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Firearm and Motor Vehicle Injury Mortality—Variations by State, Race, and Ethnicity: United States, 1990–91

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Introduction

In 1991, motor vehicles were responsible for more injury deaths than any other cause of injury. Firearms were the second leading cause of injury death. Motor vehicle crash- and firearm-related injuries accounted for 55 percent of all injury deaths in the United States in 1991; 43,536 people died as the result of injuries sustained during motor vehicle crashes and 38,317 people died as the result of firearm-related injuries (1,2).

From 1980 through 1985, motor vehicle crash and firearm death rates decreased by 18 and 11 percent, respectively. From 1985 through 1991, the motor vehicle crash death rate continued to decrease (by 10 percent), whereas the death rate due to firearms increased by 14 percent. The more recent period, 1988 through 1991, was one of faster change for both causes of death; the motor vehicle death rate declined 14 percent, at an average annual rate of 4.8 percent per year, while the firearm death rate increased 9 percent, at an average annual rate of 3.2 percent per year. If these recent trends (1988 through 1991) in motor vehicle crash and firearm mortality were to continue, firearms would displace motor vehicle crashes as the leading cause of injury death in the United States by the mid-1990's. If predictions of when the crossover would occur were based upon longer term trends, for example, 1968 through 1991, firearm deaths would outnumber motor vehicle deaths by the year 2003 (2).

The Healthy People 2000 initiative includes objectives for reducing motor vehicle crash fatalities for persons of all ages, and in particular for persons 15–24 years of age, and for American Indian/Alaskan Native persons (3). In addition, there are several objectives directed towards the reduction of homicide, suicide, and weapon-related violent death rates for all persons, and specifically for males 15–34 years of age, black persons, persons of Hispanic origin, and American Indian/Alaskan Native males.

Recent increases in firearm mortality have been greatest among adolescents and young adults. From 1988 through 1991, the firearm death rate for persons 15–24 years increased 40 percent to 28.9 per 100,000 population, and the motor vehicle death rate declined 15 percent to 32.0 per 100,000 population. Also during this period, the firearm death rate for persons 25–34 years increased 8 percent to 22.1 per 100,000, and the motor vehicle death rate decreased 12 percent to 21.2 per 100,000. In 1991, the firearm death rate for persons 15–24 years of age was only 10 percent lower than the motor vehicle death rate, and at 25–34 years the firearm death rate exceeded the motor vehicle death rate by 4 percent (figure 1).

Large racial differentials in firearm mortality have been previously reported for the white and black populations (4,5). Death rates for other racial and ethnic groups could not be estimated previously for non-Census years because age and State-specific intercensal population estimates (needed for estimates of the Hispanic population) were unavailable.

In this report, numbers of firearm and motor vehicle deaths are compared within States for persons of all races in 1991, and within States for the non-Hispanic white, Hispanic, black, Asian and Pacific Islander, and American Indian/Alaskan Native (hereafter referred to, respectively, as Asian and American Indian) populations for 1990–91. The extent to which homicide and suicide contribute to firearm deaths is also examined for these groups. In addition, this report includes an analysis of State-, race-, and ethnic-specific firearm and motor vehicle death rates for persons 15–34 years of age.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control and Prevention
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CENTERS FOR DISEASE CONTROL AND PREVENTION

Methods

Data by State

Total numbers of firearm and motor vehicle deaths for 1990 and 1991 are shown for all States in table 1. Two years of data, 1990–91, were combined in tables 2–4 because of the small numbers of annual deaths in some minority populations and in the age group 15–34 years. Numbers of deaths in 1990–91 are shown for all States in table 2. However, the text highlights data only for States in which the combined numbers of firearm and motor vehicle deaths for 1990–91 exceeded 100. State- and race/ethnic-specific death rates for persons 15–34 years of age for 1990–91 were included in table 4 if the death rate was based on at least 20 deaths, and are shown with an asterisk if they were based on fewer than 50 deaths.

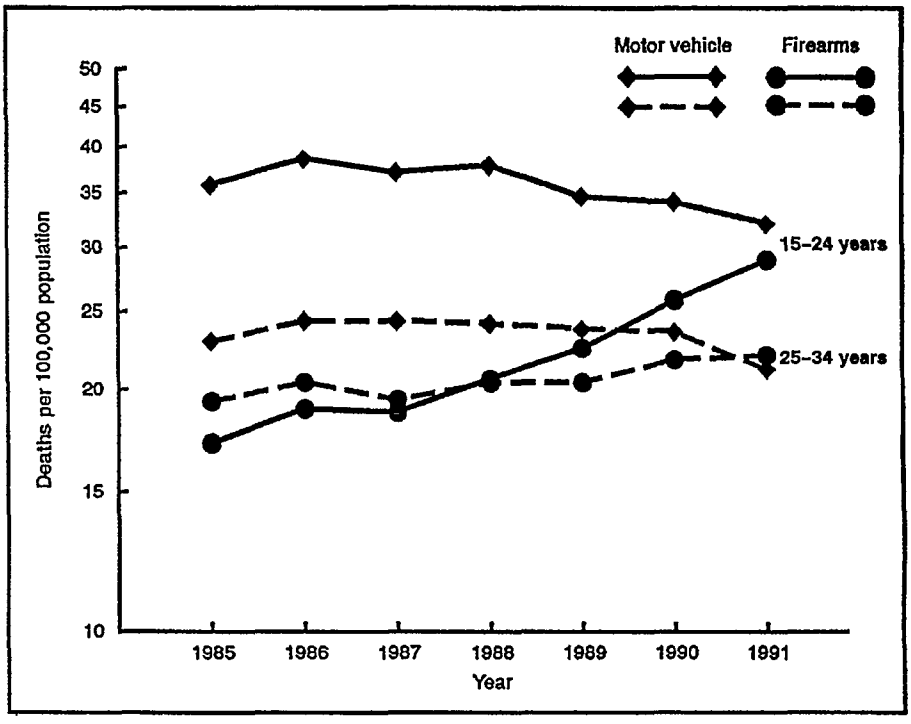

Figure 1. Firearm and motor vehicle crash death rates for persons 15–24 and 25–34 years of age: United States, 1985–91

Hispanic origin

In 1990, mortality data for the Hispanic origin population were based on deaths to residents of 45 States and the District of Columbia whose data were at least 90 percent complete (6). In 1991, the number of States with mortality data by Hispanic origin increased to 47. Data on people of Hispanic origin from New York, New Hampshire, and Oklahoma were not included in 1990 or 1991, and data for Connecticut and Louisiana were excluded for 1990. Data for New York were excluded in 1990 and 1991 because more than 10 percent of the death certificates from New York City were classified to "unknown origin." Thus, deaths and death rates for non-Hispanic white and Hispanic populations reported here are not national in scope. They do, however, include almost 90 percent of the Hispanic population in 1990–91 (1,6).

Quality of race data

In estimating race- and ethnic-specific death rates, it is important that race and ethnicity be consistently reported in the numerator and denominator of the death rate. In a study of the agreement between race and ethnic identification as reported on death certificates and as reported by the Bureau of the Census, it was found that agreement rates were high for the non-Hispanic white, Hispanic, and black populations (7). However, persons classified as American Indian or Asian by the Census (household respondents) were sometimes classified as white on their death certificates leading to a potential underestimation of death rates for American Indians by 22 percent and for Asian persons by 12 percent (7).

Cause of death classifications are found in the technical appendix.

Results

Numbers of deaths for the total population (table 1)

Throughout most of the 1980's, motor vehicle deaths exceeded firearm deaths in all States with the exceptions of Alaska, Louisiana, and the District of Columbia. (Data upon request.) In 1990, Maryland, New York, Texas, Alaska, Louisiana, and the District of Columbia had more firearm than motor vehicle deaths. In 1991, there were more firearm deaths than motor vehicle deaths in California, Louisiana, Nevada, New York, Texas, Virginia, and the District of Columbia. In Maryland, the numbers of firearm and motor vehicle deaths were identical in 1991.

Race- and ethnic-specific numbers of deaths (table 2)

Among non-Hispanic white persons in 1990–91, firearm deaths exceeded motor vehicle deaths by 5 percent in Nevada. Four of five firearm deaths (79 percent) in Nevada were suicides. In Arizona, Texas, New Mexico, and Wyoming, the numbers of firearm deaths were less than 10 percent below the number of motor vehicle deaths. In Arizona, New Mexico, and Wyoming, three-fourths of the firearm deaths were suicides, and in Texas, about two-thirds (68 percent) were suicides. Nearly three-fourths of all non-Hispanic white firearm victims died as a result of a suicide.

Among Hispanic persons in the 15 States that had at least 100 total firearm and motor vehicle deaths in 1990–91, firearm deaths exceeded motor vehicle deaths in Illinois and Pennsylvania, and 78–80 percent of those firearm deaths were homicides. In California, Massachusetts, and Texas, the numbers

of firearm deaths were less than 10 percent lower than the number of motor vehicle deaths. Four of five firearm deaths in California and Massachusetts were homicides, and two of three in Texas were homicides. Overall, about 70 percent of Hispanic firearm victims died in a homicide (excludes data from New York).

In the black population, firearm deaths exceeded motor vehicle deaths in all but three—New Jersey, Mississippi, and South Carolina—of the 31 States (where there were at least 100 total firearm and motor vehicle deaths). In New Jersey, the number of firearm deaths was less than 5 percent below the number of motor vehicle deaths. In Mississippi and South Carolina, firearm deaths were lower than motor vehicle deaths by 19 and 28 percent respectively. On the other hand, in Wisconsin and the District of Columbia, the ratio of firearm deaths to motor vehicle deaths ranged from 4–6:1. In the District of Columbia, 96 percent of firearm deaths were homicides. In another 21 States, the ratio averaged 2–3 firearm deaths for every 1 motor vehicle death. Overall, 85 percent of black victims of firearm mortality died in a homicide.

For the Asian population, 4 States had at least 100 deaths from firearm and motor vehicle injuries. Texas was the only State to have more firearm than motor vehicle deaths; 73 percent of those firearm deaths were homicides. Among all Asian persons, 64 percent of firearm deaths were homicides.

For the American Indian/Alaskan Native population, 5 States had at least 100 deaths from firearm and motor vehicle injuries, and only Alaska had more firearm than motor vehicle deaths. (Alaska had a disproportionate number of unintentional firearm deaths.)

Death rates for all persons 15–34 years of age (table 3)

Among adolescents and young adults 15–34 years of age in 1990–91, the firearm death rate was 11 percent lower than the motor vehicle crash death rate, 24.4 compared with 27.3 per 100,000. In four States (Illinois, Maryland, Louisiana, and Texas), the firearm death rates were 13 to 26 percent higher than the respective motor vehicle death rates. In New York, the death rate for firearms exceeded the rate for motor vehicle deaths by 61 percent (28.1 compared with 17.4 per 100,000), and in the District of Columbia, the firearm death rate was 8.6 times the motor vehicle death rate (119.8 compared with 14.0 per 100,000).

With few exceptions, there were low (relative to the United States rates) firearm and motor vehicle death rates in the New England, Middle Atlantic, and the East North Central States. Low firearm death rates were also reported in the West North Central States. Of the States with relatively large numbers (several hundred) of injury deaths, firearm and motor vehicle death rates in New Jersey and Massachusetts were among the lowest (9.6 and 15.3 per 100,000, respectively, in New Jersey and 8.3 and 15.9 per 100,000, respectively, in Massachusetts). On the other hand, in five States (Alabama, Mississippi, Arkansas, Louisiana, and Nevada) the firearm and the motor vehicle death rates were at least 25 percent greater than the respective national rates for all persons 15–34 years in 1990–91.

Race- and ethnic-specific death rates for persons 15–34 years (table 4)

National firearm death rates for black, Hispanic, and American Indian persons 15–34 years were, respectively, 4.7, 1.9, and 1.6 times the firearm death rate for non-Hispanic white persons (15.2 per 100,000). The firearm death rate for Asian persons was 30 percent lower than the rate for non-Hispanic white persons. The motor vehicle death rate for American Indian persons (50.6 per 100,000), was 1.8–2.2 times the respective death rates for non-Hispanic white, Hispanic, and black persons, and 3.7 times the rate for Asian persons. For black persons 15–34 years, the firearm death rate was 3.1 times the motor vehicle death rate; for Hispanic persons, the two death rates were similar; for non-Hispanic white and American Indian persons, the firearm death rates were about half the motor vehicle rates; and for Asian persons, the firearm death rate was 22 percent below the motor vehicle death rate.

For non-Hispanic white persons 15–34 years of age, the firearm death rate did not exceed the motor vehicle death rate in any State. In Arizona and Wyoming, the firearm death rates for non-Hispanic white persons were, respectively, 11 and 17 percent less than the respective motor vehicle death rates as a result of higher than average firearm death rates for non-Hispanic white persons.

For Hispanic persons 15–34 years (where, overall, the two death rates were similar) in California and Texas, the firearm death rates exceeded the motor vehicle death rates by 14 and 18 percent, respectively, both as a result of higher than average firearm death rates (33.5 and 33.6 compared with 29.6 per 100,000). In Illinois, the firearm death rate was 67 percent greater than the motor vehicle death rate, as a result of a lower than average motor vehicle death rate.

For black persons 15–34 years of age, (where the firearm to motor vehicle death rate ratio was 3.1:1) the ratio in New York was 6:1 as a result of a much lower than average motor vehicle death rate (12.6 compared with 23.0 per 100,000). In Illinois, Michigan, and Missouri, the firearm to motor vehicle death rate ratios were 5.2–5.7:1 as a result of higher than average firearm and lower than average motor vehicle death rates.

For Asian persons 15–34 years, the firearm death rates in Texas and California were 1.8 and 1.3 times the national rate for Asian persons (19.1 and 13.5 compared with 10.7 per 100,000). The motor vehicle death rate in Hawaii was 1.6 times the national average (22.3 compared with 13.7 per 100,000).

For American Indian persons 15–34 years, the firearm death rate in Alaska was 4 times the national average for all American Indians (100.6 compared with 24.1 per 100,000). The motor vehicle death rates in Arizona and New Mexico were, respectively, 2.0 and 2.5 times the national average for American Indians (103.0 and 124.7 compared with 50.6 per 100,000).

In several States, comparisons of firearm and motor vehicle death rates

for persons 15–34 years across three or more race and ethnic groups were possible:

- In New Jersey, (where firearm and motor vehicle death rates for non-Hispanic white, Hispanic, and black persons were lower than the national average) the firearm death rate for black persons (26.7 per 100,000) was 2.2 and 5.1 times the respective rates for Hispanic and non-Hispanic white persons. The motor vehicle death rates for all three groups in New Jersey were similar (14.8–17.5 per 100,000).
- In Pennsylvania, the firearm death rate for black persons (71.1 per 100,000) was 1.7 and 6.0 times the respective rates for Hispanic and non-Hispanic white persons.
- In Illinois, the firearm death rate for black persons (94.2 per 100,000) was 3.2 and 9.6 times the respective rates for Hispanic and non-Hispanic white persons, and the motor vehicle death rate for non-Hispanic white persons (24.8 per 100,000) was 1.4 times the respective rates for Hispanic and black persons.
- In Florida, the firearm death rate for black persons (70.5 per 100,000) was 3.4 and 3.8 times the respective rates for Hispanic and non-Hispanic white persons, and the motor vehicle death rate for non-Hispanic white persons (32.4 per 100,000) was 1.2 times the rates for black and Hispanic persons.
- In Texas, firearm death rates for non-Hispanic white, Hispanic, black, and Asian persons were higher than the national averages for those groups. The firearm death rate for black persons (84.9 per 100,000) was 2.5, 4.0, and 4.4 times the respective rates for Hispanic, non-Hispanic white, and Asian persons. Motor vehicle death rates were similar for non-Hispanic white, Hispanic, and black persons (27.1–30.2 per 100,00).
- In Arizona, the firearm death rates were higher than average for non-Hispanic white persons, and average for Hispanic and black persons. The firearm death rate for black persons (66.6 per 100,000) was 2.3 and 2.8 times the respective rates for Hispanic and non-Hispanic white persons. The motor vehicle death rate for American Indians (103.0 per 100,000) was 3.1 and 3.9 times the respective rates for Hispanic and non-Hispanic white persons in Arizona.
- In New Mexico, the motor vehicle death rate for American Indians 15–34 years of age (124.7 per 100,000) was 2.4 and 4.2 times the respective rates for Hispanic and non-Hispanic white persons in New Mexico.
- In California, the firearm death rate for black persons (89.7 per 100,000) was 2.7, 5.8, and 6.6 times the respective rates for Hispanic, non-Hispanic white, and Asian persons. Motor vehicle death rates were higher for Hispanic and non-Hispanic white persons (29.5 and 25.8 per 100,000) than for black (21.4 per 100,000) or Asian persons (14.2 per 100,000).

Discussion

The two leading causes of injury death in the United States continue to be motor vehicles and firearms. Death rates for motor vehicle injuries and for firearm injuries, however, have been converging in recent years as a result of declines in the former and increases in the latter. If the trends observed from the late 1960's through 1991 continue, firearms will claim more lives than motor vehicles very early in the next decade. In several States this crossover has already occurred.

Efforts to reduce motor vehicle death rates have proven successful. Effective interventions have included increasing public awareness, education, legal proscriptions, innovative vehicle and equipment designs, improved roadways, and enhanced medical systems (both emergency services and trauma care) (8). The importance of safety seats and safety belts for children and adults and of bicycle and motorcycle helmets is being continually reinforced. The risks in alcohol consumption and driving are being continually addressed.

Prevention strategies to reduce firearm death rates must be tried and evaluated. The same level of attention that was, and continues to be, paid to the reduction of motor vehicle death rates must be directed toward lowering firearm mortality.

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Table 1. Firearm and motor vehicle deaths and ratio of firearm to motor vehicle deaths by State: United States, 1990 and 1991

State	1990			1991		
	Firearm	Motor vehicle	Ratio	Firearm	Motor vehicle	Ratio
United States	37,155	46,814	0.79	38,317	43,536	0.88
New England:						
Connecticut	258	419	0.62	287	335	0.86
Maine	114	210	0.54	123	196	0.63
Massachusetts	308	680	0.45	307	614	0.50
New Hampshire	97	164	0.59	83	153	0.54
Rhode Island	66	104	0.63	55	93	0.59
Vermont	59	90	0.66	82	91	0.90
Middle Atlantic:						
New Jersey	447	936	0.48	428	857	0.50
New York	2,418	2,409	1.00	2,515	2,226	1.13
Pennsylvania	1,387	1,840	0.75	1,302	1,723	0.76
East North Central:						
Illinois	1,510	1,845	0.82	1,574	1,667	0.94
Indiana	732	1,088	0.67	722	1,047	0.69
Michigan	1,415	1,687	0.84	1,498	1,513	0.99
Ohio	1,178	1,729	0.68	1,284	1,656	0.78
Wisconsin	517	808	0.64	491	823	0.60
West North Central:						
Iowa	225	492	0.46	241	503	0.48
Kansas	289	475	0.61	344	440	0.78
Minnesota	374	660	0.57	351	598	0.59
Missouri	865	1,082	0.80	942	1,023	0.92
Nebraska	160	283	0.57	169	300	0.56
North Dakota	47	120	0.39	45	98	0.46
South Dakota	68	163	0.42	75	146	0.51
South Atlantic:						
Delaware	59	142	0.42	53	106	0.50
District of Columbia	336	71	4.73	344	66	5.21
Florida	2,411	2,879	0.84	2,323	2,517	0.92
Georgia	1,284	1,650	0.78	1,377	1,466	0.94
Maryland	742	702	1.06	708	708	1.00
North Carolina	1,181	1,467	0.81	1,265	1,407	0.90
South Carolina	633	942	0.67	619	897	0.69
Virginia	981	1,059	0.93	984	965	1.02
West Virginia	257	472	0.54	292	431	0.68
East South Central:						
Alabama	912	1,241	0.73	928	1,225	0.76
Kentucky	641	858	0.75	605	821	0.74
Mississippi	544	857	0.63	614	812	0.76
Tennessee	971	1,210	0.80	1,003	1,161	0.86
West South Central:						
Arkansas	467	633	0.74	483	639	0.76
Louisiana	1,050	979	1.07	1,101	869	1.27
Oklahoma	498	717	0.69	503	680	0.74
Texas	3,479	3,359	1.04	3,727	3,229	1.15
Mountain:						
Arizona	699	893	0.78	696	814	0.86
Colorado	422	574	0.74	429	586	0.73
Idaho	165	250	0.66	145	252	0.58
Montana	151	205	0.74	144	181	0.80
Nevada	286	320	0.89	333	272	1.22
New Mexico	255	455	0.56	288	431	0.67
Utah	201	292	0.69	214	269	0.80
Wyoming	90	99	0.91	85	111	0.77
Pacific:						
Alaska	106	100	1.06	98	102	0.96
California	4,829	5,454	0.89	5,064	5,009	1.01
Hawaii	56	179	0.31	57	140	0.41
Oregon	379	559	0.68	367	500	0.73
Washington	536	912	0.59	550	768	0.72

Table 2. Firearm and motor vehicle deaths by race, ethnicity, and State: United States, 1990–91

State	Non-Hispanic white		Hispanic		Black		Asian and Pacific Islander		American Indian/ Alaskan native	
	Firearm	Motor vehicle	Firearm	Motor vehicle	Firearm	Motor vehicle	Firearm	Motor vehicle	Firearm	Motor vehicle
United States[1]	41,413	61,730	6,684	7,863	21,200	10,765	960	1,702	530	1,343
New England:										
Connecticut[2]	175	270	37	13	123	61	5	4	–	1
Maine	220	372	–	2	1	2	–	2	1	4
Massachusetts	393	1,109	50	52	158	77	16	20	2	3
New Hampshire	---	---	---	---	2	3	–	–	–	2
Rhode Island	83	173	18	10	15	11	3	–	1	–
Vermont	136	164	–	1	–	1	1	2	1	–
Middle Atlantic:										
New Jersey	471	1,303	112	164	274	285	18	46	–	1
New York	---	---	---	---	2,050	651	72	100	3	21
Pennsylvania	1,850	3,215	101	64	722	247	19	31	1	3
East North Central:										
Illinois	1,289	2,737	291	214	1,478	491	18	50	3	5
Indiana	1,127	1,965	29	32	296	118	3	5	–	5
Michigan	1,501	2,657	48	69	1,321	378	6	40	13	27
Ohio	1,767	3,021	24	30	664	298	6	21	3	4
Wisconsin	776	1,538	26	15	193	43	8	12	5	23
West North Central:										
Iowa	432	952	4	14	21	18	7	8	2	2
Kansas	494	776	27	26	98	45	6	11	3	10
Minnesota	635	1,162	5	21	60	11	4	21	21	42
Missouri	1,210	1,874	22	29	567	170	4	11	3	7
Nebraska	277	544	10	16	36	12	–	1	3	5
North Dakota	86	175	1	1	–	1	–	–	3	37
South Dakota	118	230	–	1	2	–	1	2	22	76
South Atlantic:										
Delaware	82	209	1	8	27	31	2	1	–	–
District of Columbia	14	18	16	9	653	107	–	–	–	–
Florida	3,009	3,901	507	653	1,243	768	16	38	7	21
Georgia	1,565	2,255	29	71	1,026	751	21	27	3	1
Maryland	632	1,005	25	28	777	339	16	33	3	2
North Carolina	1,577	2,112	30	44	791	640	7	10	34	60
South Carolina	802	1,215	10	11	435	606	2	9	1	–
Virginia	1,258	1,520	28	50	643	411	17	20	1	3
West Virginia	517	876	4	4	28	17	–	5	–	–
East South Central:										
Alabama	1,136	1,849	12	16	684	583	4	4	2	3
Kentucky	1,131	1,585	4	5	103	71	1	6	–	1
Mississippi	652	1,025	–	4	497	611	4	5	1	6
Tennessee	1,379	2,011	4	16	573	318	3	10	3	5
West South Central:										
Arkansas	673	1,041	2	11	266	196	3	2	1	3
Louisiana[2]	514	597	9	18	1,093	526	9	12	2	5
Oklahoma	---	---	---	---	126	84	2	4	45	106
Texas	3,622	3,950	1,667	1,688	1,806	800	88	70	7	8
Mountain:										
Arizona	991	1,019	225	337	86	36	17	12	76	304
Colorado	671	884	118	202	54	37	2	13	7	11
Idaho	294	445	12	40	–	1	–	2	4	14
Montana	265	307	3	4	2	1	–	3	22	70
Nevada	470	446	45	78	71	32	8	12	18	15
New Mexico	265	296	212	384	19	13	4	6	46	187
Utah	374	480	25	41	2	4	5	12	6	24
Wyoming	164	175	7	13	2	2	1	–	1	19
Pacific:										
Alaska	118	138	7	4	3	6	3	6	72	47
California	4,573	5,741	2,797	3,105	1,992	782	430	708	42	63
Hawaii	40	93	14	30	4	8	64	206	1	–
Oregon	685	928	20	80	28	7	6	18	8	26
Washington	900	1,372	46	135	85	54	28	61	27	61

[1]Data for non-Hispanic white and Hispanic totals do not include the nonreporting States (New Hampshire or Oklahoma) or New York.
[2]Data are for 1991 only.

Table 3. Firearm and motor vehicle death rates, number of deaths, and ratio of firearm to motor vehicle deaths, for persons 15–34 years of age by State: United States, 1990–91

State	Deaths per 100,000 population		Deaths		
	Firearm	Motor vehicle	Firearm	Motor vehicle	Ratio
United States	24.4	27.3	38,911	43,534	0.89
New England:					
Connecticut	15.3	20.1	315	415	0.76
Maine	14.2	27.3	107	206	0.52
Massachusetts	8.3	15.9	330	633	0.52
New Hampshire	11.6	23.1	83	165	0.50
Rhode Island	9.5	14.6	62	95	0.65
Vermont	15.4	29.3	55	105	0.53
Middle Atlantic:					
New Jersey	9.6	15.3	461	738	0.63
New York	28.1	17.4	3,223	2,001	1.61
Pennsylvania	18.8	23.4	1,339	1,672	0.80
East North Central:					
Illinois	25.5	22.5	1,865	1,643	1.13
Indiana	20.1	29.4	708	1,032	0.68
Michigan	26.9	24.6	1,593	1,458	1.09
Ohio	16.7	24.7	1,127	1,664	0.68
Wisconsin	17.1	25.5	521	778	0.67
West North Central:					
Iowa	11.0	29.9	180	491	0.37
Kansas	19.4	29.6	296	451	0.66
Minnesota	12.1	22.3	334	619	0.54
Missouri	28.1	34.2	879	1,072	0.82
Nebraska	14.7	27.9	140	266	0.53
North Dakota	9.7	26.0	38	102	0.37
South Dakota	16.0	32.4	66	134	0.49
South Atlantic:					
Delaware	11.6	24.3	51	107	0.48
District of Columbia	119.8	14.0	522	61	8.56
Florida	27.2	30.8	2,058	2,328	0.88
Georgia	29.1	33.2	1,281	1,459	0.88
Maryland	27.4	22.4	861	704	1.22
North Carolina	26.9	31.6	1,179	1,384	0.85
South Carolina	26.3	40.4	608	933	0.65
Virginia	23.4	24.3	977	1,015	0.96
West Virginia	22.6	44.2	237	463	0.51
East South Central:					
Alabama	33.1	44.2	844	1,125	0.75
Kentucky	22.0	36.9	514	863	0.60
Mississippi	34.9	49.3	572	807	0.71
Tennessee	30.3	36.9	938	1,143	0.82
West South Central:					
Arkansas	32.5	43.7	455	612	0.74
Louisiana	45.4	36.0	1,233	978	1.26
Oklahoma	21.9	33.0	423	637	0.66
Texas	33.2	29.3	3,807	3,367	1.13
Mountain:					
Arizona	27.2	32.5	639	763	0.84
Colorado	17.1	26.8	369	578	0.64
Idaho	18.8	36.3	114	220	0.52
Montana	24.4	40.8	111	186	0.60
Nevada	33.8	37.2	267	294	0.91
New Mexico	28.6	49.2	273	470	0.58
Utah	16.7	22.8	192	262	0.73
Wyoming	29.4	40.7	81	112	0.72
Pacific:					
Alaska	32.8	28.4	126	109	1.15
California	27.6	25.9	5,643	5,298	1.07
Hawaii	8.2	21.9	60	160	0.37
Oregon	17.1	30.3	287	508	0.56
Washington	15.2	27.6	467	848	0.55

Table 4. Death rates due to firearm and motor vehicle injuries among persons 15–34 years of age by race, ethnicity, and State: United States, 1990–91

State	Non-Hispanic white		Hispanic		Black		Asian and Pacific Islander		American Indian/ Alaskan native	
	Firearm	Motor vehicle	Firearm	Motor vehicle	Firearm	Motor vehicle	Firearm	Motor vehicle	Firearm	Motor vehicle
	Deaths per 100,000 population									
United States[1]	15.2	28.4	29.6	28.7	70.7	23.0	10.7	13.7	24.1	50.6
New England:										
Connecticut[2]	10.0	17.8	*33.0	*	48.0	*15.7	*	*	*	*
Maine	13.9	25.9	*	*	*	*	*	*	*	*
Massachusetts	4.6	15.8	*14.6	*14.2	50.6	*15.0	*	*	*	*
New Hampshire	---	---	---	---	*	*	*	*	*	*
Rhode Island	*5.1	14.2	*	*	*	*	*	*	*	*
Vermont	15.2	27.2	*	*	*	*	*	*	*	*
Middle Atlantic:										
New Jersey	5.2	14.8	12.3	14.9	26.7	17.5	*	*12.2	*	*
New York	---	---	---	---	75.6	12.6	*7.0	*8.1	*	*
Pennsylvania	11.8	24.4	42.7	*20.5	71.1	16.1	*	*	*	*
East North Central:										
Illinois	9.8	24.8	29.3	17.5	94.2	17.1	*	*9.7	*	*
Indiana	16.0	30.8	*	*	64.9	17.7	*	*	*	*
Michigan	12.2	25.3	*19.8	*27.8	107.4	18.7	*	*	*	*
Ohio	11.6	25.9	*	*	56.5	17.6	*	*	*	*
Wisconsin	12.4	26.7	*28.1	*	85.1	*	*	*	*	*
West North Central:										
Iowa	10.1	30.2	*	*	*	*	*	*	*	*
Kansas	15.5	28.6	*	*	64.4	*28.0	*	*	*	*
Minnesota	10.5	22.1	*	*	*56.6	*	*	*	*	*62.9
Missouri	16.8	36.4	*	*	109.1	20.8	*	*	*	*
Nebraska	12.1	28.6	*	*	*61.9	*	*	*	*	*
North Dakota	*9.3	21.4	*	*	*	*	*	*	*	*
South Dakota	13.8	24.5	*	*	*	*	*	*	*	*117.7
South Atlantic:										
Delaware	*8.9	27.5	*	*	*24.4	*	*	*	*	*
District of Columbia	*	*	*	*	191.7	*17.9	*	*	*	*
Florida	18.8	32.4	20.6	27.2	70.5	26.5	*	*	*	*
Georgia	19.5	35.7	*20.2	50.0	51.7	26.9	*	*	*	*
Maryland	11.8	25.3	*	*	67.9	17.6	*	*	*	*
North Carolina	19.8	32.4	*33.7	*36.4	47.8	27.9	*	*	*	*47.7
South Carolina	20.6	39.9	*	*	38.7	42.7	*	*	*	*
Virginia	15.5	25.9	*	*23.5	56.1	19.7	*	*	*	*
West Virginia	21.3	44.9	*	*	*55.3	*	*	*	*	*
East South Central:										
Alabama	21.2	47.1	*	*	64.2	36.8	*	*	*	*
Kentucky	21.7	38.8	*	*	26.6	*18.1	*	*	*	*
Mississippi	23.9	50.8	*	*	52.5	46.2	*	*	*	*
Tennessee	21.3	39.1	*	*	72.1	27.8	*	*	*	*
West South Central:										
Arkansas	24.5	44.8	*	*	69.8	36.9	*	*	*	*
Louisiana[2]	24.6	37.4	*	*	89.5	28.5	*	*	*	*
Oklahoma	---	---	---	---	50.3	*22.6	*	*	*15.4	35.0
Texas	21.1	30.2	33.6	28.5	84.9	27.1	19.1	*13.5	*	*
Mountain:										
Arizona	23.8	26.7	29.4	33.5	66.6	*	*	*	*31.5	103.0
Colorado	14.9	25.3	24.6	35.8	*35.5	*23.0	*	*	*	*
Idaho	19.5	35.5	*	*	*	*	*	*	*	*
Montana	23.2	33.7	*	*	*	*	*	*	*	*132.7
Nevada	27.5	36.3	*26.7	*43.0	85.1	*	*	*	*	*
New Mexico	22.6	29.8	33.1	51.8	*	*	*	*	*30.9	124.7
Utah	15.9	20.8	*	*33.3	*	*	*	*	*	*
Wyoming	32.1	38.6	*	*	*	*	*	*	*	*

Table 4. Death rates due to firearm and motor vehicle injuries among persons 15–34 years of age by race, ethnicity, and State: United States, 1990–91—Con.

State	Non-Hispanic white		Hispanic		Black		Asian and Pacific Islander		American Indian/ Alaskan native	
	Firearm	Motor vehicle	Firearm	Motor vehicle	Firearm	Motor vehicle	Firearm	Motor vehicle	Firearm	Motor vehicle
Pacific:										
Alaska	19.4	26.6	*	*	*	*	*	*	100.6	*41.9
California	15.5	25.8	33.5	29.5	89.7	21.4	13.5	14.2	*14.6	*15.6
Hawaii	*	21.2	*	*	*	*	*8.8	22.3	*	*
Oregon	16.4	28.5	*	67.0	*64.8	*	*	*	*	*
Washington	12.9	25.8	*21.1	49.6	51.1	*30.2	*	*14.7	*	*58.1

[1]Data for non-Hispanic white and Hispanic totals do not include the nonreporting States (New Hampshire or Oklahoma) or New York.
[2]Data are for 1991 only.
Notes: Rates shown if based on at least 20 deaths.
Rates are asterisked (*) when they are based on fewer than 50 deaths.

Technical notes

Mortality

Deaths are based on information from all death certificates filed in the 50 States and the District of Columbia. Mortality statistics are based on information coded by the National Center for Health Statistics (NCHS) from copies of the original death certificates received from the State registration offices and on State coded data provided to NCHS through the Vital Statistics Cooperative Program.

For each year 1980 through 1991, the numbers of deaths reported by Alaska have been different from the numbers reported for Alaska by the NCHS because NCHS did not receive changes resulting from Alaska's amended vital records. These differences have been larger for external than for natural causes of death. Alaska reported 221 deaths among residents from firearms and 238 deaths from motor vehicles for 1990–91.

Residence versus occurrence

Firearm and motor vehicle deaths were classified by State of residence of the decedent. Classifying death rates by State (or county) of residence is the usual practice in mortality reporting because population counts (the denominators of the death rates) are based on place of residence. (County of occurrence of death is also coded from the death certificate and is available for analysis from data tapes.) For deaths caused by injuries, residence may not be the most meaningful method of classification. For injury prevention activities, it is more useful to know where the injury event occurred rather than where the victim resided or where the death occurred. National vital statistics data are not coded to identify the location of where the event occurred (e.g., the motor vehicle crash site or the street corner where the firearm was discharged) but rather where the death occurred (e.g., location of hospital). It is known, however, that for 94 percent of all injury fatalities, the State of residence and occurrence were the same. Differences between the State of occurrence of the death and the State of residence are less frequent for firearm fatalities than for motor vehicle crashes. In 1991, 96 percent of firearm fatality victims died in their State of residence compared with 90 percent of motor vehicle crash victims.

Cause-of-death classification

Cause of death was coded in accordance with the Ninth Revision of the International Classification of Diseases (9). Firearm deaths include external cause codes: E922 (unintentional firearm injury), E965.0–E965.4, E970 (firearm homicide), E955.0–E955.4 (firearm suicide), and E985.0–E985.4 (firearm deaths for which the intent was unknown). Motor vehicle deaths include external cause codes E810–E825.

Population

Population counts for 1990 are based on the April 1990 enumeration and 1991 counts are postcensal population estimates (10).

Random variation

Although the mortality data in this report are not subject to sampling error, they may be affected by random variation in the number of deaths involved. When the number of events is small (perhaps less than 100) and the probability of such an event is small, considerable caution must be observed in interpreting the data. Such infrequent events may be assumed to follow a Poisson probability distribution. For this distribution, a simple approximation may be used to estimate the confidence interval, as follows:

If N is the number of registered deaths in the population and R is the corresponding rate, the chances are 19 in 20 (approximate 95-percent confidence interval) that

1. $N-2\sqrt{N}$ and $N+2\sqrt{N}$

covers the "true" number of events.

2. $R-2\frac{R}{\sqrt{N}}$ and $R+2\frac{R}{\sqrt{N}}$

covers the "true" rate.

If the rate R_1 corresponding to N_1 events is compared with the rate R_2 corresponding to N_2 events, the difference between the two rates may be regarded as statistically significant if it exceeds

$$2\sqrt{\frac{R_1^2}{N_1}+\frac{R_2^2}{N_2}}$$

Additional information on random variation may be found in the Technical Appendix of *Vital Statistics of the United States, 1989*, Volume II, Mortality, Part A.

Rates of change

Annual rates of change are represented by the slope of a least squares regression line through the logarithm of the annual rates.

Symbols	
- - -	Data not available
. . .	Category not applicable
–	Quantity zero
0.0	Quantity more than zero but less than 0.05
Z	Quantity more than zero but less than 500 where numbers are rounded to thousands
*	Figure does not meet standard of reliability or precision

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