

Traumatic Brain Injury: Prevalence, External Causes, and Associated Risk Factors

Overview

Background

Traumatic Brain Injury (TBI) involves a blow or jolt to the head or a penetrating injury that disrupts brain function. TBI may cause death as well as short and long term injuries. It affects thinking, language, learning, emotions, behavior, memory and general independent body functions.¹

1. Programs and policies to reduce traumatic brain injury (TBI) rates also help reduce injury rates overall. TBI is a significantly large portion of all injuries in Washington State.
2. TBI deaths are not randomly distributed geographically. There are five distinct areas in the State where these fatalities are more likely. TBI deaths are mainly due to transport related injuries, firearms, and falls.
3. TBI prevention programs targeting young male residents of the State will likely have the greatest impact as they are in the highest risk group.
4. Death records show that people living in rural areas, Hispanics, and people working in agriculture and construction industries tend to have a slightly higher risk of dying of TBI.

How common is TBI?

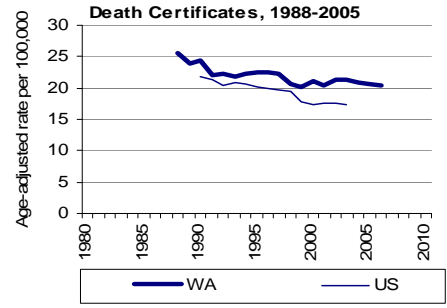
- Every year Washington residents have about 55,000 TBI hospitalizations. This is an age-adjusted rate of 88 (± 1) hospitalizations per 100,000 population during 2002-2006.
- Every year about 1,300 residents die of traumatic brain injuries. This is an age-adjusted rate of 21.2 (±1) deaths per 100,000 population during 2002-2006.
- TBI hospitalizations are about 10% of all injury-related hospitalizations.
- TBI deaths are about 29% of all injury-related fatalities.
- Only a small portion of TBI cases result in hospitalization or death. One national estimate places the proportion at 23% for hospitalizations and 5% for deaths.²
- National estimates indicate that about 2% of the US population live with long-term or lifelong TBI-related disability.^{3, 4}
- If these national estimates hold true in Washington State, there are a total of nearly 123,750 residents with TBI-related disabilities.

Who is at risk for severe TBI?

- The likelihood of death from severe TBI is associated with age, gender, race and ethnicity, and education level. Where one lives – urban or rural – and the industry one works in also appear to make a difference. (Chart 2).
- Adjusting for these factors, the likelihood of TBI death is the highest among the 15-24 and 25-34 age groups.
- Men are twice as likely to die of TBI than women.
- In terms of race and ethnicity, Hispanics are the most prone to TBI deaths.
- TBI deaths occur more often in particular industries such as agriculture and construction.
- The likelihood of TBI death increases as one goes further away from urban core areas. For example, TBI deaths are more likely to occur in rural Ferry County than downtown Seattle.

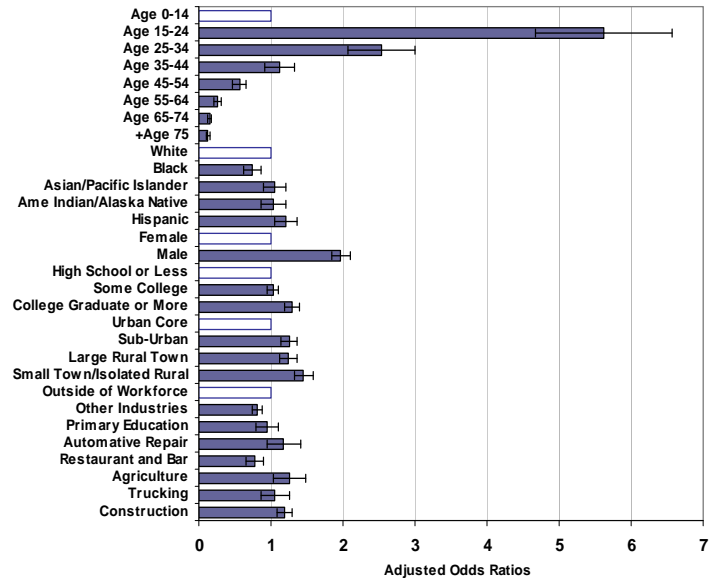
How is Washington State doing nationally?

Chart 1: Traumatic Brain Injury WA State and US



- Despite an overall decrease since 1988, Washington's TBI death rates (Chart 1) are higher than the nation's as a whole. The gap appears to be widening.

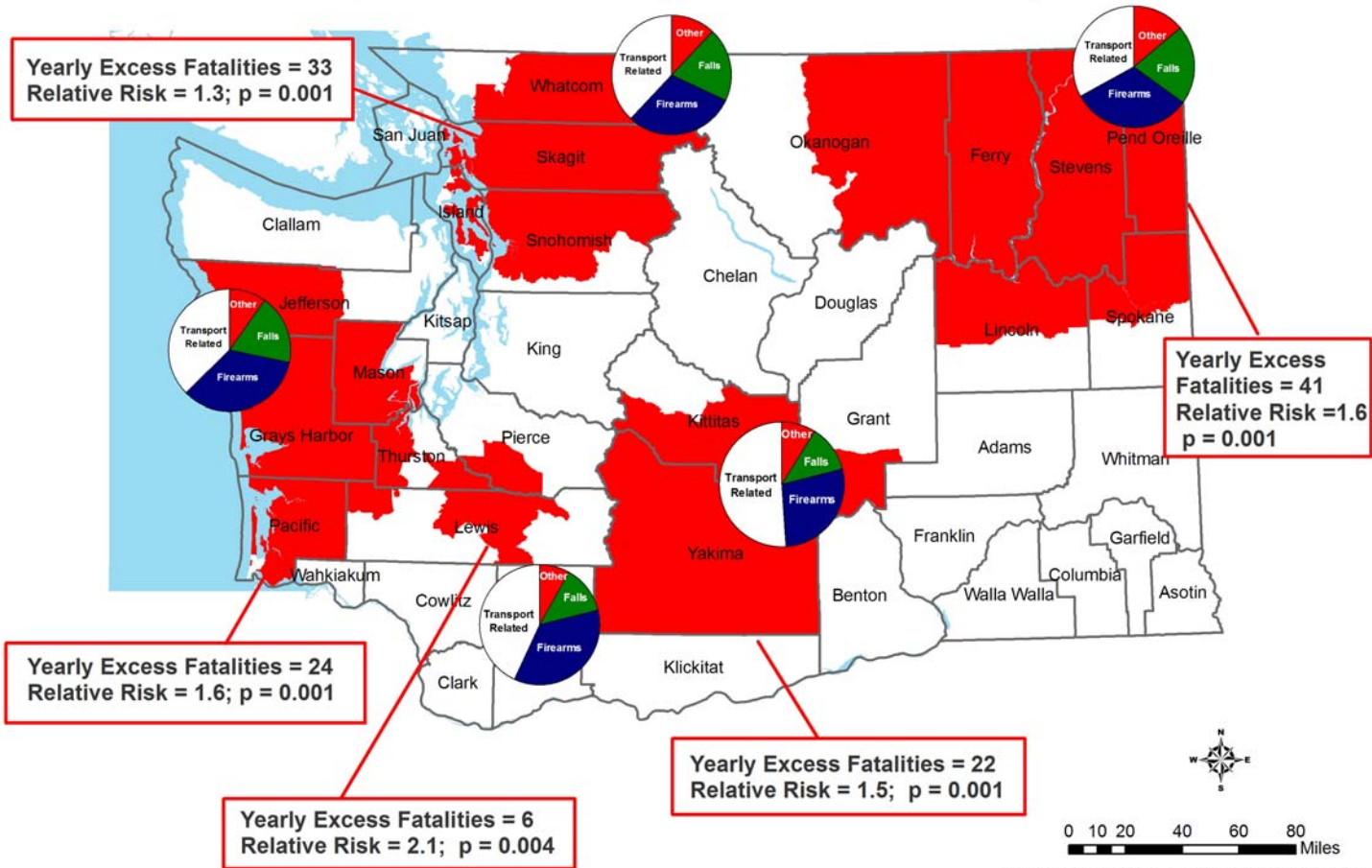
Chart 2: Traumatic Brain Injury Deaths Death Certificates, 2002-2006



Are there areas in the State more at risk for severe TBI?

Clusters Where Traumatic Brain Injury (TBI) Deaths Are More Likely Than in the Rest of Washington State, 2002-2006

(Pie charts show leading causes of fatal TBI events)



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Adjusted for Age and Sex

Data Source: Washington State Department of Health, Center for Health Statistics, Death Certificates

- Traumatic brain injury deaths show clusters in five distinct areas of the state. The highest concentration of yearly TBI deaths is in the northeast. The highest risk of such fatalities is in an area intersecting Thurston, Pierce, and Lewis Counties.
- In each cluster, falls, firearms, and transport-related injuries are the leading causes of TBI deaths. Transport-related injuries involve motor vehicle occupants, pedestrians, bicyclists, motorcyclists, and others.

References

- 1 U.S. Centers for Disease Control and Prevention. Traumatic Brain Injury Prevention. Retrieved January 20, 2009 from <http://www.cdc.gov/ncipc/tbi/TBI.htm>
- 2 Langlois, J. A., Rutland-Brown, W. & Thomas, K. E. (2006). Traumatic Brain Injury in the United States: emergency department visits, hospitalizations, and deaths. U.S. Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Atlanta, GA. Retrieved April 2, 2007 from <http://www.cdc.gov/ncipc/tbi/TBI.htm>
- 3 Thurman, D. J., Alverson, C. A., Dunn, K. A., Guerrero, J. & Sniezek, J. E. (1999). Traumatic Brain Injury in the United States: a public health perspective. *Journal of Head Trauma Rehabilitation*, 14(6), 602-615.
- 4 U.S. Centers for Disease Control and Prevention. Traumatic Brain Injury Prevention. Retrieved January 20, 2009 from <http://www.cdc.gov/ncipc/tbi/Overview.htm>