

What Should I Know Before Using Unintentional Drowning Data?

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UNINTENTIONAL DROWNING DATA CONSIDERATIONS

[Injury and Violence Prevention Branch \(IVPB\)](#) unintentional drowning-related 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 unintentional drowning data resources.

How Unintentional Drowning-Related Injuries are Measured

Who Is Included in Unintentional Drowning Data?

Unintentional drowning-related injury data are limited to NC residents.

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

- Limiting to NC 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 who drowned or experienced a drowning-related injury 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 drowning-related injury occurs or where a drowning-related injury is treated can be different from where a person lives.

- Most drownings happen in the summer in natural bodies of water like lakes, rivers or the ocean, which can be popular tourist destinations during the summer months.
- Someone may experience a drowning-related injury in one county and then be transported to and treated in a hospital in another county.
 - This is especially true in rural areas where a single hospital or health care facility may serve a large area across multiple counties.
 - 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 drowning-related injury data because these data are normally based on residence rather than injury location.

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



Unintentional Drowning-Related Injuries Among Children

While IVPB unintentional drowning data are available for all NC residents, some resources are specific to children ages 0-17.

- Drowning-related injuries impact NC residents of all ages. However, young children experience the greatest burden of drowning-related injury and death.
 - Children ages one to four experience two to three times the rate of drowning-related injury and deaths as other age groups.
- IVPB provides more specific data about drownings among children to help focus prevention activities for this age group.

What Is Counted in Drowning-Related Injury Data?

IVPB drowning data are limited to unintentional drowning-related injuries.

- These data include injuries or deaths caused by suffocation (asphyxia) from being submerged in water, or another liquid, unintentionally¹.
- Assaults, self-inflicted drowning-related injuries, and injuries of undetermined intent are excluded.
- Almost all drowning-related injuries and deaths (around 99%) are unintentional injuries.
- For more information on intent, visit [Injury Mechanism and Intent](#).

IVPB monitors drowning-related injuries that are treated in a hospital setting or that result in death.

Non-fatal drowning-related injury data do not capture:

- Injuries from unintentional drownings that are treated outside of the ED or hospital
 - This can include drowning-related injuries treated at urgent care clinics, by primary care providers, or by other health care providers.
 - This also includes individuals treated by emergency medical services (EMS) who are not transported to the hospital.
- Injuries from unintentional drownings where someone does not seek medical care or that are treated at home.

What Else is Measured to Monitor Unintentional Drowning-Related Injuries?

Where Drowning-Related Injuries Occur

IVPB monitors the water source involved in drowning-related injuries, including:

Natural body of water	Swimming pool	Bathtub
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When Drowning-Related Injuries Occur

IVPB monitors the seasonality of drowning-related injuries.

- Drowning-related injuries often increase in warmer months, starting in the spring and peaking in the summer.

Other Water-Related Injuries

IVPB also monitors boating-related injuries and deaths.

- Some boating-related injuries are drownings and are also included in the number of drowning-related injuries.

Considerations for Unintentional Drowning-Related Injury Data by Data Source

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

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

Unintentional Drowning-Related Injury Death Data

IVPB uses vital statistics death certificate data to monitor deaths from drowning.

- Unintentional drowning deaths are limited to deaths where drowning and submersion is listed as 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 drowning listed as another 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.
- Unintentional drowning deaths are identified in the death certificate data using ICD-10 codes.
 - For more information, visit [Understanding Injury Surveillance Case Definitions](#).

Unintentional Drowning-Related 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 Drowning-Related 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.
 - For more information, visit [Understanding Injury Surveillance Case Definitions](#).
 - 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 drowning-related cases.
- IVPB includes hospital records as unintentional drowning-related injury hospitalizations when there is an ICD-10-CM code for any injury listed as the primary diagnosis, and an unintentional drowning-related 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 drowning-related injury later in the record.
 - For more detailed information on how these cases are identified, see [Injury Surveillance Technical Notes](#).
- IVPB does not exclude hospitalizations that result in death.
 - Including hospitalizations resulting in death helps to understand the full burden of unintentional drowning and other injuries on the NC health care system.
 - This can contribute to a difference in the number of unintentional drowning injury hospitalizations IVPB identifies compared to those shared by CDC or other sources.

Costs of Unintentional Drowning-Related 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 unintentional drowning-related injury hospitalizations.
- The total charges billed are not necessarily the same amount paid for the hospital visit.
 - Insurance companies typically negotiate to lower rates for hospital charges.

Unintentional Drowning-Related 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 was a large drop in the number of people going to the ED for any reason (ED utilization) around March 2020 after the COVID-19 stay at home order was implemented.
 - ED utilization slowly increased but remained lower than normal throughout most of that year.

Using Provisional Data

Provisional ED visit data are sometimes used to:

- Share information about drowning 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 Drowning-Related Injury ED Visits

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

- ED visits with an ICD-10-CM code for an unintentional drowning-related injury are included, even if the code is not listed as the primary cause of the visit.
 - For more detailed information on how these cases are identified, see [Injury Surveillance Technical Notes](#).
 - 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 drowning-related injury cases.
- Some ED visit case definitions, called syndromes, also search the chief complaint and/or triage notes fields for keywords to identify suspected unintentional drowning-related injury ED visits.
 - NCDETECT uses a syndrome to identify suspected drowning-related ED visits
 - This syndrome was originally used to identify drownings potentially related to disasters but was updated in July 2025 to look for all suspected drownings.
 - Because these definitions also use keywords, they identify more ED visits than when using ICD-10-CM codes alone.

- IVPB does not exclude ED visits where the patient is admitted to the hospital or visits that result in death.
 - Including ED visits resulting in hospitalization or death helps to understand the full burden of unintentional drowning 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 a difference in the number of unintentional drowning-related injury ED visits IVPB identifies compared to those shared by CDC or other sources.

ED Visits with Multiple ICD-10-CM Codes

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

Multiple Mechanisms of Injury

- There may be codes to describe multiple types of injuries, for example a drowning-related injury and a fall.

Multiple Injury Intents

- There may be multiple codes with conflicting intent information, like a code for an unintentional drowning-related injury in addition to a code for a drowning of undetermined intent.
 - 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.
- In some cases, there may be codes for different types of injuries and different injury intents.

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 drowning-related injury** and an **unintentional fall injury** would be counted one time each in:
 - The total number of unintentional injury ED visits
 - The total number of unintentional drowning-related ED visits
 - The total number of unintentional fall injury ED visits
 - The total number of injury ED visits
- Similarly, if multiple injury intents were identified, such as a code for both an **unintentional drowning-related injury** and **drowning-related injury** of undetermined intent, it would be counted once in each category:
 - The total number of unintentional injury ED visits
 - The total number of injury ED visits of undetermined intent
 - The total number of unintentional drowning-related injury 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)

	Multiple Intents	Intent	Mechanism	Total Injury
ED Visit A	- Unintentional Drowning-Related Injury - Unintentional Fall Injury	Unintentional	Drowning/ Submersion	Injury ED Visit
			Fall	
ED Visit B	Multiple Types of Injuries Unintentional Drowning-Related Injury - Drowning of Undetermined Intent	Unintentional	Drowning/ Submersion	Injury ED Visit
		Undetermined		

Changes in Drowning Metrics Over Time

Drowning-related 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 IVPB [Data and Surveillance webpage](#) to be sure you are accessing the most up-to-date information on drowning-related 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](#).

Who is Most Affected by Drowning?

Learning how to swim is one of the best ways to prevent drowning. Some communities have faced long-standing barriers to accessing swimming instruction and places to swim safely.

These barriers have taken root over generations, creating different levels of drowning risk across communities and differences in drowning-related injury outcomes.²⁻³

- Historically, public pools were not open to everyone, which limited access to many families.
- There continues to be limited access to pools and swimming instruction for some communities, leading to differences in swimming ability.
 - Many pools have become privatized, and there are fewer public pools in lower-income neighborhoods.
 - Costs for accessing pools and for swimming lessons can prevent some groups from learning to swim more than others.
 - Swimming culture can be passed down from parents to children, amplifying these differences over time.
- Rates of drowning deaths are two times higher among non-Hispanic American Indian residents and 1.5 times higher for non-Hispanic Black residents than non-Hispanic white residents in NC and nationally.¹⁻²
 - There are also racial differences in where drownings happen, like in natural water, public pools, and private pools.¹⁻²

Who we count – and how – changes what we know about drowning-related 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 Drowning-Related Injuries by Group and Place

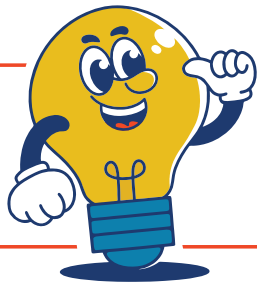
IVPB uses rates to compare the burden of drowning-related injury across groups, including by age group, sex, race/ethnicity, and county of residence.

- This approach allows IVPB to identify groups that are experiencing the greatest burden of drowning-related injury, like young children.
 - IVPB regularly breaks out data separately for children, to consider differences in drowning-related injuries among children 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 drowning-related injuries between groups.
- For more information, visit [Understanding Counts and Rates](#).

There are relatively few drowning-related injuries and deaths compared to other causes of injury.

- There are around 100 drowning deaths among NC residents in a given year, compared to 1,000 to 2,000 deaths a year for other leading causes of injury.
 - The same is true for non-fatal drownings. There are around 100 drowning-related ED visits a year compared to around 34 overdose ED visits per day in NC.
- With so few drowning-related injuries and deaths a year, it becomes difficult to separate data further to understand more specifically who was impacted.
 - When data are broken out for specific groups, results may need to be suppressed if there are very few drowning-related injuries within a given group.
 - Visit [Data Suppression and Working with Small Numbers](#)



FOR MORE RESOURCES:

Visit our [Injury Data Users Toolkit](#)

¹ Centers for Disease Control and Prevention. (n.d.). *About Nonfatal Injury Data: Data definitions*. WISQARS. Retrieved March 31, 2026, from <https://wisqars.cdc.gov/about/nonfatal-injury-data/#data-definitions>

² Centers for Disease Control and Prevention. (2026, January 27). Health disparities in drowning. U.S. Department of Health & Human Services. Retrieved April 26, 2026, from <https://www.cdc.gov/drowning/health-equity/index.html>

³ Clemens, T., Moreland, B., & Lee, R. (2021, June 18). Persistent racial/ethnic disparities in fatal unintentional drowning rates among persons aged ≤29 years — United States, 1999–2019. *Morbidity and Mortality Weekly Report*, 70(24), 869–874. <https://doi.org/10.15585/mmwr.mm7024a1>

