

What Should I Know Before Using Fall Injury Data?

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DATA CONSIDERATIONS

The [Injury and Violence Prevention Branch \(IVPB\)](#) fall injury data can be used in many ways, from identifying risks, tracking trends, and developing effective prevention strategies, to supporting advocacy, funding decisions, and public awareness campaigns.

This document outlines what you should know and consider before using IVPB fall injury data resources.

How Fall Injuries are Measured

Who Is Included in Fall Injury Data?

Fall injury data are limited to NC residents.

Residence describes the area where someone has reported that they live.

- Limiting to residents allows for rate calculations using NC resident population estimates.
 - This ensures that the information used to calculate rates is consistent.
- Limiting to residents allows for more accurate comparisons across groups and between counties.
 - This excludes people that were injured or died from a fall in a given county but are not residents of that county.
 - Someone living in a county, but who has not yet updated their residence status to that county would also be excluded.

Differences in Injury Location and Residence

Where a fall injury occurs or where a fall injury is treated can be different from where a person lives.

- This distinction is especially true in rural areas where a single hospital or health care facility may serve a large area across multiple counties.
- Someone may experience a fall injury in one county and then be transported to and treated in a hospital in another county.
 - This transfer of care to another county is common for people with serious injuries that require treatment at a designated trauma center.
- This difference is not shown in the IVPB fall injury data because these data are normally based on residence rather than injury location.

For more information, visit [Understanding Injury Surveillance Case Definitions](#).



Fall Injuries Among Older Adults

While IVPB fall injury data are available for all NC residents, many resources are specific to fall injuries among older adults ages 65 and older.

- Older adults experience the greatest burden of fall injuries and deaths, with rates of fall injuries and death being highest among adults 85 and older.
- IVPB provides more specific data on the demographic groups and places where there is a greater burden of fall injuries among older adults.
 - These data can help focus prevention activities for older adults.

What Is Counted in Fall Injury Data?

IVPB fall injury data are limited to unintentional fall injuries.

- Assaults, self-inflicted fall injuries, and injuries of undetermined intent are excluded.
- Almost all fall injuries and deaths (around 99%) are unintentional injuries.
- For more information on intent, visit [Injury Mechanism and Intent](#).



IVPB monitors fall injuries that are treated in a hospital setting or that result in death.

Non-fatal fall injury data do not capture:

- Unintentional fall injuries treated outside of the ED or hospital.
 - This can include fall injuries treated at urgent care clinics, by primary care providers, or by other health care providers.
- Fall injuries where someone does not seek medical care or that are treated at home.
 - While data are not available to show exactly how many of these falls occur, IVPB does use survey data to understand how many people report experiencing falls.
 - See the section below on [What Else is Measured to Monitor Fall Injuries](#) or the section on [Behavioral Risk Factor Surveillance System \(BRFSS\) data](#) for more information.

What Else is Measured to Monitor Fall Injuries?

Other Health Outcomes Related to Falls

In addition to how many people died from or experienced an unintentional fall injury, IVPB also monitors fall injuries and deaths that involved:

- Traumatic brain injury (TBI)
 - Falls lead to almost half of TBI-related injury hospitalizations.¹
- Hip fractures
 - More than 80% of hip fractures treated in the ED or hospital are caused by a fall.²
 - Hip fractures are hard to recover from. Many people do not regain their same level of function from before the injury and may not be able to live on their own.²

Self-Reported Fall Injuries

Fall injuries seen in the ED or in the hospital are only the tip of the iceberg. Many more falls happen where people do not seek medical attention or are seen by providers outside of the ED or hospital.

- IVPB uses self-reported data from the NC BRFSS to understand the broader impact of fall injuries.
 - See the [Survey Data](#) section below for considerations when using BRFSS data.
 - Visit [NC State Center for Health Statistics, BRFSS](#) for information on BRFSS.

Considerations for Fall Injury Data by Data Source

No single data source captures the full scope of fall injury in NC. Data sources should be used together to more fully understand the statewide impact of fall injuries and related health outcomes.

For more information on a specific data source, visit [Data Sources IVPB Uses for Injury Surveillance](#).



Fall Injury Death Data

IVPB uses vital statistics death certificate data to monitor fall injury deaths.

- Unintentional fall injury deaths are limited to deaths where the fall was the primary cause of death.
 - Primary causes of death are the injuries or conditions that directly resulted in the death.
- Deaths from other primary causes that have unintentional fall listed as an underlying cause of death are not included.
 - An underlying cause of death is an injury or condition that started the chain of events that directly or indirectly led to the primary cause of death.
 - For example, a fall into a body of water where the person drowned.
 - There are only a handful of deaths each year with unintentional fall listed as an underlying cause.
- Fall injury deaths are identified in the death certificate data using ICD-10 codes.
 - For more information, visit [Understanding Injury Surveillance Case Definitions](#).

Fall Injury Hospital Discharge Data

Hospital discharge data are encounter-based, meaning that the same person may have multiple hospital stays during any given time period.

Identifying Unintentional Fall Injury Hospitalizations

- ICD-10-CM codes are used to group and classify diagnoses and reasons for health care visits in administrative health care systems, including hospital discharge data.
 - ICD-10-CM codes are intended for administrative and billing purposes, not public health surveillance.
 - This purpose can affect which codes are or are not assigned to a record and therefore which events are included or excluded as fall injury cases.
 - For more information on ICD-10-CM codes, visit [Understanding Injury Surveillance Case Definitions](#).
- IVPB includes hospital records as unintentional fall injury hospitalizations when there is an ICD-10-CM code for any injury listed as the primary diagnosis, and an unintentional fall injury ICD-10-CM code listed anywhere in the record.
 - Records with another non-injury ICD-10-CM code listed as the primary cause are excluded, even if there is also a code for a fall injury later in the record.
- IVPB does not exclude hospitalizations that result in death.
 - Including hospitalizations resulting in death helps to understand the full burden of unintentional falls and other injuries on the NC health care system.

- IVPB's expanded case definition can contribute to differences in the number of unintentional fall injury hospitalizations IVPB identifies compared to those shared by CDC or other sources.
- For more detailed information on how these cases are identified, see [Injury Surveillance Technical Notes](#).

Identifying falls involving TBI or Hip Fracture

These are hospitalizations that meet the definition above (an injury code as the primary diagnosis and a code for unintentional fall injury included in the record), that also include:

- TBI-related fall hospitalizations - an ICD-10-CM code for TBI listed anywhere in the record.
- Fall-related hip fracture hospitalizations - an ICD-10-CM code for hip fracture listed anywhere in the record.

Costs of Fall Injury Hospitalizations

Hospital discharge data include information on the total charges billed for the hospital stay.

- This information can be used to understand the financial costs of fall injury hospitalizations.
- The total charges billed are not necessarily the same amount that was paid for the hospital visit.
 - Insurance companies typically negotiate to lower rates for hospital charges.

Fall Injury ED Visit Data

ED visit data are also encounter-based. The same person may have multiple ED visits during any given time period.

Data Quality

- Trends may be impacted by missing data.
- There were changes in the number of people going to the ED for any reason (ED utilization) during the COVID-19 pandemic.
 - See the [Unintentional Fall Injuries and COVID-19](#) section below for more information.

Using Provisional Data

Some resources, such as the [NC DETECT Unintentional Falls Dashboard](#), use data to:

- Share information about fall injuries in NC quickly.
- Spot changes in trends before the final data are available.
- See patterns that help us know when to take action.
- Provisional numbers can change as more information becomes available.
- Provisional data should be used carefully because there may be missing information or delays in reporting.

For more information on provisional data and when they become available, visit [Using Provisional Data for Monitoring Injuries](#).

Identifying Unintentional Fall Injury ED Visits

ICD-10-CM codes are used to identify ED visits for unintentional fall injuries. For more information, visit [Understanding Injury Surveillance Case Definitions](#).

- ED visits with an ICD-10-CM code for an unintentional fall injury anywhere in the record are included.

- IVPB does not exclude ED visits where the patient is admitted to the hospital or that result in death.
 - Including ED visits resulting in hospitalization or death helps us understand the full burden of unintentional falls and other injuries on the NC health care system.
 - These records are excluded in national case definitions. This variation in case definitions can contribute to differences in the number of unintentional fall injury ED visits IVPB identifies compared to those shared by CDC or other sources.
- ICD-10-CM codes are intended for administrative and billing purposes, not public health surveillance.
 - This purpose can affect which codes are or are not assigned to a record and therefore which events are included or excluded as fall injury cases.
- Some ED visit case definitions, called syndromes, also search the chief complaint and/or triage notes fields for keywords to identify fall injury ED visits.
 - NC DETECT uses a syndrome to identify winter weather-related ED visits, including falls from snow and ice.
 - Because these definitions also use keywords, they identify more ED visits than when using ICD-10-CM codes alone.
- For more detailed information on how these cases are identified, see [Injury Surveillance Technical Notes](#).

ED Visits with Multiple ICD-10-CM Codes

Some unintentional fall injury ED visits may receive multiple ICD-10-CM codes related to the fall injury and for other types of injury.

Multiple Mechanisms of Injury

- There may be codes to describe multiple types of injuries, for example a fall and a cut/pierce injury.

Multiple Mechanisms and Injury Intent

- In some instances, there may be multiple injury codes with conflicting intent information, such as a code for an unintentional fall injury in addition to a code for self-inflicted injury.
 - The ICD-10-CM coding guidance defaults to classifying injuries as unintentional.
 - Multiple codes may be used to document different aspects of the ED visit, which can contribute to conflicting or inconsistent coding.

A visit with multiple ICD-10-CM codes is counted once in each mechanism and intent category that applies to that ED visit, but only once in the total number of injury ED visits.

For example:

- An ED visit that had a code for both an unintentional fall and an unintentional burn would be counted one time each in:
 - The total number of unintentional injury ED visits
 - The total number of unintentional fall ED visits
 - The total number of unintentional fire/burn ED visits
 - The total number of injury ED visits
- Similarly, if multiple types of injuries were identified, that had different mechanism and intent categories, such as a code for both an unintentional fall injury and a self-inflicted overdose, it would be counted once in each category:
 - The total number of unintentional injury ED visits
 - The total number of self-inflicted injury ED visits
 - The total number of unintentional fall injury ED visits

- The total number of overdose ED visits
- The total number of injury ED visits

Injury ICD-10-CM Codes in the ED Visit Record

How IVPB Counts the Injury ED Visit

(each box represents the visit being counted once in the number of injuries by intent, mechanism, and total injury)

ED Visit	Multiple Types of Injury	Intent	Mechanism	Total Injury
ED Visit A	- Unintentional Fall Injury - Unintentional Fire/Burn Injury	Unintentional	Fall	Injury ED Visit
			Fire/Burn	
ED Visit B	Multiple Injuries and Intents Unintentional Fall Injury Assault Fall Injury - Unintentional Fall	Unintentional	Fall	Injury ED Visit
		Self-Inflicted	Medication/Drug Overdose	

Emergency Medical Services (EMS) Data

- EMS data are useful for identifying the broader impact from falls when the fall doesn't require medical attention in the ED or hospital.
 - EMS data include EMS responses where the patient is treated on-scene and not transported to the hospital, as well as those that are transported.
 - Falls that are treated on the scene and not transported are often falls among older adults, where someone needs assistance getting back into bed or to another safe place but does not require further medical attention.
- Fields in the EMS data describe the chief complaint, symptoms, impressions, causes of injury, and notes outlining the response.
 - Syndrome definitions search these fields using keywords to identify related-EMS responses.
- EMS responses for falls offer opportunities for prevention.
 - First responders are often responding to the home and can help identify and address fall risks with patients.
- EMS data are also encounter-based. The same person may be involved in multiple EMS responses during any given time period.

Survey Data

IVPB uses data from the NC BRFSS to better understand the burden of falls and related injuries in NC.

- The NC BRFSS surveys adults living in NC about behaviors and experiences that impact their health, including:
 - How many times someone has fallen over the last year
 - How many of those falls resulted in an injury that limited their activity or caused them to see a doctor

- NC BRFSS data on falls provide more context on the burden of fall injury among NC adults and can be used to understand connections to other health behaviors, and risk and protective factors.
- NC BRFSS data are available statewide and regionally.
 - NC BRFSS data are not available at the county level.
- The NC BRFSS is conducted every year. However, the questions included in the NC BRFSS vary from year to year and may change over time.
 - For information on the specific questions included in BRFSS and when falls-related questions were asked, visit [NC State Center for Health Statistics, BRFSS](#)
- Visit [Data Sources IVPB Uses for Injury Surveillance](#) for more information on how IVPB uses NC BRFSS data.

Considerations For Using Survey Data

Survey data are self-reported and may show different rates of falls than what people actually experienced. Survey data related to falls can be affected by:

- **Social Desirability Bias** – People may report experiencing fewer falls than they actually do or may report not experiencing them at all when they have fallen.
 - People may be embarrassed by or not want others to know about their health issues.
 - People may respond with what they think will make them look good.
- **Recall Bias** – People may forget exactly how often over the reporting period they experienced a fall.
- **Nonresponse Bias** – People may not respond to the survey questions about falling.
 - They may feel uncomfortable and skip the question.
 - Some respondents may have stopped taking the survey before getting to that question.
 - They may choose not to participate in the survey at all.

Changes in Unintentional Fall Injury Metrics Over Time

Unintentional fall injury case definitions have not changed much over the years.

If changes are made, they are also applied to historical data whenever possible.

- Changes are applied retroactively so that data can be counted the same way across multiple years of data.
 - This allows IVPB to accurately monitor trends.
- Because of this, data IVPB shared before a change was implemented can be different from data shared for the same time period today.
 - Use the data resources posted to the [Falls Injury Data](#) webpage to be sure you are accessing the most up-to-date information on fall injuries in NC.
 - If you have questions about data you have received from IVPB previously, email us at InjuryData@dhhs.nc.gov.

ICD-10-CM Coding Transition

- The system used to code diagnoses and other information in ED visit, hospital discharge, and other outpatient data was updated in 2015.
- The codes used previously (ICD-9-CM codes) are not directly comparable to the new codes (ICD-10-CM codes).

- Since the data are not comparable, data from before 2016 are not usually shared.
- For more information on this transition and impacts to injury surveillance, visit [ICD-10-CM Coding Transition](#).

Unintentional Fall Injuries and COVID-19

There have been many implications from the COVID-19 pandemic that began in 2020, including major changes to the numbers and rates of unintentional fall injuries.

- Unintentional fall injury deaths were already increasing and continued to increase during the pandemic.
 - Unintentional fall deaths increased by 86% from 2014 to 2023.
 - There was a 40% increase before the pandemic (2014 to 2019), followed by a 34% increase during the pandemic (2019 to 2023).
- There were large impacts to ED visits during the pandemic
 - There was a large drop in the number of people going to the ED for any reason (ED utilization) starting in March 2020 when the COVID-19 Stay at Home Order was implemented.
 - ED utilization slowly increased but remained lower than normal throughout most of 2020.
 - This drop in ED utilization also impacted the number of ED visits for specific injuries, including unintentional falls, which dropped by almost 18% from 2019 to 2020.
 - The number of ED visits for unintentional falls had been decreasing before the pandemic. Since 2020, there has been more than a 40% increase in ED visits for unintentional fall injuries (2020 to 2023).
 - ED visits for related health outcomes, such as TBI, also increased during the pandemic.
- Changes to unintentional fall injuries in NC align with trends seen across the United States during the pandemic.

Who is Most Affected by Fall-Related Injury?

Who we count — and how — changes what we know about self-inflicted injury.

The most reliable way to collect information on race and ethnicity is when it is self-reported, where individuals choose the race and ethnicity they use to describe themselves.

Asking someone to report their own race and ethnicity ensures the data are accurate.

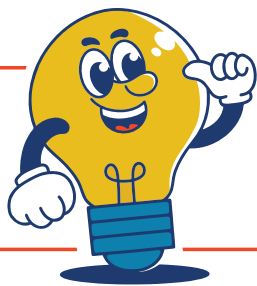
- In some cases, race and ethnicity may not be self-reported and may instead be assigned based on someone's name or their appearance.
- This assumption may happen if the person was unresponsive when EMS responded or when they arrived at the ED.
- This assumption can result in misclassification of race and ethnicity, when someone is categorized into a racial or ethnic group that they do not identify with.

For more information on how race and ethnicity are collected in the data sources IVPB uses, and how IVPB groups race and ethnicity, visit [Using Injury Data by Race and Ethnicity](#).

Monitoring Fall Injuries by Demographic Groups

IVPB uses rates to compare the burden of fall injury across groups, including by age group, sex, and race/ethnicity.

- This approach allows IVPB to identify groups that are experiencing the greatest burden of fall injury (e.g., older adults).
 - IVPB regularly breaks out data separately for older adults, to consider differences in fall injuries among older adults by sex, race, and county.
 - Rates account for the size of the population and allow us to compare injuries that happened in small populations to injuries in larger groups.
 - Comparing rates helps us understand differences in unintentional fall injuries between groups.
 - For more information, visit [Understanding Counts and Rates](#).
- When data are broken out for specific groups, results may need to be suppressed if there are very few fall injuries within a given group.
 - When the number of injuries or deaths is small, it becomes difficult to separate data further to understand more specifically who was impacted.
 - Visit [Data Suppression and Working with Small Numbers](#).



FOR MORE RESOURCES:
Visit our [Injury Data Users Toolkit](#)

¹ Centers for Disease Control and Prevention (CDC). (2025, August 4). Facts about TBI: Traumatic brain injury & concussion. <https://www.cdc.gov/traumatic-brain-injury/data-research/facts-stats/index.html>

² CDC. (2026, January 27). Preventing falls and hip fractures. <https://www.cdc.gov/falls/prevention/index.html>

