

INTRODUCTION

Children under 5, individuals between the ages of 15-24, and 65 years and older are at the greatest risk for traumatic brain injury (TBI)^{1,2}.

In addition to the heightened risk of injury, elderly adults have poorer outcomes following TBI when compared to young adults^{3,4,5,6,7}.

Given that the aging population is increasing⁸, there is a need for research focusing on how elderly TBI has changed as the US population shifts.

This study aimed to provide a statewide account of moderate-severe TBI incidence rates in the elderly.

METHODS

Analyzed data from Pennsylvania accredited trauma centers collected in the Pennsylvania Trauma Outcome Study (PTOS) between 1992-2009.

Individuals ages 65-90 with moderate to severe TBI were included in the study, see Table 1.

Of the 31 accredited trauma centers in PA, 22 have been present in the PTOS for every year. We focused our analyses on those 22 medical centers.

Incidence rates were calculated after controlling for US Census Bureau population estimates.

The elderly sample was then divided into subgroups for further analyses: Young Elderly (YE: 65-73), Middle Elderly (ME: 74-82), and Old Elderly group (OE: 83 to 90). See Table 2.

Table 1. Elderly Sample (Ages 65-90)

N	3,895
Age	74.0 (SD=8.4)
Gender	Male: 57%, Female: 43%
Race	White: 86%, Black: 9%, Asian: .8%, Unknown: 4.2%

Table 2. Elderly Age Subgroups

Group	N	Age
Young Elderly	1079	69.1 (SD=2.6)
Middle Elderly	1348	78.0 (SD=2.6)
Old Elderly	799	85.8 (SD=2.2)

Figure 1. Elderly TBI in Pennsylvania

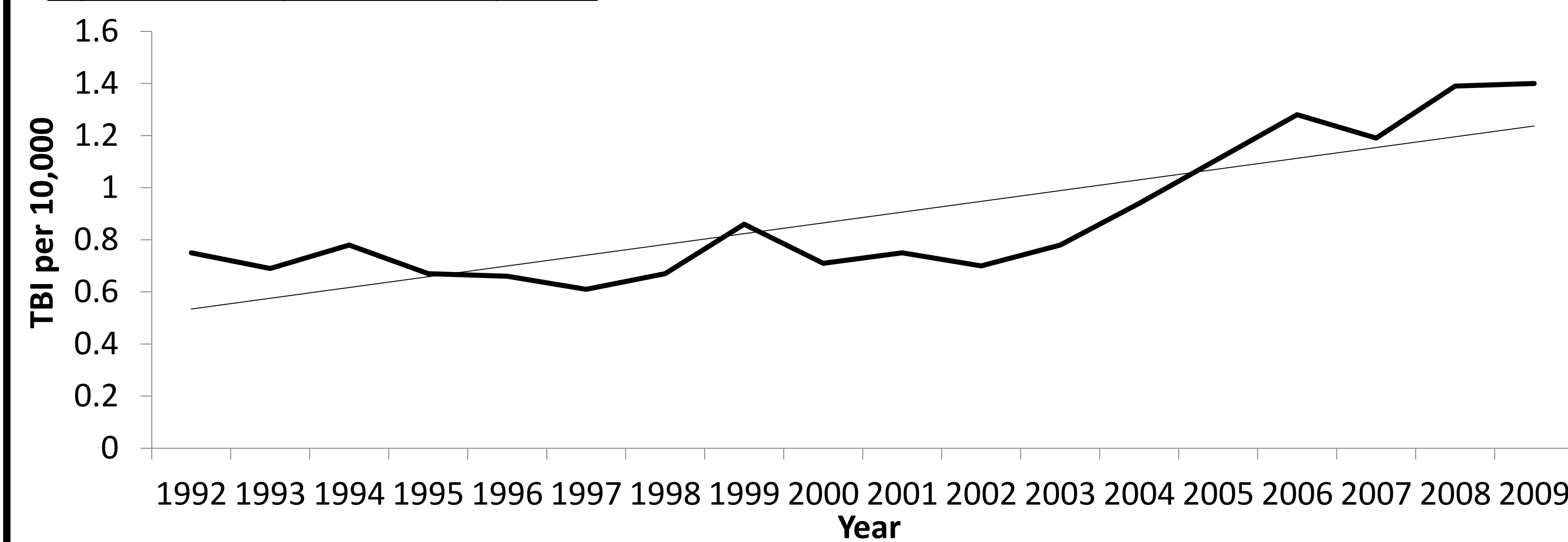


Figure 2. Increase in Elderly Subgroup TBI in Pennsylvania

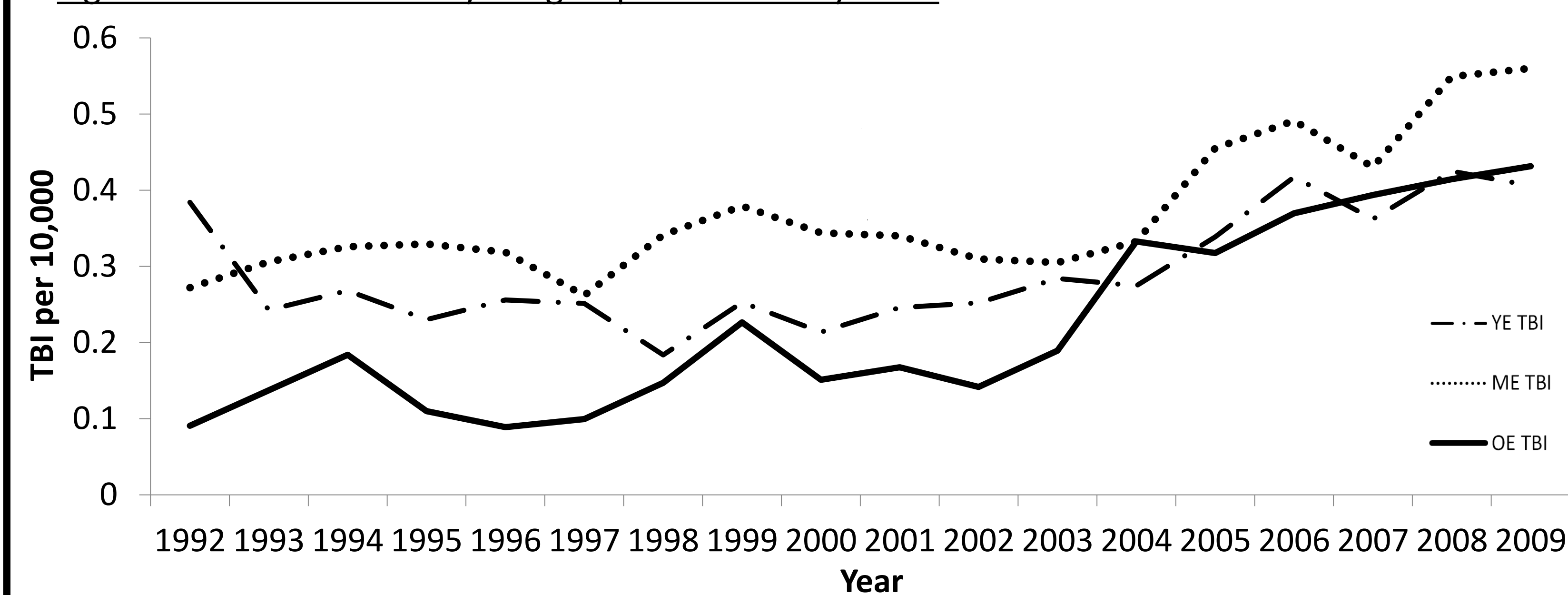
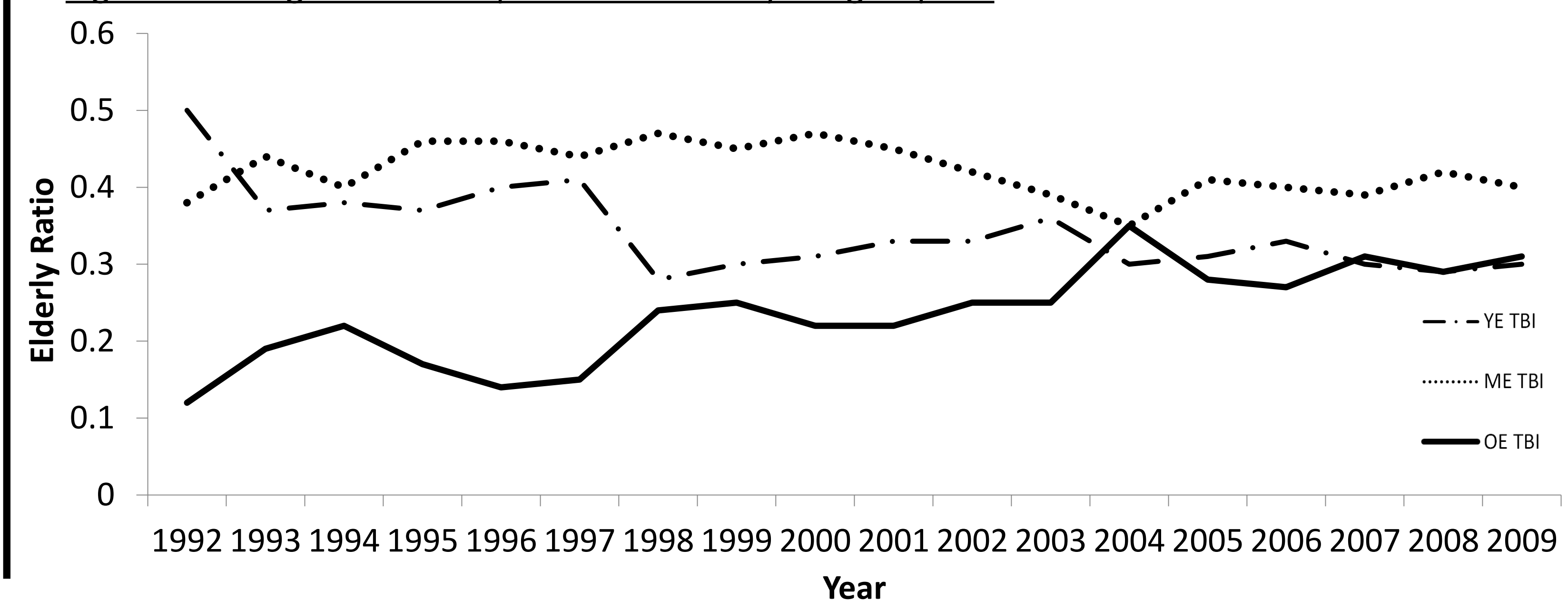


Figure 3. Changes in the Proportions of Elderly Subgroup TBI



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RESULTS

For the trauma centers included, 18,164 moderate to severe brain injuries (fatal and nonfatal) were sustained by adults (ages 18 and above) from 1992-2009.

The elderly sample (ages 65-90) accounted for 21% of the total adult injuries, with falls being the primary mechanism of injury.

Figure 1 shows the incidence rates for elderly TBI, indicating an 87% increase.

Incidence rates for the YE, ME, and OE groups are shown in Figure 2, demonstrating that TBI has increased in all groups.

Incidence rates were then examined by calculating the proportion of elderly TBI (ages 65-90) that each elderly subgroup (YE, ME, and OE) accounted for, see Figure 3.

CONCLUSIONS

Elderly TBI incidence has approximately doubled between 1992-2009 after controlling for PA population growth and trauma center increases.

The OE TBI group made up a greater proportion of the total elderly TBI sample over time. Thus, the OE group could be differentially influencing the rise in elderly TBI.

Concerted efforts from health care professionals are needed to increase awareness regarding the primary risks for injury to help reduce the incidence of TBI in the elderly, especially in the OE age group.

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