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State-Specific Birth Rates for Teenagers — United States, 1990–1996

During the late 1980s, birth rates for teenagers in the United States increased sharply. Although rates have declined steadily since 1991 (*1,2*), age-, race-, ethnicity-, and state-specific rates have varied substantially. Despite recent declines, the U.S. birth rate for teenagers remains high compared with other industrialized countries. In 1996, an estimated 505,514 females aged <20 years gave birth; two thirds of births to teenagers are unintended (*3*). The adverse consequences of teenage childbearing include increased poverty for both mother and child. This report presents state-specific birth rates for females aged 15–19 years for 1991 and 1995 and compares race/ethnicity-specific birth rates for U.S. females aged <20 years for 1990–1996. These findings indicate that, during 1991–1995, birth rates among teenagers declined significantly in all but five states and the District of Columbia, and declines nationwide during 1991–1996 were especially large for teenagers aged 15–17 years and for black teenagers. Recent declines in abortions and abortion rates for teenagers, coupled with the trends described in this report for birth rates for teenagers, indicate that, since 1991, pregnancy rates for teenagers also have declined.

Data for 1990–1995 (the most recent year for which state-specific data were available) were derived from the complete file of all births registered in state vital statistics offices (*1,4*). Data for 1996 were derived from preliminary files containing 94% of births; the preliminary data series was initiated in 1995 (*2*). Births were reported by mother's state of residence. Population denominators for the birth rates were obtained from the Bureau of the Census (*5,6*). Race/ethnicity-specific data are presented for Hispanics, non-Hispanic whites, blacks, American Indians/Alaskan Natives, and Asians/Pacific Islanders. Data for non-Hispanic blacks are not presented separately from data for all blacks because both sets of data are virtually identical (97% of births to blacks are to non-Hispanic females). Because preliminary data for 1996 were not available for race/ethnicity cross-classification, the most recent data for non-Hispanic white females were for 1995.

The preliminary birth rate for teenagers aged 15–19 years in 1996 was 54.7 births per 1000 females aged 15–19 years, a 4% decline from the rate for 1995 (56.8) (Table 1). From 1986 to 1991, the rate increased 24% (from 50.2 to 62.1) (*1*); however, from 1991 to 1996, the rate declined 12%. Although rates declined in all subgroups, the percentage decline was greater for teenagers in younger age groups (14% for those

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TABLE 1. Rate* of births for females aged <20 years, by age group and race/ethnicity — United States, 1990–1996

Age group (yrs)/ Race/Ethnicity	1990	1991	1992	1993	1994	1995	1996†
10–14							
Hispanic§	2.4	2.4	2.6	2.7	2.7	2.7	2.6
White, non-Hispanic	0.5	0.5	0.5	0.5	0.5	0.4	NA¶
Black**	4.9	4.8	4.7	4.6	4.6	4.2	3.7
American Indian/ Alaskan Native††	1.6	1.6	1.6	1.4	1.9	1.8	1.8
Asian/Pacific Islander	0.7	0.8	0.7	0.6	0.7	0.7	0.6
Total	**1.4**	**1.4**	**1.4**	**1.4**	**1.4**	**1.3**	**1.2**
15–19							
Hispanic	100.3	106.7	107.1	106.8	107.7	106.7	101.6
White, non-Hispanic	42.5	43.4	41.7	40.7	40.4	39.3	NA
Black	112.8	115.5	112.4	108.6	104.5	96.1	91.7
American Indian/ Alaskan Native	81.1	85.0	84.4	83.1	80.8	78.0	75.1
Asian/Pacific Islander	26.4	27.4	26.6	27.0	27.1	26.1	25.4
Total	**59.9**	**62.1**	**60.7**	**59.6**	**58.9**	**56.8**	**54.7**
15–17							
Hispanic	*65.9*	*70.6*	*71.4*	*71.7*	*74.0*	*72.9*	*68.9*
White, non-Hispanic	*23.2*	*23.6*	*22.7*	*22.7*	*22.8*	*22.0*	*NA*
Black	*82.3*	*84.1*	*81.3*	*79.8*	*76.3*	*69.7*	*64.9*
American Indian/ Alaskan Native	*48.5*	*52.7*	*53.8*	*53.7*	*51.3*	*47.8*	*47.0*
Asian/Pacific Islander	*16.0*	*16.1*	*15.2*	*16.0*	*16.1*	*15.4*	*15.6*
Total	***37.5***	***38.7***	***37.8***	***37.8***	***37.6***	***36.0***	***34.0***
18–19							
Hispanic	*147.7*	*158.5*	*159.7*	*159.1*	*158.0*	*157.9*	*150.7*
White, non-Hispanic	*66.6*	*70.5*	*69.8*	*67.7*	*67.4*	*66.1*	*NA*
Black	*152.9*	*158.6*	*157.9*	*151.9*	*148.3*	*137.1*	*133.0*
American Indian/ Alaskan Native	*129.3*	*134.3*	*132.6*	*130.7*	*130.3*	*130.7*	*124.3*
Asian/Pacific Islander	*40.2*	*43.1*	*43.1*	*43.3*	*44.1*	*43.4*	*41.5*
Total	***88.6***	***94.4***	***94.5***	***92.1***	***91.5***	***89.1***	***86.5***

*Per 1000 females.
†Data for 1996 are preliminary.
§Persons of Hispanic ethnicity may be of any race.
¶Not available.
**Data for non-Hispanic blacks are not presented separately from data for all blacks because both sets of data are virtually identical (97% of births to blacks are to non-Hispanic females).
††Includes births to Aleuts and Eskimos.

aged 10–14 years and 12% for those aged 15–17 years) than for those who were older (8% for those aged 18–19 years).

In general, birth rates during 1991–1996 declined for teenagers in all racial/ethnic groups for which 1996 rates could be computed. During this period, the rate for blacks aged 15–17 years declined 23%, compared with a decline of 16% for those aged 18–19 years. From 1991 to 1995 (the most recent year for which data were available), the rate for non-Hispanic whites aged 15–17 years declined 7%, compared with a decline

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of 6% for those aged 18–19 years. From 1995 to 1996, rates for Hispanics aged 15–19 years declined 5%, even though rates in this group had been stable during 1991–1995. During 1991–1996, rates for American Indians/Alaskan Natives and Asians/Pacific Islanders aged 15–19 years declined 12% and 7%, respectively.

From 1991 to 1995 (the most recent year for which state-specific data were available), state-specific birth rates for teenagers varied substantially (Table 2).* During this period, rates for those aged 15–19 years declined in all states and the District of Columbia, and declined significantly in most (45) states. Statistically significant percentage declines ranged from 3.6% (Texas) to 26.9% (Vermont) (Table 2). Rates declined ≥12.0% in 12 states, 10.0%–11.9% in nine states, 8.0%–9.9% in 12 states, and <8.0% in 12 states (Figure 1).

Reported by: Reproductive Statistics Br, Div of Vital Statistics, National Center for Health Statistics, CDC.

Editorial Note: The findings in this report indicate that, from 1991 to 1996, birth rates for all U.S. teenagers declined; rates declined for all age groups and for all racial/ethnic groups. Birth rates are used to assess the effectiveness of programs to reduce teenage pregnancy; comprehensive assessment of such trends also requires that data on legal induced abortion and fetal loss be combined with live-birth data to produce teenage pregnancy rates. From 1991 to 1992, the teenage pregnancy rate declined 3% (from 115.0 pregnancies per 1000 females aged 15–19 years to 111.3 per 1000, respectively) (*4,7*), reflecting declines in both birth and abortion rates for teenagers. More recently, abortion statistics for 1993–1994 indicate a continued decline in abortions and abortion rates for teenagers (*8*). The declines in both birth and abortion rates for teenagers suggest a sustained decline in teenage pregnancy rates.

Teenage childbearing patterns varied substantially by race/ethnicity, possibly reflecting differences in income, education, access to health care, and health-care coverage. Rates historically have been higher for black and Hispanic teenagers than for other groups (*1,2,4*). Because recent declines in teenage birth rates have been greater for blacks, race-specific differences in rates have narrowed.

State-specific variations in birth rates for teenagers especially reflected differences in the racial/ethnic composition of the teenage population. Overall, rates were higher in states with higher proportions of Hispanic and/or black teenagers. For example, rates were higher in states in the South and Southwest with proportionately higher Hispanic and black populations (Table 2). The state-specific data in this report were not adjusted for these compositional differences because the race-/ethnicity-specific data are not available for 1995.

Although birth rates for teenagers were substantially higher during the early 1970s than during recent years, most teenagers giving birth during the earlier period were married; most of those giving birth during more recent periods were unmarried (*1,2,4*). The sustained increases in the percentage of births to unmarried teenagers slowed during the early 1990s.

Findings from the 1995 National Survey of Family Growth suggest two trends have contributed to the declines in teenage birth (and pregnancy) rates. First, the long-term increase in the proportion of teenaged women who were sexually experienced leveled

*State-specific rates for teenagers aged <15 years are excluded from this analysis because the numbers of births were too small to compute reliable rates for many states.

Birth Rates for Teenagers — Continued

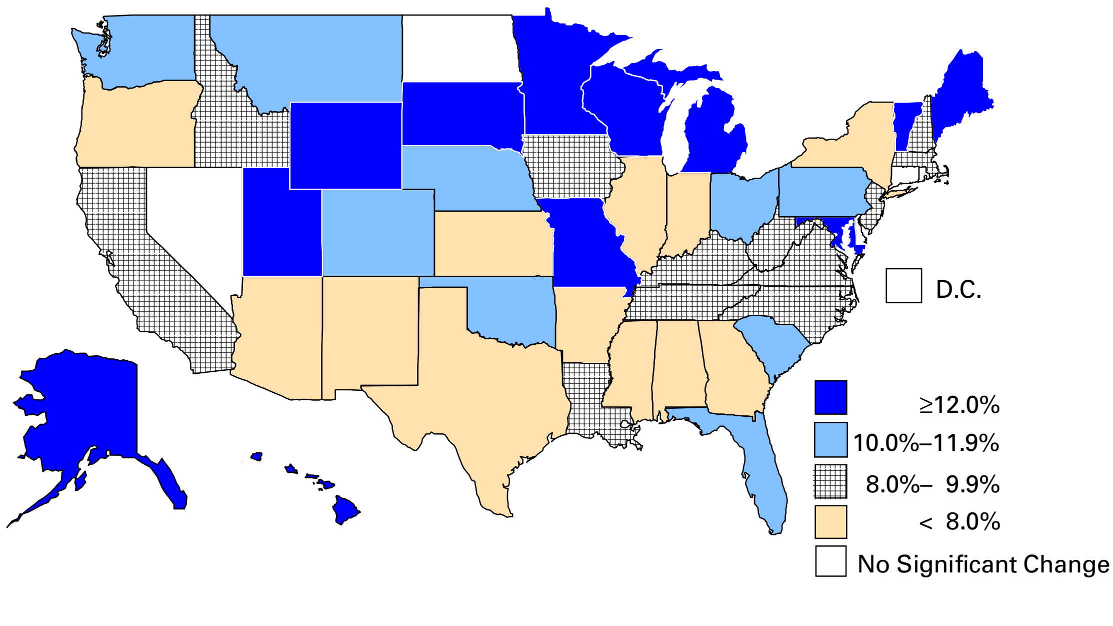
TABLE 2. Rate* of births for females aged 15–19 years, by age group and state, and percentage change for females aged 15–19 years — United States, 1991 and 1995

	1991			1995			% Change from 1991 to 1995
State	**15–17**	**18–19**	**15–19**	**15–17**	**18–19**	**15–19**	**15–19**
Alabama	47.7	109.5	**73.9**	47.2	104.3	**70.3**	– 4.9
Alaska	35.3	111.7	**65.4**	29.6	81.2	**50.2**	–23.3
Arizona	51.4	122.6	**80.7**	47.7	121.0	**75.7**	– 6.2
Arkansas	49.4	122.8	**79.8**	47.9	112.0	**73.5**	– 7.9
California	46.9	113.6	**74.7**	43.4	107.0	**68.2**	– 8.7
Colorado	35.3	91.4	**58.2**	32.7	80.3	**51.3**	–11.9
Connecticut	26.3	59.4	**40.4**	26.6	59.7	**39.3**	– 2.8†
Delaware	40.3	87.1	**61.1**	39.2	83.4	**57.0**	– 6.7†
District of Columbia	102.8	125.5	**114.4**	78.3	145.7	**106.8**	– 6.6†
Florida	44.0	102.9	**68.8**	40.0	96.4	**61.7**	–10.3
Georgia	50.6	110.9	**76.3**	48.3	106.7	**71.1**	– 6.8
Hawaii	34.7	91.5	**58.7**	27.6	76.3	**47.9**	–18.4
Idaho	29.3	90.8	**53.9**	26.7	82.7	**49.0**	– 9.1
Illinois	40.6	99.1	**64.8**	38.4	94.0	**59.9**	– 7.6
Indiana	35.2	95.2	**60.5**	34.7	92.2	**57.5**	– 5.0
Iowa	22.8	71.5	**42.6**	22.1	64.9	**38.6**	– 9.3
Kansas	29.4	94.1	**55.4**	29.9	87.6	**52.2**	– 5.8
Kentucky	42.6	105.5	**68.9**	38.9	98.2	**62.5**	– 9.2
Louisiana	51.1	111.4	**76.1**	45.3	106.8	**69.9**	– 8.1
Maine	23.8	70.1	**43.5**	19.2	56.7	**33.6**	–22.7
Maryland	35.2	79.8	**54.3**	32.0	72.6	**47.7**	–12.2
Massachusetts	25.2	52.9	**37.8**	21.7	53.5	**34.3**	– 9.2
Michigan	35.5	91.1	**59.0**	30.1	79.3	**49.2**	–16.6
Minnesota	20.7	61.4	**37.3**	19.4	53.8	**32.4**	–13.1
Mississippi	60.1	120.4	**85.6**	57.7	115.2	**80.6**	– 5.9
Missouri	38.7	100.7	**64.5**	32.6	91.9	**55.5**	–13.9
Montana	23.6	83.0	**46.7**	22.8	72.1	**41.8**	–10.6
Nebraska	23.6	69.2	**42.4**	22.0	61.4	**37.6**	–11.3
Nevada	43.9	119.1	**75.3**	43.8	121.1	**73.3**	– 2.6†
New Hampshire	17.1	53.8	**33.3**	14.6	57.1	**30.5**	– 8.4
New Jersey	26.3	62.9	**41.6**	24.4	59.6	**38.0**	– 8.7
New Mexico	50.0	124.4	**79.8**	48.9	115.2	**74.5**	– 6.6
New York	29.1	69.0	**46.0**	27.6	69.1	**44.0**	– 4.3
North Carolina	46.2	101.7	**70.5**	41.6	98.1	**64.1**	– 9.1
North Dakota	18.1	62.4	**35.6**	17.8	58.5	**33.5**	– 5.9†
Ohio	36.2	93.8	**60.5**	32.6	85.7	**53.4**	–11.8
Oklahoma	41.7	115.6	**72.1**	38.7	103.4	**64.0**	–11.3
Oregon	31.3	90.7	**54.9**	30.0	83.6	**50.7**	– 7.7
Pennsylvania	29.2	70.5	**46.9**	26.2	65.9	**41.7**	–11.1
Rhode Island	30.1	63.6	**45.4**	26.5	68.9	**43.1**	– 5.1†
South Carolina	48.0	105.4	**72.9**	43.5	97.1	**65.1**	–10.7
South Dakota	26.3	79.2	**47.5**	21.4	70.1	**40.5**	–14.8
Tennessee	47.8	112.1	**75.2**	42.0	108.1	**67.9**	– 9.7
Texas	50.4	119.3	**78.9**	50.6	115.4	**76.1**	– 3.6
Utah	27.0	79.8	**48.2**	25.2	67.7	**42.4**	–12.0
Vermont	21.3	62.0	**39.2**	10.8	57.0	**28.6**	–26.9
Virginia	31.8	81.2	**53.5**	30.7	74.8	**48.7**	– 9.1
Washington	31.0	86.5	**53.7**	28.0	78.1	**47.6**	–11.3
West Virginia	32.4	93.2	**57.8**	30.5	85.6	**52.7**	– 8.8
Wisconsin	24.8	71.2	**43.7**	22.6	62.1	**37.8**	–13.5
Wyoming	26.4	98.6	**54.2**	24.6	84.5	**47.2**	–13.0
Total	**38.7**	**94.4**	**62.1**	**36.0**	**89.1**	**56.8**	**– 8.5**

*Per 1000 females.
†Not statistically significant at $p<0.05$.

Birth Rates for Teenagers — Continued

FIGURE 1. Percentage decline in teenage birth rates*, by state — United States, 1991–1995



*Per 1000 females aged 15–19 years.

after having increased during 1982–1990 (from 47% to 55%). In addition, among sexually experienced teenagers who used any method of contraception, condom use increased substantially (*3*).

Recognition of the consequences of teenage pregnancy has prompted initiatives to reduce teenage pregnancy in state and local jurisdictions. Although a variety of programs have been developed to reduce the incidence of teenage pregnancy, only a limited number have been rigorously evaluated (*9*), and no single approach has been identified. Instead, states and local jurisdictions are being encouraged to consider a wide variety of approaches and strategies for preventing teenage pregnancy. The U.S. Department of Health and Human Services (DHHS) is coordinating and supporting an intensive multifaceted strategy to reduce teenage pregnancy (*10*). Basic elements of this strategy include increasing opportunities through welfare reform (e.g., provisions promoting personal responsibility for minor parents, abstinence education, incentives for states that reduce out-of-wedlock childbearing, and strict enforcement of child support laws); supporting approaches tailored to the unique needs of individual communities (e.g., DHHS' Community Coalition Partnership Program for the Prevention of Teen Pregnancy and the Adolescent Family Life Program); building partnerships among concerned citizens from all sectors of society; sharing information about promising and successful approaches in teenage pregnancy-prevention programs; and improving data collection, research, and evaluation.

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Use of Rollover Protective Structures — Iowa, Kentucky, New York, and Ohio, 1992–1997

Agriculture has one of the highest occupational fatality rates of all industries in the United States (*1*). Tractors and other types of agricultural equipment account for a large proportion of these fatalities, and farm-tractor rollovers account for approximately 130 work-related deaths each year in the United States (*2*). Although rollover protective structures (ROPS) are effective in protecting tractor operators from fatal injuries during rollovers (*3–5*), most tractors in the United States are not equipped with ROPS (*4–7*). Beginning in 1985, tractor manufacturers in the United Sates agreed to sell only tractors with ROPS; however, many older tractors without ROPS remain in use. To determine the prevalence of the use of ROPS, beginning in 1992, the Farm Family Health and Hazard Surveillance (FFHHS) program* collected state-based data on tractor age and use of ROPS from selected states. As of August 1997, four states had completed collection and analysis of data on farm tractors. This report summarizes the results of that survey, which indicates that 80%–90% of tractors in use in the four states were manufactured before 1985 and that <40% are equipped with ROPS.

*A cooperative agreement program funded by CDC's National Institute for Occupational Safety and Health to provide descriptive health and hazard data for a sample of farms in six states.

Rollover Protective Structures — Continued

FFHHS included population-based, cross-sectional surveys of health conditions and exposures to workplace hazards among farmers in six states (California, Colorado, Iowa, Kentucky, New York, and Ohio). For this report, data from four of these states were analyzed, including use of ROPS (Iowa, Kentucky, New York, and Ohio), year of tractor manufacture (Iowa, Kentucky, and Ohio), and the mean annual usage for these tractors (Iowa). The design of the surveys varied slightly from state to state. ROPS data were collected through a combination of telephone interviews (Iowa and Kentucky) and/or on-farm observational walkthroughs (Kentucky, New York, and Ohio).

Sampling frames varied by state and included all farms in the respective geographic study areas (Iowa and New York), only farms operated by farmers aged ≥55 years (Kentucky), and only cash grain farms (Ohio). The surveys were designed to provide prevalence estimates either for a specific geographic area within the state (New York and Ohio) or statewide (Iowa and Kentucky). State-specific prevalence estimates were based on numbers of sampled farms and tractors: Iowa—344 farms, 1128 tractors; Kentucky—149 farms, 282 tractors; New York—580 farms, 2513 tractors; and Ohio—315 farms, 919 tractors.

The proportions of tractors with ROPS varied inversely with the age of the tractors, and the numbers of older tractors in use at the time of the survey were substantial. Overall, the percentage of tractors equipped with ROPS was greatest in Iowa (39.5%) followed by New York (38.6%), Ohio (34.3%), and Kentucky (26.9%) (Table 1). The percentage of tractors manufactured since 1985 that were equipped with ROPS ranged from 79.7% (Kentucky) to 91.5% (Ohio). However, among tractors manufactured during 1955–1964 (approximately 15% of all tractors), <5% were equipped with ROPS, and among tractors manufactured before 1955 (approximately 13% of tractors), <1% were equipped with ROPS.

In Iowa, information was collected about the annual hours of use of tractors with and without ROPS (Table 2). Approximately 70% of tractors without ROPS in Iowa, representing an estimated 114,246 tractors statewide, were used for >100 hours each year. In 1995, the Iowa FFHHS asked farmers about tractors they had purchased during the previous year. A total of 45 farmers reported having purchased 63 tractors with a mean age of 18 years. Of these tractors, 25 (40%) were not equipped with ROPS.

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Editorial Note: The number of tractors in the United States equipped with ROPS has been estimated by CDC's Traumatic Injury Surveillance of Farmers (TISF) survey. TISF contains data from a random sample of farming operations across the United States and provides information on lost-time, work-related farm injuries and data about farm tractors used on these farms. Based on information for 1993, TISF indicated that the hours of tractor use, distribution of the age of tractors in use, and ROPS-use patterns were similar to those presented in this report for Iowa, Kentucky, New York, and Ohio (*6*).

Rollover Protective Structures — Continued

TABLE 1. Number and percentage of all tractors and percentage of tractors with rollover protective structures (ROPS), by state and year of manufacture — Iowa, Kentucky, New York, and Ohio, 1992–August 1997

State/Year of manufacture	No.*	(%)	% With ROPS
Iowa			
<1955	32,895	(12.8)	0.6
1955–1964	42,493	(16.5)	3.8
1965–1974	82,298	(32.0)	29.4
1975–1984	71,627	(27.8)	70.4
≥1985	28,155	(10.9)	89.5
Total	**257,468**	**(100.0)**	**39.5**
Kentucky			
<1955	24,751	(12.5)	0
1955–1964	28,315	(14.3)	0
1965–1974	41,185	(20.8)	0
1975–1984	61,778	(31.2)	32.2
≥1985	41,978	(21.2)	79.7
Total	**198,007**	**(100.0)**	**26.9**
Ohio			
<1955	127	(13.8)	0
1955–1964	131	(14.3)	3.8
1965–1974	277	(30.1)	17.3
1975–1984	278	(30.3)	68.3
≥1985	106	(11.5)	91.5
Total	**919**	**(100.0)**	**34.3**
New York†			
Total	**2,513**	**(100.0)**	**38.6**

*Iowa and Kentucky reported weighted estimates for tractors statewide; New York and Ohio reported numbers of tractors in the survey sample of counties or regions.
†New York has not completed analysis of year of manufacture.

TABLE 2. Number and percentage of tractors with and without rollover protective structures (ROPS), by annual hours of use — Iowa, 1992–August 1997

	Tractors with ROPS		Tractors without ROPS	
Annual hours of use	**No.**	**(%)**	**No.**	**(%)**
<100	6,341	(6.4)	46,271	(28.8)
100–200	29,459	(29.6)	67,118	(41.8)
201–400	44,177	(44.4)	32,747	(20.4)
>400	19,628	(19.7)	14,381	(9.0)
Total	**99,605**	**(100.0)**	**160,517**	**(100.0)**

In 1993, an estimated 4.8 million tractors were in use on U.S. farms (*6*). Of these, only 38% were equipped with a ROPS. However, 87% of the farm tractors manufactured since 1985 are reported to be equipped with ROPS, and 92% of the farm tractors manufactured since 1990 were equipped with ROPS. In comparison, for farm tractors aged ≥30 years (approximately 28% of tractors on farms), <5% are equipped with ROPS.

Rollover Protective Structures — Continued

The increase in installation of ROPS on tractors beginning in the mid-1980s especially reflects the 1985 American Society of Agricultural Engineers (ASAE) voluntary standard on ROPS (*8*)—this standard encouraged all manufacturers of farm tractors to install ROPS on all new tractors (tractors used in orchard and vineyard operations were exempted because of limitations of vertical clearances). Most tractor manufacturers responded to the voluntary standard by developing ROPS suitable for use on all types of farm tractors currently being manufactured. In addition, most manufacturers have developed ROPS retrofits for use on many older tractor models. Retrofit kits, including safety belts, are now offered to farmers at the manufacturer's cost. The combined use of safety belts and ROPS provide tractor operators with a high level of protection by ensuring that the operator remains within the zone of protection of the ROPS in the event of a rollover.

The ASAE standard has contributed substantially to reducing the risk for tractor-rollover–associated injuries among farmers and farm workers. However, no effective national program has been implemented to encourage retrofitting ROPS on the approximately 3 million tractors without ROPS that are currently in use on farms. CDC's National Institute for Occupational Safety and Health (NIOSH) and the Occupational Safety and Health Administration (OSHA) encourage the use of ROPS and safety belts on all farm tractors in the United States, and OSHA maintains a standard that requires ASAE-approved ROPS to be placed on all farm tractors manufactured after 1976. The OSHA standard is not actively enforced on farms with <11 employees, and family farms without other employees are exempt from OSHA regulations. NIOSH can promote ROPS use but has no authority to require their use.

In September 1997, the University of Iowa sponsored the Tractor Risk Abatement and Control Policy Conference in Iowa City, Iowa. A main focus of this conference was to identify innovative policies and programs to encourage installation of ROPS on tractors and to promote use of safety belts with ROPS.

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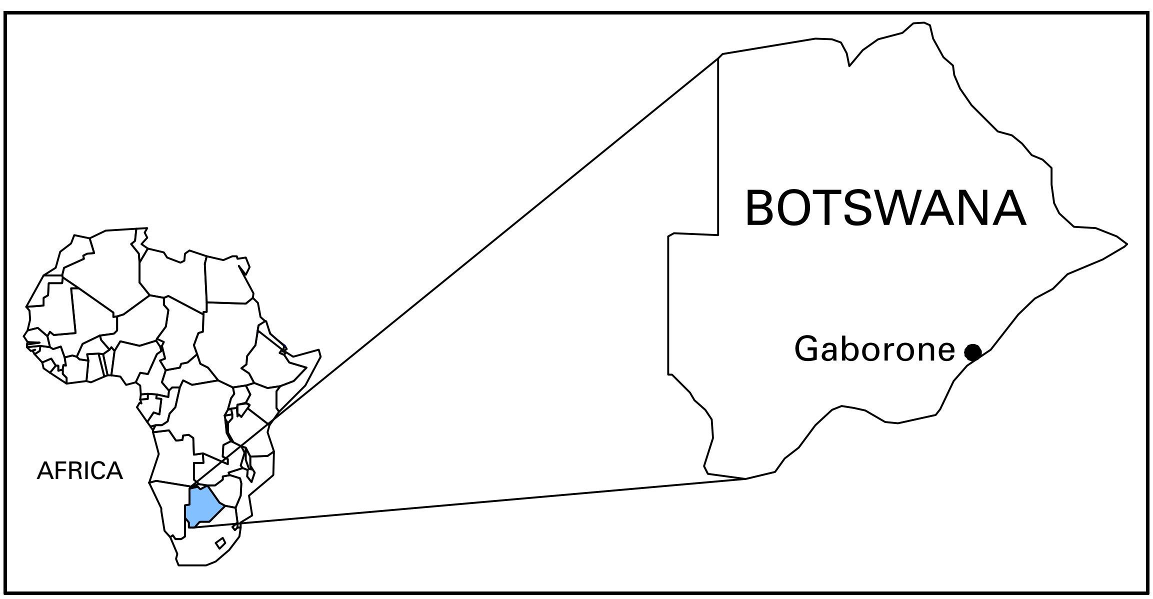
Tuberculin Skin Test Survey in a Pediatric Population with High BCG Vaccination Coverage — Botswana, 1996

Tuberculosis (TB) causes more deaths worldwide than any other infectious disease: in 1995, TB caused an estimated 3 million deaths, of which 170,000 (6%) occurred among children aged <15 years (*1,2*). Diagnosing TB in children often is difficult and relies on clinical judgement and use of algorithms that include chest radiography and the tuberculin skin test (TST). However, interpretation of TST reactivity can be complicated by many factors other than infection with *Mycobacterium tuberculosis*. For example, previous Bacille Calmette-Guérin (BCG) vaccination or exposure to nontuberculous mycobacteria can result in positive TST reactions indistinguishable from those caused by *M. tuberculosis* (*3*). In contrast, such factors as human immunodeficiency virus (HIV) infection, poor nutritional status, and recent viral or bacterial infections or vaccination with live virus can reduce response to the TST (*4*). To assess the use of the TST for diagnosing pediatric TB in a population with high BCG coverage, a TST survey was conducted during July–August 1996 among children aged 3–60 months in Botswana (1991 population: 1.3 million) (Figure 1). The findings indicate that most positive TSTs (induration ≥10 mm) among children in Botswana can be attributed to TB infection rather than previous BCG vaccination and that the TST remains useful for diagnosing pediatric TB in Botswana.

The rate of TB in Botswana in 1996 was high (444 cases per 100,000 population) compared with that in the United States (eight per 100,000), and approximately 90% of children in Botswana are vaccinated at birth with BCG. This survey and analysis assessed the prevalence of and risk factors for a positive TST reaction (e.g., BCG vaccination, crowding, symptoms of TB, and exposure to persons with TB) and the potential associations between TST reactivity and recent measles vaccination or oral poliovirus vaccination and poor nutritional status.

A multistage cluster survey was conducted in two urban and two rural districts using a modification of the Expanded Program on Immunization method (*5*). The sur-

FIGURE 1. Location of Botswana



Tuberculin Skin Test Survey — Continued

vey protocol was approved by the institutional review boards of CDC and the Health Research Development and Ethical Committee of the Botswana Ministry of Health. After obtaining informed consent from a parent or guardian, a questionnaire was administered to the parent or guardian of eligible children aged 3–60 months, and the child's vaccination card was reviewed, weight and height were obtained, and arms were examined for a BCG scar. Study nurses then administered 0.1 cm^3 of RT23 tuberculin intradermally (equivalent to 5 tuberculin units of purified protein derivative–standard, Mantoux method). Induration was measured independently by two study nurses at 48–72 hours, and an average of these two readings was used in data analysis (mean inter-reader variability was <0.3 mm). Data were weighted to account for the probability of selection. Comparisons and associations between categorical variables were evaluated using the chi-square test, and prevalence rate ratios (PRRs) with 95% confidence intervals (CIs) were calculated by the Mantel-Haenszel method.

Of the 1593 households visited, an adult occupant was contacted in 1484 (93%); at least one child aged 3–60 months was identified in 691 (47%) of these households. An adult respondent in 620 (90%) of the 691 households (representing 821 eligible children) agreed to allow at least one child to participate in the study. TSTs were administered to and read for 783 (95%) of the 821 children. The median age of participants was 28 months; 53% were female. The TSTs for the 783 children yielded indurations of zero for 617 (79%) children, 1–9 mm for 108 (14%), 10–14 mm for 43 (5%), and ≥15 mm for 15 (2%) (range: zero to 21 mm). Of the 724 children for whom vaccination cards were available, 721 had received BCG vaccine; BCG scars were observed in 524 (73%) children with documented BCG vaccination and in 34 (58%) without vaccination cards.

Children with BCG scars were twice as likely as those without scars to have a TST reaction ≥5 mm (95% CI=1.4–2.7); however, the rate of TST positivity (at the 10-mm cutoff) did not differ significantly between those with and without BCG scars (PRR=1.6, 95% CI=0.9–2.9) (Table 1). The prevalence of a positive TST was greater among children with reported contact with any person with active TB than among those without reported contact (PRR=1.9, 95% CI=1.0–3.6). In addition, the prevalence was greater among children with reported contact with a mother (PRR=5.1, 95% CI=2.1–12.4) or aunt (PRR=5.3, 95% CI=2.0–14.0) with TB than among those without any reported contact. The prevalence of TST positivity increased directly with the number of reported TB contacts (chi-square test for trend=0.03). TST positivity was not associated with other factors (e.g., age, interval since BCG vaccination, nutritional status, district, household crowding, or receipt of measles or oral poliovirus vaccine during the preceding 2 months). Although nine children had received anti-TB treatment previously, laboratory confirmation of TB disease in these children was not available; of these nine, TSTs were positive for two (among those with history of TB treatment, the PRR for positive TST was 3.2, 95% CI=1.3–8.0).

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Editorial Note: The increasing rates of reported TB in many countries in which BCG is administered underscore the importance of judicious interpretation of TSTs in children who have received BCG (*6*). In the United States, this consideration is important for many health-care workers who must interpret TSTs in BCG vaccinees, even though

TABLE 1. Tuberculin skin test (TST) positivity among children aged 3–60 months, by study characteristics — Botswana, July–August 1996*

	Sample size (n=783)		Positive TST (induration ≥10 mm)				
Characteristic	**No.**	**(%)**	**No.**	**(%)**	**PRR†**	**(95% CI§)**	**p value¶**
Sex							
Male	367	(47)	30	(8)	1.2	(0.8–1.8)	>0.05
Female	416	(53)	28	(7)		(Referent)	
Bacille Calmette-Guérin (BCG) status**							
Vaccinated	721	(92)	56	(8)	2.7	(0.9–8.4)	>0.05
Not vaccinated	62	(8)	2	(3)		(Referent)	
BCG scar							
Yes	558	(71)	46	(8)	1.6	(0.9–2.9)	>0.05
No	223	(29)	12	(5)		(Referent)	
Measles vaccination during the preceding 2 months							
Yes	228	(29)	14	(6)	0.8	(0.4–1.4)	>0.05
No	555	(71)	44	(8)		(Referent)	
Oral poliovirus vaccination during the preceding 2 months							
Yes	410	(52)	27	(7)	0.7	(0.3–1.5)	>0.05
No	373	(48)	31	(8)		(Referent)	
Any symptoms suggestive of tuberculosis††							
Yes	353	(45)	26	(7)	1.0	(0.6–1.6)	>0.05
No	430	(55)	32	(7)		(Referent)	
Height-for-age Z score ≤2§§							
Yes	106	(14)	9	(8)	1.3	(0.7– 2.2)	>0.05
No	677	(86)	49	(7)		(Referent)	
Weight-for-height Z score ≤2§§							
Yes	47	(6)	3	(6)	0.9	(0.3– 2.6)	>0.05
No	736	(94)	55	(7)		(Referent)	

Age group (mos)¶¶							
3–12	136	(17)	9	(7)	1.1	(0.4– 2.6)	>0.05
13–24	190	(24)	16	(8)	1.4	(0.6– 3.0)	>0.05
25–36	158	(20)	12	(8)	1.2	(0.5– 2.8)	>0.05
37–48	152	(20)	12	(8)	1.3	(0.6– 2.9)	>0.05
49–60	145	(19)	9	(6)		(Referent)	
TB contact* **							
None	690	(88)	46	(7)		(Referent)	
Any	93	(12)	12	(13)	1.9	(1.0– 3.6)	0.02
Mother	*12*	*(2)*	*4*	*(33)*	*5.1*	*(2.1–12.4)*	*<0.01*
Father	*3*	*(<1)*	*1*	*(33)*	*4.6*	*(0.9–25.2)*	*>0.05*
Sibling	*5*	*(1)*	*0*	—		*Undefined*	
Aunt	*11*	*(1)*	*4*	*(36)*	*5.3*	*(2.0–14.0)*	*<0.01*
Grandmother	*23*	*(3)*	*4*	*(17)*	*2.5*	*(1.0– 6.3)*	*>0.05*

* Study participants include only children who had TSTs read. Two categories (scar and age) contain information on only 781 patients because of missing data.

† Prevalence rate ratio is the rate of TST positivity among children with the characteristic compared with the rate of TST positivity among children without the characteristic.

§ Confidence interval.

¶ p values are nonweighted; PRRs and corresponding CIs are weighted.

** Only considered "vaccinated" if this was documented on a vaccination card. If vaccination card was not available, the child was counted as "unvaccinated."

†† Cough, fever, or enlarged glands, as reported by the child's parent or guardian.

§§ Z scores, or standard deviation (SD) units, have a normal distribution and SD of 1. Z scores that are at least 2 SD units below the reference median indicate malnutrition. Low height-for-age indicates chronic malnutrition, whereas low weight-for-height Z scores suggest acute malnutrition or illness.

¶¶ PRRs and corresponding CIs for age compare the rate of TST positivity among children of the specific age group with the rate of TST positivity among the children with the lowest rate of TST positivity (i.e., those aged 49–60 months). The PRRs for age are nonweighted.

*** The referent population is comprised of children for whom no TB contact was reported. PRRs for TB contact represent the ratio of the risk for TST positivity among children with the contact to the rate of TST positivity among children without any TB contact.

Tuberculin Skin Test Survey — Continued

BCG vaccine is not administered in the United States. For example, TSTs are frequently administered to assist in contact tracing and screening efforts among foreign-born persons in the United States; in 1996, foreign-born persons accounted for 36% of all U.S. TB cases, and many of these persons had received BCG (*7,8*).

WHO recommends BCG vaccination of infants in countries with high TB rates, and an estimated 71% of infants worldwide born in 1989 received BCG. Mean TST size in BCG-vaccinated children varies with factors including the strain and dose of BCG used, interval since vaccination, number of BCG vaccinations administered, subsequent TST placement, and age and nutritional status of the child at the time of vaccination; previous reports indicate the mean size of induration in such children may range from 3 mm to 18 mm (*9*). In addition, previous studies indicate that TST induration attributed to BCG cross-reactivity decreases with increasing time since BCG administration (*10*) and that BCG efficacy does not correlate with postvaccination TST induration (*9*).

The findings of this survey suggest that, in Botswana, a TST with induration ≥10 mm can be attributed to TB infection rather than previous BCG vaccination. Of 783 children studied, 617 (79%) had zero reactivity after a TST, indicating that BCG vaccination did not result in TST induration in most study participants. The higher prevalence of positive TST reactions in children who had a reported TB contact and the direct relation between positivity and increasing number of TB contacts suggests that the positive reactions probably resulted from infection with *M. tuberculosis* rather than BCG vaccination. In addition, presence of a BCG scar was not associated with a positive TST, and TST size did not vary inversely with age, suggesting the continued usefulness of TST for diagnosing pediatric TB in Botswana.

Factors potentially causing false-negative TSTs in this study included HIV seropositivity, altered potency of the tuberculin agent, and malnutrition. However, in Botswana, an estimated 7% of children aged 3–60 months are HIV-positive, which would not account for the large proportion of children with an induration of zero. In addition, the potency of the tuberculin used in the study was confirmed at the Statens Serum Institute in Copenhagen, Denmark. Finally, poor nutritional status (based on low height-for-age and weight-for-weight Z scores) was not associated with TST negativity.

Although BCG vaccination can cause a TST reaction that is indistinguishable from reactivity caused by *M. tuberculosis* infection, a history of BCG vaccination is not a contraindication to skin testing (*10*). Factors associated with an increased probability that a positive TST reaction is caused by *M. tuberculosis* infection rather than BCG vaccination include 1) large reaction size; 2) history of previous contact between the reactive person and a patient with TB; 3) a family history of TB; 4) country of origin with a high prevalence of TB; and 5) longer interval between BCG vaccination and TST administration (*10*). Health-care workers should be encouraged to use the TST in pediatric TB diagnosis and in screening high-risk populations for tuberculous infection, even in persons who have received BCG vaccine.

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Tuberculin Skin Test Survey — Continued

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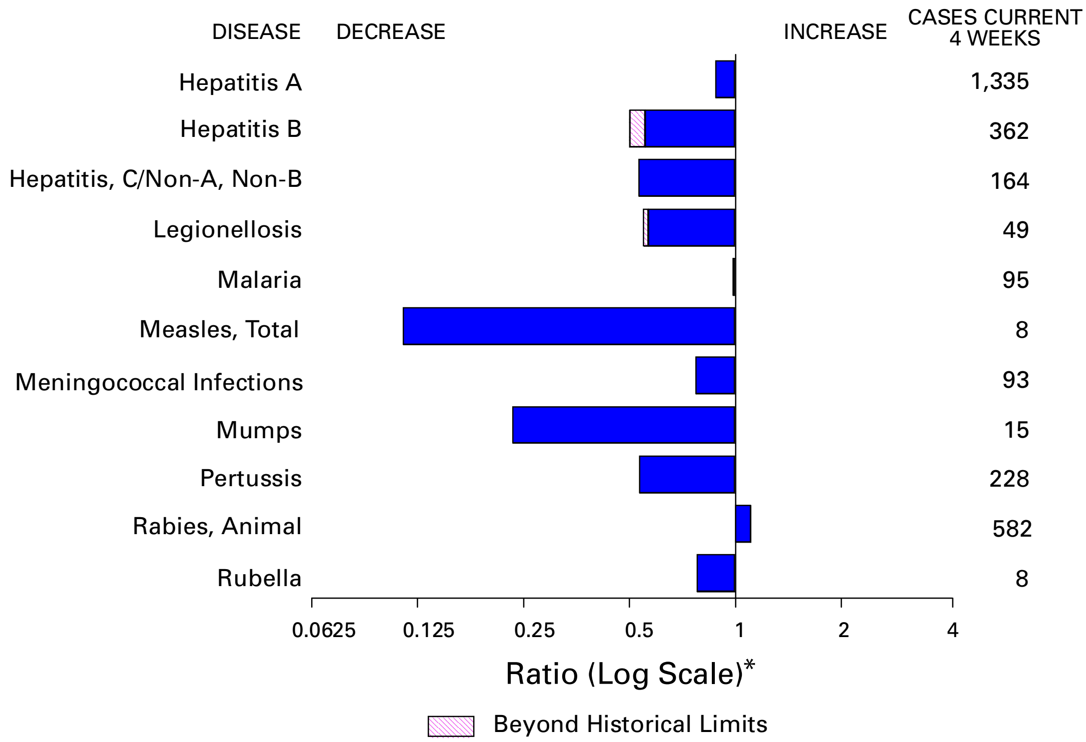
Erratum: Vol. 46, No. 35

In the article "Update: *Staphylococcus aureus* with Reduced Susceptibility to Vancomycin—United States, 1997," two errors appear on page 813 in the case report for Case 2. In line 8, 8 µ/mL should have been 8 µg/mL, and in line 11, the isolate was not susceptible to imipenem.

In the same issue, the erratum title on page 827 was incorrect. The title should have been "Erratum: Vol. 46, No. 33" for the article "*Staphylococcus aureus* with Reduced Susceptibility to Vancomycin—United States, 1997," published on page 765 of issue number 33.

FIGURE I. Selected notifiable disease reports, comparison of provisional 4-week totals ending September 6, 1997, with historical data — United States



*Ratio of current 4-week total to mean of 15 4-week totals (from previous, comparable, and subsequent 4-week periods for the past 5 years). The point where the hatched area begins is based on the mean and two standard deviations of these 4-week totals.

TABLE I. Summary — provisional cases of selected notifiable diseases, United States, cumulative, week ending September 6, 1997 (36th Week)

	Cum. 1997		Cum. 1997
Anthrax	-	Plague	2
Brucellosis	48	Poliomyelitis, paralytic	-
Cholera	10	Psittacosis	36
Congenital rubella syndrome	3	Rabies, human	2
Cryptosporidiosis*	1,040	Rocky Mountain spotted fever (RMSF)	267
Diphtheria	5	Streptococcal disease, invasive Group A	1,045
Encephalitis: California*	47	Streptococcal toxic-shock syndrome*	26
eastern equine*	2	Syphilis, congenital¶	196
St. Louis*	2	Tetanus	29
western equine*	1	Toxic-shock syndrome	84
Hansen Disease	70	Trichinosis	6
Hantavirus pulmonary syndrome*†	15	Typhoid fever	214
Hemolytic uremic syndrome, post-diarrheal*	35	Yellow fever	-
HIV infection, pediatric*§	173		

-:no reported cases
*Not notifiable in all states.
†Updated weekly from reports to the Division of Viral and Rickettsial Diseases, National Center for Infectious Diseases (NCID).
§Updated monthly to the Division of HIV/AIDS Prevention–Surveillance and Epidemiology, National Center for HIV, STD, and TB Prevention (NCHSTP), last update August 26, 1997.
¶Updated from reports to the Division of STD Prevention, NCHSTP.

TABLE II. Provisional cases of selected notifiable diseases, United States, weeks ending September 6, 1997, and September 7, 1996 (36th Week)

Reporting Area	AIDS		Chlamydia		*Escherichia coli* O157:H7		Gonorrhea		Hepatitis C/NA,NB	
					NETSS†	PHLIS§				
	Cum. 1997*	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1997	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996
UNITED STATES	39,488	45,513	298,835	295,131	1,471	848	187,335	216,238	2,133	2,401
NEW ENGLAND	1,740	1,966	11,729	11,697	129	66	3,962	4,434	46	69
Maine	42	31	658	635	11	-	38	38	-	-
N.H.	26	58	510	500	6	7	67	110	8	7
Vt.	30	14	274	272	6	1	36	41	2	17
Mass.	604	995	4,851	4,565	74	55	1,480	1,475	29	39
R.I.	113	123	1,339	1,354	4	-	306	357	7	6
Conn.	925	745	4,097	4,371	28	3	2,035	2,413	-	-
MID. ATLANTIC	12,364	12,704	40,760	43,259	90	22	24,658	28,476	239	193
Upstate N.Y.	1,935	1,671	N	N	60	-	3,905	5,073	178	153
N.Y. City	6,469	7,052	21,267	22,351	8	-	9,519	10,397	-	3
N.J.	2,526	2,392	6,239	8,446	22	16	4,886	5,934	-	-
Pa.	1,434	1,589	13,254	12,462	N	6	6,348	7,072	61	37
E.N. CENTRAL	2,905	3,608	39,843	58,895	276	147	25,166	39,663	383	341
Ohio	626	810	7,398	14,247	66	32	5,132	10,119	13	24
Ind.	411	459	6,158	6,483	49	-	4,053	4,212	10	7
Ill.	1,186	1,576	7,327	16,684	47	-	3,568	11,813	61	67
Mich.	499	566	12,692	14,129	114	82	9,644	10,180	299	243
Wis.	183	197	6,268	7,352	N	33	2,769	3,339	-	-
W.N. CENTRAL	729	1,047	16,004	21,717	330	221	7,417	10,437	113	66
Minn.	138	188	U	3,560	155	135	U	1,610	3	1
Iowa	79	69	2,857	2,717	76	28	758	680	22	30
Mo.	318	537	7,955	8,775	34	44	4,948	5,878	73	17
N. Dak.	11	11	546	650	9	6	37	23	2	-
S. Dak.	7	9	865	1,004	19	-	94	124	-	-
Nebr.	72	74	1,147	1,929	23	-	426	712	2	6
Kans.	104	159	2,634	3,082	14	8	1,154	1,410	11	12
S. ATLANTIC	9,404	11,155	62,789	33,832	143	92	61,358	63,953	197	132
Del.	175	212	1,276	1,148	3	4	819	1,007	-	-
Md.	1,167	1,320	4,869	U	13	6	9,012	7,355	11	2
D.C.	657	803	N	N	2	-	3,004	3,099	-	-
Va.	769	793	7,868	7,521	N	18	5,215	6,411	20	10
W. Va.	79	83	2,028	1,485	N	1	638	519	13	9
N.C.	598	605	12,590	U	43	29	12,258	12,727	38	34
S.C.	545	583	8,578	U	7	7	8,071	7,747	30	21
Ga.	1,156	1,641	9,239	7,947	34	-	10,513	13,144	U	-
Fla.	4,258	5,115	16,341	15,731	40	27	11,828	11,944	85	56
E.S. CENTRAL	1,370	1,558	22,779	20,811	72	30	22,776	22,097	245	415
Ky.	234	269	4,350	4,626	21	-	2,769	2,860	11	26
Tenn.	576	578	8,723	9,040	37	30	7,453	7,840	173	310
Ala.	333	431	5,750	5,781	11	-	8,057	9,246	7	3
Miss.	227	280	3,956	1,364	3	-	4,497	2,151	54	76
W.S. CENTRAL	4,187	4,568	40,057	38,043	45	8	25,532	26,411	293	249
Ark.	160	185	905	1,227	9	1	1,893	2,902	1	8
La.	716	1,077	6,404	4,962	6	3	6,047	5,187	145	141
Okla.	215	187	5,167	5,324	3	1	3,408	3,373	7	1
Tex.	3,096	3,119	27,581	26,530	27	3	14,184	14,949	140	99
MOUNTAIN	1,114	1,340	16,420	17,241	172	90	5,508	5,344	295	420
Mont.	33	23	697	849	21	-	31	24	15	11
Idaho	37	28	993	1,073	18	13	78	78	40	92
Wyo.	13	4	398	432	12	-	40	29	130	129
Colo.	278	360	1,896	1,533	68	42	1,336	1,116	28	41
N. Mex.	112	116	2,238	2,633	6	4	908	535	42	61
Ariz.	273	373	7,321	7,622	N	23	2,428	2,651	24	50
Utah	88	124	1,116	1,033	37	-	170	200	3	18
Nev.	280	312	1,761	2,066	10	8	517	711	13	18
PACIFIC	5,675	7,566	48,454	49,636	214	165	10,958	15,423	322	516
Wash.	457	507	6,150	6,688	53	54	1,298	1,448	19	41
Oreg.	222	338	3,328	3,811	56	63	504	588	3	6
Calif.	4,918	6,564	36,915	37,124	94	41	8,585	12,773	196	321
Alaska	36	23	1,017	813	11	1	259	300	-	2
Hawaii	42	134	1,044	1,200	N	6	312	314	104	146
Guam	2	4	31	267	N	-	3	46	-	6
P.R.	1,382	1,511	U	U	30	U	418	456	87	126
V.I.	75	17	N	N	N	U	-	-	-	-
Amer. Samoa	-	-	-	-	N	U	-	-	-	-
C.N.M.I.	1	-	N	N	N	U	17	11	2	-

N: Not notifiable U: Unavailable -: no reported cases C.N.M.I.: Commonwealth of Northern Mariana Islands

*Updated monthly to the Division of HIV/AIDS Prevention–Surveillance and Epidemiology, National Center for HIV, STD, and TB Prevention, last update August 26, 1997.

†National Electronic Telecommunications System for Surveillance.

§Public Health Laboratory Information System.

TABLE II. (Cont'd.) Provisional cases of selected notifiable diseases, United States, weeks ending September 6, 1997, and September 7, 1996 (36th Week)

Reporting Area	Legionellosis		Lyme Disease		Malaria		Syphilis (Primary & Secondary)		Tuberculosis		Rabies, Animal
	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997
UNITED STATES	580	614	5,121	9,595	1,136	1,057	5,533	8,163	11,705	12,972	5,260
NEW ENGLAND	45	34	1,236	2,850	65	40	102	114	297	291	808
Maine	2	2	8	25	1	7	-	-	11	17	143
N.H.	5	1	19	35	7	1	-	1	10	9	28
Vt.	10	4	6	19	2	2	-	-	4	1	95
Mass.	10	18	207	142	24	14	47	54	166	141	169
R.I.	5	9	220	331	5	6	2	1	26	24	23
Conn.	13	N	776	2,298	26	10	53	58	80	99	350
MID. ATLANTIC	105	152	3,043	5,601	272	320	263	341	2,159	2,394	1,067
Upstate N.Y.	28	50	1,285	2,669	47	56	22	52	293	280	809
N.Y. City	4	10	30	279	141	194	63	100	1,124	1,245	U
N.J.	15	9	743	1,260	65	50	101	119	440	498	114
Pa.	58	83	985	1,393	19	20	77	70	302	371	144
E.N. CENTRAL	175	193	59	338	98	132	446	1,233	1,120	1,400	116
Ohio	81	64	39	19	15	9	133	466	203	201	77
Ind.	30	38	17	19	12	12	103	156	100	119	10
Ill.	7	28	3	8	31	67	44	344	545	759	12
Mich.	49	32	-	6	30	30	93	133	186	250	17
Wis.	8	31	U	286	10	14	73	134	86	71	-
W.N. CENTRAL	45	32	82	120	41	33	109	250	373	337	346
Minn.	1	3	56	38	19	15	U	31	99	77	37
Iowa	11	8	5	15	9	2	6	15	43	44	121
Mo.	13	5	15	36	6	9	76	175	153	141	16
N. Dak.	2	-	-	-	2	1	-	-	8	6	55
S. Dak.	2	2	1	-	-	-	-	-	9	15	51
Nebr.	12	11	2	2	1	2	5	10	14	14	1
Kans.	4	3	3	29	4	4	22	19	47	40	65
S. ATLANTIC	86	80	447	465	239	182	2,291	2,625	2,252	2,417	2,162
Del.	8	9	31	150	4	3	17	26	18	30	47
Md.	17	17	306	193	67	55	636	473	221	200	389
D.C.	3	7	7	3	12	7	82	96	73	93	4
Va.	17	13	37	33	51	32	169	300	194	201	443
W. Va.	N	N	3	11	-	3	3	2	41	44	66
N.C.	11	7	24	58	12	19	514	715	302	326	649
S.C.	3	4	2	4	11	9	269	276	214	255	135
Ga.	-	3	1	1	25	16	377	472	422	440	221
Fla.	27	20	36	12	57	38	224	265	767	828	208
E.S. CENTRAL	35	35	53	60	23	27	1,242	1,773	879	957	216
Ky.	5	3	7	21	4	7	100	97	120	161	23
Tenn.	24	17	29	17	6	11	543	586	304	325	130
Ala.	2	3	5	6	10	3	323	393	299	300	63
Miss.	4	12	12	16	3	6	276	697	156	171	-
W.S. CENTRAL	13	17	56	83	15	24	789	1,300	1,622	1,455	230
Ark.	-	1	15	20	4	-	71	184	134	132	27
La.	2	1	2	1	8	4	256	372	152	11	2
Okla.	3	5	12	13	3	-	85	137	125	116	77
Tex.	8	10	27	49	-	20	377	607	1,211	1,196	124
MOUNTAIN	40	32	13	6	58	42	117	105	335	422	114
Mont.	1	1	-	-	2	6	-	-	7	14	33
Idaho	2	-	2	-	-	-	-	4	8	6	-
Wyo.	1	3	3	3	2	3	-	2	2	5	26
Colo.	14	7	4	-	26	17	9	24	61	54	-
N. Mex.	2	1	1	1	8	2	8	4	18	58	9
Ariz.	9	13	1	-	8	6	86	57	169	166	39
Utah	7	2	-	1	3	4	5	2	24	39	3
Nev.	4	5	2	1	9	4	9	12	46	80	4
PACIFIC	36	39	132	72	325	257	174	422	2,668	3,299	201
Wash.	6	5	6	12	17	15	8	8	211	186	-
Oreg.	-	-	15	14	16	16	5	6	114	124	12
Calif.	29	30	111	45	287	216	159	406	2,166	2,804	167
Alaska	-	1	-	-	3	3	1	-	57	56	22
Hawaii	1	3	-	1	2	7	1	2	120	129	-
Guam	-	1	-	-	-	-	-	3	5	55	-
P.R.	-	-	-	-	5	1	173	159	129	130	50
V.I.	-	-	-	-	-	-	-	-	-	-	-
Amer. Samoa	-	-	-	-	-	-	-	-	-	-	-
C.N.M.I.	-	-	-	-	-	-	9	1	2	-	-

N: Not notifiable U: Unavailable -: no reported cases

TABLE III. Provisional cases of selected notifiable diseases preventable by vaccination, United States, weeks ending September 6, 1997, and September 7, 1996 (36th Week)

	H. influenzae, invasive		Hepatitis (Viral), by type				Measles (Rubeola)					
			A		B		Indigenous		Imported†		Total	
Reporting Area	Cum. 1997*	Cum. 1996	Cum. 1997	Cum. 1996	Cum. 1997	Cum. 1996	1997	Cum. 1997	1997	Cum. 1997	Cum. 1997	Cum. 1996
UNITED STATES	743	760	18,644	18,741	5,847	6,584	1	59	2	45	104	434
NEW ENGLAND	42	26	443	252	102	149	-	11	-	6	17	15
Maine	4	-	47	14	6	2	-	-	-	1	1	-
N.H.	5	10	22	10	9	9	-	1	-	-	1	-
Vt.	3	1	9	6	5	11	-	-	-	-	-	2
Mass.	26	13	170	129	38	52	-	10	-	4	14	12
R.I.	2	2	107	13	12	9	-	-	-	-	-	-
Conn.	2	-	88	80	32	66	-	-	-	1	1	1
MID. ATLANTIC	91	158	1,300	1,293	857	1,003	-	14	-	8	22	35
Upstate N.Y.	21	40	211	300	187	238	-	2	-	3	5	9
N.Y. City	24	42	482	391	310	360	-	5	-	2	7	11
N.J.	36	40	193	255	155	194	-	2	-	-	2	3
Pa.	10	36	414	347	205	211	-	5	-	3	8	12
E.N. CENTRAL	121	129	1,794	1,760	626	763	-	6	-	3	9	17
Ohio	71	74	238	570	59	91	-	-	-	-	-	2
Ind.	13	7	209	227	72	100	-	-	-	-	-	-
Ill.	26	35	419	503	157	239	-	6	-	1	7	3
Mich.	10	8	828	304	306	266	-	-	-	2	2	3
Wis.	1	5	100	156	32	67	-	-	-	-	-	9
W.N. CENTRAL	41	34	1,482	1,591	318	341	1	10	-	3	13	22
Minn.	27	21	132	90	28	40	1	1	-	3	4	18
Iowa	6	3	319	252	29	47	-	-	-	-	-	-
Mo.	4	7	735	798	225	200	-	1	-	-	1	3
N. Dak.	-	-	10	75	3	2	-	-	-	-	-	-
S. Dak.	2	1	18	41	1	3	-	8	-	-	8	-
Nebr.	1	1	70	105	10	25	U	-	U	-	-	-
Kans.	1	1	198	230	22	24	-	-	-	-	-	1
S. ATLANTIC	127	140	1,235	801	884	897	-	1	1	10	11	11
Del.	-	2	24	11	4	6	-	-	-	-	-	1
Md.	46	49	168	136	120	119	-	-	-	2	2	2
D.C.	-	5	17	22	25	27	-	-	-	1	1	-
Va.	11	6	151	115	86	98	-	-	-	1	1	3
W. Va.	3	7	8	13	11	18	-	-	-	-	-	-
N.C.	17	22	138	101	180	254	-	-	1	2	2	2
S.C.	4	4	76	42	77	61	-	-	-	1	1	-
Ga.	24	31	266	86	94	8	-	-	-	1	1	2
Fla.	22	14	387	275	287	306	-	1	-	2	3	1
E.S. CENTRAL	37	23	440	982	474	583	-	-	-	-	-	2
Ky.	5	5	58	31	26	52	-	-	-	-	-	-
Tenn.	24	9	275	648	322	330	-	-	-	-	-	2
Ala.	8	8	66	141	49	47	-	-	-	-	-	-
Miss.	-	1	41	162	77	154	U	-	U	-	-	-
W.S. CENTRAL	36	32	3,847	3,610	715	771	-	3	-	4	7	25
Ark.	1	-	184	320	42	56	-	-	-	-	-	-
La.	8	3	150	109	97	84	-	-	-	-	-	-
Okla.	24	25	1,118	1,599	34	24	-	-	-	-	-	-
Tex.	3	4	2,395	1,582	542	607	-	3	-	4	7	25
MOUNTAIN	76	39	3,065	3,026	638	796	-	7	1	2	9	156
Mont.	-	-	59	82	7	8	-	-	-	-	-	-
Idaho	1	1	98	154	25	70	-	-	-	-	-	1
Wyo.	3	-	28	26	29	33	-	-	-	-	-	1
Colo.	12	11	309	319	119	95	-	-	-	-	-	7
N. Mex.	8	9	234	289	195	282	-	1	-	-	1	16
Ariz.	29	12	1,588	1,203	145	182	-	5	-	-	5	8
Utah	3	6	439	667	71	68	-	-	1	1	1	118
Nev.	20	-	310	286	47	58	-	1	-	1	2	5
PACIFIC	172	179	5,038	5,426	1,233	1,281	-	7	-	9	16	151
Wash.	3	2	366	334	49	64	-	1	-	1	2	38
Oreg.	30	24	260	639	76	80	-	-	-	-	-	12
Calif.	128	146	4,300	4,363	1,083	1,121	-	4	-	7	11	34
Alaska	4	5	25	33	17	8	-	-	-	-	-	63
Hawaii	7	2	87	57	8	8	-	2	-	1	3	4
Guam	-	-	-	6	1	-	U	-	U	-	-	-
P.R.	-	1	219	159	1,045	686	-	-	-	-	-	2
V.I.	-	-	-	29	-	26	U	-	U	-	-	-
Amer. Samoa	-	-	-	-	-	-	U	-	U	-	-	-
C.N.M.I.	6	10	1	1	34	5	U	1	U	-	1	-

N: Not notifiable U: Unavailable -: no reported cases

*Of 165 cases among children aged <5 years, serotype was reported for 87 and of those, 35 were type b.

†For imported measles, cases include only those resulting from importation from other countries.

TABLE III. (Cont'd.) Provisional cases of selected notifiable diseases preventable by vaccination, United States, weeks ending September 6, 1997, and September 7, 1996 (36th Week)

Reporting Area	Meningococcal Disease		Mumps			Pertussis			Rubella		
	Cum. 1997	Cum. 1996	1997	Cum. 1997	Cum. 1996	1997	Cum. 1997	Cum. 1996	1997	Cum. 1997	Cum. 1996
UNITED STATES	2,340	2,287	4	391	493	64	3,439	3,616	4	135	213
NEW ENGLAND	148	95	-	8	1	-	636	811	-	1	25
Maine	17	10	-	-	-	-	6	27	-	-	-
N.H.	13	3	-	-	-	-	80	72	-	-	-
Vt.	4	3	-	-	-	-	187	55	-	-	2
Mass.	72	37	-	2	1	-	337	611	-	1	20
R.I.	14	10	-	5	-	-	12	25	-	-	-
Conn.	28	32	-	1	-	-	14	21	-	-	3
MID. ATLANTIC	214	246	-	41	59	-	243	252	-	29	10
Upstate N.Y.	54	64	-	7	18	-	82	127	-	2	4
N.Y. City	39	37	-	3	14	-	56	22	-	27	4
N.J.	46	53	-	5	2	-	9	17	-	-	2
Pa.	75	92	-	26	25	-	96	86	-	-	-
E.N. CENTRAL	327	328	1	45	101	7	288	441	-	4	3
Ohio	129	121	1	19	35	4	109	158	-	-	-
Ind.	36	46	-	7	6	-	38	32	-	-	-
Ill.	97	90	-	9	19	3	51	98	-	1	1
Mich.	39	33	-	10	39	-	38	29	-	-	2
Wis.	26	38	-	-	2	-	52	124	-	3	-
W.N. CENTRAL	174	188	-	13	14	23	253	211	-	-	-
Minn.	29	25	-	5	5	18	160	156	-	-	-
Iowa	39	40	-	6	1	1	25	10	-	-	-
Mo.	77	71	-	-	5	3	43	25	-	-	-
N. Dak.	2	3	-	-	2	-	2	1	-	-	-
S. Dak.	4	10	-	-	-	1	4	4	-	-	-
Nebr.	8	17	U	2	-	U	6	5	U	-	-
Kans.	15	22	-	-	1	-	13	10	-	-	-
S. ATLANTIC	414	356	3	55	80	13	335	366	4	69	91
Del.	5	2	-	-	-	-	1	17	-	-	-
Md.	37	40	-	4	27	1	99	132	2	3	-
D.C.	-	5	-	-	-	-	3	-	-	-	1
Va.	38	42	-	9	12	-	34	44	-	1	2
W. Va.	14	13	-	-	-	-	6	2	-	-	-
N.C.	77	60	1	9	17	4	89	72	1	52	77
S.C.	44	42	-	10	5	1	21	21	-	9	1
Ga.	77	106	-	5	2	-	9	17	-	1	-
Fla.	122	46	2	18	17	7	73	61	1	3	10
E.S. CENTRAL	186	162	-	18	19	2	78	172	-	-	2
Ky.	38	21	-	3	-	-	21	134	-	-	-
Tenn.	71	47	-	3	1	2	30	15	-	-	-
Ala.	60	55	-	6	3	-	19	16	-	-	2
Miss.	17	39	U	6	15	U	8	7	U	-	N
W.S. CENTRAL	223	256	-	34	36	3	148	97	-	4	8
Ark.	27	28	-	1	1	1	22	4	-	-	-
La.	46	47	-	11	12	2	15	7	-	-	1
Okla.	26	26	-	-	-	-	21	8	-	-	-
Tex.	124	155	-	22	23	-	90	78	-	4	7
MOUNTAIN	139	136	-	51	20	2	881	328	-	5	6
Mont.	8	6	-	-	-	-	16	18	-	-	-
Idaho	8	20	-	2	-	-	547	96	-	1	2
Wyo.	2	3	-	1	-	-	6	4	-	-	-
Colo.	36	28	-	3	3	1	188	104	-	-	2
N. Mex.	23	21	N	N	N	-	66	43	-	-	-
Ariz.	39	30	-	31	1	-	30	24	-	4	1
Utah	11	12	-	7	3	1	14	10	-	-	-
Nev.	12	16	-	7	13	-	14	29	-	-	1
PACIFIC	515	520	-	126	163	14	577	938	-	23	68
Wash.	62	74	-	14	18	14	259	406	-	5	15
Oreg.	100	93	N	N	N	-	17	46	-	-	1
Calif.	346	344	-	92	120	-	276	459	-	10	49
Alaska	2	6	-	3	2	-	14	2	-	-	-
Hawaii	5	3	-	17	23	-	11	25	-	8	3
Guam	-	4	U	1	4	U	-	-	U	-	-
P.R.	9	11	2	7	1	-	-	2	-	-	-
V.I.	-	-	U	-	1	U	-	-	U	-	-
Amer. Samoa	-	-	U	-	-	U	-	-	U	-	-
C.N.M.I.	-	-	U	4	-	U	-	-	U	-	-

N: Not notifiable U: Unavailable -: no reported cases

TABLE IV. Deaths in 122 U.S. cities,* week ending September 6, 1997 (36th Week)

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	>65	45-64	25-44	1-24	<1	
NEW ENGLAND	518	365	82	41	10	20	24
Boston, Mass.	139	88	26	12	4	9	6
Bridgeport, Conn.	30	23	5	2	-	-	1
Cambridge, Mass.	14	13	-	-	-	1	2
Fall River, Mass.	16	14	2	-	-	-	-
Hartford, Conn.	46	28	11	4	1	2	-
Lowell, Mass.	19	16	1	-	-	2	1
Lynn, Mass.	9	6	2	1	-	-	1
New Bedford, Mass.	20	17	3	-	-	-	1
New Haven, Conn.	36	21	9	3	-	3	6
Providence, R.I.	68	52	5	6	3	2	1
Somerville, Mass.	5	5	-	-	-	-	-
Springfield, Mass.	44	32	5	5	1	1	4
Waterbury, Conn.	21	15	4	2	-	-	1
Worcester, Mass.	51	35	9	6	1	-	-
MID. ATLANTIC	2,045	1,399	386	193	40	27	93
Albany, N.Y.	45	36	3	3	3	-	2
Allentown, Pa.	25	15	9	1	-	-	-
Buffalo, N.Y.	U	U	U	U	U	U	U
Camden, N.J.	30	15	11	2	2	-	4
Elizabeth, N.J.	22	17	4	1	-	-	-
Erie, Pa.	29	21	5	3	-	-	3
Jersey City, N.J.	38	20	8	9	-	1	3
New York City, N.Y.	1,021	708	188	98	16	11	41
Newark, N.J.	62	31	15	15	-	1	2
Paterson, N.J.	15	12	3	-	-	-	1
Philadelphia, Pa.	400	246	87	46	13	8	10
Pittsburgh, Pa.§	55	41	9	3	-	2	2
Reading, Pa.	23	17	5	1	-	-	-
Rochester, N.Y.	119	83	23	5	6	2	11
Schenectady, N.Y.	19	16	2	1	-	-	2
Scranton, Pa.	26	24	2	-	-	-	-
Syracuse, N.Y.	57	46	6	3	-	2	8
Trenton, N.J.	11	8	1	2	-	-	1
Utica, N.Y.	27	24	3	-	-	-	1
Yonkers, N.Y.	21	19	2	-	-	-	2
E.N. CENTRAL	1,770	1,170	369	155	28	48	83
Akron, Ohio	35	22	9	3	-	1	-
Canton, Ohio	24	19	4	1	-	-	3
Chicago, Ill.	429	250	97	58	15	9	11
Cincinnati, Ohio	107	73	26	5	1	2	4
Cleveland, Ohio	124	71	40	9	1	3	3
Columbus, Ohio	121	83	25	10	-	3	7
Dayton, Ohio	101	69	25	3	3	1	6
Detroit, Mich.	154	103	31	16	1	3	10
Evansville, Ind.	38	28	4	4	1	1	1
Fort Wayne, Ind.	40	30	7	3	-	-	4
Gary, Ind.	7	3	1	1	-	2	-
Grand Rapids, Mich.	75	49	9	6	-	11	11
Indianapolis, Ind.	138	93	28	9	2	6	8
Lansing, Mich.	38	27	8	3	-	-	2
Milwaukee, Wis.	102	78	15	8	1	-	3
Peoria, Ill.	26	21	3	-	1	1	3
Rockford, Ill.	43	31	9	2	-	1	-
South Bend, Ind.	46	34	7	3	-	2	4
Toledo, Ohio	81	57	15	6	2	1	1
Youngstown, Ohio	41	29	6	5	-	1	2
W.N. CENTRAL	541	380	106	24	11	13	27
Des Moines, Iowa	U	U	U	U	U	U	U
Duluth, Minn.	U	U	U	U	U	U	U
Kansas City, Kans.	25	19	3	-	-	3	-
Kansas City, Mo.	89	50	19	7	2	4	3
Lincoln, Nebr.	21	14	5	1	1	-	1
Minneapolis, Minn.	120	86	24	7	2	1	5
Omaha, Nebr.	71	53	15	1	1	1	3
St. Louis, Mo.	96	68	20	4	3	1	9
St. Paul, Minn.	50	43	5	1	1	-	4
Wichita, Kans.	69	47	15	3	1	3	2
S. ATLANTIC	1,050	668	222	120	24	14	40
Atlanta, Ga.	127	82	28	11	2	4	1
Baltimore, Md.	128	75	32	19	1	1	6
Charlotte, N.C.	84	50	20	10	4	-	3
Jacksonville, Fla.	113	74	23	10	1	5	2
Miami, Fla.	108	70	24	8	5	1	1
Norfolk, Va.	47	32	10	4	1	-	4
Richmond, Va.	57	41	10	6	-	-	2
Savannah, Ga.	62	45	10	5	2	-	4
St. Petersburg, Fla.	37	28	6	2	1	-	2
Tampa, Fla.	137	89	29	14	2	3	13
Washington, D.C.	129	74	25	25	5	-	2
Wilmington, Del.	21	8	5	6	-	-	-
E.S. CENTRAL	748	498	152	62	27	8	33
Birmingham, Ala.	137	89	31	8	6	2	7
Chattanooga, Tenn.	65	38	16	8	3	-	1
Knoxville, Tenn.	84	60	17	4	3	-	3
Lexington, Ky.	73	44	16	7	4	2	8
Memphis, Tenn.	155	107	28	15	3	2	9
Mobile, Ala.	49	35	6	5	2	1	-
Montgomery, Ala.	54	43	7	2	1	1	4
Nashville, Tenn.	131	82	31	13	5	-	1
W.S. CENTRAL	1,120	682	238	111	50	39	61
Austin, Tex.	59	44	13	-	2	-	2
Baton Rouge, La.	30	16	6	4	2	2	2
Corpus Christi, Tex.	42	24	9	4	2	3	1
Dallas, Tex.	148	67	24	34	20	3	2
El Paso, Tex.	48	27	16	-	1	4	2
Ft. Worth, Tex.	85	58	14	8	4	1	5
Houston, Tex.	276	167	70	31	5	3	22
Little Rock, Ark.	54	33	10	7	1	3	3
New Orleans, La.	93	51	14	10	6	12	-
San Antonio, Tex.	170	113	37	10	5	5	12
Shreveport, La.	49	30	16	2	1	-	6
Tulsa, Okla.	66	52	9	1	1	3	4
MOUNTAIN	730	486	119	74	31	19	30
Albuquerque, N.M.	89	58	14	12	4	1	3
Boise, Idaho	39	25	6	5	3	-	1
Colo. Springs, Colo.	68	50	9	5	3	1	2
Denver, Colo.	75	39	14	10	5	7	5
Las Vegas, Nev.	147	104	29	10	2	2	10
Ogden, Utah	22	17	3	1	1	-	1
Phoenix, Ariz.	115	65	19	19	9	2	3
Pueblo, Colo.	22	14	5	1	-	2	1
Salt Lake City, Utah	78	56	9	8	2	3	1
Tucson, Ariz.	75	58	11	3	2	1	3
PACIFIC	1,542	1,073	268	134	38	29	104
Berkeley, Calif.	18	14	2	2	-	-	1
Fresno, Calif.	57	42	7	6	-	2	2
Glendale, Calif.	32	26	4	1	1	-	2
Honolulu, Hawaii	71	53	10	5	2	1	3
Long Beach, Calif.	54	38	8	4	3	1	4
Los Angeles, Calif.	455	325	81	32	10	7	22
Pasadena, Calif.	33	24	5	2	2	-	4
Portland, Oreg.	95	58	15	14	5	3	2
Sacramento, Calif.	116	82	20	6	3	5	15
San Diego, Calif.	89	59	15	12	-	3	5
San Francisco, Calif.	121	76	27	16	2	-	18
San Jose, Calif.	150	112	25	10	2	1	11
Santa Cruz, Calif.	28	19	6	3	-	-	1
Seattle, Wash.	101	57	24	14	3	3	5
Spokane, Wash.	45	32	8	3	1	1	2
Tacoma, Wash.	77	56	11	4	4	2	7
TOTAL	10,064¶	6,721	1,942	914	259	217	495

U: Unavailable -: no reported cases

*Mortality data in this table are voluntarily reported from 122 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

†Pneumonia and influenza.

§Because of changes in reporting methods in this Pennsylvania city, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

¶Total includes unknown ages.

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