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

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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

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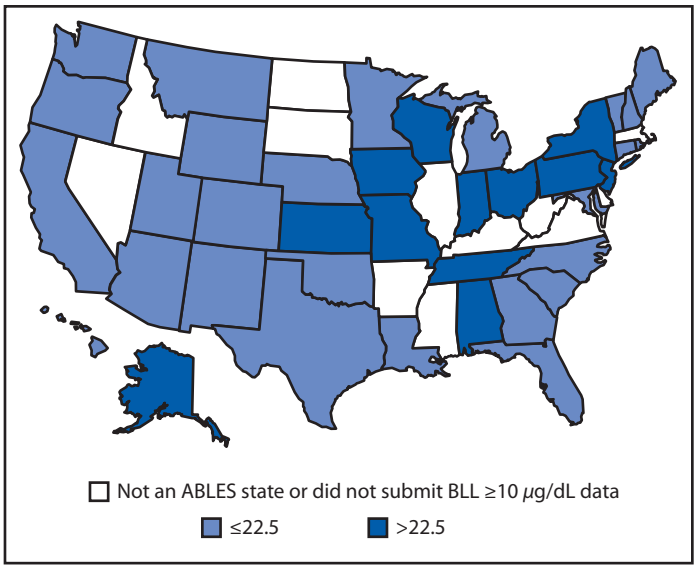
FIGURE 1. Prevalence rate* of adults with elevated blood lead levels ≥10 μg/dL, by state — State Adult Blood Lead Epidemiology and Surveillance programs, United States, 2012†

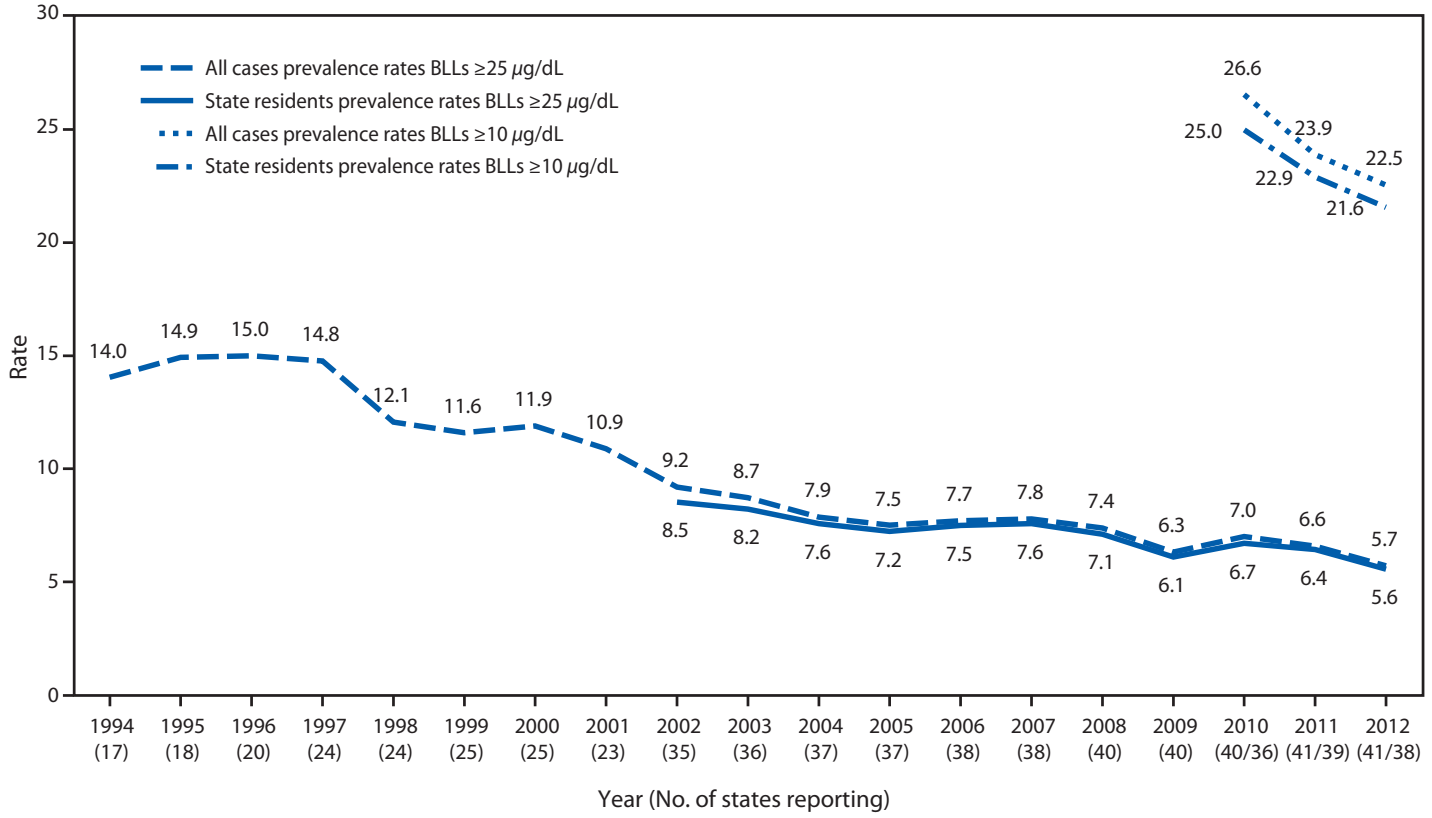


Abbreviation: ABLES = Adult Blood Level Epidemiology and Surveillance.

* 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.

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

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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.

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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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