



# Hawaii

## Special Emphasis Report: Traumatic Brain Injury 2011-2015

### Understanding TBI

Traumatic brain injury (TBI) is a serious public health problem and in the United States. A TBI is caused by a bump, blow, jolt, or penetration to the head that disrupts the normal function of the brain. Each year, traumatic brain injuries contribute to a substantial number of deaths and cases of permanent disability.

### Impact and Magnitude of TBI

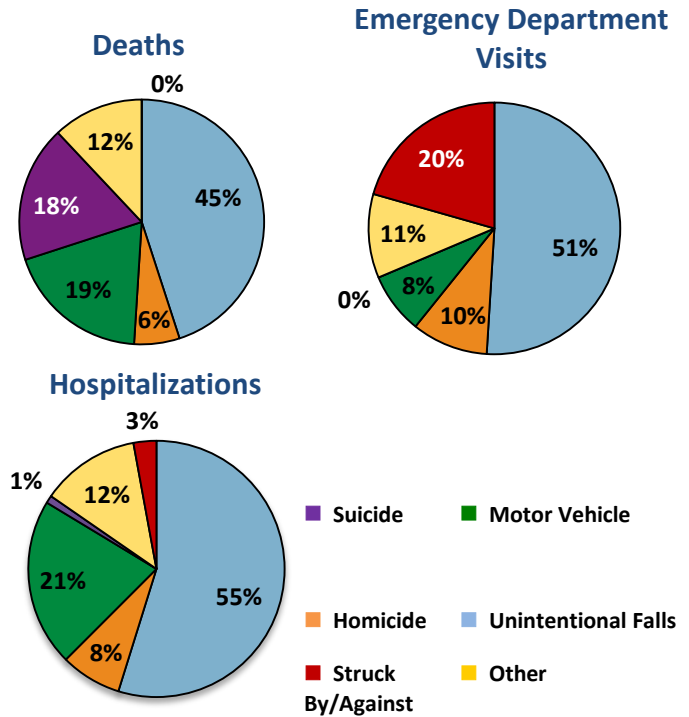
During 2011-2015, an average of 12,635 Hawaii residents sustained a TBI annually. Among those injured, 195 (12.5 per 100,000 residents) died where TBI was reported as a cause of death on the death certificate alone or in combination with other injuries or conditions. Another 1,402 (86.4 per 100,000), were hospitalized with a TBI, and an additional 11,028 (768.5 per 100,000) were treated and released from emergency departments (ED) with a TBI alone or in combination with other injuries or conditions. An unknown number of individuals sustained injuries that were treated in other settings or went untreated.

### Causes of TBI

Unintentional falls was the leading cause of TBI at each level of severity, accounting for more than half of the nonfatal injuries and 45% of deaths that involved a TBI. Most of the fatal falls (81%) and those requiring hospitalization (70%) occurred among senior-aged residents (those 65 years and older), while patients under 15 years of age comprised 23% of the fall-related TBI treated in ED settings. Motor vehicle crashes were common causes of fatalities and hospitalizations, while being unintentionally struck by or against something were a more prevalent cause of TBI-related ED visits. The average duration for hospitalizations was 7 days and resulted in approximately \$50,800 in medical charges (\$70.9 million/year). Each TBI-related ED visit generated almost \$3,200 in medical charges (a total of \$35.1 million/year).

*Data sources: Mortality data is from the death certificate database of the Hawaii Department of Health. Data on ED visits and hospitalizations is from the Hawaii Health Information Corporation (HHIC). Only includes HHIC records with an injury-related principal diagnosis.*

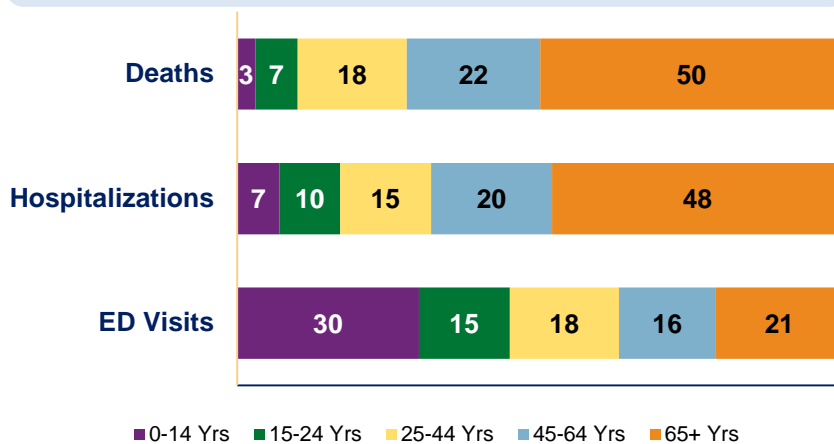
**Figure 1: Percentage of Annual TBI-Related Deaths, Hospitalizations, and Emergency Department Visits, by External Cause, in Hawaii, 2011-2015**



### TBI by Age

About half of the TBI-related fatalities (50%) and hospitalizations (48%) occurred among residents 65 years of age or older. Patient age was more widely distributed among those treated in ED settings, as nearly one-third (30%) were under 15 years of age. Residents aged 75 years and older also had the highest rates of TBI-related deaths and hospitalizations, while those under 5 years of age had the highest rates of TBI-related ED visits.

**Figure 2: Percentage of Annual TBI-Related Deaths, Hospitalizations, and Emergency Department Visits, by Age, in Hawaii, 2011-2015**



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### TBI by Gender

Men were more likely to sustain a traumatic brain injury than women. The magnitude of this difference was greatest among those who died (69% were males) and those who were hospitalized (63% males). Among senior-age residents, however, women comprised a slight majority (52%) of hospitalized patients, and 62% of those treated in EDs. Age-adjusted TBI-related fatality rates were twice as high among male residents (20 deaths/100,000) compared to female residents (9/100,000), and rates of TBI-related hospitalizations were 64% higher among males compared to females (124 vs. 75/100,000, respectively). All-ages rates of TBI-related ED visits were 26% higher among males (874 vs. 693/100,000 for females), but females had significantly higher rates among senior-aged residents.



### TBI Prevention Strategies

CDC's National Center for Injury Prevention and Control (Injury Center) is committed to protecting people against preventable TBI by putting science into action.

- **State Injury Prevention Programs** - The Injury Center's Core Violence and Injury Prevention Program (Core VIPP) funds state health departments to estimate the impact of TBIs and define the groups most affected. [www.cdc.gov/injury](http://www.cdc.gov/injury)
- **Heads Up** – Injury Center campaigns with free tools for health care providers, school administrators, nurses, teachers, coaches, and parents to help them recognize and respond to a TBI. [www.cdc.gov/traumaticbraininjury](http://www.cdc.gov/traumaticbraininjury)
- **Motor Vehicle Safety** – Motor vehicle crashes are a leading cause of death, injury and TBI in the US. CDC's primary prevention focuses on child passenger safety, seat belt use and reducing impaired driving. [www.thecommunityguide.org/mvoi](http://www.thecommunityguide.org/mvoi) [www.cdc.gov/motorvehiclesafety](http://www.cdc.gov/motorvehiclesafety)

### Hawaii TBI Activities

#### Prevention:

With the passage of the 2016 [Senate Bill B2557](#), the concussion education program established under the 2012 [Act 197](#) was expanded to appropriate funds to develop and implement the educational program, administer concussion testing to high school student athletes, and implement a concussion awareness and management program for students participants aged eleven to eighteen. Through the new Core State Violence and Injury Prevention Program (Core SVIPP) grant, the Hawaii State Department of Health (DOH) plans to establish a contract with the University of Hawaii, Department of Education, Kinesiology and Rehabilitation Science (KRS) to improve the current annual concussion education curriculum provided to parents, and coaches to reduce sports-related TBI among high school students in Hawaii.

The DOH also launched the new 2016 "[Every Seat Every Time](#)" radio message campaign, targeting the public's adherence to the universal seatbelt law, in collaboration with the Department of Transportation (DOT) and key stakeholders from the Strategic Highway Safety Plan Occupant Protection Emphasis Area.

In an effort to heighten the public's awareness of preventing falls among older adults, the Fall Prevention Consortium, in coordination with the DOH, EMSIPSB conducted the third annual 2016 Fall Prevention Summer Fall Prevention Campaign. During the 2016 Campaign, a total of 222 PSAs aired for a total of 111 minutes of broadcast time. BRFSS data is used to evaluate the annual Campaigns. Based on the most recent results from 2015 BRFSS data, public exposure to fall prevention messaging has increased: the proportion of BRFSS respondents who had "seen, heard or read any information on prevention falls for the elderly" the past 30 days" increased nearly 13% from 33.2 in April through June to 37.5% in July through September period of the Campaign.

**Surveillance:** TBI related deaths and hospitalizations are tracked on an annual basis by age group and gender as part of the CDC Indicator Report. The causes of TBI were examined in the [Injuries in Hawaii, 2007-2011](#) data book, and updated reports are available from the DOH, EMSIPSB.

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<http://health.hawaii.gov/injuryprevention/>

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