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Emerging Infectious Diseases

Lyme Disease — United States, 1991–1992

Surveillance for Lyme disease (LD) was initiated by CDC in 1982 (*1*), and in 1990, the Council of State and Territorial Epidemiologists (CSTE) approved a resolution making LD nationally reportable. During 1982–1991, states reported 40,195 cases of LD. In 1992, LD accounted for more than 90% of all reported vectorborne illnesses in the United States (CDC, unpublished, 1993). This report summarizes surveillance for LD in the United States during 1991–1992.

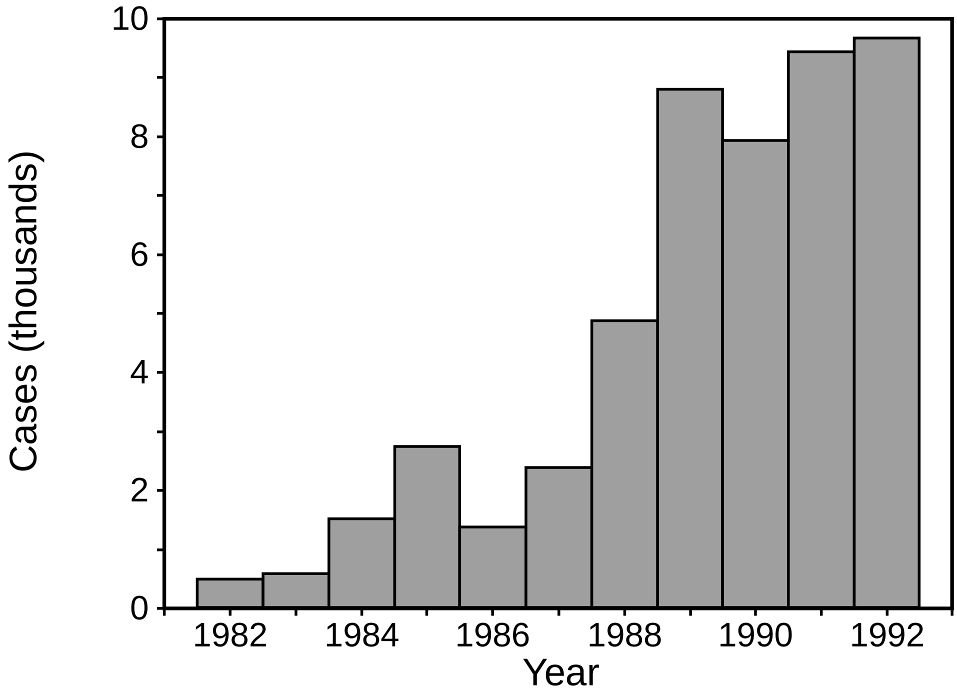
Forty-nine states and the District of Columbia require reporting of LD. The CSTE/CDC surveillance case definition requires the presence of an erythema migrans rash or at least one objective sign of musculoskeletal, neurologic, or cardiovascular disease and laboratory confirmation of infection (*2*).

During 1991, 47 states reported 9465 cases of LD to CDC (*3*); during 1992, 45 states reported a provisional total of 9677 cases, representing a 19-fold increase over the 497 cases reported by 11 states in 1982 (*1*) (Figure 1). Most cases were reported from the northeastern, mid-Atlantic, north central, and Pacific coastal regions (Figure 2). Established enzootic cycles of *Borrelia burgdorferi*, the causative agent of LD, have been identified in 19 states; these states accounted for 94% of cases reported during 1991–1992.

The overall incidence rate of reported LD during 1992 was 3.9 per 100,000 population. During 1992, Connecticut (53.6 cases per 100,000), Wisconsin (10.7), and California (0.8) reported the highest rates in the northeast, north central, and Pacific coastal regions, respectively. Rates in some counties in California, Connecticut, Massachusetts, New York, and Wisconsin exceeded 200 cases per 100,000; the incidence was highest in Nantucket County, Massachusetts (449.1). The number of reported cases in Connecticut and Rhode Island increased 48% and 93%, respectively, over 1991. New York reported a provisional total of 3370 confirmed cases during 1992, a decrease of 574 cases from 1991. From 1991 through 1992, decreases were greatest in Westchester (1762, compared with 1154) and Suffolk (860, compared with 654) counties. In 1992, these two counties accounted for 19% of the national total, compared with 28% in 1991.

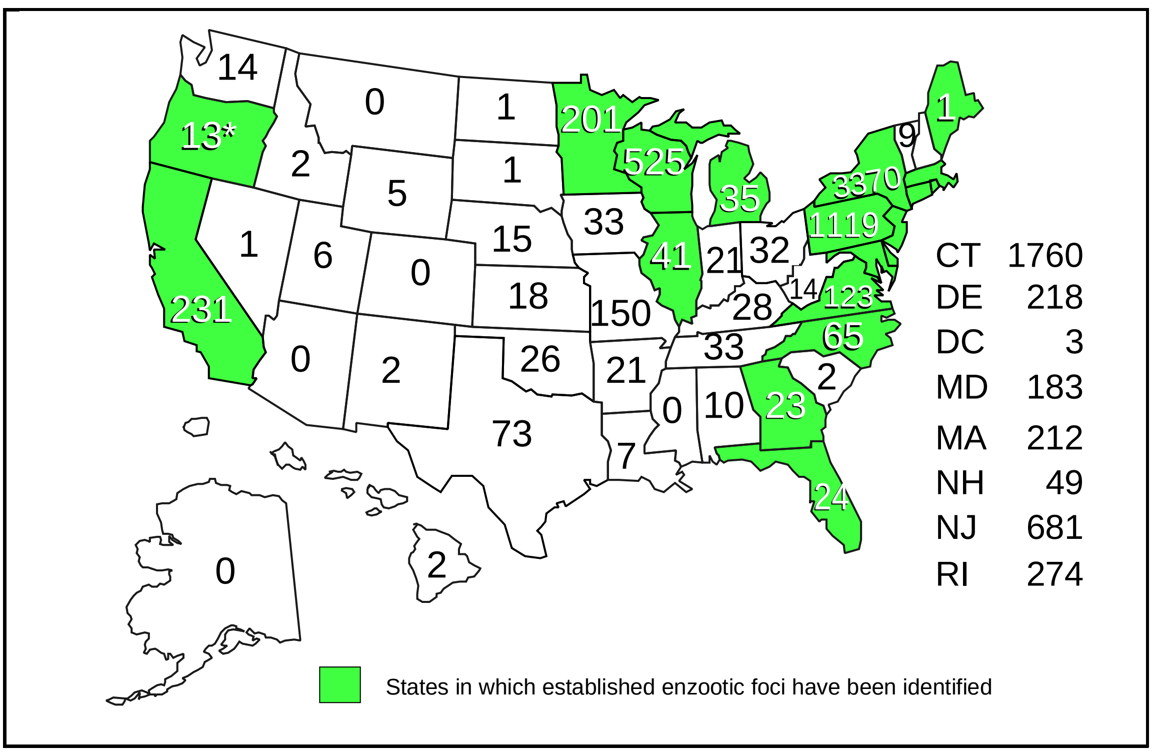
Lyme Disease — Continued

FIGURE 1. Reported cases of Lyme disease, by year — United States, 1982*–1992†



*In 1982, 11 states reported cases, compared with 47 and 45 in 1991 and 1992, respectively.
†1992 data are provisional.

FIGURE 2. Reported cases of Lyme disease — United States, 1992



*Mandatory reporting not required.

Lyme Disease — Continued

Among 7507 cases analyzed for which patient age was given, the largest numbers were reported for persons aged 0–9 years (1087 [14.5%]), 30–39 years (1272 [16.9%]), and 40–49 years (1271 [16.9%]). Of 7642 cases, 3770 (49.3%) occurred among males.

Reported by: State health depts. Bacterial Zoonoses Br, Div of Vector-Borne Infectious Diseases, National Center for Infectious Diseases, CDC.

Editorial Note: The distribution of LD in the United States is highly correlated with the distribution of the principal tick vectors *Ixodes dammini* (reported to be the same species as *I. scapularis*, the black-legged tick [*4*]) in the northeastern and north central regions and *I. pacificus* (i.e., the western black-legged tick) in the Pacific coastal states (*5*). The occurrence of sporadic cases in states without established enzootic transmission of *B. burgdorferi* may be due to infectious exposures in limited, unrecognized foci, exposures during visits to areas with endemic LD outside the state of residence, misclassification, or misdiagnosis. Enzootic foci are highly localized and are dependent on environmental factors favorable to vector ticks and their maintenance hosts (especially deer) and to rodent reservoirs of *B. burgdorferi*. Therefore, subtle ecologic differences may account for substantial differences in incidence between states, counties within states, and adjacent townships (*6,7*).

The 19-fold increase in reported LD cases since 1982 may reflect a combination of at least four factors: heightened awareness of LD by patients and physicians; increased use of laboratory testing in LD diagnosis; increased surveillance and health department requirements for reporting; and a true increase in the number of cases. Surveillance practices in particular have had an important impact on the reported occurrence of LD. For example, active physician-based surveillance conducted in 1992 by state health departments in collaboration with CDC in Connecticut and Rhode Island resulted in substantial increases in reported cases over 1991. By contrast, the decrease in reported cases in Suffolk and Westchester counties, New York, probably reflects reductions in state and county surveillance personnel necessary to maintain previous levels of case detection and validation.

LD is considered an emerging infectious disease because of the impact of changing environmental and socioeconomic factors, such as the transformation of farmland into suburban woodlots that are favorable for deer and deer ticks (*8,9*). Demographic profiles of persons with LD reflect mostly suburban and rural risk. Evidence suggests both continuing geographic spread and increasing incidence over time in established endemic foci (*6,7*).

The diagnosis of LD is based principally on clinical findings, and results of serologic testing are supportive. Serologic tests for LD are not standardized, and problems in the reliability and accuracy of serologic test results have limited their usefulness for surveillance purposes. CDC, in collaboration with the Association of State and Territorial Public Health Laboratory Directors, held a workshop on standardized serologic testing for LD in March 1993, and an evaluation of a standardized testing protocol by selected public health laboratories will be conducted during May–August 1993.

Although the numbers of LD cases reported by some states have fluctuated by year, the annual number of reported cases in the United States has remained relatively constant during 1989–1992, possibly reflecting the implementation of the uniform case definition and standardized reporting. However, the true incidence of LD in the United States is unknown, and estimates are subject to the influences of underreporting, misclassification, and overdiagnosis. The development of standardized, sensitive and

Lyme Disease — Continued

specific serologic tests and better surveillance should result in improved estimates of LD.

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Physician Reporting of Lyme Disease — Connecticut, 1991–1992

Although disease reporting by physicians is an essential component of public health surveillance, the extent of physician participation in reporting specific diseases is not routinely assessed. As part of an evaluation of Lyme disease (LD) surveillance, the Connecticut Department of Health Services (CDHS) conducted a study to determine the number and specialty of Connecticut physicians who reported LD cases in 1991 and/or 1992. This report summarizes the results of this study.

To characterize physician reporting of LD, the CDHS expanded the LD surveillance database to include the names, towns, and license numbers of 4570 licensed physicians from four primary-care specialties: internal medicine (2520), general/family practice (1096), pediatrics (839), and dermatology (115). This primary-care physician group was a subset of the 9185 physicians (excluding physicians in residency programs) licensed by the CDHS as of January 30, 1992. If LD was reported by a physician not on the primary-care physician list, the name was checked against the complete list of licensed physicians.

From January 1, 1991, through December 31, 1992, 2952 cases meeting the CSTE/CDC surveillance case definition for LD (*1*) were reported to the CDHS. Of these, 2432 (82%) were reported by physicians from the four primary-care specialties and 59 (2%) from physicians in other specialties (Table 1). A total of 359 (12%) cases was reported by either a group practice; a hospital, laboratory, or clinic; or another state health department. Sixty-seven (3%) were reported with no physician or practice name listed, and 35 (1%) were reported by physicians whose license numbers could not be determined.

Of the 4570 physicians from the four specialties, 341 (7%) reported LD in 1991 and 313 (7%) reported cases in 1992 (Table 2). Twenty-five physicians reported 43% to 62% of the cases in five counties.

Physician Reporting — Continued

Reported by: PA Mshar, SH Ertel, ML Cartter, MD, JL Hadler, MD, State Epidemiologist, Connecticut State Dept of Health Svcs. Bacterial Zoonoses Br, Div of Vector-Borne Infectious Diseases, National Center for Infectious Diseases, CDC.

Editorial Note: LD was first recognized in 1975 in Connecticut; the disease is endemic in each of Connecticut's eight counties, and the state rate of 54 cases per 100,000 population was the highest reported in the United States in 1992 (*2*). In November 1991, in collaboration with CDC, the CDHS began active surveillance for LD in two areas of the state and continued passive, physician-based surveillance in other areas. In 1992, 632 (36%) cases were reported by the 127 physicians in the active surveillance study.

The finding that only 7% of physicians in selected primary-care specialties in Connecticut reported LD in 1991 and/or 1992 suggests that most primary-care physicians in the state have not diagnosed cases of LD and/or that underreporting of cases by physicians is common. Of the 2952 LD cases reported, 2432 (82%) were reported by primary-care physicians: general practice/family medicine (46%), internal medicine (32%), and pediatric (21%) specialties. A limited number of cases was reported by dermatologists (1%), even though the earliest and most characteristic sign of LD is a large, expanding, annular dermatitis (erythema migrans), usually arising 3–30 days following tick bite (*3*).

TABLE 1. Lyme disease case reporting sources — Connecticut, 1991–1992

	1991		1992		Total	
Source	**No.**	**(%)**	**No.**	**(%)**	**No.**	**(%)**
General/Family practice	490	(41)	629	(36)	1119	(38)
Internal medicine	340	(29)	436	(25)	776	(26)
Pediatrics	196	(16)	317	(18)	513	(17)
Dermatology	4	(0)	20	(1)	24	(1)
Other specialty	27	(2)	32	(2)	59	(2)
Mixed specialty group	0	—	152	(9)	152	(5)
Hospital/Laboratory/Clinic	38	(3)	72	(4)	110	(4)
No physician/practice name	30	(3)	37	(2)	67	(3)
State health department	52	(4)	45	(3)	97	(3)
Unknown license number	15	(1)	20	(1)	35	(1)
Total	**1192**	**(100)**	**1760**	**(100)**	**2952**	**(100)**

TABLE 2. Number and percentage of physicians reporting at least one case of Lyme disease, by specialty — Connecticut, 1991–1992

		Physicians reporting			
		1991		1992	
Specialty	**No. physicians**	**No.**	**(%)**	**No.**	**(%)**
General/Family practice	1096	108	(10)	93	(8)
Internal medicine	2520	156	(6)	126	(5)
Pediatrics	839	73	(9)	81	(10)
Dermatology	115	4	(3)	13	(11)
Total	**4570**	**341**	**(7)**	**313**	**(7)**

Physician Reporting — Continued

As the findings in Connecticut indicate, a physician-based passive system of LD surveillance may be sensitive to small changes in reporting practices. Many of the cases in Connecticut were reported by a small group of physicians.

The findings in this report did not directly assess underreporting. Additional studies are needed to determine the percentage of LD cases that are diagnosed by physicians but not reported to local and state health departments.

Physician participation is critical in public health surveillance efforts. Surveillance should be improved by educating physicians, especially those in primary-care specialties, about the importance of reporting cases of notifiable diseases, including LD, and other selected health events.

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Current Trends

Commercial Fishing Fatalities — Alaska, 1991–1992

Based on data from the National Traumatic Occupational Fatality surveillance system, Alaska had the highest state-specific work-related fatality rate during 1980–1989. During this period, the annual average private industry fatality rate in Alaska was 34.8 per 100,000 workers, nearly five times the annual average for the United States (7.0 per 100,000) (*1*). Fatalities in the commercial fishing industry—which accounts for the second largest percentage of revenue and number of jobs in the state—are among the highest industry-specific rates in the United States (*1*). Because of the high occupational fatality rates for Alaska, in 1991, CDC's National Institute for Occupational Safety and Health (NIOSH) initiated efforts in Alaska to improve surveillance and describe risk factors for serious occupational injuries associated with the fishing, logging, and air transport industries. This report uses data obtained and analyzed by NIOSH to characterize fishing industry deaths in Alaska for 1991 and 1992.

Surveillance data from fatality investigations by NIOSH's Alaska Activity, Division of Safety Research, were used to obtain information on fishing-related fatalities, including the cause of death, the circumstances of the incident, and the location of the vessel's operation. The data included interviews of survivors; review of death certificates; and analysis of data received from the U.S. Coast Guard (USCG), the Alaska State Troopers (AST), and local news media reports. Fatality rates were calculated for each type of fishery by estimating worker population of the fishery within which the vessel was operating at the time of the fatal event (Table 1). These estimates were based on methodology developed by the Institute of Social and Economic Research, University of Alaska (*2*), and revised by the Alaska Department of Labor and the Alaska Commercial Fisheries Entry Commission (*3*): the number of workers at risk was estimated by multiplying the number of vessels making landings each month by the appropriate crew size associated with the respective fishery. Data on use of wearable personal flotation devices (PFDs) (i.e., survival suits, life jackets, and float coats) were obtained either from the USCG or AST reports.

During 1991–1992 in Alaska, there were 116 fatal occupational incidents resulting in 166 work-related deaths; 43 (37%) incidents occurred in the commercial fishing industry, resulting in 70 fatalities (35 each in 1991 and 1992). Of these 70 workers, 69 (98.6%) were male; mean age at death was 32.7 years. The occupational fatality rate for the Alaska commercial fishing industry for 1991 and 1992 was 200 per 100,000 workers per year—6.7 times the mean fatality rate for all private sector Alaskan industry for 1991 and 1992 (30.0 per 100,000 per year)* (CDC, unpublished data, 1993).

The cause of death for 66 (94.3%) workers was drowning, presumed drowning, or drowning due to hypothermia (*International Classification of Diseases, Ninth Revision*, external cause-of-death codes 830, 831, 832, 834, 836, 838, and 910). Three workers were crushed to death during crabbing operations, and one committed suicide aboard a working vessel (Figure 1, page 357). Of the 66 drownings, 51 (77.3%) were attributed to capsized, sunk, or missing (presumed lost) vessels; the remaining 15 (22.7%) (all single-fatality events) resulted from a person-overboard drowning. Twenty-one (31.8%) were confirmed drownings (body recovered), and 45 (68.2%), presumed (no body found). Of the 43 fatal incidents, 27 (62.8%) were single-fatality events; the remaining 16 (37.2%) were multiple-fatality events, including the loss of two vessels with six persons aboard each.

Of the 70 fatalities recorded, 63 were identified as participating in one of the five major Alaska fisheries (groundfish, halibut, herring, salmon, or shellfish); two died while harvesting sea cucumbers; and information on type of fishery was not available for five fatalities. Both the number of fatalities (32) and the average annual fatality rate (530 per 100,000) were highest for the shellfish fishery. Half (16) of these fatalities resulted from the disappearance and presumed sinking of three vessels in the Bering Sea in three separate incidents; all three vessels were fishing for king crab in the vicinity of the Pribilof Islands during winter months (February 1991, November 1991, and January 1992).

(Continued on page 357)

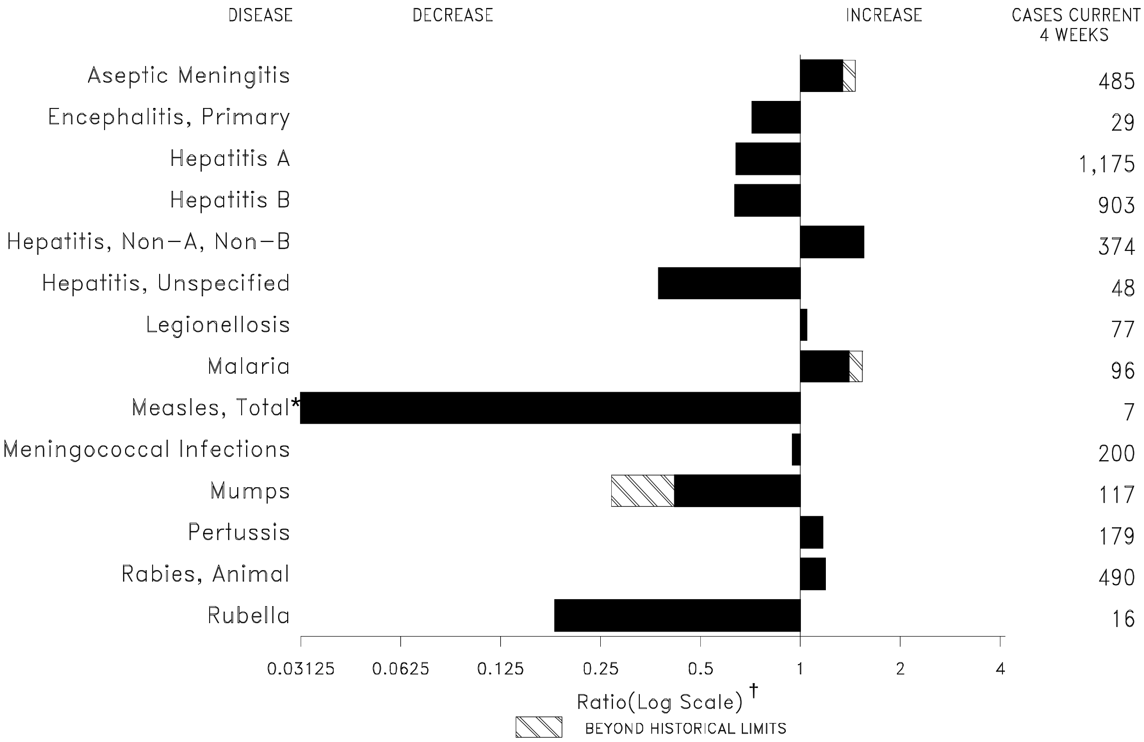
*Denominators are from employment estimates supplied by the Research and Analysis Section, Alaska Department of Labor.

TABLE 1. Employment and occupational fatality rates in the commercial fishing industry, by fishery — Alaska, 1991–1992

Fishery	Annual full-time employee equivalents*	No. fatalities	Fatality rate†
Groundfish	4,600	8	90
Halibut	1,500	9	300
Herring	500	0	0
Salmon	7,500	14	90
Shellfish	3,000	32	530
Miscellaneous/Unknown	300	7	—§
Total	**17,400**	**70**	**200**

*Full-time employee equivalent (FTE) values estimated to nearest 50 FTEs; one FTE=2080 person-hours per year.
†Per 100,000 per year. Calculated fatality rates rounded to nearest 10.
§Not calculated.

FIGURE I. Notifiable disease reports, comparison of 4-week totals ending May 8, 1993, with historical data — United States



*The large apparent decrease in reported cases of measles(total) reflects dramatic fluctuations in the historical baseline. (Ratio [log scale] for week eighteen is 0.00793).

† 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 thehatched area begins is based on the mean and two standard deviations of these 4-week totals.

TABLE I. Summary — cases of specified notifiable diseases, United States, cumulative, week ending May 8, 1993 (18th Week)

	Cum. 1993		Cum. 1993
AIDS*	37,227	Measles: imported	15
Anthrax	-	indigenous	80
Botulism: Foodborne	5	Plague	1
Infant	12	Poliomyelitis, Paralytic§	-
Other	1	Psittacosis	19
Brucellosis	22	Rabies, human	-
Cholera	9	Syphilis, primary & secondary	9,077
Congenital rubella syndrome	4	Syphilis, congenital, age < 1 year	-
Diphtheria	-	Tetanus	7
Encephalitis, post-infectious	60	Toxic shock syndrome	88
Gonorrhea	127,764	Trichinosis	7
Haemophilus influenzae (invasive disease)†	466	Tuberculosis	6,258
Hansen Disease	56	Tularemia	20
Leptospirosis	12	Typhoid fever	116
Lyme Disease	943	Typhus fever, tickborne (RMSF)	27

*Updated monthly; last update April 17, 1993.
†Of 427 cases of known age, 152 (36%) were reported among children less than 5 years of age.
§No cases of suspected poliomyelitis have been reported in 1993; 4 cases of suspected poliomyelitis were reported in 1992; 6 of the 9 suspected cases with onset in 1991 were confirmed; the confirmed cases were vaccine associated.

TABLE II. Cases of selected notifiable diseases, United States, weeks ending May 8, 1993, and May 2, 1992 (18th Week)

Reporting Area	AIDS*	Aseptic Menin-gitis	Encephalitis		Gonorrhea		Hepatitis (Viral), by type				Legionel-losis	Lyme Disease
			Primary	Post-in-fectious			A	B	NA,NB	Unspeci-fied		
	Cum. 1993	Cum. 1993	Cum. 1993	Cum. 1993	Cum. 1993	Cum. 1992	Cum. 1993	Cum. 1993	Cum. 1993	Cum. 1993	Cum. 1993	Cum. 1993
UNITED STATES	37,227	2,222	171	60	127,764	168,856	7,136	3,835	1,461	200	368	943
NEW ENGLAND	1,651	47	4	3	2,651	3,507	192	132	8	5	13	97
Maine	51	6	1	-	32	35	8	7	-	-	2	-
N.H.	50	4	-	-	16	43	4	13	2	-	-	7
Vt.	8	5	-	-	9	9	3	2	1	-	-	-
Mass.	819	25	3	3	1,012	1,333	112	99	2	5	9	35
R.I.	80	7	-	-	125	276	42	11	3	-	2	19
Conn.	643	-	-	-	1,457	1,811	23	-	-	-	-	36
MID. ATLANTIC	6,434	252	6	5	12,913	17,811	468	525	114	3	78	672
Upstate N.Y.	1,414	94	-	2	2,779	3,548	126	142	62	1	19	480
N.Y. City	2,774	92	1	-	3,355	6,327	169	106	1	-	3	3
N.J.	1,570	-	-	-	2,459	2,665	109	131	34	-	11	59
Pa.	676	66	5	3	4,320	5,271	64	146	17	2	45	130
E.N. CENTRAL	2,709	321	58	14	24,779	30,842	750	397	300	5	96	11
Ohio	497	97	19	3	7,883	9,541	119	92	27	-	55	10
Ind.	433	46	4	6	2,707	2,972	355	66	4	1	12	-
Ill.	858	70	11	-	7,503	9,034	185	71	18	2	3	1
Mich.	839	100	21	5	4,985	7,913	86	165	236	2	20	-
Wis.	82	8	3	-	1,701	1,382	5	3	15	-	6	-
W.N. CENTRAL	1,941	124	6	-	5,839	9,068	992	266	73	3	20	22
Minn.	322	32	3	-	320	1,040	143	22	1	2	-	3
Iowa	120	30	-	-	602	620	12	10	2	1	3	1
Mo.	1,188	26	-	-	3,422	4,847	657	205	56	-	7	3
N. Dak.	-	3	2	-	10	33	30	-	-	-	-	1
S. Dak.	18	6	1	-	81	67	9	-	-	-	-	-
Nebr.	88	2	-	-	141	534	101	6	6	-	8	-
Kans.	205	25	-	-	1,263	1,927	40	23	8	-	2	14
S. ATLANTIC	7,778	560	31	25	36,238	55,060	421	649	203	25	66	89
Del.	158	4	1	-	472	595	3	56	58	-	6	55
Md.	591	46	7	-	6,045	5,375	66	99	5	3	17	7
D.C.	354	16	-	-	2,026	2,700	2	11	-	-	8	2
Va.	566	62	9	3	3,492	6,612	54	59	18	10	2	6
W. Va.	19	5	6	-	203	303	1	14	12	-	-	2
N.C.	254	49	7	-	7,940	8,116	20	116	25	-	7	9
S.C.	590	4	-	-	3,171	3,980	5	10	-	1	1	-
Ga.	1,345	38	1	-	4,660	18,071	39	33	20	-	12	-
Fla.	3,901	336	-	22	8,229	9,308	231	251	65	11	13	8
E.S. CENTRAL	989	100	6	3	14,642	16,406	98	397	311	1	18	5
Ky.	79	49	2	3	1,594	1,701	54	32	4	-	7	2
Tenn.	393	16	3	-	4,540	5,212	16	319	300	-	9	1
Ala.	350	27	1	-	5,085	5,658	20	43	3	1	-	2
Miss.	167	8	-	-	3,423	3,835	8	3	4	-	2	-
W.S. CENTRAL	4,497	156	15	-	15,171	15,587	594	477	64	55	10	10
Ark.	181	11	-	-	1,993	3,102	17	19	2	-	-	1
La.	595	6	-	-	3,934	2,073	27	50	20	-	2	-
Okla.	421	-	3	-	1,265	1,612	36	78	17	5	7	5
Tex.	3,300	139	12	-	7,979	8,800	514	330	25	50	1	4
MOUNTAIN	2,252	119	9	3	3,703	4,162	1,469	216	106	36	37	3
Mont.	10	-	-	1	18	32	46	4	-	-	5	-
Idaho	33	3	-	-	54	47	78	16	-	1	1	-
Wyo.	28	-	-	-	28	17	7	7	28	-	3	2
Colo.	729	28	3	-	1,135	1,614	341	24	14	18	3	-
N. Mex.	186	13	3	2	338	302	120	100	35	1	1	-
Ariz.	799	54	2	-	1,409	1,400	518	31	9	7	9	-
Utah	161	4	1	-	84	71	339	12	16	9	4	1
Nev.	306	17	-	-	637	679	20	22	4	-	11	-
PACIFIC	8,976	543	36	7	11,828	16,413	2,152	776	282	67	30	34
Wash.	139	-	-	-	1,306	1,513	222	71	70	7	4	-
Oreg.	459	-	-	-	805	497	44	18	5	-	-	-
Calif.	8,360	510	33	7	9,384	13,980	1,588	674	202	59	23	33
Alaska	7	4	2	-	171	253	265	5	3	-	-	-
Hawaii	11	29	1	-	162	170	33	8	2	1	3	1
Guam	-	1	-	-	29	31	1	1	-	1	-	-
P.R.	953	19	-	-	169	61	17	82	16	1	-	-
V.I.	33	-	-	-	29	37	-	2	-	-	-	-
Amer. Samoa	-	-	-	-	9	13	7	-	-	-	-	-
C.N.M.I.	1	2	-	-	25	15	-	-	-	1	-	-

N: Not notifiable U: Unavailable C.N.M.I.: Commonwealth of Northern Mariana Islands

*Updated monthly; last update April 17, 1993.

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending May 8, 1993, and May 2, 1992 (18th Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported*		Total									
	Cum. 1993	1993	Cum. 1993	1993	Cum. 1993	Cum. 1992	Cum. 1993	1993	Cum. 1993	1993	Cum. 1993	Cum. 1992	1993	Cum. 1993	Cum. 1992
UNITED STATES	318	-	80	1	15	749	974	37	575	45	858	447	3	60	52
NEW ENGLAND	23	-	44	-	4	8	59	-	4	16	223	40	-	1	4
Maine	-	-	-	-	-	-	3	-	-	-	5	2	-	1	-
N.H.	2	-	-	-	-	1	7	-	-	2	133	15	-	-	-
Vt.	1	-	29	-	1	-	4	-	-	3	37	-	-	-	-
Mass.	10	-	7	-	2	5	34	-	1	11	38	19	-	-	-
R.I.	1	-	-	-	1	-	1	-	2	-	2	-	-	-	4
Conn.	9	U	8	U	-	2	10	U	1	U	8	4	U	-	-
MID. ATLANTIC	62	-	6	-	1	142	125	2	51	5	149	64	-	14	6
Upstate N.Y.	22	-	1	-	-	68	53	1	16	2	56	20	-	1	4
N.Y. City	24	-	1	-	-	27	19	-	-	-	5	6	-	7	-
N.J.	10	-	4	-	1	44	14	-	6	-	20	18	-	5	2
Pa.	6	-	-	-	-	3	39	1	29	3	68	20	-	1	-
E.N. CENTRAL	19	-	-	-	-	22	137	5	98	1	120	41	-	1	6
Ohio	5	-	-	-	-	5	45	-	44	-	83	11	-	1	-
Ind.	3	-	-	-	-	11	22	-	-	-	12	9	-	-	-
Ill.	9	-	-	-	-	5	41	-	23	-	10	7	-	-	6
Mich.	2	-	-	-	-	-	28	5	31	1	13	1	-	-	-
Wis.	-	-	-	-	-	1	1	-	-	-	2	13	-	-	-
W.N. CENTRAL	7	-	-	1	2	3	59	1	18	3	53	32	-	1	4
Minn.	2	-	-	-	-	3	2	-	-	2	22	13	-	-	-
Iowa	1	-	-	-	-	-	9	-	6	-	1	1	-	-	-
Mo.	2	-	-	-	-	-	25	1	7	1	15	10	-	1	1
N. Dak.	-	-	-	-	-	-	2	-	4	-	1	5	-	-	-
S. Dak.	2	-	-	-	-	-	2	-	-	-	1	1	-	-	-
Nebr.	-	-	-	-	-	-	3	-	1	-	4	2	-	-	-
Kans.	-	-	-	1§	2	-	16	-	-	-	9	-	-	-	3
S. ATLANTIC	100	-	15	-	3	96	195	7	146	5	74	50	1	5	2
Del.	1	-	3	-	-	3	10	-	3	-	1	-	-	1	-
Md.	8	-	-	-	2	5	19	4	32	-	28	11	-	1	-
D.C.	5	-	-	-	-	-	4	-	-	1	1	-	-	-	-
Va.	6	-	-	-	1	6	16	-	13	-	6	4	-	-	-
W. Va.	2	-	-	-	-	-	6	-	4	1	3	2	-	-	-
N.C.	58	-	-	-	-	21	37	3	64	3	13	13	-	-	-
S.C.	-	-	-	-	-	29	14	-	13	-	5	7	-	-	-
Ga.	2	U	-	U	-	-	44	U	-	U	3	4	U	-	-
Fla.	18	-	12	-	-	32	45	-	17	-	14	9	1	3	2
E.S. CENTRAL	5	-	1	-	-	340	62	1	25	3	36	7	-	-	1
Ky.	-	-	-	-	-	323	12	-	-	-	3	-	-	-	-
Tenn.	1	-	1	-	-	-	13	-	9	1	21	5	-	-	1
Ala.	2	-	-	-	-	-	20	1	11	2	12	2	-	-	-
Miss.	2	-	-	-	-	17	17	-	5	-	-	-	-	-	-
W.S. CENTRAL	8	-	1	-	-	62	74	7	94	-	15	11	1	9	-
Ark.	2	-	-	-	-	-	6	-	3	-	1	5	-	-	-
La.	-	-	1	-	-	-	18	-	6	-	4	-	1	1	-
Okla.	3	-	-	-	-	-	6	-	2	-	10	6	-	1	-
Tex.	3	-	-	-	-	62	44	7	83	-	-	-	-	7	-
MOUNTAIN	9	-	2	-	-	6	88	-	27	-	59	79	-	3	1
Mont.	1	-	-	-	-	-	6	-	-	-	-	-	-	-	-
Idaho	-	-	-	-	-	-	4	-	3	-	10	13	-	1	1
Wyo.	-	-	-	-	-	1	2	-	2	-	1	-	-	-	-
Colo.	6	-	2	-	-	5	9	-	7	-	21	19	-	-	-
N. Mex.	2	-	-	-	-	-	3	N	N	-	14	13	-	-	-
Ariz.	-	-	-	-	-	-	53	-	6	-	7	28	-	-	-
Utah	-	-	-	-	-	-	4	-	3	-	6	5	-	1	-
Nev.	-	-	-	-	-	-	7	-	6	-	-	1	-	1	-
PACIFIC	85	-	11	-	5	70	175	14	112	12	129	123	1	26	28
Wash.	5	-	-	-	-	7	27	-	7	2	13	33	-	-	-
Oreg.	2	-	-	-	-	-	16	N	N	-	-	10	-	1	1
Calif.	76	-	5	-	-	37	116	13	93	10	109	77	-	15	27
Alaska	-	-	-	-	-	9	9	-	5	-	1	-	-	1	-
Hawaii	2	-	6	-	5	17	7	1	7	-	6	3	1	9	-
Guam	1	U	-	U	-	10	1	U	6	U	-	-	U	-	-
P.R.	-	15	122	-	-	115	5	1	1	-	-	9	-	-	-
V.I.	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
Amer. Samoa	-	-	1	-	-	-	-	-	-	-	2	6	-	-	-
C.N.M.I.	-	-	-	1	1	-	-	-	10	-	-	1	-	-	-

*For measles only, imported cases include both out-of-state and international importations.
N: Not notifiable U: Unavailable † International § Out-of-state

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending May 8, 1993, and May 2, 1992 (18th Week)

Reporting Area	Syphilis (Primary & Secondary)		Toxic-Shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1993	Cum. 1992	Cum. 1993	Cum. 1993	Cum. 1992	Cum. 1993	Cum. 1993	Cum. 1993	Cum. 1993
UNITED STATES	9,077	11,928	88	6,258	6,734	20	116	27	2,543
NEW ENGLAND	145	230	8	114	90	-	9	2	431
Maine	2	-	1	7	6	-	-	-	-
N.H.	5	18	2	1	-	-	-	-	21
Vt.	-	1	-	2	2	-	-	-	11
Mass.	71	103	4	50	52	-	7	2	147
R.I.	4	14	1	22	-	-	-	-	-
Conn.	63	94	-	32	30	-	2	-	252
MID. ATLANTIC	723	1,693	21	1,252	1,663	-	33	2	868
Upstate N.Y.	78	146	10	92	211	-	6	-	618
N.Y. City	448	905	1	735	976	-	22	-	-
N.J.	126	243	-	195	244	-	3	2	132
Pa.	71	399	10	230	232	-	2	-	118
E.N. CENTRAL	1,393	1,611	29	697	704	3	12	-	14
Ohio	404	242	14	102	111	1	6	-	2
Ind.	143	69	1	65	63	1	1	-	-
Ill.	455	647	2	349	355	-	3	-	-
Mich.	247	370	12	152	146	1	2	-	-
Wis.	144	283	-	29	29	-	-	-	12
W.N. CENTRAL	568	463	6	135	146	2	2	2	121
Minn.	14	32	2	26	38	-	-	-	21
Iowa	32	11	3	9	12	-	-	-	20
Mo.	450	339	-	69	60	1	2	2	1
N. Dak.	-	1	-	2	3	-	-	-	29
S. Dak.	-	-	-	6	8	-	-	-	10
Nebr.	7	15	-	8	5	-	-	-	1
Kans.	65	65	1	15	20	1	-	-	39
S. ATLANTIC	2,515	3,397	9	1,012	1,282	-	12	5	673
Del.	51	77	-	10	17	-	-	-	54
Md.	133	265	-	139	84	-	3	-	207
D.C.	155	159	-	57	48	-	-	-	4
Va.	222	268	2	141	104	-	1	-	123
W. Va.	1	6	-	25	22	-	-	-	31
N.C.	660	808	3	130	178	-	-	4	22
S.C.	413	447	-	124	120	-	-	-	56
Ga.	426	736	-	246	292	-	1	1	156
Fla.	454	631	4	140	417	-	7	-	20
E.S. CENTRAL	1,243	1,661	3	444	381	3	1	3	35
Ky.	100	51	1	116	133	-	-	2	5
Tenn.	349	417	1	95	-	2	-	-	-
Ala.	291	738	1	156	139	1	1	-	30
Miss.	503	455	-	77	109	-	-	1	-
W.S. CENTRAL	2,027	1,987	1	594	575	8	2	13	191
Ark.	289	294	-	56	41	3	-	-	10
La.	861	873	-	-	26	-	1	-	-
Okla.	124	87	1	55	44	3	-	13	45
Tex.	753	733	-	483	464	2	1	-	136
MOUNTAIN	73	161	2	157	185	1	3	-	34
Mont.	-	2	-	5	-	-	-	-	7
Idaho	-	1	-	3	10	-	-	-	-
Wyo.	2	1	-	1	-	1	-	-	5
Colo.	23	22	1	8	17	-	2	-	-
N. Mex.	14	17	-	18	26	-	-	-	2
Ariz.	33	75	-	75	87	-	1	-	20
Utah	1	2	1	9	23	-	-	-	-
Nev.	-	41	-	38	22	-	-	-	-
PACIFIC	390	725	9	1,853	1,708	3	42	-	176
Wash.	21	42	1	90	105	1	2	-	-
Oreg.	44	20	-	30	28	-	-	-	-
Calif.	317	657	8	1,622	1,460	2	38	-	162
Alaska	2	2	-	13	31	-	-	-	14
Hawaii	6	4	-	98	84	-	2	-	-
Guam	-	2	-	27	34	-	-	-	-
P.R.	186	84	-	46	55	-	-	-	17
V.I.	18	20	-	2	3	-	-	-	-
Amer. Samoa	-	-	-	1	-	-	-	-	-
C.N.M.I.	-	4	-	7	12	-	-	-	-

U: Unavailable

TABLE III. Deaths in 121 U.S. cities,* week ending May 8, 1993 (18th Week)

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	616	397	128	59	16	16	48
Boston, Mass.	177	98	42	21	6	10	11
Bridgeport, Conn.	46	33	10	1	2	-	3
Cambridge, Mass.	23	16	5	2	-	-	4
Fall River, Mass.	32	29	3	-	-	-	-
Hartford, Conn.	56	30	14	8	3	1	4
Lowell, Mass.	30	18	4	5	1	2	3
Lynn, Mass.	17	15	2	-	-	-	4
New Bedford, Mass.	34	22	8	4	-	-	-
New Haven, Conn.	38	19	8	5	3	3	3
Providence, R.I.	25	20	4	1	-	-	1
Somerville, Mass.	6	5	1	-	-	-	-
Springfield, Mass.	44	32	8	4	-	-	5
Waterbury, Conn.	38	29	5	4	-	-	3
Worcester, Mass.	50	31	14	4	1	-	7
MID. ATLANTIC	2,824	1,847	525	314	74	63	140
Albany, N.Y.	34	25	5	4	-	-	3
Allentown, Pa.	24	20	2	2	-	-	3
Buffalo, N.Y.	100	53	21	18	4	4	2
Camden, N.J.	43	32	3	6	2	-	3
Elizabeth, N.J.	26	22	2	1	1	-	-
Erie, Pa.§	40	31	6	1	1	1	4
Jersey City, N.J.	42	21	10	10	-	1	-
New York City, N.Y.	1,509	969	294	188	36	22	65
Newark, N.J.	80	33	22	17	7	1	3
Paterson, N.J.	33	13	7	5	1	7	-
Philadelphia, Pa.	509	334	101	39	19	15	41
Pittsburgh, Pa.§	59	44	9	4	1	1	5
Reading, Pa.	16	12	4	-	-	-	-
Rochester, N.Y.	111	87	10	8	2	4	3
Schenectady, N.Y.	31	25	3	3	-	-	-
Scranton, Pa.§	25	20	3	2	-	-	-
Syracuse, N.Y.	66	46	13	1	-	6	4
Trenton, N.J.	32	23	4	4	-	1	2
Utica, N.Y.	22	18	3	1	-	-	1
Yonkers, N.Y.	22	19	3	-	-	-	1
E.N. CENTRAL	2,013	1,320	371	190	90	42	155
Akron, Ohio	61	44	11	4	-	2	-
Canton, Ohio	42	29	13	-	-	-	6
Chicago, Ill.	310	131	62	68	42	7	19
Cincinnati, Ohio	72	35	15	15	6	1	8
Cleveland, Ohio	130	90	23	8	5	4	1
Columbus, Ohio	204	149	39	10	5	1	19
Dayton, Ohio	142	106	23	8	3	2	12
Detroit, Mich.	214	127	43	25	9	10	9
Evansville, Ind.	64	46	9	4	2	3	4
Fort Wayne, Ind.	54	40	10	3	1	-	7
Gary, Ind.	18	9	3	2	3	1	-
Grand Rapids, Mich.	28	23	2	2	-	1	5
Indianapolis, Ind.	160	114	25	12	6	3	16
Madison, Wis.	67	44	14	8	-	1	11
Milwaukee, Wis.	141	102	28	8	1	2	16
Peoria, Ill.	37	28	8	-	1	-	4
Rockford, Ill.	49	37	9	2	-	1	6
South Bend, Ind.	60	45	11	1	2	1	4
Toledo, Ohio	109	79	16	9	3	2	7
Youngstown, Ohio	51	42	7	1	1	-	1
W.N. CENTRAL	831	607	123	57	19	25	56
Des Moines, Iowa	90	71	13	3	-	3	5
Duluth, Minn.	33	25	8	-	-	-	1
Kansas City, Kans.	28	15	9	3	-	1	2
Kansas City, Mo.	111	82	17	7	5	-	7
Lincoln, Nebr.	40	24	9	5	-	2	2
Minneapolis, Minn.	201	160	21	15	4	1	13
Omaha, Nebr.	96	68	11	10	2	5	5
St. Louis, Mo.	123	78	20	8	8	9	17
St. Paul, Minn.	58	47	7	2	-	2	3
Wichita, Kans.	51	37	8	4	-	2	1
S. ATLANTIC	1,174	717	224	130	51	52	57
Atlanta, Ga.	185	108	32	28	6	11	3
Baltimore, Md.	124	79	24	13	7	1	16
Charlotte, N.C.	81	52	19	5	2	3	7
Jacksonville, Fla.	125	73	30	14	5	3	9
Miami, Fla.	88	47	20	16	4	1	-
Norfolk, Va.	69	51	12	2	1	3	3
Richmond, Va.	89	55	19	6	7	2	4
Savannah, Ga.	43	23	9	7	1	3	2
St. Petersburg, Fla.	64	51	4	4	3	2	1
Tampa, Fla.	151	103	23	16	2	7	11
Washington, D.C.	132	58	28	17	13	16	1
Wilmington, Del.	23	17	4	2	-	-	-
E.S. CENTRAL	715	485	147	46	16	21	63
Birmingham, Ala.	110	68	29	3	1	9	3
Chattanooga, Tenn.	38	29	6	3	-	-	6
Knoxville, Tenn.	78	52	18	6	1	1	11
Lexington, Ky.	65	45	16	3	1	-	10
Memphis, Tenn.	162	105	35	11	5	6	18
Mobile, Ala.	79	61	8	6	2	2	3
Montgomery, Ala.	49	38	6	3	1	1	-
Nashville, Tenn.	134	87	29	11	5	2	12
W.S. CENTRAL	1,427	880	294	152	61	40	91
Austin, Tex.	75	49	13	7	4	2	2
Baton Rouge, La.	31	15	10	2	4	-	-
Corpus Christi, Tex.	44	29	12	3	-	-	1
Dallas, Tex.	210	128	44	26	5	7	7
El Paso, Tex.	86	55	18	6	3	4	6
Ft. Worth, Tex.	91	55	21	5	5	5	6
Houston, Tex.	347	209	74	42	16	6	36
Little Rock, Ark.	85	52	16	10	4	3	5
New Orleans, La.	66	29	16	15	2	4	-
San Antonio, Tex.	178	114	30	20	9	5	9
Shreveport, La.	83	52	20	5	5	1	6
Tulsa, Okla.	131	93	20	11	4	3	13
MOUNTAIN	934	630	151	91	35	27	89
Albuquerque, N.M.	136	100	19	10	5	2	16
Colo. Springs, Colo.	45	33	5	4	1	2	3
Denver, Colo.	129	74	24	14	6	11	17
Las Vegas, Nev.	147	93	34	16	2	2	7
Ogden, Utah	25	19	3	-	2	1	5
Phoenix, Ariz.	195	126	30	23	11	5	17
Pueblo, Colo.	25	19	5	1	-	-	2
Salt Lake City, Utah	91	58	11	13	6	3	11
Tucson, Ariz.	141	108	20	10	2	1	11
PACIFIC	1,869	1,183	347	221	55	57	126
Berkeley, Calif.	21	11	6	1	1	2	-
Fresno, Calif.	96	62	16	10	3	4	4
Glendale, Calif.	15	12	1	2	-	-	-
Honolulu, Hawaii	80	56	11	9	3	1	7
Long Beach, Calif.	61	36	13	9	1	2	5
Los Angeles, Calif.	417	251	75	62	18	6	24
Pasadena, Calif.	29	17	5	3	1	3	4
Portland, Oreg.	127	77	30	13	2	5	5
Sacramento, Calif.	175	112	33	18	8	4	17
San Diego, Calif.	180	109	38	21	3	9	22
San Francisco, Calif.	172	100	34	33	4	1	5
San Jose, Calif.	176	114	31	16	7	8	16
Santa Cruz, Calif.	31	20	4	6	1	-	4
Seattle, Wash.	145	102	25	11	2	5	4
Spokane, Wash.	59	48	6	1	-	4	5
Tacoma, Wash.	85	56	19	6	1	3	4
TOTAL	12,403¶	8,066	2,310	1,260	417	343	825

*Mortality data in this table are voluntarily reported from 121 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 these 3 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

¶Total includes unknown ages.

U: Unavailable.

Fishing Fatalities — Continued

Persons who drowned or are presumed to have drowned were compared with persons who survived incidents in which at least one life was lost. Of those persons reportedly wearing a PFD, seven (58%) of 12 survived and thus were more likely to have survived (odds ratio=8.9; 95% confidence interval=1.7–49.0) than those who reportedly were not wearing a PFD, of whom six (14%) of 44 survived.

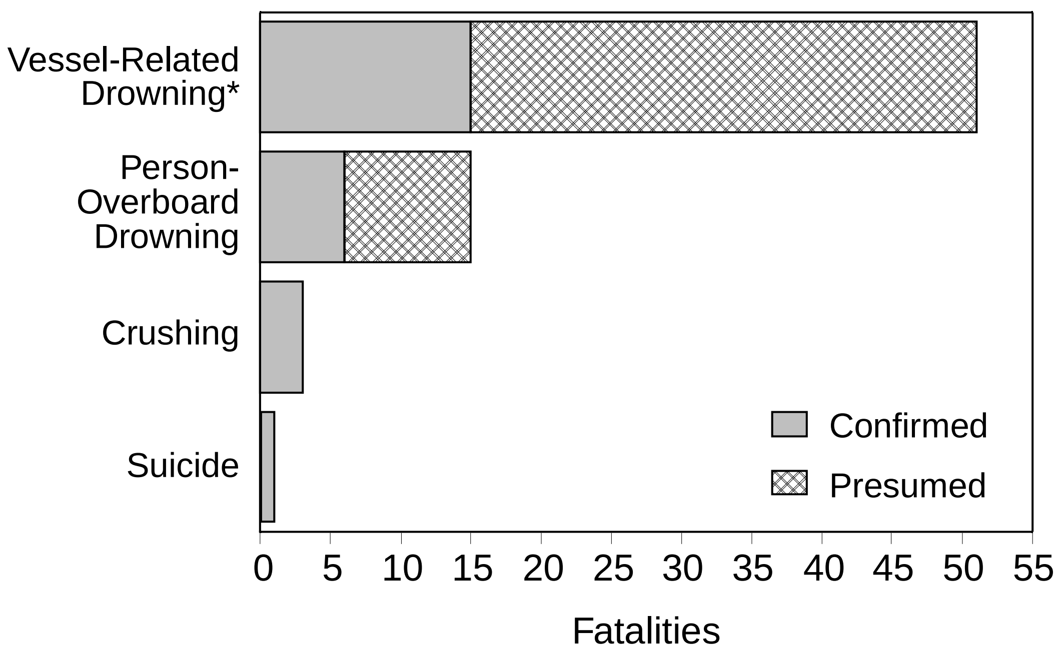
Seven (10%) of the 70 workers died while working aboard catcher-processor (“factory trawler”) vessels. These vessels combine the activities and risks of fish harvesting with those of large commercial canning and food-processing machinery.

Nine workers died during “derbys” (i.e., abbreviated fishing seasons during which catch quantities are unlimited), which are scheduled in advance and held regardless of weather or sea conditions. The USCG cited foul weather and/or vessel overloading as a factor in five of these fatalities.

Reported by: Alaska Activity, Div of Safety Research, National Institute for Occupational Safety and Health, CDC.

Editorial Note: The findings in this report are consistent with previous reports of surveillance data, incident investigations, and survey information collected during 1980–1992 by NIOSH (*4*; CDC, unpublished data), the USCG (*5*), the National Research Council (*6*), and the University of Alaska (*7*). These findings indicate that workers at greatest risk for fishing-related fatal injuries are those who operate aboard unstable (i.e., easily capsized) vessels and those who have insufficient training in shipboard safety, especially regarding cold-water survival techniques and the use of lifesaving equipment such as PFDs.

FIGURE 1. Commercial fishing fatalities, by circumstance of death — Alaska, 1991–1992



*Vessel-related drownings include fatalities related to missing, sunk, or capsized vessels.

Fishing Fatalities — Continued

In this report, fatality rates were greatest for shellfishing and varied substantially by fishery, which differ in geographic location of fishing grounds, type of harvesting equipment and techniques, and time of year and duration of respective fishing seasons. Alaska shellfishing, which is predominantly for crab, may be particularly hazardous because crab harvesting generally takes place during the winter months, often in conditions of cold, high winds, short daylight hours, and high seas. In addition, the basic equipment used in crabbing is large steel cages ("pots") that weigh up to 800 pounds (empty) each and require physical strength and use of winches and other equipment for placement, retrieval, and stowage. Stacking these pots on deck can also severely compromise vessel stability, especially if accompanied by icing of the vessel structure.

Adverse weather and other environmental conditions contribute to the increased risk for injury for all commercial fishing workers in Alaska. Resource management needs have led to a substantial reduction in the number of permitted fishing days for some species (*8*); for example, in 1992 the Alaskan halibut fishing season consisted of two or three 24-hour derbys, compared with a 2-week season in 1980. Many workers labor continuously—without sleep and in foul weather—through a derby and return to port in overladen, unstable vessels. If more flexible fishing seasons were established, fishing could be done during fair weather instead of during a mandated short season regardless of weather conditions.

Environmental conditions may also contribute to the severity of work-related incidents. The USCG has classified all waters in Alaska (including bays, inlets, harbors, and rivers) as "cold" waters (<60 F [<15.6 C]); in these waters, hypothermia can lead to death by drowning within minutes of immersion. Because immersion suits provide thermal protection from cold water temperatures and are critical for survival during immersions in cold waters, the USCG has recommended their routine use in these environments (*9*).

The findings in this report also indicate that once a person falls overboard, protection from drowning is frequently inadequate. Although the USCG does not require PFDs to be worn during all activities, USCG regulations (46 CFR Part 28) do require that each commercial fishing vessel carry at least one USCG-approved PFD of the proper size for each person on board, and that each PFD be readily accessible from both the worker's usual work station and berthing area (*9*). The use of some PFDs while performing tasks on commercial fishing vessels may actually increase worker risk because the PFDs may become snagged by nets or hooks or caught in large winches and pulleys (*9*).

Since 1987, the number of factory seafood-processor vessels has increased rapidly in the Alaska seafood industry. The risks for workers aboard processor vessels are similar to those on commercial fishing vessels (e.g., prolonged and extended work hours, exposure to hazardous equipment, and danger of falling overboard or the vessel sinking). College newspapers recently have advertised opportunities for seasonal employment aboard factory processors operating in Alaskan waters. Accordingly, students and other persons considering seasonal employment in the Alaskan seafood industry should be aware of the hazards associated with this type of work and the need to familiarize themselves with available safety equipment (including PFDs) and procedures. In addition, employers should provide such training to workers on their arrival.

Fishing Fatalities — Continued

Prevention-oriented research activities aimed at reducing the risk for occupational injuries in the Alaska commercial fishing industry include the recently established NIOSH surveillance and investigative activities to identify potential risk factors. Other activities include developing, testing, and increasing acceptance of PFDs that incorporate heat-conserving properties and can be comfortably and safely worn by all fisherpersons while working on deck. Ongoing activities include data collection by the Alaska Occupational Injury Prevention Program and the USCG and safety education programs through the USCG and nonprofit organizations (e.g., Alaska Marine Safety and Education Association, Alaska Vocational Technical Center, and the North Pacific Fishing Vessel Owners Association).

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International Notes

Mandatory Bicycle Helmet Use — Victoria, Australia

On July 1, 1990, the first statewide law in Australia requiring wearing of an approved safety helmet by all bicyclists became effective in Victoria (1989 population: approximately 4.3 million) (Figure 1). Implementation of the law was preceded by a decade-long campaign to promote helmet use among the estimated 2.2 million persons who ride bicycles; the campaign included educational programs; mass media publicity; financial incentives; and efforts by professional, community, and bicycle groups (*1,2*). This report assesses helmet law enforcement, helmet use, and injuries related to bicycling in Victoria.

Victoria's comprehensive bicycle-helmet–promotion program included promotion of helmets in the schools through a bicycle-safety education unit, a film on safer riding, and since 1983, a requirement for helmets to be worn for all cycling activities

Bicycle Helmet Use — Continued

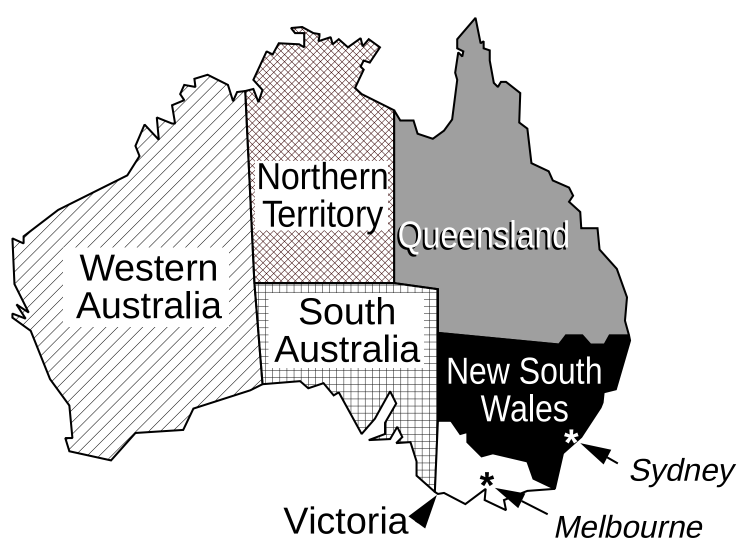
organized by public schools in the state. A mass media publicity campaign emphasizing the seriousness of head injury and the protection provided by helmets was targeted at parents of primary-school–aged children. A helmet-promotion task force was formed that included bicyclists, motorists, police officers, educators, community safety organizations, helmet manufacturers, retailers, and physicians. Government-sponsored bulk purchase and rebate programs enabled purchase and distribution of 188,000 helmets at discount.

The law requires all persons cycling on roads, footpaths, and separate bicycle paths and in public parks to wear a securely fitted, government-approved bicycle helmet; the law also applies to passengers (e.g., children in bicycle child seats). Exemptions are difficult to obtain; fewer than 50 exemptions were granted during the first year. The maximum penalty for an offense—a $100 fine—has been invoked rarely; more commonly, a "Bicycle Offence Penalty Notice" of $15 is issued, or a "Bicycle Offence Report" for children (no monetary penalty) is sent to the parents. The number of penalty notices increased from 2836 during July 1989–June 1990 and to 19,229 during July 1990–June 1991, and offense reports increased from 1743 to 5028, respectively.

Overall helmet-wearing rates for cyclists in Victoria were estimated by combining the results of observation surveys in the city of Melbourne and elsewhere in proportion to the population distribution (*1*). Estimated overall wearing rates for Victoria increased from 31% during 1990 to 75% during 1991. Substantial increases occurred among all age groups, although rates of use were lowest among teenagers (Table 1).

Concurrent with the increase in helmet use, declines have occurred in both the number of compensation claims filed with the Transport Accident Commission (TAC), the sole motor-vehicle insurer in Victoria, for severe bicycle injuries (fatal or resulting in hospitalization) (Figure 2) and the number of cyclists with injuries who were admit-

FIGURE 1. Site of bicycle safety-helmet legislation — Victoria, Australia



Bicycle Helmet Use — Continued

ted to public hospitals (Figure 3). Based on comparison of claims submitted to the TAC during 1989–1990 and 1990–1991, the number of cyclists killed or hospitalized with head injuries decreased by 51%, and the number with similarly severe injuries other than to the head decreased by 24%; for public hospital admissions (Figure 3), these numbers decreased 37% and 21%, respectively.

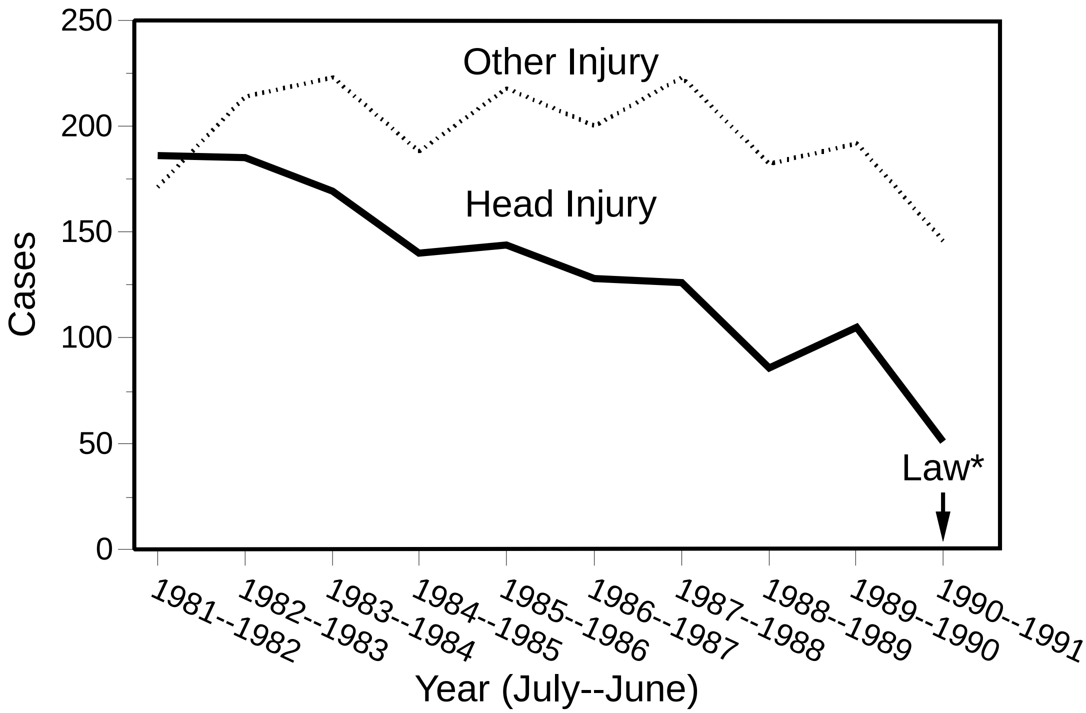
Observational surveys of bicycle use in Melbourne indicated a 36% decrease in bicycle use by children in May–June 1991 compared with May–June 1990. The largest

TABLE 1. Percentage of bicyclists who wore helmets, by age group and type of bicycle use — Victoria, Australia, 1985–1991

	Commuting use* (age group [yrs])			Recreational use (age group [yrs])			
Year	5–11	12–17	≥18	5–11	12–17	≥18	Total
1985	36	11	32	12	5	8	**15**
1986	55	17	32	17	7	7	**20**
1987	64	19	35	20	9	10	**23**
1988	59	13	33	28	9	16	**23**
1989	69	15	38	31	12	20	**26**
1990	71	19	37	41	16	26	**31**
1991†	93	53	89	76	58	77	**75**

*To and from school and work.
†Year when law requiring helmet use went into effect.

FIGURE 2. Motor-vehicle–related bicyclist injuries resulting in hospitalization or death, registered with the Transport Accident Commission, by site of injury — Victoria, Australia, July 1981–June 1991



*A law requiring bicyclists and passengers to wear an approved safety helmet went into effect July 1, 1990.

Bicycle Helmet Use — Continued

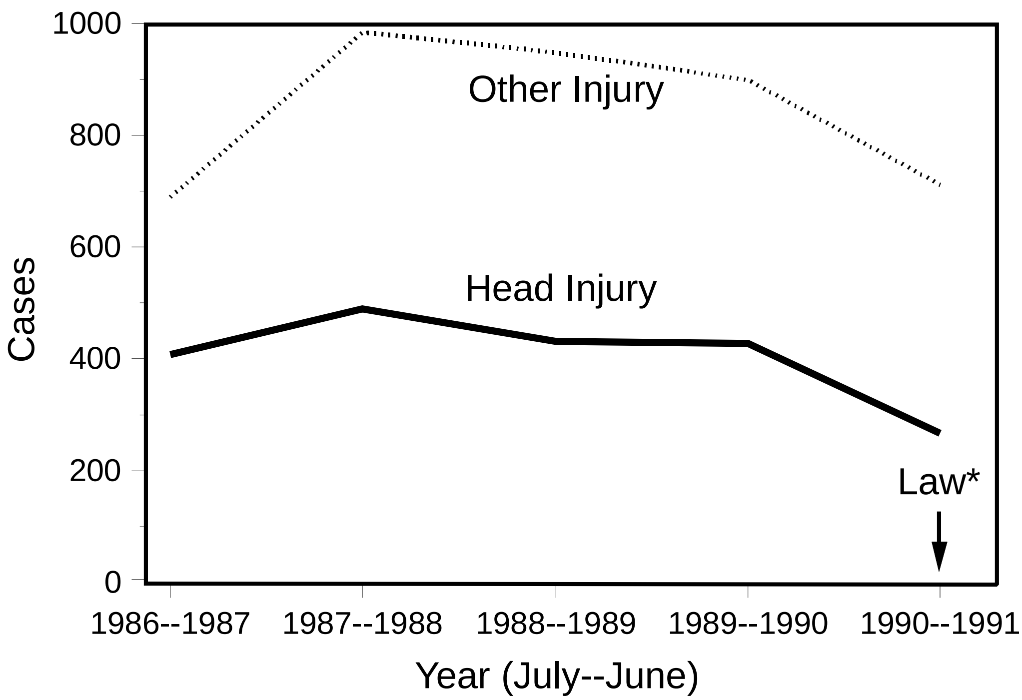
decrease (44%) occurred among 12–17-year-olds, compared with the decrease among 5–11-year-olds (15%).

Reported by: AP Vulcan, MH Cameron, L Heiman, Monash Univ Accident Research Center, Melbourne, Victoria, Australia. Epidemiology Br, Div of Injury Control, National Center for Injury Prevention and Control, CDC.

Editorial Note: The findings in this report indicate a substantial increase in helmet-wearing rates after implementation of the law in Victoria, especially among teenagers and adults. The number of offenses issued suggests a moderate level of enforcement. In addition, however, comprehensive efforts to promote helmet use increased the prevalence of helmet wearing among cyclists to 31% from 1989 through 1990—before the law was enacted—and were accompanied by a reduction in head injuries; these efforts fostered support for legislation.

The reduction in number of bicyclists with head injuries following implementation of the law in Victoria may reflect a combination of several factors, including the decline in bicycle use by children; the possibility that, by wearing helmets, cyclists are more likely to be noticed by motorists; the effect of educational efforts and publicity in improving the safety practices of cyclists; and the impact of major initiatives in 1989 and 1990 to reduce motorists' speeding and drinking and driving. The findings in this report suggest a substantial and positive effect of the law on helmet use. Further assessment is needed to identify the most important components of the combined legislative and educational approach and to measure the effectiveness of the program in reducing head injuries.

FIGURE 3. Bicyclist admissions to public hospitals, by site of injury — Victoria, Australia, July 1986–June 1991



*A law requiring bicyclists and passengers to wear an approved safety helmet went into effect July 1, 1990.

Bicycle Helmet Use — Continued

Attempts to increase bicycle safety-helmet use in the United States include, for example, a communitywide educational program in Seattle that increased helmet use from 5% to 33% during a 3-year period (*3*). In Howard County, Maryland, a law requiring bicyclists aged <16 years to wear a helmet was enacted after the cycling-related deaths of two children; helmet use among children increased from 4% before the law to 47% after implementation (*4*). However, no U.S. community has employed the approach in Victoria of combining a sustained, comprehensive educational approach with enactment and enforcement of a law.

Although most head injuries resulting from bicycle crashes occur among children, and helmet use reduces the risk for head injury by 85% (*5*), the prevalence of helmet wearing is low among U.S. children (*6*). Attributable risk calculations suggest that if all U.S. bicyclists had worn helmets from 1984 through 1988, as many as 2500 deaths and 757,000 head injuries might have been prevented (*7*). The comprehensive community-based educational program and legislative approach for increasing bicycle-helmet use in Victoria may serve as a model for reducing bicycle-related injuries and deaths in the United States and other countries.

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Current Trends

Tuberculosis Morbidity — United States, 1992

In 1992, health departments in all 50 states, New York City, and the District of Columbia reported to CDC 26,673 cases of tuberculosis through the Report of Verified Case of Tuberculosis surveillance system—an increase of 390 cases (1.5%) over the 26,283 cases reported in 1991 (*1*). The tuberculosis incidence rate for 1992 was 10.5 per 100,000 population, compared with 10.4 per 100,000 in 1991.

Further analysis will be published in *CDC Surveillance Summaries*.

Reported by: Div of Tuberculosis Elimination, National Center for Prevention Svcs, CDC.

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