

### ***Indicator 3: Fatal Work-Related Injuries***

#### **Significance<sup>i</sup>**

Fatal work-related injuries are defined as injuries that occur at work and result in death. Each year, over 4,600 cases of work-related fatalities are reported to the Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI). On average in the United States, 13 workers die each day as a result of injuries sustained at work. The causes of these fatalities include **unintentional** injuries, such as falls, electrocutions, acute poisonings and motor vehicle crashes occurring during work travel, and also the **intentional** injuries of homicides and suicides which occur at work. The identification of risk factors and exposures through surveillance of work-related fatalities is useful for intervention, education and prevention.

#### **Methods**

The counts and rates of fatal work-related injuries are reported for the years 2000 to 2012 for both Colorado and the United States. Numerator data were obtained from the CFOI through the BLS or the Colorado Department of Public Health and Environment. Denominator data were obtained from the BLS, Geographic Profile of Employment and Unemployment (GP) or the Current Population Survey (CPS).

The BLS methods for calculating rates have changed from using the number of employed persons as the denominator to using full-time equivalent (FTE) hours worked. To be consistent with the BLS and provide consistent data over time, rates were calculated using both methods. There are negligible differences in rates calculated using employed population compared to FTE hours worked as the denominator. (Table 3.1)

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<sup>i</sup> Council of State and Territorial Epidemiologists. *Occupational Health Indicators: A Guide for Tracking Occupational Health Conditions and Their Determinants*. Last updated March 2014.

## Results

**Table 3.1: Count and rate of fatal work-related injuries, Colorado and the United States, 2000-2013\***

	Colorado			United States		
	Work-related fatalities (all causes)	Fatality rate per 100,000 employed persons, age 16 years and older	Fatality rate per 100,000 FTE hours worked, age 16 years and older	Work-related fatalities (all causes)	Fatality rate per 100,000 employed persons age, 16 years and older	Fatality rate per 100,000 FTE hours worked, age 16 years and older
<b>2000</b>	117	5.3	5.4	5,920	4.4	4.5
<b>2001</b>	139	6.3	6.5	5,915	4.4	4.6
<b>2002</b>	123	5.4	5.8	5,534	4.1	4.3
<b>2003</b>	102	4.4	4.6	5,575	4.0	4.2
<b>2004</b>	117	4.9	5.1	5,764	4.1	4.3
<b>2005</b>	125	5.2	5.4	5,734	4.0	4.2
<b>2006</b>	137	5.4	5.7	5,840	4.0	4.2
<b>2007</b>	126	4.9	5.0	5,675	3.9	4.1
<b>2008</b>	105	4.0	4.2	5,214	3.6	3.8
<b>2009</b>	83	3.3	3.5	4,551	3.3	3.5
<b>2010</b>	85	3.4	3.6	4,690	3.4	3.6
<b>2011</b>	92	3.7	3.8	4,693	3.4	3.6
<b>2012</b>	82	3.3	3.5	4,628	3.2	3.4
<b>2013*</b>	65	2.5	2.7	4,405	3.1	3.2
<b>Average</b>	<b>107</b>	<b>4.4</b>	<b>4.6</b>	<b>5,296</b>	<b>3.8</b>	<b>4.0</b>

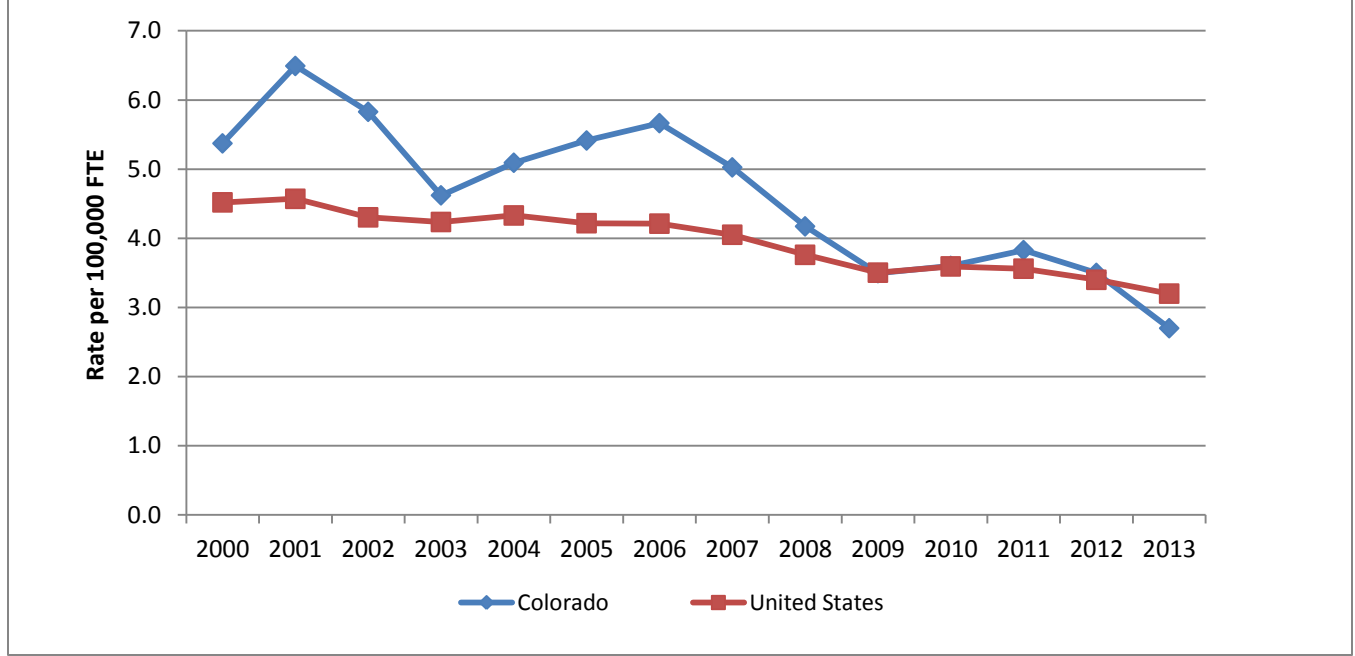
*Numerator: Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI) and Colorado Department of Public Health and Environment CFOI Surveillance Program*

*Denominator: Bureau of Labor Statistics (BLS), Geographic Profile of Employment & Unemployment (GP) and Current Population Survey (CPS) (secondary source)*

**NOTE:** *Work-related fatalities of people younger than 16 may be included in the numerator but are not included in the denominator. Deaths in the military are included in the number of fatalities, but not the rates because they are not part of the Bureau of Labor Statistics Current Population*

*\*2013 data is preliminary*

**Figure 3.1: Crude rate of fatal work-related injuries per 100,000 FTE hours worked, Colorado and the United States, 2000-2013\***



*Numerator: Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI) and Colorado Department of Public Health and Environment CFOI Surveillance Program*

*Denominator: Bureau of Labor Statistics (BLS), Geographic Profile of Employment & Unemployment (GP) and Current Population Survey (CPS) (secondary source)*

**NOTE:** *Work-related fatalities of people younger than 16 may be included in the numerator but are not included in the denominator. Deaths in the military are included in the number of fatalities, but not the rates because they are not part of the Bureau of Labor Statistics Current Population*

*\*2013 data is preliminary*

**Table 3.2: Annual number and percent of fatal work-related injuries by event or exposure, Colorado, 2000-2013<sup>†</sup>, N (%)**

	Total	Transportation incidents	Assaults and violent acts	Contact with objects and equipment	Falls, Slips, Trips	Exposure to harmful substances or environments	Fires and explosions	Other
<b>2000</b>	117	58 (49.6)	25 (21.4)	15 (12.8)	12 (10.3)	7 (6.0)	*	*
<b>2001</b>	139	56 (40.3)	26 (18.7)	26 (18.7)	20 (14.4)	8 (5.8)	*	*
<b>2002</b>	123	61 (49.6)	27 (22.0)	14 (11.4)	15 (12.2)	6 (4.9)	*	*
<b>2003</b>	102	39 (38.2)	23 (22.5)	14 (13.7)	19 (18.6)	4 (3.9)	*	*
<b>2004</b>	117	60 (51.3)	25 (21.4)	16 (13.7)	9 (7.7)	5 (4.3)	*	*
<b>2005</b>	125	76 (60.8)	8 (6.4)	17 (13.6)	9 (7.2)	11 (8.8)	*	*
<b>2006</b>	137	60 (43.8)	30 (21.9)	23 (16.8)	13 (9.5)	7 (5.1)	*	*
<b>2007</b>	126	63 (50.0)	18 (14.3)	21 (16.7)	11 (8.7)	12 (9.5)	*	*
<b>2008</b>	105	48 (45.7)	14 (13.3)	17 (16.2)	12 (11.4)	10 (9.5)	4 (3.8)	*
<b>2009</b>	83	34 (41.0)	18 (21.7)	9 (10.8)	14 (16.9)	6 (7.2)	*	*
<b>2010</b>	85	30 (35.3)	21 (24.7)	15 (17.6)	12 (14.1)	3 (3.5)	*	*
<b>2011</b>	92	36 (39.1)	16 (17.4)	16 (17.4)	17 (18.5)	6 (6.5)	*	*
<b>2012</b>	82	34 (37.0)	16 (17.4)	9 (9.8)	15 (16.3)	3 (3.3)	4 (4.3)	*
<b>2013<sup>†</sup></b>	65	28 (43.1)	11 (16.9)	7 (10.8)	9 (13.8)	9 (13.8)	*	*
<b>Average</b>	<b>110</b>	<b>49 (44.6)</b>	<b>20 (18.6)</b>	<b>16 (14.3)</b>	<b>13 (12.8)</b>	<b>7 (6.6)</b>	<b>1 (1.3)</b>	<b>1 (0.9)</b>

Source: Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI) and the Colorado Department of Public Health and Environment CFOI Surveillance Program

<sup>†</sup>2013 data are preliminary

\*Annual case numbers are too small for publication due to confidentiality policies of the CDPHE

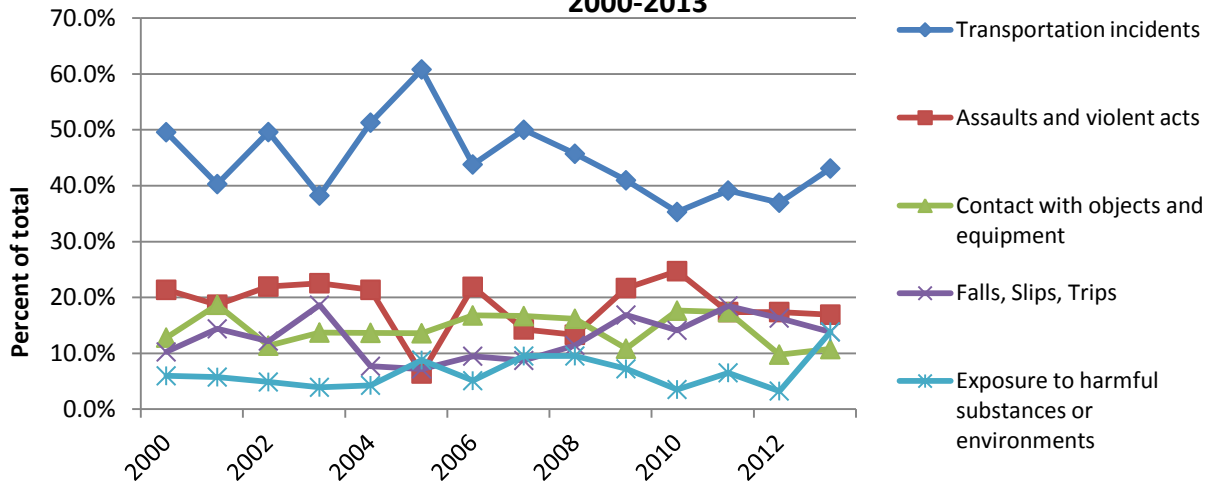
**Table 3.3: Annual number and percent of fatal work-related injuries by event or exposure, United States, 2000-2013\*, N (%)**

	Total	Transportation incidents	Assaults and violent acts	Contact with objects and equipment	Falls, Slips, Trips	Exposure to harmful substances or environments	Fires and explosions	Other
<b>2000</b>	5,920	2573 (43.5)	930 (15.7)	1,006 (17.0)	734 (12.4)	481 (8.1)	177 (3.0)	19 (0.3)
<b>2001</b>	5,915	2524 (42.7)	908 (15.4)	962 (16.3)	810 (13.7)	499 (8.4)	188 (3.2)	24 (0.4)
<b>2002</b>	5,534	2385 (43.1)	840 (15.2)	872 (15.8)	719 (13.0)	539 (9.7)	165 (3.0)	14 (0.3)
<b>2003</b>	5,575	2364 (42.4)	902 (16.2)	913 (16.4)	696 (12.5)	486 (8.7)	198 (3.6)	16 (0.3)
<b>2004</b>	5,764	2490 (43.2)	809 (14.0)	1009 (17.5)	822 (14.3)	464 (8.0)	159 (2.8)	11 (0.2)
<b>2005</b>	5,734	2493 (43.5)	792 (13.8)	1005 (17.5)	770 (13.4)	501 (8.7)	159 (2.8)	14 (0.2)
<b>2006</b>	5,840	2459 (42.1)	788 (13.5)	993 (17.0)	827 (14.2)	547 (9.4)	202 (3.5)	24 (0.4)
<b>2007</b>	5,657	2351 (41.6)	864 (15.3)	920 (16.3)	847 (15.0)	497 (8.8)	152 (2.7)	26 (0.5)
<b>2008</b>	5,214	2130 (40.9)	816 (15.7)	937 (18.0)	700 (13.4)	439 (8.4)	174 (3.3)	18 (0.3)
<b>2009</b>	4,551	1795 (39.4)	837 (18.4)	741 (16.3)	645 (14.2)	404 (8.9)	113 (2.5)	16 (0.4)
<b>2010</b>	4,690	1857 (39.6)	832 (17.7)	738 (15.7)	646 (13.8)	414 (8.8)	191 (4.1)	12 (0.3)
<b>2011</b>	4,609	1898 (41.2)	780 (16.9)	708 (15.4)	666 (14.4)	401 (8.7)	143 (3.1)	13 (0.3)
<b>2012</b>	4,628	1923 (41.6)	803 (17.4)	723 (15.6)	704 (15.2)	340 (7.3)	122 (2.6)	13 (0.3)
<b>2013*</b>	4,405	1740 (39.5)	753 (17.1)	717 (16.3)	699 (15.9)	330 (7.5)	148 (3.4)	18 (0.4)
<b>Average</b>	<b>5,288</b>	<b>2213 (41.8)</b>	<b>832 (15.7)</b>	<b>875 (16.5)</b>	<b>735 (13.9)</b>	<b>453 (8.6)</b>	<b>164 (3.1)</b>	<b>17 (0.3)</b>

Source: Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI) and the Colorado Department of Public Health and Environment CFOI Surveillance Program

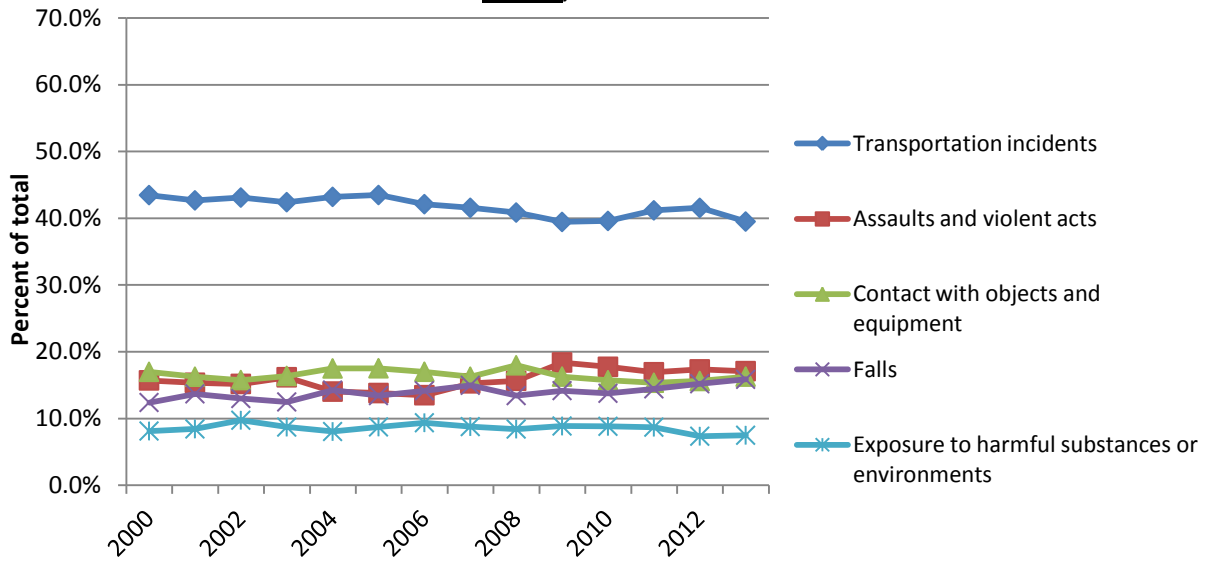
\*2013 data are preliminary

**Figure 3.2 Percent of work-related fatalities by event or exposure, Colorado, 2000-2013**



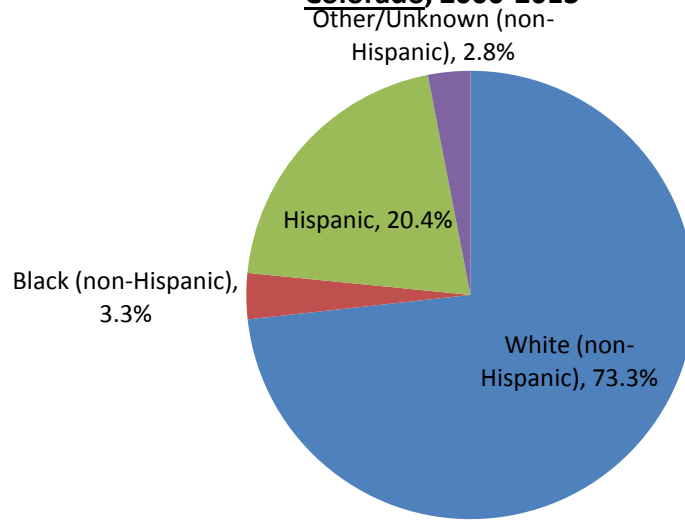
Source: Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI) and the Colorado Department of Public Health and Environment CFOI Surveillance Program

**Figure 3.3 Percent of work-related fatalities by event or exposure, United States, 2000-2013**



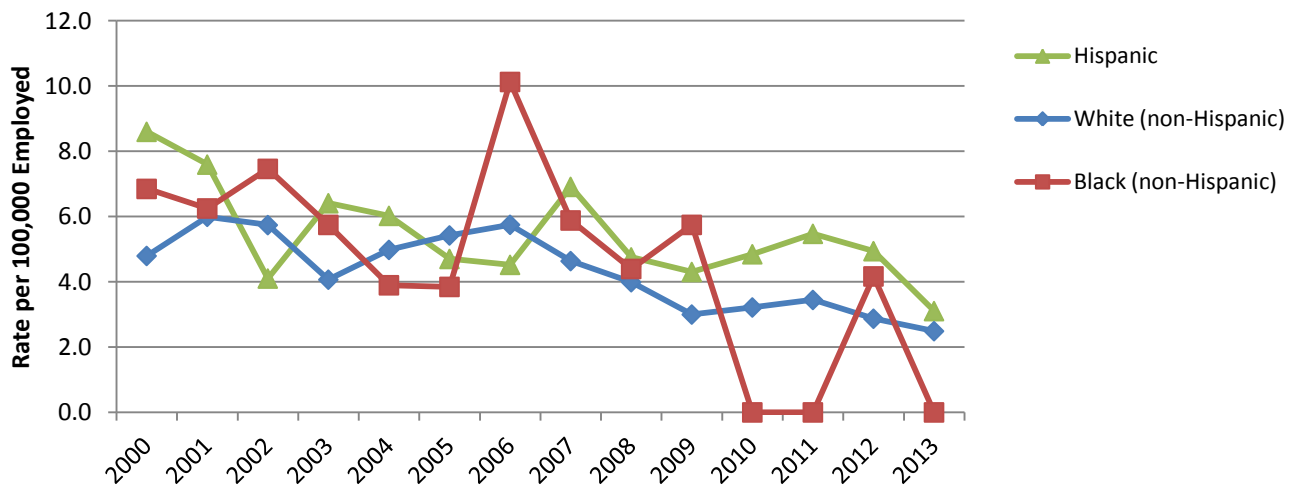
Source: Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI)

**Figure 3.4: Average percent of work-related fatalities by race and ethnicity, Colorado, 2000-2013**



Source: Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI) and the Colorado Department of Public Health and Environment CFOI Surveillance Program

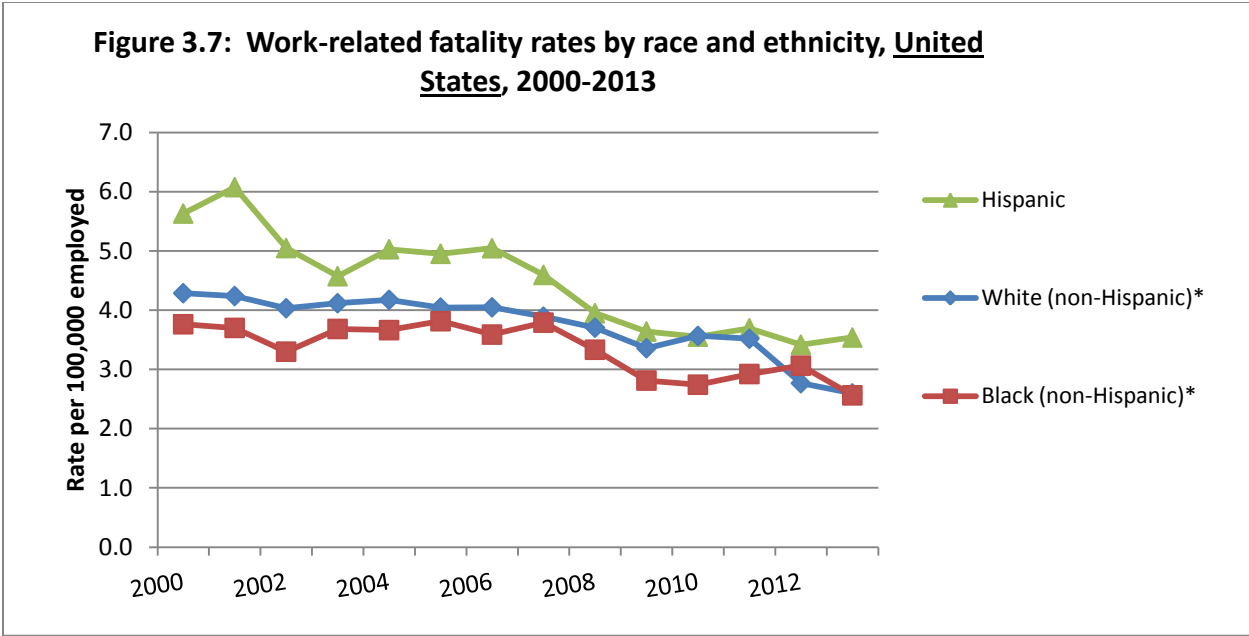
**Figure 3.5: Work-related fatality rates by race and ethnicity, Colorado, 2000-2013**



Numerator: Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI) and the Colorado Department of Public Health and Environment CFOI Surveillance Program

Denominator: Bureau of Labor Statistics (BLS), Geographic Profile of Employment & Unemployment (GP) and the Current Population Survey (CPS)

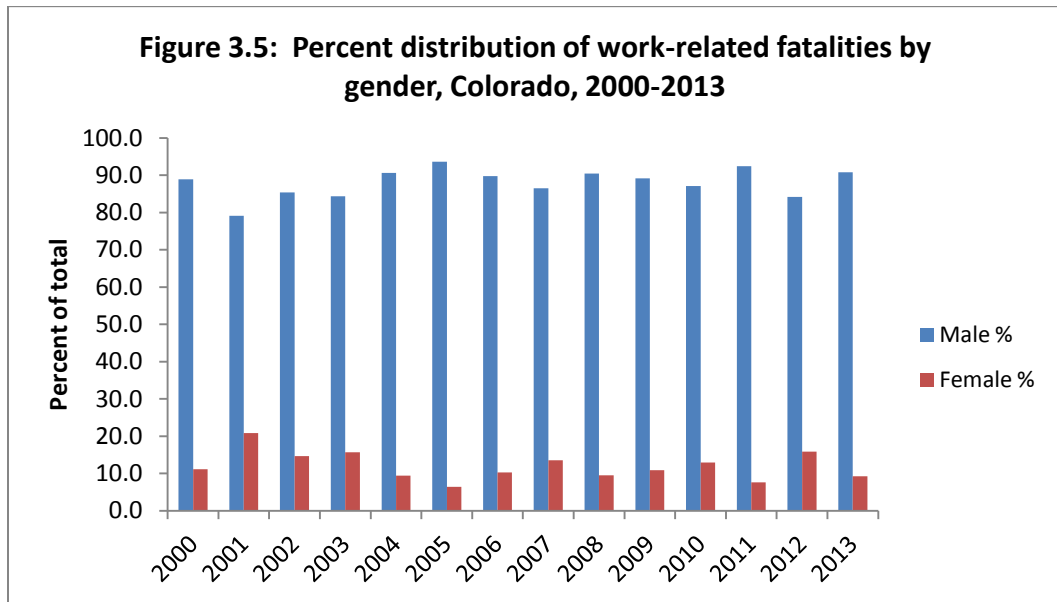
**NOTE:** The CFOI race and ethnicity categories include White (non-Hispanic), Black (non-Hispanic), and Hispanic. However, the CPS classifies employment data as White, Black and Other, with Hispanic ethnicity classified as a separate variable. Other surveillance within CDPHE demonstrates that Hispanics in Colorado are often classified as Whites for racial categorization. To calculate the rate of non-Hispanic Whites, the CPS denominator data were adjusted by subtracting the number of Hispanics from the number of Whites employed in Colorado.



Numerator: Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI)

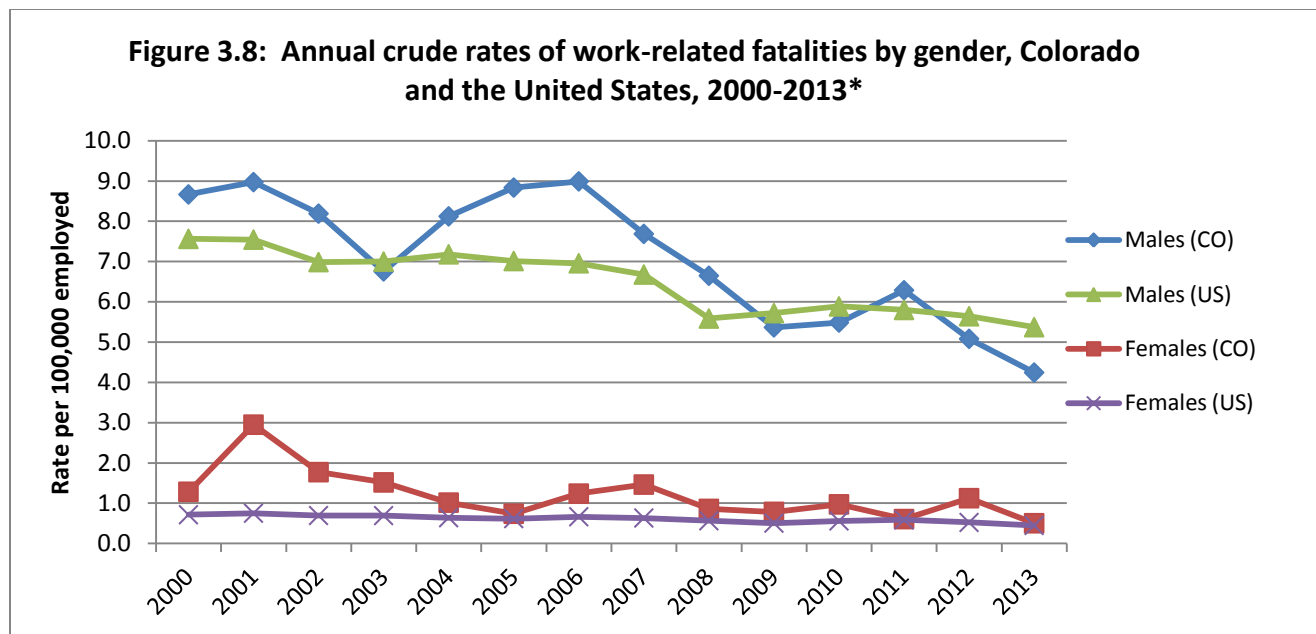
Denominator: Bureau of Labor Statistics (BLS), Geographic Profile of Employment & Unemployment (GP) and the Current Population Survey (CPS)

**NOTE:** The CFOI race and ethnicity categories include White (non-Hispanic), Black (non-Hispanic), and Hispanic. However, the CPS classifies employment data as White, Black and Other, with Hispanic ethnicity classified as a separate variable. Other surveillance within CDPHE demonstrates that Hispanics in Colorado are often classified as Whites for racial categorization. To calculate the rate of non-Hispanic Whites, the CPS denominator data were adjusted by subtracting the number of Hispanics from the number of Whites employed in Colorado



Source: Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI) and the Colorado Department of Public Health and Environment CFOI Surveillance Program





*Numerator: Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI) and the Colorado Department of Public Health and Environment CFOI Surveillance Program*

*Denominator: Bureau of Labor Statistics (BLS), Geographic Profile of Employment & Unemployment (GP) and Current Population Survey (CPS)*

*\*2013 data are preliminary*

### Limitations

- The CPS data use a sample of households; therefore, CPS employment estimates and the fatality rates based on them contain sampling error.
- Fatalities of people younger than 16 and military personnel are included in the numerator. However, these groups are not included in the denominator data from the BLS GP/CPS.
- Suicides and homicides that take place at the workplace are considered work-related fatalities even though these deaths may not necessarily be caused by work-related factors.
- Since work-related fatalities are reported by CFOI according to the state in which the fatality occurred and not the state of the worker's residence, rates may overestimate risk if the work-related fatalities involved workers who were out of state residents. Likewise, rates may be underestimated if fatalities occurred in other states.

### Accomplishments to Date

- In February 2012, the Occupational Health and Safety Surveillance Program took over implementation of the CFOI. Direct oversight of this program is expected to enhance our understanding and use of these data.

### Recommendations and Next Steps

- Enhance surveillance of fatal work-related injuries and illnesses to collect and report more detailed information on industry, occupation and injury/illness characteristics.

- Should the NIOSH Fatality Assessment and Control Evaluation (FACE) Program extend funding to new states, Colorado should apply to conduct additional surveillance, targeted investigations and prevention activities at the state level using the FACE model.
- Analyze existing CFOI data by state of residence to estimate how many out-of-state residents are included in Colorado data.