The Effect of Entry-Level Motorcycle Rider Training on Motorcycle Crashes
Supporting Statement for Information Collection Request

TABLE OF CONTENTS

ATTACHMENTS

A. Justification

A.1. Explain the circumstances that make the collection of information necessary. Identify any Legal or administrative requirements that necessitate the collection. Attach a copy of the appropriate section of each statute and regulation mandating or authorizing the collection of information.

a. Circumstances making the collection necessary

The National Highway Traffic Safety Administration (NHTSA) was established by the Highway Safety Act of 1970 (23 U.S.C. 101) to carry out a Congressional mandate to reduce the mounting number of deaths, injuries and economic losses resulting from motor vehicle crashes on the Nation's highways. As part of this statutory mandate, NHTSA is authorized to conduct research as a foundation for the development of motor vehicle standards and traffic safety programs.

Motorcycle crashes and fatalities have become a rapidly escalating traffic safety problem on our Nation's roads. Motorcycle fatalities in the US decreased in 2009 for the first time after steadily increasing for 11 years; however, even with this decline, the number of motorcycle fatalities in 2009 was nearly double that from a decade earlier (NHTSA, 2009, 2010)[1,2]. In response to this sizeable increase in motorcycle fatalities, motorcycle rider training has been promoted by advocacy groups and States as a valuable countermeasure for motorcycle safety. The National Agenda for Motorcycle Safety (NAMS) published by NHTSA and the Motorcycle Safety Foundation also emphasizes the importance of rider training in motorcycle safety programs (NHTSA and MSF, 2000)[3].

This endorsement of motorcycle rider training is reflected in the Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU) Pub. L. 109-59. Congress authorized $25 million in grant funding to States under Section 2010 of SAFETEA-LU in part to support improvements in motorcycle safety curricula, rider training program delivery, and recruitment or retention of motorcyclist safety training instructors. Many States additionally allow motorcycle riders to receive a waiver for their motorcycle licensing test after successful completion of a rider training course, and several States require completion of a training course for all riders or for riders under a certain age in order to receive motorcycle endorsements on their licenses.

Despite the prominent role that rider training plays in Federal motorcycle safety funding and motorcycle licensing policy, evidence on the effectiveness of rider training has been mixed. One study in the United States by Billheimer (1998)[4] found that trained riders had a lower crash rate than untrained riders during their first 6 months of riding. However, a number of other studies

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[1] NHTSA. (2009). Traffic Safety Facts, 2008 Data: Motorcycles. Publication No. DOT HS 811 159. Washington, DC: National Highway Traffic Safety Administration.

[2] NHTSA. (2010). Traffic Safety Facts, Research Note: Highlights of 2009 Motor Vehicle Crashes. Publication No. DOT HS 811 363. Washington, DC: National Highway Traffic Safety Administration.

[3] NHTSA and MSF. (2000). *National Agenda for Motorcycle Safety*. Publication No. DOT HS 809 156. Washington, DC: National Highway Traffic Safety Administration.

[4] Billheimer, J. W. (1998). Evaluation of California Motorcyclist Safety Program. *Transportation Research Record, 1640,* 100-109.

have found no effect or a negative effect of training on motorcycle crashes (as reviewed in Daniello, Gabler & Mehta, 2009; Mayhew & Simpson, 1996)[5,6]. Because these studies have differed considerably in their control for self-selection and control for prior riding experience, it is unclear how to account for the differences in their findings.

For example, Billheimer's (1998)[4] study compared crash rates between trained and untrained riders matched on several characteristics, but did not control for the possibility that trained riders may have had lower crash rates than untrained riders because safety-conscious riders self-selected to take training. Other studies that have found no difference in crash rates between trained and untrained riders failed to account for the number of miles that participants in the study had ridden prior to training or enrollment in the study, or have not included many novice motorcycle riders in their sample. The lack of difference in crash rates between trained and untrained riders in these studies may be because training is most effective for novice riders. It is similarly possible that the untrained riders that participated in these studies were more experienced riders than the recently trained riders, and that the greater experience of untrained riders superseded the benefits of training. In light of the conflicting evidence on the effectiveness of motorcycle rider training, one of the recommendations of the NAMS is to conduct follow-up research on the effectiveness of motorcycle training (NHTSA and MSF, 2000)[3].

b. Statute authorizing the collection of information

The National Traffic and Motor Vehicle Safety Act of 1966, Title 15 United States Code 1395, Section 106 (b), gives the Secretary authorization to conduct research, testing, development, and training as authorized to be carried out by subsections of this title. The Vehicle Safety Act was subsequently re-codified under Title 49 of the U.S. Code in Chapter 301, Motor Vehicle Safety. Section 30168 of Title 49, Chapter 301, gives the Secretary authorization to conduct research, testing, development, and training to carry out this chapter. (See Attachment A for full text).

A.2. Indicate how, by whom, and for what purpose the information is to be used. Except for a new collection, indicate the actual use the agency has made of the information received from the current collection.

NHTSA will use this new collection to ascertain the effectiveness of entry-level motorcycle rider training. This data from these studies will help to elucidate:

- If motorcycle riders who receive entry-level rider training have a lower crash rate than matched untrained riders;
- If motorcycle riders who receive entry-level rider training have a lower citation rate than matched untrained riders;
- If motorcycle riders who receive entry-level rider training wear DOT-compliant helmets more often than matched untrained riders;

[5] Daniello, A., Gabler, H. C., & Mehta, Y. A. (2009). Effectiveness of motorcycle training and licensing. *Transportation Research Record, 2140,* 206-213.

[6] Mayhew, D. R., & Simpson, H. M. (1996). *Effectiveness and Role of Driver Education and Training in a Graduated Licensing System.* Ottawa, ON: Traffic Injury Research Foundation.

- If motorcycle riders who receive entry-level rider training wear protective gear often than matched untrained riders;
- If motorcycle riders who receive entry-level rider training drink alcoholic beverages prior to riding less often than matched untrained riders.

The data will be used by NHTSA to determine if resources used on motorcycle rider training support NHTSA's mission by decreasing motorcycle crashes and fostering safe motorcycle riding. Results will be shared with NHTSA's partners that are interested in motorcycle safety so that they can deploy their resources to support effective motorcycle safety countermeasures.

This study will be conducted with a convenience sample and respondents will not be representative of the population of American motorcycle riders. Thus, when interpreting the findings NHTSA will note that the results are not generalizable to all American motorcycle riders, but rather that they demonstrate that training is associated with outcomes of interest (e.g., crashes, protective gear use, alcohol use prior to riding) in a group of riders that are as similar as possible with the exception of their training status.

A.3. Describe whether, and to what extent, the collection of information involves the use of automated, electronic, mechanical or other technological collection techniques or other information technology. Also describe any considerations of using information technology to reduce burden.

When possible, participants will have the option to respond to a web-based survey rather than a paper-based survey. This option will reduce respondent burden by allowing flexibility in how they respond. A web-based survey will additionally require less time for the data entry needed to compile responses than would a paper-based survey.

A.4. Describe efforts to identify duplication. Show specifically why any similar information, already available cannot be used or modified for use for the purposes described in Item 2 above.

The most recent large-scale, methodologically rigorous study on the effectiveness of motorcycle rider training in the United States was conducted between 1989 and 1994 (Billheimer, 1998)[4]. Since then, there have been significant changes in the demographics of the motorcycle riding population, and in the size and speed of motorcycles that are commonly ridden. The number of fatal motorcycle crashes in the United States has also increased considerably since 1994. Because of these large changes in the motorcycle riding population and in motorcycle riding outcomes, it cannot be assumed that the relationship between rider training and crashes is the same now as it was more than 15 years ago.

The current study will be more methodologically sound than past studies on rider training effectiveness. One criticism of Billheimer's (1998)[4] study was that trained riders may have had lower crash rates than untrained riders because motorcycle riders who choose to take training are more safety-conscious than those who do not. To control for this, safety behaviors (e.g., reported speeding and lane-splitting) will be added as a factor on which trained and untrained riders in the current study will be matched.

A.5. If the collection of information involves small businesses or other small entities, describe the methods used to minimize burden.

Information for this study will only be collected from individuals. Some recruitment of motorcycle riders will occur at their State-run training classes, but this will require no burden or effort from the instructors of the training classes. The States of California and Illinois, which are the potential sites for this study, support this project and have given permission to the project team to distribute surveys through their courses.

A.6. Describe the consequences to Federal Program or policy activities if the collection is not collected or collected less frequently.

The information is necessary to ensure that funds budgeted for motorcycle safety programs are used efficiently. Without evaluating the effectiveness of motorcycle rider training, it is difficult to determine the value of rider training as a countermeasure for motorcycle safety. The number of injuries and fatalities due to motorcycle crashes will continue to increase if effective countermeasures cannot be identified and promoted with scientific data.

Information will be collected from respondents up to three times in this study. The second information collection will occur 6 months after the first, and the third information collection will occur 18 months after the first. The timing of the 6 month follow-up survey is based on the results of Billheimer (1998)[4], who found that trained riders had a lower per-mile crash rate than untrained riders only in the first 6 months following training. The difference in crash rates disappeared after this time. If the first follow-up survey was conducted more than 6 months after training, the information may be collected after the window in which training is the most effective.

The primary purpose of the 18 month follow-up survey is to examine if there is a longer-term relationship between training and safe motorcycle riding. Although Billheimer (1998)[4] did not find a strong relationship between training and crash rates 6 months beyond training, updated data on this is necessary. The long-term effects of rider training are relevant to training's effectiveness as a motorcycle safety countermeasure.

A.7. Explain any special circumstances that require the collection to be conducted in a manner inconsistent with the guidelines set forth in 5 CFR 1320.6.

There are no special circumstances that would cause this collection to be conducted in a manner inconsistent with OMB guidelines.

A.8. Provide a copy and identify the date and page number of publication in the Federal Register of the agency's notice, required by 5 CFR 1320.8 (d), soliciting comments on the information collection prior to submission to OMB. Summarize public comments received in response to that notice and describe actions taken by the agency in response to these comments. Describe efforts to consult with persons outside the agency to obtain their views.

a. Federal Register Notice

NHTSA published a notice in the *Federal Register* with a 60-day public comment period to announce this proposed information collection on August 16, 2010, Volume 75, Number 157, pages 50034-50035. A copy of the Federal Register Notice is provided in Attachment B.

NHTSA published a notice in the *Federal Register* on January 21, 2011 (Volume 76, Number 14, pages 3934-3935) with a 30-day public comment period to announce forwarding of the information collection request to OMB for approval. A copy of this Federal Register Notice is also provided in Attachment B.

b. Responses to the Federal Register Notice

Three comments were submitted to Docket Number NHTSA-2010-0109 in response to the 60 Day Federal Register Notice.

Comment 1 - Anonymous commenter on September 10, 2010.
On the surface this seems like important research, however because of the huge number of variables (even with all the attempts to match subjects) the results will be difficult to interpret. We certainly know that rider training teaches/improves physical skills. Does rider training have an impact on risk reduction choice making? The answer to this likely depends on the type/kind, method of basic training, and who (what individual) actually conducts the training. I see nothing in the proposal that identifies how variables in the actual training will be accounted for. How will this be done? Will this be done? Failure to take differences in training into account will invalidate the findings. For example, MSF BRC training conducted at one site, might be significantly different from MSF BRC training conducted at another - one rushes riders through with an emphasis on skill accusation while another delivers significant "safety messages." These differences need to be addressed.

NHTSA Response 1 - This commenter indicates that individual motorcycle rider training classes can differ from one another and that a study of rider training should account for these differences. In 45 States, the State motorcycle training program uses the Basic Rider Course (BRC) curriculum developed by the Motorcycle Safety Foundation (MSF). The two States that are being considered as sites for this project, California and Illinois, use the BRC as their entry-level rider training course. Instructors of the MSF BRC, called RiderCoaches, must take and pass a standardized training course called the RiderCoach Preparation Course. The training that respondents receive should not differ significantly across courses because the courses follow a uniform curriculum and are taught by course instructors who received standardized training.

Comment 2 - Harold Bodeker on September 14, 2010.
I would like to applaud the NHTSA for conducting research on the effectiveness of motorcycle rider training on motorcycle crashes. However, I have a concern with the methodology of relying on voluntary responses. In the NHTSA's revue of driver education curricula (Feasibility Study of Evaluating Driver Education Curriculum - DOT HS 811 108 - April, 2009), the authors reviewed the DeKalb Study among others. In reviewing the DeKalb study's comparison of the driver education groups and the control group, the authors came to the conclusion that "...these

comparisons do not provide a valid test of driver education, because students were self selected into the analysis...". If the NHTSA's own researchers concluded that self selection by study subjects rendered the resulting comparisons invalid, then the same invalidity would taint any comparisons of trained versus untrained motorcycle riders if they self selected into the study as volunteers. I encourage the NHTSA to proceed with this study, but strongly encourage a more scientific methodology (i.e. random sampling) be used to collect data from the study subjects. Otherwise, there is the risk that the study outcome, whatever it is, may be attacted as invalid, just as the DeKalb study was described by the NHTSA's own reasearchers.

NHTSA Response 2 - The commenter is mistaken in saying that DOT HS 811 108 (Williams, Preusser, & Ledingham, 2009)[7] criticized the DeKalb Study because the participating students self-selected into the study as volunteers. The DeKalb Study did randomly assign teenage students in DeKalb County, GA to receive driver education, or to a control group that did not receive driver education. The criticism of the DeKalb Study from Williams et al. (2009)[7] refers how the data were analyzed and not how students were selected to participate.

As explained in Part B of this package, random assignment of some novice riders to receive training and of some novice riders to a control group that does not receive training would be the ideal methodology to use for this study, but is not feasible for several reasons. It is also not feasible to recruit participants through traditional nationwide sampling methods. Moreover, for ethics purposes respondents to any survey must be volunteers; sampling methods can control who is given the opportunity to respond to a survey, but potential respondents cannot be forced to respond. More information on how respondents will be selected for the study, and on why it is not possible to use random assignment and nationwide sampling methods, appear in Section B.2.

Trained and untrained riders in this study will be matched on such variables as age, gender, years of riding experience, miles ridden, crash history, and safety behaviors (e.g., reported speeding and lane-splitting). Matching on safety behaviors will control for the possibility that riders who choose to receive training have better outcomes because safety-conscious riders self-select into training classes.

Comment 3 - Motorcycle Safety Foundation (MSF) on October 15, 2010. A summary of the observations made by the MSF are underlined, and NHTSA's responses appear below each underlined comment. MSF's complete response is included in Attachment C.

MSF: It appears that the study will include only crashes and violations as the final outcomes of the analysis. Since crashes and violations are relatively infrequent outcomes, they should not be the only indicators of training effectiveness.

NHTSA: This survey study will not include only crashes and violations as the final outcomes of the analysis. The survey will also examine if safety-relevant practices such as helmet use, protective gear use, and drinking and riding differ between trained and untrained riders.

[7] Williams, A. F., Preusser, D. F., & Ledingham, K. A. (2009). *Feasibility Study on Evaluating Driver Education Curriculum.* Publication No. DOT HS 811 108. Washington, DC: National Highway Traffic Safety Administration.

MSF: Researchers should look further into mediating variables and their effect upon those final outcomes [crashes and violations].

NHTSA: As mentioned above, the survey will also examine if safety-relevant practices such as helmet use, protective gear use, and drinking and riding, differ between trained and untrained riders. Furthermore, this survey study is one of a series of studies that NHTSA is performing to examine the effectiveness of rider training. A second study will examine the effect of entry-level rider training on on-motorcycle riding proficiency. This second study does not require information collection and thus is not included in this package.

MSF: Any evaluation of the effectiveness of training should acknowledge that training is only one aspect of a traffic safety system that includes education, enforcement and engineering.

NHTSA: NHTSA agrees with this statement. This evaluation of rider training is part of a larger motorcycle safety program that includes research on other factors that affect motorcycle safety.

MSF: Variables such as "near crashes," avoidance maneuvers, and others will be measured by MSF in their 100 Motorcyclist Naturalistic Study.

NHTSA: This statement pertains to a study that MSF is performing and is unrelated to the current study.

MSF: Twenty-five to 30% of motorcycle crashes go unreported, which calls into question using only archival data to measure crashes. While self-report data have their inherent limitations, the method can serve as a supplemental measure of riding outcomes.

NHTSA: Because some motorcycle crashes go unreported, we will use self-report data on crashes to supplement archival crash data. Respondents to the survey will be asked if they have ever been involved in an on-street motorcycle crash, how long it has been since their most recent crash, and how many minor incidents or close calls they have experienced in the past year.

c. Consultation with outside experts

National experts at NHTSA and Cambridge Systematics have collaborated on the data collection methodology. Additionally, NHTSA convened an expert panel with nine national and international experts in motorcycle safety and training on April 3 and 4, 2008, to discuss the best methods of conducting a well-designed, large scale study of the effectiveness of entry-level motorcycle rider training. These experts included (with their titles at the time of expert panel listed):

- John Billheimer, Ph.D., independent consultant;
- Steve Garets, director of Team Oregon motorcycle rider training program;
- Narelle Haworth, Ph.D., Queensland University of Technology;
- Andy Krajewski, M.S., program director, Driver Programs, Maryland Motor Vehicle Administration;
- Larry Lonero, Northport Associates, Ontario, Canada;
- Dan Mayhew, M.A., senior vice president, Traffic Injury Research Foundation;
- Ray Ochs, Ed.D., director of training systems, Motorcycle Safety Foundation;
- Bob Reichenberg, independent consultant/Streetmasters Motorcycle Workshops; and
- Peter T. Savolainen, Ph.D., assistant professor, Transportation Research Group, Wayne State University.

The recommendations of the panel are published in Brock, Robinson, Robinson, and Percer (2010)[8], and are incorporated into the design of this study.

A.9. Explain any decisions to provide any payment or gift to respondents, other than remuneration of contractors or grantees.

No payment or gifts will be offered to respondents for their participation in the surveys.

A.10. Describe any assurance of confidentiality provided to respondents.

Participants will be asked to provide their driver's license number so that public records of crashes and citations may be obtained. This private information will be stored separately from the database containing respondents' answers to survey questions. It is also necessary to collect respondents' contact information so that follow-up surveys can be sent to them. Contact information will similarly be stored separately from survey responses.

The contractor for this study, Cambridge Systematics, operates a Novell file network across its offices. In general, Cambridge Systematics staff members have access to all project directories based on Novell's standard name and password authentication scheme. This level of protection ensures that persons outside Cambridge Systematics will not have access to the data.

For sensitive project data, such as systems of records data, Cambridge Systematics adds another layer of name/password protection, at the project data directory level. All sensitive project data must reside in this protected directory structure, and only staff authorized by Cambridge Systematics' Project Manager and/or Director of Information Technology are given authorization for access. The Cambridge Systematics project manager will provide the NHTSA project manager with a list of employees authorized to access the databases.

The physical infrastructure of the servers is protected by electronic or keyed access, available to members of Cambridge Systematics' Department of Information Technology. In CS offices

[8] Brock, J., Robinson, A., Robinson, B., & Percer, J. (2010). *Approaches to the Assessment of Entry-Level Motorcycle Training: An Expert Panel Discussion.* Publication No. DOT HS 811 242. Washington, DC: National Highway Traffic Safety Administration.

where there is no IT personnel, access is limited to authorized individuals. Inside the server room, console access is protected by password authentication as appropriate to each type of server.

When not in use by the project team, physical copies of sensitive data will be stored in a locked storage area with either key or digital code access restricted to the project staff. At the conclusion of the project, Cambridge Systematics will destroy all sensitive physical data. Cambridge Systematics will not provide any sensitive individual information to NHTSA, and NHTSA will never see any individually identifiable information.

To ensure that sensitive data will not be provided to outside sources, information on crashes and citations will be requested in batches defined for analytic purposes. Thus, a request for crash data from a state Department of Motor Vehicles (DMV) might ask for the total number of crashes involving a certain group of riders (e.g., trained riders) over a specific period (e.g., 6 months). This means that the DMV would report to Cambridge Systematics the total number of crashes and citations that riders in each group had over the prescribed period of time, and will not provide the names of the individuals in the group who were involved in these crashes and citations. By requesting data in this fashion, no one outside of the responsible State agencies (not even the analysts at Cambridge Systematics) will be able to associate crash records with specific individuals.

Participants will be told that their information will be kept private to the extent permitted by law and will only be used for research purposes. Participation will be voluntary.

A.11. Provide additional justification for any questions of a sensitive nature, such as sexual behavior or attitudes, religious beliefs, and other matters that are commonly considered private.

A question on how often respondents ride a motorcycle within 2 hours of drinking an alcoholic beverage could be considered sensitive. It is important to collect this information to assess if rider training has an impact on the unsafe behavior of drinking and riding. Riding while impaired by alcohol contributes to a considerable number of motorcycle crashes. In 2008, 29% of motorcycle riders killed in fatal crashes had a blood alcohol concentration (BAC) of the legal limit of .08 g/dL or greater, while only 23% of fatally injured passenger car drivers had a BAC of .08 or greater (NHTSA, 2009)[1].

A.12. Provide estimates of the hour burden of the collection of information on the respondents.

NHTSA estimates that each respondent will require an average of 5 minutes to fill out each survey. A total of 1,250 respondents (625 trained riders and 625 untrained riders) will respond to three surveys: an initial survey, one follow-up survey 6 months after screening, and a second follow-up survey 18 months after screening. The estimated burden for these respondents is 187.5 hours (1,250 respondents X 3 surveys X 5 minutes = 18,750 minutes, or 312.5 hours).

To form the 625 trained-untrained rider matched pairs that will be studied, up to an additional 14,750 motorcycle riders (7,375 trained and 7,375 untrained) will be screened. These riders will respond only to the initial survey. They will not be matched into a trained-untrained rider pair, and will not participate in the 6-month and 18-month follow-up surveys. The estimated burden for these respondents is 1,229 hours (14,750 respondents X 1 survey X 5 minutes = 73,750 minutes, or 1,229 hours).

Based on the above calculations, the total (not annual) burden hours for this project will be 1,541.5 hours. These totals are also displayed in the following table.

Table 1. Estimated Total Burden.

Task	Estimated Burden per Response	Frequency of Response	Number of Respondents	Total Burden Hours
Study participants	5 minutes	3 responses	1,250	312.5 hours
Screened for study, but not matched into a trained-untrained rider pair	5 minutes	1 response	14,750	1,229 hours
Total				*1,541.5 hours*

Participation in this study is voluntary, and there are no costs to respondents. However, the cost to respondents could be computed in terms of their hourly wage. Based on the average income level in the United States, the average hourly wage of $20.90 per hour (US Department of Labor, Bureau of Labor Statistics, 2009)[9] can be used to estimate the total cost at 1,541.5 burden hours x $20.90 = $32,217.35.

A.13. Provide an estimate of the total annual cost to the respondents or record keepers resulting from the collection of information.

There are no record keeping or reporting costs to respondents. Respondents will be asked to participate in three surveys over 18 months. However, they will not be required to consult records to answer questions in subsequent surveys, and instead will be asked to provide responses spontaneously.

A.14. Provide estimates of the annualized cost to the Federal Government

The estimated total cost to the Federal Government is $428,438 over 39 months. The annualized cost is $131,827. This estimate includes costs for personnel, survey development, data collection, data tabulation, data analysis, and report preparation.

[9] US Department of Labor, Bureau of Labor Statistics (2009). May 2009 National Occupational Employment and Wage Estimates. http://www.bls.gov/oes/current/oes_nat.htm

A.15. Explain the reasons for any program changes or adjustments in Items 13 or 14 of the OMB 83-I

There are no changes in burden. This is a new collection.

A.16. For collection of information whose results will be published, outline plans for tabulation and publication.

Statistical tests, such as regression analyses, will be performed to compare measures between trained and untrained rider groups, and over time when applicable. Injury crashes, other crashes and citations will be compared as rates per mile ridden to take riding exposure into account. Findings will be reported in a technical report printed by NHTSA that will be disseminated to State, local, and national traffic safety officials. Reports and results will also be disseminated to advocacy and other groups interested in motorcycle safety. Findings will additionally be disseminated as briefings and presentations at traffic safety meetings, and to the research community through the Transportation Research Board.

Because this study will use a convenience sample and respondents will not be representative of the population of American motorcycle riders, reports and publications summarizing the data will note that the results cannot be generalized to all American motorcycle riders.

A.17. If seeking approval to not display the expiration date for OMB approval of the information collection, explain the reasons that display would be inappropriate.

NHTSA will display the expiration date for OMB approval.

A.18. Explain each exception to the certification statement identified in Item 19, "Certification for Paperwork Reduction Act Submissions" of the OMB Form 83-I

No exceptions to the certification statement are made.