

Cancer Trends Progress Report

Online Summary of Trends in US Cancer Control Measures

20 Years of the Cancer Trends Progress Report!

The Cancer Trends Progress Report, continually updated since its first issue in 2001, summarizes our nation's advances against cancer in relation to Healthy People targets set forth by the Department of Health and Human Services. The report, intended for policy makers, researchers, and public health professionals, includes key measures of progress along the cancer control continuum and uses national trend data to illustrate where improvements have been made and where attention is demanded. New measures this year include Cancer Survivors and UV Exposure, Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS), Healthy Eating Index, Tobacco Company Marketing Expenditures for E-Cigarettes, and Systemic Therapy Treatment for both Bladder and Kidney Cancers.

Read our [Introduction](#) and [Division Director's Message](#) to learn more about the report.

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Early Detection

Breast, Cervical, Colorectal, Lung, Prostate Cancer Screening

Diagnosis

Incidence, Stage at Diagnosis

Treatment

Trends in Cancer Treatment

Life After Diagnosis

Financial Burden of Cancer Care, Cancer Survivorship

End of Life

Mortality, Years of Life Lost

The report, available only online, can be printed in part or in its entirety. Portions of the report are updated annually, while other sections are updated as new data become available. The full report is updated every year.

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Cancer Trends Progress Report

National Cancer Institute, NIH, HHS, Bethesda, MD, October 2022, <https://progressreport.cancer.gov>.

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About the Report

This section provides an overview of the Cancer Trends Progress Report and includes a message from NCI's Director of the Division of Cancer Control and Population Sciences, the methodology used for characterizing trends, frequently asked questions and answers, acknowledgments, and a downloadable PDF fact sheet.

- [Introduction](#)
- [Division Director's Message](#)
- [Methodology for Characterizing Trends](#)

- [Frequently Asked Questions](#)
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- [Fact Sheet \(PDF\)](#)

Printable Version of Report

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Introduction

The nation's investment in cancer research is making a difference. The rate of death from cancer continues to decline among both men and women, among all major racial and ethnic groups, and for many types of cancer, including the four most common (lung, colorectal, breast, and prostate cancers). The death rate from all cancers combined continues to decline, as it has since the early 1990s. Many people who have had cancer live longer and enjoy a better quality of life than was possible years ago. This steady improvement in mortality from cancer reflects public health prevention and screening initiatives and improvements in the diagnosis and treatment of cancer.

Still, cancer remains a major public health problem that profoundly affects more than 1.7 million people diagnosed each year, as well as their families and friends.

- Cancer is the second most common cause of death in the United States (exceeded only by heart disease), accounting for nearly one in every four deaths.
- The incidence of some cancers, including leukemia, myeloma (cancer of plasma cells), melanoma of the skin, thyroid, liver, oral cavity and pharynx, pancreas, uterus, kidney, and female breast, is rising.
- The burden of some types of cancer weighs more heavily on some groups than on others. The rates of both new cases and deaths from cancer vary by socioeconomic status, sex, and racial and ethnic group.
- The economic burden of cancer also is taking its toll. As the U.S. population ages and newer technologies and treatments become available, national expenditures for cancer continue to rise and could potentially exceed overall medical care expenditures combined.

Why a Progress Report Is Needed

Since the signing of the National Cancer Act in 1971, our country has vigorously fought the devastating effects of cancer. Now it is time to see how far we have come. The *Cancer Trends Progress Report* is a series of reports that describe the nation's progress against cancer through research and related efforts. The report is based on the most recent data at the time of analysis from the National Cancer Institute, the Centers for Disease Control and Prevention, other federal agencies, professional groups, and cancer researchers.

The *Cancer Trends Progress Report* is designed to help the nation review past efforts and plan future ones. The report can help the public better understand the nature of cancer, as well as the results of current strategies to fight cancer. Researchers, clinicians, and public health providers can focus on the gaps and opportunities identified in the report, paving the way for future progress against cancer. Policymakers can use the report to evaluate our progress relative to our investment in cancer research discovery, program development, and service delivery.

What's in the Report

The *Cancer Trends Progress Report* includes key measures of progress along the [cancer control continuum](#).

- [Prevention](#). The measures in this section cover behaviors that can help people prevent cancer, the most important of which is avoiding tobacco use and secondhand smoke exposure. This section also addresses physical activity, dietary intakes, alcohol consumption, exposure to the sun and chemicals in the environment, HPV vaccination, tobacco policy and regulatory factors, smoking cessation, and genetic testing.
- [Early Detection](#). Screening tests help find cancers early, which greatly increases the chances of successful treatment. This section describes the extent to which people are following recommended screening guidelines to detect breast, cervical, colorectal, lung, and prostate cancers.
- [Diagnosis](#). We can learn much about our progress against cancer by looking at the rates of new cancer cases (incidence) and cancers diagnosed at late stages. This section reviews both of these areas.
- [Treatment](#). This section describes common treatment options and measures the rates at which people are undergoing treatments for certain cancers. It also describes new treatment options emerging from ongoing research and monitoring activities.

- Life After Diagnosis. This section addresses trends in the proportion of cancer patients who are alive five years after their diagnosis, costs of cancer care, and health behaviors among survivors.
- End of Life. This section includes the rate of deaths (mortality) due to cancer and the estimated number of years of life lost due to cancer.

Where possible, the *Cancer Trends Progress Report* shows changes in these data over time (trends). The report indicates whether trends are "rising", "falling", or "stable" using standard definitions and tests of statistical significance (see Methodology for Categorizing Trends). For some measures, differences in the cancer burden among various racial and ethnic groups, income groups, and groups by level of educational attainment, are also presented.

Many of the measures shown in this report are identical to those presented in Healthy People 2030, a comprehensive set of 10-year health objectives for the nation sponsored by the U.S. Department of Health and Human Services. Using identical measures enables us to show the nation's progress against cancer in relation to cancer-related Healthy People 2030 targets.

How Data Are Selected

In selecting measures that would be meaningful to readers of this report, we relied largely on long-term national - rather than state or local - data collection efforts. (State and local data are available online at State Cancer Profiles). The report includes more measures for prevention than for other segments of the continuum, because preventive measures hold so much potential in positively impacting national progress to reduce the burden of cancer. Behavioral choices can greatly reduce the risk of many cancers, making prevention a key focus of the report.

Data in the *Cancer Trends Progress Report* come from a variety of sources with different collection techniques and reporting times, so time periods for the data may vary by section. The starting point or baseline year against which to measure how well the nation is progressing toward the Healthy People 2030 targets depends on the data available. For example, data for most Diagnosis, Life After Cancer, and End of Life measures are available starting in 1975, while data for most Prevention, Early Detection, and Treatment measures are available beginning in the late 1980s or early 1990s.

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National Cancer Institute, NIH, DHHS, Bethesda, MD, March 2021, <https://progressreport.cancer.gov>.

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Division Director's Message

One of the most important responsibilities of the National Cancer Institute is communicating our nation's progress against cancer to the public. The *Cancer Trends Progress Report* is one way that we fulfill this responsibility. As an online summary of trends in US cancer control measures, this web-based report provides up-to-date information on a wide range of topics across the cancer control continuum—from disease prevention to cancer-related mortality or survivorship. It also includes data to help us track the successful implementation of research-based methods of early detection and risk reduction.

The *Cancer Trends Progress Report* draws on data from numerous federal departments and agencies, including the Environmental Protection Agency, the Department of Agriculture, and several offices and agencies within the Department of Health and Human Services, such as the Agency for Toxic Substances and Disease Registry, the Centers for Disease Control and Prevention, the Office of Disease Prevention and Health Promotion, the Substance Abuse and Mental Health Administration, and the National Institute on Alcohol Abuse and Alcoholism. As the report details, the nation is making important progress toward major cancer-related targets but losing ground in some areas. Mortality trends are the best indicators of progress against cancer. The rate of death from all cancers combined continues to decline among both men and women, among all major racial and ethnic groups, and for the most common types of cancer, including colon, lung, female breast, and prostate cancers. Nevertheless, mortality rates are increasing for some cancers, and important differences among subpopulations reflect chronic health disparities that are substantial for some groups. Along with mortality rates and other standard measures of cancer control, this report includes new and updated measures that address current issues like UV exposure among cancer survivors, e-cigarettes, PFAS exposure, systemic therapies, and healthy eating. We frequently update relevant graphs with the latest information. We look forward to continuing to improve this report as we add more measures to inform readers.

Researchers and cancer control professionals can use the *Cancer Trends Progress Report* to advance cancer control progress by stimulating research ideas and setting priorities for cancer control program planning. We at NCI, along with our partners in this initiative, intend for this report to be a valuable reference tool and a catalyst for action. The numbers in this report reflect the lives and struggles of millions of people. NCI remains committed to advancing scientific progress and facilitating the application of scientific evidence. This report reflects our overarching mission: the support of cancer research to help all people live longer, healthier lives.

Katrina A. B. Goddard, Ph.D.

Director, Division of Cancer Control and Population Sciences
National Cancer Institute



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Methodology for Characterizing Trends

The *Cancer Trends Progress Report* features [joinpoint statistical methodology](#) to present a consistent characterization of population trends for factors related to the prevention, early detection, or treatment of cancer. Joinpoint methodology characterizes a trend using joined linear segments on a logarithmic scale; the point where two segments meet is called a "joinpoint." The methodology is useful for identifying trends in cancer incidence and mortality rates (e.g., in the [SEER Cancer Statistics Review](#)).

The Joinpoint software uses statistical criteria to determine:

- the fewest number of segments necessary to characterize a trend
- where the segments begin and end; and
- the annual percent change (APC) for each segment (a linear trend on a log scale implies a constant APC).

In addition, we the report authors used a 95-percent confidence interval around the APC to determine if the APC for each segment differed significantly from zero. Whenever possible, we calculated weighted regression lines (utilizing standard errors) using the Joinpoint software. Using a log response variable, the weight (motivated by the delta method) equals the square of the response variable divided by the square of the standard error. If the standard errors were unavailable, we used an unweighted regression.

With the results of these analyses, we characterized trends in this report with respect to both their public health importance and statistical significance. If a trend was:

- Changing less than or equal to 0.5% per year ($-0.5 \leq \text{APC} \leq 0.5$), and the APC was not statistically significant, we characterized it as **STABLE**
- Changing more than 0.5% per year ($\text{APC} < -0.5$ or $\text{APC} > 0.5$), and the APC was not statistically significant, we characterized it as **NON-SIGNIFICANT CHANGE**
- Changing with a statistically significant $\text{APC} > 0$, we characterized it as **RISING**
- Changing with a statistically significant $\text{APC} < 0$, we characterized it as **FALLING**

While these categorizations are somewhat arbitrary, they do provide a consistent method to characterize trends across disparate measures. Additionally, the statistical significance and absolute value of change for incidence and mortality trends were used to ensure consistency with all major publications on national cancer trends. To avoid statistical anomalies, a joinpoint segment must contain at least 3 observed data points, and no joinpoint segment can begin or end closer than 3 data points from the beginning or end of the data series. Due to these constraints on the joinpoint models, data series with a smaller set of data points are limited as to where a joinpoint can occur and how many joinpoints can be fit into the series. For example, if there are 4 data points or fewer, only 1 segment and no joinpoints can be fit to the series; for 5 to 7 data points, up to 2 segments and 1 joinpoint can be fit to the series; for 8 to 10 data points, up to 3 segments and 2 joinpoints can be fit. To avoid some of these limitations and allow a degree of flexibility as to where a joinpoint can be placed in a series, we established a set of guidelines on what method to use for calculating the APC of a data series based on the number of estimates that make up the data series:

- 2-6 data points: because of the limited number of data points, we did not use Joinpoint. Instead, we calculated an APC between each consecutive data point, and we calculated the statistical significance of the APC using a two-sample test based on the standard errors derived from the survey/data source.
- 7-11 data points: a joinpoint analysis with a maximum of 1 joinpoint.
- 12-16 data points: a joinpoint analysis with a maximum of 2 joinpoints.
- 17-21 data points: a joinpoint analysis with a maximum of 3 joinpoints.
- 22-26 data points: a joinpoint analysis with a maximum of 4 joinpoints.
- 27 or more data points: a joinpoint analysis with a maximum of 5 joinpoints.

In addition to the annual percent change (APC) estimates, this report also presents the average annual percent change (AAPC), which is characterized in the same way as the APC. The AAPC is a measure which uses the underlying joinpoint model to compute a summary measure of the trend over a fixed pre-specified interval. The AAPC is useful for comparing the most recent trend across different groups (e.g., racial/ethnic groups or sex) when the final joinpoint segments are not directly comparable because they are of different lengths. Regardless of where the joinpoints occur for the different series, the AAPC can be computed over the same fixed interval for all the series (e.g., 2007–2011 to characterize the most recent trend). The AAPC is computed as a weighted average of the APC's from the joinpoint model, with the weights equal to the length of the APC intervals included. When there were seven or fewer data points, the AAPC was computed based on the connected data points, rather than an underlying joinpoint model. The derivation of the AAPC and its standard error based on a series of connected points is presented in a technical report from the Surveillance Research Program. Measures were age-adjusted to the 2000 U.S. standard population using the direct method of standardization (see the tutorial on Calculating Age-adjusted Rates). Whenever possible, age-adjustment for measures was done using the age-adjustment groups specified for the Healthy People 2030 objective that corresponds to the data series.

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Frequently Asked Questions

What is the *Cancer Trends Progress Report*?

The National Cancer Institute's *Cancer Trends Progress Report* is an online report that tracks the nation's progress against cancer across the cancer continuum - from prevention through end of life - and compares that progress to [Healthy People 2030](#) goals set forth by the Department of Health and Human Services.

Why is the report important?

The *Cancer Trends Progress Report* is currently the only report of its kind to present the most up-to-date information on trends in the nation's progress against cancer all in one place. Key cancer agencies and groups, including the National Cancer Institute, the Centers for Disease Control and Prevention, other federal agencies, professional groups, and cancer researchers gather the information in this report through a collaborative effort.

What is the main message of the report?

The nation has met or is making progress toward many major cancer-related Healthy People 2030 targets. However, we are losing ground in other important areas that demand attention. For more information, visit the [Highlights](#) section of the report.

What is in the report?

The *Cancer Trends Progress Report* includes key measures in the areas of prevention, screening, diagnosis, treatment, life after diagnosis, and end of life. Progress against cancer is tracked over time and determined by the availability of data. This progress is measured in relation to certain cancer-related Healthy People 2030 targets.

The body of the report includes standardized information for each measure, including background, definition of measure, Healthy People targets, data source, trends and most recent estimates, related cancers, and additional references for each topic area. This information is also summarized in chart form in the [Summary Tables](#) section of the report, where special color-coded graphics show whether the trend is going in the desired direction and how the nation's progress compares to the Healthy People targets.

How is the information displayed and explained?

Most of the trend graphs were made using [Joinpoint regression analysis](#). This statistical method illustrates real changes in direction instead of merely connecting one dot to another. The report shows whether trends are rising or falling and explains why changes might have occurred. Where data are available, differences in the cancer burden are also illustrated by race and ethnicity, educational attainment, and socioeconomic status. A bulleted summary of recent trends is presented in the [Highlights](#) section of the report. Data are downloadable as Excel spreadsheets, and graphs within the report are downloadable as JPEG files, which can be used in PowerPoint slides.

Where does the data come from?

The data in the *Cancer Trends Progress Report* come from a variety of sources with different collection techniques and reporting times, so time periods for the data may vary by section. Data is gathered through a collaborative effort by the National Cancer Institute, the Centers for Disease Control and Prevention, other federal agencies, professional groups, and cancer researchers.

How are the data selected?

Measures are selected based on scientific evidence and the availability of periodic or longitudinal national - rather than state or local - data collection and analysis efforts. Criteria for selecting measures include the relevance of what is being measured (e.g., impact on cancer, national policy implications); the scientific rigor underlying the measure (e.g., validity, reliability, and explicitness of evidence base); the feasibility of using the measure (e.g., availability of long-term data); and the usability by target audiences (e.g., ease of understanding and applicability). The report includes more measures for prevention than other sections because there are more trends data available in that area. Where possible, 1990 was used as the starting point or baseline against which to measure how well the nation is progressing toward the Healthy People 2030 targets.

What data are not in the report?

Not all measures for all relevant areas of cancer progress could be included in this report. In some cases, trend information on a national level is not available. In other cases, there is no reliable information at the time of report publication. Although dramatic advances have been made in the treatment of many cancers (breast and colorectal cancers are two of the featured sites in the report), a national data system for tracking and assessing progress over time is not yet in place. Some measures such as quality of life, while important in assessing the cancer burden, are not included because there simply is no consensus on how best to track those measures in a population at this time. As data and information become available, future editions of the report will include new measures (e.g., population-level measures like the one in this edition describing state smoke-free air laws).

Where can I find state- and county-level cancer data?

The *Cancer Trends Progress Report* only presents data at the national level. For cancer data at the state and county level or behavioral risk factor data at the state level, go to NCI's [State Cancer Profiles](#) website.

Who can use the report?

The report can help the public better understand the nature of cancer, as well as the results of current strategies to fight cancer. Researchers, clinicians, and public health providers can focus on the gaps and opportunities identified, and work to make future progress against cancer. Policymakers can use the report to evaluate our progress relative to our investment in cancer research discovery, program development, and service delivery.

How often will the report be updated?

The report is updated annually, where data are available. Page notes display the date of the most recent update.

What is the rationale for the report?

In 1996, the NCI Director and the NCI Board of Scientific Advisors assembled the Cancer Control Program Review Group (CCPRG) to evaluate the full scope of the institute's cancer control research program. The NCI Director also established the Surveillance Implementation Group (SIG) to provide advice and recommendations for expanding and enhancing NCI's cancer surveillance research program. Thus, in the late 1990s the *Cancer Trends Progress Report* was created based on recommendations from CCPRG and SIG to develop a national progress report on the burden of cancer.

How can I get a copy of the report?

The *Cancer Trends Progress Report* is available online only. Archived reports from previous releases since 2001 are available on the [Recent Updates and Archive](#) page.

Where can more information on cancer be found?

- <https://www.cancer.gov>
- 1-800-4-CANCER (1-800-422-6237)

Where should I direct my questions or comments about the *Cancer Trends Progress Report*?

Send questions or comments about the report to [Progress Report Help](#).

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Acknowledgments

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- Agency for Toxic Substances and Disease Registry
- National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention
- National Center for Environmental Health, Centers for Disease Control and Prevention
- National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention
- National Center for Health Statistics, Centers for Disease Control and Prevention
- National Institute on Alcohol Abuse and Alcoholism
- Office of Disease Prevention and Health Promotion
- Substance Abuse and Mental Health Services Administration
- U.S. Census Bureau
- U.S. Department of Agriculture
- U.S. Environmental Protection Agency

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Data Sources

Americans for Nonsmokers' Rights Foundation

Americans for Nonsmokers' Rights is the leading national lobbying organization (501 (c) 4), dedicated to nonsmokers' rights, taking on the tobacco industry at all levels of government, protecting nonsmokers from exposure to secondhand smoke, and preventing tobacco addiction among youth. ANR pursues an action-oriented program of policy and legislation.

Measures: Smokefree workplace rules and laws.

Berkeley Mortality Database(<http://bmd.mortality.org/>)

This database contains life tables for national populations and, whenever available, the raw data used in constructing these tables. The raw data generally consist of birth and death counts from vital statistics, plus population counts from periodic censuses.

Measures: Financial burden of cancer care.

Continuing Survey of Food Intakes by Individuals

A part of the National Nutrition Monitoring System, which was the first nationwide dietary intake survey designed to be conducted annually.

Measures: Fruit and vegetable consumption, Red meat consumption, Fat consumption.

Federal Trade Commission and Staff Reports

The Federal Trade Commission provides annual reports on sales, advertising, and promotion for both cigarettes and smokeless tobacco.

Measures: Tobacco company marketing expenditures.

Morbidity and Mortality Weekly Report

Often called "the voice of CDC," the MMWR series is the agency's primary vehicle for scientific publication of timely, reliable, authoritative, accurate, objective, and useful public health information and recommendations.

Measures: Medicaid coverage of tobacco dependence.

National Center for Health Statistics (NCHS) Life-Tables

The life tables in this report are current life tables for the U.S. based on age-specific death rates.

Measures: Years of life lost.

National Health and Nutrition Examination Survey

The National Health and Nutrition Examination Survey (NHANES) is a program of studies designed to assess the health and nutritional status of adults and children in the United States. The survey is unique in that it combines interviews and physical examinations.

Measures: Fruit and vegetable consumption, Red meat consumption, Fat consumption, Weight, Secondhand smoke exposure, Arsenic, Benzene, Cadmium, Nitrate.

National Health Interview Survey Cancer Control Topical Module

The National Health Interview Survey (NHIS) is an annual nationwide survey of 36,000 households conducted by the National Center for Health Statistics and administered by the U.S. Census Bureau. In 2019 the NHIS questionnaire was redesigned to increase relevance, enhance data quality, and minimize respondent burden. In addition, the COVID-19 pandemic created challenges conducting in-person interviews for the 2020 NHIS, requiring changes to field procedures to conduct most surveys by telephone, which impacted survey response rates. For details, please refer to "[Potential Impact of NHIS Redesign and COVID-19 on the Cancer Trends Progress Report](#)".

Measures: Adult tobacco use, Quitting smoking, Physical activity, Sleep, Sun protection, Indoor tanning, Outdoor tanning, Sunburn, Genetic testing, Breast cancer screening, Cervical cancer screening, Colorectal cancer screening, Lung cancer screening, Prostate cancer screening, Cancer survivors and smoking, Cancer survivors and physical activity, Cancer survivors and obesity.

National Immunization Surveys

The National Immunization Surveys (NIS) are a group of phone surveys used to monitor vaccination coverage among children 19–35 months and teens 13–17 years, and flu vaccinations for children 6 months–17 years. The surveys are sponsored and conducted by the National Center for Immunization and Respiratory Diseases (NCIRD) of the Centers for Disease Control and Prevention (CDC) and authorized by the Public Health Service Act [Sections 306].

Measures: HPV Immunization.

National Institute on Alcohol Abuse and Alcoholism Surveillance Reports

The Division of Epidemiology and Prevention Research within the National Institute on Alcohol Abuse and Alcoholism prepares annual reports highlighting per capita alcohol consumption in the U.S.

Measures: Alcohol consumption.

National Report on Human Exposure to Environmental Chemicals

The National Report on Human Exposure to Environmental Chemicals (National Exposure Report) is a series of ongoing assessments of the U.S. population's exposure to environmental chemicals.

Measures: Arsenic, Benzene, Cadmium, Nitrate.

National Survey on Drug Use and Health

The National Survey on Drug Use and Health (NSDUH), formerly called the National Household Survey on Drug Abuse (NHSDA), is an annual survey sponsored by the Substance Abuse and Mental Health Services Administration (SAMHSA). The survey is the primary source of information on the use of illicit drugs, alcohol, and tobacco in the civilian, non-institutionalized population of the United States aged 12 years old or older.

Measures: Age at smoking initiation.

National Youth Tobacco Survey

The National Youth Tobacco Survey (NYTS) was designed to provide national data on long-term, intermediate, and short-term indicators key to the design, implementation, and evaluation of comprehensive tobacco prevention and control programs. The NYTS also serves as a baseline for comparing progress toward meeting selected Healthy People 2020 goals for reducing tobacco use among youth.

Measures: Youth tobacco use.

National Vital Statistics System

These data are provided through contracts between NCHS and vital registration systems operated in the various jurisdictions legally responsible for the registration of vital events – births, deaths, marriages, divorces, and fetal deaths.

Measures: Financial burden of cancer care, Mortality.

Surveillance, Epidemiology, and End Results (SEER)

The Surveillance, Epidemiology and End Results (SEER) Program collects information on incidence, prevalence and survival from specific geographic areas representing 34.6 percent of the US population and compiles reports on all of these plus cancer mortality for the entire country.

Measures: Incidence, Stage at diagnosis, Breast cancer treatment, Kidney cancer treatment, Survival.

SEER-Medicare Linked Database

The SEER-Medicare data reflect the linkage of two large population-based sources of data that provide detailed information about Medicare beneficiaries with cancer. The data come from the SEER Program of cancer registries that collect clinical, demographic, and cause of death information for persons with cancer and the Medicare claims for covered health care services from the time of a person's Medicare eligibility until death.

Measures: Financial burden of cancer care.

SEER Patterns of Care

The SEER Patterns of Care (POC) studies provide important information on cancer treatments as documented in hospital records.

Measures: Bladder cancer treatment, Breast cancer treatment, Colorectal cancer treatment, Lung cancer treatment, Ovarian cancer treatment, Prostate cancer treatment.

State Tobacco Activities Tracking and Evaluation (STATE) System

The State Tobacco Activities Tracking and Evaluation (STATE) System is an electronic data warehouse containing up-to-date and historical state-level data on tobacco use prevention and control. The STATE System is designed to integrate many data sources to provide comprehensive summary data and facilitate research and consistent interpretation of the data. The STATE System was developed by the Centers for Disease Control and Prevention in the Office on Smoking and Health, National Center for Chronic Disease Prevention and Health Promotion.

Measures: Medicaid coverage of tobacco dependence.

Tobacco Use Supplement to the Current Population Survey

The Tobacco Use Supplement to the Current Population Survey (TUS-CPS) is an NCI-sponsored survey of tobacco use that has been administered as part of the U.S. Census Bureau's Current Population Survey. The TUS-CPS is a key source of national- and state- level data on smoking and other tobacco use in the U.S. household population. These data can be used by researchers to monitor progress in the control of tobacco use, conduct tobacco-related research, and evaluate tobacco control programs.

Measures: Clinician's advice to quit smoking, Smokefree home rules, Smokefree workplace rules and laws.

U.S. Census Bureau Population Projections

The population projections associated with this release were produced by the Population Division as an interim product to meet the immediate needs of our user community for national projections that incorporate the results of Census 2000.

Measures: Financial burden of cancer care.

Radon Vent Fan Manufacturers' Sales Data

Measures: Radon.

U.S. EPA. An Inventory of Sources and Environmental Releases of Dioxin-Like Compounds in the U.S.

In November 2006, EPA released the report: An inventory of sources and environmental releases of dioxin-like compounds in the United States for the years 1987, 1995 and 2000. The report presented an evaluation of sources and emissions of dioxins (CDDs), dibenzofurans (CDFs) and coplanar PCBs to the air, land and water of the U.S.

Measures: Information to come.

Youth Risk Behavior Surveillance System

The Youth Risk Behavior Surveillance System (YRBSS) monitors priority health-risk behaviors and the prevalence of obesity and asthma among youth and young adults.

Measures: Youth tobacco use, Indoor Tanning, Sunburn.

Cancer Trends Progress Report

Online Summary of Trends in US Cancer Control Measures

Highlights

Last Updated:

March 2022

Report highlights are categorized into one of the three following groups: Making Progress, Areas of Concern, and Other Trends to Consider.

Making Progress

The nation is making progress toward major cancer-related targets for Healthy People 2030, a comprehensive set of 10-year health objectives sponsored by the U.S. Department of Health and Human Services.

Prevention

- Cigarette smoking prevalence among adults has declined steadily since we began monitoring trends in 1965. In 2020, 12.6% of adults aged 18 and older reported current cigarette smoking.
- Cigarette smoking prevalence among adolescents has declined since at least 2011, with 3.3% of middle and high school students in 2020 having smoked cigarettes in the past 30 days.
- Initiation of the use of cigarettes among adolescents and young adults aged 12 to 25 years has been falling. As of 2019, it was 2.6%.
- Cigarette smoking cessation among adults has risen since 2003. In 2020, 8.5% of adult smokers quit successfully in the prior 6-12 months, approaching the Healthy People 2030 target of 10.2%.
- Indoor tanning has decreased significantly among female high school students since 2013. Many states have enacted policies to control the indoor tanning industry, and some are restricting minors' access to indoor tanning facilities. The most recent estimate (2019) of the percentage of female adolescents in grades 9 through 12 who used an indoor tanning device in the past year is 5.7% (4.5% for both sexes).
- Recent trends for inorganic arsenic exposure have been decreasing since 2009/2010. Inorganic arsenic compounds are more toxic than organic arsenic compounds, and inorganic arsenic has been linked to bladder, lung, skin, prostate, liver and intrahepatic bile duct, and some kidney cancers. Inorganic arsenic compounds are found in industry, in building products (in some "pressure-treated" woods), and in arsenic-contaminated water and soil. We typically take in small amounts of inorganic arsenic in the food we eat (in particular, rice and fish), the water we drink, and the air we breathe.
- The percentage of adolescents aged 13 to 17 years who are up-to-date on recommended HPV vaccinations (based on the guidelines set forth by the Centers for Disease Control and Prevention's [CDC] Advisory Committee on Immunization Practices [ACIP]) has been increasing, and in 2019 was 56.8% for females and 51.8% for males.

Early Detection

- The percentage of adults aged 50 to 75 years who are up-to-date with colorectal cancer screening (based on the 2016 U.S. Preventive Services Task Force recommendations) has been increasing, and in 2019 it was 67.1%.

Diagnosis

- Lung cancer incidence (new cases) rates have continued to fall since at least 1991 among males, and since 2006 among females.
- Recent trends show a decline in the incidence of thyroid, urinary bladder, ovarian, and larynx cancers at 2% or more a year, as well as smaller but still statistically significant decreases in stomach and brain cancers, and Hodgkin and non-Hodgkin lymphoma.
- Trends for distant-stage colon cancer have been decreasing since 2004.
- Colorectal cancer incidence rates have been decreasing since 1998; however, the rate of decline slowed starting in 2011. Since then, the trend has flattened somewhat. The declines in colorectal cancer incidence

can be attributed to increased screening, which not only contributes to reduced incidence through the identification and removal of precancerous lesions but also improves the detection of cancer at an earlier stage.

- Trends for distant-stage lung cancer have been decreasing since 2008, with a larger decline since 2015.

Treatment

- The proportion of patients aged 20 years and older diagnosed with stage IIIB or IV non-small cell lung cancer receiving any chemotherapy has increased from 2015 to 2017/2018. In 2017/2018, 61.9% of patients aged 20 years and older diagnosed with stage IIIB or IV non-small cell lung cancer received chemotherapy.
- The proportion of patients aged 20 years and older diagnosed with advanced-stage melanoma of the skin receiving any chemotherapy increased from 2001 to 2011 and increased further from 2011 to 2018. In 2018, 79.4% of patients aged 20 years and older diagnosed with stage III or IV melanoma of the skin received chemotherapy.

Life After Diagnosis

- The proportion of adult cancer survivors who are current smokers continues to decline, with the greatest improvement seen among survivors aged 18 to 44 years.
- The percentage of cancer survivors aged 18 years and older reporting no physical activity in their leisure time has been declining steadily since 2005. Likewise, the percentage of survivors who meet current federal guidelines for aerobic and muscle-strengthening physical activity continues to improve.

End of Life

- The rate of death from cancer continues to decline among both males and females in all major racial and ethnic groups.
- Mortality for the four most common types of cancer (colorectal, female breast, lung, and prostate) continues to fall.
- Recent trends show a decline of 2% or more a year in mortality for ovarian, larynx, and kidney and renal pelvis cancers, non-Hodgkin and Hodgkin lymphomas, melanoma of the skin, and leukemia, as well as smaller but still statistically significant decreases for myeloma, esophagus, cervix uteri, urinary bladder, and stomach cancers.

Areas of Concern

The nation is losing ground in other important areas that demand attention.

Prevention

- Although the percentage of smokers making a quit attempt in the past year has been rising since 2005 and was 53.9% in 2020, it is still well below the Healthy People 2030 target of 65.7%.
- All subgroups examined show a statistically significant increasing trend in recent smoking cessation success, except for people with less than a high school education.
- Progress has been made in reducing exposure to secondhand smoke among all populations; however, non-Hispanic black individuals still have higher rates of exposure than individuals of other races and ethnicities. Additionally, people of lower socioeconomic status and with lower educational attainment remain less likely to be covered by smokefree laws in worksites, restaurants, and bars. Private settings such as homes and vehicles remain major sources of exposure for some populations, including youth.
- Since 2014, e-cigarettes have been the most commonly used tobacco product among youth. In 2020, 19.6% of high school students and 4.7% of middle school students reported current use of e-cigarettes.
- Tobacco advertising and promotion are causally related to increased tobacco initiation and use. The U.S. Federal Trade Commission reports cigarette and smokeless tobacco advertising and promotion expenditures for the largest cigarette companies and major smokeless tobacco product manufacturers. In 2020, the combined annual expenditure for advertising and promotion (adjusted to 2020 dollars) was \$7.8

billion for cigarettes and \$567.3 million for smokeless tobacco products —amounting to about \$22.9 million every day.

- Although more than 69.4% of adults reported practicing sun-protective behaviors in 2020, more than 29% reported having had one or more sunburns in the past 12 months. An even higher rate of sunburn (57.2% in 2017) was reported among teens. Sunburn is a primary modifiable risk factor for melanoma skin cancer, and the rate has changed very little from 2015-2017 for adults and between 2015-2017 among teens. Non-Hispanic whites were more likely to experience sunburn than other racial/ethnic groups, and sunburn occurred more often among those aged 18 to 24 years (40.6% in 2020) than among those aged 25 years and older (27.4%).
- Outdoor tanning also poses significant risk for skin cancer; intentional outdoor tanning appears to be more prevalent than indoor tanning and warrants public health monitoring.
- Sun sensitivity occurs in all racial/ethnic groups. Sun-sensitive adults, who are at greatest risk for melanoma, continue to report slightly higher rates of tanning bed use, outdoor tanning, and higher sunburn incidence than those without sun sensitivity (45.3% for sun-sensitive individuals versus 13.5% among those who are not sun-sensitive in 2020).
- Although sunbathing and tanning are strongly associated with sunburn, recent data indicate that most sunburns occur in contexts unrelated to intentional tanning. Results suggest the need to promote multiple forms of sun protection tailored to specific contexts, especially when engaged in physical activity and when spending time near the water.
- Per capita alcohol consumption, which can increase the risk of some cancers, has risen slightly since the mid-1990s.
- Excess weight and obesity are associated with elevated cancer risk. Obesity prevalence continues to increase, with an estimated 42.4% of adults with obesity and an additional 31.2% with overweight.
- Despite modest increases over time, only 25.4% of adults report meeting federal guidelines for aerobic and muscle-strengthening physical activity. Rates among low-income and low-education groups of any race were well below the Healthy People 2030 target of 28.4%.
- Overall diet quality has not improved for years; Americans are not meeting recommendations for intake of fruits and vegetables, which have been linked to prevention of several cancer types.

Early Detection

- The *Cancer Trends Progress Report* includes rates of Pap testing since 1987. To accommodate the addition of HPV testing and Pap/HPV co-testing as recommended approaches to cervical cancer screening, the current report tracks the percentage of females who were up-to-date with current U.S. Preventive Services Task Force (USPSTF) cervical cancer screening recommendations. In 2019, 73.5% of females aged 21 to 65 years were up-to-date with respect to their cervical screening recommendations, which is below the Healthy People 2030 target of 84.3%.
- Since 2010, uptake of lung cancer screening with chest computed tomography (CT) has been fairly stable—but limited. The USPSTF first recommended low-dose radiation CT screening for lung cancer in 2013 for adults aged 55 to 80 years who had a 30 pack-year smoking history or more and who currently smoked or had quit within the past 15 years. In March 2021, the USPSTF published revised guidelines recommending annual low-dose radiation CT (LDCT) screening for lung cancer in adults aged 50 to 80 years who 1) have a 20 pack-year smoking history or more and 2) who currently smoke or have quit within the past 15 years. The percentage of adults at risk for lung cancer due to smoking, aged 55-80 years, who had a CT scan to check for lung cancer within the past year was 4.5% in 2015. The Healthy People 2030 target is to increase to 7.5 percent the proportion of adults aged 55 to 80 years who receive lung cancer screening based on the 2013 USPSTF recommendations.

Diagnosis

- The incidence of several cancers, including leukemia, melanoma of the skin, esophageal adenocarcinoma, and cancers of the oral cavity and pharynx, testis, and pancreas, has been increasing annually.
- Although age-specific trends in incidence and mortality are not generally covered in this report, it should be noted that incidence trends of colorectal cancer for those aged under 50 years have been rising and

are of enough concern that some guideline-setting organizations either have, or are considering, lowering the age to initiate screening.

- Although the incidence rates for late-stage prostate cancer remain low, the rates of late-stage cases have been increasing since 2011.

Treatment

- The proportion of patients aged 20 years and older diagnosed with localized/regional kidney cancer receiving partial nephrectomy has remained stable since 2012.

Life After Diagnosis

- Estimates of national expenditures for cancer care in 2020 for the top five most costly cancer sites were \$29.8, \$24.3, \$23.8, \$22.3, and \$18.6 billion for female breast, colorectal, lung, and prostate cancers, and non-Hodgkin lymphoma, respectively.
- The proportion of adult cancer survivors who are obese has been rising and is now 33%. Efforts are needed to help cancer survivors adopt or maintain a healthy weight after diagnosis, which has the potential to reduce both cancer- and non-cancer-related morbidity.

End of Life

- Recent trends in the death rates have been increasing for several cancers, including oral cavity and pharynx, pancreas, and corpus uteri (endometrial) cancers.

Other Trends to Consider

While this report provides trends in cancer rates, and factors that influence cancer rates, for some trends it is not possible to characterize the direction of the trend as either progress or an area of concern.

Early Detection

- After a long decline, the incidence rates for prostate cancer started rising in 2014, and death rates flattened out starting in 2013. Prostate cancer incidence rates are very sensitive to changes in PSA screening rates and subsequent referral for biopsy. In 2012, USPSTF recommended against prostate cancer screening. In 2018, the task force changed its recommendation to call for an individualized, shared decision-making approach. Prostate cancer testing rates in the year prior to being surveyed fell between 2010 and 2013 (from 46.1% to 38.2%), probably as a result of the 2012 USPSTF guidelines, but have been fairly stable since. Mortality rates are a function of many factors, including changes in screening rates and advances in treatment. While PSA screening may reduce mortality for some patients, it must be balanced against a significant number of patients who are diagnosed with disease that is relatively indolent and may not have progressed prior to the person eventually dying of other unrelated causes.

Cancer Trends Progress Report

Online Summary of Trends in US Cancer Control Measures

Trends at a Glance

Last Updated:

October 2021

The Trends-at-a-Glance offers an overview of trend direction measure by measure. Trends noted as stable or non-significant change (NSC) are not changing significantly. The difference between "stable" and "non-significant change" is based on statistical computations described in the [Methodology for Characterizing Trends](#) appendix. The table below provides a snapshot of recent national trends (as characterized by the Average Annual Percent Change (AAPC)) for measures included in this report. Green indicates that the recent trend is moving in the desired direction. Red indicates that the recent trend is not moving in the desired direction. Purple indicates that the recent trend is moving but it is indeterminate whether the direction is desired or not. There is no background color for trends that are stable or show a non-significant change in direction. The column labeled "Recent trend time period" shows the dates associated with each trend. These dates depend upon the recency of available data.

Click on any measure title in the "Measure" column to read more about the measure. For a more complete summary of the measures, including their progress compared with the Healthy People 2030 target (where one exists), see the [Summary Tables](#) by topic.

Cancer Trends Progress Report - Trends at a Glance

Measure	Desired Direction	Recent Trend	Recent Trend Time Period
<u>Prevention</u>			
<u>Tobacco Use Initiation (Ages 12-17)</u>			
Any Tobacco Product	Falling	Falling	2015-2019
Cigarettes	Falling	Falling	2015-2019
Smokeless Tobacco	Falling	Falling	2015-2019
Cigars	Falling	Falling	2015-2019
<u>Youth Tobacco Use</u>			
All Tobacco	Falling	Falling	2019-2021
Cigarettes	Falling	Falling	2019-2021
E-Cigarettes	Falling	Falling	2019-2021
Smokeless Tobacco	Falling	Falling	2019-2021
Cigars	Falling	Falling	2019-2021
<u>Adult Tobacco Use</u>			
Cigarettes	Falling	Falling	2017-2021
Smokeless Tobacco	Falling	Falling	2017-2021
Cigars	Falling	Stable	2017-2021

¹ The desired direction of the recent trend is difficult to interpret due to outside factors which may be driving its direction (e.g., early detection driving breast cancer incidence rates upward temporarily, screening rates for older tests such as home FOBT going down as they are replaced by newer technologies such as colonoscopy).

Measure	Desired Direction	Recent Trend	Recent Trend Time Period
E-Cigarettes	Falling	Non-Significant Change	2017-2021
<u>Quitting Smoking</u>			
Attempted to quit smoking	Rising	Rising	2016-2020
Successfully quit smoking	Rising	Rising	2016-2020
<u>Evidence-based Cessation Aids</u>	Rising	Stable	2010-2019
<u>Clinicians' Advice to Quit Smoking</u>	Rising	Rising	2014-2019
<u>Tobacco Company Marketing Expenditures</u>			
Cigarettes	Falling	Falling	2016-2020
Smokeless tobacco	Falling	Falling	2016-2020
<u>Medicaid Coverage of Tobacco Dependence Treatments</u>	Rising	Rising	2018-2022
<u>Secondhand Smoke Exposure</u>	Falling	Falling	2013-2018
<u>Smokefree Home Rules</u>	Rising	Rising	2014-2019
<u>Smokefree Workplace Rules and Laws</u>			
Smokefree workplace	Rising	Non-Significant Change	2014-2019
Indoor air laws for workplaces	Rising	Rising	2018-2022
Indoor air laws for restaurants	Rising	Rising	2018-2022
Indoor air laws for bars	Rising	Stable	2018-2022
<u>Healthy Eating Index</u>	Rising	Rising	2013-2018
<u>Fruit and Vegetable Consumption</u>			
Fruit and Vegetables Combined	Rising	Non-Significant Change	2013-2018
Fruit	Rising	Falling	2013-2018
Vegetables	Rising	Stable	2013-2018
<u>Red Meat and Processed Meat Consumption</u>	Falling	Falling	2013-2018
<u>Fat Consumption (Saturated fat)</u>	Falling	Non-Significant Change	2013-2018
<u>Alcohol Consumption</u>	Falling	Rising	2016-2020
<u>Physical Activity</u>			
No physical activity in leisure time	Falling	Falling	2016-2020

¹ The desired direction of the recent trend is difficult to interpret due to outside factors which may be driving its direction (e.g., early detection driving breast cancer incidence rates upward temporarily, screening rates for older tests such as home FOBT going down as they are replaced by newer technologies such as colonoscopy).

Measure	Desired Direction	Recent Trend	Recent Trend Time Period
Meet physical activity guidelines	Rising	Rising	2016-2020
<u>Weight</u>			
Healthy Weight	Rising	Falling	2013-2018
Overweight	Falling	Rising	2013-2018
Obesity	Falling	Rising	2013-2018
<u>Sleep</u>	Rising	Rising	2016-2020
<u>Sun-Protective Behavior</u>			
Use sun protective measures	Rising	Falling	2015-2020
Use sunscreen (SPF 15+)	Rising	Rising	2015-2020
Wear protective clothing	Rising	Falling	2015-2020
Seek shade	Rising	Stable	2015-2020
<u>Indoor and Outdoor Tanning</u>			
Adolescents	Falling	Falling	2015-2019
Adults	Falling	Falling	2010-2015
<u>Sunburn</u>			
Adolescents	Falling	Non-Significant Change	2015-2017
Adults	Falling	Falling	2015-2020
<u>HPV Vaccination</u>			
(Up-to-date on HPV vaccination)			
Females, Ages 13-15	Rising	Rising	2017-2021
Males, Ages 13-15	Rising	Rising	2017-2021
Female	Rising	Rising	2017-2021
<u>Genetic Testing</u>			
(Received Genetic Counseling)			
Arsenic Exposure	Falling	Non-Significant Change	2013-2018
Benzene Exposure	Falling	Non-Significant Change	2013-2018
Cadmium Exposure	Falling	Falling	2013-2018
Nitrate Exposure	Falling	Stable	2013-2018

¹ The desired direction of the recent trend is difficult to interpret due to outside factors which may be driving its direction (e.g., early detection driving breast cancer incidence rates upward temporarily, screening rates for older tests such as home FOBT going down as they are replaced by newer technologies such as colonoscopy).

Measure	Desired Direction	Recent Trend	Recent Trend Time Period
<u>Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) Exposure</u>	Falling	Falling	2013-2018
<u>Early Detection</u>			
<u>Breast Cancer Screening</u>	Rising	Stable	2019-2021
<u>Cervical Cancer Screening</u>	Rising	Falling	2019-2021
<u>Colorectal Cancer Screening</u>	Rising	Rising	2018-2021
<u>Lung Cancer Screening</u>	Rising	Non-Significant Change	2010-2015
<u>Prostate Cancer Screening</u>	<u>Indeterminate</u> ¹	Falling	2018-2021
<u>Diagnosis</u>			
<u>Incidence</u>			
All cancer sites combined	Falling	Stable	2015-2019
Colon and rectum	Falling	Falling	2015-2019
Lung and bronchus	Falling	Falling	2015-2019
Female breast	<u>Indeterminate</u> ¹	Rising	2015-2019
Prostate	Falling	Rising	2015-2019
<u>Stage at Diagnosis</u>			
Late stage breast cancer	Falling	Falling	2013-2017
Distant stage colon cancer	Falling	Falling	2013-2017
Distant stage rectum cancer	Falling	Rising	2013-2017
Distant stage cervix cancer	Falling	Rising	2013-2017
Distant stage lung cancer	Falling	Falling	2013-2017
Distant stage prostate cancer	Falling	Rising	2013-2017
<u>Treatment</u>			
<u>Bladder Cancer Treatment (Intravesical therapy for disease Ta G1-2)</u>	Rising	Non-Significant Change	2009-2019
<u>Breast Cancer Treatment (Breast conserving surgery with radiation)</u>	Falling	Stable	2015-2019
<u>Colorectal Cancer Treatment (Guideline therapy)</u>	Rising	Rising	2010-2015
<u>Kidney Cancer Treatment (Partial nephrectomy)</u>	Rising	Non-Significant Change	2015-2019

¹ The desired direction of the recent trend is difficult to interpret due to outside factors which may be driving its direction (e.g., early detection driving breast cancer incidence rates upward temporarily, screening rates for older tests such as home FOBT going down as they are replaced by newer technologies such as colonoscopy).

Measure	Desired Direction	Recent Trend	Recent Trend Time Period
<u>Lung Cancer Treatment (Chemotherapy)</u>	Rising	Rising	2010-2018
<u>Melanoma of the Skin Treatment (Chemotherapy)</u>	Rising	Rising	2011-2018
<u>Ovarian Cancer Treatment (Chemotherapy)</u>			
Stage I/II Diagnoses	Rising	Rising	2002-2011
Stage III/IV Diagnoses	Rising	Rising	2002-2011
<u>Prostate Cancer Treatment (Hormonal therapy)</u>	<u>Indeterminate</u> ¹	Falling	2002-2008
<u>Life After Cancer</u>			
<u>Survival</u>			
All cancer sites combined	Rising	Stable	2010-2014
Colon and rectum	Rising	Stable	2010-2014
Lung and bronchus	Rising	Rising	2010-2014
Female breast	Rising	Rising	2010-2014
Prostate	Rising	Falling	2010-2014
<u>Cancer Survivors and Smoking</u>	Falling	Falling	2017-2021
<u>Cancer Survivors and Physical Activity</u>	Falling	Falling	2016-2020
<u>Cancer Survivors and Weight</u>	Falling	Falling	2017-2021
<u>End of Life</u>			
<u>Mortality</u>			
All cancer sites combined	Falling	Falling	2016-2020
Colon and rectum	Falling	Falling	2016-2020
Lung and bronchus	Falling	Falling	2016-2020
Female breast	Falling	Falling	2016-2020
Prostate	Falling	Falling	2016-2020

¹ The desired direction of the recent trend is difficult to interpret due to outside factors which may be driving its direction (e.g., early detection driving breast cancer incidence rates upward temporarily, screening rates for older tests such as home FOBT going down as they are replaced by newer technologies such as colonoscopy).

Cancer Trends Progress Report

Online Summary of Trends in US Cancer Control Measures

Prevention

Cancer can be caused by a variety of factors and may develop over a number of years. Some risk factors can be controlled. Choosing the right health behaviors and preventing exposure to certain environmental risk factors can help prevent the development of cancer. For this reason, it is important to follow national trends data to monitor the reduction of these risk factors. This section focuses on national trends data from four major groups of risk factors: behavioral, environmental, policy/regulatory, and genetic testing.

Tobacco

Tobacco Use

Smoking causes at least 30 percent of all cancer deaths in the United States. Avoiding tobacco use is the single most important step Americans can take to reduce the cancer burden in this country.

- [Tobacco Use Initiation](#)
- [Youth Tobacco Use](#)
- [Adult Tobacco Use](#)

Smoking Cessation

Tobacco use can lead to nicotine dependence and serious health problems. Quitting smoking greatly reduces the risk of developing smoking-related diseases, including cancer.

- [Quitting Smoking](#)
- [Evidence-based Cessation Aids](#)
- [Clinicians' Advice to Quit Smoking](#)

Tobacco Policy/Regulatory Factors

Effective tobacco control policy and tobacco product regulation are necessary to reduce the burden of cancer on the U.S. Federal law regulates advertising, marketing, manufacturing, and distribution of tobacco products. Moreover, Federal and state laws determine coverage of tobacco dependence treatment under individual state Medicaid programs.

- [Tobacco Company Marketing Expenditures](#)
- [Medicaid Insurance Coverage of Tobacco Cessation Treatments](#)

Secondhand Smoke

Conclusive scientific evidence shows that secondhand smoke causes premature death and disease in children and adults who do not smoke, including lung cancer in adults. Eliminating smoking in indoor spaces protects nonsmokers from exposure to secondhand smoke.

- [Secondhand Smoke Exposure](#)
- [Smokefree Home Rules](#)
- [Smokefree Workplace Rules and Laws](#)

Diet and Alcohol

Considerable evidence indicates that maintaining a healthy lifestyle has the potential to reduce cancer-related morbidity. Up to one-third of cancer cases in the United States are related to poor nutrition, physical inactivity, and/or excess body weight or obesity, and thus could be prevented.

- [Healthy Eating Index](#)
- [Fruit and Vegetable Consumption](#)
- [Red Meat and Processed Meat Consumption](#)

- [Fat Consumption](#)
- [Alcohol Consumption](#)

Physical Activity

Maintaining a healthy lifestyle has the potential to reduce both cancer- and non-cancer-related morbidity. In particular, physical activity may reduce the risk of several types of cancer, including bladder, breast, colon, endometrium (lining of the uterus), esophagus (adenocarcinoma), kidney, and stomach. Physical activity may lower a person's risk of health problems such as heart disease, high blood pressure, diabetes, and osteoporosis (bone thinning). Being active may help to prevent weight gain and obesity, which can reduce the risk of developing cancers that have been linked to excess body weight.

Weight

Consistent evidence indicates that preventing excess body weight and obesity reduces the risk of several types of cancer, including colorectal, breast (among women who have gone through menopause), uterine, esophageal, renal cell (kidney), liver, and pancreatic cancers.

Sleep

Sleep health – including sleep duration, efficiency, and quality, as well as sleep timing and regularity – is important to overall health. Poor sleep may directly affect mortality risk and influence risk for cancer and other non-communicable diseases through its impact on immune function, stress response and inflammation, DNA repair, and metabolic and hormonal activity. It may also impact mortality through its effect on modifiable risk factors, including physical activity, diet, alcohol, and tobacco use.

UV Exposure and Sun-Protective Behavior

Reducing unprotected exposure to the sun and avoiding artificial ultraviolet (UV) light from indoor tanning beds, tanning booths, and sun lamps can lower the risk of skin cancer.

- [Sun-Protective Behavior](#)
- [Indoor and Outdoor Tanning](#)
- [Sunburn](#)

HPV Vaccination

A number of cancers that affect men and women can be prevented through vaccination against human papillomavirus (HPV) and effective screening. HPV can cause cancers of the penis, in men; of the cervix, vagina and vulva, in women; and in the anus and back of the throat, for women and men.

Genetic Testing

Genetic test results can help guide a person's future medical care as specific genetic mutations may increase a person's chance of developing cancer.

Chemical and Environmental Exposures

Exposure to carcinogens that exist as pollutants in our air, food, water, and soil, also influence the incidence of cancer. Most exposure to toxic substances and hazardous wastes results from human activities, particularly through agricultural and industrial production. Chemicals were selected for inclusion in this report based on the following set of criteria: (1) likely or probable carcinogen as classified by IARC classification (Group 1 or 2A), (2) available biomarker data from the National Health and Nutrition Examination Survey (NHANES) since 2004, and (3) ubiquitous (i.e. >50% with detectable levels) in the U.S. general population (based on NHANES data).

- [Arsenic](#)
- [Benzene](#)
- [Cadmium](#)

- [Nitrate](#)
- [PFAS](#)
- [Radon](#)

Cancer Trends Progress Report

Online Summary of Trends in US Cancer Control Measures

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Cancer Trends Progress Report

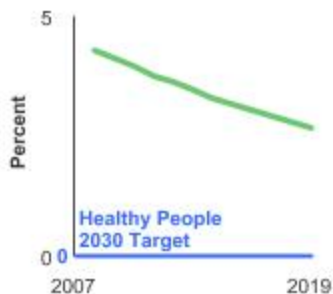
Online Summary of Trends in US Cancer Control Measures

Tobacco Use Initiation

Data Up to Date as of:

August 2023

In 2019, 2.6% of adolescents and young adults aged 12 to 25 began smoking cigarettes in the past year.



Background

Because cigarette smoking typically begins during adolescence, tobacco use is often described as a “pediatric disease.” Nearly 90 percent of adults in the United States who smoke daily began smoking by age 18, and 98 percent first smoked by age 26. Nicotine is highly addictive; initiation of smoking during adolescence is linked to persistent smoking in adulthood and the many adverse health effects caused by smoking. Further, exposure to nicotine during adolescence may harm normal brain development, which continues until about age 25. Specifically, nicotine exposure during adolescence may impair development of brain regions involved in attention, learning, and impulse control, and it may prime the brain for addiction to other drugs.

Understanding trends in youth initiation of tobacco products – including cigarettes, electronic cigarettes, cigars, and smokeless tobacco – helps policy makers determine how to allocate prevention resources more effectively. Effective strategies to reduce youth initiation of tobacco use include federal regulation of tobacco products; significant increases in tobacco prices, including excise taxes; smokefree air laws; restrictions on tobacco advertising and promotion; restricting the availability of tobacco products to youth; mass-media public education campaigns; and full implementation of comprehensive state and community tobacco control programs. On December 20, 2019, legislation was enacted to amend the Federal Food, Drug, and Cosmetic Act, and raise the federal minimum age of sale of tobacco products from 18 to 21 years.

Measure

The percentage of individuals among those aged 12 to 25 years who said they had initiated cigarette smoking during the past 12 months.

The percentage of individuals among those aged 12 to 25 years who said they had initiated cigar smoking during the past 12 months.

The percentage of individuals among those aged 12 to 25 years who said they had initiated smokeless tobacco use during the past 12 months.

The percentage of individuals among those aged 12 to 25 years who said they had initiated use of any of these tobacco products during the past 12 months.

Note: Initiation measures included a numerator of the number of adolescents and young adults aged 12 to 25 years who used the specified tobacco product for the first time in the past 12 months and a denominator of the number of adolescents and young adults aged 12 to 25 years who did not use the specified tobacco product in their lifetime or who used the specified tobacco product for the first time in the past 12 months.

Note: Cigars include premium cigars, little cigars, and cigarillos.

Healthy People 2030 Target

- Eliminate the initiation of the use of cigarettes among adolescents and young adults.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Note: Goals are indicated as blue line on Detailed Trend Graphs.

Data Source

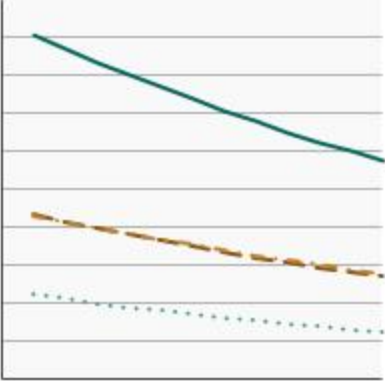
Substance Abuse and Mental Health Services Administration, National Household Survey on Drug Use and Health, 2008-2019.

Note: NSDUH, like many surveys, experienced significant challenges and changes during the 2020 fielding. The COVID-19 pandemic interrupted data collection in mid-March, and the survey did not resume until September of 2020. In the interim, many aspects of daily life were drastically altered, and these may have affected substance use behaviors. Beginning in October of 2020, data collection became almost entirely web-based, with very few in-person interviews. Overall response rates, and particularly youth interview response rates, dropped, and many interviews were not completed. As a result, 2020 data may not be internally consistent (i.e., Q1 to Q4) or comparable with previous survey years. During the 2021 fielding, data collection remained multimodal, with responses collected either in person or online. Estimates differed significantly based on the mode of data collection, diminishing the comparability of the 2021 survey to previous years. Data points from 2020 and 2021 are therefore not included in this report.

Trends and Most Recent Estimates

By Type of Tobacco Product

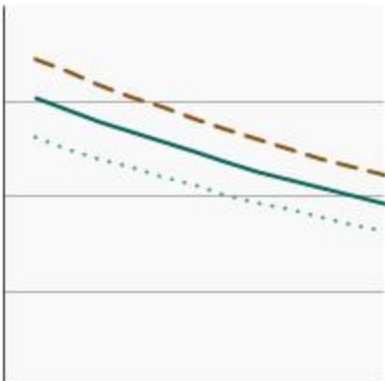
Initiation of the use of any tobacco product among adolescents and young adults aged 12-25 years by type of tobacco product, 2008-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent	95% Confidence Interval
	Any Tobacco Product	5.7	5.4 - 6.1
	Cigarettes	2.6	2.3 - 2.8
	Smokeless Tobacco	1.3	1.1 - 1.5
	Cigars	2.7	2.5 - 3.0

Any Tobacco Product

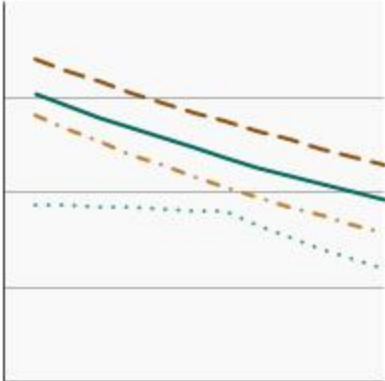
By Sex

Initiation of the use of any tobacco product among adolescents and young adults aged 12-25 years by sex, 2008-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent	95% Confidence Interval
	Both Sexes	5.7	5.4 - 6.1
	Male	6.7	6.2 - 7.2
	Female	4.8	4.3 - 5.2

By Race/Ethnicity

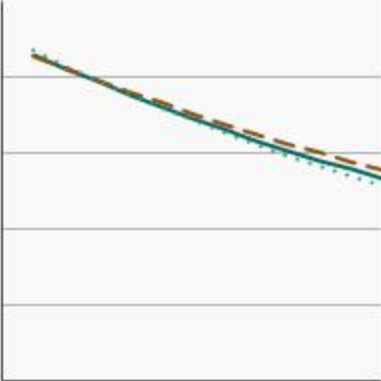
Initiation of the use of any tobacco product among adolescents and young adults aged 12-25 years by race/ethnicity, 2008-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent	95% Confidence Interval
	All Races	5.7	5.4 - 6.1
	Non-Hispanic White	6.9	6.4 - 7.4
	Non-Hispanic Black	3.6	3.0 - 4.3
	Hispanic	5.0	4.3 - 5.8

Cigarettes

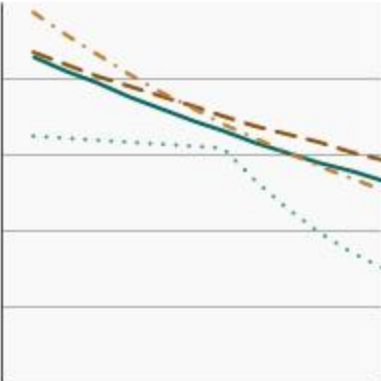
By Sex

Initiation of the use of cigarettes among adolescents and young adults aged 12-25 years by sex, 2008-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent	95% Confidence Interval
	Both Sexes	2.6	2.3 - 2.8
	Male	2.8	2.5 - 3.2
	Female	2.3	2.0 - 2.6

By Race/Ethnicity

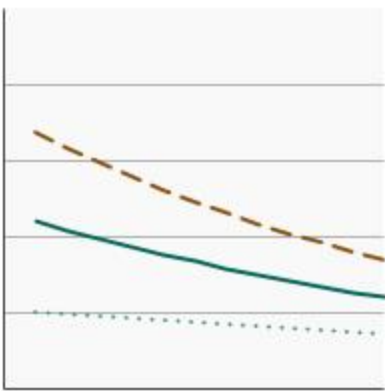
Initiation of the use of cigarettes among adolescents and young adults aged 12-25 years by race/ethnicity, 2008-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent	95% Confidence Interval
	All Races	2.6	2.3 - 2.8
	Non-Hispanic White	3.0	2.7 - 3.4
	Non-Hispanic Black	1.5	1.1 - 2.0
	Hispanic	2.3	1.9 - 2.9

Smokeless Tobacco

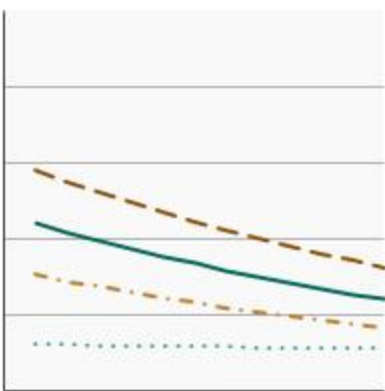
By Sex

Initiation of the use of smokeless tobacco among adolescents and young adults aged 12-25 years, 2008-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent	95% Confidence Interval
	Both Sexes	1.3	1.1 - 1.5
	Male	1.7	1.5 - 1.9
	Female	0.9	0.7 - 1.1

By Race/Ethnicity

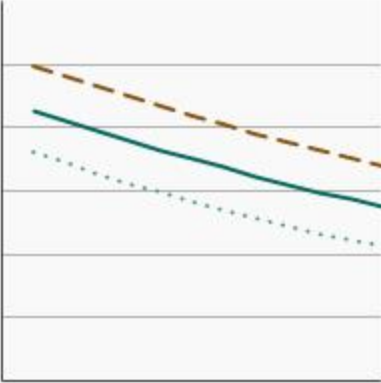
Initiation of the use of smokeless tobacco among adolescents and young adults aged 12-25 years by race/ethnicity, 2008-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent	95% Confidence Interval
	All Races	1.3	1.1 - 1.5
	Non-Hispanic White	1.6	1.4 - 1.9
	Non-Hispanic Black	0.5	0.3 - 0.9
	Hispanic	1.2	0.9 - 1.6

Cigars

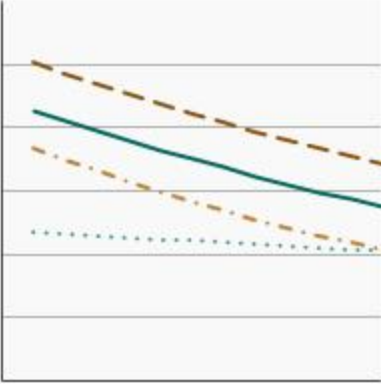
By Sex

Initiation of the use of cigars among adolescents and young adults aged 12-25 years, 2008-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent	95% Confidence Interval
	Both Sexes	2.7	2.5 - 3.0
	Male	3.4	3.0 - 3.8
	Female	2.0	1.8 - 2.3

By Race/Ethnicity

Initiation of the use of cigars among adolescents and young adults aged 12-25 years by race/ethnicity, 2008-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent	95% Confidence Interval
	All Races	2.7	2.5 - 3.0
	Non-Hispanic White	3.3	3.0 - 3.7
	Non-Hispanic Black	2.0	1.6 - 2.5
	Hispanic	2.1	1.6 - 2.6

Cancers Related to Tobacco Use

Statistical summaries from NCI's SEER Cancer Stat Fact Sheets:

- [Acute Myeloid Leukemia \(AML\)](#)
- [Anus](#)
- [Bladder](#)
- [Cervix Uteri](#)
- [Colon and Rectum](#)
- [Esophagus](#)
- [Kidney and Renal Pelvis](#)

- [Larynx](#)
- [Liver and Intrahepatic Bile Duct](#)
- [Lung and Bronchus](#)
- [Oral Cavity and Pharynx](#)
- [Pancreas](#)
- [Stomach](#)

Additional Information on Tobacco Use Initiation

General Public Resources

- [Tobacco](#). National Cancer Institute.
- [Consumer Guide: Let's Make the Next Generation Tobacco-Free](#). U.S. Department of Health and Human Services.
- [Tobacco and Cancer](#). American Cancer Society.
- [Youth Tobacco Prevention](#). Centers for Disease Control and Prevention.
- [Youth and Tobacco](#). U.S. Food and Drug Administration.

Public Health Resources

- [Smoking and Tobacco Control Monograph 21: The Economics of Tobacco and Tobacco Control](#). National Cancer Institute.
- [Tobacco Control Evidence-Based Programs Listing](#). National Cancer Institute.
- [Julius B. Richmond Center](#). American Academy of Pediatrics.
- [2016 Surgeon General's Report – E-Cigarette Use Among Youth and Young Adults](#). Centers for Disease Control and Prevention.
- [2014 Surgeon General's Report - The Health Consequences of Smoking: 50 Years of Progress](#). Centers for Disease Control and Prevention.
- [2012 Surgeon General's Report—Preventing Tobacco Use Among Youth and Young Adults](#). Centers for Disease Control and Prevention.
- [Prevention and Cessation of Tobacco Use in Children and Adolescents: Primary Care Interventions](#). U.S. Preventive Services Task Force.

Scientific Reports

- [Vital Signs: Tobacco Product Use Among Middle and High School Students – United States, 2011-2018](#). Gentzke AS, Creamer M, Cullen KA, et al. MMWR. 2019; 68(6):157-164.
- [Trends in the Age of Cigarette Smoking Initiation Among Young Adults in the U.S. From 2002 to 2018](#). Barrington-Trimis JL, Braymiller JL, Unger JB, McConnell R, Stokes A, et al. JAMA Netw Open. 2020;3(10):e2019022.
- [Age of initiation of cigarillos, filtered cigars and/or traditional cigars among youth: Findings from the Population Assessment of Tobacco and Health \(PATH\) study, 2013-2017](#). Chen B, Sterling KL, Bluestein MA, Kuk AE, Harrell MB, et al. PLoS One. 2020;15(12):e0243372.
- [Tobacco Product Use Among Middle and High School Students — United States, 2022](#). Park-Lee E, Ren C, Cooper M, et al. MMWR. 2022; 71(45):1429–1435.

- The Tobacco Control Vaccine: a population-based framework for preventing tobacco-related disease and death. King BA, Graffunder C. *Tob. Control.* 2018;27(2):123-124.
- Boosting the Tobacco Control Vaccine: recognizing the role of the retail environment in addressing tobacco use and disparities. Kong AY, King BA. *Tob. Control.* 2021;30(e2):e162-e168.
- Notes from the Field: E-cigarette Use Among Middle and High School Students — United States, 2022. Cooper M, Park-Lee E, Ren C, et al. *MMWR.* 2022; 71(40):1283–1285.

Cancer Trends Progress Report

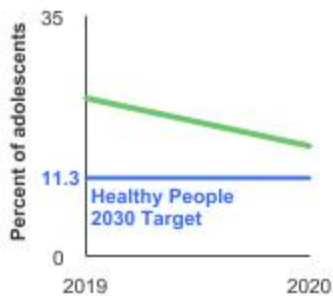
Online Summary of Trends in US Cancer Control Measures

Youth Tobacco Use

Data Up to Date as of:

August 2023

In 2020, 15.9% of adolescents in grades 6-12 were current tobacco users.



Background

Cigarette smoking is the leading preventable cause of disease, disability, and death in the United States. Smoking causes cancers of the lung, esophagus, larynx (voice box), mouth, throat, kidney, bladder, liver, pancreas, stomach, cervix, colon and rectum, as well as acute myeloid leukemia. Tobacco use is initiated and established primarily during adolescence (defined as ages 10-19): nearly 90 percent of adults in the U.S. who smoke daily first tried cigarettes by age 18, and 98 percent first tried cigarettes by age 26. Each day in the U.S., around 1,500 youth aged 17 or younger smoke their first cigarette.

Electronic cigarettes (e-cigarettes, (also known as vapes or Electronic Nicotine Delivery Systems [ENDS]) are battery-powered devices that convert a liquid (“e-liquid”) into an aerosol. E-liquids typically contain nicotine, flavorings, vegetable glycerin, propylene glycol, and other chemicals. In addition to nicotine, e-cigarette aerosol may contain heavy metals, volatile organic compounds, and fine and ultrafine particles that can be inhaled deeply into the lungs by both users and bystanders. Nicotine use among youth increases the risk of lifelong tobacco addiction and may also increase the risk for future addiction to other drugs.

Youth cigarette smoking prevalence peaked around 1996/1997 but has been declining since. However, a substantial portion of youth use other tobacco products, including e-cigarettes, cigars, smokeless tobacco, and hookah. According to data from the 2022 National Youth Tobacco Survey (NYTS), 16.2% of middle and high school students reported current use of a tobacco product. Youth use of more than one tobacco product (dual use) is also common. Since 2014, e-cigarettes have been the most commonly used tobacco product among youth, and, in 2018, former U.S. Surgeon General Jerome Adams issued an advisory declaring youth e-cigarette use an epidemic.

According to data from the NYTS, in 2022, more than 2.5 million U.S. youth, including 14.1% of high school students and 3.3% of middle school students, currently used e-cigarettes. Moreover, among high school students who reported current e-cigarette use, 42.3% reported using the products frequently (on 20 or more of the past 30 days) and 27.6% reported daily use. Flavors are an important aspect of appeal to youth e-cigarette users with 85% reporting having used flavored e-cigarettes (e.g., fruit, candy, menthol flavors).

There are many factors associated with youth tobacco use, including social, environmental, cognitive, and genetic influences. In addition, Preventing Tobacco Use Among Youth and Young Adults: A Report of the Surgeon General, published by the Centers for Disease Control and Prevention in 2012, concluded that tobacco advertising, promotion, and depictions of smoking in movies are causally related to youth tobacco use. Initiation of smoking during adolescence is linked to persistent smoking during adult life and the many adverse health effects caused by smoking.

Understanding trends in youth initiation and use of tobacco products – including cigarettes, e-cigarettes, cigars, and smokeless tobacco – helps policy makers determine how to allocate prevention resources. Effective strategies to reduce youth initiation of tobacco use include federal regulation of tobacco products; significant increases in tobacco prices, including excise taxes; smokefree air laws; restrictions on tobacco advertising and promotion;

restricting the availability of tobacco products to youth; mass-media public education campaigns; and full implementation of comprehensive state and community tobacco control programs. On December 20, 2019, legislation was enacted to amend the Federal Food, Drug, and Cosmetic Act, and raise the federal minimum age of sale of tobacco products from 18 to 21 years.

Measure

The percentage of middle and high school students (grades 6–12) who reported use of cigarettes, cigars, smokeless tobacco, or e-cigarettes on at least 1 day during the 30 days before the survey.

The percentage of middle and high school students who reported use of any tobacco product (cigarettes, e-cigarettes, cigars, smokeless tobacco—including chewing tobacco, snuff, dip—hookah, pipe tobacco, bidis, dissolvable tobacco, or snus) on at least 1 day during the 30 days before the survey.

Healthy People 2030 Target

- Reduce to 11.3 percent the proportion of adolescents in grades 6–12 who used tobacco products (cigarettes, e-cigarettes, cigars, smokeless tobacco, hookah, pipe tobacco, and/or bidis) in the past 30 days.
- Reduce to 10.5 percent the proportion of adolescents in grades 6-12 who used e-cigarettes in the past 30 days.
- Reduce to 3.4 percent the proportion of adolescents in grades 6–12 who smoked cigarettes in the past 30 days.
- Reduce to 3 percent the proportion of adolescents in grades 6–12 who smoked cigars in the past 30 days.
- Reduce to 2.3 percent the proportion of adolescents in grades 6–12 who used smokeless tobacco products (chewing tobacco or snuff) in the past 30 days.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Note: Goals are indicated as blue line on Detailed Trend Graphs.

Data Source

Centers for Disease Control and Prevention, National Youth Tobacco Survey (NYTS), 2019-2021.^{1, 2}

¹ Between 1999 and 2018, the NYTS was conducted using paper-and-pencil questionnaires. In 2019, the mode of administration changed to an electronic survey, making prior years' estimates incomparable. This Report focuses on data from 2019 and later.

² Because NYTS is administered in schools, to accommodate students learning under varying instructional models (in-person, distance/virtual, and hybrid), the 2021 NYTS was administered using a web URL. Approximately half of student respondents reported completing the survey at school or in the classroom, and half reported completing the survey at home or some other place. Prevalence estimates from 2021 should be interpreted with caution, as the proportion of students reporting any tobacco use differed greatly between those who completed the survey at school vs. at another location.

Trends and Most Recent Estimates

By Type of Tobacco Product

Percentage of adolescents in grades 6 to 12 who reported current tobacco product use by type of tobacco product, 2019-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adolescents	95% Confidence Interval
	All Tobacco	15.9	13.9 - 18.1
	Cigarettes	3.3	2.6 - 4.2
	E-Cigarettes	13.1	11.2 - 15.1
	Smokeless Tobacco	2.3	1.8 - 3.0
	Cigars	3.5	2.9 - 4.3

All Tobacco Products

By Sex

Percentage of adolescents in grades 6 to 12 who reported current tobacco product use by sex, 2019-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adolescents	95% Confidence Interval
	Both Sexes	15.9	13.9 - 18.1
	Male	16.3	14.1 - 18.8
	Female	15.6	13.5 - 17.9

By Race/Ethnicity

Percentage of adolescents in grades 6 to 12 who reported current tobacco product use by race/ethnicity, 2019-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adolescents	95% Confidence Interval
	All Races/Ethnicities	15.9	13.9 - 18.1
	Non-Hispanic White	17.5	15.1 - 20.3
	Non-Hispanic Black	12.9	10.9 - 15.2
	Hispanic	16.7	14.0 - 19.8

By Current Grade Level

Percentage of adolescents in grades 6 to 12 who reported current tobacco product use by grade level, 2019-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adolescents	95% Confidence Interval
	Middle School	6.4	5.2 - 7.8
	High School	23.3	20.8 - 26.0

Cigarettes

By Sex

Percentage of adolescents in grades 6 to 12 who reported current cigarette use by sex, 2019-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adolescents	95% Confidence Interval
	Both Sexes	3.3	2.6 - 4.2
	Male	3.6	2.7 - 4.7
	Female	3.1	2.4 - 4.0

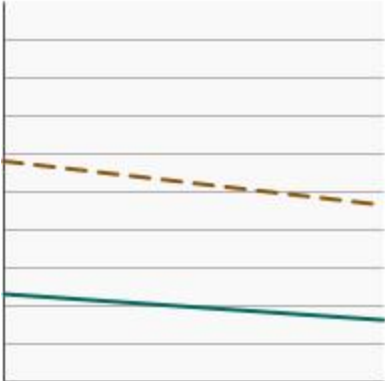
By Race/Ethnicity

Percentage of adolescents in grades 6 to 12 who reported current cigarette use by race/ethnicity, 2019-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adolescents	95% Confidence Interval
	All Races/Ethnicities	3.3	2.6 - 4.2
	Non-Hispanic White	3.7	2.8 - 4.8
	Non-Hispanic Black	2.5	1.7 - 3.7
	Hispanic	3.6	2.6 - 4.9

By Current Grade Level

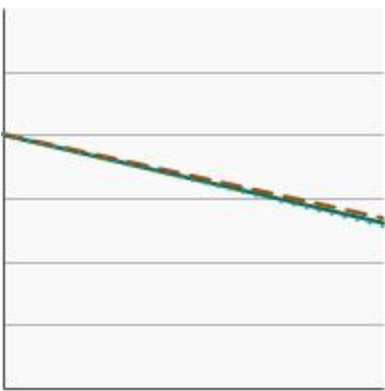
Percentage of adolescents in grades 6 to 12 who reported current cigarette use by grade level, 2019-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adolescents	95% Confidence Interval
	Middle School	1.6	1.2 - 2.3
	High School	4.6	3.6 - 6.0

E-Cigarettes

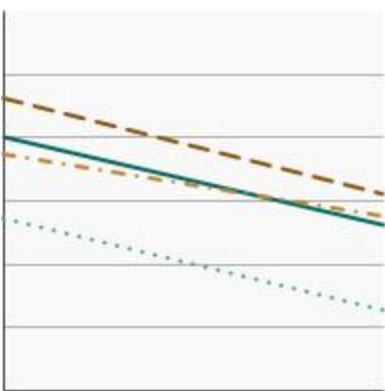
By Sex

Percentage of adolescents in grades 6 to 12 who reported current e-cigarette use by sex, 2019-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adolescents	95% Confidence Interval
	Both Sexes	13.1	11.2 - 15.1
	Male	13.4	11.5 - 15.6
	Female	12.8	10.8 - 15.0

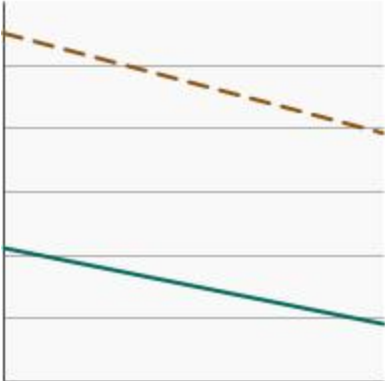
By Race/Ethnicity

Percentage of adolescents in grades 6 to 12 who reported current e-cigarette use by race/ethnicity, 2019-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adolescents	95% Confidence Interval
	All Races/Ethnicities	13.1	11.2 - 15.1
	Non-Hispanic White	15.5	13.4 - 17.9
	Non-Hispanic Black	6.2	4.6 - 8.4
	Hispanic	13.7	11.1 - 16.8

By Current Grade Level

Percentage of adolescents in grades 6 to 12 who reported current e-cigarette use by grade level, 2019-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adolescents	95% Confidence Interval
	Middle School	4.7	3.6 - 6.0
	High School	19.6	17.2 - 22.2

Smokeless Tobacco

By Sex

Percentage of adolescents in grades 6 to 12 who reported current smokeless tobacco use by sex, 2019-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adolescents	95% Confidence Interval
	Both Sexes	2.3	1.8 - 3.0
	Male	3.3	2.5 - 4.4
	Female	1.3	0.9 - 1.7

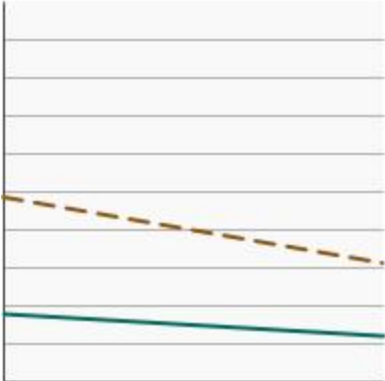
By Race/Ethnicity

Percentage of adolescents in grades 6 to 12 who reported current smokeless tobacco use by race/ethnicity, 2019-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adolescents	95% Confidence Interval
	All Races/Ethnicities	2.3	1.8 - 3.0
	Non-Hispanic White	3.0	2.3 - 4.0
	Non-Hispanic Black	1.2	0.6 - 2.3
	Hispanic	1.7	1.3 - 2.2

By Current Grade Level

Percentage of adolescents in grades 6 to 12 who reported current smokeless tobacco use by grade level, 2019-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adolescents	95% Confidence Interval
	Middle School	1.2	0.9 - 1.7
	High School	3.1	2.3 - 4.2

Cigars

By Sex

Percentage of adolescents in grades 6 to 12 who reported current cigar use by sex, 2019-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adolescents	95% Confidence Interval
	Both Sexes	3.5	2.9 - 4.3
	Male	3.7	3.0 - 4.5
	Female	3.4	2.7 - 4.4

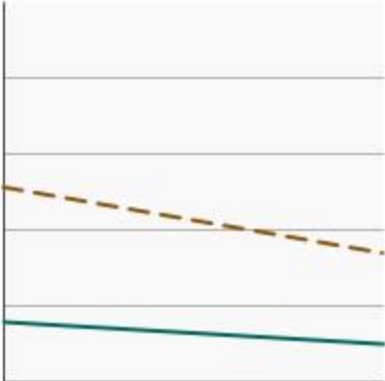
By Race/Ethnicity

Percentage of adolescents in grades 6 to 12 who reported current cigar use by race/ethnicity, 2019-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adolescents	95% Confidence Interval
	All Races/Ethnicities	3.5	2.9 - 4.3
	Non-Hispanic White	2.8	2.1 - 3.7
	Non-Hispanic Black	6.6	5.3 - 8.1
	Hispanic	4.0	2.9 - 5.4

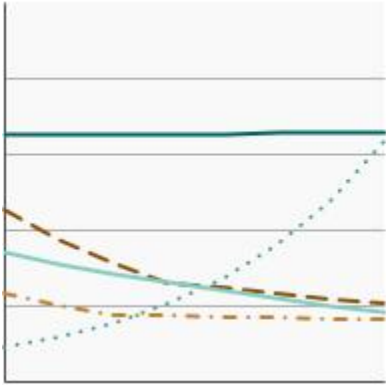
By Current Grade Level

Percentage of adolescents in grades 6 to 12 who reported current cigar use by grade level, 2019-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adolescents	95% Confidence Interval
	Middle School	1.5	1.1 - 2.0
	High School	5.0	4.1 - 6.2

Previous Trends, 2011-2018

Percentage of adolescents in grades 6 to 12 who reported current tobacco product use by type of tobacco product, 2011-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2018)	
		Percent of adolescents	95% Confidence Interval
	All Tobacco	18.3	16.9 - 19.9
	Cigarettes	5.4	4.6 - 6.2
	E-Cigarettes	13.8	12.4 - 15.3
	Smokeless Tobacco	4.1	3.5 - 4.9
	Cigars	5.0	4.4 - 5.7

Cancers Related to Tobacco Use

Statistical summaries from NCI's SEER Cancer Stat Fact Sheets:

- [Acute Myeloid Leukemia \(AML\)](#)
- [Anus](#)
- [Bladder](#)
- [Cervix Uteri](#)
- [Colon and Rectum](#)
- [Esophagus](#)
- [Kidney and Renal Pelvis](#)

- [Larynx](#)
- [Liver and Intrahepatic Bile Duct](#)
- [Lung and Bronchus](#)
- [Oral Cavity and Pharynx](#)
- [Pancreas](#)
- [Stomach](#)

Additional Information on Youth Tobacco Use

General Public Resources

- [Tobacco](#). National Cancer Institute.
- [Tobacco and Cancer](#). American Cancer Society.
- [2016 Surgeon General's Report—E-cigarette Use Among Youth and Young Adults](#). Centers for Disease Control and Prevention.
- [2018 Surgeon General's Advisory on E-cigarette Use Among Youth](#). Office of the U.S. Surgeon General and Centers for Disease Control and Prevention.
- [50 Years of Progress: A Report of the Surgeon General, 2014](#). U.S. Department of Health and Human Services.
- [Quick Facts on the Risks of E-Cigarette's for Kids, Teens, and Young Adults](#). Centers for Disease Control and Prevention.

- [Youth Tobacco Prevention](#). Centers for Disease Control and Prevention.
- [Youth and Tobacco](#). U.S. Food and Drug Administration.

Quitting Resources

- [Smokefreeteen.gov](#). National Cancer Institute.
- [SmokefreeTXT](#). National Cancer Institute.
- [Cigarette Smoking: Health Risks and How to Quit \(PDQ®\)–Patient Version](#). National Cancer Institute.
- [Smokefree.gov](#). National Cancer Institute.
- [Where To Get Help When You Decide To Quit Smoking](#). National Cancer Institute.
- [How to Quit Smoking or Smokeless Tobacco](#). American Cancer Society.

Public Health Resources

- [Cigarette Smoking: Health Risks and How to Quit \(PDQ®\)–Health Professional Version](#). National Cancer Institute.
- [Tobacco Control Evidence-Based Programs Listing](#). National Cancer Institute.
- [Julius B. Richmond Center](#). American Academy of Pediatrics.
- [Best Practices for Comprehensive Tobacco Control Programs—2014](#). Centers for Disease Control and Prevention.
- [Best Practices: Putting Evidence into Practice](#). Centers for Disease Control and Prevention.
- [Healthcare Provider Resources: Smoking and Tobacco Use](#). Centers for Disease Control and Prevention.
- [Tobacco 21](#). U.S. Food and Drug Administration.

Scientific Reports

- [Monograph 19: The Role of the Media in Promoting and Reducing Tobacco Use.](#) National Cancer Institute. Smoking and Tobacco Control Monographs.
- [Tobacco Use in Top-Grossing Movies-United States, 2010-2018](#). Centers for Disease Control and Prevention. MMWR. 2019; 68(43):974-978.
- [Tobacco Product Use Among High School Students — Youth Risk Behavior Survey, United States, 2019](#). Creamer MR, Everett Jones S, Gentzke AS, et al. MMWR Suppl. 2020;69(Suppl-1):56–63.
- [Notes from the Field: Use of Electronic Cigarettes and Any Tobacco Product Among Middle and High School Students — United States, 2011–2018.](#) Cullen KA, Ambrose BK, Gentzke AS et al. MMWR. 2018;67(45):1276-1277.
- [Vital Signs: Tobacco Product Use Among Middle and High School Students – United States, 2011-2018](#). Gentzke AS, Creamer M, Cullen KA, et al. MMWR. 2019; 68(6):157-164.
- [Tobacco Product Use Among Middle and High School Students — United States, 2022](#). Park-Lee E, Ren C, Cooper M, et al. MMWR. 2022; 71(45):1429–1435.
- [Monitoring the Future: national survey results on drug use, 1975–2017: Overview, key findings on adolescent drug use](#). Johnston LD, Miech RA, O'Malley PM, et al. The University of Michigan, Institute for Social Research, 2018.
- [Notes from the Field: E-cigarette Use Among Middle and High School Students — United States, 2022](#). Cooper M, Park-Lee E, Ren C, et al. MMWR. 2022; 71(40):1283–1285.

Cancer Trends Progress Report

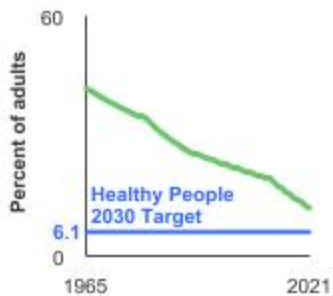
Online Summary of Trends in US Cancer Control Measures

Adult Tobacco Use

Data Up to Date as of:

August 2023

In 2021, 11.7% of adults aged 18 and older reported current cigarette use.



Background

Cigarette smoking is the leading preventable cause of disease, disability, and death in the United States. Smoking causes cancers of the lung, esophagus, larynx, mouth, throat, kidney, bladder, liver, pancreas, stomach, cervix, colon and rectum, as well as acute myeloid leukemia. Altogether, smoking causes approximately 30 percent of all U.S. cancer deaths each year. The American Cancer Society estimates that in 2022, almost 182,808 of the estimated 609,360 cancer-related deaths will be caused by cigarette smoking.

The prevalence of adult cigarette smoking in the U.S. has steadily declined since the first Surgeon General's Report on the harms of smoking was published in 1964, when smoking prevalence was 42 percent. While the prevalence of daily smoking has dropped over time, and the average number of cigarettes smoked per day among those who smoke daily has decreased, nondaily smoking has remained relatively stable. Many studies show that there is no safe level of smoking. For example, individuals who smoke even a few cigarettes per month over their lifetime are at a higher risk of smoking-related death than those who have never smoked, according to [research](#) published in the journal *JAMA Network Open*.

Moreover, while the prevalence of cigarette smoking has declined overall, there remain notable disparities between different subpopulations defined by income, level of educational attainment, race and ethnicity, and other sociodemographic characteristics. For example, according to 2020 National Health Interview Survey (NHIS) data, 27.1% of American Indian or Alaska Native individuals reported current cigarette use, compared to only 13.3% among non-Hispanic White individuals. Another area where disparities remain is among people who smoke menthol cigarettes. Although the overall prevalence of menthol cigarette smoking has declined over time among US adults, menthol use among people who smoke has continued to increase over time. Young adults, women and non-Hispanic Black individuals are more likely to smoke menthol cigarettes compared to their respective counterparts.

Besides cigarettes, other tobacco products are also used by U.S. adults. According to 2020 NHIS data, 3.7% of U.S. adults (9.1 million) reported using electronic cigarettes (e-cigarettes), 3.5% (8.6 million) reported using cigars, and 2.3% (5.7 million) reported using smokeless tobacco.

A cigar is defined as a roll of tobacco wrapped in leaf tobacco or in a substance that contains tobacco (whereas a cigarette is defined as a roll of tobacco wrapped most often in paper or some other non-tobacco substance). There are three major types of cigars currently sold in the U.S. – large cigars, cigarillos, and little cigars. Cigarillos are short (3-4 inches), narrow cigars that contain approximately 3 grams of tobacco and typically do not include a filter. Little cigars are about the same size as a cigarette and often include a filter. The marketplace of cigar products in the U.S. has recently been characterized by increasing product diversity, and marketing of these products has been targeted to specific population groups, including urban Black adults. Cigars, especially little cigars and cigarillos, come in a variety of flavors, including menthol, fruit and alcohol flavors, such as grape and wine, which appeals to adolescents and young adults.

Like cigarette smoke, cigar smoke contains toxic and carcinogenic compounds that are harmful to both people who smoke and people exposed to secondhand smoke. Cigar smoking causes oral cavity cancers (cancers of the lip, tongue, mouth, and throat) and cancers of the larynx (voice box), esophagus, and lung. Gum disease and tooth loss are also linked to cigar smoking, and people who smoke cigars heavily or inhale deeply may further be at increased risk of developing coronary heart disease. Smoking cigars heavily also increases the risk for lung diseases, such as emphysema and chronic bronchitis, which can be risk factors for lung cancer.

Smokeless tobacco is also known as chewing tobacco, spit tobacco, snuff, dip, or snus. Snuff is a finely cut or powdered tobacco that is either placed between the cheek and gum, or sniffed through the nose, respectively. Some moist snuff and all snus come in tea bag-like pouches. Chewing tobacco is used by putting a wad (loose leaves, plug, or twist) of tobacco inside the cheek. The prevalence of smokeless tobacco use tends to be higher among men, compared with women, and residents of rural areas, compared with residents of urban areas. Chewing tobacco and snuff contain at least 28 cancer-causing agents. Use of smokeless tobacco causes oral, esophageal, and pancreatic cancer. Smokeless tobacco also causes serious oral health problems, including gum disease, other non-cancerous oral lesions, and tooth loss, and increases the risk of heart disease.

E-cigarettes (also known as vapes or Electronic Nicotine Delivery Systems (ENDS)) are battery-powered devices that convert a liquid (“e-liquid”) into an aerosol. E-liquids typically contain nicotine, flavorings, vegetable glycerin, propylene glycol and other chemicals. In addition to nicotine, e-cigarette aerosol may contain heavy metals, volatile organic compounds, and fine and ultrafine particles that can be inhaled deeply into the lungs by both users and by-standers.

E-cigarette use among adults may potentially reduce the health risks associated with conventional cigarette smoking if users switch completely to e-cigarettes. However, a large percentage of U.S. adults who use e-cigarettes also smoke conventional cigarettes and are at continued risk for exposure to their toxic and carcinogenic compounds, and subsequent smoking-related morbidity and mortality. Furthermore, almost a quarter of those who use e-cigarettes report never having smoked, and the majority of this group is 18-24 years old. As noted above, overall, 3.7 percent of U.S. adults reported current e-cigarette use in 2020. E-cigarette use was higher among men than women (4.6% vs. 2.8%), among young adults (aged 18-24) than other age groups (9.4% vs. 3.7%), and among those who identify as lesbian, gay, or bisexual than heterosexual/straight (8.7% vs. 3.5%). Presently, the COVID-19 pandemic poses a major threat to public health in the U.S. and across the world. Current and former cigarette smoking can increase an individual’s risk of severe illness from COVID-19. To reduce the chance of severe illness, people who currently smoke should quit, and people who used to smoke or have never smoked should refrain from using cigarettes.

Measure

Cigarettes: Percentage of adults aged 18 years and older who had smoked at least 100 cigarettes in their lifetime and, at the time of the interview, smoked cigarettes every day or some days.

Smokeless Tobacco: Percentage of adults aged 18 years and older who used smokeless tobacco at least once in their lifetime and, at the time of the interview, used smokeless tobacco every day or some days.

Cigars: Percentage of adults aged 18 years and older who smoked cigars at least once in their lifetime and, at the time of the interview, smoked cigars every day or some days.

E-cigarettes: Percentage of adults aged 18 years and older who used e-cigarettes at least once in their lifetime and, at the time of the interview, used e-cigarettes every day or some days.

Healthy People 2030 Target

- Reduce to 6.1 percent the proportion of adults who currently smoke cigarettes.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Note: Goals are indicated as blue line on Detailed Trend Graphs.

Data Source

Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 1965–2021.

In 2019 the NHIS questionnaire was redesigned to increase relevance, enhance data quality, and minimize respondent burden. In addition, the COVID-19 pandemic created challenges conducting in-person interviews for the 2020 NHIS, requiring changes to field procedures to conduct most surveys by telephone, which impacted

survey response rates. For details related to the potential impacts of these issues, please refer to [Potential Impact of NHIS Redesign and COVID-19 on the Cancer Trends Progress Report](#).

In 2020, NHIS data collection shifted from being conducted in person to being conducted primarily over the telephone, and response rates subsequently declined. To augment data from the 2020 sample, followback interviews were conducted with 2019 NHIS participants. Estimates presented here for 2020 use this sample, which includes both new 2020 respondents and re-interviewed 2019 respondents.

Trends and Most Recent Estimates

By Type of Tobacco Product

Percentage of adults aged 18 years and older who reported current tobacco product use by type of tobacco product used, 1991-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of adults	95% Confidence Interval
	Cigarettes	11.7	11.2 - 12.2
	Smokeless Tobacco	2.2	2.0 - 2.4
	Cigars	3.7	3.4 - 4.0
	E-Cigarettes	4.9	4.6 - 5.3

Cigarettes, Long Term Trends (1965+)

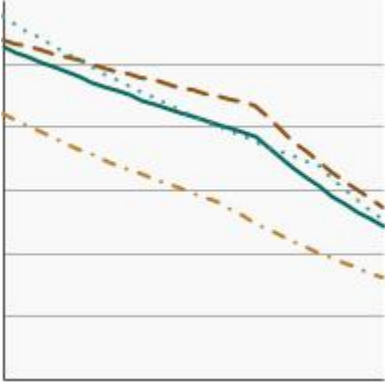
Percentage of adults aged 18 years and older who reported current cigarette use by sex, 1965-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of adults	95% Confidence Interval
	Both Sexes	11.7	11.2 - 12.2
	Male	13.3	12.6 - 14.1
	Female	10.1	9.5 - 10.7

Cigarettes

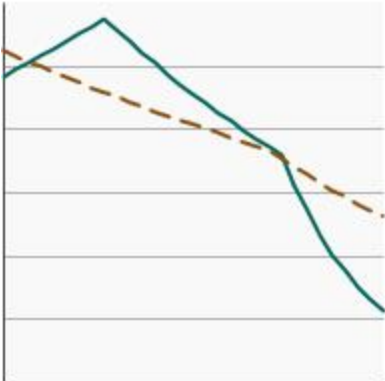
By Race/Ethnicity

Percentage of adults aged 18 years and older who reported current cigarette use by race/ethnicity, 1991-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of adults	95% Confidence Interval
	All Races/Ethnicities	11.7	11.2 - 12.2
	Non-Hispanic White	13.3	12.6 - 14.0
	Non-Hispanic Black	11.7	10.3 - 13.2
	Hispanic	7.8	7.0 - 8.8

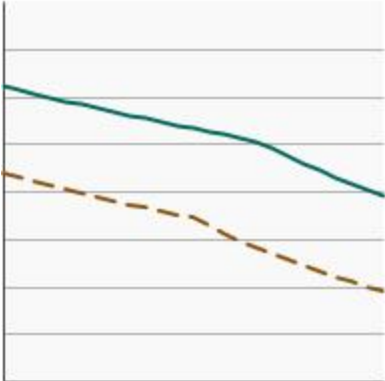
By Age

Percentage of adults aged 18 years and older who reported current cigarette use by age, 1991-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of adults	95% Confidence Interval
	Ages 18-24	5.3	4.3 - 6.5
	Ages 25+	12.6	12.1 - 13.2

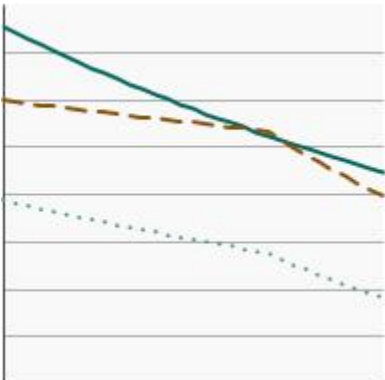
By Poverty Income Level

Percentage of adults aged 18 years and older who reported current cigarette use by poverty income level, 1997-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of adults	95% Confidence Interval
	<u><200% of federal poverty level</u>	19.2	18.1 - 20.4
	<u>>=200% of federal poverty level</u>	9.0	8.5 - 9.5

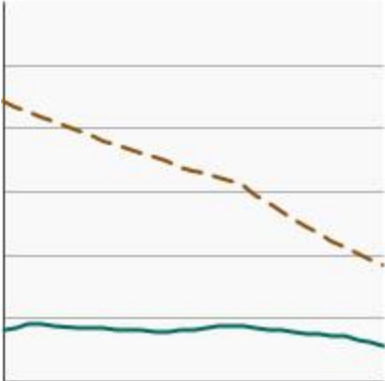
By Education Level

Percentage of adults aged 25 years and older who reported current cigarette use by highest level of education obtained, 1991-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of adults	95% Confidence Interval
	<u>Less than High School</u>	21.1	18.9 - 23.4
	<u>High School</u>	19.2	18.0 - 20.5
	<u>Greater than High School</u>	8.8	8.3 - 9.3

By Smoking Frequency

Percentage of adults aged 18 years and older who reported current cigarette use by smoking frequency, 1991-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of adults	95% Confidence Interval
	Nondaily Smoking	2.9	2.6 - 3.1
	Daily Smoking	8.8	8.4 - 9.3

Smokeless Tobacco

By Sex

Percentage of adults aged 18 years and older who reported current smokeless tobacco use by sex, 1993-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of adults	95% Confidence Interval
	Both Sexes	2.2	2.0 - 2.4
	Male	4.2	3.8 - 4.7
	Female	0.3	0.2 - 0.4

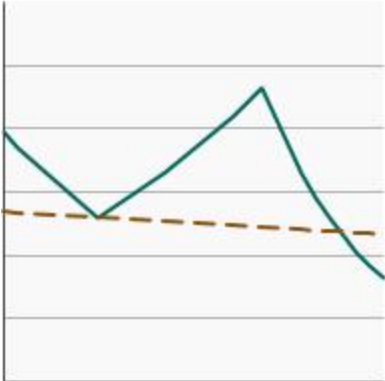
By Race/Ethnicity

Percentage of adults aged 18 years and older who reported current smokeless tobacco use by race/ethnicity, 1993-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of adults	95% Confidence Interval
	All Races/Ethnicities	2.2	2.0 - 2.4
	Non-Hispanic White	3.1	2.8 - 3.5
	Non-Hispanic Black	0.8	0.5 - 1.3
	Hispanic	0.8	0.5 - 1.2

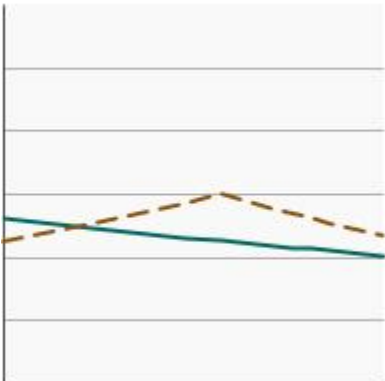
By Age

Percentage of adults aged 18 years and older who reported current smokeless tobacco use by age, 1993-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of adults	95% Confidence Interval
	<u>Ages 18-24</u>	1.4	0.9 - 2.1
	<u>Ages 25+</u>	2.3	2.1 - 2.6

By Poverty Income Level

Percentage of adults aged 18 years and older who reported current smokeless tobacco use by poverty income level, 2000-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of adults	95% Confidence Interval
	<u><200% of federal poverty level</u>	2.0	1.7 - 2.5
	<u>>=200% of federal poverty level</u>	2.2	2.0 - 2.5

By Education Level

Percentage of adults aged 25 years and older who reported current smokeless tobacco use by highest level of education obtained, 1993-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of adults	95% Confidence Interval
	<u>Less than High School</u>	1.6	1.1 - 2.4
	<u>High School</u>	3.4	2.9 - 4.0
	<u>Greater than High School</u>	1.9	1.7 - 2.2

Cigars

By Sex

Percentage of adults aged 18 years and older who reported current cigar use by sex, 1998-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of adults	95% Confidence Interval
	Both Sexes	3.7	3.4 - 4.0
	Male	6.3	5.8 - 6.9
	Female	1.1	0.9 - 1.3

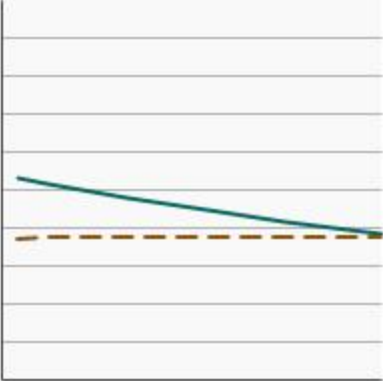
By Race/Ethnicity

Percentage of adults aged 18 years and older who reported current cigar use by race/ethnicity, 1998-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of adults	95% Confidence Interval
	All Races/Ethnicities	3.7	3.4 - 4.0
	Non-Hispanic White	4.0	3.6 - 4.4
	Non-Hispanic Black	5.3	4.2 - 6.5
	Hispanic	2.3	1.9 - 2.9

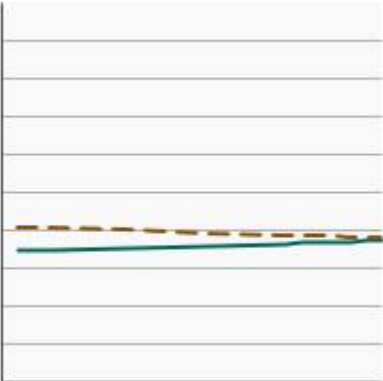
By Age

Percentage of adults aged 18 years and older who reported current cigar use by age, 1998-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of adults	95% Confidence Interval
	Ages 18-24	3.0	2.2 - 4.1
	Ages 25+	3.7	3.5 - 4.1

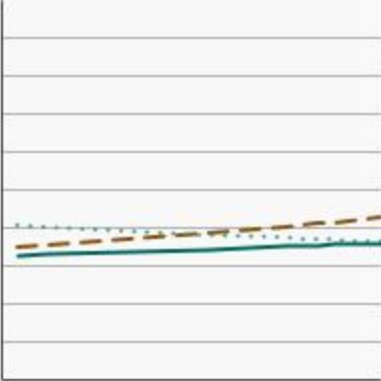
By Poverty Income Level

Percentage of adults aged 18 years and older who reported current cigar use by poverty income level, 1998-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of adults	95% Confidence Interval
	<200% of federal poverty level	3.7	3.1 - 4.3
	>=200% of federal poverty level	3.7	3.3 - 4.0

By Education Level

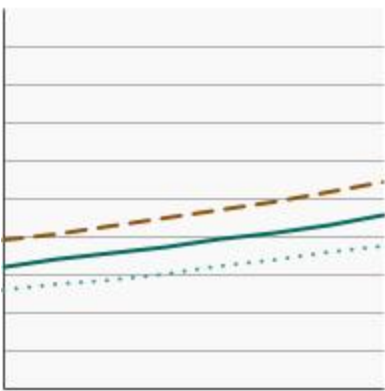
Percentage of adults aged 25 years and older who reported current cigar use by highest level of education obtained, 1998-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of adults	95% Confidence Interval
	Less than High School	3.1	2.2 - 4.3
	High School	3.9	3.3 - 4.7
	Greater than High School	3.8	3.4 - 4.2

E-Cigarettes

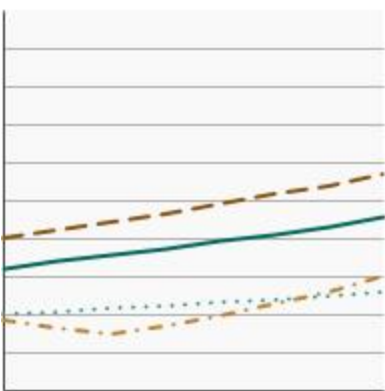
By Sex

Percentage of adults aged 18 years and older who reported current e-cigarette use by sex, 2014-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of adults	95% Confidence Interval
	Both Sexes	4.9	4.6 - 5.3
	Male	5.4	5.0 - 5.9
	Female	4.4	3.9 - 4.8

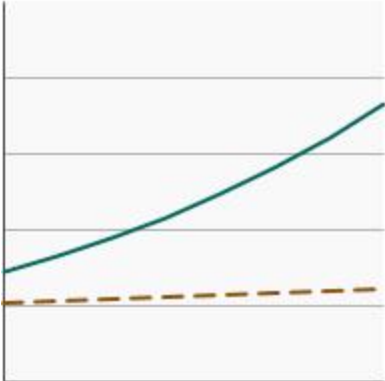
By Race/Ethnicity

Percentage of adults aged 18 years and older who reported current e-cigarette use by race/ethnicity, 2014-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of adults	95% Confidence Interval
	All Races/Ethnicities	4.9	4.6 - 5.3
	Non-Hispanic White	6.1	5.6 - 6.7
	Non-Hispanic Black	2.5	1.9 - 3.3
	Hispanic	3.0	2.5 - 3.6

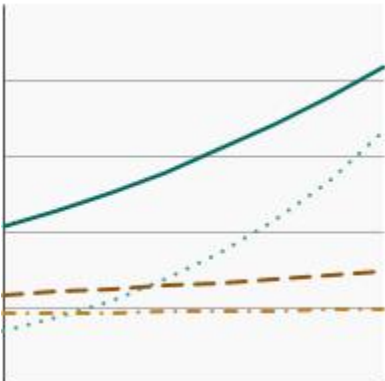
By Age

Percentage of adults aged 18 years and older who reported current e-cigarette use by age, 2014-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of adults	95% Confidence Interval
	Ages 18-24	10.9	9.3 - 12.6
	Ages 25+	4.0	3.7 - 4.3

By Sex and Age

Percentage of adults aged 18 years and older who reported current e-cigarette use by sex and age, 2014-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of adults	95% Confidence Interval
	Males, Ages 18-24	11.5	9.3 - 14.3
	Males, Ages 25+	4.5	4.1 - 5.0
	Females, Ages 18-24	10.2	8.1 - 12.7
	Females, Ages 25+	3.5	3.1 - 3.9

Cancers Related to Tobacco Use

Statistical summaries from NCI's SEER Cancer Stat Fact Sheets:

- [Acute Myeloid Leukemia \(AML\)](#)
- [Anus](#)
- [Bladder](#)
- [Cervix Uteri](#)
- [Colon and Rectum](#)
- [Esophagus](#)
- [Kidney and Renal Pelvis](#)

- [Larynx](#)
- [Liver and Intrahepatic Bile Duct](#)
- [Lung and Bronchus](#)
- [Oral Cavity and Pharynx](#)
- [Pancreas](#)
- [Stomach](#)

Additional Information on Adult Tobacco Use

General Public Resources

- [Tobacco](#). National Cancer Institute.
- [Tobacco and Cancer](#). American Cancer Society.
- [Smoking and Tobacco Use](#). Centers for Disease Control and Prevention.
- [Smoking and Increased Risk of Severe Illness from COVID-19](#). Centers for Disease Control and Prevention.
- [Tobacco Products](#). U.S. Food and Drug Administration.

Quitting Resources

- [Cigarette Smoking: Health Risks and How to Quit \(PDQ®\)–Patient Version](#). National Cancer Institute.
- [Smokefree.gov](#). National Cancer Institute.
- [Where To Get Help When You Decide To Quit Smoking](#). National Cancer Institute.
- [How to Quit Smoking or Smokeless Tobacco](#). American Cancer Society.
- [How to Quit Smoking](#). Centers for Disease Control and Prevention.
- [What You Need To Know About Quitting Smoking: Advice from the Surgeon General](#). Centers for Disease Control and Prevention.
- [North American Quitline Consortium](#). North American Quitline Consortium.

Public Health Resources

- [Cigarette Smoking: Health Risks and How to Quit \(PDQ®\)–Health Professional Version](#). National Cancer Institute.
- [Tobacco Control Evidence-Based Programs Listing](#). National Cancer Institute.
- [Treating Tobacco Use and Dependence: 2008 Update – Clinical Practice Guidelines](#). Agency for Healthcare Research and Quality.
- [Best Practices for Comprehensive Tobacco Control Programs—2014](#). Centers for Disease Control and Prevention.
- [Best Practices: Putting Evidence into Practice](#). Centers for Disease Control and Prevention.
- [Smoking and Tobacco Use – Healthcare Provider Resources](#). Centers for Disease Control and Prevention.
- [Smoking Cessation – The Role of Healthcare Professionals and Health Systems](#). Centers for Disease Control and Prevention.
- [Surgeon General's Reports on Smoking and Tobacco Use](#). Centers for Disease Control and Prevention.
- [Tobacco Use](#). Million Hearts.

- [Tobacco Smoking Cessation in Adults, Including Pregnant Women: Behavioral and Pharmacotherapy Interventions.](#) U.S. Preventive Services Task Force.

Scientific Reports

- [Cigar-Smoking Patterns by Race/Ethnicity and Cigar Type: A Nationally Representative Survey Among U.S. Adults.](#) Chen-Sankey JC, Mead-Morse EL, Le D, et al. Am J Prev Med. 2021; 60(1):87-94.
- [Trends in education-related smoking disparities among U.S. Black/African American and White adults: Intersections of race, sex, and region.](#) Choi K, Jones JT, Ruybal AL, et al. Nicotine Tob Res. 2022.
- [Tobacco Product Use Among Adults — United States, 2020.](#) Cornelius ME, Loretan CG, Wang TW, Jamal A, Homa DM. MMWR 2022;71(11);397-405.
- [State-specific patterns of cigarette smoking, smokeless tobacco use, and e-cigarette use among adults—United States, 2016.](#) Hu SS, Homa DM, Wang T et al. Prev Chronic Dis 2019;16:180362.
- [Association of long-term, low-intensity smoking with all-cause and cause-specific mortality in the National Institutes of Health-AARP Diet and Health Study.](#) Inoue-Choi M, Liao LM, Reyes-Guzman C et al. JAMA Intern Med. 2017;177(1):87-95.
- [Dose-Response Association of Low-Intensity and Nondaily Smoking With Mortality in the United States.](#) Inoue-Choi M, Christensen CH, Rostron BL, et al. JAMA Netw Open. 2020; 3(6):e206436.
- [Demographic Characteristics, Cigarette Smoking, and e-Cigarette Use Among US Adults.](#) Mayer M, Reyes-Guzman C, Grana R, et al. JAMA Netw Open. 2020; 3(10):e2020694.
- [Not Quite the Rule, But No Longer the Exception: Multiple Tobacco Product Use and Implications for Treatment, Research, and Regulation.](#) Pacek LR, Villanti AC, Mcclernon FJ. Nicotine Tob Res. 2020;22(11):2114-2117.

Statistics

- [2018-2019 Tobacco Use Supplement to the Current Population Survey \(TUS-CPS\) Data Brief.](#) National Cancer Institute.
- [State Cancer Profiles.](#) National Cancer Institute.
- [Cancer Facts and Figures.](#) American Cancer Society.
- [Behavioral Risk Factor Surveillance System Prevalence and Trends Data.](#) Centers for Disease Control and Prevention.
- [Current Cigarette Smoking Among Adults in the United States.](#) Centers for Disease Control and Prevention.
- [Reports and Detailed Tables From the 2020 National Survey on Drug Use and Health.](#) Substance Abuse and Mental Health Services Administration.

Cancer Trends Progress Report

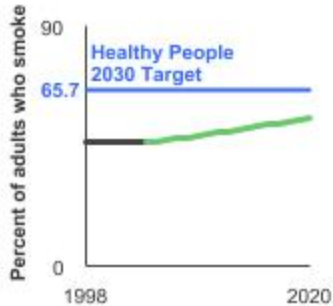
Online Summary of Trends in US Cancer Control Measures

Quitting Smoking

Data Up to Date as of:

August 2023

In 2020, 53.9% of adults who smoke attempted to quit smoking within the past year.



Background

Quitting smoking has major and immediate health benefits for people of all ages. Quitting smoking dramatically reduces the risk of lung and other cancers caused by smoking, coronary heart disease, stroke, and chronic obstructive pulmonary disease (COPD). For example, 10-15 years after quitting, the risk of lung cancer decreases to about one-half that of a person who continues to smoke; with continued abstinence from smoking, the risk of lung cancer decreases even further.

Although quitting smoking is beneficial at any age, the earlier in life a person quits, the more likely it is that they will avoid the devastating health effects of continued tobacco use. Few people who smoke quit successfully on their first attempt; most will require many attempts before they are able to permanently quit. This emphasizes the need for those who smoke to begin trying to quit as early in life as possible.

A number of strategies can increase the likelihood of successful smoking cessation, including comprehensive, barrier-free, and widely promoted access to insurance coverage for smoking cessation treatment, and the use of FDA approved smoking cessation medications together with behavioral counseling to support quit attempts.

Behavioral counseling and support can be delivered using individual or group counseling, or by quitlines, web and internet, or text-messaging platforms. Cessation rates can also be improved by adopting population-level policies, such as tobacco product price increases or comprehensive smokefree policies, implementing anti-tobacco mass media campaigns, requiring pictorial health warnings on tobacco products, and maintaining comprehensive statewide tobacco control programs.

Recently, the FDA announced([link is external](#)) a proposal to prohibit menthol as a characterizing flavor in cigarettes and all characterizing flavors (other than tobacco) in cigars. These proposed rules have the potential to significantly reduce the death and disease caused by smoking by reducing youth use and experimentation, and by increasing the number of people that quit. In addition, the FDA also announced([link is external](#)) plans to develop a proposed product standard that would establish a maximum nicotine level to reduce the addictiveness of cigarettes and some other combustible tobacco products. The goal of this proposed product standard would be to reduce youth use, addiction, and death.

Measure

Attempt to quit: The percentage of adults (aged 18 years and older) who attempted smoking cessation within the past 12 months. The numerator of this measure includes both people who currently smoke every day or some days and who, at the time of the survey, had quit smoking for at least 1 day during the past 12 months, as well as people who quit smoking less than or equal to 1 year ago. The denominator of this measure includes all adults who smoked 12 months prior to the survey.

Successful quitting: The percentage of adults (aged 18 years and older) who smoke and successfully quit smoking in the past 12 months. The numerator of this measure includes adults who quit smoking 6-12 months prior to the survey. The denominator of this measure includes adults who:

1. Formerly smoked and had quit smoking 6-12 months prior to the survey.
2. Formerly smoked and had quit smoking less than 6 months prior to the survey.
3. Currently smoked at the time of the survey and who initiated smoking at least 2 years prior to the survey.

Healthy People 2030 Target

- Increase to 65.7 percent the proportion of adults who currently smoked (aged 18 years and older) who stopped smoking for a day or longer because they were trying to quit.
- Increase to 10.6 percent the proportion of adults who smoked (aged 18 years and older) who successfully quit smoking.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Note: Goals are indicated as blue line on Detailed Trend Graphs.

Data Source

Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey 1998-2020.

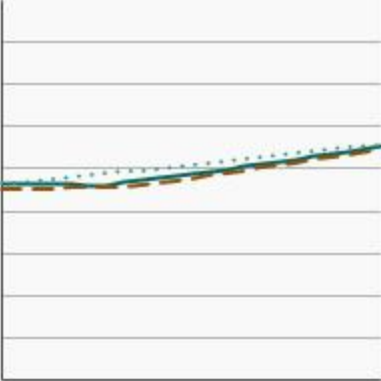
In 2019 the NHIS questionnaire was redesigned to increase relevance, enhance data quality, and minimize respondent burden. In addition, the COVID-19 pandemic created challenges conducting in-person interviews for the 2020 NHIS, requiring changes to field procedures to conduct most surveys by telephone, which impacted survey response rates. For details related to the potential impacts of these issues, please refer to [Potential Impact of NHIS Redesign and COVID-19 on the Cancer Trends Progress Report](#).

Trends and Most Recent Estimates

Attempted to Quit Smoking

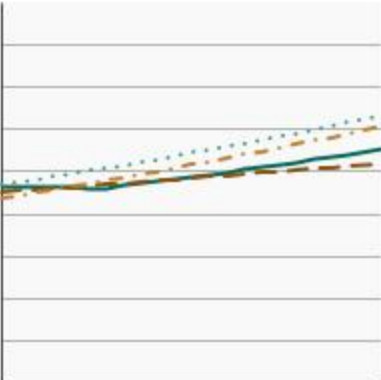
By Sex

Percentage of adults aged 18 years and older who smoke and attempted to stop smoking for one day or longer in the past year by sex, 1998-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults who smoke	95% Confidence Interval
	Both Sexes	53.9	51.6 - 56.1
	Male	53.5	50.6 - 56.5
	Female	54.1	50.8 - 57.4

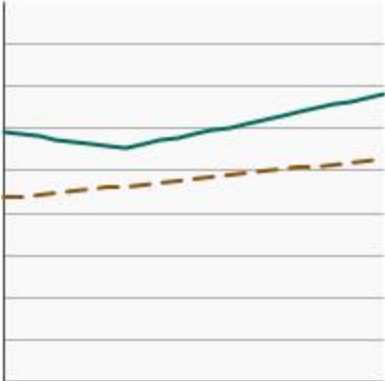
By Race/Ethnicity

Percentage of adults aged 18 years and older who smoke and attempted to stop smoking for one day or longer in the past year by race/ethnicity, 1998-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults who smoke	95% Confidence Interval
	All Races	53.9	51.6 - 56.1
	Non-Hispanic White	51.1	48.4 - 53.8
	Non-Hispanic Black	60.4	52.8 - 67.5
	Hispanic	55.4	48.6 - 61.9

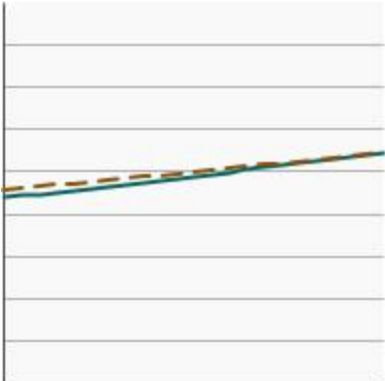
By Age

Percentage of adults aged 18 years and older who smoke and attempted to stop smoking for one day or longer in the past year by age, 1998-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults who smoke	95% Confidence Interval
	Ages 18-24	63.4	50.4 - 74.7
	Ages 25 and older	52.2	50.1 - 54.3

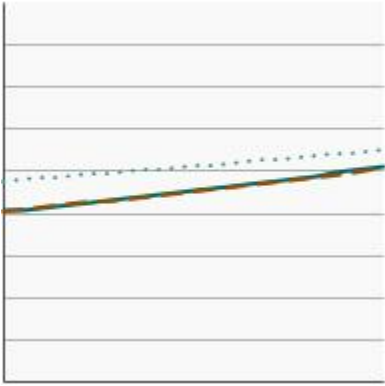
By Poverty Income Level

Percentage of adults aged 18 years and older who smoke and attempted to stop smoking for one day or longer in the past year by poverty income level, 1998-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults who smoke	95% Confidence Interval
	<200% of federal poverty level	55.0	51.4 - 58.6
	>=200% of federal poverty level	53.0	50.0 - 55.9

By Education Level

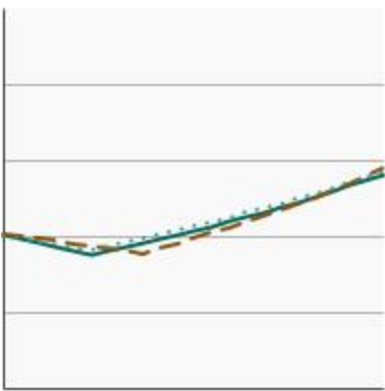
Percentage of smokers aged 25 years and older who smoke and attempted to stop smoking for one day or longer in the past year by highest level of education obtained, 1998-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults who smoke	95% Confidence Interval
	Less than High School	51.8	46.0 - 57.5
	High School	51.7	48.2 - 55.2
	Greater than High School	52.6	49.7 - 55.4

Successfully Quit Smoking

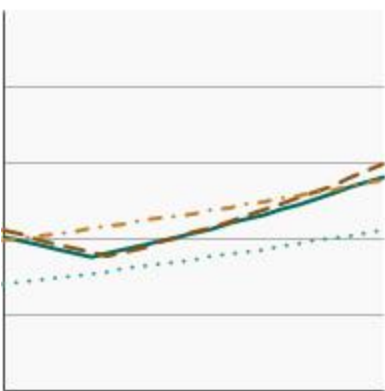
By Sex

Percentage of recent smoking cessation success among adults aged 18 years and older who smoke by sex, 1998-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults who smoke	95% Confidence Interval
	Both Sexes	8.5	7.3 - 9.8
	Male	8.1	6.7 - 9.9
	Female	8.8	6.9 - 11.2

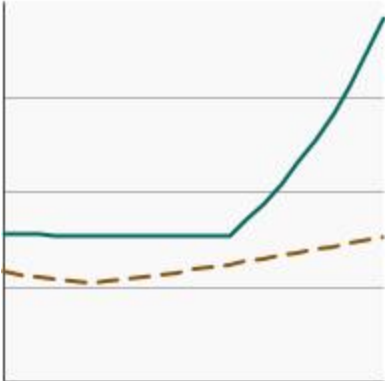
By Race/Ethnicity

Percentage of recent smoking cessation success among adults aged 18 years and older who smoke by race/ethnicity, 1998-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults who smoke	95% Confidence Interval
	All Races	8.5	7.3 - 9.8
	Non-Hispanic White	9.6	8.1 - 11.4
	Non-Hispanic Black	7.8	4.8 - 12.5
	Hispanic	5.2	3.2 - 8.3

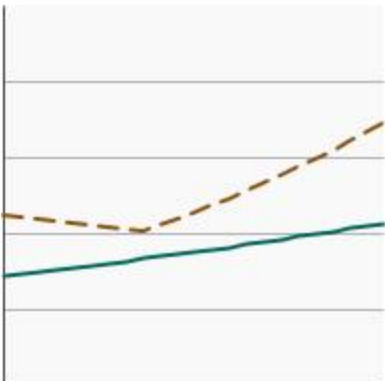
By Age

Percentage of recent smoking cessation success among adults aged 18 years and older who smoke by age, 1998-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults who smoke	95% Confidence Interval
	Ages 18-24	15.8	8.6 - 27.3
	Ages 25 and older	7.6	6.6 - 8.7

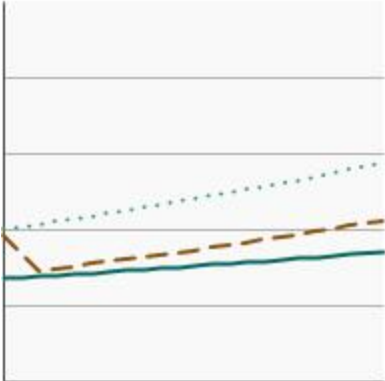
By Poverty Income Level

Percentage of recent smoking cessation success among adults aged 18 years and older who smoke by poverty income level, 1998-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults who smoke	95% Confidence Interval
	<200% of federal poverty level	6.2	4.6 - 8.4
	>=200% of federal poverty level	10.0	8.4 - 11.9

By Education Level

Percentage of recent smoking cessation success among adults aged 25 years and older who smoke by highest level of education obtained, 1998-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults who smoke	95% Confidence Interval
	Less than High School	5.8	3.7 - 9.1
	High School	6.3	4.8 - 8.1
	Greater than High School	9.4	7.9 - 11.0

Additional Information on Quitting Smoking

General Public Resources

- [Tobacco](#). National Cancer Institute.
- [Smoking & Tobacco Use – Quit Smoking](#). Centers for Disease Control and Prevention.
- [Public Health Education](#). U.S. Food and Drug Administration.

Quitting Smoking Resources

- [Smokefree.gov](#). National Cancer Institute.
- [Cigarette Smoking: Health Risks and How to Quit \(PDQ®\)–Patient Version](#). National Cancer Institute.
- [How to Quit Using Tobacco](#). American Cancer Society.
- [North American Quitline Consortium](#). North American Quitline Consortium.
- [How to Quit Smoking](#). Centers for Disease Control and Prevention.

Public Health Resources

- [A Socioecological Approach to Addressing Tobacco-Related Health Disparities](#). U.S. National Cancer Institute. National Cancer Institute Tobacco Control Monograph 22. NIH Publication No. 17-CA-8035A. Bethesda, MD: U.S. Department of Health and Human Services, National Institutes of Health, National Cancer Institute; 2017.
- [The Economics of Tobacco and Tobacco Control](#). U.S. National Cancer Institute and World Health Organization. National Cancer Institute Tobacco Control Monograph 21. NIH Publication No. 16-CA-8029A. Bethesda, MD: U.S. Department of Health and Human Services, National Institutes of Health, National Cancer Institute; and Geneva, CH: World Health Organization; 2016.
- [Tobacco Control Evidence-Based Programs Listing](#). National Cancer Institute.
- [Smoking Cessation: A Report of the Surgeon General](#). Centers for Disease Control and Prevention.
- [Healthcare Provider Resources: Smoking and Tobacco Use](#). Centers for Disease Control and Prevention.
- [Interventions for Tobacco Smoking Cessation in Adults, Including Pregnant Persons](#). U.S. Preventive Services Task Force.

Scientific Reports

- [Prevalence and determinants of cigarette smoking relapse among US adult smokers: a longitudinal study](#). Alboksmaty A, Agaku IT, Odani S, Filippidis FT. *BMJ Open*. 2019;9(11):e031676.
- [Anti-Smoking Media Campaigns and Disparities in Smoking Cessation in the United States, 2001-2015](#). Colston DC, Cho B, Thrasher JF, et al. *Am J Health Promot*. 2021 Jan 8;890117120985818.
- [Tobacco Product Use and Cessation Indicators Among Adults - United States, 2018](#). Creamer MR, Wang TW, Babb S, et al. *MMWR Morb Mortal Wkly Rep*. 2019;68(45):1013-1019.
- [State Tobacco Excise Taxation, Comprehensive Smoke-free Air Laws, and Tobacco Control Appropriations as Predictors of Smoking Cessation Success in the United States](#). Dahne J, Nahhas GJ, Wahlquist AE, Cummings KM, Carpenter MJ. *J Public Health Manag Pract*. 2020;26(5):E1-E4.
- [Relapse Prevention Interventions for Smoking Cessation](#). Livingstone-Banks J, Norris E, Hartmann-Boyce J, et al. *Cochrane Database Syst Rev*. 2019;2019(10).
- [Targeted smoking cessation for dual users of combustible and electronic cigarettes: a randomised controlled trial](#). Martinez U, Simmons VN, Sutton SK, et al. *Lancet Public Health*. 2021;6(7):e500-e509.
- [Longitudinal Associations Between Use of Tobacco and Cannabis Among People Who Smoke Cigarettes in Real-world Smoking Cessation Treatment](#). Nguyen N, Neilands TB, Lisha NE, Lyu JC, Olson SS, Ling PM. *J Addict Med*. 2022 Jul-Aug 01;16(4):413-419.
- [Heterogeneity in Past-Year Smoking, Current Tobacco Use, and Smoking Cessation Behaviors Among Light and/or Non-Daily Smokers](#). Omole T, McNeel T, Choi K. *Tob Induc Dis*. 2020;18:74.
- [Enhancing employer coverage of smoking cessation treatment: A randomized trial of the Partners in Helping You Quit \(PIHQ\) program](#). Rigotti NA, Kelley JHK, Regan S, et al. *Prev Med*. 2020;140:106216.
- [Income disparities in smoking cessation and the diffusion of smoke-free homes among U.S. smokers: Results from two longitudinal surveys](#). Vijayaraghavan M, Benmarhnia T, Pierce JP, et al. *PLoS One*.

2018;13(7):e0201467.

- Smoking-Cessation Interventions for U.S. Young Adults: Updated Systematic Review. Villanti AC, West JC, Klemperer EM, et al. Am J Prev Med. 2020;59(1):123-136.
- Characteristics and Correlates of Recent Successful Cessation Among Adult Cigarette Smokers, United States, 2018. Walton K, Wang TW, Prutzman Y, Jamal A, Babb SD. Prev Chronic Dis. 2020;17:E154.

Statistics

- The Tobacco Use Supplement to the Current Population Survey. National Cancer Institute.
- The National Health Interview Survey Cancer Control Supplements. National Center for Health Statistics, co-sponsored by the National Cancer Institute/DCCPS and the Centers for Disease Control and Prevention/OSH and DCPC.
- Population Assessment of Tobacco and Health (PATH) Study Series. National Institute on Drug Abuse, National Institutes of Health, and the Center for Tobacco Products, Food and Drug Administration.

Cancer Trends Progress Report

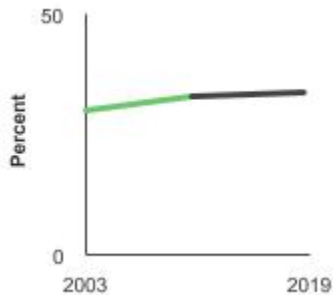
Online Summary of Trends in US Cancer Control Measures

Evidence-based Cessation Aids

Data Up to Date as of:

August 2023

In 2018 to 2019, 33.7% of adults aged 18 years and older who smoke and attempted to quit in the past year used a smoking cessation aid in the quit attempt.



Background

Quitting smoking has major and immediate health benefits for people of all ages. It dramatically reduces the risk of lung and other cancers caused by smoking, as well as risks of coronary heart disease, stroke, and chronic obstructive pulmonary disease.

Cessation success is increased by the use of evidence-based treatment, including the use of behavioral counseling and medications. The combination of behavioral counseling and medication is especially effective. FDA-approved cessation medications include various forms of nicotine replacement therapy (NRT), and two medications that do not contain nicotine: bupropion (also known as Zyban), and varenicline (also known as Chantix). Behavioral support can be delivered in person, in group settings, over the phone (quitlines and telehealth sessions), and with other mobile technology tools and methods (i.e., mHealth). However, few people who smoke use evidence-based cessation treatments when attempting to quit, which decreases their likelihood of success.

E-cigarettes (also known as vapes or Electronic Nicotine Delivery Systems) are battery-powered devices that convert a liquid (“e-liquid”) into an aerosol. E-liquids typically contain nicotine, flavorings, vegetable glycerin, propylene glycol and other chemicals. In addition to nicotine, e-cigarette aerosol may contain heavy metals, volatile organic compounds, and fine and ultrafine particles that can be inhaled deeply into the lungs by both users and bystanders. Many people who smoke report using e-cigarettes in an effort to quit smoking. However, the Surgeon General has concluded that there is presently inadequate evidence to conclude that e-cigarettes, in general, increase smoking cessation, and no e-cigarette has been approved by FDA as a therapeutic product for smoking cessation treatment.

Measure

The three measures presented here (“Any Cessation Aid,” “Any Cessation Medication,” and “Any Cessation Counseling”) use a common denominator consisting of people who smoke at the time of interview and report a quit attempt during the past 12 months as well as people who formerly smoked but quit smoking within the past 12 months. The numerators for each measure consist of individuals reporting the following behaviors:

Any Cessation Medication Use: people who reported using any NRT(s) (patch, gum, lozenge, nasal spray or oral inhaler) and/or reported using any of the following medications: Bupropion (Zyban®) and/or Varenicline (Chantix®).

Any Cessation Counseling Use: people who reported using any of the following type(s) of behavioral counseling: from a quit-line; one-on-one with a clinician; at a clinic, class or support group; or from the internet (i.e., web-based), a smartphone app, or a texting program. (Note: The 2020 Surgeon General’s Report on Smoking Cessation concluded that evidence is inadequate to infer that smartphone apps for smoking cessation are independently effective in increasing smoking cessation.)

Any Cessation Aid Use: people who reported using one or more of the cessation medications and/or cessation counseling types included in the above two measures.

Healthy People 2030 Target

- Healthy People 2030 includes a goal to increase the use of smoking cessation counseling and medication in adults who smoke (TU-13) which relies on National Health Interview Survey (NHIS) data. In 2015, 32.1 percent of adults who smoke and who tried to quit during the past year (and adults who formerly smoked and who quit during the past 2 years) reported using cessation counseling and/or medication as part of a quit attempt. The 2030 target for this goal is 43.8%. In contrast, the data presented in the Cancer Trends Progress Report are drawn from the Tobacco Use Supplement to the Current Population Survey (TUS-CPS). Therefore, the data presented in this report cannot be directly compared to the HP2030 objective.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Data Source

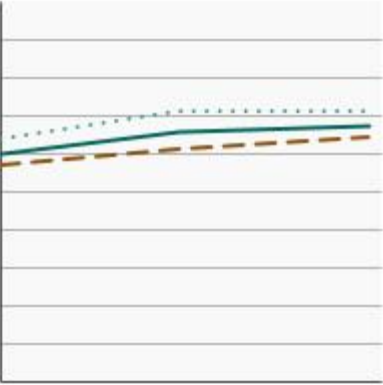
The Tobacco Use Supplement to the Current Population Survey Harmonized Data, National Cancer Institute, 1992–2019.

US Department of Commerce, Census Bureau (2005, 2013, 2020). Tobacco Use Supplement to the Current Population Survey- National Cancer Institute sponsored in 2003 and 2010-11 and National Cancer Institute and Food and Drug Administration co-sponsored in 2018-19.

Trends and Most Recent Estimates

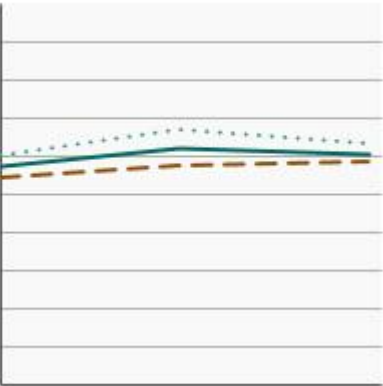
Any Cessation Aid

Percentage of adults aged 18 years and older who smoke and used a smoking cessation aid (counseling and/or medication) in an attempt to quit smoking in the past year, 2003-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2018 to 2019)	
		Percent	95% Confidence Interval
	Both Sexes	33.7	32.5 - 34.9
	Male	32.0	30.4 - 33.7
	Female	35.4	33.6 - 37.2

Cessation Medication

Percentage of adults aged 18 years and older who smoke and used a smoking cessation medication in an attempt to quit smoking in the past year, 2003-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2018 to 2019)	
		Percent	95% Confidence Interval
	Both Sexes	30.4	29.2 - 31.6
	Male	29.2	27.6 - 30.8
	Female	31.5	29.9 - 33.2

Cessation Counseling

Percentage of adults aged 18 years and older who smoke and used smoking cessation counseling in an attempt to quit smoking in the past year, 2003-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2018 to 2019)	
		Percent	95% Confidence Interval
	Both Sexes	10.1	9.4 - 10.9
	Male	8.6	7.6 - 9.7
	Female	11.7	10.6 - 12.9

Additional Information on Evidence-based Cessation Aids

General Public Resources

- [Cigarette Smoking: Health Risks and How to Quit \(PDQ®\)—Patient Version](#). National Cancer Institute.
- [What You Need to Know About Quitting Smoking](#). U.S. Department of Health & Human Services.
- [Adult Smoking Cessation – The Use of E-Cigarettes](#). Centers for Disease Control and Prevention.

Quitting Resources

- [How To Quit](#). Smokefree.gov.
- [Where To Get Help When You Decide To Quit Smoking](#). National Cancer Institute.
- [Tips for Coping with Nicotine Withdrawal and Triggers](#). National Cancer Institute.
- [How to Quit Smoking](#). Centers for Disease Control and Prevention.
- [Want to Quit Smoking? FDA-Approved Products Can Help](#). U.S. Food and Drug Administration.

Public Health Resources

- [Smoking Cessation: A Report of the Surgeon General](#). U.S. Department of Health and Human Services.
- [Treatment of Tobacco Smoking: A Review](#). JAMA Network.
- [Interventions for Tobacco Smoking Cessation in Adults, Including Pregnant Persons: U.S. Preventive Services Task Force Recommendation Statement](#). U.S. Preventive Services Task Force.
- [Treating Tobacco Use and Dependence: 2008 Update](#). US Department of Health and Human Services.
- [CPSTF Finding and Rationale Statement - Tobacco Use: Mobile Phone Text Messaging Interventions for Smoking Cessation](#). Community Preventive Services Task Force
- [Tobacco Use: Internet-based Interventions to Increase Tobacco Use Cessation](#). Community Preventive Services Task Force

Scientific Reports

- [Neuropsychiatric safety and efficacy of varenicline, bupropion, and nicotine patch in smokers with and without psychiatric disorders \(EAGLES\): a double-blind, randomised, placebo-controlled clinical trial](#). Anthenelli RM, Benowitz NL, West R, et al. Lancet. 2016;387(10037):2507-2520.
- [Quitting smoking among adults—United States, 2000-2015](#). Babb S, Malarcher A, Schauer G, Asman K, Jamal A. MMWR Morb Mortal Wkly Rep. 2017;65(52):1457-1464.

- Barriers to building more effective treatments: negative interactions among smoking-intervention components. Baker TB, Bolt DM, Smith SS. Clin Psychol Sci. 2021 Nov 1;9(6):995-1020.
- Effects of Combined Varenicline With Nicotine Patch and of Extended Treatment Duration on Smoking Cessation. Baker TB, Piper ME, Smith SS, et al. JAMA. 2021;326(15):1485–1493.
- Nicotine replacement therapy versus control for smoking cessation. Hartmann-Boyce J, Chepkin SC, Ye W, Bullen C, Lancaster T. Cochrane Database Syst Rev. 2018;5(5):CD000146.
- Additional behavioural support as an adjunct to pharmacotherapy for smoking cessation. Hartmann-Boyce J, Hong B, Livingstone-Banks J, Wheat H, Fanshawe TR. Cochrane Database Syst Rev. 2019;6(6):CD009670.
- Antidepressants for smoking cessation. Howes S, Hartmann-Boyce J, Livingstone-Banks J, Hong B, Lindson N. Cochrane Database of Systematic Reviews 2020 Apr 22;4(4):CD000031.
- Different doses, durations and modes of delivery of nicotine replacement therapy for smoking cessation. Lindson N, Chepkin SC, Ye W, et al. Cochrane Database Syst Rev. 2019;4(4):CD013308.
- Telephone counselling for smoking cessation. Matkin W, Ordóñez-Mena JM, Hartmann-Boyce J. Cochrane Database Syst Rev. 2019;5:CD002850.
- Assessment of Racial Differences in Pharmacotherapy Efficacy for Smoking Cessation: Secondary Analysis of the EAGLES Randomized Clinical Trial. Nollen NL, Ahluwalia JS, Sanderson Cox L, et al. JAMA Netw Open. 2021 Jan 4;4(1):e2032053.
- Combined pharmacotherapy and behavioural interventions for smoking cessation. Stead LF, Koilpillai P, Fanshawe TR, Lancaster T. Cochrane Database Syst Rev. 2016;3(3):CD008286.
- Internet-based interventions for smoking cessation. Taylor GMJ, Dalili MN, Semwal M, et al. Cochrane Database Syst Rev. 2017 Sep 4;9(9):CD007078.
- Smoking-Cessation Interventions for U.S. Young Adults: Updated Systematic Review. Villanti AC, West JC, Klemperer EM, et al. Am J Prev Med. 2020;59(1):123-136.
- Characteristics and Correlates of Recent Successful Cessation Among Adult Cigarette Smokers, United States, 2018. Walton K, Wang TW, Prutzman Y, Jamal A, Babb SD. Prev Chronic Dis. 2020;17:E154.
- Mobile phone text messaging and app-based interventions for smoking cessation. Whittaker R, McRobbie H, Bullen C, et al. Cochrane Database Syst Rev. 2019;10(10):CD006611.

Cancer Trends Progress Report

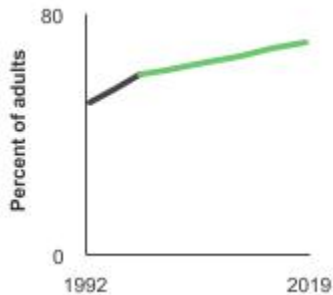
Online Summary of Trends in US Cancer Control Measures

Clinicians' Advice to Quit Smoking

Data Up to Date as of:

August 2023

In 2018 to 2019, 69.5% of adult who smoked and had seen a physician during the past 12 months reported being advised by that doctor to quit smoking.



Background

Clinicians' advice to quit smoking can, by itself, increase quit attempts and quit success and can have even greater impact if coupled with cessation counseling and/or medication. In addition, even brief clinical interventions have been shown to be cost effective for increasing the motivation of people who smoke to quit.

Clinical guidelines recommend clinicians utilize the "5 A's" (ask, advise, assess, assist, and arrange) when screening for tobacco use and providing cessation interventions. For patients ready to quit, clinicians can provide cessation assistance and support, including medication, counseling, referral to treatment extenders, and follow-up. For patients who are not yet ready to quit, clinicians can instead provide a brief intervention designed to promote the motivation to quit. A wide variety of clinicians, including dentists, physicians, nurses, and other health professionals such as pharmacists, can effectively implement brief strategies to increase future quit attempts. Many individual pharmacies and one national pharmacy chain have decided not to sell tobacco products, recognizing that the sale of tobacco products is not compatible with their important role in health care.

Measure

The percentage of adults who smoke (aged 18 years and older) and have seen a physician in the past 12 months who report that the physician advised them to quit smoking.

Healthy People 2030 Target

- Increase to 58.1 percent the proportion of adults who smoke that receive advice to quit from a health professional.

This Healthy People 2030 (HP2030) goal is focused on all health professionals, including a medical doctor, dentist, or other health professional, and the chosen data source for this goal is the National Health Interview Survey. In contrast, the data presented in the Cancer Trends Progress Report are based on reports from patients regarding whether they received smoking cessation advice from their physicians, and data presented are drawn from the Tobacco Use Supplement to the Current Population Survey. Therefore, the data presented in this report cannot be directly compared to the HP2030 objective.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Note: Goals are indicated as blue line on Detailed Trend Graphs.

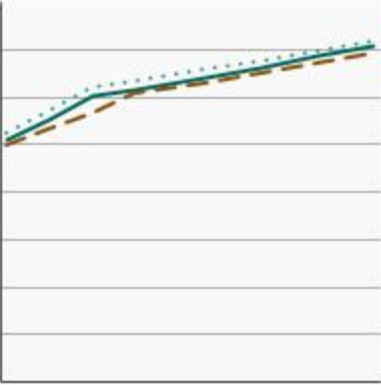
Data Source

The Tobacco Use Supplement to the Current Population Survey Harmonized Data, National Cancer Institute, 1992–2019.

Trends and Most Recent Estimates

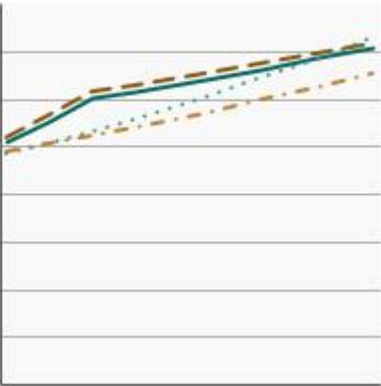
By Sex

Percentage of adults aged 18 years and older who smoke and have seen a physician in the past year and were advised to quit smoking by sex, 1992-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2018 to 2019)	
		Percent of adults	95% Confidence Interval
	Both Sexes	69.5	68.3 - 70.8
	Male	67.9	66.1 - 69.6
	Female	71.2	69.4 - 72.8

By Race/Ethnicity

Percentage of adults aged 18 years and older who smoke and have seen a physician in the past year and were advised to quit smoking by race/ethnicity, 1992-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2018 to 2019)	
		Percent of adults	95% Confidence Interval
	All Races	69.5	68.3 - 70.8
	Non-Hispanic White	71.0	69.4 - 72.5
	Non-Hispanic Black	67.3	63.5 - 70.9
	Hispanic	60.9	56.5 - 65.2

By Age

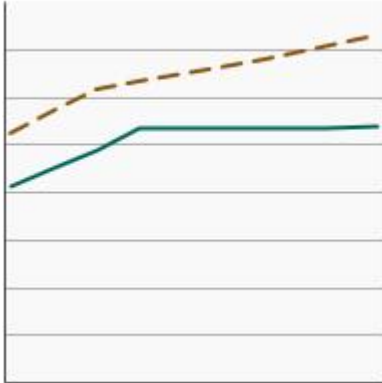
Percentage of adults aged 18 years and older who smoke and have seen a physician in the past year and were advised to quit smoking by age, 1992-2019

[Overview Graph](#)

[Detailed Trend Graphs](#)

Most Recent Estimates (2018 to 2019)

Percent of adults **95% Confidence Interval**



Ages 18-24

55.9

48.8 - 62.8

Ages 25+

71.5

70.4 - 72.7

By Sex and Age

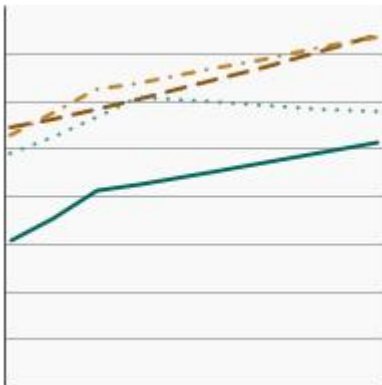
Percentage of adults aged 18 years and older who smoke and have seen a physician in the past year and were advised to quit smoking by sex and age, 1992-2019

[Overview Graph](#)

[Detailed Trend Graphs](#)

Most Recent Estimates (2018 to 2019)

Percent of adults **95% Confidence Interval**



Males, ages 18-24

54.0

43.4 - 64.3

Males, ages 25+

70.2

68.5 - 71.8

Females, ages 18-24

58.0

48.1 - 67.4

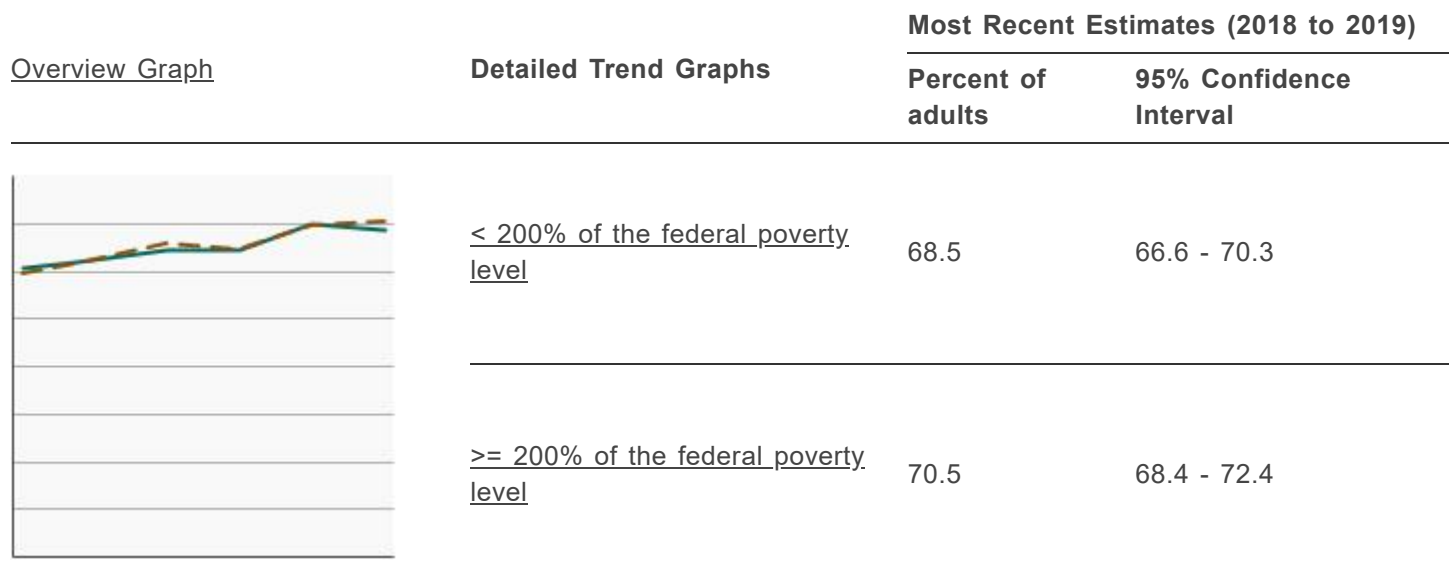
Females, ages 25+

72.9

71.3 - 74.4

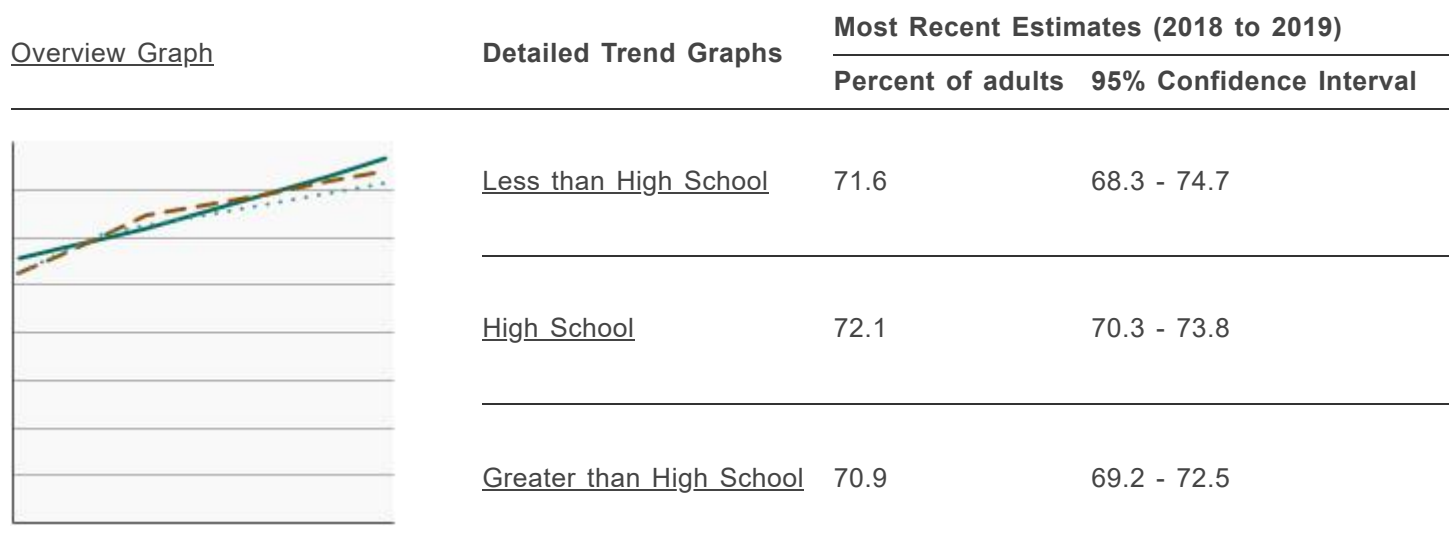
By Poverty Income Level

Percentage of adults aged 18 years and older who smoke and have seen a physician in the past year and were advised to quit smoking by poverty income level, 1998-2019



By Education Level

Percentage of adults aged 25 years and older who smoke and have seen a physician in the past year and were advised to quit smoking by highest level of education obtained, 1992-2019



Additional Information on Clinicians' Advice to Quit Smoking

General Public Resources

- [Tobacco and Cancer](#). American Cancer Society.
- [Smokefree.gov](#). National Cancer Institute.
- [Public Health Education](#). The Food and Drug Administration.

Quitting Resources

- [Cigarette Smoking: Health Risks and How to Quit \(PDQ®\)—Patient Version](#). National Cancer Institute.
- [What You Need to Know About Quitting Smoking: Advice from the Surgeon General](#). Centers for Disease Control and Prevention.
- [How to Quit Using Tobacco](#). American Cancer Society.

- [How to Quit Smoking](#). Centers for Disease Control and Prevention.
- [Tips From Former Smokers-Media Campaign](#). Centers for Disease Control and Prevention.

Public Health Resources

- [Tobacco Control Evidence-Based Programs Listing](#). National Cancer Institute.
- [Cigarette Smoking: Health Risks and How to Quit \(PDQ®\) - Health Professional Version](#). National Cancer Institute.
- [Treating Tobacco Use and Dependence: 2008 Update](#). Agency for Healthcare Research and Quality.
- [Best Practices for Comprehensive Tobacco Control Programs – 2014](#). Centers for Disease Control and Prevention.
- [Healthcare Provider Resources: Smoking and Tobacco Use](#). Centers for Disease Control and Prevention.
- [Surgeon General's Reports on Smoking and Tobacco Use](#). Centers for Disease Control and Prevention.
- [Tobacco Use](#). Million Hearts.
- [Interventions for Tobacco Smoking Cessation in Adults, Including Pregnant Persons](#). U.S. Preventive Services Task Force.

Scientific Reports

- [Disparities in Cessation Behaviors Between Hispanic and Non-Hispanic White Adult Cigarette Smokers in the United States, 2000-2015](#). Babb S, Malarcher A, Asman K, et al. *Prev Chronic Dis*. 2020; 17:190279.
- [Disparities in Smoking Cessation Assistance in US Primary Care Clinics](#). Bailey SR, Heintzman J, Jacob RL, Puro J, Marino M. *Am J Public Health*. 2018;108(8):1082-1090.
- [Long-Term Outcomes From Repeated Smoking Cessation Assistance in Routine Primary Care](#). Bailey SR, Stevens VJ, Fortmann SP, et al. *Am J Health Promot*. 2018;32(7):1582-1590.
- [Community Pharmacy Personnel Interventions for Smoking Cessation](#). Carson-Chahhoud KV, Livingstone-Banks J, Sharrad KJ, et al. *Cochrane Database Syst Rev*. 2019;2019(10).
- [Physicians' Recommendations to Medicaid Patients About Tobacco Cessation](#). Holla N, Brantley E, Ku L. *Am J Prev Med*. 2018;55(6):762-769.
- [Association between race and receipt of counselling or medication for smoking cessation in primary care](#). Hooks-Anderson DR, Salas J, Secrest S, Skiöld-Hanlin S, Scherrer JF. *Fam Pract*. 2018;35(2):160-165.
- [Nurse Counseling as Part of a Multicomponent Tobacco Treatment Intervention: An Integrative Review](#). Keller KG, Lach HW. *J Addict Nurs*. 2020;31(3):161-179.
- [Deaf patient-provider communication and lung cancer screening: Health Information National Trends survey in American Sign Language \(HINTS-ASL\)](#). Kushalnagar P, Engelman A, Sadler G. *Patient Educ Couns*. 2018;101(7):1232-1239.
- [Effectiveness of decision aids for smoking cessation in adults: a quantitative systematic review](#). Moyo F, Archibald E, Slyer JT. *JBIC Database System Rev Implement Rep*. 2018;16(9):1791-1822.
- [How To Support Smoking Cessation In Primary Care And The Community: A Systematic Review Of Interventions For The Prevention Of Cardiovascular Diseases](#). Odorico M, Le Goff D, Aerts N, Bastiaens H, Le Reste JY. *Vasc Health Risk Manag*. 2019;15:485-502.
- [Computer-Facilitated 5A's for Smoking Cessation: A Randomized Trial of Technology to Promote Provider Adherence](#). Satterfield JM, Gregorich SE, Kalkhoran S, et al. *Am J Prev Med*. 2018;55(1):35-43.
- [Smokers' Receipt of Cessation Advice from Healthcare Professionals in National Samples of People Diagnosed with HIV and the General Population](#). Timberlake DS, Nwosisi NG. *Subst Use Misuse*. 2020;55(7):1079-1085.

Statistics

- [The Tobacco Use Supplement to the Current Population Survey](#). National Cancer Institute.
- [The National Health Interview Survey Cancer Control Supplements](#). National Center for Health Statistics, co-sponsored by the National Cancer Institute/DCCPS and the Centers for Disease Control and Prevention/OSH and DCPC.

Cancer Trends Progress Report

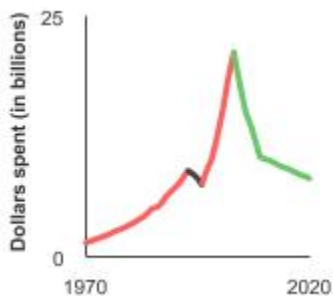
Online Summary of Trends in US Cancer Control Measures

Tobacco Company Marketing Expenditures

Data Up to Date as of:

August 2023

In 2020, adjusted combined annual expenditures for cigarette advertising and promotion was \$7.8 billion.



Background

Tobacco advertising and promotion are causally related to increased tobacco use. Cigarettes are one of the most heavily marketed products in the U.S. The U.S. Federal Trade Commission has reported cigarette sales and marketing expenditures annually since 1967 and smokeless tobacco sales and marketing expenditures periodically since 1987. These reports highlight spending on advertising and promotion by the largest cigarette companies and major smokeless tobacco product manufacturers in the U.S. The sales and marketing expenditures reported include categories such as direct mail, Internet, point of sale, price discounts, coupons, sampling distribution, and sponsorships. In 2019, the Federal Trade Commission issued orders to six of the country's largest domestic e-cigarette manufacturers to request similar information starting with the year 2015. The Family Smoking Prevention and Tobacco Control Act, signed into law on June 22, 2009, provides the U.S. Food and Drug Administration with broad authority to regulate tobacco product marketing. This legislation affirms state and community authority to regulate, among other things, the sale, distribution, access to, advertising and promotion of, or use of tobacco products.

Measure

Combined cigarette annual advertising and promotional expenditures by the parent companies of the major manufacturers of cigarettes sold in the U.S., adjusted, as reported by manufacturers to the U.S. Federal Trade Commission.

Combined smokeless tobacco annual advertising and promotional expenditures by the parent companies of the major manufacturers of smokeless tobacco products in the U.S., adjusted, as reported by manufacturers to the U.S. Federal Trade Commission.

Combined e-cigarette annual advertising and promotional expenditures by the largest U.S. domestic manufacturers, adjusted, as reported by manufacturers to the U.S. Federal Trade Commission.

Note: Estimates are adjusted to 2020 dollars using the Gross Domestic Product: Implicit Price Deflator.

Healthy People 2030 Target

- There are no Healthy People 2030 targets for reducing tobacco company marketing expenditures.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Data Source


Federal Trade Commission Cigarette Report for 2020.

Federal Trade Commission Smokeless Tobacco Report for 2020.

Trends and Most Recent Estimates

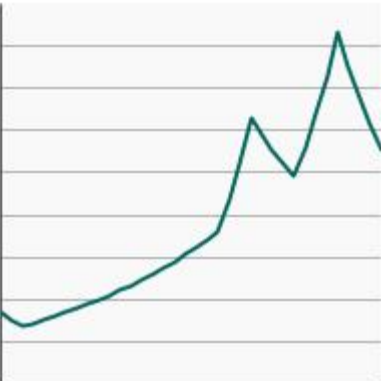
Cigarettes

Domestic cigarette advertising and promotional expenditures by U.S. tobacco companies adjusted to 2020 dollars, 1970-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Dollars spent (in billions)	95% Confidence Interval
	Total Marketing Expenditures	7.8	Not available


Smokeless Tobacco

Domestic smokeless tobacco advertising and promotional expenditures by U.S. tobacco companies adjusted to 2020 dollars, 1985-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Dollars spent (in millions)	95% Confidence Interval
	Total Marketing Expenditures	576.3	Not available

E-Cigarettes

Domestic e-cigarette advertising and promotional expenditures by U.S. tobacco companies adjusted to 2020 dollars, 2015-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Dollars spent (in millions)	95% Confidence Interval
	<u>Total Marketing Expenditures</u>	719.9	Not available

Additional Information on Tobacco Company Marketing Expenditures

General Public Resources

- [A Broken Promise to our Children: A State-by-State Look at the 1998 Tobacco Settlement 23 Years Later](#). Campaign for Tobacco Free Kids.
- [Smoke Free Movies](#). UCSF Center for Tobacco Control Research and Education.
- [Litigation Against Tobacco Companies](#). U.S. Department of Justice, Consumer Protection Branch.
- [Family Smoking Prevention and Tobacco Control Act—An Overview](#). U.S. Food and Drug Administration.

Quitting Resources

- [Smokefree.gov](#). National Cancer Institute.
- [Tobacco](#). National Cancer Institute.
- [How to Quit Smoking](#). Centers for Disease Control and Prevention.
- [North American Quitline Consortium](#). North American Quitline Consortium.

Public Health Resources

- [Smokeless Tobacco and Public Health: A Global Perspective](#). U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Institutes of Health, National Cancer Institute. NIH Publication No. 14-7983; 2014.
- [Monograph 19: The Role of the Media in Promoting and Reducing Tobacco Use](#). National Cancer Institute. Smoking and Tobacco Control Monographs.
- [2016 Surgeon General's Report: E-Cigarette Use Among Youth and Young Adults](#). Centers for Disease Control and Prevention.
- [2014 Surgeon General's Report: The Health Consequences of Smoking—50 Years of Progress](#). Centers for Disease Control and Prevention.
- [2012 Surgeon General's Report—Preventing Tobacco Use Among Youth and Young Adults](#). Centers for Disease Control and Prevention.

Scientific Reports

- [Exposure to multimedia tobacco marketing and product use among youth: A longitudinal Analysis](#). Choi K, Rose SW, Zhou Y et al. *Nicotine Tob Res* 2020;22(6):1036-1040.

- [Examining market trends in smokeless tobacco sales in the United States: 2011-2019.](#) Delnevo CD, Hrywna M, Lo, EJM et al. Nicotine Tob Res 2020: epub
- [Implementation and research priorities for FCTC Articles 13 and 16: tobacco advertising, promotion, and sponsorship and sales to and by minors.](#) Nagler RH, Viswanath K. Nicotine Tob Res 2013;15(4):832–846.
- [Cigarette Brand Preference and Pro-Tobacco Advertising Among Middle and High School Students—United States, 2012-2016.](#) Perks SN, Armour B, Agaku IT. MMWR 2018;67(4):119-124 .
- [Association between receptivity to tobacco advertising and progression to tobacco use in youth and young adults in the PATH study.](#) Pierce JP, Sargent JD, Portnoy DB et al. JAMA Pediatr. 2018;172(5):444-451.
- [Tobacco Control: Advertising and Marketing.](#) Public Health Law Center.
- [Tobacco Use in Top-Grossing Movies – United States, 2010-2018.](#) Tynan MA, Polansky JR, Driscoll D, Garcia C, Glantz SA. MMWR 2019;68(43):974-978.

Statistics

- [NCI sponsored Tobacco Use Supplement to the Current Population.](#) U.S. Dept. of Commerce, Census Bureau.
- [Smoking in the Movies.](#) Centers for Disease Control and Prevention.
- [Tobacco Industry Marketing.](#) Centers for Disease Control and Prevention.

Cancer Trends Progress Report

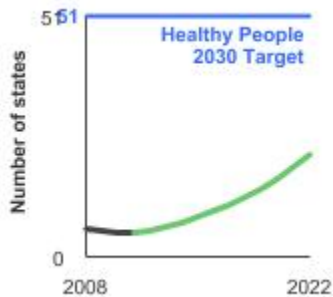
Online Summary of Trends in US Cancer Control Measures

Medicaid Insurance Coverage of Tobacco Cessation Treatments

Data Up to Date as of:

August 2023

In 2022, 20 states provided comprehensive insurance coverage of evidence-based tobacco cessation treatments (seven FDA-approved smoking cessation medications plus individual and group cessation counseling) for all standard Medicaid enrollees.



Background

Medicaid enrollees have a higher smoking prevalence than the general population. Smoking-related diseases are a major contributor to Medicaid costs. Providing people who use tobacco with access to evidence-based tobacco cessation treatments can reduce morbidity and mortality from cancers and other tobacco-related diseases and reduce Medicaid costs. Individual, group, and telephone counseling are effective in helping people who use tobacco to quit. In addition, the U.S. Food and Drug Administration (FDA) has approved seven medications for smoking cessation, including five nicotine replacement therapies (the nicotine patch, gum, lozenge, nasal spray, and oral inhaler) and two non-nicotine medications (bupropion and varenicline). The U.S. Surgeon General has concluded that, with adequate promotion, comprehensive, barrier-free, insurance coverage of evidence-based cessation treatment increases both the availability and use of cessation services, leads to higher rates of successful quitting, and is cost effective.

There is considerable variation in states' Medicaid insurance coverage of tobacco cessation treatments for standard (vs. expansion) Medicaid enrollees. All state Medicaid programs are required to cover tobacco cessation services (both counseling and medications) for pregnant women under section 4107 of the 2010 Patient Protection and Affordable Care Act (ACA). Additionally, effective 2014, section 2502 of the ACA barred state Medicaid programs that participate in the Medicaid drug rebate program from excluding coverage for cessation medications approved by the FDA. Telephone counseling is available for free to callers to state quitlines (including Medicaid enrollees) in all 50 states and the District of Columbia via 1-800-QUIT-NOW. However, coverage of individual and group cessation counseling for non-pregnant standard Medicaid enrollees varies widely by state. As of December 31, 2022, only 20 states provided comprehensive insurance coverage of all evidence-based cessation treatments (all seven FDA-approved smoking cessation medications, individual and group cessation counseling) for standard Medicaid enrollees. Expansion of treatment coverage and eligibility while reducing barriers to treatment access (e.g., copays, duration limits on treatment) are still needed.

Measure

The number of state Medicaid programs that provide comprehensive insurance coverage of evidence-based tobacco cessation treatments (all seven FDA-approved smoking cessation medications plus individual and group cessation counseling) for standard Medicaid enrollees.

The number of state Medicaid programs that provide insurance coverage for individual or group tobacco cessation counseling for standard Medicaid enrollees.¹

The number of state Medicaid programs that provide insurance coverage for all seven FDA-approved smoking cessation medications including the nicotine patch, nicotine gum, nicotine lozenge, nicotine oral inhaler, nicotine nasal spray, bupropion (Zyban®) and varenicline (Chantix®) for standard Medicaid enrollees.¹

¹Definitions

Standard Medicaid Enrollees: *Persons who are enrolled in Medicaid under standard Medicaid eligibility criteria; does not include enrollees who are eligible under the income-only eligibility criteria for expanded Medicaid coverage.*

Covered (individual counseling, group counseling): *Service was covered for all standard Medicaid enrollees, including those enrolled in fee-for-service and managed care plans.*

Varies (individual counseling, group counseling): *Service coverage was different between managed care and fee-for-service plans, coverage varied among fee-for-service plans or among managed care plans, or coverage varied by pregnancy status.*

Not Covered (individual counseling, group counseling): *This service was not covered under applicable fee-for-service and managed care plans, or information was not available for both plans.*

Covered (smoking cessation medications): *All seven FDA-approved smoking cessation medications were covered for all standard Medicaid enrollees, including those enrolled in fee-for-service and managed care plans.*

Varies (smoking cessation medications): *Coverage of all seven FDA-approved smoking cessation medications was different between managed care and fee-for-service plans, coverage varied among fee-for-service plans or among managed care plans, or coverage varied by pregnancy status.*

Not Covered (smoking cessation medications): *Any of the seven FDA-approved smoking cessation medications was not covered under applicable fee-for-service and managed care plans, or information was not available for both plans.*

Healthy People 2030 Target

- Increase comprehensive Medicaid insurance coverage of evidence-based treatment for nicotine dependency to include all 50 U.S. states and the District of Columbia.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

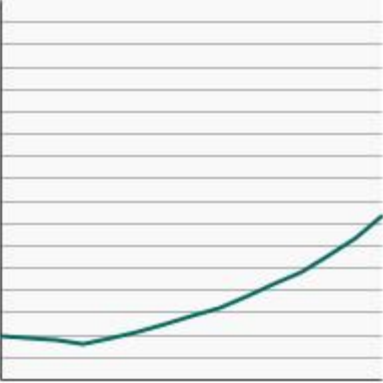
Data Source

Centers for Disease Control and Prevention. State Tobacco Activities Tracking and Evaluation (STATE) System. Annual quarter 4 estimates.

Trends and Most Recent Estimates

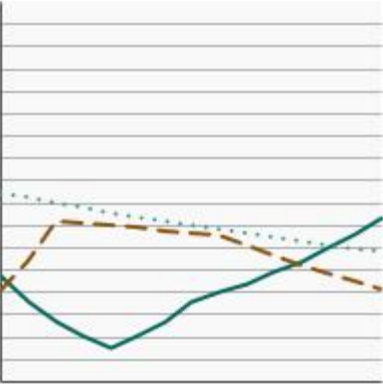
Comprehensive Coverage of Cessation Treatments

Number of states (including the District of Columbia) with comprehensive Medicaid insurance coverage for evidence-based tobacco cessation treatments, 2008-2022

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2022)	
		Number of states	95% Confidence Interval
	Comprehensive Coverage of Cessation Treatments	20.0	Not available

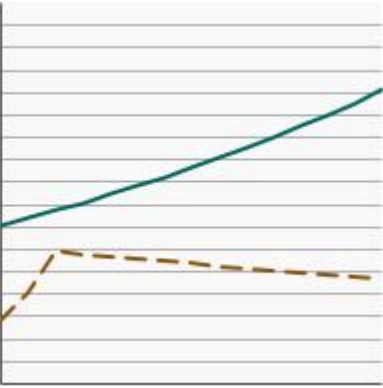
Group Cessation Counseling

Number of states (including the District of Columbia) with Medicaid insurance coverage for group tobacco cessation counseling, 2008-2022

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2022)	
		Number of U.S. states	95% Confidence Interval
	Covered	21.0	Not available
	Varies	12.0	Not available
	Not Covered	18.0	Not available

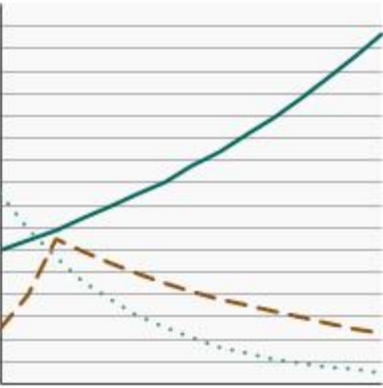
Individual Cessation Counseling

Number of states (including the District of Columbia) with Medicaid insurance coverage for individual tobacco cessation counseling, 2008-2022

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2022)	
		Number of U.S. states	95% Confidence Interval
	Covered	39.0	Not available
	Varies	12.0	Not available
	Not Covered	0.0	Not available

Smoking Cessation Medications

Number of states (including the District of Columbia) with Medicaid insurance coverage for all seven FDA-approved smoking cessation medications, 2008-2022

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2022)	
		Number of U.S. states	95% Confidence Interval
	Covered	43.0	Not available
	Varies	6.0	Not available
	Not Covered	2.0	Not available

Additional Information on Medicaid Insurance Coverage of Tobacco Cessation Treatments General Public Resources

- [Tobacco and Cancer](#). American Cancer Society.
- [Surgeon General’s Reports on Smoking and Tobacco Use](#). Centers for Disease Control and Prevention.
- [Tobacco Cessation](#). Medicaid.gov.
- [Tobacco Products](#). U.S. Food and Drug Administration.

Quitting Resources

- [Tobacco](#). National Cancer Institute.
- [Smokefree.gov](#). National Cancer Institute.

- [How to Quit Smoking or Smokeless Tobacco](#). American Cancer Society.
- [North American Quitline Consortium](#).

Public Health Resources

- [Treating Tobacco Use and Dependence: 2008 Update](#). Agency for Healthcare Research and Quality.
- [Healthcare Provider Resources: Smoking and Tobacco Use](#). Centers for Disease Control and Prevention.
- [Tobacco Use](#). Million Hearts.

Scientific Reports

- [Policies affecting Medicaid beneficiaries' smoking cessation behaviors](#). Brantley E, Greene J, Bruen B, Steinmetz E, Ku L. *Nicotine Tob Res* 2018;00(00):1-8.
- [State Medicaid expansion tobacco cessation coverage and number of adult smokers enrolled in expansion coverage—United States, 2016](#). DiGiulio A, Haddix M, Jump Z et al. *MMWR Morb Mortal Wkly Rep* 2016;65(48):1364-1369.
- [State Medicaid Coverage for Tobacco Cessation Treatments and Barriers to Accessing Treatments — United States, 2008–2018](#). DiGiulio A, Jump Z, Babb S et al. *MMWR Morb Mortal Wkly Rep* 2020;69(6):155-160.
- [The Affordable Care Act Medicaid Expansion and Smoking Cessation Among Low-Income Smokers](#). Donahoe JT, Norton EC, Elliott MR et al. *Am J Prev Med* 2019;57(6):e203-e210.
- [Impact of Medicaid expansion on smoking prevalence and quit attempts among those newly eligible, 2011–2019](#). Hilts KE, Blackburn J, Gibson PJ, et al. *Tob Prev Cessat*. 2021 Aug 5;7:16.
- [Does state Medicaid coverage of smoking cessation treatments affect quitting?](#) Kostova D, Xu X, Babb S, McMenamin SB, King BA. *Health Serv Res* 2018;53(6):4725-4746.
- [How Medicaid and other public policies affect use of tobacco cessation therapy, United States, 2010–2014](#). Ku L, Brantley E, Bysshe T, Steinmetz E, Bruen BK. *Prev Chronic Dis* 2016;13:E150.
- [Helping smokers quit—opportunities created by the Affordable Care Act](#). McAfee T, Babb S, McNabb S, Fiore MC. *N Engl J Med* 2015;372:5–7.
- [The Affordable Care Act's Medicaid Expansion and Impact Along the Cancer-Care Continuum: A Systematic Review](#). Moss HA, Wu J, Kaplan SJ, Zafar SY. *J Natl Cancer Inst*. 2020 Aug 1;112(8):779-791.
- [Current smoking and quit-attempts among US adults following Medicaid expansion](#). Valvi N, Vin-Raviv N, Akinyemiju T. *Prev Med Rep*. 2019; epub.
- [Smoking prevalence in Medicaid has been declining at a negligible rate](#). Zhu SH, Anderson CM, Zhuang YL et al. *PLoS One* 2017;12(5): e0178279.

Statistics

- [Current Cigarette Smoking Among Adults in the United States](#). Centers for Disease Control and Prevention.
- [State Tobacco Activities Tracking and Evaluation \(STATE\) System: Map of Comprehensive Medicaid Coverage of Cessation Treatments](#). Centers for Disease Control and Prevention.

Cancer Trends Progress Report

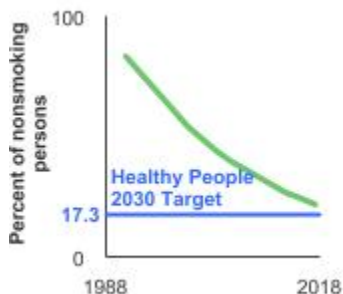
Online Summary of Trends in US Cancer Control Measures

Secondhand Smoke Exposure

Data Up to Date as of:

August 2023

From 2017.5, 25.8% of persons aged 3 years and older were currently exposed to second-hand smoke.



Background

Secondhand smoke (SHS) is a mixture of the sidestream smoke released by a smoldering cigarette, pipe, hookah/waterpipe, or cigar, and the mainstream smoke exhaled by a person who is smoking. SHS is a complex mixture containing thousands of chemicals, including formaldehyde, cyanide, carbon monoxide, ammonia, and nicotine. More than 250 of the chemicals in SHS are known to be harmful, and at least 69 are known to cause cancer.

Conclusive scientific evidence documents that SHS causes premature death and disease in children and adults who do not smoke. Among adults, exposure to SHS has immediate adverse effects on the cardiovascular system, and long-term exposure to SHS causes coronary heart disease, stroke, and lung cancer. Children exposed to SHS are at increased risk for sudden infant death syndrome, acute respiratory infections, middle ear disease, more severe asthma, respiratory symptoms, and slowed lung growth.

There is no risk-free level of exposure to SHS, and only eliminating smoking in indoor spaces fully protects people who don't smoke from exposure to SHS. Exposure to SHS among nonsmoking persons can be assessed by measurement of cotinine, a metabolite of nicotine. While cotinine levels may vary by individual due to the speed of nicotine metabolism and cotinine clearance, detection of cotinine above a minimum threshold is a validated measure of exposure to SHS in nonsmoking persons.

Measure

The percentage of nonsmoking persons exposed to secondhand smoke. (The percentage of nonsmoking persons aged 3 years and older with a serum cotinine level greater than 0.05 ng/mL and less than or equal to 10 ng/mL.)

Healthy People 2030 Target

- Reduce the proportion of people who do not smoke but are exposed to secondhand smoke to 17.3%.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Note: Goals are indicated as blue line on Detailed Trend Graphs.

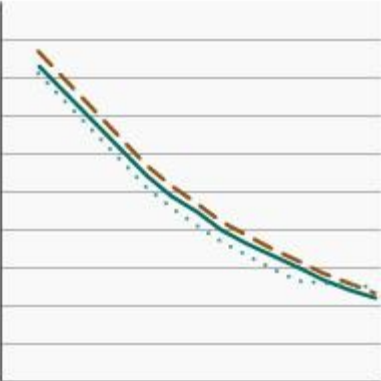
Data Source

Centers for Disease Control and Prevention, National Center for Health Statistics, National Health and Nutrition Examination Survey. "Secondhand smoke exposure" measure.

Trends and Most Recent Estimates

By Sex

Percentage of nonsmoking persons aged 3 years and older¹ exposed to secondhand smoke² by sex, 1988-2018

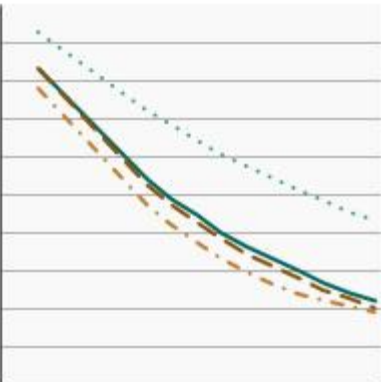
Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017.5)	
		Percent of nonsmoking persons	95% Confidence Interval
	Both Sexes	25.8	22.8 - 28.7
	Male	27.1	22.6 - 31.6
	Female	24.6	22.1 - 27.1

¹The 1988-1994 estimate starts at age 4 instead of age 3.

²As measured by a serum cotinine level of greater than 0.05 ng/ml and less than or equal to 10 ng/ml.

By Race/Ethnicity

Percentage of nonsmoking persons aged 3 years and older¹ exposed to secondhand smoke² by race/ethnicity, 1988-2018

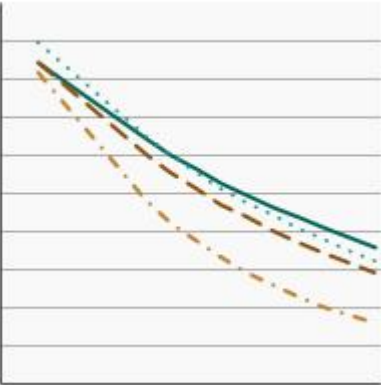
Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017.5)	
		Percent of nonsmoking persons	95% Confidence Interval
	All Races	25.8	22.8 - 28.7
	Non-Hispanic White	24.5	20.9 - 28.2
	Non-Hispanic Black	47.8	41.5 - 54.0
	Hispanic	18.7	15.4 - 21.9

¹The 1988-1994 estimate starts at age 4 instead of age 3.

²As measured by a serum cotinine level of greater than 0.05 ng/ml and less than or equal to 10 ng/ml.

By Age

Percentage of nonsmoking persons aged 3 years and older¹ exposed to secondhand smoke² by age, 1988-2018

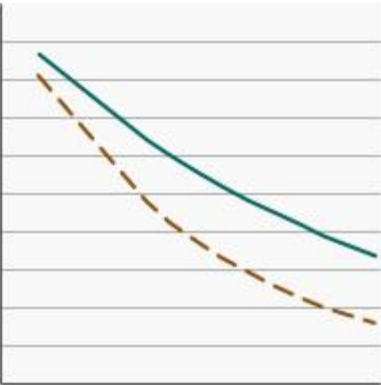
Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017.5)	
		Percent of nonsmoking persons	95% Confidence Interval
	Ages 3-11	38.2	34.4 - 42.0
	Ages 12-17	32.9	26.9 - 38.9
	Ages 18-29	33.9	28.1 - 39.8
	Ages 30+	19.6	16.5 - 22.8

¹The 1988-1994 estimate starts at age 4 instead of age 3.

²As measured by a serum cotinine level of greater than 0.05 ng/ml and less than or equal to 10 ng/ml.

By Poverty Income Level

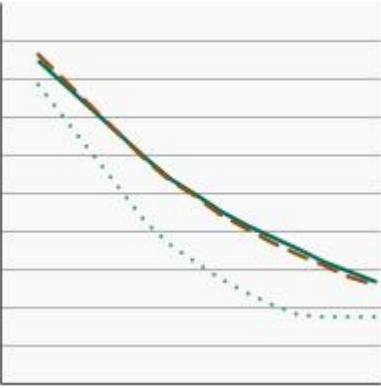
Percentage of nonsmoking persons aged 3 years and older¹ exposed to secondhand smoke² by poverty income level, 1988-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017.5)	
		Percent of nonsmoking persons	95% Confidence Interval
	<200% of federal poverty level	37.5	33.4 - 41.6
	>=200% of federal poverty level	19.0	15.7 - 22.3

¹As measured by a serum cotinine level of greater than 0.05 ng/ml and less than or equal to 10 ng/ml.

By Education Level

Percentage of nonsmoking persons aged 25 years and older exposed to secondhand smoke¹ by highest level of education obtained, 1988-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017.5)	
		Percent of nonsmoking persons	95% Confidence Interval
	Less than High School	25.3	20.4 - 30.1
	High School	27.5	22.4 - 32.5
	Greater than High School	17.9	14.6 - 21.2

¹As measured by a serum cotinine level of greater than 0.05 ng/ml and less than or equal to 10 ng/ml.

Cancers Related to Secondhand Smoke

Statistical summaries from NCI's SEER Cancer Stat Fact Sheets:

- [Lung and Bronchus](#)

Additional Information on Secondhand Smoke Exposure

General Public Resources

- [Secondhand Smoke Exposure](#). National Cancer Institute.
- [Secondhand Smoke and Cancer](#). National Cancer Institute.
- [The Dangers of Secondhand Smoke](#). American Academy of Pediatrics.
- [Smoking and Tobacco Use: Secondhand Smoke](#). Centers for Disease Control and Prevention.
- [Smoke-Free Public Housing and Multifamily Properties](#). Department of Housing and Urban Development.
- [Secondhand Smoke and Smoke-free Homes](#). Environmental Protection Agency.
- [Secondhand Smoke and What it Means to You](#). U.S. Department of Health and Human Services.

Public Health Resources

- [Tobacco Control Monograph Series](#). National Cancer Institute.
 - [Monograph 10: Health Effects of Exposure to Environmental Tobacco Smoke](#). National Cancer Institute.
- [Tobacco Control Evidence-Based Programs Listing](#). National Cancer Institute.
- [Surgeon General's Reports on Smoking and Tobacco Use](#). Centers for Disease Control and Prevention.
 - [50 Years of Progress: A Report of the Surgeon General, 2014](#). U.S. Department of Health and Human Services.
 - [The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General, 2006](#). U.S. Department of Health and Human Services.
- [Report on Carcinogens](#). National Toxicology Program, U.S. Department of Health and Human Services.

Scientific Reports

- [Secondhand Smoke Exposure Among Nonsmoking Adults: United States, 2015–2018](#). Brody DJ, Faust E, Tsai J. NCHS Data Brief 2021;396.
- [Secondhand Smoke Exposure and Subsequent Academic Performance Among U.S. Youth](#). Choi K, Chen-Sankey JC, Merianos AL, McGruder C, Yerger V. Am J Prev Med. 2020;58(6):776-782.
- [Exposure to Secondhand Smoke and Secondhand E-Cigarette Aerosol Among Middle and High School Students](#). Gentzke AS, Wang TW, Marynak KL, Trivers KF, King BA. Prev Chronic Dis. 2019;16:180531.
- [Drifting Tobacco Smoke Exposure among Young Adults in Multiunit Housing](#). Holmes LM, Llamas JD, Smith D, Ling PM. J Community Health. 2020;45(2):319-328.
- [National and state estimates of secondhand smoke infiltration among U.S. multiunit housing residents](#). King BA, Babb SD, Tynan MA, Gerzoff RB. Nicotine Tob Res 2013 Jul;15(7):1316-21.
- [Effects of Electronic Cigarettes on Indoor Air Quality and Health](#). Li L, Lin Y, Xia T, Zhu Y. Annu Rev Public Health 2020;41(2):363-380.
- [Secondhand Smoke Exposure at Home and/or in a Vehicle: Differences Between Urban and Non-Urban Adolescents in the United States, From 2015 to 2018](#). Mantey DS, Omega-Njemnobi O, Barroso CS. Nicotine Tob Res. 2021;23(8):1327-1333.
- [Exposure to Secondhand Smoke Among Nonsmokers in New York City in the Context of Recent Tobacco Control Policies: Current Status, Changes Over the Past Decade, and National Comparisons](#). Perlman SE, Chernov C, Farley SM, et al. Nicotine Tob Res 2016; 18(11):2065-2074.
- [Exposure to Secondhand Smoke in Homes and Vehicles Among US Youths, United States, 2011-2019](#). Walton K, Gentzke AS, Murphy-Hoefer R, Kenemer B, Neff LJ. Preventing Chronic Disease 2020;17.

Statistics

- [Tobacco Use Supplement to the Current Population Survey](#). National Cancer Institute.
- [Cancer Facts and Figures](#). American Cancer Society.
- [State Tobacco Activities Tracking and Evaluation System](#). Centers for Disease Control and Prevention.

Cancer Trends Progress Report

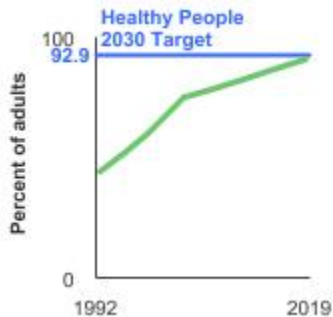
Online Summary of Trends in US Cancer Control Measures

Smokefree Home Rules

Data Up to Date as of:

August 2023

In 2018 to 2019, 90.2% of adults aged 18 years and older reported a smokefree home rule.



Background

Secondhand smoke (SHS) is a mixture of the sidestream smoke released by a smoldering cigarette, pipe, hookah or waterpipe, or cigar, and the mainstream smoke exhaled by a person who smokes. SHS is a complex mixture containing thousands of chemicals, including formaldehyde, cyanide, carbon monoxide, ammonia, and nicotine. More than 250 of the chemicals in SHS are known to be harmful, and at least 69 are known to cause cancer.

Conclusive scientific evidence documents that SHS causes premature death and disease in children and adults who do not smoke. Among adults, exposure to SHS has immediate adverse effects on the cardiovascular system, and long-term exposure to SHS causes coronary heart disease, stroke, and lung cancer. Children exposed to SHS are at increased risk for sudden infant death syndrome, acute respiratory infections, middle ear disease, more severe asthma, respiratory symptoms, and slowed lung growth.

Many individuals and families, including both people who smoke and people who don't, have voluntarily adopted smokefree rules for their homes, reflecting a change in community social norms. For children, smoking in the home is the main source of exposure to SHS. Studies have found that adoption of smokefree home rules is a significant predictor of smoking cessation success.

About 80 million (1 in 4) people in the US live in multiunit housing, such as apartments, including about 7 million living in government-subsidized housing. Secondhand smoke can travel between units and into common areas in multiunit housing. To protect nonsmokers living within public housing, the U.S. Department of Housing and Urban Development adopted a rule making all public housing smokefree. This rule was implemented in July 2018.

There is no risk-free level of exposure to SHS, and only 100% smokefree indoor air fully protects people who don't smoke from exposure to SHS.

Measure

The percentage of respondents reporting a smokefree home rule (i.e., that smoking was not allowed anywhere in their home).

Healthy People 2030 Target

- Increase the proportion of smokefree homes to 92.9 percent.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Note: Goals are indicated as blue line on Detailed Trend Graphs.

Data Source

National Cancer Institute. Tobacco Use Supplement to the Current Population Survey for "home smokefree policies" measures.

Trends and Most Recent Estimates

By Sex

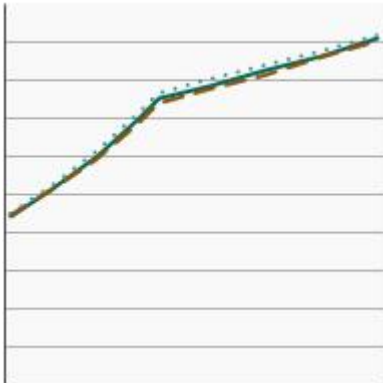
Percentage of adults aged 18 years and older reporting a smokefree home rule by sex, 1992-2019

[Overview Graph](#)

[Detailed Trend Graphs](#)

Most Recent Estimates (2018 to 2019)

Percent of adults 95% Confidence Interval



[Both Sexes](#)

90.2

90.0 - 90.5

[Male](#)

89.5

89.2 - 89.8

[Female](#)

90.9

90.6 - 91.2

By Race/Ethnicity

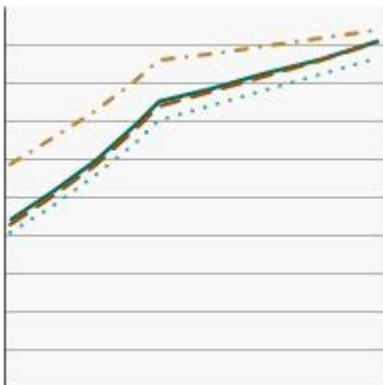
Percentage of adults aged 18 years and older reporting a smokefree home rule by race/ethnicity, 1992-2019

[Overview Graph](#)

[Detailed Trend Graphs](#)

Most Recent Estimates (2018 to 2019)

Percent of adults 95% Confidence Interval



[All Races/Ethnicities](#)

90.2

90.0 - 90.5

[Non-Hispanic White](#)

89.9

89.6 - 90.2

[Non-Hispanic Black](#)

86.0

85.1 - 86.8

[Hispanic](#)

93.7

93.2 - 94.1

By Age

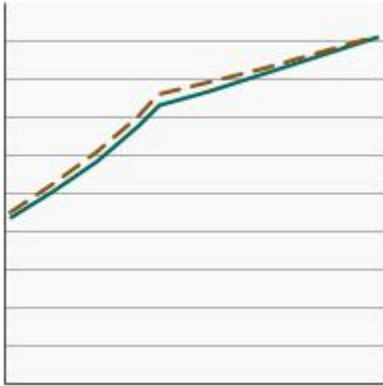
Percentage of adults aged 18 years and older reporting a smokefree home rule by age, 1992-2019

[Overview Graph](#)

[Detailed Trend Graphs](#)

Most Recent Estimates (2018 to 2019)

Percent of adults 95% Confidence Interval



[Ages 18-24](#)

90.5

89.6 - 91.3

[Ages 25+](#)

90.2

90.0 - 90.4

By Sex and Age

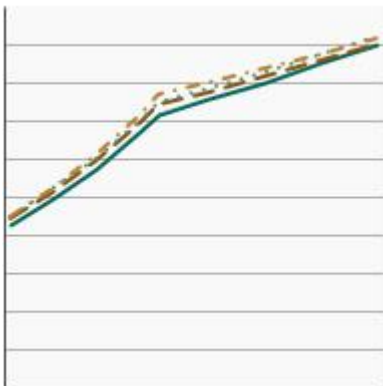
Percentage of adults aged 18 years and older reporting a smokefree home rule by sex and age, 1992-2019

[Overview Graph](#)

[Detailed Trend Graphs](#)

Most Recent Estimates (2018 to 2019)

Percent of adults 95% Confidence Interval



[Males, ages 18-24](#)

90.0

88.8 - 91.1

[Males, ages 25+](#)

89.4

89.1 - 89.7

[Females, ages 18-24](#)

90.9

89.7 - 92.0

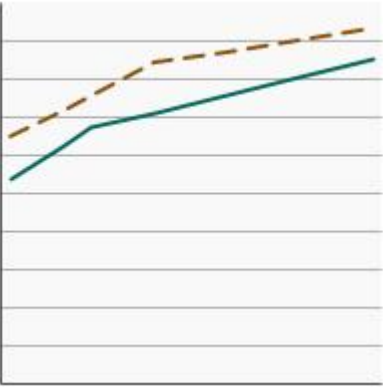
[Females, ages 25+](#)

90.9

90.7 - 91.2

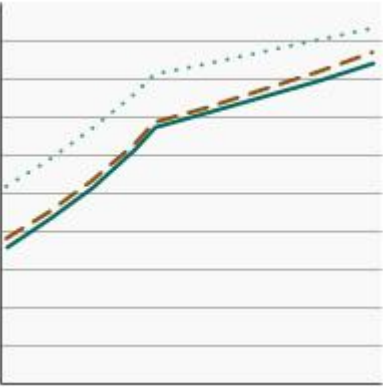
By Poverty Income Level

Percentage of adults aged 18 years and older reporting a smokefree home rule by poverty income level, 1998-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2018 to 2019)	
		Percent of adults	95% Confidence Interval
	<u>< 200% of the federal poverty level</u>	85.0	84.5 - 85.6
	<u>>= 200% of the federal poverty level</u>	92.5	92.3 - 92.8

By Education Level

Percentage of adults aged 25 years and older reporting a smokefree home rule by highest level of education obtained, 1992-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2018 to 2019)	
		Percent of adults	95% Confidence Interval
	<u>Less than High School</u>	83.5	82.4 - 84.5
	<u>High School</u>	85.7	85.2 - 86.3
	<u>Greater than High School</u>	92.7	92.5 - 93.0

Cancers Related to Smokefree Home Rules

Statistical summaries from NCI's SEER Cancer Stat Fact Sheets:

- [Lung and Bronchus](#)

Additional Information on Smokefree Home Rules

General Public Resources

- [Secondhand Smoke Exposure](#). National Cancer Institute.
- [Secondhand Smoke and Cancer](#). National Cancer Institute.
- [Tips to Keep a Smoke-free Home & Car](#). American Academy of Pediatrics.
- [The Dangers of Secondhand Smoke](#). American Academy of Pediatrics.
- [Smoke, Vape, and Tobacco-Free Home Rules and Organization Policy](#). American Lung Association.

- [Going Smokefree Matters: In Your Home](#). Centers for Disease Control and Prevention.
- [Going Smokefree Matters: Multiunit Housing](#). Centers for Disease Control and Prevention.

Public Health Resources

- [Tobacco Control Evidence-Based Programs Listing](#). National Cancer Institute.
- [Surgeon General's Reports on Smoking and Tobacco Use](#). Centers for Disease Control and Prevention.
 - [50 Years of Progress: A Report of the Surgeon General, 2014](#). U.S. Department of Health and Human Services.
 - [The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General, 2006](#). U.S. Department of Health and Human Services.
- [American Nonsmokers' Rights Foundation](#).
- [This is a Smoke-Free Building! Smoke-Free Policy: Information for Residents](#). U.S. Department of Housing and Urban Development.

Scientific Reports

- [Association between smokefree laws and voluntary smokefree-home rules](#). Cheng KW, Glantz SA, Lightwood JM. *Am J Prev Med* 2011;41(6):566–72.
- [Small Area Estimation of Smoke-free Workplace Policies and Home Rules in U.S. Counties](#). Liu B, Dompok I, Hartman AM. *Nicotine Tob Res*. 2021; [Epub ahead of print]
- [Parental home smoking policies: the protective effect of having a young child in the household](#). Hawkins SS and Berkman L. *Prev Med* 2011;53(1–2):61–3.
- [National and state prevalence of smoke-free rules in homes with and without children and smokers: Two decades of progress](#). King BA, Patel R, Babb SD, et al. *A. Prev Med*. 2016 Jan;82:51-8.
- [Persistent tobacco smoke residue in multiunit housing: Legacy of permissive indoor smoking policies and challenges in the implementation of smoking bans](#). Matt GE, Quintana PJE, Hoh E, et al. *Prev Med Rep* 2020;18:101088.
- [SIDS and Other Sleep-Related Infant Deaths: Updated 2016 Recommendations for a Safe Infant Sleeping Environment](#). Task Force on Sudden Infant Death Syndrome. *Pediatrics* 2016;138(5):e20162938.
- [Income disparities in smoking cessation and the diffusion of smoke-free homes among U.S. smokers: Results from two longitudinal surveys](#). Vijayaraghavan M, Benmarhnia T, Pierce JP, et al. *PLoS One*. 2018;13(7):e0201467.
- [Battling tobacco use at home: an analysis of smoke-free home rules among U.S. veterans from 2001 to 2011](#). Zhang X, Martinez-Donate AP, Cook J, et al. *Am J Public Health* 2014 Sep;104 Suppl 4: S572-9.

Statistics

- [Tobacco Use Supplement to the Current Population Survey](#). National Cancer Institute.
- [Cancer Facts and Figures](#). American Cancer Society.
- [National Health and Nutrition Examination Survey](#). Centers for Disease Control and Prevention, National Center for Health Statistics.
- [State Tobacco Activities Tracking and Evaluation System](#). Centers for Disease Control and Prevention.

Cancer Trends Progress Report

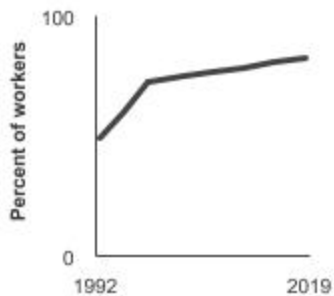
Online Summary of Trends in US Cancer Control Measures

Smokefree Workplace Rules and Laws

Data Up to Date as of:

August 2023

In 2018 to 2019, 80.4% of adults aged 18 years and older reported a smokefree worksite rule.



Background

As of October 1, 2022, thirty-six states, along with the District of Columbia, American Samoa, Guam, the Northern Mariana Islands, Puerto Rico, and the U.S. Virgin Islands, have laws in effect that require one or more of the following venues to be 100% smokefree: non-hospitality workplaces, restaurants, bars and state-run gambling establishments. A total of 1,159 cities and counties have a 100% smokefree provision in effect in one or more of the following venues: non-hospitality workplaces, restaurants, and bars. In 2021, the Navajo Nation became the first tribe to pass legislation to create a commercial tobacco free environment for all public places (including the four Navajo casinos, pow wows, annual festivals, and sports and rodeos). This will protect nonsmokers living within and visitors to the Navajo Nation.

Secondhand smoke (SHS) is a mixture of the side stream smoke released by a smoldering cigarette, pipe, hookah/waterpipe, or cigar, and the mainstream smoke exhaled by a smoker. SHS is a complex mixture containing thousands of chemicals, including formaldehyde, cyanide, carbon monoxide, ammonia, and nicotine. More than 250 of the chemicals in SHS are known to be harmful, and at least 69 are known to cause cancer. Conclusive scientific evidence documents that SHS causes premature death and disease in children and adults who do not smoke. Among adults, exposure to SHS has immediate adverse effects on the cardiovascular system, and long-term exposure to SHS causes coronary heart disease, stroke, and lung cancer. Children exposed to SHS are at increased risk for sudden infant death syndrome, acute respiratory infections, middle ear disease, more severe asthma, respiratory symptoms, and slowed lung growth.

E-cigarettes (also known as vapes or Electronic Nicotine Delivery Systems) are battery-powered devices that convert a liquid (“e-liquid”) into an aerosol. E-liquids typically contains nicotine, flavorings, vegetable glycerin, propylene glycol and other chemicals. In addition to nicotine, e-cigarette aerosol may contain heavy metals, volatile organic compounds, and fine and ultrafine particles that can be inhaled deeply into the lungs by both users and by-standers. States and localities are increasingly incorporating prohibition of e-cigarette use into comprehensive smokefree air laws. As of January 1, 2023, 26 states, the territories of Guam, and Puerto Rico, and 742 municipalities have prohibited the use of e-cigarettes in 100% smokefree locations.

Secondhand smoke (SHS) is a mixture of the side stream smoke released by a smoldering cigarette, pipe, hookah/waterpipe, or cigar, and the mainstream smoke exhaled by a smoker. SHS is a complex mixture containing thousands of chemicals, including formaldehyde, cyanide, carbon monoxide, ammonia, and nicotine. More than 250 of the chemicals in SHS are known to be harmful, and at least 69 are known to cause cancer. Conclusive scientific evidence documents that SHS causes premature death and disease in children and adults who do not smoke. Among adults, exposure to SHS has immediate adverse effects on the cardiovascular system, and long-term exposure to SHS causes coronary heart disease and lung cancer. Children exposed to SHS are at increased risk for sudden infant death syndrome, acute respiratory infections, middle ear disease, more severe asthma, respiratory symptoms, and slowed lung growth.

There is no risk-free level of exposure to SHS, and only eliminating smoking in indoor spaces fully protects people who don't smoke from exposure to SHS. Not everyone in the U.S. is equally protected by 100% smokefree laws; currently, about 37% of the U.S. population is not protected at the state or community level. Smokefree laws not only protect people from SHS exposure, but also reduce youth initiation and encourage people who smoke to quit.

Measure

The percentage of indoor workers reporting a smokefree worksite rule (i.e., no smoking allowed in any indoor public/common or work areas).

The percentage of the population protected by local and state smokefree indoor air laws covering workplaces, restaurants, and bars. This measure draws on data collected and analyzed by the Americans for Nonsmokers' Rights Foundation. Use of this information allows the National Cancer Institute (NCI) to include both local and state laws in its assessments.

Healthy People 2030 Target

- Increase the proportion of worksites that are covered by indoor worksite policies that prohibit smoking (Developmental Objective)
- Increase the number of states, territories, and DC that prohibit smoking in worksites, restaurants, and bars to 58.

While the Healthy People 2030 (HP2030) developmental objective focuses on the proportion of worksites covered by indoor worksite policies that prohibit smoking, data presented in the Cancer Trends Progress Report focus on the proportion of indoor workers reporting that smoking is prohibited in all indoor public/common or work areas. Therefore, the data presented in this report cannot be directly compared to the HP2030 developmental objective. [Healthy People 2030](#) is a set of goals set forth by the Department of Health and Human Services.

Data Source

National Cancer Institute. [Tobacco Use Supplement to the Current Population Survey for "work place smokefree policies" measures](#).

Americans for Nonsmokers Right Foundation. "Percentage of the population covered by local and/or state 100% smokefree air laws".

Trends and Most Recent Estimates

Smokefree Workplace Rules

By Sex

Percentage of workers aged 18 years and older reporting a smokefree worksite rule by sex, 1992-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2018 to 2019)	
		Percent of workers	95% Confidence Interval
	Both Sexes	80.4	79.9 - 80.8
	Male	77.9	77.2 - 78.6
	Female	82.7	82.1 - 83.2

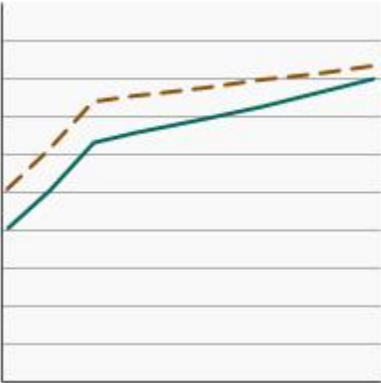
By Race/Ethnicity

Percentage of workers aged 18 years and older reporting a smokefree worksite rule by race/ethnicity, 1992-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2018 to 2019)	
		Percent of workers	95% Confidence Interval
	All Races	80.4	79.9 - 80.8
	Non-Hispanic White	82.4	81.9 - 82.9
	Non-Hispanic Black	79.0	77.6 - 80.5
	Hispanic	73.8	72.2 - 75.4

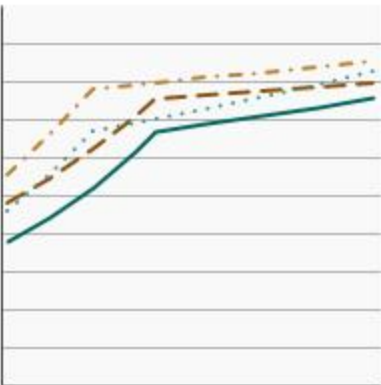
By Age

Percentage of workers aged 18 years and older reporting a smokefree worksite rule by age, 1992-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2018 to 2019)	
		Percent of workers	95% Confidence Interval
	Ages 18-24	76.2	74.5 - 77.8
	Ages 25+	81.0	80.6 - 81.5

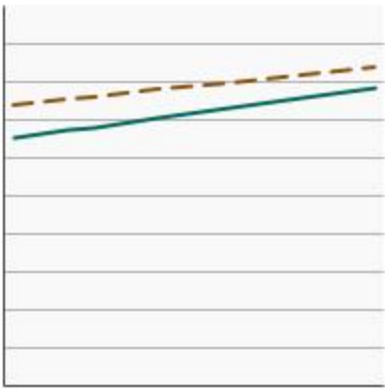
By Sex and Age

Percentage of workers aged 18 years and older reporting a smokefree worksite rule by sex and age, 1992-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2018 to 2019)	
		Percent of workers	95% Confidence Interval
	Males, ages 18-24	73.7	71.1 - 76.2
	Males, ages 25+	78.6	77.9 - 79.3
	Females, ages 18-24	78.4	76.1 - 80.6
	Females, ages 25+	83.3	82.7 - 83.9

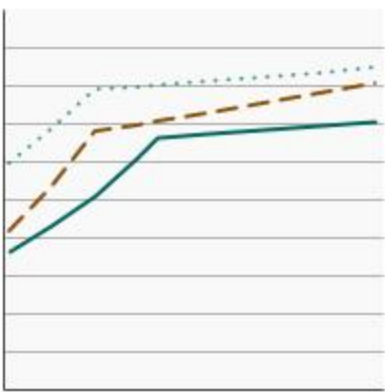
By Poverty Income Level

Percentage of workers aged 18 years and older reporting a smokefree worksite rule by poverty income level, 1998-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2018 to 2019)	
		Percent of workers	95% Confidence Interval
	<u>< 200% of the federal poverty level</u>	74.9	73.7 - 76.1
	<u>>= 200% of the federal poverty level</u>	81.4	80.9 - 81.9

By Education Level

Percentage of workers aged 25 years and older reporting a smokefree worksite rule by highest level of education obtained, 1992-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2018 to 2019)	
		Percent of workers	95% Confidence Interval
	<u>Less than High School</u>	67.9	64.9 - 70.7
	<u>High School</u>	77.2	76.1 - 78.2
	<u>Greater than High School</u>	82.9	82.4 - 83.4

Indoor Air Laws

Percentage of population protected by local and state 100% smokefree indoor air laws, 1998-2022

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2022)	
		Percent of population	95% Confidence Interval
	Workplaces	77.4	Not available
	Restaurants	78.1	Not available
	Bars	66.7	Not available

Cancers Related to Smokefree Workplace Rules and Laws

Statistical summaries from NCI's SEER Cancer Stat Fact Sheets:

- [Lung and Bronchus](#)

Additional Information on Smokefree Workplace Rules and Laws

General Public Resources

- [Secondhand Smoke Exposure](#). National Cancer Institute.
- [Secondhand Smoke and Cancer](#). National Cancer Institute.
- [Health Risks of Secondhand Smoke](#). American Cancer Society.
- [The Effects of Secondhand Smoke on Worker Health](#). American Cancer Society.
- [Secondhand Smoke: Worker Health](#). American Nonsmokers' Rights Foundation.
- [Cancer Health Effects](#). U.S. Department of Health and Human Services, National Toxicology Program.
- [Secondhand Smoke and What it Means to You](#). U.S. Department of Health and Human Services.

Public Health Resources

- [Tobacco Control Evidence-Based Programs Listing](#). National Cancer Institute.
- [Surgeon General's Reports on Smoking and Tobacco Use](#). Centers for Disease Control and Prevention.
 - [50 Years of Progress: A Report of the Surgeon General, 2014](#). U.S. Department of Health and Human Services.
 - [The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General, 2006](#). U.S. Department of Health and Human Services.
- [American Nonsmokers' Rights Foundation](#).
 - [Overview List – How many smokefree laws?](#) American Nonsmokers' Rights Foundation.
 - [Summary of 100% Smokefree State Laws and Protected by 100% U.S. Smokefree Laws](#)(<http://no-smoke.org/wp-content/uploads/pdf/SummaryUSPopList.pdf>). American Nonsmokers' Rights Foundation.
 - [U.S. 100% Smokefree Laws in Non-Hospitality Workplaces, Restaurants, and Bars](#)(<http://no-smoke.org/wp-content/uploads/pdf/WRBLawsMap.pdf>). American Nonsmokers' Rights Foundation.

- [State and local comprehensive smoke-free laws for worksites, restaurants, and bars—United States, 2015.](#) Centers for Disease Control and Prevention. MMWR 2016;65(24):623-626.
- [STATE System Smokefree Indoor Air Fact Sheet.](#) Centers for Disease Control and Prevention.
- [Stuck in Neutral: Stalled Progress in Statewide Comprehensive Smoke-Free Laws and Cigarette Excise Taxes, United States, 2000–2014.](#) Centers for Disease Control and Prevention.

Scientific Reports

- [Changes in self-reported smokefree workplace policy coverage among employed adults-United States, 2003 and 2010-2011.](#) Babb S, Liu B, Kenemer B Et al. Nicotine Tob Res 2017; 00(00): 1-9.
- [Smoke-free and tobacco-free colleges and universities in the United States.](#) Blake KD, Klein AL, Walpert L, et al. Tob Control. 2020;29(3):289-294.
- [Uneven Access to Smoke-Free Laws and Policies and Its Effect on Health Equity in the United States: 2000–2019.](#) Hafez AY, Gonzalez M, Kulik MC, Vijayaraghavan M, Glantz SA. Am J Public Health. 2019;109(11):1568-1575.
- [Occupation and workplace policies predict smoking behaviors: analysis of national data from the current population survey.](#) Ham DC, Przybeck T, Strickland JR, et al. J Occup Environ Med 2011;53(11):1337–45.
- [Small Area Estimation of Smoke-free Workplace Policies and Home Rules in U.S. Counties.](#) Liu B, Dompreh I, Hartman AM. Nicotine Tob Res. 2021; [Epub ahead of print]
- [Workplace Smoke-Free Policies and Cessation Programs Among U.S. Working Adults.](#) Syamlal G, King BA, Mazurek JM. Am J Prev Med. 2019 Apr;56(4):548-562.
- [State and Local Comprehensive Smoke-Free Laws for Worksites, Restaurants, and Bars — United States, 2015.](#) Tynan MA, Holmes CB, Promoff G, et al. MMWR. 2016;65:623–626.

Statistics

- [Tobacco Use Supplement to the Current Population Survey.](#) National Cancer Institute.
- [Cancer Facts and Figures.](#) American Cancer Society.
- [National Health and Nutrition Examination Survey.](#) Centers for Disease Control and Prevention, National Center for Health Statistics.
- [State Tobacco Activities Tracking and Evaluation System.](#) Centers for Disease Control and Prevention.

Cancer Trends Progress Report

Online Summary of Trends in US Cancer Control Measures

Diet and Alcohol

Considerable evidence indicates that maintaining a healthy lifestyle has the potential to reduce cancer-related morbidity. Up to one-third of cancer cases in the United States are related to poor nutrition, physical inactivity, and/or excess body weight or obesity, and sleep, and thus could be prevented.

- [Healthy Eating Index](#)
- [Fruit and Vegetable Consumption](#)
- [Red Meat and Processed Meat Consumption](#)

- [Fat Consumption](#)
- [Alcohol Consumption](#)

Cancer Trends Progress Report

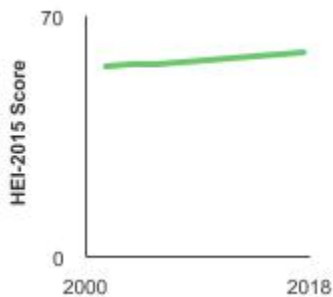
Online Summary of Trends in US Cancer Control Measures

Healthy Eating Index

Data Up to Date as of:

August 2023

From 2017 to 2018, people aged 2 years and older scored 57.4 on the Healthy Eating Index score range of 0 - 100.



Background

Poor diet quality is associated with an increased risk of cancer. Measuring total diet quality is complex, so some analyses have focused only on individual dietary constituents. However, such a reductionist approach may provide limited information, so a more integrated approach that captures the total diet, or dietary pattern, is useful. The Healthy Eating Index (HEI) is a measure of overall diet quality, independent of diet quantity, that measures alignment with the Dietary Guidelines for Americans.

Measure

The Healthy Eating Index (HEI) provides a total diet score on a scale from 0 to 100 points. The HEI is a scoring metric that can be used to determine overall diet quality as well as the quality of several dietary components.

[View more information about the HEI.](#)

Healthy People 2030 Target

- There is no Healthy People target for the Healthy Eating Index.

[Healthy People 2030](#) is a set of goals set forth by the Department of Health and Human Services.

Data Source

Centers for Disease Control and Prevention, National Center for Health Statistics, [National Health and Nutrition Examination Survey\(link is external\)](#), 1994–2018.

Trends and Most Recent Estimates

By Sex

Average Healthy Eating Index score among persons aged 2 years and older by sex, 2001-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		HEI-2015 Score	95% Confidence Interval
	Both Sexes	57.4	55.6 - 59.3
	Male	55.8	53.9 - 57.7
	Female	59.5	57.5 - 61.4

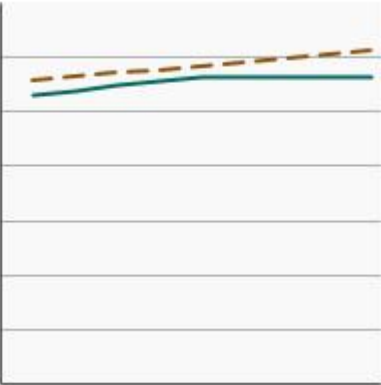
By Race/Ethnicity

Average Healthy Eating Index score among persons aged 2 years and older by race/ethnicity, 2001-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		HEI-2015 Score	95% Confidence Interval
	All Races/Ethnicities	57.4	55.6 - 59.3
	Non-Hispanic White	56.1	53.3 - 58.9
	Non-Hispanic Black	55.1	52.1 - 57.9
	Hispanic	59.9	57.9 - 61.8

By Poverty Income Level

Average Healthy Eating Index score among persons aged 2 years and older by poverty income level, 2001-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		HEI-2015 Score	95% Confidence Interval
	<200% of Federal Poverty Level	56.1	53.7 - 58.6
	>=200% of Federal Poverty Level	58.3	56.3 - 60.4

Cancers Related to Healthy Eating Index

Statistical summaries from NCI's SEER Cancer Stat Fact Sheets:

- [Colon and Rectum](#)
- [Esophagus](#)
- [Larynx](#)
- [Lung and Bronchus](#)

- [Oral Cavity and Pharynx](#)
- [Pancreas](#)
- [Prostate](#)
- [Stomach](#)

Additional Information on Healthy Eating Index

General Public Resources

- [ACS Guidelines on Nutrition and Physical Activity for Cancer Prevention](#). American Cancer Society.
- [Diet and Physical Activity: What's the Cancer Connection?](#) American Cancer Society.
- [Cancer Prevention and Control: Healthy Choices](#). Centers for Disease Control and Prevention.
- [Overview & Background of Healthy Eating Index \(HEI\)](#). Epidemiology and Genomics Research Program.
- [Healthy Eating Index](#). Food and Nutrition Service.
- [National Collaborative on Childhood Obesity Research | Healthy Eating Index](#). National Collaborative on Childhood Obesity Research.

Public Health Resources

- [Diet/Nutrition Evidence-Based Programs Listing](#). National Cancer Institute.
- [Nutrition, Physical Activity, and Obesity](#). Centers for Disease Control and Prevention. State, Tribal, Local, and Territorial Public Health Professionals Gateway.

Scientific Reports

- [American Cancer Society guideline for diet and physical activity for cancer prevention](#). Rock CL, Thomson C, Gansler T, et al. CA Cancer J Clin. 2020; 70(4): 245-271.

- [2020-2025 Dietary Guidelines for Americans](#). U.S. Department of Agriculture, and U.S. Department of Health and Human Services.
- [Continuous Update Project](#). World Cancer Research Fund International.
- [Diet, Nutrition, Physical Activity, and Cancer: a Global Perspective](#). World Cancer Research Fund, and the American Institute for Cancer Research.

Statistics

- [Usual Dietary Intakes: Food Intakes, U.S. Population, 2007–10](#). National Cancer Institute.
- [What We Eat in America](#). U.S. Department of Agriculture.

Cancer Trends Progress Report

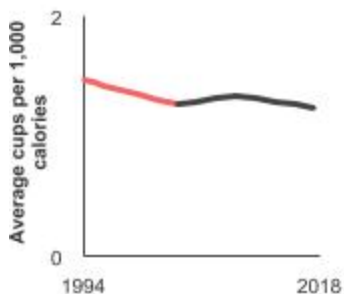
Online Summary of Trends in US Cancer Control Measures

Fruit and Vegetable Consumption

Data Up to Date as of:

August 2023

From 2017 to 2018, people aged 2 years and older consumed 1.2 cups of fruit and vegetables per 1,000 calories.



Background

People whose diets are rich in plant foods such as fruits and vegetables have a lower risk of getting cancers of the mouth, pharynx, larynx, esophagus, stomach, and lung, and some evidence suggests that maintaining a diet rich in plant foods also lowers the risk of cancers of the colon, pancreas, and prostate. This diet also reduces the risk of diabetes, heart disease, and hypertension, helps to reduce calorie intake, and may help to control weight.

To help prevent the aforementioned cancers and other chronic diseases, experts recommend the daily consumption of 2 to 6.5 cups of fruits and vegetables, depending on one's energy needs. This includes 1 to 2.5 cups of fruits and 1 to 4 cups of vegetables, with special emphasis on dark green and orange vegetables and legumes. There is no evidence that the popular white potato protects against cancer.

Measure

Average daily cup equivalents per 1,000 calories of fruits and vegetables for people aged 2 years and older. This measure includes fruits and vegetables from all sources.

Healthy People 2030 Target

- Increase the consumption of fruits by persons aged 2 years and over to 0.56 cup equivalents of fruit per 1,000 calories.
- Increase the consumption of total vegetables by persons aged 2 years and over to 0.84 cup equivalents of total vegetables per 1,000 calories.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Note: Goals are indicated as blue line on Detailed Trend Graphs.

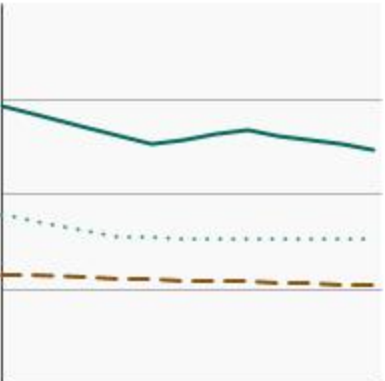
Data Source

U.S. Department of Agriculture, Agricultural Research Service, Beltsville Human Nutrition Research Center, Food Surveys Research Group (Beltsville, MD). Continuing Survey of Food Intakes by Individuals 1994-96, 1998. Centers for Disease Control and Prevention, National Center for Health Statistics, National Health and Nutrition Examination Survey, 1994-2018.

Trends and Most Recent Estimates

Overall Comparison

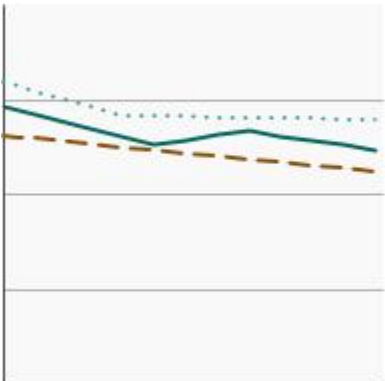
Average cups of fruit and vegetables consumed per 1,000 calories by individuals aged 2 years and older, 1994-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Average cups per 1,000 calories	95% Confidence Interval
	Fruit and Vegetables Combined	1.2	1.2 - 1.3
	Fruit	0.5	0.5 - 0.5
	Vegetables	0.7	0.7 - 0.8

Fruit and Vegetables Combined

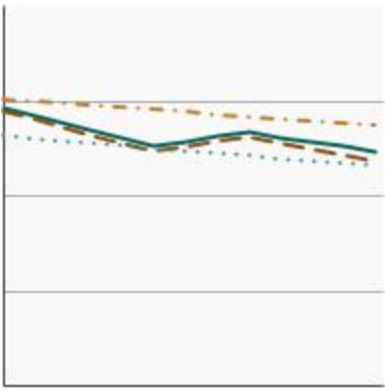
By Sex

Average cups of fruit and vegetables consumed per 1,000 calories by individuals aged 2 years and older by sex, 1994-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Average cups per 1,000 calories	95% Confidence Interval
	Both Sexes	1.2	1.2 - 1.3
	Male	1.1	1.0 - 1.2
	Female	1.4	1.3 - 1.4

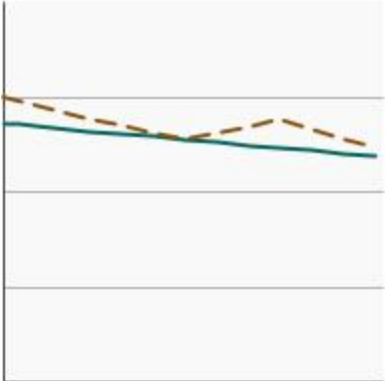
By Race/Ethnicity

Average cups of fruit and vegetables consumed per 1,000 calories by individuals aged 2 years and older by race/ethnicity, 1994-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Average cups per 1,000 calories	95% Confidence Interval
	All Races/Ethnicities	1.2	1.2 - 1.3
	Non-Hispanic White	1.2	1.1 - 1.2
	Non-Hispanic Black	1.2	1.1 - 1.3
	Hispanic	1.5	1.3 - 1.6

By Poverty Income Level

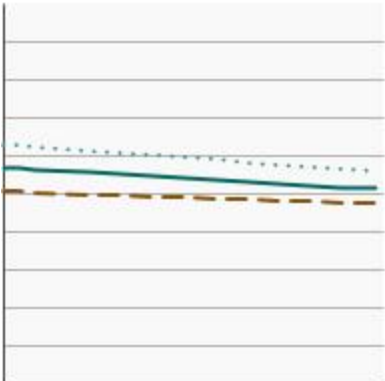
Average cups of fruit and vegetables consumed per 1,000 calories by individuals aged 2 years and older by poverty income level, 1994-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Average cups per 1,000 calories	95% Confidence Interval
	<200% of Federal Poverty Level	1.2	1.1 - 1.3
	>=200% of Federal Poverty Level	1.3	1.2 - 1.3

Fruit

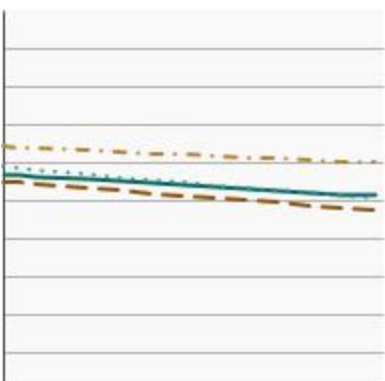
By Sex

Average cups of fruit consumed per 1,000 calories by individuals aged 2 years and older by sex, 1994-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Average cups per 1,000 calories	95% Confidence Interval
	Both Sexes	0.5	0.5 - 0.5
	Male	0.4	0.4 - 0.5
	Female	0.5	0.5 - 0.6

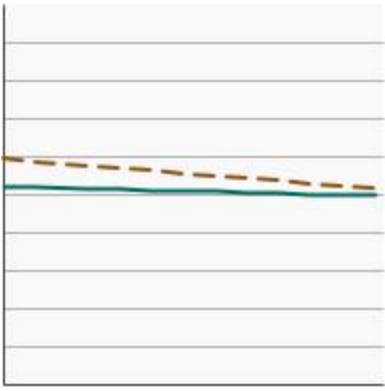
By Race/Ethnicity

Average cups of fruit consumed per 1,000 calories by individuals aged 2 years and older by race/ethnicity, 1994-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Average cups per 1,000 calories	95% Confidence Interval
	All Races/Ethnicities	0.5	0.5 - 0.5
	Non-Hispanic White	0.4	0.4 - 0.5
	Non-Hispanic Black	0.5	0.4 - 0.6
	Hispanic	0.6	0.6 - 0.7

By Poverty Income Level

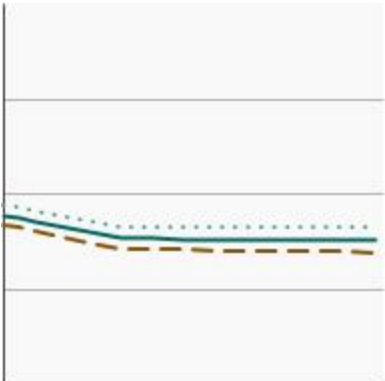
Average cups of fruit consumed per 1,000 calories by individuals aged 2 years and older by poverty income level, 1994-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Average cups per 1,000 calories	95% Confidence Interval
	<u><200% of Federal Poverty Level</u>	0.5	0.4 - 0.5
	<u>>=200% of Federal Poverty Level</u>	0.5	0.5 - 0.5

Vegetables

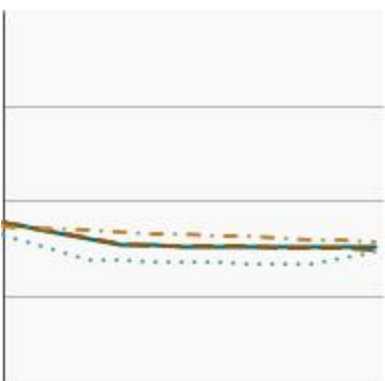
By Sex

Average cups of vegetables consumed per 1,000 calories by individuals aged 2 years and older by sex, 1994-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Average cups per 1,000 calories	95% Confidence Interval
	Both Sexes	0.7	0.7 - 0.8
	Male	0.7	0.6 - 0.7
	Female	0.8	0.8 - 0.9

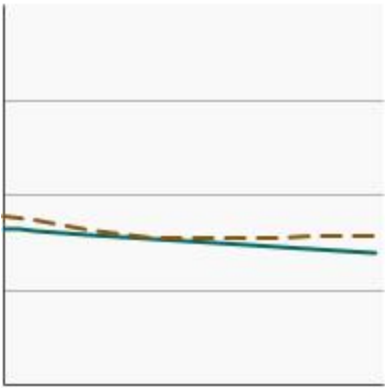
By Race/Ethnicity

Average cups of vegetables consumed per 1,000 calories by individuals aged 2 years and older by race/ethnicity, 1994-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Average cups per 1,000 calories	95% Confidence Interval
	All Races/Ethnicities	0.7	0.7 - 0.8
	Non-Hispanic White	0.7	0.7 - 0.8
	Non-Hispanic Black	0.7	0.6 - 0.8
	Hispanic	0.8	0.8 - 0.9

By Poverty Income Level

Average cups of vegetables consumed per 1,000 calories by individuals aged 2 years and older by poverty income level, 1994-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Average cups per 1,000 calories	95% Confidence Interval
	<u><200% of Federal Poverty Level</u>	0.7	0.7 - 0.8
	<u>>=200% of Federal Poverty Level</u>	0.8	0.7 - 0.8

Cancers Related to Fruit and Vegetable Consumption

Statistical summaries from NCI's SEER Cancer Stat Fact Sheets:

- [Colon and Rectum](#)
- [Esophagus](#)
- [Larynx](#)
- [Lung and Bronchus](#)

- [Oral Cavity and Pharynx](#)
- [Pancreas](#)
- [Prostate](#)
- [Stomach](#)

Additional Information on Fruit and Vegetable Consumption

General Public Resources

- [ACS Guidelines on Nutrition and Physical Activity for Cancer Prevention](#). American Cancer Society.
- [Diet and Physical Activity: What's the Cancer Connection?](#) American Cancer Society.
- [Cancer Prevention and Control: Healthy Choices](#). Centers for Disease Control and Prevention.

Public Health Resources

- [Diet/Nutrition Evidence-Based Programs Listing](#). National Cancer Institute.
- [Nutrition, Physical Activity, and Obesity](#). Centers for Disease Control and Prevention. State, Tribal, Local, and Territorial Public Health Professionals Gateway.

Scientific Reports

- [American Cancer Society guideline for diet and physical activity for cancer prevention](#). Rock CL, Thomson C, Gansler T, et al. CA Cancer J Clin. 2020; 70(4): 245-271.
- [2020-2025 Dietary Guidelines for Americans](#). U.S. Department of Agriculture, and U.S. Department of Health and Human Services.
- [Continuous Update Project](#). World Cancer Research Fund International.
- [Diet, Nutrition, Physical Activity, and Cancer: a Global Perspective](#). World Cancer Research Fund, and the American Institute for Cancer Research.

Statistics

- [Usual Dietary Intakes: Food Intakes, U.S. Population, 2007–10](#). National Cancer Institute.
- [What We Eat in America](#). U.S. Department of Agriculture.

Cancer Trends Progress Report

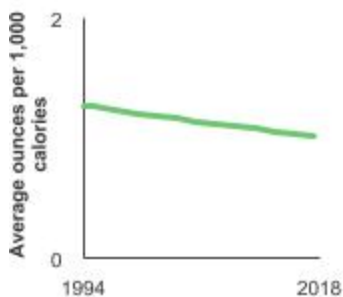
Online Summary of Trends in US Cancer Control Measures

Red Meat and Processed Meat Consumption

Data Up to Date as of:

August 2023

From 2017 to 2018, people aged 2 years and older consumed, on average, 1.0 ounces of red meat per 1,000 calories.



Background

Red meat is associated with an increased risk of colon and rectum cancer, and evidence also suggests it is associated with some other cancers, such as prostate and pancreatic cancer. Examples of red meat include beef, pork, and lamb.

Processed meats are red meat and poultry products that have been preserved by smoking, curing, salting, and/or the addition of chemical preservatives. Examples of processed meat include hot dogs, sausages, bacon, and luncheon meats. Processed meat is associated with an increased risk of colorectal cancer, and evidence also suggests it is associated with stomach cancer.

However, more research is needed to understand how red meat and processed meats influence cancer risk. The increased risk may be explained by the iron and fat content in red meat, and/or the salt and nitrates/nitrites in processed meats. Additionally, when meat is cooked at high temperatures, substances are formed that may cause cancer.

Measure

Average daily ounce equivalents of total red meat (includes processed and unprocessed red meat) and processed red meat and poultry (includes processed red meat and processed poultry) per 1000 calories for people aged 2 years and older.

The Standardized Method for Estimating Intakes of Processed Red Meat and Processed Poultry used to estimate total red meat intake in the U.S. population was automated beginning with NHANES 2007-2008. Organ meats were excluded when the method was automated, based on the definition of red meat in the Dietary Guidelines for Americans. Organ meat intake in the U.S. population is low and therefore did not meaningfully influence total red meat intake estimates when excluded.

Healthy People 2030 Target

- There is no Healthy People target for red meat and processed meat consumption.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Data Source

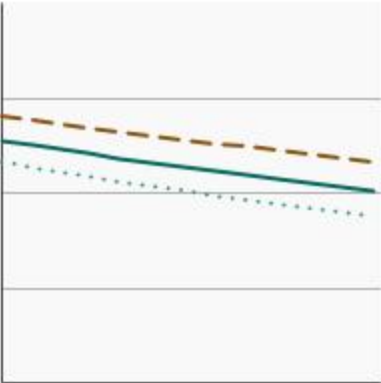
U.S. Department of Agriculture, Agricultural Research Service, Beltsville Human Nutrition Research Center, Food Surveys Research Group (Beltsville, MD). Continuing Survey of Food Intakes by Individuals 1994-96, 1998 Centers for Disease Control and Prevention, National Center for Health Statistics, National Health and Nutrition Examination Survey, 1999–2018.

Trends and Most Recent Estimates

Total Red Meat

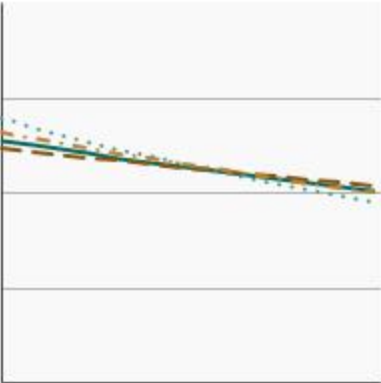
By Sex

Average ounces of total red meat consumed per 1,000 calories by individuals aged 2 years and older by sex, 1994-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Average ounces per 1,000 calories	95% Confidence Interval
	Both Sexes	1.0	0.9 - 1.1
	Male	1.2	1.1 - 1.3
	Female	0.8	0.8 - 0.9

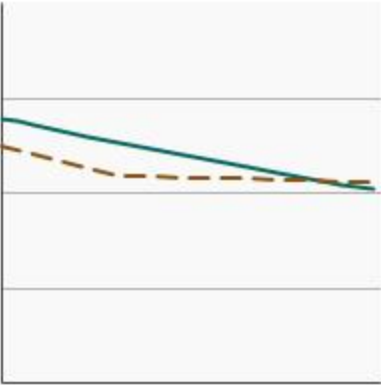
By Race/Ethnicity

Average ounces of total red meat consumed per 1,000 calories by individuals aged 2 years and older by race/ethnicity, 1994-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Average ounces per 1,000 calories	95% Confidence Interval
	All Races/Ethnicities	1.0	0.9 - 1.1
	Non-Hispanic White	1.0	0.9 - 1.2
	Non-Hispanic Black	0.9	0.8 - 0.9
	Hispanic	1.0	0.9 - 1.1

By Poverty Income Level

Average ounces of total red meat consumed per 1,000 calories by individuals aged 2 years and older by poverty income level, 1994-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Average ounces per 1,000 calories	95% Confidence Interval
	<u><200% of Federal Poverty Level</u>	1.0	0.9 - 1.1
	<u>>=200% of Federal Poverty Level</u>	1.0	0.9 - 1.1

Processed Red Meat and Poultry

By Sex

Average ounces of processed red meat and poultry consumed per 1,000 calories by individuals aged 2 years and older by sex, 2005-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Average ounces per 1,000 calories	95% Confidence Interval
	Both Sexes	0.4	0.4 - 0.5
	Male	0.5	0.5 - 0.6
	Female	0.4	0.3 - 0.4

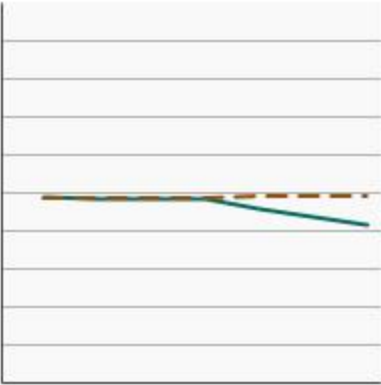
By Race/Ethnicity

Average ounces of processed red meat and poultry consumed per 1,000 calories by individuals aged 2 years and older by race/ethnicity, 2005-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Average ounces per 1,000 calories	95% Confidence Interval
	All Races/Ethnicities	0.4	0.4 - 0.5
	Non-Hispanic White	0.5	0.4 - 0.6
	Non-Hispanic Black	0.5	0.4 - 0.6
	Hispanic	0.3	0.3 - 0.4

By Poverty Income Level

Average ounces of processed red meat and poultry consumed per 1,000 calories by individuals aged 2 years and older by poverty income level, 2005-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Average ounces per 1,000 calories	95% Confidence Interval
	<u><200% of Federal Poverty Level</u>	0.4	0.4 - 0.5
	<u>>=200% of Federal Poverty Level</u>	0.5	0.4 - 0.5

Cancers Related to Red Meat and Processed Meat Consumption

Statistical summaries from NCI's SEER Cancer Stat Fact Sheets:

- [Colon and Rectum](#)
- [Prostate](#)
- [Pancreatic](#)
- [Stomach](#)

Additional Information on Red Meat and Processed Meat Consumption

General Public Resources

- [Chemicals in Meat Cooked at High Temperatures and Cancer Risk](#). National Cancer Institute.
- [ACS Guidelines on Nutrition and Physical Activity for Cancer Prevention](#). American Cancer Society.
- [Diet and Physical Activity: What's the Cancer Connection?](#) American Cancer Society.
- [Cancer Prevention and Control: Healthy Choices](#). Centers for Disease Control and Prevention.

Public Health Resources

- [Diet/Nutrition Evidence-Based Programs Listing](#). National Cancer Institute.
- [Carcinogenicity of Consumption of Red and Processed Meat](#). The Lancet Oncology.

Scientific Reports

- [A large prospective study of meat consumption and colorectal cancer risk: an investigation of potential mechanisms underlying this association](#). Cross AJ, Ferrucci LM, Risch A. Cancer Res 2010;70:2406.
- [American Cancer Society guideline for diet and physical activity for cancer prevention](#). Rock CL, Thomson C, Gansler T, et al. CA Cancer J Clin. 2020; 70(4): 245-271.
- [2020-2025 Dietary Guidelines for Americans](#). U.S. Department of Agriculture, and U.S. Department of Health and Human Services.
- [Continuous Update Project](#). World Cancer Research Fund International.
- [Diet, Nutrition, Physical Activity, and Cancer: a Global Perspective](#). World Cancer Research Fund, and the American Institute for Cancer Research.
- [Diet, nutrition and the prevention of chronic diseases](#). World Health Organization.

Statistics

- [Usual Dietary Intakes: Food Intakes, U.S. Population, 2007–10](#). National Cancer Institute.
- [What We Eat in America](#). U.S. Department of Agriculture.

Cancer Trends Progress Report

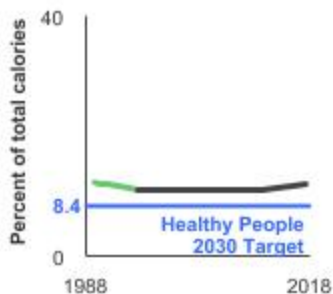
Online Summary of Trends in US Cancer Control Measures

Fat Consumption

Data Up to Date as of:

August 2023

From 2017 to 2018, saturated fat made up 11.8% of the calories people consumed.



Background

Some studies suggest that high-fat diets or high intakes of different types of fat in the diet may be linked to several cancers, including colon, lung, and postmenopausal breast cancer, as well as heart disease and other chronic diseases.

More research is needed to better understand which types of fat should be avoided and how much of each type alters cancer risk. Although monounsaturated and polyunsaturated fatty acids have been studied for a number of years, their effects are still unclear. More recent research on the effects of trans fatty acids also has yet to reach definitive conclusions.

The 2015-2020 Dietary Guidelines for Americans, issued by the U.S. Department of Agriculture and the U.S. Department of Health and Human Services, recommend getting less than 10 percent of calories from saturated fatty acids and keeping trans fatty acid consumption as low as possible for general health and the prevention of chronic disease, including cancer and heart disease. The guidelines also recommend keeping total fat intake between 20 and 35 percent of calories for adults, with most fats coming from sources of polyunsaturated and monounsaturated fatty acids, such as fish, nuts, and vegetable oils.

Measure

Intakes of total fat, and of the major fatty acids - saturated, monounsaturated, and polyunsaturated - as a percentage of total calories.

Healthy People 2030 Target

- Reduce the consumption of saturated fat by persons aged 2 years and over to 8.4 percent of calories consumed.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Note: Goals are indicated as blue line on Detailed Trend Graphs.

Data Source

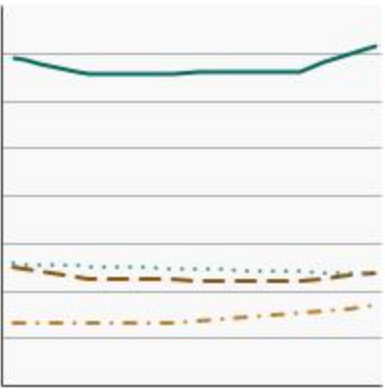
U.S. Department of Agriculture, Agricultural Research Service, Beltsville Human Nutrition Research Center, Food Surveys Research Group (Beltsville, MD). Continuing Survey of Food Intakes by Individuals 1989-1991, 1994-96, 1998

Centers for Disease Control and Prevention, National Center for Health Statistics, National Health and Nutrition Examination Survey, 1999-2018.

Trends and Most Recent Estimates

Fat Intake Comparison

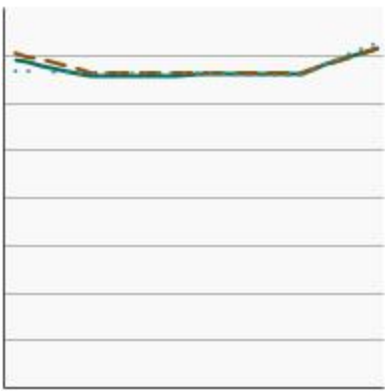
Fat intake as a percentage of total calories, 1989-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of total calories	95% Confidence Interval
	<u>Total</u>	35.8	35.4 - 36.2
	<u>Saturated Fat</u>	11.8	11.6 - 12.0
	<u>Monounsaturated Fat</u>	12.1	11.9 - 12.3
	<u>Polyunsaturated Fat</u>	8.4	8.2 - 8.6

Total Fat Intake

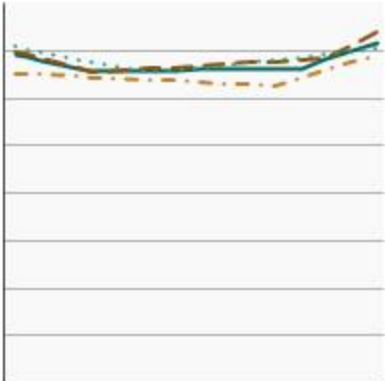
By Sex

Total fat intake as a percentage of total calories by sex, 1989-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of total calories	95% Confidence Interval
	<u>Both Sexes</u>	35.8	35.4 - 36.2
	<u>Male</u>	35.6	35.1 - 36.2
	<u>Female</u>	36.0	35.4 - 36.5

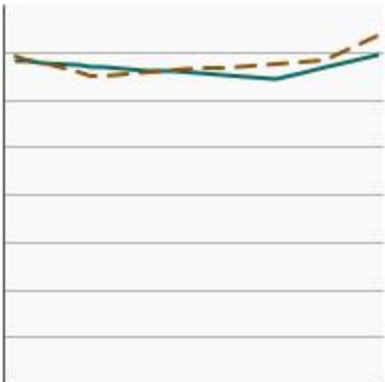
By Race/Ethnicity

Total fat intake as a percentage of total calories by race/ethnicity, 1989-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of total calories	95% Confidence Interval
	All Races/Ethnicities	35.8	35.4 - 36.2
	Non-Hispanic White	36.6	36.0 - 37.2
	Non-Hispanic Black	35.8	35.0 - 36.7
	Hispanic	33.8	33.1 - 34.4

By Poverty Income Level

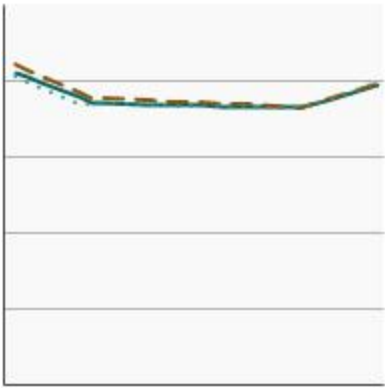
Total fat intake as a percentage of total calories by poverty income level, 1989-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of total calories	95% Confidence Interval
	<200% of Federal Poverty Level	34.8	34.4 - 35.2
	>=200% of Federal Poverty Level	36.4	35.9 - 37.0

Saturated Fat Intake

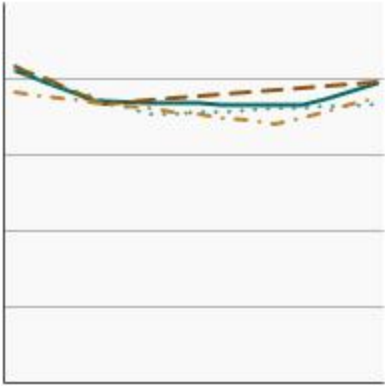
By Sex

Saturated fat intake as a percentage of total calories by sex, 1989-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of total calories	95% Confidence Interval
	Both Sexes	11.8	11.6 - 12.0
	Male	11.8	11.6 - 12.0
	Female	11.8	11.6 - 12.1

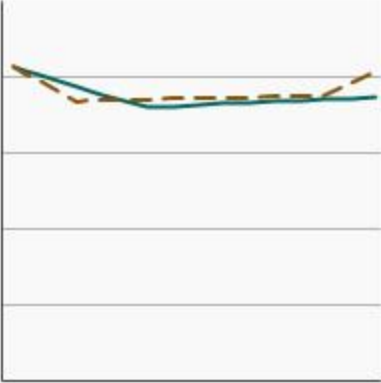
By Race/Ethnicity

Saturated fat intake as a percentage of total calories by race/ethnicity, 1989-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of total calories	95% Confidence Interval
	All Races/Ethnicities	11.8	11.6 - 12.0
	Non-Hispanic White	12.3	12.0 - 12.6
	Non-Hispanic Black	11.2	10.9 - 11.6
	Hispanic	10.9	10.6 - 11.1

By Poverty Income Level

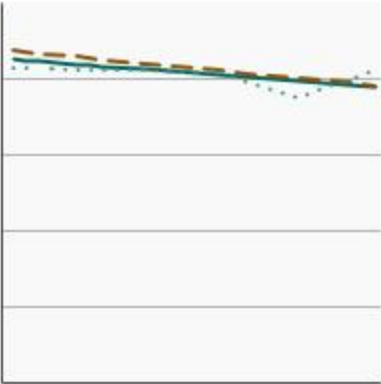
Saturated fat intake as a percentage of total calories by poverty income level, 1989-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of total calories	95% Confidence Interval
	<u><200% of Federal Poverty Level</u>	11.4	11.0 - 11.7
	<u>>=200% of Federal Poverty Level</u>	12.1	11.9 - 12.3

Monosaturated Fat Intake

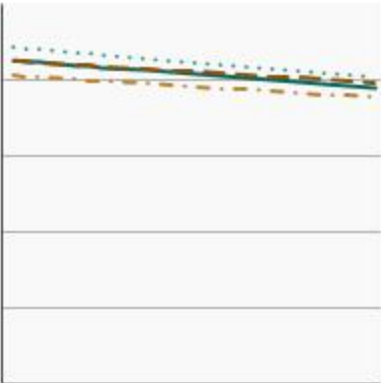
By Sex

Monosaturated fat intake as a percentage of total calories by sex, 1989-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of total calories	95% Confidence Interval
	Both Sexes	12.1	11.9 - 12.3
	Male	12.1	11.8 - 12.3
	Female	12.1	11.8 - 12.3

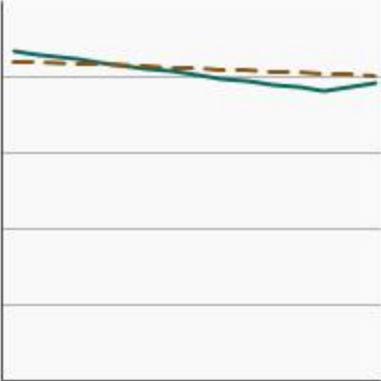
By Race/Ethnicity

Monosaturated fat intake as a percentage of total calories by race/ethnicity, 1989-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of total calories	95% Confidence Interval
	All Races/Ethnicities	12.1	11.9 - 12.3
	Non-Hispanic White	12.3	12.1 - 12.6
	Non-Hispanic Black	12.2	11.9 - 12.5
	Hispanic	11.3	11.0 - 11.6

By Poverty Income Level

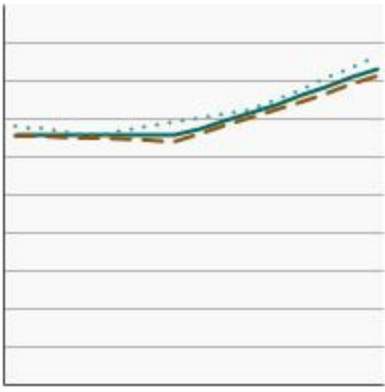
Monosaturated fat intake as a percentage of total calories by poverty income level, 1989-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of total calories	95% Confidence Interval
	<u><200% of Federal Poverty Level</u>	11.7	11.5 - 11.9
	<u>>=200% of Federal Poverty Level</u>	12.3	12.1 - 12.6

Polyunsaturated Fat Intake

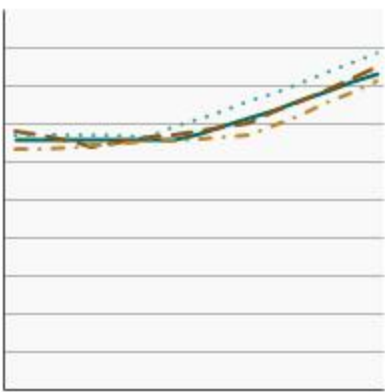
By Sex

Polyunsaturated fat intake as a percentage of total calories by sex, 1989-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of total calories	95% Confidence Interval
	Both Sexes	8.4	8.2 - 8.6
	Male	8.2	7.9 - 8.5
	Female	8.5	8.3 - 8.8

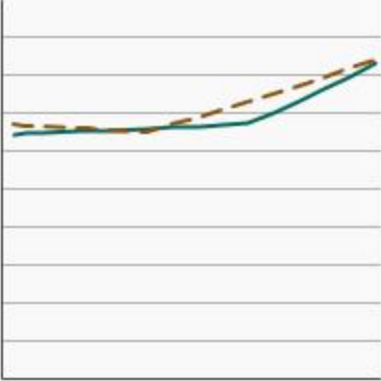
By Race/Ethnicity

Polyunsaturated fat intake as a percentage of total calories by race/ethnicity, 1989-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of total calories	95% Confidence Interval
	All Races/Ethnicities	8.4	8.2 - 8.6
	Non-Hispanic White	8.4	8.1 - 8.7
	Non-Hispanic Black	8.9	8.7 - 9.2
	Hispanic	8.0	7.8 - 8.2

By Poverty Income Level

Polyunsaturated fat intake as a percentage of total calories by poverty income level, 1989-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of total calories	95% Confidence Interval
	<u><200% of Federal Poverty Level</u>	8.2	8.0 - 8.5
	<u>>=200% of Federal Poverty Level</u>	8.4	8.2 - 8.7

Cancers Related to Fat Consumption

Statistical summaries from NCI's SEER Cancer Stat Fact Sheets:

- [Breast](#)
- [Colon and Rectum](#)
- [Lung and Bronchus](#)

Additional Information on Fat Consumption

General Public Resources

- [Chartbook on Healthy Living](#). Agency for Healthcare Research and Quality.
- [ACS Guidelines on Nutrition and Physical Activity for Cancer Prevention](#). American Cancer Society.
- [Diet and Physical Activity: What's the Cancer Connection?](#) American Cancer Society.
- [Cancer Prevention and Control: Healthy Choices](#). Centers for Disease Control and Prevention.
- [Nutrition, Physical Activity, and Obesity](#). Centers for Disease Control and Prevention.
- [What We Eat in America](#). U.S. Department of Agriculture.

Public Health Resources

- [Diet/Nutrition Evidence-Based Programs Listing](#). National Cancer Institute.
- [Nutrition, Physical Activity, and Obesity](#). Centers for Disease Control and Prevention. State, Tribal, Local, and Territorial Public Health Professionals Gateway.

Scientific Reports

- [American Cancer Society guideline for diet and physical activity for cancer prevention](#). Rock CL, Thomson C, Gansler T, et al. CA Cancer J Clin. 2020; 70(4): 245-271.
- [2020-2025 Dietary Guidelines for Americans](#). U.S. Department of Agriculture, and U.S. Department of Health and Human Services.
- [Continuous Update Project](#). World Cancer Research Fund International.
- [Diet, Nutrition, Physical Activity, and Cancer: a Global Perspective](#). World Cancer Research Fund, and the American Institute for Cancer Research.
- [Diet, nutrition and the prevention of chronic diseases](#). World Health Organization. 2003.

Statistics

- [Usual Dietary Intakes: Food Intakes, U.S. Population, 2007–10](#). National Cancer Institute.
- [What We Eat in America](#). U.S. Department of Agriculture.

Cancer Trends Progress Report

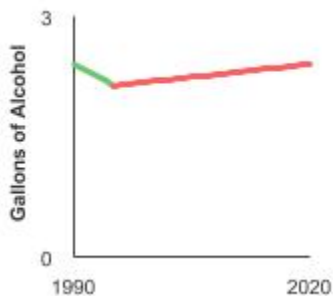
Online Summary of Trends in US Cancer Control Measures

Alcohol Consumption

Data Up to Date as of:

August 2023

In 2020, the annual per capita alcohol consumption was 2.5 gallons.



Background

Drinking alcohol increases the risk of cancers of the mouth, esophagus, pharynx, larynx, liver, colon, and rectum in men and women and of breast cancer in women. In general, these risks increase after about one daily drink for women and two daily drinks for men. (A drink is defined as 12 ounces of regular beer, 5 ounces of wine, or 1.5 ounces of 80-proof liquor.)

The chances of getting liver cancer increase markedly with five or more drinks per day. Heavy alcohol use may also increase the risk of colorectal cancer and leads to greater increases in risk for most of the alcohol-related cancers. The sooner long-term, heavy alcohol use begins, the greater the cancer risk. Also, using alcohol with tobacco is riskier than using either one alone because it further increases the chances of getting cancers of the mouth, throat, and esophagus.

Measure

Per capita alcohol consumption: The estimated number of gallons of pure alcohol consumed per person (aged 14 years and older), per year. This measure accounts for the varying alcohol content of wine, beer, and liquor. People as young as 14 are included because a large number of adolescents begin drinking at an early age.

Healthy People 2030 Target

- There are no Healthy People 2030 targets regarding per capita alcohol consumption, but there are other goals related to reducing the misuse of alcohol and reducing alcohol addiction.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.


Data Source

National Institute on Alcohol Abuse and Alcoholism. Surveillance report #120 – Apparent per capita alcohol consumption: national, state, and regional trends, 1977–2021. April 2023.

Trends and Most Recent Estimates

Alcohol Consumption

Apparent per capita alcohol consumption in gallons by individuals aged 14 years and older, 1990-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Gallons of Alcohol	95% Confidence Interval
	All Types of Alcoholic Beverages	2.5	Not available

Cancers Related to Alcohol Consumption

Statistical summaries from NCI's SEER Cancer Stat Fact Sheets:

- [Breast](#)
- [Colon and Rectum](#)
- [Esophagus](#)

- [Larynx](#)
- [Liver and Intrahepatic Bile Duct](#)
- [Oral Cavity and Pharynx](#)

Additional Information on Alcohol Consumption

General Public Resources

- [Alcohol and Cancer Risk](#). National Cancer Institute.
- [Alcohol Use and Cancer](#). American Cancer Society.
- [Publications & Multimedia – NIAAA resources on alcohol consumption and alcohol-related problems](#). National Institute on Alcohol Abuse and Alcoholism.

Public Health Resources

- [Unhealthy Alcohol Use in Adolescents and Adults: Screening and Behavioral Counseling Interventions](#). U.S. Preventive Services Task Force.

Scientific Reports

- [Alcohol abuse in cancer patients: a shadow side in the oncological field and research](#). Glasdam S, Oye C. Med Health Care Philos. 2013;17(3):437-46.
- [American Cancer Society guideline for diet and physical activity for cancer prevention](#). Rock CL, Thomson C, Gansler T, et. al. CA Cancer J Clin. 2020; 70(4): 245-271.
- [2020-2025 Dietary Guidelines for Americans](#). U.S. Department of Agriculture, and U.S. Department of Health and Human Services.
- [Continuous Update Project](#). World Cancer Research Fund International.

- Diet, Nutrition, Physical Activity, and Cancer: a Global Perspective. World Cancer Research Fund, and the American Institute for Cancer Research.

Statistics

- Food Intakes, U.S. Population, 2007-10: Usual Daily Intake of Alcoholic Drinks. National Cancer Institute.

Cancer Trends Progress Report

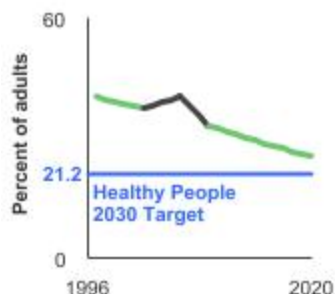
Online Summary of Trends in US Cancer Control Measures

Physical Activity

Data Up to Date as of:

August 2023

In 2020, 26.1% of adults reported no physical activity in their leisure time.



Background

Maintaining a healthy lifestyle has the potential to reduce both cancer- and non-cancer-related morbidity. In particular, physical activity may reduce the risk of several types of cancer, including bladder, breast, colon, endometrium (lining of the uterus), esophagus (adenocarcinoma), kidney, and stomach. Physical activity may lower a person's risk of health problems such as heart disease, high blood pressure, diabetes, and osteoporosis (bone thinning). Being active may help to prevent weight gain and obesity, which can reduce the risk of developing cancers that have been linked to excess body weight.

Physical activity also improves the quality of life among cancer patients and survivors. For people with colorectal cancer, women with breast cancer, and men with prostate cancer, greater amounts of physical activity are associated with reduced risk of mortality from the original type of cancer. For people with colorectal cancer and women with breast cancer, greater amounts of physical activity are also associated with reduced risk of all-cause mortality.

Several national groups offer recommendations for engaging in regular physical activity. The U.S. Department of Health and Human Services recommends that adults get at least 2.5 hours of moderate-intensity or 1 hour and 15 minutes of vigorous-intensity aerobic activity each week. Adults should also do muscle-strengthening activities on 2 or more days a week.

Measure

Percentage of adults aged 18 years and older who reported no leisure-time physical activity during the past month and percentage of adults who meet both the aerobic and muscle-strengthening guidelines.

Healthy People 2030 Target

- Reduce the percentage of adults who engage in no leisure-time physical activity to 21.2 percent.
- Increase the proportion of adults who meet the objectives for aerobic physical activity and for muscle-strengthening activity to 28.4 percent.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Note: Goals are indicated as blue line on Detailed Trend Graphs.

Data Source

Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey 1992–2020.

In 2019 the NHIS questionnaire was redesigned to increase relevance, enhance data quality, and minimize respondent burden. In addition, the COVID-19 pandemic created challenges conducting in-person interviews for the 2020 NHIS, requiring changes to field procedures to conduct most surveys by telephone, which impacted

survey response rates. For details related to the potential impacts of these issues, please refer to [Potential Impact of NHIS Redesign and COVID-19 on the Cancer Trends Progress Report](#).

Trends and Most Recent Estimates

No Leisure Time Physical Activity

By Sex

Percentage of adults aged 18 years and older reporting no physical activity in their leisure time by sex, 1997-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	Both Sexes	26.1	25.1 - 27.0
	Male	24.4	23.3 - 25.5
	Female	27.6	26.5 - 28.8

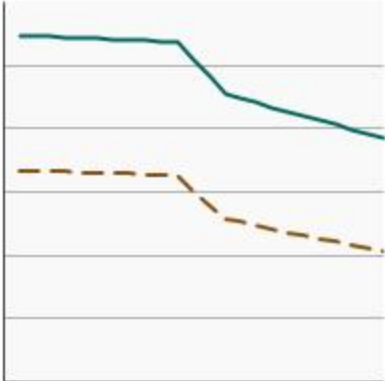
By Race/Ethnicity

Percentage of adults aged 18 years and older reporting no physical activity in their leisure time by race/ethnicity, 1997-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	All Races/Ethnicities	26.1	25.1 - 27.0
	Non-Hispanic White	22.8	21.8 - 23.8
	Non-Hispanic Black	32.0	29.5 - 34.6
	Hispanic	34.4	31.9 - 36.9

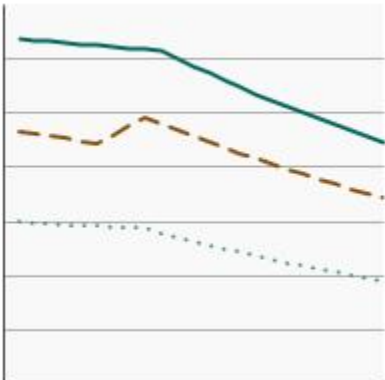
By Poverty Income Level

Percentage of adults aged 18 years and older reporting no physical activity in their leisure time by poverty income level, 1997-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	<u><200% of federal poverty level</u>	40.2	38.3 - 42.0
	<u>>=200% of federal poverty level</u>	20.7	19.9 - 21.6

By Education Level

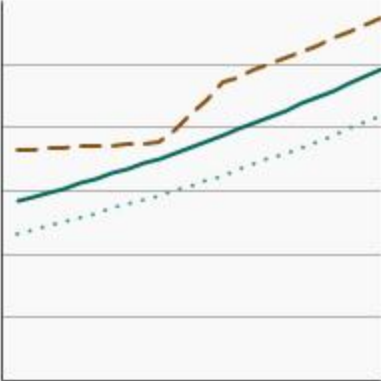
Percentage of adults aged 25 years and older reporting no physical activity in their leisure time by highest level of education obtained, 1997-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	<u>Less than High School</u>	48.4	45.2 - 51.7
	<u>High School</u>	35.0	33.3 - 36.7
	<u>Greater than High School</u>	19.6	18.7 - 20.4

Meet Federal Guidelines

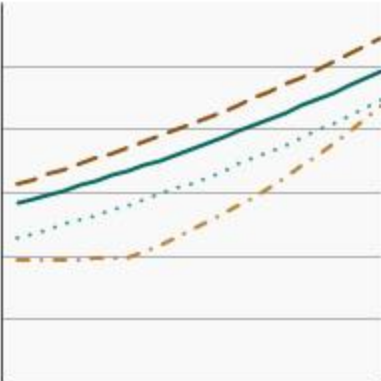
By Sex

Percentage of adults aged 18 years and older who meet current Federal guidelines for aerobic and muscle-strengthening physical activity by sex, 1997-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	Both Sexes	25.2	24.5 - 26.0
	Male	29.0	28.0 - 30.2
	Female	21.5	20.6 - 22.5

By Race/Ethnicity

Percentage of adults aged 18 years and older who meet current Federal guidelines for aerobic and muscle-strengthening physical activity by race/ethnicity, 1997-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	All Races/Ethnicities	25.2	24.5 - 26.0
	Non-Hispanic White	27.3	26.4 - 28.3
	Non-Hispanic Black	22.3	20.4 - 24.3
	Hispanic	20.7	19.0 - 22.6

By Poverty Income Level

Percentage of adults aged 18 years and older who meet current Federal guidelines for aerobic and muscle-strengthening physical activity by poverty income level, 1997-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	<u><200% of federal poverty level</u>	14.7	13.6 - 16.0
	<u>>=200% of federal poverty level</u>	29.2	28.3 - 30.1

By Education Level

Percentage of adults aged 25 years and older who meet current Federal guidelines for aerobic and muscle-strengthening physical activity by highest level of education obtained, 1997-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	<u>Less than High School</u>	9.6	7.9 - 11.7
	<u>High School</u>	16.3	15.1 - 17.5
	<u>Greater than High School</u>	28.8	27.9 - 29.7

Cancers Related to Physical Activity

Statistical summaries from NCI's SEER Cancer Stat Fact Sheets:

- [Breast](#)
- [Bladder](#)
- [Colon and Rectum](#)
- [Esophagus](#)
- [Kidney](#)
- [Stomach](#)
- [Uterus](#)

Additional Information on Physical Activity

General Public Resources

- [Physical Activity and Cancer](#). National Cancer Institute.
- [ACS Guidelines on Nutrition and Physical Activity for Cancer Prevention](#). American Cancer Society.
- [Nutrition, Physical Activity, and Obesity](#). Centers for Disease Control and Prevention.
- [Physical Activity](#). Centers for Disease Control and Prevention.
- [Physical Activity Guidelines for Americans](#). U.S. Department of Health & Human Services.

Public Health Resources

- [Physical Activity Evidence-Based Programs Listing](#). National Cancer Institute.
- [Community Preventive Services Task Force Findings: Physical Activity](#). The Community Guide.
- [Move Your Way® Community Resources](#). U.S. Department of Health and Human Services.

Scientific Reports

- [Amount and Intensity of Leisure-Time Physical Activity and Lower Cancer Risk](#). Matthews CE, Moore SC, Arem H, et al. J Clin Oncol 2020; 38(7):686-697.
- [Physical Activity in Cancer Prevention and Survival: A Systematic Review](#). McTiernan A, Friedenreich CM, Katzmarzyk PT, et al. Medicine and Science in Sports and Exercise 2019; 51(6):1252-1261.
- [American College of Sports Medicine Roundtable Report on Physical Activity, Sedentary Behavior, and Cancer Prevention and Control](#). Patel AV, Friedenreich CM, Moore SC, et al. Medicine and Science in Sports and Exercise 2019; 51(11):2391-2402.
- [2018 Physical Activity Guidelines Advisory Committee Scientific Report. Part F. Chapter 4. Cancer Prevention](#). US Department of Health and Human Services. F4-2 – F4-67.
- [Diet, activity and cancer](#). World Cancer Research Fund and the American Institute for Cancer Research.

Statistics

- [FastStats – Exercise/Physical Activity](#). Centers for Disease Control and Prevention.

Cancer Trends Progress Report

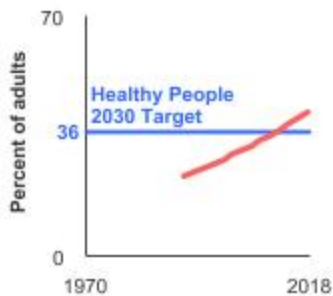
Online Summary of Trends in US Cancer Control Measures

Weight

Data Up to Date as of:

August 2023

During 2017.5, 42.4% of adults had obesity.



Background

Consistent evidence indicates that preventing excess body weight and obesity reduces the risk of several types of cancer, including colorectal, breast (among women who have gone through menopause), uterine, esophageal, renal cell (kidney), liver, and pancreatic cancers.

Research has also identified an association between obesity and worse prognosis and outcomes among some cancer patients, particularly those with breast, prostate, liver, and colon cancer. Excess body weight is thought to contribute to as many as one in five cancer-related deaths in the United States.

Among children, obesity is linked to a higher risk for obesity, metabolic diseases, and other chronic diseases and conditions later in adulthood, including cancer risk.

While there is still much to be learned about the link between excess weight and cancer, people with overweight or obesity are encouraged to lose weight and maintain a healthy lifestyle. Doing so has the potential to reduce both cancer- and non-cancer-related morbidity.

Measure

Adults: The percentage of adults aged 20 years and older with a healthy weight, overweight, or obesity. These weight groups are defined by BMI, which is calculated by dividing weight in kilograms by height in meters squared. For most adults, experts consider a BMI within the range of 18.5 to 24.9 as healthy weight, a BMI between 25 and 29.9 as overweight, and a BMI of 30 and above as having obesity.

Children and adolescents: The percentage of children and adolescents aged 2-19 years with a healthy weight, overweight, or obesity. These weight groups are defined by a measurement called the body mass index (BMI) z-score, which is calculated based on BMI sex- and age-specific percentiles (from the [CDC Growth Charts](#)). For most children, experts consider BMI-for-age percentiles between 5-84% as healthy weight, between 85-94% as overweight, and 95% or above as having obesity.

Healthy People 2030 Target

- Reduce the proportion of children and adolescents with obesity to 15.5 percent.
- Reduce the proportion of adults with obesity to 36.0 percent.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Note: Goals are indicated as blue line on Detailed Trend Graphs.

Data Source

Centers for Disease Control and Prevention, National Center for Health Statistics, National Health and Nutrition Examination Survey, 1971–2018.

Trends and Most Recent Estimates

Body Weight Comparison

Children and Adolescents

Percentage of children and adolescents aged 2-19 years with a healthy weight, overweight, or obesity, 1988-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of children and adolescents	95% Confidence Interval
	Healthy Weight	60.8	58.5 - 63.1
	Overweight	15.9	14.2 - 17.6
	Obesity	19.4	17.4 - 21.4

Adults

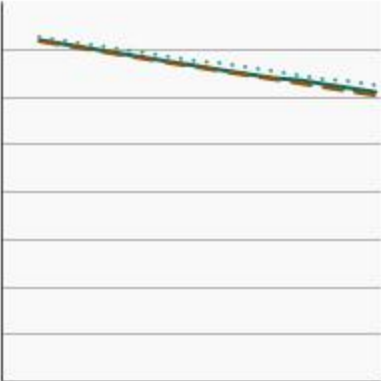
Percentage of adults aged 20 years and older with a healthy weight, overweight, or obesity, 1971-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017.5)	
		Percent of adults	95% Confidence Interval
	Healthy Weight	24.9	22.4 - 27.3
	Overweight	31.2	29.1 - 33.3
	Obesity	42.4	39.0 - 45.8

Children and Adolescents, Healthy Weight

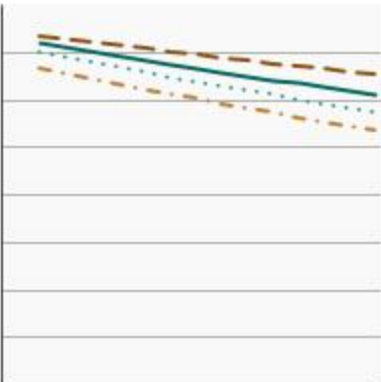
By Sex

Percentage of children and adolescents aged 2-19 years at a healthy weight by sex, 1988-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of children and adolescents	95% Confidence Interval
	Both Sexes	60.8	58.5 - 63.1
	Male	59.9	56.6 - 63.2
	Female	61.6	58.5 - 64.6

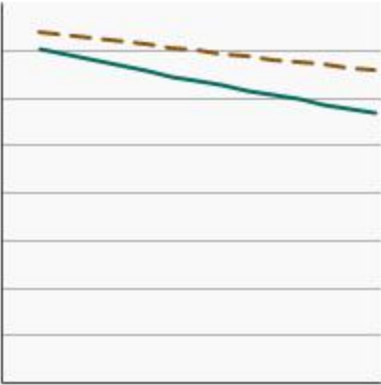
By Race/Ethnicity

Percentage of children and adolescents aged 2-19 years at a healthy weight by race/ethnicity, 1988-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of children and adolescents	95% Confidence Interval
	All Races/Ethnicities	60.8	58.5 - 63.1
	Non-Hispanic White	63.8	60.5 - 67.2
	Non-Hispanic Black	59.4	54.8 - 64.0
	Hispanic	53.2	49.8 - 56.7

By Poverty Income Level

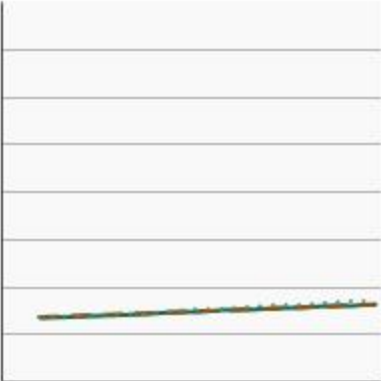
Percentage of children and adolescents aged 2-19 years at a healthy weight by poverty status, 1988-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of children and adolescents	95% Confidence Interval
	< 200% of the federal poverty level	56.8	52.9 - 60.6
	>= 200% of the federal poverty level	65.6	62.4 - 68.9

Children and Adolescents, Overweight

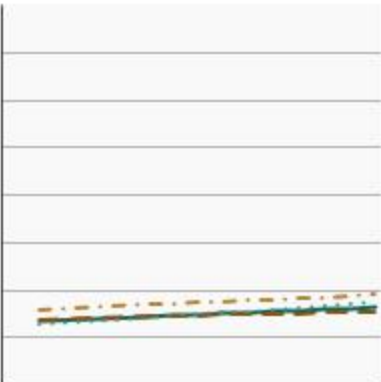
By Sex

Percentage of children and adolescents aged 2-19 years who were overweight by sex, 1988-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of children and adolescents	95% Confidence Interval
	Both Sexes	15.9	14.2 - 17.6
	Male	14.3	11.7 - 16.9
	Female	17.5	15.3 - 19.7

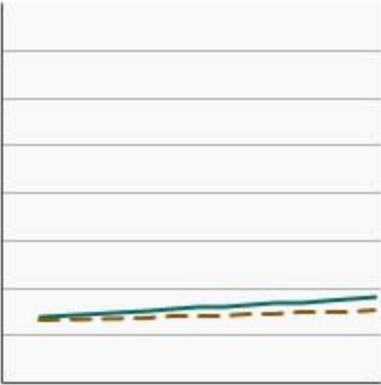
By Race/Ethnicity

Percentage of children and adolescents aged 2-19 years who were overweight by race/ethnicity, 1988-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of children and adolescents	95% Confidence Interval
	All Races/Ethnicities	15.9	14.2 - 17.6
	Non-Hispanic White	15.8	13.5 - 18.1
	Non-Hispanic Black	13.8	11.1 - 16.5
	Hispanic	18.3	14.4 - 22.2

By Poverty Income Level

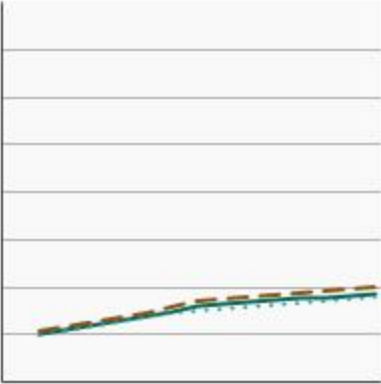
Percentage of children and adolescents aged 2-19 years who were overweight by poverty status, 1988-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of children and adolescents	95% Confidence Interval
	< 200% of the federal poverty level	16.6	13.4 - 19.8
	>= 200% of the federal poverty level	15.2	13.2 - 17.3

Children and Adolescents, Obesity

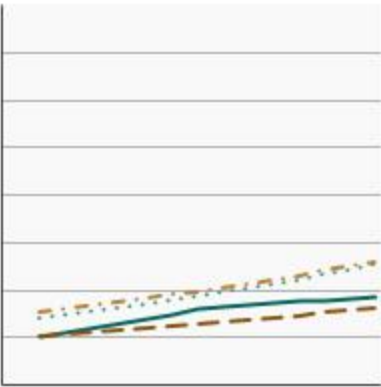
By Sex

Percentage of children and adolescents aged 2-19 years with obesity by sex, 1988-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of children and adolescents	95% Confidence Interval
	Both Sexes	19.4	17.4 - 21.4
	Male	20.6	18.4 - 22.8
	Female	18.1	15.3 - 21.0

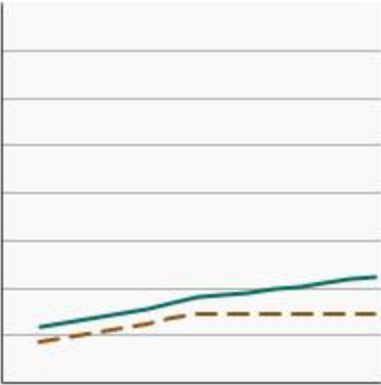
By Race/Ethnicity

Percentage of children and adolescents aged 2-19 years with obesity by race/ethnicity, 1988-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of children and adolescents	95% Confidence Interval
	All Races/Ethnicities	19.4	17.4 - 21.4
	Non-Hispanic White	16.3	13.3 - 19.2
	Non-Hispanic Black	24.1	20.1 - 28.1
	Hispanic	25.7	21.9 - 29.5

By Poverty Income Level

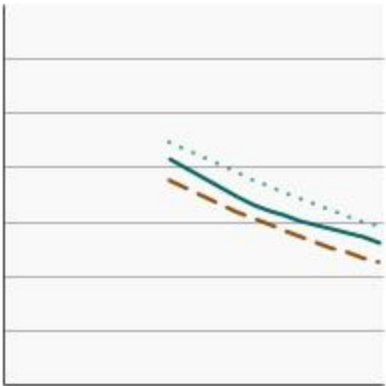
Percentage of children and adolescents aged 2-19 years with obesity by poverty status, 1988-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of children and adolescents	95% Confidence Interval
	< 200% of the federal poverty level	23.7	20.8 - 26.6
	>= 200% of the federal poverty level	14.4	12.2 - 16.6

Adults, Healthy Weight

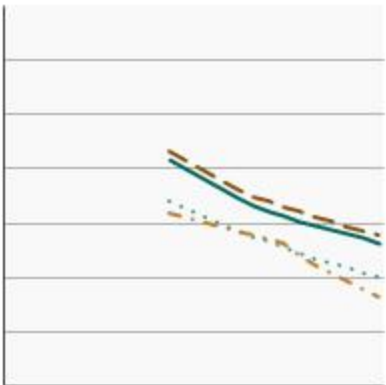
By Sex

Percentage of adults aged 20 years and older at a healthy weight by sex, 1971-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of adults	95% Confidence Interval
	Both Sexes	24.9	22.4 - 27.3
	Male	21.3	18.0 - 24.6
	Female	28.4	25.4 - 31.4

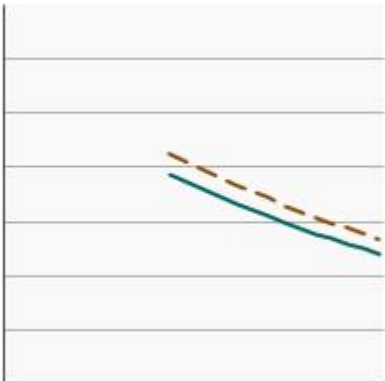
By Race/Ethnicity

Percentage of adults aged 20 years and older at a healthy weight by race/ethnicity, 1971-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of adults	95% Confidence Interval
	All Races	24.9	22.4 - 27.3
	Non-Hispanic White	27.0	23.4 - 30.5
	Non-Hispanic Black	22.2	19.6 - 24.8
	Hispanic	16.1	14.0 - 18.1

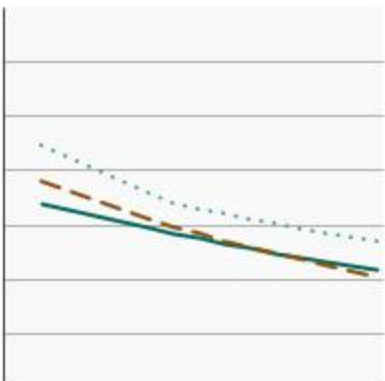
By Poverty Income Level

Percentage of adults aged 20 years and older at a healthy weight by poverty status, 1971-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of adults	95% Confidence Interval
	<u>< 200% of the federal poverty level</u>	24.1	20.9 - 27.4
	<u>>= 200% of the federal poverty level</u>	24.5	21.4 - 27.5

By Education Level

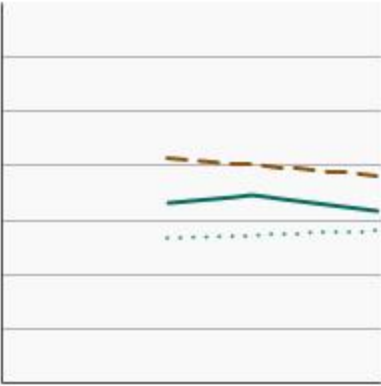
Percentage of adults aged 25 years and older at a healthy weight by highest level of education obtained, 1988-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of adults	95% Confidence Interval
	<u>Less than High School</u>	22.5	19.3 - 25.6
	<u>High School</u>	20.1	17.4 - 22.7
	<u>Greater than High School</u>	24.9	22.1 - 27.8

Adults, Overweight

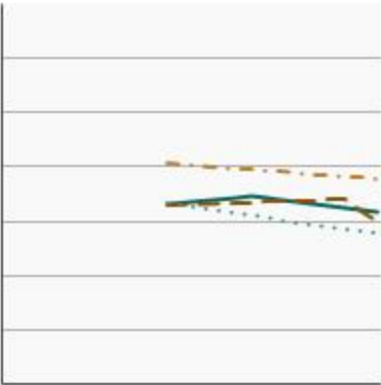
By Sex

Percentage of adults aged 20 years and older who were overweight by sex, 1971-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of adults	95% Confidence Interval
	Both Sexes	31.2	29.1 - 33.3
	Male	34.6	31.0 - 38.2
	Female	28.0	26.2 - 29.8

By Race/Ethnicity

Percentage of adults aged 20 years and older who were overweight by race/ethnicity, 1971-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of adults	95% Confidence Interval
	All Races	31.2	29.1 - 33.3
	Non-Hispanic White	29.0	25.8 - 32.3
	Non-Hispanic Black	26.8	23.8 - 29.9
	Hispanic	39.2	36.3 - 42.1

By Poverty Income Level

Percentage of adults aged 20 years and older who were overweight by poverty status, 1971-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of adults	95% Confidence Interval
	<u>< 200% of the federal poverty level</u>	29.2	26.5 - 32.0
	<u>>= 200% of the federal poverty level</u>	32.4	29.4 - 35.4

By Education Level

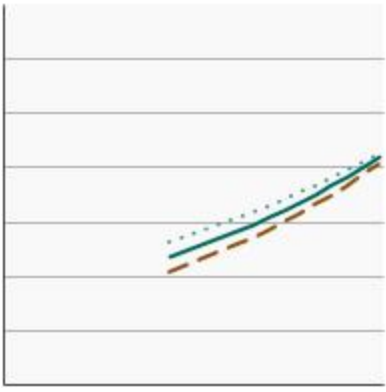
Percentage of adults aged 25 years and older who were overweight by highest level of education obtained, 1988-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of adults	95% Confidence Interval
	<u>Less than High School</u>	33.8	28.8 - 38.9
	<u>High School</u>	29.3	26.3 - 32.4
	<u>Greater than High School</u>	32.7	29.8 - 35.7

Adults, Obesity

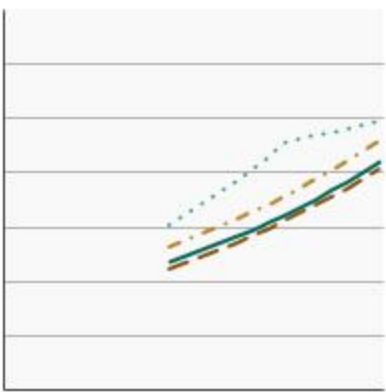
By Sex

Percentage of adults aged 20 years and older with obesity by sex, 1971-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of adults	95% Confidence Interval
	Both Sexes	42.4	39.0 - 45.8
	Male	42.9	37.8 - 48.1
	Female	41.9	38.1 - 45.6

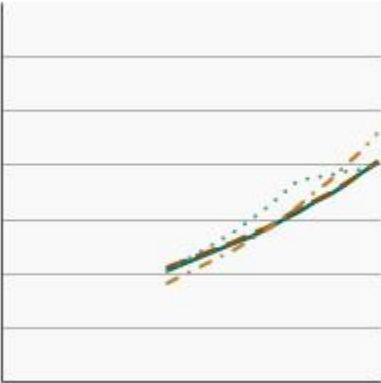
By Race/Ethnicity

Percentage of adults aged 20 years and older with obesity by race/ethnicity, 1971-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of adults	95% Confidence Interval
	All Races	42.4	39.0 - 45.8
	Non-Hispanic White	42.3	37.5 - 47.0
	Non-Hispanic Black	49.4	46.0 - 52.7
	Hispanic	44.1	40.8 - 47.3

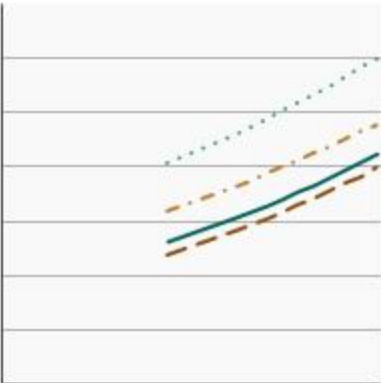
Males by Race/Ethnicity

Percentage of males aged 20 years and older with obesity by race/ethnicity, 1971-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of adults	95% Confidence Interval
	All Races	42.9	37.8 - 48.1
	Non-Hispanic White	44.6	37.6 - 51.6
	Non-Hispanic Black	40.7	36.1 - 45.4
	Hispanic	45.6	42.0 - 49.3

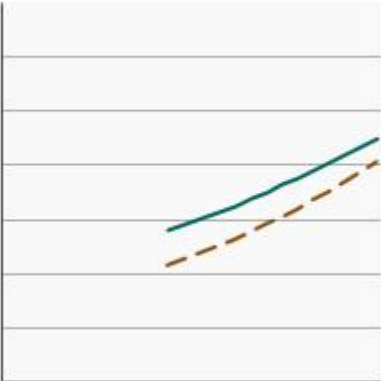
Females by Race/Ethnicity

Percentage of females aged 20 years and older with obesity by race/ethnicity, 1971-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of adults	95% Confidence Interval
	All Races	41.9	38.1 - 45.6
	Non-Hispanic White	39.9	34.5 - 45.4
	Non-Hispanic Black	56.5	52.4 - 60.5
	Hispanic	42.3	38.4 - 46.1

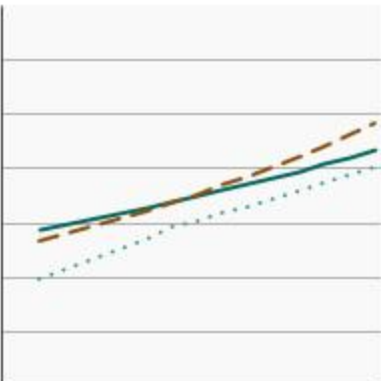
By Poverty Income Level

Percentage of adults aged 20 years and older with obesity by poverty status, 1971-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of adults	95% Confidence Interval
	<u>< 200% of the federal poverty level</u>	44.3	40.4 - 48.2
	<u>>= 200% of the federal poverty level</u>	42.1	38.0 - 46.2

By Education Level

Percentage of adults aged 25 years and older with obesity by highest level of education obtained, 1988-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of adults	95% Confidence Interval
	<u>Less than High School</u>	42.8	37.8 - 47.8
	<u>High School</u>	48.7	44.6 - 52.9
	<u>Greater than High School</u>	41.6	37.6 - 45.6

Cancers Related to Weight

Statistical summaries from NCI's SEER Cancer Stat Fact Sheets:

- [Brain and Other Nervous System](#)
- [Breast](#)
- [Colon and Rectum](#)
- [Esophagus](#)
- [Kidney and Renal Pelvis](#)
- [Liver and Intrahepatic Bile Duct](#)
- [Gallbladder](#)

- [Myeloma](#)
- [Ovary](#)
- [Pancreas](#)
- [Stomach](#)
- [Thyroid](#)
- [Uterus](#)

Additional Information on Weight

General Public Resources

- [Obesity and Cancer Risk](#). National Cancer Institute.
- [Body Weight and Cancer Risk](#). American Cancer Society.
- [Obesity and Cancer](#). Centers for Disease Control and Prevention.
- [Take Control of Your Weight](#). American Cancer Society.
- [Cancer Prevention and Control: Healthy Choices](#). Centers for Disease Control and Prevention.
- [Chartbook on Healthy Living](#). Agency for Healthcare Research and Quality.
- [ACS Guidelines on Nutrition and Physical Activity for Cancer Prevention](#). American Cancer Society.
- [Nutrition, Physical Activity, and Obesity](#). Centers for Disease Control and Prevention.
- [Healthy Weight, Nutrition, and Physical Activity](#). Centers for Disease Control and Prevention.
- [Overweight and Obesity](#). Centers for Disease Control and Prevention.
- [Body Mass Index Table](#). National Heart, Lung, and Blood Institute.

Public Health Resources

- [Obesity Evidence-Based Programs Listing](#). National Cancer Institute.
- [Strategic Plan for NIH Obesity Research](#). National Institute of Diabetes and Digestive and Kidney Diseases.
- [Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults](#). National Heart, Lung, and Blood Institute.
- [Obesity in Children and Adolescents: Screening \(June 2017\)](#). U.S. Preventive Services Task Force.
- [Weight Loss to Prevent Obesity-Related Morbidity and Mortality in Adults: Behavioral Interventions](#). U.S. Preventive Services Task Force.

Scientific Reports

- [Prevalence of Obesity and Severe Obesity Among Adults: United States, 2017–2018](#). Hales CM, Carroll MD, Fryar CD, Ogden CL. NCHS Data Brief, no 360. Hyattsville, MD: National Center for Health Statistics. 2020
- [Body Fatness and Cancer — Viewpoint of the IARC Working Group](#). Lauby-Secretan B, Scoccianti C, Loomis D, Grosse Y, Bianchini F, and Straif K for the International Agency for Research on Cancer Handbook Working Group. N Engl J Med. 2016; 375:794-798.
- [American Cancer Society guideline for diet and physical activity for cancer prevention](#). Rock, C.L., Thomson, C., Gansler, T., et al. CA A Cancer J Clin, 70: 245-271. <https://doi.org/10.3322/caac.21591>.
- [Obesity and cancer risk: Emerging biological mechanisms and perspectives](#). Metabolism. 2019; 92:121-135.

- [Nutrition and physical activity cancer prevention guidelines, cancer risk, and mortality in the women's health initiative.](#) Thomson CA, McCullough ML, Wertheim BC, et al. Cancer Prev Res (Phila) 2014;1:42–53.
- [2018 Physical Activity Guidelines Advisory Committee Scientific Report. Part F. Chapter 5. Cardiometabolic Health and Prevention of Weight Gain.](#) U.S Department of Health and Human Services. F5-4 – F5-12.
- [Diet, nutrition, physical activity, and cancer: a global perspective.](#) World Cancer Research Fund and the American Institute for Cancer Research.
- [Body fatness and weight gain.](#) World Cancer Research Fund and American Institute for Cancer Research.
- [Energy balance and body fatness.](#) World Cancer Research Fund and the American Institute for Cancer Research.
- [Advancing Measurement for Childhood Obesity Workshop Series.](#) National Collaborative on Childhood Obesity Research.

Statistics

- [Obesity and Overweight.](#) Centers for Disease Control and Prevention.
- [Overweight and Obesity: Data and Statistics.](#) Centers for Disease Control and Prevention.

Cancer Trends Progress Report

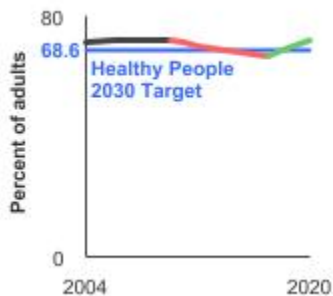
Online Summary of Trends in US Cancer Control Measures

Sleep

Data Up to Date as of:

August 2023

In 2020, 72.1% of adults 18 and older reported getting sufficient sleep.



Background

Sleep health – including sleep duration, efficiency, and quality, as well as sleep timing and regularity – is important to overall health. Poor sleep may directly affect mortality risk and influence risk for cancer and other non-communicable diseases through its impact on immune function, stress response and inflammation, DNA repair, and metabolic and hormonal activity. It may also impact mortality through its effect on modifiable risk factors, including physical activity, diet, alcohol, and tobacco use.

Existing evidence indicates that sleep duration is associated with cancer mortality. However, across sites, risk may vary by sleep duration – both short (<7 hours/night) and long (>9 hours/night) sleep duration. Findings are also mixed regarding the association between sleep duration and cancer risk. Other aspects of poor sleep health, including poor sleep quality and irregular sleep timing due to shift work, have also been linked to increased risk of cancer, highlighting the need for future research in these areas.

Additionally, poor sleep health is associated with poorer treatment efficacy, adverse physical and mental health outcomes, and increased mortality in cancer survivors. The mechanisms connecting sleep health and cancer survivorship are not fully understood and are an evolving area of study.

The recommendations stratified by age are 7 or more hours/night for adults 18-60 years, 7-9 hours for adults 31-64 years, and 7–8 hours for adults 65 years and older.

Measure

Percentage of adults aged 18 years and older who report getting sufficient sleep, defined as an average of 7 or more hours of sleep per day.

Healthy People 2030 Target

- Increase the proportion of adults who get sufficient sleep to 68.6 percent.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Note: Goals are indicated as a blue line on Detailed Trend Graphs.

Data Source

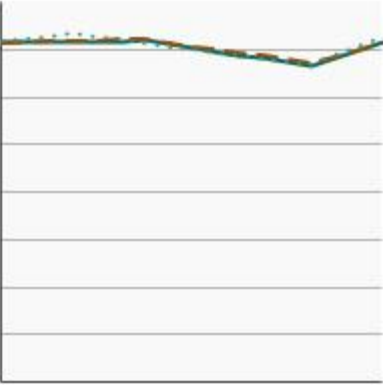
Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey 2004 - 2020.

In 2019 the NHIS questionnaire was redesigned to increase relevance, enhance data quality, and minimize respondent burden. In addition, the COVID-19 pandemic created challenges conducting in-person interviews for the 2020 NHIS, requiring changes to field procedures to conduct most surveys by telephone, which impacted survey response rates. For details related to the potential impacts of these issues, please refer to [Potential Impact of NHIS Redesign and COVID-19 on the Cancer Trends Progress Report](#).

Trends and Most Recent Estimates

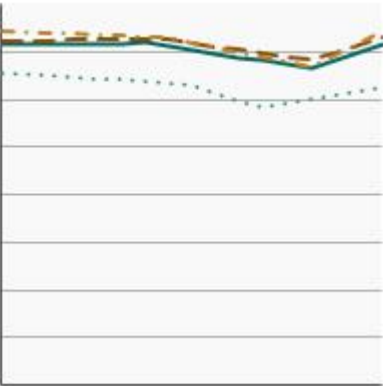
By Sex

Percentage of adults aged 18 years and older who report getting sufficient sleep, defined as an average of 7 or more hours of sleep per day by sex, 2004-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	Both Sexes	72.1	71.3 - 72.8
	Male	71.4	70.3 - 72.4
	Female	72.8	71.9 - 73.7

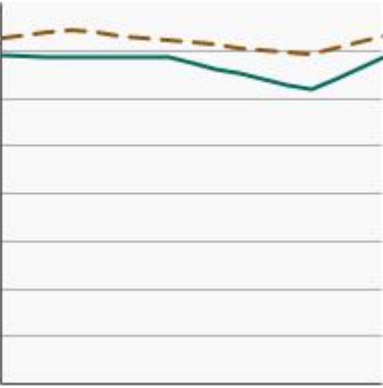
By Race/Ethnicity

Percentage of adults aged 18 years and older who report getting sufficient sleep, defined as an average of 7 or more hours of sleep per day by race/ethnicity, 2004-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	All Races/Ethnicities	72.1	71.3 - 72.8
	Non-Hispanic White	73.1	72.2 - 73.9
	Non-Hispanic Black	62.9	60.5 - 65.2
	Hispanic	74.4	72.5 - 76.2

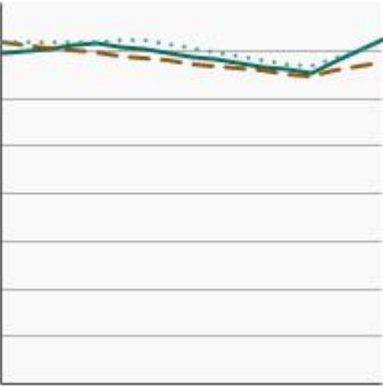
By Poverty Income Level

Percentage of adults aged 18 years and older who report getting sufficient sleep, defined as an average of 7 or more hours of sleep per day by poverty income level, 2004-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	<u><200% of federal poverty level</u>	69.0	67.5 - 70.5
	<u>>=200% of federal poverty level</u>	73.2	72.3 - 74.0

By Education Level

Percentage of adults aged 25 years and older who report getting sufficient sleep, defined as an average of 7 or more hours of sleep per day by highest level of education obtained, 2004-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	<u>Less than High School</u>	72.7	70.1 - 75.2
	<u>High School</u>	68.1	66.4 - 69.8
	<u>Greater than High School</u>	71.8	70.9 - 72.6

Additional Information on Sleep

General Public Resources

- [Sleep Disorders \(PDQ®\)—Health Professional Version](#). National Cancer Institute.
- [Sleep Disturbance](#). National Cancer Institute.
- [Sleep Problems in People with Cancer](#). National Cancer Institute.
- [Sleep and Sleep Disorders](#). Centers for Disease Control and Prevention.
- [Sleep Deprivation and Deficiency](#). National Heart, Lung, and Blood Institute.

Public Health Resources

- [NIH Sleep Research Plan](#). National Heart, Lung, and Blood Institute.

Scientific Reports

- [Sleep duration and risk of all-cause mortality: a systematic review and meta-analysis.](#) García-Perdomo HA, Zapata-Copete J, Rojas-Cerón CA. Epidemiol Psychiatr Sci. 2019;28(5):578-588.
- [Association between total sleep time and all cancer mortality: non-linear dose-response meta-analysis of cohort studies.](#) Li Y, Cai S, Ling Y, et al. Sleep Med. 2019;60:211-218.
- [Association of Sleep Duration With All- and Major-Cause Mortality Among Adults in Japan, China, Singapore, and Korea.](#) Svensson T, Saito E, Svensson AK, et al. JAMA Network Open. 2021;4(9):e2122837.
- [Sleep duration and the risk of cancer: a systematic review and meta-analysis including dose-response relationship.](#) Chen Y, Tan F, Wei L, et al. BMC Cancer. 2018;18(1):1149.
- [Relationship of Sleep Duration With All-Cause Mortality and Cardiovascular Events: A Systematic Review and Dose-Response Meta-Analysis of Prospective Cohort Studies.](#) Yin J, Jin X, Shan Z, et al. J Am Heart Assoc. 2017;6(9):e005947.
- [Sleep duration and risk of overall and 22 site-specific cancers: A Mendelian randomization study.](#) Titova OE, Michaëlsson K, Vithayathil M, et al. Int J Cancer. 2021;148(4):914-920.
- [Associations Among Sleep and Cancer Risk Behaviors: a Scoping Review of Experimental Studies in Healthy Adult Populations.](#) Taber JM, Cribbet MR, Cadmus-Bertram L, et al. Int J Behav Med. 2021; 28: 162–176.
- [Recommended Amount of Sleep for a Healthy Adult: A Joint Consensus Statement of the American Academy of Sleep Medicine and Sleep Research Society.](#) Watson NF, Badr MS, Belenky G, et al. Sleep. 2015;38(6):843-844.

Statistics

- [Data and Statistics - Sleep and Sleep Disorders.](#) Centers for Disease Control and Prevention.

Cancer Trends Progress Report

Online Summary of Trends in US Cancer Control Measures

UV Exposure and Sun-Protective Behavior

Reducing unprotected exposure to the sun and avoiding artificial ultraviolet (UV) light from indoor tanning beds, tanning booths, and sun lamps can lower the risk of skin cancer.

- [Sun-Protective Behavior](#)
- [Indoor and Outdoor Tanning](#)
- [Sunburn](#)

Cancer Trends Progress Report

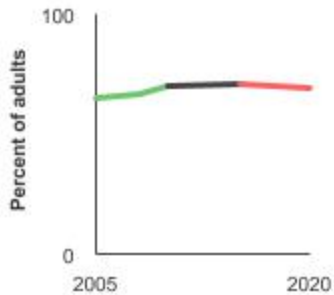
Online Summary of Trends in US Cancer Control Measures

Sun-Protective Behavior

Data Up to Date as of:

August 2023

In 2020, 69.4% of adults said they usually or always protect themselves from the sun by practicing at least one of three sun protection behaviors.



Background

Avoiding sunburns and intermittent high-intensity sun exposure (especially in children, teens, and young adults) reduces the chances of getting melanoma skin cancer. Engaging in sun-protective behaviors when outside can reduce one's exposure to ultraviolet (UV) radiation and sunburn. For example, avoiding intense sun when possible and seeking shade can reduce the risk of sunburn, and one of the goals of the Surgeon General's Call To Action to Prevent Skin Cancer is to increase the availability of shade in outdoor recreation, education, and workplace environments. Additional behaviors such as wearing sun-protective clothing (e.g., long sleeve shirt, long pants, and wide brim hat) and sunglasses can help prevent excessive exposure to UV. Broad spectrum sunscreen (protects against UVA and UVB) with a sun protection factor of 15 or higher (SPF15 or higher) should be used in combination with other sun-protective behaviors and applied appropriately (e.g., proper amount applied prior to sun exposure and with timely reapplication).

Although sunbathing and tanning are strongly associated with sunburn, recent data indicate that most sunburns occur in contexts unrelated to intentional tanning. Results suggest the need to promote multiple forms of sun protection tailored to specific contexts, especially when being physically active and when spending time near the water.

Protective behaviors are most needed when UV intensity is greatest, which occurs during the summer time and between 10 am and 4 pm. However, UV index can also be high during cloudy days, and for some regions of the U.S., such as the southeast and southwest, UV intensity is high year-round. To help maximize one's protection, multiple sun-protective behaviors should be practiced, especially for those with sun sensitive skin. People with sun sensitive skin are relatively more likely to incur sunburn and are at greater risk for skin cancer. Sun sensitivity reflects a person's characteristic skin response (e.g., a burn, a burn and then tan, etc.) after prolonged sun exposure or after a long period or season of being relatively unexposed. Though related to sun sensitivity, skin color and ethnicity are not adequate proxies for sun sensitivity.

In recent years, the Food and Drug Administration has improved standards for sunscreen content and labeling to minimize misleading statements and better ensure formulations deliver the advertised benefits.

Measure

The percentage of adults aged 18 years and older who reported that they usually or always practice at least one of three sun-protective behaviors - using sunscreen, wearing protective clothing (a long-sleeve shirt, and/or wide brimmed hat shading the face, ears, and neck, and/or long pants/long skirt), or seeking shade when going outside on a sunny day for more than an hour.

Beginning in 2005, the question on hat use (as part of protective clothing) was modified to more accurately distinguish baseball caps (which do not fully protect the face, neck, and ears) from other types of fully protective

hats. Graphic illustrations of different hats were used, and respondents were asked a separate question about baseball cap and sun visor use. Also, long pants/long skirt was an item added in 2005.

The data series for this measure page have differing years of availability with 'protective clothing' available for 2005+, 'sunscreen use (SPF 15+)' available for 2000+ and 'likely to seek shade' available for 1992+. For the graphs that compare the different methods or present a total of all three protection types, trends were calculated for 2005+. For graphs that show the series individually, the full range of available data is shown.

Healthy People 2030 Target

- There are no Healthy People 2030 targets regarding protective measures that may reduce the risk of skin cancer.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Data Source

Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey NCI and CDC co-sponsored Cancer Control Supplement, 1992-2010, 2005–2015.

In 2019 the NHIS questionnaire was redesigned to increase relevance, enhance data quality, and minimize respondent burden. In addition, the COVID-19 pandemic created challenges conducting in-person interviews for the 2020 NHIS, requiring changes to field procedures to conduct most surveys by telephone, which impacted survey response rates. For details related to the potential impacts of these issues, please refer to [Potential Impact of NHIS Redesign and COVID-19 on the Cancer Trends Progress Report](#).

Trends and Most Recent Estimates

Sun Protection Methods

Percentage of adults aged 18 years and older who always or most of the time protect themselves from the sun by type of protective measure, 2005-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	Total	69.4	68.5 - 70.3
	Sunscreen (SPF 15+)	36.5	35.7 - 37.3
	Protective Clothing	36.7	35.8 - 37.6
	Seek Shade	39.1	38.1 - 40.0

Use Some Type of Protection

By Sex

Percentage of adults aged 18 years and older who always or most of the time protect themselves from the sun by sex, 2005-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	Both Sexes	69.4	68.5 - 70.3
	Male	64.2	63.0 - 65.4
	Female	74.5	73.4 - 75.5

By Race/Ethnicity

Percentage of adults aged 18 years and older who always or most of the time protect themselves from the sun by race/ethnicity, 2005-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	All Races/Ethnicities	69.4	68.5 - 70.3
	Non-Hispanic White	69.1	68.0 - 70.1
	Non-Hispanic Black	64.5	62.0 - 66.9
	Hispanic	75.1	73.3 - 76.8

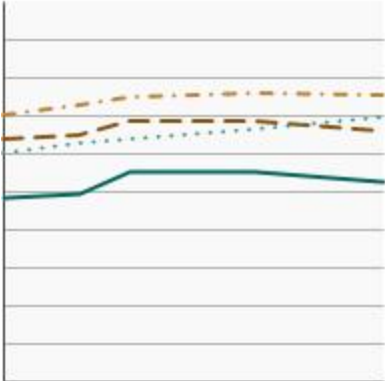
By Age

Percentage of adults aged 18 years and older who always or most of the time protect themselves from the sun by age, 2005-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	Ages 18-24	61.1	58.2 - 63.9
	Ages 25+	70.6	69.7 - 71.5

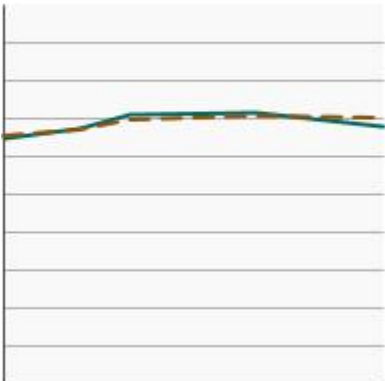
By Sex and Age

Percentage of adults aged 18 years and older who always or most of the time protect themselves from the sun by sex and age, 2005-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	Males, Ages 18-24	52.7	48.4 - 56.9
	Males, Ages 25+	65.8	64.6 - 67.0
	Females, Ages 18-24	69.5	65.5 - 73.3
	Females, Ages 25+	75.2	74.1 - 76.2

By Poverty Income Level

Percentage of adults aged 18 years and older who always or most of the time protect themselves from the sun by poverty income level, 2005-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	<200% of federal poverty level	67.7	66.2 - 69.3
	>=200% of federal poverty level	70.0	69.1 - 71.0

By Education Level

Percentage of adults aged 25 years and older who always or most of the time protect themselves from the sun by highest level of education obtained, 2005-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	Less than High School	70.5	67.4 - 73.4
	High School	66.4	64.7 - 68.0
	Greater than High School	72.4	71.5 - 73.3

By Sun Sensitivity

Percentage of adults aged 18 years and older who always or most of the time protect themselves from the sun by sun sensitivity, 2005-2020

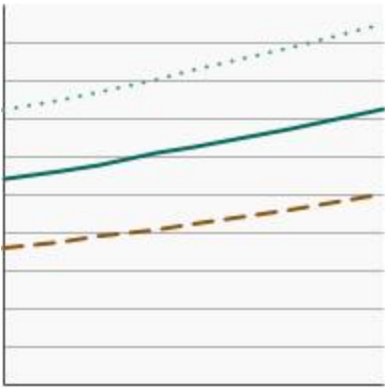
Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	Sun-Sensitive	76.5	75.5 - 77.5
	Not Sun-Sensitive	60.0	58.7 - 61.3

Sun sensitivity reflects a person's biological response (e.g., a burn, a burn and then tan, etc.) after prolonged sun exposure or after a long period or season of being relatively unexposed. Although race is related to sun sensitivity, race and ethnicity are not adequate proxies for sun sensitivity.

Use Sunscreen

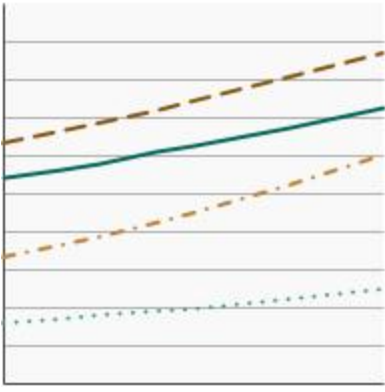
By Sex

Percentage of adults aged 18 years and older who always or most of the time protect themselves from the sun by using SPF 15 or higher sunscreen by sex, 2000-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	Both Sexes	36.5	35.7 - 37.3
	Male	25.0	24.1 - 25.9
	Female	47.5	46.4 - 48.7

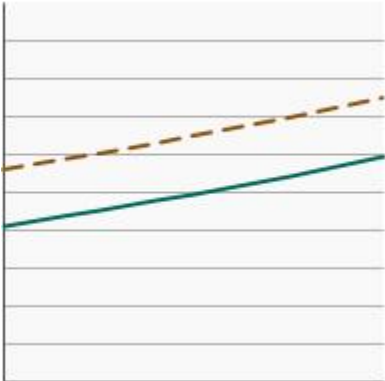
By Race/Ethnicity

Percentage of adults aged 18 years and older who always or most of the time protect themselves from the sun by using SPF 15 or higher sunscreen by race/ethnicity, 2000-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	All Races/Ethnicities	36.5	35.7 - 37.3
	Non-Hispanic White	43.5	42.5 - 44.5
	Non-Hispanic Black	12.0	10.5 - 13.8
	Hispanic	31.4	29.4 - 33.6

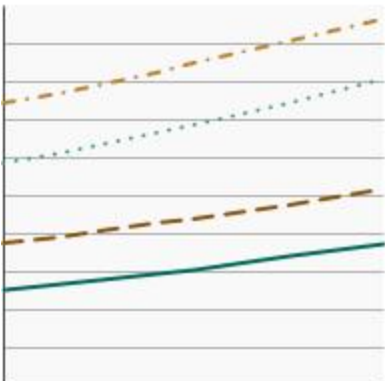
By Age

Percentage of adults aged 18 years and older who always or most of the time protect themselves from the sun by using SPF 15 or higher sunscreen by age, 2000-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	Ages 18-24	31.7	29.2 - 34.4
	Ages 25+	37.2	36.3 - 38.0

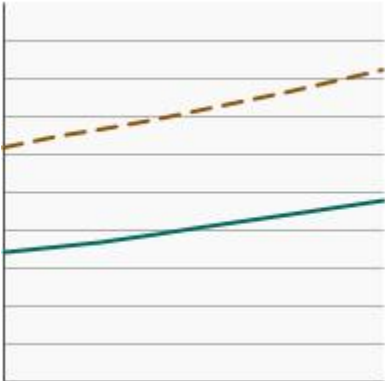
By Sex and Age

Percentage of adults aged 18 years and older who always or most of the time protect themselves from the sun by using SPF 15 or higher sunscreen by sex and age, 2000-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	Males, Ages 18-24	20.2	17.4 - 23.4
	Males, Ages 25+	25.7	24.8 - 26.7
	Females, Ages 18-24	43.2	39.1 - 47.4
	Females, Ages 25+	48.1	46.9 - 49.3

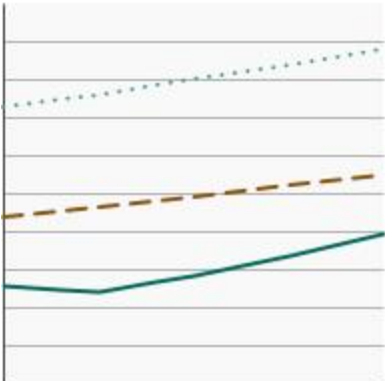
By Poverty Income Level

Percentage of adults aged 18 years and older who always or most of the time protect themselves from the sun by using SPF 15 or higher sunscreen by poverty income level, 2000-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	<200% of federal poverty level	25.0	23.5 - 26.5
	>=200% of federal poverty level	40.7	39.8 - 41.7

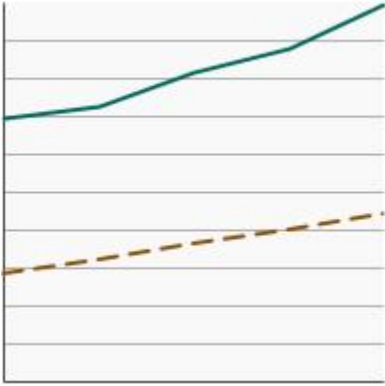
By Education Level

Percentage of adults aged 25 years and older who always or most of the time protect themselves from the sun by using SPF 15 or higher sunscreen by highest level of education obtained, 2000-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	Less than High School	20.5	17.6 - 23.6
	High School	28.0	26.6 - 29.5
	Greater than High School	44.1	43.1 - 45.0

By Sun Sensitivity

Percentage of adults aged 18 years and older who always or most of the time protect themselves from the sun by using SPF 15 or higher sunscreen by sun sensitivity, 2000-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	<u>Sun-Sensitive</u>	49.6	48.6 - 50.7
	<u>Not Sun-Sensitive</u>	22.1	21.1 - 23.1

Sun sensitivity reflects a person's biological response (e.g., a burn, a burn and then tan, etc.) after prolonged sun exposure or after a long period or season of being relatively unexposed. Although race is related to sun sensitivity, race and ethnicity are not adequate proxies for sun sensitivity.

Wear Protective Clothing

By Sex

Percentage of adults aged 18 years and older who always or most of the time protect themselves from the sun by wearing protective clothing by sex, 2005-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	Both Sexes	36.7	35.8 - 37.6
	Male	42.0	40.7 - 43.3
	Female	31.6	30.6 - 32.7

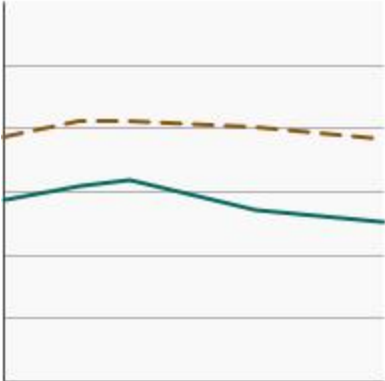
By Race/Ethnicity

Percentage of adults aged 18 years and older who always or most of the time protect themselves from the sun by wearing protective clothing by race/ethnicity, 2005-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	All Races/Ethnicities	36.7	35.8 - 37.6
	Non-Hispanic White	33.9	32.9 - 35.0
	Non-Hispanic Black	33.3	31.1 - 35.5
	Hispanic	46.3	44.0 - 48.5

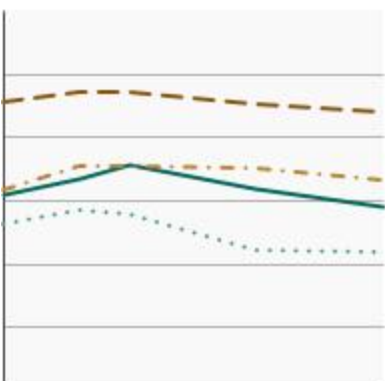
By Age

Percentage of adults aged 18 years and older who always or most of the time protect themselves from the sun by wearing protective clothing by age, 2005-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	Ages 18-24	25.4	22.8 - 28.2
	Ages 25+	38.3	37.4 - 39.3

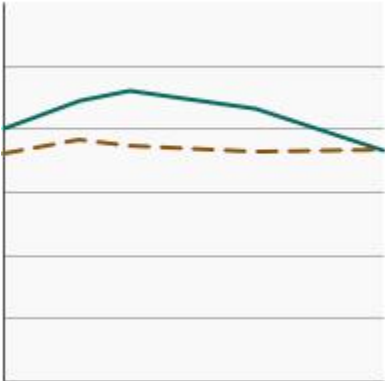
By Sex and Age

Percentage of adults aged 18 years and older who always or most of the time protect themselves from the sun by wearing protective clothing by sex and age, 2005-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	Males, Ages 18-24	29.1	25.3 - 33.1
	Males, Ages 25+	43.8	42.5 - 45.1
	Females, Ages 18-24	21.7	18.3 - 25.6
	Females, Ages 25+	33.1	32.0 - 34.3

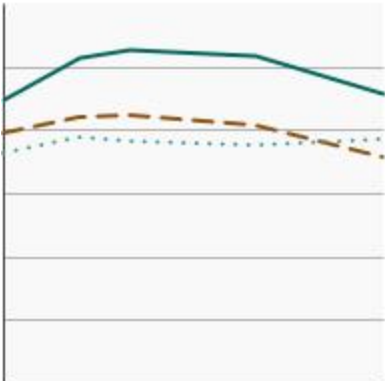
By Poverty Income Level

Percentage of adults aged 18 years and older who always or most of the time protect themselves from the sun by wearing protective clothing by poverty income level, 2005-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	<200% of federal poverty level	36.5	35.1 - 38.1
	>=200% of federal poverty level	36.7	35.7 - 37.8

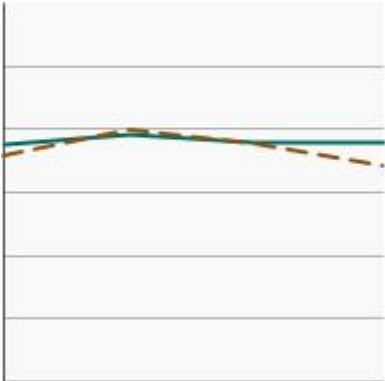
By Education Level

Percentage of adults aged 25 years and older who always or most of the time protect themselves from the sun by wearing protective clothing by highest level of education obtained, 2005-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	Less than High School	45.9	42.6 - 49.2
	High School	35.7	34.0 - 37.4
	Greater than High School	38.5	37.5 - 39.5

By Sun Sensitivity

Percentage of adults aged 18 years and older who always or most of the time protect themselves from the sun by wearing protective clothing by sun sensitivity, 2005-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	<u>Sun-Sensitive</u>	38.0	36.9 - 39.1
	<u>Not Sun-Sensitive</u>	34.1	32.9 - 35.3

Sun sensitivity reflects a person's biological response (e.g., a burn, a burn and then tan, etc.) after prolonged sun exposure or after a long period or season of being relatively unexposed. Although race is related to sun sensitivity, race and ethnicity are not adequate proxies for sun sensitivity.

Seek Shade

By Sex

Percentage of adults aged 18 years and older who always or most of the time protect themselves from the sun by seeking shade by sex, 1992-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	Both Sexes	39.1	38.1 - 40.0
	Male	32.5	31.4 - 33.7
	Female	45.3	44.1 - 46.6

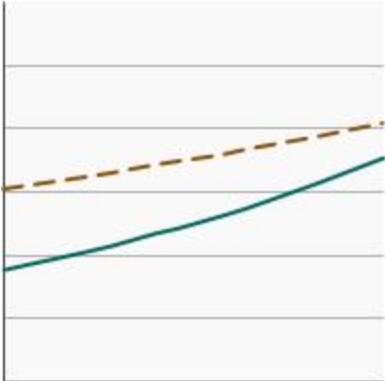
By Race/Ethnicity

Percentage of adults aged 18 years and older who always or most of the time protect themselves from the sun by seeking shade by race/ethnicity, 1992-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	All Races/Ethnicities	39.1	38.1 - 40.0
	Non-Hispanic White	34.6	33.5 - 35.7
	Non-Hispanic Black	46.7	44.0 - 49.4
	Hispanic	47.9	45.9 - 50.0

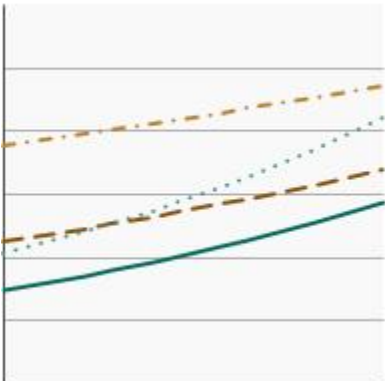
By Age

Percentage of adults aged 18 years and older who always or most of the time protect themselves from the sun by seeking shade by age, 1992-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	Ages 18-24	33.7	30.8 - 36.8
	Ages 25+	39.8	38.9 - 40.8

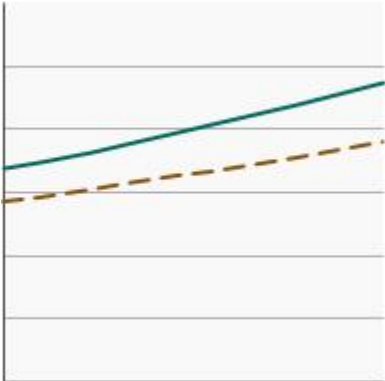
By Sex and Age

Percentage of adults aged 18 years and older who always or most of the time protect themselves from the sun by seeking shade by sex and age, 1992-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	Males, Ages 18-24	27.0	23.1 - 31.3
	Males, Ages 25+	33.3	32.1 - 34.5
	Females, Ages 18-24	40.6	36.5 - 44.8
	Females, Ages 25+	46.0	44.7 - 47.2

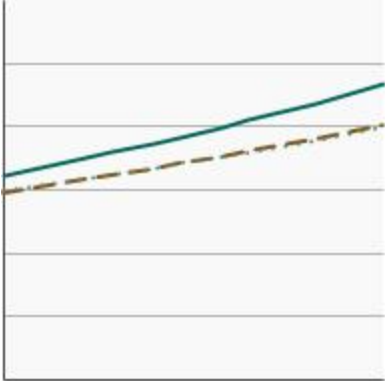
By Poverty Income Level

Percentage of adults aged 18 years and older who always or most of the time protect themselves from the sun by seeking shade by poverty income level, 1998-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	<200% of federal poverty level	44.6	42.9 - 46.4
	>=200% of federal poverty level	37.1	36.0 - 38.1

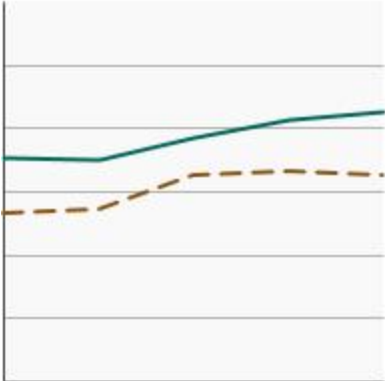
By Education Level

Percentage of adults aged 25 years and older who always or most of the time protect themselves from the sun by seeking shade by highest level of education obtained, 1992-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	Less than High School	43.1	40.0 - 46.4
	High School	40.0	38.4 - 41.7
	Greater than High School	39.0	38.0 - 40.0

By Sun Sensitivity

Percentage of adults aged 18 years and older who always or most of the time protect themselves from the sun by seeking shade by sun sensitivity, 2000-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	<u>Sun-Sensitive</u>	42.6	41.4 - 43.9
	<u>Not Sun-Sensitive</u>	32.4	31.2 - 33.7

Sun sensitivity reflects a person's biological response (e.g., a burn, a burn and then tan, etc.) after prolonged sun exposure or after a long period or season of being relatively unexposed. Although race is related to sun sensitivity, race and ethnicity are not adequate proxies for sun sensitivity.

Cancers Related to UV Exposure

Statistical summaries from NCI's SEER Cancer Stat Fact Sheets:

- [Melanoma of the Skin](#)

Additional Information on UV Exposure

General Public Resources

- [Skin Cancer](#). National Cancer Institute.
- [Skin Cancer](#). American Cancer Society.
- [Skin Cancer](#). Centers for Disease Control and Prevention.
- [Skin Cancer](#). National Council on Skin Cancer Prevention.
- [FDA Proposes Sunscreen Regulation Changes](#). U.S. Food and Drug Administration.
- [Sun protection factor \(SPF\)](#). U.S. Food and Drug Administration.
- [Sunscreen: How to Help Protect Your Skin from the Sun](#). U.S. Food and Drug Administration.
- [Sun Safety](#). U.S. Environmental Protection Agency.

Public Health Resources

- [Melanoma Treatment \(PDQ®\) - Health Professional Version](#). National Cancer Institute.
- [Skin Cancer Treatment \(PDQ®\) - Health Professional Version](#). National Cancer Institute.
- [Sun Safety Evidence-Based Programs Listing](#). National Cancer Institute.
- [Vitamin D and Calcium: A Systematic Review of Health Outcomes \(Update\)](#). AHRQ Publication No. 14-E004-EF September 2014. Evidence Report/Technology Assessment Number 217.
- [Surgeon General's Call to Action to Prevent Skin Cancer](#). Centers for Disease Control and Prevention.
- [Skin cancer: multicomponent community-wide interventions](#). Community Preventive Services Task Force.
- [Stratosphere: UV index](#). National Weather Service: Climate Prediction Center.
- [Code of Federal Regulations Title 21, Volume 76, Number 117, Part 352: Sunscreen Drug Products for Over-the-Counter Human Use \(April 2019\)](#). U.S. Food and Drug Administration.
- [Code of Federal Regulations Title 21, Volume 76, Number 117, Part 201: Labeling \(July 2018\)](#). U.S. Food and Drug Administration.
- [FDA proposed rule: sunscreen drug products for over-the-counter-human use; proposal to amend and lift stay on monograph](#). U.S. Food and Drug Administration.
- [Skin Cancer Prevention: Behavioral counseling](#). U.S. Preventive Services Task Force.

Scientific Reports

- [Association of occupational sun safety policy and actions in state transportation sector in the United States](#). Buller DB, Walkosz BJ, Olivas S, et al. Am J Ind Med. 2021 Apr;64(4):274-282.
- [Interdisciplinary perspectives on sun safety](#). Geller AC, Jablonski NG, Pagoto SL, et al. JAMA Dermatol. 2018;154(1):88-92.
- [Reduced melanoma after regular sunscreen use: randomized trial follow-up](#). Green A, Williams GM, Logan V, and Strutton GM. J Clin Oncol. 2011;29(3):257-263.
- [Estimated cost of sunburn-associated visits to US hospital emergency departments](#). Guy GP, Berkowitz Z, and Watson M. JAMA Dermatol. 2017;153(1):90-92.
- [Trends in indoor tanning and its association with sunburn among US adults](#). Guy GP, Watson M, Seidenberg AB et al. J Am Acad Dermatol. 2017;76(6):1191-1193.
- [The potential impact of reducing indoor tanning on melanoma prevention and treatment costs in the United States: an economic analysis](#). Guy GP, Zhang Y, Ekwueme DU, et al. J Am Acad Dermatol. 2017;76(2):226-233.
- [Prevalence of sun protection use and sunburn and association of demographic and behavioral characteristics with sunburn among US adults](#). Holman DM, Ding H, Guy GP et al. JAMA Dermatol. 2018; 154(5):561-568.

- [Health Beliefs About UV and Skin Cancer Risk Behaviors. Cancer Control. Julian A, Thorburn S, Geldhof GJ. 2020 Jan-Dec;27\(4\):1073274819894008.](#)
- [Benefit–Cost Analysis of the Danish Sun Safety Campaign 2007–2015: Cost Savings from Sunburn and Sunbed Use Reduction and Derived Skin Cancer Reductions 2007–2040 in the Danish Population. Køster B, Meyer MKH, Søgaard J, Dalum P. Pharmacoecoon Open. 2020 Sep;4\(3\):419-425.](#)
- [Prevalence and predictors of total-body skin examination among US adults: 2005 National Health Interview Survey. Lakhani NA, Shaw KM, Thompson T, et al. J Am Acad Dermatol. 2011; 65\(3\): 645-648.](#)
- [Prevalence and correlates of skin self-examination practices among cutaneous malignant melanoma survivors. Manne SL, Heckman CJ, Kashy D, et al. Prev Med Rep. 2020 May 1;19:101110.](#)
- [Effect of Sunscreen Application Under Maximal Use Conditions on Plasma Concentration of Sunscreen Active Ingredients: A Randomized Clinical Trial. Matta MK, Zusterzeel R, Pilli NR, et al. JAMA. 2019;321\(21\):2082-2091.](#)
- [Decision tree model v traditional measures to identify patterns of sun-protective behaviors and sun sensitivity associated with sunburn. Morris KL and Perna FM. JAMA Dermatol. 2018;154\(8\):897-902.](#)
- [Environmental effects of stratospheric ozone depletion, UV radiation, and interactions with climate change: UNEP Environmental Effects Assessment Panel, Update 2020. Neale RE, Barnes PW, Robson TM, et al. Photochem Photobiol Sci. 2021 Jan;20\(1\):1-67.](#)
- [The effect of sunscreen on vitamin D: a review. Neale RE, Khan SR, Lucas RM, et al. Br J Dermatol. 2019 Nov;181\(5\):907-915.](#)
- [Remote skin self-examination training of melanoma survivors and their skin check partners: A randomized trial and comparison with in-person training. Robinson JK, Reavy R, Mallett KA, Turrisi R. Cancer Med. 2020 Oct;9\(19\):7301-7309.](#)
- [Melanoma Skin Self-Examination Education During Mammography: Health Burden of Women Impairs Implementation. Robinson JK, Brown Z, Spring B. J Cancer Educ. 2020 Feb 24;10.1007/s13187-020-01714-4.](#)
- [Community-wide interventions to prevent skin cancer: two community guide systematic reviews. Sandhu PK, Elder R, Patel M, et al. Am J Prev Med. 2016;51\(4\):531-9.](#)
- [Implementation of the SunSmart program and population sun protection behaviour in Melbourne, Australia: Results from cross-sectional summer surveys from 1987 to 2017. Tabbakh T, Volkov A, Wakefield M, Dobbins S. PLoS Med. 2019;16\(10\):e1002932.](#)
- [Walking and Sun Protective Behaviors: Cross-Sectional Associations of Beneficial Health Factors. Tribby CP, Perna FM, Berrigan D. Int J Environ Res Public Health. 2019 Jul 3;16\(13\):2361.](#)

Statistics

- [SEER Cancer Statistics Review, National Cancer Institute.](#)
- [National Health Interview Survey. Centers for Disease Control and Prevention, National Center for Health Statistics.](#)

Cancer Trends Progress Report

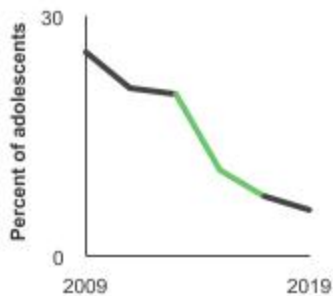
Online Summary of Trends in US Cancer Control Measures

Indoor and Outdoor Tanning

Data Up to Date as of:

August 2023

In 2019, 5.7% of female adolescents used an indoor tanning device within the past year.



Background

Guy et al. 2017 estimated that restricting indoor tanning among minors under 18 years old may prevent melanoma incidence and mortality and save millions of dollars in treatment costs in the United States.

Subsequent international modeling studies accounting for more stringent indoor policies in the US, Canada, and Europe since 2018 estimate reduced skin cancer burden and reduced health care costs if indoor tanning were banned among minors or banned completely.

Reports indicate that age restriction laws have been associated with less indoor tanning, and teens who do not tan before age 18 are two to four times less likely to tan as adults. Several states have adopted laws restricting youth access to tanning beds, and the FDA has proposed a nationwide restriction for minors' (under 18 years) access to tanning beds. Bowers et al, 2020 reported that indoor tanning rates among adults over age 18 also decreased in states that banned indoor tanning among minors as compared to adults in states without tanning restrictions for minors.

While reduction of indoor tanning is estimated to significantly reduce melanoma, outdoor sun exposure is the primary modifiable melanoma risk factor and includes intentional outdoor tanning and unintentional sun exposure. Among US adolescents, outdoor tanning (15.6%) appears to be more prevalent than indoor tanning (3%). The 2020 National Health Interview Survey provides the most recent intentional outdoor tanning data for US adults. Overall, 33.7% of US adults reported intentional outdoor tanning in the last 12-months, and outdoor tanning was more common among women (38.7%) than men (28.7%) and among adults aged under 25 years (45.1%) than those aged 25 years and over (32%), and among sun-sensitive adults (39.9%) than adults who are not sun-sensitive (29.2%). Considering the context of sunburn, other data indicate, leisure pursuits near water, physical activity, and work around the home as the most frequent contexts of sunburn in addition to intentional outdoor tanning.

Measure

Measures

The percentage of high school students (grades 9-12) who reported use of an indoor tanning device such as a sunlamp, sunbed, or tanning booth (not counting receipt of a spray-on tan) one or more times during the 12 months before the survey.

The percentage of adults aged 18 years and older who have used an indoor tanning device one or more times during the past 12 months. Although NHIS-CCS also collected this data for adults in 2005 and 2008, the methodology used likely resulted in overestimates, and these data are not included in the report.

The percentage of adults aged 18 years and older who reported spending time outdoors for the purpose of developing a tan (i.e., always, most times, sometimes, or rarely) during the past 12 months

Note: 2020 data point included above; graph will be included when more data points become available.

Healthy People 2030 Target

There are no Healthy People 2030 targets regarding indoor or outdoor tanning.

[Healthy People 2030](#) is a set of goals set forth by the Department of Health and Human Services.

Data Source

Adolescents: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Youth Risk Behavior Surveillance System (YRBSS), 2009–2019.

Adults: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey NCI and CDC co-sponsored Cancer Control Supplement, 2010-2015. Outdoor tanning only available for 2020.

In 2019 the NHIS questionnaire was redesigned to increase relevance, enhance data quality, and minimize respondent burden. In addition, the COVID-19 pandemic created challenges conducting in-person interviews for the 2020 NHIS, requiring changes to field procedures to conduct most surveys by telephone, which impacted survey response rates. For details related to the potential impacts of these issues, please refer to [Potential Impact of NHIS Redesign and COVID-19 on the Cancer Trends Progress Report](#).

Trends and Most Recent Estimates

Adolescents

By Sex

Percentage of adolescents in grades 9 through 12 who used an indoor tanning device in the past year by sex, 2009-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent of adolescents	95% Confidence Interval
	Both Sexes	4.5	3.5 - 5.6
	Male	3.2	2.5 - 4.1
	Female	5.7	4.2 - 7.7

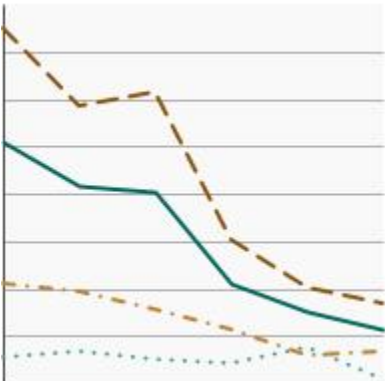
By Race/Ethnicity

Percentage of adolescents in grades 9 through 12 who used an indoor tanning device in the past year by race/ethnicity, 2009-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent of adolescents	95% Confidence Interval
	All Races/Ethnicities	4.5	3.5 - 5.6
	Non-Hispanic White	5.6	4.2 - 7.4
	Non-Hispanic Black	3.2	2.2 - 4.7
	Hispanic	3.4	2.5 - 4.5

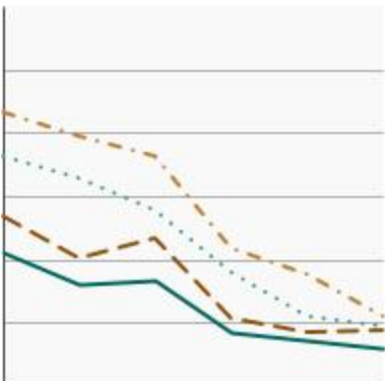
Females by Race/Ethnicity

Percentage of female adolescents in grades 9 through 12 who used an indoor tanning device in the past year by race/ethnicity, 2009-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent of female adolescents	95% Confidence Interval
	All Races/Ethnicities	5.7	4.2 - 7.7
	Non-Hispanic White	8.4	6.0 - 11.7
	Non-Hispanic Black	0.5	0.3 - 0.9
	Hispanic	3.3	2.5 - 4.4

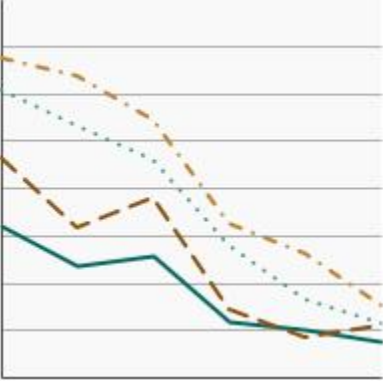
By High School Grade

Percentage of adolescents in grades 9 through 12 who used an indoor tanning device in the past year by grade level, 2009-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent of adolescents	95% Confidence Interval
	Grade 9	3.0	2.1 - 4.3
	Grade 10	4.4	3.2 - 6.1
	Grade 11	4.7	3.2 - 7.0
	Grade 12	5.5	4.0 - 7.4

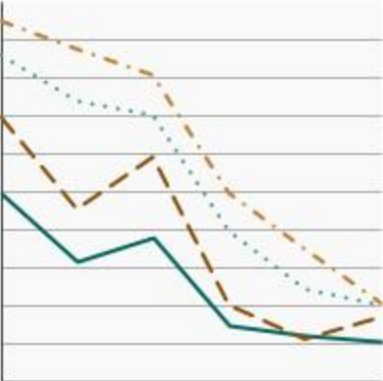
Females by High School Grade

Percentage of female adolescents in grades 9 through 12 who used an indoor tanning device in the past year by grade level, 2009-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent of female adolescents	95% Confidence Interval
	Grade 9	3.7	2.4 - 5.6
	Grade 10	5.5	3.7 - 8.1
	Grade 11	5.6	3.5 - 9.0
	Grade 12	7.5	5.0 - 11.3

Non-Hispanic White Female by High School Grade

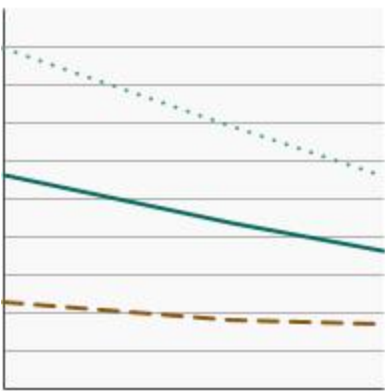
Percentage of Non-Hispanic White female adolescents in grades 9 through 12 who used an indoor tanning device in the past year by grade level, 2009-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent of female Non-Hispanic White adolescents	95% Confidence Interval
	Grade 9	5.3	3.3 - 8.4
	Grade 10	8.5	5.7 - 12.6
	Grade 11	9.9	6.1 - 15.8
	Grade 12	10.1	6.2 - 16.2

Adults

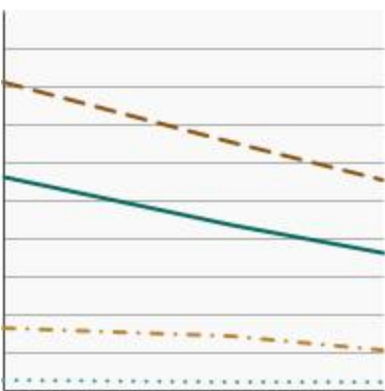
By Sex

Percentage of adults aged 18 years and older who used an indoor tanning device in the past year by sex, 2010-2015

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2015)	
		Percent of adults	95% Confidence Interval
	Both Sexes	3.6	3.3 - 4.0
	Male	1.7	1.4 - 2.0
	Female	5.6	5.1 - 6.2

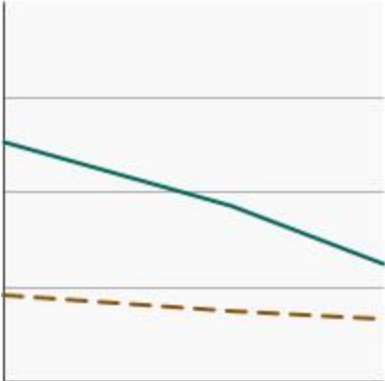
By Race/Ethnicity

Percentage of adults aged 18 years and older who used an indoor tanning device in the past year by race/ethnicity, 2010-2015

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2015)	
		Percent of adults	95% Confidence Interval
	All Races/Ethnicities	3.6	3.3 - 4.0
	Non-Hispanic White	5.5	5.0 - 6.1
	Non-Hispanic Black	0.2	0.1 - 0.4
	Hispanic	1.0	0.8 - 1.4

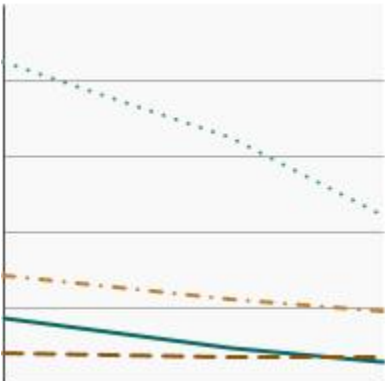
By Age

Percentage of adults aged 18 years and older who used an indoor tanning device in the past year by age, 2010-2015

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2015)	
		Percent of adults	95% Confidence Interval
	Ages 18-24	6.2	5.1 - 7.5
	Ages 25 and older	3.3	2.9 - 3.6

By Sex and Age

Percentage of adults aged 18 years and older who used an indoor tanning device in the past year by sex and age, 2010-2015

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2015)	
		Percent of adults	95% Confidence Interval
	Males, Ages 18-24	1.5	0.9 - 2.5
	Males, Ages 25 and older	1.7	1.4 - 2.0
	Females, Ages 18-24	11.0	9.0 - 13.4
	Females, Ages 25 and older	4.8	4.3 - 5.4

By Poverty Income Level

Percentage of adults aged 18 years and older who used an indoor tanning device in the past year by poverty income level, 2010-2015

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2015)	
		Percent of adults	95% Confidence Interval
	<u><200% of federal poverty level</u>	2.6	2.2 - 3.0
	<u>>=200% of federal poverty level</u>	4.2	3.7 - 4.6

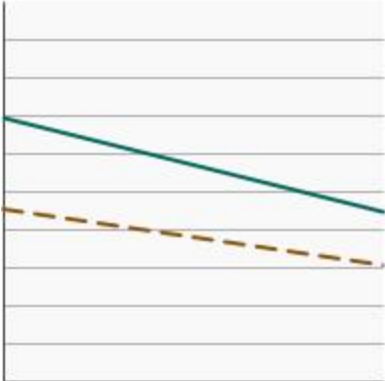
By Education Level

Percentage of adults aged 25 years and older who used an indoor tanning device in the past year by highest level of education obtained, 2010-2015

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2015)	
		Percent of adults	95% Confidence Interval
	<u>Less than High School</u>	1.6	1.1 - 2.2
	<u>High School</u>	3.8	3.1 - 4.6
	<u>Greater than High School</u>	3.4	3.0 - 3.8

By Sun Sensitivity

Percentage of adults aged 18 years and older who used an indoor tanning device in the past year by sun sensitivity, 2010-2015

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2015)	
		Percent of adults	95% Confidence Interval
	<u>Sun-Sensitive</u>	4.5	4.0 - 5.0
	<u>Not Sun-Sensitive</u>	3.0	2.6 - 3.5

Sun sensitivity reflects a person's biological response (e.g., a burn, a burn and then tan, etc.) after prolonged sun exposure or after a long period or season of being relatively unexposed. Although race is related to sun sensitivity, race and ethnicity are not adequate proxies for sun sensitivity.

Cancers Related to Indoor and Outdoor Tanning

Statistical summaries from NCI's SEER Cancer Stat Fact Sheets:

- [Melanoma of the Skin](#)

Additional Information on Indoor and Outdoor Tanning

General Public Resources

- [Skin Cancer \(including Melanoma\)—Patient Version](#). National Cancer Institute.
- [Skin Cancer](#). American Cancer Society.
- [National Council on Skin Cancer Prevention](#).
- [Sunburn Protection Factor \(SPF\)](#). U.S. Food and Drug Administration.
- [The Risks of Tanning](#). U.S. Food and Drug Administration.
- [Sunscreen: How to Help Protect Your Skin From the Sun](#). U.S. Food and Drug Administration.

Public Health Resources

- [Melanoma Treatment \(PDQ®\)—Health Professional Version](#). National Cancer Institute.
- [Skin Cancer Treatment \(PDQ®\)—Health Professional Version](#). National Cancer Institute.
- [Sun Safety Evidence-Based Programs Listing](#). National Cancer Institute.
- [Surgeon General's Call to Action to Prevent Skin Cancer](#). Centers for Disease Control and Prevention.
- [Counseling on Sun Protection and Indoor Tanning](#). Balk SJ, Gottschlich EA, Holman DM, Watson M. Pediatrics. 2017;140(6): e20171680.
- [Skin cancer: multicomponent community-wide interventions](#). Community Preventive Services Task Force.
- [Sunlamps and Sunlamp Products \(Tanning Beds/Booths\)](#). U.S. Food and Drug Administration.
- [Behavioral counseling to prevent skin cancer: U.S. Preventive Services Task Force recommendation statement](#). U.S. Preventive Services Task Force. JAMA 2018;319(11):1134–1142.
- [Indoor Tanning Restrictions for Minors – A State-by-State Comparison \(April 2018\)](#). National Conference of State Legislatures.

Scientific Reports

- [Effect of vitamin D supplementation on non-skeletal disorders: a systematic review of meta-analyses and randomized trials](#). Autier P, Mullie P, Macacu A et al. Lancet Diabetes Endocrinol. 2017;5(12):986-1004.
- [VITamin D and Omega-3 Trial \(VITAL Study\)](#). Brigham and Women's Hospital.
- [Interdisciplinary Perspectives on Sun Safety](#). Geller AC, Jablonski NG, Pagoto SL et al. JAMA Dermatol. 2018;154(1):88-92.
- [Trends in indoor tanning and its association with sunburn among US adults](#). Guy GP, Watson M, Seidenberg AB et al. J Am Acad Dermatol. 2017;76(6):1191-1193 .
- [The potential impact of reducing indoor tanning on melanoma prevention and treatment costs in the U.S.: An economic analysis](#). Guy GP, Zhang Y, Ekwueme DU et al. J Am Acad Dermatol. 2017;76(2):226-233.
- [Behavioral counseling to prevent skin cancer: U.S. Preventive Services Task Force recommendation statement](#). U.S. Preventive Services Task Force. JAMA 2018;319(11):1134–1142.
- [Age-Specific Incidence of Melanoma in the United States](#). Paulson KG, Gupta D, Kim TS, et al. JAMA Dermatol. 2019. doi: 10.1001/jamadermatol.2019.3353. [Epub ahead of print]
- [Research on Skin Cancer-Related Behaviors and Outcomes in the NIH Grant Portfolio, 2000-2014: Skin Cancer Intervention Across the Cancer Control Continuum \(SCI-3C\)](#). Perna FM, Dwyer LA, Tesaro G et al. JAMA Dermatol. 2017;153(5): 398-405.
- [State Indoor Tanning Laws and Prevalence of Indoor Tanning Among US High School Students, 2009-2015](#). Qin J, Holman DM, Jones SE et al. Am J Public Health. 2018;108(7):951-956.
- [Implementation of the SunSmart program and population sun protection behaviour in Melbourne, Australia: Results from cross-sectional summer surveys from 1987 to 2017](#). Tabbakh T, Volkov A, Wakefield M, Dobbins S. PLoS Med. 2019;16(10):e1002932.

- Tanning Salon Compliance Rates in States with Legislation to Protect Youth Access to UV Tanning. Williams MS, Buhalog B, Blumenthal L, Stratman EJ. JAMA Dermatol 2018;154(1):67-72.
- Prevalence of indoor tanning and association with sunburn among youth in the United States. Guy GP, Berkowitz Z, Jones ES et al. JAMA Dermatol 2017;153(5):387-390.

Statistics

- SEER Cancer Statistics Review. National Cancer Institute.
- Cancer Statistics Center, 2018 Estimates. American Cancer Society.
- National Health Interview Survey. Centers for Disease Control and Prevention, National Center for Health Statistics.

Cancer Trends Progress Report

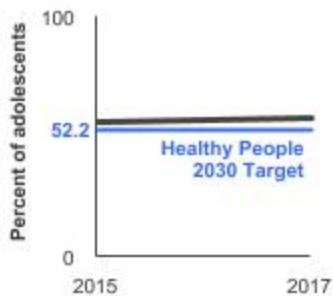
Online Summary of Trends in US Cancer Control Measures

Sunburn

Data Up to Date as of:

August 2023

In 2017, 57.2% of students in grades 9-12 were sunburned in the past year.



Background

Sunburn, also known as erythema, is caused by excessive exposure to ultraviolet radiation (UVR), which results in an acute cutaneous inflammatory response. Sunburn results from over exposure to UVR and can occur from use of indoor tanning beds or over exposure to outdoor sunlight. Although sunbathing and tanning are strongly associated with sunburn, recent data indicate that most sunburns occur in contexts unrelated to intentional tanning, such as engaging in physical activity and when spending time near the water. Sunburn symptoms include redness, warmth, tenderness, or edema, and may cause pain or blistering. Annually, over 33,000 sunburns are reported that require emergency room visits and may occur among people of all racial/ethnic groups. Previous sun burning, particularly experienced at younger ages, is a strong predictor of future skin cancer and especially melanoma, the deadliest form of skin cancer. People with sun sensitive skin are more likely to incur sunburn and are at greater risk for skin cancer, especially melanoma, than those with relatively less sun sensitivity. Sun sensitivity reflects a person's characteristic skin response (e.g., a burn, a burn and then tan, etc.) after prolonged sun exposure or after a long period or season of being relatively unexposed. Though related to sun sensitivity, skin color and ethnicity are not adequate proxies for sun sensitivity because they are not accurate biological descriptors of at-risk populations.

Measure

The percentage of high school students (grades 9-12) who reported having been sunburned in the past 12 months.

The percentage of adults aged 18 years and older who reported having been sunburned in the past 12 months.

Healthy People 2030 Target

- Reduce to 52.2 percent the proportion of adolescents in grades 9 through 12 who report sunburn.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Note: Goals are indicated as blue line on Detailed Trend Graphs.

Data Source

Adolescents: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Youth Risk Behavior Surveillance System (YRBSS), 2015-2017.

Adults: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey NCI and CDC co-sponsored Cancer Control Supplement, 2000-2010, 2010-2020.

In 2019 the NHIS questionnaire was redesigned to increase relevance, enhance data quality, and minimize respondent burden. In addition, the COVID-19 pandemic created challenges conducting in-person interviews for the 2020 NHIS, requiring changes to field procedures to conduct most surveys by telephone, which impacted

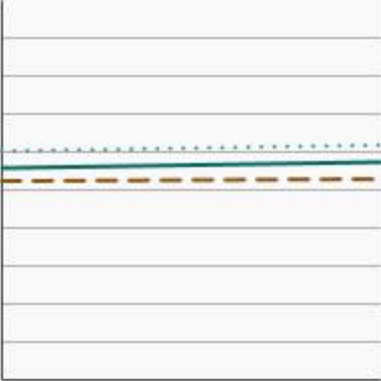
survey response rates. For details related to the potential impacts of these issues, please refer to [Potential Impact of NHIS Redesign and COVID-19 on the Cancer Trends Progress Report](#).

Trends and Most Recent Estimates

Adolescents

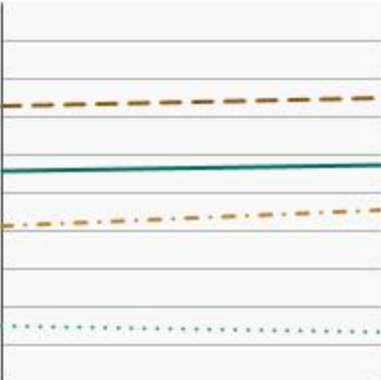
By Sex

Percentage of students in grades 9-12 who were sunburned in the past year by sex, 2015-2017

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017)	
		Percent of adolescents	95% Confidence Interval
	Both Sexes	57.2	54.1 - 60.3
	Male	52.8	49.4 - 56.0
	Female	61.6	58.4 - 64.7

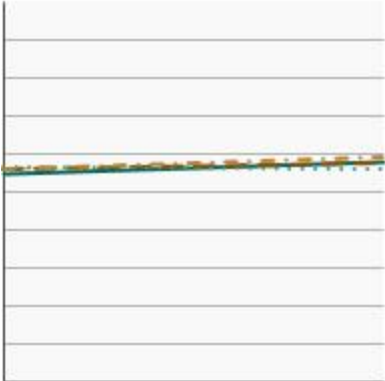
By Race/Ethnicity

Percentage of students in grades 9-12 who were sunburned in the past year by race/ethnicity, 2015-2017

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017)	
		Percent of adolescents	95% Confidence Interval
	All Races/Ethnicities	57.2	54.1 - 60.3
	Non-Hispanic White	74.8	73.0 - 76.6
	Non-Hispanic Black	13.0	10.4 - 16.1
	Hispanic	45.1	42.4 - 47.8

By High School Grade

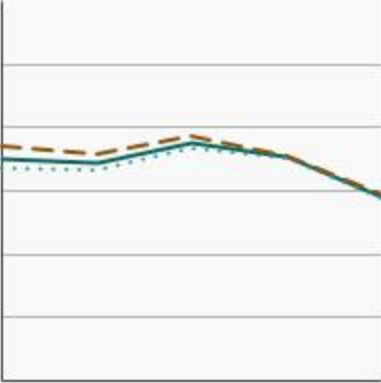
Percentage of students in grades 9-12 who were sunburned in the past year by grade level, 2015-2017

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017)	
		Percent of adolescents	95% Confidence Interval
	Grade 9	57.7	53.9 - 61.4
	Grade 10	57.2	53.1 - 61.2
	Grade 11	55.6	51.5 - 59.7
	Grade 12	58.7	54.5 - 62.9

Adults

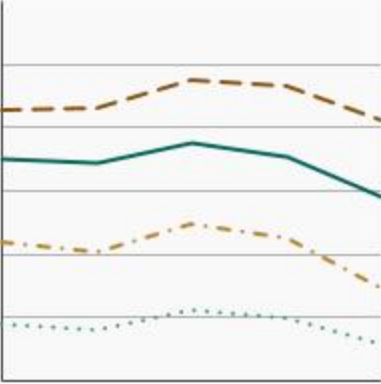
By Sex

Percentage of adults aged 18 years and older who were sunburned in the past year by sex, 2000-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	Both Sexes	29.1	28.2 - 30.1
	Male	29.5	28.3 - 30.6
	Female	28.9	27.7 - 30.0

By Race/Ethnicity

Percentage of adults aged 18 years and older who were sunburned in the past year by race/ethnicity, 2000-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	All Races/Ethnicities	29.1	28.2 - 30.1
	Non-Hispanic White	41.1	40.1 - 42.2
	Non-Hispanic Black	5.6	4.6 - 6.7
	Hispanic	14.4	12.9 - 16.0

By Age

Percentage of adults aged 18 years and older who were sunburned in the past year by age, 2000-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	Ages 18-24	40.6	37.7 - 43.6
	Ages 25 and older	27.4	26.5 - 28.3

By Sex and Age

Percentage of adults aged 18 years and older who were sunburned in the past year by sex and age, 2000-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	Males, Ages 18-24	37.7	33.8 - 41.7
	Males, Ages 25 and older	28.2	27.1 - 29.4
	Females, Ages 18-24	43.6	39.4 - 47.8
	Females, Ages 25 and older	26.7	25.6 - 27.8

By Poverty Income Level

Percentage of adults aged 18 years and older who were sunburned in the past year by poverty income level, 2000-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	<u><200% of federal poverty level</u>	19.1	17.8 - 20.5
	<u>>=200% of federal poverty level</u>	33.1	32.1 - 34.1

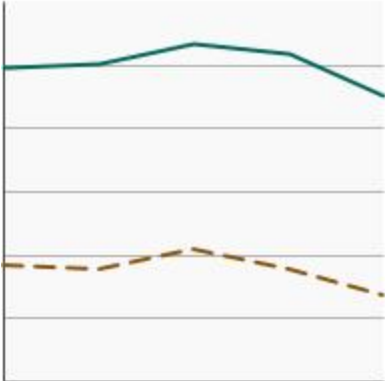
By Education Level

Percentage of adults aged 25 years and older who were sunburned in the past year by highest level of education obtained, 2000-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	<u>Less than High School</u>	13.2	11.1 - 15.6
	<u>High School</u>	23.0	21.4 - 24.7
	<u>Greater than High School</u>	31.7	30.7 - 32.7

By Sun Sensitivity

Percentage of adults aged 18 years and older who were sunburned in the past year by sun sensitivity, 2000-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of adults	95% Confidence Interval
	<u>Sun-Sensitive</u>	45.3	44.1 - 46.4
	<u>Not Sun-Sensitive</u>	13.5	12.6 - 14.4

Sun sensitivity reflects a person's biological response (e.g., a burn, a burn and then tan, etc.) after prolonged sun exposure or after a long period or season of being relatively unexposed. Although race is related to sun sensitivity, race and ethnicity are not adequate proxies for sun sensitivity.

Cancers Related to Sunburn

Statistical summaries from NCI's SEER Cancer Stat Fact Sheets:

- [Melanoma of the Skin](#)

Additional Information on Sunburn

General Public Resources

- [Skin Cancer](#). National Cancer Institute.
- [Skin Cancer](#). American Cancer Society.
- [Skin Cancer](#). Centers for Disease Control and Prevention.
- [Skin Cancer](#). National Council on Skin Cancer Prevention.
- [Sun Safety](#). U.S. Environmental Protection Agency.
- [Radiation-Emitting Products: Sunlamps and Sunlamp Products \(Tanning Beds/Booths\)](#). U.S. Food and Drug Administration.
- [Sun protection factor \(SPF\)](#). U.S. Food and Drug Administration.
- [Sunscreen: How to Help Protect Your Skin from the Sun](#). U.S. Food and Drug Administration.

Public Health Resources

- [Melanoma Treatment \(PDQ®\)—Health Professional Version](#). National Cancer Institute.
- [Skin Cancer Treatment \(PDQ®\)—Health Professional Version](#). National Cancer Institute.
- [Sun Safety Evidence-Based Programs Listing](#). National Cancer Institute.
- [Vitamin D and Calcium: A Systematic Review of Health Outcomes \(Update\)](#). AHRQ Publication No. 14-E004-EF September 2014. Evidence Report/Technology Assessment Number 217.
- [Counseling on Sun Protection and Indoor Tanning](#). Balk SJ, Gottschlich EA, Holman DM, Watson M. Pediatrics. 2017;140(6): e20171680.
- [Surgeon General's Call to Action to Prevent Skin Cancer](#). Centers for Disease Control and Prevention.
- [Skin cancer: multicomponent community-wide interventions](#). Community Preventive Services Task Force.
- [Indoor Tanning Association settles FTC charge that it deceived customers about skin cancer risks from tanning](#). Federal Trade Commission.
- [Dietary Reference Intakes for Calcium and Vitamin D \(2010\)](#). Institute of Medicine.
- [Stratosphere: UV index](#). National Weather Service: Climate Prediction Center.
- [Code of Federal Regulations Title 21, Volume 76, Number 117, Part 352: Sunscreen Drug Products for Over-the-Counter Human Use \(April 2019\)](#). U.S. Food and Drug Administration.
- [Code of Federal Regulations Title 21, Volume 76, Number 117, Part 201: Labeling \(July 2018\)](#). U.S. Food and Drug Administration.
- [Skin Cancer Prevention: Behavioral counseling](#). U.S. Preventive Services Task Force.
- [Sunlamp products and ultraviolet lamps intended for use in sunlamp products](#). U.S. Food and Drug Administration. Title 21. Food and drugs. CFR 1040.20. Fed Regist. April 2019.

Scientific Reports

- [Effect of vitamin D supplementation on non-skeletal disorders: a systematic review of meta-analyses and randomized trials](#). Autier P, Mullie P, Macacu A et al. Lancet Diabetes Endocrinol. 2017;5(12):986-1004.
- [Counseling on Sun Protection and Indoor Tanning](#). Balk SJ, Gottschlich EA, Holman DM, Watson M. Pediatrics. 2017;140(6): e20171680.
- [Is the sun setting on vitamin D?](#) Chou SH, LeBoff MS, Manson JE. Clin Chem 2020 May 1; 66(5):635-637.
- [Interdisciplinary Perspectives on Sun Safety](#). Geller AC, Jablonski NG, Pagoto SL et al. JAMA Dermatol. 2018;154(1):88-92.
- [Reduced melanoma after regular sunscreen use: randomized trial follow-up](#). Green A, Williams GM, Logan V, and Strutton GM. J Clin Oncol. 2011;29(3):257-263.
- [Estimated cost of sunburn-associated visits to US hospital emergency departments](#). Guy GP, Berkowitz Z, and Watson M. JAMA Dermatol. 2017;153(1):90-92.

- [Prevalence of indoor tanning and association with sunburn among youth in the United States](#). Guy GP, Berkowitz Z, Jones ES et al. JAMA Dermatol 2017;153(5):387-390.
- [The Context of Sunburn Among U.S. Adults: Common Activities and Sun Protection Behaviors](#). Holman DM, Ragan KR, Julian AK, Perna FM. Am J Prev Med. 2021 Feb 12:S0749-3797(21)00064-7.
- [Sunburn prevalence among US adults, National Health Interview Survey 2005, 2010, and 2015](#). Holman DM, Ding H, Berkowitz Z, Hartman AM, Perna FM. J Am Acad Dermatol. 2019 Mar;80(3):817-820. doi: 10.1016/j.jaad.2018.10.044.
- [The Context of Sunburn Among U.S. Adults: Common Activities and Sun Protection Behaviors](#). Holman DM, Ragan KR, Julian AK, Perna FM. Am J Prev Med. 2021 May;60(5):e213-e220.
- [Prevalence of sun protection use and sunburn and association of demographic and behavioral characteristics with sunburn among US adults](#). Holman DM, Ding H, Guy GP et al. JAMA Dermatol. 2018; 154(5):561-568.
- [Radiation](#). International Agency for Research on Cancer. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans 2012;100D:36–102.
- [Sun safety practices among schools in the United States](#). Jones SE, Guy GP. JAMA Dermatol. 2017;153(5):391-397
- [Benefit–Cost Analysis of the Danish Sun Safety Campaign 2007–2015: Cost Savings from Sunburn and Sunbed Use Reduction and Derived Skin Cancer Reductions 2007–2040 in the Danish Population](#). Køster B, Meyer MKH, Søgaard J, Dalum P. Pharmacoecoon Open. 2020 Sep;4(3):419-425.
- [Decision tree model v traditional measures to identify patterns of sun-protective behaviors and sun sensitivity associated with sunburn](#). Morris KL and Perna FM. JAMA Dermatol. 2018;154(8):897-902.
- [Environmental effects of stratospheric ozone depletion, UV radiation, and interactions with climate change: UNEP Environmental Effects Assessment Panel, Update 2020](#). Neale RE, Barnes PW, Robson TM, et al. Photochem Photobiol Sci. 2021 Jan;20(1):1-67.
- [The effect of sunscreen on vitamin D: a review](#). Neale RE, Khan SR, Lucas RM, et al. Br J Dermatol. 2019 Nov;181(5):907-915.
- [Age-Specific Incidence of Melanoma in the United States](#). Paulson KG, Gupta D, Kim TS, et al. JAMA Dermatol. 2019. doi: 10.1001/jamadermatol.2019.3353. [Epub ahead of print]
- [Research on Skin Cancer-Related Behaviors and Outcomes in the NIH Grant Portfolio, 2000-2014: Skin Cancer Intervention Across the Cancer Control Continuum \(SCI-3C\)](#). Perna FM, Dwyer LA, Tesauro G et al. JAMA Dermatol. 2017;153(5): 398-405
- [Community-wide interventions to prevent skin cancer: two community guide systematic reviews](#). Reed KB, Brewer JD, Lohse CM, et al. Mayo Clin Proc. 2012;87(4):328–334.
- [Implementation of the SunSmart program and population sun protection behaviour in Melbourne, Australia: Results from cross-sectional summer surveys from 1987 to 2017](#). Tabbakh T, Volkov A, Wakefield M, Dobbins S. PLoS Med. 2019;16(10):e1002932.
- [Associations between ultraviolet radiation, tree cover and adolescent sunburns](#). Tribby CP, Julian AK, Oh AY, Perna FM, Berrigan D. Int J Health Geogr. 2020 Dec 14;19(1):59.

Statistics

- [SEER Cancer Statistics Review](#). National Cancer Institute.
- [Cancer Statistics Center, 2021 Estimates](#). American Cancer Society.
- [National Health Interview Survey](#). Centers for Disease Control and Prevention, National Center for Health Statistics.

Cancer Trends Progress Report

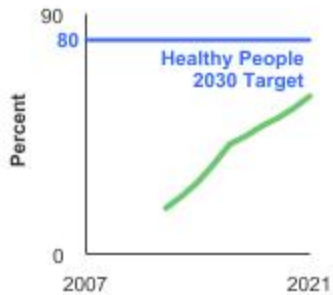
Online Summary of Trends in US Cancer Control Measures

HPV Vaccination

Data Up to Date as of:

August 2023

In 2021, 58.5% of adolescents aged 13-15 years had received 2 or 3 doses of human papillomavirus (HPV) vaccine as recommended.



Background

Human papillomavirus (HPV) is a common virus, some types of which spread through sexual contact. Some sexually transmitted HPVs can cause genital warts, whereas others, called high-risk or oncogenic HPVs, can cause cancer. High-risk HPVs cause virtually all cervical cancers, most anal cancers, and some vaginal, vulvar, penile, and oropharyngeal cancers. Many HPV infections go away on their own within 1 to 2 years. However, infections that last for many years increase a person's risk of developing cancer.

HPV vaccines work like other immunizations (a technique used to cause an immune response that results in resistance to a specific disease) that guard against viral infections. According to the Centers for Disease Control and Prevention (CDC), both males and females aged 11 to 12 years should get vaccinated. People aged 9 to 26 years are recommended to receive the vaccine. People aged 27 to 45 years may decide to get vaccinated after talking with their doctors about their risks for new HPV infections.

Because the vaccines do not protect against all HPV infections that cause cervical cancer, it is important for vaccinated women to continue cervical cancer screening.

Measure

Percentage of adolescents aged 13-15 years who had received 2 or 3 doses of the human papillomavirus (HPV) vaccine as recommended at time of immunization.

From 2008-2011, the recommendation by the CDC's Advisory Committee on Immunization Practices (ACIP) was for a 3-dose series for females only. From 2011-2016, the recommendation included both males and females using a 3-dose series. Beginning in 2016, ACIP recommended males and females beginning their vaccination series before 15 years of age receive a 2-dose, rather than 3-dose series.

The National Immunization Survey Teen (NIS-Teen) vaccination coverage estimates are based on provider-reported vaccination histories from adolescents with adequate provider data (APD). NIS-Teen implemented a revised APD definition in 2014, thus estimates in 2014 and after are not directly comparable to those from prior years. However, the change in APD definition does not impact overall vaccination coverage trends; vaccines routinely recommended during adolescence, such as HPV, were less affected than vaccines routinely recommended in childhood. Additional information on implementation of the revised APD definition and assessment of impact on vaccine coverage estimates is available on the [National Immunization Survey-Teen \(NIS-Teen\): Revised Definition of Adequate Provider Data \(APD\)](#) website, published by the CDC.

Healthy People 2030 Target

- Increase to 80 percent the proportion of adolescents who receive recommended doses of the human papillomavirus (HPV) vaccine.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Note: Goals are indicated as blue line on Detailed Trend Graphs.

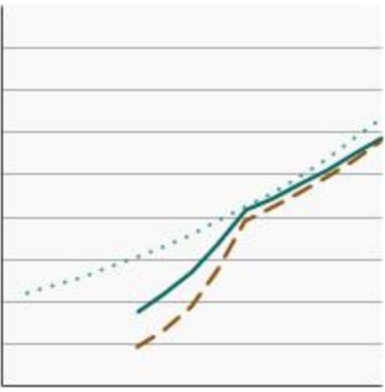
Data Source

Centers for Disease Control and Prevention, The National Immunization Surveys (NIS), 2008-2021.

Trends and Most Recent Estimates

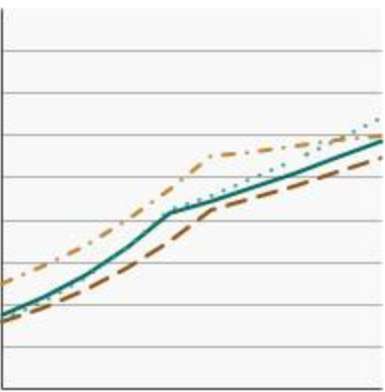
By Sex

Percentage of adolescents aged 13-15 years who had received 2 or 3 doses of the human papillomavirus (HPV) vaccine as recommended at time of immunization by sex, 2008-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent	95% Confidence Interval
	Both Sexes	58.5	56.5 - 60.5
	Male	57.1	54.3 - 59.9
	Female	60.0	57.1 - 62.7

By Race/Ethnicity

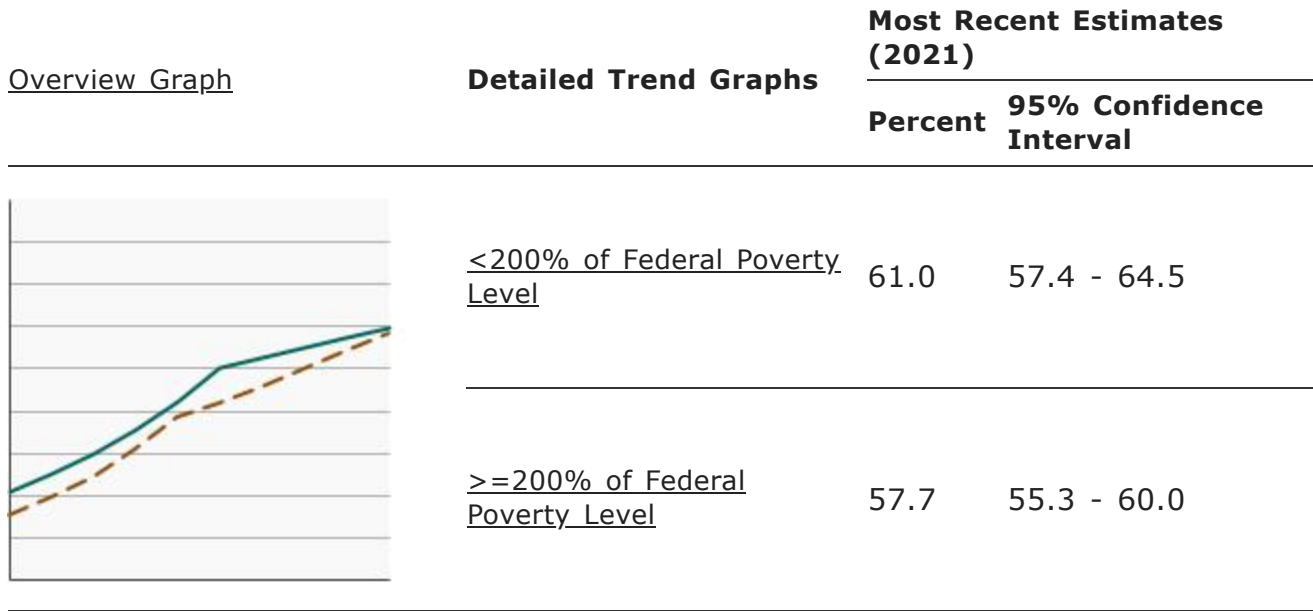
Percentage of adolescents aged 13-15 years who had received 2 or 3 doses of the human papillomavirus (HPV) vaccine as recommended at time of immunization by race/ethnicity, 2012-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent	95% Confidence Interval
	All Races	58.5	56.5 - 60.5
	Non-Hispanic White	54.8	52.5 - 57.0
	Non-Hispanic Black	64.2	59.2 - 68.9
	Hispanic	60.9	55.7 - 65.8

By Poverty Income Level

Percentage of adolescents aged 13-15 years who had received 2 or 3 doses of the

human papillomavirus (HPV) vaccine as recommended at time of immunization by poverty income level, 2012-2021



Cancers Related to HPV

Statistical summaries from NCI's SEER Cancer Stat Fact Sheets:

- [Anus](#)
- [Cervix Uteri](#)
- [Oral Cavity and Pharynx](#)
- [Vulva](#)

Additional Information on HPV Vaccination

General Public Resources

- [HPV and Cancer](#). National Cancer Institute.
- [Human Papillomavirus \(HPV\) Vaccines](#). National Cancer Institute.
- [Human Papillomavirus \(HPV\) Vaccination & Cancer Prevention](#). Centers for Disease Control and Prevention.

Public Health Resources

- [Cervical Cancer Prevention \(PDQ®\)](#). National Cancer Institute.
- [HPV Vaccination Evidence-Based Programs Listing](#). National Cancer Institute.
- [What Works Fact Sheet: Increasing Appropriate Vaccination](#). Centers for Disease Control and Prevention.
- [Human Papillomavirus Vaccination for Adults: Updated Recommendations of the Advisory Committee on Immunization Practices](#). Meites E, Szilagyi PG, Chesson HW, et al. MMWR. 2019;68(32);698-702.
- [Use of a 2-Dose Schedule for Human Papillomavirus Vaccination — Updated Recommendations of the Advisory Committee on Immunization Practices](#). Meites E, Kempe A, Markowitz LE. MMWR. 2016;65(49);1405-8.

Scientific Reports

- [Population-level impact and herd effects following the introduction of human papillomavirus vaccination programmes: updated systematic review and meta-analysis](#). Drolet M, Bénard É, Pérez N, et al. Lancet 394 (10197): 497-509, 2019.
- [Immunogenicity of the 9-Valent HPV Vaccine Using 2-Dose Regimens in Girls and Boys vs a 3-Dose Regimen in Women](#). Iversen OE, Miranda MJ, Ulied A, et al. JAMA 316 (22): 2411-2421, 2016.

- A 9-valent HPV vaccine against infection and intraepithelial neoplasia in women. Joura EA, Giuliano AR, Iversen OE, et al. N Engl J Med 372 (8): 711-23, 2015.
- Efficacy of fewer than three doses of an HPV-16/18 AS04-adjuvanted vaccine: combined analysis of data from the Costa Rica Vaccine and PATRICIA trials. Kreimer AR, Struyf F, Del Rosario-Raymundo MR, et al. Lancet Oncol 16 (7): 775-86, 2015
- HPV Vaccination and the Risk of Invasive Cervical Cancer. Lei J, Ploner A, Elfström KM, et al. N Engl J Med 383 (14): 1340-1348, 2020
- National, Regional, State, and Selected Local Area Vaccination Coverage Among Adolescents Aged 13-17 Years – United States, 2018. Walker TY, Elam-Evans LD, Yankey D, et al. Centers for Disease Control and Prevention. MMWR 2019;68(33):718–723.

Statistics

- Health Information National Trends Survey. National Cancer Institute.
- Behavioral Risk Factor Surveillance System: Prevalence Data & Data Analysis Tools. Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion.
- National Health Interview Survey. Centers for Disease Control and Prevention, National Center for Health Statistics.

Cancer Trends Progress Report

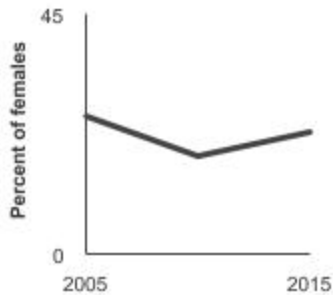
Online Summary of Trends in US Cancer Control Measures

Genetic Testing

Data Up to Date as of:

August 2023

In 2015, 22.9% of females aged 18 years and older with a family history of breast and/or ovarian cancer had discussed the possibility of getting a genetic test for cancer risk.



Background

Genetic testing looks for specific inherited changes in a person's DNA (or genetic mutations) that may increase a person's chance of developing a disease such as cancer. Genetic testing should be considered if personal or family history suggests an inherited cancer risk condition. The test results can help guide a person's future medical care.

A genetic counselor is a health professional who has special training in medical genetics and counseling. Any person who is considering genetic testing should speak with a genetic counselor before deciding whether to be tested. Genetic counselors can also discuss the risks, benefits, and limitations of genetic testing for individuals to help them understand their situation.

Measure

Percentage of females aged 18 years and older with a family history of breast and/or ovarian cancer who had discussed the possibility of getting a genetic test for cancer risk with a doctor or other health professional, 2005-2015.

Percentage of adults aged 18 years and older with a personal history of colorectal cancer who had discussed the possibility of getting a genetic test for cancer risk with a doctor or other health professional, by sex, 2005-2015.

Percentage of adults aged 18 years and older with a personal history of colorectal cancer who had a genetic test for cancer risk, by sex, 2005-2015.

Healthy People 2030 Target

- (Developmental Objective) Increase the proportion of women with a family history of breast and/or ovarian cancer who receive genetic counseling.
- (Research Objective) Increase the proportion of persons with newly diagnosed colorectal cancer who receive genetic testing to identify Lynch syndrome or familial colorectal cancer syndromes.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Note: Healthy People 2030 Developmental and Research Objectives do not have targets, so there is no target line on the Detailed Trend Graphs. Learn more about [different types of Healthy People Objectives](#).

Data Source

Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey NCI and CDC co-sponsored Cancer Control Supplement, 2005-2015.

In 2019 the NHIS questionnaire was redesigned to increase relevance, enhance data quality, and minimize respondent burden. In addition, the COVID-19 pandemic created challenges conducting in-person interviews for the 2020 NHIS, requiring changes to field procedures to conduct most surveys by telephone, which impacted

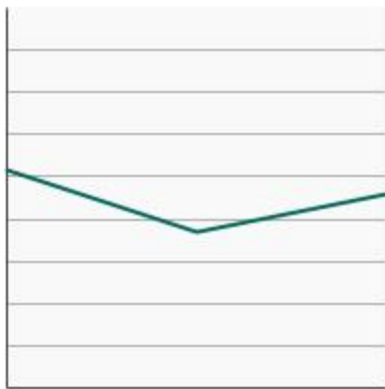
survey response rates. For details related to the potential impacts of these issues, please refer to [Potential Impact of NHIS Redesign and COVID-19 on the Cancer Trends Progress Report](#).

Trends and Most Recent Estimates

Breast and Ovarian Cancer

Percentage of females aged 18 years and older with a family history of breast and/or ovarian cancer who had discussed the possibility of getting a genetic test for cancer risk with a doctor or other health professional¹, 2005-2015

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2015)	
		Percent of females	95% Confidence Interval



Discussed the Possibility of a Genetic Test for Cancer Risk

22.9

12.8 - 37.6

¹ Analysis includes females who met the USPSTF guidelines based on family history of breast and ovarian cancer.

Colorectal Cancer

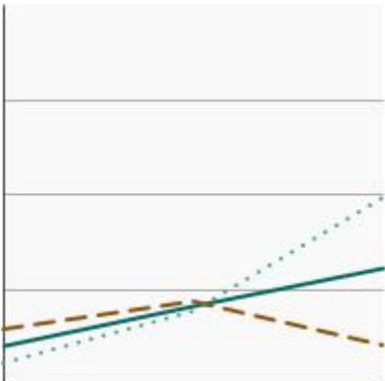
Genetic Counseling

Percentage of adults aged 18 years and older with a personal history of colorectal cancer who had discussed the possibility of getting a genetic test for cancer risk with a doctor or other health professional by sex, 2005-2015

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2015)	
		Percent of adults with personal history of colorectal cancer	95% Confidence Interval
	Both Sexes	10.3	6.0 - 17.1
	Male	7.6	3.3 - 16.6
	Female	12.6	6.2 - 23.9

Genetic Testing

Percentage of adults aged 18 years and older with a personal history of colorectal cancer who had a genetic test for cancer risk by sex, 2005-2015

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2015)	
		Percent of adults with personal history of colorectal cancer	95% Confidence Interval
	Both Sexes	6.1	2.9 - 12.3
	Male	2.0	0.7 - 5.4
	Female	9.8	4.3 - 21.1

Cancers Related to Genetic Testing

Statistical summaries from NCI's [SEER Cancer Stat Fact Sheets](#):

- Adrenal Gland
- [Bone and Joint](#)
- [Brain and Other Nervous System](#)
- [Breast](#)
- [Colon and Rectum](#)
- Eye
- [Kidney and Renal Pelvis](#)
- [Leukemia](#)
- [Liver and Intrahepatic Bile Duct](#)
- [Melanoma of the Skin](#)

- [Ovary](#)
- [Pancreas](#)
- Pineal Gland
- Pituitary Gland
- [Prostate](#)
- [Small Intestine](#)
- [Soft Tissue including Heart](#)
- [Stomach](#)
- [Thyroid](#)
- [Uterus](#)

Additional Information on Genetic Testing

General Public Resources

- [The Genetics of Cancer](#). National Cancer Institute.
- [Genetic Testing for Inherited Cancer Susceptibility Syndromes](#). National Cancer Institute.
- [Genetic Testing for Cancer Risk](#). American Society of Clinical Oncology.

Public Health Resources

- [Cancer Genetics Overview \(PDQ®\)–Health Professional Version](#). National Cancer Institute.
- [Cancer Genetics Risk Assessment and Counseling \(PDQ®\)–Health Professional Version](#). National Cancer Institute.

Scientific Reports

- [Prevalence of Americans reporting a family history of cancer indicative of increased cancer risk: Estimates from the 2015 National Health Interview Survey](#). Kumerow MT, Rodriguez JL, Dai S, Kolor K, Rotunno M, Peipins LA. *Prev Med*. 2022;159:107062.
- [Risk Assessment, Genetic Counseling, and Genetic Testing for BRCA-Related Cancer](#). U.S. Preventive Services Task Force, Owens DK, Davidson KW, et al. *JAMA* 2019; 322(7): 652-65.
- [NCCN Guidelines Insights: Genetic/Familial High-Risk Assessment: Colorectal, Version 2.2019](#). Gupta S, Provenzale D, Llor X, et al. *J Natl Compr Canc Netw*. 2019 Sep 1;17(9):1032-1041.
- [Genetic/familial high-risk assessment: breast and ovarian, version 2.2015](#). Daly MB, Pilarski R, Axilbund JE, et al. *J Natl Compr Canc Netw* 2016; 14(12): 153-62.

Cancer Trends Progress Report

Online Summary of Trends in US Cancer Control Measures

Chemical and Environmental Exposures

Exposure to carcinogens that exist as chemical pollutants or radioactive gas in our air, food, water, and soil, also influence the incidence of cancer. Most exposure to toxic chemical substances and hazardous wastes results from human activities, particularly through agricultural and industrial production. Chemicals were selected for inclusion in this report based on the following set of criteria: (1) likely or probable carcinogen as classified by the International Agency for Research on Cancer (IARC) classification (Group 1 or 2A), (2) available biomarker data from the National Health and Nutrition Examination Survey (NHANES) since 2004, and (3) ubiquitous (i.e. >50% with detectable levels) in the U.S. general population (based on NHANES data). Most exposures to radioactive gases result from the naturally occurring breakdown of certain elements in rocks, soil, and water. The most common of these is radon, which is the second leading cause of lung cancer and has been included in this report.

- [Arsenic](#)
- [Benzene](#)
- [Cadmium](#)

- [Nitrate](#)
- [PFAS](#)
- [Radon](#)

Methodology for Chemical Exposures

This report includes the R function “svyquantile” from the R Package “survey” to estimate the percentiles and their confidence limits. Based on the [Confidence Intervals for Medians and Other Position Measures](#) article, published in the *Journal of the American Statistical Association*, and the [Confidence Intervals for Proportions with Small Expected Number of Positive Counts Estimates from Survey Data](#) article, published in the journal *Survey Methodology*, the researchers chose the “betaWald” interval option. To test whether there is statistically significant difference between the estimated percentiles obtained from different survey years, they used the “svyranktest” R function from the same package. For more details on the applicable R functions, see the [Analysis of Complex Survey Samples](#) by Thomas Lumley.

Cancer Trends Progress Report

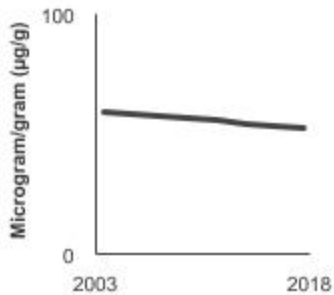
Online Summary of Trends in US Cancer Control Measures

Arsenic

Data Up to Date as of:

August 2023

In 2017 to 2018, the 95th percentile for urinary (creatinine corrected) concentration of arsenic among persons aged 6 years and older was 52.2 µg/g.



Background

Arsenic is a tasteless, odorless element in the environment that can be found naturally in rocks and soil, water, air, plants, and animals. It can also be released into the environment from some agricultural and industrial sources.

Arsenic is usually part of chemical compounds, including inorganic compounds (combined with oxygen, iron, chlorine, and sulfur), and organic compounds (combined with carbon and other atoms).

Inorganic arsenic compounds are found in industry, in building products (in some “pressure-treated” woods), and in arsenic-contaminated water. Soil and water contamination also can occur as a result of mining and smelting activities. Past use of arsenic-containing herbicides has resulted in soil contamination, and some food crops grown in these soils take up the arsenic. Inorganic arsenic compounds are more toxic than organic arsenic compounds, and inorganic arsenic has been strongly linked to cancer of the bladder, lungs, and skin. Additionally, inorganic arsenic has been linked to some types of kidney cancers, as well as liver and intrahepatic bile duct and prostate cancers.

We typically take in small amounts of inorganic arsenic in the food we eat (in particular, rice and fish), the water we drink, and the air we breathe. Arsenic is also present in tobacco smoke. People may be exposed to higher levels of arsenic at work in certain industries, but such exposures are now rare in the United States. People may also be exposed to greater amounts of arsenic if they live near current or former industrial or agricultural sources of arsenic, live in areas where arsenic is naturally high in drinking water, or eat a lot of seafood (although the organic form predominantly found in seafood is likely to be much less harmful). Major dietary sources of inorganic arsenic include rice and rice products.

Both short- and long-term exposure to arsenic can cause health problems. Breathing in high levels of arsenic may cause a sore throat and irritated lungs. Swallowing high levels of arsenic can be fatal. Exposure to lower levels of arsenic over longer periods of time can result in liver and kidney damage. Moreover, arsenic and cigarette smoking exposure act synergistically to increase the incidence of lung cancer.

Measure

We present exposure data on the 95th percentile of the population, representing people with the greatest exposure. The 95th percentile level means that 95% of the population has concentrations below that level. Public health officials use such reference values to determine whether groups of people are experiencing an exposure that is unusual compared with an exposure experienced by the rest of the population. For more information, see the [National Report on Human Exposure to Environmental Chemicals](#), published by the Centers for Disease Control and Prevention.

To calculate whether the differences between 95th percentiles for two different time points are statistically significant, we used a different statistical methodology than that used by the National Center for Environmental

Health, which publishes the National Report on Human Exposure to Environmental Chemicals, from which our data are derived. Our estimates may differ slightly from those in the original report due to differences in statistical procedures used. [\[Methodology\]](#)

Because arsenic is measured from urine, the concentration of arsenic may be affected by urine diluteness. Analyte concentrations within urine also may vary with time, due to changes in the water concentration within urine. We use creatinine as a reference analyte to adjust for urine concentration and obtain measures of arsenic that are comparable, whether they are from concentrated or dilute urine samples.

Healthy People 2030 Target

There are no Healthy People 2030 targets regarding urinary concentration of arsenic.

[Healthy People 2030](#) is a set of goals set forth by the Department of Health and Human Services.

Data Source

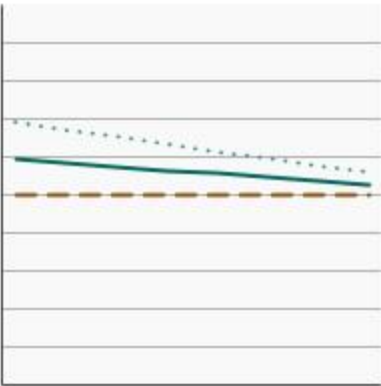
Centers for Disease Control and Prevention, National Center for Health Statistics, National Health and Nutrition Examination Survey.

Trends and Most Recent Estimates

Total Arsenic Exposure

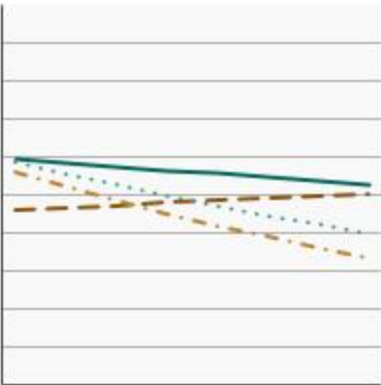
By Sex

95th percentile for urinary (creatinine corrected) concentrations ($\mu\text{g/g}$ of creatinine) of total arsenic among persons aged 6 years and older by sex, 2003-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Microgram/gram ($\mu\text{g/g}$)	95% Confidence Interval
	Both Sexes	52.2	40.3 - 71.9
	Male	47.9	34.2 - 72.6
	Female	58.7	39.0 - 75.5

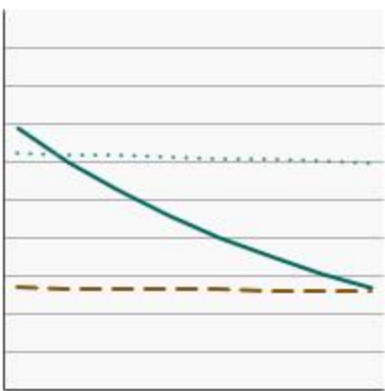
By Race/Ethnicity

95th percentile for urinary (creatinine corrected) concentrations ($\mu\text{g/g}$ of creatinine) of total arsenic among persons aged 6 years and older by race/ethnicity, 2003-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Microgram/gram ($\mu\text{g/g}$)	95% Confidence Interval
	All Races/Ethnicities	52.2	40.3 - 71.9
	Non-Hispanic White	47.5	34.6 - 65.1
	Non-Hispanic Black	40.5	28.3 - 61.2
	Hispanic	42.5	30.7 - 97.5

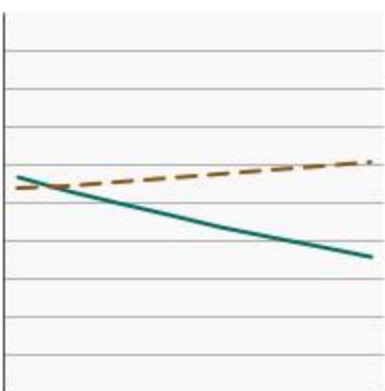
By Age

95th percentile for urinary (creatinine corrected) concentrations ($\mu\text{g/g}$ of creatinine) of total arsenic among persons aged 6 years and older by age, 2003-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Microgram/gram ($\mu\text{g/g}$)	95% Confidence Interval
	Ages 6-11	25.8	20.4 - 39.8
	Ages 12-19	33.0	13.7 - 48.3
	Ages 20+	59.4	43.2 - 75.0

By Poverty Income Level

95th percentile for urinary (creatinine corrected) concentrations ($\mu\text{g/g}$ of creatinine) of total arsenic among persons aged 6 years and older by poverty income level, 2003-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Microgram/gram ($\mu\text{g/g}$)	95% Confidence Interval
	< 200% of the federal poverty level	35.2	27.0 - 50.8
	>= 200% of the federal poverty level	67.9	40.5 - 83.6

By Education Level

95th percentile for urinary (creatinine corrected) concentrations ($\mu\text{g/g}$ of creatinine) of total arsenic among adults aged 20 years and older by highest level of education obtained, 2003-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Microgram/gram ($\mu\text{g/g}$)	95% Confidence Interval
	<u>Less than High School</u>	52.7	36.5 - 126.1
	<u>High School</u>	39.8	24.6 - 68.5
	<u>Greater than High School</u>	70.1	46.2 - 85.4

By Smoking Status

95th percentile for urinary (creatinine corrected) concentrations ($\mu\text{g/g}$ of creatinine) of total arsenic among adults aged 20 years and older by smoking status, 2003-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Microgram/gram ($\mu\text{g/g}$)	95% Confidence Interval
	<u>Non-Smoker</u>	64.7	46.6 - 82.7
	<u>Smoker</u>	24.3	19.0 - 41.1

Inorganic Arsenic Exposure

By Sex

95th percentile for urinary (creatinine corrected) concentrations ($\mu\text{g/g}$ of creatinine) of inorganic-related arsenic species among persons aged 6 years and older by sex, 2003-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Microgram/gram ($\mu\text{g/g}$)	95% Confidence Interval
	Both Sexes	14.7	13.3 - 18.4
	Male	12.9	10.2 - 15.1
	Female	17.0	14.2 - 22.5

By Race/Ethnicity

95th percentile for urinary (creatinine corrected) concentrations ($\mu\text{g/g}$ of creatinine) of inorganic-related arsenic species among persons aged 6 years and older by race/ethnicity, 2003-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Microgram/gram ($\mu\text{g/g}$)	95% Confidence Interval
	All Races/Ethnicities	14.7	13.3 - 18.4
	Non-Hispanic White	13.3	12.6 - 14.2
	Non-Hispanic Black	11.1	9.5 - 15.3
	Hispanic	16.4	12.8 - 21.2

Additional Information on Arsenic

General Public Resources

- [Arsenic](#). National Cancer Institute.
- [Toxic Substances Portal – Arsenic: CCA- Treated Wood](#). Agency for Toxic Substances and Disease Registry.
- [Toxic Substances Portal – Arsenic: Public Health Statement for Arsenic](#). Agency for Toxic Substances and Disease Registry.
- [Toxic Substances Portal – Arsenic: ToxFAQs™ for Arsenic](#). Agency for Toxic Substances and Disease Registry.
- [Arsenic and Cancer Risk](#). American Cancer Society.
- [Known and Probable Human Carcinogens](#). American Cancer Society.
- [Fourth National Report on Human Exposure to Environmental Chemicals: Updated Tables, March 2018, Volume One](#)(http://e.hormone.tulane.edu/PDFs/FourthReport_UpdatedTables_Volume1_Mar2018.pdf). Centers for Disease Control and Prevention.
- [Fourth National Report on Human Exposure to Environmental Chemicals: Updated Tables, March 2018, Volume Two](#)(http://e.hormone.tulane.edu/PDFs/FourthReport_UpdatedTables_Volume2_Mar2018.pdf). Centers for Disease Control and Prevention.
- [Occupational Cancer](#). Centers for Disease Control and Prevention.
- [Drinking Water Requirements for States and Public Water Systems: Chemical Contaminant Rules](#). Environmental Protection Agency.
- [Fact Sheet on Arsenic](#). Environmental Protection Agency.
- [Arsenic in groundwater of the United States](#). U.S. Geological Survey, National Water-Quality Assessment Program, Trace Elements National Synthesis Project.

Public Health Resources

- [Environmental Health and Medicine Education – Arsenic Toxicity](#). Agency for Toxic Substances and Disease Registry.
- [Interaction Profiles for Toxic Substances: Arsenic, Cadmium, Chromium, Lead](#). Agency for Toxic Substances and Disease Registry.
- [Minimal Risk Levels \(MRLs\) List](#). Agency for Toxic Substances and Disease Registry.
- [Toxic Substances Portal – Arsenic](#). Agency for Toxic Substances and Disease Registry.
- [Toxic Substances Portal – Arsenic: Toxicological Profile for Arsenic](#). Agency for Toxic Substances and Disease Registry.
- [Arsenic, inorganic](#). Environmental Protection Agency, Integrated Risk Information System.

Scientific Reports

- [New England Bladder Cancer Study](#). National Cancer Institute, Division of Cancer Epidemiology & Genetics.
- [Bladder cancer mortality and private well use in New England: an ecological study](#). Ayotte JD, Baris D, Cantor KP, et al. J Epidemiol Community Health 2006;60:168–172.
- [Ingested arsenic, cigarette smoking, and lung cancer risk: a follow-up study in arseniosis-endemic areas in Taiwan](#). Chen CL, Hsu LI, Chiou HY, et al. JAMA 2004;292:2984–90.
- [Dietary sources of methylated arsenic species in urine of the United States population, NHANES 2003-2010](#). deCastro BR, Caldwell KL, Jones RL, et al. PLoS One 2014;9(9):e108098.
- [Arsenic, Metals, Fibres, and Dusts](#). International Agency for Research on Cancer. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans 2012;100(c):41–93.
- [Some Drinking-Water Disinfectants and Contaminants, including Arsenic](#). International Agency for Research on Cancer. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans 2004;84:41–267.
- [Estimating water supply arsenic levels in the New England bladder cancer study](#). Nuckols JR, Freeman LEB, Lubin JH, et al. Environ Health Perspect 2011;119(9):1279–1285.

- The Chemical Composition of Tobacco and Tobacco Smoke. Rodgman A, Perfetti TA. CRC Press; Boca Raton, FL, USA: 2009.
- Arsenic and Inorganic Arsenic Compounds. U.S. Department of Health and Human Services, National Toxicology Program. Report on Carcinogens, Fourteenth Edition 2016.

Cancer Trends Progress Report

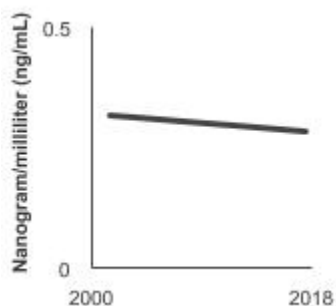
Online Summary of Trends in US Cancer Control Measures

Benzene

Data Up to Date as of:

August 2023

In 2017 to 2018, the 95th percentile for blood concentration of benzene among persons aged 20 years and older was 0.3 ng/mL.



Background

Benzene is an organic chemical that is colorless and has a sweet odor. It is highly flammable, and evaporates quickly when exposed to air. Benzene is formed through natural processes such as volcanoes and forest fires, and is present in crude oil, gasoline, and cigarette smoke. Most exposure to benzene results from human activities. Benzene use in materials and to adjust fuel octane levels has been minimized, resulting in reduced benzene exposure among non-smokers. Cigarette smoking has been shown to be the primary exposure source of benzene blood levels in the U.S., with some benzene exposure in non-smokers attributable to secondhand smoke exposure. The chemical is also widely used as a component of plastics, rubber, resins, and synthetic fabrics; an additive in motor fuels; a solvent in printing, paints, and dry cleaning; and for other purposes. Benzene is also used in the manufacture of detergents, explosives, pharmaceuticals, and dyestuffs. Benzene has been identified as a cause of acute non-lymphocytic leukemia, including acute myeloid leukemia (AML) in adults. This article, [Carcinogenicity of Benzene](#), published in *The Lancet Oncology*, provides evidence that benzene might be related to other myeloid and certain lymphoid malignancies.

The main way people are exposed is by breathing in air containing benzene—in emissions from burning coal and oil, motor vehicle exhaust, evaporation from gasoline tanks and service stations, and in industrial solvents. It is estimated that about half of the exposure to benzene in the United States results from smoking tobacco or from exposure to tobacco smoke. It can also be absorbed through the skin during contact with a source such as gasoline, but because liquid benzene evaporates quickly, this is less common.

Measure

We present exposure data on the 95th percentile of the population, representing people with the greatest exposure. The 95th percentile level means that 95% of the population has concentrations below that level. Public health officials use such reference values to determine whether groups of people are experiencing an exposure that is unusual compared with an exposure experienced by the rest of the population. For more information, see the [National Report on Human Exposure to Environmental Chemicals](#), published by the Centers for Disease Control and Prevention.

To calculate whether the differences between 95th percentiles for two different time points are statistically significant, we used a different [statistical methodology](#) than that used by the National Center for Environmental Health, who publishes the National Report on Human Exposure to Environmental Chemicals from where our data are derived. Our estimates may differ slightly from those in the original report due to differences in statistical procedures used. [\[Methodology\]](#)

Healthy People 2030 Target

There are no Healthy People 2030 targets regarding benzene.

[Healthy People 2030](#) is a set of goals set forth by the Department of Health and Human Services.

Data Source

Centers for Disease Control and Prevention, National Center for Health Statistics, National Health and Nutrition Examination Survey.

Trends and Most Recent Estimates

By Sex

95th percentile for blood concentrations (ng/mL) of benzene among adults aged 20 years and older by sex, 2001-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Nanogram/milliliter (ng/mL)	95% Confidence Interval
	Both Sexes	0.3	0.2 - 0.4
	Male	0.3	0.2 - 0.4
	Female	0.3	0.2 - 0.4

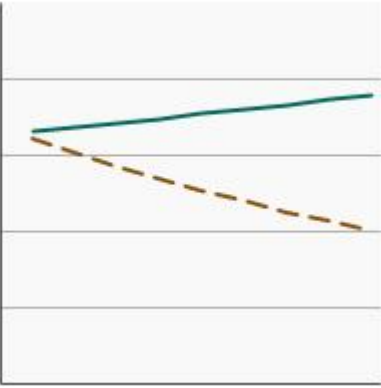
By Race/Ethnicity

95th percentile for blood concentrations (ng/mL) of benzene among adults aged 20 years and older by race/ethnicity, 2001-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Nanogram/milliliter (ng/mL)	95% Confidence Interval
	All Races/Ethnicities	0.3	0.2 - 0.4
	Non-Hispanic White	0.3	0.2 - 0.4
	Non-Hispanic Black	0.4	0.3 - 0.4
	Hispanic	0.1	0.1 - 0.2

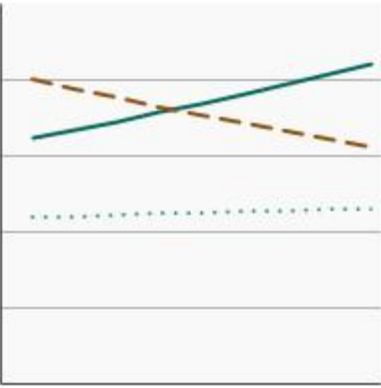
By Poverty Income Level

95th percentile for blood concentrations (ng/mL) of benzene among adults aged 20 years and older by poverty income level, 2001-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Nanogram/milliliter (ng/mL)	95% Confidence Interval
	<u>< 200% of the federal poverty level</u>	0.4	0.3 - 0.5
	<u>>= 200% of the federal poverty level</u>	0.2	0.1 - 0.2

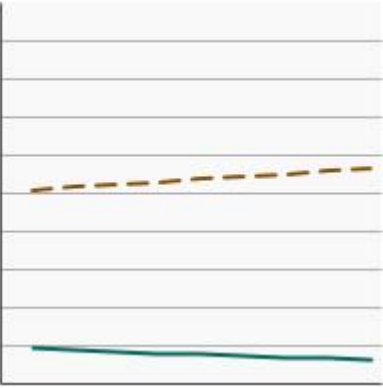
By Education Level

95th percentile for blood concentrations (ng/mL) of benzene among adults aged 20 years and older by highest level of education obtained, 2001-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Nanogram/milliliter (ng/mL)	95% Confidence Interval
	<u>Less than High School</u>	0.4	0.3 - 0.5
	<u>High School</u>	0.4	0.3 - 0.4
	<u>Greater than High School</u>	0.2	0.2 - 0.3

By Smoking Status

95th percentile for blood concentrations (ng/mL) of benzene among adults aged 20 years and older by smoking status, 2001-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Nanogram/milliliter (ng/mL)	95% Confidence Interval
	Non-Smoker	0.1	0.1 - 0.1
	Smoker	0.6	0.5 - 0.7

Additional Information on Benzene

General Public Resources

- [Toxic Substances Portal – Toxicological Profile for Benzene](#). Agency for Toxic Substances & Disease Registry.
- [Benzene and Cancer Risk](#). American Cancer Society.
- [Known and Probable Human Carcinogens](#). American Cancer Society.
- [Facts about Benzene](#). Centers for Disease Control and Prevention.
- [Fourth National Report on Human Exposure to Environmental Chemicals: Updated Tables, March 2018, Volume One](#)(http://e.hormone.tulane.edu/PDFs/FourthReport_UpdatedTables_Volume1_Mar2018.pdf). Centers for Disease Control and Prevention.
- [Fourth National Report on Human Exposure to Environmental Chemicals: Updated Tables, March 2018, Volume Two](#)(http://e.hormone.tulane.edu/PDFs/FourthReport_UpdatedTables_Volume2_Mar2018.pdf). Centers for Disease Control and Prevention.
- [Drinking Water Requirements for States and Public Water Systems: Chemical Contaminant Rules](#). Environmental Protection Agency.
- [Benzene](#). Environmental Protection Agency.
- [Benzene](#). National Library of Medicine.
- [Benzene](#). U.S. Department of Labor, Occupational Safety & Health Administration.

Public Health Resources

- [Minimal Risk Levels \(MRLs\) List](#). Agency for Toxic Substances & Disease Registry.
- [Benzene](#). Environmental Protection Agency, Integrated Risk Information System.

Scientific Reports

- [Benzene-associated hematotoxicity and carcinogenicity](#). National Cancer Institute, Division of Cancer Epidemiology & Genetics.
- [Benzene-exposed workers in China](#). National Cancer Institute, Occupational and Environmental Epidemiology Branch.
- [Toxicological Profile for Benzene, 2007](#). Agency for Toxic Substances & Disease Registry.

- Impact of Cigarette Smoking on Volatile Organic Compound (VOC) Blood Levels in the U.S. Population: NHANES 2003-2004. Chambers D, Ocariz JM, McGuirk M, Blount BC. Environ Int. 2011 Nov;37(8):1321-8.
- Chemical Agents and Related Occupations. International Agency for Research on Cancer. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans 2012;100f:249-294.
- Carcinogenicity of benzene. Loomis D, Guyton KZ, Grosse Y, et al. Lancet Oncol. 2017;18(12):1574-1575.

Cancer Trends Progress Report

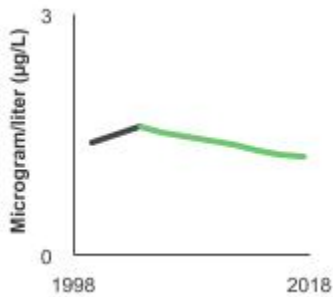
Online Summary of Trends in US Cancer Control Measures

Cadmium

Data Up to Date as of:

August 2023

In 2017 to 2018, 95th percentile for the blood concentration of cadmium among persons aged 1 year and older was 1.3 µg/L.



Background

Cadmium is an element found in low concentrations in the earth's crust. It is usually found as a mineral combined with other elements such as oxygen (cadmium oxide), chlorine (cadmium chloride), or sulfur (cadmium sulfate, cadmium sulfide).

All soils and rocks, including coal and mineral fertilizers, contain some cadmium. Most cadmium used in the United States is extracted during the production of other metals like zinc, lead, and copper. Cadmium has many uses, including in the production of batteries, pigments, metal coatings, and plastics.

Cadmium and its compounds are highly toxic and exposure is known to cause cancer. It is primarily associated with human lung, prostate, and kidney cancers, and recently pancreatic cancer. It has also been associated with cancers of the breast and urinary bladder.

The general population may be exposed to small amounts of cadmium daily through food, tobacco smoke (as active or secondhand smoke), drinking water, and air. Cadmium is introduced to the food chain through agricultural soils, which may naturally contain cadmium; anthropogenic (human) sources; cadmium-based pigments; and stabilizers used in certain plastics. While dietary sources can be sporadic, intake from tobacco occurs with each cigarette smoked and can proceed for decades, resulting in accumulation of metals like cadmium in the body. Cadmium levels are expected to be low in drinking water and ambient air, except in the vicinity of cadmium-emitting industries or incinerators.

Occupational exposure to cadmium primarily occurs in operations involving heating cadmium-containing products. Occupations with the highest potential for exposure include alloy production, battery production, pigment production and use, plastics production, and smelting and refining. Although levels vary widely among the different industries, occupational exposures generally have decreased since the 1970s.

Measure

We present exposure data on the 95th percentile of the population, representing people with the greatest exposure. The 95th percentile level means that 95% of the population has concentrations below that level. Public health officials use such reference values to determine whether groups of people are experiencing an exposure that is unusual compared with an exposure experienced by the rest of the population. For more information, see the [National Report on Human Exposure to Environmental Chemicals](#), published by the Centers for Disease Control and Prevention.

To calculate whether the differences between 95th percentiles for two different time points is statistically significant, we used a different statistical methodology than that used by the National Center for Environmental Health, who publishes the National Report on Human Exposure to Environmental Chemicals from where our data are derived. Our estimates may differ slightly from those in the original report due to differences in statistical procedures used. [\[Methodology\]](#)

Healthy People 2030 Target

There are no Healthy People 2030 targets regarding blood levels of cadmium.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Data Source

Centers for Disease Control and Prevention, National Center for Health Statistics, National Health and Nutrition Examination Survey.

Trends and Most Recent Estimates

By Sex

95th percentile for blood concentrations ($\mu\text{g/L}$) of cadmium among persons aged 1 year and older by sex, 1999-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Microgram/liter ($\mu\text{g/L}$)	95% Confidence Interval
	Both Sexes	1.3	1.1 - 1.5
	Male	1.1	1.0 - 1.3
	Female	1.5	1.1 - 1.8

By Race/Ethnicity

95th percentile for blood concentrations ($\mu\text{g/L}$) of cadmium among persons aged 1 year and older by race/ethnicity, 1999-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Microgram/liter ($\mu\text{g/L}$)	95% Confidence Interval
	All Races/Ethnicities	1.3	1.1 - 1.5
	Non-Hispanic White	1.3	1.1 - 1.6
	Non-Hispanic Black	1.3	1.2 - 1.7
	Hispanic	0.8	0.7 - 0.9

By Age

95th percentile for blood concentrations ($\mu\text{g/L}$) of cadmium among persons aged 1 year and older by age, 1999-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Microgram/liter ($\mu\text{g/L}$)	95% Confidence Interval
	Ages 1-5	0.2	0.2 - 0.2
	Ages 6-11	0.2	0.2 - 0.3
	Ages 12-19	0.4	0.3 - 0.4
	Ages 20+	1.4	1.2 - 1.7

By Poverty Income Level

95th percentile for blood concentrations ($\mu\text{g/L}$) of cadmium among persons aged 1 year and older by poverty income level, 1999-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Microgram/liter ($\mu\text{g/L}$)	95% Confidence Interval
	< 200% of the federal poverty level	1.6	1.4 - 1.7
	>= 200% of the federal poverty level	1.0	0.9 - 1.2

By Education Level

95th percentile for blood concentrations ($\mu\text{g/L}$) of cadmium among persons aged 20 years and older by highest level of education obtained, 1999-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Microgram/liter ($\mu\text{g/L}$)	95% Confidence Interval
	Less than High School	1.8	1.4 - 2.3
	High School	1.8	1.6 - 2.1
	Greater than High School	1.1	1.0 - 1.3

By Smoking Status

95th percentile for blood concentrations ($\mu\text{g/L}$) of cadmium among persons aged 20 years and older by smoking status, 1999-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Microgram/liter ($\mu\text{g/L}$)	95% Confidence Interval
	Non-Smoker	0.7	0.7 - 0.8
	Smoker	2.9	2.5 - 3.2

Additional Information on Cadmium

General Public Resources

- [Cadmium](#). National Cancer Institute.
- [Toxic Substances Portal – Cadmium](#). Agency for Toxic Substances & Disease Registry.
- [Fourth National Report on Human Exposure to Environmental Chemicals: Updated Tables, March 2018, Volume One](#)(http://e.hormone.tulane.edu/PDFs/FourthReport_UpdatedTables_Volume1_Mar2018.pdf). Centers for Disease Control and Prevention.
- [Fourth National Report on Human Exposure to Environmental Chemicals: Updated Tables, March 2018, Volume Two](#)(http://e.hormone.tulane.edu/PDFs/FourthReport_UpdatedTables_Volume2_Mar2018.pdf). Centers for Disease Control and Prevention.
- [Workplace Safety & Health Topics – Cadmium](#). Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health.

- [Drinking Water Requirements for States and Public Water Systems: Chemical Contaminant Rules](#). Environmental Protection Agency.
- [Cadmium Compounds](#). Environmental Protection Agency, Technology Transfer Network – Air Toxics Web Site.
- [Cadmium](#). U.S. Department of Labor, Occupational Safety & Health Administration.

Public Health Resources

- [Interaction Profiles for Toxic Substances: Arsenic, Cadmium, Chromium, Lead](#). Agency for Toxic Substances & Disease Registry.
- [Minimal Risk Levels \(MRLs\) List](#). Agency for Toxic Substances & Disease Registry.
- [ToxGuide™ for Cadmium](#). Agency for Toxic Substances & Disease Registry.
- [Cadmium](#). Environmental Protection Agency, Integrated Risk Information System.

Scientific Reports

- [Cadmium exposure and cancer mortality in a prospective cohort: the strong heart study](#). Garcia-Esquinas E, Pollan M, Tellez-Plaza M, et al. Environ Health Perspect 2014;122(4):363–370.
- [Cadmium-induced cancers in animals and in humans](#). Huff J, Lunn RM, Waalkes MP, et al. Int J Occup Environ Health 2007;13(2):202–12.
- [Arsenic, Metals, Fibres, and Dusts](#). International Agency for Research on Cancer. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans 1997;100c:121–145.
- [Cadmium-induced pathologies: where is the oxidative balance lost \(or not\)?](#) Nair AR, DeGheselle O, Smeets K, et al. Int J Mol Sci 2013;14(3):6116–6143.
- [Cadmium exposure in the population: from health risks to strategies of prevention](#). Nawrot TS, Staessen JA, Roels HA, et al. Biometals 2010;23(5):769–82.
- [Tobacco smoke exposure and levels of urinary metals in the U.S. youth and adult population: The National Health and Nutrition Examination Survey \(NHANES\) 1999–2004](#). Richter PA, Bishop EE, Wang J, et al. Int J Environ Res Public Health 2009;6(7):1930-1946.
- [Cadmium exposure and incident peripheral arterial disease](#). Tellez-Plaza M, Guallar E, Fabsitz RR, et al. Circ Cardiovasc Qual Outcomes 2013;6(6):626–33.
- [Cadmium exposure and incident cardiovascular disease](#). Tellez-Plaza M, Guallar E, Howard BV, et al. Epidemiology 2013;24(3):421–9.
- [Cadmium and Cadmium Compounds](#). U.S. Department of Health and Human Services, National Toxicology Program. Report on Carcinogens, Fourteenth Edition 2016.

Cancer Trends Progress Report

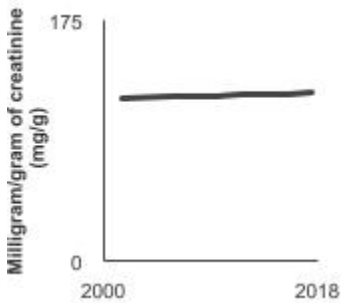
Online Summary of Trends in US Cancer Control Measures

Nitrate

Data Up to Date as of:

August 2023

In 2017 to 2018, the 95th percentile for urinary (creatinine corrected) concentration of nitrate among persons aged 6 years and older was 113.0 mg/g of creatinine.



Background

Nitrates and nitrites are nitrogen-oxygen chemical units that naturally occur in soil, water, and some foods. When taken into the body by drinking water and through other dietary sources, nitrate and nitrite can react with amines and amides to form N-nitroso compounds (NOC), which are known to cause cancer in animals and may cause cancer in humans. Excessive nitrate or nitrite exposure can also result in acute acquired methemoglobinemia, a blood abnormality that causes blood to lose its ability to carry oxygen to tissues (anoxia). This is especially dangerous in infants younger than 4 months of age.

The biggest source of nitrate exposure is dietary consumption of certain types of vegetables that are naturally high in nitrate. However, these vegetables also contain compounds that prevent the formation of NOCs. Studies assessing connections between nitrate and cancer in humans have focused on excess exposure from drinking water or food grown in areas where use of nitrogen-based fertilizers is common. Some of the highest levels of nitrate have been measured in shallow wells and surface water supplies that are subject to runoff from nitrogen fertilizers, confined animal feedlot operations, and resulting excrement and contamination from leaking septic tanks and sewage. In addition, workers who manufacture these fertilizers can have high exposures to dusts that contain nitrate. Oral tobacco also may contribute to nitrate intake, but is a minor source compared to diet or contaminated drinking water.

Studies have shown increased risks of colon, kidney, and stomach cancer among people with higher ingestion of water nitrate and higher meat intake compared with low intakes of both, a dietary pattern that results in increased NOC formation. Other studies have shown modest evidence that higher nitrate intake can increase the risk of thyroid cancer and ovarian cancer among women.

Measure

We present exposure data on the 95th percentile of the population, representing people with the greatest exposure. The 95th percentile level means that 95% of the population has concentrations below that level. Public health officials use such reference values to determine whether groups of people are experiencing an exposure that is unusual compared with an exposure experienced by the rest of the population. For more information, see the [National Report on Human Exposure to Environmental Chemicals](#), published by the Centers for Disease Control and Prevention.

To calculate whether the differences between 95th percentiles for two different time points is statistically significant, we used a different statistical methodology than that used by the National Center for Environmental Health, who publishes the National Report on Human Exposure to Environmental Chemicals from where our data are derived. Our estimates may differ slightly from those in the original report due to differences in statistical procedures used. [[Methodology](#)]

As nitrate is measured from urine, the concentration of nitrate may be affected by urine diluteness. Analyte concentrations within urine also may vary with time due to changes in the water concentration within urine. We use creatinine as a reference analyte to adjust for urine concentration and obtain measures of nitrate that are comparable, whether they are from concentrated or dilute urine samples.

Healthy People 2030 Target

There are no Healthy People 2030 targets regarding nitrate.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Data Source

Centers for Disease Control and Prevention, National Center for Health Statistics, National Health and Nutrition Examination Survey.

Trends and Most Recent Estimates

By Sex

95th percentile for urinary (creatinine corrected) concentrations (mg/g of creatinine) of nitrate among persons aged 6 years and older by sex, 2001-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Milligram/gram of creatinine (mg/g)	95% Confidence Interval
	Both Sexes	113.0	99.3 - 126.4
	Male	99.4	87.5 - 114.3
	Female	124.5	109.0 - 160.7

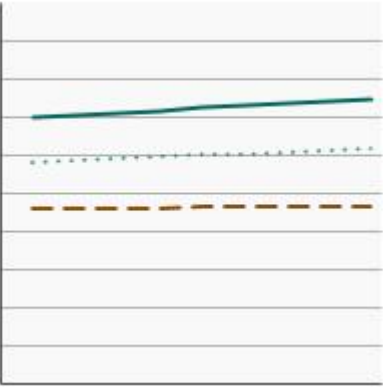
By Race/Ethnicity

95th percentile for urinary (creatinine corrected) concentrations (mg/g of creatinine) of nitrate among persons aged 6 years and older by race/ethnicity, 2001-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Milligram/gram of creatinine (mg/g)	95% Confidence Interval
	All Races/Ethnicities	113.0	99.3 - 126.4
	Non-Hispanic White	110.2	97.6 - 126.2
	Non-Hispanic Black	77.6	64.7 - 92.8
	Hispanic	105.1	85.5 - 128.0

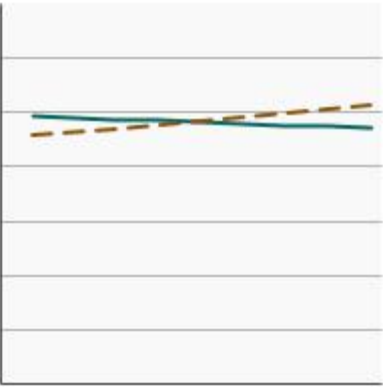
By Age

95th percentile for urinary (creatinine corrected) concentrations (mg/g of creatinine) of nitrate among persons aged 6 years and older by age, 2001-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Milligram/gram of creatinine (mg/g)	95% Confidence Interval
	Ages 6-11	143.3	120.9 - 162.5
	Ages 12-19	87.4	63.2 - 103.7
	Ages 20+	110.7	97.4 - 131.8

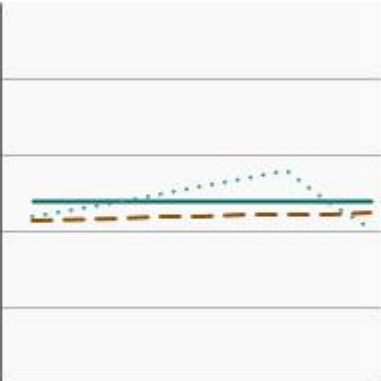
By Poverty Income Level

95th percentile for urinary (creatinine corrected) concentrations (mg/g of creatinine) of nitrate among persons aged 6 years and older by poverty income level, 2001-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Milligram/gram of creatinine (mg/g)	95% Confidence Interval
	< 200% of the federal poverty level	111.4	91.7 - 159.9
	>= 200% of the federal poverty level	117.5	97.5 - 147.8

By Education Level

95th percentile for urinary (creatinine corrected) concentrations (mg/g of creatinine) of nitrate among persons aged 20 years and older by highest level of education obtained, 2001-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Milligram/gram of creatinine (mg/g)	95% Confidence Interval
	Less than High School	211.2	73.4 - 425.4
	High School	119.0	84.4 - 134.8
	Greater than High School	99.1	96.8 - 116.8

Additional Information on Nitrate

General Public Resources

- [Toxic Substances Portal – Nitrate and Nitrite: ToxFAQs™ for Nitrate and Nitrite](#). Agency for Toxic Substances & Disease Registry.
- [Stomach Cancer Risk Factors](#) American Cancer Society.
- [Fourth National Report on Human Exposure to Environmental Chemicals: Updated Tables, March 2018, Volume One](#)(http://e.hormone.tulane.edu/PDFs/FourthReport_UpdatedTables_Volume1_Mar2018.pdf). Centers for Disease Control and Prevention.
- [Fourth National Report on Human Exposure to Environmental Chemicals: Updated Tables, March 2018, Volume Two](#)(http://e.hormone.tulane.edu/PDFs/FourthReport_UpdatedTables_Volume2_Mar2018.pdf). Centers for Disease Control and Prevention.
- [Drinking Water Requirements for States and Public Water Systems: Chemical Contaminant Rules](#). Environmental Protection Agency.

Public Health Resources

- [ATSDR Case Studies in Environmental Medicine Nitrate/Nitrite Toxicity](#). Agency for Toxic Substances and Disease Registry.
- [Nitrate](#). Environmental Protection Agency, Integrated Risk Information System.

Scientific Reports

- [Pancreatic cancer and exposure to dietary nitrate and nitrite in the NIH-AARP Diet and Health Study](#). Aschebrook-Kilfoy B, Cross AJ, Stolzenberg-Solomon RZ, et al. Am J Epidemiol. 2011;174(3):305–15.
- [Thyroid cancer risk and dietary nitrate and nitrite intake in the Shanghai women’s health study](#). Aschebrook-Kilfoy B, Shu XO, Gao YT, et al. Int J Cancer 2013;132(4):897–904.
- [Epithelial ovarian cancer and exposure to dietary nitrate and nitrite in the NIH-AARP Diet and Health Study](#). Aschebrook-Kilfoy B, Ward MH, Gierach GL, et al. Eur J Cancer Prev. 2012;21(1):65–72.
- [Pancreatic cancer and drinking water and dietary sources of nitrate and nitrite](#). Coss A, Cantor KP, Reif JS, et al. Am J Epidemiol. 2004;159(7):693–701.
- [Nitrate in public water supplies and risk of colon and rectum cancers](#). De Roos A, Ward MH, Lynch C, and Cantor KP. Epidemiology 2003;14(6):640–9.

- Carcinogenicity of nitrate, nitrite, and cyanobacterial peptide toxins. Grosse Y, Baan R, Straif K, et al. Lancet Oncol. 2006;7(8):628–9.
- Dietary intake of polyphenols, nitrate and nitrite and gastric cancer risk in Mexico City. Hernandez-Ramirez RU, Galvan-Portillo MV, Ward MH, et al. Int J Cancer 2009;125(6):1424–30.
- Ingested Nitrate and Nitrite, and Cyanobacterial Peptide Toxins. International Agency for Research on Cancer. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans 2010;94.
- Drinking water nitrate and human health: an updated review. Ward MH, Jones RR, Brender JD et al. Int J Environ Res Public Health 2018;15(7): pii:E1557.
- Nitrate in public water supplies and the risk of renal cell carcinoma. Ward MH, Rusiecki J, Lynch CF, Cantor KP. Cancer Causes Control 2007 Dec;18(10):1141–51.

Cancer Trends Progress Report

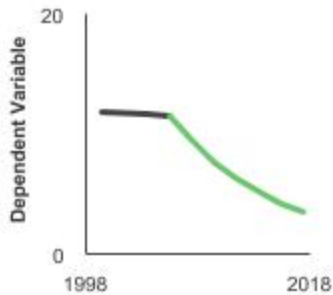
Online Summary of Trends in US Cancer Control Measures

Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS)

Data Up to Date as of:

August 2023

In 2017 to 2018, the 95th percentile for blood concentration of serum perfluorooctanoic acid (PFOA) among persons aged 12 years and older was 3.8 ng/mL.



Background

Per- and poly-fluoroalkyl substances (PFAS) are a group of manufactured compounds that consist of carbon-fluorine bonds that make PFAS highly stable and resistant to degradation by metabolic or environmental means. First developed in the 1940s, PFAS became widely popular and are used in a number of commercial, industrial, and consumer applications and products. Some current examples include pesticides, firefighting foams, flame retardants, additives in coatings and paints for buildings, textile products such as repellent coatings, personal care products such as cosmetics and makeup, home products such as non-stick coatings for pans, and the development of electronic and semiconductor products.

With its unique chemical and physical properties, PFAS have been designated as “forever chemicals.”

Biomonitoring studies have shown that PFAS are ubiquitous in the soil and water, and detected in humans. In both occupational and non-occupational settings, the routes of exposures are ingestion of contaminated food and drinking water, inhalation via air or dust particulate, or dermal contact. PFAS exposure has been reported to be associated with hepatic, cardiovascular, immune, reproductive, and developmental effects in humans and animals. However, much of the scientific knowledge of the risk to humans from PFAS exposure is limited by the nature of how previous studies have been conducted. For example, some human studies did not collect any information on historical exposure. Among those that may have historical exposures, collected biological specimens such as blood, and/or have information of specific outcomes of interest, many were cross-sectional in design and thus were only able to evaluate the associations at one specific point in time. These aspects limit the ability to assess any potential relationships between PFAS exposure and health outcomes in terms of establishing causality. Despite this, the growing evidence and awareness of PFAS and detrimental health effects have motivated physicians, scientists, and public health officials about the importance of additional research and regulatory measures on PFAS.

Measure

Over the years, many epidemiologic studies have primarily examined specific PFAS compounds such as perfluorooctanoic acid (PFOA) and perfluorooctanoic sulfonate (PFOS) due to their early discovery and past industrial usage. While other PFAS compounds exist, we focus on PFOA and PFOS due to the existing assessment within the National Health and Nutritional Examination Survey.

We present exposure data on the 95th percentile of the population, representing people with the greatest exposure. The 95th percentile level means that 95% of the population has concentrations below that level. Public health officials use such reference values to determine whether groups of people are experiencing an exposure that is unusual compared with an exposure experienced by the rest of the population. For more information, see the [National Report on Human Exposure to Environmental Chemicals](#), published by the Centers for Disease Control and Prevention.

To calculate whether the differences between 95th percentiles for two different time points are statistically significant, we used a different statistical methodology than that used by the National Center for Environmental Health, which publishes the National Report on Human Exposure to Environmental Chemicals, from which our data are derived. Our estimates may differ slightly from those in the original report due to differences in statistical procedures used. [\[Methodology\]](#)

Healthy People 2030 Target

There are no Healthy People 2030 targets regarding PFAS as a whole or specific PFAS compounds.

[Healthy People 2030](#) is a set of goals set forth by the Department of Health and Human Services.

Data Source

Centers for Disease Control and Prevention, National Center for Health Statistics, National Health and Nutrition Examination Survey.

Trends and Most Recent Estimates

Serum Perfluorooctanoic Acid (PFOA)

By Sex

95th percentile for blood concentrations (ng/mL) of serum perfluorooctanoic acid (PFOA) among persons aged 12 years and older by sex, 1999-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Dependent Variable	95% Confidence Interval
	Both Sexes	3.8	3.3 - 4.9
	Male	3.8	3.4 - 5.1
	Female	3.8	3.1 - 5.0

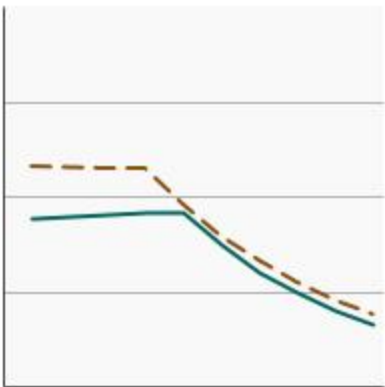
By Race/Ethnicity

95th percentile for blood concentrations (ng/mL) of serum perfluorooctanoic acid (PFOA) among persons aged 12 years and older by race/ethnicity, 1999-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Dependent Variable	95% Confidence Interval
	All Races	3.8	3.3 - 4.9
	Non-Hispanic White	3.8	3.2 - 5.4
	Non-Hispanic Black	3.4	2.8 - 4.1
	Hispanic	3.0	2.5 - 4.3

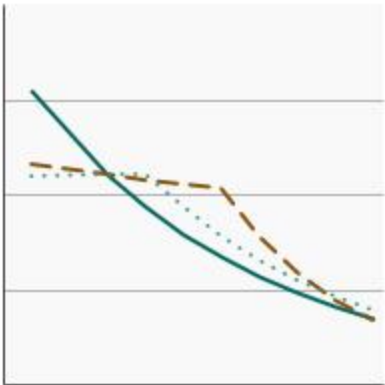
By Poverty Income Level

95th percentile for blood concentrations (ng/mL) of serum perfluorooctanoic acid (PFOA) among persons aged 12 years and older by poverty income level, 1999-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Dependent Variable	95% Confidence Interval
	<u>< 200% of the federal poverty level</u>	3.6	3.0 - 3.9
	<u>>= 200% of the federal poverty level</u>	4.1	3.1 - 5.9

By Education Level

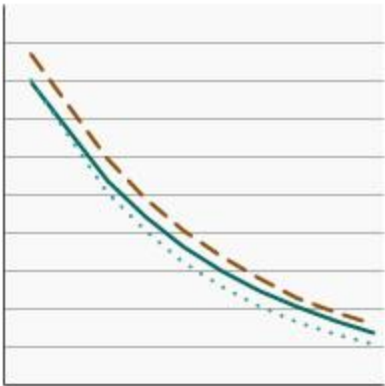
95th percentile for blood concentrations (ng/mL) of serum perfluorooctane sulfonic (PFOS) among persons aged 20 years and older by highest level of education obtained, 1999-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Dependent Variable	95% Confidence Interval
	<u>Less than High School</u>	4.3	3.6 - 6.2
	<u>High School</u>	3.3	2.8 - 3.8
	<u>Greater than High School</u>	4.3	3.3 - 6.2

Serum Perfluorooctane Sulfonic (PFOS)

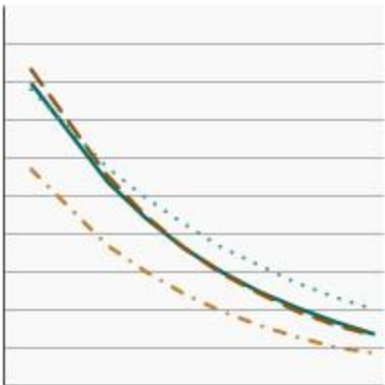
By Sex

95th percentile for blood concentrations (ng/mL) of serum perfluorooctane sulfonic (PFOS) among persons aged 12 years and older by sex, 1999-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Dependent Variable	95% Confidence Interval
	Both Sexes	14.6	13.1 - 16.3
	Male	15.8	13.6 - 18.2
	Female	13.1	10.1 - 17.0

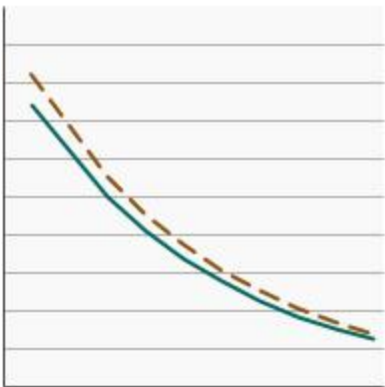
By Race/Ethnicity

95th percentile for blood concentrations (ng/mL) of serum perfluorooctane sulfonic (PFOS) among persons aged 12 years and older by race/ethnicity, 1999-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Dependent Variable	95% Confidence Interval
	All Races	14.6	13.1 - 16.3
	Non-Hispanic White	13.9	13.0 - 15.8
	Non-Hispanic Black	21.6	17.2 - 32.0
	Hispanic	10.0	8.4 - 12.9

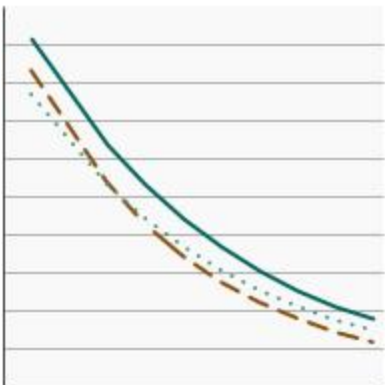
By Poverty Income Level

95th percentile for blood concentrations (ng/mL) of serum perfluorooctane sulfonic (PFOS) among persons aged 12 years and older by poverty income level, 1999-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Dependent Variable	95% Confidence Interval
	<u>< 200% of the federal poverty level</u>	13.9	12.2 - 17.5
	<u>>= 200% of the federal poverty level</u>	15.0	13.1 - 17.0

By Education Level

95th percentile for blood concentrations (ng/mL) of serum perfluorooctane sulfonic (PFOS) among persons aged 20 years and older by highest level of education obtained, 1999-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Dependent Variable	95% Confidence Interval
	<u>Less than High School</u>	20.1	13.5 - 29.5
	<u>High School</u>	13.9	12.7 - 19.3
	<u>Greater than High School</u>	15.0	13.7 - 16.1

Additional Information on PFAS

General Public Resources

- [Known and Probable Human Carcinogens](#). American Cancer Society.
- [National Report on Human Exposure to Environmental Chemicals: Biomonitoring Data Tables for Environmental Chemicals](#). Centers for Disease Control and Prevention.

Public Health Resources

- [Minimal Risk Levels \(MRLs\) List](#). Agency for Toxic Substances and Disease Registry.

Cancer Trends Progress Report

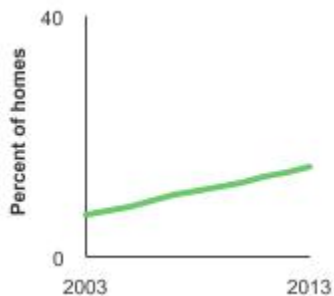
Online Summary of Trends in US Cancer Control Measures

Radon

Data Up to Date as of:

August 2023

In 2013, 15.0% homes at risk for radon exposure had an operating radon mitigation system.



Background

Radon is a radioactive gas that comes from the natural breakdown of uranium in soil, rock and water. Radon has no smell or taste and cannot be seen. It can be found all over the United States, in every state. Radon can get into any type of building where there is naturally occurring radon in the ground. When buildings have high levels of radon in the air, people can breathe air containing radon, which can cause lung cancer. Radon is the second leading cause of lung cancer after smoking tobacco and the leading cause of lung cancer in non-smokers. Most people are exposed to radon primarily in their homes, since that is where people spend most of their time. Homes can be tested for radon; if high levels of radon are detected, there are ways to lower radon levels in a home. New homes can be built with radon-resistant features that can reduce radon entry and make it easier and less expensive to lower radon levels if necessary.

Measure

The exposure data presented here is the proportion of homes with an operating radon mitigation system for persons living in homes at risk for radon exposure. This measure is expressed as a percentage. It is calculated for each year by dividing the cumulative number of single family dwellings (SFD) with an operating mitigation system by the number of SFDs estimated to have a radon level $\geq 4\text{pCi/L}$, which is EPA's action level. The number of SFDs with an operating mitigation system is calculated based on the gross number of radon vent fans sold for a given year, adjusted for longevity by subtracting the fans installed 11 years before, assuming the useful life of a fan is 10 years, and assuming one fan per SFD. The number of fans sold is based on radon vent fan sales data from three major fan manufacturers that represent over 90 percent of the market. More information is available on the Healthy People 2020 [website](#).

Healthy People 2030 Target

- There are no Healthy People 2030 targets for radon exposure.

[Healthy People 2030](#) is a set of goals set forth by the Department of Health and Human Services.

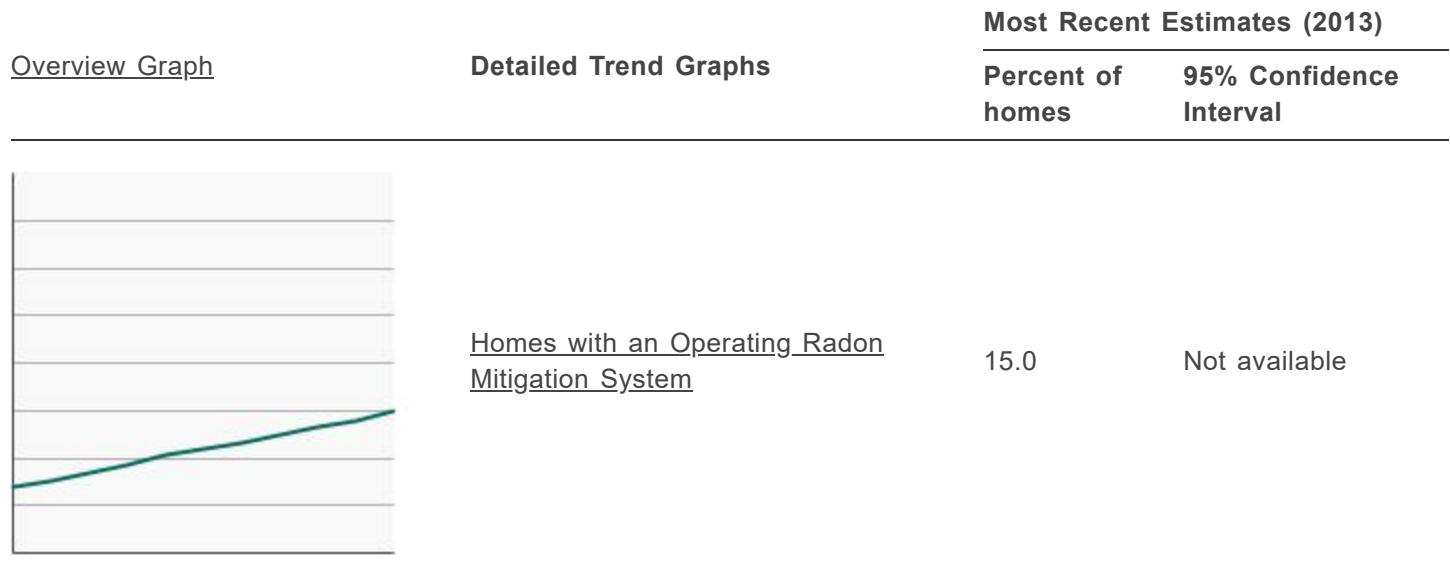
Data Source

Radon Vent Fan Manufacturers' Sales Data (<https://www.healthypeople.gov/2020/data-source/homes-with-radon-mitigation-systems>).

Trends and Most Recent Estimates

Homes with an Operating Radon Mitigation System

The proportion of homes with an operating radon mitigation system for persons living in homes at risk for radon exposure, 2003-2013



Additional Information on Radon

General Public Resources

- [Radon and Cancer](#). National Cancer Institute.
- [Radon](#). American Lung Association.
- [A Citizen's Guide to Radon: The Guide to Protecting Yourself and Your Family from Radon](#). Environmental Protection Agency.
- [Basic Radon Facts](#). Environmental Protection Agency.

Public Health Resources

- [Environmental Health and Medicine Education: Radon Toxicity](#). Agency for Toxic Substances and Disease Registry.
- [ToxGuide™ for Radon](#). Agency for Toxic Substances and Disease Registry.

Scientific Reports

- [Man-made Mineral Fibres and Radon](#). International Agency for Research on Cancer. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans 1988;43.

Cancer Trends Progress Report

Online Summary of Trends in US Cancer Control Measures

Early Detection

The use of screening tests to detect cancers earlier provides potential opportunities for patients to obtain more effective treatment with fewer side effects. Patients whose cancers are found at an earlier stage and treated in a timely manner are less likely to die from these cancers than are those whose cancers are not found until they are more widespread.

While there are clear benefits to screening, screening tests also carry harms. Not all screening tests are helpful and most have harms. It is important to know the harms associated with the test and whether it has been shown to decrease one's chances of dying from cancer.

This section describes trends in the use of breast, cervical, colorectal, and lung screening tests, which have been found to detect cancers accurately for specified age groups and can reduce the risk of death from that cancer.

- [Breast Cancer Screening](#)
- [Cervical Cancer Screening](#)
- [Colorectal Cancer Screening](#)
- [Lung Cancer Screening](#)

This section also describes trends in prostate screening tests; however, the highest grade assigned to prostate cancer screening by the U.S. Preventive Services Task Force (USPSTF) is a grade C, meaning that, for men aged 55 to 69 years, the decision to undergo periodic prostate-specific antigen (PSA)-based screening for prostate cancer should be an individual one, and that before deciding whether to be screened, men should have an opportunity to discuss the potential benefits and harms of screening with their clinician.

- [Prostate Cancer Screening](#)

Cancer Trends Progress Report

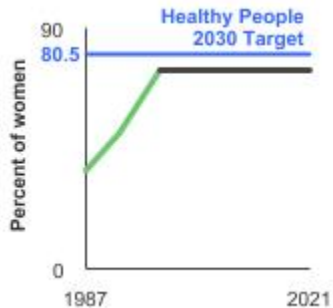
Online Summary of Trends in US Cancer Control Measures

Breast Cancer Screening

Data Up to Date as of:

August 2023

In 2021, 75.9% of women aged 50-74 years had a mammogram within the past 2 years.



Background

Mammography screening uses an x-ray of the breast to look for tumors in women who don't have symptoms. This screening method allows for the earlier detection of breast cancer, which, when followed by timely treatment, can help reduce deaths due to the disease. In part because age is the most important risk factor for breast cancer, women aged 60 to 69 years are likely to derive the greatest absolute benefit from screening. The U.S. Preventive Services Task Force recommends that women aged 50 to 74 years receive a mammogram every 2 years, and that women aged 40 to 49 years make an individual decision regarding screening.

Measure

The percentage of women aged 50 to 74 years who reported having had a mammogram within the past 2 years, by race/ethnicity, income, and education level.

Measurement challenges

We track breast cancer screening rates in U.S. women using a large, national, in-person survey in which people are asked about their health behaviors and the medical care they receive (see Data Source, below). There are important limitations to this method that impact what information we can accurately collect and how confident we can be in the findings. Studies have found that certain types of healthcare survey questions can be difficult for people to clearly understand and answer, and it is easy for some questions to be misinterpreted.

In the case of breast cancer screening, it can be challenging to determine by self-report alone if a woman received a mammogram for the purposes of looking for asymptomatic, previously undetected cancer (i.e., for screening purposes), or to follow up on symptoms or suspicious findings from a prior test (i.e., for diagnostic purposes). From an individual's point of view both tests appear similar to the patient experiencing them. Additionally, looking for new or recurrent asymptomatic cancer in a person previously diagnosed and treated for that cancer type represents a third type of testing known as surveillance testing. People may also not always accurately recall the specific time they received a particular test. Our measure captures general receipt of a mammogram (yes/no) more accurately than its underlying purpose, and the population may include those with a prior diagnosis of breast cancer. This serves as a reasonable approximation, although an overestimate, of the true U.S. breast cancer screening rate, i.e., the measure is not perfectly comparing the actual frequency of women's use of mammograms to national recommendations.

Healthy People 2030 Target

- Increase to 80.5 percent the proportion of women aged 50 to 74 years who have received a breast cancer screening based on the most recent guidelines.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Note: Goals are indicated as blue line on Detailed Trend Graphs.

Data Source

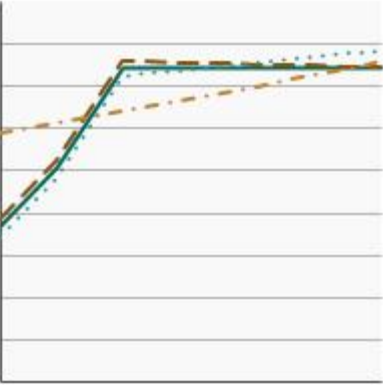
Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 1987–2021.

In 2019 the NHIS questionnaire was redesigned to increase relevance, enhance data quality, and minimize respondent burden. In addition, the COVID-19 pandemic created challenges conducting in-person interviews for the 2020 NHIS, requiring changes to field procedures to conduct most surveys by telephone, which impacted survey response rates. For details related to the potential impacts of these issues, please refer to [Potential Impact of NHIS Redesign and COVID-19 on the Cancer Trends Progress Report](#).

Trends and Most Recent Estimates

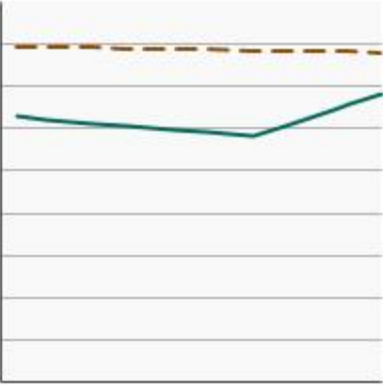
By Race/Ethnicity

Percent of females aged 50-74 years who had mammography within the past 2 years by race/ethnicity, 1987-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of women	95% Confidence Interval
	All Races/Ethnicities	75.9	74.7 - 77.1
	Non-Hispanic White	76.3	74.8 - 77.6
	Non-Hispanic Black	82.1	78.7 - 85.2
	Hispanic	74.0	70.1 - 77.6

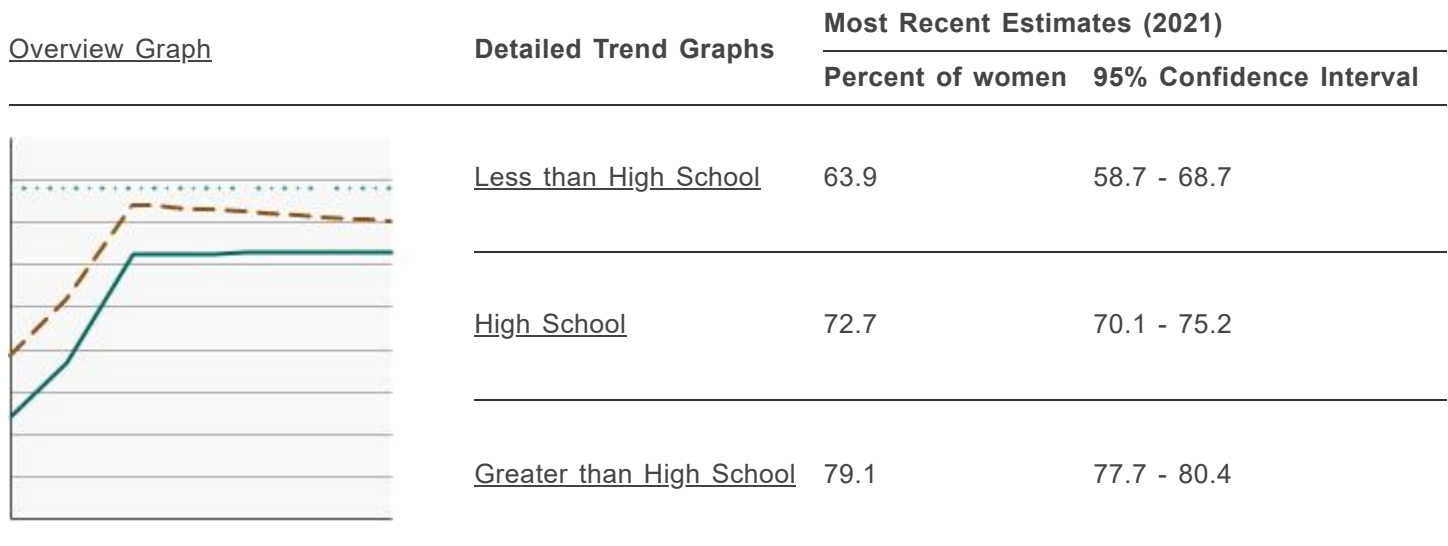
By Poverty Income Level

Percent of females aged 50-74 years who had mammography within the past 2 years by poverty income level, 1998-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of women	95% Confidence Interval
	<200% of federal poverty level	67.5	64.6 - 70.2
	>=200% of federal poverty level	78.7	77.3 - 80.0

By Education Level

Percent of females aged 50-74 years who had mammography within the past 2 years by highest level of education obtained, 1987-2021



Additional Information on Breast Cancer Screening

General Public Resources

- [Breast Cancer Screening \(PDQ®\)-Patient Version](#). National Cancer Institute.
- [Mammograms](#). National Cancer Institute.
- [Medicare Coverage for Cancer Prevention and Early Detection](#). American Cancer Society.
- [National Breast and Cervical Cancer Early Detection Program](#). Centers for Disease Control and Prevention.
- [What is Breast Cancer Screening?](#) Centers for Disease Control and Prevention.

Public Health Resources

- [Breast Cancer Screening Evidence-Based Programs Listing](#). National Cancer Institute.
- [Breast Cancer Screening \(PDQ®\)-Health Professional Version](#). National Cancer Institute.
- [The Community Guide: Cancer](#). Centers for Disease Control and Prevention, Community Preventive Services Task Force.
- [Breast Cancer: Screening \(January 2016\)](#). U.S. Preventive Services Task Force.
- [Breast Cancer Surveillance Consortium \(BCSC\)](#).

Scientific Reports

- [Effectiveness of breast cancer screening: Systematic review and meta-analysis to update the 2009 U.S. Preventive Services Task Force recommendation](#). Nelson HD, Fu R, Cantor A, et al. Ann Intern Med 2016; 164(4):244-55.
- [Harms of breast cancer screening: Systematic review to update the 2009 U.S. Preventive Services Task Force recommendation](#). Nelson HD, Pappas M, Cantor A, et al. Ann Intern Med 2016; 164(4): 256-67.
- [Supplemental screening for breast cancer in women with dense breasts: A systematic review for the U.S. Preventive Services Task Force](#). Melnikow J, Fenton JJ, Whitlock EP, et al. Ann Intern Med 2016; 164(4): 268-78.
- [Evaluating screening participation, follow-up, and outcomes for breast, cervical, and colorectal cancer in the PROSPR consortium](#). Barlow WE, Beaber EF, Geller BM, et al. J Natl Cancer Inst 2020; 112(3):238-246.
- [Association of screening with digital breast tomosynthesis vs digital mammography with risk of interval invasive and advanced breast cancer](#). Kerlikowske K, Su Y-R, Sprague BL, et al. JAMA 2022; 327(22): 2220-2230.

- [Mammography use and breast cancer incidence among older U.S. women.](#) Turbow SD, White MC, Breslau ES, et al. Breast Cancer Res Treat 2021; 188(1): 307-16.

Statistics

- [SEER Cancer Stat Facts: Female Breast Cancer.](#) National Cancer Institute.
- [Behavioral Risk Factor Surveillance System Prevalence Data & Analysis Tools.](#) Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion.

Cancer Trends Progress Report

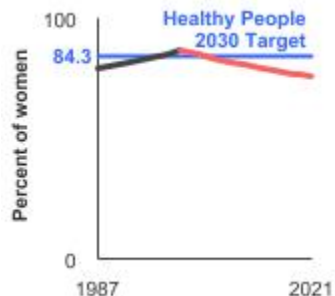
Online Summary of Trends in US Cancer Control Measures

Cervical Cancer Screening

Data Up to Date as of:

August 2023

In 2021, 72.4% of women aged 21-65 years were up-to-date with cervical cancer screening.



Background

Screening methods used to find cervical changes that may lead to cervical cancer include the Pap test (cytology-based screening, where a sample of cervical cells are collected and examined under a microscope) and human papillomavirus (HPV) testing (which tests cervical cells for the presence of high-risk types of HPV, a viral infection causing nearly all cervical cancer). Such screening tests may find cancers earlier when they are more easily treated. Women who have never been screened face the greatest risk of developing invasive cervical cancer.

The U.S. Preventive Services Task Force (USPSTF) recommends screening for cervical cancer with the Pap test alone every 3 years in women aged 21 to 29 years. In women aged 30 to 65 years, the USPSTF recommends the Pap test alone every 3 years or HPV testing, with or without Pap co-testing, every 5 years.

Measure

The percentage of women aged 21 to 65 years who were up-to-date with cervical cancer screening, by race/ethnicity, income, and education level. For 2013 and before, up-to-date was defined as having a Pap test within the past 3 years. For 2014-2018, up-to date is defined as having a Pap test within the past 3 years for all women aged 21 to 65 years, or having a Pap test, with or without an HPV test, in the past 5 years for women aged 30 to 65 years.

Starting in 2018, up-to-date on cervical screening was additionally defined as having an HPV test alone in the past 5 years for women aged 30 to 65 years.

Measurement challenges

We track cervical cancer screening rates in U.S. women using a large, national, in-person survey in which people are asked about their health behaviors and the medical care they receive (see Data Source, below). There are important limitations to this method that impact what information we can accurately collect and how confident we can be in the findings. Studies have found that certain types of healthcare survey questions can be difficult for people to clearly understand and answer.

It can be challenging to determine by self-report alone which type of cervical cancer screening test a woman received (i.e., a Pap smear, HPV test, or both). Both tests appear identical to the woman experiencing them; a person may only know if informed by her healthcare provider. People may also not always accurately recall the specific time they received a particular test. Additionally, cancer screening is looking for cancer before a person has symptoms, when they are not known to have had that specific cancer type before. Looking for new or recurrent asymptomatic cancer in a person previously diagnosed and treated for that cancer type represents a different type of testing known as surveillance testing. Finally, guidelines for cervical cancer screening have increased in complexity over time, which results in a greater likelihood for missing or incomplete self-reported information about the screening tests women received. Different approaches by researchers for handling this

missing information can result in somewhat varied estimates presented for up-to-date cervical cancer screening status, depending on publication.

Our measure captures any type of cervical cancer screening received by a woman, and the population may include those with a prior diagnosis of cervical cancer. It is a reasonable approximation of the true U.S. cervical cancer screening rate, but it is not perfectly comparing the actual frequency of women's use of specific cervical cancer screening tests to national recommendations.

Even though the National Health Interview Survey cervical cancer screening measures have limitations, it is the best nationally representative data we have available to assess cervical cancer screening rates. It is frequently used by governmental and other organizations to track screening use over time in the U.S.

Healthy People 2030 Target

- Increase to 84.3 percent the proportion of women aged 21 to 65 years who received cervical cancer screening based on the most recent guidelines.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Note: Goals are indicated as blue line on Detailed Trend Graphs.

Data Source

Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 1987–2021.

In 2019 the NHIS questionnaire was redesigned to increase relevance, enhance data quality, and minimize respondent burden. In addition, the COVID-19 pandemic created challenges conducting in-person interviews for the 2020 NHIS, requiring changes to field procedures to conduct most surveys by telephone, which impacted survey response rates. For details related to the potential impacts of these issues, please refer to [Potential Impact of NHIS Redesign and COVID-19 on the Cancer Trends Progress Report](#).

Trends and Most Recent Estimates

By Race/Ethnicity

Percentage of females aged 21-65 years who were up-to-date with cervical cancer screening by race/ethnicity, 1987-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of women	95% Confidence Interval
	All Races/Ethnicities	72.4	71.2 - 73.5
	Non-Hispanic White	75.7	74.2 - 77.1
	Non-Hispanic Black	71.6	68.1 - 74.9
	Hispanic	67.9	65.1 - 70.5

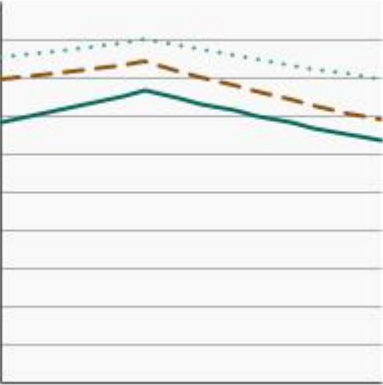
By Poverty Income Level

Percentage of females aged 21-65 years who were up-to-date with cervical cancer screening by poverty income level, 1998-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of women	95% Confidence Interval
	<200% of federal poverty level	63.3	61.0 - 65.5
	>=200% of federal poverty level	76.0	74.6 - 77.2

By Education Level

Percentage of females aged 21-65 years who were up-to-date with cervical cancer screening by highest level of education obtained, 1987-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of women	95% Confidence Interval
	<u>Less than High School</u>	58.4	53.5 - 63.2
	<u>High School</u>	63.9	61.3 - 66.5
	<u>Greater than High School</u>	77.2	76.0 - 78.3

Additional Information on Cervical Cancer Screening

General Public Resources

- [Cervical Cancer \(PDQ®\)—Patient Version](#). National Cancer Institute.
- [HPV and Pap Testing](#). National Cancer Institute.
- [Next Steps after an Abnormal Cervical Cancer Screening Test: Understanding HPV and Pap Test Results](#). National Cancer Institute.
- [Medicare Coverage for Cancer Prevention and Early Detection](#). American Cancer Society.
- [Cervical Cancers – What Should I Know About Screening?](#) Centers for Disease Control and Prevention.
- [National Breast and Cervical Cancer Early Detection Program](#). Centers for Disease Control and Prevention.

Public Health Resources

- [Cervical Cancer Screening Evidence-Based Programs Listing](#). National Cancer Institute.
- [Cervical Cancer Screening \(PDQ®\)-Health Professional Version](#). National Cancer Institute.
- [Cervical Cancer Prevention \(PDQ®\)-Health Professional Version](#). National Cancer Institute.
- [The Community Guide: Cancer](#). Centers for Disease Control and Prevention, Community Preventive Services Task Force.
- [Cervical Cancer: Screening \(August 2018\)](#). U.S. Preventive Services Task Force.

Scientific Reports

- [Screening for cervical cancer with high-risk human papillomavirus testing: Updated evidence report and systematic review for the U.S. Preventive Services Task Force](#). Melnikow J, Henderson JT, Burda BU, et al. JAMA 2018; 320(7): 687-705.
- [Impact of COVID-19-related care disruptions on cervical cancer screening in the United States](#). Burger EA, Jansen EE, Killen J, et al. J Med Screen. 2021 Jun;28(2):213-216.
- [Self-Sampling as a Plausible Alternative to Screen Cervical Cancer Precursor Lesions in a Population with Low Adherence to Screening: A Systematic Review](#). Caleia AI, Pires C, Pereira JF, Pinto-Ribeiro F, Longatto-Filho A. Acta Cytol. 2020;64(4):332-343.
- [Cervical cancer screening research in the PROSPR I consortium: Rationale, methods and baseline findings from a US cohort](#). Kamineni A, Tiro J, Beaver EF, et al. Int J Cancer 2019; 144(6): 1460-73.
- [Effect of Mailed Human Papillomavirus Test Kits vs Usual Care Reminders on Cervical Cancer Screening Uptake, Precancer Detection, and Treatment: A Randomized Clinical Trial](#). Winer RL, Lin J, Tiro JA, et al.

Statistics

- [Health Information National Trends Survey](#). National Cancer Institute.
- [SEER Cancer Stat Facts: Cervical Cancer](#). National Cancer Institute.
- [Behavioral Risk Factor Surveillance System: Prevalence Data & Data Analysis Tools](#). Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion.

Cancer Trends Progress Report

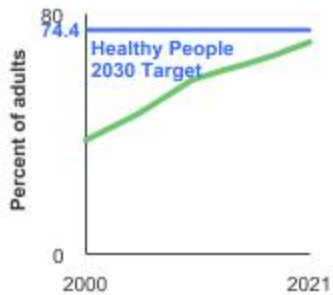
Online Summary of Trends in US Cancer Control Measures

Colorectal Cancer Screening

Data Up to Date as of:

August 2023

In 2021, 71.8% of adults aged 50-75 had received colorectal cancer screening based on the most recent guidelines.



Background

There are multiple approaches used to screen for colorectal cancer. They can be divided into stool-based tests (fecal occult blood testing [FOBT], fecal immunochemical testing [FIT], stool DNA testing [FIT-DNA]) and optical or visualization tests (sigmoidoscopy, colonoscopy, virtual colonoscopy [CT-colonography]). These screening tests can detect colorectal cancer prior to symptoms, which, when followed by timely treatment, can reduce deaths due to the disease.

In 2016, the U.S. Preventive Services Task Force (USPSTF) recommended screening for colorectal cancer for adults aged 50 to 75 years, and that adults aged 76 to 85 years should make an individual decision about screening. In May 2021, the USPSTF updated their guidance to lower the recommended screening start age to 45 years. This was based on evidence indicating a trend for increasing risk of colorectal cancer in adult birth cohorts younger than 50 years and statistical modeling suggesting that starting at age 45 years may increase life years gained compared to 50 years.

Measure

Optical or visualization screening tests

Colonoscopy - A procedure where a doctor looks into the rectum and the entire colon using a flexible narrow tube to identify colorectal cancer or precancerous polyps. Used not only as a screening test, colonoscopies are also used as a diagnostic procedure to follow up after positive results from a fecal occult blood test (FOBT) or fecal immunochemical test (FIT), fecal DNA test, sigmoidoscopy, or CT colonography. The USPSTF suggests a screening colonoscopy once every 10 years.

Computed tomography (CT) colonography (otherwise known as a virtual colonoscopy) - Produces a three-dimensional image of the colon which your doctor examines for colorectal cancer and precancerous polyps. The USPSTF suggests CT colonography once every 5 years.

Sigmoidoscopy - A procedure where a doctor looks into the rectum and part of the colon using a flexible narrow tube to identify colorectal cancer or precancerous polyps. The USPSTF suggests sigmoidoscopy once every 5 years, or once every 10 years when conducted along with FIT every year.

Stool-based screening tests

Fecal occult blood test (FOBT) and fecal immunochemical test (FIT) - These tests identify hidden blood in the stool, which can be a sign of cancer. The USPSTF suggests FOBT or FIT annually, using a home-based kit.

Fecal DNA test - In addition to checking for hidden blood in the stool like a FIT, this test also looks for abnormal genetic material that may be a sign of colorectal cancer. The USPSTF suggests fecal DNA testing at least every 3 years.

Measurement challenges

We track colorectal cancer screening rates in the U.S. using a large, national, in-person survey in which people are asked about their health behaviors and the medical care they receive (see Data Source, below). There are important limitations to this method that impact what information we can accurately collect and how confident we can be in the findings. Studies have found that certain types of healthcare survey questions can be difficult for people to clearly understand and answer, and it is easy for some questions to be misinterpreted.

In the case of colorectal screening, it may be challenging to determine by self-report alone if a colonoscopy was received for screening purposes, i.e., to look for asymptomatic, previously undetected cancer, or for diagnostic purposes, i.e., as a follow up on symptoms or suspicious findings from a prior test. It can also be difficult to determine by self-report alone which type of colorectal cancer screening test a person received, as several testing options appear similar to the person experiencing them. People may also not always accurately recall the specific time they received a particular test. Additionally, cancer screening is looking for cancer before a person has symptoms, when they are not known to have had that specific cancer type before. Looking for new or recurrent asymptomatic cancer in a person previously diagnosed and treated for that cancer type represents a different type of testing known as surveillance testing.

Options for colorectal cancer screening have increased over time, which results in a greater likelihood for missing or incomplete self-reported information about the screening tests people received. Different approaches by researchers for handling this missing information can result in somewhat varied estimates presented for up-to-date colorectal cancer screening status, depending on publication.

Our measure captures general receipt of a colorectal cancer screening test (yes/no) more accurately than its underlying purpose or the specific screening test received, and the population may include those with a prior diagnosis of colorectal cancer. This serves as a reasonable approximation of the true U.S. colorectal cancer screening rate, but the measure is not perfectly comparing the actual frequency of people's use of colorectal cancer screening to national recommendations.

Even though the National Health Interview Survey colorectal cancer screening measures have limitations, it is the best nationally representative data we have available to assess colorectal cancer screening rates. It is frequently used by governmental and other organizations to track screening use over time in the US.

Healthy People 2030 Target

- Increase to 74.4 percent the proportion of adults aged 50 to 75 years who have received a colorectal screening test based on the most recent guidelines.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Note: Goals are indicated as blue line on Detailed Trend Graphs.

Data Source

Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 1987–2021.

Please note that these data were collected while the 2016 USPSTF recommendations were in place. Therefore, the estimates include adults aged 50 to 75 years.

In 2019 the NHIS questionnaire was redesigned to increase relevance, enhance data quality, and minimize respondent burden. In addition, the COVID-19 pandemic created challenges conducting in-person interviews for the 2020 NHIS, requiring changes to field procedures to conduct most surveys by telephone, which impacted survey response rates. For details related to the potential impacts of these issues, please refer to [Potential Impact of NHIS Redesign and COVID-19 on the Cancer Trends Progress Report](#).

Trends and Most Recent Estimates

By Sex

Percentage of adults aged 50-75 years who were up-to-date¹ with colorectal cancer screening by sex, 2000-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of adults	95% Confidence Interval
	Both Sexes	71.8	70.8 - 72.8
	Male	70.8	69.3 - 72.2
	Female	72.7	71.4 - 74.0

By Race/Ethnicity

Percentage of adults aged 50-75 years who were up-to-date¹ with colorectal cancer screening by race/ethnicity, 2000-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of adults	95% Confidence Interval
	All Races/Ethnicities	71.8	70.8 - 72.8
	Non-Hispanic White	74.3	73.2 - 75.4
	Non-Hispanic Black	72.0	69.0 - 74.8
	Hispanic	63.1	59.9 - 66.2

By Poverty Income Level

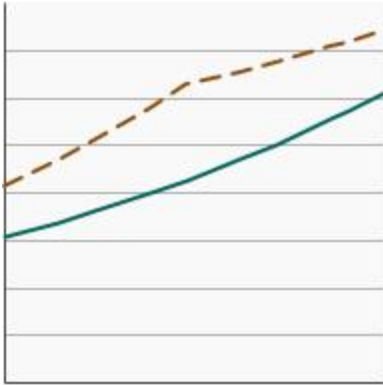
Percentage of adults aged 50-75 years who were up-to-date¹ with colorectal cancer screening by poverty income level, 2000-2021

[Overview Graph](#)

Detailed Trend Graphs

Most Recent Estimates (2021)

Percent of adults **95% Confidence Interval**



<200% of federal poverty level

61.1

58.9 - 63.2

>=200% of federal poverty level

75.0

74.0 - 76.1

By Education Level

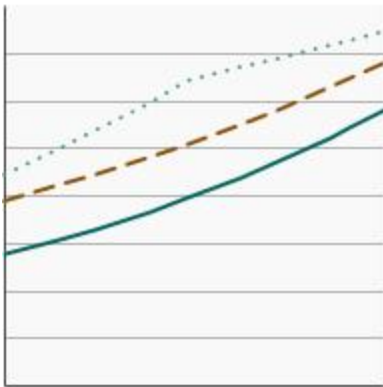
Percentage of adults aged 50-75 years who were up-to-date¹ with colorectal cancer screening by highest level of education obtained, 2000-2021

[Overview Graph](#)

Detailed Trend Graphs

Most Recent Estimates (2021)

Percent of adults **95% Confidence Interval**



Less than High School

58.8

55.4 - 62.2

High School

67.1

65.1 - 69.0

Greater than High School

75.9

74.7 - 77.0

By Screening Location

Breakdown of colorectal screening tests received by adults aged 50-75 years by screening location, 2000-2021

[Overview Graph](#)

Detailed Trend Graphs

Most Recent Estimates (2021)

Percent of adults **95% Confidence Interval**

Home-Based Testing

10.0

9.3 - 10.8

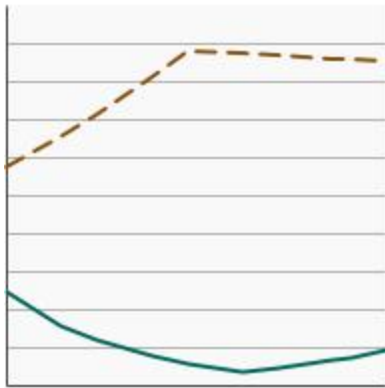
[Overview Graph](#)

**Detailed Trend
Graphs**

Most Recent Estimates (2021)

**Percent of
adults**

**95% Confidence
Interval**



[Visualization
Testing](#)

78.7

77.6 - 79.8

By Contributing Test Type

Breakdown of colorectal screening tests received by adults aged 50-75 years by type of screening test received, 2000-2021

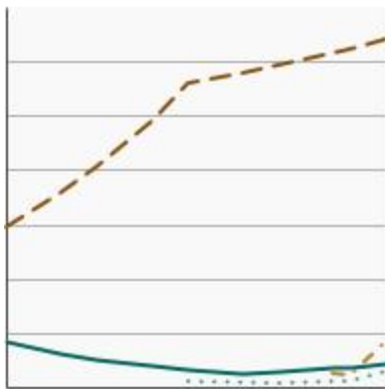
[Overview Graph](#)

**Detailed Trend
Graphs**

Most Recent Estimates (2021)

**Percent of
adults**

**95% Confidence
Interval**



[Home FOBT](#)

4.4

4.0 - 4.9

[Sigmoidoscopy or
Colonoscopy](#)

63.9

62.8 - 64.9

[CT Colonography](#)

2.9

2.5 - 3.3

[Fecal DNA Test](#)

8.3

7.7 - 8.9

Additional Information on Colorectal Cancer Screening

General Public Resources

- [Colorectal Cancer Screening \(PDQ®\)-Patient Version](#). National Cancer Institute.
- [Tests to Detect Colorectal Cancer and Polyps](#). National Cancer Institute.
- [Medicare Coverage for Cancer Prevention and Early Detection](#). American Cancer Society.
- [Colorectal \(Colon\) Cancer](#). Centers for Disease Control and Prevention.

Public Health Resources

- [Colorectal Cancer Screening Evidence-Based Programs Listing](#). National Cancer Institute.
- [Colorectal Cancer Screening \(PDQ®\)-Health Professional Version](#). National Cancer Institute.
- [The Community Guide: Cancer](#). Centers for Disease Control and Prevention, Community Preventive Services Task Force.

- [Colorectal Cancer: Screening \(May 2021\)](#). U.S. Preventive Services Task Force.

Scientific Reports

- [Screening for Colorectal Cancer: Updated Evidence Report and Systematic Review for the US Preventive Services Task Force](#). Lin JS, Perdue LA, Henrikson, et al. JAMA. 2021; 325(19):1978-98.
- [Effect of Colonoscopy Screening on Risks of Colorectal Cancer and Related Death](#). Bretthauer M, Loberg M, Wieszczy, et al. N Engl J Med. 2022 Oct 27;387(17):1547-1556.
- [Long-Term Follow-up of the Italian Flexible Sigmoidoscopy Screening Trial](#). Senore C, Riggi E, Armaroli P, et al. Ann Intern Med. 2022 Jan;175(1):36-45. doi: 10.7326/M21-0977.
- [Guaiac-based faecal occult blood tests versus faecal immunochemical tests for colorectal cancer screening in average-risk individuals](#). Grobbee EJ, Wisse PH, Schreuders EH, et al. Cochrane Database Syst Rev. 2022 Jun 6;6(6):CD009276.
- [Screening for Colorectal Cancer in the United States: Correlates and Time Trends by Type of Test](#). Shapiro JA, Soman AV, Berkowitz Z, et al. Cancer Epidemiol Biomarkers Prev. 2021 Aug;30(8):1554-1565.
- [Evaluating screening participation, follow-up, and outcomes for breast, cervical, and colorectal cancer in the PROSPR consortium](#). Barlow WE, Beaber EF, Geller BM, et al. J Natl Cancer Inst 2020;112(3):238-246.

Statistics

- [SEER Cancer Stat Facts: Colorectal Cancer](#). National Cancer Institute.
- [Behavioral Risk Factor Surveillance System: Prevalence Data & Data Analysis Tools](#). Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion.

Cancer Trends Progress Report

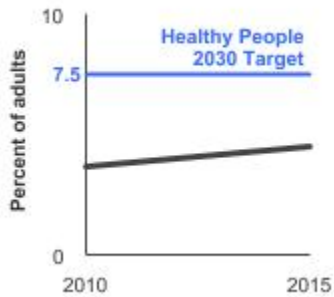
Online Summary of Trends in US Cancer Control Measures

Lung Cancer Screening

Data Up to Date as of:

August 2023

In 2015, 4.5% of adults aged 55-80 years who were at risk for lung cancer due to smoking had a CT scan to check for lung cancer within the past year.



Background

Lung cancer screening uses a type of chest computed tomography (CT), known as low radiation dose CT (LDCT), to create detailed pictures of the lungs. Doctors use lung cancer screening for early detection of disease in former and current smokers who do not have symptoms. Another name for LDCT is low-dose helical CT. In 2013, the U.S. Preventive Services Task Force's (USPSTF) recommended annual LDCT screening for lung cancer in adults aged 55 to 80 years who had a 30 pack-year smoking history or more and who currently smoked or had quit within the past 15 years. In March 2021, the USPSTF published revised guidelines and now recommends annual LDCT screening for lung cancer in adults aged 50 to 80 years who have a 20 pack-year smoking history or more and who currently smoke or have quit within the past 15 years. Quitting smoking is the best way to reduce the risk of dying from lung cancer. Lung cancer screening is not a substitute for smoking cessation.

Measure

Percentage of adults at risk for lung cancer due to smoking, aged 55-80 years, who had a CT scan to check for lung cancer within the past year, by sex, race/ethnicity, income, education level, age, and smoking pack years.

Measurement challenges

We track lung cancer screening rates in U.S. adults using the *National Health Interview survey*, a large, national, in-person survey in which people are asked about their health behaviors and the medical care they receive (see Data Source, below). There are important limitations to this method that impact what information we can accurately collect and how confident we can be in the findings. Studies have found that certain types of healthcare survey questions can be difficult for people to clearly understand and answer, and it is easy for some questions to be misinterpreted.

National guidelines state that only individuals with extensive cigarette smoking experience be screened for lung cancer, and this report strives to only include eligible individuals in our measures. One challenge we face is calculation of an accurate measure of lifetime smoking, which is needed to determine whether someone is eligible for screening. Cigarette smoking behaviors can vary from day to day and year to year, yet our survey does not capture such time-specific information; instead, we collect information about average lifetime smoking. In addition, it can be difficult for an individual to accurately recall how many cigarettes he or she smoked a day in years past. Furthermore, an individual may underreport amount smoked given the stigma associated with the activity.

In the case of lung cancer screening, it can be challenging to determine by self-report alone if an individual received an LDCT for the purposes of looking for asymptomatic, previously undetected cancer or precancers (i.e., for screening purposes), or to follow up on symptoms or suspicious findings from a prior test (i.e., for diagnostic purposes). Patients may not know the difference between a screening LDCT and a diagnostic LDCT. Therefore,

we ask individuals whether they received an exam to check for lung cancer, and our measures include both screening and diagnostic LDCTs. Though people may have reported LDCT exams that occurred for surveillance following lung cancer diagnosis and treatment, as of 2021 we exclude individuals previously diagnosed with lung cancer from our measurement of lung cancer screening rates, thus minimizing inclusion of surveillance exams. We also exclude individuals who report having an exam to check for lung cancer but then report that they had no exams in the last three years.

The challenges noted above can lead to the overreporting and underreporting of smoking and lung cancer screening; therefore, it is difficult to know whether our measures of lung cancer screening in eligible individuals are overestimates or underestimates. We do not believe that errors are extensive, and as such, we feel that our measures provide good estimates of the true magnitude of lung cancer screening. Furthermore, these data are widely considered to be the best national data on lung cancer screening and are used frequently to track lung cancer screening rates in the U.S.

In addition to the challenges noted above, lung cancer screening is somewhat unique among cancer screening modalities because it does not apply to everyone in a specified age range, but rather only to current or former heavy smokers in the age range. This means that the denominator of eligible individuals is considerably smaller than that for other screening modalities. Thus the resultant estimates from NHIS of those screened among the eligible population will have considerably larger standard errors (especially relative to the size of the estimates) than for other cancer sites, and should be interpreted with caution.

Healthy People 2030 Target

Increase to 7.5 percent the proportion of adults aged 55 to 80 years who receive lung cancer screening based on the 2013 USPSTF recommendations. Recommendations are restricted to individuals who have never had lung cancer, have smoked at least 30 pack-years, and if former smokers, have quit no more than 15 years ago.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Note: Goals are indicated as blue line on Detailed Trend Graphs.

Data Source

Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2010–2015.

Please note that these data were collected while the 2013 USPSTF recommendations were in place. Therefore, the estimates include adults aged 55 to 80 who had a 30 pack-year smoking history or more and who currently smoked or had quit within the past 15 years.

In 2019 the NHIS questionnaire was redesigned to increase relevance, enhance data quality, and minimize respondent burden. In addition, the COVID-19 pandemic created challenges conducting in-person interviews for the 2020 NHIS, requiring changes to field procedures to conduct most surveys by telephone, which impacted survey response rates. For details related to the potential impacts of these issues, please refer to [Potential Impact of NHIS Redesign and COVID-19 on the Cancer Trends Progress Report](#).

Trends and Most Recent Estimates

By Sex

Percentage of adults at risk for lung cancer due to smoking¹, aged 55-80 years, who had a CT scan to check for lung cancer within the past year by sex, 2010-2015

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2015)	
		Percent of adults	95% Confidence Interval
	Both Sexes	4.5	2.8 - 7.2
	Male	4.5	2.7 - 7.4
	Female	4.5	1.8 - 10.5

¹ Includes adults who have smoked for 30+ pack years and who currently smoke or have quit within the past 15 years. Excludes adults who reported a previous diagnosis of lung cancer.

By Race/Ethnicity

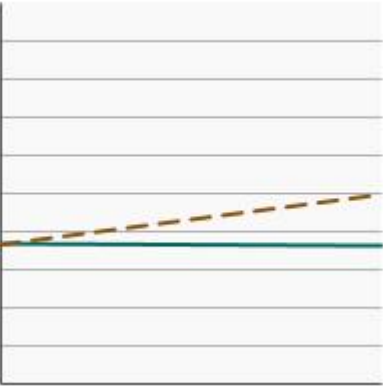
Percentage of adults at risk for lung cancer due to smoking¹, aged 55-80 years, who had a CT scan to check for lung cancer within the past year by race/ethnicity, 2010-2015

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2015)	
		Percent of adults	95% Confidence Interval
	All Races	4.5	2.8 - 7.2
	Non-Hispanic White	4.9	3.0 - 8.0
	Non-Hispanic Black	1.7	0.6 - 5.0
	Hispanic	0.7	0.1 - 4.6

¹ Includes adults who have smoked for 30+ pack years and who currently smoke or have quit within the past 15 years. Excludes adults who reported a previous diagnosis of lung cancer.

By Poverty Income Level

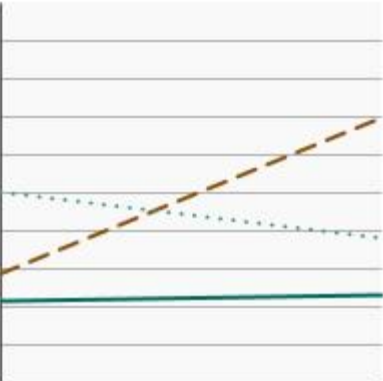
Percentage of adults at risk for lung cancer due to smoking¹, aged 55-80 years, who had a CT scan to check for lung cancer within the past year by poverty income level, 2010-2015

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2015)	
		Percent of adults	95% Confidence Interval
	<200% of federal poverty level	3.6	2.0 - 6.5
	>=200% of federal poverty level	5.0	2.7 - 9.1

¹ Includes adults who have smoked for 30+ pack years and who currently smoke or have quit within the past 15 years. Excludes adults who reported a previous diagnosis of lung cancer.

By Education Level

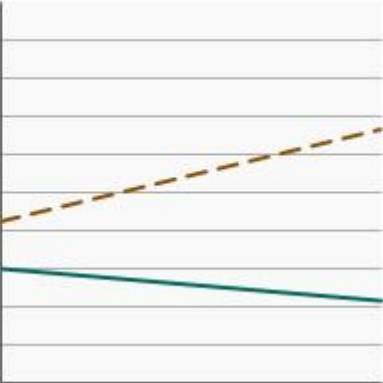
Percentage of adults at risk for lung cancer due to smoking¹, aged 55-80 years, who had a CT scan to check for lung cancer within the past year by highest level of education obtained, 2010-2015

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2015)	
		Percent of adults	95% Confidence Interval
	Less than High School	2.3	1.1 - 4.7
	High School	7.0	4.0 - 11.8
	Greater than High School	3.8	1.4 - 9.6

¹ Includes adults who have smoked for 30+ pack years and who currently smoke or have quit within the past 15 years. Excludes adults who reported a previous diagnosis of lung cancer.

By Age

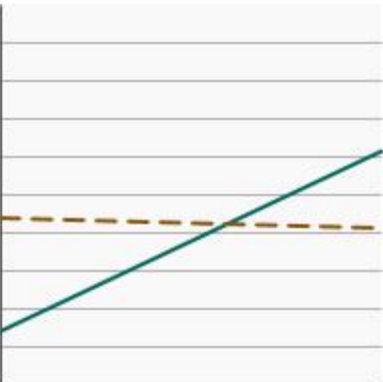
Percentage of adults at risk for lung cancer due to smoking¹, aged 55-80 years, who had a CT scan to check for lung cancer within the past year by age, 2010-2015

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2015)	
		Percent of adults	95% Confidence Interval
	Ages 55-64	2.2	1.2 - 3.8
	Ages 65-80	6.6	3.7 - 11.7

¹ Includes adults who have smoked for 30+ pack years and who currently smoke or have quit within the past 15 years. Excludes adults who reported a previous diagnosis of lung cancer.

By Smoking Pack Years

Percentage of adults at risk for lung cancer due to smoking¹, aged 55-80 years, who had a CT scan to check for lung cancer within the past year by smoking pack years, 2010-2015

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2015)	
		Percent of adults	95% Confidence Interval
	30-39 Pack Years	6.2	2.5 - 14.6
	40+ Pack Years	4.1	2.3 - 7.2

¹ Includes adults who have smoked for 30+ pack years and who currently smoke or have quit within the past 15 years. Excludes adults who reported a previous diagnosis of lung cancer.

Additional Information on Lung Cancer Screening

General Public Resources

- [Lung Cancer](#). National Cancer Institute.
 - [Lung Cancer Screening \(PDQ®\)-Patient Version](#). National Cancer Institute.
 - [Smokefree.gov](#). National Cancer Institute.
 - [Is Lung Cancer Screening Right for Me?](#). American Lung Association.
 - [Lung Cancer: Who Should Be Screened for Lung Cancer?](#). Centers for Disease Control and Prevention.
- *2021 GUIDELINES*

- [Tips from Former Smokers: Guide for quitting smoking](#). Centers for Disease Control and Prevention.
- [Medicare coverage of yearly lung cancer screenings](#). Medicare Interactive.
- [Screening for Lung Cancer](#). U.S. Department of Veterans Affairs
- [Lung Cancer: Screening \(Related Information for Consumers\)](#). U.S. Preventive Services Task Force. *2021 GUIDELINES*

Public Health Resources

- [Lung Cancer Screening \(PDQ®\)-Health Professional Version](#). National Cancer Institute
- [Smoking Cessation](#). Cancer Trends Progress Report.
- [Help others quit](#). Smokefree.gov.
- [Lung cancer screening tools](#). Agency for Healthcare Research and Quality.
- [Health Care Providers: How you can help your patients quit](#). Centers for Disease Control and Prevention.
- [Final Recommendation Statement. Lung Cancer: Screening](#). U.S. Preventive Services Task Force. *2021 GUIDELINES*

Scientific Reports

- [Cost-Effectiveness of Smoking Cessation Interventions in the Lung Cancer Screening Setting: A Simulation Stud](#). Cadham CJ, Cao P, Jayasekera J, et al. J Natl Cancer Inst. 2021 Aug 2;113(8):1065-1073.
- [Reduced lung-cancer mortality with volume CT screening in a randomized trial](#). de Koning HJ, van der Aalst CM, de Jong PA, et al. N Engl J Med. 2020;382(6):503-513. doi:10.1056/NEJMoa1911793
- [Screening for Lung Cancer With Low-Dose Computed Tomography: Updated Evidence Report and Systematic Review for the US Preventive Services Task Force](#). Jonas DE, Reuland DS, Reddy SM, et al. JAMA. 2021;325(10):971–987. doi:10.1001/jama.2021.0377
- [Lung Cancer Screening and Smoking Cessation Clinical Trials. SCALE \(Smoking Cessation within the Context of Lung Cancer Screening\) Collaboration](#). Joseph AM, Rothman AJ, Almirall D, et al. Am J Respir Crit Care Med. 2018 Jan 15;197(2):172-182.
- [Smoking-related health beliefs and smoking behavior in the National Lung Screening Trial](#). Kaufman AR, Dwyer LA, Land SR et al. Addict Behav 2018;84:27-32.
- [Impact of Joint Lung Cancer Screening and Cessation Interventions Under the New Recommendations of the U.S. Preventive Services Task Force](#). Meza R, Cao P, Jeon J, et al. J Thorac Oncol. 2022 Jan;17(1):160-166.
- [Evaluation of the Benefits and Harms of Lung Cancer Screening With Low-Dose Computed Tomography: Modeling Study for the US Preventive Services Task Force](#). Meza R, Jeon J, Toumazis I, et al. JAMA. 2021;325(10):988–997. doi:10.1001/jama.2021.1077
- [Community-based Lung Cancer Screening Results in Relation to Patient and Radiologist Characteristics: The PROSPR Consortium](#). Burnett-Hartman AN, Carroll NM, Honda SA, et al. Ann Am Thorac Soc. 2022 Mar;19(3):433-441. doi: 10.1513/AnnalsATS.202011-1413OC.
- [Characteristics of Persons Screened for Lung Cancer in the United States : A Cohort Study](#). Silverstri GA, Goldman L, Burleson L, et al. Ann Intern Med. 2022 Nov;175(11):1501-1505. doi: 10.7326/M22-1325. Epub 2022 Oct 11.

Statistics

- [SEER Cancer Stat Facts: Lung and Bronchus Cancer](#). National Cancer Institute.
- [Use of lung cancer screening tests in the United States: results from the 2010 National Health Interview Survey](#). Doria-Rose VP, White MC, Klabunde CN et al. Cancer Epidemiol Biomarkers Prev 2012;21(7):1049-59.
- [Lung Cancer Screening With Low-Dose Computed Tomography in the United States-2010 to 2015](#). Jemal A, Fedewa SA. JAMA Oncol 2017;3(9):1278-1281.

Cancer Trends Progress Report

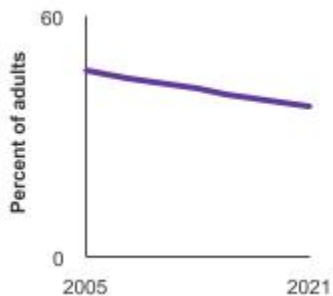
Online Summary of Trends in US Cancer Control Measures

Prostate Cancer Screening

Data Up to Date as of:

August 2023

In 2021, 37.1% of men aged 55-69 years had a PSA test within the past year.



Background

Prostate-specific antigen, or PSA, is a protein produced by normal, as well as malignant, cells of the prostate gland. The PSA test measures the level of PSA in a man's blood. For this test, a blood sample is sent to a laboratory for analysis.

In 2012 the U.S. Preventive Services Task Force (USPSTF) recommended against prostate cancer screening. In May 2018, the USPSTF published a [final recommendation statement](#) to update PSA screening guidelines for two subsets of the population:

1. for men age 70 years and older, the USPSTF recommends against PSA-based screening for prostate cancer, and
2. for men ages 55 to 69 years, the USPSTF recommends that clinicians inform them about the potential benefits and harms of PSA-based screening for prostate cancer, stating that the decision about whether to be screened for prostate cancer should be an individual one.

Measure

The percentage of men aged 55 to 69 years who reported having had a PSA test within the past year, by race/ethnicity, income, education level, and age. This provides information about the use of PSA testing in the population.

Measurement challenges

We track prostate cancer screening rates in U.S. using a large, national, in-person survey in which male respondents were asked several questions about prostate cancer and PSA testing, including whether they had ever had a PSA test and, if so, the time of their most recent test and the main reason for undergoing it (see Data Source, below). There are important limitations to this method that impact what information we can accurately collect and how confident we can be in the findings. Studies have found that certain types of healthcare survey questions can be difficult for people to clearly understand and answer, and it is easy for some questions to be misinterpreted.

In the case of PSA screening, it may be challenging to determine by self-report alone if a PSA test was received for screening purposes, i.e., to look for asymptomatic, previously undetected cancer, or for diagnostic purposes, i.e., as a follow up on symptoms or suspicious findings from a prior test. Additionally, looking for new or recurrent asymptomatic cancer in a person previously diagnosed and treated for that cancer type represents a third type of testing known as surveillance testing. In some cases, because PSA testing is a blood test, it may be bundled by a clinician with other tests, and a man may be unaware he even had the test. Finally, men may also not always accurately recall the specific time they received a particular test. As such, our measure captures any type of PSA test received by a man, and the population may include those with a prior diagnosis of prostate

cancer. This serves as a reasonable approximation, although an overestimate, of the true U.S. prostate cancer screening rate.

Even though the National Health Interview Survey prostate cancer screening measures have limitations, it is the best nationally representative data we have available to assess prostate cancer screening rates.

Healthy People 2030 Target

There is no Healthy People 2030 target related to being screened for prostate cancer. There is a target goal to increase the proportion of men who have discussed the advantages and disadvantages of the PSA test to screen for prostate cancer with their health care provider.

[Healthy People 2030](#) is a set of goals set forth by the Department of Health and Human Services.

Note: Goals are indicated as blue line on Detailed Trend Graphs.

Data Source

Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey, 2005-2021.

In 2019 the NHIS questionnaire was redesigned to increase relevance, enhance data quality, and minimize respondent burden. In addition, the COVID-19 pandemic created challenges conducting in-person interviews for the 2020 NHIS, requiring changes to field procedures to conduct most surveys by telephone, which impacted survey response rates. For details related to the potential impacts of these issues, please refer to [Potential Impact of NHIS Redesign and COVID-19 on the Cancer Trends Progress Report](#).

Trends and Most Recent Estimates

By Race/Ethnicity

Percent of men aged 55-69 years who had a prostate-specific antigen (PSA) test within the past year by race/ethnicity, 2005-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of adults	95% Confidence Interval
	All Races/Ethnicities	37.1	35.1 - 39.1
	Non-Hispanic White	40.7	38.5 - 42.9
	Non-Hispanic Black	32.7	27.0 - 38.9
	Hispanic	29.1	23.0 - 36.1

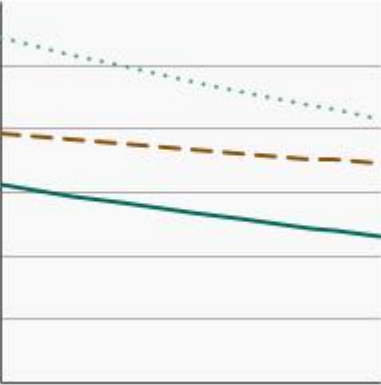
By Poverty Income Level

Percent of men aged 55-69 years who had a prostate-specific antigen (PSA) test within the past year by poverty income level, 2005-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of adults	95% Confidence Interval
	<200% of federal poverty level	22.7	19.3 - 26.4
	>=200% of federal poverty level	41.0	38.7 - 43.3

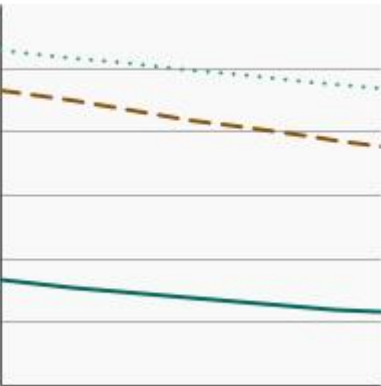
By Education Level

Percent of men aged 55-69 years who had a prostate-specific antigen (PSA) test within the past year by highest level of education obtained, 2005-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of adults	95% Confidence Interval
	Less than High School	21.7	16.8 - 27.5
	High School	35.8	32.1 - 39.6
	Greater than High School	40.3	38.0 - 42.8

By Age

Percent of men aged 40 years and older who had a prostate-specific antigen (PSA) test within the past year by age at time of screening, 2005-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of adults	95% Confidence Interval
	Ages 40-54	10.5	9.4 - 11.8
	Ages 55-69	37.1	35.1 - 39.1
	Ages 70+	48.8	46.4 - 51.1

Additional Information on Prostate Cancer Screening

General Public Resources

- [Prostate Cancer Screening Final Recommendations](#). U.S. Preventive Services Task Force.

Scientific Reports

- [Prostate-Specific Antigen–Based Screening for Prostate Cancer Evidence Report and Systematic Review for the US Preventive Services Task Force](#). Fenton JJ, Weyrich MS, Durbin S, et al. JAMA 2018;319(18):1914-1931. doi:10.1001/jama.2018.3712
- [Extended follow-up for prostate cancer incidence and mortality among participants in the Prostate, Lung, Colorectal and Ovarian randomized cancer screening trial](#). Pinsky PF, Miller E, Prorok P, et al. BJU Int 123 (5): 854-860, 2019.

- [A 16-yr Follow-up of the European Randomized study of Screening for Prostate Cancer](#). Hugosson J, Roobol MJ, Månsson M, et al. *Eur Urol* 76 (1): 43-51, 2019.

Statistics

- [SEER Cancer Stat Facts: Prostate Cancer](#). National Cancer Institute.
- [Behavioral Risk Factor Surveillance System: Prevalence Data & Data Analysis Tools](#). Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion.

Cancer Trends Progress Report

Online Summary of Trends in US Cancer Control Measures

Diagnosis

The rate of newly diagnosed cancer cases (incidence) is one way to measure progress against cancer. A lower rate of new cases suggests greater progress is being made.

Another important measure is the proportion of cancers diagnosed at a later stage of development. The stage of a cancer shows how far the disease has progressed and spread within the body. The earlier the stage at diagnosis, the better the chances are for a cure. Downward trends in the proportion of late cancer diagnoses are a sign that screening is working for cancers for which early detection methods are available.

This section describes trends in the rates of new cancers by cancer site and by racial and ethnic group. It also includes data on the proportion of cancers diagnosed at a late stage for six of the major cancer sites (female breast, lung, colon, rectum, cervix, and prostate) where cancer screening has been shown to make a difference in outcomes and is recommended or is being widely used (with the exception of prostate cancer screening, for which the highest grade assigned by the U.S. Preventive Services Task Force [USPSTF] is a grade C, meaning that, for men aged 55 to 69 years, the decision to undergo periodic prostate-specific antigen [PSA]-based screening for prostate cancer should be an individual one, and that before deciding whether to be screened, men should have an opportunity to discuss the potential benefits and harms of screening with their clinician). In this report, late stage colon, rectum, cervix, and prostate cancer cases are distant stage cases only. Late stage female breast and lung cancer cases include both regional and distant stage cases.

- [Incidence](#)
- [Stage at Diagnosis](#)

Cancer Trends Progress Report

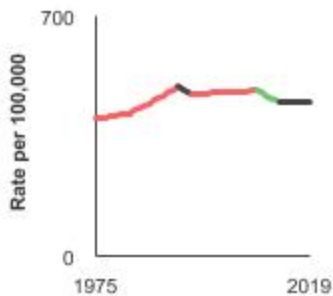
Online Summary of Trends in US Cancer Control Measures

Incidence

Data Up to Date as of:

August 2023

In 2019, the rate of new cases of all cancers combined was 451.2 per 100,000 people per year.



Background

Cancer incidence is typically measured as the number of new cases each year for every 100,000 people (for sex-specific cancers, people of the same sex serve as the denominator) and age-adjusted to a standard population to allow comparisons over time.

In 2022, nearly half of all new cancer cases are expected to be cancers of the prostate, breast, lung, and colon and rectum. According to American Cancer Society projections, about 1,918,030 new cases of cancer are expected to be diagnosed in 2022, including 268,490 cases of prostate cancer, 290,560 cases of breast cancer, 236,740 cases of lung and bronchus cancer, and 151,030 cases of colorectal cancer.

Measure

Incidence rate: the observed number of new cancer cases per 100,000 people per year, adjusted for age and cancer case reporting delays and based on data from approximately 10 percent of the U.S. population.

Delay adjustment: a method of estimating delayed reporting of incident cases and then adjusting rates to account for this delay.

Healthy People 2030 Target

There are no Healthy People 2030 targets for cancer incidence.

[Healthy People 2030](#) is a set of goals set forth by the Department of Health and Human Services.

Data Source

SEER Program, National Cancer Institute, 1975–2019.

Trends and Most Recent Estimates

All Cancer Sites Combined

By Sex

Rates of new cases of all cancer, delay-adjusted cancer incidence by sex, 1975-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Rate per 100,000	95% Confidence Interval
	Both Sexes	451.2	448.7 - 453.6
	Male	484.8	481.1 - 488.4
	Female	429.8	426.6 - 433.1

By Race/Ethnicity

Rates of new cases of all cancer, delay-adjusted cancer incidence by race/ethnicity, 2000-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Rate per 100,000	95% Confidence Interval
	All Races	456.1	455.1 - 457.1
	Non-Hispanic White	466.7	465.5 - 467.8
	Non-Hispanic Black	462.0	458.9 - 465.1
	Hispanic	367.6	365.3 - 369.9
	Non-Hispanic Asian/Pacific Islander	323.2	320.3 - 326.1
	Non-Hispanic American Indian/Alaska Native	468.3	449.1 - 488.1

Top 4 Cancer Sites

Comparison of Top Cancer Sites

Rates of new cases of the most common cancers, delay-adjusted cancer incidence, 1975-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Rate per 100,000	95% Confidence Interval
	Colon and Rectum	34.6	34.0 - 35.3
	Lung and Bronchus	45.9	45.2 - 46.7
	Female Breast	137.3	135.5 - 139.2
	Prostate	122.6	120.8 - 124.4

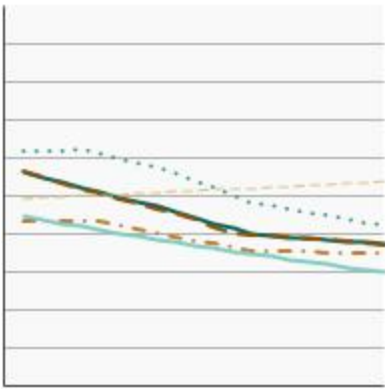
Colon and Rectum Cancer by Sex

Rates of new cases of colon and rectum cancer, delay-adjusted cancer incidence by sex, 1975-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Rate per 100,000	95% Confidence Interval
	Both Sexes	34.6	34.0 - 35.3
	Male	39.9	38.9 - 41.0
	Female	30.0	29.1 - 30.8

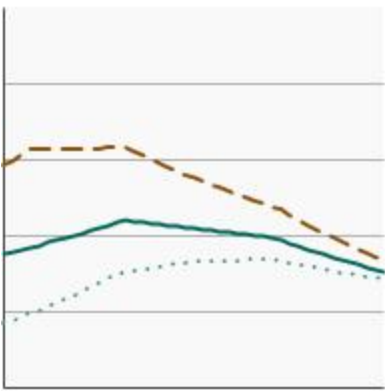
Colon and Rectum Cancer by Race/Ethnicity

Rates of new cases of colon and rectum cancer, delay-adjusted cancer incidence by race/ethnicity, 2000-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Rate per 100,000	95% Confidence Interval
	All Races	37.4	37.2 - 37.7
	Non-Hispanic White	37.2	36.9 - 37.6
	Non-Hispanic Black	42.8	41.8 - 43.7
	Hispanic	34.1	33.4 - 34.8
	Non-Hispanic Asian/Pacific Islander	30.8	29.9 - 31.7
	Non-Hispanic American Indian/Alaska Native	49.3	43.2 - 55.9

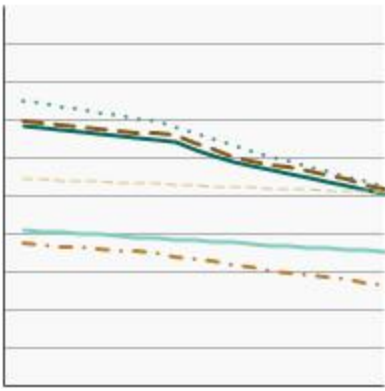
Lung and Bronchus Cancer by Sex

Rates of new cases of lung and bronchus cancer, delay-adjusted cancer incidence by sex, 1975-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Rate per 100,000	95% Confidence Interval
	Both Sexes	45.9	45.2 - 46.7
	Male	49.3	48.1 - 50.4
	Female	43.6	42.6 - 44.6

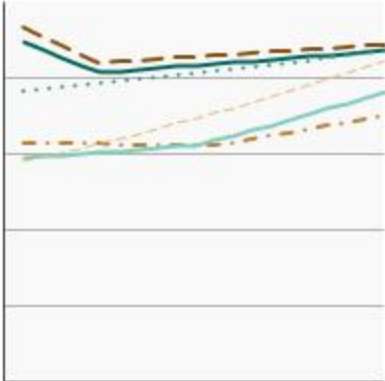
Lung and Bronchus Cancer by Race/Ethnicity

Rates of new cases of lung and bronchus cancer, delay-adjusted cancer incidence by race/ethnicity, 2000-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Rate per 100,000	95% Confidence Interval
	All Races	50.2	49.9 - 50.5
	Non-Hispanic White	51.6	51.2 - 51.9
	Non-Hispanic Black	52.4	51.4 - 53.5
	Hispanic	26.8	26.1 - 27.4
	Non-Hispanic Asian/Pacific Islander	35.6	34.7 - 36.6
	Non-Hispanic American Indian/Alaska Native	49.7	43.6 - 56.4

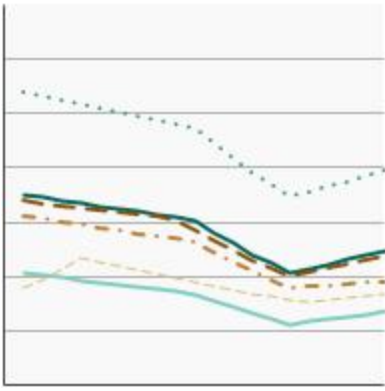
Female Breast Cancer by Race/Ethnicity

Rates of new cases of female breast cancer, delay-adjusted cancer incidence by race/ethnicity, 2000-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Rate per 100,000	95% Confidence Interval
	All Races	133.9	133.1 - 134.7
	Non-Hispanic White	135.7	134.8 - 136.6
	Non-Hispanic Black	133.6	131.4 - 135.8
	Hispanic	106.8	105.2 - 108.4
	Non-Hispanic Asian/Pacific Islander	115.2	112.9 - 117.6
	Non-Hispanic American Indian/Alaska Native	138.5	124.7 - 153.4

Prostate Cancer by Race/Ethnicity

Rates of new cases of prostate cancer, delay-adjusted cancer incidence by race/ethnicity, 2000-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Rate per 100,000	95% Confidence Interval
	All Races	123.1	122.3 - 123.9
	Non-Hispanic White	117.4	116.6 - 118.3
	Non-Hispanic Black	197.0	193.9 - 200.2
	Hispanic	94.2	92.4 - 96.0
	Non-Hispanic Asian/Pacific Islander	67.3	65.3 - 69.3
	Non-Hispanic American Indian/Alaska Native	88.3	75.8 - 102.0

Recent Trends for Common Cancer Sites

2015-2019 trends (Average Annual Percent Change) in delay-adjusted cancer incidence rates for common cancer sites

Overview graph	Cancer Site	Average Annual Percent Change	Stat Sig
	All Sites	0.0	0.0
	Brain and ONS	-0.4	1.0
	Cervix Uteri	0.4	0.0
	Colon and Rectum	-1.0	1.0
	Corpus Uteri and NOS	1.3	1.0
	Esophageal Adenocarcinoma	0.7	1.0
	Esophageal Squamous Cell	-1.9	1.0
	Female Breast	0.5	1.0
	Hodgkin Lymphoma	-1.0	1.0
	Kidney and Renal Pelvis	1.2	1.0
	Larynx	-2.7	1.0
	Leukemia	-0.4	0.0
	Liver and IBD	0.2	0.0
	Lung and Bronchus	-1.9	1.0
	Melanoma of the Skin	1.1	1.0
	Myeloma	1.1	1.0
	Non-Hodgkin Lymphoma	-0.4	1.0
	Oral Cavity and Pharynx	0.7	1.0
	Ovary	-2.7	1.0
	Pancreas	1.1	1.0
	Prostate	3.7	1.0
	Stomach	-0.7	1.0
	Testis	0.8	1.0
	Thyroid	-2.1	1.0
	Urinary Bladder	-1.1	1.0

* The Average Annual Percent Change (AAPC) is statistically significant.

- [Cancer Incidence Rates](#). National Cancer Institute.
- [Common Cancer Types](#). National Cancer Institute.
- [Learn About Cancer](#). American Cancer Society.

Public Health Resources

- [Resources for Health Professionals](#). National Cancer Institute.
- [Cancer Facts and Figures](#). American Cancer Society.

Scientific reports

- [Annual Report to the Nation on the Status of Cancer](#). National Cancer Institute.
- [Lung cancer incidence trends among men and women – United States, 2005–2009](#). Henley SJ, Richareds TB, Underwood JM, et al. MMWR Morb Mortal Wkly Rep 2014;63(01):1–5.
- [Invasive Cancer Incidence and Survival—United States, 2013](#). Henley SJ, Singh SD, King JK et al. MMWR Morb Mortal Wkly Rep. 2017;66(3):69-75.
- [Cancer Statistics, 2018](#). Siegel RL, Miller KD, Jemal, A. CA: A Cancer Journal for Clinicians. 2018;61(01):7-30.

Statistics

- [SEER Cancer Statistics Review](#), National Cancer Institute.
- [State Cancer Profiles](#). National Cancer Institute, and Centers for Disease Control and Prevention.
- [United States Cancer Statistics: Data Visualizations](#). National Cancer Institute, and Centers for Disease Control and Prevention.
- [United States Cancer Statistics – Interpreting Incidence Data](#). National Cancer Institute, and Centers for Disease Control and Prevention.
- [SEER*Explorer: An interactive website that provides easy access to a wide range of SEER cancer statistics](#). National Cancer Institute.
- [WONDER Online Databases – United States Cancer Statistics](#). Centers for Disease Control and Prevention.

Cancer Trends Progress Report

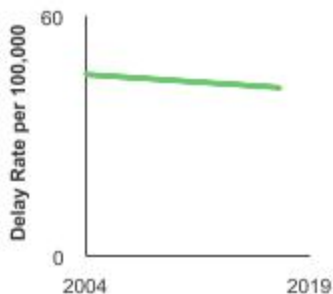
Online Summary of Trends in US Cancer Control Measures

Stage at Diagnosis

Data Up to Date as of:

August 2023

In 2019, the rate of new regional and distant stage female breast cancer cases was 43.2 per 100,000 females.



Background

Cancers can be diagnosed at different stages in their development. Stage of cancer diagnosis may be expressed as numbers (for example, I, II, III, or IV) or by terms such as “localized,” “regional,” and “distant.” The lower the number or the more localized the cancer, the better a person’s chances of benefiting from treatment.

Tracking the rates of late-stage (distant) cancers is a good way to monitor the impact of cancer screening. When more cancers are detected in early stages, fewer should be detected in late stages.

Both rates of late stage disease and stage proportions are provided below since each has a somewhat different interpretation. For example, rates could be declining among all stages of disease, but the proportion of late stage disease among diagnosed cases could be relatively constant.

Measure

Late-stage diagnosis rate: The number of new cancer cases diagnosed at a distant stage per 100,000 people per year for cancers of the prostate, lung and bronchus, colon, rectum, and cervix uteri. Late stage is defined as regional and distant stage diagnoses, per 100,000 women per year for cancer of the female breast. Late stage is defined as the stages which screening tends to reduce and differs by cancer site (i.e. when screening is initiated the proportion diagnosed with late state disease goes down).

Stage Distribution: The proportion of new cancer cases among all cases diagnosed in a specific year. The full distribution of all stages (local, regional, distant and unstaged/unknown) is shown.

Healthy People 2030 Target

- There are no Healthy People Target for breast, colon, rectum, cervix uteri, lung and bronchus or prostate cancer by stage at diagnosis.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.


Data Source

SEER Program, National Cancer Institute, 2004–2019.

Trends and Most Recent Estimates

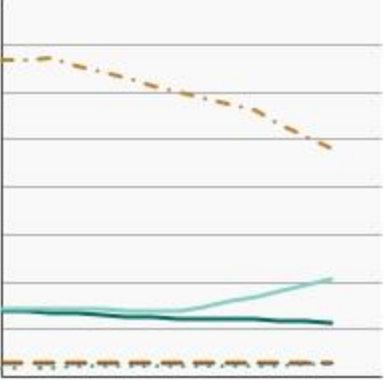
Late Stage Female Breast Cancer Rates

Rates of new cases of late stage female breast cancer, delay-adjusted incidence, 2004-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Delay Rate per 100,000	95% Confidence Interval
	Late Stage Breast Cancer	43.2	42.7 - 43.6

Distant Stage Cancer Rates

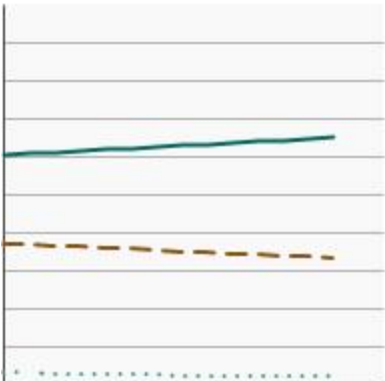
Rates of new cancers of distant stage diseases, delay-adjusted incidence, 2004-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Delay Rate per 100,000	95% Confidence Interval
	Colon	5.9	5.7 - 6.0
	Rectum	1.7	1.6 - 1.7
	Cervix Uteri	1.1	1.0 - 1.1
	Lung and Bronchus	22.8	22.5 - 23.0
	Prostate	10.9	10.7 - 11.2

Stage Distribution

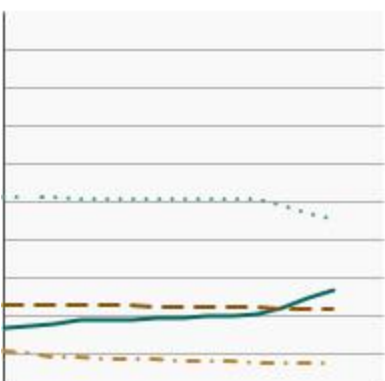
Female Breast Cancer

Distribution of female breast cancer diagnoses by stage at diagnosis, 2004-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent of diagnoses	95% Confidence Interval
	Localized	65.2	57.0 - 73.3
	Regional/Distant	32.1	24.2 - 40.1
	Unstaged/Unknown	3.0	0.1 - 5.9

Lung Cancer

Distribution of lung cancer diagnoses by stage at diagnosis, 2004-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent of diagnoses	95% Confidence Interval
	Localized	27.7	15.2 - 40.2
	Regional	20.3	9.1 - 31.6
	Distant	45.5	31.6 - 59.4
	Unstaged/Unknown	7.1	0.0 - 14.3

Colon Cancer

Distribution of colon cancer diagnoses by stage at diagnosis, 2004-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent of diagnoses	95% Confidence Interval
	Localized	34.8	16.4 - 53.2
	Regional	36.2	17.6 - 54.7
	Distant	22.8	6.6 - 39.0
	Unstaged/Unknown	7.2	0.0 - 17.1

Rectum Cancer

Distribution of rectum cancer diagnoses by stage at diagnosis, 2004-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent of diagnoses	95% Confidence Interval
	Localized	37.2	5.5 - 68.9
	Regional	35.6	4.2 - 67.0
	Distant	18.9	0.0 - 44.5
	Unstaged/Unknown	9.8	0.0 - 29.4

Cervix Uteri Cancer

Distribution of cervix uteri cancer diagnoses by stage at diagnosis, 2004-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent of diagnoses	95% Confidence Interval
	Localized	43.6	8.8 - 78.3
	Regional	37.4	3.5 - 71.3
	Distant	14.0	0.0 - 38.4
	Unstaged/Unknown	7.2	0.0 - 25.4

Prostate Cancer

Distribution of prostate cancer diagnoses by stage at diagnosis, 2004-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent of diagnoses	95% Confidence Interval
	Localized	67.5	59.0 - 76.0
	Regional	13.3	7.1 - 19.4
	Distant	8.7	3.6 - 13.9
	Unstaged/Unknown	11.0	5.4 - 16.7

Additional Information on Stage at Diagnosis

General Public Resources

- [Cancer Staging](#). National Cancer Institute.
- [Metastatic Cancer](#). National Cancer Institute.
- [Tumor Grade](#). National Cancer Institute.
- [Tumor Markers](#). National Cancer Institute.
- [Understanding Laboratory Tests](#). National Cancer Institute.
- [Staging](#). American Cancer Society.

Public Health Resources

- [Resources for Health Professionals](#). National Cancer Institute.
- [SEER Program Coding and Staging Manual 2018](#). National Cancer Institute.

Scientific reports

- [Annual Report to the Nation on the Status of Cancer](#). National Cancer Institute.

Statistics

- [SEER Cancer Stat Facts: Breast Cancer](#). National Cancer Institute.
- [SEER Cancer Stat Facts: Cervix Uteri Cancer](#). National Cancer Institute.
- [SEER Cancer Stat Facts: Colon and Rectum Cancer](#). National Cancer Institute.
- [SEER Cancer Stat Facts: Lung and Bronchus Cancer](#). National Cancer Institute.
- [SEER Cancer Stat Facts: Prostate Cancer](#). National Cancer Institute.
- [SEER Cancer Statistics Review](#). National Cancer Institute.

Cancer Trends Progress Report

Online Summary of Trends in US Cancer Control Measures

Treatment

Cancer treatment is improving, saving lives and extending survival for many people. Depending on various factors, treatment options may include surgery, radiation, immunotherapy, chemotherapy, hormone therapy, targeted therapy, or local therapy, among others. These treatments might be used alone or in combination. Clinical trials evaluate the benefits of new therapies and broaden the options available to patients.

This section includes treatment trends for cancer sites for which there are available data trends and definitive treatment guidelines based on rigorous evidence of benefit to patients, including bladder, breast, colorectal, kidney, lung, ovarian, and prostate cancers, and melanoma of the skin.

- [Bladder Cancer Treatment](#)
- [Breast Cancer Treatment](#)
- [Colorectal Cancer Treatment](#)
- [Kidney Cancer Treatment](#)

- [Lung Cancer Treatment](#)
- [Melanoma of the Skin Treatment](#)
- [Ovarian Cancer Treatment](#)
- [Prostate Cancer Treatment](#)

Cancer Trends Progress Report

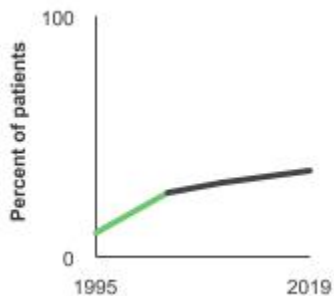
Online Summary of Trends in US Cancer Control Measures

Bladder Cancer Treatment

Data Up to Date as of:

August 2023

In 2019, 35.5% of patients with non-muscle invasive disease received intravesical therapy.



Background

Bladder cancer is a disease in which malignant (cancer) cells form in the tissues of the bladder. The first targeted therapy for bladder cancer was approved by the FDA in 2019. Treatment options depend on the stage of bladder cancer. Four types of standard treatment are used: surgery, radiation therapy, chemotherapy, and immunotherapy. Intravesical (within the bladder) therapy, one type of immunotherapy, involves the instillation of an agent or biologic into the bladder. The use of intravesical therapy has been associated with improved survival for individuals with non-muscle invasive bladder cancer. There have been no significant increases in the use of intravesical therapy for patients diagnosed with non-muscle invasive in the most recent time period, while use of intravesical therapy has increased significantly in the most recent time period for those diagnosed with muscle-invasive and metastatic disease. The Ta G1-2 means non-invasive papillary carcinoma (Ta) that is Grade 1 (well differentiated) or Grade 2 (moderately differentiated). There have been no significant increases in the use of systemic therapy for patients diagnosed with non-muscle invasive in the most recent time period, while use of systemic therapy has increased significantly in the most recent time period for those diagnosed with muscle-invasive and metastatic disease.

Measure

Percentage of individuals receiving intravesical therapy.

Percentage of individuals receiving systemic therapy.

Healthy People 2030 Target

- There are no Healthy People 2030 targets for cancer treatment, including bladder cancer treatment.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Data Source

SEER Patterns of Care/Quality of Care Studies, National Cancer Institute, 1995-2019.

Trends and Most Recent Estimates

Intravesical Therapy

Percent of bladder cancer patients receiving intravesical therapy by extent of disease, 1995-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent of patients	95% Confidence Interval
	Ta G1-2	35.5	30.7 - 40.7
	Other non-muscle invasive disease	64.6	60.3 - 68.6
	Muscle invasive/metastatic disease	28.3	22.5 - 35.0

Systemic Therapy

Percent of bladder cancer patients receiving systemic therapy by extent of disease, 1995-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent of patients	95% Confidence Interval
	Ta G1-2	0.7	0.3 - 1.7
	Other non-muscle invasive disease	9.2	7.1 - 11.9
	Muscle invasive/metastatic disease	48.7	42.1 - 55.3

Additional Information on Bladder Cancer Treatment

General Public Resources

- [Bladder Cancer](#). National Cancer Institute.
- [Bladder Cancer Treatment \(PDQ®\)-Patient Version](#). National Cancer Institute.
- [Treating Bladder Cancer](#). American Cancer Society.

Public Health Resources

- [Advances in Bladder Cancer Research](#). National Cancer Institute.
- [Bladder Cancer Treatment \(PDQ®\)-Health Professional Version](#). National Cancer Institute.

Statistics

- [SEER Cancer Stat Facts: Bladder Cancer](#). National Cancer Institute.
- [SEER-Medicare Linked Database](#). National Cancer Institute.
- [SEER Patterns of Care/Quality of Care Studies](#). National Cancer Institute.

Cancer Trends Progress Report

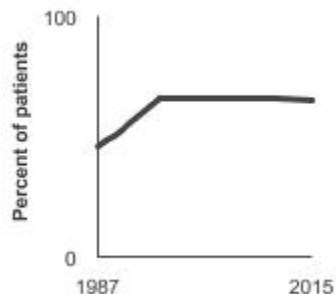
Online Summary of Trends in US Cancer Control Measures

Breast Cancer Treatment

Data Up to Date as of:

August 2023

In 2015, 64.2% of women diagnosed with node positive breast cancer, received multi-agent chemotherapy.



Background

Breast cancer is the most common type of cancer among women in the United States (other than skin cancer). Women with breast cancer have many treatment options, including surgery, radiation therapy, hormone therapy, chemotherapy, immunotherapy, and targeted therapy. Treatment options for a woman diagnosed with breast cancer may include more than one type of treatment (ex. Surgery and radiation) or more than one agent (multi-agent chemotherapy).

The proportion of women with node-positive disease (cancer in the lymph nodes near the tumor) receiving guideline-concordant treatment is high. Clinical trials have demonstrated that women with early stage breast cancer who receive breast-conserving surgery (BCS) with radiation therapy have a survival rate similar to those of women who undergo a mastectomy. Among women for whom chemotherapy is indicated, older women are less likely to receive chemotherapy than younger women, but there are no major differences in treatment among major racial and ethnic groups.

Breast cancer also develops in men, but it is rare and is not included in the data presented on this page.

Measure

Percentage of women aged 20 and older, diagnosed with early stage breast cancer (stage I or II), receiving breast-conserving surgery and radiation treatment.

Percentage of women aged 20 and older, diagnosed with node-positive, stage I–IIIA breast cancer, receiving multi-agent chemotherapy.

Note: This measure includes women with both hormone receptor positive and negative breast cancer.

Healthy People 2030 Target

- There are no Healthy People 2030 targets for cancer treatment, including breast cancer treatment and multi-agent chemotherapy.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Data Source

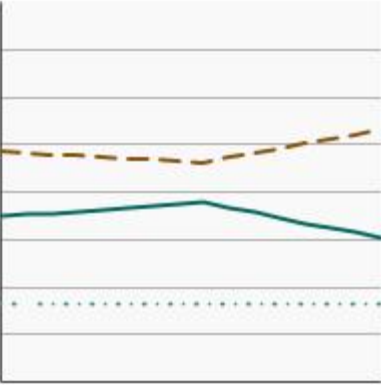
Breast-conserving surgery and radiation treatment estimates: SEER 17 Registries, National Cancer Institute, 2004–2019.

Multi-agent chemotherapy estimates: SEER Patterns of Care/Quality of Care Studies, National Cancer Institute, 1987-2015.

Trends and Most Recent Estimates

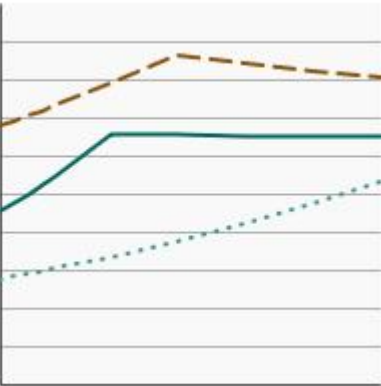
Treatment Distribution

Treatment distribution for invasive stage I or II female breast cancer patients aged 20 years and older, 2004-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent of patients	95% Confidence Interval
	Mastectomy	31.0	30.8 - 31.2
	BCS with radiation	51.9	51.7 - 52.1
	BCS without radiation	17.1	17.0 - 17.2

Chemotherapy

Percentage of node positive female breast cancer patients receiving multiagent chemotherapy treatment by age at diagnosis, 1987-2015

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2015)	
		Percent of patients	95% Confidence Interval
	Ages 20+	64.2	57.6 - 70.2
	Ages 20-64	82.4	74.6 - 88.2
	Ages 65+	40.7	29.9 - 52.5

Additional Information on Breast Cancer Treatment

General Public Resources

- [Breast Cancer](#). National Cancer Institute.
- [Breast Cancer Treatment \(PDQ®\)-Patient Version](#). National Cancer Institute.
- [Breast Biopsy](#). American Cancer Society.
- [Treating Breast Cancer](#). American Cancer Society.
- [Breast Cancer \(NCCN Guidelines for Patients®\)](#). National Comprehensive Cancer Network.

Public Health Resources

- [Advances in Breast Cancer Research](#). National Cancer Institute.
- [Breast Cancer Treatment \(PDQ®\)-Health Professional Version](#). National Cancer Institute.

Statistics

- [SEER Cancer Stat Facts: Breast Cancer](#). National Cancer Institute.
- [SEER-Medicare Linked Database](#). National Cancer Institute.
- [SEER Patterns of Care/Quality of Care Studies](#). National Cancer Institute.

Cancer Trends Progress Report

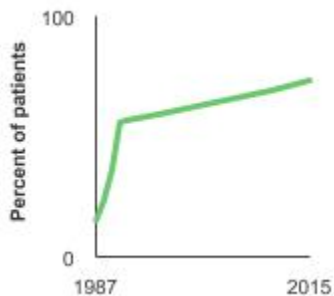
Online Summary of Trends in US Cancer Control Measures

Colorectal Cancer Treatment

Data Up to Date as of:

August 2023

In 2015, 70.3% of stage III colon and stage II and III rectal patients received adjuvant chemotherapy.



Background

Colon cancer forms in the tissues of the colon, which is the longest part of the large intestine. Rectal cancer forms in the tissues of the rectum, which is the last several inches of the large intestine closest to the anus. The main types of treatment for colon and rectal cancer are surgery, radiation therapy, chemotherapy, immunotherapy, and targeted therapy. Depending on the stage of the cancer, two or more of these types of treatment may be combined at the same time or used one after another.

Surgery is the most common treatment for all stages of colorectal cancer. Adjuvant chemotherapy is used after surgery to minimize chances of recurrence and has been shown to help people with stage III colon and rectal cancer live longer. Radiation therapy uses high energy rays or particles to destroy cancer cells. Chemotherapy can make radiation therapy more effective against some colon and rectal cancers. The proportion of patients receiving guideline-concordant adjuvant therapy increased steadily between 1987 and 2005. Potential disparities remain for some groups of patients.

Measure

Percent of individuals, aged 20 years and older, diagnosed with stage III colon cancer who received adjuvant chemotherapy or diagnosed with stage II or stage III rectal cancer who received chemotherapy with or without radiation therapy.

Healthy People 2030 Target

- There are no Healthy People 2030 targets for cancer treatment, including colorectal cancer treatment.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

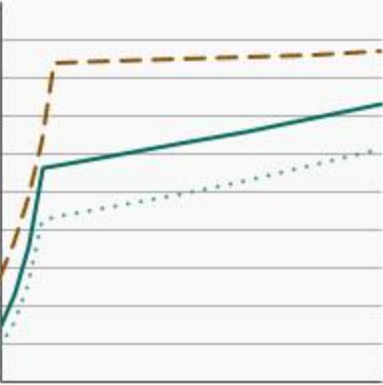
Data Source

SEER Patterns of Care/Quality of Care Studies, National Cancer Institute, 1987-2015.

Trends and Most Recent Estimates

Guideline-concordant Chemotherapy Treatment

Percent of colon stage III and rectal stages II & III cancer patients who received guideline-concordant chemotherapy treatment by age at diagnosis, 1987-2015

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2015)	
		Percent of patients	95% Confidence Interval
	All Ages	70.3	66.4 - 74.0
	Ages <65	86.9	82.2 - 90.6
	Ages 65+	57.1	51.1 - 62.9

Additional Information on Colorectal Cancer Treatment

General Public Resources

- [Colorectal Cancer](#). National Cancer Institute
- [Colon Cancer Treatment \(PDQ®\)-Patient Version](#). National Cancer Institute.
- [Rectal Cancer Treatment \(PDQ®\)-Patient Version](#). National Cancer Institute.
- [Treating Colorectal Cancer](#). American Cancer Society.
- [Colon Cancer \(NCCN Guidelines for Patients®\)](#). National Comprehensive Cancer Network.
- [Rectal Cancer \(NCCN Guidelines for Patients®\)](#). National Comprehensive Cancer Network.

Public Health Resources

- [Advances in Colorectal Cancer Research](#). National Cancer Institute.
- [Colon Cancer Treatment \(PDQ®\)-Health Professional Version](#). National Cancer Institute.
- [Rectal Cancer Treatment \(PDQ®\)-Health Professional Version](#). National Cancer Institute.

Statistics

- [SEER Cancer Stat Facts: Colorectal Cancer](#). National Cancer Institute.
- [SEER-Medicare Linked Database](#). National Cancer Institute.
- [SEER Patterns of Care/Quality of Care Studies](#). National Cancer Institute.
- [Colorectal Cancer Mortality Projections](#). Cancer Intervention Surveillance Network.

Cancer Trends Progress Report

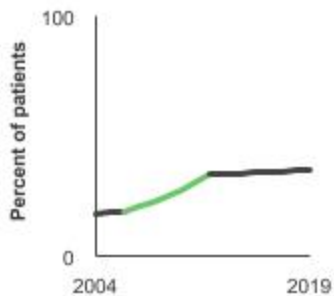
Online Summary of Trends in US Cancer Control Measures

Kidney Cancer Treatment

Data Up to Date as of:

August 2023

In 2019, 36.2% of patients diagnosed with localized/regional kidney cancer received a partial nephrectomy.



Background

Kidney cancer, also called renal cell cancer, is one of the ten most common cancers in both men and women. Treatment options may include surgery (open or laparoscopic), local therapies such as ablation and embolization, active surveillance, radiation therapy, targeted therapy, immunotherapy, and chemotherapy. These treatments might be used alone or in combination, depending on various factors.

Surgery is the main treatment for most types of kidney cancer. Since 2000, the use of complete nephrectomy (removal of the whole kidney) in patients with localized kidney cancer or cancer in the immediate surrounding tissue (regional kidney cancer) has decreased, while the rate of partial nephrectomy (removal of only the affected part of the kidney) has increased. Partial nephrectomy is now the preferred treatment for patients with early stage kidney cancer, but there are patients with early stage disease for whom partial nephrectomy may not be possible. Studies have shown the long-term results of partial nephrectomy and complete nephrectomy are about the same. Also, partial nephrectomy may prevent serious side effects like chronic kidney disease.

Measure

Partial nephrectomy or complete nephrectomy in patients with localized/regional kidney cancer.

Receipt of systemic therapy among patients with kidney cancer.

Healthy People 2030 Target

- There are no Healthy People 2030 targets for cancer treatment, including kidney cancer treatment.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Data Source

Nephrectomy estimates: SEER 17 Registries, National Cancer Institute, 2004–2019.

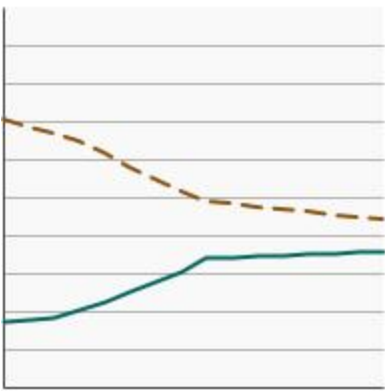
Systemic therapy estimates: SEER Patterns of Care/Quality of Care Studies, National Cancer Institute, 2004–2019.

Trends and Most Recent Estimates

Nephrectomy

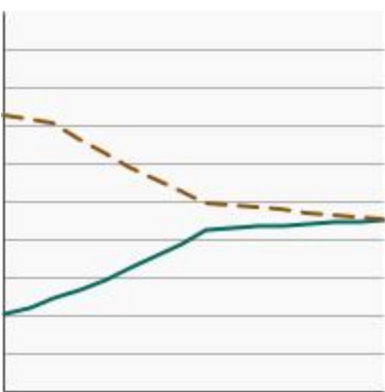
All Races/Ethnicities, Ages 20+

Percent of patients aged 20 years and older diagnosed with localized/regional kidney cancer receiving partial nephrectomy or complete nephrectomy, 2004-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent of patients	95% Confidence Interval
	Partial nephrectomy	36.2	35.7 - 36.6
	Complete nephrectomy	44.0	43.5 - 44.4

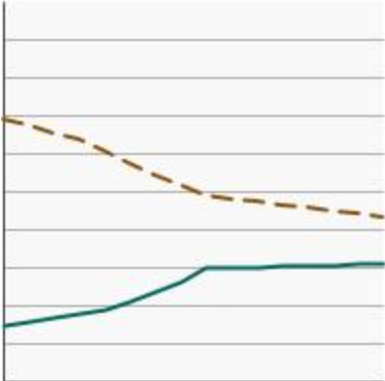
All Races/Ethnicities, Ages 20-64

Percent of patients aged 20 - 64 years diagnosed with localized/regional kidney cancer receiving partial nephrectomy or complete nephrectomy, 2004-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent of patients	95% Confidence Interval
	Partial nephrectomy	45.0	44.3 - 45.7
	Complete nephrectomy	45.7	45.1 - 46.4

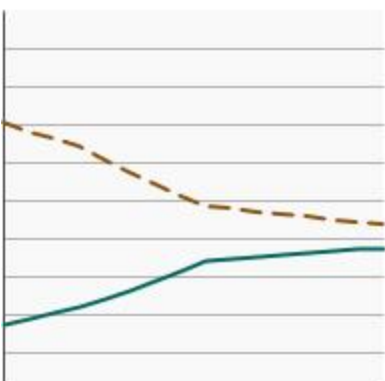
All Races/Ethnicities, Ages 65 and Older

Percent of patients aged 65 years and older diagnosed with localized/regional kidney cancer receiving partial nephrectomy or complete nephrectomy, 2004-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent of patients	95% Confidence Interval
	Partial nephrectomy	31.7	31.4 - 32.0
	Complete nephrectomy	43.1	42.7 - 43.4

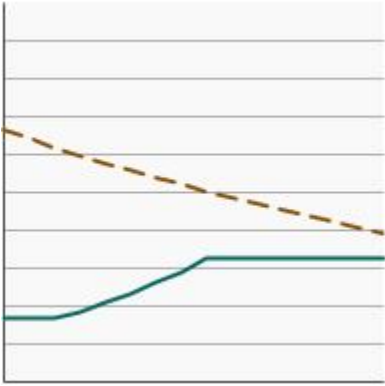
Non-Hispanic White, Ages 20+

Percent of Non-Hispanic White patients aged 20 years and older diagnosed with localized/regional kidney cancer receiving partial nephrectomy or complete nephrectomy, 2004-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent of patients	95% Confidence Interval
	Partial nephrectomy	38.0	37.6 - 38.3
	Complete nephrectomy	43.0	42.7 - 43.4

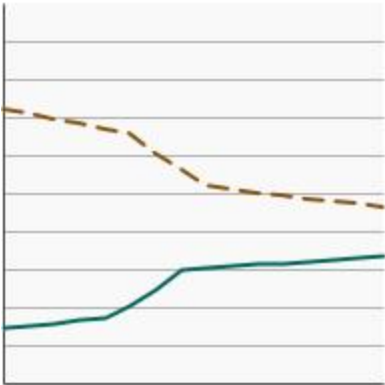
Non-Hispanic Black, Ages 20+

Percent of Non-Hispanic Black patients aged 20 years and older diagnosed with localized/regional kidney cancer receiving partial nephrectomy or complete nephrectomy, 2004-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent of patients	95% Confidence Interval
	Partial nephrectomy	33.8	33.6 - 33.9
	Complete nephrectomy	42.1	42.0 - 42.3

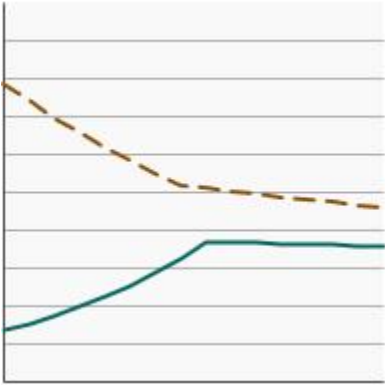
Hispanic, Ages 20+

Percent of Hispanic patients aged 20 years and older diagnosed with localized/regional kidney cancer receiving partial nephrectomy or complete nephrectomy, 2004-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent of patients	95% Confidence Interval
	Partial nephrectomy	31.5	31.3 - 31.7
	Complete nephrectomy	47.3	47.1 - 47.5

Non-Hispanic Asian/Pacific Islander, Ages 20+

Percent of Non-Hispanic Asian/Pacific Islander patients aged 20 years and older diagnosed with localized/regional kidney cancer receiving partial nephrectomy or complete nephrectomy, 2004-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent of patients	95% Confidence Interval
	Partial nephrectomy	36.6	36.5 - 36.7
	Complete nephrectomy	46.6	46.5 - 46.7

Systemic Therapy

By Age at Diagnosis

Percent of patients aged 20 years and older diagnosed with kidney cancer receiving systemic therapy by age at diagnosis, 2004-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent of patients	95% Confidence Interval
	All Ages	24.5	22.2 - 27.0
	Ages 20-64	24.3	21.4 - 27.5
	Ages 65+	24.7	21.1 - 28.7

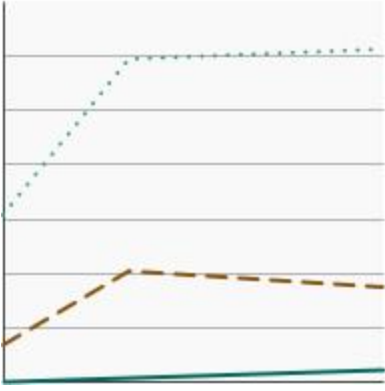
By Race/Ethnicity

Percent of patients aged 20 years and older diagnosed with kidney cancer receiving systemic therapy by race/ethnicity, 2004-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent of patients	95% Confidence Interval
	All Races/Ethnicities	24.5	22.2 - 27.0
	Non-Hispanic White	29.1	25.8 - 32.6
	Non-Hispanic Black	9.9	6.8 - 14.3
	Hispanic	16.9	13.7 - 20.7
	Asian/Pacific Islander	24.3	18.5 - 31.2
	American Indian/Alaska Native	8.8	4.3 - 17.0

By Stage at Diagnosis

Percent of patients aged 20 years and older diagnosed with kidney cancer receiving systemic therapy by stage at diagnosis, 2004-2019

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2019)	
		Percent of patients	95% Confidence Interval
	Localized	2.1	1.1 - 3.8
	Regional	17.3	12.7 - 23.0
	Distant	61.1	56.6 - 65.3

Additional Information on Kidney Cancer Treatment

General Public Resources

- [Kidney \(Renal Cell\) Cancer](#). National Cancer Institute.
- [Renal Cell Cancer Treatment \(PDQ®\)-Patient Version](#). National Cancer Institute.
- [Kidney Cancer Treatment](#). American Cancer Society.
- [Kidney Cancer \(NCCN Guidelines for Patients®\)](#). National Comprehensive Cancer Network.

Public Health Resources

- [Advances in Kidney Cancer Research](#). National Cancer Institute.
- [Renal Cell Cancer Treatment \(PDQ®\)-Health Professional Version](#). National Cancer Institute.

Statistics

- [SEER Cancer Stat Facts: Kidney and Renal Pelvis Cancer](#). National Cancer Institute.
- [SEER-Medicare Linked Database](#). National Cancer Institute.
- [SEER Patterns of Care/Quality of Care Studies](#). National Cancer Institute.

Cancer Trends Progress Report

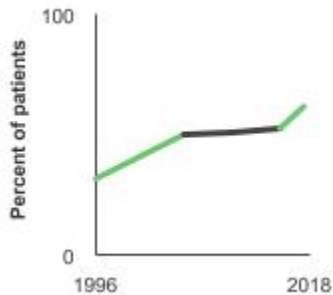
Online Summary of Trends in US Cancer Control Measures

Lung Cancer Treatment

Data Up to Date as of:

August 2023

In 2017 to 2018, 61.9% of stage IIIB or IV non-small cell lung cancer patients aged 20 years and older received chemotherapy.



Background

Lung cancer forms in tissues of the lung, usually in the cells that line air passages. The two main types of lung cancer are small cell lung cancer and non-small cell lung cancer (NSCLC), which is the most common. About 85 percent of lung cancers are NSCLCs.

Primary treatment options for people with NSCLC include surgery, radiation therapy, other local treatments, chemotherapy, immunotherapy, and targeted therapies. In many cases, more than one of these treatments is used.

Surgery to remove the tumor presents the greatest chance of curing NSCLC, and is commonly used to treat stages I and II and some stage III cancers but is rarely used to treat stage IV cancers. Postoperative chemotherapy may provide an additional benefit to patients who have undergone surgical removal of NSCLC. Radiation therapy combined with chemotherapy can effectively treat a small number of patients and can provide palliation in most patients.

Measure

Chemotherapy following the diagnosis of non-small cell lung cancer stages IIIB or IV.

Healthy People 2030 Target

- There are no Healthy People 2030 targets for cancer treatment, including lung cancer treatment.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

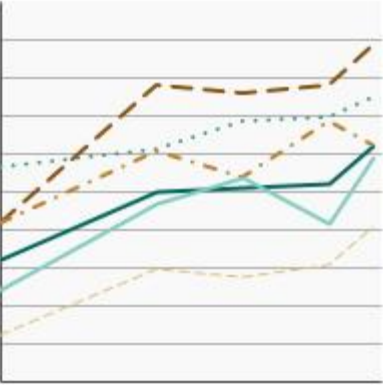
Data Source

SEER Patterns of Care/Quality of Care Studies, National Cancer Institute, 1996-2018.

Trends and Most Recent Estimates

Chemotherapy

Distribution of patients aged 20 years and older diagnosed with stage IIIB or IV non-small cell lung cancer receiving any chemotherapy by age at diagnosis, 1996-2018

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2017 to 2018)	
		Percent of patients	95% Confidence Interval
	Ages 20 and older	61.9	59.9 - 63.8
	Ages 20-49	88.6	83.4 - 93.8
	Ages 50-59	74.6	70.4 - 78.7
	Ages 60-69	62.1	58.7 - 65.4
	Ages 70-79	59.2	55.5 - 62.9
	Ages 80 and older	40.6	35.4 - 45.9

Additional Information on Lung Cancer Treatment

General Public Resources

- [Lung Cancer](#). National Cancer Institute.
- [Non-Small Cell Lung Cancer Treatment \(PDQ®\)-Patient Version](#). National Cancer Institute.
- [Small Cell Lung Cancer Treatment \(PDQ®\)-Patient Version](#). National Cancer Institute.
- [Treating Non-small Cell Lung Cancer](#). American Cancer Society.
- [Treating Small Cell Lung Cancer](#). American Cancer Society.
- [Non-Small Cell Lung Cancer \(NCCN Guidelines for Patients®\)](#). National Comprehensive Cancer Network.

Quitting Resources

- [Smokefree.gov](#). National Cancer Institute.
- [Tobacco](#). National Cancer Institute.
- [Stay Away from Tobacco](#). American Cancer Society.

Public Health Resources

- [Advances in Lung Cancer Research](#). National Cancer Institute.
- [Non-Small Cell Lung Cancer Treatment \(PDQ®\)-Health Professional Version](#). National Cancer Institute.
- [Small Cell Lung Cancer Treatment \(PDQ®\)-Patient Version](#). National Cancer Institute.

Statistics

- [SEER Cancer Stat Facts: Lung and Bronchus Cancer](#). National Cancer Institute.
- [SEER-Medicare Linked Database](#). National Cancer Institute.
- [SEER Patterns of Care/Quality of Care Studies](#). National Cancer Institute.

Cancer Trends Progress Report

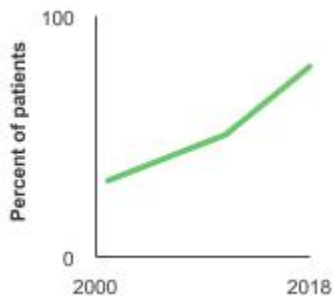
Online Summary of Trends in US Cancer Control Measures

Melanoma of the Skin Treatment

Data Up to Date as of:

August 2023

In 2018, 79.4% of stage III or IV melanoma of the skin patients aged 20 years and older received chemotherapy.



Background

Melanoma is a type of skin cancer in which malignant cells form in melanocytes (cells that color the skin). While less common than other types of skin cancer, it is more likely to spread to other parts of the body and to be a cause of death. Melanoma may also occur in mucous membranes (thin tissue layers that cover surfaces such as the lips). Standard treatment for melanoma can include surgery, chemotherapy, radiation therapy, immunotherapy, or targeted therapy. Surgery to remove the tumor is the primary treatment for all stages of melanoma; this may include determining whether the melanoma has spread to neighboring lymph nodes. Systemic therapies and/or radiation therapy may be used following surgery. Newer treatments including vaccine therapy are being explored in clinical trials.

Measure

Percentage of individuals with advanced (stage III or IV) melanoma of the skin receiving chemotherapy.

Healthy People 2030 Target

- There are no Healthy People 2030 targets for cancer treatment, including melanoma of the skin treatment.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Data Source

SEER Patterns of Care/Quality of Care Studies, National Cancer Institute, 2001-2018.

Trends and Most Recent Estimates

Chemotherapy

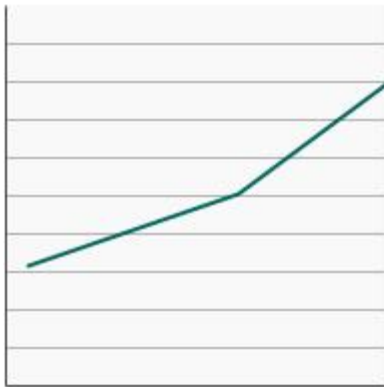
Distribution of patients aged 20 years and older diagnosed with stage III or IV melanoma of the skin receiving any chemotherapy , 2001-2018

[Overview Graph](#)

[Detailed Trend Graphs](#)

Most Recent Estimates (2018)

Percent of patients 95% Confidence Interval



Received Chemotherapy 79.4

76.2 - 82.6

Additional Information on Melanoma Treatment

General Public Resources

- [Skin Cancer \(Including Melanoma\)](#). National Cancer Institute.
- [Melanoma Treatment \(PDQ®\)-Patient Version](#). National Cancer Institute.
- [Treating Melanoma](#). American Cancer Society.

Public Health Resources

- [Advances in Melanoma and Other Skin Cancer Research](#). National Cancer Institute.
- [Melanoma Treatment \(PDQ®\)-Health Professional Version](#). National Cancer Institute.

Statistics

- [SEER Cancer Stat Facts: Melanoma of the Skin](#). National Cancer Institute.
- [SEER-Medicare Linked Database](#). National Cancer Institute.
- [SEER Patterns of Care/Quality of Care Studies](#). National Cancer Institute.

Cancer Trends Progress Report

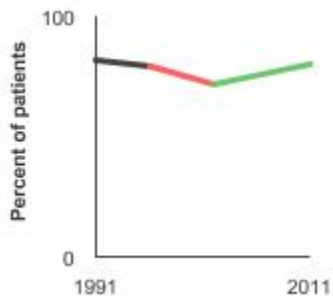
Online Summary of Trends in US Cancer Control Measures

Ovarian Cancer Treatment

Data Up to Date as of:

August 2023

In 2011, 79.9% of stage III or IV ovarian cancer patients received chemotherapy.



Background

Ovarian cancer forms in the tissues of the ovary (one of a pair of female reproductive glands in which the ova, or eggs, are formed). Most ovarian cancers are either ovarian epithelial carcinomas (cancer that begins in the cells on the surface of the ovary) or malignant germ cell tumors (cancer that begins in egg cells). Cancerous ovarian tumors can also begin in stromal cells, which release hormones and connect the different structures of the ovaries, though this is less common. Ovarian epithelial, fallopian tube, and primary peritoneal cancers form in the same tissue and are treated the same way.

Ovarian cancer treatment varies by the type of tumor. Often, two or more different treatments are used, though surgery is the main initial treatment for most ovarian cancers. Studies in early stage ovarian cancer have shown an increase in overall survival with the administration of chemotherapy, which is used in the majority of cases as a follow-up therapy to surgery. Epithelial ovarian cancer is treated with surgery, chemotherapy, and targeted therapy. Ovarian germ cell tumors are treated with surgery, chemotherapy, and radiation therapy. Ovarian stromal tumors are treated with surgery, chemotherapy, and hormone therapy.

Guidelines suggest intraperitoneal (IP) chemotherapy for later stage ovarian cancer. IP chemotherapy involves injecting a concentrated dose of drugs through a thin tube into the abdominal cavity where the cancer cells are located. In a study of women with advanced ovarian cancer, those receiving IP chemotherapy lived longer than those getting regular chemotherapy, but the side effects of IP chemotherapy were often more severe.

Measure

Percentage of individuals diagnosed with ovarian cancer who received chemotherapy or hormonal therapy by stage of diagnosis.

Healthy People 2030 Target

- There are no Healthy People 2030 targets for cancer treatment, including ovarian cancer treatment.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

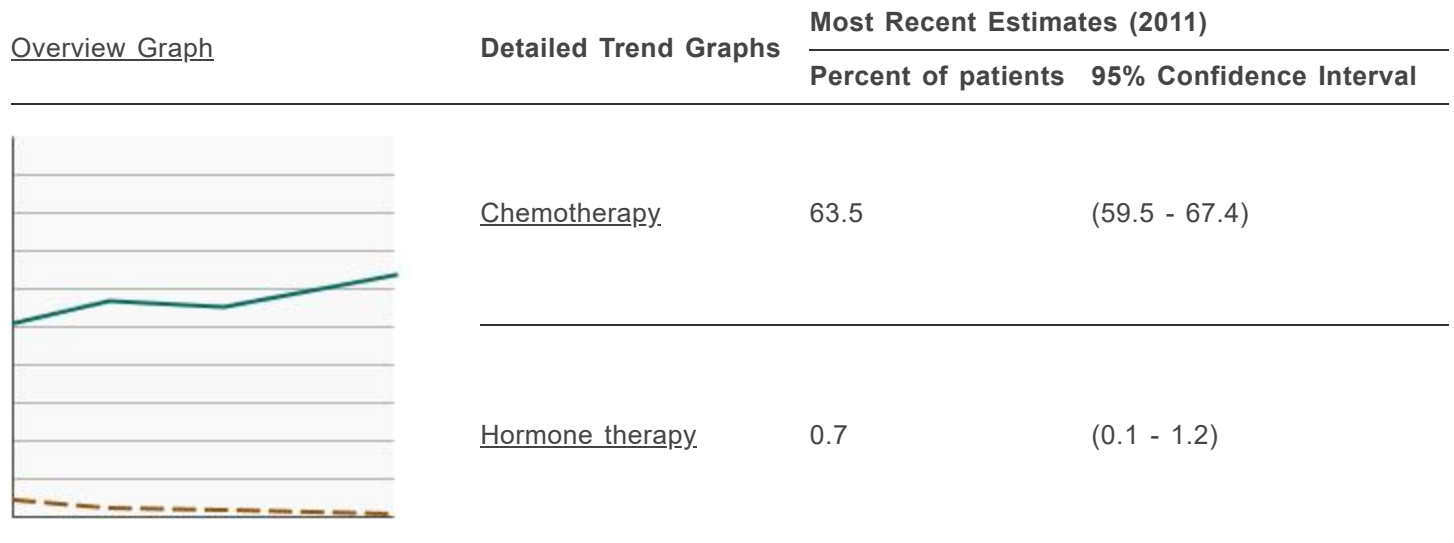
Data Source

SEER Patterns of Care/Quality of Care Studies, National Cancer Institute, 1991-2011.

Trends and Most Recent Estimates

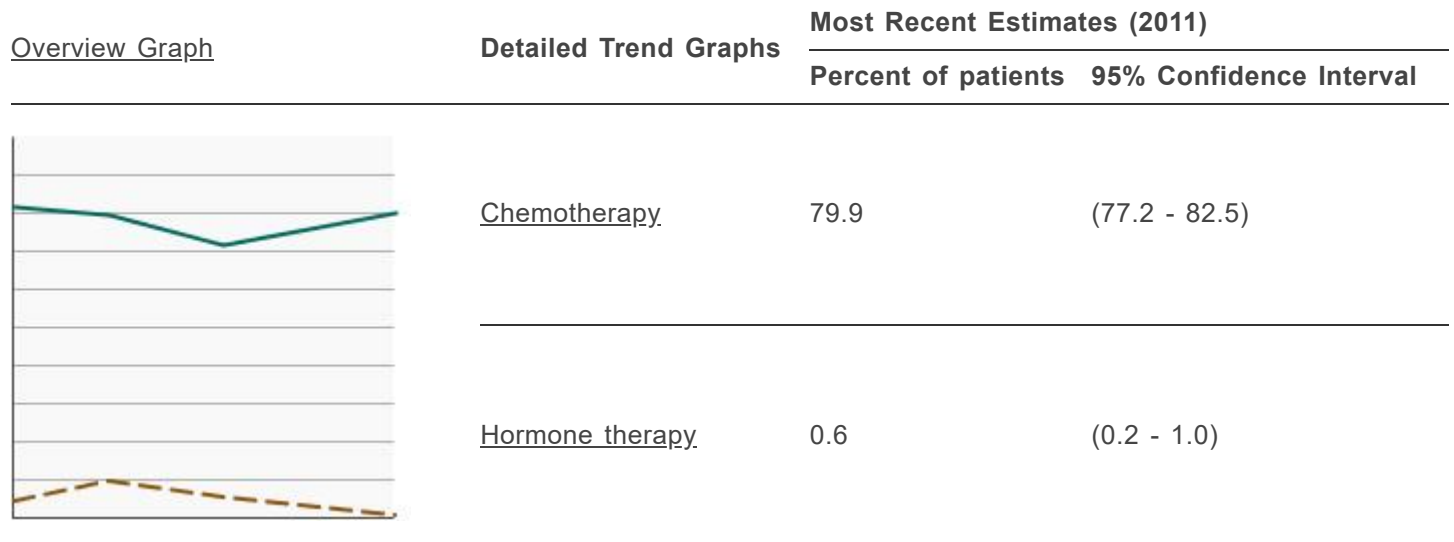
Stage I and II Diagnoses

Percent of patients aged 20 years and older diagnosed with stage I or II ovarian cancer by type of treatment received, 1991-2011



Stage III and IV Diagnoses

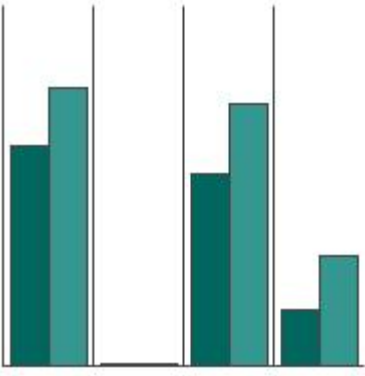
Percent of patients aged 20 years and older diagnosed with stage III or IV ovarian cancer by type of treatment received, 1991-2011



Distribution of Chemotherapeutic Agents

Distribution of chemotherapeutic agents given to ovarian cancer patients aged 20 years and older by type of treatment received, 2011

[Overview graph](#)



Chemotherapy agent received	Stage I and II		Stage III and IV	
	Percent of patients receiving agent	95% Confidence Interval	Percent of patients receiving agent	95% Confidence Interval
Carboplatin/Cisplatin	61.1	(56.9 - 65.1)	77.5	(74.5 - 80.2)
Cyclophosphamide (Cytoxan)	0.1	(0.0 - 0.4)	0.6	(0.3 - 1.0)
Paclitaxol (Taxol)	53.3	(49.1 - 57.5)	72.6	(69.5 - 75.4)
Other Chemo Agents	15.7	(12.9 - 19.1)	30.7	(27.7 - 34.0)

Additional Information on Ovarian Cancer Treatment

General Public Resources

- [Ovarian, Fallopian Tube, and Primary Peritoneal Cancer](#). National Cancer Institute.
- [Ovarian, Fallopian Tube, and Primary Peritoneal Cancer Treatment \(PDQ®\)-Patient Version](#). National Cancer Institute.
- [Ovarian Germ Cell Tumors Treatment \(PDQ®\)-Patient Version](#). National Cancer Institute.
- [Ovarian Low Malignant Potential Tumors Treatment \(PDQ®\)-Patient Version](#). National Cancer Institute.
- [Treating Ovarian Cancer](#). American Cancer Society.
- [Ovarian Cancer \(NCCN Guidelines for Patients®\)](#). National Comprehensive Cancer Network.

Public Health Resources

- [Ovarian Epithelial, Fallopian Tube, and Primary Peritoneal Cancer Treatment \(PDQ®\)-Health Professional Version](#). National Cancer Institute.
- [Ovarian Germ Cell Tumors Treatment \(PDQ®\)-Health Professional Version](#). National Cancer Institute.
- [Ovarian Low Malignant Potential Tumors Treatment \(PDQ®\)-Health Professional Version](#). National Cancer Institute.

Statistics

- [SEER Cancer Stat Facts: Ovarian Cancer](#). National Cancer Institute.
- [SEER-Medicare Linked Database](#). National Cancer Institute.
- [SEER Patterns of Care/Quality of Care Studies](#). National Cancer Institute.

Cancer Trends Progress Report

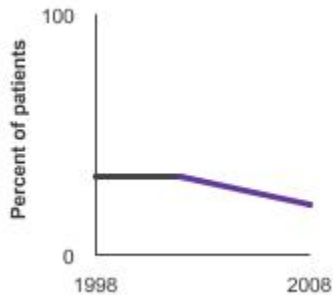
Online Summary of Trends in US Cancer Control Measures

Prostate Cancer Treatment

Data Up to Date as of:

August 2023

In 2008, 21.1% of localized/regional prostate cancer patients aged 40 years and older were given hormonal therapy.



Background

Prostate cancer forms in tissues of the prostate (a gland in the male reproductive system found below the bladder and in front of the rectum). This disease, which usually occurs in older men and grows relatively slowly, is the most common cancer among men (after skin cancer), but can often be treated successfully.

Standard treatment options may include active surveillance, surgery, radiation therapy, hormonal therapy, chemotherapy, biologic therapy, and targeted therapy. These treatments are generally used one at a time, although in some cases they may be combined.

Hormonal therapy is also called *androgen deprivation therapy* or *androgen suppression therapy*. Its goal is to reduce levels of male hormones, called *androgens*, in the body, and to block them from affecting prostate cancer cells. This type of therapy can slow prostate cancer cell growth, which is stimulated by androgens.

The use of hormonal therapy for prostate cancer typically increases with the age of the patient, and it is currently also recommended for men with a high risk of recurrence. It may also be used for men who are not able to have surgery or radiation, and for men who can't be cured by these treatments because the cancer has already spread beyond the prostate gland. It is increasingly being used before, during, and after local treatment as well.

Measure

Hormonal therapy following the diagnosis of prostate cancer.

Healthy People 2030 Target

- There are no Healthy People 2030 targets for cancer treatment, including prostate cancer treatment.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Data Source

SEER Patterns of Care/Quality of Care Studies, National Cancer Institute, 1998-2008.

Trends and Most Recent Estimates

Hormonal Therapy

Percent of men aged 40 years and older with localized/regional prostate cancer and receiving hormonal therapy by age at diagnosis, 1998-2008

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2008)	
		Percent of patients	95% Confidence Interval
	Ages 40 and older	21.1	(17.6 - 24.5)
	Ages 40-49	7.7	(3.4 - 12.1)
	Ages 50-59	10.4	(6.9 - 13.9)
	Ages 60-69	17.7	(10.9 - 24.5)
	Ages 70-79	24.7	(18.1 - 31.3)
	Ages 80 and older	53.0	(43.1 - 63.0)

Additional Information on Prostate Cancer Treatment

General Public Resources

- [Hormone Therapy for Prostate Cancer](#). National Cancer Institute.
- [Prostate Cancer](#). National Cancer Institute.
- [Prostate Cancer Treatment \(PDQ®\) - Patient Version](#). National Cancer Institute.
- [Treating Prostate Cancer](#). American Cancer Society.
- [Prostate Cancer \(NCCN Guidelines for Patients®\)](#). National Comprehensive Cancer Network.
- [Prostate Cancer Treatment](#). Prostate Cancer Foundation.
- [Treatment Options](#). Us TOO International Prostate Cancer Education & Support Network.

Public Health Resources

- [Advances in Prostate Cancer Research](#). National Cancer Institute.
- [Prostate Cancer Treatment \(PDQ®\)-Health Professional Version](#). National Cancer Institute.

Scientific Reports

- [NIH-funded study shows increased survival in men with metastatic prostate cancer who receive chemotherapy when starting hormone therapy](#). National Cancer Institute. June 2014.
- [Initial hormonal management of androgen-sensitive metastatic, recurrent, or progressive prostate cancer: 2006 update of an American Society of Clinical Oncology practice guideline](#). Loblaw DA, Virgo KS, Nam R, et al. Journal of Clinical Oncology 2004;22(20):4109–4118.
- [Immediate versus deferred hormonal treatment for patients with prostate cancer who are not suitable for curative local treatment: results of the randomized trial SAKK 08/88](#). Studer UE, Hauri D, Hanselmann S, et al. Journal of Clinical Oncology 2004;22(20):4109–4118.
- [Immediate or deferred androgen deprivation for patients with prostate cancer not suitable for local treatment with curative intent: European Organization for Research and Treatment of Cancer Trial 30891](#). Studer UE, Whelan P, Albrecht W, et al. Journal of Clinical Oncology 2006;24(12):1868–1876.

Statistics

- [SEER Cancer Stat Facts: Prostate Cancer](#). National Cancer Institute.
- [SEER-Medicare Linked Database](#). National Cancer Institute.
- [SEER Patterns of Care/Quality of Care Studies](#). National Cancer Institute.

Cancer Trends Progress Report

Online Summary of Trends in US Cancer Control Measures

Life After Diagnosis

More and more people are benefiting from the early detection of cancer and its successful treatment. These advances are improving both quality of life and length of survival among people diagnosed with cancer, permitting many survivors to lead full and productive lives at home and at work.

National data regarding life after cancer diagnosis track the financial burden of cancer care and survival rates, as well as the health behaviors of cancer survivors, including survivors' physical activity, weight management, UV exposure, and smoking status.

- [Financial Burden of Cancer Care](#)
- [Survival](#)
- [Cancer Survivors and Smoking](#)

- [Cancer Survivors and Physical Activity](#)
- [Cancer Survivors and Weight](#)
- [Cancer Survivors and UV Exposure](#)

Cancer Trends Progress Report

Online Summary of Trends in US Cancer Control Measures

Financial Burden of Cancer Care

Data Up to Date as of:

August 2023

Background

The national cancer-attributed medical care costs in the United States are substantial and projected to increase due to population changes alone, according to the [Medical Care Costs Associated with Cancer Survivorship in the United States](#) article, published in the journal *Cancer Epidemiology, Biomarkers & Prevention* (1). National costs for cancer care were estimated to be \$190.2 billion in 2015. Assuming constant future costs, we project costs to be \$208.9 billion in 2020 (2020 U.S. dollars), an increase of 10 percent that is only due to the aging and growth of the U.S. population. These cost estimates include cancer-attributable costs for medical services and oral prescription drugs. National medical services costs were largest for those diagnosed with female breast, colorectal, lung, and prostate cancers and non-Hodgkin lymphomas. National oral prescription drug costs were highest for those diagnosed with female breast, leukemia, lung, and prostate cancers. The differences in national costs reflect prevalence of the disease, treatment patterns, and costs for different types of care for the different cancer sites.

If cancer diagnosis and treatment is divided into phases of care: initial (first year after diagnosis), end-of-life (year before cancer death) and continuing (the time in between), per-patient annualized average costs were highest in the last year of life, followed by the initial and continuing phases (medical services: \$109,727, \$43,516, and \$5,518, and oral prescription drugs: \$4,372, \$1,874, \$1,041, respectively). There was considerable variation in costs by cancer site. Annualized average oral drug costs were highest for chronic myeloid leukemia (CML) and myeloma in all phases of care. Annualized average costs also varied by stage in all phases of care [data is not shown here but is available in Mariotto, et al. (1)].

Measure

- The estimates in this report come from Mariotto, et al. (1) and are an extension and update of previous estimates (2). All cost estimates have been adjusted and are reported in 2020 U.S. dollars.
- Per-patient annualized average cancer-attributable costs were estimated, respectively, from 2007-2013 Medicare claims by subtracting costs between patients with cancer and their matched controls without cancer. Annualized average medical costs were estimated by phases of care: initial (first year after diagnosis), end-of-life (year before cancer death) and continuing (the time in between).
- Medical services care costs were estimated from Medicare Parts A and B claims and include both Medicare payments and patient responsibilities for all billed medical services, including hospitalizations, outpatient hospital services, physician/supplier services, infusion or injectable drugs, durable medical equipment, hospice care, and home health care.
- Oral prescription drug costs were estimated from Medicare Part D claims.
- National expenditures or national cancer-attributed costs were estimated by combining U.S. cancer prevalence estimates and projections from the [Anticipating the “Silver Tsunami”: Prevalence Trajectories and Comorbidity Burden among Older Cancer Survivors in the United States](#) article, published in the journal *Cancer Epidemiology, Biomarkers & Prevention* (3) with the annualized average cost estimates, using previously described methods (1).

Healthy People 2030 Target

- There is no Healthy People 2030 target for the financial burden of cancer care.

[Healthy People 2030](#) is a set of goals set forth by the Department of Health and Human Services.

Data Source

1. Mariotto AB, Enewold L, Zhao JX, Zeruto CA, Yabroff KR. Medical Care Costs Associated with Cancer Survivorship in the United States. *Cancer Epidemiol Biomarkers Prev.* 2020;29(7):1304-12.

2. Mariotto AB, Yabroff KR, Shao Y, Feuer EJ, Brown ML. Projections of the cost of cancer care in the United States: 2010-2020. *J Natl Cancer Inst.* 2011;103(2):117-28.
3. Bluethmann SM, Mariotto AB, Rowland JH. Anticipating the "Silver Tsunami": Prevalence Trajectories and Comorbidity Burden among Older Cancer Survivors in the United States. *Cancer Epidemiol Biomarkers Prev.* 2016;25(7):1029-36.

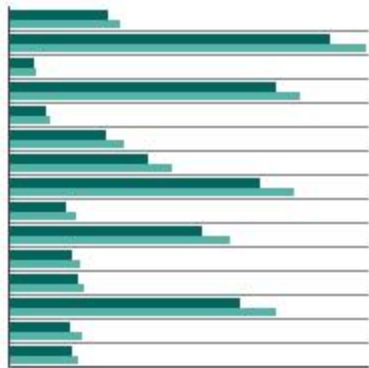
Trends and Most Recent Estimates

National Expenditures

Total Cost

Estimates of national expenditures for cancer care (in billions of dollars) by cancer site and year

[Overview graph](#)

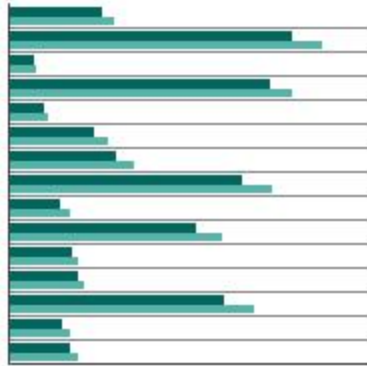


Cancer Site	2015	2020
All sites	\$190.2	\$208.9
Bladder	\$8.3	\$9.4
Female Breast	\$26.8	\$29.8
Cervix Uteri	\$2.2	\$2.3
Colorectal	\$22.3	\$24.3
Hodgkin Lymphoma	\$3.2	\$3.5
Kidney	\$8.2	\$9.7
Leukemia	\$11.7	\$13.6
Lung	\$21.1	\$23.8
Melanoma	\$4.9	\$5.7
Non-Hodgkin Lymphoma	\$16.2	\$18.6
Oral Cavity	\$5.4	\$6.0
Ovary	\$5.9	\$6.4
Prostate	\$19.4	\$22.3
Thyroid	\$5.2	\$6.1
Uterus	\$5.3	\$5.8

Medical Services

Estimates of national expenditures for medical services related to cancer care (in billions of dollars) by cancer site and year

[Overview graph](#)

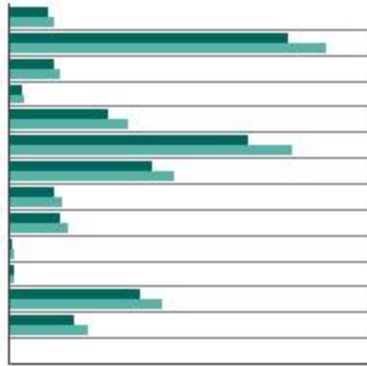


Cancer Site	2015	2020
All sites	\$171.6	\$188.1
Bladder	\$7.9	\$8.9
Female Breast	\$23.7	\$26.2
Cervix Uteri	\$2.2	\$2.3
Colorectal	\$21.8	\$23.7
Hodgkin Lymphoma	\$3.0	\$3.3
Kidney	\$7.1	\$8.4
Leukemia	\$9.1	\$10.5
Lung	\$19.4	\$21.9
Melanoma	\$4.4	\$5.1
Non-Hodgkin Lymphoma	\$15.6	\$17.9
Oral Cavity	\$5.3	\$5.9
Ovary	\$5.8	\$6.3
Prostate	\$17.9	\$20.6
Thyroid	\$4.5	\$5.3
Uterus	\$5.3	\$5.8

Prescription Drugs

Estimates of national expenditures for prescription drugs related to cancer care (in billions of dollars) by cancer site and year

[Overview graph](#)



Cancer Site	2015	2020
All sites	\$18.6	\$20.9
Bladder	\$0.4	\$0.5
Female Breast	\$3.1	\$3.5
Cervix Uteri	-	-
Colorectal	\$0.5	\$0.6
Hodgkin Lymphoma	\$0.2	\$0.2
Kidney	\$1.1	\$1.3
Leukemia	\$2.7	\$3.2
Lung	\$1.6	\$1.8
Melanoma	\$0.5	\$0.6
Non-Hodgkin Lymphoma	\$0.6	\$0.7
Oral Cavity	\$0.1	\$0.1
Ovary	\$0.1	\$0.1
Prostate	\$1.5	\$1.7
Thyroid	\$0.7	\$0.9
Uterus	\$0.0	\$0.0

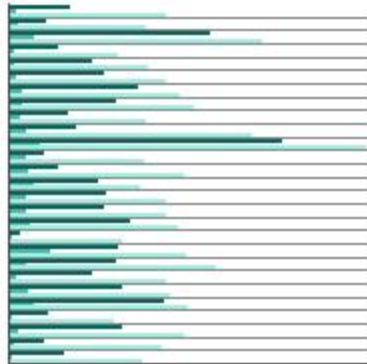
- Cancer-attributable oral prescription drug costs for cancer of the cervix uteri are not available.

Per Patient Cost

Medical Services

Average (per patient) annualized 2007-2013 cancer-attributable costs in 2020 US dollars for medical services related to cancer care by cancer site and phase of care

[Overview graph](#)



Cancer Site	Initial care	Continuing care	Last year of life
All Sites	\$43,516.1	\$5,517.6	\$109,727.3
Bladder	\$26,442.8	\$6,350.4	\$95,985.4
Brain	\$139,813.8	\$17,385.6	\$176,354.9
Breast	\$34,979.5	\$3,539.6	\$76,101.2
Cervix Uteri	\$58,715.6	\$3,956.0	\$97,026.4
Colorectal	\$66,523.5	\$6,246.3	\$110,143.7
Esophagus	\$89,947.2	\$9,785.9	\$120,033.8
Hodgkin Lymphoma	\$75,372.5	\$9,785.9	\$128,986.8
Kidney	\$41,121.7	\$8,536.7	\$95,985.4
Leukemia	\$47,263.9	\$12,700.9	\$169,588.0
Acute Myeloid Leukemia	\$190,305.0	\$21,758.1	\$249,124.7
Chronic Lymphocytic Leukemia	\$25,505.9	\$12,076.3	\$94,111.5
Chronic Myeloid Leukemia	\$34,875.4	\$13,950.2	\$122,428.2
Liver	\$62,775.7	\$18,218.5	\$92,133.5
Lung	\$68,293.3	\$12,388.6	\$110,247.8
Lung: Non-small Cell Carcinoma	\$67,148.1	\$12,284.5	\$109,102.7
Lung: Small Cell Carcinoma	\$85,366.6	\$14,783.0	\$118,055.8
Melanoma	\$8,536.7	\$2,706.8	\$78,912.0
Myeloma	\$77,038.1	\$28,524.9	\$123,365.1
Non-Hodgkin Lymphoma	\$75,164.2	\$12,805.0	\$144,706.8
Oral Cavity	\$58,715.6	\$5,934.0	\$110,039.6
Ovary	\$79,120.3	\$14,158.4	\$112,017.6
Pancreas	\$108,165.7	\$18,426.7	\$125,030.8
Prostate	\$28,108.5	\$2,602.6	\$74,227.3

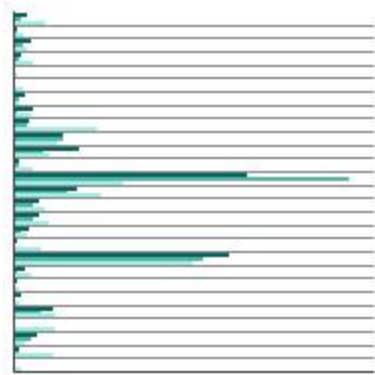
Overview graph

Cancer Site	Initial care	Continuing care	Last year of life
Stomach	\$79,120.3	\$7,079.2	\$122,011.8
Thyroid	\$24,881.2	\$4,060.1	\$107,437.0
Uterus	\$39,039.6	\$3,019.1	\$93,590.9

Oral Prescription Drugs

Average (per patient) annualized 2007-2013 cancer-attributable costs in 2020 US dollars for oral prescription drugs related to cancer care by cancer site and phase of care

[Overview graph](#)



Cancer Site	Initial care	Continuing care	Last year of life
All Sites	\$1,873.9	\$1,041.1	\$4,372.4
Bladder	\$624.6	\$520.5	\$1,353.4
Brain	\$2,394.4	\$1,353.4	\$1,873.9
Breast	\$1,145.2	\$832.8	\$2,706.8
Cervix Uteri	\$0.0	\$0.0	\$520.5
Colorectal	\$416.4	\$208.2	\$1,353.4
Esophagus	\$1,561.6	\$832.8	\$937.0
Hodgkin Lymphoma	\$2,810.9	\$520.5	\$2,602.6
Kidney	\$2,290.3	\$1,873.9	\$11,763.9
Leukemia	\$6,871.0	\$6,871.0	\$6,038.1
Acute Myeloid Leukemia	\$9,057.2	\$4,164.2	\$4,893.0
Chronic Lymphocytic Leukemia	\$728.7	\$728.7	\$2,915.0
Chronic Myeloid Leukemia	\$32,481.0	\$46,743.4	\$15,303.5
Liver	\$8,849.0	\$7,599.7	\$12,180.4
Lung and Bronchus	\$3,643.7	\$2,706.8	\$4,580.7
Lung: Non-small Cell Carcinoma	\$3,747.8	\$2,810.9	\$4,997.1
Lung: Small Cell Carcinoma	\$2,290.3	\$1,145.2	\$1,873.9
Melanoma	\$624.6	\$312.3	\$3,956.0
Myeloma	\$29,878.3	\$26,442.8	\$24,985.3
Non-Hodgkin Lymphoma	\$1,561.6	\$624.6	\$2,602.6
Oral Cavity	\$520.5	\$0.0	\$937.0
Ovary	\$1,041.1	\$104.1	\$937.0
Pancreas	\$5,517.6	\$3,851.9	\$5,829.9
Prostate	\$312.3	\$312.3	\$5,829.9

Overview graph

Cancer Site	Initial care	Continuing care	Last year of life
Stomach	\$3,435.5	\$2,498.5	\$1,769.8
Thyroid	\$937.0	\$937.0	\$5,517.6
Uterus	\$104.1	\$0.0	\$1,145.2

Additional Information on the Financial Burden of Cancer Care

General Public Resources

- [Financial Toxicity \(Financial Distress\) and Cancer Treatment \(PDQ®\)](#). National Cancer Institute.

Scientific Reports

- [Productivity costs of cancer mortality in the United States: 2000-2020](#). Bradley CJ, Yabroff KR, Dahman B, Feuer EJ, Mariotto A, Brown ML. J Natl Cancer Inst 2008; 100: 1763-70.
- [Projections of the cost of cancer care in the United States: 2010–2020](#). Mariotto AB, Yabroff KR, Shao Y, Feuer EJ, Brown ML. J Natl Cancer Inst 2011;103(2): 117–28.
- [Evaluation of trends in the cost of initial cancer treatment](#). Warren, JL, Yabroff KR, Meekins A, Topor M, Lamont E, Brown ML. J Natl Cancer Inst 2008; 100: 888-897.

Cancer Trends Progress Report

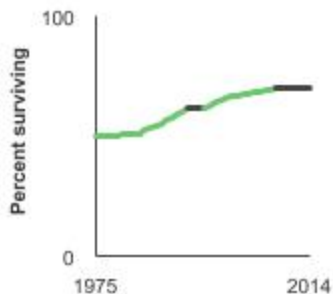
Online Summary of Trends in US Cancer Control Measures

Survival

Data Up to Date as of:

August 2023

For patients diagnosed with cancer in 2014, 70.1% survived the cancer for at least five years.



Background

Advances in the ways that cancer is diagnosed and treated have increased the number of people who live for long periods of time after a cancer diagnosis. This report looks at trends in 5-year survival rates for cancer, a common timeframe used by statisticians to measure survival rates. It is important to note that while many people may live without evidence of cancer during and beyond this period, some people may live long-term with their cancer, or experience a recurrence or progression of their cancer.

Measure

Five-year relative cancer survival: The proportion of patients surviving cancer 5 years after diagnosis calculated in the absence of other causes of death. The relative survival ratio is defined as the observed survival in the patient group divided by the expected survival of a comparable group from the general population. This ratio represents survivors that are expected if cancer were the only cause of death in the cohort.

Healthy People 2030 Target

- The Healthy People 2030 Target for survival is pending revisions. This measure will be updated once the Healthy People 2030 target is finalized.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Data Source

SEER Program, National Cancer Institute, 1975–2014 with follow-up through 2019.

Trends and Most Recent Estimates

All Cancer Sites Combined

By Sex

5-year relative survival for all cancer sites combined by sex, 1975-2014

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2014)	
		Percent surviving	95% Confidence Interval
	Both Sexes	70.1	69.8 - 70.4
	Male	68.3	67.8 - 68.7
	Female	71.9	71.5 - 72.4

By Race/Ethnicity

5-year relative survival for all cancer sites combined by race/ethnicity, 2000-2014

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2014)	
		Percent surviving	95% Confidence Interval
	All Races/Ethnicities	67.5	67.3 - 67.6
	Non-Hispanic White	68.1	67.8 - 68.3
	Non-Hispanic Black	62.8	62.2 - 63.4
	Hispanic	66.6	66.1 - 67.1
	Non-Hispanic Asian/Pacific Islander	65.0	64.3 - 65.7
	Non-Hispanic American Indian/Alaska Native	60.1	57.3 - 62.8

Top 4 Cancer Sites

Comparison of Top Cancer Sites

5-year relative survival for the most common cancers, 1975-2014

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2014)	
		Percent surviving	95% Confidence Interval
	Colon and Rectum	67.6	66.4 - 68.8
	Lung and Bronchus	23.2	22.3 - 24.2
	Female Breast	92.1	91.4 - 92.6
	Prostate	97.1	96.3 - 97.7

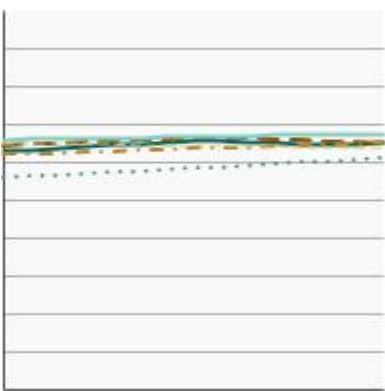
Colon and Rectum Cancer by Sex

5-year relative survival for colon and rectum cancer by sex, 1975-2014

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2014)	
		Percent surviving	95% Confidence Interval
	Both Sexes	67.6	66.4 - 68.8
	Male	67.5	65.8 - 69.1
	Female	67.8	66.0 - 69.5

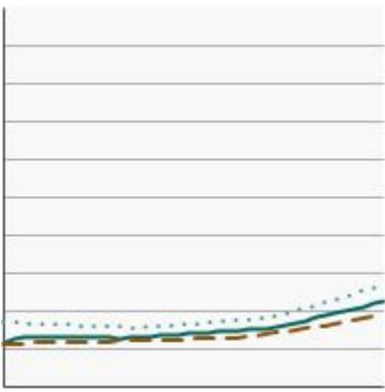
Colon and Rectum Cancer by Race/Ethnicity

5-year relative survival for colon and rectum cancer by race/ethnicity, 2000-2014

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2014)	
		Percent surviving	95% Confidence Interval
	All Races/Ethnicities	65.1	64.5 - 65.8
	Non-Hispanic White	65.2	64.3 - 66.0
	Non-Hispanic Black	61.3	59.4 - 63.2
	Hispanic	65.5	63.7 - 67.2
	Non-Hispanic Asian/Pacific Islander	66.8	64.8 - 68.8
	Non-Hispanic American Indian/Alaska Native	61.3	53.2 - 68.4

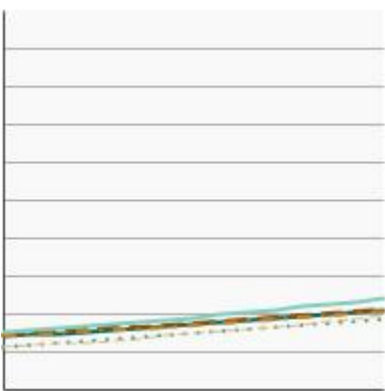
Lung and Bronchus Cancer by Sex

5-year relative survival for lung and bronchus cancer by sex, 1975-2014

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2014)	
		Percent surviving	95% Confidence Interval
	Both Sexes	23.2	22.3 - 24.2
	Male	20.6	19.3 - 21.8
	Female	26.0	24.7 - 27.4

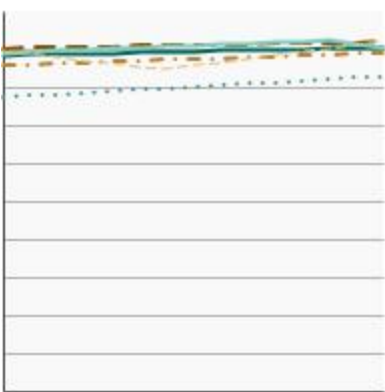
Lung and Bronchus Cancer by Race/Ethnicity

5-year relative survival for lung and bronchus cancer by race/ethnicity, 2000-2014

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2014)	
		Percent surviving	95% Confidence Interval
	All Races/Ethnicities	21.6	21.2 - 22.1
	Non-Hispanic White	21.7	21.1 - 22.2
	Non-Hispanic Black	18.8	17.5 - 20.2
	Hispanic	22.2	20.4 - 24.1
	Non-Hispanic Asian/Pacific Islander	24.8	23.0 - 26.6
	Non-Hispanic American Indian/Alaska Native	15.8	10.0 - 22.8

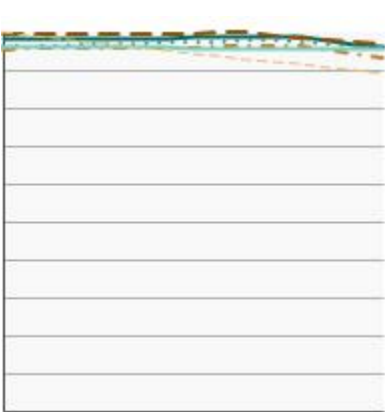
Female Breast Cancer by Race/Ethnicity

5-year relative survival for female breast cancer by race/ethnicity, 2000-2014

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2014)	
		Percent surviving	95% Confidence Interval
	All Races/Ethnicities	90.4	90.0 - 90.8
	Non-Hispanic White	91.9	91.4 - 92.3
	Non-Hispanic Black	82.9	81.6 - 84.1
	Hispanic	87.8	86.8 - 88.8
	Non-Hispanic Asian/Pacific Islander	90.9	89.8 - 91.8
	Non-Hispanic American Indian/Alaska Native	93.2	87.0 - 96.6

Prostate Cancer by Race/Ethnicity

5-year relative survival for prostate cancer by race/ethnicity, 2000-2014

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2014)	
		Percent surviving	95% Confidence Interval
	All Races/Ethnicities	96.4	96.0 - 96.8
	Non-Hispanic White	96.8	96.2 - 97.2
	Non-Hispanic Black	95.9	94.7 - 96.9
	Hispanic	92.9	91.6 - 94.0
	Non-Hispanic Asian/Pacific Islander	93.9	92.0 - 95.4
	Non-Hispanic American Indian/Alaska Native	91.8	76.7 - 97.3

Additional Information on Survival

General Public Resources

- [Survivorship](#). National Cancer Institute.

Public Health Resources

- [Office of Cancer Survivorship: Resources and Information for Health Care Professionals](#). National Cancer Institute.
- [Resources for Health Professionals](#). National Cancer Institute.

Scientific Reports

- [Annual Report to the Nation on the Status of Cancer](#). National Cancer Institute.

Statistics

- [SEER Cancer Statistics Review](#). National Cancer Institute.
- [SEER*Explorer: An interactive website that provides easy access to a wide range of SEER cancer statistics](#). Surveillance Research Program, National Cancer Institute.
- [Cancer Facts and Figures](#). American Cancer Society.

Cancer Trends Progress Report

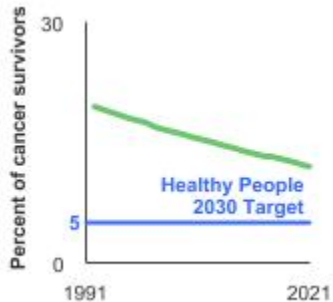
Online Summary of Trends in US Cancer Control Measures

Cancer Survivors and Smoking

Data Up to Date as of:

August 2023

In 2021, 11.4% of cancer survivors aged 18 and older currently smoked cigarettes.



Background

As illustrated in the present section, many cancer survivors continue to smoke after their cancer diagnosis. This increases their risk for chronic health conditions, second primary cancers related to smoking, and premature death. To enhance the length and health-related quality of their lives, efforts are needed to identify these individuals and provide them with evidence-based interventions to help them quit smoking and remain tobacco free.

As the population of cancer survivors increases and their expected time of survival lengthens, the health behaviors of these individuals are becoming an important focus of attention. Behavioral risk factors, such as smoking, affect the length and quality of life after diagnosis. Tracking these behaviors permits evaluation of how well cancer control efforts are working to reduce preventable disability and death among those with a history of cancer.

Measure

Rates of smoking among cancer survivors are based on the self-reporting of individuals with a cancer history who are interviewed as part of the annual population-based National Health Interview Survey (NHIS). Participants who had smoked at least 100 cigarettes in their lifetime and who, at the time of the interview, reported smoking every day or some days were considered to be currently smoking.

Healthy People 2030 Target

- There is no Healthy People 2030 target for smoking rates among cancer survivors, though Healthy People does include a national objective to increase the mental and physical health-related quality of life of cancer survivors; however, the goal for the general population is to decrease to 5 percent the proportion of people who currently smoke cigarettes.
- Healthy People 2030 Targets are developed and based on the general population and do not account for differences in the age distribution of cancer survivors compared to the general population. Cancer survivors are typically older than those in the general population who have not had cancer.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Note: Goals are indicated as blue line on Detailed Trend Graphs.

Data Source

Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey, 1992–2021.

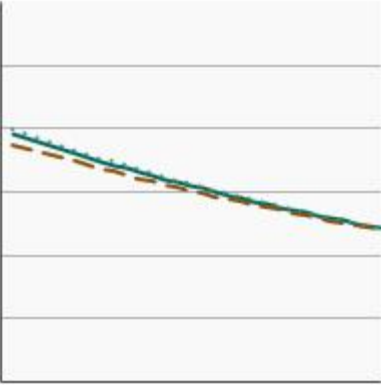
In 2019 the NHIS questionnaire was redesigned to increase relevance, enhance data quality, and minimize respondent burden. In addition, the COVID-19 pandemic created challenges conducting in-person interviews for the 2020 NHIS, requiring changes to field procedures to conduct most surveys by telephone, which impacted

survey response rates. For details related to the potential impacts of these issues, please refer to [Potential Impact of NHIS Redesign and COVID-19 on the Cancer Trends Progress Report](#).

Trends and Most Recent Estimates

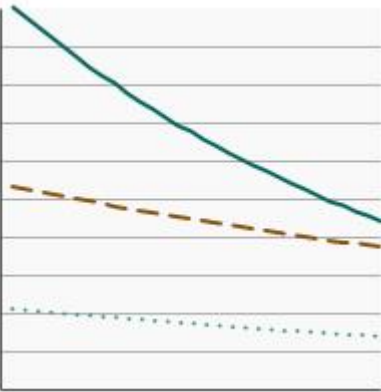
By Sex

Percentage of cancer survivors aged 18 years and older who reported current cigarette use by sex, 1992-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of cancer survivors	95% Confidence Interval
	Both Sexes	11.4	10.1 - 12.9
	Male	11.5	9.5 - 13.9
	Female	11.0	9.4 - 12.8

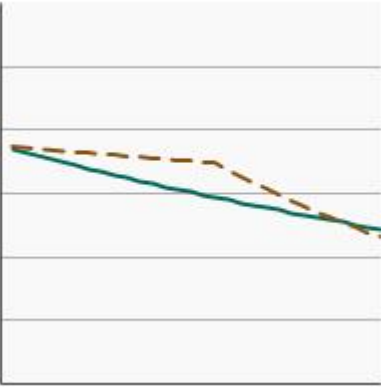
By Age

Percentage of cancer survivors aged 18 years and older who reported current cigarette use by age, 1992-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of cancer survivors	95% Confidence Interval
	Ages 18-44	15.0	10.1 - 21.8
	Ages 45-64	17.9	15.1 - 21.3
	Ages 65 and older	7.0	5.9 - 8.3

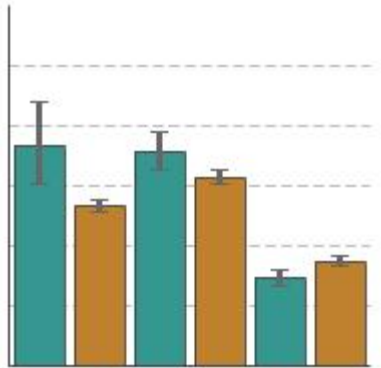
By Time Since Cancer Diagnosis

Percentage of cancer survivors aged 18 years and older who reported current cigarette use by time since cancer diagnosis, 1992-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of cancer survivors	95% Confidence Interval
	5 years or less since diagnosis	10.8	8.8 - 13.1
	6+ years since diagnosis	12.1	10.4 - 14.1

Compared to Remaining U.S. Population

Comparison of cancer survivors and remaining U.S. population for percentage of adults aged 18 years and older who currently smoked cigarettes by age, 2017-2021

Overview graph	Age Group	Cancer Survivor		Remaining U.S. Population	
		Percent of population	Confidence Interval	Percent of population	Confidence Interval
	Ages 18-44	18.3	15.1 - 22.1	13.3	12.8 - 13.8
	Ages 45-64	17.9	16.4 - 19.5	15.7	15.1 - 16.3
	Ages 65 and older	7.4	6.7 - 8.1	8.7	8.3 - 9.1

Additional Information on Cancer Survivors and Smoking Quitting Resources

- [Smokefree.gov](#). National Cancer Institute.
- [SmokefreeTXT](#). National Cancer Institute.
- [Smokefree Women](#). National Cancer Institute.
- [Tobacco](#). National Cancer Institute.
- [Quit Smoking](#). Springboard Beyond Cancer.

Public Health Resources

- [Cancer Center Cessation Initiative](#). National Cancer Institute.

- [Monograph 23: Treating Smoking in Cancer Patients: An Essential Component of Cancer Care](#). National Cancer Institute.
- [Tobacco Control Evidence-Based Programs Listing](#). National Cancer Institute.
- [Tobacco Cessation Tools & Resources](#). American Society of Clinical Oncology.
- [2014 Surgeon General's Report - The Health Consequences of Smoking: 50 Years of Progress](#). Centers for Disease Control and Prevention.
- [Caring for Cancer Survivors Who Use Tobacco](#). Centers for Disease Control and Prevention.
- [Smoking Cessation, Version 1.2016, NCCN Clinical Practice Guidelines in Oncology](#). Shields PG, Herbst RS, Arenberg D, et al. J Natl Compr Canc Netw 2016;14(11):1430- 1468.
- [Tobacco Smoking Cessation in Adults, Including Pregnant Women: Behavioral and Pharmacotherapy Interventions](#). U.S. Preventive Services Task Force.

Scientific Reports

- [Correlates of continued smoking versus cessation among survivors of smoking-related cancers](#). Berg CJ, Thomas AN, Mertens AC, et al. Psycho-Oncology 2013;22:799–806.
- [Introduction to the Cancer Center Cessation Initiative Working Groups: Improving Oncology Care and Outcomes by Including Tobacco Treatment](#). The Cancer Center Cessation Initiative Coordinating Center and Expert Advisory Panel. JNCCN. 2021 Nov; 19(Suppl_1).
- [Smoking Cessation: A Report of the Surgeon General](#). Centers for Disease Control and Prevention. 2020.
- [Association of a Comprehensive Smoking Cessation Program With Smoking Abstinence Among Patients With Cancer](#). Cinciripini PM, Karam-Hage M, Kyriotakis G, et al. JAMA Netw Open. 2019 Sep 4;2(9):e1912251.
- [Addressing a Core Gap in Cancer Care - The NCI Moonshot Program to Help Oncology Patients Stop Smoking](#). Croyle RT, Morgan GD, Fiore MC. N Engl J Med 2019; 380:512-515.
- [Tobacco use in the oncology setting: advancing clinical practice and research](#). Gritz ER, Toll BA, Warren GW. Cancer Epidemiol Biomarkers Prev. 2014;23(1):3-9.
- [21st-century hazards of smoking and benefits of cessation in the United States](#). Jha P, Ramasundarahettige C, Landsman V, et al. N Engl J Med. 2013;368(4):341–50.
- [Tobacco use and cessation for cancer survivors: an overview for clinicians](#). Karam-Hage M, Cinciripini PM, Gritz ER. CA Cancer J Clin. 2014 Jul-Aug;64(4):272-90.
- [Cigarette smoking, comorbidity, and general health among survivors of adolescent and young adult cancer](#). Kaul S, Veeranki SP, Rodriguez AM, Kuo YF. Cancer. 2016 Sep 15;122(18):2895-905.
- [Research priorities, measures, and recommendations for assessment of tobacco use in clinical cancer research](#). Land SR, Toll BA, Moinpour CM, et al. Clin Cancer Res. 2016;22(8):1907-13.
- [Smoking and all-cause mortality in older adults: results from the CHANCES Consortium](#). Müezziner A, Mons U, Gellert C, et al. Am J Prev Med. 2015;49(5): e53–e63.
- [Effect of Sustained Smoking Cessation Counseling and Provision of Medication vs Shorter-term Counseling and Medication Advice on Smoking Abstinence in Patients Recently Diagnosed With Cancer: A Randomized Clinical Trial](#). Park ER, Perez GK, Regan S, et al. JAMA. 2020 Oct 13;324(14):1406-1418.
- [Cigarette smoking before and after breast cancer diagnosis: mortality from breast cancer and smoking-related diseases](#). Passarelli MN, Newcomb PA, Hampton JM, et al. Journal of Clinical Oncology 2016;34(12):1315–22.
- [Lung cancer risk by years since quitting in 30+ pack year smokers](#). Pinsky PF, Zhu CS, Kramer BS. J Med Screen. 2015;22(3):151–7.
- [The 21st century hazards of smoking and benefits of stopping: a prospective study of one million women in the UK](#). Pirie K, Peto R, Reeves GK, et al. Lancet. 2013;381(9861):133–41.
- [Use of electronic cigarettes among cancer survivors in the U.S.](#) Salloum RG, Getz KR, Tan ASL, et al. Am J Prev Med. 2016 Nov;51(5):762-766.
- [Postdiagnosis Smoking Cessation and Reduced Risk for Lung Cancer Progression and Mortality: A Prospective Cohort Study](#). Sheikh M, Mukeriya A, Shangina O, et al. Ann Intern Med. 2021 Sep;174(9):1232-1239.

- Deaths due to cigarette smoking for 12 smoking-related cancers in the United States. Siegel RL, Jacobs EJ, Newton CC, et al. JAMA Intern Med. 2015;175(9):1574–6.
- Cancer Center Cessation Initiative Special Issue. Journal of the National Comprehensive Cancer Network, Volume 19: Issue Suppl_1, Online Publication Date: Nov 2021.
- Tobacco smoking and the risk of subsequent primary cancer among cancer survivors: a retrospective cohort study. Tabuchi T, Ito Y, Ioka A, et al. Ann Oncol 2013;24(1):2699–2704.
- Impact of postdiagnosis smoking on long-term survival of cancer patients: the Shanghai cohort study. Tao L, Wang R, Gao YT, Yuan JM. Cancer Epidemiology, Biomarkers and Prevention 2013;22(12):2404–11.
- 50-year trends in smoking-related mortality in the United States. Thun MJ, Carter BD, Feskanich D, et al. N Eng J Med. 2013;368(4):351–64.
- Smoking-related mortality in the United States. Thun MJ, Lopez AD, Hartge P. N Eng J Med. 2013;368(18):1753.
- Assessing tobacco use by cancer patients and facilitating cessation: an American Association for Cancer Research policy statement. Toll B, Brandon T, Gritz E, et al. Clin Cancer Res. 2013;19(8):1941-8.
- The biological and clinical effects of smoking by patients with cancer and strategies to implement evidence-based tobacco cessation support. Warren GW, Sobus S, Gritz ER. Lancet Oncol. 2014;15(12):e568–e80.
- Active smoking and mortality among colorectal cancer survivors: the Cancer Prevention Study II nutrition cohort. Yang B, Jacobs EJ, Gapstur SM, et al. J Clin Oncol. 2015;33(8):885–93.

Cancer Trends Progress Report

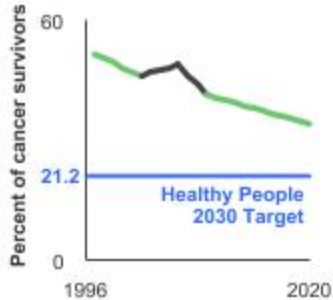
Online Summary of Trends in US Cancer Control Measures

Cancer Survivors and Physical Activity

Data Up to Date as of:

August 2023

In 2020, 35.5% of cancer survivors aged 18 years and older reported no physical activity in their leisure time.



Background

As the number of cancer survivors grows and expected survival time increases, the health behaviors of these individuals are becoming an important focus of attention. Adoption or maintenance of healthy lifestyles after a cancer diagnosis has the potential to reduce both cancer- and non-cancer-related morbidity and mortality. Tracking these behaviors permits evaluation of how well cancer control efforts are working to reduce unnecessary disability and death among those with a history of cancer.

To enhance the length and health-related quality of life of cancer survivors, efforts are needed to encourage adequate physical activity. Physical activity may improve treatment outcomes and reduce the risk of developing several types of cancer, including breast, colon, and endometrium (lining of the uterus). Being active may also help to prevent weight gain and obesity, reducing the risk of developing cancers that have been linked to excess body weight. In addition to cancer risk, physical activity may also lower a person's risk of other health problems such as heart disease, high blood pressure, diabetes mellitus, and osteoporosis.

Measure

The percentage of cancer survivors reporting no physical activity are based on the self-reporting of individuals with a cancer history who are interviewed as part of the annual population-based National Health Interview Survey (NHIS). Participants were asked how often they perform light, moderate, or vigorous activity for at least 10 minutes.

Healthy People 2030 Target

- There is no Healthy People 2030 target for physical activity among cancer survivors, though it does include a national objective to increase the mental and physical health-related quality of life of cancer survivors. However, it is reasonable to set goals determined for the general population, which are to reduce the proportion of adults who engage in no leisure time physical activity to 21.2 percent and increase the proportion of adults who meet the objectives for aerobic physical activity and for muscle-strengthening activity to 28.4 percent.
- Healthy People 2030 Targets are developed and based on the general population and do not account for differences in the age distribution of cancer survivors compared to the general population. Cancer survivors are typically older than those in the general population who have not had cancer.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Note: Goals are indicated as blue line on Detailed Trend Graphs.

Data Source

Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey, 1997–2020.

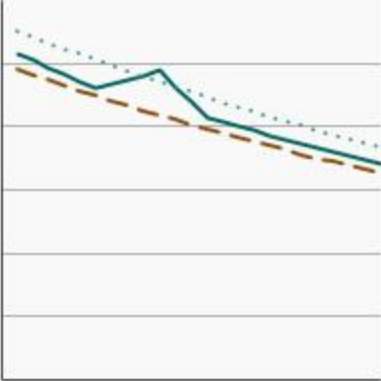
In 2019 the NHIS questionnaire was redesigned to increase relevance, enhance data quality, and minimize respondent burden. In addition, the COVID-19 pandemic created challenges conducting in-person interviews for the 2020 NHIS, requiring changes to field procedures to conduct most surveys by telephone, which impacted survey response rates. For details related to the potential impacts of these issues, please refer to [Potential Impact of NHIS Redesign and COVID-19 on the Cancer Trends Progress Report](#).

Trends and Most Recent Estimates

No Leisure Time Physical Activity

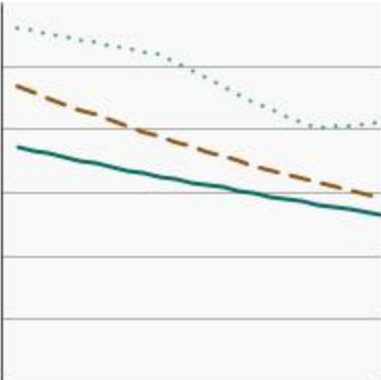
By Sex

Percentage of cancer survivors aged 18 years and older reporting no physical activity in their leisure time by sex, 1997-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of cancer survivors	95% Confidence Interval
	Both Sexes	35.5	33.4 - 37.7
	Male	33.2	29.8 - 36.7
	Female	37.7	35.0 - 40.4

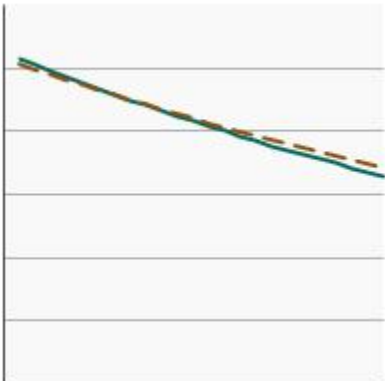
By Age

Percentage of cancer survivors aged 18 years and older reporting no physical activity in their leisure time by age, 1997-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of cancer survivors	95% Confidence Interval
	Ages 18-44	24.4	17.8 - 32.5
	Ages 45-64	29.1	25.4 - 33.1
	Ages 65 and older	41.0	38.4 - 43.7

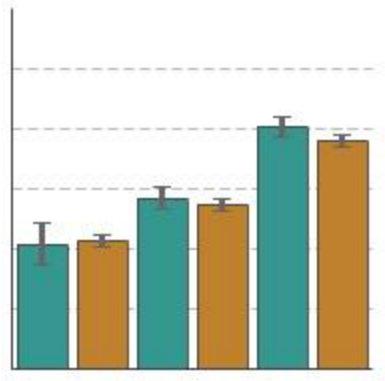
By Time Since Cancer Diagnosis

Percentage of cancer survivors aged 18 years and older reporting no physical activity in their leisure time by time since cancer diagnosis, 1997-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of cancer survivors	95% Confidence Interval
	<u>5 years or less since diagnosis</u>	33.9	30.6 - 37.4
	<u>6+ years since diagnosis</u>	35.4	32.7 - 38.2

Compared to Remaining U.S. Population

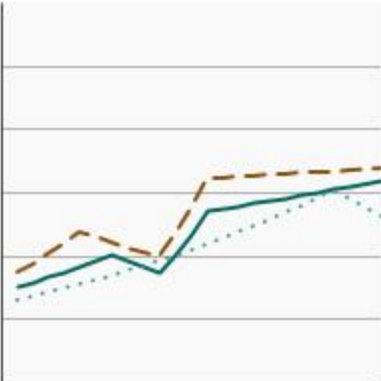
Comparison of cancer survivors and remaining U.S. population for percentage of adults aged 18 years and older reporting no physical activity in their leisure time by age, 2016-2020

Overview graph	Age Group	Cancer Survivor		Remaining U.S. Population	
		Percent of population	Confidence Interval	Percent of population	Confidence Interval
	Ages 18-44	20.6	17.2 - 24.4	21.3	20.4 - 22.2
	Ages 45-64	28.5	26.5 - 30.5	27.3	26.3 - 28.2
	Ages 65 and older	40.2	38.6 - 41.9	38.0	37.0 - 39.0

Meet Federal Guidelines

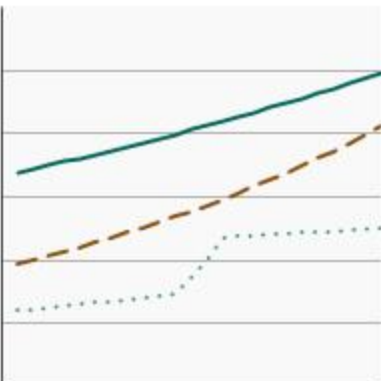
By Sex

Percentage of cancer survivors aged 18 years and older who meet current Federal guidelines for aerobic and muscle-strengthening physical activity by sex, 1997-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of cancer survivors	95% Confidence Interval
	Both Sexes	14.8	13.3 - 16.5
	Male	16.5	14.1 - 19.3
	Female	13.0	11.2 - 15.0

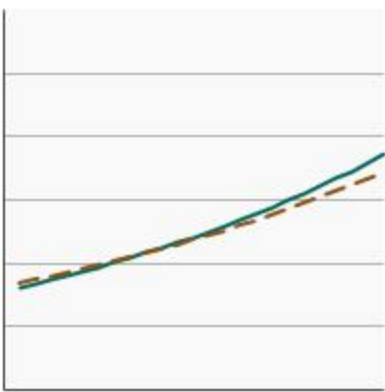
By Age

Percentage of cancer survivors aged 18 years and older who meet current Federal guidelines for aerobic and muscle-strengthening physical activity by age, 1997-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of cancer survivors	95% Confidence Interval
	Ages 18-44	27.9	20.8 - 36.3
	Ages 45-64	17.3	14.6 - 20.5
	Ages 65 and older	11.3	9.8 - 13.0

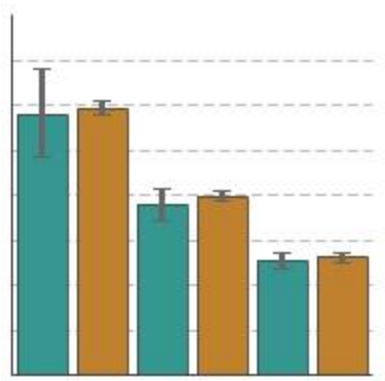
By Time Since Cancer Diagnosis

Percentage of cancer survivors aged 18 years and older who meet current Federal guidelines for aerobic and muscle-strengthening physical activity by time since cancer diagnosis, 1997-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of cancer survivors	95% Confidence Interval
	5 years or less since diagnosis	14.3	12.0 - 17.0
	6+ years since diagnosis	15.8	13.8 - 18.1

Compared to Remaining U.S. Population

Comparison of cancer survivors and remaining U.S. population for percentage of adults aged 18 years and older who meet current Federal guidelines for aerobic and muscle-strengthening physical activity by age, 2016-2020

Overview graph	Age Group	Cancer Survivor		Remaining U.S. Population	
		Percent of population	Confidence Interval	Percent of population	Confidence Interval
	Ages 18-44	28.8	24.2 - 34.0	29.7	29.0 - 30.4
	Ages 45-64	18.8	17.2 - 20.6	19.9	19.3 - 20.5
	Ages 65 and older	12.7	11.7 - 13.7	13.1	12.5 - 13.6

Additional Information on Cancer Survivors and Physical Activity

General Public Resources

- [Facing Forward: Life After Cancer Treatment](#). National Cancer Institute.
- [Health and Well-Being After a Cancer Diagnosis](#). National Cancer Institute.
- [Physical Activity and Cancer](#). National Cancer Institute.
- [Physical Activity and the Person with Cancer](#). American Cancer Society.
- [Living Beyond Cancer](#). National Coalition for Cancer Survivorship.

Public Health Resources

- [Physical Activity Evidence-Based Programs Listing](#). National Cancer Institute.
- [Exercise Guidelines for Cancer Survivors: Consensus Statement from International Multidisciplinary Roundtable](#). Campbell KL, Winters-Stone KM, Wiskemann J, et al. *Med Sci Sports Exerc*. 2019 Nov;51(11):2375-2390.

Scientific Reports

- [Pre- to postdiagnosis leisure-time physical activity and prognosis in postmenopausal breast cancer survivors](#). Jung AY, Behrens S, Schmidt M, et al. *Breast Cancer Res*. 2019 Nov 7;21(1):117.
- [The dose-response effect of physical activity on cancer mortality: findings from 71 prospective cohort studies](#). Li T, Wei S, Shi Y, et al. *Br J Sports Med*. 2016 Mar;50(6):339-45. doi: 10.1136/bjsports-2015-094927. Review.
- [Posttreatment trajectories of physical activity in breast cancer survivors](#). Lucas AR, Levine BJ, Avis NE. *Cancer*. 2017 Jul 15;123(14):2773-2780.
- [The effectiveness of exercise interventions for improving health-related quality of life from diagnosis through active cancer treatment](#). Mishra SI, Scherer RW, Snyder C, et al. *Oncol Nurs Forum*. 2015 Jan;42(1):E33-53. doi: 10.1188/15.ONF.E33-E53. Review.
- [Childhood Cancer and Functional Impacts Across the Care Continuum](#). National Academies of Sciences, Engineering, and Medicine. 2021.
- [Incorporating Weight Management and Physical Activity Throughout the Cancer Care Continuum: Proceedings of a Workshop](#). National Academies of Sciences, Engineering, and Medicine. 2018.
- [Results of the Exercise and Nutrition to Enhance Recovery and Good Health for You \(ENERGY\) Trial: A Behavioral Weight Loss Intervention in Overweight or Obese Breast Cancer Survivors](#). Rock CL, Flatt SW, Byers TE, et al. *J Clin Oncol*. 2015 Oct 1;33(28):3169-76.
- [Exercise is medicine in oncology: Engaging clinicians to help patients move through cancer](#). Schmitz KH, Campbell AM, Stuiver MM, et al. *CA Cancer J Clin*. 2019 Nov;69(6):468-484.
- [The Role of Physical Activity in Managing Fatigue in Cancer Survivors](#). Serdà I Ferrer BC, van Roekel E, Lynch BM. *Curr Nutr Rep*. 2018 Sep;7(3):59-69.
- [Postdiagnosis sedentary behavior and health outcomes in cancer survivors: A systematic review and meta-analysis](#). Swain CTV, Nguyen NH, Eagles T, et al. *Cancer*. 2019 Nov 12.
- [Interventions for promoting habitual exercise in people living with and beyond cancer](#). Turner RR, Steed L, Quirk H, et al. *Cochrane Database Syst Rev*. 2018 Sep 19;9:CD010192.

Cancer Trends Progress Report

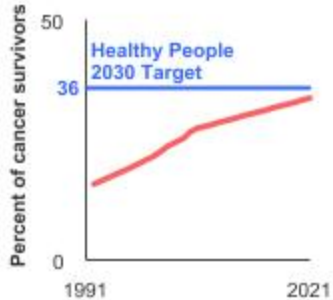
Online Summary of Trends in US Cancer Control Measures

Cancer Survivors and Weight

Data Up to Date as of:

August 2023

In 2021, 32.5% of cancer survivors aged 20 years and older had obesity.



Background

Adopting or maintaining a healthy lifestyle after a cancer diagnosis has the potential to reduce both cancer- and non-cancer-related morbidity and mortality. Preventing excess body weight and obesity can enhance the length and health-related quality of life of cancer survivors, and it can reduce the risk of developing cancers that have been linked to excess body weight, including colorectal, breast (among women who have gone through menopause), endometrial, esophageal, renal cell (kidney), and pancreatic cancer.

As the number of cancer survivors grows and expected survival time increases, the health behaviors of these individuals are becoming an important focus of attention.

Measure

Rates of cancer survivors with obesity are based on the self-reporting of individuals with a cancer history, who are interviewed as part of the annual population-based National Health Interview Survey (NHIS). Weight groups are defined by a measurement called body mass index (BMI), which is calculated by dividing weight in kilograms by height in meters, squared. For most adults, experts consider a BMI of 30 and above as having obesity.

Healthy People 2030 Target

- There is no Healthy People 2030 target for obesity rates among cancer survivors, though Healthy People does include a national objective to increase the mental and physical health-related quality of life of cancer survivors; however, the goal for the general population is to reduce the proportion of adults with obesity to 36.0 percent.
- Healthy People 2030 Targets are developed and based on the general population and do not account for differences in the age distribution of cancer survivors compared to the general population. Cancer survivors are typically older than those in the general population who have not had cancer.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Note: Goals are indicated as blue line on Detailed Trend Graphs.

Data Source

Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey, 1992–2021.

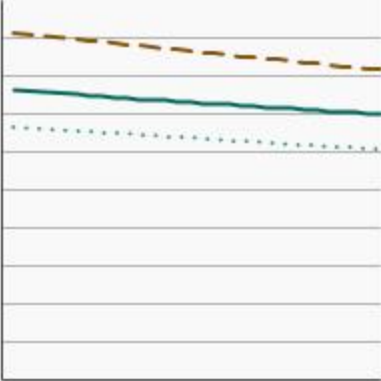
In 2019 the NHIS questionnaire was redesigned to increase relevance, enhance data quality, and minimize respondent burden. In addition, the COVID-19 pandemic created challenges conducting in-person interviews for the 2020 NHIS, requiring changes to field procedures to conduct most surveys by telephone, which impacted survey response rates. For details related to the potential impacts of these issues, please refer to [Potential Impact of NHIS Redesign and COVID-19 on the Cancer Trends Progress Report](#).

Trends and Most Recent Estimates

Overweight

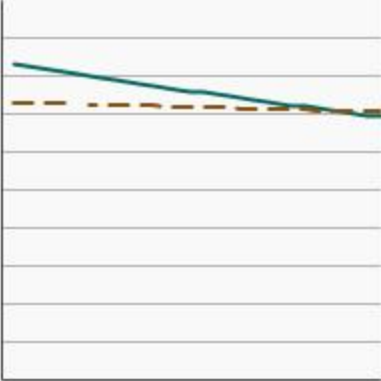
By Sex

Percentage of cancer survivors aged 20 years and older who were overweight by sex, 1992-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of cancer survivors	95% Confidence Interval
	Both Sexes	34.5	32.6 - 36.4
	Male	41.3	38.2 - 44.5
	Female	29.2	26.8 - 31.7

By Time Since Cancer Diagnosis

Percentage of cancer survivors aged 20 years and older who were overweight by time since cancer diagnosis, 1992-2021

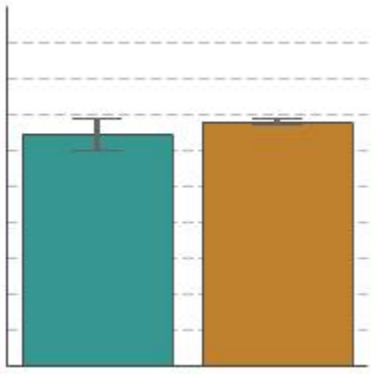
Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of cancer survivors	95% Confidence Interval
	5 years or less since diagnosis	32.4	29.2 - 35.8
	6+ years since diagnosis	35.5	33.1 - 38.0

Compared to Remaining U.S. Population

Comparison of cancer survivors and remaining U.S. population for percentage of adults aged 18 years and older who were overweight, 2017-2021

[Overview graph](#)

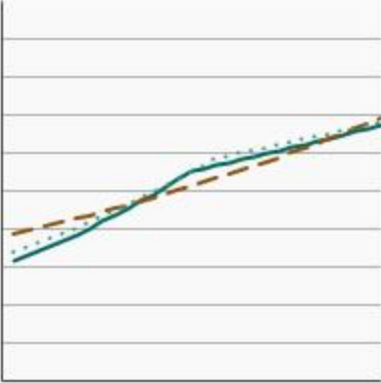
Age Group	Cancer Survivor		Remaining U.S. Population	
	Percent of population	Confidence Interval	Percent of population	Confidence Interval
Ages 18 and older	32.2	30.0 - 34.6	34.0	33.7 - 34.4



Obesity

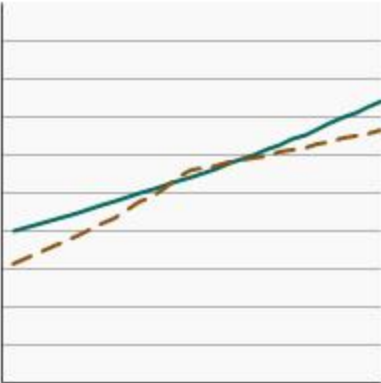
By Sex

Percentage of cancer survivors aged 20 years and older with obesity by sex, 1992-2021

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of cancer survivors	95% Confidence Interval
	Both Sexes	32.5	30.5 - 34.6
	Male	31.8	28.7 - 35.0
	Female	33.6	31.0 - 36.3

By Time Since Cancer Diagnosis

Percentage of cancer survivors aged 20 years and older with obesity by time since cancer diagnosis, 1992-2021

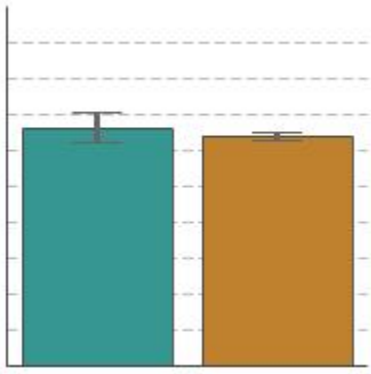
Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2021)	
		Percent of cancer survivors	95% Confidence Interval
	5 years or less since diagnosis	36.1	32.6 - 39.7
	6+ years since diagnosis	31.6	29.0 - 34.3

Compared to Remaining U.S. Population

Comparison of cancer survivors and remaining U.S. population for percentage of adults aged 18 years and older with obesity, 2017-2021

[Overview graph](#)

Age Group	Cancer Survivor		Remaining U.S. Population	
	Percent of population	Confidence Interval	Percent of population	Confidence Interval
Ages 18 and older	33.2	31.1 - 35.3	32.0	31.5 - 32.5



Additional Information on Cancer Survivors and Weight

General Public Resources

- [Facing Forward: Life After Cancer Treatment](#). National Cancer Institute.
- [Health and Well-Being After a Cancer Diagnosis](#). National Cancer Institute, Office of Cancer Survivorship.
- [Obesity and Cancer](#). National Cancer Institute.
- [Survivorship: During and After Treatment](#). American Cancer Society.
- [Take Control of Your Weight](#). American Cancer Society.
- [Division of Nutrition, Physical Activity, and Obesity](#). Centers for Disease Control and Prevention.
- [Overweight & Obesity](#). Centers for Disease Control and Prevention.
- [Physical Activity for a Healthy Weight](#). Centers for Disease Control and Prevention.
- [Body Mass Index Table](#). National Heart, Lung, and Blood Institute.
- [Overweight and Obesity](#). National Heart, Lung, and Blood Institute.

Public Health Resources

- [Obesity Evidence-Based Programs Listing](#). National Cancer Institute.
- [Caring for Cancer Survivors: Obesity and Wellness](#). Centers for Disease Control and Prevention.
- [Obesity in Adults: Screening and Management](#). U.S. Preventive Services Task Force.
- [Obesity in Children and Adolescents: Screening \(June 2017\)](#). U.S. Preventive Services Task Force.

Scientific Reports

- [Weight management and physical activity throughout the cancer care continuum](#). Demark-Wahnefried W, Schmitz KH, Alfano CM, et al. *CA Cancer J Clin*. 2018 Jan;68(1):64-89.
- [Trends in Obesity Among Adults in the United States, 2005 to 2014](#). Flegal KM, Kruszon-Moran D, Carroll MD, Fryar CD, Ogden CL. *JAMA*. 2016 Jun 7;315(21):2284-91.
- [Helping Patients Eat Better During and Beyond Cancer Treatment: Continued Nutrition Management Throughout Care to Address Diet, Malnutrition, and Obesity in Cancer](#). Greenlee H, Santiago-Torres M, McMillen KK, Ueland K, Haase AM. *Cancer J*. 2019 Sep/Oct;25(5):320-328.
- [Obesity, physical activity, and breast cancer survival among older breast cancer survivors in the Cancer Prevention Study-II Nutrition Cohort](#). Maliniak ML, Patel AV, McCullough ML, et al. *Breast Cancer Res Treat*. 2017 Aug 31.
- [Incorporating Weight Management and Physical Activity Throughout the Cancer Care Continuum: Proceedings of a Workshop](#). National Academies of Sciences, Engineering, and Medicine. 2018.
- [American College of Sports Medicine Roundtable Report on Physical Activity, Sedentary Behavior, and Cancer Prevention and Control](#). Patel AV, Friedenreich CM, Moore SC, et al. *Med Sci Sports Exerc*. 2019 Nov;51(11):2391-2402.
- [Association of Obesity with Survival Outcomes in Patients with Cancer: A Systematic Review and Meta-analysis](#). Petrelli F, Cortellini A, Indini A, Tomasello G, Ghidini M, et al. *JAMA Network Open*. 2021; 4(3): e213520.
- [Results of the Exercise and Nutrition to Enhance Recovery and Good Health for You \(ENERGY\) Trial: A Behavioral Weight Loss Intervention in Overweight or Obese Breast Cancer Survivors](#). Rock CL, Flatt SW, Byers TE, et al. *J Clin Oncol*. 2015 Oct 1;33(28):3169-76.
- [Obese Breast Cancer Patients and Survivors: Management Considerations](#). Sheng JY, Sharma D, Jerome G, Santa-Maria CA. *Oncology (Williston Park)*. 2018 Aug 15;32(8):410-7.
- [Diet and supplements in cancer prevention and treatment: clinical evidences and future perspectives](#). Vernieri C, Nichetti F, Raimondi A, et al. *Critical Reviews in Oncology/Hematology*. 2018 March: 123: 57-73.

Statistics

- [National Center for Health Statistics – Obesity and Overweight](#). Centers for Disease Control and Prevention.

Cancer Trends Progress Report

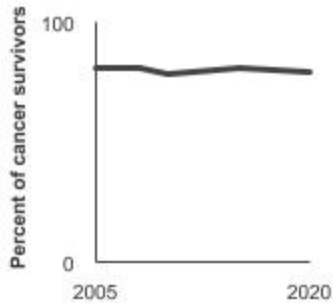
Online Summary of Trends in US Cancer Control Measures

Cancer Survivors and UV Exposure

Data Up to Date as of:

August 2023

In 2020, 79.2% of adult cancer survivors said they usually or always protect themselves from the sun by practicing at least one of three sun protection behaviors.



Background

A cancer survivorship care plan should include guidelines for healthy living, including sun safety and avoidance of indoor and outdoor tanning since some chemotherapies and radiologic treatment can increase sensitivity to ultraviolet (UV) radiation. In addition to those with a history of a primary skin cancer, many cancer survivors with primary cancers at other sites, and especially survivors of childhood cancers, are also at increased risk for secondary skin cancers. Reducing unprotected exposure to the sun, especially exposures resulting in sunburn, and avoiding artificial UV light from indoor tanning devices can lower the risk of skin cancer. Engaging in sun-protective behaviors, such as seeking shade, using protective clothing and sunscreen when outside, or scheduling outside activities before 10am or after 4pm (when UV index is lower) can reduce one's exposure to UV radiation and sunburn. Previous sun burning at any age is a strong predictor of future skin cancer and especially melanoma, the deadliest form of skin cancer.

Measure

Rates reported for cancer survivors are based on the self-reporting of individuals with a cancer history who are interviewed as part of the annual population-based National Health Interview Survey (NHIS).

The percentage of cancer survivors aged 18 years and older who reported that they usually or always practice at least one of three sun-protective behaviors - using sunscreen, wearing protective clothing (a long-sleeve shirt, and/or wide brimmed hat shading the face, ears, and neck, and/or long pants/long skirt), or seeking shade when going outside on a sunny day for more than an hour.

The percentage of cancer survivors aged 18 years and older who have used an indoor tanning device one or more times during the past 12 months.

The percentage of cancer survivors aged 18 years and older who reported having been sunburned in the past 12 months.

Healthy People 2030 Target

- There are no Healthy People 2030 targets regarding protective measures that may reduce the risk of skin cancer, indoor tanning or sunburn.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Data Source

Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey NCI and CDC co-sponsored Cancer Control Supplement, 2005–2020.

In 2019 the NHIS questionnaire was redesigned to increase relevance, enhance data quality, and minimize respondent burden. In addition, the COVID-19 pandemic created challenges conducting in-person interviews for the 2020 NHIS, requiring changes to field procedures to conduct most surveys by telephone, which impacted survey response rates. For details related to the potential impacts of these issues, please refer to [Potential Impact of NHIS Redesign and COVID-19 on the Cancer Trends Progress Report](#).

Trends and Most Recent Estimates

Sun Protection

By Sex

Percentage of cancer survivors aged 18 years and older who always or most of the time protect themselves from the sun by sex, 2005-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of cancer survivors	95% Confidence Interval
	Both Sexes	79.2	77.3 - 81.1
	Male	78.2	75.3 - 80.9
	Female	80.8	78.2 - 83.2

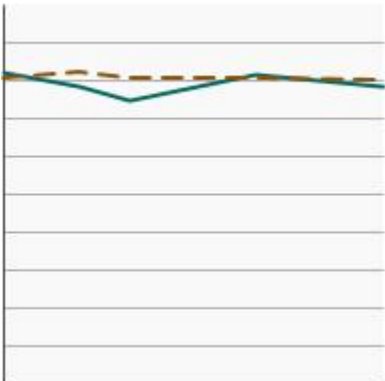
By Age

Percentage of cancer survivors aged 18 years and older who always or most of the time protect themselves from the sun by age, 2005-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of cancer survivors	95% Confidence Interval
	Ages 18-44	69.4	61.0 - 76.7
	Ages 45-64	78.7	75.0 - 81.9
	Ages 65 and older	81.1	79.0 - 83.1

By Time Since Cancer Diagnosis

Percentage of cancer survivors aged 18 years and older who always or most of the time protect themselves from the sun by time since cancer diagnosis, 2005-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of cancer survivors	95% Confidence Interval
	<u>5 years or less since diagnosis</u>	78.3	74.9 - 81.3
	<u>6+ years since diagnosis</u>	79.8	77.4 - 82.0

Indoor Tanning

By Sex

Percentage of cancer survivors aged 18 years and older who used an indoor tanning device in the past year by sex, 2010-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of cancer survivors	95% Confidence Interval
	Both Sexes	10.1	8.8 - 11.5
	Male	9.7	7.9 - 11.8
	Female	10.1	8.5 - 11.9

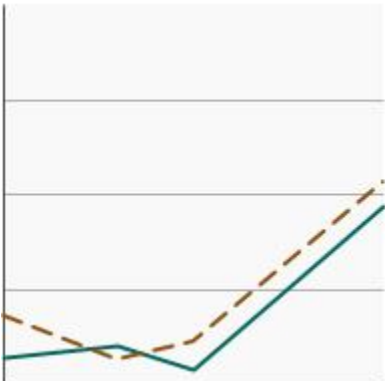
By Age

Percentage of cancer survivors aged 18 years and older who used an indoor tanning device in the past year by age, 2010-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of cancer survivors	95% Confidence Interval
	Ages 18-44	7.4	4.3 - 12.5
	Ages 45-64	9.2	7.2 - 11.6
	Ages 65 and older	11.1	9.4 - 12.9

By Time Since Cancer Diagnosis

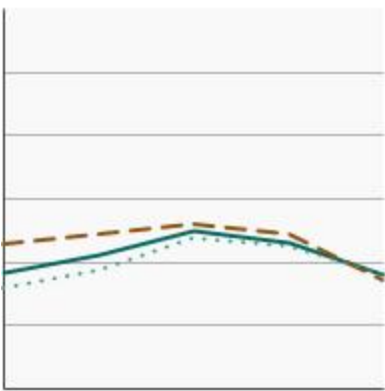
Percentage of cancer survivors aged 18 years and older who used an indoor tanning device in the past year by time since cancer diagnosis, 2010-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of cancer survivors	95% Confidence Interval
	<u>5 years or less since diagnosis</u>	9.3	7.5 - 11.6
	<u>6+ years since diagnosis</u>	10.6	9.0 - 12.5

Sunburn

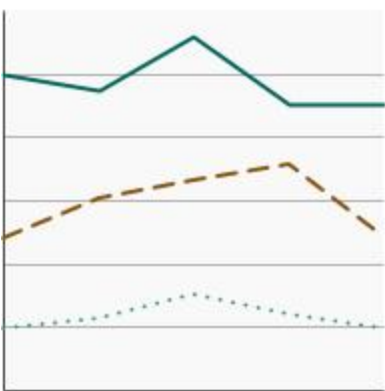
By Sex

Percentage of cancer survivors aged 18 years and older who were sunburned in the past year by sex, 2000-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of cancer survivors	95% Confidence Interval
	Both Sexes	17.8	16.2 - 19.6
	Male	17.0	14.5 - 19.8
	Female	18.1	16.0 - 20.5

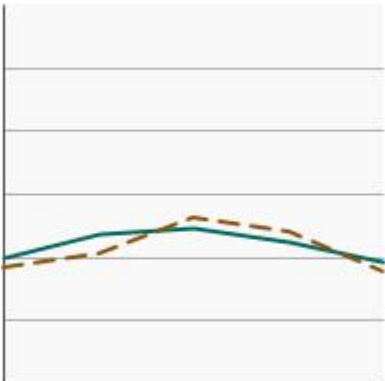
By Age

Percentage of cancer survivors aged 18 years and older who were sunburned in the past year by age, 2000-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of cancer survivors	95% Confidence Interval
	Ages 18-44	45.2	37.3 - 53.3
	Ages 45-64	24.4	20.9 - 28.2
	Ages 65 and older	9.6	8.2 - 11.3

By Time Since Cancer Diagnosis

Percentage of cancer survivors aged 18 years and older who were sunburned in the past year by time since cancer diagnosis, 2000-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Percent of cancer survivors	95% Confidence Interval
	<u>5 years or less since diagnosis</u>	19.4	16.4 - 22.8
	<u>6+ years since diagnosis</u>	17.8	16.0 - 19.9

Cancers Related to UV Exposure

Statistical summaries from NCI's SEER Cancer Stat Fact Sheets:

- [Melanoma of the Skin](#)

Additional Information on UV Exposure

General Public Resources

- [Skin Cancer](#). National Cancer Institute.
- [Skin Cancer](#). American Cancer Society.
- [Skin Cancer](#). Centers for Disease Control and Prevention.
- [Skin Cancer](#). National Council on Skin Cancer Prevention.
- [FDA Proposes Sunscreen Regulation Changes](#). U.S. Food and Drug Administration.
- [Sun protection factor \(SPF\)](#). U.S. Food and Drug Administration.
- [Sunscreen: How to Help Protect Your Skin from the Sun](#). U.S. Food and Drug Administration.
- [Sun Safety](#). U.S. Environmental Protection Agency.

Public Health Resources

- [Melanoma Treatment \(PDQ®\) - Health Professional Version](#). National Cancer Institute.
- [Skin Cancer Treatment \(PDQ®\) - Health Professional Version](#). National Cancer Institute.
- [Sun Safety Evidence-Based Programs Listing](#). National Cancer Institute.
- [Vitamin D and Calcium: A Systematic Review of Health Outcomes \(Update\)](#). AHRQ Publication No. 14-E004-EF September 2014. Evidence Report/Technology Assessment Number 217.
- [Surgeon General's Call to Action to Prevent Skin Cancer](#). Centers for Disease Control and Prevention.
- [Skin cancer: multicomponent community-wide interventions](#). Community Preventive Services Task Force.
- [Stratosphere: UV index](#). National Weather Service: Climate Prediction Center.
- [Code of Federal Regulations Title 21, Volume 76, Number 117, Part 352: Sunscreen Drug Products for Over-the-Counter Human Use \(April 2019\)](#). U.S. Food and Drug Administration.
- [Code of Federal Regulations Title 21, Volume 76, Number 117, Part 201: Labeling \(July 2018\)](#). U.S. Food and Drug Administration.
- [FDA proposed rule: sunscreen drug products for over-the-counter-human use; proposal to amend and lift stay on monograph](#). U.S. Food and Drug Administration.
- [Skin Cancer Prevention: Behavioral counseling](#). U.S. Preventive Services Task Force.

Scientific Reports

- [Association of occupational sun safety policy and actions in state transportation sector in the United States](#). Buller DB, Walkosz BJ, Olivas S, et al. Am J Ind Med. 2021 Apr;64(4):274-282.
- [Interdisciplinary perspectives on sun safety](#). Geller AC, Jablonski NG, Pagoto SL, et al. JAMA Dermatol. 2018;154(1):88-92.
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- [Estimated cost of sunburn-associated visits to US hospital emergency departments](#). Guy GP, Berkowitz Z, and Watson M. JAMA Dermatol. 2017;153(1):90-92.
- [Trends in indoor tanning and its association with sunburn among US adults](#). Guy GP, Watson M, Seidenberg AB et al. J Am Acad Dermatol. 2017;76(6):1191-1193.
- [The potential impact of reducing indoor tanning on melanoma prevention and treatment costs in the United States: an economic analysis](#). Guy GP, Zhang Y, Ekwueme DU, et al. J Am Acad Dermatol. 2017;76(2):226-233.
- [Prevalence of sun protection use and sunburn and association of demographic and behavioral characteristics with sunburn among US adults](#). Holman DM, Ding H, Guy GP et al. JAMA Dermatol. 2018; 154(5):561-568.

- [Health Beliefs About UV and Skin Cancer Risk Behaviors. Cancer Control. Julian A, Thorburn S, Geldhof GJ. 2020 Jan-Dec;27\(4\):1073274819894008.](#)
- [Benefit–Cost Analysis of the Danish Sun Safety Campaign 2007–2015: Cost Savings from Sunburn and Sunbed Use Reduction and Derived Skin Cancer Reductions 2007–2040 in the Danish Population. Køster B, Meyer MKH, Søgaard J, Dalum P. Pharmacoecoon Open. 2020 Sep;4\(3\):419-425.](#)
- [Prevalence and predictors of total-body skin examination among US adults: 2005 National Health Interview Survey. Lakhani NA, Shaw KM, Thompson T, et al. J Am Acad Dermatol. 2011; 65\(3\): 645-648.](#)
- [Prevalence and correlates of skin self-examination practices among cutaneous malignant melanoma survivors. Manne SL, Heckman CJ, Kashy D, et al. Prev Med Rep. 2020 May 1;19:101110.](#)
- [Effect of Sunscreen Application Under Maximal Use Conditions on Plasma Concentration of Sunscreen Active Ingredients: A Randomized Clinical Trial. Matta MK, Zusterzeel R, Pilli NR, et al. JAMA. 2019;321\(21\):2082-2091.](#)
- [Decision tree model v traditional measures to identify patterns of sun-protective behaviors and sun sensitivity associated with sunburn. Morris KL and Perna FM. JAMA Dermatol. 2018;154\(8\):897-902.](#)
- [Environmental effects of stratospheric ozone depletion, UV radiation, and interactions with climate change: UNEP Environmental Effects Assessment Panel, Update 2020. Neale RE, Barnes PW, Robson TM, et al. Photochem Photobiol Sci. 2021 Jan;20\(1\):1-67.](#)
- [The effect of sunscreen on vitamin D: a review. Neale RE, Khan SR, Lucas RM, et al. Br J Dermatol. 2019 Nov;181\(5\):907-915.](#)
- [Remote skin self-examination training of melanoma survivors and their skin check partners: A randomized trial and comparison with in-person training. Robinson JK, Reavy R, Mallett KA, Turrisi R. Cancer Med. 2020 Oct;9\(19\):7301-7309.](#)
- [Melanoma Skin Self-Examination Education During Mammography: Health Burden of Women Impairs Implementation. Robinson JK, Brown Z, Spring B. J Cancer Educ. 2020 Feb 24;10.1007/s13187-020-01714-4.](#)
- [Community-wide interventions to prevent skin cancer: two community guide systematic reviews. Sandhu PK, Elder R, Patel M, et al. Am J Prev Med. 2016;51\(4\):531-9.](#)
- [Implementation of the SunSmart program and population sun protection behaviour in Melbourne, Australia: Results from cross-sectional summer surveys from 1987 to 2017. Tabbakh T, Volkov A, Wakefield M, Dobbins S. PLoS Med. 2019;16\(10\):e1002932.](#)
- [Walking and Sun Protective Behaviors: Cross-Sectional Associations of Beneficial Health Factors. Tribby CP, Perna FM, Berrigan D. Int J Environ Res Public Health. 2019 Jul 3;16\(13\):2361.](#)

Statistics

- [SEER Cancer Statistics Review, National Cancer Institute.](#)
- [National Health Interview Survey. Centers for Disease Control and Prevention, National Center for Health Statistics.](#)

Cancer Trends Progress Report

Online Summary of Trends in US Cancer Control Measures

End of Life

The ultimate measure of our nation's success against cancer is how quickly and how far we can lower the death rate from this group of diseases. This report provides national data not only on cancer mortality by major sites, sex, and race/ethnicity, but also in terms of the years of life lost to cancer—a measure that emphasizes the tragedy of common cancers that strike people at a relatively young age.

The good news is that the rate of death from cancer in the United States continues to decline among both men and women, among all major racial and ethnic groups, and for the most common types of cancer. It is our job as a nation to maintain and accelerate this trend.

- [Mortality](#)
- [Years of Life Lost](#)

Cancer Trends Progress Report

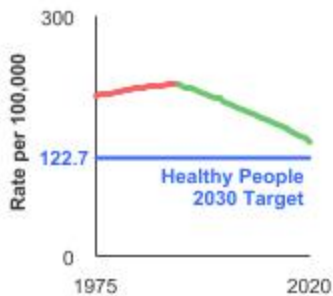
Online Summary of Trends in US Cancer Control Measures

Mortality

Data Up to Date as of:

August 2023

In 2020, the death rate for all cancers combined was 144.1 per 100,000 people per year.



Background

The rate of death from cancer in the United States continues to decline among both men and women, among all major racial and ethnic groups, and for the most common types of cancer, including [lung](#), [colorectal](#), [breast](#), and [prostate](#) cancers. The [Annual Report to the Nation on the Status of Cancer](#) shows that the death rate from all cancers combined is continuing the decline that began in the early 1990s.

Still, in 2020 cancers of the female breast, prostate, lung, colorectal, and pancreas accounted for over one-half (51 percent) of all cancer deaths in the United States. Lung cancer alone claimed 23 percent of lives lost to cancer.

Measure

The number of cancer deaths per 100,000 people per year, age-adjusted to a U.S. 2000 standard population.

Healthy People 2030 Target

- Reduce the overall cancer death rate to 122.7 cancer deaths per 100,000 people per year.

Top 4 Cancer Sites

- Reduce the colorectal cancer death rate to 8.9 deaths per 100,000 people per year.
- Reduce the lung cancer death rate to 25.1 deaths per 100,000 people per year.
- Reduce the female breast cancer death rate to 15.3 deaths per 100,000 females per year.
- Reduce the prostate cancer death rate to 16.9 deaths per 100,000 males per year.

[Healthy People 2030](#) is a set of goals set forth by the Department of Health and Human Services.

Note: Goals are indicated as blue line on Detailed Trend Graphs.

Data Source

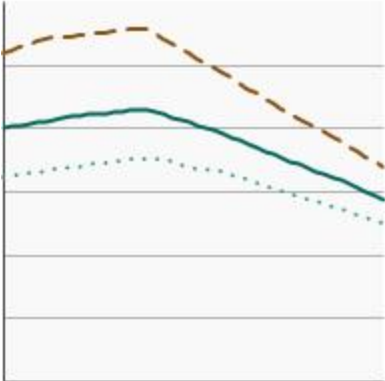
Centers for Disease Control and Prevention, National Center for Health Statistics, 1975–2020.

Trends and Most Recent Estimates

All Cancer Sites Combined

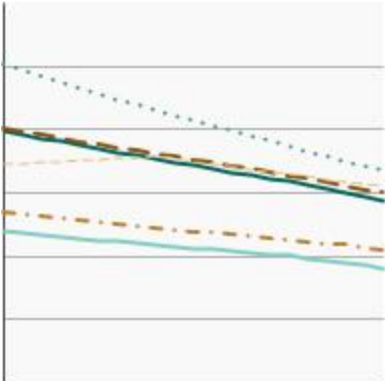
By Sex

U.S. death rates for all cancers by sex, 1975-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Rate per 100,000	95% Confidence Interval
	Both Sexes	144.1	143.7 - 144.5
	Male	170.3	169.7 - 170.9
	Female	124.5	124.1 - 125.0

By Race/Ethnicity

U.S. death rates for all cancers by race/ethnicity, 2000-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Rate per 100,000	95% Confidence Interval
	All Races/Ethnicities	144.1	143.7 - 144.5
	Non-Hispanic White	149.9	149.5 - 150.3
	Non-Hispanic Black	166.8	165.5 - 168.0
	Hispanic	103.5	102.5 - 104.5
	Non-Hispanic Asian/Pacific Islander	91.3	90.0 - 92.6
	Non-Hispanic American Indian/Alaska Native	153.8	147.7 - 160.2

Top 4 Cancer Sites

Comparison of Top Cancer Sites

U.S. death rates for the most common cancers, 1975-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Rate per 100,000	95% Confidence Interval
	Colon and Rectum	12.6	12.5 - 12.7
	Lung and Bronchus	31.8	31.7 - 32.0
	Female Breast	19.1	18.9 - 19.3
	Prostate	18.5	18.3 - 18.7

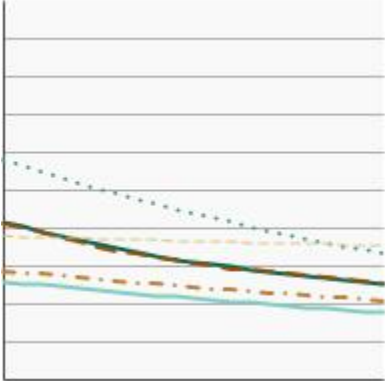
Colon and Rectum Cancer by Sex

U.S. death rates for colon and rectum cancer by sex, 1975-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Rate per 100,000	95% Confidence Interval
	Both Sexes	12.6	12.5 - 12.7
	Male	15.1	15.0 - 15.3
	Female	10.5	10.3 - 10.6

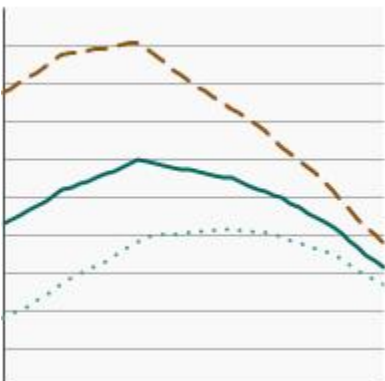
Colon and Rectum Cancer by Race/Ethnicity

U.S. death rates for colon and rectum cancer by race/ethnicity, 2000-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Rate per 100,000	95% Confidence Interval
	All Races/Ethnicities	12.6	12.5 - 12.7
	Non-Hispanic White	12.6	12.5 - 12.8
	Non-Hispanic Black	16.7	16.3 - 17.1
	Hispanic	10.4	10.1 - 10.7
	Non-Hispanic Asian/Pacific Islander	8.9	8.5 - 9.3
	Non-Hispanic American Indian/Alaska Native	18.0	15.9 - 20.3

Lung and Bronchus Cancer by Sex

U.S. death rates for lung and bronchus cancer by sex, 1975-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Rate per 100,000	95% Confidence Interval
	Both Sexes	31.8	31.7 - 32.0
	Male	38.1	37.8 - 38.3
	Female	26.9	26.7 - 27.2

Lung and Bronchus Cancer by Race/Ethnicity

U.S. death rates for lung and bronchus cancer by race/ethnicity, 2000-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Rate per 100,000	95% Confidence Interval
	All Races/Ethnicities	31.8	31.7 - 32.0
	Non-Hispanic White	35.0	34.7 - 35.2
	Non-Hispanic Black	33.4	32.8 - 33.9
	Hispanic	14.1	13.7 - 14.5
	Non-Hispanic Asian/Pacific Islander	18.5	17.9 - 19.1
	Non-Hispanic American Indian/Alaska Native	31.3	28.5 - 34.2

Female Breast Cancer by Race/Ethnicity

U.S. death rates for female breast cancer by race/ethnicity, 2000-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Rate per 100,000	95% Confidence Interval
	All Races/Ethnicities	19.1	18.9 - 19.3
	Non-Hispanic White	19.4	19.1 - 19.6
	Non-Hispanic Black	26.4	25.7 - 27.0
	Hispanic	13.1	12.6 - 13.6
	Non-Hispanic Asian/Pacific Islander	11.4	10.8 - 12.1
	Non-Hispanic American Indian/Alaska Native	16.4	13.7 - 19.3

Prostate Cancer by Race/Ethnicity

U.S. death rates for prostate cancer by race/ethnicity, 2000-2020

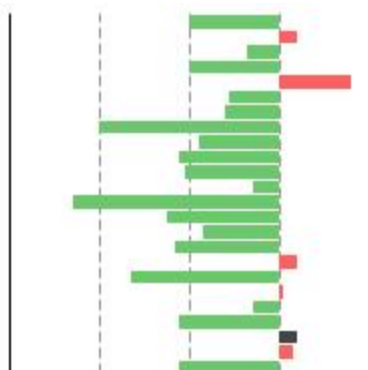
Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Rate per 100,000	95% Confidence Interval
	All Races/Ethnicities	18.5	18.3 - 18.7
	Non-Hispanic White	17.6	17.4 - 17.8
	Non-Hispanic Black	36.5	35.4 - 37.5
	Hispanic	14.2	13.6 - 14.9
	Non-Hispanic Asian/Pacific Islander	8.8	8.2 - 9.5
	Non-Hispanic American Indian/Alaska Native	16.6	13.3 - 20.4

Recent Trends for Common Cancer Sites

2016-2020 trends (Average Annual Percent Change) in U.S. death rates for common cancer sites

[Overview graph](#)

Cancer Site	Average Annual Percent Change
All Sites	-2.0*
Brain and Other Nervous System	0.4*
Cervix Uteri	-0.7*
Colon and Rectum	-2.0*
Corpus Uteri and NOS	1.6*
Esophagus	1.0
Female Breast	-1.2*
Hodgkin Lymphoma	-4.0*
Kidney and Renal Pelvis	-1.8*
Larynx	-2.2*
Leukemia	-2.1*
Liver and IBD	-0.6*
Lung and Bronchus	-4.6*
Melanoma of the Skin	-2.5*
Myeloma	-1.7*
Non-Hodgkin Lymphoma	-2.3*
Oral Cavity and Pharynx	0.4*
Ovary	-3.3*
Pancreas	0.1*
Prostate	-0.6*
Stomach	-2.2*
Testis	0.4
Thyroid	0.3*
Urinary Bladder	-2.2*



* The Average Annual Percent Change (AAPC) is statistically significant.

Additional Information on Mortality

General Public Resources

- [Advanced Cancer](#). National Cancer Institute.
- [End-of-Life Care for People Who Have Cancer](#). National Cancer Institute.

- [Hospice Care](#). National Cancer Institute.
- [Advance Directives](#). American Cancer Society.
- [Hospice Care](#). American Cancer Society.
- [Nearing the End of Life](#). American Cancer Society.

Public Health Resources

- [Planning the Transition to End-of-Life Care in Advanced Care \(PDQ®\)-Health Professional Version](#). National Cancer Institute.
- [Resources for Health Professionals](#). National Cancer Institute.

Scientific reports

- [Annual Report to the Nation on the Status of Cancer](#). National Cancer Institute.

Statistics

- [SEER Cancer Statistics Review](#). National Cancer Institute.
- [SEER*Explorer: An interactive website that provides easy access to a wide range of SEER cancer statistics](#). National Cancer Institute.
- [State Cancer Profiles](#). National Cancer Institute.
- [Cancer Facts and Figures](#). American Cancer Society.
- [Colorectal Cancer Mortality Projection](#). Cancer Intervention Surveillance Network.
- [National Vital Statistics Reports—Deaths: Final Data for 2016](#). Centers for Disease Control and Prevention.
- [National Vital Statistics System—Mortality Data](#). Centers for Disease Control and Prevention.

Cancer Trends Progress Report

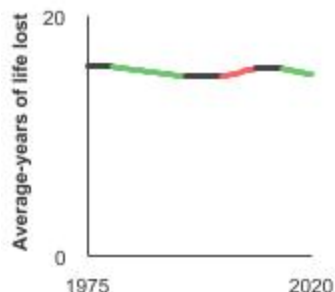
Online Summary of Trends in US Cancer Control Measures

Years of Life Lost

Data Up to Date as of:

August 2023

In 2020, the average years of life lost due to cancer was 15.2.



Background

Death rates alone do not provide a complete picture of the burden that deaths impose on the population. Another useful measure that may add a different dimension is years of life lost (YLL)—the years of life lost because of early death from a particular cause or disease. YLL caused by cancer helps to describe the extent to which the lives of people with cancer are cut short.

Measure

Years of Life Lost is measured as the difference between the actual age stemming from the disease/cause and the expected age of death due to a particular disease or cause. Specifically, this measure is estimated by linking life table data to each death of a person of a given age and sex. The life table permits a determination of the number of additional years an average person of that age, race, and sex would have been expected to live. Average Years of Life Lost represents Years of Life Lost divided by the number of people who lost their lives.

Healthy People 2030 Target

There is no Healthy People 2030 target for this measure.

Healthy People 2030 is a set of goals set forth by the Department of Health and Human Services.

Data Source

Centers for Disease Control and Prevention, National Center for Health Statistics, 1975-2020.

Trends and Most Recent Estimates

Average Years of Life Lost

By Sex

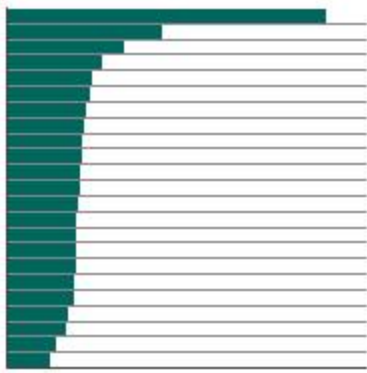
Average-years of life lost due to cancer by sex, 1975-2020

Overview Graph	Detailed Trend Graphs	Most Recent Estimates (2020)	
		Average-years of life lost	95% Confidence Interval
	Both Sexes	15.2	Not available
	Male	14.2	Not available
	Female	16.3	Not available

Cancer, All Races, Both Sexes

Average-years of life lost in 2020 due to cancer, total U.S., all races, both sexes

[Overview graph](#)



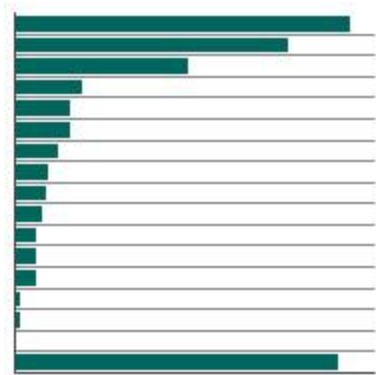
Cause of death	Years of life lost
Childhood Ages (0-14)	71.3
Testis	34.7
Cervix Uteri	26.2
Brain & ONS	21.5
Hodgkin Lymphoma	19.1
Breast (Female)	18.8
Ovary	17.7
Corpus & Uterus, NOS	17.5
Oral Cavity & Pharynx	16.9
Liver & IBD	16.8
Melanoma of the Skin	16.6
Stomach	16.5
Esophagus	16.0
Colon & Rectum	15.7
Leukemia	15.6
All Sites Combined	15.6
Kidney & Renal Pelvis	15.5
Pancreas	15.0
Lung & Bronchus	15.0
Non-Hodgkin Lymphoma	13.7
Myeloma	13.5
Urinary Bladder	11.1
Prostate	9.9

Person-years of Life Lost

All Causes of Death, All Races, Both Sexes

Person-years of life lost in 2020 by cause of death, total U.S., all races, both sexes

[Overview graph](#)



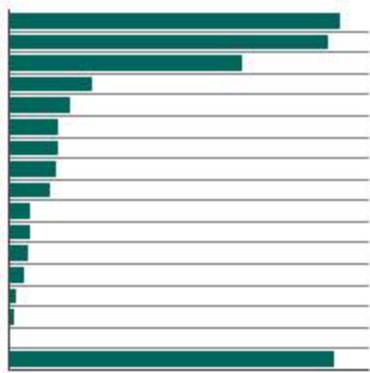
Cause of death	Years of life lost (in thousands)
Malignant Cancers	9,319
Heart Disease	7,635
Accidents	4,809
Chronic Lung Disease	1,883
Suicide & Self-Inflicted Injury	1,539
Cerebrovascular	1,539
Diabetes Mellitus	1,223
Cirrhosis	921
Homicide	864
Alzheimers Disease	751
Pneumonia & Influenza	614
Nephritis & Nephrosis	606
Septicemia	589
HIV	174
Aortic Aneurysm & Dissection	140
Atherosclerosis	49
All Other Causes	9,020

All Causes of Death, All Races, Males

Person-years of life lost in 2020 by cause of death, total U.S., all races, males

[Overview graph](#)

	Cause of death	Years of life lost (in thousands)
	Malignant Cancers	4,607
	Heart Disease	4,454
	Accidents	3,240
	Suicide & Self-Inflicted Injury	1,157
	Chronic Lung Disease	861
	Cerebrovascular	705
	Homicide	686
	Diabetes Mellitus	675
	Cirrhosis	570
	Pneumonia & Influenza	305
	Nephritis & Nephrosis	304
	Septicemia	283
	Alzheimers Disease	231
	HIV	122
	Aortic Aneurysm & Dissection	89
	Atherosclerosis	24
	All Other Causes	4,524

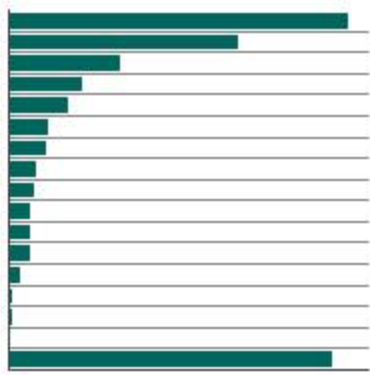


All Causes of Death, All Races, Females

Person-years of life lost in 2020 by cause of death, total U.S., all races, females

[Overview graph](#)

	Cause of death	Years of life lost (in thousands)
	Malignant Cancers	4,711
	Heart Disease	3,181
	Accidents	1,569
	Chronic Lung Disease	1,022
	Cerebrovascular	833
	Diabetes Mellitus	549
	Alzheimers Disease	519
	Suicide & Self-Inflicted Injury	382
	Cirrhosis	351
	Pneumonia & Influenza	309
	Septicemia	306
	Nephritis & Nephrosis	302
	Homicide	178
	HIV	52
	Aortic Aneurysm & Dissection	51
	Atherosclerosis	25
	All Other Causes	4,496

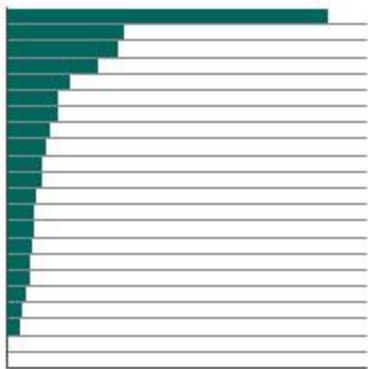


Cancer, All Races, Both Sexes

Person-years of life lost in 2020 due to cancer, total U.S., all races, both sexes

[Overview graph](#)

	Cause of death	Years of life lost (in thousands)
	Lung & Bronchus	2,230
	Colon & Rectum	820
	Breast (Female)	778
	Pancreas	643
	Liver & IBD	447
	Leukemia	364
	Brain & ONS	362
	Prostate	302
	Non-Hodgkin Lymphoma	278
	Ovary	252
	Esophagus	248
	Kidney & Renal Pelvis	214
	Stomach	189
	Corpus & Uterus, NOS	188
	Urinary Bladder	185
	Oral Cavity & Pharynx	172
	Myeloma	165
	Melanoma of the Skin	136
	Cervix Uteri	110
	Childhood Ages (0-14)	94
	Hodgkin Lymphoma	19
	Testis	15

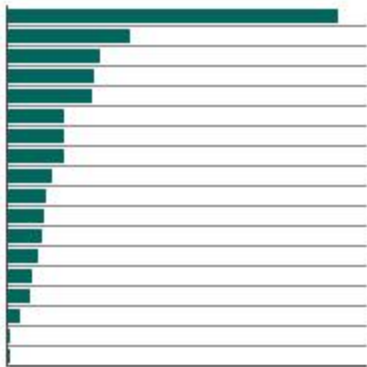


Cancer, All Races, Males

Person-years of life lost in 2020 due to cancer, total U.S., all races, males

[Overview graph](#)

	Cause of death	Years of life lost (in thousands)
	Lung & Bronchus	1,155
	Colon & Rectum	433
	Pancreas	327
	Liver & IBD	303
	Prostate	302
	Leukemia	202
	Brain & ONS	199
	Esophagus	198
	Non-Hodgkin Lymphoma	158
	Kidney & Renal Pelvis	140
	Urinary Bladder	130
	Oral Cavity & Pharynx	122
	Stomach	110
	Myeloma	88
	Melanoma of the Skin	85
	Childhood Ages (0-14)	51
	Testis	15
	Hodgkin Lymphoma	11

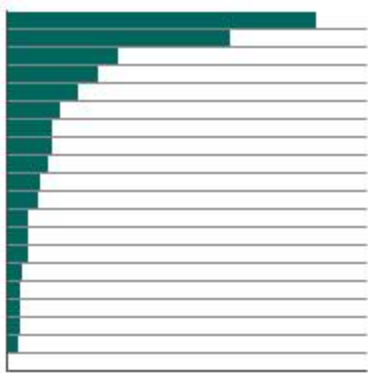


Cancer, All Races, Females

Person-years of life lost in 2020 due to cancer, total U.S., all races, females

[Overview graph](#)

	Cause of death	Years of life lost (in thousands)
	Lung & Bronchus	1,075
	Breast (Female)	778
	Colon & Rectum	387
	Pancreas	316
	Ovary	252
	Corpus & Uterus, NOS	188
	Brain & ONS	163
	Leukemia	161
	Liver & IBD	144
	Non-Hodgkin Lymphoma	120
	Cervix Uteri	110
	Stomach	79
	Myeloma	77
	Kidney & Renal Pelvis	74
	Urinary Bladder	55
	Melanoma of the Skin	50
	Oral Cavity & Pharynx	50
	Esophagus	50
	Childhood Ages (0-14)	44
	Hodgkin Lymphoma	8



Additional Information on Years of Life Lost

Public Health Resources

- [For Health Care Professionals](#). National Cancer Institute..
- [Resources for Health Professionals](#). National Cancer Institute.

Scientific reports

- [Annual Report to the Nation on the Status of Cancer](#). National Cancer Institute.

Statistics

- [SEER Cancer Statistics Review](#). National Cancer Institute.
- [Life Tables](#). U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics National Vital Statistics System.