



Colorado Department
of Public Health
and Environment

BRIEF

HEALTH STATISTICS SECTION

Cigarette Smoking: The Toll in Colorado

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Introduction

Cigarette smoking is the largest preventable cause of unnecessary death in the United States and in Colorado. Decades of research have shown that more than 25 diseases, most of which are life-threatening, are strongly suspected to be related to smoking.¹ Tobacco claims more lives than drugs, alcohol, sexual behavior, firearms, and motor vehicle injuries combined.¹ This is a significant issue for public health because cigarette smoking greatly increases the risk of premature death from a number of chronic diseases, which account for more than 60 percent of all deaths recorded in Colorado each year.² Smoking also affects nonsmokers, who suffer the health consequences of environmental tobacco smoke. Women who smoke during pregnancy are at higher risk for pregnancy complications; their babies are at risk for intrauterine growth retardation, low birth weight and infant mortality.

From 1993 to 1999, the estimated prevalence of current smokers in Colorado adults remained constant at approximately 23 percent. This rate is well above the Year 2000 Health Objective for cigarette smoking, which is to reduce the prevalence of current smokers to 15 percent.³ Smoking prevalence has risen steadily among Colorado's young adults (age 18-24 years) from 15 percent in 1991 to 31 percent in 1999.

Each of these facts reminds us that cigarette smoking remains a serious public health problem in Colorado and underscores our need for a strong and vigilant public health system for the state and its local communities. Colorado's experience with local tobacco-related coalitions has shown that it is both possible and feasible to reduce tobacco use, thereby saving lives and money, through implementation of a variety of community- and school-based programs. Serving as a cornerstone for these tobacco control programs is basic information about the impact of tobacco use on mortality and years of potential life lost (YPLL) from smoking-related premature deaths in local communities. Although national and state estimates of smoking attributable mortality (SAM) and YPLL due to cigarette smoking have been made periodically, SAM and YPLL estimates for local communities have not been made in Colorado. SAM and YPLL data can be used by local communities to document the toll

of smoking-related health problems and to encourage tobacco control efforts in a variety of settings. In this report, SAM and YPLL were estimated for Colorado by state, major counties, and specific population regions.

Methodology

For this *Brief*, state- and county-specific cigarette smoking prevalence, SAM and YPLL from smoking were estimated by using the Smoking-Attributable Mortality, Morbidity, and Economic Costs (SAMMEC) software package (version 3.0) developed by CDC's Office on Smoking and Health.⁴ This software estimates the number of smoking-related deaths from neoplastic, cardiovascular, and respiratory conditions and diseases of infants by using attributable risk formulas based on smoking prevalence and relative risks from certain conditions among current and former smokers.

Four different sources of data were used for these analyses: death certificates, birth certificates, results from the Colorado Behavioral Risk Factor Surveillance System (BRFSS),⁵ and the 1998-based population estimates developed by the Demography Section, Colorado Division of Local Government. SAM and YPLL could only be calculated for those areas that had a large enough population to have an adequate sample size from the statewide BRFSS.

For the most populated areas (Adams, Arapahoe, Boulder, Denver, El Paso, Jefferson, and Pueblo counties and Planning and Management Region Two - Larimer and Weld counties), estimates were made using five-year annual averages (1994-1998) of the number of deaths (death certificates), the prevalence of current and former smokers (BRFSS), and the prevalence of smoking among pregnant women (birth certificates).

While the data sources for the Eastern Plains and the Rural Resort regions are the same as those used for Colorado and the largest counties, the dates of the data sources are different. Neither of these two regions have sample sizes large enough in the state-wide BRFSS survey to be able to develop smoking estimates. Smoking data were used from a special BRFSS survey in the Eastern Plains in 1995 and in the Rural Resort region in 1998. Death and birth data

corresponding to these time periods (1994-1996 for Eastern Plains and 1996-1998 for Rural Resort) were used in developing SAM and YPLL.

These prevalence estimates were applied to the 1994-1998 annual average deaths in those two regions. SAM rates per 100,000 were calculated for persons age 35 years or older and were age-adjusted to the 1980 U.S. population to allow comparison of rates between different counties or regions with varying age distributions. YPLL that accounts for years of potential life lost at age of death before age 65 was calculated by using standard methodology.¹

Cigarette Smoking Prevalence

Region-specific estimates of current cigarette smoking prevalence among males age 35-64 years ranged from 16 percent in the Rural Resort region to 33 percent in Denver county; for females from 12 percent in El Paso county to 30 percent in Adams and Pueblo counties. (Table 1).

For persons age 65 years or older, the prevalence ranged from 5 percent to 20 percent for males and 3 percent to 23 percent for females. Based on birth certificate data, cigarette smoking among pregnant women ranged from 5 percent in Boulder county to 17 percent in Pueblo county.

Table 1. Adult smoking prevalence estimates (in percents) by age and gender: Colorado BRFSS

PLACE	MALE				FEMALE				
	AGE 35-64		AGE 65+		AGE 35-64		AGE 65+		PREGNANT WOMEN
	CURRENT SMOKER	FORMER SMOKER							
Colorado	24	31	12	57	21	25	9	29	13
Denver	33	33	12	61	27	29	15	26	13
Jefferson	22	39	5	80	23	27	7	25	11
Boulder	17	37	10	63	16	39	7	33	5
Adams	30	39	18	70	30	21	23	27	15
Arapahoe	17	38	17	36	22	31	9	22	11
El Paso	30	31	13	49	12	34	15	29	12
Pueblo	24	22	20	63	30	13	12	20	17
Weld & Larimer	20	41	11	50	19	27	6	34	12
Eastern Plains	26	31	9	70	24	18	7	23	14
Rural Resort	16	31	9	53	14	26	3	38	9

Notes: Eastern Plain Region includes following counties: Baca, Bent, Cheyenne, Crowley, Elbert, Huerfano, Kiowa, Kit Carson, Las Animas, Lincoln, Logan, Otero, Phillips, Prowers, Sedgwick, Washington, and Yuma. Rural Resort Region includes following counties: Eagle, Garfield, Lake, Pitkin, and Summit. Estimates of Eastern Plains region are from 1995. Estimates of Rural Resort area are from 1998. All others are from 1996 and 1997

Smoking Attributable Deaths

The estimated annual number of smoking-attributable deaths for all ages in Colorado was 4,700 (Table 2). Among those major counties and regions, the estimates for the number of annual smoking-attributable deaths ranged from 51 deaths in the Rural Resort to 832 deaths in Denver county. The majority of those smoking-attributable deaths were caused by chronic diseases such as neoplasms, cardiovascular diseases, and respiratory diseases. On average, it was estimated

that nine infant deaths each year in Colorado could be indirectly attributed to exposure to environmental tobacco smoking. The median percentage of all deaths attributable to smoking each year was 17 percent, ranging from 13 percent in Rural Resort to 21 percent in Adams county.

The median SAM rate was 276 per 100,000 population; this rate ranged from 201.0 per 100,000 in the Rural Resort to 419.3 per 100,000 in Adams county (Table 3).

Table 2. Annual average total deaths and deaths attributable to smoking by cause of death: all ages, 1994-1998

PLACE	ANNUAL AVERAGE TOTAL DEATHS (1994-1998)	SMOKING ATTRIBUTABLE DEATHS					ALL CAUSES	% OF ANNUAL AVERAGE DEATHS DUE TO SMOKING
		NEOPLASMS	CARDIOVASCULAR DISEASES	RESPIRATORY DISEASES	PERINATAL DISEASES	BURNS		
Colorado	25,398	1,454	1,700	1,522	9	15	4,700	18.5
Denver	4,836	244	332	252	*	*	832	17.2 ¹
Jefferson	2,882	149	189	173	*	*	511	17.7
Boulder	1,311	58	67	82	*	*	207	15.8 ¹
Adams	1,812	119	148	113	*	*	380	21.0 ²
Arapahoe	2,352	115	123	106	*	*	344	14.6 ¹
El Paso	2,592	164	168	154	*	*	486	18.8
Pueblo	1,319	62	86	80	*	*	228	17.3
Weld & Larimer	2,283	113	122	130	*	*	365	16.0 ¹
Eastern Plain	1,710	70	89	91	*	*	250	14.6 ¹
Rural Resort	402	19	13	19	*	*	51	12.7 ¹

* indicates fewer than three events for the category.

¹Significantly lower than the state percentage at p<0.05 level.

²Significantly higher than the state percentage at p<0.05 level.

Note: Eastern Plain Region includes following counties: Baca, Bent, Cheyenne, Crowley, Elbert, Huerfano, Kiowa, Kit Carson, Las Animas, Lincoln, Logan, Otero, Phillips, Prowers, Sedgwick, Washington, and Yuma. Rural Resort Region includes following counties: Eagle, Garfield, Lake, Pitkin, and Summit.

Years of Potential Life Lost (YPLL)

Smoking-attributable premature mortality in Colorado, as measured by YPLL, varied among major counties and regions. Each year an average of 9,662 years of life before age 65 are lost in Colorado due to cigarette smoking. For all counties and regions, the median estimate for YPLL

before age 65 was 795, ranging from 106 in the Rural Resort to 1,759 in Denver county. The median YPLL rate was 670.1 per 100,000 population; this rate ranged from 268.1 per 100,000 in the Rural Resort to 1,042.4 per 100,000 in Denver county (Table 3).

Table 3. Estimated annual average number and age-adjusted rates* of smoking-attributable mortality and smoking-attributable years of potential life lost (YPLL) by county: age 35 and older, Colorado, 1994-1998

PLACE	SMOKING ATTRIBUTABLE MORTALITY		SMOKING-ATTRIBUTABLE YPLL BEFORE AGE 65 YEARS	
	ESTIMATED NO. ¹	RATE	ESTIMATED NO.	RATE
Colorado	4,691	305.6	9,662	696.7
Denver	830	348.5	1,759	1,042.4
Jefferson	511	275.7	1,019	551.3
Boulder	207	244.9	369	428.7
Adams	380	419.3	798	816.4
Arapahoe	344	225.5	795	487.1
El Paso	486	319.0	1,064	730.2
Pueblo	228	306.3	353	832.4
Weld & Larimer	365	258.6	632	543.1
Eastern Plains	250	255.8	382	670.1
Rural Resort	51	201.0	106	268.1

* Rates per 100,000 persons adjusted to the 1980 U.S. Population.

¹ Numbers are different from those in table 2 because cases with ages <35 are not included.

Note: Eastern Plain Region includes following counties: Baca, Bent, Cheyenne, Crowley, Elbert, Huerfano, Kiowa, Kit Carson, Las Animas, Lincoln, Logan, Otero, Phillips, Prowers, Sedgwick, Washington, and Yuma. Rural Resort Region includes following counties: Eagle, Garfield, Lake, Pitkin, and Summit.

Summary

The number of deaths attributable to cigarette smoking in Colorado remains high, about 18 percent of all deaths each year. In fact, the costs of cigarette smoking go far beyond the tragic health consequences. Tobacco also places a significant economic burden on families and society as a whole. Results reported here, reflecting only part of the

toll of cigarette smoking, remind us that cigarette smoking remains a serious public health problem in Colorado. The findings reveal compelling reasons to implement a comprehensive approach to tobacco use prevention, reduction, and control in local communities.

References

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