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Current Trends

Unintentional Deaths from Carbon Monoxide Poisoning — Michigan, 1987–1989

Deaths from unintentional carbon monoxide (CO) poisoning in the United States result primarily from exposure to motor-vehicle exhaust and occur more often during the cold months of the year and in northern and midwestern states (*1–3*). In Michigan, from 1987 through 1989, 103 deaths were related to unintentional CO poisoning. To identify approaches for prevention of unintentional CO poisoning in Michigan, the Michigan Council on Injury Control (MCIC) studied death records and medical examiner (ME) records to determine the manner of deaths related to unintentional CO poisoning in that state from 1987 through 1989. This report summarizes findings of the investigation.

MCIC used the Michigan Department of Public Health's statewide death registry to identify all death records from 1987 through 1989 with underlying cause of death listed as *International Classification of Diseases, Ninth Revision* (ICD-9) E codes 868.0–868.9 (CO or other utility gas). MCIC then selected as cases Michigan residents who died in the state during 1987–1989 and whose cause of death was recorded as unintentional (i.e., not suicide or homicide). Deaths involving fires were excluded.

A total of 121 deaths attributable to unintentional poisoning by CO or other utility gas were identified; records for each case were then requested from the county MEs. Of these, 22 were excluded, including nine that were associated with fires or miscoded, eight that were identified by the ME as suicide, and four that occurred outside Michigan; for one case, no death record was found. Four additional deaths that fit the case definition but that did not appear on the original case list were identified; two of the four cases involved couples of whom only one of the pair appeared on the original list, and the remaining two cases were identified during a manual review of ME records from a large urban county.

Of the 103 deaths that were both unintentional (determined by review of the case report) and involved CO poisoning, 83 (81%) were among males. Exposure to motor-vehicle exhaust caused 69 (67%) deaths, and 34 (33%) were attributed to home-heating devices or other sources.

Carbon Monoxide Poisoning — Continued

Motor-vehicle–related deaths occurred most often among persons aged 25–44 years (4.3 per million population compared with 2.4 per million for all ages) and from September through April (78%) (Figure 1). Of the deaths attributed to motor-vehicle exhaust, 64% occurred in a closed garage; of the 49 persons tested for blood alcohol concentration (BAC), 35 (71%) had a BAC of ≥0.01 g/dL (Table 1). Of the 42 persons who were tested for drugs, five (12%) were positive. Of the deaths not related to motor vehicles, the rate was highest for persons aged ≥65 years (2.7 per million population compared with 1.1 per million for all ages); 87% of these deaths occurred during November–March.

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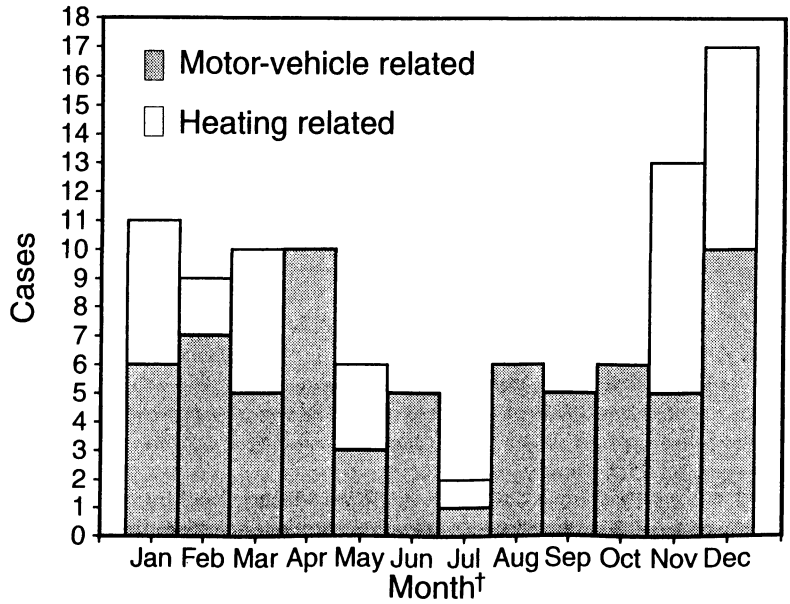
Editorial Note: In the United States, deaths attributed to unintentional CO poisoning decreased from 1979 through 1988 by approximately 63 deaths per year (from 1513 to 878) (*4*). However, because CO is colorless, odorless, and nonirritating, its presence is not easily detected and remains a substantial health risk. Early symptoms of exposure include headache, dizziness, weakness, nausea, visual disturbances, and confusion; with prolonged exposure, coma and death may result (*4–6*).

FIGURE 1. Deaths from carbon monoxide (CO) poisoning,* by month and source of exposure — Michigan, 1987–1989



*Of the 103 deaths from CO poisoning during 1987–1989, three did not involve motor vehicles or heating systems.
†Three-year total.

Carbon Monoxide Poisoning — Continued

TABLE 1. Number of persons who died from motor-vehicle–related carbon monoxide poisoning, by circumstance of death and blood alcohol concentration of deceased — Michigan, 1987–1989

Circumstance	0.00%	0.01%–0.09%	≥0.10%	≥0.10% and drugs*	Unknown	Total
Sleeping or sitting in vehicle	4	3†	13	0	11	**31**
Working on vehicle	6†	4	6	1	7	**24**
Couples parking or sleeping in vehicle	2	5	1	2	0	**10**
Other	2	0	0	0	2	**4**
Total	**14**	**12**	**20**	**3**	**20**	**69**

*Person tested positive for alcohol and other drugs in either blood or urine.
†Includes one person with a positive test result for drugs in blood.

The findings in this study underscore the seasonal patterns in unintentional CO-related deaths and the predominance of deaths related to exposure to motor-vehicle exhaust (*1–3*). In Michigan, most of these motor-vehicle–related deaths occurred in a closed garage, suggesting that many persons may not be aware of the danger of CO exposure. In addition, the findings indicate an increased risk for motor-vehicle–related deaths for young persons and an increased rate of death from other CO sources (e.g., faulty home-heating systems) for older persons.

Public health measures to prevent death from unintentional CO poisoning have included improvements in home-heating appliances and their installation and maintenance, stricter occupational exposure standards, improvements in ventilation in new buildings, prevention education, and improvements in treatment for acute poisoning such as the use of hyperbaric oxygen. Further educational efforts should be directed toward young drivers, particularly males, and toward the elderly or others living in homes with possibly obstructed chimneys and old heating systems, including homes that use butane and kerosene space heaters, wood stoves, and charcoal grills. In addition, the relation between alcohol consumption and risk for CO poisoning, especially motor-vehicle–related risk, should be emphasized in driver's education courses and other programs.

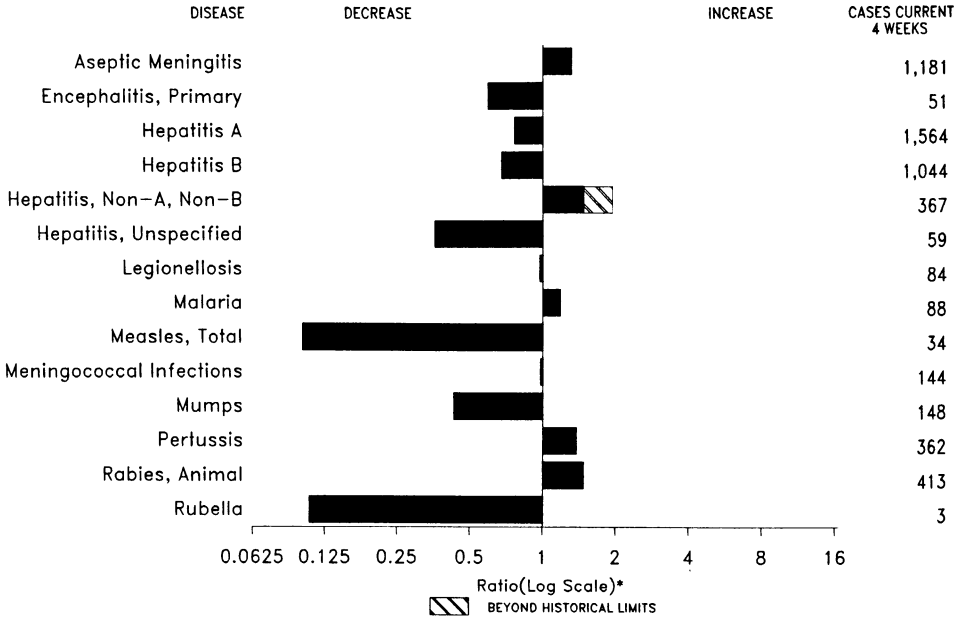
Recent advances in technology have improved the effectiveness of CO detection devices in preventing unintentional CO poisoning. Older CO detection devices measured only CO concentration; however, newer CO detection devices are able to measure cumulative CO exposure, which is a more useful measure of health risk. Underwriters Laboratories has recently implemented a standard (UL 2034) for certifying CO detectors for home use (*7*).

References

1. Cobb N, Etzel R. Unintentional carbon monoxide-related deaths in the United States, 1979–1988. JAMA 1991;266:659–63.
2. Baron RC, Backer RC, Sopher IM. Unintentional deaths from carbon monoxide in motor vehicle exhaust: West Virginia. Am J Public Health 1989;79:328–30.
3. Baron RC, Backer RC, Sopher IM. Fatal unintended carbon monoxide poisoning in West Virginia from nonvehicular sources. Am J Public Health 1989;79:1656–8.
4. Thom SR, Keim LW. Carbon monoxide poisoning: a review. Clinical Toxicology 1989;27:141–56.
5. CDC. Carbon monoxide levels in indoor tractor-pull events—Manitoba, Canada. MMWR 1990;39:743–5.

(continued on page 889)

FIGURE I. Notifiable disease reports, comparison of 4-week totals ending November 21, 1992, 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 — cases of specified notifiable diseases, United States, cumulative, week ending November 21, 1992 (47th Week)

	Cum. 1992		Cum. 1992
AIDS*	39,229	Measles: imported	128
Anthrax	1	indigenous	2,068
Botulism: Foodborne	16	Plague	11
Infant	49	Poliomyelitis, Paralytic†	-
Other	1	Psittacosis	81
Brucellosis	79	Rabies, human	-
Cholera	97	Syphilis, primary & secondary	30,474
Congenital rubella syndrome	8	Syphilis, congenital, age < 1 year§	1,639
Diphtheria	4	Tetanus	36
Encephalitis, post-infectious	103	Toxic shock syndrome	208
Gonorrhea	439,310	Trichinosis	24
Haemophilus influenzae (invasive disease)	1,161	Tuberculosis	20,689
Hansen Disease	135	Tularemia	148
Leptospirosis	43	Typhoid fever	357
Lyme Disease	7,233	Typhus fever, tickborne (RMSF)	436

*Updated monthly; last update October 31, 1992.
†Four cases of suspected poliomyelitis have been reported in 1992; 6 of the 9 suspected cases with onset in 1991 were confirmed, and 5 of the 8 suspected cases with onset in 1990 were confirmed; all were vaccine associated.
§Reports through second quarter 1992.

TABLE II. Cases of selected notifiable diseases, United States, weeks ending November 21, 1992, and November 23, 1991 (47th Week)

Reporting Area	AIDS*	Aseptic Meningitis	Encephalitis		Gonorrhea		Hepatitis (Viral), by type				Legionellosis	Lyme Disease
			Primary	Post-infectious			A	B	NA,NB	Unspecified		
	Cum. 1992	Cum. 1992	Cum. 1992	Cum. 1992	Cum. 1992	Cum. 1991	Cum. 1992	Cum. 1992	Cum. 1992	Cum. 1992	Cum. 1992	Cum. 1992
UNITED STATES	39,229	10,294	612	103	439,310	544,237	18,776	13,427	5,136	650	1,137	7,233
NEW ENGLAND	1,447	386	26	-	9,276	13,011	529	467	90	23	48	1,532
Maine	44	40	3	-	78	147	29	21	6	-	2	5
N.H.	36	27	3	-	114	183	31	33	20	1	8	36
Vt.	23	24	5	-	25	50	13	13	11	-	2	6
Mass.	722	159	12	-	3,279	5,580	260	369	47	22	25	220
R.I.	84	136	3	-	596	1,110	135	18	6	-	11	272
Conn.	538	-	-	-	5,184	5,941	61	13	-	-	-	993
MID. ATLANTIC	10,273	821	24	8	48,887	63,895	1,428	1,740	296	22	294	4,267
Upstate N.Y.	1,304	413	-	-	9,668	11,471	306	418	170	12	98	2,664
N.Y. City	6,024	143	5	2	17,193	24,880	653	346	5	-	7	23
N.J.	1,805	-	-	-	6,741	10,315	230	455	90	-	36	575
Pa.	1,140	265	19	6	15,285	17,229	239	521	31	10	153	1,005
E.N. CENTRAL	3,477	1,733	152	29	84,395	102,758	2,478	1,576	671	23	301	131
Ohio	659	441	51	2	25,118	31,314	402	211	79	4	141	57
Ind.	342	209	10	12	8,360	10,256	692	185	25	2	28	20
Ill.	1,662	490	66	6	28,531	30,795	564	277	90	6	27	27
Mich.	623	545	22	9	18,788	23,639	134	529	405	11	67	27
Wis.	191	48	3	-	3,598	6,754	686	374	72	-	38	-
W.N. CENTRAL	1,110	548	40	6	22,572	26,841	2,542	619	272	34	71	332
Minn.	188	83	17	-	2,702	2,868	700	71	20	2	6	169
Iowa	78	88	-	3	1,434	1,714	53	32	6	5	17	28
Mo.	613	234	8	-	13,836	16,065	1,109	414	212	25	26	101
N. Dak.	8	1	3	-	59	77	111	2	4	1	2	1
S. Dak.	8	10	3	1	158	331	203	5	-	-	-	1
Nebr.	52	31	4	2	8	1,581	239	39	16	1	15	15
Kans.	163	101	5	-	4,375	4,205	127	56	14	-	5	17
S. ATLANTIC	8,687	1,596	159	46	130,263	160,462	1,229	2,289	855	118	175	580
Del.	112	52	6	-	1,602	2,631	52	196	177	1	23	196
Md.	1,115	202	15	-	14,673	18,091	223	358	32	10	35	157
D.C.	621	27	1	-	5,992	8,267	14	77	278	-	16	2
Va.	541	271	35	13	13,813	16,494	128	172	35	47	19	109
W. Va.	44	40	72	-	764	1,167	9	48	3	26	-	12
N.C.	590	188	25	-	22,380	32,079	103	381	81	-	35	69
S.C.	259	26	-	-	9,779	13,038	22	49	1	1	16	2
Ga.	1,144	194	2	-	35,544	36,490	185	267	110	-	7	3
Fla.	4,261	596	3	33	25,716	32,205	493	741	138	33	24	30
E.S. CENTRAL	1,204	508	24	-	45,001	55,996	323	1,206	1,227	2	56	68
Ky.	187	179	13	-	4,308	5,463	122	88	6	-	26	26
Tenn.	386	131	6	-	14,280	18,718	116	994	1,204	-	24	33
Ala.	416	125	4	-	15,737	18,740	47	120	16	1	6	9
Miss.	215	73	1	-	10,676	13,075	38	4	1	1	-	-
W.S. CENTRAL	3,753	1,104	60	5	48,459	60,800	1,862	1,697	150	151	21	108
Ark.	244	16	7	-	6,870	7,181	122	85	7	4	1	16
La.	633	69	9	1	13,486	14,181	201	175	78	3	4	5
Okla.	219	-	3	2	5,064	6,337	178	175	39	5	9	25
Tex.	2,657	1,019	41	2	23,039	33,101	1,361	1,262	26	139	7	62
MOUNTAIN	1,140	366	28	5	10,974	11,080	2,703	675	263	59	90	16
Mont.	18	11	1	1	102	89	83	32	27	1	9	-
Idaho	31	22	-	-	106	145	82	73	-	2	4	2
Wyo.	4	6	2	-	53	87	12	12	51	-	1	5
Colo.	354	115	9	1	3,842	3,030	732	99	89	26	17	-
N. Mex.	97	49	4	1	835	919	277	192	27	8	2	2
Ariz.	333	99	6	1	3,887	4,158	1,035	157	27	15	31	-
Utah	109	19	3	1	299	295	386	18	28	7	3	6
Nev.	194	45	3	-	1,850	2,357	96	92	14	-	23	1
PACIFIC	8,138	3,232	99	4	39,483	49,394	5,682	3,158	1,312	218	81	199
Wash.	458	-	1	-	3,515	4,418	721	326	143	8	13	13
Oreg.	257	-	-	-	1,498	1,831	426	253	73	9	1	-
Calif.	7,289	3,123	91	3	33,396	41,690	4,294	2,545	892	191	65	185
Alaska	13	17	7	-	601	812	85	17	5	1	-	-
Hawaii	121	92	-	1	473	643	156	17	199	9	2	1
Guam	-	2	-	-	50	27	5	1	-	6	-	1
P.R.	1,478	151	1	-	209	490	40	376	163	17	1	-
V.I.	9	-	-	-	90	340	4	7	-	-	-	-
Amer. Samoa	-	-	-	-	47	59	1	1	-	-	-	-
C.N.M.I.	-	-	-	-	68	85	3	-	-	-	-	-

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

*Updated monthly; last update October 31, 1992.

TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending November 21, 1992, and November 23, 1991 (47th Week)

Reporting Area	Malaria	Measles (Rubeola)					Menin-gococcal Infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported*		Total									
	Cum. 1992	1992	Cum. 1992	1992	Cum. 1992	Cum. 1991	Cum. 1992	1992	Cum. 1992	1992	Cum. 1992	Cum. 1991	1992	Cum. 1992	Cum. 1991
UNITED STATES	898	16	2,068	2	128	9,191	1,921	44	2,247	114	2,684	2,425	1	142	1,329
NEW ENGLAND	44	-	56	-	13	86	119	4	20	14	225	269	-	6	4
Maine	1	-	-	-	4	7	9	-	-	-	11	54	-	1	-
N.H.	3	-	15	-	-	-	6	3	6	6	54	18	-	-	1
Vt.	-	-	-	-	-	5	8	-	1	-	10	4	-	-	-
Mass.	23	-	16	-	5	39	46	-	3	4	103	167	-	-	2
R.I.	5	-	23	-	-	4	12	1	2	3	7	-	-	4	-
Conn.	12	-	2	-	4	31	38	-	8	1	40	26	-	1	1
MID. ATLANTIC	257	4	206	1	21	4,724	229	6	165	19	256	245	-	9	575
Upstate N.Y.	43	-	103	-	10	401	95	2	69	5	104	133	-	3	539
N.Y. City	139	-	42	-	8	1,825	24	-	10	-	20	27	-	-	2
N.J.	46	4	56	1†	2	1,034	41	4	15	14	45	16	-	3	2
Pa.	29	-	5	-	1	1,464	69	-	71	-	87	69	-	3	32
E.N. CENTRAL	58	2	42	-	14	97	305	4	299	13	438	396	-	8	321
Ohio	11	-	-	-	6	11	71	3	110	12	115	94	-	-	283
Ind.	12	-	20	-	-	6	52	-	10	1	40	75	-	-	3
Ill.	17	-	9	-	4	28	81	-	90	-	33	71	-	8	9
Mich.	14	2	13	-	2	43	82	1	74	-	14	37	-	-	25
Wis.	4	-	-	-	2	9	19	-	15	-	236	119	-	-	1
W.N. CENTRAL	38	-	8	-	8	59	98	2	77	6	292	201	-	8	19
Minn.	16	-	7	-	5	27	18	-	24	1	104	79	-	-	6
Iowa	3	-	-	-	3	17	11	1	13	1	10	23	-	3	6
Mo.	11	-	-	-	-	1	31	-	31	1	103	71	-	1	5
N. Dak.	1	-	-	-	-	-	1	-	2	-	14	4	-	-	1
S. Dak.	2	-	-	-	-	-	1	-	-	-	14	4	-	-	-
Nebr.	1	-	-	-	-	1	19	1	5	2	15	9	-	-	-
Kans.	4	-	1	-	-	13	17	-	2	1	32	11	-	4	1
S. ATLANTIC	187	1	122	1	15	565	356	5	780	6	172	233	-	22	10
Del.	5	-	1	-	-	21	2	-	8	-	7	-	-	-	-
Md.	54	-	10	-	7	176	35	1	74	3	35	51	-	6	1
D.C.	13	1	1	1§	1	-	3	2	7	-	1	1	-	1	1
Va.	42	-	11	-	5	30	56	-	52	-	15	24	-	-	-
W. Va.	2	-	-	-	-	-	17	1	27	-	9	9	-	1	-
N.C.	13	-	23	-	1	44	78	-	208	1	44	39	-	-	2
S.C.	1	-	29	-	-	13	22	-	51	-	10	14	-	7	-
Ga.	13	-	2	-	1	15	54	-	75	-	17	49	-	-	-
Fla.	44	-	45	-	-	266	89	1	278	2	34	46	-	7	6
E.S. CENTRAL	19	-	451	-	18	28	125	-	59	-	29	91	-	1	100
Ky.	1	-	450	-	2	23	40	-	-	-	1	-	-	-	-
Tenn.	11	-	-	-	-	3	36	-	15	-	8	36	-	1	100
Ala.	6	-	-	-	-	2	37	-	13	-	17	49	-	-	-
Miss.	1	-	1	-	16	-	12	-	31	-	3	6	-	-	-
W.S. CENTRAL	30	9	1,059	-	5	216	149	18	390	27	147	152	-	-	7
Ark.	3	-	-	-	-	5	17	-	9	-	18	14	-	-	1
La.	1	-	-	-	-	-	28	3	25	1	11	17	-	-	-
Okla.	5	-	12	-	-	-	17	-	19	10	48	49	-	-	-
Tex.	21	9	1,047	-	5	211	87	15	337	16	70	72	-	-	6
MOUNTAIN	31	-	25	-	7	1,256	89	1	142	6	378	321	-	9	38
Mont.	-	-	-	-	-	-	15	-	2	-	9	5	-	-	11
Idaho	1	-	-	-	-	451	8	1	4	-	38	27	-	1	-
Wyo.	-	-	1	-	-	3	3	-	1	-	-	3	-	-	-
Colo.	9	-	21	-	6	7	19	-	23	-	68	134	-	2	3
N. Mex.	5	-	1	-	1	98	9	N	N	3	101	44	-	-	4
Ariz.	9	-	2	-	-	454	19	-	77	-	121	69	-	2	2
Utah	4	-	-	-	-	224	4	-	23	3	39	37	-	2	11
Nev.	3	-	-	-	-	19	12	-	12	-	2	2	-	2	7
PACIFIC	234	-	99	-	27	2,160	451	4	315	23	747	517	1	79	255
Wash.	16	-	-	-	11	61	72	-	12	15	211	131	-	8	8
Oreg.	15	-	2	-	1	91	63	N	N	1	42	64	-	2	3
Calif.	189	-	55	-	3	1,973	300	4	274	7	434	248	1	46	233
Alaska	1	-	8	-	1	5	9	-	3	-	14	13	-	-	1
Hawaii	13	-	34	-	11	30	7	-	26	-	46	61	-	23	10
Guam	2	U	10	U	-	-	1	U	11	U	-	-	U	3	-
P.R.	-	23	434	-	-	94	3	-	1	-	11	58	-	-	1
V.I.	-	U	-	U	-	2	-	U	20	U	-	-	U	-	-
Amer. Samoa	-	-	-	-	-	24	-	-	-	-	6	-	-	-	-
C.N.M.I.	-	-	1	-	1	-	-	-	-	-	2	-	-	-	-

*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 November 21, 1992, and November 23, 1991 (47th Week)

Reporting Area	Syphilis (Primary & Secondary)		Toxic-Shock Syndrome	Tuberculosis		Tula-remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1992	Cum. 1991	Cum. 1992	Cum. 1992	Cum. 1991	Cum. 1992	Cum. 1992	Cum. 1992	Cum. 1992
UNITED STATES	30,474	38,000	208	20,689	20,777	148	357	436	7,272
NEW ENGLAND	629	934	15	474	593	1	28	7	805
Maine	5	3	2	19	33	-	-	-	-
N.H.	74	12	6	17	5	-	1	-	9
Vt.	1	2	-	6	9	-	-	-	22
Mass.	295	446	5	258	325	1	18	3	35
R.I.	36	45	2	46	75	-	-	2	-
Conn.	218	426	-	128	146	-	9	2	739
MID. ATLANTIC	4,245	6,396	25	4,773	4,870	1	96	47	2,270
Upstate N.Y.	309	577	10	549	393	-	15	16	1,261
N.Y. City	2,284	3,300	-	2,807	3,045	-	41	6	18
N.J.	506	1,081	-	830	802	1	25	14	668
Pa.	1,146	1,438	15	587	630	-	15	11	323
E.N. CENTRAL	4,647	4,564	50	2,024	2,069	1	38	28	147
Ohio	763	597	16	294	341	-	7	16	13
Ind.	252	170	5	179	217	-	1	4	19
Ill.	2,168	2,175	9	1,052	1,049	1	25	2	39
Mich.	842	1,040	20	426	373	-	4	3	15
Wis.	622	582	-	73	89	-	1	3	61
W.N. CENTRAL	1,404	808	37	464	464	53	6	33	983
Minn.	87	61	7	125	91	-	2	-	154
Iowa	49	63	7	37	55	-	1	3	165
Mo.	1,105	502	8	205	207	37	2	22	30
N. Dak.	1	1	3	7	10	-	-	-	141
S. Dak.	-	1	-	21	31	11	-	1	122
Nebr.	1	15	4	20	18	2	1	2	12
Kans.	161	165	8	49	52	3	-	5	359
S. ATLANTIC	8,143	11,106	21	3,860	3,915	5	35	138	1,666
Del.	188	151	3	47	33	-	-	14	194
Md.	568	893	2	358	383	1	7	17	506
D.C.	353	646	-	100	170	-	1	1	17
Va.	672	833	3	312	289	2	5	22	328
W. Va.	19	26	1	83	65	-	1	5	47
N.C.	2,177	1,852	3	518	491	1	-	61	45
S.C.	1,088	1,416	1	368	378	-	2	8	155
Ga.	1,594	2,722	4	798	772	1	2	7	331
Fla.	1,484	2,567	4	1,276	1,334	-	17	3	43
E.S. CENTRAL	3,887	4,235	3	1,342	1,360	9	5	62	179
Ky.	157	97	-	355	304	2	1	6	59
Tenn.	1,102	1,342	3	392	439	7	-	53	41
Ala.	1,305	1,608	-	363	347	-	1	3	78
Miss.	1,323	1,188	-	232	270	-	3	-	1
W.S. CENTRAL	5,637	6,961	5	2,509	2,465	43	17	104	659
Ark.	773	668	1	201	220	30	1	22	42
La.	2,377	2,554	-	198	189	2	1	-	8
Okla.	407	195	3	149	157	11	-	81	284
Tex.	2,080	3,544	1	1,961	1,899	-	15	1	325
MOUNTAIN	306	522	18	508	538	28	6	11	234
Mont.	7	6	1	-	6	12	-	3	24
Idaho	1	4	1	22	9	-	1	1	7
Wyo.	5	9	1	-	5	1	-	4	81
Colo.	52	81	6	52	71	5	2	-	24
N. Mex.	39	28	1	72	63	5	1	1	9
Ariz.	154	334	4	235	282	-	1	-	66
Utah	7	6	4	61	40	2	-	1	6
Nev.	41	54	-	66	62	3	1	1	17
PACIFIC	1,576	2,474	34	4,735	4,503	7	126	6	329
Wash.	74	175	3	281	275	2	8	-	-
Oreg.	46	81	2	119	114	-	2	3	2
Calif.	1,443	2,207	29	4,048	3,867	2	108	3	314
Alaska	5	4	-	45	59	3	-	-	13
Hawaii	8	7	-	242	188	-	8	-	-
Guam	3	1	-	58	8	-	3	-	-
P.R.	302	383	-	200	211	-	1	-	42
V.I.	62	93	-	3	3	-	-	-	-
Amer. Samoa	-	-	-	-	3	-	1	-	-
C.N.M.I.	6	5	-	50	18	-	1	-	-

U: Unavailable

TABLE III. Deaths in 121 U.S. cities,* week ending November 21, 1992 (47th Week)

Reporting Area	All Causes, By Age (Years)						P&I† Total
	All Ages	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	612	435	97	54	13	13	49
Boston, Mass.	167	110	27	15	7	8	19
Bridgeport, Conn.	55	34	10	9	-	2	8
Cambridge, Mass.	20	16	3	1	-	-	2
Fall River, Mass.	30	26	3	-	1	-	1
Hartford, Conn.	40	28	3	7	1	1	2
Lowell, Mass.	27	25	1	1	-	-	3
Lynn, Mass.	13	11	1	1	-	-	-
New Bedford, Mass.	28	19	5	3	1	-	1
New Haven, Conn.	51	37	9	5	-	-	2
Providence, R.I.	46	29	13	4	-	-	3
Somerville, Mass.	5	5	-	-	-	-	-
Springfield, Mass.	51	37	6	5	2	1	-
Waterbury, Conn.	27	20	7	-	-	-	2
Worcester, Mass.	52	38	9	3	1	1	6
MID. ATLANTIC	2,483	1,594	485	283	68	53	118
Albany, N.Y.	57	34	11	7	5	-	3
Allentown, Pa.	19	12	7	-	-	-	2
Buffalo, N.Y.	100	69	20	6	2	3	4
Camden, N.J.	34	20	4	2	3	5	-
Elizabeth, N.J.	36	22	5	9	-	-	-
Erie, Pa.§	45	28	16	1	-	-	2
Jersey City, N.J.	61	36	11	12	-	2	2
New York City, N.Y.	1,301	801	255	183	36	26	40
Newark, N.J.	62	27	16	10	5	4	6
Paterson, N.J.	28	18	5	2	3	-	2
Philadelphia, Pa.	296	200	59	24	7	6	23
Pittsburgh, Pa.§	62	46	10	4	-	2	5
Reading, Pa.	20	14	4	2	-	-	4
Rochester, N.Y.	116	85	17	11	2	1	14
Schenectady, N.Y.	24	17	5	1	1	-	1
Scranton, Pa.§	46	39	7	-	-	-	4
Syracuse, N.Y.	97	70	15	6	2	4	2
Trenton, N.J.	41	25	12	2	2	-	2
Utica, N.Y.	14	11	3	-	-	-	-
Yonkers, N.Y.	24	20	3	1	-	-	2
E.N. CENTRAL	2,253	1,387	422	242	123	79	108
Akron, Ohio	84	58	15	7	-	4	4
Canton, Ohio	35	27	7	1	-	-	4
Chicago, Ill.	388	153	77	81	71	6	8
Cincinnati, Ohio	184	132	28	12	8	4	11
Cleveland, Ohio	186	96	41	27	2	20	3
Columbus, Ohio	199	133	43	11	5	7	13
Dayton, Ohio	126	88	21	13	3	1	9
Detroit, Mich.	221	119	47	38	11	6	6
Evansville, Ind.	34	27	3	2	2	-	1
Fort Wayne, Ind.	71	50	15	2	1	3	7
Gary, Ind.	22	12	5	2	2	1	-
Grand Rapids, Mich.	58	41	12	1	1	3	4
Indianapolis, Ind.	179	100	37	21	10	11	10
Madison, Wis.	70	55	8	4	1	2	9
Milwaukee, Wis.	134	103	22	6	-	3	8
Peoria, Ill.	55	37	11	3	2	2	1
Rockford, Ill.	52	44	5	1	-	2	4
South Bend, Ind.	47	37	6	1	2	1	1
Toledo, Ohio	108	75	19	9	2	3	5
*Youngstown, Ohio	U	U	U	U	U	U	U
W.N. CENTRAL	819	588	143	49	23	16	41
Des Moines, Iowa	91	69	17	5	-	-	2
Duluth, Minn.	21	15	4	2	-	-	-
Kansas City, Kans.	30	24	4	2	-	-	1
Kansas City, Mo.	92	61	15	10	4	2	3
Lincoln, Nebr.	45	39	6	-	-	-	4
Minneapolis, Minn.	201	142	43	9	2	5	13
Omaha, Nebr.	85	61	13	4	5	2	6
St. Louis, Mo.	134	93	22	10	7	2	5
St. Paul, Minn.	58	44	10	2	1	1	5
Wichita, Kans.	62	40	9	5	4	4	2
S. ATLANTIC	1,385	846	282	188	36	32	70
Atlanta, Ga.	155	88	37	24	5	1	8
Baltimore, Md.	236	126	54	46	5	5	15
Charlotte, N.C.	46	30	10	3	1	2	1
Jacksonville, Fla.	131	91	20	14	5	1	4
Miami, Fla.	90	52	20	15	2	1	-
Norfolk, Va.	61	40	12	5	1	3	4
Richmond, Va.	86	59	15	9	-	3	7
Savannah, Ga.	51	28	15	3	1	4	2
St. Petersburg, Fla.	62	45	9	4	3	1	1
Tampa, Fla.	190	137	30	18	3	1	21
Washington, D.C.	250	129	55	46	10	10	7
Wilmington, Del.	27	21	5	1	-	-	-
E.S. CENTRAL	698	475	116	68	25	14	44
Birmingham, Ala.	115	74	19	17	4	1	3
Chattanooga, Tenn.	53	39	10	2	-	2	2
Knoxville, Tenn.	90	64	16	5	4	1	11
Lexington, Ky.	74	50	14	4	3	3	5
Memphis, Tenn.	134	84	21	18	8	3	8
Mobile, Ala.	50	34	9	3	3	1	2
Montgomery, Ala.	44	35	7	1	1	-	2
Nashville, Tenn.	138	95	20	18	2	3	11
W.S. CENTRAL	1,499	898	330	176	58	37	77
Austin, Tex.	59	40	12	5	2	-	3
Baton Rouge, La.	35	21	6	5	-	3	-
Corpus Christi, Tex.	59	40	10	3	4	2	1
Dallas, Tex.	223	125	56	27	9	6	4
El Paso, Tex.	70	39	16	10	2	3	5
Ft. Worth, Tex.	103	70	20	10	1	2	-
Houston, Tex.	396	191	105	76	18	6	28
Little Rock, Ark.	68	44	13	5	3	3	7
New Orleans, La.	136	85	29	12	6	4	-
San Antonio, Tex.	198	139	30	18	8	3	19
Shreveport, La.	40	31	5	2	1	1	2
Tulsa, Okla.	112	73	28	3	4	4	8
MOUNTAIN	883	594	145	81	33	28	80
Albuquerque, N.M.	89	67	7	10	3	2	5
Colo. Springs, Colo.	50	39	4	3	3	1	9
Denver, Colo.	166	101	34	11	8	11	15
Las Vegas, Nev.	150	94	32	18	4	1	10
Ogden, Utah	27	26	-	-	-	1	3
Phoenix, Ariz.	168	106	32	18	7	5	25
Pueblo, Colo.	17	12	3	1	-	1	2
Salt Lake City, Utah	95	61	16	11	2	5	4
Tucson, Ariz.	121	88	17	9	6	1	7
PACIFIC	1,976	1,296	346	230	65	37	98
Berkeley, Calif.	33	22	7	3	-	1	3
Fresno, Calif.	56	36	11	3	1	5	3
Glendale, Calif.	34	25	7	2	-	-	2
Honolulu, Hawaii	92	59	20	11	-	2	5
Long Beach, Calif.	75	49	12	9	1	4	7
Los Angeles, Calif.	489	296	92	67	25	7	13
Pasadena, Calif.	34	27	4	1	1	1	5
Portland, Oreg.	158	115	16	19	7	1	7
Sacramento, Calif.	172	112	28	23	6	3	10
San Diego, Calif.	155	100	19	22	9	5	13
San Francisco, Calif.	163	100	35	25	2	1	-
San Jose, Calif.	179	123	35	15	4	2	12
Santa Cruz, Calif.	29	21	7	-	-	1	4
Seattle, Wash.	167	113	29	20	5	-	4
Spokane, Wash.	49	36	7	3	1	2	5
Tacoma, Wash.	91	62	17	7	3	2	5
TOTAL	12,608¶	8,113	2,366	1,371	444	309	685

*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.

Carbon Monoxide Poisoning — Continued

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Topics in Minority Health

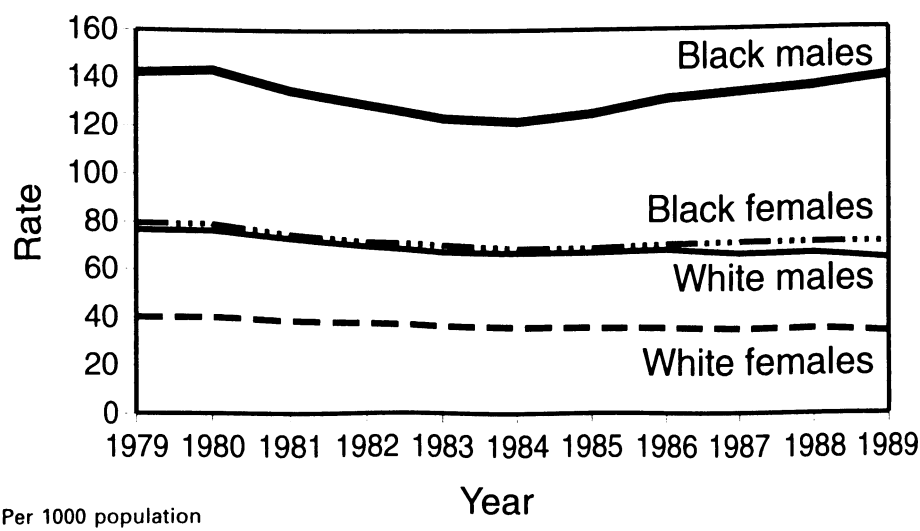
Trends in Years of Potential Life Lost Before Age 65 Among Whites and Blacks — United States, 1979–1989

The reduction of preventable deaths among minority populations in the United States is a national health objective for the year 2000 (*1*). One measure used to assess progress toward this objective is years of potential life lost before age 65 (YPLL-65), which measures the impact of deaths occurring in years preceding 65 years of age and emphasizes the effects of deaths among younger persons (*2*). This report compares trends in YPLL-65 among U.S. whites and blacks from 1979 through 1989.

To assess these trends, race- and sex-specific YPLL-65 rates for death from all causes were calculated for 1979 through 1988 and combined with recently available data on YPLL-65 in 1989 (*3*). The contributions of specific causes of death in 1979 and 1989 were analyzed among white and black males and females. Other racial/ethnic groups were not examined because of limitations in comparable census information.

From 1979 to 1989, the rate of YPLL-65 (per 1000 population) decreased for white males (from 76.3 to 65.3 [14.4%]) and white females (from 39.7 to 34.0 [14.4%]) (Figure 1). For blacks, the YPLL-65 rate decreased from 1979 through the mid-1980s, then began to increase. For black males, the rate decreased from 142.1 in 1979 to a low of

FIGURE 1. Rates* of years of potential life lost before age 65, by sex and race — United States, 1979–1989†



*Per 1000 population
†For all causes of death.

YPLL-65 — Continued

121.7 in 1984 and increased to 141.8 in 1989; for black females, the rate decreased from 79.2 in 1979 to a low of 68.9 in 1985 and increased to 74.3 in 1989 (Figure 1).

Among white males, unintentional injuries were the leading cause of YPLL-65 in both 1979 and 1989, followed by diseases of the heart, malignant neoplasms, and suicide; in 1989, human immunodeficiency virus (HIV) infection replaced homicide as the fifth leading cause of YPLL-65 (Table 1). In 1989, among black males, homicide replaced unintentional injury as the leading cause of YPLL-65, and HIV infection matched malignant neoplasms as the fourth leading cause of YPLL-65 (Table 1). Among white females, the relative ranking of four leading causes of YPLL-65 remained unchanged from 1979 to 1989: malignant neoplasm was the leading cause, followed by unintentional injuries, diseases of the heart, and suicide; in 1989, homicide replaced cerebrovascular diseases as the fifth leading cause of YPLL-65 (Table 1). Among black females, the relative ranking of the first four leading causes of YPLL-65 remained unchanged from 1979 to 1989; malignant neoplasm was the leading cause, followed by diseases of the heart, unintentional injuries, and homicide; in 1989, HIV-associated deaths replaced cerebrovascular disease as the fifth leading cause of YPLL-65.

In 1989, the YPLL-65 rate ratio for males compared with females was 1.9 both for whites and for blacks (Table 1). The YPLL-65 rate ratio for blacks compared with whites was 2.2 for both males and females in 1989; from 1979 to 1989, the rate ratio of YPLL-65 for blacks compared with whites increased by 10% among females and 16% among males.

Reported by: Applications Br, Div of Surveillance and Epidemiology, Epidemiology Program Office; Office of the Associate Director for Minority Health, Office of the Director, CDC.

Editorial Note: This report indicates an increasing disparity in early death between whites and blacks in recent years. The greatest disparities in rates (as reflected by rate ratios) are for homicide, HIV infection, and cerebrovascular disease. These race-specific differences in rates and rank ordering of causes of YPLL-65 may reflect, in part, differences in socioeconomic status and health-care access and use (*4,5*).

TABLE 1. Rates* of years of potential life lost before age 65 (YPLL–65) for whites and blacks, by sex and by selected causes of death — United States, 1979 and 1989

	White males		Black males		White females		Black females	
Cause of death (ICD-9† Code)	**1979**	**1989**	**1979**	**1989**	**1979**	**1989**	**1979**	**1989**
All causes (total)	**76.3**	**65.3**	**142.1**	**141.8**	**39.7**	**34.0**	**79.2**	**74.3**
Unintentional injuries (E800–E949)	21.0	14.6	23.3	19.2	6.6	3.7	7.5	6.5
Malignant neoplasms (140–208)	9.3	8.4	11.6	11.1	8.6	8.2	9.5	9.3
Diseases of the heart (390–398, 402, 404–429)	12.1	8.7	15.9	14.4	4.0	3.1	9.1	7.9
Suicide (E950–E959)	4.9	5.2	3.6	3.9	1.6	1.3	0.9	0.7
Homicide and legal intervention (E960–E978)	3.3	2.8	22.1	22.5	1.0	1.0	4.7	4.7
Human immunodeficiency virus infection (042–044)	—	3.9	—	11.1	—	0.3	—	2.8
Cerebrovascular diseases (430–438)	1.9	0.9	5.7	2.8	1.5	0.8	4.0	2.3
Chronic liver disease and cirrhosis (571)	3.0	1.4	6.0	2.7	1.4	0.5	3.0	1.2

*Per 1000 population.
†*International Classification of Diseases, Ninth Revision.*

YPLL-65 — Continued

YPLL-65 is a summary measure of premature mortality (i.e., deaths among persons aged <65 years) and contrasts with crude mortality statistics that are dominated by deaths among the elderly (*2*). Overall, white/black differences in YPLL-65 are consistent with other measures of death (e.g., life expectancy, crude mortality, and age-specific mortality) (*6*). With the exception of suicide, death rates (including YPLL-65) are higher for blacks than whites for the leading causes of death.

Although summary measures are used commonly for making general comparisons between groups, one limitation of summary measures is their potential to mask variation within populations. For example, while death rates are higher for blacks than whites in each age group <65 years, rate ratios vary substantially by age (*6*). Public health response to excess mortality may thus require analysis of age-specific rates for different conditions.

Several approaches have been outlined to reduce premature mortality among targeted populations. For example, CDC has recently developed a framework to assist communities in the design, implementation, and evaluation of programs to prevent youth violence; the framework includes approaches to restrict access to firearms and teach nonviolent conflict resolution.* HIV-prevention programs must address cultural and socioeconomic factors such as poverty, underemployment, and poor access to the health-care system; CDC supports community-based organizations in the operation of HIV-prevention programs (*7*), works with health departments, and funds local and national minority organizations involved in HIV-prevention programs. To lower risk from cerebrovascular disease in blacks, the National Institutes of Health has recommended steps to reduce hypertension and obesity (*8*). Finally, the Secretary's Task Force on Black and Minority Health has recommended that research and intervention programs be targeted to the specific needs and characteristics of minority communities (*4*).

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**The Prevention of Youth Violence: A Framework for Community Action* is available free from the National Center for Injury Prevention and Control, CDC, Mailstop F-36, 4770 Buford Highway, NE, Atlanta, GA 30341-3724; telephone (404) 488-4646.

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