Cancer Trends Progress Report – 2011/2012 Update

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Director's Message

One of the National Cancer Institute's important duties is communicating our nation's progress against cancer to the public. This 2011/2012 update to the *Cancer Trends Progress Report* is an important part of that dissemination process. Here you will find a Web site that provides up-to-date information on a range of cancer control topics—from disease prevention to the impact of deaths from cancer—and data that track the successful application of cancer research into practice.

The *Cancer Trends Progress Report — 2011/2012 Update* 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, including 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 Institutes of Health's National Institute on Alcohol Abuse and Alcoholism. The content, design, and production of this report are the results of a collaboration among federal and state agency partners, consumer advocates, the American Cancer Society, and others.

As the report details, the nation is making progress toward major cancer-related targets. Most prominently, death rates and incidence rates for the four most common cancers (prostate, breast, lung, and colorectal), as well as for all cancers combined, continue to decline. Because lung cancer is the country's number one cancer killer, smoking is a major focus of this update. Adult cigarette smoking prevalence has been slowly declining since 1991, and smoking prevalence among adolescents has declined since the late 1990s, but one in five adults and adolescents is still a smoker. Moreover, younger cancer survivors are smoking more than older cancer survivors and those in the general population. Non-melanoma skin cancers have continually led the list of incident cancers, and incidence rates for melanoma of the skin are still rising. I am happy to note that, perhaps due to ongoing campaigns, sun protective behaviors have increased since 2005—for example, teen indoor tanning has decreased. However, indoor tanning by older teen girls remains high and young adults, especially young men, show much lower levels of sun protective behaviors. The adult prevalence of sunburn has increased since 2005, indicating that while protective measures have increased, they may not yet be fully compliant with proper usage or there is an increase in length of sun exposure.

We have much work to do if we are truly to make significant progress in our fight against cancer, as this update notes. Incidence rates for some cancers, such as melanoma of the skin, are still rising. Lung cancer incidence rates in women also continue to rise, but not as rapidly as before. This rising incidence is not surprising given that while the percent of smokers attempting to quit smoking each year has risen to 50 percent, quitting success rates have been low and have recently shown only a slight improvement. The connection between cancer and obesity is a concern as more Americans are overweight or obese, and leisure time physical activity is not increasing. Other nutritional and dietary factors are also of concern: alcohol consumption has risen slightly since the mid 1990s, fruit and vegetable intake is not increasing, and red meat and fat consumption are not decreasing, all of which have been cited as possible links to increased risk of cancer. Unexplained cancer-related health disparities remain among population subgroups, and we must address this issue forcefully. For example, Blacks and people with low socioeconomic status have the highest rates of both new cancers and cancer deaths.

Finally, the economic burden of cancer 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.

We at NCI, along with our *Cancer Trends Progress Report* partners, hope that you will find this report to be a valuable reference tool and a stimulus for action. We must not forget that the numbers in this report reflect the lives and struggles of millions of our fellow citizens. NCI remains committed to its vital work, on behalf of each one of them.

Harold Varmus, M.D.
Director, National Cancer Institute

Report Highlights

Major Conclusions

The nation is making progress toward major cancer-related Healthy People targets.

- Death rates for the four most common cancers (prostate, female breast, lung, and colorectal), as well as for all cancers combined, continue to decline.
- The rate of cancer incidence has declined since 1998.
- Length of cancer survival has increased for all cancers combined. For all sites, the proportion of people surviving five years from diagnosis in 2003 (most recent year with five-year follow up) was 66.7 percent. Improvement in survival must continue to meet the Healthy People 2020 objective for five year survival of 72.8 percent.
- Adult cigarette smoking prevalence has been slowly declining since 1991, while smoking prevalence among adolescents has declined since the late 1990s. Despite these declines, one in five adults and adolescents is a smoker.
- Substantial decreases in secondhand smoke exposure have been realized since the beginning of the 1990s for all subgroups and across a variety of measures. This includes biological measures, as well as work place policies, rules about smoking in the home, and, more recently, through state and local smoke-free indoor air legislation.
- More adults report getting some leisure time physical activity.
- Adult sun protective behaviors have risen slightly since 2005, but young adults, especially young men, show much lower levels of this behavior.
- Teen indoor tanning has decreased since 2005. However, recent use by girls, especially non-Hispanic white older teen girls remains high. Typically, these older teen girls are not protected by state indoor tanning age restrictions.

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

- Incidence rates of some cancers are rising including melanoma of the skin, non-Hodgkin lymphoma, childhood cancer, cancers of the kidney and renal pelvis, leukemia, thyroid, pancreas, liver and intrahepatic bile duct, testis, myeloma, and esophagus.
- Lung cancer incidence rates in women continue to rise but not as rapidly as before.
- Death rates for cancer of the pancreas, liver, intrahepatic bile duct, and corpus and unspecified uterus are increasing.
- While the percent of smokers attempting to quit smoking each year has recently risen, now 50 percent, successful quitting percentages have been low and recently have shown only slight improvement.
- While initiation rates have declined for 12 to 17 year olds, initiation rates among 18-25 year olds have risen.
- Although progress has been made in all segments of the population, subgroups including children living in homes with smokers, young adults, subgroups of nonsmoking workers (for example, blue collar occupations and hospitality industry), and non-Hispanic blacks have higher rates of exposure to secondhand smoke.
- Dentists are half as likely as physicians to advise their patients to quit smoking.
- More people are overweight and obese.
- Alcohol consumption has risen slightly since the mid 1990s. Fruit and vegetable intake is not increasing. Red meat and fat consumption are not decreasing.

- Adult indoor tanning is an issue, especially for young females with more than one in five having engaged in such practice within the past 12 months. Use is lower for Hispanic females, males in general, and is lowest among non-Hispanic blacks.

- Despite some recent signs of increase in adult sun protective behaviors, adult sunburn percentages have risen since 2005.

- Cancer treatment spending continues to rise along with total health care spending.

- Unexplained cancer-related health disparities remain among population subgroups. For example, blacks have elevated rates of both new cancers and cancer deaths.

- Pap test use peaked in 2000 at 81 percent. Since then, it has fallen. Rates were 74 percent in 2010. Mammography rates peaked in 2000 at 69 percent. Rates dropped slightly between 2003 and 2005. Between 2008 and 2010, mammography rates stabilized at 67 percent; screening for colorectal cancer remains lower than Pap testing and mammography, despite its proven effectiveness. However, use of colorectal cancer tests is increasing.

Introduction

The nation's investment in cancer research is making a difference.

- The U.S. cancer death rate first began to drop in 1992.
- The incidence rates of all new cancers combined has been falling since 1999, after adjusting for delayed reporting.
- Many people who have had cancer live longer and enjoy a better quality of life than was possible years ago.

However, cancer remains a major public health problem that profoundly affects the more than 1 million people diagnosed each year, as well as their families and friends.

- The incidence rates of melanoma of the skin, kidney cancer, thyroid cancer, and cancer of the liver are rising, along with non-Hodgkin lymphoma, childhood cancers, leukemia, pancreatic cancer, testicular cancer, and esophageal cancer. 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 our nation's population grows and ages, more people are expected to get cancer. Meanwhile, the costs of cancer diagnosis and treatment are on the rise. The combination of these trends will accelerate the national costs of cancer treatment.

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—2011/2012 Update* is the sixth in 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* was designed to help the nation review past efforts and plan future ones. The public can use the report to better understand the nature and results of 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—2011/2012 Update* 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 red meat intake and exposure to sun and chemicals in the environment.
- Early Detection. Screening tests provide ways to find cancers early, when there is the best chance for cure. This section describes the proportion and types of people using recommended screening tests.
- 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 these areas.
- Treatment. This section explains the current status of treatment measures and describes the kinds of measures that are emerging from ongoing research and monitoring activities.
- Life After Cancer. This section addresses trends in the proportion of cancer patients who are alive 5 years after their diagnosis, the costs of cancer care, and smoking behavior among survivors.
- End of Life. This section includes the rate of deaths (mortality) from cancer and the estimated number of years of life lost (person-years of life lost) as a result of cancer.

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

Most of the measures for age-adjusted cancer death rates in this report are identical to those presented in Healthy People 2020, a comprehensive set of 10-year health objectives for the nation sponsored by the U.S. Department of Health and Human Services. This enabled us to show the nation's progress relative to cancer-related targets for Healthy People 2020.

How Data Were 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 (http://statecancerprofiles.cancer.gov). The report includes more measures for prevention than for other segments of the continuum, because of the potential of prevention measures to positively impact national progress to reduce the burden of cancer. Some measures such as "quality of life" were not included in this report, even though they are important in assessing the cancer burden, because there is no current consensus on how best to track these measures on a population basis over time.

The data in the *Cancer Trends Progress Report—2011/2012 Update* come from a variety of systems and surveys with different collection techniques and reporting times, so time periods may vary. The starting point or baseline year against which to measure how well the nation is progressing toward the Healthy People 2020 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.

Cancer Trends Progress Report—2011/2012 Update, National Cancer Institute, NIH, DHHS, Bethesda, MD, April 2010, http://progressreport.cancer.gov

Trends-at-a-Glance

The Trends-at-a-Glance offers an overview of trend direction measure by measure. Trends noted as stable or NSC (non-significant change) are not changing significantly. The difference between "stable" and "NSC" is based on statistical computations described in the Methodology for Characterizing Trends appendix.

The table below provides a snapshot of recent trends (as characterized by the Average Annual Percent Change (AAPC)) for measures included in this report. A light green background indicates that the recent trend is moving in the desired direction. A light red background indicates that the recent trend is **not** moving in the desired direction. 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 Trend in the "Recent Trend" column to read more about the measure. For a more complete summary of the measures, including their progress compared with the Healthy People 2020 target (where one exists), see the Summary Tables by topic.

Measure	Desired Direction	Recent Trend*	Recent Trend Time Period
PREVENTION			
Age at smoking initiation	Rising	Falling	2006-2010
Youth smoking	Falling	NSC	2005-2009
Adult smoking	Falling	Falling	2006-2010
• Non-Hispanic whites	Falling	Falling	2006-2010
• Non-Hispanic blacks	Falling	Falling	2006-2010
• Hispanic	Falling	Falling	2006-2010
Quitting smoking	Rising	Rising	2006-2010
• Non-Hispanic whites	Rising	Rising	2006-2010
• Non-Hispanic blacks	Rising	Rising	2006-2010
• Hispanic	Rising	Rising	2006-2010
Doctor advice to quit smoking	Rising	Rising	2002-2010
Dentist advice to quit smoking	Rising	NSC	2002-2010
Medicaid coverage of tobacco dependence tratments	Rising	Rising	2006-2010
Fruit and vegetable consumption	Rising	NSC	2000-2004
Red meat consumption	Falling	NSC	2000-2004
Fat consumption	Falling	Rising	2004-2008
Alcohol consumption	Falling	Rising	2006-2009
No leisure-time physical activity	Falling	Falling	2006-2010
• Non-Hispanic whites	Falling	Falling	2006-2010
• Non-Hispanic blacks	Falling	Falling	2006-2010
• Hispanic	Falling	Falling	2006-2010
Weight (both sexes)			
• Healthy weight	Rising	Falling	2006-2010
• Overweight	Falling	Stable	2006-2010
• Obese	Falling	Rising	2006-2010
Sun protection	Rising	NSC	2005-2010
Secondhand smoke			
• Environmental tobacco smoke	Falling	NSC	2004-2008
• Smoke-free work environment	Rising	Rising	2003-2010

• Smoke-free indoor air laws	Rising	Rising	2007-2011
Pesticide levels in the blood	Falling	AAPC Unavailable	N/A
Dioxin levels in the human body	Falling	AAPC Unavailable	N/A
Tobacco company marketing expenditures	Falling	Falling	2004-2008
EARLY DETECTION			
Breast cancer screening	Rising	Stable	2005-2010
Cervical cancer screening	Rising	Falling	2005-2010
Colorectal cancer screening			
• Fecal Occult Blood Test (FOBT)	Rising	Falling	2005-2010
• Endoscopy	Rising	Rising	2005-2010
• Colorectal test use	Rising	Rising	2005-2010
DIAGNOSIS			
Incidence			
• All cancers	Falling	Falling	2004-2008
• Race/ethnicity			
• White	Falling	Falling	2004-2008
• Black	Falling	Falling	2004-2008
• Hispanics	Falling	Falling	2004-2008
• American Indian/Alaskan Natives	Falling	Stable	2004-2008
• Asian/Pacific Islanders	Falling	Falling	2004-2008
• Most common cancers			
• Breast (female)	Falling	Stable	2004-2008
• Colon and rectum (female)	Falling	Falling	2004-2008
• Colon and rectum (male)	Falling	Falling	2004-2008
• Lung and bronchus (female)	Falling	Rising	2004-2008
• Lung and bronchus (male)	Falling	Falling	2004-2008
• Prostate	Falling	Falling	2004-2008
• Cancers whose incidence rate is increasing by 1 percent or more per year			
• Kidney and renal pelvis	Falling	Rising	2004-2008
• Liver and intrahepatic bile duct	Falling	Rising	2004-2008
• Melanoma of the skin	Falling	Rising	2004-2008
• Pancreas	Falling	Rising	2004-2008
• Thyroid	Falling	Rising	2004-2008
• Cancers whose incidence rate is increasing by less than 1 percent per year			
• Childhood	Falling	Rising	2004-2008
• Esophagus	Falling	Rising	2004-2008
• Leukemia	Falling	Rising	2004-2008
• Myeloma	Falling	Rising	2004-2008
• Non-Hodgkin lymphoma	Falling	Rising	2004-2008
• Testis	Falling	Rising	2004-2008
• Cancers whose incidence rate is decreasing			
• Brain and other nervous system	Falling	Stable	2004-2008
• Cervix Uteri	Falling	Falling	2004-2008

• Larynx	Falling	Falling	2004-2008
• Ovary	Falling	Falling	2004-2008
• Stomach	Falling	Falling	2004-2008
Stage at diagnosis			
• Breast - late stage (female)	Falling	Falling	2004-2008
• Cervix	Falling	Falling	2004-2008
• Colon	Falling	Falling	2004-2008
• Prostate	Falling	NSC	2004-2008
• Rectum	Falling	Falling	2004-2008
TREATMENT			
Bladder cancer	Rising	Rising	1995-2003
Breast cancer treatment			
• Mastectomy	Falling	Rising	2004-2008
• No surgery	Rising	Rising	2004-2008
• BCS with radiation	Rising	Falling	2004-2008
• BCS without radiation	Rising	Rising	2004-2008
• Multiagent chemotherapy	Rising	Rising	2001-2005
Colorectal cancer treatment	Rising	Rising	2001-2005
Kidney cancer treatment	Rising	Rising	2004-2008
Lung cancer treatment	Rising	Rising	2004-2008
Ovarian cancer treatment	Rising	NSC	1996-2002
Prostate cancer treatment	Rising	NSC	1998-2002
LIFE AFTER CANCER			
Survival			
• All cancers	Rising	Rising	1999-2003
• Breast (female)	Rising	Stable	1999-2003
• Colon and rectum	Rising	Stable	1999-2003
• Lung and bronchus	Rising	Rising	1999-2003
• Prostate	Rising	Stable	1999-2003
Costs of cancer care	Falling	AAPC Unavailable	N/A
Cancer survivors and smoking	Falling	Falling	2006-2010
END OF LIFE (Mortality)			
All cancers	Falling	Falling	2004-2008
Most common cancers			
• Breast (female)	Falling	Falling	2004-2008
• Colon and rectum (female)	Falling	Falling	2004-2008
• Colon and rectum (male)	Falling	Falling	2004-2008
• Lung and bronchus (female)	Falling	Falling	2004-2008
• Lung and bronchus (male)	Falling	Falling	2004-2008
• Prostate	Falling	Falling	2004-2008
Race/ethnicity			
• White	Falling	Falling	2004-2008
• Black	Falling	Falling	2004-2008
• Hispanic	Falling	Falling	2004-2008
• American Indian/Alaskan Natives	Falling	Stable	2004-2008
• Asian/Pacific Islander	Falling	Falling	2004-2008
Cancers whose mortality rate is increasing			

• Corpus and uterus (NOS)	Falling	Rising	2004-2008
• Liver and intrahepatice bile duct	Falling	Rising	2004-2008
• Pancreas	Falling	Rising	2004-2008
Cancers whose mortality rate is decreasing			
• Brain and other nervous system	Falling	Falling	2004-2008
• Leukemia	Falling	Falling	2004-2008
• Non-Hodgkin lymphoma	Falling	Falling	2004-2008
• Ovary	Falling	Falling	2004-2008
• Stomach	Falling	Falling	2004-2008
• Urinary bladder	Falling	Falling	2004-2008

Summary Tables by Topic

How to Interpret the Graphs in the Summary Tables

The tables in this section summarize the measures that are described at greater length in the body of this report. A graph, which addresses two questions, is included for most measures:

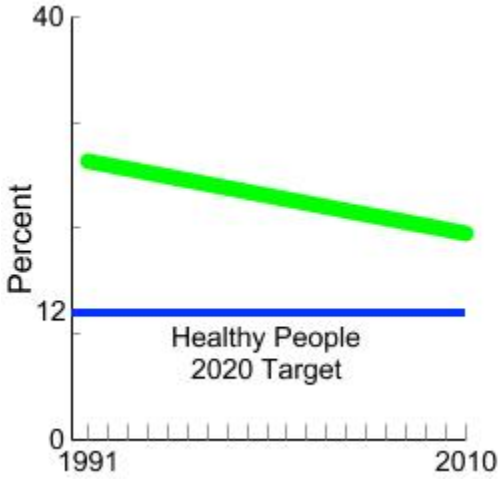
1. **Is the trend moving in the desired direction?**
   - A graph shows the trend direction for the measure. The desired trend direction is shown above the graph.

   - Each line in the graph is coded by color to indicate whether the trend is:
     - green - headed in the right direction
     - red - headed in the wrong direction
     - black - stable or non-significant change (NSC)
     - blue - Healthy People 2020 target

2. **How does the nation's progress compare to the Healthy People 2020 target?**

   Not all measures have an associated Healthy People 2020 target. When there is a target for a specific measure, it is shown by a solid blue horizontal line labeled Healthy People 2020 target.

   The example below demonstrates the Adult Smoking trend, which is heading in the right direction (green line) toward the Healthy People 2020 target (solid blue horizontal line).

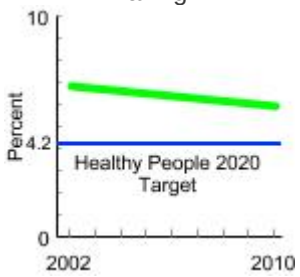
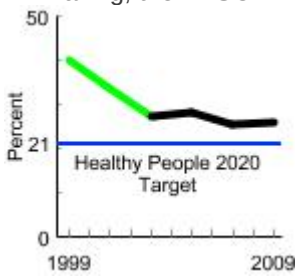
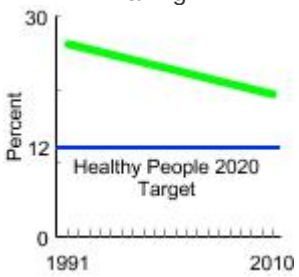
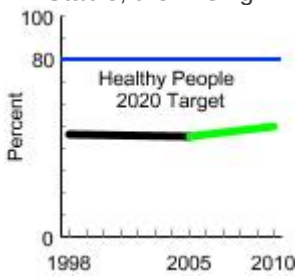


Next: Prevention - Smoking

Summary Table: Prevention – Smoking

Only one measure per topic is displayed in the summary table. A complete set of measures, where they exist, can be found in the report.

Trend key:
- green - headed in the right direction
- red - headed in the wrong direction
- black - stable or non-significant change (NSC)
- blue - Healthy People 2020 target

	Smoking Initiation 2002–2010	Youth smoking 1991–2009	Adult smoking 1991–2010	Quitting smoking 1998–2010
Measure	Percentage of individuals in the groups aged 12–17 years and 18-25 years who said they had initiated smoking during the past 12 months. (Example: 12-17 years)	Percentage of high school students who were current cigarette, cigar, or smokeless tobacco users: Students (Grades 9–12) who reported having used cigarettes, cigars, or smokeless tobacco in the 30 days before the survey.	Percentage of adults who were current cigarette smokers: Adults aged 18 and older who reported smoking 100 or more cigarettes in their lifetime and who, at the time of the interview, continued to smoke every day or some days.	Percentage of adult smokers aged 18 years and older who attempted smoking cessation in the past 12 months. This includes both current smokers who quit smoking for one day or longer and smokers who quit less than one year ago.
Recent summary trend*	Falling 2006–2010	Non-significant change 2005–2009	Falling 2006–2010	Rising 2006–2010
Desired direction	**Falling ▼**	**Falling ▼**	**Falling ▼**	**Rising ▲**
Trend details	Falling 	Falling, then NSC 	Falling 	Stable, then rising 
Most recent estimate	In the 12-17 age group, males and females had similar smoking initiation rates in 2010 (males, 5.7 percent; females, 6.0 percent).	Among high school students in 2009, 19.5 percent were current cigarette smokers, 8.9 percent were current users of smokeless tobacco, 14 percent were current cigar smokers (including little cigars). 26 percent were current users of "any tobacco" product.	In 2010, 19.3 percent of adults aged 18 and older - 21.2 percent of men and 17.5 percent of women - were current cigarette smokers.	In 2010, 50.2 percent of smokers ages 18 and older - 48.7 percent for men, 51.9 percent for women - stopped smoking for one day or longer because they were trying to quit.
Healthy People 2020 target	Decrease the percentage to initiate cigarette smoking to 4.2 percent to initiate cigarette smoking in the 12-17 age group.	Decrease the proportion of high school students who currently: smoke cigarettes to 16 percent; use smokeless tobacco to 6.9 percent; smoke cigars to 8 percent; use any tobacco product to 21 percent.	Reduce to 12% the proportion of adult current cigarette smokers. Reduce to 0.3 percent the proportion of adult current smokeless tobacco users.	Increase to 80% the proportion of adult everyday smokers ages 18 and older, who stopped smoking for a day or longer because they were trying to quit.
	Smoking Initiation	Youth Smoking	Adult Smoking	Quitting Smoking

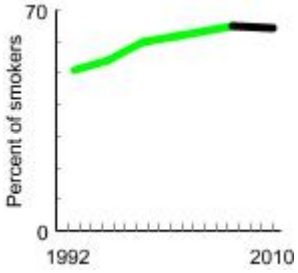
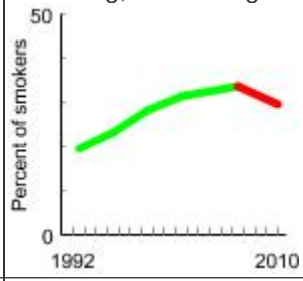
	Smoking Initiation 2002–2010	Youth smoking 1991–2009	Adult smoking 1991–2010	Quitting smoking 1998–2010
More information				

Summary Table: Prevention – Clinicians' Advice to Quit Smoking

Only one measure per topic is displayed in the summary table. A complete set of measures, where they exist, can be found in the report.

Trend key:

- green - headed in the right direction
- red - headed in the wrong direction
- black - stable or non-significant change (NSC)
- blue - Healthy People 2020 target

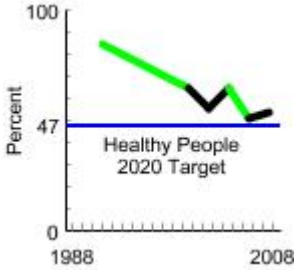
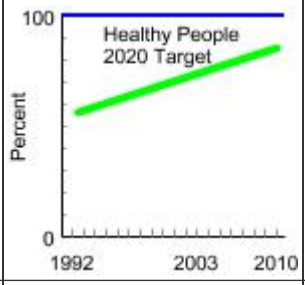
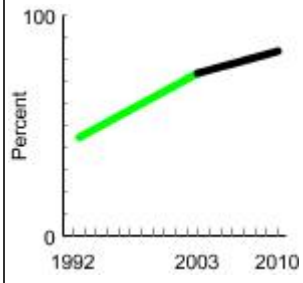
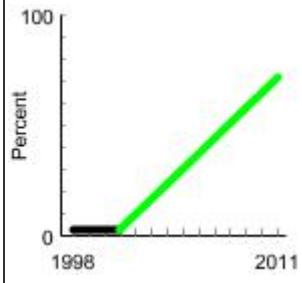
	Doctor advice to quit smoking 1992–2007	Dentist advice to quit smoking 1992–2010
Measure	The percentage of adult smokers ages 18 and older, who have seen a physician in the past 12 months, reporting that a physician has advised them to quit smoking.	The percentage of adult smokers ages 18 and older, who have seen a dentist in the past 12 months, reporting that a dentist has advised them to quit smoking.
Recent summary trend*	Rising 2001/2002–2010	non-significant change 2001/2002–2010
Desired direction	**Rising ▲**	**Rising ▲**
Trend details	Rising, then stable 	Rising, then falling 
Most recent estimate	In 2010, 64.4 percent of smokers ages 18 and older - 63.0 percent of men and 65.7 percent of women - who had seen a physician during the past 12 months reported being advised by that doctor to quit smoking.	In 2010, 29.8 percent of smokers ages 18 and older - 32.1 percent of men and 27.8 percent of women - who had seen a dentist during the past 12 months reported being advised by that dentist to quit smoking.
Healthy People 2020 target	The Healthy People 2020 target for physicians' advice to quit smoking in office-based ambulatory care settings is 21.1 percent of visits. The target for ordered or provided tobacco counseling during hospital visits is 24.9 percent of visits.	Healthy People 2020 targets for dentists' advice to quit smoking are still in development.
More information	Health Professional Advice to Quit Smoking	

Summary Table: Prevention – Secondhand Smoke

Only one measure per topic is displayed in the summary table. A complete set of measures, where they exist, can be found in the report.

Trend key:

- green - headed in the right direction
- red - headed in the wrong direction
- black - stable or non-significant change (NSC)
- blue - Healthy People 2020 target

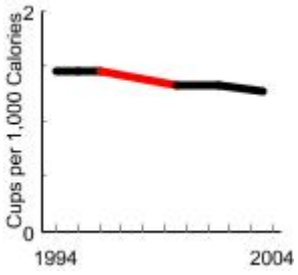
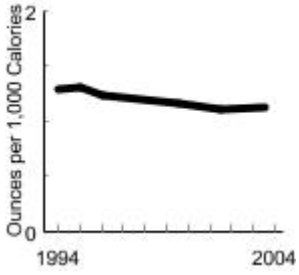
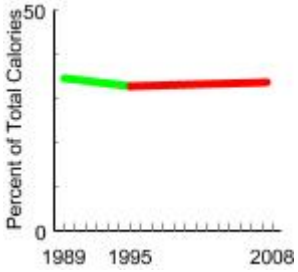
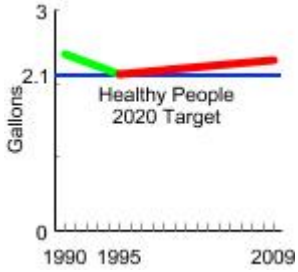
	Environmental tobacco smoke 1988–2008	Smoke-free work environment 1992–2010	Smoke-free home environment 1992–2010	Smoke-free indoor air laws 1990–2011
Measure	Percentage of nonsmokers exposed to secondhand smoke (SHS), also known as environmental tobacco smoke. (The percentage of nonsmokers aged 3 years and older with a serum cotinine level greater than 0.05 ng/mL less than or equal to 10 ng/mL).	Percentage of indoor workers reporting a smoke-free work environment.	Percentage of respondents reporting a smoke-free home policy. environment.	Percentage of the population protected by local and state smoke-free indoor air laws covering workplaces, restaurants, and bars. (Example: workplaces).
Recent summary trend*	Non-significant change 2004–2008	Rising 2003–2010	Non-significant change 2003–2010	Rising 2007–2011
Desired direction	**Falling ▼**	**Rising ▲**	**Rising ▲**	**Rising ▲**
Trend details	Falling, then non-significant change, then falling, then non-significant change 	Rising 	Rising, then non-significant change 	Non-significant change, then rising 
Most recent estimate	During the period 2007-2008, the estimate of U.S. nonsmokers aged 3 years and older currently exposed to SHS is 41 percent (males - 44 percent, females - 39 percent).	In May 2010, 81 percent of indoor workers aged 18 years and older reported that a smoke-free policy was in place at their workplace, with 78 percent of men and 84 percent of women reporting the presence of such a policy.	During the period 2007-2010, 84 percent of adults aged 18 years and older (men - 83 percent, women - 85 percent) reported a smokefree home environment.	As of October 2011, there were 31 states, as well as Puerto Rico and Washington, D.C., that had laws that provide complete or nearly complete protection from SHS.
Healthy People 2020 target		Increase the proportion of persons covered by indoor worksite policies that prohibit smoking to 100 percent.	Increase the proportion of persons covered by indoor worksite policies that prohibit smoking to 100 percent.	

	Environmental tobacco smoke 1988–2008	Smoke-free work environment 1992–2010	Smoke-free home environment 1992–2010	Smoke-free indoor air laws 1990–2011
	Reduce the proportion of children aged 3-11 years who are regularly exposed to tobacco smoke 47 percent. Reduce the proportion of children aged 12-17 years who are regularly exposed to tobacco smoke to 41 percent. Reduce the proportion of nonsmokers exposed to secondhand smoke to 33.8 percent.			Increase to 51 the number of jurisdictions (50 states and the District of Columbia) with smoke-free indoor air laws for public places and work sites.
More information	Secondhand Smoke			

Summary Table: Prevention – Diet

Only one measure per topic is displayed in the summary table. A complete set of measures, where they exist, can be found in the report.

Trend key:
- green - headed in the right direction
- red - headed in the wrong direction
- black - stable or non-significant change (NSC)
- blue - Healthy People 2020 target

	Fruit and vegetable consumption 1994–2004	Red meat consumption 1994–2004	Fat consumption 1989–2008	Alcohol consumption 1990–2009
Measure	Average daily cups of fruits and vegetables for people ages 2 and older. This measure includes fruits and vegetables from all sources.	Average daily ounce equivalents of red meat for people aged 2 years and older. Red meat includes beef, lamb, and pork from all sources and does not include processed poultry.	Intakes of total fat, and of the major fatty acids - saturated, monounsaturated, and polyunsaturated - as a percentage of total calories.	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.
Recent summary trend*	Non-significant change 2000–2004	Non-significant change 2000–2004	Rising 2004–2008	Rising 2005–2009
Desired direction	**Rising ▲**	**Rising ▲**	**Falling ▼**	**Falling ▼**
Trend details	Stable, then falling, then stable, then non-significant change 	Stable, then non-significant change, then stable 	Falling, then rising 	Falling, then rising 
Most recent estimate	From 2001 to 2004, people aged 2 years and older consumed, on average, 0.5 cup equivalents of fruits per 1,000 calories and 0.8 cup equivalents of vegetables per 1,000 calories (including 0.1 cup equivalents of dark green and orange vegetables and legumes per 1,000 calories).	In 2003 to 2004, people aged 2 years and older had, on average, consumed 1.1 ounce equivalents of red meat per 1,000 calories.	Data collected in 2007 to 2008 show that total fat made up one-third (33 percent) of the calories people consumed, a level within the recommendations of the Dietary Guidelines. In the same period, saturated fatty acids accounted for 11 percent of calories, monounsaturated, 12 percent, and polyunsaturated, 7 percent.	In 2009, per capita alcohol consumption was 2.3 gallons for all beverages, including beer, wine, and liquor.

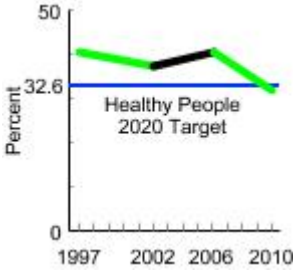
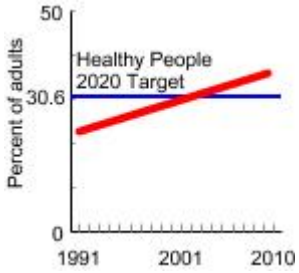
	Fruit and vegetable consumption 1994–2004	Red meat consumption 1994–2004	Fat consumption 1989–2008	Alcohol consumption 1990–2009
Healthy People 2020 target	0.9 cup equivalents of fruits per 1,000 calories. 1.1 cup equivalents of vegetables per 1,000 calories, with at least 0.3 cup equivalents of dark green or orange vegetables or legumes per 1,000 calories.	There is no Healthy People target for red meat consumption.	9.5 percent saturated fatty acids. (Healthy People 2020 includes targets for saturated fat and solid fat.)	Reduce annual per capita alcohol consumption to 2 gallons.
More information	Fruit and Vegetable Consumption	Red Meat Consumption	Fat Consumption	Alcohol Consumption

Summary Table: Prevention – Weight and Physical Activity

Only one measure per topic is displayed in the summary table. A complete set of measures, where they exist, can be found in the report.

Trend key:

- green - headed in the right direction
- red - headed in the wrong direction
- black - stable or non-significant change (NSC)
- blue - Healthy People 2020 target

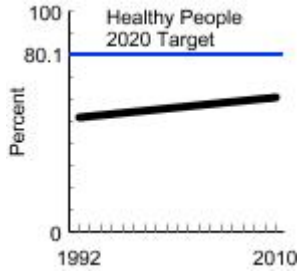
	Physical activity 1997–2010	Weight 1971–2010
Measure	Percentage of adults aged 18 and older who reported no leisure time physical activity during the past month.	Percentage of adults aged 20 years and older who were at a healthy weight, overweight, or obese (Example: obese).
Recent summary trend*	Falling 2006–2010	Rising 2006–2010
Desired direction	**Falling ▼**	**Falling ▼**
Trend details	Falling, then non-significant change, then falling 	Rising 
Most recent estimate	The 2010 National Health Interview Survey (NHIS), an in-person household survey, indicates that 36 percent of adults 18 and older reported no physical activity in their leisure time.	Among adults aged 20 years and older in 2009-2010, 29 percent were at a healthy weight, 33 percent were overweight or obese, and 36 percent were obese.
Healthy People 2020 target	Reduce to 32.6 percent the proportion of adults who engage in no leisure-time physical activity.	Increase to 33.9 percent the proportion of adults who are at a healthy weight and decrease to 30.6 percent the proportion of obese adults.
More information	Physical Activity	Weight

Summary Table: Prevention – Sun Protection

Only one measure per topic is displayed in the summary table. A complete set of measures, where they exist, can be found in the report.

Trend key:

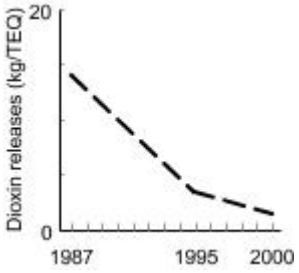
- green - headed in the right direction
- red - headed in the wrong direction
- black - stable or non-significant change (NSC)
- blue - Healthy People 2020 target

	Sun protection 1992–2010
Measure	Percentage of adults aged 18 years and older who reported that they usually or always practice at least one of three sun protection behaviors (using sunscreen, wearing protective clothing, or seeking shade) when going outside on a warm sunny day for more than one hour.
Recent summary trend*	Non-significant change 2005–2010
Desired direction	**Falling** ▼
Trend details	Non-significant change 
Most recent estimate	In 2010, 60.6 percent of adults said they usually or always protect themselves from the sun by practicing at least one of three sun protection behaviors.
Healthy People 2020 target	Increase to 80.1 percent the proportion of adults who are very likely to use sunscreen with an SPF of 15 or higher, wear protective clothing, or seek shade.
More information	Sun Protection

Summary Table: Prevention - Chemical Exposures

Only one measure per topic is displayed in the summary table. A complete set of measures, where they exist, can be found in the report.

Trend key:
- green - headed in the right direction
- red - headed in the wrong direction
- black - stable or non-significant change (NSC)
- blue - Healthy People 2020 target

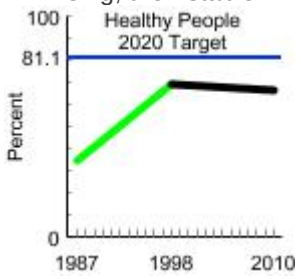
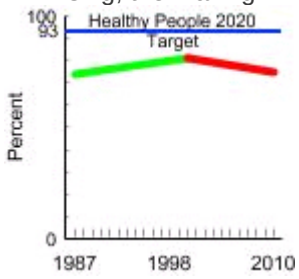
	Pesticides 1999–2004	Dioxins 1999–2000
Measure	Possible carcinogens, pesticides chlordane and DDT and their metabolites, measured in human blood.	Measurement of tetrachlorodibenzo-p-dioxin (TCDD) in human blood adjusting for lipids and EPA estimates of dioxin releases in the environment.
Recent summary trend*	AAPC is not available for this measure	AAPC is not available for this measure
Desired direction	**Falling ▼**	**Falling ▼**
Trend	Trend details are not available for this measure **(No trend graph is available for this measure)**	Falling 
Most recent estimate	In 20032004, blood and urine concentrations (nanograms per gram) were 37.7 for oxychlordane, 68.3 for trans-nonachlor, 18.9 for heptachlor epoxide, and 1,860 for DDT (DDE).	95th percentile of TCDD concentration in the U.S. population: 5.2 pg/g. Estimated dioxin releases to the environment in 2000: 1.42 kg-TEQ.
Healthy People 2020 target	Reduce exposure of the population to pesticides, heavy metals, and other toxic chemicals, as measured by blood and urine concentrations of the substances or their metabolites, as follows: •Reduce chlordane (oxychlordane) from 37.7 ng/g to 26.39 ng/g of lipid. •Reduce DDT (DDE) from 1860 ng/g to 1302 ng/g of lipid.	There is no Healthy People 2020 target for dioxins.

	Pesticides 1999–2004	Dioxins 1999–2000
	• Reduce beta-hexachlorocyclohexane (beta-HCH) from 56.5 ng/g to 39.55 ng/g of lipid.	
More information	Pesticides	Dioxins

Summary Table: Early Detection – Breast and Cervical Cancers

Only one measure per topic is displayed in the summary table. A complete set of measures, where they exist, can be found in the report.

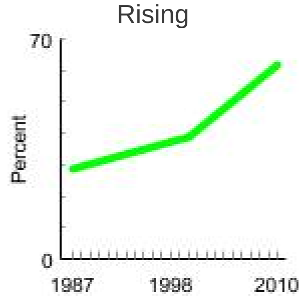
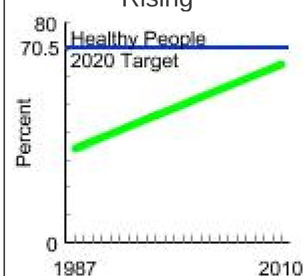
Trend key:
- green - headed in the right direction
- red - headed in the wrong direction
- black - stable or non-significant change (NSC)
- blue - Healthy People 2020 target

	Breast cancer screening 1987–2010	Cervical cancer screening 1987–2010
Measure	Percentage of women aged 40 and older, by racial/ethnic, geographic, and low-income groups, who reported having had a mammogram within the past two years.	Percentage of women aged 18 years and older who reported they had a Pap test within the past three years.
Recent summary trend*	Stable 2005–2010	Falling 2005–2010
Desired direction	**Rising ▲**	**Rising ▲**
Trend details	Rising, then stable 	Rising, then falling 
Most recent estimate	In 2010, 66 percent of women aged 40 and older had a mammogram within the past two years, a statistically significant drop from 70 percent (1998-2003).	In 2010, 74 percent of women aged 18 and older had a Pap test within the past three years, down from 81 percent in 2003.
Healthy People 2020 target	The Healthy People 2020 targets are limited to women ages 50-74. The 2008 baseline for this age group of women was 74 percent. Healthy People calls for a 10 percent improvement to 81 percent in 2020.	The Healthy People 2020 target modified the age groups for Pap testing to include women aged 21 to 65 years. The 2020 baseline for women 21 to 65 is 84.5 percent. The target is a 10 percent improvement to 93 percent in 2020.
More information	Breast Cancer Screening	Cervical Cancer Screening

Summary Table: Early Detection – Colorectal Cancer

Only one measure per topic is displayed in the summary table. A complete set of measures, where they exist, can be found in the report.

Trend key:
- green - headed in the right direction
- red - headed in the wrong direction
- black - stable or non-significant change (NSC)
- blue - Healthy People 2020 target

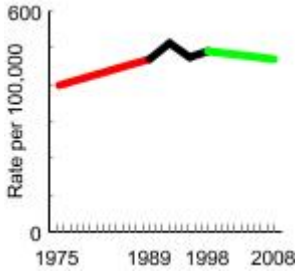
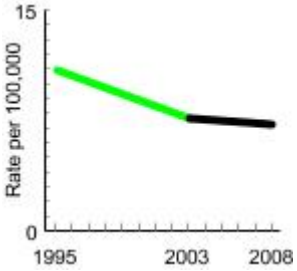
	Fecal occult blood test 1987–2010	**Colorectal endoscopy 1987–2010**	**Colorectal cancer test use 1987–2010**
Measure	Percentage of adults aged 50 and older who reported that they had a fecal occult blood test (FOBT) within the past two years, by racial/ethnic group.	Percentage of adults aged 50 and older who reported that they ever had an endoscopy (proctoscopy, sigmoidoscopy, or colonoscopy).	Percentage of adults aged 50 and older who had a colorectal cancer test (home-based FOBT in the past two years or ever had a colorectal endoscopy).
Recent summary trend*	Falling 2005–2010	Rising 2005–2010	Rising 2005–2010
Desired direction	**Rising** ▲	**Rising** ▲	**Rising** ▲
Trend details	Rising, then falling 	Rising 	Rising 
Most recent estimate	In 2010, 13 percent of people aged 50 and older had a home FOBT within the past two years.	In 2010, 62 percent of people aged 50 and older had ever had a colorectal endoscopy.	In 2010, 65 percent of people aged 50 and older had used a colorectal cancer test.
Healthy People 2020 target	The Healthy People 2020 target calls for 70.5 percent of adults ages 50 to 75 to be up-to-date with recommended colorectal cancer screening, defined according to U.S. Preventive Services Task Force Guidelines as high-sensitivity FOBT done at home every year; sigmoidoscopy every five years with high-sensitivity FOBT every three years; or colonoscopy every 10 years	The Healthy People 2020 target calls for 70.5 percent of adults ages 50 to 75 to be up-to-date with recommended colorectal cancer screening, defined according to U.S. Preventive Services Task Force Guidelines as high-sensitivity FOBT done at home every year; sigmoidoscopy every five years with high-sensitivity FOBT every three years; or colonoscopy every 10 years	The Healthy People 2020 target calls for 70.5 percent of adults ages 50 to 75 to be up-to-date with recommended colorectal cancer screening, defined according to U.S. Preventive Services Task Force Guidelines as high-sensitivity FOBT done at home every year; sigmoidoscopy every five years with high-sensitivity FOBT every three years; or colonoscopy every 10 years
More information	Colorectal Cancer Screening		

Summary Table: Diagnosis

Only one measure per topic is displayed in the summary table. A complete set of measures, where they exist, can be found in the report.

Trend key:

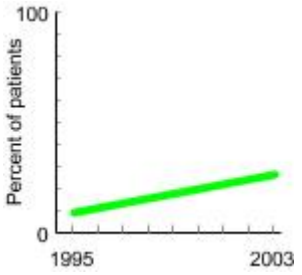
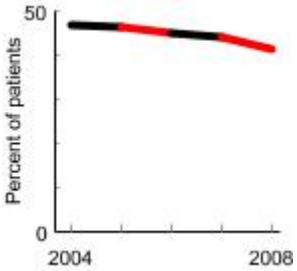
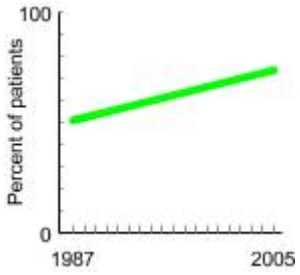
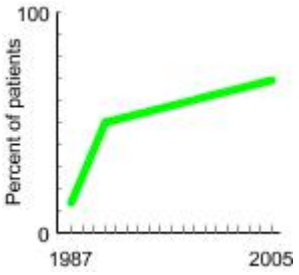
- green - headed in the right direction
- red - headed in the wrong direction
- black - stable or non-significant change (NSC)
- blue - Healthy People 2020 target

	Incidence 1975–2008	Stage at Diagnosis 1980–2008
Measure	The observed number of new cancer cases per 100,000 people per year is adjusted for cancer case reporting delays, based on data from approximately 10 percent of the U.S. population.	The number of new cancer cases diagnosed at a late (distant) stage, per 100,000 people per year. (Example: prostate cancer).
Recent summary trend*	Falling 2004–2008	Non-significant change 2003–2008
Desired direction	**Falling ▼**	**Falling ▼**
Trend	Rising, then non-significant change, then falling 	Falling, then non-significant change 
Most recent estimate	In 2008, the rate of new cases of all cancers combined was 474.0 per 100,000 people per year.	In 2004, 7.1 new cases of prostate cancer per 100,000 men were diagnosed at a late stage.
Healthy People 2020 target	There is no Healthy People 2020 target for cancer incidence.	There is no Healthy People 2020 target for stage at diagnosis.
More information	Incidence	Stage at Diagnosis

Summary Table: Treatment – Bladder, Breast, Colorectal

Only one measure per topic is displayed in the summary table. A complete set of measures, where they exist, can be found in the report.

Trend key:
- green - headed in the right direction
- red - headed in the wrong direction
- black - stable or non-significant change (NSC)
- blue - Healthy People 2020 target

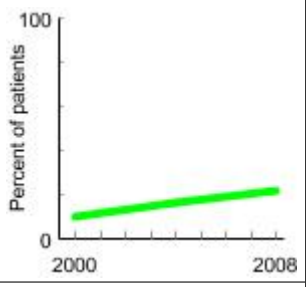
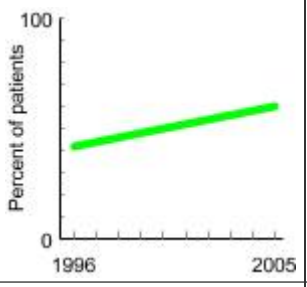
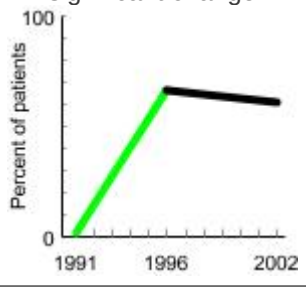
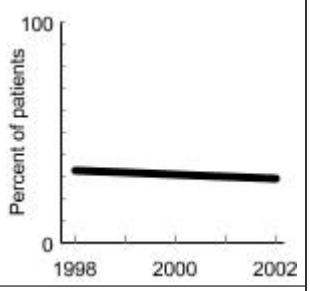
	Bladder cancer treatment 1995–2003	Breast cancer treatment: Breast-conserving surgery and radiation 1992–2008	Breast cancer treatment: Multi-agent chemotherapy 1987–2005	Colorectal cancer treatment 1987–2005
Measure	Percentage of individuals receiving intravesical therapy in non-muscle invasive bladder cancer.	Percentage of women aged 20 years and older, diagnosed with early-stage breast cancer (less than stage IIIA), receiving breast-conserving surgery and radiation treatment.	Percentage of women aged 20 years and older, diagnosed with node positive, stage I–IIIa breast cancer, receiving multi-agent chemotherapy.	Percentage of individuals ages 20 years and older, who were diagnosed with stage III colon cancer and received chemotherapy, or were diagnosed with stage II or stage III rectal cancer and received chemotherapy with or without radiotherapy.
Recent summary trend*	Rising 1995–2003	Falling 2004–2008	Rising 2001–2005	Rising 2001–2005
Desired direction	**Rising ▲**	**Rising ▲**	**Rising ▲**	**Rising ▲**
Trend	Rising 	Non-significant change, then falling, then non-significant change, then falling 	Rising 	Rising 
Most recent estimate	In 2003, 27 percent of patients with non-muscle invasive disease received intravesical therapy. New estimates will be available in 2013.	In 2008, 35 percent of women ages 20 years and older diagnosed with early-stage breast cancer (less than stage IIIA) received mastectomy, 41 percent received breast-conserving surgery plus radiation, and 19 percent received breast-conserving surgery only.	In 2005, 67 percent of women aged 20 years and older, diagnosed with node positive breast cancer, received multi-agent chemotherapy.	In 2005, 60 percent of stage III colon and stage II and III rectal patients aged 65 years and older received adjuvant chemotherapy, while more than 85 percent of patients aged 20 to 64 received chemotherapy. A colorectal patterns of care study is currently being conducted for diagnosis year 2010.
Healthy People 2020 target	There are no Healthy People 2020 targets for cancer treatment, including bladder cancer treatment.	There are no Healthy People 2020 targets for cancer treatment, including breast cancer treatment.	There are no Healthy People 2020 targets for cancer treatment, including breast cancer treatment.	There are no Healthy People 2020 targets for cancer treatment, including colorectal cancer treatment.

	Bladder cancer treatment 1995–2003	Breast cancer treatment: Breast-conserving surgery and radiation 1992–2008	Breast cancer treatment: Multi-agent chemotherapy 1987–2005	Colorectal cancer treatment 1987–2005
More information	Bladder Cancer Treatment	Breast Cancer Treatment		Colorectal Cancer Treatment

Summary Table: Treatment – Kidney, Lung, Ovarian, Prostate

Only one measure per topic is displayed in the summary table. A complete set of measures, where they exist, can be found in the report.

Trend key:
- green - headed in the right direction
- red - headed in the wrong direction
- black - stable or non-significant change (NSC)
- blue - Healthy People 2020 target

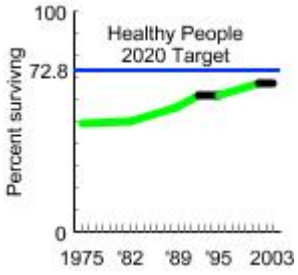
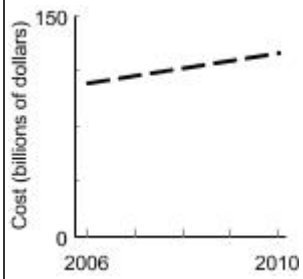
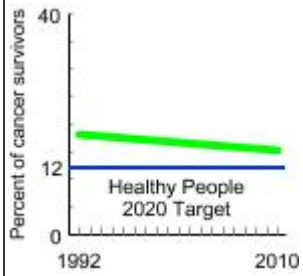
	Kidney cancer treatment 2000–2008	Lung cancer treatment 1996 and 2005	Ovarian cancer treatment 1991, 1996, 2002	Prostate cancer treatment 1998 and 2002
Measure	Partial nephrectomy (removal of the part of the kidney) or complete nephrectomy in patients with local-regional disease.	Chemotherapy following the diagnosis of stage IIIB or IV non-small cell lung cancer. (Example below is for ages 60–69.)	Percentage of women diagnosed with ovarian cancer who received Paclitaxol (Taxol) by stage of diagnosis. (Example below is for stage III or IV.)	Hormonal therapy following the diagnosis of prostate cancer. (Example below is for ages 60–69).
Recent summary trend*	Rising 2004–2008	Rising 1996–2005	Non-significant change 1996–2002	Non-significant change 1998–2002
Desired direction	**Rising ▲**	**Rising ▲**	**Rising ▲**	**Rising ▲**
Trend	Rising 	Rising 	Rising, then non-significant change 	Non-significant change 
Most recent estimate	In 2008, the rate of partial nephrectomy was 22 percent. The rate of complete nephrectomy was 62 percent.	In 2005, 60 percent of patients diagnosed with stage IIIB or IV non-small cell lung cancer received chemotherapy.	In 2002, 61 percent of women with stage III or IV ovarian cancer received Paclitaxol compared to 49 percent with stage I or II disease.	In 2002, 29 percent of men aged 6069 with localized/regional prostate cancer were given hormonal therapy.
Healthy People 2020 target	There are no Healthy People 2020 targets for cancer treatment, including kidney cancer treatment.	There are no Healthy People 2020 targets for cancer treatment, including lung cancer treatment.	There are no Healthy People 2020 targets for cancer treatment, including ovarian cancer treatment.	There are no Healthy People 2020 targets for cancer treatment, including prostate cancer treatment.
More information	Kidney Cancer Treatment	Lung Cancer Treatment	Ovarian Cancer Treatment	Prostate Cancer Treatment

Summary Table: Life After Cancer

Only one measure per topic is displayed in the summary table. A complete set of measures, where they exist, can be found in the report.

Trend key:

- green - headed in the right direction
- red - headed in the wrong direction
- black - stable or non-significant change (NSC)
- blue - Healthy People 2020 target

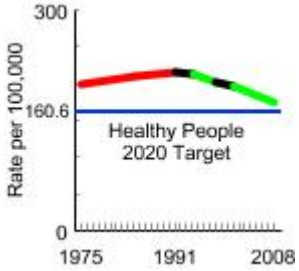
	Survival 1975–2003 (year diagnosed)	Costs of cancer care 2010	Cancer survivors and smoking 1992–2010
Measure	The proportion of patients surviving cancer five years after diagnosis calculated in the absence of other causes of death.	Estimates of national expenditures for cancer care.	Rates of smoking 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 were asked whether they were a current smoker.
Recent summary trend*	Rising 1999–2003	There is no AAPC for this measure	Falling 2006–2010
Desired direction	**Rising ▲**	**Falling ▼**	**Falling ▼**
Trend	Rising, then stable, then rising, then stable 		Falling 
Most recent estimate	For adults (over 19 years old) diagnosed with cancer (all sites) in 2003, 66.7 percent survived cancer for at least five years.	In 2010, national cancer care expenditures were an estimated $124.6 billion. National expenditures were largest for lymphoma and female breast, colorectal, lung, and prostate cancers, reflecting prevalence of disease, treatment patterns, and costs for different types of care.	

	Survival 1975–2003 (year diagnosed)	Costs of cancer care 2010	Cancer survivors and smoking 1992–2010
			Based on estimates adjusted for the age distribution of cancer patients diagnosed in the SEER program, the percent of adult cancer survivors who currently smoke is decreasing over time, and the rate of decline is similar for both men and women. However, when looking at estimates of smoking prevalence, age-adjusted to the 2000 U.S, standard population, cancer survivors aged 18-44 report smoking at rates higher than those reported for the rest of the population. Cancer survivors older than age 44 report smoking rates similar to those of the rest of the population.
Healthy People 2020 target	Increase to 72.8 percent the proportion of cancer survivors who are living five years or longer after diagnosis.	There is no Healthy People 2020 target for costs of cancer care.	There is no Healthy People 2020 target for smoking rates among cancer survivors. However, it is reasonable to set this at the goal determined for the general population, which is to decrease to 12 percent the proportion of people who smoke.
More information	Survival	Costs of Cancer Care	Cancer Survivors and Smoking

Summary Table: End of Life

Only one measure per topic is displayed in the summary table. A complete set of measures, where they exist, can be found in the report.

Trend key:
- green - headed in the right direction
- red - headed in the wrong direction
- black - stable or non-significant change (NSC)
- blue - Healthy People 2020 target

	Mortality 1975–2008	Person-years of life lost (PYLL) 2008
Measure	The number of cancer deaths per 100,000 people per year, age-adjusted to a U.S. 2000 standard population.	The difference between the actual age stemming from the disease/cause and the expected age of death.
Recent summary trend*	Falling 2004–2008	No trend data are available for person-years of life lost.
Desired direction	**Falling ▼**	**Falling ▼**
Trend	Rising, then stable, then falling, then NSC, then falling 	No trend data are available for person-years of life lost. **(No trend graph is available for this measure)**
Most recent estimate	In 2008, the death rate for all cancers was 175.7 cancer deaths per 100,000 people.	In 2008, cancer deaths were responsible for more than 8.7 million PYLL, which is more than heart disease and all other causes of death combined. About 51 percent of the PYLL caused by cancer death occurred among women. The number of PYLL from causes other than cancer varied by gender, with more accidental deaths and suicides among men and more cerebrovascular and chronic lung disease-related deaths among women.
Healthy People 2020 target	Reduce the overall cancer death rate to 160.6 cancer deaths per 100,000 people per year.	There is no Healthy People 2020 target for PYLL.

	Mortality 1975–2008	Person-years of life lost (PYLL) 2008
More information	Mortality	Person-years of Life Lost

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 three major groups of risk factors: Behavioral, Environmental, and Policy/Regulatory.

Behavioral Factors

Smoking, poor diet quality, and physical inactivity are just some of the human behaviors that have been linked to the development of many common cancers. This section describes trends in the following behaviors that can influence the likelihood of getting cancer.

Smoking Initiation
Youth Smoking
Adult Smoking
Quitting Smoking
Clinicians' Advice to Quit Smoking
Medicaid Coverage of Tobacco Dependence Treatments

Tobacco Use

Smoking causes about 30 percent of all U.S. deaths from cancer. Avoiding tobacco use is the single most important step Americans can take to reduce the cancer burden in this country.

Diet, Physical Activity, and Weight

Fruit and Vegetable Consumption
Red Meat Consumption
Fat Consumption
Alcohol Consumption
Physical Activity
Weight

Considerable evidence indicates that behavioral factors related to energy balance—such as diet and physical activity—as well as body weight that indicates the state of energy balance are known risk factors for many chronic diseases and conditions, including several forms of cancer. These combined factors may be the most significant, avoidable causes of cancer in the non-smoking population. Poor diet, physical inactivity, and overweight/obesity may account for about 25–30 percent of several of the major cancers in the United States.

Sun Protection

Sun Protection

The number of new cases of melanoma has increased between 1975 and 2008, with an estimated number of 76,250 new cases in 2012.

Environmental Factors

Certain chemicals, biological agents, toxins, industry factors, etc., are associated with the development of cancer. In this section, national trends data associated with environmental exposures and their relationship to cancer are reported. The environmental measures highlighted in this report were chosen based on the availability of national trends data and their inclusion in the Healthy People 2020 Report.

Secondhand Smoke

Secondhand Smoke

Secondhand smoke (also known as environmental tobacco smoke) continues to be a leading environmental hazard. An expanded chapter on Secondhand smoke is presented in this year's report update.

Chemical Exposures

Pesticides
Dioxins

Pesticides and dioxins were reported in the *Cancer Trends Progress Report – 2009/2010 Update*. Both exposures again appear in this update, with a special focus on pesticides for which new data have been presented.

Policy/Regulatory Factors

Tobacco Company
  Marketing Expenditures

Tobacco advertising and promotion increases Americans' tobacco use.

Smoking Initiation

The percentage of people who initiated smoking has declined among the youngest cohort (those aged 12 to 17 years) but has risen among young adults (those aged 18 to 25 years).

Smoking Initiation and Cancer

The younger a person starts smoking, the greater their lifelong risk of developing smoking-related cancers. This is because young smokers are more likely to become addicted, and the more years a person smokes, the greater the risk of cancer.

Measure

Percentage of individuals in the groups aged 12 to 17 years and 18 and 25 years who said they had initiated smoking during the past 12 months.

Period – 2002–2010

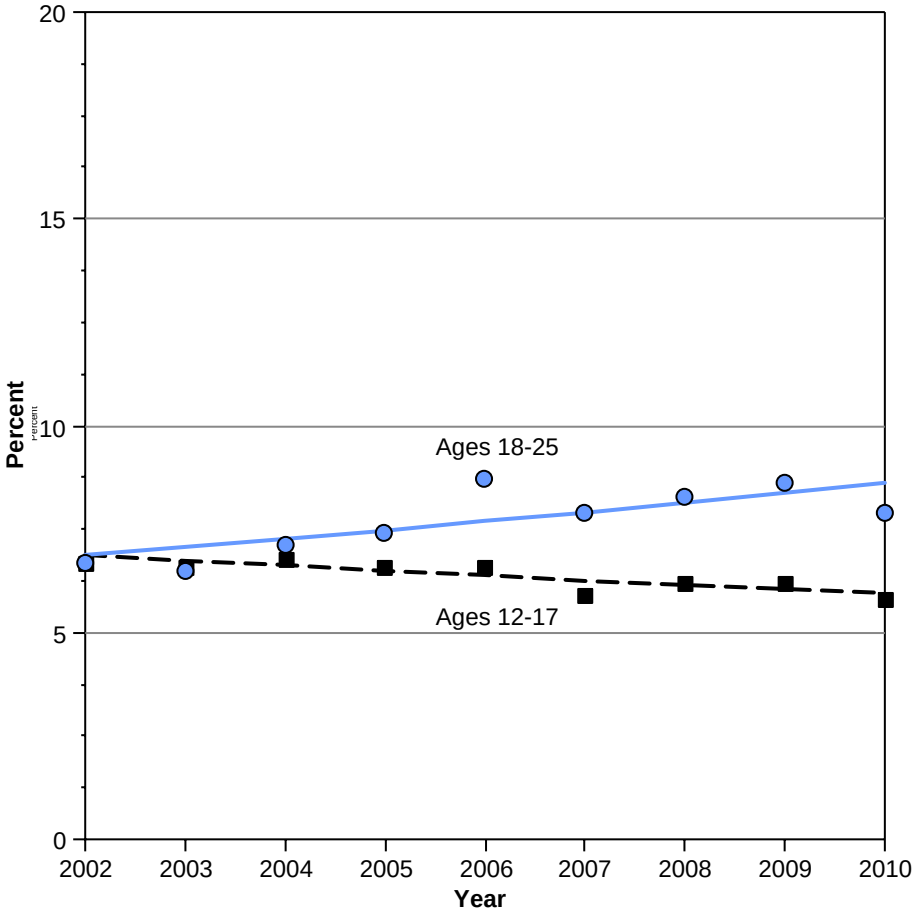
Trends

Initiation of Cigarette Use:

Age 12–17: Significantly decreased from 2002 to 2010 (data shown only for this period given change in methodology).
Age 18–25: Significantly increased from 2002 to 2010 (data shown only for this period given change in methodology).
Although there were no trend differences by sex in the group aged 18 to 25 years from 2002 to 2008 (years data are available), there were trend differences by sex for the age group 12 and 17 years for the period 2002 and 2010. Females' rates fell between 2002 (7.4 percent) and 2010 (6.0 percent), while males exhibited stable rates of smoking initiation over the same time.

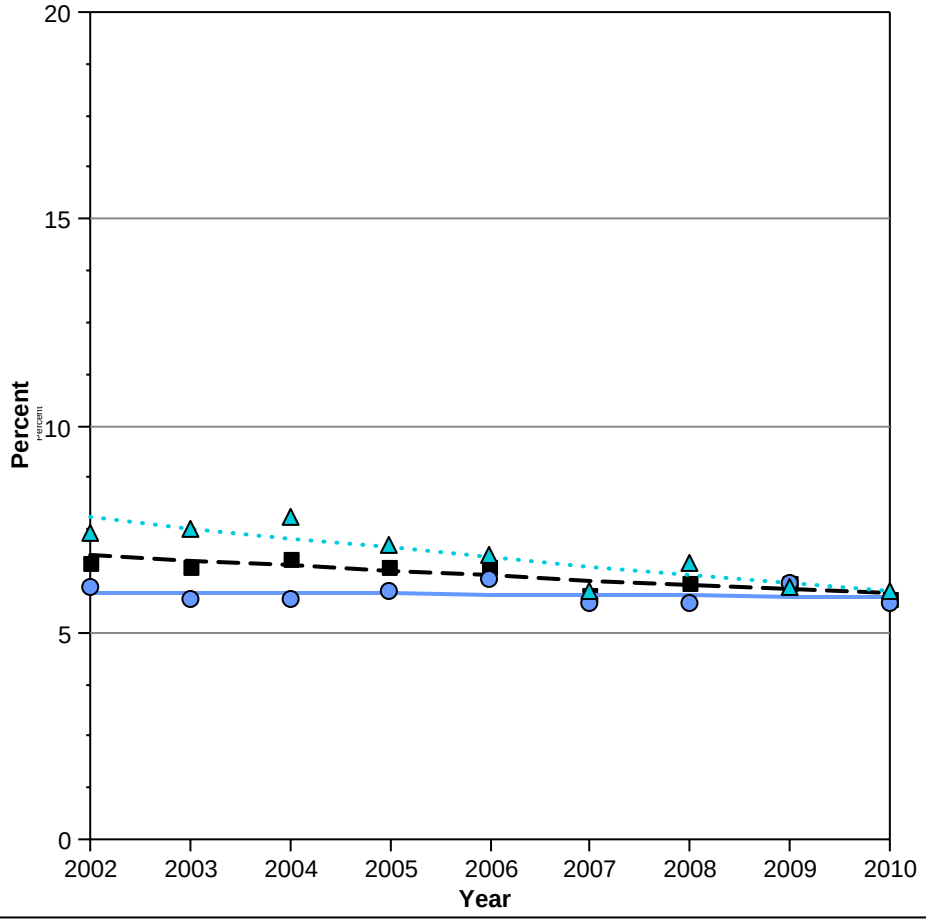
From 2002 to 2008 (years data are available), there were no trend differences by race/ethnicity or poverty level in either age group.

Figure PSI1: Initiation of cigarette use among children, adolescents and young adults by age of respondant: 2002-2010



Source: Substance Abuse and Mental Health Services Administration, National Household Survey on Drug Use and Health.
Data are not age-adjusted.

Figure PSI2: Initiation of cigarette use among children and adolescents aged 12-17 by sex: 2002-2010



Source: Substance Abuse and Mental Health Services Administration, National Household Survey on Drug Use and Health.
Data are not age-adjusted.

Most Recent Estimates

In the 12 and 17 age group, males and females had similar smoking initiation rates in 2010 (males, 5.7 percent; females, 6.0 percent).

In the 12+ age group, males and females initiated smoking at similar rates in 2010 (males, 3.1 percent; females, 2.3 percent).

Healthy People 2020 Targets

Decrease the percentage to initiate cigarette smoking to:

- 4.2 percent to initiate cigarette smoking in the 12 to 17 age group
- 6.3 percent to initiate cigarette smoking in the 18 to 25 age group

Groups at High Risk for Beginning Smoking

Overall, blacks have lower smoking initiation rates during adolescence than whites and Hispanics. Blacks begin regularly smoking primarily after the age of 18. Hispanics have an earlier onset of cigarette smoking compared to Asians/Pacific Islanders and blacks, but have a similar age of initiation compared to whites.

Young people who come from low-income families or families with less education are more likely to smoke. Young people are also more likely to smoke when they have less success and involvement in school and fewer skills to resist the pervasive pressures to use tobacco. Tendencies to take risks and rebel are among the other risk factors for beginning smoking.

Key Issues

Nine out of 10 daily smokers try their first cigarette before the age of 18 and become addicted during adolescence, with 99 percent of first use by 26 years of age. In fact, in 2010 most new smokers were younger than 18 when they first smoked cigarettes (60 percent or 1.4 million).. Studies of smokers have indicated that the younger the age of smoking initiation, the greater the risk for developing nicotine dependence. People in adolescence and young adulthood are highly susceptible to initiating tobacco use because they are more willing to take risks, are more influenced by social pressures, and are highly susceptible to advertising. Tobacco companies spend more than $1 million dollars an hour to market their products, and tobacco product advertising, including depictions of smoking in movies and promotions, entice many young people to start using tobacco. However, the recent Surgeon General report predicts youth smoking initiation can be significantly curtailed by instituting comprehensive anti-smoking programs and increasing cigarette prices. Efforts to help young people delay or, even better, avoid smoking would help to prevent many cancers, as well as other adverse side effects associated with smoking.

A study examining high school graduates one year after graduation found that, among those who were "never smokers" in 12th grade, 25 percent had begun smoking. Among 12th-grade smokers, 39 percent had increased their cigarette use. Efforts to reduce smoking among adolescents should be extended to young adults because smoking initiation extends into young adulthood. Particular attention needs to be paid to those young adults not enrolled in college because they have higher smoking rates compared to those enrolled in college.

Research suggests that menthol cigarettes help adolescents and young adults begin smoking (see FDA-CTP-TPSAC report on menthol). Emerging smokeless and other non-cigarette tobacco products such as hookahs/water pipes are also of future concern.

Additional Information on Smoking Initiation

- Centers for Disease Control and Prevention. Tobacco use among middle and high school students --- United States, 2000-2009. MMWR Morb Mortal Wkly Rep. 2010 Aug 27;59(33):1063-8. http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5933a2.htm
- Centers for Disease Control and Prevention. Cigarette use among high school students --- United States, 1991—2009. MMWR Morb Mortal Wkly. 2010 July;59(26);797-801. http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5926a1.htm?s_cid=mm5926a1_w
- Center for Disease Control and Prevention. A Report of the Surgeon General: Preventing Tobacco Use Among Youth and Young Adults, 2012. http://www.surgeongeneral.gov/library/preventing-youth-tobacco-use/index.html
- Changing Adolescent Smoking Prevalence: Smoking and Tobacco Control Monograph #14 (NCI) http://cancercontrol.cancer.gov/tcrb/monographs/14/index.html
- Fagan P, Moolchan ET, Lawrence D, Fernander A, Ponder PK. Identifying health disparities across the tobacco continuum. Addiction 2007;102 (Suppl. 2):5–29.
- Food and Drug Administration: Tobacco Products Scientific Advisory Committee. 2012. http://www.fda.gov/AdvisoryCommittees/CommitteesMeetingMaterials/TobaccoProductsScientificAdvisoryCommittee/default.htm
- Healthy People 2010, Volume 2, Chapter 27 - Tobacco Use and Midcourse Review http://www.healthypeople.gov/Document/html/volume2/27tobacco.htm http://healthypeople.gov/data/midcourse/html/focusareas/FA27TOC.htm
- Healthy People 2020, Tobacco Use – Topics and Objectives http://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicid=41
- Jamner LD, Whalen CK, Loughlin SE, et al. Tobacco use across the formative years: a road map to developmental vulnerabilities. Nicotine Tob Res. 2003;5:S71–S87.

- Kandel DB, Kiros GE, Schaffran C, Hu MC. Racial/ethnic differences in cigarette smoking initiation and progression to daily smoking: a multilevel analysis. Am J Public Health 2004;94:128–35.
- Preventing Tobacco Use Among Young People: A Report of the Surgeon General, 1994 (CDC)
  http://www.cdc.gov/tobacco/data_statistics/sgr/1994/
- Reducing Tobacco Use: A Report of the Surgeon General (Tobacco Information and Prevention Source, CDC)
  http://www.cdc.gov/mmwr/preview/mmwrhtml/rr4916a1.htm
- Rigotti NA, Lee JE, Wechsler H. U.S. college students' use of tobacco products: results of a national survey. JAMA 2000:284:699-705.
- Substance Abuse and Mental Health Services Administration (SAMHSA)
  http://oas.samhsa.gov/nsduh.htm#NSDUHinfo
- Trinidad DR, Gilpin EA, Lee L, Pierce JP. Do the majority of Asian-American and African-American smokers start as adults? Am J Prev Med 2004;26:156–8.

Youth Smoking

Cigarette smoking by high school students rose early and through the mid 1990s, but this rate has fallen more steeply since the end of the 1990s. The most recent data point in 2009 is consistent with a falling trend. Smokeless tobacco use by high school students fell from the 1990s to 2003 but did not change significantly from 2003 to 2009.

Youth Tobacco Use and Cancer

From 1997 to 2010, the number of youth under 18 who became daily cigarette smokers (defined as smoking every day for at least 30 days) each day declined from 3,000 to about 1,000, according to the National Survey on Drug Use and Health.

Other forms of tobacco commonly used by young people include smokeless tobacco (chewing tobacco and snuff, also known as spit tobacco) and cigars. Both of these can also cause cancer.

Measure

Percentage of high school students who were current cigarette, cigar, or smokeless tobacco users: Students (Grades 9–12) who reported having used cigarettes, cigars, or smokeless tobacco in the 30 days before the survey.

Period – 1991–2009

Trends

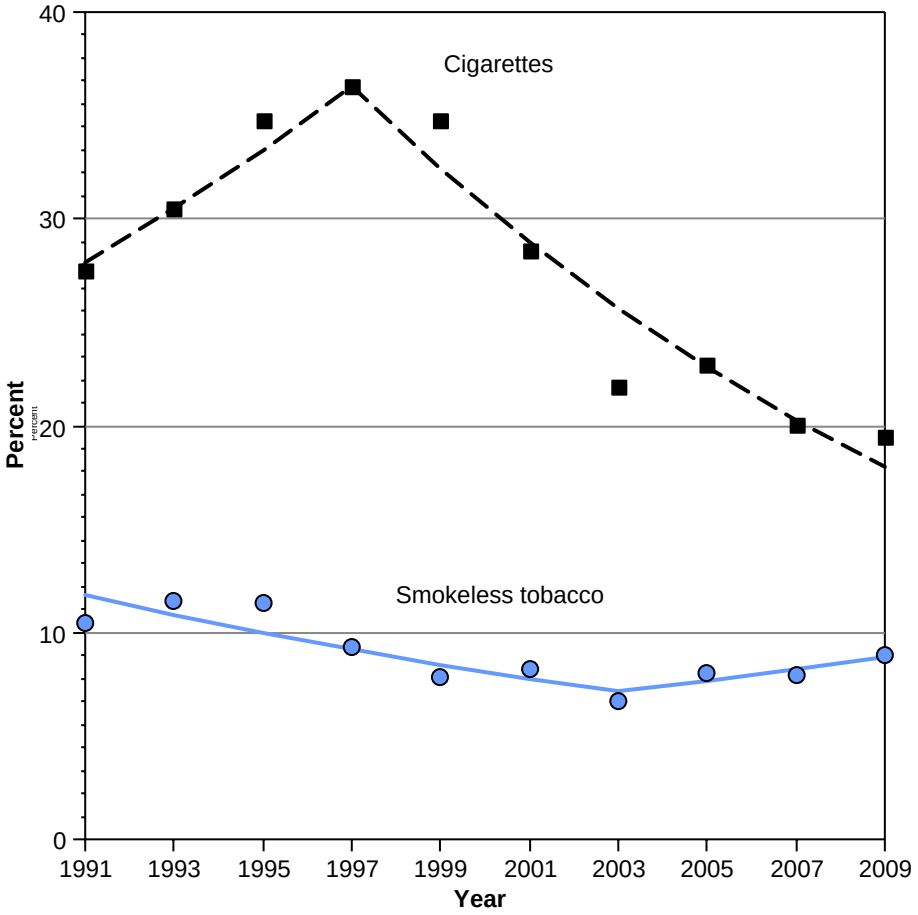
Cigarettes: After a non-significant rise from 1991 to 1997, current cigarette smoking among youth has fallen. From 1997 to 2009, youth smoking showed a statistically significant long-term downward trend. The trends between 1999 and 2009 were similar by sex and by race/ethnicity.

Smokeless tobacco: Current smokeless tobacco use fell from 1991 to 2003, followed by a non-significant rise from 2003 to 2009.

Smokeless tobacco use among females was low, with a non-significant increase from 1999 to 2003; smokeless tobacco use among females has remained stable since 2003, while male trends were similar to the overall trends.

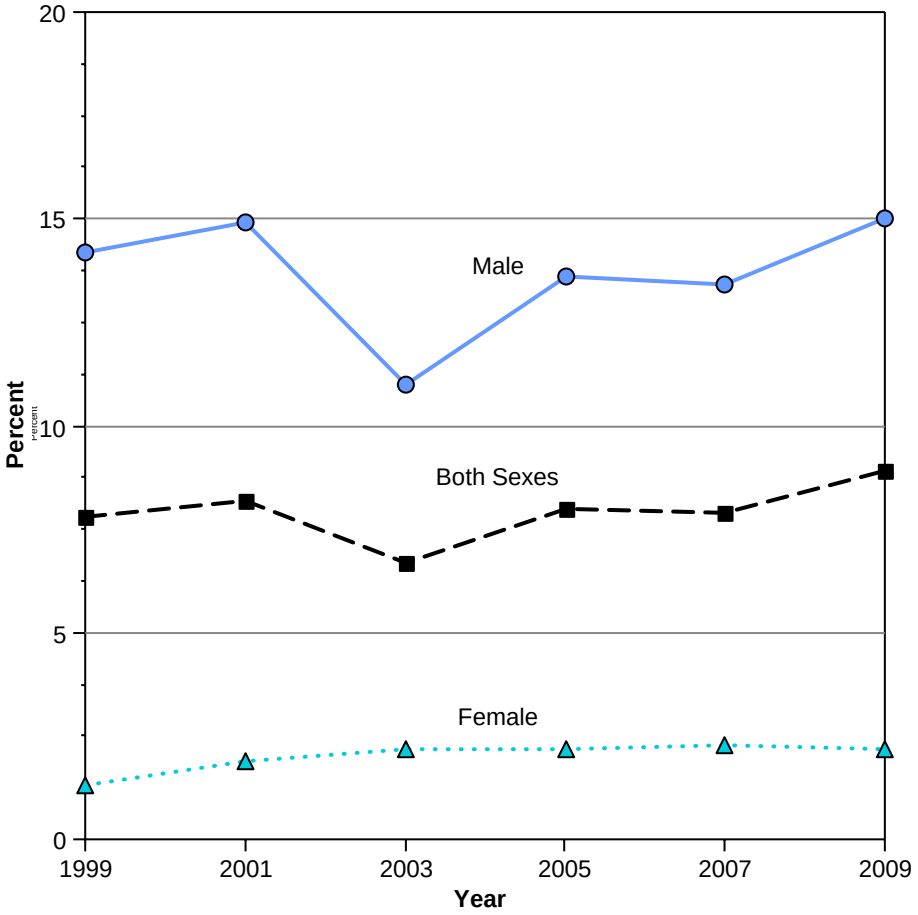
Trends among non-Hispanic whites indicated a non-significant rise for use of smokeless tobacco between 1995 and 1999, while trends among non-Hispanic blacks indicated a statistically significant rise, and trends among Hispanics indicated stability over this same time period.

Figure PYS1: Percentage of high school students (grades 9-12) who were current users of cigarettes or smokeless tobacco: 1991-2009



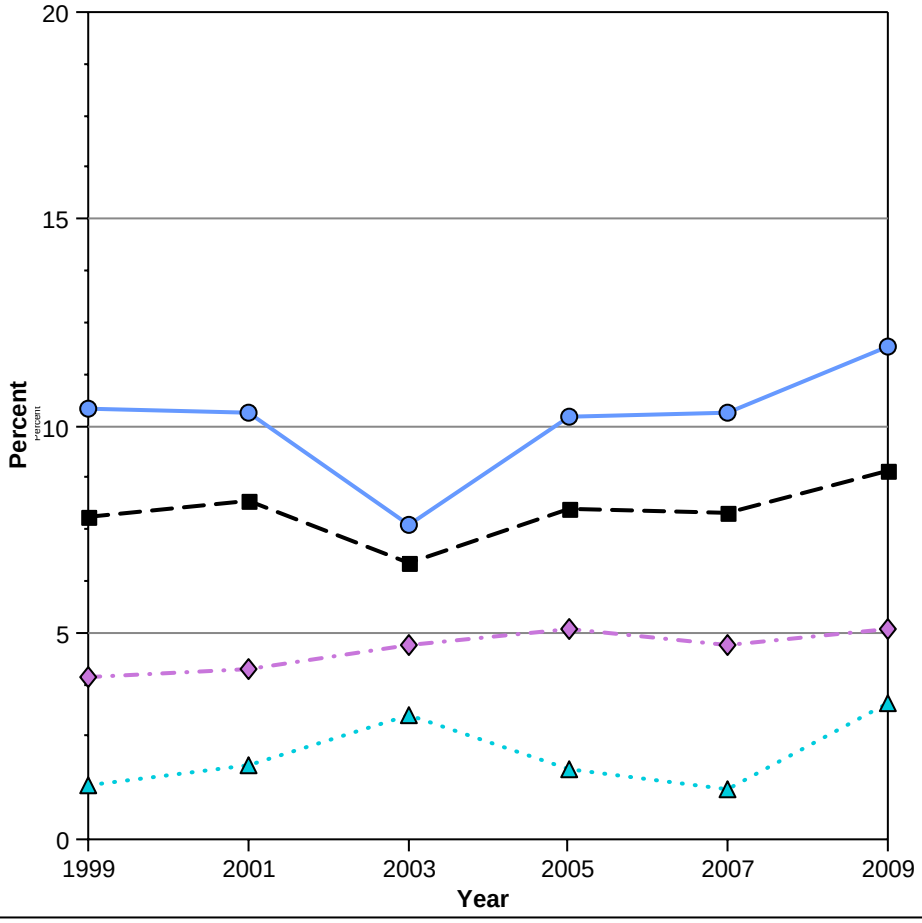
Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion. Youth Risk Behavior Surveillance System.
Data are not age-adjusted.

Figure PYS2: Percentage of high school students (grades 9-12) who were current users of smokeless tobacco by sex: 1999-2009



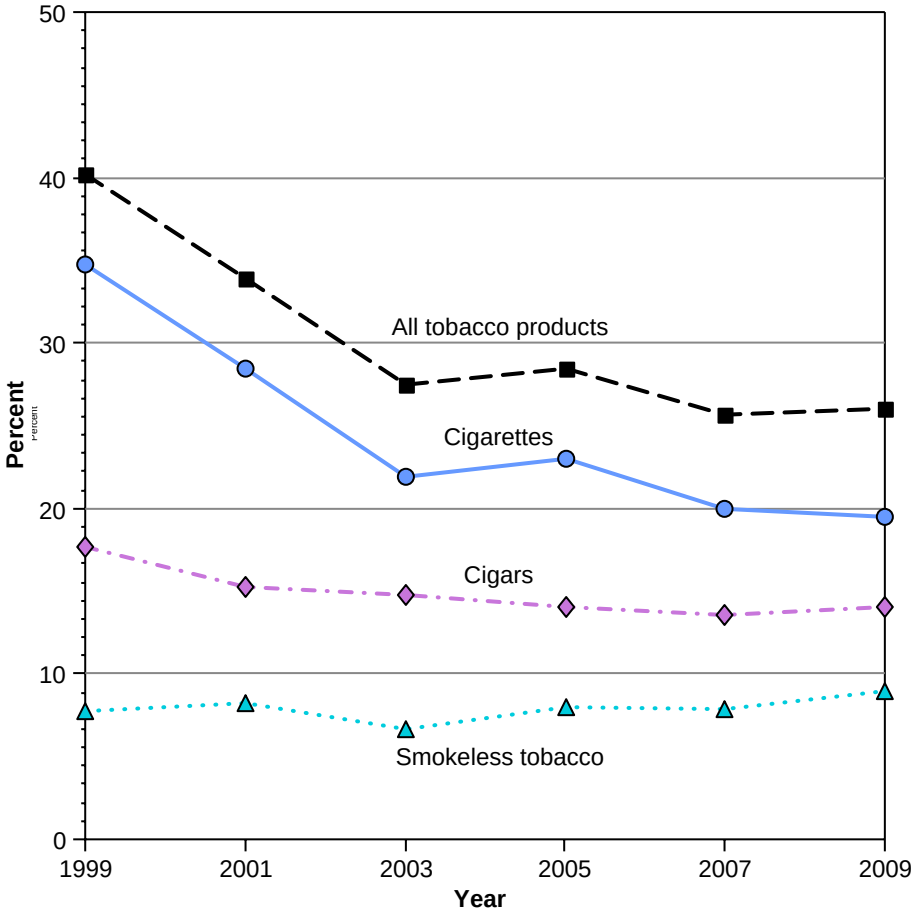
Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion. Youth Risk Behavior Surveillance System.
Data are not age-adjusted.

Figure PYS3: Percentage of high school students (grades 9-12) who were current users of smokeless tobacco by race/ethnicity: 1999-2009



Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion. Youth Risk Behavior Surveillance System.
Data are not age-adjusted.

Figure PYS4: Percentage of high school students (grades 9-12) who were current users of tobacco by type of tobacco product: 1999-2009



Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion. Youth Risk Behavior Surveillance System.
Data are not age-adjusted.

Most Recent Estimates

Among high school students in 2009:

- 19.5 percent were current cigarette smokers (19.1 percent for female, 19.8 percent for male)
- 8.9 percent were current users of smokeless tobacco
- 14 percent were current cigar smokers (including little cigars)
- 26 percent were current users of "any tobacco" product

Healthy People 2020 Targets

Decrease the proportion of high school students who currently:

- Smoke cigarettes to 16 percent

- Use smokeless tobacco to 6.9 percent
- Smoke cigars to 8 percent
- Use any tobacco product to 21 percent

Groups at High Risk for Tobacco Use

In 2009, cigarette use was higher among non-Hispanic white (22.5 percent) and Hispanic students (18.0 percent) than non-Hispanic black students (9.5 percent). Male students' use of cigarettes was about the same as female students' use (19.8 percent for males and 19.1 percent for females). Cigarette use was higher among 12th graders (25.2 percent), 11th graders (22.3 percent), and 10th graders (18.3 percent) than 9th-grade students (13.5 percent). Overall, 7.3 percent of high school students had smoked on 20 or more of the preceding 30 days, and frequent use was more common among white students than black and Hispanic students. Among current smokers, 7.8 percent of students smoked more than 10 cigarettes per day on the days that they smoked, with this rate being higher for male students than female students.

High school males are far more likely than females to use smokeless tobacco (15 percent males, 2.2 percent females). Non-Hispanic whites reported a greater use of smokeless tobacco products (11.9 percent) than either non-Hispanic blacks (3.3 percent) or Hispanics (5.1 percent).

Current cigar use was higher among male students (18.6 percent) than among female students (8.8 percent) and was slightly higher among non-Hispanic white (14.9 percent) students than among Hispanic (12.7 percent) and non-Hispanic black students (12.8 percent).

Typically, as high school grade increases, use of each of the three types of tobacco products (cigarettes, smokeless, and cigars) increases.

Key Issues

In 2006, in her Final Opinion in the U.S. Department of Justice lawsuit against the cigarette industry, Federal District Judge Gladys Kessler determined that despite their denials, cigarette companies market to young people, and that their "marketing activities are intended to bring new, young, and hopefully long-lived smokers into the market in order to replace those who die (largely from tobacco-caused illnesses) or quit." She further noted that cigarette companies "intensively researched and tracked young people's attitudes, preferences, and habits...knew youth were highly susceptible to marketing and advertising appeals, would underestimate the health risks and effects of smoking, would overestimate their ability to stop smoking, and were price sensitive," and that the companies "used their knowledge of young people to create highly sophisticated and appealing marketing campaigns targeted to lure them into starting smoking and later becoming nicotine addicts."

Cigarettes are one of the most heavily marketed products in the United States. Between 1940 and 2005, U.S. cigarette manufacturers spent about $250 billion (in 2006 dollars) on cigarette advertising and promotion. In 2008, the last year for which data is available, advertising expenditures totaled about $10 billion. Much tobacco advertising targets the psychological needs of adolescents, such as popularity, peer acceptance, and positive self-image, and creates the perception that smoking will satisfy these needs. Even brief exposure to tobacco advertising influences adolescents' attitudes and perceptions about smoking and smokers and adolescents' intentions to smoke. Strong and consistent evidence from longitudinal studies indicates that exposure to cigarette advertising influences adolescents to initiate smoking and to move toward regular smoking. Studies of tobacco advertising bans in various countries show that comprehensive bans reduce tobacco consumption. In addition, studies show that mass media campaigns designed to discourage tobacco use can change youth attitudes about tobacco use and curb youth smoking initiation. Children and adolescents are heavily exposed to entertainment media, averaging 7.5 hours of media use per day. Depictions of smoking are pervasive in movies but are currently less common in television and music videos. The total weight of evidence from research indicates a causal relationship between exposure to movie smoking depictions and youth smoking initiation.

The Food and Drug Administration (FDA) was granted regulatory authority over tobacco by Congress through the Family Smoking Prevention and Tobacco Control Act, which was signed into law by the president on June 22, 2009. The new law gives the FDA authority to regulate tobacco product manufacturing, marketing, and sale, including marketing and sale to youth. In September 2009, FDA banned fruit and candy-flavored cigarettes, widely viewed as appealing to youth. In March 2010, the FDA re-issued a rule that prohibits sale of cigarettes and smokeless tobacco to youth younger than age 18 and imposes certain marketing, labeling, and advertising requirements. On March 31, 2010, President Obama signed the Prevent All Cigarette Trafficking Act, intended to reduce the availability of low-cost cigarettes sold over the Internet or by mail order and stop sales of such products to youth. Later in 2010, the FDA published a plan to enforce restrictions on advertising of menthol and other cigarettes to youth in minority communities. In March 2011, after a year-long review of the public health consequences of menthol in cigarettes, the FDA's Center for Tobacco Products (CTP) Tobacco Product Scientific Advisory Committee (TPSAC) concluded, "The evidence is sufficient to conclude that it is more likely than not that the availability of menthol cigarettes increases the likelihood of experimentation and regular smoking beyond the anticipated prevalence if such cigarettes were not available, in the general population and particularly in African Americans. The evidence is sufficient to conclude that it is more likely than not there is a causal relationship between the availability of menthol cigarettes and regular smoking among youth.

As restrictions on smoking and cigarette sales increase, some tobacco companies are developing cigarette alternatives. One such example is the development of dissolvable tobacco products, nicotine-containing products that dissolve in the mouth such as lozenges, strips, and sticks. There is not much data about the national use of these products because they have been test-marketed in only a few U.S. locations. In addition, not much is known about the health risks of dissolvable tobacco use. However, many clinicians have expressed concern that dissolvable tobacco products, which often resemble candy, may have particular appeal for youth and that use of these products by adolescents may lead to nicotine addiction and possible overdose. The FDA's CTP-TPSAC met several times between July 2011 and March 2012 to discuss what is known and what additional information is needed to provide a basis for regulation of such products.

The overall declining long-term trend in cigarette use by youth is encouraging. However, reaching the Healthy People 2020 (HP2020) goal will require increased prevention efforts, including increasing taxes on cigarettes, sustained anti-tobacco media campaigns, expanded smoke-free indoor air laws, and community mobilization combined with other interventions to decrease youth's access to cigarettes. The Surgeon General's report *Preventing Tobacco Use Among Youth and Young Adults* outlines evidence that mass media campaigns, community and school-based programs, and statewide tobacco control programs can effectively reduce the prevalence of youth smoking. Increases in cigarette prices can also reduce both the initiation and prevalence of youth smoking.

In addition to preventing smoking initiation, efforts need to target smoking cessation among youth. Many adolescents who smoke would like to quit, and HP2020 Objective TU-7 focuses on increasing tobacco use cessation attempts among adolescent smokers. The 2008 Public Health Service Guidelines note that smoking cessation counseling has been shown to be effective in the treatment of adolescent smokers, and recommends that adolescent smokers be provided with counseling interventions to aid them in quitting smoking (Strength of Evidence = B).

Additional Information on Youth Smoking

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- Kessler G. U.S.A. v. Philip Morris USA inc. Final Opinion. August 17, 2006.
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  http://www.samhsa.gov/data/NSDUH/2k10Results/Web/HTML/2k10Results.htm#Ch4
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  http://cancercontrol.cancer.gov/tcrb/monographs/19/monograph19.html
  http://cancercontrol.cancer.gov/tcrb/monographs/19/m19_complete.pdf [PDF]

- Tobacco Use, Access, and Exposure to Tobacco in Media Among Middle and High School Students—United States, 2000–2009
  MMWR August 27, 2010/59(33);1063-1068
  http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5933a2.htm
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  http://www.cdc.gov/tobacco/data_statistics/sgr/2012/index.htm
- Youth Risk Behavior Surveillance—United States, 2009.
  MMWR June 4, 2010 / 59(SS-5): 1-142.
- Youth Risk Behavior Surveillance System (YRBSS) (CDC)
  http://www.cdc.gov/nccdphp/dash/yrbs/index.htm

Adult Smoking

Adult cigarette smoking has slowly fallen since 1991. While the percentage of male smokers has constantly trended downward, the percentage of female smokers trended downward from 1991 to 2005, followed by no change in cigarette smoking from 2005 to 2010. Among 18 to 24-year-olds, there was a rise, followed by a fall in smoking prevalence from 1998 to 2010. The lack of change in overall cigarette smoking from 2005 to 2010 for females is apparently because of the lack of change in smoking among females 25 years of age and older.

Smoking and Cancer

Cigarette smoking is the leading preventable cause of death in the United States. It causes approximately 30 percent of all U.S. cancer deaths each year (more than 173,000 estimated deaths projected for 2012, American Cancer Society Facts & Figures 2012).

Cigarette smoking causes cancers of the lung, larynx, mouth, esophagus, pharynx, bladder, pancreas, kidney, cervix, stomach, and acute myeloid leukemia.

Measure

Percentage of adults who were current cigarette smokers: Adults aged 18 and older who reported smoking 100 or more cigarettes in their lifetimes and who, at the time of the interview, continued to smoke every day or some days.

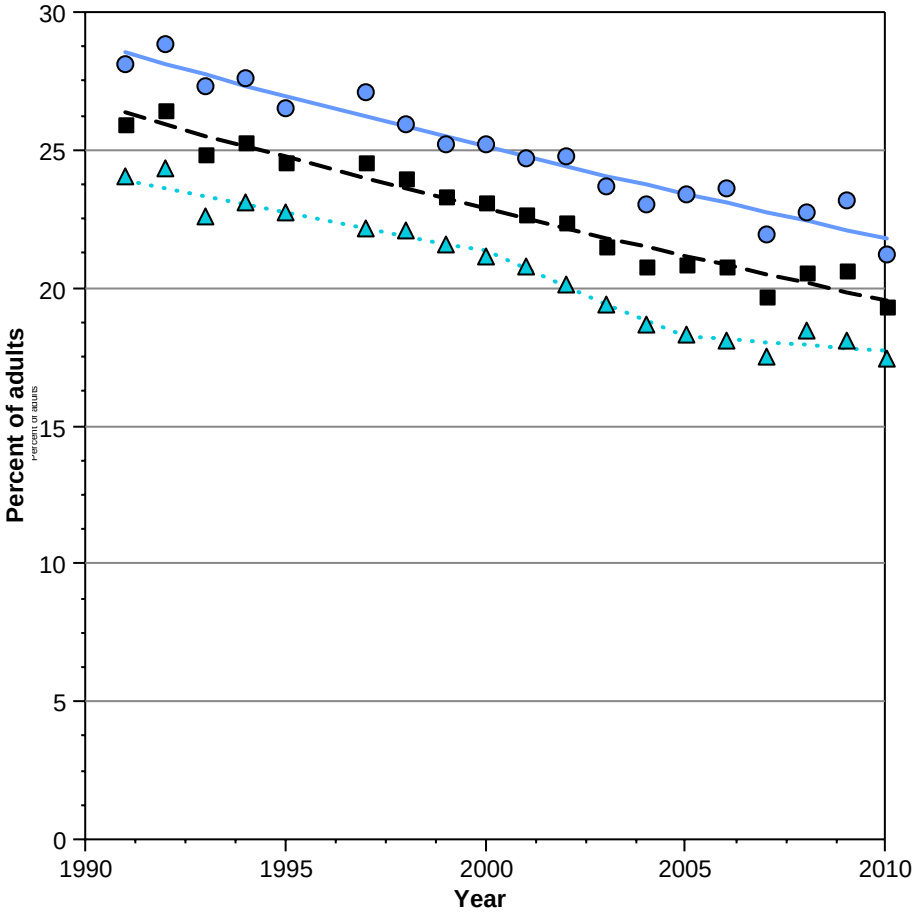
Period – 1991–2010

Trends

There is a long-term trend for decreased smoking rates for both men and women aged 18 years and older. There was a more accelerated reduction in smoking rates in women from 2000 to 2005, after which smoking rates did not change from 2005 to 2010. In contrast, men had a more gradual downward trend in smoking from 1991 to 2010. Among 18 to 24 year-olds, smoking trends rose and then fell. The decline among women began in 1999, approximately two years later than among men. In contrast, in the group aged 25 years and older, men showed a steady fall over the entire time period from 1991 to 2010, while women had a decrease in smoking from 1991 to 2007, after which smoking rates remained stable.

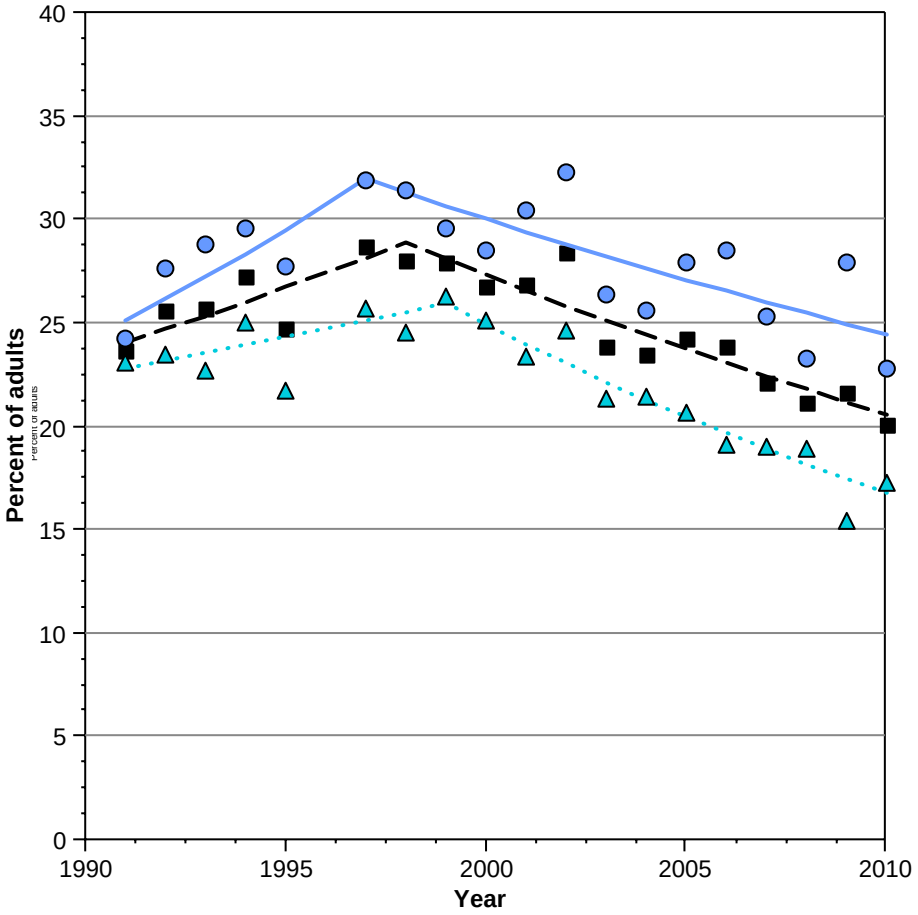
Current cigarette smoking prevalence showed similar declines from 1991 to 2010 by race/ethnicity. Among adults aged 25 years and older, smoking prevalence declined significantly for all three levels of education. However, smoking declines for those with only a high school education were more shallow than for those with less than a high school education or those with greater than a high school education. Those living below and above 200 percent of the poverty level experienced similar falling trends in smoking prevalence.

Figure PAS1: Percentage of adults aged 18 years and older who were current cigarette smokers by sex: 1991-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

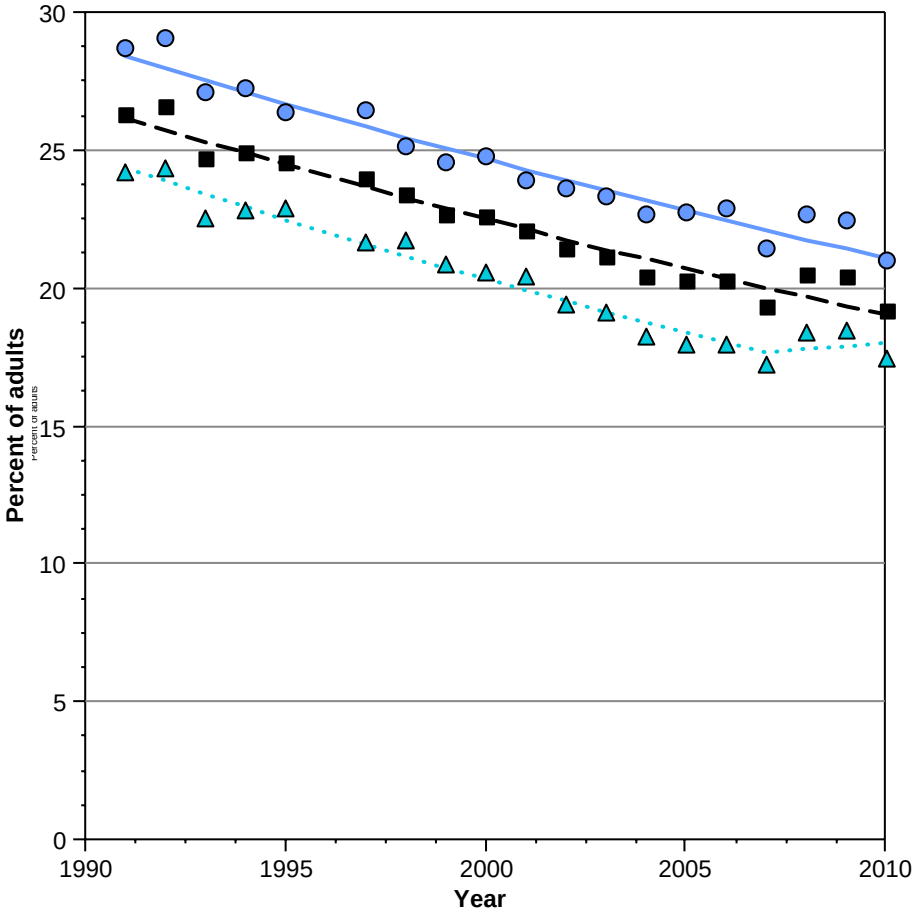
Figure PAS2: Percentage of adults aged 18-24 years who were current cigarette smokers by sex: 1991-2010



Both Sexes
Male
Female

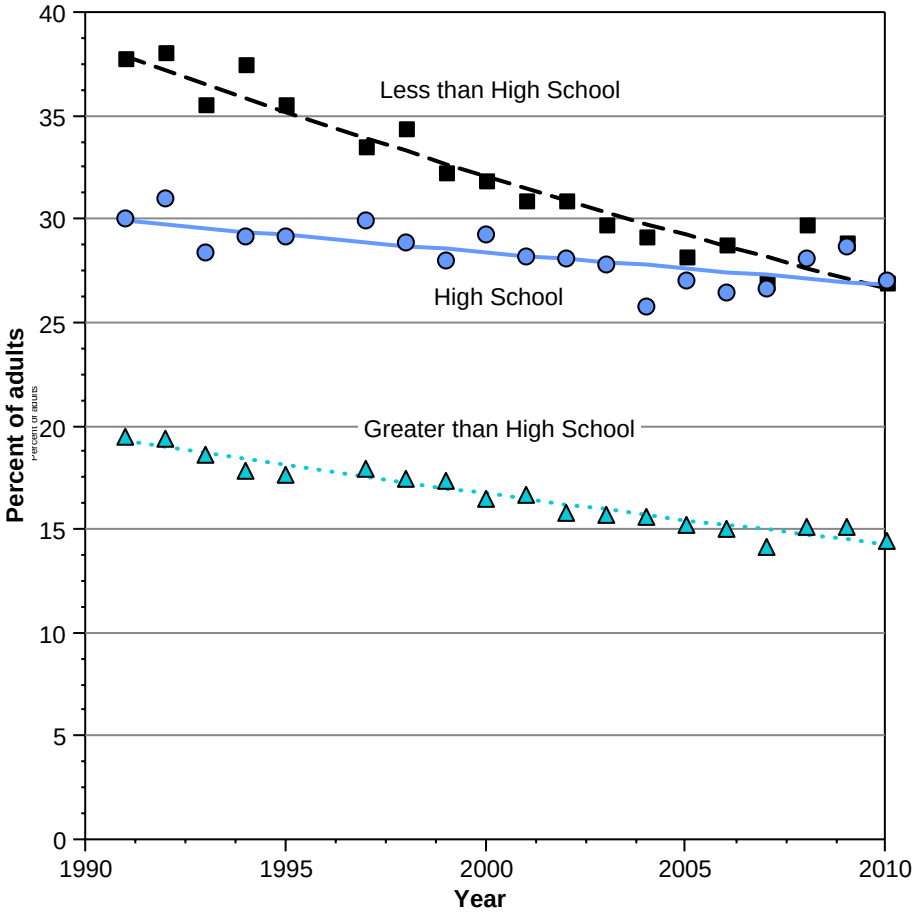
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-19, 20-24.

Figure PAS3: Percentage of adults aged 25+ years and older who were current cigarette smokers by sex: 1991-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 25-34, 35-44, 45-64, 65+.

Figure PAS4: Percentage of adults aged 25+ years and older who were current cigarette smokers by highest level of education obtained: 1991-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 25-34, 35-44, 45-64, 65+.

Most Recent Estimates

In 2010, 19.3 percent of adults aged 18 and older—21.2 percent of men and 17.5 percent of women—were current cigarette smokers. In this same group, 5.4 percent of men and 0.2 percent of women were current users of smokeless tobacco. Cigarette smoking prevalence was similar for non-Hispanic whites (21.7 percent) and non-Hispanic blacks (19.9 percent) but was lower for Hispanics (12.2 percent).

Among adults aged 18 to 24 years, 20.0 percent—22.7 percent of men and 17.3 percent of women—were current cigarette smokers. Among adults aged 25 years and older, 19.2 percent—21.0 percent of men and 17.5 percent of women—were current cigarette smokers.

In 2010, there were similar smoking rates among adults aged 25 and older who had less than a high school education (26.9 percent) and a high school education (27.0 percent). Those with greater than a high school education smoked at the lowest level (14.4 percent) among the three education groups.

Among adults living below 200 percent of the federal poverty level, 26.8 percent smoked cigarettes, while 15.9 percent of adults living at or above 200 percent of the federal poverty level smoked cigarettes.

Healthy People 2020 Targets

Reduce to 12 percent the proportion of adult current cigarette smokers.

Reduce to 0.3 percent the proportion of adult current smokeless tobacco users.

Reduce to 0.2 percent the proportion of adult current cigar smokers.

Groups at High Risk for Smoking

Men are more likely than women to smoke cigarettes and cigars. American Indian/Alaska Natives are more likely to smoke cigarettes than non-Hispanic whites and non-Hispanic blacks, who in turn are more likely to smoke cigarettes than Hispanics and Asians.

People living below 200 percent of the poverty level and those 25 years of age and older with a high school or less than a high school education are also at a higher risk of smoking.

Key Issues

Although the rate of smoking has dropped by more than half since the Surgeon General's first report on smoking in 1964 (42 percent of adults were current smokers in 1965), progress has slowed over the past few years, especially for women. It appears that if trends progress at the current pace, only a few subgroups will reach the Healthy People 2020 (HP2020) goal of 12 percent or fewer smokers. Thus far, Hispanic and non-Hispanic Asian women, those 65 years of age and older, and those with an undergraduate degree or higher level of education have reached or are approaching the HP2020 goal. In addition, in fiscal year 2012, only two states, Alaska and North Dakota are funding tobacco control programs at the level recommended by the Centers for Disease Control and Prevention (CDC). Only four other states provide even half the recommended funding, while 33 states and Washington, D.C., provide less than one-quarter, and four states provided no funding this fiscal year. Further decreases in tobacco use could vastly improve the public's health.

Concurrent with the decrease in adolescent cigarette smoking since 1997 and general decreases in adult smoking, the tobacco industry has increased its tobacco promotion and advertising, targeting young adults who are price- and brand-sensitive consumers. Among adults aged 18 years and older, those aged 18 to 24 had the highest smoking prevalence or were among the highest groups of smokers in most years based on different national surveys and across different definitions of a smoker (e.g., NSDUH and NHIS/TUS-CPS, respectively). In 2010, one out of three young adults younger than age 26 were smokers by the least stringent definition, and almost one out of four young adults 18 to 24 years old were smokers based on the definition of having ever smoked 100 cigarettes. According to the NSDUH survey, 99 percent of adult current smokers began smoking by age 26. Another recent phenomenon is the emergence of young adult use of water pipes to smoke tobacco, especially at specialty cafes near college campuses.

From 1997 to 2007, there was more than a two-fold increase in smoking little or small cigars, while there was a 6 percent decrease in smoking large cigars. In 2009, U.S. retail sales of cigars were more than $8 billion. Large cigar sales accounted for 49 percent, cigarillo sales for 31 percent, and small or little filtered cigars for 19 percent of the total cigar market share. In 2009, 5.4 percent of all adults in the United States—9.1 percentofadult men and 1.9 percent of adult women—used cigars on at least one of the past 30 days. Recent changes in the taxing of various cigar size categories and their relationship to taxing of cigarettes has impacted how the tobacco industry promotes these products. Subsequently, this impacts the use of the various types of cigars by smokers, including use of the little filtered cigars, which most resemble cigarettes and are even sold in packs of 20. Cigar smoking is a popular trend in the United States, especially among young and middle-aged white men with higher-than-average incomes and education. However, the most recent data in 2010 suggests a possible change in pattern by employment status for those 18 years and older, with 9.4 percent of unemployed adults reporting cigar use during the past 30 days compared to 5.9 percent of full-time workers reporting this use. The "cigar culture" is supported by cigar magazines, shops, bars, and clubs.

There is an increasing number of smokeless products being promoted by the tobacco industry, and some are promoted as products to use when it is inconvenient to smoke. Men are more likely than women to use smokeless tobacco; in 2010, the estimate for adult women was 0.2 percent and 5.4 percent for adult men. There was a trend for decreased smokeless tobacco use in men and women aged 18 years and older from 1987 to 2000. However, while smokeless tobacco use continued to decline in women from 2000 to 2010, there has been a recent rising trend in smokeless tobacco use in men from 2005 to 2010.

Although the FDA has banned the sale of characterizing flavored cigarettes (except for menthol), flavored smokeless, flavored cigar products, and menthol cigarettes are still available for purchase. The FDA-CTP TPSAC concluded in its report on the review of the public health consequences of menthol in cigarettes to the FDA and the secretary of Health and Human Services, "The evidence is sufficient to conclude that a relationship is more likely than not that the availability of menthol cigarettes results in lower likelihood of smoking cessation success in African Americans, compared to smoking non-menthol cigarettes. (Above Equipoise)."

Additional Information on Adult Smoking

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  http://healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicId=41
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  http://www.healthypeople.gov/data/midcourse/default.htm#pubs
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  http://monographs.iarc.fr/ENG/Monographs/vol83/mono83.pdf

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- Smoking and Tobacco Control Monograph 9 – Cigar Health Effects and Trends (NCI) http://cancercontrol.cancer.gov/tcrb/monographs/9/index.html
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Quitting Smoking

Adult attempt-to-quit rates have recently increased for both men and women, with no substantial differences in trends observed based on gender, race/ethnicity, poverty level, or level of education. Only young adults 18 to 24 years of age had no changes in quit attempts. However, there was a small amount of progress in recent successful quitting, with some overall recent rises restricted to those aged 25 years and older.

The Effects of Quitting Smoking on Cancer Risk

Quitting smoking has major and immediate health benefits for men and women of all ages. Quitting smoking dramatically reduces the risk of lung and other cancers, coronary heart disease, stroke, and chronic lung disease. For example, 10 years after a person quits smoking, his or her risk of lung cancer is decreased to about one-third to one-half of 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 he or she will avoid the devastating health effects of continued tobacco use. Few smokers can quit successfully on their first attempt; most people will require several attempts before they are able to permanently quit. This emphasizes the need for smokers to begin trying to quit as early in life as possible.

Measures

Attempt to quit: Percentage of adult smokers aged 18 years and older who attempted smoking cessation in the past 12 months. This “attempt to quit” includes both current (everyday and some days) smokers at the time of the survey who quit smoking for one day or longer during the past 12 months and recent former smokers (those who quit smoking less than one year ago).

Successful quitting: Percentage of current smokers who initiated smoking at least two years ago and recent former smokers (aged 18 years and older) who had successfully quit smoking 6 to 12 months ago.

Period – 1998–2010

Trends

Quit Attempts of One Day or Longer

Overall, quit attempts of one day or longer remained stable between 1998 and 2005 and rose during the period between 2005 and 2010. The trends by sex show increases over the entire period between 1998 and 2010 for both men (44.4 percent in 1998 to 48.7 percent in 2010) and women (46.1 percent in 1998 to 51.9 percent in 2010). There was no change in rates among adults aged 18 to 24 years based on age ; however, among those aged 25 years and older, there was a significant increase from 43.6 percent in 1998 to 48.6 percent in 2010.

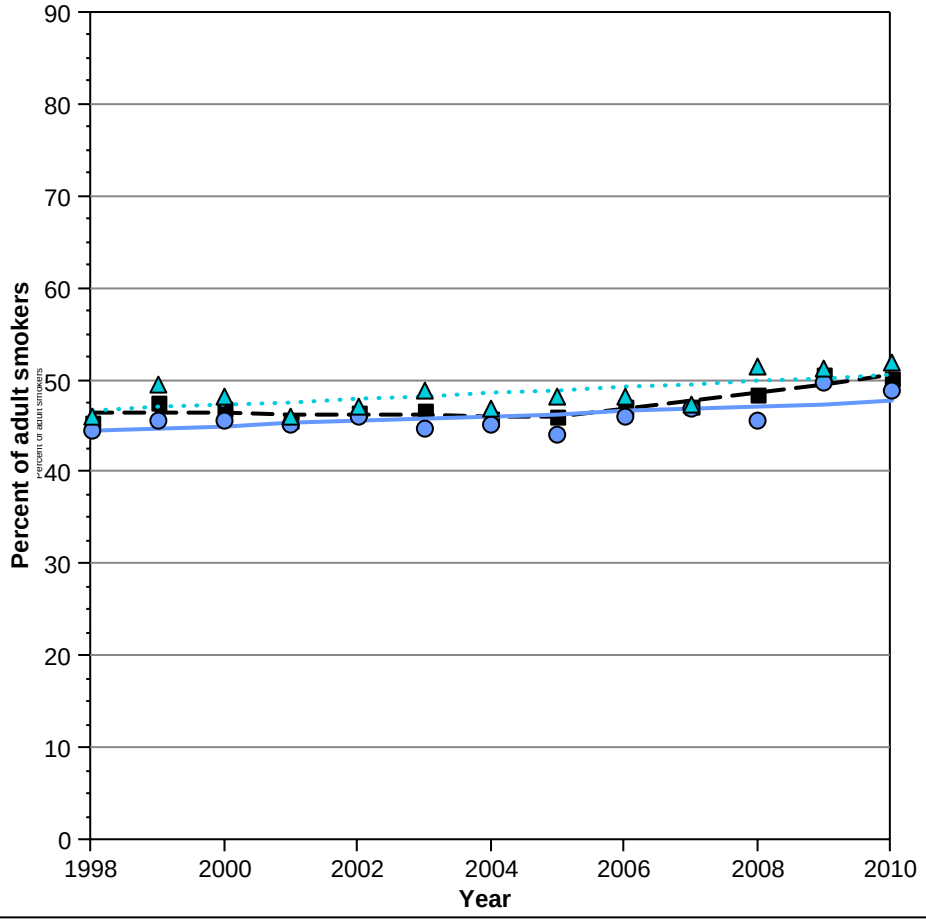
In population subgroups considered by poverty status, there was a small but significant rise in attempts over the whole period of 1998 to 2010 for those greater than or equal to 200 percent of the poverty level. In contrast, those at less than 200 percent of the poverty level had no change in attempt to quit between 1998 and 2007 but a significant rise in attempts from 45.9 percent in 2007 to 51.4 percent in 2010. There were no differences in trends based on level of education.

Attempt-to-quit rates have significantly increased across all races/ethnicities (i.e., Hispanics, non-Hispanic whites, and non-Hispanic blacks). The increase over the entire period of 12.6 percentage points for Hispanics is significantly greater than the 3.7 percentage point increase for non-Hispanic whites.

Recent Successful Quitting 6-12 Months Ago
Between 1998 and 2003, adult rates of successfully quitting smoking did not change, while the estimates of successful quitting rose from 2003 to 2010. Specifically, there was a recent rising trend from 5.3 percent in 2003 to 6.2 percent in 2010. However, trends differed by sex, with male rates stable and female rates showing no significant change over the entire period. Trends by age showed some differences. Rates among adults aged 18 to 24 years were stable, while rates among adults aged 25 years and older showed no change between 1998 and 2003 and a rise between 2003 and 2010.

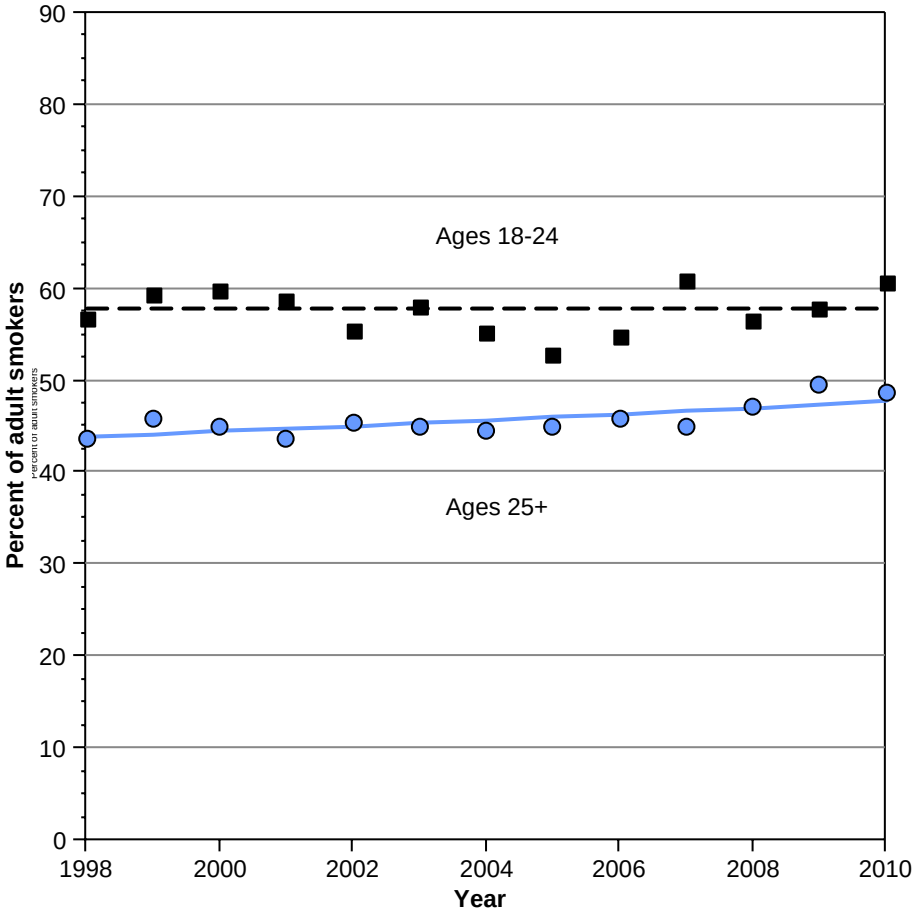
During this period, trends in rates of successfully quitting were stable or showed no change for the various subgroups defined by race/ethnicity, poverty status, or level of education.

Figure PQS1: Percentage of smoking cessation attempts for one day or longer in the past 12 months by adult smokers 18 years and older by sex: 1998-2010



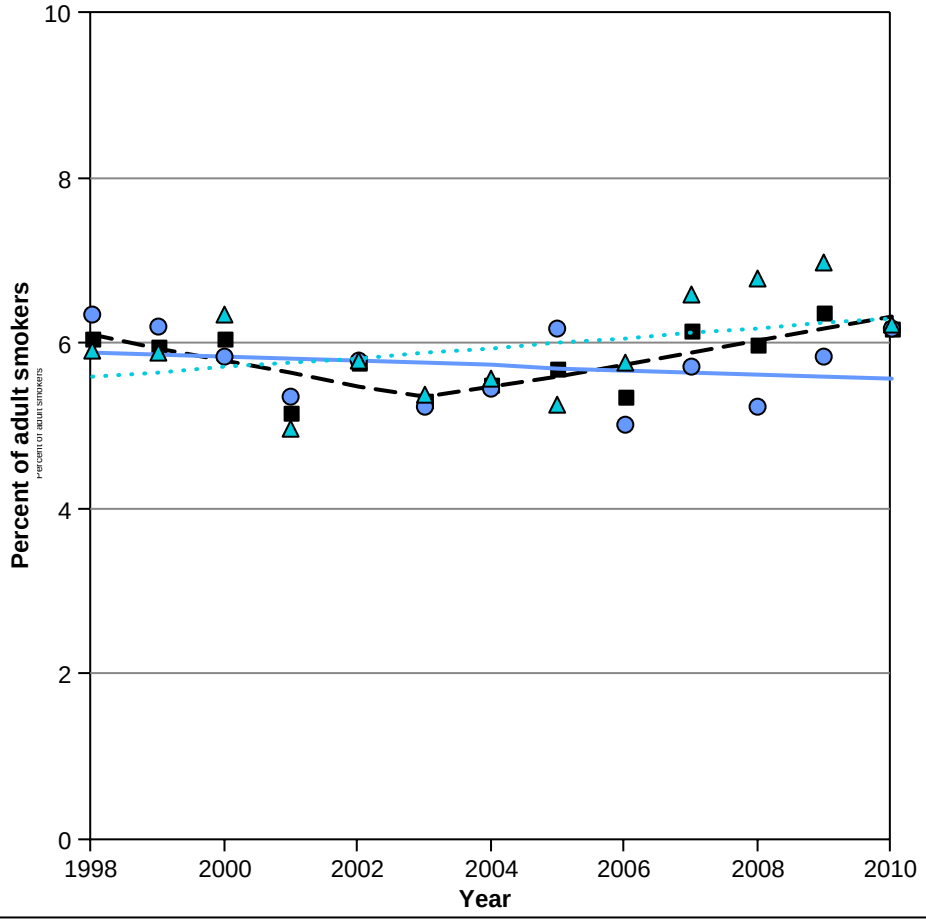
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

Figure PQS2: Percentage of smoking cessation attempts for one day or longer in the past 12 months by adult smokers 18 years and older by age: 1998-2010



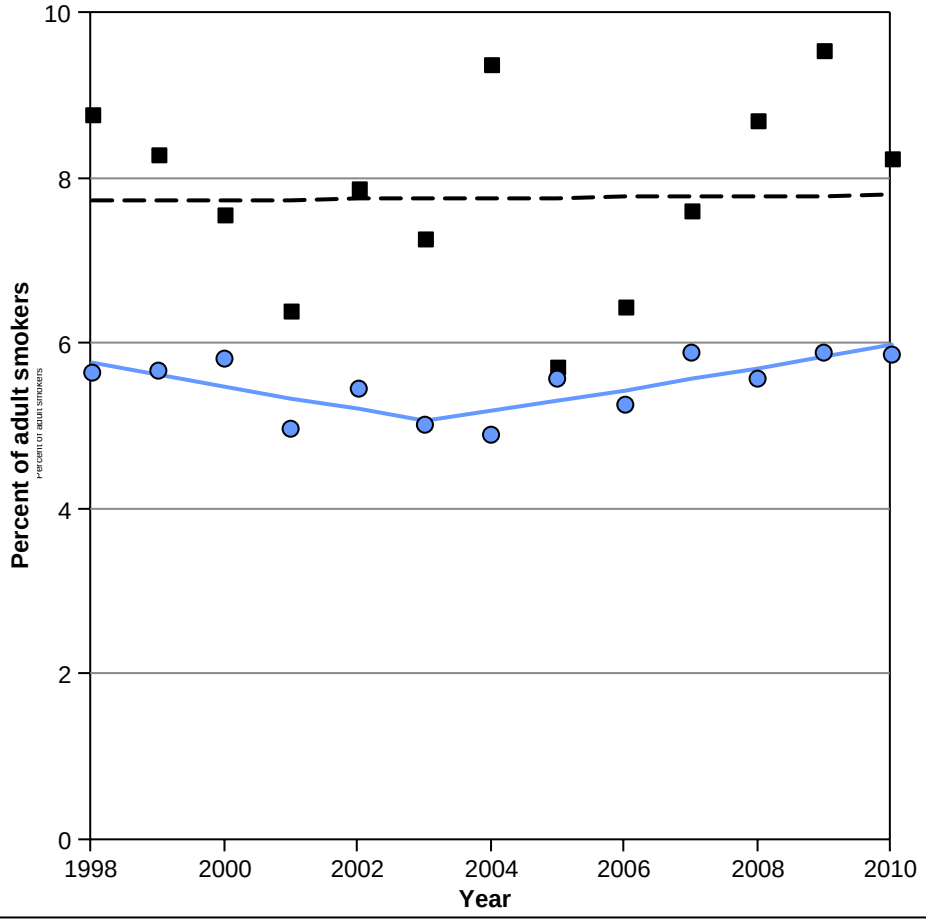
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 standard. Ages 18-24 are age-adjusted using age groups: 18-19, 20-24. Ages 25+ are age-adjusted using age groups: 25-34, 35-44, 45-64, 65+.

Figure PQS3: Percentage of recent smoking cessation success by adult smokers 18 years and older by sex: 1998-2010



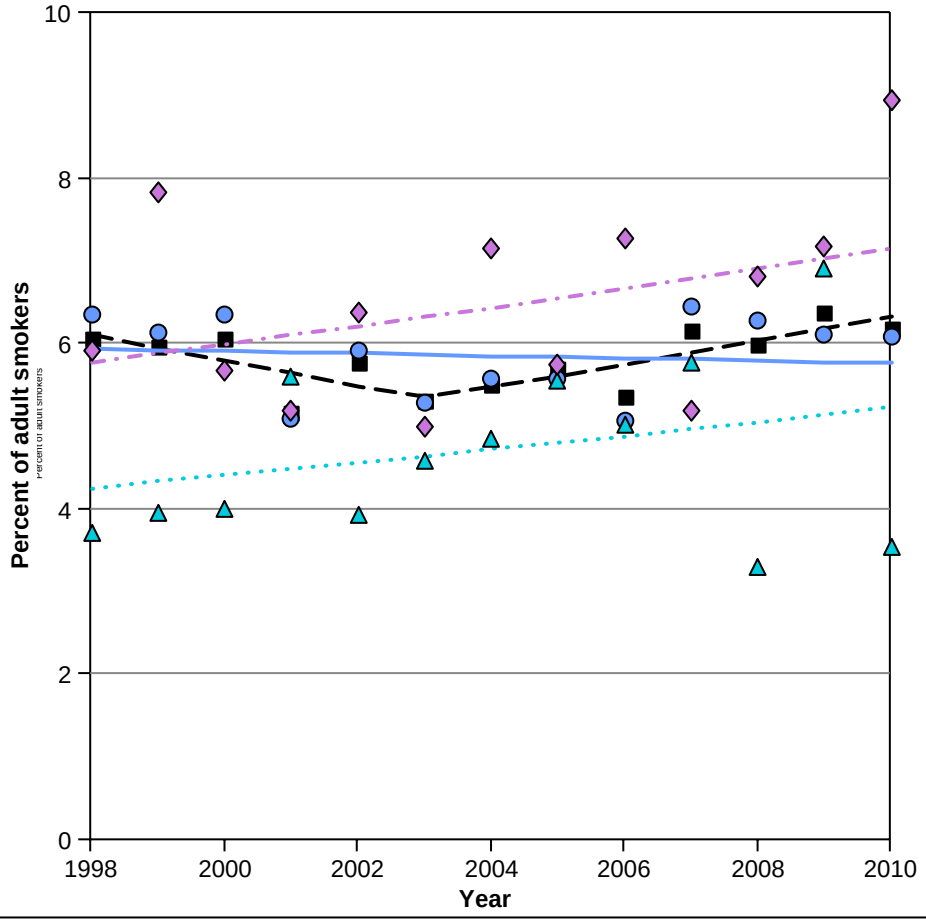
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Cessation success means having stopped smoking completely for 6-12 months at the time of the NHIS interview. Current smokers a year ago assumes that all current smokers at time of interview were smoking one year ago and those former smokers who completely quit smoking less than 12 months ago were smokers 12 months ago.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

Figure PQS4: Percentage of recent smoking cessation success by adult smokers 18 years and older by age: 1998-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Successfully quitting means having stopped smoking completely for 6-12 months at the time of the NHIS interview. Current smokers a year ago assumes that all current smokers at time of interview were smoking one year ago and those former smokers who completely quit smoking less than 12 months ago were smokers 12 months ago.
Data are age-adjusted to the 2000 standard. Ages 18-24 are age-adjusted using age groups: 18-19, 20-24. Ages 25+ are age-adjusted using age groups: 25-34, 35-44, 45-64, 65+.

Figure PQS5: Percentage of recent smoking cessation success by adult smokers 18 years and older by race/ethnicity: 1998-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Cessation success means having stopped smoking completely for 6-12 months at the time of the NHIS interview. Current smokers a year ago assumes that all current smokers at time of interview were smoking one year ago and those former smokers who completely quit smoking less than 12 months ago were smokers 12 months ago.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

Most Recent Estimates

Quit Attempts of One Day or Longer

In 2010, 50.2 percent of smokers aged 18 years and older (48.7 percent for men, 51.9 percent for women) stopped smoking for one day or longer because they were trying to quit. Attempt-to-quit rates were higher among adults aged 18 to 24 years (60.6 percent) than among adults aged 25 years and older (48.6 percent).

The percentages of those attempting to quit was very similar among Hispanics (54.8 percent) and non-Hispanic blacks (55.9.0 percent) but were slightly lower for non-Hispanic whites (48.8 percent). These percentages by poverty level were also similar (49.4 percent for those at greater than or equal to 200 percent of the poverty level and 51.4 percent for those at less than 200 percent of the poverty level). Based on education level for adults aged 25 years and older, the corresponding percentages were 45.6 for those with less than a high school education, 46.2 for those with a high school education, and 51.0 for those with greater than a high school education.

Recent Successful Quitting 6-12 Months Ago

In 2010, 6.2 percent of adults (6.2 percent for men and 6.2 for women) aged 18 years and older had successfully quit smoking 6 to 12 months ago. Rates of successfully quitting were 8.2 percent for adults aged 18 to 24 years and 5.9 percent for adults aged 25 years and older.

Based on race/ethnicity, the percentage that successfully quit smoking in 2010 was higher among Hispanics (8.9 percent) and non-Hispanic whites (6.1 percent) relative to non-Hispanic blacks (3.5 percent).

By poverty level, the corresponding percentages were 7.2 for those at greater than or equal to 200 percent of the poverty level and 5.0 for those at less than 200 percent of the poverty level. Based on education level for adults aged 25 years and older, these percentages were 3.1 for those with less than a high school education, 4.7 for those with a high school education, and 7.8 for those with more than a high school education.

Healthy People 2020 Targets

Increase to 80 percent the proportion of adult current smokers (aged 18 years and older) who stopped smoking for a day or longer because they were trying to quit.

Increase to 8 percent the proportion of adult smokers (aged 18 years and older) who successfully quit smoking for at least 6 months or longer in the past 12 months.

Additional Information on Quitting Smoking

- ACS: Guide to Quitting Smoking
  http://www.cancer.org/docroot/PED/content/PED_10_13X_Guide_for_Quitting_Smoking.asp
- Addiction vol 102 Supplement 2 October 2007 “Methodological Issues for Research on Tobacco-Related Health Disparities.”
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  http://www.tobaccofreekids.org/reports/settlements/
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  http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5844a2.htm
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  Also see http://www.impacteen.org/generalarea_PDFs/chartbook_final071009.pdf
- Healthy People 2010, Volume 2, Chapter 27 - Tobacco Use
  http://www.health.gov/healthypeople/Document/html/volume2/27tobacco.htm
- Healthy People 2020, Tobacco Use Objectives
  http://healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicId=41
- Malarcher A, Dube SR, Shaw L, Babb S, Kaufmann R. Centers for Disease Control and Prevention. Quitting Smoking Among Adults – United States, 2001-2010. MMWR 2011; 60(46) 1513-1519.
  http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6044a2.htm?s_cid=%20mm6044a2.htm_w
- National Network of Tobacco Cessation Quitlines 1-800-QUIT-NOW.
  http://www.smokefree.gov
- National Cancer Institute Fact Sheet on Quitting Smoking: Why to Quit and How to Get Help
  http://www.cancer.gov/cancertopics/factsheet/Tobacco/cessation/
- North American Quitline Consortium resources
  http://www.naquitline.org/
  http://www.naquitline.org/?page=map

- Peterson Jr. AV, Kealey KA, Mann SL, et. al. Group-Randomized Trial of a Proactive, Personalized Telephone Counseling Intervention for Adolescent Smoking Cessation. J Natl Cancer Inst 2009;101:1378–1392.
- Population-Based Smoking Cessation: Smoking and Tobacco Control Monograph #12 (NCI) http://cancercontrol.cancer.gov/tcrb/monographs/12/index.html
- Reducing Tobacco Use: A Report of the Surgeon General (Tobacco Information and Prevention Source, CDC) http://www.cdc.gov/tobacco/data_statistics/sgr/2000/index.htm
- State Medicaid Coverage for tobacco-dependence treatments – U.S., 2006. MMWR 2008; 57 (5) 117-122
- Secretan B, Straif K, Baan R, Grosse Y, El Ghissassi F, Bouvard V. et al on behalf of the WHO International Agency for Research on Cancer Monograph Working Group. A review of human carcinogens – Part E: tobacco, areca nut, alcohol, coal smoke, and salted fish. The Lancet Oncology 2009 Nov 10(11) :1033–4.
- Tobacco Cessation Guideline (The Surgeon General) http://surgeongeneral.gov/tobacco/
- Zhu SH, Wang JB, Hartman A, Zhuang Y, Gamst A, Gibson JT, Gilljam H, Galanti MR. Quitting cigarettes completely or switching to smokeless tobacco: do US data replicate the Swedish results? Tob Control 2009 Apr;18(2):82-7.

Clinicians’ Advice to Quit Smoking

Clinicians’ advice to current smokers to quit smoking has begun to stabilize and in some cases decline.

The Effects of Clinical Advice on Quitting Smoking

Clinicians’ advice to quit smoking can by itself contribute 5 to 10 percentage points toward quitting among smoking patients and much more if coupled with behavioral therapy and pharmacological treatment of nicotine addiction. In addition, minimal clinical interventions have been shown to be cost effective in increasing smokers’ motivation to quit.

If a patient wants to quit, the national guidelines recommend that the clinician follow the "5 A’s" (Ask, Advise, Assess, Assist, and Arrange). For patients who do not want to quit, the clinician should instead provide a motivational intervention. The Public Health Service-sponsored “Clinical Practice Guideline: Treating Tobacco Use and Dependence 2008 Update” expert panel’s analysis suggests that a wide variety of clinicians, including dentists, physicians, and other health professionals, can successfully implement brief strategies effectively.

Measure

Among adult smokers (aged 18 years and older) who have seen a physician or dentist in the past 12 months, the percentage of adult smokers who report that a physician and/or dentist advised them to quit smoking.

Period – 1992–2010

Trends

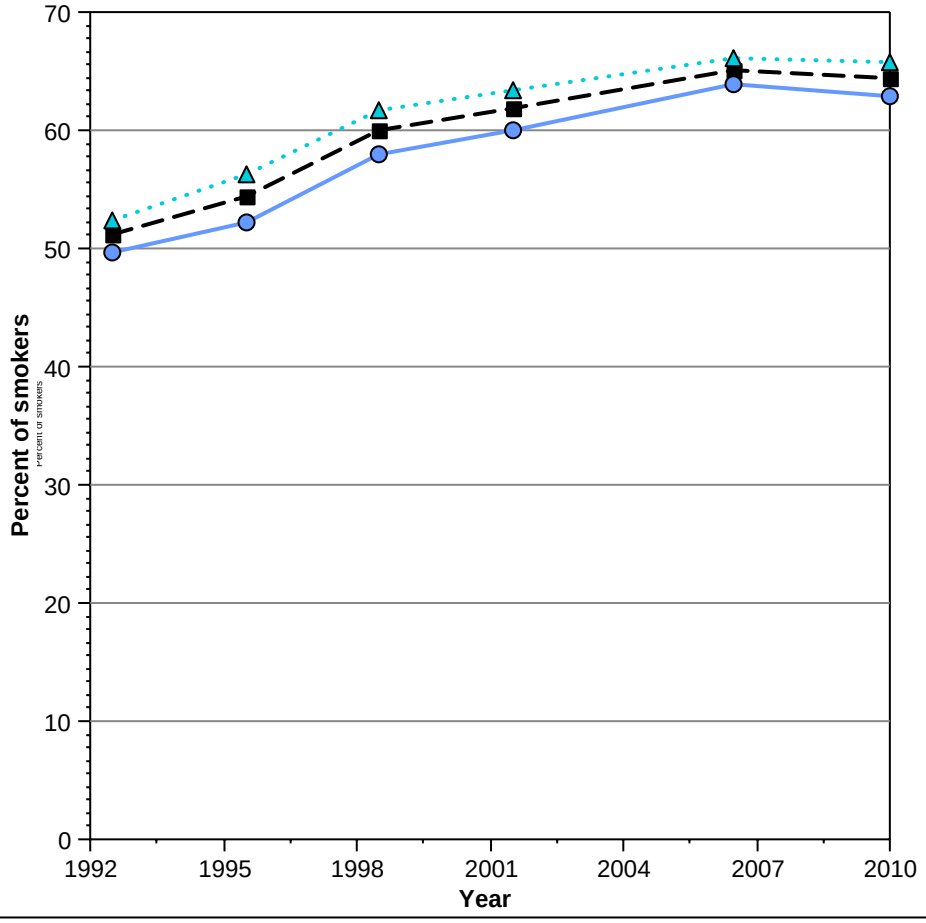
The percentage of smokers advised by a physician to quit shows a steep rise from 1993 to 1999 and then a more gradual rise from 1999 to 2007. The rise for each period of time is similar for both males and females. Percentages remained steady from 2007 to 2010 for both males and females.

For smokers aged 25 years and older, both males and females had a rise in receiving advice to quit throughout the entire period from 1992 to 2007, but percentages changed little from 2007 to 2010. For young adult smokers aged 18 to 24 years, only the early part of the period prior to 1999 showed any rise. Since 1999, the percentage receiving advice to quit from a physician has changed little. While the trend is similar for both adult men and women, the percentage of young adult men receiving advice to quit is much lower than that for young women, older men, and older women.

Both male and female smokers tended to show rises in receipt of advice from dentists to quit smoking over most of the time period studied, although women aged 25 years and older did not show much change between 2002 and 2007. However, from 2007 to 2010, the percentage of men and women receiving dentists’ advice to quit smoking declined. Both men and women aged 18 to 24 years showed increases early in the 1990s but then showed no significant change throughout the rest of the period studied.

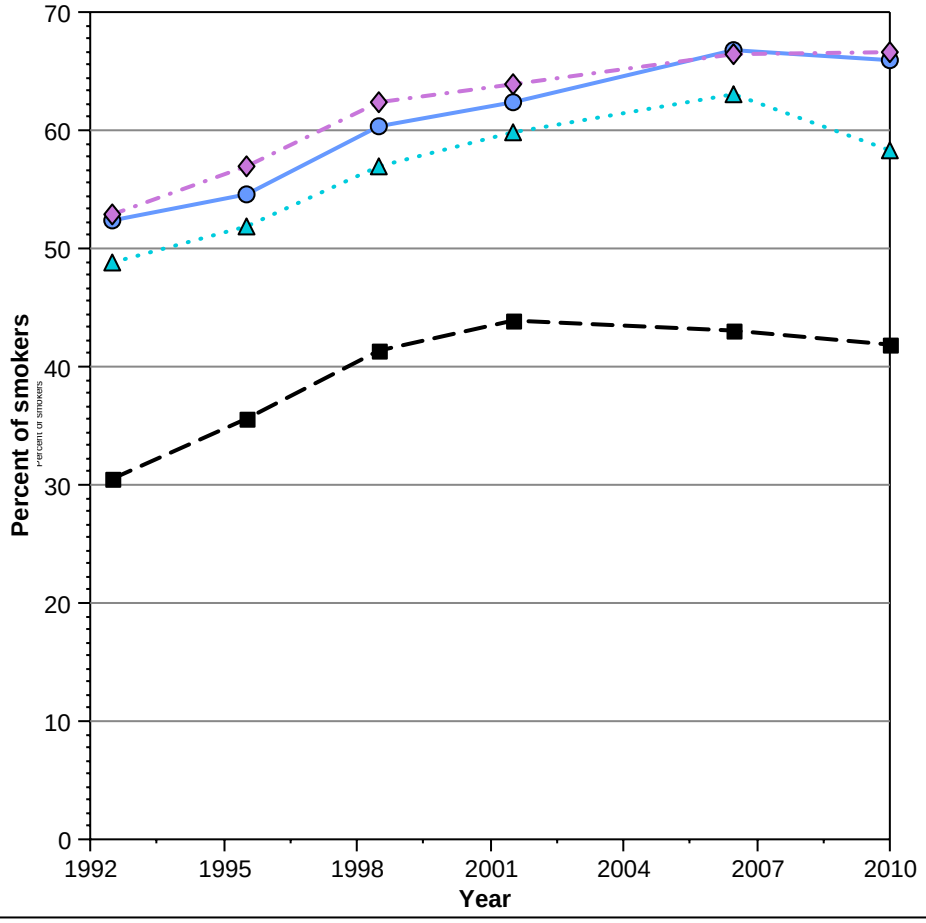
The trend in the percentage of adults who were advised to quit smoking by a physician varied by race/ethnicity. Overall there was a rise between 1992 and 2010 for all race/ethnicity groups. Over the recent decade (2001–2010), the trend has been stable for non-Hispanic whites, while it has risen for non-Hispanic blacks and Hispanics. Although overall, there has been an increase in dentist advice reported by non-Hispanic whites and non-Hispanic blacks, this is not seen for Hispanics. Over the recent decade, all three race/ethnicity groups showed no significant change. However, from 2007–2010, the percentage of smokers receiving dental advice to quit decreased for non-Hispanic whites and Hispanics, while non-Hispanic blacks showed no significant change. Non-Hispanic whites showed a steeper decline than non-Hispanic blacks. For the same time period, the percentage of adult smokers aged 25 years and older with less than high school education who received dentists’ advice changed little, while the percentages of adult smokers with high school education or greater than high school education who received dentists’ advice decreased. The percentage of smokers with incomes greater than or equal to 200 percent of the federal poverty level who received dentists’ advice to quit decreased from 2007 to 2010, while the percentage of those with incomes less than 200 percent of the federal poverty level remained stable.

Figure PCA1: Percentage of current smokers (who have seen a physician in the past year) aged 18 years and older who were advised by a physician to quit smoking by sex: 1992-2010



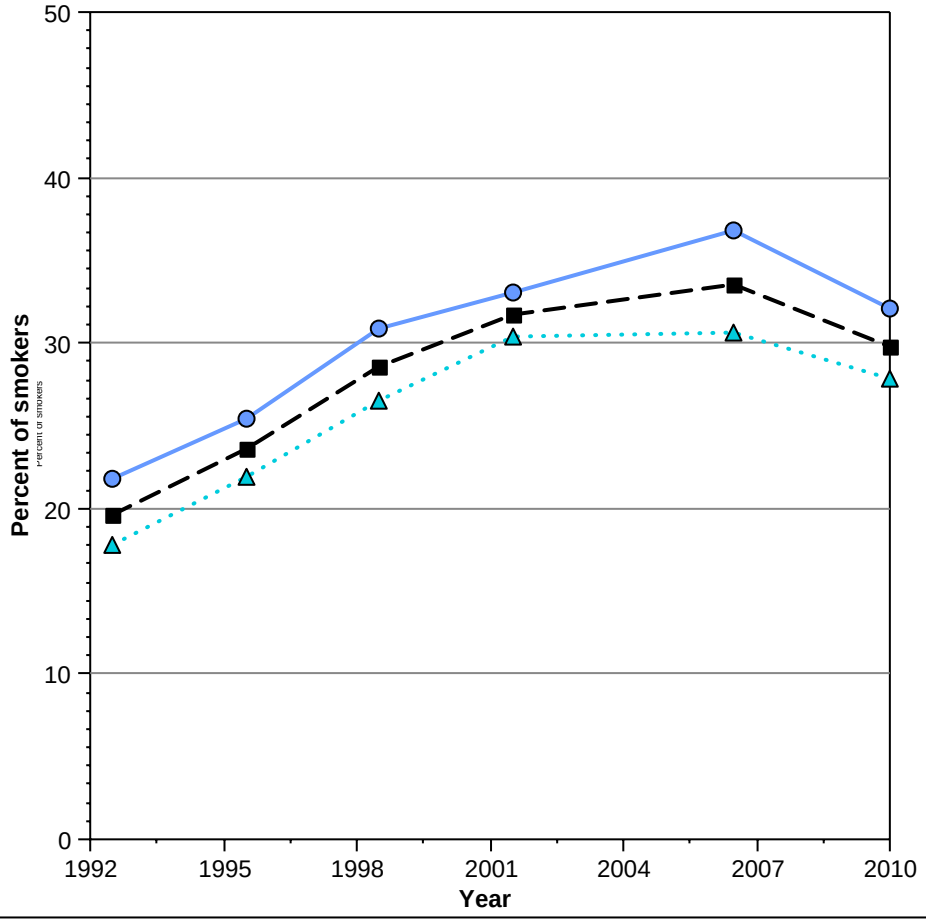
Source: Tobacco Use Supplement to the Current Population Survey, sponsored by the National Cancer Institute.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

Figure PCA2: Percentage of current smokers (who have seen a physician in the past year) aged 18 years and older who were advised by a physician to quit smoking by sex and age: 1992-2010



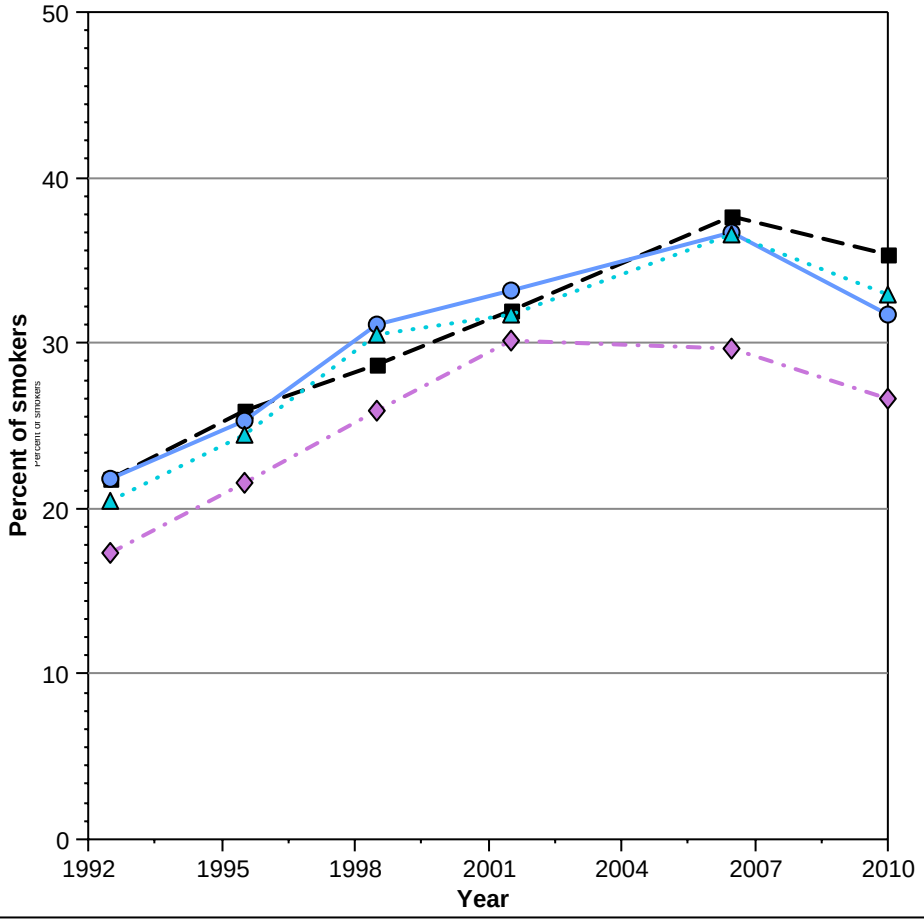
Source: Tobacco Use Supplement to the Current Population Survey, sponsored by the National Cancer Institute.
Data are age-adjusted to the 2000 standard. Ages 18-24 are age-adjusted using age groups: 18-19, 20-24. Ages 25+ are age-adjusted using age groups: 25-34, 35-44, 45-64, 65+.

Figure PCA3: Percentage of current smokers (who have seen a dentist in the past year) aged 18 years and older who were advised by a dentist to quit smoking by sex: 1992-2010



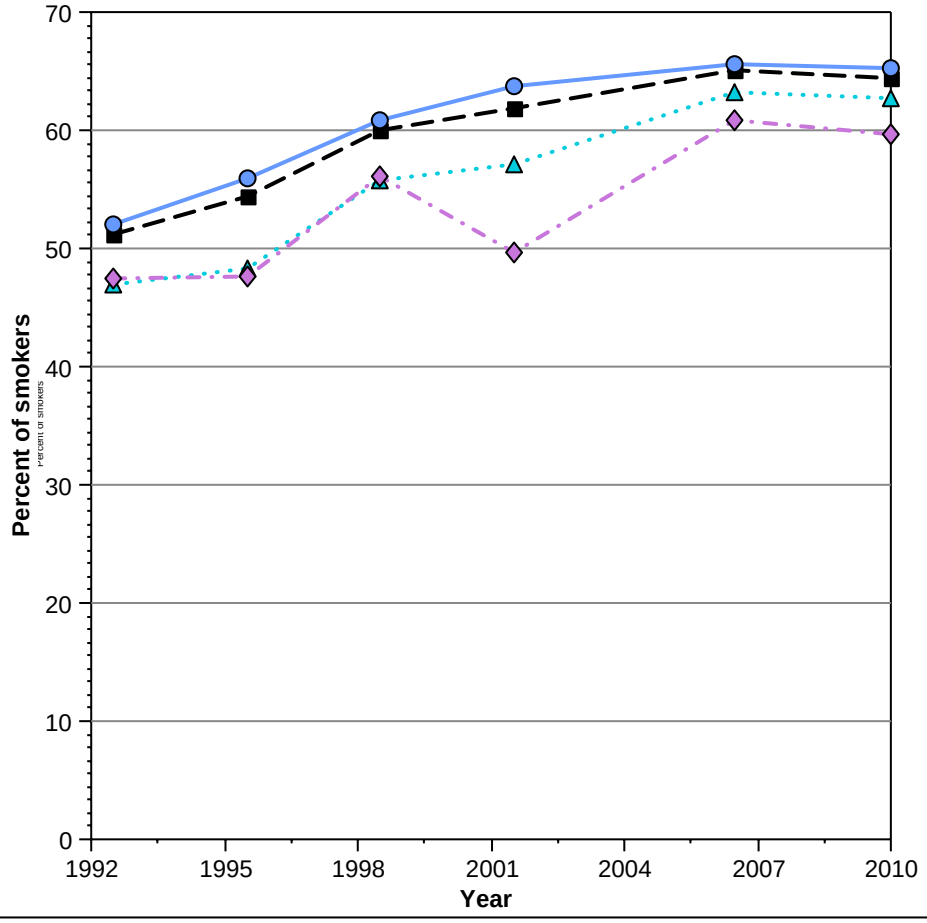
Source: Tobacco Use Supplement to the Current Population Survey, sponsored by the National Cancer Institute.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

Figure PCA4: Percentage of current smokers (who have seen a dentist in the past year) aged 18 years and older who were advised by a dentist to quit smoking by sex and age: 1992-2010



Source: Tobacco Use Supplement to the Current Population Survey, sponsored by the National Cancer Institute.
Data are age-adjusted to the 2000 standard. Ages 18-24 are age-adjusted using age groups: 18-19, 20-24. Ages 25+ are age-adjusted using age groups: 25-34, 35-44, 45-64, 65+.

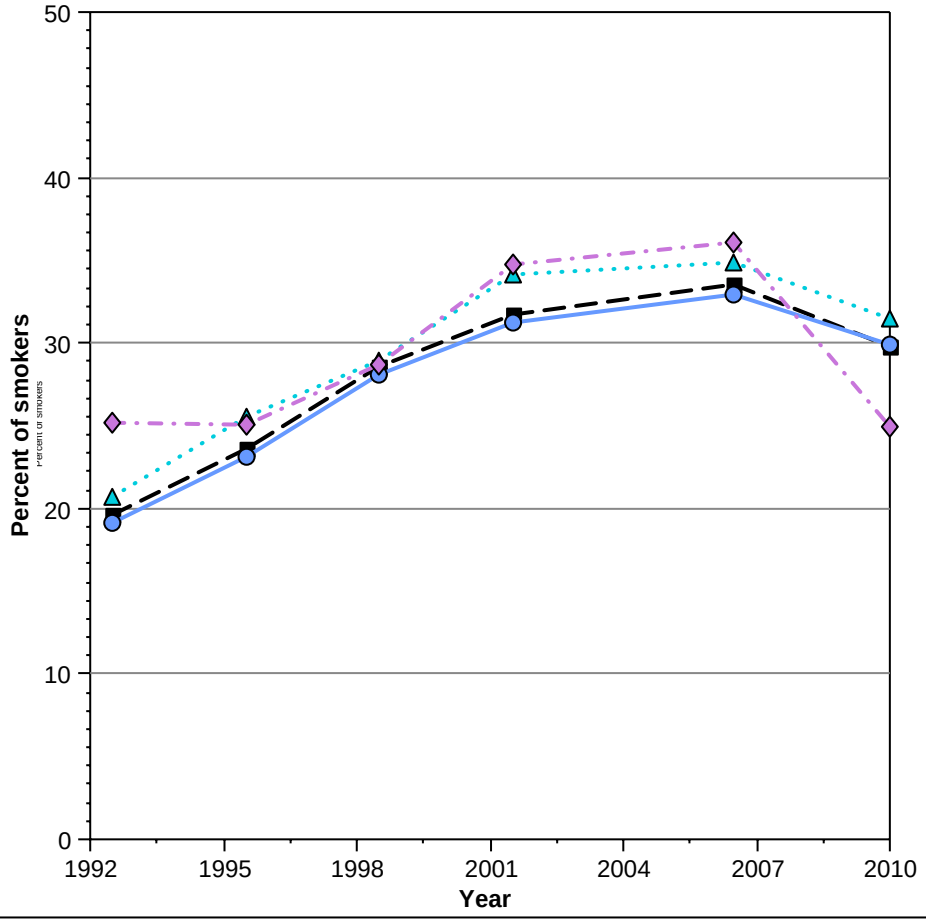
Figure PCA5: Percentage of current smokers (who have seen a physician in the past year) aged 18 years and older who were advised by a physician to quit smoking by race/ethnicity: 1992-2010



All Races
Non-Hispanic White
Non-Hispanic Black
Hispanic

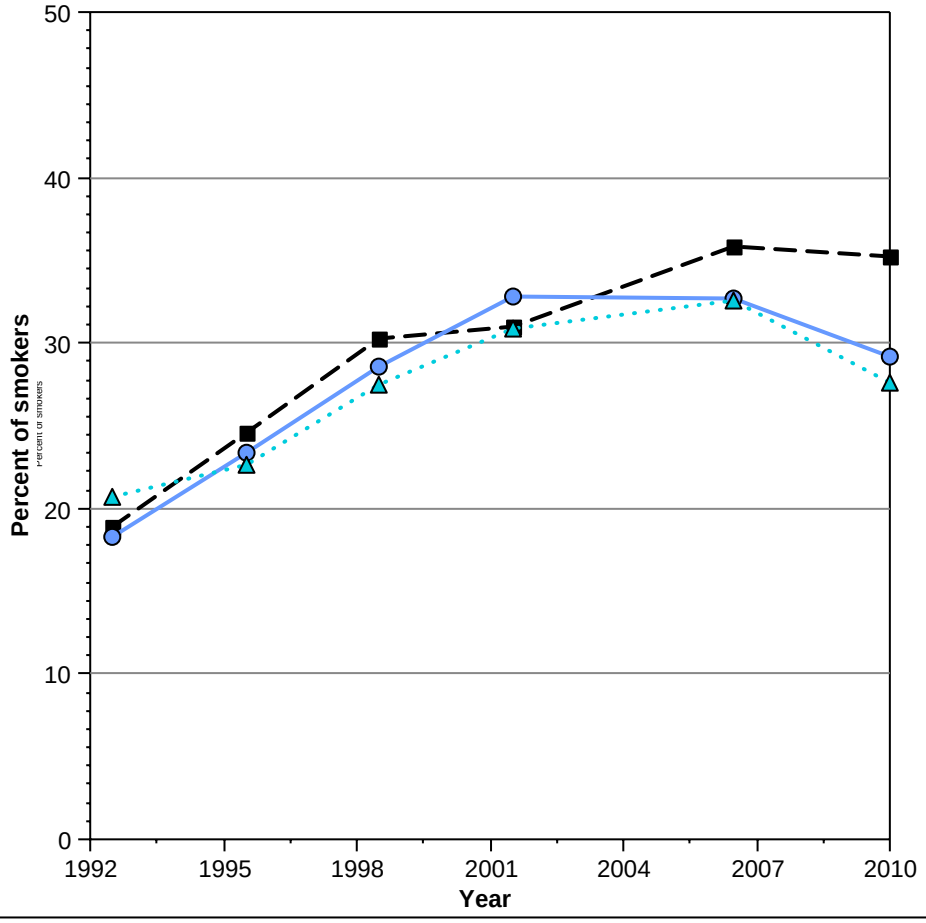
Source: Tobacco Use Supplement to the Current Population Survey, sponsored by the National Cancer Institute.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

Figure PCA6: Percentage of current smokers (who have seen a dentist in the past year) aged 18 years and older who were advised by a dentist to quit smoking by race/ethnicity: 1992-2010



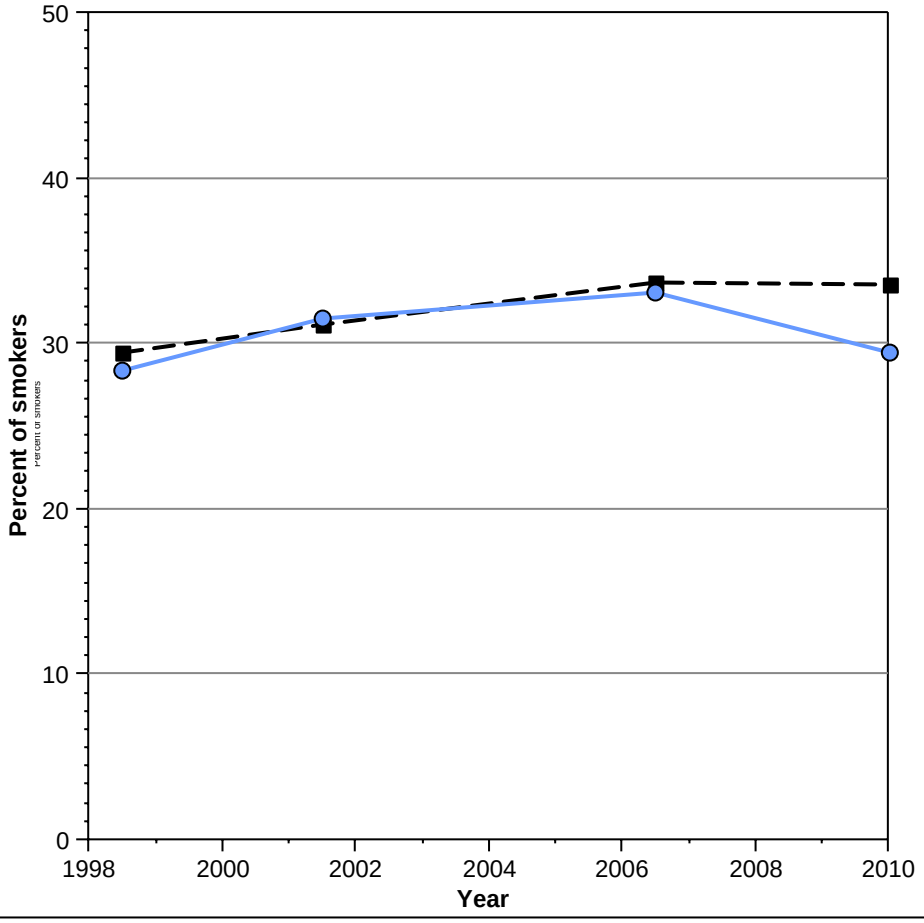
Source: Tobacco Use Supplement to the Current Population Survey, sponsored by the National Cancer Institute.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

Figure PCA7: Percentage of current smokers (who have seen a dentist in the past year) aged 25 years and older who were advised by a dentist to quit smoking by highest level of education obtained: 1992-2010



Source: Tobacco Use Supplement to the Current Population Survey, sponsored by the National Cancer Institute.
Data are age-adjusted to the 2000 US standard population using age groups: 25-34, 35-44, 45-64, 65+.

Figure PCA8: Percentage of current smokers (who have seen a dentist in the past year) aged 18 years and older who were advised by a dentist to quit smoking by poverty income level: 1998/99-2010



Source: Tobacco Use Supplement to the Current Population Survey, sponsored by the National Cancer Institute.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

Most Recent Estimates

In 2010, 64.4 percent of smokers aged 18 years and older (63.0 percent of males, 65.7 percent of females) who had seen a physician during the past 12 months reported being advised by that physician to quit smoking. For females and males aged 18 to 24 years, the percentages were 58.4 and 41.8, respectively. Among smokers aged 25 years and older, 66.6 percent of females and 66.0 percent of males were advised by a physician to quit smoking.

In contrast, the 2010 estimates for receipt of advice from a dentist to quit smoking were much lower than the comparable estimates for receipt of advice from a physician. For those aged 18 years and older, only 29.8 percent received advice to quit from a dentist (32.1 percent of males and 27.8 percent of females). Among those aged 18 to 24 years, 35.3 percent of males and 33.0 percent of females received advice to quit from a dentist. Among those aged 25 years and older, 31.7 percent of males and 26.6 percent of females received advice to quit from a dentist.

Healthy People 2020 Targets

The Healthy People 2020 (HP2020) targets are developed based on the National Center for Health Statistics survey of physicians and hospitals. 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 or dentists. Therefore, the data presented in this report cannot be directly compared with the HP2020 objectives. Nevertheless, patient self-report data is a valuable measure of how clinicians' advice to quit smoking is changing over time.

HP2020 includes targets for physicians' advice to quit smoking in office-based ambulatory care settings and in hospital ambulatory care settings. In 2007, 19.2 percent of visits to physicians' offices by smokers aged 18 and older had tobacco cessation counseling ordered or provided. The HP2020 objective is to reach 21.1 percent of visits, a 10 percent increase. The HP2020 target for ordered or provided tobacco cessation counseling during hospital visits is 24.9 percent of visits, a 10 percent increase from the 2007 baseline of 22.6 percent. Healthy People 2020 targets for dentists' advice to quit smoking are still in development.

Groups at High Risk for Not Being Advised to Quit

Young adult males aged 18 to 24 years are far less likely to receive advice to quit from their physicians than older men or women aged 18 to 24 and 25 years and older.

By contrast, females aged 25 years and older had the lowest rate of advice from dentists among the four age/gender groups. In 2010, this was about 27 percent for females aged 25 years and older versus 32 to 35 percent for the other three age/gender groups.

In 2010, non-Hispanic whites reported the highest percentage of receiving physicians' advice (65.2 percent), followed by non-Hispanic blacks (62.6 percent), and Hispanics (59.7 percent).

In 2010, Hispanics reported the lowest percentage of receiving dentists' advice (25.0 percent) compared with non-Hispanic whites (29.9 percent) and non-Hispanic blacks (31.5 percent).

Key Issues

Studies show that most smokers want to quit. The success of clinicians' advice to quit and subsequent counseling increases with the intensity of the program and may be improved by increasing the frequency and duration of contact.

In addition to physicians' and dentists' advice, efforts to reduce smoking are most effective when multiple techniques are used, including educational, regulatory, and economic interventions, as well as media campaigns and other social strategies.

Although the long-term increase in both physicians' and dentists' advice to quit smoking is encouraging, the more recent stall and decline, respectively, is clear evidence that improvement is still needed, especially for dentists. Given physicians', dentists', and other health professionals' combined access to 70 to 80 percent of smokers each year, clinicians can play a major role in smoking cessation by advising all of their patients who smoke to quit.

Progress needs to be made to remove barriers to clinicians providing advice and further treatment, as well as barriers to patients in seeking treatment. An important barrier for both groups has been lack of medical insurance coverage for counseling and pharmacological treatment for tobacco dependence. This barrier has already been reduced and will be further reduced in the future with the implementation of the 2010 Patient Protection and Affordable Care Act. The act provides tobacco cessation coverage through some Medicaid provisions and also through those provisions pertaining to non-grandfathered private health plans.

Additional Information on Clinicians' Advice to Quit Smoking

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  http://www.surgeongeneral.gov/tobacco/treating_tobacco_use08.pdf
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  http://www.healthypeople.gov/Document/HTML/Volume1/03Cancer.htm
- Healthy People 2010, Volume 2, Chapter 27—Tobacco Use and Midcourse Review
  http://www.healthypeople.gov/Document/html/volume2/27tobacco.htm
  http://www.healthypeople.gov/data/midcourse/default.htm#pubs
- Healthy People 2020, Tobacco Use Objectives
  http://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicId=41
- Population-Based Smoking Cessation: Smoking and Tobacco Control Monograph #12 (NCI)
  http://cancercontrol.cancer.gov/tcrb/monographs/12/index.html
- Reducing Tobacco Use: A Report of the Surgeon General (Tobacco Information and Prevention Source, CDC)
  http://www.cdc.gov/mmwr/preview/mmwrhtml/rr4916a1.htm
- Tobacco Cessation Guideline (The Surgeon General); Treating Tobacco Use and Dependence
  http://surgeongeneral.gov/tobacco/
- U.S. Department of Commerce, Census Bureau (1995–2001).National Cancer Institute Sponsored Tobacco Use Supplement to the Current Population Survey (1992–1999)
  http://riskfactor.cancer.gov/studies/tus-cps/
    - Data files and/or technical documentation
      http://riskfactor.cancer.gov/studies/tus-cps/info.html
      http://www.census.gov/apsd/techdoc/cps/cps-main.html
- U.S. Department of Commerce, Census Bureau (2004). National Cancer Institute and Centers for Disease Control and Prevention Co-sponsored Tobacco Use Supplement to the Current Population Survey (2001–2002)
  http://riskfactor.cancer.gov/studies/tus-cps/
    - Data files and/or technical documentation
      http://www.census.gov/apsd/techdoc/cps/cpsJun01Nov01Feb02.pdf
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  http://riskfactor.cancer.gov/studies/tus-cps/
    - Data files and/or technical documentation
      http://www.census.gov/apsd/techdoc/cps/cps-main.html
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  http://riskfactor.cancer.gov/studies/tus-cps/
    - Data files and/or technical documentation
      http://www.census.gov/apsd/techdoc/cps/cps-main.html
- U.S. Preventive Services Task Force - Counseling and Interventions to Prevent Tobacco Use and Tobacco-Caused Disease in Adults and Pregnant Women
  http://www.ahrq.gov/clinic/uspstf/uspstbac2.htm

Medicaid Coverage of Tobacco Dependence Treatments

All state Medicaid programs must provide tobacco cessation services for pregnant women as part of the Affordable Care Act (section 4107), but coverage is still limited in some states for other populations.

Medicaid Coverage of Tobacco Dependence Treatments

Providing tobacco users access to evidence-based tobacco dependence treatments can reduce morbidity and mortality from cancers and other diseases caused by tobacco use. Low-income Americans are more likely than other Americans to be addicted to tobacco products. Beginning October 1, 2010, state Medicaid programs must fully cover tobacco cessation services (both counseling and pharmacotherapy) for pregnant women as part of the Affordable Care Act (section 4107). However, expansion of coverage to more treatments, expansion of the groups eligible for treatment, and a reduction of barriers to accessing treatment is needed.

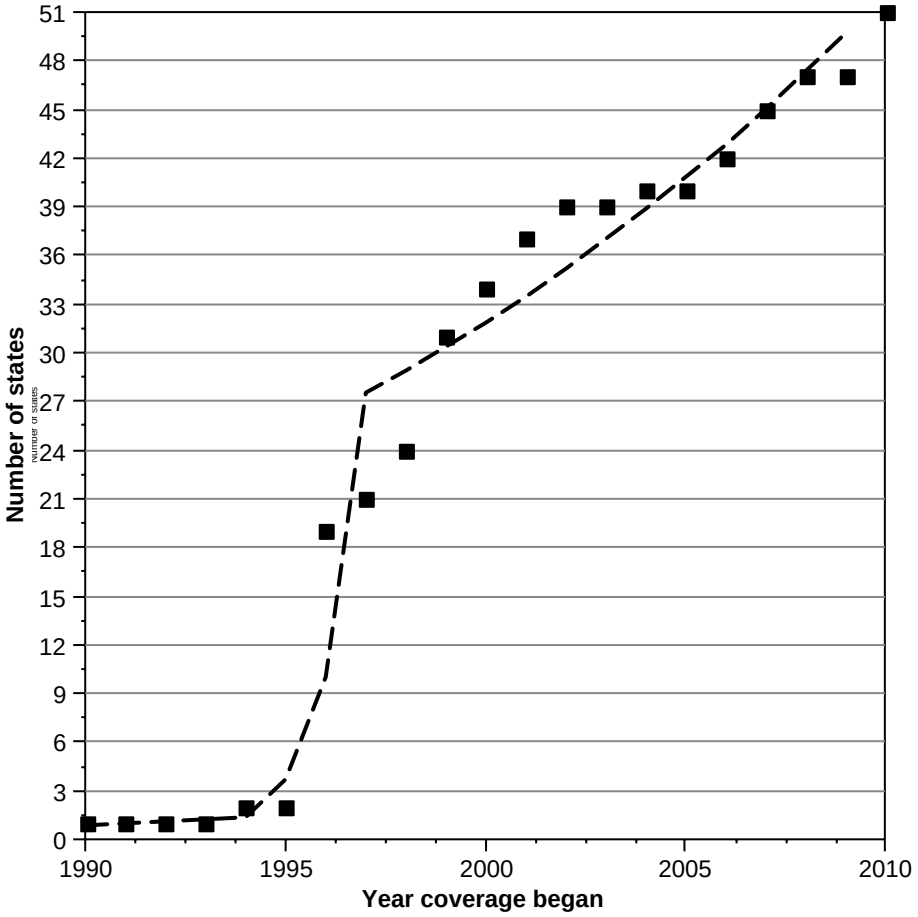
Measure

Number of states that report providing coverage under Medicaid for any evidence-based tobacco dependence treatment (pharmacotherapy or counseling), either to their entire Medicaid population or to pregnant women only.

Period – 1990–2010

Trends – State Medicaid programs have steadily increased their coverage of tobacco dependence treatments over time. They have also expanded the number of treatments for which coverage is provided, over time.

Figure PMC1: Medicaid coverage of smoking cessation aids in the 50 states and DC: 1990-2010



Source: McMenamin SB, Haplin HA, Ingram M, Rosenthal A. State Medicaid coverage for tobacco-dependance treatments - United States, 2009. Morbidity and Mortality Weekly Report October 22, 2010;59(41);1340-1343.

Most Recent Estimates

In 2010, all 51 Medicaid programs provided coverage for at least one tobacco-dependence treatment for at least some segment of their Medicaid eligible population. Data from 2009 revealed that only 8 Medicaid programs offered coverage of all medications and some form of counseling for all Medicaid enrollees. Twelve Medicaid programs added or expanded coverage between 2007 and 2009.

Healthy People 2020 Target

There is no Healthy People target for Medicaid coverage of tobacco dependence treatments.

Why is Medicaid Coverage of Tobacco Dependence Treatments Important to Reducing Cancer?

Approximately one-half of all long-term smokers, especially those who began smoking as teenagers, will die prematurely from a disease caused by smoking. Quitting smoking as early in life as possible is the only proven way to reduce the enormous health risk incurred by smoking. Smoking is more common among Americans of low socio-economic status, and smoking contributes significantly to health disparities. In addition, the proportion of adult smokers is significantly higher among Medicaid recipients than among the general population; in 2008, 37 percent of Medicaid enrollees reported being current smokers (compared to 18 percent with private health insurance and 33 percent who were uninsured). This highlights the importance of providing tobacco dependence treatment to Medicaid recipients in all states.

Key Issues

Tobacco-dependence treatment is highly cost-effective. Effective tobacco dependence treatments include both medication and counseling. In addition, many states employ measures that limit access such as co-payments and limitations on number of treatment courses. Some states also require prior authorization or require that individuals enroll in a behavioral modification program to gain coverage for pharmacotherapy. In 2009, only five states reported policies that require coverage of all recommended pharmacotherapies and individual and group counseling for all Medicaid enrollees. Effective on October 1, 2010, all state Medicaid programs were required to fully cover tobacco cessation services for pregnant women as part of the Affordable Care Act (section 4107). Coverage of pharmacotherapy for all Medicaid enrollees will be enhanced by January 2014, when tobacco dependence cessation drugs will no longer be excluded from covered benefits.

Enhanced access to tobacco dependence treatment among the Medicaid population will help more low-income tobacco users quit and will contribute to reducing cancer deaths and cancer-related health disparities in this population.

Additional Information

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Fruit and Vegetable Consumption

Fruit and vegetable intake remained relatively stable between 1994 and 2004.

Limited Fruit and Vegetable Consumption is a Cancer Risk

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 there is some suggested evidence that such individuals also have a lower risk of cancers of the colon, pancreas, and prostate. They are also less likely to get diabetes, heart disease, and hypertension. A diet high in fruits and vegetables helps to reduce calorie intake and may help to control weight.

To help prevent the aforementioned cancers and other chronic diseases, experts recommend 2 to 6½ cups of fruits and vegetables daily, depending on energy needs. This includes 1 to 2½ 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 of fruits and vegetables for people aged 2 years and older. This measure includes fruits and vegetables from all sources.

Period – 1989–2004

We used the My Pyramid Equivalents Database to estimate food group intake (available at http://www.ars.usda.gov/Services/docs.htm?docid=8498). Please note that these data are currently available only through 2003–2004 NHANES. We will update as new data become available.

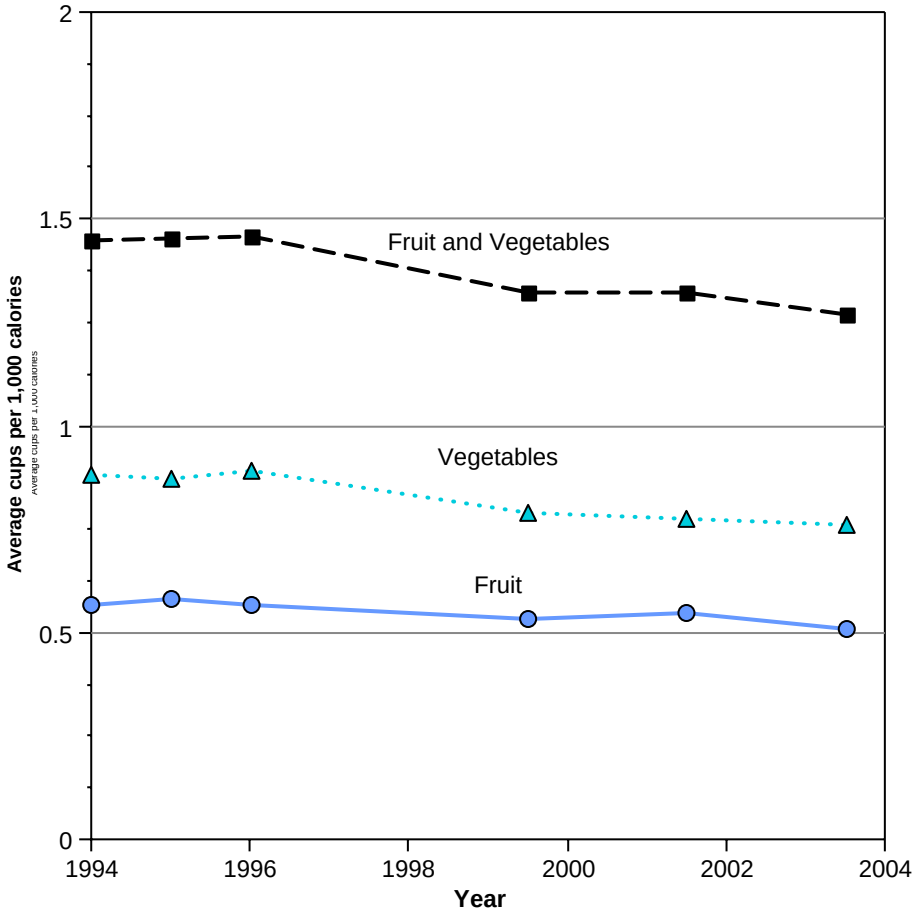
Trends

Total fruits and vegetables: Relatively stable

Fruits: Relatively stable

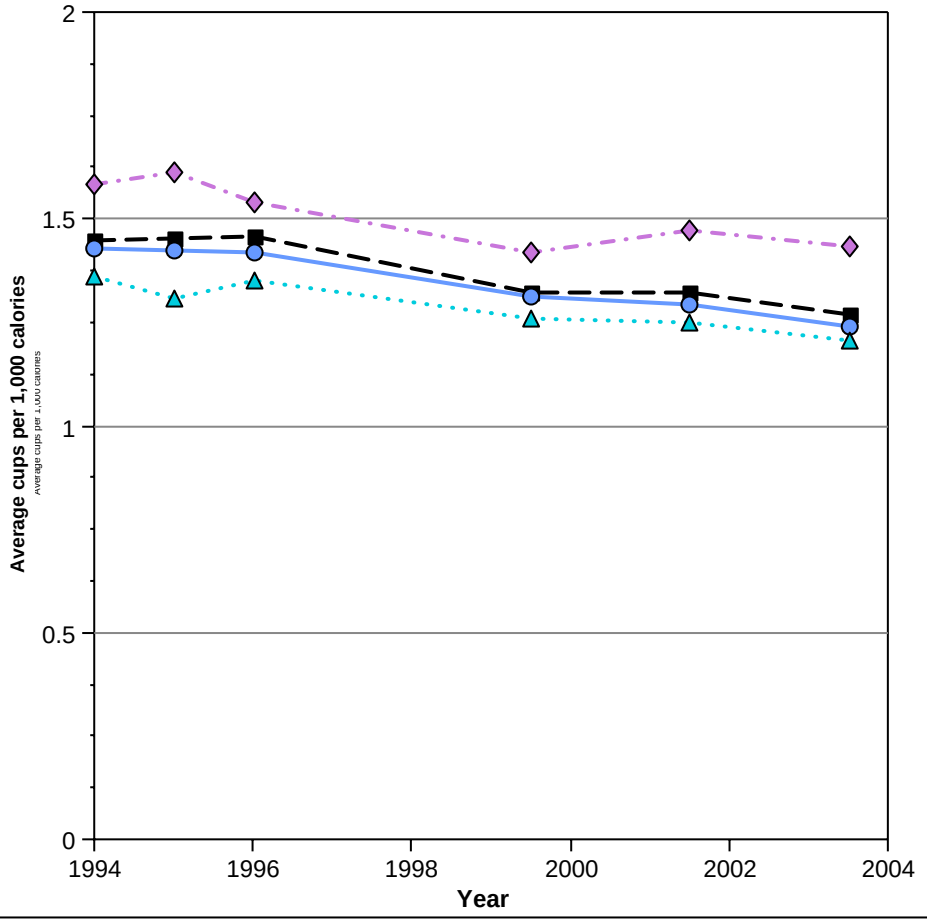
Vegetables: Relatively stable

Figure PFV1: Average cups of fruit and vegetables consumed per 1,000 calories by individuals aged 2 years and older: 1994-2004



Source (1994-1996): U.S. Department of Agriculture. Continuing Survey of Food Intakes by Individuals.
Source (1999+ Data): National Center for Health Statistics. National Health and Nutrition Examination Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 2-3, 4-8, 9-13, 14-18, 19-30, 31-50, 51-70, 70+.

Figure PFV2: Average cups of fruit and vegetables consumed per 1,000 calories by individuals aged 2 years and older by race/ethnicity: 1994-2004



Source (1994-1996): U.S. Department of Agriculture. Continuing Survey of Food Intakes by Individuals.
Source (1999+ Data): National Center for Health Statistics. National Health and Nutrition Examination Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 2-3, 4-8, 9-13, 14-18, 19-30, 31-50, 51-70, 70+.

Most Recent Estimates

From 2001 to 2004, people aged 2 years and older consumed, on average, 0.5 cup equivalents of fruits per 1,000 calories and 0.8 cup equivalents of vegetables per 1,000 calories (including 0.1 cup equivalents of dark green and orange vegetables and legumes per 1,000 calories).

Healthy People 2020 Targets

0.9 cup equivalents of fruits per 1,000 calories.

1.1 cup equivalents of vegetables per 1,000 calories, with at least 0.3 cup equivalents of dark green or orange vegetables or legumes per 1,000 calories.

Groups at High Risk for Not Eating Enough Fruits and Vegetables

Fruit consumption is highest among the youngest and oldest segments of the population. Total fruit and vegetable consumption tends to increase with age, education, and income. Among racial and ethnic groups, blacks have the lowest intake and Mexican Americans have the highest.

Key Issues

Dietary guidance released in 2010 recommended increased intake of fruits and vegetables based on evolving evidence of the benefit of eating a diet rich in fruits and vegetables.The majority of Americans do not meet recommendations for fruits and vegetables intake.Additional servings of fruits and vegetables should replace sources of "empty calories" in the diet, such as added sugars (honey, syrup, soft drinks) and solid fats (butter, sour cream), to avoid taking in too many calories. Individuals should be especially encouraged to consume dark green and orange varieties of vegetables such as broccoli or carrots and legumes or dried beans, such as pinto beans or lentils.

Additional Information on Fruit and Vegetable Consumption

- Choose a Variety of Fruits and Vegetables Daily: Understanding the Complexities
  http://jn.nutrition.org/cgi/content/abstract/131/2/487S
- Dietary Guidelines for Americans 2010
  http://health.gov/dietaryguidelines/dga2010/dietaryguidelines2010.pdf
- Food, Nutrition, Physical Activity, and the Prevention of Cancer: A Global Perspective, (WCRF/AICR)
  http://www.dietandcancerreport.org/
- Healthy People 2020–Nutrition and Weight Status
  http://healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicId=29
- MyPyramid
  http://mypyramid.gov/
- State Cancer Profiles, Latest Rates, Percents, and Counts
  http://statecancerprofiles.cancer.gov/micromaps/
- Usual Dietary Intakes: Food Intakes, US Population, 2001–04 (NCI)
  http://riskfactor.cancer.gov/diet/usualintakes/pop/

Red Meat Consumption

Red meat consumption was relatively stable between 1996 and 2004.

Red Meat and Cancer

Red meat and processed meat are associated with an increased risk of colorectal cancer, and there is also suggested evidence that it is associated with some other cancers, such as prostate cancer. Red meat refers to beef, pork, and lamb, although some studies have included all processed meats (such as bacon, sausage, hot dogs, and cold cuts) in their definition, regardless of animal origin. Some research has suggested that processed, but not fresh, meat may increase risk. More research is needed to understand how these meats influence cancer risk. The increased risk may be because of the iron and fat in red meat, and/or the salt and nitrates/nitrites in processed meat. Additionally, when meat is cooked at high temperatures, substances are formed that may be mutagenic or carcinogenic.

Measure

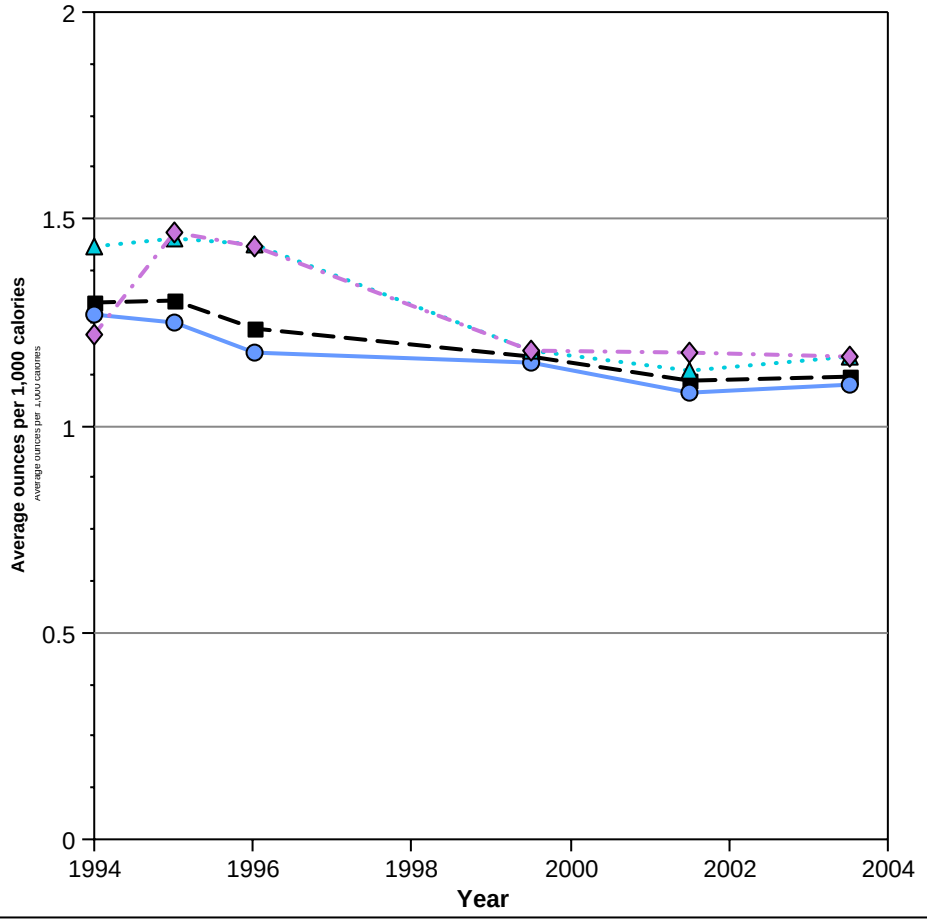
Average daily ounce equivalents of red meat for people aged 2 years and older. Red meat includes beef, lamb, and pork from all sources and does not include processed poultry.

Period – 1994–2004

We used the My Pyramid Equivalents Database to estimate food group intake (available at http://www.ars.usda.gov/Services/docs.htm?docid=8498). Please note that these data are currently available only through 2003-04 NHANES. We will update as new data become available.

Trends – Stable.

Figure PRM1: Average ounces of red meat consumed per 1,000 calories by individuals aged 2 years and older by race/ethnicity: 1994-2004



Source (1994-1996): U.S. Department of Agriculture. Continuing Survey of Food Intakes by Individuals.
Source (1999+ Data): National Center for Health Statistics. National Health and Nutrition Examination Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 2-3, 4-8, 9-13, 14-18, 19-30, 31-50, 51-70, 70+.

Most Recent Estimates

In 2003 to 2004, people aged 2 years and older had, on average, consumed 1.1 ounce equivalents of red meat per 1,000 calories.

Healthy People 2020 Target

There is no Healthy People target for red meat consumption.

Key Issues

The World Cancer Research Fund/American Institute for Cancer Research Expert Report “Food, Nutrition, Physical Activity, and the Prevention of Cancer: A Global Perspective” recommends limiting consumption of red meat and avoiding processed meat. The recommendation is to limit intake to no more than 18 ounces a week, very little if any of which is to be processed. The Dietary Guidelines for Americans also recommend that choices be lean, portions be small, and meat be prepared by baking, broiling, or poaching, rather than by frying or charbroiling.

One area of active research is examining how risk differs for processed meats, such as salami, compared to fresh or frozen unprocessed meats, such as roasts.

Additional Information on Red Meat Consumption

- American Cancer Society Guidelines on Nutrition and Physical Activity for Cancer Prevention: Reducing the Risk of Cancer with Healthy Food Choices and Physical Activity
  http://caonline.amca
- Dietary Guidelines for Americans 2010
  http://health.gov/dietaryguidelines/dga2010/dietaryguidelines2010.pdf
- Eating Lots of Red Meat Linked to Colon Cancer (ACS)
  http://www.cancer.org/docroot/NWS/content/NWS_1_1x_Eating_Lots_of_Red_Meat_Linked_to_Colon_Cancer.asp
- ncersoc.org/cgi/reprint/56/5/254
- Food, Nutrition, Physical Activity, and the Prevention of Cancer: A Global Perspective (WCR/AICR)
  http://www.dietandcancerreport.org/
- Meat Consumption among Black and White Men and Risk of Prostate Cancer
  http://cebp.aacrjournals.org/cgi/content/abstract/15/2/211
- Usual Dietary Intakes: Food Intakes, U.S. Population, 2001–04 (NCI)
  http://riskfactor.cancer.gov/diet/usualintakes/pop/
- World Health Organization Report (2003)—Diet, Nutrition and the Prevention of Chronic Diseases
  http://www.who.int/hpr/NPH/docs/who_fao_expert_report.pdf

Fat Consumption

The percentage of total calories from fat remained relatively stable between 1989 and 2004.

Fat Consumption and Cancer

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 2010 Dietary Guidelines for Americans 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.

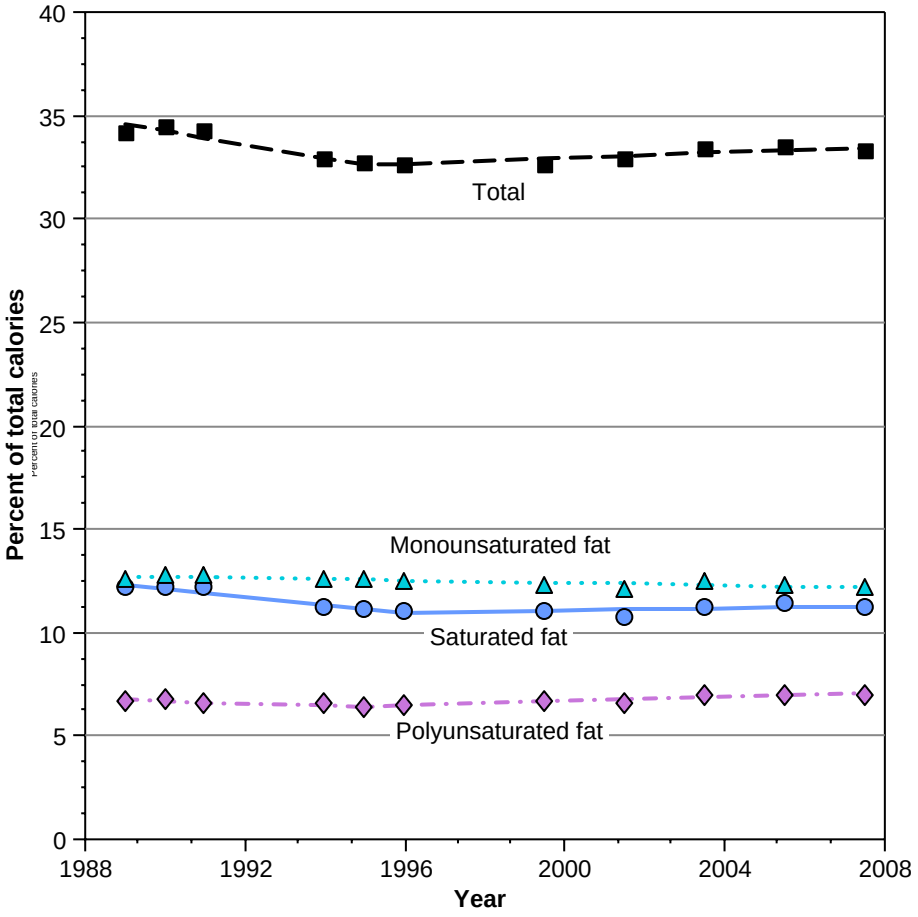
Period – 1989–2004

We used the My Pyramid Equivalents Database to estimate food group intake (available at http://www.ars.usda.gov/Services/docs.htm?docid=8498). Please note that this data are currently available only through 2003-04 NHANES. We will update as new data becomes available.

Trends – Relatively stable overall.

Total fat: Falling slightly, then stable
Saturated fat: Falling slightly, then stable
Monounsaturated fat: Falling slightly
Polyunsaturated fat: Stable

Figure PFC1: Fat intake as a percentage of total calories: 1989-2008



Source (1989-1996): U.S. Department of Agriculture. Continuing Survey of Food Intakes by Individuals.
Source (1999+ Data): National Center for Health Statistics. National Health and Nutrition Examination Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 2-3, 4-8, 9-13, 14-18, 19-30, 31-50, 51-70, 70+.

Most Recent Estimates

Data collected in 2003 to 2004 show that total fat made up one-third (33 percent) of the calories people consumed, a level within the recommendations of the Dietary Guidelines. In the same period, saturated fatty acids accounted for 11 percent of calories; monounsaturated, 13 percent; and polyunsaturated, 7 percent.

Healthy People 2020 Target

9.5 percent saturated fatty acids. (Healthy People 2020 includes targets for saturated fat and solid fat.)

Groups at High Risk for Eating Too Much Fat

Non-Hispanic whites, non-Hispanic blacks, and Mexican Americans all have average saturated fat intakes slightly above current dietary recommendations.

Key Issues

Researchers are studying how fat and fatty acids alter cancer risk. Precise and reliable measures of the amount and type of fat are needed—such as improved self-reported measures and biological indicators of fat intake that might be determined from a blood test.

Trans fatty acids account for only about 2 to 3 percent of energy intake, but most of these come from sources that are not clearly labeled. Major food sources of trans fatty acids are cakes, cookies, crackers, animal products, margarine, fried potatoes, chips, and shortenings. Some manufacturers have recently discontinued the use of trans fatty acids.

Additional Information on Fat Consumption

- Choose a Diet That Is Low in Saturated Fat and Cholesterol and Moderate in Total Fat: Subtle Changes to a Familiar Message
  http://jn.nutrition.org/cgi/content/full/131/2/510S
- Dietary Guidelines for Americans 2010
  http://www.healthierus.gov/dietaryguidelines/dga2010/dietaryguidelines2010.pdf
- Food, Nutrition, Physical Activity, and the Prevention of Cancer: A Global Perspective (WCRF/AICR)
  http://www.dietandcancerreport.org/
- Healthy People 2020, Nutrition and Weight Status
  http://healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicId=29
- Usual Dietary Intakes: Food Intakes, US Population, 2001–04 (NCI)
  http://riskfactor.cancer.gov/diet/usualintakes/pop/

Alcohol Consumption

Per capita alcohol consumption was relatively stable between 1995 and 2009.

Alcohol and Cancer

Drinking alcohol increases the risk of cancers of the mouth, esophagus, pharynx, larynx, and liver 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 earlier 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.

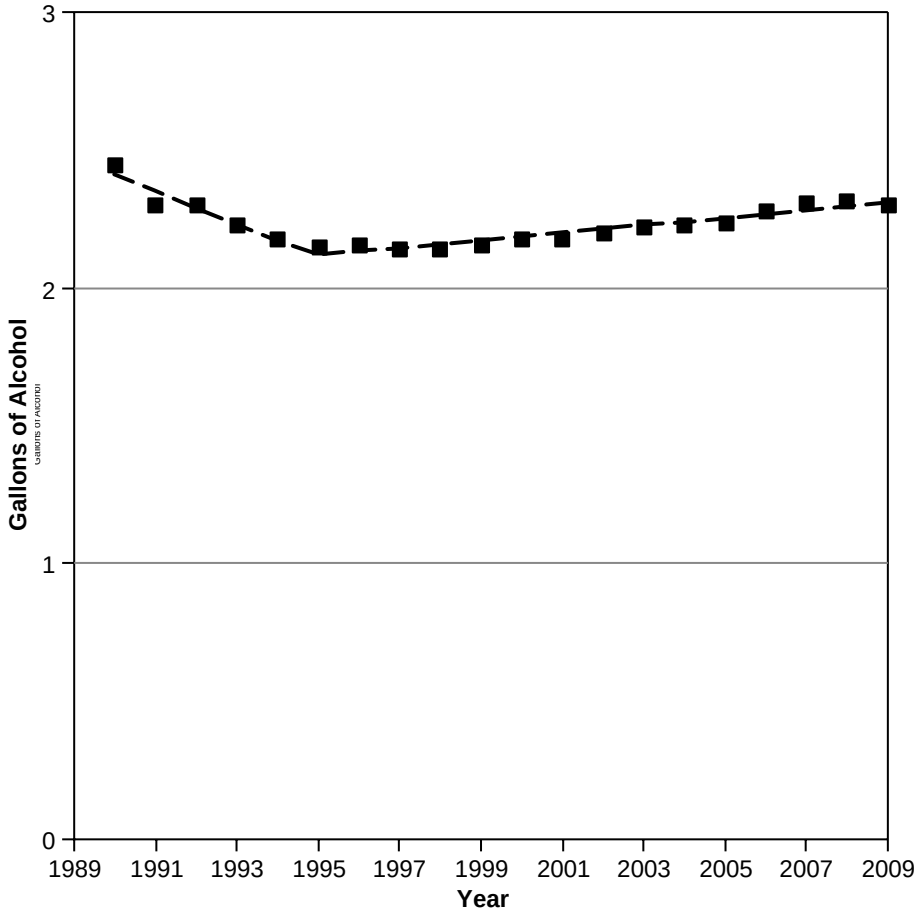
Measure

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.

Period – 1990–2009

Trends – Falling from 1990 to 1995 and then rising from 1995 to 2009.

Figure PAC1: Annual per capita alcohol consumption in gallons by individuals aged 14 years and older: 1990-2009



Source : LaVallee, R.A.; and Yi, H. Surveillance Report #92: Apparent Per Capita Alcohol Consumption: National, State, and Regional Trends, 1977-2009. Bethesda, MD: National Institute on Alcohol Abuse and Alcoholism, Division of Epidemiology and Prevention Research (August 2011).
Data are not age-adjusted.

Most Recent Estimate

In 2009, per capita alcohol consumption was 2.3 gallons for all beverages, including beer, wine, and liquor.

Healthy People 2020 Target

Reduce annual per capita alcohol consumption to 2 gallons.

Groups at High Risk for Using Alcohol

The 2010 Dietary Guidelines for Americans state that alcoholic beverages should not be consumed by some individuals, including those who cannot restrict their alcohol intake, pregnant women, children and adolescents, those taking medications that can interact with alcohol, those with certain medical conditions, and those who plan to drive, operate machinery, or take part in other activities that require attention, skill, or coordination or participate in situations or activities where impaired judgment could cause injury or death (e.g., swimming).

Many people start drinking as early as middle school (aged 13–14 years). Among those aged 12–17 years, whites and Hispanics are more likely than blacks to use alcohol. Among alcohol drinkers, those aged 18–25 years consume greater quantities than any other group.

Key Issues

Some studies suggest that alcohol consumption is associated with a lower risk of some non-cancer health conditions. However, it is not recommended that anyone begin drinking or drink more frequently on the basis of health considerations.

Additional Information on Alcohol Consumption

- Alcohol Alert (NIAAA)
  http://pubs.niaaa.nih.gov/publications/aa39.htm
- Alcohol and Youth (NIAAA)
  http://pubs.niaaa.nih.gov/publications/arh22-2/toc22-2.htm
- Alcohol Use and Cancer (ACS)
  http://www.cancer.org/Cancer/CancerCauses/DietandPhysicalActivity/alcohol-use-and-cancer
- Food, Nutrition, Physical Activity, and the Prevention of Cancer: A Global Perspective (AICR)
  http://www.dietandcancerreport.org
- Healthy People 2020—SubstanceAbuse
  http://healthypeople.gov/2020/
- United States Preventive Services Task Force, Screening and Behavioral Counseling Interventions in Primary Care to Reduce Alcohol Misuse, April 2004
  http://www.ahrq.gov/clinic/uspstf/uspsdrin.htm
- Usual Dietary Intakes: Food Intakes, US Population, 2001–04 (NCI)
  http://riskfactor.cancer.gov/diet/usualintakes/pop/
- What is Moderate Drinking? Defining "Drinks" and Drinking Levels (NIAA)
  http://pubs.niaaa.nih.gov/publications/arh23-1/05-14.pdf

Physical Activity

Approximately one-third of adults get no physical activity in their leisure time.

Physical Activity and Cancer

Physical activity at work or during leisure-time is linked to a 30 percent lower risk of getting colon cancer. Both vigorous and moderate levels of physical activity appear to reduce this risk. Physical activity is also connected to a lower risk of breast cancer and possibly lung and endometrial cancers. Studies continue to examine whether physical activity has a role in reducing the chances of getting other cancers.

Physical activity improves quality of life among cancer patients and survivors. Studies are beginning to explore the potential for physical activity to improve cancer survival. Studies have not yet determined if any specific types of physical activity, such as aerobic, strength, or flexibility training, have different effects on cancer outcomes.

Several national groups have recommended that people engage in regular physical activity. In late 2008, the U.S. Department of Health and Human Services issued Physical Activity Guidelines for Americans that recommend at least 1 hour of physical activity every day for children and adolescents and 2.5 hours of moderate intensity aerobic activity or one hour and 15 minutes of vigorous activity for adults each week. This was a slight departure from former physical activity recommendations, which focused on a daily routine rather than a cumulative weekly total for adults. Previous recommendations suggested engaging in at least 30 minutes per day of moderate physical activity for most (5 or more) days of the week.

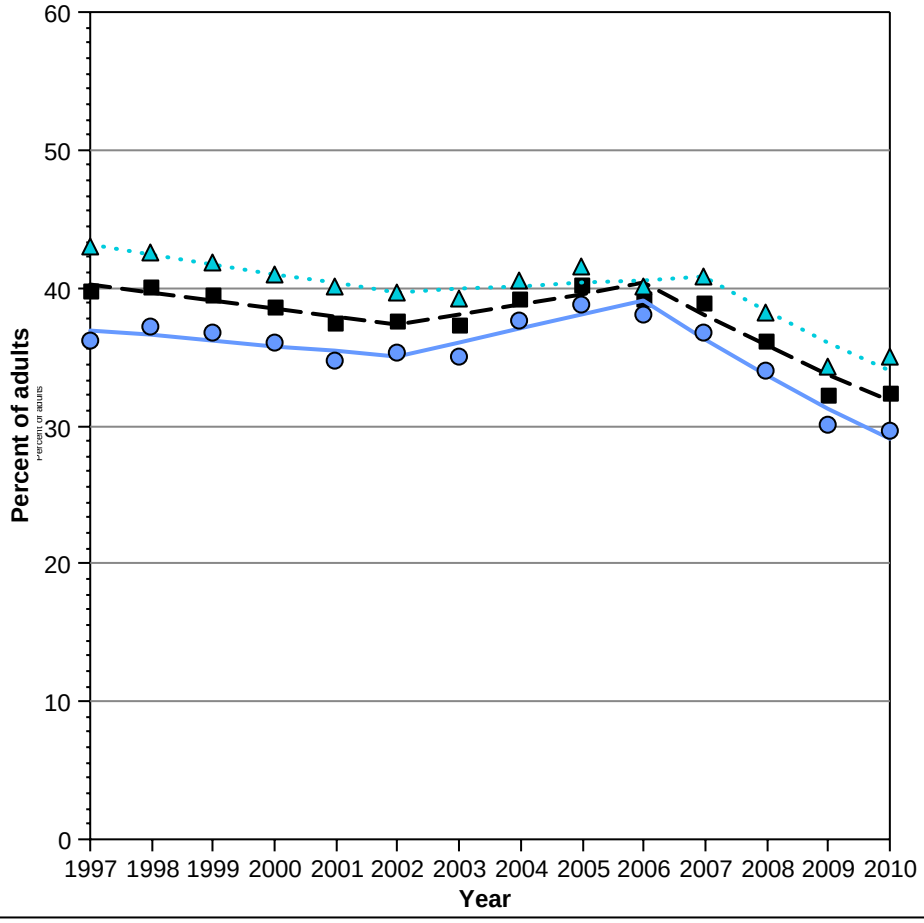
Measure

Percentage of adults aged 18 and older who reported no leisure time physical activity during the past month.

Period – 1997–2010

Trends – Falling from 1997–2002 for both sexes combined and for females; stable from 2002–2006 for both sexes and to 2007 for females; stable from 1997–2006 for males; falling from 2006–2010 for both sexes combined and males and from 2007–2010 for females.

Figure PPA1: Percentage of adults aged 18 years and older reporting no physical activity in their leisure time by Sex: 1997-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

Most Recent Estimates

The 2010 National Health Interview Survey (NHIS), an in-person household survey, indicates that 32 percent of adults aged 18 and older reported no physical activity in their leisure time.

Healthy People 2020 Target

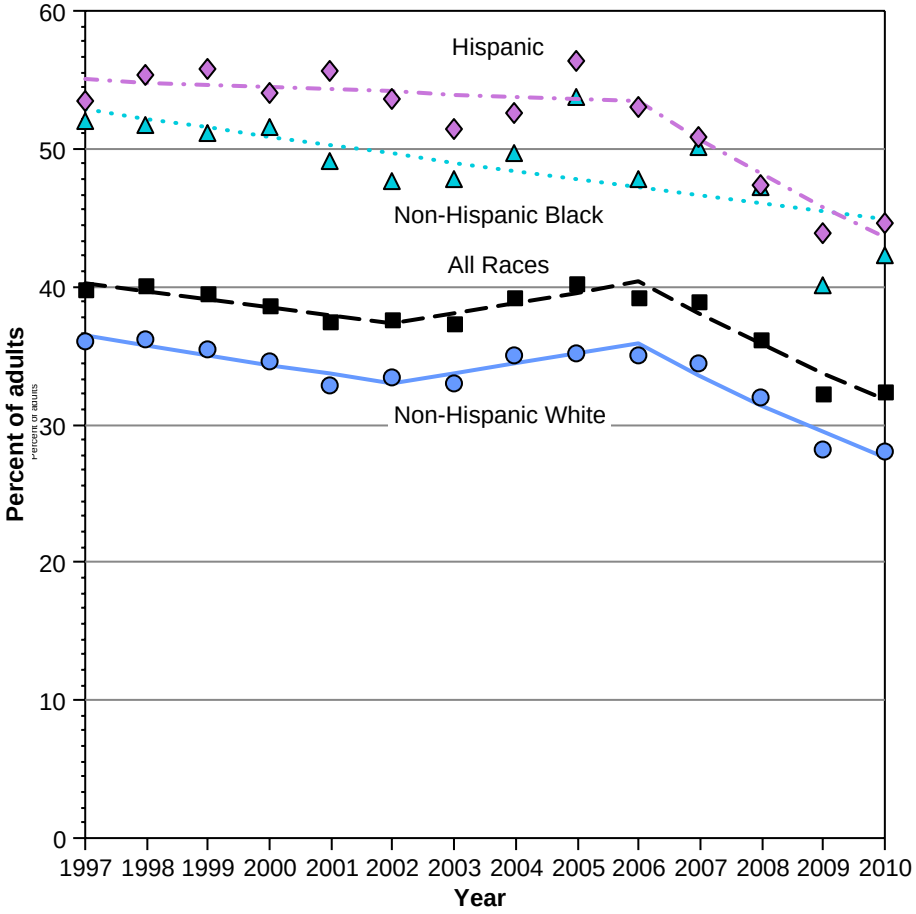
Reduce to 32.6 percent the percent of adults who engage in no leisure-time physical activity.

Groups at High Risk for Being Inactive in Their Leisure Time

Women are more likely than men, and blacks and Hispanics are more likely than whites, to report no leisure-time physical activity. Lack of physical activity is also more common among those with lower incomes.

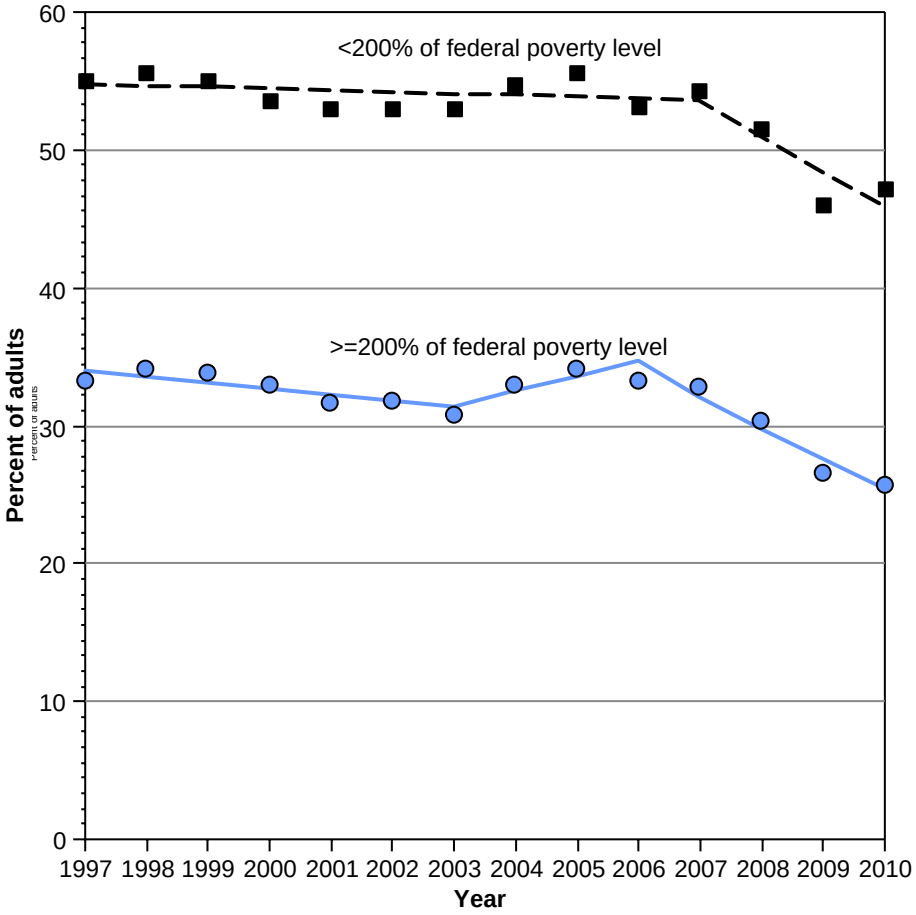
For youth, physical activity is lower among females, especially black females. Physical activity also decreases as children get older.

Figure PPA2: Percentage of adults aged 18 years and older reporting no physical activity in their leisure time by race/ethnicity: 1997-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

Figure PPA3: Percentage of adults aged 18 years and older reporting no physical activity in their leisure time by poverty income level: 1997-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

Key Issues

Since the mid 1980s, fewer high school students have taken part in physical education classes.

Removing barriers (such as lack of physical education classes) and setting up supports (such as bicycle and walking paths) can help promote physically active lifestyles.

Physical activity appears to be effective in reducing the amount of weight gained during and after treatment of breast cancer and improves quality of life for cancer survivors.

Additional Information on Physical Activity

- CDC, Behavioral Risk Factor Surveillance System (BRFSS)
  http://www.cdc.gov/brfss

- Healthy People 2020, Physical Activity
  http://www.healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicId=33
- Morbidity and Mortality Weekly Report (MMWR)
  http://www.cdc.gov/mmwr/
- National Health Interview Survey (NHIS) (NCHS)
  http://www.cdc.gov/nchs/nhis.htm
- Physical Activity Guidelines for Americans (U.S. Department of Health and Human Services)
  http://www.health.gov/PAGuidelines/
- Physical Activity Trends – United States, 1998–2009 (2010 Health United States, Table 70)
  http://www.cdc.gov/nchs/data/hus/2010/070.pdf
- State Cancer Profiles, Latest Rates, Percents, and Counts
  http://statecancerprofiles.cancer.gov/micromaps/

Weight

More adults are becoming obese, but the increase is slowing.

Overweight, Obesity, and Cancer

Compelling evidence indicates that prevention of obesity reduces the risk for several types of cancer, such as colon, postmenopausal breast, uterine, esophageal, and renal cell cancers. It is estimated that 20 to 30 percent of these cancers—some of the most common cancers in the United States—may be related to being overweight or lack of physical activity.

During the past two decades, an extensive body of research has also begun to identify an association between obesity and worse prognosis and outcomes among some cancer patients, particularly those with breast, prostate, and colon cancer.

Measure

Percentage of adults (aged 20 and older) who are at a healthy weight, overweight, or obese.

These weight groups are defined by a measurement called body mass index (BMI). BMI is found by dividing weight (in kilograms) by height (in meters) squared. Category definitions used here are:

- Healthy weight: BMI between 18.5 and 24.9
- Overweight: BMI between 25.0 and 29.9
- Obese: BMI equal to or greater than 30.0

Period – 1971–2010

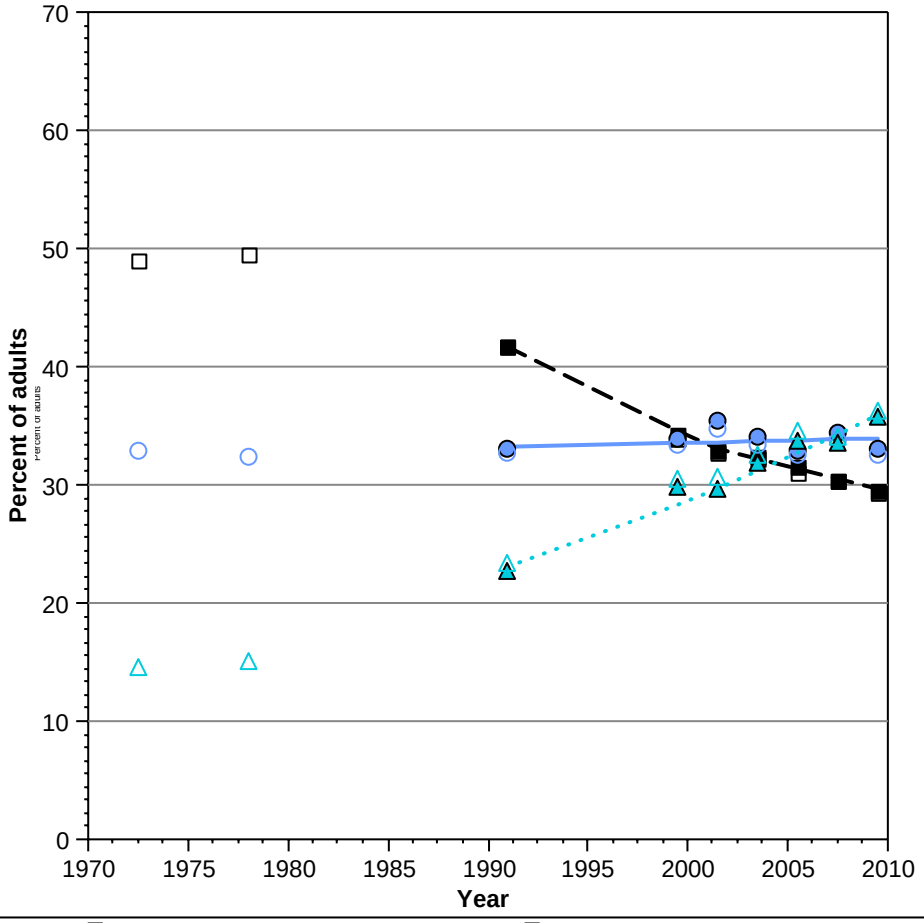
Note: Data from 1971–1974 and 1976–1980 are for ages 20–74, but the age difference does not appear to affect the prevalence, as seen from later survey years where data are plotted for both age groupings (20–74 and 20+). Trends are evaluated only for 1991 and forward, with data for ages 20+.

Trends

Healthy weight: Falling
Overweight: Stable
Obese: Rising

Note: These trends do not indicate that individuals are moving from healthy weight to obesity. Rather, the observed trends stem from a similar number of persons moving from healthy weight to overweight and from overweight to obese. Flegal et al. (2012) have suggested a leveling off of the increase in obesity, particularly for females, but this is not indicated by the overall trend analysis conducted here.

Figure PWT1: Percent of adults aged 20 years and older who were at a healthy weight, overweight, or obese: 1971-2010



Source: National Center for Health Statistics. National Health and Nutrition Examination Survey.
Data are age-adjusted to the 2000 US standard population using age groups: for 20+ data 20-29, 30-39, 40-49, 50-59, 60-69, 70-79, 80+; for 20-74 data: 20-29, 30-39, 40-49, 50-59, 60-69, 70-74.

Most Recent Estimates

Among adults aged 20 and older in 2009–2010:

- 29 percent were at a healthy weight
- 33 percent were overweight
- 36 percent were obese

Values do not add to 100 percent because underweight (BMI less than 18.5) is not included.

When data after 1999 are examined by gender, it appears that the increases in obesity among women have leveled off, while the prevalence for men is still rising. Among women, obesity prevalence has increased for non-Hispanic black and Mexican American women but not for non-Hispanic white women. For both women and men, the 2009–2010 estimates are not statistically different from the prevalence for 2003–2008.

Healthy People 2020 Target

Increase to 33.9 percent the proportion of adults who are at a healthy weight.

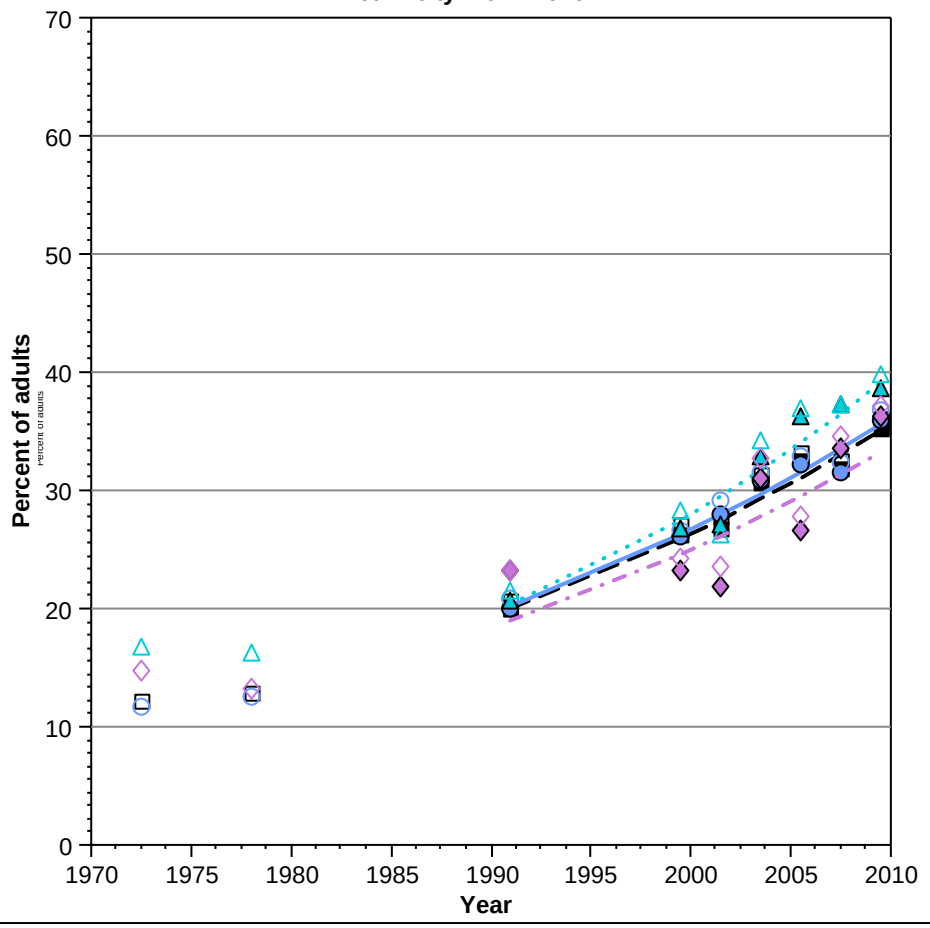
Decrease to 30.6 percent the proportion of obese adults.

Groups at High Risk for Being Overweight or Obese

Overweight and obesity are most common among black and Mexican American women. The same patterns are seen for children and teens in these groups.

Overweight children are more likely to become overweight adults and to suffer from associated illnesses and premature death. As with adults, the trend toward excess weight among children has greatly increased in recent years.

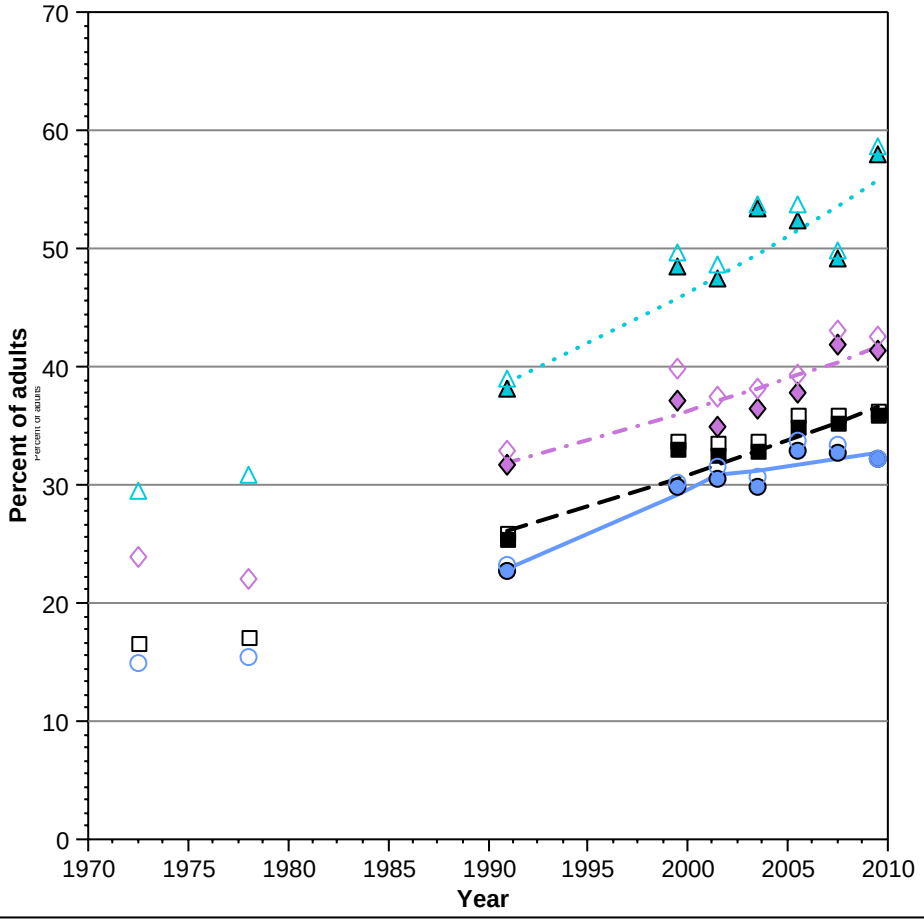
Figure PWT2: Percent of males aged 20 years and older who were obese by race/ethnicity: 1971-2010



All Races (All Ages)
Non-Hispanic White (All Ages)
Non-Hispanic Black (All Ages)
Hispanic (All Ages)
All Races (Ages 20-74)
Non-Hispanic White (Ages 20-74)
Non-Hispanic Black (Ages 20-74)
Hispanic (Ages 20-74)

Source: National Center for Health Statistics. National Health and Nutrition Examination Survey.
Data are age-adjusted to the 2000 US standard population using age groups: for 20+ data 20-29, 30-39, 40-49, 50-59, 60-69, 70-79, 80+; for 20-74 data: 20-29, 30-39, 40-49, 50-59, 60-69, 70-74.

Figure PWT3: Percent of females aged 20 years and older who were obese by race/ethnicity: 1971-2010



Source: National Center for Health Statistics. National Health and Nutrition Examination Survey.
Data are age-adjusted to the 2000 US standard population using age groups: for 20+ data 20-29, 30-39, 40-49, 50-59, 60-69, 70-79, 80+; for 20-74 data: 20-29, 30-39, 40-49, 50-59, 60-69, 70-74.

Key Issues

Daily physical activity, balanced with appropriate calorie intake, is one of the most effective ways to avoid weight gain. Lack of activity is believed to contribute to the increase in overweight among U.S. youth and adults.

Increased TV watching and similar sedentary activity is linked with excess weight and weight-related chronic disease.

See Physical Activity for trends in physical activity.

Additional Information on Weight

- 2008 Physical Activity Guidelines for Americans (U.S. Department of Health and Human Services)
  http://www.health.gov/PAGuidelines/

- Agency for Healthcare Research and Quality, Staying Healthy http://www.ahrq.gov/consumer/healthy.html
- Body Mass Index Table (National Heart, Lung, and Blood Institute) http://www.nhlbi.nih.gov/guidelines/obesity/bmi_tbl.htm
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Sun Protection

Only 61 or 70 percent of adults say that they protect themselves from the sun, depending upon the measure used. The percentage of adults who report being sunburned has increased since 2005. Although use of one or more sun protective measures has changed little over the long term, the newly defined Healthy People 2020 (HP2020) measure shows some promising rise over the short term period 2005–2010, with 70 percent of adults saying that they protect themselves from the sun. Teens' indoor tanning has declined, but remains high—in particular among non-Hispanic white girls; the rate of indoor tanning is even higher among the oldest of non-Hispanic white girls, who are typically not protected by state indoor tanning age restrictions.

Sun Protection and Cancer

The number of new cases of melanoma skin cancer increased between 1975 and 2009, with a projected number of 76,250 new cases in 2012. More than two million people were diagnosed with basal cell and/or squamous cell (non-melanoma) skin cancer in the United States in 2006. Basal and squamous cell cancers are the two most common types of cancers in the country. Although 40 to 50 percent of Americans who live to age 65 will have non-melanoma at least once, most of these cancers—as well as melanoma, the deadliest form of skin cancer—can be prevented. Studies suggest that 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. Avoiding sunburns, intermittent high-intensity sun exposure, indoor UV tanning, and other damage from these sources—especially in children, teens, and young adults—reduces the chances of getting melanoma skin cancer. Although these types of skin cancers do occur in people with darker skin, they are most common in light-skinned people.

Measures

Sun-protective behaviors: Percentage of adults aged 18 and older who reported that they usually or always practice at least one of three sun protective behaviors—using sunscreen, wearing protective clothing (long sleeve shirt and/or wide brimmed hat shading the face, ears and neck), or seeking shade—when going outside on a sunny day for more than one hour.

Beginning in 2005, the question on hat use (as part of protective clothing) was supplemented and 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.

In certain sections of this report, the protective clothing and sunscreen measures were defined according to the HP2020 objectives with data available since 2005, only allowing for short-term trends. HP2020 defines use of protective clothing as wearing a wide-brimmed hat that shades the face, ears, and neck, or long sleeves and long pants or long skirt. Use of long pants and/or long skirts was not tracked until 2005. HP2020 guidelines for sunscreen use refer to sunscreens with sun protective factor (SPF) 15+.

Indoor tanning: The National Health Interview Survey Cancer Control Supplement (NHIS-CCS) data began to track indoor tanning use by adolescents in 2005. The percentage of teens aged 14 to 17 years who have used an indoor tanning device one or more times during the past 12 months is given here. This was reported by a knowledgeable adult household respondent. Self-reports of use of the same devices by adults aged 18 years and older are given for 2010. Although NHIS-CCS also collected this data for adults in 2005 and 2008, the methodology used then likely resulted in overestimates and thus we chose not to look at trends.

Sunburn: Percentage of adults aged 18 and older who reported having been sunburned in the past 12 months.

Periods

1992–2010 (sun-protective behaviors)

2000–2010 (sunburn)

2005–2010 (teen indoor tanning, HP2020 sun-protective behaviors)

2010 (adult indoor tanning)

Trends

From 1992 to 2010, there was a non-significant increase in the percentage of adults reporting use of one or more sun-protective behaviors. Overall, by 2010, reporting of one or more sun protective behaviors in which the sun-protective clothing component was more loosely defined (i.e., including partially protective baseball caps and sun visors) increased about 16 percentage points from 1992, when the percentage was 53.7. Also, the percentage of those reporting one or more sun-protective behaviors in 2010 still represents nearly a 7 percentage point increase over the 1992 value even after differentiating the use of fully sun-protective hats from the use of baseball caps since 2005.

This long-term non-significant increase trend pattern was the same by sex, age, sex by age, race/ethnicity, poverty status, and education.

The short-term trend, from 2005 to 2010 for the HP2020 defined set of one or more sun-protective behaviors, showed a statistically significant rise.

This short-term statistically significant rising trend was similar by sex, age, sex by age, race/ethnicity, and poverty level except for 18- to 24-year old females and greater than or equal to 200 percent of the federal poverty level groups, which showed a non-significant rise.

Protective clothing: The long-term trend in percentage of people who usually or always wear at least one sun-protective article of clothing (fully sun-protective hat or long-sleeved shirt) has not changed significantly over the period 1992–2010. Women's practices of these behaviors show an overall fall from 1992 to 2010. However, this fall is only statistically significant for those aged 25 years and older, while women 18 to 24 years old showed no significant change. Men's practices of these behaviors show no significant change overall or by age group. Men continue to show a far greater use of baseball caps for protection than the more fully protective type of hat that shades the ears, face, and neck, as shown by a 30 percentage point difference in 2005 between the estimate counting long- sleeve shirts and/or fully sun-protective hats and the estimate counting these articles of clothing plus baseball caps. Non-Hispanic whites and non-Hispanic blacks experienced no significant change in protective clothing use from 1992 to 2010, while use of protective clothing by Hispanics remained stable. Long-term trends by poverty status are similar overall. However the recent period from 2005 to 2010 shows a rise in protective clothing use among those who live at or above 200 percent of the federal poverty level, while percentages of those with lower incomes who wear protective clothing show no significant change. There are no differences in trend by education level.

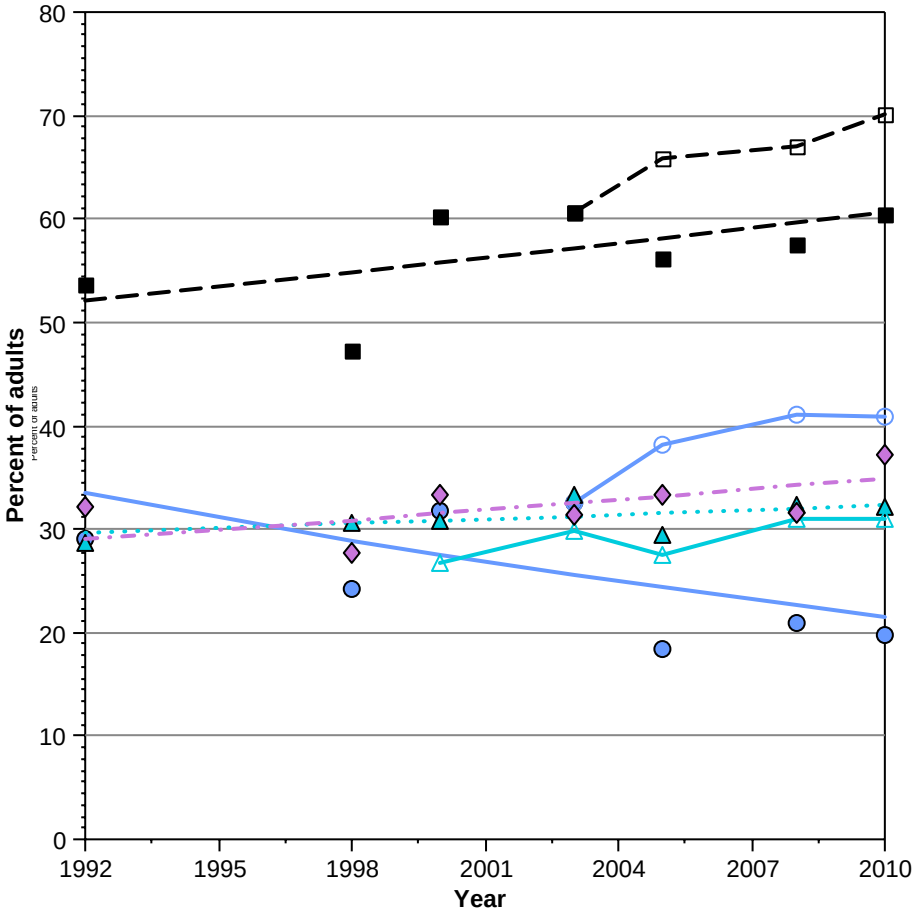
The short-term trend, from 2005 to 2010 for the HP2020 defined set of one or more protective clothing articles, shows a statistically significant rise. This trend is similar overall by sex but not by sex by age group. Only women ages 25 years and older show a statistically significant rise over this time period. The overall rise is similar for non-Hispanic blacks and Hispanics, but non -Hispanic whites show no significant change. The rise is similar by poverty level and by education.

Shade: The long-term trend in percentage of people who usually seek shade has shown little change overall, beginning with 32.3 percent in 1992. Similar trend patterns are seen among men and women, among various race/ethnicity groups, by poverty level, and by education level. The percentage of adults ages 18 to 24 who usually or always seek shade rose from 1992 to 2010. Most recently, between 2008 and 2010, use of shade has risen and this finding is consistent by sex, age, sex by age group, race/ethnicity, poverty level, and education.

Sunscreen: Overall, the long-term trend in percentage of people who usually use sunscreen remained fairly stable from 1992 to 2010. Long term trends are similarly stable or show no significant change by sex, age, race/ethnicity, poverty level, and education. One exception to this pattern is for women ages 25 years and older who show a small but statistically significant rise over this period.

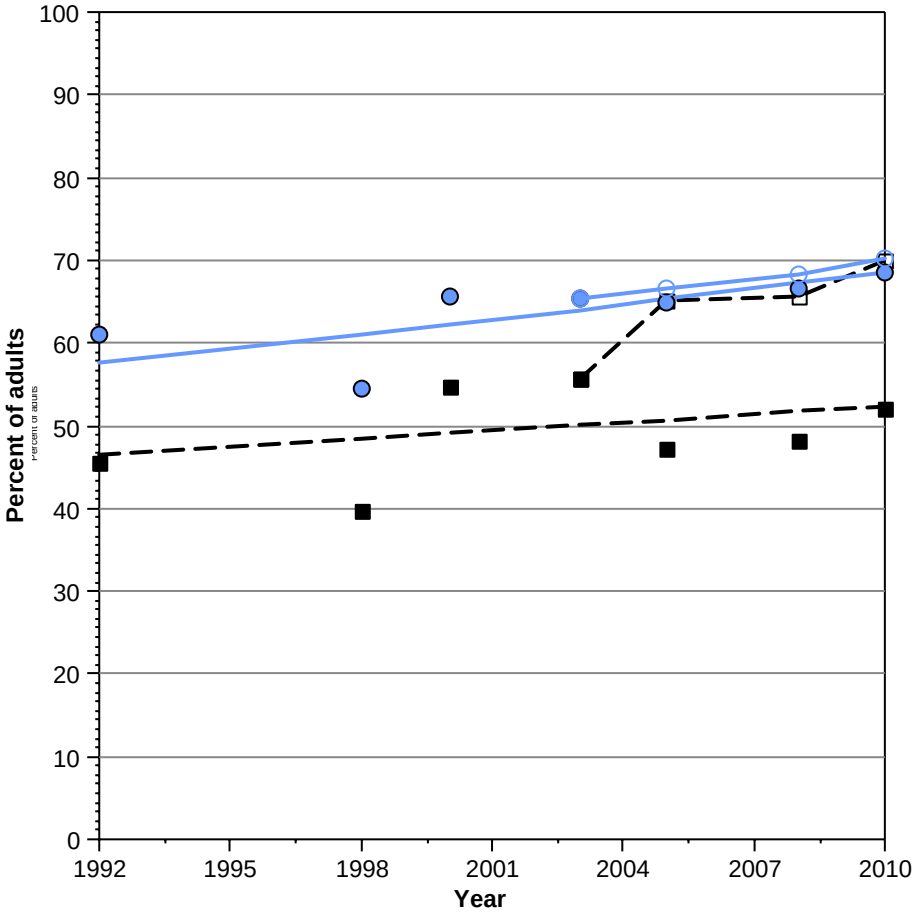
The level of SPF, which is in line with the intent of the HP2020 goal (SPF15+) for use of sun-protective measures, was tracked beginning in 2000. The updated HP2020 objectives also refer to sunscreens with SPF 15+. Short-term trends between 2005 and 2010 show an overall rise for adults' use of sunscreens with SPF 15+. This rise appears to be mainly between 2005 and 2008, with greater stability between 2008 and 2010. These trends were similar among men and women, among various race/ethnicity groups, by poverty level, and by education level. A non-significant change among those 18 to 24 years of age seems to be driven by a non-significant change for young men 18 to 24 years of age because the other sex by age categories show a similar rising trend.

Figure PSP1: Percentage of adults aged 18 years and older who usually or always protect themselves from the sun: 1992-2010



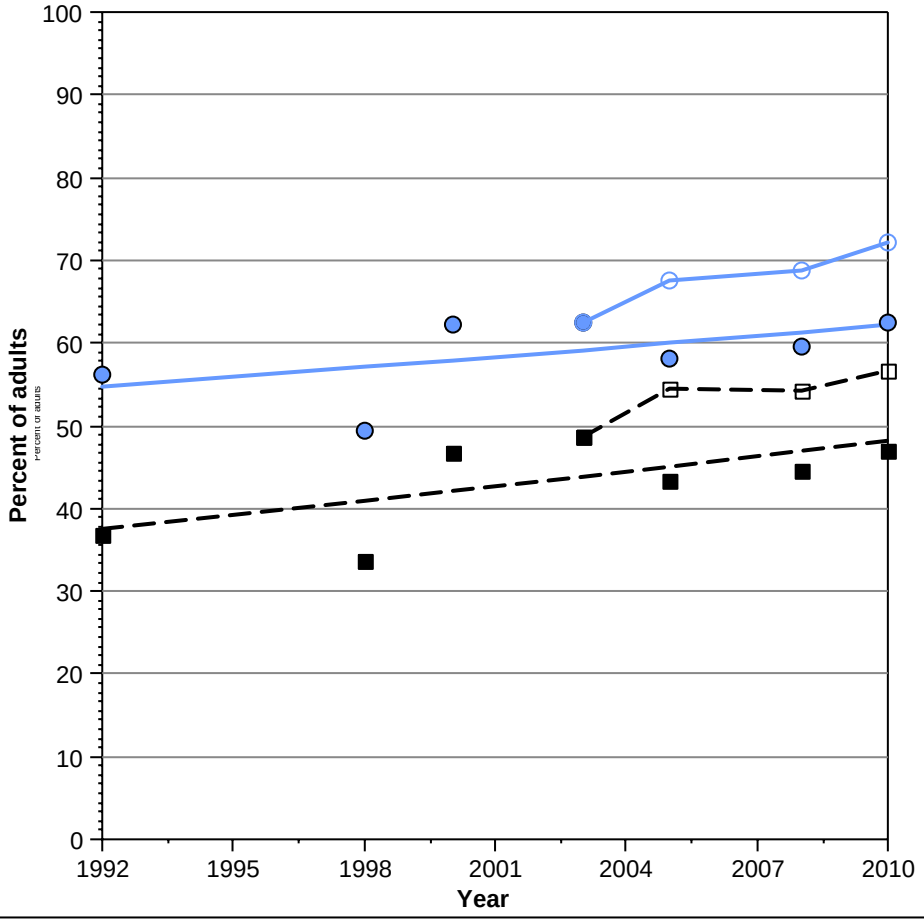
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.
(1) Open symbols for 'Total' and Protective clothing series also include partially protective hats.

Figure PSP2: Percentage of adults aged 18 years and older who usually or always protect themselves from the sun by sex: 1992-2010



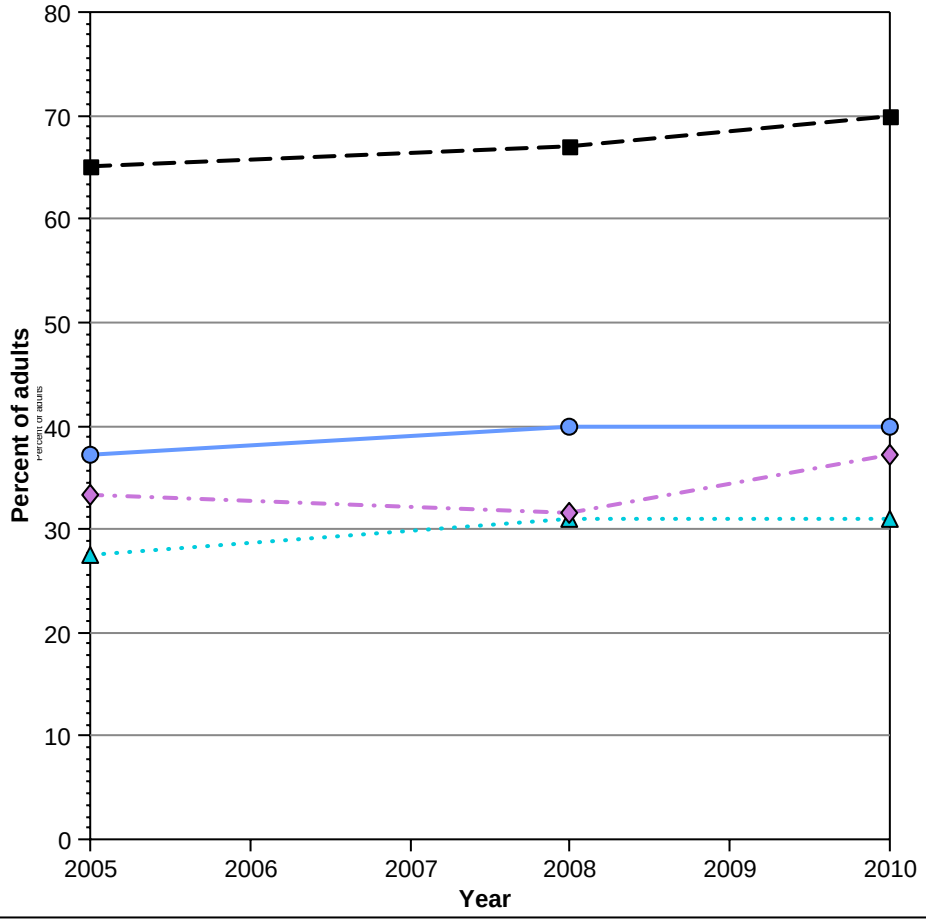
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.
(1) Series using open symbols also includes partially protective hats.

Figure PSP3: Percentage of adults aged 18 years and older who usually or always protect themselves from the sun by age: 1992-2010



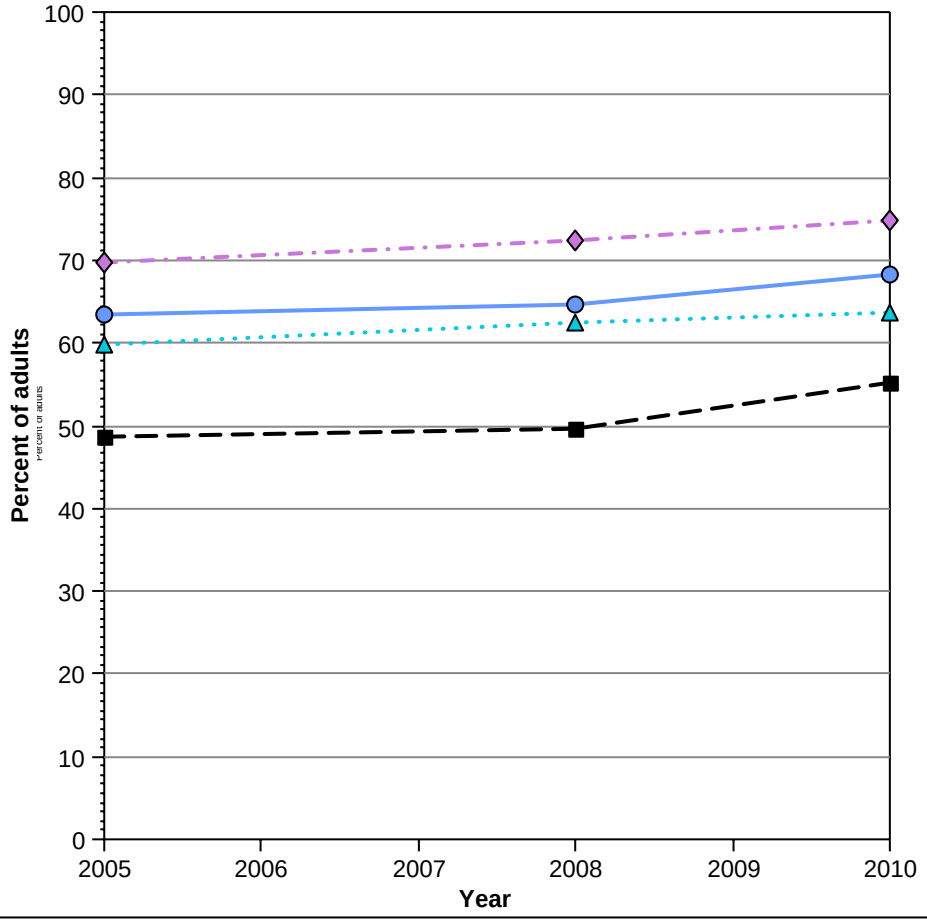
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.
(1) Series using open symbols also includes partially protective hats.

Figure PSP4: Percentage of adults aged 18 years and older who usually or always protect themselves from the sun: 2005-2010



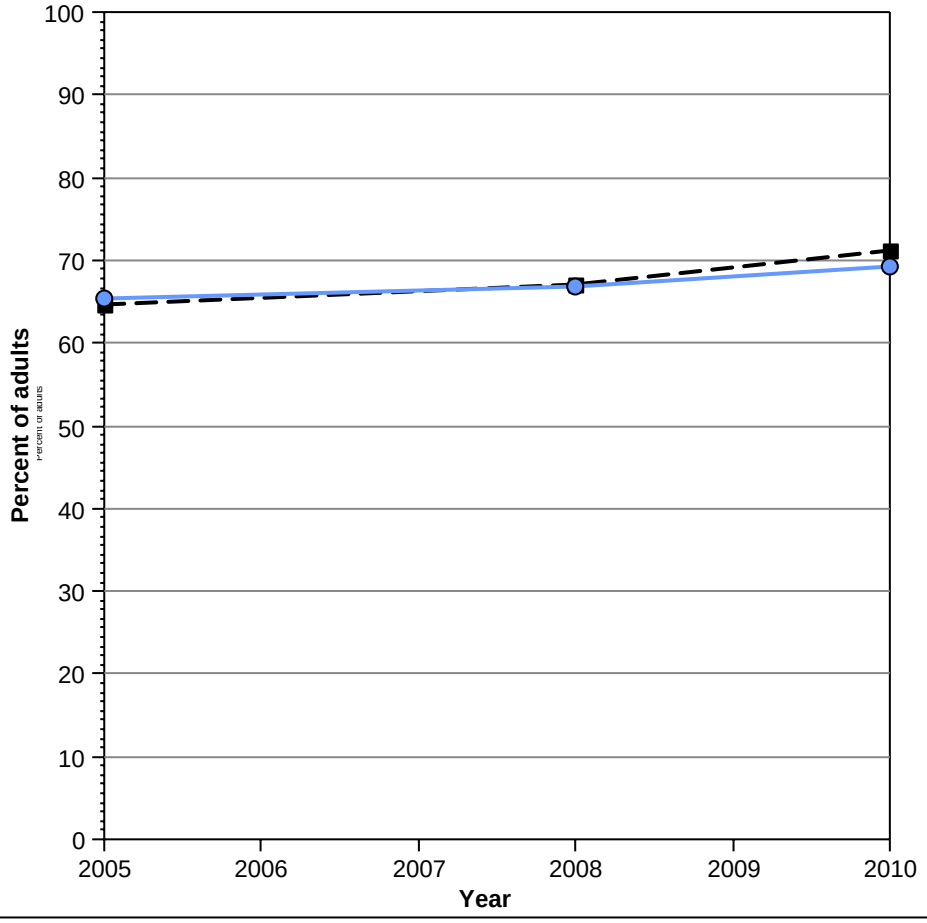
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

Figure PSP5: Percentage of adults aged 18 years and older who usually or always protect themselves from the sun by sex and age: 2005-2010



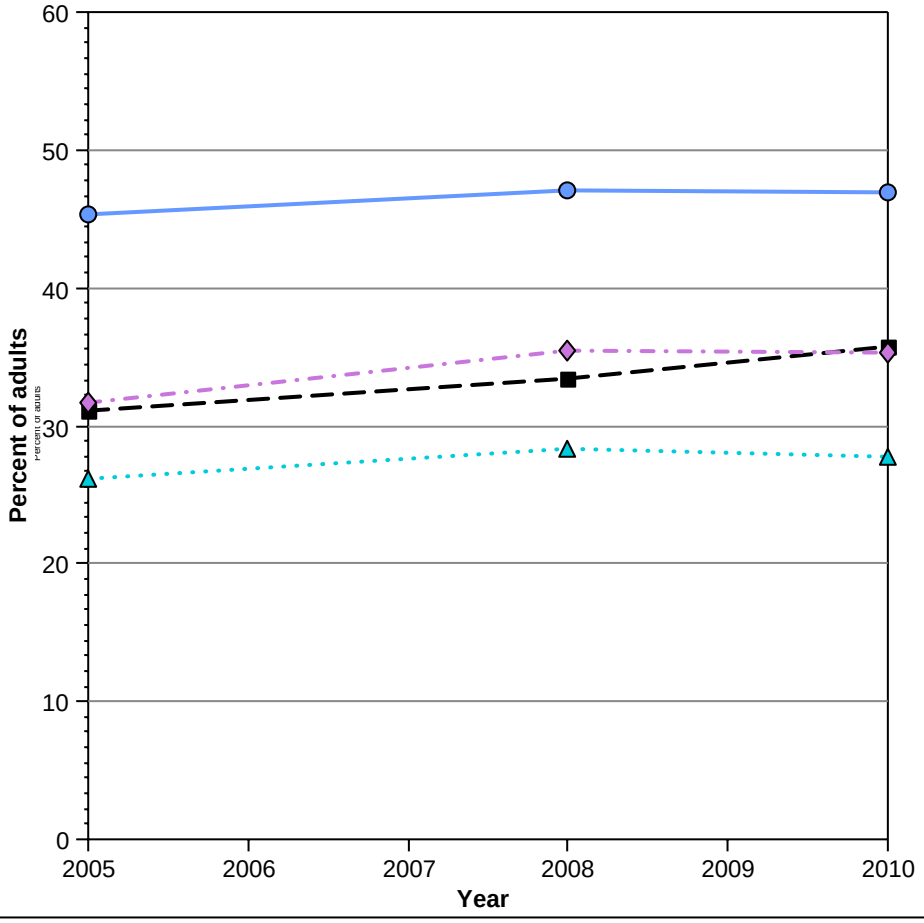
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+. Analysis uses the 2000 Standard Population as defined by NCHS (http://www.cdc.gov/nchs/data/statnt/statnt20.pdf).

Figure PSP6: Percentage of adults aged 18 years and older who usually or always protect themselves from the sun by poverty income level: 2005-2010



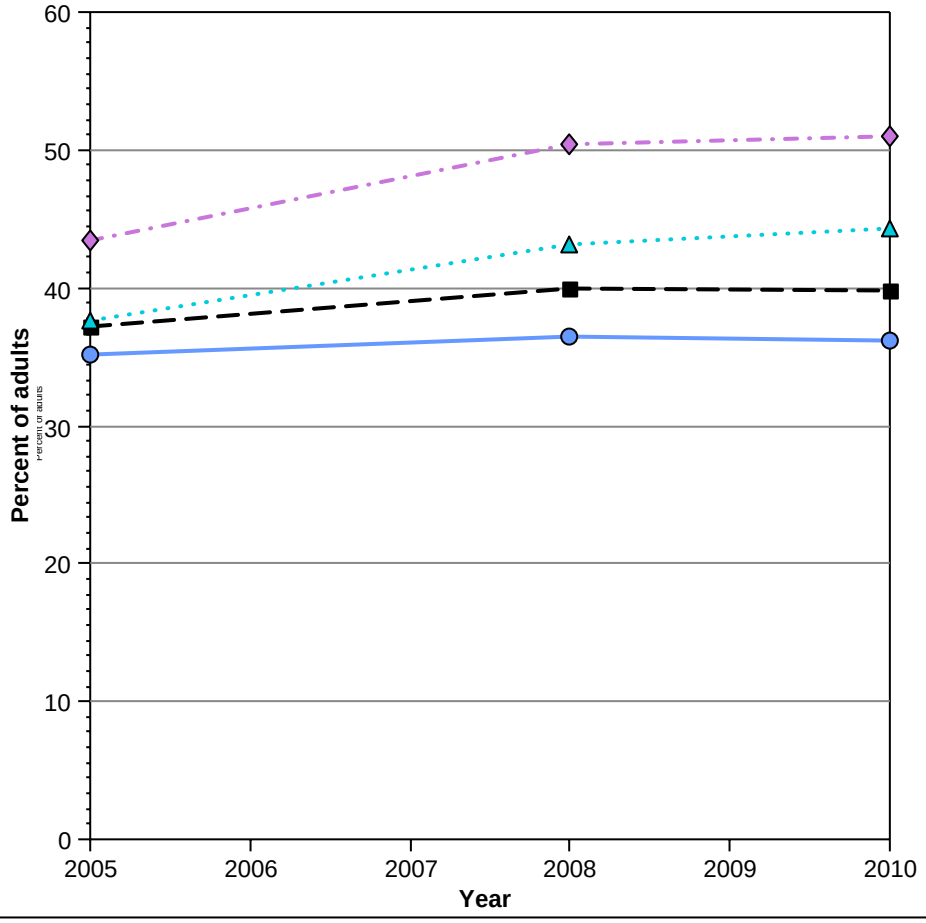
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+. Analysis uses the 2000 Standard Population as defined by NCHS (http://www.cdc.gov/nchs/data/statnt/statnt20.pdf).

Figure PSP7: Percentage of adults aged 18 years and older who usually or always protect themselves from the sun by wearing protective clothing by sex and age: 2005-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

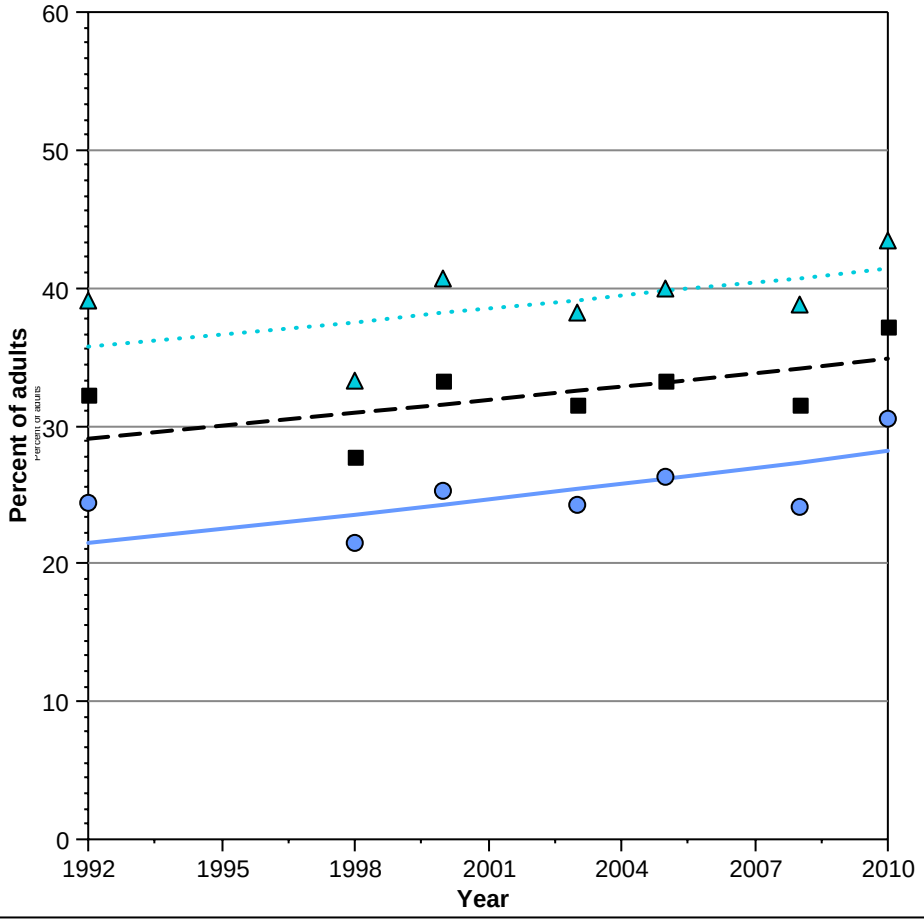
Figure PSP8: Percentage of adults aged 18 years and older who usually or always protect themselves from the sun by wearing protective clothing by race/ethnicity: 2005-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

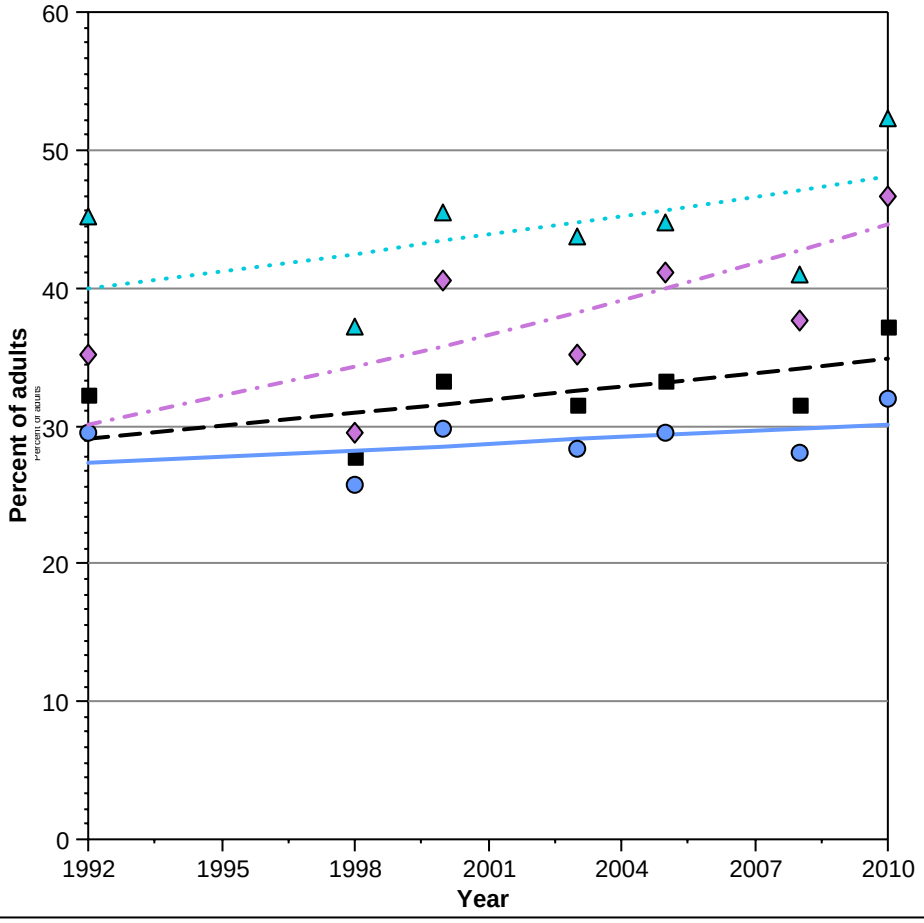
Indoor tanning: Between 2005 and 2010 indoor tanning use fell among teens 14 to 17 years of age. This decline in use was primarily due to a decline in use among girls between 2005 and 2008, as boys showed no significant change during the entire period. The fall in indoor tanning use between 2005 and 2010 was statistically significant only for non-Hispanic whites, while Hispanics and non-Hispanic blacks showed no significant change.

Figure PSP9: Percentage of adults aged 18 years and older who usually or always protect themselves from the sun by seeking shade by sex: 1992-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

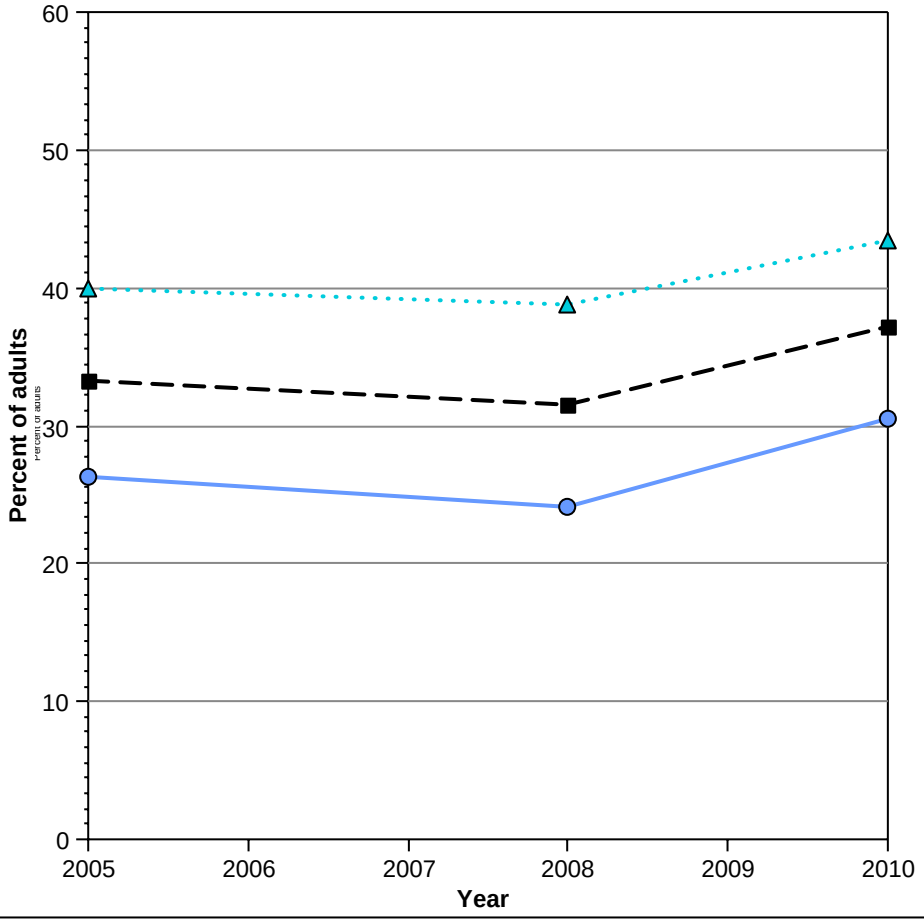
Figure PSP10: Percentage of adults aged 18 years and older who usually or always protect themselves from the sun by seeking shade by race/ethnicity: 1992-2010



All Races
Non-Hispanic White
Non-Hispanic Black
Hispanic

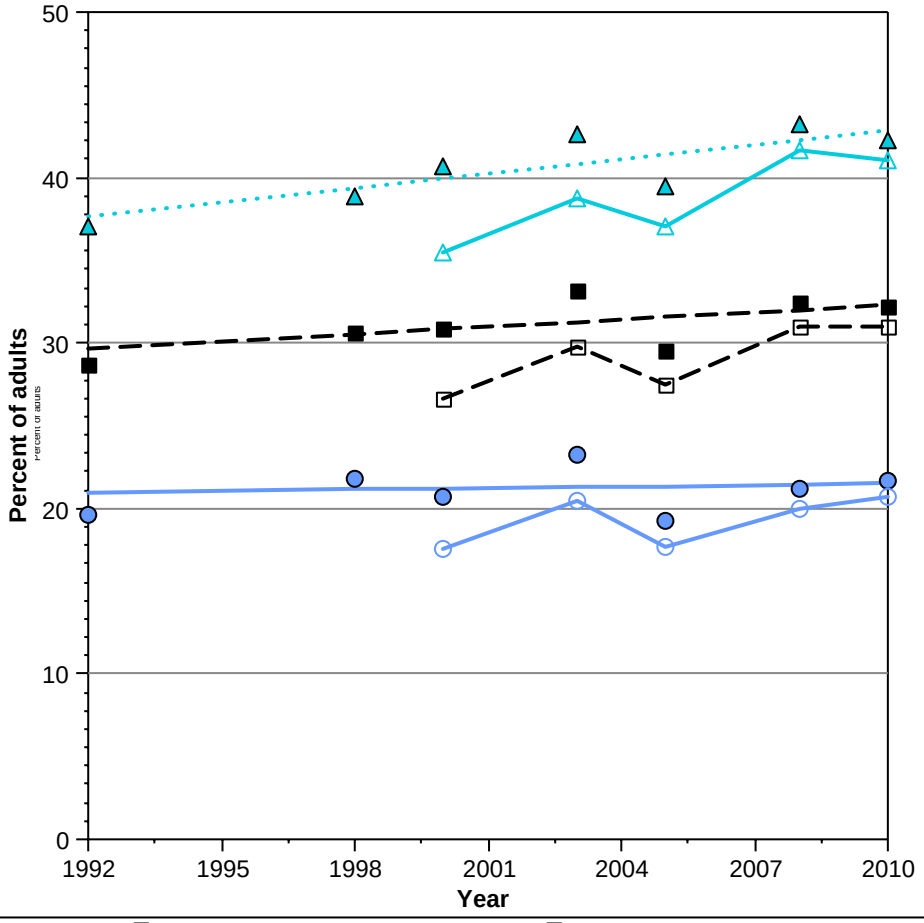
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

Figure PSP11: Percentage of adults aged 18 years and older who usually or always protect themselves from the sun by seeking shade by sex: 2005-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

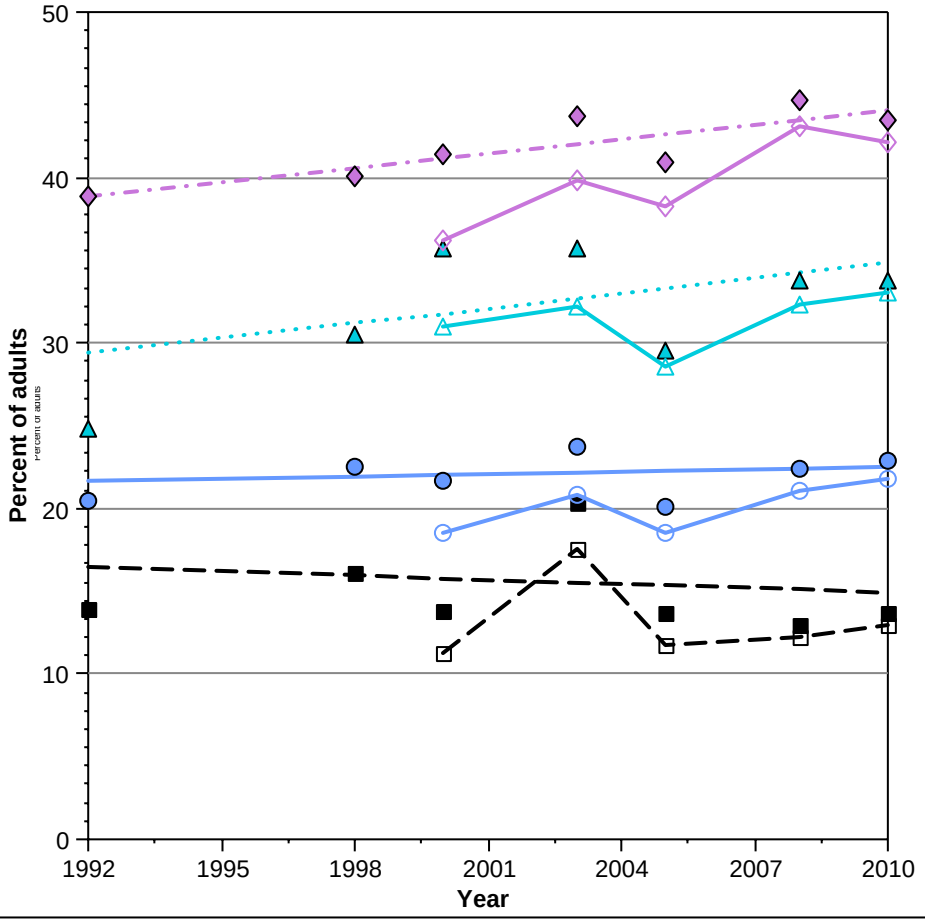
Figure PSP12: Percentage of adults aged 18 years and older who usually or always protect themselves from the sun by using sunscreen by sex: 1992-2010



Both Sexes
Male
Female
Both Sexes (SPF 15+)
Male (SPF 15+)
Female (SPF 15+)

Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

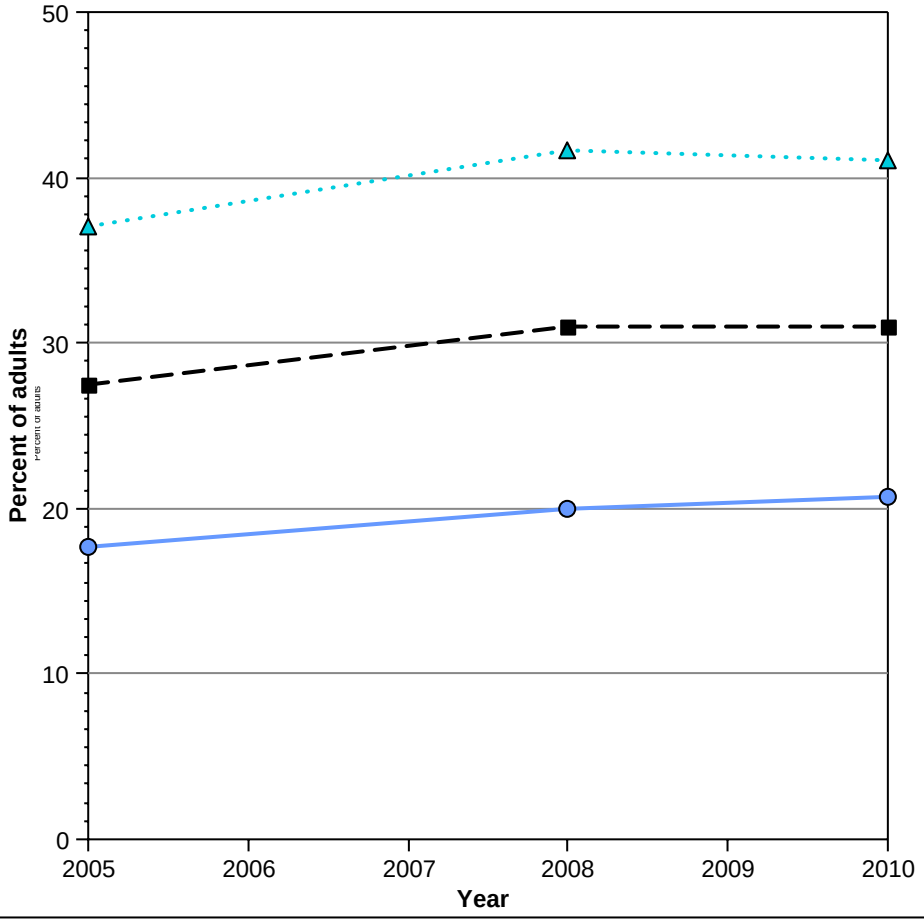
Figure PSP13: Percentage of adults aged 18 years and older who usually or always protect themselves from the sun by using sunscreen by sex and age: 1992-2010



Males, ages 18-24
Males, ages 25+
Females, ages 18-24
Females, ages 25+
Males Ages 18-24 (SPF 15+)
Males Ages 25+ (SPF 15+)
Females Ages 18-24 (SPF 15+)
Females Ages 25+ (SPF 15+)

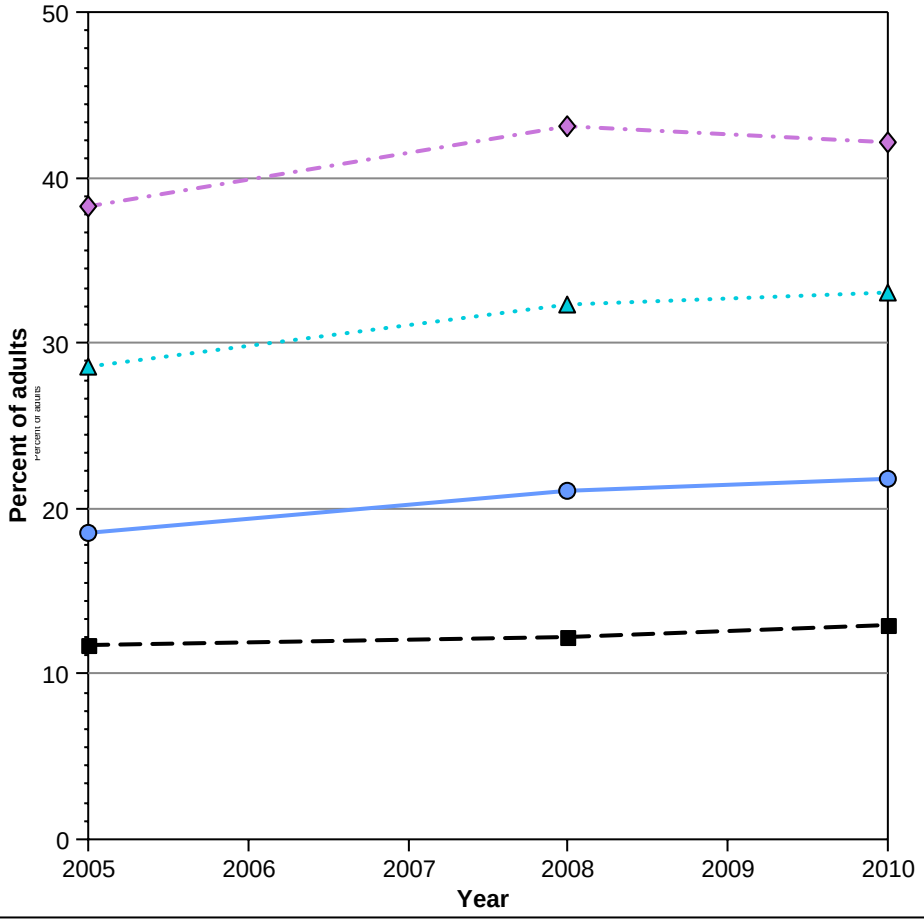
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

Figure PSP14: Percentage of adults aged 18 years and older who usually or always protect themselves from the sun by using sunscreen by sex: 2005-2010



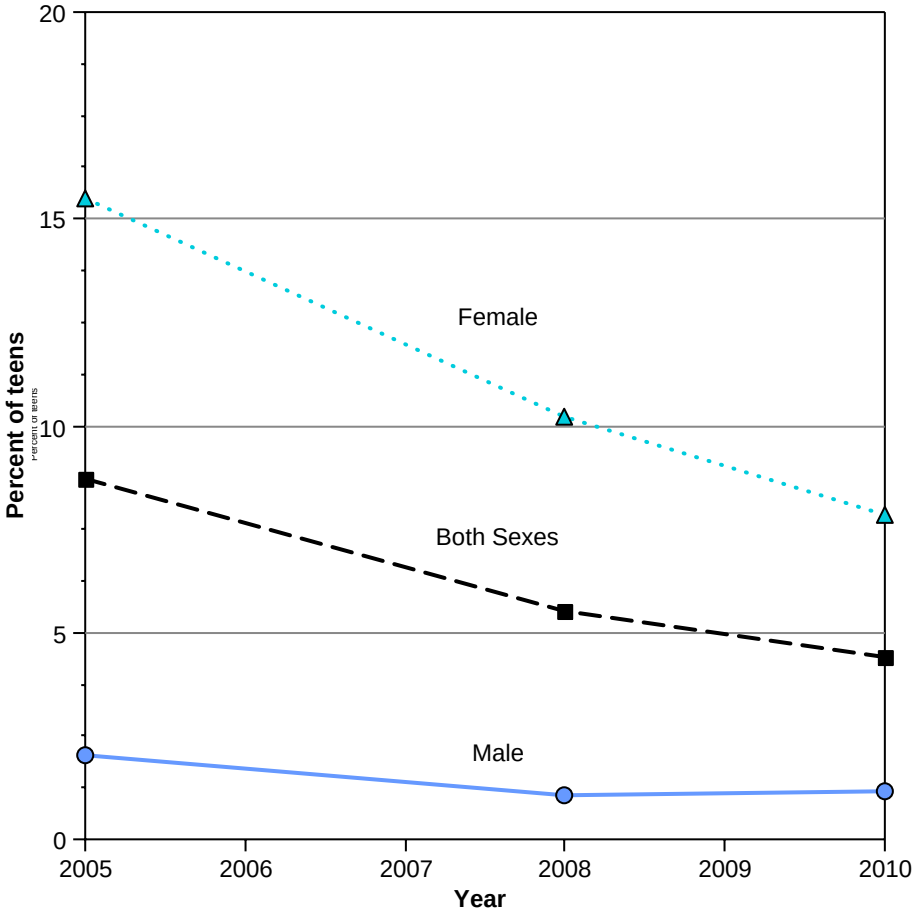
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

Figure PSP15: Percentage of adults aged 18 years and older who usually or always protect themselves from the sun by using sunscreen by sex and age: 2005-2010



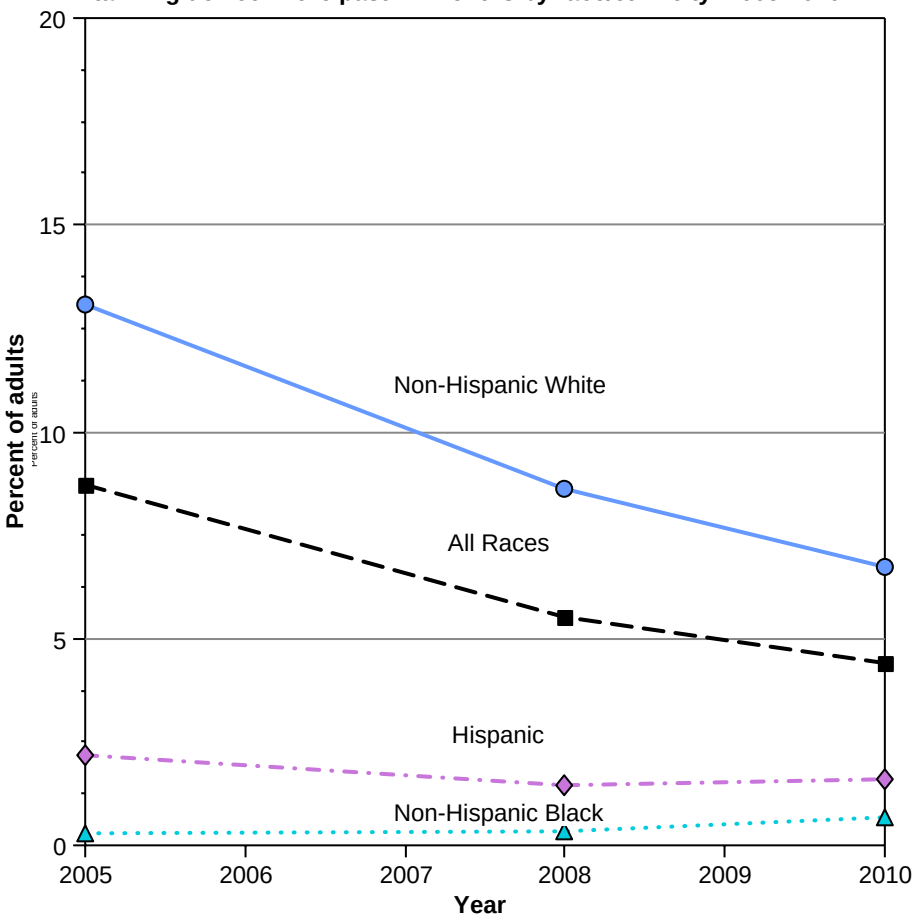
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

Figure PSP16: Percentage of teenagers aged 14 to 17 years who used an indoor tanning device in the past 12 months by sex: 2005-2010



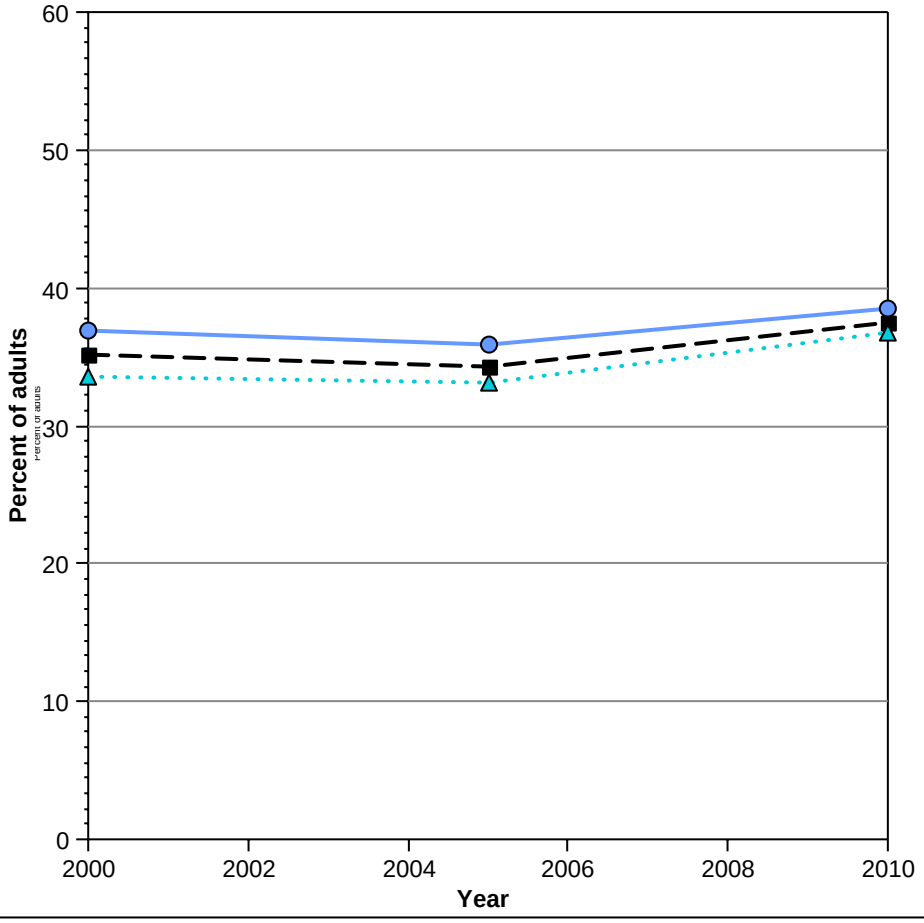
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are not age-adjusted.

Figure PSP17: Percentage of teenagers aged 14 to 17 years who used an indoor tanning device in the past 12 months by race/ethnicity: 2005-2010



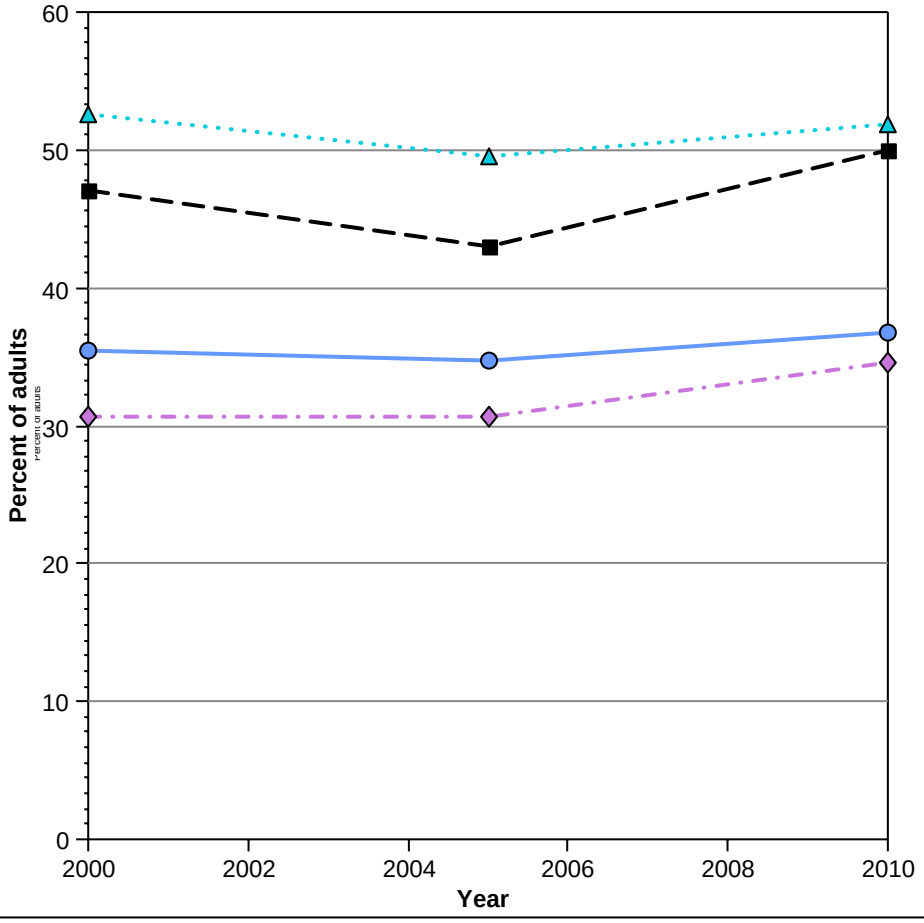
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are not age-adjusted.

Figure PSP18: Percentage of adults aged 18 years and older who were sunburned in the last 12 months by sex: 2000-2010



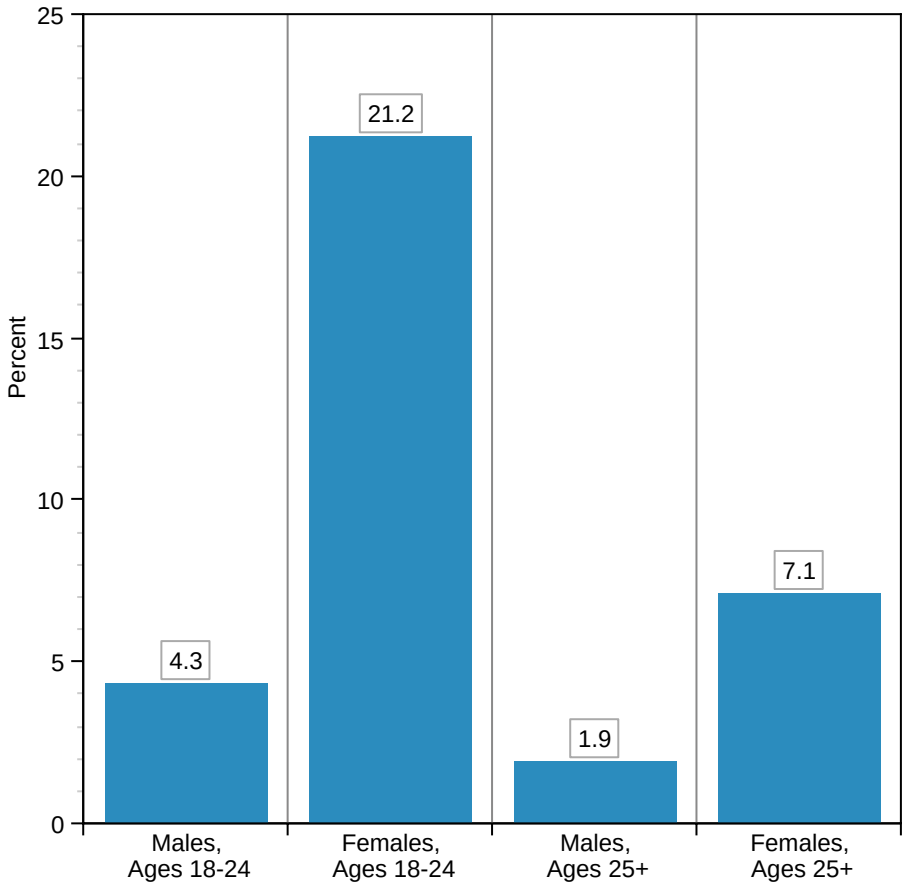
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

Figure PSP19: Percentage of adults aged 18 years and older who were sunburned in the last 12 months by sex and age: 2000-2010



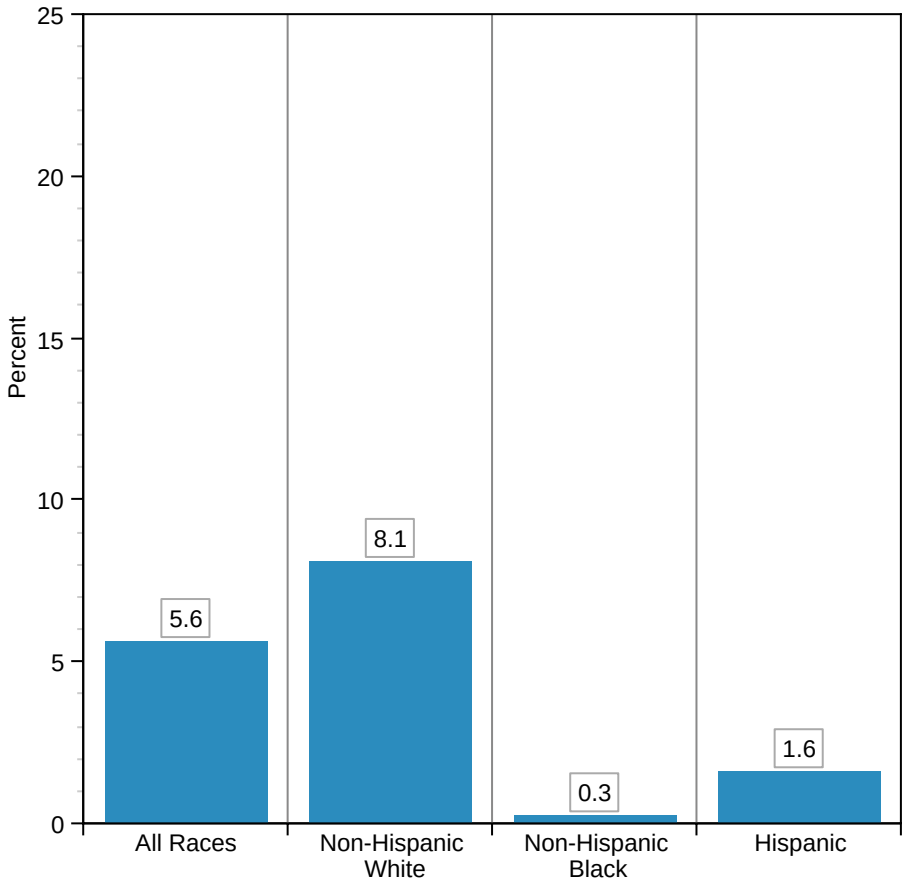
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 standard. Ages 18-24 are age-adjusted using age groups: 18-19, 20-24. Ages 25+ are age-adjusted using age groups: 25-34, 35-44, 45-64, 65+.

Figure PSP20:Percent of adults aged 18 years and older who report using an indoor tanning device in the last year by sex and age: 2010



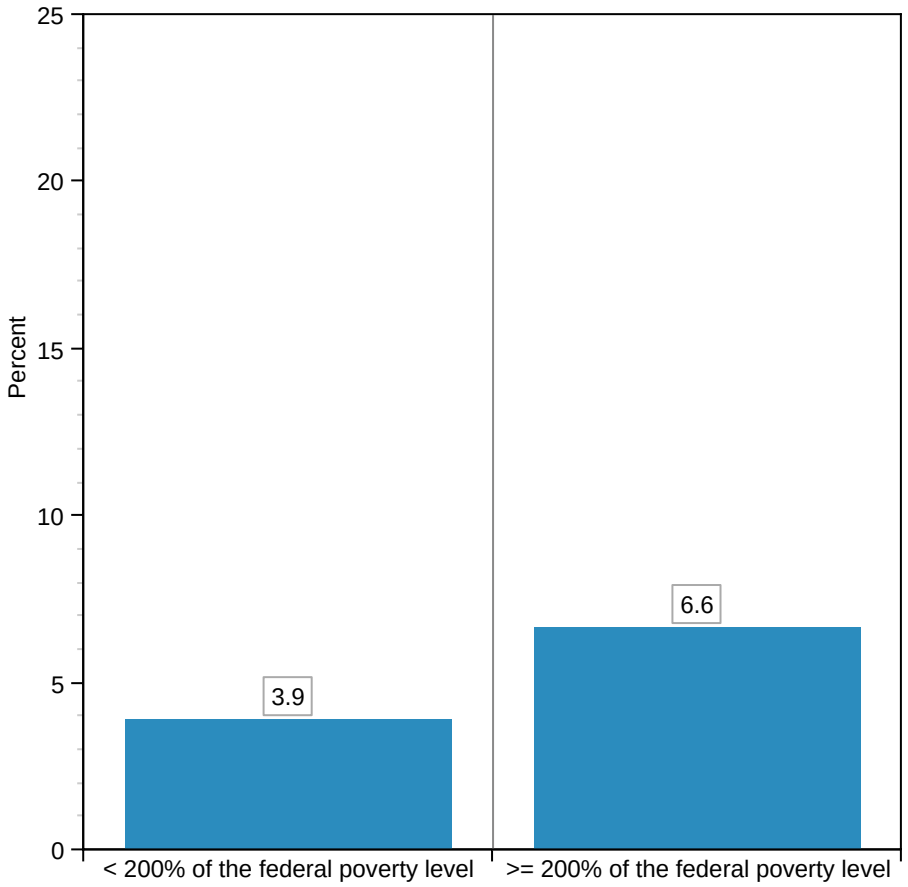
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data for ages 18-24 are age-adjusted to the 2000 US standard population using age groups: 18-19, 20-24.
Data for ages 25+ are age-adjusted to the 2000 US standard population using age groups: 25-34, 35-44, 45-64, 65+.

Figure PSP21:Percent of adults aged 18 years and older who report using an indoor tanning device in the last year by race/ethnicity: 2010



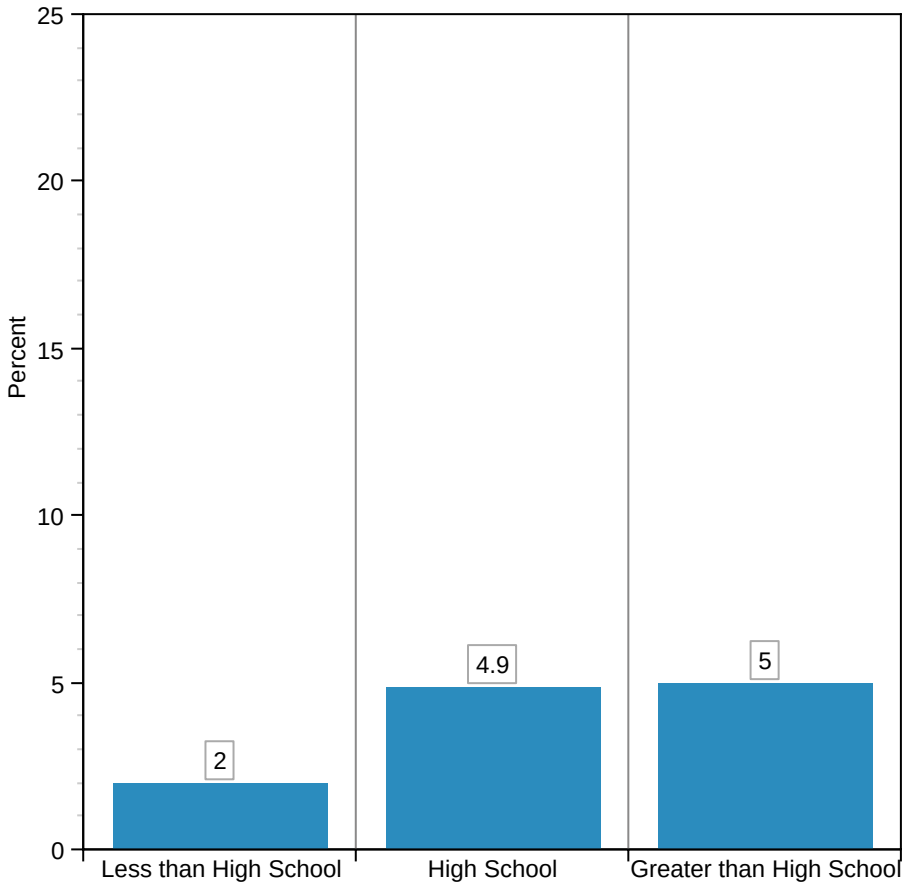
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-19, 20-24, 25-34, 35-44, 45-64, 65+.

Figure PSP22:Percent of adults aged 18 years and older who report using an indoor tanning device in the last year by poverty income level: 2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-19, 20-24, 25-34, 35-44, 45-64, 65+.

Figure PSP23:Percent of adults aged 25 years and older who report using an indoor tanning device in the last year by highest level of education obtained: 2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 25-34, 35-44, 45-64, 65+.

Sunburn: Overall, the percentage of people who reported being sunburned within the past 12 months remained stable from 2000 to 2005 and rose from 2005 to 2010. These trends varied little overall by sex, age, race/ethnicity, poverty status, or education level. The only trend variations were among 18- to 24-year old women and those with less than a high school education, which showed no significant change between 2005 and 2010.

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Secondhand Smoke

Much progress has been made in reducing secondhand smoke exposure over the past decade. More than a 50 percent reduction has occurred among nonsmokers overall. Yet young children (54 percent), adolescents (46 percent), and young adults (54 percent) still had greater exposure than adults 30 years and older (34 percent) from 2007 to 2008.

Secondhand Smoke and Cancer

Secondhand smoke (SHS), also known as environmental tobacco smoke, is a mixture of the sidestream smoke released by the smoldering cigarette and the mainstream smoke exhaled by the smoker. Like mainstream smoke, SHS is a complex mixture containing thousands of chemicals, including formaldehyde, cyanide, carbon monoxide, ammonia, and nicotine. At least 250 chemicals in SHS are known to be toxic and/or cancer-causing agents.

Conclusive scientific evidence documents that SHS causes premature death and disease in children and adults who do not smoke. Exposure to SHS by adults has immediate adverse effects on the cardiovascular system and causes coronary heart disease and lung cancer. Children exposed to SHS are at increased risk for sudden infant death syndrome (SIDS), acute respiratory infections, middle ear disease, more severe asthma, respiratory symptoms, and slowed lung growth. In 2005, the California Environmental Protection Agency estimated that SHS exposure causes approximately 3,400 lung cancer deaths and approximately 46,000 heart disease deaths among nonsmoking adults in the United States annually, as well as 430 SIDS deaths annually among U.S. infants. There is no risk-free level of exposure to SHS, and only eliminating smoking in indoor spaces fully protects nonsmokers from exposure to SHS. In 2009, the Institute of Medicine conducted a comprehensive review of the impact of smoke-free legislation and determined that “data consistently demonstrate that SHS exposure increases the risk of coronary heart disease and heart attacks and that smoking bans reduce heart attacks.”

Measures

Presented here are four measures of progress in this area:

1. Percentage of nonsmokers exposed to SHS. (The percentage of nonsmokers aged 3 years and older with a serum cotinine level greater than 0.05 ng/mL less than or equal to 10 ng/mL).
2. Percentage of indoor workers reporting a smoke-free work environment.
3. Percentage of respondents reporting a smoke-free home policy.
4. Percentage of the population protected by local and state smoke-free indoor air laws covering workplaces, restaurants, and bars.

The fourth measure, smoke-free laws, draws on data collected and analyzed by the Americans for Nonsmokers’ Rights Foundation. Use of this information provides inclusion of both local and state laws and ensures consistency with the NCI Smoke-free Meeting Policy. For more information, see http://dccps.nci.nih.gov/tcrb/smokefreemeetingpolicy.html.

Periods –

1. Secondhand smoke: 1988–2008
2. Smoke-free work environment: 1992–2010
3. Smoke-free home policy: 1992–2010
4. Smoke-free indoor air laws: 1992–2010

Trends

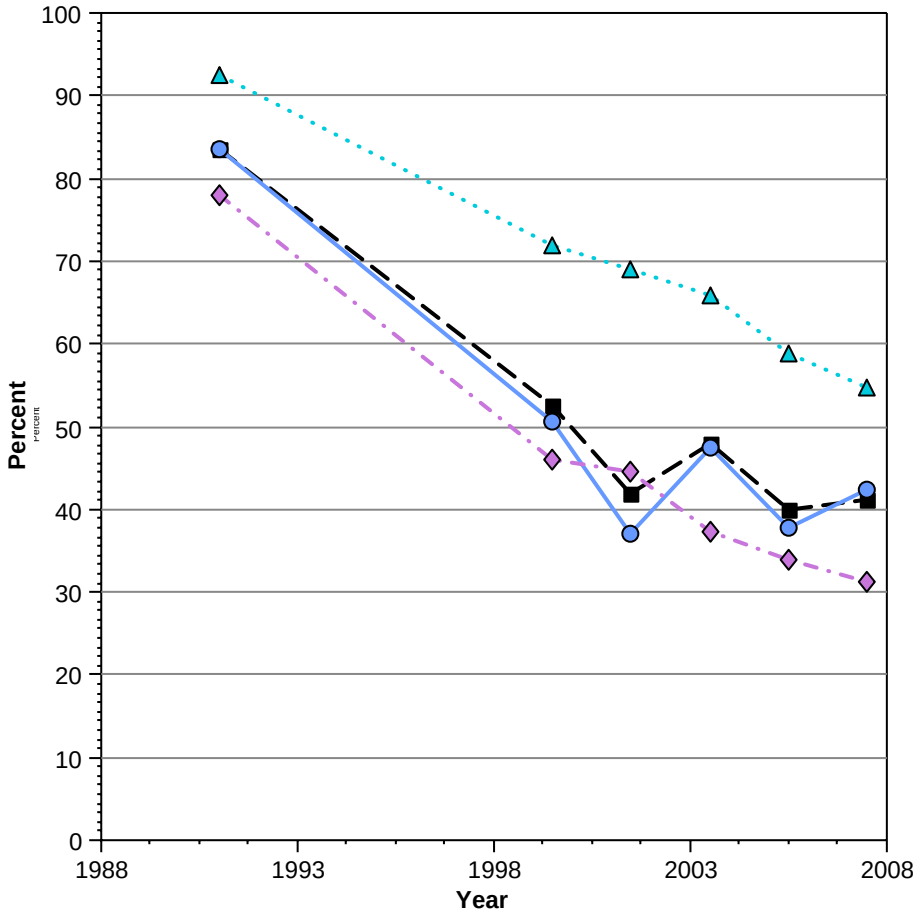
Secondhand Smoke Exposure

Over the past few decades, the nation has made enormous progress in reducing nonsmokers’ SHS exposure. The first graph shows that the percentage of nonsmokers exposed to SHS was generally declining from 1988 to 2008. The proportion of nonsmokers (3 years of age and older) with detectable levels of cotinine, a marker for SHS, in their blood was more than halved—from 84 percent (from 1988 to 1994) to 41 percent (from 2007 to 2008).

This downward trend slowed between 2002 and 2008. Both the long-term steep falling trend and the more recent non-significant declines are seen for both males and females. While all three race/ethnicity categories show a downward trend, the decline in SHS exposure from 1988 to 1994 to 2007 to 2008 has been statistically significantly steeper among Hispanics (47 percentage point decline) compared to non-Hispanic Blacks (38 percentage point decline).

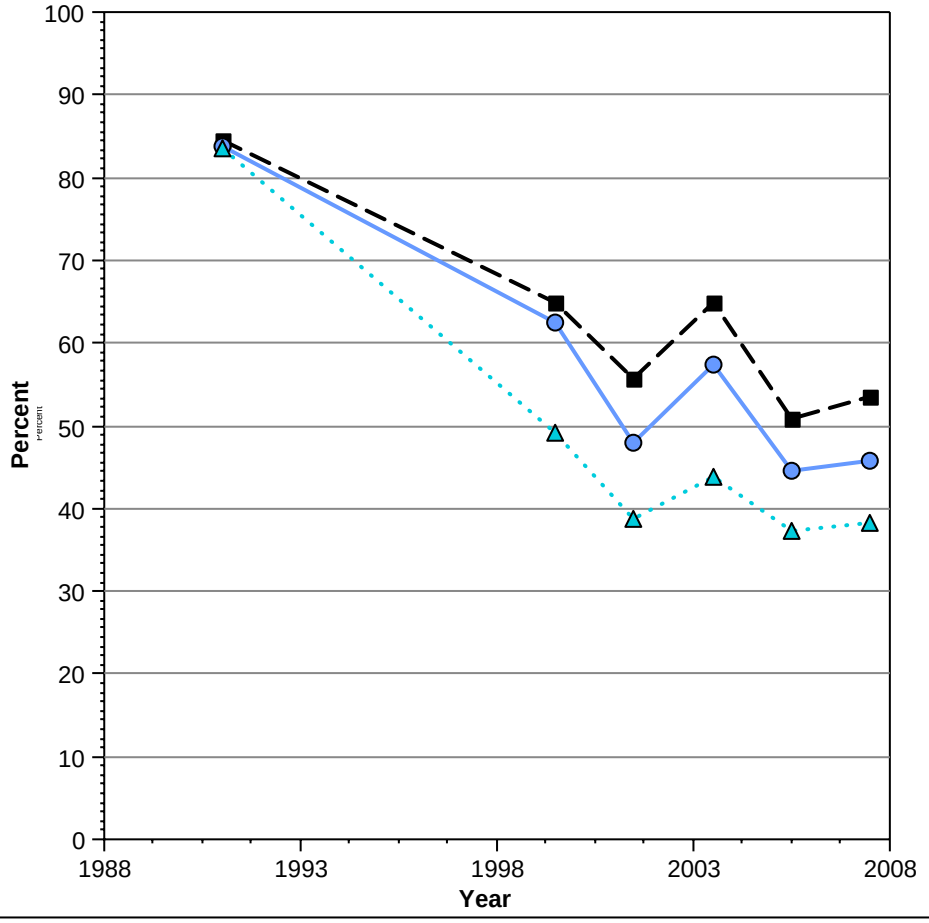
Trends in serum cotinine levels are similar by age, except that those recent declines for ages 3 to 11 and 12 to 17 are statistically significant, and the recent period estimates for ages 18 to 29 are stable. Trends in serum cotinine levels are similar by education and poverty status, although higher-income populations seem to show somewhat larger statistically significant recent declines than lower-income populations.

Figure PSS1: Percentage of nonsmokers aged 3 years and older[1] exposed to secondhand smoke[2] by race/ethnicity: 1988-2008



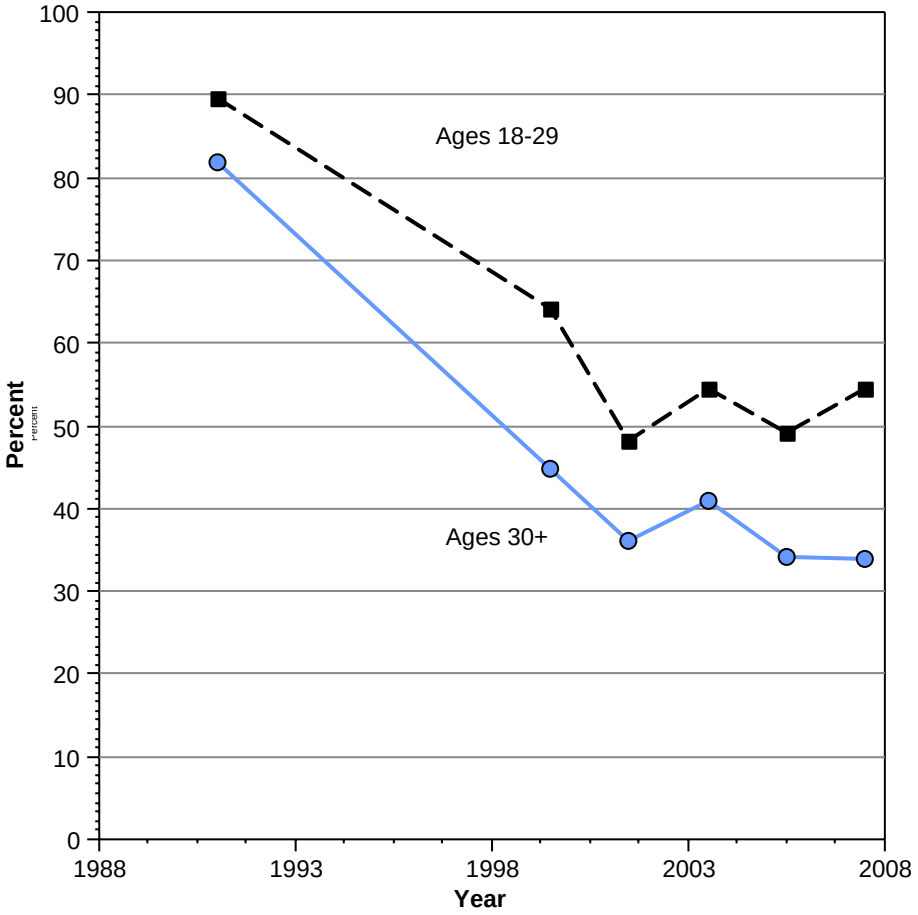
[1]The 1988-1994 estimate is for ages 4+.
[2]As measured by a serum cotinine level of greater than 0.05 ng/ml and less than or equal to 10 ng/ml.
Source : National Center for Health Statistics. National Health and Nutrition Examination Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 3-11, 12-17, 18-29, 30-39, 40-49, 50-59, 60-69, 70-79, 80+.

Figure PSS2: Percentage of nonsmokers aged 3 years and older[1] exposed to secondhand smoke[2] by age: 1988-2008



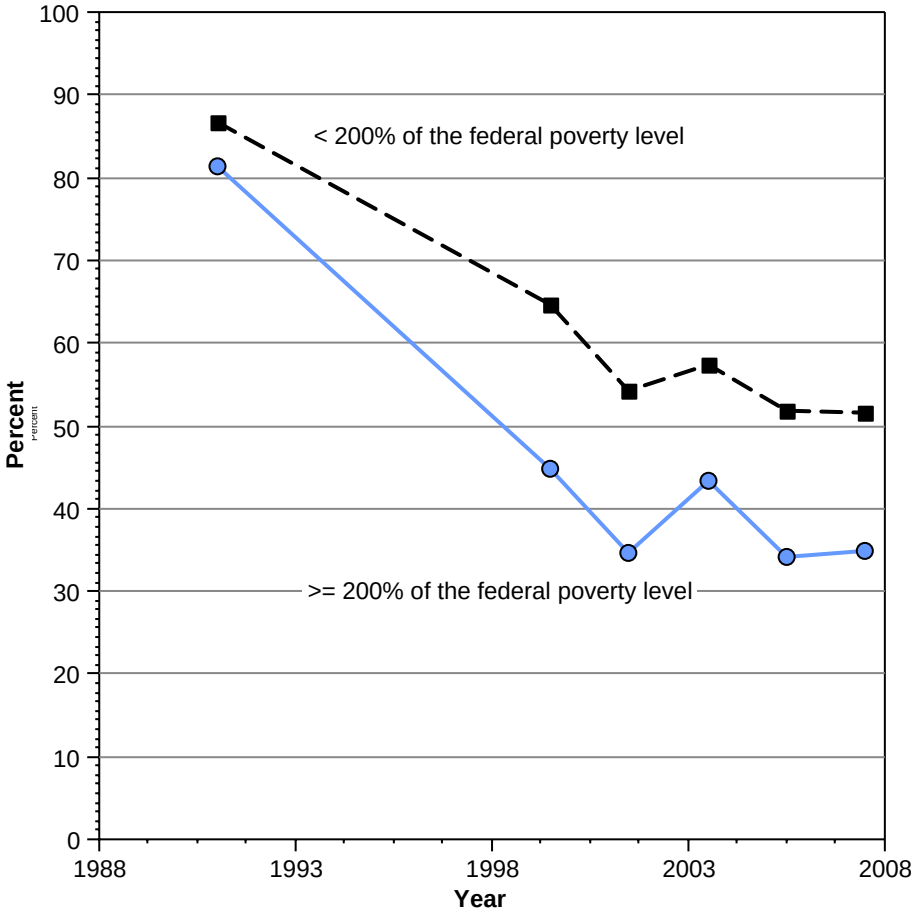
[1]The 1988-1994 estimate for ages 3-11 is for ages 4-11.
[2]As measured by a serum cotinine level of greater than 0.05 ng/ml and less than or equal to 10 ng/ml.
Source : National Center for Health Statistics. National Health and Nutrition Examination Survey.
Data for ages 3-11 and 12-17 are not age-adjusted.
Data for ages 18+ are age-adjusted to the 2000 US standard population using age groups: 18-29, 30-39, 40-49, 50-59, 60-69, 70-79, 80+.

Figure PSS3: Percentage of nonsmokers aged 18 years and older exposed to secondhand smoke[1] by age: 1988-2008



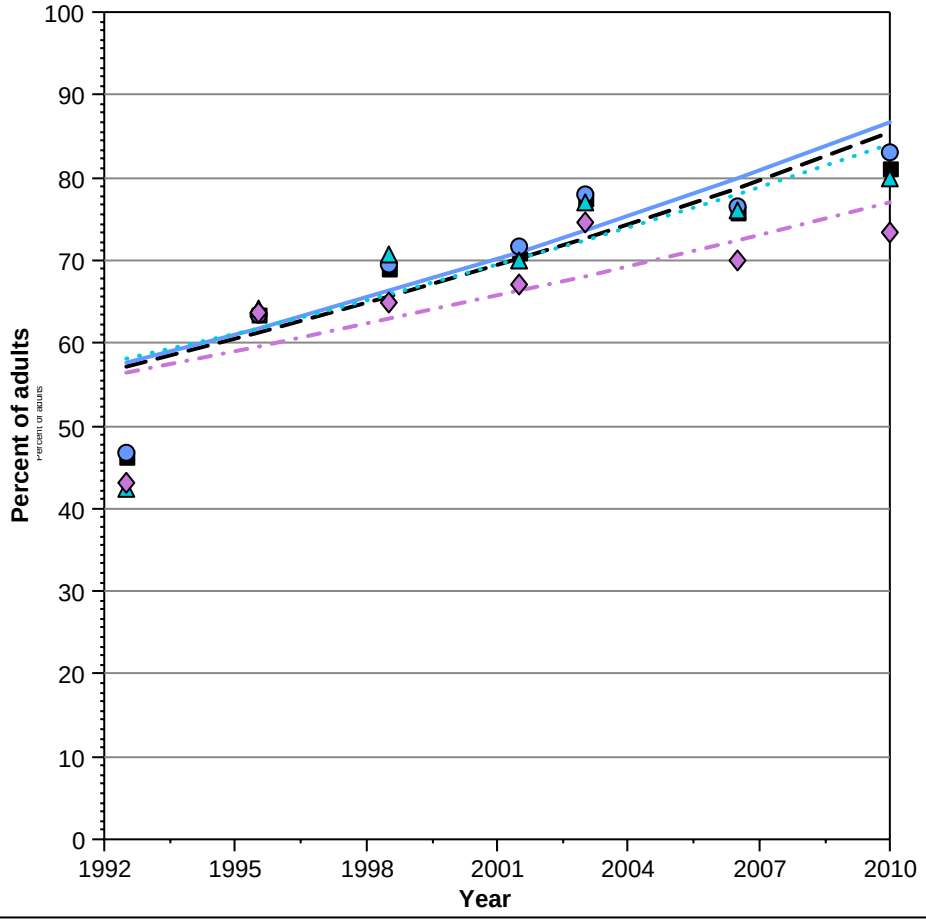
[1]As measured by a serum cotinine level of greater than 0.05 ng/ml and less than or equal to 10 ng/ml.
Source : National Center for Health Statistics. National Health and Nutrition Examination Survey.
Data for ages 18-29 are not age-adjusted.
Data for ages 30+ are age-adjusted to the 2000 US standard population using age groups: 30-39, 40-49, 50-59, 60-69, 70-79, 80+.

Figure PSS4: Percentage of nonsmokers aged 3 years and older[1] exposed to secondhand smoke[2] by poverty income level: 1988-2008



[1]The 1988-1994 estimate is for ages 4+.
[2]As measured by a serum cotinine level of greater than 0.05 ng/ml and less than or equal to 10 ng/ml.
Source : National Center for Health Statistics. National Health and Nutrition Examination Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 3-11, 12-17, 18-29, 30-39, 40-49, 50-59, 60-69, 70-79, 80+.

Figure PSS5: Percentage of workers aged 18 years and older reporting a smoke-free work environment by race/ethnicity: 1992-2010



Source: Tobacco Use Supplement to the Current Population Survey, sponsored by the National Cancer Institute.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

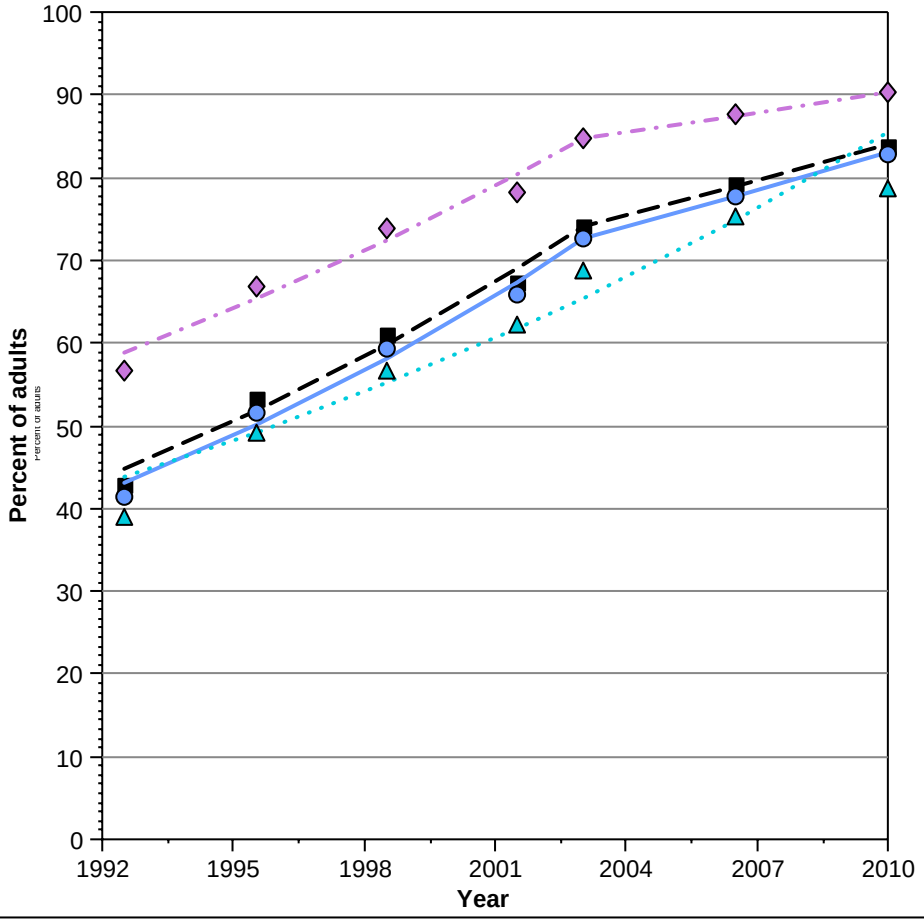
Smoke-free Work Environment

Overall, indoor workers reported large increases in smoke-free work environments from 1992 to 2010.

The patterns are similar for males and females, as well as for adults in groups aged 18 to 24 years and 25 years and older.

Smoke-free workplace trends are also similar by education, poverty status, and race/ethnicity, although the increase among Hispanics was not statistically significant.

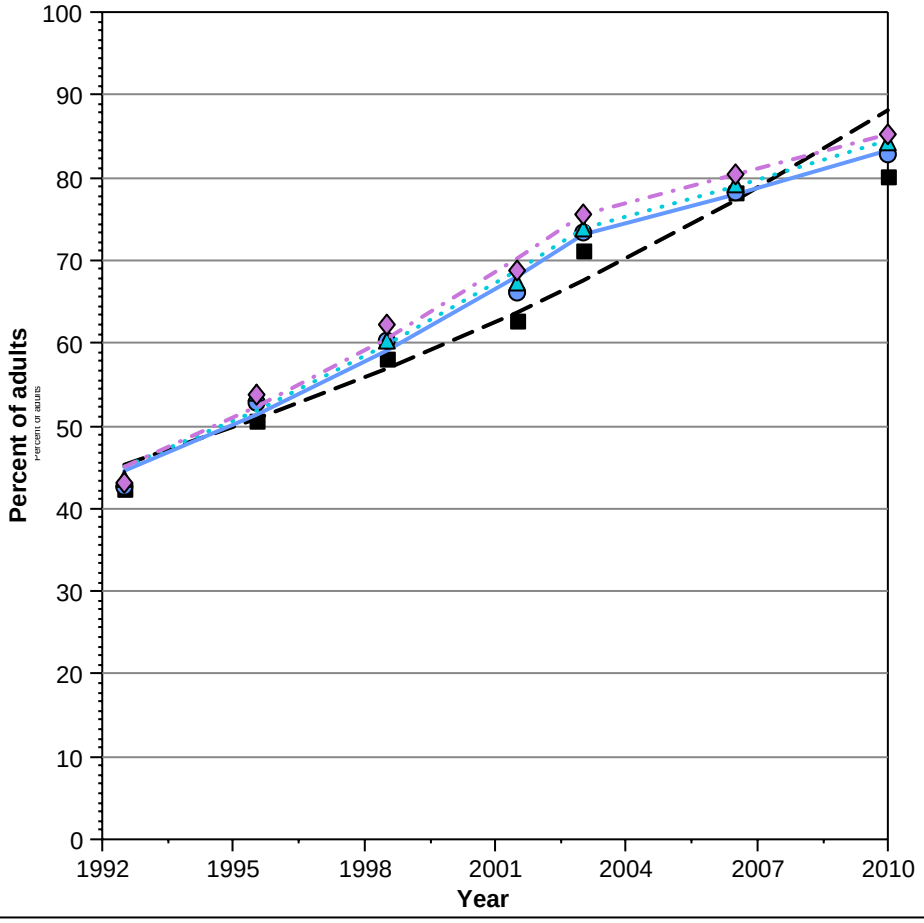
Figure PSS6: Percentage of adults aged 18 years and older reporting a smoke-free home environment by race/ethnicity: 1992-2010



All Races
Non-Hispanic White
Non-Hispanic Black
Hispanic

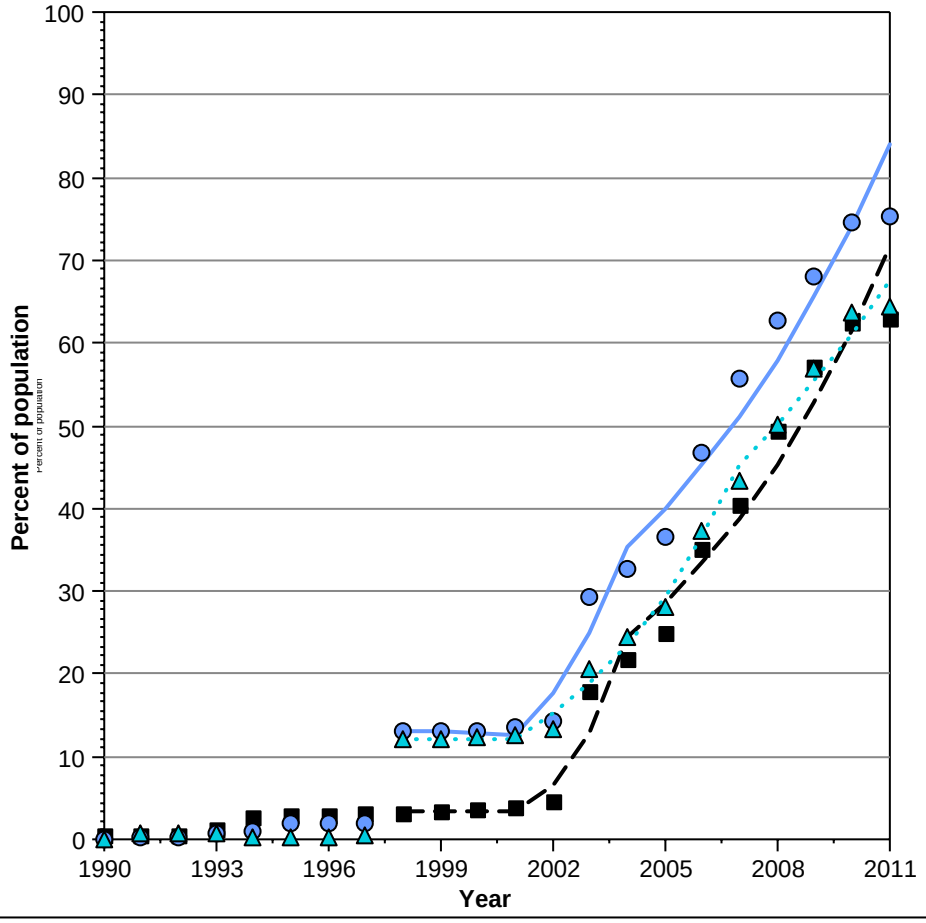
Source: Tobacco Use Supplement to the Current Population Survey, sponsored by the National Cancer Institute.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

Figure PSS7: Percentage of adults aged 18 years and older reporting a smoke-free home environment by sex and age: 1992-2010



Source: Tobacco Use Supplement to the Current Population Survey, sponsored by the National Cancer Institute.
Data are age-adjusted to the 2000 standard. Ages 18-24 are age-adjusted using age groups: 18-19, 20-24. Ages 25+ are age-adjusted using age groups: 25-34, 35-44, 45-64, 65+.

Figure PSS8: Percentage of population protected by local and state 100% smoke-free indoor air laws: 1990-2011



Source: Americans for Nonsmokers' Rights Foundation. All population Figures are from the United States Census 2000. 2011 estimates are based on the January 2,2012 reports.
Data are not age-adjusted.
Regression lines are calculated for 1998+ estimates because of very low coverage prior to this date.

Smoke-free Home Policy

There was an overwhelming increase in smoke-free home environments between 1992 and 1993 (43 percent) and 2009 and 2010 (84 percent). There was a sharp rise in smoke-free home environments from 1992 to 2003, although this rise continued—albeit less steeply and typically statistically non-significant—between 2003 and 2010. This trend is similar by sex, age, race/ethnicity, education, and poverty status, with the exception of a statistically significant rising trend for non-Hispanic blacks and males aged 18 to 24 years.

Population Covered by Local and State Smoke-free Indoor Air Laws

Trends for the percentage of the population covered by local and state indoor air laws have been steeply rising since 2001 after a slow non-significant increase between 1993 and 2001 for workplaces and between 1998 and 2001 for restaurants and bars.

Most Recent Estimates

Secondhand Smoke Exposure

From 2007 to 2008, the estimate of U.S. nonsmokers aged 3 years and older currently exposed to SHS was 41 percent (44 percent for males; 39 percent for females). Thus, nearly 40 percent of nonsmokers aged 3 years and older were still exposed to SHS.

The most recent cotinine data for 2007 to 2008 for children aged 3 to 11 years reveal that 54 percent had detectable levels of cotinine in their blood, which is down from 85 percent from 1988 to 1994. Thus, just over half of all children aged 3–11 years are still exposed to SHS. The 2007 to 2008 data also indicate that 46 percent of children aged 12 to 17 years, 54 percent of young adults aged 18 to 29 years, and 34 percent of adults aged 30 years and older are exposed to SHS.

Smoke-free Work Environment

In May 2010, 81 percent of indoor workers aged 18 years and older reported that a smoke-free policy was in place at their workplace, with 78 percent of men and 84 percent of women reporting the presence of such a policy. Among workers aged 25 years and older, 79 percent of males and 84 percent of females worked at a smoke-free workplace, as opposed to only 76 percent of male workers and 80 percent of female workers aged 18 to 24 years.

Smoke-free Home Policy

About 84 percent of men and women reported their homes were smoke-free (83 percent of males and 85 percent of females). Similar levels were seen for both young adults aged 18–24 years (80 percent of males and 84 percent of females) as well as those aged 25 years and older (83 percent of males and 85 percent of females).

Population Covered by Local and State Smoke-free Indoor Air Laws

As of October 2011, there were 31 states, as well as Puerto Rico and Washington, D.C., that had laws that provide complete or nearly complete protection from SHS, according to NCI's Smoke-free Meeting Policy. There were 13 additional states that contain at least one smoke-free jurisdiction. Only six states had no jurisdictions that meet NCI's standards for smoke-free policies. According to the American's for Nonsmokers' Rights Foundation (http://www.no-smoke.org/pdf/mediaordlist.pdf), as of April 2012, 63 percent, 75 percent, and 64 percent of Americans lived in a community where they were covered by a state or local smoke-free law making workplaces, restaurants, and bars, respectively, smoke free. Americans in 23 states, along with Puerto Rico, the U.S. Virgin Islands, and Washington, D.C., which represents 48 percent of the population, lived in a community where all three of these settings were smoke-free by law. Meanwhile, Americans in 39 states plus Washington, D.C., representing 80 percent of the population, were covered by a local or state 100 percent smoke-free law in at least one of these settings, while 35 states were covered by a state 100 percent smoke-free law.

Healthy People 2020 Targets

Reduce the proportion of children aged 3 to 11 years who are regularly exposed to tobacco smoke to 47 percent.

Reduce the proportion of children aged 12 to 17 years who are regularly exposed to tobacco smoke to 41 percent.

Reduce the proportion of nonsmokers exposed to secondhand smoke to 33.8 percent.

Increase the proportion of persons covered by indoor worksite policies that prohibit smoking to 100 percent.

Increase the proportion of smoke-free homes to 87 percent.

Increase the number of jurisdictions (states and Washington, D.C.) with smoke-free indoor air laws that prohibit smoking in public places and work sites to 51.

Groups at High Risk for Exposure to Secondhand Smoke

Nonsmokers' exposure to SHS has declined broadly in recent years; declines have been observed in both children and nonsmoking adults. However, significant levels of exposure to SHS persist. The most recent data suggest that, on average, concentrations of cotinine in children's and young adults' blood are more than those in nonsmoking adolescents' and older adults' blood. Cotinine levels in children's and nonsmokers' blood (aged 3 years and older) have declined in all racial/ethnic groups, but levels have consistently been higher in non-Hispanic blacks than in both non-Hispanic whites and Hispanics. Male adult SHS exposure estimates are higher than female adult exposure estimates. SHS exposure also tends to be higher for individuals with lower incomes and lower levels of education.

Adult working men are less likely than adult working women to report being protected by smoke-free workplace policies. Similarly, 18 to 24-year-old working adults are less likely than working adults aged 25 years and older to be covered by such policies. Among those aged 25 years and older, the percentage of workers reporting a smoke-free work environment decreases with lower levels of education. Additionally, lower-income working respondents are less likely to report a smoke-free workplace.

In particular, people who work in casinos, some other hospitality industry worksites, and blue-collar worksites are far less likely to be protected from SHS exposure than other workers, and they are likely to be exposed to especially high levels of SHS on the job.

Non-Hispanic blacks (79 percent) and non-Hispanic whites (83 percent) report having a smoke-free home environment less frequently than Hispanics (90 percent). Those with less than a high school diploma and with a high school diploma report a lower percentage of smoke-free home policies when compared to those with more than a high school education. Likewise, smoke-free home policies are less common among lower-income individuals compared to those with higher incomes. Also, although both smokers' and nonsmokers' reports of smoke-free home policies have increased since 1992, smokers still report lower levels of smoke-free home policies than nonsmokers.

Key Issues

Exposure to SHS remains a serious public health concern, and one that is completely preventable. Children's SHS exposure continues to exceed that of adults, and the home is the single most important setting where children are exposed. Special efforts should be targeted to parents and guardians who smoke to convince them to make their homes and cars smoke free. They should be assisted to quit smoking to protect their own health, to protect their children from SHS exposure, and to reduce the likelihood that their children will become smokers. EPA and HHS are supporting activities and research involving pediatricians counseling parents who smoke about the dangers of SHS for their children in an attempt to accomplish these three goals. Additionally, efforts should focus on helping all parents and guardians, including nonsmokers, ensure that their children are not exposed to SHS—for instance, by avoiding public places, such as restaurants, that do not prohibit smoking and making their homes and cars smoke free. Smoke-free laws effectively protect nonsmokers from SHS exposure and appear to yield health benefits soon after implementation. They help educate the public about the serious health consequences of SHS exposure, help change social norms about smoking, and help smokers quit. Some U.S. states, territories, and localities have enacted laws making it illegal to smoke in a vehicle when a child is present. Like seat belt laws, these laws could potentially be accompanied by public education campaigns.

Momentum toward the passage of smoke-free laws has accelerated in recent years. These laws typically enjoy broad public support, which usually increases after the laws take effect. North Carolina, a tobacco growing state, passed a strong clean indoor air law in the spring of 2009 that protects its citizens from tobacco smoke in the workplace. Today, hundreds of communities, many states, and several countries (including Ireland, the United Kingdom, Norway, Italy, France, and Uruguay) have such laws in place. Laws are increasingly covering restaurants, bars, casinos, and other worksites that were often exempt in the past. Contrary to concerns voiced by the tobacco industry, peer-reviewed studies using objective measures have consistently found that smoke-free laws have not had a negative economic impact on restaurants and bars, and in many instances, such laws have actually had a positive economic impact.

Despite recent progress in reduced SHS exposure, many nonsmoking adults and children remain exposed to SHS. As SHS exposure in enclosed workplaces and public places has decreased because of the implementation of smoke-free policies, the home has become a more important source of exposure, even for adults. Efforts to reduce SHS exposure have expanded to making multi-unit housing complexes smoke-free.

Through a variety of tactics, the tobacco industry has long sought to undermine the credibility of the scientific evidence on the adverse health effects of SHS and to impede the adoption of smoke-free policies in workplaces and public places. These activities have slowed progress toward protecting the public from the hazards of SHS exposure and have harmed the public's health.

Additional Information on Secondhand Smoke

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Pesticides

General studies of people with high exposures to pesticides have found high rates of certain types of cancers.

Pesticides and Cancer

Pesticides are chemicals used to eliminate or control unwanted or harmful insects, plants, fungi, animals, or microorganisms in order to protect food crops and other plants. Some pesticides have been classified as carcinogens. Chlordane and dichlorodiphenyltrichloroethane (DDT) are possible human carcinogens. General studies of people with high exposures to pesticides, such as farmers, pesticide applicators, manufacturers, and crop dusters, have found high rates of blood and lymphatic system cancers; cancers of the lip, stomach, lung, brain, and prostate; as well as melanoma and other skin cancers.

Measure

Possible carcinogens, pesticides chlordane and DDT and their metabolites, measured in human blood.

Period – 1999–2004

Trends

Chlordane was measured in three metabolites. Concentrations of chlordane (and its metabolite, oxychlordane) rose from 1999 to 2002 and then dropped from 2003–2004; chlordane metabolites trans-nonachlor and heptachlor epoxide have been on a more constant and steady decline from 1999–2004. Blood concentrations of the DDT metabolite DDE have risen. Pesticide levels in human metabolites were measured in a random sample of participants from the National Health and Nutrition Examination Survey (NHANES).

Table P1. 95th Percentile for Blood (lipid-adjusted) concentrations of DDT and chlordane, nanogram/gram (ng/g), 1999–2004.

	1999–2000 (ng/g)	2001–2002 (ng/g)	2003–2004 (ng/g)
Chlordane metabolites			
oxychlordane	44.8	49.7	37.7
Trans-nonachlor	79.4	78.2	68.3
Heptachlor epoxide	24.0	21.8	18.9
DDT			
DDE	1830.0	2320.0	1860.0

Source: National Report on Human Exposure to Environmental Chemicals, Centers for Disease Control and Prevention, 2009

Most Recent Estimates

Blood concentrations (nanograms per gram, ng/g):

- Chlordane
  - oxychlordane – 37.7 ng/g
  - trans-nonachlor – 68.3 ng/g
  - heptachlor epoxide – 18.9 ng/g
- DDT (DDE) – 1860.0 ng/g

Healthy People 2020 Targets

Reduce exposure of the population to pesticides, heavy metals, and other toxic chemicals, as measured by blood and urine concentrations of the substances or their metabolites.

- Reduce chlordane (oxychlordane) from 37.7 ng/g to 26.39 ng/g of lipid.
- Reduce DDT (DDE) from 1860 ng/g to 1302 ng/g of lipid.
- Reduce beta-hexachlorocyclohexane (beta-HCH) from 56.5 ng/g to 39.55 ng/g of lipid.

Groups at Risk for Pesticide Exposure

Farmers, pesticide applicators, crop dusters, pesticide manufacturers, and home gardeners could be at high risk of exposure to pesticides. The general population may be exposed to low doses of pesticides from fruits and vegetables bought from the supermarket or from contaminated surface or ground water.

Key Issues

National goals have been set, but not yet reached, to reduce pesticide exposure. To help prevent pesticide exposure, people who apply pesticides should follow application directions and wear appropriate personal protective equipment (gloves, masks, etc.). For the general public, washing fruits and vegetables with water also helps to reduce pesticide exposure.

Additional Information on Pesticides

- EPA's Annual Pesticide Reports
  http://www.epa.gov/oppfead1/annual/index.htm
- Fourth National Report on Human Exposure to Environmental Chemicals
  http://www.cdc.gov/exposurereport/pdf/FourthReport.pdf
- Healthy People 2010-Environment
  http://www.healthypeople.gov/Document/HTML/Volume1/08environmental.htm
- List of environmental exposures that cause cancer
  http://monographs.iarc.fr/ENG/Classification/index.php
- NCI's Cancer Prevention Overview
  http://www.healthypeople.gov/Document/HTML/Volume1/08environmental.htm#_Toc490564699
- NCI Cancer Bulletin, National Cancer Institute, January 26, 2010, Vol 7/ Number 2.
  http://www.cancer.gov/aboutnci/ncicancerbulletin/archive/2010/012610/page8.
- President's Cancer Panel, 2008-2009 Annual Report, Reducing Environmental Cancer Risk: What we Can Do Now, U.S. .Dept of Health and Human Services, National Institutes of Health, National Cancer Institute.
  http://deainfo.nci.nih.gov/advisory/pcp/annualreports/pcp08-09rpt/PCP_Report_08-09_508.pdf
- Sixth IARC Monographs Advisory Group on Priorities for future evaluation
  http://monographs.iarc.fr/ENG/Meetings/prioritylist.pdf
- Twelfth Report on Carcinogens, Revised 2011 (EHIS)
  http://ntp.niehs.nih.gov/?objectid=03C9AF75-E1BF-FF40-DBA9EC0928DF8B15

Dioxins

Dioxin levels in the United States environment have been declining for the past 30 years due to increasing regulation and reductions in man-made sources.

Dioxins and Cancer

Dioxins are chemicals produced as by-products of incomplete combustion and through certain chemical processes. Major sources of dioxins in the environment include burning of municipal, toxic, hospital, and domestic wastes; specific industrial processes including metal smelting and refining; and paper and pulp bleaching. Dioxins can also be found as contaminants in some insecticides, herbicides, and wood preservatives, and in cigarette smoke. There are at least 100 different kinds of dioxins, including tetrachlorodibenzo-p-dioxin (TCDD), which is the most toxic and is considered a known human carcinogen. There are also numerous dioxin-like compounds, so-called because they have similar chemical, physical, and toxicological properties to the dioxins. These include the chlorinated dibenzo-p-dioxins (CDDs), chlorinated dibenzofurans (CDFs), and certain coplanar polychlorinated biphenyls (PCBs). Environmental release estimates are often presented in terms of toxic equivalents (TEQs). TEQs are derived from a toxicity weighting system that converts all mixture components to a single value normalized to the toxicity of TCDD.

The most common routes of exposure for dioxins occur through the diet, particularly from ingestion of animal fats including meats, full-fat dairy products, and fatty fish. Exposure can also occur through breathing incineration gases released from medical, municipal, and hazardous waste incinerators and industrial sources such as paper mills, cement kilns, and metal smelters.

Measure

Measurement of TCDD in human blood adjusting for lipids (Table P2) and EPA estimates of dioxin releases in the environment (Figure PDI1).

Period – 1999–2004 (dioxin measures in humans)

Trends

Dioxin levels in the general population of the United States are very low (Table P2). Dioxin levels in the environment have been declining for the last 30 years due to stricter regulations on emissions and reductions in man-made sources. Releases from industrial sources have decreased approximately 80–90% since the 1980s (U.S. EPA, 2006). However, dioxins break down so slowly that past releases will remain in the environment for many years (Figure PDI1).

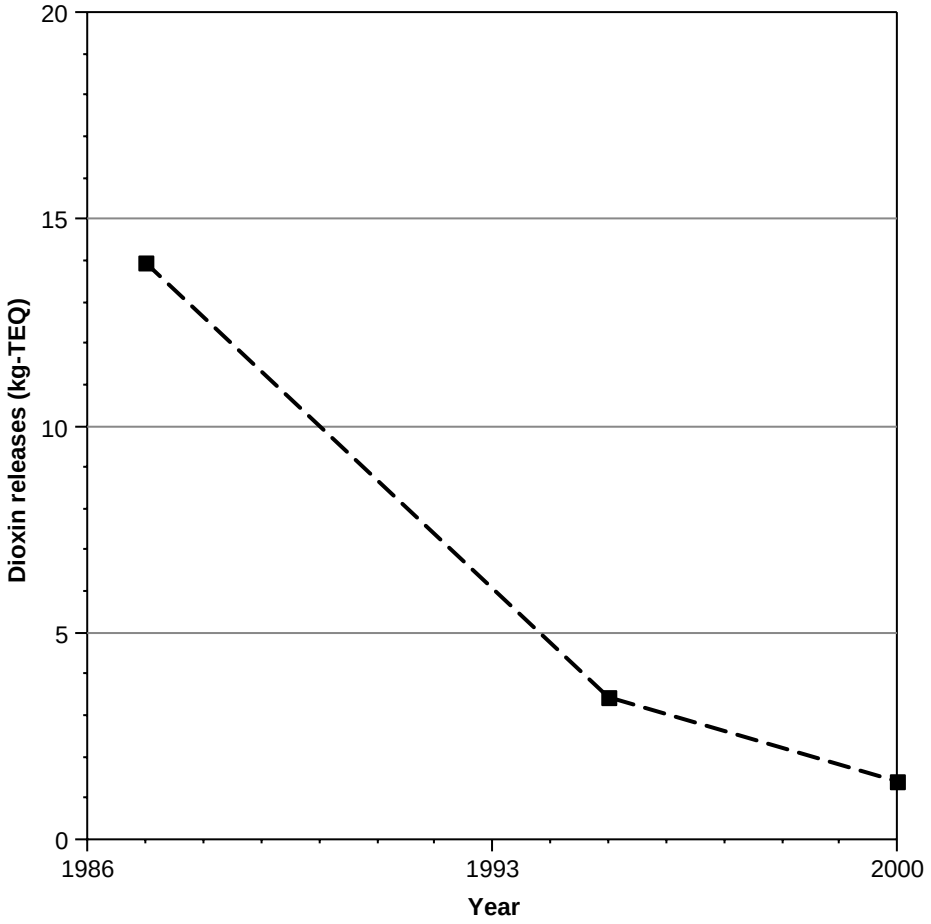
Table P2. 50th and 95th percentiles for tetrachlorodibenzo-p-dioxin (TCDD) in blood samples from the U.S. population (picograms/gram, lipid adjusted), 1999–2004.

	1999–2000 (pg/g)	2001–2002 (pg/g)	2003–2004 (pg/g)
TCDD	< LOD*	< LOD*	< LOD*, 5.2

Source: Fourth National Report on Human Exposure to Environmental Chemicals,
Centers for Disease Control and Prevention, 2009; available at: http://www.cdc.gov/exposurereport/pdf/FourthReport.pdf

* For certain chemicals like TCDD, each individual sample has its own limit of detection (LOD), which is the level at which a measurement has a 95% probability of being greater than zero. In 1999–2000 and 2001–2002, 12.1 pg/g and 5.8 pg/g, respectively, represented the maximum LOD among the samples analyzed and the geometric mean or average concentration of TCDD in all the samples was less than the maximum LOD so the estimate was reported as < LOD. In 2003-2004 the LOD was 3.8 pg/g.

Figure PDI1: Total environmental releases of dioxin-like compounds (kg TEQ) from all quantifiable sources during 1987, 1995, and 2000



Source: U.S. EPA. An Inventory of Sources and Environmental Releases of Dioxin-Like Compounds in the U.S. for the Years 1987, 1995, and 2000 (EPA/600/P-03/002f, Final Report, November 2006). U.S. Environmental Protection Agency, Washington, DC, EPA/600/P-03/002F.

Most Recent Estimates

95th percentile of TCDD concentration in the U.S. population: 5.2 pg/g (see Table P2)
Estimated dioxin releases to the environment in 2000: 1.42 kg-TEQ (see Figure PDI1)

Healthy People 2010 Targets

Reduce air toxic emissions to decrease the risk of adverse health effects caused by airborne toxics. A specific numerical level for environmental concentration has not yet been set for dioxin.

Reduce exposure of the population to pesticides, heavy metals, and other toxic chemicals, as measured by blood and urine concentrations of the substances or their metabolites. A specific numerical level for metabolite concentration has not yet been set for dioxin.

Groups At Risk for Dioxin Exposure

Workers exposed to dioxin-contaminated air are at high risk of exposure. The general population is at risk of inhaling and ingesting dioxins.

Key Issues

A national goal has been set to reduce and measure dioxins in the environment and in the human body. People can help prevent exposure to dioxins by following existing Federal Dietary Guidelines, particularly by increasing consumption of fruits, vegetables, and grain products. Certain occupations are at high risk of dioxin exposure.

Additional Information on Dioxins

- Cancer and the Environment
  http://www.niehs.nih.gov/health/scied/documents/CancerEnvironment.pdf
- Dioxin Source Inventories European Commission Overview Report
  http://ec.europa.eu/environment/dioxin/download.htm
- Eleventh Report on Carcinogens, Revised 2005 (EHIS)
  http://ehis.niehs.nih.gov/roc/
- Environmental Protection Agency Information Sheet on Dioxins
  http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=87843
- European Commission on Dioxin Exposure and Health
  http://ec.europa.eu/environment/dioxin/index.htm
- FDA's Q & A about Dioxins
  http://www.fda.gov/Food/FoodSafety/FoodContaminantsAdulteration/ChemicalContaminants/DioxinsPCBs/ucm077524.htm
- Fourth National Report on Human Exposure to Environmental Chemicals
  http://www.cdc.gov/exposurereport/pdf/FourthReport.pdf
- Healthy People 2010—Environmental Health
  http://www.healthypeople.gov/Document/HTML/Volume1/08environmental.htm
- International Agency for Research on Cancer (IARC) Monograph on the Evaluation of Carcinogenic Risks to Humans
  http://apps.who.int/bookorders/anglais/detart1.jsp?sesslan=1&codlan=1&codcol=72&codcch=69
- NCI Cancer Bulletin, National Cancer Institute, January 26, 2010, Vol 7/ Number 2.
  http://www.cancer.gov/aboutnci/ncicancerbulletin/archive/2010/012610/page8.
- President's Cancer Panel, 2008-2009 Annual Report, Reducing Environmental Cancer Risk: What we Can Do Now, U.S. .Dept of Health and Human Services, National Institutes of Health, National Cancer Institute.
  http://deainfo.nci.nih.gov/advisory/pcp/annualreports/pcp08-09rpt/PCP_Report_08-09_508.pdf
- The Agency for Toxic Substances and Disease Registry (ATSDR): Toxicological Profile for Chlorinated Dibenzo-p-dioxins (CDDs)
  http://www.atsdr.cdc.gov/toxprofiles/tp104.html
- United Nations Environmental Program. Standardized Toolkit for Identification and Quantification of Dioxin and Furan Release.
  http://www.chem.unep.ch/pops/pcdd_activities/default.htm

Tobacco Company Marketing Expenditures

Tobacco advertising and promotion increases Americans' tobacco use.

Reported Annual Cigarette Advertising and Promotional Expenditures

Tobacco advertising and promotion are causally related to increased tobacco use. Cigarettes are one of the most heavily marketed products in the United States. In 2008, the five major cigarette companies spent $9.94 billion to advertise and promote cigarettes. The recently enacted Family Smoking Prevention and Tobacco Control Act, signed into law on June 22, 2009, provides the U.S. Food and Drug Administration (FDA) with broad authority to regulate tobacco product advertising. This legislation removes most federal preemption constraints on the ability of states and communities to restrict the time, manner, and place of tobacco advertising and promotions.

Measure

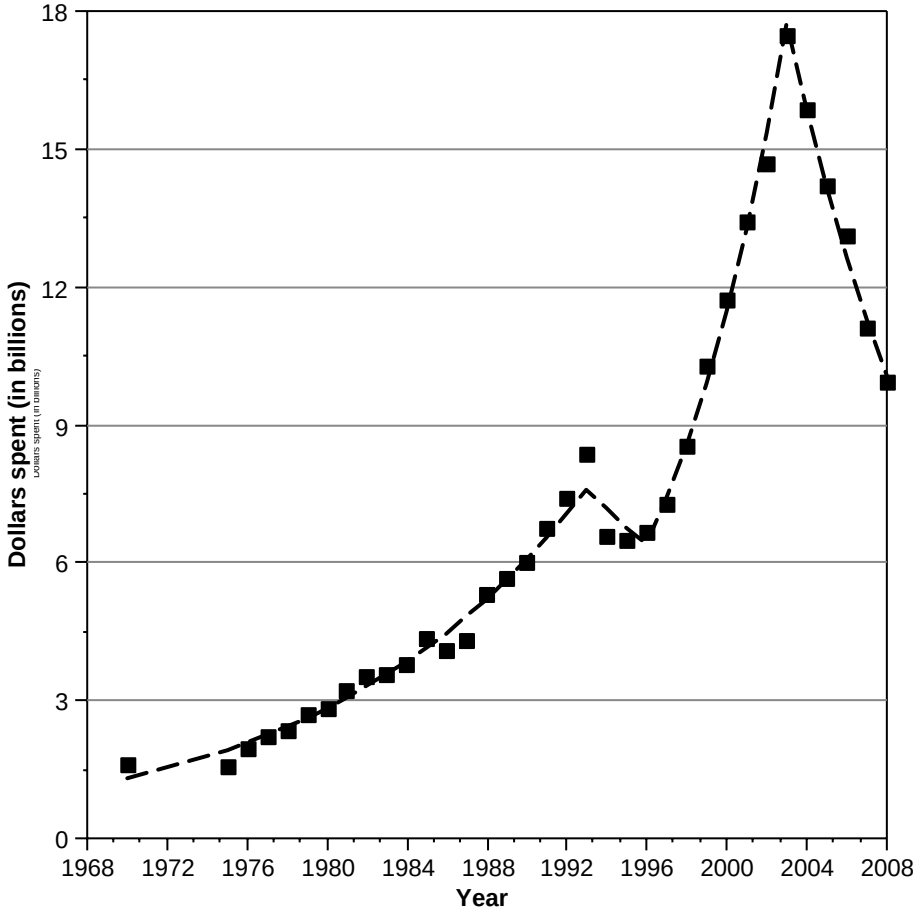
Combined cigarette annual advertising and promotional expenditures by the five (six in 2007) major U.S. cigarette manufacturers, adjusted to 2008 dollars, as reported by manufacturers to the U.S. Federal Trade Commission (FTC).

Period – 1970–2008

Trends

Reported annual combined expenditures for advertising and promotion for cigarettes (adjusted to 2008 dollars using the gross domestic product implicit price deflator) increased in most years between 1970 and 2003. Since 2003, adjusted combined expenditures have declined.

Figure PTC1: Domestic cigarette advertising and promotional expenditures by U.S. tobacco companies adjusted to 2008 dollars: 1970-2008



Source: Federal Trade Commission Cigarette Report For 2007 and 2008 (http://www.ftc.gov/os/2011/07/110729cigarettereport.pdf). Accessed December 5, 2011. Estimates are adjusted to 2008 dollars using the Gross Domestic Product: Implicit Price Deflator (http://www.data360.org/dataset.aspx?Data_Set_Id=650).

Most Recent Estimates

In 2008, adjusted combined annual expenditures for cigarette advertising and promotion totaled $9.94 billion.

Healthy People 2020 Target

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

Groups at High Risk for Being Targeted

The tobacco industry has strategically targeted various groups, including youth, young adults, and specific racial and ethnic groups. Much tobacco advertising targets the psychological needs of adolescents, such as popularity, peer acceptance, and positive self-image. Advertising creates the perception that smoking will satisfy these needs. Even brief exposure to tobacco advertising influences adolescents' attitudes and perceptions about smoking and smokers and adolescents' intentions to smoke. Strong and consistent evidence from longitudinal studies indicates that exposure to cigarette advertising influences non-smoking adolescents to initiate smoking and to move toward regular smoking.

In 2006, U.S. District Judge Gladys Kessler found the major U.S. cigarette companies violated the Racketeer Influenced and Corrupt Organization (RICO) statute, noting specifically that the companies "marketed and advertised their products to children under the age of 18 and to young people between the ages of 18–21, in order to ensure an adequate supply of 'replacement smokers,' as older ones fall by the wayside through death, illness, or cessation of smoking."

Key Issues

Most of the cigarette industry's advertising and promotional expenditures are directed toward price discounts, which accounted for about 72 percent of total marketing expenditures in 2008. Tobacco advertising has been dominated by three themes: providing satisfaction (taste, freshness, mildness, etc.), allaying anxieties about the dangers of smoking, and creating associations between smoking and desirable outcomes (independence, social success, sexual attraction, thinness, etc.).

As cigarette advertising is curtailed in some traditional media, cigarette companies are exploring the use of new or non-traditional media for distributing pro-tobacco messages and images, including the Internet and cigarette packages. The tobacco industry has become increasingly sophisticated in applying market research to population segments to design products, messages, communication channels, and promotions more aligned with the needs and susceptibilities of particular market segments. This research results in more efficiency, greater reach, and increased effectiveness for marketing activities aimed at target populations.

Additional Information on Tobacco Company Marketing Expenditures

- Federal Trade Commission (2011). Cigarette Report for 2007 and 2008. http://www.ftc.gov/os/2011/07/110729cigarettereport.pdf
- Kessler G. Final Opinion, U.S. vs. Philip Morris USA, inc. et al. August 17, 2006. http://www.justice.gov/civil/cases/tobacco2/index.htm
- President's Cancer Panel, 2008-2009 Annual Report, Reducing Environmental Cancer Risk: What we Can Do Now, U.S. .Dept of Health and Human Services, National Institutes of Health, National Cancer Institute. http://deainfo.nci.nih.gov/advisory/pcp/annualreports/pcp08-09rpt/PCP_Report_08-09_508.pdf
- The Role of the Media in Promoting and Reducing Tobacco Use: NCI Monograph 19 http://dccps.nci.nih.gov/tcrb/monographs/19/docs/M19MajorConclusionsFactSheet.pdf

Early Detection

The use of screening tests to detect cancers early provides better opportunities for patients to obtain more effective treatment with fewer side effects. Patients whose cancers are found early and treated in a timely manner are more likely to survive these cancers than are those whose cancers are not found until symptoms appear. This section describes trends in the use of the following screening tests, each of which has been found to detect cancers accurately for specified age groups; evidence suggests that they decrease the chances of dying from cancer:

- Mammography (for breast cancer)
- Pap test (for cervical cancer)
- Fecal occult blood test (for colorectal cancer)
- Colorectal endoscopy (sigmoidoscopy or colonoscopy for colorectal cancer)

Trends for prostate-specific antigen (PSA) to detect prostate cancer are not included in this edition of the *Cancer Trends Progress Report*. Use of the PSA test has not yet been shown to reduce deaths from prostate cancer. There is also concern about possible harm caused by unnecessary treatments, because the test can find very early cancers that might not cause any harm if left untreated—especially in older men. Other screening methods, such as new imaging techniques to detect breast or lung cancer and ways to detect early cancer in the blood, also require more research on their effectiveness.

Breast Cancer Screening

Mammography use rose steadily in women aged 40 and older until 2000, was stable until 2003, dropped slightly in 2005, and remained stable until 2008. The 2010 target for all women, 70 percent, was met in 2000 but the proportion fell to 67 percent in 2005. Rates fell for non-Hispanic white, non-Hispanic black and Hispanic women. Disparities remain for immigrants and those with lower incomes, with less education, without insurance, and lacking a usual health care provider. The Healthy People 2010 target for mammography was not met.

Benefits of Mammography Screening

Mammography screening allows for the early detection of breast cancer, which may help reduce mortality from breast cancer, especially among women aged 50 to 69 years.

For women between the ages of 50 and 69, there is solid evidence that screening may lower this risk by up to 30 percent. For women in their 40s, the risk may be reduced by about 17 percent. For women aged 70 and older, mammography may be helpful, although firm evidence is lacking.

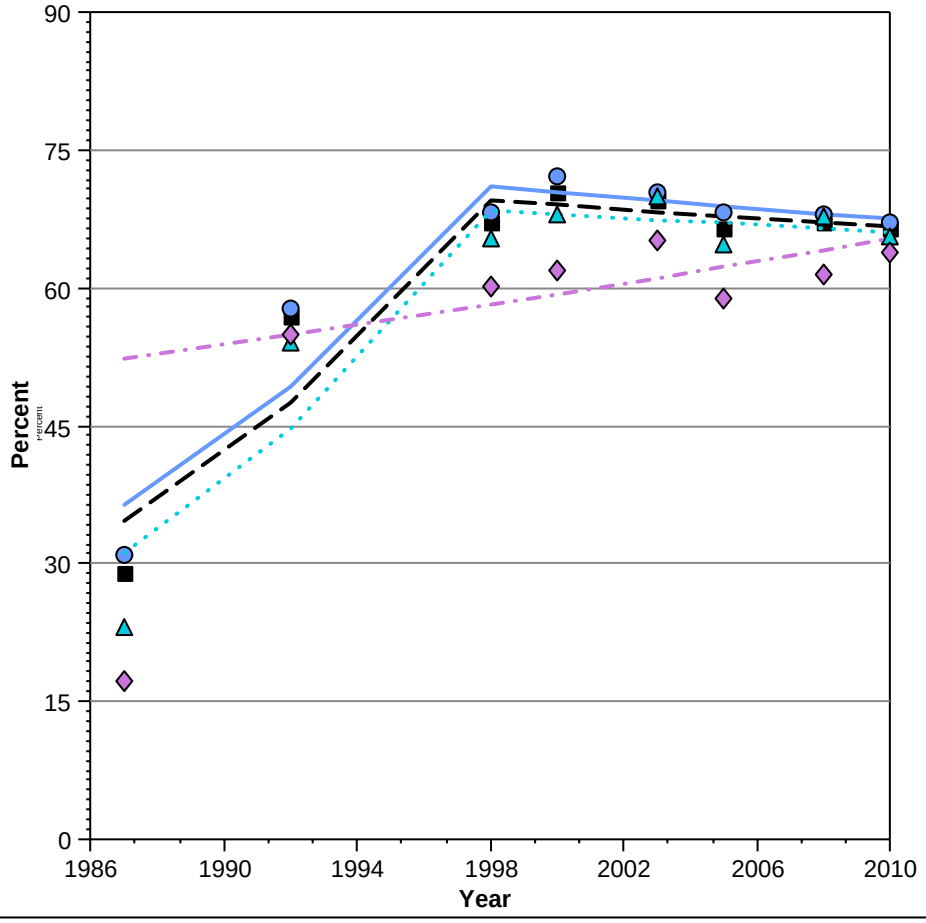
Measure

Percentage of women aged 40 and older, by racial/ethnic, geographic, and low-income groups, who reported having had a mammogram within the past two years.

Period – 1987–2010

Trends – Rising for non-Hispanic black and white women until 2000, then stable through 2010. Rates for Hispanic women remained stable during the period between 1987 and 2010.

Figure SBR1: Percent of women aged 40 years and older who had mammography within the past 2 years by race/ethnicity: 1987-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 40-49, 50-64, 65-74, 75+.

Most Recent Estimates

In 2010, 66 percent of women aged 40 and older had a mammogram within the past two years, a statistically significant drop from 70 percent (1998–2003). Among racial/ethnic groups, 64 percent of Hispanics (down from 65 percent in 2003), 66 percent of blacks (down from 70 percent in 2003), and 68 percent of whites (down from 70 percent in 2003) had a mammogram within the past two years, but these drops were not statistically significant. Among Asian women interviewed in California, mammography rose to 77 percent in 2009 compared to 74 percent in 2003 and again in 2005. In terms of the social determinants of health, between 1998 and 2010, mammography rates were consistently lower for women living in households with incomes at less than 200 percent of the federal poverty level. There was a consistent education gradient, with women less who had earned than a high school diploma least likely to report a Pap test, women with a high school diploma in the middle, and women with more than a high school education most likely to report being screened.

Healthy People 2020 Targets

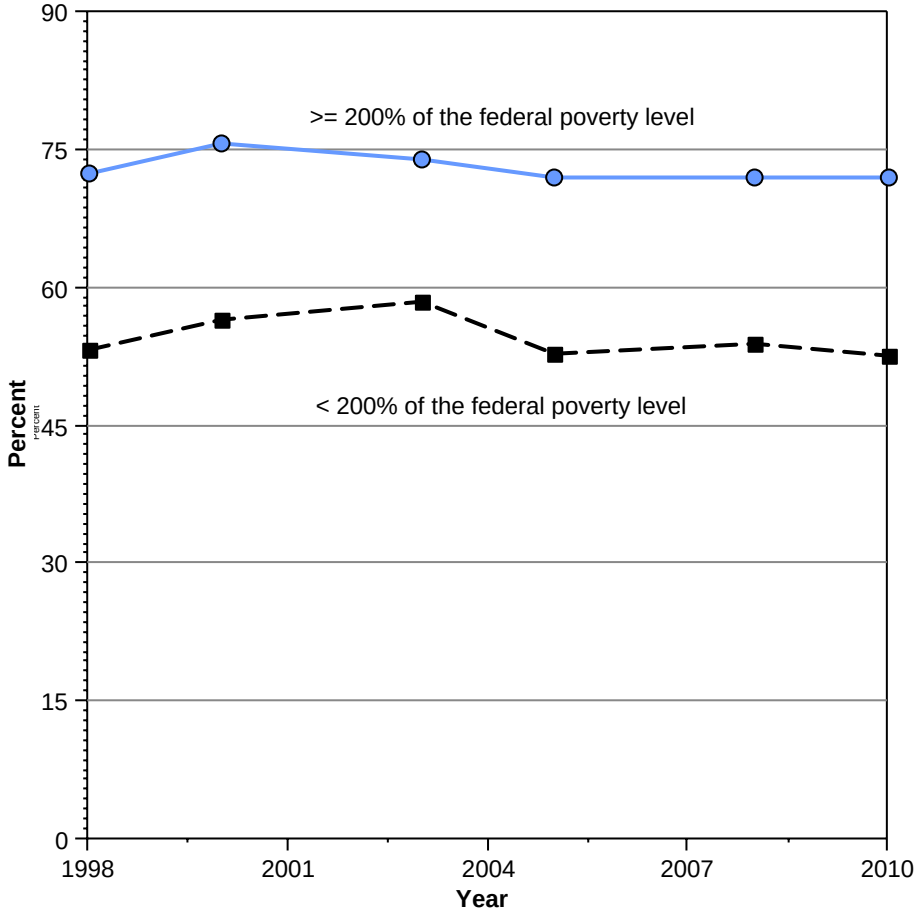
Healthy People 2010 targets were to increase to 70 percent the proportion of women aged 40 and older who have had a mammogram within the past two years. This target was met in 2003, but the rate dropped to 67 percent, below the target, in 2005 and remained there through 2010.

New Healthy People 2020 targets are limited to women ages 50–74. The 2008 baseline for this age group of women was 74 percent. Healthy People calls for a 10 percent improvement to 81 percent in 2020.

Groups at High Risk for Not Being Screened

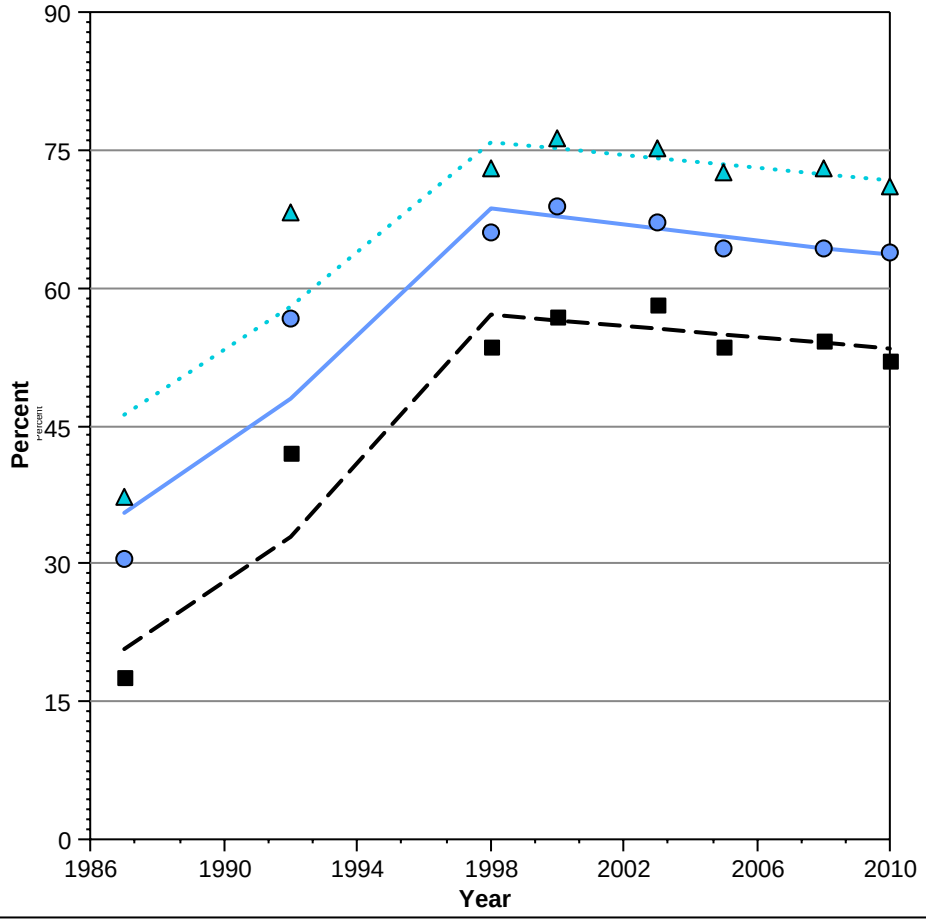
Women who are immigrants and those with lower incomes, with less education, without insurance, and lacking a usual health care provider are less likely to get screening mammograms.

Figure SBR2: Percent of women aged 40 years and older who had mammography within the past 2 years by poverty income level: 1998-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 40-49, 50-64, 65-74, 75+.

Figure SBR3: Percent of women aged 40 years and older who had mammography within the past 2 years by highest level of education obtained: 1987-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 40-49, 50-64, 65-74, 75+.

Key Issues

Cost and knowledge barriers, including lack of insurance and lack of provider recommendations for regular mammograms, need to be removed.

For women to benefit from mammography, regular screening is needed. Although millions of women have had at least one screening mammogram, many women still have not. Even among those women who have had a recent screening mammogram, many do not have them on a regular basis. In November 2009, the USPSTF modified their recommendations for mammography screening for specific age groups. For women aged 50 to 74 years, biennial mammography screening was recommended—the previous recommendation was for women aged 40 to 69. Evidence for the decision to start regular, biennial mammography screening before the age of 50 showed more harms and smaller benefits for this age group than for older women; therefore, it was recommended that this should be a decision for individual patients and their physicians to make. For women 75 years or older, the USPSTF concluded that the current evidence is insufficient to make a recommendation.

Different organizations have generated different guidelines. To see guidelines issued by the U.S. Preventive Services Task Force and others, go to http://www.ahrq.gov/clinic/USpstfix.htm. The Guide to Community Preventive Services, http://www.thecommunityguide.org/index.html, is a source of information about evidence-based approaches for enhancing cancer screening.

Additional Information on Breast Cancer Screening

- Breast Cancer (PDQ®): Screening — Health Professionals
  http://cancer.gov/cancerinfo/pdq/screening/breast/healthprofessional
- California Health Interview Survey (CHIS) (UCLA)
  http://www.chis.ucla.edu/
- Free or Low-Cost Programs Providing Mammography and Clinical Breast Examination in Your Area
  http://www.cdc.gov/cancer/nbccedp/index.htm
- Guide to Community Preventive Services
  http://www.thecommunityguide.org/index.html
- Healthy People 2010, Volume 1, Chapter 3—Cancer
  http://www.health.gov/healthypeople/document/HTML/Volume1/03Cancer.htm
- Medicaid Coverage for Mammography and Clinical Breast Examination
  http://www.cms.hhs.gov/medicaid/
- Medicare Coverage for Mammography and Clinical Breast Examination
  http://www.medicare.gov/health/mammography.asp
- National Health Interview Survey (NHIS) (NCHS)
  http://www.cdc.gov/nchs/nhis.htm
- Phillips KA, Kerlikowske K, Baker LC, Chang SW, Brown ML. Factors associated with women's adherence to mammography screening guidelines. *Health Serv Res* 1998 Apr;33(1):29-53.
- State Cancer Profiles, Latest Rates, Percents, and Counts
  http://statecancerprofiles.cancer.gov/micromaps/
- US Preventive Services Task Force Recommendations (AHRQ)
  http://ahrq.gov/clinic/uspstf/uspsbrca.htm

Cervical Cancer Screening

Pap test use is high, although it fell slightly between 2000 and 2005 among women aged 18 and older.

Benefits of Pap Testing

Regular use of the Pap test followed by appropriate and timely treatment reduces deaths from cervical cancer. Women who have never been screened or who have not been screened in the past five years face a greater risk of developing invasive cervical cancer.

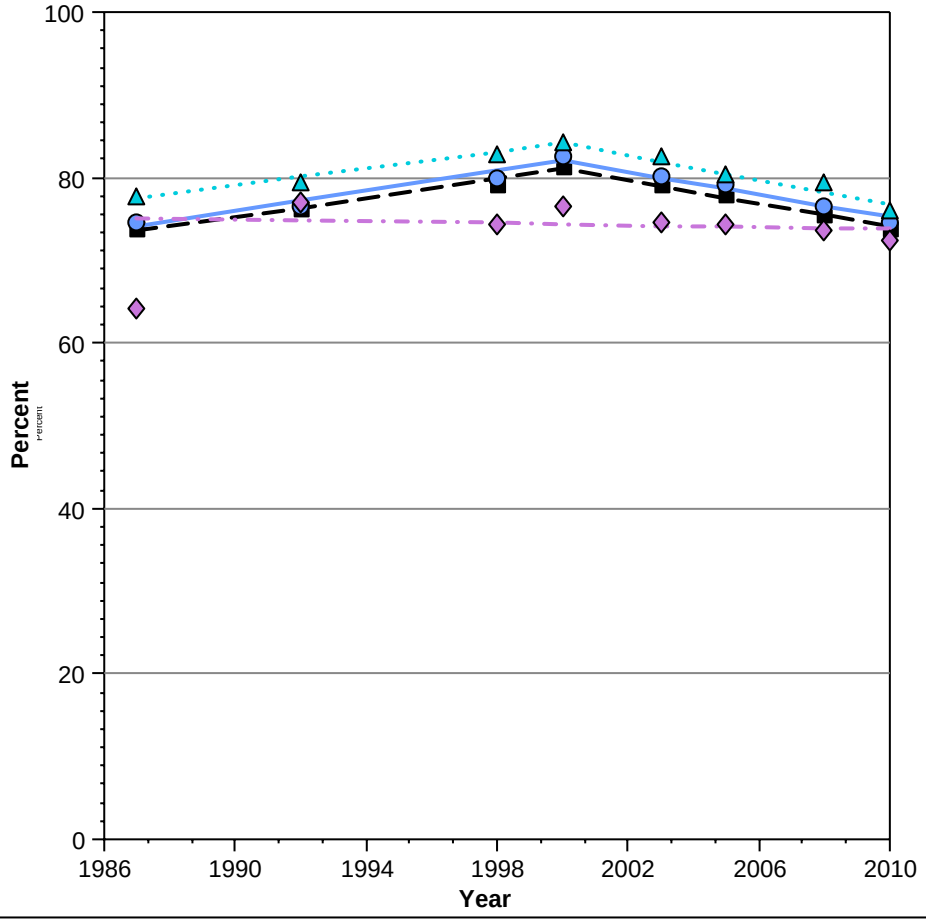
Measure

Percentage of women aged 18 years and older who reported they had a Pap test within the past three years.

Period – 1987–2010

Trends – Rising slightly from 1987 until 2000, then falling slightly until 2010 for whites and blacks. Stable for Hispanics from 1987 to 2010 and from 2001 to 2007 for California Asians (not graphed, 2007 is most recent year for which data are collected).

Figure SCE1: Percent of women aged 18 years and older who had a pap smear test within the past 3 years by race/ethnicity: 1987-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

Most Recent Estimates

In 2010, 74 percent of women aged 18 and older had a Pap test within the past 3 years. This includes 72 percent of Hispanics, 77 percent of blacks, and 75 percent of whites. These rates were down for all women (from 81 percent in 2000), for blacks (from 84 percent in 2000), and for whites (82 percent in 2000). Among Asian women interviewed in California, 71 percent had a Pap test in 2005 (compared with 73 percent in 2005 and 74 percent in 2003).

Healthy People 2020 Targets

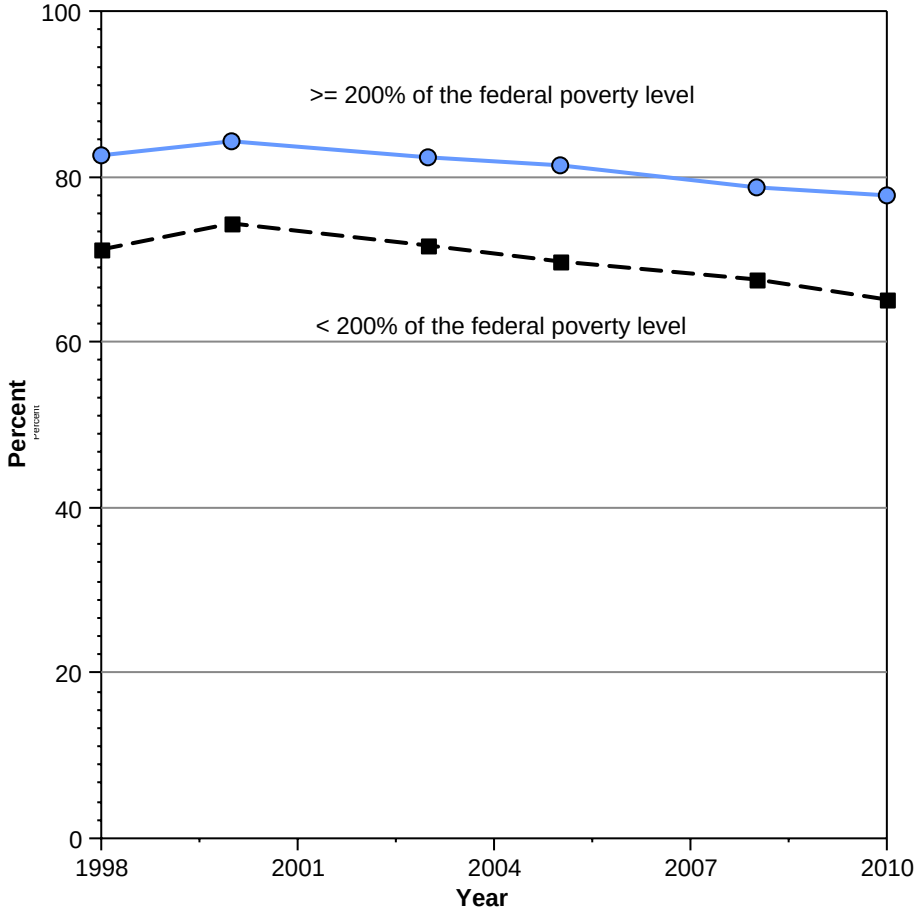
The Healthy People 2020 target was to increase to 90 percent the proportion of women aged 18 and older who have received a Pap test within the past 3 years. The 2010 target was not met. The overall rate was 77 percent in 2008 and 75 percent in 2010. The Healthy People 2020 target modified the age groups for Pap testing to include women aged 21 to 65 years. The 2020 baseline for women 21 to 65 is 84.5 percent. The target is a 10 percent improvement to 93 percent in 2020.

In terms of social determinants of health, between 1998 and 2010, Pap test rates were consistently lower for women living in households with incomes at less than 200 percent of the federal poverty level. There was a consistent education gradient, with women less who had earned than a high school diploma least likely to report a Pap test, women with a high school diploma in the middle, and women with more than a high school education most likely to report being screened.

Groups at High Risk for Not Being Screened

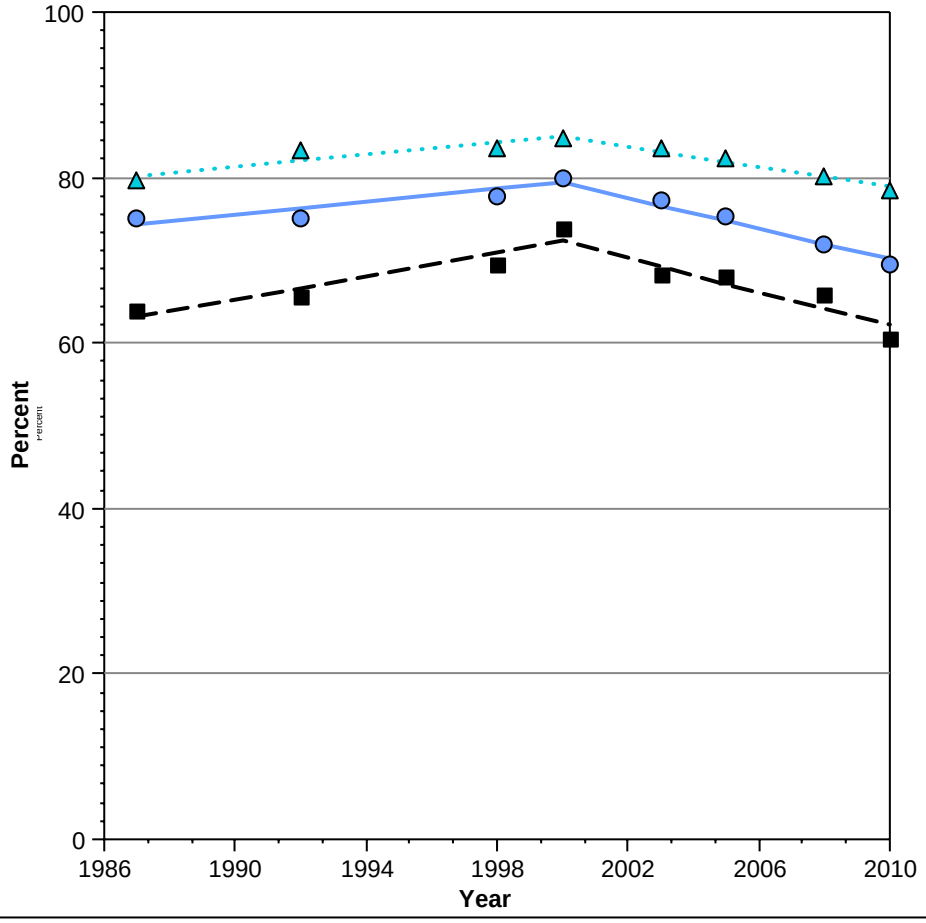
Older, poor, and less educated women are less likely to be screened for cervical cancer. Women 35 to 84 are at greater risk than younger women of developing and dying from cervical cancer, and black women are at greater risk than white women. Women who have received the human papillomavirus vaccination (HPV) should still continue to obtain Pap tests.

Figure SCE2: Percent of women aged 18 years and older who had a pap smear test within the past 3 years by poverty income level: 1998-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

Figure SCE3: Percent of women aged 18 years and older who had a pap smear test within the past 3 years by highest level of education obtained: 1987-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 18-24, 25-34, 35-44, 45-64, 65+.

Key Issues

Sexually active women are more likely to be exposed to the human papillomavirus (HPV) and the human immunodeficiency virus (HIV), both of which can increase the risk of developing cervical cancer. HPV testing is a promising new technique that may improve screening efforts because detection of these viruses identifies women at higher risk of cervical cancer, who then may be followed more closely.

A new HPV vaccine for cervical cancer, shown to be effective in girls not exposed to the sexually transmitted virus, was approved in 2006. By 2010, CDC estimated that 48 percent of girls ages 13 to 17 had gotten at least one dose of the HPV vaccine (Adolescent vaccination-coverage levels in the United States: 2006-2009. Stokley S, Cohn A, Dorell C, Hariri S, Yankey D, Messonnier N, Wortley PM. Pediatrics. 2011 Dec;128(6):1078-86. Epub 2011 Nov 14.)

In November 2011, the United States Preventive Services Task Force (USPSTF) released new guidelines for cervical cancer screening, which indicate women ages 21 to 65 should be routinely screened every three years. The advice is meant to decrease unnecessary testing and potentially harmful treatment, particularly in teenagers and young women. Different organizations have generated different guidelines. To see guidelines issued by various organizations, go to http://www.ahrq.gov/clinic/USpstfix.htm. The Guide to Community Preventive Services, http://www.thecommunityguide.org/index.html, is a source of information about evidence-based approaches for enhancing cancer screening.

Additional Information on Cervical Cancer Screening

- American Cancer Society Guideline for the Early Detection of Cervical Neoplasia and Cancer
  http://caonline.amcancersoc.org/cgi/content/full/52/6/342
- California Health Interview Survey (CHIS) (UCLA)
  http://www.chis.ucla.edu/
- Centers for Disease Control and Prevention, Gynecologic Cancers
  http://www.cdc.gov/cancer/gynecologic/
- Cervical Cancer (PDQ®): Screening — Health Professionals
  http://www.cancer.gov/cancerinfo/pdq/screening/cervical/HealthProfessional
- Free or Low-Cost Pap Test Programs in Your Area
  http://www.cdc.gov/cancer/nbccedp/index.htm
- Guide to Community Preventive Services
  http://www.thecommunityguide.org/index.html
- Healthy People 2010, Volume 1, Chapter 3—Cancer
  http://www.health.gov/healthypeople/document/HTML/Volume1/03Cancer.htm
- Medicaid Coverage for Pap Testing and Pelvic Exams
  http://www.cms.hhs.gov/medicaid/
- Medicare Coverage for Pap Testing and Pelvic Exams
  http://www.medicare.gov/health/cervical.asp
- Nancy Messonnier and Pascale M. Wortley Shannon Stokley, Amanda Cohn, Christina Dorell, Susan Hariri, David Yankey, Adolescent Vaccination-Coverage Levels in the United States: 2006–2009 *Pediatrics* 2011;128;1078; originally published online November 14, 2011)
  http://pediatrics.aappublications.org/content/128/6/1078.abstract
- National Health Interview Survey (NHIS) (NCHS)
  http://www.cdc.gov/nchs/nhis.htm
  http://www.appliedresearch.cancer.gov/surveys/nhis/
- Schiffman M, Castle PE, Jeronimo J, Rodriguez AC, and Wacholder S. Lancet. Human papillomavirus and cervical cancer. 2007 Sep 8;370(9590):890–907.
  http://www.ncbi.nlm.nih.gov/sites/entrez?cmd=Retrieve&db=PubMed&list_uids=17826171&dopt=AbstractPlus (Abstract)
- State Cancer Profiles, Latest Rates, Percents, and Counts
  http://statecancerprofiles.cancer.gov/micromaps/
- U.S. Preventive Services Task Force Guidelines (AHRQ)
  http://www.ahrq.gov/clinic/pocketgd1011/gcp10s2.htm

Colorectal Cancer Screening

Colorectal cancer screening rates continue to rise but remain low among people aged 50 and older.

Benefits of Screening Tests for Colorectal Cancer

Research supports the use of several screening tests for colorectal cancer. Usage is monitored by total test use and the following two specific tests:

- **Fecal occult blood test (FOBT).** When done every 1 to 2 years using home test kits in people aged 50 to 80, the FOBT can decrease the number of deaths caused by colorectal cancer.
- **Colorectal endoscopy (sigmoidoscopy or colonoscopy).** Regular sigmoidoscopy can reduce colorectal cancer deaths. More research is needed to learn the best timing between exams and to determine the effectiveness of screening by colonoscopy. Colonoscopy also is the diagnostic procedure used to follow up positive FOBT and sigmoidoscopy screening tests.

  Note: The 1987 and 1992 versions of the National Health Interview Survey asked only about proctoscopy use. Because of improvements in colorectal cancer screening technology, and because sigmoidoscopy and colonoscopy are now recommended for colorectal cancer screening by major expert groups and covered by Medicare, respondents to the 2000, 2003, 2005, 2008 National Health Interview Surveys were asked whether they had had a proctoscopy, sigmoidoscopy, or colonoscopy. Respondents to the 2010 National Health Interview Survey were asked about sigmoidoscopy and colonoscopy. The procedures are referred to collectively in this report as colorectal endoscopy.

Measure

FOBT: Percentage of adults aged 50 and older who reported that they had a fecal occult blood test (FOBT) within the past two years, by racial/ethnic group. In the 2000 National Health Interview Survey (NHIS), questions were asked on both home and office FOBT, and in 2003, questions were asked only on home FOBT. Responses from the 2000–2010 NHIS for home FOBT are directly calculated.

Note: Responses from the 1987–1998 NHIS may underrepresent use of home FOBT because, prior to 2000, respondents were asked when—but not where—they had their most recent blood stool test. From 2000 on, respondents were asked when their most recent blood stool test was and whether it was a home or office test. If a home and office test were both received within the past two years and the office test was the more recent, the response would be counted in the 2000 and later surveys and not in the pre-2000 surveys.

Colorectal endoscopy: Percentage of adults aged 50 and older who reported that they ever had an endoscopy (proctoscopy, sigmoidoscopy, or colonoscopy).

Colorectal cancer test use: Percentage of adults aged 50 and older who had a colorectal cancer test (home-based FOBT in the past two years or ever had a colorectal endoscopy).

Period – 1987–2010

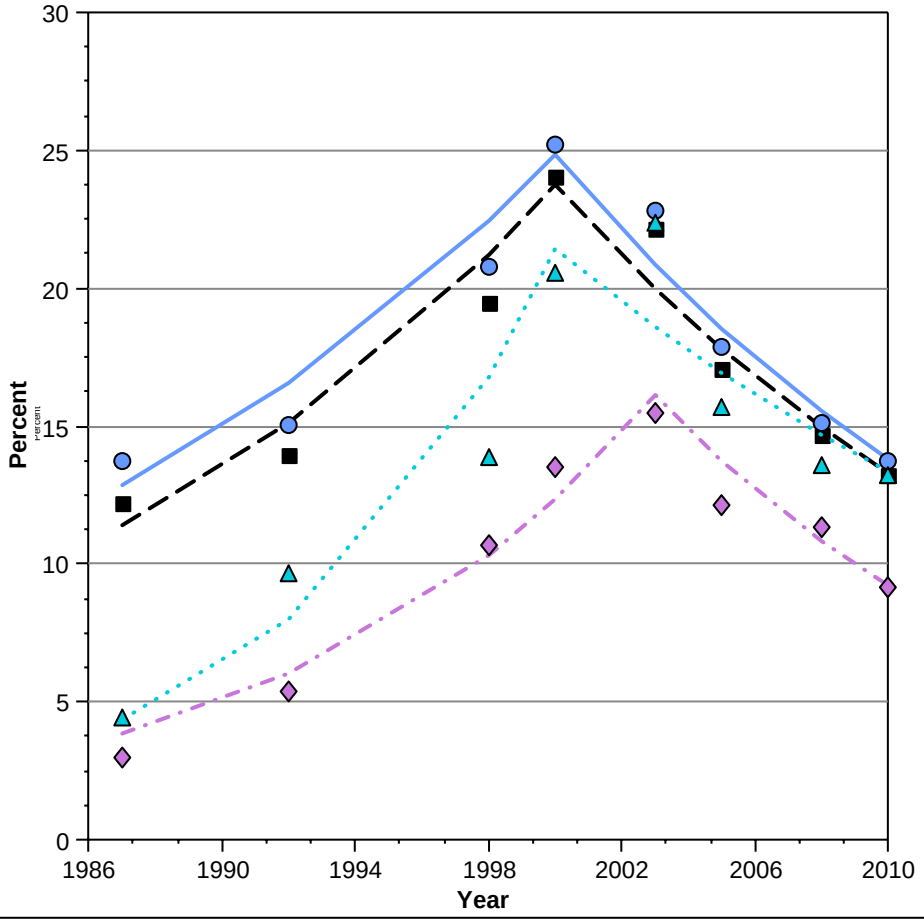
Trends

Home FOBT: Declining. Home FOBT had been rising until 2000 and then began falling in whites and non-Hispanic blacks, continued to rise in Hispanics until 2003 and then fell in these groups through 2010.

Colorectal endoscopy: Rising overall. Colorectal endoscopy had been rising from 1987 to 1998, stabilized until 2000, and then began to rise again after 2000 and rose especially rapidly (Annual Percent Change = 7 percent) from 2003 to 2010. These same trends characterize both whites and blacks. Among Hispanics, rates began to rise rapidly after 2003.

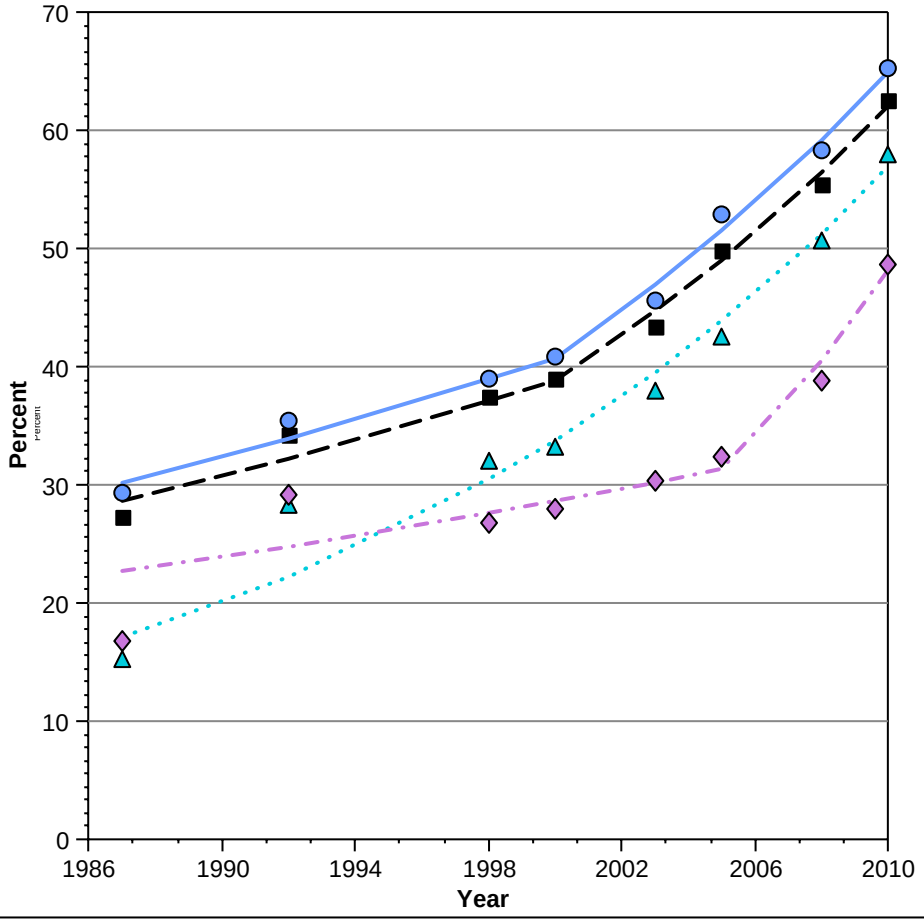
Colorectal cancer test use: Rising overall among each racial/ethnic group (non-Hispanic white, non-Hispanic black, and Hispanic) and all education and income groups.

Figure SCO1: Percent of adults aged 50 years and older who had a home Fecal Occult Blood Test (FOBT) within the past 2 years by race/ethnicity: 1987-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
The National Health Interview Survey (NHIS) did not distinguish between Home and Office FOBTs until the 2000 survey. Starting with the 2003 NHIS survey, sampled adults were only questioned about Home FOBT usage.
Data are age-adjusted to the 2000 US standard population using age groups: 50-64, 65+.

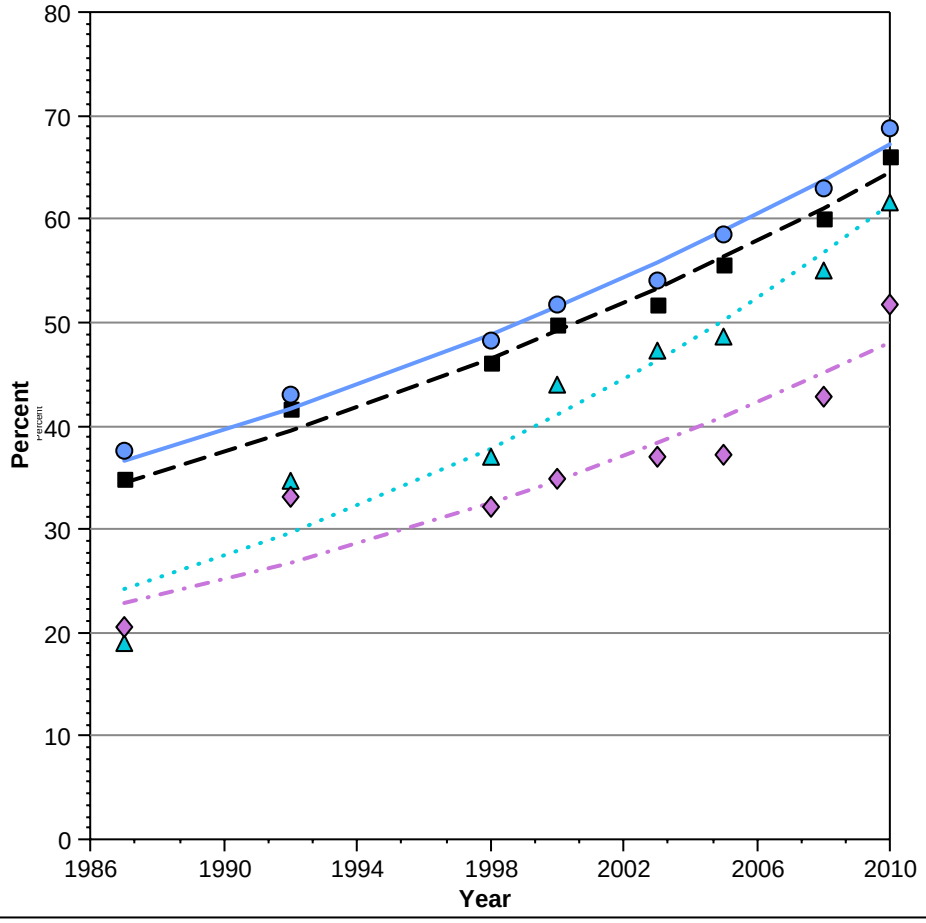
Figure SCO2: Percent of adults aged 50 years and older who ever had a colorectal endoscopy by race/ethnicity: 1987-2010



All Races
Non-Hispanic White
Non-Hispanic Black
Hispanic

Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 50-64, 65+.

Figure SCO3: Colorectal test use rates^ for adults aged 50 years and older by race/ethnicity: 1987-2010



^ Colorectal Test Use Rates are defined as the combined percentage of people who have received a home FOBT in the last 2 years or have ever had a colorectal endoscopy. Each surveyed individual can only contribute once to the numerator of the calculation.
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 50-64, 65+.

Most Recent Estimates

In 2010, 13 percent of people aged 50 and older had a **home FOBT** within the past two years. This includes 9 percent of Hispanics, 13 percent of blacks, and 14 percent of whites. Among Asians interviewed in California, 22 percent had a home FOBT within the past two years. In 2010, 62 percent of people 50 and older had ever had a **colorectal endoscopy**. This includes 49 percent of Hispanics, 58 percent of blacks, and 65 percent of whites. Among Asians interviewed in California, 53 percent had ever had a colorectal endoscopy. In 2010, 65 percent of people 50 and older had used a **colorectal cancer test**. This includes 52 percent of Hispanics, 61 percent of blacks, and 69 percent of whites. Among Asians interviewed in California, 60 percent had used a colorectal cancer test.

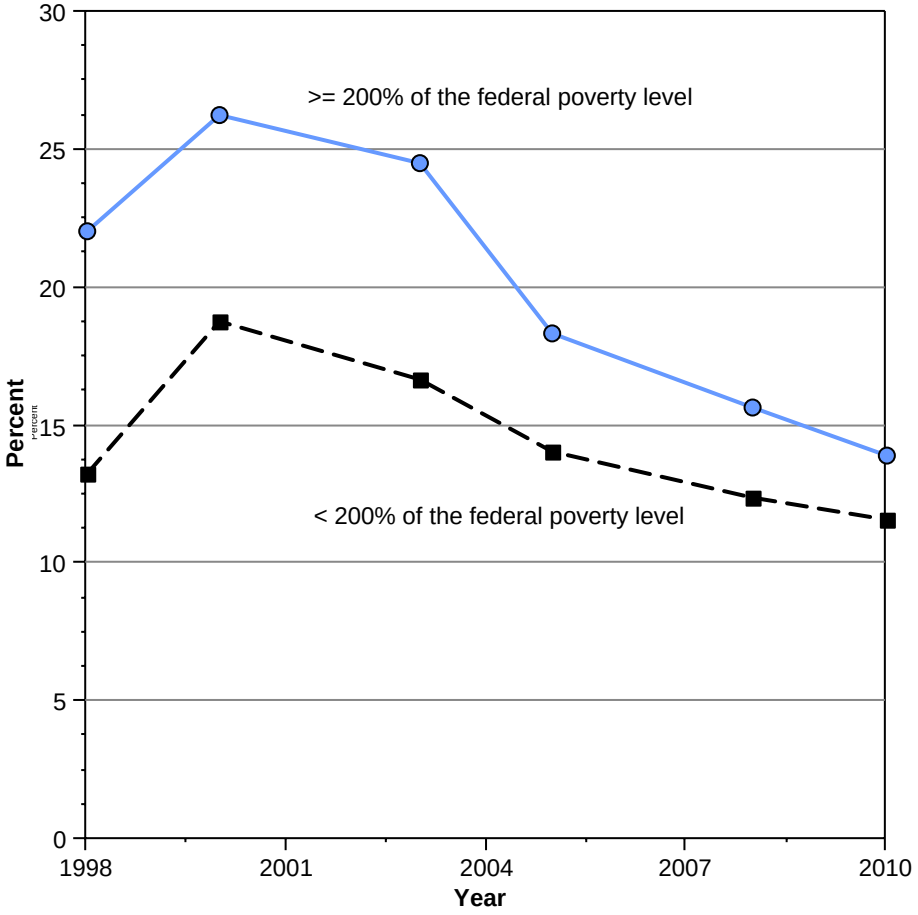
Healthy People 2020 Targets

The new Healthy People 2020 target calls for 70.5 percent of adults ages 50 to 75 to be up to date with recommended colorectal cancer screening, defined according to U.S. Preventive Services Task Force Guidelines as high-sensitivity FOBT done at home every year; sigmoidoscopy every five years, with high-sensitivity FOBT every three years or colonoscopy every 10 years.

Groups at High Risk for Not Being Screened

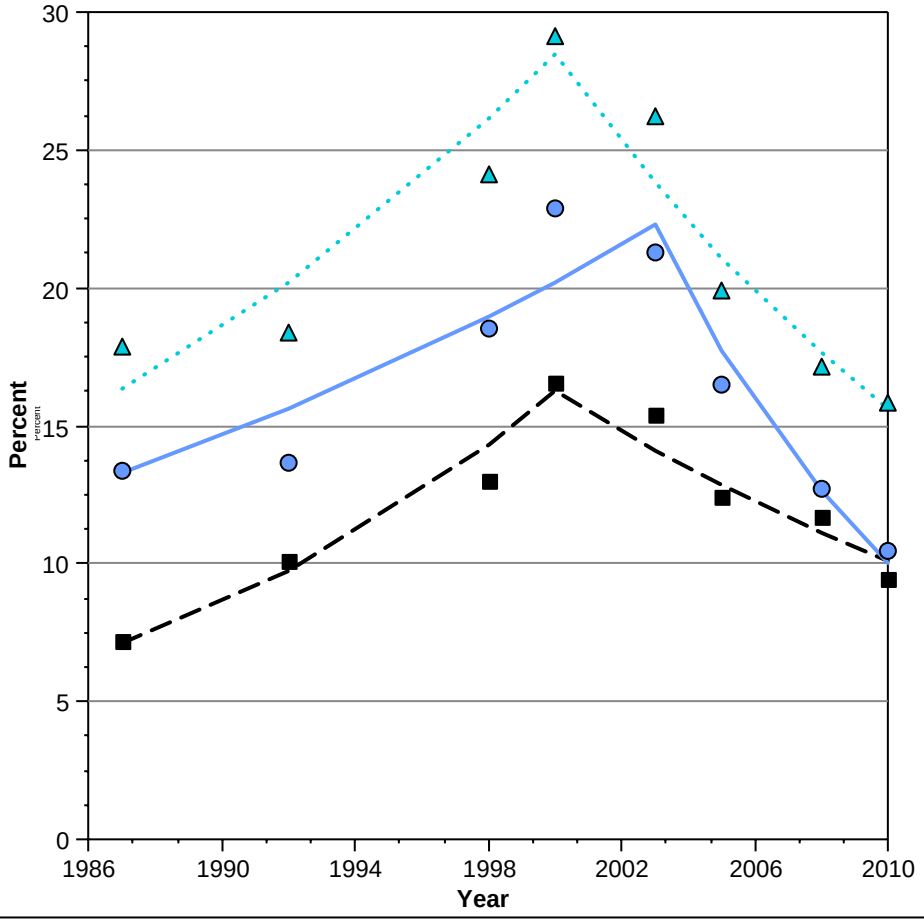
Individuals with household income < 200 percent of the federal poverty level and those with less than a high school education are less likely to be screened for colorectal cancer.

Figure SCO4: Percent of adults aged 50 years and older who had a home Fecal Occult Blood Test (FOBT) within the past 2 years by poverty income level: 1998-2010



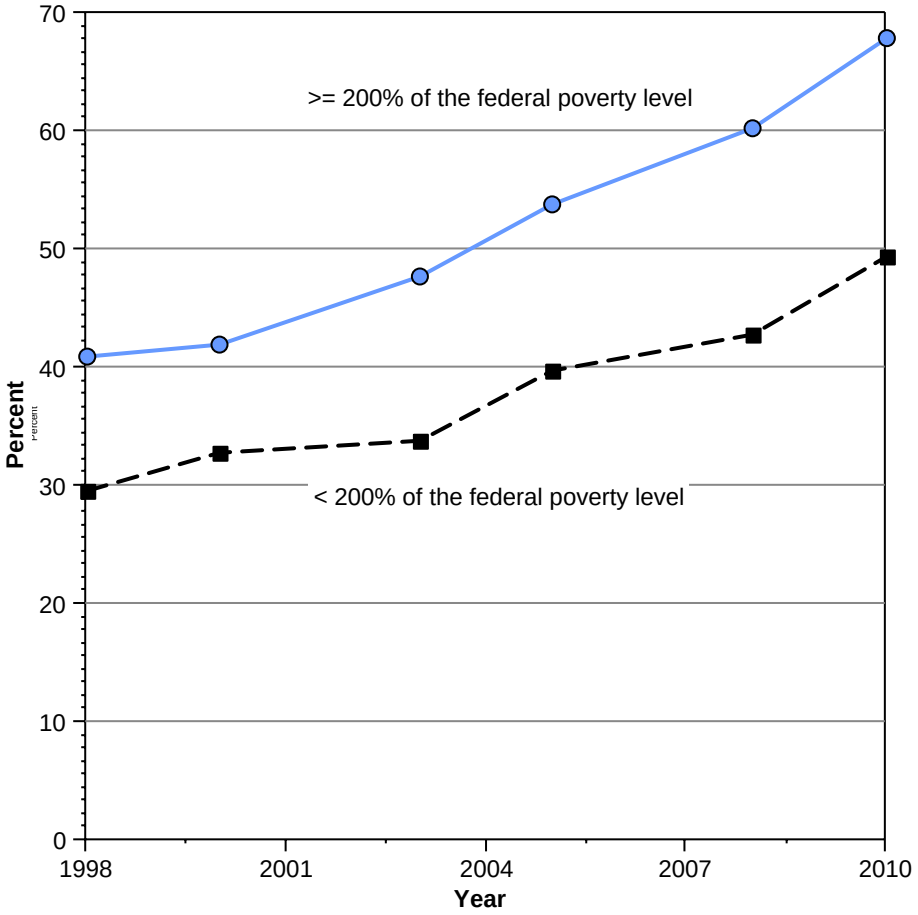
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
The National Health Interview Survey (NHIS) did not distinguish between Home and Office FOBTs until the 2000 survey. Starting with the 2003 NHIS survey, sampled adults were only questioned about Home FOBT usage.
Data are age-adjusted to the 2000 US standard population using age groups: 50-64, 65+.

Figure SCO5: Percent of adults aged 50 years and older who had a home Fecal Occult Blood Test (FOBT) within the past 2 years by highest level of education obtained: 1987-2010



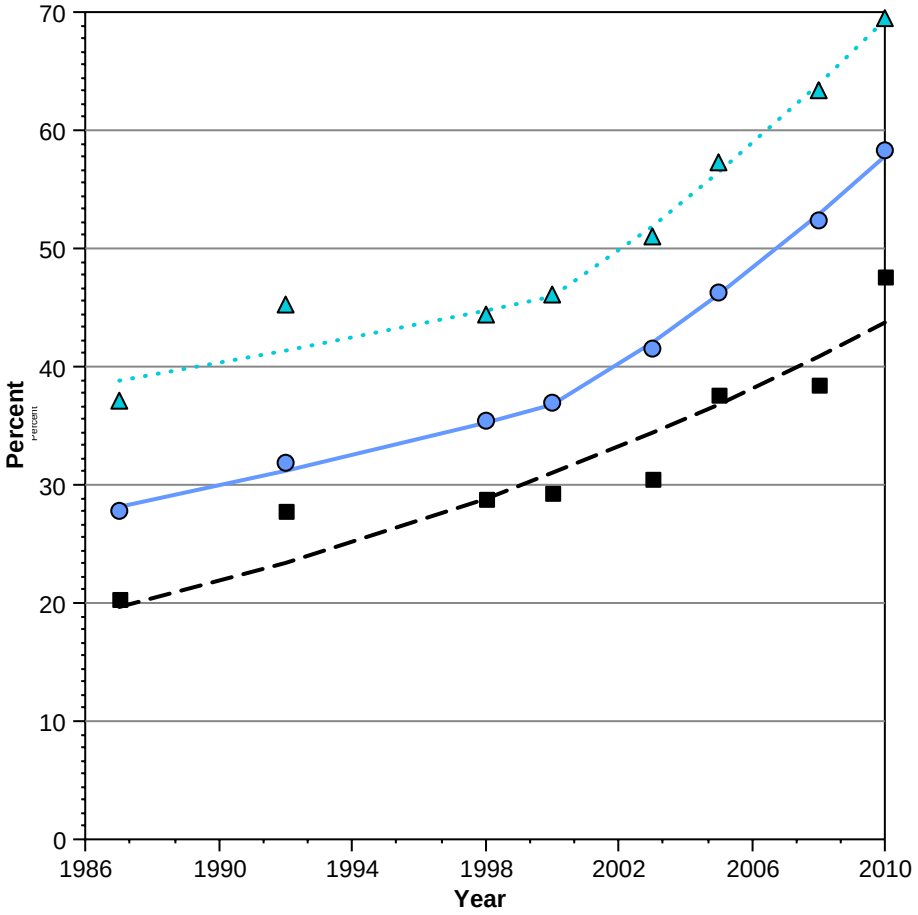
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
The National Health Interview Survey (NHIS) did not distinguish between Home and Office FOBTs until the 2000 survey. Starting with the 2003 NHIS survey, sampled adults were only questioned about Home FOBT usage.
Data are age-adjusted to the 2000 US standard population using age groups: 50-64, 65+.

Figure SCO6: Percent of adults aged 50 years and older who ever had a colorectal endoscopy by poverty income level: 1998-2010



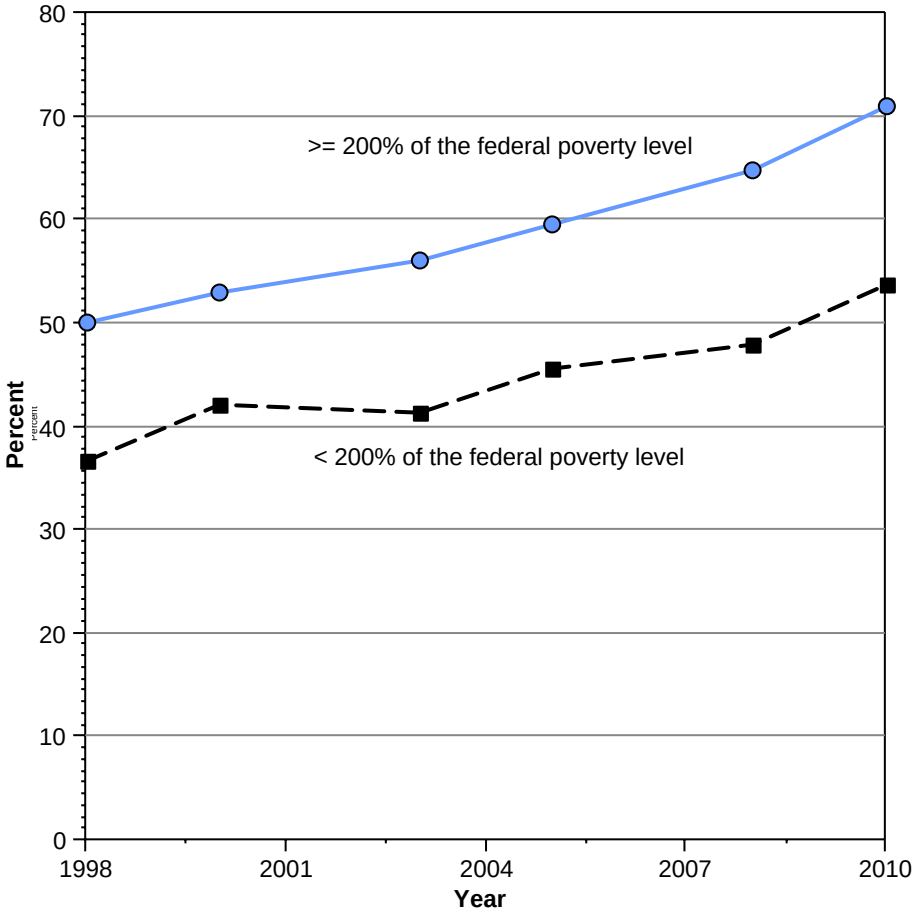
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 50-64, 65+.

Figure SCO7: Percent of adults aged 50 years and older who ever had a colorectal endoscopy by highest level of education obtained: 1987-2010



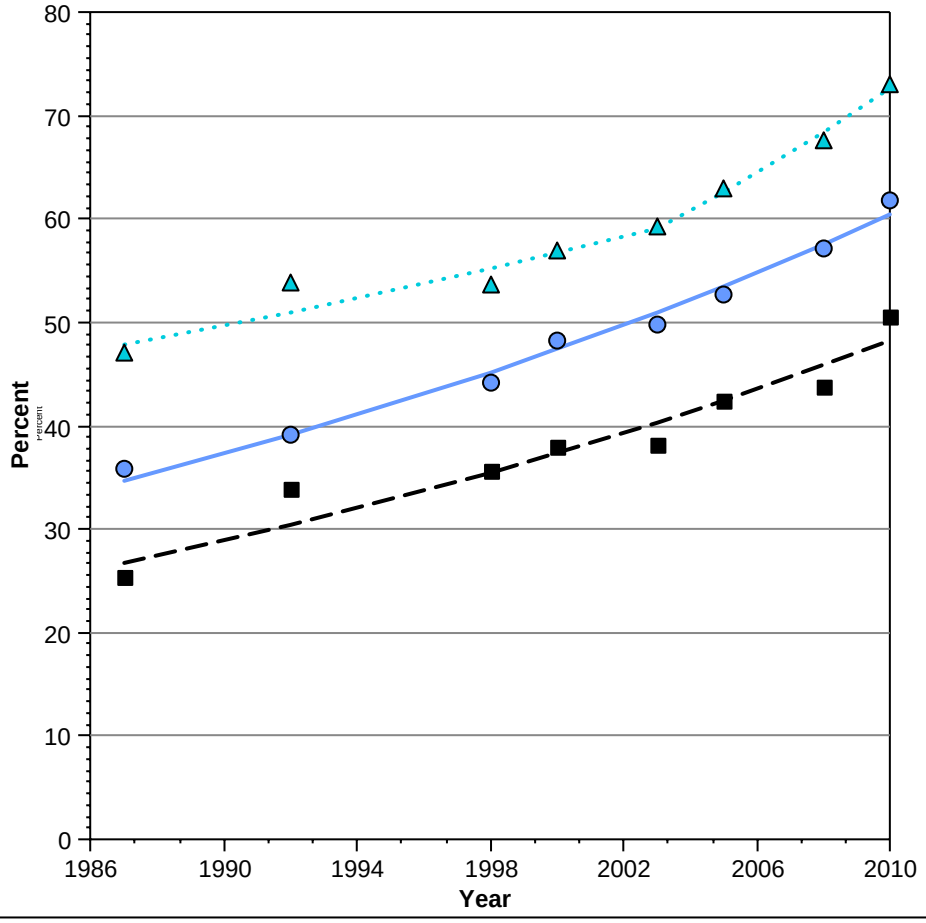
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 50-64, 65+.

Figure SCO8: Colorectal test use rates^ for adults aged 50 years and older by poverty income level: 1998-2010



^ Colorectal Test Use Rates are defined as the combined percentage of people who have received a home FOBT in the last 2 years or have ever had a colorectal endoscopy. Each surveyed individual can only contribute once to the numerator of the calculation.
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 50-64, 65+.

Figure SCO9: Colorectal test use rates^ for adults aged 50 years and older by highest level of education obtained: 1987-2010



^ Colorectal Test Use Rates are defined as the combined percentage of people who have received a home FOBT in the last 2 years or have ever had a colorectal endoscopy. Each surveyed individual can only contribute once to the numerator of the calculation.
Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 US standard population using age groups: 50-64, 65+.

Key Issues

Colorectal cancer screening rates are increasing, but are still considerably lower than rates of mammography and Pap testing in the United States.

Newer screening methods, such as virtual colonoscopy and fecal DNA testing, are promising and need further evaluation.

A substantial proportion of reported FOBT and colorectal endoscopy procedures may be used for diagnostic rather than screening purposes.

Different organizations have generated different guidelines. To see guidelines issued by the U.S. Preventive Services Task Force and others, go to http://www.ahrq.gov/clinic/USpstfix.htm. The Guide to Community Preventive Services, http://www.thecommunityguide.org/index.html, is a source of information about evidence-based approaches for enhancing cancer screening.

Additional Information on Colorectal Cancer Screening

- Agency for Healthcare Research and Quality, Staying Healthy
  http://www.ahrq.gov/consumer/healthy.html
- Cancer Intervention Surveillance Network (CISNET), Colorectal Cancer Mortality Projections
  http://cisnet.cancer.gov/projections/colorectal
- Colorectal Cancer (PDQ®): Screening — Health Professionals
  http://www.cancer.gov/cancertopics/pdq/screening/colorectal/HealthProfessional
- Colorectal Cancer Testing in the Medicare Population: 1998–2004
- Centers for Disease Control and Prevention, Colorectal (Colon) Cancer
  http://www.cdc.gov/cancer/colorectal/
- Guide to Community Preventive Services
  http://www.thecommunityguide.org/index.html
- Healthy People 2010, Volume 1, Chapter 3—Cancer
  http://www.health.gov/healthypeople/document/HTML/Volume1/03Cancer.htm
- National Cancer Institute, Colorectal Cancer Screening: Questions and Answers
  http://www.cancer.gov/cancertopics/factsheet/Detection/colorectal-screening
- National Health Interview Survey (NHIS) (NCHS)
  http://www.cdc.gov/nchs/nhis.htm
- State Cancer Profiles, Latest Rates, Percents, and Counts
  http://statecancerprofiles.cancer.gov/micromaps/
- The Annual Report to the Nation on the Status of Cancer, 1973-1997, with a Special Section on Colorectal Cancer (ACS)
  http://www3.interscience.wiley.com/cgi-bin/fulltext/75504286/HTMLSTART
- U.S. Preventive Services Task Force Recommendations (ARHQ)
  http://www.ahrq.gov/clinic/uspstf/uspscolo.htm

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 of the *Cancer Trends Progress Report – 2011/2012 Update* provides data on the rates of new cancers, based on the NCI Surveillance, Epidemiology, and End Results (SEER) Program, by cancer site and by racial and ethnic group. Also included are data on the proportion of cancers diagnosed at a late stage for five of the major cancer sites where cancer screening has been shown to make a difference in outcomes and is recommended—or is being widely used—as in the case of prostate cancer screening. Cancer sites include the female breast, colon, rectum, cervix, and prostate.

Incidence
(Through 2008)

After several decades of significant increase, delay adjusted rates have stabilized since 1999.

Measuring New Cancer Cases

In 2010, more than one-half of all new cancers were cancers of the prostate, female breast, lung, and colon/rectum. According to American Cancer Society projections, there were 1,529,560 new cases of cancer in 2010, including 217,730 cases of prostate cancer; 209,060 cases of female breast cancer; 222,520 cases of lung cancer; and 142,570 cases of colon/rectum cancer.

Cancer incidence is usually measured as the number of new cases each year for every 100,000 people (for gender-specific cancers, people of the same gender serve as the denominator) and age-adjusted (to a standard population) to allow comparisons over time.

Measure

Incidence rate: The observed number of new cancer cases per 100,000 people per year is adjusted for cancer case reporting delays, based on data from approximately 10 percent of the U.S. population.

Delay Adjustment: Delay adjustment is a method of estimating delayed reporting of incident cases and then adjusting rates to account for this delay.

Period – 1975–2008

Trends

All sites combined: All sites combined: Overall incidence was on the rise from 1975 to 1989, with non-significant changes in rates from 1989 to 1998. From 1998 to 2008, incidence has significantly declined. Among men, incidence rates rose from 1975 to 1992. From 1992 to 1995, cancer incidence among men significantly declined, with no significant change between 1995 and 2000. From 2000 to 2007, incidence trends among men resumed a decline. Among women, from 1975 to 1979 incidence rates were stable before rising between 1979 and 1987 and then stabilizing through 1998. From 1998 to 2005, cancer incidence among women significantly declined, and was stable from 2005 to 2008.

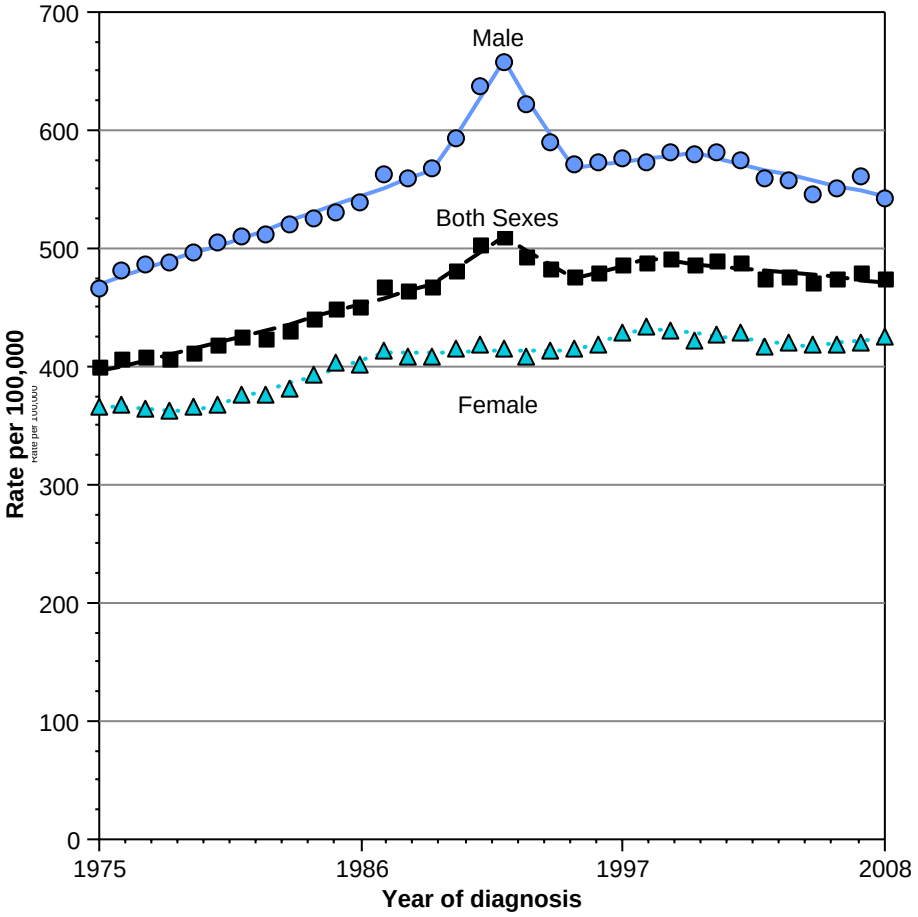
Prostate cancer: Incidence rose between 1975 and 1992 and then fell until around 1995. After a period of non-significant change from 1995 to 2000, rates declined again from 2000 to 2008.

Female breast cancer: After an initial period of no significant change, incidence rates rose between 1980 and 1987, before stabilizing from 1987 to 1998. Incidence rates fell from 1998 to 2008.

Colorectal cancer: Among males and females, incidence rose between 1975 and 1985. Among both men and women, incidence rates have fallen steadily since 1985, except for a period of non-significant change in rates among both men and women from 1995 to 1998.

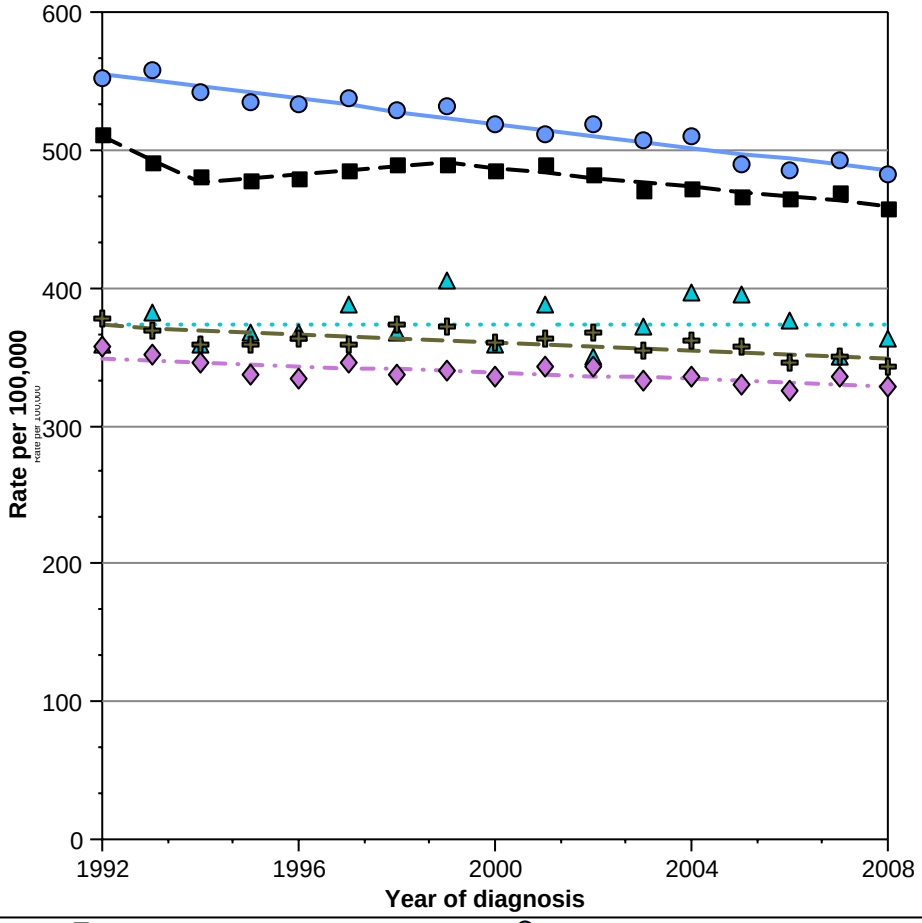
Lung cancer: Incidence of lung cancer was consistently higher among males than females between 1975 and 2008. Incidence rates increased among men from 1975 until 1982 and fell from 1982 to 2008. Lung cancer incidence rates steadily increased among women from 1975 to 2008.

Figure DIN1: Rates of new cases of all cancer, delay-adjusted cancer incidence by sex: 1975-2008



Source: SEER Program, National Cancer Institute. Incidence data are from the SEER 9 areas (http://seer.cancer.gov/registries/terms.html).
Data are age-adjusted to the 2000 US standard population using age groups:<1, 1-4, 5-9, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+. Analysis uses the 2000 Standard Population (Census P25-1130) as defined by NCI(http://seer.cancer.gov/stdpopulations/).

Figure DIN2: Rates of new cases of all cancer by race/ethnicity: 1992-2008



Source: SEER Program, National Cancer Institute. Incidence data are from the SEER 9 areas (http://seer.cancer.gov/registries/terms.html).
Data are age-adjusted to the 2000 US standard population using age groups:<1, 1-4, 5-9, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+. Analysis uses the 2000 Standard Population (Census P25-1130) as defined by NCI(http://seer.cancer.gov/stdpopulations/).

Most Recent Estimates (Delay-adjusted)

In 2008, new cases of cancer occurred at the following rates:

All sites combined: 473.95 cases per 100,000 people per year

Prostate: 157.04 per 100,000 men per year

Female breast: 128.84 per 100,000 women per year

Colorectal: 50.98 per 100,000 men per year and 39.64 per 100,000 women per year

Lung: 71.85 per 100,000 men per year and 53.59 per 100,000 women per year

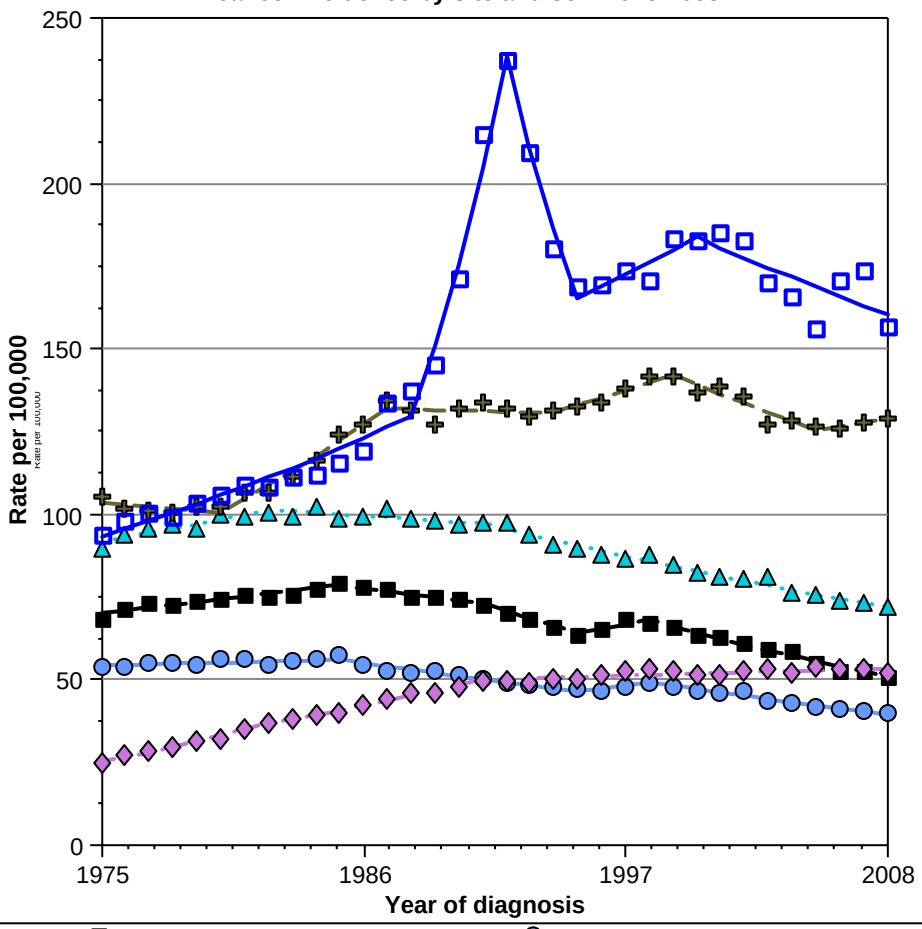
Healthy People 2020 Targets

Reduce new cases of invasive colorectal cancer to 38.6 per 100,000 people.

Groups at High Risk for Getting New Cancers

Among major racial/ethnic groups, blacks have the highest rate of new cancers, followed by whites. Comparatively, rates are lower among American Indians/Alaska Natives, Hispanics, and Asians and Pacific Islanders.

Figure DIN3: Rates of new cases of the most common cancers, delay-adjusted cancer incidence by site and sex: 1975-2008



Source: SEER Program, National Cancer Institute. Incidence data are from the SEER 9 areas (http://seer.cancer.gov/registries/terms.html).
Data are age-adjusted to the 2000 US standard population using age groups:<1, 1-4, 5-9, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+. Analysis uses the 2000 Standard Population (Census P25-1130) as defined by NCI(http://seer.cancer.gov/stdpopulations/).

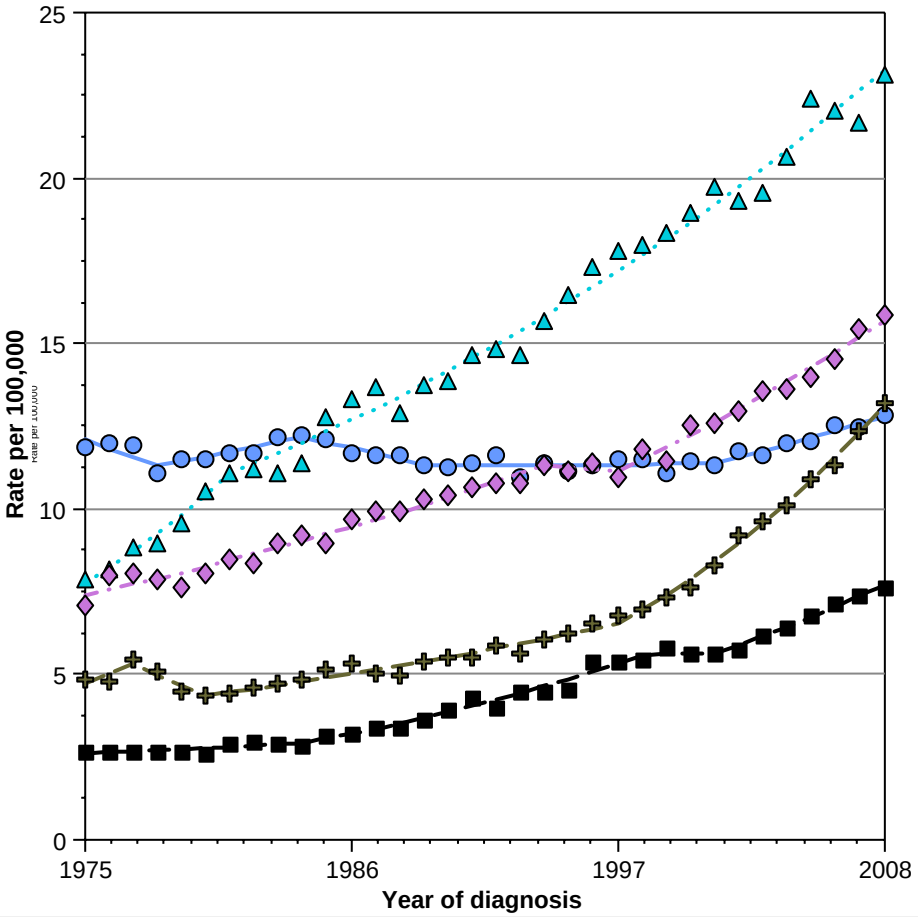
Cancer Sites with Increasing Incidence Trends

The small subset of cancer sites with the fastest increasing incidence rates (annual percent changes of 1 percent or more per year) include melanoma of the skin, cancer of the kidney and renal pelvis, thyroid, pancreas, and liver and intrahepatic bile duct cancers. The incidence rates of some other cancer sites are also rising; however, they are rising at rates of less than 1 percent per year. These cancers include non-Hodgkin lymphoma, childhood cancer, leukemia, testis, myeloma, and esophageal cancer. Rising cancer incidence trends must be interpreted with caution, because they can reflect a “real” increase in cases, a temporary increase in cases associated with early detection, or a permanent increase in cases associated with finding cases that are histologically malignant but biologically indolent.

Cancer Sites with Decreasing Incidence Trends

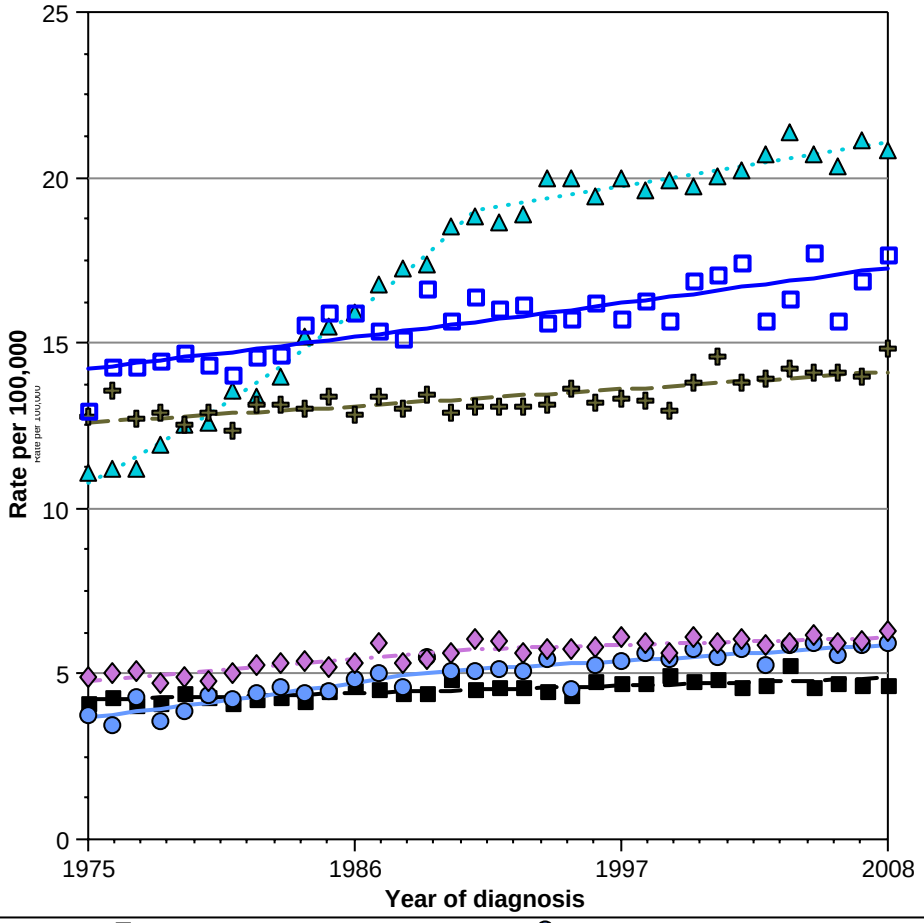
Incidence rates are decreasing for all cancer sites combined and for the four leading cancers (prostate, breast, lung, and colorectal cancer). In addition incidence rates of several other cancer sites are also decreasing including cancers of the ovary, stomach, uterine cervix, brain and other nervous system, and larynx.

Figure DIN4: Rates of cancer sites that are increasing by 1% or more per year^, delay-adjusted cancer incidence: 1975-2008



Source: SEER Program, National Cancer Institute. Incidence data are from the SEER 9 areas (http://seer.cancer.gov/registries/terms.html).
Data are age-adjusted to the 2000 US standard population using age groups:<1, 1-4, 5-9, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+. Analysis uses the 2000 Standard Population (Census P25-1130) as defined by NCI (http://seer.cancer.gov/stdpopulations/).
Restricted to cancer sites with 2008 incidence rates of 3 per 100,000 or more.
^ Annual percent change (APC) for final Joinpoint segment is greater than zero (P<=0.05).

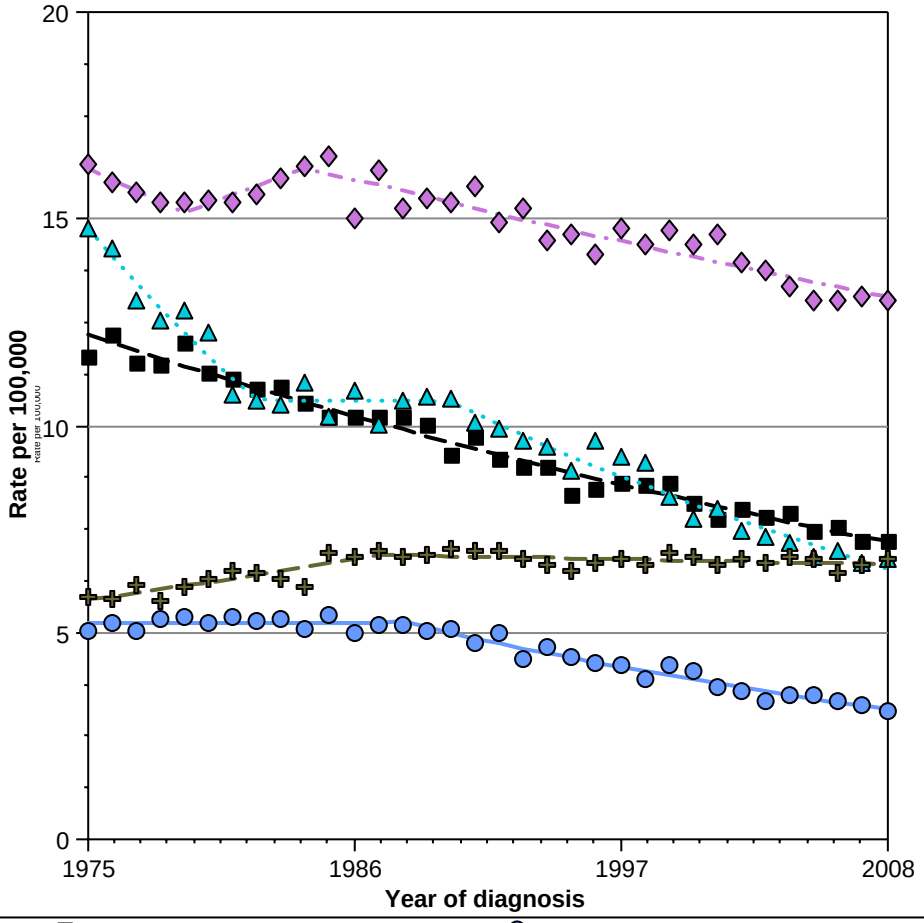
Figure DIN5: Rates of cancer sites that are increasing by less than 1% per year^, delay-adjusted cancer incidence: 1975-2008



Esophagus
Testis
Non-Hodgkin Lymphoma
Myeloma
Leukemia
Childhood (Ages <20)

Source: SEER Program, National Cancer Institute. Incidence data are from the SEER 9 areas (http://seer.cancer.gov/registries/terms.html).
Data are age-adjusted to the 2000 US standard population using age groups:<1, 1-4, 5-9, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+. Analysis uses the 2000 Standard Population (Census P25-1130) as defined by NCI (http://seer.cancer.gov/stdpopulations/).
Restricted to cancer sites with 2008 incidence rates of 3 per 100,000 or more.
^ Annual percent change (APC) for final Joinpoint segment is greater than zero (P<=0.05).

Figure DIN6: Rates of cancer sites other than all cancers combined, colon and rectum and prostate with decreasing delay-adjusted incidence^: 1975-2008



Source: SEER Program, National Cancer Institute. Incidence data are from the SEER 9 areas (http://seer.cancer.gov/registries/terms.html).
Data are age-adjusted to the 2000 US standard population using age groups:<1, 1-4, 5-9, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+. Analysis uses the 2000 Standard Population (Census P25-1130) as defined by NCI(http://seer.cancer.gov/stdpopulations/).
Restricted to cancer sites with 2008 incidence rates greater than 5 per 100,000.
^ Cancer sites with annual mortality rates between 5 and 40 per 100,000 population after rounding. Annual percent change (APC) for final Joinpoint segment is less than zero (P<=0.05).

Key Issues

Although the rate of increase in lung cancer incidence among women has slowed recently, the increasing trend remains statistically significant, and lung cancer is by far the leading cause of cancer deaths among women. This highlights the need to reduce smoking prevalence and environmental tobacco smoke (ETS) exposure among all women, focusing especially on those populations whose tobacco use and ETS exposure remains high, such as women with lower levels of education.

Although most major cancers are occurring less frequently, cancers of some sites are on the rise and require greater efforts at control. For instance, incidence rates of some cancers, including melanoma of the skin, cancer of the kidney, and renal pelvis, thyroid, pancreas, and liver and intrahepatic bile duct cancers are rising with annual percent changes of greater than 1 percent. Incidence rates of some other cancers are also rising; however, they are rising at a rate of less than 1 percent per year. These cancer sites include non-Hodgkin lymphoma, childhood cancer, leukemia, myeloma, testicular cancer, and esophageal cancer.

Rising incidence rates must be interpreted with caution, because trends can reflect real increases in cases, temporary increase in cases with earlier detection, or additional finding of cases that are histologically malignant but biologically indolent.

Incidence rates of most leading cancers are decreasing, including all cancer combined, prostrate, female breast, lung, and colorectal cancers. Incidence rates are also decreasing for other sites, including cancers of the ovary, stomach, uterine cervix, brain and other nervous system, and larynx.

Additional Information on Incidence

- CDC WONDER
  http://wonder.cdc.gov/cancer.html
- Healthy People 2020, 2020 Topic and Objective – Cancer
  http://healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicId=5
- SEER Cancer Statistics Review, 1975–2008 (NCI)
  http://seer.cancer.gov/csr/1975_2007/
- State Cancer Profiles
  http://statecancerprofiles.cancer.gov
- Statistics for 2010 (ACS)
  http://www.cancer.org/docroot/stt/stt_0.asp
- The Health Consequences of Smoking: A Report of the Surgeon General (May 27, 2004)
  http://www.surgeongeneral.gov/library/smokingconsequences/
- United States Cancer Statistics
  http://apps.nccd.cdc.gov/uscs/
- Women and Smoking: A Report of the Surgeon General — 2001 (Tobacco Information and Prevention Source, CDC)
  http://www.surgeongeneral.gov/library/womenandtobacco

Stage at Diagnosis

(Through 2008)

There are fewer late-stage diagnoses for five major cancers where early detection is either recommended and/or widely used.

Late-Stage Diagnosis of Cancer

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.

Measure

Late-stage diagnosis rate: The number of new cancer cases diagnosed at a late (distant) stage, per 100,000 people per year. This report shows the rates for cancers of the prostate, colon, female breast, and cervix uteri.

Period – 1980–2008 (Late-stage prostate data is presented for the years 1995 to 2008)

Trends

Prostate: Late-stage prostate cancer incidence fell from 1995 to 2003, following the introduction of the prostate-specific antigen (PSA) test, with non-significant change from 2003 to 2008.

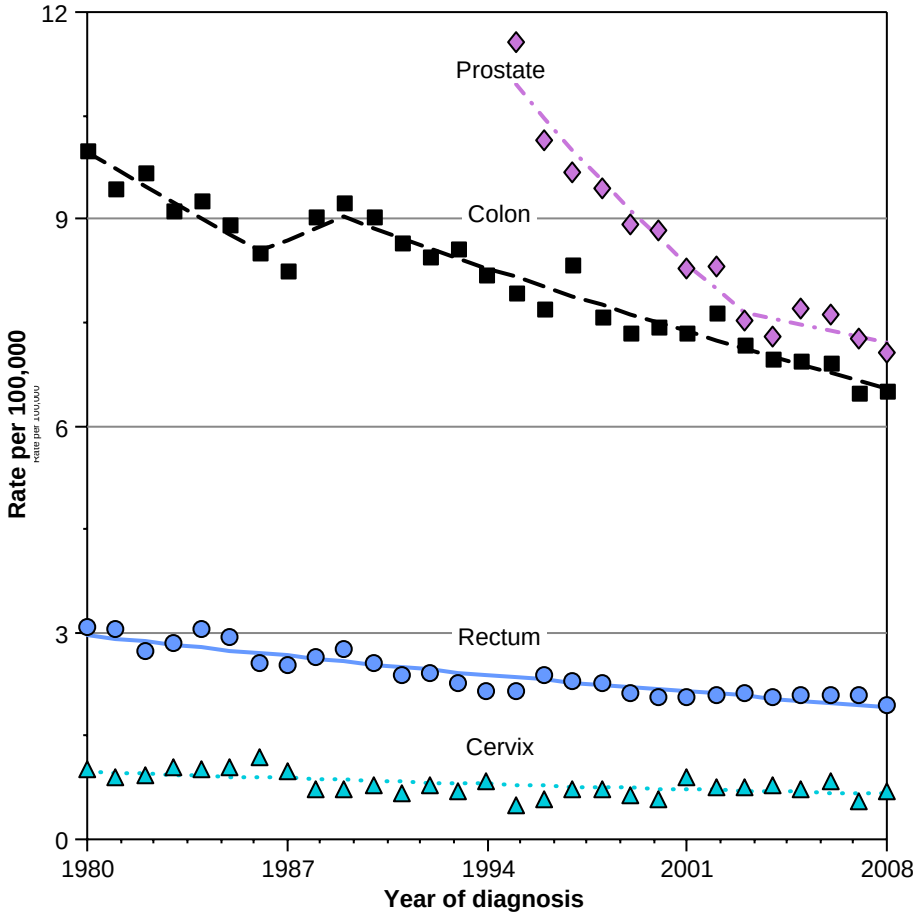
Colon: Late-stage colon cancer incidence fell for most of the period between 1980 and 2008.

Rectum (including Rectosigmoid Junction): Incidence rates of late-stage cancer fell throughout the period between 1980 and 2008.

Cervix: Incidence rates of late-stage cancer fell from 1980 to 2008.

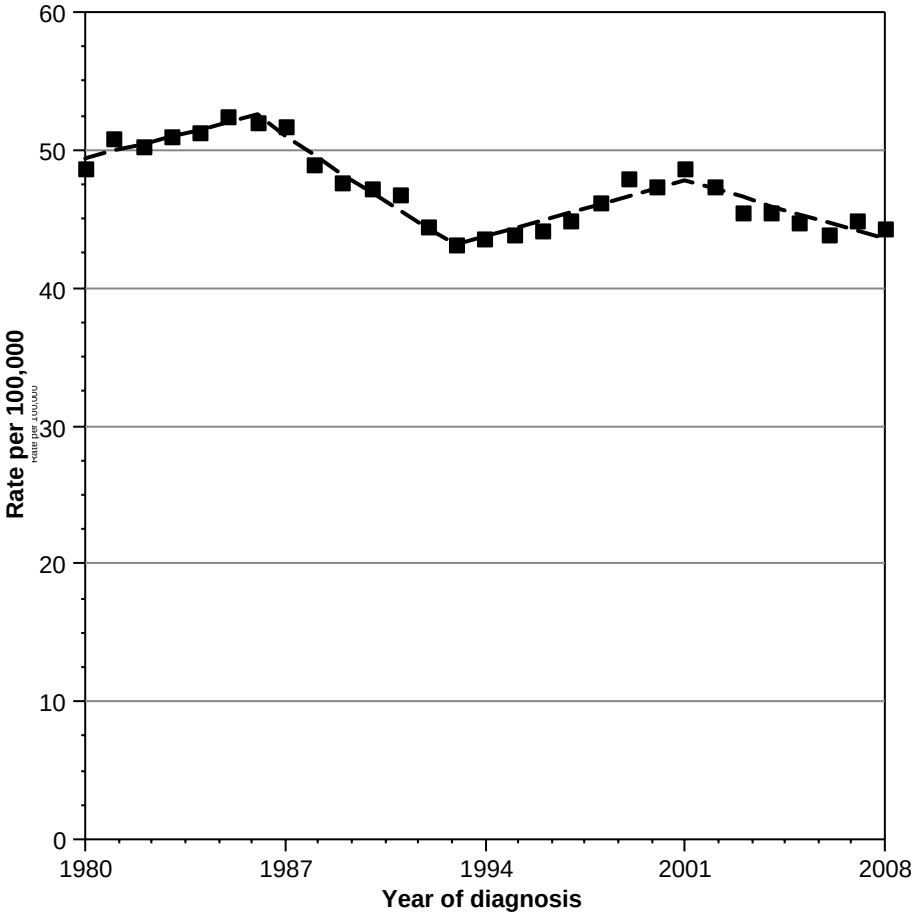
Female breast: Incidence rates of regional and late-stage cancer first rose and then fell during two separate intervals between 1980 and 2008 and falling most recently from 2001 to 2008.

Figure DST1: Rates of new cancers of distant stage diseases by cancer site: 1980-2008



Source: SEER Program, National Cancer Institute. Incidence data are from the SEER 9 areas (http://seer.cancer.gov/registries/terms.html).
Data are age-adjusted to the 2000 US standard population using age groups:<1, 1-4, 5-9, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+. Analysis uses the 2000 Standard Population (Census P25-1130) as defined by NCI(http://seer.cancer.gov/stdpopulations/).

Figure DST2: Rates of new late stage breast cancer: 1980-2008



Source: SEER Program, National Cancer Institute. Incidence data are from the SEER 9 areas (http://seer.cancer.gov/registries/terms.html).
Late stage breast cancer includes cases diagnosed at regional and distant stages.
Data are age-adjusted to the 2000 US standard population using age groups:<1, 1-4, 5-9, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+. Analysis uses the 2000 Standard Population (Census P25-1130) as defined by NCI(http://seer.cancer.gov/stdpopulations/).

Most Recent Estimates

In 2008, the following five cancers were diagnosed at a late stage at the following rates:

Prostate: 7.07 new cases per 100,000 men per year

Colon: 6.55 new cases per 100,000 people per year

Rectum: 1.92 new cases per 100,000 people per year

Cervix: 0.66 new cases per 100,000 women per year

Female breast: 43.54 new cases of regional and distant-stage cancer per 100,000 women per year

Healthy People 2020 Targets

Reduce new regional and distant stage female breast cancer cases to 41.0 per 100,000 females.

Groups at High Risk for Late-stage Diagnosis

People who do not have access to health care or do not receive regular, recommended cancer screening tests or experience a delay in following up on an abnormal screening test finding are at highest risk of being diagnosed with late-stage cancer.

Key Issues

A lower rate of diagnosis at late stages is an early sign of the effectiveness of cancer screening efforts. These lower rates can be expected to occur before decreases in death rates are seen. For example, the drop in new cases of late-stage prostate cancer probably was an early indicator of lower death rates observed for this disease.

Important differences among racial and ethnic groups in the percentage of cases diagnosed at a late stage contribute to disparities in cancer mortality.

Additional Information on Stage at Diagnosis

- SEER Cancer Statistics Review, 1975–2008 (NCI)
  http://seer.cancer.gov/csr/1975_2008
- Staging (ACS)
  http://www.cancer.org/docroot/eto/content/eto_1_2x_staging.asp

Treatment

- Bladder Cancer Treatment
- Breast Cancer Treatment
- Colorectal Cancer Treatment
- Kidney Cancer Treatment
- Lung Cancer Treatment
- Ovarian Cancer Treatment
- Prostate Cancer Treatment

Cancer treatment is improving—saving lives and extending survival for people with cancers at many sites, including breast, colon, bladder, lung, prostate, ovary, and kidney, and for people with leukemias, lymphomas, and pediatric cancers.

Clinical trials are the major avenue for evaluating the benefits of new therapies. However, a relatively small percentage of all adult cancer patients (aged 20 years and older) participate in clinical trials. The exact percentage is unknown because NCI-sponsored trials and industry-sponsored trials are tracked separately. However, it is estimated to be less than 5 percent for most types of cancer. It is important to increase physician and patient awareness of, and participation in, clinical trials if we are to examine new treatments, find more effective treatments more rapidly, and broaden the options available to patients.

For treatments already in use, trends in patterns of care have been examined for major cancers, including breast, colorectal, prostate, lung, bladder, and ovarian cancers. Patterns of care at specific points in time, generally in relationship to the release of new guidance on care, have been documented for additional cancers, including cervical, endometrial, head and neck, non-Hodgkin lymphoma, and melanoma. These studies have been supported through the NCI Patterns of Care/Quality of Care and Surveillance, Epidemiology, and End-Results (SEER)-Medicare projects.

Research results on breast cancer treatment have shown that the use of breast-conserving surgery increased markedly from 1992 to 2002. From 1998 to 2002 the proportion of women receiving breast-conserving surgery who also received radiation treatment declined modestly. The use of recommended adjuvant chemotherapy increased substantially from 1987 to 1995. However, the increase has slowed between 1995 and 2005. Similarly, the receipt of adjuvant chemotherapy for stage III colon cancer increased markedly following the publication in 1989 of clinical recommendations for this treatment with a moderate increase from 1990 to 2005. Paclitaxel was unavailable in 1991, but following its introduction and approval by the Food and Drug Administration (FDA), its use among patients with stage III or IV ovarian cancer rose steadily until peaking in 1996 at 67 percent. The use of paclitaxel and chemotherapy of any type decreased in 2002.

The studies also show that older individuals and members of racial/ethnic minority groups are less likely to receive these treatments. More investigation is required to determine if these differences in treatments received constitute disparities in quality of care that need to be addressed through policy or organizational interventions. Women with node-positive breast cancer are less often given chemotherapy if they are aged 65 years or older. However, past clinical trials have included few older women, and there are no clear guidelines for women aged 70 years or older. Although chemotherapy has been reported to improve survival and palliation of lung change patients with stage IIIB or IV, patients aged 80 years or older receive chemotherapy less than half as often as patients under the age of 70. Some of these differences have decreased over time; for example, the treatment gap between White and Black patients with stage III colon cancer closed between 1995 and 2000.

NCI is working with many Federal and private partners to improve methods and data systems for tracking the quality of cancer care. For prostate cancer, a major study on quality-of-life outcomes among 3,500 men following diagnosis has provided important new information that will help men and their families and physicians to make more informed decisions about treatment. An ongoing NCI study, the Cancer Care Outcomes Research and Surveillance Consortium, will provide more detailed information on how to link quality-of-care measures to outcomes important to colorectal and lung cancer patients. Other similar initiatives are being supported by major professional organizations, as well as by NCI.

These and other ongoing studies will provide much new information on treatment. Future editions of the *Cancer Trends Progress Report* will include treatment trends for cancer sites for which there are definitive treatment guidelines based on rigorous evidence of benefit to patients.

Bladder Cancer Treatment

There has been a significant increase in the use of intravesical therapy for patients diagnosed with non-muscle invasive Ta G1-2 bladder cancer. However, this therapy is given to only 27 percent of patients with non-muscle invasive disease.

Benefits of Treatment

The use of intravesical therapy has been associated with improved survival.

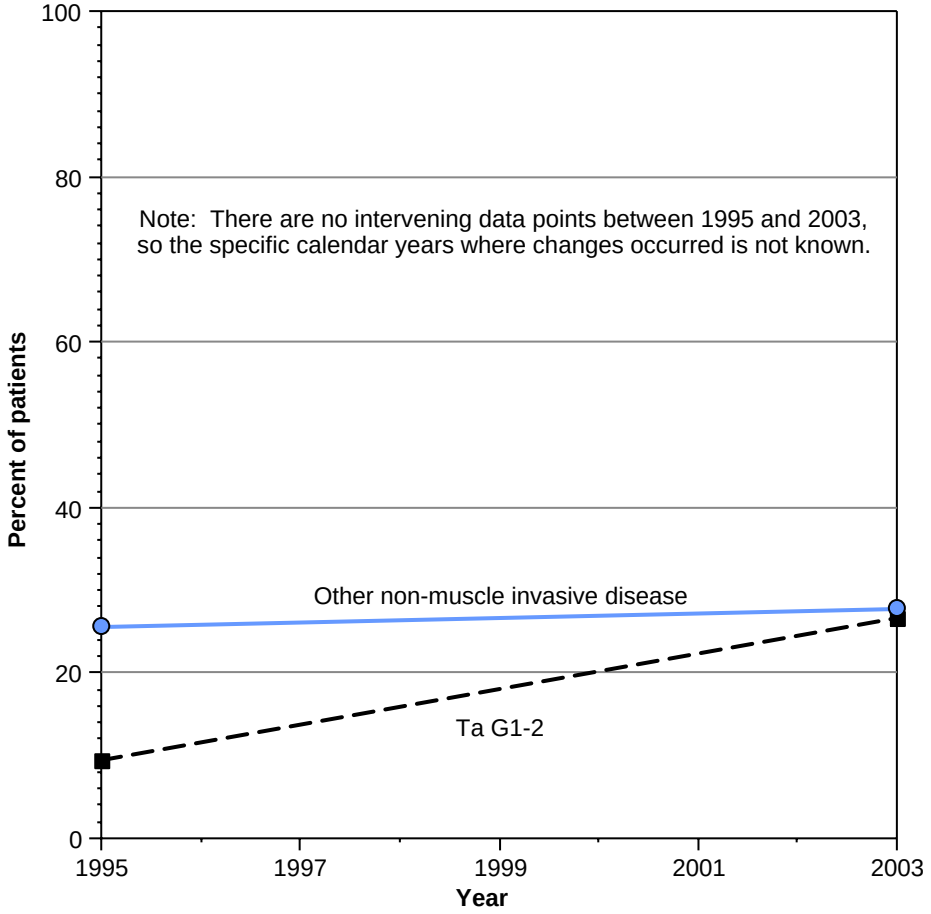
Measure

Percentage of individuals receiving intravesical therapy in non-muscle invasive bladder cancer.

Period – 1995–2003

Trends – Rising in Ta G1-2; stable in other non-muscle invasive disease.

Figure TBL1: Percent of patients receiving intravesical therapy for non-muscle invasive disease Ta G1-2 and all other non-muscle invasive disease: 1995-2003



Source: SEER based Patterns of Care Studies, Applied Research Program, National Cancer Institute.
Data are age-adjusted based on the age distribution of urinary bladder cancer patients from 2002-2004 in the SEER 17 areas (http://seer.cancer.gov/registries/terms.html) using age groups: 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+.

Most Recent Estimates

In 2003, 27 percent of patients with non-muscle invasive disease received intravesical therapy. New estimates will be available in 2013.

Healthy People 2020 Targets

There are no Healthy People targets for cancer treatment, including bladder cancer treatment.

Groups at High Risk for Not Receiving Appropriate Treatment

The use of intravesical therapy varies by geographic area, with individuals in the Midwest more likely to receive intravesical therapy compared to those living in Los Angeles. Patients of other races, primarily Asians, were more likely to receive intravesical therapy than white patients. There were no differences between white, black, and Hispanic patients in the use of intravesical therapy.

Key Issues

The barriers to the use of intravesical therapy should be identified.

Additional Information on Bladder Cancer Treatment

- All About Bladder Cancer (ACS)
  http://www.cancer.org/docroot/CRI/CRI_2x.asp?sitearea=LRN&dt=44
- Bladder Cancer Treatment (PDQ®)
  http://www.cancer.gov/cancertopics/pdq/treatment/bladder/Patient
- Huang GJ, Hamilton AS, Lo M, Stein JP, Penson DF. Predictors of intravesical therapy for nonmuscle invasive bladder cancer: results from the Surveillance, Epidemiology and End Results Program 2003 Patterns of Care Project. J Urol 2008;180:520–4.

Breast Cancer Treatment

The proportion of women with node positive disease receiving appropriate treatment is high. 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-conserving Surgery and Radiation Treatment
Benefits of Treatment

Clinical trials have demonstrated that women with early-stage breast cancer who receive breast-conserving surgery with radiation have survival similar to women who receive a mastectomy. A 1990 NIH Consensus Development Panel concluded that "breast conservation treatment (BCS followed by radiation therapy) is an appropriate method of primary therapy for the majority of women with stage I and II breast cancer and is preferable because it provides survival equivalent to total mastectomy and axillary dissection while preserving the breast."

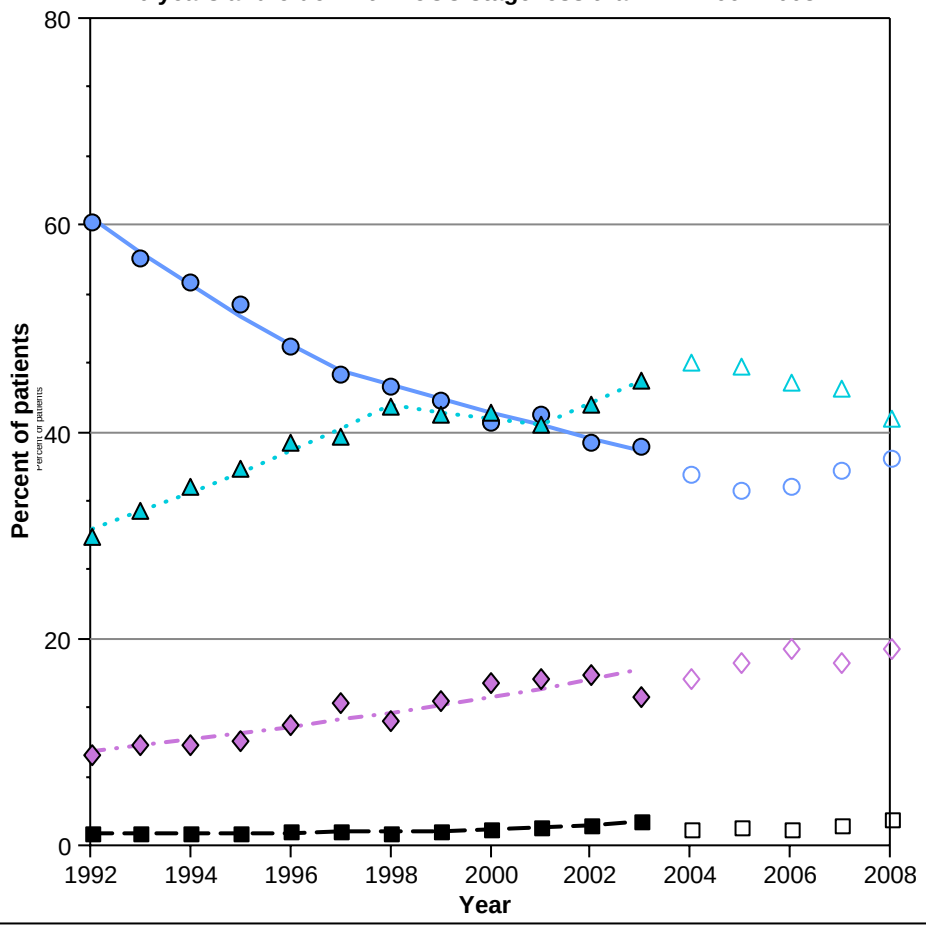
Measure

Percentage of women age 20 and older, diagnosed with early-stage breast cancer (less than stage IIIA), receiving breast-conserving surgery and radiation treatment.

Period – 1992–2008

Trends – Rising between 1992 and 1998, falling between 2004 and 2008.

Figure TBR1: Treatment distribution for invasive female breast cancer patients aged 20 years and older with AJCC stage less than IIIA: 1992-2008



Source: SEER Program, National Cancer Institute. Incidence data are from the SEER 13 areas (http://seer.cancer.gov/registries/terms.html).
Data are age-adjusted based on the age distribution of lung cancer patients from 2006-2008 in the SEER 17 areas (http://seer.cancer.gov/registries/terms.html) using age groups: 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+.

Most Recent Estimates

In 2008, 37 percent of women age 20 and older diagnosed with early-stage breast cancer (less than stage IIIA) received a mastectomy, 41 percent received breast-conserving surgery plus radiation, and 19 percent received breast-conserving surgery only.

Healthy People 2020 Targets

There are no Healthy People targets for cancer treatment, including breast cancer treatment.

Multi-agent Chemotherapy
Benefits of Treatment

For women with positive lymph nodes, multi-agent chemotherapy has been recommended by NIH since 1985. However, the NIH Consensus Conference on Breast Cancer in 2000 stated insufficient numbers of women age 70 or older were included in clinical trials to make a recommendation about chemotherapy. Based on the results of numerous randomized, controlled treatment trials, tamoxifen has been recommended for women with estrogen-receptor positive breast cancer.

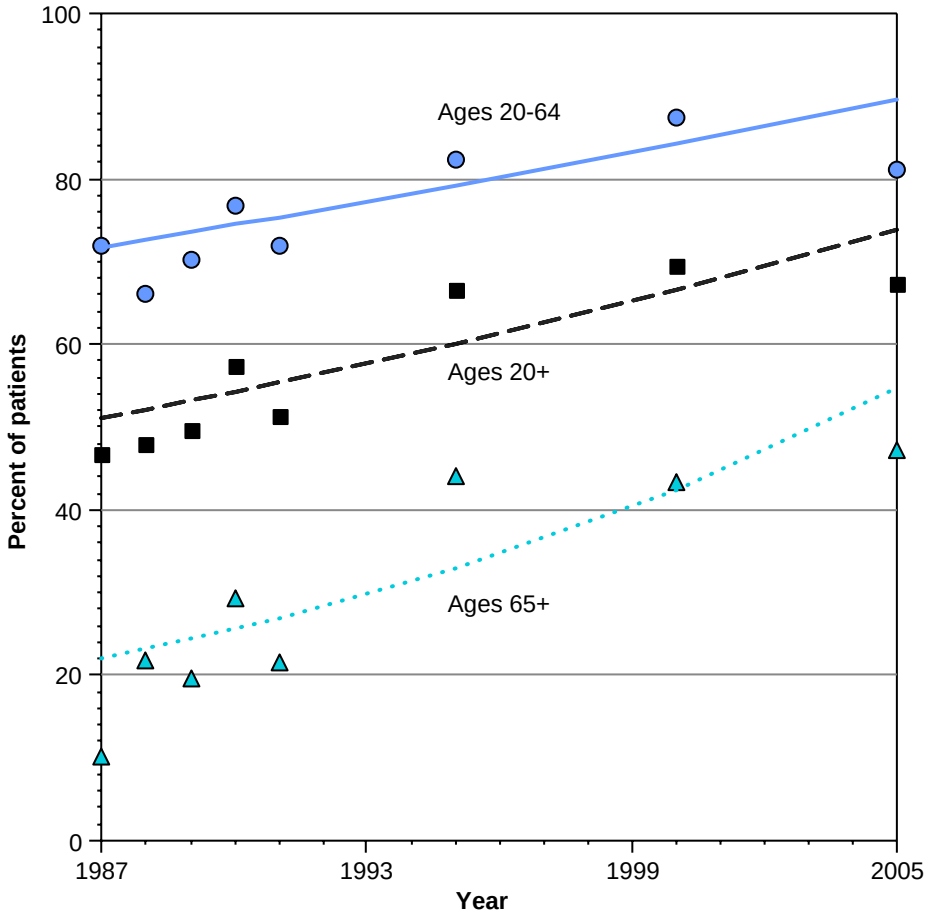
Measure

Percentage of women age 20 and older, diagnosed with node positive, stage I–IIIa breast cancer, receiving multi-agent chemotherapy.

Period – 1987–2005

Trends – Rising use through 1995 but stable after that time.

Figure TBR2: Percentage of node positive female breast cancer patients receiving multiagent chemotherapy treatment by age at diagnosis: 1987-2005



Source: SEER based Patterns of Care Studies, Applied Research Program, National Cancer Institute.
Data are age-adjusted based on the age distribution of female breast cancer patients from 2004-2006 in the SEER 17 areas (http://seer.cancer.gov/registries/terms.html) using age groups: 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+.

Most Recent Estimates

In 2005, 67 percent of women age 20 and older diagnosed with node positive breast cancer received multi-agent chemotherapy. A breast cancer NCI patterns of care study is currently being conducted for diagnosis year 2010.

Healthy People 2020 Targets

There are no Healthy People targets for cancer treatment, including breast cancer treatment, and multi-agent chemotherapy.

Groups at High Risk for Not Receiving Appropriate Treatment

Studies have found that older women are less likely to receive radiation treatment following breast-conserving surgery. Even elderly patients with no or very few co-morbid conditions—such as diabetes, kidney, or heart disease—were less likely to receive treatment. Although there are no clear guidelines for the use of chemotherapy in women age 70 or older, the use of chemotherapy is lower among older women.

Key Issues

Emerging treatments for breast cancer include the anti-HER2/neu antibody, trastuzumab for patients with HER2 over expressing cancers, and aromatase inhibitors either in conjunction with or instead of tamoxifen. The inclusion of women age 70 or older in clinical trials is necessary to determine the benefit of more aggressive therapies.

Additional Information on Breast Cancer Treatment

- Breast Cancer (PDQ®): Treatment — Health Professionals
  http://www.cancer.gov/cancertopics/pdq/treatment/breast/healthprofessional/
- NCI Patterns of Care/Quality of Care Studies
  http://healthservices.cancer.gov/surveys/poc/
- SEER-Medicare Studies
  http://healthservices.cancer.gov/seermedicare/

Colorectal Cancer Treatment

The proportion of patients receiving appropriate adjuvant therapy has increased steadily since 1987. Potential disparities remain for some groups of patients.

Benefits of Treatment

On the basis of accumulated evidence from clinical trials, a 1990 NIH Consensus Development Conference recommended that patients with stage III colon cancer be given adjuvant chemotherapy. The 1990 NIH Consensus Conference also recommended combined adjuvant chemotherapy and high-dose external-beam radiotherapy for stage II and III rectal cancer. Radiation does not appear to affect disease-specific or overall survival for rectal cancer, although it does decrease local recurrence.

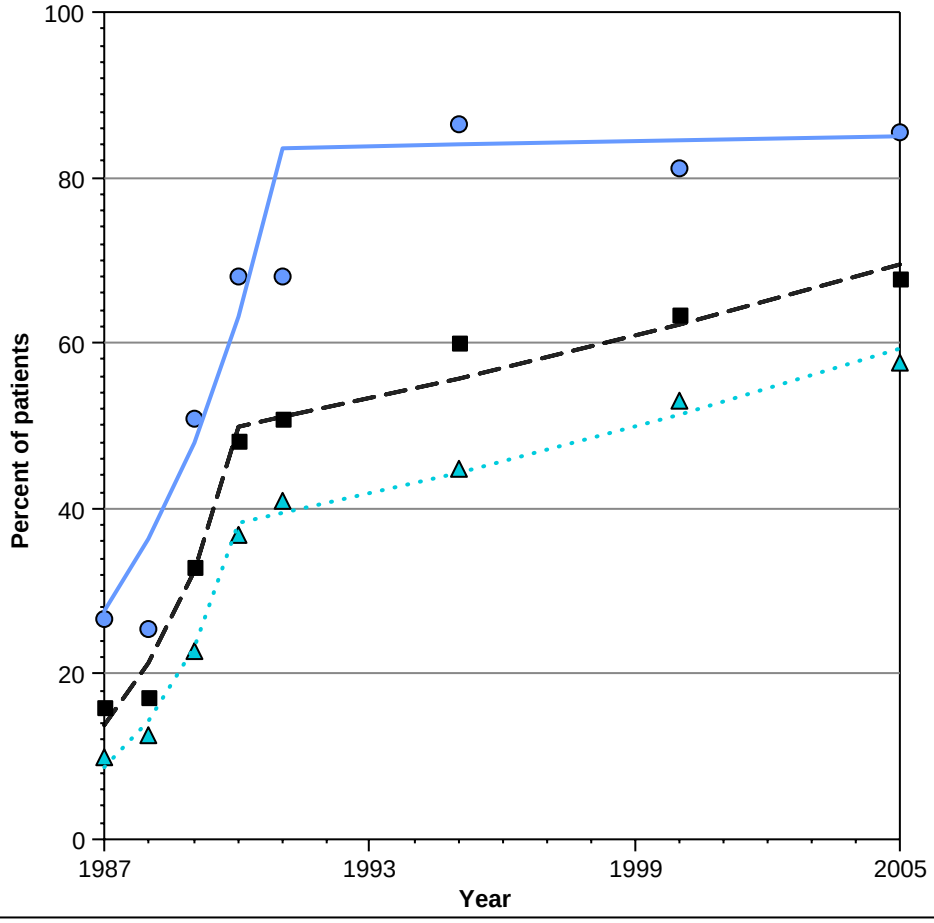
Measure

Percent of individuals, aged 20 years and older, diagnosed with stage III colon cancer who received chemotherapy or diagnosed with stage II or stage III rectal cancer who received chemotherapy with or without radiotherapy.

Period – 1987–2005

Trends – Rising rapidly from 1987 to 1990, rising moderately from 1990 to 2005.

Figure TCO1: Percent of colon stage III and rectal stages II & III cancer patients who received chemotherapy by age at diagnosis: 1987-2005



Source: SEER based Patterns of Care Studies, Applied Research Program, National Cancer Institute.
Data are age-adjusted based on the age distribution of colorectal cancer patients from 2004-2006 in the SEER 17 areas (http://seer.cancer.gov/registries/terms.html) using age groups: 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+.

Most Recent Estimates

In 2005, 60 percent of stage III colon and stage II and III rectal patients aged 65 years and older received adjuvant chemotherapy, while more than 85 percent of patients aged 20 to 64 received chemotherapy. A colorectal NCI patterns of care study is currently being conducted for diagnosis year 2010.

Healthy People 2020 Targets

There are no Healthy People targets for cancer treatment, including colorectal cancer treatment.

Groups at High Risk for Not Receiving Appropriate Treatment

Studies have found that older colorectal patients are less likely to receive adjuvant chemotherapy treatment, even after adjustment for the higher rate of pre-existing co-morbid conditions among older patients. Even elderly patients with no or very few co-morbid conditions, such as diabetes, kidney disease, or heart disease, were less likely to receive treatment. Earlier studies indicated that black patients were less likely to receive treatment than white patients; however, this disparity was not found in the 2000 NCI Patterns of Care/Quality of Care study. Older patients continue to receive adjuvant chemotherapy less often than younger patients.

Key Issues

Chemotherapy for colorectal cancer is a rapidly evolving field. Emerging treatments include chemotherapy regimens that incorporate irinotecan and/or oxaliplatin agents that interfere with DNA synthesis during cancer cell division and, more recently, anti-angiogenesis agents. These newer drugs result in better outcomes for many colorectal cancer patients, but they also are much more expensive than earlier treatments.

Additional Information on Colorectal Cancer Treatment

- Cancer Intervention Surveillance Network (CISNET), Colorectal Cancer Mortality Projections
  http://cisnet.cancer.gov/projections/colorectal
- Colon Cancer Treatment (PDQ®) — Health Professional
  http://www.cancer.gov/cancertopics/pdq/treatment/colon/HealthProfessional/
- NCI Patterns of Care/Quality of Care Studies
  http://healthservices.cancer.gov/surveys/poc/
- Rectal Cancer Treatment (PDQ®)
  http://www.cancer.gov/cancertopics/pdq/treatment/rectal/healthprofessional/
- SEER-Medicare Studies
  http://healthservices.cancer.gov/seermedicare/

Kidney Cancer Treatment

Since 2000, the use of complete nephrectomy in patients with localized and regional kidney cancer has decreased, while the rate of partial nephrectomy has increased.

Benefits of Treatment

Partial nephrectomy rather than complete removal of the kidney may prevent serious side effects, including chronic kidney disease, while producing similar outcomes.

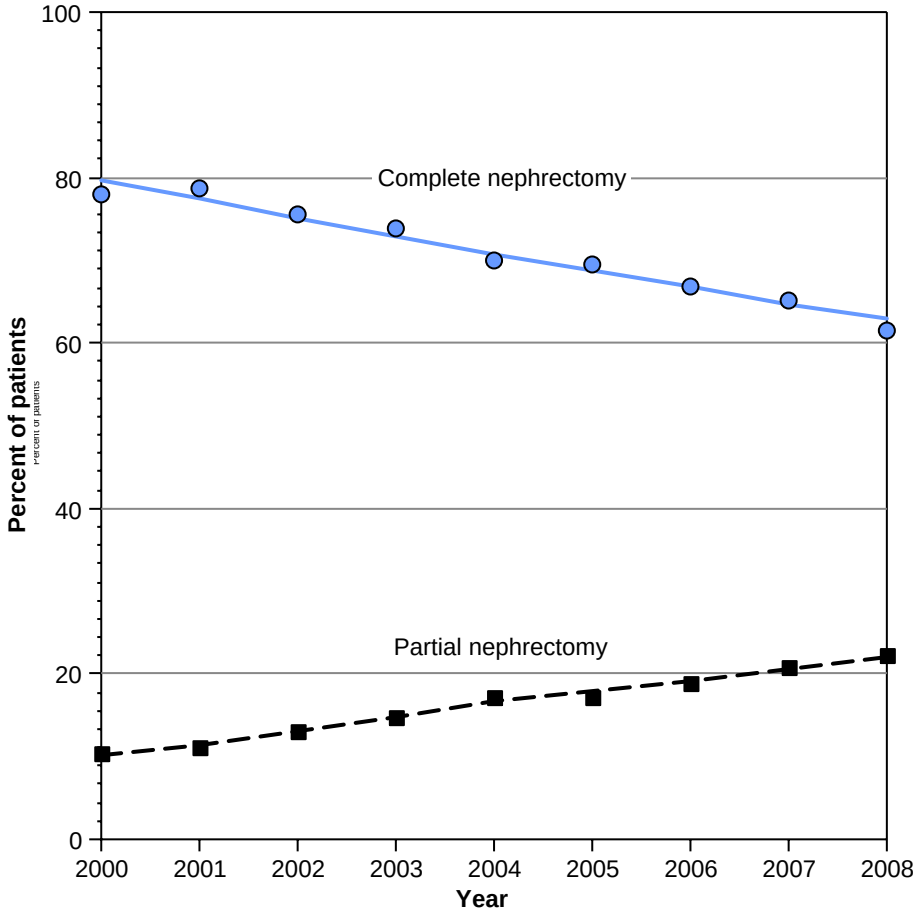
Measure

Partial nephrectomy (removal of part of the kidney) or complete nephrectomy in patients with local-regional disease.

Period – 2000–2008

Trends – Partial nephrectomy increased rapidly, APC = 13.2 percent, from 2000 to 2004 and increased more slowly from 2004 to 2008.

Figure TKI1: Percent of patients (ages 20+) diagnosed with localized/regional kidney cancer receiving partial nephrectomy or complete nephrectomy: 2000-2008



Source: SEER Program, National Cancer Institute. Incidence data are from the SEER 17 areas (http://seer.cancer.gov/registries/terms.html).
Data are age-adjusted based on the age distribution of kidney cancer patients from 2006-2008 in the SEER 17 areas (http://seer.cancer.gov/registries/terms.html) using age groups: 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+.
Complete nephrectomy includes complete, total, simple and radical nephrectomies.

Most Recent Estimates

The rate of partial nephrectomy is 22 percent. The rate of complete nephrectomy is 62 percent.

Healthy People 2020 Targets

There are no Healthy People targets for cancer treatment, including kidney cancer treatment.

Key Issues

The use of partial nephrectomy should be encouraged when appropriate.

Additional Information on Kidney Cancer Treatment

- Kidney Cancer (NCI)
  http://www.cancer.gov/cancertopics/types/kidney
- Kidney Cancer Association
  http://www.kidneycancer.org

Lung Cancer Treatment

Between 1996 and 2005, there was a substantial increase in the use of chemotherapy for patients with non-small cell lung cancer stages IIIB or IV. Older patients were less likely to receive chemotherapy than younger patients.

Benefits of Treatment

Improved survival and palliation of disease-related symptoms have been reported with the use of chemotherapy and radiation.

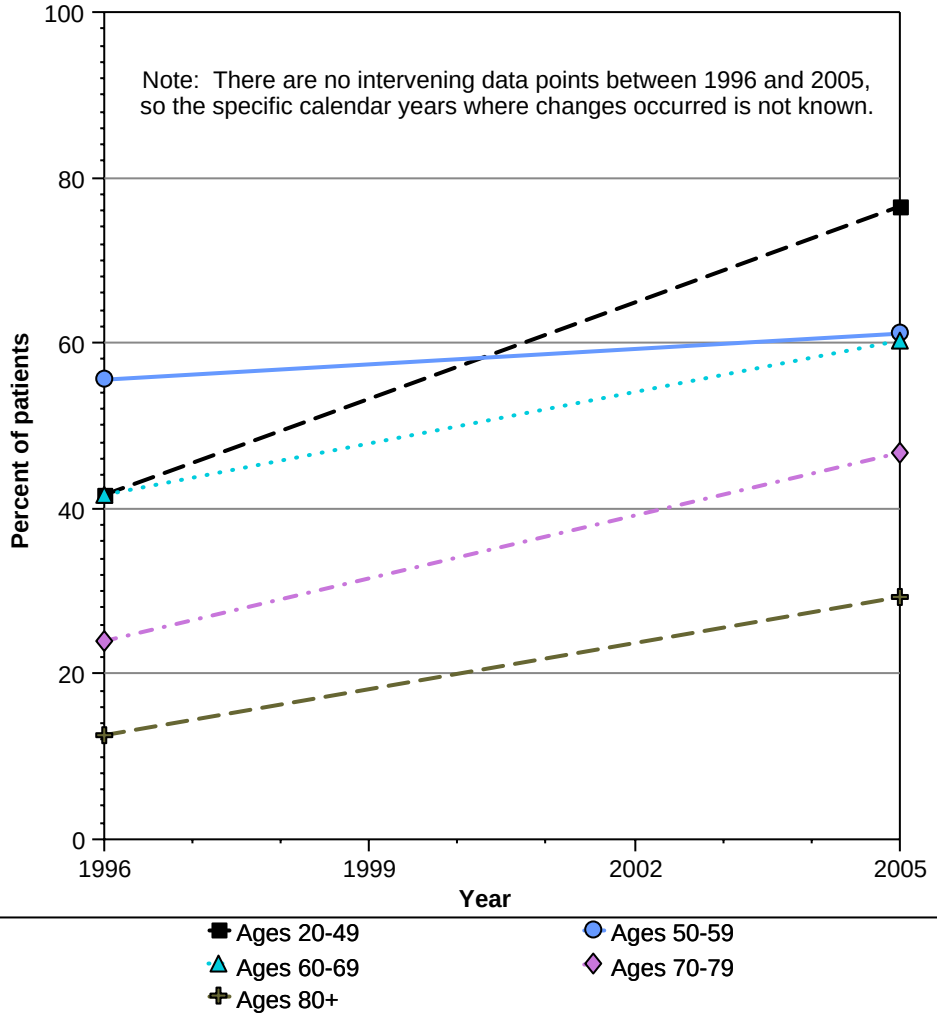
Measure

Chemotherapy following the diagnosis of stage IIIB or IV non-small cell lung cancer.

Period – 1996 and 2005

Trends – Rising in patients ages 20–49, 60–69, and 70–79.

Figure TLU1: Distribution of patients (ages 20+) diagnosed with stage IIIB or IV non-small cell lung cancer receiving any chemotherapy by age at diagnosis: 1996-2005



Source: SEER based Patterns of Care Studies, Applied Research Program, National Cancer Institute.
Data are age-adjusted based on the age distribution of lung cancer patients from 2004-2006 in the SEER 17 areas (http://seer.cancer.gov/registries/terms.html) using age groups: 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+.

Most Recent Estimates

Percent of patients diagnosed with stage IIIB or IV non-small cell lung cancer receiving chemotherapy in 2005:

- Age 20–49, 77 percent
- Age 50–59, 61 percent
- Age 60–69, 60 percent
- Age 70–79, 47 percent
- Age 80 or older, 29 percent

A lung cancer NCI patterns of care study is currently being conducted for diagnosis year 2010.

Healthy People 2020 Targets

There are no Healthy People targets for cancer treatment, including the treatment of lung cancer.

Groups at High Risk for Not Receiving Appropriate Treatment

Overall, the use of chemotherapy decreases as the age of the patient increases. Less than 50 percent of patients age 70 or older receive chemotherapy.

Key Issues

There have been significant increases in the use of chemotherapy for the treatment of advanced lung cancer in most age groups. Although patients ages 50–59 did not have a significant increase in their use of chemotherapy in 2005, these patients had a much higher use of chemotherapy than other age groups in 1996. There have been no significant increases in patients age 80 or older, as co-morbid conditions and performance status may influence their treatment decisions.

Additional Information on Lung Cancer Treatment

- Non-Small Cell Lung Cancer Treatment (PDQ®)
  http://www.cancer.gov/cancertopics/pdq/treatment/non-small-cell-lung/Patient

Ovarian Cancer Treatment

The use of paclitaxel rose following its approval by the Food and Drug Administration (FDA), but use has decreased in the most recent year for patients with late-stage disease.

Benefits of Treatment

An analysis of two pooled studies in early-stage ovarian cancer showed an increase in overall survival with the administration of chemotherapy. Guidelines suggest intraperitoneal (IP) chemotherapy for later stage ovarian cancer.

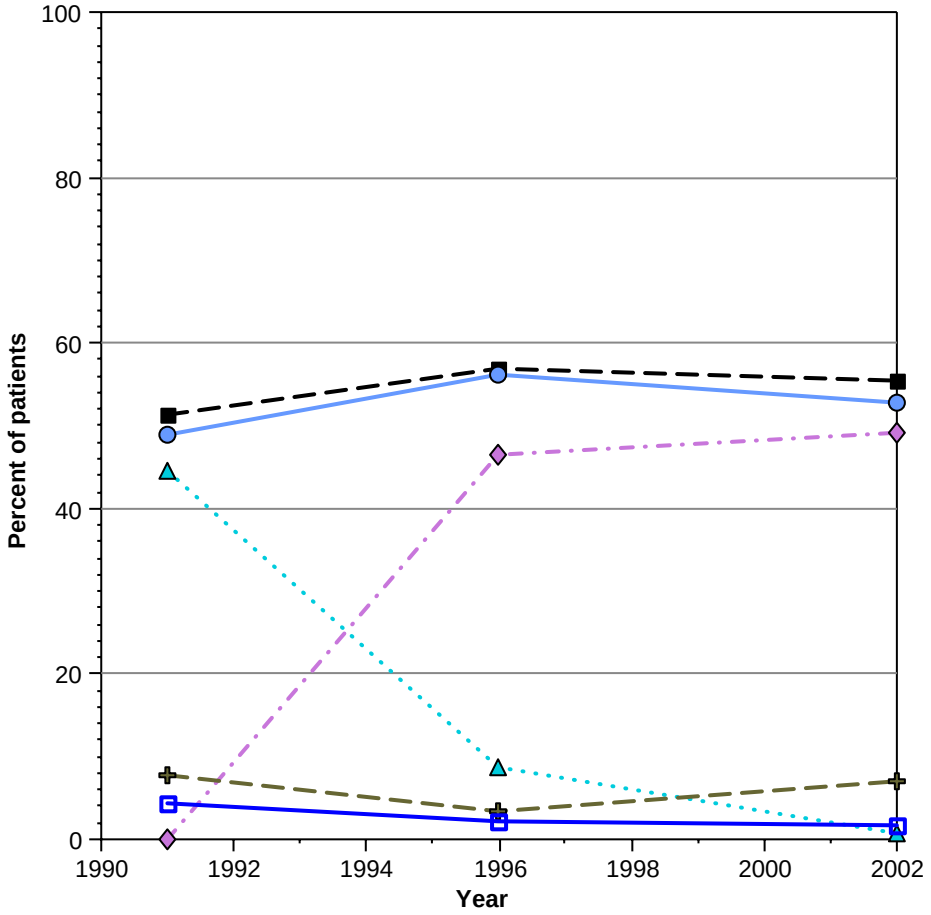
Measure

Percentage of individuals diagnosed with ovarian cancer who received chemotherapy by stage of diagnosis.

Period – 1991, 1996, 2002

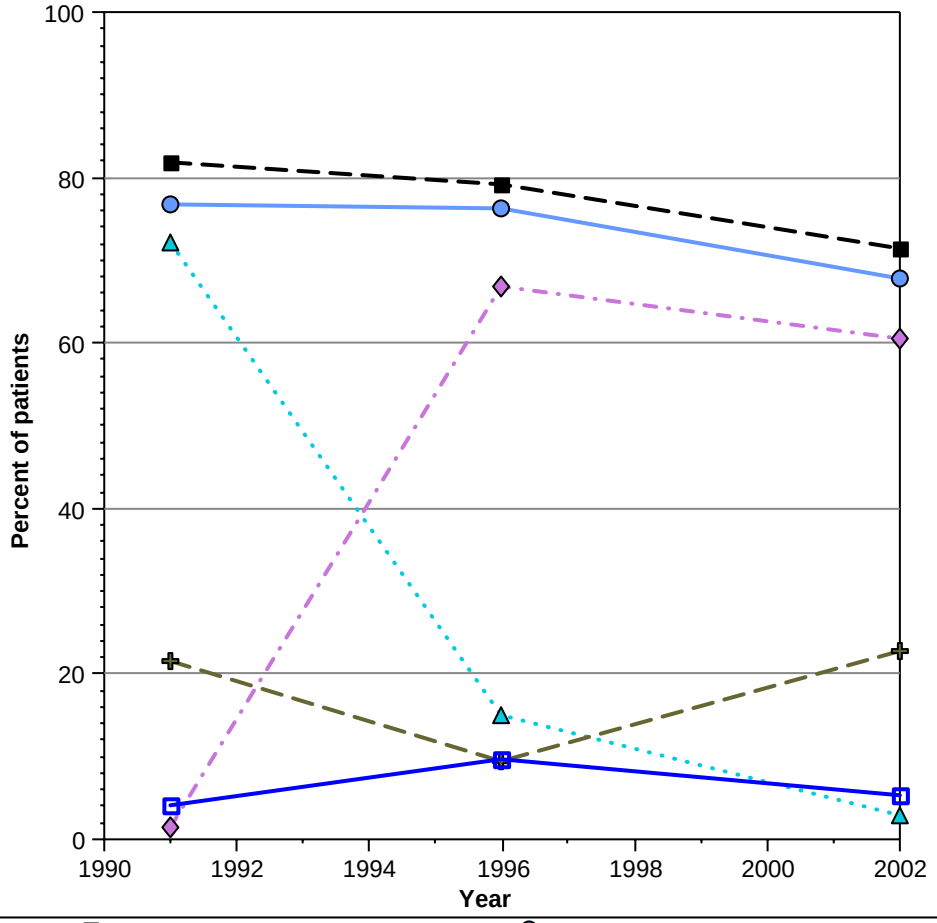
Trends – From 1996 to 2002, for women with stage I or II, the use of chemotherapy was stable. Women with stage III and IV have had a decrease in the use of chemotherapy over the same time period.

Figure TOV1: Percent of patients (ages 20+) diagnosed with stage I or II ovarian cancer receiving specific chemotherapeutic and hormonal agents: 1991-2002



Source: SEER based Patterns of Care Studies, Applied Research Program, National Cancer Institute.
Data are age-adjusted based on the age distribution of ovarian cancer patients from 2001-2003 in the SEER 17 areas (http://seer.cancer.gov/registries/terms.html) using age groups: 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+.

Figure TOV2: Percent of patients (ages 20+) diagnosed with stage III or IV ovarian cancer receiving specific chemotherapeutic and hormonal agents: 1991-2002



Source: SEER based Patterns of Care Studies, Applied Research Program, National Cancer Institute.
Data are age-adjusted based on the age distribution of ovarian cancer patients from 2001-2003 in the SEER 17 areas (http://seer.cancer.gov/registries/terms.html) using age groups: 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+.

Most Recent Estimates

In 2002, 56 percent of women with stage I or II ovarian cancer received chemotherapy compared to 72 percent of women with stage III or IV disease. An NCI patterns of care study of ovarian cancer is being planned for 2013.

Healthy People 2020 Targets

There are no Healthy People targets for cancer treatment, including for ovarian cancer treatment.

Groups at High Risk for Not Receiving Appropriate Treatment

Paclitaxel is recommended for the treatment of ovarian cancer. There has been a non-significant decrease in its use for women with stage III or IV disease between 1996 and 2002.

Key Issues

Taxol was approved for the treatment of ovarian cancer in December 1992. Between 1991 and 1996, the dissemination of taxol into community practice can be seen. There was a substitution of taxol for cyclophosphamide in those years.

The use of IP chemotherapy is recommended for late-stage ovarian cancer. Research is needed to examine the current use of IP therapy.

Additional Information on Ovarian Cancer Treatment

- Detailed Guide: Ovarian Cancer—How is Ovarian Cancer Treated (ACS)
  http://www.cancer.org/docroot/CRI/content/CRI_2_4_4X_How_is_ovarian_cancer_treated_33.asp
- Ovarian Cancer Health Center (WebMD)
  http://www.webmd.com/ovarian-cancer/default.htm
- Ovarian Cancer: Treatment (NCI)
  http://www.cancer.gov/cancertopics/treatment/ovarian

Prostate Cancer Treatment

The use of hormonal therapy for localized/regional disease increased with the age of the patient.

Benefits of Treatment

A meta-analysis comparing early hormonal therapy with hormonal therapy given later to men with locally advanced prostate cancer found a decrease in overall mortality for those who received early hormonal therapy, whether or not the patient had other treatment. Hormonal therapy is currently recommended for men at high risk of recurrence.

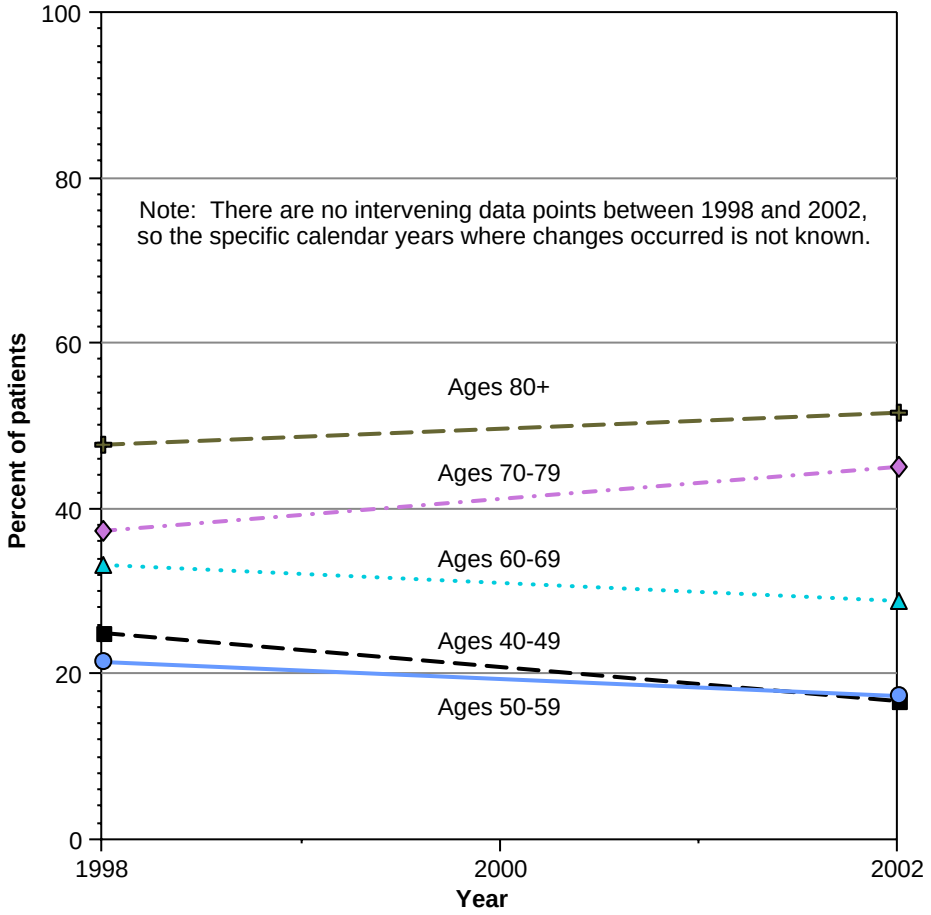
Measure

Hormonal therapy following the diagnosis of prostate cancer.

Period – 1998 and 2002

Trends – Between 1998 and 2002, there were no significant changes in the use of hormonal therapy.

Figure TPR1: Percent of men (ages 40+) with localized/regional prostate cancer and receiving hormonal therapy by age at diagnosis: 1998-2002



Source: SEER based Patterns of Care Studies, Applied Research Program, National Cancer Institute.
Data are age-adjusted based on the age distribution of prostate cancer patients from 2004-2006 in the SEER 17 areas (http://seer.cancer.gov/registries/terms.html) using age groups: 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+.

Most Recent Estimates

The percentage of men with localized/regional prostate cancer given hormonal therapy was highest for those aged 80 years or older (52 percent) and lowest for men aged 40–49 years and 50–59 years (17 percent). An update on hormone use will be available in 2013.

Healthy People 2020 Targets

There are no Healthy People targets for cancer treatment, including prostate cancer treatment.

Key Issues

Currently, hormone therapy is recommended only for patients at high risk of recurrence. Zeliadt found that in 1999, African-American men aged 65 years or older were less often given androgen depravation therapy than were white men.

Additional Information on Prostate Cancer Treatment

- Learn About Cancer (ACS)
  http://www.cancer.org/docroot/lrn/lrn_0.asp
- Prostate Cancer Treatment (PDQ®)
  http://www.cancer.gov/cancertopics/pdq/treatment/prostate/Patient
- Us TOO Prostate Cancer Education and Support
  http://www.ustoo.org/
- Zeliadt SB, Potosky AL, Etzioni R, Ramsey SD, Penson DF. Racial disparity in primary and adjuvant treatment for nonmetastatic prostate cancer: SEER-Medicare trends 1991 to 1999. Urology 2004 Dec;64(6):1171–6.

Life After Cancer

More and more people are benefiting from the early detection of cancer and its successful treatment. These medical advances are improving both quality of life and length of survival, permitting many survivors to continue full and productive lives at home and at work.

Nevertheless, national data regarding life after cancer are limited. They include:

- The economic impact of cancer (Cost of cancer care)
- Survival rates for cancer by each stage at diagnosis (Survival)
- Cancer survivors' smoking status (Cancer survivors and smoking)

Few national measures are available that reflect health-related quality of life for cancer survivors, such as:

- The ability of cancer survivors to perform daily tasks
- The impact of cancer on employment and insurability
- The effects of cancer on family and loved ones

These and other measures related to life after cancer are subjects of intense research interest, as well as matters of great concern to cancer survivors themselves. Future editions of the *Cancer Trends Progress Report* will include additional measures in this area.

Costs of Cancer Care

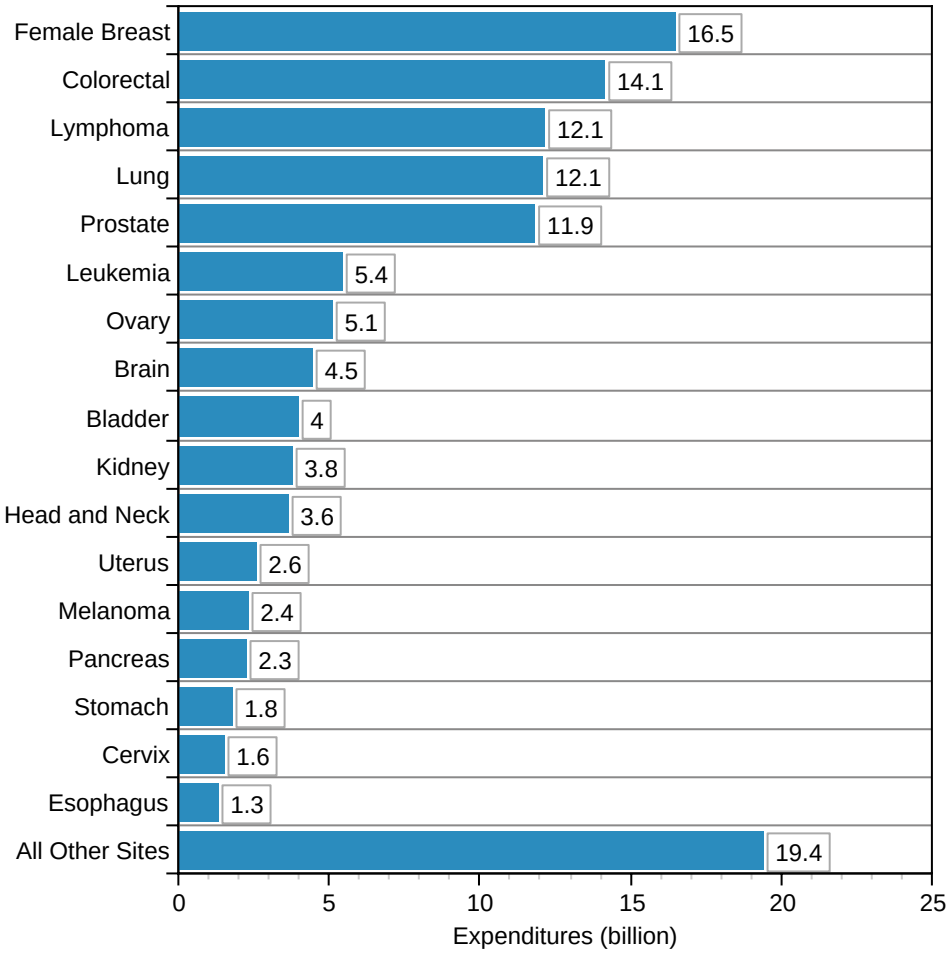
National cancer care expenditures were an estimated $124.6 billion in 2010.

The financial costs of cancer care are a burden to people diagnosed with cancer, their families, and society as a whole. National cancer care expenditures have been steadily increasing in the United States. Cancer care accounted for an estimated $124.6 billion in medical care expenditures in the United States in 2010. In the near future, cancer costs may increase at a faster rate than overall medical expenditures. As the population ages, the absolute number of people treated for cancer will increase faster than the overall population, and cancer prevalence will increase relative to other disease categories—even if cancer incidence rates remain constant or decrease somewhat. Costs are also likely to increase as new, more advanced, and more expensive treatments are adopted as standards of care.

The national economic burden of cancer care in 2010 is shown below for bladder, brain, female breast, cervical, colorectal, esophageal, head and neck, kidney, lung, ovarian, pancreatic, prostate, stomach, and uterine cancers, as well as lymphoma, leukemia, and melanoma. All other cancers are combined as a single category.

National expenditures were largest for lymphoma and female breast, colorectal, lung, and prostate cancers, reflecting prevalence of disease, treatment patterns, and costs for different types of care.

Figure LCO1: Estimates of national expenditures for cancer care in 2010 (in billions of dollars) by cancer site



Source: Mariotto AB, Yabroff KR, Shao Y, Feuer EJ, Brown ML. Projections of the cost of cancer care in the U.S.: 2010-2020. J Natl Cancer Inst 2011; 103(2):117-28.
Cancer Prevalence and Cost of Care Projections:http://costprojections.cancer.gov/
Cost estimates expressed in 2010 dollars using CMS cost adjusters and adjusted for out-of- pocket expenditures, including co-payments and deductibles.
Estimates for the population younger than 65 were developed using ratios of cost in the younger than 65 and older 65 populations from studies conducted in managed care populations.

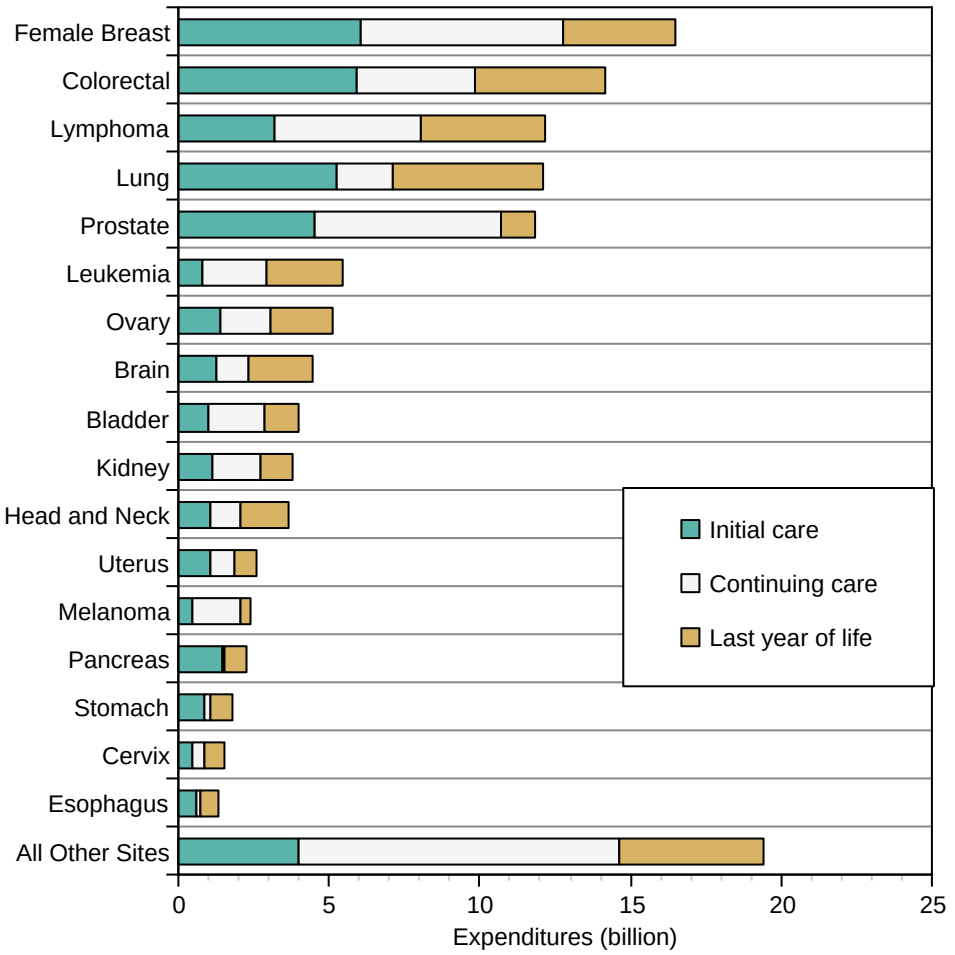
Expenditures associated with cancer are commonly reported by phase of care, which divides care into clinically relevant periods: (1) the initial phase, which is the period after diagnosis, (2), the continuing phase or the monitoring phase, which is the period between the initial phase and last year of life phase, and (3) the last year of life. Expenditures for cancer patients with short survival are typically grouped with the last year of life phase because their care is most similar to care received at the end of life. For all cancers, annualized costs associated with cancer are highest in the initial and last year of life phases and lowest in the continuing phase of care, following a “u-shaped” curve.

National expenditures in 2010 are calculated by combining 2010 cancer prevalence by cancer site and phase of care with annualized expenditures associated with cancer care in 2010 dollars.

The following figures display expenditures by phase of care and the proportion of expenditures by phase of care for the 17 cancer sites and all cancer sites combined. Estimates do not include expenditures related to screening, which are likely to be substantial in 2010.

Cancers with the largest expenditures in the initial phase of care in 2010 are female breast, colorectal, lung, and prostate. In the last year of life phase of care, cancers with the largest expenditures are lung, colorectal, lymphoma, and female breast. In the continuing phase of care, female breast, prostate, lymphoma, and colorectal cancers have the largest expenditures.

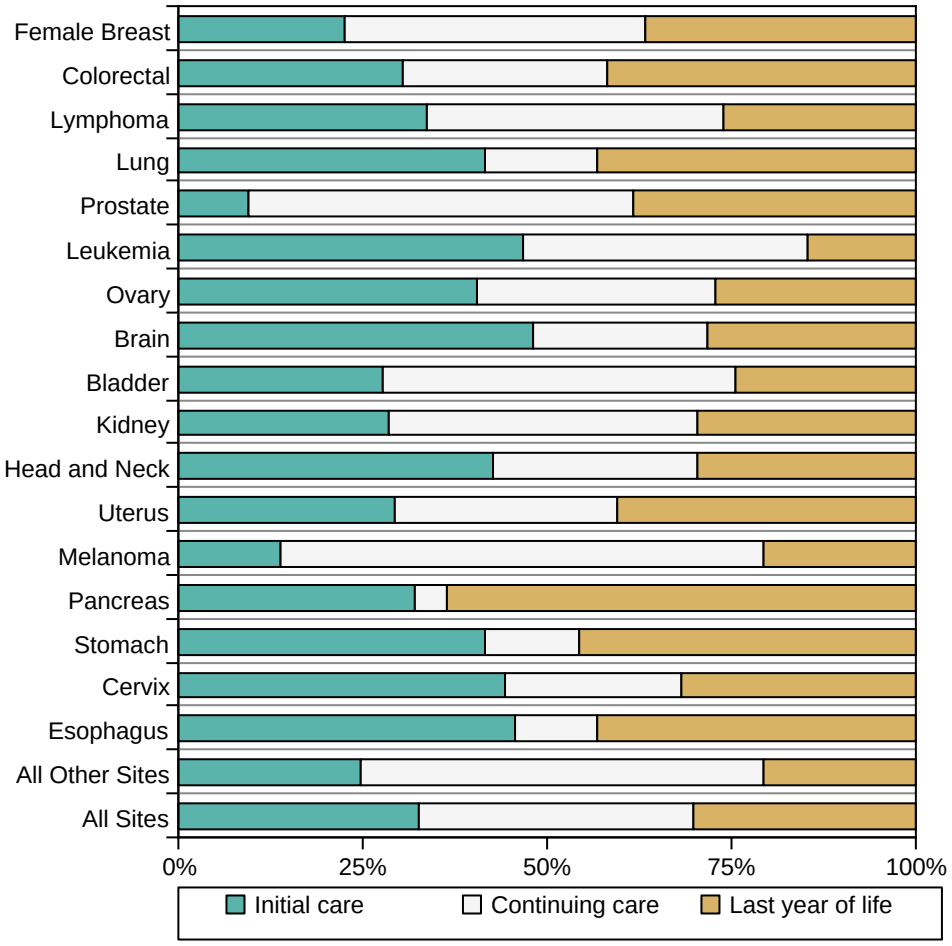
Figure LCO2: Estimates of national expenditures for cancer care in 2010 (in billions of dollars) by cancer site and phase of care



Source: Mariotto AB, Yabroff KR, Shao Y, Feuer EJ, Brown ML. Projections of the cost of cancer care in the U.S.: 2010-2020. J Natl Cancer Inst 2011; 103(2):117-28.
Cancer Prevalence and Cost of Care Projections:http://costprojections.cancer.gov/
Cost estimates expressed in 2010 dollars using CMS cost adjusters and adjusted for out-of- pocket expenditures, including co-payments and deductibles.
Estimates for the population younger than 65 were developed using ratios of cost in the younger than 65 and older 65 populations from studies conducted in managed care populations.

In this cross-sectional snapshot of national expenditures for cancer care in 2010, the proportion of expenditures in each phase of care varies by cancer type. For cancer types with short survival following diagnosis, such as pancreas, stomach, and lung, the majority of expenditures in 2010 are for patients in the initial and last year of life phases, with only a small percentage for patients in the continuing phase. Other cancer types with longer survival, such as female breast, melanoma, and prostate, have a higher percentage of expenditures for patients in the continuing phase of care.

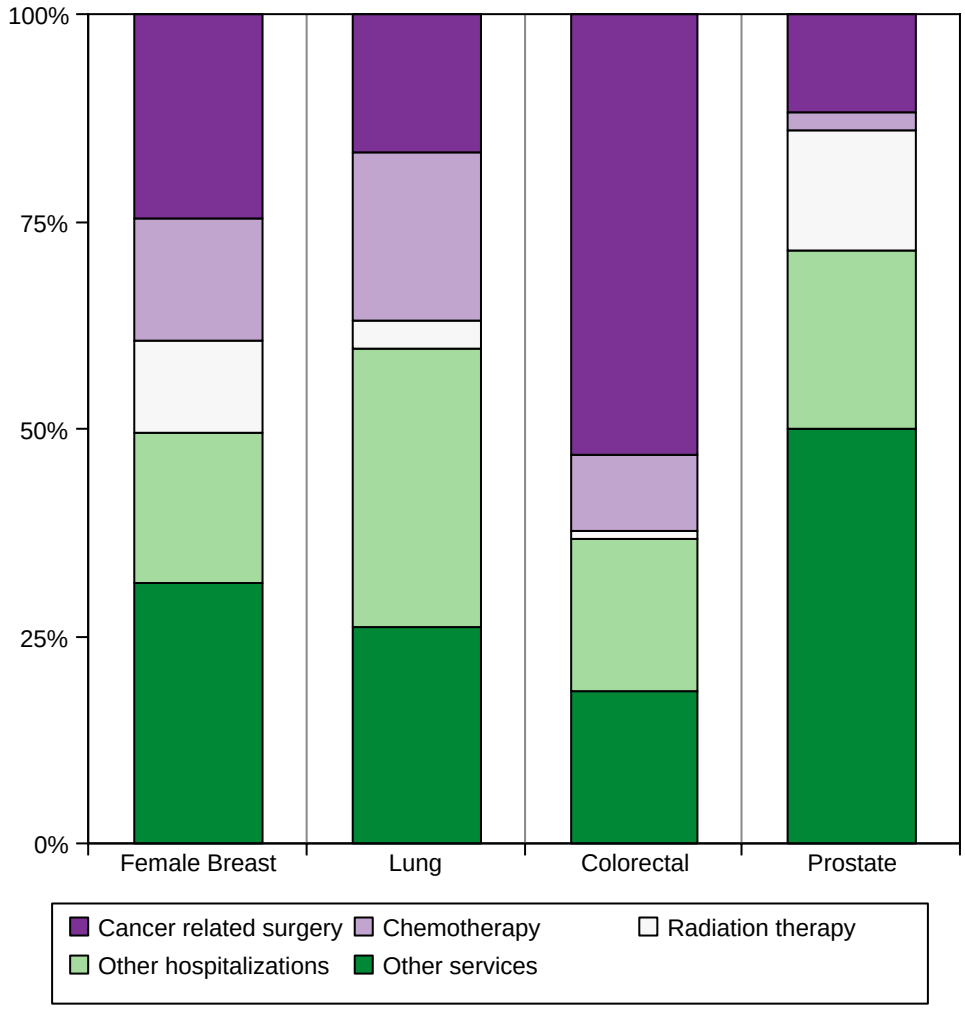
Figure LCO3: Estimates of the proportion of national expenditures for cancer care in 2010 by cancer site and phase of care



Source: Mariotto AB, Yabroff KR, Shao Y, Feuer EJ, Brown ML. Projections of the cost of cancer care in the U.S.: 2010-2020. J Natl Cancer Inst 2011; 103(2):117-28.
Cancer Prevalence and Cost of Care Projections:http://costprojections.cancer.gov/
Cost estimates expressed in 2010 dollars using CMS cost adjusters and adjusted for out-of- pocket expenditures, including co-payments and deductibles.
Estimates for the population younger than 65 were developed using ratios of cost in the younger than 65 and older 65 populations from studies conducted in managed care populations.

The types of cancer care and associated costs vary by cancer site. The percentage of Medicare payments in the first year following diagnosis in 2002 stemming from cancer-related surgery, chemotherapy, radiation therapy, other hospitalizations, and other services among the four most common cancers is listed in Figure 4. The percentage of all care represented by hospital care, either associated with cancer-directed surgery or other hospitalizations, varied for female breast (43 percent), colorectal (72 percent), lung (50 percent), and prostate cancers (33 percent). The percentage of first-year costs attributable to chemotherapy and radiation therapy also varied by cancer site.

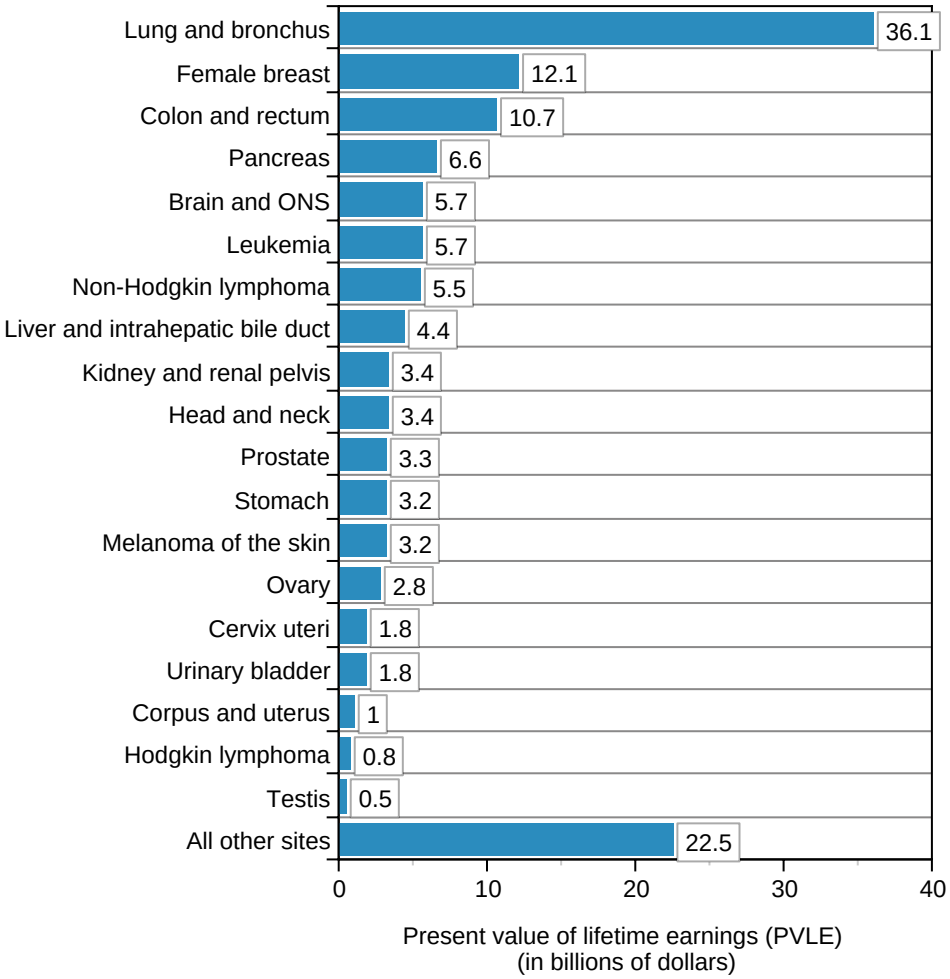
Figure LCO4: Percentage of Medicare Payments in the First Year Following Diagnosis for Cancer Care by Type of Service in 2002



Source: Warren JL, Yabroff KR, Meekins A, Topor M, Lamont E, Brown ML. Evaluation of trends in the cost of initial cancer treatment. J Natl Cancer Inst 2008;100:888-897.

Direct medical expenditures are only one component of the total economic burden of cancer. The indirect costs include losses in time and economic productivity resulting from cancer-related illness and death. Using earnings to value lost productivity caused by premature cancer deaths in the United States, mortality costs associated with an approximately 600,000 cancer deaths in 2005 are estimated to be $134.8 billion . Lost productivity because of cancer deaths is greatest for lung, colorectal, and female breast cancers. Based on projected growth and aging of the U.S. population, productivity costs will increase if cancer mortality rates are constant in the future.

Figure LCO5: Lost productivity due to cancer deaths in the United States among adults aged 20 years and older, 2005



Source: Bradley CJ, Yabroff KR, Dahman B, Feuer EJ, Mariotto A, Brown ML. Productivity costs of cancer mortality in the United States: 2000-2020. J Natl Cancer Inst 2008;100: 1763-70.

Survival

(Five-year follow up for cases diagnosed in 2003)

Five-year survival rates have improved for all sites combined.

Cancer Survival

Advances in the ways that cancer is diagnosed and treated have increased the number of people who live disease-free for long periods of time. This report looks at trends in five-year survival rates for cancer, the time period traditionally associated with good prognosis. However, some people will experience a recurrence of their cancer after five years.

In 2009, more than 12.6 million Americans were alive after having been diagnosed with invasive cancer. Among survivors, more than 2.7 million were living with a previous diagnosis of female breast cancer, more than 2.4 million had been diagnosed with prostate cancer, and more than 1.1 million had been diagnosed with colorectal cancer. More than 2.0 million of 12.6 million Americans diagnosed with invasive cancer were longer-term survivors (16.5 percent) diagnosed at least 20 years earlier.

Measure

Five-year relative cancer survival rate: The proportion of patients surviving cancer five years after diagnosis calculated in the absence of other causes of death. This rate is a ratio (expressed as a percentage) of the proportion of observed survivors in a cohort of cancer patients to the proportion of expected survivors. This report shows survival rates for cancers of the prostate, female breast, colon/rectum, and lung. It also shows survival rates for all cancers combined.

Period – 1975–2003 (year diagnosed)

Trends – Mostly rising.

All cancer sites combined: Generally rising since 1975, except for a stable period during 1992 to 1995.

Prostate: Generally rising since 1975, except for stable periods during 1992 to 1995 and 1999 to 2003.

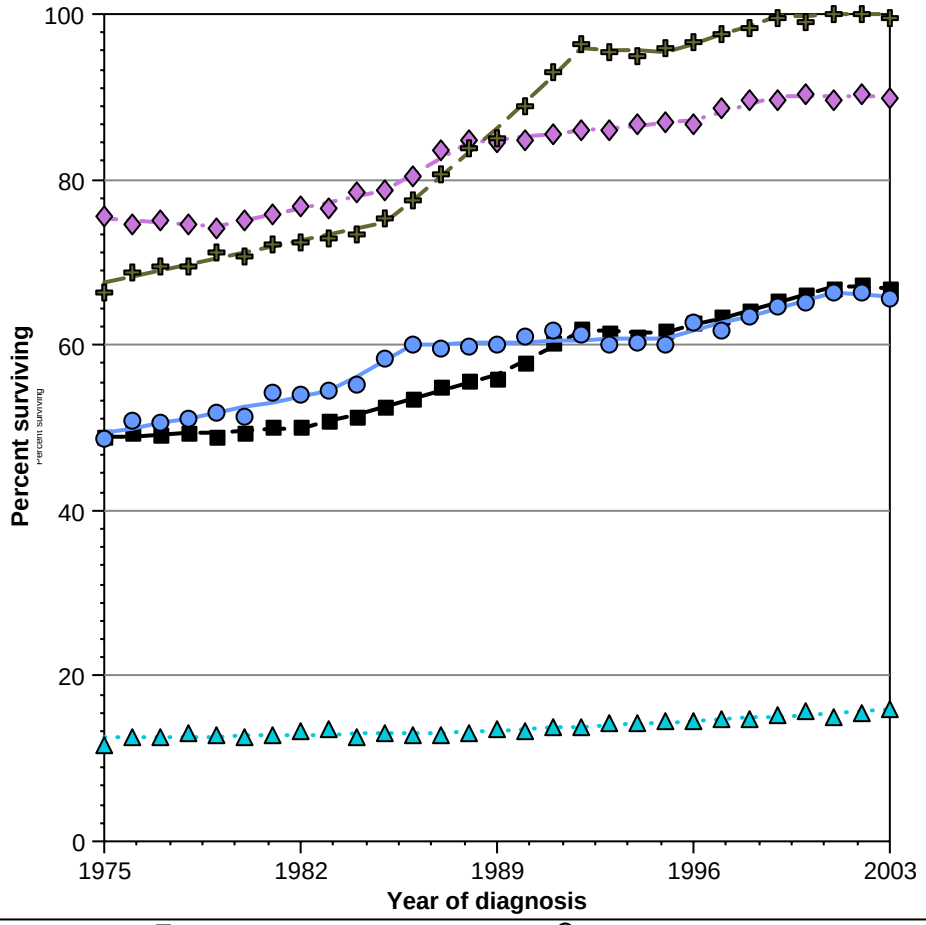
Female breast: Rising from 1979 to 1999 and stable from 1999 to 2003.

Colon and rectum: Survival rose during 1975 to1983, followed by a period of non-significant change during 1983 to 1986 and stable survival during 1986 to 1995. Survival then rose during 1995 to 2001 and was stable during 2001 to 2003.

Lung and bronchus: There has been a small but significant rise in survival since 1975. In 2003, five-year survival remained less than 20 percent.

Among the four cancer sites listed above, five-year survival rates are highest for prostate and female breast cancers, intermediate for colorectal cancer, and lowest for lung cancer.

Figure LSU1: 5-year relative survival by site: 1975-2003



Source: SEER Program, National Cancer Institute. Incidence data are from the SEER 9 areas (http://seer.cancer.gov/registries/terms.html).
Data are not age-adjusted.

Most Recent Estimates

Of the patients diagnosed with cancer (all sites) in 2003, 66.7 percent survived cancer for at least five years. Among those who were children (aged 19 years and younger) at the time of their diagnosis in 2002, 83.9 percent survived cancer for at least five years.

Healthy People 2020 Targets

Increase to 72.8 percent the proportion of cancer survivors who are living five years or longer after diagnosis.

Groups at High Risk for Limited Survival

Late stage at diagnosis is associated with limited survival. Causes of disparity in late-stage cancer diagnosis vary by site, but may include factors related to low socio-economic status (e.g., health insurance, income, or education) or related demographic attributes (e.g., age, gender, or race and ethnicity minority). This association supports the need for continued development of early detection and stage-appropriate treatment strategies, as well as expanded efforts to ensure that all Americans have equal access to these life-saving interventions.

Key Issues

Improved survival rates result from a combination of early detection, better treatments, and improved supportive care. It is difficult to separate out the contribution of each factor. Caution is also warranted against over-interpretation of improved survival as a result of early detection via screening (lead-time bias).

Despite the positive trends in five-year survival for three of the most common cancers, lung cancer survival rates remain low. Prevention efforts to reduce the incidence of lung cancer would therefore contribute to improvement in overall cancer survival rates for all cancers combined.

Additional Information on Cancer Survival

- Healthy People 2020,Topic & Objectives Cancer
  http://healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicid=5
- SEER Cancer Statistics Review, 1975-2008 (NCI)
  http://seer.cancer.gov/csr/1975_2008/
  http://seer.cancer.gov/faststats/
- Statistics for 2010 (American Cancer Society)
  http://www.cancer.org/docroot/stt/stt_0.asp

Cancer Survivors and Smoking

Despite their increased risk for chronic health conditions and premature death, many cancer survivors continue to smoke after their diagnosis. Young survivors (those younger than age 40) may be at particular risk for smoking. 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.

Cancer Survivors and Smoking

As the population of cancer survivors increases and their expected time of survival lengthens, the health behaviors of these individuals is becoming an important focus of attention. Adoption or maintenance of healthy lifestyles after cancer has the potential to reduce both cancer- and non-cancer-related morbidity. In some cases, lifestyle choices such as smoking may also affect survival. 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. Examination of survivors' smoking status was added to the Cancer Trends Progress Report in the last issue. We update these numbers through 2010 here.

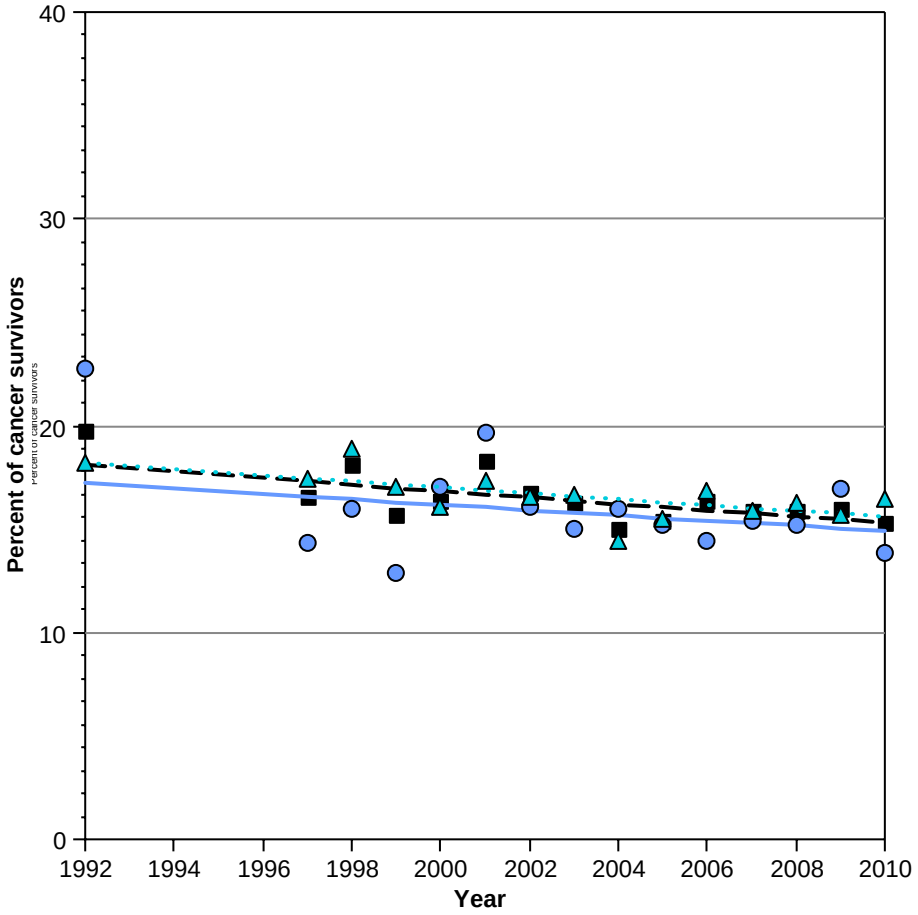
Measure

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 were asked whether they were a current smoker.

Period – 1992–2010

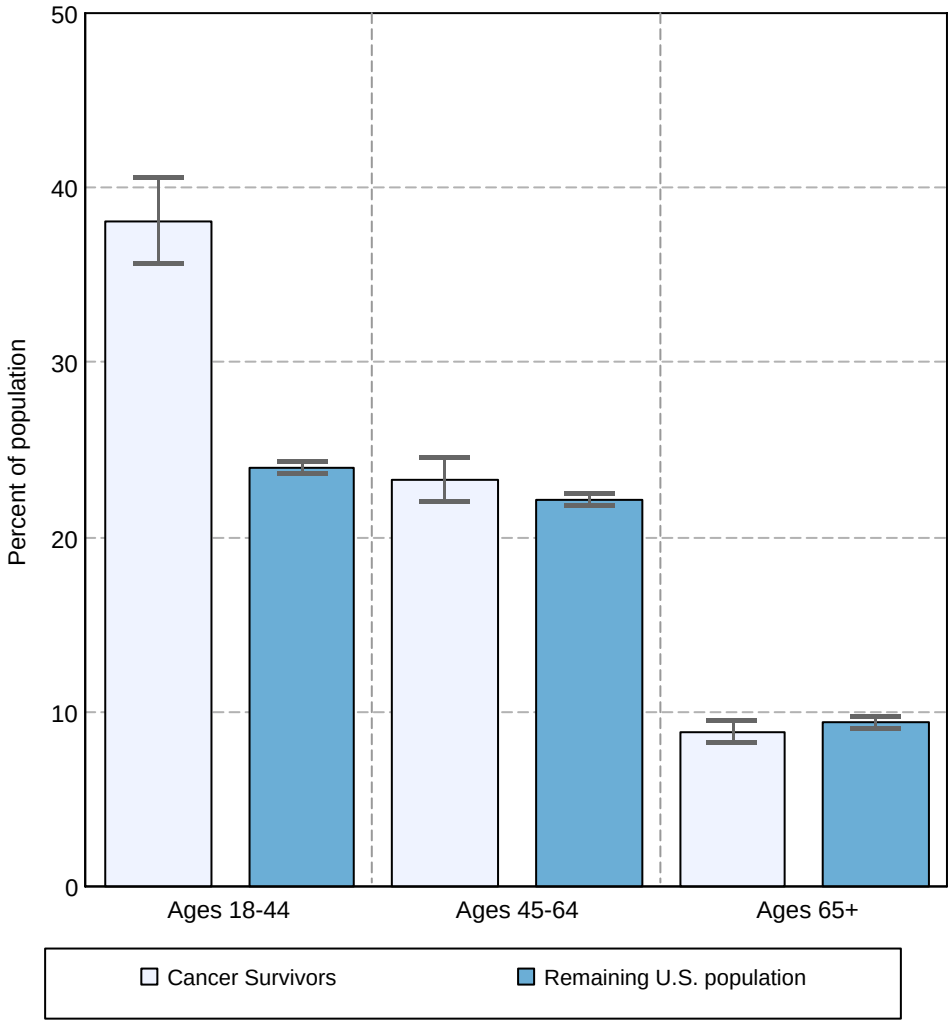
Trends – Declining slowly.

Figure LCS1: Percentage of cancer survivors aged 18 years and older who were current cigarette smokers by sex: 1992-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted based on the age distribution of cancer patients diagnosed in 2000 in the SEER 17 areas (http://seer.cancer.gov/registries/terms.html) using age groups: 18-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+.

Figure LCS2: Percentage of current smokers among cancer survivors and remaining U.S. population by age : 2000-2010



Source: Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey.
Data are age-adjusted to the 2000 standard using age groups: 18-24, 25-34, 35-44, 45-64, 65+. Analysis uses the 2000 Standard Population.

Most Recent Estimates

Based on estimates adjusted for the age distribution of cancer patients diagnosed in the SEER program (figure LCS1), the percent of adult cancer survivors who currently smoke is decreasing over time, and the rate of decline is similar for both men and women. However, Figure LCS2 presents estimates of smoking prevalence, age-adjusted to the 2000 U.S. standard population to permit comparison with the U.S. population at large. These graphs show that cancer survivors aged 18–44 report smoking at rates higher than those reported for the rest of the population. Cancer survivors older than age 44 report smoking rates similar to those of the rest of the population.

Healthy People 2020 Targets

There is no Healthy People 2020 target for smoking rates among cancer survivors. However, it is reasonable to set this at the goal determined for the general population, which is to decrease to 12 percent the proportion of people who smoke.

Groups at High Risk for Continuing to Smoke After Surviving Cancer

Analysis of NHIS data (2000–2010) by age suggests that younger survivors (those younger than age 40) are at greater risk for being current smokers than either older cancer survivors or those in the general population. Survivors of lung, head and neck, and cervical cancers—cancers for which there is a known association between smoking and cancer risk—are at higher risk of being current smokers than survivors of other cancer sites.

Key Issues

Despite the known association between smoking and cancer incidence and mortality, a significant number of survivors continue to smoke after diagnosis. Further, because these figures are based on self-report, they may underestimate the actual proportion of survivors who smoke.

Efforts are needed to ensure all individuals diagnosed with cancer are asked about their smoking status and provided evidence-based smoking cessation programs, including counseling and medications as appropriate. Screening of smoking status among family members and caregivers of cancer survivors is also important, as their behaviors can adversely affect survivors' health.

Additional Information on Cancer Survivors and Smoking

- Bellizzi KM, Rowland JH, Jeffery DD, McNeel T. Health behaviors of cancer survivors: examining opportunities for cancer control intervention. J Clin Oncol 2005;23(34):8884–93.
- Cancer 2006;106(1):17–27.
- Demark-Wahnefried W, Pinto BM, Gritz ER. Promoting health and physical function among cancer survivors: potential for prevention and questions that remain. J Clin Oncol 2006;24(32):5125–31.
- Gritz ER, Demark-Wahnefried W. Health behaviors influence cancer survival. J Clin Oncol 2009;27(12):1930–2.
- Gritz ER, Fingeret MC, Vidrine DJ, Lazev AB, Mehta NV, Reece GP. Successes and failures of the teachable moment: smoking cessation in cancer patients.
- Online smoking information and cessation resources:
    - http://www.smokefree.gov/
    - http://www.cancer.gov/cancertopics/smoking
    - http://women.smokefree.gov
    - http://smokefree.gov/smokefreetxt/

End of Life

- Mortality
- Person-Years of Life Lost

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 final section of the *Cancer Trends Progress Report – 2011/2012 Update* provides national data not only on cancer mortality by major sites, but also in terms of years of life lost to cancer—a measure that emphasizes the tragedy of common cancers that strike people at a relatively young age.

As highlighted at the beginning of this report, the news is good. For the first time since the government began collecting mortality data early in the last century, cancer death rates began to decline in 1993. It is our job as a nation to maintain and accelerate this trend. Future editions of this report will continue to document our progress in the ongoing battle against deaths from cancer.

Mortality
(Through 2008)

After several decades of steady increases from 1975, the U.S. cancer death rate stabilized from 1991 to 1994 and significantly declined from 1994 to 1998 with a non-significant decline from 1998 to 2001 and falling death rates from 2001 to 2008.

Measuring Cancer Deaths

In 2008, cancers of the female breast, prostate, lung, and colon/rectum accounted for more than one-half of all cancer deaths in the United States. Lung cancer alone claimed 28 percent of the lives lost to cancer. According to American Cancer Society projections, in 2010 there were 569,490 cancer deaths overall, including 157,300 deaths from lung cancer; 51,370 from cancers of the colon/rectum; 39,840 from female breast cancer; 36,800 deaths from cancer of the pancreas; and 32,050 from prostatecancer. Cancer mortality is usually measured as the annual number of deaths from cancer for every 100,000 people, adjusted to a standard population.

Measure

The number of cancer deaths per 100,000 people per year, age-adjusted to a U.S. 2000 standard population.

Period – 1975–2008

Trends

All sites combined: After steady increases in death rates among both sexes combined from 1975 to 1991, the U.S. cancer death rate stabilized from 1991 to 1994 and significantly declined from 1994 to 1998 with a non-significant decline from 1998 to 2001, followed by falling death rates from 2001 to 2008. Among men, death rates increased through 1990, were stable from 1990 to 1993, and fell thereafter. Among women, death rates increased from 1975 to 1991 and fell from 1991 to 2008.

Colorectal cancer: Death rates among women fell from 1975 to 2008. Among men, rates fell from 1984 to 2008.

Female breast cancer: After rising from 1975 to 1990, death rates have steadily fallen.

Lung cancer: Death rates among men rose from 1975 to 1990, with non-significant change from 1990 to 1993 and falling rates from 1993 to 2008. Death rates among women rose from 1975 to 2003 and fell from 2003 to 2008.

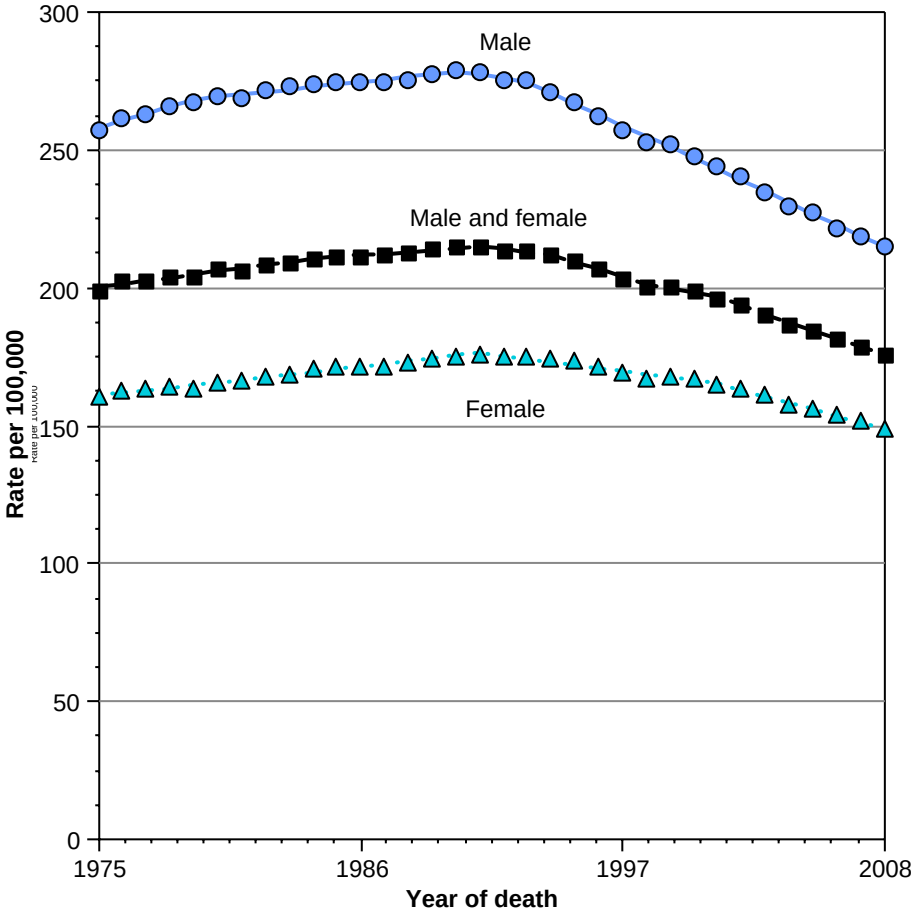
Prostate cancer: After increasing from 1975 to 1991, prostate cancer death rates fell from 1994 to 2008.

Uterine cervix: Death rates fell from 1975 to 2003, followed by a period of non-significant change from 2003 to 2008.

Oral cavity and pharynx: Death rates were stable from 1975 to 1979, followed by a period of falling rates from 1979 to 2008.

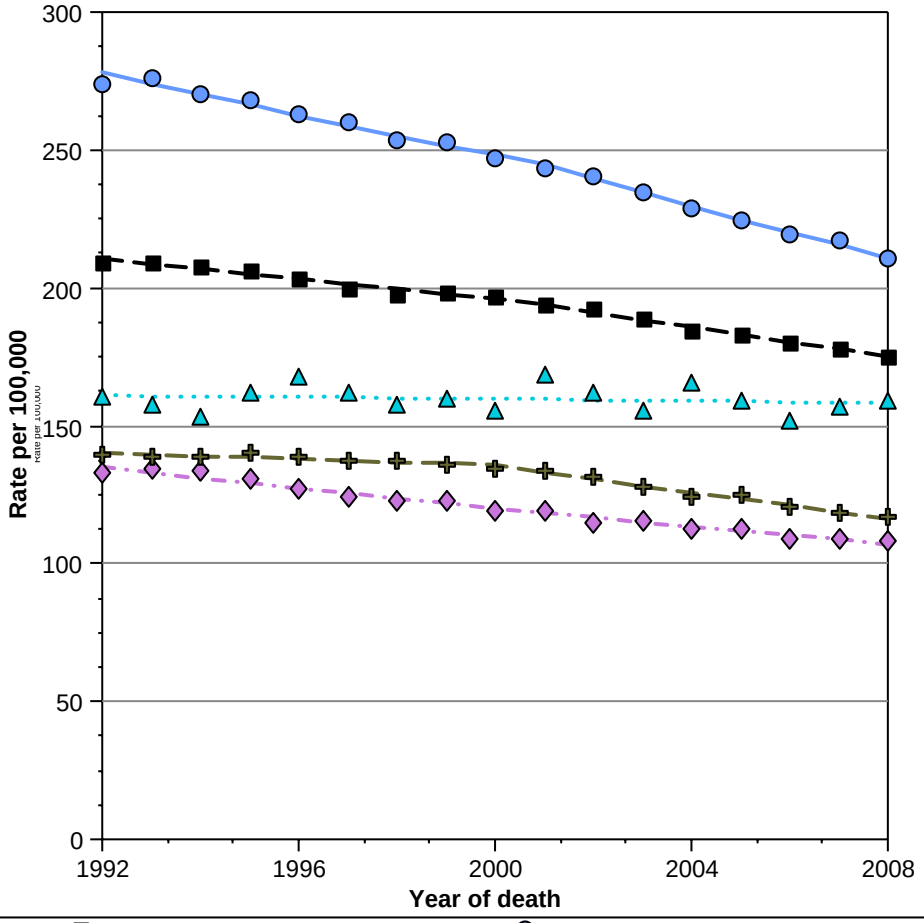
Melanoma of the skin: Death rates rose from 1975 to 1989 and were stable thereafter.

Figure EMO1: Death rates for all cancers by sex: 1975-2008



Source: National Center for Health Statistics data as analyzed by NCI.
Data are age-adjusted to the 2000 US standard population using age groups: <1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+. Analysis uses the 2000 Standard Population as defined by NCHS(http://www.cdc.gov/nchs/data/statnt/statnt20.pdf).

Figure EMO2: Death rates for all cancers by race/ethnicity: 1992-2008



Source: National Center for Health Statistics data as analyzed by NCI.
Data are age-adjusted to the 2000 US standard population using age groups: <1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+. Analysis uses the 2000 Standard Population as defined by NCHS(http://www.cdc.gov/nchs/data/statnt/statnt20.pdf).

Most Recent Estimates

In 2008, the death rate for all cancers was 175.67 per 100,000 people, the death rate for lung cancer was 49.6 per 100,000 people, the death rate for prostate cancer was 23.0 deaths per 100,000 people per year, the death rate for female breast cancer was 22.5 per 100,000 people, and the death rate for colorectal cancer was16.4 per 100,000 people. In 2008, the death rate for melanoma was 2.7 per 100,000 people, with 2.5 oropharyngeal cancer deaths and 2.4 uterine cervical cancer deaths per 100,000 people.

Healthy People 2020 Targets

Reduce the overall cancer death rate to 160.6 cancer deaths per 100,000 people per year by 2020.

Reduce the lung cancer death rate to 45.5 deaths per 100,000 people per year by 2020.

Reduce the prostate cancer death rate per 100,000 to 23.5 deaths per 100,000 people per year by 2020.

Reduce the female breast cancer death rate per 100,000 deaths to 22.9 deaths per 100,000 people per year by 2020.

Reduce the colorectal death rate per 100,000 to 14.5 deaths per 100,000 people per year by 2020.

Reduce the melanoma death rate per 100,000 to 2.4 deaths per 100,000 people per year by 2020.

Reduce the oropharyngeal cancer death rate per 100,000 to 2.5 deaths per 100,000 people per year by 2020.

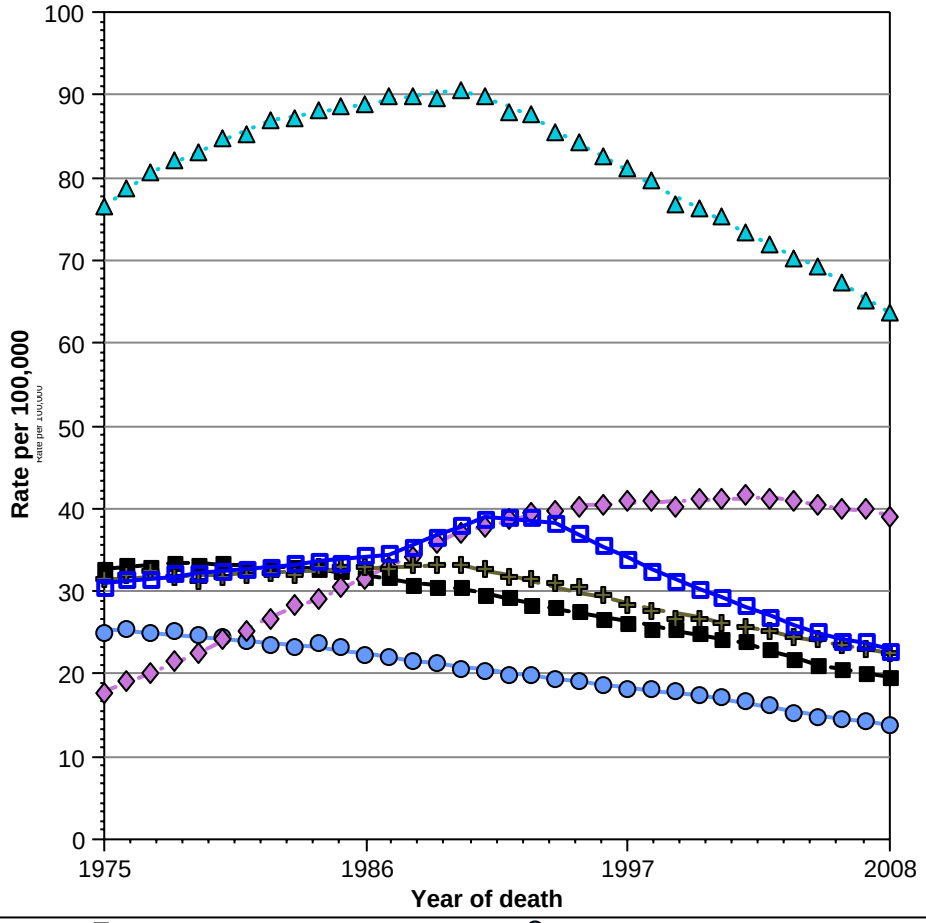
Reduce the uterine cervix death rate per 100,000 deaths to 2.4 deaths per 100,000 people per year by 2020.

Groups at High Risk for Cancer Deaths

Blacks experience the highest cancer death rates, followed by whites, who also have cancer death rates that exceed the Healthy People 2020 objective of 160.6 deaths or less per 100,000 people per year. In 2008, cancer death rates among Asian and Pacific Islanders, American Indians and Alaska Natives, and persons of Hispanic ethnicity were lower than the Healthy People 2010 objective.

Studies have shown that persons self-reported as American Indian, Asian, or Hispanic on census and survey records may sometimes be reported as white or non-Hispanic on the death certificate, resulting in an underestimation of deaths and death rates for these groups. http://www.cdc.gov/nchs/data/series/sr_02/sr02_148.pdf.

Figure EMO3: Death rates for top 5 most common cancers by cause of death and sex: 1975-2008

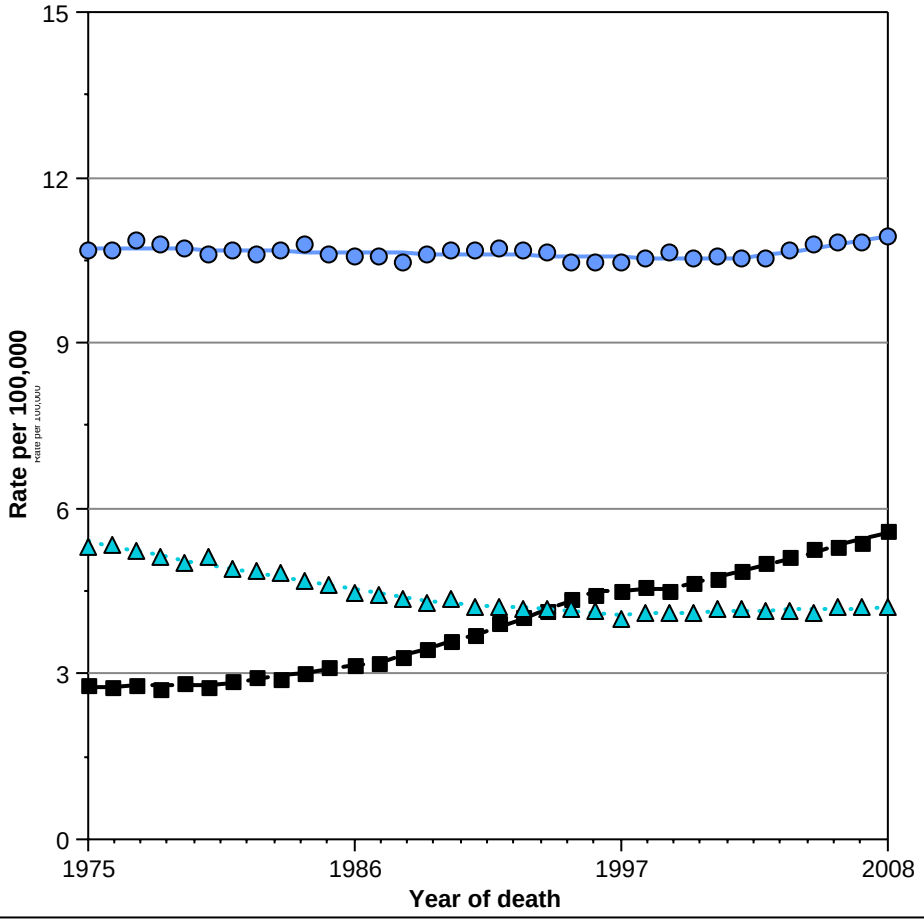


Source: National Center for Health Statistics data as analyzed by NCI.
Data are age-adjusted to the 2000 US standard population using age groups: <1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+. Analysis uses the 2000 Standard Population as defined by NCHS(http://www.cdc.gov/nchs/data/statnt/statnt20.pdf).
Restricted to cancer sites with 2007 mortality rates of 10 per 100,000 or more.

Cancer Sites with Increasing Mortality Trends

Mortality rates are currently increasing for only a few cancer sites. These cancer sites include the pancreas, liver and intrahepatic bile duct, and corpus and unspecified uterus.

Figure EMO4: Death rates for sites with current increasing trends^ by cause of death: 1975-2008



Source: National Center for Health Statistics data as analyzed by NCI.
Data are age-adjusted to the 2000 US standard population using age groups: <1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+. Analysis uses the 2000 Standard Population as defined by NCHS(http://www.cdc.gov/nchs/data/statnt/statnt20.pdf).
Restricted to cancer sites with 2008 mortality rates between 3 and 10 per 100,000.
^ Annual percent change (APC) for final Joinpoint segment is greater than zero (P<=0.05).

Other Cancer Sites with Decreasing Mortality Trends

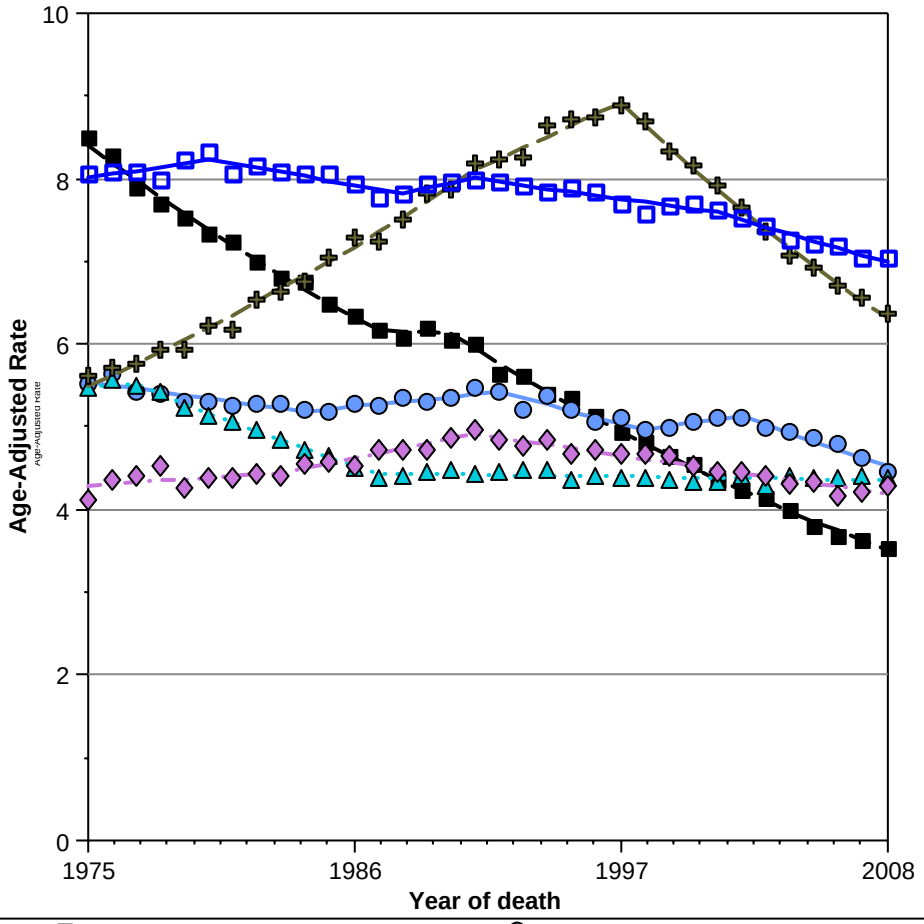
As indicated in Figure EMO2, mortality rates are decreasing for the leading causes of new cancer cases: lung cancer in men and women, prostate cancer, female breast cancer, and colorectal cancer in both males and females. Among these leading cancers, rates per 100,000 range from 63.6 (male lung cancer) to 13.8 6 (female colorectal cancer) deaths per year.

Mortality rates also are decreasing for other cancer sites. Figure EMO5 shows trends for the next six most common causes of cancer death with decreasing mortality trends (3 to 10 deaths per 100,000 people each year). These sites are leukemia, non-Hodgkin lymphoma, ovarian cancer, urinary bladder cancer, brain and other nervous system cancers, and stomach cancer.

Other Cancer Sites with Healthy People 2020 Mortality Rate Targets

In addition to Healthy People 2020 Targets to reduce mortality for cancer sites already mentioned in this report (lung, prostate, female breast, and the colon and rectum) Healthy People 2020 Mortality Rate Targets have been defined to reduce deaths from melanoma and cancers of the oral cavity and pharynx, and of the uterine cervix.

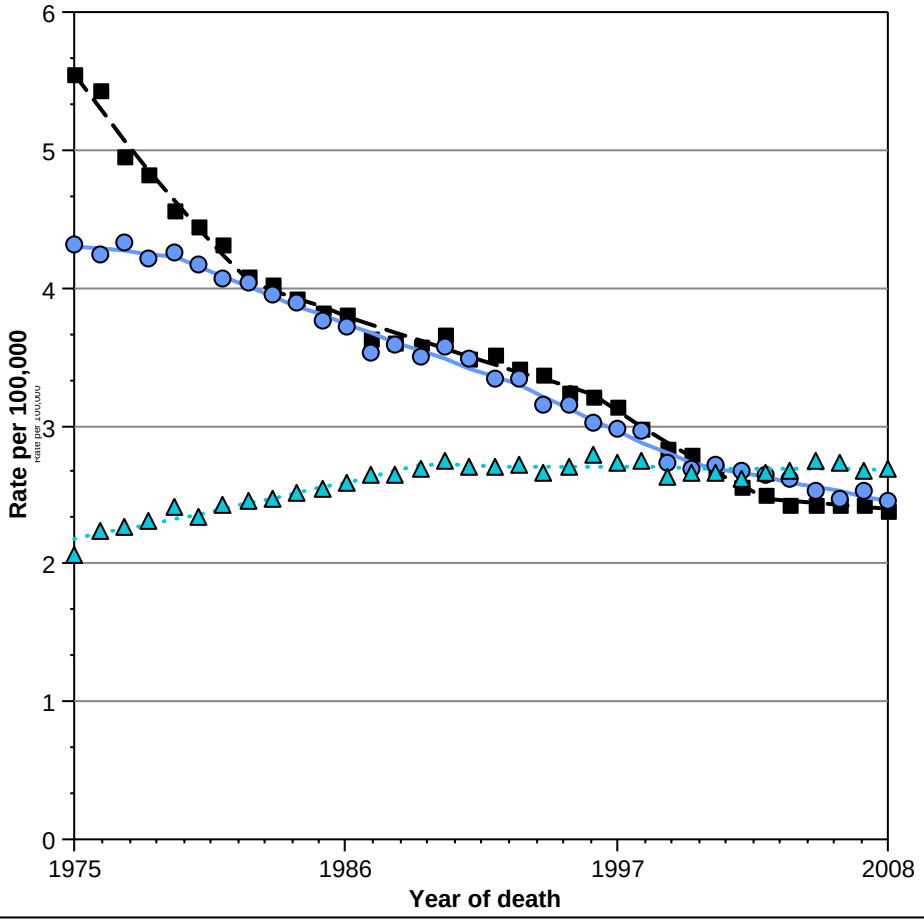
Figure EMO5: Death rates for six cancer sites with decreasing trends and highest rates other than the top 4 sites^ by cause of death: 1975-2008



Stomach
Ovary
Urinary Bladder
Brain and Other Nervous System
Non-Hodgkin Lymphoma
Leukemia

Source: National Center for Health Statistics data as analyzed by NCI.
Data are age-adjusted to the 2000 US standard population using age groups: <1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+. Analysis uses the 2000 Standard Population as defined by NCHS(http://www.cdc.gov/nchs/data/statnt/statnt20.pdf).
Restricted to cancer sites with 2008 mortality rates between 3 and 10 per 100,000.
^ Annual percent change (APC) for final Joinpoint segment is less than zero (P<=0.05).

Figure EMO6: Death rates for additional cancer sites with Healthy People 2020 reduction goals: 1975-2008



Source: National Center for Health Statistics data as analyzed by NCI.
Data are age-adjusted to the 2000 US standard population using age groups: <1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+. Analysis uses the 2000 Standard Population as defined by NCHS(http://www.cdc.gov/nchs/data/statnt/statnt20.pdf).

Key Issues

Although overall death rates are on the decline, cancer deaths for some sites are increasing, such as pancreas, liver and intrahepatic bile duct, and corpus and unspecified uterus.

An ongoing challenge for the United States is to find new and better ways to reduce and eliminate disparities in cancer death rates among different populations of Americans.

Additional Information on Mortality

- American Cancer Society - Statistics for 2010
  http://www.cancer.org/docroot/stt/stt_0.asp
- Cancer Intervention Surveillance Network (CISNET), Colorectal Cancer Mortality Projection
  http://cisnet.cancer.gov/projections/colorectal

- Healthy People 2020, 2020 Topic and Objective - Cancer
  http://healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicId=5
- National Vital Statistics System
  http://www.cdc.gov/nchs/deaths.htm
- State Cancer Profiles
  http://statecancerprofiles.cancer.gov

Person-Years of Life Lost

(Though 2008)

Cancer is responsible for more person years of life lost than all other causes of death combined.

Person-Years of Life Lost (PYLL)

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 person-years of life lost (PYLL)—the years of life lost because of early death from a particular cause or disease. PYLL caused by cancer helps to describe the extent to which life is cut short by cancer. On average, each person who died from cancer in 2008 lost an estimated 15.5 years of life.

Measure

PYLL because of a particular disease or cause is measured as the difference between the actual age stemming from the disease/cause and the expected age of death. 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.

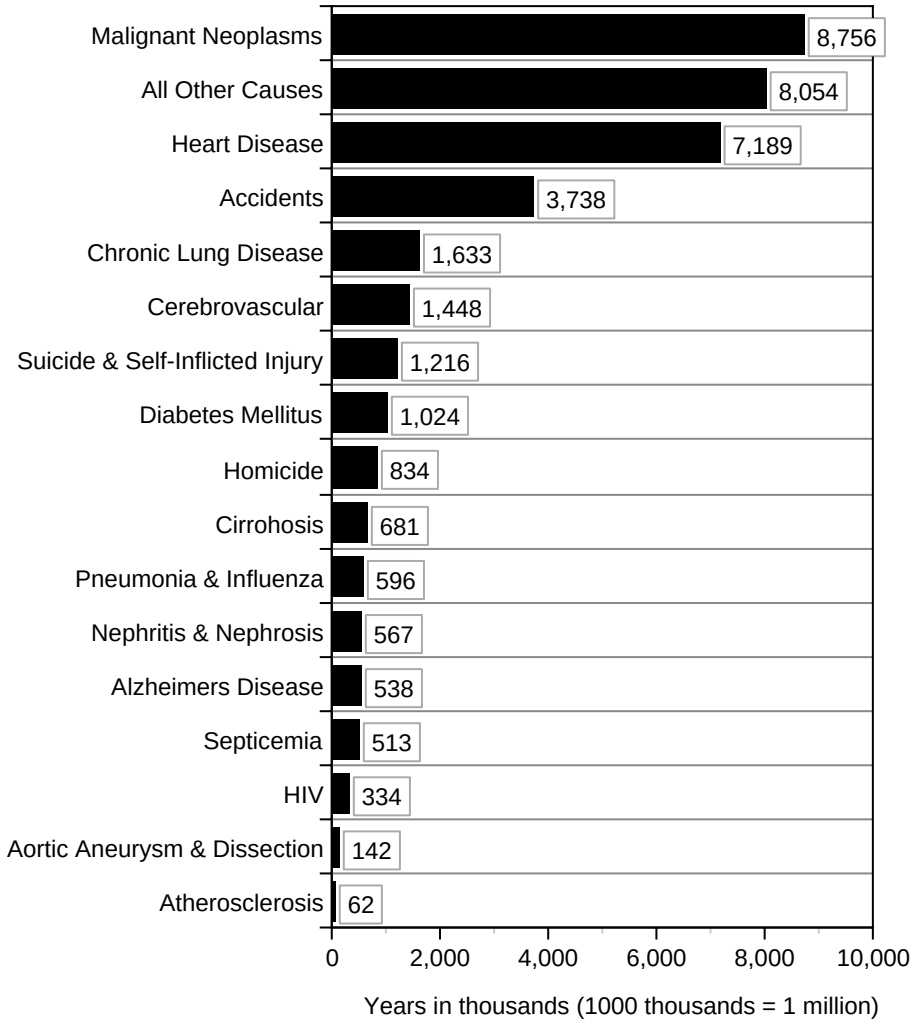
Period – 2008

Trends – No trend data are available.

Most Recent Estimates

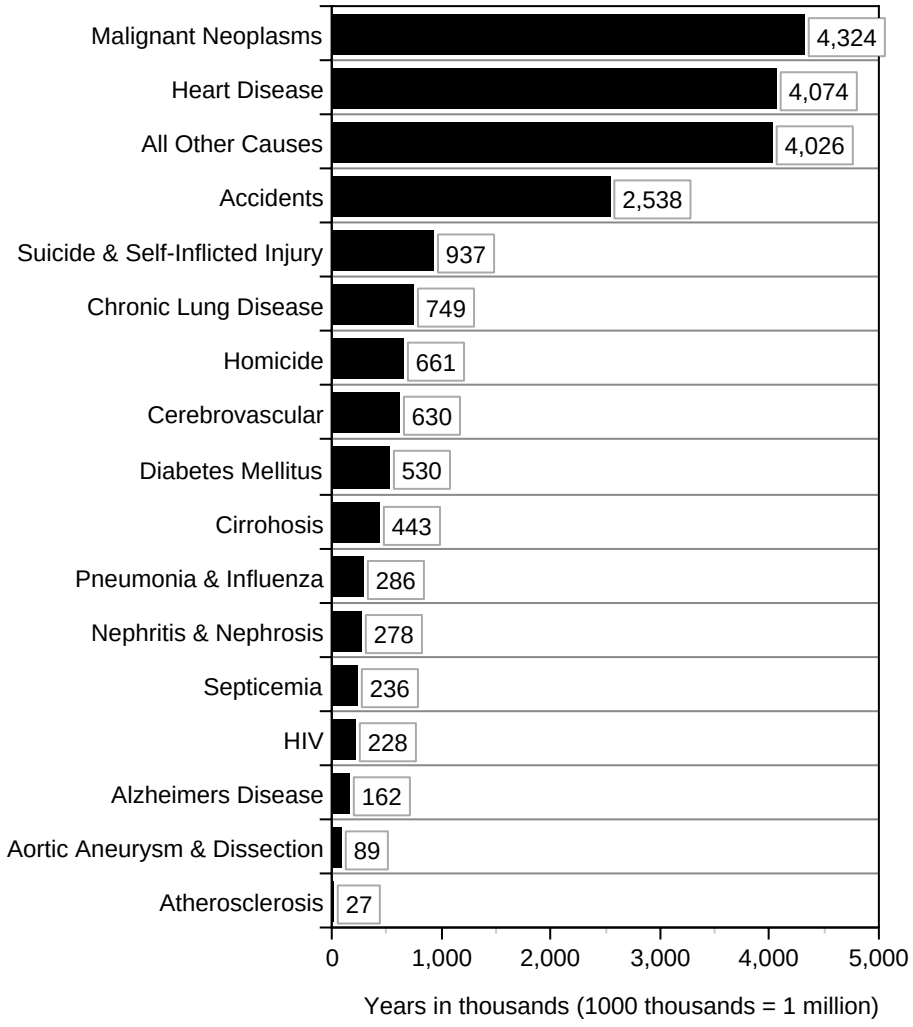
In 2008, cancer deaths were responsible for more than 8.7 million PYLL, which is more than heart disease and all other causes of death, combined. About 51 percent of the PYLL caused by cancer death occurred among women. The number of PYLL from causes other than cancer varied by gender, with more accidental deaths and suicides among men and more cerebrovascular and chronic lung disease-related deaths among women.

Figure EPY1: Person-years of life lost in the U.S. due to major causes of death, All Races, Both Sexes: 2008



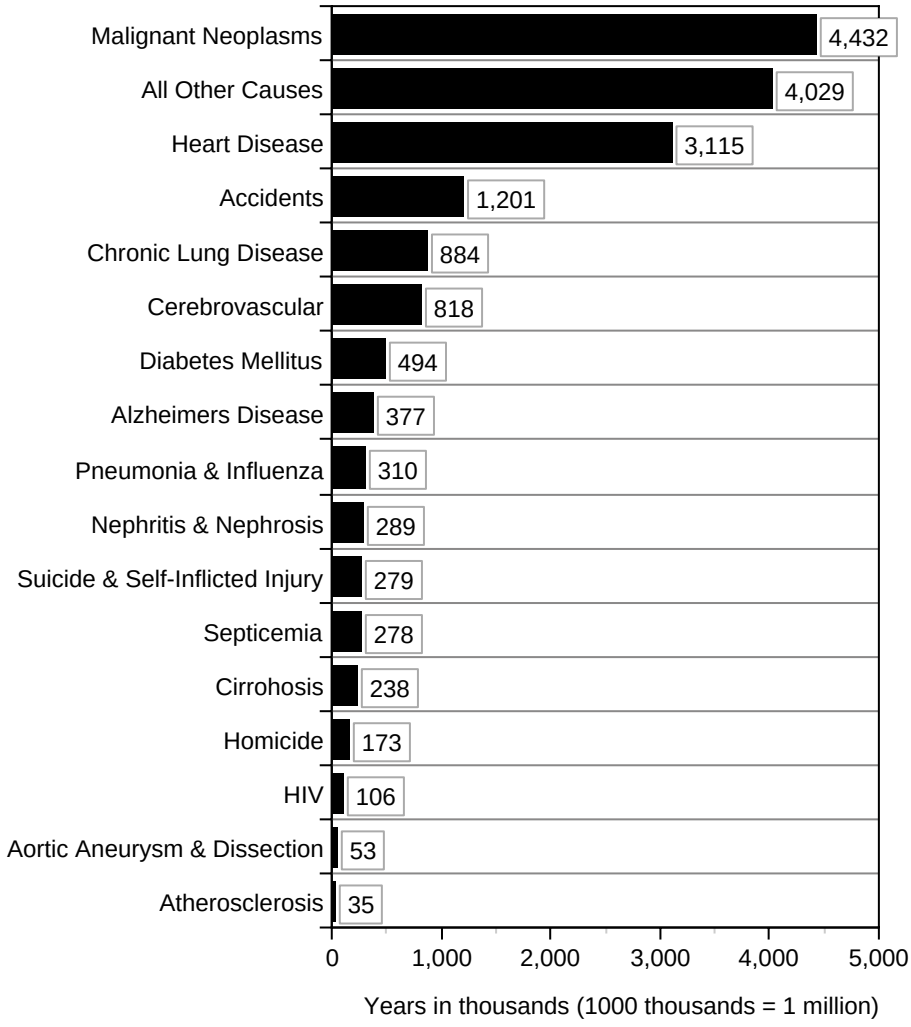
Source: National Center for Health Statistics data as analyzed by NCI and National Center for Health Statistics life-tables.
Data are not age-adjusted.
Estimates produced using 2007 life-tables.

Figure EPY2: Person-years of life lost in the U.S. due to major causes of death, All Races, Males: 2008



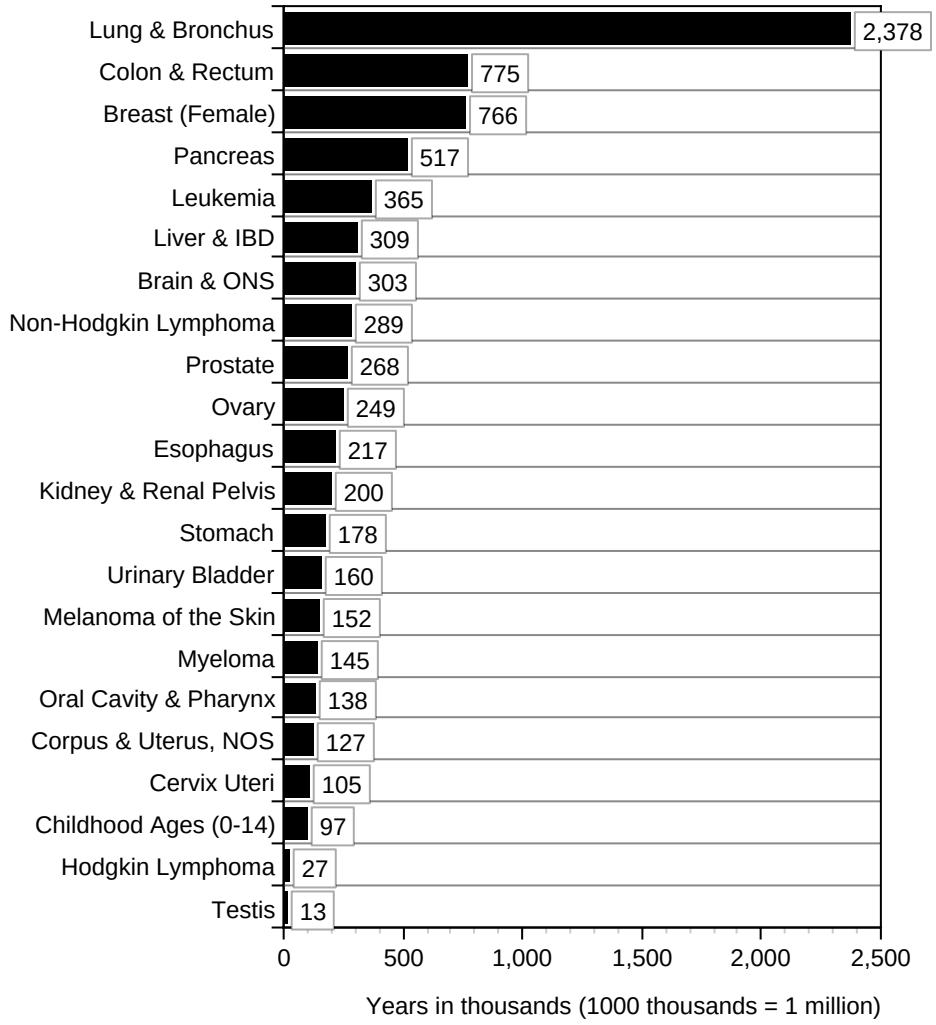
Source: National Center for Health Statistics data as analyzed by NCI and National Center for Health Statistics life-tables.
Data are not age-adjusted.
Estimates produced using 2007 life-tables.

Figure EPY3: Person-years of life lost in the U.S. due to major causes of death, All Races, Females: 2008



Source: National Center for Health Statistics data as analyzed by NCI and National Center for Health Statistics life-tables.
Data are not age-adjusted.
Estimates produced using 2007 life-tables.

Figure EPY4: Person-years of life lost in the U.S. due to cancer, All Races, Both Sexes: 2008



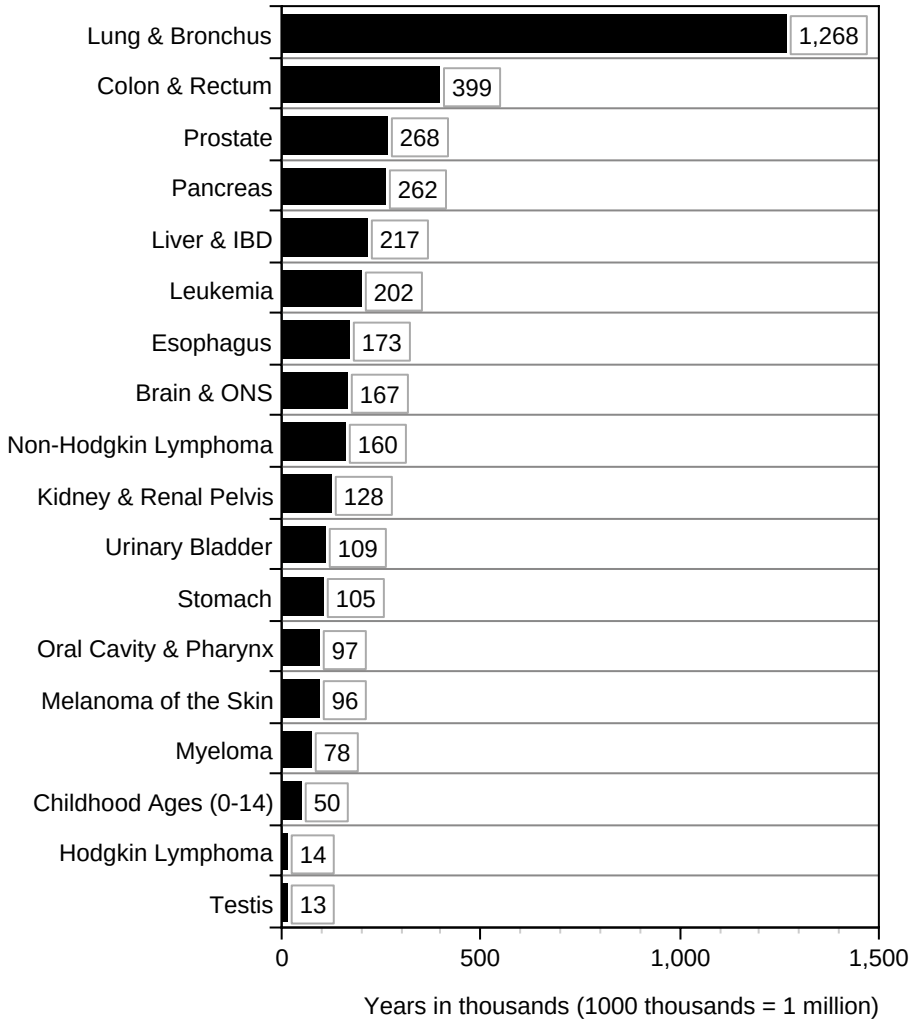
Source: National Center for Health Statistics data as analyzed by NCI and National Center for Health Statistics life-tables.
Data are not age-adjusted.
Estimates produced using 2007 life-tables.

Lung cancer accounted for nearly 2.4 million PYLL, the most by far for any cancer. In contrast, another leading cancer, prostate cancer, which primarily affects older men, accounted for many fewer PYLL—approximately 268,000.

In 2008, for each of the leading cancer sites affecting both men and women, men had more PYLL than women. For both sexes combined, these sites included lung and bronchus; colon and rectum; pancreas; leukemia; non-Hodgkin lymphoma; liver and intrahepatic bile duct; brain and other nervous system; esophagus; kidney and renal pelvis; stomach; urinary bladder; melanoma of the skin; myeloma; oral cavity and pharynx; childhood cancers; and Hodgkin lymphoma.

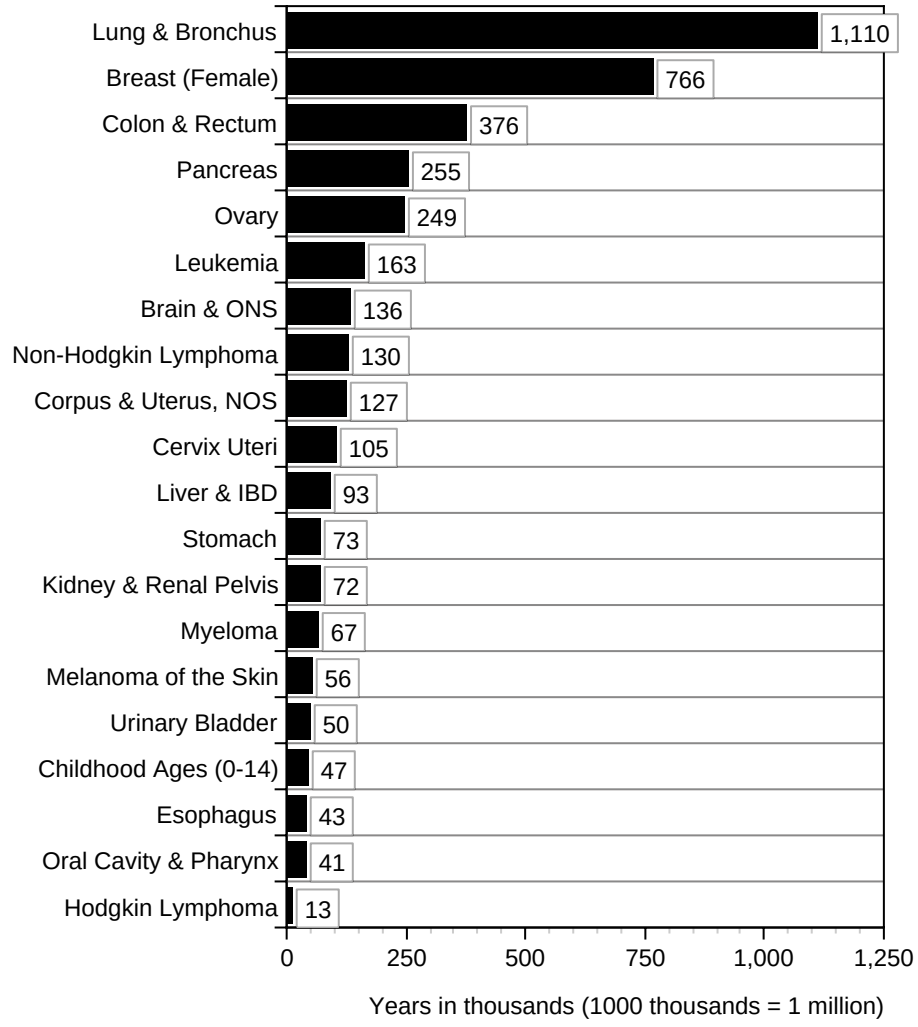
However, the number of PYLL stemming from collective cancer deaths among women was slightly greater than that among men because the number of PYLL lost to cancers affecting only women (i.e., female breast; ovary; corpus and uterus; NOS; and cervix uteri) exceeded the number of PYLL stemming from cancers affecting only men (i.e., prostate and testis).

Figure EPY5: Person-years of life lost in the U.S. due to cancer,
All Races, Males: 2008



Source: National Center for Health Statistics data as analyzed by NCI and National Center for Health Statistics life-tables.
Data are not age-adjusted.
Estimates produced using 2007 life-tables.

Figure EPY6: Person-years of life lost in the U.S. due to cancer, All Races, Females: 2008



Source: National Center for Health Statistics data as analyzed by NCI and National Center for Health Statistics life-tables.
Data are not age-adjusted.
Estimates produced using 2007 life-tables.

Healthy People 2020 Targets

There is no Healthy People 2020 target for this measure.

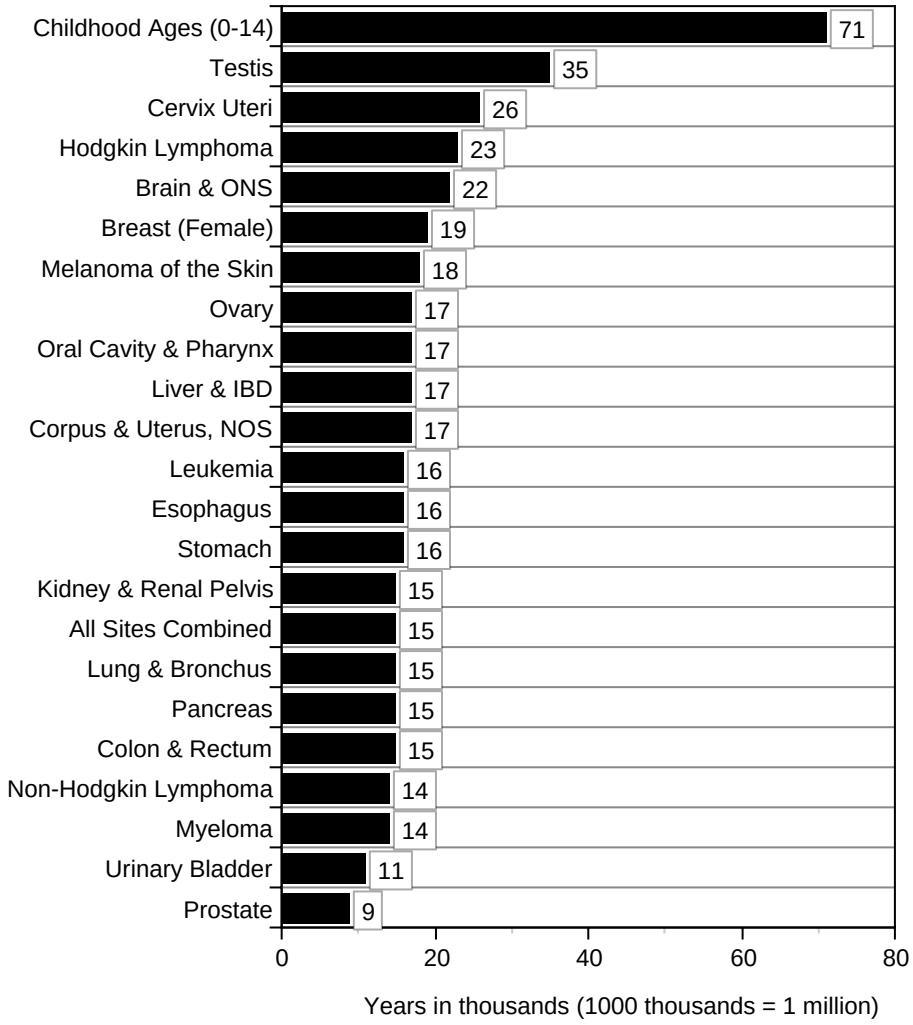
Groups at High Risk for the Most PYLL

Cancers that are both common and associated with poor survival are responsible for the most PYLL. These factors are accentuated when median age of death occurs many years before the expected lifespan. Lung cancer is an example of a common cancer that has a 5-year survival rate of less than 20 percent.

Total Versus Average PYLL

Deaths from childhood cancers, which are uncommon, lead to the most years of life lost for the individual but contribute only a small percentage to total PYLL.

Figure EPY7: Average-years of life lost in the U.S. due to cancer, All Races, Both Sexes: 2008



Source: National Center for Health Statistics data as analyzed by NCI and National Center for Health Statistics life-tables.
Data are not age-adjusted.
Estimates produced using 2007 life-tables.

Key Issues

The greatest impact on reducing the number of years lost to cancer will come from progress against common cancers—such as lung, female breast, and colorectal cancers—as well as new scientific breakthroughs for cancers where the prognosis is poor (e.g., pancreatic cancer).

Additional Information on Person-Years of Life Lost

- SEER Cancer Statistics Review, 1975–2008 (NCI)
  http://seer.cancer.gov/csr/1975_2008/index.html

Appendices

Acknowledgements

Figure Numbering Key

Incidence & Mortality Tables

Methodology for Characterizing Trends

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Substance Abuse and Mental Health Services Administration

U.S. Department of Agriculture

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Figure Numbering Key

Figures in the *Cancer Trends Progress Report* have been renumbered for easier association with the specific chapter and section in which they appear. The first letter of the 3-letter code indicates the chapter, while the second and third letters represent the section. Below is the key for figure numbering:

PREVENTION (P)
PSI – Smoking Initiation
PYS – Youth Smoking
PAS – Adult Smoking
PQS – Quitting Smoking
PCA – Clinicians' Advice to Quit Smoking
PMC – Medical Coverage of Tobacco Dependence Treatment
PFV – Fruit and Vegetable Consumption
PRM – Red Meat Consumption
PFC – Fat Consumption
PAC – Alcohol Consumption
PPA – Physical Activity
PWT – Weight
PSP – Sun Protection
PSS – Secondhand Smoke
PPE – Pesticides
PDI – Dioxins
PTC – Tobacco Company Marketing Expenditures

EARLY DETECTION (S)
SBR – Breast Cancer Screening
SCE – Cervical Cancer Screening
SCO – Colorectal Cancer Screening

DIAGNOSIS (D)
DIN – Incidence
DST – Stage at Diagnosis

TREATMENT (T)
TBL – Bladder Cancer Treatment
TBR – Breast Cancer Treatment
TCO – Colorectal Cancer Treatment
TKI – Kidney Cancer Treatment
TLU – Lung Cancer Treatment
TOV – Ovarian Cancer Treatment
TPR – Prostate Cancer Treatment

LIFE AFTER CANCER (L)
LCO – Costs of Cancer Care
LSU – Survival
LCS – Cancer Survivors and Smoking

END OF LIFE (E)
EMO – Mortality
EPY – Person-years of Life Lost

Cancer Incidence and Mortality Rates - United States, 2008

The following tables depict the incidence and mortality rates for the cancers included in the *Cancer Trends Progress Report – 2011/2012 Update*. Rates are per 100,000 and are age-adjusted to the 2000 U.S. Standard Population. Click on the cancer name to view more detailed data for that particular cancer. For cancers not included in the tables, please visit the Cancer Statistics Review, 1975–2008 (http://seer.cancer.gov/csr/1975_2008).

Delay-adjusted incidence rates

	All races			Whites			Blacks		
Cancer	Total	Males	Females	Total	Males	Females	Total	Males	Females
All sites	473.9	543.1	425.7	484.7	549.1	440.6	523.1	671.4	422.9
Brain and other nervous system	6.8	8.0	5.8	7.6	8.9	6.5	3.7	4.6	3.1
Female breast	128.8	X	128.8	131.7	X	131.7	129.1	X	129.1
Cervix uteri	6.8	X	6.8	6.5	X	6.5	9.5	X	9.5
Colon and rectum	44.8	51.0	39.7	44.2	50.1	39.3	54.7	64.5	47.6
Corpus and uterus, NOS	26.2	X	26.2	26.8	X	26.8	24.3	X	24.3
Esophagus	4.6	8.1	1.8	4.8	8.5	1.8	4.6	8.0	2.1
Hodgkin	2.9	3.3	2.6	3.2	3.5	2.8	3.1	3.6	2.6
Kidney and renal pelvis	15.9	21.5	11.2	15.8	21.3	11.2	20.3	29.9	13.7
Larynx	3.1	5.5	1.1	3.2	5.6	1.1	4.6	8.5	1.9
Leukemia	14.9	19.1	11.5	15.3	19.8	11.7	11.7	16.1	8.4
Liver and bile duct	7.6	11.7	4.1	6.4	9.8	3.5	11.0	19.1	5.0
Lung and	60.2	71.8	51.9	61.0	70.5	54.4	75.6	104.1	56.6
Melanoma of the skin	23.1	29.1	19.0	28.7	35.4	24.1	X	X	X
Myeloma	6.3	7.7	5.3	5.8	7.3	4.7	14.4	17.4	12.8
Non-Hodgkin lymphoma	20.8	25.4	17.1	21.7	26.5	17.8	16.7	18.7	14.9
Oral cavity and pharynx	11.0	16.3	6.4	11.4	16.9	6.6	9.0	14.1	5.1
Ovary	13.0	X	13.0	13.8	X	13.8	9.9	X	9.9
Pancreas	12.8	14.7	11.3	12.5	14.4	10.9	17.6	19.8	16.1
Prostate	157.0	157.0	X	153.5	153.5	X	260.4	260.4	X
Stomach	7.2	10.1	5.0	6.1	8.8	3.8	13.0	18.5	9.6
Testis	6.0	6.0	X	7.2	7.2	X	1.4	1.4	X
Thyroid	13.2	6.6	19.7	14.1	7.0	21.4	7.1	4.4	9.5
Urinary bladder	21.3	37.6	9.4	23.5	41.2	10.3	13.3	23.2	6.8

Source: SEER Program, National Cancer Institute. Incidence data are from the SEER 9 areas (http://seer.cancer.gov/registries/terms.html). Data are age-adjusted to the 2000 standard using age groups:<1, 1-4, 5-9, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+. Analysis uses the 2000 Standard Population (Census P25-1130) as defined by NCI (http://seer.cancer.gov/stdpopulations/).

X - Statistic not available for sex-specific cancer sites. Delay-adjusted incidence not calculated for Blacks due to low annual case counts.

Age-adjusted mortality rates

	All races			Whites			Blacks		
Cancer	Total	Males	Females	Total	Males	Females	Total	Males	Females
All sites	175.8	215.7	148.4	174.9	213.3	148.2	211.3	280.1	171.0
Brain and other nervous system	4.3	5.3	3.5	4.6	5.7	3.8	2.5	3.2	2.0
Breast	12.6	0.3	22.5	12.2	0.3	21.9	18.6	0.6	31.2
Cervix uteri	2.4	X	2.4	2.2	X	2.2	4.2	X	4.2
Colon and rectum	16.4	19.7	13.8	15.8	19.0	13.4	23.0	29.3	19.0
Corpus and uterus, NOS	4.2	X	4.2	3.9	X	3.9	7.1	X	7.1
Esophagus	4.2	7.6	1.6	4.3	7.8	1.5	4.5	7.8	2.3
Hodgkin lymphoma	0.4	0.5	0.3	0.4	0.5	0.3	0.3	0.4	0.3
Kidney and renal pelvis	4.0	5.8	2.5	4.1	5.9	2.6	3.9	5.9	2.6
Leukemia	7.0	9.5	5.3	7.3	9.8	5.4	6.3	8.8	4.8
Liver and bile duct	5.6	8.4	3.2	5.1	7.7	3.0	7.5	12.3	3.9
Lung and bronchus	49.6	64.0	39.0	50.2	63.8	40.2	53.6	79.6	36.9
Melanoma of the skin	2.7	4.1	1.6	3.1	4.6	1.9	0.4	0.5	0.3
Myeloma	3.3	4.3	2.6	3.1	4.0	2.4	6.4	8.1	5.3
Non-Hodgkin lymphoma	6.4	8.2	5.0	6.7	8.5	5.3	4.3	5.6	3.5
Oral cavity and pharynx	2.5	3.8	1.4	2.4	3.6	1.4	3.0	5.2	1.5
Ovary	8.0	X	8.0	8.2	X	8.2	6.6	X	6.6
Pancreas	10.9	12.6	9.6	10.8	12.5	9.4	13.8	15.4	12.6
Prostate	22.8	22.8	X	21.2	21.2	X	49.5	49.5	X
Stomach	3.5	4.9	2.5	3.1	4.2	2.1	7.0	10.2	4.9
Testis	0.2	0.2	X	0.3	0.3	X	0.1	0.1	X
Thyroid	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.5
Urinary bladder	4.4	7.6	2.2	4.6	8.0	2.2	3.4	4.9	2.5

US Mortality Files, National Center for Health Statistics, Centers for Disease Control and Prevention. Rates are per 100,000 and are age-adjusted to the 2000 US Std Population (19 age groups - Census P25-1130).

X - Statistic not available for sex-specific cancer sites.

Methodology for Characterizing Trends

In order to obtain a consistent characterization of population trends in factors related to the prevention, early detection, or treatment of cancer, the joinpoint statistical methodology was used in this report (http://srab.cancer.gov/joinpoint/). This methodology characterizes a trend using joined linear segments on a logarithmic scale; the point where two segments meet is called a "joinpoint." The methodology has previously proven useful in characterizing trends in cancer incidence and mortality rates (e.g., in the Annual Report to the Nation on the Status of Cancer, 1975–2004, Featuring Cancer in American Indians and Alaska Natives).

The joinpoint software (Joinpoint Version 3.4.2) uses statistical criteria to determine:

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

In addition, a 95-percent confidence interval around the APC was used to determine if the APC for each segment differed significantly from zero. Whenever possible, weighted regression lines (utilizing standard errors) were calculated 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, an unweighted regression was used.

Using the results of these analyses, we characterize 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 APC 0.5), and the APC was not statistically significant, we characterized it as **STABLE**
- Changing more than 0.5% per year (APC < -0.5 or APC > 0.5), and the APC was not statistically significant, we characterized it as **NON-SIGNIFICANT CHANGE**
- Changing with a statistically significant APC > 0, we characterized it as **RISING**
- Changing with a statistically significant APC < 0, we characterized it as **FALLING**

While these categorizations are somewhat arbitrary, they do provide a consistent method to characterize the trends across disparate measures. However, statistical significance in addition to the 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, segments had to contain at least three observed data points, and no segment could begin or end closer than three data points from the beginning or end of the data series. Because we constrained the joinpoint models to those in which no segment could begin or end closer than three data points from the beginning or end of the data series, if there were four data points or fewer, only one segment could be fit; from five to seven data points, up to two segments could be fit; and from eight to 10 data points, up to three segments could be fit. To avoid some of these limitations, for two to six data points we connected the data points to determine the APC for each time period, and then employed a two-sample test using the standard errors derived from the survey to determine the statistical significance of the change across periods For 7-13 data points we allowed a maximum of 1 joinpoint, 14-20 data points, we allowed a maximum of 2 joinpoints, for 21-27 data points, we allowed a maximum of 3 joinpoints, and for 28 or more data points, we allowed a maximum of 4 joinpoints.

A new addition to the methodology in the 2009/2010 update of the CTPR was the Average Annual Percent Change (AAPC), 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 groups or gender) 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., 2002–2006 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. For more information on the AAPC, see http://srab.cancer.gov/joinpoint/aapc.html. When there are 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 (http://srab.cancer.gov/reports/tech2009.02.pdf).

Age adjustment (to a standard population) for measures was done using the direct method of standardization. Whenever possible, age adjustment for measures was done using the age adjustment groups specified for Healthy People age-adjusted measures (http://wonder.cdc.gov/data2010/aagroups.htm). The year 2000 standard population for specific age groups is available in Klein and Shoenborn (2001). For cancer incidence, 19 age groups were used with the 2000 standard population as specified in http://seer.cancer.gov/stdpopulations.

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