

# Traffic Safety Facts

## Crash•Stats

## Motorcycle Riders in Fatal Crashes

**Background:** Since 1997, motorcycle rider fatalities have increased each year, according to the recently released estimate from the National Highway Traffic Safety Administration's (NHTSA) 2003 Early Assessment. Over the past three years NHTSA's National Center for Statistics and Analysis (NCSA) has released several technical reports and research notes analyzing the increasing trend in motorcycle rider fatalities. This note is a compilation of various crash facts relating to motorcycle rider fatalities from 1997 to 2003. The fatal crash data are from the Fatality Analysis Reporting System (FARS) and exposure data from the Federal Highway Administration (FHWA).

**Trend Data:** Motorcycle rider fatalities, following a longer-term trend, declined each year from 1993 to 1997, reaching a historic low of 2,116 in 1997. Motorcycle rider fatalities increased each year between 1997 and 2003 with a total increase of 1,476 or 70 percent. According to early estimates, 43,220 people died in traffic crashes in 2003, a net change of 405 from 2002 (Table 1). In the same period, motorcycle crash fatalities increased by 348. While other types of crashes have also contributed to the net increase in fatalities, motorcycles, which made up about 2 percent of all registered vehicles and 0.3 percent of

all vehicle miles traveled (VMT), accounted for over 8 percent of the fatalities in 2003 compared to 5 percent in 1997, a significant increase as a component of the annual loss of life in traffic crashes.

### Fatality Rates

■ Fatality rates have increased in recent years (Table 2) which implies that rate of increase in fatalities has outpaced the rate of increase in motorcycle expo-

sure (VMT and registered vehicles).

◆ Fatalities per 100 million VMT are 33.96, up from 20.99 in 1997 (61 percent increase) and per 100,000 registered vehicles 64.82, up from 55.30 in 1997 (17 percent increase).

■ Compared with a passenger car occupant, a motorcycle rider is 26 times more likely to die in a crash, based on vehicle miles traveled.

Table 1  
**Motorcycle Rider Fatalities and Trends in Summary Statistics**

Fatalities	1997	1998	1999	2000	2001	2002	2003*
Total Fatalities	42,013	41,501	41,717	41,945	42,196	42,815	43,220
Change	---	- 512	+ 216	+ 228	+ 251	+ 619	+ 405
Motorcycle Rider Fatalities	2,116	2,294	2,483	2,897	3,197	3,244	3,592
Change	---	+ 178	+ 189	+ 414	+ 300	+ 47	+ 348
Motorcycle Riders (% of Total)	5.0%	5.5%	6.0%	6.9%	7.6%	7.6%	8.3%

Source: FARS 1997-2001 (Final), 2002 (ARF), 2003 (EAF)

Table 2  
**Motorcycle Rider Fatality Rates by Year**

Fatality Rate	1997	1998	1999	2000	2001	2002	2003*
/100 Million VMT	20.99	22.31	23.46	27.67	33.17	33.96	---
/100K Reg. Vehicles	55.30	59.13	59.80	66.66	65.20	64.82	---

Source: FARS 1997-2001 (Final), 2002 (ARF) FHWA

\*2003 exposure data not available.

The following facts present some of the findings from the various analyses completed by NCSA, which explain the characteristics and magnitude of the fatal motorcycle crash problem.

## Motorcycle Helmets

- In 2003, fifty two percent of fatally injured motorcycle riders were unhelmeted.
  - ◆ Two-thirds of unhelmeted fatalities were in states without a universal helmet law.
- NHTSA research shows that, in potentially fatal crashes, helmets have an overall effectiveness of 37 percent in preventing fatalities.
  - ◆ In 2002, helmets saved an estimated 1,005 lives.
  - ◆ At 100 percent use, an additional 579 lives could have been saved in 2002 alone.
- Only 58 percent of motorcyclists were observed to be wearing helmets according to the 2002 National Occupant Protection Use Survey (NOPUS).

## Rider Characteristics

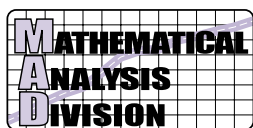
- The largest ten-year age group of rider fatalities is the 20 to 29 year olds.
- However, 46 percent are age 40 or over, a group that has grown steadily from 21 percent in 1993.
- Forty percent of fatally injured operators tested positive for alcohol, and 32 percent had a BAC of 0.08 or higher.
  - ◆ Alcohol use was highest among operators 40 to 49 years old, followed by those 30 to 39 years old.
  - ◆ Of operators 40 to 49 years old, 41 percent had a BAC of 0.08 or higher.
  - ◆ Of operators 30 to 39 years old, 39 percent had a BAC of 0.08 or higher.
- Twenty-five percent of operators involved in fatal crashes had an invalid license.

## Crash Characteristics

- Almost half (about 46 percent) of fatal motorcycle crashes are single vehicle.
- More fatalities occur on rural than urban roads, reversing a

trend that existed from 1990 through 1997.

- A majority of the crashes occur on undivided roadways (70 percent) and roadways with median and no barriers (20 percent).
- Of fatal crashes that occur at night (6:00 PM to 6:00 AM) 58 percent involve alcohol compared to only 18 percent during the day.
  - ◆ Of weekend fatal crashes 45 percent are alcohol related compared with 32 percent of weekday crashes.
- In single vehicle crashes, 52 percent are alcohol related compared with 28 percent of multi-vehicle crashes.
- Larger motorcycles are figuring more prominently in fatal crashes. The percentage of fatally injured riders of motorcycles with engine displacements of 1,001 to 1,500 cc has risen from about 28 percent in 1993 to about 38 percent in 2002.
  - ◆ Mean engine size involved in a fatal crash has steadily increased from 820 cc in 1993 to 999 cc in 2002.
  - ◆ Two-thirds of the riders killed on 1,001-1,500 cc engine size were 40 and over years old.



U.S. Department of Transportation  
**National Highway Traffic Safety Administration**

For questions regarding the data reported in this note, contact Umesh G. Shankar [202-366-5558] or William Deutermann [202-366-5206]. The findings in this note were obtained from the following NCSA publications: DOT HS 809 271, DOT HS 809 360, DOT HS 809 500, DOT HS 809 576, DOT HS 809 609, DOT HS 809 715, and DOT HS 809 728. This crash stats and other general information on highway traffic safety may be accessed by internet users at: <http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/AvailInf.html>