

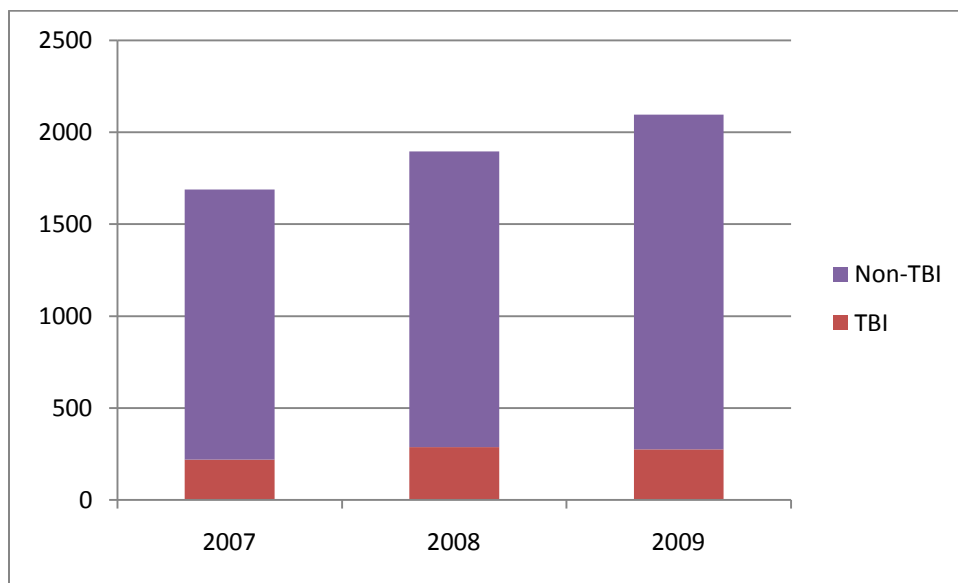
Iowa CODES Fact Sheet¹

Traumatic Brain Injuries Caused by Motor Vehicle Crash (MVC) - 2007-2009

Of all types of injury, traumatic brain injuries (TBI) are among the most likely to cause death or permanent disability. During 2007-2009, approximately 5,631 people in Iowa were hospitalized due to a motor vehicle crash, an average of 1,877 per year. Of them,

- 783 (14 percent of all MVC-related hospitalizations) sustained traumatic brain injury (TBI), an average of 261 cases per year;
- Children and teen riders had a higher proportion of TBI than older riders;
- 9.7 percent of TBI crash victims died at hospitals vs. 1.7 percent of non-TBI crash victims died at hospitals;
- Traumatic brain injury accounts for significant health care costs in Iowa.

MVC Injuries Hospitalized in Iowa Hospitals by Injury Type



CODES linked Data (2007-2009)

Crash data variables were linked to hospital inpatient discharge data to determine risk factors associated with obtaining TBI. Linked cases² (2,310 records) were compared by vehicle type,

1 Fact sheet was produced by the CODES (the Crash Outcome Data Evaluation System) program of the Iowa Department of Public Health funded by The Governor's Traffic Safety Bureau (GTSB).

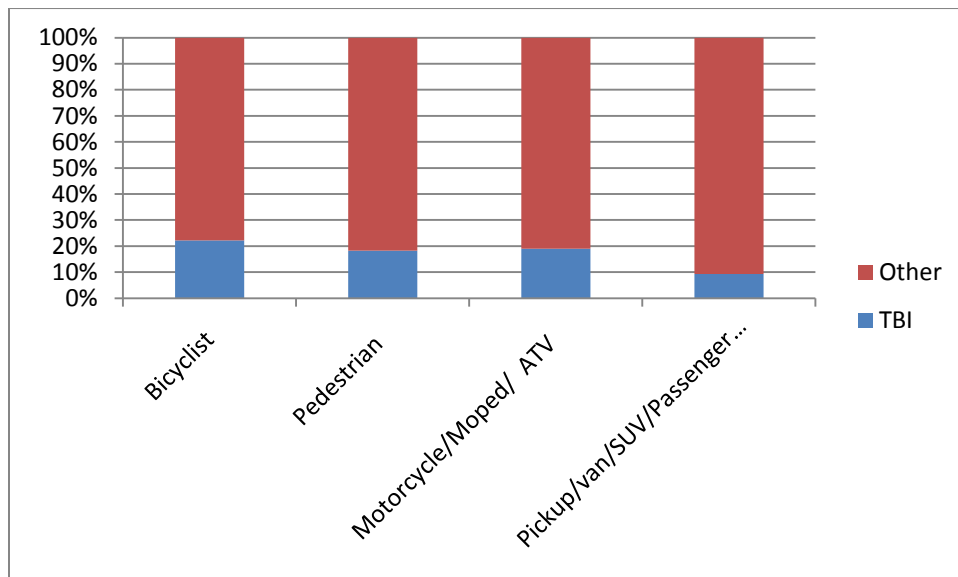
2 Not all injured crash records could be linked to hospital records, or vice versa.
Vehicle Type

restraint use, crash type, impaired drivers, etc. in two groups: TBI (n=336, 14.5%) and other injury (1,974, 85.5%). The odds ratios were calculated for each variable and the following variables were found to be associated with TBI.

- Bicyclists were the most vulnerable group to sustain TBI when involved in MVC compared with other motor vehicle occupants. A bicyclist was 1.5 times more likely to sustain TBI than other motor vehicle riders.
 - ✚ Approximately 27 bicyclists were hospitalized each year in Iowa due to MVC and 22 percent of them were TBI patients. Of those, 50 percent were children ages 5-14.
- Pedestrians were the second most vulnerable group in suffering TBI: A pedestrian was 1.3 times more likely to sustain TBI than that of motor vehicle riders.
 - ✚ Approximately 82 pedestrians were hospitalized each year due to MVC and 18.3 percent of them suffered TBI. Of those, 20 percent were under age 15.
- Motorcyclists were 1.3 times as likely as other motor vehicle riders to sustain TBI, especially for the non-helmeted motorcyclists.

 - ✚ Approximately 308 motorcyclists were hospitalized in Iowa each year during the three years and 19 percent of them sustained TBI.
- 46 percent of MVC hospitalizations were riders of motor vehicles, which include passenger cars, pick-up trucks, vans and SUVs. The TBI rates between pick-up, van/SUV and passenger car were not statistically different.

Injury Type by Vehicle Type (2007-2009)



TBI Patients' Age Distribution by Vehicle Type (2007-2009)

Age Group	Passenger Car /Pickup/ SUV (n=98) %	Motorcycle/Moped/ ATV (n=175) %	Pedestrian (n=45) %	Bicyclist (n=18) %
<5	2.7%	0.6%	2.2%	0.0%
5 – 14	8.0%	1.3%	20.0%	50.0%
15-24	28.8%	17.4%	22.2%	5.6%
25-64	43.5%	74.8%	33.3%	38.9%
>64	17.0%	5.8%	22.2%	5.6%

Protective Device

Not wearing a safety belt or helmet is a significant risk factor in sustaining TBI for MVC victims.

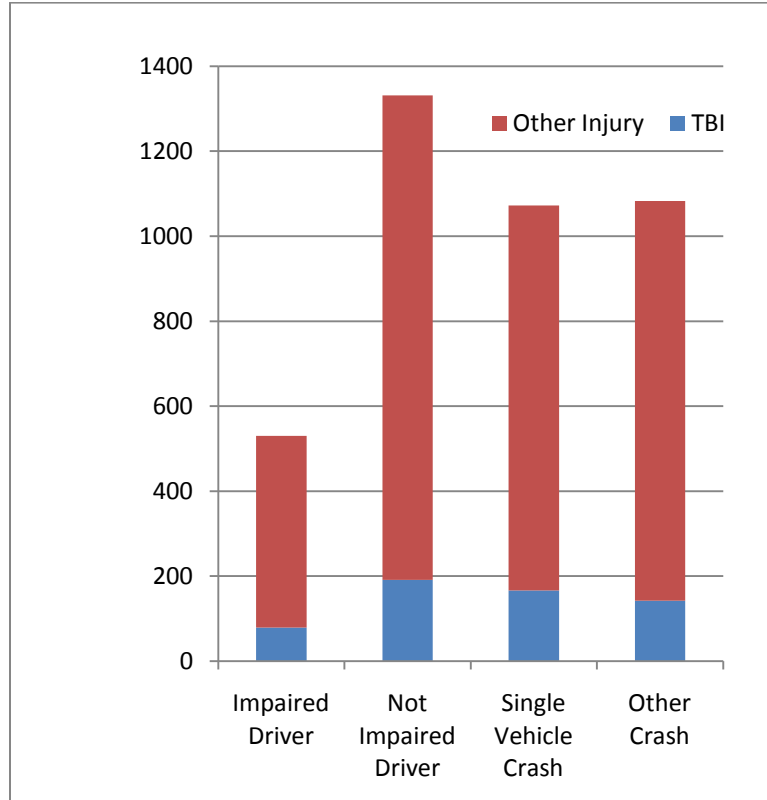
- Unhelmeted motorcycle riders who were hospitalized were 2.2 times more likely to sustain TBI than the helmeted riders. A large number of motorcyclists in Iowa³ were not wearing helmets across the three years; especially young riders aged 25-44. In 2009, 72 percent of hospitalized motorcyclists did not wear helmets.
- Unrestrained pickup/SUV occupants were 1.5 times more likely to sustain TBI than restrained. 27.4 percent of hospitalized pickup/SUV riders did not wear a safety belt.
- Unrestrained passenger car occupants were 1.3 times more likely to suffer TBI than restrained. 17.3 percent of hospitalized passenger car occupants were not wearing safety belts.

Impaired Drivers and Crash Type

- Impaired drivers accounted for 24.1 percent of all hospitalized MVC injuries; they were only slightly more likely to sustain TBI than non-impaired drivers.
- 48.8 percent of hospitalized MVC injuries occurred in single-vehicle crashes in Iowa, and they were 1.1 times more likely to cause TBI than multiple-vehicle crashes.

³ Iowa is one of the only three states which does not have a helmet law requiring motorcyclist to be helmeted.

Injury Type by Impaired Drivers and Crash Type (2007-2009)



Costs of MVC-Related TBI (2007-2009)

- The costs of TBI in medical costs were \$6.5 million annually. Traumatic brain injury makes up about a fifth of the total costs of MVC-related inpatients in Iowa, while their number was about 14.5 percent of all admitted MVC-related patients.
 - includes only hospital charges,
 - Does not include rehabilitation, prescription, medical equipment and related special treatment costs, and other costs such as wage work/human capital losses. These costs are likely to make up the lion's share of TBI costs. TBI injuries are regarded as the highest level of severity of injuries. TBI frequently produces long term disabilities that would not be reflected on hospital discharge records.
- The median medical cost in Iowa for TBI was \$26,462 (2009) vs. \$ 27,095 for non-TBI patients. Again, this disregards the indirect and long-term costs of these highly severe injuries.

Reducing the Economic Burden of MVC-Related Injuries

- Increase safety restraint usage, especially helmet usage among motorcyclists and safety belt usage among pick-up truck occupants, who had the lowest safety restraint usage in Iowa.

- Invest in early prevention strategies targeting teen drivers and riders, their families, schools and communities to reduce MVC-related TBI, especially those that can influence risk-taking behaviors.
- Address and take advantage of evidence-based prevention strategies, such as the Emergency Medical Services for Children program, which implements both child passenger safety and bike safety programs. The Traumatic Brain Injury program at Iowa Department of Public Health should be included as a partner with other traffic injury prevention programs existing in Iowa.

The Iowa Crash Outcome Data Evaluation System (CODES) represents a collaborative effort among the Iowa Department of Public Health, Iowa Department of Transportation and Iowa Governor's Traffic Safety Bureau.

For more information please call (515) 281-7132. Updated in April 2011