

**Unintentional Fall-Related Injuries Among Older Adults
in New Mexico, 2014**

**Office of Injury Prevention
Injury and Behavioral Epidemiology Bureau
Epidemiology and Response Division**



Unintentional fall-related injuries are a serious public health problem, especially among adults 65 years of age and older. In New Mexico (NM) for 2012, unintentional fall-related injury was the third leading cause of unintentional injury-related death for all ages, behind poisoning and motor vehicle traffic injuries. Falls were the fourth leading cause of injury-related death, which includes intentional injuries. Unintentional fall-related injury was the leading cause of unintentional injury-related death, hospitalization and emergency department visits among older adults in 2012. The 2011 age-adjusted fall-related death rate among older adults in New Mexico (97.6/100,000) was the third highest among all states and was 1.8 times higher than the national rate (53.4/100,000) based on CDC WISQARS¹.

Fall-related injury seriously affects quality of life. Falls can increase the risk of early death. Older adults are more likely to suffer severe injuries from falling than younger people, resulting in emergency department visits, hospitalizations and long-term rehabilitation. Fall-related injuries can make it hard for older adults to get around and limit independent living. Many older adults who fall, even those who are not injured, develop a fear of falling. This fear may cause them to limit their activities, leading to reduced mobility and physical fitness and therefore increased risk of falling and declining health.

In 2010, the total direct medical costs of fall injuries for people 65 and older in the United States, adjusted for inflation, were \$30 billion². The following table contains the estimated total lifetime costs for fall-related deaths, hospitalizations and emergency department visits among adults 65+ years of age in New Mexico.

Type of Cost	Cost*
Deaths	\$31,930,000
Hospitalizations	\$99,399,000
Emergency Department Visits – treat and release	\$16,707,000
Total Deaths, Hospitalizations and ED visits	\$148,036,000

*Source: CDC WISQARS

This report addresses unintentional fall-related deaths, hospitalizations and emergency department (ED) visits among New Mexico adults who are 65 years of age or older. Prevention activities to reduce falls are also addressed.

Methods

The data on fall deaths were obtained from the NM Bureau of Vital Records and Health Statistics. All New Mexico residents ages 65 years and older at the time of their death with an ICD-10 underlying cause of death code in the range W00 – W19 were included in the analysis. The data on fall-related hospitalizations were obtained from the Hospital Inpatient Discharge Database (HIDD) at the New Mexico Department of Health (NMDOH), which contains hospital discharge data from non-federal hospitals in NM. Fall-related hospitalizations are based on E-codes, which describe the cause, circumstance and intent of the injury. Hospital data records included in this analysis were limited to NM residents with a principal diagnosis of injury and an E-code of E880-E886 or E888, the codes for unintentional falls. In 2010 and 2011, 93% of the

injury–related hospitalizations were E-coded, and in 2012, 94% of the injury–related hospitalizations were E-coded. Emergency department records were selected by searching the principal diagnosis field for an injury diagnosis and searching all fields for an E-code of E880-E886 or E888, the codes for unintentional falls.

Several limitations impact the use of the HIDD and the ED dataset for determining numbers and rates of hospitalizations and ED visits for fall-related injuries in New Mexico. The HIDD and ED dataset do not include data from federal hospitals, such as the Veterans Administration Hospital and Indian Health Service hospitals. New Mexico residents who are hospitalized in out-of-state hospitals or visit out-of-state EDs are not included in the HIDD and ED dataset.

The number and rate of fall-related injury deaths, hospitalizations and ED visits among NM residents were calculated for this report.

Magnitude of the Problem

Each year, one in every three adults age 65 and older falls in the United States. According to the 2012 New Mexico Behavioral Risk Factor Surveillance System Survey, 32% of adults 65+ years of age had at least one fall in the previous 12 month period. This translates to over 89,000 adults \geq 65 years having at least one fall in the previous 12 months. Among those who fell, 39.9%, or over 35,400 were injured sufficiently in at least one fall, to require some form of medical attention. Among older adults, 12.8% or over 35,400 had at least one fall with injury requiring some form of medical attention.

Unintentional fall-related injury is the leading cause of unintentional injury death among older adults, accounting for 71% of unintentional injury death. Fall-related injury deaths and hospitalizations increase dramatically with age (Figures 1 and 2). Older adults account for 86% of fall-related deaths and 70% of fall-related hospitalizations in New Mexico.

Figure 1. Fall-related Death Rate by Age Group, New Mexico, 2008-2012

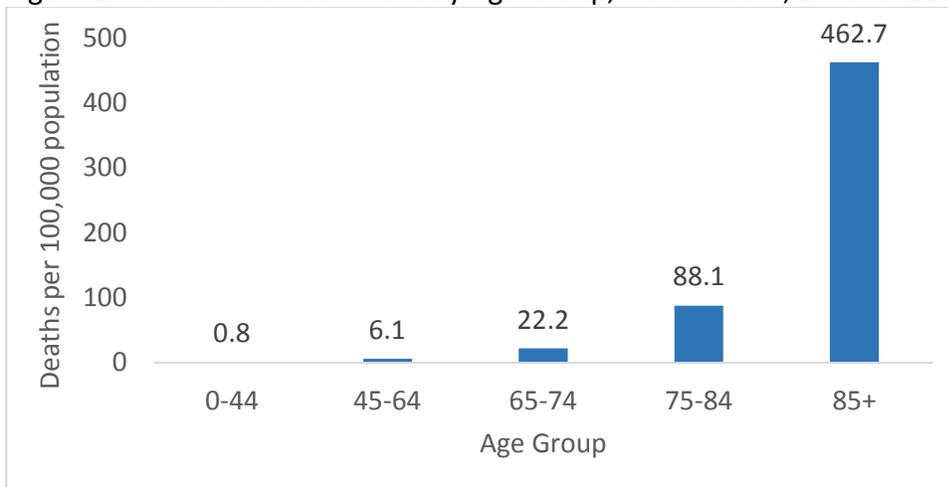
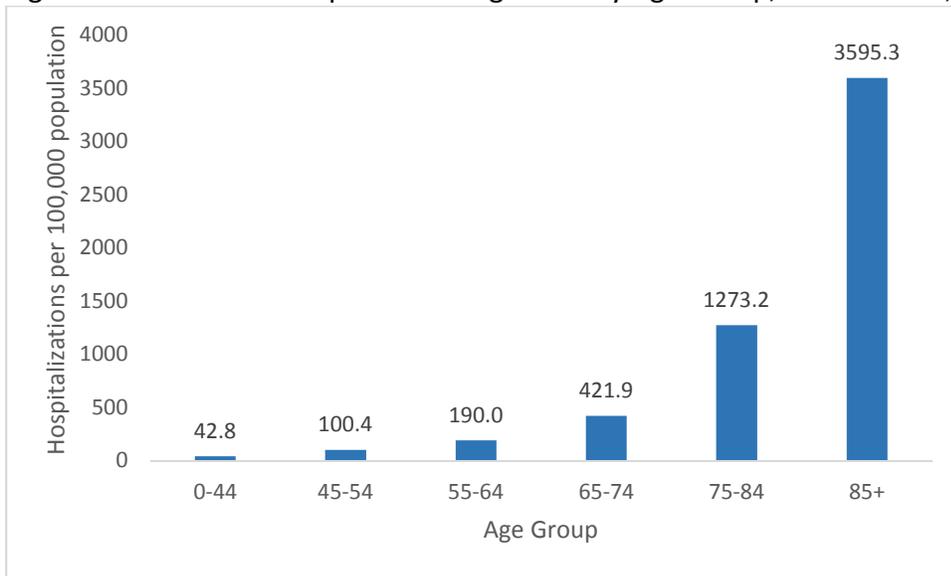


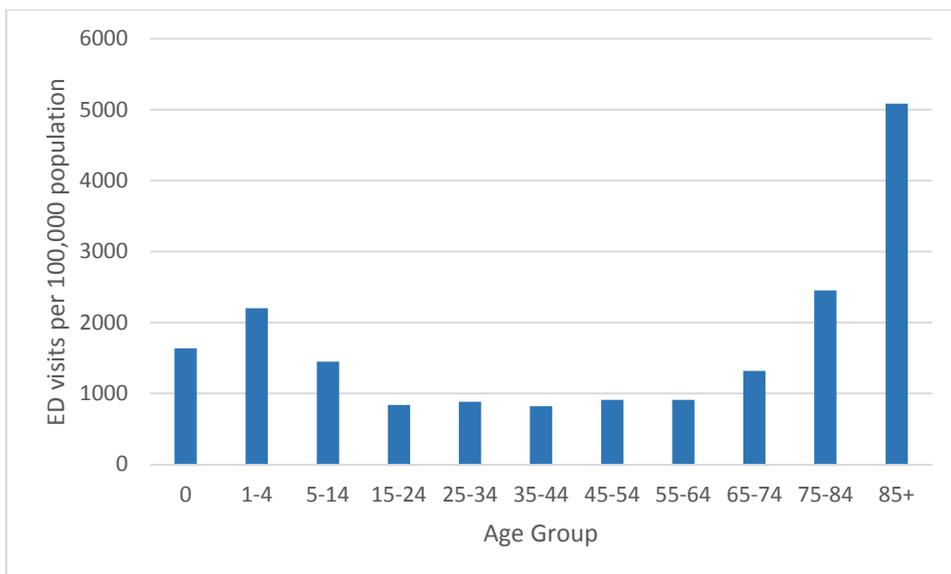
Figure 2. Fall-related Hospital Discharge Rate by Age Group, New Mexico, 2010-2012



Falls can cause moderate to severe injuries, such as hip fractures and head traumas, and can increase the risk of early death.

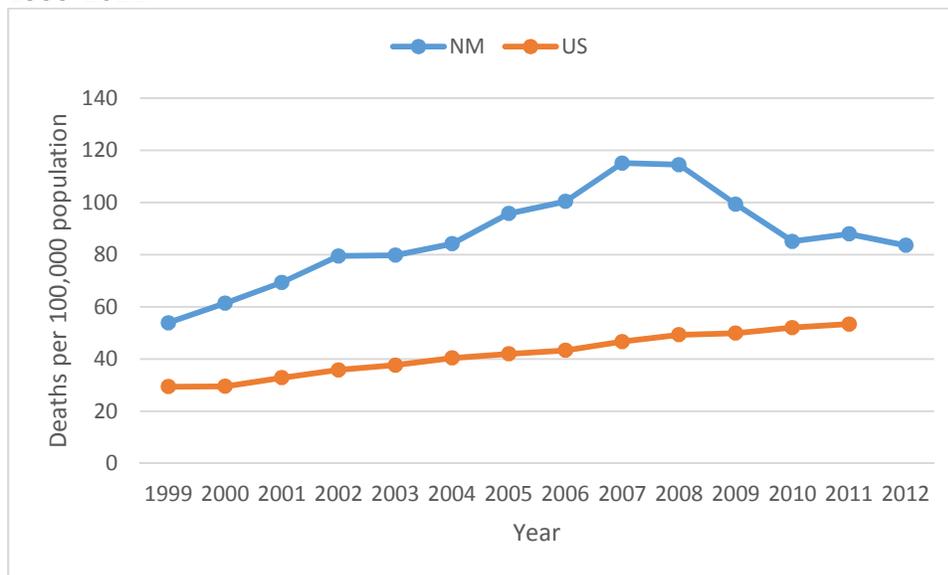
Persons ≥ 85 years had the highest fall-related injury ED visit rate (5,082/100,000), followed by those 75-84 years of age (2,452.1/100,000 population). (Figure 3). The age distribution for fall-related injury emergency department visits differed somewhat from the age distribution for fall-related injury deaths and hospitalizations. Children aged 0 to 14 years have a higher fall-related injury emergency department visit rate than 65-74 year olds.

Figure 3. Fall-related Injury Emergency Department Visit Rate by Age Group, New Mexico, 2012



The fall-related injury death rate among older adults increased 114% from 1999 through 2007 (Figure 4.). The dramatic increase in the fall-related death rate from 1999 through 2007 may be linked to increased life expectancy that results in a larger proportion of older adults living with chronic diseases that cause them to be at increased risk and vulnerability to fall-related injuries³. For as yet unknown reasons, the fall-related death rate declined 26% from 2008 through 2010. However, the national fall-related death rate among older adults continues to increase.

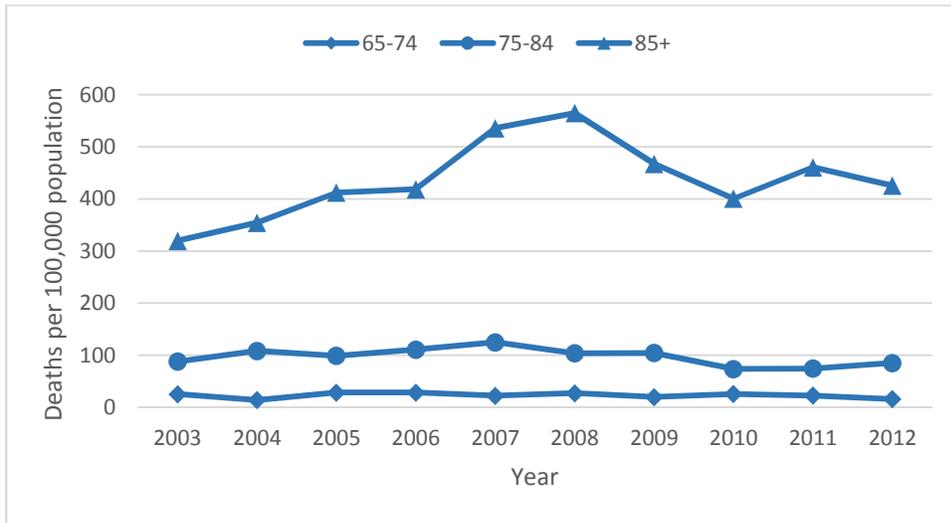
Figure 4. Fall-related Injury Death Rate Among Older Adults, New Mexico and United States, 1999-2012



Demographics

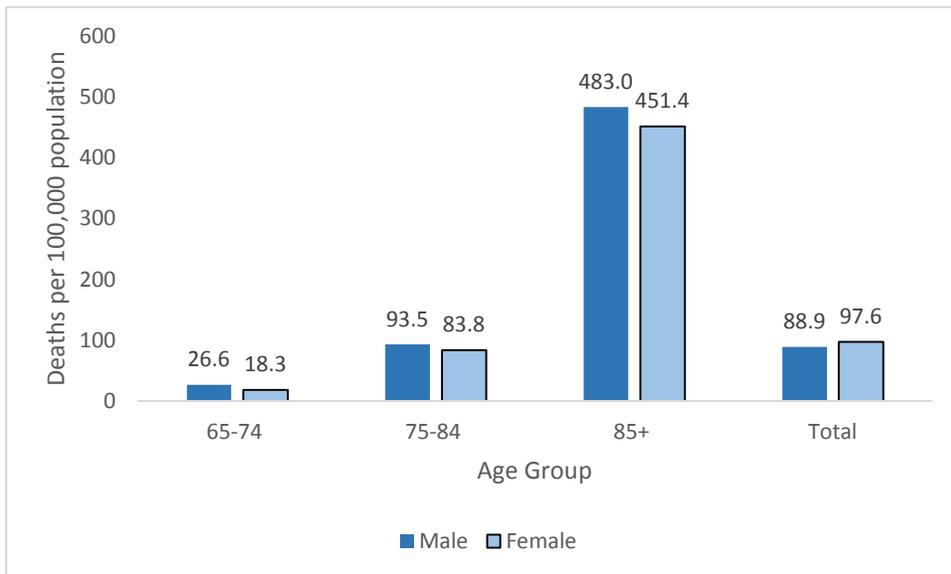
Older adults ≥ 85 years had the highest increase of the fall-related death rate from 2003 through 2012. The increase was 68% among this age group compared to 42% among 75-84 year olds. The fall-related death rate among 65-75+ year olds fluctuated between a low of 14.3/100,000 in 2004 and a high of 28.6/100,000 in 2005 and 2006 between 2003 and 2012.

Figure 5. Fall-related Injury Death Rate by Age Group, New Mexico, 2003-2012



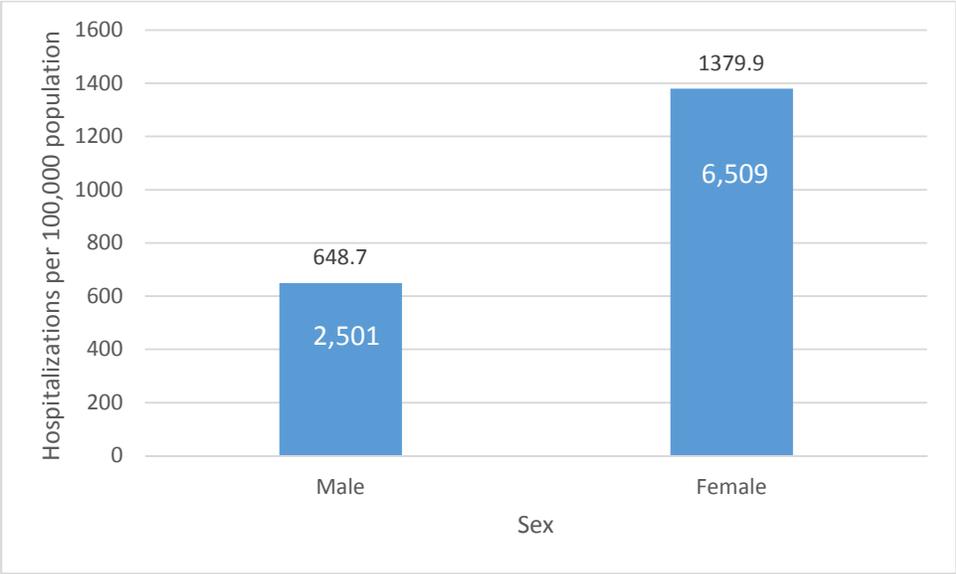
The female fall-related death rate (97.6/100,000) was 10% higher than the male rate (88.9/100,000) among adults ≥ 65 years but the male fall-related death rate was higher than the female fall-related death rate for each of the three age groups (Figure 6). This apparent discrepancy is due to the difference in the size of the population between male and female older adults, especially among adults ≥ 85 years, of which females comprise 64% of the population.

Figure 6. Fall-related Injury Death Rate among Older Adults by Sex, New Mexico, 2008-2012



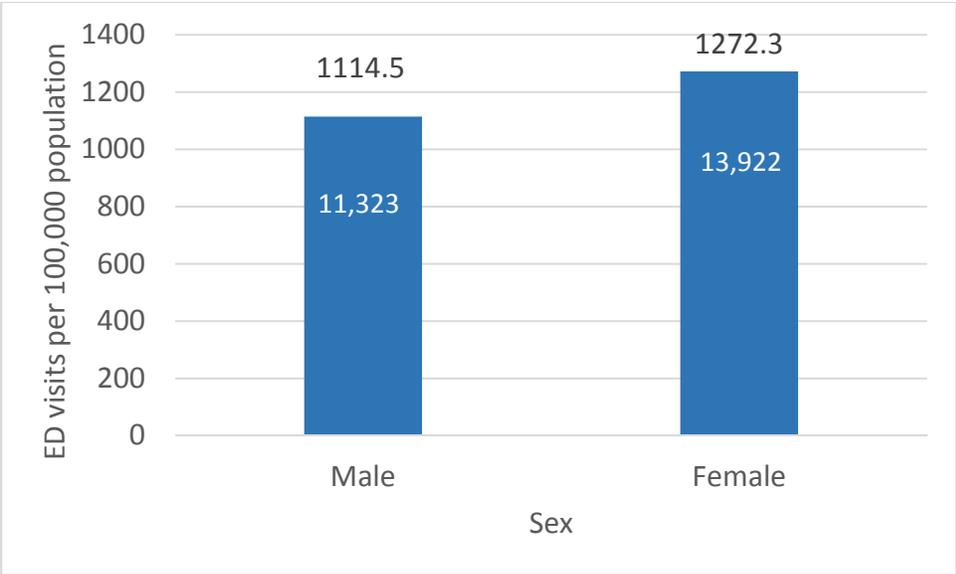
The fall-related injury hospitalization rate among females was two times higher than the rate among males (Figure 7).

Figure 7. Fall-related Injury Hospitalization Rate among Older Adults by Sex, New Mexico, 2010-2012



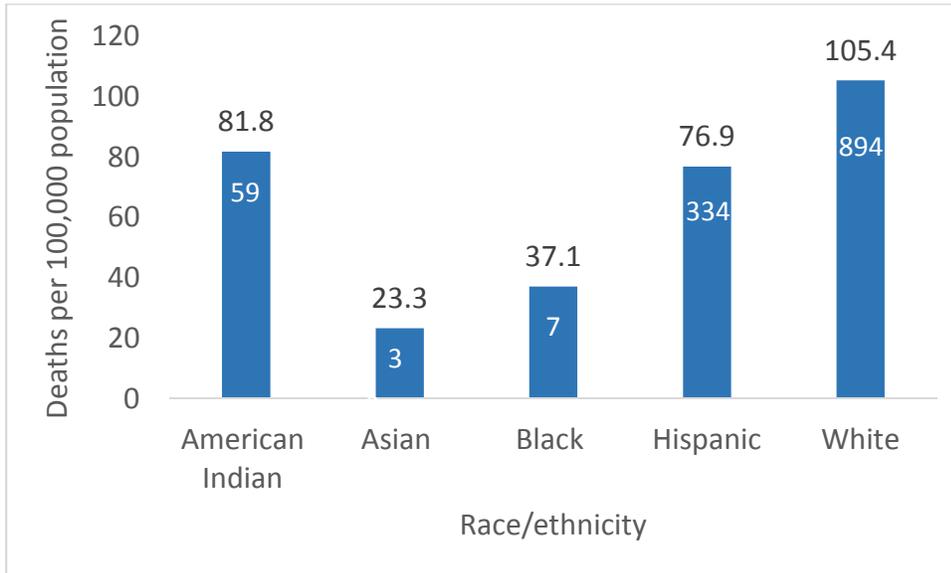
The fall-related injury emergency department visit rate among females was 10% higher than the rate among males (Figure 8).

Figure 8. Fall-related Injury Emergency Department Visit Rate among Older Adults by Sex, New Mexico, 2012



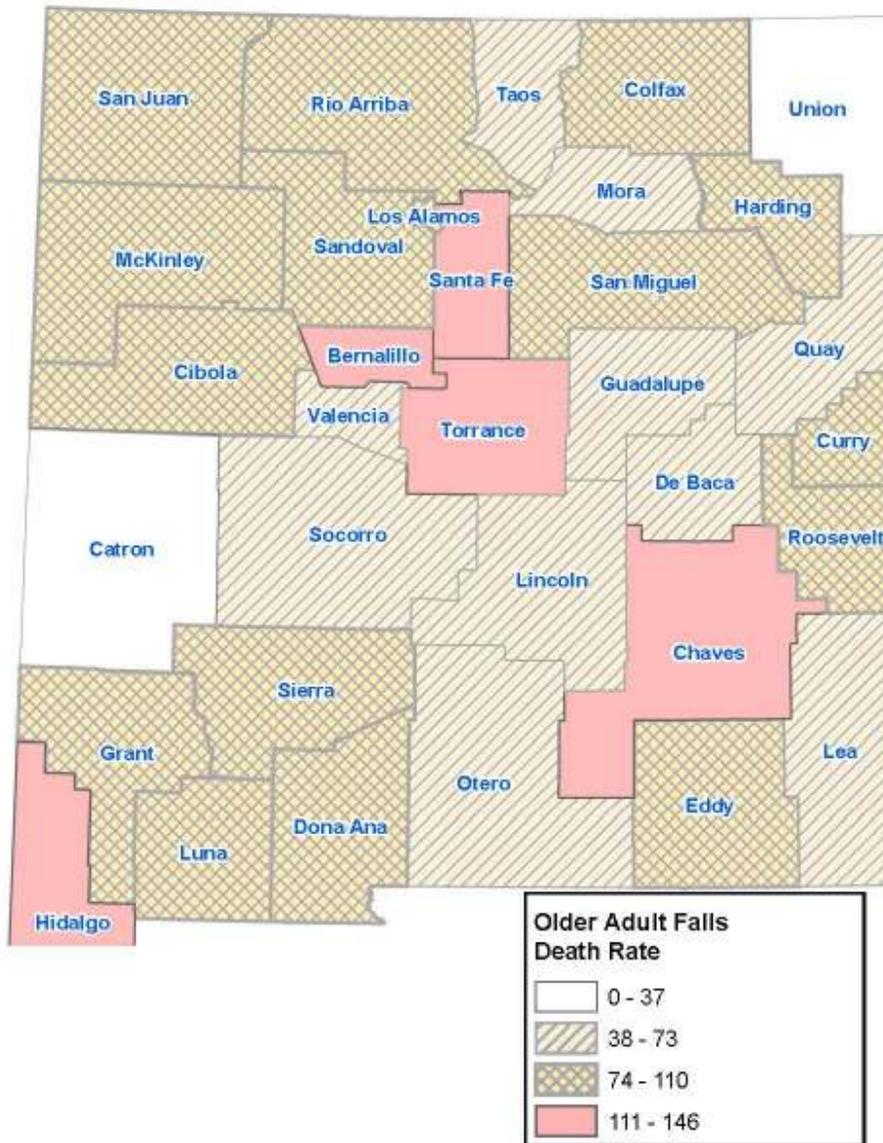
The fall-related death rate was highest among whites, followed by American Indians and Hispanics (Figure 9). Rates for the Asian and Black population were based on 20 or fewer deaths, so the rates may be unstable.

Figure 9. Fall-related Injury Death Rate among Older Adults by Race/Ethnicity, New Mexico, 2008-2012

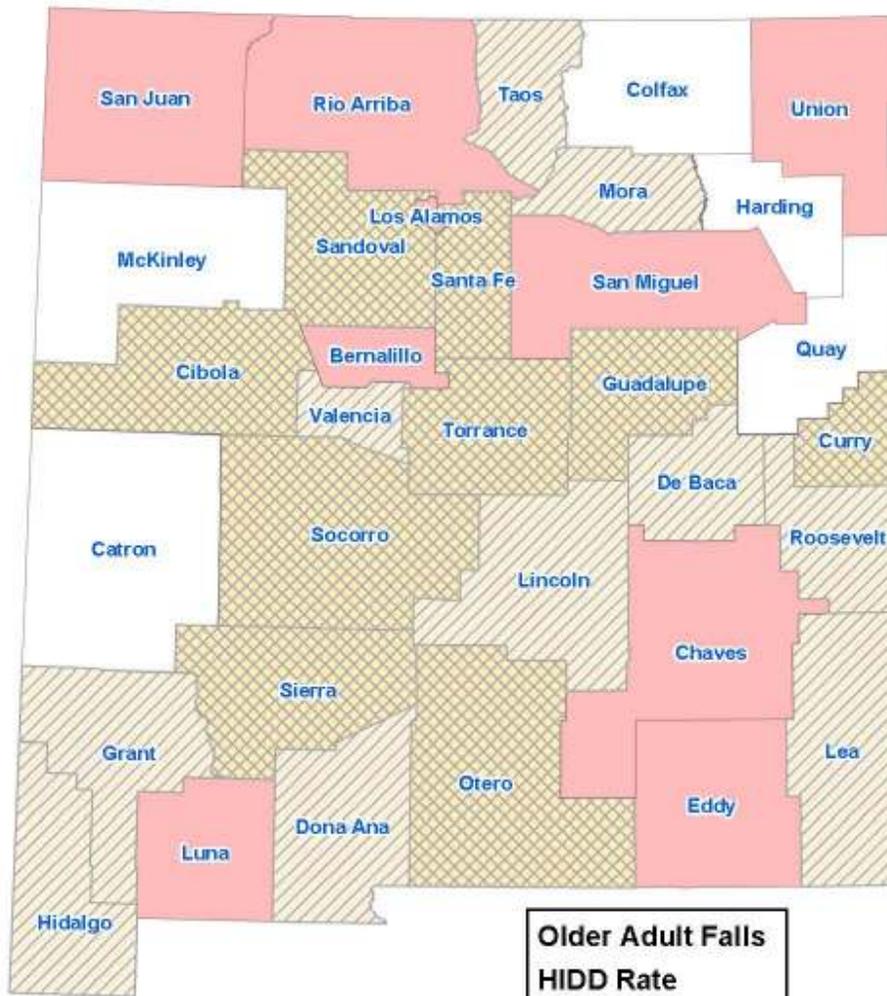


The next three maps show the fall-related injury death, hospitalization and emergency department visit rates among older adults by county of residence in New Mexico.

Fall-related Injury Death Rates among Persons ≥ 65 Years by County, 2008 - 2012



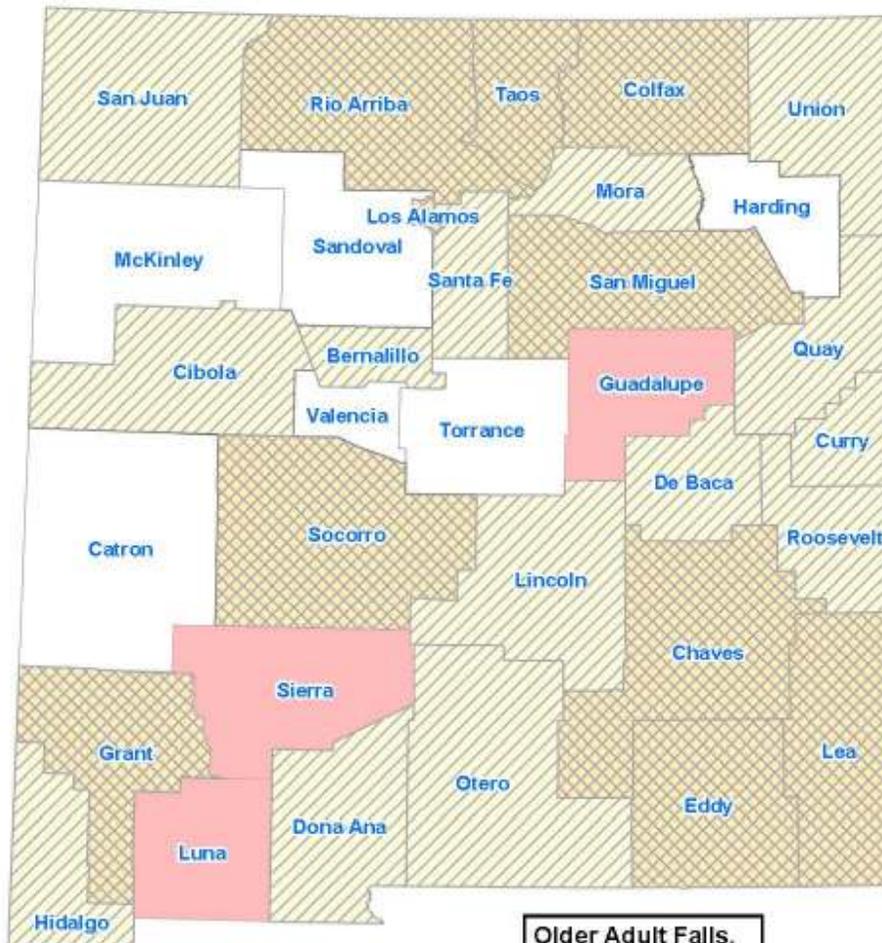
Fall-related Injury Hospitalization Rates among Persons ≥ 65 Years by County, 2008 - 2012



Older Adult Falls
HIDD Rate

White	399 - 587
Diagonal lines (top-left to bottom-right)	588 - 905
Grid pattern	906 - 1117
Red	1118 - 1485

**Fall-related Injury Emergency Department Visits
among Persons \geq 65 Years by
County, 2008 - 2012**



**Older Adult Falls,
ED Rate**

	361 - 1422
	1423 - 2370
	2371 - 3457
	3458 - 5795

Type of Fatal Fall Injuries and Non-Fatal Injuries

Most falls among the 1,843 older adults who died of a fall from 2008 through 2012 occurred on the same level (82%), most of which were classified as “other same level”. Another 10.3% of fall-related injury deaths involved falls from one level to another including from a bed (44), chair (10), wheelchair (27), ladder (6), stairs or steps (17) and building or other structure (10).

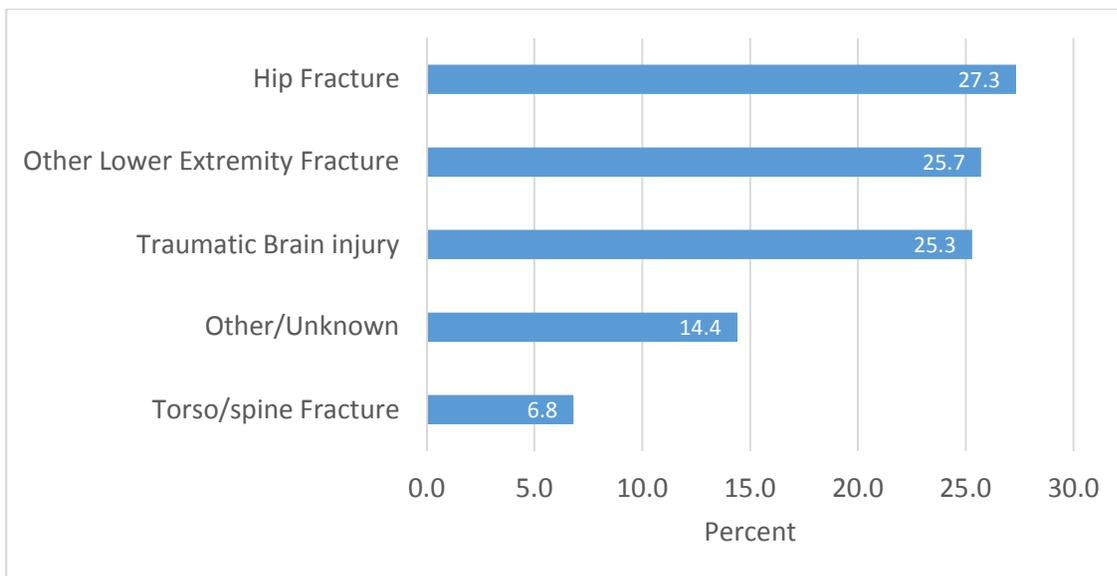
The most frequent type of fall resulting in hospitalization among the 2,972 older adults who were hospitalized in 2012 was “other and unspecified fall” (46.6%), followed by “fall on same level from slipping, tripping, or stumbling” (39.0%). Another 14.3% of falls resulting in hospitalization involved falling from one level to another including from a bed (89), chair (48), wheelchair (44), ladder (6), stairs or steps (92) and building or other structure (11).

The most frequent type of fall resulting in an ED visit among the 6,139 older adults who visited an ED in 2012 was “fall on same level from slipping, tripping, or stumbling” (73.5%). Another 26.4% of falls resulting in an ED visit involved falling from one level to another including from a bed (381), chair (198), wheelchair (247), commode (80), other furniture (28), ladder (128), stairs or steps (262), sidewalk/curb (66), and building or other structure (11).

Nature of Fall-related Injury and Body Part Injured

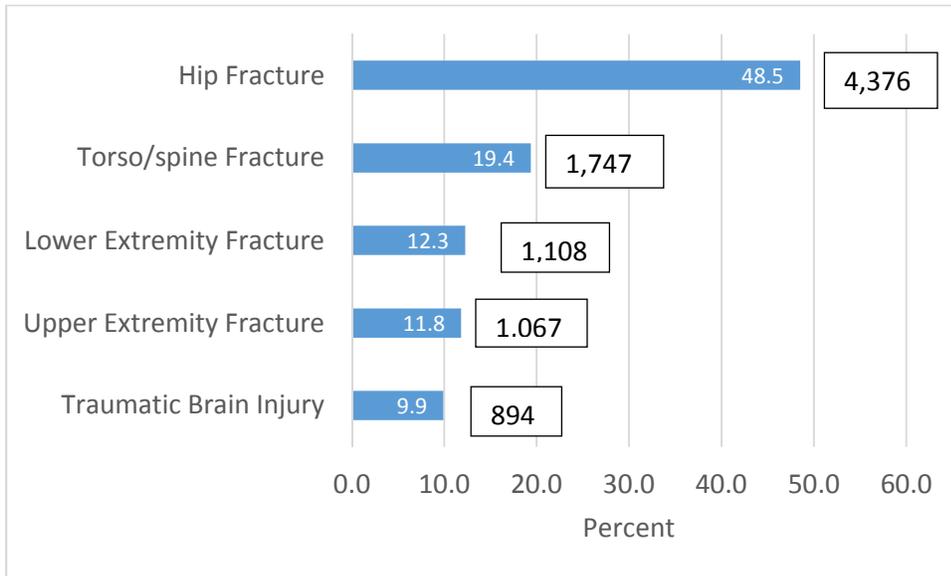
Falls can cause many different types of injuries to various parts of the body. During 2010 through 2012, hip fracture was the leading injury sustained in a fall that resulted in death followed by other lower extremity fracture and traumatic brain injury (Figure 10). During 2010-2012, sixteen of the fall-related injury deaths among older adults involved more than one injury such as hip fracture and other lower extremity fracture or hip fracture and traumatic brain injury.

Figure 10. Leading Diagnoses of Injuries Sustained in Falls that Resulted in Death among Older Adults, New Mexico, 2010-2012



48.5% of the 9,019 falls among older adults who were hospitalized due to a fall resulted in a hip fracture (Figure 11).

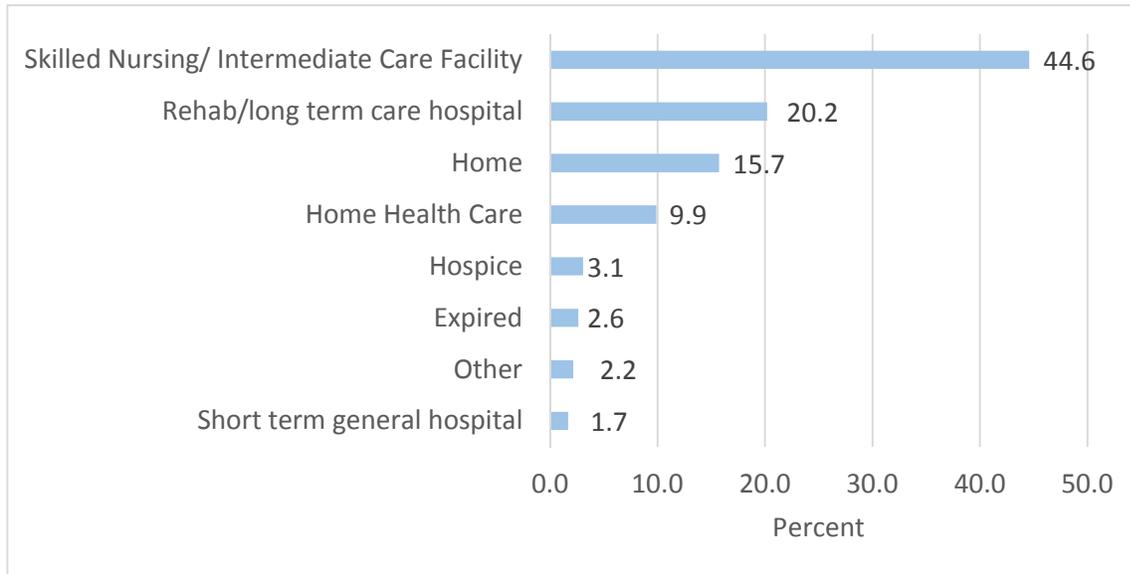
Figure 11 Leading Diagnoses of Injuries Sustained in Falls Resulting in Hospitalization, New Mexico, 2010-2012



Hospital Discharge Status and Length of Stay

Among the 9,020 older adults hospitalized for fall-related injuries during 2010-2012, over 40% were discharged to a skilled nursing facility or intermediate care facility (Figure 12). Another 26% were discharged to home with over one-third of these older adults requiring home health care services.

Figure 12. Discharge Status of Older Adults Hospitalized for Fall-Related Injuries, New Mexico, 2010-2012



The majority of the adults hospitalized for fall-related injuries during 2012 were hospitalized for one week or less (86%). Another 12% were hospitalized for 8 days to two weeks and 1.6% were hospitalized for over two weeks.

Prevention and Intervention Activities

Falls are a public health problem that is largely preventable. Older adults can stay independent and reduce their chances of falling by:

- 1) exercising regularly;
- 2) having their doctor or pharmacist review their medicines to identify medicines that may cause side effects or interactions such as dizziness or drowsiness;
- 3) having their eyes checked by an eye doctor at least once a year; and
- 4) making their homes safer.

Exercise should focus on increasing leg strength and improving balance. Tai Chi programs are a proven way to reduce falls among older adults.

Some of the improvements to the home environment to reduce the risk of falls include removing tripping hazards such as loose rugs and clutter, adding grab bars inside and outside the tub or shower and next to the toilet, adding railings on both sides of stairways, and improving the lighting in the home.

Activities the New Mexico Department of Health is engaged in to Increase public awareness about modifiable fall risk factors include:

1. Establishing a web page on the DOH website to include the following: locations of effective falls intervention community-based programs, resources such as educational tools (multi-factorial modifiable risks vs. un-modifiable), a speaker's bureau, and a list of training opportunities available to start programs, etc.
2. Establishing a protocol to facilitate collaboration with potential partners (such as the YMCA) to sponsor educational events, screenings, and effective fall prevention community programs throughout the state.
3. Identifying existing barriers that limit the number of trained leaders for effective, evidence based fall prevention programs.

The New Mexico Department of Health is actively engaged in the following older adult fall prevention efforts in NM:

1. Establishing targets for the number of adults reached with evidence-based exercise programs and their completion rate for wellness directors at senior communities (private, public, HUD housing) and community outreach departments within health care organizations to support evidence-based interventions that reduce fall risk factors
2. Identifying "champions" in NM pueblos and tribes who could update DOH, participate in NM Fall Prevention Coalition meetings, and fall intervention activities in their pueblos and tribes such as the Tai Chi for Better Balance.
3. Conducting two Tai Chi: Moving for Better Balance trainings in 2014, one in Albuquerque and the other in Las Cruces.

Tai Chi: Moving for Better Balance is an evidence-based falls prevention program conducted in community or group settings. The eight-form Tai Chi program was developed at the Oregon Research Institute. In collaboration with Oregon Research Institute, the Office of Injury Prevention has conducted trainings for individuals to become Tai Chi instructors for the purpose of implementing the *Tai Chi: Moving for Better Balance* program for older adults in NM. The selected instructors are expected to lead *Tai Chi: Moving for Better Balance* classes for seniors to help them increase balance, strength and flexibility. The primary goal of the Instructor training is to increase the number of individuals teaching Tai Chi and increase the geographic accessibility of this training for seniors throughout New Mexico. There have been several such trainings, beginning in 2010. During this time approximately 90 people were trained to be *Tai Chi: Moving for Better Balance* instructors. Each person completed a 2-day training that included learning the eight Tai Chi forms, reviewing training materials and class materials, and how to implement the program at their perspective trainer's sites. Four hundred fifty seniors throughout New Mexico have attended Tai Chi for Better Balance classes.

According to the survey that was recently conducted by the Office of Injury Prevention, ten senior centers are currently offering *Tai Chi: Moving for Better Balance* classes. Such classes are also conducted in other settings, such as community centers and senior residential facilities.

References

1. CDC WISQARS produced by Office of Statistics and Programming, National Center for Injury Prevention and Control, CDC; Data Source: NCHS Vital Statistics System for numbers of deaths. Bureau of Census for population estimates
2. Stevens JA, Corso PS, Finkelstein EA, Miller TR. The costs of fatal and nonfatal falls among older adults. *Injury Prevention* 2006a;12:290–5.
3. Centers for Disease Control and Prevention (CDC). Fatalities and injuries for falls among older adults – United States, 1993-2003 and 2001-2005. *MMWR Morb Mortal Wkly Rep.* 2006 Nov 17; 55(45):1221-4.