Homicides in Colorado Workplaces, 1982-94

There were 1,457 occupational fatalities in Colorado from 1982 through 1994. A major public health issue, homicide accounted for 135 of these deaths and, although the rate of other fatal occupational injuries decreased over the period, the homicide rate remained constant. Many of the homicides occurred at night, in public buildings, and were caused by guns.

BY KATE MALONEY VASSALLO, A. JAMES RUTTENBER, CAROL J. GARRETT, AND WILLIAM M. MARINE

Homicide was the second leading cause of workplace fatality in the United States in 1994, accounting for 1,071 victims or 16 percent of all job-related deaths during the year. It was the leading cause of death for women, blacks, Hispanics, Asians and Pacific Islanders, 18- and 19-year-olds, the self-employed, sales supervisors, police, taxi drivers, guards, and cashiers.[1] It was the third leading cause of job-related death in the United States throughout the 1980s,[2] moving to second place in the 1990s.[3,4] This upward trend appears to indicate that homicide on the job is becoming ever more problematical.

While interest in this public health issue has been growing, research on occupational homicide is still limited. Most studies have analyzed data for only a few years, ignoring long-term trends. Moreover, many studies included only cases identified through death certificates. Because many work-related deaths may not be recorded as such on the death certificate, this method underestimates mortality rates.[5]

Colorado has been collecting data on workplace fatalities since 1982 using multiple sources of information to identify cases. This procedure provides more accurate estimates of population-based fatality rates and, along with the history of data collection, presents a good opportunity to evaluate trends over time.

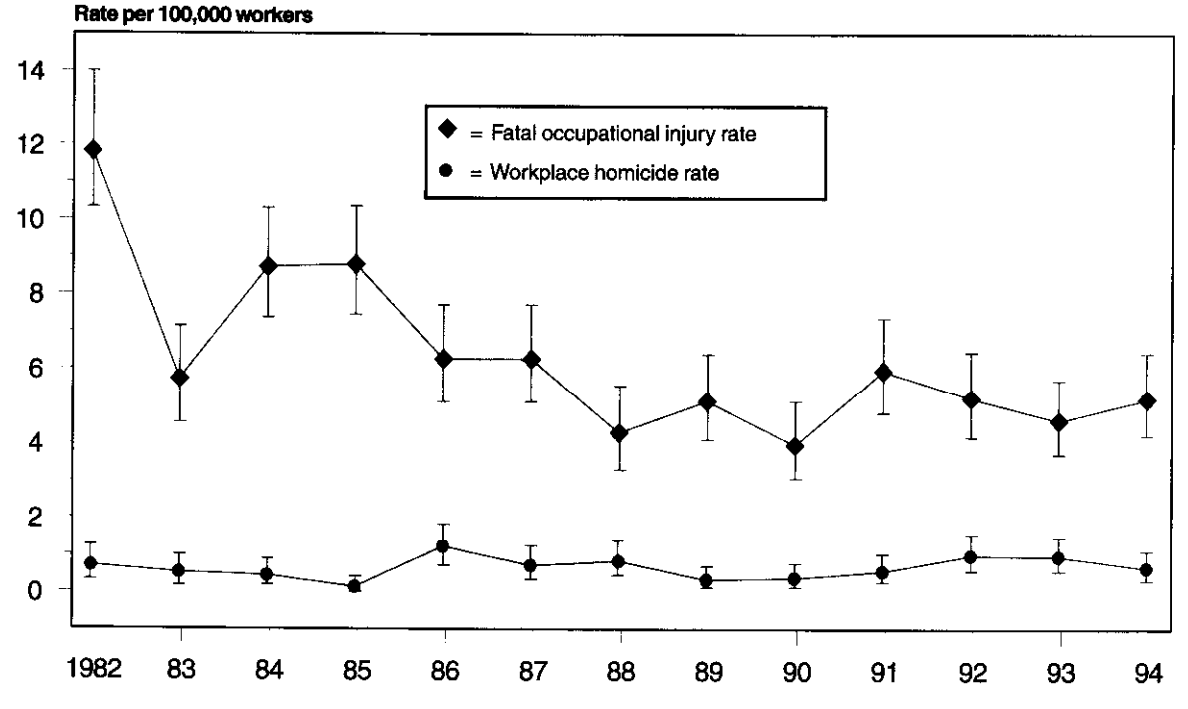
The Colorado experience

There were 1,457 fatal occupational injuries identified in Colorado (excluding suicides) from 1982 through 1994. Of these, 135 or 9 percent were homicides. The only specific events to cause more deaths in the workplace than homicides were highway incidents at 401 and air transportation incidents at 169. On average, there were 10 homicides per year. The 13-year average annual crude rate of occupational homicide was 0.63 per 100,000 workers.

There were no significant trends in homicide data for Colorado from 1982 through 1994. There was, however, a significant decrease in the number of workplace deaths due to all other injuries as well as a significant decrease over time in the *rate* of these workplace deaths (chart 1). This decrease in other injury deaths may be underestimated due to the more inclusive case certification criteria used in the later years.

Kate Maloney Vassallo holds a Master of Science degree in Public Health; A. James Ruttenber is Associate Professor, Department of Preventive Medicine and Biometrics, University of Colorado Health Sciences Center, Denver, Colorado; Carol J. Garrett is Chief, Health Statistics Section, Colorado Department of Public Health and Environment, Denver, Colorado; and William M. Marine is Professor, Department of Preventive Medicine and Biometrics, University of Colorado Health Sciences Center, Denver, Colorado.

Chart 1. Rates per 100,000 workers of homicides and other fatal occupational injuries by year, Colorado, 1982-94.



Demographics. Men accounted for 77 percent of all homicide victims, significantly lower than the proportion of men who died from other injury fatalities (table 1). For workers who died from an occupational injury, the risk of dying from homicide was three times higher for women than for men. However, the risk of dying from homicide was higher for men than for women when adjusted for occupations in services and sales and also when adjusted for employment in the retail industry. The 13-year average annual rate of homicide per 100,000 workers was 0.90 for men and 0.32 for women (table 2).

Whites accounted for 93 percent or 124 of the homicide victims and blacks for 7 percent or 9 homicides. This was significantly different than their proportions of other fatal occupational injuries (table 1). But, for blacks, the rate of homicides was nearly twice the white rate, but the difference was not statistically significant (table 2).

The proportion of homicide victims over the 13-year period who were Hispanic was 7 percent or 9, which was not significantly different from the proportion of victims of other fatal occupational injuries who were Hispanic (table 1). The 13-year fatality rate due to homicide for Hispanics was 0.48 per 100,000 workers, compared with 0.65 for non-Hispanics (table 2).

The greatest proportion of homicide victims fell in the 25- to 34-year-old age group (table 1), accounting for 25 percent or 34 of the homicide victims. Among all other occupational fatalities, 31 percent, or 411, were in this age bracket. In the 45- to 54-year-old age group, a greater proportion of workers died from homicide (24 percent or 32) than from other injuries (14 percent, 204). There were no homicides in workers under the age of 16, and five in workers over the age of 65.[6]

The proportion of foreign born homicide victims was significantly higher than the proportion of victims of other injuries who were foreign born (table 1). For workers who died from occupational injuries, the risk of dying from homicide was twice as high for workers who were born in a foreign country.

Homicide victims were more likely to die on the job in an urban county (84 percent, or 113) than those who died from other injuries (52 percent, 679). (See table 1.) For fatally injured workers, the risk of dying from homicide was four times higher for workers who were injured in an urban county.

Occupation. The greatest proportion of workplace homicides (30 percent, or 41) occurred in service occupations (table 3). This was significantly higher than the proportion of other injury victims who worked in services when compared to all other occupational groups combined. Sales occupations accounted for 22 percent (30) of all workplace homicides, significantly higher than

Table 1. Demographic characteristics for victims of workplace homicide and other fatal occupational injuries, Colorado, 1982-94[1]

Demographic characteristic	Occupational homicides		All other fatal occupational injuries		P value
	Number	Percent	Number	Percent	
Total	135	100	1,322	100	
Male	104	77	1,234	93	<0.01
Female	31	23	88	7	
White	124	93	1,268	97	<0.05
Black	9	7	40	3	
Other/unknown	2	1	14	1	
Non-Hispanic	126	93	1,201	91	n.s.
Hispanic	9	7	118	9	
Unknown	0	0	3	0	
Less than 16 years old	0	0	4	0	([2])
16-19	7	5	50	4	
20-24	11	8	151	11	
25-34	34	25	411	31	
35-44	30	22	294	22	
45-54	32	24	204	14	
55-64	16	12	135	10	
65+	5	4	73	6	
Unknown	0	0	0	0	
Birth in U.S.A.	121	90	1,255	95	<0.05
Birth in other country	13	10	60	5	
Unknown	1	1	7	1	
MSA location[3]	113	84	679	52	<0.01
Non-MSA location	21	16	639	48	
Unknown	1	1	4	0	

[1] Percentages and chi square statistics were calculated after the unknowns were dropped.
[2] Unable to calculate significance with Fisher's Exact Test.
[3] MSA = Metropolitan Statistical Area.
n.s. = not significant.

Table 2. Workplace homicides stratified by sex, race, and ethnicity, Colorado, 1982-94

Demographic characteristic	Total number of homicides	Average number of homicides per year	Average annual workforce (in thousands)	Average annual rate per 100,000	95% confidence interval
Total	135	10	1,636	0.63	0.30-1.16
Male	104	8	885	0.90	0.39-1.77
Female	31	2	751	0.32	0.04-1.16
White	124	10	1,530	0.62	0.30-1.14
Black	9	1	61	1.13	0.03-6.29
Non-Hispanic	126	10	1,492	0.65	0.31-1.20
Hispanic	9	1	144	0.48	0.01-2.67

Table 3. Occupation and industry for victims of workplace homicide and other fatal occupational injuries, Colorado, 1982-94[1]

Category and code	Occupational homicides (N=135)		All other fatal occupational injuries (N=1,322)		P value
	Number	Percent	Number	Percent	
Occupation					
Service occupations (403-469)	41	30	87	7	<0.01
Sales (243-285)	30	22	48	4	<0.01
Manager/professional specialty (003-199)	23	17	145	11	<0.05
Transportation (803-859)	10	7	260	20	<0.01
Laborers (864-889)	10	7	125	9	n.s.
Precision production, craft, repair (503-699)	7	5	271	21	<0.01
Administrative support (303-389)	5	4	32	2	n.s[2]
Farming, forestry, fishing (473-499)	4	3	164	12	<0.01[2]
Technicians (203-235)	4	3	85	6	n.s.[2]
Machinists (703-799)	1	1	42	3	n.s.[2]
Military occupations (903-905)	0	0	59	4	<0.01[2]
Not classified or unknown	0	0	4	0	
Industry (SIC)					
Retail trade (52-59)	60	44	50	4	<0.01
Services (70-89)	22	16	178	13	<0.01
Public administration (91-97)	15	11	129	10	n.s.
Transportation, communications, electricity, gas (40-49)	13	10	242	18	<0.05
Finance, insurance, real estate (60-67)	8	6	29	2	<0.01
Agriculture, forestry, fishing (01-09)	5	4	148	11	<0.01[2]
Wholesale trade (50-51)	5	4	83	6	n.s.[2]
Construction (15-17)	4	3	257	19	<0.01[2]
Manufacturing (20-39)	3	2	112	8	<0.01[2]
Mining (10-14)	0	0	92	7	<0.01[2]
Not classified	0	0	2	0	

[1]Percentages and chi square statistics were calculated after the unknowns were dropped.

[2] Fisher's Exact Test (two-tailed).
n.s. = not significant.

the proportion of workers who died from other occupational injuries who worked in sales. Service and sales occupations combined accounted for over half of all homicides (52 percent, 71) and, for all fatally injured workers, the risk of dying from homicide was almost seven times higher for workers in these two groups combined.

The specific occupations with the most homicides were supervisors in sales positions (10 victims), managers "not elsewhere classified" (9), police (7), guards not in public service (7), sales workers in "other commodities" (6), garage and service station attendants (6), restaurant managers (5), sheriffs (5), and taxi drivers (5).

Service occupations had the highest rate of homicide of any occupational group, at 1.40 per 100,000 workers (table 4). Sales occupations also had an elevated average homicide rate, 1.12 per 100,000 workers. Other occupations with elevated rates were laborers at 1.29 and transportation and material movers at 1.27 per 100,000 workers.

Industry. Retail trade had the greatest proportion of homicides, 44 percent, or 60 (table 3). The proportion of homicide victims who worked in retail trade was significantly higher than the proportion of victims of other fatal injuries who worked in retail trade. For workers who died from an injury, the risk of dying from homicide was nearly 10 times higher for workers in retail trade.

Retail and wholesale trade had the highest average annual rate of homicide per 100,000 workers, 1.57 (table 4).

The services industry accounted for 16 percent, or 22, of all occupational homicides. This was significantly higher than the proportion of victims of other injuries who worked in the service industry (table 3). The detailed industries with the most homicides were eating and drinking places at 25, police protection, 9, taxi cabs, 7, grocery stores, 6, and liquor stores, 5.

Circumstances of death

For the years 1991 through 1994, the time of homicide was known for

Table 4. Homicides stratified by occupation and industry (SIC), Colorado, 1982-94

Category	Total number of homicides	Average number of homicides per year	Average annual workforce (in thousands)	Average annual rate per 100,000	95% confidence interval
	Occupation, 1983-94[1] N=125				
Service occupations	36	3	215	**1.40**	0.29-4.09
Laborers	9	1	58	**1.29**	0.03-7.19
Transportation	9	1	59	**1.27**	0.03-7.07
Sales	29	2	216	**1.12**	0.14-4.04
Farming, forestry, fishing	4	0	41	**0.81**	0.00-2.43
Technicians	4	0	64	0.52	0.00-1.56
Manager/professional specialty	22	2	489	0.37	0.04-0.60
Precision production, craft, repair	7	1	77	0.33	0.01-1.84
Machinists	1	0	65	0.13	0.00-0.39
Administrative support	4	0	267	0.12	0.00-0.36
	Industry (Standard Industrial Classification category), 1982-94 N=135				
Wholesale and retail trade	65	5	319	**1.57**	0.51-3.66
Transportation, communications, electricity, gas	13	1	104	**0.96**	0.02-5.35
Agriculture, forestry, fishing	5	0	41	**0.95**	0.00-2.85
Finance, insurance, real estate	8	1	107	0.58	0.01-3.23
Services	22	2	333	0.51	0.06-1.84
Public administration	15	1	255	0.45	0.01-2.51
Construction	4	0	83	0.37	0.00-1.11
Manufacturing	3	0	203	0.11	0.00-0.33

[1]1982 rates by occupational category were not calculated due to a change in the Bureau of Census coding in 1983.

NOTE: Bold rates indicate rates higher than the overall homicide rate of 0.63.

47 of the 54 cases (87 percent). One fifth (20 percent, 9) of all homicides occurred between the hours of 9 p.m. and midnight, and nearly half (42 percent, 19) occurred between 6 p.m. and 6 a.m. Thirty-five percent (19) of the 54 homicides took place over the 2 weekend days. Sunday had the most homicides (20 percent, 11), but they were otherwise evenly distributed throughout the week.

The location was known and classifiable in 117 out of the 135 workplace homicides (87 percent) from 1982 through 1994. More than half of these took place in public buildings (57 percent, 67) and, specifically, 26 occurred in restaurants or bars. Roads and highways accounted for another 20 percent (23) and homes for 11 percent (13). Victims of occupational homicides which occur in a home were primarily police or sheriffs.

Between 1991 and 1994, the activity of the victim was known for 40 of the 54 homicides (74 percent). Homicide victims were tending a retail establishment in 33 percent, or 13 of the cases. Another 23 percent (9) of the homicides occurred while the victim was providing a protective service. In 13 of the 54 homicides (24 percent), the circumstances surrounding the assault were unknown. In over half of the remaining cases, the assailant was a robber (51 percent, 21) and, in an additional 5 cases (12 percent), the victim was an officer of the law killed in the line of duty. The perpetrator was a relative of, or known to, the victim in six cases (15 percent) and a co-worker or former co-worker in five cases (12 percent).

Most homicide victims in Colorado workplaces from 1982 through 1994 were shot (84 percent, 106). Another 13 percent, or 16, were stabbed and 2 percent (3) were beaten. The manner of homicide in the remaining 10 cases was undetermined.

Colorado and the United States

When comparing occupational homicide victims in Colorado to the United States for 1992 through 1994, there were no statistically significant differences in rates. The 3-year average rate of homicide per 100,000 workers was 0.85 for Colorado and 0.88 for the Nation. The rate for men in Colorado was 1.16 per 100,000 workers compared to 1.35 for men in the U.S. For women, the rates were 0.48 and 0.34, respectively. In Colorado, the rate for whites was 0.84 compared to 0.68 in the United States. Among blacks the rates were 1.41 and 1.55, respectively. Finally, the average rate of homicide for Hispanics in Colorado was 0.43 and in the Nation, 1.56.

Analysis and recommendations

Although non-homicide fatal occupational injuries decreased in Colorado from 1982 through 1994, Colorado from 1982 through 1994, homicides in the workplace did not.

This is consistent with the movement of homicide from the third to the second leading cause of death on the job nationally. Furthermore, analysis of data in Colorado also showed that the use of multiple data sources led to greater case reliability in the later years, strengthening the interpretation of the decreasing trend in non-homicide fatal injuries. The fact that the rate of homicides did not decrease in Colorado is consistent with national data. The overall rate for homicide in the United States was 0.85 per 100,000 workers from 1980 through 1989; from 1992 through 1994 it was 0.88. The decrease in the rate of other work-related fatalities makes the significance of occupational homicide all the more important.

The risk of being a homicide victim on the job was higher for men than for women when adjusted for high risk occupations in sales and services and jobs in the retail industry. The overall increased share of fatalities from homicide among women may be due to their employment in occupations and industries in which homicides occur more often regardless of sex. It may also be due to their lack of employment in occupations and industries where other fatal injuries occur, such as construction, transportation, and manufacturing.

The data in this article are consistent with other studies, which have found elevated rates of work-related homicides for men,[7, 8, 9, 10, 11] blacks and Hispanics.[12, 13, 14] The rates calculated for blacks and Hispanics were not elevated in comparison with the overall homicide rate (0.63 per 100,000 workers) in Colorado. Their rates also did not differ significantly from the U.S. rates for blacks, and Hispanics, even though these two groups had rates that were significantly higher than those for whites and non-Hispanics.

The findings for workers in the retail industry are consistent with other studies which show elevated risks for occupational homicide in this category[15]. Workers in public administration, particularly police and sheriffs, have also been shown to be at increased risk in other studies. Other occupations with elevated rates include sales, handlers and laborers (particularly gas station attendants), transportation occupations (particularly taxi cab drivers), and services (particularly protective services).

Robbery is the primary motive in occupational homicides in Colorado as well as the nation.[16] The assailants have been unknown to the victims in the majority of cases, and many homicides in workplaces occur at night and over the weekend.[17] Finally, the majority of workplace homicides have been reported to occur in public buildings.

This article, in addition to other studies on homicide in the workplace, shows that the majority of the perpetrators have not been employed at the workplace of the victims. The data also show that homicides occur in industries and occupations where the worker deals with the general public and handles money. Efforts to prevent workplace homicides should target these industries and workers in these occupations.

Several preventive measures have been implemented by various employers. These include camera surveillance, protective glass separating the worker and the public, timed drop boxes for cash, improved visibility of the cashier from the street, improved lighting, and increased police surveillance.[18] All of these measures should be considered in situations where employees have contact with the public, especially in occupations where money is handled. In addition to these measures, studies that examine the factors that differ between robberies where the worker is assaulted and those where he or she is not, could contribute substantially to prevention strategies.

Because many homicides in workplaces occur at night, a decrease in nighttime hours of operation may contribute to a decrease in the number of workplace homicides in some situations. Some employers may be unwilling to lose potential business by decreasing their hours of operation when the risk of assault seems relatively small for any one workplace. However, when assessing the financial benefits of operating at night, the employer should also weigh into the equation the emotional stress for employees working higher risk shifts, as well as the *potential* emotional and physical effects of assault on those employees.

The prevalence of gun use in workplace homicides needs particular attention. Although 84 percent of Colorado workplace homicides in 1993 were caused by guns, only 70 percent of all homicides in the State were caused by firearms.[19] The installation of metal detectors in high risk locations may prevent workplace homicides by directly alerting local police agencies to increase surveillance.

The limitations of this study include the lack of denominator data by age groups, which precluded calculating age-specific rates. Other studies have reported elevated rates for workers 65 years old and older. In addition, data collection in the 1980s was less inclusive than the method employed in the 1990s. However, this discrepancy is not expected to affect the results of this study in any way other than an underestimation of mortality.

Homicide is currently the second leading cause of death on the job and the leading cause for certain groups of workers. The significance of the effect of homicide on workers is increasing as workers continue to be successfully protected from other fatal injuries. Because homicide is becoming an increasingly significant contributor to workplace deaths, continued research is necessary. While this research did not find significant differences between homicide rates in Colorado and the United States, it is expected that rates and risks will differ among

regions where demographic and occupational differences exist. The continued collection of data using comprehensive methods such as those employed by the Census of Fatal Occupational Injuries program of the Bureau of Labor Statistics, will make this type of research possible and will allow researchers to monitor trends in mortality rates from homicide. Finally, this research reveals that homicide victims differ substantially in many respects from victims of other occupational injuries, providing a foundation for developing preventive measures to deal with this public health issue.

Technical Notes

The study population included all persons who died from injuries sustained while working in Colorado from 1982 through 1994. Workers of all ages and from all employment sectors, including self-employed and volunteer workers, composed the study population. Suicides were excluded from the analysis.

Between 1982 and 1990, the majority of cases were identified from either death certificates that indicated an injury at work or from Workers' Compensation claims. A few additional cases were identified from the Occupational Safety and Health Administration (OSHA), the Mining Safety and Health Administration (MSHA), and the National Transportation Safety Board (NTSB), and were confirmed by a review of the death certificate. Cases from 1982 through 1990 were included when any one source indicated a fatality at work, if a review of the circumstances of death on the death certificate were not contradictory.

From 1991 through 1994, cases were identified using any of the above listed sources, as well as newspaper articles, the National Institute of Occupational Safety and Health's Fatal Assessment and Control Evaluations (FACE) investigations, and review of death certificates with a farm or industrial location of death. Cases from 1991 through 1994 were included only if there were two source documents. The difference in the number of source documents used to identify cases in the two datasets is not expected to affect the results of this study. Cases were categorized using information from all of the sources listed above, as well as highway accident reports and coroners reports. For detailed information on case reliability, the reader is referred to previous studies.[20]

Examination of all workplace deaths from 1991 through 1994 determined that 9 percent (5) of the homicide cases and 4 percent (17) of all other workplace deaths would not have been included using the methods and criteria for selection of the earlier years. Most of these cases were identified by newspaper articles. This difference in case reliability is not expected to affect the results of this study in any way other than an underestimation of mortality in the earlier years.

Death certificates were used to determine sex, race, ethnicity (Hispanic or non-Hispanic), age, country of birth, and the date, time and county of injury. Urban location of injury was defined as the Metropolitan Statistical Area, as designated by the Federal Information Processing Standards, and included Adams, Arapahoe, Denver, Douglas, Jefferson, Boulder, Weld, Larimer, El Paso, and Pueblo counties.

The industry in which each homicide victim was employed was classified using the 1987 Standard Industrial Classification system[21] and the occupation was classified using the 1990 Occupational Classification System developed by the Bureau of the Census.[22] These were determined using Workers' Compensation records, OSHA reports, coroner reports, and newspaper articles. When no other source of information was available, they were imputed from the usual industry or occupation listed on the death certificate after a review of the circumstances of the death failed to indicate the individual was engaged in other than his or her usual industry or occupation.

Homicide victims were classified as being shot, stabbed, beaten, or undetermined, as listed on the death certificate. The type of location where the homicide occurred (farm, house, industrial place, etc.) was also determined from the death certificate. For cases from 1991 through 1994, the worker's activity at the time of the homicide was determined from Workers' Compensation reports, OSHA reports, FACE investigations, or coroner reports. Also for these later years, the relationship between the perpetrator and the victim was characterized when it was known.

Data analysis

After the two datasets (1982-90 and 1991-94) were combined, the annual number of homicides and other injury deaths, the annual proportionate mortality from homicide, and the annual rates of homicide and other injury deaths were analyzed for long-term trends using linear regression with the year of death as the independent variable. Aggregate frequency distributions for all variables listed above were calculated for all occupational homicides and for all other fatal occupational injury deaths and the significance of the differences was

assessed with chi square or Fisher's Exact Tests. Risk ratios were calculated using Mantel-Haenszel estimates, including a stratified analysis for gender by occupational and industry groups. Crude rates of occupational homicide were calculated for each year, and stratified by sex, race, ethnicity, industry, and occupation using annual denominator data from the BLS publication, *Geographic Profile of Employment and Unemployment.*[23] Rates by occupational group were not calculated for 1982 due to a change in the Bureau of Census classification structure in 1983. For data from 1992 through 1994 only, homicides rates for Colorado and the United States were compared. Because the annual number of homicides was small, 95 percent confidence intervals for annual incidence rates were calculated using the Poisson distribution.

Acknowledgments

Data were collected from 1982 through 1990 by the Colorado Department of Public Health and Environment (CDPHE) Health Statistics Section under a cooperative agreement with the National Institute of Occupational Safety and Health. Since 1991, CDPHE has been collecting data on occupational fatalities under a cooperative agreement with the U.S. Department of Labor, Bureau of Labor Statistics, for the Census of Fatal Occupational Injuries program. The Bureau of Labor Statistics provided part of the funding for this research. Statistical support and data management assistance was provided by Chun-Lo Meng at CDPHE.

—ENDNOTES—

[1] Bureau of Labor Statistics, "National Census of Fatal Occupational Injuries, 1994." News release, USDL 95-288. Washington, DC, August 3, 1995.

[2] Centers for Disease Control, *Fatal Injuries to Workers in the United States, 1980-1989: A Decade of Surveillance*, U.S. Department of Health and Human Services (NIOSH), Publication No. 93-108, August 1993, pp. 1-27.

[3] Toscano, Guy and Windau, Janice. "Fatal Work Injuries: Results from the 1992 National Census." *Monthly Labor Review*. U.S. Department of Labor, Bureau of Labor Statistics. October, 1993, pp. 39-48.

[4] Toscano, Guy and Windau, Janice. "The Changing Character of Fatal Work Injuries." *Monthly Labor Review*. U.S. Department of Labor, Bureau of Labor Statistics. October, 1994, pp.17-28.

[5] Bell, Catherine A., Stout, Nancy A., Bender, Thomas R., Conroy, Carol S., Crouse, William E., and Myers, John R. "Fatal Occupational Injuries in the United States, 1980 through 1985." *Journal of the American Medical Association*. 1990; 263(22):3047-3050.

[6] The significance of this difference could not be calculated with a Fisher's Exact test, and rates could not be calculated due to lack of denominator data.

[7] Castillo, Dawn N., and Jenkins, E. Lynn. "Industries and Occupations at High Risk for Work-related Homicide." *Journal of Occupational Medicine*. 1994; 36(2):125-132.

[8] Jenkins, E. Lynn, Layne, Larry A., and Kisner, Suzanne M. "Homicide in the Workplace: The U.S. Experience, 1980-1988." *American Association of Occupational Health Nurses Journal*. 1992; 40(5):215-218.

[9] Kraus, Jess. "Homicide While at Work: Persons, Industries and Occupations at High Risk." *American Journal of Public Health*. 1987; 77:1285-1299.

[10] Richardson, Scott. "Workplace Homicides in Texas, 1990-91." *Compensation and Working Conditions*. U.S. Department of Labor, Bureau of Labor Statistics. May, 1993, pp. 1-6.

[11] Toscano, Guy and Weber, William. "Violence in the Workplace." *Compensation and Working Conditions*. U.S. Department of Labor, Bureau of Labor Statistics. April, 1995, pp. 1-8.

[12] Bell, Catherine A. "Female Homicides in the United States Workplaces, 1980-1985." *American Journal of Public Health*. 1991; 81:729-732.

[13] Davis, Harold. "Workplace Homicides of Texas Males." *American Journal of Public Health*. 1987; 77:1290-1293.

[14] Windau, Janice and Toscano, Guy. "Workplace Homicides in 1992." *Compensation and Working Conditions*. U.S. Department of Labor, Bureau of Labor Statistics. February, 1994, pp. 1-8.

[15] Davis, Harold, Honchar, Patricia A., and Suarez, Lucina. "Fatal Occupational Injuries of Women, Texas, 1975-84." *American Journal of Public Health*. 1987; 77:1524-1527.

[16] Howe, Holly L. "Differences in Workplace Homicides by Sex, 1993." *Compensation and Working Conditions*. U.S. Department of Labor, Bureau of Labor Statistics. October, 1995, pp. 1-7.

[17] Hales, Thomas, Seligman, Paul J., Newman, Sandy C., and Timbrook, Clifton L. "Occupational Injuries Due to Violence." *Journal of Occupational Medicine*. 1988; 30(6):483-487.

[18] National Association of Convenience Stores. *Robbery Deterrence Manual*. Alexandria, VA, 1987.

[19] Colorado Department of Public Health and Environment. *Colorado Vital Statistics, 1993*. Health Statistics and Vital Records Division, Health Statistics Section. Denver, Colorado. December, 1995, p. 134.

[20] Colorado Department of Public Health and Environment, *Colorado Population-based Occupational Injury and Fatality Surveillance System Report, 1982-1984*. Denver, Colorado, 1985.

[21] Executive Office of the President. *Standard Industrial Classification Manual*. Office of Management and Budget. Springfield, Virginia. Revised 1987.

[22] Bureau of the Census. *1990 Alphabetical Index of Occupations*. Washington, DC. 1990.

[23] Bureau of Labor Statistics. *Geographic Profile of Employment and Unemployment*. U.S. Department of Labor, 1982 through 1994.