

**Occupational Injury Fatalities in New Mexico: 1998-2002**  
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## Introduction

Workplace injuries and illnesses remain a significant problem in the United States. A worker is injured every five seconds [1, 2]. It was estimated in 1996 that 11,000 workers were disabled each day due to work-related injuries [3] and the Bureau of Labor Statistics (BLS) reported in 2000 that 5,915 workers in private industry died as a result of work related injuries [4]. The National Safety Council estimated in 1996 that on-the-job injuries alone cost society \$121 billion. The 1992 combined U.S. economic burden for occupational illnesses and injuries was an estimated \$171 billion [5].

In 2002, the New Mexico Department of Health in partnership with the University of New Mexico Health Sciences Center's Program in Occupational and Environmental Health applied for and received a grant from NIOSH to establish an occupational injury and illnesses surveillance system for the state of New Mexico. The New Mexico Occupational Health Registry (NMOHR) was established to utilize existing data sources in state and federal public health and labor agencies, public and private healthcare provider data, academic institutions, and create a single repository for combining these data into valid, reliable and useful surveillance information. The NMOHR has been designated the official entity to collect and maintain the reportable occupational illness and injury data. The registry is authorized to access all records of physicians and surgeons, hospitals, outpatient clinics, nursing homes, and all other facilities, individuals or agencies providing such services to patients that would identify or establish the characteristics or outcome of occupationally-related illnesses and injuries.

The NMOHR has been participating in the development and pilot testing of a set of occupational health indicators being developed in a collaborative effort between CSTE, NIOSH and federally funded states conducting occupational health surveillance. Criteria for selection of indicators included: 1) the availability of easily attainable state-wide data; 2) the public health importance of the occupational health effect or exposure to be measured; and 3) the potential for workplace intervention activities.

The current characterization of occupational fatality in New Mexico arose from the indicator project, which revealed a rate on par with the national rate for occupational fatality for the year 2000. Furthermore, the proportion of workers in high-risk occupations and industries was higher in New Mexico than for the majority of other states participating in the indicators project.

## Methods

The Census of Fatal Occupational Injury (CFOI), from the Bureau of Labor Statistics provided much of the data for this report. Data from the New Mexico Vital Records and Health Statistics (NMVRHS) were also analyzed. Rates and confidence intervals were calculated where denominator data were available.

CFOI: The Census of Fatal Occupational Injury is administered by the Bureau of Labor Statistics. In the state of New Mexico, the New Mexico Occupational Health and Safety Bureau (NMOHSB) is the agency contracted for conducting the census annually. Each case is corroborated by a minimum of two sources, which may be from death certificates from NMVRHS, Office of the Medical Investigator reports, newspaper articles, or other approved sources. Some of the variables reported in CFOI include demographics, industry, occupation, place of injury (farm, industrial yard, highway, etc.), cause and event leading to death and part of body injured.

**New Mexico Vital Records and Health Statistics (NMVRHS):** Data set includes all death certificates for the years 1998 through 2002 where the “injury at work” box has been checked. All deaths that occurred in New Mexico are included regardless of the residence of the worker. Work-related deaths of New Mexico residents that did not occur in New Mexico were excluded from the dataset. Variables obtained from NMVRHS include residence county and city of decedent, county and city in which death occurred, the manner of death (accident, assault, suicide or undetermined), date of death (year, month, day), the underlying cause of death (1999-2002 by ICD-10 codes, 1998 by ICD-9 codes), industry and occupation codes, and citizenship status.

**BLS Current Population Survey:** The CPS is a sample survey of about 60,000 households nationwide conducted by the U.S. Census Bureau for the Bureau of Labor Statistics [6]

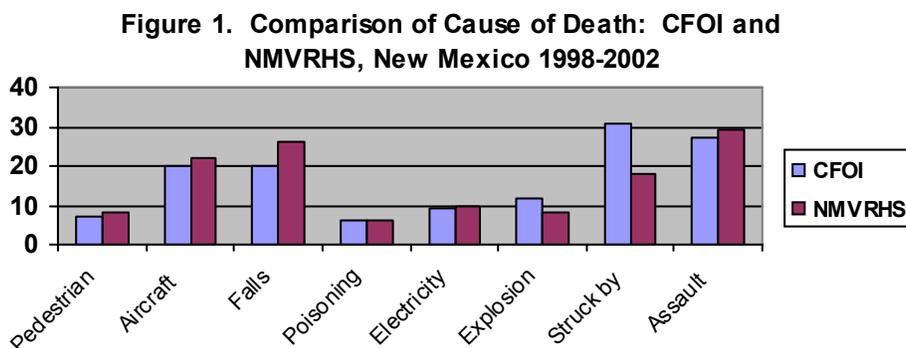
**BLS Quarterly Census of Employment and Wages:** Employment data under the QCEW program represent the number of covered workers who worked during, or received pay for, the pay period including the 12th of the month. Excluded are members of the armed forces, the self-employed, proprietors, domestic workers, unpaid family workers, and railroad workers covered by the railroad unemployment insurance system [7].

**Risk of occupational injury fatality by industry and occupation:** The definition of “high risk industry” is based on the twenty-seven industries have fatality rates higher than 10 deaths per 100,000 workers, representing approximately 17.2 million workers (14% of the private sector employment), but 58% of the occupational fatalities in 1998. “High-risk occupations” are the 24 occupations that have fatality rates higher than 20 deaths per 100,000 workers [8]. Percentages were determined for the year 2000.

## Findings

### Comparison of CFOI and NMVRHS for selected causes of death

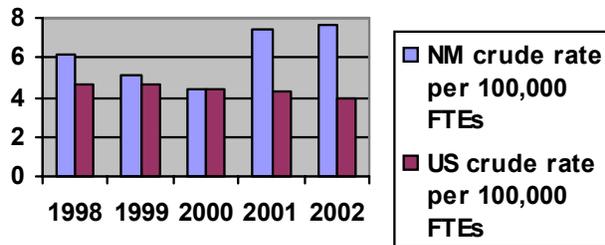
According to BLS CFOI data there were a total of 244 fatal occupational injuries in New Mexico from January 1998 to December 2002. In comparison, there were 248 death certificates marked “death at work” for the same time period. Because cause of death is categorized by the BLS Occupational Illness and Injury Classification System (OIICS) in the CFOI data set and death certificates causes are categorized by the ICD10 code, the two datasets are not directly comparable. However, general categorizations reveal some comparisons between the two data sets (figure1). The cause “death by poisoning” had 6 deaths reported in both data sets. Deaths by electricity and pedestrian-related deaths were the second most closely matched, with a discrepancy of one death for both causes. Assaults, explosions, and aircraft-related deaths were within two fatalities. The largest discrepancy was for the category of “struck by”; the CFOI data reported 31 deaths in this cause category while death certificates only reported 18.



## Crude occupational fatality rates, CFOI

The crude occupational injury fatality rate has remained higher in New Mexico than for a nation as a whole. In 1995, the fatality rate was reported to be New Mexico rate was 7.9/100,000 workers, whereas the U.S. rate for same time period was 6.0/100,000 [9]. Figure 2 shows the fatality rate in New Mexico for the years 1998 to 2002. The combined rate for all five years was 6.14/100,000 in New Mexico versus 4.4/100,000 for the U.S.

**Figure 2. U.S. and New Mexico crude occupational injury fatality rates: 1998-2002**



Source: CFOI

## Occupations and Industries at high risk of occupational injury fatality

For the year 2,000 New Mexico had the third highest percentage of workers (15.5%) in industries at high risk of occupational injury mortality among the 12 participating CSTE indicator states. A comparison of New Mexico with US percentages for selected industries indicates which of New Mexico's industries may be problematic for occupational fatalities. New Mexico had a much higher percentage of workers than does the nation as a whole employed in oil and gas extraction (1.69% vs. 1.30%), metal mining (0.6% vs. 0.04%) and agricultural livestock production (1.33% vs. 0.87%). New Mexico employed fewer people in agricultural crop production (0.65% vs. 0.81), however the percentages of workers employed in the trucking industry (1.91% vs. 1.92%) and construction (6.71% vs. 6.71%) are about equal for the US and NM.

With seven percent of the state's workforce employed in high risk occupations for fatality, New Mexico had the second highest percentage compared to the other CSTE indicator states and was higher than the national average of six percent. Some examples of high risk occupations include: Mining machine operators, truck drivers, farmers, roofers, electricians apprentices, airplane pilots and navigators, and garbage collectors.

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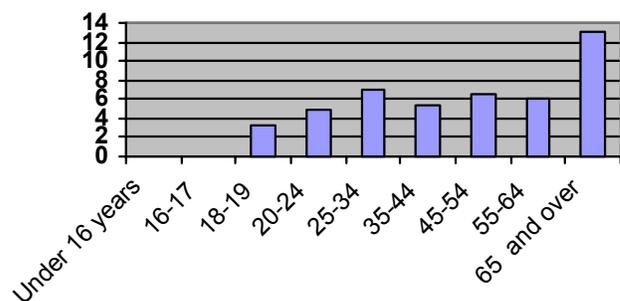
## Selected characteristics of workers fatally injured on the job

### Occupational injury fatality rates by age

Nationally, there is a certain age at which the fatality rate for workers increases dramatically. New Mexico's workers follow this pattern as well. Workers aged 65 years and older have a fatality of 13.1 per 100,000 workers (95% C.I. 6.5 – 19.6), a rate twice that of any other age group except 25-34 year olds who have a fatality rate of 7 per 100,000 (95% C.I. 5.2 – 8.8) (figure 3).

### Occupational injury fatality rates by industry and gender

**Figure 3. Occupational injury fatality rates by age group, NM 1998-2002**



Source: CFOI

Between the years of 1998-2002 males in New Mexico experienced an occupational injury fatality rate of 10.9/100,000 workers (95% C.I. 9.4 – 12.3) while females only experienced a rate 0.1/100,000 workers

(95% C.I. 0.04 – 0.13) (CFOI). What are more informative are the industries represented and causes of death for women. The two industries where there were enough deaths of women workers to be reportable were transportation (five deaths), and retail (six deaths). Moreover, a full 31% of the fatalities in women were due to assault.

### Occupational injury fatality rates by worker status

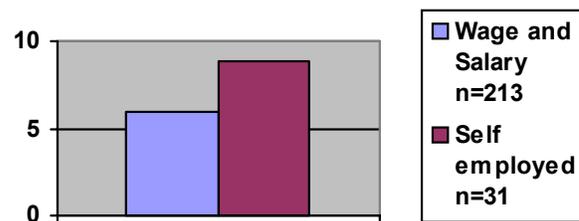
Workers in New Mexico who were self employed had about a third higher rate of death than wage and salary workers. [wage and salary workers: 5.9/100,000 workers, 95%C.I.(5.1-6.7), self employed workers 8.8/100,000 workers, 95%C.I.(5.6-12.0)] (Figure 4). Self-employed workers may be less likely insured than workers with more conventional employment. It is unclear from the data if the self-employed experienced death more frequently than wage and salary workers due to the lack of adequate, and/or timely medical treatment.

### Occupational injury fatality rates by industry and occupation

The top industries for fatalities in New Mexico from 1998-2002 were mining (30.9/100,000 workers), the transportation, communication and public utilities industry (29.2/100,000 workers), agriculture (24.1/100,000 workers) and construction (18.4/100,000 workers) (CFOI).

Workers employed in transportation and material moving in New Mexico were much more likely to die on the job than workers in any other occupation, with a rate of 37.5/100,000 workers. The occupation with the next highest injury fatality rate was farming with a rate of 19.9/100,000 workers, followed by protective service workers with a rate of 17.2/100,000 workers (CFOI).

**Figure 4. Occupational injury fatality rates by worker status, NM 1998-2002**



Source: CFOI

### Top 3 industries for occupational fatality by ethnicity, Comparison 1981-1992 – 1998-2002

The table below lists the top three industries in which the highest percentages of deaths occurred, and shows a comparison between 1998-2002 data and an earlier study by Fullerton et. al. [9].

**Table 1. Comparison of race/ethnicity and industry for occupational injury fatalities.**

	<b>White non-Hispanic</b>	<b>Hispanic</b>	<b>American Indian</b>
1981-1992 (Fullerton, et. al)	Construction (38.1%), Oil & Gas (19.2%), Military (12.8%)	Construction (22.4%), Mining (13.6%), Agriculture (13.6%)	Construction (38.1%), Agriculture (38.1%)
1998-2002 (NMOHR)	Construction (14%), Public Administration (9%), Transportation (31%)	Construction (25%), Mining (14%), Transportation (16%)	Construction (29%), Agriculture (21%), Services (21%)

The only industry consistently dangerous for all groups over time was construction. Mining remained consistently fatal for Hispanics over time while agriculture persisted for American Indians. Transportation became a more fatal industry for both white non-Hispanics and Hispanics over time.

## Occupational injury fatalities by U.S. citizenship status

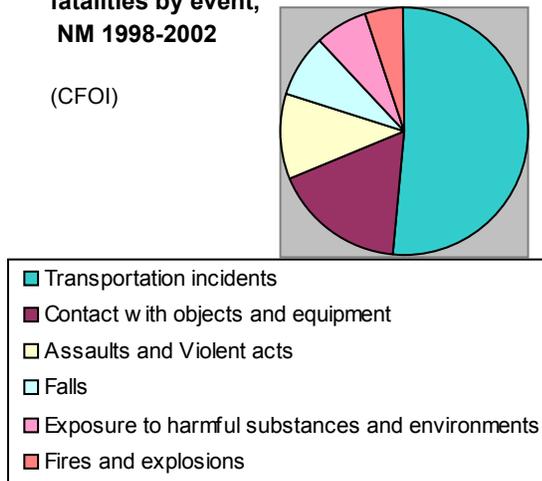
Nine percent of worker deaths in New Mexico occurred in non-US citizens; of those, six percent were Mexican Nationals. This percentage is close to that reported in a previous study where 10% of occupational injury fatalities occurred in immigrants nationwide [10].

Although it is not possible to count the number of non-U.S. citizens who are actually employed in New Mexico, crude estimates were calculated using Immigration and Naturalization Service counts of legal immigrants, plus an estimate of non-legal immigrants, then using U.S. Census Bureau's Current Population Survey micro data. The first method yielded an estimated a fatality rate of 10.7/100,000 workers, while the CPS denominator yielded a fatality rate of 10.3/100,000 non-citizen workers.

## Occupationally-related deaths by cause or event

**Figure 5. Occupational injury fatalities by event, NM 1998-2002**

(CFOI)



As seen in figure 5, transportation incidents were the main factor in 52% of occupational injury fatalities in New Mexico from 1998-2002. Forty four percent were deaths resulting from a motor vehicle, while the remaining eight percent were air craft, or other mode of transport.

The second most common cause of fatality was contact with objects and equipment (17%), assaults and violent acts (11%), falls (8%), exposure to harmful substances and environments (7%), and fires and explosions. (5%).

## Occupational injury fatalities by state of residence

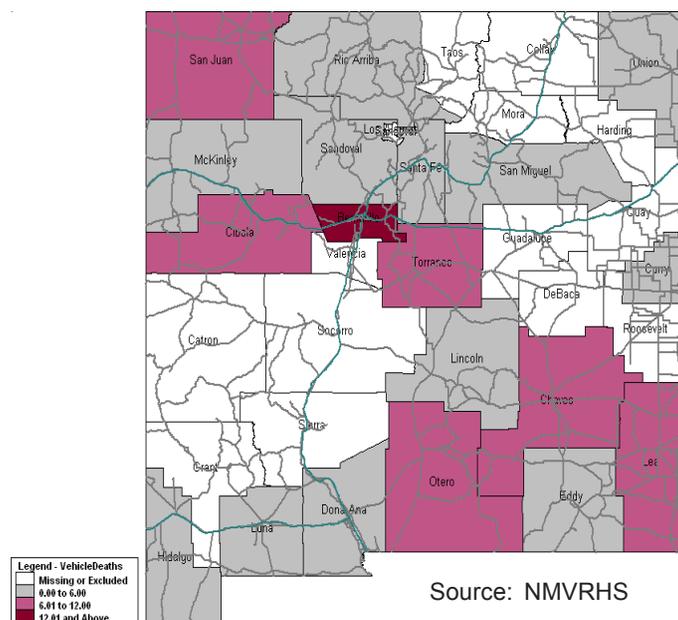
In the analysis of state of residence of decedents, 30% of occupational injury fatalities that occurred in New Mexico from 1998-2002 were non-New Mexicans (NMVRHS).

Work-related travel through the state appears to be particularly risky for out-of-state workers as 47% of transportation related deaths occurred in out-of state residents. Furthermore, 10% of air transport fatalities occurred in non-residents while only 8% of residents died in air transport events.

**Figure 6. work-related ground transport fatalities by NM county**

## Occupationally-related ground transportation fatalities

New Mexico counties in which transportation deaths occurred did not align with the three interstates as expected (figure 6). Aside from Bernalillo County, I-25 did not pass through any county where the number of deaths was higher than six. Two counties along I-40 had between six and 12 work-related ground transport fatalities (Cibola and Torrance). Other counties with elevated numbers of ground transport deaths were

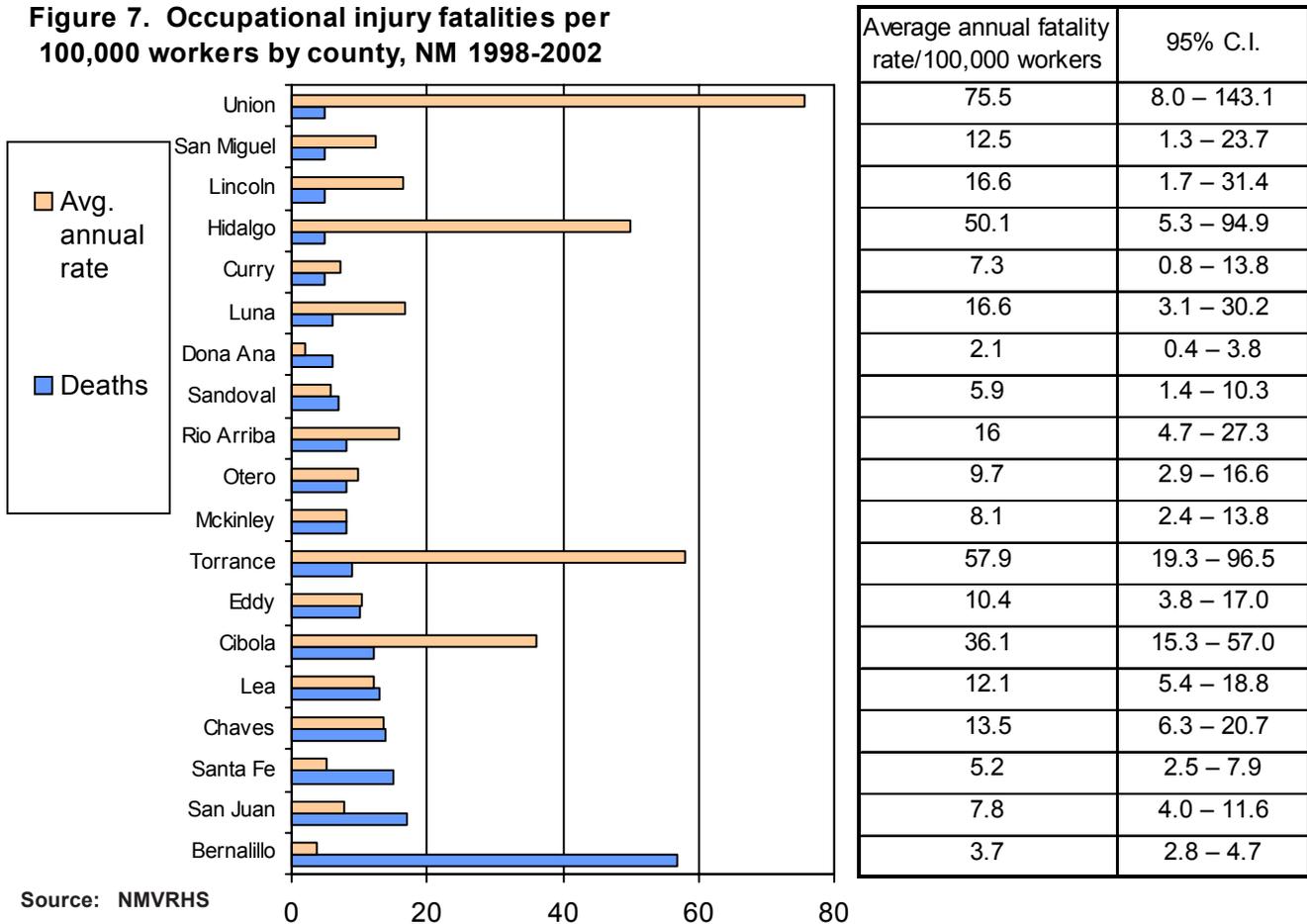


Source: NMVRHS

San Juan in the northwest corner of the state and a cluster of counties in the southwestern corner; Otero, Catron and Lea.

**Occupational injury fatalities per 100,000 workers by county**

**Figure 7. Occupational injury fatalities per 100,000 workers by county, NM 1998-2002**



Counties not listed: Colfax, Guadalupe, Quay, Taos, Catron, De Baca, Roosevelt, Socorro, Grant, Mora, Sierra, Harding, Los Alamos, and Valencia. Numbers and rates for counties with less than 5 deaths are not reported.

Figure 7 shows the range of occupational injury fatality rates for New Mexico’s counties. Rates ranged from 75.5/100,000 workers in Union County, to 2.1/100,000 workers in Dona Ana County. Counties with no occupational injury fatalities from 1998 to 2002 were Los Alamos, Harding, and Valencia. The highest number of fatalities occurred in Bernalillo County, with 57 work-related fatalities from 1998-2002. Some of the higher fatality rates occurred in counties that are sparsely populated, such as Union, Hidalgo and Torrance.

**Limitations**

Because identifying information is not available through CFI, it was not possible to directly compare fatalities from the two datasets. Furthermore, there are differences between coding systems for the two datasets for variables such as cause of death, occupation, and industry.

Fatalities of workers younger than 16 may be included in the numerator but are not included in the denominator, since employment statistics are only available for those 16 years of age and older. Be-

cause the number of deaths among those less than 16 in any one state are small, these numbers are not broken out in the BLS tables and often do not meet the BLS publication criteria. Additionally, CFOI reports data on work-related fatalities by the state in which the fatal incident occurred, which is not necessarily the state of death or the state of residence. The denominator data used for calculating rates is an estimate of the civilian employed population who live in the state, thus rates may overestimate risk for a state if the fatal incidents involved victims who were out of state residents.

## Conclusion

- Males comprise the overwhelming number of occupational fatalities BUT 31% of fatalities in females were due to assaults.
- Workers over the age of 65 have twice the rate of occupational injury fatalities of workers under 65.
- The self employed have a one-third higher rate of fatal occupational injury than do wage and salary workers.
- Non-US citizen workers have a higher rate of fatality than do US citizens in New Mexico.
- Workers in rural counties have higher fatality rates than do workers in more populated New Mexico counties.
- Transportation, construction, mining, and agriculture are the main industries represented among New Mexico's workers who are fatally injured.

Implications for next steps include: Outreach and intervention activities for older workers, workers in rural counties, immigrant workers, and the self employed.

### *The NMOHR plans to improve surveillance by:*

- Exploring OMI and the UNM Hospital Trauma Registry for further information on occupational mortality.
- Distributing brochures on the New Mexico Occupational Health Registry to all physicians, hospitals and health care centers in the state.
- Improving accuracy of reporting by linking with IHS data and broadening data fields in the state trauma registries.

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