SUPPORTING STATEMENT
FOR

Request for Clearance Extension under

P.L. 109-59, Section 5511 (71 FR 30831)

Motorcycle Crash Causation Study

TABLE OF CONTENTS

Chapter Page

A. JUSTIFICATION 5

A1. Circumstances, Statutes, and Regulations 5

A1.1 Congressional Mandate 5
A1.2 FHWA Authorization 6
A1.3 NHTSA Authorization 6
A1.4 Highway Safety Need 6
A1.5 Circumstances Leading to a Combined Approval Request 8

A2. Indicate How, by Whom, and for What Purpose the Information is to be Used 8

A2.1 FHWA Data Applications 8
A2.2 NHTSA Data Applications 8
A2.3 National Transportation Safety Board (NTSB) Potential Uses 9
A2.4 Other Users of Project Data (e.g. state government, manufacturers) 9

A3. Uses of Automatic, Electronic, Mechanical, or Technologic Data Collection Techniques 9
A4. Describe Efforts to Identify Duplication. Show Why any Similar Information Already Available Cannot be Used or Modified 9
A5. If the Collection of Information Impacts Small Businesses or Other Small Entities, Describe Any Methods Used to Minimize Burden 10
A6. Describe the Consequence to Federal Program or Policy Activity if the Collection is not Conducted or is Conducted Less Frequently 10
A7. Explain any Special Circumstances that Require the Collection to be Conducted in a Manner Inconsistent with the Guidelines Set Forth in 5CFR.1320.6 10
A8. Compliance with 5CFR 1320.6 10

A8.1 Federal Register Notice (60 Day) - Comment Summary 10

A8.1.1 Non-Supportive Comments 10
A8.1.2 Supportive Comments 11

A8.2 Federal Register Notice (30 Day) - 0Comment Summary 13

A9. Payment or Gift to Respondents 16
A10. Assurances of Confidentiality Provided to Respondents 16
A11. Justification of Collection of Sensitive Information 16

TABLE OF CONTENTS
(continued)

Chapter		Page
A12.	Estimate of the Hour Burden of the Collection of Information on the Respondents	17
A13.	Estimate of the Total Cost Burden to Respondents Resulting from the Collection of Information	17
A14.	Estimates of Annualized Costs to the Federal Government	17
A15.	Explain the Reason for any Program Changes of Adjustments	18
A16.	For Collection of Information whose Results will be Published, Outline Plans for Tabulation and Publication	18
	A16.1 Motorcycle Crash Causes and Outcomes - Pilot Study	18
	A16.2 Motorcycle Crash Causation Study - Main Study	18
A17.	Approval for not Displaying the Expiration Date of Collection	18
A18.	Exception to the Certification Statement	18
B.	COLLECTIONS OF INFORMATION EMPLOYING STATISTICAL METHODS	19
B1.	Describe the Potential Respondent Universe and any Sampling or other Respondent Selection Methods to be Used	9
	B1.1 Potential Respondent Universe	19
	B1.2 Crash Sample Acquisition	19
	B1.3 Control Sample Acquisition	20
B2.	Describe Collection of Information Procedures	20
	B2.1 Crash Investigation Procedures	21
	B2.2 Control Data Collection Procedures	21
B3.	Describe Methods to Maximize Response Rates and to Deal with Issues of Non-Response	22
B4.	Describe any Tests of Procedures or Methods to be Undertaken	23
B5.	Contact Information for Consultants and Agency Officials	23
	B5.1 Statisticians Consulted	23
	B5.2 Agency, Contractors, Grantees	23

TABLE OF CONTENTS
(continued)

List of Figures

Figure

1 Occupant Fatality Rate per 100 Million Vehicle Miles Traveled by Vehicle Type..... 7

List of Attachments

1. SAFETEA-LU, Section 5511
2. Notice From Federal Register: November 24, 2006 (Volume 71, Number 226)
3. Notice From Federal Register: February 26, 2007 (Volume 72, Number 37)
4. Motorcycle Study Interview Forms:
    a. Crash Motorcycle - Rider
    b. Crash Motorcycle - Passenger
    c. Crash Motorcycle - Mechanical
    d. Helmet Evaluation Form
    e. Motorcycle Dynamics From
    f. Motorcycle Injury From
    g. Other Vehicle - Form
    h. Other Vehicle - Driver
    i. Control Motorcycle - Rider
    j. Control Motorcycle - Passenger
    k. Control Motorcycle – Mechanical
    l. Contributing Factors Form
    m. Environmental Form
5. OECD Methodology
6. Certificate of Confidentiality
7. Informed Consent
8. Example Medical Release Forms
9. Motorcycle Pilot Study Final Report

A. JUSTIFICATION

A1. EXPLAIN THE CIRCUMSTANCES THAT MAKE THE COLLECTION OF INFORMATION, NECESSARY. ATTACH A COPY OF THE APPROPRIATE SECTION OF EACH STATUTE AND REGULATION MANDATING OR AUTHORIZING THE COLLECTION OF INFORMATION.

A prior request under P.L. 109-59, /section 5511 (71FR30831) was approved for both the NHTSA Pilot Motorcycle Crash Causes and Outcomes Study and the FHWA Motorcycle Crash Causation Study. The NHTSA Pilot Motorcycle Crash Causes and Outcomes study has been completed and the FHWA Motorcycle Crash Causation study is underway. The current request is for continuation of the FHWA Motorcycle Crash Causation Study. This current request will reflect information learned from the completed NHTSA Pilot Study.

A1.1 Congressional Mandate

Congress directed the Department of Transportation (USDOT) to conduct research that will provide a better understanding of the causes of motorcycle crashes in Section 5511 of the Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU) Pub. L. 109-59. The legislation requires the Secretary of Transportation to provide grants to the Oklahoma Transportation Center (OTC) for the purpose of conducting a comprehensive, in-depth motorcycle crash causation study using the common international methodology for in-depth motorcycle crash investigation. (This methodology was developed by the Organization for Economic Cooperation and Development (OECD) to foster uniform procedures in the investigation of motorcycle crashes).

The OECD methodology is a comprehensive approach to investigating motorcycle crashes. The 649 page methodology calls for the investigation of crashes of all severities and the collection of exposure data in the form of controls (two matched non-crash involved vehicles for every similar crash-involved vehicle). Crash investigations specify interviews with motorcycle operators, passengers and the drivers of other-involved vehicles. Human factors topics range from rider experience, licensing and training to fatigue, drug and alcohol use, trip purpose, use of protective clothing, and risk-taking behaviors.

Vehicle inspections specify detailed examinations and judgments of pre-and post-crash condition for every motorcycle component. The type, size and handling characteristics of the motorcycles are also carefully documented. When other motor vehicles (such as cars and trucks) are involved in crashes with motorcycles, data on the points of contact and exterior vehicle damage are recorded.

Roadway features, traffic controls, and environmental factors that could have contributed to crash causation are recorded. In addition, circumstances such as line-of-site and potential visual obstructions are noted.

Control data includes detailed interviews with motorcycle operators, passengers and drivers of other vehicles similarly at risk to those involved in each crash. OECD also requires careful documentation of the condition of motorcycles selected as part of the control population.

The OECD protocol also describes a 12 week training program that covers data collection

techniques (interviewing skills, vehicle damage assessments), and the analyses of physical data such as metal fractures. Training materials have been developed based on the OECD protocols and modified as a result of the Pilot Study.

A1.2 FHWA Authorization

The Federal Highway Administration (FHWA) was delegated authority to conduct this research by the Secretary under Section 5511 (71 FR 30831). Under 23 USC402 , FHWA has responsibility for highway safety programs, research and development related to highway design, construction and maintenance, traffic control devices, and identification and surveillance of accident locations.

A1.3 NHTSA Authorization

The National Highway Traffic Safety Administration's (NHTSA's) authorization to conduct the motorcycle study derives from the National Traffic and Motor Vehicle Safety Act of 1966 (Public Law 89-563, Title 1, Sections 106, 108, and 112). Under this legislation, NHTSA is charged with the collection of crash data to support the establishment and enforcement of motor vehicle regulations that reduce the severity of injury and property damage caused by motor vehicle crashes.

A1.4 Highway Safety Need

This research on the causes of motorcycle crashes is necessary because the countermeasures currently being used have not been effective in reducing the rate of motorcycle crashes in recent years. The figure below shows how serious the problem of motorcycle safety has become. It compares the occupant fatality rate per 100 million vehicle miles traveled for motorcycles with the same rate for passenger cars over the past 12 years. From 1996 to 2005 there was a dramatic increase in the motorcyclist fatality rate. While the fatality rate for all motor vehicle occupants has decreased from 2005 to the present, the motorcyclist fatality rate still continues to be about 36 times higher than that of the passenger occupant fatality rate. The information to be acquired in this study is needed to mitigate this discrepancy.

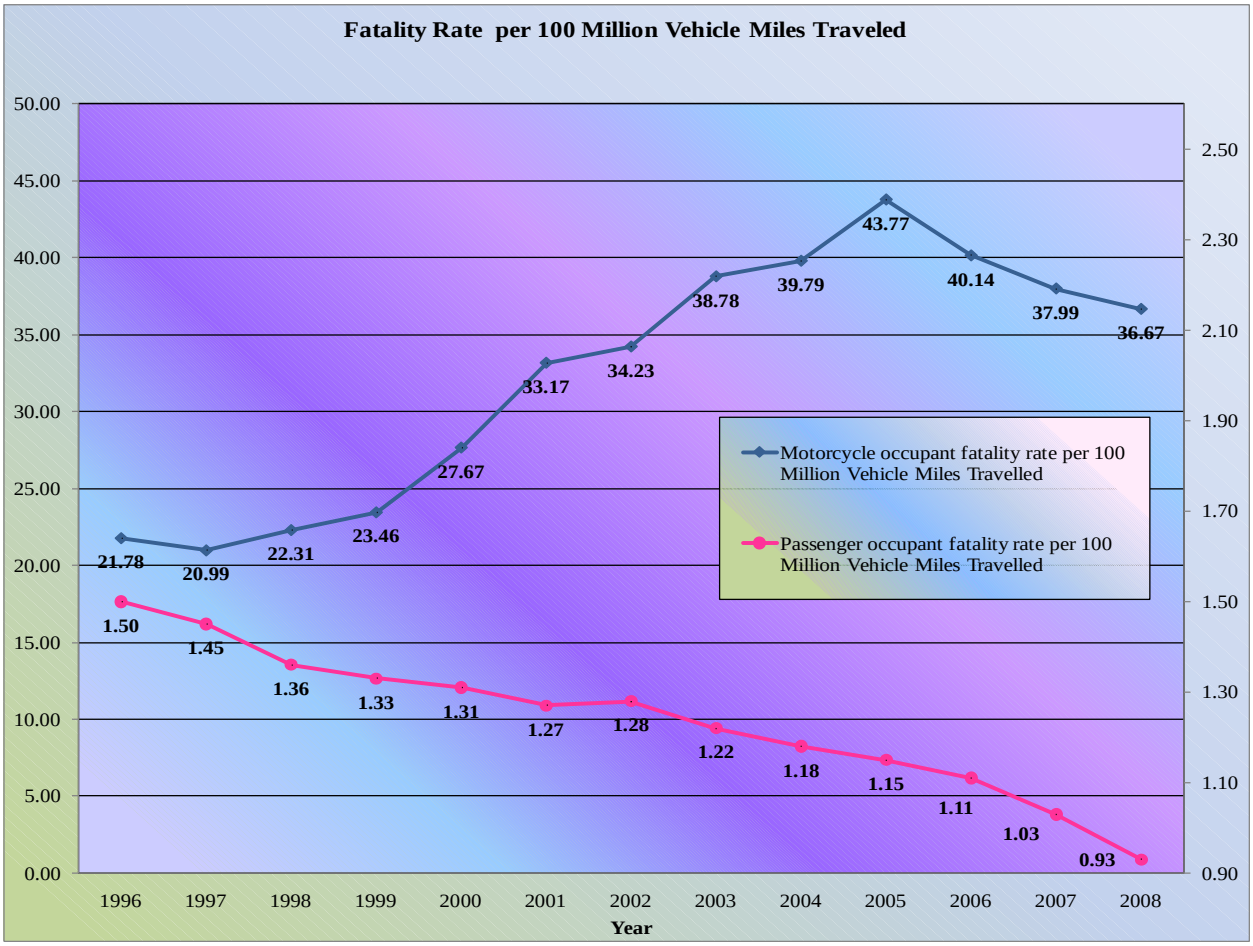

Figure 1. Occupant Fatality Rate per 100 Million Vehicle Miles Traveled by Vehicle Type

A1.5 Circumstances Leading to an initial Combined Approval Request
Prior to this directive by Congress, NHTSA initiated a pilot study to investigate the causes of motorcycle crashes using the OECD methodology. Given that FHWA was authorized to conduct a main study using the OECD methodology, and that NHTSA had already begun its pilot study, an opportunity was provided for the NHTSA study to seamlessly transition into the main FHWA study. The coordination of these two studies was expected to allow the main study to avoid many start up costs (e.g., site selection, training of personnel, coding manual development, data form development, etc. that will be accomplished by the pilot study). **Because the NHTSA and FHWA studies became a single research effort and the methods to be used were the same, the USDOT decided to request a single clearance from the Office of Management and Budget (OMB) for both studies. This initial request under P.L. 109-59, /section 5511 (71FR30831) for both studies was approved.**

While the Pilot Study has since been completed, the main study is underway though it has been held up by many budgetary and approval issues. The original OMB approval has since expired and the FHWA is now seeking separate approval for the remainder of the main study. The methods and materials have remained largely unchanged from the original submission. Essentially, the only difference between the current submission and the original is the completion of the pilot study. The Pilot Study Final Report, completed in June 2010, is attached as an appendix.

A2. INDICATE HOW, BY WHOM, AND FOR WHAT PURPOSE THE INFORMATION IS TO BE USED.

A2.1 FHWA Data Applications

The data from this study will provide the FHWA with information that will allow determination and development of effective countermeasures to reduce the frequency and severity of motorcycle crashes for the various crash types as determined by the study. Countermeasures may take the form of rulemaking, safety programs, design standards, and recommended practices.

The FHWA can use the information from this study to evaluate and update current roadway design and maintenance guidelines. The information can also be used to make roadways more accommodating to motorcyclists by modifying road delineation and markings, conspicuity of traffic controls, signal timing, intersection design, and vehicle detection.

For example, this research may show that one of the most common motorcycle crash types occurs on sharp curves on arterial roads. A potential countermeasure could be the installation of warning or advisory signs for motorcyclists indicating the approaches to such curves. Another frequent crash type could be automobiles turning left in front of oncoming motorcycles. A potential ITS (Intelligent Transportation System) countermeasure could be an in-vehicle warning to drivers preceding unsignalized intersections or signalized intersections with permissive phasing advising them to watch for oncoming motorcyclists.

A2.2 NHTSA Data Applications
NHTSA can use the data in its development of licensing requirements, rider training programs, and vehicle design standards. Such information is critical to the evaluation of current standards and practices and to the development of improvements that enhance traffic safety.

As an example, if the research were to show that a large proportion of the crashes involved novice riders on motorcycles over 900 cubic centimeters, NHTSA may recommend graduated rider licensing, based on engine displacement. As another example, if the research shows that in many crashes the motorist did not see the motorcyclist, and then increased conspicuity of the motorcycle could be mandated. With the increasing use of daytime running lights on passenger vehicles, a different headlight color for motorcycle daytime use is a remedy that could be considered.

A2.3 National Transportation Safety Board (NTSB) Potential Uses
The NTSB sponsored a Forum on motorcycle safety on September12-13, 2006 to raise awareness of the increasing rate of motorcycle crash-related fatalities and injuries. NTSB submitted a statement to the Docket in support of this study. It is possible that NTSB will make use of the findings to support recommendations on motorcycle safety.

A2.4 Other Users of Project Data (e.g. state governments, manufacturers)
This information could also be used by State highway engineers for road design and maintenance changes, and by State highway safety officers in their development of highway safety initiatives. The motorcycle industry could use this information as it develops safer vehicle designs. User organizations, (e.g., American Motorcyclists' Association) could use findings from this study as they develop recommendations for their constituencies. Other potential users include insurance companies, safety research organizations, and universities that have an interest in improving transportation safety.

A3. DESCRIBE WHETHER, OR TO WHAT EXTENT, THE COLLECTION OF INFORMATION INVOLVES THE USE OF AUTOMATED, ELECTRONIC, MECHANICAL, OR OTHER TECHNOLOGICAL COLLECTION TECHNIQUES OR OTHER FORMS OF INFORMATION TECHNOLOGY.

Vehicle and scene data will be collected mainly using photographic equipment and electronic and mechanical measuring devices. These include digital cameras and Total Stations (surveying devices that measure distance and elevation). However, data describing rider, passenger, and motor vehicle operator characteristics and behaviors will be collected through in-person and telephone interviews using paper forms.

A4. DESCRIBE EFFORTS TO IDENTIFY DUPLICATION. SHOW WHY ANY SIMILAR INFORMATION ALREADY AVAILABLE CANNOT BE USED OR MODIFIED.

This study does not duplicate any US National study on motorcycle crashes. The last federally sponsored study focused on MC crashes was performed by researchers at the University of Southern California, for NHTSA, in the1970s. Some information is available on motorcycle crashes in the U.S. from state databases using widely different protocols; however, these do not conform to the OECD methodology. Both FHWA and NHTSA currently collect a limited amount of data on motorcycle crashes; however, again, the data do not conform to the OECD methodology and moreover, do not capture exposure data, and are not focused on antecedents to such crashes. The application of the OECD guidelines results in a more complete collection of data and also allows this study to be compared to recent research conducted in Thailand and Europe.

A5. IF THE COLLECTION OF INFORMATION IMPACTS SMALL BUSINESSES OR OTHER SMALL ENTITIES, DESCRIBE ANY METHODS USED TO MINIMIZE BURDEN.

There are no planned interactions with small businesses in this study. Crash investigations may take place in the general vicinity of small businesses, but steps will be taken to avoid placing any burden on small businesses.

A6. DESCRIBE THE CONSEQUENCE TO FEDERAL PROGRAM OR POLICY ACTIVITIES IF THE COLLECTION IS NOT CONDUCTED OR IS CONDUCTED LESS FREQUENTLY.

The upward trend in motorcycle crashes and fatalities is likely to continue or worsen if the collection is not conducted. The reason for this is that the existing countermeasures currently being used have not been as effective as hoped. This research will allow new countermeasures to be developed and tested.

Regarding the matter of collection frequency, FHWA and NHTSA do not see a need to repeat this study in the near term. The vehicle mix and crash environment are expected to remain fairly stable for the next 5-10 years.

A7. EXPLAIN ANY SPECIAL CIRCUMSTANCES THAT REQUIRE THE COLLECTION TO BE CONDUCTED IN A MANNER INCONSISTENT WITH THE GUIDELINES SET FORTH IN 5CFR 1320.6.

There are no special circumstances that require an inconsistency with the subject guidelines. The Code of Federal Regulations, 5CFR 1320.6, addresses public protection regarding the conduct of surveys. It describes provisions such as: displaying a valid OMB control number, informing potential participants that the survey is voluntary, complying with OMB directives to modify survey plans, and not imposing penalties on persons who choose not to participate. The OECD procedures to be used in this study are consistent with those guidelines.

A8. Compliance with 5 CFR 1320.8:

Federal Register, November 24, 2006, Page 67952, volume 7, No 226.

A8.1 Federal Register Notice (60 day)--Comments Summary
Nine comments were submitted to Docket Number FHWA 2006-26125 in response to the 60 Day Federal Register Notice. Two were non-supportive and 7 were supportive.

A8.1.1 Non-supportive comments
Both of these comments were submitted by private citizens.

Comment 1 – Barb Sachau---a private citizen. This person considers the proposed research to be a waste of taxpayers' money.

FHWA-NHTSA Response 1 – Congress and the research community and the rider community do not accept this view. They are in agreement that new countermeasures, based upon valid information, are needed to reduce the increasing toll of motorcycle crash-related losses.

Comment 2 – Ken Wiseman---a private citizen This person suggests that it is well established that crashes are caused by drunk riding and failure of auto drivers to see motorcycles and therefore, no further research is needed. He ascribes the increase in crashes and fatalities to the "Harley Davidson phenomena" of increased motorcycle sales, yet offers no scientific sources for his information.

FHWA-NHTSA Response 2 – The rate of motorcycle-related crashes and fatalities is estimated per 100 million vehicle miles of travel and is thus independent of the number of motorcycles being sold. There has not been a study of motorcycle crash causes conducted in the U.S. for over three decades, and the roadway and driving environment have undergone major changes that require a fresh look at the motorcycle crash problem.

A8.1.2 Supportive Comments
Four citizens and three agencies/organizations provided comments in support of the proposed research.

Comment 3 – An anonymous citizen. This person expressed initial reservations about spending tax dollars to study something that "should be common sense", but concluded that a study such as this could result in saving lives by identifying potential dangers, and thus is warranted.

FHWA-NHTSA Response 3 – The study is intended to identify antecedents to motorcycle-related crashes that may be changed and with the effect of reducing crash outcomes and severities, and to estimate risk factors that are predictive of crashes to help identify and target countermeasures to reduce crash frequencies. Therefore this citizen's observations are consistent with the objectives of this study.

Comment 4 – John Cloonan-- a private citizen. This person observed that is has been, "nearly 30 years since the Hurt Study" and that changes have occurred in motorcycle design and rider ship. He is thankful for federal research efforts to enhance motorcycle safety.

FHWA-NHTSA Response 4 – It is recognized that larger and more powerful motorcycles are common in the current fleet. It is also recognized that riders over 40 years of age are overrepresented in the crash and injury population, and that these characteristics differ with those in the earlier research (NHTSA, Traffic Safety Facts, 2005). Thus citizen's observations are correct.

Comment 5 – Umesh Shankar is a NHTSA statistician, however this person is responding as a private citizen. The observations made by this person are underlined, and the FHWA-NHTSA responses appear below each underlined comment.

> This study will provide much needed information.
> It is agreed that this study is needed.
>
> Case control methodology will yield relative risk for an event, not an absolute risk.
> The observation that case-control methodology will yield only relative risk for an event, not absolute risk, is mostly correct. Case control methodology can only yield relative risk for a variable or a set of variables, but not for any specific event and not for any specific

crash or event.

In the event of a fatality, some data (such as level of fatigue) may be missing for that rider. Efforts will be made to keep missing data to a minimum (described below in Section B.3**).** However, it should be noted that all research experiences some level of missing data. Statistical methods such as imputation may also be used to manage the problem of missing data (as described in Section B.3 below).

Using in-depth crash investigation and the case control method is a good approach. This approach is considered to be optimal by the research team, and is specified in the OECD methodology.

This person also raised the following questions:

How will the study deal with missing data?
Section B.3 includes a discussion on missing data.

How will the study deal with confounding factors?
In case-control studies the possibility of confounding cannot be ruled out on a-priori grounds. Commonly used statistical methods to reduce the biasing effects of potential confounding factors on relative risk estimates will be followed. For example, one commonly used approach estimates relative risk with statistical methods that explicitly account for the effects of potential confounders on case-control differences. An alternative approach, involves a three step process: (1) identify matched groups of cases and controls such that potential confounders have similar distributions in each matched pair, (2) estimate relative risk by comparing cases to controls in matched pairs, (3) aggregate the group-specific relative risk estimates.

Can a single location satisfy all of the desirable sampling characteristics?
A description of the utility of a single location for data collection is provided in Section B1.1.

Comment 6 – David Thom –a private citizen. This person is interested in being able to compare the results to the studies conducted previously in Asia and Europe.

FHWA-NHTSA Response 6 – The research will be based upon the OECD methods employed in Thailand and Europe, as modified for use in the U.S., and therefore comparisons with other current and previous research will be possible.

Comment 7 - California Highway Patrol (CHP). The Commissioner stated his support for the overall concept of the research program; however he expressed concern about safety aspects of having the crash investigators respond immediately to the crash scene. The Commissioner also raised concerns about potential regulatory impediments to the release of non-redacted police accident reports to the investigators and about potential discrepancies in the conclusions stated in the CHP case report versus the research case report

FHWA-NHTSA Response 7 – The OECD Methodology uses the on-scene approach, while the involved vehicles and operators are still in place to perform the crash investigations. It is

understood that to accomplish this safely, the controlling police agency must first secure the crash scene and gather data for their own investigation. However, it should be possible for researchers to join first responders at the scene and, under police guidance, collect those OECD data elements not available from police reports. This approach is currently used in the National Motor Vehicle Crash Causation Study that is also sponsored by NHTSA. Compensation for any extraordinary police assistance could be negotiated as part of a pre-arranged agreement with the agency.

Comment 8 - The American Motorcyclist Association (AMA). This rider organization fully endorsed the research plans. The AMA specifically mentioned the coordination of the pilot and main studies; the guidance of the Project Working Group; the in-depth crash investigation/case control protocol, and the need for a robust sample size of at least 1,200 crashes and 2,400 controls.

FHWA-NHTSA Response 8 – The endorsement of the AMA will be an asset in gaining the cooperation of motorcyclists, and will contribute to the success of the study.

Comment 9 - The National Transportation Safety Board (NTSB) This independent Federal Agency recognized the need for this research, and was supportive of the efforts to coordinate the pilot and main studies. They endorse using "all relevant OECD variables" to enable comparisons with the Thailand and European studies. The NTSB also endorsed the dual procedures of in-depth crash investigations and the case control research approach. They recognize the need for limiting the study to a manageable geographic area that experiences a full range of motorcycle crash types under a wide range of conditions and with a wide range of rider characteristics. They suggested expanding the sample size (number of crash investigations and case controls), if additional resources become available in order to increase the statistical robustness of the results.

FHWA-NHTSA Response 9 – The NTSB recommendations help to promote safety and they support the efforts of the regulatory transportation agencies. As such their endorsement of this study is significant.

A8.2 Federal Register Notice (30 day)--Comments Summary

Two comments were submitted to Docket Number FHWA 2007-26843 in response to the 2nd Federal Register Notice. Both of these comments came from a single source, Advocates for Highway and Auto Safety ("Advocates"). A summary of the main points made by the Advocates in their comment appears below.

Comment 1 – Advocates for Highway Safety. This comment was focused exclusively on a Large Truck Crash Causation Study (LTCCS) being jointly administered by NHTSA and the Federal Motor Carrier Safety Administration (FMCSA).

FHWA-NHTSA Response 1 - This comment is not relevant to the Motorcycle Crash Studies for which approval is being sought, and will therefore not be addressed in this document.

Comment 2 – Advocates for Highway Safety - This comment was directed at the motorcycle studies for which approval is being sought. A listing of the main points made by the Advocates in their second comment together with the FHWA-NHTSA responses appears below

A study of the sources of motorcycle crashes is of crucial importance.
It is agreed that a study of the sources of motorcycle crash research is of crucial importance.

FHWA proposes using the OECD methodology to conduct the study.
The decision to use the OECD methodology was made by Congress, not FHWA.

Members of the "wider safety community" were not invited to provide input to the meeting of the "Project Working Group" held on June 15-16 where the OECD methodology was reviewed.
The June 15-16 meeting of the Project Working Group *(a non-policy making group)* included representatives from FHWA, NHTSA, NTSB, and non-government groups interested in motorcycle safety. FHWA and NHTSA did not extend invitations to all members of a "wider safety community" because such a group would have become too large to accomplish any work. However, FHWA and NHTSA invited Advocates to participate in future working sessions of the Project Working Group.

No information on the Pilot Program or Project Working Group is contained in the docket for this Notice.
All information available to date on the "Pilot Program" was included in the original docket. The Pilot Study Final Report has been included with the resubmission. The data collection forms that were originally created for the pilot project have been amended for the main study based on the findings of the pilot study and are also included in the docket.

FHWA needs to provide a public explanation of why it is holding planned repeated meetings of a group with a defined membership consisting solely of representatives of the motorcycle industry and motorcycle community.
This statement is incorrect. The June,2006 project working session included representatives from NTSB and NHTSA. FHWA did not extend an invitation to the Advocates because it was a working session *not a policy meeting*. However, FHWA and NHTSA have welcomed the Advocates to participate in subsequent working sessions.

The lack of information on the Pilot Program or Project Working Group is evidence of a disregard of the public process of an agency soliciting advice and recommendations.
At the time of the comments, there was no "Pilot Program" as such. There was a pilot research project in planning and a main research project in planning. Subsequently, all information available to date on the Pilot and Main projects has been included in the docket. Also, it is to be noted that the Federal Register Notice serves primarily as an announcement of the project and the general approach, not a description of work performed to date.

FHWA at no point invokes Section 1914 and the Motorcycle Advisory Council as the instrument for the "consensus work" and repeated meetings of the Project Working Group".

Section 1914 established the Motorcyclist Advisory Council. However this Council had not met as of June 15, 2006 when the Project Working Group met. Also, the Project Working Group is not part of the Advisory Council. It simply provides relevant information needed by the research projects. Since 2006, the FHWA has given regular updates and engaged in open discussion of the main study at the Motorcycle Advisory Council meetings.

The OECD methodology has not been placed in the docket
The OECD methodology has been in the public domain for several years, and therefore FHWA and NHTSA provided direction to the source of this methodology rather than a copy of this 649 page document.

Advocates opposes acquiring exposure data using interviews because it is impossible to remove subjectivity; only observational data should be relied upon to acquire exposure data.
Acquiring exposure data using interviews allows for the capture of data not readily available by observation, especially if the observations are made from a distance. For example, it is often difficult to determine the gender of a rider wearing a helmet and nearly impossible to determine the age. Variables such as distance ridden before crashing, blood alcohol content, licensing status, and riding experience also cannot be obtained by observation from a distance. However, FHWA and NHTSA are aware of biases generated from interview data, and will use appropriate methods to minimize any such biases. In addition, FHWA and NHTSA may acquire some exposure data by direct observation. The Federal Register Notice was explicit in stating that the final procedures for capturing exposure data have not been determined.

The OECD methodology is characterized as capable of producing causal explanations for the causes of crashes, but while case-control can produce odds ratios, it cannot rise to the level of causal explanations.
The title of both the pilot and main study use the word "cause" and in the case of the main study the language was taken directly from SAFETY-LU, section 5511 where it states that "The Secretary shall provide Grants…..for the purpose of conducting a comprehensive in-depth motorcycle crash causation study." NHTSA and FHWA are aware of limitations on inferences of causality associated with the OECD methods that will be used in these studies. However, regarding the matter of inferring crash causes, two points can be made. First, for some variables, (e.g. Blood Alcohol Content (BAC), age, engine size), risks of crashing can be calculated for differing levels of the variable. If the data show that crash risk increases as the level of the variable increases, such concomitant variation strongly implicates the variable as a crash cause *when crashes are considered in the aggregate*. It is recognized that such data do not permit one to infer cause for any single crash. Second, even in the case of binary variables such as gender, if, for example, the data show that 89 percent of riders are male, but 98 percent of crash involved riders are male, then gender would be considered predictive of crashes. These kinds of data are still useful for countermeasure development although by no means would one argue that they suggest gender is a cause of crashes.

A9. PAYMENT OR GIFT TO RESPONDENTS.

Upon review of the pilot study it was found that an effective method for collecting control data was to offer $20 gas cards as a "thank you" to participants. Per the findings of the IRB at OSU it was determined that if the control subjects were being offered a $20 gas card, then the crash participants must also be provided with similar compensation. As a result, all participants will be given a $20 gas card. Nonetheless, the motorcycle industry and enthusiast groups are supportive of this effort, and therefore, we expect participation rates to be high. For example, recently the AMA provided $100,000 in seed money to a fund to which they are asking others to contribute to the study. This endorsement from the AMA is expected to enhance the level of cooperation from motorcyclists.

A10. ASSURANCE OF CONFIDENTIALITY PROVIDED TO RESPONDENTS.

No personal identifiers will be included in any of the databases; the data on individual cases is not discoverable. However, a Certificate of Confidentiality was obtained from the Department of Health and Human Services and a copy will be provided to each participant. An Informed Consent Document was prepared by FHWA's and NHTSA's legal departments and will be provided to each participant. The Pilot Study contractor, Westat, Inc used its Institutional Review Board (IRB) to review both the Certificate of Confidentiality and the Informed Consent Document and ensure that they are provided to each subject as this research is conducted. The Certificates of Confidentiality and Informed Consent documents are provided in the Appendix.

Several levels of protection are planned to protect both the survey participants and the data files holding crash information. Westat staff and relevant subcontractors sign confidentiality pledges to protect all information gathered in the study. No personal identifiers regarding the crashes, vehicles or involved parties, are ever recorded in any system of records. All databases use password protection as do the computers and servers used to manage the data. Westat's computer network is protected using state of the art hardware and software applications. If a telephone number is acquired because of the need for a follow-up call to a respondent this number will not be recorded in any database and will not be retained once the follow-up call is completed.

For the main study, the University of Oklahoma's Transportation Center has an established secure facility that will be used for the data collected under this study. Their IRB also reviewed all experimental protocols.

A11. JUSTIFICATION OF COLLECTION OF SENSITIVE INFORMATION.

Information will be requested on rider behavior, training history, license type and status, health status, alcohol consumption, and blood alcohol levels (using preliminary breath testers). This information is necessary to determine risk factors for crashes. However, NO identifying information will be associated with this private information, and respondents will be advised that they may refuse any and all questions, as well as the breath test.

A12. ESTIMATE OF THE HOUR BURDEN OF THE COLLECTION OF INFORMATION ON THE RESPONDENTS.

The following table shows the sampling plan and estimated number of interviews assuming a maximum of 1200 crashes are investigated in the combined studies.

Crash Interviews:

Operators of motorcycles in single vehicle crashes =	540
Motorcycle operators and other drivers in Multi-vehicle crashes (660 crashes*2 persons) =	1320
Motorcycle Passenger interviews (0.10(of single vehicle crashes) *540 crashes + 0.10 (of multi-vehicle crashes)*660) =	120
Car passenger interviews cars (.68*660) =	449
Total Crash Interviews (540 + 1320 + 120 + 449) =	*2429*

Control interviews:

Controls for single vehicle motorcycle crashes (2 controls *540 crashes) =	1080
Controls for multi-vehicle crashes (1 motorcyclist * 660 crashes + other vehicle driver * 660 crashes) =	1320
Passenger Interviews =	0
Total Control Interviews (1080+1320) =	*2400*
Grand Total Crash plus Control Interviews (2429 + 2400) =	**4829**

The Estimated Average Burden per Interviewee is calculated as 25 minutes for crash interviews and 25 minutes for control individuals' interviews. The Estimated Total (Not Annual) Burden Hours estimates are based on the total of 2,429 crash interviews to be conducted at an average length of 25 minutes each and 2,400 control interviews to be conducted at an average length of 25 minutes each for a total one-time burden on the public of 120,725 minutes or 2012 hours.

A13. ESTIMATE OF THE TOTAL COST BURDEN TO RESPONDENTS RESULTING FROM THE COLLECTION OF INFORMATION.

This collection of information will impose no costs to participants/respondents beyond the time they voluntarily provide. Record keepers from hospitals and police departments are not considered as respondents since part of their jobs is to provide records upon request. Additionally, hospitals charge a fee for each record request. As such, no additional cost burden is imposed on these record keepers resulting from the collection of information beyond the record keepers' actual job requirements.

A14. ESTIMATES OF ANNUALIZED COSTS TO THE FEDERAL GOVERNMENT.

The following figures come from the awards of the the "Motorcycle Crash Causation Study" cooperative agreement. These are total, not annual amounts.

Contract	Estimated Total Cost
Motorcycle Crash Causation Study (Main Study)	$2,500,000*
Total Federal Cost	$2,500,000

*A waiver has been obtained from the Administrator of the FHWA that states that the Grantee is no longer required to obtain matching funds for the project.

A15. EXPLAIN THE REASONS FOR ANY PROGRAM CHANGES OR ADJUSTMENTS.

This is a new information collection. It is a one-time research project.

A16. FOR COLLECTIONS OF INFORMATION WHOSE RESULTS WILL BE PUBLISHED, OUTLINE PLANS FOR TABULATION AND PUBLICATION.

A 16.1 Motorcycle Crash Causes and Outcomes – Pilot Study

The Pilot Study tested the methodology on about 53 crashes. No conclusions were drawn from these data because the sample was too small and the focus of the pilot was to test the methodology. All collected data from the crashes were encoded into ASCII files, and summary statistics are available on broad categories such as the age and gender of involved motorcyclists, types of motorcycles, crash configurations, etc. These data might be pooled with the main study master file data (see A16.2) that will follow directly. Procedures used in conducting this pilot study and minor adjustments to the OECD Methodology that were adopted are described in detail in the pilot final report which is available from NHTSA.

A16.2 Motorcycle Crash Causation Study- Main Study

This study will produce an FHWA-owned master data file with all personal identifiers removed. A series of summary reports describing these types of topics are planned: precipitating antecedents to the crashes, identification of risk factors for crashes such as age, gender, alcohol use, motorcycle size, motorcycle type, road conditions, time of day, etc.; estimates of the relative importance of these risk factors in predicting crashes. A final report will be published that will describe the major crash types, the most frequent antecedent events that if altered would have resulted in a reduced severity or no-crash outcome, and the variables that are most over-involved in crashes when compared with their overall incidence in the sample. These antecedent events and risk factors will form the basis for recommending countermeasures. Such recommendations will also be included the final report.

A17. APPROVAL FOR NOT DISPLAYING THE EXPIRATION DATE OF COLLECTION.

There are no reasons this display would be inappropriate. OMB approval will be shown on all collection instruments.

A18. EXCEPTION TO THE CERTIFICATION STATEMENT.

No exceptions are requested.

B. COLLECTIONS OF INFORMATION EMPLOYING STATISTICAL METHODS

B1. DESCRIBE THE POTENTIAL RESPONDENT UNIVERSE AND ANY SAMPLING OR OTHER RESPONDENT SELECTION METHODS TO BE USED.

B1.1 Potential Respondent Universe

The sampling frame is the set of all police-reported traffic crashes that include motorcycles in the United States. An ideal sample would be drawn randomly from the 103,000 such police reported crashes that occur each year (NHTSA, Traffic Safety Facts, 2005). However, such a sampling plan would require research teams to respond to a randomly drawn sample of those 103,000 different crash locations, something beyond the budget for this project. Alternatively, a clustered sampling plan could be used similar to that used in the National Automotive Sampling System. However, this also is well beyond the budget allotted by Congress for this study. Therefore, operational considerations dictate that a limited geographic area be selected from which to draw the crash sample. The plan is to draw from police jurisdictions in a single geographic area. This area will cover diverse demographic and geographic characteristics and experience substantial numbers of motorcycle operators year-round. Orange County, California has been selected as the data collection region because of the large number of motorcyclists with diverse population and geographic characteristics. Furthermore, the pilot study was successfully conducted in this region and a relationship with local law enforcement has already been established. Precedents exist for performing studies on vehicle crashes from investigations conducted in a single geographic location. Nevertheless, it is recognized that this study is not nationally representative, although it is anticipated that the most common crash types and most common antecedent conditions leading up to the acquired crashes will be represented in the study. Nonetheless, the single location will be considered as a limitation when using crash data collected from this study and as a result, language will be included in reports and analyses that use this data to acknowledge this limitation:

> "The Motorcycle Crash Causation Study chose southern California as the data collection site because of previous successes in collecting crash data in this region, in addition to climate and budgetary considerations. This single data collection location is a limitation of the study in that the distribution of causative factors in motorcycle crashes in southern California may not represent the entire United States."

B1.2 Crash Sample Acquisition

The pilot study developed and evaluated data collection forms, field methods, coding instructions, training materials and crash notification systems that will be used in the main study. The research samples for the pilot study and for the full-scale study include all police reported, motorcycle-related crashes that occur in the selected police jurisdictions within the study period. For the pilot study, 53 crash notifications were received during a three-month period. Only 6 out of the 53 cases were dropped due to a lack of cooperation, resulting in an 89% response rate. For the main study, a maximum of 1200 crash investigations are planned, along with 2,400 matched case controls. It is assumed that the main study will see a response rate similar to that of the pilot study.

A sample size of 1200 was chosen because it is anticipated that this size sample can be acquired within the geographic area, and a sample this size can be acquired in a single large jurisdiction in

a two-year period. Furthermore, the power analysis was conducted based on the data collected from two previous studies (Hurt, 1981 and MAIDS, 2004) with the same or similar data collection methodologies. The power used to determine the necessary sample size was considered to be the standard β=0.80 while the level of desired statistical significance was set at α=.05. Based on the data obtained from the Hurt study, conducted in Southern California, and the MAIDS study, conducted with the OECD data collection methodology, it was determined that a maximum of 1200 cases with 2400 controls would be sufficient to provide statistically significant results for many or all of the desired analyses.

The acquisition of motorcycle-related crashes will be identified through cooperative agreements with the selected police jurisdictions. The crash investigators will be notified by police dispatchers when an applicable crash is reported, and will initiate their investigations on-scene in concert with first responders. Crashes of all severities from minor property damage to fatality will be included.

An advantage that was not available in the Hurt study is that the data elements for this study that are in common with those collected by National Automotive Sampling System and the National Motor Vehicle Crash Causation Study have been identified so that they can be cross-referenced. This allows the results from the current study to be compared to the in-common nationally representative data from these other NHTSA programs. This study is anticipated to provide more detailed information on motorcycle crashes and motorcyclist characteristics than is available in the other programs because of the unique data elements that will be collected pertaining to motorcycle and operator factors. Examples include operator training, experience and behaviors, and specific motorcycle features and condition.

B1.3 Control Sample Acquisition

The collection of control data also has antecedents in passenger vehicle safety research projects and motorcycle research projects. The current study will use a more stringent procedure than either of these studies for acquiring similarly at risk motorcyclists by capturing data from non-crash involved motorcyclists and passenger vehicle drivers (control subjects) matched on location, travel direction, and day of week, and time of day as the selected crash-involved parties. Acquiring data on controls matched this way (that is, similarly-at-risk controls) allows for the calculation of relative risks that can be used for developing countermeasures. In the Hurt study in the 1970s, this approach identified several significant risk factors for crashes. One was that riders who had received formal training were less likely to be involved in a crash or to suffer serious injury. Also, crash involved motorcyclists used daytime headlamps only about half as often as did those in the control group.

B2. <u>DESCRIBE COLLECTION OF INFORMATION PROCEDURES.</u>

The OECD identifies two complementary procedures to be performed for acquiring the data needed to understand the causes of motorcycle crashes. The first of these is the traditional in-depth crash investigation that focuses on the sequence of events leading up to the crash, and on the motorcycle, rider, and environmental characteristics that may have been relevant to the crash. The second procedure, known as the case-control procedure, complements the first. It requires the acquisition of matched control data to allow for a determination of the extent to which rider and driver characteristics, and pre-crash factors observed in the crash vehicles, are present in similarly-at-risk, non-crash involved control vehicles.

Such a dual approach offers specific advantages to the understanding of crashes and the development of countermeasures. The in-depth study of the crash by itself allows for analysis of the events antecedent to the crash, some of which, if removed or altered, could result in a change in subsequent events that would have led to a non-crash, or reduced crash severity outcome. For example, an in-depth crash investigation may reveal that an automobile approaching an intersection was in a lane designated for straight through traffic only, but the motorist proceeded to make a left turn from that lane into the path of an oncoming motorcycle. That finding can, by itself, be used to develop countermeasures, and does not require matched control data. However, acquiring matched control data from similarly-at-risk riders and drivers provides additional critical information about crash causes that cannot be obtained if only crashes are examined. Perhaps the crash-involved motorcycle operator was not using daytime running lights, but the matched controls both used such conspicuity features.

B2.1 Crash Investigation Procedures

Once a crash notification has been received, several activities are initiated by the research team. Crash investigators immediately locate, visit, measure, and photograph the crash scene (while the vehicles are still there, to the extent possible). They locate, inspect, and photograph all involved vehicles. The investigators conduct an in-person or telephone interview with each involved person or surrogate. Because inclusion in the research is strictly voluntary, the investigators will use a script similar to the following:

"Hello, we are conducting a study of motorcycle safety for the NHTSA/FHWA and would like to ask you a few questions. This is expected to take about 25 minutes of your time. All information that you provide will be kept strictly confidential. We do not include any names, addresses or other personal identifiers in our records".

Injury information from hospital or emergency room records or medical examiner reports is obtained and encoded for all injured victims. Surrogate interviews are used when a person is not able to be interviewed because of hospitalization or incarceration. Note that participation in the study is completely voluntary and the confidentiality safeguards described in Section A above will be strictly followed. During each activity the researchers record information on the appropriate crash, vehicle, and environment data forms. No personal identifiers are ever entered into any system of records.

B2.2 Control Data Collection Procedures

For the control data, researchers will interview motorcycle operators and motor vehicle drivers who pass by the site of a selected crash either for one hour immediately following the crash occurrence, or at one week after the crash at the same time of day. The timing of the control data collection effort will be determined by the current circumstances at each site (traffic congestion, police permission, and crash-data availability). Priority will also be given to obtaining crash data as rapidly as possible before it can be affected by traffic, weather or clean-up activities. If weather (or other) conditions differ substantially on the week following the crash, then the control sample collection will be moved to the week following.

Police help may be enlisted in asking motorcyclists and motor vehicle drivers to participate in the study if the police jurisdiction determines that this is necessary, or the site characteristics make such data collection tasks risky. Vehicles will be selected by type (passenger cars, trucks,

etc. similar to those involved in the fatal crash). Interviews will be conducted with the operators of the motorcycle and the drivers of the targeted other vehicles. Motorcycle inspections will also be conducted so that the type and condition of the vehicle can be recorded. Two control motorcyclist interviews will be captured for each single vehicle motorcycle crash. For two-vehicle crashes, one control motorcyclist and one control motor vehicle driver (similar to the crash-involved vehicle) will be interviewed. The number of controls captured per crash is relatively small because increasing the control sample size beyond the size of the crash sample yields diminishing returns on statistical power. One general problem these kinds of studies face is response bias. This problem is recognized and will be acknowledged in the final report.

B3. DESCRIBE METHODS TO MAXIMIZE RESPONSE RATES AND TO DEAL WITH ISSUES OF NON-RESPONSE.

Motorcycle operators, passengers and the drivers of other involved vehicles will be interviewed at the scene of the crash whenever possible. If these individuals have been medically transported, arrested or are otherwise not available for immediate interview, follow-up efforts will be initiated. Occupants will be contacted by telephone to arrange for an in-person interview if one can be arranged. Telephone interviews will be conducted only when necessary. Several methods are used to maximize response rates. Researchers call at varying hours (often in evenings or on weekends) until they have located the driver, operator, or passenger sought. When the person is unavailable (for medical or legal reasons), other family members or witnesses may be contacted to provide whatever limited information is available to them. Each researcher is given special training in interviewing. This increases the possibility that crash-involved persons will cooperate once they have been located and contacted. At least four follow-up phone calls will be made to reach necessary respondents.

Attempts will be made to recruit control drivers for interviewing at site-time matched locations (see Section 2.1.2). During the designated time period, the recruitment effort will continue until a control driver has agreed to participate, or the matched time period has ended. In the latter case, the same recruitment effort will be repeated at the same location during a second time period a week later, and if needed in subsequent weeks. We note that even if a motorcyclist does not cooperate, Westat will be able to identify the approximate size and type, the rider's approximate age and gender by observation, and so Westat might also be able to match non-responding riders to crash-involved riders on a few key variables such as use of protective equipment, riding speed, etc.

It is anticipated that some information items may not be obtained even for riders who are willing to participate in the research. Westat plans to impute such missing item responses using traditional methods of imputation such as the hot deck.

Regarding the problem of refusals and bias that may be introduced by non-responders, it should be noted that response rates have been exceptionally high in the pilot study as well as other crash investigation research projects and therefore non-response bias is not expected to be a problem in this project. In the most important prior motorcycle crash study conducted in the US, (Hurt, Ouellette, Thom, 1981) refusal rates for both crash and control motorcyclists were near zero (personnel communication, Ouellette, 2007). However for drivers of cars involved in crashes with motorcycles they were about 25%. In a more recent automotive crash study focused on alcohol involvement that was conducted by NHTSA (see Compton, R. P., Blomberg, R. D.,

Moskowitz, H., Burns, M., Peck, R. C., & Fiorentino, D., Crash Risk of Alcohol Impaired Driving, in D. R. Mayhew and C. Dussault (Eds.), *Proceedings of the 16th International Conference on Alcohol, Drugs*) refusal rates were 7.55% for crash drivers and 2.12% for control drivers. For NHTSA's National Automotive Sampling System (NASS) annual crash study, refusal rates in 2006 were in the 26% range). However, most NASS interviews are conducted by telephone, and refusal rates in this current study are expected to be much lower as interviews will be conducted at the crash scenes. The pilot study experienced a response rate of 89% and it is expected that the main study will see a similar result. Regarding the matter of analyses to be performed on sub samples, FHWA and NHTSA recognize that the matter of non-response is to be given careful attention with respect to the potential of bias when sample sizes are effectively reduced in sub sample analyses.

B4. DESCRIBE ANY TESTS OF PROCEDURES OR METHODS TO BE UNDERTAKEN.

The NHTSA Pilot Study served as a test of the procedures to be used for the Main study. It was found that the OECD procedures were very applicable to the U.S. environment. Minor modifications to the methodology were made to accommodate differences in the units of measurement and language, but as a whole, the methods to be employed in the main study will be those outlined in the OECD methodology.

B5. PROVIDE THE NAME AND TELEPHONE NUMBER OF INDIVIDUALS CONSULTED ON STATISTICAL ASPECTS OF THE DESIGN AND THE NAME OF THE AGENCY UNIT, CONTRACTOR(S), GRANTEE(S), OR OTHER PERSON(S) WHO WILL ACTUALLY COLLECT AND/OR ANALYZE THE INFORMATION FOR THE AGENCY.

B5.1 Statisticians Consulted

Ms. Roya Amjadi, Safety Research and Development, reviewed the statistical approach for FHWA. She can be reached at 202.493.3383

Paul Zador, Ph.D, Senior Statistician, Westat Corporation provided consulting services. Tel. 301.294.2825.

Abe Ahmad, Ph.D. Head of Statistics, Oklahoma State University provided analyses regarding power and sample size. He can be reached at 405.144.9659.

B5.2 Agency, Contractors, Grantees

NHTSA

Maria Vegega, Ph.D, Office of Behavioral Safety Research, National Highway Traffic Safety Administration (NHTSA) overall was responsible for the Pilot Study and for NHTSA recommendations regarding the Main Study. She can be reached at 202.366.2668

FHWA

Carol Tan, Ph.D, Office of Safety Research and Development, Federal Highway Administration (FHWA), is responsible for the large-scale study. She can be reached at 202.493.3315.

Contractors
The contract for the Pilot Study–Motorcycle Crash Causes and Outcomes, contract DTNH22-05-C-05079, was awarded to Westat in September, 2005. Ms. Frances Bents was the Project Director. She can be reached at 240.314.7557.

The cooperative agreement for the Motorcycle Crash Causation Study (DTFH61-06-H-00034) was awarded to the Oklahoma Transportation Center (OTC). Dr. Samir Ahmed is the Project Director and Principal Investigator. He can be reached at 405.744.5261.

OTC has named Westat as the subrecipient under the cooperative agreement. Ms. Frances Bents is the Project Manager for data collection. She can be reached at 240.314.7557.

Westat
1600 Research Blvd.
Rockville, Maryland 20850

Westat has the following subrecipients under its award:

Dynamic Science, Incorporated (DSI). Mr. James Perry is the Field Manager for data collection. Michael Kaszubowski is the Director of Contract Management. He can be reached at: 602.995.3700

Dynamic Science, Inc.
8433 N. Black Canyon Highway
Phoenix, Az. 85021

James Oullette, consultant, will assist with training, data quality control, and helmet inspection. He can be reached at: 310.306.9194

James Oullette
8117 Manchester Ave. #668
Playa Del Rey, Ca. 90293

Dynamic Research, Incorporated (DRI). Dr. Terry Smith, principal scientist, will assist with training, data quality control, and OECD coding. He can be reached at: 310.212.5211

Dynamic Research
355 Van Ness Ave.
Torrance, Ca. 90501

CI-Dynamics, Incorporated. Helmet testing will be conducted by CI-Dynamics. David Thom is the Principal Scientist. He can be reached at: 310.414.0449

CI-Dynamics
149 Sheldon St.
El Segundo, Ca. 90245