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15. Supplementary Notes

Dr. Paul Tremont, Dr. Jenny Percer, and Dr. Jessica Cicchino were the NHTSA Contracting Officer's Technical Representatives for this project.

16. Abstract

The number of motorcyclist crash-related fatalities has more than doubled during the past 10 years. In the *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)* P.L. 109-59, Congress directed the Secretary of Transportation to conduct a comprehensive study of the causes of motorcycle crashes. In anticipation of this mandate, the National Highway Traffic Safety Administration awarded a contract to conduct a Pilot Study to develop and test a methodology for in-depth motorcycle crash investigation. Using a protocol developed by the Organization for Economic Cooperation and Development for a multination European study as a guide, the contract had four main goals: (1) develop comprehensive data collection forms, a coding manual, and field protocol for crash investigations; (2) develop data collection forms, a coding manual, and field protocol for the collection of control group data; (3) develop training material that can be used for a future larger scale study; and (4) assess the levels of effort and resources required for each stage of an investigation so that more accurate plans can be made for the future study. This report describes the process used to develop the data collection methods and tools, conduct data collection, and evaluate the results. In addition, it provides estimates of the average cost of completing an in-depth investigation, including the related dropped cases and control group data. Recommendations for modifications to the data forms, coding manuals, training material, and database are included.

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Executive Summary

The number of motorcyclist crash-related fatalities has more than doubled during the past 10 years. In the *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU),* P.L. 109-59, Congress directed the Secretary of Transportation to conduct a comprehensive study of the causes of motorcycle crashes. In anticipation of this mandate, the National Highway Traffic Safety Administration (NHTSA) awarded contract DTNH22-05-C-05079 to conduct a Pilot Study to develop and test a methodology for in-depth motorcycle crash investigation.

Using a protocol developed by the Organisation for Economic Cooperation and Development (OECD) for a multination European study as a guide, the study had four main goals: (1) develop comprehensive data collection forms, a coding manual, and field protocol for crash investigations; (2) develop data collection forms, a coding manual, and field protocol for the collection of control group data; (3) develop training material that can be used for a future larger scale study; and (4) assess the levels of effort and resources required for each stage of an investigation so that more accurate plans can be made for the future study.

A Project Working Group of stakeholders from the motorcycle community was convened in June 2006. They reviewed all of the OECD data elements and made recommendations. As a result of this meeting and with contributions and review by the project team, staff from NHTSA, the Federal Highway Administration, and Oklahoma State University, a modified set of data elements was created.

Westat and its subcontractor, Dynamic Science, Inc., (DSI) conducted the study in Orange County, California. Cooperative agreements were negotiated with five police agencies in seven jurisdictions. The plan was to investigate up to 37 crashes via on-scene response during a 3-month data collection period. The project successfully developed and evaluated all data collection instruments, hired and trained crash investigators, conducted on-scene investigations, and gathered exposure data. Notifications were received on 53 motorcycle crashes during the 3-month data collection period. Of those, 23 cases were completed. Twenty cases were dropped because there was no injury to a motorcycle rider or passenger or because of lack of cooperation. An additional 10 cases were not completed by the end of the data collection period.

The collection of case controls proved to be the most challenging aspect of the study. Several approaches were used with limited success. Suggestions for improving the collection of control data are discussed.

Although laboratory testing of crash-involved helmets is part of the OECD protocol, such testing was not conducted as part of the Pilot Study. There was no need to adapt the protocol for use in the United States, and thus, there was no need to evaluate the standard testing procedure.

This report describes the process used to develop the data collection methods and tools, conduct data collection, and evaluate the results. In addition, it provides estimates of the levels of effort for various subtasks when conducting an in-depth investigation, including the related dropped cases and control group data. Recommendations for modifications to the data forms, coding manuals, training material, and database are included.

The Pilot Study demonstrated that case notifications could be received from cooperating police jurisdictions within about 15 minutes, and crash investigators could be dispatched almost immediately in order to respond on-scene. Interviews with involved riders and drivers of other vehicles were obtained on average in less than 24 hours,

Medical records were sometimes available almost immediately via fax, and generally within about two weeks when signed patient release forms were provided to hospitals. Autopsy reports are public records in California and were available immediately once they were completed.

The average number of hours to complete a crash investigation including collecting control data and allowing a margin for dropped cases was about 60 hours, resulting in an average cost per completed case of about $7,500. It is important to note that this cost **does not include** the cost of developing data collection forms, a coding manual, training material, databases, or field protocol. It also does not include the cost of equipment, hiring and training data collectors, or helmet testing. Likewise, the cost does not reflect efforts to obtain approval from the Office of Management and Budget (OMB) or from Institutional Review Boards (IRBs). These related costs of developing and implementing a research program are substantial.

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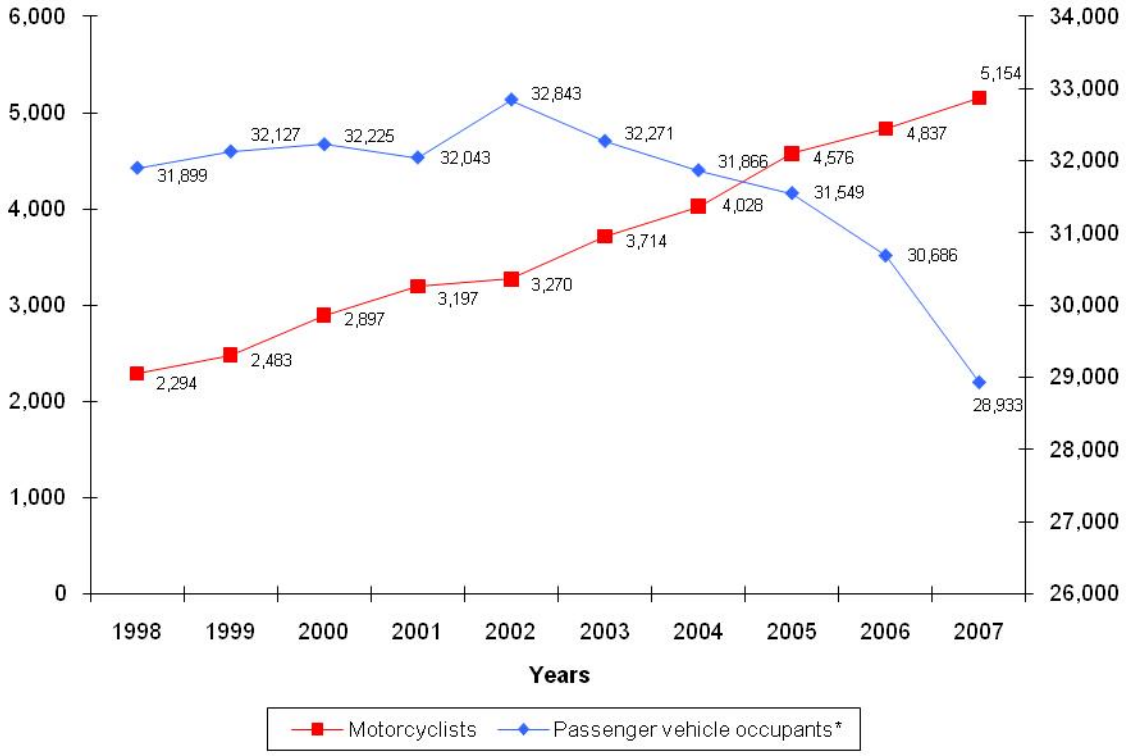
1.0 Background

The safety of motorcyclists on our nation's roads has become an increasing concern among traffic safety professionals. Figure 1-1 below compares the number of passenger vehicle occupant fatalities with motorcyclist fatalities over the past 10 years. While occupant (and nonoccupant) fatalities have decreased, motorcyclist fatalities have steadily increased.

Figure 1-1: Motor Vehicle Crash Fatalities by Vehicle Type and Year



Source: Fatality Analysis Reporting System (FARS).
*Includes occupants of passenger cars, vans, SUVs, pickups and other light trucks.

With the rising number of motorcyclist fatalities each year, it is important to conduct an in-depth study of motorcycle crashes to develop more appropriate countermeasures. Congress directed the Department of Transportation in Section 5511 of the *Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU)*, P. L. 109-59, to conduct research that will provide a better understanding of the causes of motorcycle crashes. The *SAFETEA-LU* legislation required the Secretary of Transportation to provide grants to the Oklahoma Transportation Center (OTC) to conduct a comprehensive, in-depth motorcycle crash causation study using the common international methodology for in-depth motorcycle crash investigation. There has been no DOT-sponsored comprehensive study in the United States of such crashes for over 30 years.

The Organisation for Economic Cooperation and Development (OECD) methodology is a comprehensive approach to investigating motorcycle crashes. The 649-page methodology calls for the investigation of crashes of all severities, excluding non-injury cases 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.

Environmental details are collected to get a full picture of the crash event. Roadway features, traffic controls, and other 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 include detailed interviews with motorcycle operators and passengers 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 training program that should be no less than four weeks and up to nine weeks long that covers data collection techniques (interviewing skills, vehicle damage assessments) and the analyses of physical data such as metal fractures. Very limited training material are available. A database developed in Europe has been used by a manufacturer-sponsored study to record crash investigation and control data but is not available to the public.

In anticipation of a congressional mandate for a full motorcycle crash causation study, the National Highway Traffic Safety Administration (NHTSA) awarded a contract for a Pilot Study to test the methodology for a motorcycle crash causation study using the common international methodology for in-depth motorcycle crash investigation. The project has four main target outcomes. Using the protocol developed by OECD to foster uniform procedures in the investigation of motorcycle crashes, this project: (1) developed comprehensive data collection forms, a coding manual, and field protocol for crash investigations; (2) developed data collection forms, a coding manual, and field protocol for the collection of control group data; (3) developed training material that can be used for a future larger scale study; and (4) assessed the levels of effort and resources required for each stage of an investigation so that more accurate plans can be made for the future study.

The Pilot Study was conducted by Westat and Dynamic Science, Inc. (DSI). As the prime contractor, Westat was responsible for overall planning, project management, recruiting police agencies, creation of data forms, database development, evaluation, and reporting. As a subcontractor, DSI was primarily responsible for the creation of the coding manual and training material, recruiting and hiring the crash investigators, conducting the training, performing the crash investigations, collecting control group data, and populating the database.

The Pilot Study built upon the research protocol used in motorcycle research in the 1970s in the United States, current data collection programs, and the methods developed by the OECD for use in Europe. The Pilot Study created a comprehensive research protocol that allows comparisons with other current U.S. crash data such as the National Motor Vehicle Crash Causation Study (NMVCCS), the National Automotive Sampling System (NASS), and the Fatality Analysis Reporting System (FARS), along with the motorcycle and motor scooter studies previously conducted in Thailand and in Europe.

2.0 Study Design

The study includes assessments of the data forms, coding manual and training material along with measurements of the time and resources needed for the collection of information on motorcycle-involved crashes and on two non-crash-involved "control" motorcyclists for each focal crash. These control cases provide a basis for comparisons of operator and vehicle characteristics and are matched for time of day, weather, road type, urban, suburban or rural area type, and other factors.

Data collection for the crashes and controls included observation, measurement, interviews, photography, and the collection of official documents. All technical data were encoded using carefully defined definitions and standard data forms; scene and vehicle diagrams were created, and photographs were organized and labeled. Narrative descriptions from interviews accompany each crash report and discuss relevant factors that contributed to crash and injury causation and severity. Because this study is focused on developing and refining data collection procedures, a consolidated database was created in Microsoft Access so that data completion rates can be tracked for each variable. Because of the small sample size for the Pilot Study, no comprehensive analysis will be performed of the entire dataset with regard to crash characteristics and outcomes.

A research team comprising three crash investigators and one supervisor investigated motorcycle-related crashes that occurred within Orange County, California. Cooperative agreements were negotiated with police agencies as described in Sections 4.1 and 4.2 to provide the team with immediate notification of focal crashes and to provide the team with access to crash-related data (such as the ability to document scene and vehicle information) preferably while such data were relatively undisturbed, immediately following the crash. The team was also provided with copies of the completed police accident reports (PARs). In addition, the team routinely reviewed Web sites for police agencies and news organizations to identify potential crashes. At least one investigator was on call via cell phone and e-mail so that crash investigations could be initiated on-scene, 24 hours per day, 7 days per week.

Access to tow facilities and salvage yards was handled on a per-case basis. Additional cooperation was needed to access police tow facilities. For the California Highway Patrol (CHP), this included watch commander approval and a written release from the watch commander to the tow facility. Other tow yards required the presence of the vehicle owner in order to provide access for a vehicle inspection. Medical records were obtained through the use of signed patient release forms in compliance with Federal privacy regulations. Autopsy reports are publicly available in California.

The Pilot Study plan called for the investigation of up to 37 crashes within 3 months. Cases were initiated by the team from December 8, 2008, through March 8, 2009. It can take up to 90 days to obtain all of the necessary documents and analyses to complete an investigation; thus, not all cases could be completed within the 3-month study period. The team continued to gather official documents in order to complete reports through

April 10, 2009. The study was intended to validate the proposed protocol on a variety of crash types (single- versus multivehicle), all driver ages and levels of experience, and in a broad range of circumstances (varying roadways, geographic conditions, driver characteristics, etc.) for motorcycle- and motor-scooter-related collisions. The investigators responded to crash cases at the scene, immediately after notification that the crash occurred, when such notifications were timely. Thus, the investigator arrived at the scene with no idea what the crash involved, other than a report that a motorcycle or scooter was involved with a reported injury to the rider or passenger. In this way, no sampling bias was introduced by the researchers, and the broadest possible range of crashes was included in the study. It should be noted that not all crash notifications were provided promptly. In some cases, notifications occurred hours or days after the crash occurrence. The team responded by initiating investigations as quickly as possible for all cases.

The study plan also required the collection of comparison data from non-crash-involved motorcyclists. Two control cases were to be selected for each investigated crash. The control cases included interviews with motorcyclists and passengers and a detailed inspection of the motorcycle. Breath samples for alcohol detection were also requested from control motorcycle riders. The control data were intended to be collected either at the crash location at the same time of day and day of week for traffic traveling in the same direction, one week post-crash, or immediately following the clearance of the crash scene. Alternatively, control cases were obtained from a nearby location such as a gas station, when safety concerns precluded data collection at the crash site.

Details about the protocol used to collect crash and control data are presented below. Copies of the Pilot Study data forms, coding manual, and database were delivered under separate cover.

2.1 Crash Investigation

Case Assignment

Crash investigations were assigned, on a rotating basis, to the three investigators. When the workload became uneven due to the random assignment of a series of more complicated cases to an individual, the supervisor modified the assignments as necessary. The case criteria were that a crash must involve a single motorcycle or motor scooter or a multi-vehicle crash must involve at least one motorcycle or motor scooter, and the operator or passenger of the motorcycle or scooter must have sustained a reported injury. Cases were subsequently dropped if the preliminary investigation indicated that no treatable injury occurred.

Data collection essentially followed the guidelines laid out in the OECD Common Methodology. Of course, the variability of crash scenes required investigators to remain flexible in the order in which they undertook the various investigation tasks. Generally speaking, the highest priority was given to obtaining data that were likely to be altered or to disappear quickly. Most often this meant obtaining photos of the vehicles at their final rest positions and interviewing uninjured or slightly injured riders and drivers. Documenting the motorcycle damage and crash scene evidence was accomplished as soon as possible before details became modified or obliterated.

Tape recording of interviews is suggested in the Common Methodology, and most of the interviews during the Pilot Study were conducted over the phone. Tape recordings were attempted on a limited number of occasions during in-person interviews, and the results were mixed. The interviewee either agreed or did not agree to being taped, but the interview itself was completed. All information was transcribed onto paper forms and entered into a database.

All photography was digital, so the requirement in Section 4.5.5 of the Common Methodology to mount all photos on paper was not done. Electronic versions of the photos were labeled and attached to the case file in the database. The image files were named in a structured alphabetic format so that the images for each case would appear in a consistent and logical order, both when viewed through the database and with any file management application.

No personal identifiers are ever included in hardcopy or electronic reports, and no system of records is maintained with case identification data.

Case Response

Cooperating police agencies were given a phone number and an e-mail address to be used for case notification. The corresponding cell phone was provided to the crash investigator on-call at any given time. Upon receiving notification, he would initiate a case by notifying a second investigator (when available) and traveling directly to the crash scene.

Upon arriving at the crash scene, the investigators parked their vehicle in a safe place and introduced themselves to the lead police investigator. Business cards and a letter of authorization from NHTSA (Attachment 1) were used as a means of identification. The police officer determined when the documentation and collection of case data could begin. The activities could range from allowing only photographs, to providing full access to crash-involved vehicles, riders, drivers, and the scene. Information that could not be gathered immediately was collected through follow-up visits to the crash site, tow yards, salvage yards, and places of residence.

Documentation of the Scene and Environment

Using the prescribed Crash Scene Data Collection protocols (as adapted from the Common Methodology and the NASS), the crash investigator collected environmental, highway-related, and crash-related evidence while at the scene of the crash whenever possible. Most freeway locations were not available for detailed inspection, and alternate methods were used as described below. The goal was to describe the crash scene in detail for both the rider and the operator of other vehicles. Information regarding the pre-crash path of travel was documented, including type of area, illumination (daylight, dusk, night lighted, night not lighted, or dawn), type of intersection, traffic direction, lane dividers, roadside environment and obstacles, traffic way description, posted speed limits and roadway surface characteristics, and information about traffic conditions and weather at the time of the crash.

The investigator documented the exact location where the sequence of crash events occurred (point of impact [POI], point of rest [POR], object(s) contacted, skid marks, etc.). Also the investigator attempted to associate physical evidence such as debris with the motorcycle or other vehicle component involved in producing it. Once all of the physical evidence was identified, the investigator marked the important scene data with spray chalk.

After the scene evidence was completely marked, the investigator measured and photographed the motorcycle and vehicle POIs, PORs, and intermediate trajectory points; physical evidence; and pertinent items of the permanent environment. The presence of stationary view obstructions (e.g., road signs) or mobile obstructions (e.g., other vehicles) was documented along with other pertinent features unique to the case.

Total stations (computerized surveying instruments) were tested late in the Pilot Study to measure their utility in documenting pertinent features in the physical environment and crash-related evidence when it was possible to do so. This approach could be used in certain locations to provide three dimensional measurements of critical scene documentation such as the distance between points and the relative height of various features. More frequently, standard measuring wheels and tape measures were used.

The resultant data were recorded on the data collection forms and were used as the basis for drawing a scaled diagram of the crash scene and related evidence. Easy Street Draw Accident Diagramming Software was used for the creation of the scene diagram. The file was then converted to a JPEG format and appended to the electronic case file.

Documentation of Motorcycle and Vehicle Data

While at the scenes, the investigators inspected and photographed the involved motorcycles as well as other vehicles, if appropriate and available. Complete vehicle inspections could not be accomplished at the crash scene, so the investigator tracked the vehicle to a tow yard, impound facility, or other location to finish the documentation. The investigator gathered information regarding the motorcycle manufacturer, model and style, year, colors, tire and rim sizes, suspension characteristics, brake system type and condition, frame, handlebar, seat, fuel tank, drive train, throttle control, and exhaust system. The condition of each component, and whether it was original equipment, modified, or after market, was also recorded.

A supplemental roll attitude angle form was developed to aid in the coding of variable 19 on the Motorcycle Dynamics Form. It was found that additional field measurements beyond those called for in OECD were needed in order to code the variable accurately.

Photographs were taken of each vehicle, with particular emphasis placed on verification and documentation of all coded data elements, especially as they related to the areas of interest for that crash. In some circumstances (e.g., poor light or inclement weather), a further inspection of the involved vehicles was required, and as noted above, the investigator then tracked the location of the vehicle and arranged for further inspection at a tow yard, impound lot, or other location.

The investigator identified and recorded all motorcycle rider and passenger contact points using both coded data and diagrams. Individual contact points were identified by such physical evidence as deformations of the motorcycle's instrument panel, the fuel tank, and other surfaces; strands of hair, makeup, and tissue fragments; and clothing embossments. Occupant contact points within the crash environment were also identified, e.g., bloodstains on a road surface. All identifiable contact points were photographed and diagrammed according to prescribed methodology.

Documentation of Rider and Occupant Data

Information regarding occupants involved in assigned cases was gathered from many sources such as PARs, medical records, and autopsy reports, but for this study, interviews were particularly important. This study focused on the events leading up to crashes; those involved are best able to describe those circumstances. While at the scene, interviews were conducted with police officers, the motorcycle riders and passengers, and other vehicle occupants (when possible). These individuals contributed information about the rider's and occupant's roles, kinematics, injuries, and injury mechanisms. If the involved parties were not available for interviews, due to injuries for example, the investigators contacted them later.

Demographic information was collected for all crash-involved people (riders, passengers, and other vehicle drivers). This information included extensive background data (e.g., age, gender, educational status, occupation, and vision correction) and riding/driving experience (e.g., all vehicle experience, on any street motorcycles, on crashed vehicles, number of days motorcycles are ridden, the ridden distance per year, training, motorcycle percent-use estimate, and experience with a passenger or cargo). Information was also gathered on the riders' and passengers' clothing and safety equipment by body region. This included information about helmets, including the type of helmet, type of coverage, manufacturer, model, and helmet condition before and after the crash.

Information regarding the trip was gathered (i.e., origin, destination, trip length, frequency of road use, length of time since departure) and possible impairment (i.e., alcohol/drug type of use, impairment, blood alcohol concentration [BAC], source of BAC information, physiological impairment, permanent or transient condition, presence of stress, etc.). Interviewees who were available on-scene were given voluntary breath tests for BAC. For injured parties, blood alcohol information was obtained from medical reports or PARs, when possible.

Additionally, interviews covered activities such as any particular or unique situations that may have led to the crash (e.g., rider and passenger position at time of collision, attention to tasks, etc.). Interviews were needed to obtain releases for medical records, consent for breath tests, and are useful in locating vehicles or other occupants. They were also necessary in order to gather information that simply is not found in official documentation. For these reasons, the crash investigators made every attempt to conduct the interviews on-scene and in person.

Injury Data Collection
Using occupant interviews, medical records, and/or autopsy reports, the investigators compiled as complete a listing of occupant injuries as possible. Some descriptions of slight injuries were obtained only through occupant interviews. The best source for descriptions of substantial injuries was, of course, official medical records. Since the passage of the *Health Insurance Portability and Accountability Act*, access to medical information is generally carefully controlled. Signed patient release forms are required and were used to obtain copies of patient records so that injury information could be examined, encoded, and related to possible or probable injury sources.

When interviewing vehicle occupants, the investigator asked that a medical release form be signed. A generic form was used. At times, certain hospitals required their own specific patient release forms. These were used as they became available. The investigators made personal visits to area hospitals to introduce themselves and explain the study. The hospitals were generally very responsive in providing the requested records once the appropriate patient release forms were provided. Official medical records requested included emergency room reports and patient discharge summaries and records from private physicians.

Autopsy reports were provided by the medical examiner. These are public records in California and did not require special authorization for their release.

Some cases included riders who received first aid at the scenes. When possible, injury information was obtained directly from the riders. Some riders agreed to be photographed, which allowed documentation of some injuries as well as riders' clothing and protective equipment.

After weighing all of the gathered information, the investigator determined the case rider/occupant kinematics, interaction between the rider/motorcycle and environment, as well as what role the components played in the crash outcomes. The investigator assembled the entire related official and interview-derived medical information and coded the injuries using the Abbreviated Injury Scale (AIS2005), the International Statistical Classification of Diseases and Related Health Problems (ICD-9), and the Injury Severity Score (ISS).

Reconstruction
When all interview, scene, and vehicle data had been gathered, the investigator addressed the pre-crash motion of the involved vehicles and motorcycle dynamics, including:

- Contributing environmental factors (e.g., roadway condition and design, traffic controls, defects, traffic hazards, weather-related problems, etc);
- Contributing vehicle factors (e.g., tire size, tire inflation pressure, motorcycle mechanical component-related problems, pre-crash fires, and any contribution of the cargo/luggage);
- Motorcycle contributing factors, indicating which mechanical element may have contributed to rider injury causation; and

- Contributing human factors (e.g., attention failure, lane choice, traffic scan, faulty traffic strategy, safe position, skills deficiencies).

The interviewee narrative description of the crash circumstances is included in each electronic case report.

Data Entry

Crash investigators entered data into the database throughout each investigation. The database indicated when each form was complete so that a notice of missing data could be provided. In addition to the data forms, the electronic case files include the interviewee narrative description of the case, diagrams and photographs of the crash scene, involved vehicles, and personal injuries.

Edit checks built into the database ensured that all entries were at least within a predetermined range (for example, a rider could not be 150 years old). In addition, consistency checks helped to ensure that data were consistent (for example, there should not be a dry road on a rainy day). Once an investigator completed data entry on a case and finished a self-review, the case was released for quality review by the quality control staff.

2.2 Control Group Data Collection

As described above, the motorcycle Pilot Study required 3 months of data collection or a sample of 37 crash-involved motorcycle investigations and information on at least two matched non-crash-involved control motorcycle riders for each (for a potential total of 74 controls). The reason for collecting the comparison information was so that analyses (in a larger sample of cases) can focus on the relevant aspects of the crash susceptible to countermeasures that, if effectively administered, would have prevented the crash from occurring or would have lessened the harm caused by it. Such analyses were not possible in the Pilot Study due to the small number of crashes investigated. However, this study was able to examine whether the planned approach for collecting control data is feasible and effective. The relative levels of effort required to collect the control data were determined.

Sampling Protocol

The crash investigation team was instructed to attempt to collect data on two comparison riders per crash rider at each crash site (or nearby location), on the same roadway and traveling in the same direction, either immediately following the on-scene crash data collection or one week later at the same time of day and day of week. Data collection at each crash site was to be conducted no more than one hour prior to and one hour past the time of the original crash. Problems with the planned approach are discussed in Section 5.2.

The OECD international coordinating committee developed three methodologies to collect exposure data in cases where it is impossible to perform traffic stops on the same road due to safety or law enforcement agency concerns. The committee recommended that research groups collect exposure data using one of the following methodologies:

- Photography or video recording of traffic, follow up of motorcycles via license plate number, plus signs indicating voluntary or police-assisted stopping of motorcycles for questionnaire interviews;
- Photography or video recording of traffic, plus follow-up of motorcycle riders via license plate number; or
- Only photography or video recording of traffic.

Note that previous motorcycle crash studies recruited comparison cases from nearby locations such as gas stations.

Roadside signs were used that stated, "Motorcycle Survey, Free Gas." Also a motorcycle was parked in a high-visibility location, and the investigator wore motorcycle-related clothing. Gas cards worth $20 were used as incentives for the control riders. Any motorcyclist who approached the data collection site was a candidate. There were no other selection criteria. If a rider refused to stop, then the next rider was considered. Tallies were kept of the number of riders who were potential control subjects but did not stop or refused to participate.

Control Sample Interviews

Interviews with motorcycle operators and passengers and inspections of their vehicles were conducted. As with the crash-involved riders, the questions included demographics such as age, gender, educational status, occupation, and vision correction. Questions included riding/driving experience (e.g., all vehicle experience, on any street motorcycle, on other vehicle, number of days motorcycle is ridden, the ridden distance per year, training, motorcycle percent-use estimate, and experience with a passenger or a cargo). Information was also gathered on the riders' and passengers' clothing and safety equipment by body region. This also included information about helmets, including the type of helmet, type of coverage, manufacturer, model, and helmet condition.

Information regarding the trip was gathered (i.e., origin, destination, trip length, frequency of road use, length of time since departure), and possible impairment (i.e., alcohol/drug type of use, impairment, BAC, source of BAC information, physiological impairment, permanent or transient condition, presence of stress). Riders and passengers were given voluntary breath tests for BAC. Although protocols were in place to provide safe transport in the event that riders were legally impaired, there were no impaired riders in the control group.

Vehicle Inspection

The investigators inspected and photographed the control motorcycle similarly to the inspection for crash-involved motorcycles. Data included the motorcycle manufacturer, model and style, year, colors, tire and rim sizes, suspension characteristics, brake system type and conditions, frame, handlebar, seat, fuel tank, drive train, throttle control, and exhaust system. The condition of each component, and whether it was original equipment, modified, or after market was also recorded, when possible. Photographs were taken of each vehicle in accordance with the required protocol, with particular emphasis placed on verification and documentation of all coded data elements.

Data Entry

The control data that were collected for each case were entered into the Access database. Built-in range checks and consistency checks ensured that the entered data were consistent with the values established in the coding manual for each data element. The database identified missing data on each form. Once the control data entry was complete, the data were subject to self-review by the data collector and then a quality review by the quality control staff.

3.0 Research Methodology

3.1 Adaptation of OECD Methods

The research team acknowledged the NHTSA goal of generating data that are compatible with those in the OECD-sponsored multi-nation, in-depth study of motorcycle crashes (MAIDS study) and incorporating the critical data elements in their entirety. A Project Working Group consisting of stakeholders from the motorcycle and safety communities was convened in June 2006 to review all of the 1,657 OECD data elements and to make recommendations. As a result of this meeting and a review by the project team, staff from NHTSA, the Federal Highway Administration (FHWA), and Oklahoma State University (OSU), a modified set of data forms was created and reviewed. The development of the revised data forms was a major task that required substantial effort on the part of the project team and federal sponsors.

3.2 Data Forms

The Pilot Study incorporated essentially the same data elements as used in the Thailand and MAIDS studies because this facilitated direct statistical comparisons between studies. However, substantial effort was devoted to updating, reformatting and revising the OECD data forms and certain data elements to enhance usability and completeness. Some data elements were revised in order to reflect American units of measurements (such as miles and inches) and terminology (gasoline rather than petrol). Also, the ordering of the data elements was modified for greater consistency, with 0 always indicating "none," 97 meaning "not applicable," 98 meaning "other" (as needed), and 99 used for "unknown." Also, the attributes for some of the data elements were modified so that data are more compatible with other NHTSA and U.S. data sets. For example, the OECD occupation codes include unfamiliar terms such as "elementary occupations." We substituted the employment codes used in the U.S. Census. Descriptions of road characteristics and design did not reflect U.S. standards and were modified in order to be compatible.

In addition, data elements were added to meet the stated needs of the research community. These included additional questions on topics such as the specific type and timing of rider training; rider experience including not only the length of time but also any hiatus in riding experience; conspicuity of the rider's apparel including retro-reflective gear; use of armored protective clothing by the rider; the type and operation of traffic controls; and both coded data and scale drawings of the road design from the perspective of each vehicle involved in a crash. In addition, a more detailed and up-to-date injury coding protocol, the Abbreviated Injury Scale, AIS2005, was adopted. A summary comparison of the data elements for the OECD and the Pilot Study is shown as Attachment 2. A base total of 1,689 data elements were collected for the Pilot Study. This reflects the total number of data elements that would be used if each data collection form was used once in a case. The actual number of data elements varies according to the number of vehicles and occupants that exist for each crash investigation.

The data forms used for the MAIDS study were modified in format, as approved by the Contracting Officer's Technical Representative (COTR), in order to incorporate content changes and to make them easy to use. For example, an OECD interview form may have

data elements that pertain to the motorcycle rider, then the rider and passenger, then the other vehicle driver, then back to the rider on a single form. The Westat/DSI team developed unique interview forms for the motorcycle rider, for the passenger and for the driver. In this way, a form would only include data elements pertaining to the individual being addressed, and if there were no passenger, or no other vehicle driver, then their data form would not be used. This approach also eliminated the need to code "not applicable" onto a form and into a database (as was required in the MAIDS study) when a passenger or other vehicle driver was not involved in the crash. This reduced the coding effort by the investigator and reduced the null entries in the database.

All retained OECD data elements are identified in the *Coding and Editing Manual* by their corresponding numbers. Draft and final copies of each data collection form were provided to the COTR and to the FHWA COTR of the main study for review and approval.

3.3 Office of Management and Budget (OMB) Approval

The application for OMB survey approval was submitted on behalf of both the Pilot Study and the Main Study. The initial 60-day *Federal Register* notice was published on November 24, 2006, and the 30-day *Federal Register* notice was published on February 26, 2007 (Attachments 3 and 4). A total of 11 comments were received in response to these notices. They were generally favorable to the study.

In July 2007, the formal request for survey approval was submitted. The OMB approval **(**number 2125-0619) was received in October 2007.

3.4 Coding Manual

The Westat/DSI team developed a *Coding and Editing Manual* with pertinent instructions and specific definitions for every variable for all crash and control data forms. This manual guided the data collection activities and defines all allowable responses to encoded data. In this way, we were able to ensure that all case data were collected and recorded according to specific standards. The training manual was provided under separate cover. Each data element for every crash and control form included the following information:

Data Form
Data Element Number and Name
OECD Reference Number
Convention/Coding Source
Element Attributes
Range
Source
Remarks

Potential future edits to the coding manual were noted on the Issues forms (Attachment 5) so that it can be updated for future use. The *Coding and Editing Manual* served as the basis for the range and edit checks in the Access database created for the crash and control portions of the study.

3.5 Training Material

DSI developed comprehensive training material that covered every data element on every data form, along with field techniques for collecting such data. The training material also included background information such as the handling characteristics of motorcycles and elementary anatomy sessions to provide a basis for better understanding the proper ways to encode data. A training syllabus is shown as Attachment 6. Copies of all the training PowerPoint presentations, along with trainer guidelines and student notes were provided under separate cover.

DSI created and implemented additional tutorial and question/answer PowerPoint presentations that addressed the data collection forms and coding manual. Initial presentations were conducted during week 1 of training, and a more advanced version was conducted during week 6 of training. This effort went beyond the original syllabus, but was found to be necessary to give the investigators greater familiarity with the forms and coding manual layout and content. In addition, DSI created a session on roll attitude angle in order to provide the basis for coding certain data elements related to motorcycle dynamics. They also created an additional training session labeled, “Scene Inspection and Physical Evidence.” This was necessary prior to conducting the scene practicum cases, as there was no formal training on this topic available from the OECD documents.

All crash investigators were given 6 weeks of training on every aspect of the project. This included instruction on how to collect all required information through observation, measurement, interviewing, photography, or acquisition of official records. The training included review of the entire coding manual and data collection techniques related to the defined aspects of each data element. Photographic techniques and the use of all measurement equipment were also taught. Note that training in the use of Total Stations occurred late in the Pilot Study because the manufacturer’s representative had scheduling conflicts. Methods to conduct in-person and telephone-based interviews successfully were reinforced through role-playing exercises. Also included was instruction on responding to the scene of a crash and correct protocol when dealing with law enforcement personnel, salvage yard operators, crash victims, witnesses, and other involved parties.

The training also covered methods used for documenting environmental and vehicle data through the use of scaled diagrams. Coding injuries according to the AIS2005 and relating them to occupant contact locations were taught later in the Pilot Study. These are complicated topics that are generally left to specialists in other studies. DSI has a trained AIS coding specialist who assisted in injury coding.

The classroom training was accompanied by field exercises such as examining damaged and undamaged motorcycles, interpreting skid marks and other scene data, measuring and documenting environmental characteristics, and role playing interview sessions with victims and witnesses. Field forms were completed during these practice sessions and were reviewed and critiqued by the trainers.

The training also included practiced responses to crash notifications and attempts at collecting control data through traffic stops. These field practice sessions allowed the instructors to critique the crash investigators' initial attempts and to suggest effective ways of achieving task objectives. All training was conducted by experienced crash investigators and motorcycle safety experts.

3.6 Technical Database

A database was created by Westat using MS Access. It includes every data element for each of the crash and control data forms. The database also links the narrative case description, diagrams, and photographs for every case to the encoded data. Text explanations for responses coded as "other" provided a means for recording unusual circumstances.

The Access database was built upon the coding conventions included in the *Coding and Editing Manual.* The acceptable ranges for each variable (for example, ages from 1 month to 100 years) are pre-programmed to help eliminate keystroke errors. Consistency checks are also built into the database so that there cannot be inconsistencies such as training dates entered if a rider stated that he/she never received formal motorcycle training. Skip patterns are also built into the database. As an example, if a vehicle driver did not use alcohol or drugs prior to driving the vehicle, then the question of what kind of drugs used would not be available for data entry. The database also includes completeness checks to ensure that the appropriate number of data collection forms was used (for example, a vehicle form for every involved vehicle) and that all variables were coded. A user's manual was also provided to guide data entry.

The database is password protected and was available on a non-network personal computer in a locked conference area in order to protect the data. Each data collector entered case and control data for his own cases. Once the case completed all range, consistency, and completeness checks, the team leader reviewed the case and noted technical errors. The revised case was then noted as complete.

3.7 Administrative Database

Because one of the primary goals of the pilot test was to determine the resources needed to complete crash investigations and the collection of control data using the prescribed methods, the Westat/DSI team developed a tracking system. The information on the Administration Form (Attachment 7) was entered into an administrative database on Friday of each week. This form provided a means for measuring and recording the length of time and other resources needed to complete portions of crash investigations and the collection of control data. It was used in conjunction with specific coding of timesheets to provide the details needed for budget planning for the main study.

DSI developed a PowerPoint presentation that covered the data included in the Administrative Database. Each entry was addressed during week 6 of training. The database was updated every Friday during a team meeting. The updated database was provided to the COTR each week. Standard reports were also produced in accordance with COTR requests.

3.8 Institutional Review Board

Westat's corporate policy requires that all contractual research projects be reviewed by Westat's Institutional Review Board (IRB). The IRB comprises both Westat and outside members who meet monthly to review new and ongoing projects in order to ensure that human subjects receive appropriate protection. Westat's IRB served as the reviewing body for both the Westat and DSI portions of the study. The IRB focuses on the informed consent script, collection and storage of sensitive data, privacy protection, and reporting protocol. Following its initial review, the IRB requested modifications to the consent forms for both the crash-involved and control subjects (Attachments 8 and 9). In addition, parental consent forms and youth assent forms were developed for use with any motorcycle rider, passenger, or other vehicle driver who was under 18 years of age (Attachments 10 and 11)**.**

The IRB also reviewed DSI's data confidentiality and data security protocol (Attachment 12). Project data do not include any personal identifiers, such as names, addresses, dates, or specific locations. During the course of an investigation, some identifying information such as names and phone numbers were maintained until all required data were assembled. Protocol for the protection and storage of such data was reviewed and approved.

The crash investigators and project personnel completed the Human Subjects Protection training offered by Westat and the National Institutes of Health (NIH). They signed statements of confidentiality (Attachment 13). DSI also conducted background checks for its newly hired crash investigators.

The IRB provided approval for the project with the recommendation that a Certificate of Confidentiality (CoC) be obtained from the NIH to protect project data from disclosure and subpoena (Attachment 14). The application for a CoC is described below. Due to delays in the CoC review process, Westat's IRB approved data collection for the pilot study (with appropriate revisions to the language in the consent forms). The IRB still recommended that negotiations proceed with NIH so that a CoC could be obtained.

3.9 Certificate of Confidentiality

An application for a CoC was submitted to NIH. Following an initial review, the application was transferred to the National Institute for Mental Health since much of the sensitive project data related to legal and illegal drug use and the pre-crash emotional state of the motorcycle rider. The National Institute on Alcohol Abuse and Alcoholism provided the final review and granted the CoC (number AA-015-2009) on March 11, 2009 (Attachment 15).

3.10 Use of Total Stations

The OECD protocol calls for the use of a Total Station during the collection of scene data. The Total Station is a surveying tool that can measure and record the distance and elevation of a point relative to a base location. It is important to note that Total Stations are not required in order to collect the scene and vehicle data required for this study. They are not appropriate for use on freeways or other high traffic locations since it takes some

time to set up and calibrate the equipment. They are also costly at $5,000 for a base model. Westat provided two Total Stations for use in the Pilot Study. They were accompanied by very limited documentation on their use. An experienced surveyor was called upon to demonstrate their use and provide basic training to a DSI staff member. This training was insufficient, however, and Total Stations were not used for the cases in the study.

Arrangements were made with the manufacturer to provide 1 day of informal training, updated software, and an accessory pack that would allow the Total Station to be used by a single individual in the field. Due to the manufacturer's schedule, the training was conducted on March 5, 2009. The instructor tailored the course to project needs and demonstrated:

1. Setting up and leveling the device,
2. Initiating and orienting the device,
3. Collecting data,
4. Downloading data to a computer.

The measured data come out as a CSV-delimited file, which can be brought into Excel. Currently Easy Street Draw cannot import the data directly. There is a measurement table within Easy Street Draw that allows the data to be entered directly, and then points can be plotted. The Total Stations can be operated by one person using a prismless device, or by a team using several prisms. The training was provided using a one-person, prismless device. The basic operation requires the investigator to focus on an object of interest and hit the capture button. It seems a little clumsy when descriptive text is added to identify features of the crash or environmental elements, since it works like a cell phone keypad.

The team tested the Total Stations on a limited basis. The team felt that the use of the device would be beneficial, particularly for complicated and/or dangerous scenes.

Other devices and software might be useful and less time consuming; for example, MapScenes (http://www/mapscenes.com) is an accident reconstruction software program capable of advanced surface modeling. According to its advertisement, the MapScenes System is designed to provide professional investigators with the tools to capture data quickly and precisely at a scene, using a hand-held device and then visually communicating the output of their investigation in accurate and compelling diagrams. Such a system would be less cumbersome than the large Total Station unit, and MapScenes includes diagramming software.

4.0 Data Collection

In order to conduct crash investigations on-scene, it must be possible to identify when and where a crash occurs and to reach the crash scene while involved vehicles and riders/drivers are still in place. This approach depends upon a real-time notification system and a geographic target area that can be reached quickly by crash investigators. Ideally, crash notifications would be obtained from police dispatchers who would contact the crash team immediately after notifying first responders (police and ambulance personnel).

4.1 Selection of Study Area

Criteria for the selection of the Pilot Study location included (1) a climate conducive to year-round motorcycle riding, (2) a large population of motorcyclists, and (3) a mixture of road types and urban/rural traffic conditions. It was also desirable to include a location with some type of helmet use law so that a proportion of riders would be using compliant motorcycle helmets.

Consideration was given to conducting the Pilot Study in the greater Atlanta region, south Florida, and in Texas. Southern California was selected for several reasons. It fit the criteria described above; DSI had an established office with experienced crash investigators in Anaheim; and the previous study conducted by the University of Southern California included much of the same region. Once the general region was selected, the next step was to identify the police agencies with jurisdiction in the region and those that reported relatively high numbers of motorcycle crashes. Attachment 16 shows the crash data for the first half of 2007 that were used to determine those jurisdictions with a high number of motorcycle crashes and their relative location to the DSI office in Anaheim (to help ensure a quick response to the crash scene).

As a result of these efforts, the following police jurisdictions were identified as potential partners for the Pilot Study:

- Anaheim Police Department;
- California Highway Patrol (Border Division, Capistrano, Santa Ana, and Westminster);
- City of Santa Ana Police Department;
- Costa Mesa Police Department;
- Long Beach Police Department; and
- Orange County Sheriff – Coroner.

4.2 Memoranda of Understanding With Police Agencies

Letters of introduction explaining the study and identifying the contractors were sent from NHTSA to the head of each agency. Subsequently, Westat contacted agency representatives to provide additional information about the Pilot Study and request agency participation. The response from every police agency was enthusiastic. Agency staff attended a meeting where DSI representatives provided a PowerPoint presentation that

closely outlined the study details and addressed potential concerns of the police agencies. There was general discussion about field protocol, law enforcement concerns, and notification procedures. Using the discussion as a basis, Westat/DSI developed a draft Memorandum of Understanding (MOU) and submitted it to each agency for review and consideration. The MOU reflected the agreement between the police agency and Westat/DSI concerning case notification, access to information, and DSI data collection activities. Certain agencies asked for edits to address issues raised by their counsel, records departments, or other affected individuals. The MOUs were signed by agency representatives and corporate officers from Westat and DSI. A draft MOU is shown as Attachment 17.

4.3 Field Protocol

In accordance with the terms of the MOUs, DSI's crash investigators' field response was subject to the direction of the lead police officer at each crash site and the particular circumstances related to each crash. No vehicle or scene evidence could be disturbed. Informed consent protocol required that a consent form (or assent form for youth) be presented and signed prior to the administration of an interview. Riders, passengers, and drivers may not have been interviewed on-scene if they were (1) severely injured or (2) suspected of criminal activity. In such cases, interviews were held at the hospital, at home, or as a follow-up telephone correspondence. Note that verbal consent to participate in the interview would be noted on the consent form in the case of telephone interviews.

Field sobriety tests were not administered by DSI if the police agencies administered such tests. Also, the crash investigators' activities may have been limited if the scene was considered to be unsafe for any reason. In such circumstances, photographs were taken to record critical information such as the point of impact, final resting place for vehicles, and as much additional physical evidence as was possible.

Repeat visits were generally made to crash scenes that were not located on freeways to complete the documentation of crash-related evidence such as skid marks and fluid spills and to make detailed measurements of the roadway, traffic control devices, and other pertinent information.

4.4 Quality Control

Quality control was a consideration in all parts of this project. The development of the data collection forms and coding manual was guided by the intent to have discrete attributes for each data element that were not redundant and that could be clearly defined in the coding manual. The creation of a coding manual that addresses every data element found on every data collection form ensures that both data collector and data user understand the source, the basis, and the definition of the data attributes.

The training program likewise covers every element on the data collection forms. In addition, the crash investigators learned data collection techniques such as the proper ways to interpret and measure skid marks, discerning direct versus induced vehicle damage, how to conduct interviews, and the requirements for exhaustive photographic coverage of crash-involved vehicles and scenes. This comprehensive training on both data forms and

investigation protocol helped to ensure that data were collected consistently and predictably by all staff.

Quality control also was reflected in the careful selection and screening of the crash investigation staff. Each was an active motorcycle rider with a background in law enforcement, interviewing, and at least some limited crash investigation experience. These attributes were indicative of the basic interest and capabilities of the investigators. It was important that they had a basic knowledge of motorcycle design and operation and of how to interact with law enforcement personnel and crash victims as prerequisites to the training program.

An Administration Form (Attachment 7) was created for two purposes. It served as a case tracking form to ensure that all components of each case were initiated in a timely manner. For example, the team manager reviewed the status of each case every Friday to make sure that interviews had been scheduled and completed and medical records had been requested, etc. Crash data deteriorate over time, as memories fade, and subjects may become less cooperative. Collecting data as rapidly as possible is an important technique for ensuring case quality.

The administrative database was also one of the bases for the calculation and reporting of resources needed for case investigation as described in 4.5.

The Microsoft Access database used to record the crash and control data has range checks on every data element. This eliminates erroneous keystrokes such as recording age as 150 years. The acceptable range for each of the data elements is shown in the coding manual. The database also includes some consistency checks among selected data elements such that a certain response for a data element will prohibit the entry of conflicting information in another data element. For example, if a respondent states that he/she had received no motorcyclist training, it is not possible to enter a year in which that training was received.

Following the completion of a crash investigation or control case and entry of the information into the database, a senior investigator conducted a quality review. This reviewer relied on source documents (such as police reports, medical records, tapes of interviews) and photographs as resources when reviewing all of the data entered into the database. Errors and inconsistencies were noted. The case reviews served two purposes: first, they provided instruction and a reference for the investigators regarding coding conventions and field protocol. Second, they offered the reviewer an opportunity to identify coding form/manual problems and coding areas that were vague and in need of further clarification.

Case review notes were discussed with the investigator. When all questions and issues were clarified and coding inaccuracies corrected, the team manager approved each case as final and closed in the database.

A quality control review was conducted during week 6 of training and involved an examination of the practice case (Case 9990). This practice case was a single motorcycle crash that involved fatal injuries to the rider. The team documented the crash during week 5 of training. Case review notes were generated, and a standard format for feedback to the investigators was formulated. The form outlined case coding inconsistencies and data coding problems. After the case was reviewed, the problems and inconsistencies were discussed on a variable by variable basis. This provided a solid framework and reference guide with regard to coding issues. This approach was then used for all future cases.

An Issues Form was developed (Attachment 5) for use during the Pilot Study. It was used to identify errors, inconsistencies, or omissions in the data forms, coding manual, and training material. All staff members, including instructors, crash investigators, and managers, used these forms throughout the project to document any issue that should be addressed. Some examples included a typographic error in the coding manual and the need for additional training on anatomy, especially for head and thorax injuries. The suggestions found on these forms can be used to update the source documents for use in the larger study as discussed in Section 6.

4.5 Reporting

Westat/DSI provided a weekly report to the COTR throughout the data collection period so that case progress could be closely tracked. The report included an updated administrative database and standard reports as requested by the COTR. Topics of interest included the status of each case from date selected to case completion. The number of vehicles that were inspected (including the motorcycles), interviews obtained, hospital and medical records requested and acquired, cases released to quality control staff, and entry into the technical database were shown by date accomplished.

The weekly report also included information on the collection of control data for each case. The database showed the focal crash investigation case number and the number of related comparison interviews that were attempted and obtained (again reported by date completed).

An *Interim Report* that described the background for the pilot study and the research design was submitted on December 15, 2008. The *Interim Report* also included a discussion of the adaptation of the OECD methods and the other enhancements developed for the collection and recording of motorcycle crash and control data. The *Interim Report* reflected the format of the *Final Report*. It was intended to expedite the development and approval of this *Final Report* so that the Pilot Study results could be applied as rapidly as possible to the implementation of the main study.

5.0 Results

The contract called for data collection to continue for 3 months, or until 37 cases were completed, whichever came first. Data collection began on December 8, 2007, and continued until March 8, 2008. A total of 53 crash cases were initiated, and 23 crash cases were completed, 10 cases were incomplete, and 20 were dropped. Likewise control data collection was attempted for all 23 completed cases. A summary of the data collection phase follows.

5.1 Crashes Investigated

The number of crash notifications, completed cases, and dropped cases from each police agency is shown below in Table 5-1.

Table 5-1: Case Identification and Completion by Jurisdiction

Jurisdiction	Case Notifications	Completed Cases	Dropped Cases	Incomplete/Open Cases
CHP - Capistrano	1	1		
CHP-Santa Ana *	25	11	13	1
CHP – Westminster*	3	1	1	1
CHP – Riverside*	1			1
Costa Mesa	6	4	2	
Long Beach	10	3	3	4
Orange County Sheriff	6	2	1	3
Fullerton *	1	1		
Total	53	23	20	10

* Note that for 7 cases, the team initially identified the crashes through other sources such as newspapers, the Internet, or file searches of police accident reports.

Of the dropped cases, 8 were dropped because the crashes were minor, and no police reports were subsequently filed. Two more were dropped by the team because there were no injuries as a result of minor crashes. Two additional cases were dropped because the team was not allowed to inspect the motorcycles, 1 was dropped because the motorcyclist was jailed and would not consent to be interviewed, and 1 was dropped because the next of kin refused to be interviewed while the motorcyclist was hospitalized. Six cases were dropped due to a total lack of cooperation.

Table 5-2 shows the number of vehicles involved in the various completed cases. It should be noted that there were 3 crashes that included fatalities, and there were no motorcycle passengers or pedestrians included in any of the cases. The most frequent crash configuration (4 cases) involved a motorcycle striking the rear of another vehicle. In 3 crashes, drivers of “Other Vehicles” turned left in front of the motorcyclists.

Table 5-2: Completed Cases by Case Type

Case Type	Number
Single Vehicle	12
Two Vehicles	7
Three Vehicles	3
Four Vehicles	1
Total Cases	**23**

Injury severity for the motorcyclists included the following: 7 treated and released, 5 hospitalized, 2 died within 30 days, 1 was dead on arrival, 1 received first aid at the scene. In addition, there were missing medical records for 2 riders, and 5 received unknown treatment.

Of the 23 completed cases, 11 occurred during daylight hours, 4 were at dusk, and 8 were at night.

Based on interviews with 22 riders or surrogates (an interview was not obtained for 1 rider), 4 had owned the crash-involved motorcycle for 2 weeks or less and 7 more had owned their bikes for more than 2 weeks, but less than 1 year. The maximum reported ownership was 8 years. Three of the motorcyclists did not own their vehicles.

Likewise, when asked how long they had operated a street motorcycle, 5 riders had less than 2 weeks of experience, and 2 more had more than 2 weeks but less than 1 year of experience. Four riders had 16 to 42 years of riding experience.

BAC tests were not performed for 15 of the riders. Among the remainder, 3 received breath tests, 3 received blood tests from medical authorities or during an autopsy, and testing for 2 riders was unknown. It was determined that alcohol had been used by two riders, and alcohol and other drugs were used by two riders. The reported BAC levels were .12, .153, .169, and .19.

The age range for the riders was fairly evenly distributed as shown in Table 5-3 below.

Table 5-3: Age Ranges for Motorcycle Operators

Age Range	Number of Riders
18-23	6
24-40	6
41-60	8
Unknown	3
Total Riders	**23**

There were 19 male riders, 1 female rider, and the gender of 3 riders was unknown. Twenty of the riders were helmeted, and for 3 riders, helmet use was unknown. Twelve had some sort of motorcycle safety training.

The engine size for the crash-involved motorcycles ranged from 96 to 1690 CCs, and there was a good mixture of manufacturers. There were no fires, but six of the motorcycles had moderate fuel tank damage. Impact speeds ranged from 0 to 76 miles per hour (MPH). Four crashes occurred at speeds greater than 60 MPH, and the speeds for three crashes were unknown.

With regard to environmental features, there were 41 forms (note that there is one form for each vehicle, including Other Vehicles) which represent the roads on which they travel prior to the impact. Table 5-4 shows the road type. Twenty-two vehicles were at non-junctions, 15 at intersections, and 4 at interchanges.

Table 5-4: Type of Road by Total Number of Vehicles in the Sample

Road Type	Number of Vehicles
Interstate/Freeway	16
Arterial	10
Local Road	6
Driveway	2
HOV Lane	2
Forest Road	2
Freeway Transition	1
Dedicated Path	1
Entrance Ramp	1
Total Vehicles	**41**

The crashes all occurred in Orange County, California. The area type for each crash was judged to be as shown in Table 5-5.

Table 5-5: Area Type by Total Number of Vehicles in the Sample

Area Type	Number of Vehicles
Commercial/Business	20
Apartments	6
Rural	5
Urban/Industrial	4
Suburban – Single Family Homes	3
Church/School	2
Trees	1
Total Vehicles	**41**

5.2 Control Data Collected

The collection of the case control data was one of the most difficult and frustrating tasks. Several approaches were used and were met with limited success. Initially, DSI attempted to conduct control stops using signage (for free gas) and multiple investigators. As the investigators became more comfortable with the process, the number of investigators dropped down to two and then to one. DSI visited gas stations when safe locations near

the crash site could not be identified and had a motorcyclist and motorcycle present at the control site. Although occasionally successful, results showed that even during 4 hours of attempts, it may not be possible to successfully obtain two interviews and vehicle inspections from traffic stops. Control subjects included the first two motorcyclists who voluntarily stopped to participate. There was no selection process.

During the latter part of the Pilot Study, the team used digital photography to capture images of the motorcycles. The investigator set up signage and photographed the motorcycles as they passed by but did not stop. Again, the first two motorcyclists who passed the control location were included in the study. Filming was sometimes continued after two riders passed the location in order to further test this method of data collection. Digital imagery allowed the images of the control motorcycles and riders to be included in each case. From the images, the investigator could complete some of the data elements on the Control Motorcycle and Control Motorcycle Rider data forms. When a license plate was present, the team could legally request vehicle registration data, including the vehicle identification number. Owner addresses are not public information in California.

Table 5-6 shows that control data were attempted on 24 crashes. Of those, 6 crash sites had successful in-person stops with 10 people interviewed; 12 used signage, but obtained only digital images of motorcycles; and 6 resulted in no data.

Table 5-6: Control Data Results

Control Data Type	Signage/ Still Photo	Signage Plus Video	No Attempt (Off-road)	Total
Number of Sites	18	6	1	25
Total Number of Images	54	27	0	81
Total Available Vehicles	104	44	0	148
Total Captured Vehicles	12	44	0	56

5.3 Police Cooperation

As a result of the site selection activities described in Section 4.1, MOUs were signed with five police agencies: the CHP, Long Beach Police Department, Anaheim Police Department, Costa Mesa Police Department, and the Orange County Sheriff's Office. The agreement with the CHP covered three divisions, so a total of seven police jurisdictions were included in the Pilot Study.

Because the Pilot Study required the investigators to respond to the scene of the crash as soon as possible after the crash occurred, notification procedures had to be negotiated with each agency. DSI acquired cell phones dedicated solely to receiving crash notifications. The generic MOUs were modified slightly to address the preferred operating procedure for each police jurisdiction. Sometimes dispatch officers would place a telephone call to notify the team of a crash. Other jurisdictions preferred to send an e-mail (which was received as a text message by the cell phone). The team also monitored police Web sites and local news outlets in order to identify motorcycle crashes.

The notification process was generally good and improved during the project. After dispatchers became familiar with the Pilot Study protocol, the notifications were more timely and there were fewer instances of missed crash notifications.

Both the police agencies and the crash team sometimes were provided with incorrect site location information resulting in the need to search for the crash site. Minor, single-vehicle crashes were often cleared, especially on the freeways, before the team could reach the area. It should be noted that the police generally did not file reports on such crashes, and non-injury collisions are not included in our case selection criteria, so these cases did not affect overall study results.

The crash investigators found that responding on a motorcycle enabled them to arrive more quickly despite freeway backups. However, the police were still required to clear the scene of more serious crashes as quickly as possible in order to restore traffic flow. The police jurisdictions were generally very helpful in sharing their photographs and basic crash scene information. The investigators also used satellite imagery and highway engineering data to enhance their scene documentation.

The investigators required information from PARs in order to identify crash-involved individuals who were not interviewed on-scene, and the locations to which vehicles were towed. All agencies except one provided draft copies of their PAR cover sheets within 24 hours to DSI. The remaining agency, on the advice of counsel, would not provide any information until the PAR was complete and had been reviewed and approved by the agency. This process often took 30 days or more. Thus, the investigators could not proceed with their case until such information became available. This restriction was a serious impediment to data collection within that jurisdiction. Both DSI and Westat senior staff appealed, but no relief from the requirement could be arranged.

On the other hand, another jurisdiction provided vehicle registration, driver record data, and other supporting documentation that was of great value to the crash investigators. This jurisdiction exceeded the high levels of cooperation that characterized the study.

The cooperation and strong support of all these agencies was critical to the success of the Pilot Study. Letters expressing appreciation for participation were sent to each of the police agencies by NHTSA at the conclusion of the project.

5.4 Administrative Reporting

An Administrative Database was created to track the case initiation, investigation, and case and control completion status. The database was provided to the NHTSA COTR each week during the data collection phase. This database allowed management to review the number and timeliness of police notifications of crashes, team response times, attempts to conduct interviews, vehicle and scene inspections, attempts to collect control data, dates for completion of all subtasks, and when appropriate, reasons for dropping case investigations.

5.4.1 Average Crash Notification Time

The team responded to 45 crash notifications from cooperating police agencies. The average time from crash occurrence until notification from a police agency for these 45 crashes was 1.6 days. The median time for notification was 15 minutes. The interval from time of crash to time of notification ranged from immediate notification to more than 11 days. For 4 of the cases, the time of crash was unknown and no police report was ultimately filed; thus, the interval could not be computed. In addition, the team identified 8 cases from other sources (such as from Internet searches). These cases are not included in the notification interval analyses.

Among the remaining 41 cases, 9 notifications were severely delayed ranging from 15 hours to 11 days. The average time to notification for this group of delayed notifications is 77 hours or 3.2 days. The median time for this group is 33 hours.

For the remaining 32 cases, the average notification time was 14.4 minutes. The median time interval for notifications for this group was 10 minutes. Of these, 20 notifications were received in 10 minutes or less. This final group of 32 cases represents the notification system working as it should.

5.4.2 Average Crash Response Time

Once a notification is received from a police agency, the on-call crash investigator is tasked with traveling to the crash scene as quickly as possible. As noted above, there were times when the police agencies did not provide a prompt notification. In these instances, the crash investigators would seek a copy of the police report and any on-scene police photos before traveling to the scene, in order to have all available resources prior to documenting the scene evidence and roadway characteristics.

When notifications were received promptly, the average response time in leaving home/office to travel to the scene was 7.5 minutes; median response departure was 5 minutes. The maximum response time for this group was 14 minutes. For those 9 instances when the crash notifications were late, or when no information was provided as to the location of the crash, the investigators arrived at the scene, on average, 3.2 days after notification (median arrival was 2.7 days). The latest scene arrival was one week after the notification.

The average travel time to reach the scene was 34 minutes (median time was 30 minutes). The closest scene was 15 minutes away, and the most distant/congested required a 90 minute trip.

5.4.3 Average Time to Collect On-Scene, Medical, and Interview Data

The Administrative database includes data elements for crash notification, departure for the scene, and arrival at the scene. It does not include a variable for time elapsed at the scene. Therefore, it is not possible to calculate the exact time required for each scene inspection. We recommend that future administrative databases include two data elements: A 15, on-scene crash completion time, and A 16, scene completion time (not on-scene).

Note that A 15 would be inexact because numerous and variable tasks can be initiated while on-scene. These include photographing scene and vehicle evidence, conducting initial interviews with involved parties, coordinating with the officer-in-charge, etc. A second visit to the scene is virtually always required in order to complete the documentation process.

In general, the collection of scene data is estimated to take from 2 to 4 hours depending upon the complexity of the location (straight road segment versus an intersection), the number of vehicles involved, and the available evidence such as skid marks, gouges and fluid spills. Note that the preparation of a scaled diagram and labeling and sorting photographs is not included in this estimation.

There were 13 cases for which medical data was requested and received by the end of the data collection period. The average length of time for receipt of medical records following the submission of a signed patient release form was 17.6 days. For 3 cases, the medical records were obtained on the same day they were requested. The longest interval for receipt of records was 46 days. Autopsy reports are public records in California, and those were available as soon as they were completed. Medical records were pending for 7 cases at the end of the pilot study. The team reported excellent cooperation from the hospitals and the medical examiner's office.

The average amount of time that elapsed from the time of the crash notification to the time that the interviews of all crash-involved parties were obtained was 16.26 hours, with the minimum amount of time being 1 hour, and the maximum amount of time being 47 hours.

5.4.4 Average Caseload per Investigator

The caseloads varied during the course of the Pilot Study in concert with improved notification procedures, improving skills, and generally improving weather conditions during the 3 month data collection period. As shown in the discussion below, the average time expended per case including the collection of control data was nearly 60 hours. We recommend that a caseload of one per week per investigator is appropriate given the current number of data elements, and the approach to collecting control data. If the crash investigators did not collect control data, then the number of cases could be increased to 1.25 cases per person per week.

5.4.5 Average Time and Estimated Cost per Case Subtask

The average number of days between the notification of a case, and the completion of all investigation requirements including the collection and encoding of both case and control data was 53.6 days. This average includes the length of time needed to obtain approved police accident reports, medical records, and other supporting documents, along with organizing and labeling photographs, preparing scaled scene diagrams, and entering all data into the database. This interval does not include the review of the case data by a senior crash reconstructionist.

Using case completion status from the Administrative Database, along with detailed timesheet information, an estimated cost per completed crash investigation was computed. The cost included a factor for the number of dropped cases as compared to completed cases. The efforts to obtain control data were also added in to the estimated cost per case since the control data are considered to be part of the completed case file. Quality review of the case materials was included. In addition, any costs for official records such as police photos or medical and autopsy reports, were added to the labor charges. For the 23 completed cases, the average time expended per case was calculated to be 59.7 hours. Using these factors, the estimated cost per Pilot Study case was approximately $7,500.

Table 5-7: Average Cost per Case for 23 Completed Cases

Item	Completed Investigations	Quality Review	Dropped Cases	Control Cases	Total
Labor Hours/Cost	**59.7/$5,362**	**6.6/$593**	**8.4/$754**	**7.2/$647**	**$7,356**
Records/Supplies	**$103**			**$ 12**	**$ 115**
Mileage and Parking					**$ 47**
Total					**$7,518**

It is important to note that this cost **does not include** the cost of developing data collection forms, a coding manual, training material, databases, or field protocol. It also does not include the cost of equipment, hiring and training data collectors, or helmet testing. Likewise, the cost does not reflect efforts to obtain approval from OMB or from IRBs. These related costs to develop and implement a research program are substantial.

Many of these Pilot Study expenditures can be applied to a future study, thus reducing overall budget needs. For example, the data collection forms, coding manual and training material require only minor editing in order to incorporate recommendations from the Pilot Study. Likewise, approval from the OMB to conduct the Pilot Study also applied to a follow-on effort.

5.4.6 Average Time per Control Case

As is discussed below in Section 5.5.2, the collection of control data was found to be challenging. In the Pilot Study, attempts to collect two controls for each of the 23 completed cases resulted in 7.2 hours of labor per case. This cost is included in the estimated cost per completed case.

5.5 Lessons Learned

One of the primary goals of the Pilot Test was to evaluate the data collection instruments and methodology prior to the initiation of a larger scale study.

5.5.1 Crash Data Collection

The crash investigation portion of the Pilot Study successfully collected data and provided an opportunity to evaluate both the instruments that were developed and the study protocol.

The selection of crash investigators was an asset. Each of the three newly hired crash investigators had long-term motorcycle riding experience. This experience rendered them very familiar with the mechanical design of motorcycles and with the dynamics of riding. The basic knowledge of these investigators enhanced their ability to grasp what would be challenging information to quickly learn for a non-rider. The investigators also had some crash investigation-type experience such as former police work or as an insurance adjuster. Again, this was helpful, although the research perspective had to be emphasized rather than the investigators' attempting to assess culpability as they had previously been trained for prior employment.

Basic data collection techniques long used in NASS were adapted for the Pilot Study. These time-tested techniques allowed for the efficient collection and recording of data and were in concert with the structure of the data collection forms, e.g., all interview questions for a motorcycle rider were on a specific form, while all questions for a motorcycle passenger were on a separate form. Systematic approaches to the inspection and documentation of vehicle and scene data were used successfully.

The team found it difficult to respond to crashes "on-scene" or while the involved vehicles were at their final rest positions and rescue efforts were ongoing. This difficulty could be attributed to several causes: (1) less than prompt notification by police dispatchers, (2) police concerted efforts to quickly clear the scene and restore traffic flow, and (3) incorrect information provided to dispatchers as to the scene location. Although opportunities to obtain breath tests for BAC were lost when the team arrived after the crash scene had been cleared, there was little or no loss of environmental data. Police photographs and scene measurements, engineering data, and satellite photographs were used to augment information collected by the investigators at the scene.

Attempts were made to conduct interviews in-person. However, telephone interviews were obtained for most cases. This was the preference of the motorcycle riders and was honored by the team.

Some attempts to inspect motorcycles that were located in certain tow yards proved to be challenging. The tow yard operators often wanted the owner of the motorcycle to be present during the vehicle inspection. Also, some police agencies simply placed a hold on motorcycles rather than formally impounding them pending trial. If the bikes had been impounded, only police permission would have been needed to secure a vehicle inspection. When motorcycles were being held, the owners were still responsible for the vehicle. The team believes that continued interaction with many of the tow agencies and salvage yards will help to overcome these difficulties because the tow yard operators will have a better understanding of the inspection process. Also, letters of introduction from the local police agencies to the tow yard operators could help circumvent problems with the team gaining access, since tow yards operate under contract to the police agencies.

The Pilot Study data collection forms included 1,689 data elements. Of these, only two were coded as "unknown" more than 50% of the time. These were the blood alcohol level for Other Vehicle drivers (BAC tests were not administered by the police) and the condi-

tion of the Rear Swing Arm Pivot Bearing (motorcycles must be dismantled in order to evaluate this bearing). Thus, the Pilot Study was able to demonstrate that virtually all data elements could be completed using the field data collection protocol adopted for the study.

There were a number of data elements where (98) Other, Specify was used with some frequency. These "other" attributes should be examined for inclusion as coded attributes in the future. For example, nearly 20% of the riders were wearing some sort of armor as motorcycle safety gear. This should be considered as a new attribute under clothing type.

The number of times "Not Applicable" was coded seemed appropriate for the data elements. There were no fires, no work zone crashes, no pedestrian involvement, and none of the motorcycles were equipped with ABS, so these received a code of (97) Not Applicable in every case. Also, when a data element allowed for multiple answers (such as having more than one operator's license or more than 1 year in which safety training was taken), code (97) was often used for the second and succeeding responses.

The question of whether all data elements should be included in a subsequent study should also be examined. It is difficult to imagine the analysis plan for some of the data elements retained from the OECD protocol. Although such information can be collected, there is a cost associated with having a data element on a data form, in a coding manual, in a database, included in training, gathered, and subject to QC review. The cost per case is driven by the amount of information required. Suggestions for the revision of data elements and the coding manual are included in Section 6.1.

Although included in the OECD methodology, helmet testing was not included in the Pilot Study. It was determined that the testing method was non-controversial, and so this module was eliminated in order to reduce costs. It is expected that helmet testing, using the information from the OECD forms, will be included in a subsequent study.

5.5.2 Control Data Collection

Although the investigation protocol called for control data to be collected immediately following the initial crash response, or 1 week post-crash at the same time of day and same day of week, this generally proved to be impractical. In order for a crash to be retained as an active case, it was necessary to locate and inspect the subject vehicle. If the motorcycle was not at the scene (which often was the case), the investigator had to obtain a copy of the PAR, locate the motorcycle, secure the owner's permission, obtain the tow yard permission, secure police permission, or any combination depending upon the location and impoundment status of the vehicle. From a management perspective, a control stop should not be conducted until the crash becomes an active case, so there may be long gaps between the crash date and the control date.

The reasons for delays in collecting control data according to a prescribed schedule also include the need to respond immediately to new cases and the demands of collecting field and interview data when they become available. Crashes do not occur according to a schedule; thus an investigator who may have planned to collect control data on a Tuesday

at 2 p.m. may have been notified of yet another crash or an interviewee had returned his call and was ready to provide an interview and vehicle inspection right away.

There are four possible control stop outcomes: (1) an in-person stop is secured, (2) a digital image/stop is made, (3) no motorcycles pass the control stop location, and (4) a no-control decision is made. A no-control decision might include no reasonable location could be found or, as was the case in one investigation, the crash occurred off-road and there would be no motorcycle traffic. In those cases where no control data were obtained, the first variable on the Control Motorcycle Mechanical Form was completed, and the Control Rider Form was not submitted.

There are two additional control data issues. The first is that there were quite a few freeway crashes in the Pilot Study. For those, the team located an off-ramp that was downstream from the crash site and found a safe location to set up for the stop. This approach reduced the potential number of controls to just those who happened to take a particular exit, but was the most reasonable approach from a safety perspective. For cases that occurred on surface streets, the process seemed to work much better. We believe the gas card incentive can still be effective. However, if the control stops were conducted by someone specifically hired and trained to do control data collection rather than full investigations, it would eliminate the time conflicts and allow for more consistent planning and scheduling.

6.0 Recommendations

The data collection team offers the following recommendations for modifying the instruments used during training, data collection, and the creation of the electronic data file.

6.1 Data Forms and Coding Manual

Crash Form-

Data Element 3 - Motorcycle Involved in Collision With?

OECD Reference: A.2.4
Convention/Coding Source: NASS, OECD

Element Attributes:

(01) other motor vehicle
(02) other parked motor vehicle
(03) roadway
(04) off-road environment, fixed object
(05) bicycle
(06) pedestrian
(07) animal
(98) other, specify
(99) unknown

Range: 00-07, 98, 99
Source: Investigator determined. Primary sources are scene and vehicle inspections; secondary includes police crash report and interviewees

Issues: The list of impacted objects is not comprehensive. Although it would appear that this could be fixed by merely adding several additional coded attributes (e.g., non-fixed object in roadway/for impacts with debris, tires, wood, etc., and another code for curbing because technically an impact with a curb is going to be considered on the roadway because most of the motorcycle would still be on the roadway when the harmful event occurred). After further review, it makes more sense to have this variable consistently aligned with Motorcycle Dynamics Variable No. 17, Object(s) Contacted- Attributes 01-49, 97, 98, 99. This would cover these issues and would provide more consistency. Also, the manual and the data form need to reflect that this is for the first harmful event.

Data Element 6 - How Many Other Vehicles Were Involved in the Crash?

OECD Reference: A.2.5
Convention/Coding Source: NASS, OECD

Element Attributes:

(00) none
(01) one
(02) two

(03) three
(04) four or more
(97) not applicable
(98) other, specify
(99) unknown

Range: 00-04, 97-99
Source: Primary- on scene; secondary- police crash report and interviews

Issue: It appears that the original intention of OECD was to capture "other" involved vehicles, not including the focal motorcycle. The NASS definition used in the coding manual includes all involved vehicles in the crash. A decision needs to be made as to whether it is preferred to have this variable be consistent with OECD or with U.S. DOT data collection programs. The solution is to either eliminate the word "Other" on the form and manual (to be consistent with U.S. DOT) or re-work the remarks in the manual (to be consistent with OECD). We suggest revising the remarks in the coding manual so that the data element retains its original purpose in OECD.

Case Administration Log Data Element 21 - Motor Vehicle Inspection Completed
Issue: We need to have a range fix in the manual for single-vehicle (motorcycle) crashes where there is not an "Other Vehicle" involved. A line code of 9's does not make sense and 0's should be the proper code.

Motorcycle Mechanical Form

Data Element 1 - Manufacture[r]
Issue: Code Y01 for Yamaha was inadvertently omitted. It needs to be added to the coding manual.

Data Element 24 - Measured Tread Depth
Code in inches and tenths
Issue: Code should reflect exactly the measurement from the tire tread depth gauge. The result should be recorded in 32nds (e.g., 7/32).

Data Element 48 - Steering Stem Adjustment
OECD Reference: A.4.1.1.43
Convention/Coding Source: OECD, DSI

Element Attributes:
(01) secure, properly tightened
(02) overly tightened, control interference
(03) loose, contributes to control difficulty
(04) very loose, control interference
(98) other (specify)_____
(99) unknown
Range: 01-04, 97-99

Source: Vehicle inspection

Issue: Many motorcycles are not equipped with center stands. The front tire needs to be raised in order to assess the steering stem adjustment with any degree of accuracy.

Data Element 51 - Rear Swing Arm Pivot Bearing Condition

OECD Reference: A.4.1.1.46
Convention/Coding Source: DSI

Element Attributes:
(01) pivot bolt loose; bearings in good condition
(02) bearings loose or worn; deteriorated distinct swing arm mobility
(03) severely loose or worn, badly deteriorated; severe mobility of swing arm
(97) not applicable
(98) other (specify)_____
(99) unknown

Range: 01-03, 97-99
Source: Vehicle inspection

Issue: This variable should be removed from the data form. It will nearly always be coded (99) unknown as we are *not* conducting invasive (take the motorcycle apart) inspections. Internal (enclosed) components cannot be inspected visually, and we have promised the police agencies that we would not disturb or remove components from the motorcycle.

Data Element 61 - Handlebar Type

OECD Reference: A.1.1.52
Convention/Coding Source: OECD, Wikipedia, DSI

Element Attributes:
(01) original equipment
(02) clip-on
(03) clubman or racer
(04) high sweep or tiller type touring
(05) high rise
(06) motocross, off-road
(98) other (specify)
(99) unknown

Issue: Most sport bikes have “clip-on” type bars that are attached directly to fork tubes. These are original equipment, yet considered “clip-on.” The *Coding Manual* needs to provide guidance on coding this type of handlebar.

Motorcycle Dynamics Form

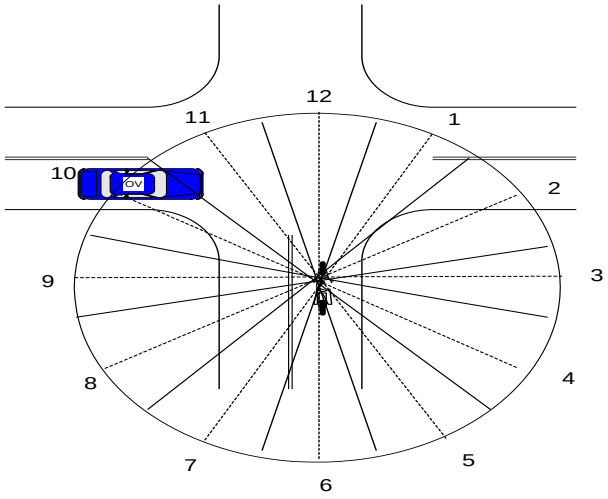
Data Element 4 - Line-of-Sight to Other Vehicle

OECD Reference: A.4.2.3
Convention/Coding Source: OECD

Element Attributes:
01 to 12 o'clock
(97) not applicable
(99) unknown

Range: 01-12, 97-99
Source: Investigator determined -- primary source is the scene and investigator scene scaled drawing.

Issue: A diagram should be added to the coding manual to serve as an example and will eliminate any misconceptions for the coder. Currently (identified through case quality review), the investigators are coding 12, 09, 03, or 06 (reference example below of solution):



Note: The line-of-sight to the other vehicle is 10 o'clock.

Data Element 5 - Pre-Crash Motion After Precipitating Event

Issue: Coding convention does not clearly accommodate the scenario where a rider drifts off the roadway to the right or the left and hits an object. Suggest that attributes 27 and 28 be modified to state "(27) leaving traffic or drifting to the right," and "(28) leaving traffic or drifting to the left."

Data Element 16 - Motorcycle First Collision Contact Code

OECD Reference: A.4.2.14
Convention/Coding Source: OECD

Element Attributes:
(LF) left front
(CF) center front
(RF) right front
(LC) left center
(RC) right center
(TC) top center
(TR) top rear
(UF) undercarriage front
(UC) undercarriage center
(LR) left rear
(CR) center rear
(RR) right rear
(TF) top front
(UR) undercarriage rear
(NC) no contact to motorcycle
(98) other (specify)
(99) unknown

Issue: A code is needed for the entire left-side plane and the entire right-side plane for lay-down impacts. Note that OECD does not include lay-down impacts as first collisions. Suggest (EL) for entire left and (ER) for entire right side.

Data Element 17 - Object(s) Contacted

OECD Reference: None
Convention/Coding Source: NASS

Element Attributes:
01 - 49
(97) not applicable
(98) other event (specify)
(99) unknown event or object

Range: 01-23, 28-49, 98, 99
Source: Primary sources are the scene and vehicle inspections

Issue: Attributes 04 tree (<= 10 cm) and 05 tree (>10 cm in diameter) need to be converted to inches. The remarks section must reflect this change. The same problem exists with attributes 19, 20, and 21 (convert to English units). Additionally, the range in the manual does not include code 97.

Data Element 22 - Principal Direction of Force

Issue: Non-horizontal direction of force for lay downs. The coding manual should specify 000 for non-horizontal forces and 997 not applicable for lay downs.

Data Element 25 - Distance from POI to Motorcycle POR

OECD Reference: A.4.2.24
Convention/Coding Source: Contractor-Derived (DSI)

Element Attributes:
(0000-995)
(96) 96 or more
(99) unknown

Range: 000-995, 96 and 99
Source: Investigator determined-primary source is the scene inspection

Issue: The coding manual needs some additional examples with vehicles at different angles and one showing an axile or in-line collision.

Motorcycle Rider Form

Data Element 21 - How Long Had You Been Riding Today Prior to the Crash?
Issue: The range for hours should be (00-24) not (00-96) as is shown on the data form and in the coding manual.

Data Element 37 - At the Time of the Crash, Were You Experiencing Any of the Following?
Issue: Page 61 in coding manual should reflect Data Element 38 – this is a typographical error.

Data Element 43 - What Is the Source of the Drugs Other Than Alcohol?
Issue: The data form and coding manual should allow for more than one response.

Data Element 44 - Blood Alcohol Concentration (BAC)?
Issue: This data element should be moved to the end of the data form since the field test would be administered after the interview or the results would come from police or hospital records, not the interview.

Data Element 45 - Source of BAC Information?
Issue: This data element should accompany # 44 above at the end of the data form.

Data Element 89 - How Old Are You?
Issue: The coding manual needs to define age as the age at the time of the crash.

There are no questions about injuries.
Issue: There are no questions about injuries on the interview form. Injury mannequins should be added along with a list of pertinent questions.

Motorcycle Passenger Form

Data Element 24 - What Is the Source of Drugs Other Than Alcohol?
Issue: The data form and coding manual should allow for more than one response.

Data Element 25 - Blood Alcohol Concentration (BAC)?
Issue: This data element should be moved to the end of the data form since the field test would be administered after the interview or the results would come from police or hospital records, not the interview.

Data Element 26 - Source of BAC Information?
Issue: This data element should accompany # 25 above at the end of the data form

Data Element 61 - What Is Your Current Occupation?
Issue: coding manual, the supplemental pages are labeled as #101 rather than # 61. This is a typographical error.

There are no questions about injuries.
Issue: There are no questions about injuries on the interview form. Injury mannequins should be added along with a list of pertinent questions.

Other Vehicle Form

Data Elements 19 and 20 - Skid Mark and Cornering Tire Evidence
Issue: Cornering evidence refers to two-wheeled vehicles. The data form and coding manual should address how to code for four-wheeled vehicles (not applicable, not a two-wheeled vehicle).

Data Element 21 - Other Vehicle First Collision Contact Code
Issue: The available responses do not adequately address Other Vehicle versus Other Vehicle contact. A new code should be added to each attribute grouping to cover "distributed across plane of contact."

Other Vehicle Driver Form

Data Element 9 - Was Your Line of Site to the Motorcycle Vehicle Clear?
Issue: Need to clarify that the question can refer to a motorcycle or an Other Vehicle (in the event of a three-vehicle collision).

Data Element 10 - What Obstructed Your View?
Issue: There needs to be a (00) attribute for "No Obstructions." Attribute (97) not applicable should be removed.

Data Element 11 - Was Your View of the Motorcycle Vehicle Obscured?
Issue: Need to clarify that the question can refer to a motorcycle or an Other Vehicle (in the event of a three-vehicle collision).

Data Element 25 - What Is the Source of Drugs Other Than Alcohol?
Issue: The data form and coding manual should allow for more than one response.

Data Element 26 - Blood Alcohol Concentration (BAC)?
Issue: This data element should be moved to the end of the data form since the field test would be administered after the interview or the results would come from police or hospital records, not the interview.

Data Element 27 - Source of BAC Information?
Issue: This data element should accompany # 26 at the end of the data form

There are no questions about injuries.
Issue: There are no questions about injuries on the interview form. Injury mannequins should be added along with a list of pertinent questions.

Environment Form

Data Element 17 - Exclusive Turn Lane Presence and Type of Signal Phasing
OECD Reference: 3.1.19
Convention/Coding Source: FHWA-MUTCD-Part 4

Issue: Code (00) none and code (14) no exclusive turn lane, no traffic signal are redundant. Suggest that (00) be retained with the wording, "no exclusive turn lane, no traffic signal, and that attribute (14) be dropped.

Data Element 38 - If First Harmful Event Is a Non-collision
OECD Reference: None
Convention/Coding Source: NASS

Element Attributes:
(01) overturn
(02) fire/explosion
(03) immersion
(04) jackknife
(05) cargo/equipment loss or shift
(06) fell/jumped from motor vehicle
(07) thrown or falling object
(97) not applicable, event is a collision
(98) other (specify)_____
(99) unknown

Issue: Overturn or rollover typically refers to four-wheeled vehicles. Given the NASS definition, it does not relate to two-wheeled vehicles. Laying down the motorcycle should be considered a collision with the roadway or ground. The coding manual should include this discussion.

Data Element 39 - If First Harmful Event Is a Collision With Motor Vehicle/Motorcycle, Pedestrian, Animal, or Fixed Object

OECD Reference: None
Convention/Coding Source: NASS, DSI

Element Attributes:
(01) motor vehicle in transport
(02) parked motor vehicle
(03) work-zone equipment
(04) railway/light-rail vehicle
(05) pedestrian
(06) pedalcycle
(07) motorcycle
(08) animal
(97) not applicable
(98) other (specify)_____
(99) unknown

Range: 01-08, 97-99
Source: Investigator determined-Primary source on scene; secondary police crash report

Issue: The term "or Fixed Object" is confusing for this variable as it seems that this variable is trying to capture non-fixed objects. Suggestion: Move the attributes for parked vehicle (02) and work-zone equipment (03) to Variable 40 "If First Harmful Event Is a Collision with a Fixed Object." Then this variable could read: *If First Harmful Event Is a Collision With a Non-Fixed Object,* to create more distinction between variable 39 and 40.

Data Element 40 - If First Harmful Event Is a Collision with a Fixed Object

OECD Reference: None
Convention/Coding Source: NASS, DSI

Issue: A definition is needed for "terminal" and "non-terminal" for attributes 11 and 12.

Control Motorcycle Rider Form

Data Element 6 - How Long Have You Been Riding Today?
Issue: Attribute should be (00-24) hours, not (00-96) years.

Data Element 28 - What Is the Source of Drugs Other Than Alcohol?
Issue: The data form and coding manual should allow for more than one response.

Data Element 29 - Blood Alcohol Concentration (BAC)?
Issue: This data element should be moved to the end of the data form since the field test would be administered after the interview or the results would come from police or hospital records, not the interview.

Data Element 30 - Source of BAC Information?
Issue: This data element should accompany # 29 above at the end of the data form

Control Motorcycle Passenger Form

Data Element 20 - What Is the Source of Drugs Other Than Alcohol?

Issue: The data form and coding manual should allow for more than one response.

Data Element 21 - Blood Alcohol Concentration (BAC)?

Issue: This data element should be moved to the end of the data form since the field test would be administered after the interview or the results would come from police or hospital records, not the interview.

Data Element 22 - Source of BAC Information?

Issue: This data element should accompany # 21 at the end of the data form

6.2 Training Material

Discussions with the data collectors, and review of the crash investigation reports were used to examine the various training components. Some of the classroom training sessions included levels of detail that exceeded what the investigators needed for field work. There were other areas in which additional classroom training was necessary. In fact, several training segments were developed during the training period to address perceived needs. These included a basic overview of anatomy, review of the content of the data forms and coding manual, administrative reporting requirements, and a segment on motorcycle dynamics/roll attitude angle.

Field practice was determined to be very valuable, and many hours were spent demonstrating classroom material and conducting mock vehicle and scene inspections.

Injury coding is a specialized skill and is generally performed by specially trained personnel such as nurses and medical coders. For the Pilot Study, DSI planned to have the injury coding performed by a senior investigator who had previously attended training on the AIS2005 offered by the Association for the Advancement of Automotive Medicine. The Pilot Study team members became interested in the injury coding and eventually attempted to perform much of the coding themselves, under the guidance of the senior in-

vestigator. Additional training in anatomy and successful completion of the AIS2005 training must be a prerequisite for injury coders. Experienced coders can also apply for certification through testing offered by AAAM. This is becoming the industry standard for injury coding in both civilian and military applications.

Additional comments on specific training modules are shown below.

Table 6-1: Training Recommendations

Week 1 of Training	Problem	Solution
Dynamics and Chronology (Crash Envelope) Section *Reconstruction, Time, Distance, Velocity (4 hrs.) 54 slides* *Applications in Reconstruction of Motorcycle Crashes (4hrs.) 83 slides* *Analysis of Crash Phase Motions (3 ½ hrs.)*	Material is probably too in-depth and includes advanced trigonometry and physics formulas. The numerous formulas are taught for determining mostly "speeds." Only 3 data elements cover "speed": <u>MC Dynamics Form</u> <u>Variable 2</u> =Travel Speed <u>Variable 3</u> =Travel Speed Confidence Interval <u>Variable 18</u> =MC Impact Speed in MPH Trajectories, speeds, and energy distribution are redundancies	The 11 ½ hours of taught material is essentially for coding three variables in the MC Dynamics Form (Nos. 2, 3, and 18). The material is very advanced, and a simpler version could be covered in about 3 hours. That would offer more field time for practice scene and vehicle documentation, in addition to more time for teaching the use of the Easy Street Draw program. http://www.trancite.com/pro_esd.php
Week 2 Training	**Problem**	**Solution**
Motorcycle Dynamics and Vehicle Response Section *Motorcycle Equilibrium Conditions*	<u>Material</u> • Single track vehicles • Steady and accelerated motion • Rider-active contribution This module covers concepts that have little applicability to data elements.	Eliminate and apply time to either injury coding, scene/vehicle inspections. or Easy Street Draw program.

Table 6-1: Training Recommendations (continued)

Week 2 Training	Problem	Solution
Applications to Accident Reconstruction	<u>Material</u> • Effect of vehicle characteristics • Defect-related areas, tire-run-flat performance • Effects of rider experience, roadway conditions • Collision avoidance performance, loss of control • Performance of motorcycles, control failures • Analysis of accident events, speed computation This module is redundant and has little applicability to data elements.	Eliminate and apply time to either injury coding, scene/vehicle inspections. or Easy Street Draw program.
Week 4	**Problem**	**Solution**
Injury Coding	Only 1 day was designated for Injury Coding. There was no detailed coverage of anatomy.	Anatomy and injury coding concepts and mechanisms require at least 2 full days of training. Additional time for training is available during Week 6. In addition, the investigators should attend the 2-day AIS2005/2008 update training course *Injury Scaling Uses and Techniques* available through AAAM. http://www.carcrash.org/injury scaling.html

6.3 Field Protocol

The field protocol was found to be effective. There are no suggestions for modifying the approach to crash investigations.

During the Pilot Study, it became clear that the planned method for obtaining comparison data from a control group was problematic. The plan was to obtain interviews and vehicle inspections either immediately following the crash or 1 week later, at the crash site. Data collection was to take place over a 2-hour period and was to have included at least two interviews and motorcycle inspections. The team found it very difficult to achieve these goals for a number of reasons.

Because the team was constantly on-call to respond immediately to crash notifications from several police jurisdictions, it was very difficult to plan and execute the collection of control data at specific dates and times. Investigating crashes was viewed as the priority, and collecting control data was frequently rescheduled when there were scene and vehicle inspections to complete.

The team used a large sign offering free gas as an incentive to lure motorcycle riders. Although occasionally successful, it was determined that most riders who stopped were retired, unemployed, or returning from work. Some car and truck drivers also stopped because of their interest in the incentive. Most of the time, the response rate was very low.

The team purchased a second sign, had a motorcycle prominently displayed, and dressed in motorcycle gear, but such approaches had little effect on attracting riders. Alternate approaches, including approaching riders at nearby gas stations and video taping riders who passed the crash scene so that some basic information on motorcycle type and rider characteristics could be obtained, were finally tried.

As a result of this experience, we recommend that a control group investigator be employed who would be responsible for collecting comparison data. This would eliminate the conflict between obtaining critical crash data and maintaining the schedule for control data collection. This investigator would not have to be fully trained in crash investigation and thus could be paid at a lower rate. As a specialist, s/he could focus on developing techniques that would be best suited for various neighborhoods and road types.

6.4 Database

During the course of data collection, minor changes to range checks were requested and completed so that legitimate data could be properly entered into the database. Such range checks reflect the acceptable responses for each data element that are listed in the coding manual. Modifications to these ranges in the coding manual must also be incorporated into the allowable response ranges in the database for consistency.

Each data element also included the attribute code “(98) other – specify.” A small text field was provided so that a description of the “other” response could be added. We suggest that the “(98) other” attribute be retained. The text box could be a separate feature that would allow the data collector to include a brief note related to any attribute within that data element. These text boxes would not be included in data analyses, but would be available during a case review to highlight points of special interest for that case.

It is recommended that an additional narrative description of the crash be created by the investigator and included in the electronic case file. The narrative would include the investigator's judgment as to the pre-crash factors, crash circumstances, and the factors that contributed to the case outcome. It could include a description of injury causation circumstances as well. Such a narrative is best developed by investigators with some experience in crash reconstruction.

For the Pilot Study, the database was housed on a password-protected, personal computer that was not connected to any network or to the Internet in order to ensure the protection of the data. It is suggested that future studies provide on-line access to the database for the sponsor and all levels of management.

References

Fatality Analysis Reporting System, census of motor vehicle crash-related fatalities in the United States. Data are encoded from police accident reports and other official records. Conducted by the National Highway Traffic Safety Administration.

MAIDS Report on Methodology and Process, Association of European Motorcycle Manufacturers (ACEM), 2003.

Hurt, H. H., Ouellet, J. V., & Thom, D. R. (1981). *Motorcycle Accident Cause Factors and Identification of Countermeasures*. Contract No. DOT HS-5-01160. Final Report. Washington, DC: National Highway Traffic Safety Administration.

National Automotive Sampling System (NASS), continuing crash investigation program sponsored by the National Highway Traffic Safety Administration. Data collection is conducted at a nationally representative sample of primary sampling units and produces national estimates of crash occurrence and crash severity.

National Motor Vehicle Crash Causation Study (NMVCCS), on-scene crash investigation program operated through the NASS. Project was focused on crash causation factors. National Highway Traffic Safety Administration.

Appendices

Attachment 1

NHTSA Letter of Introduction

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

1200 New Jersey Avenue SE.
Washington, DC 20590

November 10, 2008

To Whom It May Concern:

Dynamic Science, Inc. (DSI) is under contract to the National Highway Traffic Safety Administration, U.S. Department of Transportation, to conduct research on motorcycle safety. The data collection phase consists of studying crashes that involve motorcyclists, as well as conducting brief interviews and vehicle inspections with non-crash involved motorcyclists at selected sites. The survey will be conducted from November, 2008 through March, 2009.

Project staff includes Michael Naron, Garth Wilson, Anthony Prieto, Joseph Kausch and Project Manager James Perry. Information from this survey will be used to help identify factors that contribute to the occurrence and severity of motorcycle crashes.

If you have any questions about the study or the activities of the field staff, please direct them to the Project Director, Fran Bents, at 1-800-937-8281 extension 7557, or to Dr. Jenny Percer of the National Highway Traffic Safety Administration, at 202-366-9785. Thank you very much for your support of this important research program.

Sincerely,

Richard P. Compton, Ph.D.
Director, Office of Behavioral Safety Research

NHTSA
www.nhtsa.gov

Attachment 2

Data Forms Summary

- The Pilot Study collected extensive administrative data for the Pilot Study and all of the Administrative Data Log (A.1) variables.
- The Pilot Study data forms collected 100% of the A.2 Accident Typology, Classification.
- The Pilot Study data forms collected 100% of the A.3 Environmental Factor variables.[1]
- Only one question/variable is missing from the A.4.1 Motorcycle Mechanical Factors variables, and this has to do with recording the license plate. This information cannot be collected in the United States because of U.S. privacy laws.
- Among the A.4.2 Motorcycle Dynamics variables, the Pilot Study data forms are missing three questions/variables. Two of the questions that were omitted have to do with the fact that the OECD definition of a crash differs from the U.S. definition of a crash (A.4.2.15 & A.4.2.16). The third variable (A.4.2.21a) that was omitted is asked twice in OECD.
- The Pilot Study data forms collected 100% of the A.4.3 Other Vehicle Mechanical Factors variables.
- The Pilot Study data forms collected 100% of the A.4.4 Other Vehicle Dynamics variables.
- The Pilot Study data forms collected 90% of the A.5.1 Human Factors Variables.
    - Three variables involved asking for date of birth from the motorcycle rider, motorcycle passenger, and other vehicle driver. Because OECD captures age, date of birth was not included in the forms because it cannot be included in a public-use database.
    - Three variables ask the citizenship of the motorcycle rider, motorcycle passenger, and other driver. We cannot ask these politically sensitive questions in the United States.
    - Three variables ask for the duration of formal education of the motorcycle rider, motorcycle passenger, and other driver. This variable does not apply because the educational system in the United States is different from those in Europe. We modified the question for U.S. relevance.
    - Three variables involve asking the motorcycle rider, motorcycle passenger, and other vehicle driver to recommend countermeasures. This is subjective information.
    - One question that asks about the passenger position has three OECD variables so that more than one code can be entered. The problem is that each code is mutually exclusive. A rider can't be "normal, straddle, seated behind rider," and "riding with both legs to the left." Therefore, only one code will be captured.

[1] While the OECD variables will be collected, the coding choices were revised based on U.S. engineering terminology. These changes were made under the advisement of FHWA, OSU, and the first Project Working Group.

- Of the remaining variables that were not used (3), these were excluded in the interests of ensuring that all data that were collected were objective. We dropped one variable regarding the distance the motorcycle passenger rides on a motorcycle each year. It seemed unlikely that a passenger pays attention to the mileage on each trip he or she takes and, on average, would be providing unreliable data. We decided not to ask the motorcycle passenger the number of traffic violations he or she had in the last 5 years because the information was irrelevant to the cause of the crash. We also decided to exclude the question about attention to passenger tasks because "passenger tasks" are not well defined in OECD.

- While the Pilot Study Injury form looks very different from the OECD injury form, it still captures 100% of the OECD A.5.2 Injury Analysis variables.
- Due to the focus of the Pilot and budgetary constraints, the Pilot did not conduct the helmet examination, and so this information was not included in our forms. As such, the Pilot Study data forms capture 100% of the A.5.3 Human Factors Personal Protective Equipment variables that do not involve the helmet examination.
- In OECD, 0 and 00 can stand for not applicable or some other code. Examples of variations in coding are below:
- 0 – not applicable
- 00 – not applicable
- 0 – no pedestrian involvement (A.3.1.28)
- 0 – clear (A.3.1.33)
- 00 – conventional street L1 or L3 vehicle (A.4.1.1.4.2)
- 00 – none (also sometimes 01)
- 00 – step through, formed sheet metal (A.4.1.1.39)

A well-designed data form should have a unique identifier for any codes that consistently show up for most, if not all, variables. Therefore, the codes 97, 98, and 99 were used for "not applicable," "unknown," and "other," respectively, for all variables in the U.S. data forms. These three numbers are used for only "not applicable," "unknown," and "other," and in the instances when a metric (i.e., speed, feet, etc.) might overlap, additional 9's are added (i.e., 997, 9997).

Pilot Study Form/Topic	Number of Data Elements	
	Pilot Study	Included from OECD
Administrative	8	8
Crash	15	13
Motorcycle Mechanical	537	531
Motorcycle Dynamics	43	29
Motorcycle Rider	103	62
Motorcycle Passenger	63	54
Other Vehicle	26	23
Other Vehicle Driver	56	35
Environment	51	30
Rider/Occupant Injury	160	145
Control Motorcycle Mechanical	488	472
Control Motorcycle Rider	88	52
Control Motorcycle Passenger	59	42
Total	**1,689**	**1,488**

* Note that many "new" collected data elements are derived from OECD A.6 series interpretations.

2007 OECD Data Form	Number of Data Elements
Administrative Data Log	8
Accident Typology/Classification	9
Environmental Factor	86
Motorcycle Mechanical Factor	485
Motorcycle Dynamics	46
Other Vehicle mechanical Factors	8
Other Vehicle Dynamics	29
Human Factors	166
Injury Analysis	120
Human Factors Personal Protective Equipment	126
Control Motorcycle Mechanical Factors	401
Control Human Factors	103
Control Personal Protective Equipment	70
Total	**1,657**

* Note that some data elements summarize other data. These were not included in the Pilot Study since they can be computer generated.

Attachment 3

60 Day Federal Register Notice

that it is seeking to identify qualified industry consultants to assist 14 Code of Federal Regulations (CFR) Part 91, 121, 125, 129, 135 applicants as they pursue approval to conduct "Required Navigation Performance Special Aircraft and Aircrew Authorization Required" (RNP SAAAR) approaches. Provisions for gaining those approvals are contained within FAA Advisory Circular 90–101, "Approval Guidance for RNP Procedures with SAAAR." Applicants who meet certain qualifications will be permitted to enter into an agreement with the FAA to be listed as RNP SAAAR Approval Consultants.

DATES: Formal letter of application must be received on or before December 31, 2006.

FOR FURTHER INFORMATION CONTACT: Mr. Vincent Chirasello, Federal Aviation Administration, AFS–400 Flight Technologies and Procedures Division, 470 L'Enfant Plaza, Suite 4102, Washington, DC 20024, (202) 385–4586.

SUPPLEMENTARY INFORMATION: RNP SAAAR procedures provide an opportunity to improve safety, efficiency and capacity. Safety is improved when RNP approaches replace visual or non-precision approaches, and efficiency is improved through more repeatable and optimum flight paths. Capacity can be improved by de-conflicting traffic during instrument conditions. RNP SAAAR procedures provide an unprecedented flexibility in construction of approach procedures. RNP SAAAR procedures build upon the performance based National Airspace System (NAS) concept. The performance requirements to conduct an approach are defined, and aircraft are qualified against these performance requirements. RNP approaches include unique characteristics that require special aircraft and aircrew capabilities and authorization similar to Category (CAT) II/III ILS operations.

The AC 90–101 RNP SAAAR approval process is complex and the success of the process depends on the quality of the application. Although the FAA is committed to providing approval services, a reduced budget and increase in attrition leaves fewer resources available to assist new entrants in the approval process. In an effort to address this new RNP SAAAR entrant need, the FAA will develop and maintain a list of qualified AC 90–101 RNP SAAAR Approval Consultants to assist in the approval process. This process will benefit the general public by helping expedite new entrant applications.

(a) *Eligibility Requirements:* To be identified as an FAA-qualified RNP SAAAR Approval Consultant, the following qualifications must be met:

(1) Have understanding of AC 90–101, as revised, to include the individual appendices. This includes a thorough understanding of the approval process.

(2) At least 2 years experience working with RNP SAAAR or equivalent procedures.

(3) Upon selection for the program, successfully complete an RNP SAAAR Approval Process Seminar.

(4) Have operations and airworthiness personnel qualified through training, experience, and expertise in 14 CFR part 91, 121, 125, 129 and/or 135 operations, or equivalent experience.

(b) *Required Documentation:* An applicant to become RNP SAAAR Approval Consultant must submit a formal letter of request in addition to the following documents:

(1) Statement substantiating that the RNP SAAAR Approval Consultant applicant meets eligibility requirements as stated in item 1 above.

(2) Supplemental statement including the names, signatures, and titles of those persons who will perform the authorized functions, and substantiating that they meet the eligibility requirements.

(3) RNP SAAAR Approval Consultant Operations Manual.

(4) References.

(5) Certification that, to the best of its knowledge and belief, the persons serving as management of the organization have not been convicted of, or had a civil or administrative finding rendered against, them for: commission of fraud, embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property.

(c) *How to Apply:* An RNP SAAAR Consultant applicant must submit all required documents for consideration before being identified as an FAA-qualified RNP SAAAR Approval Consultant to: Mr. Vincent Chirasello, Federal Aviation Administration, AFS–400 Flight Technologies and Procedures Division, 470 L'Enfant Plaza, Suite 4102, Washington, DC 20024.

(d) *Application Process:* Upon receipt of the application, AFS–400, will:

(1) Ensure the RNP SAAAR Approval Consultant application package contains all the required documents as listed in item 2 above.

(2) Evaluate documents for accuracy.

(3) Ensure the RNP SAAAR consultant application package contains all the eligibility requirements as listed in item 1 above.

(4) Contact the applicant's personal references.

(5) Conduct a personal interview with the applicant; including those persons within organizations, if any, who will perform authorized functions.

Auhority: The FAA is authorized to enter into this Agreement by 49 U.S.C. 106(1), (6) and (m).

Issued in Washington, DC on November 9, 2006.

John M. Allen,

Director, Flight Standards Service.

[FR Doc. 06–9245 Filed 11–22–06; 8:45 am]

BILLING CODE 4910–13–M

DEPARTMENT OF TRANSPORTATION

Federal Highway Administration

[Docket No. FHWA–2006–26125]

Agency Information Collection Activities: Request for Comments for New Information Collection

AGENCIES: Federal Highway Administration (FHWA), and National Highway Traffic Safety Administration (NHTSA), Department of Transportation (DOT).

ACTION: Notice and request for comments.

SUMMARY: The FHWA and the NHTSA invite the public to comment on our intention to request the Office of Management and Budget (OMB) to approve a new information collection. This collection is summarized below under Supplementary Information. We are required to publish this notice in the **Federal Register** by the Paperwork Reduction Act of 1995.

DATES: Please submit comments by January 23, 2007.

ADDRESSES: You may submit comments identified by DOT DMS Docket Number FHWA–2006–26125 by any of the following methods:

- *Web Site: http://dms.dot.gov.* Follow the instructions for submitting comments on the DOT electronic docket site.
- *Fax:* (202) 493–2251.
- *Mail:* Docket Management Facility; U.S. Department of Transportation, 400 Seventh Street, S.W., Nassif Building, Room PL–401, Washington, DC, 20590–0001.
- *Hand Delivery:* Room PL–401 on the plaza level of the Nassif Building, 400 Seventh Street, SW., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

Docket: For access to the docket to read background documents or comments received, go to *http://dms.dot.gov* at any time or to Room 401 on the plaza level of the Nassif Building,

400 Seventh Street, S.W., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: For questions concerning the FHWA Motorcycle Crash Causation Study, please contact Carol Tan, Ph.D, Office of Safety Research and Development (HRDS), at (202) 493–3315, Turner-Fairbank Highway Research Center, Federal Highway Administration, 6300 Georgetown Pike, McLean, VA, 22101, between 9:00 a.m. and 5:30 p.m., Monday through Friday, except Federal Holidays. For questions concerning the Pilot Motorcycle Crash Causes and Outcomes Study, please contact Paul J. Tremont, Ph.D, Office of Behavioral Safety Research, NTI–131, at (202) 366–5588, National Highway Traffic Safety Administration (NHTSA), 400 Seventh Street, S.W., Washington, DC 20590 between 7:30 a.m. and 4:00 p.m., Monday through Friday, except Federal Holidays.

SUPPLEMENTARY INFORMATION:

Title: Motorcycle Crash Causation Study and Pilot Motorcycle Crash Causes and Outcomes Study.

Background: In 2004, 4,008 motorcyclists were killed and 76,000 were injured in traffic crashes in the United States, increases of 8 percent, and 14 percent respectively from 2003. Per vehicle mile traveled in 2003, motorcyclists were about 32 times more likely to die, and 6 times more likely to be injured in a motor vehicle crash than were passenger car occupants. Per 100 million miles traveled, in 2003, motorcyclist fatalities were 57 percent higher than they were in 1993. This compares with a decrease of 17.8 percent in fatality rates for occupants in passenger vehicles over the same period. These data show that the motorcycle crash problem is becoming more severe.[1]

Congress has recognized this problem and directed the Department of Transportation to conduct research that will provide a better understanding of the causes of motorcycle crashes. Specifically, in Section 5511 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA–LU) Pub. L. 109–59, Congress directed 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 that employs the common international methodology for in-depth motorcycle crash investigation developed by the Organization for Economic Cooperation and Development (OECD).[2] SAFETEA–LU authorized $1,408,000 for each of fiscal years 2006 and 2007, but provided for an equal match by the Grantee (Sections 5511 and 5101). The Secretary delegated authority to FHWA for the Motorcycle Crash Causation Grants under Section 5511 (71 FR 30831).

Coordination of FHWA Main Study and NHTSA Pilot Study

Prior to the SAFETEA–LU directive by Congress to administer a full-scale study of motorcycle crash causes, NHTSA awarded a contract to conduct a pilot study of Motorcycle Crash Causes and Outcomes. The intent of this pilot study is to examine appropriate applications of the OECD methodology to motorcycle crashes in the United States. This pilot test is needed before any full-scale study could be conducted because the OECD methodology has not previously been implemented in the United States, and also because this methodology incorporates some options for collecting crash and control sample data that are affected by logistical and budget constraints.

The authorization of funds by Congress for a full-scale motorcycle crash study provided an opportunity for the NHTSA pilot study to become closely coordinated with the FHWA main study. As a result, the pilot study will test the procedures FHWA will consider using as it implements the OECD methodology. Additionally, it may be possible for the pilot study to transition directly into the main study, thereby allowing the main study to avoid many startup costs (e.g., site selection, training, coding manual development, data form development, etc.) that it otherwise would have incurred. This will allow the main study to capture a larger sample of crashes with the available funding. Recognizing these advantages, the Department of Transportation intends to submit a single request to OMB for approval of both of these studies. This notice is the first step in that combined approval request.

Project Working Group Guidance

A project working group consisting of representatives from the motorcycle industry and from the motorcycle community was formed to provide input into the study design. A working group meeting was held in Denver on June 15–16, 2006. At this meeting, consensus was reached that all the relevant OECD variables would be captured in both the NHTSA pilot and FHWA full-scale studies, that some of these variables would need to be modified to conform to U.S. requirements, and that other variables would need to be added to provide necessary data related to the U.S. roadway environment.

Proposed Data Acquisition Methodology

Use of Parallel and Complementary Procedures

The OECD describes 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 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. The main purpose of acquiring matched data is to allow for inferences to be made regarding risk factors for crash causes. A brief explanation is provided here so that those less familiar with case-control procedures will understand the

[1] More detailed information on motorcycle crashes can be found in Traffic Safety Facts—Motorcycles, published by NHTSA and available on its Web site at: *http://www.-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/Rpts/2006/810606.pdf.*

[2] The OECD methodology may be obtained by sending a request to *jtrc.contact@oecd.org.*

advantage of acquiring controls.[3] Consider a hypothetical situation where it is observed that the proportion of motorcycle riders involved in crashes that have a positive Blood Alcohol Content (BAC) is the same as the proportion of matched (similarly-at-risk) control motorcycle riders not involved in crashes. And assume that the proportion of passenger-vehicle motorists who crash with motorcycles at a positive BAC is greater than matched control passenger-vehicle motorists. These data considered together would suggest that for crashes involving passenger vehicles and motorcycles, alcohol is a bigger risk factor for passenger vehicle drivers than it is for motorcycle riders. That is, the relative risk of crash involvement attributable to alcohol in motorcycle-automobile crashes is greater for passenger-vehicle motorists than for motorcyclists. Other risk factors for crashes (i.e., age, gender, riding and driving experience, fatigue level) for both motorcyclists and motorists can also be examined in this manner. If scaled interval measurements of risk factor levels are obtained (for example, if the level of alcohol is measured, not just its presence or absence), then it becomes possible to calculate functions showing how risk changes with changes in the variable of interest. Such risk functions are highly useful in the development of countermeasures.[4]

Issues Related to Sampling

Characteristics of the Crash Sample

To properly acquire in-depth crash data, it is necessary to find a location in the country that experiences the full range of motorcycle crash types that occur under a wide range of conditions and with a wide range of motorcycle rider characteristics. The location must also have a sufficiently high frequency of motorcycle crashes to allow acquisition of the crash data in a reasonable amount of time. It is anticipated that it will be possible to find a single location meeting these requirements.

It is not necessary that the crash types observed (or other composite indices or parameters of interest) be drawn from a nationally representative sample, because it is not the intent of FHWA to make projections of the national incidence of the causes of crashes involving motorcycles from this study. Rather, the focus will be on identifying the antecedents and risk factors associated with motorcycle crashes. If it is deemed necessary, FHWA and NHTSA may utilize their alternative databases that incorporate certain of the key variables that will be acquired in this study, and those databases could be used in conjunction with this study's data to make national estimates of population parameters of interest.[5]

In addition, the crash investigations will be conducted on-scene, while the involved operators and vehicles are still in place. This provides access to physical data that is less disturbed by rescue and clean up activities. It also facilitates the collection of interview data while memories are unaffected. This quick-response approach is most effective when a census of applicable crashes is selected for inclusion.

Characteristics of the Control Sample

While the occurrence of a crash involving a motorcycle in the study site is sufficient for it to be selected into the study, selecting the similarly-at-risk controls is not as straightforward. The OECD recommends several options for acquiring matched controls including interviewing motorcyclists who may be filling up at nearby gas stations, taking videos of motorcyclists who pass the crash scenes, and interviewing motorcyclists at the location of the crash location at the same time of day, same day of week, and same direction of travel. The first of these methods suffers from the shortcoming that a rider or motorist filling his fuel tank is not presented with the same risks, in the same setting, as is the crash-involved rider and motorist. To illustrate, consider a motorcycle rider who is hit from the rear by a passenger vehicle motorist on a Friday night at 1:00 a.m. There is a reasonable chance that alcohol is involved in this crash, but to estimate the relative risk it will not help to measure the BAC of passenger vehicle motorists (and motorcyclists) at a nearby gas station. Passenger-vehicle motorists and motorcyclists will need to be sampled at the location of the crash on the same day of the week, at the same hour, and from the same travel direction. Even if the suspected risk factor is not alcohol, but some other variable (e.g., distraction associated with cell phone use), it is still highly advantageous to acquire the comparison data at the crash locations (matched on time and direction), rather than somewhere else.

Using the second method mentioned above, acquiring the risk sample by taking video at the crash scenes provides a similarly-at-risk pool, and it also allows for many controls to be acquired at low cost. Its chief disadvantage is that it does not allow capture of some of the key risk factors for crashes (e.g., BAC), while others (e.g., fatigue) may be very difficult to capture. However, some risk factors could be acquired later by contacting the riders and drivers if license tag numbers are recorded, and so this method could be used to supplement the safety zone interview (described below).

The final method, the voluntary safety research interview, involves setting up a safety zone at the crash location, one week later at the same time of day, and asking those drivers and motorcyclists who pass through to volunteer in a study. With this method, Certificates of Confidentiality are presented to each interviewed driver and rider and immunity is provided from arrest. The main advantage of this method is that the key variables that are thought to affect relative crash risk can be acquired from drivers and riders who are truly similarly-at-risk. A final decision on the means of acquiring control data has not been made.

Information Proposed for Collection

The OECD protocol includes the following number of variables for each aspect of the investigation:

Administrative log: 28
Accident typology/configuration: 9
Environmental factors: 35
Motorcycle mechanical factors: 146
Motorcycle dynamics: 32
Other vehicle mechanical factors: 9
Other vehicle dynamics: 18
Human factors: 51
Personal protective equipment: 34
Contributing environmental factors: 8
Contributing vehicle factors: 13
Contributing motorcycle factors: 57

[3] This being a study of crashes involving motorcycles, data will be acquired from both crash-involved motorcycles and also motor vehicles involved in those crashes as countermeasures may be developed separately for each that could lead to a reduction in crashes involving motorcycles. Similarly, when control data are acquired, data from similarly-at-risk motorcycle rider controls and similarly-at-risk automobile driver controls will also be acquired. This way a balanced picture of the causes of crashes involving motorcycles and other vehicles will emerge.

[4] Certainly other outcomes besides the one presented are possible, and other comparisons are of interest. For example, it would be useful to compare crash-involved motorcyclists to non-crash involved motorcyclists and crash-involved passenger vehicle motorists to non-crash involved passenger-vehicle motorists. These comparisons would allow for estimates of changes in relative risks for riders and drivers independently.

[5] There is a lengthy precedent for studying crashes using case-control methods including the Grand Rapids study, (Borkenstein, R.F., Crowther, F.R., Shumate, R.P., Ziel, W.B. & Zylman, R. (1974). The Role of the Drinking Driver in Traffic Accidents (The Grand Rapids Study). Blutalkohol, 11, Supplement 1), and of course the Hurt study, (Hurt, H.H., Jr., Ouellet, J.V., and Thom, D.R. (1981). Motorcycle Accident Cause Factors and Identification of Countermeasures Volume I: Technical Report).

Contributing human factors: 50
Contributing overall factors: 2

Note that multiple copies of various data forms will be completed as the data on each crash-involved vehicle and person and each control vehicle and person are acquired. This increases the number of variables above the sum of what is presented above. There are also diagrams and photographs that are essential elements of each investigation that are entered into the database. In prior OECD implementations, about 2,000 data elements in total were recorded for each crash.

Estimated Burden Hours for Information Collection

Frequency: This is a one time study.

Respondents: This study will be based on all crashes occurring within the sampling area; however, this burden estimate is based on what we know about fatal crashes. The plan calls for data to be captured from up to 1200 crashes with motorcycle involvement, and for all surviving crash-involved riders and drivers to be interviewed. Two control riders will be interviewed for each crash-involved motorcyclist, and one rider and one driver will be interviewed for each rider and motorist in multi-vehicle crashes. Passengers accompanying crash-involved riders and passenger-vehicle drivers will also be interviewed. The following table shows the sampling plan and estimated number of interviews assuming 1200 crashes are investigated.[6]

Maximum total crashes to be investigated is 1200.

Crash Interviews
- Single vehicle motorcycle crashes = 540
- Multi-vehicle (2-vehicle) motorcycle crashes (660*2) = 1320
- Passenger interviews motorcycle (.10* 540 + .10*660) = 120
- Passenger interviews cars (.68*660) = 449
- Total Crash Interviews (540+1320+120+449) = 2429

Control interviews
- Controls for single vehicle motorcycle crashes (2*540) = 1080
- Controls for multi-vehicle motorcycle crashes (1*660 + 1*660) = 1320
- Passenger Interviews = 0
- Total Control Interviews = 2400

Grand Total Crash plus Control Interviews (2429+2400) = 4829

Estimated Average Burden per Interviewee: Crash interviews are estimated to require about 15 minutes per individual interviewed To the extent possible, crash interviews will be collected at the scene, although it is likely that some follow-ups will be needed to get completed interviews from crash involved individuals. Control individuals' interviews will be completed in a single session and are expected to require about 10 minutes per individual.

Estimated Total Annual Burden Hours: Burden hours estimates are based on the total of 2,429 crash interviews to be conducted at an average length of 15 minutes each and 2,400 control interviews to be conducted at an average length of 10 minutes each for a total one-time burden on the public of 60,435 minutes or 1007.25 hours.

Public Comments Invited: You are asked to comment on any aspect of this information collection, including: (1) Whether the proposed collection is necessary for FHWA's and NHSTA performance; (2) the accuracy of the estimated burden, (3) ways for the FHWA and NHTSA to enhance the quality, usefulness, and clarity of the collected information; and (4) ways that the burden could be minimized, including the use of electronic technology, without reducing the quality of the collected information. The agency will summarize and/or include your comments in the request for OMB's clearance of this information collection.

Authority: The Paperwork Reduction Act of 1995; 44 U.S.C. Chapter 35, as amended; and 49 CFR 1.48.

Issued on: November 15, 2006.

James R. Kabel,

Chief, Management Programs and Analysis Division.

[FR Doc. E6–19831 Filed 11–22–06; 8:45 am]
BILLING CODE 4910–22–P

[6] The final crash sample size will depend on the rate at which crashes can be acquired in the selected site(s) and other matters related to logistics and the final budget. However, the study will acquire crashes on a sample size that exceeds the requirements of the OECD methodology, and will be of sufficient size to meet the goals of the study.

DEPARTMENT OF TRANSPORTATION

Federal Highway Administration

Environmental Impact Statement: Hunterdon County, NJ

AGENCY: Federal Highway Administration (FHWA), DOT.

ACTION: Notice of Intent.

SUMMARY: The FHWA is issuing this notice to advise the public that an environmental impact statement (EIS) will be prepared for a proposed highway project in Hunterdon County, New Jersey.

FOR FURTHER INFORMATION CONTACT: Tanya Emam, Engineering Coordinator, Federal Highway Administration, New Jersey Division Office, 840 Bear Tavern Road, Suite 310, West Trenton, NJ 08628–1019, Telephone: (609) 637–4200.

SUPPLEMENTARY INFORMATION: The FHWA, in cooperation with the New Jersey Department of Transportation (NJDOT), will prepare an EIS on a proposed action to construct the South Branch Parkway in Hunterdon County, New Jersey, Federal Project No. HPP–0037(139). The proposed project will consist of the construction of a limited access highway on new location for a distance of approximately 3.7 miles. The parkway would extend from a proposed intersection at Voorhees Corner Road, northward to a proposed intersection at existing Route 31, at a point approximately 0.5 mile north of the existing intersection of Route 31 and Bartles Corner Road.

The purpose of the South Branch Parkway is to provide an alternative to Route 31 for north-south travel through the Flemington-Raritan area and increase overall connectivity with the local roadway network; to reduce congestion on existing Route 31 to facilitate movement of both local and regional traffic; to provide the initial investment in a long-term Integrated Land Use and Transportation Plan that effectively shapes existing and future development into a land-use pattern that does not increase demand beyond the State highway system's roadway capacity; and to lead to a more balanced transportation network and land use patterns that decrease reliance on the automobile and encourage pedestrian and bicycle travel through the area. The selected transportation solution will represent a long-term, cost-effective capital investment consistent with Smart Growth principles.

Alternatives under consideration include: (1) Taking no action; and (2) constructing a new two-lane, limited access highway as described above. This alternative includes a multi-use bicycle/pedestrian path along the length of the parkway; an optional center grass median; two options for a minor shift in the southern terminus location; and analysis of proposed intersections and roundabouts throughout the project length.

Input for further defining the purpose and need for the proposed project, and range of alternatives under consideration, will be accomplished via the following: In October 2006, a Public Officials Briefing (POB) and a Public Information Center (PIC) were held within the project area to update local stakeholders regarding the project status and to elicit early commentary. In the near future, letters describing the

Attachment 4

30 Day Federal Register Notice

Frequency: Continuous.

Estimated Total Annual Burden Hours: The estimated total annual burden for all respondents is 83,200 hours. This involves responses from 52 State Departments of Transportation or equivalent with an estimated average time of 1,600 hours per respondent over the course of a year. This estimate only includes the burden on the respondents to provide information that is not usually and customarily collected.

Authority: The Paperwork Reduction Act of 1995; 44 U.S.C. Chapter 35, as amended; and 49 CFR 1.48.

Issued on: February 20, 2007.

James R. Kabel,

Chief, Management Programs and Analysis Division.

[FR Doc. E7–3196 Filed 2–23–07; 8:45 am]

BILLING CODE 4910–22–P

DEPARTMENT OF TRANSPORTATION

Federal Highway Administration

[Docket No. FHWA–2007–26843]

Agency Information Collection Activities: Request for Comments for New Information Collection

AGENCY: Federal Highway Administration (FHWA), DOT.

ACTION: Notice and request for comments.

SUMMARY: The FHWA has forwarded the information collection request described in this notice to the Office of Management and Budget (OMB) for approval of a new information collection. We published a **Federal Register** Notice with a 60-day public comment period on this information collection on November 24, 2006. We are required to publish this notice in the **Federal Register** by the Paperwork Reduction Act of 1995.

DATES: Please submit comments by March 28, 2007.

ADDRESSES: You may send comments within 30 days to the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th Street, NW., Washington, DC 20503, Attention DOT Desk Officer. You are asked to comment on any aspect of this information collection, including: (1) Whether the proposed collection is necessary for the FHWA's performance; (2) the accuracy of the estimated burden; (3) ways for the FHWA to enhance the quality, usefulness, and clarity of the collected information; and (4) ways that the burden could be minimized, including the use of electronic technology, without reducing the quality of the collected information. All comments should include the Docket number FHWA–2007–26843.

FOR FURTHER INFORMATION CONTACT: For questions concerning the FHWA Motorcycle Crash Causation Study, please contact Carol Tan, Ph.D, Office of Safety Research and Development (HRDS), at (202) 493–3315, Turner-Fairbank Highway Research Center, Federal Highway Administration, 6300 Georgetown Pike, McLean, VA 22101, between 9 a.m. and 5:30 p.m., Monday through Friday, except Federal holidays. For questions concerning the Pilot Motorcycle Crash Causes and Outcomes Study, please contact Paul J. Tremont, Ph.D, Office of Behavioral Safety Research, NTI–131, at (202) 366–5588, National Highway Traffic Safety Administration (NHTSA), 400 Seventh Street, SW., Washington, DC 20590, between 7:30 a.m. and 4 p.m. Monday through Friday, except Federal holidays.

SUPPLEMENTARY INFORMATION:

Title: Motorcycle Crash Causation Study and Pilot Motorcycle Crash Causes and Outcomes Study.

Background: In 2005, 4,553 motorcyclists were killed and 87,000 were injured in traffic crashes in the United States, increases of 13 percent, and 14 percent respectively from 2004. Per vehicle mile traveled in 2004, motorcyclists were about 34 times more likely to die, and 8 times more likely to be injured in a motor vehicle crash than were passenger car occupants. Per 100 million miles traveled, in 2004, motorcyclist fatalities were 77 percent higher than they were in 1994. This compares with a decrease of 22 percent in fatality rates for occupants in passenger vehicles over the same period. These data show that the motorcycle crash problem is becoming more severe.[1]

Congress has recognized this problem and directed the DOT to conduct research that will provide a better understanding of the causes of motorcycle crashes. Specifically, in Section 5511 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA–LU) Pub. L. 109–59, Congress directed 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 that employs the common international methodology for in-depth motorcycle crash investigation developed by the Organization for Economic Cooperation and Development (OECD).[2] SAFETEA–LU authorized $1,408,000 for each of fiscal years 2006 and 2007, but provided for an equal match by the Grantee (Sections 5511 and 5101). The Secretary delegated authority to FHWA for the Motorcycle Crash Causation Grants under Section 5511 (71 FR 30831).

Coordination of FHWA Main Study and NHTSA Pilot Study

Prior to the SAFETEA–LU directive by Congress to administer a full-scale study of motorcycle crash causes, NHTSA awarded a contract to conduct a pilot study of Motorcycle Crash Causes and Outcomes. The intent of this pilot study is to examine appropriate applications of the OECD methodology to motorcycle crashes in the United States. This pilot test is needed before any full-scale study could be conducted because the OECD methodology has not previously been implemented in the United States, and also because this methodology incorporates some options for collecting crash and control sample data that are affected by logistical and budget constraints.

The authorization of funds by Congress for a full-scale motorcycle crash study provided an opportunity for the NHTSA pilot study to become closely coordinated with the FHWA full-scale study. As a result, the pilot study will test the procedures FHWA will consider using as it implements the OECD methodology. Additionally, it may be possible for the pilot study to transition directly into the main study, thereby allowing the main study to avoid many startup costs (e.g., site selection, training, coding manual development, data form development, etc.) that it otherwise would have incurred. This will allow the main study to capture a larger sample of crashes with the available funding. Recognizing these advantages, the DOT intends to submit a single request to OMB for approval of both of these studies. This notice is the first step in that combined approval request.

Project Working Group Guidance

A project working group consisting of representatives from the motorcycle industry and from the motorcycle community was formed to provide input into the study design. A working group meeting was held in Denver on June 15–16, 2006. At this meeting, consensus was reached that all the relevant OECD variables would be captured in both the

[1] More detailed information on motorcycle crashes can be found in Traffic Safety Facts—Motorcycles, published by NHTSA and available on its Web site at: *http://www-nrd.nhtsa.dot.gov/pdf/nrd-30/NCSA/TSF2005/MotorcyclesTSF05.pdf.*

[2] The OECD methodology may be obtained by sending a request to *jtrc.contact@oecd.org.*

NHTSA pilot and FHWA full-scale studies, that some of these variables would need to be modified to conform to U.S. requirements, and that other variables would need to be added to provide necessary data related to the U.S. roadway environment.

Proposed Data Acquisition Methodology

Use of Parallel and Complementary Procedures

The OECD describes 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 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. The main purpose of acquiring matched data is to allow for inferences to be made regarding risk factors for crash causes. A brief explanation is provided here so that those less familiar with case-control procedures will understand the advantage of acquiring controls.[3]

Consider a hypothetical situation where it is observed that the proportion of motorcycle riders involved in crashes that have a positive Blood Alcohol Content (BAC) is the same as the proportion of matched (similarly-at-risk) control motorcycle riders not involved in crashes. And assume that the proportion of passenger-vehicle motorists who crash with motorcycles at a positive BAC is greater than matched control passenger-vehicle motorists. These data considered together would suggest that for crashes involving passenger vehicles and motorcycles, alcohol is a bigger risk factor for passenger vehicle drivers than it is for motorcycle riders. That is, the relative risk of crash involvement attributable to alcohol in motorcycle-automobile crashes is greater for passenger-vehicle motorists than for motorcyclists. Other risk factors for crashes (i.e., age, gender, riding and driving experience, fatigue level) for both motorcyclists and motorists can also be examined in this manner. If scaled interval measurements of risk factor levels are obtained (for example, if the level of alcohol is measured, not just its presence or absence), then it becomes possible to calculate functions showing how risk changes with changes in the variable of interest. Such risk functions are highly useful in the development of countermeasures.[4]

Issues Related to Sampling

Characteristics of the Crash Sample

To properly acquire in-depth crash data, it is necessary to find a location in the country that experiences the full range of motorcycle crash types that occur under a wide range of conditions and with a wide range of motorcycle rider characteristics. The location must also have a sufficiently high frequency of motorcycle crashes to allow acquisition of the crash data in a reasonable amount of time. It is anticipated that it will be possible to find a single location meeting these requirements.

It is not necessary that the crash types observed (or other composite indices or parameters of interest) be drawn from a nationally representative sample, because it is not the intent of FHWA to make projections of the national incidence of the causes of crashes involving motorcycles from this study. Rather, the focus will be on identifying the antecedents and risk factors associated with motorcycle crashes. If it is deemed necessary, FHWA and NHTSA may utilize their alternative databases that incorporate certain of the key variables that will be acquired in this study, and those databases could be used in conjunction with this study's data to make national estimates of population parameters of interest.[5]

In addition, the crash investigations will be conducted on-scene, while the involved operators and vehicles are still in place. To accomplish this safely, it is understood that the controlling police agency would need to first secure the crash scene, and gather any evidence and data for their own investigation. One way for this project to capture its on-scene data, would be for researchers to accompany early police responders to the scene, and under police guidance, acquire those OECD data elements not captured by the police. If this procedure imposes additional costs on the police agency having jurisdiction over the crash, then the project would consider compensation to the police agency for those costs in accordance with a prearranged agreement. This on-scene collection approach provides access to physical data that is less disturbed by rescue and clean up activities. It also facilitates the collection of interview data while memories are unaffected. This quick-response approach is most effective when a census of applicable crashes is selected for inclusion.

Characteristics of the Control Sample

While the occurrence of a crash involving a motorcycle in the study site is sufficient for it to be selected into the study, selecting the similarly-at-risk controls is not as straightforward. The OECD recommends several options for acquiring matched controls; including interviewing motorcyclists who may be filling up at nearby gas stations, taking videos of motorcyclists who pass the

[3] This being a study of crashes involving motorcycles, data will be acquired from both crash-involved motorcycles and also motor vehicles involved in those crashes as countermeasures may be developed separately for each that could lead to a reduction in crashes involving motorcycles. Similarly, when control data are acquired, data from similarly-at-risk motorcycle rider controls and similarly-at-risk automobile driver controls will also be acquired. This way a balanced picture of the causes of crashes involving motorcycles and other vehicles will emerge.

[4] Certainly other outcomes besides the one presented are possible, and other comparisons are of interest. For example it would be useful to compare crash-involved motorcyclists to non-crash involved motorcyclists and crash-involved passenger vehicle motorists to non-crash involved passenger-vehicle motorists. These comparisons would allow for estimates of changes in relative risks for riders and drivers independently.

[5] There is a lengthy precedent for studying crashes using case-control methods including the Grand Rapids study, (Borkenstein, R.F., Crowther, F.R., Shumate, R.P., Ziel, W.B. & Zylman, R. (1974). The Role of the Drinking Driver in Traffic Accidents (The Grand Rapids Study). Blutalkohol, 11, Supplement 1), and of course the Hurt study, (Hurt, H.H., Jr., Ouellet, J.V., and Thom, D.R. (1981). Motorcycle Accident Cause Factors and Identification of Countermeasures Volume I: Technical Report).

crash scenes, and interviewing motorcyclists at the location of the crash location at the same time of day, same day of week, and same direction of travel. The first of these methods suffers from the shortcoming that a rider or motorist filling his fuel tank is not presented with the same risks, in the same setting, as is the crash-involved rider and motorist. To illustrate, consider a motorcycle rider who is hit from the rear by a passenger vehicle motorist on a Friday at 1 a.m.. There is a reasonable chance that alcohol is involved in this crash, but to estimate the relative risk it will not help to measure the BAC of passenger vehicle motorists (and motorcyclists) at a nearby gas station. Passenger-vehicle motorists and motorcyclists will need to be sampled at the location of the crash on the same day of the week, at the same hour, and from the same travel direction. Even if the suspected risk factor is not alcohol, but some other variable (e.g., distraction associated with cell phone use), it is still highly advantageous to acquire the comparison data at the crash locations (matched on time and direction), rather than somewhere else.

Using the second method mentioned above, acquiring the risk sample by taking video at the crash scenes provides a similarly-at-risk pool, and it also allows for many controls to be acquired at low cost. Its chief disadvantage is that it does not allow capture of some of the key risk factors for crashes (*e.g.*, BAC), while others (*e.g.*, fatigue) may be very difficult to capture. However, some risk factors could be acquired later by contacting the riders and drivers if license tag numbers are recorded, and so this method could be used to supplement the safety zone interview (described below).

The final method, the voluntary safety research interview, involves setting up a safety zone at the crash location, one week later at the same time of day, and asking those drivers and motorcyclists who pass through to volunteer in a study. With this method, Certificates of Confidentiality are presented to each interviewed driver and rider and immunity is provided from arrest. The main advantage of this method is that the key variables that are thought to affect relative crash risk can be acquired from drivers and riders who are truly similarly-at-risk. A final decision on the means of acquiring control data has not been made.

Information Proposed for Collection

The OECD protocol includes the following number of variables for each aspect of the investigation:

Administrative log	28
Accident typology/configuration	9
Environmental factors	35
Motorcycle mechanical factors	146
Motorcycle dynamics	32
Other vehicle mechanical factors	9
Other vehicle dynamics	18
Human factors	51
Personal protective equipment	34
Contributing environmental factors	8
Contributing vehicle factors	13
Contributing motorcycle factors	57
Contributing human factors	50
Contributing overall factors	2

Note that multiple copies of various data forms will be completed as the data on each crash-involved vehicle and person and each control vehicle and person are acquired. This increases the number of variables above the sum of what is presented above. There are also diagrams and photographs that are essential elements of each investigation that are entered into the database. In prior OECD implementations, about 2,000 data elements in total were recorded for each crash.

Estimated Burden Hours for Information Collection

Frequency: This is a one-time study.

Respondents: This study will be based on all crashes occurring within the sampling area; however, this burden estimate is based on what we know about fatal crashes. The plan calls for data to be captured from up to 1200 crashes with motorcycle involvement, and for all surviving crash-involved riders and drivers to be interviewed. Two control riders will be interviewed for each crash-involved motorcyclist, and one rider and one driver will be interviewed for each rider and motorist in multi-vehicle crashes. Passengers accompanying crash-involved riders and passenger-vehicle drivers will also be interviewed. The final crash sample size will depend on the rate at which crashes can be acquired in the selected site(s) and other matters related to logistics and the final budget. However, the study will acquire crashes on a sample size that exceeds the requirements of the OECD methodology, and will be of sufficient size to meet the goals of the study.

The following table shows the sampling plan and estimated number of interviews assuming 1200 crashes are investigated.

A maximum total number of crashes to be investigated is 1200.

Crash Interviews:	
Single vehicle motorcycle crashes =	540
Multi-vehicle (2-vehicle) motorcycle crashes (660*2) =	1320
Passenger interviews motorcycle (.10*540 + .10*660) =	120
Passenger interviews cars (.68*660) =	449
Total Crash Interviews (540 + 1320 + 120 + 449) =	2429
Control interviews:	
Controls for single vehicle motorcycle crashes (2*540) =	1080
Controls for multi-vehicle motorcycle crashes (1*660 + 1*660) =	1320
Passenger Interviews =	0
Total Control Interviews =	2400
Grand Total Crash plus Control Interviews (2429 + 2400) =	4829

Estimated Average Burden per Interviewee: Crash interviews are estimated to require about 25 minutes per individual interviewed. To the extent possible, crash interviews will be collected at the scene, although it is likely that some follow-ups will be needed to get completed interviews from crash involved individuals. Control individuals' interviews will be completed in a single session and are also expected to require about 25 minutes per individual.

Estimated Total Annual Burden Hours: 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. It should be noted that this burden estimate is increased from the estimate appearing in the 60-day notice because a trial interview showed the need for more time to capture all of the OECD required elements.

Electronic Access: Internet users may access all comments received by the U.S. DOT Dockets, Room PL–401, by using the universal resource locator (URL): *http://dms.dot.gov*, 24 hours each day, 365 days each year. Please follow the instructions online for more information and help.

Authority: The Paperwork Reduction Act of 1995; 44 U.S.C. Chapter 35, as amended; and 49 CFR 1.48.

Issued on: February 20, 2007.

James R. Kabel,

Chief, Management Programs and Analysis Division.

[FR Doc. E7–3197 Filed 2–23–07; 8:45 am]

BILLING CODE 4910–22–P

DEPARTMENT OF TRANSPORTATION

Federal Motor Carrier Safety Administration

[Docket No. FMCSA–2007–26653]

Qualification of Drivers; Exemption Applications; Vision

AGENCY: Federal Motor Carrier Safety Administration (FMCSA), DOT.

ACTION: Notice of applications for exemptions; request for comments.

SUMMARY: FMCSA announces receipt of applications from 28 individuals for exemptions from the vision requirement in the Federal Motor Carrier Safety Regulations. If granted, the exemptions would enable these individuals to qualify as drivers of commercial motor vehicles (CMVs) in interstate commerce without meeting the Federal vision standard.

DATES: Comments must be received on or before March 28, 2007.

ADDRESSES: You may submit comments identified by Department of Transportation (DOT) Docket Management System (DMS) Docket Number FMCSA–2006–26653 using any of the following methods:

- *Web Site: http://dmses.dot.gov/submit.* Follow the instructions for submitting comments on the DOT electronic docket site.
- *Fax:* 1–202–493–2251.
- *Mail:* Docket Management Facility; U.S. Department of Transportation, 400 Seventh Street, SW., Nassif Building, Room PL–401, Washington, DC 20590–0001.
- *Hand Delivery:* Room PL–401 on the plaza level of the Nassif Building, 400 Seventh Street, SW., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.
- *Federal eRulemaking Portal:* Go to *http://www.regulations.gov.* Follow the online instructions for submitting comments.

Instructions: All submissions must include the Agency name and docket number for this Notice. Note that all comments received will be posted without change to *http://dms.dot.gov* including any personal information provided. Please see the Privacy Act heading for further information.

Docket: For access to the docket to read background documents or comments received, go to *http://dms.dot.gov* at any time or Room PL–401 on the plaza level of the Nassif Building, 400 Seventh Street, SW., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The DMS is available 24 hours each day, 365 days each year. If you want acknowledgment that we received your comments, please include a self-addressed, stamped envelope or postcard or print the acknowledgement page that appears after submitting comments on-line.

Privacy Act: Anyone may search the electronic form of all comments received into any of our dockets by the name of the individual submitting the comment (or of the person signing the comment, if submitted on behalf of an association, business, labor union, etc.). You may review the DOT's complete Privacy Act Statement in the **Federal Register** published on April 11, 2000 (65 FR 19477; Apr. 11, 2000). This information is also available at *http://dms.dot.gov.*

FOR FURTHER INFORMATION CONTACT: Dr. Mary D. Gunnels, Chief, Physical Qualifications Division, (202) 366–4001, *maggi.gunnels@dot.gov*, FMCSA, Department of Transportation, 400 Seventh Street, SW., Room 8301, Washington, DC 20590–0001. Office hours are from 8:30 a.m. to 5 p.m., Monday through Friday, except Federal holidays.

SUPPLEMENTARY INFORMATION:

Background

Under 49 U.S.C. 31136(e) and 31315, FMCSA may grant an exemption for a 2-year period if it finds "such exemption would likely achieve a level of safety that is equivalent to, or greater than, the level that would be achieved absent such exemption." FMCSA can renew exemptions at the end of each 2-year period. The 28 individuals listed in this notice each have requested an exemption from the vision requirement in 49 CFR 391.41(b)(10), which applies to drivers of CMVs in interstate commerce. Accordingly, the Agency will evaluate the qualifications of each applicant to determine whether granting the exemption will achieve the required level of safety mandated by statute.

Qualifications of Applicants

Michael W. Anderson

Mr. Anderson, age 48, has loss of vision in his left eye due to a retinal detachment in 1998. The best corrected visual acuity in his right eye is 20/20 and in the left, 20/400. Following an examination in 2006, his ophthalmologist noted, "In my opinion, Mr. Anderson's vision is stable and is probably sufficient for driving tasks required to operate a commercial vehicle." Mr. Anderson reported that he has driven straight trucks for 25 years, accumulating 715,000 miles. He holds a Class A Commercial Driver's License (CDL) from New Mexico. His driving record for the last 3 years shows no crashes and no convictions for moving violations in a CMV.

Manassah E. Baker

Mr. Baker, 54, has a prosthetic right eye due to a traumatic injury sustained as a child. The visual acuity in his left eye is 20/20. Following an examination in 2006, his ophthalmologist noted, "In my medical opinion, he has sufficient vision to perform the driving tasks required to operate a commercial vehicle." Mr. Baker reported that he has driven straight trucks for 2 years, accumulating 50,000 miles, and tractor-trailer combinations for 20 years, accumulating 2.1 million miles. He holds a Class A CDL from Florida. His driving record for the last 3 years shows no crashes and no convictions for moving violations in a CMV.

Thomas H. Barnhart, Jr.

Mr. Barnhart, 59, has a corneal scar in his right eye due to a traumatic injury. The best corrected visual acuity in his right eye is 20/50 and in the left, 20/20. Following an examination in 2006, his optometrist noted, "Mr. Barnhart appears to have sufficient visual acuity and visual fields to operate a commercial vehicle." Mr. Barnhart reported that he has driven straight trucks for 40 years, accumulating 4 million miles, tractor-trailer

Attachment 5

Issues Form

ISSUES FORM

Issue Number _____ Date: _____

Source: Training Material

Data Form

Coding Manual

Database

Problem: _____
_____
_____
_____
_____
_____

Recommended Solution: _____
_____
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_____
_____

Resolution and Date: _____
_____
_____
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_____

Attachment 6

Training Syllabus

Motorcycle Pilot Study
Training Syllabus

Contents

Contents
(Continued)

Training and instruction will cover the following topics:

Principles of crash investigation

Legal aspects of crash investigation

- Related government agencies, data sources
- Authorities and jurisdictions
- Legal status of the investigator, cooperation with the authorities
- Liability, negligence, privacy, personal contacts
- Qualification of evidence, care of evidence, spoliation of evidence
- Attorney work product and research privilege
- Response to subpoenas

Cooperative agreements and procedures

- Notification and response procedures
- Transport and traffic safety procedures
- Initial on-scene procedures
- Cooperation of law enforcement and rescue ambulance
- Documentation at scene, data requirements
- Photography, metrication, records preparation
- Identification of key personnel, coordination for traffic accident report, medical transport
- Planning for follow-up requirements
- Crash scene completion activities

Multidisciplinary crash investigation

- The traffic safety matrix
- Human, vehicle, environment factors
- Pre-crash, crash, and post-crash phases of a crash
- Technical, medical, and environmental approaches to multidisciplinary crash investigation
- Beneficial interaction of disciplines
- Contributing factors and identification of over and under represented factors
- Multidisciplinary team operation
- Team interaction if field operation
- Team interaction in crash analysis
- Data collection and preparation
- Multidisciplinary crash reconstruction and injury analysis

Dynamics and chronology (crash envelope)

Sequence of events

- Pre-crash, crash, and post-crash events
- Precipitating event
- Sequence of events
- Crash contributing analysis

Reconstruction (time, distance and velocity)

- Sequence from the precipitating event to collision
- Sequence from collision contact to departure
- Sequence from departure to final rest
- Analysis of space and time throughout crash events
- Methods to validate of initial speeds and control actions

Applications in reconstruction of motorcycle crashes

- Collision contact reconstruction
- Single vehicle crashes
- Car-motorcycle collisions
- Trajectory analysis, falls, slides, vaults
- Conservation of momentum
- Accounting of energy, restitution

Deformation and damage analysis

- Mechanical behavior of materials
- Effects of environment
- Metals, plastic, composites
- Priority of damage, reconstruction sequence

Collisions and crash dynamics

Analysis of crash phase motions

- Trajectories, speeds and energy distribution
- Vehicle analysis
- Rider and passenger analysis

Defect analysis and investigation

- Ductile and brittle failure modes
- Overstress mechanical failure
- Fatigue, corrosion, creep
- Macroscopic examination of potential defect

Motorcycle dynamics and vehicle response

Motorcycle equilibrium conditions

- Single-track vehicles
- Steady and accelerated motion
- Rider-active contribution

Normal, side force cornering and traction requirements

- Road friction
- Cornering forces
- Traction requirements
- Slip angles

Anatomy of a turn

- Transient and steady-state conditions
- Counter steering
- Indicial response, recovery
- Human performance in collision avoidance
- Undercornering, running wide on a turn
- Limits of cornering

Acceleration and braking performance

- Representative motorcycles for acceleration and braking performance
- Front and rear wheel normal force distribution
- Limits of braking and acceleration
- Rider control errors in collision avoidance action
- Analysis of speeds from skid and scrape marks
- Compound crash impact and ski/scrape evidence

Tire Characteristics

- Camber and cornering stiffness
- Slip ratio and traction force
- Combination cornering and traction force
- Friction circle

Longitudinal motions

- Pitch-plunge
- Suspension performance and longitudinal motions
- Passenger and cargo/parcel effects
- Two-stroke surge
- Wheelies, lost wheelies, stoppies, and end-overs
- Power and brake effects
- Dip and pothole encounters

Lateral and directional motions

- Lateral-directional dynamics
- Capsize, wobble, and weave modes
- Slide-out
- Low-side or high-side falls
- Pitch-weave, roadway effects upon lateral directional motions
- Limits of cornering, stability effects
- Loading effects

Applications to accident reconstruction

- Effect of vehicle characteristics
- Defect related areas, tire run-flat performance
- Effects of rider experience, roadway conditions
- Collision avoidance performance, loss of control
- Performance of motorcycles, control failures
- Analysis of accident events, speed computation

Photography (scene and vehicles)

Photographic methods

- Principals of crash photography
- Techniques of evidence recording
- Photographic techniques, camera selection
- Field practice and critique
- Lighting problems, flash, flash-fill, auxiliary flash-flood fill

Photography protocol guideline

- Pre-crash trajectory and environment
- Capturing pre-crash physical evidence
- Capturing the area of the point of impact and secondary impacts
- Final rest position, vehicles, scuff marks, and fluid spills
- Look-back views
- Required motorcycle photographic positions
- Macro-photography of damaged components and injury mechanisms
- Required photographic positions for the other vehicle

Vehicle fires and explosions

Fires and explosions

- Ignition sources
- Combustible mixtures
- Flame propagation
- Circulation and draft effects

Fire and explosion evidence, fuel fires

- Fuel spill sources
- Evidence of fire origin, ignition sources
- Thermal damage mechanisms
- Soot patterns, circulation effects
- Metal, paint, plastics, tissue

Collection and analysis of interview information

Principals and techniques of interviewing

- Principals of human information processing
- Attention, perception, decision, response, feedback
- Short-term sensory store, working memory, long term memory
- Attention, perception effects- errors of perception and orientation related to crash events
- Long term memory, experience effects
- Contamination from others, confabulation, deterioration
- Decay, reconstruction, and self contamination
- Interrogation effects, contribution of the interviewer
- Interaction between interviewer and interviewee
- Control of the interview, presence of others
- Use of photographs, models, visual aids during the interview process
- Strategy of interviews, timing, on-scene, post-crash, authority for information, notes, audio or video recording, sworn testimony, certification
- Interviewer attitude and demeanor

Validation of interview information

- Errors of interview information
- Correlation with physical evidence, other interviewees
- Correlation with interviewee background
- Evaluation of interview quality, recall of crash events, reconstruction, and confabulation effects
- Cooperative and uncooperative interviewees
- Use of cooperating law enforcement, employers, family

- Failed interviews, retry of interviews
- Interviewee and witness accuracy issue

Human factors analysis

Collection of field BAC data

- Obtaining consent for breath sample
- Use of the portable breath alcohol tester
- Dealing with impaired riders

Determination of psychological factors in crashes

- Principals in human behavior
- Perception, orientation, decision, and reaction
- Attention, perception, reaction-Broadbent model
- Analysis of human error in crashes, risk taking

Determination of physiological factors in crashes, human performance in traffic tasks

- Human physiology, human performance in traffic tasks
- Vision, detection, visual deficits
- Hearing detection, hearing deficits, environmental effects
- Human information processing
- Response performance, reaction time
- Human anatomy, tolerance limits
- Evaluation of injuries, autopsy protocol
- Physiological effects of and testing and examination for alcohol and drug involvement

Human factors in motorcycle crashes

Visual factors

- Collision geometry
- Angular motion sensing, motion-in-depth sensing
- Conspicuity, contrast effects, motion effects
- Traffic strategy , obstruction of vision
- Protection of vision, eye protection, wind blast
- Attention problems
- Other vehicle driver experience
- Other vehicle driver culpability

Motorcycle control factors

- Traffic strategy
- Collision avoidance skills
- Decision skills and effect of training
- Reaction times and effect of experience
- Counter steering and failed collision avoidance, habit pattern interference
- Braking and failed collision avoidance
- Rear brake overuse
- Front brake underuse, prepositioning
- Panic effects and effects of experience, training
- Loss of control and failed collision avoidance
- Alcohol and drug effects

Protection problems

- Common lower extremities injuries
- Typical integument injuries
- Pelvic-urogenital injuries
- Head protection
- Facial injury and head protection
- Potentiating effects of alcohol involvement

Vehicle systems technology

Electrical systems and components

- Ignition
- Lights, accessories
- Controls, switches, fusing, failure analysis
- Incandescent lamp damage analysis
- Lamp filament ductile and brittle damage evidence
- Oxidation effects
- Glass fragment fusing

Suspension systems

- Forks, shock absorbers
- Seals, failure and damage evaluation
- Suspension system degradation and wear
- Steering head bearings, pivot bearings, and seals
- Frame and swing arm structures, lever geometry, frame integrity
- Failure and damage evaluation
- Side and center stand ground contact
- Fixed and pivoting foot pegs

Engines and Transmissions

- Lubrication
- Clutch, gears, shifters, controls
- Shafts and bearings
- Cable and hydraulic controls
- Chains and sprockets, shaft drives
- Failure and malfunction analysis, relation to crash events

Fuel Systems

- Carburetors
- Fuel injection
- Fuel pumps, lines and valves
- Contamination effects
- Tank integrity
- Crash fires, fire analysis
- Documentation of evidence

Wheels and Brakes

- Wire spokes and solid cast wheels
- Bearings and axles, hubs, axle fixing, stay configuration
- Drum brakes
- Disc brakes
- Interconnected front and rear brakes
- Mechanical and hydraulic brake systems
- ABS
- Wheel and brake examination procedures
- Determination of pre-crash performance of wheels and brakes
- Failure and malfunction analysis

Tires and Tubes

- Rubber technology
- Tire and tube construction
- Tubeless and tube types
- Valves and cap seals
- Mechanical and performance characteristics
- Road friction characteristics
    - -dry, wet contaminated surfaces
    - -dynamic, viscous, and reverted rubber hydroplaning
    - -skid marks and skid striations
    - -braking, acceleration, and cornering contact conditions
    - -tire wear patterns
    - -analysis of accident events, correlation dynamic analysis
    - -failure analysis, documentation

Motorcycle defect investigation analysis

- Maintenance problem analysis
- Defect evaluation, documentation
- Street, dual purpose/enduro, sport/racer design, cruiser, chopper, scooter, moped, mofa, off-road/ motocross
- Past case studies

Motorcycle crash injury mechanisms

Motorcycle-fixed object collision dynamics

- Initial contact
- Motorcycle upright, down sliding, or tumbling
- Inertial response of rider and passenger
- Typical contact conditions

Motorcycle-other vehicle collision dynamics

- Initial contact
- Contribution of relative motion in motorcycle-moving object collision
- Motorcycle striking other vehicle
- Other vehicle striking motorcycle
- Rider and passenger dynamics, kinematics from collision
- Reconstruction, fall analysis, trajectory analysis

Collision contact conditions

- Rider and passenger kinematics
- Crash evidence
- Motorcycle-car truck-environment injury agents
- Matching contact points and kinematics, continuity of contact

Anatomy and motorcycle crash injury mechanisms

- Review of human anatomy
- Injury physiology associated with motorcycle accidents
- Integument injuries
- Soft tissue injuries
- Injury patterns due to frontal impacts, side impacts and rear impacts
- Abrasion injuries, integument protection
- Impact penetration
- Lacerative injuries
- Contact contusion injuries
- Fractures-closed and open, compound, comminuted
- Dislocations
- Burns, protection performance
- Motorcycle accident injury mechanisms and protection technology

-contact isolation
-penetration resistance
-energy absorption
-contact versus inertial injury
-thermal protection, thermal barrier, and heat sink
-extremities injuries
-somatic injuries
-head, face and neck injuries

- Head injury mechanisms
- AIS2005 coding conventions

Human subjects and confidentiality

Human subjects training and certification

Data confidentiality and protection

Attachment 7

Administration Form

Administration Form

Incident Number _____
(sequential)

1. Incident sampling qualification decision _____
OECD A.1.14
(1) no
(2) yes
(8) other

2. Case number (if incident becomes a case)

_____

3. Notification date (mm/dd/yyyy)

____ ____/____ ____/____ ____ ____ ____

4. Notification time (military time)

____ ____ : ____ ____

5. Notifying agency OECD A.1.1

_____

_____

6. Location OECD A.1.2

_____

_____

_____

_____

7. Crash date OECD A.1.5

____ ____/____ ____/____ ____ ____ ____

8. Crash time OECD A.1.4

____ ____ : ____ ____

9. Crash description OECD A.1.3

_____

_____

_____

_____

10. Scene departure date

____ ____/____ ____/____ ____ ____ ____

11. Scene departure time

____ ____ : ____ ____

12. Responding team members

A.1.10.1 _____

A.1.10.2 _____

A.1.10.3 _____

A.1.10.4 _____

13. Scene arrival date

____ ____/____ ____/____ ____ ____ ____

14. Scene arrival time

____ ____ : ____ ____

15. Date PAR obtained

____ ____/____ ____/____ ____ ____ ____

16. Case notes (memo field)

_____

_____

_____

_____

_____

_____

_____

_____

17. MC inspection date

____ ____ / ____ ____ / ____ ____ ____ ____

18. OV inspection date (CODE ALL 9S FOR N/A)

____ ____ / ____ ____ / ____ ____ ____ ____

19. MC Rider interview date (CODE ALL 9S FOR N/A)

____ ____ / ____ ____ / ____ ____ ____ ____

19a. Reason for no MC Rider interview
(CODE N/A IF INTERVIEW OBTAINED)

_____

_____

20. MC Passenger interview date (CODE ALL 9S FOR N/A)

____ ____ / ____ ____ / ____ ____ ____ ____

20a. Reason for no MC Passenger interview
(CODE N/A IF INTERVIEW OBTAINED)

_____

_____

21. OV Driver interview date (CODE ALL 9S FOR N/A)

____ ____ / ____ ____ / ____ ____ ____ ____

21a. Reason for no OV Driver interview
(CODE N/A IF INTERVIEW OBTAINED)

_____

_____

22. Date medical records requested

____ ____ / ____ ____ / ____ ____ ____ ____

23. Date medical records received
(CODE ALL 9S FOR N/A)

____ ____ / ____ ____ / ____ ____ ____ ____

23a. Reason no medical records obtained
(CODE N/A IF INTERVIEW OBTAINED)

_____

_____

24. Cost of medical records $ ____ , ____ ____ ____

25. Cost of police reports/photos

$ ____ , ____ ____ ____

26. Cost of miscellaneous case-related items

$ ____ , ____ ____ ____

27. Date control data collection initiated

____ ____ / ____ ____ / ____ ____ ____ ____

28.Time control data collection initiated

____ ____ : ____ ____

29. Time control data collection ended

____ ____ : ____ ____

30. Number of eligible motorcycles that passed data collection location ____ ____ ____

31. Number of motorcyclists who stopped ____ ____ ____

32. Number of motorcyclists who refused to participate ____ ____ ____

33. Exposure Case 1

Type: signage, gas station, video

_____

_____

_____

Date ____ ____ / ____ ____ / ____ ____ ____ ____

34. Exposure Case 2

Type: signage, gas station, video

_____

_____

_____

Date ____ ____ / ____ ____ / ____ ____ ____ ____

35. Data collection completed date

____ ____ / ____ ____ / ____ ____ ____ ____

36. Submitted for case review

____ ____ / ____ ____ / ____ ____ ____ ____

37. Case review completed date

____ ____ / ____ ____ / ____ ____ ____ ____

38. Database entry date

____ ____ / ____ ____ / ____ ____ ____ ____

39. Total hours for crash investigation related tasks ____ ____ ____

40. Total hours for control data related tasks ____ ____ ____

41. Case dropped

_____ **Yes**

_____ **No**

42. Reason Case Dropped

_____

_____

_____

_____

_____

_____

_____

_____

Attachment 8

Consent Form – Crash Involved Subject

Crash Investigation Group
Informed Consent

Purpose of Research: Thank you for volunteering to participate in this study. This study provides an opportunity to examine the many factors that can lead to motorcycle-related crashes and affect the severity of the injury outcome. This research is funded by the U.S. Department of Transportation, National Highway Traffic Safety Administration (NHTSA) and is supported by the motorcycle industry.

Research Procedures: Trained researchers will collect data on police-reported, motorcycle-involved crashes. Information will be collected for each rider, passenger and driver of involved vehicles, along with vehicle and environmental characteristics. Data include interviews, examinations of vehicle condition, and measurement and diagrams of environmental characteristics and photographs of vehicle and scene information. Researchers will also ask for information regarding specific injuries sustained by crash victims. We are including your crash as part of the study so that the survey will cover all crash types and severities.

We would like to ask you a series of questions about the crash circumstances, your current health status, and your riding/driving experience. The information may be audio recorded so that we can ensure that your responses are encoded accurately. All information will be kept confidential, and you can refuse to answer any question. The entire interview will last approximately 45 minutes. We also may need your permission to examine and document the damage to your vehicle. You will also be provided with a consent form that we can submit to the hospital in order to obtain specific information about your injuries (if applicable).

Foreseeable Risk: All data will be collected from a safe location and at your convenience. No personal identifiers are included in our forms, and all information is used for statistical purposes by the federal government.

Benefits of the Research: The number and severity of motorcycle crashes has risen greatly in recent years. There has been no comprehensive study of motorcycle crash causation for more than 30 years. Our objective is just to gain some insight into the causes of such crashes, and what can be done to prevent them or reduce their severity. The federal government may eventually use this information when making rules, or developing strategies and design changes to improve motorcyclist safety.

Confidentiality: We will be asking you for some basic descriptive information about yourself. This includes your age and certain questions about physical status and health. We will also ask about your riding/driving experience and the circumstances leading to this crash. This information is confidential, and no published reports of the research will identify any participants. Likewise, all information collected during the study is confidential and will not be presented in any form that identifies individuals. Your crash will be assigned a case number and all identifying information will be separated from the data you provide.

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Any data or documents containing personal identifiers, such as your name, address, and phone number, that we have obtained from Police Accident Reports or other related official records, along with any audio recording, will be kept in secure storage and will be destroyed at the end of this project.

To help us protect your privacy, we have obtained a Certificate of Confidentiality from the National Institutes of Health. With this Certificate, the researchers cannot be forced to disclose information that may identify you, even by court subpoena, in any federal, state, or local civil, criminal, administrative, legislative, or other proceedings.

You should understand that a Certificate of Confidentiality does not prevent you or a member of your family from voluntarily releasing information about yourself or your involvement in this research. If an insurer, employer, or other person obtains your written consent to receive research information, then the researchers may not use the certificate to withhold that information, but any such request would be immediately referred to our sponsors at the NHTSA.

At no time will the researchers voluntarily disclose information collected in this study.

Voluntary Withdrawal from the Survey: Your cooperation in this study is entirely voluntary. Refusal to participate will involve no penalty. You may discontinue participation at any time.

Contact Person: If you have any questions about the research program, contact [redacted], Project Director, [redacted telephone number]. He can be reached at DSI, 299 W. Cerritos Avenue, Anaheim, California. 92805. If you have questions about the rights of research participants contact [redacted name and telephone number]. She can be reached at Westat, 1650 Research Blvd., Rockville Maryland 20850.

Authorization: By signing this form you certify that you understand that your participation in this study is voluntary and that you consent to be interviewed and allow access to your vehicle for inspection.

I have read (or heard) the above information and recognize the risks of this study. I agree to be a participant in the research. I understand that participation is voluntary and I may withdraw from the study at any time.

Participant: _____ Date:_____

Investigator: _____Date:_____

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Attachment 9

Consent Form – Control Subject

Control Group
Informed Consent

Purpose of Research: Thank you for volunteering to participate in this study. This study provides an opportunity to examine the many factors that can lead to motorcycle-related crashes and affect the severity of the injury outcome. This research is funded by the US Department of Transportation, National Highway Traffic Safety Administration (NHTSA), and is supported by the motorcycle industry.

Research Procedures: Trained researchers will collect data on traveling motorcyclists to compare the information with that from riders involved in police-reported, motorcycle-involved crashes. Information will be collected for each randomly selected rider and passenger, along with vehicle and characteristics. Data include interviews and examinations of vehicle condition.

We would like to ask you a series of questions about your current trip, your health status, and your riding/driving experience. All information will be kept confidential, and you can refuse to answer any question. We may audio record the interview to ensure that the information you provide is encoded correctly. The entire interview will last approximately 25 minutes. We also need your permission to examine and document the characteristics of your vehicle. You will receive a $20 gas card to thank you for your participation.

Foreseeable Risk: All data will be collected from a safe location and at your convenience. No personal identifiers are included in our forms, and all information is used for statistical purposes by the federal government.

Benefits of the Research: The number and severity of motorcycle crashes has risen greatly in recent years. There has been no comprehensive study of motorcycle crash causation for more than 30 years. Our objective is just to gain some insight into the causes of such crashes, and what can be done to prevent them or reduce their severity. The federal government may eventually use this information when making rules, or developing strategies and design changes to improve motorcyclist safety.

Confidentiality: We will be asking you for some basic descriptive information about yourself. This includes your age and certain questions about physical status and health. We will also ask about your riding/driving experience and your current trip. This information is confidential, and no published reports of the research will identify any participants. Likewise, all information collected during the study is confidential and will not be presented in any form that identifies individuals. All data will be protected; your information will be assigned a number and no identifying information will be collected about you or your motorcycle.

All documents collected in this survey, including any audio recordings, will be kept in secure storage and will be destroyed at the end of this project. Information entered into a database will not include any personal identifiers and will only be used for statistical purposes.

To help us protect your privacy, we have obtained a Certificate of Confidentiality from the National Institutes of Health. With this Certificate, the researchers cannot be forced to disclose information that may identify you, even by court subpoena, in any federal, state, or local civil, criminal, administrative, legislative, or other proceedings.

You should understand that a Certificate of Confidentiality does not prevent you or a member of your family from voluntarily releasing information about yourself or your involvement in this research. If an insurer, employer, or other person obtains your written consent to receive research information, then the researchers may not use the certificate to withhold that information, but any such request would be immediately referred to our sponsors at the NHTSA.

At no time will the researchers voluntarily disclose information collected in this study.

Voluntary Withdrawal from the Survey: Your cooperation in this study is entirely voluntary. Refusal to participate will involve no penalty. You may discontinue participation at any time.

Contact Person: If you have any questions about the research program, please contact [redacted name and telephone number]. He can be reached at DSI, 299 W. Cerritos Avenue, Anaheim, California 92805. If you have questions about the rights of research participants contact [redacted name and telephone number]. She can be reached at Westat, 1650 Research Blvd., Rockville Maryland 20850.

Authorization: By signing this form you certify that you understand that your participation in this study is voluntary and that you consent to be interviewed and allow access to your vehicle for inspection.

I have read (or heard) the above information and recognize the risks of this study. I agree to be a participant in the research. I understand that participation is voluntary and I may withdraw from the study at any time.

Participant: _____ Date:_____

Investigator: _____Date:_____

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Attachment 10

Parental Consent Form

Crash Group
Parent/Guardian Consent Form

OMB NO.: 2125-0619

Crash Involved Subject's Name: _____

Case Number: _____

Research Project Title: Pilot Study – Motorcycle Crash Causes and Outcomes

Organization: Dynamic Science for U.S. Department of Transportation (USDOT)

Project Manager: James Perry

Project Research Dates: September 2008 to October 2009

The U.S. Department of Transportation is sponsoring a study called the Pilot Test – Motorcycle Crash Causes and Outcomes to help identify the causes of motorcycle crashes and related injuries. The government will use the study to help develop safety programs to reduce the number and severity of such crashes. All data is confidential. No names or other personal identifiers are entered into any system of records. This information will not be shared with the police department or anyone else involved in this crash.

Motorcycle operators of all ages who are involved in crashes will be asked to be part of this study and we would like your permission to ask your child to be in the study. If you and your child agree, he/she will spend about 45 minutes answering questions. Youth will be asked questions about their rider training and experience and their health status. They will also be asked questions about alcohol and drug use prior to this crash. No one will receive payment for participating in the study.

Your child does not have to do the survey. It is entirely up to you whether we can interview your child, and then it is up to your child. If your child agrees to do the survey, he can stop answering questions at any point. If there is a question that your child does not want to answer, he/she can skip it.

To help us protect privacy, we have obtained a Certificate of Confidentiality from the National Institutes of Health. With this Certificate, the researchers cannot be forced to disclose information that may identify you or your child, even by court subpoena, in any federal, state, or local civil, criminal, administrative, legislative, or other proceedings.

You should understand that a Certificate of Confidentiality does not prevent you or a member of your family from voluntarily releasing information about yourself or your involvement in this research. If an insurer, employer, or other person obtains your written consent to receive research information, then the researchers may not use the certificate to withhold that information, but any such request would be immediately referred to our sponsors at the USDOT. At no time will the researchers voluntarily disclose information collected in this study.

We will do everything we can to protect your child's privacy. To help keep everything private:

- The researcher who meets with your child will not ask for your child's name.
- All the answers will be confidential – that is, no one will know your child's answers.
- All of the researchers working on this study have signed a legal certificate saying that they will protect your child's privacy and not to tell anyone anything that he/she has said. The researchers have to obey all of the state and federal laws and regulations regarding confidentiality and the family's right to privacy.

If you have any questions about the study, you can call the Project Manager, [redacted name and telephone number]. If you have questions about your child's rights as a study participant, you can call [redacted name and telephone number].

Please indicate your choice by checking one of the boxes below and signing and dating the form.

☐ **Yes**, I give my permission for you to ask my child to take part in this study.

☐ **No**, I do not give you permission to ask my child to take part in this study.

_____ _____

Your signature Date

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Attachment 11

Youth Assent Form

Youth Assent Script for Crashes

Thank you for volunteering to participate in this study.

I work for a research firm named Dynamic Science and we are doing a study for the U.S. Department of Transportation to better understand the causes of motorcycle crashes and injuries. The study is called the Pilot Study – Motorcycle Crash Causes and Outcomes.

This study provides an opportunity to examine the many factors that can lead to motorcycle-related crashes and affect the severity of the injury outcome.

Trained researchers will collect data on police-reported, motorcycle-involved crashes. Information will be collected for each rider, passenger and driver of involved vehicles, along with vehicle and environmental characteristics. Data include interviews, examinations of vehicle condition, and measurement and diagrams of environmental characteristics and photographs of vehicle and scene information. Researchers will also ask for information regarding specific injuries sustained by crash victims. We are including your crash as part of the study so that the survey will cover all crash types and severities.

With your parent's permission, we would like to ask you a series of questions about the crash circumstances, your current health status, and your riding/driving experience. The information may be audio recorded so that we can ensure that your responses are encoded accurately. All information will be kept confidential, and you can refuse to answer any question.

The government will use the study to develop better safety programs, or improve the design of vehicles to reduce the number of motorcycle crashes. We will combine the answers that people give into one report. No names will appear in the report and it won't say anything about who said what. You will not be paid for participating in the study.

We're asking people involved in motorcycle crashes to be part of this study and we would like you to be part of the study. If you agree to be part of the study, you'll answer some questions and allow us to examine your motorcycle.

- Answering the questions takes about 45 minutes.
- You will be asked questions about your riding habits and experience, driver training, and health status.
- You will be asked questions about alcohol and drug use before you rode today.
- You do not have to answer every question, and can stop the interview at any time.

Before I go on, let me make sure that what I'm telling you makes sense. Based on what I've said so far…

1. Do you think I will be recording identifying information about you?

   Yes ☐
   No ☐

2. Do you think this study is about motorcycle safety?

   Yes ☐
   No ☐

3. Do you believe that anyone will be able to identify you from the data that is recorded?

   Yes ☐
   No ☐

Ok, that's good. Is it ok if we keep going?

- You don't have to do this study. It's entirely up to you. You can start the interview and then decide to quit at any time. Just tell me that you want to stop and I'll tell you what to do. If you want to skip a question, that's ok too.

4. Now, if someone asked you whether you had to do the interview or whether it was voluntary, what would you say?

   Had to do it. ☐
   I didn't have to do it/ it was voluntary. ☐

And these paragraphs are very important.

- **Everyone working on this project is required by law to protect your privacy.** Your answers will always be kept private. We have to obey all of the state and federal laws and regulations regarding confidentiality and your right to privacy.

If you have any questions, you can ask me anytime while I'm here. After I leave,

- If you have any questions about your rights as a study participant, you can call [redacted name and telephone number]. She works for Westat, which is responsible for this study.

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- If you have questions about how the study works, call [redacted name and telephone number]. He works for the same company that I do.

So that's it. I hope that you'll be willing to take part in this important study. Your answers will help us understand the factors that can contribute to motorcycle crashes and injuries.

Are you willing to be part of this study?

YES	☐
NO	☐

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Attachment 12

Dynamic Science, Inc.’s Data Confidentiality and Security Policy

DSI Data Confidentiality and Security Policy

The collection of personal information is a necessary component of any crash investigation. For the Motorcycle Pilot Study, personal information will be obtained from police crash reports, medical records, and interviews with involved parties. Personal information will generally include names, addresses, phone numbers, crash locations, specific dates, and so on. The confidentiality of the data collected by DSI investigators has the highest priority. The corporate general policy for the treatment of confidentiality of information is described in DSI's Operating Policies and Procedures Manual in the section entitled Confidentiality of Information (See Attachment 1).

A working case will be comprised of the personal information necessary to conduct an investigation and data forms that will be used to populate the pilot study database. The data forms do not contain any personal identifiers and no personal identifiers are included in the database. The deliverable product to the government is the database. Each working case will have a unique case number.

When not in use, working case materials will be stored in a locked file cabinet in DSI's Anaheim facility. The file cabinet will be set aside for this specific project and will be accessible only to project staff.

It is necessary for investigators to have access to the working case materials. Cases will be checked out on an as-needed basis. The checkout sheet will have columns for the case number, investigator initials, check out date/time, and check in date/time.

Checked out case materials will be the responsibility of the investigator who checked out the materials. The material will be in his/her physical possession and it is his/her responsibility to keep materials safeguarded at all times. Materials checked out overnight, will be stored in a cabinet or other container secured with a locking device. Materials taken into the field will be secured in the trunk of the vehicle.

Special efforts and procedures will be put in place to handle medical data. It is anticipated that medical data will generally be obtained through signed medical releases. Upon receiving a signed medical release, a letter request will be made to the involved hospital. The request will include the patient name, date of the crash, and possibly the crash location. A medical request log will be used to track medical requests and to associate the requests to the case. The request log and any medical request correspondence will be kept in locked file cabinet. These materials will not be part of the working case materials and will only be accessible by the project staff member who is responsible for making the requests.

Medical Request Log:

Patient Name	Case Number	Request Date	Hospital/ME	Date obtained

Data Destruction

After a case is completed it will go into Quality Control. After the Quality Control effort has been completed, all the case materials will be shredded by project staff. The data destruction process will be a formalized and structured effort. A checklist will be used to ensure that all materials are destroyed. The checklist will include the case number, the date, the person who destroyed the data, and a witness to the data destruction (management). DSI will use a commercial service that provides secure and bonded document and media (CDs, tapes, etc.) destruction.

Data Destruction Checklist

Case Number:

Destruction Date:

Destroyed by:

Verified by:

- Police Report
- Audio Tapes
- Medical Records
- Field Notes
- Interview notes (interview and contact effort)
- News articles
- Data Forms

Corporate Promise of Confidentiality:
Pilot Study--Motorcycle Crash Causes and Outcomes

Dynamic Science, Inc. (DSI) is committed to successfully meeting its contractual obligations in a disciplined and confidential basis. We place great importance on protecting the rights of our employees, customers, and those parties who are subject to our investigations and research. As such, we promise to maintain the highest standards of confidentiality as we complete the duties and responsibilities for the Pilot Study--Motorcycle Crash Causes and Outcomes.

We understand and acknowledge that we will be obtaining some basic descriptive information about the parties in the study, to include age, physical status and health, riding/driving experience, and the circumstances leading to the crash. This information is confidential, and no published reports of the research will identify any participants. Each crash incident will be assigned a case number and all identifying information will be separated from the individual's data. At no time will our researchers voluntarily disclose information collected in this study.

Over the years, DSI has conducted numerous studies of a similar nature that involved the need to obtain and protect confidential data. For nearly 20 years, DSI has conducted crash investigations under the Special Crash Investigations (SCI) program for the National Highway Traffic Safety Administration. Investigators routinely obtain police reports, medical records, photograph vehicles and crash scenes, and interview involved parties. In the recent past, DSI was involved in on-scene investigations involving passenger rail car crashes. The main focus of the study was relating injuries to injury sources. Interviews were conducted on a regular basis. DSI also conducts investigations under contract to a major automobile manufacturer. For each of these studies, DSI has been committed to maintaining personal confidentiality. For example, there are procedures in place to protect hard copy case materials, such as filing the cases in locked cabinets in secure offices. The computers used for the SCI project, as another example, do not have access to the internet and are password protected at the boot, logon, and the program initiation levels. It is our standard practice to treat all collected data as confidential and to never share data with any party outside of a given project.

Our corporate guidelines for addressing confidential information are outlined in Dynamic Science, Inc. Operating Policies and Procedures, No. Admin-1015, Confidentiality of Information. An excerpt with the applicable policy directives is provided below:

"Safeguarding Confidential Information

The primary responsibility for safeguarding confidential or proprietary information rests with management. Supervisors/managers at every level of DSI and other responsible DSI employees are expected to:

- Identify confidential information and materials and instruct their employees in the handling of such information and materials.
- Ensure that confidential information and materials are kept in safe and secure places and accessible only to those whose work requires them to access it. Paper records should be kept in secured cabinets.

- Ensure that confidential information is properly packaged prior to transmittal. This includes encryption when electronic data is being transmitted.
- Ensure that recipients have a legitimate need to know.
- Limit reproduction and distribution of sensitive information to what is absolutely necessary.
- Ensure that proprietary information is properly identified and marked. This includes display screens in computer systems.
- Ensure that computerized records have limited user access and computer display screens should be positioned so that only authorized users can view the data. Such users are responsible for securing their computers when they are left unattended.
- Destroy by shredding any proprietary information that is in excess of requirements or no longer needed.
- Ensure that employees who are hired into positions that require the handling of confidential information are required to keep such information safeguarded and not to disclose it, except as permitted or required in the course of their job duties.
- Ensure that inquires from the news media regarding DSI are immediately be referred to the DSI President.
- Ensure that inquiries from competitors regarding employees or DSI practices are immediately referred to the DSI President.
- Ensure that inquires from attorneys should immediately be referred to the Exodyne, Inc. Chief Financial Officer or Corporate Human Resources Director.
- Ensure that inquires from other outside agencies regarding DSI should be referred to the Exodyne, Inc. Chief Financial Officer or Corporate Human Resources Director. Such agencies include, but are not limited to:
  - Government agencies such as the FBI, Social Security Administration, Equal Employment Commission, National Labor Relations Board, Department of Health and Human Services, Office of Civil Rights, or Office of Inspector General.
  - Police.
  - Credit bureaus or lending agencies.
- Review these procedures regularly with all employees who are involved in the handling or securing of proprietary information.
- Remind employees that their office, computers, desks, cases, and personal belongings are subject to inspection to ensure confidential information is not removed from DSI property without authorization.

Storage

When not in use or in transit, proprietary information should be stored in a cabinet or other container secured with a locking device. The combination or key should be similarly safeguarded, and kept in a locked desk or file cabinet as a convenience for daily access. Any willful, intentional, or unauthorized disclosure of proprietary information will be considered sufficient cause for disciplinary action, up to and including termination."

BRUCE E. BURDA
Brigadier General (Retired), USAF
President

Purpose

To identify information considered to be confidential and to establish guidelines on the treatment and disclosure of confidential information.

Scope

All Employment Classifications

Definitions

Business Confidential refers to information of an impersonal nature, the disclosure of which would be detrimental to company interests.

Personal and Confidential refers to information of a personal nature and certain types of business information that must be controlled on a strict need-to-know basis.

Legal Confidential refers to any communication requesting or furnishing legal opinion, analysis, or advice.

To Be Opened by Addressee Only refers to a marking on an envelope or package containing confidential information, indicating it is to be opened only by the person to whom it is addressed or by the person designated to act in his absence.

Authorized Persons are individuals who have been authorized to receive Business Confidential, Personal and Confidential, or Legal Confidential information.

Need to Know refers to any individual to whom proprietary information must be disclosed in the performance of his regular duties.

Policy

Employees shall not engage in private discussion of or otherwise disclose to third parties information regarding Dynamic Science, Inc. (DSI) matters (except when engaged in the conduct of the proper business of DSI). All information that is not a matter of public record, or not otherwise authorized by the appropriate authority to be disclosed as public, shall be considered confidential.

Procedure

The protection of confidential business information and trade secrets is vital to the interests and success of DSI. Confidential information is any and all information disclosed to or known by an employee as a consequence of his employment with DSI that is not generally known to people outside DSI. This includes its business, marketing and sales strategies and plans, finances, operations, employees, methods, processes, compositions, computer software programs, research projects, customers, customer accounts, customer information, customer reports, product information and reports, supplies, accounts, billing methods, pricing data and strategy, business methods, and any and all information entrusted to DSI in confidence by third parties.

Confidential information may be contained in written manuals and materials, verbal communications, or any other tangible method of expression, including hard disk and soft disk drive mechanisms. Confidential information, materials, and records include, but are not limited to, the following:

Business Confidential Information

- Financial, marketing, and statistical data.
- Competitive relationships with other firms.
- Budget information.
- Improvements in processes, techniques, or methods.
- Mergers, dissolutions, or significant reorganization.
- Proposals and contract negotiations.
- Reduction in Force (contemplated or in planning).
- Research and development programs.
- Business reports and summaries.

Personal and Confidential Information

- Personnel actions (promotions, demotions, resignations, bonuses, compensation and benefits data, performance appraisals, etc.—until released officially).
- Controversies within or between DSI personnel.
- Information of an embarrassing nature.

B. Woodman	5-15-06		3-9-07	Revision				
				Date				

Legal Confidential Information

- Legal advice and opinion communicated by an attorney to DSI.
- Documents revealing the substance of legal advice received from an attorney.
- Communications to an attorney for the purpose of obtaining legal advice.
- Information or data furnished at the request of our attorney to enable legal service or advice to be given.

Safeguarding Confidential Information

The primary responsibility for safeguarding confidential or proprietary information rests with management. Supervisors/managers at every level of DSI and other responsible DSI employees are expected to:

- Identify confidential information and materials and instruct their employees in the handling of such information and materials.
- Ensure that confidential information and materials are kept in safe and secure places and accessible only to those whose work requires them to access it. Paper records should be kept in secured cabinets.
- Ensure that confidential information is properly packaged prior to transmittal. This includes encryption when electronic data is being transmitted.
- Ensure that recipients have a legitimate need to know.
- Limit reproduction and distribution of sensitive information to what is absolutely necessary.
- Ensure that proprietary information is properly identified and marked. This includes display screens in computer systems.
- Ensure that computerized records have limited user access and computer display screens should be positioned so that only authorized users can view the data. Such users are responsible for securing their computers when they are left unattended.
- Destroy by shredding any proprietary information that is in excess of requirements or no longer needed.
- Ensure that employees who are hired into positions that require the handling of confidential information are required to keep such information safeguarded and not to disclose it, except as permitted or required in the course of their job duties.
- Ensure that inquires from the news media regarding DSI are immediately be referred to the DSI President.
- Ensure that inquiries from competitors regarding employees or DSI practices are immediately referred to the DSI President.

- Ensure that inquires from attorneys should immediately be referred to the Exodyne, Inc. Chief Financial Officer or Corporate Human Resources Director.
- Ensure that inquires from other outside agencies regarding DSI should be referred to the Exodyne, Inc. Chief Financial Officer or Corporate Human Resources Director. Such agencies include, but are not limited to:
  - Government agencies such as the FBI, Social Security Administration, Equal Employment Commission, National Labor Relations Board, Department of Health and Human Services, Office of Civil Rights, or Office of Inspector General.
  - Police.
  - Credit bureaus or lending agencies.
- Review these procedures regularly with all employees who are involved in the handling or securing of proprietary information.
- Remind employees that their office, computers, desks, cases, and personal belongings are subject to inspection to ensure confidential information is not removed from DSI property without authorization.

Marking

The employee who originates or produces proprietary information is responsible for marking or stamping such material as Business Confidential, Personal and Confidential, or Legal Confidential. The marking should appear at the top and bottom of the first page of the document, as well as in a visible position when the document is folded or rolled. With respect to diskettes, the label is to bear the proper classification and the first screen viewed is to also bear the proper classification. When practical, each page of material printer should bear a diagonal watermark created by the word processing software containing the proper marking.

When in the employee's judgment, proprietary information is extra sensitive in nature, the following special marking procedures must be followed:

- All pages must be numbered to reflect the total (6-page document—Page 1 of 6).
- All copies should be numbered in series (Copy 1 of 4).
- A distribution list should be maintained and copies should be signed for.

Reproduction

Any employee who is responsible for reproducing proprietary information should make sure that access is kept to a minimum and granted only to those individuals with a need to know. If the nature or volume of the information being reproduced makes controlled access impractical, area controls should be instituted until the work is completed.

When Business Confidential, Personal and Confidential, or Legal Confidential documents are reproduced by a graphic arts shop, duplicating room, etc., the material should be hand delivered to the supervisor/manager in charge, who should assign an authorized employee to complete the work and return it to the supervisor/manager, including all excess or spoiled copies.

Storage

When not in use or in transit, proprietary information should be stored in a cabinet or other container secured with a locking device. The combination or key should be similarly safeguarded, and kept in a locked desk or file cabinet as a convenience for daily access.

Any willful, intentional, or unauthorized disclosure of proprietary information will be considered sufficient cause for disciplinary action, up to and including termination.

Attachment 13

Crash Investigator Confidentiality Statement

Personal Agreement of Confidentiality:
Pilot Study--Motorcycle Crash Causes and Outcomes

Dynamic Science, Inc. (DSI) is committed to successfully meeting its contractual obligations in a disciplined and confidential basis. We place great importance on protecting the rights of our employees, customers, and those parties who are subject to our investigations and research. As such, we promise to maintain the highest standards of confidentiality as we complete the duties and responsibilities for the Pilot Study--Motorcycle Crash Causes and Outcomes.

In consideration of my employment and the compensation paid to me by Dynamic Science, Inc., I agree as follows:

I understand and acknowledge that we will be obtaining some basic descriptive information about the parties in the study, to include age, physical status and health, riding/driving experience, and the circumstances leading to the crash. This information is confidential, and no published reports of the research will identify any participants. Each crash incident will be assigned a case number and all identifying information will be separated from the individual's data. At no time will I disclose information collected in this study to a third party without permission.

More specifically, I will not, during the course of my employment or subsequent thereto, either directly or indirectly, except in the course of carrying out the business of DSI or as authorized in writing on behalf of DSI, use for my own benefit or purposes or disclose or communicate to any person, individual, firm or corporation, any information of any kind concerning any matters affecting or relating to the business of the Company or any of its subsidiaries, including, without limitation, any of the customers, investigation sources or subjects, plans, processes, trade secrets, or other data of DSI. I will not take or retain or copy any of the Company's specifications, drawings, blueprints, reproductions, other documents, or any other personal/confidential information.

In addition, I will comply with the directives regarding protection of confidential information as outlined in Dynamic Science, Inc. Operating Policies and Procedures, No. Admin-1015, Confidentiality of Information, and provided below:

"Safeguarding Confidential Information

The primary responsibility for safeguarding confidential or proprietary information rests with management. Supervisors/managers at every level of DSI and other responsible DSI employees are expected to:

- Identify confidential information and materials and instruct their employees in the handling of such information and materials.

- Ensure that confidential information and materials are kept in safe and secure places and accessible only to those whose work requires them to access it. Paper records should be kept in secured cabinets.
- Ensure that confidential information is properly packaged prior to transmittal. This includes encryption when electronic data is being transmitted.
- Ensure that recipients have a legitimate need to know.
- Limit reproduction and distribution of sensitive information to what is absolutely necessary.
- Ensure that proprietary information is properly identified and marked. This includes display screens in computer systems.
- Ensure that computerized records have limited user access and computer display screens should be positioned so that only authorized users can view the data. Such users are responsible for securing their computers when they are left unattended.
- Destroy by shredding any proprietary information that is in excess of requirements or no longer needed.
- Ensure that employees who are hired into positions that require the handling of confidential information are required to keep such information safeguarded and not to disclose it, except as permitted or required in the course of their job duties.
- Ensure that inquires from the news media regarding DSI are immediately be referred to the DSI President.
- Ensure that inquiries from competitors regarding employees or DSI practices are immediately referred to the DSI President.
- Ensure that inquires from attorneys should immediately be referred to the Exodyne, Inc. Chief Financial Officer or Corporate Human Resources Director.
- Ensure that inquires from other outside agencies regarding DSI should be referred to the Exodyne, Inc. Chief Financial Officer or Corporate Human Resources Director. Such agencies include, but are not limited to:
  - Government agencies such as the FBI, Social Security Administration, Equal Employment Commission, National Labor Relations Board, Department of Health and Human Services, Office of Civil Rights, or Office of Inspector General.
  - Police.
  - Credit bureaus or lending agencies.
- Review these procedures regularly with all employees who are involved in the handling or securing of proprietary information.
- Remind employees that their office, computers, desks, cases, and personal belongings are subject to inspection to ensure confidential information is not removed from DSI property without authorization.

Storage

When not in use or in transit, proprietary information should be stored in a cabinet or other container secured with a locking device. The combination or key should be similarly safeguarded, and kept in a locked desk or file cabinet as a convenience for daily access. Any willful, intentional, or unauthorized disclosure of proprietary information will be considered sufficient cause for disciplinary action, up to and including termination."

It is further understood that breach of this Agreement may result in my immediate termination from Dynamic Science, Inc., and/or recovery from me by Dynamic Science, Inc., legal damages as provided by law.

Employee (Print): _____

Signature: _____

Date: _____

Attachment 14

Institutional Review Board Approval

Date: September 09, 2008

To: Fran Bents, Project Director

From: Kerry Levin, Chair
Westat Institutional Review Board

Subject: **Final Approval for Motorcycle Crash Causes and Outcomes Pilot Study, Project 8191**
FWA 5551

As Chair of the Westat Institutional Review Board (IRB), I have reviewed the materials submitted for the following: Motorcycle Crash Causes and Outcomes Pilot Study, Project 8191. Pursuant to 45 CFR pt. 46, the IRB reviews all studies involving research on human subjects. This study is funded by the John Jay College of Criminal Justice in New York.

On Tuesday, August 12th, 2008, the Westat Institutional Review Board (IRB) reviewed the Motorcycle Crash Causes and Outcomes Pilot Study including the following materials: Initial protocol application as well as the procedures, informed consent forms, assent scripts, and measures.

This project is sponsored by the National Highway Traffic Safety Administration (NHSTA) to develop and conduct an on-scene investigation program focused on injury –producing motorcycle crashes. Westat is responsible for overall planning, project management, evaluation, and reporting. Dynamic Science Inc (DSI), the sub-contractor for the study, will recruit the crash investigators and conduct their training, perform the investigations, collect control group data, and enter the data into the database. The project team also requested that Westat serve as the IRB overseeing the protection of human subjects

Following discussions with the Project Director and the IRB Representative, as well as two representatives from DSI, the Board decided to table the study as there was insufficient information to make a determination of approval. The IRB had several concerns about the study's protocol, informed consent process, and relationship with DSI regarding their confidentiality and data security procedures.

The following is a list of questions and comments that resulted from the discussion between the research team and the Board as well as the research team's responses.

Information Needed from Dynamic Science Inc.

1. Provide human subjects training certificates and signed confidentiality statements for current DSI staff who will be working on this project.

- Response: Certificates for five staff members were included in the September 12th resubmission.

2. Provide signed confidentiality statements of current staff and newly hired staff.

- Response: Signed statements for five staff members were included in the September 12th resubmission.

3. Provide a letter of written promise of confidentiality, including evidence of experience with similar work.
- A Corporate Promise of Confidentiality was included in the September 12th resubmission package.

Revisions to Informed Consent Forms

4. Use DSI letterhead with Jim Perry as the contact for questions about the study and Sharon Zack, IRB Administrator, as the contact for questions about human subjects.

- Response: These changes were inserted into the informed consent and assent forms.

5. Revise language about confidentiality/anonymity to all consent forms to accurately reflect the language presented in the Certificate of Confidentiality.

- Response: Language regarding confidentiality was inserted into the project overview and consent forms.

6. Revise wording from, "This research is FUNDED by.... to "This research is SUPPORTED by....".

- Response: done

7. Provide copies of parental consent and teen assent forms.
- The following attachments, on DSI letterhead, were included with the resubmission package.
    - Informed Consent Form- Crash
    - Informed Consent Form-Control
    - Parent Consent Form –Crash
    - Parent Consent Form- Control
    - Youth Assent Script- Crash
    - Youth Assent Script- Control

8. Provide sample patient release forms to be used to obtain medical records.

- Response: done

Data Protection and Security Issues

9. Provide more details about safeguards that will be in place to protect case file folders during data collection both with interviewers and at the home office.

- Response: DSI Data Protection and Security Procedures are included in the resubmission.

10. Provide plans for data destruction.

- Response: Plans for data destruction were included in the DSI Data Protection and Security Procedures' document.

11. Describe plans for future public use data file and NHTSA's role in this effort.

- Response: The sponsor's plans to develop a public use data set are included in the revised project overview.

12. Describe types of methodological results (i.e., lessons learned) that will be provided to the Board upon completion of the pilot study.

- Response: the purpose of the pilot study is to develop and test a research protocol and survey instruments that can be used in a larger scale study of motorcycle involved crashes. Crash investigation data will not be analyzed. A process evaluation of variables such as the number of hours required to inspect a motorcycle and the number of attempts needed to obtain passenger interviews, are included in the project revised overview.

13. Provide a copy of Certificate of Confidentiality.

- Response: Once the Certificate of Confidentiality becomes available, the Project Director will submit it to the IRB.

14. The Board also requested that all data collection forms be submitted for review.

- Response: done

On September 9, 2008, the Board reconvened to assess the revised IRB submission. They found that the project team had adequately addressed the Board's concerns. During the review, the Board requested several minor changes to the informed consent forms and assent scripts. The Project Director also requested two waivers of documentation of informed consent. These waivers were approved according to 45 CFR 46 117 (c) as the research presented no more than minimal of harm to the participants and involved no procedures for which written consent was normally required outside of the research context. The first waiver was to contact parents by telephone in order to obtain permission for their youth (driving or riding in the motorcycles including crash and control youth participants) to participate in the study. The second waiver was approved to use a script to verbally

assent the youth participants without obtaining written informed consent document. The youth will be provided with a copy of the assent script/information sheet.

In accordance with 45 CFR 46, this project was considered minimal risk and assigned a conditional approval. Once the following changes are made and returned to the IRB for review, a full approval will be assigned.

The request for minor changes included the following:

1. Resubmit your overview to include a request for a *Waiver of Documentation of Informed Assent* for youth participants in your project.

Revisions to Informed Consent and Assent Forms and Scripts

2. Remove the word "strictly" and any language that refers to "names will not be collected from participants".
3 Insert appropriate language from the study's Certificate of Confidentially when it becomes available.
4. Re order the assent script so that the introduction begins with the description of the study.
5. Replace Fran Bent's name with the PI from DSI.
6. Provide finalized copies of the overview, informed consent forms and assent scripts (including highlights or track changes of all revisions) and the Certificate of Confidentiality to the IRB.

Please submit a copy of the Certificate of Confidentiality to the IRB when it becomes available.

All minor changes have since been made to the informed consent forms and assent scripts. Therefore, this project has been granted a full approval. The Project Director is still obligated to submit this study for a continuing review on or before September 9, 2009. In the interim, the Project Director is responsible for notifying the Office of Research Administration as soon as possible if there are any injuries to the subjects, problems with the study, or changes to the study design that relate to human subjects.

cc: Institutional Review Board
Mark Freedman

Attachment 15

Certificate of Confidentiality

CONFIDENTIALITY CERTIFICATE

Number: AA-015-2009

Issued to

National Highway Traffic Safety Administration

conducting research known as

Motorcycle Crash Causes and Outcomes

In accordance with the provisions of section 301(d) of the Public Health Service Act 42 U.S.C. 241(d), this Certificate is issued in response to the request of the Principal Investigator, Jennifer Percer, Ph.D., to protect the privacy of research subjects by withholding their identities from all persons not connected with this research. Dr. Percer is primarily responsible for the conduct of this research, which is supported by the National Institute on Alcohol Abuse & Alcoholism.

Under the authority vested in the Secretary of Health and Human Services by section 301(d), all persons who:

1. are enrolled in, employed by, or associated with the National Highway Traffic Safety Administration and its contractors or cooperating agencies and

2. have in the course of their employment or association access to information that would identify individuals who are the subjects of the research pertaining to the project known as "Motorcycle Crash Causes and Outcomes,"

are hereby authorized to protect the privacy of the individuals who are the subjects of that research by withholding their names and other identifying characteristics from all persons not connected with the conduct of that research.

The project will evaluate the data collection forms, coding manuals and training materials developed for use in a larger scale study of motorcycle-involved crashes.

A Certificate of Confidentiality is needed because potentially illegal or sensitive use of addictive substances or other sensitive information will be collected during the course of the study. The Certificate will help researchers avoid involuntary disclosure that could expose subjects or their families to adverse economic, legal, psychological and social consequences.

Measures to be taken to protect confidentiality include confidentiality training for research staff, restricted access to study records, use of codes instead of recognizable names, publication only of grouped data, and other steps to protect privacy.

Beginning date for this research: February 20, 2009. The research is expected to end on February 10, 2014.

As provided in section 301 (d) of the Public Health Service Act 42 U.S.C. 241(d):

"Persons so authorized to protect the privacy of such individuals may not be compelled in any Federal, State, or local civil, criminal, administrative, legislative, or other proceedings to identify such individuals."

This Certificate does not protect you from being compelled to make disclosures that: (1) have been consented to in writing by the research subject or the subject's legally authorized representative; (2) are required by the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 et seq.) or regulations issued under that Act; or (3) have been requested from a research project funded by NIH or DHHS by authorized representatives of those agencies for the purpose of audit or program review.

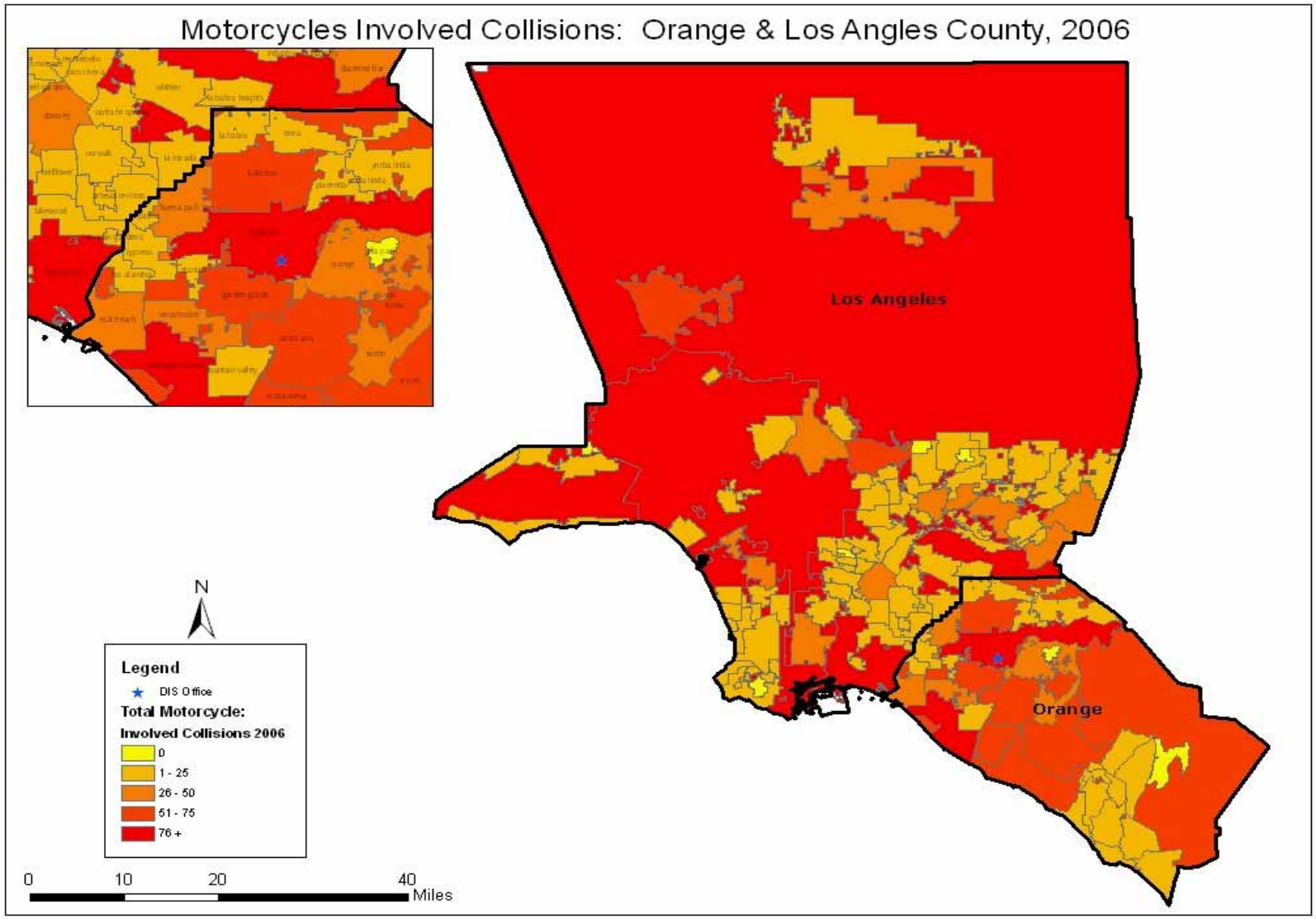
This Certificate does not represent an endorsement of the research project by the Department of Health and Human Services. This Certificate is now in effect and will expire on February 10, 2014. The protection afforded by this Confidentiality Certificate is permanent with respect to subjects who participate in the research during the time the Certificate is in effect.

Kenneth R. Warren, Ph.D.
Acting Director
National Institute on Alcohol Abuse and Alcoholism

March 11, 2009
Date

Attachment 16

Motorcycle Crashes in Southern California, July 2007


Motorcycles Involved Collisions: Orange & Los Angles County, 2006
Los Angeles
Orange
N
Legend
DIS Office
Total Motorcycle:
Involved Collisions 2006
0
1 - 25
26 - 50
51 - 75
76 +
0
10
20
40
Miles

Attachment 17

Exemplar Memorandum of Understanding

Westat | An Employee-Owned Research Corporation

Memo

Motorcycle Crash Causes and Outcomes-Pilot Study
Memorandum of Understanding

MEMORANDUM OF UNDERSTANDING BETWEEN WESTAT AND SUBCONTRACTOR DYNAMIC SCIENCE, INC. (DSI) [PARTY ONE] AND THE _____POLICE DEPARTMENT TWO]

Background:
Motorcycle crashes and related fatalities have increased dramatically during the past several years. There has been no in-depth study of the causes and outcomes of such crashes in the U.S. for more than 30 years. Westat and subcontractor DSI were awarded contract DTNH22-05-C-05079 to conduct the Motorcycle Crash Causes and Outcomes Pilot Study. This research is sponsored by the National Highway Traffic Safety Administration. In order to conduct in-depth research on motorcycle crashes, it is necessary for trained crash investigators to initiate their investigation as soon as possible after a crash occurs. In addition, exposure data collection is needed to provide comparison information from non-crash involved motorcyclists, so that crash causation factors can be identified. This research approach can best be achieved with the cooperation and help of law enforcement agencies who can provide notifications of such crashes, and access to relevant information. The _____ Police Department is committed to cooperating in this study and will make every effort to ensure personnel are briefed on the importance of the study and the agreed upon guidelines for participation.

Purpose:
The purpose of this memorandum is to establish a basic framework for cooperation and coordination between Westat/DSI and the _____ Police Department in the implementation of the pilot test. This will enable identification of and response to motorcycle crashes and access to police accident reports and impounded vehicles.

Objectives:
1. To identify methods that will allow for prompt notification of motorcycle crashes.
2. To establish protocol for the initiation of investigations that will not hinder or impede police activities.
3. To establish agreements with regard to data confidentiality.
4. To identify methods for the collection of control cases that comply with agency protocol.

Methods:
DSI will conduct all crash investigation and control data collection tasks in areas covered by several police jurisdictions in the greater Los Angeles/Orange County area. It is expected that data collection will begin on December 8, 2008 and will continue for approximately 3

months. A total of 37 on-site crashes will be investigated, plus two control cases for each on-site crash. The control cases will consist of non-crash involved motorcycle interviews and vehicle inspections conducted within a close proximity to the actual crash occurrence. Alcohol breath tests will also be administered to consenting participants.

The _____ Police Department will notify DSI whenever an injury producing motorcycle crash occurs within their respective jurisdiction. DSI will be notified by phone or e-mail from _____ PD's communications center. DSI personnel will be on-call to answer any phone call or e-mail, 24 hours per day, seven days per week. The phone number is [redacted]. The e-mail address is [redacted].

DSI investigators will respond to the scene as quickly as possible and obey all traffic laws enroute to the crash location. Upon arrival, the DSI investigator(s) will park their vehicle(s) in a safe location that will not impede any emergency response vehicles either arriving or leaving the scene. An amber safety light will be activated on the parked DSI investigator vehicle and the DSI investigators will wear Fluorescent Safety Vests with clear print that illustrates "DSI Investigator". The DSI investigator(s) will check-in with the law enforcement Incident Commander or lead investigator prior to commencing any activity. It is acknowledged that some crash locations may be crime scenes, and access of the DSI investigator(s) may be denied / limited by the law enforcement Incident Commander or lead investigator.

If the scene is still active, and with the permission of the Incident Commander, DSI will begin its investigation. If the vehicles are at their final rest positions, then photographs will be secured by DSI in a fashion that will be in the periphery of the rescue and police efforts. The same amount of caution will be exercised while securing photographs of scene evidence and the debris field. The investigation activities will be undertaken so as not to interfere or impede the police and medical evacuation operations. DSI understands that officers on scene will be in full control and DSI investigators may be removed from the scene by the Incident Commander or lead law enforcement investigator for safety concerns.

The _____ Police Department will provide DSI with enough information to locate the involved vehicle(s) and to acquire an early (not signed off) copy of the crash report from the Accident Investigation office. The vehicle inspections will be non-destructive (no components or parts removed). They include examination of direct and induced damage patterns on the exterior of vehicles, measurement of vehicle crush, diagrams of damage, and photographs of vehicle exteriors. Evidence of occupant contact points will also be measured and photographed.

The DSI Motorcycle Pilot study investigators will attempt to conduct on-scene interviews of all involved riders/drivers and passengers. An interview <u>will only be initiated</u> upon receipt of a signed, two page interviewee consent form (refer to attached Consent Form). The consent form also explains that DSI would like to collect a voluntary breath sample. Should the crash produce potential legal charges and future prosecution, then the DSI investigator will proceed with interviews and breath samples under direction of the _____ Police Department and or the District Attorney. In those cases where alcohol is involved and an interview is declined, it would be helpful if the investigating police agency would relay the Blood Alcohol Content (BAC) level (verbally) for inclusion into DSI's investigation report.

If the rider/passenger is under the age of legal consent (18 years of age), a parent or legal guardian will be contacted and will provide verbal or written consent before any questioning of a minor commences (refer to the attached parental consent/legal guardian form).

As aforementioned, DSI will collect comparison data one week following each crash and within a close proximity to the crash scene. This control group data will be collected from riders who traversed the same location of the crash and at approximately the same time frame in which the crash occurred. This control group will include two motorcyclist interviews and vehicle inspections for non-crash involved individuals. The control groups will be selected and their locations determined by DSI using their street signage or using vehicle collection areas such as gas stations or convenience stores. The acquisition of the control data will in no way present an added burden for the cooperating police agencies.

It should be stressed that at no time will the cooperating police agencies be asked to commit any additional resources or delay or hamper the on-scene law enforcement efforts.

DSI is solely responsible for their actions, safety of personnel, and any property damage caused by their investigators.

DSI will provide the police agencies with the names of the investigators, a completed Human Subjects Training certificate, a copy of the investigator-signed confidentiality agreement, and the results of investigator employment background checks.

It should be stressed that in this research program, all identifiers regarding identification of the scene, vehicle operators or vehicle specifics (VINS) are completely sanitized. In addition, no information referring to dates, specific locations, jurisdictions or other identifiers are ever entered into any system of records. In addition, the DSI investigators are keenly aware of any potential conflicts of interest regarding the data collection involved in any aspect of the study and any other outside entity or corporation. All data is held confidential and is protected in accordance with established security protocol.

The undersigned agree to uphold the terms of this agreement for the period of time that the project is being administered. This agreement may be terminated by either party with written notification.

Mark Freedman	Robert Swank	
Vice President, Westat	Vice President, DSI	_____ Police Department

Attachments
1 – Crash Group Consent Form
2 – Parental Consent

Crash Investigation Group
Informed Consent

Purpose of Research: Thank you for volunteering to participate in this study. This study provides an opportunity to examine the many factors that can lead to motorcycle-related crashes and affect the severity of the injury outcome. This research is funded by the U.S. Department of Transportation, National Highway Traffic Safety Administration (NHTSA) and is supported by the motorcycle industry.

Research Procedures: Trained researchers will collect data on police-reported, motorcycle-involved crashes. Information will be collected for each rider, passenger and driver of involved vehicles, along with vehicle and environmental characteristics. Data include interviews, examinations of vehicle condition, and measurement and diagrams of environmental characteristics and photographs of vehicle and scene information. Researchers will also ask for information regarding specific injuries sustained by crash victims. We are including your crash as part of the study so that the survey will cover all crash types and severities.

We would like to ask you a series of questions about the crash circumstances, your current health status, and your riding/driving experience. The information may be audio recorded so that we can ensure that your responses are encoded accurately. All information will be kept strictly confidential, and you can refuse to answer any question. The entire interview will last approximately 45 minutes. We also may need your permission to examine and document the damage to your vehicle. You will also be provided with a consent form that we can submit to the hospital in order to obtain specific information about your injuries (if applicable).

Foreseeable Risk: All data will be collected from a safe location and at your convenience. No personal identifiers are included in our forms, and all information is used strictly for statistical purposes by the federal government.

Benefits of the Research: The number and severity of motorcycle crashes has risen greatly in recent years. There has been no comprehensive study of motorcycle crash causation for more than 30 years. Our objective is just to gain some insight into the causes of such crashes, and what can be done to prevent them or reduce their severity. The federal government may eventually use this information when making rules, or developing strategies and design changes to improve motorcyclist safety.

Confidentiality: We will be asking you for some basic descriptive information about yourself. This includes your age and certain questions about physical status and health. We will also ask about your riding/driving experience and the circumstances leading to this crash. This information is confidential, and no published reports of the research will identify any participants. Likewise, all information collected during the study is confidential and will not be presented in any form that identifies individuals. Your crash will be assigned a case number and all identifying information will be separated from the data you provide.

Any data or documents containing personal identifiers, such as your name, address, and phone number, that we have obtained from Police Accident Reports or other related official records, along with any audio recording, will be kept in secure storage and will be destroyed at the end of this project.

To help us protect your privacy, we have obtained a Certificate of Confidentiality from the National Institutes of Health. With this Certificate, the researchers cannot be forced to disclose information that may identify you, even by court subpoena, in any federal, state, or local civil, criminal, administrative, legislative, or other proceedings.

You should understand that a Certificate of Confidentiality does not prevent you or a member of your family from voluntarily releasing information about yourself or your involvement in this research. If an insurer, employer, or other person obtains your written consent to receive research information, then the researchers may not use the certificate to withhold that information, but any such request would be immediately referred to our sponsors at the NHTSA.
At no time will the researchers voluntarily disclose information collected in this study.

Voluntary Withdrawal from the Survey: Your cooperation in this study is entirely voluntary. Refusal to participate will involve no penalty. You may discontinue participation at any time.

Contact Person: If you have any questions about the research program, contact [redacted]. He can be reached at DSI, 299 W. Cerritos Avenue, Anaheim, California. 92805. If you have questions about the rights of research participants contact [redacted]. She can be reached at Westat, 1650 Research Blvd., Rockville Maryland 20850.

Authorization: By signing this form you certify that you understand that your participation in this study is voluntary and that you consent to be interviewed and allow access to your vehicle for inspection.

I have read (or heard) the above information and recognize the risks of this study. I agree to be a participant in the research. I understand that participation is voluntary and I may withdraw from the study at any time.

Participant: _____ Date:_____

Investigator: _____Date:_____

Crash Group
Parent/Guardian Consent Form

OMB NO.: 2125-0619

Crash Involved Subject's Name:_____

Case Number_____

Research Project Title: Pilot Study – Motorcycle Crash Causes and Outcomes

Organization: Dynamic Science for U.S. Department of Transportation (USDOT)

Principal Investigator: Frances D. Bents

Project Research Dates: September 2008 to October 2009

The U.S. Department of Transportation is sponsoring a study called the Pilot Test – Motorcycle Crash Causes and Outcomes to help identify the causes of motorcycle crashes and related injuries. The government will use the study to help develop safety programs to reduce the number and severity of such crashes. All data is confidential. No names or other personal identifiers are entered into any system of records. This information will not be shared with the police department or anyone else involved in this crash.

Motorcycle operators of all ages who are involved in crashes will be asked to be part of this study and we would like your permission to ask your child to be in the study. If you and your child agree, he/she will spend about 45 minutes answering questions. Youth will be asked questions about their rider training and experience and their health status. They will also be asked questions about alcohol and drug use prior to this crash. No one will receive payment for participating in the study.

Your child does not have to do the survey. It is entirely up to you whether we can interview your child, and then it is up to your child. If your child agrees to do the survey, he can stop answering questions at any point. If there is a question that your child does not want to answer, he/she can skip it.

To help us protect privacy, we have obtained a Certificate of Confidentiality from the National Institutes of Health. With this Certificate, the researchers cannot be forced to disclose information that may identify you or your child, even by court subpoena, in any federal, state, or local civil, criminal, administrative, legislative, or other proceedings.

You should understand that a Certificate of Confidentiality does not prevent you or a member of your family from voluntarily releasing information about yourself or your involvement in this research. If an insurer, employer, or other person obtains your written consent to receive research information, then the researchers may not use the certificate to withhold that information, but any such request would be immediately referred to our sponsors at the

USDOT. At no time will the researchers voluntarily disclose information collected in this study.

We will do everything we can to protect your child's privacy. To help keep everything private:

- The researcher who meets with your child will not ask for your child's name.
- All the answers will be confidential – that is, no one will know your child's answers.
- All of the researchers working on this study have signed a legal certificate saying that they will protect your child's privacy and not to tell anyone anything that he/she has said. The researchers have to obey all of the state and federal laws and regulations regarding confidentiality and the family's right to privacy.

If you have any questions about the study, you can call the Project Manager, [redacted]. If you have questions about your child's rights as a study participant, you can call [redacted].

Please indicate your choice by checking one of the boxes below and signing and dating the form.

☐ **Yes**, I give my permission for you to ask my child to take part in this study.

☐ **No**, I do not give you permission to ask my child to take part in this study.

_____ _____

Your signature Date

Attachment 18

Pilot Study Data Collection Forms:

- **Crash**
- **Motorcycle Mechanical**
- **Motorcycle Dynamics**
- **Motorcycle Rider**
- **Motorcycle Passenger**
- **Other Vehicle**
- **Other Vehicle Driver**
- **Injury**
- **Environment**
- **Control Motorcycle Mechanical**
- **Control Motorcycle Rider**
- **Control Motorcycle Passenger**

Crash Form

Case Number _____

1. Day of Week Crash Occurred ____
(1) Monday
(2) Tuesday
(3) Wednesday
(4) Thursday
(5) Friday
(6) Saturday
(7) Sunday

2. Time of Day Crash Occurred ___ ___:___ ___
(24-hour clock)

3. Motorcycle Involved in Collision With ___ ___
(01) other motor vehicle
(02) other parked motor vehicle
(03) roadway
(04) off road environment, fixed object
(05) bicycle
(06) pedestrian
(07) animal
(98) other (specify)
_____
(99) unknown

4. If This Case is a MC vs. MC, Provide Matching Case Number

_____

5. Presence at Crash Scene ____ ____
CODE UP TO 4
(00) not on-scene ____ ____
(01) nothing present
(02) crash vehicles present ____ ____
(03) police present
(04) EMS present ____ ____
(05) motorcycle rider present
(06) motor vehicle driver(s) present
(07) motorcycle passengers present
(08) motor vehicle passengers present
(09) non-motorists present
(98) other present (specify):
_____
(99) unknown

6. How Many Other Vehicles Were Involved in the Crash? ____ ____
(00) none
(01) one
(02) two
(03) three
(04) four or more
(97) not applicable
(98) other (specify)_____
(99) unknown

7. How Many Pedestrians Were Involved in the Crash? ____ ____
(00) none
(01) one
(02) two
(03) three
(04) four or more
(97) not applicable
(98) other (specify) _____
(99) unknown

8. Number of Passengers on the Motorcycle ____ ____
(00) none
(01) one
(02) two
(03) three
(04) four
(05) five
(06) six
(99) unknown

9. Are There Any Fatal Injuries Involved? ____ ____
(00) no
(01) yes
(99) unknown

10. Crash Configuration ____ ____
(01) head-on collision of MC and OV
(02) OV into MC impact at intersection; both vehicles proceeding straight ahead, paths perpendicular
(03) MC into OV impact at intersection; both vehicles proceeding straight ahead, paths perpendicular
(04) OV turning left in front of MC, MC proceeding in either direction perpendicular to OV path
(05) OV turning right in front of MC, MC proceeding in either direction perpendicular to OV path
(06) MC and OV traveling in opposite directions, OV turns in front of MC, crossing MC path, OV impacting MC
(07) MC and OV traveling in opposite directions, OV turns in front of MC, crossing MC path, MC impacting OV
(08) MC turning left in front of OV, OV proceeding in either direction perpendicular to MC path
(09) MC turning right in front of OV, OV proceeding in either direction perpendicular to MC path
(10) MC overtaking OV while OV turning left
(11) MC overtaking OV while OV turning right
(12) OV impacting rear of MC
(13) MC impacting rear of OV
(14) sideswipe, OV and MC traveling in opposite directions
(15) sideswipe, OV and MC traveling in same directions
(16) OV making U-turn or Y-turn ahead of MV
(17) Other MC/OV impacts
(18) MC falling on roadway, no OV involvement
(19) MC running off roadway, no OV involvement
(20) MC falling on roadway in collision avoidance with OV
(21) MC running off roadway in collision avoidance with OV
(22) Other MC accidents with no OV or other involvement
(23) MC impacting pedestrian or animal
(24) MC impacting environmental object
(98) other (specify)_____
(99) unknown

11. Light Conditions ____ ____
(01) daylight, bright
(02) daylight, not bright
(03) dusk, sundown
(04) night, lighted
(05) night, not lighted
(06) dawn, sunup
(07) night, continuous illumination
(08) night, spot illumination
(98) other (specify)_____
(99) unknown

12. Ambient Temperature + ___ ___ ___
(CODE PLUS (+) OR MINUS (-); DEGREES F)
(999) unknown

WEATHER AT TIME OF CRASH

13. Weather Description ____ ____
(01) clear
(02) cloudy, partly cloudy
(03) overcast
(04) drizzle, light rain
(05) moderate or heavy rain
(06) snow
(07) sleet, freezing rain
(08) hail
(09) fog
(98) other (specify)_____
(99) unknown

14. Wind Description ____ ____
(00) none, calm
(01) light
(02) moderate
(03) strong
(04) light with gusts
(05) moderate with gusts
(06) strong with gusts
(07) variable
(98) other (specify)_____
(99) unknown

15. Wind Direction With Respect to Motorcycle Path ____ ____
(00) none, no wind
(01) left crosswind
(02) headwind
(03) right crosswind
(04) tailwind
(98) other (specify)_____
(99) unknown

CASE ADMINISTRATION

The following are *NOT* to be entered in the database

16. Team/Investigator departure time, 24 hr clock ___ ___:___ ___
(0001 - 2400) actual time
(9999) unknown

17. Team/Investigator scene arrival time, 24 hr clock ___ ___:___ ___
(0001 - 2400) actual time
(9999) unknown

CODE THE FOLLOWING IN MM/DD/YYYY FORMAT

18. Date of crash ___ ___/ ___ ___/ ___ ___ ___ ___

19. Date Scene Inspection Completed ___ ___/ ___ ___/ ___ ___ ___ ___

20. Motorcycle Inspection Completed ___ ___/ ___ ___/ ___ ___ ___ ___

21. Motor Vehicle Inspection Completed ___ ___/ ___ ___/ ___ ___ ___ ___

22. Assigned Investigator(s)

a. _____

b. _____

Motorcycle Mechanical Form

Case Number _____

SPECIFICATIONS

1. Manufacture ___ ___ ___

_____
WRITE IN - DO NOT CODE

2. Model

_____
WRITE IN - DO NOT CODE

3. Year ___ ___ ___ ___
CODE THE 4-DIGIT YEAR

4. Motorcycle Legal Category ___ ___
(01) L1 vehicle
(02) L3 vehicle
(03) mofa
(98) other (specify)
_____
(99) unknown

5. Motorcycle Type ___ ___
(01) conventional street L1 or L3 vehicle (tank between knees), without modifications
(02) conventional street L1 or L3 vehicle (tank between knees), with modifications
(03) dual purpose, on-road off-road motorcycle
(04) sport, race replica
(05) cruiser
(06) chopper, modified chopper
(07) touring
(08) scooter
(09) step-through
(10) sport-Touring
(11) motorcycle plus sidecar, left
(12) motorcycle plus sidecar, right
(13) off-road motorcycle, motocross, enduro, trials
(14) tri-cycle
(15) law enforcement
(98) other (specify)_____
(99) unknown

6. Motorcycle Weight ___ ___ ___ ___
(0001-9996) In pounds, as specified by manufacturer
(9999) unknown

7. Vehicle Identification Number (VIN)
INPUT "9" IN ALL SPACES FOR UNKNOWN

__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ X X X

8. Odometer Reading in Miles ___ ___ ___, ___ ___ ___
(000,001 - 999,996) actual miles
(999,999) unknown

9. Registered Owner Category ___ ___
(01) motorcycle rider
(02) motorcycle passenger
(03) operated with consent of owner
(04) dealer
(05) stolen
(97) not applicable, no registration available
(98) other (specify) _____
(99) unknown

10. Predominant Color of Motorcycle ___ ___
(00) no dominating color, multi-colored
(01) white
(02) yellow
(03) black
(04) red
(05) blue
(06) green
(07) silver, grey
(08) orange
(09) brown, tan
(10) purple
(11) gold
(12) chrome, metallic
(98) other (specify) _____
(99) unknown

11. Did the Motorcycle Have Any Retroreflective Parts, Material or Paint? ___ ___
(00) no, none
(01) yes
(98) other (specify)
_____
(99) unknown

12. Motor Displacement ___ ___ ___ ___
CODE NUMBER IN CCS
(0001-9996) actual number
(9999) unknown

13. Number of Cylinders ___ ___
CODE NUMBER OF CYLINDERS
(01-96) actual number
(99) Unknown

MECHANICAL PROBLEMS

14. Symptom of Problem ____ ____
(00) none
(01) stopped in traffic
(02) front wheel lockup
(03) rear wheel lockup
(04) power loss
(05) speed control problem
(06) loss of control
(07) uncontrolled acceleration or deceleration
(08) motor stalled
(09) front axle loose
(10) rear axle loose
(11) front axle fixing loose
(12) rear axle fixing loose
(13) loss of lighting
(14) loss of electrical, other than lighting
(98) other (specify) _____
(99) unknown

15. Source of Problem ____ ____
(01) fuel starvation
(02) electrical or ignition failure
(03) mechanical failure of motor components
(04) lubrication
(05) cooling system
(06) stuck or binding throttle
(07) seized motor
(08) transmission
(09) clutch
(10) lighting system
(11) fuse, circuit breaker
(12) missing axle security
(13) axle bearings
(14) front fork pinch bolts
(15) axle adjust screws and set nuts
(97) not applicable, no mechanical problem
(98) other (specify) _____
(99) unknown

TIRES

16. Tire Size Measurement Units ____ ____
(01) inches
(02) millimeters
(03) alpha-Numeric
(99) unknown

17. Front Tire Measurement
(999999999) - unknown

___ ___ ___ ___ ___ ___ ___ ___ ___

18. Rear Tire Measurement

___ ___ ___ ___ ___ ___ ___ ___ ___

19. Tire Manufacturer **front** ____ ____
(A1) Avon
(B1) Bridgestone **rear** ____ ____
(C1) Cheng Shin
(C2) Continental
(D1) Dico
(D2) Dunlop
(F1) Firestone
(G1) Goodyear
(H1) Hutchinson
(I1) IRC
(I2) ITP
(K1) Kazan
(K2) Kenda
(M1) Metzeler
(M2) Michelin
(O1) Ohtsu
(P1) Pirelli
(S1) Skat Trak
(98) other (specify)_____
(99) unknown

20. Rim Size Front ___.___ ___ x ___ ___ in

21. Rim Size Rear ___.___ ___ x ___ ___ in

9.99x 99 - unknown (Example 2.25 x 17)

22. Rim Manufacturer **front** ____ ____
(OE) original equipment
(D1) Daido (DID) **rear** ____ ____
(D2) Douglas
(E1) Enkai
(E2) Excel
(S1) Sun
(T1) Talon Hubs
(U1) Union
(OT) other (specify) _____
(99) unknown

23. Tread Type **front** ____ ____
(00) no tread pattern, slick
(01) straight rib tread pattern **rear** ____ ____
(02) block pattern, trials type
(03) knobby pattern, motocross type
(04) all weather, cross or dog-bone pattern
(05) all weather, diagonal or diamond pattern
(06) all weather, angle groove
(07) racing design, minimum groove design
(98) other (specify) _____
(99) unknown

24. Measured Tread Depth **front** ____ ____ **.** ____
Code in inches and tenths
(00.0 - 99.6) actual number **rear** ____ ____ **.** ____
(99.9) unknown

25. Inflation Pressure Code in PSI **front** ___ ___ ___
(000) tire completely flat
(999) unknown **rear** ___ ___ ___
NOTE: ONLY TAKE PRESSURE IF CONFIDENT THAT THE CRASH DID NOT CAUSE LOSS OF PRESSURE, OTHERWISE CODE 999.

26. Braking Evidence on Tire **front** ____ ____
(00) none
(01) evidence of moderate braking **rear** ____ ____
(02) evidence of heavy braking without wheel lock up
(03) evidence of heavy locked wheel braking, one skid patch
(04) evidence of heavy locked wheel braking, multiple skid patches
(98) other (specify) _____
(99) unknown

SUSPENSION

27. Suspension Type Front ____ ____
(00) none, rigid wheel mount
(01) telescoping tube, conventional lower fork legs
(02) telescoping tube, inverted fork legs
(03) springer
(04) girder
(05) leading link, single or double sided
(06) articulated multiple link
(07) trailing link, single or double sided
(08) telever (BMW, only)
(09) lower suspension
(98) other (specify)_____
(99) unknown

28. Suspension Type Rear ____ ____
(00) none, rigid wheel mount
(01) conventional fork swing arm, double exterior tubular shocks
(02) conventional fork swing arm, mono-shock
(03) conventional fork swing arm, linkage articulated mono-shock
(04) one-sided swing arm, single exterior tubular shock
(05) one-sided swing arm, mono-shock
(06) one-sided swing arm, linkage articulated mono-shock
(07) lower suspension
(98) other (specify)_____
(99) unknown

29. Suspension Condition **front** ____
(00) no unusual condition; acceptable condition **rear** ____
(01) excessive wear in joints, sliders, pivot bolts; excessive mobility
(02) seals or dampers leaking; deteriorated damping
(03) loose or missing fasteners, inadequate clamping; excessive flexibility
(04) suspension elements damaged prior to accident events
(05) not applicable
(98) other (specify) _____
(99) unknown

BRAKE SYSTEM

30. Rider Brake Control Type **lever/pedal 1** ____ ____
(00) none, not present
(01) hand **lever/pedal 2** ____ ____
(02) foot
(99) unknown

31. Rider Brake Control Side **lever/pedal 1** ____ ____
(01) left
(02) right **lever/pedal 2** ____ ____
(97) not applicable
(98) other (specify) _____
(99) unknown

32. Brake Actuation at Lever or Pedal **lever/pedal 1** ____ ____
(01) hydraulic **lever/pedal 2** ____ ____
(02) mechanical
(03) electric
(97) not applicable
(98) other (specify)_____
(99) unknown

33. Brake Control System Type **lever/pedal 1**____ ____
(01) independent front brake
(02) independent rear brake **lever/pedal 2**____ ____
(03) combined front and rear brakes, CBS
(97) not applicable
(99) unknown

34. Connection to Front Brake Includes **lever/pedal 1** ____ ____
(01) no proportioning valve **lever/pedal 2** ____ ____
(02) fixed proportioning valve
(03) variable proportioning valve
(97) not applicable
(99) unknown

35. Connection to Rear Brake Includes **lever/pedal 1** ____ ____
(01) no proportioning valve **lever/pedal 2**____ ____
(02) fixed proportioning valve
(03) variable proportioning valve
(97) not applicable
(99) unknown

36. ABS **front** ____ ____
(00) no
(01) yes **rear** ____ ____
(97) not applicable
(99) unknown

37. ABS Type **front** ____ ____
(01) electro hydraulic
(02) hydro mechanical **rear** ____ ____
(03) all hydraulic, fluidic
(04) all mechanical
(05) pneumatic hydraulic
(06) electro mechanical
(97) not applicable
(98) other (specify) _____
(99) unknown

38. Brake Mechanism **front** ____ ____
(00) none, not present
(01) caliper/shoe to wheel rim **rear** ____ ____
(02) drum, single leading shoe
(03) drum, double leading shoe
(04) single disc, single piston
(05) single disc, multi piston
(06) double disc, single piston
(07) double disc, multi piston
(97) not applicable
(98) other (specify) _____
(99) unknown

39. Brake Mechanism Actuation **front** ____ ____
(01) hydraulic
(02) mechanical **rear** ____ ____
(03) electric
(04) electric regenerative
(97) not applicable
(98) other (specify) _____
(99) unknown

40. Were Brakes Operational Before Crash? **front** ____ ____
(00) no **rear** ____ ____
(01) yes
(99) unknown

41. Do the Brakes Appear to be Defective? **front** ____ ____
(00) No **rear** ____ ____
(01) Yes
(99) Unknown

42. Brakes Condition/Wear **front** ____ ____
(01) no significant wear
(02) minimum wear to friction surfaces **rear** ____ ____
(03) moderate wear to friction surfaces
(04) severe wear to friction surfaces, replacement and repair overdue
(05) severe deterioration due to wear of friction surfaces
(06) severe deterioration of operating system
(07) brake components damaged prior to accident events
(98) other (specify) _____
(99) unknown

43. Brake Adjustment **front** ____ ____
(00) no maladjustment
(01) improper adjustment, **rear** ____ ____
significant control action required for braking action
(02) severe adjustment problem
(03) inoperable due to sabotage
(98) other (specify) _____
(99) unknown

FRAME

44. Frame Type/Configuration ____ ____
(01) step-through, formed sheet metal
(02) step-through, tubular frame
(03) conventional tube cradle type with single down tube
(04) conventional tube cradle type with double down tubes
(05) backbone type, motor-transmission mounted independently
(06) backbone type, motor-transmission integral with frame
(07) perimeter frame, tube type
(08) perimeter frame, extrusion element type
(09) monocoque, shell only structure
(98) other (specify) _____
(99) unknown

45. Frame Material ____ ____
(01) steel
(02) aluminum alloy
(03) carbon fiber composite
(04) other composite
(98) other (specify) _____
(99) unknown

46. Reduction in Wheelbase ___ ____ . ____
CODE IN INCHES AND TENTHS
(00.0 - 99.6) actual number
(99.9) unknown

47. Did Front Wheel Displace Against Either the Motor or the Frame? ____ ____
(00) no
(01) yes
(97) not applicable
(99) unknown

48. Steering Stem Adjustment ____ ____
(01) secure, properly tightened
(02) overly tightened, control interference
(03) loose, contributes to control difficulty
(04) very loose, control interference
(98) other (specify) _____
(99) unknown

49. Steering Damper Installed ____ ____
(00) none installed or not applicable
(01) center steering pivot adjustable friction discs
(02) tubular friction damper
(03) hydraulic tubular damper, one side
(04) hydraulic tubular damper, both sides
(98) other (specify) _____
(99) unknown

50. Is Rear Swing Arm Loose? ____ ____
(00) no
(01) yes
(97) not applicable
(99) unknown

51. Rear Swing Arm Pivot Bearing Condition ____ ____
(01) pivot bolt loose; bearings in good condition
(02) bearings loose or worn; deteriorated distinct swing arm mobility
(03) severely loose or worn, badly deteriorated; severe mobility of swing arm
(97) not applicable
(98) other (specify) _____
(99) unknown

MISCELLANEOUS COMPONENTS

52. Is the Motorcycle Equipped with Pedals? ____ ____
(00) no
(01) yes
(99) unknown

53. Rider Foot Pegs, Footrest Type ____ ____
(00) none
(01) rigid metal pegs, no covers
(02) rigid metal pegs, rubber covers
(03) metal folding pegs, no covers
(04) metal folding pegs, rubber covers
(05) rigid metal footrests, pegs, or footboards
(06) folding metal footrests, pegs, or footboards
(07) accessory highway pegs, only
(08) scooter footboards
(98) other (specify) _____
(99) unknown

54. Passenger Foot Pegs, Footrest Type ____ ____
(00) none
(01) rigid metal pegs, no covers
(02) rigid metal pegs, rubber covers
(03) metal folding pegs, no covers
(04) metal folding pegs, rubber covers
(05) rigid metal footrests, pegs, or footboards
(06) folding metal footrests, pegs, or footboards
(07) accessory highway pegs, only
(08) scooter footboards
(98) other (specify) _____
(99) unknown

55. Side Stand Type ____ ____
(00) none
(01) original equipment, right side, metal end or pad
(02) original equipment, right side, rubber catch pad
(03) original equipment, left side, metal end or pad
(04) original equipment, left side, rubber catch pad
(05) accessory, installed right side
(06) accessory, installed left side
(98) other (specify) _____
(99) unknown

56. Center Stand Type ____ ____
(00) none
(01) original equipment, installed
(02) original equipment, removed
(03) ride-off stand installed
(98) other (specify) _____
(99) unknown

57. Headlamp Assembly Type ____ ____
(00) none
(01) single headlamp
(02) double headlamp
(03) single with auxiliary lights
(04) double with auxiliary lights
(98) other (specify) _____
(99) unknown

58. Was Headlamp Illuminated at the Time of Crash? ____ ____
(00) no
(01) yes, rider controlled
(02) yes, "Always On" technology
(98) other (specify) _____
(99) unknown

59. Was Motorcycle Equipped With an Airbag? ____ ____
(00) no
(01) yes, but airbag did not deploy
(02) yes, airbag did deploy
(99) unknown

60. Is Motorcycle Equipped With or Pulling Any of the Following? ____ ____
(00) no, not applicable
(01) side car
(02) trailer
(03) training wheels
(04) outrigger
(98) other (specify) _____
(99) unknown

61. Handlebar Type ____ ____
(01) original equipment
(02) clip-on
(03) clubman or racer
(04) high sweep or tiller type touring
(05) high rise
(06) motocross, off-road
(98) other (specify) _____
(99) unknown

62. Handlebar Mounting ____ ____
(01) original equipment, solid
(02) original equipment, rubber bushing
(03) setbacks
(04) dog bones
(05) risers
(98) other (specify) _____
(99) unknown

63. Handlebar Construction ____ ____
(01) steel tube
(02) aluminum alloy tube
(03) titanium alloy tube
(04) cast steel
(05) forged steel
(06) cast aluminum alloy
(07) forged aluminum alloy
(08) composite
(09) cast steel with steel tube
(98) other (specify)_____
(99) unknown

64. Handlebar Measurements **Width** ____ ____.____
CODE IN INCHES AND TENTHS
(00.1-99.6) actual number **Rise** ____ ____.____
(99.9) - Unknown
Sweep ____ ____.____

65. Seat Type ____ ____
(01) conventional straddle seat, one level
(02) straddle type, two level, raised passenger
(03) bucket, single seat
(04) bucket, double seat, one level
(05) bucket, double seat, raised passenger
(06) single racer seat, tail fairing behind
(07) single straddle seat, pillion pad behind
(08) single pad, semi-bench type
(98) other (specify) _____
(99) unknown

66. Seat Fastening ____ ____
(00) no seat/not attached
(01) one side hinged, other side latched
(02) tank tongue, both sides tab and screw attachment
(03) tank tongue with double claw latch
(04) forward hinge, button rest on frame, no latch
(05) forward hinge, button rest with latch
(06) multiple tab and screw attachment
(98) other (specify) _____
(99) unknown

FUEL TANK

67. Fuel Tank Type ____ ____
(01) saddle
(02) under seat
(03) submerged in-frame
(98) other (specify)_____
(99) unknown

68. Fuel Tank Material ____ ____
(01) steel
(02) aluminum alloy
(03) fiberglass composite
(04) other composite
(05) injection molded plastic
(06) injection molded plastic covered by metal
(98) other (specify) _____
(99) unknown

69. Fuel Tank Cap Type ____ ____
(00) none, cap missing, fuel filler open or stuffed with cloth, rag, rubber ball, etc.
(01) external screw type, no cover
(02) external screw type, covered
(03) internal screw type, no ratchet, no cover
(04) internal screw type, ratchet, no cover
(05) internal screw type, ratchet, covered, or recessed
(06) exposed bayonet type, no cover, no guard
(07) covered, guarded, or recessed bayonet type
(08) smooth with tank top surface, covered
(09) smooth with tank top surface, no cover
(10) monza, flip-up
(11) press fit cap
(98) other (specify) _____
(99) unknown

70. Cap Retention ____ ____
(01) retained securely, no venting or fuel loss from cap
(02) not retained, ejected completely from tank body
(03) opened but remained attached to tank
(04) displaced sufficiently to allow fuel loss
(97) not applicable, cap missing, fuel filler open or stuffed with cloth, rag, rubber ball, etc.
(98) other (specify)_____
(99) unknown

71. Tank Retention ____ ____
(01) tank completely retained in motorcycle
(02) partially separated, displaced from mounting
(03) completely separated from mounting position
(99) Unknown

72. Tank Deformation ____ ____
(00) none - SKIP TO # 74
(01) mild denting
(02) moderate denting
(03) severe damage
(99) unknown

73. Deformation Source ____ ____
(00) no deformation
(01) contact from motorcyclist's body
(02) collision contact from other motorcycle components
(03) collision contact with other vehicle
(04) collision contact with roadway surface
(05) collision contact with other objects in environment
(97) not applicable
(98) other (specify) _____
(99) unknown

74. Was There a Fuel Tank Failure? ____ ____
(00) no - SKIP TO # 76
(01) yes
(99) unknown

75. Tank Damage/Failure Type ____ ____
CODE UP TO FOUR
(01) denting or crushing from blunt impact ____ ____
(02) laceration or puncture from edge or sharp object ____ ____
(03) metal tank welds separated ____ ____
(04) metal tank weld defect
(05) metal tank corrosion weakness
(06) plastic tank material embrittlement
(07) plastic tank mold defect
(97) not applicable
(98) other (specify) _____
(99) unknown

76. Was There a Fuel Spill or Leak? ____ ____
(00) no - SKIP TO #78
(01) minor leaks, little or no fire hazard
(02) moderate leak or spill, some fire hazard
(03) large quantity of fuel lost with severe fire hazard
(98) other (specify) _____
(99) unknown

77. Source of Fuel Spills or Leaks ____ ____
CODE UP TO FIVE; 00 IN OTHERS
(00) no leaks or spills ____ ____
(01) primary fuel tank
(02) auxiliary fuel tank ____ ____
(03) fuel lines and fittings
(04) fuel filter ____ ____
(05) exhaust
(06) carburetor ____ ____
(07) fuel injection system
(08) fuel cap
(09) fuel tank vent
(97) not applicable
(98) other (specify) _____
(99) unknown

78. Did a Fire Occur? ____ ____
(00) no - SKIP TO #83
(01) yes
(97) not applicable
(99) unknown

79. When Did the Fire Occur? ____ ____
(01) pre-crash
(02) during crash
(03) post-crash
(97) not applicable, no fire
(98) other (specify) _____
(99) unknown

80. The Fire Occurred How Long After the Crash? ____ ____
IN MINUTES
(01-96) actual time
(97) not applicable, no fire
(98) other (specify)_____
(99) unknown

81. Fuel Source for Fire ____ ____
(01) other vehicle or environment
(02) primary fuel tank
(03) auxiliary fuel tank
(04) fuel lines and fittings
(05) fuel filter
(06) exhaust
(07) carburetor
(08) fuel injection system
(09) fuel cap
(10) fuel tank vent
(97) not applicable, no fire
(98) other on motorcycle (specify)
_____
(99) unknown

82. Ignition Source for Fire ____ ____
(00) no source, no fire
(01) other vehicle or environment
(02) sliding motorcycle caused friction sparks
(03) ignition system, high tension sparks
(04) violation of electrical system other than lights/lamps
(05) lights/lamps
(06) exhaust system
(07) smoking materials
(08) cargo, parcels
(09) traffic hazard flares
(97) not applicable, no fire
(98) other (specify) _____
(99) unknown

DRIVELINE

83. Drive Line Type ____ ____
(01) sprockets, exposed chain
(02) sprockets, enclosed chain
(03) belt
(04) shaft
(98) other (specify) _____
(99) unknown

84. Drive Chain, Belt, or Shaft Condition ____ ____
(00) no unusual condition, acceptable adjustment
(01) excessively loose adjustment, excessive wear
(02) drive chain or belt adjustment too tight
(03) chain or belt broken
(04) chain or belt derailed
(98) other (specify)_____
(99) unknown

85. When Did This Drive Line Damage Occur? ____ ____
(00) no drive line damage
(01) pre-crash
(02) during crash
(03) post-crash
(97) not applicable
(99) unknown

86. Drive Sprocket Condition ____ ____
(00) no unusual condition, acceptable condition
(01) front sprocket teeth worn but serviceable
(02) front sprocket teeth badly worn, hinders power application
(03) rear sprocket teeth worn but serviceable
(04) rear sprocket teeth badly worn, hinders power application
(05) severe sprocket wear, related to chain or belt derailing, drive line failure
(97) not applicable, no sprockets
(98) other (specify) _____
(99) unknown

THROTTLE CONTROL

87. Does Throttle Control Work? ____ ____
(00) no
(01) yes
(99) unknown

88. Drum Condition ____ ____
(00) no drum damage
(01) grip interference; binds in rotation
(02) base adjustment improper; binds in rotation
(03) drum damaged prior to accident events; binds in rotation
(04) cable draw interference; binds in rotation
(05) needs lubrication; binds in rotation
(06) has foreign matter in throttle base; binds in rotation
(07) improper tightening of throttle base; rotation causes base rotation
(97) not applicable, thumb throttle or squeeze throttle type
(98) other (specify)
_____
(99) unknown

89. Condition of Cables ____ ____
(00) cables not damaged
(01) bind due to bent sheath
(02) bind due to corrosion, lack of lubrication
(03) bind due to frayed wires
(04) end collets loose
(05) incorrect size causes malfunction
(06) improper routing; steering causes throttle action
(97) not applicable
(98) other (specify)
_____
(99) unknown

90. Condition of Throttle Plate/Slides ____ ____
(00) throttle plate/slides not damaged
(01) carburetor damage prior to accident events causes binding, throttle sticking
(02) throttle plate damage prior to accident causes throttle sticking
(03) foreign object in induction system causes throttle malfunction
(04) missing air cleaner allows induction system contamination, sticking throttle
(05) improper reassembly of carburetor after maintenance allows sticking slide or throttle plate
(97) not applicable
(98) other (specify)_____
(99) unknown

91. Return springs condition ____ ____
(00) return springs not damaged
(01) external return springs missing, sticking throttle
(02) carburetor internal slide springs missing or damaged
(03) external throttle plate springs altered, weaker springs; sticking throttle
(04) not applicable
(98) other (specify)
_____
(99) unknown

EXHAUST SYSTEM

92. Condition ____ ____
(00) no problems, good condition
(01) worn or damaged
(02) worn or damaged; excessive noise
(03) performance equipment; noise level approximately same as original equipment
(04) high performance equipment; excessive noise
(98) other (specify)
_____
(99) unknown

MOTORCYCLE SUMMARY TABLE

Codes for each blank cell (unless otherwise noted)
(00) No
(01) Yes
(97) Not applicable

	Equipped	Original Equipment	Aftermarket	Operational	Modified	Damaged in Crash
Front crash bars						
Rear crash bars						
Engine guard						
Windscreen						
Fairing, handlebar or steering mounted						
Fairing, frame mounted						
Headlamps						
Headlamp nacelle						
Auxiliary headlamp						
Front position lamp						
Front reflector, yellow						
Front reflector, white						
Front reflector, red						
Front reflector, silver						
Front turn signals						
Speedometer						
Tachometer						
Handlebars						
Throttle						

Codes unless otherwise noted (00) No (01) Yes (97) Not applicable	**Equipped**	**Original Equipment**	**Aftermarket**	**Operational**	**Modified**	**Damaged in Crash**
Clutch lever						
Brake lever						
Right side rear view mirrors, posts						
Left side rear view mirrors, posts						
Front suspension						
Front tire/wheel						
Front fender						
Front brakes						
Seat						
Sissy bar/passenger back rest						
Side reflectors, yellow						
Side reflectors, red						
Side reflectors, silver						
Frame						
Grab rails/ hand holds						
Fuel tank						
Auxiliary fuel tank						
Motor crankcase, cylinders						
Radiator						
Water hose						
Motor power enhancement						
Transmission case						
Oil tank						
Battery, battery box						
Rear brake pedal						
Shift lever						
Foot pegs, footrests						

Codes unless otherwise noted (00) No (01) Yes (97) Not applicable	**Equipped**	**Original Equipment**	**Aftermarket**	**Operational**	**Modified**	**Damaged in Crash**
Highway pegs/footrests						
Side stand						
Side stand interlock						
Center stand						
Muffler/exhaust system						
Tank bag						
Luggage/cargo rack						
Parcel rack						
Saddle bags						
Rear position lamps						
Stop lamp						
Rear reflectors, yellow						
Rear reflectors, red						
Rear reflectors, silver						
Rear turn signals						
Rear suspension						
Rear tire/wheel						
Rear fender						
Rear brakes						
Tools, tool box						
Side covers						
Trailer						
Side Car						

Motorcycle Dynamics Form

Case Number _____

PRECRASH

1. Pre-crash Motion Prior to Precipitating Event ____ ____

(00) stopped in traffic, speed is zero
(01) moving in a straight line, constant speed
(02) moving in a straight line, throttle off
(03) moving in a straight line, braking
(04) moving in a straight line, accelerating
(05) turning right, constant speed
(06) turning right, throttle off
(07) turning right, braking
(08) turning right, accelerating
(09) turning left, constant speed
(10) turning left, throttle off
(11) turning left, braking
(12) turning left, accelerating
(13) stopped at roadside, or parked
(14) backing up, in a straight line
(15) backing up, steering left
(16) backing up, steering right
(17) making U-turn right
(18) making U-turn left
(19) making Y-turn right
(20) making Y-turn left
(21) changing lanes to left
(22) changing lanes to right
(23) merging to left
(24) merging to right
(25) entering traffic from right shoulder, median, or parked
(26) entering traffic from left shoulder, median, or parked
(27) leaving traffic, turn out to right
(28) leaving traffic, turn out to left
(29) passing maneuver, passing on right
(30) passing maneuver, passing on left
(31) crossing opposing lanes of traffic
(32) traveling wrong way, against opposing traffic
(33) stripe-riding, filtering forward between lanes, longitudinal motion, only
(34) filtering between lanes, lateral motion, only
(35) filtering forward between lanes, both longitudinal and lateral motion
(36) collision avoidance maneuver to avoid a different collision
(37) negotiating a curve, constant speed
(38) negotiating a curve, throttle off
(39) negotiating a curve, braking
(40) negotiating a curve, accelerating
(97) not applicable
(98) other(specify) _____
(99) unknown

2. Travel Speed ____ ____ ____

IN MPH, WHOLE NUMBERS, ONLY
(000) stopped in traffic, speed is zero
(999) unknown

3. Travel Speed Confidence Interval + ____ ____

IN MPH, WHOLE NUMBERS, ONLY
(99) unknown

4. Line-of-Sight to Other Vehicle ____ ____

CLOCK FACE DIRECTION, RELATIVE TO MOTORCYCLE CENTER LINE
(97) not applicable
(99) unknown

5. Pre-crash Motion after Precipitating Event ____ ____

USE SAME CODES AS IN #1 ABOVE

6. Collision Avoidance Action ____ ____

CODE UP TO FOUR
(00) none ____ ____
(01) braking
(02) swerving ____ ____
(03) accelerating
(04) counter-steering ____ ____
(05) cornering
(98) other (specify)
_____
(99) unknown

7. Braking Skid Marks on Roadway ____ ____

(00) none
(01) skid marks from rear tire, only
(02) skid marks from front tire, only
(03) skid marks from both front and rear tires, front and rear equivalent and overlaying
(04) long skid mark from rear tire, short terminal skid mark from front tire
(05) light skid marks from both front and rear, no wheel lockup evidence.
(97) not applicable
(98) other (specify) _____
(99) unknown

8. Length of Skid Marks on Roadway

Front tire ____ ____ ____ feet ____ ____ inches

Rear tire ____ ____ ____ feet ____ ____ inches

(000 00) none
(001-996) actual number
(997 97) not applicable
(999 99) unknown

9. Braking Skid Mark Evidence on Roadway ____ ____
(00) none
(01) dry roadway braking skid marks confirmed from crash motorcycle
(02) wet roadway braking skid marks confirmed from crash motorcycle
(03) deep water on roadway, aquaplaning most likely, no braking skid marks remaining
(04) wet reverted rubber skidding in evidence, white steam-cleaned skid paths shown on roadway confirmed from crash motorcycle
(05) braking skid marks evidence most likely present but degraded by traffic after crash, no confirmation at scene examination
(06) snow/ice on roadway, braking skid marks confirmed from crash motorcycle
(97) not applicable
(98) other (specify) _____
(99) unknown

10. Braking Tire Striation Evidence ____ ____
(00) none, front or rear tire
(01) rear tire, only
(02) front tire, only
(03) both front and rear tires
(04) prolonged skid patch on rear tire, only
(05) prolonged skid patch on rear tire, plus braking striations on front tire
(06) prolonged skid patch on rear tire, plus slide-out striations on front tire
(07) prolonged skid patch on rear tire, plus slide-out striations on both front and rear tires
(97) not applicable
(98) other (specify) _____
(99) unknown

11. Swerve ____ ____
(00) no swerve
(01) swerve to right, correct decision
(02) swerve to right, incorrect decision
(03) swerve to left, correct decision
(04) swerve to left, incorrect decision
(97) not applicable
(99) unknown

12. Acceleration Evidence on Rear Tire ____ ____
(00) none
(01) moderate slip striations and tread block edge erosion
(02) severe slip striations and tread block edge erosion
(03) extreme slip striations, tread block edge erosion and tread rubber reversion
(97) not applicable
(98) other (specify) _____
(99) unknown

13. Counter-steering ____ ____
(00) no counter steering
(01) counter-steering proper, produced desired swerve
(02) counter-steering improper, produced undesired direction change
(97) not applicable
(99) unknown

14. Cornering Skid Mark Evidence on Roadway ____ ____
(00) none
(01) dry roadway cornering skid marks confirmed from crash motorcycle
(02) wet roadway cornering skid marks confirmed from crash motorcycle
(03) deep water on roadway, aquaplaning most likely, no cornering skid marks remaining
(04) wet reverted rubber skidding in evidence, white steam-cleaned cornering skid paths shown on roadway confirmed from crash motorcycle
(05) cornering skid marks evidence most likely present but degraded by traffic after crash, no confirmation at scene examination
(06) snow/ice on roadway, cornering skid marks confirmed from crash motorcycle
(97) not applicable
(98) other (specify)
_____
(99) unknown

15. Cornering Tire Striation Evidence ____ ____
(00) none
(01) right cornering tire striations, rear tire
(02) right cornering tire striations, front tire
(03) right cornering striations, both front and rear tires
(04) left cornering tire striations, rear tire
(05) left cornering tire striations, front tire
(06) left cornering tire striations, both front and rear tires
(97) not applicable
(98) other (specify)
_____
(99) unknown

CRASH MOTION AT IMPACT

16. Motorcycle First Collision Contact Code ____ ____

(LF) left front
(CF) center front
(RF) right front
(LC) left center
(RC) right center
(TC) top center
(TR) top rear
(UF) undercarriage front
(UC) undercarriage center
(LR) left rear
(CR) center rear
(RR) right rear
(TF) top front
(UR) undercarriage rear
(NC) no direct contact to motorcycle
(98) other (specify) _____
(99) unknown

17. Object(s) Contacted, code up to 3 FIRST ____ ____ SECOND ____ ____ THIRD ____ ____

COLLISION WITH OTHER VEHICLE
(01) other vehicle # 1
(02) other vehicle # 2
(03) other vehicle # 3

COLLISION WITH FIXED OBJECT
(04) tree (<=10 cm in diameter)
(05) tree (>10 cm in diameter)
(06) shrubbery or bush
(07) embankment
(08) concrete traffic barrier
(09) other traffic barrier (includes guardrail)(specify)
(10) impact attenuator
(11) bridge
(12) curb
(13) fire hydrant
(14) ground
(15) ditch or culvert
(16) building
(17) wall
(18) fence
(19) nonbreakaway pole or post (<=10cm in diameter)
(20) nonbreakaway pole or post (>10 cm but <=30 cm in diameter)
(21) nonbreakaway pole or post (>30 cm in diameter)
(22) nonbreakaway pole or post (diameter unknown)
(23) breakaway pole or post (any diameter)
(28) other fixed object (specify) _____
(29) unknown fixed object

COLLISION WITH NONFIXED OBJECT
(30) pedestrian
(31) train
(32) object fell from vehicle in-transport
(33) trailer, disconnected in transport
(34) animal
(35) cyclist or cycle
(36) vehicle occupant
(37) other nonmotorist or conveyance (specify) _____
(38) other nonfixed object (specify) _____
(39) unknown nonfixed object

NONCOLLISION
(40) overturn-> rollover (excludes end-over-end)
(41) rollover->end-over-end
(42) fire or explosion
(43) jackknife
(44) other intra-unit damage specify) _____
(45) noncollision injury
(48) other noncollision (specify) _____
(49) noncollision-details unknown
(97) not applicable
(98) other event (specify) _____
(99) unknown event or object

18. Motorcycle Impact Speed in MPH ___ ___ ___
(000) stopped in traffic, speed is zero
(999) unknown

19. Roll Attitude Angle in Degrees ± ___ ___ ___
INDICATE "+" RIGHT SIDE DOWN, OR "-" LEFT SIDE DOWN
(997) not applicable
(999) unknown

20. Sideslip Angle in Degrees ± ___ ___ ___
INDICATE "+" CLOCKWISE OR "-" COUNTERCLOCKWISE RELATIVE TO THE MOTORCYCLE CENTER LINE
(997) not applicable
(999) unknown

21. Relative Heading Angle ± ___ ___ ___
ANGLE OF OTHER VEHICLE X AXIS RELATIVE TO MOTORCYCLE X AXIS, REGARDLESS OF RELATIVE POSITIONS OF OTHER VEHICLE AND MOTORCYCLE
(997) not applicable
(999) unknown

22. PDOF
PRINCIPAL DIRECTION OF FORCE IN DEGREES ___ ___ ___
(999) unknown

23. Calculated Time from Precipitating Event to Impact ___ ___ .___ ____
IN SECONDS
(99.99) unknown

POST CRASH

24. Motorcycle Motion Code ____ ____

(00) none, stopped at POI; point of rest POR and POI coincide
(01) stopped within 6 feet of POI
(02) rolled on wheels from POI to POR
(03) rolled on wheels from POI, then impacted other object at POR
(04) vehicle rollover from POI to POR
(05) skidded, slid from POI to POR
(06) skidded, slid from POI, then impacted other object at POR
(07) vaulted above ride height from POI, then rolled to POR
(08) vaulted above ride height from POI, then slid to POR
(09) vaulted above ride height from POI, then impacted other object at POR
(10) run over at POI
(11) run over, dragged from POI to POR
(12) caught by or landed on other vehicle; carried to POR, different from other vehicle POR
(13) engaged, entangled, or entrapped with other vehicle (other than run over); POR same as other vehicle POR
(14) vehicles did not separate; PORs are essentially same for motorcycle and other vehicle
(15) spun or yawed, sliding from POI to POR
(16) hit and run, rider departed scene of crash, with motorcycle, immediately after collision
(17) rider/passenger departed scene immediately after collision but motorcycle still at scene
(98) other (specify) _____
(99) unknown

25. Distance from POI to Motorcycle POR

CODE DISTANCE IN FEET AND INCHES

Distance along the POI path

± ___ ____ ____ feet ____ ___ in.

Offset

± ____ ____ ____ feet ___ ___ in.

(996 96) 996 feet or more
(999 99) unknown

26. Post-crash Scrape Marks on Motorcycle ____ ____

(00) none
(01) motorcycle down on right side, sliding high side first
(02) motorcycle down on right side, sliding low side first
(03) motorcycle down on right side, sliding front end first
(04) motorcycle down on right side, sliding rear end first
(05) motorcycle down on left side, sliding high side first
(06) motorcycle down on left side, sliding low side first
(07) motorcycle down on left side, sliding front end first
(08) motorcycle down on left side, sliding rear end first
(09) motorcycle tumbling, side over side
(10) motorcycle tumbling, end over end
(11) scrape marks with unknown motorcycle dynamics
(98) other (specify) _____
(99) unknown

27. Rider Motion Code ____ ____

(00) none, stopped at POI; POR and POI coincide
(01) stopped within 6 feet of POI
(02) tumbled and rolled from POI to POR
(03) tumbled and rolled from POI, then impacted other object at POR
(04) skidded, slid from POI to POR
(05) skidded, slid from POI, then impacted other object at POR
(06) vaulted above ride height from POI, then rolled to POR
(07) vaulted above ride height from POI, then slid to POR
(08) vaulted above ride height from POI, then impacted other object at POR
(09) run over at POI
(10) run over, dragged from POI to POR
(11) caught by or landed on other vehicle; carried to POR, different from other vehicle POR
(12) engaged, entangled, or entrapped with other vehicle (other than run over); POR same as other vehicle POR
(13) did not separate from motorcycle, rode from POI to POR; POR same as motorcycle POR
(14) hit and run, departed scene of crash immediately after collision
(15) rider departed scene immediately after collision, but motorcycle still at scene
(98) other (specify) _____
(99) unknown

28. Distance from POI to Rider POR

CODE IN FEET AND INCHES

___ ___ ___ feet ___ ___ inches

(996 96) 996 feet or more
(999 99) unknown

29. Passenger Motion Code ____ ____
(00) none, stopped at POI; POR and POI coincide
(01) stopped within 6 feet of POI
(02) tumbled and rolled from POI to POR
(03) tumbled and rolled from POI, then impacted other object at POR
(04) skidded, slid from POI to POR
(05) skidded, slid from POI, then impacted other object at POR
(06) vaulted above ride height from POI, then rolled to POR
(07) vaulted above ride height from POI, then slid to POR
(08) vaulted above ride height from POI, then impacted other object at POR
(09) run over at POI
(10) run over, dragged from POI to POR
(11) caught by or landed on other vehicle; carried to POR, different from other vehicle POR
(12) engaged, entangled, or entrapped with other vehicle (other than run over); POR same as other vehicle POR
(13) did not separate from motorcycle, rode from POI to POR; POR same as motorcycle POR
(14) hit and run, departed scene of crash immediately after collision
(15) rider departed scene immediately after collision, but motorcycle still at scene
(97) not applicable, no passenger
(98) other (specify) _____
(99) unknown

30. Distance from POI to Passenger POR
CODE IN FEET AND INCHES
___ ___ ___ feet ___ ___ inches
(000 00) no passenger
(999 99) unknown

31. Post-crash Crash Scene Scrape Marks ____ ____
(00) none
(01) made by motorcycle
(02) made by other vehicle
(03) made by motorcycle and other vehicle
(98) other (specify)
_____
(99) unknown

CONTRIBUTING MOTORCYCLE FACTORS

32. Tire Size **front** ____ ____
(01) original equipment
(02) not original equipment, but specified size **rear** ____ ____
(03) proper rim size, oversize section
(04) proper rim size, undersize section
(05) improper rim size, too large
(06) improper rim size, too small
(98) other (specify) _____
(99) unknown

33. Tire Inflation Pressure Post Crash **front** ____ ____
(01) tire deflated during crash events
(02) tire inflation within 15% of recommended pressure **rear** ____ ____
(03) tire inflation between 16% and 39% of recommended pressure
(04) tire grossly underinflated, greater than 40% below recommended pressure
(05) tire grossly overinflated, greater than 40% above recommended pressure
(98) other (specify) _____
(99) unknown

34. Contributing Factor Related to Tire or Wheel **front** ____ ____
(00) no wheel or tire condition related to crash causation **rear** ____ ____
(01) tire mechanical failure caused loss of control
(02) tire puncture/ flat caused loss of control
(03) tire beads unseated and caused loss of control
(04) gross underinflation contributed to loss of tire traction and caused loss of control
(05) gross overinflation caused loss of traction and caused loss of control
(06) gross error of inflation contributed to stability problem and caused loss of control
(07) wheel mechanical failure caused loss of control, including valve failure
(98) other (specify) _____
(99) unknown

35. Contributing Factor Related to Suspension Condition **front** ____ ____
(00) suspension condition made no contribution to crash causation **rear** ____ ____
(01) deteriorated suspension caused control distress, limited collision avoidance
(02) deteriorated suspension caused unstable dynamics, loss of control
(97) not applicable, rigid suspension
(98) other (specify) _____
(99) unknown

36. Contributing Factor Related to Frame Condition ____ ____
(00) no contribution
(01) cracked or broken frame caused loss of control
(02) loose motor-transmission mounting bolts or screws caused loss of control
(03) deteriorated steering head bearings/steering stem caused loss of control
(04) deteriorated rear swing arm bearings caused loss of control
(05) general frame deterioration caused uncontrolled dynamic response
(98) other (specify) _____
(99) unknown

37. Contributing Factor Related to Cornering Clearance ____ ____
(00) no contribution
(01) exhaust system grounded out first
(02) foot pegs, foot rests grounded out first
(03) side stand not retracted, grounded out first
(04) side stand retracted but grounded out first
(05) center stand grounded out first
(06) accessory or cargo limited ground clearance
(07) passenger weight or extremities limited ground clearance
(98) other (specify) _____
(99) unknown

38. Contributing Factor Related to the Seat ____ ____
(00) no contribution
(01) seat came loose, distracted rider
(02) seat came loose caused rider loss of control
(03) seat cover material slippery, caused rider displacement and loss of control
(04) seat cover treated with slippery preservative, caused rider displacement and loss of control
(05) seat cover and cushion severely deteriorated, caused rider displacement and loss of control
(98) other (specify) _____
(99) unknown

39. Contributing Factor Related to the Drive Chain, Belt, or Shaft Condition ____ ____
(00) no contribution
(01) chain or belt broken or derailed, drive failure crash related
(98) other (specify) _____
(99) unknown

40. Contributing Factor Related to the Exhaust System Condition ____ ____
(00) no contribution
(01) hot exhaust system caused contact burns
(02) exhaust system components involved in contact impact injury
(03) hot exhaust system components were fire ignition source
(04) exhaust system noise prevented motorcyclist from hearing critical traffic sounds
(05) exhaust system noise caused motorcyclist fatigue and inattention (as claimed by rider)
(06) exhaust system noise alerted other vehicle driver of motorcycle presence, but could not avoid collision
(97) not applicable, no exhaust system
(98) other (specify) _____
(99) unknown

41. Contributing Motorcycle Vehicle Failure ____ ____
(00) no contribution
(01) tire or wheel failure
(02) brake failure
(03) steering failure
(04) power transmission failure
(05) electrical failure
(06) suspension failure
(07) vehicle structural failure, other than suspension, tire, or wheel
(98) other (specify) _____
(99) unknown

42. Was a Pre-Crash Fire a Contributing Factor? ____ ____
(00) no
(01) yes
(99) unknown

43. Was The Cargo/Luggage a Contributing Factor? ____ ____
(00) no contribution
(01) cargo/luggage came loose, caused rider loss of control
(02) cargo/luggage interfered with controls, caused loss of control
(03) cargo/luggage interfered with controls, prevented successful collision avoidance action
(04) cargo/luggage entrapped in rear suspension or wheel
(05) cargo/luggage entrapped in front suspension or wheel
(06) cargo/luggage against motor and exhaust system, heat damage or fire caused rider distraction
(07) cargo/luggage container began to spill contents, distracted rider
(97) not applicable, no cargo or luggage
(98) other (specify) _____
(99) unknown

Motorcycle Rider Form

Case Number _____

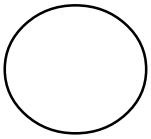
Source: Rider ☐ Surrogate ☐

RIDER'S DESCRIPTION OF CRASH EVENTS AND RELATED FACTORS

SPECIFIC QUESTIONS TO ASK INTERVIEWEE

CRASH DIAGRAM

Use this diagram to aid in relating interview crash trajectory data to identifiable objects in the environment.



North

PRECRASH DATA

1. How Were You Operating Your Motorcycle Immediately Prior to the Crash? ____ ____
(00) stopped in traffic, speed is zero
(01) moving in a straight line, constant speed
(02) moving in a straight line, throttle off
(03) moving in a straight line, braking
(04) moving in a straight line, accelerating
(05) turning right, constant speed
(06) turning right, throttle off
(07) turning right, braking
(08) turning right, accelerating
(09) turning left, constant speed
(10) turning left, throttle off
(11) turning left, braking
(12) turning left, accelerating
(13) stopped at roadside, or parked
(14) backing up, in a straight line
(15) backing up, steering left
(16) backing up, steering right
(17) making U-turn right
(18) making U-turn left
(19) making Y-turn right
(20) making Y-turn left
(21) changing lanes to left
(22) changing lanes to right
(23) merging to left
(24) merging to right
(25) entering traffic from right shoulder, median, or parked
(26) entering traffic from left shoulder, median, or parked
(27) leaving traffic, turn out to right
(28) leaving traffic, turn out to left
(29) passing maneuver, passing on right
(30) passing maneuver, passing on left
(31) crossing opposing lanes of traffic
(32) traveling wrong way, against opposing traffic
(33) stripe-riding, filtering forward between lanes, longitudinal motion, only
(34) filtering forward between lanes, lateral motion, only
(35) filtering forward between lanes, both longitudinal and lateral motion
(36) collision avoidance maneuver to avoid a different collision
(37) negotiating a curve, constant speed
(38) negotiating a curve, throttle off
(39) negotiating a curve, braking
(40) negotiating a curve, accelerating
(97) not applicable
(98) other (specify) _____
(99) unknown

2. Where Were You Looking At the Start of the Crash Sequence? ____ ____
(01) looking straight ahead
(02) looking right
(03) looking left
(04) looking rearward
(05) looking at own motorcycle
(98) other (specify) _____
(99) unknown

3. Were Your Motorcycle Brakes Functioning Before the Crash? ____ ____
(00) no
(01) yes
(98) other (specify) _____
(99) unknown

4. Did You Have Your Hands/Fingers Positioned on the Front Brake Prior to the Crash Event? ____ ____
(00) no
(01) yes
(97) not applicable, no front brake or brake lever
(98) other (specify) _____
(99) unknown

5. In Which Lane Were You Traveling Just Before the Precipitating Event? ____ ____
(01) lane 1 (right curb lane)
(02) lane two
(03) lane three
(04) lane four
(97) not applicable, not in a travel lane
(98) other (specify) _____
(99) unknown

6. What Was Your Travel Speed Just Before the Precipitating Event? ____ ____
(00) stopped
(01-95) actual miles per hour
(96) 96 mph or more
(98) other (specify) _____
(99) unknown

7. What Were the Lateral Movements of Your Motorcycle Immediately Before Impact? ____ ____
(00) no movement/avoidance maneuver
(01) lane departure-left side
(02) lane return-left side
(03) lane departure-right side
(04) lane return-right side
(05) road departure-left side
(06) road return-left side
(07) road departure-right side
(08) road return-right side
(97) not applicable
(98) other (specify) _____
(99) unknown

8. What Collision Avoidance Actions Were You Taking (If Any)? ____ ____

CODE UP TO FOUR ____ ____

(00) no avoidance actions
(01) braking ____ ____
(02) downshifting
(03) releasing brakes ____ ____
(04) steering left
(05) steering right
(06) accelerating
(07) laid the bike down
(08) use of horn
(09) flashing headlamp
(10) drag feet
(11) jump or bail out
(98) other (specify) _____
(99) unknown

9. Did You Lose Control Of The Motorcycle? ____ ____

(00) no loss of control - SKIP TO # 11
(01) capsized or fell over
(02) braking slide out-low side
(03) braking slide out-high side
(04) cornering slide out-low side
(05) cornering slide out-high side
(06) ran wide on turn, ran off road
(07) lost wheelie
(08) low speed wobble
(09) high speed wobble
(10) weave, no pitch
(11) pitch weave, low speed
(12) pitch weave, high speed cornering
(13) end over, flying W
(14) continuation, no control actions
(15) lost stoppie
(97) not applicable
(98) other (specify) _____
(99) unknown

10. Was There Any Control Loss Due To Weather, Roadway Or Mechanical Problems? ____ ____

(00) no control loss due to weather, roadway or mechanical problems
(01) yes, control loss due to weather
(02) yes, control loss due to mechanical problems
(03) yes, control loss due to both weather and mechanical
(04) yes, control loss due to roadway
(05) yes, control loss due to roadway and weather
(06) yes, control loss due to roadway and mechanical
(07) yes, control loss due to all three
(98) other (specify) _____
(99) unknown

RECOGNITION OR DECISION

If not multi-vehicle crash, code not applicable to questions 11 through 13

11. Where Was The Other Vehicle Coming From In Relation To You? ____ ____

(01) 180 degrees opposed (oncoming)
(02) from left front
(03) from left
(04) from left rear
(05) from right front
(06) from right
(07) from right rear
(08) from behind
(97) not applicable/no other vehicle
(98) other (specify) _____
(99) unknown

12. Was Your Line Of Sight To The Other Vehicle Clear? ____ ____

(01) yes, clear
(02) no, view obstructed by road curvature
(03) no, view obstructed by roadway grade
(04) no, view obstructed by roadside objects (shrubs, vehicles, buildings)
(05) other vehicle in blind spot of mirror
(97) not applicable, no other vehicle
(98) other (specify) _____
(99) unknown

13. Was Your View Of The Other Vehicle Obscured? ____ ____

(00) no, not obscured
(01) yes, obscured by sun glare
(02) yes, obscured by headlight glare
(03) yes, obscured by other glare (specify)
_____
(04) yes, obscured by darkness
(05) yes, obscured by nighttime and color of vehicle
(06) obscured by dust, smoke, smog, fog
(07) obscured by windscreen or eye wear condition (dirt, condensation, etc)
(97) not applicable
(98) yes, obscured by other (specify)
_____
(99) unknown

SITUATION

14. What Was Your Position On The Motorcycle At The Time of The Collision? ____ ____
(00) not on motorcycle
(01) normal seating position
(02) standing on footrests, foot pegs
(03) seated, head down
(04) shoulder check, left
(05) shoulder check, right
(06) dismounting, jumping to side
(07) dismounting, jumping upward
(08) dragging feet, foot down
(09) abnormal seating position
(10) standing on seat
(98) other (specify) _____
(99) unknown

15. Were You Distracted By Any Of The Following? ____ ____
(00) attentive and not distracted
(01) looked but did not see
DISTRACTIONS
(02) by other occupants (specify)_____
(03) by moving object in vehicle (specify) _____
(04) while talking or listening to cellular phone/intercom/ shortwave radio (specify location and type of device) _____
(05) while dialing cellular phone/intercom/shortwave radio (specify location and type of device) _____
(06) while adjusting climate controls
(07) while adjusting radio/cassette/CD (specify) _____
(08) while using other device/controls integral to vehicle (specify) _____
(09) while using/reaching for device/object brought into vehicle (specify) _____
(10) sleepy or fell asleep
(11) distracted by outside person/object/event (specify) _____
(12) eating or drinking
(13) smoking related
(14) while listening to or adjusting GPS device
(96) distracted, details unknown
(98) other distraction (specify) _____
(99) unknown

TRIP INFORMATION

16. Where Did Your Trip Begin Today? ____ ____
(01) home
(02) work, business
(03) recreation/social
(04) school
(05) errand, shopping
(06) family, friends, relatives
(07) meals, restaurant, café, etc.
(08) transport someone
(09) medical/dental
(10) bar, pub
(11) religious activity
(12) personal business/obligations
(98) other (specify) _____
(99) unknown

17. Did You Do Any Safety Or Maintenance Checks On Your Motorcycle Before Leaving For This Trip? ____ ____
CODE UP TO 4
(00) none ____ ____
(01) exterior, visual inspection, only
(02) checked fluids ____ ____
(03) checked lights
(04) checked brakes
(05) checked tire pressure
(98) other (specify) _____
(99) unknown

18. What Was Your Trip Destination? ____ ____
(01) home
(02) work, business
(03) recreation/social
(04) school
(05) errand, shopping
(06) family, friends, relatives
(07) meals, restaurant, café, etc.
(08) transport someone
(09) medical/dental
(10) bar, pub
(11) religious activity
(12) personal business/obligations
(13) no destination, joy riding
(98) other (specify) _____
(99) unknown

19. About How Many Miles Would The Trip Have Been One Way? ___ ___ ___
(001) one mile or less
(002-995) actual number of miles
(996) 996 miles or greater
(997) not applicable
(999) unknown

20. How Frequently Do You Travel This Road On/In Any Vehicle? ____ ____
(01) first time
(02) daily use, i.e., once per day
(03) weekly use, i.e., once per week
(04) monthly use, i.e., once per month
(05) quarterly, i.e., once per quarter
(06) annually, i.e., once per year
(07) less than annually
(99) unknown

21. How Long Had You Been Riding Today Prior To The Crash?
USE ZEROS TO FILL IN BLANKS
___ ___ Hours ___ ___Minutes

(00-96) hours (00-59) minutes
(97-97) not applicable, had not yet begun trip
(98-98) other (specify) _____
(99-99) unknown

22. How Many Miles Had You Ridden Before The Crash Occurred? ___ ___ ___
(001) one mile or less
(002-095) actual miles
(096) 96 or more
(997) not applicable, had not yet begun trip
(998) other (specify) _____
(999) unknown

HELMET DATA

23. At The Time Of The Crash, Were You Wearing A Helmet? ____ ____
(00) no
(01) yes - SKIP TO # 26
(02) helmet available, but not used
(98) other (specify) _____
(99) unknown

24. What Is Your Reason For Not Wearing A Helmet? ____ ____
(01) not required by law
(02) no expectation of accident involvement
(03) helmets too expensive
(04) helmets are inconvenient and uncomfortable
(05) helmets reduce traffic awareness, limit hearing and vision
(06) helmets ineffective in reducing head injury
(07) helmets cause neck injury
(08) helmets can not be used, physical or religious reasons
(09) do not own a helmet
(10) forgot to bring helmet today
(97) not applicable, rider is wearing a helmet
(98) other (specify) _____
(99) unknown

25. Do You Ever Wear A Helmet? ____ ____
(00) no - SKIP TO # 37, IMPAIRMENT
(01) yes - SKIP TO QUESTION # 35
(02) occasionally - SKIP TO QUESTION # 35
(97) not applicable, rider is wearing a helmet
(98) other (specify) _____
(99) unknown

26. Was Your Helmet Properly Adjusted On Your Head? ____ ____
(00) no
(01) yes
(97) not applicable, no helmet
(98) other (specify) _____
(99) unknown

27. Was Your Helmet Securely Fastened To Your Head? ____ ____
(00) no
(01) yes
(97) not applicable, no helmet
(98) other (specify) _____
(99) unknown

28. What Type Of Helmet Is It? ____ ____
(00) not a motorcycle helmet
(01) half/police motor vehicle, motorcycle helmet
(02) open face motor vehicle, motorcycle helmet
(03) full face motor vehicle, motorcycle helmet
(04) novelty helmet
(97) not applicable/no helmet
(98) other (specify)_____
(99) unknown

29. What Is The Type Of Helmet Coverage? ____ ____
(01) partial coverage
(02) full coverage
(03) full facial, integral chin bar but no face shield
(04) full facial, removable chin bar
(05) full facial, retractable chin bar
(06) full facial coverage, integral chin bar and face shield
(07) wrap around face shield
(08) bubble type face shield
(09) visor/face shield combo
(97) not applicable/no helmet
(98) other (specify)_____
(99) unknown

30. What Is The Predominant Color Of Your Helmet? ____ ____
(01) no dominating color, multi-colored
(02) white
(03) yellow
(04) black
(05) red
(06) blue
(07) green
(08) silver, grey
(09) orange
(10) brown, tan
(11) purple
(12) gold
(13) chrome, metallic
(97) not applicable/no helmet
(98) other (specify) _____
(99) unknown

31. What Is The Color Of The Face Shield? ____ ____
(01) clear
(02) green
(03) grey, smoke
(04) amber, yellow
(05) blue
(06) reflective (any color)
(97) not applicable/no face shield
(98) other (specify) _____
(99) unknown

32. Do You Own This Helmet? ____ ____
(00) no
(01) yes
(97) not applicable, no helmet
(98) other (specify) _____
(99) unknown

33. How Well Does This Helmet Fit? ____ ____
(01) acceptable fit
(02) too large, too loose
(03) too small, too tight
(97) not applicable/no helmet
(98) other (specify) _____
(99) unknown

34. Was The Helmet Retained In Place On Your Head During The Crash? ____ ____
(00) no helmet
(01) no, helmet ejected from head during pre-crash time period
(02) no, helmet ejected from head during crash
(03) no, helmet ejected from head after collision
(04) yes, helmet retained in place to completion of crash events
(05) yes, helmet moved on head but was retained
(97) not applicable
(98) other (specify) _____
(99) unknown

35. What Percentage Of Time Do You Wear Your Helmet When Riding? ___ ___ ___ %
CODE FROM 001-100 PERCENT
(000) never wear a helmet
(997) not applicable/no helmet
(999) unknown

36. Under What Conditions Do You Usually Wear Your Helmet? ____ ____
CODE UP TO FOUR; INPUT "97" ____ ____
FOR REMAINING RESPONSES
(00) never use helmet ____ ____
(01) long trips
(02) highway traffic ____ ____
(03) in adverse weather
(04) never in hot weather
(05) always
(97) not applicable/no helmet
(98) other (specify) _____
(99) unknown

IMPAIRMENT

37. Do You Have Any Of The Following Permanent Physical Conditions? ____ ____
CODE UP TO THREE; INPUT "00" ____ ____
IN REMAINING RESPONSES
(00) no ____ ____
(01) vision reduction or loss
(02) hearing reduction or loss
(03) respiratory, cardiovascular condition
(04) paraplegia
(05) amputee
(06) neurological, epilepsy, stroke
(07) endocrine system, diabetes, digestive system
(08) infirmity, arthritis, senility
(98) other (specify) _____
(99) unknown

38. At The Time Of The Crash, Were You Experiencing Any Of The Following? ____ ____
CODE UP TO THREE; INPUT "00" ____ ____
IN REMAINING RESPONSES
(00) no ____ ____
(01) fatigue
(02) hunger
(03) thirst
(04) elimination urgency
(05) muscle spasm, cramp, itch
(06) headache, minor malaise, fever
(07) siesta syndrome (tired in afternoon)
(98) other (specify) _____
(99) unknown

39. Were You Concerned About Any Of The Following Issues On The Day Of The Crash? ____ ____ ____ ____ ____ ____

CODE UP TO THREE; INPUT "00" IN REMAINING RESPONSES

(00) no problems
(01) conflict with friends, relatives, divorce, separation
(02) work related problems
(03) financial distress
(04) school problems
(05) legal, police problems
(06) reward stress
(07) traffic conflict, road rage
(08) death of family, friend
(98) other (specify) _____
(99) unknown

40. How Many Hours Of Sleep Did You Have in The 24 Hours Prior To The Crash? ____ ____

(00) no sleep
(01-24) number of hours slept
(98) other (specify) _____
(99) unknown

41. Did You Drink Any Alcohol Or Take Any Drugs Or Medications In The 24 Hours Prior To The Crash? ____ ____

(00) no - SKIP TO # 44
(01) alcohol use, only - SKIP TO # 44
(02) drug/medication use, only
(03) combined alcohol and drug/medication use
(98) other (specify) _____
(99) unknown

42. What Is The Type Of Drugs Other Than Alcohol? ____ ____

(00) no drugs other than alcohol
(01) stimulant
(02) depressant
(03) drugs taken, type unknown
(04) multiple drugs taken
(97) not applicable
(98) other (specify)_____
(99) unknown

43. What Is The Source Of The Drugs Other Than Alcohol? ____ ____

(00) no drugs other than alcohol
(01) prescription
(02) non-prescription, over the counter
(03) illegal
(97) not applicable
(99) unknown

44. Blood Alcohol Concentration (BAC)? ___ ___ ___

CODE RESULTS IN MG/100ML

(000) negative BAC
(995) BAC tested, results not known
(996) BAC not tested
(998) other (specify) _____
(999) unknown

45. Source of BAC Information? ____ ____

(00) not tested
(01) breath testing
(02) unknown if tested
(03) tested, results unknown
(04) tested, results not available
(98) other (specify) _____
(99) unknown source

RIDING/DRIVING EXPERIENCE

46. Are You The Owner Of This Motorcycle? ____ ____

(00) no
(01) yes
(98) other (specify) _____
(99) unknown

47. Where Did You Purchase This Motorcycle? ____ ____

(01) dealership (store front or internet)
(02) family, friend, or neighbor
(03) newspaper want ad or internet ad
(04) motorcycle was a gift
(97) not applicable, rider does not own this motorcycle
(98) other (specify)_____
(99) unknown

48. How Long Have You Owned The Crash-Involved Motorcycle?

USE ZEROS TO FILL IN BLANKS

___ ___Years ___ ___ Months

(00-00) less than two weeks
(00-96) years (00-11) months
(97-97) not applicable, rider does not own this motorcycle
(98-98) other (specify) _____
(99-99) unknown

49. How Long Have You Operated A Street Motorcycle?

USE ZEROS TO FILL IN BLANKS

___ ___Years ___ ___ Months

(00-00) less than two weeks
(00-96) years (00-11) months
(97-97) not applicable
(98-98) other (specify) _____
(99-99) unknown

50. How Long Have You Operated The Crash-Involved Motorcycle?

USE ZEROS TO FILL IN BLANKS

___ ___Years ___ ___ Months

(00-00) this is the first time
(00-96) years (00-11) months
(97-97) not applicable
(98-98) other (specify) _____
(99-99) unknown

51. What Is The Average Number Of Days Per Year You Ride Motorcycles? ___ ___ ___

(001-365) actual number of days per year
(997) not applicable, first time
(998) other (specify) _____
(999) unknown

52. About How Many Miles Per Year Do You Ride Motorcycles?

___ ___, ___ ___ ___

(00000) none
(00001-99,995) actual miles
(99996) 99,996 or greater miles
(99998) other (specify) _____
(99999) unknown

53. What Kind Of Motorcycle Training Have You Had? ____ ____

(00) none - SKIP TO # 55
(01) state recognized, entry level motorcycle course
(02) experienced rider course
(03) high performance/competitive track course
(04) self taught
(05) taught by family and/or friends
(98) other (specify) _____
(99) unknown

54. In What Years Have You Taken Any Formal Motorcycle Training? ___ ___ ___ ___

BEGIN WITH YOUR MOST RECENT COURSE AND WORK BACKWARDS ___ ___ ___ ___

CODE UP TO THREE AND SKIP TO # 56 ___ ___ ___ ___

(9997) not applicable
(9999) unknown

55. Please Tell Me The Reason For Not Taking Motorcycle Safety Training ____ ____

(01) not offered
(02) enrolled for future date
(03) tried unsuccessfully to enroll
(04) not interested/don't need it
(05) cost
(97) not applicable, took training
(98) other (specify) _____
(99) unknown

56. How Old Were You When You First Began To Ride A Street Motorcycle? ____ ____

CODE ACTUAL AGE

(00) never rode before, or rarely ever ride
(01-96) actual age
(98) other (specify) _____
(99) unknown

57. Were There Years In Which You Did Not Ride A Motorcycle? ____ ____

(00) no - SKIP TO # 59
(01) yes
(97) not applicable, never before rode
(98) other (specify) _____
(99) unknown

58. How Many Years Was Your Most Recent Hiatus? ____ ____

(00) never stopped riding
(01-96) actual number of years
(97) not applicable, never before rode
(98) other _____
(99) unknown

59. When You Ride or Drive, What is the Percentage of Time You Ride a Motorcycle Versus Driving Another Type of Vehicle?

INDICATE % OF TOTAL RIDING/DRIVING TIME FOR EACH CATEGORY

Motorcycle ___ ___ ___

Other Vehicle Type ___ ___ ___

(000) first time use 100%
(997) not applicable
(999) unknown

60. When You Ride A Motorcycle, What Is The Percentage Of Time You Use It For Each Of These Categories?

INDICATE % OF TOTAL RIDING/DRIVING TIME FOR EACH CATEGORY

Recreation ___ ___ ___

Basic transportation ___ ___ ___

(000) first time use 100%
(997) not applicable
(999) unknown

61. How Long Have You Been Driving Any Kind Of Motor Vehicle?

___ ___Years ___ ___ Months

(00-00) less than two weeks
(00-96) years (00-11) months
(97-97) not applicable
(98-98) other (specify) _____
(99-99) unknown

62. How Many Miles Per Year Do You Drive a Car Or Truck?

____ ____ ____ ____ ____

(00000) none, do not drive car or truck
(00001-99995) actual miles
(99996) 99996 or greater miles
(99998) other (specify) _____
(99999) unknown

63. Have You Had Any Car Or Truck Driver Training? ____ ____

(00) no training
(01) self taught
(02) taught by friends or family
(03) official driver training class
(04) voluntary drivers education
(05) compulsory drivers education
(06) professional training for commercial license
(07) compulsory motor vehicle training ordered by judge/ police/etc.
(98) other (specify) _____
(99) unknown

64. How Many Moving Traffic Convictions Have You Had In The Previous 5 Years? ____ ____

CODE THE TOTAL NUMBER OF MOVING TRAFFIC CONVICTIONS - ANY VEHICLE

(00) none
(01-96) actual number
(99) unknown

65. How Many Motorcycle Moving Traffic Crashes Have You Had In The Past 5 Years? ____ ____

CODE THE TOTAL NUMBER OF PREVIOUS MOTORCYCLE CRASHES

(00) none
(01-96) actual number
(99) unknown

66. How Many Car Or Truck Traffic Crashes Have You Had In The Past 5 Years? ____ ____

CODE THE TOTAL NUMBER OF PREVIOUS CAR OR TRUCK CRASHES

(00) none
(01-96) actual number
(99) unknown

67. How Much Experience Do You Have Riding With Passengers On A Motorcycle? ____ ____

(00) never carry passengers
(01) first time carrying passenger(s)
(02) very little experience
(03) moderate experience
(04) extensive experience
(97) not applicable
(99) unknown

68. How Much Experience Do You Have Riding With Cargo/Luggage? ____ ____

(00) no experience with cargo/luggage
(01) first time
(02) seldom carries similar cargo/luggage
(03) frequently carries similar cargo/luggage
(04) always carries similar cargo/luggage
(97) not applicable
(99) unknown

RIDING HABITS

69. Are You A Motorcycle Club Member? ____ ____

(00) no
(01) yes
(99) unknown

70. Were You Riding With Other Motorcyclists At The Time Of The Crash? ____ ____

IF THE ANSWER IS NO, SKIP TO QUESTION # 74

(00) no
(01) yes
(98) other (specify) _____
(99) unknown

71. How Many Other Motorcycles Were In The Group? ____ ____

(00) none, no group
(01-95) code number of motorcycles
(96) 96 motorcycles or more
(98) other (specify) _____
(99) unknown

72. Was The Group Riding In A Specific Formation? ____ ____

(00) no group
(01) single file
(02) staggered
(03) side-by-side
(04) no formation - SKIP TO # 74
(97) not applicable
(98) other (specify)_____
(99) unknown

73. If In A Formation, Where Was Your Motorcycle Placed In The Formation? ____ ____
(00) not in formation
(01) front area
(02) middle area
(03) rear area
(07) not applicable
(08) other (specify) _____
(09) unknown

PROTECTIVE CLOTHING/GEAR WHEN RIDING

74. What Kind Of Clothing Was On Your Upper Body? ____ ____
(00) none - SKIP TO #76
(01) light cloth garment, i.e., thin cotton
(02) medium cloth garment, i.e., denim, nylon
(03) heavy cloth garment, i.e., imitation leather
(04) leather garment
(05) Kevlar
(98) other (specify) _____
(99) unknown

75. Was This Upper Body Clothing Motorcycle-Oriented? ____ ____
(00) no
(01) yes
(97) not applicable/no clothing
(98) other (specify) _____
(99) unknown

76. What Kind Of Clothing Was On Your Lower Body? ____ ____
(00) none - SKIP TO # 78
(01) light cloth garment, i.e., thin cotton
(02) medium cloth garment, i.e., denim, nylon
(03) heavy cloth garment, i.e., imitation leather
(04) leather garment
(05) Kevlar
(98) other (specify) _____
(99) unknown

77. Was This Lower Body Clothing Motorcycle-Oriented? ____ ____
(00) no
(01) yes
(97) not applicable/no clothing
(98) other (specify) _____
(99) unknown

78. Were You Wearing An Inflatable Safety Vest? ____ ____
(00) no
(01) yes
(98) other (specify) _____
(99) unknown

79. What Kind Of Shoes Or Boots Were You Wearing? ____ ____
(00) no shoes or boots, barefoot - SKIP TO # 82
(01) light sandal
(02) medium street shoe, loafer
(03) athletic, training shoe
(04) heavy shoe or boot
(05) reinforced work boot or motorcycle boot
(98) other (specify) _____
(99) unknown

80. Did This Footwear Go Up Over Your Ankle? ____ ____
(00) no
(01) yes
(97) not applicable, no footwear worn
(98) other (specify) _____
(99) unknown

81. Was The Footwear Motorcycle-Oriented? ____ ____
(00) no
(01) yes
(97) not applicable, no footwear worn
(99) unknown

82. What Kind Of Gloves Were You Wearing? ____ ____
(00) none - SKIP TO # 84
(01) light cloth garment, i.e., thin cotton
(02) medium cloth garment, i.e., denim, nylon
(03) heavy cloth garment, i.e., imitation leather
(04) leather garment
(05) Kevlar
(98) other (specify) _____
(99) unknown

83. Are The Gloves Motorcycle-Oriented? ____ ____
(00) no
(01) yes, full fingered
(02) yes-shorties
(97) not applicable, no gloves worn
(98) other (specify) _____
(99) unknown

84. Is Any Of This Clothing Retroreflective? ____ ____
CODE UP TO 3 RESPONSES
(00) no retroreflective clothing or gloves ____ ____
(01) upper body (shirt/jacket/vest)
(02) lower body (pants/ shorts) ____ ____
(03) gloves
(04) special arm bands, or similar items
(97) not applicable, no clothing or gloves
(98) other (specify) _____
(99) unknown

85. What Is The Clothing Color Of The Following?

Upper Body Clothing ___ ___

Lower Body Clothing ___ ___

Footwear ___ ___

Gloves ___ ___

(01) no dominating color, multi-colored
(02) white
(03) yellow
(04) black
(05) red
(06) blue
(07) green
(08) silver
(09) orange
(10) brown
(11) purple
(12) gold
(13) grey
(97) not applicable/no clothing
(98) other (specify) _____
(99) unknown

86. Are You Required To Wear Corrective Lenses When Riding/Driving? ____ ____

(00) no
(01) yes
(98) other (specify)_____
(99) unknown

87. What Kind Of Eye Protection Were You Wearing At The Time Of The Crash? ____ ____

(00) none - SKIP TO # 89
(01) non-prescription clear glasses
(02) prescription clear glasses
(03) non-prescription sunglasses
(04) prescription sunglasses
(05) goggles, non-prescription
(06) goggles, prescription
(07) industrial safety glasses
(98) other (specify) _____
(99) unknown

88. What Color Was The Eye Coverage Lens? ____ ____

(01) clear
(02) green
(03) grey, smoke
(04) amber, yellow
(05) blue
(06) reflective (any color)
(97) not applicable, not wearing eye coverage
(98) other (specify) _____
(99) unknown

BACKGROUND INFORMATION

89. How Old Are You? ____ ____

(01-96) code actual age in years
(99) unknown

90. What State/Country Issued Your Current Driver's License? ____ ____

(00) no license
(01) Canada
(02) California
(03) other state (list)_____
(04) military
(97) no license required (49cc scooter)
(98) other (specify) _____
(99) unknown

91. What Kind Of Operator's License Is It? ____ ____

CODE UP TO 4; INPUT "00"
IN REMAINING RESPONSES ____ ____

(00) no license held
(01) learner's permit, only ____ ____
(02) motorcycle license
(03) automobile license ____ ____
(03) commercial license
(05) motorcycle driver and competition license
(06) license to transport people
(07) heavy truck license
(08) no license required (49 cc scooter)
(98) other (specify) _____
(99) unknown

92. What Year Was/Were The License(s) Issued? ___ ___ ___ ___

Listed in same order as licenses above ___ ___ ___ ___
(9997) not applicable
(9999) unknown ___ ___ ___ ___

___ ___ ___ ___

93. How Many Times Have You Acquired A Motorcycle Learner's Permit? ____ ____

(00) never
(01-96) actual number of times
(97) not applicable
(98) other (specify) _____
(99) unknown

94. How Long Have You Held A Motorcycle License?

USE ZEROS TO FILL IN BLANKS

___ ___Years ___ ___ Months

(00-00) less than two weeks
(00-96) years (00-11) months
(97-97) not applicable, no license held
(98-98) other (specify) _____
(99-99) unknown

95. Are You Of Hispanic Or Latino Origin? ____ ____
(00) no
(01) yes
(02) refused to answer
(98) other (specify) _____
(99) unknown

96. What Is Your Race? ____ ____
PLEASE SELECT ONE OR MORE, CODE "97" IN OTHERS
(01) white ____ ____
(02) black or African American
(03) Asian ____ ____
(04) Native Hawaiian or other Pacific Islander
(05) American Indian or Alaska native
(06) refused to answer
(97) not applicable
(98) other (specify)_____
(99) unknown

97. What Is Your Height? ____ft. ____ ____ in.
(01-12) actual number
(9 99) unknown

98. What Is Your Weight in Pounds? ___ ___ ___
(001-996) actual number
(999) unknown

99. Gender ____ ____
(01) male
(02) female
(99) unknown

100. How Much Formal Education Have You Had? ____ ____
(00) no formal schooling
(01) less than high school diploma
(02) high school diploma or GED
(03) partial college/university
(04) college/university graduate
(05) graduate school, advanced degree, professional degree
(06) specialty/technical school
(97) not applicable
(98) other (specify) _____
(99) unknown

101. What Is Your Current Occupation? ____ ____
(01) management occupations
(02) business and financial
(03) computer and mathematical
(04) architecture and engineering
(05) life, physical, and social science
(06) community and social services
(07) legal
(08) education, training or library
(09) arts, design, entertainment, sports or media
(10) healthcare practitioners and technical jobs
(11) healthcare support
(12) protective services
(13) food preparation and serving related
(14) building and grounds maintenance
(15) personal care and services
(16) sales and related occupations
(17) office and administrative support
(18) farming, fishing or forestry
(19) construction or extraction
(20) installation, maintenance or repair
(21) transportation and material moving
(22) military
(23) full time student
(97) not applicable, not in workforce at present
(98) other (specify) _____
(99) unknown

102. Are You Married? ____ ____
(01) single
(02) married
(03) separated
(04) divorced
(05) widowed
(06) cohabitating
(98) other (specify) _____
(99) unknown

103. How Many Children Do You Have? ____ ____
(00) none
(01) one
(02) two
(03) three
(04) four
(05) five
(06) six or more
(97) more than six
(99) unknown

Motorcycle Passenger Form

Case Number _____

Passenger Number ____ ____

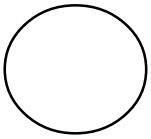
Source: Passenger ☐ Surrogate ☐

PASSENGER'S DESCRIPTION OF CRASH EVENTS AND RELATED FACTORS

SPECIFIC QUESTIONS TO ASK INTERVIEWEE

CRASH DIAGRAM

Use this diagram to aid in relating interview crash trajectory data to identifiable objects in the environment.



North

SITUATION

1. Where Were You Located at the Time of The Crash? ____ ____
(01) immediately behind the motorcycle rider
(02) immediately in front of the motorcycle rider
(03) behind passenger in location 1
(04) behind passenger in location 2
(05) dismounting, jumping to side
(97) not applicable, unseated prior to the crash
(98) other (specify) _____
(99) unknown

2. Where Was Your Riding Position at the Time of the Collision? ____ ____
(01) normal, straddle seated behind rider
(02) riding with both legs on left side of motorcycle
(03) riding with both legs on right side of motorcycle
(04) straddle seated on pillion behind rider
(05) straddle seated on tank ahead of rider
(06) in sidecar
(07) straddle seated, behind rider, facing rear
(98) other (specify) _____
(99) unknown

3. Did Any Of Your Actions Contribute To The Crash? ____ ____
(01) yes, passenger weight contributed to loss of control during evasive action
(02) yes, passenger lost hold or fell and contributed to rider loss of control
(03) yes, passenger interfered with motorcycle balance, caused rider loss of control
(04) yes, passenger interfered with motorcycle controls and contributed to crash
(05) yes, passenger's lower extremities entrapped in rear suspension or wheel and contributed to crash
(06) yes, passenger action distracted motorcycle rider and contributed to crash, (specify)
_____
(97) not applicable, no action by passenger contributed to crash.
(98) other passenger action that contributed to crash, (specify)_____
(99) unknown

HELMET DATA

4. At The Time Of The Crash, Were You Wearing A Helmet? ____ ____
(00) no
(01) yes - SKIP TO # 7
(02) helmet available but not used
(98) other (specify) _____
(99) unknown

5. What Is Your Reason For Not Wearing A Helmet? ____ ____
(01) not required by law
(02) no expectation of accident involvement
(03) helmets too expensive
(04) helmets are inconvenient and uncomfortable
(05) helmets reduce traffic awareness, limit hearing and vision
(06) helmets ineffective in reducing head injury
(07) helmets cause neck injury
(08) helmets can not be used, physical or religious reasons
(09) do not own a helmet
(10) forgot to bring helmet today
(97) not applicable, passenger is wearing a helmet
(98) other (specify) _____
(99) unknown

6. Do You Ever Wear A Helmet? ____ ____
(00) no - SKIP TO # 18, IMPAIRMENT
(01) yes - SKIP TO # 16
(02) occasionally - SKIP TO # 16
(97) not applicable, passenger is wearing a helmet
(98) other (specify) _____
(99) unknown

7. Was your helmet properly adjusted on your head? ____ ____
(00) no
(01) yes
(97) not applicable, no helmet
(98) other (specify) _____
(99) unknown

8. Was Your Helmet Securely Fastened To Your Head? ____ ____
(00) no
(01) yes
(97) not applicable, no helmet
(98) other (specify) _____
(99) unknown

9. What Type Of Helmet Is It? ____ ____
(00) not a motorcycle helmet
(01) half/police motor vehicle, motorcycle helmet
(02) open face motor vehicle, motorcycle helmet
(03) full face motor vehicle, motorcycle helmet
(04) novelty helmet
(97) not applicable/no helmet
(98) other (specify) _____
(99) unknown

10. What Is The Type Of Helmet Coverage? ____ ____
(01) partial coverage
(02) full coverage
(03) full facial, integral chin bar but no face shield
(04) full facial, removable chin bar
(05) full facial, retractable chin bar
(06) full facial coverage, integral chin bar and face shield
(07) wrap around face shield
(08) bubble type face shield
(09) visor/face shield combo
(97) not applicable/no helmet
(98) other (specify) _____
(99) unknown

11. What Is The Predominant Color Of Your Helmet? ____ ____
(01) no dominating color, multi-colored
(02) white
(03) yellow
(04) black
(05) red
(06) blue
(07) green
(08) silver, grey
(09) orange
(10) brown, tan
(11) purple
(12) gold
(13) chrome, metallic
(97) not applicable/no helmet
(98) other (specify) _____
(99) unknown

12. What Is The Color Of The Face Shield? ____ ____
(01) clear
(02) green
(03) grey, smoke
(04) amber, yellow
(05) blue
(06) reflective (any color)
(97) not applicable/no face shield
(98) other (specify) _____
(99) unknown

13. Do You Own This Helmet? ____ ____
(00) no
(01) yes
(97) not applicable, no helmet
(98) other (specify) _____
(99) unknown

14. How Well Does This Helmet Fit? ____ ____
(01) acceptable fit
(02) too large, too loose
(03) too small, too tight
(97) not applicable/no helmet
(98) other (specify) _____
(99) unknown

15. Was The Helmet Retained In Place On Your Head During The Crash? ____ ____
(00) no helmet
(01) no, helmet ejected from head during pre-crash time period
(02) no, helmet ejected from head during crash
(03) no, helmet ejected from head after collision
(04) yes, helmet retained in place to completion of crash events
(05) yes, helmet moved on head but was retained
(97) not applicable/no helmet
(98) other (specify) _____
(99) unknown

16. What Percentage Of Time Do You Wear Your Helmet (When Riding As A Passenger)? ___ ___ ___ %
CODE FROM 001 - 100 PERCENT
(000) never wear a helmet
(001-100) percent helmet worn
(997) not applicable/no helmet
(999) unknown

17. Under what conditions do you usually wear your helmet? ____ ____
CODE UP TO FOUR; INPUT "97" ____ ____
FOR REMAINING RESPONSES
(00) never uses helmet ____ ____
(01) long trips
(02) highway traffic ____ ____
(03) in adverse weather
(04) never in hot weather
(05) always
(97) not applicable/no helmet
(98) other (specify) _____
(99) unknown

IMPAIRMENT

18. Do You Have Any Of The Following Permanent Physical Conditions? ____ ____
CODE UP TO THREE; INPUT "00" ____ ____
IN REMAINING RESPONSES
(00) no ____ ____
(01) vision reduction or loss
(02) hearing reduction or loss
(03) respiratory, cardiovascular condition
(04) paraplegia
(05) amputee
(06) neurological, epilepsy, stroke
(07) endocrine system, diabetes, digestive system
(08) infirmity, arthritis, senility
(98) other (specify) _____
(99) unknown

19. At The Time Of The Crash, Were You Experiencing Any Of The Following? ____ ____
CODE UP TO THREE; INPUT "00" ____ ____
IN REMAINING RESPONSES ____ ____
(00) no
(01) fatigue
(02) hunger
(03) thirst
(04) elimination urgency
(05) muscle spasm, cramp, itch
(06) headache, minor malaise, fever
(07) siesta syndrome (tired in afternoon)
(98) other (specify) _____
(99) unknown

20. Were You Concerned About Any Of The Following Issues On The Day Of The Crash? ____ ____
CODE UP TO THREE; INPUT "00" ____ ____
IN REMAINING RESPONSES ____ ____
(00) no problems
(01) conflict with friends, relatives, divorce, separation
(02) work related problems
(03) financial distress
(04) school problems
(05) legal, police problems
(06) reward stress
(07) traffic conflict, road rage
(08) death of family, friend
(98) other (specify) _____
(99) unknown

21. How Many Hours Of Sleep Did You Have In The 24 Hours Prior To The Crash? ____ ____
(00) no sleep
(01-24) number of hours slept
(98) other (specify) _____
(99) unknown

22. Did You Drink Any Alcohol Or Take Any Drugs Or Medications In The 24 Hours Prior To The Crash? ____ ____
(00) no - SKIP TO QUESTION # 25
(01) alcohol use, only - SKIP TO QUESTION # 25
(02) drug/medication use, only
(03) combined alcohol and drug/medication use
(98) other (specify) _____
(99) unknown

23. What Type Of Drugs Other Than Alcohol? ____ ____
(00) no drugs other than alcohol
(01) stimulant
(02) depressant
(03) drugs taken, type unknown
(04) multiple drugs taken
(97) not applicable
(98) other (specify)_____
(99) unknown

24. What Is The Source Of Drugs Other Than Alcohol? ____ ____
(00) no drugs other than alcohol
(01) prescription
(02) non-prescription, over the counter
(03) illegal
(97) not applicable
(99) unknown

25. Blood Alcohol Concentration (BAC)? ___ ___ ___
CODE RESULTS IN MG/100ML
(000) negative BAC
(995) BAC tested, results not known
(996) BAC not tested
(998) other (specify) _____
(999) unknown

26. Source of BAC Information? ____ ____
(00) not tested
(01) breath testing
(02) unknown if tested
(03) tested, results unknown
(04) tested, results not available
(98) other (specify) _____
(99) unknown source

RIDING/DRIVING EXPERIENCE

27. How Long Have You Been Riding as a Passenger on the Crash-Involved Motorcycle?

___ ___ Years ___ ___ Months
(00-00) less than two weeks
(01-96) years, (01-11) months
(97-97) not applicable/no previous experience, first time
(99-99) unknown

28. How Long Have You Been Riding As A Passenger In Any Kind Of Motor Vehicle?

___ ___ Years ___ ___ Months
(00-00) less than two weeks
(01-96) years, (01-11) months
(97-97) not applicable/no previous experience, first time
(99-99) unknown

29. How Long Have You Ridden As A Passenger On Any Street Motorcycle

___ ___ Years ___ ___ Months

(00-00) less than two weeks
(01-96) years, (01-11) months
(97-97) not applicable/no previous experience, first time
(99-99) unknown

30. What is The Average Number Of Days Per Year You Ride As A Passenger On Motorcycles? ___ ___ ___

(001-365) code actual number of days per year
(999) unknown

31. What Kind Of Motorcycle Training Have You Had? ____ ____

(00) none
(01) state recognized, entry-level motorcycle course
(02) experienced rider course
(03) high performance/competitive track course
(04) self taught
(05) taught by family and/or friends
(98) other (specify) _____
(99) unknown

32. When You Travel as a Passenger, What is the Percentage of Time You Ride on a Motorcycle Versus Riding as a Passenger in Another Type of Vehicle?

INDICATE % OF TOTAL RIDING TIME AS A PASSENGER FOR EACH CATEGORY

Motorcycle ___ ___ ___

Other Vehicle Type ___ ___ ___

100%

(000) first time use
(001-100) actual percentage
(997) not applicable
(999) unknown

33. When You Ride A Motorcycle As A Passenger, What Is The Percentage Of Time It Is For Each Of These Categories?

INDICATE % OF TOTAL RIDING TIME AS A PASSENGER FOR EACH CATEGORY

Recreation ___ ___ ___

Basic transportation ___ ___ ___

100%

(000) first time use
(001-100) actual percentage
(997) not applicable
(999) unknown

34. How Much Experience Do You Have Riding As A Passenger On Motorcycles? ____ ____

(00) never rode as a passenger before
(01) very little experience
(02) moderate experience
(03) extensive experience
(98) other (specify)_____
(99) unknown

35. How Many Motorcycle Moving Traffic Crashes Have You Had As A Passenger In The Past 5 Years? ____ ____

CODE THE TOTAL NUMBER OF PREVIOUS MOTORCYCLE CRASHES
(00) none
(01-96) actual number
(99) unknown

36. How Many Car Or Truck Traffic Crashes Have You Had As A Passenger In The Past 5 Years? ____ ____

CODE THE TOTAL NUMBER OF PREVIOUS CAR OR TRUCK CRASHES
(00) none
(01-96) actual number
(99) unknown

PROTECTIVE CLOTHING/GEAR WHEN RIDING

37. What Kind of Clothing Was On Your Upper Body? ____ ____

(00) none - SKIP TO # 39
(01) light cloth garment, i.e., thin cotton
(02) medium cloth garment, i.e., denim, nylon
(03) heavy cloth garment, i.e., imitation leather
(04) leather garment
(05) Kevlar
(98) other (specify) _____
(99) unknown

38. Was This Upper Body Clothing Motorcycle-Oriented? ____ ____

(00) no
(01) yes
(97) not applicable/no clothing
(98) other (specify) _____
(99) unknown

39. What Kind Of Clothing Was On Your Lower Body? ____ ____

(00) none - SKIP TO # 41
(01) light cloth garment, i.e., thin cotton
(02) medium cloth garment, i.e., denim, nylon
(03) heavy cloth garment, i.e., imitation leather
(04) leather garment
(05) Kevlar
(98) other (specify) _____
(99) unknown

40. Was This Lower Body Clothing Motorcycle-Oriented? ____
(00) no
(01) yes
(97) not applicable/no clothing
(98) other (specify) _____
(99) unknown

41. Were you Wearing An Inflatable Safety Vest? ____
(00) no
(01) yes
(98) other (specify) _____
(99) unknown

42. What Kind of Shoes or Boots Were You Wearing? ____
(00) no shoes or boots, barefoot - SKIP TO # 45
(01) light sandal
(02) medium street shoe, loafer
(03) athletic, training shoe
(04) heavy shoe or boot
(05) reinforced work boot or motorcycle boot
(98) other (specify) _____
(99) unknown

43. Did This Footwear Go Up Over Your Ankle? ____
(00) no
(01) yes
(97) not applicable, no footwear worn
(98) other, specify _____
(99) unknown

44. Was The Footwear Motorcycle-Oriented? ____
(00) no
(01) yes
(97) not applicable, no footwear worn
(99) unknown

45. What Kind Of Gloves Were You Wearing? ____
(00) none - SKIP TO # 47
(01) light cloth garment, i.e., thin cotton
(02) medium cloth garment, i.e., denim, nylon
(03) heavy cloth garment, i.e., imitation leather
(04) leather garment
(05) Kevlar
(98) other (specify) _____
(99) unknown

46. Are the Gloves Motorcycle-Oriented? ____
(00) no
(01) yes, full fingered
(02) yes, shorties
(97) not applicable, no gloves worn
(98) other (specify) _____
(99) unknown

47. Is Any Of This Clothing Retroreflective? ____ ____
CODE UP TO 3 RESPONSES
(00) no retroreflective clothing or gloves ____ ____
(01) upper body (shirt/jacket/vest)
(02) lower body (pants/ shorts) ____ ____
(03) gloves
(04) special arm bands, or similar items
(97) not applicable, no clothing or gloves
(98) other (specify) _____
(99) unknown

48. What is The Clothing Color Of the Following?

Upper body clothing ___ ___
Lower body clothing ___ ___
Footwear ___ ___
Gloves ___ ___

(01) no dominating color, multi-colored
(02) white
(03) yellow
(04) black
(05) red
(06) blue
(07) green
(08) silver
(09) orange
(10) brown
(11) purple
(12) gold
(13) grey
(97) not applicable/no clothing
(98) other (specify) _____
(99) unknown

49. What Kind Of Eye Protection Were You Wearing At The Time Of The Crash? ____ ____
(00) none - SKIP TO # 51
(01) non-prescription clear glasses
(02) prescription clear glasses
(03) non-prescription sunglasses
(04) prescription sunglasses
(05) goggles, non-prescription
(06) goggles, prescription
(07) industrial safety glasses
(98) other (specify) _____
(99) unknown

50. What Color Was The Eye Coverage Lens? ____ ____
(01) clear
(02) green
(03) grey, smoke
(04) amber, yellow
(05) blue
(06) reflective (any color)
(97) not applicable, not wearing eye coverage
(98) other (specify) _____
(99) unknown

BACKGROUND INFORMATION

51. How Old Are You? ____ ____
CODE ACTUAL AGE IN YEARS
(01-96) actual age
(99) unknown

52. Where Did You Get Your Current Driver's License? ____ ____
(00) no license
(01) Canada
(02) California
(03) other state (list)_____
(04) military
(97) no license required (49 cc scooter)
(98) other (specify) _____
(99) unknown

53. What Kind Of Operator's License Is It? ____ ____
CODE UP TO 4; INPUT "97" ____ ____
IN REMAINING RESPONSES
(00) no license held ____ ____
(01) learner's permit, only
(02) motorcycle license ____ ____
(03) automobile license
(04) commercial license
(05) motorcycle driver and competition license
(06) license to transport people
(07) heavy truck license
(97) not applicable
(98) other (specify) _____
(99) unknown

54. What Year Was/Were The License(s) Issued? ___ ___ ___ ___
LISTED IN SAME ORDER AS LICENSES ABOVE ___ ___ ___ ___
(9997) not applicable, no license
(9999) unknown ___ ___ ___ ___

___ ___ ___ ___

55. Are You Of Hispanic Or Latino Origin? ____ ____
(00) no
(01) yes
(02) refused to answer
(98) other (describe) _____
(99) unknown

56. What Is Your Race? ____ ____
PLEASE CODE ONE OR MORE, CODE "97" IN OTHERS
(01) white ____ ____
(02) black or African American
(03) Asian ____ ____
(04) Native Hawaiian or other Pacific Islander
(05) American Indian or Alaska native
(06) refused to answer
(97) not applicable
(98) other (specify)_____
(99) unknown

57. What is Your Height? ____ft. ____ ____ in.
(01-12) actual number
(9 99) unknown

58. What Is Your Weight in Pounds? ___ ___ ___
(001-996) actual number
(999) unknown

59. Gender ____ ____
(01) male
(02) female
(99) unknown

60. How Much Formal Education Have You Had? ____ ____
(00) no formal schooling
(01) less than high school diploma
(02) high school diploma or GED
(03) partial college/university
(04) college/university graduate
(05) graduate school, advanced degree, professional degree
(06) specialty/technical school
(98) other (specify) _____
(99) unknown

61. What is Your Current Occupation? ____ ____
(01) management occupations
(02) business and financial
(03) computer and mathematical
(04) architecture and engineering
(05) life, physical, and social science
(06) community and social services
(07) legal
(08) education, training or library
(09) arts, design, entertainment, sports or media
(10) healthcare practitioners and technical jobs
(11) healthcare support
(12) protective services
(13) food preparation and serving related
(14) building and grounds maintenance
(15) personal care and services
(16) sales and related occupations
(17) office and administrative support
(18) farming, fishing or forestry
(19) construction or extraction
(20) installation, maintenance or repair
(21) transportation and material moving
(22) military
(23) full time student
(97) not applicable, not in workforce at present
(98) other (specify) _____
(99) unknown

62. Are You Married? ____ ____
(01) single
(02) married
(03) separated
(04) divorced
(05) widowed
(06) cohabitating
(98) other (specify) _____
(99) unknown

63. How Many Children Do You Have? ____ ____
(00) none
(01) one
(02) two
(03) three
(04) four
(05) five
(06) six or more
(98) other (specify) _____
(99) unknown

Other Vehicle Form

Case Number _____

Vehicle Number ____ ____

MECHANICAL FACTORS

1. Vehicle Body Type ____ ____
SEE CODING MANUAL FOR CODES AND DEFINITIONS
Enter Text
_____
(99) unknown

2. Vehicle Manufacturer ____ ____ ____
ENTER TEXT
_____
(99) unknown

3. Vehicle Model ____ ____ - ____ ____ ____
ENTER TEXT
_____
(99) unknown

4. Model Year ___ ___ ___ ___
(9999) unknown

5. Vehicle Identification Number
CODE ALL 9S FOR UNKNOWN
__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ X X X X

6. Vehicle Curb Weight ___ ___ ___ ___ ___
CODE ACTUAL WEIGHT IN POUNDS
(99996) 99996 or greater pounds
(99999) unknown

7. Is This Vehicle Equipped With ABS? ____ ____
(00) no
(01) yes, equipped rear only
(02) yes, equipped front and rear
(97) not applicable
(98) other (specify)_____
(99) unknown

8. Did This Vehicle Experience Mechanical Problems? ____ ____
(00) none
(01) tire or wheel failure
(02) brake failure
(03) steering failure
(04) power transmission failure
(05) electrical failure
(06) suspension failure
(07) vehicle structural failure, other than suspension, tire, or wheel
(08) maintenance related mechanical problem
(97) not applicable
(98) other (specify)_____
(99) unknown

VEHICLE DYNAMICS

9. Pre-crash Motion Prior to Precipitating Event ____ ____
(00) stopped in traffic, speed is zero
(01) moving in a straight line, constant speed
(02) moving in a straight line, foot off accelerator and/or throttle off
(03) moving in a straight line, braking
(04) moving in a straight line, accelerating
(05) turning right, constant speed
(06) turning right, foot off accelerator/throttle off
(07) turning right, braking
(08) turning right, accelerating
(09) turning left, constant speed
(10) turning left, foot off accelerator/throttle off
(11) turning left, braking
(12) turning left, accelerating
(13) stopped at roadside, or parked
(14) backing up, in a straight line
(15) backing up, steering left
(16) backing up, steering right
(17) making U-turn right
(18) making U-turn left
(19) making Y-turn right
(20) making Y-turn left
(21) changing lanes to left
(22) changing lanes to right
(23) merging to left
(24) merging to right
(25) entering traffic from right shoulder, median, or parked
(26) entering traffic from left shoulder, median, or parked
(27) leaving traffic, turn out to right
(28) leaving traffic, turn out to left
(29) passing maneuver, passing on right
(30) passing maneuver, passing on left
(31) crossing opposing lanes of traffic
(32) traveling wrong way, against opposing traffic
(36) collision avoidance maneuver to avoid a different collision
(37) negotiating a curve, constant speed
(38) negotiating a curve, foot off accelerator/throttle off
(39) negotiating a curve, braking
(40) negotiating a curve, accelerating
(97) not applicable
(98) other (specify) _____
(99) unknown

10. Travel Speed At Time of Precipitating Event ___ ___ ___
IN MPH, WHOLE NUMBERS ONLY
(000) stopped in traffic, speed is zero
(999) unknown

11. Line-of-Sight to Motorcycle ____ ____

USE CLOCK FACE DIRECTION, RELATIVE TO VEHICLE CENTER LINE

(97) not applicable
(99) unknown

12. Pre-crash Motion after Precipitating Event ____ ____

(00) stopped in traffic, speed is zero
(01) moving in a straight line, constant speed
(02) moving in a straight line, foot off accelerator/throttle off
(03) moving in a straight line, braking
(04) moving in a straight line, accelerating
(05) turning right, constant speed
(06) turning right, foot off accelerator/throttle off
(07) turning right, braking
(08) turning right, accelerating
(09) turning left, constant speed
(10) turning left, foot off accelerator/throttle off
(11) turning left, braking
(12) turning left, accelerating
(13) stopped at roadside, or parked
(14) backing up, in a straight line
(15) backing up, steering left
(16) backing up, steering right
(17) making U-turn right
(18) making U-turn left
(19) making Y-turn right
(20) making Y-turn left
(21) changing lanes to left
(22) changing lanes to right
(23) merging to left
(24) merging to right
(25) entering traffic from right shoulder, median, or parked
(26) entering traffic from left shoulder, median, or parked
(27) leaving traffic, turn out to right
(28) leaving traffic, turn out to left
(29) passing maneuver, passing on right
(30) passing maneuver, passing on left
(31) crossing opposing lanes of traffic
(32) traveling wrong way, against opposing traffic
(36) collision avoidance maneuver to avoid a different collision
(37) negotiating a curve, constant speed
(38) negotiating a curve, foot off accelerator/throttle off
(39) negotiating a curve, braking
(40) negotiating a curve, accelerating
(97) not applicable
(98) other (specify) _____
(99) unknown

13. Collision Avoidance Action ____ ____

CODE UP TO 4, THEN CODE 00

(00) none ____ ____
(01) braking
(02) swerve ____ ____
(03) accelerating
(04) counter-steering ____ ____
(05) cornering
(98) other (specify)

_____

(99) unknown

14. Braking Skid Marks on Roadway ____ ____

(00) none
(01) skid marks from rear tires, only
(02) skid marks from front tires, only
(03) skid marks from both front and rear tires, front and rear equivalent and overlaying
(04) long skid marks from rear tires, short terminal skid marks from front tires
(05) light skid marks from both front and rear tires, no wheel lockup evidence
(97) not applicable
(98) other, specify: _____
(99) unknown

15. Length of Skid Marks on Roadway

IN FEET AND INCHES

Left front tire ___ ___ ___ feet ___ ___ inches

Left rear tire ___ ___ ___ feet ___ ___ inches

Right front tire ___ ___ ___ feet ___ ___ inches

Right rear tire ___ ___ ___ feet ___ ___ inches

(000 00) none, no skid marks visible
(001-996) actual number
(999 99) unknown

16. Braking Skid Mark Evidence on Roadway ____ ____

(00) none
(01) dry roadway braking skid marks confirmed from motor vehicle
(02) wet roadway braking skid marks confirmed from motor vehicle
(03) deep water on roadway, dynamic hydroplaning most likely, no braking skid marks remaining
(04) wet reverted rubber skidding in evidence, white steam-cleaned skid paths shown on roadway confirmed from motor vehicle
(05) braking skid marks evidence most likely present, but degraded by traffic after accident, no confirmation at scene examination
(06) snow/ice on roadway, braking skid marks confirmed from other vehicles
(97) not applicable
(98) other (specify) _____
(99) unknown

17. Braking Tire Striation Evidence ____ ____

(00) none, front or rear tires
(01) rear tires, only
(02) front tires, only
(03) both front and rear tires
(04) prolonged skid patch on rear tires, only
(05) prolonged skid patch on rear tires, plus braking striations on front tires
(06) prolonged skid patch on rear tires, plus slide-out striations on front tires
(07) prolonged skid patch on rear tires, plus slide-out striations on both front and rear tires
(97) not applicable
(98) other (specify) _____
(99) unknown

18. Acceleration Evidence on Tires ____ ____

(00) none
(01) moderate slip striations and tread block edge erosion
(02) severe slip striations and tread block edge erosion
(03) extreme slip striations, tread block edge erosion and tread rubber reversion
(97) not applicable
(98) other (specify) _____
(99) unknown

19. Cornering Skid Mark Evidence on Roadway ____ ____

(00) none
(01) dry roadway cornering skid marks confirmed from motor vehicle/motorcycle
(02) wet roadway cornering skid marks confirmed from motor vehicle/motorcycle
(03) deep water on roadway, aquaplaning most likely, no cornering skid marks remaining
(04) wet reverted rubber skidding in evidence, white steam-cleaned cornering skid paths shown on roadway confirmed from motor vehicle/motorcycle
(05) cornering skid marks evidence most likely present, but degraded by traffic after accident, no confirmation at scene examination
(06) snow/ice on roadway, cornering skid marks confirmed from other vehicle
(97) not applicable
(98) 0ther (specify) _____
(99) unknown

20. Cornering Tire Striation Evidence ____ ____

(00) none
(01) right cornering tire striations, rear tires
(02) right cornering tire striations, front tires
(03) right cornering striations, both front and rear tires
(04) left cornering tire striations, rear tires
(05) left cornering tire striations, front tires
(06) left cornering tire striations, both front and rear tires
(97) not applicable
(98) other (specify) _____

CRASH MOTION AT IMPACT

21. Other Vehicle First Collision Contact Code ____ ____ ____ ____

Code the appropriate vehicle component, plus "L," "R," or "C" for left, right, or center of OV longitudinal center line respectively, i.e., "front bumper, left of center line" is coded as "F01L"

(99) unknown

F: Vehicle Front

F01 bumper
F02 push bar, bull bar
F03 grille
F04 front corner, headlamp nacelle
F05 front edge or side of hood
F06 top of hood, front
F07 front side of upper A-pillar
F08 front cowl
F09 windshield lower molding
F10 windshield surface
F11 windshield header
F12 front roof top
F13 external rear view mirror
F14 accessory lights, light bar
F15 underride bar
F98 other front (specify)
_____
F99 unknown front

T: Vehicle Top Surfaces

T01 top of hood, front
T02 top of hood, center
T03 top of hood, rear
T04 front cowl
T05 roof top, front
T06 sun roof, moon roof
T07 roof top, center
T08 roof top, rear
T09 rollbar
T10 trunk lid, front
T11 trunk lid, center
T12 trunk lid, rear
T13 custom work/tool box
T14 top rail of tailgate
T15 top rail of truck bed
T16 floor of truck bed
T17 accessory lights, light bar
T18 accessory equipment, air horns, etc.
T98 other top (specify)
_____
T99 unknown top

R: Vehicle rear

R01 bumper
R02 step bumper
R03 push bar,bull bar
R04 power lift gate
R05 trailer hitch
R06 rear lamp, sub-trunk panel
R07 top rail of tailgate
R08 tailgate
R09 rear door panel, top
R10 rear door panel, center
R11 rear door panel, bottom
R12 rear door handles, hardware
R13 rear corner, truck bed
R14 lower rear corner, attached truck cab
R15 upper rear corner, attached truck cab
R16 lower rear corner, van
R17 upper rear corner, van
R18 B-pillar, rear (truck only)
R19 truck upper rear corner of cab
R20 back light (window) header
R21 back light glass
R22 back light lower molding
R23 lower C-pillar
R24 upper C-pillar
R25 rear door frame header
R26 rear door or window, frame sill
R27 rear door side frame posts, hinges
R28 spare tire/spare tire housing
R29 accessory lights, light bar
R30 underride bar
R98 other rear (specify)
_____
R99 unknown rear

U: Vehicle Undercarriage

RUN OVER OR SNAG

U01 front of undercarriage
U02 rear of undercarriage
U03 side of undercarriage
U04 spare tire/spare tire mount
U98 other undercarriage (specify)
_____
U99 unknown undercarriage

S: Vehicle Side

S01 side of front bumper
S02 side corner, headlamp nacelle
S03 front mudguard (fender)
S04 front mudguard (fender) wheel house
S05 front tires
S06 side of bonnet (hood), edge
S07 rocker panel, sill beam, steps
S08 lower A-pillar
S09 upper A-pillar
S10 front door, front
S11 front door, rear
S12 front door belt line
S13 front door side glass
S14 front door handle
S15 front roof rail, including drip channel molding
S16 rear roof rail, including drip channel molding
S17 lower B-pillar
S18 upper B-pillar
S19 rear door, front
S20 rear door, rear
S21 rear door belt line
S22 rear door side glass (window)
S23 rear door handle
S24 back light (window) side frame
S25 center panel (van, bus)
S26 lower C-pillar
S27 upper C-pillar
S28 rear mudguard (fender) wheel house
S29 rear tires
S30 rear mudguard (fender), rear bed side panel, rear panel
S31 side of boot (trunk) lid, edge
S32 lower rear corner
S33 upper rear corner
S34 side of rear bumper
S35 side mount fuel tank
S36 battery box, tool box, fire extinguishers
S37 frame rail
S38 semi-trailer spare tire, chain racks
S39 trailer landing gear, struts
S40 semi-trailer tie down hook points, strap anchors, ratchet locks
S41 accessory lights, light bar
S42 underride bar
S43 external rear view mirror
S44 front wheel
S45 rear wheel
S98 other side (specify)
_____
S99 unknown side

M: Motorcycle/Moped

MCLF left front
MCCF center front
MCRF right front
MCLC left center
MCLR left rear
MCCR center rear
MCRR right rear
MCRC right center
MCTR top rear
MCTC top center
MCTF top front
MCUR undercarriage rear
MCUC undercarriage center
MCUF undercarriage front
MC98 other motorcycle/moped location
MC99 unknown motorcycle, moped location

(9998) other (specify)
_____
(9999) unknown

22. Object(s) Contacted ___ ___

CODE UP TO THREE

COLLISION WITH OTHER VEHICLE ___ ___

(01) other vehicle # 1

(02) other vehicle # 2 ___ ___

(03) other vehicle # 3

COLLISION WITH FIXED OBJECT

(04) tree (<=10 cm in diameter)

(05) tree (>10 cm in diameter)

(06) shrubbery or bush

(07) embankment

(08) concrete traffic barrier

(09) other traffic barrier (includes guardrail)(specify)

(10) impact attenuator

(11) bridge

(12) curb

(13) fire hydrant

(14) ground

(15) ditch or culvert

(16) building

(17) wall

(18) fence

(19) nonbreakaway pole or post (<=10cm in diameter)

(20) nonbreakaway pole or post (>10 cm but <=30 cm in diameter)

(21) nonbreakaway pole or post (>30 cm in diameter)

(22) nonbreakaway pole or post (diameter unknown)

(23) breakaway pole or post (any diameter)

(28) other fixed object (specify) _____

(29) unknown fixed object

COLLISION WITH NONFIXED OBJECT

(30) pedestrian

(31) train

(32) object fell from vehicle in-transport

(33) trailer, disconnected in transport

(34) animal

(35) cyclist or cycle

(36) vehicle occupant

(37) other nonmotorist or conveyance (specify)

_____

(38) other nonfixed object (specify)

_____

(39) unknown nonfixed object

_____

Noncollision

(40) overturn-> rollover (excludes end-over-end)

(41) rollover->end-over-end

(42) fire or explosion

(43) jackknife

(44) other intra-unit damage (specify)_____

(45) noncollision injury

(48) other noncollision (specify)_____

(49) noncollision-details unknown

(97) not applicable

(98) other event (specify) _____

(99) unknown event or object

23. Impact Speed ___ ___ ___

IN MPH

(000) stopped in traffic, speed is zero

(999) unknown

24. PDOF - Principal Direction of Force (In Degrees) ___ ___ ___

(000) non-horizontal

(010-350) actual value

(999) unknown

POST CRASH MOTION

25. Other Vehicle Post Crash Motion Code ____ ____

(00) none, stopped at point of impact (POI); point of rest (POR) and POI coincide

(01) stopped within 6 feet of POI

(02) rolled on wheels from POI to POR

(03) rolled on wheels from POI, then impacted other object at POR

(04) vehicle rollover from POI to POR

(05) skidded, slid from POI to POR

(06) skidded, slid from POI, then impacted other object at POR

(07) vehicles did not separate; PORs are essentially same for motorcycle and other vehicle

(08) spun or yawed, sliding from POI to POR

(09) hit and run, driver departed scene of accident with other vehicle, immediately after collision

(10) driver departed scene immediately after collision, but other vehicle still at scene

(97) not applicable

(98) other, specify: _____

(99) unknown

26. Distance from POI to POR

CODE IN FEET AND INCHES

Distance along the POI path

± ___ ___ ___ feet ___ ___ in.

Offset

± ___ ___ ___ feet ___ ___ in.

(000 00 - 995 11) actual value

(996 11) 996 feet or greater

(997 97) not applicable

(999 99) unknown

Other Vehicle Driver Form

Case Number _____

Motor Vehicle Number ____ ____

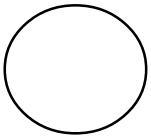
Source: Driver ☐ Surrogate ☐

DRIVER'S DESCRIPTION OF CRASH EVENTS AND RELATED FACTORS

SPECIFIC QUESTIONS TO ASK INTERVIEWEE

CRASH DIAGRAM

Use this diagram to aid in relating interview crash trajectory data to identifiable objects.



North

PRECRASH DATA

1. How Were You Operating Your Motor Vehicle Immediately Prior to the Crash? ____ ____

(00) stopped in traffic, speed is zero
(01) moving in a straight line, constant speed
(02) moving in a straight line, foot off accelerator/throttle
(03) moving in a straight line, braking
(04) moving in a straight line, accelerating
(05) turning right, constant speed
(06) turning right, foot off accelerator/throttle
(07) turning right, braking
(08) turning right, accelerating
(09) turning left, constant speed
(10) turning left, foot off accelerator/throttle
(11) turning left, braking
(12) turning left, accelerating
(13) stopped at roadside, or parked
(14) backing up, in a straight line
(15) backing up, steering left
(16) backing up, steering right
(17) making U-turn right
(18) making U-turn left
(19) making Y-turn right
(20) making Y-turn left
(21) changing lanes to left
(22) changing lanes to right
(23) merging to left
(24) merging to right
(25) entering traffic from right shoulder, median, or parked
(26) entering traffic from left shoulder, median, or parked
(27) leaving traffic, turn out to right
(28) leaving traffic, turn out to left
(29) passing maneuver, passing on right
(30) passing maneuver, passing on left
(31) crossing opposing lanes of traffic
(32) traveling wrong way, against opposing traffic
(33) stripe riding, filtering forward between lanes, longitudinal motion, only
(34) filtering forward between lanes, lateral motion only
(35) filtering forward between lanes, both longitudinal and lateral motions
(36) collision avoidance maneuver to avoid a different collision
(37) negotiating a curve, constant speed
(38) negotiating a curve, foot off accelerator/throttle
(39) negotiating a curve, braking
(40) negotiating a curve, accelerating
(97) not applicable
(98) other (specify) _____
(99) unknown

2. Where Were You Looking Prior to the Start of the Crash Sequence? ____ ____

(01) looking straight ahead
(02) looking right
(03) looking left
(04) looking rearward
(05) looking at own motorcycle
(98) other (specify) _____
(99) unknown

3. In Which Lane Were You Traveling Just Before the Precipitating Event? ____ ____

(01) lane 1 (right curb lane)
(02) lane two
(03) lane three
(04) lane four
(97) not applicable, not in a travel lane
(98) other (specify) _____
(99) unknown

4. What Was Your Travel Speed Just Before the Precipitating Event? ____ ____

(00) stopped
(01-95) actual miles per hour
(96) 96 mph or more
(98) other (specify) _____
(99) unknown

5. What Collision Avoidance Actions Were You Taking (if any)? ____ ____

CODE UP TO THREE ____ ____

(00) no avoidance actions
(01) braking ____ ____
(02) steering
(03) braking and steering
(04) accelerating
(05) steering and accelerating
(06) releasing brakes
(07) honked horn
(08) flashing headlamps
(98) other (specify) _____
(99) unknown

6. Was There Any Control Loss Due to Weather, Roadway or Mechanical Problems? ____ ____

(00) no control loss due to weather, roadway or mechanical problems
(01) yes, control loss due to weather
(02) yes, control loss due to mechanical problems
(03) yes, control loss due to both weather and mechanical
(04) yes, control loss due to roadway
(05) yes, control loss due to roadway and weather
(06) yes, control loss due to roadway and mechanical
(07) yes, control loss due to all three
(98) other (specify) _____
(99) unknown

7. How Many Passengers Were in Your Vehicle? ____ ____
(00) none - SKIP TO QUESTION # 9
(01-08) actual number
(09) nine or more
(99) unknown

8. Did the Passengers in Your Vehicle Contribute to the Crash? ____ ____
(00) passengers present, but they made no contribution to the crash
(01) yes, passenger activities distracted driver and contributed to the crash
(02) yes, passenger interfered with vehicle control and contributed to the crash
(97) not applicable, no passengers
(98) other (specify) _____
(99) unknown

9. Was Your Line of Sight to the Motorcycle Clear? ____ ____
(00) no - GO TO QUESTION # 10, FOR ALL OTHER RESPONSES, - GO TO # 11
(01) yes, clear
(02) other vehicle in blind spot of mirror
(98) other (specify) _____
(99) unknown

10. What Obstructed Your View? ____ ____
(01) view obstructed by road curvature
(02) view obstructed by roadway grade
(03) view obstructed by roadside objects (shrubs, vehicles, buildings)
(97) not applicable
(98) other (specify) _____
(99) unknown

11. Was Your View of the Motorcycle Vehicle Obscured? ____ ____
(00) no, not obscured
(01) yes, obscured by sun glare
(02) yes, obscured by headlight glare
(03) yes, obscured by other glare (specify)
_____
(04) yes, obscured by darkness
(05) yes, obscured by nighttime and color of vehicle
(06) obscured by dust, smoke, smog, fog
(07) obscured by windshield/windscreen or eye wear condition (dirt, condensation, etc)
(97) not applicable
(98) yes, obscured by other (specify)
_____
(99) unknown

SITUATION

12. Were You Distracted by Any of the Following? ____ ____
(00) attentive and not distracted
(01) looked, but did not see
DISTRACTIONS
(02) by other occupants (specify)
_____
(03) by moving object in vehicle (specify)
_____
(04) while talking or listening to cellular phone/intercom/shortwave radio (specify location and type of device)
_____
(05) while dialing cellular phone/intercom/shortwave radio (specify location and type of device)
_____
(06) while adjusting climate controls
(07) while adjusting radio/cassette/CD (specify)
_____
(08) while using other device/controls integral to vehicle (specify) _____
(09) while using/reaching for device/object brought into vehicle (specify) _____
(10) sleepy or fell asleep
(11) distracted by outside person/object/event (specify)
_____
(12) eating or drinking
(13) smoking related
(14) while listening to or adjusting GPS device
(96) distracted, details unknown
(98) other distraction (specify)
_____
(99) unknown

TRIP INFORMATION

13. Where Did Your Trip Begin Today? ____ ____
(01) home
(02) work, business
(03) recreation/social
(04) school
(05) errand, shopping
(06) family, friends, relatives
(07) meals, restaurant, café, etc.
(08) transport someone
(09) medical/dental
(10) bar, pub
(11) religious activity
(12) personal business/obligations
(98) other (specify) _____
(99) unknown

14. What Was Your Trip Destination? ____ ____
(01) home
(02) work, business
(03) recreation/social
(04) school
(05) errand, shopping
(06) family, friends, relatives
(07) meals, restaurant, café, etc
(08) transport someone
(09) medical/dental
(10) bar, pub
(11) religious activity
(12) personal business/obligations
(13) no destination, joy riding
(98) other (specify) _____
(99) unknown

15. About How Many Miles Would the Trip Be One Way? ___ ___ ___
(001) one mile or less
(002-995) actual number of miles
(996) 996 miles or greater
(997) not applicable
(999) unknown

16.How Frequently Do You Travel This Road On/In Any Vehicle? ____ ____
(01) first time
(02) daily use, i.e., once per day
(03) weekly use, i.e., once per week
(04) monthly use, i.e., once per month
(05) quarterly, i.e., once per quarter
(06) annually, i.e., once per year
(07) less than annually
(99) unknown

17.How Long Have You Been Driving Today Since Your Trip Departure?
USE ZEROS TO FILL IN BLANKS

___ ___ Hours ___ ___ Minutes

(00-24) hours (00-59) minutes, actual time
(97-97) not applicable, had not yet begun trip
(98-98) other (specify) _____
(99-99) unknown

18.How Many Miles Have You Gone Since Your Trip Departure? ___ ___ ___
(001) one mile or less
(002-995) actual miles
(996) 996 or more
(997) not applicable, had not yet begun trip
(998) other (specify) _____
(999) unknown

IMPAIRMENT

19. Do You Have Any of the Following Permanent Physical Conditions? ____ ____
CODE UP TO THREE; INPUT "00" ____ ____
IN REMAINING RESPONSES
(00) no ____ ____
(01) vision reduction or loss
(02) hearing reduction or loss
(03) respiratory, cardiovascular condition
(04) paraplegia
(05) amputee
(06) neurological, epilepsy, stroke
(07) endocrine system, diabetes, digestive system
(08) infirmity, arthritis, senility
(98) other (specify) _____
(99) unknown

20. At the Time of the Crash, Were You Experiencing Any of the Following? ____ ____
CODE UP TO THREE; INPUT "00" ____ ____
IN REMAINING RESPONSES
(00) no ____ ____
(01) fatigue
(02) hunger
(03) thirst
(04) elimination urgency
(05) muscle spasm, cramp, itch
(06) headache, minor malaise, fever
(07) siesta syndrome (tired in afternoon)
(98) other (specify) _____
(99) unknown

21. At the Time of the Crash, Were You Concerned About Any of the Following Issues? ____ ____
CODE UP TO THREE; INPUT "00" ____ ____
IN REMAINING RESPONSES ____ ____
(00) no problems
(01) conflict with friends, relatives, divorce, separation
(02) work related problems
(03) financial distress
(04) school problems
(05) legal, police problems
(06) reward stress
(07) traffic conflict, road rage
(08) death of family, friend
(98) other (specify) _____
(99) unknown

22. How Many Hours of Sleep Did You Have in the 24 Hours Prior to the Crash? ____ ____
(00) no sleep
(01-24) number of hours slept
(98) other (specify) _____
(99) unknown

23. Did You Drink Any Alcohol or Take Any Drugs or Medications Within the 24 Hours Prior to the Crash? ____

(00) no - SKIP TO # 26
(01) alcohol use, only - SKIP TO # 26
(02) drug/medication use, only
(03) combined alcohol and drug/medication use
(98) other (specify) _____
(99) unknown

24. What is the Type of Drugs Other Than Alcohol? ____

(00) no drugs other than alcohol
(01) stimulant
(02) depressant
(03) drugs taken, type unknown
(04) multiple drugs taken
(97) not applicable
(98) other (specify) _____
(99) unknown

25. What is the Source of Drugs Other Than Alcohol? ____

(00) no drugs other than alcohol
(01) prescription
(02) non-prescription, over the counter
(03) illegal
(97) not applicable
(99) unknown

26. Blood Alcohol Concentration (BAC)? ___

CODE RESULTS IN MG/100ML
(000) negative BAC
(001-100) actual result
(995) BAC tested, results not known
(996) BAC not tested
(998) other (specify) _____
(999) unknown

27. Source of BAC Information? ____

(00) not tested
(01) breath testing
(02) unknown if tested
(03) tested, results unknown
(04) tested, results not available
(98) other (specify) _____
(99) unknown source

RIDING/DRIVING EXPERIENCE

28. How long have you been driving any kind of motor vehicle?

USE ZEROS TO FILL IN BLANKS

____ ____Years ____ ____ Months

(00-00) this is the first time
(00-96) years (00-11) months, actual number
(98-98) other (specify) _____
(99-99) unknown

29. How Long Have You Been Driving the Crash-Involved Motor Vehicle/Motorcycle?

USE ZEROS TO FILL IN BLANKS

____ ____Years ____ ____ Months

(00-00) this is the first time
(00-96) years (00-11) months, actual number
(98-98) other (specify) _____
(99-99) unknown

30. About How Many Miles Per Year Do You Drive a Car or a Truck?

___ ___, ___ ___ ___

(00000) none
(00001-99,995) actual miles
(99996) 99,996 or greater miles
(99998) other (specify) _____
(99999) unknown

31. What Kind of Driver Training Have You Had? ____

(00) none
(01) state recognized, entry-level motorcycle course
(02) experienced rider course
(03) high performance/competitive track course
(04) self taught
(05) taught by family and/or friends
(06) state recognized entry-level passenger vehicle course
(07) professional training for a commercial license
(08) complusory motor vehicle training ordered by judge/police, etc.
(98) other (specify) _____
(99) unknown

32. How Many Moving Traffic Convictions Have You Had in the Previous 5 Years? ____

CODE THE TOTAL NUMBER OF MOVING TRAFFIC CONVICTIONS - ANY VEHICLE
(00) none
(01-96) actual number
(99) unknown

33. How Many Motorcycle Moving Traffic Crashes Have You Had in the Past 5 Years? ____ ____

CODE THE TOTAL NUMBER OF PREVIOUS MOTORCYCLE CRASHES

(00) none
(01-96) actual number
(99) unknown

34. How Many Car or Truck Traffic Crashes Have You Had in the Past 5 Years? ____ ____

CODE THE TOTAL NUMBER OF PREVIOUS CAR OR TRUCK CRASHES

(00) none
(01-96) actual number
(99) unknown

35. Do You Currently Ride a Street Motorcycle? ____ ____

(00) no
(01) yes
(02) refused to answer
(98) other (specify)_____
(99) unknown

If not currently operating a motorcycle, code questions 36-40 as N/A and go to Question 41.

36. How Long Have You Operated a Street Motorcycle?

USE ZEROS TO FILL IN BLANKS

____ ____Years ____ ____ Months

(00-00) this is the first time
(00-96) years (00-11) months, actual number
(97-97) not applicable, not currently riding
(98-98) other (specify) _____
(99-99) unknown

37. What is The Average Number of Days Per Year You Ride Motorcycles? ___ ___ ___

(001-365) actual number of days per year
(997) not applicable, just started
(998) other (specify) _____
(999) unknown

38. About How Many Miles Per Year Do You Ride Motorcycles? ___ ___, ___ ___ ___

(00000) none
(00001-99,995) actual miles
(99996) 99,996 or greater miles
(99997) not applicable
(99998) other (specify) _____
(99999) unknown

39. When You Ride or Drive, What is the Percentage of Time You Ride a Motorcycle Versus Driving Another Type of Vehicle

INDICATE % OF TOTAL RIDING/DRIVING TIME FOR EACH CATEGORY

Motorcycle ___ ___ ___

Other Vehicle Types ___ ___ ___

100%

(000) first time use
(001-100) actual percentage
(997) not applicable
(999) unknown

40. When You Ride a Motorcycle, What is the Percentage of Time You Use it for Each of These Categories?

INDICATE % OF TOTAL RIDING/DRIVING TIME FOR EACH CATEGORY

Recreation ___ ___ ___

Basic transportation ___ ___ ___

100%

(000) first time use
(001-100) actual percentage
(997) not applicable
(999) unknown

BACKGROUND INFORMATION

41. How Old Are You? ____ ____

(01-96) code actual age in years
(99) unknown

42. What State/Country Issued Your Current Driver's License? ____ ____

(00) no license
(01) Canada
(02) California
(03) other state (list) _____
(04) military
(97) no license required (49cc scooter)
(98) other (specify) _____
(99) unknown

43. What Kind of Operator's License is it? ____ ____

CODE UP TO 4; INPUT "97" IN REMAINING RESPONSES

(00) no license held ____ ____
(01) learner's permit, only
(02) motorcycle license ____ ____
(03) automobile license
(04) commercial license ____ ____
(05) motorcycle driver and competition license
(06) license to transport people
(07) heavy truck license
(08) no license required (49 cc scooter)
(97) not applicable
(98) other (specify) _____
(99) unknown

44. What Year Was/Were the License(s) Issued? ___ ___ ___ ___
LISTED IN SAME ORDER AS LICENSES ABOVE ___ ___ ___ ___
(9997) not applicable
(9999) unknown ___ ___ ___ ___

___ ___ ___ ___

45. Does Your License Qualify You to Operate This Motor Vehicle? ____ ____
(00) no
(01) yes
(97) not applicable
(99) unknown

46. Are You of Hispanic or Latino Origin? ____ ____
(00) no
(01) yes
(02) refused to answer
(98) other (specify) _____
(99) unknown

47. What is Your Race? ____ ____
PLEASE SELECT ONE OR MORE, CODE "97" IN OTHERS
(01) white ____ ____
(02) black or African American
(03) Asian ____ ____
(04) Native Hawaiian or other Pacific Islander
(05) American Indian or Alaska native ____ ____
(06) refused to answer
(97) not applicable
(98) other (specify)_____
(99) unknown

48. What is Your Height? _____ ft. ___ ___ in.
(01-12) actual number
(9/99) unknown

49. What is Your Weight? ___ ___ ___ lbs.
(001-996) actual number
(999) unknown

50. Gender ____ ____
(01) male
(02) female
(99) unknown

51. How Much Formal Education Have You Had? ____ ____
(00) no formal schooling
(01) less than high school diploma
(02) high school diploma or GED
(03) partial college/university
(04) college/university graduate
(05) graduate school, advanced degree, professional degree
(06) specialty/technical school
(98) other (specify) _____
(99) unknown

52. What is Your Current Occupation? ____ ____
(01) management occupations
(02) business and financial
(03) computer and mathematical
(04) architecture and engineering
(05) life, physical, and social science
(06) community and social services
(07) legal
(08) education, training or library
(09) arts, design, entertainment, sports or media
(10) healthcare practitioners and technical jobs
(11) healthcare support
(12) protective services
(13) food preparation and serving related
(14) building and grounds maintenance
(15) personal care and services
(16) sales and related occupations
(17) office and administrative support
(18) farming, fishing or forestry
(19) construction or extraction
(20) installation, maintenance or repair
(21) transportation and material moving
(22) military
(23) full time student
(97) not applicable, not in workforce at present
(98) other (specify)
_____
(99) unknown

53. Are You Required to Wear Corrective Lenses When Riding/Driving? ____ ____
(00) no - SKIP TO #55
(01) yes
(98) other (specify)_____
(99) unknown

54. Were You Wearing Corrective Lenses at the Time of the Crash? ____ ____
(00) no
(01) yes
(98) other (specify)
_____
(99) unknown

55. Are You Married? ____ ____
(01) single
(02) married
(03) separated
(04) divorced
(05) widowed
(06) cohabitating
(98) other (specify) _____
(99) unknown

56. How Many Children Do You Have? ____ ____
(00) none
(01) one
(02) two
(03) three
(04) four
(05) five
(06) six or more
(98) other (specify) _____
(99) unknown

Rider/Occupant Injury Form

Case Number _____

Motorcycle or Motor Vehicle Number ____ ____ ____

Rider/Occupant Number ____ ____

INJURY DATA

Record below the actual injuries sustained by this occupant that were identified from the official and unofficial data sources. Remember not to double count an injury just because it was identified from two different sources. If greater than ten injuries have been documented, encode the balance on the next page.

A.I.S. 2005

	Source of Injury Data	Body Region	Type of Anatomic Structure	Specific Anatomic Structure	Level of Injury	Severity	Localizer 1	Localizer 2	1st Injury Source	2nd Injury Source	Injury Source Conf Level 1	Injury Source Conf. Level 2	Occupant Direct/ Indirect Injury	FCI	ICD-9
1															
16															
31															
46															
61															
76															
91															
106															
121															
136															

INJURY DATA (continued)

Source of Injury Data	A.I.S. 2005 Body Region	Type of Anatomic Structure	Specific Anatomic Structure	Level of Injury	Severity	Localizer 1	Localizer 2	1st Injury Source	2nd Injury Source	Injury Source Conf Level 1	Injury Source Conf. Level 2	Occupant Direct/ Indirect Injury	FCI	ICD-9

OCCUPANT INJURY CLASSIFICATION

Source of Injury Data

OFFICIAL RECORDS

(1) autopsy records with or without hospital/medical records
(2) hospital/medical records other than emergency room (e.g., discharge summary)
(3) emergency room records only (including associated X-rays or other lab reports)
(4) private physician, walk-in or emergency clinic

UNOFFICIAL RECORDS

(5) lay coroner report
(6) E.M.S. personnel
(7) interviewee
(8) other source (specify):

_____

(9) police

Body Region

(0) other trauma
(1) head
(2) face
(3) neck
(4) thorax
(5) abdomen
(6) spine
(7) upper extremity
(8) lower extremity
(9) external (skin) and thermal

Type of Anatomic Structure

(0) whole area NFS
(1) skin
(2) vessels
(3) nerves
(4) organs (includes muscles/ligaments/tendons)
(5) skeletal
(6) head - concussive injury
(7) joints

Specific Anatomic Structure

Vessels, Nerves, Organs. Bones, Joints are assigned consecutive two digit numbers beginning with 00.

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Level of Injury

Specific injuries are assigned consecutive two-digit numbers beginning with 00.

To the extent possible, within the organizational framework of the AIS, 00 is assigned to an injury NFS as to severity or where only one injury is given in the dictionary for that anatomic structure. 99 is assigned to any injury NFS as to lesion or severity.

Severity Code

(1) minor injury
(2) moderate injury
(3) serious injury
(4) severe injury
(5) critical injury
(6) maximum (untreatable)
(9) injured, unknown severity

Localizer

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Injury Source

SEE CODES ON NEXT PAGES

Injury Source Confidence Level

(1) certain
(2) probable
(3) possible
(9) unknown

Direct/Indirect Injury

(1) direct contact injury
(2) indirect contact injury
(3) noncontact injury
(7) injured, unknown source

Functional Capacity Index (FCI)

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Motor Vehicle (MV) FRONT

(001) Windshield
(002) Mirror
(003) Sunvisor
(004) Steering wheel rim
(005) Steering wheel hub/spoke
(006) Steering wheel (combination of codes 004 and 005)
(007) Steering column, transmission selector lever, other attachment
(008) Cellular telephone or CB radio
(009) Add on equipment (e.g., tape deck, air conditioner)
(010) Left instrument panel and below
(011) Center instrument panel and below
(012) Right instrument panel and below
(013) Glove compartment door
(014) Knee bolster
(015) Windshield including one or more of the following: front header, A (A1/A2)-pillar, instrument panel, mirror, or steering assembly (driver side only)
(016) Windshield including one or more of the following: front header, A (A1/A2)-pillar, instrument panel, or Mirror (passenger side only)
(017) Windshield reinforced by exterior object (specify)

_____

(019) Other front object (specify):

_____

MV LEFT SIDE

(051) Left side interior surface, excluding hardware or armrests
(052) Left side hardware or armrest
(053) Left A (A1/A2)-pillar
(054) Left B-pillar
(055) Other left pillar (specify):

_____

(056) Left side window glass
(057) Left side window frame
(058) Left side window sill
(059) Left side window glass including one or more of the following: frame, window sill, A (A1/A2)-pillar, B-pillar, or roof side rail.
(060) Other left side object (specify):

_____

MV RIGHT SIDE

(101) Right side interior surface, excluding hardware or armrests
(102) Right side hardware or armrest
(103) Right A (A1/A2)-pillar
(104) Right B-pillar
(105) Other right pillar (specify):

_____

(106) Right side window glass
(107) Right side window frame
(108) Right side window sill
(109) Right side window glass including one or more of the following: frame, window sill, A (A1/A2)-pillar, B-pillar, or roof side rail.
(110) Other right side object (specify):

_____

MV INTERIOR

(151) Seat, back support
(152) Belt restraint webbing/buckle
(153) Belt restraint B-pillar or door frame attachment point
(154) Other restraint system component (specify):_____
(155) Head restraint system
(160) Other occupants (specify):

_____

(161) Interior loose objects
(162) Child safety seat (specify):

_____

(163) Other interior object (specify):

_____

MV AIR BAG

(170) Air bag-driver side
(171) Air bag-driver side and eyewear
(172) Air bag-driver side and jewelry
(173) Air bag-driver side and object held
(174) Air bag-driver side and object in mouth
(175) Air bag compartment cover-driver side
(176) Air bag compartment cover-driver side and eyewear
(177) Air bag compartment cover-driver side and jewelry
(178) Air bag compartment cover-driver side and object held
(179) Air bag compartment cover-driver side and object in mouth
(180) Air bag-passenger side
(181) Air bag-passenger side and eyewear
(182) Air bag-passenger side and jewelry
(183) Air bag-passenger side and object held
(184) Air bag-passenger side and object in mouth
(185) Air bag compartment cover-passenger side
(186) Air bag compartment cover-passenger side and eyewear
(187) Air bag compartment cover-passenger side and jewelry
(188) Air bag compartment cover-passenger side and object held
(189) Air bag compartment cover-passenger side and object in mouth
(190) Other air bag (specify)

_____

(195) Other air bag compartment cover (specify)

_____

MV ROOF

(201) Front header
(202) Rear header
(203) Roof left side rail
(204) Roof right side rail
(205) Roof or convertible top

MV FLOOR

(251) Floor (including toe pan)
(252) Floor or console mounted transmission lever, including console
(253) Parking brake handle
(254) Foot controls including parking brake

MV REAR

(301) Backlight (rear window)
(302) Backlight storage rack, door, etc.
(303) Other rear object (specify):

_____

MV ADAPTIVE (ASSISTIVE) DRIVING EQUIPMENT

(401) Hand controls for braking/acceleration
(402) Steering control devices (attached to OEM steering wheel)
(403) Steering knob attached to steering wheel
(404) Replacement steering wheel (i.e., reduced diameter)
(405) Joy stick steering controls
(406) Wheelchair tie-downs
(407) Modification to seat belts, (specify): _____
(408) Additional or relocated switches, (specify):_____
(409) Raised roof
(410) Wall mounted head rest (used behind wheel chair)
(411) Other adaptive device (specify):_____

EXTERIOR OF MV OCCUPANT'S VEHICLE

(451) Hood
(452) Outside hardware (e.g., outside mirror, antenna)
(453) Other exterior surface or tires (specify):_____
(454) Unknown exterior objects

EXTERIOR OF OTHER MOTOR VEHICLE

(501) Front bumper
(502) Hood edge
(503) Other front of vehicle (specify):

_____

(504) Hood
(505) Hood ornament
(506) Windshield, roof rail, A-pillar
(507) Side surface
(508) Side mirrors
(509) Other side protrusions (specify):

_____

(510) Rear surface
(511) Undercarriage
(512) Tires and wheels
(513) Other exterior of other motor vehicle (specify):

_____

(514) Unknown exterior of other motor vehicle

OTHER VEHICLE OR OBJECT IN THE ENVIRONMENT

(551) Ground
(598) Other vehicle or object (specify):

_____

(599) Unknown vehicle or object

NONCONTACT INJURY

(601) Fire in vehicle
(602) Flying glass
(603) Other noncontact injury source (specify): _____
(604) Air bag exhaust gases
(697) Injured, unknown source

INJURY SOURCE MOTORCYCLE

(701) front crash bars
(702) rear crash bars
(703) engine guard
(704) windscreen
(705) fairing
(706) headlamps
(707) front reflector
(708) front turn signals
(709) instrument panel
(710) GPS/Nav system
(711) entertainment/radio/CD controls
(712) cruise control
(713) ignition/power control
(714) intercom/2-way radio control
(715) handlebar
(716) throttle
(717) clutch lever
(718) brake lever
(719) right side rear view mirrors, posts
(720) left side rear view mirrors, posts
(721) front suspension
(722) front tire/wheel
(723) front fender
(724) front brakes
(725) seat
(726) sissy bar/passenger back rest
(727) side reflectors
(728) frame
(729) grab rails/ hand holds
(730) arm rests
(731) fuel tank
(732) auxiliary fuel tank
(733) radiator
(734) battery, battery box
(735) rear brake pedal
(736) shift lever
(737) foot pegs, footrests
(738) highway pegs/footrests
(739) side stand
(740) center stand
(741) muffler/exhaust system
(742) drive chain/belt
(743) drive shaft
(744) tank bag
(745) luggage/cargo rack
(746) parcel rack
(747) saddle bags
(748) rear position lamps
(749) stop lamp
(750) rear reflectors
(751) rear turn signals
(752) rear tire/wheel
(753) rear fender
(754) rear brakes
(755) tools, tool box
(756) cup holder
(757) side covers
(758) trailer
(759) side car
(798) other motorcycle component (specify)

_____

(799) unknown motorcycle component

OTHER
(997) not applicable
(998) other (specify)

_____

(999) unknown injury source

151. Blood Alcohol Concentration

____ . ____ ____

BAC = _____mg/dl

152. Alcohol/drug impairment? ____ ____
(00) no impairment
(01) not legally impaired
(02) legally impaired
(98) other (specify)_____
(99) unknown

153. Source of BAC information? ____ ____
(00) not tested
(01) breath testing
(02) blood test
(03) urine test
(04) unknown if tested

154.Time span from crash to BAC collection

___ ___ Hours ___ ___ Minutes

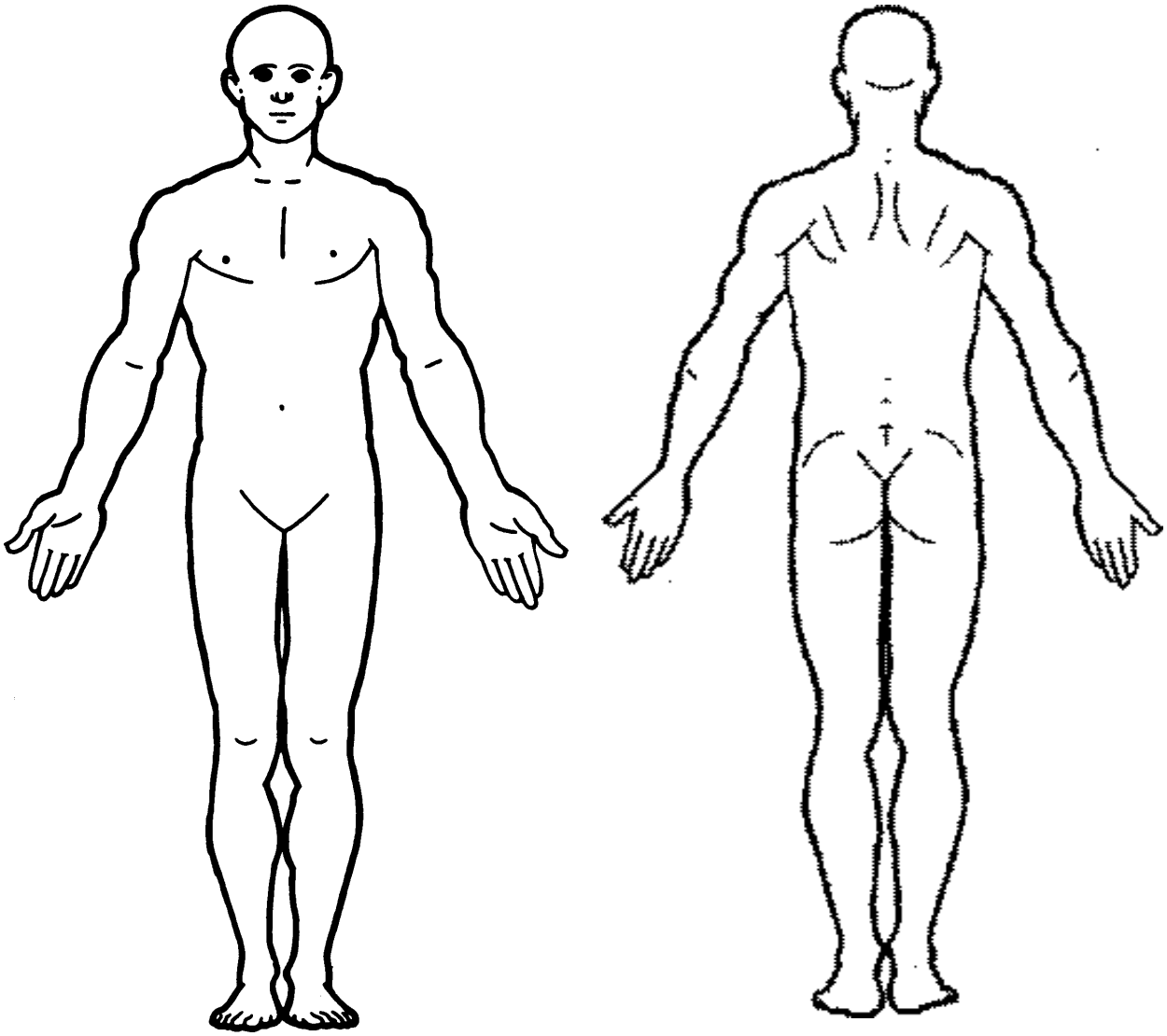
(00-00) no test done
(01-12) hours, and (00-60) minutes
(98-98) other (specify) _____
(99-99) unknown

155. Type of drugs other than alcohol? ____ ____
(00) no drugs other than alcohol
(01) stimulant
(02) depressant
(03) drugs taken, type unknown
(04) multiple drugs taken
(97) not applicable
(98) other (specify)_____
(99) unknown

156. Source of drugs other than alcohol? ____ ____
(00) no drugs other than alcohol
(01) prescription
(02) non-prescription, over the counter
(03) illegal
(97) not applicable
(99) unknown

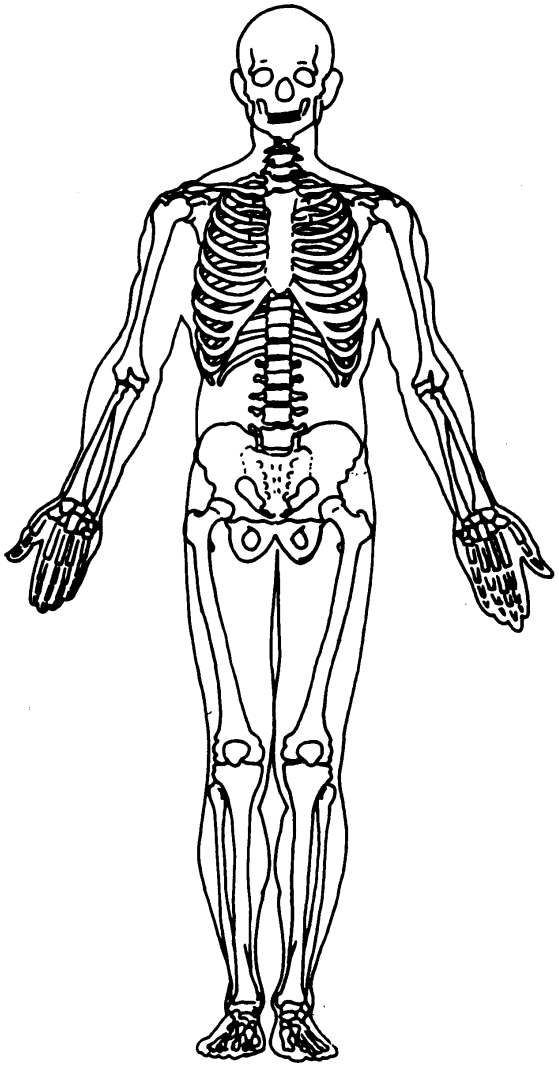
OFFICAL INJURY DATA - SOFT TISSUE INJURIES

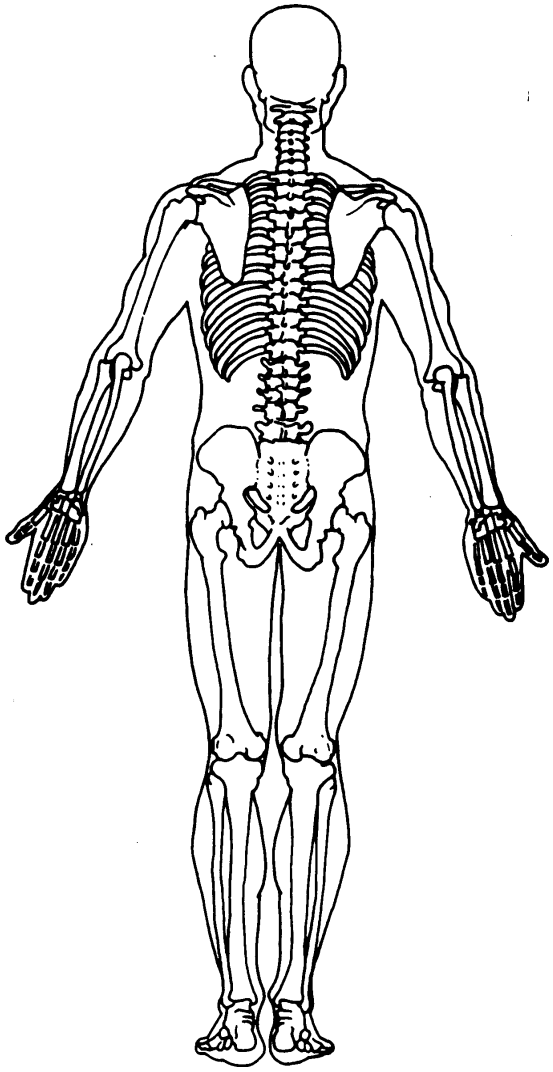
Indicate the Location, Specific Anatomic Structure, Detail (size, depth, fracture type, head injury clinical signs and neurological deficits), and Source of all injuries indicated by official sources (or from PAR or other unofficial sources if medical records and interviewee data are unavailable.



OFFICIAL INJURY DATA - SKELETAL INJURIES

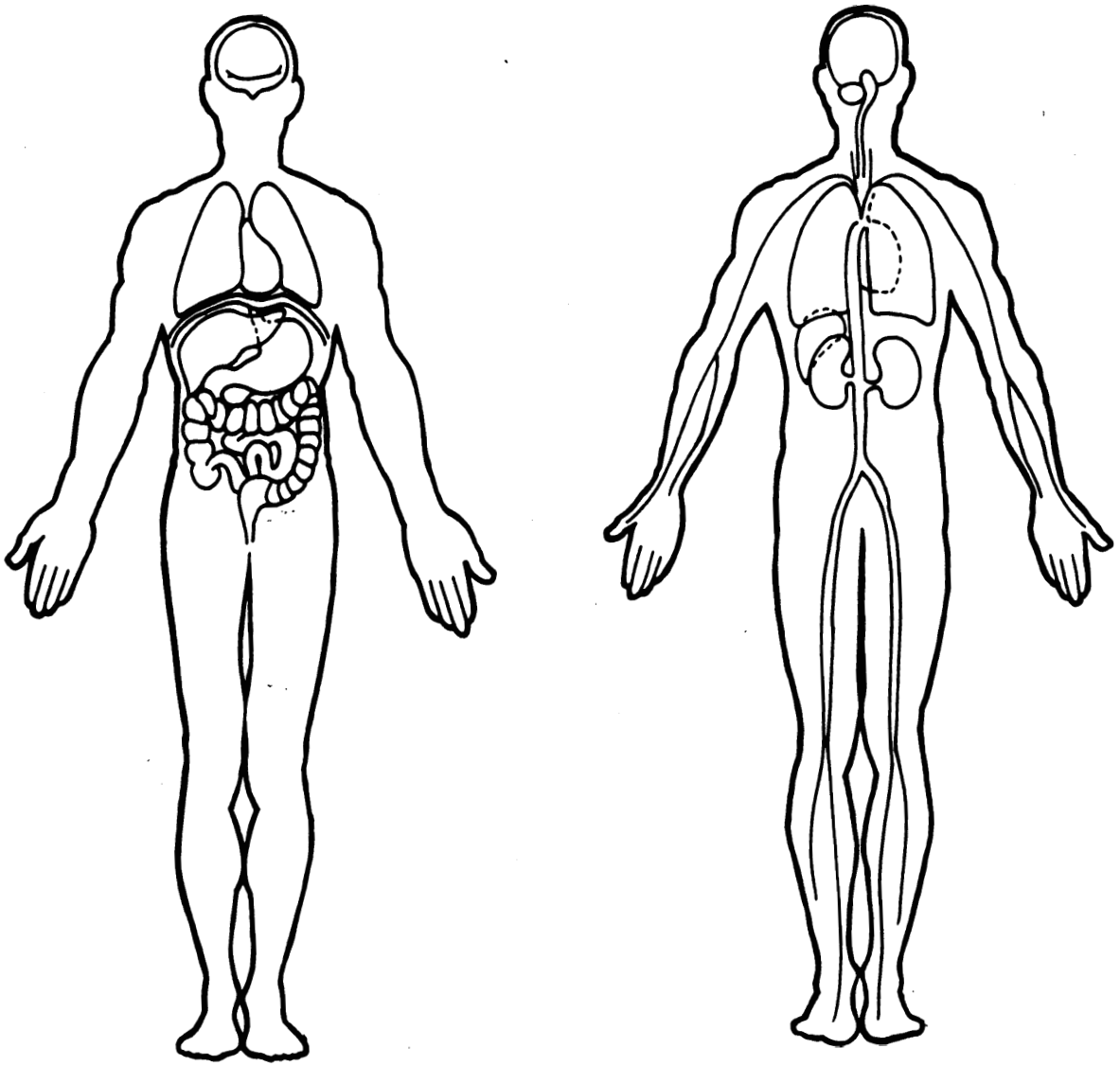
Indicate the Location, Specific Anatomic Structure, Detail (size, depth, fracture type, head injury clinical signs and neurological deficits), and Source of all injuries indicated by official sources (or from PAR or other unofficial sources if medical records and interviewee data are unavailable.





OFFICIAL INJURY DATA - INTERNAL INJURIES

Indicate the Location, Specific Anatomic Structure, Detail (size, depth, fracture type, head injury clinical signs and neurological deficits), and Source of all injuries indicated by official sources (or from PAR or other unofficial sources if medical records and interviewee data are unavailable.



INJURY SEVERITY SCORE (ISS) WORKSHEET

ISS Region	Injury	AIS Code	Highest AIS in 3 worst regions	Highest AIS Code Squared
Head				
Face				
Chest				
Abdominal/Pelvic contents				
Extremities/Pelvic Girdle				
General (external)				
			157. Injury Severity Score	

Note: ISS equals the sum of squares of the highest AIS (severity) code in each of the three most severly injured areas.

TRAUMA STATUS

158. Trauma Status ____ ____

(00) no medical aid sought
(01) first aid at scene only
(02) treated at hospital/clinic and released
(03) hospitalized, code number of days in Question 159
(04) disabled, institutionalized
(05) fatal, dead on scene
(06) fatal, dead on arrival at hospital
(07) fatal, code days until death in Question 160
(98) other (specify) _____
(99) unknown

159. Number of Days of Hospital Admission ____ ____

(00) not hospitalized
(01-95) actual days
(96) 96 days or more
(98) other(specify) _____
(99) unknown

160. Death Within How Many Days? ____ ____

(00) not fatal
(01-30) actual days
(98) other (specify) _____
(99) unknown

Environment Form

Case Number _____

Vehicle Number ____ ____ ____ **(ex. MC1, OV2)**

TRAFFICWAY DEFINITION

1. Type of Land Development

same side of street ____ ____

other side of street ____ ____

(01) urban industrial
(02) commercial/business
(03) housing: apartments
(04) housing: single-family homes
(05) urban school
(06) urban park
(07) rural farming, ranching, etc.
(08) rural wilderness
(09) rural school
(10) rural park
(98) other (specify) _____
(99) unknown

2. Relation to Junction ____ ____

(00) non-junction
(01) at-grade intersection area
(02) interchange area
(98) other (specify) _____
(99) unknown

3. Type of At-Grade Intersection ____ ____

(00) not at intersection
(01) four-leg intersection, not skewed
(02) four-leg intersection, skewed
(03) T intersection
(04) Y intersection
(05) alley, driveway
(06) offset intersection
(07) intersection as part of interchange
(08) roundabout or traffic circle (specify)
_____
(09) multi-leg (five-leg or more) intersection (describe)
_____
(10) rail/light-rail crossing
(98) other (specify) _____
(99) unknown

ROADWAY VEHICLE WAS TRAVELING

4. Trafficway Description ____ ____

(01) two-way, undivided
(02) two-way, with a continuous left-turn lane
(03) two-way, divided, no median barrier
(04) two-way, divided, with median barrier
(05) one-way
(98) other (specify) _____
(99) unknown

5. Roadway Function ____ ____

(00) none
(01) interstate/freeway mainline
(02) freeway entrance ramp
(03) freeway exit ramp
(04) freeway transition (freeway to freeway)
(05) freeway frontage road
(06) principal arterial, non-freeway
(07) minor arterial
(08) collector
(09) local road/street
(10) construction detour
(11) parking area, off-street
(12) alley
(13) driveway
(14) round about or traffic circle (describe)
_____
(15) overpass mainline
(16) overpass entrance ramp
(17) overpass exit ramp
(18) underpass mainline
(19) underpass entrance ramp
(20) underpass exit ramp
(21) dedicated bicycle/moped path separated from ordinary vehicular traffic roadway
(22) dedicated bicycle/moped path not separated from ordinary vehicular roadway
(23) unseparated HOV lane
(24) separated HOV lane
(98) other (specify) _____
(99) unknown

6. Posted Speed Limit in MPH ____ ____

(01-96) actual speed limit
(97) not applicable, no posted limit
(98) other (specify) _____
(99) unknown

7. Number of Through Lanes ____ ____

(01-08) number of lanes
(97) not applicable
(99) unknown

8. Lane Vehicle was Traveling ____ ____

(01-09) actual lane number
(10) right turn only
(11) left turn only
(12) vehicle traveling opposite intended traffic, any lane
(97) not applicable, vehicle not in a lane
(98) other (specify)
_____
(99) unknown

9. Lane Width In Feet/Inches

___ ___feet ___ ___ inches

(01-96) actual number
(97/97) not applicable, vehicle not in a lane
(99/99) unknown

10. Travel-way Width In Feet/Inches ___ ___feet ___ ___ inches

(01-96) actual number
(97/97) not applicable
(99/99) unknown

ROADWAY SURFACE

11. Type of Surface ____ ____

(01) concrete
(02) asphalt
(03) brick
(04) stone
(05) gravel
(06) dirt
(07) metallic
(98) other (specify) _____
(99) unknown

12. Surface Condition ____ ____

CODE UP TO FOUR, THEN CODE 00

(00) none ____ ____
(01) dry
(02) wet ____ ____
(03) snow
(04) slush ____ ____
(05) ice/frost
(06) water (standing, moving)
(07) mud, dirt
(08) sand
(09) gravel
(10) oil
(11) debris (tire tread, construction materials, tree limbs, etc.)
(12) loads dropped from another vehicle
(98) other (specify)

_____

(99) unknown

13. Surface Special Features ____ ____

CODE UP TO THREE, THEN CODE 00

(00) none ____ ____
(01) surface cracking (longitudinal, transverse) ____ ____
(02) spalling (breaking up, splintering)
(03) potholes
(04) ruts
(05) bump
(06) ripples, ridges
(07) pavement edge drop
(08) overbanding and tar snakes (describe)

_____

(09) bitumen repair (describe)

_____

(10) tram//train rails
(11) rumble strips
(12) grooved pavement
(13) steel plates
(14) speed bumps/humps
(15) bridge grating
(16) expansion joints
(98) other (specify) _____
(99) unknown

14. Vertical Alignment ____ ____

(01) level
(02) upgrade
(03) crest vertical curve
(04) downgrade
(05) sag vertical curve
(98) other (specify) _____
(99) unknown

15. Horizontal Alignment ____ ____

(01) straight
(02) curve right
(03) curve left
(04) corner right
(05) corner left
(06) reverse curve right: turn to right, then left, resuming approximate original direction
(07) reverse curve left: turn to left, then right, resuming approximate original direction
(98) other (specify) _____
(99) unknown

16. Horizontal Curve Data

(0000) no curve
(0001-9996) actual number
(9998) other (specify) _____
(9999) unknown

Radius (ft) ____ ____ ____ ____
Chord (ft) ____ ____
Middle Ordinate (ft) ____ ____
Superelevation rate (%) ____ ____
Length of horizontal curve (ft) ____ ____ ____ ____

TRAFFIC CONTROLS ON PATH OF TRAVEL

17. Exclusive Turn Lane Presence and Type of Signal Phasing ____ ____

(00) none
(01) no exclusive left-turn lane, permissive LT signal phasing
(02) no exclusive left-turn lane, protected/permissive LT signal phasing
(03) no exclusive right-turn lane, permissive RT signal phasing
(04) no exclusive right-turn lane, protected/permissive RT signal phasing
(05) exclusive left-turn lane, protected-only LT signal phasing with leading green
(06) exclusive left-turn lane, protected-only LT signal phasing with lagging green
(07) exclusive left-turn lane, protected/permissive LT signal phasing with separate signal face
(08) exclusive left-turn lane, protected/permissive LT signal phasing with shared signal face
(09) exclusive right-turn lane, protected-only RT signal phasing with leading green
(10) exclusive right-turn lane, protected-only RT signal phasing with lagging green
(11) exclusive right-turn lane, protected/permissive RT signal phasing with separate signal face
(12) exclusive right-turn lane, protected/permissive RT signal phasing with shared signal face
(13) exclusive turn lane, no traffic signal
(14) no exclusive turn lane, no traffic signal
(98) other, specify

_____

(99) unknown

18. Type of Traffic Control ____ ____

(00) no traffic control - SKIP TO #22
(01) yield sign
(02) stop sign
(03) three-way, four-way, all-way stop
(04) traffic control signal
(05) traffic officer
(06) construction personnel
(07) gate, toll gate
(08) pedestrian crossing
(09) traffic calming/speed bumps
(10) traffic advisory signage (describe)

_____

(11) traffic warning signage (describe)

_____

(12) traffic signal, actuated, two-phase
(13) traffic signal, actuated, multi-phase
(14) traffic signal, pre-timed, two-phase
(15) traffic signal, pre-timed, multi-phase
(16) traffic control signal, mid-block pedestrian crossing
(17) flasher red
(18) flasher yellow
(98) other (specify) _____
(99) unknown

19. Was Traffic Control Functioning Properly? ____ ____

(00) no, non-operational
(01) yes
(02) operational, but malfunctioning (ex: signal turn timing is incorrect)
(97) not applicable, no traffic control
(98) other (specify) _____
(99) unknown

20. Traffic Control Visible to Vehicle Operator? ____ ____

(00) no
(01) yes
(97) not applicable, no traffic control
(98) other (specify) _____
(99) unknown

21. Traffic Control Violated by Vehicle Operator ____ ____

(00) no
(01) yes
(97) not applicable, no traffic control
(98) other (specify) _____
(99) unknown

22. Traffic Density at Time of Crash As reported by: ____ ____

_____

(00) no other traffic
(01) light traffic
(02) moderate traffic
(03) heavy traffic, traffic moving
(04) heavy traffic, congested roadway
(98) other (specify) _____
(99) unknown

23. Visibility Limitation Due To ____ ____

(00) not significantly limited
(01) dust
(02) smoke
(03) smog
(04) fog
(05) precipitation
(06) glare
(07) windscreen, visor condition (describe)

_____

(08) misaligned/obscured roadside curved mirror
(98) other (specify)

_____

(99) unknown

24. Direction of Traffic Flow in Lane Adjacent to Vehicle **right side** ____ ____ **left side** ____ ____
(00) no adjacent lane
(01) same direction
(02) opposite direction
(03) both directions
(97) not applicable
(98) other (specify) _____
(99) unknown

25. Parked Vehicle Presence in Lane Adjacent to Vehicle **right side** ____ ____ **left side** ____ ____
(00) no parked vehicles
(01) parallel parked vehicles
(02) angle parked vehicles
(03) loading zone, parked vehicles
(97) not applicable, no adjacent lane
(98) other (specify) _____
(99) unknown

26. Shoulder and Sidewalk Presence in Area Adjacent to Vehicle Lane of Travel **right side** ____ ____ **left side** ____ ____
(00) no shoulder or sidewalk
(01) shoulder, (describe)
_____
(02) sidewalk, (describe)
_____
(98) other (specify)
_____
(99) unknown

PAVEMENT MARKINGS, LONGITUDINAL

27. Longitudinal Pavement Markings at the Edge of the Lane Traveled by the Vehicle **right side** ____ ____ **left side** ____ ____
(00) no markings
(01) centerline, skip-dash, yellow
(02) centerline, solid, yellow
(03) centerline, solid double, yellow
(04) lane line, skip-dash, white
(05) lane line, solid, white
(06) edge line, left, yellow
(07) edge line, right, white
(08) left-turn lane lines, combination of solid and skip-dash, yellow
(09) turn arrow symbols, thru, left, or combination of two
(97) not applicable, no adjacent lane
(98) other (specify) _____
(99) unknown

28. Pavement Markings Material **right side** ____ ____ **left side** ____ ____
(00) no markings
(01) paint
(02) thermoplastic
(03) raised markers
(04) tape
(97) not applicable, no adjacent lane
(98) other (specify) _____
(99) unknown

29. Delineator Presence **right side** ____ ____ **left side** ____ ____
(00) no delineator
(01) delineator
(97) not applicable, no adjacent lane
(98) other (specify)
_____
(99) unknown

30. Roadside Environment **right side** ____ ____ **left side** ____ ____
(01) level ground, no remarkable features
(02) grass, ground cover
(03) shrubbery
(04) dirt, soft soil, sand
(05) gravel preparation
(06) sidewalk
(07) paved or topped surface
(08) trees, posts
(98) other (specify) _____
(99) unknown

31. Roadside Fixed Objects **right side** ____ ____ **left side** ____ ____
(00) none
(01) wall, building, tunnel, etc.
(02) ditch or low lying area, describe
(03) trees
(04) impact attenuator/crash cushion
(05) bridge pier or support
(06) bridge rail
(07) culvert, describe _____
(08) curb, describe
_____
(09) embankment foreslope, slope = 1V:xH (describe)
_____
(10) embankment transverse-slope, slope = 1V:xH (describe) _____
(11) cut slope, backslope
(12) guardrail
(13) concrete traffic barrier
(14) other traffic barrier
(15) utility pole, light support
(16) traffic sign support
(17) other post, pole or support
(18) fence
(19) mailbox
(97) not applicable
(98) other (specify) _____
(99) unknown

32. Stationary View Obstructions Along the Operator's Line of Sight at time of Precipitating Event ____ ____

CODE UP TO THREE

(00) none ____ ____
(01) buildings
(02) signs
(03) vegetation, trees, bushes, walls, vegetation covered fences
(04) crest vertical curve
(05) blind horizontal curve
(06) stationary or parked vehicles
(07) barricades
(98) other, specify _____
(99) unknown

33. Mobile View Obstructions Along the Operator's Line-of-Sight at Time of Precipitating Event ____ ____

(00) none
(01) vehicles: automobiles
(02) vehicles: light trucks and vans
(03) trucks and busses
(04) vehicles: special purpose equipment, construction, cranes
(05) farm and/or agricultural equipment
(06) people, pedestrians
(07) animals
(98) other (specify) _____
(99) unknown

WORK ZONE-RELATED

34. Was This Crash Work Zone-related? ____ ____

(00) no - SKIP TO #37
(01) yes
(99) unknown

35. Location of Crash within Work Zone ____ ____

(01) before the first work zone warning sign
(02) advance warning area
(03) transition area
(04) activity area
(05) terminal area
(97) not applicable, not in work zone
(98) other (specify) _____
(99) unknown

36. Type of Work Zone ____ ____

(01) lane closure
(02) lane shift/crossover
(03) work on shoulder or median
(04) intermittent or moving work
(97) not applicable, not in work zone
(98) other (specify)

_____

(99) unknown

FIRST HARMFUL EVENT

37. Location of First Harmful Event ____ ____

(01) on roadway
(02) shoulder
(03) median
(04) roadside non-median
(05) gore area
(06) separator (between arterial and frontage road)
(07) in parking lane or zone
(08) off roadway, location unknown
(09) outside trafficway
(98) other (specify)

_____

(99) unknown

38. If First Harmful Event is a Non-collision ____ ____

(01) overturn
(02) fire/explosion
(03) immersion
(04) jackknife
(05) cargo/equipment loss or shift
(06) fell/jumped from motor vehicle
(07) thrown or falling object
(97) not applicable, event is a collision
(98) other (specify)

_____

(99) unknown

39. If First Harmful Event is a Collision with Motor Vehicle/Motorcycle, Pedestrian, Animal, or Fixed Object ____ ____

(01) motor vehicle in transport
(02) parked motor vehicle
(03) work-zone equipment
(04) railway/light-rail vehicle
(05) pedestrian
(06) pedalcycle
(07) motorcycle
(08) animal
(97) not applicable
(98) other (specify)

_____

(99) unknown

40. If First Harmful Event is a Collision with a Fixed Object ____ ____
(01) impact attenuator/crash cushion
(02) bridge overhead structure
(03) bridge pier or support
(04) bridge rail
(05) culvert
(06) curb
(07) ditch or low lying area)
(08) embankment, foreslope
(09) embankment transverse- slope
(10) cut slope, backslope
(11) guardrail non-terminal
(12) guardrail terminal
(13) concrete traffic barrier
(14) other traffic barrier
(15) trees
(16) utility pole, light support
(17) traffic sign support
(18) traffic signal support
(19) other post, pole or support
(20) fence
(21) mailbox
(22) wall, building, tunnel, etc.
(97) not applicable
(98) other (specify) _____
(99) unknown

41. Pedestrian Involvement ____ ____
(00) none - SKIP TO #44
(01) yes, pedestrian involved in precipitating event
(02) yes, pedestrian involved in collision with motorcycle or motorcyclist
(99) unknown

42. Location of Pedestrian at Precipitating Event **Ped 1** ____ ____
(00) no pedestrian involvement in precipitating event - SKIP TO #46 **Ped 2** ____ ____
(01) in crosswalk **Ped 3** ____ ____
(02) jaywalking
(03) darting from roadside
(04) passenger entering or leaving automobile
(05) passenger entering or leaving public transportation
(06) darting from roadside near school
(07) entering or leaving transportation near school
(97) not applicable, pedestrian not involved in crash
(98) other (specify)
_____
(99) unknown

43. Location of Pedestrian at Impact **Ped 1** ____ ____
(00) pedestrian not impacted
(01) in crosswalk **Ped 2** ____ ____
(02) jaywalking
(03) darting from roadside **Ped 3** ____ ____
(04) passenger entering or leaving automobile
(05) passenger entering or leaving public transportation
(06) darting from roadside near school
(07) entering or leaving transportation near school
(97) not applicable, no pedestrian involved
(98) other (specify)
_____
(99) unknown

44. Animal Involvement ____ ____
(00) none - SKIP TO #46
(01) small dog, less than 20 pounds
(02) big dog
(03) cat
(04) bird
(05) cow
(06) horse
(07) deer
(08) sheep
(09) squirrel
(10) elk
(11) moose
(98) other (specify) _____
(99) unknown

45. Was the Animal Struck? ____ ____
(00) no, animal not struck
(01) yes, animal involved in precipitating event
(02) yes, animal struck by motorcycle, or involved with motorcyclist
(97) not applicable, no animal involved
(99) unknown

CONTRIBUTING ENVIRONMENTAL FACTORS SUMMARY

46. Roadway Design Factors ____ ____
(00) no design issue
(01) roadway design issue present but not a contributing factor
(02) roadway design issue was the precipitating event
(03) roadway design issue was the primary contributing factor
(04) roadway design issue was a contributing factor
(97) not applicable
(98) other (specify) _____
(99) unknown

47. Roadway Maintenance Factors ____ ____
(00) no maintenance issue
(01) roadway maintenance issue present, but not a contributing factor
(02) roadway maintenance issue was the precipitating event
(03) roadway maintenance issue was the primary contributing factor
(04) roadway maintenance issue was a contributing factor
(97) not applicable
(98) other (specify) _____
(99) unknown

48. Traffic Controls Factors ____ ____
(00) no traffic control issue or malfunction
(01) traffic controls issue or malfunction present, but not a contributing factor
(02) traffic controls issue or malfunction was the precipitating event
(03) traffic controls issue or malfunction was the primary contributing factor
(04) traffic controls issue or malfunction was a contributing factor
(97) not applicable, no traffic controls
(98) other (specify)
_____
(99) unknown

49. Traffic Hazard, including Construction and Maintenance Operations ____ ____
(00) no temporary traffic hazard or obstruction
(01) temporary traffic obstruction present but not a contributing factor
(02) temporary traffic obstruction was the precipitating event
(03) temporary traffic obstruction was the primary contributing factor
(04) temporary traffic obstruction was a contributing factor
(97) not applicable
(98) other (specify) _____
(99) unknown

50. Weather Related Problem ____ ____
(00) no weather related problem
(01) weather related problem was the precipitating event
(02) weather related problem was the primary contributing factor
(03) weather related problem was a contributing factor
(97) not applicable
(98) other (specify) _____
(99) unknown

51. Effect of the Visual Background of the Other Vehicle Along This Vehicle Driver/Rider's Line-of-Sight at Time of Precipitating Event ____ ____
(00) visual background of motor vehicle made no contribution to conspicuity of the vehicle
(01) visual background had a positive effect on vehicle conspicuity, vehicle was more noticeable
(02) visual background had a negative effect on vehicle conspicuity, vehicle was less noticeable
(03) no "other vehicle" involved in crash
(97) not applicable, view obstructed by foreground
(98) other (specify)
_____
(99) unknown

Control Motorcycle Mechanical Form

Case Number _____

Control Motorcycle Number ____ ____

Data Collected Using Which Method ____

(0) control data collection attempted, no data obtained
(1) full stop interview and inspection at crash location
(2) full stop interview but inspection refused
(3) full stop - interview refused, but inspection obtained
(4) identification and telephone follow-up
(5) remote observation at location: photography, and/or video
(6) at nearby location (specify)

_____

WEATHER

1. Ambient Temperature ± ___ ___ ___
(code plus (+) or minus (-); degrees F)
(999) unknown

2. Weather Description ____ ____
(01) clear
(02) cloudy, partly cloudy
(03) overcast
(04) drizzle, light rain
(05) moderate or heavy rain
(06) snow
(07) sleet, freezing rain
(08) hail
(98) other, specify _____
(99) unknown

3. Wind Description ____ ____
(00) none, calm
(01) light
(02) moderate
(03) strong
(04) light with gusts
(05) moderate with gusts
(06) strong with gusts
(07) variable
(98) other, specify _____
(99) unknown

4. Wind Direction With Respect to Motorcycle Path ____ ____
(00) none, no wind
(01) left crosswind
(02) headwind
(03) right crosswind
(04) tailwind
(98) other, specify _____
(99) unknown

SPECIFICATIONS

5. Manufacturer ____ ____ ____

_____
(Write in - do not code)

6. Model

_____
(Write in - do not code)

7. Year ___ ___ ___ ___
(Code the 4-digit year)

8. Motorcycle Legal Category ____ ____
(01) L1 vehicle
(02) L3 vehicle
(03) mofa
(98) other (specify)
_____
(99) unknown

9. Motorcycle Type ____ ____
(01) conventional street L1 or L3 vehicle (tank between knees), without modifications
(02) conventional street L1 or L3 vehicle (tank between knees), with modifications
(03) dual purpose, on-road off-road motorcycle
(04) sport, race replica
(05) cruiser
(06) chopper, modified chopper
(07) touring
(08) scooter
(09) step-through
(10) sport-touring
(11) motorcycle plus sidecar, left
(12) motorcycle plus sidecar, right
(13) off-road motorcycle, motocross, enduro, trials
(14) tri-cycle
(15) law enforcement
(98) other (specify)_____
(99) unknown

10. Motorcycle Weight ___ ___ ___ ___ lbs
(0001-9996) in pounds, as specified by manufacturer
(9999) unknown

11. Vehicle Identification Number (VIN)

__ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ X X X
CODE "9" IN ALL SPACES FOR UNKNOWN

12. Odometer Reading in Miles

___ ___ ___, ___ ___ ___

(000,001 - 999,996) actual miles
(999,999) unknown

13. Registered Owner Category ____ ____
(01) motorcycle rider
(02) motorcycle passenger
(03) operated with consent of owner
(04) dealer
(05) stolen
(97) not applicable, no registration available
(98) other (specify)
_____
(99) unknown

14. Predominant Color of Motorcycle ____ ____
(01) no dominating color, multi-colored
(02) white
(03) yellow
(04) black
(05) red
(06) blue
(07) green
(08) silver, grey
(09) orange
(10) brown, tan
(11) purple
(12) gold
(13) chrome, metallic
(98) other (specify) _____
(99) unknown

15. Does The Motorcycle Have Any Retroreflective Parts, Material Or Paint? ____ ____
(00) no, none
(01) yes
(98) other (specify) _____
(99) unknown

16. Motor Displacement ___ ___ ___ ___
CODE NUMBER IN CCS
(0001-9996) actual number
(9999) unknown

17. Number of Cylinders ____ ____
Code number of cylinders
(01-96) actual number
(99) unknown

18. Number of Passengers ____ ____
(00-96) actual number
(99) unknown

19. Cargo/luggage on motorcycle ____ ____
CODE UP TO THREE
(00) no cargo/luggage ____ ____
(01) carried on rear rack
(02) carried in saddle bag ____ ____
(03) carried by passenger
(04) carried on seat or tank ahead of rider
(05) carried between legs of rider (step through frame or scooter)
(06) carried between rider's arms
(98) other (specify) _____
(99) unknown

TIRES

20. Are The Tires Original Equipment? ____ ____
(01) yes
(02) no, but are standard size
(03) no, modified size
(98) other (specify) _____
(99) unknown

21. Tread Type **front** ____ ____
(00) no tread pattern, slick
(01) straight rib tread pattern **rear** ____ ____
(02) block pattern, trials type
(03) knobby pattern, motocross type
(04) all weather, cross or dog-bone pattern
(05) all weather, diagonal or diamond pattern
(06) all weather, angle groove
(07) racing design, minimum groove design
(98) other (specify) _____
(99) unknown

22. Measured Tread Depth **front** ____ ____ . ___
Code in inches and tenths
(00.0-99.6) actual number **rear** ____ ____ . ___
(99.9) unknown

23. Are The Wheels Original Equipment? ____ ____
(01) yes
(02) no, but are standard size
(03) no, modified size
(98) other (specify) _____
(99) unknown

SUSPENSION

24. Is The Suspension Original Equipment? ____ ____
(00) no
(01) yes, all original equipment
(02) partially original equipment
(98) other (specify) _____
(99) unknown

25. Suspension Type - Front ____ ____
(00) none, rigid wheel mount
(01) telescoping tube, conventional lower fork legs
(02) telescoping tube, inverted fork legs
(03) springer
(04) girder
(05) leading link, single or double sided
(06) articulated multiple link
(07) trailing link, single or double sided
(08) telever (BMW, only)
(09) lower suspension
(98) other (specify)_____
(99) unknown

26. Suspension Type - Rear ____ ____
(00) none, rigid wheel mount
(01) conventional fork swing arm, double exterior tubular shocks
(02) conventional fork swing arm, mono-shock
(03) conventional fork swing arm, linkage articulated mono-shock
(04) one-sided swing arm, single exterior tubular shock
(05) one-sided swing arm, mono-shock
(06) one-sided swing arm, linkage articulated mono-shock
(07) lower suspension
(98) other (specify)_____
(99) unknown

BRAKE SYSTEM

27. Rider Brake Control Type **lever/pedal 1** ____ ____
(00) none, not present
(01) hand **lever/pedal 2** ____ ____
(02) foot
(98) other (specify) _____
(99) unknown

28. Brake Control System Type **lever/pedal 1** ____ ____
(01) independent front brake **lever/pedal 2** ____ ____
(02) independent rear brake
(03) combined front and rear brakes, CBS
(97) not applicable
(99) unknown

29. ABS **front** ____ ____
(00) no
(01) yes **rear** ____ ____
(97) not applicable
(99) unknown

FRAME

30. Has The Frame Been Modified? ____ ____
(00) no
(01) yes
(98) other (specify) _____
(99) unknown

31. Frame Type/Configuration ____ ____
(01) step-through, formed sheet metal
(02) step-through, tubular frame
(03) conventional tube cradle type with single down tube
(04) conventional tube cradle type with double down tubes
(05) backbone type, motor-transmission mounted independently
(06) backbone type, motor-transmission integral with frame
(07) perimeter frame, tube type
(08) perimeter frame, extrusion element type
(09) monocoque, shell only structure
(98) other (specify) _____
(99) unknown

MISCELLANEOUS COMPONENTS

32. Is The Motorcycle Equipped With Pedals? ____ ____
(00) no
(01) yes
(99) unknown

33. Headlamp Assembly Type ____ ____
(00) none
(01) single headlamp
(02) double headlamp
(03) single with auxiliary lights
(04) double with auxiliary lights
(98) other (specify) _____
(99) unknown

34. Was Headlamp Illuminated Prior To Stopping For The Interview? ____ ____
(00) no
(01) yes, rider controlled
(02) yes, "Always On" technology
(98) other (specify) _____
(99) unknown

35. Is Motorcycle Equipped With An Airbag? ____ ____
(00) no
(01) yes
(99) unknown

36. Is Motorcycle Equipped With Or Pulling Any Of The Following? ____ ____
(00) no, not applicable
(01) side car
(02) trailer
(03) training Wheels
(04) outrigger
(98) other (specify) _____
(99) unknown

37. Have The Handlebars Been Modified? ____ ____
(00) no, original equipment
(01) yes, clip-on
(02) yes, clubman or racer
(03) yes, high sweep or tiller type touring
(04) yes, high rise
(05) yes, motocross, off-road
(98) other (specify) _____
(99) unknown

38. Has The Seat Been Modified? ____ ____
(00) no
(01) yes
(98) other (specify)_____
(99) unknown

39. Seat Type ____ ____
(01) conventional straddle seat, one level
(02) straddle type, two level, raised passenger
(03) bucket, single seat
(04) bucket, double seat, one level
(05) bucket, double seat, raised passenger
(06) single racer seat, tail fairing behind
(07) single straddle seat, pillion pad behind
(08) single pad, semi-bench type
(98) other (specify)
_____
(99) unknown

40. Has The Exhaust System Been Modified? ____ ____
(00) no
(01) yes, performance equipment; noise level approximately same as original equipment
(02) yes, high performance equipment; excessive noise
(98) other (specify)
_____
(99) unknown

41. Has The Windshield Been Modified? ____ ____
(00) no
(01) yes
(97) not applicable, no windshield
(98) other (specify) _____
(99) unknown

42. Is This Motorcycle Equipped With Crash Bars? ____ ____
(00) no
(01) yes
(02) previously equipped, but crash bars have been removed
(98) other (specify) _____
(99) unknown

43. Is This Motorcycle Equipped With Engine Guards? ____ ____
(00) no
(01) yes
(02) previously equipped, but engine guards have been removed
(98) other (specify) _____
(99) unknown

MOTORCYCLE SUMMARY TABLE

Codes for each blank cell (unless otherwise noted)
(00) No
(01) Yes
(97) Not applicable

	Equipped	Original Equipment	Aftermarket	Operational	Modified
Front crash bars					
Rear crash bars					
Engine guard					
Windscreen					
Fairing, handlebar or steering mounted					
Fairing, frame mounted					
Headlamps					
Headlamp nacelle					
Auxiliary headlamp					
Front position lamp					
Front reflector, yellow					
Front reflector, white					
Front reflector, red					
Front reflector, silver					
Front turn signals					
Speedometer					
Tachometer					
Handlebars					
Throttle					
Clutch lever					
Brake lever					
Right side rear view mirrors, posts					
Left side rear view mirrors, posts					
Front suspension					
Front tire/wheel					

Codes for each blank cell (unless otherwise noted) (00) No (01) Yes (97) Not applicable	**Equipped**	**Original Equipment**	**Aftermarket**	**Operational**	**Modified**
Front fender					
Front brakes					
Seat					
Sissy bar/passenger back rest					
Side reflectors, yellow					
Side reflectors, red					
Side reflectors, silver					
Frame					
Grab rails/ hand holds					
Fuel tank					
Auxiliary fuel tank					
Motor crankcase, cylinders					
Radiator					
Water hose					
Motor power enhancement					
Transmission case					
Oil tank					
Battery, battery box					
Rear brake pedal					
Shift lever					
Foot pegs, footrests					
Highway pegs/footrests					
Side stand					
Side stand interlock					
Center stand					
Muffler/exhaust system					
Tank bag					

Codes for each blank cell (unless otherwise noted)
(00) No
(01) Yes
(97) Not applicable

	Equipped	Original Equipment	Aftermarket	Operational	Modified
Luggage/cargo rack					
Parcel rack					
Saddle bags					
Rear position lamps					
Stop lamp					
Rear reflectors, yellow					
Rear reflectors, red					
Rear reflectors, silver					
Rear turn signals					
Rear suspension					
Rear tire/wheel					
Rear fender					
Rear brakes					
Tools, tool box					
Side covers					
Trailer					
Side Car					

Control Motorcycle Rider Form

Case Number _____

Control MC Rider Number _____

TRIP INFORMATION

1. Where Did Your Trip Begin Today? ____ ____
(01) home
(02) work, business
(03) recreation/social
(04) school
(05) errand, shopping
(06) family, friends, relatives
(07) meals, restaurant, café, etc.
(08) transport someone
(09) medical/dental
(10) bar, pub
(11) religious activity
(12) personal business/obligations
(98) other (specify) _____
(99) unknown

2. Did You Do Any Safety Or Maintenance Checks On Your Motorcycle Before Leaving For This Trip? ____ ____
CODE UP TO 4 ____ ____
(00) none
(01) exterior, visual inspection, only ____ ____
(02) checked fluids
(03) checked lights
(04) checked brakes
(05) checked tire pressure
(98) other (specify) _____
(99) unknown

3. What Was Your Trip Destination? ____ ____
(01) home
(02) work, business
(03) recreation/social
(04) school
(05) errand, shopping
(06) family, friends, relatives
(07) meals, restaurant, café, etc.
(08) transport someone
(09) medical/dental
(10) bar, pub
(11) religious activity
(12) personal business/obligations
(13) no destination, joy riding
(98) other (specify) _____
(99) unknown

4. About How Many Miles Will The Trip Be One Way? ___ ___ ___
(001) one mile or less
(002-995) actual number of miles
(996) 996 miles or greater
(997) not applicable
(999) unknown

5. How Frequently Do You Travel This Road On/In Any Vehicle? ____ ____
(01) first time
(02) daily use, i.e., once per day
(03) weekly use, i.e., once per week
(04) monthly use, i.e., once per month
(05) quarterly, i.e., once per quarter
(06) annually, i.e., once per year
(07) less than annually
(99) unknown

6. How Long Have You Been Riding Today Since Your Trip Departure?
USE ZEROS TO FILL IN BLANKS
___ ___Hours ___ ___Minutes
(00-96) years (00-59) minutes
(97-97) not applicable, had not yet begun trip
(98-98) other (specify) _____
(99-99) unknown

7. How Many Miles Have You Gone Since Your Trip Departure? ___ ___ ___
(001) one mile or less
(002-995) actual miles
(996) 996 or more
(997) not applicable, had not yet begun trip
(998) other (specify) _____
(999) unknown

8. What Was Your Travel Speed Just Before You Stopped For This Interview? ____ ____
(00) stopped
(01-95) actual miles per hour
(96) 96 mph or more
(98) other (specify) _____
(99) unknown

HELMET DATA

9. When You Were Just Riding, Were You Wearing A Helmet? ____ ____
(00) no
(01) yes - SKIP TO # 12
(02) helmet available, but not used
(98) other (specify) _____
(99) unknown

10. What Is Your Reason For Not Wearing A Helmet? ____ ____
(01) not required by law
(02) no expectation of accident involvement
(03) helmets too expensive
(04) helmets are inconvenient and uncomfortable
(05) helmets reduce traffic awareness, limit hearing and vision
(06) helmets ineffective in reducing head injury
(07) helmets cause neck injury
(08) helmets cannot be used, physical or religious reasons
(09) do not own a helmet
(10) forgot to bring helmet today
(97) not applicable, rider is wearing a helmet
(98) other (specify) _____
(99) unknown

11. Do You Ever Wear A Helmet? ____ ____
(00) no - SKIP TO # 22
(01) yes - SKIP TO # 20
(02) occasionally - SKIP TO # 20
(97) not applicable, rider is wearing a helmet
(98) other (specify) _____
(99) unknown

12. Was/Is Your Helmet Properly Adjusted On Your Head? ____ ____
(00) no
(01) yes
(97) not applicable, no helmet
(98) other (specify) _____
(99) unknown

13. Was/Is Your Helmet Securely Fastened To Your Head? ____ ____
(00) no
(01) yes
(97) not applicable, no helmet
(98) other (specify) _____
(99) unknown

14. What Type Of Helmet Is It? ____ ____
(00) not a motorcycle helmet
(01) half/police motor vehicle, motorcycle helmet
(02) open face motor vehicle, motorcycle helmet
(03) full face motor vehicle, motorcycle helmet
(04) novelty helmet
(97) not applicable, no helmet
(98) other (specify) _____
(99) unknown

15. What Is The Type Of Helmet Coverage? ____ ____
(01) partial coverage
(02) full coverage
(03) full facial, integral chin bar but no face shield
(04) full facial, removable chin bar
(05) full facial, retractable chin bar
(06) full facial coverage, integral chin bar and face shield
(07) wrap around face shield
(08) bubble type face shield
(09) visor/face shield combo
(97) not applicable/no helmet
(98) other (specify)_____
(99) unknown

16. What Is The Predominant Color Of Your Helmet? ____ ____
(01) no dominating color, multi-colored
(02) white
(03) yellow
(04) black
(05) red
(06) blue
(07) green
(08) silver, grey
(09) orange
(10) brown, tan
(11) purple
(12) gold
(13) chrome, metallic
(97) not applicable/no helmet
(98) other (specify) _____
(99) unknown

17. What Is The Color Of The Face Shield? ____ ____
(01) clear
(02) green
(03) grey, smoke
(04) amber, yellow
(05) blue
(06) reflective (any color)
(97) not applicable/no face shield
(98) other (specify) _____
(99) unknown

18. Do You Own This Helmet? ____ ____
(00) no
(01) yes
(97) not applicable/no helmet
(98) other (specify) _____
(99) unknown

19. How Well Does This Helmet Fit? ____ ____
(01) acceptable fit
(02) too large, too loose
(03) too small, too tight
(97) not applicable/no helmet
(98) other (specify) _____
(99) unknown

20. What Percentage Of Time Do You Wear Your Helmet When Riding? ___ ___ ___ %
CODE FROM 001-100 PERCENT
(000) never wear a helmet - SKIP TO # 22
(997) not applicable/no helmet
(999) unknown

21. Under What Conditions Do You Usually Wear Your Helmet? ____ ____
CODE UP TO FOUR; INPUT "97" ____ ____
FOR REMAINING RESPONSES
(00) never use helmet ____ ____
(01) long trips
(02) highway traffic ____ ____
(03) in adverse weather
(04) never in hot weather
(05) always
(97) not applicable/no helmet
(98) other (specify) _____
(99) unknown

IMPAIRMENT

22. Do You Have Any Of The Following Permanent Physical Conditions? ____ ____
CODE UP TO THREE; INPUT "00" ____ ____
IN REMAINING RESPONSES
(00) no ____ ____
(01) vision reduction or loss
(02) hearing reduction or loss
(03) respiratory, cardiovascular condition
(04) paraplegia
(05) amputee
(06) neurological, epilepsy, stroke
(07) endocrine system, diabetes, digestive system
(08) infirmity, arthritis, senility
(98) other (specify) _____
(99) unknown

23. When You Were Just Riding, Were You Experiencing Any Of The Following? ____ ____
CODE UP TO THREE; INPUT "00" ____ ____
IN REMAINING RESPONSES
(00) no ____ ____
(01) fatigue
(02) hunger
(03) thirst
(04) elimination urgency
(05) muscle spasm, cramp, itch
(06) headache, minor malaise, fever
(07) siesta syndrome (tired in afternoon)
(98) other (specify) _____
(99) unknown

24. When You Were Just Riding, Were You Concerned About Any Of The Following Issues? ____ ____
CODE UP TO THREE; INPUT "00" ____ ____
IN REMAINING RESPONSES ____ ____
(00) no problems
(01) conflict with friends, relatives, divorce, separation
(02) work related problems
(03) financial distress
(04) school problems
(05) legal, police problems
(06) reward stress
(07) traffic conflict, road rage
(08) death of family, friend
(98) other (specify) _____
(99) unknown

25. How Many Hours Of Sleep Did You Have In The Past 24 Hours? ____ ____
(00) no sleep
(01-24) number of hours slept
(98) other (specify) _____
(99) unknown

26. Did You Drink Any Alcohol Or Take Any Drugs Or Medications Within The Past 24 Hours? ____ ____
(00) no - SKIP TO # 29
(01) alcohol use, only - SKIP TO # 29
(02) drug/medication use, only
(03) combined alcohol and drug/medication use
(98) other (specify) _____
(99) unknown

27. What Is The Type Of Drugs Other Than Alcohol? ____ ____
(00) no drugs other than alcohol
(01) stimulant
(02) depressant
(03) drugs taken, type unknown
(04) multiple drugs taken
(97) not applicable
(98) other (specify)_____
(99) unknown

28. What Is The Source Of Drugs Other Than Alcohol? ____ ____
(00) no drugs other than alcohol
(01) prescription
(02) non-prescription, over the counter
(03) illegal
(97) not applicable
(99) unknown

29. Blood Alcohol Concentration (BAC)? ___ ___ ___
CODE RESULTS IN MG/100ML
(000) negative BAC
(995) BAC tested, results not known
(996) BAC not tested
(998) other (specify) _____
(999) unknown

30. Source Of BAC Information? ____ ____
(00) not tested
(01) breath testing
(02) unknown if tested
(03) tested, results unknown
(04) tested, results not available
(98) other (specify) _____
(99) unknown source

RIDING/DRIVING EXPERIENCE

31. Are You The Owner Of This Motorcycle? ____ ____
(00) no
(01) yes
(98) other (specify) _____
(99) unknown

32. Where Did You Purchase This Motorcycle? ____ ____
(01) dealership (store front or internet)
(02) family, friend, or neighbor
(03) newspaper want ad or internet ad
(04) motorcycle was a gift
(97) not applicable, rider does not own this motorcycle
(98) other (specify)
_____
(99) unknown

33. How Long Have You Owned This Motorcycle?
USE ZEROS TO FILL IN BLANKS
___ ___Years ___ ___ Months
(00-00) less than two weeks
(00-96) years (00-11) months
(97-97) not applicable, rider does not own this motorcycle
(98-98) other (specify)
_____
(99-99) unknown

34. How Long Have You Operated A Street Motorcycle?
USE ZEROS TO FILL IN BLANKS
___ ___Years ___ ___ Months
(00-00) less than two weeks
(00-96) years (00-11) months
(97-97) not applicable
(98-98) other (specify) _____
(99-99) unknown

35. How Long Have You Operated The Motorcycle You Were Just Riding?
USE ZEROS TO FILL IN BLANKS
___ ___Years ___ ___ Months
(00-00) less than two weeks
(00-96) years (00-11) months
(97-97) not applicable
(98-98) other (specify) _____
(99-99) unknown

36. What Is The Average Number Of Days Per Year You Ride Motorcycles? ___ ___ ___
(001-365) actual number of days per year
(997) not applicable, first time
(998) other (specify) _____
(999) unknown

37. About How Many Miles Per Year Do You Ride Motorcycles? ___ ___, ___ ___ ___
(00000) none
(00001-99,995) actual miles
(99996) 99,996 or greater miles
(99998) other (specify) _____
(99999) unknown

38. What Kind Of Motorcycle Training Have You Had? ____ ____
(00) none
AFTER ALL OTHER RESPONSES, SKIP TO # 40
(01) state recognized, entry-level motorcycle course
(02) experienced rider course
(03) high performance/competitive track course
(04) self taught
(05) taught by family and/or friends
(98) other (specify) _____
(99) unknown

39. Please Tell Me The Reason For Not Taking Motorcycle Safety Training ____ ____
THEN SKIP TO # 41
(01) not offered
(02) enrolled for future date
(03) tried unsuccessfully to enroll
(04) not interested/don't need it
(05) cost
(97) not applicable, took training
(98) other (specify) _____
(99) unknown

40. In What Years Have You Taken Any Formal Motorcycle Training? ___ ___ ___ ___
BEGIN WITH YOUR MOST RECENT COURSE AND WORK BACKWARDS ___ ___ ___ ___
CODE UP TO THREE ___ ___ ___ ___
(9997) not applicable
(9999) unknown

41. How Old Were You When You First Began To Ride A Street Motorcycle? ____ ____
CODE ACTUAL AGE
(00) never rode before, or rarely ever rides
(01-96) actual age
(98) other (specify) _____
(99) unknown

42. Were There Years In Which You Did Not Ride A Motorcycle? ____ ____
(00) no - SKIP TO # 44
(01) yes
(97) not applicable, never before rode
(98) other (specify) _____
(99) unknown

43. How Many Years Was Your Most Recent Hiatus? ____ ____
(00) never stopped riding
(01-96) actual number of years
(97) not applicable, never before rode
(98) other (specify) _____
(99) unknown

44. When You Ride or Drive, What is the Percentage of Time You Ride a Motorcycle Versus Driving Another Type of Vehicle
INDICATE % OF TOTAL RIDING/DRIVING TIME FOR EACH CATEGORY

Motorcycle ___ ___ ___

Other Vehicle Type ___ ___ ___
100%

(000) first time use
(997) not applicable
(999) unknown

45. When You Ride A Motorcycle, What Is The Percentage Of Time You Use It For Each Of These Categories?
INDICATE % OF TOTAL RIDING/DRIVING TIME FOR EACH CATEGORY

Recreation ___ ___ ___

Basic transportation ___ ___ ___
100%

(000) first time use
(997) not applicable
(999) unknown

46. How Long Have You Been Driving Any Kind Of Motor Vehicle?

___ ___Years___ ___ Months
(00-00) less than two weeks
(00-96) years (00-11) months
(97-97) not applicable
(98-98) other (specify) _____
(99-99) unknown

47. How Many Miles Per Year Do You Drive A Car Or Truck? ____ ____ ,____ ____ ____
(00000) none, do not drive car or truck
(00001-99995) actual miles
(99996) 99996 or greater miles
(99998) other (specify) _____
(99999) unknown

48. Have You Had Any Car Or Truck Driver Training? ____ ____
(00) no training
(01) self taught
(02) taught by friends or family
(03) official driver training class
(04) voluntary drivers education
(05) compulsory drivers education
(06) professional training for commercial license
(07) compulsory motor vehicle training ordered by judge/ police/etc.
(98) other (specify) _____
(99) unknown

49. How Many Moving Traffic Convictions Have You Had In The Previous 5 Years? ____ ____
CODE THE TOTAL NUMBER OF MOVING TRAFFIC CONVICTIONS - ANY VEHICLE
(00) none
(01-96) actual number
(99) unknown

50. How Many Motorcycle Moving Traffic Crashes Have You Had In The Past 5 Years? ____ ____
CODE THE TOTAL NUMBER OF PREVIOUS MOTORCYCLE CRASHES
(00) none
(01-96) actual number
(99) unknown

51. How Many Car Or Truck Traffic Crashes Have You Had In The Past 5 Years? ____ ____
CODE THE TOTAL NUMBER OF PREVIOUS CAR OR TRUCK CRASHES
(00) none
(01-96) actual number
(99) unknown

52. How Much Experience Do You Have Riding With Passengers On A Motorcycle? ____ ____
(00) never carry passengers
(01) first time carrying passenger(s)
(02) very little experience
(03) moderate experience
(04) extensive experience
(97) not applicable
(99) unknown

53. How Much Experience Do You Have Riding With Cargo/Luggage? ____ ____
(00) no experience with cargo/luggage
(01) first time
(02) seldom carries similar cargo/luggage
(03) frequently carries similar cargo/luggage
(04) always carries similar cargo/luggage
(97) not applicable
(99) unknown

RIDING HABITS

54. Are You A Motorcycle Club Member? ____ ____
(00) no
(01) yes
(99) unknown

55. Were You Riding With Other Motorcyclists? ____ ____
(00) no - SKIP TO # 58
(01) yes
(98) other (specify) _____
(99) unknown

56. How Many Other Motorcycles Were In The Group? ____ ____
(00) none, no group
(01-95) code number of motorcycles
(96) 96 motorcycles or more
(98) other (specify) _____
(99) unknown

57. Was The Group Riding In A Specific Formation? ____ ____
(00) no formation - SKIP TO #59
(01) single file
(02) staggered
(03) side-by-side
(97) not applicable, no group
(98) other (specify)_____
(99) unknown

58. If In a Formation, Where Was Your Motorcycle Placed In The Formation? ____ ____
(00) not in formation
(01) front area
(02) middle area
(03) rear area
(97) not applicable, no group
(98) other (specify) _____
(99) unknown

PROTECTIVE CLOTHING/GEAR WHEN RIDING

59. What Kind Of Clothing Is On Your Upper Body ____ ____
(00) none - SKIP TO #61
(01) light cloth garment, i.e., thin cotton
(02) medium cloth garment, i.e., denim, nylon
(03) heavy cloth garment, i.e., imitation leather
(04) leather garment
(05) Kevlar
(98) other (specify) _____
(99) unknown

60. Is This Upper Body Clothing Motorcycle-Oriented? ____ ____
(00) no
(01) yes
(97) not applicable/no clothing
(98) other (specify) _____
(99) unknown

61. What Kind Of Clothing Is On Your Lower Body? ____ ____
(00) none - SKIP TO # 63
(01) light cloth garment, i.e., thin cotton
(02) medium cloth garment, i.e., denim, nylon
(03) heavy cloth garment, i.e., imitation leather
(04) leather garment
(05) Kevlar
(98) other (specify) _____
(99) unknown

62. Is This Lower Body Clothing Motorcycle-Oriented? ____ ____
(01) no
(01) yes
(97) not applicable/no clothing
(98) other (specify) _____
(99) unknown

63. Are You Wearing An Inflatable Safety Vest? ____ ____
(00) no
(01) yes
(98) other (specify) _____
(99) unknown

64. What Kind Of Shoes Or Boots Are You Wearing? ____ ____
(00) no shoes or boots, barefoot - SKIP TO # 67
(01) light sandal
(02) medium street shoe, loafer
(03) athletic, training shoe
(04) heavy shoe or boot
(05) reinforced work boot or motorcycle boot
(98) other (specify) _____
(99) unknown

65. Does This Footwear Go Up Over Your Ankle? ____ ____
(00) no
(01) yes
(97) not applicable, no footwear worn
(98) other, specify _____
(99) unknown

66. Is The Footwear Motorcycle-Oriented? ____ ____
(00) no
(01) yes
(97) not applicable, no footwear worn
(99) unknown

67. What Kind Of Gloves Are You Wearing? ____ ____
(00) none - SKIP TO # 69
(01) light cloth garment, i.e., thin cotton
(02) medium cloth garment, i.e., denim, nylon
(03) heavy cloth garment, i.e., imitation leather
(04) leather garment
(05) Kevlar
(98) other (specify) _____
(99) unknown

68. Are The Gloves Motorcycle-Oriented? ____ ____
(00) no
(02) yes, full fingered
(03) yes-shorties
(97) not applicable, no gloves worn
(98) other (specify) _____
(99) unknown

69. Is Any Of This Clothing Retroreflective? ____ ____
CODE UP TO 3 RESPONSES
(00) no retroreflective clothing or gloves ____ ____
(01) upper body (shirt/jacket/vest)
(02) lower body (pants/ shorts) ____ ____
(03) gloves
(04) special arm bands, or similar items
(97) not applicable, no clothing or gloves
(98) other (specify) _____
(99) unknown

70. What is The Clothing Color Of The Following?

Upper body clothing ____ ____

Lower body clothing ____ ____

Footwear ____ ____

Gloves ____ ____

(01) no dominating color, multi-colored
(02) white
(03) yellow
(04) black
(05) red
(06) blue
(07) green
(08) silver
(09) orange
(10) brown
(11) purple
(12) gold
(13) grey
(97) not applicable/no clothing
(98) other (specify) _____
(99) unknown

71. Are You Required To Wear Corrective Lenses When Riding/Driving? ____ ____
(00) no
(01) yes
(98) other (specify)_____
(99) unknown

72. What Kind Of Eye Protection Are You Wearing Now? ____ ____
(00) none - SKIP TO # 74
(01) non-prescription clear glasses
(02) prescription clear glasses
(03) non-prescription sunglasses
(04) prescription sunglasses
(05) goggles, non-prescription
(06) goggles, prescription
(07) industrial safety glasses
(98) other (specify) _____
(99) unknown

73. What Color Is The Eye Coverage Lens? ____ ____
(01) clear
(02) green
(03) grey, smoke
(04) amber, yellow
(05) blue
(06) reflective (any color)
(97) not applicable, not wearing eye coverage
(98) other (specify) _____
(99) unknown

BACKGROUND INFORMATION

74. How Old Are You? ____ ____
CODE ACTUAL AGE IN YEARS
(01-95) actual age
(96) 96 or more
(99) unknown

75. What State/Country Issued Your Current Driver's License? ____ ____
(00) no license
(01) Canada
(02) California
(03) other State (list)_____
(04) military
(97) no license required (49cc scooter)
(98) other (specify) _____
(99) unknown

76. What Kind Of Operator's License Is It? ____ ____
CODE UP TO 4; INPUT "97"
IN REMAINING RESPONSES ____ ____
(00) no license held
(01) learner's permit, only ____ ____
(02) motorcycle license
(03) automobile license ____ ____
(04) commercial license
(05) motorcycle driver and competition license
(06) license to transport people
(07) heavy truck license
(08) no license required (49 cc scooter)
(97) not applicable
(98) other (specify) _____
(99) unknown

77. What Year Was/Were The License(s) Issued? ___ ___ ___ ___
LISTED IN SAME ORDER AS LICENSES ABOVE ___ ___ ___ ___
(9997) not applicable
(9999) unknown ___ ___ ___ ___

___ ___ ___ ___

78. How Many Times Have You Acquired A Motorcycle Learner's Permit? ____ ____
(00) never
(01-96) actual number of times
(97) not applicable
(98) other (specify) _____
(99) unknown

79. How Long Have You Held A Motorcycle License?

___ ___ Years___ ___ Months
USE ZEROS TO FILL IN BLANKS
(00-00) less than two weeks
(00-96) years (00-11) months
(97-97) not applicable, no license held
(98-98) other (specify) _____
(99-99) unknown

80. Are You Of Hispanic Or Latino Origin? ____ ____
(00) no
(01) yes
(02) refused to answer
(98) other (specify) _____
(99) unknown

81. What is Your Race? ____ ____
PLEASE SELECT ONE OR MORE, CODE "97" IN OTHERS
(01) white ____ ____
(02) black or African American
(03) Asian ____ ____
(04) Native Hawaiian or other Pacific Islander
(05) American Indian or Alaska native
(06) refused to answer
(97) not applicable
(98) other (specify) _____
(99) unknown

82. What Is Your Height? ____ft. ____ ____ in.
(01-12) actual number
(9 99) unknown

83. What is Your Weight in Pounds? ___ ___ ___
(001-995) actual number
(999) unknown

84. Gender ____ ____
(01) male
(02) female
(99) unknown

85. How Much Formal Education Have You Had? ____ ____

(00) no formal schooling
(01) less than high school diploma
(02) high school diploma or GED
(03) partial college/university
(04) college/university graduate
(05) graduate school, advanced degree, professional degree
(06) specialty/technical school
(97) not applicable
(98) other (specify) _____
(99) unknown

86. What is Your Current Occupation? ____ ____

(01) management occupations
(02) business and financial
(03) computer and mathematical
(04) architecture and engineering
(05) life, physical, and social science
(06) community and social services
(07) legal
(08) education, training or library
(09) arts, design, entertainment, sports or media
(10) healthcare practitioners and technical jobs
(11) healthcare support
(12) protective services
(13) food preparation and serving related
(14) building and grounds maintenance
(15) personal care and services
(16) sales and related occupations
(17) office and administrative support
(18) farming, fishing or forestry
(19) construction or extraction
(20) installation, maintenance or repair
(21) transportation and material moving
(22) military
(23) full time student
(97) not applicable, not in workforce at present
(98) other (specify)
_____
(99) unknown

87. Are You Married? ____ ____

(01) single
(02) married
(03) separated
(04) divorced
(05) widowed
(06) cohabitating
(98) other (specify) _____
(99) unknown

88. How Many Children Do You Have? ____ ____

(00) none
(01) one
(02) two
(03) three
(04) four
(05) five
(06) six or more
(97) more than six
(99) unknown

Control Motorcycle Passenger Form

Case Number _____

Control MC Passenger Number _____

HELMET DATA

1. Before This Interview, Were You Wearing A Helmet? ____
(00) no
(01) yes - SKIP TO # 4
(02) helmet available but not used
(08) other (specify) _____
(09) unknown

2. What Is Your Reason For Not Wearing A Helmet? ____
(01) not required by law
(02) no expectation of crash involvement
(03) helmets too expensive
(04) helmets are inconvenient and uncomfortable
(05) helmets reduce traffic awareness, limit hearing and vision
(06) helmets ineffective in reducing head injury
(07) helmets cause neck injury
(08) helmets cannot be used, physical or religious reasons
(09) do not own a helmet
(10) forgot to bring helmet today
(97) not applicable, rider always wears a helmet
(98) other (specify) _____
(99) unknown

3. Do You Ever Wear A Helmet? ____
(00) no - SKIP TO #14
(01) yes - SKIP TO # 12
(02) occasionally - SKIP TO # 12
(97) not applicable, passenger is wearing a helmet
(98) other (specify) _____
(99) unknown

4. Was/Is Your Helmet Properly Adjusted On Your Head? ____
(00) no
(01) yes
(97) not applicable, no helmet
(98) other (specify) _____
(99) unknown

5. Was/Is Your Helmet Securely Fastened To Your Head? ____
(00) no
(01) yes
(97) not applicable, no helmet
(98) other (specify) _____
(99) unknown

6. What Type Of Helmet Is It? ____
(00) not a motorcycle helmet
(01) half/police motor vehicle, motorcycle helmet
(02) open face motor vehicle, motorcycle helmet
(03) full face motor vehicle, motorcycle helmet
(04) novelty helmet
(97) not applicable/no helmet
(98) other (specify) _____
(99) unknown

7. What Is The Type Of Helmet Coverage? ____
(01) partial coverage
(02) full coverage
(03) full facial, integral chin bar but no face shield
(04) full facial, removable chin bar
(05) full facial, retractable chin bar
(06) full facial coverage, integral chin bar and face shield
(07) wrap around face shield
(08) bubble type face shield
(09) visor/face shield combo
(97) not applicable/no helmet
(98) other (specify) _____
(99) unknown

8. What Is The Predominant Color Of Your Helmet? ____
(01) no dominating color, multi-colored
(02) white
(03) yellow
(04) black
(05) red
(06) blue
(07) green
(08) silver, grey
(09) orange
(10) brown, tan
(11) purple
(12) gold
(13) chrome, metallic
(97) not applicable/no helmet
(98) other (specify) _____
(99) unknown

9. What Is The Color Of The Face Shield? ____
(01) clear
(02) green
(03) grey, smoke
(04) amber, yellow
(05) blue
(06) reflective (any color)
(97) not applicable/no face shield
(98) other (specify) _____
(99) unknown

10. Do You Own This Helmet? ____
(00) no
(01) yes
(97) not applicable/no helmet
(98) other (specify) _____
(99) unknown

11. How Well Does This Helmet Fit? ____
(01) acceptable fit
(02) too large, too loose
(03) too small, too tight
(97) not applicable/no helmet
(98) other (specify) _____
(99) unknown

12. What Percentage Of Time Do You Wear Your Helmet (When Riding As A Passenger)? ____ ____ ____
CODE FROM 001 - 100 PERCENT
(001-100) percent helmet worn
(997) not applicable/ no helmet
(999) unknown

13. Under What Conditions Do You Usually Wear Your Helmet? ____ ____
CODE UP TO FOUR; INPUT "97" FOR REMAINING RESPONSES ____ ____
(00) never uses helmet ____ ____
(01) long trips
(02) highway traffic
(03) in adverse weather
(04) never in hot weather
(05) always
(97) not applicable/no helmet
(98) other (specify) _____
(99) unknown

IMPAIRMENT

14. Do You Have Any Of The Following Permanent Physical Conditions? ____ ____
CODE UP TO THREE; INPUT "00" IN REMAINING RESPONSES ____ ____
(00) no ____ ____
(01) vision reduction or loss
(02) hearing reduction or loss
(03) respiratory, cardiovascular condition
(04) paraplegia
(05) amputee
(06) neurological, epilepsy, stroke
(07) endocrine system, diabetes, digestive system
(08) infirmity, arthritis, senility
(98) other (specify) _____
(99) unknown

15. When You Were Just Riding, Were You Experiencing Any Of The Following? ____ ____
CODE UP TO THREE; INPUT "00" IN REMAINING RESPONSES ____ ____
(00) no ____ ____
(01) fatigue
(02) hunger
(03) thirst
(04) elimination urgency
(05) muscle spasm, cramp, itch
(06) headache, minor malaise, fever
(07) siesta syndrome (tired in afternoon)
(98) other (specify) _____
(99) unknown

16. When You Were Just Riding, Were You Concerned About Any Of The Following Issues? ____ ____
____ ____
CODE UP TO THREE; INPUT "00" IN REMAINING RESPONSES ____ ____
(00) no problems
(01) conflict with friends, relatives, divorce, separation
(02) work related problems
(03) financial distress
(04) school problems
(05) legal, police problems
(06) reward stress
(07) traffic conflict, road rage
(08) death of family, friend
(98) other (specify) _____
(99) unknown

17. How Many Hours Of Sleep Did You Have In The Past 24 Hours? ____ ____
(00) no sleep
(01-24) number of hours slept
(98) other (specify) _____
(99) unknown

18. Did You Drink Any Alcohol Or Take Any Drugs Or Medications In The Past 24 Hours? ____ ____
(00) no - SKIP TO # 21
(01) alcohol use, only - SKIP TO # 21
(02) drug/medication use, only
(03) combined alcohol and drug/medication use
(98) other (specify) _____
(99) unknown

19. Did You Take Any Type Of Drugs Other Than Alcohol? ____ ____
(00) no drugs other than alcohol
(01) stimulant
(02) depressant
(03) drugs taken, type unknown
(04) multiple drugs taken
(97) not applicable
(98) other (specify)_____
(99) unknown

20. What Is The Source Of These Drugs Other Than Alcohol? ____ ____

(00) no drugs other than alcohol
(01) prescription
(02) non-prescription, over the counter
(03) illegal
(97) not applicable
(98) other (specify) _____
(99) unknown

21. Blood Alcohol Concentration (BAC)? ___ ___ ___

CODE RESULTS IN MG/100ML
(000) negative BAC
(995) BAC tested, results not known
(996) BAC not tested
(998) other (specify) _____
(999) unknown

22. Source of BAC Information? ____ ____

(00) not tested
(01) breath testing
(02) unknown if tested
(03) tested, results unknown
(04) tested, results not available
(98) other (specify) _____
(99) unknown source

RIDING/DRIVING EXPERIENCE

23. How Long Have You Been Riding as a Passenger on This Motorcycle?

___ ___ Years ___ ___ Months

(00 00) less than two weeks
(00-96) years (00-11) months, actual time
(97-97) not applicable/no previous experience, first time
(99-99) unknown

24. How Long Have You Been Riding As A Passenger In Any Kind Of Motor Vehicle?

___ ___ Years ___ ___ Months

(00 00) less than two weeks
(00-96) years (00-11) months, actual time
(97-97) not applicable/no previous experience, first time
(99-99) unknown

25. How Long Have You Ridden As A Passenger On Any Street Motorcycle?

___ ___ Years ___ ___ Months

(00 00) less than two weeks
(00-96) years (00-11) months, actual time
(97-97) not applicable/no previous experience, first time
(99-99) unknown

26. What Is The Average Number Of Days Per Year You Ride As A Passenger On Motorcycles? ___ ___ ___

(001-365) code actual number of days per year
(999) unknown

27. What Kind Of Motorcycle Training Have You Had? ____ ____

(00) none
(01) state recognized, entry-level motorcycle course
(02) experienced rider course
(03) high performance/competitive track course
(04) self taught
(05) taught by family and/or friends
(98) other (specify) _____
(99) unknown

28. When You Travel as a Passenger, What is the Percentage of Time You Ride on a Motorcycle Versus Riding as a Passenger in Another Type of Vehicle?

INDICATE % OF TOTAL RIDING TIME AS A PASSENGER FOR EACH CATEGORY

Motorcycle ___ ___ ___

Other vehicle type ___ ___ ___ 100%

(000) first time use
(001-100) actual percent
(997) not applicable
(999) unknown

29. When You Ride A Motorcycle As A Passenger, What Is The Percentage Of Time It Is For Each Of These Categories?

INDICATE % OF TOTAL RIDING TIME AS A PASSENGER FOR EACH CATEGORY

Recreation ___ ___ ___

Basic transportation ___ ___ ___ 100%

(000) first time use
(001-100) actual percent
(997) not applicable
(999) unknown

30. How Much Experience Do You Have Riding As A Passenger On Motorcycles? ____ ____
(00) never rode as a passenger before
(01) very little experience
(02) moderate experience
(03) extensive experience
(98) other (specify)_____
(99) unknown

31. How Many Motorcycle Moving Traffic Crashes Have You Had As a Passenger In the Past 5 Years? ____ ____
CODE THE TOTAL NUMBER OF PREVIOUS MOTORCYCLE CRASHES
(00) none
(01-96) actual number
(99) unknown

32. How Many Car or Truck Traffic Crashes Have You Had as a Passenger in the Past 5 Years? ____ ____
CODE THE TOTAL NUMBER OF PREVIOUS CAR OR TRUCK CRASHES
(00) none
(01-96) actual number
(99) unknown

PROTECTIVE CLOTHING/GEAR WHEN RIDING

33. What Kind Of Clothing Is On Your Upper Body? ____ ____
(00) none - SKIP TO # 35
(01) light cloth garment, i.e., thin cotton
(02) medium cloth garment, i.e., denim, nylon
(03) heavy cloth garment, i.e., imitation leather
(04) leather garment
(05) Kevlar
(98) other (specify) _____
(99) unknown

34. Is This Upper Body Clothing Motorcycle-Oriented? ____ ____
(00) no
(01) yes
(97) not applicable/no clothing
(98) other (specify) _____
(99) unknown

35. What Kind Of Clothing Is On Your Lower Body? ____ ____
(00) none - Skip to # 37
(01) light cloth garment, i.e., thin cotton
(02) medium cloth garment, i.e., denim, nylon
(03) heavy cloth garment, i.e., imitation leather
(04) leather garment
(05) Kevlar
(98) other (specify) _____
(99) unknown

36. Is This Lower Body Clothing Motorcycle-Oriented? ____ ____
(00) no
(01) yes
(97) not applicable/no clothing
(98) other (specify) _____
(99) unknown

37. Are You Wearing An Inflatable Safety Vest? ____ ____
(00) no
(01) yes
(98) other (specify) _____
(99) unknown

38. What Kind Of Shoes Or Boots Are You Wearing? ____ ____
(00) no shoes or boots, barefoot - SKIP TO # 41
(01) light sandal
(02) medium street shoe, loafer
(03) athletic, training shoe
(04) heavy shoe or boot
(05) reinforced work boot or motorcycle boot
(98) other (specify) _____
(99) unknown

39. Does This Footwear Go Up Over Your Ankle? ____ ____
(00) no
(01) yes
(97) not applicable, no footwear worn
(98) other (specify)
_____
(99) unknown

40. Is The Footwear Motorcycle-Oriented? ____ ____
(00) no
(01) yes
(97) not applicable, no footwear worn
(99) unknown

41. What Kind Of Gloves Are You Wearing? ____ ____
(00) none - SKIP TO # 43
(01) light cloth garment, i.e., thin cotton
(02) medium cloth garment, i.e., denim, nylon
(03) heavy cloth garment, i.e., imitation leather
(04) leather garment
(05) Kevlar
(98) other (specify)
_____
(99) unknown

42. Are The Gloves Motorcycle-Oriented? ____ ____
(00) no
(01) yes, full fingered
(02) yes, shorties
(97) not applicable, no gloves worn
(98) other (specify)
_____
(99) unknown

43. Is Any of This Clothing Retroreflective? ____ ____
CODE UP TO 3 RESPONSES
(00) no retroreflective clothing or gloves ____ ____
(01) upper body (shirt/jacket/vest)
(02) lower body (pants/ shorts) ____ ____
(03) gloves
(04) special arm bands, or similar items
(97) not applicable, no clothing or gloves
(98) other (specify)
_____
(99) unknown

44. What Is The Clothing Color Of The Following?

Upper body clothing ____ ____
Lower body clothing ____ ____
Footwear ____ ____
Gloves ____ ____

(01) no dominating color, multi-colored
(02) white
(03) yellow
(04) black
(05) red
(06) blue
(07) green
(08) silver
(09) orange
(10) brown
(11) purple
(12) gold
(13) grey
(97) not applicable/no clothing
(98) other (specify) _____
(99) unknown

45. What Kind of Eye Protection Are You Wearing Now? ____ ____
(00) none - SKIP TO # 47
(01) non-prescription clear glasses
(02) prescription clear glasses
(03) non-prescription sunglasses
(04) prescription sunglasses
(05) goggles, non-prescription
(06) goggles, prescription
(07) industrial safety glasses
(98) other (specify) _____
(99) unknown

46. What Color Is The Eye Coverage Lens? ____ ____
(01) clear
(02) green
(03) grey, smoke
(04) amber, yellow
(05) blue
(06) reflective (any color)
(97) not applicable, not wearing eye coverage
(98) other (specify)
_____
(99) unknown

BACKGROUND INFORMATION

47. How Old Are You? ____ ____
CODE ACTUAL AGE IN YEARS
(01-96) actual age
(99) unknown

48. Where Did You Get Your Current Driver's License? ____ ____
(00) no license
(01) Canada
(02) California
(03) other state (list) _____
(04) military
(97) no license required (49 cc scooter)
(98) other (specify) _____
(99) unknown

49. What Kind Of Operator's License Is It? ____ ____
CODE UP TO 4; INPUT "97" IN REMAINING RESPONSES
(00) no license held ____ ____
(01) learner's permit, only
(02) motorcycle license ____ ____
(03) automobile license
(04) commercial license ____ ____
(05) motorcycle driver and competition license
(06) license to transport people
(07) heavy truck license
(97) not applicable
(98) other (specify) _____
(99) unknown

50. What Year Was/Were The License(s) Issued? ___ ___ ___ ___
LISTED IN SAME ORDER AS LICENSES ABOVE ___ ___ ___ ___
(9997) not applicable, no license
(9999) unknown ___ ___ ___ ___

___ ___ ___ ___

51. Are You Of Hispanic Or Latino Origin? ____ ____
(00) no
(01) yes
(02) refused to answer
(98) other (specify) _____
(99) unknown

52. What Is Your Race? ____ ____
PLEASE CODE ONE OR MORE, CODE "97" IN OTHERS
(01) white ____ ____
(02) black or African American
(03) Asian ____ ____
(04) Native Hawaiian or other Pacific Islander
(05) American Indian or Alaska native
(06) refused to answer
(97) not applicable
(98) other (specify) _____
(99) unknown

53. What Is Your Height? ____ft. ____ ____ in.
(01-12) actual number
(99) unknown

54. What Is Your Weight? ____ ____ ____
IN POUNDS
(001-996) actual number
(999) unknown

55. Gender ____ ____
(01) male
(02) female
(99) unknown

56. How Much Formal Education Have You Had? ____ ____
(00) no formal schooling
(01) less than high school diploma
(02) high school diploma or GED
(03) partial college/university
(04) college/university graduate
(05) graduate school, advanced degree, professional degree
(06) specialty/technical school
(98) other (specify) _____
(99) unknown

57. What Is Your Current Occupation? ____ ____
(01) management occupations
(02) business and financial
(03) computer and mathematical
(04) architecture and engineering
(05) life, physical, and social science
(06) community and social services
(07) legal
(08) education, training or library
(09) arts, design, entertainment, sports or media
(10) healthcare practitioners and technical jobs
(11) healthcare support
(12) protective services
(13) food preparation and serving related
(14) building and grounds maintenance
(15) personal care and services
(16) sales and related occupations
(17) office and administrative support
(18) farming, fishing or forestry
(19) construction or extraction
(20) installation, maintenance or repair
(21) transportation and material moving
(22) military
(23) full time student
(97) not applicable, not in workforce at present
(98) other (specify) _____
(99) unknown

58. Are You Married? ____ ____
(01) single
(02) married
(03) separated
(04) divorced
(05) widowed
(06) cohabitating
(98) other (specify) _____
(99) unknown

59. How Many Children Do You Have? ____ ____
(00) none
(01) one
(02) two
(03) three
(04) four
(05) five
(06) six or more
(98) other (specify) _____
(99) unknown

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**National Highway
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