



DATA SUMMARY

ALCOHOL-RELATED MORTALITY
CALIFORNIA, 1989 - 1995

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This report covers alcohol-related mortality in California for the years 1989 through 1995, and is based on a previous report published by the Center for Health Statistics, *Alcohol-Related Mortality - California 1979 - 1988*.¹ Alcohol-related mortality includes deaths in which alcohol abuse was a direct cause of death ("alcohol-defined" deaths), and deaths in which alcohol abuse was a contributing but not a direct cause of death. Alcohol-defined deaths are those thirteen causes of death listed in Table 1. Prior research has shown that these causes of death are directly associated with alcohol abuse, and have an "alcohol-attributable fraction (AAF)" equal to 1.00, which indicates a 100% correlation to alcohol abuse. Causes of death where alcohol was a contributing factor have AAFs less than 1.00).²

As shown in Table 1, over 3,000 alcohol-defined deaths occurred each year among California's residents from 1989 to 1995. These deaths accounted for a total of 23,063 alcohol-defined deaths during this period. Of the 23,063 total deaths, 10,720 (46.5%) were due to alcoholic liver cirrhosis, followed by 4,480 (19.4%) deaths due to alcoholic liver damage unspecified, and 4,102 (17.8%) deaths due to alcohol dependence syndrome. From 1989 to 1995, the total of all alcohol-defined deaths increased 7.3%, alcoholic dependence syndrome increased 46.3%, alcoholic liver cirrhosis increased 7.5%, and alcoholic liver damage unspecified declined 12.3%.

TABLE 1
ALCOHOL-DEFINED DEATHS FOR PERSONS AGED 15 AND OVER
CALIFORNIA, 1989-1995
(By Place of Residence)

ALCOHOL DIAGNOSIS	ICD-9 CODE	1989	1990	1991	1992	1993	1994	1995	TOTAL
Alcoholic Psychoses	291	40	43	25	31	28	32	42	241
Alcohol Dependence Syndrome	303	482	472	539	565	600	739	705	4,102
Non-Dependent Alcohol Abuse	305.0	113	111	135	109	104	111	102	785
Alcoholic Polyneuropathy	357.5	1	0	1	1	0	2	1	6
Alcoholic Cardiomyopathy	425.5	151	135	130	133	150	145	164	1,008
Alcoholic Gastritis	535.3	10	15	16	10	12	17	9	89
Alcoholic Fatty Liver	571.0	110	133	94	116	95	81	111	740
Acute Alcoholic Hepatitis	571.1	110	98	96	113	98	106	95	716
Alcoholic Liver Cirrhosis	571.2	1,515	1,529	1,430	1,514	1,463	1,641	1,628	10,720
Alcoholic Liver Damage Unspecified	571.3	685	651	656	660	629	598	601	4,480
Excess Blood Alcohol Level	790.3	3	1	3	3	0	0	0	10
Accidental Alcohol Poisoning	E860.0	0	5	2	6	2	1	6	22
Other Alcohol Poisoning	E860.1	29	26	23	17	16	11	22	144
TOTAL		3,249	3,219	3,150	3,278	3,197	3,484	3,486	23,063

Note: Alcohol-defined deaths are those that are directly caused by alcohol, as designated by the above codes from

Volume 1 of the International Classification of Diseases (ICD), Ninth Revision

Source: Department of Health Services, Death Records.

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TABLE 2
ALCOHOL-DEFINED DEATHS BY GENDER FOR PERSONS AGED 15 AND OVER
CALIFORNIA, 1989 - 1995
(By Place of Residence)

<i>MALES</i>								
<i>AGE</i>	<i>1989</i>	<i>1990</i>	<i>1991</i>	<i>1992</i>	<i>1993</i>	<i>1994</i>	<i>1995</i>	<i>TOTAL</i>
15 - 24	14	27	14	17	18	13	12	115
25 - 34	190	155	133	154	119	132	124	1,007
35 - 44	513	517	514	587	533	525	539	3,728
45 - 54	562	543	545	586	601	683	726	4,246
55 - 64	588	599	582	594	546	584	583	4,076
65 - 74	401	399	377	382	407	486	452	2,904
75 - 84	129	130	112	134	131	144	151	931
85+	23	19	18	17	25	24	24	150
TOTAL	2,420	2,389	2,295	2,471	2,380	2,591	2,611	17,157
<i>FEMALES</i>								
<i>AGE</i>	<i>1989</i>	<i>1990</i>	<i>1991</i>	<i>1992</i>	<i>1993</i>	<i>1994</i>	<i>1995</i>	<i>TOTAL</i>
15 - 24	2	0	6	3	3	3	5	22
25 - 34	38	59	53	37	40	27	25	279
35 - 44	146	152	180	154	157	178	175	1,142
45 - 54	197	193	169	188	174	221	231	1,373
55 - 64	211	192	213	187	201	195	188	1,387
65 - 74	175	176	165	165	173	189	167	1,210
75 - 84	53	50	62	62	61	74	72	434
85+	7	8	7	11	8	6	12	59
TOTAL	829	830	855	807	817	893	875	5,906

Note: Alcohol-defined deaths are those that are directly caused by alcohol, designated by ICD-9 codes 291, 303, 305.0, 357.5, 425.5, 535.3, 571.0, 571.1, 571.2, 571.3, 790.3, E860.0 and E860.1.

Source: Department of Health Services, Death Records.

As illustrated in Table 2, males in California accounted for 17,157 (74.4%) alcohol-defined deaths, while females accounted for the remaining 5,906 (25.6%) during the period of 1989 through 1995. The alcohol-defined death ratio between males and females was almost three to one. The annual average number of deaths among males during this period was 2,451, and the annual average among females was approximately 844. When examining alcohol-defined deaths by age, 87.2% of the male deaths and 86.6% of the female deaths were among those aged 35-74. Out of the eight age groups, males aged 45-54 had the highest number of deaths (4,246) whereas females aged 55-64 had the highest number of deaths (1,387). Both males and females aged 15-24 had the lowest number of deaths, which were 115 and 22 deaths respectively. When comparing the two end point years of 1989 and 1995, the percent change in the number of alcohol-defined deaths by age ranged from a 34.7% decrease among males aged 25-34 to a 29.2% increase among males aged 45-54. For females, the number of alcohol-defined deaths ranged from a 34.2% decrease for those aged 25-34 to a 35.8% increase for those aged 75-84. Males and females aged 15-24 and aged 85 and over were excluded from the aforementioned comparative analyses due to small numbers.

Since alcohol abuse is one of the leading causes of premature death in California, years of potential life lost at age 75 (YPLL-75) was calculated and analyzed from the data in Table 2. YPLL-75 is a methodology developed by the Center for Disease Control and Prevention to quantify the amount of life lost due to disease.² From 1989 to 1995, Californians lost an estimated 489,590 years of life due to alcohol-defined deaths. Of the 489,590 years of life lost, 371,968 (76.0%) years were among males, while the remaining 117,622 (24.0%) years were among females.

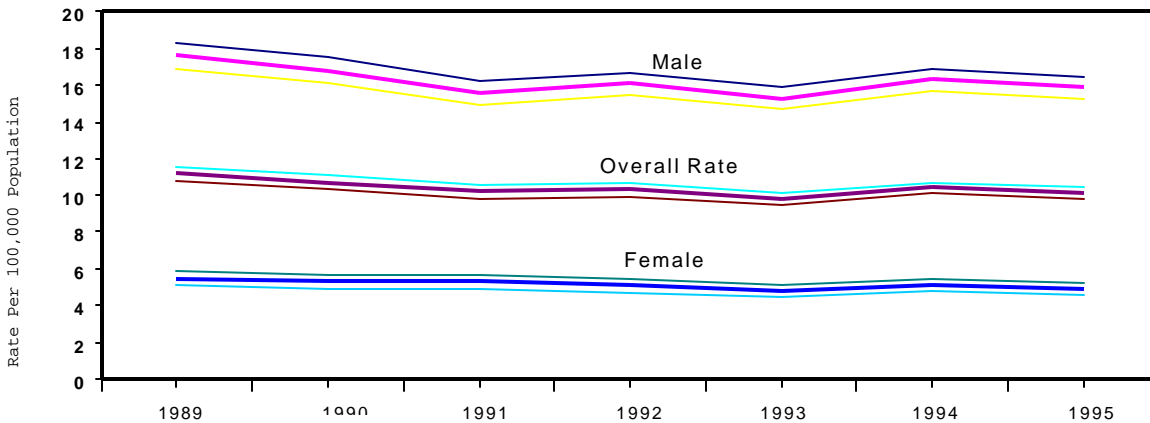
TABLE 3
ALCOHOL-DEFINED DEATHS
AND AGE-ADJUSTED DEATH RATES
FOR PERSONS AGED 15 AND OVER BY GENDER
CALIFORNIA, 1989 - 1995
(By Place of Residence)

YEAR	NUMBER			RATE			95% CONFIDENCE INTERVAL		
	TOTAL	MALE	FEMALE	OVERALL	MALE	FEMALE	OVERALL	MALE	FEMALE
1989	3,249	2,420	829	11.2	17.6	5.5	10.8 - 11.6	16.9 - 18.3	5.1 - 5.9
1990	3,219	2,389	830	10.7	16.8	5.3	10.3 - 11.1	16.1 - 17.5	4.9 - 5.7
1991	3,150	2,295	855	10.2	15.6	5.3	9.8 - 10.6	14.9 - 16.2	4.9 - 5.7
1992	3,278	2,471	807	10.3	16.1	5.1	9.9 - 10.7	15.5 - 16.7	4.7 - 5.5
1993	3,197	2,380	817	9.8	15.3	4.8	9.5 - 10.1	14.7 - 15.9	4.5 - 5.1
1994	3,484	2,591	893	10.4	16.3	5.1	10.1 - 10.7	15.7 - 16.9	4.8 - 5.4
1995	3,486	2,611	875	10.1	15.9	4.9	9.8 - 10.4	15.3 - 16.5	4.6 - 5.2

Note: Alcohol-defined deaths are those that are directly caused by alcohol, by ICD-9 codes, 291, 303, 305.0, 357.5, 425.5, 535.3, 571.0, 571.1, 571.2, 571.3, 790.3, E860.0 and E860.1. The Alcohol-defined death rates are per 100,000 population, and are age-adjusted using California's 1990 mid-year population estimates as the standard.

*Source: Department of Health Services, Death Records
 Department of Finance population estimates*

FIGURE 1
ALCOHOL-DEFINED
AGE-ADJUSTED DEATH RATES
CALIFORNIA, 1989 - 1995
(By Place of Residence)



Source: Table 3.

Using the age-adjusted death rates per 100,000 population from Table 3, linear regression tests revealed no significant upward or downward trend among Californians due to alcohol-defined deaths from 1989 to 1995 ($p < .05$). Figure 1 illustrates the trend lines with their respective 95% confidence intervals for the overall age-adjusted death rates and the age-adjusted death rates among males and females. The overall alcohol-defined death rates for the years 1989 to 1995 varied from 9.8 per 100,000 to 11.2 per 100,000 (with an average annual rate of 10.4). The rates for males varied from 15.3 to 17.6 (average annual rate of 16.2) and the rates for females varied from 4.8 to 5.5 (average annual rate of 5.1). In addition, analysis of the age-adjusted rate ratios for that period revealed that males were almost consistently three times more likely to die from alcohol abuse than their female counterparts.

TABLE 4
ALCOHOL-ATTRIBUTABLE FRACTIONS (AAF's)
TOTAL DEATHS, AND ESTIMATED ALCOHOL-RELATED MORTALITY (ARM)
BY SPECIFIED AGE GROUPS, GENDER, AND DIAGNOSES
CALIFORNIA, 1995
(By Place of Residence)

ICD-9 CODES	ALCOHOL-RELATED DIAGNOSES	AGE	AAF	MALE DEATHS	MALE ARM	FEMALE DEATHS	FEMALE ARM
MALIGNANT NEOPLASMS							
140-149	Cancer: lip, oral cavity, pharynx	35	0.50 *	586	293	326	130
150	Cancer: esophagus	35	0.75	735	551	278	209
151	Cancer: stomach	35	0.20	935	187	659	132
155	Cancer: liver/intrahepatic bile ducts	35	0.15	820	123	467	70
161	Cancer: larynx	35	0.50 *	294	147	53	21
MENTAL DISORDERS							
291	Alcoholic psychoses	15	1.00	36	36	6	6
303	Alcohol dependence syndrome	15	1.00	545	545	160	160
305.0	Alcohol abuse	15	1.00	78	78	24	24
CARDIOVASCULAR DISEASES							
401	Essential hypertension	35	0.08	256	20	470	38
425.5	Alcoholic cardiomyopathy	15	1.00	149	149	15	15
430-438	Cerebrovascular disease	35	0.07	6,466	453	9,560	669
RESPIRATORY DISEASES							
011-012	Respiratory tuberculosis	35	0.25	94	24	48	12
480-487	Pneumonia and influenza	35	0.05	4,614	231	5,744	287
DIGESTIVE DISEASES							
530-530.7	Diseases of the esophagus, stomach, duodenum	35	0.10	530	53	562	56
535.3	Alcoholic gastritis	15	1.00	9	9	0	0
571.0	Alcoholic fatty liver	15	1.00	88	88	23	23
571.1	Acute alcoholic hepatitis	15	1.00	66	66	29	29
571.2	Alcoholic cirrhosis of the liver	15	1.00	1,187	1,187	441	441
571.3	Alcoholic liver damage, unspecified	15	1.00	435	435	166	166
571.5 & .6	Other cirrhosis of the liver	35	0.50	494	247	456	228
577	Acute pancreatitis	35	0.42	92	39	68	29
577.1	Chronic pancreatitis	35	0.60	25	15	12	7
UNINTENTIONAL INJURIES							
E810-825	Motor vehicle accidents	0	0.32	2,948	943	1,367	437
E826,829	Other road vehicle accidents	0	0.20	24	5	4	1
E830-838	Water transport accidents	0	0.20	46	9	10	2
E840-845	Air/Space transport accidents	0	0.16	81	13	19	3
E860.0, 860.1	Alcohol poisonings	15	1.00	18	18	10	10
E880-E888	Accidental Falls	15	0.35	583	204	451	158
E890-899	Accidents caused by fires	0	0.45	139	63	108	49
E910	Accidental drownings	0	0.38	354	135	106	40
E - E *	Other unintentional injuries	15	0.25	610	153	176	44
INTENTIONAL INJURIES							
E950-959	Suicide	15	0.28	2,976	833	812	227
E960-969	Homicide	15	0.46	2,858	1,315	557	256
METABOLIC DISORDERS							
250	Diabetes mellitus	35	0.05	2,328	116	2,679	134
OTHER ALCOHOL-RELATED DIAGNOSES							
357.5	Alcoholic polyneuropathy	15	1.00	0	0	1	1
790.3	Excess blood alcohol level	15	1.00	0	0	0	0
TOTAL				31,499	8,783	25,867	4,114

Note: The Alcohol-Attributable Fraction (AAF) is an estimator that approximates the degree to which alcohol contributed to the person's death. *The two AAF's for cancer of 0.5 apply only to males, for females the factor is 0.4. The Alcohol-Related Mortality comprises the total of all the Alcohol-Attributable Fractions times the total number of deaths or 12,897 alcohol-related deaths. There were 222,626 deaths from all causes in California for 1995, (116,199 for males and 106,427 for females).

Source: Department of Health Services, Death Records

** Other unintentional injuries include ICD-9 Codes: E800-E807, E900-E909, E911, E916-E928, E980-E989.

Alcohol-Related Mortality (ARM) was calculated to show the total impact that alcohol abuse has on Californians. ARM is a combination of the alcohol-defined diseases from Table 1 and the other diseases/injuries listed in Table 4 for which alcohol is fractionally responsible. The Alcohol Attributable Fractions (AAFs) have a factor equal to 1.0 for alcohol-defined diseases and a factor less than one for all other diseases/injuries involving alcohol. The alcohol-attributable fractions shown in Table 4, were derived from research that was done for the Centers for Disease Control and Prevention by Dr. James M. Shultz.²

Table 4 shows that in 1995, alcohol contributed to 12,897 of the 222,626 California deaths for that year. Stated in another way, 1 out of every 17 California deaths was attributable to alcohol. This is significant in that if ARM was listed among the leading causes of death in California for 1995, it would rank fourth after heart disease, cancer, and stroke.⁴ Of the 12,897 alcohol-related deaths in California, 8,783 (68.1%) were among males, while 4,114 (31.9%) were among females. These data show that over twice as many males died of alcohol-related causes, than did females. Homicide accounted for the greatest number of alcohol-related deaths among males (1,315), followed by alcoholic cirrhosis of the liver (1,187), motor vehicle accidents (943), and suicide (833). For females, cerebrovascular disease accounted for the greatest number of alcohol-related deaths (669), followed by alcoholic cirrhosis of the liver (441), motor vehicle accidents (437), and pneumonia/influenza (287).

In summarizing the findings of this report, calculations of YPLL has shown that alcohol use and abuse dramatically decreases the life expectancy of both men and women. In addition, mortality attributed to alcohol abuse is over twice as high for males as it is for females. Because it continues to be a significant preventable cause of death, the findings clearly support the need to continue progress towards achieving the Healthy California 2000 objectives of reducing morbidity and mortality associated with alcohol abuse and alcohol-related injuries, especially among targeted high risk populations.⁵

¹ Sutocky, J.W. *Alcohol-Related Mortality, California 1979-1988*. California Department of Health Services, Center for Health Statistics, Data Matters October 1990.

² Shultz, J.M., Parker, D.L., and Rice, D.P. Alcohol-related disease impact software. DHHS, Centers for Disease Control, 1989.

³ Centers for Disease Control, Alcohol-Related Mortality and Years of Potential Life Lost – United States, 1987. *Morbidity and Mortality Weekly Report*, 1990; 39(11): 173-178.

⁴ California Department of Health Services, Center for Health Statistics, *Vital Statistics in California*, June 1997 p. 157.

⁵ California Department of Health Services, Center for Health Statistics, *Healthy California 2000*, July 1995 pp. 30-35.