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

TRAFFIC SAFETY FACTS
2011 Data

NHTSA
www.nhtsa.gov

DOT HS 811 765

May 2013

Motorcycles

In 2011, 4,612 motorcyclists were killed in motor vehicle traffic crashes—an increase of 2 percent from the 4,518 motorcyclists killed in 2010. There were 81,000 motorcyclists injured during 2011, a slight decrease from 82,000 in 2010.

The following definitions apply to terms used throughout this fact sheet: the motorcycle rider is the individual operating the motorcycle; the passenger is a person seated on, but not operating, the motorcycle; the motorcyclist is a general term referring to either the rider or passenger. NHTSA publications prior to 2007 may not reflect this terminology. The following vehicles are included in the definition of motorcycle: mopeds, two- or three-wheeled motorcycles, off-road motorcycles, scooters, mini bikes, and pocket bikes. In 2011, two-wheeled motorcycles accounted for 94 percent of these vehicles in fatal crashes.

In 2011, 4,612 motorcyclists were killed—a 2-percent increase from the 4,518 motorcyclists killed in 2010.

Table 1
Motorcyclist Fatalities and Injuries and Fatality and Injury Rates, 2002–2011

Year	Fatalities	Registered Vehicles	Fatality Rate*	Vehicle Miles Traveled (millions)	Fatality Rate**
2002	3,270	5,004,156	65.35	9,552	34.23
2003	3,714	5,370,035	69.16	9,576	38.78
2004	4,028	5,767,934	69.83	10,122	39.79
2005	4,576	6,227,146	73.48	10,454	43.77
2006	4,837	6,678,958	72.42	12,049	40.14
2007	5,174	7,138,476	72.48	21,396	24.18
2008	5,312	7,752,926	68.52	20,811	25.52
2009	4,469	7,929,724	56.36	20,822	21.46
2010	4,518	8,009,503	56.41	18,513	24.40
2011	4,612	8,437,502	54.66	18,500	24.93
Year	**Injured**	**Registered Vehicles**	**Injury Rate***	**Vehicle Miles Traveled (millions)**	**Injury Rate****
2002	65,000	5,004,156	1,293	9,552	677
2003	67,000	5,370,035	1,250	9,576	701
2004	76,000	5,767,934	1,324	10,122	755
2005	87,000	6,227,146	1,402	10,454	835
2006	88,000	6,678,958	1,312	12,049	727
2007	103,000	7,138,476	1,443	21,396	481
2008	96,000	7,752,926	1,238	20,811	461
2009	90,000	7,929,724	1,130	20,822	430
2010	82,000	8,009,503	1,024	18,513	443
2011	81,000	8,437,502	965	18,500	440

*Rate per 100,000 registered vehicles
**Rate per 100 million vehicle miles traveled
Source: Vehicle miles traveled and registered vehicles—Federal Highway Administration
Traffic deaths—Fatality Analysis Reporting System (FARS), NHTSA
Traffic injuries—General Estimates System (GES), NHTSA

Note: In 2011, the Federal Highway Administration implemented an enhanced methodology for estimating registered vehicles and vehicle miles traveled by vehicle type. These revisions were applied to data from 2007 through 2011. In some cases the changes were significant and should be taken into account when comparing registered vehicle counts and/or vehicle miles traveled for 2006 and earlier years with the numbers for 2007 and later years.

Per vehicle mile traveled, motorcyclists were over 30 times more likely than passenger car occupants to die in a traffic crash.

In 2011, motorcyclists accounted for 14 percent of all traffic fatalities, 17 percent of all occupant fatalities, and 4 percent of all occupants injured. Of the 4,612 motorcyclists killed in traffic crashes, 94 percent (4,323) were riders and 6 percent (289) were passengers.

Motorcycles made up 3 percent of all registered vehicles in the United States in 2011 and accounted for only 0.6 percent of all vehicle miles traveled. Per vehicle mile traveled in 2011, motorcyclists were over 30 times more likely than passenger car occupants to die in a motor vehicle traffic crash and 5 times more likely to be injured (Table 2).

Per registered vehicle, the fatality rate for motorcyclists in 2011 was 6 times the fatality rate for passenger car occupants. The injury rate for motorcyclists was about the same as the injury rate for passenger car occupants.

Table 2
Occupant Fatality Rates by Vehicle Type, 2011

Fatality Rate		Motorcycles	Passenger Cars	Light Trucks
2011	Per 100,000 Registered Vehicles	54.66	8.90	8.95
	Per 100 Million Vehicle Miles Traveled	24.93	0.80	0.81

Motorcycle Involvement in Crashes

In 2011, 2, 449 (49%) of all motorcycles involved in fatal crashes collided with another type of motor vehicle in transport. In two-vehicle crashes, 75 percent of the motorcycles involved in motor vehicle traffic crashes collided with the vehicle in the front of the motorcycle. Only 6 percent were struck in the rear.

Motorcycles are more likely to be involved in a fatal collision with a fixed object than are other vehicles. In 2011, 23 percent of the motorcycles involved in fatal crashes collided with fixed objects, compared to 18 percent for passenger cars, 13 percent for light trucks, and 4 percent for large trucks.

In 2011, there were 1,998 two-vehicle fatal crashes involving a motorcycle and another type of vehicle. In 38 percent (757) of these crashes the other vehicle was turning left while the motorcycle was going straight, passing, or overtaking another vehicle. Both vehicles were going straight in 447 crashes (23%).

NHTSA considers a crash to be speeding-related if the driver was charged with a speeding-related offense or if an officer indicated that racing, driving too fast for conditions, or exceeding the posted speed limit was a contributing factor in the crash. In 2011, 35 percent of all motorcycle riders involved in fatal crashes were speeding, compared to 22 percent for passenger car drivers, 19 percent for light-truck drivers, and 8 percent for large-truck drivers.

Table 3

Motorcyclist Fatalities in Motor Vehicle Traffic Crashes, by Age, Year, and Day of the Week, 2002 and 2011

Age	Weekday (6 a.m. Monday to 5:59 p.m. Friday)		Weekend (6 p.m. Friday to 5:59 a.m. Monday)		Total	
	Number	Percent	Number	Percent	Number	Percent
2002						
<30	525	50	516	49	1,043	100
30–39	372	48	406	52	781	100
40+	683	47	759	53	1,444	100
Total	1,581	48	1,682	51	3,270*	100
2011						
<30	654	54	563	46	1,221	100
30–39	411	50	413	50	825	100
40+	1,344	52	1,216	47	2,565	100
Total	2,409	52	2,193	48	4,612*	100

* Totals include unknown age and unknown time of day.

From 2002 to 2011, motorcyclist fatalities increased by 41 percent. Among those increases, the 40 and older age group made up 44 percent of motorcyclists killed in 2002 as compared to 56 percent in 2011. Within this motorcyclist age group, fatalities increased by 78 percent over a 10-year period. Data has also shown in 2011, the average age of motorcycle riders killed in motor vehicle traffic crashes was 42 (Table 3).

Table 4

Motorcycle Rider (Operator) Fatalities by Engine Size (cc), 2002 and 2011

Year	Engine Displacement										Total	
	Up to 500		501–1,000		1,001–1,500		1,501 & Higher		Unknown			
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
2002	198	7	1,308	43	1,135	37	84	3	309	10	3,034	100
2011	258	6	1,712	40	1,303	30	628	15	422	10	4,323	100

Forty-five percent of motorcycle riders were killed in motor vehicle traffic crashes while riding a motorcycle with an engine size of 1001cc or higher in 2011. These riders showed a 60 percent increase in fatalities from 2002 to 2011, while rider fatalities on motorcycles with engine size of 1000cc or less showed an increase of 30 percent during the same time period. (See table 4).

Licensing

Twenty-two percent of motorcycle riders involved in fatal crashes in 2011 were riding their vehicles without a valid motorcycle license at the time of the collision, while only 12 percent of drivers of passenger vehicles in fatal crashes did not have valid licenses. A valid motorcycle license includes a rider having a valid driver license (Non-CDL License Status) with a motorcycle endorsement, or a motorcycle-only license.

Motorcycle riders involved in fatal traffic crashes were 1.4 times more likely than passenger vehicle drivers to have a previous license suspension or revocation (19% and 14%, respectively).

Twenty-two percent of motorcycle riders involved in fatal crashes in 2011 were riding their vehicles without a valid motorcycle license.

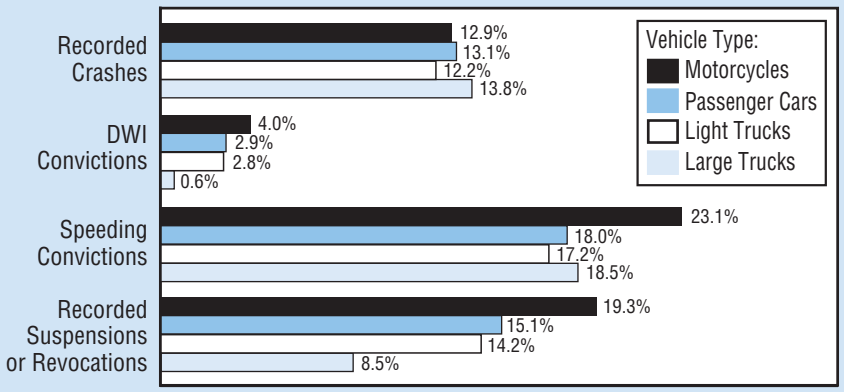
In 2011, a higher percentage of motorcycle riders in fatal crashes had BAC levels of .08 g/dL or higher than any other type of driver.

Previous Driving Records

As shown in Figure 1, motorcycle riders were shown to have the highest percentage of drivers with previous driving convictions (DWI, speeding, and revocation) as compared to other vehicle drivers.

Figure 1

Previous Driving Records of Drivers Involved in Fatal Traffic Crashes, by Type of Vehicle, 2011



Note: Excluding all drivers with unknown previous records.

Forty-two percent of motorcycle riders who died in single-vehicle crashes in 2011 had BAC levels of .08 g/dL or higher.

Alcohol

In fatal crashes in 2011, a higher percentage of motorcycle riders had blood alcohol concentration (BAC) of .08 grams per deciliter (g/dL) or higher than any other type of motor vehicle driver. The percentages for alcohol impaired drivers involved in fatal crashes were 29 percent for motorcycles, 24 percent for passenger cars, 21 percent for light trucks, and 1 percent for large trucks.

In 2011, 1,298 (30%) of all fatally injured motorcycle riders had BAC levels of .08 g/dL or higher. An additional 309 (7 %) had lower alcohol levels (BAC .01 to .07 g/dL) (Table 5).

The percentage with BAC .08 g/dL or above was highest for fatally injured motorcycle riders among the age group 40–44 (38%), followed by the 45–49 and 35–39 age groups at 37 percent each.

Forty-two percent of the 1,997 motorcycle riders who died in single-vehicle crashes in 2011 had BAC levels of .08 g/dL or higher. Sixty-seven percent of those killed in single-vehicle crashes on weekend nights had BACs of .08 g/dL or higher.

Table 5

Motorcycle Riders Killed With a BAC of .08 or Higher, by Crash Type and Time of Day, 2002 and 2011

Crash Type and Time of Day		2002			2011		
		Total Motorcycle Riders Killed	BAC=.08+		Total Motorcycle Riders Killed	BAC=.08+	
			Number	Percent		Number	Percent
All Crashes	Total*	3,034	958	32	4,323	1,298	30
	Weekday	1,482	376	25	2,298	526	23
	Weekend	1,546	579	37	2,015	766	38
Single-Vehicle	Total*	1,437	631	44	1,997	846	42
	Weekday	619	237	38	948	326	34
	Weekend	812	392	48	1,039	515	50
Multi-Vehicle	Total*	1,597	326	20	2,326	452	19
	Weekday	863	140	16	1,350	201	15
	Weekend	734	187	25	976	251	26
Time of Day	Daytime	1,461	191	13	2,231	303	14
	Nighttime	1,546	752	49	2,065	981	47

*Includes riders involved in fatal crashes when time of day was unknown.
Daytime - 6 a.m. to 5:59 p.m.
Nighttime - 6 p.m. to 5:59 a.m.

Motorcycle riders killed in traffic crashes at night were over 3 times more likely to have BAC levels of .08 g/dL or higher than those killed during the day.

Motorcycle riders killed in traffic crashes at night were over 3 times more likely to have BAC levels of .08 g/dL or higher than those killed during the day (47% and 14%, respectively).

The reported helmet use rate for motorcycle riders killed in traffic crashes was 44 percent for those with BAC levels of .08 g/dL or higher as compared to 67 percent for those with no alcohol (BAC =.00 g/dL).

Among drivers and motorcycle riders, drinking and driving has always been a concern. In 2011, 4,323 motorcycle riders were killed in motor vehicle traffic crashes. Thirty percent of these riders were alcohol impaired (BAC of .08 or higher). As seen in Table 6, the proportion of motorcycle riders killed that were alcohol impaired can range from a high of 63 percent (Vermont) to a low of 7 percent (South Dakota).

Table 6

Motorcycle Rider Fatalities in Motor Vehicle Traffic Crashes by State and Rider's BAC, 2011

State	Total Motorcycle Riders Killed	Percent of Motorcycle Riders Killed, by Their BAC	
		BAC=.08+	BAC=.01+
Alabama	95	31	34
Alaska	9	23	36
Arizona	119	24	30
Arkansas	60	27	38
California	386	22	30
Colorado	74	36	44
Connecticut	34	31	36
Delaware	18	50	54
Dist of Columbia	4	25	50
Florida	426	34	41
Georgia	142	16	23
Hawaii	29	35	43
Idaho	17	24	36
Illinois	132	29	36
Indiana	113	43	51
Iowa	32	41	51
Kansas	43	33	35
Kentucky	67	32	35
Louisiana	76	28	35
Maine	14	36	36
Maryland	75	30	41
Massachusetts	36	32	39
Michigan	112	30	34
Minnesota	34	19	26
Mississippi	53	19	25
Missouri	77	40	45
Montana	18	12	18
Nebraska	21	14	20
Nevada	40	26	38
New Hampshire	14	39	41
New Jersey	91	28	34
New Mexico	43	32	35
New York	164	19	29
North Carolina	155	25	29
North Dakota	12	30	30
Ohio	157	40	47
Oklahoma	85	35	42
Oregon	37	27	38
Pennsylvania	189	30	36
Rhode Island	14	44	44
South Carolina	123	41	54
South Dakota	12	7	10
Tennessee	110	26	34
Texas	441	37	45
Utah	27	21	27
Vermont	8	63	75
Virginia	94	21	26
Washington	70	29	36
West Virginia	25	17	30
Wisconsin	81	35	47
Wyoming	15	25	25
National	**4,323**	**30**	**37**
Puerto Rico	49	31	40

Helmet Use and Effectiveness

NHTSA estimates that helmets saved the lives of 1,617 motorcyclists in 2011. If all motorcyclists had worn helmets, an additional 703 lives could have been saved.

Helmets are estimated to be 37-percent effective in preventing fatal injuries to motorcycle riders and 41 percent for motorcycle passengers. In other words, for every 100 motorcycle riders killed in crashes while not wearing a helmet, 37 of them could have been saved had all 100 worn helmets.

According to NHTSA's National Occupant Protection Use Survey, a nationally representative observational survey of motorcycle helmet, seat belt, and child safety seat use, use of DOT-compliant helmets in 2011 stood at 66 percent, an increase from 54 percent in 2010.

Reported helmet use rates for fatally injured motorcyclists in 2011 were 60 percent for riders and 49 percent for passengers, compared with 59 percent and 49 percent, respectively, in 2010.

All motorcycle helmets sold in the United States are required to meet Federal Motor Vehicle Safety Standard 218, the performance standard which establishes the minimum level of protection helmets must afford each user.

In 2011, 20 States, the District of Columbia, and Puerto Rico required helmet use by all motorcyclists. Whereas 27 States only required helmet use by a subset of motorcyclists (typically motorcyclists under age 18) and 3 States (Illinois, Iowa, and New Hampshire) do not require helmet use by motorcyclists of any age.

In States without universal helmet laws, 65 percent of motorcyclist killed in 2011 were not wearing helmets, as compared to 9 percent in States with universal helmet laws.

In 2011, 40 percent of the 4,323 motorcycle riders killed in motor vehicle traffic crashes were not helmeted. Table 7 shows that these percentages can range from as high as 94 percent in Iowa to as low as 0 percent in Washington.

Helmets are estimated to be 37-percent effective in preventing fatal injuries to motorcycle riders.

NHTSA estimates that helmets saved 1,617 motorcyclists' lives in 2011, and that 703 more could have been saved if all motorcyclists had worn helmets.

For more information:

Information on traffic fatalities is available from the National Center for Statistics and Analysis (NCSA), NVS-424, 1200 New Jersey Avenue SE., Washington, DC 20590. NCSA can be contacted at 800-934-8517 or via the following e-mail address: ncsaweb@dot.gov. General information on highway traffic safety can be accessed by Internet users at www.nhtsa.gov/NCSA. To report a safety-related problem or to inquire about motor vehicle safety information, contact the Vehicle Safety Hotline at 888-327-4236.

Other fact sheets available from the *National Center for Statistics and Analysis are Alcohol-Impaired Driving, Bicyclists and Other Cyclists, Children, Large Trucks, Occupant Protection, Older Population, Overview, Passenger Vehicles, Pedestrians, Race and Ethnicity, Rural/Urban Comparisons, School Transportation-Related Crashes, Speeding, State Alcohol Estimates, State Traffic Data*, and *Young Drivers*. Detailed data on motor vehicle traffic crashes are published annually in *Traffic Safety Facts: A Compilation of Motor Vehicle Crash Data from the Fatality Analysis Reporting System and the General Estimates System*. The fact sheets and annual Traffic Safety Facts report can be accessed online at www-nrd.nhtsa.dot.gov/CATS/index.aspx.

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

Table 7

Motorcycle Rider Fatalities, by State and Helmet Use, 2011

State	Total Motorcycle Riders Killed	Helmeted	Not Helmeted
	Number	Percent	Percent
Alabama	95	91	9
Alaska	9	89	11
Arizona	119	45	55
Arkansas	60	41	59
California	386	93	7
Colorado	74	37	63
Connecticut	34	28	72
Delaware	18	18	82
Dist of Columbia	4	50	50
Florida	426	44	56
Georgia	142	90	10
Hawaii	29	21	79
Idaho	17	47	53
Illinois	132	26	74
Indiana	113	17	83
Iowa	32	6	94
Kansas	43	30	70
Kentucky	67	42	58
Louisiana	76	81	19
Maine	14	29	71
Maryland	75	86	14
Massachusetts	36	88	12
Michigan	112	91	9
Minnesota	34	40	60
Mississippi	53	89	11
Missouri	77	87	13
Montana	18	47	53
Nebraska	21	90	10
Nevada	40	88	13
New Hampshire	14	14	86
New Jersey	91	91	9
New Mexico	43	14	86
New York	164	93	7
North Carolina	155	94	6
North Dakota	12	25	75
Ohio	157	29	71
Oklahoma	85	21	79
Oregon	37	89	11
Pennsylvania	189	51	49
Rhode Island	14	36	64
South Carolina	123	21	79
South Dakota	12	25	75
Tennessee	110	85	15
Texas	441	46	54
Utah	27	37	63
Vermont	8	88	13
Virginia	94	99	1
Washington	70	100	0
West Virginia	25	76	24
Wisconsin	81	9	91
Wyoming	15	20	80
National	**4,323**	**60**	**40**
Puerto Rico	49	31	69

Shading indicates states requiring helmet use for all motorcyclists.