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Summary of Notifiable Noninfectious Conditions and Disease Outbreaks — United States

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Introduction to the Summary of Notifiable Noninfectious Conditions and Disease Outbreaks — United States

Ralph J. Coates, PhD[1]
Ruth Ann Jajosky, DMD[1]
Martha Stanbury, MSPH[2]
Steven C. Macdonald, PhD[3]
[1]*Division of Health Informatics and Surveillance, Center for Surveillance, Epidemiology and Laboratory Services, CDC, Atlanta, Georgia*
[2]*Division of Environmental Health, Michigan Department of Community Health, Lansing, Michigan*
[3]*Environmental Public Health Division, Washington State Department of Health, Olympia, Washington*

Preface

With this 2015 *Summary of Notifiable Noninfectious Conditions and Disease Outbreaks — United States*, CDC is publishing official statistics for the occurrence of nationally notifiable noninfectious conditions and disease outbreaks for the first time in the same volume of *MMWR* as the annual *Summary of Notifiable Infectious Diseases* (*1*).

This two-part publication provides the opportunity for readers to review information on all of the nationally notifiable conditions identified by the Council of State and Territorial Epidemiologists (CSTE) in collaboration with CDC. This combined publication is the result of a February 2013 request by CSTE for CDC to present surveillance data on all nationally notifiable conditions and disease outbreaks in the same publication. In recent years, CSTE formalized and expanded the list of nationally notifiable conditions to include foodborne and waterborne disease outbreaks and four noninfectious conditions: acute pesticide-related illness and injury, cancer, silicosis, and elevated blood lead levels.* After discussion within the organization and with subject matter experts at CDC, CSTE concluded that inclusion of information on all nationally notifiable conditions in the same *MMWR* annual surveillance summary of nationally notifiable conditions would be useful and important for the public and public health professionals.

This *Summary of Notifiable Noninfectious Conditions and Disease Outbreaks* includes six chapters treating the following subjects: acute pesticide-related illness and injury arising from occupational exposure (*2*), cancer (*3*), elevated blood lead levels among employed adults (*4*), elevated blood lead levels among children (*5*), silicosis (*6*), and foodborne and waterborne disease outbreaks (*7*). Information about nonoccupational acute pesticide-related illness could not be included this year because the data were not ready for publication. However, the CDC programs involved in pesticide-related illness surveillance activities plan to include these data in the 2016 *MMWR* publication of the annual *Summary of Notifiable Noninfectious Conditions and Disease Outbreaks*.

Information on elevated lead exposure is provided in two separate chapters because the sources of lead exposure differ between children and adults. Lead exposure among children is caused principally by deteriorated lead paint found in homes whereas lead exposure among adults occurs principally in the workplace. CDC's National Center for Environmental Health (NCEH) has primary responsibility for preventing disease from environmental (principally nonoccupational) hazards, and CDC's National Institute of Occupational Safety and Health (NIOSH) is responsible for preventing disease from workplace hazards. Because of the separate delegation of responsibilities and differences in sources of lead exposure, CDC has a linked surveillance system for lead exposure with NCEH responsible for the Childhood Blood Lead Surveillance (CBLS) system (*5*) and with NIOSH responsible for the Adult Blood Lead Epidemiology and Surveillance system (ABLES) (*4*).

Each of the six chapters in this *Summary* (*Noninfectious*) presents the most recent statistics available to the CDC program. Local, state, and territorial public health departments and other agencies within those jurisdictions (e.g., departments of labor, environmental protection agencies, cancer registries, and their agents) submit data on these conditions and outbreaks to CDC programs at the National Center for Chronic Disease Prevention and Health Promotion, the National Center for Emerging and Zoonotic Infectious Diseases, NCEH, and NIOSH. Previously, the programs compiled and published surveillance data on these noninfectious conditions and disease outbreaks periodically in multiple venues with variable timeframes and formats.

The Center for Surveillance, Epidemiology, and Laboratory Services (CSELS) coordinated the development and publication of this summary. Comments and suggestions from readers on this new combined publication are encouraged, including ones about whether the information presented could be made more useful. Comments should be sent to NNDSSweb@cdc.gov.

* CDC designated these conditions nationally notifiable as a result of CSTE position statements in the following years: foodborne and waterborne disease outbreaks in 2010, acute pesticide-related illness and injury in 1999, cancer in 1997, silicosis in 2009, and elevated blood lead levels for adults and children in 1995.

Corresponding author: Ralph Coates, Division of Health Informatics and Surveillance, Center for Surveillance, Epidemiology and Laboratory Services, CDC. Telephone: 404-498-0080; e-mail rjc5@cdc.gov.

Background

As with nationally notifiable infectious diseases, nationally notifiable noninfectious conditions and disease outbreaks require regular, frequent, and timely information for prevention and control. A brief history of the reporting of nationally notifiable conditions in the United States is available at http://wwwn.cdc.gov/nndss/case-definitions-history.html. In 1961, responsibility for the collection of data on nationally notifiable diseases and deaths in 122 U.S. cities was transferred from the National Office of Vital Statistics to CDC.

CDC's collection of data on nationally notifiable noninfectious conditions and disease outbreaks is based on surveillance conducted at the local, state, and territorial levels by health departments and other agencies on reportable conditions in each jurisdiction. Legislation, regulation, or other rules in those jurisdictions require health-care providers, hospitals, laboratories, and others to provide information on reportable conditions to public health authorities or their agents. The list of reportable conditions in each jurisdiction varies over time and across jurisdictions; more information is available at http://www.cste.org/?SRCA. Public health surveillance of noninfectious conditions and disease outbreaks at the local, state, and territorial levels protects the public's health by ensuring the proper identification of diseases and health hazards. Public health officials use these data to monitor trends in these conditions, identify populations or geographic areas at high risk, plan prevention and control policies and other interventions, allocate resources effectively, coordinate activities, and assess the effectiveness of their efforts.

A selected set of reportable conditions is designated as nationally notifiable, and case notifications for those conditions are submitted to CDC by state, local, and territorial health departments. Public health officials at state, local, and territorial health departments and CDC collaborate in identifying conditions to consider for national notification. During annual meetings, CSTE, in consultation with CDC, recommends revisions to the list of nationally notifiable conditions. Conditions are added as new pathogens, environmental hazards, or conditions emerge as public health concerns, and conditions are deleted when surveillance is found not to be useful. CDC uses these data to monitor trends at the national level, develops and implements programs, allocates resources, and assesses the effectiveness of national efforts at prevention and control. Current and historic national public health surveillance case definitions used for classifying and counting cases consistently at the national level across jurisdictions are available at http://wwwn.cdc.gov/nndss/case-definitions.html. National surveillance case definitions for noninfectious nationally notifiable conditions and disease outbreaks were added to this website in 2010.

Although reporting of conditions at the local, state, and territorial levels is mandated by legislation or regulations at those levels, submission of case notifications to CDC is voluntary. Under-reporting of noninfectious conditions and disease outbreaks to local and state health departments occurs, and completeness of reporting, and therefore of notifications to CDC, varies by condition (*2*–*13*). A 2002 publication reported similar findings for reporting and notifications of infectious conditions (*14*).

Although the sources of data for nationally notifiable infectious diseases and for nationally notifiable noninfectious conditions and disease outbreaks are the same (i.e., local, state, and territorial jurisdictions' data on reportable conditions), and the purpose is the same (i.e., monitoring and responding to the condition to improve population health), there are a number of variations and differences among the conditions in this summary (*1*–*7*). Case-based surveillance of such nationally notifiable conditions as acute pesticide-related illness or injury, silicosis, and cancer is focused on detecting persons who have a condition that meets the criteria specified in national disease-specific case definitions and on collecting information about those persons' conditions. In contrast, surveillance of outbreaks of foodborne and waterborne illness seeks to identify clusters of sick persons with a common exposure (as opposed to specific diseases). Foodborne disease outbreaks are defined as two or more cases of similar illness resulting from common ingestion of a food, and waterborne disease outbreaks are defined as two or more cases of a similar illness resulting from common exposure to water or water-associated chemicals volatized into the air (http://wwwn.cdc.gov/nndss/conditions/notifiable/2014/outbreaks). Information is collected about the characteristics of the disease outbreaks, including data from epidemiologic and environmental investigations. Even among conditions for which case-based surveillance methods are used, there is substantial variation in what a condition means. For example, for a condition such as elevated blood lead levels, surveillance identifies persons who have been exposed to a hazard on the basis of a laboratory test, but does not necessarily identify persons with a diagnosis of lead poisoning. In contrast, for many other conditions, a diagnosis is needed to meet the case definition for case notification to CDC (http://wwwn.cdc.gov/nndss/conditions/notifiable/2014/noninfectious).

Among the topics treated in this summary, the definitions of the characteristics of the conditions and populations covered also differ. This variability makes it challenging for readers to compare statistics easily across conditions and geographic locations and for public health and medical professionals to develop automated electronic health information systems based on common national standards to improve sharing of information on state-reportable conditions and nationally notifiable conditions.

The meaning of the date of the occurrence of the condition varies among the conditions. For infectious diseases, the meaning of the date varies across jurisdictions as well as by condition, and might be a date of symptom or disease onset, diagnosis, or laboratory result; the date the case was reported to a jurisdiction; the date CDC was notified of a case; the date the criteria in the national surveillance case definition were met; or the date of death (http://wwwn.cdc.gov/nndss/document/MMWR_Week_overview.pdf). For cancer, as for some infectious diseases, including the arboviral diseases, tuberculosis, and human immunodeficiency virus infection diagnosis, it is the date the condition is diagnosed. For silicosis, it is the date of the initial report (e.g., the date of a hospital discharge report, clinician report, or a workers' compensation claim). For lead screening test results, it is the date of a test. For acute pesticide-related illness and injury, it is the date of the pesticide exposure that led to acute illness/injury. For disease outbreaks, it is the date of the illness onset of the first case in the outbreak.

The source and definitions of race and ethnicity vary over time and among conditions. For example, information about race and ethnicity for lead exposure is based on self-report whereas for cancer incidence, it is based on medical records, which might not be based on self-report, or from matching the names of persons with cancer with lists of surnames for different ethnic groups or with tribal registries. For silicosis, race and ethnicity are based on self-report, report from next-of-kin, or from medical records. Race- and ethnicity-specific information among the conditions also might vary depending on differences in the jurisdictions' systems for submitting notifications to CDC and the need to protect confidentiality of private health information.

The chapters in this summary use U.S. Census Bureau data sets for the denominators in the rate estimates. However, there is variation across the chapters in which specific U.S. Census Bureau data sets are used.

There are additional notable differences among the chapters in this annual summary concerning the criteria used by CDC programs to determine which case notifications are summarized and published annually in *MMWR* (i.e., publication criteria). For data on both infectious or noninfectious conditions to be submitted to CDC from states, territories, or cities, the condition or disease must have been designated as a reportable condition in that jurisdiction for the year of notification to CDC. However, CDC publishes information on foodborne and waterborne disease outbreaks in this annual summary even if the outbreak was not on the jurisdiction's reportable conditions list. Additional criteria, based on characteristics that define the conditions and disease outbreaks (http://wwwn.cdc.gov/nndss/case-definitions.html), are used in making a final determination on publication in this annual summary (Box).

Data Sources

Final data for nationally notifiable noninfectious conditions and disease outbreaks are derived from the surveillance systems of the CDC Centers listed below. Requests for further information regarding these data should be directed to the appropriate Center or program.

- National Center for Chronic Disease Prevention and Health Promotion
  - National Program of Cancer Registries (cancer)
- National Center for Emerging and Zoonotic Infectious Diseases
  - Foodborne Disease Outbreak Surveillance System (foodborne disease outbreaks)
  - Waterborne Disease and Outbreak Surveillance System (waterborne disease outbreaks)
- National Center for Environmental Health
  - Childhood Blood Lead Surveillance (lead exposure test results in children)
- National Institute for Occupational Safety and Health
  - Sentinel Event Notification System for Occupational Risks (SENSOR)-Pesticides Program (acute pesticide related illness)
  - Adult Blood Lead Epidemiology and Surveillance (ABLES) Program (lead exposure test results in adults)
  - State-Based Silicosis Surveillance (silicosis)

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BOX. Criteria defining nationally notifiable conditions and disease outbreaks used to determine whether notifications to CDC are published in the annual *Summary of Notifiable Noninfectious Conditions and Disease Outbreaks*

Condition/Outbreak	Classification
Acute pesticide-related illness	Definite, probable, possible, and suspicious
Cancer	Confirmed
Lead exposure test results in children	Confirmed
Lead exposure test results in adults	Confirmed
Silicosis	Confirmed
Foodborne disease outbreak	Two or more cases of a similar illness resulting from the ingestion of the same food
Waterborne disease outbreak	Two or more cases of a similar illness linked epidemiologically by time and location to exposure to water or water-associated chemicals volatized into the air

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Acute Occupational Pesticide-Related Illness and Injury — United States, 2007–2010

Geoffrey M. Calvert, MD[1]
John Beckman[2]
Joanne Bonnar Prado, MPH[3]
Heidi Bojes, PhD[4]
Prakash Mulay, MPH[5]
Michelle Lackovic, MPH[6]
Justin Waltz, MPH[7]
Abby Schwartz, MPH[8]
Yvette Mitchell, MS[9]
Stephanie Moraga-McHaley, MS[10]
Kathy Leinenkugel, MPA[11]
Sheila Higgins, MPH[12]

[1]*Division of Surveillance, Hazard Evaluations, and Field Studies, National Institute for Occupational Safety and Health, CDC, Cincinnati, Ohio*
[2]*Public Health Institute and Occupational Health Branch, California Department of Public Health, Richmond, California*
[3]*Office of Environmental Public Health Sciences, Washington State Department of Health, Olympia, Washington*
[4]*Environmental and Injury Epidemiology and Toxicology Unit, Texas Department of State Health Services, Austin, Texas*
[5]*Florida Department of Health, Tallahassee, Florida*
[6]*Louisiana Department of Health and Hospitals, New Orleans, Louisiana*
[7]*Center for Health Protection, Oregon Public Health Division, Oregon Health Authority, Portland, Oregon*
[8]*Division of Environmental Health, Michigan Department of Health and Human Services, Lansing, Michigan*
[9]*Bureau of Occupational Health and Injury Prevention, New York State Department of Health, Troy, New York*
[10]*New Mexico Department of Health, Albuquerque, New Mexico*
[11]*Iowa Department of Public Health, Des Moines, Iowa*
[12]*North Carolina Department of Health and Human Services, Raleigh, North Carolina*

Preface

CDC's National Institute for Occupational Safety and Health (NIOSH) collects data on acute pesticide-related illnesses and injuries reported by 11 states (California, Florida, Iowa, Louisiana, Michigan, North Carolina, New Mexico [2007–2008 only], New York, Oregon, Texas, and Washington). This report summarizes data on illnesses and injuries arising from occupational exposure to conventional pesticides during 2007–2010. This report is a part of the first-ever *Summary of Notifiable Noninfectious Conditions and Disease Outbreaks*, which encompasses various surveillance years but is being published in 2015 (*1*). The *Summary of Notifiable Noninfectious Conditions and Disease Outbreaks* appears in the same volume of *MMWR* as the annual *Summary of Notifiable Infectious Diseases* (*2*).

Background

Pesticides are substances or mixtures of substances intended to prevent, destroy, repel, or mitigate pests (e.g., insects, rodents, fungi, and weeds). In 2007, the year with the most currently available data, an estimated 2.1 billion pounds of conventional pesticides were used in the United States (*3*), which represents approximately 22% of the entire worldwide use of these pesticides. Conventional pesticides include insecticides, herbicides, fungicides, and fumigants and exclude chlorine, hypochlorites, and biocides.

The toxicity of pesticides continues to raise public concern and is the focus of much media attention. The benefits of pesticides are well recognized and primarily include their role in protecting the food supply and in controlling disease vectors (*4*). However, no form of pest control is perfectly safe. Tracking the associated health effects of pesticides can help ensure that no pesticides pose an unreasonable burden (*5*). As such, public health surveillance of acute pesticide-related illness and injury serves a vital societal role by assessing the magnitude and characteristics of this condition. Surveillance of acute pesticide-related illness and injury has been endorsed by several professional organizations and federal agencies including the American Medical Association (*6*), the Council of State and Territorial Epidemiologists (*7*), NIOSH (*8*), and the U.S. Government Accountability Office (*9*). To address the need for public health surveillance of acute pesticide-related illness and injury, NIOSH established such a surveillance program in 1987.

Pesticide products must pass an extensive battery of testing prior to being registered by the U.S. Environmental Protection

Corresponding author: Geoffrey M. Calvert, Division of Surveillance, Hazard Evaluations, and Field Studies, National Institute for Occupational Safety and Health, CDC. Telephone: 513-841-4448; e-mail: jac6@cdc.gov.

Agency (EPA). This testing forms the basis for the human health and environmental risk assessments conducted by EPA that guide identification of the conditions under which a pesticide can be used. These conditions of use are reflected in pesticide product labeling. Compliance with these use conditions are expected to prevent unreasonable adverse effects to human health and the environment. To verify the real-world effectiveness of pesticide product labeling in preventing adverse human health effects, findings from acute pesticide-related illness and injury surveillance systems are reviewed. These surveillance data assist EPA to determine whether labeling is effective or if labeling improvements are needed. When adverse health effects occur despite adherence to label instructions, and if EPA determines the magnitude to be unreasonable, EPA requires that interventions be instituted that involve changing pesticide use practices and/or modifying regulatory measures (*10*). Acute pesticide-related illness and injury also can occur because of a lack of compliance with existing pesticide regulations. The appropriate interventions for these cases include enhanced education and enforcement.

Data Sources

Since 1987, NIOSH has conducted surveillance of acute occupational pesticide-related illness and injury through the Sentinel Event Notification System for Occupational Risks (SENSOR)–Pesticides program. Detailed information on this program is available at http://www.cdc.gov/niosh/topics/pesticides/overview.html. During 2007–2010, a total of 11 states (California, Florida, Iowa, Louisiana, Michigan, North Carolina, New Mexico [2007–2008 only], New York, Oregon, Texas, and Washington) participated in the SENSOR-Pesticides program.

Case ascertainment sources used by the state programs include poison control centers, other government agencies (e.g., state departments of agriculture), workers' compensation documents, and physician reports. In some states, other sources (e.g., medical record reviews, news reports, and reports from worker representatives) infrequently identify cases (*11*). Staff from some state surveillance programs attempt to interview persons with illness or injury to obtain more details about the event. All states use standardized variables to code available information about a case systematically (*11*).

Persons are considered to have a pesticide-related illness or injury if they became ill or injured soon (i.e., within seconds to hours) after exposure to one or more pesticides. An illness and injury is considered occupational if the pesticide exposure occurred at the affected person's place of work. Agricultural cases are defined as cases occurring among persons employed in an industry with one of the following Census Industry Codes (CICs): agricultural production, excluding livestock (1990 CIC: 010; 2002 CIC: 0170); agricultural production, including livestock (1990 CIC: 011; 2002 CIC: 0180); and agricultural services (1990 CIC: 030; 2002 CIC: 0290). All other occupational cases with a known industry code are defined as "nonagricultural" cases.

The SENSOR-Pesticides case definition has been described in detail elsewhere (*11*). The definition requires information about pesticide exposure and health effects, which is compared with the known toxicology of the pesticide. Cases in the SENSOR-Pesticides program are categorized as definite, probable, possible, and suspicious on the basis of the level of known detail on the case. Cases are defined as definite exclusively on the basis of objective data about exposure and health effects (e.g., residues were measured to confirm exposure and health effects were observed by the examining clinician). Cases are defined as probable on the basis of a mix of objective and self-reported data. Cases are defined as possible on the basis of self-reported exposure and health effects data. Suspicious cases arise when the toxicologic information is insufficient to determine a causal relationship between pesticide exposure and illness, often because the given pesticide is relatively new and limited toxicologic data involving humans exist. Often reports of illness and injury are not categorized as definite, probable, possible, or suspicious because insufficient information is available about the circumstances of the exposure event or because the available evidence suggests that the pesticide exposure was either unrelated to or was unlikely to have caused the observed health effects. These "insufficient information," "unrelated," and "unlikely" exposures are not included in the analysis of confirmed illness and injury cases provided in this report.

Illness and injury severity was categorized into four groups using standardized criteria for state-based surveillance programs (*11*). In low-severity cases, the condition usually resolves without treatment and <3 days are lost from work. In moderate-severity cases, the condition is not life-threatening but does require medical treatment, no residual impairment is expected, and time lost from work is ≤5 days. In high-severity cases, the condition is life-threatening, requires hospitalization, often has >5 days lost from work, and might result in permanent impairment. Fatal cases of pesticide poisoning were placed in a separate category.

To calculate incidence rates (IRs) of acute occupational pesticide-related illness and injury, NIOSH obtained denominator data (i.e., hours worked) from the U.S. Current Population Survey (CPS) (*12*). These data were used to derive full time equivalent (FTE) estimates, with one FTE equal to 2,000 hours worked. Denominator data correspond to the states and time periods of numerator availability.

This report includes only acute pesticide-related illness and injury arising from occupational exposures. Furthermore,

nine occupational cases involving exposures with suicidal or homicidal intent were excluded. During 2007–2010, of the 6,841 cases reported to SENSOR-Pesticides, 2,014 (29%) were from occupational exposures and are included in the analyses.

Interpreting Data

For multiple reasons, the counts and rates provided in this report (Tables 1 and 2) are likely to be underestimates of the actual magnitude of acute occupational pesticide-related illness and injury (*13*). Many cases of persons with pesticide-related illness or injury are never ascertained because they neither seek medical care nor call appropriate authorities. Furthermore, because the signs and symptoms of acute pesticide-related illnesses are not pathognomonic, and because most health-care professionals are not acquainted with the recognition and management of these illnesses, many persons who seek medical care might not receive an accurate diagnosis. Even among those who do receive an accurate diagnosis, many are not reported to state surveillance systems, despite the fact that the participating states all have mandatory reporting requirements for occupational pesticide-related illness and injury (*5*). For these reasons, the counts and rates provided in this report must be considered minimum estimates. In contrast, some persons might have been categorized incorrectly as having acute occupational pesticide-related illness because symptoms for acute illnesses associated with pesticides are nonspecific and not pathognomonic, and diagnostic tests are either not available or rarely performed. In addition, rates of pesticide illness and injury might have been affected by inaccurate estimates of the agricultural industry population. Many workers in this industry are difficult to count because of the transient employment of seasonal and migrant farmworkers, and those with undocumented U.S. immigrant status tend to avoid government contact (*14*). Furthermore, the denominator inaccuracies might vary across states because some states might be more likely to have agricultural workers whose usual residence is elsewhere. Agricultural workers are not included in CPS state population estimates of those states in which they reside only temporarily (*15*).

Although the incidence rates for acute occupational pesticide-related illness and injury were highest in Washington, this finding might not necessarily mean that pesticide exposures are more hazardous or more prevalent in that state. Washington has stronger protections for agricultural workers and a larger and more robust pesticide illness and injury surveillance

TABLE 1. Distribution of cases of acute occupational pesticide-related illness and injury, full time equivalent estimates, and incidence rates per 100,000 FTEs by industrial sector, state, sex, and year of exposure — SENSOR-Pesticides program, United States, 2007–2010

	Industrial sector (CIC codes)								
	All			Agricultural (010–030)			Nonagricultural (all other codes)		
Characteristic	No.*	FTE estimates†	Incidence rate§	No.	FTE estimates†	Incidence Rate§	No.	FTE estimates†	Incidence rate§
State									
California	638	62,551,316	1.0	228	1,193,212	19.1	377	61,358,104	0.6
Florida	99	32,131,463	0.3	9	164,260	5.5	33	31,967,203	0.1
Iowa	138	5,984,592	2.3	81	275,240	29.5	17	5,709,352	0.3
Louisiana	89	7,577,948	1.2	14	74,288	18.8	35	7,503,660	0.5
Michigan	153	16,224,188	0.9	17	217,330	7.8	126	16,006,858	0.8
New Mexico	9	1,767,303	0.5	0	47,773	0	4	1,719,530	0.2
New York	25	33,947,898	<0.1	3	178,485	1.7	16	33,769,413	<0.1
North Carolina	138	15,977,020	0.9	40	169,553	23.6	91	15,807,467	0.6
Oregon	35	6,610,282	0.5	7	215,746	3.3	21	6,394,536	0.3
Texas	337	43,414,155	0.8	23	709,702	3.2	260	42,704,453	0.6
Washington	353	11,900,137	3.0	222	255,341	86.9	128	11,644,796	1.1
Sex									
Male	1356	135,950,614	1.0	494	2,774,545	17.8	673	133,176,069	0.5
Female	654	102,135,688	0.6	150	726,385	20.7	434	101,409,303	0.4
Year									
2007	614	61,979,631	1.0	194	876,815	22.1	327	61,102,816	0.5
2008	541	61,751,566	0.9	191	909,306	21.0	287	60,842,260	0.5
2009	429	57,059,520	0.8	123	831,358	14.8	263	56,228,162	0.5
2010	430	57,295,585	0.8	136	883,451	15.4	231	56,412,134	0.4
Total	**2,014**	**238,086,302**	**0.8**	**644**	**3,500,930**	**18.4**	**1,108**	**234,585,372**	**0.5**

Abbreviations: CIC = U.S. Bureau of the Census industry codes; FTE = full time equivalent; SENSOR = Sentinel Event Notification System for Occupational Risks.
* Information on industry was missing for 262 (13%) persons with cases of pesticide-related illness.
† Estimates were derived from the hours worked data obtained from the U.S. Current Population Survey (CPS) and summed for the years 2007–2010 (*8*).One FTE equals 2,000 hours worked. Denominator data correspond to the states and time periods of numerator availability.
§ Incidence rate per 100,000 FTEs.

TABLE 2. Distribution of cases of acute occupational pesticide-related illness and injury by industrial sector, pesticide functional class, and illness and injury severity — SENSOR-Pesticides program, United States, 2007–2010

	Industrial sector (CIC codes)					
	All		Agricultural (010–030)		Nonagricultural (all other codes)	
Characteristic	No.	(%)	No.	(%)	No.	(%)
Pesticide functional class						
Insecticides	739	(37)	162	(25)	447	(40)
Herbicides	358	(18)	111	(17)	201	(18)
Fungicides	103	(5)	65	(10)	33	(3)
Fumigants	152	(8)	68	(11)	77	(7)
Insecticides + fungicides	116	(6)	77	(12)	30	(3)
Other*	314	(16)	43	(7)	230	(21)
Multiple†	232	(12)	118	(18)	90	(8)
Illness and injury severity category						
Low	1,641	(81)	528	(82)	894	(81)
Moderate	346	(17)	105	(16)	202	(18)
High and death	27	(1)	11	(2)	12	(1)
Total	**2,014**	**(100)**	**644**	**(100)**	**1,108**	**(100)**

Abbreviations: CIC = U.S. Bureau of the Census industry codes; SENSOR = Sentinel Event Notification System for Occupational Risks.
* Includes plant growth regulators, insect growth regulators, wood treatment products, preservatives, and insect repellants.
† Exposed to pesticide products that were classified into more than one functional class or to more than one pesticide product with each having a different functional class.

program than other states, thereby accounting for some of the differences in incidence rates. As an example of stronger worker protections, Washington gives farmworkers the right to organize and bargain collectively and requires cholinesterase monitoring for some pesticide handlers (*10*). These protections might make farmworkers in Washington less hesitant to seek medical care for pesticide illness and injury. In addition, Washington has a larger number of surveillance program staff (3.75 FTEs versus an average of 1.3), and all but one are bilingual Spanish/English speakers. The odds of identifying agricultural worker cases might be improved when surveillance programs have a bilingual staff of ample size because agricultural workers are often Spanish-speaking. Although workers' compensation systems can be an important source of case reports, only two states (California and Washington) received reports from this source during 2007–2010. The workers' compensation system can be an especially useful reporting source when it is organized as in Washington. For example, Washington is the only state whose workers' compensation system covers the first visit for any suspected work-related illness or injury, even if the illness or injury is determined not to be work-related. In addition, unless Washington employers are able to self-insure, workers' compensation insurance is provided by an exclusive state-fund operated by the state's Department of Labor and Industries. There are no other private workers' compensation insurers in the state. This avoids problems that can occur in other states when state authorities either do not receive information from private workers' compensation insurers or process such information incorrectly. No other SENSOR-Pesticides state provides workers' compensation insurance through an exclusive state fund. For all these reasons, case estimates from Washington might be more accurate than those in other states, although even these estimates likely underestimate the actual level of occupational pesticide-related illness and injury.

The pesticides most often implicated in acute occupational pesticide-related illness and injury are listed (Table 3). Data are stratified by whether the affected person was exposed to a single substance (i.e., active ingredient). When affected persons were exposed to a single substance, it is very likely that that substance was responsible for illness or injury. However, this might not be so for persons who were exposed to multiple substances because one of the other substances might have produced the illness or injury. Furthermore, pesticide products also contain solvents and other nonactive ingredients, some of which might produce illness. Because the identity of inert ingredients present in pesticide products is almost never available, attribution of illness to these ingredients is not possible. In addition, only illnesses and injuries caused by exposure to conventional pesticides are included in this report. Illnesses and injuries caused by chlorine, hypochlorites, and other disinfectants are not included in this report because not all states capture such illnesses (often because of resource constraints) and therefore including them would make the rate estimates not comparable across the 11 states.

Methods for Identifying Acute Occupational Pesticide-Related Illness and Injury

All 11 states that participate in the SENSOR-Pesticides program require physicians to report confirmed and suspected cases of pesticide-related illness and injury to state health

TABLE 3. Pesticides most often implicated in acute occupational pesticide-related illness and injury and number of cases — SENSOR-Pesticides program, United States, 2007–2010

Pesticide category	Pesticide functional class	Exposed to single substance*		Exposed to multiple substances†		All cases (single and multiple exposure)†	
		No.	(%)	No.	(%)	No.	(%)
Pyrethroids	Insecticide	244	(59)	172	(41)	**416**	**(21)**
Organophosphorous compounds	Insecticide	160	(59)	111	(41)	**271**	**(13)**
Glyphosate	Herbicide	105	(64)	58	(36)	**163**	**(8)**
Pyrethrins	Insecticide	68	(49)	71	(51)	**139**	**(7)**
Sulfur compounds	Insecticide/Fungicide	66	(50)	65	(50)	**131**	**(7)**
Organochlorine compounds	Insecticide	12	(17)	60	(83)	**72**	**(4)**
N-methyl carbamates	Insecticide	42	(72)	16	(28)	**58**	**(3)**
Phosphorus	Fumigant	52	(95)	3	(5)	**55**	**(3)**
Dipyridyls	Herbicide	28	(52)	26	(48)	**54**	**(3)**
Thiocarbamates/Dithiocarbamates	Fumigant	41	(79)	11	(21)	**52**	**(3)**
Pyraclostrobin	Fungicide	32	(74)	11	(26)	**43**	**(2)**
Chloropicrin	Fumigant	3	(8)	35	(92)	**38**	**(2)**
Fipronil	Insecticide	5	(14)	30	(86)	**35**	**(2)**
Imidacloprid	Insecticide	1	(3)	28	(97)	**29**	**(1)**
Triazines	Herbicide	12	(50)	12	(50)	**24**	**(1)**
All other		419	(52)	392	(48)	**811**	**(40)**
Total		**1,290**	**(64)**	**724**	**(36)**	**2,014**	**(100)**

Abbreviation: SENSOR = Sentinel Event Notification System for Occupational Risks
* A pesticidal active ingredient.
† Because some persons who were exposed to multiple substances appear in the totals of more than one pesticide category, the sum of the pesticide categories in this column exceeds the number of individual persons.

authorities. Besides identifying, classifying, and tabulating pesticide poisoning cases, states periodically perform in-depth investigations of pesticide-related events, and develop interventions aimed at particular industries or pesticide hazards.

Publication Criteria

Persons meet the publication criteria if they met the case definition and were exposed to conventional pesticides at their place of work during January 1, 2007–December 31, 2010.

Highlights

During 2007–2010, a total of 2,014 cases of acute occupational pesticide-related illness and injury were identified in 11 states (Table 1). Rates of illness and injury among agricultural industry workers (18.4/100,000) were 37 times greater than the rates for nonagricultural workers (0.5/100,000). Rates were found to be highest in Washington. Most affected persons were exposed to insecticides or herbicides (Table 2). Among persons who were exposed to insecticides, the chemical classes most often involved were pyrethroids, organophosphates, and pyrethrins (Table 3). Among persons exposed to herbicides, the specific herbicides most commonly involved were glyphosate and the dipyridyls (i.e., paraquat and diquat). A total of 81% of cases were classified as low severity, 17% were moderate severity, and 1% were high severity. One affected person died.

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Surveillance for Cancer Incidence and Mortality — United States, 2011

Simple D. Singh, MD
S. Jane Henley, MSPH
A. Blythe Ryerson, PhD
Division of Cancer Prevention and Control, National Center for Chronic Disease Prevention and Health Promotion, CDC

Preface

This report provides, in tabular and graphic form, official federal statistics on the occurrence of cancer for 2011 and trends for 1999–2011 as reported by CDC and the National Cancer Institute (NCI) (*1*). Cancer incidence data are from population-based cancer registries that participate in CDC's National Program of Cancer Registries (NPCR) and NCI's Surveillance, Epidemiology, and End Results (SEER) program reported as of November 2013. Cancer mortality data are from death certificate information reported to state vital statistics offices through 2011 and compiled into a national file for the entire United States by CDC's National Center for Health Statistics' (NCHS) National Vital Statistics System (NVSS). This report is a part of the first-ever *Summary of Notifiable Noninfectious Conditions and Disease Outbreaks*, which encompasses various surveillance years but is being published in 2015 (*2*). The *Summary of Notifiable Noninfectious Conditions and Disease Outbreaks* appears in the same volume of *MMWR* as the annual *Summary of Notifiable Infectious Diseases* (*3*).

This report presents information on new cancer cases and deaths for 2011. The number and rate of cancer cases and deaths are stratified by the primary cancer sites as reported for 2011; information is provided by demographic characteristic (e.g., sex, age, race, and ethnicity) and primary cancer site (68 selected sites among men and 72 selected sites among women) (Tables 1–12). Age-adjusted cancer incidence and death rates for the most common sites are shown by race, sex, and ethnicity for 2011, the most recent diagnosis year (Figure 1). Maps of the United States display age-adjusted cancer incidence and death rates, presented by quartiles, for 2011, the most recent diagnosis year (Figures 2 and 3). Time trends in age-adjusted cancer incidence and death rates during 1999–2011 are shown for all sites combined by race, sex, and ethnicity (Figures 4–7). Age-adjusted cancer incidence and death rates are shown by primary site and year for the period 1999–2011 (Tables 13–16).

Corresponding author: Simple Singh, Division of Cancer Prevention and Control, National Center for Chronic Disease Prevention and Health Promotion, CDC. Telephone: 770-488-4292; e-mail: sdsingh@cdc.gov.

Background

Cancer comprises a diverse mix of diseases occurring in every part of the body and is a leading cause of death in the United States, second only to heart disease (*4*). More than half of cancer cases could be prevented (*5*). Surveillance of cancer incidence and mortality can help public health officials target areas for control efforts (*6*) and track progress toward meeting the national health objectives set forth in *Healthy People 2020* (*7*). Because cancer is a reportable disease in every state, hospitals, physician's offices, pathology laboratories, and other medical facilities are required to submit data on all cancer diagnoses to a central cancer registry at the state or territorial level. A cancer registry is a database that contains individual records of all cancer cases in a defined population and includes patient demographics, tumor characteristics (e.g., cancer site and pathology), and information about the notifying health provider or facility. In 1992, Congress established NPCR by enacting the Cancer Registries Amendment Act, Public Law 102-515 (*8*). Administered by CDC, NPCR collects data on the occurrence of cancer, and the type, extent, and location of the cancer. Before NPCR was established, 10 states had no registry, and most states with registries lacked the resources and state legislation needed to gather complete data (*9*). Presently, NPCR supports central cancer registries in 45 states, the District of Columbia, Puerto Rico, and the U.S. Pacific Island Jurisdictions. NPCR data represent 96% of the overall U.S. population. Together, NPCR and NCI's SEER Program collect data for the entire U.S. population. Cancer control planners and others can identify variations in cancer rates by population subgroups and monitor trends over time to guide the planning and evaluation of cancer prevention and control programs and allocation of health resources.

Data Sources

Data about cancer incidence and mortality in the *Summary* (*Noninfectious*) come from the official federal statistics on cancer, the U.S. Cancer Statistics (USCS) dataset (*1*). The USCS dataset includes cancer incidence data from NPCR registries in 45 states and the District of Columbia (cancer

incidence data from Puerto Rico and the U.S. Pacific Island Jurisdictions were not available for this analysis) and SEER program registries in the remaining five states (Connecticut, Hawaii, Iowa, New Mexico, and Utah) and cancer mortality data from NVSS.

Incidence Data

The primary source of data on cancer incidence is medical records. Staff at health care facilities abstract data from patients' medical records, enter it into the facility's own cancer registry if it has one, and then send the data to the regional or state registry. Both NPCR and SEER registries collect data using uniform data items and codes as documented by the North American Association of Central Cancer Registries (NAACCR). This uniformity ensures that data items collected by the two federal programs are comparable (*10,11*). Information on primary site and histology is coded according to the *International Classification of Diseases for Oncology, Third Edition* (ICD-O-3) and categorized according to the revised SEER recodes dated January 27, 2003, which define standard groupings of primary cancer sites (http://seer.cancer.gov/siterecode) (*12*). Beginning with 2010 diagnoses, cases were first classified by anatomic site using ICD-O-3; cases with hematopoetic histologies were further classified by using the 2008 *WHO Classification of Tumours of Haematopoietic and Lymphoid Tissues* (*13*). Data from the NPCR registries provided in this report were reported to CDC as of November 30, 2013. Data from SEER registries were reported to NCI as of November 1, 2013.

NPCR and SEER cancer registries consider as reportable all incident cases with a behavior code of 2 (in situ, noninvasive) or 3 (invasive, primary site only) in ICD-O-3, except for in situ cancer of the cervix. Basal and squamous cell carcinomas of the skin also are excluded, except for those on the skin of the genital organs. (*12*). Several cancers that are coded as malignant in ICD-O-3 (beginning with 2001 diagnoses) were not coded as malignant in ICD-O-2 (*10*). Additional information is provided in the USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes/data_sources/incidence.htm).

Mortality Data

Cancer mortality statistics are based on information from all death certificates filed in the 50 states and the District of Columbia and processed by NVSS at NCHS (*14*). The cancer mortality data were compiled in accordance with World Health Organization regulations, which specify that member nations classify and code causes of death in accordance with the current revision of the *International Classification of Diseases* (ICD) (*15*). For consistency with the data on cancer incidence, the cancer sites in mortality data were grouped according to the revised SEER recodes dated January 27, 2003 (available at http://seer.cancer.gov/codrecode). Additional information is provided in the USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes/data_sources/mortality.htm).

Population Estimates

Population denominators are race-specific, ethnicity-specific, and sex-specific county population estimates from the 2010 U.S. Census, modified by SEER and aggregated to the state and national level. Additional details about SEER are available at http://seer.cancer.gov/popdata/index.html.

Interpreting Data

Incidence Data

Each year, state cancer registries submit cancer cases for a new diagnosis year and an updated version of the previous years' cancer cases to CDC or NCI. Therefore, each year when *U.S. Cancer Statistics* is published, updates to the previous year's data are published, using the most recent data submission and the most recent population data. Users of cancer incidence data published by federal agencies should be mindful of the data submission dates for all data used in their analyses.

Mortality Data

Cancer mortality statistics in USCS are influenced by the accuracy of information on the death certificate. Unlike incidence data, mortality data for a calendar year are not updated after the data file is released. Mortality data for the entire United States refer to only deaths that occurred within the United States; data for geographic areas are provided by the decedent's place of residence.

Race and Ethnicity Data

For cancer incidence, race and ethnicity data are abstracted from medical records and grouped into categories (*11*). When reporting cancer mortality, race and Hispanic origin are recorded separately on the death certificate by the funeral director as provided by an informant or, in the absence of an informant, on the basis of observation (*16*).

Differences in rates among racial and ethnic (Hispanic origin) populations should be interpreted with caution. A recent study using SEER incidence data suggests that the quality of data on race in cancer registries is considered excellent for whites, blacks, and Asians/Pacific Islanders, good for Hispanics, and poor for American Indians/Alaska Natives (*17*). Recent studies involving cancer mortality data demonstrate that death rates

for whites and blacks generally are estimated accurately whereas death rates for Asians/Pacific Islanders, American Indians/Alaska Natives, and Hispanics are underestimated (*18*). For this reason, incidence and mortality data provided in this report might be underestimated for these groups, possibly because of misclassification of race or Hispanic ethnicity.

Four NPCR registries (Delaware, Kentucky, Missouri, and South Carolina) opted not to present state-specific Asian/Pacific Islander counts and rates. Six NPCR registries (Delaware, Kentucky, Massachusetts, Missouri, Pennsylvania, and South Carolina) opted not to present state-specific Hispanic (classified by the NAACCR Hispanic Identification [NHIA] Algorithm) counts and rates. Nine NPCR registries (Delaware, Georgia, Illinois, Kansas, Kentucky, Missouri, New Jersey, New York, and South Carolina) opted not to present state-specific American Indian/Alaska Native counts and rates. However, in each of these cases, the aggregate national rates presented in this report include data for these registries.

Methods for Identifying Cancer

Medical facilities such as hospitals, doctor's offices, and pathology laboratories send information about cancer cases to their cancer registry. Most information comes from hospitals, where highly trained cancer registrars transfer the information from the patient's medical record to the registry's computer software using standardized codes. The data are then sent to the central cancer registry. Every year the central cancer registries electronically submit incidence, demographic, and clinical data to NPCR or SEER.

Population Coverage

The population coverage for incidence data varies by diagnosis year. Population coverage might be affected by the suppression of state incidence data, if a state did not meet the publication criteria or did not submit data. In addition, state incidence data might be suppressed if <16 cases were reported or if the state requested that the data be suppressed. Additional information is provided by the USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/data/00_pop_coverage.htm). Mortality data from malignant neoplasms (i.e., cancers) as recorded in the NVSS from the 50 states and the District of Columbia are available in USCS, and thus 100% of the U.S. population is covered each year.

Suppression of Rates and Counts

When the numbers of cases or deaths used to compute rates are small, those rates tend to have poor reliability. Therefore, in an effort to discourage misinterpretation or use of rates or counts that are unstable because case or death counts are small, incidence and death rates and counts of <16 are not shown in tables and figures. The use of a threshold value for suppressing cells helps protect the confidentiality of patients by reducing or eliminating the risk for disclosure of their identity. Additional information is provided in the USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes/stat_methods/suppression.htm).

Publication Criteria

Cancer incidence data that appear in this report are derived from state cancer registries that have high-quality cancer incidence data for individual (e.g., 2011) and combined (e.g., 1999–2011) years as demonstrated by meeting all of the following criteria on data quality for all cancer sites combined:

- case ascertainment is ≥90% (margin of error ±5%) complete,
- ≤5% of cases are ascertained solely on the basis of a death certificate,
- ≤3% of cases are missing information on sex,
- ≤3% of cases are missing information on age,
- ≤5% of cases are missing information on race, and
- ≥97% of the registry's records passed a set of single-field and inter-field computerized edits that test the validity and logic of data components.

Additional information about USCS is available at available at http://www.cdc.gov/uscs.

Highlights

Incidence and Death Rates

In 2011, approximately 1.5 million invasive cancers were diagnosed in the United States, an annual incidence rate of 451 cases per 100,000 persons. In the same year, approximately 576,000 persons died of cancer nationally, an annual death rate of 169 deaths per 100,000 persons. Differing rates of cancer by race, ethnicity, and state of residence indicate that for some populations, *Healthy People 2020* objectives have already been achieved, whereas objectives for other populations have not been met, and these populations might benefit from targeted cancer prevention and control efforts.

Cancer incidence and death rates increase with age. In 2011, among persons in the youngest age group (<15 years), 10,063 new cancer cases (rate: 17 cases per 100,000 persons) and 1,283 cancer deaths (rate: two deaths per 100,000 persons) were reported. Among persons aged ≥65 years, 822,548 new

cancer cases (rate: 2,005 cases per 100,000 persons) and 397,106 cancer deaths (rate: 960 deaths per 100,000 persons) were reported. Overall, 54% of cancer cases and 69% of cancer deaths in 2011 occurred among persons aged ≥65 years.

Among men in 2011, blacks had the highest cancer incidence and death rates in the United States, and American Indians/Alaska Natives and Asians/Pacific Islanders had the lowest cancer incidence and death rates. Among women in 2011, whites had the highest cancer incidence rates and blacks had the highest cancer death rates. American Indians/Alaska Natives had the lowest cancer incidence rates, and Asians/Pacific Islanders had the lowest cancer death rates. Differences in cancer rates by race and ethnicity might reflect differences in risk factors, screening, and treatment although rates among some populations might be underestimated because of problems ascertaining race or ethnicity. By state, overall (all cancer sites combined) cancer incidence rates in 2011 ranged from 374 to 509 cases per 100,000 persons, and overall cancer death rates ranged from 126 to 201 deaths per 100,000 persons.

Four cancer sites accounted for half of all cases diagnosed in 2011, including 209,292 prostate cancers, 220,097 female breast cancers, 207,339 lung and bronchus cancers (110,322 among men and 97,017 among women), and 135,260 colon and rectum cancers (70,099 among men and 65,161 among women). These four sites also accounted for half of cancer deaths in 2011, including 156,953 lung cancer deaths, 51,783 colon and rectum cancer deaths, 40,931 female breast cancer deaths, and 27,970 prostate cancer deaths.

Time Trends in Incidence and Death Rates

On the basis of data from registries meeting data quality criteria during 1999–2011, cancer incidence rates declined from 485 cancer cases per 100,000 population in 1999 to 444 cases in 2011. Although lung cancer incidence declined steadily among men from 1999 to 2011, it increased among women from 1999 to 2005 and has since declined from 2005 to 2011. Prostate cancer incidence declined from 170 cases per 100,000 men in 1999 to 128 cases in 2011. Colorectal cancer incidence declined from 57 cases per 100,000 persons in 1999 to 40 cases in 2011. Female breast cancer incidence declined from 135 cases per 100,000 women in 1999 to 121 cases in 2005, increased to 125 cases in 2009, and declined again to 122 cases in 2011. During 1999–2011, cancer death rates declined from 201 deaths per 100,000 persons in 1999 to 169 deaths in 2011; during the same period, death rates declined for each of the top four cancers.

National cancer surveillance data help public health officials track progress toward achieving the national cancer objectives set forth in *Healthy People 2020* (*19*). For the national cancer burden to be reduced and *Healthy People 2020* targets to be met, behavioral and environmental factors that increase cancer risk must be reduced, and high-quality screening services and evidence-based treatments must be available and accessible to all persons. Several effective primary and secondary prevention measures, such as vaccination against infectious agents that cause cancer (i.e., hepatitis B virus and human papilloma virus), help with smoking cessation, and cancer screening, when effectively implemented and sustained, could reduce the number of new cancer cases and prevent many cancer-related deaths (*20*). Evidence-based interventions can be implemented at both the individual level and the population level to reduce cancer risk factors, promote healthy living, and encourage cancer screening (*5*).

Acknowledgment

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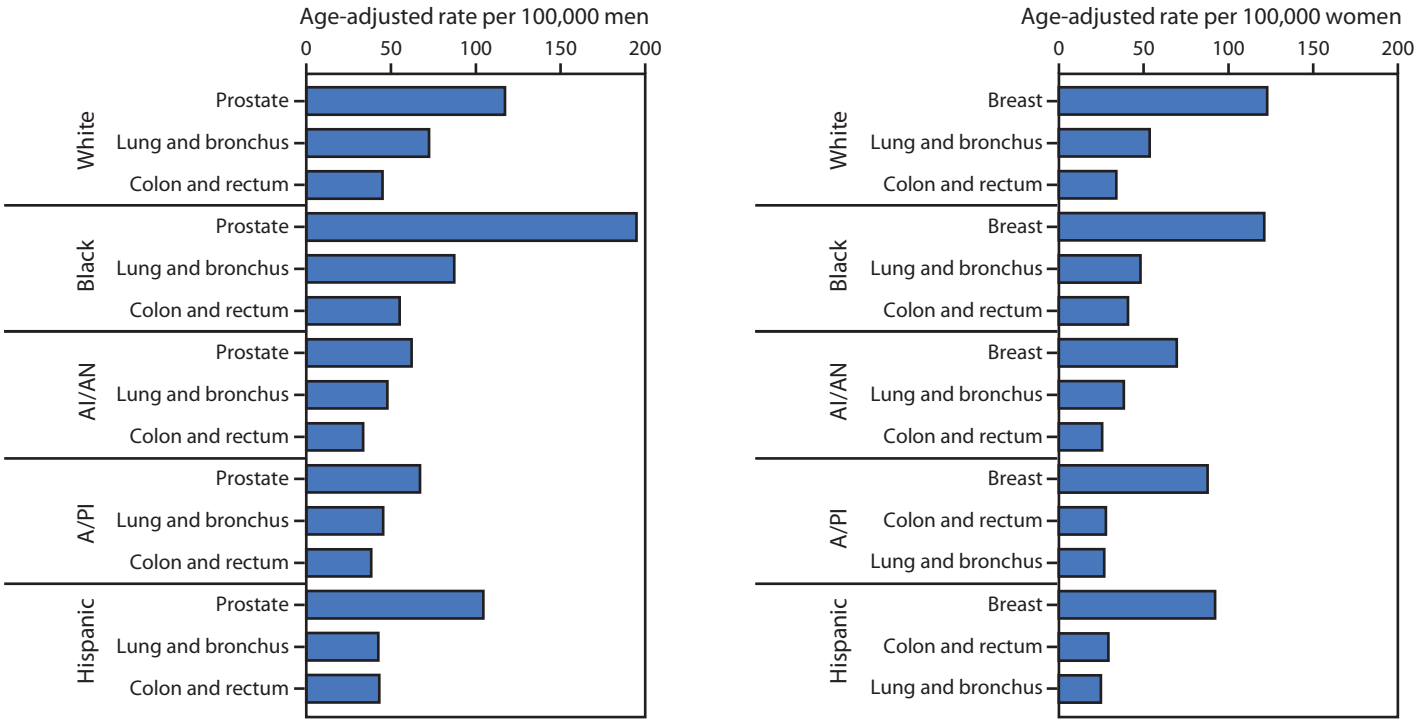
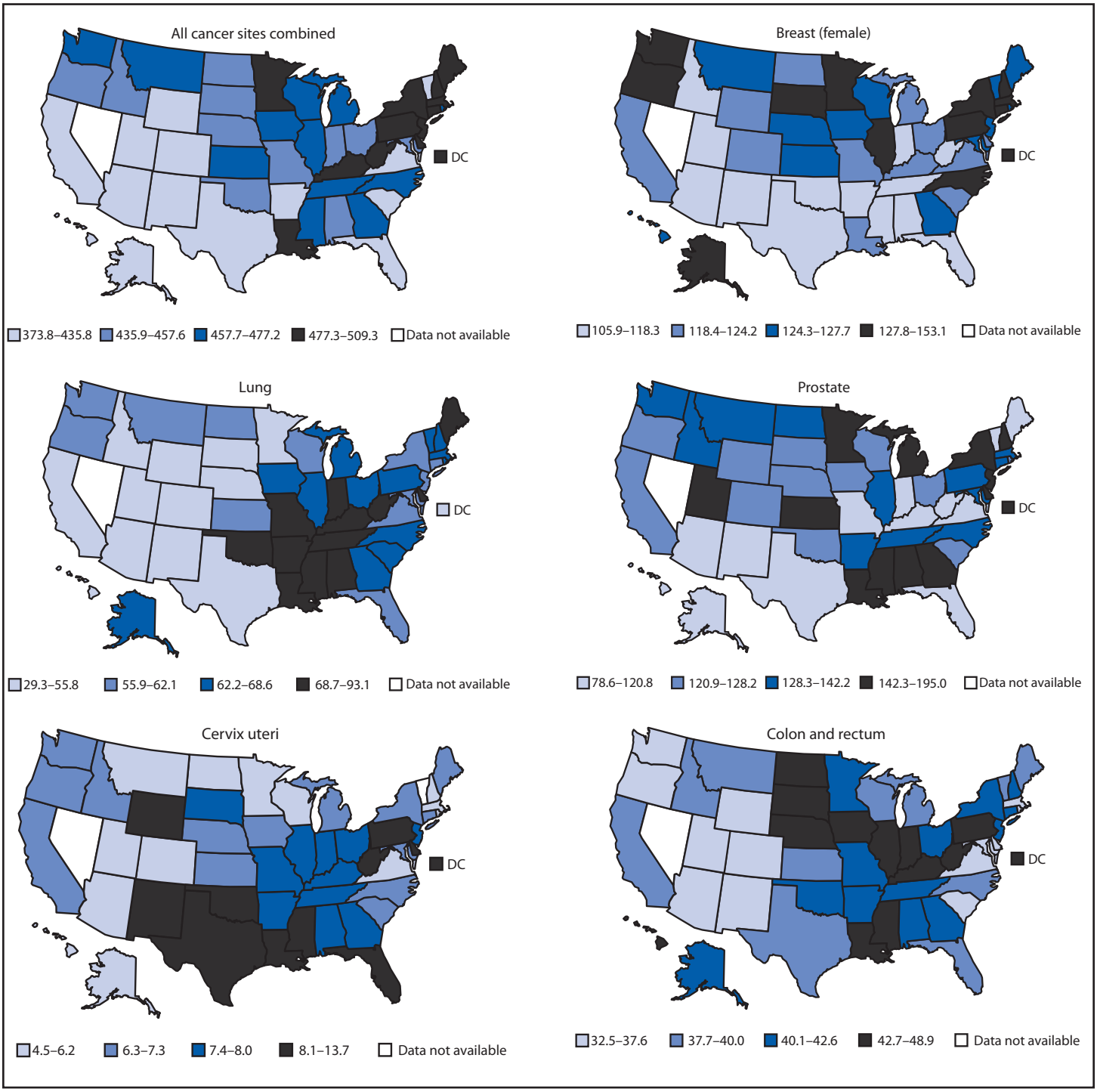
FIGURE 1. Reported rate* of invasive† cancer cases for most common cancer sites, by sex and race/ethnicity§ — United States, 2011¶



Abbreviations: AI/AN = American Indian/Alaska Native; A/PI = Asian/Pacific Islander.
Sources: CDC's National Program of Cancer Registries and the National Cancer Institute's Surveillance, Epidemiology, and End Results program.
* Rates are the number of cases per 100,000 persons and are age-adjusted to the 2000 U.S. standard population (19 age groups – Census P25–1130). For more information, see USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes).
† Invasive cancer excludes basal and squamous cell carcinomas of the skin except when these occur on the skin of the genital organs, and in situ cancers except urinary bladder. Urinary bladder cancer includes invasive and in situ.
§ Race categories are not mutually exclusive from Hispanic origin. Rates are not presented for persons of unknown or other race. Data for specified racial or ethnic populations other than white and black should be interpreted with caution. For more information, see USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes/interpreting/race.htm).
¶ Data are compiled from cancer registries that meet the data quality criteria for all invasive cancer sites combined (covering approximately 99% of the U.S. population). Registry-specific data quality information is available at http://www.cdc.gov/cancer/npcr/uscs/2011/data/00_data_quality.htm. Caution should be used when comparing incidence and death rates because of the difference in population coverage.

FIGURE 2. Reported rate* of invasive† cancer cases, by primary cancer site and state — United States, 2011§

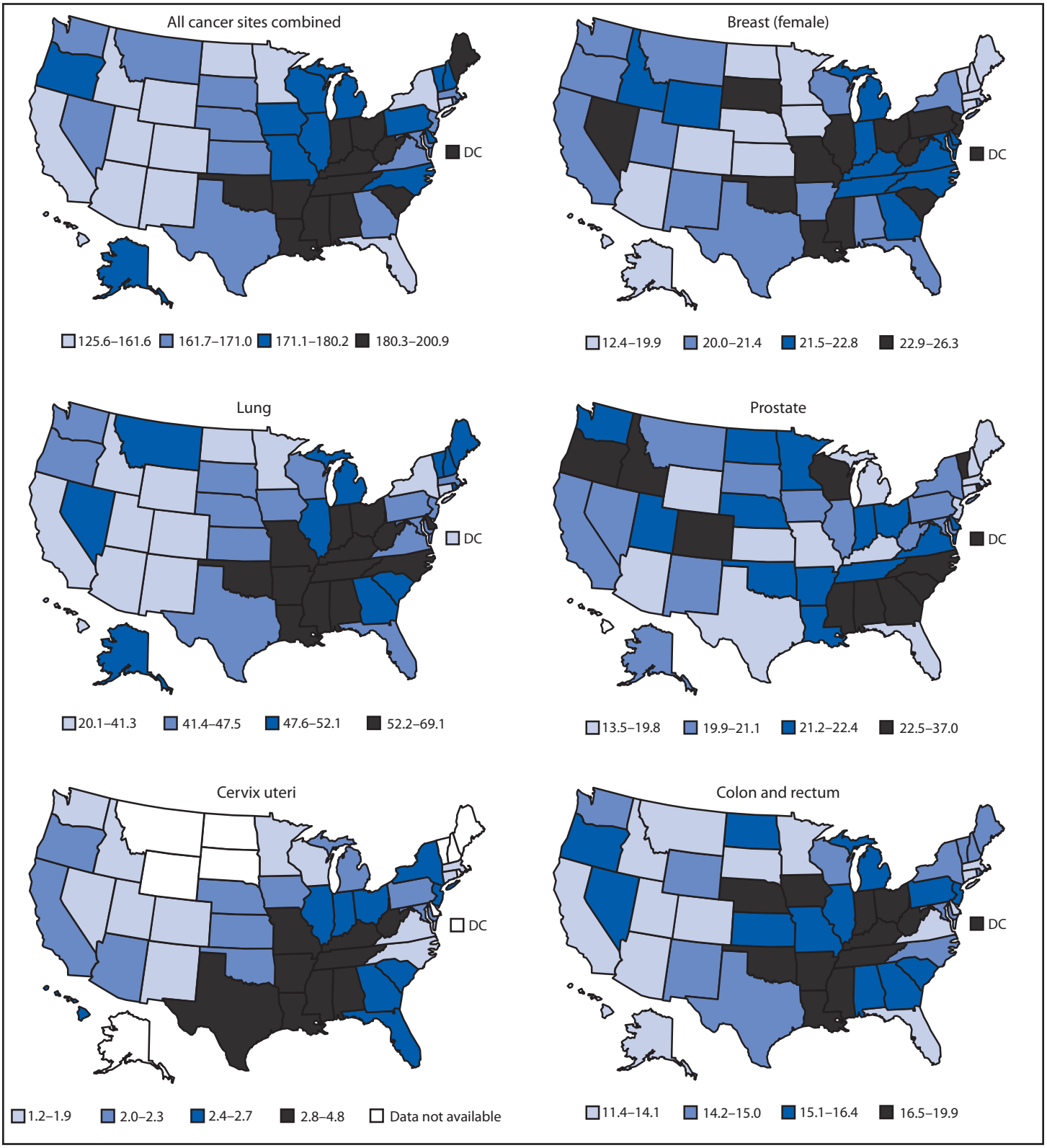


* Rates are the number of cases per 100,000 persons and are age-adjusted to the 2000 U.S. standard population (19 age groups – Census P25–1130). For more information, see USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes).

† Invasive cancer excludes basal and squamous cell carcinomas of the skin except when these occur on the skin of the genital organs, and in situ cancers except urinary bladder. Urinary bladder cancer includes invasive and in situ.

§ Data are compiled from cancer registries that meet the data quality criteria for all invasive cancer sites combined (covering approximately 99% of the U.S. population). Registry-specific data quality information is available at http://www.cdc.gov/cancer/npcr/uscs/2011/data/00_data_quality.htm. Caution should be used when comparing incidence and death rates because of potential differences in population coverage.

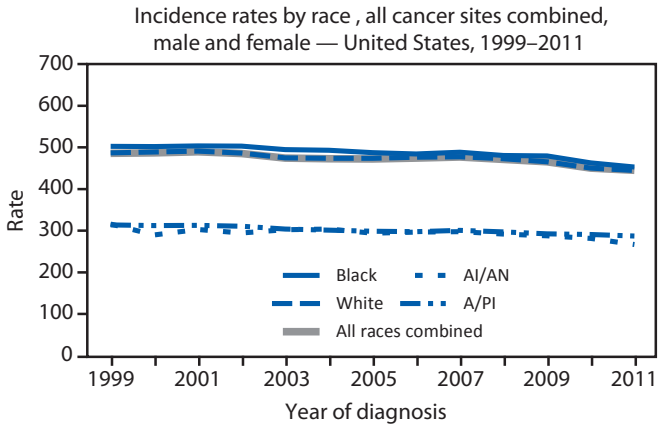
FIGURE 3. Rate* of cancer deaths, by primary cancer site and state — United States, 2011†

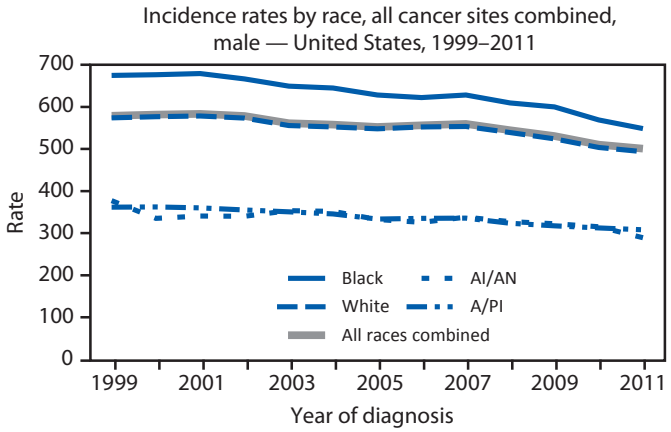


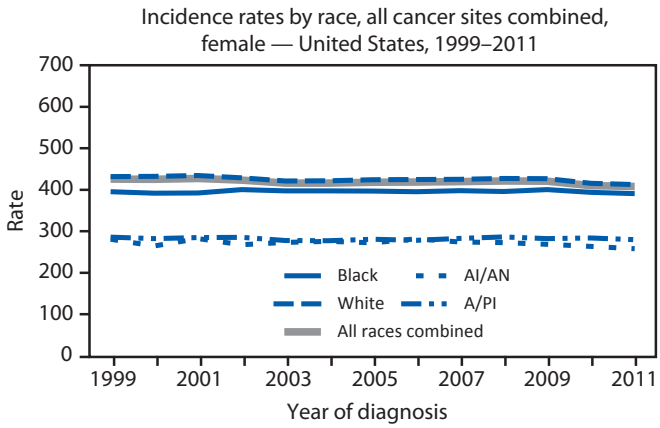
* Rates are the number of deaths per 100,000 persons and are age-adjusted to the 2000 U.S. standard population (19 age groups – Census P25–1130). For more information, see USCS Technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes).

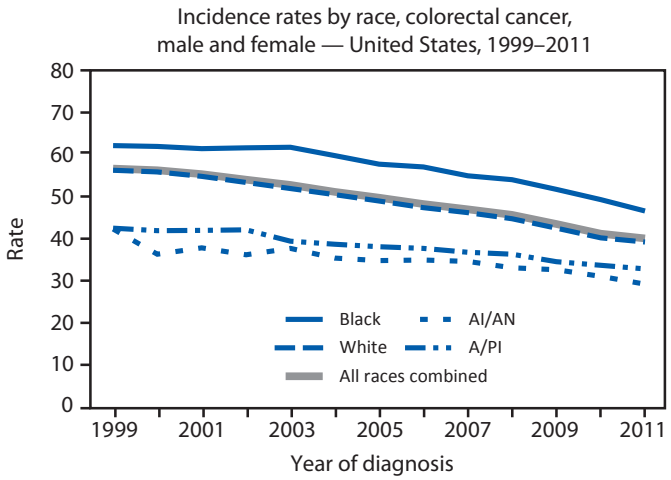
† Data are from the National Vital Statistics System (NVSS). Data for death rates cover 100% of the U.S. population. Caution should be used when comparing incidence and death rates because of potential differences in population coverage.

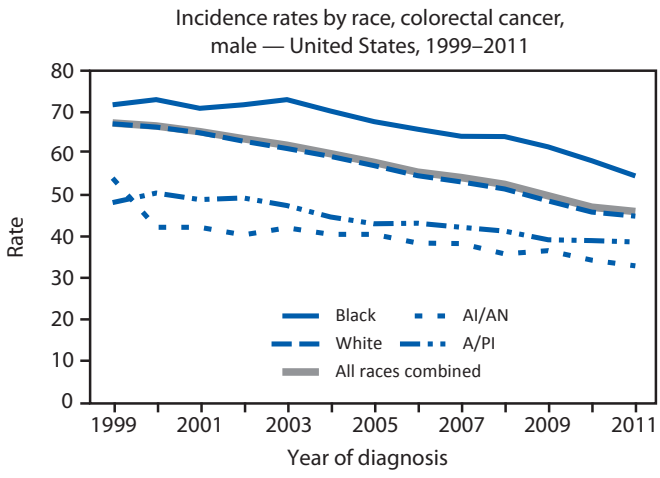
FIGURE 4. Reported rate* of invasive† cancer cases by primary cancer site, race,§ and sex — United States, 1999–2011¶











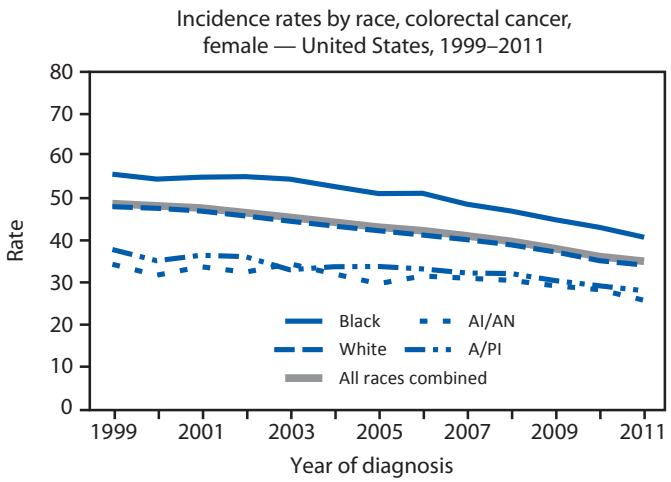


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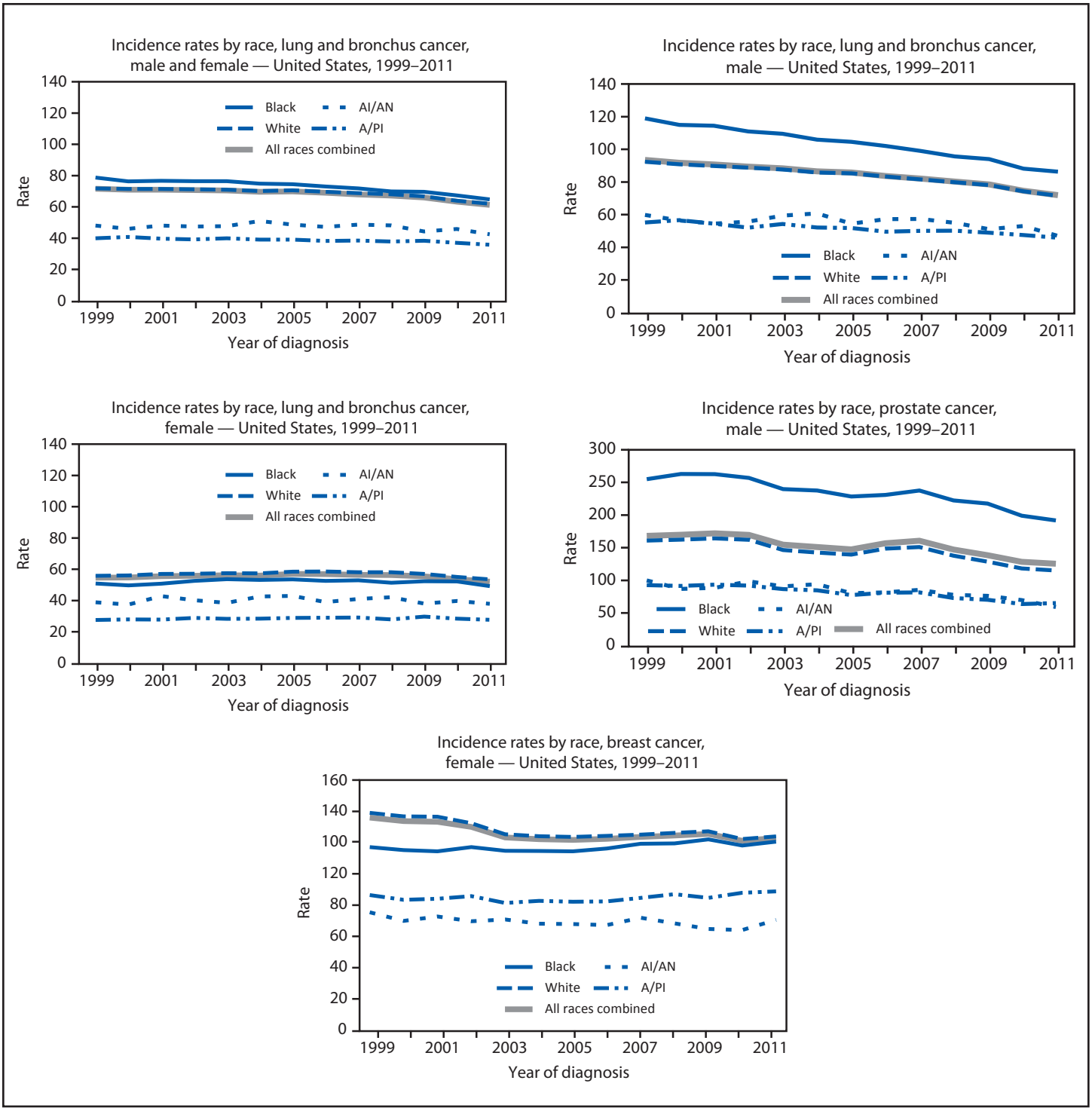
FIGURE 4. (*Continued*) Reported rate* of invasive† cancer cases by primary cancer site, race,§ and sex — United States, 1999–2011¶



Abbreviations: AI/AN = American Indian/Alaska Native; A/PI = Asian/Pacific Islander.

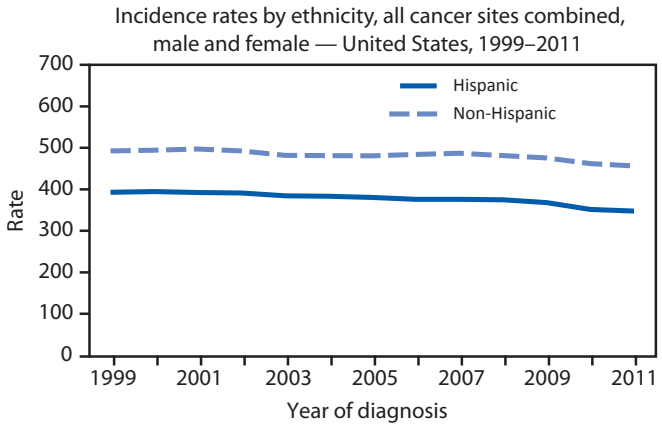
* Rates are the number of cases per 100,000 persons and are age-adjusted to the 2000 U.S. standard population (19 age groups – Census P25–1130). For more information, see USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes).

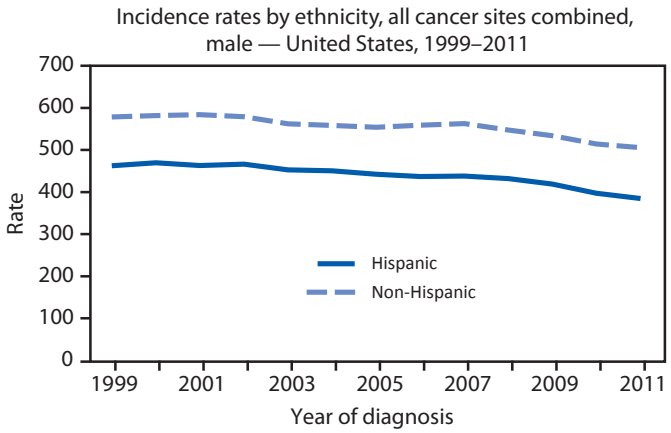
† Invasive cancer excludes basal and squamous cell carcinomas of the skin except when these occur on the skin of the genital organs, and in situ cancers except urinary bladder. Urinary bladder cancer includes invasive and in situ.

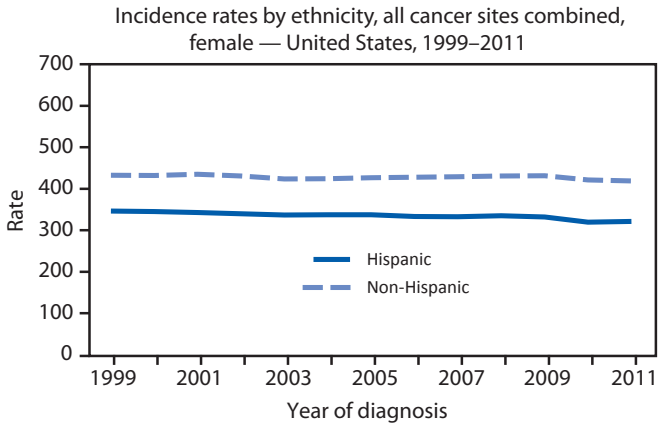
§ Rates are not presented for persons of unknown or other race. Data for specified racial populations other than white and black should be interpreted with caution. For more information, see USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes/interpreting/race.htm).

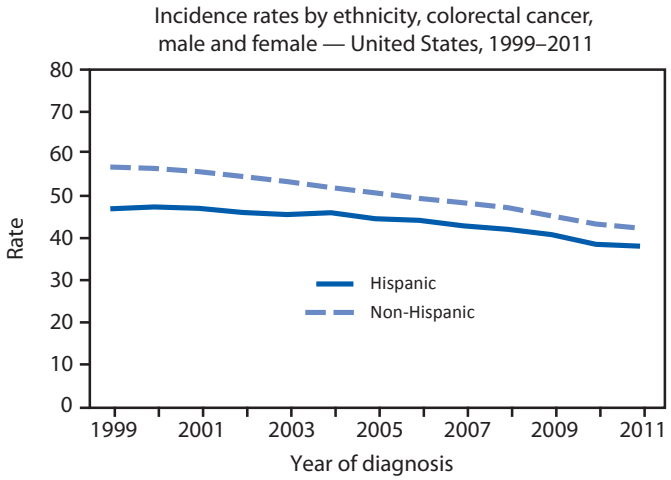
¶ Data are compiled from cancer registries that meet the data quality criteria for all invasive cancer sites combined for all years, 1999–2011 (covering approximately 89% of the U.S. population). See registry-specific data quality information for all years, 1999–2011 (http://www.cdc.gov/cancer/npcr/uscs/2011/data/00_data_quality.htm). Caution should be used when comparing incidence and death rates because of potential differences in population coverage.

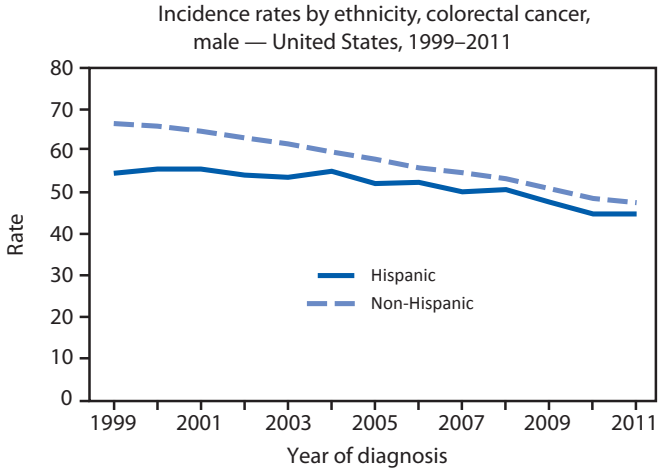
FIGURE 5. Reported rate* of invasive† cancer cases, by primary cancer site, ethnicity,§ and sex — United States, 1999–2011¶











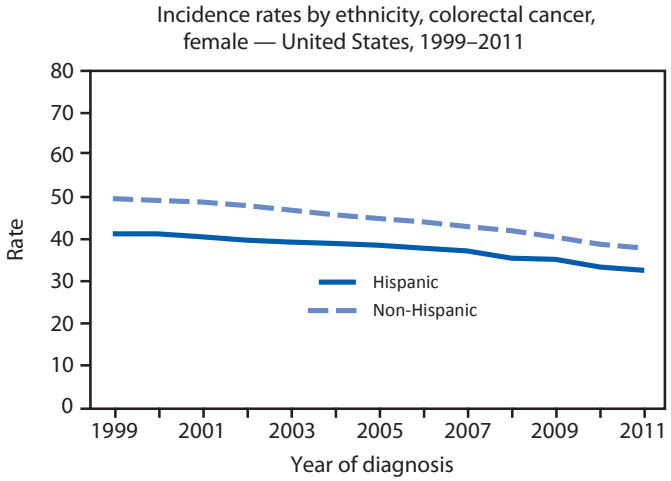


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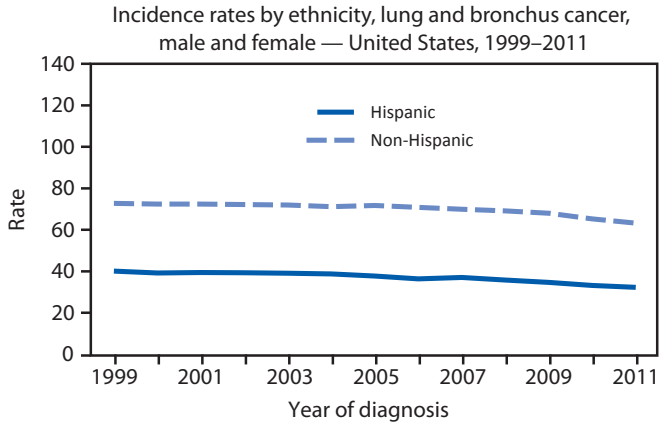
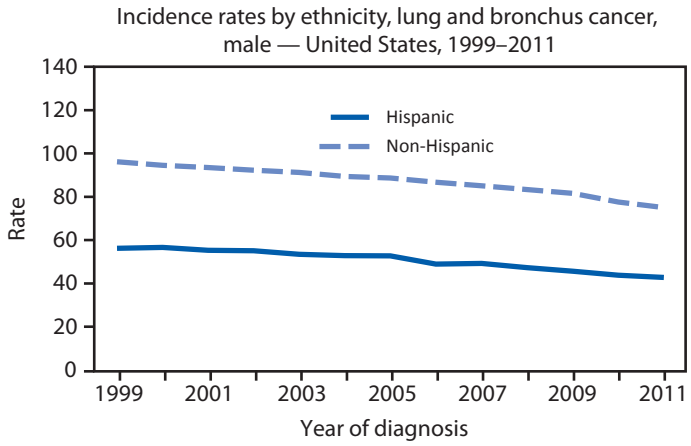
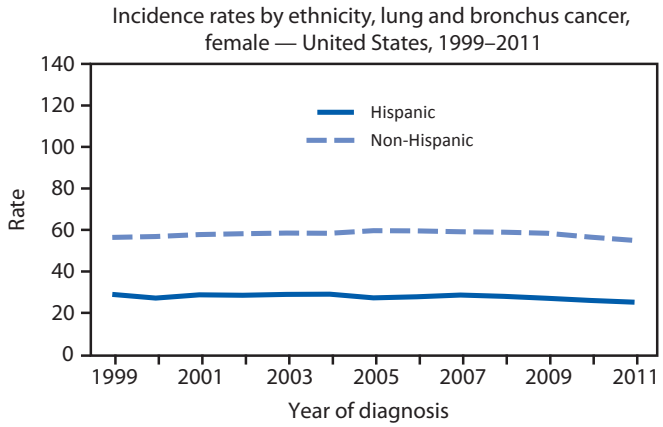
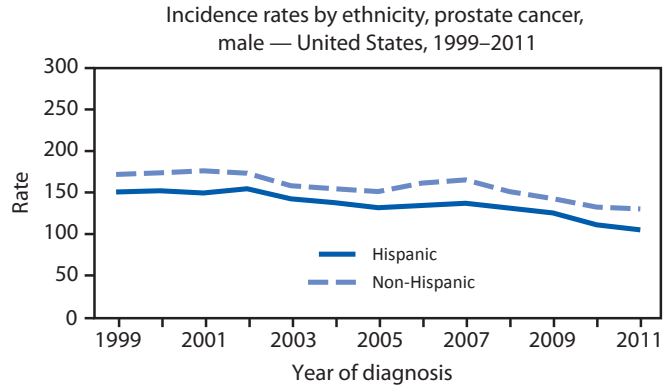
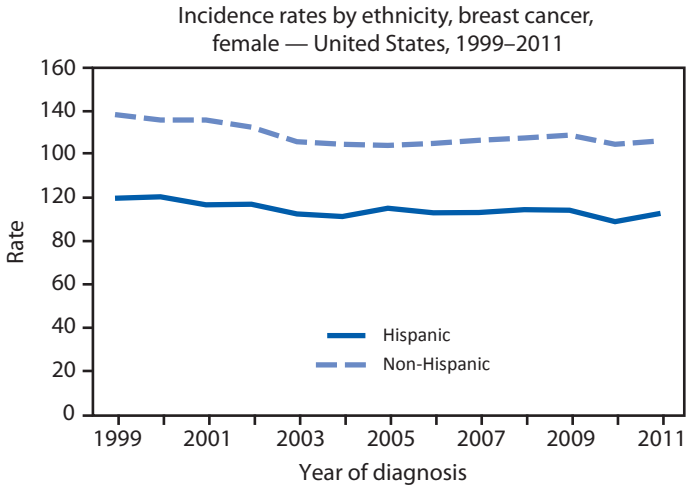
FIGURE 5. (*Continued*) Reported rate* of invasive† cancer cases, by primary cancer site, ethnicity,§ and sex — United States, 1999–2011¶











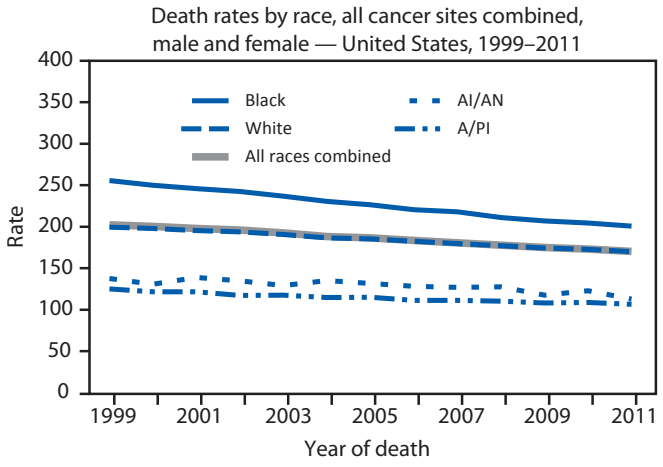
* Rates are the number of cases per 100,000 persons and are age-adjusted to the 2000 U.S. standard population (19 age groups – Census P25–1130). For more information, see USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes).

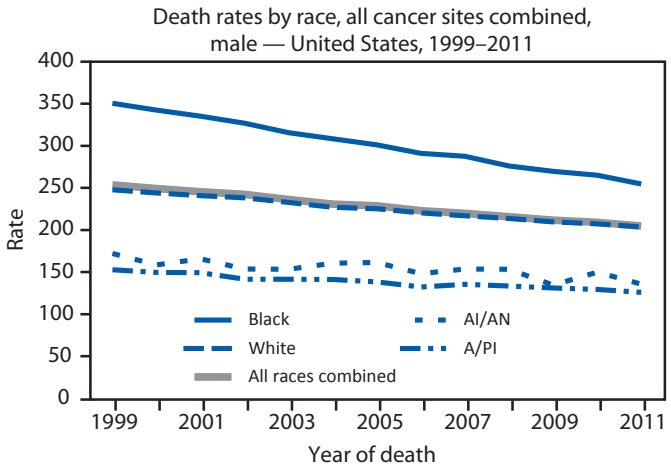
† Invasive cancer excludes basal and squamous cell carcinomas of the skin except when these occur on the skin of the genital organs, and in situ cancers except urinary bladder. Urinary bladder cancer includes invasive and in situ.

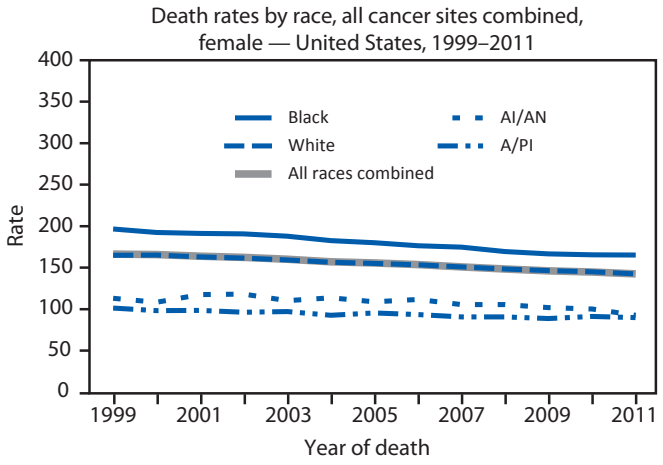
§ Data for specified ethnic populations should be interpreted with caution. For more information, see USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes/interpreting/race.htm).

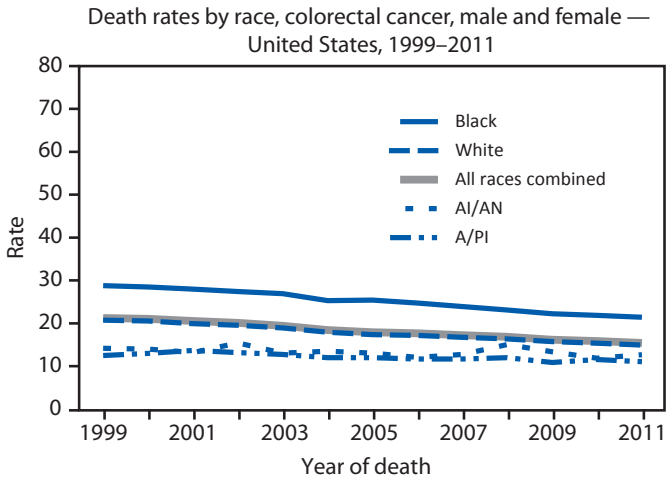
¶ Data are compiled from cancer registries that meet the data quality criteria for all invasive cancer sites combined for all years, 1999–2011 (covering approximately 89% of the U.S. population). See registry-specific data quality information for all years, 1999–2011(http://www.cdc.gov/cancer/npcr/uscs/2011/data/00_data_quality.htm). Caution should be used when comparing incidence and death rates because of potential differences in population coverage.

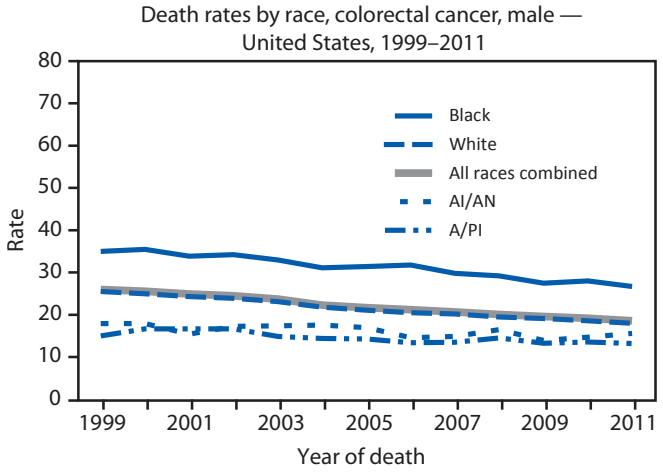
FIGURE 6. Reported rate* of cancer deaths, by primary cancer site, race,† and sex — United States, 1999–2011§











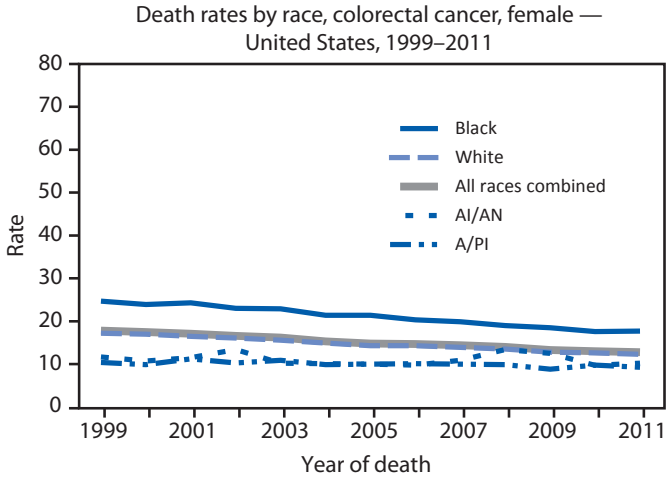


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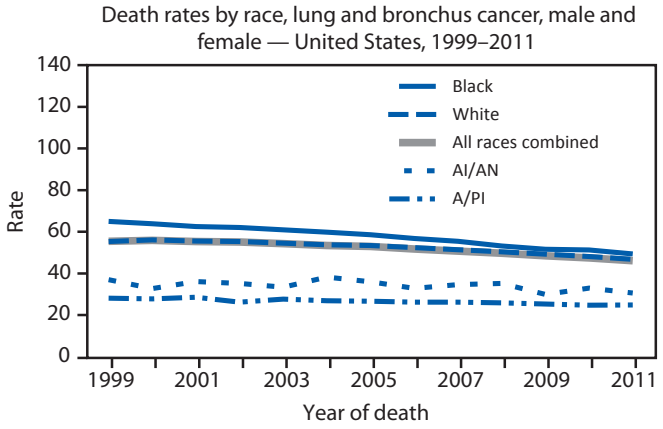
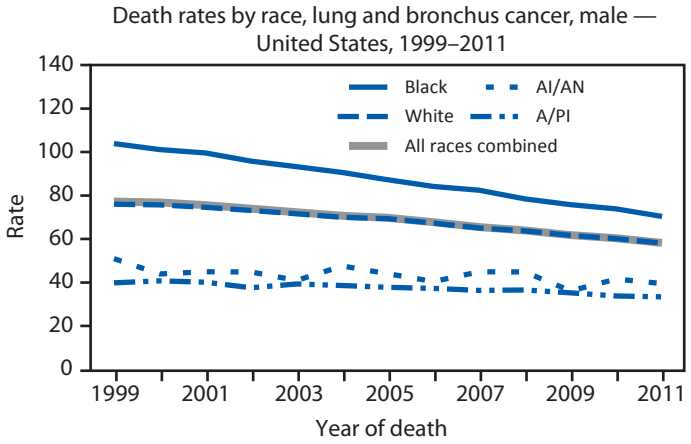
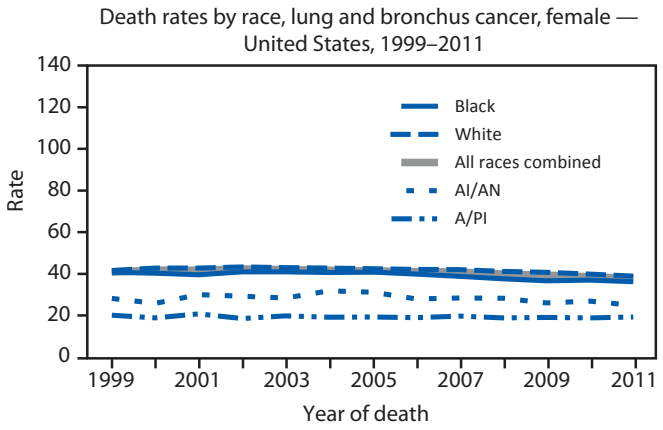
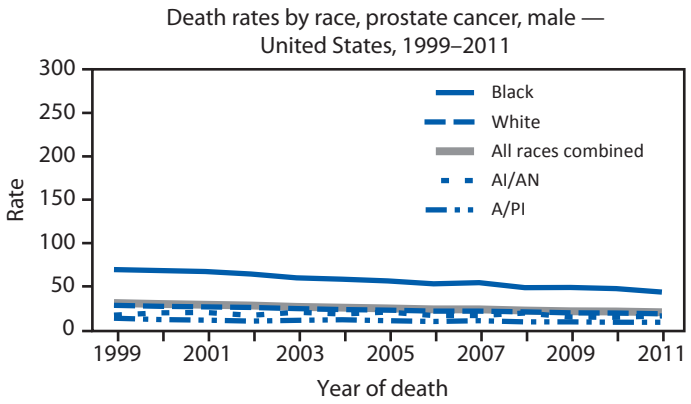
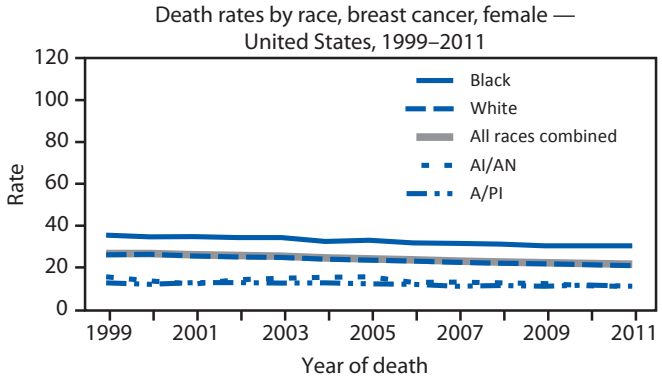
FIGURE 6. (*Continued*) Reported rate* of cancer deaths, by primary cancer site, race,† and sex — United States, 1999–2011§











Abbreviations: AI/AN = American Indian/Alaska Native; A/PI = Asian/Pacific Islander.

* Rates are the number of deaths per 100,000 persons and are age-adjusted to the 2000 U.S. standard population (19 age groups – Census P25–1130). For more information, see USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes).

† Rates are not presented for persons of unknown or other race. Data for specified racial populations other than white and black should be interpreted with caution. For more information, see USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes/interpreting/race.htm).

§ Data are from the National Vital Statistics System (NVSS). Data for death rates cover 100% of the U.S. population. Caution should be used when comparing incidence and death rates because of potential differences in population coverage.

FIGURE 7. Reported cancer death rates* by primary cancer site, ethnicity,† and sex — United States, 1999–2011

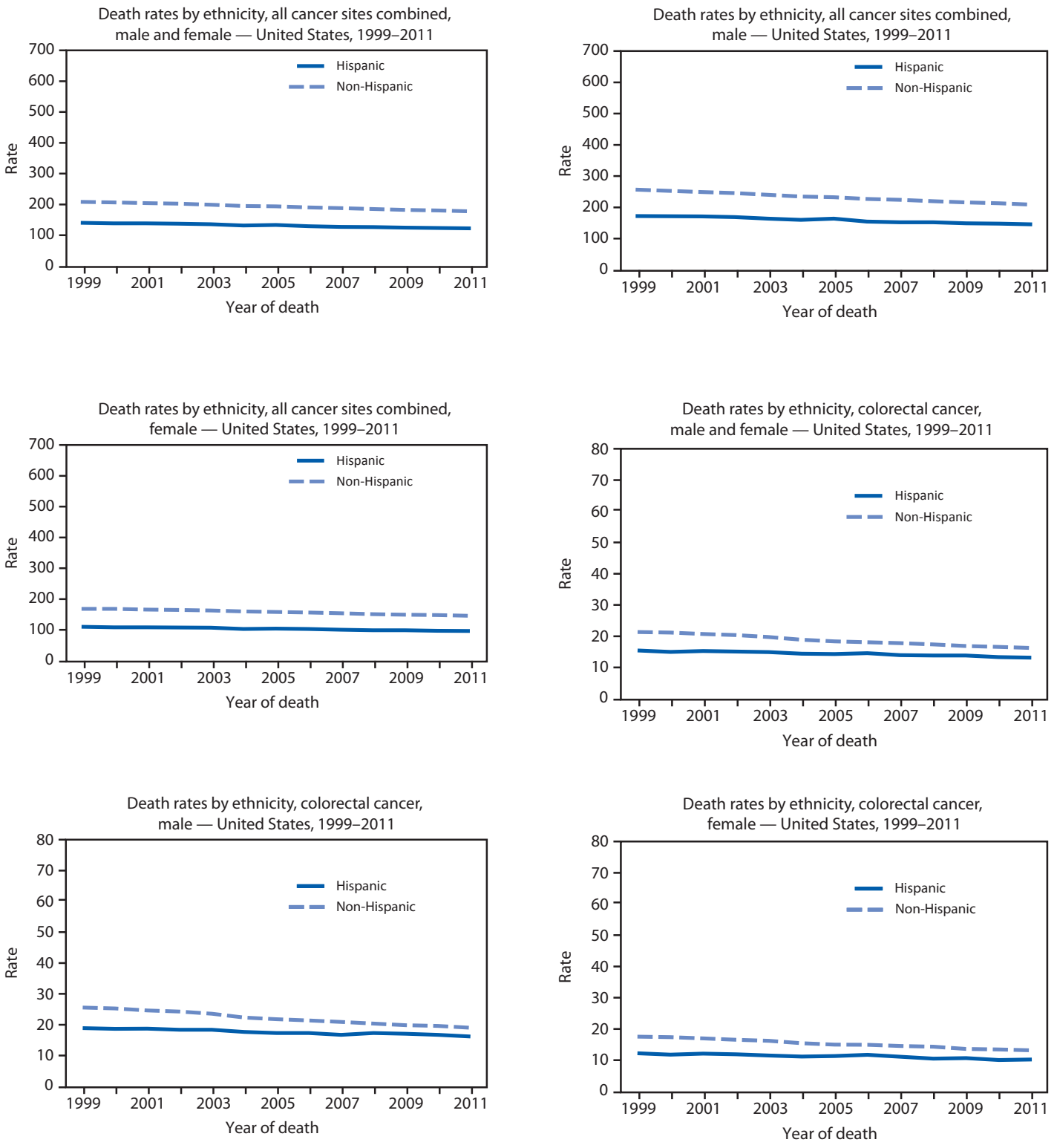


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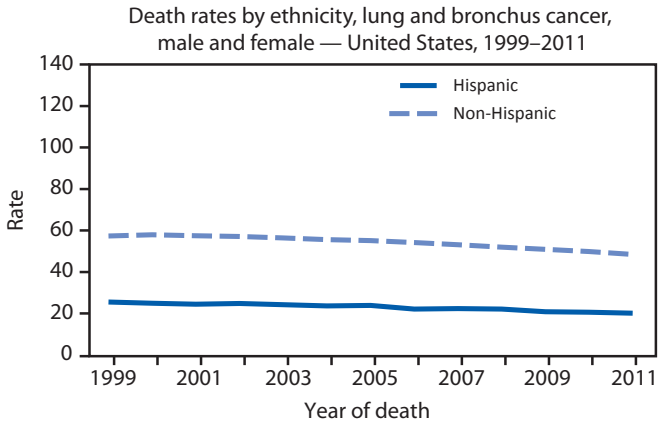
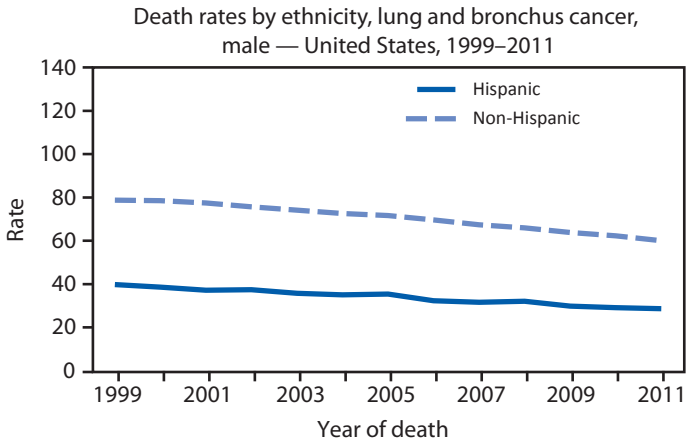
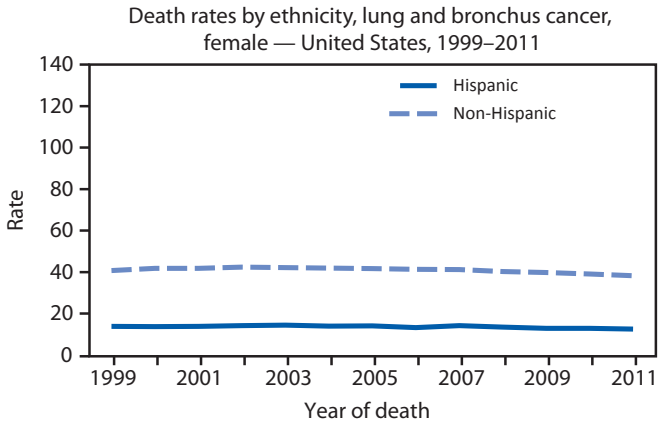
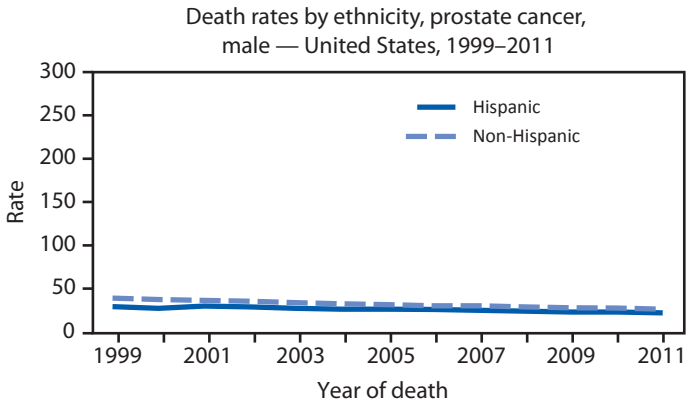
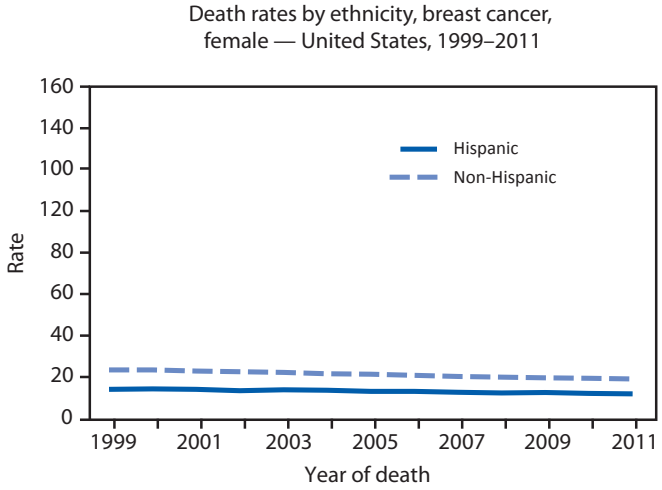
FIGURE 7. (*Continued*) Reported cancer death rates* by primary cancer site, ethnicity,† and sex — United States, 1999–2011§











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§ Data are from the National Vital Statistics System (NVSS). Data for death rates cover 100% of the U.S. population. Caution should be used when comparing incidence and death rates because of potential differences in population coverage.

TABLE 1. Reported number and rate* of invasive† cancer cases, by primary cancer site — United States, 2011§

Cancer site	All races/ethnicities	
	No.	Rate
All sites combined	**1,532,066**	**450.6**
Oral cavity and pharynx	**39,152**	**11.2**
Lip	1,997	0.6
Tongue	11,825	3.4
Salivary gland	3,995	1.2
Floor of mouth	1,945	0.5
Gum and other mouth	5,256	1.5
Nasopharynx	1,732	0.5
Tonsil	7,242	2.0
Oropharynx	1,822	0.5
Hypopharynx	2,302	0.7
Other oral cavity and pharynx	1,036	0.3
Digestive system	**269,319**	**78.9**
Esophagus	15,914	4.6
Stomach	22,424	6.6
Small intestine	7,686	2.2
Colon and rectum	135,260	39.9
Colon excluding rectum	96,970	28.7
Rectum and rectosigmoid junction	38,290	11.2
Anus, anal canal, and anorectum	6,067	1.8
Liver and intrahepatic bile duct	26,097	7.3
Gallbladder	3,778	1.1
Other biliary	5,926	1.8
Pancreas	41,473	12.2
Retroperitoneum	1,258	0.4
Peritoneum, omentum, and mesentery	1,923	0.6
Other digestive organs	1,513	0.4
Respiratory system	**222,399**	**65.4**
Nose, nasal cavity, and middle ear	2,166	0.6
Larynx	12,253	3.5
Lung and bronchus	207,339	61.0
Pleura	98	0
Trachea, mediastinum, and other respiratory organs	543	0.2
Bones and joints	**2,889**	**0.9**
Soft tissue including heart	**10,385**	**3.2**
Skin excluding basal and squamous	**70,853**	**21.3**
Melanoma of the skin	65,647	19.7
Other nonepithelial skin	5,206	1.6
Male and female breast	**222,175**	**65.6**
Female breast	220,097	122.0
Male breast	2,078	1.4
Female genital system	**88,068**	**48.4**
Cervix	12,109	7.5
Corpus and uterus, NOS	47,537	25.4
Corpus	45,994	24.6
Uterus, NOS	1,543	0.8
Ovary	20,593	11.3
Vagina	1,255	0.7
Vulva	4,596	2.5
Other female genital organs	1,978	1.1
Male genital system	**218,876**	**134.8**
Prostate	209,292	128.3
Testis	7,941	5.3
Penis	1,293	0.9
Other male genital organs	350	0.2
Urinary system	**124,095**	**36.6**
Urinary bladder	68,070	20.2
Kidney and renal pelvis	53,185	15.6
Ureter	1,862	0.6
Other urinary organs	978	0.3
Eye and orbit	**2,511**	**0.8**
Brain and other nervous system	**21,084**	**6.4**
Brain	19,818	6.0
Cranial nerves other nervous system	1,266	0.4
Endocrine system	**46,586**	**14.5**
Thyroid	44,332	13.8
Other endocrine including thymus	2,254	0.7
Lymphomas	**70,861**	**21.3**
Hodgkin lymphoma	8,416	2.7
Non-Hodgkin lymphoma	62,445	18.6
Myeloma	**20,696**	**6.1**
Leukemias	**42,836**	**13.0**
Acute lymphocytic leukemia	4,988	1.7
Chronic lymphocytic leukemia	13,947	4.1
Acute myeloid leukemia	13,093	4.0
Chronic myeloid leukemia	5,375	1.6
Other leukemia	5,433	1.6
Mesothelioma	**3,229**	**1.0**
Kaposi Sarcoma	**1,154**	**0.4**
Miscellaneous	**54,898**	**16.3**

Abbreviation: NOS = not otherwise specified.

* Rates are the number of cases per 100,000 persons and are age-adjusted to the 2000 U.S. standard population (19 age groups – Census P25–1130). For more information, see USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes).

† Invasive cancer excludes basal and squamous cell carcinomas of the skin except when these occur on the skin of the genital organs, and in situ cancers except urinary bladder. Urinary bladder cancer includes invasive and in situ.

§ Data are compiled from cancer registries that meet the data quality criteria for all invasive cancer sites combined (covering approximately 99% of the U.S. population). Registry-specific data quality information is available at http://www.cdc.gov/cancer/npcr/uscs/2011/data/00_data_quality.htm.

TABLE 2. Reported number and rate* of cancer deaths, by primary cancer site — United States, 2011†

Cancer site	All races/ethnicities	
	No.	Rate
All sites combined	**576,685**	**168.7**
Oral cavity and pharynx	**8,657**	**2.5**
Lip	83	0
Tongue	2,089	0.6
Salivary gland	820	0.2
Floor of mouth	84	0
Gum and other mouth	1,245	0.4
Nasopharynx	630	0.2
Tonsil	842	0.2
Oropharynx	861	0.2
Hypopharynx	322	0.1
Other oral cavity and pharynx	1,681	0.5
Digestive system	**144,007**	**41.8**
Esophagus	14,446	4.2
Stomach	11,035	3.3
Small intestine	1,256	0.4
Colon and rectum	51,783	15.1
Colon excluding rectum	42,181	12.3
Rectum and rectosigmoid junction	9,602	2.8
Anus, anal canal, and anorectum	863	0.2
Liver and intrahepatic bile duct	21,608	6.1
Gallbladder	2,101	0.6
Other biliary	1,510	0.4
Pancreas	37,344	10.9
Retroperitoneum	219	0.1
Peritoneum, omentum, and mesentery	807	0.2
Other digestive organs	1,035	0.3
Respiratory system	**161,376**	**47.3**
Nose, nasal cavity, and middle ear	416	0.1
Larynx	3,732	1.1
Lung and bronchus	156,953	46.0
Pleura	61	0
Trachea, mediastinum, and other respiratory organs	214	0.1
Bones and joints	**1,423**	**0.4**
Soft tissue including heart	**4,408**	**1.3**
Skin excluding basal and squamous	**12,212**	**3.6**
Melanoma of the skin	9,128	2.7
Other nonepithelial skin	3,084	0.9

TABLE 2. (*Continued*) Reported number and rate* of cancer deaths, by primary cancer site — United States, 2011†

Cancer site	All races/ethnicities	
	No.	Rate
Male and female breast	**41,374**	**12.0**
Female breast	40,931	21.5
Male breast	443	0.3
Female genital system	**29,027**	**15.3**
Cervix	4,092	2.3
Corpus and Uterus, NOS	8,641	4.5
Corpus	3,714	1.9
Uterus, NOS	4,927	2.6
Ovary	14,346	7.5
Vagina	428	0.2
Vulva	1,022	0.5
Other female genital organs	498	0.3
Male genital system	**28,630**	**21.2**
Prostate	27,970	20.8
Testis	380	0.3
Penis	239	0.2
Other male genital organs	41	0
Urinary system	**29,317**	**8.6**
Urinary bladder	15,014	4.4
Kidney and renal pelvis	13,559	3.9
Ureter	338	0.1
Other urinary organs	406	0.1
Eye and orbit	**280**	**0.1**
Brain and other nervous system	**14,491**	**4.3**
Endocrine system	**2,689**	**0.8**
Thyroid	1,747	0.5
Other endocrine including thymus	942	0.3
Lymphomas	**21,485**	**6.4**
Hodgkin lymphoma	1,168	0.4
Non-Hodgkin lymphoma	20,317	6.0
Myeloma	**11,411**	**3.4**
Leukemias	**23,194**	**6.9**
Acute lymphocytic leukemia	1,432	0.4
Chronic lymphocytic leukemia	4,608	1.4
Acute myeloid leukemia	9,491	2.8
Chronic myeloid leukemia	1,091	0.3
Other leukemia	6,572	2.0
Mesothelioma	**2,651**	**0.8**
Miscellaneous	**40,002**	**11.7**

Abbreviation: NOS = not otherwise specified.

* Rates are the number of deaths per 100,000 persons and are age-adjusted to the 2000 U.S. standard population (19 age groups – Census P25–1130). For more information, see UCSC technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes).

† Data are from the National Vital Statistics System (NVSS).

TABLE 3. Reported number and rate* of invasive† cancer cases, all cancer sites combined, by geographic division and area — United States, 2011§

Division/Area	All races/ethnicities	
	No.	Rate
Northeast	**316,905**	**489.2**
New England	**82,141**	**480.0**
Connecticut	20,368	483.2
Maine	8,254	479.3
Massachusetts	36,555	480.5
New Hampshire	7,704	494.0
Rhode Island	5,754	465.7
Vermont	3,506	453.9
Middle Atlantic	**234,764**	**492.6**
New Jersey	48,050	480.5
New York	108,554	494.2
Pennsylvania	78,160	498.5
Midwest	**349,805**	**462.1**
East North Central	**241,710**	**461.2**
Illinois	65,309	473.4
Indiana	31,791	445.4
Michigan	54,134	472.2
Ohio	60,357	448.3
Wisconsin	30,119	460.0
West North Central	**108,095**	**464.3**
Iowa	17,183	474.9
Kansas	14,572	466.5
Minnesota	28,835	491.1
Missouri	30,616	443.8
Nebraska	8,975	442.5
North Dakota	3,600	454.9
South Dakota	4,314	455.2
South	**559,650**	**440.5**
South Atlantic	**306,473**	**440.5**
Delaware	5,300	496.8
District of Columbia	3,088	509.3
Florida	106,062	426.4
Georgia	44,206	460.4
Maryland	27,802	438.6
North Carolina	49,065	460.7
South Carolina	23,234	434.8
Virginia	36,355	418.4
West Virginia	11,361	477.9
East South Central	**98,503**	**470.7**
Alabama	24,768	450.3
Kentucky	24,886	505.5
Mississippi	15,027	464.4
Tennessee	33,822	465.4
West South Central	**154,674**	**423.9**
Arkansas	14,742	432.7
Louisiana	23,841	488.1
Oklahoma	18,435	440.6
Texas	97,656	406.7
West	—¶	—
Mountain	—	—
Arizona	27,566	383.9
Colorado	21,467	417.0
Idaho	7,449	448.4
Montana	5,633	461.3
Nevada	—	—
New Mexico	8,674	373.8
Utah	9,565	416.5
Wyoming	2,676	434.6
Pacific	**222,676**	**428.5**
Alaska	2,632	423.1
California	158,647	419.1
Hawaii	6,759	418.9
Oregon	20,336	451.4
Washington	34,302	468.0

* Rates are the number of cases per 100,000 persons and are age-adjusted to the 2000 U.S. standard population (19 age groups – Census P25–1130). For more information, see USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes).

† Invasive cancer excludes basal and squamous cell carcinomas of the skin except when these occur on the skin of the genital organs, and in situ cancers except urinary bladder. Urinary bladder cancer includes invasive and in situ.

§ Data are compiled from cancer registries that meet the data quality criteria for all invasive cancer sites combined (covering approximately 99% of the U.S. population). Registry-specific data quality information is available at http://www.cdc.gov/cancer/npcr/uscs/2011/data/00_data_quality.htm.

¶ Rates and counts are not presented for the West Census Region, the Mountain Census Division, or Nevada because data from Nevada are not included in this analysis.

TABLE 4. Reported number and rate* of cancer deaths, all cancer sites combined, by geographic division and area — United States, 2011†

Division/Area	All races/ethnicities	
	No.	Rate
United States	**576,685**	**168.7**
Northeast	**110,262**	**166.8**
New England	**29,190**	**167.4**
Connecticut	6,837	157.9
Maine	3,201	181.7
Massachusetts	12,895	166.4
New Hampshire	2,740	178.0
Rhode Island	2,170	168.3
Vermont	1,347	175.6
Middle Atlantic	**81,072**	**166.7**
New Jersey	16,708	165.6
New York	35,469	159.6
Pennsylvania	28,895	177.3
Midwest	**134,633**	**176.4**
East North Central	**94,354**	**179.3**
Illinois	24,006	174.8
Indiana	13,180	185.2
Michigan	20,420	177.4
Ohio	25,140	184.4
Wisconsin	11,608	174.9
West North Central	**40,279**	**170.0**
Iowa	6,481	172.4
Kansas	5,440	169.9
Minnesota	9,489	160.5
Missouri	12,473	179.4
Nebraska	3,410	164.2
North Dakota	1,321	160.5
South Dakota	1,665	168.6
South	**218,374**	**173.9**
South Atlantic	**117,490**	**168.9**
Delaware	1,905	179.7
District of Columbia	1,070	180.6
Florida	41,681	160.2
Georgia	15,602	171.0
Maryland	10,249	165.9
North Carolina	18,284	174.8
South Carolina	9,543	182.2
Virginia	14,374	170.7
West Virginia	4,782	199.6
East South Central	**39,806**	**192.6**
Alabama	10,233	187.4
Kentucky	9,733	200.9
Mississippi	6,278	196.8
Tennessee	13,562	189.1
West South Central	**61,078**	**172.8**
Arkansas	6,497	191.1
Louisiana	9,233	193.5
Oklahoma	7,997	191.2
Texas	37,351	162.6
West	**113,416**	**153.5**
Mountain	**33,951**	**149.3**
Arizona	10,690	148.4
Colorado	7,051	143.9
Idaho	2,573	157.6
Montana	2,022	164.4
Nevada	4,605	170.3
New Mexico	3,328	146.6
Utah	2,746	125.6
Wyoming	936	156.1
Pacific	**79,465**	**155.4**
Alaska	935	176.1
California	56,448	151.8
Hawaii	2,278	138.2
Oregon	7,802	172.2
Washington	12,002	166.6

* Rates are the number of deaths per 100,000 persons and are age-adjusted to the 2000 U.S. standard population (19 age groups – Census P25–1130). For more information, see USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes).

† Data are from the National Vital Statistics System (NVSS).

TABLE 5. Reported number and rate* of invasive† cancer cases, by primary cancer site and age group — United States, 2011§

	Age group (yrs)											
	<15		15–24		25–39		40–64		≥65		Total (All ages)	
Cancer site	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate (crude)
All sites combined	**10,063**	**16.6**	**12,278**	**28.3**	**57,032**	**93.8**	**630,145**	**612.1**	**822,548**	**2,004.6**	**1,532,066**	**496.0**
Oral cavity and pharynx	82	0.1	236	0.5	1,202	2.0	21,141	20.5	16,491	40.2	**39,152**	**12.7**
Esophagus	—¶	—	—	—	138	0.2	6,512	6.3	9,255	22.6	**15,914**	**5.2**
Stomach	—	—	62	0.1	585	1.0	8,165	7.9	13,603	33.2	—¶	**7.3**
Colon and rectum	25	0	287	0.7	3,302	5.4	51,303	49.8	80,343	195.8	**135,260**	**43.8**
Liver and intrahepatic bile duct	211	0.3	57	0.1	298	0.5	13,827	13.4	11,704	28.5	**26,097**	**8.4**
Pancreas	—	—	45	0.1	398	0.7	13,611	13.2	27,409	66.8	—	**13.4**
Larynx	—	—	—	—	89	0.2	5,935	5.8	6,222	15.2	**12,253**	**4.0**
Lung and bronchus	24	0	113	0.3	973	1.6	65,891	64.0	140,336	342.0	**207,339**	**67.1**
Melanomas of the skin	129	0.2	939	2.2	5,444	9.0	28,329	27.5	30,806	75.1	**65,647**	**21.3**
Female breast	—	—	182	0.9	9,457	31.2	114,784	218.4	95,668	411.3	—	**140.2**
Cervix	—	—	144	0.7	2,761	9.1	6,750	12.8	2,454	10.6	—	**7.7**
Corpus and uterus, NOS	—	—	43	0.2	1,601	5.3	25,914	49.3	19,977	85.9	—	**30.3**
Ovary	101	0.3	303	1.4	986	3.3	9,614	18.3	9,589	41.2	**20,593**	**13.1**
Prostate	—	—	—	—	124	0.4	92,152	182.9	117,001	658.3	**209,292**	**137.8**
Testis	56	0.2	1,400	6.3	3,879	12.7	2,412	4.8	194	1.1	**7,941**	**5.2**
Urinary bladder	19	0	79	0.2	517	0.9	18,025	17.5	49,430	120.5	**68,070**	**22.0**
Kidney and renal pelvis	568	0.9	145	0.3	1,918	3.2	24,850	24.1	25,704	62.6	**53,185**	**17.2**
Brain and nervous system	2,112	3.5	1,021	2.4	2,014	3.3	8273	8.0	7,664	18.7	**21,084**	**6.8**
Thyroid	197	0.3	1,861	4.3	9,055	14.9	24,165	23.5	9,055	22.1	**44,332**	**14.4**
Hodgkin lymphoma	311	0.5	1,556	3.6	2,334	3.8	2,641	2.6	1,574	3.8	**8,416**	**2.7**
Non-Hodgkin lymphoma	553	0.9	883	2.0	2,882	4.7	22,951	22.3	35,176	85.7	**62,445**	**20.2**
Myeloma	—	—	—	—	276	0.5	7,622	7.4	12,786	31.2	**20,696**	**6.7**
Leukemias	3,094	5.1	1,175	2.7	2,082	3.4	13,190	12.8	23,295	56.8	**42,836**	**13.9**
Mesothelioma	—	—	—	—	35	0.1	713	0.7	2,476	6.0	**3,229**	**1.0**
Kaposi Sarcoma	—	—	47	0.1	306	0.5	508	0.5	289	0.7	—	**0.4**

Abbreviation: NOS = not otherwise specified.

* Rates are the number of cases per 100,000 persons. For more information, see USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes).

† Invasive cancer excludes basal and squamous cell carcinomas of the skin except when these occur on the skin of the genital organs, and in situ cancers except urinary bladder. Urinary bladder cancer includes invasive and in situ.

§ Data are compiled from cancer registries that meet the data quality criteria for all invasive cancer sites combined (covering approximately 99% of the U.S. population). Registry-specific data quality information is available at http://www.cdc.gov/cancer/npcr/uscs/2011/data/00_data_quality.htm.

¶ Counts and rates are suppressed if <16 cases were reported in a specific category. Some counts and rates are suppressed as complementary cell suppression.

TABLE 6. Reported number and rate* of cancer deaths, by primary cancer site and age group — United States, 2011†

	Age group (yrs)											
	<15		15–24		25–39		40–64		≥65		Total (all ages)	
Cancer site	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate (crude)
All sites combined	**1,283**	**2.1**	**1,611**	**3.7**	**7,419**	**12.1**	**169,266**	**163.0**	**397,106**	**959.8**	**576,685**	**185.1**
Oral cavity and pharynx	—§	—	19	0	113	0.2	3,600	3.5	4,919	11.9	—	**2.8**
Esophagus	—	—	—	—	107	0.2	5,392	5.2	8,941	21.6	**14,446**	**4.6**
Stomach	—	—	16	0	287	0.5	3,402	3.3	7,330	17.7	—	**3.5**
Colon and rectum	—	—	58	0.1	735	1.2	15,454	14.9	35,534	85.9	—	**16.6**
Liver and intrahepatic bile duct	41	0.1	27	0.1	201	0.3	9,375	9.0	11,964	28.9	**21,608**	**6.9**
Pancreas	—	—	—	—	158	0.3	10,621	10.2	26,560	64.2	**37,344**	**12.0**
Larynx	—	—	—	—	—	—	1,451	1.4	2,272	5.5	**3,732**	**1.2**
Lung and bronchus	—	—	30	0.1	379	0.6	44,243	42.6	112,295	271.4	—	**50.4**
Melanomas of the skin	—	—	25	0.1	310	0.5	3,198	3.1	5,593	13.5	—	**2.9**
Female breast	—	—	—	—	1,033	3.4	16,173	30.5	23,715	101.2	**40,931**	**25.9**
Cervix	—	—	—	—	405	1.3	2,224	4.2	1,450	6.2	**4,092**	**2.6**
Corpus and uterus, NOS	—	—	—	—	75	0.2	2,880	5.4	5,684	24.3	**8,641**	**5.5**
Ovary	—	—	19	0.1	206	0.7	4,811	9.1	9,306	39.7	—	**9.1**
Prostate	—	—	—	—	—	—	2,977	5.9	24,988	139.3	**27,970**	**18.2**
Testis	—	—	45	0.2	129	0.4	147	0.3	59	0.3	—	**0.2**
Urinary bladder	—	—	—	—	32	0.1	2,404	2.3	12,571	30.4	**15,014**	**4.8**
Kidney and renal pelvis	39	0.1	31	0.1	141	0.2	4,279	4.1	9,069	21.9	**13,559**	**4.4**
Brain and nervous system	439	0.7	234	0.5	671	1.1	6,126	5.9	7,021	17.0	**14,491**	**4.7**
Thyroid	—	—	—	—	21	0	498	0.5	1,224	3.0	**1,747**	**0.6**
Hodgkin lymphoma	—	—	56	0.1	158	0.3	332	0.3	621	1.5	—	**0.4**
Non-Hodgkin lymphoma	32	0.1	90	0.2	363	0.6	4,470	4.3	15,362	37.1	**20,317**	**6.5**
Myeloma	—	—	—	—	39	0.1	2,569	2.5	8,802	21.3	**11,411**	**3.7**
Leukemias	342	0.6	390	0.9	672	1.1	4,738	4.6	17,052	41.2	**23,194**	**7.4**
Mesothelioma	—	—	—	—	—	—	460	0.4	2,175	5.3	**2,651**	**0.9**

Abbreviation: NOS = not otherwise specified.

* Rates are the number of deaths per 100,000 persons. For more information, see USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes).

† Data are from the National Vital Statistics System (NVSS).

§ Counts and rates are suppressed if <16 cases were reported in a specific category. Some counts and rates are suppressed as complementary cell suppression.

TABLE 7. Reported number and rate* of invasive† cancer cases, by primary cancer site and sex — United States, 2011§

Cancer site	Male		Female		Total	
	No.	Rate	No.	Rate	No.	Rate
All sites combined	**786,102**	**507.5**	**745,964**	**410.3**	**1,532,066**	**450.6**
Oral cavity and pharynx	**27,789**	**17.0**	**11,363**	**6.2**	**39,152**	**11.2**
Lip	1,452	1.0	545	0.3	**1,997**	**0.6**
Tongue	8,506	5.1	3,319	1.8	**11,825**	**3.4**
Salivary gland	2,411	1.6	1,584	0.9	**3,995**	**1.2**
Floor of mouth	1,361	0.8	584	0.3	**1,945**	**0.5**
Gum and other mouth	2,933	1.9	2,323	1.2	**5,256**	**1.5**
Nasopharynx	1,243	0.8	489	0.3	**1,732**	**0.5**
Tonsil	5,914	3.4	1,328	0.7	**7,242**	**2.0**
Oropharynx	1,367	0.8	455	0.2	**1,822**	**0.5**
Hypopharynx	1,836	1.1	466	0.2	**2,302**	**0.7**
Other oral cavity and pharynx	766	0.5	270	0.1	**1,036**	**0.3**
Digestive system	**148,767**	**96.5**	**120,552**	**64.3**	**269,319**	**78.9**
Esophagus	12,547	8.0	3,367	1.8	**15,914**	**4.6**
Stomach	13,950	9.2	8,474	4.6	**22,424**	**6.6**
Small intestine	4,024	2.6	3,662	2.0	**7,686**	**2.2**
Colon and rectum	70,099	46.1	65,161	34.9	**135,260**	**39.9**
Colon excluding rectum	47,915	32.0	49,055	26.1	**96,970**	**28.7**
Rectum and rectosigmoid junction	22,184	14.2	16,106	8.7	**38,290**	**11.2**
Anus, anal canal, and anorectum	2,252	1.4	3,815	2.1	**6,067**	**1.8**
Liver and intrahepatic bile duct	18,888	11.4	7,209	3.8	**26,097**	**7.3**
Gallbladder	1,210	0.8	2,568	1.4	**3,778**	**1.1**
Other biliary	3,155	2.1	2,771	1.5	**5,926**	**1.8**
Pancreas	21,110	13.8	20,363	10.7	**41,473**	**12.2**
Retroperitoneum	613	0.4	645	0.4	**1,258**	**0.4**
Peritoneum, omentum, and mesentery	139	0.1	1,784	1.0	**1,923**	**0.6**
Other digestive organs	780	0.5	733	0.4	**1,513**	**0.4**
Respiratory system	**121,781**	**80.2**	**100,618**	**54.0**	**222,399**	**65.4**
Nose, nasal cavity, and middle ear	1,300	0.8	866	0.5	**2,166**	**0.6**
Larynx	9,723	6.1	2,530	1.4	**12,253**	**3.5**
Lung and bronchus	110,322	73.0	97,017	52.0	**207,339**	**61.0**
Pleura	62	0	36	0	**98**	**0**
Trachea, mediastinum, and other respiratory organs	374	0.2	169	0.1	**543**	**0.2**
Bones and joints	**1,569**	**1.0**	**1,320**	**0.8**	**2,889**	**0.9**
Soft tissue including heart	**5,719**	**3.8**	**4,666**	**2.7**	**10,385**	**3.2**
Skin excluding basal and squamous	**41,573**	**27.5**	**29,280**	**16.8**	**70,853**	**21.3**
Melanoma of the skin	38,415	25.3	27,232	15.6	**65,647**	**19.7**
Other nonepithelial skin	3,158	2.2	2,048	1.1	**5,206**	**1.6**
Male and female breast	**NA**	**NA**	**NA**	**NA**	**222,175**	**65.6**
Female breast	NA	NA	220,097	122.0	**NA**	**NA**
Male breast	2,078	1.4	NA	NA	**NA**	**NA**
Female genital system	**NA**	**NA**	**88,068**	**48.4**	**NA**	**NA**
Cervix	NA	NA	12,109	7.5	**NA**	**NA**
Corpus and uterus, NOS	NA	NA	47,537	25.4	**NA**	**NA**
Corpus	NA	NA	45,994	24.6	**NA**	**NA**
Uterus, NOS	NA	NA	1,543	0.8	**NA**	**NA**
Ovary	NA	NA	20,593	11.3	**NA**	**NA**
Vagina	NA	NA	1,255	0.7	**NA**	**NA**
Vulva	NA	NA	4,596	2.5	**NA**	**NA**
Other female genital organs	NA	NA	1,978	1.1	**NA**	**NA**

See table footnotes on next page.

TABLE 7. (*Continued*) Reported number and rate* of invasive† cancer cases, by primary cancer site and sex — United States, 2011§

Cancer site	Male		Female		Total	
	No.	Rate	No.	Rate	No.	Rate
Male genital system	**218,876**	**134.8**	**NA**	**NA**	**NA**	**NA**
Prostate	209,292	128.3	NA	NA	**NA**	**NA**
Testis	7,941	5.3	NA	NA	**NA**	**NA**
Penis	1,293	0.9	NA	NA	**NA**	**NA**
Other male genital organs	350	0.2	NA	NA	**NA**	**NA**
Urinary system	**86,200**	**57.4**	**37,895**	**20.4**	**124,095**	**36.6**
Urinary bladder	51,270	35.1	16,800	8.9	**68,070**	**20.2**
Kidney and renal pelvis	33,118	21.0	20,067	11.0	**53,185**	**15.6**
Ureter	1,156	0.8	706	0.4	**1,862**	**0.6**
Other urinary organs	656	0.5	322	0.2	**978**	**0.3**
Eye and orbit	**1,357**	**0.9**	**1,154**	**0.7**	**2,511**	**0.8**
Brain and other nervous system	**11,734**	**7.6**	**9,350**	**5.4**	**21,084**	**6.4**
Brain	11,135	7.2	8,683	5.0	**19,818**	**6.0**
Cranial nerves other nervous system	599	0.4	667	0.4	**1,266**	**0.4**
Endocrine system	**11,969**	**7.7**	**34,617**	**21.2**	**46,586**	**14.5**
Thyroid	10,789	6.9	33,543	20.5	**44,332**	**13.8**
Other endocrine including thymus	1,180	0.8	1,074	0.6	**2,254**	**0.7**
Lymphomas	**38,780**	**25.7**	**32,081**	**17.8**	**70,861**	**21.3**
Hodgkin lymphoma	4,694	3.1	3,722	2.3	**8,416**	**2.7**
Non-Hodgkin lymphoma	34,086	22.6	28,359	15.5	**62,445**	**18.6**
Myeloma	**11,388**	**7.5**	**9,308**	**5.0**	**20,696**	**6.1**
Leukemias	**24,528**	**16.5**	**18,308**	**10.2**	**42,836**	**13.0**
Acute lymphocytic leukemia	2,733	1.8	2,255	1.5	**4,988**	**1.7**
Chronic lymphocytic leukemia	8,371	5.6	5,576	2.9	**13,947**	**4.1**
Acute myeloid leukemia	7,107	4.8	5,986	3.4	**13,093**	**4.0**
Chronic myeloid leukemia	3,092	2.1	2,283	1.3	**5,375**	**1.6**
Other leukemia	3,225	2.2	2,208	1.2	**5,433**	**1.6**
Mesothelioma	**2,414**	**1.7**	**815**	**0.4**	**3,229**	**1.0**
Kaposi Sarcoma	**1,015**	**0.7**	**139**	**0.1**	**1,154**	**0.4**
Miscellaneous	**28,565**	**19.6**	**26,333**	**13.9**	**54,898**	**16.3**

Abbreviations: NA = not applicable; NOS = not otherwise specified.

* Rates are the number of cases per 100,000 persons and are age-adjusted to the 2000 U.S. standard population (19 age groups – Census P25–1130). For more information, see USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes).

† Invasive cancer excludes basal and squamous cell carcinomas of the skin except when these occur on the skin of the genital organs, and in situ cancers except urinary bladder. Urinary bladder cancer includes invasive and in situ.

§ Data are compiled from cancer registries that meet the data quality criteria for all invasive cancer sites combined (covering approximately 99% of the U.S. population). Registry-specific data quality information is available at http://www.cdc.gov/cancer/npcr/uscs/2011/data/00_data_quality.htm.

TABLE 8. Reported number and rate* of cancer deaths, by primary cancer site and sex —United States, 2011†

Cancer site	Male		Female		Total	
	No.	Rate	No.	Rate	No.	Rate
All sites combined	**302,228**	**204.3**	**274,457**	**143.5**	**576,685**	**168.7**
Oral cavity and pharynx	**6,123**	**3.9**	**2,534**	**1.3**	**8,657**	**2.5**
Lip	60	0	23	0	**83**	**0**
Tongue	1,441	0.9	648	0.3	**2,089**	**0.6**
Salivary gland	551	0.4	269	0.1	**820**	**0.2**
Floor of mouth	59	0	25	0	**84**	**0**
Gum and other mouth	712	0.5	533	0.3	**1,245**	**0.4**
Nasopharynx	447	0.3	183	0.1	**630**	**0.2**
Tonsil	657	0.4	185	0.1	**842**	**0.2**
Oropharynx	616	0.4	245	0.1	**861**	**0.2**
Hypopharynx	260	0.2	62	0	**322**	**0.1**
Other oral cavity and pharynx	1,320	0.8	361	0.2	**1,681**	**0.5**
Digestive system	**81,563**	**53.6**	**62,444**	**32.2**	**144,007**	**41.8**
Esophagus	11,514	7.4	2,932	1.5	**14,446**	**4.2**
Stomach	6,544	4.4	4,491	2.3	**11,035**	**3.3**
Small intestine	681	0.5	575	0.3	**1,256**	**0.4**
Colon and rectum	26,804	18.1	24,979	12.8	**51,783**	**15.1**
Colon excluding rectum	21,336	14.5	20,845	10.6	**42,181**	**12.3**
Rectum and rectosigmoid junction	5,468	3.6	4,134	2.1	**9,602**	**2.8**
Anus, anal canal, and anorectum	345	0.2	518	0.3	**863**	**0.2**
Liver and intrahepatic bile duct	14,626	9.0	6,982	3.6	**21,608**	**6.1**
Gallbladder	705	0.5	1,396	0.7	**2,101**	**0.6**
Other biliary	745	0.5	765	0.4	**1,510**	**0.4**
Pancreas	18,881	12.5	18,463	9.5	**37,344**	**10.9**
Retroperitoneum	113	0.1	106	0.1	**219**	**0.1**
Peritoneum, omentum, and mesentery	83	0.1	724	0.4	**807**	**0.2**
Other digestive organs	522	0.4	513	0.3	**1,035**	**0.3**
Respiratory system	**90,099**	**60.0**	**71,277**	**37.6**	**161,376**	**47.3**
Nose, nasal cavity, and middle ear	249	0.2	167	0.1	**416**	**0.1**
Larynx	2,948	1.9	784	0.4	**3,732**	**1.1**
Lung and bronchus	86,736	57.9	70,217	37.0	**156,953**	**46.0**
Pleura	41	0	20	0	**61**	**0**
Trachea, mediastinum, and other respiratory organs	125	0.1	89	0	**214**	**0.1**
Bones and joints	**814**	**0.5**	**609**	**0.3**	**1,423**	**0.4**
Soft tissue including heart	**2,257**	**1.5**	**2,151**	**1.2**	**4,408**	**1.3**
Skin excluding basal and squamous	**8,241**	**5.6**	**3,971**	**2.1**	**12,212**	**3.6**
Melanoma of the skin	6,001	4.0	3,127	1.7	**9,128**	**2.7**
Other nonepithelial skin	2,240	1.6	844	0.4	**3,084**	**0.9**
Male and female breast	**NA**	**NA**	**40,931**	**21.5**	**41,374**	**12.0**
Female breast	NA	NA	NA	NA	**NA**	**NA**
Male breast	443	0.3	NA	NA	**NA**	**NA**

See table footnotes on next page.

TABLE 8. (*Continued*) Reported number and rate* of cancer deaths, by primary cancer site and sex —United States, 2011†

Cancer site	Male		Female		Total	
	No.	Rate	No.	Rate	No.	Rate
Female genital system	**NA**	**NA**	**29,027**	**15.3**	**NA**	**NA**
Cervix	NA	NA	4,092	2.3	**NA**	**NA**
Corpus and uterus, NOS	NA	NA	8,641	4.5	**NA**	**NA**
Corpus	NA	NA	3,714	1.9	**NA**	**NA**
Uterus, NOS	NA	NA	4,927	2.6	**NA**	**NA**
Ovary	NA	NA	14,346	7.5	**NA**	**NA**
Vagina	NA	NA	428	0.2	**NA**	**NA**
Vulva	NA	NA	1,022	0.5	**NA**	**NA**
Other female genital organs	NA	NA	498	0.3	**NA**	**NA**
Male genital system	**28,630**	**21.2**	**NA**	**NA**	**NA**	**NA**
Prostate	27,970	20.8	NA	NA	**NA**	**NA**
Testis	380	0.3	NA	NA	**NA**	**NA**
Penis	239	0.2	NA	NA	**NA**	**NA**
Other male genital organs	41	0	NA	NA	**NA**	**NA**
Urinary system	**19,649**	**13.6**	**9,668**	**4.9**	**29,317**	**8.6**
Urinary bladder	10,594	7.6	4,420	2.2	**15,014**	**4.4**
Kidney and renal pelvis	8,632	5.7	4,927	2.5	**13,559**	**3.9**
Ureter	180	0.1	158	0.1	**338**	**0.1**
Other urinary organs	243	0.2	163	0.1	**406**	**0.1**
Eye and orbit	**147**	**0.1**	**133**	**0.1**	**280**	**0.1**
Brain and other nervous system	**8,128**	**5.2**	**6,363**	**3.4**	**14,491**	**4.3**
Endocrine system	**1,291**	**0.8**	**1,398**	**0.7**	**2,689**	**0.8**
Thyroid	788	0.5	959	0.5	**1,747**	**0.5**
Other endocrine including thymus	503	0.3	439	0.3	**942**	**0.3**
Lymphomas	**11,992**	**8.3**	**9,493**	**4.9**	**21,485**	**6.4**
Hodgkin lymphoma	688	0.5	480	0.3	**1,168**	**0.4**
Non-Hodgkin lymphoma	11,304	7.8	9,013	4.6	**20,317**	**6.0**
Myeloma	**6,165**	**4.3**	**5,246**	**2.7**	**11,411**	**3.4**
Leukemias	**13,219**	**9.3**	**9,975**	**5.2**	**23,194**	**6.9**
Acute lymphocytic leukemia	773	0.5	659	0.4	**1,432**	**0.4**
Chronic lymphocytic leukemia	2,756	2.0	1,852	0.9	**4,608**	**1.4**
Acute myeloid leukemia	5,343	3.7	4,148	2.2	**9,491**	**2.8**
Chronic myeloid leukemia	597	0.4	494	0.3	**1,091**	**0.3**
Other leukemia	3,750	2.7	2,822	1.5	**6,572**	**2.0**
Mesothelioma	**2,137**	**1.5**	**514**	**0.3**	**2,651**	**0.8**
Miscellaneous	**21,292**	**14.4**	**18,710**	**9.6**	**40,002**	**11.7**

Abbreviations: NA = not applicable; NOS = not otherwise specified.

* Rates are the number of deaths per 100,000 persons and are age-adjusted to the 2000 U.S. standard population (19 age groups – Census P25–1130). For more information, see USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes).

† Data are from the National Vital Statistics System (NVSS).

TABLE 9. Reported number and rate* of invasive† cancer cases, by primary cancer site and race§ — United States, 2011¶

Cancer site	AI/AN§		A/PI§		Black		White		Total	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
All sites combined	**7,877**	**273.4**	**43,738**	**290.4**	**165,062**	**458.3**	**1,286,265**	**449.7**	**1,532,066**	**450.6**
Oral cavity and pharynx	**229**	**7.3**	**1,171**	**7.5**	**3,496**	**9.1**	**33,697**	**11.5**	**39,152**	**11.2**
Lip	—**	—	—	—	29	0.1	1,884	0.7	**1,997**	**0.6**
Tongue	65	1.9	280	1.8	805	2.1	10,522	3.6	**11,825**	**3.4**
Salivary gland	24	0.7	140	0.9	376	1.0	3,392	1.2	**3,995**	**1.2**
Floor of mouth	16	0.5	22	0.2	218	0.6	1,673	0.6	**1,945**	**0.5**
Gum and other mouth	33	1.2	207	1.4	495	1.4	4,407	1.5	**5,256**	**1.5**
Nasopharynx	18	0.6	356	2.1	253	0.6	1,076	0.4	**1,732**	**0.5**
Tonsil	34	1.1	72	0.4	600	1.5	6,461	2.2	**7,242**	**2.0**
Oropharynx	—	—	25	0.2	257	0.7	1,519	0.5	**1,822**	**0.5**
Hypopharynx	18	0.6	48	0.3	350	0.9	1,868	0.6	**2,302**	**0.7**
Other oral cavity and pharynx	—	—	—	—	113	0.3	895	0.3	**1,036**	**0.3**
Digestive system	**1,718**	**61.2**	**10,626**	**73.4**	**34,031**	**96.8**	**219,964**	**76.1**	**269,319**	**78.9**
Esophagus	78	2.8	301	2.1	1,600	4.4	13,787	4.7	**15,914**	**4.6**
Stomach	146	5.4	1,469	10.3	3,518	10.5	16,998	5.9	**22,424**	**6.6**
Small intestine	34	1.3	153	1.0	1,260	3.6	6,154	2.1	**7,686**	**2.2**
Colon and rectum	821	29.1	4,730	32.4	16,348	46.7	111,649	38.9	**135,260**	**39.9**
Colon excluding rectum	550	20.3	3,018	21.1	12,234	35.5	80,037	27.9	**96,970**	**28.7**
Rectum and rectosigmoid junction	271	8.8	1,712	11.2	4,114	11.2	31,612	11.0	**38,290**	**11.2**
Anus, anal canal, and anorectum	35	1.1	81	0.5	682	1.8	5,201	1.8	**6,067**	**1.8**
Liver and intrahepatic bile duct	288	9.5	1,952	13.0	3,910	9.8	19,655	6.6	**26,097**	**7.3**
Gallbladder	38	1.6	179	1.3	573	1.7	2,959	1.0	**3,778**	**1.1**
Other biliary	34	1.4	342	2.4	553	1.7	4,953	1.7	**5,926**	**1.8**
Pancreas	211	7.9	1,238	9.1	5,127	15.2	34,620	11.9	**41,473**	**12.2**
Retroperitoneum	—	—	53	0.3	131	0.3	1,052	0.4	**1,258**	**0.4**
Peritoneum, omentum, and mesentery	—	—	55	0.4	146	0.4	1,705	0.6	**1,923**	**0.6**
Other digestive organs	—	—	73	0.5	183	0.6	1,231	0.4	**1,513**	**0.4**
Respiratory system	**1,156**	**45.5**	**5,051**	**36.6**	**23,882**	**69.2**	**191,119**	**66.0**	**222,399**	**65.4**
Nose, nasal cavity and middle ear	27	0.9	72	0.5	204	0.6	1,833	0.6	**2,166**	**0.6**
Larynx	58	1.9	183	1.3	1,699	4.5	10,192	3.5	**12,253**	**3.5**
Lung and bronchus	1,065	42.5	4,770	34.7	21,905	64.0	178,564	61.7	**207,339**	**61.0**
Pleura	—	—	—	—	—	—	83	0	**98**	**0**
Trachea, mediastinum, and other respiratory organs	—	—	24	0.1	61	0.2	447	0.2	**543**	**0.2**
Bones and joints	**29**	**0.8**	**102**	**0.6**	**285**	**0.7**	**2,425**	**1.0**	**2,889**	**0.9**
Soft tissue including heart	**50**	**1.5**	**383**	**2.4**	**1,254**	**3.3**	**8,549**	**3.1**	**10,385**	**3.2**
Skin excluding basal and squamous	**143**	**4.9**	**290**	**1.9**	**660**	**1.8**	**65,892**	**23.7**	**70,853**	**21.3**
Melanomas of the skin	128	4.3	197	1.3	359	1.0	61,337	22.1	**65,647**	**19.7**
Other nonepithelial skin	—	—	93	0.6	301	0.8	4,555	1.6	**5,206**	**1.6**
Male and female breast	**1,155**	**37.4**	**7,861**	**48.2**	**25,465**	**69.2**	**185,360**	**65.4**	**222,175**	**65.6**
Female breast	1,146	69.6	7,826	87.8	25,198	121.2	183,621	122.8	**220,097**	**122.0**
Male breast	—	—	35	0.5	267	1.9	1,739	1.3	**2,078**	**1.4**

See table footnotes on next page.

TABLE 9. (*Continued*) Reported number and rate* of invasive† cancer cases, by primary cancer site and race§ — United States, 2011¶

Cancer site	AI/AN§		A/PI§		Black		White		Total	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Female genital system	**549**	**31.7**	**3,072**	**34.0**	**9,522**	**46.0**	**73,799**	**49.2**	**88,068**	**48.4**
Cervix	116	6.3	534	5.9	1,882	9.0	9,350	7.3	**12,109**	**7.5**
Corpus and uterus, NOS	260	14.7	1,584	17.3	5,123	24.6	39,960	25.7	**47,537**	**25.4**
Corpus	247	14.0	1,532	16.7	4,775	22.9	38,846	25.0	**45,994**	**24.6**
Uterus, NOS	—	—	52	0.6	348	1.7	1,114	0.7	**1,543**	**0.8**
Ovary	132	7.9	789	8.9	1,796	8.8	17,701	11.7	**20,593**	**11.3**
Vagina	—	—	31	0.4	190	0.9	997	0.6	**1,255**	**0.7**
Vulva	22	1.4	63	0.8	343	1.7	4,095	2.7	**4,596**	**2.5**
Other female genital organs	—	—	71	0.8	188	0.9	1,696	1.1	**1,978**	**1.1**
Male genital system	**843**	**65.8**	**4,516**	**69.6**	**31,328**	**197.3**	**172,005**	**124.5**	**218,876**	**134.8**
Prostate	770	62.2	4,302	67.1	30,864	194.7	163,395	117.2	**209,292**	**128.3**
Testis	65	2.8	175	1.9	286	1.5	7,230	6.2	**7,941**	**5.3**
Penis	—	—	26	0.4	141	0.9	1,095	0.9	**1,293**	**0.9**
Other male genital organs	—	—	—	—	37	0.2	285	0.2	**350**	**0.2**
Urinary system	**671**	**23.8**	**2,322**	**16.3**	**10,180**	**29.1**	**109,214**	**38.0**	**124,095**	**36.6**
Urinary bladder	201	8.4	1,086	8.1	3,697	11.4	61,930	21.4	**68,070**	**20.2**
Kidney and renal pelvis	461	15.0	1,137	7.4	6,291	17.1	44,786	15.7	**53,185**	**15.6**
Ureter	—	—	73	0.6	80	0.3	1,693	0.6	**1,862**	**0.6**
Other urinary organs	—	—	26	0.2	112	0.3	805	0.3	**978**	**0.3**
Eye and orbit	**—**	**—**	**48**	**0.3**	**92**	**0.2**	**2,294**	**0.8**	**2,511**	**0.8**
Brain and other nervous system	**110**	**3.1**	**550**	**3.4**	**1,549**	**4.0**	**18,625**	**6.9**	**21,084**	**6.4**
Brain	99	2.8	515	3.2	1,427	3.7	17,557	6.5	**19,818**	**6.0**
Cranial nerves other nervous system	—	—	35	0.2	122	0.3	1,068	0.4	**1,266**	**0.4**
Endocrine system	**229**	**6.2**	**2,547**	**14.8**	**3,822**	**9.7**	**39,097**	**15.1**	**46,586**	**14.5**
Thyroid	220	6.0	2,426	14.0	3,453	8.8	37,370	14.4	**44,332**	**13.8**
Other endocrine including thymus	—	—	121	0.7	369	0.9	1,727	0.7	**2,254**	**0.7**
Lymphomas	**335**	**11.4**	**2,120**	**14.1**	**5,998**	**16.1**	**61,044**	**21.9**	**70,861**	**21.3**
Hodgkin lymphoma	40	1.0	201	1.2	1,128	2.7	6,913	2.8	**8,416**	**2.7**
Non-Hodgkin lymphoma	295	10.3	1,919	13.0	4,870	13.4	54,131	19.1	**62,445**	**18.6**
Myeloma	**92**	**3.4**	**500**	**3.5**	**4,072**	**11.8**	**15,688**	**5.4**	**20,696**	**6.1**
Leukemias	**224**	**6.8**	**1,151**	**7.6**	**3,590**	**10.0**	**36,718**	**13.3**	**42,836**	**13.0**
Acute lymphocytic leukemia	40	0.8	224	1.4	446	1.0	4,147	1.8	**4,988**	**1.7**
Chronic lymphocytic leukemia	39	1.5	170	1.2	930	2.8	12,168	4.2	**13,947**	**4.1**
Acute myeloid leukemia	76	2.2	489	3.3	1,163	3.3	11,231	4.1	**13,093**	**4.0**
Chronic myeloid leukemia	40	1.2	144	0.9	546	1.5	4,513	1.6	**5,375**	**1.6**
Other leukemia	29	1.0	124	0.8	505	1.5	4,659	1.7	**5,433**	**1.6**
Mesothelioma	**—**	**—**	**50**	**0.4**	**149**	**0.5**	**3,008**	**1.1**	**3,229**	**1.0**
Kaposi Sarcoma	**—**	**—**	**16**	**0.1**	**355**	**0.9**	**717**	**0.3**	**1,154**	**0.4**
Miscellaneous	**318**	**12.8**	**1,362**	**10.1**	**5,332**	**16.1**	**47,050**	**16.3**	**54,898**	**16.3**

Abbreviations: AI/AN = American Indian/Alaska Native; A/PI = Asian/Pacific Islander; NOS = not otherwise specified.

* Rates are the number of cases per 100,000 persons and are age-adjusted to the 2000 U.S. standard population (19 age groups – Census P25–1130). For more information, see USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes).

† Invasive cancer excludes basal and squamous cell carcinomas of the skin except when these occur on the skin of the genital organs, and in situ cancers except urinary bladder. Urinary bladder cancer includes invasive and in situ.

§ Rates are not presented for persons of unknown or other race, therefore categories do not sum to total. Data for specified racial populations other than white and black should be interpreted with caution. For more information, see USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes/interpreting/race.htm).

¶ Data are compiled from cancer registries that meet the data quality criteria for all invasive cancer sites combined (covering approximately 99% of the U.S. population). Registry-specific data quality information is available at http://www.cdc.gov/cancer/npcr/uscs/2011/data/00_data_quality.htm.

** Counts and rates are suppressed if <16 cases were reported.

TABLE 10. Reported number and rate* of cancer deaths, by primary cancer site and race† — United States, 2011§

Cancer site	AI/AN		A/PI		Black		White		Total	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
All sites combined	**2,810**	**111.5**	**14,713**	**105.5**	**66,817**	**199.2**	**492,345**	**168.5**	**576,685**	**168.7**
Oral cavity and pharynx	**58**	**2.1**	**286**	**1.9**	**1,126**	**3.1**	**7,187**	**2.4**	**8,657**	**2.5**
Lip	—¶	—	—	—	—	—	77	0	**83**	**0**
Tongue	16	0.5	52	0.4	215	0.6	1,806	0.6	**2,089**	**0.6**
Salivary gland	—	—	21	0.1	73	0.2	726	0.2	**820**	**0.2**
Floor of mouth	—	—	—	—	—	—	72	0	**84**	**0**
Gum and other mouth	—	—	30	0.2	119	0.3	1,087	0.4	**1,245**	**0.4**
Nasopharynx	—	—	129	0.8	85	0.2	409	0.1	**630**	**0.2**
Tonsil	—	—	—	—	96	0.3	736	0.2	**842**	**0.2**
Oropharynx	—	—	—	—	165	0.4	673	0.2	**861**	**0.2**
Hypopharynx	—	—	—	—	61	0.2	252	0.1	**322**	**0.1**
Other oral cavity and pharynx	—	—	22	0.2	297	0.8	1,349	0.5	**1,681**	**0.5**
Digestive system	**851**	**32.8**	**5,296**	**38.0**	**18,712**	**55.3**	**119,148**	**40.5**	**144,007**	**41.8**
Esophagus	54	1.9	235	1.6	1,352	3.8	12,805	4.3	**14,446**	**4.2**
Stomach	76	3.1	775	5.6	1,979	6.1	8,205	2.8	**11,035**	**3.3**
Small intestine	—	—	30	0.2	207	0.6	1,015	0.4	**1,256**	**0.4**
Colon and rectum	318	12.3	1,492	10.7	7,017	21.1	42,956	14.6	**51,783**	**15.1**
Colon excluding rectum	238	9.3	1,184	8.7	5,925	17.9	34,834	11.9	**42,181**	**12.3**
Rectum and rectosigmoid junction	80	3.0	308	2.1	1,092	3.2	8,122	2.8	**9,602**	**2.8**
Anus, anal canal, and anorectum	—	—	—	—	102	0.3	740	0.3	**863**	**0.2**
Liver and intrahepatic bile duct	180	6.5	1,436	9.9	3,041	8.1	16,951	5.7	**21,608**	**6.1**
Gallbladder	23	1.0	102	0.8	306	0.9	1,670	0.6	**2,101**	**0.6**
Other biliary	—	—	71	0.5	121	0.4	1,306	0.4	**1,510**	**0.4**
Pancreas	162	6.5	1,083	8.0	4,380	13.3	31,719	10.8	**37,344**	**10.9**
Retroperitoneum	—	—	—	—	16	0	196	0.1	**219**	**0.1**
Peritoneum, omentum, and mesentery	—	—	19	0.1	46	0.1	738	0.3	**807**	**0.2**
Other digestive organs	—	—	33	0.2	145	0.4	847	0.3	**1,035**	**0.3**
Respiratory system	**765**	**31.2**	**3,409**	**25.2**	**17,322**	**51.4**	**139,880**	**47.9**	**161,376**	**47.3**
Nose, nasal cavity, and middle ear	—	—	18	0.1	58	0.2	338	0.1	**416**	**0.1**
Larynx	18	0.6	54	0.4	655	1.8	3,005	1.0	**3,732**	**1.1**
Lung and bronchus	743	30.5	3,331	24.7	16,586	49.3	136,293	46.7	**156,953**	**46.0**
Pleura	—	—	—	—	—	—	55	0	**61**	**0**
Trachea, mediastinum, and other respiratory organs	—	—	—	—	19	0.1	189	0.1	**214**	**0.1**
Bones and joints	**—**	**—**	**36**	**0.2**	**168**	**0.5**	**1,211**	**0.4**	**1,423**	**0.4**
Soft tissue including heart	**—**	**—**	**157**	**1.0**	**542**	**1.4**	**3,694**	**1.3**	**4,408**	**1.3**
Skin excluding basal and squamous	**35**	**1.3**	**74**	**0.5**	**286**	**0.8**	**11,817**	**4.1**	**12,212**	**3.6**
Melanomas of the skin	21	0.8	46	0.3	133	0.4	8,928	3.1	**9,128**	**2.7**
Other nonepithelial skin	—	—	28	0.2	153	0.4	2,889	1.0	**3,084**	**0.9**
Male and female breast	**165**	**6.1**	**985**	**6.3**	**6,261**	**17.7**	**33,963**	**11.6**	**41,374**	**12.0**
Female breast	164	11.0	977	11.2	6,192	30.2	33,598	20.9	**40,931**	**21.5**
Male breast	—	—	—	—	69	0.5	365	0.3	**443**	**0.3**

See table footnotes on next page.

TABLE 10. (*Continued*) Reported number and rate* of cancer deaths, by primary cancer site and race† — United States, 2011§

Cancer site	AI/AN		A/PI		Black		White		Total	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Female genital system	**144**	**9.3**	**830**	**9.6**	**3,870**	**19.5**	**24,183**	**15.2**	**29,027**	**15.3**
Cervix	30	1.7	173	2.0	815	4.0	3,074	2.1	**4,092**	**2.3**
Corpus and uterus, NOS	41	2.8	248	2.8	1,577	8.0	6,775	4.1	**8,641**	**4.5**
Corpus	—	—	116	1.3	611	3.1	2,972	1.8	**3,714**	**1.9**
Uterus, NOS	26	1.6	132	1.5	966	4.9	3,803	2.3	**4,927**	**2.6**
Ovary	65	4.4	389	4.5	1,293	6.6	12,599	7.8	**14,346**	**7.5**
Vagina	—	—	—	—	54	0.3	368	0.2	**428**	**0.2**
Vulva	—	—	—	—	79	0.4	936	0.6	**1,022**	**0.5**
Other female genital organs	—	—	—	—	52	0.3	431	0.3	**498**	**0.3**
Male genital system	**130**	**16.7**	**465**	**9.6**	**4,711**	**44.5**	**23,324**	**19.7**	**28,630**	**21.2**
Prostate	129	16.7	455	9.5	4,658	44.1	22,728	19.2	**27,970**	**20.8**
Testis	—	—	—	—	20	0.1	355	0.3	**380**	**0.3**
Penis	—	—	—	—	26	0.2	207	0.2	**239**	**0.2**
Other male genital organs	—	—	—	—	—	—	34	0	**41**	**0**
Urinary system	**154**	**6.3**	**480**	**3.6**	**2,446**	**7.6**	**26,237**	**8.9**	**29,317**	**8.6**
Urinary bladder	47	2.2	195	1.6	1,110	3.6	13,662	4.6	**15,014**	**4.4**
Kidney and renal pelvis	107	4.2	267	1.9	1,281	3.8	11,904	4.0	**13,559**	**3.9**
Ureter	—	—	—	—	—	—	314	0.1	**338**	**0.1**
Other urinary organs	—	—	—	—	40	0.1	357	0.1	**406**	**0.1**
Eye and orbit	**—**	**—**	**—**	**—**	**—**	**—**	**263**	**0.1**	**280**	**0.1**
Brain and other nervous system	**62**	**1.9**	**291**	**1.8**	**887**	**2.4**	**13,251**	**4.6**	**14,491**	**4.3**
Endocrine system	**—**	**—**	**133**	**0.9**	**276**	**0.8**	**2,267**	**0.8**	**2,689**	**0.8**
Thyroid	—	—	98	0.7	146	0.4	1,494	0.5	**1,747**	**0.5**
Other endocrine including thymus	—	—	35	0.2	130	0.3	773	0.3	**942**	**0.3**
Lymphomas	**72**	**2.9**	**552**	**4.2**	**1,596**	**4.7**	**19,265**	**6.7**	**21,485**	**6.4**
Hodgkin lymphoma	—	—	21	0.2	129	0.3	1,016	0.4	**1,168**	**0.4**
Non-Hodgkin lymphoma	70	2.8	531	4.0	1,467	4.4	18,249	6.3	**20,317**	**6.0**
Myeloma	**44**	**1.8**	**236**	**1.8**	**1,945**	**6.1**	**9,186**	**3.2**	**11,411**	**3.4**
Leukemias	**78**	**3.0**	**585**	**4.1**	**1,977**	**6.0**	**20,554**	**7.2**	**23,194**	**6.9**
Acute lymphocytic leukemia	—	—	61	0.4	124	0.3	1,237	0.5	**1,432**	**0.4**
Chronic lymphocytic leukemia	—	—	36	0.3	380	1.2	4,180	1.4	**4,608**	**1.4**
Acute myeloid leukemia	34	1.3	311	2.1	742	2.2	8,404	3.0	**9,491**	**2.8**
Chronic myeloid leukemia	—	—	29	0.2	128	0.4	932	0.3	**1,091**	**0.3**
Other leukemia	20	0.7	148	1.1	603	1.9	5,801	2.0	**6,572**	**2.0**
Mesothelioma	**—**	**—**	**30**	**0.2**	**109**	**0.3**	**2,504**	**0.9**	**2,651**	**0.8**
Miscellaneous	**206**	**8.5**	**861**	**6.3**	**4,565**	**13.7**	**34,370**	**11.7**	**40,002**	**11.7**

Abbreviations: AI/AN = American Indian/Alaska Native; A/PI = Asian/Pacific Islander; NOS = not otherwise specified.

* Rates are the number of deaths per 100,000 persons and are age-adjusted to the 2000 U.S. standard population (19 age groups – Census P25–1130). For more information, see USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes).

† Data for specified racial populations other than white and black should be interpreted with caution. For more information, see USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes/interpreting/race.htm).

§ Data are from the National Vital Statistics System (NVSS).

¶ Counts and rates are suppressed if <16 cases were reported.

TABLE 11. Reported number and rate* of invasive† cancer cases, by primary cancer site and ethnicity§ — United States, 2011¶

	Hispanic		Non-Hispanic		Total	
Cancer site	**No.**	**Rate**	**No.**	**Rate**	**No.**	**Rate**
All sites combined	**109,279**	**350.6**	**1,422,787**	**461.5**	**1,532,066**	**450.6**
Oral cavity and pharynx	**2,327**	**7.3**	**36,825**	**11.7**	**39,152**	**11.2**
Lip	92	0.3	1,905	0.6	**1,997**	**0.6**
Tongue	624	2.0	11,201	3.5	**11,825**	**3.4**
Salivary gland	291	0.9	3,704	1.2	**3,995**	**1.2**
Floor of mouth	113	0.4	1,832	0.6	**1,945**	**0.5**
Gum and other mouth	349	1.1	4,907	1.6	**5,256**	**1.5**
Nasopharynx	122	0.3	1,610	0.5	**1,732**	**0.5**
Tonsil	400	1.2	6,842	2.1	**7,242**	**2.0**
Oropharynx	102	0.3	1,720	0.5	**1,822**	**0.5**
Hypopharynx	155	0.5	2,147	0.7	**2,302**	**0.7**
Other oral cavity and pharynx	79	0.3	957	0.3	**1,036**	**0.3**
Digestive system	**23,390**	**80.4**	**245,929**	**78.9**	**269,319**	**78.9**
Esophagus	783	2.8	15,131	4.8	**15,914**	**4.6**
Stomach	2,880	9.8	19,544	6.3	**22,424**	**6.6**
Small intestine	501	1.7	7,185	2.3	**7,686**	**2.2**
Colon and rectum	10,342	35.4	124,918	40.5	**135,260**	**39.9**
Colon excluding rectum	7,077	24.9	89,893	29.1	**96,970**	**28.7**
Rectum and rectosigmoid junction	3,265	10.5	35,025	11.3	**38,290**	**11.2**
Anus, anal canal, and anorectum	430	1.4	5,637	1.8	**6,067**	**1.8**
Liver and intrahepatic bile duct	3,855	12.6	22,242	6.9	**26,097**	**7.3**
Gallbladder	525	2.0	3,253	1.0	**3,778**	**1.1**
Other biliary	639	2.4	5,287	1.7	**5,926**	**1.8**
Pancreas	3,001	11.1	38,472	12.3	**41,473**	**12.2**
Retroperitoneum	139	0.4	1,119	0.4	**1,258**	**0.4**
Peritoneum, omentum, and mesentery	135	0.5	1,788	0.6	**1,923**	**0.6**
Other digestive organs	160	0.6	1,353	0.4	**1,513**	**0.4**
Respiratory system	**9,551**	**35.5**	**212,848**	**68.1**	**222,399**	**65.4**
Nose, nasal cavity, and middle ear	191	0.6	1,975	0.7	**2,166**	**0.6**
Larynx	733	2.5	11,520	3.6	**12,253**	**3.5**
Lung and bronchus	8,539	32.2	198,800	63.7	**207,339**	**61.0**
Pleura	—**	—	92	0	—	**0**
Trachea, mediastinum, and other respiratory organs	82	0.2	461	0.2	**543**	**0.2**
Bones and joints	**405**	**0.9**	**2,484**	**0.9**	**2,889**	**0.9**
Soft tissue including heart	**1,050**	**2.8**	**9,335**	**3.2**	**10,385**	**3.2**
Skin excluding basal and squamous	**1,666**	**5.1**	**69,187**	**23.2**	**70,853**	**21.3**
Melanomas of the skin	1,371	4.1	64,276	21.6	**65,647**	**19.7**
Other nonepithelial skin	295	0.9	4,911	1.6	**5,206**	**1.6**
Male and female breast	**16,555**	**49.5**	**205,620**	**67.5**	**222,175**	**65.6**
Female breast	16,441	92.1	203,656	125.4	**220,097**	**122.0**
Male breast	114	0.8	1,964	1.4	**2,078**	**1.4**

See table footnotes on next page.

TABLE 11. (*Continued*) Reported number and rate* of invasive† cancer cases, by primary cancer site and ethnicity§ — United States, 2011¶

	Hispanic		Non-Hispanic		Total	
Cancer site	**No.**	**Rate**	**No.**	**Rate**	**No.**	**Rate**
Female genital system	**8,251**	**44.9**	**79,817**	**48.7**	**88,068**	**48.4**
Cervix	1,998	9.8	10,111	7.2	**12,109**	**7.5**
Corpus and uterus, NOS	3,923	21.8	43,614	25.7	**47,537**	**25.4**
Corpus	3,744	20.8	42,250	24.9	**45,994**	**24.6**
Uterus, NOS	179	1.0	1,364	0.8	**1,543**	**0.8**
Ovary	1,812	10.1	18,781	11.5	**20,593**	**11.3**
Vagina	104	0.6	1,151	0.7	**1,255**	**0.7**
Vulva	268	1.7	4,328	2.6	**4,596**	**2.5**
Other female genital organs	146	0.8	1,832	1.1	**1,978**	**1.1**
Male genital system	**14,744**	**110.2**	**204,132**	**137.4**	**218,876**	**134.8**
Prostate	13,303	104.4	195,989	130.8	**209,292**	**128.3**
Testis	1,227	4.3	6,714	5.6	**7,941**	**5.3**
Penis	184	1.3	1,109	0.8	**1,293**	**0.9**
Other male genital organs	30	0.2	320	0.2	**350**	**0.2**
Urinary system	**7,923**	**27.0**	**116,172**	**37.5**	**124,095**	**36.6**
Urinary bladder	2,847	11.0	65,223	21.0	**68,070**	**20.2**
Kidney and renal pelvis	4,954	15.5	48,231	15.7	**53,185**	**15.6**
Ureter	65	0.3	1,797	0.6	**1,862**	**0.6**
Other urinary organs	57	0.2	921	0.3	**978**	**0.3**
Eye and orbit	**206**	**0.5**	**2,305**	**0.8**	**2,511**	**0.8**
Brain and other nervous system	**1,998**	**5.0**	**19,086**	**6.7**	**21,084**	**6.4**
Brain	1,860	4.7	17,958	6.2	**19,818**	**6.0**
Cranial nerves other nervous system	138	0.3	1,128	0.4	**1,266**	**0.4**
Endocrine system	**5,194**	**12.8**	**41,392**	**14.9**	**46,586**	**14.5**
Thyroid	4,937	12.2	39,395	14.2	**44,332**	**13.8**
Other endocrine including thymus	257	0.6	1,997	0.7	**2,254**	**0.7**
Lymphomas	**6,249**	**19.1**	**64,612**	**21.7**	**70,861**	**21.3**
Hodgkin lymphoma	1,025	2.3	7,391	2.8	**8,416**	**2.7**
Non-Hodgkin lymphoma	5,224	16.7	57,221	18.8	**62,445**	**18.6**
Myeloma	**1,712**	**6.0**	**18,984**	**6.1**	**20,696**	**6.1**
Leukemias	**3,843**	**10.3**	**38,993**	**13.1**	**42,836**	**13.0**
Acute lymphocytic leukemia	1,263	2.3	3,725	1.5	**4,988**	**1.7**
Chronic lymphocytic leukemia	494	1.8	13,453	4.3	**13,947**	**4.1**
Acute myeloid leukemia	1,157	3.4	11,936	4.0	**13,093**	**4.0**
Chronic myeloid leukemia	516	1.5	4,859	1.6	**5,375**	**1.6**
Other leukemia	413	1.2	5,020	1.7	**5,433**	**1.6**
Mesothelioma	**193**	**0.7**	**3,036**	**1.0**	**3,229**	**1.0**
Kaposi Sarcoma	**219**	**0.6**	**935**	**0.4**	**1,154**	**0.4**
Miscellaneous	**3,803**	**14.1**	**51,095**	**16.5**	**54,898**	**16.3**

Abbreviation: NOS = not otherwise specified.

* Rates are the number of cases per 100,000 persons and are age-adjusted to the 2000 U.S. standard population (19 age groups – Census P25–1130). For more information, see USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes).

† Invasive cancer excludes basal and squamous cell carcinomas of the skin except when these occur on the skin of the genital organs, and in situ cancers except urinary bladder. Urinary bladder cancer includes invasive and in situ.

§ Data for specified ethnic populations should be interpreted with caution. For more information, see USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes/interpreting/race.htm).

¶ Data are compiled from cancer registries that meet the data quality criteria for all invasive cancer sites combined (covering approximately 99% of the U.S. population). Registry-specific data quality information is available at http://www.cdc.gov/cancer/npcr/uscs/2011/data/00_data_quality.htm.

** Counts and rates are suppressed if <16 cases were reported. Some counts and rates are suppressed as complementary cell suppression.

TABLE 12. Reported number and rate* of cancer deaths, by primary cancer site and ethnicity† — United States, 2011§

Cancer site	Hispanic		Non-Hispanic		Total	
	No.	Rate	No.	Rate	No.	Rate
All sites combined	**32,380**	**117.9**	**543,371**	**173.0**	**576,685**	**168.7**
Oral cavity and pharynx	**418**	**1.5**	**8,219**	**2.6**	**8,657**	**2.5**
Lip	—¶	—	80	0	**83**	**0**
Tongue	96	0.3	1,989	0.6	**2,089**	**0.6**
Salivary gland	37	0.1	781	0.2	**820**	**0.2**
Floor of mouth	—	—	81	0	**84**	**0**
Gum and other mouth	46	0.2	1,197	0.4	**1,245**	**0.4**
Nasopharynx	46	0.1	581	0.2	**630**	**0.2**
Tonsil	37	0.1	804	0.2	**842**	**0.2**
Oropharynx	45	0.2	813	0.3	**861**	**0.2**
Hypopharynx	—	—	306	0.1	**322**	**0.1**
Other oral cavity and pharynx	90	0.3	1,587	0.5	**1,681**	**0.5**
Digestive system	**10,929**	**39.8**	**132,820**	**41.9**	**144,007**	**41.8**
Esophagus	673	2.5	13,749	4.3	**14,446**	**4.2**
Stomach	1,500	5.2	9,509	3.0	**11,035**	**3.3**
Small intestine	69	0.2	1,184	0.4	**1,256**	**0.4**
Colon and rectum	3,235	11.9	48,464	15.4	**51,783**	**15.1**
Colon excluding rectum	2,654	10.0	39,463	12.5	**42,181**	**12.3**
Rectum and rectosigmoid junction	581	2.0	9,001	2.9	**9,602**	**2.8**
Anus, anal canal, and anorectum	39	0.1	823	0.3	**863**	**0.2**
Liver and intrahepatic bile duct	2,568	9.0	18,995	5.9	**21,608**	**6.1**
Gallbladder	274	1.0	1,820	0.6	**2,101**	**0.6**
Other biliary	130	0.5	1,379	0.4	**1,510**	**0.4**
Pancreas	2,305	8.8	34,975	11.1	**37,344**	**10.9**
Retroperitoneum	—	—	204	0.1	**219**	**0.1**
Peritoneum, omentum, and mesentery	45	0.2	762	0.2	**807**	**0.2**
Other digestive organs	76	0.3	956	0.3	**1,035**	**0.3**
Respiratory system	**5,367**	**20.9**	**155,762**	**49.5**	**161,376**	**47.3**
Nose, nasal cavity, and middle ear	29	0.1	385	0.1	**416**	**0.1**
Larynx	230	0.9	3,491	1.1	**3,732**	**1.1**
Lung and bronchus	5,088	19.9	151,631	48.2	**156,953**	**46.0**
Pleura	—	—	58	0	—	**0**
Trachea, mediastinum, and other respiratory organs	17	0	197	0.1	**214**	**0.1**
Bones and joints	**151**	**0.4**	**1,269**	**0.4**	**1,423**	**0.4**
Soft tissue including heart	**340**	**1.0**	**4,060**	**1.3**	**4,408**	**1.3**
Skin excluding basal and squamous	**328**	**1.2**	**11,870**	**3.8**	**12,212**	**3.6**
Melanomas of the skin	235	0.8	8,884	2.9	**9,128**	**2.7**
Other nonepithelial skin	93	0.4	2,986	0.9	**3,084**	**0.9**
Male and female breast	**2,388**	**7.9**	**38,916**	**12.4**	**41,374**	**12.0**
Female breast	2,369	14.1	38,494	22.2	**40,931**	**21.5**
Male breast	19	0.2	422	0.3	**443**	**0.3**

See table footnotes on next page.

TABLE 12. (*Continued*) Reported number and rate* of cancer deaths, by primary cancer site and ethnicity† — United States, 2011§

Cancer site	Hispanic		Non-Hispanic		Total	
	No.	Rate	No.	Rate	No.	Rate
Female genital system	**2,018**	**12.3**	**26,962**	**15.6**	**29,027**	**15.3**
Cervix	471	2.6	3,613	2.3	**4,092**	**2.3**
Corpus and uterus, NOS	582	3.6	8,046	4.5	**8,641**	**4.5**
Corpus	215	1.3	3,492	2.0	**3,714**	**1.9**
Uterus, NOS	367	2.3	4,554	2.6	**4,927**	**2.6**
Ovary	852	5.3	13,471	7.7	**14,346**	**7.5**
Vagina	29	0.2	399	0.2	**428**	**0.2**
Vulva	55	0.4	965	0.5	**1,022**	**0.5**
Other female genital organs	29	0.2	468	0.3	**498**	**0.3**
Male genital system	**1,701**	**18.0**	**26,876**	**21.4**	**28,630**	**21.2**
Prostate	1,576	17.4	26,343	21.0	**27,970**	**20.8**
Testis	83	0.3	296	0.2	**380**	**0.3**
Penis	40	0.3	198	0.1	**239**	**0.2**
Other male genital organs	—	—	39	0	**41**	**0**
Urinary system	**1,556**	**5.9**	**27,721**	**8.8**	**29,317**	**8.6**
Urinary bladder	558	2.4	14,437	4.6	**15,014**	**4.4**
Kidney and renal pelvis	974	3.5	12,565	4.0	**13,559**	**3.9**
Ureter	—	—	332	0.1	**338**	**0.1**
Other urinary organs	19	0.1	387	0.1	**406**	**0.1**
Eye and orbit	**17**	**0**	**262**	**0.1**	**280**	**0.1**
Brain and other nervous system	**918**	**2.7**	**13,554**	**4.4**	**14,491**	**4.3**
Endocrine system	**237**	**0.8**	**2,447**	**0.8**	**2,689**	**0.8**
Thyroid	160	0.6	1,584	0.5	**1,747**	**0.5**
Other endocrine including thymus	77	0.2	863	0.3	**942**	**0.3**
Lymphomas	**1,481**	**5.5**	**19,971**	**6.5**	**21,485**	**6.4**
Hodgkin lymphoma	140	0.4	1,022	0.4	**1,168**	**0.4**
Non-Hodgkin lymphoma	1,341	5.0	18,949	6.1	**20,317**	**6.0**
Myeloma	**742**	**2.9**	**10,655**	**3.4**	**11,411**	**3.4**
Leukemias	**1,492**	**4.7**	**21,676**	**7.1**	**23,194**	**6.9**
Acute lymphocytic leukemia	315	0.7	1,115	0.4	**1,432**	**0.4**
Chronic lymphocytic leukemia	106	0.5	4,500	1.4	**4,608**	**1.4**
Acute myeloid leukemia	552	1.8	8,927	2.9	**9,491**	**2.8**
Chronic myeloid leukemia	96	0.3	994	0.3	**1,091**	**0.3**
Other leukemia	423	1.5	6,140	2.0	**6,572**	**2.0**
Mesothelioma	**100**	**0.4**	**2,545**	**0.8**	**2,651**	**0.8**
Miscellaneous	**2,191**	**8.2**	**37,742**	**12.0**	**40,002**	**11.7**

Abbreviation: NOS = not otherwise specified.

* Rates are the number of deaths per 100,000 persons and are age-adjusted to the 2000 U.S. standard population (19 age groups – Census P25–1130). For more information, see USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes).

§ Data for specified ethnic populations should be interpreted with caution. For more information, see USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes/interpreting/race.htm).

† Data are from the National Vital Statistics System (NVSS).

¶ Counts and rates are suppressed if <16 cases were reported. Some counts and rates are suppressed as complementary cell suppression.

TABLE 13. Reported rate* of invasive† cancer cases, by primary cancer site and year — United States, 1999–2011§

Cancer site	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
All sites combined	**484.6**	**485.8**	**488.1**	**483.9**	**473**	**471.9**	**471.1**	**473.4**	**475.7**	**470.3**	**464.2**	**449.6**	**444.2**
Oral cavity and pharynx	**10.9**	**10.8**	**10.8**	**10.8**	**10.8**	**10.8**	**10.6**	**10.7**	**11.0**	**11.2**	**11.1**	**11.1**	**11.2**
Lip	1.0	0.9	0.9	0.9	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6
Tongue	2.6	2.7	2.7	2.8	2.8	2.9	2.9	3.0	3.1	3.3	3.3	3.2	3.4
Salivary gland	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.2	1.3	1.3	1.2	1.2
Floor of mouth	0.8	0.8	0.8	0.8	0.7	0.7	0.6	0.7	0.6	0.6	0.6	0.6	0.5
Gum and other mouth	1.7	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.6	1.6	1.5	1.5	1.5
Nasopharynx	0.6	0.6	0.5	0.6	0.6	0.6	0.6	0.5	0.6	0.6	0.5	0.5	0.5
Tonsil	1.3	1.4	1.4	1.5	1.6	1.6	1.6	1.7	1.8	1.8	2.0	1.9	2.0
Oropharynx	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5
Hypopharynx	0.9	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.6	0.6
Other oral cavity and pharynx	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.2	0.3	0.3
Digestive system	**92.0**	**91.8**	**91.4**	**90.3**	**89.8**	**88.8**	**87.4**	**86.4**	**85.5**	**84.7**	**82.8**	**80.3**	**79.1**
Esophagus	5.0	5.0	5.0	4.9	5.0	5.1	5.0	5.1	4.9	5.0	4.9	4.6	4.6
Stomach	7.7	7.5	7.4	7.4	7.3	7.2	7.0	6.9	6.9	6.7	6.7	6.8	6.7
Small intestine	1.7	1.7	1.8	1.8	1.9	1.9	2.0	2.1	2.1	2.2	2.2	2.3	2.2
Colon and rectum	56.5	56.1	55.2	53.9	52.6	51.0	49.6	48.1	46.8	45.5	43.3	41.0	39.9
Colon excluding rectum	41.2	40.9	40.4	39.5	38.5	37.2	36.0	35.0	34.0	33.0	31.2	29.5	28.7
Rectum and rectosigmoid junction	15.3	15.1	14.8	14.4	14.1	13.8	13.6	13.1	12.9	12.5	12.1	11.5	11.3
Anus, anal canal, and anorectum	1.4	1.4	1.4	1.4	1.5	1.6	1.6	1.6	1.7	1.7	1.8	1.7	1.8
Liver and intrahepatic bile duct	4.9	5.2	5.2	5.4	5.6	6.0	6.2	6.4	6.8	7.0	7.4	7.4	7.4
Gallbladder	1.2	1.2	1.2	1.1	1.2	1.2	1.2	1.2	1.1	1.1	1.2	1.2	1.1
Other biliary	1.3	1.4	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.8	1.7	1.8
Pancreas	11.1	11.2	11.3	11.3	11.5	11.6	11.8	12.0	12.0	12.2	12.1	12.2	12.1
Retroperitoneum	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Peritoneum, omentum, and mesentery	0.4	0.5	0.5	0.6	0.6	0.7	0.6	0.6	0.6	0.7	0.6	0.6	0.6
Other digestive organs	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Respiratory system	**76.2**	**75.5**	**75.3**	**74.9**	**74.6**	**73.7**	**73.9**	**72.9**	**71.9**	**71**	**69.7**	**67**	**64.7**
Nose, nasal cavity, and middle ear	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6
Larynx	4.6	4.5	4.4	4.1	4.1	4.1	4.0	3.9	3.8	3.7	3.7	3.6	3.4
Lung and bronchus	70.7	70.1	70.1	69.8	69.6	68.7	69.0	68.1	67.1	66.3	65.1	62.5	60.4
Pleura	0	0	0	0	0	0	0	0	0	0	0	0	0
Trachea, mediastinum, and other respiratory organs	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Bones and joints	**1.0**	**0.9**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**	**0.9**	**1.0**	**0.9**	**0.9**
Soft tissue including heart	**2.9**	**3.0**	**3.0**	**3.0**	**3.1**	**3.2**	**3.3**	**3.2**	**3.3**	**3.3**	**3.3**	**3.3**	**3.2**
Skin excluding basal and squamous	**16.6**	**17.7**	**18.7**	**19.1**	**18.9**	**19.8**	**21**	**20.7**	**21.1**	**21.5**	**21.8**	**21.2**	**21.4**
Melanomas of the skin	15.3	16.3	17.2	17.6	17.4	18.3	19.4	19.1	19.4	19.8	20.1	19.6	19.8
Other nonepithelial skin	1.3	1.4	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.7	1.7	1.6	1.6
Male and female breast	**74.3**	**72.8**	**72.4**	**70.5**	**66.8**	**66.0**	**65.7**	**66.0**	**66.5**	**66.9**	**67.4**	**64.9**	**65.7**
Female breast	135.3	133.0	132.6	129.3	122.7	121.5	121.1	121.8	123.0	123.9	124.9	120.5	122.3
Male breast	1.3	1.3	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4

See table footnotes on next page.

TABLE 13. (*Continued*) Reported rate* of invasive† cancer cases, by primary cancer site and year — United States, 1999–2011§

Cancer site	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Female genital system	**52.1**	**51.8**	**51.7**	**50.5**	**49.1**	**49.1**	**49.3**	**49.2**	**49.4**	**49.6**	**49.8**	**49**	**48.9**
Cervix	9.7	9.6	9.1	8.7	8.4	8.2	8.3	8.2	8.1	7.9	8.0	7.6	7.5
Corpus and uterus, NOS	24.3	24.1	24.6	24.2	23.3	23.9	24.2	24.3	24.6	25.0	25.5	25.4	25.6
Corpus	23.5	23.3	23.8	23.5	22.6	23.2	23.4	23.6	23.9	24.2	24.7	24.7	24.8
Uterus, NOS	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8
Ovary	14.4	14.4	14.3	13.8	13.7	13.2	13.2	13.0	12.7	12.6	12.2	11.7	11.4
Vagina	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.7	0.7	0.7	0.7	0.7	0.7
Vulva	2.4	2.3	2.4	2.3	2.4	2.3	2.4	2.4	2.5	2.5	2.5	2.5	2.5
Other female genital organs	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.9	0.9	1	1.1
Male genital system	**176.7**	**178.5**	**180.6**	**178.2**	**163.3**	**159.7**	**156.1**	**165.5**	**169.4**	**156.0**	**147.4**	**137.0**	**134.2**
Prostate	170.1	171.9	174.0	171.7	156.6	153.0	149.4	158.9	162.8	149.2	140.7	130.4	127.6
Testis	5.4	5.4	5.5	5.3	5.5	5.6	5.6	5.5	5.6	5.7	5.6	5.6	5.5
Penis	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.9	0.9	0.8	0.8	0.9
Other male genital organs	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2
Urinary system	35.4	35.9	36.3	36.7	37.2	37.9	38.3	38.2	38.5	38.6	38.3	37.3	36.8
Urinary bladder	22.2	22.2	22.1	22.1	22.1	22.4	22.3	21.6	21.7	21.5	21.4	20.8	20.4
Kidney and renal pelvis	12.3	12.8	13.4	13.8	14.3	14.7	15.2	15.8	15.9	16.2	16.1	15.7	15.6
Ureter	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Other urinary organs	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.3	0.3	0.3
Eye and orbit	**0.9**	**0.9**	**0.9**	**0.8**	**0.9**	**0.9**	**0.9**	**0.9**	**0.9**	**0.8**	**0.8**	**0.8**	**0.8**
Brain and other nervous system	**6.9**	**6.9**	**6.8**	**6.9**	**6.8**	**6.9**	**6.9**	**6.8**	**6.8**	**6.8**	**6.7**	**6.6**	**6.5**
Brain	6.5	6.4	6.3	6.4	6.3	6.4	6.4	6.4	6.4	6.4	6.3	6.2	6.1
Cranial nerves other nervous system	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.4	0.5	0.5	0.4	0.4	0.4
Endocrine system	**7.5**	**8.1**	**8.6**	**9.2**	**9.6**	**10.4**	**11.2**	**11.9**	**12.7**	**13.7**	**14.4**	**14.5**	**14.7**
Thyroid	6.8	7.4	7.9	8.5	8.9	9.6	10.5	11.1	11.9	13.0	13.6	13.7	14.0
Other endocrine including thymus	0.7	0.7	0.7	0.7	0.7	0.8	0.7	0.8	0.8	0.8	0.7	0.8	0.7
Lymphomas	**22.3**	**22.2**	**22.4**	**22.5**	**22.6**	**23.0**	**22.9**	**22.7**	**22.7**	**22.7**	**22.6**	**22.2**	**21.5**
Hodgkin lymphoma	2.8	2.9	2.8	2.9	2.8	2.9	2.9	2.9	2.9	2.9	2.8	2.8	2.7
Non-Hodgkin lymphoma	19.4	19.3	19.5	19.6	19.8	20.2	20.0	19.8	19.8	19.8	19.8	19.4	18.8
Myeloma	**5.6**	**5.8**	**5.9**	**5.9**	**5.9**	**6.0**	**6.0**	**5.9**	**5.9**	**6.0**	**6.1**	**6.1**	**6.1**
Leukemias	**13.0**	**13.4**	**13.6**	**13.2**	**13.4**	**13.5**	**13.3**	**13.4**	**13.1**	**13.1**	**13.0**	**13.4**	**13.1**
Acute lymphocytic leukemia	1.4	1.5	1.5	1.5	1.5	1.6	1.5	1.6	1.6	1.7	1.6	1.6	1.7
Chronic lymphocytic leukemia	4.2	4.5	4.6	4.6	4.7	4.8	4.8	4.8	4.5	4.5	4.4	4.3	4.1
Acute myeloid leukemia	3.8	3.9	3.9	3.8	3.8	3.7	3.6	3.7	3.7	3.7	3.7	4.0	4.0
Chronic myeloid leukemia	1.6	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.7	1.7	1.7
Other leukemia	1.9	1.9	1.9	1.8	1.8	1.7	1.7	1.7	1.7	1.6	1.7	1.7	1.6
Mesothelioma	**1.1**	**1.1**	**1.1**	**1.1**	**1.1**	**1.1**	**1.1**	**1.1**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**
Kaposi Sarcoma	**0.6**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.4**	**0.4**	**0.4**	**0.4**
Miscellaneous	**12.6**	**12.3**	**12.1**	**11.7**	**11.2**	**10.8**	**10.7**	**10.5**	**10.3**	**10.0**	**9.8**	**9.8**	**9.5**

Abbreviation: NOS = not otherwise specified.

* Rates are the number of cases per 100,000 persons and are age-adjusted to the 2000 U.S. standard population (19 age groups – Census P25–1130). For more information, see USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes).

† Invasive cancer excludes basal and squamous cell carcinomas of the skin except when these occur on the skin of the genital organs, and in situ cancers except urinary bladder. Urinary bladder cancer includes invasive and in situ.

§ Data are compiled from cancer registries that meet the data quality criteria for all invasive cancer sites combined for all years, 1999–2011 (covering approximately 89% of the U.S. population). See registry-specific data quality information for all years, 1999–2011 (available at http://www.cdc.gov/cancer/npcr/uscs/2011/data/00_data_quality.htm). Caution should be used when comparing incidence and death rates because of potential differences in population coverage.

TABLE 14. Reported rate* of cancer deaths, by primary cancer site and year — United States, 1999–2011†

Cancer site	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
All sites combined	**200.7**	**198.8**	**196.3**	**194.4**	**190.9**	**186.8**	**185.2**	**182.0**	**179.3**	**176.3**	**173.4**	**171.8**	**168.7**
Oral cavity and pharynx	**2.7**	**2.7**	**2.7**	**2.7**	**2.6**	**2.6**	**2.5**	**2.5**	**2.5**	**2.5**	**2.4**	**2.5**	**2.5**
Lip	0	0	0	0	0	0	0	0	0	0	0	0	0
Tongue	0.6	0.6	0.6	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Salivary gland	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Floor of mouth	0.1	0.1	0	0.1	0	0	0	0	0	0	0	0	0
Gum and other mouth	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.4
Nasopharynx	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Tonsil	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Oropharynx	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Hypopharynx	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Other oral cavity and pharynx	0.5	0.6	0.6	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.5
Digestive system	**47.5**	**47.3**	**46.7**	**46.2**	**45.6**	**44.5**	**44.1**	**43.8**	**43.3**	**43.0**	**42.3**	**42.3**	**41.8**
Esophagus	4.3	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.3	4.2	4.2	4.3	4.2
Stomach	4.6	4.5	4.4	4.3	4.2	4.0	3.8	3.7	3.6	3.5	3.4	3.4	3.3
Small intestine	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.4
Colon and rectum	20.9	20.7	20.2	19.8	19.1	18.1	17.6	17.3	16.9	16.5	15.8	15.5	15.1
Colon excluding rectum	17.9	17.6	17.1	16.8	16.2	15.2	14.7	14.4	14.1	13.6	13.0	12.6	12.3
Rectum and rectosigmoid junction	3.0	3.0	3.0	3.0	2.9	2.9	2.9	2.9	2.8	2.9	2.8	2.9	2.8
Anus, anal canal, and anorectum	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Liver and intrahepatic bile duct	4.5	4.6	4.7	4.9	5.0	5.1	5.3	5.3	5.4	5.6	5.8	5.9	6.1
Gallbladder	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6
Other biliary	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.5	0.4
Pancreas	10.6	10.5	10.6	10.6	10.5	10.7	10.8	10.9	10.8	11.0	10.8	11.0	10.9
Retroperitoneum	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Peritoneum, omentum, and mesentery	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Other digestive organs	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3
Respiratory system	**57.1**	**57.5**	**57.0**	**56.6**	**55.8**	**54.8**	**54.3**	**53.2**	**52.1**	**51.0**	**49.7**	**48.7**	**47.3**
Nose, nasal cavity, and middle ear	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.1	0.1
Larynx	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.2	1.1	1.2	1.1	1.1	1.1
Lung and bronchus	55.4	55.8	55.3	55.0	54.2	53.4	52.9	51.7	50.7	49.6	48.4	47.4	46.0
Pleura	0	0	0	0	0	0	0	0	0	0	0	0	0
Trachea, mediastinum, and other respiratory organs	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Bones and Joints	**0.4**	**0.4**	**0.5**	**0.4**	**0.4**	**0.4**	**0.5**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**
Soft tissue including heart	**1.3**	**1.3**	**1.3**	**1.2**	**1.2**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**
Skin excluding basal and squamous	**3.5**	**3.5**	**3.5**	**3.4**	**3.5**	**3.5**	**3.6**	**3.6**	**3.6**	**3.5**	**3.7**	**3.6**	**3.6**
Melanomas of the skin	2.6	2.7	2.7	2.6	2.7	2.7	2.8	2.7	2.7	2.7	2.8	2.7	2.7
Other nonepithelial skin	0.8	0.8	0.9	0.8	0.8	0.8	0.8	0.8	0.9	0.8	0.9	0.9	0.9
Male and female breast	**15.2**	**15.2**	**14.8**	**14.5**	**14.3**	**13.8**	**13.6**	**13.2**	**12.9**	**12.7**	**12.4**	**12.3**	**12.0**
Female beast	26.6	26.6	26.0	25.6	25.3	24.5	24.1	23.6	23.0	22.6	22.2	21.9	21.5
Male breast	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3

See table footnotes on next page.

TABLE 14. (*Continued*) Reported rate* of cancer deaths, by primary cancer site and year — United States, 1999–2011†

Cancer site	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Female genital system	**16.7**	**16.7**	**16.8**	**16.7**	**16.4**	**16.2**	**16.0**	**16.1**	**15.8**	**15.5**	**15.2**	**15.5**	**15.3**
Cervix	2.8	2.8	2.7	2.6	2.5	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.3
Corpus and uterus, NOS	4.1	4.1	4.2	4.2	4.1	4.1	4.1	4.2	4.2	4.2	4.2	4.5	4.5
Corpus	2.0	2.0	2.0	1.9	2.0	1.9	1.9	2.0	1.9	1.9	1.8	1.9	1.9
Uterus, NOS	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.4	2.5	2.6
Ovary	8.8	8.9	9.0	9.0	8.9	8.8	8.7	8.6	8.3	8.0	7.9	7.8	7.5
Vagina	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Vulva	0.5	0.4	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Other female genital organs	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3
Male genital system	**32.1**	**30.9**	**30.0**	**29.2**	**27.7**	**26.7**	**25.8**	**24.7**	**24.7**	**23.5**	**22.6**	**22.3**	**21.2**
Prostate	31.6	30.4	29.5	28.7	27.2	26.2	25.4	24.2	24.2	23.0	22.1	21.8	20.8
Testis	0.3	0.2	0.2	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.3
Penis	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Other male genital organs	0	0	0	0	0	0	0	0	0	0	0	0	0
Urinary system	**8.7**	**8.8**	**8.8**	**8.9**	**8.7**	**8.8**	**8.8**	**8.7**	**8.7**	**8.6**	**8.5**	**8.6**	**8.6**
Urinary bladder	4.4	4.3	4.3	4.4	4.3	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
Kidney and renal pelvis	4.1	4.2	4.3	4.2	4.2	4.1	4.1	4.0	4.0	4.0	3.9	3.9	3.9
Ureter	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Other urinary organs	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Eye and orbit	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Brain and other nervous system	**4.6**	**4.5**	**4.4**	**4.5**	**4.4**	**4.3**	**4.3**	**4.2**	**4.2**	**4.3**	**4.3**	**4.2**	**4.3**
Endocrine system	**0.8**	**0.8**	**0.8**	**0.8**	**0.7**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**
Thyroid	0.5	0.5	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Other endocrine including thymus	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Lymphomas	**8.8**	**8.6**	**8.4**	**8.1**	**7.8**	**7.5**	**7.4**	**7.2**	**7.0**	**6.8**	**6.7**	**6.5**	**6.4**
Hodgkin lymphoma	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Non-Hodgkin lymphoma	8.3	8.2	7.9	7.7	7.4	7.1	6.9	6.7	6.6	6.4	6.3	6.1	6.0
Myeloma	**3.8**	**3.8**	**3.8**	**3.8**	**3.7**	**3.6**	**3.6**	**3.5**	**3.5**	**3.3**	**3.3**	**3.3**	**3.4**
Leukemias	**7.7**	**7.7**	**7.6**	**7.5**	**7.4**	**7.3**	**7.3**	**7.2**	**7.1**	**7.1**	**7.1**	**6.9**	**6.9**
Acute lymphocytic leukemia	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4
Chronic lymphocytic leukemia	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4
Acute myeloid leukemia	2.5	2.7	2.7	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.8	2.8
Chronic myeloid leukemia	0.7	0.6	0.6	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3
Other leukemia	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0
Mesothelioma	**0.9**	**0.9**	**0.8**	**0.9**	**0.9**	**0.9**	**0.9**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**	**0.8**
Miscellaneous	**16.2**	**14.8**	**14.4**	**14.4**	**14.0**	**13.5**	**13.4**	**13.0**	**12.7**	**12.4**	**12.2**	**11.9**	**11.7**

Abbreviation: NOS = not otherwise specified.

* Rates are the number of deaths per 100,000 persons and are age-adjusted to the 2000 U.S. standard population (19 age groups – Census P25-1130). For more information, see USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes).

† Data are from the National Vital Statistics System (NVSS). Data for deaths cover 100% of the U.S. population. Caution should be used when comparing incidence and death rates because of potential differences in population coverage.

TABLE 15. Reported number of invasive* cancer cases by primary site and year — United States, 1999–2011†

Cancer site	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
All sites combined	**1,180,100**	**1,201,031**	**1,224,220**	**1,234,500**	**1,228,017**	**1,245,608**	**1,265,769**	**1,295,571**	**1,329,613**	**1,342,306**	**1,352,526**	**1,337,067**	**1,347,590**
Oral cavity and pharynx	**26,367**	**26,750**	**27,080**	**27,687**	**28,203**	**28,794**	**29,055**	**29,936**	**31,413**	**32,725**	**33,069**	**33,667**	**34,859**
Lip	2,320	2,265	2,204	2,173	1,938	1,856	1,744	1,759	1,793	1,774	1,744	1,810	1,749
Tongue	6,383	6,607	6,759	7,198	7,421	7,808	7,955	8,374	9,028	9,687	9,756	9,796	10,556
Salivary gland	2,855	3,003	3,056	3,103	3,171	3,223	3,331	3,466	3,469	3,599	3,610	3,574	3,574
Floor of mouth	2,004	1,965	1,991	1,932	1,857	1,853	1,765	1,849	1,839	1,856	1,840	1,843	1,734
Gum and other mouth	4,193	4,006	4,132	4,041	4,178	4,159	4,158	4,185	4,351	4,531	4,441	4,594	4,679
Nasopharynx	1,417	1,475	1,361	1,471	1,550	1,506	1,559	1,509	1,647	1,646	1,540	1,582	1,533
Tonsil	3,251	3,443	3,638	3,890	4,149	4,400	4,590	4,851	5,116	5,504	6,003	6,076	6,439
Oropharynx	943	1,001	1,038	1,053	1,211	1,231	1,238	1,309	1,347	1,406	1,388	1,578	1,632
Hypopharynx	2,106	2,049	1,992	1,982	2,044	2,049	2,026	1,951	2,040	1,980	2,037	1,967	2,033
Other oral cavity and pharynx	895	936	909	844	684	709	689	683	783	742	710	847	930
Digestive system	**223,637**	**226,849**	**229,051**	**230,027**	**232,820**	**234,283**	**234,990**	**236,554**	**239,302**	**242,028**	**241,931**	**239,635**	**240,813**
Esophagus	12,162	12,357	12,552	12,568	13,046	13,615	13,474	13,945	13,929	14,486	14,575	13,960	14,225
Stomach	18,617	18,563	18,458	18,763	18,988	18,971	18,684	18,714	19,095	18,920	19,328	20,082	20,122
Small intestine	4,115	4,125	4,439	4,690	4,834	5,156	5,416	5,702	5,913	6,243	6,388	6,766	6,755
Colon and rectum	137,463	138,543	138,331	137,243	136,306	134,550	133,145	131,461	130,770	129,645	125,959	121,725	120,704
Colon excluding rectum	100,240	101,114	101,110	100,385	99,524	97,993	96,392	95,393	94,621	93,769	90,390	87,118	86,352
Rectum and rectosigmoid junction	37,223	37,429	37,221	36,858	36,782	36,557	36,753	36,068	36,149	35,876	35,569	34,607	34,352
Anus, anal canal, and anorectum	3,335	3,406	3,506	3,663	4,030	4,143	4,329	4,343	4,789	4,988	5,386	5,194	5,409
Liver and intrahepatic bile duct	12,032	12,918	13,043	13,910	14,725	15,918	16,778	17,856	19,367	20,440	22,251	22,820	23,582
Gallbladder	2,996	2,884	3,040	2,887	3,013	3,042	3,130	3,164	3,176	3,209	3,419	3,396	3,437
Other Biliary	3,242	3,450	4,072	4,246	4,405	4,477	4,513	4,691	4,715	4,979	5,138	5,201	5,382
Pancreas	26,920	27,697	28,325	28,653	29,883	30,660	31,666	32,783	33,536	34,956	35,424	36,382	36,935
Retroperitoneum	948	922	989	1,029	998	1,022	1,081	1,035	1,065	1,087	1,073	1,099	1,162
Peritoneum, omentum, and mesentery	1,078	1,152	1,336	1,410	1,588	1,730	1,728	1,679	1,808	1,880	1,749	1,723	1,742
Other digestive organs	729	832	960	965	1,004	999	1,046	1,181	1,139	1,195	1,241	1,287	1,358
Respiratory system	**185,613**	**186,395**	**188,513**	**190,434**	**193,054**	**193,826**	**197,824**	**198,575**	**200,014**	**201,809**	**202,265**	**198,756**	**196,160**
Nose, nasal cavity, and middle ear	1,726	1,723	1,688	1,799	1,728	1,865	1,893	1,874	2,031	1,987	2,003	1,906	1,919
Larynx	11,199	11,013	10,930	10,596	10,749	10,903	10,859	10,950	10,934	10,938	10,959	11,083	10,698
Lung and bronchus	172,056	173,025	175,351	177,462	179,983	180,442	184,457	185,147	186,425	188,212	188,668	185,113	182,967
Pleura	101	99	75	93	83	92	86	80	95	90	99	100	90
Trachea, mediastinum, and other respiratory organs	531	535	469	484	511	524	529	524	529	582	536	554	486
Bones and joints	**2,371**	**2,350**	**2,528**	**2,523**	**2,459**	**2,515**	**2,628**	**2,587**	**2,645**	**2,564**	**2,704**	**2,593**	**2,620**
Soft tissue including heart	**7,024**	**7,373**	**7,521**	**7,659**	**8,048**	**8,426**	**8,670**	**8,518**	**9,083**	**9,165**	**9,269**	**9,544**	**9,334**
Skin excluding basal and squamous	**40,502**	**43,910**	**47,160**	**48,686**	**49,042**	**52,200**	**56,024**	**56,201**	**58,305**	**60,717**	**62,538**	**61,969**	**63,522**
Melanomas of the skin	37,269	40,351	43,356	44,856	45,104	48,151	51,794	51,959	53,833	55,902	57,635	57,295	58,776
Other nonepithelial skin	3,233	3,559	3,804	3,830	3,938	4,049	4,230	4,242	4,472	4,815	4,903	4,674	4,746
Male and female breast	**180,390**	**179,961**	**182,086**	**180,754**	**174,289**	**175,389**	**177,766**	**181,643**	**186,751**	**191,457**	**196,283**	**192,592**	**198,294**
Female breast	178,998	178,555	180,748	179,334	172,808	173,840	176,249	180,053	185,098	189,666	194,519	190,741	196,459
Male breast	1,392	1,406	1,338	1,420	1,481	1,549	1,517	1,590	1,653	1,791	1,764	1,851	1,835

See table footnotes on next page.

TABLE 15. (*Continued*) Reported number of invasive* cancer cases by primary site and year — United States, 1999–2011†

Cancer site	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Female genital system	**68,956**	**69,595**	**70,434**	**69,879**	**69,141**	**70,251**	**71,732**	**72,837**	**74,498**	**76,257**	**77,839**	**78,049**	**79,194**
Cervix	12,482	12,492	11,952	11,535	11,225	11,043	11,247	11,220	11,239	11,169	11,311	10,901	10,805
Corpus and uterus, NOS	32,271	32,402	33,588	33,764	33,095	34,620	35,626	36,471	37,820	39,290	40,907	41,652	42,821
Corpus	31,204	31,310	32,479	32,654	32,007	33,524	34,499	35,389	36,737	38,028	39,555	40,358	41,459
Uterus, NOS	1,067	1,092	1,109	1,110	1,088	1,096	1,127	1,082	1,083	1,262	1,352	1,294	1,362
Ovary	19,144	19,557	19,633	19,258	19,440	19,088	19,296	19,381	19,328	19,509	19,054	18,681	18,497
Vagina	977	1,033	1,023	1,045	1,002	1,063	953	1,050	1,052	1,073	1,101	1,109	1,108
Vulva	3,265	3,213	3,337	3,309	3,427	3,445	3,571	3,643	3,829	3,855	4,002	4,025	4,126
Other female genital organs	817	898	901	968	952	992	1,039	1,072	1,230	1,361	1,464	1,681	1,837
Male genital system	**187,393**	**192,546**	**198,441**	**200,398**	**187,837**	**188,068**	**188,321**	**205,010**	**216,720**	**206,126**	**201,601**	**192,722**	**194,358**
Prostate	179,466	184,476	190,274	192,390	179,550	179,737	179,824	196,614	208,130	197,225	192,875	183,941	185,622
Testis	6,709	6,823	6,936	6,769	7,021	7,126	7,253	7,119	7,263	7,414	7,375	7,387	7,267
Penis	966	976	964	986	1,000	943	960	979	1,063	1,161	1,063	1,092	1,149
Other male genital organs	252	271	267	253	266	262	284	298	264	326	288	302	320
Urinary system	**86,075**	**88,718**	**90,945**	**93,415**	**96,512**	**99,897**	**102,660**	**104,202**	**107,184**	**109,862**	**111,221**	**110,512**	**111,380**
Urinary bladder†	53,970	54,941	55,237	56,070	57,154	58,678	59,510	58,567	60,131	60,866	61,682	61,273	61,428
Kidney and renal pelvis	29,927	31,631	33,517	35,211	37,189	39,015	40,909	43,250	44,631	46,373	47,024	46,758	47,384
Ureter	1,491	1,476	1,513	1,503	1,529	1,566	1,546	1,649	1,616	1,632	1,663	1,630	1,671
Other urinary organs	687	670	678	631	640	638	695	736	806	991	852	851	897
Eye and orbit	**2,118**	**2,182**	**2,195**	**2,168**	**2,347**	**2,358**	**2,336**	**2,401**	**2,407**	**2,391**	**2,418**	**2,282**	**2,289**
Brain and other nervous system	**16,919**	**17,128**	**17,105**	**17,531**	**17,621**	**18,139**	**18,281**	**18,457**	**18,705**	**19,007**	**19,122**	**18,924**	**18,883**
Brain	15,811	15,962	15,934	16,393	16,356	16,877	17,013	17,286	17,468	17,766	17,889	17,775	17,763
Cranial nerves other nervous system	1,108	1,166	1,171	1,138	1,265	1,262	1,268	1,171	1,237	1,241	1,233	1,149	1,120
Endocrine system	**18,320**	**20,187**	**21,691**	**23,410**	**24,760**	**27,179**	**29,817**	**31,971**	**34,652**	**37,948**	**40,141**	**40,904**	**42,106**
Thyroid	16,689	18,526	19,898	21,623	22,906	25,204	27,849	29,946	32,531	35,749	38,045	38,753	40,082
Other endocrine including thymus	1,631	1,661	1,793	1,787	1,854	1,975	1,968	2,025	2,121	2,199	2,096	2,151	2,024
Lymphomas	**54,407**	**54,956**	**56,164**	**57,396**	**58,653**	**60,539**	**61,251**	**61,497**	**62,619**	**63,766**	**64,549**	**64,682**	**63,858**
Hodgkin lymphoma	7,025	7,169	7,098	7,385	7,329	7,447	7,701	7,625	7,663	7,929	7,694	7,717	7,486
Non-Hodgkin lymphoma	47,382	47,787	49,066	50,011	51,324	53,092	53,550	53,872	54,956	55,837	56,855	56,965	56,372
Myeloma	**13,625**	**14,238**	**14,686**	**14,958**	**15,283**	**15,785**	**16,178**	**16,240**	**16,447**	**17,238**	**17,834**	**18,145**	**18,508**
Leukemias	**31,635**	**33,283**	**34,166**	**33,587**	**34,659**	**35,236**	**35,317**	**36,172**	**36,108**	**36,588**	**37,144**	**38,851**	**38,623**
Acute lymphocytic leukemia	3,553	3,702	3,830	3,795	3,848	4,003	3,941	4,141	4,249	4,370	4,334	4,437	4,520
Chronic lymphocytic leukemia	10,169	11,065	11,627	11,730	12,160	12,600	12,917	13,083	12,603	12,742	12,725	12,741	12,646
Acute myeloid leukemia	9,237	9,751	9,846	9,561	9,793	9,757	9,618	9,929	10,029	10,338	10,468	11,665	11,724
Chronic myeloid leukemia	4,011	4,143	4,210	3,956	4,156	4,313	4,217	4,426	4,426	4,554	4,792	4,964	4,915
Other leukemia	4,665	4,622	4,653	4,545	4,702	4,563	4,624	4,593	4,801	4,584	4,825	5,044	4,818
Mesothelioma	**2,730**	**2,798**	**2,793**	**2,815**	**2,830**	**2,866**	**2,975**	**2,891**	**2,848**	**2,902**	**2,930**	**2,933**	**2,922**
Kaposi Sarcoma	**1,361**	**1,353**	**1,346**	**1,252**	**1,306**	**1,277**	**1,320**	**1,180**	**1,218**	**1,142**	**1,133**	**1,051**	**1,068**
Miscellaneous	**30,657**	**30,459**	**30,315**	**29,921**	**29,153**	**28,580**	**28,624**	**28,699**	**28,694**	**28,614**	**28,535**	**29,256**	**28,799**

Abbreviation: NOS = not otherwise specified.

* Invasive cancer excludes basal and squamous cell carcinomas of the skin except when these occur on the skin of the genital organs, and in situ cancers except urinary bladder. Urinary bladder cancer includes invasive and in situ.

† Data are compiled from cancer registries that meet the data quality criteria for all invasive cancer sites combined for all years, 1999–2011 (covering approximately 89% of the U.S. population). See registry-specific data quality information for all years, 1999–2011 (available at http://www.cdc.gov/cancer/npcr/uscs/2011/data/00_data_quality.htm). Caution should be used when comparing number of cases and deaths because of potential differences in population coverage.

TABLE 16. Reported number of cancer deaths, by primary cancer site and year — United States, 1999–2011*

Cancer site	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
All sites combined	**549,829**	**553,080**	**553,760**	**557,264**	**556,890**	**553,880**	**559,303**	**559,880**	**562,867**	**565,460**	**567,614**	**574,738**	**576,685**
Oral cavity and pharynx	**7,486**	**7,492**	**7,701**	**7,737**	**7,777**	**7,826**	**7,773**	**7,720**	**8,067**	**8,019**	**7,922**	**8,474**	**8,657**
Lip	52	67	77	74	72	74	60	51	66	68	57	69	83
Tongue	1,738	1,767	1,818	1,887	1,875	1,881	1,948	1,906	2,034	1,983	1,971	2,125	2,089
Salivary gland	656	663	685	722	696	697	701	699	742	718	795	827	820
Floor of mouth	180	153	135	149	147	122	135	114	102	99	109	93	84
Gum and other mouth	1,215	1,213	1,179	1,152	1,176	1,168	1,118	1,108	1,109	1,160	1,091	1,212	1,245
Nasopharynx	638	650	621	628	598	637	615	633	677	645	662	701	630
Tonsil	543	518	612	638	608	592	647	654	688	724	736	795	842
Oropharynx	600	547	592	606	626	658	655	650	721	734	720	806	861
Hypopharynx	385	359	348	323	318	368	281	301	324	294	279	324	322
Other oral cavity and pharynx	1,479	1,555	1,634	1,558	1,661	1,629	1,613	1,604	1,604	1,594	1,502	1,522	1,681
Digestive system	**130,070**	**131,455**	**131,726**	**132,541**	**133,010**	**132,215**	**133,562**	**135,140**	**136,419**	**138,469**	**139,200**	**142,680**	**144,007**
Esophagus	11,917	12,232	12,529	12,700	12,860	13,023	13,499	13,685	13,592	13,714	13,908	14,490	14,446
Stomach	12,711	12,645	12,319	12,198	12,110	11,859	11,514	11,345	11,388	11,352	11,184	11,390	11,035
Small intestine	1,036	1,057	1,082	1,017	1,070	1,115	1,117	1,091	1,083	1,192	1,195	1,218	1,256
Colon and rectum	57,222	57,434	56,808	56,603	55,783	53,580	53,005	53,196	53,219	52,857	51,848	52,045	51,783
Colon excluding rectum	48,962	49,019	48,292	47,987	47,248	44,988	44,325	44,331	44,247	43,650	42,471	42,245	42,181
Rectum and rectosigmoid junction	8,260	8,415	8,516	8,616	8,535	8,592	8,680	8,865	8,972	9,207	9,377	9,800	9,602
Anus, anal canal, and anorectum	462	492	511	539	555	589	583	623	644	718	818	813	863
Liver and intrahepatic bile duct	12,382	12,916	13,351	14,047	14,706	15,321	16,075	16,525	17,146	18,213	19,352	20,304	21,608
Gallbladder	2,059	1,949	1,971	1,907	1,915	1,936	1,989	2,000	1,914	1,971	2,048	2,105	2,101
Other biliary	1,531	1,717	1,630	1,501	1,491	1,461	1,464	1,427	1,436	1,377	1,384	1,519	1,510
Pancreas	29,081	29,331	29,802	30,263	30,777	31,771	32,759	33,454	34,117	35,234	35,628	36,888	37,344
Retroperitoneum	220	262	220	219	191	219	238	190	204	226	186	202	219
Peritoneum, omentum, and mesentery	429	503	543	616	602	686	648	698	721	695	703	702	807
Other digestive organs	1,020	917	960	931	950	655	671	906	955	920	946	1,004	1,035
Respiratory system	**156,708**	**160,051**	**160,602**	**162,148**	**162,589**	**162,400**	**163,751**	**163,134**	**163,065**	**163,141**	**162,492**	**162,730**	**161,376**
Nose, nasal cavity, and middle ear	456	419	485	444	457	458	484	426	475	516	530	495	416
Larynx	3,815	3,861	3,797	3,722	3,791	3,668	3,796	3,821	3,634	3,760	3,630	3,691	3,732
Lung and bronchus	152,061	155,426	155,969	157,630	157,990	158,006	159,217	158,599	158,683	158,592	158,081	158,248	156,953
Pleura	99	76	84	73	76	78	67	64	48	54	55	54	61
Trachea, mediastinum, and other respiratory organs	277	269	267	279	275	190	187	224	225	219	196	242	214
Bones and joints	**1,224**	**1,212**	**1,298**	**1,194**	**1,262**	**1,301**	**1,391**	**1,340**	**1,362**	**1,357**	**1,384**	**1,378**	**1,423**
Soft tissue including heart	**3,679**	**3,693**	**3,646**	**3,554**	**3,651**	**3,722**	**3,849**	**3,960**	**4,023**	**4,093**	**4,229**	**4,376**	**4,408**
Skin excluding basal and squamous	**9,530**	**9,672**	**9,992**	**9,904**	**10,214**	**10,301**	**10,798**	**11,068**	**11,234**	**11,337**	**12,130**	**12,089**	**12,212**
Melanomas of the skin	7,215	7,420	7,542	7,513	7,818	7,952	8,345	8,441	8,461	8,623	9,199	9,154	9,128
Other nonepithelial skin	2,315	2,252	2,450	2,391	2,396	2,349	2,453	2,627	2,773	2,714	2,931	2,935	3,084
Male and female breast	**41,528**	**42,300**	**41,809**	**41,883**	**41,998**	**41,316**	**41,491**	**41,209**	**40,969**	**41,026**	**41,076**	**41,435**	**41,374**
Female breast	41,144	41,872	41,394	41,514	41,619	40,954	41,116	40,820	40,598	40,589	40,676	40,996	40,931
Male breast	384	428	415	369	379	362	375	389	371	437	400	439	443

See table footnotes on next page.

TABLE 16. (*Continued*) Reported number of cancer deaths, by primary cancer site and year — United States, 1999–2011*

Cancer site	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Female genital system	**25,881**	**26,411**	**26,838**	**27,091**	**27,011**	**27,049**	**27,259**	**27,848**	**27,739**	**27,813**	**27,817**	**28,770**	**29,027**
Cervix	4,204	4,200	4,092	3,952	3,919	3,850	3,924	3,976	4,021	4,008	3,909	3,939	4,092
Corpus and uterus, NOS	6,468	6,585	6,783	6,853	6,899	6,990	7,096	7,384	7,456	7,675	7,713	8,402	8,641
Corpus	3,121	3,139	3,185	3,187	3,261	3,272	3,259	3,449	3,377	3,436	3,333	3,644	3,714
Uterus, NOS	3,347	3,446	3,598	3,666	3,638	3,718	3,837	3,935	4,079	4,239	4,380	4,758	4,927
Ovary	13,627	14,060	14,414	14,682	14,657	14,716	14,787	14,857	14,621	14,362	14,436	14,572	14,346
Vagina	403	405	382	378	391	416	382	396	376	417	398	423	428
Vulva	762	752	765	794	775	806	809	862	865	921	946	942	1,022
Other female genital organs	417	409	402	432	370	271	261	373	400	430	415	492	498
Male genital system	**32,349**	**31,675**	**31,300**	**31,084**	**30,176**	**29,627**	**29,514**	**29,022**	**29,703**	**29,120**	**28,744**	**29,276**	**28,630**
Prostate	31,728	31,078	30,719	30,446	29,554	29,002	28,905	28,372	29,093	28,471	28,088	28,560	27,970
Testis	378	338	335	393	344	357	359	358	326	358	376	399	380
Penis	202	217	205	209	250	231	217	245	246	246	234	258	239
Other male genital organs	41	42	41	36	28	37	33	47	38	45	46	59	41
Urinary system	**23,666**	**24,344**	**24,910**	**25,443**	**25,422**	**25,928**	**26,404**	**26,649**	**27,319**	**27,682**	**27,941**	**28,726**	**29,317**
Urinary bladder	11,910	12,002	12,225	12,627	12,483	13,030	13,253	13,474	13,843	14,036	14,201	14,730	15,014
Kidney and renal pelvis	11,116	11,736	12,078	12,165	12,286	12,313	12,517	12,379	12,703	12,895	12,995	13,219	13,559
Ureter	345	302	294	297	323	334	347	361	340	354	371	350	338
Other urinary organs	295	304	313	354	330	251	287	435	433	397	374	427	406
Eye and orbit	227	236	226	240	231	208	252	219	249	262	278	283	280
Brain and other nervous system	**12,765**	**12,655**	**12,609**	**12,830**	**12,901**	**12,829**	**13,152**	**12,886**	**13,234**	**13,724**	**14,176**	**14,164**	**14,491**
Endocrine system	**2,146**	**2,210**	**2,299**	**2,231**	**2,155**	**2,272**	**2,354**	**2,404**	**2,488**	**2,555**	**2,634**	**2,641**	**2,689**
Thyroid	1,241	1,328	1,354	1,367	1,312	1,409	1,462	1,518	1,562	1,649	1,707	1,686	1,747
Other endocrine including thymus	905	882	945	864	843	863	892	886	926	906	927	955	942
Lymphomas	**24,205**	**24,016**	**23,628**	**23,262**	**22,822**	**22,214**	**22,145**	**21,920**	**21,799**	**21,539**	**21,639**	**21,525**	**21,485**
Hodgkin lymphoma	1,403	1,287	1,323	1,352	1,347	1,276	1,272	1,327	1,271	1,171	1,250	1,231	1,168
Non-Hodgkin lymphoma	22,802	22,729	22,305	21,910	21,475	20,938	20,873	20,593	20,528	20,368	20,389	20,294	20,317
Myeloma	**10,508**	**10,639**	**10,714**	**10,913**	**10,809**	**10,578**	**10,758**	**10,712**	**10,872**	**10,606**	**10,690**	**11,022**	**11,411**
Leukemias	**21,071**	**21,397**	**21,532**	**21,581**	**21,608**	**21,472**	**21,716**	**22,016**	**21,928**	**22,431**	**22,688**	**22,673**	**23,194**
Acute lymphocytic leukemia	1,361	1,395	1,433	1,432	1,429	1,371	1,460	1,393	1,418	1,424	1,423	1,436	1,432
Chronic lymphocytic leukemia	4,476	4,323	4,386	4,443	4,476	4,342	4,391	4,498	4,471	4,395	4,557	4,486	4,608
Acute myeloid leukemia	6,932	7,413	7,749	7,914	8,126	8,214	8,267	8,539	8,568	8,962	9,223	9,150	9,491
Chronic myeloid leukemia	1,788	1,802	1,649	1,367	1,233	1,164	1,067	1,077	984	1,000	1,003	1,019	1,091
Other leukemia	6,514	6,464	6,315	6,425	6,344	6,381	6,531	6,509	6,487	6,650	6,482	6,582	6,572
Mesothelioma	**2,343**	**2,384**	**2,371**	**2,430**	**2,476**	**2,504**	**2,553**	**2,452**	**2,432**	**2,538**	**2,606**	**2,574**	**2,651**
Miscellaneous	**44,401**	**41,176**	**40,519**	**41,144**	**40,723**	**40,070**	**40,534**	**40,140**	**39,920**	**39,700**	**39,926**	**39,886**	**40,002**

Abbreviation: NOS = not otherwise specified.

* Data are from the National Vital Statistics System (NVSS). Data for deaths cover 100% of the U.S. population. Caution should be used when comparing numbers of cases and deaths because of potential differences in population coverage. For more information, see USCS technical notes (available at http://www.cdc.gov/cancer/npcr/uscs/2011/technical_notes).

Elevated Blood Lead Levels Among Employed Adults — United States, 1994–2012

Walter A. Alarcon, MD[1],
State Adult Blood Lead Epidemiology and Surveillance (ABLES) Program investigators
[1]*National Institute for Occupational Safety and Health, CDC*

Preface

The National Institute for Occupational Safety and Health (NIOSH) and state health departments collect data on laboratory-reported adult blood lead levels (BLLs). This report presents data on elevated blood lead levels among employed adults in the United States for 1994–2012. This report is a part of the first-ever *Summary of Notifiable Noninfectious Conditions and Disease Outbreaks*, which encompasses various surveillance years but is being published in 2015 (*1*). The *Summary of Notifiable Noninfectious Conditions and Disease Outbreaks* appears in the same volume of MMWR as the annual *Summary of Notifiable Infectious Diseases* (*2*).

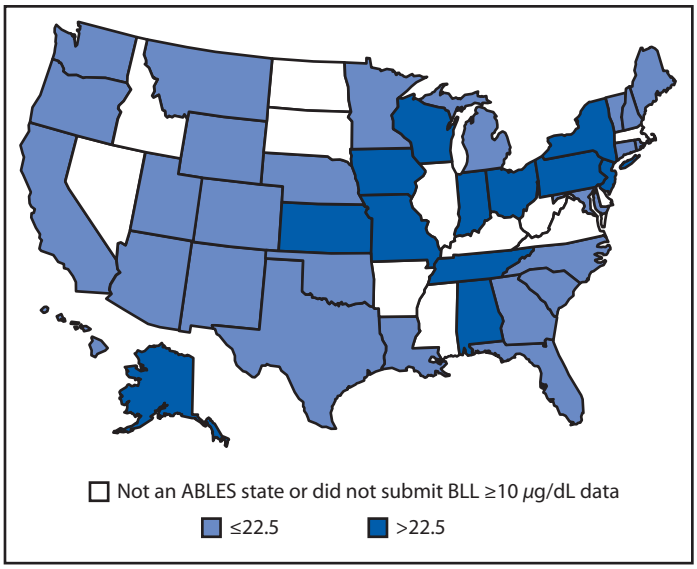
Background

Since 1987, the National Institute for Occupational Safety and Health (NIOSH) and state health departments have maintained a state–based surveillance program of laboratory-reported adult blood lead levels (BLLs) known as the Adult Blood Lead Epidemiology and Surveillance (ABLES) Program (*3*). The BLL is an often-used estimate of recent external exposure to lead (*4,5*). This report summarizes data on elevated blood lead levels among employed adults, defined as persons aged ≥16 years, during January 1, 1994–December 31, 2012.

Reported cases of elevated BLLs in 2012 are provided in tabular form (Tables 1–4). Information is provided by geographic division and reporting state, for "all cases" reported by a state (these include cases among adult residents in the reporting state plus cases identified by the reporting state but who reside in another state) and "state-residents" only, by exposure source, age, and sex groups, for BLLs ≥10 μg/dL (current definition of elevated BLL) (*3,6*), and for BLLs ≥25 μg/dL (former definition of elevated BLL)(*7*). The current case definition was adopted in 2009 on the basis of mounting evidence for adverse health outcomes among adults with BLLs between 10 μg/dL and 25 μg/dL (*4,6*). State prevalence rates of elevated BLLs (≥10 μg/dL) for 2012 are categorized into two groups (above or below the national rate) (Figure 1). Trends of national prevalence rates of BLLs ≥10 μg/dL and BLLs ≥25 μg/dL from 1994 to 2012 are provided (Figure 2). Prevalence rates are provided for "all cases" (these include cases among adult residents in the reporting state plus cases identified by the reporting state but who reside in another state) and "state-residents" when available. National and state numbers of cases, employed populations, and prevalence rates of elevated BLLs are provided in tabular form (Tables 5–10). Available data include BLLs ≥10 μg/dL from 2010 to

Corresponding author: Walter A. Alarcon, MD, National Institute for Occupational Safety and Health, CDC. Telephone: 513-841-4451 e-mail: wda7@cdc.gov.

FIGURE 1. Prevalence rate* of adults with elevated blood lead levels ≥10 μg/dL, by state — State Adult Blood Lead Epidemiology and Surveillance programs, United States, 2012†

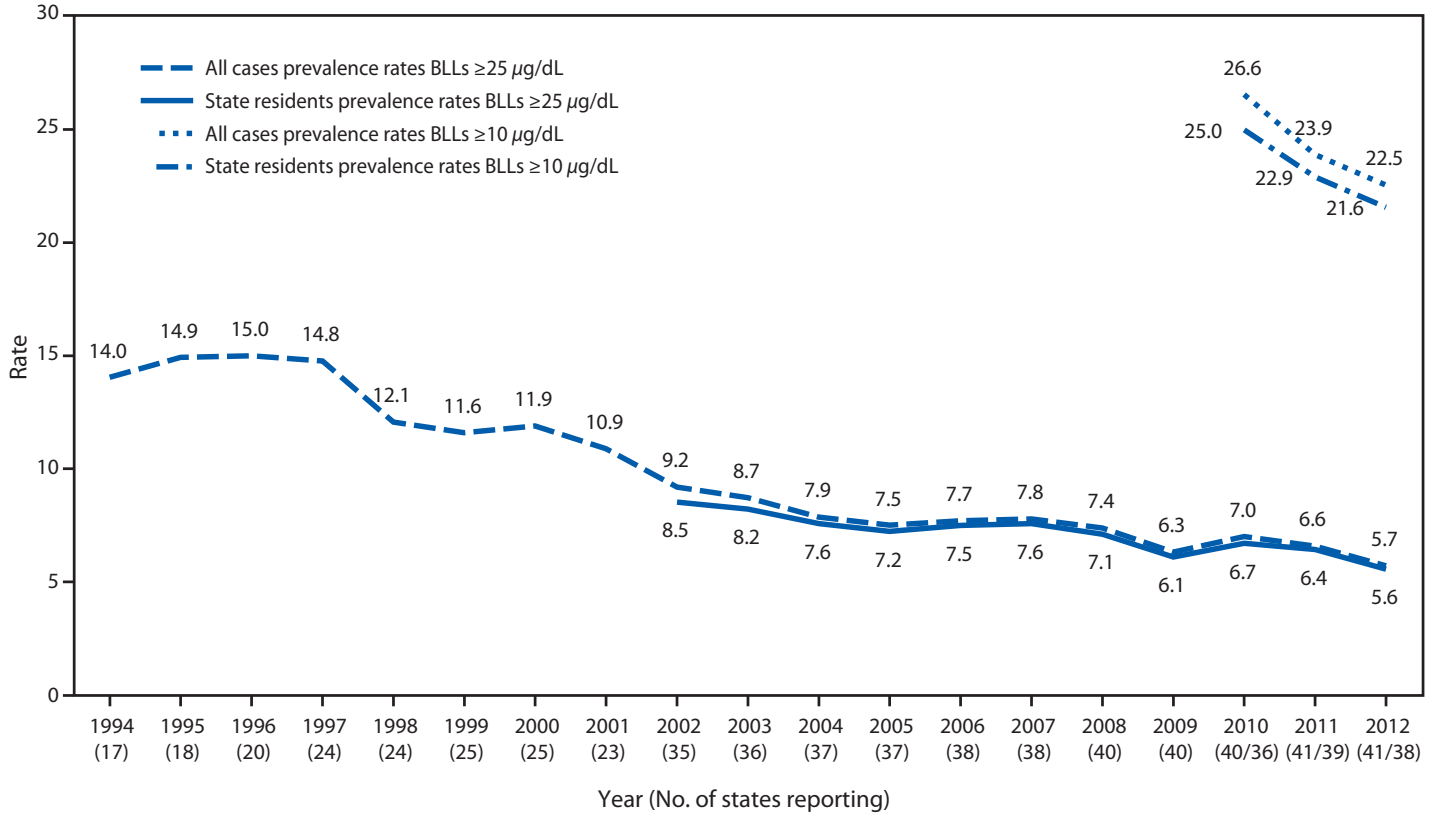


Abbreviation: ABLES = Adult Blood Level Epidemiology and Surveillance.

* Rate per 100,000 employed adults aged ≥16 years. State-resident rate might be lower for some states. Data from the Adult Blood Epidemiology and Surveillance Program, National Institute for Occupational Safety and Health (NIOSH/CDC). Denominators for 2012 extracted from 2013 U.S. Department of Labor, Bureau of Labor Statistics, Local Area Unemployment Statistics (LAUS) program available at http://www.bls.gov/lau/staadata.txt.

† A total of 41 states submitted data in 2012: Alabama, Alaska, Arizona, California, Colorado, Connecticut, Florida, Georgia, Hawaii, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Utah, Vermont, Washington, Wisconsin, and Wyoming. Kentucky and Illinois submitted BLLs ≥25 μg/dL and Massachusetts submitted BLLs ≥15 μg/dL. In 2012, the two states reporting the highest prevalence of elevated blood lead levels were Missouri (106.66) and Kansas (77.32). The national rate in 2012 was 22.5 cases per 100,000 employed adults aged ≥16 years.

FIGURE 2. National prevalence rate* of reported cases of elevated blood lead levels (BLLs),† by year — State Adult Blood Epidemiology and Surveillance Programs, United States, 1994–2012§



Abbreviations: All cases = all reported cases by a state, including adult residents in the reporting state and residents in other states; state residents = adult residents in the reporting state.

* Per 100,000 employed adults aged ≥16 years. Denominators for 1994–2012 extracted from 2013 US Department of Labor, Bureau of labor Statistics Local Area Unemployment Statistics (LAUS) program available at http://www.bls.gov/lau/staadata.txt.

† Since 2009, the case definition for an elevated blood lead level is a BLL ≥10 μg/dL. For historical comparisons, prevalence rates at the previous case definition (BLL ≥25 μg/dL) are provided.

§ Numbers of states reporting BLL ≥25 μg/dL data are in parentheses. From 2010, numbers of states reporting BLLs ≥10 μg/dL data also are provided. A total of 41 states submitted data in 2012: Alabama, Alaska, Arizona, California, Colorado, Connecticut, Florida, Georgia, Hawaii, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Utah, Vermont, Washington, Wisconsin, and Wyoming.

2012 and BLLs ≥25 μg/dL from 1994 to 2012. Prevalence rates and numerators are provided for "all cases" and "state residents" when available. The number of employed adults (state residents) used as denominators for calculating rates are provided in tabular form (Tables 11 and 12).

ABLES is the only program conducting nationwide adult lead exposure surveillance. It has provided the occupational safety and health community with essential information for setting research and intervention priorities. ABLES' impact is achieved through its longstanding strategic partnerships with State ABLES programs, federal agencies, and worker-affiliated organizations. For example, in 2008, the Occupational Safety and Health Administration (OSHA) updated its National Lead Emphasis Program to reduce occupational lead exposure by targeting unsafe conditions and high-hazard industries (*8*). To accomplish this objective, OSHA utilized ABLES data to identify industries with elevated BLL problems and has agreements with State ABLES programs to obtain their lead exposure data to target workplace inspections.

Although federal funding for State ABLES programs was discontinued in September 2013, a total of 34 states continue to collaborate with NIOSH (down from a peak of 41). These states self-fund their ABLES programs to sustain lead exposure surveillance and prevention activities. To assist with accomplishing these objectives, State ABLES programs share resources with two other CDC programs: the Healthy Homes and Childhood Lead Poisoning Prevention Program and Environmental Public Health Tracking. Since September 2013, NIOSH has continued to provide technical assistance to states

with adult blood lead surveillance programs and maintains the ABLES website for reporting ongoing analyses of ABLES data.

The BLL is a direct index of a worker's recent exposure to lead as well as an indication of the potential for adverse effects from that exposure (*4,5*). The half-life of lead in blood is about 40 days in men (*9*), so the BLL is an estimate primarily of recent exposure to lead. Because lead accumulates in bone and BLL is in equilibrium with bone lead, the BLL might be elevated in some persons who have not had recent exposure to lead. Because this equilibrium can lead to persistent BLL elevations, the public health burden of elevated BLLs in adults is measured as prevalence. In contrast, the public health burden of elevated BLLs in children aged <5 years is measured as incidence because these young children have little lead storage in their bones at birth and thus their early childhood blood lead tests reflect recent exposures.

Over the past several decades in the United States, a marked reduction has occurred in environmental sources of lead and improved protection from occupational lead exposure. As a result, there is an overall decreasing trend in the prevalence of elevated BLLs among adults. Nonetheless, lead exposures continue to occur at unacceptable levels (*3*). In 2012, the prevalence rate of BLLs ≥10 μg/dL was 22.5 adults per 100,000 employed population. During 2011–2012, the mean BLL in adults in the United States was 1.09 μg/dL (*10*).

Research continues to find that low BLLs are associated with harmful effects in adults (*11*). In 2009, NIOSH and State ABLES programs led the occupational safety and health community to establish a new case definition for an elevated BLL (i.e., BLLs ≥10 μg/dL) (*3*). The Council of State and Territorial Epidemiologists also recommended that CDC use this case definition (*12*). In 2010, for the first time, CDC included elevated BLLs, defined as those ≥10 μg/dL, in the List of Nationally Notifiable Noninfectious Conditions (*6*). The U.S. Department of Health and Human Services' *Healthy People 2020* initiative also uses the 10 μg/dL level for its Occupational Safety and Health Objective No. 7 (OSH-7), which is to reduce the proportion of persons who have elevated blood lead concentrations from work exposures (*13*). Before 2009, the case definition for an elevated BLL was ≥25 μg/dL.

Data Sources

The ABLES program is an occupational health state-based surveillance system. The number of cases (numerator) is provided by 41 State ABLES programs. The number of employed adults (denominator) is obtained from the Local Area Unemployment Statistics (LAUS), Bureau of Labor Statistics, in the U.S. Department of Labor (available at http://www.bls.gov/data). A direct link to annual averages of states employment status of the civilian noninstitutionalized population is available at http://www.bls.gov/lau/staadata.txt).

State ABLES programs 1) collect data on adult BLLs from laboratories and physicians through mandatory reporting; 2) assign unique identifiers to each adult to account for multiple BLL records to protect individual privacy and permit longitudinal analyses; 3) follow-up on adults with BLLs ≥10 or ≥25 μg/dL with laboratories, health-care providers, employers, or workers to ensure completeness of information (e.g., the industry in which the adult is employed and whether the exposure source is occupational, nonoccupational, or both); 4) provide guidance and information to workers and employers to prevent lead exposures; and 5) submit data annually to NIOSH. Most ABLES states submit data on all BLLs (both occupational and nonoccupational) to NIOSH, including records from adults whose BLLs fall below the state mandatory reporting requirement. NIOSH conducts data quality control, analyzes the data, and disseminates the findings among stakeholders.

Interpreting Data

The primary measure of adult lead exposure in the United States is the National Prevalence Rate of Elevated BLLs. This measure is provided by the ABLES program and can be used to estimate the magnitude and monitor trends of lead exposures and to target areas requiring further investigation or interventions. The results indicate that efforts to reduce the prevalence of elevated BLLs have resulted in considerable progress towards reducing lead exposures. However, the ABLES data from 2012 establish that lead exposure remains a national health problem and that continued efforts to reduce lead exposures both within and outside the workplace are needed.

Many adults in the United States continue to have BLLs above levels known to be associated with acute and chronic adverse effects in multiple organ systems ranging from subclinical changes in function to symptomatic intoxication. These include neurologic, cardiovascular, reproductive, hematologic, and kidney adverse effects. The risks for adverse chronic health effects are even higher if the exposure is maintained for many years (*4,5*). Current research has found decreased renal function associated with BLLs at 5 μg/dL and lower, and increased risk of hypertension and essential tremor at BLLs below 10 μg/dL (*11*).

Prevalence rates of adults with BLLs ≥25 μg/dL are available since 1994. Beginning in 2002, State ABLES programs reported individual BLL laboratory test and state of residence. Formerly, state-resident and non-resident data could not be

separated. When an adult has multiple blood lead tests in a given year, only the highest blood lead level for that adult in that year was counted. Prevalence rates of BLLs ≥10 μg/dL are provided since 2010. Prevalence rates of BLLs ≥25 μg/dL are a subset of rates of BLLs ≥10 μg/dL. In the U.S. most lead exposures are occupational. Among all participating states in 2012, when an exposure source was known, the proportion of BLLs ≥25 μg/dL from occupational exposures was 93.3%. The greatest proportions of adults with elevated BLLs were employed in four main industry sectors: manufacturing, construction, services, and mining.

These counts and rates of elevated BLLs must be considered minimum estimates of the actual magnitude of the problem of lead exposures in the U.S. This is for multiple reasons:

- not all states are included in the system;
- not all employers provide BLL testing to lead-exposed workers as required by OSHA regulations;
- not all nonoccupationally exposed adults are tested; and
- some laboratories might not report all tests as required by state laws or regulations.

For specific explanations, interpretation, and possible updates on data for any individual state, we strongly recommend contacting the State ABLES program investigator. Their contact information is available from the ABLES State-based Programs webpage (http://www.cdc.gov/niosh/topics/ABLES/state.html).

Methods for Identifying Elevated BLLs Among Employed Adults

A nationally reportable case of an employed adult with an elevated BLL is defined as a case in an employed adult (≥16 years at the time of blood collection) with a venous blood lead level ≥10 μg/dL (0.48 μmol/L) of whole blood. The standardized diagnostic test is the blood lead level test using a venous blood sample. All participating state health departments have a requirement for laboratories and/or health-care providers to report laboratory blood lead results to the state health department. However, this requirement varies among ABLES states, ranging from the reporting of all BLLs to only BLLs ≥40 μg/dL (*3*). The ABLES program ultimately aims to collect a complete list of variables for all BLL tests, including BLLs <10 μg/dL, and encourages all states to supply this information to NIOSH.

Publication Criteria

Adult cases meet the publication criteria if between 1994 and 2012 a venous BLL was ≥25 μg/dL and since 2010 if the venous BLL was ≥10 μg/dL. BLLs ≥25 μg/dL are a subset of BLLs ≥10 μg/dL and are included for historical comparison. When an adult had multiple blood lead tests in a given year, only the highest blood lead level for that adult in that year was counted.

Highlights

In 2012, a total of 41 states submitted data on 7,529 adults with BLLs ≥25 μg/dL and 38 states submitted data on 27,218 adults with BLLs ≥10μg/dL. Overall, the prevalence of BLLs ≥10 μg/dL among state residents and nonresidents declined from 26.6 adults per 100,000 employed in 2010 to 22.5 in 2012. The prevalence of BLLs ≥25 μg/dL among state residents and nonresidents declined from 14.0 adults per 100,000 employed in 1994 to 5.7 in 2012. In 2012, state prevalence rates of BLLs ≥25 μg/dL were above the national rate (5.7/100,000) in 10 states and state prevalence rates of BLLs ≥10μg/dL were above the national rate (22.5/100,000) in 12 states.

In 2012, more than half (53.0%) of adults with BLLs ≥10 μg/dL were aged 40–64 years 33.3% were aged 25–39 years, and the great majority (91.5%) were males. Historically, in the United States, most lead exposures have been occupational. During 2002–2012, the annual proportion of BLLs ≥25 μg/dL from occupational exposures was 94.7% among participating states (minimum: 93.3% in 2012; maximum: 95.5% in 2004). In 2012, among the 37 states that reported the exposure source for adults with BLLs ≥25μg/dL, the proportion of occupational cases ranged from 38.9% to 100%.

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TABLE 1. Reported numbers of cases of adults* with blood lead levels ≥10 μg/dL and blood lead levels ≥25 μg/dL, by geographic division and area — State Adult Blood Lead Epidemiology and Surveillance programs, United States, 2012†

Division/Area	No. of employed state-resident adults (in 1,000s)	Blood lead levels ≥10 μg/dL		Blood lead levels ≥25 μg/dL§	
		All cases¶	State residents**	All cases	State residents
Total	**131,879**	**27,218**	**26,034**	**7,529**	**7,332**
New England					
Connecticut	1,731	281	276	53	53
Maine	656	133	133	18	18
Massachusetts	3,235	—††	—	124	117
New Hampshire	702	155	155	16	16
Rhode Island	501	104	104	22	22
Vermont	338	47	47	8	8
Mid Atlantic					
New Jersey	4,137	1,102	1,085	178	176
New York	8,806	2,149	1,924	285	260
Pennsylvania	5,954	3,138	3,137	1,708	1,708
East North Central					
Illinois	5,982	—	—	318	312
Indiana	2,912	1,081	1,081	280	280
Michigan	4,244	631	630	132	132
Ohio	5,317	2,323	2,167	517	495
Wisconsin	2,850	708	708	100	100
West North Central					
Iowa	1,577	816	816	196	196
Kansas	1,401	1,083	1,083	234	234
Minnesota	2,795	493	493	123	123
Missouri	2,787	2,973	2,973	669	669
Nebraska	979	168	168	51	51
South Atlantic					
Florida	8,547	1,273	1,197	384	363
Georgia	4,342	745	743	205	203
Maryland	2,910	273	253	63	61
North Carolina	4,271	277	274	112	112
South Carolina	1,989	291	290	66	66
East South Central					
Alabama	2,010	970	969	380	380
Kentucky	1,900	—	—	138	122
Tennessee	2,846	985	838	214	195
Louisiana	1,944	382	381	67	67
Oklahoma	1,698	175	117	80	65
Texas	11,762	1,149	1,144	261	260
Mountain					
Arizona	2,774	238	238	43	43
Colorado	2,531	107	69	44	37
Montana	477	27	27	2	2
New Mexico	860	50	50	7	7
Utah	1,303	164	56	26	8
Wyoming	289	56	55	12	12
Pacific					
Alaska	340	219	139	30	23
California	16,590	1,797	1,783	221	218
Hawaii	612	28	27	2	2
Oregon	1,777	344	226	53	38
Washington	3,203	283	178	87	78

* A person aged ≥16 years at the time of blood collection. When an adult had multiple blood lead tests in a given year, only the highest blood lead level for that adult in that year was counted.

† A total of 41 states participated in the ABLES Program in 2012.

§ Adults with BLLs ≥25 μg/dL are a subset of adults with BLLs ≥10 μg/dL.

¶ All cases reported by a state. These include cases among adult residents in the reporting state plus cases identified by the reporting state but who reside in another state.

** Adults residing in the reporting state. States did not report this variable before 2002.

†† 10–24 μg/dL BLL data were not complete.

TABLE 2. Reported numbers of adults* with blood lead levels ≥25 μg/dL, by exposure source, geographic division, and area — State Adult Blood Lead Epidemiology and Surveillance programs, United States, 2012†

Division/Area	Exposure source			Total
	Occupational§	Nonoccupational	Unknown	
Total	**5,902**	**424**	**737**	**7,063**
New England				
Connecticut	28	22	3	**53**
Maine	7	11	—¶	**18**
Massachusetts	71	24	29	**124**
New Hampshire	7	—	9	**16**
Rhode Island	13	1	8	**22**
Vermont	7	1	—	**8**
Mid Atlantic				
New Jersey	148	16	14	**178**
New York	181	65	39	**285**
Pennsylvania	1,594	—	114	**1,708**
East North Central				
Illinois	185	30	103	**318**
Indiana	260	—	20	**280**
Michigan	93	32	7	**132**
Ohio	450	13	54	**517**
Wisconsin	86	11	3	**100**
West North Central				
Iowa	180	10	6	**196**
Kansas	200	—	34	**234**
Minnesota	96	6	21	**123**
Missouri	642	27	—	**669**
Nebraska	39	—	12	**51**
South Atlantic				
Florida	312	6	66	**384**
Maryland	50	7	6	**63**
North Carolina	88	21	3	**112**
South Carolina	58	—	8	**66**
East South Central				
Alabama	331	2	47	**380**
Tennessee	149	—	65	**214**
West South Central				
Louisiana	59	8	—	**67**
Texas	207	41	13	**261**
Mountain				
Colorado	28	7	9	**44**
Montana	2	—	—	**2**
New Mexico	5	1	1	**7**
Utah	5	1	20	**26**
Wyoming	12	—	—	**12**
Pacific				
Alaska	20	—	10	**30**
California	170	51	—	**221**
Hawaii	1	1	—	**2**
Oregon	42	4	7	**53**
Washington	76	5	6	**87**

* A person aged ≥16 years at the time of blood collection. When an adult had multiple blood lead tests in a given year, only the highest blood lead level for that adult in that year was counted.

† A total of 37 states reported data on exposure source in 2012. These data includes data from adult residents in the state and residents of other states reported by the State ABLES programs.

§ Includes 32 cases coded with both occupational and nonoccupational exposure source.

¶ No cases were reported.

TABLE 3. Reported number of cases and prevalence rate of adults* with blood lead levels ≥10 μg/dL, by state and age group — State Adult Blood Lead Epidemiology and Surveillance programs, United States, 2012

	16–24 yrs		25–39 yrs		40–64 yrs		≥65 yrs		Age not stated	Total
State	No.	(Rate)	No.	(Rate)	No.	(Rate)	No.	(Rate)	No.	No.
Alabama										
All cases[†]	101	(41.8)	364	(59.7)	482	(44.6)	23	(25.3)	—[§]	**970**
State residents[¶]	101	(41.8)	363	(59.6)	482	(44.6)	23	(25.3)	—	**969**
Alaska										
All cases	19	(42.8)	86	(82.2)	108	(62.0)	6	(41.7)	—	**219**
State residents	12	(27.0)	62	(59.3)	62	(35.6)	3	(20.8)	—	**139**
Arizona										
All cases	26	(7.1)	68	(7.6)	114	(8.2)	23	(18.8)	7	**238**
State residents	26	(7.1)	68	(7.6)	114	(8.2)	23	(18.8)	7	**238**
California										
All cases	176	(8.7)	530	(9.5)	928	(11.4)	163	(20.7)	—	**1,797**
State residents	174	(8.6)	528	(9.4)	920	(11.3)	161	(20.5)	—	**1,783**
Colorado										
All cases	11	(3.5)	38	(4.5)	42	(3.4)	16	(13.5)	—	**107**
State residents	6	(1.9)	20	(2.4)	30	(2.4)	13	(11.0)	—	**69**
Connecticut										
All cases	17	(8.3)	55	(12.1)	170	(17.7)	39	(38.4)	—	**281**
State residents	17	(8.3)	53	(11.6)	167	(17.4)	39	(38.4)	—	**276**
Florida										
All cases	149	(16.6)	392	(15.1)	645	(14.0)	74	(14.8)	13	**1,273**
State residents	138	(15.4)	366	(14.1)	613	(13.3)	68	(13.6)	12	**1,197**
Georgia										
All cases	64	(12.7)	280	(20.0)	361	(15.8)	40	(23.9)	—	**745**
State residents	64	(12.7)	279	(19.9)	360	(15.7)	40	(23.9)	—	**743**
Hawaii										
All cases	1	(1.3)	8	(4.4)	18	(5.8)	1	(2.8)	—	**28**
State residents	1	(1.3)	7	(3.9)	18	(5.8)	1	(2.8)	—	**27**
Indiana										
All cases	74	(18.6)	361	(39.5)	603	(42.1)	43	(28.7)	—	**1,081**
State residents	74	(18.6)	361	(39.5)	603	(42.1)	43	(28.7)	—	**1,081**
Iowa										
All cases	67	(29.7)	202	(43.0)	521	(65.0)	26	(32.0)	—	**816**
State residents	67	(29.7)	202	(43.0)	521	(65.0)	26	(32.0)	—	**816**
Kansas										
All cases	76	(39.2)	354	(77.0)	619	(93.3)	34	(38.1)	—	**1,083**
State residents	76	(39.2)	354	(77.0)	619	(93.3)	34	(38.1)	—	**1,083**
Louisiana										
All cases	49	(19.8)	166	(25.9)	151	(16.2)	15	(14.2)	1	**382**
State residents	49	(19.8)	165	(25.7)	151	(16.2)	15	(14.2)	1	**381**
Maine										
All cases	7	(8.6)	28	(17.6)	79	(21.3)	19	(47.2)	—	**133**
State residents	7	(8.6)	28	(17.6)	79	(21.3)	19	(47.2)	—	**133**
Maryland										
All cases	24	(6.9)	116	(13.0)	115	(7.7)	17	(10.3)	1	**273**
State residents	23	(6.6)	108	(12.1)	105	(7.0)	17	(10.3)	—	**253**
Michigan										
All cases	36	(6.2)	208	(16.6)	342	(15.1)	45	(21.7)	—	**631**
State residents	36	(6.2)	208	(16.6)	342	(15.1)	44	(21.2)	—	**630**

See table footnotes on page 61.

TABLE 3. (*Continued*) Reported number of cases and prevalence rate of adults* with blood lead levels ≥10 μg/dL, by state and age group — State Adult Blood Lead Epidemiology and Surveillance programs, United States, 2012

State	16–24 yrs		25–39 yrs		40–64 yrs		≥65 yrs		Age not stated	Total
	No.	(Rate)	No.	(Rate)	No.	(Rate)	No.	(Rate)	No.	No.
Minnesota										
All cases	40	(10.7)	174	(19.6)	253	(18.2)	26	(20.0)	—	**493**
State residents	40	(10.7)	174	(19.6)	253	(18.2)	26	(20.0)	—	**493**
Missouri										
All cases	222	(65.5)	1,043	(115.8)	1,650	(116.6)	58	(37.2)	—	**2,973**
State residents	222	(65.5)	1,043	(115.8)	1,650	(116.6)	58	(37.2)	—	**2,973**
Montana										
All cases	—	(—)	7	(5.0)	17	(7.3)	3	(7.2)	—	**27**
State residents	—	(—)	7	(5.0)	17	(7.3)	3	(7.2)	—	**27**
Nebraska										
All cases	15	(10.9)	61	(20.1)	84	(17.7)	8	(11.6)		**168**
State residents	15	(10.9)	61	(20.1)	84	(17.7)	8	(11.6)		**168**
New Hampshire										
All cases	7	(8.0)	56	(30.4)	81	(20.9)	11	(26.8)	—	**155**
State residents	7	(8.0)	56	(30.4)	81	(20.9)	11	(26.8)	—	**155**
New Jersey										
All cases	71	(14.7)	450	(38.2)	506	(23.0)	73	(26.8)	2	**1,102**
State residents	71	(14.7)	442	(37.5)	497	(22.6)	73	(26.8)	2	**1,085**
New Mexico										
All cases	4	(3.5)	12	(4.4)	31	(6.8)	3	(6.8)	—	**50**
State residents	4	(3.5)	12	(4.4)	31	(6.8)	3	(6.8)	—	**50**
New York										
All cases	176	(18.0)	782	(27.5)	1,091	(24.4)	100	(22.7)	—	**2,149**
State residents	161	(16.5)	686	(24.1)	980	(21.9)	97	(22.0)	—	**1,924**
North Carolina										
All cases	25	(4.7)	101	(7.4)	134	(6.1)	17	(7.7)	—	**277**
State residents	25	(4.7)	100	(7.3)	132	(6.0)	17	(7.7)	—	**274**
Ohio										
All cases	170	(22.5)	748	(48.1)	1,294	(47.8)	110	(34.7)	1	**2,323**
State residents	157	(20.8)	701	(45.0)	1,206	(44.5)	102	(32.2)	1	**2,167**
Oklahoma										
All cases	12	(5.4)	66	(11.7)	91	(11.1)	5	(4.1)	1	**175**
State residents	7	(3.2)	39	(6.9)	67	(8.2)	3	(2.4)	1	**117**
Oregon										
All cases	19	(8.6)	103	(18.8)	201	(22.1)	21	(22.2)	—	**344**
State residents	11	(5.0)	68	(12.4)	134	(14.7)	13	(13.7)	—	**226**
Pennsylvania										
All cases	429	(51.4)	1,019	(60.0)	1,608	(50.5)	81	(25.6)	1	**3,138**
State residents	429	(51.4)	1,019	(60.0)	1,607	(50.4)	81	(25.6)	1	**3,137**
Rhode Island										
All cases	6	(8.2)	25	(18.3)	62	(23.9)	11	(38.0)	—	**104**
State residents	6	(8.2)	25	(18.3)	62	(23.9)	11	(38.0)	—	**104**
South Carolina										
All cases	26	(10.9)	90	(14.3)	170	(16.8)	5	(5.0)	—	**291**
State residents	26	(10.9)	90	(14.3)	169	(16.7)	5	(5.0)	—	**290**
Tennessee										
All cases	77	(20.6)	346	(38.1)	531	(37.3)	29	(18.1)	2	**985**
State residents	63	(16.9)	298	(32.9)	451	(31.7)	24	(15.0)	2	**838**
Texas										
All cases	152	(10.3)	368	(8.9)	571	(10.1)	58	(10.8)	—	**1,149**
State residents	151	(10.2)	366	(8.9)	569	(10.1)	58	(10.8)	—	**1,144**
Utah										
All cases	9	(4.0)	59	(12.2)	79	(15.0)	17	(33.2)	—	**164**
State residents	2	(0.9)	13	(2.7)	32	(6.1)	9	(17.6)	—	**56**

See table footnotes on page 61.

TABLE 3. (*Continued*) Reported number of cases and prevalence rate of adults* with blood lead levels ≥10 μg/dL, by state and age group — State Adult Blood Lead Epidemiology and Surveillance programs, United States, 2012

	16–24 yrs		25–39 yrs		40–64 yrs		≥65 yrs		Age not stated	Total
State	No.	(Rate)	No.	(Rate)	No.	(Rate)	No.	(Rate)	No.	No.
Vermont										
All cases	4	(10.4)	8	(8.8)	29	(15.3)	6	(28.3)	—	**47**
State residents	4	(10.4)	8	(8.8)	29	(15.3)	6	(28.3)	—	**47**
Washington										
All cases	30	(7.9)	99	(9.6)	143	(8.7)	11	(7.2)	—	**283**
State residents	18	(4.8)	62	(6.0)	93	(5.7)	5	(3.3)	—	**178**
Wisconsin										
All cases	37	(9.0)	184	(22.0)	452	(31.0)	33	(22.2)	2	**708**
State residents	37	(9.0)	184	(22.0)	452	(31.0)	33	(22.2)	2	**708**
Wyoming										
All cases	1	(2.6)	12	(13.5)	38	(26.7)	5	(26.3)	—	**56**
State residents	1	(2.6)	11	(12.4)	38	(26.7)	5	(26.3)	—	**55**

* A person aged ≥16 years at the time of blood collection. When an adult had multiple blood lead tests in a given year, only the highest blood lead level for that adult in that year was counted. To calculate rates, CDC estimated the number of employed adults (denominator) by age group and sex on the basis of data obtained from the Current Population Survey, U.S. Census Bureau.
† All cases reported by a state. These include cases among adult residents in the reporting state plus cases identified by the reporting state but who reside in another state.
§ No cases were reported.
¶ Adults residing in the reporting state. States did not report this variable before 2002.

TABLE 4. Number of reported cases and prevalence of adults* with blood lead levels ≥10 μg/dL, by state and sex — State Adult Blood Lead Epidemiology and Surveillance programs, United States, 2012

State	Male		Female		Sex not stated	Total
	No.	(Rate)	No.	(Rate)	No.	
Alabama						
All cases†	933	(87.4)	24	(2.5)	13	**970**
State residents§	932	(87.3)	24	(2.5)	13	**969**
Alaska						
All cases	207	(114.7)	12	(7.6)	—¶	**219**
State residents	130	(72.0)	9	(5.7)	—	**139**
Arizona						
All cases	226	(15.1)	12	(0.9)	—	**238**
State residents	226	(15.1)	12	(0.9)	—	**238**
California						
All cases	1,642	(18.1)	155	(2.1)	—	**1,797**
State residents	1,629	(18.0)	154	(2.1)	—	**1,783**
Colorado						
All cases	98	(7.2)	9	(0.8)	—	**107**
State residents	62	(4.6)	7	(0.6)	—	**69**
Connecticut						
All cases	265	(29.6)	14	(1.7)	2	**281**
State residents	260	(29.1)	14	(1.7)	2	**276**
Florida						
All cases	1,204	(26.9)	64	(1.6)	5	**1,273**
State residents	1,130	(25.2)	62	(1.5)	5	**1,197**
Georgia						
All cases	628	(27.2)	92	(4.5)	25	**745**
State residents	627	(27.2)	91	(4.4)	25	**743**
Hawaii						
All cases	22	(6.9)	6	(2.1)	—	**28**
State residents	22	(6.9)	5	(1.8)	—	**27**
Indiana						
All cases	1,020	(66.2)	57	(4.2)	4	**1,081**
State residents	1,020	(66.2)	57	(4.2)	4	**1,081**
Iowa						
All cases	724	(88.0)	92	(12.1)	—	**816**
State residents	724	(88.0)	92	(12.1)	—	**816**
Kansas						
All cases	941	(127.0)	141	(21.1)	1	**1,083**
State residents	941	(127.0)	141	(21.1)	1	**1,083**
Louisiana						
All cases	371	(36.0)	11	(1.2)	—	**382**
State residents	370	(35.9)	11	(1.2)	—	**381**
Maine						
All cases	106	(31.5)	27	(8.6)	—	**133**
State residents	106	(31.5)	27	(8.6)	—	**133**
Maryland						
All cases	260	(17.8)	12	(0.8)	1	**273**
State residents	240	(16.4)	12	(0.8)	1	**253**
Michigan						
All cases	591	(26.0)	40	(2.0)	—	**631**
State residents	590	(26.0)	40	(2.0)	—	**630**
Minnesota						
All cases	459	(31.2)	34	(2.6)	—	**493**
State residents	459	(31.2)	34	(2.6)	—	**493**

See table footnotes on page 63.

TABLE 4. (*Continued*) Number of reported cases and prevalence of adults* with blood lead levels ≥10 μg/dL, by state and sex — State Adult Blood Lead Epidemiology and Surveillance programs, United States, 2012

State	Male		Female		Sex not stated	Total
	No.	(Rate)	No.	(Rate)	No.	
Missouri						
All cases	2,625	(178.9)	348	(25.8)	—	**2,973**
State residents	2,625	(178.9)	348	(25.8)	—	**2,973**
Montana						
All cases	21	(8.5)	5	(2.2)	1	**27**
State residents	21	(8.5)	5	(2.2)	1	**27**
Nebraska						
All cases	159	(30.7)	5	(1.1)	4	**168**
State residents	159	(30.7)	5	(1.1)	4	**168**
New Hampshire						
All cases	151	(41.4)	4	(1.2)	—	**155**
State residents	151	(41.4)	4	(1.2)	—	**155**
New Jersey						
All cases	1,059	(48.4)	40	(2.1)	3	**1,102**
State residents	1,044	(47.7)	38	(1.9)	3	**1,085**
New Mexico						
All cases	45	(9.7)	5	(1.2)	—	**50**
State residents	45	(9.7)	5	(1.2)	—	**50**
New York						
All cases	1,826	(40.1)	323	(7.7)	—	**2,149**
State residents	1,605	(35.2)	319	(7.6)	—	**1,924**
North Carolina						
All cases	253	(11.1)	23	(1.1)	1	**277**
State residents	250	(10.9)	23	(1.1)	1	**274**
Ohio						
All cases	2,160	(76.9)	156	(6.1)	7	**2,323**
State residents	2,011	(71.6)	152	(6.0)	4	**2,167**
Oklahoma						
All cases	159	(16.8)	16	(2.0)	—	**175**
State residents	104	(11.0)	13	(1.7)	—	**117**
Oregon						
All cases	322	(34.6)	18	(2.1)	4	**344**
State residents	211	(22.7)	14	(1.7)	1	**226**
Pennsylvania						
All cases	3,015	(94.2)	118	(4.1)	5	**3,138**
State residents	3,014	(94.2)	118	(4.1)	5	**3,137**
Rhode Island						
All cases	95	(37.5)	9	(3.6)	—	**104**
State residents	95	(37.5)	9	(3.6)	—	**104**
South Carolina						
All cases	262	(25.7)	25	(2.6)	4	**291**
State residents	262	(25.7)	24	(2.5)	4	**290**
Tennessee						
All cases	832	(54.3)	82	(6.1)	71	**985**
State residents	709	(46.3)	71	(5.3)	58	**838**
Texas						
All cases	1,079	(16.6)	69	(1.3)	1	**1,149**
State residents	1,075	(16.6)	68	(1.3)	1	**1,144**
Utah						
All cases	153	(21.1)	10	(1.8)	1	**164**
State residents	52	(7.2)	4	(0.7)	—	**56**

See table footnotes on page 63.

TABLE 4. (*Continued*) Number of reported cases and prevalence of adults* with blood lead levels ≥10 μg/dL, by state and sex — State Adult Blood Lead Epidemiology and Surveillance programs, United States, 2012

State	Male		Female		Sex not stated	Total
	No.	(Rate)	No.	(Rate)	No.	
Vermont						
All cases	43	(24.7)	4	(2.4)	—	**47**
State residents	43	(24.7)	4	(2.4)	—	**47**
Washington						
All cases	273	(16.0)	9	(0.6)	1	**283**
State residents	172	(10.1)	6	(0.4)	—	**178**
Wisconsin						
All cases	640	(43.3)	66	(4.8)	2	**708**
State residents	640	(43.3)	66	(4.8)	2	**708**
Wyoming						
All cases	46	(28.6)	10	(7.7)	—	**56**
State residents	45	(28.0)	10	(7.7)	—	**55**

* A person aged ≥16 years at the time of blood collection. When an adult had multiple blood lead tests in a given year, only the highest blood lead level for that adult in that year was counted. To calculate rates, CDC estimated the number of employed adults (denominator) by age group and sex on the basis of data obtained from the Current Population Survey, U.S. Census Bureau.

† All cases reported by a state. These include cases among adult residents in the reporting state plus cases identified by the reporting state but who reside in another state.

§ Adults residing in the reporting state. States did not report this variable before 2002.

¶ No cases were reported.

TABLE 5. Number and national prevalence rates per 100,000 employed adults* of adults with blood lead levels ≥10 μg/dL — State Adult Blood Lead Epidemiology and Surveillance programs, United States, 2010–2012†

Characteristic	2010	2011	2012
Prevalence rate			
All cases§	26.6	23.9	22.5
State residents¶	25.0	22.9	21.6
No. of cases			
All cases	30,738	28,456	27,218
State residents	28,928	27,279	26,034
Employed population			
Total (in 1,000s)	**115,768**	**119,128**	**120,763**

* A person aged ≥16 years at the time of blood collection. When an adult had multiple blood lead tests in a given year, only the highest blood lead level for that adult in that year was counted. Rates were calculated on the basis of data on the number of employed adults (denominator), which were obtained from the Local Area Unemployment Statistics (LAUS) program, Bureau of labor Statistics, U.S. Department of Labor.

† A total of 37 states participated in 2010; 38 states participated in 2011 and 2012.

§ All cases reported by a state. These include cases among adults residing in the reporting state plus cases identified by the reporting state but who reside in another state.

¶ Adults residing in the reporting state.

TABLE 6. National prevalence rates per 100,000 employed adults* of adults with blood lead levels ≥25 μg/dL — State Adult Blood Lead Epidemiology and Surveillance programs, United States, 1994–2012

Characteristic	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
No. of states participating	17	18	20	24	24	25	25	23	35	36
Prevalence rate										
All cases†	14.0	14.9	15.0	14.8	12.1	11.6	11.9	10.9	9.2	8.7
State residents§	¶	¶	¶	¶	¶	¶	¶	¶	8.5	8.2
No. of cases										
All cases	9,225	10,260	11,607	12,613	10,454	10,309	10,718	9,517	10,690	10,404
State residents	**	**	**	**	**	**	**	**	9,922	9,809
Employed population (in 1,000s)										
Total in reporting states	**65,706**	**68,787**	**77,444**	**85,390**	**86,759**	**88,943**	**90,111**	**87,477**	**116,325**	**119,302**

Characteristic	2004	2005	2006	2007	2008	2009	2010	2011	2012
No. of states participating	37	37	38	38††	40††	40	39	41	41
Prevalence rate									
All cases†	7.9	7.5	7.7	7.8	7.4	6.3	7.0	6.6	5.7
State residents§	7.6	7.3	7.5	7.6	7.1	6.1	6.7	6.4	5.6
No. of cases									
All cases	9,530	9,235	9,880	10,190	9,709	7,992	8,738	8,567	7,529
State residents	9,169	8,934	9,613	9,882	9,212	7,725	8,369	8,366	7,332
Employed population (in 1,000s)									
Total in reporting states	**121,203**	**123,191**	**128,378**	**130,943**	**131,510**	**126,689**	**124,880**	**130,156**	**131,879**

* A person aged ≥16 years at the time of blood collection. When an adult had multiple blood lead tests in a given year, only the highest blood lead level for that adult in that year was counted. Rates were calculated on the basis of data on the number of employed adults (denominator), which were obtained from the Local Area Unemployment Statistics (LAUS) program, Bureau of labor Statistics, U.S. Department of Labor.

† All cases reported by a state. These include cases among adults residing in the reporting state plus cases identified by the reporting state but who reside in another state.

§ Adults residing in the reporting state. States did not report this variable before 2002.

¶ Rates were not calculated because data for state residents were not available.

** Data for state residents were not available.

†† Montana reported zero cases of state residents with elevated BLLs in 2007 and Kentucky did not report state-resident data in 2008. National state-resident rates were calculated by excluding the employed population in these states for these years.

TABLE 7. Number of reported cases and prevalence rate per 100,000 of employed adults* of persons with blood lead levels ≥10 μg/dL — State Adult Blood Lead Epidemiology and Surveillance programs, United States, 2010–2012

State	2010		2011		2012	
	No.	(Rate)	No.	(Rate)	No.	(Rate)
Alabama						
All cases†	832	(42.1)	998	(49.8)	970	(48.3)
State residents§	831	(42.0)	992	(49.5)	969	(48.2)
Alaska						
All cases	267	(80.2)	264	(78.3)	219	(64.4)
State residents	70	(21.0)	83	(24.6)	139	(40.9)
Arizona						
All cases	167	(6.0)	217	(7.9)	238	(8.6)
State residents	167	(6.0)	217	(7.9)	238	(8.6)
California						
All cases	1,746	(10.9)	1,819	(11.2)	1,797	(10.8)
State residents	1,702	(10.6)	1,778	(10.9)	1,783	(10.8)
Colorado						
All cases	—¶	(—)	64	(2.6)	107	(4.2)
State residents	—	(—)	31	(1.2)	69	(2.7)
Connecticut						
All cases	446	(25.7)	330	(19.0)	281	(16.2)
State residents	431	(24.8)	317	(18.3)	276	(16.0)
Florida						
All cases	886	(10.9)	1,082	(13.0)	1,273	(14.9)
State residents	864	(10.6)	1,082	(13.0)	1,197	(14.0)
Georgia						
All cases	530	(12.5)	635	(14.8)	745	(17.2)
State residents	508	(12.0)	630	(14.7)	743	(17.1)
Hawaii						
All cases	15	(2.5)	28	(4.6)	28	(4.6)
State residents	15	(2.5)	28	(4.6)	27	(4.4)
Indiana						
All cases	1,387	(48.7)	1,386	(48.0)	1,081	(37.1)
State residents	1,387	(48.7)	1,386	(48.0)	1,081	(37.1)
Iowa						
All cases	735	(46.9)	829	(52.9)	816	(51.8)
State residents	735	(46.9)	829	(52.9)	816	(51.8)
Kansas						
All cases	1,155	(82.7)	1,143	(81.7)	1,083	(77.3)
State residents	1,155	(82.7)	1,143	(81.7)	1,083	(77.3)
Kentucky						
All cases	1,805	(97.2)	—	(—)	—	(—)
State residents	1,745	(94.0)	—	(—)	—	(—)
Louisiana						
All cases	287	(15.0)	309	(16.1)	382	(19.7)
State residents	287	(15.0)	309	(16.1)	381	(19.6)

See table footnotes on page 66.

TABLE 7. (*Continued*) Number of reported cases and prevalence rate per 100,000 of employed adults* of persons with blood lead levels ≥10 μg/dL — State Adult Blood Lead Epidemiology and Surveillance programs, United States, 2010–2012

State	2010		2011		2012	
	No.	(Rate)	No.	(Rate)	No.	(Rate)
Maine						
All cases	120	(18.6)	85	(13.1)	133	(20.3)
State residents	120	(18.6)	85	(13.1)	133	(20.3)
Maryland						
All cases	209	(7.4)	273	(9.5)	273	(9.4)
State residents	170	(6.0)	265	(9.2)	253	(8.7)
Michigan						
All cases	598	(14.4)	625	(14.9)	631	(14.9)
State residents	590	(14.2)	615	(14.7)	630	(14.9)
Minnesota						
All cases	572	(20.8)	428	(15.4)	493	(17.6)
State residents	572	(20.8)	428	(15.4)	493	(17.6)
Missouri						
All cases	2,951	(107.3)	2,988	(108.2)	2,973	(106.7)
State residents	2,951	(107.3)	2,988	(108.2)	2,973	(106.7)
Montana						
All cases	88	(19.0)	34	(7.3)	27	(5.7)
State residents	26	(5.6)	34	(7.3)	27	(5.7)
Nebraska						
All cases	163	(17.3)	141	(14.7)	168	(17.2)
State residents	163	(17.3)	141	(14.7)	168	(17.2)
New Hampshire						
All cases	225	(32.4)	214	(30.7)	155	(22.1)
State residents	225	(32.4)	214	(30.7)	155	(22.1)
New Jersey						
All cases	1,187	(28.9)	1,261	(30.7)	1,102	(26.6)
State residents	1,119	(27.2)	1,146	(27.9)	1,085	(26.2)
New Mexico						
All cases	63	(7.4)	61	(7.1)	50	(5.8)
State residents	57	(6.7)	61	(7.1)	50	(5.8)
New York						
All cases	2,552	(29.1)	2,376	(27.1)	2,149	(24.4)
State residents	2,222	(25.4)	2,136	(24.4)	1,924	(21.9)
North Carolina						
All cases	484	(11.7)	395	(9.4)	277	(6.5)
State residents	482	(11.7)	391	(9.4)	274	(6.4)
Ohio						
All cases	3,002	(57.1)	2,049	(38.8)	2,323	(43.7)
State residents	2,880	(54.8)	1,988	(37.6)	2,167	(40.8)
Oklahoma						
All cases	—	(—)	65	(3.9)	175	(10.3)
State residents	—	(—)	54	(3.2)	117	(6.9)

See table footnotes on page 66.

TABLE 7. (*Continued*) Number of reported cases and prevalence rate per 100,000 of employed adults* of persons with blood lead levels ≥10 µg/dL — State Adult Blood Lead Epidemiology and Surveillance programs, United States, 2010–2012

State	2010		2011		2012	
	No.	(Rate)	No.	(Rate)	No.	(Rate)
Oregon						
All cases	355	(20.2)	312	(17.6)	344	(19.4)
State residents	340	(19.4)	295	(16.6)	226	(12.7)
Pennsylvania						
All cases	3,904	(66.7)	4,042	(68.7)	3,138	(52.7)
State residents	3,895	(66.6)	4,030	(68.5)	3,137	(52.7)
Rhode Island						
All cases	159	(31.5)	134	(26.8)	104	(20.7)
State residents	159	(31.5)	134	(26.8)	104	(20.7)
South Carolina						
All cases	240	(12.5)	216	(11.1)	291	(14.6)
State residents	102	(5.3)	216	(11.1)	290	(14.6)
Tennessee						
All cases	967	(34.8)	1,189	(42.0)	985	(34.6)
State residents	632	(22.7)	942	(33.3)	838	(29.4)
Texas						
All cases	1,203	(10.7)	1,156	(10.1)	1,149	(9.8)
State residents	1,157	(10.3)	1,149	(10.0)	1,144	(9.7)
Utah						
All cases	170	(13.6)	129	(10.2)	164	(12.6)
State residents	75	(6.0)	56	(4.4)	56	(4.3)
Vermont						
All cases	57	(16.9)	63	(18.6)	47	(13.9)
State residents	57	(16.9)	63	(18.6)	47	(13.9)
Washington						
All cases	332	(10.5)	278	(8.8)	283	(8.8)
State residents	159	(5.0)	187	(5.9)	178	(5.6)
Wisconsin						
All cases	831	(29.4)	782	(27.6)	708	(24.8)
State residents	830	(29.4)	781	(27.5)	708	(24.8)
Wyoming						
All cases	48	(17.1)	56	(19.7)	56	(19.4)
State residents	48	(17.1)	55	(19.3)	55	(19.0)

* A person aged ≥16 years at the time of blood collection. When an adult had multiple blood lead tests in a given year, only the highest blood lead level for that adult in that year was counted. Rates were calculated on the basis of data on the number of employed adults (denominator), which were obtained from the Local Area Unemployment Statistics (LAUS) program, Bureau of labor Statistics, U.S. Department of Labor.

† All cases reported by a state. These include cases among adults residing in the reporting state plus cases identified by the reporting state but who reside in another state.

§ Adults residing in the reporting state. States did not report this variable before 2002.

¶ Data unavailable.

TABLE 8. Reported prevalence rate per 100,000 employed adults of adults* with blood lead levels ≥25 μg/dL — State Adult Blood Lead Epidemiology and Surveillance programs, United States, 2002–2012

State	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Alabama											
All cases†	23.8	27.3	30.5	29.6	27.3	24.2	20.6	15.4	18.2	21.5	18.9
State residents§	23.8	27.3	30.5	29.6	27.3	24.2	20.6	15.4	18.2	21.2	18.9
Alaska											
All cases	—¶	13.5	8.3	13.1	12.3	9.4	6.6	4.5	9.6	10.1	8.8
State residents	—	1.0	4.1	6.9	3.4	3.0	2.1	3.0	4.5	5.6	6.8
Arizona											
All cases	0.8	1.4	2.0	0.7	1.0	0.9	1.1	1.1	0.7	1.4	1.6
State residents	0.8	1.4	2.0	0.7	1.0	0.9	1.0	1.0	0.7	1.4	1.6
California											
All cases	4.2	3.4	2.8	2.6	2.2	2.1	2.2	2.0	1.5	1.4	1.3
State residents	3.8	3.0	2.6	2.5	2.1	2.0	2.2	2.0	1.5	1.4	1.3
Colorado											
All cases	—	—	—	—	—	—	—	—	—	1.0	1.7
State residents	—	—	—	—	—	—	—	—	—	0.8	1.5
Connecticut											
All cases	4.1	3.7	2.4	3.8	3.5	4.2	4.1	3.5	4.3	4.3	3.1
State residents	3.9	3.6	2.0	3.6	3.4	4.2	4.1	3.5	4.0	3.9	3.1
Florida											
All cases	4.4	3.9	3.3	2.7	2.3	1.5	2.3	2.5	3.1	3.2	4.5
State residents	4.4	3.9	3.3	2.7	2.3	1.5	2.3	2.5	3.1	3.2	4.3
Georgia											
All cases	4.1	6.5	3.3	8.6	6.2	4.3	4.2	3.7	3.9	4.5	4.7
State residents	4.1	6.5	3.3	8.6	6.2	4.3	4.2	3.7	3.7	4.5	4.7
Hawaii											
All cases	1.2	—	0.8	0.5	1.6	—	0.5	0.5	0.2	1.1	0.3
State residents	1.2	—	0.8	0.5	1.6	—	0.5	0.5	0.2	1.1	0.3
Illinois											
All cases	10.1	7.7	5.9	6.2	6.5	6.2	5.4	4.8	4.6	4.5	5.3
State residents	10.1	7.7	5.9	6.1	6.5	6.2	5.3	4.6	4.6	4.4	5.2
Indiana											
All cases	—	12.7	18.6	19.9	16.8	22.1	12.1	15.5	16.2	14.6	9.6
State residents	—	12.6	18.5	19.9	16.8	22.1	12.1	15.5	16.2	14.6	9.6
Iowa											
All cases	29.0	22.3	16.0	16.7	15.9	20.2	16.9	11.8	11.1	15.3	12.4
State residents	29.0	22.3	16.0	16.7	15.9	20.2	16.9	11.8	11.1	15.3	12.4
Kansas											
All cases	46.6	41.4	33.6	34.0	24.9	27.3	22.5	22.6	22.8	20.9	16.7
State residents	43.9	39.8	33.6	34.0	24.9	27.3	22.5	22.6	22.8	20.9	16.7
Kentucky											
All cases	20.2	14.8	10.3	9.8	13.9	15.3	10.1	6.9	15.2	8.0	7.3
State residents	20.2	14.8	7.8	8.4	12.8	13.3	NA	6.4	14.0	7.7	6.4
Louisiana											
All cases	—	—	—	—	—	8.8	9.5	7.1	2.4	3.1	3.5
State residents	—	—	—	—	—	8.8	9.3	7.0	2.4	3.1	3.5

See table footnotes on page 69.

TABLE 8. (*Continued*) Reported prevalence rate per 100,000 employed adults of adults* with blood lead levels ≥25 μg/dL — State Adult Blood Lead Epidemiology and Surveillance programs, United States, 2002–2012

State	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Maine											
All cases	7.1	6.9	6.6	4.0	4.8	3.0	3.8	2.2	4.2	2.2	2.7
State residents	7.1	6.9	4.7	4.0	4.8	3.0	3.8	2.2	4.2	2.2	2.7
Maryland											
All cases	4.8	4.6	3.1	2.7	2.3	3.9	3.9	3.7	3.7	2.0	2.2
State residents	4.7	3.4	2.2	1.5	1.8	3.3	3.1	2.8	2.9	1.9	2.1
Massachusetts											
All cases	9.1	7.6	7.8	6.3	7.1	5.6	5.3	5.3	5.4	6.1	3.8
State residents	7.3	6.9	7.2	5.8	6.1	5.0	4.9	4.7	4.5	5.5	3.6
Michigan											
All cases	4.1	3.7	3.4	2.8	2.3	2.8	2.8	2.5	2.5	2.8	3.1
State residents	4.1	3.5	3.2	2.7	2.3	2.8	2.8	2.4	2.4	2.7	3.1
Minnesota											
All cases	6.0	6.7	5.2	4.8	4.8	5.6	4.5	3.5	4.1	3.2	4.4
State residents	6.0	6.7	5.2	4.7	4.8	5.6	4.5	3.5	4.1	3.2	4.4
Missouri											
All cases	32.9	33.1	26.8	30.9	32.1	37.2	35.3	26.5	30.7	28.2	24.0
State residents	15.1	24.7	26.3	29.0	30.6	36.0	34.4	26.4	30.7	28.2	24.0
Montana											
All cases	0.9	1.1	1.8	0.9	1.5	1.0	2.1	3.0	2.6	0.6	0.4
State residents	0.9	1.1	1.8	0.9	0.2	**	1.2	2.4	1.1	0.6	0.4
Nebraska											
All cases	4.8	6.3	5.5	4.5	3.3	5.4	5.0	5.1	5.0	4.1	5.2
State residents	4.8	6.3	5.5	4.5	3.3	5.4	5.0	5.1	5.0	4.1	5.2
New Hampshire											
All cases	9.1	8.4	7.6	7.6	6.4	5.5	7.0	4.2	4.3	3.9	2.3
State residents	8.4	8.4	7.6	7.6	6.4	5.5	7.0	4.2	4.3	3.9	2.3
New Jersey											
All cases	10.4	10.2	9.5	9.5	7.8	3.3	4.7	4.9	5.8	5.1	4.3
State residents	10.4	8.7	7.8	8.7	7.3	3.1	4.5	4.7	5.5	4.5	4.3
New Mexico											
All cases	1.8	1.1	1.3	0.6	0.8	0.8	1.1	1.0	0.8	1.9	0.8
State residents	1.8	1.1	1.3	0.6	0.8	0.8	1.0	1.0	0.7	1.9	0.8
New York											
All cases	9.2	7.3	7.8	6.2	5.6	3.6	3.8	3.2	4.6	3.8	3.2
State residents	8.4	6.8	7.2	5.6	5.3	3.3	3.5	2.8	3.9	3.5	3.0
North Carolina											
All cases	5.5	5.6	4.5	3.2	3.7	4.8	3.9	3.5	5.6	3.5	2.6
State residents	5.5	5.6	4.4	3.1	3.7	4.7	3.8	3.4	5.6	3.5	2.6
Ohio											
All cases	16.5	13.0	12.4	13.2	10.9	10.9	10.8	10.2	13.1	10.4	9.7
State residents	16.5	13.0	12.3	13.1	10.9	10.9	10.7	10.2	13.0	10.2	9.3
Oklahoma											
All cases	3.9	6.1	5.1	3.0	4.0	1.9	2.3	2.0	—	2.5	4.7
State residents	3.9	5.3	4.6	3.0	3.6	1.3	1.6	2.0	—	2.1	3.8

See table footnotes on page 69.

TABLE 8. (*Continued*) Reported prevalence rate per 100,000 employed adults of adults* with blood lead levels ≥25 μg/dL — State Adult Blood Lead Epidemiology and Surveillance programs, United States, 2002–2012

State	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Oregon											
All cases	4.1	4.5	4.8	3.5	2.7	3.4	3.9	2.7	2.2	3.0	3.0
State residents	4.1	4.2	4.1	3.3	2.7	3.4	3.9	2.0	1.9	2.7	2.1
Pennsylvania											
All cases	26.0	31.3	30.2	20.9	32.2	34.3	37.6	32.2	35.7	39.3	28.7
State residents	25.8	31.3	30.2	20.9	32.2	34.0	37.3	32.0	35.6	39.2	28.7
Rhode Island											
All cases	20.4	8.3	7.0	7.7	7.2	6.1	4.9	5.4	5.9	6.4	4.4
State residents	20.4	7.7	7.0	7.7	7.2	6.1	4.9	5.4	5.9	6.4	4.4
South Carolina											
All cases	6.7	4.2	6.1	12.1	6.9	5.6	3.7	1.6	3.7	2.1	3.3
State residents	6.7	4.2	5.4	12.1	6.9	5.6	3.6	0.6	1.5	2.1	3.3
Tennessee											
All cases	—	—	—	—	19.8	21.2	19.5	9.7	9.4	9.4	7.5
State residents	—	—	—	—	19.5	19.1	17.3	7.7	6.3	8.2	6.9
Texas											
All cases	3.4	2.4	2.0	2.3	2.4	2.3	2.9	2.9	2.5	2.5	2.2
State residents	3.4	2.4	2.0	2.3	2.4	2.3	2.5	2.7	2.5	2.4	2.2
Utah											
All cases	4.0	5.2	3.0	4.3	3.0	2.6	2.6	2.6	1.9	1.6	2.0
State residents	4.0	5.1	2.8	4.0	2.5	2.4	2.3	2.4	1.2	0.7	0.6
Vermont											
All cases	—	—	—	—	—	—	5.6	4.2	3.3	5.0	2.4
State residents	—	—	—	—	—	—	5.6	4.2	3.3	5.0	2.4
Washington											
All cases	2.8	3.6	2.3	2.0	2.5	2.3	1.7	2.6	2.7	2.3	2.7
State residents	2.7	2.7	2.1	1.6	2.0	1.8	1.5	2.1	2.1	2.0	2.4
Wisconsin											
All cases	9.0	7.4	7.0	6.0	5.2	7.9	6.5	5.6	4.2	4.2	3.5
State residents	9.0	7.4	7.0	6.0	5.2	7.9	6.5	5.6	4.2	4.1	3.5
Wyoming											
All cases	4.3	5.0	10.7	15.7	10.1	9.6	6.6	5.0	2.1	4.6	4.2
State residents	4.3	5.0	10.7	15.7	10.1	9.2	6.3	5.0	2.1	4.6	4.2

Abbreviation: NA = not available; program did not report state resident data this year.

* A person aged ≥16 years at the time of blood collection. When an adult had multiple blood lead tests in a given year, only the highest blood lead level for that adult in that year was counted.

† All cases reported by a state. These include cases among adults residing in the reporting state plus cases identified by the reporting state but who reside in another state.

§ Adults residing in the reporting state. States did not report this variable before 2002.

¶ Data were unavailable because the state did not participate in the program for this year.

** Reported zero cases of state residents with elevated BLLs for this year.

TABLE 9. Number of reported cases of adults* with blood lead levels ≥25 μg/dL — State Adult Blood Lead Epidemiology and Surveillance programs, United States, 2002–2012

State	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Alabama											
All cases†	474	544	612	608	572	509	423	298	360	431	380
State residents§	474	544	612	608	572	509	423	298	359	425	380
Alaska											
All cases	—¶	42	26	42	40	31	22	15	32	34	30
State residents	—	3	13	22	11	10	7	10	15	19	23
Arizona											
All cases	21	35	54	19	27	27	31	30	18	39	43
State residents	21	35	54	18	27	27	29	29	18	39	43
California											
All cases	686	554	462	436	368	349	372	324	238	231	221
State residents	622	481	421	413	346	337	369	317	234	227	218
Colorado											
All cases	—	—	—	—	—	—	—	—	—	26	44
State residents	—	—	—	—	—	—	—	—	—	21	37
Connecticut											
All cases	69	62	41	66	61	73	72	61	74	74	53
State residents	66	61	34	61	59	73	72	60	70	67	53
Florida											
All cases	335	301	267	227	194	135	198	200	253	262	384
State residents	335	301	267	227	194	134	198	200	251	262	363
Georgia											
All cases	170	271	138	375	279	199	191	158	165	192	205
State residents	170	271	138	375	279	199	191	157	158	192	203
Hawaii											
All cases	7	—	5	3	10	—	3	3	1	7	2
State residents	7	—	5	3	10	—	3	3	1	7	2
Illinois											
All cases	600	457	354	373	405	392	339	282	274	265	318
State residents	600	457	352	369	402	389	333	273	273	262	312
Indiana											
All cases	—	380	556	604	518	682	371	444	462	423	280
State residents	—	378	555	604	516	681	371	444	462	423	280
Iowa											
All cases	455	343	245	260	253	324	272	185	173	240	196
State residents	455	343	245	260	253	324	272	185	173	240	196
Kansas											
All cases	630	565	464	473	349	385	318	316	318	293	234
State residents	593	543	464	473	349	385	318	316	318	293	234
Kentucky											
All cases	372	274	191	183	265	294	193	127	283	151	138
State residents	372	274	144	158	244	255	NA	118	260	144	122
Louisiana											
All cases	—	—	—	—	—	170	187	136	46	59	67
State residents	—	—	—	—	—	170	183	135	46	59	67

See table footnotes on page 72.

TABLE 9. (*Continued*) Number of reported cases of adults* with blood lead levels ≥25 μg/dL — State Adult Blood Lead Epidemiology and Surveillance programs, United States, 2002–2012

State	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Maine											
All cases	46	45	43	26	32	20	25	14	27	14	18
State residents	46	45	31	26	32	20	25	14	27	14	18
Maryland											
All cases	132	126	85	75	66	113	114	103	106	56	63
State residents	128	93	60	42	51	96	89	80	82	54	61
Massachusetts											
All cases	296	245	249	203	232	183	174	168	173	196	124
State residents	237	222	230	186	198	165	160	151	142	176	117
Michigan											
All cases	195	173	157	133	108	132	128	103	102	116	132
State residents	194	162	149	129	107	132	127	102	101	115	132
Minnesota											
All cases	164	185	143	131	134	156	125	96	113	88	123
State residents	164	185	143	130	134	156	125	96	113	88	123
Missouri											
All cases	932	931	755	881	928	1,078	1,014	736	845	780	669
State residents	427	695	740	826	885	1,042	987	734	845	780	669
Montana											
All cases	4	5	8	4	7	5	10	14	12	3	2
State residents	4	5	8	4	1	**	6	11	5	3	2
Nebraska											
All cases	44	59	52	42	31	51	48	48	47	39	51
State residents	44	59	52	42	31	51	48	48	47	39	51
New Hampshire											
All cases	62	57	52	53	45	39	50	29	30	27	16
State residents	57	57	52	53	45	39	50	29	30	27	16
New Jersey											
All cases	430	417	392	401	331	141	199	202	239	210	178
State residents	430	358	325	367	309	131	193	196	227	186	176
New Mexico											
All cases	15	9	11	5	7	7	10	9	7	16	7
State residents	15	9	11	5	7	7	9	9	6	16	7
New York											
All cases	801	639	683	552	511	330	350	285	402	331	285
State residents	728	593	631	503	480	299	318	246	342	308	260
North Carolina											
All cases	217	221	183	132	157	205	168	142	230	147	112
State residents	217	221	176	129	157	200	161	140	230	147	112
Ohio											
All cases	910	716	680	730	608	611	601	544	689	548	517
State residents	910	715	676	723	608	611	594	544	684	539	495

See table footnotes on page 72.

TABLE 9. (*Continued*) Number of reported cases of adults* with blood lead levels ≥25 μg/dL — State Adult Blood Lead Epidemiology and Surveillance programs, United States, 2002–2012

State	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Oklahoma											
All cases	62	97	82	49	66	31	39	33	—	41	80
State residents	62	85	74	48	59	22	27	33	—	35	65
Oregon											
All cases	70	77	82	60	49	62	71	47	39	54	53
State residents	69	71	70	58	48	62	71	35	34	48	38
Pennsylvania											
All cases	1,526	1,816	1,770	1,244	1,937	2,074	2,296	1,897	2,087	2,312	1,708
State residents	1,512	1,816	1,770	1,244	1,937	2,058	2,276	1,886	2,084	2,309	1,708
Rhode Island											
All cases	107	44	37	41	39	33	26	27	30	32	22
State residents	107	41	37	41	39	33	26	27	30	32	22
South Carolina											
All cases	123	78	115	233	136	112	73	31	72	41	66
State residents	123	78	102	233	136	112	71	11	29	41	66
Tennessee											
All cases	—	—	—	—	564	614	555	264	260	267	214
State residents	—	—	—	—	557	554	493	210	176	232	195
Texas											
All cases	344	246	202	241	254	255	321	318	287	282	261
State residents	344	246	202	241	254	251	281	295	279	279	260
Utah											
All cases	44	59	35	53	38	35	35	33	24	20	26
State residents	44	58	33	49	32	32	31	30	15	9	8
Vermont											
All cases	—	—	—	—	—	—	19	14	11	17	8
State residents	—	—	—	—	—	—	19	14	11	17	8
Washington											
All cases	79	105	69	62	78	73	57	83	84	72	87
State residents	77	78	63	49	63	57	48	66	67	62	78
Wisconsin											
All cases	257	213	202	173	153	233	190	159	119	118	100
State residents	257	213	202	173	153	233	190	159	119	117	100
Wyoming											
All cases	11	13	28	42	28	27	19	14	6	13	12
State residents	11	13	28	42	28	26	18	14	6	13	12

Abbreviation: NA = not available; program did not report state resident data this year.

* A person aged ≥16 years at the time of blood collection. When an adult had multiple blood lead tests in a given year, only the highest blood lead level for that adult in that year was counted.

† All cases reported by a state. These include cases among adults residing in the reporting state plus cases identified by the reporting state but who reside in another state.

§ Adults residing in the reporting state. States did not report this variable before 2002.

¶ Data were unavailable because the state did not participate in the program in this year.

** Reported zero cases of state residents with elevated BLLs for this year.

TABLE 10. Reported number of cases and prevalence rate per 100,000 employed adults of adults* with blood lead levels ≥25 μg/dL — State Adult Blood Lead Epidemiology and Surveillance programs, United States, 1994–2001

State	1994		1995		1996		1997		1998		1999		2000		2001	
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
Alabama	502	(26.3)	—†	(—)	511	(25.6)	567	(27.9)	549	(26.7)	490	(23.7)	634	(30.6)	578	(28.4)
Arizona	40	(2.0)	148	(7.1)	56	(2.6)	79	(3.6)	91	(4.0)	48	(2.0)	58	(2.4)	35	(1.4)
California	1,347	(9.7)	997	(7.1)	1,010	(7.1)	1,044	(7.1)	900	(5.9)	911	(5.9)	1,001	(6.2)	872	(5.4)
Connecticut	354	(21.2)	262	(15.8)	229	(13.8)	207	(12.4)	118	(7.0)	124	(7.3)	99	(5.8)	77	(4.5)
Iowa	—	—	533	(34.9)	522	(33.7)	421	(27.1)	309	(19.9)	401	(25.7)	268	(17.2)	432	(27.5)
Maryland	196	(7.7)	178	(6.9)	153	(5.9)	189	(7.1)	162	(6.1)	292	(10.9)	229	(8.5)	205	(7.5)
Massachusetts	755	(25.3)	641	(21.2)	582	(18.9)	507	(16.1)	470	(14.7)	429	(13.2)	368	(11.2)	297	(9.1)
Michigan	—	(—)	—	(—)	—	(—)	135	(2.8)	298	(6.2)	272	(5.6)	238	(4.8)	208	(4.3)
Minnesota	—	(—)	467	(18.5)	255	(9.9)	258	(9.9)	264	(9.9)	272	(10.1)	190	(7.0)	244	(8.8)
Nebraska	—	(—)	—	(—)	—	(—)	—	(—)	—	(—)	143	(15.6)	94	(10.2)	—	(—)
New Hampshire	—	(—)	—	(—)	—	(—)	187	(29.4)	213	(32.7)	174	(26.1)	212	(31.3)	142	(20.9)
New Jersey	744	(19.6)	611	(15.9)	592	(15.1)	567	(14.1)	511	(12.6)	534	(13.1)	572	(13.9)	543	(13.2)
New York	955	(11.8)	850	(10.5)	1,115	(13.6)	1,045	(12.4)	903	(10.6)	948	(11.0)	955	(10.9)	834	(9.6)
North Carolina	224	(6.4)	342	(9.6)	269	(7.3)	362	(9.5)	379	(9.9)	426	(10.9)	280	(7.1)	345	(8.7)
Ohio	—	(—)	—	(—)	1,367	(25.4)	1,440	(26.4)	1,146	(20.9)	1,090	(19.7)	1,039	(18.7)	1,572	(28.2)
Oklahoma	52	(3.5)	76	(5.1)	94	(6.2)	88	(5.7)	67	(4.3)	46	(2.9)	66	(4.1)	49	(3.0)
Oregon	269	(17.4)	199	(12.6)	204	(12.6)	187	(11.3)	129	(7.7)	170	(10.0)	180	(10.5)	89	(5.2)
Pennsylvania	2,005	(36.3)	2,897	(52.2)	2,862	(50.6)	3,348	(58.0)	2,394	(41.4)	2,031	(35.0)	2,826	(48.5)	2,113	(36.0)
Rhode Island	—	(—)	—	(—)	—	(—)	104	(20.6)	78	(15.3)	67	(12.9)	178	(34.2)	95	(18.3)
South Carolina	367	(21.2)	595	(33.9)	188	(10.5)	189	(10.4)	195	(10.6)	32	(1.7)	60	(3.2)	—	(—)
Texas	387	(4.4)	189	(2.1)	738	(8.0)	687	(7.3)	556	(5.8)	510	(5.2)	554	(5.6)	307	(3.1)
Utah	83	(8.8)	102	(10.4)	57	(5.7)	98	(9.5)	75	(7.1)	41	(3.8)	34	(3.1)	45	(4.1)
Washington	232	(9.0)	241	(9.1)	203	(7.5)	277	(9.8)	152	(5.3)	148	(5.1)	160	(5.5)	120	(4.2)
Wisconsin	713	(26.3)	932	(33.6)	600	(21.3)	528	(18.5)	428	(14.9)	671	(23.3)	376	(13.0)	294	(10.1)
Wyoming	—	(—)	—	(—)	—	(—)	99	(40.6)	67	(27.0)	39	(15.5)	47	(18.3)	21	(8.1)

* A person aged ≥16 years at the time of blood collection. When an adult had multiple blood lead tests in a given year, only the highest blood lead level for that adult in that year was counted. Rates are forAll reported cases by the state. These include adult residents in the reporting state plus residents of other states. State resident data were only available from 2002 onwards.

† Data were unavailable because the state did not participate in the ABLES program in this year.

TABLE 11. Total number (in 1000s) of state-resident employed adults* (denominators), by state and year — United States, 2002–2012†

State	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Alabama	1,995	1,990	2,007	2,052	2,098	2,104	2,054	1,937	1,978	2,004	2,010
Alaska	—†	311	315	321	326	330	333	331	333	337	340
Arizona	2,513	2,573	2,650	2,725	2,837	2,898	2,913	2,822	2,782	2,761	2,774
California	16,181	16,200	16,355	16,592	16,821	16,961	16,894	16,155	16,068	16,250	16,590
Colorado	—	—	—	—	—	—	—	—	—	2,493	2,531
Connecticut	1,701	1,697	1,704	1,719	1,746	1,761	1,769	1,741	1,737	1,737	1,731
Florida	7,663	7,786	7,998	8,305	8,584	8,839	8,637	8,140	8,131	8,311	8,547
Georgia	4,135	4,174	4,249	4,375	4,500	4,588	4,541	4,295	4,235	4,280	4,342
Hawaii	584	—	598	610	618	—	617	593	604	614	612
Illinois	5,969	5,917	5,969	6,033	6,225	6,322	6,248	5,938	5,925	5,937	5,982
Indiana	—	2,998	2,998	3,032	3,080	3,082	3,057	2,873	2,851	2,890	2,912
Iowa	1,568	1,537	1,535	1,558	1,595	1,604	1,609	1,571	1,566	1,569	1,577
Kansas	1,351	1,365	1,381	1,390	1,404	1,411	1,416	1,400	1,397	1,399	1,401
Kentucky	1,838	1,848	1,855	1,876	1,904	1,924	1,907	1,850	1,857	1,879	1,900
Louisiana	—	—	—	—	—	1,934	1,965	1,916	1,919	1,917	1,944
Maine	651	650	654	659	666	666	665	643	645	651	656
Maryland	2,733	2,741	2,762	2,825	2,893	2,885	2,893	2,814	2,833	2,871	2,910
Massachusetts	3,243	3,209	3,204	3,220	3,256	3,277	3,278	3,188	3,187	3,212	3,235
Michigan	4,725	4,676	4,687	4,717	4,723	4,678	4,551	4,204	4,151	4,192	4,244
Minnesota	2,750	2,751	2,752	2,757	2,775	2,768	2,772	2,714	2,744	2,776	2,795
Missouri	2,830	2,814	2,816	2,850	2,889	2,895	2,870	2,776	2,751	2,762	2,787
Montana	445	450	456	463	476	486	487	466	463	467	477
Nebraska	921	932	938	935	943	953	962	939	944	960	979
New Hampshire	680	679	688	697	709	714	714	696	694	698	702
New Jersey	4,117	4,108	4,144	4,208	4,258	4,265	4,262	4,136	4,109	4,112	4,137
New Mexico	823	836	850	866	887	904	905	870	856	854	860
New York	8,721	8,704	8,816	8,947	9,062	9,098	9,111	8,834	8,767	8,755	8,806
North Carolina	3,931	3,974	4,031	4,124	4,261	4,284	4,280	4,108	4,138	4,183	4,271
Ohio	5,503	5,499	5,503	5,537	5,603	5,611	5,550	5,312	5,260	5,287	5,317
Oklahoma	1,602	1,599	1,606	1,629	1,650	1,664	1,676	1,647	—	1,671	1,698
Oregon	1,704	1,700	1,714	1,741	1,792	1,822	1,827	1,751	1,757	1,777	1,777
Pennsylvania	5,869	5,796	5,860	5,958	6,021	6,054	6,105	5,898	5,851	5,885	5,954
Rhode Island	526	533	526	533	544	544	528	504	505	499	501
South Carolina	1,826	1,854	1,888	1,922	1,971	2,010	1,998	1,912	1,925	1,955	1,989
Tennessee	—	—	—	—	2,853	2,902	2,854	2,715	2,779	2,828	2,846
Texas	10,115	10,229	10,385	10,552	10,758	10,914	11,076	11,074	11,281	11,506	11,762
Utah	1,114	1,139	1,179	1,230	1,285	1,329	1,330	1,273	1,253	1,262	1,303
Vermont	—	—	—	—	—	—	342	335	337	338	338
Washington	2,877	2,913	3,000	3,076	3,155	3,233	3,285	3,194	3,167	3,154	3,203
Wisconsin	2,861	2,863	2,868	2,890	2,932	2,949	2,941	2,845	2,823	2,838	2,850
Wyoming	258	259	262	268	277	282	287	281	281	285	289

* Persons aged ≥16 years in the civilian noninstitutionalizedpopulation who, during the reference week (the week including the 12th day of the month), either 1) did any work as paid employees, worked in their own business or profession or on their own farm, or worked 15 hours or more as unpaid workers in an enterprise operated by a member of their family, or 2) were not working but who had jobs from which they were temporarily absent because of vacation, illness, bad weather, childcare problems, maternity or paternity leave, labor-management dispute job training, or other family or personal reasons, whether or not they were paid for the time off or were seeking other jobs. Each employed person is counted only once, even if he or she holds more than one job. Source: US Department of Labor, Bureau of Labor Statistics. Local Area Unemployment Statistics (LAUS) program. Washington, DC: Department of Labor, Bureau of Labor Statistics; 2014. Available at http://www.bls.gov/lau/staadata.txt.

† No denominator data were provided because the state did not participate in the ABLES program in these years.

TABLE 12. Total number (in 1,000s) of state-resident employed adults* (denominators) by state and year — United States, 1994–2001

State	1994	1995	1996	1997	1998	1999	2000	2001
Alabama	1,910	—†	1,993	2,035	2,059	2,070	2,073	2,033
Arizona	1,977	2,096	2,146	2,197	2,279	2,355	2,406	2,453
California	13,954	14,062	14,304	14,781	15,204	15,567	16,034	16,217
Connecticut	1,670	1,658	1,660	1,675	1,685	1,695	1,698	1,698
Iowa	—	1,528	1,551	1,556	1,556	1,561	1,561	1,570
Maryland	2,545	2,573	2,616	2,646	2,661	2,688	2,703	2,719
Massachusetts	2,989	3,029	3,083	3,159	3,209	3,246	3,277	3,275
Michigan	—	—	—	4,749	4,810	4,897	4,967	4,865
Minnesota	—	2,529	2,566	2,606	2,657	2,687	2,733	2,764
Nebraska	—	—	—	—	—	916	926	—
New Hampshire	—	—	—	635	651	666	677	681
New Jersey	3,790	3,846	3,926	4,031	4,047	4,093	4,129	4,112
New York	8,080	8,126	8,229	8,417	8,547	8,657	8,764	8,730
North Carolina	3,511	3,583	3,704	3,810	3,845	3,921	3,959	3,949
Ohio	—	—	5,378	5,448	5,489	5,534	5,571	5,570
Oklahoma	1,469	1,491	1,515	1,543	1,569	1,591	1,608	1,615
Oregon	1,547	1,583	1,619	1,653	1,678	1,697	1,721	1,709
Pennsylvania	5,530	5,554	5,662	5,775	5,788	5,810	5,832	5,870
Rhode Island	—	—	—	504	510	519	521	520
South Carolina	1,729	1,755	1,786	1,820	1,849	1,877	1,896	—
Texas	8,779	8,986	9,176	9,395	9,601	9,766	9,913	10,004
Utah	945	979	1,004	1,034	1,061	1,080	1,096	1,103
Washington	2,567	2,636	2,712	2,822	2,887	2,918	2,899	2,861
Wisconsin	2,713	2,774	2,816	2,856	2,870	2,879	2,891	2,899
Wyoming	—	—	—	244	248	252	257	260

* Persons aged ≥16 years in the civilian noninstitutionalized population who were employed during the reference week. Source: US Department of Labor, Bureau of Labor Statistics. 2003 Local Area Unemployment Statistics (LAUS) program. Washington, DC: Department of Labor, Bureau of Labor Statistics; 2004. Available at http://www.bls.gov/lau/staadata.txt.

† No denominator data were provided because the state did not participate in the ABLES program in these years.

State Adult Blood Lead Epidemiology and Surveillance (ABLES) Program Investigators

(All ABLES program investigators meet the CDC and *MMWR* criteria for contributors)

Sherri Davidson, MPH, Martha L. Sanchez, MD, Alabama Department of Public Health; Sandrine E. Deglin, PhD, Alaska Department of Health and Social Services; Diane Eckles, Arizona Department of Health Services; Susan F. Payne, MA, California Department of Public Health; Albert L. DeLoreto, MPH, Thomas St. Louis, MSPH, Connecticut Department of Public Health; Christy Kuriatnyk, MSPH, Georgia Department of Public Health; Barbara Brooks, PhD, Hawaii Department of Health; Van Nguyen, MS, Tiefu Shen, MD, Illinois Department of Public Health; Jeffery M. Turner, Indiana State Department of Health; Kathy Leinenkugel, MPA, Iowa Department of Public Health; Alisha Langham, Kansas Department of Health and Environment; Monica L. Clouse, MPH, Kentucky Department for Public Health; Michelle Lackovic, MPH, Jocelyn Lewis, PhD, Louisiana Department of Health and Hospitals; Ezattolah Keyvan, MD, Maryland Department of the Environment; Robert J. Nicotera, DJ, Massachusetts Department of Labor Standards; Joanna Kica, MPA, Michigan State University; Stephanie Yendell, DVM, Minnesota Department of Health; Carol R. Braun, Missouri Department of Health and Senior Services; Doug Gillespie, Derry Stover, MPH, Nebraska Department of Health and Human Services; Karla R. Armenti, ScD, Paul L. Lakevicius, MBA, New Hampshire Department of Health and Human Services; Marija Borjan, PhD, Margaret E. Lumia, PhD, Devendra Singh, New Jersey Department of Health; Leilani Schwarcz, MPH, New Mexico Department of Health; Alicia M. Fletcher, MPH, New York State Department of Health; Sheila Higgins, MPH, North Carolina Department of Health and Human Services; Chris Alexander, MS, Tyler Serafini, MPH, Ohio Department of Health; Susan J. Quigley, Christin T. Benner, MPH, Oklahoma State Health Department; Daniel Cain, MA, Oregon Health Authority; Sasidevi Arunachalam, Pennsylvania Department of Health; James Bruckshaw, Rhode Island Department of Health; H. Reed Corley, MPH, South Carolina Department of Health and Environmental Control; Jennifer Karnik, MPH, Teresa Willis, Texas Department of State Health Services; Bonnie Hinds, Martha Keel, PhD, Morey Parang, Phillip Woodard, University of Tennessee; Mark E. Jones, Sam Lefevre, Utah Department of Health; Mike Sullivan, MBA, Vermont Department of Health; Todd M. Schoonover, PhD, Washington Department of Labor and Industries; Carrie Tomasallo, PhD, Wisconsin Department of Health Services; Steve Melia, MSPH, Wyoming Department of Health; ABLES Programs coordinators in Colorado Department of Public Health and Environment, Florida Department of Health, Maine Department of Health and Human Services, and Montana Department of Public Health and Human Services.

Please note: An erratum has been published for this issue. To view the erratum, please click here.

Morbidity and Mortality Weekly Report

Childhood Blood Lead Levels — United States, 2007–2012

Jaime Raymond, MPH
Mary Jean Brown, ScD
Division of Emergency and Environmental Health Services, National Center for Environmental Health, CDC

Preface

This report provides data concerning childhood blood lead levels (BLLs) in the United States during 2007–2012. These data were collected and compiled from extracts sent by state and local health departments to CDC's Childhood Blood Lead Surveillance (CBLS) system. The numbers of children aged <5 years reported to CDC for 2007–2012 with BLLs ≥10 μg/dL are provided by month, geographic location, and age group in tabular form (Tables 1–3). The number of children who received a new diagnosis of BLLs ≥70 μg/dL during the same time period is summarized (Figure). This report is a part of the first-ever *Summary of Notifiable Noninfectious Conditions and Disease Outbreaks*, which encompasses various surveillance years but is being published in 2015 (*1*). The *Summary of Notifiable Noninfectious Conditions and Disease Outbreaks* appears in the same volume of *MMWR* as the annual *Summary of Notifiable Infectious Diseases* (*2*).

Background

In 1991, CDC recommended that identification of children with BLLs ≥10 μg/dL should prompt public health action by state or local health departments with follow-up testing (*3*). In 1995, in collaboration with CDC, the Council of State and Territorial Epidemiologists designated elevated blood lead levels as the first noninfectious condition to be added to the list of conditions designated as reportable at the national level (*4*).

In May 2012, the Advisory Committee on Childhood Lead Poisoning Prevention (ACCLPP) recommended the use of a reference range for blood lead. ACCLPP recommended that clinical and public health-care providers use the upper value of the reference range to identify children with elevated BLLs, on the basis of the 97.5th percentile of the National Health and Nutritional Examination Survey (NHANES)–generated BLL distribution in children aged 1–5 years (currently 5 μg/dL) (*5*).

Permanent neurological damage and behavioral disorders have been found to be associated with lead exposure at blood levels at or below 5 μg/dL (*6–9*). Previous studies have shown that high BLLs (≥70 μg/dL) can cause severe neurologic problems such as seizures, comas, and even death (*10*).

In 2007, a total 38 states identified and reported 37,289 children aged <6 years with BLLs ≥10 μg/dL (*11*). In 2012, approximately 122,000 children aged <6 years were reported with BLLs ≥5 μg/dL (*11*). For the period 2007–2012, CDC examined reported BLLs of children aged <5 years in three categories: children with BLLs ≥10 μg/dL, children with new reports of BLLs ≥10 μg/dL, and children with new reports of BLLs ≥70 μg/dL.

Corresponding author: Jaime S. Raymond, Division of Emergency and Environmental Health Services, National Center for Environmental Health, CDC. Telephone: 770-488-3627; e-mail: zvu0@cdc.gov.

Data Sources

Results of blood lead tests for children from state and local health departments were sent to CDC's Healthy Homes and Lead Poisoning Prevention Program (HHLPPP) quarterly. At the end of each quarter, state health departments verify the data collected for blood lead testing. The test results compiled and analyzed by state health departments and submitted to CDC comprise the CBLS database.

State and local childhood blood lead surveillance systems contain the results of blood lead tests of children reported to state health departments by private laboratories as well as state and local government laboratories. The reporting criteria of BLLs from the laboratories to the state are set by each state and vary across jurisdictions. CDC and participating states have established a set of core data variables that should be collected for every child at the time of the blood lead test. These variables include identification and demographic information (e.g., date of birth, race, or ethnicity), laboratory information (e.g., venous or capillary blood test), date of blood lead test, address information (e.g., city and zip code), and test result. Records are de-identified and de-duplicated; the child associated with each record is assigned a unique identifier that is sent to CDC along with the collated core data. CDC checks each state-submitted record for correct formatting, coding, and content. Records not meeting CDC criteria are summarized in file processing reports that are sent to states for correction. Certain errors, if not corrected, prevent the record from being entered in the CBLS database.

To assist state health departments with tracking children who have received a blood lead test, CDC developed a computer software program, Healthy Homes Lead Poisoning Surveillance

TABLE 1. Number and percentage of cases of elevated blood lead levels ≥10 μg/dL among children aged <5 years, by month — Childhood Blood Lead Surveillance System, United States, 2007–2012

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	
Year	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	Total no.
2007	3,323 (16.2)	1,066 (5.2)	1,159 (5.7)	1,087 (5.3)	1,487 (7.3)	1,751 (8.6)	2,013 (9.8)	2,440 (11.9)	2,088 (10.2)	1,944 (9.5)	1,226 (6.0)	869 (4.2)	**20,453**
2008	2,681 (15.7)	834 (4.9)	857 (5.0)	1,127 (6.6)	1,242 (7.3)	1,543 (9.0)	1,809 (10.6)	1,787 (10.4)	1,858 (10.9)	1,529 (8.9)	981 (5.7)	845 (4.9)	**17,103**
2009	2,319 (15.4)	773 (5.1)	899 (6.0)	926 (6.2)	1,095 (7.3)	1,476 (9.8)	1,671 (11.1)	1,544 (10.3)	1,538 (10.2)	1,194 (7.9)	838 (5.6)	767 (5.1)	**15,040**
2010	752 (5.8)	686 (5.3)	840 (6.4)	991 (7.6)	1,120 (8.6)	1,329 (10.2)	1,510 (11.6)	1,593 (12.2)	1,438 (11.0)	1,212 (9.3)	888 (6.8)	700 (5.4)	**13,059**
2011	1,796 (15.3)	579 (4.9)	727 (6.2)	669 (5.7)	842 (7.2)	1,102 (9.4)	1,068 (9.1)	1,320 (11.3)	1,192 (10.2)	977 (8.3)	809 (6.9)	636 (5.4)	**11,717**
2012	693 (6.8)	625 (6.1)	674 (6.6)	667 (6.5)	959 (9.4)	1,024 (10.0)	1,109 (10.8)	1,412 (13.8)	1,115 (10.9)	852 (8.3)	644 (6.3)	455 (4.4)	**10,229**

System (HHLPSS). Some states have adopted this system, while others have developed their own system.

Interpreting Data

In this report, state surveillance data are presented for children aged <5 years who were tested for lead at least once during 2007–2012. Confirmed BLLs ≥10 μg/dL are defined as having one venous blood lead test ≥10 μg/dL or two capillary blood tests ≥10 μg/dL drawn within 12 weeks of each other (*12*). Incidence data are presented by the date of the confirmed blood lead test. Data are reported by the jurisdiction of the child's residence at the time of the confirmed blood lead test. State health departments check for duplicate laboratory reports for children as well as for completeness of the laboratory report before sending the data to CDC. After data are sent, CDC has its own checks for the data to ensure its completeness and accuracy.

The data provided in this report are useful for analyzing childhood blood lead trends and determining relative morbidity numbers. However, reporting practices affect how these data are interpreted. Childhood blood lead reporting is likely incomplete, and completeness of the records might vary depending on state, laboratory, or BLL range (e.g., some states might not require reporting of BLLs <10 μg/dL). Independent of the actual incidence of disease, factors such as changes in the methods of surveillance or introduction of new diagnostic tests (e.g., portable handheld analyzer) can cause changes in the reported blood lead levels. Only states funded by CDC are required to report.

Methods for Identifying Childhood Lead Exposure

Each state has laws and regulations regarding blood lead tests reported to the state health department. Most states require electronic reporting. Some states have laws that require laboratories to send all blood lead tests, regardless of the BLL, while other states only require laboratories to send blood lead tests with BLLs ≥10 μg/dL. Blood lead test reporting has been a notifiable condition since 1995 (*4*). CDC asks that state health departments report all blood lead test data for children to HHLPPP. In May 2012, CDC adopted the ACCLPP recommendation to replace the "level of concern" (10 μg/dL) with a reference value based on the distribution of BLLs in U.S. children aged 1–5 years, the upper value of which is 5 μg/dL (*5*). However, because this change was not made until mid-2012, in this report, an elevated blood lead level (EBLL) is defined as ≥10 μg/dL.

Publication Criteria

Reports of children (aged <5 years) with confirmed BLLs ≥10 μg/dL during 2007–2012.

Highlights

Lead exposure in children can cause permanent neurologic damage (*6*). Behavioral disorders are associated with lead exposure even at detectable blood levels at or below 5 μg/dL (*6–9*). The most common highly concentrated source of lead for children is lead paint. When paint containing lead deteriorates into flakes, chips, or fine dust, it is easily inhaled or ingested by small children In 2007, a total of 38 states* and New York City submitted BLL data to CDC; however, by 2012, that number was reduced to 29 states† and New York City submitting data (a 24% reduction in contributors). One state, California, provided a substantial amount of BLL data during 2007–2011 but did not submit any data for 2012. The other states not submitting data to CDC in 2012 did not contribute a substantial number of BLLs ≥10 μg/dL. Among the states that reported data to CDC for all 6 years, the number of children with confirmed

* Alabama, Arizona, California, Connecticut, Delaware, the District of Columbia, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, Tennessee, Texas, Vermont, Virginia, West Virginia, and Wisconsin.

† Alabama, Arizona, Connecticut, the District of Columbia, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, New York , Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, Vermont, West Virginia, and Wisconsin.

TABLE 2. Reported number of cases of elevated blood lead levels ≥10 μg/dL in children aged <5 years, by geographic division and area — Childhood Blood Lead Surveillance System, United States, 2007–2012

Division/Area	2007	2008	2009	2010	2011	2012
United States	**20,453**	**17,10**	**15,040**	**13,059**	**11,717**	**10,229**
New England	**2,042**	**1,912**	**1,508**	**1,373**	**1,170**	**1,190**
Connecticut	602	660	432	416	340	353
Maine	125	120	101	87	81	—*
Massachusetts	875	653	558	518	454	550
New Hampshire	146	124	104	103	78	71
Rhode Island	238	295	267	207	170	173
Vermont	56	60	46	42	47	43
Mid-Atlantic	**6,822**	**5,321**	**4,816**	**4,883**	**4,340**	**3,047**
New Jersey	1,444	672	443	838	729	675
New York	1,678	1,427	1,393	1,469	1,216	202
New York City	1,326	981	947	885	798	717
Pennsylvania	2,374	2,241	2,033	1,691	1,597	1,453
East North Central	**5,765**	**4,892**	**3,955**	**3,083**	**3,148**	**3,845**
Illinois	2,014	1,502	1,459	1,115	1,059	1,429
Indiana	336	341	290	190	177	209
Michigan	1,099	960	652	619	20	524
Ohio	1,464	1,387	947	652	935	1,156
Wisconsin	852	702	607	507	457	527
West North Central	**1,325**	**1,033**	**1,037**	**966**	**800**	**867**
Iowa	374	318	334	228	248	154
Kansas	141	109	121	101	125	84
Minnesota	267	257	207	171	155	196
Missouri	523	349	375	466	272	433
Nebraska	20	—	—	—	—	—
North Dakota	—	—	—	—	—	—
South Dakota	—	—	—	—	—	—

See table footnotes on page 79.

BLLs ≥10 μg/dL declined (Table 2), a trend which is consistent with national data reporting for 2007–2012 (*11*).

During the four warm-weather months (June–September), 40%–50% of cases are identified, more than would be expected (33%) if identification rates were distributed evenly over the year (Table 1). In warm weather, windows possibly painted with lead-based paint are opened and closed, creating lead dust in the air and on the ground. Also, repainting and renovation activities are more common in summer. Increased presence and activity of children in and around the home might lead to children having more contact with contaminated dust, surfaces, and soil.

Except for 2010 and 2012, the number of BLL cases reported in January exceeds other months in that year (15% of cases). Various reasons might account for this finding. Increases in illness acquired during the holidays might account for increased visits to pediatrician offices and increased lead screening tests. Insurance changes at the beginning of the calendar year also might cause an increase in child testing. Another possible contributor to this observation is delayed reporting of BLL data from the latter half of December, when many businesses (laboratories and physician offices) are closed.

States in the Mid-Atlantic region reported the largest number of cases in 2007 (Table 2). This same region also shows the largest reduction in reported cases, with a decrease of >50% in reported cases during 2007–2012. In the East North Central states, elevated BLLs decreased 33%. In the East South Central states, where the fewest cases were reported, the number of cases decreased 22% and no clear trend was evident over time (Table 2).

The number of incidence cases (defined as cases among children aged <5 years with a first confirmed BLL ≥10 μg/dL) decreased 50% during 2007–2012 (Table 3). The percentage of children aged 1–4 years with BLLs ≥10 μg/dL was higher than that for children aged <1 year across all years, possibly because of increased hand-to-mouth activity and mobility for older children. However, the number of children with BLLs ≥70 μg/dL remains persistent with no clear trend emerging (Figure). Although CDC funding for state and local programs ended in 2012, a total of 21 states[§] and New York City still have Healthy Homes and Childhood Lead Poisoning Prevention Programs and continue to send screening and elevated blood lead data to CDC quarterly.

More detailed annual summaries describing the number of children tested for lead by state, county, and BLL are published periodically by CDC. A summary of childhood lead exposure in 2013, the most recent year for which data are available, is available at http://www.cdc.gov/nceh/lead.

[§] Alabama, Arizona, the District of Columbia, Georgia, Illinois, Indiana, Kentucky, Maryland, Massachusetts, Minnesota, Missouri, New Hampshire, New Jersey, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, Vermont, West Virginia, and Wisconsin.

Please note: An erratum has been published for this issue. To view the erratum, please click here.

TABLE 2. (*Continued*) Reported number of cases of elevated blood lead levels ≥10 µg/dL in children aged <5 years, by geographic division and area — Childhood Blood Lead Surveillance System, United States, 2007–2012

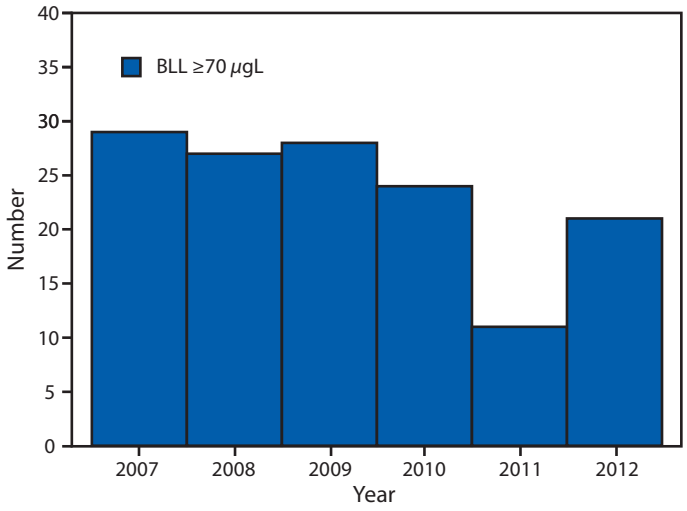
Division/Area	2007	2008	2009	2010	2011	2012
South Atlantic	**1,590**	**1,349**	**1,182**	**972**	**839**	**726**
Delaware	12	10	28	38	26	—
District of Columbia	62	58	61	58	32	31
Florida	417	305	132	222	139	257
Georgia	101	122	165	149	185	167
Maryland	460	384	316	308	282	223
North Carolina	208	182	153	—	—	—
South Carolina	—	—	—	—	—	—
Virginia	259	232	263	154	134	—
West Virginia	71	56	64	43	41	48
East South Central	**333**	**291**	**275**	**227**	**188**	**260**
Alabama	112	124	125	65	66	62
Kentucky	75	56	29	77	56	102
Missouri	125	111	121	85	66	96
Tennessee	21	—	—	—	—	—
West South Central	**1,195**	**969**	**1,202**	**652**	**421**	**193**
Arkansas	—	—	—	—	—	—
Louisiana	92	92	97	67	56	63
Oklahoma	92	64	112	73	99	130
Texas	1,011	813	993	512	266	—
Mountain	**156**	**108**	**114**	**102**	**53**	**80**
Arizona	144	91	105	86	53	80
Colorado	—	—	—	—	—	—
Idaho	—	—	—	—	—	—
Montana	—	—	—	—	—	—
Nevada	12	17	9	16	—	—
New Mexico	—	—	—	—	—	—
Utah	—	—	—	—	—	—
Wyoming	—	—	—	—	—	—
Pacific	**1,225**	**1,228**	**951**	**801**	**758**	**21**
Alaska	—	—	—	—	—	—
California	1,188	1,170	895	759	730	—
Hawaii	—	—	—	—	—	—
Oregon	37	35	30	28	17	21
Washington	—	23	26	14	11	—

* No data were reported for the state for that year.

TABLE 3. Reported number of cases and incidence rate per 100,000 children aged <5 years of elevated blood lead levels ≥10 µg/dL, by age group — Childhood Blood Lead Surveillance System, United States, 2007–2012

	<1 yr		1–4 yrs	
Year	No.	Rate	No.	Rate
2007	2,055	47.75	18,398	110.72
2008	1,852	43.00	15,251	90.41
2009	1,608	38.69	13,432	78.76
2010	1,412	34.05	11,647	68.05
2011	1,185	29.89	10,532	65.25
2012	860	21.81	9,369	58.31

FIGURE. Number of children aged <5 years with newly confirmed blood lead levels ≥70 µgL — Childhood Blood Lead Surveillance System, United States, 2007–2012



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Surveillance for Silicosis — Michigan and New Jersey, 2003–2010

Margaret S. Filios, MSc[1]
Jacek M. Mazurek, MD, PhD[1]
Patricia L. Schleiff, MS[1]
Mary Jo Reilly, MS[2]
Kenneth D. Rosenman, MD[2]
Margaret E. Lumia, PhD, MPH[3]
Karen Worthington, MS[3]
[1]*Division of Respiratory Disease Studies, National Institute for Occupational Safety and Health, CDC*
[2]*Division of Occupational and Environmental Medicine, Michigan State University, East Lansing, Michigan*
[3]*Environmental and Occupational Health Surveillance Program, New Jersey Department of Health, Trenton, New Jersey*

Preface

CDC's National Institute for Occupational Safety and Health (NIOSH), state health departments, and other state entities maintain a state-based surveillance program of confirmed silicosis cases. Data on confirmed cases are collected and compiled by state entities and submitted to CDC. This report summarizes information for cases of silicosis that were reported to CDC for 2003–2010. The data for this report were final as of December 31, 2010. Data are presented in tabular form on the prevalence of silicosis, the number of cases and the distribution of cases by year, industry, occupation, and the duration of occupational exposure to dust containing respirable crystalline silica (Tables 1–4). The number of cases by year is presented graphically (Figure). This report is a part of the first-ever *Summary of Notifiable Noninfectious Conditions and Disease Outbreaks*, which encompasses various surveillance years but is being published in 2015 (*1*). The *Summary of Notifiable Noninfectious Conditions and Disease Outbreaks* appears in the same volume of *MMWR* as the annual *Summary of Notifiable Infectious Diseases* (*2*).

Background

Silicosis, a form of pneumoconiosis, is a progressive occupational lung disease caused by the inhalation, deposition, and retention of respirable dust containing crystalline silica. There is no effective specific treatment, and patients with silicosis can be offered only supportive care. Silicosis is preventable by using non-silica substitution materials, effective dust control measures, and personal protective equipment.* Occupational exposure to respirable dust containing crystalline silica occurs in mining, quarrying, sandblasting, rock drilling, construction, pottery making, stone masonry, and tunneling operations (*3*). The Occupational Safety and Health Administration (OSHA) estimates that approximately 2.2 million workers are currently exposed† to respirable crystalline silica in industries where exposure might occur: 1.85 million workers in the construction industry and 320,000 workers in general industry and maritime workplaces (*4,5*). Typically a disease of long latency, silicosis usually is diagnosed through a chest radiograph after ≥10 years of exposure to respirable crystalline silica dust. Nodular silicosis can also develop within 5–10 years of exposure to higher concentrations of crystalline silica. A clinical continuum exists between the accelerated and the chronic forms of silicosis. Acute silicosis has a different

* General information concerning the hierarchy of hazard exposure controls is available at http://www.cdc.gov/niosh/topics/engcontrols; information on control measures specific to crystalline silica is available at https://www.osha.gov/dsg/topics/silicacrystalline/control_measures_silica.html.

Corresponding author: Patricia L. Schleiff, Division of Respiratory Disease Studies, National Institute for Occupational Safety and Health, CDC. Telephone: 304-285-5874; e-mail: pls1@cdc.gov.

† National compliance standards for silica dust exposure (the Mine Safety and Health Administration [MSHA] and the Occupational Safety and Health Administration [OSHA]) use permissible exposure limits (PELs) based on the American Conference of Governmental Industrial Hygienists threshold limit value. These began to be applied in the early 1970s and included limits on exposure to silica through regulation of respirable mixed mine dust in underground coal mines using the Mine Safety and Health Administration's formula: (10 mg/m^3)/(% quartz), and direct limits on exposure to crystalline silica as respirable quartz using the formulas: (10 mg/m^3)/(%quartz + 2) for metal/nonmetal mining and general industry or (250 million particles per cubic foot)/(%quartz + 5) for the construction industry (currently for the construction industry, sampling, analysis, and calculations are the same as general industry, except an additional calculation to convert to millions of particles per cubic foot is conducted to determine overexposure according to OSHA's National Emphasis Program – Crystalline Silica, Appendix E at https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=DIRECTIVES&p_id=3790). For more information, see Lowering Miners' Exposure to Respirable Coal Mine Dust, Including Continuous Personal Dust Monitors; Final Rule (available at http://www.gpo.gov/fdsys/pkg/FR-2014-05-01/pdf/2014-09084.pdf); Criteria for a Recommended Standard: Occupational Exposure to Respirable Coal Mine Dust (available at http://www.cdc.gov/niosh/docs/95-106/pdfs/95-106.pdf); Occupational Safety and Health Standards, Toxic and Hazardous Substances, 1910.1000, TABLE Z-3 Mineral Dusts (available at https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=9994); Safety and Health Regulations for Construction, Occupational Health and Environmental Controls, 1926.55 App A, Gases, Vapors, Fumes, Dusts, and Mists (available at https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10629); and OSHA Frequently Asked Questions, Silica Advisor (available at https://www.osha.gov/dsg/etools/silica/faq/faq.html).

pathophysiology than accelerated or chronic silicosis. It might develop within weeks of initial exposure and is associated with exposures to extremely high concentrations[†] of crystalline silica. Respiratory impairment is severe, and the disease is usually fatal within a year of diagnosis. In addition, occupational exposure to respirable crystalline silica puts workers at increased risk for other serious health conditions including chronic obstructive lung disease, kidney and connective tissue disease, tuberculosis and other mycobacterial-related diseases, and lung cancer (*6*). In 1997, the International Agency for Research on Cancer classified crystalline silica as carcinogenic to humans (*7*), and this classification was reconfirmed in 2012 (*8*).

During 1968–2010, the number of deaths in the United States for which silicosis was listed on the death certificate declined from 1,065 (age-adjusted death rate: 8.21 per million persons aged ≥15 years) in 1968 to 101 (rate: 0.39) in 2010 (*9*). Analysis of 1968–2005 data indicated that silicosis-attributable years of potential life lost before age 65 years decreased substantially during 1968–2005, but the decline slowed during the last 10 years of that period (*10*). However, no decline occurred in the number of hospitalizations for which silicosis was listed as one of the discharge diagnoses during 1993–2011.[§] Cases of silicosis continue to occur despite the existence of legally enforceable exposure limits.[†] Silicosis in any

TABLE 1. Number and percentage of cases of silicosis, by year — Michigan and New Jersey, 2003–2010

	Michigan		New Jersey		Total	
Year	No.	(%)	No.	(%)	No.	(%)
2003	34	(17.9)	7	(8.4)	**41**	**(15.0)**
2004	28	(14.7)	16	(19.3)	**44**	**(16.1)**
2005	30	(15.8)	8	(9.6)	**38**	**(13.9)**
2006	19	(10.0)	10	(12.0)	**29**	**(10.6)**
2007	22	(11.6)	11	(13.3)	**33**	**(12.1)**
2008	23	(12.1)	16	(19.3)	**39**	**(14.3)**
2009	14	(7.4)	7	(8.4)	**21**	**(7.7)**
2010	20	(10.5)	8	(9.6)	**28**	**(10.3)**
Total	**190**	**(100.0)**	**83**	**(100.0)**	**273**	**(100.0)**

Source: State surveillance data as of January 2014.

[§] Agency for Healthcare Research and Quality. HCUPnet, an on-line query system for National Statistics on All Stays. Available at http://hcupnet.ahrq.gov.

TABLE 2. Number and percentage* of primary industries associated with cases of silicosis — Michigan and New Jersey, 2003–2010

	Michigan		New Jersey		Total	
Industry (NAICS 2000)	No.	(%)	No.	(%)	No.	(%)
Agriculture, Forestry, Fishing and Hunting	1	(0.5)	1	(1.2)	**2**	**(0.7)**
Mining	15	(7.9)	11	(13.3)	**26**	**(9.5)**
Mining (except Oil and Gas) (212)	15	(7.9)	10	(12.0)	**25**	**(9.2)**
All other mining industries (213)	—†	—	1	(1.2)	**1**	**(0.4)**
Construction	32	(16.8)	18	(21.7)	**50**	**(18.3)**
Specialty Trade Contractors (238)	30	(15.8)	9	(10.8)	**39**	**(14.3)**
Heavy and Civil Engineering Construction (237)	2	(1.1)	5	(6.0)	**7**	**(2.6)**
All other construction industries (230, 236)	—	—	4	(4.8)	**4**	**(1.5)**
Manufacturing	131	(68.9)	44	(53.0)	**175**	**(64.1)**
Primary Metal Manufacturing (331)	99	(52.1)	3	(3.6)	**102**	**(37.4)**
Nonmetallic Mineral Product Manufacturing (327)	10	(5.3)	27	(32.5)	**37**	**(13.6)**
Transportation Equipment Manufacturing (336)	12	(6.3)	2	(2.4)	**14**	**(5.1)**
Miscellaneous Manufacturing (339)	4	(2.1)	3	(3.6)	**7**	**(2.6)**
Fabricated Metal Product Manufacturing (332)	3	(1.6)	3	(3.6)	**6**	**(2.2)**
All other manufacturing industries (325, 333–335)	3	(1.6)	6	(7.2)	**9**	**(3.3)**
Wholesale Trade	1	(0.5)	—	—	**1**	**(0.4)**
Retail Trade	1	(0.5)	—	—	**1**	**(0.4)**
Transportation and Warehousing	2	(1.1)	2	(2.4)	**4**	**(1.5)**
Professional, Scientific, and Technical Services	—	—	1	(1.2)	**1**	**(0.4)**
Administrative and Support and Waste Management and Remediation Services	—	—	1	(1.2)	**1**	**(0.4)**
Health Care and Social Assistance	1	(0.5)	—	—	**1**	**(0.4)**
Arts, Entertainment, and Recreation	—	—	1	(1.2)	**1**	**(0.4)**
Other Services (except Public Administration)	4	(2.1)	3	(3.6)	**7**	**(2.6)**
Repair and Maintenance (811)	4	(2.1)	3	(3.6)	**7**	**(2.6)**
Public Administration	1	(0.5)	—	—	**1**	**(0.4)**
Unclassified	1	(0.5)	1	(1.2)	**2**	**(0.7)**
Total	**190**	**(100.0)**	**83**	**(100.0)**	**273**	**(100.0)**

Abbreviation: NAICS = North American Industry Classification System.
Source: State surveillance data as of January 2014.
* Percentages might not sum to 100% due to rounding.
† Indicates no cases reported.

TABLE 3. Number and percentage* of primary occupations associated with cases of silicosis — Michigan and New Jersey, 2003–2010

Occupation (COC)	Michigan		New Jersey		Total	
	No.	(%)	No.	(%)	No.	(%)
Management (022)	—†	—	1	(1.2)	**1**	**(0.4)**
Architecture and engineering (145, 150)	1	(0.5)	2	(2.4)	**3**	**(1.1)**
Health-care practitioners and technical	1	(0.5)	—	—	**1**	**(0.4)**
Protective service (374)	1	(0.5)	—	—	**1**	**(0.4)**
Building and grounds cleaning and maintenance	5	(2.6)	2	(2.4)	**7**	**(2.6)**
Janitors and building cleaners (422)	5	(2.6)	1	(1.2)	**6**	**(2.2)**
Grounds maintenance workers (425)	—	—	1	(1.2)	**1**	**(0.4)**
Office and administrative support (561, 562)	2	(1.1)	—	—	**2**	**(0.7)**
Farming, forestry, and fishing (605)	—	—	1	(1.2)	**1**	**(0.4)**
Construction and extraction	44	(23.2)	26	(31.3)	**70**	**(25.6)**
Construction laborers (626)	17	(8.9)	7	(8.4)	**24**	**(8.8)**
Brickmasons, blockmasons, and stonemasons (622)	11	(5.8)	1	(1.2)	**12**	**(4.4)**
Other extraction workers (694)	6	(3.2)	2	(2.4)	**8**	**(2.9)**
All other construction and extraction occupations (620–625, 632, 635, 636, 642, 644, 652, 653, 660, 673, 682, 684)	10	(5.3)	16	(19.3)	**26**	**(9.5)**
Installation, repair, and maintenance (712, 715, 722, 733–735, 762)	6	(3.2)	8	(9.6)	**14**	**(5.1)**
Production	104	(54.7)	34	(41.0)	**138**	**(50.5)**
Production workers, all other (896)	38	(20.0)	2	(2.4)	**40**	**(14.7)**
Molders and molding machine setters, operators, and tenders, metal and plastic (810)	24	(12.6)	1	(1.2)	**25**	**(9.2)**
Grinding, polishing, and buffing machine tool setters, operators, and tenders, metal and plastic (800)	16	(8.4)	1	(1.2)	**17**	**(6.2)**
Crushing, grinding, polishing, mixing, and blending workers (865)	4	(2.1)	4	(4.8)	**8**	**(2.9)**
Metal furnace and kiln operators and tenders (804)	7	(3.7)	—	—	**7**	**(2.6)**
Molders, shapers, and casters, except metal and plastic (892)	—	—	7	(8.4)	**7**	**(2.6)**
First-line supervisors/managers of production and operating workers (770)	5	(2.6)	1	(1.2)	**6**	**(2.2)**
Painting workers (881)	2	(1.1)	4	(4.8)	**6**	**(2.2)**
Miscellaneous assemblers and fabricators (775)	—	—	5	(6.0)	**5**	**(1.8)**
Inspectors, testers, sorters, samplers, and weighers (874)	2	(1.1)	3	(3.6)	**5**	**(1.8)**
All other production occupations (801, 803, 813, 814, 822, 831, 876)	6	(3.2)	6	(7.2)	**12**	**(4.4)**
Transportation and material moving (913, 920, 961–963)	4	(2.1)	8	(9.6)	**12**	**(4.4)**
Unclassifiable	22	(11.6)	1	(1.2)	**23**	**(8.4)**
Total	**190**	**(100.0)**	**83**	**(100.0)**	**273**	**(100.0)**

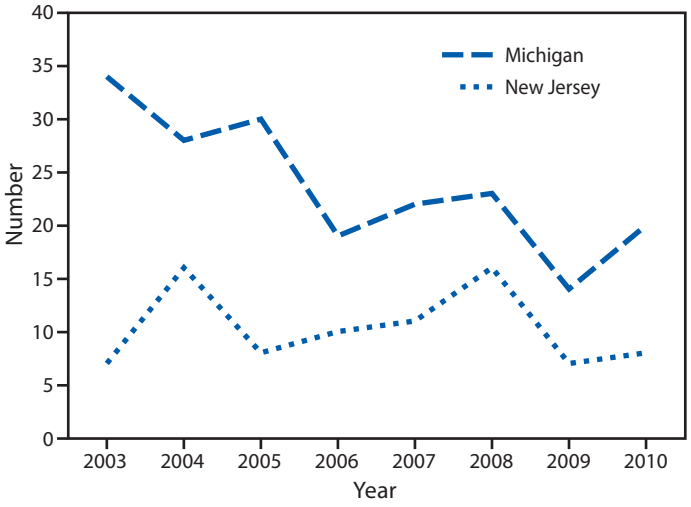
Abbreviation: COC = Census Occupation Code.
Source: State surveillance data as of January 2014.
* Percentages might not sum to 100% due to rounding.
† Indicates no cases reported.

TABLE 4. Number and percentage* of cases of silicosis, by number of years of employment in jobs with potential exposure to silica — Michigan and New Jersey, 2003–2010

No. (yrs)	Michigan		New Jersey		Total	
	No.	(%)	No.	(%)	No.	(%)
<10	18	(9.5)	7	(8.4)	25	(9.2)
10–19	19	(10.0)	15	(18.1)	34	(12.5)
20–29	52	(27.4)	10	(12.0)	62	(22.7)
30–39	55	(28.9)	9	(10.8)	64	(23.4)
≥40	25	(13.2)	8	(9.6)	33	(12.1)
Unknown	21	(11.1)	34	(41.0)	55	(20.1)
Total	**190**	**(100.0)**	**83**	**(100.0)**	**273**	**(100.0)**

Source: State surveillance data as of January 2014.
* Percentages might not sum to 100% due to rounding.

FIGURE. Number* of cases of silicosis, by year — Michigan and New Jersey, 2003–2010



Source: State surveillance data as of January 2014.
* N = 273 (Michigan: 190; New Jersey: 83).

of its clinical forms is consistently undercounted by the Survey of Occupational Injuries and Illnesses (SOII), an employer-based surveillance system maintained by the Bureau of Labor Statistics (*11*). Estimates indicate that 3,600–7,300 new cases of silicosis might be occurring each year (*11*). In 2008, the National Academy of Sciences recommended that surveillance efforts to prevent silicosis and other interstitial lung diseases be continued and expanded (*12*).

Cases of silicosis are sentinel events that indicate the need for intervention (*13*). Silicosis was first designated as a notifiable condition at the national level in 1999[¶] and reconfirmed in 2009.[**] In 2010, silicosis was a reportable condition in 25 states.[††]

NIOSH has supported efforts by states to conduct surveillance for silicosis under several cooperative agreements, including the Sentinel Event Notification system for Occupational Risks (SENSOR) and the State-Based Occupational Safety and Health Surveillance agreements. In 1987, states initiated active silicosis surveillance under SENSOR and began providing data voluntarily to NIOSH (*14,15*). Since 1992, data summaries have been published in a series of reports.[§§] The number of states[¶¶] that conduct silicosis surveillance varies by year based on funding support by NIOSH. Currently, Michigan and New Jersey continue to maintain their sentinel case-based silicosis surveillance systems and intervention programs. These two states are the only states that continue to provide data voluntarily to NIOSH.

This report summarizes data for silicosis cases that met the surveillance case definition for a confirmed silicosis case for the period 2003–2010 as reported by Michigan and New Jersey. Data from state programs are updated annually and are available through the CDC's Work-Related Lung Disease Surveillance System (eWoRLD).[***]

Data Sources

In 1987, states initiated active silicosis surveillance under SENSOR and began providing data voluntarily to NIOSH (*13,14*). The number of states conducting silicosis surveillance varies by year.[¶¶] Two states, Michigan and New Jersey, continue to maintain their sentinel case-based silicosis surveillance systems and intervention programs and provide data voluntarily to NIOSH.

Interpreting the Data

In this report, state surveillance data for confirmed silicosis cases are presented by the year of the reporting source, industry, occupation, and duration of exposure. The reporting source year is the year of a silicosis-related clinician report, hospital discharge, death, or year of a workers' compensation claim. If a case is ascertained from multiple data sources over multiple years, the year reported is the first year that the case is ascertained from any data source.

Reporting practices affect how the data should be interpreted. Silicosis frequently is not recognized or reported by clinicians. Although multiple data sources are used, case ascertainment likely is incomplete. The data provided in this report are based on data from two states and might not be generalizable.

Methods for Identifying Silicosis

State sentinel silicosis surveillance programs identify suspected cases of silicosis through health care provider reports, hospital discharge or outpatient data, state death certificate data, and workers' compensation data. Other data sources include the identification by the index case of additional cases among co-workers at a work place, referrals from industrial hygienists conducting inspections at companies, employer screenings, and referrals from other state health departments.

In Michigan and New Jersey, clinicians and hospitals are required to report cases of silicosis directly to the state health department or the state health department's bona fide agent (e.g., Michigan State University). In addition, in Michigan, employers are also required to report silicosis cases.

Cases are confirmed using the surveillance case definition which requires a history of occupational exposure to airborne silica dust and either or both 1) a chest radiograph (or other radiographic image, such as computed tomography) showing abnormalities interpreted as consistent with silicosis; or 2) lung histopathology consistent with silicosis.[**] Medical record review and follow-up interviews are conducted with the reported case or their surviving next-of-kin, using a standardized telephone-administered questionnaire.

[¶] Source: Council of State and Territorial Epidemiologists position statement ENV 4. Available at http://c.ymcdn.com/sites/www.cste.org/resource/resmgr/PS/1999-ENV-4.pdf.

[**] Source: Council of State and Territorial Epidemiologists position statement 07-EC-02. Available at http://c.ymcdn.com/sites/www.cste.org/resource/resmgr/PS/09-OH-01.pdf.

[††] In 2010, silicosis was a reportable condition in 25 states (Arkansas, California, Connecticut, Delaware, Florida, Illinois, Iowa, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Rhode Island, Texas, Virginia, and Wisconsin); however, only two states, Michigan and New Jersey, submit case data to NIOSH. For more information, see Council of State and Territorial Epidemiologists SRCA query tool available at http://www.cste.org/group/SRCAQueryRes.

[§§] Work-Related Lung Disease (WoRLD) Surveillance Reports are available at http://www.cdc.gov/niosh/topics/surveillance/ords/NationalStatistics.html. The most recent data are available at http://wwwn.cdc.gov/eworld.

[¶¶] A list of states conducting silicosis surveillance is available in Table A-1 on page A-7 at http://www.cdc.gov/niosh/docs/2008-143/pdfs/2008-143.pdf.

[***] Available at http://wwwn.cdc.gov/eworld/Grouping/Silicosis/94#State-based Case Data.

Publication Criteria

De-identified confirmed cases of silicosis case data are reported to NIOSH on an annual basis. All confirmed cases are published.

Highlights

Silicosis is a progressive and preventable occupational lung disease caused by the inhalation, deposition, and retention of respirable dust containing crystalline silica. As a sentinel event, a case of silicosis indicates a failure to prevent exposure to crystalline silica dust.

For the period 2003–2010, silicosis surveillance programs in Michigan and New Jersey identified and confirmed 273 cases; 25 (9.2%) had <10 years of potential exposure to silica dust. The manufacturing, construction, and mining industries accounted for 92% (n = 251) of the cases, with the greatest number of cases (175 [64%]) associated with manufacturing.

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Foodborne and Waterborne Disease Outbreaks — United States, 1971–2012

Daniel Dewey-Mattia, MPH
Virginia Roberts, MSPH
Jonathan Yoder, MPH
L. Hannah Gould, PhD
Division of Foodborne, Waterborne, and Environmental Diseases, National Center for Emerging and Zoonotic Infectious Diseases, CDC

Preface

CDC collects data on foodborne and waterborne disease outbreaks reported by all U.S. states and territories through the Foodborne Disease Outbreak Surveillance System (FDOSS) and the Waterborne Disease and Outbreak Surveillance System (WBDOSS), respectively. These two systems are the primary source of national data describing the number of illnesses, hospitalizations, and deaths; etiologic agents; water source or implicated foods; settings of exposure; and other factors associated with recognized foodborne and waterborne disease outbreaks in the United States. This report summarizes data on foodborne disease outbreaks reported during 1973–2012 and waterborne disease outbreaks reported during 1971–2012. This report is a part of the first-ever *Summary of Notifiable Noninfectious Conditions and Disease Outbreaks*, which encompasses various surveillance years but is being published in 2015 (*1*). The *Summary of Notifiable Noninfectious Conditions and Disease Outbreaks* appears in the same volume of *MMWR* as the annual *Summary of Notifiable Infectious Diseases* (*2*).

Background

Foodborne Disease Outbreak Surveillance

Foodborne diseases cause an estimated 48 million illnesses each year in the United States, including 9.4 million caused by known pathogens (*3,4*). Only a minority of foodborne illnesses, hospitalizations, and deaths occur as part of recognized outbreaks (*5*). However, information gathered from foodborne disease outbreak surveillance provides valuable insights into the agents that cause foodborne illness, types of implicated foods and ingredients, and settings in which transmission occurs.

Foodborne disease outbreaks have been nationally notifiable since 2010; however, reports of foodborne disease outbreaks have been collected by CDC through FDOSS since 1973. Initially a paper-based system, FDOSS became web-based in 1998. In 2009, the system was transitioned to an enhanced reporting platform, the National Outbreak Reporting System (NORS), which also collects information on waterborne disease outbreaks and enteric disease outbreaks with modes of transmission other than food, including person-to-person contact, animal contact, and environmental contamination. Information about NORS is available at http://www.cdc.gov/nors.

Foodborne disease outbreak surveillance data highlight the etiologic agents, foods, and settings involved most often in outbreaks and can help to identify food commodities and preparation settings in which interventions might be most effective. Surveillance for foodborne disease outbreaks provides insight into the effectiveness of regulations and control measures, helps identify new and emerging pathogens, provides information regarding the food preparation and consumption settings where outbreaks occur, informs prevention and control measures in the food industry by identifying points of contamination, and can be used to describe trends in foodborne disease outbreaks over time.

Corresponding author: L. Hannah Gould, Division of Foodborne, Waterborne, and Environmental Diseases, National Center for Emerging and Zoonotic Infectious Diseases, CDC. Telephone: 404-639-3315; e-mail: lgould@cdc.gov.

Waterborne Disease Outbreak Surveillance

Despite advances in water management and sanitation, waterborne disease and outbreaks continue to occur in the United States. CDC collects data on waterborne disease outbreaks associated with drinking water, recreational water, and other water exposures through WBDOSS. Waterborne disease outbreaks have been nationally notifiable since 2010; however, reports of waterborne disease outbreaks have been collected by CDC since 1971. Initially utilizing a paper-based reporting process, the system transitioned to web-based reporting with the launch of NORS in 2009.

CDC uses waterborne disease outbreak surveillance data to identify the types of etiologic agents, settings, recreational water venues, and drinking water systems associated with waterborne disease outbreaks; inform regulations and public awareness activities to promote healthy swimming and safe drinking water; and establish public health priorities to improve prevention efforts, guidelines, and regulations at the local, state, and federal levels.

Data Sources

Foodborne Disease Outbreak Surveillance

State, local, and territorial health departments use a standard form (CDC form 52.13, available at http://www.cdc.gov/nors/pdf/NORS_CDC_5213.pdf) to report foodborne disease outbreaks to CDC. Data requested for each outbreak include reporting state; date of first illness onset; the number of illnesses, hospitalizations, and deaths; the etiology; the implicated food vehicle; the setting of food preparation and consumption; and contributing factors. Multistate outbreaks (i.e., those in which exposure to the implicated food occurred in more than one state) typically are reported to the system by CDC.

Only reports meeting the definition of a foodborne disease outbreak (i.e., the occurrence of two or more cases of a similar illness resulting from the ingestion of a common food) are included in this summary. Outbreaks that occurred on cruise ships and those involving food eaten outside the United States, even if the illness occurred in the United States, are not included in FDOSS.

Laboratory and clinical guidelines for confirming an etiology are specific to each bacterial, chemical/toxin, parasitic, and viral agent (http://www.cdc.gov/foodsafety/outbreaks/investigating-outbreaks/confirming_diagnosis.html). Suspected etiologies are those that do not meet the confirmation guidelines. The cause of an outbreak is categorized as "multiple etiologies" if more than one etiologic agent is reported.

Waterborne Disease Outbreak Surveillance

State, local, and territorial health departments use a standard form (CDC form 52.12, available at http://www.cdc.gov/nors/forms.html#waterborne) to report waterborne disease outbreaks to CDC. Data requested for each outbreak include reporting state; date of first illness onset; the number of illnesses, hospitalizations, and deaths; the etiology; the type of water exposure (e.g., recreational); the implicated venue or system, the setting of exposure; water quality indicators; and contributing factors.

Only reports meeting the definition of a waterborne disease outbreak (i.e., the occurrence of two or more cases of a similar illness resulting from exposure to a common water source) are included in this summary. WBDOSS includes reports of both gastrointestinal illness outbreaks and other illness outbreaks (e.g., legionellosis). Outbreaks that occurred on cruise ships and those in which the water exposure occurred outside the United States, even if the illness occurred in the United States, are not included in WBDOSS.

Interpreting Data

Outbreaks represent only a small fraction of the number of foodborne and waterborne illnesses reported each year. Outbreaks caused by certain pathogens or vehicles might be more likely to be recognized or investigated. However, some illnesses reported as sporadic likely are not recognized as being part of a reported outbreak or are part of undetected outbreaks. In addition, all outbreak-related illnesses might not be identified during an investigation, smaller outbreaks might not come to the attention of public health authorities, and some outbreaks might not be investigated or reported to CDC. Reporting practices for foodborne and waterborne disease outbreaks also vary among states, which might have differing definitions of which events are reportable and unique laws related to disease outbreak reporting. For these reasons, variations in reporting rates by state might reflect variations in levels of effort and funding for foodborne and waterborne disease outbreak investigation rather than actual differences in reporting rates by state. Finally, NORS maintains a dynamic database; this analysis included data on March 27, 2015 for foodborne disease outbreaks and April 27, 2015 for waterborne disease outbreaks. Results might differ from those published earlier or later.

Methods for Identifying Foodborne and Waterborne Disease Outbreaks

Guidance for states and jurisdictions for reporting foodborne and waterborne disease outbreaks is provided by CDC (http://www.cdc.gov/nors/forms.html). As for all notifiable conditions, reporting to CDC is voluntary, and state and local laws, regulations, and practices vary. For example, CDC advises states to report outbreaks with cases in the same household; however, state or local jurisdictions might determine that these outbreaks do not require investigation or might deem them nonreportable at the state level.

Publication Criteria

Foodborne disease outbreaks are defined as two or more cases of a similar illness resulting from ingestion of a common food. Waterborne disease outbreaks are defined as two or more cases of a similar illness linked epidemiologically by time and location to exposure to water or water-associated chemicals volatized into the air.

Highlights

Foodborne Disease Outbreaks

During 1973–2012, CDC received reports of 29,429 foodborne disease outbreaks with 729,020 outbreak-associated illnesses from 50 states, Puerto Rico, the District of Columbia, and freely associated states/territories. An average of 736 (range: 298–1404) outbreaks were reported each year (Figure 1). The average annual number of foodborne disease outbreaks reported to CDC during 1998–2012 was more than double the average annual number reported during 1973–1997, coinciding with the transition to an electronic reporting system.

In 2012, a total of 804 single-state exposure outbreaks were reported with 13,320 illnesses by 49 states and Puerto Rico (Table, Figure 2). An additional 25 multistate outbreaks (i.e., outbreaks in which exposure to the implicated food occurred in more than one state) with 1,496 associated illnesses were also reported.

More detailed annual summaries describing the implicated foods, etiologic agents, settings, and points of contamination associated with foodborne disease outbreaks are published periodically by CDC. A summary of foodborne disease outbreaks in 2013, the most recent year for which data are available, is available at http://www.cdc.gov/foodsafety/fdoss/data/annual-summaries/index.html.

Waterborne Disease Outbreaks

During 1971–2012, CDC received reports of 1,901 waterborne disease outbreaks with 639,949 outbreak-associated illnesses from 50 states and six freely associated states/territories. An average of 45 waterborne outbreaks were reported each year (Figure 1).

In 2012, a total of 73 outbreaks causing at least 1,261 illnesses occurred in 27 states and one territory. No multistate outbreaks were reported (Table, Figure 3).

CDC publishes separate and more detailed summaries of waterborne disease outbreaks associated with recreational water and waterborne disease outbreaks associated with drinking water. These summaries are available at http://www.cdc.gov/healthywater/surveillance/surveillance-reports.html.

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FIGURE 1. Number of foodborne and waterborne disease outbreaks reported, by year — United States 1971–2012

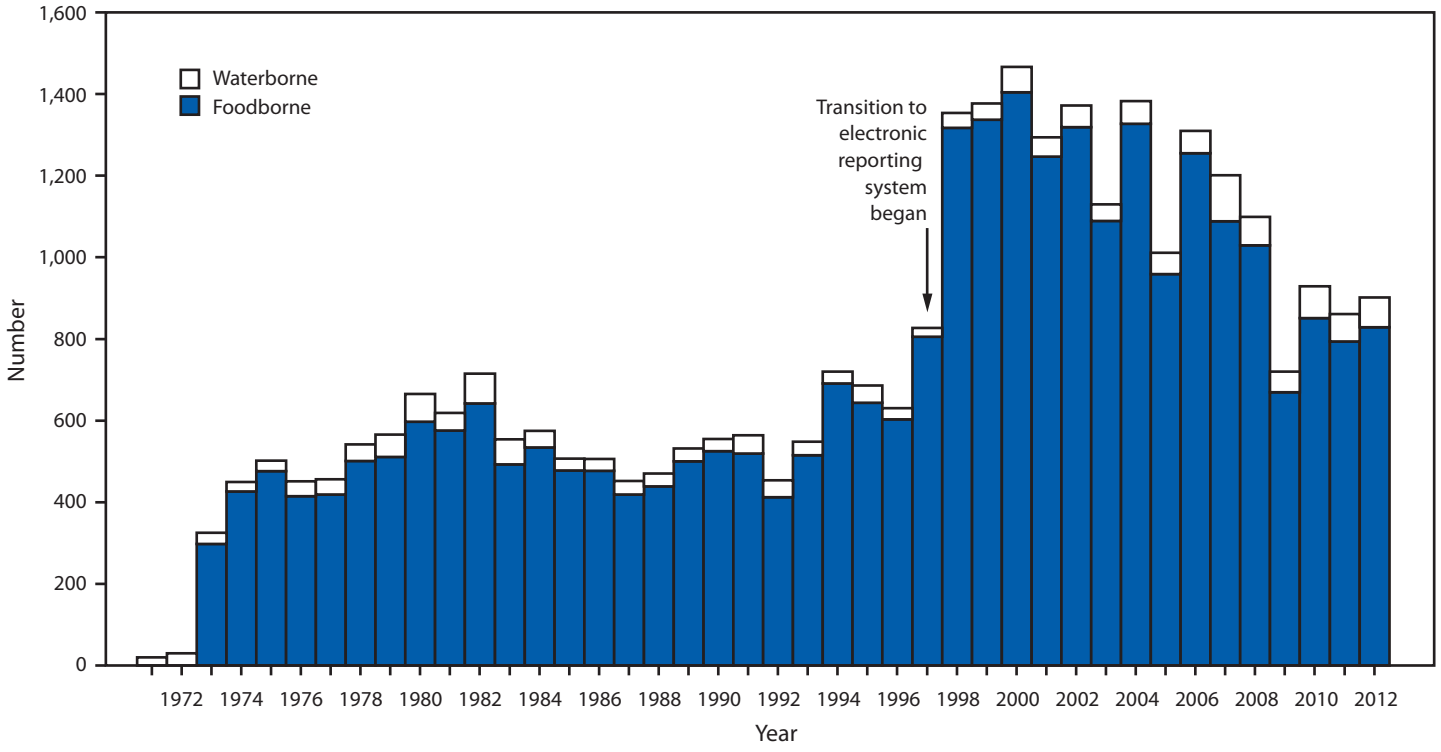
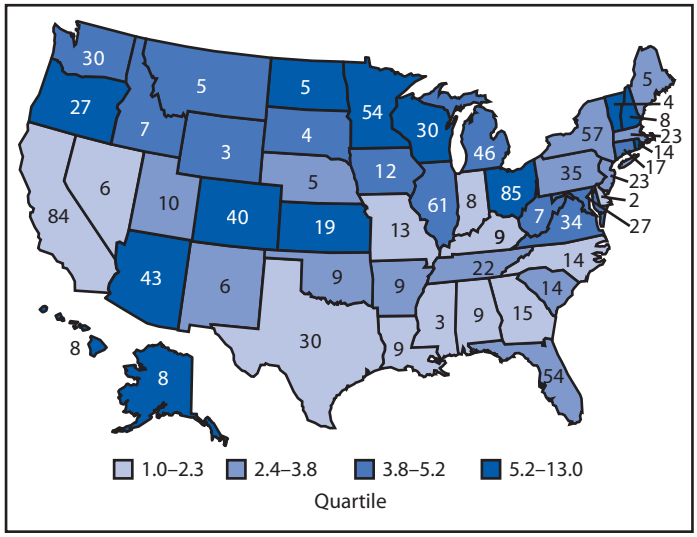


TABLE. Number of reported foodborne and waterborne disease outbreaks and outbreak-associated illnesses, by geographic division and area — United States, 2012

	Foodborne		Waterborne		All	
Division/Area	Outbreaks	Illnesses	Outbreaks	Illnesses	Outbreaks	Illnesses
United States	**829**	**14,816**	**73**	**1,261**	**902**	**16,077**
New England	**45**	**523**	**2**	**59**	**47**	**582**
Connecticut	13	157	1	24	14	181
Maine	2	16	—*	—	2	16
Massachusetts	15	226	—	—	15	226
New Hampshire	4	60	—	—	4	60
Rhode Island	10	53	—	—	10	53
Vermont	1	11	1	35	2	46
Mid Atlantic	**81**	**1,236**	**11**	**99**	**92**	**1,335**
New Jersey	16	190	—	—	16	190
New York	42	517	7	57	49	574
Pennsylvania	23	529	4	42	27	571
East North Central	**170**	**3,106**	**21**	**499**	**191**	**3,605**
Illinois	44	869	6	209	50	1078
Indiana	1	21	—	—	1	21
Michigan	31	880	4	48	35	928
Ohio	74	1,019	7	89	81	1,108
Wisconsin	20	317	4	153	24	470
West North Central	**88**	**1,201**	**16**	**299**	**104**	**1,500**
Iowa	8	50	2	99	10	149
Kansas	18	210	1	3	19	213
Minnesota	48	572	11	191	59	763
Missouri	5	78	1	3	6	81
Nebraska	2	73	—	—	2	73
North Dakota	5	112	1	3	6	115
South Dakota	2	106	—	—	2	106
South Atlantic	**123**	**2,000**	**7**	**64**	**130**	**2,064**
Delaware	1	5	—	—	1	5
District of Columbia†	—	—	—	—	—	—
Florida	49	760	2	5	51	765
Georgia	9	99	1	2	10	101
Maryland	20	183	1	3	21	186
North Carolina	7	364	1	47	8	411
South Carolina	11	210	1	2	12	212
Virginia	22	301	1	5	23	306
West Virginia	4	78	—	—	4	78
East South Central	**23**	**403**	**—**	**—**	**23**	**403**
Alabama	2	57	—	—	2	57
Kentucky	5	69	—	—	5	69
Mississippi†	—	—	—	—	—	—
Tennessee	16	277	—	—	16	277
West South Central	**40**	**1,295**	**1**	**4**	**41**	**1,299**
Arkansas	6	605	—	—	6	605
Louisiana	6	68	1	4	7	72
Oklahoma	6	97	—	—	6	97
Texas	22	525	—	—	22	525
Mountain	**90**	**1,594**	**11**	**193**	**101**	**1,787**
Arizona	37	504	1	3	38	507
Colorado	35	519	3	62	38	581
Idaho	4	38	4	95	8	133
Montana	2	57	—	—	2	57
Nevada	2	72	—	—	2	72
New Mexico	2	21	—	—	2	21
Utah	5	64	3	33	8	97
Wyoming	3	319	—	—	3	319
Pacific	**130**	**1,831**	**3**	**26**	**133**	**1,857**
Alaska	7	53	1	21	8	74
California	72	755	1	2	73	757
Hawaii	6	204	—	—	6	204
Oregon	24	342	—	—	24	342
Washington	21	477	1	3	22	480
Territory	**14**	**131**	**1**	**18**	**15**	**149**
Puerto Rico	14	131	1	18	15	149
Multistate	**25**	**1,496**	**—**	**—**	**25**	**1,496**

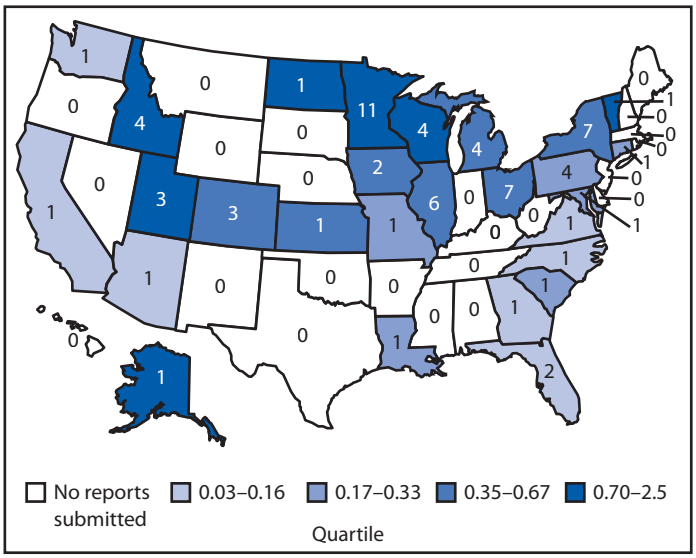
* No outbreaks reported.
† No foodborne or waterborne disease outbreaks reported.

FIGURE 2. Rate* of reported foodborne disease outbreaks and number† of outbreaks, by state — Foodborne Disease Outbreak Surveillance System, United States, 2012



* Incidence of outbreaks per 1 million population based on the 2012 U.S census estimates. Cutpoints for outbreak rate categories determined by using quartiles.
† N = 829 (includes 25 multistate outbreaks assigned as an outbreak to each state involved).

FIGURE 3. Rate* of reported waterborne disease outbreaks and number† of outbreaks by state — Waterborne Disease and Outbreak Surveillance System, United States, 2012



* Incidence of outbreaks per 1 million population based on the 2012 U.S census estimates. Cutpoints for outbreak rate categories determined by using quartiles.
† N = 73.

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