

# Colorado

## Special Emphasis Report: Fall Injuries among Older Adults 2007-2015



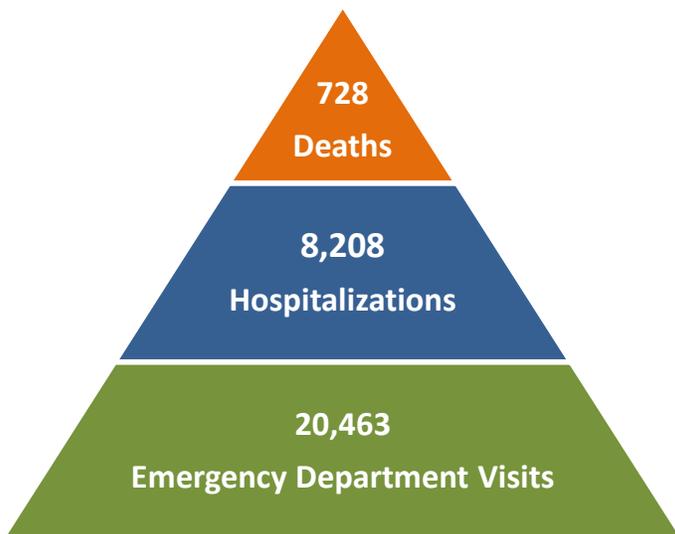
### A GROWING CONCERN

Falls among older adults are a leading cause of fatal and nonfatal injury in the U.S. and Colorado. Hospital costs associated with injuries sustained by falls account for a significant share of health care dollars spent on injury-related care.

In 2015, 728 Colorado residents ages 65 and older died and almost 29,000 fall-related injuries were treated at hospitals and emergency departments (Figure 1).

This report provides recent data on fall-related injuries and deaths among Colorado residents ages 65 and older. It includes information about groups with the highest rates, associated costs and current prevention strategies and activities in Colorado.

**FIGURE 1.** Burden of Fall-related Injuries  
Colorado Residents Age 65+, 2015



### QUICK FACTS



Residents ages 65 and older account for **86 percent of all fall deaths** and 22 percent of hospitalizations for fall-related injuries in Colorado in 2015.



Falls are a **leading cause of traumatic brain injury (TBI)** in Colorado accounting for 27 percent of all TBI deaths and 42 percent of TBI hospitalizations and emergency department (ED) visits. Among older adults, **36 percent of fall injury deaths**, 16 percent of hospitalizations, and 22 percent of ED visits mentioned TBI as a cause of death or diagnosis.



**Projected lifetime costs** associated with fall-related injuries in 2014 among Colorado residents ages 65 and older are **an estimated \$738 million dollars** for medical and work-loss costs combined. "Lifetime work-loss is the estimated wages lost because of time away from work while recovering from the injury, and the loss of income incurred for injuries that lead to permanent disability."<sup>1</sup>



**Each week, there are 394 emergency department discharges among residents ages 65+, 158 inpatient hospitalizations, and 14 deaths due to fall injuries.**

1. <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6438a5.htm>

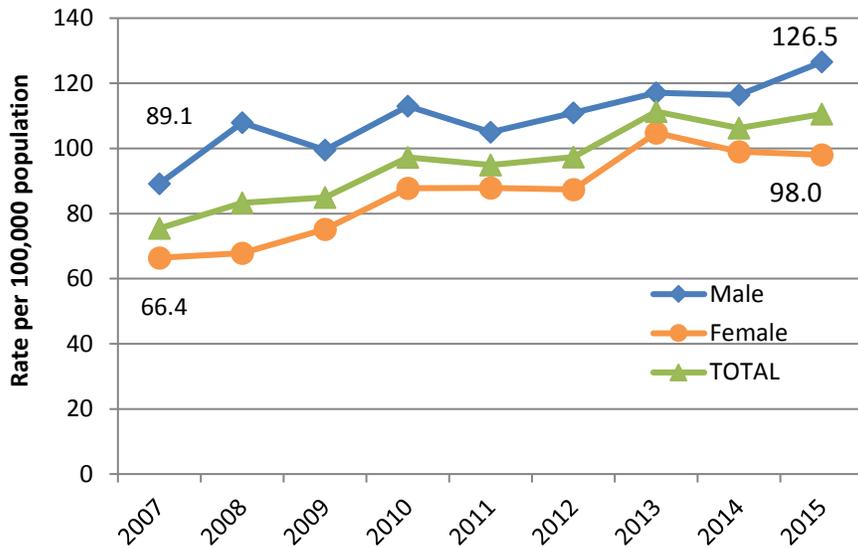
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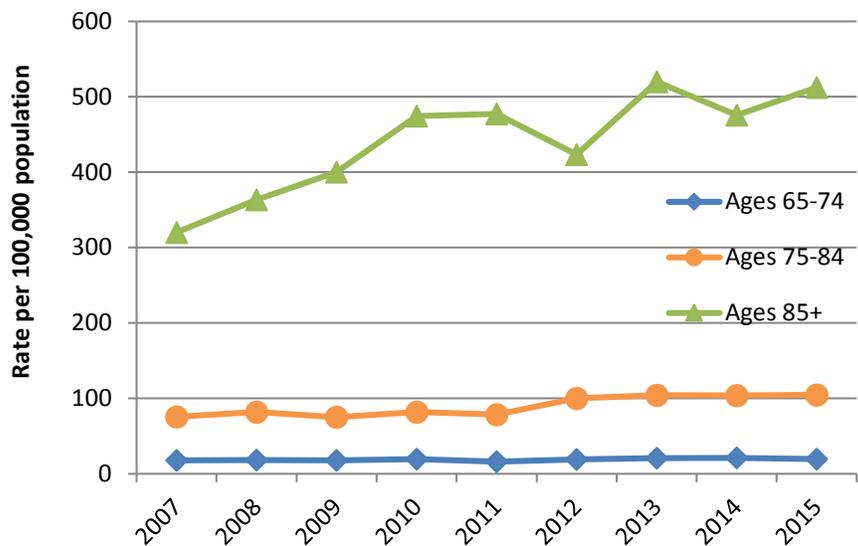
FALL DEATHS

**FIGURE 2.** Age-adjusted Rate of Unintentional Fall Injury Deaths by Sex, Colorado Residents Age 65+, 2007-2015



- From 2007 to 2015, the age-adjusted rate of injury deaths due to falls increased 47 percent from 75.4 deaths per 100,000 persons in 2007 to 110.6 deaths per 100,000 persons in 2015.
- Fall injury death rates increased among males and females from 2007 to 2015: 42 percent among males and 48 percent among females.
- In 2015, the fall injury death rate among males was 28.5 deaths (per 100,000 persons) greater than for females, a 29 percent higher rate than among females.

**FIGURE 3.** Age-specific Rate of Unintentional Fall Injury Deaths by Age Group, Colorado Residents Age 65+, 2007-2015



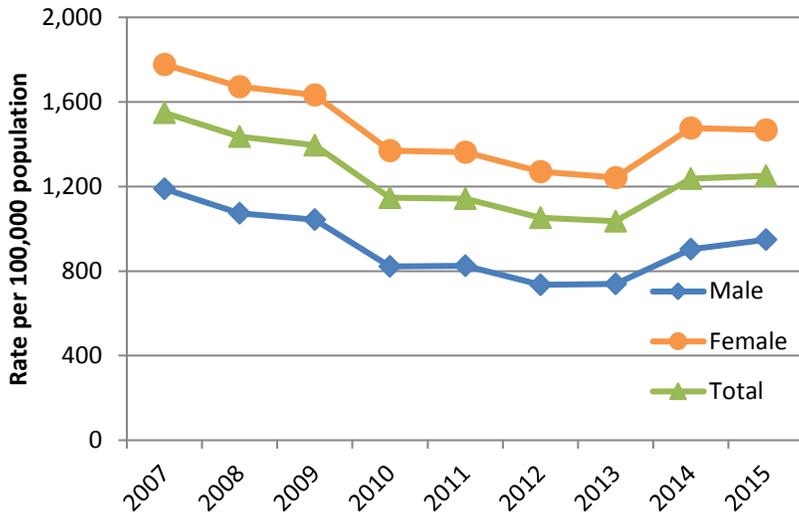
- Fall injury death rates increased among all three age groups.
- **Colorado residents age 85 and older had the highest increase in fall death rates.**
- Rates for persons age 85 and older increased 60 percent, from 320.2 deaths per 100,000 persons ages 85 and older in 2007 to 512.6 deaths per 100,000 persons in 2015.
- In 2015, the fall injury death rate for Colorado residents age 75-84 years old was 104.7 deaths per 100,000 persons.
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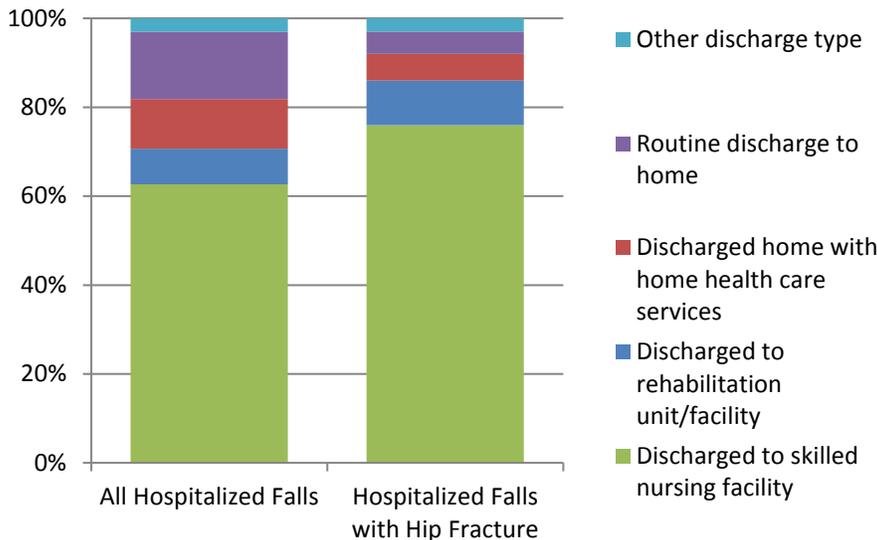
### NONFATAL FALL HOSPITALIZATIONS

**FIGURE 4.** Age-adjusted Rate of Unintentional Nonfatal Fall Hospitalizations by Sex,  
Colorado Residents Age 65+. 2007-2015



- The age-adjusted rate of injury hospitalizations due to unintentional falls among Colorado residents age 65 years and older decreased from 1548.7 hospitalizations per 100,000 persons in 2007 to 1036.1 per 100,000 in 2013.
- These age-adjusted rates increased to 1237.2 hospitalizations per 100,000 persons age 65 and older in 2014 and 1250.8 in 2015, though still below the rate in 2007.
- In 2015, the age-adjusted rate of injury hospitalizations due to unintentional falls among females was 1.5 times higher than the rate for males (1466.9 hospitalizations per 100,000, compared to 947.9 hospitalizations among males).

**FIGURE 5.** Percent of Unintentional Nonfatal Fall Hospitalizations by Discharge Disposition,<sup>2</sup>  
Colorado Residents Age 65+, 2015



- Of the 8208 hospitalizations for fall-related injuries among Colorado residents age 65 years and older, 5126 (62 percent) had a discharge disposition to a skilled nursing facility and 15 percent to home.
- Of the 8208 hospitalizations for fall-related injuries among Colorado residents age 65 years and older, 3147 (38 percent) were for treatment of a hip fracture.
- Of the 3147 hospitalizations for hip fractures due to falls:
  - 76 percent had a discharge disposition to a skilled nursing facility,
  - 10 percent to a rehabilitation facility,<sup>2</sup>
  - Six percent to home with home health services,<sup>2</sup> and
  - Five percent to home.

<sup>2</sup>Discharge disposition is where the patient went when released from the hospital or emergency department. Discharged home with home health care included home IV service. Discharged to rehabilitation includes a rehabilitation unit within the same hospital, a "swing bed" in the same unit that provides acute care or rehab services, and free-standing inpatient rehabilitation facilities outside of the hospital where the patient received acute care the injury from a fall.

# Colorado

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### DEMOGRAPHIC DATA

**TABLE 1.** Number and Rate of Unintentional Fall-related Deaths and Injuries, Colorado Residents Age 65+, 2015

	Deaths		Nonfatal Hospitalizations + Emergency Department (ED) Visits			
	Total Count	Death Rate per 100,000 <sup>3</sup>	# of Hospitalizations	# of ED Visits	Total Count	Nonfatal Injury Rate per 100,000 <sup>3</sup>
<b>TOTAL</b>	<b>728</b>	<b>110.6</b>	<b>8,208</b>	<b>20,463</b>	<b>28,671</b>	<b>4292.2</b>
<b>Sex</b>						
Male	331	126.5	2,623	6,683	9,306	3269.9
Female	397	98.0	5,585	13,780	19,365	5070.9
<b>Age Group</b>						
Ages 65-74	85	19.7	2,080	7,557	9,637	2,232.0
Ages 75-84	204	104.7	2,913	6,793	9,706	4,982.2
Ages 85+	439	512.6	3,215	6,113	9,328	10,892.6
<b>Race/Ethnicity</b>						
White, NH <sup>4</sup>	647	146.6	7,136	17,136	24,272	5,024.9
Black, NH	7	58.5	127	373	500	3,251.5
Hispanic	53	105.3	222	800	1,022	1,729.4
Asian/PI, <sup>5</sup> NH	13	122.9	66	185	251	2,163.0
AI/AN, <sup>6</sup> NH	*	---	31	82	113	3,875.0

- Colorado **males** age 65 years and older **had a higher age-adjusted rate of fall deaths** than females ([126.5 deaths per 100,000 persons and 98.0 per 100,000, respectively).
- Colorado **females** age 65 years and older **had a higher age-adjusted rate of non-fatal injuries due to falls** ([5,070.9 hospitalizations and ED visits per 100,000 females) than males, whose rate was 3,269.9 hospitalizations and ED visits per 100,000 males).
- Colorado residents age 85 and older had the highest rates of fatal and nonfatal fall-related injuries.
- Colorado residents age 85 and older had 25 times the fall-related death rate than those aged 65-74.
- Colorado residents whose race/ethnicity was **white, non-Hispanic had the highest rates of fall-related deaths** and residents whose race/ethnicity was white, Hispanic had the lowest.
- Colorado residents whose race/ethnicity was **white, non-Hispanic had the highest rates of non-fatal fall-related injuries**, as measured by hospitalizations and ED visits for fall-related injuries.

<sup>3</sup>Rates are age-adjusted except for rates by age group.

<sup>4</sup>Non-Hispanic

<sup>5</sup>Pacific Islander

<sup>6</sup>American Indian/Alaskan Native

\*Suppressed due to small numbers

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### PROJECTED LIFETIME COSTS

Lifetime costs<sup>7</sup> associated with unintentional fall-related injuries in 2014 among Colorado residents ages 65 and older are an estimated \$738 million dollars. Most of the costs were associated with injuries requiring hospitalization. Lifetime work loss is the estimated wages lost because of time away from work while recovering from the injury and the loss of income incurred for injuries that lead to permanent disability.

	Number of Injuries	Medical Cost	Work Loss Cost	Combined Cost
Deaths	677	\$16.9M	\$74.9M	<b>\$91.8M</b>
Hospitalizations	7847	\$322.4M	\$236.8M	<b>\$559.2M</b>
ED Visits	18,829	\$61.2M	\$26.6M	<b>\$87.8M</b>
<b>TOTAL</b>	<b>27,353</b>	<b>\$400.5M</b>	<b>\$338.3M</b>	<b>\$738.8M</b>

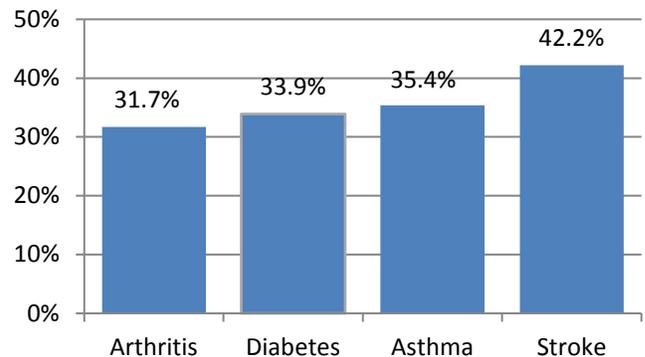
### FALLS RISK

The Behavioral Risk Factor Surveillance Survey (BRFSS) is a statewide phone survey of Colorado adults living in the community. Adults report on a variety of topics, including falls, fall-related injuries, and medical conditions.

- In 2014, an estimated 27.1 percent of Colorado adults ages 65 and older reported having fallen in the past 12 months, and 34.9 percent of those who fell reported a fall-related injury in the past 12 months.
- Older Colorado adults who reported the following health conditions were significantly **more likely**<sup>8</sup> to report falls.

Have Health Condition <sup>9</sup>	% Reported a Fall
➤ Poor mental health	38.4%
➤ Depression	41.9 %
➤ General health as fair or poor	36.8%
➤ Activity limitation	39.0%

**FIGURE 6.** Self-Reported Falls in the Past 12 Months by Selected Chronic Health Conditions,<sup>9</sup> Colorado Residents Age 65+, 2014



- Older Coloradans who reported having a chronic health condition listed in Figure 6 were significantly more likely to report falls than those without a chronic condition.
- For example, in 2014, 31.7 percent of Coloradans age 65 years and older who have arthritis also reported having fallen in the past 12 months.

<sup>7</sup>Costs were calculated using the CDC's WISQARS Cost Module that provides estimates of medical and work loss costs for injury-related deaths, hospitalizations, and emergency department visits. <http://www.cdc.gov/injury/wisqars/>. "Lifetime work-loss is the estimated wages lost because of time away from work while recovering from the injury, and the loss of income incurred for injuries that lead to permanent disability." <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6438a5.htm>

<sup>8</sup>These conditions are statistically significant using Confidence Intervals.

<sup>9</sup>Definitions from the BRFSS questionnaire: Selected chronic health conditions include: respondents reported "Yes" to **EVER** having been diagnosed with: arthritis; diabetes; asthma; stroke; depressive disorder. Poor mental health includes persons who reported experiencing 14+ days of poor mental health in the past month. Activity limitation is defined as respondents reported "Yes" to limited in any way in any activities because of physical, mental, or emotional problems. Fair or poor health is defined as respondents reported that, in general, their health is fair or poor vs. good or better general health.

# Colorado

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### PREVENTION STRATEGIES IN COLORADO

Falling is NOT an inevitable result of aging. Participation in evidence-based interventions and community partnerships can reduce the number of falls and the consequences of falls. Colorado is working in these areas:

- Preventing older adult falls is one of the Winnable Battles for the Colorado Department of Public Health and Environment.
- The Colorado Department of Public Health and Environment is working to create integrated, sustainable evidence-based older adult fall prevention programs and networks.
  - Stepping On, a community falls prevention program for small groups once a week for seven weeks, is offered through many trauma centers and large hospital systems in Colorado.
  - Tai Chi: Moving for Better Balance, a 12-week exercise program designed for older adults, is offered through local parks and recreation departments, YMCAs, and other partners.
- Matter of Balance (MOB), an eight session community workshop designed to reduce the fear of falling and increase activity levels, is widely disseminated in Colorado through the local Area Agencies on Aging with guidance from the State Unit on Aging.
- Health care providers in Colorado are encouraged to perform falls risk assessments, discuss medications with their patients, and refer patients to evidence-based fall prevention programs.
- Partners in older adult fall prevention include the Colorado Department of Public Health and Environment; Colorado State Unit on Aging; Colorado Department of Health Care Policy and Financing; Centura Health, HealthONE and UHealth hospital and healthcare systems; Tri County Health Department, individual hospital trauma centers or wellness departments implementing evidence-based fall prevention programs; and clinical partners.

### DATA SOURCES and DEFINITIONS

#### Sources:

- Cost data from the Centers for Disease Control and Prevention and CDC's WISQARS Cost Module accessed at <http://www.cdc.gov/injury/wisqars/>
- Death certificate data from the Vital Statistics Program, Colorado Department of Public Health and Environment
- Emergency department visit data from the Colorado Hospital Association
- Fall risk data from the Colorado Behavioral Risk Factor Surveillance System, Colorado Department of Public Health and Environment
- Hospital discharge data from the Colorado Hospital Association

Analysis and cost query by: Barbara Gabella, Violence and Injury Prevention – Mental Health Promotion Branch EXCEPT the fall risk analysis by the staff of the Colorado Behavioral Risk Factor Surveillance System, Colorado Department of Public Health and Environment

#### Definitions:

Fall injury deaths: underlying cause of death with an ICD-10 code in the range W00-W19

Injury hospitalization or emergency dept. (ED) visit: 1st-listed discharge diagnosis with ICD-9-CM codes 800–909.2, 909.4, 909.9 910–994.9 995.5–995.59 995.80–995.85

Fall-related injury hospitalization or ED visit: injury as defined above plus the first-listed external cause of injury has an ICD-9-CM code E880–E886 or E888.

Estimates for fall-related injury hospitalizations and ED visits for 2015 were based on ICD-9-CM coded data from the 4<sup>th</sup> quarter of 2014 and the first 3 quarters of 2014.