

A traumatic brain injury (TBI) is defined as a blow or jolt to the head, or a penetrating head injury that disrupts the normal functioning of the brain.

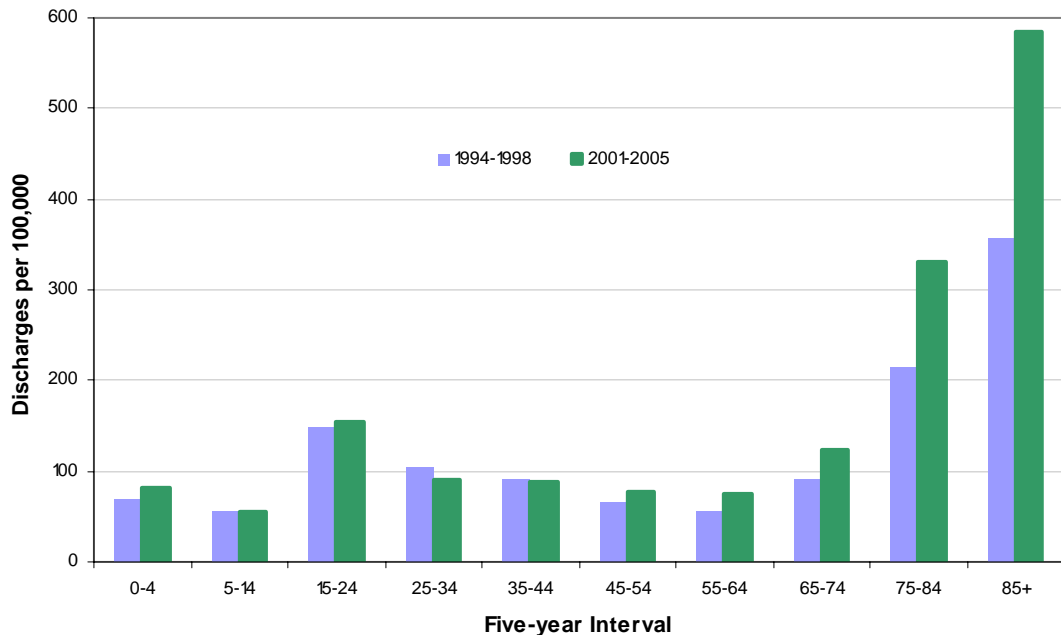
The highest rates of TBI hospitalizations occurred among adults in the 75-84 and 85 and older age groups, at 331 and 585 discharges per 100,000.

Traumatic Brain Injury Hospitalizations in Delaware

According to the CDC, TBIs are the type of injury most likely to cause death or permanent disability. Approximately 1.4 million TBIs occur each year, resulting in 235,000 hospitalizations and 50,000 deaths¹. Those TBIs requiring hospitalization are generally more severe and carry higher risks of serious and long-term complications.

To assess the impact of TBIs in Delaware, hospital discharge data from the state's acute-care hospitals were analyzed. From 1994-1998 to 2001-2005 in Delaware, TBI hospitalization rates increased 14.6 percent, from 96.8 to 110.9 per 100,000 population. The largest increases were in the 75-84 and 85+ age groups.

Figure 1. Five-year TBI Hospital Discharge Rates of Delaware Residents by Age Group Delaware Hospitals, 1994-1998 and 2001-2005



Notes:

Each hospital discharge record has one primary and up to eight secondary diagnoses. TBI-related discharges were identified if any one of the 9 diagnosis fields contained the set of ICD-9-CM (International Classification of Diseases, Ninth Revision, Clinical Modification) codes for TBI, as established by the Center for Disease Control's National Center for Injury Prevention and Control².

Source: Delaware Health Statistics Center

Patient Characteristics in 2001-2005

Males accounted for 63 percent of TBI associated discharges.

Patients 15-24 accounted for the largest single proportion (19 percent) of hospitalizations, followed by those ages 75-84, who accounted for 14 percent of the total hospitalizations.

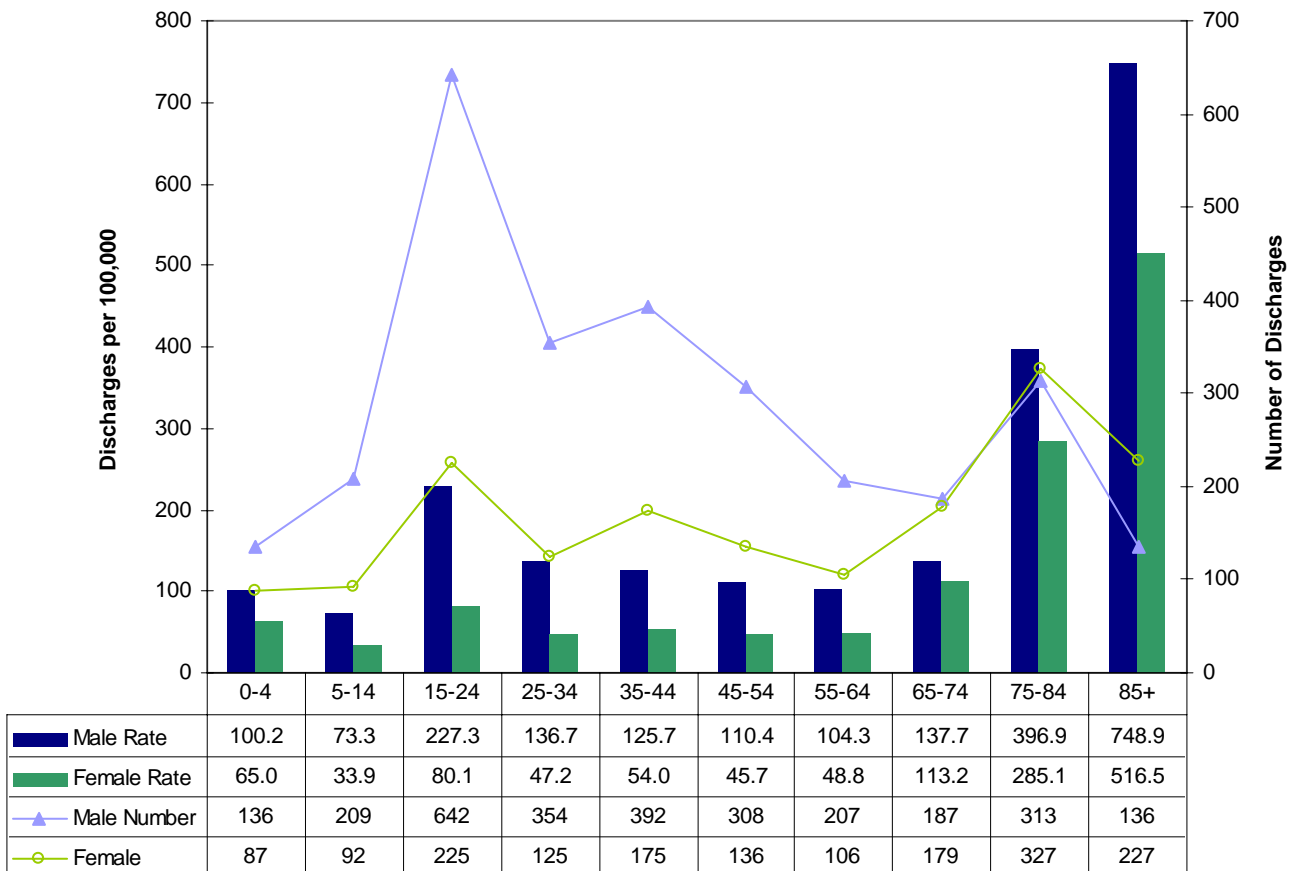
As would be expected of an injury diagnosis, almost all (92.5 percent) of TBI associated hospitalizations were admitted from the emergency department.

TBI associated hospitalizations in Delaware had median charges of \$8777 per stay.

The majority of patients (72 percent, which includes 10 percent who were discharged under the care of a home health services organization) hospitalized for a TBI were discharged home, 7 percent were sent to another hospital, 14 percent went to a long-term care or similar facility, and nearly 6 percent of patients admitted for a TBI died in the hospital, versus 2.6 of all patients.

TBI hospitalization rates for males were twice that of females; the largest differences were in the 15-24 and 25-34 age groups, where the male to female ratios were 2.8 and 2.9.

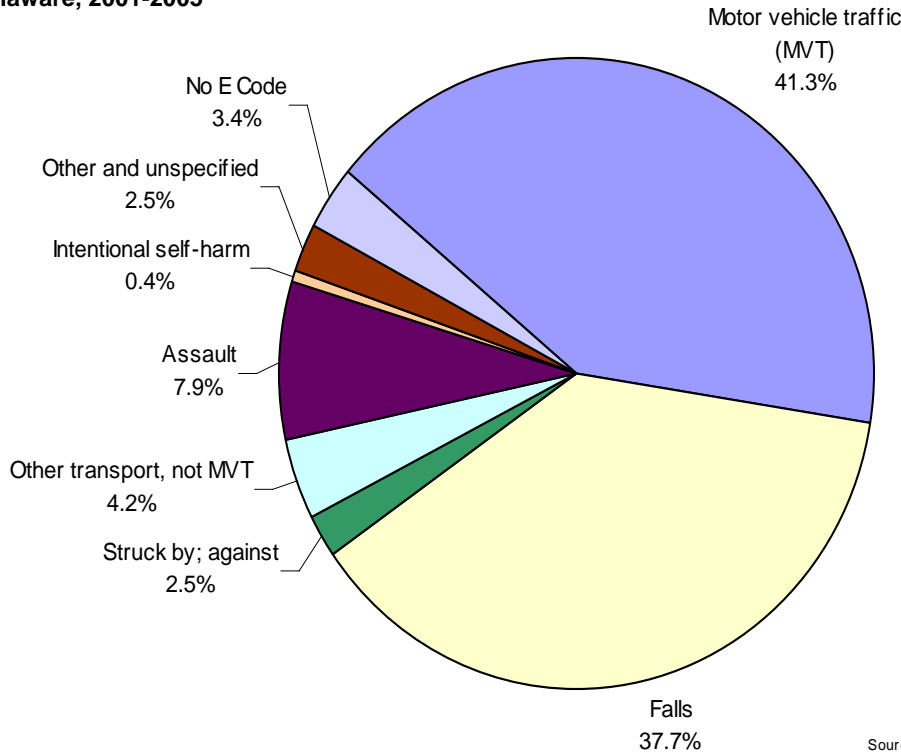
Figure 2. Five-year TBI Hospital Discharge Frequencies and Rates of Delaware Residents by Age Group and Gender, Delaware Hospitals, 2001-2005



Source: Delaware Health Statistics Center

Motor vehicle traffic crashes, falls, and assault were the leading causes of TBIs in 2001-2005. Together, these three external causes comprised 87 percent of all TBIs. Other transport accidents, which include pedal cyclist and pedestrian injuries, accounted for 4.2 percent. Struck by/against injuries, which result from being struck accidentally by a falling object, striking against, or being struck accidentally by an object or person, were responsible for 2.5 percent of all TBIs.

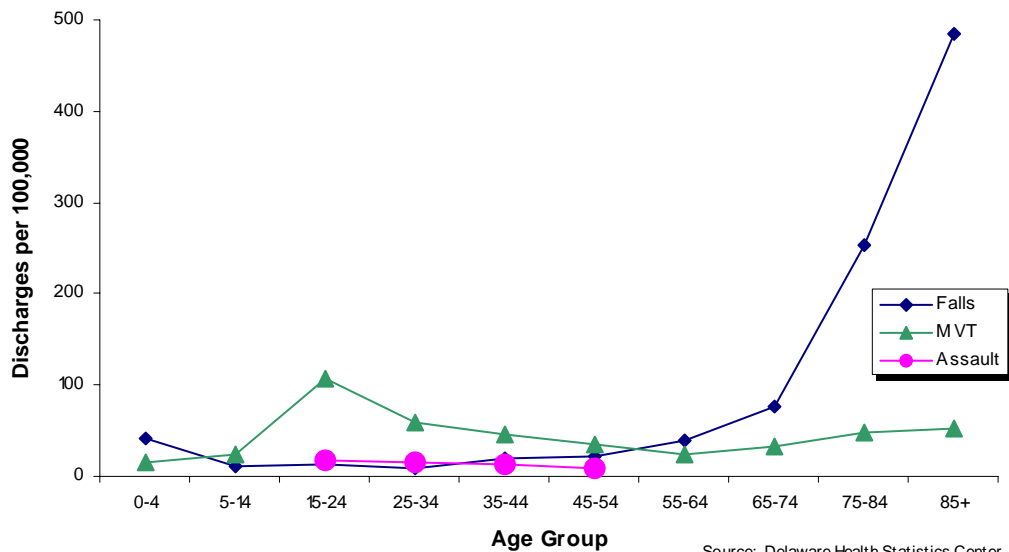
Figure 3. Percent of TBI-Related Hospitalizations by External Cause Delaware, 2001-2005



Source: Delaware Health Statistics Center

Figure 4. Five-year TBI-Related Hospitalization Rates by External Cause and Age Group Delaware Hospitals, 2001-2005

The rate of fall-related TBI was highest among older adults; rates doubled with each increase in age group, beginning with patients 55-64. The 15-24 age group had the highest rates of motor vehicle traffic- and assault-related TBIs.



Source: Delaware Health Statistics Center

References:

1. **Facts about Traumatic Brain Injury.** Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Available from: http://www.cdc.gov/ncipc/tbi/FactSheets/Facts_About_TBI.pdf. Accessed on: 9/3/2008.
2. Injury Surveillance Workgroup. **Consensus Recommendations for Using Hospital Discharge Data for Injury Surveillance.** Marietta (GA): State and Territorial Injury Prevention Directors Association; 2003.
3. Johnson RL, Thomas KE, Sarmiento K. **State Injury Indicators: Instructions for Preparing 2005 Data.** Atlanta (GA): Centers for Disease Control and Prevention, National Center for Injury Prevention and Control; 2007.
4. Langlois JA, Rutland-Brown W, Thomas KE. **Traumatic Brain Injury in the United States: Emergency Department Visits, Hospitalizations, and Deaths.** Centers for Disease Control and Prevention, National Center for Injury Prevention and Control; 2006.
5. Johnson RL, Thomas RG, Thomas EK, Patel N, Sarmiento K. **State Injury Indicators Report, Third Edition—2004 Data.** Atlanta (GA): Centers for Disease Control and Prevention, National Center for Injury Prevention and Control; 2007.



DELAWARE HEALTH AND SOCIAL SERVICES

Division of Public Health