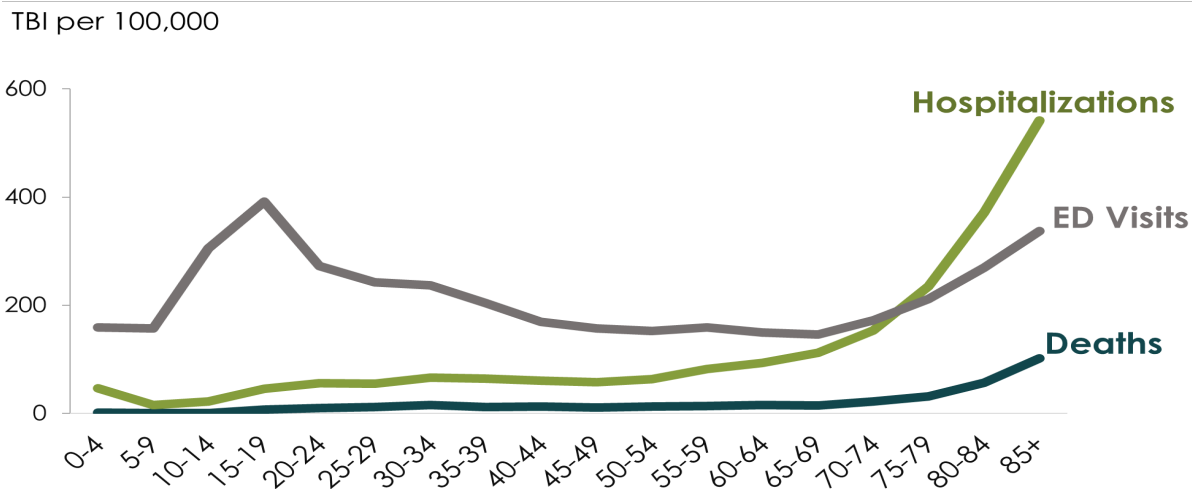


## Background

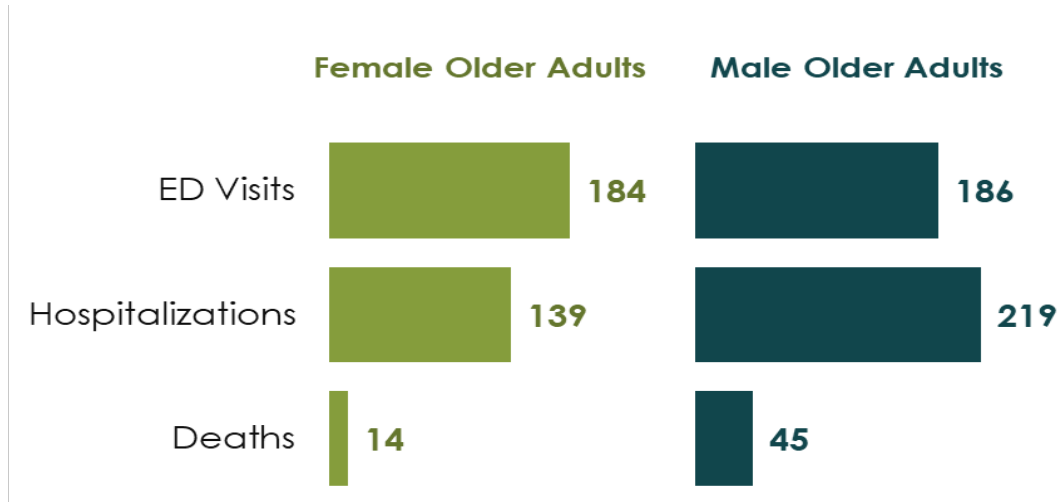
Traumatic brain injuries (TBI) disrupt the normal function of the brain and can adversely affect cognitive, behavioral, emotional, and physical functioning, leading to reductions in quality of life. A TBI can be caused by a bump, blow, or penetration to the head. The body's aging process puts older adults at greater risk for unintentional TBI, with rates of TBI deaths and hospitalizations greatest among older adults (aged 55+). Older adults are also disproportionately affected by TBI resulting from suicide by firearm. This brief provides an overview of older adult TBIs in California with a focus on highlighting TBIs that resulted in emergency department (ED) visits, hospitalizations, and deaths in 2022.

**Older adults are at increased risk for TBI in comparison to other age groups, especially for TBI resulting in death or hospitalization.**

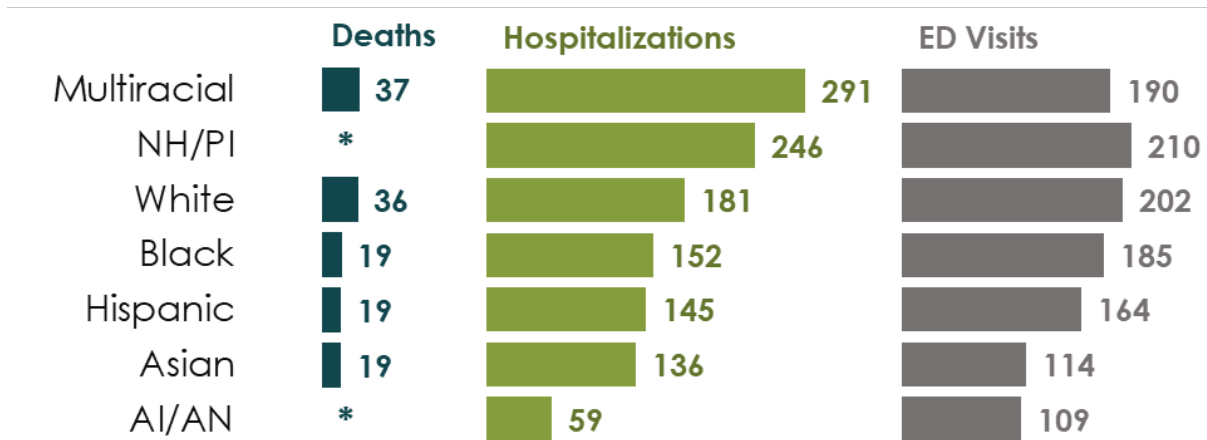


## Age-Adjusted Rates for TBI Morbidity and Mortality

Older adult males have higher age-adjusted rates (per 100,000) of TBI deaths, hospitalizations, and ED visits compared to older adult females.<sup>1</sup>



Older adult Californians who are Multiracial have the highest age-adjusted rates (per 100,000) of TBI deaths and hospitalizations. TBI ED visit rates are highest among older adult Native Hawaiian/Pacific Islanders.<sup>2</sup>



\*Age-adjusted rates for deaths suppressed due to small number of incidents in Native Hawaiian/Pacific Islander (NH/PI) and American Indian/Alaska Native (AI/AN) populations.

## Leading Causes of TBI in Older Adults

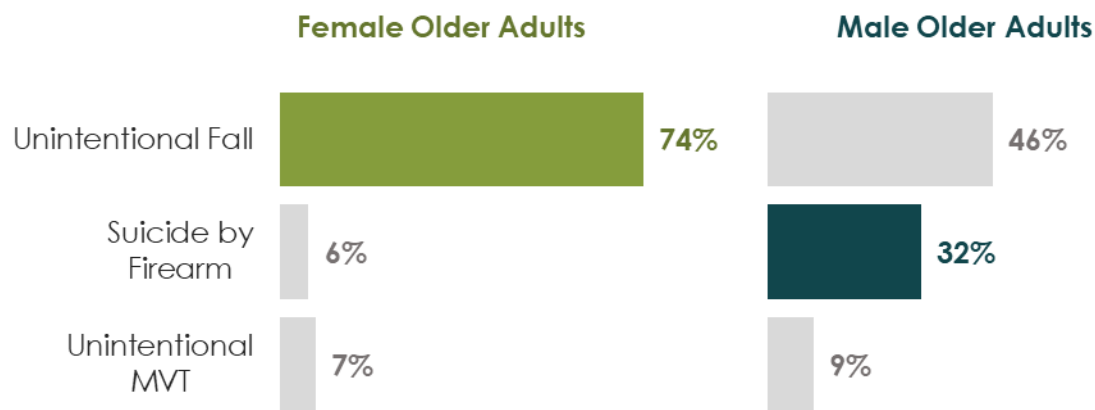
Unintentional falls were the most common cause of TBI deaths, hospitalizations, and ED visits among older Californians in 2022. Additional common causes of death were suicides by firearm and unintentional motor vehicle traffic (MVT) collisions.

Leading Causes of Older Adult TBI	
<b>Deaths</b>	
<b>Causes</b>	<b>Injuries %</b>
1. Unintentional Fall	1,696 (55%)
2. Suicide by Firearm	750 (24%)
3. Unintentional MVT	274 (9%)
.....	
<b>Hospitalizations</b>	
<b>Causes</b>	<b>Injuries %</b>
1. Unintentional Fall	14,479 (74%)
2. Unintentional MVT	2,417 (12%)
3. Unintentional Transportation	676 (3%)
.....	
<b>ED visits</b>	
<b>Causes</b>	<b>Injuries %</b>
1. Unintentional Fall	13,906 (67%)
2. Unintentional Strike	2,315 (11%)
3. Unintentional MVT	2,006 (10%)

Leading Causes of Older Adult TBI Deaths by Race Ethnicity	
<b>White Older Adults</b>	
<b>Causes</b>	<b>Injuries %</b>
1. Unintentional Fall	1,020 (50%)
2. Suicide by Firearm	647 (32%)
3. Unintentional MVT	138 (7%)
.....	
<b>Black Older Adults</b>	
<b>Causes</b>	<b>Injuries %</b>
1. Unintentional Fall	45 (38%)
2. Suicide by Firearm	18 (15%)
3. Unintentional MVT	14 (12%)
.....	
<b>Hispanic Older Adults</b>	
<b>Causes</b>	<b>Injuries %</b>
1. Unintentional Fall	300 (59%)
2. Unintentional MVT	82 (16%)
3. Suicide by Firearm	53 (10%)
.....	
<b>Asian Older Adults</b>	
<b>Causes</b>	<b>Injuries %</b>
1. Unintentional Fall	286 (76%)
2. Unintentional MVT	30 (8%)
3. Suicide by Firearm	17 (5%)
.....	
<b>Multiracial Older Adults</b>	
<b>Causes</b>	<b>Injuries %</b>
1. Unintentional Fall	18 (46%)
2. Suicide by Firearm	11 (28%)
3. Unintentional MVT	*

\*Age-adjusted rates for deaths suppressed due to small number of incidents in Multiracial older adults. Age-adjusted rates for Native Hawaiian/Pacific Islander (NH/PI) and American Indian/Alaska Native (AI/AN) populations were not included due to small number of incidents.

While unintentional falls were the leading cause of death for older adults, falls for older adult females were higher than for males. Suicide by firearm was the second leading cause of TBI-related deaths for all older adults and was higher in older adult males.



## TBI Resources for Public Health Professionals

The Centers for Disease Control and Prevention (CDC) created a comprehensive injury prevention campaign for older adults entitled, “[Still Going Strong](#).” The campaign educates older adults and their caregivers about common risk factors for injuries as we age and empowers older adults to prevent these injuries. It highlights common risk factors for falls and motor vehicle crashes, as well as traumatic brain injuries that happen from falls and motor vehicle crashes. See below for additional public health resources to support prevention efforts for the top three leading causes of TBI deaths in older Californians.

### Falls Prevention

Falls are the number one cause of TBI within the older adult population for ED visits, hospitalizations, and deaths. Falls prevention can be addressed in public health through falls prevention programs and education. At the state level, CDPH’s Injury and Violence Prevention Branch’s Healthy Aging Initiative (HAI) maintains licensing for [Stepping On](#), an evidence-based falls prevention program. There are currently three organizations across the state who are actively providing this program within their communities.

Additionally, HAI continues to provide technical assistance on falls prevention and represents California on the National Council on Aging's State Coalition on Falls Prevention Workgroup. Additional resources for falls prevention:

CDC's National Center for Injury Prevention and Control created the [STEADI \(Stopping Elderly Accidents, Deaths, and Injuries\) Toolkit](#) to help health care providers incorporate fall risk assessment and interventions into their practice.

[National Council on Aging's Falls Prevention Resources](#) provides a list of evidence-based falls prevention programs that are proven to help older adults reduce their risk of falling.

## **Suicide Prevention**

To address the high numbers of suicide by firearm, suicide prevention programs that promote safe environments and address access to firearms could reduce TBIs within the older adult population. Additional public health programming resources include:

The CDC created the [Suicide Prevention Resource for Action \(2022\)](#) which represents a core set of evidence-based strategies to prevent suicide.

The Mental Health Services Oversight and Accountability Commission (MHSOAC), an independent state agency, drafted the [Striving for Zero: California's Strategic Plan for Suicide Prevention 2020-2025](#) to provide a public health approach to suicide prevention for California.

## **Traffic Safety**

To help prevent motor vehicle traffic injuries, public health programs could consider promoting changes that better protect motorists and pedestrians from collisions that can result in TBI injuries and deaths. Additional resources include:

The CDC provides a variety of older adult safe driving resources on their [Injury Prevention and Control Older Adult Drivers](#) webpage. Additionally, the CDC offers [MyMobility Plan](#) which is a planning guide that includes checklists, tips, and resources to help people stay safe and mobile as they age.

Developed by UC Berkeley's Safe Transportation Research and Education Center (SafeTREC), [The Safe Routes for Older Adults Guide](#) provides communities with information on walking and bicycling safety for older adults.

## Methods

### Source Data

Deaths identified from the 2022 CDPH California Comprehensive Master Death File; Hospital and ED visits identified from the 2022 California Department of Health Care Access and Information Patient Discharge Data (PDD) and ED data, respectively.

### TBI Case Definition

TBI Fatalities and proposed TBI non-fatal hospitalizations and ED visit case definition diagnosis codes from Thomas KE, Johnson RL. State injury indicators report: Instructions for preparing 2022 data. Atlanta (GA): Centers for Disease Control and Prevention, National Center for Injury Prevention and Control; 2024.

### Rates per 100,000 Population

Calculated using 2022 population data from California Department of Finance. Demographic Research Unit. Report P-3: Population Projections, California, 2020-2060 (Baseline 2019 Population Projections; Vintage 2023 Release). Sacramento: California. July 2023. Age-adjusted rates calculated using the direct method with the year 2000 U.S. standard population.

This data brief is a product of the California Department of Public Health (CDPH) Injury and Violence Prevention Branch (IVPB). IVPB's mission is to help Californians achieve their full potential by ensuring that everyone has safe places in which to live, work, play, and fully participate in all activities of daily life free of violence or injury.

## Technical Notes

<sup>1</sup> The CDPH California Comprehensive Master Death File used in this analysis reports the gender identity of the decedent. All TBI-related deaths occurring in 2022 among individuals aged 55 and older were reported to identify as either male or female. Zero decedents were reported to identify as nonbinary. The California Department of Health Care Access and Information Patient Discharge Data and ED data used in this analysis reports the biological sex of the patient. In 2022, 5 hospitalizations and 1 ED visit for a TBI-related injury among individuals age 55 and older were reported as “Unknown.” The remainder were reported as either male or female.

Assembly Bill (AB) 1577 requires that the sex reported on a death certificate reflects the decedent's gender identity and AB 439 added nonbinary as an option. AB 959 requires CDPH to collect voluntarily provided information about sexual orientation and gender identity (SOGI). Detailed SOGI data is not systematically collected by all California death investigators, resulting in incomplete data. Data on SOGI status will be reported as it becomes available and in accordance with data de-identification guidelines.

<sup>2</sup> Assembly Bill (AB) 1726 requires CDPH to report expanded categories for specified Asian and Pacific Islander (API) groups on or after July 1, 2022. Expanded API categories were not yet available for these deaths that occurred in 2022. Expanded API groups will be reported as they become available and in accordance with data de-identification guidelines.

For more information, please contact: [HealthyAging@cdph.ca.gov](mailto:HealthyAging@cdph.ca.gov).

December 2024