

**The Motorcycle-Alcohol Crash Problem in Florida:
Identification of Characteristics and Countermeasures**

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ABSTRACT

Much progress has been made in reducing alcohol-related crash fatalities involving motor vehicles. However, the same success with addressing the public health issue associated with alcohol use and motorcycling has not been demonstrated. Operating a motorcycle requires more physical skill, coordination, and balance than driving a car, and the use and abuse of alcohol impairs those skills.

Because of the problem associated with motorcycling and alcohol is significant in Florida, the Florida Department of Transportation (FDOT) contracted with the Center for Urban Transportation Research (CUTR) at the University of South Florida (USF) to conduct a comprehensive analysis of alcohol-related motorcycle crashes.

A major research objective was to obtain a better understanding of the causes and characteristics of alcohol-related motorcycle crashes in Florida. This objective was accomplished by analyzing five years of state traffic crash data on alcohol-related motorcycle crashes. The study examined human-related and physical aspects of alcohol-related motorcycle crashes to help establish an “identity” to this crash type. Human-related crash aspects examined included age and gender, alcohol use, licensing status, and helmet usage. Physical crash aspects examined include temporal patterns such as time-of-day, day-of-week, and monthly trends, and contributing factors such as first harmful event, road, environmental, and human factors that cause bodily injuries and/or property damage.

A second research objective was to identify potential interventions that may be effective at reducing alcohol-related motorcycle crashes in Florida. This objective was accomplished by conducting a national and statewide survey of motorcycle safety programs and assimilating information on innovative programs targeting the motorcycle alcohol problem.

Major study recommendations include increasing efforts to get more motorcyclists properly licensed, greater exposure of messages to motorcyclists about the dangers of drinking and riding, and more focused statewide public education and information campaigns. The study concludes with five major categories of countermeasures and recommendations to address the motorcycle alcohol problem including public information and education (PI&E) campaigns, promotional activities, enforcement efforts, community-based interventions, and data collection needs.

Keywords: motorcycle, crashes, alcohol, countermeasures, community interventions, public education and information campaigns

THE MOTORCYCLE-ALCOHOL CRASH PROBLEM IN FLORIDA: IDENTIFICATION OF CHARACTERISTICS AND COUNTERMEASURES¹

INTRODUCTION

Alcohol consumption by motorcyclists is a serious public health concern. Last year, 2,284 motorcycle occupants were killed and an additional 49,000 were injured in traffic crashes in the United States. Although motorcycles account for only 0.4 percent of all vehicle miles traveled, per vehicle mile traveled, motorcyclists were about 16 times more likely as passenger car occupants to die in motor vehicle traffic crashes and about 3 times as likely to be injured (NHTSA, 1998).

There is evidence that alcohol use by motorcycle riders and passengers is a significant factor in these crashes. Last year, approximately 32 percent of the fatally injured motorcyclists had blood alcohol concentration (BAC) levels greater than or equal to 0.10 g/dl (NHTSA, 1998). Moreover, NHTSA statistics show that motorcyclists who drink alcohol were more likely to be speeding, less likely to wear helmets, and more frequently involved in single vehicle crashes. For instance, the reported helmet use rate for intoxicated motorcyclists killed in traffic crashes was 46 percent, compared with 59 percent for those who were sober (NHTSA, 1998).

Nationally, significant progress has been made over the past two decades in reducing drunk driving for all motor vehicle modes including motorcyclists. According to NHTSA, since 1986, alcohol-related fatal crashes have declined from 44 percent to 37 percent of all fatal crashes. Drinking age increases, an abundance of new state drunk driving laws, increased public awareness of the dangers of drinking and driving, and heightened enforcement practices are factors attributed to the decline.

Florida ranks second, behind California, in the number of motorcyclists fatally injured in traffic crashes. As is the case nationally, the proportion of alcohol-impaired motorcyclists killed in fatal crashes in Florida is substantial. More than one-third of all motorcyclists (34.0 percent) killed in motor vehicle crashes were legally intoxicated, compared to 31 percent nationally. Florida consistently outranks national averages.

Because the problem associated with motorcycling and alcohol is significant in Florida, the Center for Urban Transportation Research (CUTR) conducted a comprehensive analysis of motorcycle-alcohol crashes from 1993 to

¹ Paper was accepted for presentation at TRB 2001 Annual Meeting and possible publication in *Transportation Research Record*.

1997 to understand how and why these crashes occur and identified several countermeasures that may help to reduce alcohol-related motorcycle deaths and injuries in Florida. The results of this research should be of benefit to state departments of transportation, state and local motorcycle safety officials, law enforcement agencies, motorcycle safety groups, education and training providers, insurance providers, at-risk motorcycle riders, and the general motoring public.

RESEARCH OBJECTIVES

The overall research objectives were to conduct a comprehensive analysis of alcohol-related motorcycle crashes in Florida and to present information on appropriate countermeasures to address the problem. The research was designed to meet two major objectives.

First, a major focus was to obtain a better understanding of the characteristics of alcohol-related motorcycle crashes in Florida. This objective was accomplished by collecting data over a five-year period on alcohol-related motorcycle crashes and analyzing the data using statistical software.

The second research objective was to identify potential countermeasures that may be effective at reducing alcohol-related motorcycle crashes in Florida. This objective was accomplished by conducting a national survey of motorcycle safety programs and assimilating information on countermeasures targeting the motorcycle-alcohol problem.

RESEARCH METHODOLOGY

Data Collection

Researchers obtained data on police-reported alcohol-related motorcycle crashes that occurred from 1993 to 1997 from the Florida Department of Highway Safety and Motor Vehicles (DHSMV), Office of Management and Planning Services. The dataset included crash information compiled from long-form traffic crash reports submitted to the DHSMV by Florida law enforcement agencies. The DHSMV defines an alcohol-related crash as one in which alcohol use by a driver or pedestrian involved in the crash is at least suspected by a law enforcement officer. When reporting alcohol-related crash statistics, the DHSMV used the codes “under the influence” and “had been drinking” to indicate alcohol use. This definition leads to a relatively accurate picture of crashes in which alcohol may have been a contributing crash factor. However, because some crashes are included in which alcohol may not have been a factor in the crash, an inflated view of the extent to which driving while impaired by alcohol is an actual

cause of crashes may result. In contrast, in some crashes in which alcohol may be a factor, law enforcement officers may fail to note the involvement of alcohol on the crash form.

In this study, a broader definition of alcohol-related crashes was used because researchers wanted to include all possible scenarios in which alcohol may have been a factor in the crash. Therefore, a crash was considered alcohol-related if at least one motorcyclist involved in the crash was under the influence of alcohol, under the influence of alcohol and drugs, had been drinking or had pending BAC test results. This resulted in a larger number of alcohol-related crashes in the sample.

Data Analysis

Descriptive statistics were used to summarize and organize the data in order to better understand the role that human and physical factors play in alcohol-related motorcycle crashes. Frequency and percentage distributions were computed for variables describing the geographic distribution, and the nature and extent of motorcycle-alcohol crashes, as well as rider² and passenger characteristics. Moreover, contingency tables were constructed to examine relationships between variables of interest. Finally, standard tests of significance were used in order to compare selected characteristics of alcohol and non-alcohol motorcycle crashes. The data analyses presented in this study provides the most basic level of organizing and presenting quantitative information in an effective and meaningful way.

Survey of State Motorcycle-Alcohol Initiatives

Researchers surveyed state motorcycle safety coordinators to gather information on innovative programs targeting the motorcycle-alcohol problem. A total of 47 state motorcycle safety programs and two motorcycle rider education programs sponsored by the non-profit organizations Arkansas Motorcycle Safety, Inc. and ABATE of Alaska were surveyed.

Survey questions focused on motorcycle safety activities, format and content of education and training courses, licensing requirements, and countermeasures specifically targeting the reduction of alcohol-related motorcycle crashes. Follow-up telephone interviews enabled researchers to develop case studies about successful motorcycle-alcohol safety initiatives in other states.

²The term "rider" is used to refer to the person operating the motorcycle. The term "motorcyclist" refers to a rider. Information on motorcycle passengers is reported separately.

CRASH ANALYSES RESULTS

The crash analyses results are presented in three major categories: crash characteristics, driver and passenger characteristics, and alcohol versus non-alcohol crash characteristics. Crash characteristics include information about the crash event such as time-of-day, day-of-week, and month of occurrence, and contributing aspects such as first harmful event, and vehicle, road, environmental, and driver contributing factors. Driver and passenger characteristics include age and sex, licensing status, helmet use, and BAC levels. An analysis of alcohol and non-alcohol crash characteristics was also conducted to clarify who is involved and injured as a result of impaired motorcycle riding in terms of demographic and crash characteristics, license endorsement status, speeding, and injury severity.

Crash Characteristics

A major component of the analysis was to examine aspects that could help answer the “who”, “when”, “where” “how”, and “why” about motorcycle-alcohol crashes. A total of 3,012 crashes involving motorcycles and alcohol were analyzed to gain a clearer understanding of the crash aspects and the characteristics of the people involved in them. From 1993 to 1997, a total of 796 motorcyclists were killed and another 23,750 were injured in motorcycle crashes in Florida (see Table 1.). In spite of a 25 percent reduction in motorcycle-alcohol crashes from 1993 to 1997, the fact that almost one-half of all motorcyclists killed (46 percent) and 44 percent of all passengers killed were using alcohol, illustrates the magnitude of the motorcycle-alcohol problem in Florida.

Table 1. Motorcycle Fatalities, Injuries, and Alcohol Involvement¹: Florida, 1993-1997

	1993	1994	1995	1996	1997	Total 1993 –1997
All Crashes	5,273	5,055	4,887	4,828	4,707	24,750
Motorcyclists						
Killed	179	152	164	138	163	796
Injured	5,042	4,819	4,689	4,673	4,527	23,750
Motorcyclist Passengers						
Killed	22	20	19	16	10	87
Injured	877	688	695	511	666	3,437
Alcohol-related crashes	698	639	595	544	536	3,012
Motorcyclists						
Killed	95	65	79	64	66	369
Injured	701	638	580	546	516	2,982
Motorcyclist Passengers						
Killed	12	6	10	8	2	38
Injured	131	105	108	115	102	561
Non-motorcyclists²						
Killed	6	3	2	2	2	15
Injured	52	49	50	59	52	261
Percent motorcyclists killed using alcohol	53	43	48	46	40	46
Percent passengers killed using alcohol	55	30	53	50	20	44

Notes:

¹For analysis purposes, alcohol-related crashes are defined as crashes in which at least one motorcyclist involved in the crash was under the influence of alcohol, under the influence of alcohol and drugs, had been drinking or had pending BAC test results.

²Non-motorcyclist includes all persons involved in an alcohol-related motorcycle crash other than motorcycle rider and passengers.

Source: Department of Highway Safety and Motor Vehicles, Florida Traffic Crash Database.

Time of Day, Day of Week, and Month of Year

Similar to national trends, more than one half of all alcohol-related motorcycle crashes in Florida happen between 9:00 p.m. and 3:00 a.m. (54 percent) with the peak hour for all alcohol-involved motorcycle crashes falling

between midnight and 1:00 a.m. The largest percentage of fatal motorcycle-alcohol crashes happen between 10:00 p.m. and midnight (20 percent).

Two-thirds of these crashes took place on the weekends, and the highest percentage of fatal crashes occurred on Saturdays. Peak weekend hours for motorcycle-alcohol crashes are midnight to 3 a.m. when more than two times as many crashes happen compared to similar hours during weekdays. On weekdays, motorcycle-alcohol crashes are more likely to happen between 8 p.m. and 10 p.m.

March has the highest proportion of alcohol-related crashes (13 percent), which may be related to annual motorcycle events (Bike Week) held in Florida during that month.

Contributing Factors to Alcohol-Related Motorcycle Crashes

Information on the first harmful event and contributing crash factors answered the “how” question.

Sixty percent of all alcohol-related motorcycle crashes involve a collision with an object. In most cases, these crashes involve colliding with a vehicle in transport (63 percent) or with another fixed object (30 percent). One-fourth of all fatal alcohol-related motorcycle crashes involve motorcyclists running off the road, overturning, or falling from the bike rather than striking another object.

Single vehicle motorcycle crashes are twice as likely to involve alcohol than multi-vehicle crashes. Almost two-thirds of all single vehicle crashes reportedly were due to careless riding and 10 percent were directly attributed to alcohol.

In multiple-vehicle crashes, most riders were not cited for any improper driving action. When cited, however, most riders failed to yield the right-of-way (18 percent) or drove carelessly (13 percent). Drivers were cited for careless driving in 20 percent of the crashes. Alcohol was cited as a contributing factor even less in multi-vehicle crashes, 5 percent for both riders and motor vehicle drivers.

The cumulative effect of vehicle, road, and environmental factors in alcohol-related motorcycle crashes is negligible which suggests that human factors play a greater role in motorcycle-alcohol crashes than factors associated with the vehicle, road and the environment surrounding the crash.

Driver and Passenger Characteristics

To answer the “who” question, attributes such as age and sex were analyzed to characterize the person involved in motorcycle-alcohol crashes. To understand “why” certain riders are more likely than others to become involved in alcohol-related crashes, variables related to licensing status, helmet use, and BAC levels were analyzed.

Age and Sex

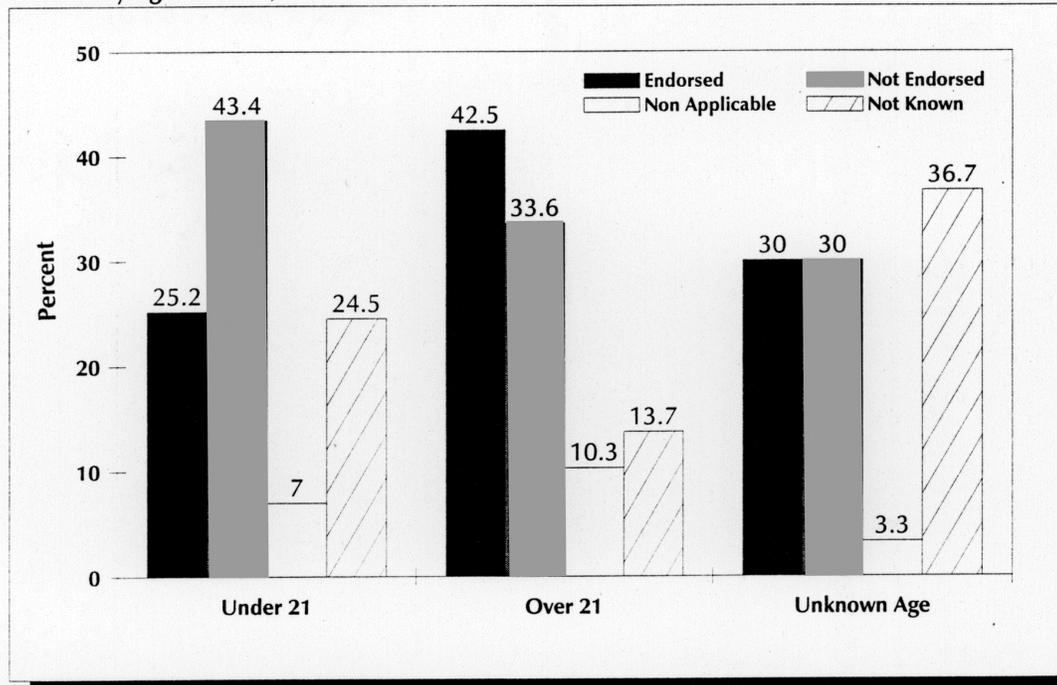
An overwhelmingly majority of those involved in both non-alcohol and alcohol-related motorcycle crashes are male (97 percent and 93 percent, respectively). Male riders age 21 to 25 years exhibit the highest percentage of alcohol-related crash involvement. While passengers in this age group also exhibit the highest proportion of fatalities in alcohol-related motorcycle crashes. Almost 10 percent of passenger deaths and injuries involve children 15 years and under.

Endorsement status

This study found that more than one-third of all riders involved in alcohol-related crashes were not endorsed³ to operate a motorcycle. As shown in Figure 1, almost one-half of the 143 riders under 21 years involved in alcohol-related crashes were not properly licensed to operate a motorcycle (43 percent). Among riders over 21 years, one out of every three riders involved in alcohol-related crashes did not have a license endorsement to operate a motorcycle. Those in the 21 to 25 year age group exhibited the highest frequencies of non-endorsement.

³ Endorsement refers to whether or not a person is properly licensed to operate a motorcycle. In Florida, all first time license applicants under 21 years of age must complete a motorcycle safety course prior to receiving a motorcycle license.

Figure 1. Endorsement Status of Motorcycle Riders Involved in Alcohol-Related Motorcycle Crashes By Age: Florida, 1993-1997



Source: Florida Department of Highway Safety and Motor Vehicles, Florida Traffic Crash Database.

Significant differences in endorsement status were found between riders involved in non-alcohol and alcohol-related crashes ($p < 0.0001$). Results indicate that a large proportion of alcohol-impaired motorcyclists do not have a license endorsement compared to riders involved in non-alcohol crashes (44 percent and 37 percent, respectively).

Helmet Use and Injury Severity

A total of 15 percent of riders and passengers killed in alcohol-related motorcycle crashes were not wearing helmets. In alcohol-related injury crashes, passengers were more likely to not wear helmets than riders (42 percent and 22 percent, respectively).

Crash-involved motorcycle riders impaired by alcohol were more likely to be seriously or fatally injured in the crash than riders who were not drinking ($p < 0.0001$). Impaired riders have significantly higher proportions of incapacitating and fatal injuries (35 percent and 11 percent, respectively) than non-impaired motorcycle riders (26 percent and 2 percent, respectively).

BAC Levels

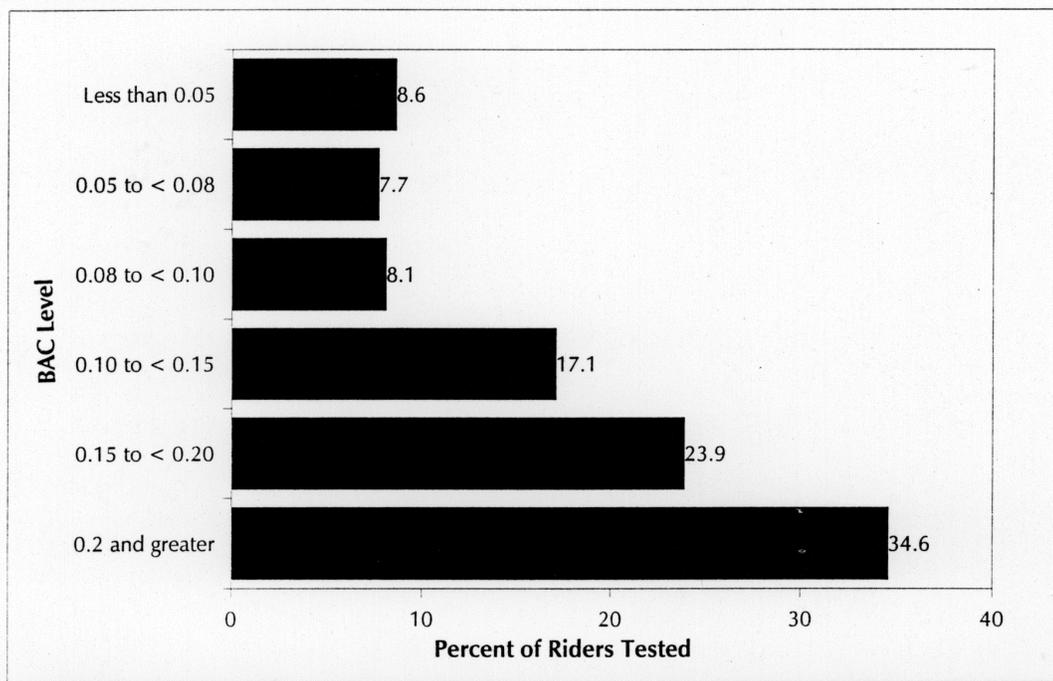
Operating a motorcycle requires motor coordination, which along with risk perception, is severely altered by

alcohol. Less than one-half (42 percent) of the 3,053 riders involved in alcohol-related crashes were tested to determine intoxication levels.

Among those tested, more than one-half of the motorcyclists (57 percent) had BAC levels of 0.15 g/dl and greater. In fatal crashes, BAC levels were obtained from 82 percent of the riders. These results indicate that approximately 60 percent of the 331 fatally injured motorcyclists in 1993 to 1997 were legally intoxicated (BAC \geq 0.08 g/dl.), while 12 percent of the riders consumed some alcohol. The mean BAC for all riders killed with BACs \geq 0.08 g/dl was 0.173.

This research did not determine if drinking was a significant predictor of injury severity. However, 35 percent of all fatally injured motorcyclists had BAC levels \geq 0.20 g/dl — more than twice the legal limit — suggesting that many may be problem drinkers (see Figure 2). Intoxication levels tend to increase with age until about age 40 then decline significantly after that. The age group 31 to 40 years had the highest intoxication levels (41 percent) followed by riders aged 21 to 25 years (18 percent).

Figure 2. Blood Alcohol Concentration (BAC) Levels of Riders Killed in Alcohol-Related Motorcycle Crashes: Florida, 1993-1997



Source: Florida Department of Highway Safety and Motor Vehicles, Florida Traffic Crash Database.

SURVEY RESULTS

The survey purpose was to identify potential countermeasures that may be effective in addressing the motorcycle-alcohol problem in Florida. Surveys were emailed and faxed to 49 motorcycle safety program coordinators. A total of 37 surveys were returned for an overall response rate of 76 percent. Programs were identified for follow-up telephone interviews based on the following criteria:

1. Promotional and public information and education (PI & E) activities.
2. Program specifically targeting alcohol education for motorcyclists.
3. Plans to expand motorcycle safety program.
4. Evaluation or research component of the program.
5. Program and community partnerships.

State Motorcycle Programs

Almost all states surveyed have motorcycle safety programs funded mostly by motorcycle license and endorsement fees, student fees, state budgets allocations, and grants. Most programs sponsor rider education and training courses, promotional activities, public information and education campaigns, drug and alcohol education, licensing requirements, and research.

Motorcycle Rider Education

Most states use the Motorcycle Safety Foundation (MSF) RiderCourse® curriculum, or a variation of the curriculum, for rider education courses. In addition, at least 33 states use MSF's Motorcycle Operator Manual (MOM), 31 states use the MSF written exam, and 32 states use the MSF skills exam as a primary test.

The MSF recommends a minimum of seven hours of classroom instruction and eight hours of on-cycle instruction. The majority of programs meet or exceeds the minimum guidelines for classroom and on-cycle instruction.

The majority of states do not require motorcyclists to complete a rider education course prior to licensing. However, some require training for younger riders 21 years and under. Most states offer incentives to complete rider education courses such as waiving the written and skills test required to obtain a motorcycle license.

Alcohol Education for Motorcyclists

All of the states incorporate alcohol education into the rider education course and typically spend 30 to 45 minutes on the topic. Previous research shows that traditional drinking and driving messages targeting motor

vehicle drivers have little or no impact on motorcyclists. Because strategies, such as designated drivers or parking a bike are not always appropriate for motorcyclists, research recommends tailoring alcohol education messages specifically to motorcycle riders. However, there is little evidence that anti drinking and riding messages actually reach motorcyclists. Only 5 of the 37 states (14 percent) offer a separate alcohol education program for motorcyclists. Generally, alcohol education curriculums include information on the effects of alcohol on rider and riding skills, state drinking and riding laws, BAC levels, and crash statistics. Alcohol messages and information are typically presented via videos, audio-visual aids, classroom instruction, brochures, and posters.

Most states do not collect data about course participants or they lack the ability to link these data with crash statistics in order to evaluate course effectiveness. A total of 33 out of 37 states have not evaluated the effectiveness of alcohol education at reducing participant involvement in alcohol-related crashes.

Rider education programs provide one method for motorcyclists to receive alcohol messages. However, non-traditional methods such as community-based strategies are also effective ways to reach motorcyclists for a number of reasons. First, motorcycle riders are hard to reach through traditional avenues and comprise a much smaller part of the general motoring public. Second, drunk driving messages and interventions that target motor vehicle operators have little or no impact on motorcyclists. Third, motorcyclists, as a group, have strong community ties that make implementing community-based interventions easier. Finally, motorcyclists have already organized to form groups that represent their interests and promote safe riding. These groups may provide access to larger numbers of motorcyclists. Also, motorcycle clubs and dealers—who already play a significant role in improving motorcycle safety—should be enlisted to assist with additional community-based endeavors.

CONCLUSIONS

Major study recommendations include increasing efforts to get more motorcyclists properly licensed, greater exposure of messages to motorcyclists about the dangers of drinking and riding, and more focused statewide public education and information campaigns. In addition, better data collection is needed so that course participation can be linked to crash statistics and motorcycle safety programs can be evaluated to ensure program effectiveness.

Successful efforts to reach motorcyclists involve collaborative partnerships with local and community groups, motorcycle clubs and dealerships, non-profit and for-profit organizations, law enforcement, and public health agencies. The study concludes with five major categories of countermeasures and recommendations to address the

motorcycle alcohol problem including public information and education (PI&E) campaigns; promotional activities, enforcement efforts, community-based interventions, and data collection and further research needs.

Some of the countermeasures identified in the study include:

- Create a PI & E campaign targeted specifically to motorcycle riders that delivers messages about impaired riding.
- Increase law enforcement training to detect impaired motorcyclists.
- Increase enforcement of motorcycle licensing and endorsement laws.
- Utilize motorcycle clubs, dealers, and organizations to distribute PI & E materials and promote rider education.
- Reach motorcyclists at the point of consumption in biker bars and at motorcycle rallies and major events like Bike Week in Daytona Beach.
- Enroll bars and restaurants in responsible vendor programs.
- Recruit rider education instructors and motorcycle club members for a volunteer speaker's bureau to talk to businesses, schools, and other community groups about motorcycle safety issues, including alcohol use and motorcycle riding.
- Develop partnerships with local businesses, community groups, motorcyclists groups, and corporations to share the costs of these programs and increase the reach of safety materials.
- Provide local alternatives to drinking and riding through ride service programs.

Public Information and Education (PI & E)

Rider education and motorcycle magazines and newsletters comprise the most common sources for motorcyclists to receive impaired-riding messages. Most messages in broader reaching forms of media target motor vehicle operators or all motorcyclists in general. Therefore, this study recommends creating a public information and education campaign that delivers messages that are aimed at preventing impaired riding specifically for motorcyclists.

The following should be considered when developing the content for PI & E impaired-riding campaigns:

- **Motorcycle riders do not comprise a homogeneous group of people.** Focus group results conducted by Global Communications, Inc. and Public Communication Resources identified seven different types

of motorcyclists. Participants felt that incorporating Harley-Davidson references into PI & E materials would appeal to a larger group of motorcyclists.

- **Target messages based on different motorcycle age groups.** Significant differences in the demographic profiles of motorcycle riders involved in motorcycle-alcohol crashes indicate that messages on impaired riding should target male riders age 31 to 45 years. A more comprehensive motorcycle safety campaign, including impaired riding messages, should be targeted to males riders age 21 to 30 year because they comprise the largest group of riders involved in all motorcycle crashes.
- **Consider attitudes among different motorcycling communities to increase broader appeal.** These attitudes include the freedom associated with riding a motorcycle, the freedom of choice and self-determination, and feelings of pride and possessiveness towards their motorcycles.
- **Include messages about motorcycle licensing laws, penalties for lack of licensure, and the benefits of completing rider education** (e.g. waiver of licensing exams, insurance discounts, and better motorcycling skills).
- **Include “share the road” campaigns to educate drivers about responsibilities to share the road with other vehicles and to look for motorcyclists.**
- **Utilize media and community groups to reach target groups.** Access to media can be attained through donated or paid ad time and space. Also, utilize other distribution avenues such as local community groups and businesses, corporations, and non-profit organizations to help produce and distribute materials. Circulate materials at motorcycle rallies, gatherings, and races. Display and distribute materials through motorcycle clubs and organizations, motorcycle dealers, rider education providers, biker bars and other hospitality establishments, schools, universities, and motor vehicle licensing and registration sites.
- **Develop BAC messages to include different habits of alcohol consumption and different age groups.** Riders involved in alcohol-related crashes typically have BAC levels that may indicate binge drinking or that the person is a problem drinker. Heavier drinkers develop a tolerance to alcohol and may not display the effects of intoxication as BAC levels continue to rise. In addition, significant differences between alcohol-related and non-alcohol crash involvement of riders in the 31 to 45 year age groups may

indicate alcohol abuse problems. Also, the high number of alcohol-related crashes in the 21 to 25 year old groups may result from binge drinking rather than alcohol abuse problems. However, data to support these hypotheses are not available.

Promotional Activities

Motorcycling clubs, ABATE chapters, and motorcycle dealers provide key opportunities to distribute public information and education materials and promote rider education and training. Thus, Florida may consider to:

- **Continue to work with motorcycle groups and establish a presence at motorcycle rallies, gatherings, events, and races.** The high frequency of motorcycle crashes in March coincides with the occurrence of Bike Week in Daytona Beach. This one event provides an opportunity to reach thousands of riders—many of whom will be drinking—and to co-sponsor events promoting safe motorcycling in Florida.
- **Organize a volunteer speaker's bureau to speak to businesses, schools, community groups, and anyone else requesting information on motorcycle safety issues.**

Enforcement of Existing DUI and Licensing Laws

A number of recommendations involve law enforcement and motorcycle licensing laws. These include:

- **Increase law enforcement training to detect impaired motorcyclists.** Differences exist in the DUI detection cues between motor vehicle and motorcycle operators. NHTSA materials developed for law enforcement officers to aid in impaired-rider detection could be used in law enforcement training workshops.
- **More focused enforcement of DUI laws.** Law enforcement could conduct DUI checkpoints and other DUI enforcement strategies to target impaired motorcycle riders during times of higher occurrences of alcohol-related motorcycle crashes, such as weekends and between the hours of 9:00 p.m. and 3:00 a.m.
- **Greater enforcement of licensing laws and increased efforts to license motorcyclists.** While the levels of non-endorsed riders in alcohol-related crashes were significantly higher than those in non-alcohol crashes, both groups exhibit high levels of non-endorsement (44 percent and 37 percent, respectively). Statewide efforts should focus on ensuring that motorcyclists riding on Florida roadways are properly licensed. One method to reach motorcycle owners with information about licensing and insurance laws

is to mail the information using registration information. Also, print, radio, and/or TV PSAs could spread this information to larger audiences. In addition, law enforcement agencies could conduct enforcement campaigns that target unlicensed riders. Another method involves linking motorcycle registrations with motorcycle endorsement or motorcycle-only license information. Owners of newly registered motorcycles or renewals could be required to show proof of licensure.

- **Referral for Alcohol Treatment.** Motor vehicle operators convicted of DUI undergo evaluation for alcohol substance abuse. However, not all persons convicted of DUI are referred to treatment. The institutions and agencies monitoring and evaluating compliance with DUI sentence requirements should ensure that motorcycle riders and other motor vehicle operators with substance and alcohol use problems are referred for treatment.

Community-Based Interventions

Recommendations for community-based interventions to prevent drinking and motorcycle riding and to reduce alcohol-related motorcycle crashes include the following:

- **Increase coordination of motorcycle safety efforts and activities at the local level.** At the local level, community involvement and ownership is more likely to take place lending a greater chance of program sustainability. Also, as previously stated, motorcycling communities provide a good opportunity for community-based efforts initiated at the state level. Many groups already show strong grassroots efforts to work together on issues they deem important (e.g. discrimination, helmet laws).
- **Utilize partnerships for community-based alternatives to drinking and riding.** The higher incidence of single vehicle alcohol-related motorcycle crashes and the degree of injury severity experienced by riders in alcohol-related crashes highlight the importance of preventing riders from getting on their motorcycles after drinking. The State could work with rider education providers, motorcycle clubs, dealers, and organizations to develop ride-service programs similar to Minnesota and New Jersey to transport impaired drivers or riders and their bike or vehicle home. In addition, the State could develop partnerships with local businesses, community groups, motorcyclist clubs, dealers and organizations, and corporations to help share the program costs and distribute program materials. Further, the support of these groups as well as hospitality establishments and public health agencies should be enlisted to

sponsor and promote ride-service programs, responsible vendor programs, motorcycle safety events, and to increase the visibility of the motorcycle-alcohol problem.

- **Utilize NHTSA-sponsored materials on community-based partnerships to aid traffic safety programs in their efforts to prevent injuries and deaths.** Several NHTSA publications, available on the web, detail suggestions for initiating and fostering community partnerships, publicizing programs and campaigns, and establishing community-based impaired driving and riding programs.

Data Collection and Further Research

The following recommendations are made concerning data collection needs and further research:

- **Conduct evaluation of rider education program and alcohol education.** Because most alcohol education for motorcyclists is incorporated in rider education courses, the State should consider conducting a program evaluation to determine if these courses are effective in promoting safe motorcycle riding behaviors and in reducing injuries and fatalities, particularly in regards to drinking and riding.
- **Utilize student evaluation data for program evaluation.** Presently, rider education course participants complete evaluation forms at the end of the course. However, these data are not compiled and evaluated at the state level. One option would be to require rider education contractors to forward student evaluation information to the State to be used to evaluate the effectiveness of the rider education program.
- **Collect rider course participation data at licensing locations.** Because skills and knowledge tests for a motorcycle endorsement or motorcycle-only license are waived upon completion of a rider education course, the State could collect these data at license renewal locations to determine how many new license applicants complete rider education courses. These data could also be collected on existing licensees to determine course participation during the license renewal process.
- **Collect more data on motorcycle passengers.** The FTCD can provide further comprehensive information by including passenger data such as licensing information, levels of intoxication, and safety equipment use on the crash form. For both motorcycle operators and passengers, the safety equipment usage category could include whether the person wore a legal helmet. This recommendation is based on the finding that the reported helmet use by injured passengers is 57 percent. The collection of these data

would yield more information so that countermeasures can be tailored to address motorcycle passenger education.

- **Research in the area of riding behavior of motorcyclists.** Further research is needed to determine why motorcyclists do or do not drink when riding. This research can be the key in identifying additional countermeasures for reducing alcohol-related motorcycle crashes.

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