

Automobile Crashes and Safety Belt Usage By Driver Vs. Cost

A Comparison Between 1998 and 1999 Tennessee Crash Outcome Data Evaluation System

Injuries resulting from motor vehicle crashes remain a major public health problem. These injuries cause unnecessary burden of increased taxes and insurance premiums. They can be prevented, or reduced, but only if we understand what the severity of these crashes is, and their associated health care costs. Crash data alone do not indicate the injury problem in terms of the medical and financial consequences. By linking crash, vehicle, and behavior characteristics to their specific medical and financial outcomes, we can identify prevention factors.

-National Highway Traffic Safety Administration

The Crash Outcome Data Evaluation System (CODES) evolved from a congressional mandate to report on the benefits of safety belts and motorcycle helmets. NHTSA has funded Alaska, Arizona, Connecticut, Delaware, Georgia, Hawaii, Iowa, Kentucky, Maine, Maryland, Massachusetts, Minnesota, Missouri, Nebraska, Nevada, New Hampshire, New Mexico, New York, North Dakota, Oklahoma, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Utah and Wisconsin to link statewide crash and injury data. Tennessee has been an active participant in this project since 2001.

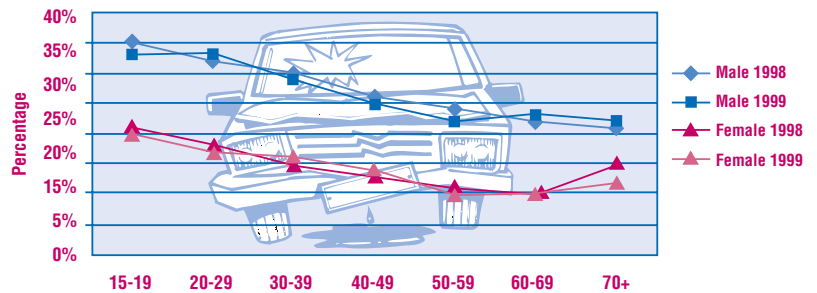
At the current time, the CODES project is able to link crash data from the Department of Safety, and medical data from emergency rooms, hospitals, and trauma from the Department of Health, as well as information from the Department of Transportation. The type of injuries, their severity, and the cost incurred by persons injured in motor vehicle crashes are described and computerized and this statewide data are linked with other related data and evaluated. This linked data identifies the types of injuries and the costs that result from specific driver, vehicle, and crash characteristics.

Vehicle crash data in this newsletter reflects the comparison of driver safety belt usage and hospital costs for 1998 and 1999. The police officer indicates on the crash report whether the drivers were wearing safety belts or not at the crash site.

In Tennessee, safety belt usage was 84 percent among female drivers in crashes both in 1998 and 1999. In contrast, only 71

percent of all male drivers involved in crashes used safety belts both years. This is a significant difference in usage. Between males and females, there was no improvement of usage in either sex. Out of 15,739 female drivers in 1998, 2,490 did not wear safety belts. In 1999, of 14,723 female drivers aged 15 and up,

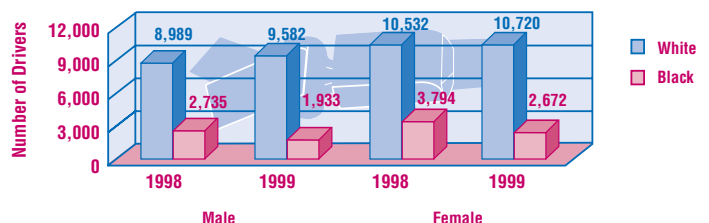
**Tennessee Crash Outcome Data Evaluation System
Percentage of Drivers Not Wearing Safety Belts at Time of Crash by Gender and Age
1998 and 1999**



Source: Tennessee Department of Health, Health Statistics, Tennessee Crash Outcome Data Evaluation System

2,298 did not wear safety belts. Out of 13,094 male drivers in 1998, 3,820 did not wear safety belts. In 1999, 3,702 of 12,855 male drivers aged 15 and up did not wear safety belts.

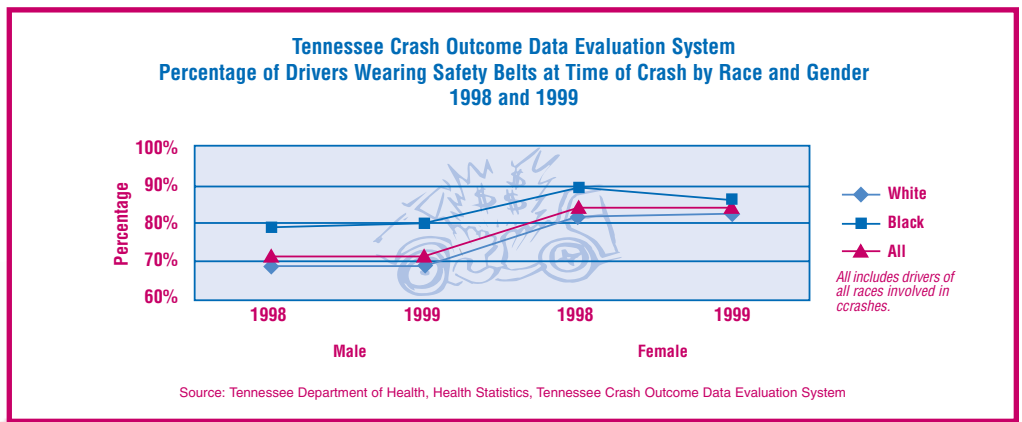
**Tennessee Crash Outcome Data Evaluation System
Distribution of White and Black Drivers by Gender
1998 and 1999**



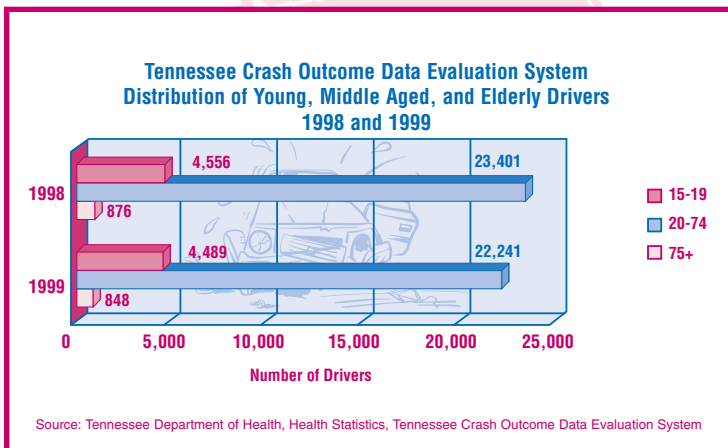
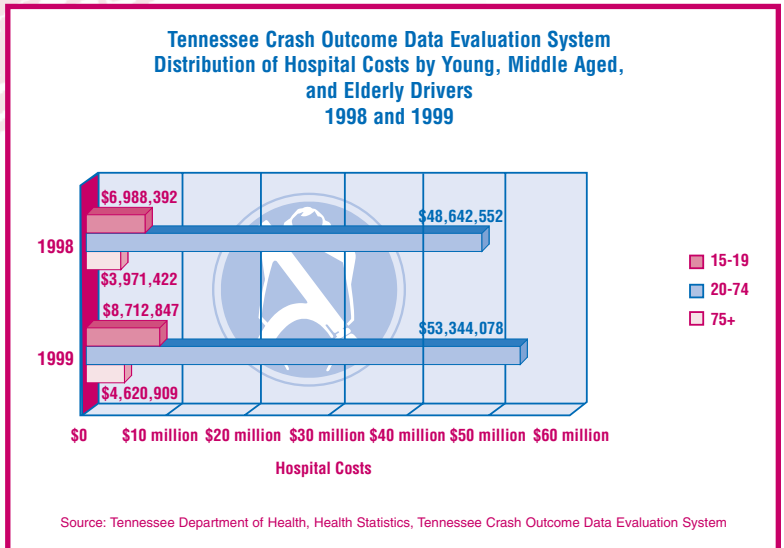
Source: Tennessee Department of Health, Health Statistics, Tennessee Crash Outcome Data Evaluation System

Automobile Crashes Comparing Safety Belt Usage By Driver Vs. Cost By Race And Sex

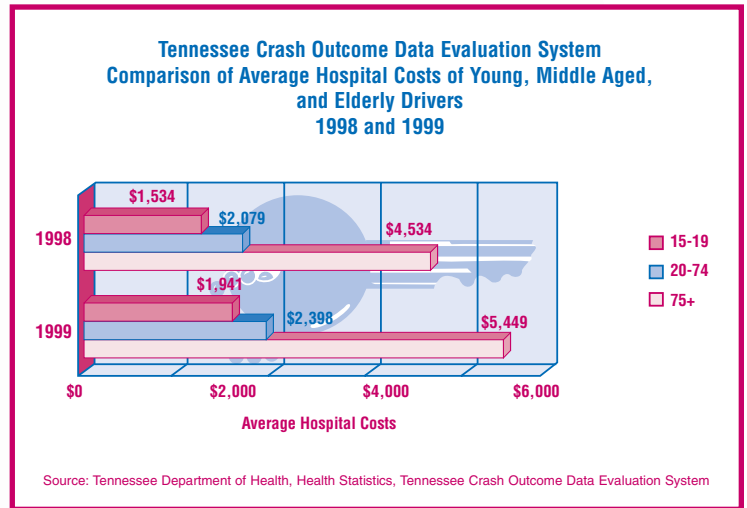
Black female drivers were the group most likely to wear safety belts. Safety belt usage by black female drivers decreased in 1999 by 3 percent from the previous year. Even so, as the graph shows, black drivers wear safety belts more than white drivers, and black males in particular wear safety belts 10 percent more than white males. The percentage of males reported with no safety belt usage was 29 percent compared to 16 percent of females.



The following graphs show the distribution and hospital costs of young, middle aged, and elderly drivers. For this newsletter, the young drivers are classified as 15-19 years of age, the middle aged are 20-74, and the elderly are aged 75 and above. Hospital costs associated with young drivers are not as high, in large part, because they heal faster and have fewer complications. Elderly drivers, on the other hand, have higher hospital costs because they do not heal as fast and more complications are likely to be involved. Of those wearing safety belts, in 1998, elderly female drivers cost an average of 280 percent more than young female drivers, and in 1999, the average rose to be 406 percent higher than for young female drivers. Elderly male drivers cost an average of 179 percent more in 1998, and 129 percent more in 1999 than young male drivers. Without safety belts, elderly female drivers in 1998 cost an average of 147 percent more and in 1999, 151 percent more. For 1998, elderly male drivers cost an average of 242 percent more than young male drivers and in 1999, the increase was 125 percent over young male drivers.



Total hospital costs increased 12 percent for 1999 over 1998 (\$66,677,834 and \$59,602,365, respectively) and average costs increased by 17 percent (\$2,418 and \$2,067, respectively). This is an interesting phenomenon since the number of total accidents decreased. However, the number of drivers increased, indicating that there were more multi-vehicle accidents. The general inflation rate for



1999 was 2.2 percent. The increase, however, in medical care and medical care services was 3.5 percent and 3.4 percent, respectively. Medical costs rose more than the general inflation rate by 59 percent. Keep in mind that the increases in hospital costs per person in 1999 will be partly due to this increase in hospital costs.

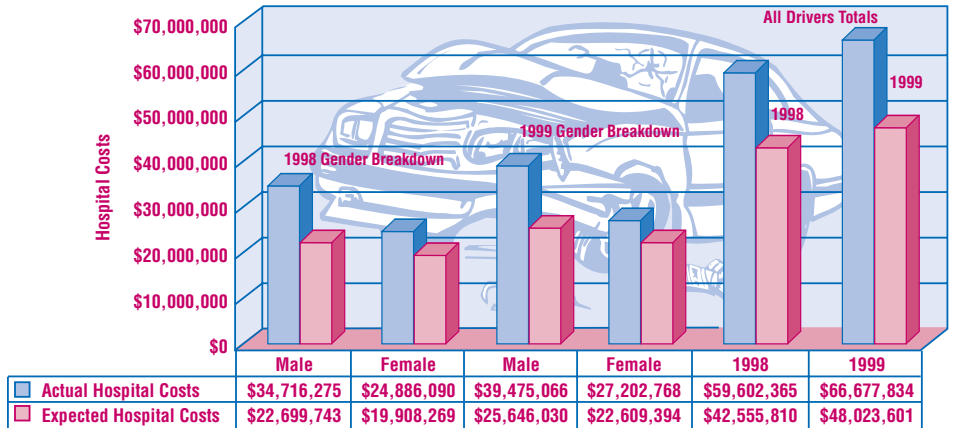
Automobile Crashes Comparing Safety Belt Usage By Driver Vs. Cost By Race And Sex

More than \$17 million in hospital charges could have been saved in 1998 and \$18 million in 1999 if all drivers had worn safety belts.

In 1998, men accounted for 58 cents of every dollar spent on hospital charges resulting from crashes, and women accounted for 42 cents of every dollar compared to 59 cents and 41 cents in 1999.

The total crash related hospital costs in 1998 for all female drivers \$24,886,090. For all male drivers, the total hospital costs \$34,716,275. In 1999, the total hospital costs for all female drivers \$27,202,768. For all male drivers, the total hospital costs \$39,475,066. In female drivers involved in crashes, 1999 saw an increase of 9 percent in total hospital costs (\$27,202,768) and an increase of 17 percent in average hospital costs (\$1,848). In male drivers involved in crashes, 1999 saw an increase of 14 percent in total hospital costs (\$39,475,066) and an increase of 16 percent in average hospital costs (\$3,071).

**Tennessee Crash Outcome Data Evaluation System
Actual Hospital Costs vs. Expected if All Drivers Wore Safety Belts
1998 and 1999**



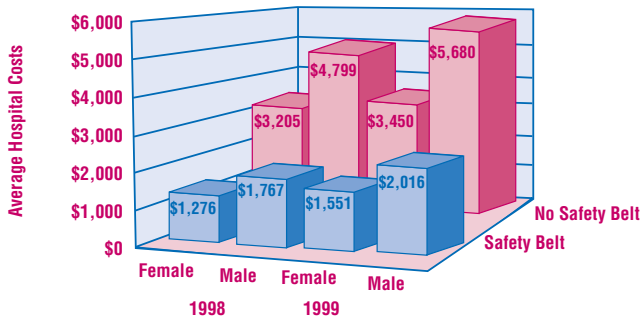
Source: Tennessee Department of Health, Health Statistics, Tennessee Crash Outcome Data Evaluation System

In 1998, the average hospital costs per male driver (\$1,767 when wearing safety belts and \$4,799 when not wearing safety belts) were higher than average hospital costs per female driver (\$1,276

On average, hospital costs per driver increase an incredible 157% when driver is wearing no safety belt.

when wearing safety belts and \$3,205 when not wearing safety belts). In 1999, the average hospital costs per male driver (\$2,016 when wearing safety belts and \$5,680 when not wearing safety belts) were higher than average hospital costs per female driver (\$1,551 when wearing safety belts and \$3,450 when not wearing safety belts). It may be concluded that male drivers were more severely injured than female drivers. In 1999, the additional hospital costs incurred due to male drivers not wearing safety belts exceeded the costs from the previous year by \$1.8 million. This cost alone increased by 15 percent. From year to year, several factors in addition to safety belt usage may contribute to the variation in costs. Some factors could include the number of crashes, number of drivers, and the rise in hospital costs and inflation in that year. For both sexes, the two year total potential savings combined would have been more than \$35 million.

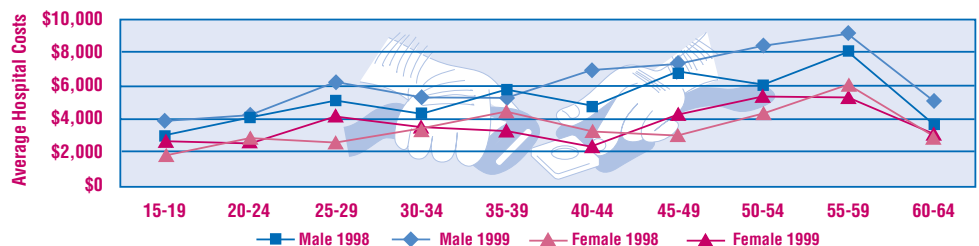
**Tennessee Crash Outcome Data Evaluation System
Average Hospital Costs Based on Safety Belt Usage by Gender
1998 and 1999**



Source: Tennessee Department of Health, Health Statistics, Tennessee Crash Outcome Data Evaluation System

For ages 15-64, the average male driver in 1998 and 1999 suffered more severe injuries when not wearing a safety belt than the average female driver.

**Tennessee Crash Outcome Data Evaluation System
Difference in Average Hospital Costs of Non-Restrained Drivers 15-64 Years by Gender
1998 and 1999**

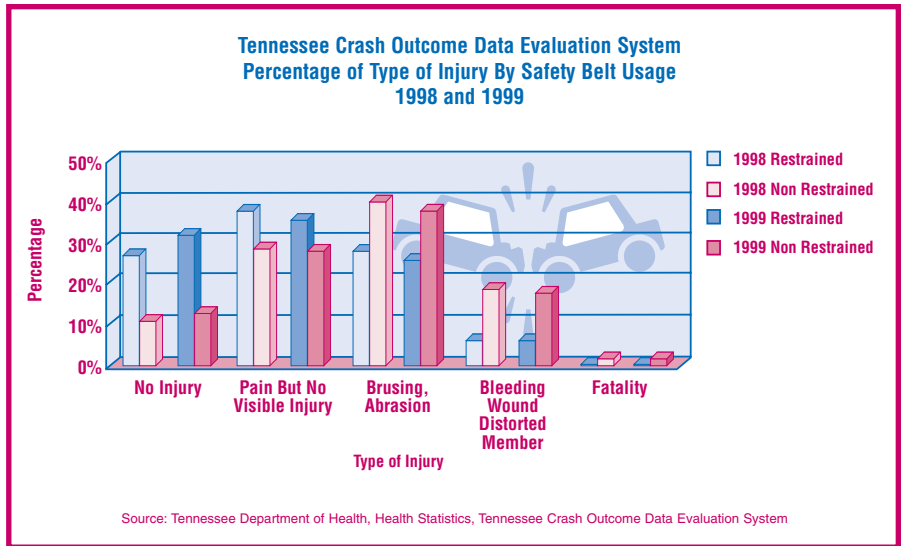


Source: Tennessee Department of Health, Health Statistics, Tennessee Crash Outcome Data Evaluation System

Automobile Crashes Comparing Safety Belt Usage By Driver Vs. Cost By Race And Sex

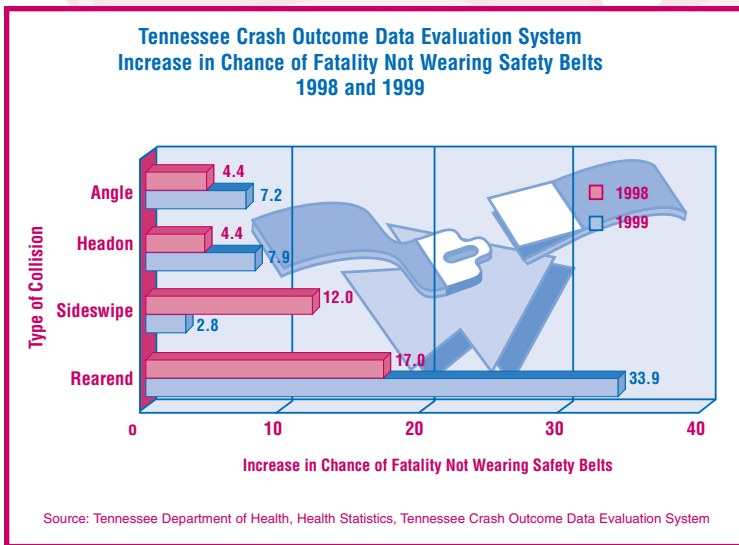
Unbelted drivers only have a 12 percent chance of escaping without pain, injury, or death. On the other hand, belted drivers have about a 30 percent chance. About 94 percent of all belted drivers will walk away with nothing worse than bruises. Only 80 percent of unbelted crash drivers can claim that.

The chances of dying in a crash increase when not wearing safety belts. In 1998, an unbelted driver was 4.4 times more likely to die from an angle collision, 4.4 times more likely to die from a head-on collision, 12 times more likely to die from a sideswipe collision, and 17 times more likely to die from a rear-end collision. In 1999, an unbelted driver was 7.2 times more likely to die from an angle collision, 7.9 times more likely from a head-on collision, 2.8 times more likely from a sideswipe collision, and 33.9 times more likely from a rear-end collision.



	1998		1999	
	Restrained	Non-Restrained	Restrained	Non-Restrained
No Injury	27%	11%	32%	13%
Pain But No Visible Injury	38%	29%	36%	28%
Bruising, Abrasion	28%	40%	26%	38%
Bleeding Wound, Distorted Member	6%	19%	6%	18%
Fatality	0%	2%	0%	2%

Source: Tennessee Department of Health, Health Statistics, Tennessee Crash Outcome Data Evaluation System



Please visit the Tennessee Department of Health Website:
tennessee.gov/health
 A Comparison Between 1998 and 1999 Automobile Crashes and Safety Belt Usage By Driver Vs. Cost was published by the Tennessee Department of Health, Health Statistics, Cordell Hull Building, Nashville, Tennessee 37247-5262
 Marguerite Lewis, Director
 (615) 741-1954

For additional CODES data, contact the Tennessee Department of Health, Health Statistics at the address above or contact the CODES Analyst at (615) 532-8653.