

Introduction

The Minnesota Motorcycle Safety Program (MMSP) was established by the Minnesota State Legislature in 1982 and began operation in 1983. The mission of MMSP is to prevent motorcycle crashes and the resulting fatalities and injuries. It was one of the first state programs to take a comprehensive approach to motorcycle safety, combining rider training, public information and education, motorcycle testing and licensing and research. The Minnesota Department of Public Safety Office of Traffic Safety is responsible for the administration of the MMSP. The following study was conducted to capture demographic and safety behavior data about the Minnesota motorcycle riding population for the purposes of directing, designing and measuring the impact of motorcycle safety countermeasures.

Survey Design

The Minnesota Motorcycle Rider Survey (MMRS) was developed by the Minnesota Department of Public Safety and the Minnesota Motorcycle Safety Center (MMSC). The survey consisted of 25 items designed to investigate five major areas: 1) Rider Characteristics; 2) Rider Experience and Exposure; 3) Rider Safety Equipment and Reflective Gear Use; 4) Rider Training Awareness and Motivations to Participate in Training; and 5) Rider Awareness about Conspicuity Messaging.

To gauge riding experience and exposure, riders reported number of years of experience riding a motorcycle on the street, if they took a rider training course, and how many years it has been since their most recent training course. Riders were also asked amount of vehicle miles ridden over the past 12 months.

Survey items investigating rider use of safety equipment included frequency of helmet and protective gear use, reflective and retro-reflective material use, frequency of fluorescent vest use, and presence of additional motorcycle modifications or features (e.g. auxiliary driving lights, etc.).

To assess riders' awareness of training courses, riders were asked to report whether or not they have seen or heard about motorcycle training courses in Minnesota, and if so, what was the source of information. Riders were also asked to provide their motivations to participate or not to participate in motorcycle training courses.

To investigate rider awareness about rider conspicuity messages, riders were asked to report whether or not they have seen or heard about motorcycle rider conspicuity in Minnesota, and if so, what was the source of information.

To evaluate a three-year rider conspicuity campaign, rider behavior in the use of high-visibility gear and motorcycle modification was compared to baseline data gathered prior to the campaign in 2008.

Methods

The MMSC mailed copies of the 2011 MMRS to a statewide sample of 3,000 registered motorcycle owners in January 2011. The sample was drawn from a sampling frame of all registered motorcycle owners (188,797) with duplicate names and addresses removed.¹ Thus,

owners of more than one motorcycle were only in the sampling frame once, resulting in a simple random sample with all registered motorcycle owners having an equal probability of being selected. To increase response rates, a MMSC patch was enclosed with the survey packet. Following the Dillman method, a reminder postcard was sent to the entire sample one week after the initial mailing.²

Completed mail surveys were received from 1,349 persons for a response rate of 45%. The response rate on all survey items was above 90%. The survey margin of error is plus or minus 2.7% at the 95% confidence level. The margin of error may be larger for subgroups. The following findings are based on all 1,349 returned surveys unadjusted for age and gender. All statistical analyses were performed using SPSS version 19.0.

Minnesota Rider Demographics and Characteristics

The demographic characteristics of Minnesota motorcycle riders are summarized overall and by age in Table 1. One out of four (26.3%) riders are ages 40 to 49, and one out of three riders (33.2%) are ages 50 to 59. Less than one out of 10 (8.7%) riders are 29 years of age or younger.

Table 1

Motorcyclist Demographics by Age (N = 1,349)

	< 30		30-39		40-49		50-59		60+		Overall	
Age	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Total	116	8.7	186	13.9	352	26.3	443	33.2	239	17.9	1336	100.0
Missing=13												
Gender^a												
Male	99	85.3	157	84.4	296	84.1	375	84.7	227	95.0	1154	86.4
Female	14	12.1	29	15.6	55	15.6	62	14.0	12	5.0	172	12.9
Not listed	3	2.6			1	0.3	6	1.3			10	0.8
Missing=13												
Region of Residency[*]												
Northern Minn	3	2.6	11	6.0	25	7.1	43	9.7	31	13.0	113	8.5
Central Minn	32	28.1	39	21.2	98	27.9	125	28.3	52	21.8	346	26.0
Southern Minn	23	20.2	42	22.8	81	23.1	86	19.5	52	21.8	284	21.4
7-County Metro	56	49.1	92	50.0	147	41.9	188	42.5	103	43.3	586	44.1
Missing=20												

^{*}See Appendix 1 for Regional Map

Note. Missing responses are not included in the calculation of the overall column percentages. ^aGender differs as a function of age $\chi^2 = 37.78$ $p < .005$.

Nearly nine out of 10 (86.4%) riders are male. Nearly three out of five (57.0%) female riders are 49 years of age or younger and one out of four (25.0%) are 39 years of age or younger. Male riders are slightly older than their female counterparts. Over one-half (52.2%) of male riders are 50 years of age or older. One out of five male riders (22.2%) are 39 years of age or younger.

One out of 10 riders (8.5%) live in northern Minnesota, one out of four riders (26.0%) live in central Minnesota, and one out of five riders (21.4%) live in southern Minnesota. Two out of five

motorcycle riders (44.1%) reside in the seven-county Twin Cities metro area. Rider region of residency does not differ significantly as a function of age.

Motorcycle ownership and motorcycle rider training course history are summarized by age in Table 2. The number of motorcycles owned ranges from 1 to 39 with a mean of 1.4 motorcycles. Three out of four riders (72.3%) own one motorcycle and one out of five (19.6%) riders own two motorcycles.

Table 2

*Number of Motorcycles Owned,
and Training History by Age (N = 1,349)*

	< 30		30-39		40-49		50-59		60+		Overall	
Motorcycles Owned	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
One	96	83.5	126	68.9	255	74.1	308	69.7	169	71.9	954	72.3
Two	15	13.0	41	22.4	64	18.6	91	20.6	47	20.0	258	19.6
Three	3	2.6	14	7.7	17	4.9	29	6.6	10	4.3	73	5.5
Four or More	1	0.9	2	1.1	8	2.3	14	3.2	9	3.8	34	2.6
Missing=30												
Training												
No Training	52	46.0	85	45.9	161	45.2	206	46.8	148	60.4	652	48.7
Basic Training	59	52.2	95	51.4	180	50.6	198	45.0	81	33.1	613	45.8
Advanced Training	2	1.8	5	2.7	15	4.2	36	8.2	16	6.5	74	5.5
Missing=10												

Note. Missing responses are not included in the calculation of the overall column percentages.

Half of all riders (51.3%) have taken at least one motorcycle rider training course. Older riders (i.e., age 60 or older) were the least likely to have taken a motorcycle training course, with 3 out of five (60.4%) having no training at all. Motorcycle ownership and training history are summarized by region of residency in Table 3.

Table 3

*Number of Motorcycles Owned, and
Training History by Region of Residence (N = 1,349)*

	Northern Minn		Central Minn		Southern Minn		7-County Metro		Overall	
Motorcycles Owned	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
One	77	68.8	244	70.7	205	73.5	424	73.4	950	72.3
Two	26	23.2	71	20.6	51	18.3	109	18.9	257	19.6
Three	6	5.4	19	5.5	15	5.4	33	5.7	73	5.6
Four or More	3	2.7	11	3.2	8	2.9	12	2.1	34	2.6
Missing=35										

	<i>Northern Minn</i>		<i>Central Minn</i>		<i>Southern Minn</i>		<i>7-County Metro</i>		<i>Overall</i>	
	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
<i>Training</i>										
No Training	54	47.4	171	49.7	149	52.8	276	46.5	650	48.7
Basic Training	54	47.4	155	45.1	121	42.9	280	47.1	610	45.7
Advanced Training	6	5.3	18	5.2	12	4.3	38	6.4	74	5.5
Missing=19										

Note. Missing responses are not included in the calculation of the overall column percentages.

Brands and types of motorcycles ridden most often are summarized by age in Table 4. Overall, the most commonly ridden motorcycle brands are Harley-Davidson (37.6%) and Honda (23.7%). Riders over age 40 are two times more likely to own a Harley-Davidson than riders 29 or younger. Conversely, riders 29 or younger are more likely to own a Kawasaki, Suzuki, or Yamaha than riders 30 or older.

Table 4

Brand and Type of Motorcycle by Age (N = 1,349)

	<i>< 30</i>		<i>30-39</i>		<i>40-49</i>		<i>50-59</i>		<i>60+</i>		<i>Overall</i>	
<i>Brand^a</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
BMW	1	0.9	0	0.0	5	1.4	10	2.3	11	4.6	27	2.0
Harley Davidson	23	19.8	62	33.3	142	40.3	182	41.1	94	39.3	503	37.6
Honda	26	22.4	50	26.9	74	21.0	102	23.0	65	27.2	317	23.7
Kawasaki	11	9.5	9	4.8	25	7.1	30	6.8	15	6.3	90	6.7
Suzuki	17	14.7	15	8.1	20	5.7	32	7.2	13	5.4	97	7.3
Yamaha	25	21.6	27	14.5	59	16.8	48	10.8	22	9.2	181	13.5
Other	13	11.2	23	12.3	27	7.7	39	8.8	19	7.9	121	9.1
Missing=13												
<i>Type/Style^b</i>												
Cruiser	45	38.8	76	40.9	133	37.8	144	32.5	74	31.0	472	35.3
Sport Bike	54	46.6	43	23.1	37	10.5	40	9.0	18	7.5	192	14.4
Sport-Touring	5	4.3	19	10.2	76	21.6	88	19.9	57	23.8	245	18.3
Touring	6	5.2	20	10.8	64	18.2	116	26.2	62	25.9	268	20.1
Dual-Sport	2	1.7	8	4.3	16	4.5	12	2.7	1	0.4	39	2.9
Sidecar/Trike	0	0.0	4	2.2	2	0.6	5	1.1	5	2.1	16	1.2
Scooter (> 50cc)	3	2.6	9	4.8	11	3.1	19	4.3	16	6.7	58	4.3
Other	1	0.9	7	3.8	13	3.7	19	4.3	6	2.5	46	3.4
Missing=13												

Note. Missing responses are not included in the calculation of the overall column percentages.

^aBrand of motorcycle ridden most often differs as a function of age $\chi^2 = 66.51$ $p < .001$. ^bType/style of motorcycle ridden most often differs as a function of age $\chi^2 = 204.37$ $p < .001$.

The most popular styles of motorcycles ridden are cruiser (35.3%) and touring (20.1%). Motorcycle riders 29 or younger are two times more likely than riders in their 30s to ride a sport bike. Riders in their 30s were two times more likely to ride a sport bike most often than riders in their 40s and riders in their 50s. Riders age 50 and older are five times more likely to ride a touring bike most often than riders 29 or younger.

Table 5

Brand and Type of Motorcycle by Region of Residency (N = 1,349)

	<i>Northern Minn</i>		<i>Central Minn</i>		<i>Southern Minn</i>		<i>7-County Metro</i>		<i>Overall</i>	
<i>Brand</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
BMW	2	1.8	4	1.2	5	1.8	16	2.7	27	2.0
Harley Davidson	56	49.6	129	37.2	114	40.1	201	34.3	500	37.6
Honda	13	11.5	94	27.1	80	28.2	128	21.8	315	23.7
Kawasaki	13	11.5	24	6.9	16	5.6	37	6.3	90	6.8
Suzuki	5	4.4	24	6.9	21	7.4	47	8.0	97	7.3
Yamaha	14	12.4	44	12.7	31	10.9	91	15.5	180	13.5
Other	10	8.8	28	8.1	17	6.0	66	11.3	121	9.1
Missing=19										
<i>Type/Style</i>										
Cruiser	34	30.1	137	39.5	84	29.6	212	36.2	467	35.1
Sport Bike	9	8.0	44	12.7	48	16.9	91	15.5	192	14.4
Sport-Touring	30	26.5	57	16.4	55	19.4	102	17.4	244	18.3
Touring	26	23.0	71	20.5	61	21.5	111	18.9	269	20.2
Dual-Sport	5	4.4	8	2.3	10	3.5	16	2.7	39	2.9
Sidecar/Trike	1	0.9	7	2.0	3	1.1	5	0.9	16	1.2
Scooter (> 50cc)	2	1.8	9	2.6	15	5.3	32	5.5	58	4.4
Other	6	5.3	14	4.0	8	2.8	17	2.9	45	3.4
Missing=19										

Note. Missing responses are not included in the calculation of the overall column percentages.

Brands and types of motorcycles are summarized by region in Table 5. In all regions of Minnesota, riders ride a Harley-Davidson most often. However, riders living in northern Minnesota are more likely to ride a Harley-Davidson and Kawasaki most often than riders in other regions. Moreover, riders in the seven county metro are more likely to ride a BMW and Yamaha most often than riders in other regions. In all regions, cruiser is the most popular style of motorcycle. Compared to other regions, a higher percentage of northern Minnesota riders use sport-touring, touring, and dual-sport motorcycles; a higher percentage of central Minnesota riders use cruiser motorcycles; a higher percentage of southern Minnesota riders use sport bikes; and a higher percentage of riders in the seven-county metro use scooters.

Riding Experience and Exposure

Amount of miles ridden are summarized by age in Table 6. Motorcyclists reported riding anywhere from 0 to 27,920 miles in the past 12 months, with a mean of 3,191 miles. Over half (56.3%) of the riders reported riding fewer than 3,000 miles. One out of four (24.4%) riders reported riding 5,000 miles or more.

Table 6

Average Miles Ridden by Age (N = 1,349)

<i>Age</i>	<i>n</i>	\bar{X}	<i>95% CI</i>
< 30	113	2,920	(2,297 – 3,543)
30-39	182	2,810	(2,344 – 3,277)
40-49	340	3,000	(2,661 – 3,339)
50-59	421	3,575	(3,231 – 3,920)
60+	214	3,211	(2,694 – 3,728)
Missing=79			
Overall	1,270	3,191	(3,001 – 3,382)

Riding experience and years since last training course are summarized in Table 7. Motorcyclists reported having anywhere from less than a year to 63 years of experience riding motorcycles on the street with a mean of 19.88 years. One out of two riders (49.6%) has less than 17 years riding experience. Over one out of five (22.4%) riders has 5 or fewer years experience. One out of three riders (34.6%) has more than 25 years riding experience.

Of those riders who have had motorcycle training, two out of five (40.8%) had a motorcycle training course more recently than six years ago. One out of five (19.0%) riders had their last training course between six and ten years ago. Less than one out of five (16.9%) riders had their last motorcycle training course more than 25 years ago.

Table 7

Riding Experience and Years Since Training (N = 1,349)

	<i>Overall</i>	
<i>Years of Riding Experience</i>	<i>n</i>	<i>%</i>
5 Years or Less	297	22.4
6 – 10 Years	232	17.5
11 – 15 Years	111	8.4
16 – 20 Years	129	9.7
21 – 25 Years	100	7.5
> 25 Years	459	34.6
Missing=21		

<i>How Many Years Since Most Recent Training Course</i>	<i>n</i>	<i>%</i>
5 Years or Less	251	40.8
6 – 10 Years	117	19.0
11 – 15 Years	64	10.4
16 – 20 Years	40	6.5
21 – 25 Years	39	6.3
> 25 Years	104	16.9
Missing=734		

Helmet and Other Safety Equipment Use

Frequency of helmet use when riding and color of helmet is summarized by age in Table 8. Over half of all riders (53.6%) wear a helmet either “most of the time” or “all of the time” when they ride. One out of three (34.2%) riders “never” or “rarely” wear helmets when they ride. Riders in their 40s are the most likely to “never” (17.4%) or “rarely” (23.9%) wear a helmet, and least likely to wear a helmet “all of the time” (31.9%).

Table 8

Helmet Use and Type by Age (N = 1,349)

	< 30		30-39		40-49		50-59		60+		Overall	
<i>How Often Do You Wear A Helmet</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
Never	16	13.9	30	16.2	61	17.4	60	13.7	36	15.1	203	15.3
Rarely	17	14.8	25	13.5	84	23.9	87	19.8	38	16.0	251	18.9
Half of the Time	13	11.3	25	13.5	39	11.1	67	15.3	19	8.0	163	12.3
Most of the Time	20	17.4	33	17.8	55	15.7	61	13.9	42	17.6	211	15.9
All of the Time	49	42.6	72	38.9	112	31.9	164	37.4	103	43.3	500	37.7
Missing=21												
<i>What is the Color of the Helmet You Wear Most Often</i>												
Black	47	49.5	83	54.2	180	63.4	244	64.9	114	56.7	668	60.2
White	2	2.1	9	5.9	18	6.3	28	7.4	15	7.5	72	6.5
Solid Bright Color	6	6.3	15	9.8	22	7.7	35	9.3	24	11.9	102	9.2
Solid Dark Color	5	5.3	14	9.2	19	6.7	31	8.2	25	12.4	94	8.5
Multi-Color Bright	16	16.8	13	8.5	30	10.6	25	6.6	14	7.0	98	8.8
Multi-Color Dark	19	20.0	19	12.4	15	5.3	13	3.5	9	4.5	75	6.8
Missing=240												

Note. Missing responses are not included in the calculation of the overall column percentages.

Of those who at least “rarely” wear a helmet, three out of five (60.2%) wear a black helmet. Riders over age 30 are more likely to wear black helmets than riders 29 or younger. Riders 29 or younger are roughly twice as likely to wear multi-color bright helmets than riders 30 or older. Nearly two out of five riders (36.8%) age 29 or younger wear a multi-colored helmet (bright or

dark), whereas only one out of 10 riders in their 50s (10.1%) and over 60 years of age (11.5%) wear a multi-colored helmet.

Table 9
Helmet Use and Type by Region (N = 1,349)

	<i>Northern Minn</i>		<i>Central Minn</i>		<i>Southern Minn</i>		<i>7-County Metro</i>		<i>Overall</i>	
<i>How Often Do You Wear A Helmet^a</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
Never	20	17.9	62	17.9	65	23.2	56	9.6	203	15.4
Rarely	18	16.1	64	18.5	63	22.5	106	18.2	251	19.0
Half of the Time	10	8.9	44	12.7	33	11.8	74	12.7	161	12.2
Most of the Time	23	20.5	50	14.5	37	13.2	100	17.1	210	15.9
All of the Time	41	36.6	126	36.4	82	29.3	248	42.5	497	37.6
Missing=27										
<i>What is the Color of the Helmet You Wear Most Often</i>										
Black	58	62.4	191	68.0	141	65.6	275	53.4	665	60.2
White	2	2.2	7	2.5	18	8.4	45	8.7	72	6.5
Solid Bright Color	8	8.6	23	8.2	14	6.5	55	10.7	100	9.1
Solid Dark Color	12	12.9	16	5.7	12	5.6	54	10.5	94	8.5
Multi-Color Bright	10	10.8	28	10.0	14	6.5	46	8.9	98	8.9
Multi-Color Dark	3	3.2	16	5.7	16	7.4	40	7.8	75	6.8
Missing=245										

Note. Missing responses are not included in the calculation of the overall column percentages.

Frequency of helmet use when riding and color of helmet is summarized by region in Table 9. Three out of five (59.6%) riders in the seven-county metropolitan area wear a helmet “most of the time” or “all the time.” One out of three riders in northern Minnesota and central Minnesota (34.0% and 36.4% respectively), and nearly one out of two riders in southern Minnesota (45.7%) “rarely” or “never” wear a helmet.

Use of protective and reflective gear is summarized by age in Table 10. Three out of five riders (59.3%) wear protective upper-body clothing “most of the time” or “all the time.” One out of 10 (9.3%) riders “never” wear protective upper-body clothing. One out of four riders (23.5%) 29 years of age or younger “rarely” or “never” wear protective upper-body gear.

Seven out of 10 (68.5%) riders that at least “rarely” wear protective upper-body gear wear black protective upper-body gear. Fewer than one out of 10 (5.6%) riders wears multi-colored bright protective upper-body gear. A higher percentage of riders age 29 or younger wear multi-colored bright protective upper body gear than riders 30 or older.

Table 10

Protective and Reflective Gear Use by Age (N = 1,349)

	< 30		30-39		40-49		50-59		60+		Overall	
<i>How Often Do You Wear Protective Upper-Body Clothing</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
Never	14	12.2	15	8.1	26	7.4	42	9.5	26	11.0	123	9.3
Rarely	13	11.3	21	11.3	29	8.3	29	6.6	22	9.3	114	8.6
Half of the Time	27	23.5	50	26.9	101	28.9	102	23.1	50	21.2	330	24.9
Most of the Time	31	27.0	48	25.8	117	33.5	175	39.7	85	36.0	456	34.4
All of the Time	30	26.1	52	28.0	76	21.8	93	21.1	53	22.5	304	22.9
Missing=22												
<i>What is the Color of the Protective Upper-Body Clothing You Wear</i>												
Black	59	60.2	118	70.2	220	70.1	274	70.6	137	64.9	808	68.5
White	2	2.0	3	1.8	7	2.2	8	2.1	7	3.3	27	2.3
Solid Bright Color	5	5.1	8	4.8	14	4.5	22	5.7	14	6.6	63	5.3
Solid Dark Color	13	13.3	12	7.1	26	8.3	46	11.9	28	13.3	125	10.6
Multi-Colored Bright	7	7.1	6	3.6	20	6.4	20	5.2	13	6.2	66	5.6
Multi-Colored Dark	12	12.2	21	12.5	27	8.6	18	4.6	12	5.7	90	7.6
Missing=170												
<i>How Often Do You Wear Riding Gear With Reflective Material</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
Never	51	44.3	92	49.5	167	47.6	206	46.6	126	52.9	642	48.2
Rarely	23	20.0	28	15.1	75	21.4	111	25.1	63	26.5	300	22.5
Half of the Time	10	8.7	18	9.7	34	9.7	45	10.2	10	4.2	117	8.8
Most of the Time	14	12.2	21	11.3	39	11.1	39	8.8	17	7.1	130	9.8
All of the Time	17	14.8	27	14.5	36	10.3	41	9.3	22	9.2	143	10.7
Missing=17												
<i>How Often Do You Wear a Fluorescent Yellow, Green, or Orange Vest When Riding</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
Never	106	91.4	173	93.0	312	88.9	382	86.2	211	88.7	1184	88.8
Rarely	6	5.2	11	5.9	20	5.7	44	9.9	17	7.1	98	7.3
Half of the Time	1	0.9	1	0.5	6	1.7	11	2.5	3	1.3	22	1.6
Most of the Time	1	0.9	1	0.5	8	2.3	2	0.5	3	1.3	15	1.1
All of the Time	2	1.7	0	0.0	5	1.4	4	0.9	4	1.7	15	1.1
Missing=15												

Note. Missing responses are not included in the calculation of the overall column percentages.

Seven out of 10 riders (70.7%) “never” or “rarely” wear riding gear with reflective materials. Riders 29 years of age or younger and riders in their 30s are roughly one-and-a-half times more likely to wear riding gear with reflective materials “most of the time” or “all the time” than riders 60 or older.

Nine out of 10 riders (88.8%) “never” wear a fluorescent vest while riding their motorcycles. Wearing a fluorescent vest does not differ significantly by age.

Use of protective and reflective gear by region is summarized in Table 11. Seven out of 10 riders (70.6%) in northern Minnesota wear protective upper-body clothing “most of the time” or “all of the time,” whereas only one out of 10 (9.9%) riders in northern Minnesota wear protective upper-body clothing “never” or “rarely.” Less than one-half of riders (46.8%) in southern Minnesota wear protective upper-body clothing “most of the time” or “all of the time”; one out of four (24.5%) riders in southern Minnesota wear protective upper-body clothing “never” or “rarely.”

Table 11

Protective and Reflective Gear Use by Region (N = 1,349)

	<i>Northern Minn</i>		<i>Central Minn</i>		<i>Southern Minn</i>		<i>7-County Metro</i>		<i>Overall</i>	
<i>How Often Do You Wear Protective Upper-Body Clothing^a</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
Never	6	5.4	31	9.0	38	13.5	48	8.2	123	9.3
Rarely	5	4.5	24	7.0	31	11.0	53	9.1	113	8.6
Half of the Time	22	19.6	83	24.1	81	28.7	144	24.7	330	25.0
Most of the Time	45	40.2	128	37.2	84	29.8	195	33.4	452	34.2
All of the Time	34	30.4	78	22.7	48	17.0	143	24.5	303	22.9
Missing=28										
<i>What is the Color of the Protective Upper-Body Clothing You Wear</i>										
Black	79	75.2	222	73.0	169	70.4	332	63.4	802	68.4
White	1	1.0	6	2.0	4	1.7	16	3.1	27	2.3
Solid Bright Color	3	2.9	15	4.9	14	5.8	31	5.9	63	5.4
Solid Dark Color	7	6.7	24	7.9	25	10.4	69	13.2	125	10.7
Multi-Colored Bright	7	6.7	16	5.3	13	5.4	30	5.7	66	5.6
Multi-Colored Dark	8	7.6	21	6.9	15	6.3	46	8.8	90	7.7
Missing=176										
<i>How Often Do You Wear Riding Gear With Reflective Material</i>										
Never	49	43.4	186	53.6	147	51.9	259	44.4	641	48.3
Rarely	34	30.1	67	19.3	59	20.8	139	23.8	299	22.5
Half of the Time	10	8.8	28	8.1	23	8.1	56	9.6	117	8.8
Most of the Time	10	8.8	34	9.8	27	9.5	56	9.6	127	9.6
All of the Time	10	8.8	32	9.2	27	9.5	73	12.5	142	10.7
Missing=23										

<i>How Often Do You Wear a Fluorescent Yellow, Green, or Orange Vest When Riding</i>	<i>Northern Minn</i>		<i>Central Minn</i>		<i>Southern Minn</i>		<i>7-County Metro</i>		<i>Overall</i>	
	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
Never	103	91.2	307	88.7	253	89.1	516	88.2	1179	88.8
Rarely	5	4.4	28	8.1	17	6.0	48	8.2	98	7.4
Half of the Time	2	1.8	5	1.4	7	2.5	8	1.4	22	1.7
Most of the Time	1	0.9	4	1.2	3	1.1	6	1.0	14	1.1
All of the Time	2	1.8	2	0.6	4	1.4	7	1.2	15	1.1
Missing=21										

Note. Missing responses are not included in the calculation of the overall column percentages.

^aUse of protective upper-body clothing differs as a function of region $\chi^2 = 28.12$ $p < .05$.

Table 12 summarizes the presence of motorcycle modifications by age. One-half (49.5%) of riders in Minnesota have some sort of high-visibility feature or modification to enhance conspicuity (i.e. make a rides more visible to other drivers) on their motorcycle. More than one-half of riders in their 50s and riders 60 years of age or older have features or modifications on their motorcycles (56.0% and 56.5% respectively). One out of three (32.8%) riders ages 30 to 39 have features or modifications on their motorcycles. Having features or modification does not differ significantly by region of residency.

Table 12

Presence of Motorcycle Modifications by Age (N = 1,349)

	<i>< 30</i>		<i>30-39</i>		<i>40-49</i>		<i>50-59</i>		<i>60+</i>		<i>Overall</i>	
<i>Does Your Motorcycle Have Any Features or Modifications^a</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
Yes	49	42.2	61	32.8	168	47.7	248	56.0	135	56.5	661	49.5
No	67	57.8	125	67.2	184	52.3	195	44.0	104	43.5	675	50.5
Missing=13												

Note. Missing responses are not included in the calculation of the overall column percentages.

^aPresence of features or modifications differs as a function of age $\chi^2 = 35.76$ $p < .001$.

Types of conspicuity enhancing features or modifications are summarized by age in Table 13. Of riders with features or modifications, fewer than one out of 10 (8.0%) have an aftermarket horn. Compared to other age groups, a higher percentage of riders in their 40s (12.8%) have an aftermarket horn.

Of the riders with conspicuity enhancing features or modifications, one out of four (28.0%) have auxiliary driving lights. Riders 40 years of age or older are over two times more likely to have auxiliary driving lights on their motorcycles than riders 29 years of age or younger. Of the riders with features or modifications, one out of 10 (9.4%) has a headlight modulator. Compared to other age groups, a higher percentage of riders 29 years of age or younger (12.9%) have a headlight modulator.

Table 13

Types of Modifications by Age (N = 1,349)

	< 30		30-39		40-49		50-59		60+		Overall	
Features/Modifications	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Aftermarket Horn^a												
Yes	10	8.6	9	4.8	45	12.8	27	6.1	16	6.7	107	8.0
No	106	91.4	177	95.2	307	87.2	416	93.9	223	93.3	1229	92.0
Missing=13												
Features/Modifications												
Auxiliary Driving Light^b												
Yes	17	14.7	24	12.9	103	29.3	146	33.0	84	35.1	374	28.0
No	99	85.3	162	87.1	249	70.7	297	67.0	155	64.9	962	72.0
Missing=13												
Features/Modifications												
Headlight Modulator												
Yes	15	12.9	13	7.0	36	10.2	40	9.0	21	8.8	125	9.4
No	101	87.1	173	93.0	316	89.8	403	91.0	218	91.2	1211	90.6
Missing=13												

Note. Missing responses are not included in the calculation of the overall column percentages.

^aPresence of aftermarket horn differs as a function of age $\chi^2 = 16.25$ $p < .005$. ^bPresence of auxiliary driving lights differs as a function of age $\chi^2 = 43.01$ $p < .001$.

Of the riders with conspicuity enhancing features or modifications, one out of five (19.8%) have position (marker) lights on their motorcycles, with the highest percentage for riders in their 50s (22.3%) and riders 60 years of age and older (25.5%). Of the riders with features or modifications, one out of six (16.3%) have reflective tape or reflective stickers on their motorcycles, with the highest percentage for riders 60 years of age and older (25.1%). Of the riders with features or modifications, one out of seven (14.2%) have taillight modulators on their motorcycles, with the highest percentage for riders 29 years of age and younger (20.7%).

Table 13 (continued)

Types of Modifications by Age (N = 1,349)

	< 30		30-39		40-49		50-59		60+		Overall	
Features/Modifications	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Position (Marker) Lights^c												
Yes	19	16.4	24	12.9	62	17.6	99	22.3	61	25.5	265	19.8
No	97	83.6	162	87.1	290	82.4	344	77.7	178	74.5	1071	80.2
Missing=13												

	< 30		30-39		40-49		50-59		60+		Overall	
<i>Features/Modifications</i> <i>Reflective Tape/Stickers^d</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
Yes	13	11.2	21	11.3	43	12.2	81	18.3	60	25.1	218	16.3
No	103	88.8	165	88.7	309	87.8	362	81.7	179	74.9	1118	83.7
Missing=13												
<i>Features/Modifications</i> <i>Taillight Modulator^e</i>												
Yes	24	20.7	14	7.5	48	13.6	67	15.1	37	15.5	190	14.2
No	92	79.3	172	92.5	304	86.4	376	84.9	202	84.5	1146	85.8
Missing=13												

Note. Missing responses are not included in the calculation of the overall column percentages.

^cPresence of position lights differs as a function of age $\chi^2 = 14.21$ $p < .01$. ^dPresence of reflective tape/stickers differs as a function of age $\chi^2 = 24.77$ $p < .001$. ^ePresence of taillight modulator differs as a function of age $\chi^2 = 11.52$ $p < .05$.

Perception of Safety Risks

Motorcycle riders' perceptions of safety risks posed by other drivers are summarized by age in Table 14. Two out of three riders (66.2%) believe other drivers' inattention or driving while distracted is the greatest risk posed to riders by other motorists; compared to other age groups, a higher percentage of riders 29 years of age and younger (75.0%) believe that other drivers' inattention/distraction is the greatest risk posed to riders. More than one out of 10 (11.2%) riders believe that failure to yield right-of-way is the greatest risk posed to riders by other motorists. Riders 60 years of age or older are nearly two times more likely to believe failure to yield right-of-way is the greatest risk posed by other motorists than riders 29 years of age or younger. Riders 60 years of age or older are also over two times more likely to believe drinking and driving is the greatest risk posed by other motorists than riders 29 years of age or younger.

Table 14

Perception of Safety Risks by Age (N = 1,349)

	< 30		30-39		40-49		50-59		60+		Overall	
<i>Greatest Risk to MC Riders Posed By Other Drivers^a</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
Drinking and Driving	5	4.3	9	4.8	22	6.3	29	6.5	22	9.2	87	6.5
Driver Inattention/Distraction	87	75.0	141	75.8	236	67.0	290	65.5	131	54.8	885	66.2
Failure to Yield Right of Way	9	7.8	10	5.4	33	9.4	62	14.0	35	14.6	149	11.2
Following Too Closely	5	4.3	9	4.8	14	4.0	10	2.3	10	4.2	48	3.6
Reckless Driving/Speeding	4	3.4	7	3.8	16	4.5	13	2.9	11	4.6	51	3.8
Other	6	5.2	10	5.4	31	8.8	39	8.8	30	12.6	116	8.7
Missing=13												

Note. Missing responses are not included in the calculation of the overall column percentages.

^aGreatest risk other drivers pose to motorcycle rider safety differs as a function of age $\chi^2 = 40.14$ $p < .01$.

Motorcycle riders' perceptions of safety risks posed by other drivers are summarized by region in Table 15. Riders in the seven-county metro area were most likely to believe other drivers' inattention/distraction poses the greatest risk to motorcycle riders. Riders in northern and southern Minnesota were roughly two times more likely than riders in the seven-county metro area to believe that other drivers' failure to yield right-of-way poses the greatest risk to motorcycle riders.

Table 15

Perception of Safety Risks by Region (N = 1,349)

	<i>Northern Minn</i>		<i>Central Minn</i>		<i>Southern Minn</i>		<i>7-County Metro</i>		<i>Overall</i>	
<i>Greatest Risk to MC Riders Posed By Other Drivers^a</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
Drinking and Driving	10	8.8	24	6.9	22	7.7	31	5.3	87	6.5
Driver Inattention/Distracted	67	59.3	216	62.2	177	62.3	420	71.7	880	66.2
Failure to Yield Right of Way	19	16.8	45	13.0	42	14.8	42	7.2	148	11.1
Following Too Closely	3	2.7	17	4.9	10	3.5	18	3.1	48	3.6
Reckless Driving/Speeding	4	3.5	16	4.6	7	2.5	23	3.9	50	3.8
Other	10	8.8	29	8.4	26	9.2	52	8.9	117	8.8
Missing=19										

Note. Missing responses are not included in the calculation of the overall column percentages.

^aGreatest risk other drivers pose to motorcycle rider safety differs as a function of region $\chi^2 = 28.46$ $p < .05$.

Rider Training Awareness and Motivations

Riders' awareness of motorcycle training courses is summarized by age in Table 16. More than nine out of 10 (96.2%) riders are aware that motorcycle training courses are available in Minnesota, with the highest percentage of riders aware among riders 29 years of age and younger (99.1%), and the lowest percentage of riders aware among riders 60 years of age and older (91.6%). Nearly one-half of all riders (49.4%) have recently seen or heard about motorcycle training in Minnesota, with the highest percentage of riders who have recently seen or heard about training among riders 60 years of age and older (52.4%).

Table 16

Motorcycle Training Awareness by Age (N = 1,349)

	<i>< 30</i>		<i>30-39</i>		<i>40-49</i>		<i>50-59</i>		<i>60+</i>		<i>Overall</i>	
<i>Are You Aware That Motorcycle Training Courses are Available in Minnesota?^a</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
Yes	115	99.1	181	97.3	341	97.4	422	96.6	218	91.6	1277	96.2
No	1	0.9	5	2.7	9	2.6	15	3.4	20	8.4	50	3.8
Missing=22												

	< 30		30-39		40-49		50-59		60+		OVERALL
<i>Have You Recently Seen or Heard About Motorcycle Training in Minnesota?</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i> <i>%</i>
Yes	57	49.6	85	46.2	165	47.7	217	50.6	121	52.4	645 49.4
No	58	50.4	99	53.8	181	52.3	212	49.4	110	47.6	660 50.6
Missing=44											

Note. Missing responses are not included in the calculation of the overall column percentages.

^aAwareness of motorcycle training differs as a function of age $\chi^2 = 24.39$ $p < .01$.

Riders' observation of messages regarding the availability of motorcycle training courses is summarized by age in Table 17. Of the most frequently cited sources, one out of five riders have seen or heard about motorcycle training courses from friends or family members (20.3%); one out of six riders have heard about training courses from a motorcycle dealer or shop (17.9%); and one out of seven riders have heard about training courses from a license exam station or deputy registrar (14.7%).

Table 17

Rider Safety Messages by Age (N = 1,349)

	< 30		30-39		40-49		50-59		60+		Overall
<i>Where Did You See or Hear About Motorcycle Safety Training Courses?</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i> <i>%</i>
Billboard	9	7.8	10	5.4	22	6.3	17	3.8	7	2.9	65 4.9
Friend or Family Member	27	23.3	39	21.0	68	19.3	84	19.0	53	22.2	271 20.3
Indoor/Bathroom Ad	5	4.3	5	2.7	6	1.7	9	2.0	6	2.5	31 2.3
License Exam Station/Registrar	16	13.8	29	15.6	51	14.5	60	13.5	40	16.7	196 14.7
Motorcycle Event/Rally	8	6.9	15	8.1	32	9.1	54	12.2	21	8.8	130 9.7
Motorcycle Dealer/Shop	17	14.7	28	15.1	67	19.0	81	18.3	46	19.2	239 17.9
Movie Theater	0	0.0	0	0.0	1	0.3	3	0.7	1	0.4	5 0.4
Newspaper/Magazine	3	2.6	11	5.9	27	7.7	43	9.7	26	10.9	110 8.2
Radio	4	3.4	2	1.1	12	3.4	15	3.4	9	3.8	42 3.1
Television	6	5.2	2	1.1	15	4.3	13	2.9	10	4.2	46 3.4
Truck-side Ad	1	0.9	0	0.0	3	0.9	1	0.2	1	0.4	6 0.4
Web/Internet	9	7.8	11	5.9	23	6.5	34	7.7	15	6.3	92 6.9
Other	6	5.2	11	5.9	20	5.7	26	5.9	10	4.2	73 5.5
Missing=13											

Note. Percentages reflect within cell responses (i.e., percent who responded "Yes" to the item). Missing responses are not included in the calculation of the overall column percentages.

Riders' motivations for the most recent motorcycle training course are summarized by age in Table 18. Two out of three riders (65.5%) were most motivated to take their most recent training course to get a motorcycle license. One out of four riders (25.6%) were most motivated to increase personal safety or skill level. Riders 29 years of age and younger are one-and-a-half times more likely to be motivated to get a motorcycle license than riders 60 years of age and

older, whereas riders 60 years of age and older are over two times more likely to be motivated to increase personal safety and six times more likely to be motivated to increase personal skill level than riders 29 years of age and younger. Riders' motivation for training does not differ significantly by region of residency.

Table 18

Training Motivation by Age (N = 1,349)

	< 30		30-39		40-49		50-59		60+		Overall	
What most motivated you to take most recent training?^a	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Accomplishment/Certification	6	10.2	2	2.0	6	3.3	8	3.7	6	7.0	28	4.4
Get Motorcycle License	45	76.3	67	68.4	125	68.7	137	63.7	45	52.3	419	65.5
Increase Personal Safety	4	6.8	10	10.2	21	11.5	30	14.0	14	16.3	79	12.3
Increase Personal Skill Level	2	3.4	11	11.2	24	13.2	31	14.4	17	19.8	85	13.3
Friend/Family Recommended	2	3.4	8	8.2	6	3.3	8	3.7	4	4.7	28	4.4
Dealer/Shop Recommended	0	0.0	0	0.0	0	0.0	1	0.5	0	0.0	1	0.2
Missing=709												

Note. Missing responses are not included in the calculation of the overall column percentages.

^aTraining motivation differs as a function of age $\chi^2 = 46.07$ $p < .01$.

Riders' reasons for never taking a motorcycle training course are summarized by age in Table 19. Of those riders who have never taken a motorcycle training course, two out of five (41.8%) claim they "don't need training," one out of four (23.1%) "didn't know about course," one out of 10 (12.1%) cite as reason for never taking a course the "price of course," and one out of 10 (9.2%) cite as reason for never taking a course "inconvenient course location." Compared to riders in other age groups, a higher percentage of riders 29 years of age and younger (19.2%) responded that the course takes too much time. Riders 29 years of age and younger were less likely to respond that they didn't know about the course than riders 30 years of age and over.

Table 19

Reasons For Lack of Training by Age (N = 1,349)

	< 30		30-39		40-49		50-59		60+		Overall	
If Not, Why Have You Never Taken Motorcycle Training?^a	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Course Not Challenging	2	3.8	1	1.2	5	2.9	2	0.9	4	3.0	14	2.1
Course Takes Too Much Time	10	19.2	11	12.8	9	5.2	11	5.0	10	7.5	51	7.7
Didn't Know About Course	3	5.8	10	11.6	46	26.6	51	23.3	43	32.3	153	23.1
Don't Need Training	18	34.6	38	44.2	68	39.3	105	47.9	48	36.1	277	41.8
Don't Want to Drop Bike	0	0.0	1	1.2	4	2.3	3	1.4	6	4.5	14	2.1
Inconvenient Course Location	5	9.6	6	7.0	13	7.5	26	11.9	11	8.3	61	9.2
Not Enough Experience	2	3.8	0	0.0	4	2.3	5	2.3	2	1.5	13	2.0
Price of Course	12	23.1	19	22.1	24	13.9	16	7.3	9	6.8	80	12.1
Missing=686												

Note. Missing responses are not included in the calculation of the overall column percentages.

^aReason for never taking motorcycle training differs as a function of age $\chi^2 = 75.45$ $p < .001$.

Riders' reasons for never taking a motorcycle training course are summarized by region in Table 20. Riders in northern Minnesota and central Minnesota were roughly twice as likely to cite inconvenient course location as reason for never taking a motorcycle training course than riders in southern Minnesota or the seven-county metro area.

Table 20

Reasons For Lack of Training by Region (N = 1,349)

	<i>Northern Minn</i>		<i>Central Minn</i>		<i>Southern Minn</i>		<i>7-County Metro</i>		<i>Overall</i>	
<i>If Not, Why Have You Never Taken Motorcycle Training?</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
Course Not Challenging	1	1.9	3	1.7	4	2.6	6	2.2	14	2.1
Course Takes Too Much Time	5	9.6	11	6.1	11	7.1	24	8.6	51	7.7
Didn't Know About Course	13	25.0	43	24.0	44	28.6	54	19.4	154	23.2
Don't Need Training	19	36.5	74	41.3	61	39.6	122	43.9	276	41.6
Don't Want to Drop Bike	0	0.0	3	1.7	1	0.6	10	3.6	14	2.1
Inconvenient Course Location	8	15.4	23	12.8	11	7.1	19	6.8	61	9.2
Not Enough Experience	0	0.0	1	0.6	6	3.9	6	2.2	13	2.0
Price of Course	6	11.5	21	11.7	16	10.4	37	13.3	80	12.1
Missing=686										

Note. Missing responses are not included in the calculation of the overall column percentages.

Rider Conspicuity Message Awareness

Riders' awareness of motorcycle conspicuity messages is summarized by age in Table 21. Two out of five (43.1%) riders have seen or heard about motorcycle rider conspicuity in Minnesota in the past 12 months.

Table 21

Motorcycle Rider Conspicuity Campaign Awareness by Age (N = 1,349)

	< 30		30-39		40-49		50-59		60+		<i>Overall</i>	
<i>Have You Seen or Heard About Motorcycle Rider Conspicuity in Minnesota in the Past 12 Months?</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
Yes	52	45.6	77	41.6	142	40.6	197	45.0	101	43.2	569	43.1
No	62	54.4	108	58.4	208	59.4	241	55.0	133	56.8	752	56.9
Missing=28												

Note. Missing responses are not included in the calculation of the overall column percentages.

Riders' observation of motorcycle conspicuity messages is summarized by age in Table 22. Of the most frequently cited sources, roughly one out of 10 riders have seen or heard about motorcycle conspicuity from a motorcycle dealer or shop (12.9%), from friends or family members (11.2%), from a motorcycle event or rally (11.1%), from a newspaper or magazine (10.9%), from a billboard (10.3%) and from television (8.5%).

Table 22

Motorcycle Rider Conspicuity Messages by Age (N = 1,349)

	< 30		30-39		40-49		50-59		60+		Overall	
<i>Where Did You See or Hear About Motorcycle Rider Conspicuity?</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>
Billboard	14	12.1	21	11.3	40	11.4	53	12.0	10	4.2	138	10.3
Friend or Family Member	15	12.9	17	9.1	35	9.9	54	12.2	29	12.1	150	11.2
Indoor/Bathroom Ad	7	6.0	4	2.2	10	2.8	10	2.3	3	1.3	34	2.5
License Exam Station/Registrar	6	5.2	16	8.6	26	7.4	24	5.4	18	7.5	90	6.7
Motorcycle Event/Rally	13	11.2	14	7.5	42	11.9	53	12.0	26	10.9	148	11.1
Motorcycle Dealer/Shop	8	6.9	20	10.8	41	11.6	72	16.3	32	13.4	173	12.9
Newspaper/Magazine	9	7.8	19	10.2	27	7.7	54	12.2	36	15.1	145	10.9
Radio	7	6.0	8	4.3	20	5.7	14	3.2	9	3.8	58	4.3
Television	14	12.1	11	5.9	26	7.4	39	8.8	23	9.6	113	8.5
Truck-side Ad	2	1.7	0	0.0	4	1.1	3	0.7	5	2.1	14	1.0
Web/Internet	5	4.3	10	5.4	18	5.1	24	5.4	11	4.6	68	5.1
Missing=13												

Note. Percentages reflect within cell responses (i.e., percent who responded "Yes" to the item). Missing responses are not included in the calculation of the overall column percentages.

Comparisons Between 2008 and 2011: Rider Conspicuity Campaign

An important component of the 2011 Motorcycle Rider Survey was to evaluate the effectiveness of the conspicuity campaign. Goals of the campaign were to increase rider awareness and use of high-visibility and reflective material, as well as increase the use of high-visibility features and modifications on motorcycles (i.e., headlight modulator, reflective tape, etc.). Tables 23-27 compare rider responses to the survey in 2008 versus rider responses to the survey in 2011.

Table 23 shows motorcycle rider conspicuity awareness by survey year. Between 2008 riders and 2011 riders, there was no significant difference in percentage of riders who reported that they had seen or heard something about motorcycle rider conspicuity in the previous 12 months.

Table 23

Motorcycle Rider Conspicuity Campaign Awareness by Survey Year

	2008	2011
<i>Have You Seen or Heard About Motorcycle Rider Conspicuity in Minnesota in the Past 12 Months?</i>	%	%
Yes	41.6	43.1
No	57.9	56.9

Table 24 shows helmet color by survey year. Since the 2008 survey, the only significant difference in helmet color was a decrease in the percentage of riders wearing solid bright color helmets at the time of the 2011 survey.

Table 24

Helmet Color by Survey Year

	2008	2011
<i>What is the Color of the Helmet You Wear Most Often</i>	%	%
Black	60.0	60.2
White	5.4	6.5
Solid Bright Color	11.3 ^a	9.2 ^a
Solid Dark Color	6.4	8.5
Multi-Color Bright	8.9	8.8
Multi-Color Dark	6.6	6.8

^aIndicates column proportions that differ significantly from each other at the .05 level.

Table 25 shows protective and reflective gear use by survey year. Compared to responses at the time of the 2008 survey, there was a significant decrease in percentage of motorcycle riders wearing black upper-body clothing, and a significant increase in percentage of riders wearing white upper-body clothing. Importantly, the percentage of riders who responded that they “rarely” wear riding gear with reflective material significantly decreased, whereas the percentage of riders who responded that they wear riding gear with reflective material “all the time” significantly increased. Similarly, the percentage of riders who responded that they “never” wear a fluorescent vest significantly decreased, whereas the percentage of riders who responded that they wear a fluorescent vest “all the time” significantly increased.

Table 25

Protective and Reflective Gear Use by Survey Year

	2008	2011
<i>What is the Color of the Protective Upper-Body Clothing You Wear</i>	%	%
Black	69.7 ^a	68.5 ^a
White	1.1 ^a	2.3 ^a
Solid Bright Color	5.5	5.3
Solid Dark Color	9.0	10.6
Multi-Colored Bright	5.9	5.6
Multi-Colored Dark	6.6	7.6
<i>How Often Do You Wear Riding Gear With Reflective Material</i>	%	n %
Never	48.6	48.2
Rarely	25.8 ^a	22.5 ^a
Half of the Time	8.3	8.8
Most of the Time	9.5	9.8
All of the Time	7.6 ^a	10.7 ^a
<i>How Often Do You Wear a Fluorescent Yellow, Green, or Orange Vest When Riding</i>	%	%
Never	91.1 ^a	88.8 ^a
Rarely	6.2	7.3
Half of the Time	1.1	1.6
Most of the Time	0.9	1.1
All of the Time	0.5 ^a	1.1 ^a

^aIndicates column proportions that differ significantly from each other at the .05 level.

Table 26 shows presence of conspicuity enhancing motorcycle modifications by survey year, and Table 27 shows types of conspicuity enhancing modifications by survey year. Presence of motorcycle modifications and types of modifications did not change significantly from the time of the 2008 survey to the time of the 2011 survey.

Table 26

Presence of Motorcycle Modifications by Survey Year

	2008	2011
<i>Does Your Motorcycle Have Any Features or Modifications</i>	%	%
Yes	47.4	49.5
No	51.2	50.5

Table 27

Types of Modifications by Survey Year

	2008	2011
<i>Features/Modifications Aftermarket Horn</i>	%	%
Yes	7.8	8.0
No	92.2	92.0
<i>Features/Modifications Auxiliary Driving Light</i>		
Yes	28.9	28.0
No	71.1	72.0
<i>Features/Modifications Headlight Modulator</i>		
Yes	9.9	9.4
No	90.1	90.6
<i>Features/Modifications Position (Marker) Lights</i>		
Yes	22.2	19.8
No	77.8	80.2
<i>Features/Modifications Reflective Tape/Stickers</i>		
Yes	17.3	16.3
No	82.7	83.7
<i>Features/Modifications Taillight Modulator</i>		
Yes	15.0	14.2
No	85.0	85.8

Key Findings

Three out of four riders (77.4%) are 40 years of age or older. Nearly nine out of 10 (86.4%) riders are male. Over two out of five motorcycle riders (44.1%) reside in the seven-county metro area.

Half of all riders (51.3%) have taken at least one motorcycle rider training course. However, only one out of 20 riders (5.5%) have taken an advanced motorcycle training course. Of those riders who have had motorcycle training, two out of five (40.8%) had a motorcycle training course five or fewer years ago.

Riders over age 40 are two times more likely to own a Harley-Davidson than riders 29 or younger. Riders 29 or younger are more likely to own a Kawasaki, Suzuki, or Yamaha than riders 30 or older.

Motorcyclists reported riding anywhere from 0 to 27,920 miles in the past 12 months, with a mean of 3,191 miles. Over half (56.3%) of the riders reported riding fewer than 3,000 miles. One out of four (24.4%) riders reported riding 5,000 miles or more.

Motorcyclists reported having anywhere from less than a year to 63 years of experience riding motorcycles on the street with a mean of 19.88 years. Over one out of five (22.4%) riders has 5 or fewer years experience. One out of three riders (34.6%) has more than 25 years riding experience.

Over half of all riders (53.6%) wear a helmet either “most of the time” or “all of the time” when they ride. One out of three (34.2%) riders “never” or “rarely” wear helmets when they ride. Of those who at least “rarely” wear a helmet, three out of five (60.2%) wear a black helmet. Riders over 30 years of age are more likely to wear black helmets than riders 29 years of age or younger.

Three out of five riders (59.3%) wear protective upper-body clothing “most of the time” or “all the time”. One out of four riders (23.5%) 29 years of age or younger “rarely” or “never” wear protective upper-body gear. Seven out of 10 (68.5%) riders that at least “rarely” wear protective upper-body gear wear black protective upper-body gear.

Seven out of ten riders (70.7%) “never” or “rarely” wear riding gear with reflective materials. Nine out of ten riders (88.8%) “never” wear a fluorescent vest while riding their motorcycles.

One-half (49.5%) of riders in Minnesota have some sort of high visibility feature or modification to enhance conspicuity (i.e. make a ride more visible to other drivers) on their motorcycle. Of riders with features or modifications, fewer than one out of 10 (8.0%) have an aftermarket horn; one out of four (28.0%) have auxiliary driving lights; one out of 10 (9.4%) has a headlight modulator; one out of five (19.8%) have position (marker) lights on their motorcycles; one out of six (16.3%) have reflective tape or reflective stickers on their motorcycles; and one out of seven (14.2%) have taillight modulators on their motorcycles.

Two out of three riders (66.2%) believe other drivers’ inattention or driving while distracted is the greatest risk posed to riders by other motorists. More than one out of 10 (11.2%) riders believe that failure to yield right-of-way is the greatest risk posed to riders by other motorists.

Over nine out of 10 (96.2%) riders are aware that motorcycle training courses are available in Minnesota. Nearly one-half of all riders (49.4%) have recently seen or heard about motorcycle training in Minnesota. Of the most frequently cited sources, one out of five riders have seen or heard about motorcycle training courses from friends or family members (20.3%); one out of six riders have heard about training courses from a motorcycle dealer or shop (17.9%); and one out of seven riders have heard about training courses from a license exam station or deputy registrar (14.7%).

Two out of three riders (65.5%) were most motivated to take their most recent motorcycle training course to get a motorcycle license. One out of four riders (25.6%) were most motivated to increase personal safety or skill level. Of those riders who have never taken a motorcycle training course, two out of five (41.8%) claim they “don’t need training,” one out of four (23.1%) “didn’t know about course,” one out of 10 (12.1%) cite as reason for never taking a course the “price of course,” and one out of 10 (9.2%) cite as reason for never taking a course “inconvenient course location.” Riders in northern Minnesota and central Minnesota were roughly twice as likely to cite inconvenient course location as reason for never taking a motorcycle training course than riders in southern Minnesota or the seven-county metro area.

Two out of five (43.1%) riders have seen or heard about motorcycle rider conspicuity in Minnesota in the past 12 months. Of the most frequently cited sources, roughly one out of 10 riders have seen or heard about motorcycle conspicuity from a motorcycle dealer or shop (12.9%), from friends or family members (11.2%), from a motorcycle event or rally (11.1%), from a newspaper or magazine (10.9%), from a billboard (10.3%) and from television (8.5%).

Regarding the motorcycle rider conspicuity campaign, a higher percentage of riders wear riding gear with reflective materials “all the time” and a lower percentage were riding gear with reflective material “rarely” in 2011 compared to riders at the time of the 2008 survey. Riders in 2011 also are more likely to wear a fluorescent vest “all the time” and less likely to “never” wear a fluorescent vest than riders at the time of the 2008 survey. Riders in 2011 are also more likely to wear white upper-body clothing, and less likely to wear black upper-body clothing than riders in 2008. That said, riders in 2011 are less likely to wear a solid bright-color helmet than riders at the time of the 2008 survey.

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