

Traffic Safety Facts

2013 Data

May 2015

DOT HS 812 148



Key Findings

- In 2013, 4,668 motorcyclists were killed—a 6-percent decrease from the 4,986 motorcyclists killed in 2012.
- There were an estimated 88,000 motorcyclists injured during 2013, a 5-percent decrease from 93,000 motorcyclist injured in 2012.
- Per vehicle mile traveled, motorcyclist fatalities occurred 26 times more frequently than passenger car occupant fatalities in traffic crashes.
- Twenty-five percent of motorcycle riders involved in fatal crashes in 2013 were riding their vehicles without valid motorcycle licenses.
- In 2013, motorcycle riders involved in fatal crashes were found to have the highest percentage of alcohol-impaired drivers than any other vehicle type (27% for motorcycles, 23% for passenger cars, 21% for light trucks, and 2% for large trucks).
- Forty percent of motorcycle riders who died in single-vehicle crashes in 2013 were alcohol-impaired.
- Motorcycle riders killed in traffic crashes at night were almost four times more frequently alcohol-impaired than those killed during the day.
- NHTSA estimates that helmets saved 1,630 motorcyclists' lives in 2013, and that 715 more could have been saved if all motorcyclists had worn helmets.
- In States without universal helmet laws, 59 percent of motorcyclists killed in 2013 were not wearing helmets, as compared to 8 percent in States with universal helmet laws.



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

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Motorcycles

The following definitions apply to terms used throughout this fact sheet: Motorcycles are defined as mopeds, two- or three-wheeled motorcycles, off-road motorcycles, scooters, mini bikes, and pocket bikes. The motorcycle rider is the person 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. For the purpose of this fact sheet, the term alcohol-impaired defines motorcycle riders with blood alcohol concentrations (BACs) of .08 grams per deciliter (g/dL) or higher.

In this fact sheet, the 2013 motorcycle information is presented in the following order:

- Overview
- Registration
- Crash Involvement
- Speeding
- Age
- Engine Size
- Licensing and Previous Driving Record
- Alcohol
- Helmet Use

Overview

In 2013, there were 4,668 motorcyclists killed in motor vehicle traffic crashes—a decrease of 6 percent from the 4,986 motorcyclists killed in 2012. There were an estimated 88,000 motorcyclists injured during 2013, a 5-percent decrease from 93,000 motorcyclist injured in 2012. In 2013, two-wheeled motorcycles accounted for 93 percent of all motorcycles in fatal crashes.

In 2013, motorcyclists accounted for 14 percent of all traffic fatalities, 4 percent of all people injured, 18 percent of all occupants (driver and passenger) fatalities, and 4 percent of all occupants injured. Of the 4,668 motorcyclists killed in traffic crashes, 94 percent (4,399) were riders and 6 percent (269) were passengers.

Table 1 presents information about motorcyclist killed and injured over the decade from 2004 to 2013. During this time, both the number of injured people and people killed peaked around 2007 and 2008 but have fallen slightly since that time. The number of registered motorcycles and motorcycle vehicle miles traveled are also presented in Table 1, along with the respective fatality and injury rates. When reviewing the registered vehicles and vehicle miles traveled data and rates over the 10-year period, note the change in methodology in collection of the data starting in 2007.

Table 1

Motorcyclists Killed and Injured, and Fatality and Injury Rates, 2004–2013

Year	Killed	Registered Vehicles	Fatality Rate*	Vehicle Miles Traveled (millions)	Fatality Rate**
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	4,630	8,437,502	54.87	18,542	24.97
2012	4,986	8,454,939	58.97	21,385	23.32
2013	4,668	8,404,687	55.54	20,366	22.92
Year	Injured	Registered Vehicles	Injury Rate*	Vehicle Miles Traveled (millions)	Injury Rate**
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	18,542	439
2012	93,000	8,454,939	1,099	21,385	434
2013	88,000	8,404,687	1,052	20,366	434

*Rate per 100,000 registered vehicles **Rate per 100 million vehicle miles traveled

Source: Fatalities—Fatality Analysis Reporting System (FARS) 2013 Annual Report File (ARF). Vehicle miles traveled and registered vehicles—Federal Highway Administration (FHWA), NHTSA traffic injuries—National Automotive Sampling System (NASS) General Estimates System (GES)

Note: In 2011, the FHWA implemented an enhanced methodology for estimating registered vehicles and vehicle miles traveled by vehicle type. These revisions were applied to data after 2006. 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.

Registration

Motorcycles made up 3 percent of all registered vehicles in the United States in 2013 and accounted for only 0.7 percent of all vehicle miles traveled. Per registered vehicle, the fatality rate for motorcyclists in 2013 was 6 times the fatality rate for passenger car occupants, as shown in Table 2. The injury rate for motorcyclists

(1,052) was slightly higher than the injury rate for passenger car occupants (1,005). Per vehicle mile traveled in 2013, motorcyclist fatalities occurred 26 times more frequently than passenger car occupant fatalities in motor vehicle traffic crashes, and motorcyclists were nearly 5 times more likely to be injured as shown in Table 2.

Table 2

Occupant Fatality Rates by Vehicle Type, 2012 and 2013

Fatality Rate		Vehicle Type		
		Motorcycles	Passenger Cars	Light Trucks
2012	Per 100,000 Registered Vehicles	58.97	9.73	7.94
	Per 100 Million Vehicle Miles Traveled	23.32	0.90	0.73
2013	Per 100,000 Registered Vehicles	55.54	9.29	7.60
	Per 100 Million Vehicle Miles Traveled	22.92	0.86	0.71

Source: Fatalities FARS 2013 ARF; Vehicle miles and registered vehicles – Federal Highway Administration.

Crash Involvement

Data shows in 2013 that the most harmful event for 2,448 (51%) of the 4,774 motorcycles involved in fatal crashes was a collision with a motor vehicle in transport.

In two-vehicle crashes, 74 percent of the motorcycles involved in motor vehicle traffic crashes were frontal collisions. Only 6 percent were struck in the rear.

Motorcycles are more frequently involved in fatal collisions with fixed objects than other vehicles. In 2013, 22 percent of the motorcycles involved in fatal crashes collided with fixed objects, compared to 18 percent for passenger cars, 14 percent for light trucks, and 4 percent for large trucks.

In 2013, there were 2,182 two-vehicle fatal crashes involving a motorcycle and another type of vehicle. In 42 percent (922) of these crashes, the other vehicles were turning left while the motorcycles were going straight, passing, or overtaking other vehicles. Both vehicles were going straight in 456 crashes (21%).

Speeding

NHTSA considers a crash to be speeding-related if the driver was charged with a speeding-related offense or if an investigating police

officer indicated that racing, driving too fast for conditions, or exceeding the posted speed limit was a contributing factor in the crash. In 2013, 34 percent of all motorcycle riders involved in fatal crashes were speeding, compared to 21 percent for passenger car drivers, 18 percent for light-truck drivers, and 8 percent for large-truck drivers.

Age

From 2004 to 2013, motorcyclist fatalities increased by 16 percent. The 40-and-older age group made up 46 percent of motorcyclist killed in 2004 as compared to 55 percent of the motorcyclist killed in 2013. Over the 10-year period from 2004–2013, fatalities among the 40-and-older age group increased by 39 percent (from 1,854 to 2,580). In 2004, the average age of motorcycle riders killed in motor vehicle traffic crashes was 38, whereas in 2013 the average age was 42.

Data further shows that in 2004 about 52 percent of motorcyclists were killed during weekends (6 p.m. Friday to 5:59 a.m. Monday). However, in 2013 the majority of motorcyclist were killed during the weekdays (6 a.m. Monday to 5:59 p.m. Friday), as shown in Table 3.

Table 3

Motorcyclist Fatalities in Motor Vehicle Traffic Crashes, by Age, Year, and Day of the Week, 2004 and 2013

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
2004						
<30	679	52%	613	47%	1,298	100%
30–39	382	44%	493	56%	876	100%
40+	869	47%	982	53%	1,854	100%
Total	1,930	48%	2,088	52%	4,028	100%
2013						
<30	679	53%	592	47%	1,273	100%
30–39	431	53%	384	47%	815	100%
40+	1,317	51%	1,256	49%	2,580	100%
Total	2,427	52%	2,232	48%	4,668	100%

Source: FARS 2013 ARF; Total includes unknown age and unknown time of day.

Motorcycle Engine Size

Table 4 presents motorcycle rider fatalities by the engine size of the motorcycle. Twenty-eight percent of motorcycle riders killed in motor vehicle traffic crashes in 2013 were riding motorcycles with engine sizes from 1,001 to 1,500 cubic centimeters (cc), down from 38 percent in 2004. In 2013, 17 percent of rider fatalities were while

riding motorcycles with engine sizes of 1,501cc or higher, up from just 3 percent in 2004.

Overall, the total number of rider fatalities increased 18 percent over the past decade from 3,713 in 2004 to 4,399 in 2013. The number

of rider fatalities on motorcycles with engine sizes of 1,000cc or less showed an increase of 12 percent during this time period. Rider fatalities on motorcycles with engine sizes between 1,001 and

1,500cc decreased by 12 percent (from 1,415 to 1,239), while the number of riders on motorcycles 1,501cc or higher increased by over 500 percent (from 122 to 738).

Table 4

Motorcycle Rider (Operator) Fatalities by Engine Size (cc), 2004 and 2013

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
2004	214	6%	1,583	43%	1,415	38%	122	3%	379	10%	3,713	100%
2013	263	6%	1,758	40%	1,239	28%	738	17%	401	9%	4,399	100%

Source: FARS 2013 ARF

Licensing and Previous Driving Records

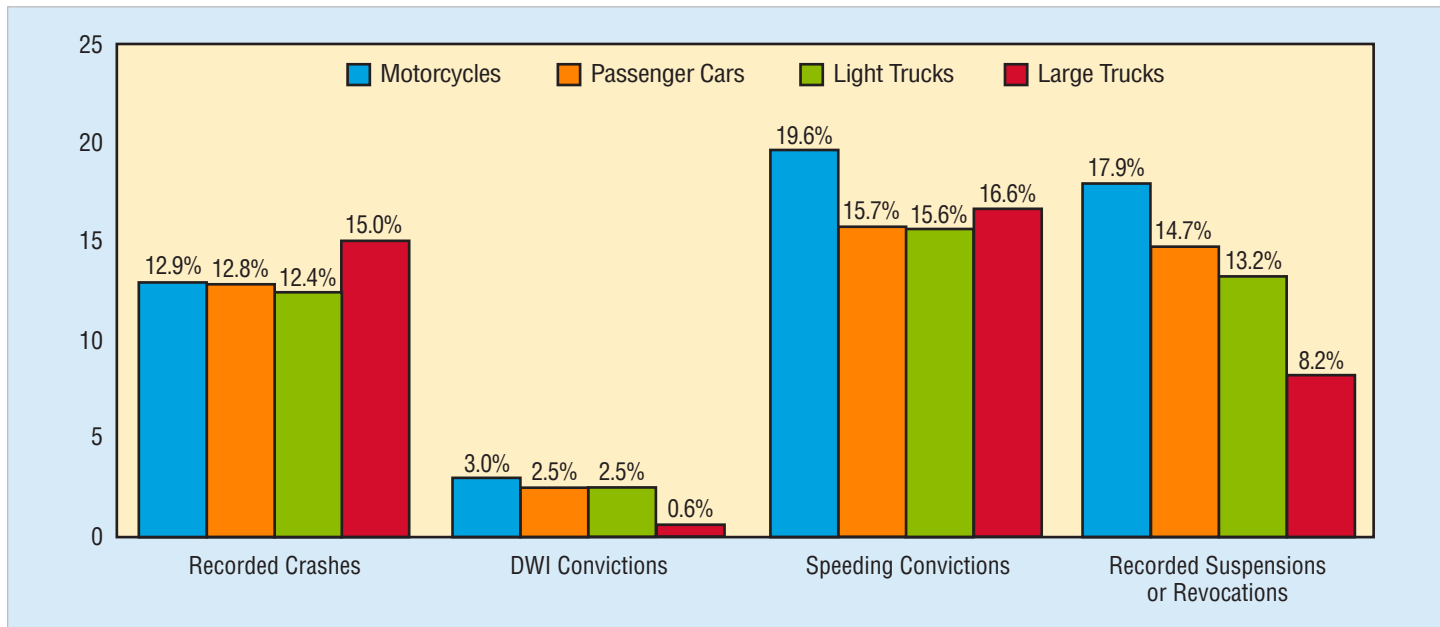
Twenty-five percent of motorcycle riders involved in fatal crashes in 2013 were riding their vehicles without valid motorcycle licenses at the time of the collisions, while only 13 percent of passenger vehicle drivers in fatal crashes did not have valid licenses. A valid motorcycle license includes a rider having a valid driver license (Non-CDL License Status) with a motorcycle endorsement or motorcycle-only license.

Motorcycle riders involved in fatal crashes were 1.2 times more frequently than passenger vehicle drivers to have previous license suspensions or revocations (17.9% and 14.7%, respectively).

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

Figure 1

Previous Driving Records of Drivers Involved in Fatal Traffic Crashes, by Vehicle Type, 2013



Source: 2013 FARS ARF

Note: Excludes all drivers with previous records that were unknown.

Alcohol

Drinking and driving has always been a concern. In 2013, there were 4,399 motorcycle riders killed in motor vehicle traffic crashes. Of those, 1,232 (28%) were alcohol-impaired (BAC of .08 or higher). In addition, there were 305 (7%) fatally injured motorcycle riders who had lower alcohol levels (BACs of .01 to .07 g/dL).

In fatal crashes in 2013, motorcycle riders involved (killed and survived) in fatal crashes had higher percentages of alcohol impairment than any other type of motor vehicle driver (27% for

motorcycle riders, 23% for passenger car drivers, 21% for light-truck drivers, and 2% for drivers of large trucks).

The highest percentages of fatally injured, alcohol-impaired motorcycle riders were in the 40-to-44 and 45-to-49 age groups (40%), followed by the 35-to-39 age group (33%).

As shown in Table 5, 40 percent of the 1,897 motorcycle riders who died in single-vehicle crashes in 2013 were alcohol impaired. Sixty-three percent of those killed in single-vehicle crashes on weekend nights were alcohol impaired.

Table 5

Motorcycle Riders Killed With BACs of .08 or Higher, by Crash Type and Day of the Week, 2004 and 2013

Crash Type and Day of the Week		2004			2013		
		Total Motorcycle Riders Killed	With BAC=.08+		Total Motorcycle Riders Killed	With BAC=.08+	
			Number	Percent		Number	Percent
Total	Total	3,713	1,024	28%	4,399	1,232	28%
	Weekday	1,790	396	22%	2,301	508	22%
	Weekend	1,913	623	33%	2,090	720	34%
Single-Vehicle	Total	1,678	673	40%	1,897	752	40%
	Weekday	731	249	34%	893	302	34%
	Weekend	937	420	45%	998	448	45%
Multiple-Vehicle	Total	2,035	350	17%	2,502	479	19%
	Weekday	1,059	147	14%	1,408	206	15%
	Weekend	976	203	21%	1,092	272	25%

Source: FARS 2013 ARF

Motorcycle riders killed in traffic crashes at night were almost 4 times more frequently found to be alcohol-impaired than those killed during the day (46% and 12%, respectively).

The reported helmet use rate for alcohol-impaired motorcycle riders killed in traffic crashes was 46 percent as compared to 66 percent for those with no alcohol (BAC=.00 g/dL).

Table 6 presents the percentage of motorcycle riders killed who were alcohol-impaired, by States. The percentage ranged from a high of 47 percent (Rhode Island) to a low of zero percent (Vermont).

Table 6
Motorcycle Rider Fatalities in Motor Vehicle Traffic Crashes by State and Rider's BAC, 2013

State	Total Motorcycle Riders Killed	Percentage of Motorcycle Riders Killed by Their BAC	
		BAC=.08+	BAC=.01+
Alabama	76	29%	37%
Alaska	9	14%	17%
Arizona	143	20%	26%
Arkansas	55	27%	36%
California	435	24%	31%
Colorado	80	17%	31%
Connecticut	52	26%	33%
Delaware	17	26%	34%
District of Columbia	3	33%	33%
Florida	467	29%	34%
Georgia	113	27%	30%
Hawaii	29	41%	50%
Idaho	23	17%	23%
Illinois	136	29%	39%
Indiana	100	25%	34%
Iowa	32	35%	45%
Kansas	35	32%	37%
Kentucky	81	29%	35%
Louisiana	85	25%	28%
Maine	13	28%	39%
Maryland	56	27%	37%
Massachusetts	39	44%	51%
Michigan	129	27%	33%
Minnesota	54	29%	33%
Mississippi	34	43%	46%
Missouri	71	30%	35%
Montana	30	35%	38%
Nebraska	14	22%	23%
Nevada	55	31%	35%
New Hampshire	24	34%	42%
New Jersey	55	24%	33%
New Mexico	38	41%	46%
New York	161	22%	30%
North Carolina	184	27%	32%
North Dakota	9	22%	22%
Ohio	124	27%	34%
Oklahoma	84	25%	35%
Oregon	33	22%	31%
Pennsylvania	173	24%	33%
Rhode Island	11	47%	47%
South Carolina	139	34%	41%
South Dakota	20	27%	37%
Tennessee	132	20%	26%
Texas	457	37%	45%
Utah	29	11%	13%
Vermont	5	0%	20%
Virginia	73	28%	36%
Washington	69	31%	36%
West Virginia	24	44%	53%
Wisconsin	81	31%	40%
Wyoming	8	14%	14%
U.S. Total	4,399	28%	35%
Puerto Rico	40	41%	47%

Source: FARS 2013 ARF

Helmet Use and Effectiveness

NHTSA estimates that helmets saved the lives of 1,630 motorcyclists in 2013. If all motorcyclists had worn helmets, an additional 715 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 helmets, 37 of them could have been saved had all 100 worn helmets.

According to results from the National Occupant Protection Use Survey (NOPUS), the overall rate of DOT-compliant motorcycle helmet use in the United States was 60 percent in 2013. Helmet use continued to be significantly higher in States that required all motorcyclists to be helmeted than in other States (see Figure 3 in *Motorcycle Helmet Use in 2013—Overall Results*, DOT HS 812 010, available at www-nrd.nhtsa.dot.gov/Pubs/812010.pdf).

Reported helmet use rates for fatally injured motorcyclists in 2013 were 60 percent for riders and 49 percent for passengers, compared with 59 percent and 48 percent, respectively, in 2012. Conversely, 41 percent of the 4,668 motorcyclists killed in motor vehicle traffic

crashes were not helmeted. Table 7 shows that these percentages ranged from a high of 93 percent (Maine) to a low of 0 percent (District of Columbia).

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 for helmets designed for use by motorcyclists.

In 2013, 19 States, the District of Columbia, and Puerto Rico that required helmet use by all motorcyclists.

In 28 States, helmet use was required for only a subset of motorcyclists (typically, motorcyclists under age 18), and 3 States (Illinois, Iowa, and New Hampshire) did not require helmet use for motorcyclists of any age. The most current information on helmet use laws is available on the GHSA Web site at www.ghsa.org/html/stateinfo/laws/helmet_laws.html.

In States without universal helmet laws, 59 percent of motorcyclists killed in 2013 were not wearing helmets, as compared to 8 percent in States with universal helmet laws.

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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 by e-mail at ncsaweb@dot.gov. General information on highway traffic safety can be found 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*, *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 found at www-nrd.nhtsa.dot.gov/CATS/index.aspx.



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Table 7
Motorcyclist Fatalities, by State and Helmet Use, 2013

State	Helmet Use						Total		Percent "Known" Helmeted	Percent "Known" Unhelmeted
	Helmeted		Unhelmeted		Unknown					
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Percent	Percent
Alabama	78	98%	1	1%	1	1%	80	100%	99%	1%
Alaska	7	78%	2	22%	0	0%	9	100%	78%	22%
Arizona	62	41%	83	55%	6	4%	151	100%	43%	57%
Arkansas	19	31%	39	64%	3	5%	61	100%	33%	67%
California	409	90%	34	8%	10	2%	453	100%	92%	8%
Colorado	31	36%	55	63%	1	1%	87	100%	36%	64%
Connecticut	22	42%	21	40%	10	19%	53	100%	51%	49%
Delaware	13	65%	7	35%	0	0%	20	100%	65%	35%
District of Columbia	3	100%	0	0%	0	0%	3	100%	100%	0%
Florida	238	49%	237	49%	10	2%	485	100%	50%	50%
Georgia	107	92%	5	4%	4	3%	116	100%	96%	4%
Hawaii	10	34%	19	66%	0	0%	29	100%	34%	66%
Idaho	12	48%	12	48%	1	4%	25	100%	50%	50%
Illinois	35	23%	113	74%	4	3%	152	100%	24%	76%
Indiana	18	16%	82	72%	14	12%	114	100%	18%	82%
Iowa	10	24%	31	76%	0	0%	41	100%	24%	76%
Kansas	15	43%	18	51%	2	6%	35	100%	45%	55%
Kentucky	28	32%	59	68%	0	0%	87	100%	32%	68%
Louisiana	66	77%	18	21%	2	2%	86	100%	79%	21%
Maine	1	7%	13	93%	0	0%	14	100%	7%	93%
Maryland	56	90%	5	8%	1	2%	62	100%	92%	8%
Massachusetts	31	78%	5	13%	4	10%	40	100%	86%	14%
Michigan	64	46%	67	49%	7	5%	138	100%	49%	51%
Minnesota	16	26%	34	56%	11	18%	61	100%	32%	68%
Mississippi	36	92%	3	8%	0	0%	39	100%	92%	8%
Missouri	66	89%	7	9%	1	1%	74	100%	90%	10%
Montana	12	34%	22	63%	1	3%	35	100%	35%	65%
Nebraska	12	86%	1	7%	1	7%	14	100%	92%	8%
Nevada	48	84%	7	12%	2	4%	57	100%	87%	13%
New Hampshire	7	29%	17	71%	0	0%	24	100%	29%	71%
New Jersey	51	91%	2	4%	3	5%	56	100%	96%	4%
New Mexico	13	32%	20	49%	8	20%	41	100%	39%	61%
New York	147	86%	16	9%	7	4%	170	100%	90%	10%
North Carolina	170	90%	17	9%	2	1%	189	100%	91%	9%
North Dakota	5	56%	3	33%	1	11%	9	100%	63%	38%
Ohio	43	33%	87	66%	2	2%	132	100%	33%	67%
Oklahoma	15	16%	77	84%	0	0%	92	100%	16%	84%
Oregon	32	94%	2	6%	0	0%	34	100%	94%	6%
Pennsylvania	84	46%	94	52%	4	2%	182	100%	47%	53%
Rhode Island	5	45%	6	55%	0	0%	11	100%	45%	55%
South Carolina	43	29%	106	71%	0	0%	149	100%	29%	71%
South Dakota	7	32%	15	68%	0	0%	22	100%	32%	68%
Tennessee	126	92%	11	8%	0	0%	137	100%	92%	8%
Texas	187	38%	279	57%	25	5%	491	100%	40%	60%
Utah	12	39%	19	61%	0	0%	31	100%	39%	61%
Vermont	5	71%	2	29%	0	0%	7	100%	71%	29%
Virginia	76	96%	3	4%	0	0%	79	100%	96%	4%
Washington	69	95%	3	4%	1	1%	73	100%	96%	4%
West Virginia	16	67%	8	33%	0	0%	24	100%	67%	33%
Wisconsin	21	25%	62	73%	2	2%	85	100%	25%	75%
Wyoming	4	44%	5	56%	0	0%	9	100%	44%	56%
U.S. Total	2,663	57%	1,854	40%	151	3%	4,668	100%	59%	41%
Puerto Rico	17	40%	25	60%	0	0%	42	100%	40%	60%

Shading indicates States requiring helmet use for all motorcyclists. Source: FARS 2013 Annual Report File (ARF)