NATIONAL ACCIDENT SAMPLING SYSTEM

1988 CRASHWORTHINESS DATA SYSTEM

DATA COLLECTION, CODING, AND EDITING MANUAL

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
NATIONAL CENTER FOR STATISTICS AND ANALYSIS
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NASS DATA COLLECTION, CODING, AND EDITING MANUAL

List of Data Collection, Coding, and Editing
Manual Changes

Change Identifier		Effective Date	Nature of Change	Type of Change
Log No.	PMOD No.			

List of PMODs

PMOD No.	Effective Date	Nature of Change

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1.0 INTRODUCTION

1.1 Purpose of the Manual

In order to produce a national traffic accident data base for the evaluation of old and the development of new highway and vehicle safety standards and to identify highway safety needs, the National Accident Sampling System was created. The system consists of thirty-six teams of accident researchers situated throughout the country. At each site (Primary Sampling Unit - PSU), the accident research team researches a probability sample of police reported accidents involving passenger cars, light trucks, and vans which were towed, according to the police report, from the scene due to damage. This system has been termed the **Crashworthiness Data System (CDS)**.

Zone centers have been established to provide for the quality control of the CDS data collected and the technical management of the teams within their zone. Quality control is carried out through zone center site visits to the PSUs and through the review of accident case report materials received at the zone center. The zone centers provide quality control in the areas of sampling, completeness of data, reliability, and validity of data. In addition, the zone centers provide annual team evaluations, training, extra PSU staff (when needed), and act as a communication link between the PSU teams and the staff of the National Center for Statistics and Analysis.

The purpose of this manual is to provide PSU team members, zone centers, the Transportation Safety Institute (TSI) NASS Training Program Coordinator, and the National Center for Statistics and Analysis with a consistent, standardized set of instructions for sampling accidents and collecting, coding, and editing the data.

1.2 Overview

The manual includes seven substantive sections; each is summarized below.

Section 2.0 Description of the Sampling Frame describes, first, the procedure for determining whether or not the incident reported on a police accident report (PAR) qualifies for inclusion in the NASS, second, the variables used to classify the NASS qualifying sampled PARs, and third, which data collection forms are required to be submitted with a NASS CDS case. The PAR sampling strata for the CDS are defined in terms of the values of the these variables. In addition, the General Estimates System (GES) and its relationship to CDS is discussed.

Section 3.0 Overview of Sampling Activities describes the procedures for compiling the sampling frame list and selecting the accidents to be researched for the CDS and obtained for the GES. Detailed instructions for use of the Automated System are found in the MDE User's Manual.

Section 4.0 Overview of Information to be Collected on Sampled CDS Accidents describes the forms which are to be filled out on each accident, the different records (e.g., injury records), photographs, and other information (e.g., CRASH runs) which make up a completed case report. Also discussed are the

file structuring data items and forms which must be encoded before a case can qualify for submission. In addition, the NASS CDS criteria for acceptable data completion are presented.

Section 5.0 Form Logs describes the procedures for filling out the form logs. First, instructions are provided for PSU form log completion. Second, instructions for zone center form log completion are given. The latter instructions indicate the criteria which the zone centers apply when assessing the quality of the data in a case.

Section 6.0 Submission Instructions describes when and where to submit case reports. It also describes the quality control procedures to be used at the PSU sites.

Section 7.0 Coding Instructions provides the general instructions for collecting and coding the data called for in the Case Summary Form and the field forms. Documentation for each data element includes variable name, element values (attributes), definitions (where needed), data sources, collection method, reference materials (if needed), and remarks.

The Appendices contain some of the necessary references, including: (1) the Uniform Symbols for Scene Marking, (2) the Uniform Symbols for Accident Diagramming, (3) the Photography Instructions, and (4) the listing of Variable Computer Formats.

Other references to be used in NASS CDS not contained in this manual include: (1) the Fourth Edition of ANSI D16.1-1983; (2) the CRASH3 User's Manual; (3) SAE J224 MAR80; (4) the 1988 NASS Injury Coding Manual; (5) NATB books (see variable GV08); (6) Passenger Car and Truck Investigators Manual (see variable GV08); (7) the Branham Automobile Reference Book; (8) Diesel and Gasoline Truck Indices; (9) the MVMA - Passenger Car Specifications (see variable GV19); (10) Microcomputer Data Entry User's Manual for the NASS; and (11) the NASS Accident Investigation Procedures Manual.

1.3 How to Use This Manual

This manual is designed to be updated periodically without the need for replacing the entire document. This will be accomplished by adding, deleting, and changing pages. Additions will be inserted in their proper location and will be identified by a different month and year. Pages which are changed will have the same month and year identifier.

When potential data encoding problems are detected in the NASS CDS Data Collection, Coding, and Editing Manual or interpretations of specific circumstances (including NASS CDS definitions) are required, the following procedures, outlined by NCSA, will be followed:

(a) Potential problems that are identified at the team level will be sent to the cognizant zone center via the NASS CDS message system.

(b) The zone center will review the potential problem.

    (1) If it is a misinterpretation of the manual, a clarification will be provided by the cognizant zone center via the NASS CDS message system (with a telephone follow-up, if necessary).

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(2) If the potential problem is determined to be valid, the cognizant zone center will broadcast the potential problem with a recommended solution to the other two (2) zone centers for review and concurrence. The final recommended solution will be sent to NCSA by the cognizant zone center for review and approval. This includes all additions, deletions, modifications or substantive interpretations that redefine, broaden, or narrow the established definition of NASS CDS variables or attributes.

(c) Changes or interpretations which affect field data encoding and are approved by the NCSA will be given an effective implementation date and included in the NASS CDS Coding Manual.

The above procedures were not established to restrict team or zone center operations but to ensure that program objectives and goals are not inadvertently changed (i.e., a variable is redefined beyond its intended purpose). When defining variables, NCSA must consider their operational use within the restrictions of the data collection time frame and their intended purpose. Any diversions from these established procedures may destroy the data validity and/or result in serious analysis problems.

2.0 DESCRIPTION OF THE SAMPLING FRAME

2.1 Accidents Which Qualify for NASS

The procedures for properly developing the list of motor vehicle accidents within the study area which qualify for research are shown in Figure 2-1 and described below.

Start with a Police Reported Incident--All incidents which meet the criteria of a motor vehicle accident, as defined in ANSI D16.1-1983 (section 2.4.20, page 16), and are (a) reported on the state accident form, or on local accident forms, (b) signed by a police officer, and (c) available through the police agency files, are to be considered for study. Other accident report forms, such as special driver report forms, that do not meet the requirements above are excluded from consideration.

Must Be Reported to the State--For an incident to qualify as a NASS accident, the police jurisdiction must send a copy of the Police Accident Report (PAR) to the state for inclusion in the state accident statistics. If a report will not be included in the state file, then the incident is not to be included in the list. If the researcher cannot determine whether or not an incident will be reported to the state, then he/she should include it in the list.

Must Involve a Harmful Event--If the incident does not involve property damage and/or personal injury, do not include it in the list. The presence of a Police Accident Report (PAR) creates a rebuttable presumption that a harmful event has occurred. It is the duty of the researcher to scrutinize any PAR which alleges the absence of a harmful event.

The Harmful Event Must Have Occurred as a Result of an Accident--An accident involves at least one harmful event (ANSI D16.1-1983, section 2.4.1, page 12) produced by an unstabilized situation (ANSI D16.1-1983, section 2.4.4, pages 14-15). There are four (4) ways in which a harmful event occurs that are not a result of an accident. They are: (a) the harmful event results from a diseased condition, (b) the unstabilized situation was the result of deliberate intent, (c) the unstabilized situation was the result of legal intervention, or (d) the harmful event results from a cataclysm (ANSI D16.1-1983, section 2.4.5, page 15). To clarify the meaning of each of these "intervening circumstances", consider the examples below.

> Disease: Even if the unstabilized situation is initiated by a disease such as cerebral hemorrhage, heart attack, diabetic coma, or epileptic seizure, which affects the driver of a motor vehicle in-transport, any subsequent harmful event which occurs is considered an accident. This includes any nonvehicular damage that this vehicle causes. The disease itself is not a harmful event for our classification as a traffic accident.

> Deliberate Intent: A harmful event which has been intentionally produced does not fall within the definition of an unstabilized situation and, thus, is not an accident.

> A driver kills himself/herself (suicide) or self-inflicts injury by driving a motor vehicle: (1) against a fixed object, (2) into a body of water, or (3) otherwise misuses a motor vehicle in transport, and this intent is verified in some manner: such intentional events are not motor vehicle accidents. If during such intentional acts other injury or

FIGURE 2-1

```
                           INCIDENT
                              ↓
                    POLICE ACCIDENT REPORT
                              ↓
         WILL ACCIDENT BE REPORTED TO THE STATE------------     Out
                              |                       No
                              |   Yes
                              ↓
                  WAS THERE A HARMFUL EVENT (2.4.1)
                  (property damage or personal injury)
                              ↓
Factors:                   rebuttable
Injury (2.3.1)             presumption
Damage (2.3.6)                |       ----------------      Out
                              |                   No
                              |   Yes
                              ↓
                  WAS THIS EVENT AN ACCIDENT------------    Out
                              |              (2.4.6)
                              |                       Intervening
Factor:  (2.4.4)             |   Yes        No        Circumstances:
Unstabilized                 |                         Diseases (2.3.1)
   Situation                 |                            (without other
                             |                             harmful event)
                             |                         Deliberate (2.4.2)
                             |                            Intent
                             |                         Legal Intervention
                             |                            (2.4.3)
                             |                         Cataclysm  (2.4.5)
                             ↓
                  DID THIS ACCIDENT INVOLVE A
                     MOTOR VEHICLE (2.2.7)
                             |      -------------     Out
                             |   Yes        No
                             ↓
Factors:           WAS AT LEAST ONE OF THE INVOLVED
In Motion or On    MOTOR VEHICLES IN-TRANSPORT
   a Roadway (2.2.17)         |      (2.2.20)--------    Out
                             |   Yes        No
                             ↓
Factors:  (2.4.16)  DID THIS ACCIDENT OCCUR ON A
Control Lost on        TRAFFICWAY (2.2.1)
   Trafficway                |      ------------     Out
Harm Occur on                |   Yes .       No
   Trafficway                ↓
                  MOTOR VEHICLE TRAFFIC ACCIDENT
                             |          (2.4.20)
                             ↓
                     STABILIZATION (2.4.4)
```

A motor vehicle traffic accident (MVTA) originates on a police accident report (PAR) filed with the state. It involves (a) a harmful event not directly resulting from a cataclysm, (b) produced by an unstabilized situation, (c) involving at least one motor vehicle, (d) in-transport [in motion or on a roadway] such that (e) the harmful event occurred on a trafficway or the unstabilized situation originated on a trafficway.

damage occurs that goes beyond the original intent, then these events are accidental and meet the specifications of a motor vehicle accident, unless the contrary can be clearly established.

Example 1: A driver who intends to commit suicide by driving head-on into another vehicle is involved in an accident, since any harmful event which results to the other vehicle or occupants goes beyond the original intent of the driver.

A person, having announced intent in some manner, causes death, injury, or damage by driving a motor vehicle against persons, motor or other road vehicles, or other property, with homicidal, injury, or damage inflicting intent; such intended acts are not motor vehicle accidents. If, in doing such intended acts, other injury or damage occurs that goes beyond the original intent (i.e., unintended consequences), these events are accidental and meet the specifications of a motor vehicle accident, unless the contrary can be clearly established.

Example 2: A driver (not connected with a law enforcement agency) who intentionally rams another vehicle, intending to inflict harm upon the vehicle or its occupants, is not involved in an accident. In Example 1 above, if the driver intended to inflict harm upon the other vehicle or its occupants, as well as inflict harm upon himself/herself, then this also would not be an accident.

However, malicious mischief, such as throwing a rock toward a motor vehicle, dropping an object from an overpass, or rolling an object upon a trafficway, is not considered to be deliberate intent unless it is clearly established that the act was directed toward a specified person or motor vehicle. See ANSI D16.1-1983, section 2.6.3, page 25.

For the purposes of NASS PAR listing (given limited information on a PAR), a first harmful event resulting from deliberate intent should not be classified as a NASS accident, except where a subsequent harm occurs to a different vehicle or person such that the harm was an unintended consequence of the original event.

When in doubt, follow the instructions for listing the accident contained in Section 3.0 of this manual and call your zone center for guidance.

Legal Intervention: Legal intervention is a type of deliberate intent involving intentional acts by a law enforcement agent, officer, or other official. If in doing such intended acts, injury or damage occurs that goes beyond the original intent, then the other events are accidental and meet the specifications of a motor vehicle accident, unless the contrary can be clearly established. The following are examples of legal intervention and should not be classified as accidents:

(a) A road block is set up to stop a lawbreaker, and the lawbreaker crashes into it, either intentionally or unintentionally.

(b) A police unit cuts in front of another vehicle to force it to the curb or shoulder and, as a result, the two vehicles collide.

(c) A vehicle loses control as a result of bullets fired into it from a police officer's gun, and crashes.

The following are examples of an accident:

(d) A driver, other than a lawbreaker, crashes unintentionally into a roadblock.

(e) A lawbreaker, while eluding the police, loses control of his vehicle and crashes into another vehicle.

(f) A police car skids and crashes while chasing a law violator.

If in (c) above, the vehicle had created a harmful event with another vehicle or person, then the presumed unintended consequences of the action would qualify this situation as an accident.

One example which has previously been encountered is as follows: A prisoner jumps out of a police car and is injured. An officer in another car who observes this event, writes a report. Is this an accident? Yes. Although the prisoner exited the car intentionally, the subsequent injury harmful event) occurred as an unintended consequence of the prisoner's escape attempt, thus constituting this event as an accident. It should be assumed that the injury was an unintended consequence of the prisoner's action unless the contrary can be clearly established.

For the purposes of NASS PAR listing, the same guidance as given above applies.

Cataclysm: ANSI D16.1-1983 lists the following events as catastrophic: a cloudburst, cyclone, earthquake, flood, hurricane, lightning, tidal wave, torrential rain, tornado, or volcanic eruption. If any one of these events was on-going at the time of the accident and produced the unstabilized situation which led to the harm, then the event(s) is (are) not considered an accident. One key phrase is "on-going". Consider the following example: A motor vehicle in-transport was overwhelmed by a landslide or an avalanche which was a direct result of a cataclysm, such as an earthquake, torrential rain, etc. This circumstance would not be considered an accident. However, this exclusion would not apply if a cataclysm were not in existence at the time of the event; nor would this exclusion apply if the motor vehicle was unintentionally driven against any fallen materials covering a trafficway as a result of any landslide or avalanche. As this example points out, the catastrophic event "exclusion" should occur very rarely.

Another key phrase is "produced the unstabilized situation". The situation in which a vehicle hydroplanes in a torrential rain and exits the roadway, striking another motor vehicle or object, would fit the criteria for a NASS accident, but the situation in which a cloudburst/torrential rain washes a roadway out from under a vehicle travelling on a roadway would be excluded from consideration as a NASS accident. (Remember, the cataclysm must be on-going at the time of the accident.)

For the purposes of NASS PAR listing, list any accidents which you believe should be excluded under the cataclysm exception. Confirm their exclusion by relating the events to your zone center before drawing the NASS CDS sample.

After a NASS CDS accident has been selected the accident can be dropped if either subsequent research or an official ruling (e.g., by the police, by a

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medical examiner, etc.) reveals that one of the exceptions (i.e., disease, deliberate intent, legal intervention, or cataclysm) applies. When dropping the accident notify your zone center and follow the procedures outlined in Section 6.3.

Must Involve A Motor Vehicle as Defined by ANSI--If a police report does not involve at least one motor vehicle as defined by ANSI D16.1-1983 (section 2.2.7, page 7), then it should be returned to the file and not included in the list which qualifies for inclusion.

> Example: A bicycle which runs off the road and hits a tree is not a motor vehicle accident and should not be listed.

Must Involve a Motor Vehicle in-Transport--Use the ANSI D16.1-1983 (section 2.2.20, page 9) definition to determine if the motor vehicles in the accident are in-transport. There must be at least one motor vehicle in the accident in-transport for the accident to qualify. (NOTE: Any driverless vehicle of which any portion is located on the roadway is considered as a vehicle in-transport)

> Example 1: A bicyclist running into a car which is parked off the roadway does not constitute a motor vehicle accident for this study and would be excluded. If a police report has been filled out on such an incident, return the police report to the file because it does not qualify.

> Example 2: Vehicles parked on roads of reduced width, such as result from snow accumulation and incomplete snow removal, are to be considered in-transport if any portion is on the roadway.

Must Involve a Motor Vehicle In-Transport on a Trafficway--Exclude accidents which occur in places other than a trafficway. Examples of places which are not on the trafficway include private driveways and parking lots (except entrances and roadways within parking lots which are customarily used to get from the entrance to a parking aisle). Review carefully the diagrams depicting rural, urban, and divided trafficways in Figures 2-2, 2-3, and 2-4.

> Example: An abandoned vehicle, a portion of which is on the roadway, is struck by a bicyclist, causing injury to the bicyclist. A police report is filled out by an investigating officer. Is this a motor vehicle accident? Yes it is, because there is a police reported incident involving a motor vehicle in-transport on a trafficway.

In each of these figures (2-2, 2-3, and 2-4) any harmful event: (1) resulting from an unstabilized situation, (2) involving an in-transport motor vehicle and (3) which occurs between the two right-of-way lines, occurred on a trafficway. This means that "the harmful event" need not necessarily be the first harmful event; see the discussion of stabilization which follows. It is only necessary that "a harmful event" occur between the right-of-way lines. Further, any harmful event satisfying the conditions above which occurs on the "roadside" (Figures 2-2 and 2-4), in the "median" (Figure 2-4), or at or beyond the curbed area (Figure 2-3), qualifies as a NASS accident.

> Example: An in-transport motor vehicle entering or exiting the driveway (Figure 2-3) is involved in a harmful event between the right-of-way line and the beginning of the "road". Because the harmful event occurred on a trafficway, this police reported incident is a NASS accident.

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FIGURE 2-2

Example of a Rural Trafficway

Trafficway

Right-of-Way

Roadside

Shoulder

Travel Lane

Travel Lane

Shoulder

Roadside

Right-of-Way

Roadway

Road

FIGURE 2-3

Example of an Urban Trafficway

Roadway: 12am – 6am, 9am – 3pm, 6pm – 12am

Roadway: 6am – 9am, 3pm – 6pm

Road

* No parking allowed 6 to 9 a.m. or 3 to 6 p.m.

** The actual right-of-way in many cases will not be known. But it is clear that the trafficway always goes from curb to curb or from shoulder to shoulder.

FIGURE 2-4

Example of a Divided Trafficway

A driveway is usually a private way providing access to property adjacent to a trafficway. An alley is an unnamed private way providing access, in general, to the rear of houses or buildings, some of which may be further served by a driveway.

Most driveways (but not all) and alleys are not trafficways in NASS. Examples of non-NASS trafficways are driveways to: (1) service stations, (2) residential dwellings, and (3) most apartment complexes, hotels, motels, and other commercial establishments.

As a general rule, assume sidewalks adjacent to roads are part of the public domain and thus are located within the right-of-way. This assumption also applies to utility poles located along a road.

Certain driveways within parking or shopping lots qualify as trafficways in NASS if they satisfy the three criteria discussed below.

The phrase "open to the public as a matter of right or custom" (ANSI D16.1-1983, section 2.2.1, page 6) causes problems when the property is privately owned. One problem area centers around shopping centers. Private ownership does not automatically disqualify a PAR for consideration as a NASS accident. The nature and extent of "land ways" (ANSI D16.1-1983, section 2.1.11, page 6) on private property, and the differences in accident reporting criteria by police, have brought about the narrowing of the definition of a trafficway (ANSI D16.1-1983, section 2.2.1, page 6) to that which can be operationally defined. In parking or shopping lots three criteria must be met:

* There must exist two or more contiguous lanes of travel, usually these are clearly marked;

* The land way must intersect another land way inside the lot or center; and

* The junction of the internal land ways must have traffic controls (i.e., STOP or YIELD signs or markings).

The intent is to select those land ways which serve the purpose of getting traffic to and from the parking area; however, the fact that parking is allowed immediately adjacent to the land way does not disqualify it from consideration. Figure 2-5 (containing four schematics) does not attempt to cover the entire spectrum of possibilities but only illustrates some common examples. For situations A, B, and C none of the land ways should be considered as trafficways, since the criteria are not met. However, a NASS accident could occur at each of these locations if a harmful event occurred on the existing trafficway (i.e., Main Street), or an unstabilized situation originated on the trafficway which resulted in a harmful event on the private way or to the commercial property itself. In situation D the screened-in areas are roadways since they meet the criteria.

In summary, each of the preceding questions is designed to focus your attention to the specific subset of transportation-related incidents characterized as "motor vehicle traffic accidents". In NASS, you research Motor Vehicle Traffic Accidents. To put this subset of accidents which qualify for NASS in perspective, see Figure 2-6. This figure outlines the major definitional sections of ANSI D16.1-1983 into meaningful groups and shows how the phenomenon of motor vehicle traffic accidents fits into the overall transportation accident picture. Accompanying Figure 2-6 are the primary ANSI definitions of

Figure 2-5

Situation A

Situation B

Figure 2-5 (Continued)

Situation C

Burger Heaven

Main

Situation D

Stores   Stores

Stores

Elm

Maple

Main

* Indicates STOP or YIELD sign

FIGURE 2-6

```
                                                    ANSI
                                                    ------
                                                    2.1.1
                                                    2.1.2
Person                                              2.1.3
Property                                            - -
Transport device
    Animal
                                                    2.1.4
Transport vehicle                                   2.1.6
    Aircraft                                        2.1.7
    Watercraft                                      2.1.8
    Land vehicle                                    2.2.4
        Railway vehicle                             2.2.6
        Road vehicle                                2.2.7
            Motor vehicle                           2.2.8
            Other road vehicle

                                                    2.2.20
In-transport
                                                    2.1.5
Transport way                                       2.1.9
    Airway                                          2.1.10
    Waterway                                        2.1.11
    Land way                                        2.2.3
        Railway                                     2.2.2
        Private way                                 2.2.1
        Trafficway                                  2.2.19
            Road                                    2.2.18
            Shoulder                                2.2.17
            Roadway                                 - -
            Roadside                                - -
            Median                                  2.4
Accidents                                           2.4.1
    Harmful event                                   2.3.1
        Injury                                      2.3.6
        Damage                                      2.4.4
    Unstabilized situation                          2.4.2
    Deliberate intent                               2.4.3
    Legal intervention                              2.4.5
    Cataclysm                                       2.4.6
Accident                                            2.4.7
    Transport accident                              2.4.8
        Aircraft accident                           2.4.9
        Watercraft accident                         2.4.11
        Railway accident                            2.4.15
        Road vehicle accident                       2.4.10
            Motor vehicle accident                  2.4.12
            Other road vehicle accident

        or                                          2.4.16
            Traffic Accident                        2.4.18
                                                    2.4.17
            Nontraffic accident                     2.4.19
```

Motor Vehicle Traffic Accident

	Traffic Accident	Nontraffic Accident
Motor Vehicle	2.4.20	2.4.21
Other Road Vehicle	2.4.22	2.4.23

FIGURE 2-6 (Definitions)

ACCIDENT: (2.4.6)

An accident is an unstabilized situation which includes at least one harmful event not directly resulting from a cataclysm. Inclusions: motor vehicle driven into water after a bridge was wa-'d out during a hurricane or flood (cataclysm), motor vehicle driven into fall materials covering a roadway after a landslide or avalanche (cataclysm). Exclusions: motor vehicle in transport washed away with a bridge during a hurricane or flood (cataclysm), motor vehicle in transport buried by a landslide or avalanche (cataclysm).

AIRCRAFT: (2.1.6)

An aircraft is a transport vehicle designed primarily for, or in use for, moving persons or property through the air from one place to another. Inclusions: airplane, balloon, dirigible, glider, parachute, spacecraft, and others.

AIRCRAFT ACCIDENT: (2.4.8)

An aircraft accident is a transport accident that involves an aircraft in-transport.

AT-GRADE INTERSECTION: (2.5.12)

An at-grade intersection is an intersection where all roadways cross or join at the same level.

BUS: (2.2.11):

A bus is a motor vehicle consisting primarily of a transport device designed for carrying more than ten persons.

CATACLYSM: (2.4.5)

A cataclysm is a cloudburst, cyclone, earthquake, flood, hurricane, lightning, tidal wave, torrential rain, tornado, or volcanic eruption.

COLLISION ACCIDENT: (2.6.2)

A collision accident is a road vehicle accident other than an overturning accident in which the first harmful event is a collision of a road vehicle in-transport with another road vehicle, other property or pedestrians (pedestrians or nonmotorists).

DAMAGE: (2.3.6)

Damage is harm to property that reduces the monetary value of that property. Inclusions: harm to wild animals, or birds, which have monetary value. Exclusions: harm to wild animals, or birds, which have no monetary value. Harm to a snowbank unless, for example, additional snow-removal costs are incurred because of the harm. Mechanical failure during normal operation such as tire blowout, broken fan belt, or broken axle.

DELIBERATE INTENT: (2.4.2)

Deliberate intent is the classification given to the cause of an event which occurs when a person acts deliberately to cause the event or deliberately refrains from prudent acts which would prevent the occurrence of the event. Inclusions: suicide, self-inflicted injury, homicide, injury or damage purposely inflicted. Exclusions: injury or damage beyond that which was intended.

Examples:
1. When a driver intentionally kills or injures himself with a motor vehicle, by driving it against a fixed object or into a body of water, for example, the driver's death or injury is a result of deliberate intent.
2. When a driver intentionally kills or injures another person with a motor vehicle, by running into a pedestrian, for example, the death or injury is a result of deliberate intent.
3. When a driver intentionally causes damage with a motor vehicle, by ramming another vehicle, for example, the damage is a result of deliberate intent.

DRIVER: (2.2.23)

A driver is an occupant who is in actual physical control of a transport vehicle or, for an out-of-control vehicle, an occupant who was in control until control was lost.

DRIVEWAY ACCESS: (2.5.9)

A driveway access is a roadway providing access to property adjacent to a trafficway. Inclusions: entrances to gas stations and others. Exclusions: any area not within a trafficway.

GRADE SEPARATION: (2.5.14)

A grade separation is a crossing at different levels of two trafficways, or a trafficway and a railway.

HARMFUL EVENT: (2.4.1)

A harmful event is an occurrence of injury or damage.

Inclusions:
Injury or damage resulting when a driver dies or loses consciousness because of a disease condition such as a stroke, heart attack, diabetic coma, or epileptic seizure. In such case the immediate effect of the disease, such as the driver's death or loss of consciousness, is not itself considered to be a harmful event.

INTERSECTION: (2.5.10)

An intersection is an area which (1) contains a crossing or connection of two or more roadways not classified as driveway access and (2) is embraced within the prolongation of the lateral curb lines or, if none, the lateral boundary lines of the roadways. Where the distance along a roadway between two areas meeting these criteria is less than 10 meters (33 feet), the two areas and the roadway connecting them are considered to be parts of a single intersection.

FIGURE 2-6 (Definitions · continued)

INJURY: (2.3.1)

An injury is bodily harm to a person. Exclusions: effects of diseases, such as stroke, heart attack, diabetic coma, epileptic seizure.

IN-TRANSPORT: (2.2.20)

The term "in-transport" denotes the state or condition of a transport vehicle which is in-motion or within the portion of a transport way ordinarily used for travel by similar transport vehicles.

When applied to motor vehicles, "in-transport" means in-motion or on a roadway. Inclusions: motor vehicle in traffic on a highway, driverless motor vehicle in-motion, motionless motor vehicle abandoned on a roadway, disabled motor vehicle on a roadway.

JUNCTION: (2.5.11)

A junction is either an intersection or the connection between a driveway access and a roadway other than a driveway access.

LAND VEHICLE: (2.1.8)

A land vehicle is a transport vehicle which is neither an aircraft nor a watercraft.

LAND WAY: (2.1.11)

A land way is the space within property lines or other boundary lines of any transport way that is neither an airway nor a waterway.

LEGAL INTERVENTION: (2.4.3)

Legal intervention is a category of deliberate intent in which the person who acts or refrains from acting is a law-enforcing agent or other official.

Examples:
1. If a lawbreaker crashes either intentionally or unintentionally into a road block set up by police to stop him, the crash is considered a result of legal intervention. If a driver other than the lawbreaker crashes into the road block, the crash is not considered to be a result of legal intervention.
2. If a police car is intentionally driven into another vehicle, the crash is considered to result from legal intervention. If a lawbreaker being pursued by the police loses control of his vehicle and crashes, the crash is not considered to result from legal intervention unless the police intended that the lawbreaker crash.

MOTOR VEHICLE: (2.2.7)

A motor vehicle is any motorized (mechanically or electrically powered) road vehicle not operated on rails.

MOTOR VEHICLE ACCIDENT: (2.4.10)

A motor vehicle accident is a transport accident that (1) involves a motor vehicle in transport, (2) is not an aircraft accident or watercraft accident, and (3) does not include any harmful event involving a railway train in transport prior to involvement of a motor vehicle in transport.

MOTOR VEHICLE NONTRAFFIC ACCIDENT: (2.4.21)

A motor vehicle nontraffic accident is a motor vehicle accident which is a nontraffic accident.

MOTOR VEHICLE TRAFFIC ACCIDENT: (2.4.20)

A motor vehicle traffic accident is a motor vehicle accident which is a traffic accident.

NONCOLLISION ACCIDENT: (2.6.3)

A noncollision accident is any road vehicle accident other than a collision accident.

Inclusions:
overturning accident;
accidental poisoning from carbon monoxide generated by a road vehicle in-transport;
breakage of any part of the road vehicle, resulting in injury or in further property damage;
explosion of any part of the road vehicle;
fire starting in the road vehicle;
fall or jump from the road vehicle;
occupant hit by an object in, or thrown against some part of the road vehicle;
injury or damage from moving part of the road vehicle;
object falling from, or in, the road vehicle;
object falling on the road vehicle;
toxic or corrosive chemicals leaking out of the road vehicle;
injury or damage involving only the road vehicle that is of a noncollision nature, such as a bridge giving way under the weight of a road vehicle, striking holes or bumps on the surface of the trafficway, or driving into water, without overturning or collision;
and others.

Exclusions:
being pushed from road vehicle when this is an act of deliberate intent;
object thrown towards, or in, or on the road vehicle by a person when this is an act of deliberate intent;
and others.

FIGURE 2-6 (Definitions · continued)

NONCONTACT ROAD VEHICLES: (3.6.3)
A "phantom" or "noncontact" road vehicle, such as one which forces another off the road but is itself not damaged, is not counted as one of the road vehicles involved in an accident.

NONTRAFFIC ACCIDENT: (2.4.17)
A nontraffic accident is a road vehicle accident which is not a traffic accident.

OCCUPANT: (2.2.21)
An occupant is any person who is part of a transport vehicle.

OTHER ROAD VEHICLE: (2.2.8)
An other road vehicle is any road vehicle other than a motor vehicle. Inclusions: animal-drawn vehicle (any type), animal harnessed to a conveyance, animal carrying a person, street car (not on rails), pedalcycle.

OTHER ROAD VEHICLE NONTRAFFIC ACCIDENT: (2.4.23)
An other road vehicle nontraffic accident is an other road vehicle accident which is a nontraffic accident.

OTHER ROAD VEHICLE ACCIDENT: (2.4.12)
An other road vehicle accident is a transport accident that (1) involves an other road vehicle in transport and (2) is not an aircraft accident, watercraft accident, motor vehicle accident, or railway accident.

OVERTURNING ACCIDENT: (2.6.1)
An overturning accident is a road vehicle accident in which the first harmful event is the overturning of a road vehicle.

PASSENGER: (2.2.24)
A passenger is any occupant of a road vehicle other than its driver.

PERSON: (2.1.1)
A person is any living human. Within the context of this manual, a fetus is considered to be part of a pregnant woman rather than a separate individual. After death, a human body is not considered to be a person.

PRIVATE WAY: (2.2.2)
A private way is any land way other than a trafficway. The space within a crossing of a private way and a trafficway shall be considered to be (a) trafficway.

PROPERTY: (2.1.2)
Property is any physical object other than a person. Inclusions: real property, personal property, animals--wild or domestic, signs, guardrails, impact attenuators, and others.

RAILWAY: (2.2.3)
A railway is any private way reserved primarily for land vehicles moving persons or property from one place to another on rails.

RAILWAY ACCIDENT: (2.4.11)
A railway accident is a transport accident that (1) involves a railway train in-transport and (2) is not an aircraft accident, watercraft accident or motor vehicle accident.

RAILWAY VEHICLE: (2.2.4)
A railway vehicle is any land vehicle that is (1) designed primarily for, or in use for, moving persons or property from one place to another on rails and (2) not in use on a land way other than a railway. Inclusions: street car on private way, and others. Exclusions: street car operating on trafficway and others.

ROAD: (2.2.19)
Road is that part of a trafficway which includes both the roadway and any shoulder alongside the roadway.

ROADWAY: (2.2.17)
A roadway is that part of a trafficway designed, improved, and ordinarily used for motor vehicle travel or, where various classes of motor vehicles travel or motor vehicles are segregated, that part of a trafficway used by a particular class. Separate roadways may be provided for northbound and southbound traffic or for trucks and automobiles.

ROAD VEHICLE: (2.2.6)
A road vehicle is any land vehicle other than a railway vehicle.

ROAD VEHICLE ACCIDENT: (2.4.15)
A road vehicle accident is a transport accident that is either a motor vehicle accident or an other road vehicle accident.

ROAD VEHICLE NONTRAFFIC ACCIDENT: (2.4.19)
A road vehicle nontraffic accident is a nontraffic accident.

ROAD VEHICLE TRAFFIC ACCIDENT: (2.4.18)
A road vehicle traffic accident is a traffic accident.

FIGURE 2-6 (Definitions - continued)

RURAL AREA: (2.5.2)
A rural area is any area which is not within urban areas.

SHOULDER: (2.2.18)
A shoulder is that part of a trafficway contiguous with the roadway for emergency use, for accommodation of stopped road vehicles, and for lateral support of the roadway structure.

TRAFFICWAY: (2.2.1)
A trafficway is any land way open to the public as a matter of right or custom for moving persons or property from one place to another.

Inclusions:

Within areas with guarded entrances, such as military posts or private residential developments, land ways are trafficways if the guards customarily admit public traffic.

Exclusions:

A land way under construction is not a trafficway if traffic is prohibited from entering by signing or barriers which are in conformance with applicable standards. However, if any part of the land way is open to travel while the remainder is closed, that part which is open for traffic is a trafficway. Likewise, any temporary bypass of a construction site is a trafficway.

A land way temporarily closed to travel and marked by signing or barriers which are in conformance with applicable standards is not a trafficway even though used by authorized vehicles, such as maintenance vehicles, or when intentionally or inadvertently used by unauthorized vehicles. A land way open only to local traffic is not considered closed.

TRAFFIC ACCIDENT: (2.4.16)
A traffic accident is a road vehicle accident in which (1) the unstabilized situation originates on a trafficway or (2) a harmful event occurs on a trafficway.

TRANSPORT ACCIDENT: (2.4.7)
A transport accident is an accident (1) that involves a transport vehicle in transport and (2) in which the first harmful event is not produced by the discharge of a firearm or explosive device.

TRANSPORT DEVICE: (2.1.3)
A transport device is any device designed primarily for moving persons or property along with the device itself from one place to another, except (1) a weapon, (2) a device used primarily within the confines of a building and its premises, or (3) a human-powered nonmotorized device not propelled by pedalling.

Inclusions: airplane, helicopter, hovercraft, ship, submarine, train, boxcar, caboose, snowmobile, automobile, bus, truck, trailer, semitrailer, motorcycle, bicycle, moped, and others.

Exclusions:

Devices not designed primarily for moving persons or property, such as construction machinery, farm or industrial machinery, snow plows, army tanks, etc.

Devices which do not move from one place to another, such as pipelines, elevators, escalators, ski lifts, conveyor belt systems, etc.

Weapons, such as guns, torpedoes, etc.

Devices used primarily within buildings and their premises, such as fork lifts in factories or lumber yards, motorized baggage trucks in railroad stations, etc.

Human-powered nonmotorized devices not propelled by pedalling, such as skis, scooters, roller skates, baby carriages, etc.

TRANSPORT VEHICLE: (2.1.4)
A transport vehicle consists of one or more devices or animals and their load. Such devices or animals must include at least one of the following:

(1) a transport device, or a unit made up of connected transport devices, while idle or in use for moving persons or property from one place to another,

(2) an animal or team of animals while in use for moving persons or property other than the animal or team itself from one place to another, or

(3) a movable device such as construction, farm, or industrial machinery outside the confines of a building and its premises while in use for moving persons, the device itself, or other property from one place to another.

If such a device or animal has a load, the load is part of the transport vehicle. Loads include:

Persons or property upon, or set in motion by, the device or animal;

Persons boarding or alighting from the device or animal;

Persons or property attached to and in position to move with the device or animal.

If the load upon a transport device includes another transport device, the entire unit including the load is considered to be a single transport vehicle.

Inclusions:

(1) Transport Devices--airplane towing a sailplane, tugboat pushing a barge, boxcar coupled to a caboose, truck tractor towing a semitrailer and a trailer, snowmobile towing a skier;

(2) Animals--horse carrying a rider, dog team drawing a sled, team of horses drawing a sled, burro carrying a load of firewood, mule towing a boat on a canal; and

(3) Other Movable Devices--road grader while traveling under its own power from a maintenance depot to a working place, lawn mower while being ridden down a street under its own power, farm tractor while pulling a wagon loaded with corn from a field to a storage place, army tank while moving under its own power from a firing range to a motor pool.

FIGURE 2-6 (Definitions - continued)

Exclusions:
  (1) Transport Devices--pickup truck while being used to power a saw, dump truck while spreading its load, tow truck while using its winch, jeep while pulling a device picking up golf balls, transit-mix concrete truck while discharging its load, and a dump truck while plowing snow.

TRANSPORT WAY: (2.1.5)
A transport way is any way or place reserved or commonly used for the operation of transport vehicles.

UNSTABILIZED SITUATION: (2.4.4)
An unstabilized situation is a set of events not under human control. It originates when control is lost and terminates when control is regained or, in the absence of persons who are able to regain control, when all persons and property are at rest.
  Exclusions: Sets of events which are the result of deliberate intent or legal intervention.
  Examples:
  1.   If intentional acts cause injury or damage beyond that reasonably to be expected from the acts, the unexpected injury or damage is not the result of deliberate intent. There is, therefore, an unstabilized situation unless the contrary can be clearly established.
  2.   In a motor vehicle crash live electric wires fall on a motor vehicle, but there is no injury from the electric current while the occupants remain in the motor vehicle. The unstabilized situation ends with the occupants in a temporary position of safety. Any subsequent injury resulting from attempts by the occupants to leave the motor vehicle, or attempts by others to rescue the occupants, is a part of a new unstabilized situation.
  3.   In a motor vehicle crash the occupants of the motor vehicle are carried or thrown into water, but there is no injury from the submersion and the occupants reach a temporary position of safety. At this point the unstabilized situation has ended. Any subsequent injury from attempts by the occupants to reach shore, or from attempts by others to rescue the occupants is part of a new unstabilized situation.
  4.   In a motor vehicle crash objects are loosened but remain in place until all persons are removed from danger from objects that might fall or roll. No property damage would result if the objects fell or rolled. This ends the unstabilized situation. Any subsequent injury attributable to the fall or roll of the loosened objects is not part of the original unstabilized situation.
  5.   In a motor vehicle crash the motor vehicle catches on fire and is burning, but all occupants have been rescued and the fire is under control. No additional property damage is expected. This is the end of the unstabilized situation. If the heat of the fire ignites nearby combustible materials, any subsequent injury or damage from the induced ignition is not part of the original unstabilized situation.
  6.   In a motor vehicle crash an involved motor vehicle carrying explosive materials is stopped and occupants and bystanders are removed from the scene. At this point the unstabilized situation is ended. If the explosive materials detonate during later attempts to remove or salvage them, any injury or damage resulting from the explosion is not part of the original unstabilized situation.

URBAN AREA: (2.5.1)
An urban area is an area whose boundaries shall be those fixed by responsible state and local officials in cooperation with each other and approved by the Federal Highway Administration, U.S. Department of Transportation. Such boundaries are established in accordance with the provisions of Title 23 of the United States Code. Urban area boundary information is available from State highway departments. In the event that boundaries have not been fixed as above for any urban place designated by the Bureau of the Census having a population of 5,000 or more, the area within boundaries fixed by the Bureau of the Census shall be an urban area.

WATERCRAFT: (2.1.7)
A watercraft is a transport vehicle designed primarily for, or in use for, moving persons or property on or through, and supported by, water from one place to another.

WATERCRAFT ACCIDENT: (2.4.9)
A watercraft accident is a transport accident that (1) involves a watercraft in-transport and (2) is not an aircraft accident.

interest to NASS. Figure 2-6 refers to these definitions. These definitions are provided here as both a reference source to you, the NASS researcher, as well as enabling you to understand the larger transportation accident picture to which ANSI refers. Be sure to remember the location in this manual of Figures 2-1 and 2-6; together, they can serve as a handy reference source to remind you of what constitutes a "NASS accident".

Ideally a police report should report only one accident. Unfortunately, this is not always true. There are practical and understandable reasons why this occurs. This manual would be remiss if it failed to discuss the issue of stabilization.

Stabilization--At times, one police report will contain more than one accident. This will happen when events constituting an accident have stabilized (see ANSI D16.1-1983, section 2.4.4, pages 14-15) and units involved in the first sequence are subsequently involved in another accident sequence which is recorded on the same police report. If more than one accident is recorded on a police report, based on the ANSI definition of stabilized, then use the following protocol to determine which of the accidents is to be listed and stratified.

First, identify all NASS accidents and exclude from consideration those that are not NASS accidents.

Second, three situations exist (identified below as A, B, and C). Identify the situation that is applicable to the PAR under consideration and follow the protocol provided.

Situation A:
If only one accident qualifies for the CDS (Strata A-H--see section 2.2 below) and one or more GES (General Estimates System) accidents not applicable to the CDS (Y Stratum or Z Stratum--see section 2.2 below) exist on the same PAR, choose the CDS accident.

Situation B:
If more than one accident qualifying for the CDS exists on the same PAR, follow steps (1) through (4) below to select the CDS accident to stratify. Ignore any GES accidents not applicable to the CDS which may also be on the PAR.

(1)   If injury is involved and you can determine the relative degree of injury between accidents and one accident is of higher severity, then choose that accident.

(2)   If injury is involved and you determine that the relative injury between accidents is approximately equal, then choose the first of the highest equal injury accidents.

(3)   If injury is involved but you cannot determine the relative injury between accidents, then choose the first accident.

(4)   If no injuries, then choose the first accident.

Situation C:

If no accident qualifying for the CDS exists on a PAR but more than one GES accident not applicable to the CDS exists on the PAR, then choose the Y Stratum or Z Stratum by following the criteria in (1) through (4) above to select the GES accident to stratify.

In those cases where an accident, by NASS criteria, other than the one reported on the PAR, is alluded to (e.g., in the narrative), there is a rebuttable presumption that this PAR is the only PAR that will be submitted to report both accidents. This presumption may be overridden if the researcher has knowledge of: (1) another PAR on file, (2) a statement in the narrative indicating that there is, or will be, another PAR, or (3) the dispatcher or other police personnel having knowledge of the accidents, indicates that there is, or will be, another report filed.

> Example: The PAR narrative states: "Vehicle #1 had been struck by an unidentified vehicle that did not stop. As driver of Vehicle #1 opened door to get out, door caught rear wheels of trailer of Vehicle #2." There is no other mention of the unidentified vehicle which failed to stop anywhere else on the PAR. The PAR contains two separate accidents. The injury severity for both is "no injury"; therefore, the first is used for NASS CDS stratification purposes, independent of the police emphasis on the second.

However, caution must be exercised when separating accidents on a PAR. At times, it will appear that two distinct events of an accident sequence should be considered separately. According to ANSI (D16.1, section 2.4.4, pages 14-15), an unstabilization terminates "...when all persons and property are at rest..." "Property" can refer to the damaged vehicles, separated components of the vehicles, or cargo. Often the interviews will be the only source for determining whether or not stabilization occurred before the second event.

> Example: Two vehicles collide in the eastbound lanes of a divided trafficway. Cargo from one vehicle spills into the westbound lanes and another vehicle is damaged. If it can be determined that stabilization never occurred (i.e., the cargo struck the vehicle, or the vehicle struck the moving cargo), the two harmful events would be considered one accident, and all three vehicles considered applicable to the NASS accident. If it should be discovered during the research that the cargo came to rest for a period of time prior to being struck by the third vehicle, then the events would be considered as two separate accidents.

2.1.1 Questions and Answers About Which Incidents Qualify for NASS

Please find below a list of questions aimed at helping researchers determine if an accident report qualifies for the NASS.

Question: If a motor vehicle in-transport hits a pothole, causing damage to a tire and wheel or to the exhaust system, is this incident eligible for NASS?

> Answer: Yes, it is eligible for NASS. To be eligible, recall that, first, a police report must be filed and, second, that the criteria set forth in ANSI D16.1-1983 (section 2.3, pages 10-12), have been met. In essence, these criteria mandate that the following occurs: (a) a harmful event (damage or injury), (b) involving a motor vehicle, (c) in-transport, and

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(d) that the unstabilized situation originated (i.e., control was lost) on a trafficway or the harmful event occurred on a trafficway. If the parties involved suffered damage to the wheels, suspension, exhaust system, or undercarriage of their vehicles, then you have a valid accident for NASS; however, ANSI D16.1-1983 specifically excludes damage from mechanical failure during normal operation (section 2.3.6, page 11). The intent is to exclude a "blow-out" incident where the driver brings the vehicle safely to the side of the road without incurring other damage. This exclusion was not meant to exclude an incident where a "blow-out" led to other vehicle damage (e.g., ran into a tree) while the driver was attempting to regain control.

Question: A man driving a motor home slams on his brakes to avoid another vehicle in his lane; he succeeds. However, his young daughter is thrown against the instrument panel and suffers injury. Is this a motor vehicle accident?

Answer: It is a motor vehicle traffic accident involving one vehicle. The other vehicle is not involved.

Question: A car loses control on a trafficway, leaves the trafficway, and does damage to a private lawn. There is no damage to the car and the driver is not hurt. Is this a traffic accident?

Answer: Yes! It would also be a traffic accident if the motor vehicle left the scene before the police arrived (i.e., a hit-and-run vehicle). In these situations, the determining factor is whether the police filed an accident report that was eventually reported to the state.

Question: A pulp wood truck is travelling down a public road with an insecure load; the load shifts and all of the wood falls off the truck. The wood bounces and rolls, and then strikes a fence on the side of the road, doing approximately $500 worth of damage to the fence. There is no damage to anything except the fence and no other vehicles are involved; however, there is a police report made out on the incident, which is eventually included in the state file. Does this incident qualify for NASS?

Answer: Yes this situation does qualify for NASS. The harmful event is the damage to the fence.

Question: A power line falls onto a motor vehicle in-transport, causing personal damage. Is this incident applicable for NASS? A tree falls onto a motor vehicle as it was driving down the road. Is this incident applicable for NASS.

Answer: Both of the above situations, plus many similar ones (e.g., rocks fell onto the vehicle), fall into the category of near cataclysmic events. ANSI D16.1-1983 excludes, from the definition of an accident (section 2.4.6, page 15), harmful events resulting from a cataclysm. To further define this exclusion, the cataclysm must have been on-going at the time the accident happened. Cataclysms are defined in ANSI D16.1-1983 (section 2.4.5, page 15). Therefore, to exclude the situation of an object (power line, rock, etc.) falling on a motor vehicle in-transport, the cataclysm which caused the object to fall must have been on-going at the time of the incident. In terms of the specific questions, they are NASS accidents.

Question: We have a rare situation where a bystander dropped his gun; it struck the ground and discharged. A bullet struck the windshield of a vehicle in-transport. Should this incident be listed as a motor vehicle accident?

Answer: No, this is a firearms accident. However, it is entirely possible that a firearms accident could trigger a traffic accident.

Question: A convertible is traveling with its top down, and occupants are riding on its boot. The vehicle swerves to avoid another vehicle; one of the occupants falls from the vehicle and is injured. Is this incident a NASS accident?

Answer: Yes, it is a noncollision (ANSI D16.1-1983, section 2.6.3) type NASS accident.

Question: A tow truck is towing a pickup. The towed pickup truck looses an axle, which subsequently strikes a vehicle parked in a parking lot. Is this a NASS accident?

Answer: Yes it is. A motor vehicle in-transport loses part of its cargo (axle of pickup), which strikes (harmful event) a vehicle not in-transport.

Question: A motor vehicle, parked in a driveway, slipped out of gear and rolled down the drive, across the street, and struck a tree on the other side. Is this an applicable accident?

Answer: It depends on the location of the vehicle when control was lost and the location when the harm occurred. To be an applicable NASS accident, the control must have been lost on a trafficway or the harmful event must have occurred on a trafficway. If the vehicle was up in its driveway (i.e., outside of the trafficway--it must be clearly beyond the curb, utility poles, or any sidewalk boarding the curb), then control was lost (i.e., control is assumed lost when the gears slipped) off a trafficway. If the tree that was struck was off the trafficway (same as above), then it is not an applicable NASS accident and whether the vehicle is on or off the roadway at impact is irrelevant. Given that you have to make a decision at the police station (must have a police report to start with), scrutinize the police report for any information which would help you in determining the locations of the key elements. If the police report is uninformative concerning these key elements, include the accident for listing purposes. If selected in the NASS CDS sample, a review of the scene should determine whether or not the accident remains.

2.2 NASS CDS PAR Sampling Strata

Before a NASS accident, represented by a PAR, can be selected for research in the CDS it must first be listed with all other qualifying PARs (the process of listing PARs is described in Section 3.2). From the listed PARs a sample of PARs will be chosen.

To increase the efficiency of the sample, qualifying PARs are grouped into sampling Strata based on accident outcome, and a sample is selected. The information used to stratify the PARs is found in the report itself and includes the following.

Type of Vehicle is the indication on the police report of the types of vehicles involved in the NASS accident. Vehicles are classified as either "CDS applicable vehicles" or as "other vehicles". CDS applicable vehicles include the vehicle types: automobile, automobile derivative and short utility vehicles, van based light trucks, and light conventional trucks where the qualifying trucks must have a gross vehicle weight rating (GVWR) of less than or equal to 10,000 pounds. The exact distinction between a CDS applicable vehicle and an other vehicle is defined in terms of the variable Body Type (GV07). CDS applicable vehicles are in-transport vehicles whose Body Type (GV07) equals: "01" through "49". Other vehicles are in-transport vehicles whose Body Type (GV07) equals: "50" through "99". If there is no indication by the police officer of the type of vehicles involved in the NASS accident (e.g., a hit-and-run accident), then classify the vehicle as an other vehicle (GV07="99").

Where Body Type (GV07) is known but not distinguishable on the PAR for CDS applicable vehicle identification purposes (e.g., "truck", "van"), refer to your VIN reference materials to decode the VIN if the VIN is present, or refer to other sections (i.e., diagram, narrative, etc.) of the PAR that may provide identifying information. If the VIN is not present and GV07 is still unknown, then consider, for sampling purposes, the GV07 code to be "29", "38", "39", or "49", and consider the vehicle in question to be a CDS applicable vehicle.

Most severe police reported injury is the indication on the police report of injury severity, if any, to the occupants of any towed CDS applicable vehicle involved in the NASS accident. This severity should be translated into the KABCO codes, if necessary (see explanation of variable OA34 of this manual). For purposes of stratification, the CDS is only concerned with the most severely injured occupant of any towed CDS applicable vehicle. The injury severity to persons not in a towed CDS applicable vehicle is not considered.

Disposition of the injured is the indication on the police report that at least one occupant of a towed CDS applicable vehicle went directly from the accident scene to a treatment facility (hospital, clinic, doctor's office, etc.) for treatment (e.g., not transported solely to have a blood alcohol test conducted). The means of transportation is not a consideration nor is the length of stay at the facility. The transportation of any one occupant of a towed CDS applicable vehicle qualifies the NASS accident as "transported". The transportation or nontransportation of any person who was not in a towed CDS applicable vehicle is not considered. If the PAR does not indicate the disposition of the injured occupant(s) of the towed CDS applicable vehicle(s), then consider the NASS accident as having no transported occupants.

Tow status of the vehicles is the indication (i.e., any item on the PAR may be used to help determine tow status--for example, damage severity, narrative) on the police report that an in-transport vehicle involved in the NASS accident was towed due to damage from the accident scene. If no CDS applicable vehicles were indicated on the police report as towed due to damage from the accident scene, then the NASS accident is classified as "all other NASS accidents" (see Strata Y and Z).

Unfortunately, PARs do not identify with one-hundred percent certainty which towed vehicles were towed as a result of damage. Therefore, when a vehicle is listed on the police accident report as towed, the default assumption is that the vehicle was towed due to damage. In addition, the PAR may be blank or unclear as to whether the vehicle was towed at all. If so, use the default assumption that the vehicle was not towed.

Model Year of Vehicles is the indication on the police report of each accident involved vehicle's production (model) year (i.e., not necessarily the same as the actual calendar year in which the vehicle was produced). All in-transport vehicles are dichotomized into either "late model year vehicles" or "nonlate model year vehicles". A late model year vehicle is one whose production year is 1984 through 1989. Any vehicle whose production year is 1983 or before is considered a nonlate model year vehicle.

The eight PAR sampling Strata used by the CDS are listed below and shown in Table 2-1:

Stratum A-NASS accidents in which at least one occupant of a towed CDS applicable late model year vehicle had a police reported injury of "K" (fatal injury).

Stratum B-NASS accidents not qualifying for Stratum A in which at least one occupant of a towed CDS applicable nonlate model year vehicle had a police reported injury of "K" (fatal injury).

Stratum C-NASS accidents not qualifying for Strata A or B in which at least one occupant of a towed CDS applicable late model year vehicle had a police reported injury of "A" (incapacitating injury).

Stratum D-NASS accidents not qualifying for Strata A, B, or C in which at least one occupant of a towed CDS applicable nonlate model year vehicle had a police reported injury of "A" (incapacitating injury).

Stratum E-NASS accidents not qualifying for Strata A, B, C, or D in which at least one occupant of a towed CDS applicable late model year vehicle was transported from the scene to a treatment facility for treatment.

Stratum F-NASS accidents not qualifying for Strata A, B, C, D, or E in which at least one occupant of a towed CDS applicable nonlate model year vehicle was transported from the scene to a treatment facility for treatment.

Stratum G-NASS accidents not qualifying for Strata A, B, C, D, E, or F which involve at least one CDS applicable late model year vehicle that was towed, according to the police report, from the scene due to damage.

Stratum H-NASS accidents not qualifying for Strata A, B, C, D, E, F, or G which involve at least one CDS applicable nonlate model year vehicle that was towed, according to the police report, from the scene due to damage.

All other NASS accidents that do not qualify for Strata A, B, C, D, E, F, G. or H are further dichotomized for the purposes of the General Estimates System (GES) into either Stratum Y or Stratum Z. See Table 2-2 above. Be aware that all CDS applicable accidents are also GES applicable accidents while the converse is not true (i.e., many GES applicable accidents are not CDS applicable). The GES includes all NASS accidents. All CDS Accidents constitute one of the three main Stratum of the GES. The other two Stratum are entitled respectively: Non-CDS Injury Accidents (Stratum Y) and Non-CDS PDO Accidents (Stratum Z).

Stratum Y-NASS accidents not qualifying for the CDS in which a person involved in the accident had a police reported injury of "K" (fatal injury), "A" (incapacitating injury), or "B" (nonincapacitating evident injury).

Stratum Z-NASS accidents not qualifying for the CDS or for Stratum Y.

Table 2-1

1988 NASS CDS Strata

Late Model Year	Most Severe Police Reported Injury				
(LMY)			Minor Injury, Not Injured, or Unknown		
Vehicle	Fatal Injury	Serious Injury	Transported to a	Not Transported	
Involvement	"K"	"A"	Treatment Facility	Vehicle Towed	Vehicle Not Towed
Injury in Towed, LMY, CDS Applicable Vehicle	A	C	E	G	NOT IN SCOPE
Injury not in Towed, LMY, CDS Applicable Vehicle	B	D	F	H	See Table 2-2

Note: Late Model Year refers to 1984 through 1989 model years.

Table 2-2

1988 NASS GES Strata

No CDS Applicable Vehicles in this Accident or No Towed CDS Applicable Vehicles in this Accident	
Most Severe Police Reported Injury to Any Occupant, Pedestrian, or Nonmotorist	
PAR Code of: "K", "A", or "B"	PAR Code of: "C", "U", or "O"
Y	Z

Notice that the eight CDS PAR sampling Strata are hierarchical. PARs included in Stratum A are not considered for Strata B, C, D, E, F, G, or H and so forth. Therefore, in reviewing PARs for stratification, proceed as follows.

First, identify all in-transport CDS applicable vehicles in the NASS accident. If no in-transport CDS applicable vehicles were present, then classify this NASS accident for GES purposes into either Stratum Y or Stratum Z.

Second, from among the CDS applicable vehicles present in the NASS accident, identify those the police accident report indicates were "towed" as a result of damage received in this NASS accident. If no in-transport "towed" CDS applicable vehicles were present in this NASS accident, then classify this NASS accident for GES purposes into either Stratum Y or Stratum Z.

Third, if at least one in-transport towed CDS applicable vehicle was present, then determine the most severe police reported injury to the occupant(s) of all towed CDS applicable vehicles present. If one or more occupants of a towed CDS applicable vehicle was killed ("K" injury), then classify this NASS accident in:
   o Stratum A if at least one of the persons was an occupant of a late model year vehicle; or
   o Stratum B if no person was an occupant of a late model year vehicle.

Fourth, if no occupant of a towed CDS applicable vehicle was killed, but at least one occupant of a towed CDS applicable vehicle received an "A" injury, then classify this NASS accident in:
   o Stratum C if at least one of the persons was an occupant of a late model year vehicle; or
   o Stratum D if no person was an occupant of a late model year vehicle.

Fifth, if the most severe police reported injury to any occupant(s) of the towed CDS applicable vehicle(s) present was a "B", "C", or "U" injury, then determine if one or more of those receiving "B", "C", or "U" injuries was transported from the scene to a medical facility for treatment purposes. If at least one "B", "C", or "U" injured occupant was transported to a medical facility for treatment purposes, then classify this NASS accident in:
   o Stratum E if at least one of the persons was an occupant of a late model year vehicle; or
   o Stratum F if no person was an occupant of a late model year vehicle.

Sixth, if no "B", "C", or "U" injured occupant of a towed CDS applicable vehicle was transported to a medical facility for treatment purposes, then classify this NASS accident in:
   o Stratum G if at least one of the persons was an occupant of a late model year vehicle; or
   o Stratum H if no person was an occupant of a late model year vehicle.

Seventh, if the PAR indicates that no occupant of a towed CDS applicable vehicle was injured (PAR "O" classification), then classify this NASS accident in:
   o Stratum G if there was at least one person who was an occupant of a late model year vehicle; or
   o Stratum H if no person was an occupant of a late model year vehicle.

The two PAR sampling Strata (Y and Z) used by the GES are distinguished as follows.

Given that no in-transport towed CDS applicable vehicles are present in the NASS accident, determine if any person [(a) occupant of a nontowed CDS applicable vehicle, (b) occupant of a non-CDS applicable vehicle, (c) pedestrian, or (d) nonmotorist] in the accident received a "K" (fatal injury), "A" (incapacitating injury), or "B" (nonincapacitating evident injury) injury. If at least one such person was so injured, then classify this NASS accident in Stratum Y. If no person received a "K", "A", or "B" injury, then classify this accident in Stratum Z. It does not matter for the purpose of distinguishing between Stratum Y and Z whether any person was transported or, if an occupant, whether their vehicle was towed or produced in a late model year. Most severe police reported injury is the sole criterion.

Figure 2-7 presents a flowchart of the NASS stratification.

Examples:

1. NASS Accident: A heavy truck (other vehicle) and a motorcycle (other vehicle) crash. The driver of the motorcycle is killed.

   Stratification: This is a Stratum "Y" accident because it does not involve a towed CDS applicable vehicle (i.e., GV07 must be "01" through "49") even though a PAR reported "K" injury occurred.

2. NASS Accident: A late model year CDS applicable vehicle and a motorcycle (other vehicle) crash. The CDS applicable vehicle is towed, and the driver has an "A" injury. The motorcyclist is killed ("K" injury).

   Stratification: This is a Stratum "C" accident. It has a CDS applicable vehicle, and the CDS applicable vehicle was towed. The most severe injury to an occupant of a towed CDS applicable vehicle is an "A" injury. The injured person was an occupant of a late model year CDS applicable vehicle. The injury to the motorcyclist is not considered.

3. NASS Accident: A CDS applicable vehicle rolls over ejecting and causing a "K" injury to one of the occupants; the nonlate model year vehicle is towed.

   Stratification: This is a Stratum "B" accident because it does have a towed CDS applicable vehicle, the most severely injured occupant of the vehicle receives a "K" injury, and the fatally injured person is not an occupant of a late model year CDS applicable vehicle.

4. NASS Accident: A CDS applicable vehicle and a bicycle crash. The bicyclist ejects shattering the vehicle's windshield. The nonlate model year CDS applicable vehicle is towed, but only minor injuries ("C" injuries) occur to the occupants. None of the occupants are transported. The bicyclist receives an incapacitating injury ("A" injury).

   Stratification: This is a Stratum "H" accident. There is at least one towed CDS applicable vehicle, but no one in a towed CDS applicable vehicle receives a "K" or "A" injury or is transported. The most severely injured person in the towed CDS applicable vehicle is not an occupant of a late model year vehicle. The incapacitating injury to the bicyclist does not affect the stratification. The only injuries that affect stratification are those suffered by occupants of towed CDS applicable vehicles.

Figure 2-7

MASS Stratification

5. **NASS Accident:** Two CDS applicable vehicles crash. Vehicle 1, which is a late model year vehicle, is towed, but none of the occupants are injured. Vehicle 2, which is not a late model year vehicle, is not towed; however, an unbelted infant hits the instrument panel and receives an "A" (incapacitating) injury.

    Stratification: This is a Stratum "G" accident. Stratification is determined first by the most severe injury to an occupant in a towed CDS applicable vehicle and second by the model year of the most severely injured occupant's vehicle. Vehicle model year and most severe police reported injury are <u>not</u> independent variables for stratification purposes.

6. **NASS Accident:** A heavy truck and two CDS applicable vehicles crash. The heavy truck catches on fire and its occupant subsequently dies of burn injuries. Both CDS applicable vehicles are towed. One CDS applicable vehicle is a late model year vehicle, and its occupant receives a "C" injury. The other CDS applicable vehicle is not a late model year vehicle, and its occupant receives a "B" injury. All drivers are transported for treatment.

    Stratification: This is a Stratum "E" accident. The most severe injury to the occupant of the towed CDS applicable late model year vehicle determines the Stratum.

2.2.1 Questions and Answers Regarding Stratification

The following questions are aimed at helping researchers classify CDS accidents.

Question: A vehicle ran off the road, struck a small tree, and continued on, eventually striking a pedalcyclist. Would this be considered a motor vehicle accident, since ANSI requires that in a pedalcycle accident (section 2.4.14, page 16), the first harmful event must involve a collision with a pedalcyclist?

  Answer: In CDS we are concerned with what is defined in ANSI as a motor vehicle traffic accident (MVTA) (section 2.4.20, page 16). The components of a MVTA are: (a) a police report, (b) a harmful event, (c) from an unstabilized situation, (d) involving at least one motor vehicle, (e) in-transport [in motion or on a roadway], such that (f) the harmful event occurred on a trafficway or the unstabilized situation originated on a trafficway. Beyond this, we are not concerned with subdividing accidents according to ANSI. For this accident to be stratified in Strata A, B, C, D, E, F, G, or H, the vehicle must have been a "CDS applicable vehicle", and it must have been towed, according to the police report, as a result of the damage it sustained in the accident. In addition, consider the most severe police reported injury to an occupant of a towed CDS applicable vehicle, the transported status of the occupant(s) of only the towed CDS applicable vehicle(s), and the vehicle model year of the vehicle in which the most severely injured person was an occupant. If the accident does not involve a towed CDS applicable vehicle, classify it as "all other NASS accidents" (Stratum Y or Stratum Z).

Question: When a hit-and-run accident occurs which involves a single in-transport vehicle, and no information is available about the hit-and-run vehicle or its occupant(s), how do you classify the accident on the stratification record?

Answer: Stratify the PAR as a Stratum Z accident since no information about the vehicle is equivalent to GV07, Body Type, equalling "99" (Unknown), and no information about the occupant(s) does not equate to a known "K", "A", or "B" injury which is required in order to classify the accident in Stratum Y.

Question: How do you stratify a vehicle not in-transport? The vehicle is unoccupied.

Answer: Vehicles not in-transport are not considered when determining the PAR sampling Stratum.

Question: It is, at times, difficult to determine whether or not a parked vehicle was on the roadway from simply reviewing a police accident report. Usually, the PAR merely states that the vehicle was parked. Unless one is familiar with the roadway, how do you determine if the vehicle was in-transport or not?

Answer: Vehicles which are legally parked are not in-transport. In certain situations illegally parked vehicles are in-transport; however, the fact that a vehicle was illegally parked when struck has never automatically made that vehicle in-transport.

Originally, this issue was resolved for bus zones. Figure 2-8 presents six bus stop parking area situations which were discussed and resolved over two zone center seminars. For situations I through V any vehicle in the bus zone was considered in-transport. In situation VI a non-bus in the bus zone was considered in-transport. The mid-block bus zone concept was extended as well to fire hydrants located mid-block.

More recently, the question of vehicles illegally parked beyond the end of legal parking (either implicit or explicit) near an intersection was considered. The resolution is that if a vehicle is illegally parked because of time, then the vehicle is not in-transport. If a vehicle is illegally parked because of location, then the vehicle is in-transport. One major exception is when time changes the character of the parking location. See Figure 2-3 above. If any part of a struck vehicle is beyond the end of legal parking, then this vehicle is in-transport. This means that any vehicle not authorized to be in a bus zone, fire hydrant zone, loading/unloading zone, NO PARKING area, or yellow curbed area is in-transport regardless of where that area is located (i.e., end of block or mid-block).

For CDS sampling purposes, the PAR scene sketch should be used in conjunction with the violations issued section to determine if a vehicle was illegally parked because of location.

Illegal parking includes any occupied vehicle which is stopped in an illegal location. Any vehicle entering or exiting one of the above mentioned areas (i.e., bus zone, fire hydrant zone, loading/unloading zone, NO PARKING zone, or yellow curbed area) is, of course, in-motion and thus in-transport.

Figure 2-8

Bus Stop Parking Area Situations I - VI

Question: A vehicle had several persons riding on top of it. The police
spotted the vehicle and started to give chase. The persons jumped off.
In the process, one was injured. Is this person an occupant or a non-
motorist? What about the vehicle and its occupants?

Answer: The persons riding on the roof do not fit the appended-to-the-
vehicle-for-motion exclusion (e.g., person on a bicycle or skateboard who
is holding onto the back of a vehicle for added motion) cited under
variables OA04, Occupant Number, and OA10, Occupant's Seat Position;
therefore, these persons are occupants of the in-transport vehicle.
Regarding the injured person, if that injury (harmful event) occurred as
a result of exiting from the vehicle, then stabilization did not occur
for that person. Therefore, in addition to those in the vehicle, con-
sider the person who was injured while jumping from the vehicle as an
occupant also. Since the police would not report the vehicle as towed
due to damage, it makes no difference whether the vehicle was a CDS
applicable vehicle or not. Strata Y or Z would be assigned to this PAR
depending upon the police report injury severity.

Question: A pickup truck was towing (pulling) a friend's passenger car to a
service station. The car broke loose and impacted a tree. No damage
occurred to the pickup. How would you stratify for CDS purposes this
NASS accident?

Answer: Any motor vehicle on a roadway is in-transport. An exception
occurs where the vehicle is attached to another vehicle by means of fixed
linkage. The critical issue is whether or not the vehicle being towed
has any control over its movement. In this instance, the answer depends
on how the car and truck were attached. If the car was attached by a tow
bar or any other form of fixed linkage, then the car is considered a
trailing unit and the tow status of that vehicle is not considered when
stratifying. On the other hand, if the linkage was nonfixed (e.g., rope
chain, etc.), then the car was in-transport, and its police reported tow
status is considered. A fixed linkage is defined as one which has the
property of keeping the towed unit separated from the power unit by a
distance which is essentially constant. Included within this definition
are cradle linkages where the towed unit has two or more wheels off the
ground. If the linkage was fixed this is a Strata Y or Z accident since
the pickup would not be reported by the police as towed due to damage.
If the linkage was nonfixed and if the car was reported by the police as
towed due to damage, then the accident qualifies for CDS Strata A, B, C,
D, E, F, G, or H.

2.3 Required Forms for CDS Cases

It is very important to remember that only the injuries to the occupants of
towed CDS applicable vehicles and the model year of those occupant's vehi-
cle(s) determine the Stratum. Also, once a NASS accident is selected for
research as a CDS case all the CDS applicable vehicles, towed or nontowed, are
candidates for a vehicle inspection. An exterior inspection is required for
nontowed CDS applicable vehicles. Towed CDS applicable vehicles require both
an exterior and an interior inspection. In addition, all drivers and occu-
pants of the towed CDS applicable vehicles are candidates for an interview.
The other vehicles in these accidents are not inspected nor are their occu-

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pants interviewed. Likewise, occupants of nontowed CDS applicable vehicles are not interviewed. **Figure 2-9** presents a flowchart aimed at assisting researchers in form selection.

Figure 2-9: Required Forms for NASS CDS Cases

Each NASS CDS accident requires one Case Summary Form, one collision diagram, and one Accident Form. The remaining forms depend upon: (1) the type of vehicles involved in the accident, (2) their police reported tow status, and (3) the level of vehicle inspection. For each vehicle involved in the accident, follow the flowchart below to determine the appropriate forms to submit.

3.0 OVERVIEW OF SAMPLING ACTIVITIES

The procedure for selecting the NASS CDS accident sample consists of three tasks:

Task 1:   Contact sampled police jurisdictions on specified days to review the police accident reports (PARs).

Task 2:   At each jurisdiction, list and stratify, using the NASS Stratification Record (SR), all PARs which qualify for NASS (CDS and GES). First, classify each into one of the three GES Sampling Strata (main columns on the SR). Second, if the NASS accident is CDS applicable, then classify it into one of the eight CDS Sampling Strata.

Task 3:   Using the Microcomputer Data Entry (MDE) system, enter the listed PARs (CDS and GES) into the NASS CDS Automated Case Selection System. The automated system will specify the sample of CDS accidents to be researched.

Most teams will perform these tasks on Monday and Thursday of each week. Alternatively, a few teams will perform these tasks on Tuesday and Friday of each week. Still other teams will sample only on Mondays or more than twice a week. Section 3.2 below discusses the Monday-Thursday example. However, the procedure to be followed is the same regardless of the schedule.

3.1 Listing and Sampling Forms

The Contact Day Assignment Sheet (CDAS), the PAR Stratification Record (SR), and the Non-NASS PAR Stratification Record are attached as examples.

3.1.1 Contact Day Assignment Sheet (CDAS)

The Contact Day Assignment Sheet (Table 3-1) provided to your PSU is unique to your PSU. It specifies the dates on which the contacts are to be made and indicates the Max Sample (maximum caseload) for each contact day. The CDAS must be initialed by a COTR and by Sample Design staff from the Mathematical Analysis Division.

3.1.2 PAR Stratification Record (SR)

All teams will use the same PAR Stratification Record form (Table 3-2). Make photocopies as needed of the form provided. Instructions for completing the form are given in Section 3.2.2.

3.1.3 Non-NASS PAR Stratification Record (NSR)

All teams will use the same Non-NASS PAR Stratification Record form (Table 3-3). Make photocopies as needed of the form provided. Instructions for completing the form are given in Section 3.2.3.

3.2 Listing and Sampling Instructions

3.2.1 Contacting Police Jurisdictions

Contact each of the jurisdictions indicated on the Sampling Worksheet (SW) on the day(s) of the week specified. For most teams, the jurisdictions are given in two different visitation patterns. For example, some jurisdictions are to

Table 3-1

CONTACT DAY ASSIGNMENT SHEET

P S U		Period
13 - Muskegon MI		04-Jan-88 to 30-Jun-88

Contact Date			Contact Date
04-Jan-88			04-Apr-88
07-Jan-88			07-Apr-88
11-Jan-88			11-Apr-88
14-Jan-88			14-Apr-88
18-Jan-88			18-Apr-88
21-Jan-88			21-Apr-88
25-Jan-88			25-Apr-88
28-Jan-88			28-Apr-88
01-Feb-88			02-May-88
04-Feb-88			05-May-88
08-Feb-88			09-May-88
11-Feb-88			12-May-88
15-Feb-88			16-May-88
18-Feb-88			19-May-88
22-Feb-88			23-May-88
25-Feb-88			26-May-88
29-Feb-88			30-May-88
03-Mar-88			02-Jun-88
07-Mar-88			06-Jun-88
10-Mar-88			09-Jun-88
14-Mar-88			13-Jun-88
17-Mar-88			16-Jun-88
21-Mar-88			20-Jun-88
24-Mar-88			23-Jun-88
28-Mar-88			27-Jun-88
31-Mar-88			30-Jun-88

Max Sample: _____   Maximum Cases per Contact Day

Approved--MAD: Approved--COTR: Date: 18-Dec-87

T/ E 3-2

NASS CRASHWORTHINESS DATA SYSTEM NASS GENERAL ESTIMATES SYSTEM

PAR STRATIFICATION RECORD

PSU: _____ JURISDICTION: _____ LISTED BY: _____ CONTACT DATE: _____ Page: ___

CDS ACCIDENTS (Strata A,B,C,D,E,F,G,N)

= GES Carryover   = GES Interval

Line No.	CDS Stratification	PAR Information		
		Date	Time	Number
		. . - 88		
		. . - 88		
		. . - 88		
		. . - 88		
		. . - 88		
		. . - 88		
		. . - 88		
		. . - 88		
		. . - 88		
		. . - 88		
		. . - 88		
		. . - 88		
		. . - 88		
		. . - 88		
		. . - 88		
		. . - 88		

NON-CDS INJURY ACCIDENTS (Y Stratum)

= GES Carryover   = GES Interval

Line No.	PAR Information		
	Date	Time	Number
	. . - 88		
	. . - 88		
	. . - 88		
	. . - 88		
	. . - 88		
	. . - 88		
	. . - 88		
	. . - 88		
	. . - 88		
	. . - 88		
	. . - 88		
	. . - 88		
	. . - 88		
	. . - 88		

NON-CDS PDO ACCIDENTS (Z Stratum)

= GES Carryover   = GES Interval

Line No.	PAR Information		
	Date	Time	Number
	. . - 88		
	. . - 88		
	. . - 88		
	. . - 88		
	. . - 88		
	. . - 88		
	. . - 88		
	. . - 88		
	. . - 88		
	. . - 88		
	. . - 88		
	. . - 88		
	. . - 88		

Page Totals: CDS Stratum = _____ Y Stratum = _____ Z Stratum = _____

Day Totals: CDS Stratum = _____ Y Stratum = _____ Z Stratum = _____

CDS Stratum Totals (Page): A= ___ B= ___ C= ___ D= ___ E= ___ F= ___ G= ___ N= ___ (Day): A= ___ B= ___ C= ___ D= ___ E= ___ F= ___ G= ___ N= ___

NASS Form SR, 1/1/88

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Table 3-3

N O N - N A S S   S T R A T I F I C A T I O N   R E C O R D

PSU: _____   CONTACT DATE: ___/___/___

JURISDICTION: _____   LISTED BY: _____

	STRATUM	PAR INFORMATION			REASON
		DATE	TIME	NUMBER	
1.		- - 88			
2.		- - 88			
3.		- - 88			
4.		- - 88			
5.		- - 88			
6.		- - 88			
7.		- - 88			
8.		- - 88			
9.		- - 88			
10.		- - 88			
11.		- - 88			
12.		- - 88			
13.		- - 88			
14.		- - 88			
15.		- - 88			
16.		- - 88			
17.		- - 88			
18.		- - 88			
19.		- - 88			
20.		- - 88			

Total Non-NASS Accidents list d on this Pag : _____.

Non-NASS Form NSR, 1/01/88

be contacted on both Monday and Thursday while others are to be contacted on either Monday or Thursday (i.e., only one visit each week). If a team wishes to change the contact day for any jurisidiction, it must notify both its respective zone center and COTR for approval to implement the change.

3.2.2 Completing the PAR Stratification Record

At each police jurisdiction, follow the guidelines in Section 2 (2.0-2.2) to identify the PARs which qualify as NASS accidents and are to be listed. Complete the PAR Stratification Record as follows:

a.   At the top of the SR enter the PSU number and name, the police jurisdiction name, the contact date, and the name or initials of the team member making the visit.

b.   GES Carryover:

On or before the first 1988 contact day, three random numbers, one for each main column `(CDS Strata, Stratum Y, and Stratum Z), will be provided by NCSA. Enter the random numbers on the GES Carryover line for the appropriate main column. The random numbers constitute this jurisdiction's initial GES Carryover values and serve to ensure that all PARs have an equal chance of selection.
On each subsequent 1988 contact day, the GES Carryover entered at the top of the SR will be equal to the last Line Number listed for that main column on the previous contact day.

c.   GES Interval:

On or before the first 1988 contact day, three GES Interval values, one for each main column (CDS Strata, Stratum Y, and Stratum Z), will be provided by NCSA. Enter the values on the GES Interval line for the appropriate main column. The GES Interval is used to indicate which PARs are sampled. When the Line Number matches the GES Interval for that stratum, "highlight" that accident and make the next line number, number 1. Line numbers will never exceed the GES Interval for that main column. The highlighted lines represent the sampled PARs for the GES.

Example: If the GES Interval for the CDS Strata is 4, then enter the line numbers: 1, 2, 3, 4*, 1, 2, 3, 4*, etc. Every time the line number 4 is recorded, that PAR is highlighted (*).

d.   Line Number:

For each contact day the first line number entered for a main column will be one more than the GES Carryover for that main column. Except for the first 1988 contact day, the GES Carryover is equal to the last line number listed for that main column on the previous day or page.

Example: If the last line number used for the CDS Accidents column on the previous contact day is 3, the GES Carryover for the CDS column on this day will be 3. The first NASS CDS accident listed for the CDS column this day will have a line number 4.

Similarly, within a single contact day, the GES Carryover is used from page to page and must be entered for all main columns when a new PAR SR is started. Verify the carryover by checking the last line number on the previous page for that main column; these numbers must be the same.

In addition, record the GES Carryover number at the top of each main column on the page to be used for the next visit to that jurisdiction.

e. For each qualifying PAR:

First, identify all in-transport CDS applicable vehicles in the NASS accident. If no in-transport CDS applicable vehicles were present, then follow the procedures below in subsection "e. 2." and classify this NASS accident for GES purposes into either Stratum Y or Stratum Z.

Second, from among the CDS applicable vehicles present in the NASS accident, identify those the police accident report indicates were "towed" as a result of damage received in this NASS accident. If no in-transport "towed" CDS applicable vehicles were present in this NASS accident, then follow the procedures below in subsection "e. 2." and classify this NASS accident for GES purposes into either Stratum Y or Stratum Z.

Third, if at least one in-transport towed CDS applicable vehicle was present, then follow the procedures below in subsection "e. 1." and classify this NASS accident for CDS purposes into one of the eight CDS Strata.

1. Determine the CDS sampling Stratum:

   (a) Determine if at least one occupant of a towed CDS applicable late model year vehicle involved in the accident was killed ("K" injury),

      (1) If so, it belongs in Stratum A.
      (2) If not,

   (b) Determine if at least one occupant of a towed CDS applicable nonlate model year vehicle involved in the accident was killed ("K" injury),

      (1) If so, it belongs in Stratum B.
      (2) If not,

   (c) Determine if at least one occupant of a towed CDS applicable late model year vehicle involved in the accident had an "A" injury,

      (1) If so, it belongs in Stratum C.
      (2) If not,

   (d) Determine if at least one occupant of a towed CDS applicable nonlate model year vehicle involved in the accident had an "A" injury,

(1) If so, it belongs in Stratum D.
(2) If not,

(e) Determine if at least one injured ("B", "C", or "U")
occupant of a towed CDS applicable late model year vehicle
involved in the accident was transported directly from the
accident scene to a treatment facility for treatment,

(1) If so, it belongs in Stratum E.
(2) If not,

(f) Determine if at least one injured ("B", "C", or "U")
occupant of a towed CDS applicable nonlate model year
vehicle involved in the accident was transported directly
from the accident scene to a treatment facility for treat-
ment,

(1) If so, it belongs in Stratum F.
(2) If not,

(g) Determine if at least one towed CDS applicable late model
year vehicle was involved in the accident,

(1) If so, it belongs in Stratum G.
(2) If not,

(h) Determine if at least one towed CDS applicable nonlate
model year vehicle was involved in the accident,

(1) If so, it belongs in Stratum H.
(2) If not, it belongs either in Stratum Y or Stratum Z
(all other NASS accidents).

2. Determine the GES sampling Stratum:

Determine if a person (occupant of either: a non-CDS applica-
ble vehicle or a nontowed CDS applicable vehicle, a pedestrian,
or a nonmotorist) in the accident received a "K" (fatal inju-
ry), "A" (incapacitating injury), or "B" (nonincapacitating
evident injury) injury,

(1) If so, it belongs in Stratum Y.
(2) If not, it belongs in Stratum Z.

3. Enter the accident date, accident time, and PAR number in the
appropriate columns for all qualifying NASS accidents that have
accumulated since the last visit to the police jurisdiction.
If the PAR meets the definition of a CDS accident (i.e., the
accident involves a towed CDS applicable vehicle--see point 1.
above), then enter the PAR information on the next available
line for the CDS Accidents column. If the PAR does not meet
the definition of a CDS accident but involves an injury quali-
fying it for Stratum Y (see point 2. above), then enter the PAR
information on the next available line for the Stratum Y col-

umn. For PARs not meeting either of the above criteria, enter the PAR information on the next available line for the Stratum Z column.

The number of PARs listed for each main column will probably differ considerably. The most PARs are expected to be listed for the Z Stratum and the least for the Y Stratum. When all PAR information is entered for a main column (20 PARs can be entered on one page for each main column), start a new page for all main columns. Draw a line through any unused lines for any part of a main column that is not complete. This procedure will prevent flipping back and forth from page to page.

> Example: Assume twenty PARs were listed for the Z Stratum, six for the CDS Strata, and two for the Y Stratum. If the next NASS accident belongs to the Z Stratum, start a new page for all three main columns even though the first page has not been entered fully for the CDS Strata and the Y Stratum.

When entering PARs on successive pages, be sure to enter the page number in the "Page ___ of ___ " field to keep pages in their proper sequence.

4.   After all PARs for that day have been listed, enter the "line numbers" for each of the three main columns, based on that main column's GES Carryover and GES Interval.

5.   Enter the "page" totals at the bottom of each main column to indicate the total number of PARs listed for each main column on that page. As discussed above, these totals will seldom be "20-20-20". In addition, record the CDS Strata totals in the spaces provided. After listing all the PARs for that day, sum the page totals to ensure that all PARs have been listed. Enter the "day" totals for each main column and for each of the CDS Strata at the bottom of the last PAR SR used for that day.

f.   Completing the GES Sample:

All GES sampling is done manually. Obtain a copy of all sampled GES PARs before leaving the police jurisdiction. The sampled GES PARs are the highlighted lines identified as a part of the NASS PAR listing process described above. Thus, NASS CDS applicable accidents can be sampled independently in either the CDS or GES and may occasionally be selected in both systems.

3.2.3 Completing the Non-NASS PAR Stratification Record

List all non-NASS PARs (e.g., private property, not state reported) on the Non-NASS PAR Stratification Record (NSR) form(s) (Table 3-3). Use different forms for each jurisdiction sampled. Make sure the non-NASS accidents are not listed on the same stratification records (i.e., SRs) as the NASS accidents.

Write the reason for listing the PAR as a non-NASS accident (e.g., private property, bicycle accident, deliberate intent, alley accident, accident not reported to state, accident outside the PSU area, etc.) under the "Reason" column of the Non-NASS PAR Stratification Record.

During site visits the zone centers will bring the NASS and non-NASS stratification records for one jurisdiction (a one month period) and check to make sure all the PARs have been listed.

3.2.4 The NASS CDS Automated Case Selection System (ACSS)

The NASS CDS Automated Case Selection System will be executed for each contact date listed on the Contact Day Assignment Sheet. The Microcomputer Data Entry User's Manual includes instructions for using the ACSS. Any problems or difficulties that are not identified in the manual should be referred to your zone center.

The ACSS reports the selected CDS PARs on the NASS CDS Automated Case Selection System Report (ACSSR). See Table 3-4 for an example of the ACSSR.

If your microcomputer system is not available, contact your zone center as soon as possible. Your zone center will have the capability to list and select accidents for your PSU for any given contact date. If the ACSS is not available, contact your zone center and headquarters for further instructions.

3.3 CDS Sampling Problems: How To Handle Them

The following section describes problems that sometimes arise in sampling and outlines ways to address them. A critical element in each case is time; that is, the longer the period between the occurrence of the problem and the implementation of some corrective action, the less likely are the Mathematical Analysis Division's (MAD) chances of resolving it. If a problem occurs which is not listed below, the researcher should inform his/her COTR or the MAD sampling design staff at once.

Problem 1: A team lists and stratifies accidents correctly, but the PAR for the selected case is missing when the researcher returns to the police jurisdiction after sampling.

 Action: After all attempts to locate the PAR have been exhausted unsuccessfully, call your zone center to have the case dropped. Follow the dropped case procedures in section 6.3 below.

Problem 2: A team does not find any CDS accidents to list.

 Action: No CDS cases will be selected this day. However, the MDE must be entered to close the Listed Cases File, even though it will be empty, and a Mainframe connect must be made to receive the next contact date.

Problem 3: A team cannot list and select on the designated contact date due to extreme weather conditions (in particular, snow hazards) or holiday.

 Action: When circumstances are foreseen, make arrangements with MAD to visit the jurisdiction(s) either the day before or the day after. When circumstances are unforeseen and the jurisdictions can be visited prior to the next contact date, list and select on the first practical day. In either situation list only PARs with accident dates prior to or equal to the missed contact day. If the jurisdiction(s) cannot be visited before the next contact day, notify the MAD sample design staff immediately.

Table 3-4

```
==============================================================================
|                  N  A  S  S  -   C   D   S                                 |
| *        A U T O M A T E D   C A S E   S E L E C T I O N           *       |
| *                  S Y S T E M   R E P O R T                       *       |
| * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *   |
|                                                                            |
| PSU NUMBER:    CONTACT DATE:     /   /       LAST CASE NUMBER:             |
|                                                                            |
| THE SAMPLE SELECTION ALGORITHM EXECUTED SUCCESSFULLY.                       |
|                                                                            |
| THE FOLLOWING PARS WERE SELECTED:                                          |
|                                                                            |
|    Case        Police       PAR      Accident              PAR            |
|    Number Jurisdiction Stratum  Date      Time         Number             |
|    ------+------------+-------+-------------+----------------             |
|                                                                            |
|                                                                            |
|                                                                            |
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==============================================================================
```

Problem 4:	Upon visiting the accident scene it is determined that the selected accident occurred outside of the PSU.
Action:	If the PAR is for a CDS accident which occurred outside of the PSU, the research is to be completed as long as it meets all other requirements for a NASS accident (i.e., Section 2.1 of the NASS CDS Data Collection, Coding, and Editing Manual).
Problem 5:	A team lists and properly selects an accident according to the information on the PAR. However, during the research it is determined that the case does not meet the criteria (i.e., Section 2.1 above) for accidents which qualify for NASS.
Action:	If the incident is not a NASS accident, then follow the dropped case procedure (see Section 6.3).
Problem 6:	A team improperly lists and selects an accident according to the information on the PAR. During the research it is determined that the case does not meet the criteria for selection in the CDS.
Action:	If the accident, which was stratified in Strata A, B, C, D, E, F, G, or H does not, in fact, contain according to the PAR any in-transport towed CDS applicable vehicles, then drop the case and follow the dropped case procedures.

It is extremely important, when problems 1 and 5 arise, that the zone center and Headquarters (COTR and MAD sample design staff) are notified immediately. Dropped cases are to be reported to headquarters at the end of each quarter, along with the reasons why they were dropped.

3.4 Beginning of Year Sampling Instructions

At the beginning of a new calendar year, some accidents that occurred in the previous year will be listed at your police jurisdictions. It is important that the accidents in each calendar year be kept separate for sampling purposes. Special instructions will be issued in December of each calendar year detailing how the separate sampling will be accomplished.

4.0 OVERVIEW OF COLLECTED INFORMATION ON SAMPLED CDS ACCIDENTS

For each case sampled, include in the case report a copy of the police report, Case Summary Form, newspaper photos and articles, correspondence, collision diagram, collision measurement table, slides (including index), the applicable crashworthiness data system data collection forms with field logs, medical injury records, reconstruction algorithm results, and MDE output.

4.1 Sequencing of Case Materials

Case report forms and miscellaneous materials are to be sequenced in conformity with the guidelines depicted in **Figure 4-1**. There are six distinct groupings which may exist with each case, and while the number of groupings may vary with each accident, it is important for the case reviewer (team or zone center) that the composition of the six groups be maintained.

The first group contains the police report, the CDS Case Summary Form, newspaper photographs, articles, and other miscellaneous, non-CDS generated materials. This group will give the zone center reviewer a general appreciation of the accident from non-CDS sources and facilitates review of sampling. The documents in this group should be bound with a paper clip. The group will appear in every case, although it will often be composed only of the police report and the CDS Case Summary Form.

The second group contains the Accident Collision Diagram, Accident Collision Measurement Table, slides, and the slide index; thus, it provides the reviewer with a general overview of the case based upon the CDS research. Differences between the two versions (Non-CDS and CDS) are to be expected periodically, and preliminary review of this and the preceding group will alert the reviewer to those differences and their eventual resolution in the final CDS version. This group should appear in every case, bound together with a paper clip.

Third, the Accident Form with its Accident Log, which is located on the back of the last page of the Accident Form, forms a group which will appear in every case.

The fourth group contains: [1] a General Vehicle (all vehicles) Form, [2] a Vehicle Exterior (CDS applicable vehicles) Form, [3] a Vehicle Interior (towed CDS applicable vehicles) Form, [4] the Occupant Assessment Forms--for only those occupants of an in-transport towed CDS applicable vehicle, [5] the Occupant Injury Forms--for all the "injured" occupants of the in-transport towed CDS applicable vehicle [6] any official injury documents for those injured occupants, and [7] a Interview Form. The first form in this vehicle group is the General Vehicle Form (with log); this form must always be present in this group. For "other vehicles" this form will be the only form present in this group. The Vehicle Exterior Form (with log) appears next, if applicable. This will be followed by the Vehicle Interior Form (with log), if applicable.

After the vehicle forms come the occupant forms, if applicable. The occupant forms are only submitted for occupants of in-transport towed CDS applicable vehicles. The first form is the Occupant Assessment Form (with log). Next comes the Occupant Injury Form (with log) which has any official injury documents stapled to the back of it. All additional occupant forms (with logs) will follow in numerical order [Occupant 02 (V1), Occupant 03 (V1), etc.]. The Occupant Injury Form is not submitted when any one of the following three

FIGURE 4-1

SEQUENCE OF CASE MATERIALS

```
              ┌── Police Report
              │   Case Summary Form                        paper clip
  Group I──────┤   Newspaper photos, articles,
              │__ misc. other photos, etc.

              ┌── Accident Collision Diagram
              │   Accident Collision Measurement
  Group II─────┤      Table                                paper clip
              │   Slides
              │__ Slide Index

  Group III─────┤▔ Accident Form (with log)


              ┌── General Vehicle Form* V1
              │      (with log)
              │   Vehicle Exterior Form** V1
              │      (with log)
              │   Vehicle Interior Form*** V1
              │      (with log)
              │
              │   Occupant Assessment Form+ 01, (V1)
              │      (with log)
              │   Occupant Injury Form++ 01 (V1)
  Group IV──────┤      (with log)                          staple
              │   Official Injury Documents
              │
              │   Occupant Assessment Form+ 02, (V1)
              │      (with log)
              │   Occupant Injury Form++ 02, (V1)
              │      (with log)                            staple
              │   Official Injury Documents
              │
              │   Subsequent Occupants this vehicle
              │
              │__ Interview Form (with log)

  Group IV──────┤▔ Subsequent Vehicles,
              │__ Occupants, and Interviews

  Group V───────┤▔ Reconstruction Program Summary
              │__ Reconstruction Output (hard copy)        paper clip

  Group VI──────┤▔▔ CDS MDE Output (hard copy)
```

**   All in-transport motor vehicles
*** All inspected in-transport CDS applicable vehicles
     All inspected in-transport towed CDS applicable vehicles
+   Submitted only for all occupants of in-transport towed CDS applicable
     vehicles
++   Submitted for all injured occupants of in-transport towed CDS applicable
     vehicles--exception: exclude if "Injured, unknown severity" or "Unknown
     if injured"

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injury conditions occurs. First, the occupant sustained "No injury"; second, the occupant was injured but the severity is unknown (i.e., "Injured, unknown severity"). Third, the information source(s) does not know if the person was injured (i.e., "Unknown if injured"). The second condition means that the source(s) of injury information cannot identify any specific (a) OIC Body Region as having been injured, (b) OIC Lesion suffered, and (c) OIC System/Organ affected. If one or more specific OIC Body Regions, Lesions, or System/Organs can be identified, then an Occupant Injury Form is completed.

The final form in this fourth group, if applicable, is the Interview Form (with log). This form contains the interview(s) obtained with the occupant(s) of all towed CDS applicable vehicles.

At least one group of this type will appear in every CDS case. Additional vehicles, occupants--including their official injury documents, and inter-views should be grouped in a similar manner. Thus, each group may be thought to represent a vehicle and its occupants; and, each such group physically distinguishes one vehicle and its occupant(s) from any other.

The fifth group is composed of the Reconstruction (CRASH, MICROCRASH, or OLDMISS) Program Summary and the Output (hard copy), if the program has been exercised for the collision. Upon reviewing the above forms and having become familiarized with the accident, the reviewer is then prepared to evaluate both the appropriateness of using the program and the viability of the various inputs on the program summary. These two items, the summary and any output (always include the input data), should be bound together with a paper clip.

The sixth group is composed of the Microcomputer Data Entry (MDE) output.

4.2 Information Required on Field Forms (File Structuring Variables)

Case Identification Variables--When using the microcomputer data entry system to enter the field data, certain information is required on each field form (log data are not entered) before it will be accepted. Every field form submitted must have a Primary Sampling Unit Number and a Case Number - Stratum. Team members fill out the Primary Sampling Unit Number and Case Number - Stratum.

Accident Form--For each accident researched, one Accident Form must be filled out. The additional file structuring information needed on this form is the Number of Vehicle Forms Submitted, Date, and Number of Recorded Events in This Accident.

General Vehicle Form--For each accident researched, at least one General Vehicle Form must be submitted. The additional file structuring information to be included on this form consists of the assigned Vehicle Number, Body Type, Police Reported Vehicle Disposition, Number of Occupant Forms Submitted, and Was This Vehicle Inspected By A Researcher.

Vehicle Exterior Form--When Vehicle Exterior Forms are filled out, Vehicle Number is required for file structuring purposes.

Vehicle Interior Form--When Vehicle Interior Forms are filled out, Vehicle Number is required for file structuring purposes.

Occupant Assessment Form--When Occupant Assessment Forms are filled out, Vehicle Number, Occupant Number, and Number of Recorded Injuries For This Occupant are required for file structuring purposes.

Occupant Injury Form--When Occupant Injury Forms are filled out, Vehicle Number and Occupant Number are required for file structuring purposes.

Treatment of Missing Data--The file (i.e., the computerized database file) structure used in the CDS minimizes the handling of missing data. For example, neither the Vehicle Exterior Form nor the Vehicle Interior Form are present for other vehicles. The Vehicle Interior Form is absent for police reported nontowed CDS applicable vehicles. Further, neither form is present for uninspected towed CDS applicable vehicles. In addition, no occupant forms are required for occupants of other vehicles and nontowed CDS applicable vehicles. Finally, Occupant Injury Forms are only submitted when required-- see the discussion above in section 4.1, fourth group. However, when accident-involved vehicles or occupants cannot be fully inspected or interviewed and data items are missing, the appropriate form must be filled out with missing data codes and submitted with the case.

4.3 Update Procedures for Hard Copy Field Forms

Data elements which may be updated in the hard copy case report are restricted to certain variables which appear on either vehicle or occupant forms. Other data will not be updated if it is acquired after the initial submission of the case. Note, most variables may be updated before the case is forwarded to the zone center. An update record has been developed for those variables which are allowable hard copy update candidates. The update record, which has been specially designed to accommodate these variables, is not to be included with the initial submission of the case; instead, it is retained at the PSU and partially filled out upon initial case submission. Subsequently, it is completed when the update information arrives. On the original case form, all data variables which the researcher intends to update should be coded with any available appropriate information or the code designating "Unknown". In addition, the variable number should be circled. This will "signal" that an attempt will be made to update that data variable. In the case of injury updates, the "Update Candidate" circle should be marked in the affirmative. This procedure applies only to those data variables on the vehicle or occupant forms which are designated below as candidates for updating.

The researcher is to complete the required sections prior to initial case submission so that the subsequently acquired information may be associated with the right case and vehicle or occupant number. The newly acquired information should be entered on the front of the Update Form and any supporting documents attached to the back.

Update Record--This form should be used when the researcher expects to receive data after the initial submission. Additional information required on this form prior to initial case submission comes from the General Vehicle Form, the Occupant Assessment Form, and the Occupant Injury Form and allows the researcher to update variables: GV12, OA05, OA06, OA07, OA08, OA17, OA18, OA21, OA22, OA35, OA36, OA37, OA38, OA39-OA41, OA42, OA43, and the injury variables OI05 through OI204, etc.; based on subsequent receipt of official data. These data would be difficult to update without recorded knowledge regarding the initial coding of Alcohol Test Result For Driver (GV12), Occupant's Age (OA05), Occupant's Sex (OA06), Occupant's Height (OA07), Occupant's Weight (OA08), Manual (Active) Belt System Availability (OA17), Manual (Active) Belt

System Use (OA18), Automatic (Passive) Restraint System Availability (OA21), Automatice (Passive) Restraint Function (OA22), Treatment - Mortality (OA35), Type Of Medical Facility (for Initial Treatment) (OA36), Hospital Stay (OA37), Working Days Lost (OA38), Time to Death (OA39), Medically Reported Cause of Death (OA40-OA42), Number of Recorded Injuries For This Occupant (OA43), and the injury data (OI05-OI204, etc.). This initial information may then be combined with the new noninjury and injury data using the NASS injury coding rules to revise the variables on the updated version. Also, a copy of the interior sketch (page 4 of the Vehicle Interior Form) is made prior to the initial submission, so that the researcher will be able to check for specific components contacted by the occupant when coding the injury sources on the update form.

Update Filing and Submission Instructions--The researcher must complete each of the sections on the above form, as required, prior to the initial submission. This allows the new information (update form) to be associated with the corresponding field form in the initial submission, and this allows the originally coded data to be combined with the new data (e.g., using the NASS injury coding rules).

All update records may then be stored in a three-ring binder. Each new addition of an update record may then be indexed by Case Number - Stratum, Vehicle Number, and Occupant Number. They may also be partially cross-indexed alphabetically based on the name of the driver or occupant. This will facilitate the processing of inquiries from zone centers as well as the retrieval of the update record when the official medical data is received.

The name of the individual and any other descriptive information unique to the team, which may identify the individual, should be sanitized from the Update Record and/or the attached medical reports, after the information from the latter has been included on the update record.

Update records should be accumulated, packaged in an individual zone center approved size manila envelope (but not one envelope for each update) which identifies the PSU and is boldly marked: UPDATES, and sent to the zone center on a periodic basis according to the schedule in Section 6.2. If the updates are not obtainable by the due date, the reasons the updates could not be obtained are to be indicated on the update record and sent to the zone center. All updates or reasons the updates were not obtainable must be submitted to the zone center within 96 days of the date the case was sampled.

This ninety-six day time-frame is a guideline established in order to keep the processing of update records proceeding at an orderly pace. Sometimes medical records are not available within 96 days. A team can extend, with zone center permission, the length of time available to obtain a medical update. The exact length of the extension will depend upon the time of year the case was selected. Medicals from cases selected in January can be held open much longer than medicals from cases selected in December. At issue from the zone center perspective is the total number of medical updates outstanding (i.e., effort required of zone center to finish processing the updates) and the likelihood of the medicals being eventually obtained.

The update record, described above, will be attached by the zone center to the corresponding forms included in the initial submission to the zone center.

4.4 Potential Safety Problem Bulletin

All teams will be provided with bulletins (forms)--Figure 4-2, to report any potential vehicle safety problems which they encounter. Submit bulletins to Mr. Vernon Roberts at NHTSA. Each team has been placed on the mailing list for reports of active defect investigations. Teams should become familiar with current investigations and be on the lookout for accidents which are relevant to these investigations; although, other defects or vehicle problems encountered are also of interest and should be reported. Attach a copy of the bulletin submitted to NHTSA to either the Vehicle Exterior Form or Vehicle Interior Form before submitting the case to your zone center. A list of potential safety problems of current interest to NHTSA is contained in Table 4-1. This list is provided for guidance and is not intended to be inclusive.

4.5 CDS Criteria for Acceptable Data Completion

The data completion criteria are used as a standard among all PSUs when determining the minimum acceptable data for completion of a case.

Scene Inspection: The Accident Collision Diagram and slides are required. No excuse is acceptable. If the photo slides did not turn out, a return visit to the scene is required.

Where no evidence of the accident is present, provide a sketch (not scaled) which includes:

1.   Approximate vehicle orientation at impact and final rest;

2.   Applicable road/roadway delineation (e.g., curbs/edge lines, lane markings, median markings, pavement markings, etc.);

3.   Applicable traffic controls (e.g., speed limit); and

4.   North arrow placed on diagram.

Where physical evidence of the accident is present, in addition to points two through four above, the following detail must be incorporated in the scene diagram:

1.   Documented reference point and reference line relative to physical features present at the scene;

2.   Scaled documentation of all accident induced physical scene evidence;

3.   Scaled documentation of all roadside objects contacted;

4.   Roadway Surface Type and Condition for all applicable roadways;

5.   Grade measurements for all applicable roadways; and

6.   Scaled representations of the vehicle(s) at pre-impact, impact, and final rest based upon either:

    (a) physical evidence, or

    (b) reconstructed accident dynamics.

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Figure 4-2

POTENTIAL SAFETY PROBLEM BULLETIN

Reporting Date:_____

SEND TO: Vernon Roberts, NRD-32
           National Highway Traffic Safety Administration
           Nassif Building, Room 6213
           400 Seventh Street, S.W.
           Washington, D.C. 20590

SUBJECT:_____

_____

_____

IDENTIFICATION:

TEAM_____   CASE NO._____   ACCIDENT DATE:_____

ACCIDENT LOCATION_____

INVESTIGATING POLICE AGENCY _____

VEHICLE MODEL YEAR _____   MAKE/MODEL _____

VIN _____   ODOMETER READING _____

ACCIDENT DESCRIPTION (include sanitized police report)

                                              (continue on back)
_____

ITEM DESCRIPTION (include hardware and photograph if possible)

Table 4-1

SPECIFIC AREAS OF INTEREST TO NHTSA RULEMAKING

CRASH AVOIDANCE

1. Accidents involving vehicles driven by handicapped drivers.

2. Accidents involving vehicles equipped with adaptive aids.

3. Accidents in which failure of a multipiece rim (not a tire failure) caused or contributed to the severity of the accident.

4. Accidents involving malfunction of a speed governor or speed control unit.

5. Accidents where the driver reported confusion about the location of display or control elements of the vehicle.

6. Accidents where underinflation of tires caused or contributed to the severity of accident.

7. Accidents involving pedestrian and/or cyclist injured by impact with outside mirrors.

8. Accidents involving injury to motorcycle drivers due to impact with the motorcycle mirrors.

9. Accidents where driver reported that distortion of image in convex mirror confused him (especially late model GM cars).

10. Accidents where commercial vehicle drivers reported that they could not see car, pedestrian, or cycle in a specific blind spot (such as in the right front area of large truck-tractors).

11. Accidents where driver or a passenger car or light truck reported that they could not see because of an obstruction of view by some part of the vehicle (such as inside mirror or roof support pillar).

12. Accidents where the vehicle's defrost/defog system or wiper system could not provide an adequate view of the traffic scene through the windshield.

13. Accidents involving pickup trucks pulling fifth-wheel type trailer.

CRASHWORTHINESS

1. Seat and/or seat back failures in crashes and their contributions to occupant injury.

2. Identify external vehicle components (i.e., hood, grill, windshield wiper, etc.) that penetrate the windshield and the degree of such penetration in crashes involving vans and light trucks.

Table 4-1 (continued)

3. Ejections through the hatchback or station wagon rear doors in rear impacts. Identify whether ejection was through window opening or through door or hatchback opening because of latch failure.

4. Cars involving child restraints that break or involve injury. Identify the restraint by make and model, how and which position used.

CORROSION

1. Structural rust of uni-body undercarriage, vehicle chassis frames, floor boards in areas of seat belt attachment points seat or seat track anchorages.

2. Rust which develops in areas where the owner can observe the rust and therefore be forewarned, but which might have safety implications such as cowl area and wipers, around windshield or backlite.

3. Rust on weight bearing or vehicle guidance components, the failure of which could affect vehicle safety and do not normally wear out in service, such as tie rods, control arms, strut rods.

4. Rust of areas where the owners report exhaust intrusion such as wheel wells, wagon tire wells and rear floor pans.

Vehicle Exterior Inspections: To be credited as "inspected", at a minimum, slides of the damaged vehicle must be submitted along with the completed form. If the vehicle has been repaired prior to the inspection, then photo slides of the repaired vehicle and damaged components (where circumstances permit) along with a completed form are required. Crush dimensions and a CDC must be provided when data permit. If there is no measureable damage, then slides of the vehicle and a completed Vehicle Exterior Form will suffice. Other vehicles are not inspected.

Vehicle Interior Inspections:

****
To be decided.
****

Accident Circumstance Interviews: If the driver was contacted and the accident circumstances section of the Interview Form completed (i.e., the information provided is sufficient enough to support that a partial or complete interview was obtained) and submitted, then it is recorded as an interview. An interview with the driver is desired; however, if an interview cannot be obtained because the driver is fatally injured or incapacitated, the accident circumstances must be provided by another occupant of the same vehicle or an eyewitness (including occupants of uninvolved vehicles).

Occupant Interviews: If the occupant was contacted and the occupant section of the Interview Form completed (i.e., the information provided is sufficient enough to support that a partial or complete interview was obtained) and submitted, then it is recorded as an interview. An interview with either a driver, occupant, relative, or friend is acceptable as a surrogate interview for other occupants. Police officers, occupants of other involved vehicles, and witnesses, who know the occupant under consideration only because of the accident, cannot be considered as surrogates and, therefore, no partial or complete interview credit can be assigned to researchers.

Official Medical Data: A copy of a hospital records department or other clinical institute final discharge medical summary is required. Copies of an emergency room or other abbreviated and advanced medical reports are acceptable with prior zone center approval only if established relations dictate (i.e., hospital will not or does not provide a more comprehensive medical report). Copies of physician reports are acceptable when appropriate (i.e., PAR reports victim as injured but driven to private physician). Substitute procedures, including handwritten or transcribed information, are acceptable only with the prior approval of the zone center with COTR concurrence. Only official copies of autopsy reports are acceptable. Reports from lay coroners and certificates of death are not considered official medical records.

Finally, before alternative methods for acquiring official records (i.e., handwritten copies or telephone transcripts of medical data) are authorized, all avenues for obtaining the hard copy must be exhausted. Therefore, establishment of PSU relations will be closely monitored by each zone center to ensure that teams do not default to alternative methods because they are easier to establish.

5.0 SUBMISSION INSTRUCTIONS

5.1 Quality Control Checks for PSU Teams

Please find below a list of quality control checks to be made by PSU teams.

5.1.1 Quality Control Checks Prior to Microcomputer Data Entry

Each case should be reviewed by a person other than the originating researcher prior to entering the case via MDE. This effort tends to minimize encoding errors resulting from values which are either illegal or legal but incorrect. The noncoded items in the case should also be checked. The primary researcher is to be informed (preferably in writing) of any problems detected during this review and that researcher is to assume the responsibility for their resolution. Some suggested areas where problems may occur are as follows:

- Has the case passed in-house review?

- Are all official records and slides present?

- Check slides and official records to make sure they correspond to the case submitted (slides and police report shouldn't be placed next to each other because the photocopied police report tends to "bleed" on the slide folders).

- Have portions of update record forms been filled out where needed?

- Do the control charts properly reflect how much of the case report has been completed?

- Make sure medical reports are properly sanitized.

- Are all data collection forms present?

- Are the logs properly completed on the forms?

- Make sure case materials are sequenced properly and the case report envelope is stamped and properly identified.

- Check noncoded data for correctness and its interface with coded data.

- Check to make sure that the coded data are properly and legibly entered on the data collection forms.

- Have "+"s or "-"s been circled for GV31 and GV32 on the General Vehicle Form, for EV22 and EV25 on the Exterior Vehicle Form, and for IV89, IV90, and IV91 on the Interior Vehicle Form?

5.1.2 Quality Control Checks Resulting from Microcomputer Data Entry

Inconsistencies, out-of-range values, and other error diagnostics encountered during the MDE are explained in CDS MDE error checks and Tables A-1 through A-9. All errors detected by the computer edits are corrected by the PSU before the case is forwarded to the zone center--unless the zone center is notified and suggests shipment of an incompletely entered case.

5.1.3 Check to Make Sure Administrative Procedures Are Being Followed

o Are control charts and activity logs (when used) updated weekly?

o Are monthly reports and sampling materials sent to the zone center?

o Are manuals up-to-date and properly displayed?

o Are needed supplies in stock (e.g., film, etc.)?

5.1.4 Check Sampling Procedures

o Periodically review sampling procedures in team meetings.

o Document any problems in the monthly report.

5.1.5 Check Data Collection Procedures

o Periodically review procedures. Document when meetings are held and any problems discovered with the data collection procedures or forms. Indicate problems in the monthly report or over the Message System to your zone center. Keep a file of problems encountered and go over them with a zone center representative during the next zone center site visit.

5.1.6 Check to Make Sure Updates Are Being Processed Properly

o Are the medical update records filed by case number?

o Do zone center and PSU records agree (see zone center list of outstanding updates)?

5.1.7 Check Individual Effort and Accuracy in Collecting Evidence and Skill in Interpretation

o Discuss data collection procedures and efficient ways to execute them in team meetings. Discuss how much follow-up effort is needed for obtaining interviews and think about methods other than the phone and personal contact for obtaining more interviews (e.g., letters).

5.2 Case Submission

The final date for the remaining submission of December 1987 cases (exclusive of updates) is February 19, 1988. All remaining updates for 1987 cases are to be submitted by March 4, 1988.

Cases acquired in 1988 shall be submitted to the zone centers on an approximately bi-weekly basis. The materials for each case are to be ordered in the recommended format discussed in Section 4.1; each case is to be packaged in a separate envelope with the appropriate identification and account of contents on the front of the envelope. These procedures will provide uniformity across teams and, in turn, reduce the variation encountered by the zone center upon receipt of the cases. Furthermore, the bi-weekly submission will minimize the peaks and valleys in the zone center case review workload.

Submission Schedule--Cases shall be submitted on an approximately bi-weekly basis beginning 5 February 1986, according to the schedule (Table 5-1). Essentially, there will be at least one month to make the initial submission of any case. All cases are to be submitted within five weeks following the date on which they were sampled. This means that the maximum time available to submit a case will be thirty-five days from the date of sample. Interviews, vehicle inspections, and scenes not completed in the allowed time period will not be updated.

Those variables which are allowed updates, but have not been completed within the time available for the initial case submission, should be documented or the appropriate record and submitted as updates in accordance with the schedule. The update time schedule may be extended with prior approval of the zone center. See section 4.3 (Update Procedures for Hard Copy Field Forms).

Cases which are completed (i.e., no updates needed) prior to elapsing of the available time period should be submitted on the next, earliest case submission.

Case Envelope--PSUs should consult with their zone centers as to the correct envelope size. The case envelope belongs inside the shipping envelope. The information below belongs on the case envelope, not on the covering shipping material. The PSU number, case number, accounting of case materials, and the status of the case at the time of submission, as shown below, are to be entered in the upper right hand corner of the envelope when the envelope is positioned with its flap on the underside and to the right.

```
PSU#_____ CASE#_____
__ CASE COMPLETE __ CASE TO BE UPDATED
FORMS:  Police_____
                        Required          Included
        Accident. . . . . ._____  . . . .  _____
        Collision Diagram ._____  . . . .  _____
        Non-Occupant. . . ._____  . . . .  _____
        Vehicle . . . . . ._____  . . . .  _____
        Driver. . . . . . ._____  . . . .  _____
        Occupants   . . . ._____  . . . .  _____
        Medicals. . . . . ._____  . . . .  _____
        CRASH . . . . . . ._____  . . . .  _____
        Slides (Number) . ._____  . . . .  _____
```

A rubber stamp, ink pad, and ink have been provided. This information will help the zone center effectively sort the case at the inception of the quality control process; the standardized envelopes will facilitate storage and retrieval.

Case update records should be submitted in the same type of envelope. Identify the PSU, and boldly mark the front of the envelope: UPDATES. The updates will be removed from the envelope and collated with the original forms in their respective cases by the zone center.

Shipment of Cases--The envelopes containing the individual cases which are eligible for shipment, according to the schedule shown in Table 5-1, should be packaged in a box or other suitable container and mailed to the zone center. The PSU should provide an acknowledgement of delivery card, return receipt, or similar confirmation to ensure the shipment was received by the zone center.

Table 5-1: CDS 1988 Case Submissions Schedule
(Dates Batches of Material Must Be Submitted By)

CASES SAMPLED ON OR BEFORE	MUST BE SUBMITTED ON OR BEFORE	MUST BE RECEIVED ON OR BEFORE	MUST BE REVIEWED ON OR BEFORE	UPDATES MUST BE RECEIVED ON OR BEFORE
	+ 4 WKS	+ 5 WKS	+ 7 WKS	+ 12 WKS
1 / 8 / 88	2 / 5 / 88	2 /12 / 88	2 /26 / 88	4 / 1 / 88
1 /22 / 88	2 /19 / 88	2 /26 / 88	3 /11 / 88	4 /15 / 88
2 / 5 / 88	3 / 4 / 88	3 /11 / 88	3 /25 / 88	4 /29 / 88
2 /19 / 88	3 /18 / 88	3 /25 / 88	4 / 8 / 88	5 /13 / 88
3 / 4 / 88	4 / 1 / 88	4 / 8 / 88	4 /22 / 88	5 /27 / 88
3 /18 / 88	4 /15 / 88	4 /22 / 88	5 / 6 / 88	6 /10 / 88
4 / 1 / 88	4 /29 / 88	5 / 6 / 88	5 /20 / 88	6 /24 / 88
4 /15 / 88	5 /13 / 88	5 /20 / 88	6 / 3 / 88	7 / 8 / 88
4 /29 / 88	5 /27 / 88	6 / 3 / 88	6 /17 / 88	7 /22 / 88
5 /13 / 88	6 /10 / 88	6 /17 / 88	7 / 1 / 88	8 / 5 / 88
5 /27 / 88	6 /24 / 88	7 / 1 / 88	7 /15 / 88	8 /19 / 88
6 /10 / 88	7 / 8 / 88	7 /15 / 88	7 /29 / 88	9 / 2 / 88
6 /24 / 88	7 /22 / 88	7 /29 / 88	8 /12 / 88	9 /16 / 88
7 / 8 / 88	8 / 5 / 88	8 /12 / 88	8 /26 / 88	9 /30 / 88
7 /22 / 88	8 /19 / 88	8 /26 / 88	9 / 9 / 88	10 /14 / 88
8 / 5 / 88	9 / 2 / 88	9 / 9 / 88	9 /23 / 88	10 /28 / 88
8 /19 / 88	9 /16 / 88	9 /23 / 88	10 / 7 / 88	11 /11 / 88
9 / 2 / 88	9 /30 / 88	10 / 7 / 88	10 /21 / 88	11 /25 / 88
9 /16 / 88	10 /14 / 88	10 /21 / 88	11 / 4 / 88	12 / 9 / 88
9 /30 / 88	10 /28 / 88	11 / 4 / 88	11 /18 / 88	12 /23 / 88
10 /14 / 88	11 /11 / 88	11 /18 / 88	12 / 2 / 88	1 / 6 / 89
10 /28 / 88	11 /25 / 88	12 / 2 / 88	12 /16 / 88	1 /20 / 89
11 /11 / 88	12 / 9 / 88	12 /16 / 88	12 /30 / 88	2 / 3 / 89
11 /25 / 88	12 /23 / 88	12 /30 / 88	1 /13 / 89	2 /17 / 89
12 / 9 / 88	1 / 6 / 89	1 /13 / 89	1 /27 / 89	3 / 3 / 89
12 /23 / 88	1 /20 / 89	1 /27 / 89	2 /10 / 89	3 /17 / 89
1 / 6 / 89	2 / 3 / 89	2 /10 / 89	2 /24 / 89	3 /31 / 89
1 /20 / 89	2 /17 / 89	2 /24 / 89	3 /10 / 89	4 /14 / 89

NOTE: For 1987 cases, refer to Tables 5-1 and 5-2 in the 1987 NASS Data
Collection, Coding and Editing Manual.

Table 5-2:   CDS 1988 File Closeout Schedule

CASES SAMPLED ON OR BEFORE	MUST BE APPROVED ON OR BEFORE	QUARTERLY FILE MUST BE CLOSED OUT ON OR BEFORE	QUARTERLY REPORT DUE ON OR BEFORE	DATE SHIP CASES TO STORAGE CONTRACTOR
	+ 13 WKS	+ 13 WKS	+ 14 WKS	+ 23 WKS
1 / 8 / 88	4 / 8 / 88			
1 /22 / 88	4 /22 / 88			
2 / 5 / 88	5 / 6 / 88			
2 /19 / 88	5 /20 / 88			
3 / 4 / 88	6 / 3 / 88			
3 /18 / 88	6 /17 / 88			
4 / 1 / 88	7 / 1 / 88	7 / 1 / 88	7 / 8 / 88	9 / 9 / 88
4 /15 / 88	7 /15 / 88			
4 /29 / 88	7 /29 / 88			
5 /13 / 88	8 /12 / 88			
5 /27 / 88	8 /26 / 88			
6 /10 / 88	9 / 9 / 88			
6 /24 / 88	9 /23 / 88			
7 / 8 / 88	10 / 7 / 88	10 / 7 / 88	10 /14 / 88	12 /16 / 88
7 /22 / 88	10 /21 / 88			
8 / 5 / 88	11 / 4 / 88			
8 /19 / 88	11 /18 / 88			
9 / 2 / 88	12 / 2 / 88			
9 /16 / 88	12 /16 / 88			
9 /30 / 88	12 /30 / 88			
10 /14 / 88	1 /13 / 89	1 /13 / 89	1 /20 / 89	3 /24 / 89
10 /28 / 88	1 /27 / 89			
11 /11 / 88	2 /10 / 89			
11 /25 / 88	2 /24 / 89			
12 / 9 / 88	3 /10 / 89			
12 /23 / 88	3 /24 / 89			
1 / 6 / 89	4 / 7 / 89			
1 /20 / 89	4 /21 / 89	4 /21 / 89	4 /28 / 89	6 /30 / 89

NOTE: The annual report is due on on before May 12, 1989.

NOTE: For 1987 cases, refer to Tables 5-1 and 5-2 in the 1987 NASS Data Collection, Coding and Editing Manual.

The addresses for the zone centers are as follows:

ZOA, Central	Transportation Research Center	(U.S. mail,
	Attention: NASS Receiving	UPS, Federal
	Indiana University	Express, etc.)
	SPEA Building, Room 430	
	Bloomington, Indiana 47405	

ZOA, Central   Transportation Research Center   (U.S. mail,
Attention: NASS Receiving   UPS, Federal
Indiana University   Express, etc.)
SPEA Building, Room 430
Bloomington, Indiana 47405

ZOB, Northern   Donald Neff
Calspan Corporation
Post Office Box 400   (U.S. mail)
Buffalo, New York 14225

4455 Genesse Street   (UPS, Federal
Cheektowaga, New York 14225   Express, etc.)

ZOC, Southern   NASS Southern Zone Center
Southwest Research Institute
Post Office Drawer 28510   (U.S. mail)
6220 Culebra Road   (UPS, Federal Express)
San Antonio, Texas 78284

ZOD, Western   Dynamic Science, Inc.   (U.S. mail,
8529 East Florence Avenue   UPS, Federal
Downey, California 90240   Express, etc.)

5.3 Case Dropping Procedures

The following procedure for dropping cases should be adhered to for all CDS cases:

1. Call your zone center for approval. Let it be known that a case is being dropped and give the reason why.

2. Send a follow-up message informing the zone center and NHTSA (HDQ) of the case to be dropped. Include in the message the case number and the reason the case is being dropped, the date of approval, and the person who approved the case for dropping.

3. Send the dropped hardcopy case report to the zone center. Each dropped case is to be sent to the zone center in a separate standard envelope.

   A. The outside of the envelope should be labeled as follows:

      - PSU stamp, on the upper right-hand corner, filled out with the PSU number and case number.

      - Written in large letters is: DROPPED (under the PSU stamp).

      - The date of the zone center approval to drop the case.

      - The person(s) who gave zone center approval to drop the case.

   ₃B. Inside the envelope should be:

      - PAR

Accident Form

<u>Zone Centers</u>

The case will be deleted from the zone center's active case file at a later date after the zone center reviews the hardcopy case report and agrees that the case should be dropped.

Below are instructions followed by the zone centers.

1. List the case number and reason why the case was dropped in your monthly, quarterly, and annual reports.

2. The COTR will use the monthly report as a record for advising Accident Investigation Division (AID) of cases to be deleted from the file.

3. Disposition (e.g., shipped to NHTSA for review or destroyed at the zone center) of the dropped case report will be determined by the COTR.

6.0   CODING INSTRUCTIONS

This section provides the general instructions for collecting and coding the data called for in the field forms. Documentation for each data element includes variable name, element values (attributes), definitions where needed, data sources, collection methodology, reference materials (if needed), and remarks.

US Department of Transportation
National Highway Traffic Safety
Administration

CASE SUMMARY

NATIONAL ACCIDENT SAMPLING SYSTEM
CRASHWORTHINESS DATA SYSTEM

PSU _____   CASE NO _____   TYPE OF ACCIDENT _____

A. DESCRIPTION OF THE ACCIDENT SEQUENCE AND ACCIDENT PECULIARITIES

(Provide a summary of the accident sequence as well as any particular event of the accident that is noteworthy Injury mechanism and vehicle crashworthiness is the focus, not driver culpability. **Do not include any personal identifiers.** Use reverse side if needed)

B. VEHICLE PROFILE(S)

Vehicle No	Class of Vehicle	Year/Make/Model	Most Severe Damage		Component Failure
			Damage Plane	Severity Description	

C. PERSON PROFILE(S)

Vehicle No.	Person Role	Seat Position	Restraint Use	Most Severe Injury			
				Body Region	Lesion	AIS	Injury Source

DO NOT SANITIZE THIS FORM

HS Form 434A
1/88

CASE SUMMARY FORM

The Case Summary Form is a noncoded description of the vehicle and persons involved in the accident. Further, the accident sequence and case peculiarities (vehicle or environmental) are noted. Thus, the form is divided into four sections:

    Identification
    A. Description of the Accident Sequence and Accident Peculiarities
    B. Vehicle Profiles
    C. Person Profiles

Through this form, the researcher is able to provide the zone center, a clinical user, or any other person interested in the NASS CDS case a quick reference of accident particulars. The form may be hand written by the researcher or typed, as decided by the PSU. The form must be neat and legible indicating the quality of the submitted case. Note that no coded values (except where indicated below) should be used. The form is a written, non-jargon account of the accident.

The following is a description of what is expected as responses to the various elements. Also following are two examples of a completed Case Summary Form.

IDENTIFICATION:

The header items are used to identify the PSU and case number. In addition, a general description of the accident type is provided. This section contains the following variables.

PSU: Indicate the appropriate PSU number.

Case No.: Indicate the case number and stratum for which the Case Summary Form is being completed.

Type of Accident: Provide a general description of the accident configuration in terms common to the traffic safety community. The pattern to be used is as follows: vehicle / vehicle - configuration. Appropriate vehicle and configuration terms are listed below; however, additional terms can be used if warranted.

Vehicle	Configuration
car	ran-of-road
light truck	rollover on road
light van	rollover off road
straight truck	head-on
step van	obtuse angle
semi-tractor	right angle
tractor-trailer	acute angle
motorcycle	rear-end
bicycle	sideswipe opposing direction
train	sideswipe same direction
pedestrain	object on road
nonmotorist	non-impact
animal	
parked _____	
abandoned _____	
stalled _____	

Some examples of the Type of Accident pattern desired are as follows:

> car - ran-of-road
> car/car - right angle
> car/light truck - head-on
> car/parked car - rear-end
> light van/motorcycle - obtuse angle
> car/train - right angle
> car/tractor-trailer - acute angle
> light truck - object on-road
> light truck - rollover off-road

Researchers should attempt to make the best possible fit of the existing responses. However, additional responses may be more appropriate.

A. DESCRIPTION OF THE ACCIDENT SEQUENCE AND ACCIDENT PECULIARITIES

This part of the summary should provide a bried synopsis of the accident sequence as reconstructed by the researcher. Occupant injury mechanisms and any particulars concerning vehicle crashworthiness should be highlighted. Causal factors, not vehicle/driver culpability, may also be noted. Include any abnormal accident occurrences that may be of interest to quality control or the data user. Two case summaries are provided as examples of what is expected in this description. Make sure personal identifiers are not used.

B. VEHICLE PROFILES

All vehicles involved in the NASS CDS case should be documented in this section. This section contains the following variables.

Vehicle No.: See variable GV03.

Class of Vehicle: See variable AC14. Note that the written attribute (i.e., not the code) should be used.

Year/Make/Model: See variables GV04-GV06. Provide the actual vehicle year, make, and model for each vehicle involved in the NASS CDS accident (e.g., '87/Ford/Mustang). Do not use coded values.

Most Severe Damage: Document the following for the accident impact which caused the most damage to the vehicle.

o Damage Plane - The plane first crossed (i.e., Front, Left, Right, Back, Top, or Undercarriage) in the impact.

o Severity Description - A gross indication of the damage severity. The terms light, moderate, or severe are adequate.

Component Failure: Any vehicular component that failed during the accident sequence should be noted. The components of special interest to the user may be noted by reviewing the field form variables (e.g., steering columns, seat backs, restraints, glazing, etc.).

C. PERSON PROFILES

All persons involved in the NASS CDS case and who were in a towed CDS applicable vehicle, should be noted in this section. This section contains the following variables.

Vehicle No: See variable GV03.

Person Role: Indicate if the person was the <u>driver</u> or a <u>passenger</u> in the vehicle.

Seat Position: See variable OA10. Note that codes should not be used; instead, indicate front left, second middle, etc.

Restraint Use: Indicate the type of restraint "used" by the person (i.e., <u>lap</u>, <u>lap & shoulder</u>, <u>airbag</u>, <u>passive belt</u>, <u>child restraint</u>, <u>combination</u>).

Most Severe Injury: The most severe (i.e., highest AIS) injury to the person should be documented by noting the injury's **Body Region, Lesion, AIS,** and **Injury Source**--see variables OI05-OI11. If more than one injury has the highest AIS, sort by source of data and then choose one. If the person did not sustain an injury, note as "<u>not injured</u>".

ACCIDENT FORM

1 Primary Sampling Unit Number   — —

2 Case Number — Stratum   — — — —

IDENTIFICATION

3 Number of General Vehicle
   Forms Submitted   — —

4 Date of Accident
   (Month, Day, Year)   — — / — — / **8** **8**

5. Time of Accident   — — — —

   Code reported military time of accident.

   NOTE   Midnight = 2400
          Unknown = 9999

SPECIAL STUDIES INDICATORS

Check (✓) each special study (SS12-SS16 below)
that has been completed, code 1 for the checked
special studies and 0 for the special studies not
checked

6. __SS12   Anti-lacerative Windshields   __

7. __SS13   __

8. __SS14   __

9   __SS15   __

10. __SS16   __

NUMBER OF EVENTS

11. Number of Recorded Events
     in This Accident   — —

     Code the number of events which occurred in
     this accident.

ACCIDENT EVENTS

For each event that occurred in the accident, code the lowest numbered vehicle in the left columns and the
other involved vehicle or object on the right.

Accident Event Sequence Number	Vehicle Number	Class of Vehicle	General Area of Damage	Vehicle Number or Object Contacted	Class of Vehicle	General Area of Damage
12. **0 1**	13. __ __	14. __ __	15. __	16. __ __	17. __ __	18. __
19. **0 2**	20. __ __	21. __ __	22. __	23. __ __	24. __ __	25. __
26. **0 3**	27. __ __	28. __ __	29. __	30. __ __	31. __ __	32. __
33. **0 4**	34. __ __	35. __ __	36. __	37. __ __	38. __ __	39. __
40. **0 5**	41. __ __	42. __ __	43. __	44. __ __	45 __ __	46. __
47. **0 6**	48. __ __	49. __ __	50. __	51. __ __	52. __ __	53. __
54. **0 7**	55. __ __	56. __ __	57. __	58. __ __	59. __ __	60. __
61. **0 8**	62. __ __	63. __ __	64. __	65. __ __	66. __ __	67. __
68. **0 9**	69. __ __	70. __ __	71. __	72. __ __	73. __ __	74. __
75. **1 0**	76. __ __	77. __ __	78. __	79. __ __	80. __ __	81. __

IF GREATER THAN TEN EVENTS, CONTINUE CODING ON THE ACCIDENT EVENTS SUPPLEMENT

CODES FOR CLASS OF VEHICLE

(00) Not a motor vehicle
(01) Subcompact/mini (wheelbase < 100 ")
(02) Compact (wheelbase = 100 "—104 ")
(03) Intermediate (wheelbase = 105 "—109 ")
(04) Full size (wheelbase = 110 "—114 ")
(05) Largest (wheelbase ≥ 115 ")
(09) Unknown passenger car size
(11) Short utility vehicle
(12) Truck based utility (≤10.000 lbs GVWR)
(13) Passenger van (≤10,000 lbs GVWR)
(14) Other van (≤10,000 lbs GVWR)
(15) Pickup truck (≤10 000 lbs GVWR)
(18) Other truck (≤10,000 lbs GVWR)
(19) Unknown light truck type
(20) School bus
(21) Other bus
(22) Truck (>10,000 lbs GVWR)
(23) Tractor without trailer
(24) Tractor-trailer
(25) Motored cycle
(28) Other vehicle
(99) Unknown

CODES FOR GENERAL AREA OF DAMAGE (GAD)

CDC APPLICABLE AND OTHER VEHICLES

(0) Not a motor vehicle
(N) Noncollision
(F) Front
(R) Right side
(L) Left side
(B) Back
(T) Top
(U) Undercarriage
(9) Unknown

TDC APPLICABLE VEHICLES

(0) Not a motor vehicle
(N) Noncollision
(F) Front
(R) Right side
(L) Left side
(B) Back of unit with cargo area (rear of trailer or straight truck)
(D) Back (rear of tractor)
(C) Rear of cab
(V) Front of cargo area
(T) Top
(U) Undercarriage
(9) Unknown

CODES FOR VEHICLE NUMBER OR OBJECT CONTACTED

(01-30) — Vehicle number

Noncollision·
(31) Overturn — rollover
(32) Fire or explosion
(33) Jackknife
(34) Other intraunit damage (specify):

_____

(35) Noncollision injury
(38) Other noncollision (specify):

_____

(39) Noncollision — details unknown

Collision with Fixed Object
(41) Tree (≤4 inches in diameter)
(42) Tree (>4 inches in diameter)
(43) Shrubbery or bush
(44) Embankment

(45) Breakaway pole or post (any diameter)

Nonbreakaway Pole or Post
(50) Pole or post (≤4 inches in diameter)
(51) Pole or post (>4 but ≤12 inches in diameter)
(52) Pole or post (>12 inches in diameter)
(53) Pole or post (diameter unknown)

(54) Concrete traffic barrier
(55) Impact attenuator
(56) Other traffic barrier (sp cify):

_____

(57) Fence
(58) Wall
(59) Building
(60) Ditch or culvert
(61) Ground
(62) Fire hydrant
(63) Curb
(64) Bridge
(68) Other fixed object (specify):

_____

(69) Unknown fixed object

Collision with Nonfixed Object
(71) Motor vehicle not in transport
(72) Pedestrian
(73) Cyclist or cycle
(74) Other nonmotorist or conveyance (specify)

_____

(75) Vehicle occupant
(76) Animal
(77) Train
(78) Trailer, disconnected in transport
(88) Other nonfixed object (specify)·

_____

(89) Unknown nonfixed object

(98) Other event (specify):

_____

(99) Unknown event or object

US Department of Transportation

National Highway Traffic Safety
Administration

ACCIDENT COLLISION
MEASUREMENT TABLE

NATIONAL ACCIDENT SAMPLING SYSTEM
CRASHWORTHINESS DATA SYSTEM

Primary Sampling Unit Number ___ ___   Case Number – Stratum   ___ ___ ___ ___

ACCIDENT COLLISION DIAGRAM

LEVEL I
PHYSICAL EVIDENCE ABSENT

To be accomplished when there is no physical evidence present at the scene:

* approximate vehicle orientation at impact and final rest

* applicable road/roadway delineation (e.g., curbs/edge lines, lane markings, median markings, pavement markings, etc.)

* applicable traffic controls (e.g., speed limit)

* north arrow placed on diagram

* sketch required

LEVEL II
PHYSICAL EVIDENCE PRESENT

In addition to the Level I tasks noted above, the following must be

LEVEL II (Cont'd)
accomplished when physical evidence is present:

* document reference point and reference line relative to physical features present at the scene

* scaled documentation of all accident induced physical evidence

* scaled documentation of all roadside objects contacted

* roadway surface type and condition of applicable roadways

* grade measurements for all applicable roadways

* scaled representations of the vehicle(s) at pre-impact, impact, and final rest based upon either:

   a) physical evidence, or

   b) reconstructed accident dynamics

CRASH DATA

	VEH #1	VEH #2	VEH #3
Heading Angle	___	___	___
Surface Type	___	___	___
Surface Condition	___	___	___
Grade Measurement (v/h)	___	___	___

Reference Point: _____   Reference Line: _____

_____   _____

Item	Distance and Direction from Reference Point	Distance and Direction from Reference Line

Item	Distance and Direction from Reference Point	Distance and Direction from Reference Line

US Department of Transportation

National Highway Traffic Safety Administration

ACCIDENT COLLISION DIAGRAM

PSU No. ___ ___

Case Number – Stratum ___ ___ ___ ___

Indicate

North

PRIMARY SAMPLING UNIT (PSU) CODES AND DESCRIPTION

VALUES	STRATA	DESCRIPTION
03, 06, 41, 49, 72, 74, 79, 82	1	Central City, one of the 60 largest SMSAs
01, 05, 07, 08, 09, 10, 12, 42, 45, 46, 47, 50, 71, 73, 75, 77, 80, 81	2	Suburban, one of the 17 - 60th largest SMSAs or PSU within 61st - 119th largest SMSAs either containing or not containing a central city
02, 04, 11, 13, 43, 44, 48, 51, 76, 78	3	Other PSU

Variable Name: Case Number - Stratum

Element Values:

    Range: Case Number--001 through 499
           CDS Sampling Stratum--A, B, C, D, E, F, G, H, Y, Z

Source: Assigned by Automated Case Selection System

Remarks:

The Case Number - Stratum is assigned by the Automated Case Selection System
and is composed of two parts: the first three digits are a number ranging
from 001 to 999; the last digit is the letter identifying from which CDS
sampling stratum the case was selected (A, B, C, D, E, F, G, H, Y, Z).

Except as noted below, no numbers will be skipped. If a case must be dropped,
the number will not be reused.

Case Numbers 001-499 are reserved for cases selected under the Crashworthiness
Data Subsystem.

Case Numbers 501-999 are reserved for those cases identified solely for
special studies.

Refer to section 2.2 of this manual for CDS stratification and case selection
procedures.

Variable Name: Number of General Vehicle Forms Submitted

Element Values:

    Range: 01 through 30

Source: Researcher determined--inputs include police report, scene inspec-
          tion, and interviews.

Remarks:

Each accident must have at least one General Vehicle Form submitted.   The
value recorded must equal the total number of General Vehicle Forms present in
the case.

This variable is a file structuring variable.

A General Vehicle Form must be submitted for each in-transport motor vehicle
involved in the accident.   For example, one CDS applicable vehicle is towing
another by a nonfixed linkage (e.g., rope, chain, etc.).   Assuming both vehi-
cles are involved in the accident, a form is required for both vehicles.   If
the linkage was fixed (see GV03, Vehicle Number, for a definition of "fixed
linkage"), only the power unit would be considered in-transport and only one
form required.

Hit-and-run accidents occasionally cause some confusion on this variable.   A
General Vehicle Form is filled out for each in-transport motor vehicle in-
volved in the accident independent of the amount of information collected on
the vehicles by the police.   Parked vehicles may or may not require a form
depending on whether or not they were in-transport.   A thorough discussion of
the sampling protocol for NASS is found in section 2.0 of the Introduction
(pages 4 through 36).

Variable Name: Date of Accident (Month, Day, Year)

Element Values:

<u>Month</u>
01	January	07	July
02	February	08	August
03	March	09	September
04	April	10	October
05	May	11	November
06	June	12	December

<u>Day</u>
Range: 01 through 31, 99

<u>Year</u>
88 1988 (precoded value)

Source: Police Report.

Remarks:

If the PAR indicates (usually a hit-and-run) that the accident occurred between some p.m. and a.m. time (e.g., 8:00 p.m. and 6:00 a.m.) on either a preceding or following day, code the accident as occurring on the following day. If a range of days is indicated (e.g., between Sunday and Friday), code the last date of the range (e.g., Friday).

If the month and year of accident occurrence is unknown, code the sample month, unknown day ("99") and sample year.

Variable Name: Time of Accident

Element Values:

>   Code reported military time of accident.
>   For example: 1200 - Noon
>   2400 - Midnight
>   9999 Unknown

Source: Police report.

Remarks:

Code to the nearest minute (e.g., 10:19 p.m. - 2219 hours). The time coded is taken from the "accident time" block on the PAR (usually at the top of the first page). If this block is left blank, then "9999" (Unknown) is coded.

If the block is coded "midnight" (i.e., 12:00 a.m., 0000, or 2400) a determination must be made for sampling purposes as to whether the police consider this accident to be the first or last accident on the date indicated on the PAR. Because of variability among police jurisdictions in how they handle midnight, researchers must look at the PAR date, day-of-week, and PAR number (if available) or question police personnel and make a determination regarding whether the particular jurisdiction considers the accident being sampled to be the first or last accident on the date indicated on the PAR. Technically, midnight (i.e., 12:00 a.m.) begins a new day, but not all jurisdictions treat midnight as such. If the jurisdiction considers the accident as the last (or one of the last) on the "date" indicated, code this variable as "2400" (Midnight); however, if the jurisdiction considers the accident as the first (or one of the first) on the "date" indicated, code this variable as "0001". Code "0000" is not allowed! Thus, 12:00 a.m. (0000, 2400) can be coded either "2400" or "0001" depending on how the particular jurisdiction handles midnight.

If the PAR indicates the accident occurred during some time interval of greater than one hour (e.g., 8:00 p.m. to 6:00 a.m., or 8:00 a.m. to 5:00 p.m.), code "9999" (Unknown). However, if the interval was one hour or less, code the midpoint of the interval (e.g., 8:00 p.m. to 9:00 p.m., code "2030").

AC06
AC07
AC08
AC09
AC10

Variable Name: SS12 - Anti-Lacerative Windshields
                 SS13
                 SS14
                 SS15
                 SS16

Element Values:

   0 No
   1 Yes

Source: Special study procedures.

Remarks:

Code "0" (No) means there is no special study form included in the case.

Code "1" (Yes) means there is a special study form included in the case.

Variable Name: Number of Accident Events

Element Values:

    Range: 01-98
    Code the actual number of events which occurred in this accident

Source: Researcher determined based on police report, scene investigation,
       and interviews

Remarks:

This variable is a file structuring variable.

Unknown is not a valid code for this variable. Researchers must determine the
number of events.

ACCIDENT EVENTS OVERVIEW
(AC12 et al. - AC18 et al.)

The accident events variables are designed to provide a coded description of all events which occurred in the accident sequence. Two groups of variables are provided for each chronologically sequenced event. The first (or left) describes the vehicle with the lowest vehicle number, while the second group describes either the other vehicle or the object involved in that event.

With this coded chronological sequence of accident events on the CDS database, it will be possible for analysts to view an entire accident in their studies. Various areas of concern to the highway safety community will be easily assessed using these variables. For instance, the injury severity in accidents can be assessed relative to the number and type of impacts involved.

Likewise, there may be certain collision configurations which create a more hazardous condition for the occupants. A possible area of analysis would be the mix of vehicle sizes or the types of objects the different classes of vehicles strike.

These variables should be completed based upon an accurate and complete reconstruction of the vehicular dynamics involved in the accident. All of the injury or damage producing events or circumstances which cause an unstabilized situation for the vehicle(s) should be coded.

All accidents consist of a series of events, some major, others minor. In terms of these variables the researcher should code all impacts and noncollision events. An impact is defined as any vehicle to vehicle or vehicle to object (fixed or nonfixed, stationary or nonstationary) contact which may or may not result in vehicle damage. Noncollision events such as fire/explosion, occupant fell from vehicle, occupant injury without vehicle impact, etc., are also included in these variables.

An example of a properly coded accident sequence follows for the accident described below.

Vehicle 1 (a compact passenger car) went out of control on a wet roadway and struck a median guardrail with its front. The vehicle was redirected by the guardrail and reentered the roadway, where it struck vehicle 2 (a pickup truck) in the left side with its front. Vehicle 1 spun to a stop in the roadway, and the driver, due to the spinning, hit his head on the door pillar breaking his neck. Vehicle 2, out-of-control, ran off the roadway and struck a pedestrian with its front.

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

GENERAL VEHICLE FORM

NATIONAL ACCIDENT SAMPLING SYSTEM
CRASHWORTHINESS DATA SYSTEM

1 Primary Sampling Unit Number — —

2 Case Number — Stratum — — — —

3 Vehicle Number — —

VEHICLE IDENTIFICATION

4 Vehicle Model Year — —
Code the last two digits of the model year
(99) Unknown

5. Vehicle Make (specify): — —

_____
Applicable codes are found in your
NASS CDS Data Collection, Coding, and
Editing Manual
(99) Unknown

6. Vehicle Model (specify): — — —

_____
Applicable codes are found in your
NASS CDS Data Collection, Coding, and
Editing Manual
(999) Unknown

7. Body Type — —
Note Applicable codes are found on
the back of this page.

8. Vehicle Identification Number

— — — — — — — — — — — — — — — — —

Left justify; Slash zeros and letter Z (∅ and Ƶ)
No VIN — Code all zeros
Unknown — Code all nine's

OFFICIAL RECORDS

9. Police Reported Vehicle Disposition —
(0) Not towed due to vehicle damage
(1) Towed due to vehicle damage
(9) Unknown

10. Police Reported Travel Speed — —

Code to the nearest mph (NOTE 00 means
less than 0.5 mph)
(97) 96.5 mph and above
(99) Unknown

11. Police Reported Alcohol or Drug Presence —
(0) Neither alcohol nor drugs present
(1) Yes (alcohol present)
(2) Yes (drugs present)
(3) Yes (alcohol and drugs present)
(4) Yes (alcohol or drugs present — specifics
unknown)
(7) Not reported
(8) No driver present
(9) Unknown

12. Alcohol Test Result for Driver — —
Code actual value (decimal implied before
first digit — 0.xx)
(95) Test refused
(96) None given
(97) AC test performed, results unknown
(98) No driver present
(99) Unknown

Source _____

ACCIDENT RELATED

13. Speed Limit — —
(00) No statutory limit
Code posted or statutory speed limit
(99) Unknown

14. Attempted Avoidance Maneuver — —
(00) No impact
(01) No avoidance actions
(02) Braking (no lockup)
(03) Braking (lockup)
(04) Braking (lockup unknown)
(05) Releasing brakes
(06) Steering left
(07) Steering right
(08) Braking and steering left
(09) Braking and steering right
(10) Accelerating
(11) Accelerating and steering left
(12) Accelerating and steering right
(98) Other action (specify).

_____
(99) Unknown

15. Accident Type — —
Applicable codes may be found on the back
of page two of this field form
(00) No impact
Code the number of the diagram that
best describes the accident circumstance
(98) Other accident type (specify):

_____
(99) Unknown

**** STOP HERE IF GV07 DOES NOT EQUAL 01-49 ****

CDS APPLICABLE VEHICLES

Automobiles
- (01) Convertible (excludes sun-roof, t-bar)
- (02) 2-door sedan, hardtop, coupe
- (03) 3-door/2-door hatchback
- (04) 4 door sedan, hardtop
- (05) 5-door/4 door hatchback
- (06) Station wagon (excluding van and truck based)
- (08) Other automobile type (specify)

- (09) Unknown automobile type

Automobile Derivatives
- (10) Auto based pickup (includes El Camino, Caballero, Ranchero, and Brat)
- (11) Auto based panel (cargo station wagon, includes auto based ambulance/hearse)
- (12) Large limousine — more than four side doors or stretched chassis

Utility Vehicles
- (13) Short utility — not truck based (includes Jeep CJ-5, Jeep CJ-7, Renegade, Landrover, Pre-78 Bronco, Landcruiser, Thing)
- (14) Truck based utility (2-door, includes Blazer, Bronco — 78 on Bronco II, Jimmy, Ramcharger, Cherokee, Trailduster, Scout)

Van Based Light Trucks (≤ 10,000 lbs GVWR)
- (20) Minivan (Espace, Astro, Caravan, Plymouth Vista, Aerostar, Safari, Voyager [84 and after], Dodge Vista, Mini Ram Van, Toyota Cargo Van, Toyota Van, Vanagon, VW Bus, Kombi)
- (21) Standard van (Sportvan, Chevy Van, Club Wagon, Ford Econoline, Ram Van, Chateau, Ram Wagon, Vandura, Rally, Voyager [83 and before], Beauville, Sportsman)
- (28) Other van type (specify) ──────────
- (29) Unknown van type

Light Conventional Trucks (Pickup Style Cab, ≤ 10,000 lbs GVWR)
- (30) Compact pickup (<4,500 lbs GVWR, S-10, LUV, Ram 50, Rampage, Courier, Ranger, S-5, Pup, Mazda Pickup, Mitsubishi Truck, Nissan Pickup, Arrow Pickup, Scamp, Toyota Pickup, VW Pickup)
- (31) Standard pickup (4,500 to 10,000 lbs. GVWR, C10 - C30, K10 - K30, T10, D100 - D350, W150 - W350, F100 - F350, Comanche, J10 - J30, Dakota)
- (32) Pickup with slide-in camper
- (33) Truck based station wagon (4-door; includes Suburban, Travelall, Wagoneer)
- (34) Light truck based suburban limousine
- (39) Unknown (pickup style) light conventional truck type

Other Light Trucks (≤ 10,000 lbs GVWR)
- (40) Cab chassis based (includes rescue vehicle, light stake, dump and tow truck)
- (41) Truck based panel
- (42) Light truck based motorhome (chassis mounted)
- (47) Other light conventional truck type (not a pickup) (specify)

- (48) Unknown other light truck type (not a pickup)
- (49) Unknown light vehicle type (automobile, van, or light truck)

OTHER VEHICLES

Buses (Excludes Van Based)
- (50) School bus (designed to carry students, not cross country or transit)
- (58) Other bus type (e.g., transit, intercity, bus based motorhome) (specify)

- (59) Unknown bus type

Medium/Heavy Trucks (>10,000 lbs GVWR)
- (60) Step van
- (61) Single unit straight truck (10,000 lbs < GVWR ≤ 26,000 lbs)
- (62) Single unit straight truck (>26,000 lbs GVWR)
- (63) Medium/heavy truck based motorhome
- (64) Truck-tractor with no cargo trailer
- (65) Truck-tractor pulling one trailer
- (66) Truck-tractor pulling two or more trailers
- (67) Truck-tractor (unknown if pulling trailer)
- (68) Unknown medium/heavy truck type
- (69) Unknown truck type (light/medium/heavy)

Motored Cycles (Does Not Include All-Terrain Vehicles/Cycles)
- (70) Motorcycle
- (71) Moped (motorized bicycle)
- (78) Other motored cycle type (minibike, motorscooter) (specify)

- (79) Unknown motored cycle type

Other Vehicles
- (80) ATV (All-Terrain Vehicle) and ATC (All-Terrain Cycle)
- (88) Other vehicle type (specify)

- (99) Unknown body type

OCCUPANT RELATED

16 Driver Presence in Vehicle   ___
   (0) Driver not present
   (1) Driver present
   (9) Unknown

17. Number of Occupants This Vehicle   ___ ___
   (00 96) Code actual number of occupants
             for this vehicle
   (97) 97 or more
   (99) Unknown

18. Number of Occupant Forms Submitted ___ ___

VEHICLE WEIGHT ITEMS

19. Vehicle Curb Weight   ___ ___ ___ **0 0**
   ___Code weight to nearest
       100 pounds.
   (000) Less than 50 pounds
   (135) 13,500 lbs or more
   (999) Unknown

   Source _____

20. Vehicle Cargo Weight   ___ ___ **0 0**
   ___Code weight to nearest
       100 pounds.
   (00) Less than 50 pounds
   (97) 9,650 lbs or more
   (99) Unknown

RECONSTRUCTION DATA

21. Towed Trailing Unit   ___
   (0) No towed unit
   (1) Yes – towed trailing unit
   (9) Unknown

22. Documentation of Trajectory Data
    for This Vehicle   ___
   (0) No
   (1) Yes

23. Post Collision Condition of Tree or Pole
    (for Highest Delta V)   ___
   (0) Not collision (for highest delta V) with
       tree or pole
   (1) Not damaged
   (2) Cracked/sheared
   (3) Tilted <45 degrees
   (4) Tilted ≥45 degrees
   (5) Uprooted tree
   (6) Separated pole from base
   (7) Pole replaced
   (8) Other (specify):

   _____

   (9) Unknown

24. Rollover   ___
   (0) No rollover (no overturning)

   Rollover (primarily about the longitudinal axis)
   (1) Rollover, 1 quarter turn only
   (2) Rollover, 2 quarter turns
   (3) Rollover, 3 quarter turns
   (4) Rollover, 4 or more quarter turns (specify)

   _____

   (5) Rollover – end-over-end (i.e , primarily
       about the lateral axis)
   (9) Rollover (overturn), details unknown

OVERRIDE/UNDERRIDE (THIS VEHICLE)

25. Front Override/Underride (this vehicle)   ___

26. Rear Override/Underride (this vehicle)   ___

   (0) No override/underride, or
       not an end-to-end impact

   Override (see specific CDC)
   (1) 1st CDC
   (2) 2nd CDC
   (3) Other not automated CDC (specify)

   _____

   Underride (see specific CDC)
   (4) 1st CDC
   (5) 2nd CDC
   (6) Other not automated CDC (specify)

   _____

   (7) Medium/heavy truck override
   (9) Unknown

HEADING ANGLE AT IMPACT FOR HIGHEST DELTA V

   Values: (000)-(359) Code actual value
           (997) Noncollision
           (998) Impact with object
           (999) Unknown

27. Heading Angle for This Vehicle   ___ ___ ___

28. Heading Angle for Other Vehicle   ___ ___ ___

Cate gory	Configuration	ACCIDENT TYPES (Includes Intent)				
I Single Driver	A Right Roadside Departure	01 DRIVE OFF ROAD	02 CONTROL/ TRACTION LOSS	03 AVOID COLLISION WITH VEH PED ANIM	04 SPECIFICS OTHER	05 SPECIFICS UNKNOWN
	B Left Roadside Departure	06 DRIVE OFF ROAD	07 CONTROL/ TRACTION LOSS	08 AVOID COLLISION WITH VEH. PED ANIM	09 SPECIFICS OTHER	10 SPECIFICS UNKNOWN
	C Forward Impact	11 PARKED VEH	12 STA OBJECT	13 PEDESTRIAN/ ANIMAL	14 END DEPARTURE	15 SPECIFICS OTHER / 16 SPECIFICS UNKNOWN
II Same Trafficway Same Direction	D Rear-End	20 / 22 21 23 STOPPED 21 22 23	24 / 26 25 27 SLOWER 25 26 27	28 / 30 29 31 DECEL 29 30 31	(EACH • 32) SPECIFICS OTHER	(EACH • 33) SPECIFICS UNKNOWN
	E Forward Impact	34 35 CONTROL/ TRACTION LOSS	36 37 CONTROL/ TRACTION LOSS	38 39 AVOID COLLISION WITH VEH	40 41 AVOID COLLISION WITH OBJECT	(EACH • 42) SPECIFICS OTHER / (EACH • 43) SPECIFICS UNKNOWN
	F Sideswipe Angle	44 45 46 45 47		(EACH • 48) SPECIFICS OTHER	(EACH • 49) SPECIFICS UNKNOWN	
III Same Trafficway Opposite Direction	G Head-On	50 51 LATERAL MOVE	(EACH • 52) SPECIFICS OTHER	(EACH • 53) SPECIFICS UNKNOWN		
	H Forward Impact	54 55 CONTROL/ TRACTION LOSS	56 57 CONTROL/ TRACTION LOSS	58 59 AVOID COLLISION WITH VEH	60 61 AVOID COLLISION WITH OBJECT	(EACH • 62) SPECIFICS OTHER / (EACH • 63) SPECIFICS UNKNOWN
	I Sideswipe/ Angle	64 65 LATERAL MOVE	(EACH • 66) SPECIFICS OTHER	(EACH • 67) SPECIFICS UNKNOWN		
IV Change Trafficway Vehicle Turning	J Turn Across Path	68 69 INITIAL OPPOSITE DIRECTIONS	71 70 72 INITIAL SAME DIRECTIONS	73	(EACH • 74) SPECIFICS OTHER	(EACH • 75) SPECIFICS UNKNOWN
	K Turn Into Path	77 78 79 78 TURN INTO SAME DIRECTION	80 81 83 82 TURN INTO OPPOSITE DIRECTIONS		(EACH • 84) SPECIFICS OTHER	(EACH • 85) SPECIFICS UNKNOWN
V Intersect ing Paths (Vehicle Damage)	L Straight Paths	87 86	88 89	(EACH • 90) SPECIFICS OTHER	(EACH • 91) SPECIFICS UNKNOWN	
VI Miscellaneous	M Backing Etc	92 93 BACKING VEH OTHER VEH. OR OBJECT		98 Other Accident Type 99 Unknown Accident Type 00 No Impact		

Accident Event Sequence Number	Vehicle Number	Class of Vehicle	General Area of Damage	Vehicle Number or Object Contacted	Class of Vehicle	General Area of Damage
12. 0 1	13. 0 1	14. 0 2	15. F	16. 5 6	17. 0 0	18. 0
19. 0 2	20. 0 1	21. 0 2	22. F	23. 0 2	24. 1 5	25. L
26. 0 3	27. 0 2	28. 1 5	29. F	30. 7 2	31. 0 0	32. 0
33. _ _	34. _ _	35. _ _	36. _	37. _ _	38. _ _	39. _

Note, for the driver of vehicle 1, breaking his neck is not a separate codeable event. Rather, this injury, and almost all occupant injuries resulting from occupant interior contact, is a result of a collision event.

Variable Name: Accident Event Sequence Number
                 (1st through 10th or higher)

Element Values:

    Range: 01-98--precoded values: 01 through 10

Source: Researcher Determined

Remarks:

This variable is precoded for events "01" through "10".   If more than 10
events are involved, use the Accident Events Supplement.

The codes are for the chronological sequence of events in the accident.

Variable Name: Vehicle Number
                 (1st through 10th or higher)

Element Values:

    Range: 01 through 30

Source: Police Accident Report

Remarks:

Code assigned number. See variable GV03, Vehicle Number, for definitions of
the attributes and coding conventions.

Variable Name: Class of Vehicle--1st
                 (1st through 10th or higher)

Element Values:

    00 Not a motor vehicle
    01 Subcompact/mini (wheelbase <100 in.)
    02 Compact (wheelbase = 100-104 in.)
    03 Intermediate (wheelbase = 105-109 in.)
    04 Full size (wheelbase = 110-114 in.)
    05 Largest (wheelbase >115 in.)
    09 Unknown passenger car size
    11 Short utility vehicle
    12 Truck based utility (<10,000 lbs GVWR)
    13 Passenger van (<10,000 lbs GVWR)
    14 Other van (<10,000 lbs GVWR)
    15 Pickup truck (<10,000 lbs GVWR)
    18 Other truck (<10,000 lbs GVWR)
    19 Unknown light truck type
    20 School bus
    21 Other bus
    22 Truck (>10,000 lbs GVWR)
    23 Tractor without trailer
    24 Tractor-trailer
    25 Motored cycle
    28 Other vehicle
    99 Unknown

Source: Researcher determined--inputs include police report, vehicle inspec-
          tion, VIN breakdown, and interviews.

Remarks:

The Passenger Car Classification Subcommittee, A3B11(1), of the Transportation
Research Board, Traffic Records and Accident Analysis Committee, A3B11, as-
sesses size based on the vehicle wheelbase. The guidelines for this classifi-
cation can be found in the report entitled Recommended Definitions for Passen-
ger Car Size Classification by Wheelbase and Weight, August 1984 by the previ-
ously mentioned subcommittee. The guidelines for wheelbase alone are used for
codes "01" through "05". All measured values are rounded to the nearest inch
before using this table.

Code "09" (Unknown passenger car size) is used when it is known that a vehicle
          is a passenger car (codes "01" through "05") but the wheelbase is
          unknown.

Code "11" (Short utility vehicle) refers to vehicles defined in code "13"
          (Short utility vehicle) in variable GV07, Body Type.

Code "12" (Truck based utility) refers to vehicles defined in code "14" (Truck
          based utility) in variable GV07, Body Type.

Variable Name: Class of Vehicle--1st (Cont'd.)
                 (1st through 10th or higher)

Code "13"   (Passenger van) includes all vehicle types defined in codes "20",
            "21", "28", and "29" in variable GV07, Body Type, and designed with
            seats installed for passengers in excess of two seat positions.

Code "14"   (Other van) includes all vehicles as described in variable GV07,
            Body Type, codes "20", "21", "28", and "29" and not fitting into the
            definition of code "13" above.

Code "15"   (Pickup truck) is defined in variable GV07, Body Type, codes "30",
            "31", and "32".

Code "18"   (Other truck) is defined in codes "33", "34", "39", "40", "41",
            "42", and "47" through "49" in variable GV07, Body Type.

Code "20"   (School bus) refers to those vehicles described by code "50" (School
            bus) in variable GV07, Body Type.

Code "21"   (Other bus) describes those vehicles included in codes "58" and "59"
            in variable GV07, Body Type.

Code "22"   (Truck) is defined in variable GV07, Body Type, as codes "60"
            through "63", "68", and "69".

Code "23"   (Tractor without trailer) refers to code "64" (Truck-tractor with no
            cargo trailer) in variable GV07, Body Type.

Code "24"   (Tractor-trailer) is defined in codes "65", "66", and "67" in vari-
            able GV07, Body Type.

Code "25"   (Motored cycle) refers to GV07, Body Type, codes "70" through "79".

Code "28"   (Other vehicle) refers to all vehicles described by codes "80"
            through "88" in variable GV07, Body Type.

Code "99"   (Unknown) should be encoded when there is no available information
            regarding the type of vehicle. This lack of informtion prohibits
            the accurate classification of this vehicle using one of the pre-
            ceding codes.

Code "00"   (Not a motor vehicle) is not valid for variable AC14 et al.

Variable Name: General Area of Damage--1st
                  (1st through 10th or higher)

Element Values:

    N   Noncollision
    9   Unknown

CDC Applicable and Other Vehicles	TDC Applicable Vehicles
F Front	F Front
R Right side	R Right side
L Left side	L Left side
B Back	B Back of unit with cargo area
T Top	(rear of trailer or straight
U Undercarriage	truck)
	D Back (rear of tractor)
	C Rear of cab
	V Front of cargo area
	T Top
	U Undercarriage

Source: Researcher determined.

Remarks:

Code "N"   (Noncollision) must be used whenever the corresponding Vehicle Number or Object Contacted (AC16 et al.) is coded "31"-"39".

Code "9"   (Unknown) must be coded when the General Area of Damage--1st (AC15 et al.) on a vehicle is not known from any reliable source. Note, for all vehicles the rules developed in SAE J224MAR80 and SAE J1301, for determining the plane of damage, should be used for completion of this variable.

For vehicles which are CDC applicable (e.g., pickups, light vans, and passenger cars) the guidelines from J224MAR80 must be applied, and the codes provided under the "CDC Applicable and Other Vehicles" category must be used.

For vehicles which are TDC applicable (i.e., medium/heavy trucks) use the guidelines from J1301, and use the codes provided under the "TDC Applicable Vehicles" category.

Since a motor vehicle must be involved in each event, the code "0" is not valid for this variable.

Variable Name: Vehicle Number or Object Contacted
                (1st through 10th or higher)

Element Values:

01-30 Vehicle Number

Noncollision
31 Overturn - rollover
32 Fire or explosion
33 Jackknife
34 Other intraunit damage
    (specify)
35 Noncollision injury
38 Other noncollision (specify)
39 Noncollision - details
    unknown

Collision with Fixed Object
41 Tree (<4 inches in diam-
    eter)
42 Tree (>4 inches in diam-
    eter)
43 Shrubbery or bush
44 Embankment

45 Breakaway pole or post

Nonbreakaway Pole or Post
50 Pole or post (<4 inches in
    diameter)
51 Pole or post (>4 but <12
    inches in diameter)
52 Pole or post (>12 inches in
    diameter)
53 Pole, post - diameter
    unknown

54 Concrete traffic barrier
55 Impact attenuator

56 Other traffic barrier
    (specify)
57 Fence
58 Wall
59 Building
60 Ditch or culvert
61 Ground
62 Fire hydrant
63 Curb
64 Bridge
68 Other fixed object
    (specify)
69 Unknown fixed object

Collision with Nonfixed Object:
71 Motor vehicle not in-trans-
    port
72 Pedestrian
73 Cyclist or cycle
74 Other nonmotorist or
    conveyance
75 Vehicle occupant
76 Animal
77 Train
78 Trailer, disconnected in
    transport
88 Other nonfixed object
89 Unknown nonfixed object

98 Other event (specify)

99 Unknown event or object

Source: Researcher determined.

Remarks:

Refer to variables GV03, Vehicle Number, and VE05, Object Contacted, for defi-
nitions of the attributes and coding conventions.

Variable Name: Class of Vehicle--2nd
                 (1st through 10th or higher)

Element Values:

    00   Not a motor vehicle
    01   Subcompact/mini (wheelbase <100 in.)
    02   Compact (wheelbase = 100-104 in.)
    03   Intermediate (wheelbase = 105-109 in.)
    04   Full size (wheelbase = 110-114 in.)
    05   Largest (wheelbase >115 in.)
    09   Unknown passenger car size
    11   Short utility vehicle
    12   Truck based utility (<10,000 lbs GVWR)
    13   Passenger van (<10,000 lbs GVWR)
    14   Other van (<10,000 lbs GVWR)
    15   Pickup truck (<10,000 lbs GVWR)
    18   Other truck (<10,000 lbs GVWR)
    19   Unknown light truck type
    20   School bus
    21   Other bus
    22   Truck (>10,000 lbs GVWR)
    23   Tractor without trailer
    24   Tractor-trailer
    25   Motored cycle
    28   Other vehicle
    99   Unknown

Source: Researcher determined--inputs include police report, vehicle inspec-
          tion, VIN breakdown, and interviews.

Remarks:

The Passenger Car Classification Subcommittee, A3B11(1), of the Transportation
Research Board, Traffic Records and Accident Analysis Committee, A3B11, as-
sesses size based on the vehicle wheelbase. The guidelines for this classifi-
cation can be found in the report entitled Recommended Definitions for Passen-
ger Car Size Classification by Wheelbase and Weight, August 1984 by the previ-
ously mentioned subcommittee. The guidelines for wheelbase alone are used for
codes "01" through "05". All measured values are rounded to the nearest inch
before using this table.

Code "09" (Unknown passenger car size) is used when it is known that a vehicle
          is a passenger car (codes "01" through "05") but the wheelbase is
          unknown.

Code "11" (Short utility vehicle) refers to vehicles defined in code "13"
          (Short utility vehicle) in variable GV07, Body Type.

Code "12" (Truck based utility) refers to vehicles defined in code "14" (Truck
          based utility) in variable GV07, Body Type.

Variable Name: Class of Vehicle--1st (Cont'd.)
                 (1st through 10th or higher)

Code "13" (Passenger van) includes all vehicle types defined in codes "20",
         "21", "28", and "29" in variable GV07, Body Type, and designed with
         seats installed for passengers in excess of two seat positions.

Code "14" (Other van) includes all vehicles as described in variable GV07,
         Body Type, codes "20", "21", "28", and "29" and not fitting into the
         definition of code "13" above.

Code "15" (Pickup truck) is defined in variable GV07, Body Type, codes "30",
         "31", and "32".

Code "18" (Other truck) is defined in codes "33", "34", "39", "40", "41",
         "42", and "47" through "49" in variable GV07, Body Type.

Code "20" (School bus) refers to those vehicles described by code "50" (School
         bus) in variable GV07, Body Type.

Code "21" (Other bus) describes those vehicles included in codes "58" and "59"
         in variable GV07, Body Type.

Code "22" (Truck) is defined in variable GV07, Body Type, as codes "60"
         through "63", "68", and "69".

Code "23" (Tractor without trailer) refers to code "64" (Truck-tractor with no
         cargo trailer) in variable GV07, Body Type.

Code "24" (Tractor-trailer) is defined in codes "65", "66", and "67" in vari-
         able GV07, Body Type.

Code "25" (Motored cycle) refers to GV07, Body Type, codes "70" through "79".

Code "28" (Other vehicle) refers to all vehicles described by codes "80"
         through "88" in variable GV07, Body Type.

Code "99" (Unknown) should be encoded when there is no available information
         regarding the type of vehicle. This lack of informtion prohibits
         the accurate classification of this vehicle using one of the pre-
         ceding codes.

When AC16 et al., Vehicle Number or Object Contacted, equals "31" through
"98", code AC17 et al., equal to "00" (Not a motor vehicle).

Variable Name: General Area of Damage--2nd
                 (1st through 10th or higher)

Element Values:

   Ø   Not a motor vehicle
   N   Noncollision
   9   Unknown

   CDC Applicable and Other Vehicles   TDC Applicable Vehicles

   F   Front   F   Front
   R   Right side   R   Right side
   L   Left side   L   Left side
   B   Back   B   Back of unit with cargo area
   T   Top   (rear of trailer or straight
   U   Undercarriage   truck)
                                          D   Back (rear of tractor)
                                          C   Rear of cab
                                          V   Front of cargo area
                                          T   Top
                                          U   Undercarriage

   Source: Researcher determined.

   Remarks:

   Code "Ø"   (Not a motor vehicle) for AC18 et al., when AC16 et al., Vehicle
              Number or Object Contacted, equals "41" through "89".

   Code "N"   (Noncollision) must be used whenever the corresponding Vehicle Num-
              ber or Object Contacted (AC16 et al.) is coded "31"-"39".

   Code "9"   (Unknown) must be coded when the General Area of Damage--1st (AC15
              et al.) on a vehicle is not known from any reliable source. Note,
              for all vehicles the rules developed in SAE J224MAR80 and SAE J1301,
              for determining the plane of damage, should be used for completion
              of this variable.

For vehicles which are CDC applicable (e.g., pickups, light vans, and passer-
ger cars) the guidelines from J224MAR80 must be applied, and the codes pro-
vided under the "CDC Applicable and Other Vehicles" category must be used.

For vehicles which are TDC applicable (i.e., medium/heavy trucks) use the
guidelines from J1301, and use the codes provided under the "TDC Applicable
Vehicles" category.

29 Basis for Total Delta V (Highest)   __

Delta V Calculated
(1) CRASH program — damage only routine
(2) CRASH program — damage and trajectory routine
(3) Missing vehicle algorithm

Delta V Not Calculated
(4) At least one vehicle (which may be this vehicle) is beyond the scope of an acceptable reconstruction program, regardless of collision conditions

(5) All vehicles within scope (CDC applicable) of CRASH program but one of the collision conditions is beyond the scope of the CRASH program or other acceptable reconstruction techniques regardless of adequacy of damage data

(6) All vehicle and collision conditions are within scope of one of the acceptable reconstruction programs, but there is insufficient data available

COMPUTER GENERATED DELTA V

	Secondary	Highest
30. Total Delta V		__ __
_____ Nearest mph		_____

(NOTE 00 means less than 0.5 mph)
(97) 96.5 mph and above
(99) Unknown

31. Longitudinal Component of Delta V   +
                                           = __ __ __

_____ Nearest mph   _____

(NOTE: __00 means greater than −0 5 and less than +0.5 mph)
(±97) ±96.5 mph and above
(__99) Unknown

	Secondary	Highest
32. Lateral Component of Delta V	= __ __	__
_____ Nearest mph		_____

(NOTE __00 means greater than −0 5 and less than −0 5 mph)
(±97) ±96 5 mph and above
(__99) Unknown

33. Energy Absorption   __ __ __ , __ 0 0

_____ Nearest 100 foot-lbs   _____

(NOTE 0000 means less than 50 Foot-Lbs)
(9997) 999,650 foot-lbs or more
(9999) Unknown

34. Confidence in Reconstruction Program Results (for Highest Delta V)   __
(0) No reconstruction
(1) Collision fits model — results appear reasonable
(2) Collision fits model — results appear high
(3) Collision fits model — results appear low
(4) Borderline reconstruction — results appear reasonable

35. Type of Vehicle Inspection   __
(0) No Inspection
(1) Complete inspection
(2) Partial inspection (specify):

_____

*** STOP HERE IF THE CDS APPLICABLE ***
VEHICLE WAS NOT INSPECTED

Variable Name: Vehicle Number

Element Values:

Range: 01 through 30

Code the number assigned to this vehicle

Source: Police report.

Remarks:

Numbers assigned to vehicles must be consecutive starting with "01" and no numbers can be missing . Each in-transport motor vehicle must be assigned a unique number. Vehicle numbers are to be assigned consecutively according to the order NASS vehicles are listed on the PAR. If there are any NASS vehicles not listed on the PAR, then use the next consecutive number.

When one motor vehicle is towing another, the vehicle number or numbers assigned depends on the accident circumstances and the type of linkage between the vehicles. A fixed linkage is defined as one which has the property of keeping the towed unit separated from the power unit by a distance which is essentially constant. Included within this definition are cradle linkages where the towed unit has two or more wheels off the ground. A nonfixed linkage (such as a rope or a chain) requires the towed unit to be manually controlled.

If the linkage between the units is fixed, assign a vehicle number to the power (i.e., towing) unit only and consider the towed unit as cargo throughout the entire accident sequence, regardless of subsequent events/impacts sustained by the towed unit. In other words, a vehicle towed by a fixed linkage: (1) is never considered as an in-transport vehicle, (2) will not require vehicle forms, and (3) will be considered as cargo associated with the power unit.

If the linkage between the units is nonfixed, each vehicle is considered to be in-transport, and a vehicle number is assigned only to the vehicle(s) involved in the accident sequence.

Do not assign a vehicle number to any struck motor vehicle not in-transport (e.g., a vehicle parked off the roadway). Vehicle and occupant forms are not required for these vehicles. However, the vehicle is shown on the accident diagram and referred to as P-1, etc. Also, data which may be required to exercise the CRASH program are collected. The necessary data questions are located at the bottom of the second page of the CRASHPC Program Summary.

Variable Name: Vehicle Model Year

Element Values:

Range: 60 through 89

    Code the last two digits of the model year
    99 Unknown

Source: Primary source is the VIN during vehicle inspection; secondary
          sources include the police report and interviews.

Remarks:

Code the last two digits of the model year for which the vehicle was manufac-
tured. A vehicle manufactured as a 1989 model is coded "89".

Code "60" is used for all vehicles manufactured for the 1960 model year or
          before (i.e., 1959, 1958, etc.).

Code "99" (Unknown) if the vehicle model year cannot be determined.

Variable Name: Vehicle Make (specify):

Element Values:

Passenger Vehicles (01-69)

		GV06 Subpage				GV06 Subpage
01	American Motors	1st		30	Volkswagen	(18)
02	Jeep (includes Kaiser-Jeep)	(2)		31	Alfa Romeo	(19)
				32	Audi	(19)
03	AM General	(2)		33	Austin/Austin Healey	(19)
				34	BMW	(20)
06	Chrysler	(3)		35	Nissan/Datsun	(20)
07	Dodge	(3)		36	Fiat	(21)
08	Imperial	(5)		37	Honda	(22)
09	Plymouth	(6)		38	Isuzu	(23)
				39	Jaguar	(23)
12	Ford	(8)		40	Lancia	(24)
13	Lincoln	(10)		41	Mazda	(24)
14	Mercury	(10)		42	Mercedes Benz	(25)
				43	MG	(26)
18	Buick	(11)		44	Peugeot	(26)
19	Cadillac	(12)		45	Porsche	(27)
20	Chevrolet	(13)		46	Renault	(27)
21	Oldsmobile	(15)		47	Saab	(28)
22	Pontiac	(16)		48	Subaru	(28)
23	GMC	(17)		49	Toyota	(29)
24	Saturn	(17)		50	Triumph	(30)
				51	Volvo	(31)
29	Other domestic: GV06 =	(18)		52	Mitsubishi	(32)
	001 - Studebaker/Avanti			53	Suzuki	(33)
	002 - Checker			54	Acura	(33)
	028 - Other domestic			55	Hyundai	(34)
	(i.e., DeSoto,			56	Merkur	(34)
	Hudson, Packard)			57	Yugo	(34)
				69	Other foreign	(35)

Motorcycle (70-79)

		GV06 Subpage				GV06 Subpage
70	BSA	(36)		78	All mopeds other than those above	(36)
71	Ducati	(36)				
72	Harley-Davidson	(36)		79	Other Motorcycle	(36)
73	Kawasaki	(36)				
74	Moto-Guzzi	(36)		Also see:	[34] - BMW	(20)
75	Norton	(36)			[37] - Honda	(22)
76	Yamaha	(36)			[50] - Triumph	(30)
77					[53] - Suzuki	(33)

Trucks and Buses (80-89)

		GV06 Subpage			GV06 Subpage
80	Brockway	(38)	Also see:		
81	Diamond Reo/Reo	(38)			
82	Freightliner/White	(38)	[03]	AM General	(2)
	Freightliner/White		[07]	Dodge	(5)
83	FWD	(38)	[12]	Ford	(9)
84	International	(37)	[20]	Chevrolet	(14)
	Harvester/Navistar		[23]	GMC	(17)
85	Kenworth	(38)	[35]	Nissan/Datsun	(21)
86	Mack	(38)	[38]	Isuzu	(23)
87	Peterbilt	(38)	[41]	Mazda	(24)
88	Iveco/Magirus	(38)	[42]	Mercedes Benz	(25)
89	Other: GV06 ▪	(38)	[51]	Volvo	(31)
	801 - Autocar		[52]	Mitsubishi	(32)
	802 - Auto-Union-DKW				
	803 - Divco				
	804 - Western Star				
	805 - Oshkosh				
	898 - Other truck (e.g., Ward LaFrance, Marmon)				
	901 - Grumman (bus)				
	902 - NeoPlan (bus)				
	950 - Truck based motorhome				
	997 - Other bus				
	998 - Other vehicle (i.e., farm vehicle, go-kart)				

Unknown (99)

99 Unknown

Source: Vehicle inspection, police report, and interview

Remarks:

Write the Vehicle Make in the available space for ready visual reference.

Code "99" (Unknown) is used for a "hit-and-run" vehicle unless reliable evidence indicates the vehicle's make.

Variable Name: Vehicle Model (specify):

Element Values:

MAKE "01"   AMERICAN MOTORS*

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
001	Rambler/American	Rogue, Scrambler, 220, 440	all	3	3
002	Rebel/Matador	Barcelona, Classic Brougham, 550, 660, 770 Matador (-78), Marlin	all	114" WB = 4 118" WB = 5	4 5
003	Ambassador	Brougham, DPL, SST, DL, Limited, 880, 990	all	5	5
004	Pacer	Limited, DL	75-80	2	2
005	AMX	(2 seater only)	68-70	2	2
006	Javelin	SST, AMX (71-74)	all	2	2
007	Hornet/Concord	Sportabout, Limited, DL, SC-360, SST, AMX (75-78)	all	2	2
008	Spirit/Gremlin	Limited, DL, Custom, X, GT (83-on) AMX (79-on)	all	2	2 .
009	Eagle	Concord based	80-on	3	3
010	Eagle SX-4	Spirit/Gremlin based	81-on	2	2
398	Other passenger vehicle		.	.	.
999	Unknown		.	.	.

* Alliance, Encore, Premier--See Renault - Code "46"

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "02"   JEEP (Includes KAISER-JEEP)

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
401	CJ-2/CJ-3/CJ-4	Military	-66	81" WB = 1 101" WB = 2	7** 7**
402	CJ-5/CJ-6/CJ-7	Scrambler, Golden Eagle, Renegade, Laredo, Wrangler	67-on	84" WB = 1 104" WB = 3	7**
403	YJ-series	Wrangler	86-on	1	7**
404	Wagoneer	Custom, Brougham Limited Grand Wagoneer	71-on	2 3	7** 7**
405	Cherokee	Wide Track, Chief, Commando, Jeepster	all	2	7**
410	Pickup	J-10, J-20, Honcho	all	per WB	7**
411	Comanche	Chief	86-on	111" WB = 3 119" WB = 4	7** 7**
498	Other light truck		.	.	.
999	Unknown				.

** Applies to front and rear impacts. Use size value for side impacts.

MAKE "03"   AM GENERAL

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
401	Dispatcher	Post Office (Jeep)	all	1	1
420	Dispatcher	DJ-series-Post Office Van	all	N/A	N/A
498	Other light truck			.	.
884	Medium/Heavy	Military off road		.	
898	Other medium/heavy truck		.	.	.
901	Bus (rear engine)	Transit	all	N/A	N/A
997	Other bus		all	N/A	N/A
999	Unknown		.	.	.

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "06"   CHRYSLER

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
009	Cordoba	Crown, 300, LS	75-83	4	4
010	New Yorker/Newport	Custom, Royal, Brougham, Town and Country, 300 (-71) (excludes all FWD)	-78 79-81 82-84	6 5 4	6 5 4
014	Fifth Avenue/New Yorker/ E Class	FWD vehicles, Turbo	83-84	3	9***
015	Laser	Turbo, XE, XT	84-86	2	9***
016	Lebaron	Medallion, Salon (RWD) FWD except GTS or GTC Sport Coupe	77-81 82-on	4 2	4 9***
017	Lebaron GTS/GTC	GTS-Turbo GTC-Sport Coupe	85-on 87-on	3 2	9*** 9***
031	TC (Maserati Sport)	Turbo Convertible	88-on	1	1
398	Other passenger vehicle		.	.	.
999	Unknown		.	.	.

MAKE "07"   DODGE

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
001	Dart	Custom, Swinger, Sport, GT, Demon, Special, Special Edition, 170, 270, 340, 360	62-70 71-76	111" WB = 4 108" WB = 3	4 3
002	Coronet/Charger (-78)/ Magnum	Brougham, Custom, Superbee, Crestwood, Deluxe, XE, R/T, SE 440, 500, Police	-79	4	4
003	Polara/Monaco Royal Monaco	Custom, Special, Crestwood, Brougham, Police, Taxi	-76 77-78	5 4	5 4
005	Challenger	R/T, T/A, Rallye	70-74	3	3
006	Aspen	Custom, Special Edition, Police, R/T, Sport	76-80	113" WB = 4 109" WB = 3	3 3
007	Diplomat	Medallion, Salon, S	77-on	4	4
008	Omni/Charger (83 on)	024, DeTomaso, Miser, GLH, GLHS Shelby, Charger 2.2, America, Expo	78-on	2	2
009	Mirada		80-83	4	4
010	St. Regis	Police, Taxi	79-81	5	5
011	Aries (K)	Custom, SE, LE	81-on	2	9***

*** Code 9 applies only to frontal impacts. Use size code for stiffness for side or rear impacts.

GV-7

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "07"   DODGE (Continued)

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
012	400	LS	82-83	2	9***
013	Rampage (car based pickup)	2.2, GT, Sport	82-84	2	2
014	600	ES, Turbo	83-on	2	9***
015	Daytona	Turbo Z, Shelby Z, Pacifica	84-on	2	9***
016	Lancer	Pacifica, Turbo, ES, Shelby	85-on	3	9***
017	Shadow	ES, Turbo	87-on	2	9***
018	Dynasty		88-on	•	•
033	Challenger	all imported	78-83	2	2
034	Colt (excludes Vista)	RS, Turbo, Custom, GTS, DL, E, Premier, Deluxe, Carousel, GT	74-76 77-80 80-on	2 <93" WB = 1 >95" WB = 2 1	2 1 2 1
035	Conquest	Turbo	84-on	2	2
398	Other passenger vehicle		•	•	•
443	D50, Colt P/U		all	per WB	8**
444	Vista	4 x 4	84-on	3	7**
445	Raider	Sport	8	1	8**
471	Ramcharger		all	3	8**
472	Caravan	Mini-Ram, 112 and 119 WB, SE	84-on	112" WB = 4 119" WB = 5	7** 7**
473	B, W-series pickup	Ram, Custom, Royal, Miser	all	per WB	8**
474	D-series vans	Sportsman, Royal, Maximagon, Ram	all	7	7**
475	Van derivative	Kary Van	all	7	7**
477	Dakota		87-on	112" WB = 3 124" WB = 6	8**
498	Other light truck		•	•	•

** Applies to front and rear impacts. Use size value for side impacts.
*** Code 9 applies only to frontal impacts. Use size code for stiffness for side or rear impacts.

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "07"   DODGE (Continued)

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
881	Medium/Heavy: CBE		all	N/A	N/A
882	Medium/Heavy: COE low entry		all	N/A	N/A
883	Medium/Heavy: COE high entry		all	N/A	N/A
898	Other medium/heavy truck		all	N/A	N/A
901	Medium bus	(not van based)	all	N/A	N/A
997	Other bus		all	N/A	N/A
999	Unknown		.	.	.

MAKE "08"   IMPERIAL

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
010	Imperial	Lebaron	-76	6	6
		Mark Cross, Frank Sinatra editions	81-83	4	4
398	Other passenger vehicle		.		
999	Unknown				

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "09"   PLYMOUTH

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
001	Valiant/Duster (-76)/ Scamp	100, 200, Brougham, Signet Custom, Special 340/360, 340, 360, Twister	-76	108" WB = 3 111" WB = 4	3 4
002	Satellite/Belvedere	Belvedere I/II, GTX, Roadrunner (-74), Sebring, Sebring Plus, Superbird, Brougham	-74	4	4
003	Fury	I, II, III, Roadrunner (75), Salon, VIP, Sport, Salon, Suburban	-74 75-78	5 4	5 4
004	Gran Fury	Sedan, Brougham, Custom Sport, Suburban	75-81 82-on	5 4	5 4
005	Barracuda	Formula, S, 340, AAR, 'Cuda Gran Coupe	65-73	3	3
006	Volare'	Custom, Premier, Roadrunner (76-on), Police	76-80	109" WB = 3 113" WB = 4	3 4
007	Caravelle	Turbo, SE	85-on	3	9***
008	Horizon	TC-3, Miser, Turismo 2.2, Custom, SE, Duster (85-on) America, Expo	78-on	2	2
011	Reliant (K)	SE, LE	81-on	2	9***
013	Scamp (car based pickup	GT, 2.2	82-84	2	2
017	Sundance	Turbo	87-on	2	9***
031	Cricket		71-72	2	2
032	Arrow	Fire Arrow, GS, GT	76-80	1	1
033	Sapparo	all imported	78-83	2	2
034	Champ/Colt (excludes Vista)	Turbo, Custom - Station Wagon (84-on)	79-on 84-on	1 103" WB = 3	1 2

*** Code 9 applies only to frontal impacts. Use size code for stiffness for side or rear impacts.

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "09"   PLYMOUTH (Continued)

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
035	Conquest	TSI	84·on	2	2
398	Other passenger vehicle		.	.	.
444	Vista	4 x 4	87·on	3	7**
471	Trailduster		all	3	8**
472	Voyager (minivan)	SE	84·on	112" WB = 4 119" WB = 5	7** 7**
474	Van·fullsize	Voyager, Sport, Premier	all	7	7**
477	Arrow pickup (foreign)		all	per WB	8**
498	Other light truck		.	.	.
999	Unknown		.	.	.

** Applies to front and rear impacts. Use size for side impacts.

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "12"   FORD

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
001	Falcon	Sprint, GT, Futura	thru-70	4	3
002	Fairlane	Torino thru 1970	thru-70	4	4
003	Mustang/Mustang II	Mach, Boss, Grande, Cobra Ghia, SVO, GT, LX, Shelby	65-73 74-on	3 2	3 2
004	Thunderbird (all sizes)	Landau, Heritage, Turbo coupe, Elan, Fila, Sport, LX	72-76 58-71, 77-79 55-57, 80-on	5 4 3	6 4 3
005	LTD II	S, Squire, Brougham	77-79	4	4
006	LTD/Custom/Galaxie (all sizes)	XL, Landau, Ranch Wagon, Country Squire, S, 500, Brougham, XL GT	thru-77 78-82 83-on	5 4 3	5 4 3
007	Ranchero	Falcon/Fairlane based Torino/LTD II based	thru-71 72-79	3 4	3 4
008	Maverick	Grabber	70-77	3	3
009	Pinto	Pony, MPG, ESS	71-80	1	1-Front 2-Rear
010	Torino/Gran Torino/Elite	GT, Cobra, Sport, Squire, Brougham	71-76	4	4
011	Granada	ESS, Ghia	75-82	3	3
012	Fairmont	Futura, Sport Coupe	78-83	3	3
013	Escort/EXP	L, GL, GLX, SS, GT	81-on	1	9***
015	Tempo	L, GL, GLX, Sport, 4 x 4	84-on	2	9***
016	Crown Victoria		81-on	4	4
017	Taurus	MT-5, L, GL, LX	86-on	3	3
018	Probe		88-on	2	2
031	English Ford	Cortina		per WB	per WB
032	Fiesta	Sport, Ghia	78-80	1	1
033	Festiva		88-on	1	1
398	Other passenger vehicle	Laser	all	per WB	per WB

*** Code 9 applies only to frontal impacts. Use size code for stiffness for side or rear impacts.

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "12"   FORD (Continued)

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
470	Bronco II/Bronco (·77)	Eddie Bauer, XL, XLT	83·on	1	7**
471	Bronco·fullsize	Eddie Bauer, Custom, XL, XLT	78·on	3	8**
472	Aerostar	XLT, Cargo Van	86·on	7	7**
473	F·series pickup	F·100 · F·350	all	per WB	8**
474	E·series vans	Econoline, Clubwagon, Chateau	all	7	7**
475	Van derivative	i.e.: Parcel Van	all	7	7**
477	Ranger	Supercab, 4 x 4, STX	82·on	108" WB = 3 114" WB = 4	8** 8**
478	Courier	Imported pickup	all	7	7**
498	Other light truck		·	·	·
881	Medium/Heavy CBE	F·5 through F·8 L·series, FT·series	all	N/A	N/A
882	Medium/Heavy COE low entry	C/CT series	all	N/A	N/A
883	Medium/Heavy COE high entry	C/CLT series	all	N/A	N/A
898	Other medium/heavy truck		·	·	·
901	Medium bus	B·series (not van based)	all	N/A	N/A
997	Other bus		all	N/A	N/A
999	Unknown		·	·	·

** Applies to front and rear impacts. Use size value for side impacts.

GV-13

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "13"   LINCOLN

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
001	Continental/Town Car	Continental (-81), Town Car (82-on)	thru-79 80-on	6 4	6 5
002	Mark	I, II, III, IV, V, VI, VII, LSC, all Signature/Designer Series	-70 71-80 80-83 84-on	4 5 4 3	4 5 4 3
005	Continental (82-on)	All Signature/Designer Series	82-87 88-on	4 3	5 3
011	Versailles		77-80	3	3
398	Other passenger vehicle		-	-	-
999	Unknown		-	-	-

MAKE "14"   MERCURY (MERKUR: See "56")

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
002	Cyclone	GT, CJ, Spoiler	thru-71	4	4
003	Capri-domestic	RS, Turbo, GS, Black Magic	79-86	2	2
004	Cougar/XR7	XR-7, RS, LS, GS, Eliminator, Bougham, Villager, (includes all body styles)	67-76 77-79 80-on	4 114" WB = 4 118" WB = 5 3	4 4 5 3
006	Marquis/Monterey	Marauder, X-100, Parklane, S-55, Custom, Brougham, Montclair, Grand Marquis	thru-78 79-82 82-on	121" WB = 5 124" WB = 6 4 106" WB = 3 114" WB = 4	5 6 4 3 4
008	Comet	Caliente, GT, Voyager, 202, Capri (66-67)	62-67 71-77	4 3	4 3
009	Bobcat	Runabout, Villager	75-80	1	1-Front 2-Rear
010	Montego	Comet (68-70), GT, MX, Villager, Brougham	68-73 72-76	3 114" WB = 3 118" WB = 4	3 3 4
011	Monarch	Ghia	75-80	3	3
012	Zephyr	GS, Z-7	78-83	3	3
013	Lynx/LN-7 (82-83)	L, LS, GS, RS, XR-3	81-on	1	9***
015	Topaz	L, LS, GS, 4 x 4	84-on	2	9***

*** Code 9 applies only to frontal impacts. Use size code for stiffness for side or rear impacts.

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "14"   MERCURY (MERKUR: See "56") [Continued]

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
017	Sable	LS, GS	86-on	3	3
031	Capri - foreign	Capri II	70-77	2	2
033	Pantera	deTomaso	72-74	2	2
036	Tracer	L, GL	88-on	1	1
398	Other passenger vehicle		-	-	-
999	Unknown		-	-	-

MAKE "18"   BUICK

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
001	Special/Skylark	GS, GS-350, GS-400, GS-455, GS California, Sport wagon, Custom	thru 72	4	4
002	LeSabre/Centurion/ Wildcat	Estate Wagon, Luxus, Invicta, Custom, Limited T-Type	-76 77-85 86-on	6 4 4	6 4 9***
003	Electra, Electra 225	Limited, Park Avenue	-76 77-84 85-on	6 5 4	6 5 9***
005	Riviera	S-Type, T-Type	63-65 66-76 77-85 86	4 5 4 3	4 5 4 9***
007	Century	Luxus, T-Type, FWD (82-on) Custom, Regal (72-77)	thru 77 78-81 82-on	4 3 3	4 3 9***
008	Apollo/Skylark*	Skylark (75)*, S/R	73-76	4	4
010	Regal	Turbo, Luxus, Grand National, GNX, T-Type	78-88	3	3
012	Skyhawk	S-Type, Roadhawk, T-Type, GT	75-81 82-on	2 2	2 9***
015	Skylark (76-85)	(except 75), S/R, S, Limited, Sport, T-Type	76-79 80-85	4 3	4 9***
018	Somerset/Skylark**	Skylark (86-on)**, Somerset Regal, Custom, Limited, T-Type	85-on	3	9***
020	Regal (FWD)	Limited	88-on	3	9***

*** Code 9 applies only to frontal impacts. Use size code for stiffness for side or rear impacts.

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "18"   BUICK (Continued)

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
021	Reatta		88-on	TBD	TBD
031	Opel Kadett		-75	2	2
032	Opel Manta	1900, Luxus, Rallye, Sports Coupe	-75	2	2
033	Opel GT		-75	2	2
034	Opel Isuzu	Deluxe, Sport	76-79	1	1
398	Other passenger vehicle		-	-	-
999	Unknown		-	-	-

MAKE "19"   CADILLAC

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
003	Deville/Fleetwood (except Limousine)	Coupe de Ville, Sedan de Ville, Fleetwood Brougham, Fleetwood 60 Special, d'Elegance	-76 RWD 77-on FWD 85-on	6 5 4	6 5 9***
004	Limousine	Fleetwood 75, Formal DeVille-based	all	6	6
005	Eldorado	Biarritz, El-doro, Touring Coupe	-78 79-85 86-on	6 4 3	6 4 9***
006	Commercial Series	Ambulance/Hearse	all	6	6
009	Allante'		87-on	2	2
014	Seville	Elegante	76-85 86-on	4 3	4 9***
016	Cimarron	D'oro	82-on	2	9***
398	Other passenger vehicle		-	-	-
999	Unknown		-	-	-

*** Code 9 applies only to frontal impacts. Use size code for stiffness for side or rear impacts.

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "20"   **CHEVROLET**

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
001	Chevelle/Malibu	Classic, Concours, S-3, Laguna, Nomad, 300, Greenbriar, Estate, Deluxe, SS 396/454	64-77 78-83	4 3	4 3
002	Impala/Caprice	Biscayne, Belair, Super Sport, Classic, Classic Brougham, Townsman Brookwood, Kingswood	-76 77-on	5 St. Wgn.=6 4	5 6 4
004	Corvette	Stingray	53-62 63-on	3 2	3 2
006	Corvair	(see attached)	60-69	N/A	N/A
007	El Camino	Royal Knight, SS	59-60 64-77 78-on	5 4 3	8** 8** 8**
008	Nova (-79)	Chevy II, LN, LE, Concours SS-350/396, Rally	62-79	4	4
009	Camaro	SS, RS, LT, Berlinetta, IROC-Z, Z28	67-on	3	3
010	Monte Carlo	LS, SS, Aerocoupe, Landau	70-77 78-on	4 3	4 3
011	Vega	GT, Cosworth	71-77	2	2
012	Monza	Spyder, 2 + 2, Towne Coupe	75-80	2	2
013	Chevette	S, Scooter, CS	76-87	2dr-1 4dr-2	1 2
015	Citation	X-11, Citation II	80-85	3	9***
016	Cavalier	CS, RS, Z24	82-on	2	9***
017	Celebrity	CS, Eurosport, VR	82-on	3	9***
019	Beretta/Corsica	GT	88-on	3	9***
031	Spectrum		85-on	1	1
032	Nova (NUMMI)	CL	85-on	2	9**
033	Sprint		85-on	1	1
398	Other passenger vehicle		-	-	-

** Applies to front and rear impacts. Use size value for side impacts.
*** Code 9 applies only to frontal impacts. Use size code for stiffness for side or rear impacts.

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "20"   CHEVROLET (CONTINUED)

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
470	S-10 Blazer	S-10 p/u based (100.5" WB)	83-on	2	4WD 7
471	Fullsize Blazer	K-series, fullsized p/u based	69-on	3	8**
472	Astro Van	Minivan	86-on	7	7**
473	C-series pickup	C10-C30, Silverado K-series	all	per WB	8**
474	G-series van	Beauville, Chevy Van, Sport Van	all	7	7**
475	Van derivative	Hi-cube, Parcel Van	all	7	7**
476	Suburban	All models	all	6	8**
477	S-10		82-on	per WB	8**
478	LUV	Imported pickup	all	7	7**
498	Other light truck	.	.	.	.
881	Medium/Heavy CBE	C50/60/65; M60/65; H70/80/90; J70/80/90; Bison 90; all other CBE	all	N/A	N/A
882	Medium/Heavy COE low entry	T60/65 - all other COE low entry	all	N/A	N/A
883	Medium/Heavy COE high entry	Titan 90, all other COE high entry	all	N/A	N/A
898	Other medium/heavy truck	.	all	N/A	N/A
901	Bus	S-60 series	all	N/A	N/A
997	Other bus		all	N/A	N/A
999	Unknown	.	.	.	.

** Applies to front and rear impacts. Use size value for side impacts.

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "21"   OLDSMOBILE

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
001	Cutlass (RWD-only)	Supreme, S, LS, Salon Brougham, Vista Cruiser, F85 (thru 72) Rallye 350, Hurst Olds, 442, Calais, Classic (88)	-77 78-88	4 3	4 3
002	Delta 88	Royale, Custom, Delta, Jetstar 88, Delmont 88, Starfire (thru 66), Custom Cruiser	-76 77-85 86-on	6 4 4	6 4 9***
003	Ninety-Eight	Regency, Luxury	-76 77-84 85-on	6 5 4	6 5 4
005	Toronado	XSR, Trofeo, Brougham Custom	66-78 79-85 86-on	5 4 3	5 4 3
006	Commercial Series	Ambulance/Hearse	all	6	6
012	Starfire	SX, GT	75-80	2	2
016	Firenza	S, LS, SX, Cruiser, GT	82	2	9***
017	Ciera	Cutlass Ciera, Brougham, ES	82-on	3	9***
018	Calais	GT, ES, 500	85-on	3	9***
020	Cutlass (FWD)	Supreme	88-on	3	9***
398	Other passenger vehicle		.	.	.
999	Unknown		.	.	.

*** Code 9 applies only to frontal impacts. Use size code for stiffness for side or rear impacts.

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "22"   PONTIAC

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
001	Lemans/Tempest (thru 79)	Safari, T-37, Luxury, Grand Sport, GTO (-73), GT-37, Sprint, Judge Grand AM (73-75) Grand Lemans	thru 77 78-79	4 3	4 3
002	Bonneville/Catalina/ Parisienne*	Brougham, Grand Safari, Safari, Grandville, 2+2 Executive, Starchief SE, SSE * Parisienne	-68 69-76 77-81 82-84 87-on 83-84	5 6 4 3 4 4	5 6 4 3 4 4
005	Fiero	2M4, 2M6, GT, SE	84-on	1	1
008	Ventura	II, SJ, Sprint, GTO (74-on) Custom	71-77	4	4
009	Firebird/Trans AM	Esprit, Formula, GTA, Redbird, Yellowbird, Skybird, SE	67-81 82-on	3 2	3 2
010	Grand Prix (RWD)	J, LJ, SJ, Brougham, 2+2	63-72 73-77 78-87	5 4 3	5 4 3
011	Astre	Safari, SJ, Custom	75-77	2	2
012	Sunbird (thru 80)	Safari, Sport, Formula	76-80	2	2
013	T-1000/1000		81-87	2dr-1 4dr-2	1 2
015	Phoenix	LJ, SJ	77-79 80-84	4 3	4 9***
016	J2000/2000/Sunbird	Sunbird (85-on), LE, SE, GT, Convertible	82-on	2	9***
017	6000	STE, SE, LE	82-on	3	9***
018	Grand AM	SE, LE	80 85-on	3 3	3 9***
020	Grand Prix (FWD)	SE	88-on	3	9***
031	Lemans (88-on)	SE, Tempest (Canadian)	88-on	2	2
398	Other passenger vehicle		.	.	.
999	Unknown		.	.	.

*** Code 9 applies only to frontal impacts. Use size code for stiffness for side or rear impacts.

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "23"   GMC

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
007	Caballero/Sprint	Sierra Madre del Sur,	·77	4	8**
		SP	78·on	3	8**
398	Other passenger vehicle		·	·	·
470	Jimmy	S15 based (100.5" WB)	83·on	2	7**
471	Fullsize Jimmy	fullsize pickup based	all	3	8**
472	Safari (Minivan)		86·on	7	7**
473	C and K-series pickup	C15-35: K15-35	all	per WB	8**
474	G-series van	Rally Van, Vandura	all	7	7**
475	Van derivative	Hicube, parcel van,	all	7	7**
		Value Van, Magna Van, P-series			
476	Suburban	all models	all	6	8**
477	S15		82·on	per WB	8**
498	Other light truck		·	·	·
881	Medium/Heavy CBE	W5000/6000/7000 series,	all	N/A	N/A
		Brigadier/General models			
882	Medium/Heavy COE low entry	W6000/W7000, all other COE, low entry	all	N/A	N/A
883	Medium/Heavy COE high entry	Astro 95, all other COE, high entry	all	N/A	N/A
898	Other medium/heavy truck		all	N/A	N/A
901	Bus	B6000	all	N/A	N/A
997	Other bus		all	N/A	N/A
999	Unknown		·	·	·

** Applies to front and rear impacts. Use size value for side impacts.

MAKE "24"   SATURN

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
	No model data available				
999	Unknown		·	·	·

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "29"   OTHER DOMESTIC MANUFACTURER

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
001	Studebaker/Avanti	Lark, Gran Turismo, Hawk, Cruiser, all associated subseries	thru-66	per WB	= size
002	Checker	Marathon, Superba, Taxi, Aerobus	thru-82	per WB	= size
398	Other auto	Desoto, Excaliber, Stutz, Hudson, Packard	all	per WB	= size

MAKE "30"   VOLKSWAGEN

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	Karmann Ghia		-74	1	1
032	Beetle 1300/1500	flat windshield, 94.5" WB	-77	1	1
033	Super Beetle	distinguished by curved windshield, 95.3" WB	71-80	2	1
034	411/412	Squareback/Fastback	71-74	2	1
035	Squareback/Fastback	Type 3, 1600	-74	1	1
036	Rabbit	L, GTI, Sport, LS, Custom, DL, Deluxe	75-84	1	1
037	Dasher		74-81	2	2
038	Scirocco	16V	75-on	1	1
039	The Thing (181)		73-75	1	1
040	Jetta	GL, GLI	81-on	2	2
041	Quantum	Synco	82-on	2	2
042	Golf	Synco, GTI, Cabriolet, GT, GL	85-on	2	1
043	Rabbit pickup	car/based pickup	80-83	1	1
044	Fox		87-on	1	1
398	Other imported auto		.	.	.
474	Vanagon/Camper	Bus, Kombi, Van	all	1	7
498	Other light truck		.	.	.
999	Unknown		.	.	.

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "31"   **ALFA ROMEO**

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	Spider	All roadsters, Veloce, 1750/2000 roadsters	all	1	1
032	Sports Sedan	All 4 door sedans; Milano (86), Giulia, Super, Berlina, Alfetta, 1750/2000 sedans	all	per WB	= size
033	Sprint Veloce	All 2-door coupes; Alfetta GT, 1750/2000 GTV, Sprint GT	all	per WB	= size
034	GTV-6		81-on	1	1
398	Other passenger vehicle		.	.	.
999	Unknown		.	.	.

MAKE "32"   **AUDI**

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	Super 90		70-72	2	2
032	100	S, LS, GL	70-77	3	3
033	Fox		74-79	2	2
034	4000	Quattro, Coupe GT, CS, S	80-	2	2
035	5000	Quattro, CS, S, Turbo	78-	3	3
398	Other passenger vehicle		.	.	.
999	Unknown		.	.	.

MAKE "33"   **AUSTIN/AUSTIN HEALEY**

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	Marina	GT	all	2	2
032	America		all	1	1
033	Healey Sprite		all	1	1
034	Healy 3000	Healy 100	all	1	1
035	Mini		all	1	1
398	Other passenger vehicle		.	.	.
999	Unknown		.	.	.

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "35"   NISSAN/DATSUN (Continued)

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
041	PL 411, RL 411		-67	1	1
042	Stanza	XE	82-on	2	2
043	Sentra		83-on	1	1
044	Pulsar	NX, EXA (86-on)	83-on	2	2
045	Micra		87-on	1	1
398	Other passenger vehicle		-	-	-
470	Pathfinder	MPV, 4 x 4	86-on	-	-
477	Datsun/Nissan Pickup	PL620, King Cab, Hardbody	73-on	per WB	8**
498	Other light truck	Patrol (1960)	-	-	-
883	Medium/Heavy COE high entry		all	N/A	N/A
898	Other medium/heavy truck		all	N/A	N/A
999	Unknown		-	-	-

** Applies to front and rear impacts. Use size values for side impacts.

MAKE "36"   FIAT

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	124 (Coupe/Sedan)	Sport	67-75	1	1
032	124 Spider/Racer	Spider 2000/1500	68-83	1	1
033	Brava - 131		75-82	2	2
034	850 (Coupe/Spyder)		67-73	1	1
035	128		72-79	2	2
036	X-1/9		75-83	1	1
037	Strada		79-83	2	2
398	Other passenger vehicle	600, 1100	-	-	-
882	Medium/Heavy COE low entry		all	N/A	N/A
883	Medium/Heavy COE high entry		all	N/A	N/A
898	Other medium/heavy truck		all	N/A	N/A
999	Unknown		-	-	-

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "34"   BMW

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	1600, 2002	Tii, 1800, 2000CS	-76	2	2
032	Coupe	2800CS, 3.0CS	69-76	3	3
033	Bavaria Sedan	2500, 2800	69-74	3	3
034	3-series	318i, 320i, 325e, 325es	77-on	2	2
035	5-series	524i, 528i, 530i, 533i, 535i, TD	75-on	3	3
036	6-series	630, 633, 635, csi	77-on	3	3
037	7-series	733i, 735i, L7	78-on	3	3
398	Other passenger vehicle		.	.	.

Motorcycles

701	0-50cc	
702	51-124cc	
703	125-349cc	
704	350-449cc	
705	450-749cc	
706	750cc-over	
999	Unknown	

MAKE "35"   NISSAN/DATSUN

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	F10		77-78	1	1
032	200 SX		78-83	1	1
			84-on	2	2
033	1200/210/B210	Honeybee	71-82	1	1
034	Z-car, ZX	240/260/280Z, 300 ZX, Turbo	70-on	1	1
		2 + 2	75-78	3	3
		2 + 2	79-on	2	2
035	310		79-82	1	1
036	510	PL	68-73	2	2
			78-81	1	1
037	610	PL	73-76	2	2
038	710	PL	74-77	2	2
039	810/Maxima		77-on	3	3
040	Roadster	SPL 311, SRL 311, 1600, 2000, convertible	-70	1	1

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "38"   ISUZU

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	I-Mark	S, RS, Turbo	85-on	1	1
032	Impulse	Turbo, RS	84-on	2	2
398	Other passenger vehicle		·	·	·
470	Trooper II	Deluxe, LS	84-on	2	7
477	P'up (pickup)	4 x 4	all	3	8**
498	Other light truck		·	·	·
881	Medium/Heavy - CBE		all	N/A	N/A
882	Medium/Heavy COE low entry		all	N/A	N/A
883	Medium/Heavy COE high entry		all	N/A	N/A
898	Other medium/heavy truck		all	N/A	N/A
999	Unknown		·	·	·

** Applies to front and rear impacts. Use size value for side impacts.

MAKE "39"   JAGUAR

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	XJ-S Coupe		76-on	3	3
032	XJ6/12 Sedan/Coupe	L, XJ, C, 340/420 Sedan	all	3	3
033	XKE	V12, Roadster, 120 2 + 2	all	2 3	3 3
398	Other passenger vehicle		·	·	·
999	Unknown		·	·	·

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "37"   HONDA (ACURA: See "54")

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	Civic/CRX	1300, 1500, CVCC, DX CRX, S, Si, HF, 4WD Wagon	all	1	1
032	Accord	LX, CVCC, SE·i, LX·i	·81 82·86 87	1 2 3	1 9*** 9***
033	Prelude	Si	80·83 84·on	1 2	1 9***
034	600	Coupe, Sedan	all	1	1
398	Other passenger vehicle	all Honda's not listed above	all	per WB	= size
	Motorcycle				
701	0-50cc				
702	51-124cc				
703	125-349cc				
704	350-449cc				
705	450-749cc				
706	750cc or greater				
	All Terrain Cycles/Vehicles				
731	0-50cc	includes all ATCs/ATVs			
732	51-124cc	designed solely for			
733	125-249cc	off-road use.			
734	350cc or greater				
999	Unknown		.	.	.

*** Code 9 applies only to frontal impacts. Use size code for stiffness for side or rear impacts.

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "42"   **MERCEDES BENZ**

(Check "INCLUDES" comments carefully to determine proper code.)

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	200/220/230/240/250/280/300	Sedan and 5 passenger "C" only, SE, CO, D, SD, TD, CE, E. DOES NOT include 280 SE (75 on), 300 SD - see code 037	all	3	3
032	230/280 SL	2 seater only	all	1	1
033	350/380/450/560 SL	2 seater only	all	2	2
034	350/380/420/450/560 SLC		all	4	4
035	280/300 SEL	TD, TD-T, CDT	all	4	4
036	380/420/450/500/560 SEL and 500/560 SEC		all	4	4
037	380/450 SE	280 S, 280 SE (75 on), 300 SD Sedan	all	4	4
038	600, 6.9 Sedan	Pullman	all	6	6
039	190	D, TD, E, 2.3, 2.5, Turbo	all	3	3
398	Other passenger vehicle		-	-	-
475	Van derivative	Kurbster	82-on	N/A	N/A
498	Other light truck		-	-	-
881	Medium/Heavy - CBE		all	N/A	N/A
882	Medium/Heavy - COE low entry		all	N/A	N/A
883	Medium/Heavy - COE high entry		all	N/A	N/A
898	Other medium/heavy		all	N/A	N/A
901	Medium bus		all	N/A	N/A
901	Other bus		all	N/A	N/A
999	Unknown		-	-	-

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "40"   LANCIA

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	Beta Sedan · HPG		·80	2	2
032	Beta Coupe · Zagato		·82	1	1
033	Scorpion		·78	1	1
398	Other passenger vehicle		·	·	
999	Unknown		·	·	·

MAKE "41"   MAZDA

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	RX2		72·74	2	2
032	RX3		72·78	1	1
033	RX4		74·78	2	2
034	RX7	S, GS, GSL, SE	79·on	2	2
035	323/GLC	DX	77·on	1	1
036	Cosmo		76·78	2	2
037	626	GT, GS, GSL, SE	79·on	2	2
038	808		72·77	1	1
039	Mizer		76	1	1
040	R·100		·72	1	1
041	616/618		·72	2	2
042	1800		·72	2	2
043	929		88·on	·	·
398	Other passenger vehicle		·	·	·
477	Mazda pickup	B·2000, B2200, SE·5, LX,	all	per WB	8**
498	Other light truck		·	·	·
999	Unknown		·	·	·

** Applies to front and rear impacts. Use size value for side impacts.

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "45"   PORSCHE

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	911	L, S, E, T, SC, Carrera, Slopenose	all	1	1
032	912	E, T	-69	1	1
033	914	S, 1.8, 2.0, 914/6	70-76	2	2
034	924	Turbo, S	77-on	1	1
035	928	S	78-on	2	2
036	930	Turbo	79	1	1
037	944	Turbo, S	83-on	1	1
398	Other passenger vehicle	Spyder, Speedster, 356	·	·	·
999	Unknown		·	·	·

MAKE "46"   RENAULT

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	LeCar	5	76-83	2	2
032	Dauphine/10/R-8 Caravelle	all models	thru-'71	1	1
033	12	R12L, R12TL	72-77	2	2
034	15	R15TL	73-76	2	2
035	16	R16	69-72	3	3
036	17	R17, Gordini Coupe, R17TL	73-80	2	2
037	R18i	Sportwagon	81-on	2	2
038	Fuego	TL, TS, GTL, GTS, Turbo	82-85	2	2
039	Alliance/Encore GTA, Convertible	L, DL, Limited, X-37,	83-on	2	2
044	Medallion	DL, LX	88-on	3	3
398	Other passenger vehicle		·	·	·
999	Unknown		·	·	·

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "43"   MG

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	Midget	MKIII, 1500	-79	1	1
032	MGB	GT	-79	1	1
034	MGA		all	1	1
035	TA/TC/TD/TF		all	1	1
036	MGC	GT	-69	1	1
398	Other passenger vehicle	Sport Sedan	.	.	.
999	Unknown		.	.	.

MAKE "44"   PEUGEOT

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	304		71-73	3	3
032	403		-67	3	3
033	404		-70	3 4-SW	3 4-SW
034	504/505	STI, STX, Turbo, S, GL, GLS, Liberte,	70-on	3 4-SW	3 4-SW
035	604	SL, D	77-84	3	3
398	Other passenger vehicle		.	.	.
	Motorcycle				
701	0-50cc				
702	51-124cc				
999	Unknown		.	.	.

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "49"   TOYOTA

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	Corona	Mark II, Custom, 1900, 2000, Deluxe	-82	2	2
032	Corolla	1100, 1200, 1600, SR-5, LE, Deluxe, Custom, FX16	69-85 FWD 86-on	1 2	1 9***
033	Celica	1900, 2000, GT, ST, GTS	72-on	2	2
034	Supra	Celica Supra, Soarer	79-on	3	3
035	Cressida		78-on	3	3
036	Crown	2300, 2600	-71	3	3
037	Carina	2000	72-73	2	2
038	Tercel	Corolla Tercel, 4WD Wagon	80-on	2	2
039	Starlet		81-84	1	1
040	Camry	LE, Deluxe	83-on	3	3
041	MR-2		85-on	1	1
398	Other passenger vehicle	2000 GT Coupe (1960s)	-	-	-
471	Landcruiser		76-on	1	8**
472	Minivan	LE, Cargo	84-on	1	7
473	4-Runner		85-on	3	8**
477	Pickup	SR-5, Extra Cab, Sport, LN44, Chinook, Wonder Wagon	75-on	per WB	8**
498	Other light truck		-	-	-
999	Unknown		-	-	-

** Applies to front and rear impacts. Use size value for side impacts.
*** Code 9 applies only to frontal impacts. Use size code for stiffness for side or rear impact.

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "47"   SAAB

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	99/99E/900	S, Turbo, Cabriolet	all	2	2
032	Sonnett	II, III, V-4	68-74	1	1
033	95/96/97		-73	2	2
034	9000	S, Turbo	85-on	3	3
398	Other passenger vehicle	Monte Carlo 850	.	.	.
999	Unknown		.	.	.

MAKE "48"   SUBARU

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	DL/FE/G/GF/GL/GLF/STD	4 wheel drive, Turbo	72-on	per WB	= size
032	Star		70-71	2	2
033	360		69-70	1	1
035	XT Coupe	4WD Turbo, convertible, DL	86-on	2	2
036	Justy	DL, GL	87-on	1	1
043	Brat	DL, GL	78-on	2	2
398	Other passenger vehicle		.	.	.
999	Unknown		.	.	.

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "51"   VOLVO

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	122	S	-68	3	3
032	142/144/145	S, E, GL, GLS, Deluxe	-74	3	3
033	164	S, E	69-75	3	3
034	242/244/245	DL, GL, GLE, GLT, Deluxe	75-	3	3
035	262/264/265	GL	76-	.	.
036	1800	E, S, ES	-73	2	2
037	P-544		.	.	.
038	760/780	Turbo	83-on	3	3
039	740	GLE, GT, Turbo	85-on	3	3
398	Other passenger vehicle		.	.	.
881	Medium/Heavy CBE		all	N/A	N/A
882	Medium/Heavy COE low entry		all	N/A	N/A
883	Medium/Heavy COE high entry		all	N/A	N/A
898	Other medium/heavy truck		all	N/A	N/A
901	Medium bus		all	N/A	N/A
997	Other bus		all	N/A	N/A
999	Unknown		.	.	.

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "50"   TRIUMPH

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	Spitfire	I, II, III, IV, 1500	-81	1	1
032	GT-6	MK3	67-73	1	1
033	TR4	TR2, TR3, TR4A	-68	1	1
034	TR6		69-76	1	1
035	TR7/8		75-81	1	1
036	Herald	Vitesse	.	.	.
037	Stag		71-73	2	2
398	Other passenger vehicle	2000, 1200 series	.	.	.
	Motorcycles				
701	0-50cc				
702	51-124cc				
703	125-349cc				
704	350-449cc				
705	450-749cc				
706	750cc or greater				
999	Unknown		.	.	.

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "53"   SUZUKI

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	SA310	GLX	86-on	1	1
398	Other passenger vehicle		.	.	.
470	Samurai	Standard, Deluxe	85-on	1	8**
498	Other light truck		.	.	.
	Motorcycles				
701	0-50cc				
702	51-124cc				
703	125-349cc				
704	350-449cc				
705	450-749cc				
706	750cc-over				
	All Terrain Cycles/Vehicles				
731	0-50cc	Includes all ATCs/ATVs			
732	51-124cc	designed solely for			
733	125-349cc	off-road use.			
734	350cc or greater				
999	Unknown		.	.	.

** Applies to front and rear impacts. Use size value for side impacts.

MAKE "54"   ACURA

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	Integra	RS, LS	86-on	2	9***
032	Legend		86-on	3	9***
398	Other passenger vehicle		.	.	.
999	Unknown		.	.	.

*** Code 9 applies only to frontal impacts. Use code for stiffness for side or rear impact.

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "52"   **MITSUBISHI**

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	Starion	2 + 2, LE, Turbo	83-on	2	2
032	Tredia	L, LS, Turbo	83-on	2	2
033	Cordia	L, Turbo	83-on	2	2
034	Galant	ECS	all	3	3
035	Mirage	L, Turbo	86-on	1	1
036	Precis		87-on	1	1
398	Other passenger vehicle		.	.	.
470	Montera	Sport	86-on	1	8**
471	Minivan	LS	86-on	1	TBD
477	Pickup	Mighty Max, SPX, 4 x 4	all	3	8**
498	Other light truck		.	.	.
802	Medium/Heavy COE low entry	FUSO FE	all	N/A	N/A
898	Other medium/heavy truck		.	.	.
999	Unknown		.	.	.

** Applies to front and rear impacts. Use size value for side impacts.

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "69"   **OTHER IMPORTS**

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	Aston Martin	Lagonda, Vantage, Volante, Saloon	all	per WB	= size
032	Bricklin		all	per WB	= size
033	Citreon		all	per WB	= size
034	Delorean		all	per WB	= size
035	Ferrari		all	per WB	= size
036	Hillman		all	per WB	= size
037	Jensen	Healy	all	per WB	= size
038	Lamborghini	Countach 5000S, Jalpa	all	per WB	= size
039	Lotus	Europe, Esprit	all	per WB	= size
040	Maserati	Biturbo	all	per WB	= size
041	Morris	Minor	all	per WB	= size
042	Rolls Royce/Bentley	Cloud/shadow series	all	per WB	= size
043	Rover		all	per WB	= size
044	Simca		all	per WB	= size
045	Sunbeam		all	per WB	= size
046	TVR		all	per WB	= size
047	Daihatsu		all	per WB	= size
048	Desta		all	per WB	= size
049	Reliant		all	per WB	= size
052	Bertone	X/19	all	per WB	= size
053	Lada		all	per WB	= size
054	Proton	Saga	all	per WB	= size
055	Sterling	825S/825SL	all	per WB	= size
398	Other imported auto	Morgan, Singer	all	per WB	= size

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "55"   HYUNDAI

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	Pony		84-on	2	2
032	Excel	GL, GLS	84-on	1	1
398	Other passenger vehicle		.	.	.
999	Unknown		.	.	.

MAKE "56"   MERKUR

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	XR4Ti	Turbo	85-on	3	3
032	Scorpio	Turbo	87-on	3	3
398	Other passenger vehicle		.	.	.
999	Unknown		.	.	.

MAKE "57"   YUGO

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
031	GV	GVX, Cabriolet	86-on	1	1
398	Other passenger vehicle		.	.	.
999	Unknown		.	.	.

Variable Name: Vehicle Model (specify): [cont'd.]

MAKE "84"   INTERNATIONAL HARVESTER

CODE	MODEL	INCLUDES	YEAR	SIZE	STIFFNESS
471	Scout	Scout II, Utility pickup, SS-2, Roadstar, 800 series, Traveler, Terra Traveltop	all	per WB	8**
472	Pickup/Panel	R-100-500, 900A-1500C/D, 1010-1510	all	per WB	8**
475	Multistop Van	Metro RM, 120-160, MS 1210, MS 1510	all	per WB	7**
476	Travelall	1010-1210, 100-200	all	per WB	8**
498	Other light truck		.	.	.
881	Medium Heavy - CBE	Loadstar/Fleetstar, Paystar, CBE Transtar, 4200, S-series Mixer	all	N/A	N/A
882	Medium/Heavy - COE low entry	CO, VCO, DCO, 190-1950, Cargostar, LFM, 5370	all	N/A	N/A
883	Medium/Heavy - COE high entry	DCO, DCOT, UCO, VCOT, 405-series, COE Transtar, Unistar, Conco 707B, 9600	all	N/A	N/A
898	Other medium/heavy truck		all	N/A	N/A
901	Conventional bus	R153-1853 - Loadstar, 1603-1853	all	N/A	N/A
902	Bus-flat front, front engine	173FC, 183FC	all	N/A	N/A
903	Bus-flat front, rear engine	183RE, 193RE-transit	all	N/A	N/A
950	Motorhome		all	N/A	N/A
997	Other bus		all	N/A	N/A
999	Unknown		.	.	.

** Applies to front and rear impacts. Use size value for side impacts.

Variable Name: Vehicle Model (specify): [cont'd.]

Vehicle Classification: Motored Cycle/ATC/ATV

Variable GV05 Vehicle Make	M C	ATC	ATV	Code	Variable GV06 Vehicle Model	Code
	M C	ATC	ATV		Motored Cycles	
BMW	x			34	0-50cc	701
Honda	x	x	x	37	51-124cc	702
Triumph	x			50	125-349cc	703
Suzuki	x	x	x	53	350-449cc	704
BSA	x			70	450-749cc	705
Ducati	x			71	750cc-or greater	706
Harley-Davidson	x			72		
Kawasaki	x	x	x	73	All Terrain Cycles/Vehicles	
Moto-Guzzi	x			74	0-50cc	731
Norton	x			75	51-124cc	732
Yamaha	x	x	x	76	125-349cc	733
Moped other than listed above	x			78	350cc or greater	734
Other motorized cycle	x	x	x	79	Unknown	999
Unknown				99		

Variable Name: Vehicle Model (specify): [cont'd.]

Source: Vehicle inspection, police report, and interview.

Remarks:

For the purposes of the Model codes the following applies.

    001 - 397 - Passenger vehicles
          398 - Other passenger vehicle

    401 - 497 - Light trucks
          498 - Other light truck

    701 - 797 - Motored Cycles/ATCs/ATVs
                (731 - 734 ATCs/ATVs)
          798 - Other motored cycle

    801 - 897 - Medium/heavy trucks
          898 - Other medium/heavy truck

    901 - 996 - Buses
          997 - Other bus
          998 - Other vehicle (i.e., farm vehicle, go-kart, etc.)
          999 - Unknown

The stiffness codes assigned in GV06, Vehicle Model (specify):, are based upon either limited crash test data, wheelbase, or a correlation with vehicles currently listed in the CRASH3 manual. These assignments replace the vehicle assignments in "Table 8-2 Vehicle Stiffness Categories" in the "CRASH3 User's Guide and Technical Manual".

Variable Name: Vehicle Model (specify): [cont'd.]

Vehicle Classification: Medium/Heavy Trucks and Buses

Variable GV05 Vehicle Make	Code	Variable GV06 Vehicle Model	Code
AM General	03	Medium/Heavy - CBE	881
Dodge	07	Medium/Heavy - COE/low entry	882
Ford	12	Medium/Heavy - COE/high entry	883
Chevrolet	20	Medium/Heavy - Other	898
GMC	23		
Nissan/Datsun	35	Bus - conventional front	901
Mazda	41	engine	
Mercedes Benz	42	Bus - front engine/flat front	902
Volvo	51	Bus - rear engine/flat front	903
Brockway	80		
Diamond Reo/Reo	81	Truck based motorhome	950
Freightliner/White	82		
FWD	83	Unknown	999
International Harvester/ Navistar	84		
Kenworth	85		
Mack	86		
Peterbilt	87		
Iveco/Magirus	88		
Other: (if code "89" is used for GV05, then GV06 must be 801-805, 898, 901, 902, 950, 997, or 998, ir- respective of Body Type)	89	Autocar	801
		Auto-Union-DKW	802
		Divco	803
		Western Star	804
		Oshkosh	805
		Other truck: e.g., Marmon, Ward LaFrance, specify	898
		Grumman (bus)	901
		Neoplan (bus)	902
		Truck based motorhome	950
		Other bus	997
		Other vehicle	998

Variable Name: Body Type (cont'd.)

Other Light Trucks ($\leq$ 10,000 lbs. GVWR)
40 Cab chassis based (includes rescue vehicle, light stake, dump,
    and tow truck)
41 Truck based panel
42 Light truck based motorhome (chassis mounted)
47 Other light conventional truck type (not a pickup) (specify):
48 Unknown other light truck type (not a pickup)
49 Unknown light vehicle type (automobile, van, or light truck)

OTHER VEHICLES

Buses (Excludes Van Based)
50 School bus (designed to carry students, not cross country or
    transit)
58 Other bus type (e.g., transit, intercity, bus based motorhome)
    (specify):
59 Unknown bus type

Medium/Heavy Trucks (> 10,000 lbs. GVWR)
60 Step van
61 Single unit straight truck (10,000 lbs. < GVWR $\leq$ 26,000 lbs.)
62 Single unit straight truck (> 26,000 lbs. GVWR)
63 Medium/heavy truck based motorhome
64 Truck-tractor with no cargo trailer
65 Truck-tractor pulling one trailer
66 Truck-tractor pulling two or more trailers
67 Truck-tractor (unknown if pulling trailer)
68 Unknown medium/heavy truck type
69 Unknown truck type (light/medium/heavy)

Motored Cycles (Does Not Include All-Terrain Vehicles/Cycles)
70 Motorcycle
71 Moped (motorized bicycle)
78 Other motored cycle (minibike, motorscooter) (specify):
79 Unknown motored cycle type

Other Vehicles
80 ATV (All-Terrain Vehicle) and ATC (All-Terrain Cycle)
88 Other type vehicle (specify):

99 Unknown body type

Source: Vehicle inspection, police report, and interview.

Remarks:

Variable Name: Body Type

Element Values:

CDS APPLICABLE VEHICLES

Automobiles
01 Convertible (excludes sun-roof, t-bar)
02 2-door sedan, hardtop, coupe
03 3-door/2-door hatchback
04 4-door sedan, hardtop
05 5-door/4-door hatchback
06 Station wagon (excluding van and truck based)
08 Other automobile type (specify):
09 Unknown automobile type

Automobile Derivatives
10 Auto based pickup (includes El Camino, Caballero, Ranchero and Brat)
11 Auto based panel (cargo station wagon, includes auto based ambulance/hearse)
12 Large limousine - more than four side doors or stretched chassis

Utility Vehicles
13 Short utility - not truck based (includes Jeep CJ-5, Jeep CJ-7, Renegade, Landrover, Pre-78 Bronco, Landcruiser, Thing)
14 Truck based utility (2-door; includes Blazer, Bronco - 78 on, Bronco II, Jimmy, Ramcharger, Cherokee, Trailduster, Scout)

Van Based Light Trucks ($\leq$ 10,000 lbs. GVWR)
20 Minivan (Espace, Astro, Caravan, Plymouth Vista, Aerostar, Safari, Voyager [84 and after], Dodge Vista, Mini Ram Van, Toyota Cargo Van, Toyota Van, Vanagon, VW Bus, Kombi)
21 Standard Van (Sportvan, Chevy Van, Club Wagon, Ford Econoline, Ram Van, Chateau, Ram Wagon, Vandura, Rally, Voyager [83 and before], Beauville, Sportsman)
28 Other van type (specify):
29 Unknown van type

Light Conventional Trucks (Pickup style cab, $\leq$ 10,000 lbs. GVWR)
30 Compact pickup (< 4,500 lbs. GVWR, S-10, LUV, Ram 50, Rampage, Courier, Ranger, S-15, Pup, Mazda Pickup, Mitsubishi Truck, Nissan Pickup, Arrow Pickup, Scamp, Toyota Pickup, VW Pickup)
31 Standard pickup (4,500 to 10,000 lbs. GVWR, C10-C30, K10-K30, T-10, D100-D350, W100-W350, F100-F350, Comanche, J10-J30, Dakota)
32 Pickup with slide-in camper
33 Truck based station wagon (4-door; includes Suburban, Travelall, Wagoneer)
34 Light truck based suburban limousine
39 Unknown (pickup style) light conventional truck type

Variable Name: Body Type (cont'd.)

Automobile Derivatives

Codes "10"-"12" are used to describe certain passenger cars that have been modified to perform cargo-related tasks.

Code "10" [Auto based pickup (includes ... see above ...)] refers to a passenger car based, pickup type vehicle. The roof area (and side glass) rearward of the front seats on a station wagon have been removed and converted into a pickup-type cargo box.

Code "11" [Auto based panel (cargo station wagon, includes auto based ambulance/hearse)] refers an automotive station wagon with sheet metal rearward of the B-pillar rather than glass.

Code "12" (Large limousine - more than four side doors or stretched chassis) refers to an automobile that has sections added within its wheelbase to increase length and passenger/cargo carrying capacity.

Utility Vehicles

Codes "13" and "14" are used to describe multi-purpose vehicles (MPV) that are designed to have off-road capabilities. These vehicles are: generally four wheel drive (4 x 4), have increased ground clearance, and are equipped with a strong frame. Four wheel drive automobiles are not considered MPVs.

Code "13" [Short utility - not truck based (includes ... see above ...)] refers to a "jeep" type multi-purpose vehicle designed to operate in rugged terrain by virtue of large ramp angles, short wheelbase, and narrow body styles.

Code "14" [Truck based utility (... see above ...)] refers to a multi-purpose vehicle designed around a shortened pickup truck chassis. While generally a station wagon style body, some models are equipped with a removable fiberglass hardtop.

Van Based Light Trucks (≤ 10,000 lbs. GVWR)

Codes "20"-"29" are used to describe light trucks (≤ 10,000 lbs. GVW) that are designed to maximize cargo/passenger area versus overall length. Basically a "box on wheels" these vehicles are identifiable by their enclosed cargo/passenger area and relatively short (or non-existant) hood.

Code "20" [Minivan (... see above ...)] is used to describe all front wheel drive cargo or passenger van-type vehicles and rear wheel drive vans with an overall length of less than 178 inches.

Variable Name: Body Type (cont'd.)

Automobiles

Codes "01"-"09" are used to describe different types of passenger cars. These light vehicles referred to as automobiles, are designed primarily to transport passengers.

Code "01" [Convertible (excludes sun-roof, t-bar)] refers to a passenger car equipped with a removable or retractable roof. To qualify for this code, the entire roof must open. Convertible roofs are generally fabric; however, removable hardtops are also included. This code takes priority over 2-door (codes "02" and "03") or 4-door (codes "04" and "05") codes.

Code "02" (2-door sedan, hardtop, coupe) refers to a passenger car equipped with two doors for ingress/egress and a separate trunk area for cargo (i.e., trunk lid hinged below the backlight). Folding rear seats do not necessarily violate the separate "trunk area" concept.

Code "03" (3-door/2-door hatchback) refers to a passenger car equipped with two doors for ingress/egress and a rear hatch opening for cargo (i.e., hinged above the backlight). The cargo area is not permanently partitioned from the passenger compartment area.

Code "04" (4-door sedan, hardtop) refers to a passenger car equipped with four doors for ingress/egress and a separate trunk area for cargo (i.e., trunk lid hinged below the backlight). Folding rear seats do not necessarily violate the separate "trunk area" concept.

Code "05" (5-door/4-door hatchback) refers to a passenger car equipped with four doors for ingress/egress and a rear hatch opening for cargo (i.e., hinged above the backlight). The cargo area is not permanently partitioned from the passenger compartment area.

Code "06" [Station wagon (excluding van and truck based)] refers to a passenger car with an enlarged cargo area. The entire roof covering the cargo area is generally equal in height from front to rear and full height side glass is installed between the C and D-pillars. The rearmost area is not permanently partitioned from the forward passenger compartment area (e.g., "horizontal window shades" to hide cargo do not constitute partitions).

Code "08" (Other automobile type) refers to any passenger car that cannot be described by elements "01" through "06" or "10" through "12".

Code "09" (Unknown automobile type) is used when it is known that the vehicle is a passenger car, but there is insufficient data to determine the type.

Variable Name: Body Type (cont'd.)

Other Light Trucks ($\leq$ 10,000 lbs. GVWR)

Codes "40"-"49" are used to describe vehicles that are based upon a conventional light pickup frame, but a commercial or recreational body has been affixed to the frame rather than a pickup box.

Code "40" [Cab chassis based (includes rescue vehicle, light stake, dump, and tow truck)] is used to describe a light vehicle with a pickup style cab and a commercial (nonpickup) body attached to the frame. Included are pickup based ambulances and tow trucks.

Code "41" (Truck based panel) is used to describe a truck based station wagon that has sheet metal rather than glass above the beltline rearward of the B-pillars.

Code "42" [Light truck based motorhome (chassis mounted)] is used to describe a frame mounted recreational unit attached to a light van or conventional chassis.

Code "47" [Other light conventional truck type (not a pickup)] is used to describe a light truck chassis based vehicle that cannot be described under the Utility (codes "13"-"14"), Van (codes "20"-"29"), Conventional (codes "30"-"39"), or Other Light Truck (codes "40"-"42") elements.

Code "48" [Unknown other light truck type (not a pickup)] is used when it can be determined that this vehicle would qualify for codes "40"-"42" or "47", but insufficient data exists to specify the proper code.

Code "49" [Unknown light vehicle type (automobile, van, or light truck)] is used when it is known that the vehicle is a light vehicle, but insufficient data exists to specify between codes "09", "10"-"14", "29", "39", or "40"-"48".

Buses (Excludes Van Based)

Codes "50", "58", and "59" are defined as any medium/heavy motor vehicle designed primarily to transport large groups of passengers.

Code "50" [School bus (designed to carry students, not cross country or transit)] is a bus designed to carry passengers to and from educational facilities and/or related functions. The vehicles are characteristically painted yellow and clearly identified as school busses. Use this code regardless of whether the vehicle is owned by a school system or a private company. School buses converted for other uses (e.g., church bus) also take this code.

Variable Name: Body Type (cont'd.)

Code "21" [Standard van (... see above ...)] is used to describe cargo or
           passenger van-type vehicles with an overall length of 178 inches or
           greater. This code excludes cutaway vans which are included in code
           "42" [Light truck based motorhome (chassis mounted)].

Code "28" (Other van type) is used if a van cannot be defined by codes "20" or
           "21". Annotate the van type when using this code.

Code "29" (Unknown van type) is used when it is known that this vehicle is a
           light van, but its specific type cannot be determined.

Light Conventional Trucks (Pickup Style Cab, ≤ 10,000 lbs. GVWR)

Codes "30"-"39" are used to describe vehicles commonly referred to as pickup
trucks and some of their derivatives. These light trucks are characteristi-
cally designed: with a small cab containing a single row of seats (extended
cabs with additional seats are available for some models), a large hood cov-
ering a conventional engine placement, and a separate open box area (typically
6 or 8 feet long) for cargo.

Code "30" [Compact pickup (< 4,500 lbs. GVWR, ... see above ...)] is used to
           describe a pickup truck having a width of 75 inches or less and/or a
           length--measured from the back of the cab to the front bumper, of
           less than 101 inches.

Code "31" [Standard pickup (4,500 to 10,000 lbs. GVWR, ... see above ...)] is
           used to describe a pickup truck having a width of greater than 75
           inches and/or length--measured from the back of the cab to the front
           bumper, of 101 inches or greater.

Code "32" (Pickup with slide-in camper) is used to describe any pickup truck
           that is equipped with a slide-in camper. A slide-in camper is a
           unit that mounts within a pickup bed. Pickup bed caps, tonneau
           covers, or frame mounted campers are not applicable for this code.

Code "33" [Truck based station wagon (4-door; ... see above ...)] generally
           refers to a "Suburban"; use this code for a vehicle that is based
           upon a pickup truck chassis and resembles an enlarged station wagon.

Code "34" (Light truck based suburban limousine) is used to describe a truck
           based station wagon (see code "33") that has been modified by
           lengthening the frame to create additional passenger/cargo space.

Code "39" [Unknown (pickup style) light conventional truck] is used when this
           vehicle qualifies for a code in the "30" to "34" range, but there is
           insufficient data to determine the specific code.

Variable Name: Body Type (cont'd.)

Code "66" (Truck-tractor pulling two or more trailers) describes a fifth wheel
equipped tractor (i.e., power unit of a tractor/trailer combination)
pulling a semi-trailer plus one or more trailers. These additional
trailers may be attached with a standard hitch or a converter dolly
(for semi-trailers).

Code "67" [Truck-tractor (unknown if pulling trailer)] is used when the vehi-
cle is known to be a truck-tractor, but it is unknown if a trailer
was being towed or if more than one trailer was being towed.

Code "68" (Unknown medium/heavy truck type) is used when the only available
information indicates a truck of medium/heavy size.

Code "69" [Unknown truck type (light/medium/heavy)] is used when it is known
that this vehicle is a truck, but there is insufficient data to
classify the vehicle further.

Motored Cycles (Does Not Include All Terrain Vehicles/Cycles)

Codes "70"-"79" define types of motored cycles.

Code "70" (Motorcycle) is used when the vehicle is a two- or three-wheeled
open (i.e., no enclosed body) vehicle propelled by an internal com-
bustion engine. Motorcycles equipped with a side car also take this
code.

Code "71" [Moped (motorized bicycle)] is used when the vehicle is a motorized
bicycle capable of moving either by pedaling or by an internal com-
bustion engine.

Code "78" [Other motored cycle type (minibike, motor scooter)] is used when
the vehicle in question does not qualify for codes "70" or "71"
(e.g., motor scooter).

Code "79" (Unknown motored cycle type) is used when it is known that the vehi-
cle is a motored cycle, but no further data is available.

Other Vehicles

Codes "80" and "88" describe all two-, three-, four-, or six-wheeled vehicles
that are designed only for off-road use and cannot be licensed for use on
public roadways.

Variable Name: Body Type (cont'd.)

Code "58" [Other bus type (e.g., transit, intercity, bus based motorhome)] is
a transport device designed to carry passengers for longer periods
of time. These vehicles may be classified as over-the-road, tran-
sit, intercity, bus related motorhome (other than school bus based),
or other.

Code "59" (Unknown bus type) is used when it is known the transport device is
a bus but there is insufficient data to choose between codes "50"
and "58".

Medium/Heavy Trucks (> 10,000 lbs. GVWR)

Codes "60"-"63" describe a single unit truck specifically designed for car-
rying cargo on the same chassis as the cab.

Codes "64"-"67" pertain to a truck-tractor designed for towing trailers or
semi-trailers. Although towing is their primary purpose, some truck-tractors
are equipped with cargo areas located rearward of the cab.

Code "60" (Step van) defines a single unit enclosed body with an integral
driver's compartment and cargo area. Step vans are generally
equipped with a folding driver seat mounted on a pedestal and a
sliding door for easy ingress/egress.

Code "61" [Single unit straight truck (10,000 lbs. < GVWR $\leq$ 26,000 lbs.)]
describes a non-articulated truck designed to carry cargo. The
gross vehicle weight rating of the vehicle must exceed 10,000 pounds
and be less than or equal to 26,000 pounds.

Code "62" [Single unit straight truck (> 26000 lbs. GVWR)] describes a non-
articulated truck designed to transport cargo with a gross vehicle
weight rating in excess of 26,000 pounds.

Code "63" (Medium/heavy truck based motorhome) describes a recreational vehi-
cle mounted on a single unit medium/heavy truck chassis.

Code "64" (Truck-tractor with no cargo trailer) describes a fifth wheel
equipped tractor/trailer power unit with no trailer attached.

Code "65" (Truck-tractor pulling one trailer) describes a fifth wheel equipped
tractor (i.e., power unit of a tractor/trailer combination) pulling
one semi-trailer.

Variable Name: Vehicle Identification Number

Element Values:

Code the entire VIN, left justify
ØØCØØØØØØØCØØØØØØ No VIN
9999999999999999 Unknown

Source: Primary source is vehicle inspection; a secondary source is the
           police report.

Remarks:

If a vehicle is inspected, the VIN must be obtained from the vehicle. The PAR
may be used to obtain a VIN when a vehicle inspection is not required (i.e.,
nontow CDS applicable and CRASH is not applicable; or GV07, Body Type, equal
"50"-"99").

Code and left justify the entire VIN; leave "Blank" any column which does not
have a VIN character.

If part of the VIN is missing or not decipherable, leave the column any such
character would ordinarily occupy "Blank".

Code "9999999999999999" (Unknown) if the entire VIN is unknown or missing.

Code "ØØØØØØØØØØØØØØØØ" if the vehicle is a type which has no VIN (e.g., go-
        kart).

If the vehicle is a motor home or school bus, the vehicle chassis VIN is coded
and the secondary manufacturer's number should be annotated if indicated on
the PAR.

If the vehicle is manufactured by the Ford Motor Company and the VIN begins or
ends with a script, "₵", the "₵" is not coded. Proceed to the next charac-
ter, as in the example below.

        VIN: ₵ 3 U 6 2 S 1 0 0 9 3 2 ₵
        CODE: 3 U 6 2 S 1 Ø Ø 9 3 2 _ _ _ _ _ _

   NOTE: For this variable only, slash zeros "Ø", so that they are not con-
          fused with the alphabet character "O", as in DOT.

In addition, if any hyphens or periods are contained in the string of alphanu-
meric characters, ignore them as in the example below.

        VIN: S M - E 3 0 7 6 4 2 1
        CODE: S M E 3 Ø 7 6 4 2 1 _ _ _ _ _ _

If the state will not allow transmittal of the complete VIN, code all charac-
ters except the sequential production numbers. Code zeros ("Ø") in place of
the sequential numbers.

Variable Name: Body Type (cont'd.)

Code "80" [ATV (All-Terrain Vehicle) and ATC (All-Terrain Cycle)] is used for off-road recreational vehicles which cannot be licensed for use on public roadways. ATCs have 4 or more wheels and ATCs have 2 or 3 wheels.

Code "88" (Other vehicle type) is used when the vehicle in question does not qualify for code "80" (e.g., construction equipment, farm tractor, go-kart).

<u>Unknown</u>

Code "99" (Unknown body type) is used when there is no available information regarding the type of vehicle. This lack of information prohibits the accurate classification of this vehicle within one of the preceding codes.

Variable Name: Vehicle Identification Number (cont'd.)

VIN Place	Value Factor	Character Values				
1st	8	A-1	B-2	C-3	D-4	E-5
2nd	7					
3rd	6	F-6	G-7	H-8		J-1
4th	5					
5th	4	K-2	L-3	M-4	N-5	
6th	3					
7th	2	P-7		R-9	S-2	T-3
8th	10					
Check Digit	0	U-4	V-5	W-6	X-7	Y-8
9th	9					
10th	8	Z-9				
11th	7					
12th	6	0-0	1-1	2-2	3-3	4-4
13th	5					
14th	4	5-5	6-6	7-7	8-8	9-9
15th	3					
16th	2					

Example:

VIN Character	1	G	4	A	H	5	9	H	4	5	G	1	1	8	3	4	1	Sum
Assigned Value	1	7	4	1	8	5	9	8	4	5	7	1	1	8	3	4	1	
Weight Factor	8	7	6	5	4	3	2	10	0	9	8	7	6	5	4	3	2	
Product	8	49	24	5	32	15	18	80	0	45	56	7	6	40	12	12	2	411

Divide sum by eleven (11): 411/11 = 37.3636.... = 37 and 4/11s.
Compare integer remainder to check digit: "4" equals "4".

Remainders of Eleven:

Decimal	Integer	Decimal	Integer	Decimal	Integer
.000000	0	.363636	4	.727272	8
.090909	1	.454545	5	.818181	9
.181818	2	.545454	6	.909090	X*
.272727	3	.636363	7		

* The character X is used instead of the integer ten (10) since the field is only one character wide.

Variable Name: Vehicle Identification Number (cont'd.)

In those cases where the VIN does not match the references given below (e.g., a character is missing or an invalid character is coded in a space), the encoded VIN must follow the correct format indicated by the references below and a note is made on the form indicating the discrepancy.

The location of the VIN will vary among, and within, vehicles. Reference sources which may prove helpful in locating the VIN include, but are not limited to:

(1) Motor Vehicle Identification Manual
     National Automobile Theft Bureau
     Palmer Publications Company   ·
     Downers Grove, Illinois 60515

(2) Passenger Car and Truck-Accident
     Investigator's Manual
     MVMA of the U.S., Inc.
     300 New Center Building
     Detroit, Michigan 48202

(3) Lee S. Cole
     Davis Publishing Co.
     Post Office Box 841
     Santa Cruz, California 95060
     (Vehicle Identification 1938-1968
     Vehicle Identification 1968-1981)

(4) N.A.D.A. Official Used Car Guide
     National Automobile Dealers Association
     8400 Westpark Drive
     McLean, Virginia 22102

Vehicles manufactured after September 1980 conform to Federal Motor Vehicle Safety Standard 115. This standard requires that: (1) each VIN have 17 characters, and (2) the VIN does not contain the letters "I", "O", or "Q". There are many other requirements, one of which is that the VIN pass a mathematical test; thus, the use of the "check digit".

Each character in a VIN has a value, and each place has a weight. Each weight is multiplied by the value of the character in it; the products are summed and divided by eleven (11). The remainder (once converted from a decimal to an integer) must be the same as the value of the check digit character (the ninth one), except when the remainder is ten (10), in which case, the check digit character is "X".

Variable Name: Police Reported Vehicle Disposition (cont'd.)

> ● the PAR indicates this vehicle was towed from the scene and a researcher cannot determine (from the PAR data) if towing was due to accident-related disabling damage.

Code "9"   (Unknown) is used when the investigating officer reported that the disposition of the vehicle was unknown at the time the PAR was completed. Also, use this code if the PAR indicates the vehicle was abandoned. However, if the police report specifies that the vehicle was disabled due to accident-related damage, as well as indicating either "unknown" or "abandoned" for disposition, it can be assumed that the vehicle will eventually be towed from the scene. In these instances, code "1" (Towed due to vehicle damage).

Variable Name: Police Reported Vehicle Disposition

Element Values:

    0 Not towed due to vehicle damage
    1 Towed due to vehicle damage
    9 Unknown

Source: Police report.

Remarks:

A "towed" vehicle is defined as a vehicle which is removed from the accident scene other than by means of its own power. For example, a vehicle which is towed out of a ditch and subsequently driven away, is not a towed vehicle. A vehicle which is driven from the scene and subsequently becomes disabled due to accident-related damage, such that towing is then required, is not a towed vehicle (even though that towing may be reported on the police report). Carefully scrutinize the PAR to determine the disposition of the vehicle directly from the scene and, if towing is indicated, the reason for the towing.

If a motorcycle is walked home [or a car pushed (by hand or by another car)] after the accident, then consider the motorcycle (and the car) as a towed vehicle. For tractor-trailer units, the disposition of the power unit (i.e., tractor) is recorded in this variable.

When a police report indicates that more than one event has occurred (i.e., stabilization is apparent), the disposition of this vehicle is based upon the event sequence selected for stratification. In other words, if the PAR indicates this vehicle was towed from the scene, and a researcher determines from the PAR that towing was not due to the damage sustained during this sequence, the correct response for this variable is "0" (Not towed due to vehicle damage).

When the PAR indicates that this vehicle was towed from the scene and it cannot be determined whether or not the towing was due to damage, the correct response for this variable is "1" (Towed due to vehicle damage).

Code "0" (Not towed due to vehicle damage) when:

    ● the PAR indicates this vehicle was not towed from the scene, or

    ● the PAR indicates this vehicle was towed from the scene but not due to accident-related disabling damage.

Code "1" (Towed due to vehicle damage) when:

    ● the PAR indicates this vehicle was towed from the scene due to accident-related disabling damage, or

Variable Name: Police Reported Alcohol or Drug Presence

Element Values:

      0 Neither alcohol nor drugs present
      1 Yes (alcohol present)
      2 Yes (drugs present)
      3 Yes (alcohol and drugs present)
      4 Yes (alcohol or drugs present - specifics unknown)
      7 Not reported
      8 No driver present
      9 Unknown

Source: Police report.

Remarks:

The phrase "drugs present" (element values "2"-"4") includes prescription and "over-the-counter" medications as well as "illicit" substances (e.g., in most cases, marijuana, cocaine, heroin, etc. where usage has not been prescribed by a doctor). Also, "drugs present" means that the driver had ingested a drug prior to the accident, but it is not an indication that the drug usage was in any way the cause of the accident (or event), even though it may have been. Finding drugs in the vehicle does not by itself constitute presence.

The phrase "alcohol present" means that the driver had consumed an alcoholic beverage. Presence is not an indication that alcohol was in any way a cause of the accident, even though it may have been. Finding opened or unopened alcoholic beverages in the vehicle does not by itself constitute presence.

Code "0"   (Neither alcohol nor drugs present) is used if the investigating officer's assessment (as reported on the police report) is that no alcohol or drug were present in the driver.

Code "1"   [Yes (alcohol present)] is used if the police indicate alcohol presence in the driver via: (1) a specific data element on the police report form, (2) the police charge the driver with DUIL, (3) the police mention in the narrative section of the report that the driver had been drinking (or alcohol was present or involved), or (4) the police report has a positive BAC test result (BAC > .00).

Code "2"   [Yes (drugs present)] is used if the police indicate drug presence in the driver via: (1) a specific data element on the PAR, or (2) the police mention in the narrative section of the report that the driver had ingested a drug.

Code "3"   [Yes (alcohol and drugs present)] is used if the police indicate:

      • alcohol presence in the driver via: (1) a specific data element on the police report form, (2) the police charge the driver with DUIL, (3) the police mention in the narrative section

Variable Name: Police Reported Travel Speed

Element Values:

Range: 00 through 97, 99

Code to the nearest mph (Note: 00 means less than 0.5 mph)
97 96.5 mph and above
99 Unknown

Source: Police report only

Remarks:

Code the travel speed for this vehicle if indicated on the police report by the investigating officer. Do not use estimates by drivers or witnesses.

Code to the nearest mph, or if the travel speed is reported as a range, code the average. For example:

Reported Speed: 40.2 mph   40.5 mph   45-50 mph
Code: "40"   "41"   "48"

Code "00" (00 mph) is used if this vehicle is stopped or traveling less than 0.5 mph.

Code "97" (96.5 mph and above) is used if this vehicle's speed is reported as equal to or exceeding 96.5 mph.

Code "99" (Unknown) is used if the estimated travel speed is unknown.

Variable Name: Alcohol Test Result For Driver

Element Values:

Range: 00-49; 95-99

Code actual value (decimal implied before first digit--0.xx).
95 Test refused
96 None given
97 AC test performed, results unknown
98 No driver present
99 Unknown

Source: Police report, medical reports, or other official sources.

Remarks:

Blood Alcohol Content (BAC) measures the percentage (expressed as a decimal) of the number of grams of alcohol in a liter of blood. The standard measure is expressed as the number of **milligrams per deciliter** (tenth of a liter) (e.g., .05 = 50 mg/100 ml; .15 = 150 mg/100 ml). A blood alcohol concentration (BAC) test could be a blood, breath, or urine test.

No psychomotor (police observation of driver actions) test results are coded here. Also, be aware of preliminary test results. These preliminary tests, including an instrumented field screening test, indicate the presence of alcohol, but not necessarily the particular content level. Preliminary tests are designed to segregate candidates for further testing from those persons where the suspected presence of alcohol is either nonexistent or too low for additional tests.

If an instrumented field screening test was given and it determined that:

- no BAC test was required, code "96" (None given);

- a BAC test was required, but the precise level was not obtained, code "97" (AC test performed, results unknown); or

- a BAC test was required and the precise level was obtained, code the reported BAC from the subsequent test (codes "00"-"49").

If the BAC was given on the police report or subsequently added after the case was initiated, code the reported value. In essence, if any BAC is obtained, code the reported value.

For drivers of nontowed CDS applicable and non-CDS applicable vehicles, use only PAR information when coding test results.

Codes "00"-"49" report the actual number value representing the fraction of alcohol present.

Code "00" is used when a test was performed, but no alcohol was detected.

Variable Name: Police Reported Alcohol or Drug Presence (cont'd.)

> of the report that the driver had been drinking (or alcohol was present or involved), or (4) the police report has a positive BAC test result (BAC > .00); and
>
> ● drug presence in the driver via: (1) a specific data element on the PAR, or (2) the police mention in the narrative section of the report that the driver had ingested a drug.

Code "4"   [Yes (alcohol or drugs present - specifics unknown)] is used if the PAR has a block which is labeled "Alcohol/Drugs", and it cannot be determined which was used. Also, in some states, blood tests indicate drug usage, and the driver may be charged with a DWI violation (Driving While Intoxicated or Driving While Impaired). If the police report indicates that a driver was charged with DWI and no clarification is offered to indicate if the DWI was alcohol related or drug related (i.e., a specific data element; mentioned in the narrative section; BAC results), then use this code.

Code "7"   (Not reported) is used if there is a specific location on the police report for assessment of alcohol and drug presence but the investigating officer fails to make either a positive or negative assessment.

Code "9"   (Unknown) is used if alcohol/drug presence is indicated as unknown. In general, police reports have blocks to check either positive or negative alcohol/drug presence. However, if a police report has provision for the investigating officer to respond "unknown presence", then used this code. In addition, use this code for hit-and-run drivers unless clear evidence to the contrary exists.

Variable Name: Speed Limit

Element Values:

    Range: 00 through 65, 99

    00 No statutory limit
    Code posted or statutory speed limit
    99 Unknown

Source: Primary sources are scene inspection or statutory law. Do <u>not</u> use
           the police report for selecting this variable's value.

Remarks:

Disregard advisory or other speed signs which do not indicate the legal speed
limit. Furthermore, <u>do not confuse</u> advisory signs on entrance/exit ramps or
near intersections with the actual legal maximum speed limit.

If no speed limit sign is posted within a reasonable distance from the loca-
tion of the first accident event along the approach leg of the roadway this
vehicle was traveling on, then reference state statutes to obtain the applica-
ble statutory maximum speed limit for the location (local or state).

If a state has a statute that uniformly reduces the maximum allowable speed
within or near a construction zone, then code the indicated reduced limit.

Code "00" (No statutory limit) is used on roadways which are neither posted
         nor have a statutory limit (e.g., parking lot roadways or en-
         trance/exits, service station entrance/exits, or driveways, etc.).

Code "99" (Unknown) is used only in situations where an accident scene cannot
         be located. Note, speed limit must be identified for all known
         accident scene locations.

Variable Name: Alcohol Test Result For Driver (cont'd.)

Code "95" (Test refused) is used when the person refuses to voluntarily take a BAC test, and no subsequent test is given. If the person refuses, but a test is performed, code the reported BAC or "97" (AC test performed, results unknown).

Code "97" (AC test performed, results unknown) is used only after all available sources have been exhausted. Verbal BACs obtained from offi-cial sources are acceptable if written approval (or approval via the message system) has been obtained from the zone center. Obtain BAC test results whenever possible.

Code "98" (No driver present) is used when an in-transport vehicle was involved in the accident but no driver was in the vehicle at the time

Code "99" (Unknown) is used when it is not known if a test was administered.

Variable Name: Accident Type

Element Values:

      Range: 00-16, 20-93, 98, 99

      00 No impact
      Code the number of the diagram that best describes the accident circum-
      stance.
      98 Other accident type (specify)
      99 Unknown

Diagrams: See next page.

Source: Researcher determined - inputs include police report, scene inspec-
          tion, vehicle inspection, and interview.

Remarks:

This variable is used for categorizing the collisions of drivers involved in
accidents. A collision is defined here as the first harmful event in an acci-
dent between a vehicle and some object; accompanied by property damage or
human injury. The object may be another vehicle, a person, an animal, a fixed
object, the road surface, or the ground. If the first collision is a roll-
over, the impact is with the ground or road surface. The collision may also
involve plowing into soft ground, if severe vehicle deceleration results in
damage or injury. A road departure without damage or injury is _not_ defined as
a collision.

To determine the proper accident type (AT), refer to Figure 1 and follow the
three step decision process outlined below:

Step 1 - Determine the appropriate category.
Step 2 - Determine the appropriate configuration.
Step 3 - Determine the specific accident type (two digit codes).

The categories are divided into six sections and are described as follows:

● Category I. Single Driver - The first harmful event involves a collision
    between an in-transport vehicle and an object. A harmful event involving
    two in-transport vehicles is excluded from this category. Note, the
    impact location on the vehicle is not a consideration for accident types
    in this category.

● Category II. Same Trafficway, Same Direction - The first harmful event
    occurred while both vehicles were traveling in the same direction on the
    same trafficway.

● Category III. Same Trafficway, Opposite Direction - The first harmful
    event occurred while both vehicles were traveling in opposite directions
    on the same trafficway.

Variable Name: Attempted Avoidance Maneuver

.Element Values:

    00 No impact
    01 No avoidance actions
    02 Braking (no lockup)
    03 Braking (lockup)
    04 Braking (lockup unknown)
    05 Releasing brakes
    06 Steering left
    07 Steering right
    08 Braking and steering left
    09 Braking and steering right
    10 Accelerating
    11 Accelerating and steering left
    12 Accelerating and steering right
    98 Other action (specify)
    99 Unknown

Source: Researcher determined--inputs include the driver interview, police report, and the scene inspection.

Remarks:

Attempted avoidance maneuvers (pre-event) are movements/actions taken by the driver to avoid the impending event after realization of an impending danger, but before the actual event.

Code the attribute which best describes the actions taken by the driver. When there was a known action, but you cannot determine whether there was more than one action (e.g., braking and steering left) default to the known action (e.g., braking).

Code "01" (No avoidance action) is used whenever the driver did not attempt any evasive (pre-event) maneuvers, or when the driver was not present.

Variable Name: Accident Type (cont'd.)

● <u>Category IV. Change Trafficway, Vehicle Turning</u> - The first harmful event occurred when the vehicle is either turning or merging while attempting to change from one trafficway to another trafficway. Trafficway for this variable is loosely defined to include driveways, alleys and parking lots when a vehicle is either entering or exiting a trafficway.

● <u>Category V. Intersecting Paths (Vehicle Damage)</u> - The first harmful event involves situations where vehicle trajectories intersect. It <u>is</u> important to note the location of damage to each vehicle for accident typing.

● <u>Category VI. Miscellaneous</u> - The first harmful event involves an accident type which cannot be described in Categories I-V and thus is included in this category.

Each category is further defined by an Accident Configuration(s). Configurations A through M are discussed below.

Category I. Single Driver

● <u>Configurations A and B ... Roadside Departure</u> - The vehicle departed either the right or left side of road with the first harmful event occurring off the road. Right versus left is based on the side of the road departed immediately prior to the first harmful event.

● <u>Configuration C. Forward Impact</u> - The vehicle struck an object on the road or off the end of a trafficway while moving forward.

Category II. Same Trafficway, Same Direction

● <u>Configuration D. Rear-End</u> - The front of the overtaking vehicle impacted *the rear of the other vehicle.*

Note, even if the rear-impacted vehicle had started to make a turn, code here (not in Category IV).

● <u>Configuration E. Forward Impact</u> - The front of the overtaking vehicle impacted the rear of the other vehicle, following a steering maneuver around a noninvolved vehicle or object.

● <u>Configuration F. Sideswipe/Angle</u> - The two vehicles are involved in a shallow, glancing impact involving the side of one or both vehicles.

Note, CDC guidelines for sideswipes are not considered when assessing this configuration.

Variable Name: Accident Type (cont'd.)

Figure 1

Category	Configuration	ACCIDENT TYPES (Includes Intent)				
I Single Driver	A Right Roadside Departure	01 DRIVE OFF ROAD	02 CONTROL/ TRACTION LOSS	03 AVOID COLLISION WITH VEH., PED., ANIM	04 SPECIFICS OTHER	05 SPECIFICS UNKNOWN
I Single Driver	B Left Roadside Departure	06 DRIVE OFF ROAD	07 CONTROL/ TRACTION LOSS	08 AVOID COLLISION WITH VEH., PED., ANIM	09 SPECIFICS OTHER	10 SPECIFICS UNKNOWN
I Single Driver	C Forward Impact	11 PARKED VEH	12 STA OBJECT	13 PEDESTRIAN/ ANIMAL	14 END DEPARTURE	15 SPECIFICS OTHER / 16 SPECIFICS UNKNOWN
II Same Trafficway Same Direction	D Rear-End	20 22 21 23 STOPPED 21 22 23	24 25 SLOWER 24 25 27	28 29 27 30 31 DECEL. 29 30 31	(EACH - 32) SPECIFICS OTHER	(EACH - 33) SPECIFICS UNKNOWN
II Same Trafficway Same Direction	E Forward Impact	34 35 CONTROL/ TRACTION LOSS	36 37 CONTROL/ TRACTION LOSS	38 39 AVOID COLLISION WITH VEH	40 41 AVOID COLLISION WITH OBJECT	(EACH - 42) SPECIFICS OTHER / (EACH - 43) SPECIFICS UNKNOWN
II Same Trafficway Same Direction	F Sideswipe Angle	44 45 46 47		(EACH - 48) SPECIFICS OTHER	(EACH - 49) SPECIFICS UNKNOWN	
III Same Trafficway Opposite Direction	G Head-On	50 51 LATERAL MOVE	(EACH - 52) SPECIFICS OTHER	(EACH - 53) SPECIFICS UNKNOWN		
III Same Trafficway Opposite Direction	H Forward Impact	54 55 CONTROL/ TRACTION LOSS	56 57 CONTROL/ TRACTION LOSS	58 59 AVOID COLLISION WITH VEH	60 61 AVOID COLLISION WITH OBJECT	(EACH - 62) SPECIFICS OTHER / (EACH - 63) SPECIFICS UNKNOWN
III Same Trafficway Opposite Direction	I Sideswipe/ Angle	64 65 LATERAL MOVE	(EACH - 66) SPECIFICS OTHER	(EACH - 67) SPECIFICS UNKNOWN		
IV Change Trafficway Vehicle Turning	J Turn Across Path	68 69 INITIAL OPPOSITE DIRECTIONS	70 71 72 73 INITIAL SAME DIRECTIONS		(EACH - 74) SPECIFICS OTHER	(EACH - 75) SPECIFICS UNKNOWN
IV Change Trafficway Vehicle Turning	K Turn Into Path	77 78 73 79 TURN INTO SAME DIRECTION	80 81 82 83 TURN INTO OPPOSITE DIRECTIONS		(EACH - 84) SPECIFICS OTHER	(EACH - 85) SPECIFICS UNKNOWN
V Intersecting Paths (Vehicle Damage)	L Straight Paths	87 86 88 89 90		(EACH - 90) SPECIFICS OTHER	(EACH - 91) SPECIFICS UNKNOWN	
VI Miscellaneous	M Backing Etc	92 BACKING VEH	93 OTHER VEH. OR OBJECT	98 Other Accident Type / 99 Unknown Accident Type / 00 No Impact		

Variable Name: Accident Type (cont'd.)

The accident types in **Category I. (Single Driver)** involve an impact between a vehicle and an object. **Categories II. through VI.** identify specific collision combinations which must be coded in specified pairs (i.e., the pair code defines the Accident Type). As an example, the combination "20" (Rear-end, stopped) and "32" (Rear-end, specifics other) or "20" (Rear-end, stopped) and "25" (Slower, straight ahead) are not valid since "20" (Rear-end, stopped) only has meaning when linked to codes "21"-"23" (Stopped, ...).

An accident involving a vehicle impacting a "driverless in-transport vehicle" is coded "..., specifics other" in the appropriate configuration-category. For example, a vehicle which impacts the rear of a driverless in-transport vehicle is encoded "32" (Rear-end, specifics other) and "32".

In accidents involving more than two vehicles or in collision sequences involving a combination of vehicle-to-object-to-vehicle impacts, code the Accident Type for the vehicle(s) involved in the first harmful event. All other vehicles are coded "98" (Other accident type).

Keep in mind that <u>intended actions</u> play an important role in the coding scheme. For example, accident type "26" (Slower, turning left) is selected over type "25" (Slower, straight ahead) if the subject vehicle was traveling slower with the <u>intention</u> of turning left. Note, the turning action need not have occurred prior to the collision. The driver's <u>intent</u> to turn is the key.

The following accident types require clarification.

Code "00" (No impact) identifies noncollision events (fire, immersion, etc.).
Rollovers on the road should be coded "98" (Other accident type).

Codes "01" (Right roadside departure, drive off road) and "06" (Left roadside departure, drive off road) are used when the vehicle departed the road under a controlled situation (i.e., the driver was distracted, fell asleep, intentionally departed, etc.).

Codes "02" (Right roadside departure, control/traction loss) and "07" (Left roadside departure, control/traction loss) are used if there is some evidence that the vehicle lost traction or in some other manner "got away" from the driver (i.e., the vehicle spun off the road as a result of surface conditions, oversteer phenomena, or mechanical malfunctions). If doubt exists, code "01" (Right roadside departure, drive off road) or "06" (Left roadside departure, drive off road) respectively.

Codes "03" (Right roadside departure; avoid collision with vehicle, pedestrian, animal) and "08" (Left roadside departure; avoid collision with vehicle, pedestrian, animal) are used when the vehicle departed the road as a result of avoiding something in the road. "Phantom" situations are included here.

Variable Name: Accident Type (cont'd.)

Category III.   Same Trafficway, Opposite Direction

- Configuration G. Head-On - The frontal area of one vehicle impacted the the frontal area of another.

- Configuration H. Forward Impact - The frontal area of one vehicle impacted the frontal area of another following a steering maneuver around a noninvolved vehicle or an object.

- Configuration I. Sideswipe/Angle - The two vehicles are involved in a shallow, glancing impact involving the side of one or both vehicles.

Category IV. Changing Trafficway, Vehicle Turning

- Configuration J. Turn Across Path - The two vehicles were initially on the same trafficway when one vehicle tried to turn onto another trafficway and pulled in front of the other vehicle. Vehicles making a "U" turn are identified in Category VI. Miscellaneous.

- Configuration K. Turn Into Path - The two vehicles were initially or different trafficways when one attempted to turn into the same trafficway as the other vehicle.

  Note, the focus of this configuration is on the turning maneuver from one trafficway to another and not on the vehicles' plane of contact.

Category V. Intersecting Paths (Vehicle Damage)

- Configuration L. Straight Paths - The two vehicles were proceeding (or attempting to proceed) straight ahead.

Category VI. Miscellaneous

- Configuration M. Backing, Etc. - One of the two vehicles involved was a backing vehicle, regardless of its location on the trafficway or the damage location on the vehicles.

  Any accident configuration which cannot be described in Category I. through V. is included here.

The configurations are delineated into specific accident types. These types can be identified by referring to the accident type diagram in Figure 1.

Variable Name: Accident Type (cont'd.)

In addition, when: (1) the right sides of the two vehicles impact following a 180 degree rotation of the vehicle on the right, or (2) the left sides of the two vehicles impact following a 180 degree rotation of the vehicle on the left; select the appropriate combination ("44"-"45", "46"-"45", "45"-"47", or "46"-"47") depending upon: (3) their positions (i.e., left versus right) and (4) the intended lane of travel (straight ahead versus changing lanes) of their drivers.

Code "48" (Sideswipe/Angle, specifics other) is used if one vehicle was behind the other prior to their Category II, Configuration F collision. For example, use this code when two vehicles are on the same trafficway and going the same direction, and one loses control and is struck in the side by the front of the other vehicle. However, if one vehicle rotates such that the impact is front to front, then use code "98" (Other accident type).

Code "64" (Sideswipe/Angle, lateral move--infringing vehicle) identifies the vehicle which infringed upon the other (code "65") in a Category III, Configuration I collision.

Codes "68" through "85" (Turn Across Path and Turn Into Path) are used in Configurations J and K where the vehicle's action is the controlling factor, and the plane of contact is irrelevant.

Code "82" (Left turn into opposite direction) is used when the driver's vehicle was in the act of making a left turn (e.g., from a driveway, parking lot or intersection). Do not confuse this situation with Configuration L. Straight Paths. The driver's intended path is the prime concern.

Codes "86" through "89" (Straight Paths) must not be confused with accident types in Configuration K. Turn Into Path. For these codes the vehicles are proceeding (or attempting to proceed) straight ahead, usually at a junction.

Code "98" (Other accident type) is used for those events and collisions which do not reasonably fit any of the specified types. This code includes:

● rollovers on the road;

● third or subsequent vehicles involved in an accident; or

● the second involved vehicle when the first harmful event involved a vehicle-to-object collision.

Variable Name: Accident Type (cont'd.)

Codes "03" (Right roadside departure; avoid collision with vehicle, pedestri-
an, animal), "08" (Left roadside departure; avoid collision with
vehicle, pedestrian, animal) and "13" (Forward impact, pedestri-
an/animal) include pedestrians, bicyclists, other cyclists and other
nonmotorists.

Codes "04" (Right roadside departure, specifics other) and "09" (Left roadside
departure, specifics other) are used for any other stationary or
nonstationary objects if the avoidance characteristics of codes "03"
or "08" are present.

Codes "11" (Forward impact, parked vehicle), "12" (Forward impact, stationary
object), and "13" (Forward impact, pedestrian/animal) involve an
impact with an object which can be located on either side of the
road.

Code "12" (Forward impact, stationary object) includes a hole in the road, an
overhead object (e.g., overpass) or an object projecting over the
road edge (e.g., support column of elevated railway).

Code "13" (Forward impact, pedestrian/animal) is used when a pedestrian, non-
motorist, or animal is involved with the first harmful event. Vehi-
cle plane of contact is not a consideration.

Code "15" (Forward impact, specifics other) is used for impacted (striking or
struck) trains and nonstationary objects on the road.

Codes "44" (Sideswipe/Angle, straight ahead on left), "45" (Sideswipe/Angle,
straight ahead on left/right), "46" (Sideswipe/Angle, changing lanes
to the right), and "47" (Sideswipe/Angle, changing lanes to the
left) identify relative vehicle positions (left versus right) and
lane of travel intentions (straight ahead versus changing lanes).

From these four codes, four combinations are permitted. They are: (1) "44"
and "45", (2) "46" and "45", (3) "45" and "47", and (4) "46" and "47". When
used as a combination these codes refer to a sideswipe or angle collision
which involved a vehicle to the left of a vehicle to the right where:

● (1) neither vehicle (codes "44" and "45") intented to change
  its lane;
● (2) the vehicle on the left (code "46") was changing lanes to
  the right, and the vehicle on the right (code "45") was not
  intending to change its lane;
● (3) the vehicle on the left (code "45") was not intending to
  change its lane, and the vehicle on the right (code "47") was
  changing lanes to the left; and
● (4) the vehicle on the left (code "46") was changing lanes to
  the right, and the vehicle on the right (code "47") was
  changing lanes to the left.

Variable Name: Number of Occupants This Vehicle

Element Values:

Range: 00 through 97, 99, Blank

Blank (GV07 = 50-99)
00-96 Code actual number of occupants for this vehicle
97   97 or more
99   Unknown

Source: Police report and interviewees

Remarks:

Code the actual number of persons (including the driver) that were occupants of this vehicle. The number of Occupant Assessment Forms submitted (GV18, Number of Occupant Forms Submitted) need not equal this value.

Code "99" (Unknown) is used when:

- the actual number of occupants is unknown, or

- this vehicle is a "hit-and-run" vehicle--unless reliable evidence clearly establishes the number of occupants present.

Variable Name: Driver Presence in Vehicle

Element Values:

    Blank (GV07 = 50-99)
    0 Driver not present
    1 Driver present
    9 Unknown

Source: Researcher determined; inputs include the police report and inter-
          views.

Remarks:

This variable serves as a flag to identify driverless motor vehicles in-trans-
port.

Code "0" (Driver not present) is used if no driver was physically in the
          vehicle at the time that it was involved in the accident. If no
          driver was present and this driver's vehicle was towed, then no
          Occupant Assessment Form or Occupant Injury Form are required for
          this driver.

Code "1" (Driver present) includes those instances when this motor vehicle
          was a "hit-and-run" vehicle.

Variable Name: Vehicle Curb Weight

Element Values:

    Range: 001 through 135, 999, blank

    Blank (GV07 = 50-99)
    Code weight to the nearest 100 pounds.
    000 Less than 50 pounds
    135 13,500 lbs. or more
    999 Unknown

Source: Primary and secondary sources are listed below.

Remarks:

Code this vehicle's curb weight to the nearest 100 pounds as in the examples.

    Weight: 3,230 lbs.   Weight: 7,500 lbs.
    Code: "032"   Code: "075"

Do not confuse the rated Gross Vehicle Weight Rating (GVWR) with the curb weight since it is likely to be significantly greater than the curb weight.

"Vehicle" is defined on this variable to mean the same as that coded on GV07, Body Type.

If the vehicle model (GV06) is known, but the engine size is unknown (e.g., 6 or 8 cylinders), code the average between the high and low curb weights for the model and annotate that the "average" was reported.

When the vehicle specifications do not report the vehicle weight with the proper engine size, adjustments must be made. First, try to determine the weight differences from the vehicle specifications. If the weight difference cannot be determined from the specifications, then adjust as follows: 8 cyl. to 6 cyl. - subtract 100 lbs.; 6cyl. to 4 cyl. - subtract 75 lbs.

Add 100 lbs. to the shipping weight to obtain a curb weight on all CDS applicable vehicles.

The primary source for obtaining this vehicle's curb weight is the first source of reference material listed below; the next three sources are secondary.

Variable Name: Number of Occupant Forms Submitted

Element Values:

    Range: 00 through 30, Blank

    Blank   (GV07 = 50-99)
    00-30   Code actual number of Occupant Assessment Forms submitted for this
            vehicle

Source: Researcher determined; inputs include police report, vehicle inspec-
          tion, and interviews.

Remarks:

If this vehicle is a police reported <u>towed</u> CDS applicable vehicle [i.e., GV07,
Body Type, equals "01"-"49" <u>and</u> GV09, Police Reported Travel Speed, equals "1"
(Towed due to vehicle damage)], then an Occupant Assessment Form must be com-
pleted for each occupant. Enter the number of forms encoded and submitted for
this vehicle. If this vehicle is not a CDS applicable vehicle (i.e., GV07
equals "50"-"99"), then this variable must be left "Blank".

Code "00" (zero Occupant Assessment Forms submitted) when:

    ● this vehicle is a police reported <u>nontowed</u> CDS applicable vehi-
      cle [i.e., GV07 equals "01"-"49" <u>and</u> GV09 equals "0" (Not towed
      due to vehicle damage) or "9" (Unknown)], or

    ● this vehicle was in-transport and unoccupied.

Code "01" (One occupant) is used in the case of a "hit-and-run" police re-
        ported towed CDS applicable vehicle, where it is <u>assumed</u> that only
        one occupant/driver was present. Additional Occupant Assessment
        Forms (and thus increase the number coded here) can be submitted if
        reliable evidence exists that additional occupants were present.

Variable Name: Vehicle Cargo Weight

Element Values:

        Range: 00 through 97, 99, Blank

        Blank   (GV07 = 50-99)
        Code weight to nearest 100 pounds.
        00   Less than 50 pounds
        97   9,650 lbs. or more
        99   Unknown

Source: Researcher determined -- inputs include vehicle inspection and in-
          terviewees.

Remarks:

If variable GV21, Towed Trailing Unit, is coded "1" (Yes - towed trailing
unit), then the weight of the trailer and its cargo is coded here. Cargo may
also be located in the passenger compartment area and/or trunk.

Do not include the weight of the occupants in the cargo weight. The weight of
the occupants is included (along with cargo and vehicle curb weight) as a
component of the single value which represents the vehicles combined weight on
the CRASH Program Summary Form, if used.

Code this vehicle's cargo weight to the nearest 100 pounds as in the examples.

        Weight: 180 lbs.   Weight: 3,230 lbs.
        Code: "02"   Code: "32"

Code "00" (Less than 50 pounds) is used if the cargo weight is less than 50
         pounds.

Code "97" (9,650 lbs. or more) is used if the cargo weight is 9,650 pounds or
         more.

Code "99" (Unknown) is used if the cargo weight is unknown.

Variable Name: Vehicle Curb Weight (cont'd.)

        Passenger Vehicle Specifications
        Motor Vehicle Manufacturers Association
        of the U.S., Inc.
        300 New Center Building
        Detroit, Michigan 48202

        Automotive News
        Crain Automotive Group, Inc.
        965 East Jefferson Avenue
        Detroit, Michigan 48207

        Branham Automobile Reference Book
        Branham Publishing Company
        Post Office Box 1948
        Santa Monica, California 90406

        Gasoline Truck Index and
        Diesel Truck Index
        Truck Index, Inc.
        Post Office Box 4221
        Anaheim, California 92803

Annotate the source used in the space provided on the General Vehicle Form
under this variable.

If variable GV21, Towed Trailing Unit, is coded "1" (Yes - towed trailing
unit), then the weight of the trailer and its cargo is not coded here. In-
stead, it is coded under variable GV20, Vehicle Cargo Weight. For example, the
weight of a boat trailer and its cargo are encoded on Vehicle Cargo Weight
(GV20), distinct from the weight of the vehicle.

Code "999" (Unknown) when the curb weight of this vehicle cannot be deter-
        mined.

Variable Name: Documentation of Trajectory Data for This Vehicle

Element Values:

    Blank   (GV07 = 50-99)
    0 No
    1 Yes

Source: Researcher determined - inputs include scene inspection, vehicle inspection, police report, and interviews.

Code "0"   (No) means there was insufficient trajectory information to know or approximate the point of impact and final rest position for this vehicle's Highest Delta V CDC (EV06-EV11, Collision Deformation Classification).

Code "1"   (Yes) is used when sufficent data is available to know or approximate the point of impact and final rest position for this vehicle's Highest Delta V CDC, independently of whether the CRASHPC program trajectory algorithm could be used (e.g., multiple impacts, missing vehicle, etc.).

Variable Name: Towed Trailing Unit

Element Values:

    Blank (GV07 = 50-99)
    0 No towed unit
    1 Yes - towed trailing unit
    9 Unknown

Source: Vehicle inspection, interviews, and police report

Remarks:

A trailing unit includes horse trailers, fifth wheel trailers, travel trail-
ers, camper trailers, boat trailers, truck trailers, towed motor vehicles, or
any other trailer.

If this variable is coded "1" (Yes - towed trailing unit), then enter the
weight of the trailer as well as any cargo it may be carrying in variable
GV20, Vehicle Cargo Weight.

Code "0" (No towed unit) is used when a trailing unit is not being towed by
          this CDS applicable vehicle.

Code "1" (Yes - towed trailing unit) is used when a trailing unit is being
          towed by this CDS applicable vehicle.

Code "9" (Unknown) is used when it is uncertain whether code "0" or "1" ap-
          plies.

Variable Name: Post Collision Condition of Tree or Pole
                 (for Highest Delta V) [cont'd.]

Code "6"   (Separated pole from base) describes a breakaway pole that has
           sheared or separated at the point where it was designed to do so.

Code "7"   (Pole replaced) is used when a replacement pole has been installed
           and insufficient data exist to categorize the damage to the original
           pole. This code takes precedence over code "9" (Unknown).

Code "8"   (Other) describes pole or tree damage that cannot be captured by the
           preceding codes.

Code "9"   (Unknown) is used when no data can be obtained regarding the pole or
           tree.

Variable Name: Post Collision Condition of Tree or Pole
                  (for Highest Delta V)

Element Values:

    Blank (GV07 = 50-99)
    0 Not collision (for highest delta V) with tree or pole
    1 Not damaged
    2 Cracked/sheared
    3 Tilted < 45 degrees
    4 Tilted > 45 degrees
    5 Uprooted tree
    6 Separated pole from base
    7 Pole replaced
    8 Other (specify):
    9 Unknown

Source: Scene inspection and PAR.

Remarks:

Codes "1" through "8" are used when EV05, Object Contacted, is encoded "41"
           [Tree (< 4 inches in diameter)], "42" [Tree (> 4 inches in diame-
           ter)], "45" [Breakaway pole ·or post (any diameter)], or "50"-"53"
           (Nonbreakaway Pole or Post).

Code "0"   [Not collision (for highest delta V) with tree or pole] is used when
           the EV05, Object Contacted, that produced this vehicle"s highest
           delta V is not a tree or pole (e.g., vehicle-to-vehicle collision).

Code "1"   (Not damaged) is used when the tree or pole has no visible damage or
           minor surface damage.

Code "2"   (Cracked/sheared) describes a pole or tree that is cracked (10% or
           more of the fibers), sheared, or bent. Bent and cracked poles may
           be tilted and the bending/cracking can be at any height. This code
           takes precedence over codes "3" (Tilted < 45 degrees), "4" (Tilted >
           45 degrees), and "5" (Uprooted tree). Fallen limbs do not consti-
           tute "cracked" for a tree; the assessment is made at the tree's
           trunk. This code does not describe metal breakaway poles sheared at
           their base [see code "6" (Separated pole from base)].

Code "3"   (Tilted < 45 degrees) describes a pole or tree that is inclined at
           less than a 45 degree angle as a result of this collision. If the
           tree/pole is also cracked, then use code "2" (Cracked/sheared).

Code "4"   (Tilted > 45 degrees) describes a pole or tree that is inclined at a
           45 degree angle or greater as a result of this collision. If the
           tree/pole is also cracked, then use code "2" (Cracked/sheared).

Code "5"   (Uprooted tree) describes a tree that was completely or partially
           torn out of the ground; the tree trunk remained intact; however, the
           root system was pulled from the soil.

Variable Name: Front Override/Underride (this vehicle)
                 Rear Override/Underride (this vehicle)

Element Values:

    Blank (GV07 = 50-99)
    0 No override/underride, or not an end-to-end impact

    Override (see specific CDC)
    1 1st CDC
    2 2nd CDC
    3 Other not automated CDC (specify):

    Underride (see specific CDC)
    4 1st CDC
    5 2nd CDC
    6 Other not automated CDC (Specify):

    7 Medium/heavy truck override
    9 Unknown

Source: Vehicle inspection (with exceptions as noted)

Remarks:

Override/Underride is coded from the perspective of vehicle impact configura-
tion and is not based on: coding in columns 5 and/or 6 of the CDC, or vehicle
measurement techniques (i.e., the "5-inch" rule for CRASH purposes).

These variables are intended to capture those instances where there is an
uneven damage pattern caused by uneven amounts of crush in different vertical
zones of the front and/or rear planes of the vehicle. Because of the differ-
ent crush stiffnesses involved in these locations, these variables are in-
cluded to alert the vehicle safety analysts to uneven crush patterns in front
and rear impacts, which are not identified in the CDC (i.e., columns 5 and/or
6).

For those variables an impact with a not-in-transport vehicle (either CDC
applicable or a medium/heavy truck) is considered a vehicle-to-vehicle impact
and not a vehicle-to-object impact.

GV25, Front Override/Underride (this vehicle), specifies the override/under-
ride result to the vehicle which sustained the frontal impact. Similarly,
GV26, Rear Override/Underride (this vehicle), encodes either override or un-
derride to the vehicle which sustained the rear impact.

The term "override" means a vehicle overrode (i.e., goes on top of) the bumper
(front or rear) of the other vehicle.

The term "underride" means a vehicle underrode (i.e., goes below) the bumper
(front or rear) of the other vehicle.

Variable Name: Rollover

Element Values:

    Blank (GV07 = 50-99)
    0 No rollover (no overturning)

    Rollover (primarily about the longitudinal axis)
    1 Rollover, 1 quarter turn only
    2 Rollover, 2 quarter turns
    3 Rollover, 3 quarter turns
    4 Rollover, 4 or more quarter turns (specify):

    5 Rollover--end-over-end (i.e., primarily about the lateral axis)
    9 Rollover (overturn), details unknown

Source: Primary sources are the vehicle and scene inspections; secondary sources include photographs, police report, driver interviews, and other interviewees.

Remarks:

Rollover is defined as any vehicle rotation of 90 degrees or more about any true longitudinal or lateral axis. Rollover can occur at any time during the collision and is coded independently of other configuration questions.

Code "0" [No rollover (no overturning)] if uncertainty exists concerning whether or not this vehicle rolled over. In addition, use this code if a trailer attached to the vehicle rolled over but the vehicle itself did not.

Codes "1", "2", "3", and "4" (Rollover, ...) are coded on the basis of the researcher's accident reconstruction. A "quarter turn" is defined as a rotation of 90 degrees about an axis of the vehicle; this does not include rotation about the vertical axis, commonly called yaw. Therefore, if a vehicle rolled longitudinally onto its roof (i.e., side-to-side roll), then it rolled 180 degrees and is coded "2" (Rollover, 2 quarter turns). When a vehicle rolls four or more quarter turns, code "4" (Rollover, 4 or more quarter turns) and specify the number of quarter turns involved.

Code "5" [Rollover--end-over-end (i.e., primarily about the lateral axis)] is used when the rollover is mainly end-over-end. This code is used when a rollover is a combination of a side-to-side and end-over-end roll and it cannot be determined which type of rollover is most prevalent.

Variable Name: Front Override/Underride (this vehicle) [cont'd.]
                 Rear Override/Underride (this vehicle) [cont'd.]

ride appears on the CDC Worksheet (Page 3 of the Exterior Vehicle Form) but is not coded in variables EV06-EV11 or EV14-EV19, Collision Deformation Classification.

Code "0" (No override/underride, or not an end-to-end impact) when:

● both vehicles are inspected and the override/underride configuration is not applicable for the end-to-end impact (code "0" for both vehicles);

● this vehicle is inspected and the override/underride configuration is not applicable for this vehicle for the end-to-end impact, and the other vehicle is not inspected [code "9" (Unknown) for the uninspected vehicle]; or

● the impact configuration is not end-to-end.

Code "1", "2", or "3" [Override (see specific CDC)] when:

● this inspected vehicle is involved in an override situation, and

● its CDC is entered in: EV06-EV11 (code "1"), EV14-EV19 (code "2"), or on the CDC Worksheet only [Page 3 of the Exterior Vehicle Form (code "3")].

Code "4", "5", or "6" [Underride (see specific CDC)] when:

● this inspected vehicle is involved in an underride situation, and

● its CDC is entered in: EV6-EV11 (code "4"), EV14-EV19 (code "5"), or on the CDC Worksheet only [Page 3 of the Exterior Vehicle Form (code "6")].

Code "7" (Medium/heavy truck override) is used if this inspected vehicle's front or rear bumper was underneath (i.e., underride) a medium/heavy truck (front or rear) such that an uneven crush pattern resulted to this vehicle's: (1) bumper/grille area (or bumper/"trunk" area), and/or (2) the above-bumper (front or rear) and greenhouse areas.

Variable Name: Front Override/Underride (this vehicle) [cont'd.]
                 Rear Override/Underride (this vehicle) [cont'd.]

If a vehicle is not equipped with a bumper (e.g., rear of some pickup trucks), then consider the equivalent end structure for coding these variables.

VEH.#1   VEH#2

SITUATION A

GV25	GV26	
"1"-"3"	"0"	(VEH. #1)
"0"	"4"-"6"	(VEH. #2)

OVERRIDE   UNDERRIDE

VEH. #1   VEH.#2

SITUATION B

GV25	GV26	
"4"-"6"	"0"	(VEH. #1)
"0"	"1"-"3"	(VEH. #2)

UNDERRIDE   OVERRIDE

As indicated in **Situation A**, the trunk area of Vehicle #2 is damaged (i.e., "crushed") while the rear bumper is relatively undisturbed. Hence, the uneven damage pattern. Conversely, the front of Vehicle #1 is "crushed" at bumper height only, or is crushed uniformly at the bumper and grille levels (i.e., an "even" damage pattern). Even though Vehicle #1 may not exhibit the uneven damage pattern, it would still receive an applicable override code due to the resultant underride damage to Vehicle #2.

When the bumper receives measurable crush and the area above the bumper also receives measurable crush, the override/underride codes are applicable if the impact configuration applies. For example, (Situation A) the front bumper (Vehicle #1) may be crushed 2" rearward and the grille area may be crushed 6" rearward. While the averaging technique rule for CRASH does not apply for the different levels of crush, the impact may in fact meet the configuration rule for the override/underride variables.

When override/underride are applicable, these variables are coded based upon the corresponding CDC. Elements "1" and "4" (1st CDC) are used when EV06-EV11, represents the override or underride damage. Elements "2" and "5" (2nd CDC) are used when EV14-EV19 represents the override/underride damage. Elements "3" and "6" (Other not automated CDC) are used when the override/under-

Variable Name: Heading Angle for This Vehicle
                Heading Angle for Other Vehicle

Element Values:

       Blank (GV07 = 50-99)
       000-359 Code actual value
       997 Noncollision
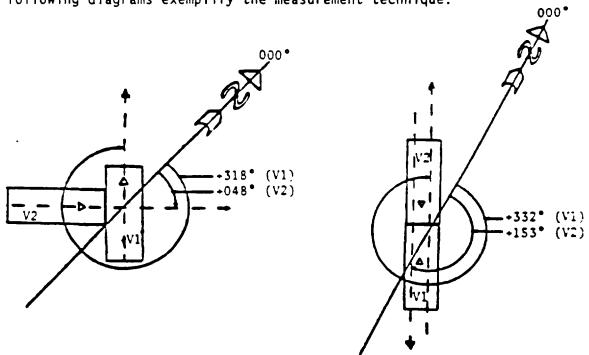   998 Impact with object
       999 Unknown

Source: Scene inspection, vehicle inspection, and interviews

Remarks:

GV27, Heading Angle for This Vehicle, records the heading angle for this vehi-
cle's highest delta V when this impact was with another vehicle. Variable
GV28, Heading Angle for Other Vehicle, records the corresponding angle for the
other vehicle. Note, for these variables, parked vehicles are considered
other vehicles and not objects.

For vehicle-to-vehicle collisions, use your scene diagram referencing system
to determine the heading angles at the point of impact for this vehicle's
highest delta V. All measurements are referenced to the north arrow on the
diagram. The heading angle of each vehicle is determined by projecting the
longitudinal axis of the vehicle through the extension of the north arrow.
The angle value is obtained by using a 360° protractor and measuring in a
clockwise direction from the north arrow. The north arrow always represents
0° (degrees). The angle is a positive value.

The following diagrams exemplify the measurement technique.

Variable Name: Front Override/Underride (this vehicle) [cont'd.]
                 Rear Override/Underride (this vehicle) [cont'd.]

Code "9" (Unknown) is <u>only</u> used when:

- this vehicle was involved in an end-to-end impact configuration <u>and</u>: (1)it was <u>not</u> inspected, <u>or</u> (2) it was repaired.

- the vehicle-to-vehicle impact configuration type is unknown.

RECONSTRUCTION PROGRAMS OVERVIEW

Two algorithms are available for reconstruction in CDS NASS. Code GV29, Basis for Total Delta V (Highest), and the results GV30-GV33 (.... Delta V) whenever a reconstruction program is applicable. Reconstruct and encode the highest delta V. If there is a question as to which impact had the higher delta V, run a reconstruction program on all impacts and use the output to rank their severity. For additional information on each reconstruction program, refer to its particular reference manual.

CRASHPC

CRASHPC is based on (CRASH3) Calspan's Reconstruction of Accident Speeds on the Highway which is the primary algorithm used in CDS NASS. This program is designed to handle vehicle to vehicle or vehicle to barrier collisions. The CRASH3 program makes basic assumptions during its calculations. Because of these assumptions, the following collisions cannot be run on CRASH3.

- rollovers
- yielding fixed objects
- sideswipes
- nonhorizontal forces
- severe override/underride
- undercarriage damage
- collisions with trains/large trucks
- collisions with animals/pedestrians/cyclists
- insufficient data (vehicle inspection required: see OLDMISS)
- multiple impacts to the same area.

Damage Algorithm (CRASH3)

The damage algorithm is the most often used portion of CRASH3. This subroutine can be used when scene data are not available to generate a speed change. Because the delta V is based entirely on vehicle deformation, care must be taken to provide accurate information.

Trajectory Algorithm (CRASH3)

In this method the scene data as well as vehicle data are used to estimate delta V. This subroutine calculates either a damage and trajectory estimate in head-on collisions or a Conservation of Linear Momentum solution in angular collisions. Because the scene data are calculated separately in the Conservation of Linear Momentum solution, a separate delta V is generated and a comparison with the damage delta V can be made for accuracy.

Reconciliation Of Different Results Between Damage And Trajectory (CRASH)

When evidence from the scene and the vehicle are present, the execution of the reconstruction program produces two independent estimates of delta V. The two results will seldom be precisely equal. What is a significant difference, and what action must the researcher take in the face of a significant difference?

Variable Name: Heading Angle for This Vehicle (cont'd.)
                 Heading Angle for Other Vehicle (cont'd.)

A value is recorded for all applicable vehicle-to-vehicle collisions regard-
less of the diagram level. Level 1 diagrams approximate vehicle orientations
at impact (see discussion in Introductory--section 4.5).

Code "997" (Noncollision) is used for both variables when the Highest Delta V
         CDC (EV06-EV11, Collision Deformation Classification) is "Blank".

Code "998" (Impact with object) is used for both variables when a collision
         with an object (EV05, Object Contacted, equals "41"-"69" or "72"-
         "98") results in this vehicle's highest delta V.

Code "999" (Unknown) is used only for vehicle-to-vehicle collisions and fcr
         both variables when either vehicle's impact position cannot be ap-
         proximated on the scene diagram.

RECONSTRUCTION PROGRAMS OVERVIEW

OLDMISS

This program is designed to handle vehicle-to-vehicle impacts when data on one of the vehicle's are missing.

Since the OLDMISS algorithm is based on the CRASH3 program the same basic CRASH3 assumptions must not be violated. Due to violations in the basic CRASH3 assumptions or the collision condition being outside of the scope of OLDMISS, the following collision types are <u>not</u> applicable to OLDMISS.

- Side-to-side collisions
- Oblique angle collisions
- Sideswipe
- Severe underride/override
- Nonhorizontal force
- Undercarriage damage
- Collisions with vehicles "out of scope" (stiffness, size)
- Multiple impacts to the same area on the known vehicle
- Insufficient data

Information required on "unknown vehicle"

1. Size and stiffness category
2. Approximate "D" dimension
3. Curb weight (± 200 lbs.)
4. Heading angle at impact (approximate)
5. Area of damage (third character of CDC - "Area of Deformation")

Warnings:

(1) When using the OLDMISS algorithm for pickups and vans, you must know additional information for a valid run.

    a. Wheelbase [to determine size and stiffness (side impacts)]
    b. Curb weight (± 200 lbs.)
    c. Stiffness
        • Rear impacts: Vehicles must have OEM bumpers.
        • Front impacts: Vehicle cannot have add-on equipment (e.g.: plow, winch, Nerf bars, etc.).

(2) OLDMISS results that are too high or low are not to be entered on the file.

(3) Do not confuse the heading angle with the PDOF.

(4) Check the PDOF result for the unknown vehicle. This PDOF must be a reasonably collinear angle for this collision.

RECONSTRUCTION PROGRAMS OVERVIEW

Experience indicates that satisfactory agreement exists between two estimates when the directions of force are collinear and their Delta V components magnitude differ by no more than 2.5 mph or 10 percent, whichever is greater. When the agreement is not satisfactory, the data associated with each option should be reviewed for accuracy.

IMPACT SPEED MPH		SPEED CHANGE MPH			BASIS OF RESULTS
FWD	LAT	TOTAL	LONG.	LATERAL	
19.3	0.0	18.1	-15.9	8.5	SPINOUT TRAJECTORIES AND CONSERVATION OF LINEAR MOMENTUM
					SPINOUT TRAJECTORIES AND DAMAGE
		10.0	-7.1	7.1	DAMAGE DATA ONLY

Example A

The Total, Longitudinal, and Lateral speed changes of SPINOUT TRAJECTORIES AND CONSERVATION OF LINEAR MOMENTUM are each compared to the DAMAGE DATA ONLY results. In Example A a good match is not present, so additional reruns would be made to improve the accuracy. Once the speed changes are in range, the results for Total, Longitudinal, and Lateral speed changes are each averaged and the averaged results encoded in variables GV30-GV33 (... Delta V) on the General Vehicle Form. If agreement cannot be reached between the two methods, the case is flagged for special review by the zone center.

Variable Name: Basis for Total Delta V (highest)

Element Values:

Blank (GV07 = 50-99)

Delta V calculated
1   CRASH program - damage only routine
2   CRASH program - damage and trajectory routine
3   Missing vehicle algorithm

Delta V not calculated
4   At least one vehicle (which may be this vehicle) is beyond the scope of an acceptable reconstruction program, regardless of collision conditions.
5   All vehicles within scope (CDC applicable) of CRASH program but one of the collision conditions is beyond the scope of the CRASH program or other acceptable reconstruction techniques, regardless of the adequacy of damage data.
6   All vehicles and collision conditions are within scope of one of the acceptable reconstruction programs, but there is insufficient data available.

Source: Researcher determined -- inputs include CRASH output (if applicable), vehicle inspection, scene inspection, police report, and photographs.

Remarks:

This variable is used to indicate: (1) which reconstruction program or routine was used to compute this vehicle's highest delta V [results encoded in GV30-GV33 (... Delta V)], or (2) the reason a reconstruction program was not applied to the most severe impact.

Code "1"   (CRASH program - damage only routine) means the CRASH output [encoded in GV30-GV33 (... Delta V)] is based upon vehicle damage only.

Code "2"   (CRASH program - damage and trajectory routine) means that the CRASH output [encoded in GV30-GV33 (... Delta V)] is based on trajectory evidence documented at the scene, in addition to vehicle damage.

Code "3"   (Missing vehicle algorithm) means that in a two vehicle impact only one vehicle is inspected (damage measurements and CDC obtained), and for the other vehicle, the damage measurements (including CDC) are missing; however, enough data are available to use the OLDMISS algorithm.

Code "4"   (At least one vehicle ... is beyond the scope ....) means that one of the vehicles (including this vehicle) involved in this vehicle's most severe collision cannot be adequately represented by the parameters in an acceptable reconstruction size/stiffness category

Table Of Weights To Be Used For Known Occupants With Unknown Weight

For known occupants with unknown weights, use the occupant's age or age group in the table below to determine the appropriate weight to add.*

Age	0	1	2	3	4	5	6	7	8	9	10	11	12	13
Male	17	25	30	35	39	43	48	53	59	66	73	83	93	10:5
Female	16	24	29	33	37	41	45	51	59	67	77	86	97	10:6

Age	14	15	16	17	18-24	25-34	35-44	45-54	55-64	65-97
Male	119	131	142	149	161	172	176	175	170	163
Female	115	121	124	125	128	132	139	145	144	142

Age Group	Child (0-12)	Adolescent (13-17)	Adult (18-97)
Male	50**	130***	170
Female		120**	137

* Sources of Information:

● Weight and Heights of Adults 18-74 Years of Age: United States, 1971-1974. Vital and Health Statistics: Series 11, Data from the National Health Survey; Number 211. DHEW publication (PHS) 79-1659. Table 4, page 17; data based on 50th percentile.

● NCHS Growth Curves for Children Birth-18 years: United States. Vital and Health Statistics: Series 11, Data from the National Health Survey; Number 165. DHEW publication (PHS) 79-1650. Tables 10, page 34, and 14, page 38; data based on 50th percentile at half year age to the nearest pound.

** Based on 6 and 7 year olds rounded to the nearest 5 pounds.

*** Based on 15 year olds rounded to the nearest 5 pounds.

Variable Name: Total Delta V

Element Values:

Range: 00 through 97, 99, Blank

Blank (GV07 = 50-99)
Nearest mph
00 Less than 0.5 mph
97 96.5 mph and above
99 Unknown

Source: Reconstruction program

Remarks:

Code the Total Delta V from the results generated by the reconstruction pro-
gram for this vehicle's most severe impact. This delta V must be for the same
impact coded in Highest Delta V (EV04-EV11, Collision Deformation Classifica-
tion).

Code "99" (Unknown) is used when the results for the most severe impact are
        unobtainable. If the CDC associated with the reconstruction program
        was only entered in Second Highest Delta V (EV12-EV19, Collision
        Deformation Classification), then enter the Total Delta V as shown
        in the results on the General Vehicle Form in the space available in
        the Secondary (noncoded) column.

Variable Name: Basis for Total Delta V (highest) [cont'd.]

(e.g., large truck, motorcycle, bus, etc.). As a general rule in CDS NASS, any vehicle that is not applicable for CDC is not applicable for an acceptable reconstruction program.

Code "5" (... one of the collision conditions is beyond the scope ....) means that the involved vehicles fit the vehicle parameters for an acceptable reconstruction program; however, the collision type is beyond the scope of the program (e.g., rollover, sideswipe, etc.).

Code "6" (... insufficient data available.) means that the involved vehicles and the collision type are applicable for an acceptable reconstruction program ("1" through "3" above), but due to insufficient data on one (or both) of the vehicles (or object), an acceptable reconstruction program ("1" through "3" above) cannot be used.

Variable Name: Lateral Component of Delta V

Element Values:

Range: -97 to -01, _00, +01 to +97, _99, Blank

Blank (GV07 = 50-99)
Nearest mph
_00   Greater than -0.5 and less than +0.5 mph
±97   ≥96.5 mph and above
_99   Unknown

Source: Reconstruction program

Remarks:

Code the Lateral Component of Delta V from the results generated by the recon-
struction program for this vehicle's most severe impact. This delta V must be
for the same impact coded in Highest Delta V (EV04-EV11, Collision Deformation
Classification).

A plus (+) or minus (-) sign must be circled when encoding a value from a
reconstruction program. Code " 99" (Unknown) does not require a sign to be
circled.

Code " 99" (Unknown) is used when the results for the most severe impact are
        unobtainable. If the CDC associated with the reconstruction program
        was only entered in Second Highest Delta V (EV12-EV19, Collision
        Deformation Classification), then enter the Lateral Component of
        Delta V as shown in the results on the General Vehicle Form in the
        space available in the Secondary (noncoded) column.

Variable Name: Longitudinal Component of Delta V

Element Values:

    Range: -97 to -01, _00, +01 to +97, _99, Blank

    Blank (GV07 = 50-99)
    Nearest mph
    _00 Greater than -0.5 and less than +0.5 mph
    ±97 ≥96.5 mph and above
    _99 Unknown

Source: Reconstruction program

Remarks:

Code the Longitudinal Component of Delta V from the results generated by the reconstruction program for this vehicle's most severe impact. This delta V must be for the same impact coded in the Highest Delta V (EV04-EV11, Collision Deformation Classification).

A plus (+) or minus (-) sign must be circled when encoding a value from a reconstruction program. Code " 99" (Unknown) does not require a sign to be circled.

Code " 99" (Unknown) is used when the results for the most severe impact are
        unobtainable. If the CDC associated with the reconstruction program
        was only entered in Second Highest Delta V (EV12-EV19, Collision
        Deformation Classification), then enter the Longitudinal Component
        of Delta V as shown in the results on the General Vehicle Form in
        the space available in the Secondary (noncoded) column.

Variable Name: Confidence in Reconstruction Program Results
                 (for Highest Delta V)

Element Values:

     Blank (GV07 = 50-99)
     0 No reconstruction
     1 Collision fits model - results appear reasonable
     2 Collision fits model - results appear high
     3 Collision fits model - results appear low
     4 Borderline reconstruction - results appear reasonable

Source: Researcher determined from reconstruction program results, vehicle
          inspection, scene inspection, and injury data.

Remarks:

Determine the quality of this vehicle's reconstruction program by evaluating
the results of the reconstruction program and the data used to create those
results for the Highest Delta V (EV04-EV11, Collision Deformation Classifica-
tion). The vehicle inspection, scene inspection, and the injury information
must all be reviewed for this determination.

Code "0"   (No reconstruction) is used if no reconstruction program was used to
           determine the Highest Delta V (EV04-EV11, Collision Deformation
           Classification).

Code "1"   (Collision fits model - results appear reasonable) is used if the
           results of the reconstruction in comparison to the actual collision
           are believed to be within an acceptable range for the Highest Delta
           V (EV04-EV11, Collision Deformation Classification).

Code "2"   (Collision fits model - results appear high) is used if the results
           of the reconstruction in comparison to the actual collision appear
           to over represent the Highest Delta V (EV04-EV11, Collision Deforma-
           tion Classification) for this vehicle. For example, vehicle damage
           is minor (bumper stroke only), and the total delta V is 15 mph.

Code "3"   (Collision fits model - results appear low) is used if the results
           of the reconstruction in comparison to the actual collision appear
           to under represent the Highest Delta V (EV04-EV11, Collision Defor-
           mation Classification) for this vehicle. For example, vehicle dam-
           age is severe (25" of distributed frontal crush), injury level is
           high (AIS-3), and the total delta V is 15 mph.

Code "4"   (Borderline reconstruction - results appear reasonable) is used if
           the results of the reconstruction in comparison to the actual colli-
           sion are within an acceptable range for the Highest Delta V (EV04-
           EV11, Collision Deformation Classification) for this vehicle; how-
           ever, some collision conditions were borderline for reconstruction.
           Code OLDMISS results as a boderline reconstruction if the results
           are reasonable.

Variable Name: Energy Absorption

Element Values:

    Range: 0000 through 9997, 9999, Blank

    Blank (GV07 = 50-99)
    Nearest 100 foot-pounds
    0000   Less than 50 foot-pounds
    9997   999,650 foot-pounds or more
    9999   Unknown

Source: Reconstruction program

Remarks:

Code the Energy Absorption from the results generated by the reconstruction program for this vehicle's most severe impact. This amount of energy must be for the same impact coded in Highest Delta V (EV04-EV11, Collision Deformation Classification).

Code "9999" (Unknown) is used when the results for the most severe impact are unobtainable. If the CDC associated with the reconstruction program was only entered in Second Highest Delta V (EV12-EV19, Collision Deformation Classification), then enter the Energy Absorption as shown in the results on the General Vehicle Form in the space available in the Secondary (noncoded) column.

Code "9997" (999,650 foot-pounds or more) if the reconstruction program is used and the amount of energy absorbed equals or exceeds 999,650 ft-lbs.

Variable Name: Type of Vehicle Inspection

Element Values:

    Blank (GV07 = 50-99)
    0 No inspection
    1 Complete inspection
    2 Partial inspection (specify):

Source: Researcher determined

Code "0"   (No inspection) is used when neither a complete nor a partial in-
           spection of this vehicle was obtained, irrespective of the reason
           (e.g., refusal, not required, etc.).

Code "1"   (Complete inspection) is used when both the exterior and the inte-
           rior of the unrepaired vehicle were inspected and all applicable
           measurements and photographs were obtained.

Code "2"   (Partial inspection) is used when any phase of the required inspec-
           tion is not completed such that element "1" (Complete inspection) is
           not applicable. This code includes inspection of partially or en-
           tirely repaired vehicles.

Variable Name: Confidence in Reconstruction Program Results
                 (for Highest Delta V) [cont'd.]

   Use this code for all <u>missing</u> vehicles whose delta V is determined
   by the OLDMISS program.

EXTERIOR VEHICLE FORM

1. Primary Sampling Unit Number ___ ___	3 Vehicle Number ___ ___
2 Case Number – Stratum ___ ___ ___ ___	

VEHICLE IDENTIFICATION

VIN ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ Model Year _____

Vehicle Make (specify)· _____   Vehicle Model (specify)· _____

LOCATOR

Locate the end of the damage with respect to the vehicle longitudinal center line or bumper corner for end impacts or an undamaged axle for side impacts.

Specific Impact No	Location of Direct Damage	Location of Field L

CRUSH PROFILE

NOTES Identify the plane at which the C-measurements are taken (e.g., at bumper, above bumper, at sill, above sill, etc.) and label adjustments (e.g., free space).

Measure and document on the vehicle diagram the location of maximum crush.

Measure C1 to C6 from driver to passenger side in front or rear impacts and rear to front in side impacts

Free space value is defined as the distance between the baseline and the original body contour taken at the individual C locations. This may include the following: bumper lead, bumper taper, side protrusion, side taper, etc. Record the value for each C-measurement and maximum crush.

Use as many lines/columns as necessary to describe each damage profile.

Specific Impact Number	Plane of C-Measurements	Direct Damage Width (CDC)	Direct Damage Max Crush	Field L	C_1	C_2	C_3	C_4	C_5	C_6	$\pm D$

VEHICLE DAMAGE SKETCH

TIRE – WHEEL DAMAGE	ORIGINAL SPECIFICATIONS	WHEEL STEER ANGLES

TIRE – WHEEL DAMAGE

a Rotation physically restricted   b Tire deflated

a	b
RF ___	RF ___
LF ___	LF ___
RR ___	RR ___
LR ___	LR ___

(1) Yes (2) No (8) NA (9) Unk

TYPE OF TRANSMISSION

☐ Manual   ☐ Automatic

ORIGINAL SPECIFICATIONS

Wheelbase   _____

Overall Length   _____

Maximum Width   _____

Curb Weight   _____

Average Track   _____

Front Overhang   _____

Rear Overhang   _____

Engine Size cyl./ displ.   _____

Undeformed End Width   _____

WHEEL STEER ANGLES

(For locked front wheels or displaced rear axles only)

RF ± ___ ___ °
LF ± ___ ___ °
RR ± ___ ___ °
LR ± ___ ___ °

Within ± 5 degrees

DRIVE WHEELS

☐ FWD   ☐ RWD   ☐ 4WD

Approximate Cargo Weight _____

POST-CRASH

Bumper corner _____ _____ _____ Bumper corner

Stringline _____ _____ Stringline

POST-CRASH

Bumper corner _____ _____ _____ Bumper corner

Stringline _____ _____ Stringline

NOTES Sketch new perimeter and cross hatch direct damage and single hatch induced damage on all views. Annotate observations which might be useful in reconstructing the accident (e g grass in tire bead direction of striations scuff on sidewall etc) If pulling trailer sketch type of trailer and damage received on the back of this page
Annotate any damage caused by extrication such as component removal by torching prying or hydraulic shears

CDC WORKSHEET

CODES FOR OBJECT CONTACTED

01-30 – Vehicle Number

Noncollision
- (31) Overturn – rollover
- (32) Fire or explosion
- (33) Jackknife
- (34) Other intraunit damage (specify):

_____

- (35) Noncollision injury
- (38) Other noncollision (specify):

_____

- (39) Noncollision – details unknown

Collision with Fixed Object
- (41) Tree (≤4 inches in diameter)
- (42) Tree (>4 inches in diameter)
- (43) Shrubbery or bush
- (44) Embankment

- (45) Breakaway pole or post (any diameter)

Nonbreakaway Pole or Post
- (50) Pole or post (≤4 inches in diameter)
- (51) Pole or post (>4 but ≤12 inches in diameter)
- (52) Pole or post (>12 inches in diameter)
- (53) Pole or post (diameter unknown)

- (54) Concrete traffic barrier
- (55) Impact attenuator
- (56) Other traffic barrier (specify):

_____

- (57) Fence
- (58) Wall
- (59) Building
- (60) Ditch or Culvert
- (61) Ground
- (62) Fire hydrant
- (63) Curb
- (64) Bridge
- (68) Other fixed object (specify):

_____

- (69) Unknown fixed object

Collision With Nonfixed Object
- (71) Motor vehicle not in transport
- (72) Pedestrian
- (73) Cyclist or cycle
- (74) Other nonmotorist or conveyance (specify):

_____

- (75) Vehicle occupant
- (76) Animal
- (77) Train
- (78) Trailer, disconnected in transport
- (88) Other nonfixed object (specify):

_____

- (89) Unknown nonfixed object

- (98) Other event (specify):

_____

- (99) Unknown event or object

DEFORMATION CLASSIFICATION BY EVENT NUMBER

Accident Event Sequence Number	Object Contacted	(1) (2) Direction of Force (degrees)	Incremental Value of Shift	(3) Deformation Location	(4) Specific Longitudinal or Lateral Location	(5) Specific Vertical or Lateral Location	(6) Type of Damage Distribution	(7) Deformation Extent
__ __	__ __	__ __ __	__ __	__	__	__	__	__ __
__ __	__ __	__ __ __	__ __	__	__	__	__	__ __
__ __	__ __	__ __ __	__ __	__	__	__	__	__ __
__ __	__ __	__ __ __	__ __	__	__	__	__	__ __
__ __	__ __	__ __ __	__ __	__	__	__	__	__ __
__ __	__ __	__ __ __	__ __	__	__	__	__	__ __
__ __	__ __	__ __ __	__ __	__	__	__	__	__ __
__ __	__ __	__ __ __	__ __	__	__	__	__	__ __
__ __	__ __	__ __ __	__ __	__	__	__	__	__ __

COLLISION DEFORMATION CLASSIFICATION

HIGHEST DELTA "V"

Accident Event Sequence Number	Object Contacted	(1) (2) Direction of Force	(3) Deformation Location	(4) Specific Longitudinal or Lateral Location	(5) Specific Vertical or Lateral Location	(6) Type of Damage Distribution	(7) Deformation Extent
4 __ __	5. __ __	6 __ __	7 __	8. __	9. __	10. __	11. __ __

Second Highest Delta "V"

12. __ __	13. __ __	14. __ __	15. __	16. __	17. __	18. __	19. __ __

CRUSH PROFILE

(The crush profile for the damage described in the CDC(s) above should be documented in the appropriate space below ALL MEASUREMENTS ARE IN INCHES)

HIGHEST DELTA "V"

20. L	21. C1	C2	C3	C4	C5	C6	22. + – D
							+ –
__ __ __	__ __	__ __	__ __	__ __	__ __	__ __	__ __ __ __

Second Highest Delta "V"

23. L	24. C1	C2	C3	C4	C5	C6	25. + – D
							+ –
__ __ __	__ __	__ __	__ __	__ __	__ __	__ __	__ __ __ __

26. Are CDCs Documented but Not Coded on The Automated File __ (0) No (1) Yes	27. Researcher's Assessment of Vehicle Disposition __ (0) Not towed due to vehicle damage (1) Towed due to vehicle damage (9) Unknown	28. Original Wheelbase __ __ __ __ ____Code to the nearest tenth of an inch (9999) Unknown

STOP HERE IF THE CDS APPLICABLE
VEHICLE WAS NOT TOWED (I.E., GV09 = 0 OR 9)

CRASHPC PROGRAM SUMMARY

Identifying Title

Primary Sampling Unit	Case No – Stratum	Accident Event Sequence No	Date (mm dd yy)

CRASHPC Vehicle Identification

Vehicle 1 _____

Vehicle 2 _____

Year   Make   Model   NASS Veh No

GENERAL INFORMATION

VEHICLE 1

Size ___

Weight _____ + ____ + ____ = ___ ___ ___
      Curb   Occupant(s) Cargo

CDC ___ ___ ___ ___ ___ ___

PDOF ___ ___ ___

Stiffness ___

VEHICLE 2

Size ___

Weight _____ + ____ + ____ = ___ ___ ___
      Curb   Occupant(s) Cargo

CDC ___ ___ ___ ___ ___ ___

PDOF ___ ___ ___

Stiffness ___

SCENE INFORMATION

Rest and Impact Positions   [ ] No, *Go To Damage Information*   [ ] Yes

VEHICLE 1

Rest Position
  X ___ ___ ___ . ___
  Y ___ ___ ___ . ___
  PSI ___ ___ ___ . ___

Impact Position
  X ___ ___ ___ . ___
  Y ___ ___ ___ . ___
  PSI ___ ___ ___ . ___

Slip Angle ___ ___ ___

VEHICLE 2

Rest Position
  X ___ ___ ___ . ___
  Y ___ ___ ___ . ___
  PSI ___ ___ ___ . ___

Impact Position
  X ___ ___ ___ . ___
  Y ___ ___ ___ . ___
  PSI ___ ___ ___ . ___

Slip Angle ___ ___ ___

VEHICLE MOTION

Sustained Contact   [ ] No   [ ] Yes

VEHICLE 1

Skidding   [ ] No   [ ] Yes
  Skidding Stop Before Rest   [ ] No   [ ] Yes
  End-of-Skidding Position
  X ___ ___ ___ . ___
  Y ___ ___ ___ . ___
  PSI ___ ___ ___ . ___

Curved Path   [ ] No   [ ] Yes
  Point on Path
  X ___ ___ ___ . ___   Y ___ ___ ___ . ___

Rotation Direction   [ ] None   [ ] CW   [ ] CCW
  Rotation > 360°   [ ] No   [ ] Yes

VEHICLE 2

Skidding   [ ] No   [ ] Yes
  Skidding Stop Before Rest   [ ] No   [ ] Yes
  End-of-Skidding Position
  X ___ ___ ___ . ___
  Y ___ ___ ___ . ___
  PSI ___ ___ ___ . ___

Curved Path   [ ] No   [ ] Yes
  Point on Path
  X ___ ___ ___ . ___   Y ___ ___ ___ . ___

Rotation Direction   [ ] None   [ ] CW   [ ] CCW
  Rotation > 360°   [ ] No   [ ] Y s

FRICTION INFORMATION

Coefficient of Friction . __ __ __

Rolling Resistance Option __

Vehicle 1 Rolling Resistance

LF __ . __ __   RF __ . __ __

LR __ . __ __   RR __ . __ __

Vehicle 2 Rolling Resistance

LF __ . __ __   RF __ . __ __

LR __ . __ __   RR __ . __ __

TRAJECTORY INFORMATION

Trajectory Data [ ] No {] Yes

If No, Go To Damage Information

Vehicle 1 Steer Angles

LF __ __ __   RF __ __ __

LR __ __ __   RR __ __ __

Vehicle 2 Steer Angles

LF __ __ __   RF __ __ __

LR __ __ __   RR __ __ __

Terrain Boundary [ ] No [ ] Yes

First Point

X __ __ __ . __   Y __ __ __ . __

Second Point

X __ __ __ . __   Y __ __ __ . __

Secondary Friction Coefficient . __ __ __

DAMAGE INFORMATION

VEHICLE 1		VEHICLE 2	
Damage Length	__ __ __ . __ __	Damage Length	__ __ __ . __ __
Crush Depths	C1 __ __ . __ __	Crush Depths	C1 __ __ . __ __
	C2 __ __ . __ __		C2 __ __ . __ __
	C3 __ __ . __ __		C3 __ __ . __ __
	C4 __ __ . __ __		C4 __ __ . __ __
	C5 __ __ . __ __		C5 __ __ . __ __
	C6 __ __ . __ __		C6 __ __ . __ __
Damage Offset	± __ __ __ . __ __	Damage Offset	± __ __ __ . __ __

IF THIS COMMON IMPACT WAS WITH A MOTOR VEHICLE NOT IN TRANSPORT FILL IN THE INFORMATION BELOW.

Model Year: _____

Make: _____

Model: _____

VIN: _____

The Weight, CDC, Scene Data and Damage Information for this vehicle should be recorded above.

Complete and ATTACH the appropriate vehicle damage sketch and dimensions to the Form.

OLDMIS PROGRAM SUMMARY

Identifying Title

_____	_____ _____	_____ _____	_____ _____ _____
Primary Sampling Unit	Case No — Stratum	Accident Event Sequence No	Date (mm dd yy)

OLDMIS Vehicle Identification

Vehicle 1 _____ _____ _____ _____

Vehicle 2 _____ _____ _____ _____

| Year | Make | Model | NASS Veh No |

GENERAL INFORMATION

Size Category for Each Vehicle

_____   _____
Vehicle 1   Vehicle 2

Stiffness Category for Each Vehicle

_____   _____
Vehicle 1   Vehicle 2

Vehicle Weight

	Curb	Occupant(s)	Cargo	
Veh. 1 _____	+ _____	+ _____	= _____ _____
Veh. 2 _____	+ _____	+ _____	= _____ _____

Vehicle Heading Angles At Impact, in Degrees

± ___ ___ ___.°   ± ___ ___ ___.°
Vehicle 1   Vehicle 2

Damaged Area of Each Vehicle

(F = Front, L = Left, R = Right,
 B = Back)

_____   _____
Vehicle 1   Vehicle 2

DAMAGE INFORMATION

For Which Vehicle Is
The Damage Known   ___

Damage Width in Inches
for Known Vehicle   L ___ ___ ___.___

Number of Crush Measurements
for Known Vehicle (2,4,or 6)   ___

Crush Measurements for
Known Vehicle (Inches)

C_1 ___ ___ ___.___
C_2 ___ ___ ___.___
C_3 ___ ___ ___.___
C_4 ___ ___ ___.___
C_5 ___ ___ ___.___
C_6 ___ ___ ___.___

Damage Midpoint Offset (D) for
Known Vehicle (Inches)   ± ___ ___ ___.___

PDOF for Known Vehicle
in Degrees (−360° to +360°)   ± ___ ___ ___

Estimated Damage Midpoint
Offset (D) for Unknown
Vehicle (Inches)   ± ___ ___ ___.___

INSTRUCTIONS FOR COMPLETION OF CDS APPLICABLE FIELD MEASUREMENTS PAGE

The first page of the Exterior Vehicle Form is designed to be a comprehensive data collection tool arranged in a format to allow sufficient space for documenting vehicle damage profiles and associated relevent measurements. The established protocol for obtaining crush data is defined in the NASS Accident Investigation Procedures Manual. The procedures for recording that data in a format that will maintain system-wide consistency are included in the following remarks.

Side or End Damage

Undeformed end width is measured and recorded whenever a side or end plane is involved.

End shift at frame (CDC) (check one) is assessed to determine whether sufficient end shift or bowing exists to necessitate incrementing the direction of force. Remember, end shift of four inches or more must be present on: both frame rails to allow for incrementation to the left or right, or at least one frame rail for vertical incrementation. If neither frame rail has end shift, this should be annotated on the form.

Locator

Locate end of damage with respect to the centerline or, for side impacts, to an undamaged axle. Spaces are provided to record the "Location of Direct Damage" and "Location of Field L" measurements with respect to the vehicle centerline or bumper corner for end impacts and an undamaged axle for side impacts. These required measurements are used to assist with CDC assignments (direct) and to determine the "D" dimension if not directly measured. The following examples include the data that are required.

Direct Damage:
- begins 1.5" right of centerline, or
- begins 19" rearward of the rear axle

Field L:
- Entire end plane involved, or
- C_1 is 40" forward of the rear axle

These data are required for each impact. A space is provided to indicate the "Specific Impact Number". If there are more impacts than spaces, the data are listed on the back of the first page of the Exterior Vehicle Form.

Crush Profile

Several data elements are required to properly complete the crush profile data portion of the first page of the Exterior Vehicle Form. These data are grouped together as they are generally obtained during the vehicle inspection. Each column (or associated group of columns) is explained as below.

Specific Impact Number contains the impact sequence number specific to this vehicle for which the data are being obtained.

INSTRUCTIONS FOR COMPLETION OF CDS APPLICABLE FIELD MEASUREMENTS PAGE   (2)

Plane of C-Measurements contains the annotation of the plane at which the crush profile is documented (i.e., bumper, grille, sill, mid-door). This column is annotated "average" when used to indicate the resultant profile from an underride-type impact.

Direct Damage: Width contains the indication of the length of direct damage as measured on the vehicle.

Direct Damage: Max Crush contains the measured maximum crush for the profile being documented. Recall that maximum crush is determined after free space is subtracted. Indicate the free space at Max Crush in the space below the measurement. Use a third line to indicate the resultant maximum crush.

Field L contains the recorded Field L as obtained during the vehicle inspection. Recall that the Field L represents both direct and induced damage as measured along the reference line (shock cord). This measurement is used to locate the position of the C-measurements.

C1-C6 contains the recorded two, four, or six C-measurements (as appropriate) on the line for the crush profile being documented. On the line beneath, annotate the free space to be subtracted. A third line is used to record the resultant crush profile.

$\pm$ D contains the recorded "D" dimension. The data obtained for the Field L damage locator is used to calculate "D"; indicate whether it is a positive or negative value.

If the spaces provided are not sufficient for the number of impacts which require documentation, include the additional data on the back of the first page of the Exterior Vehicle Form.

In the following example, a crush profile for a frontal bumper underride impact is displayed. This example is used as a guideline when completing the first page of the Exterior Vehicle Form.

INSTRUCTIONS FOR COMPLETION OF CDS APPLICABLE FIELD MEASUREMENTS PAGE   (3)

Specific Impact Number	Plane of C-Measurements	Direct Damage		Field L	C_1	C_2	C_3	C_4	C_5	C_6	- D
		Width (CDC)	Max Crush								
1	GRILLE	19	29	54	29	21	14	11	7	6	0
	– FREESPACE		6		6	4.5	4	4	4.5	6	
	RESULTANT		23		23	16.5	10	7	2.5	0	0
1	BUMPER	19	9	56	9	6	4.5	2	2	1	0
	– FREESPACE		2		2	1	.5	.5	1	2	
	RESULTANT		7		7	5	4	1.5	1	0	0
①	AVERAGE	19	15	56	15	10.75	7	4.25	1.75	0	0

INSTRUCTIONS FOR COMPLETION OF VEHICLE DAMAGE SKETCH

Exterior Vehicle Form **Page 2** (and associated **Pages 2B-2I**) enables researchers to report data that are not encoded and might otherwise be omitted from the case. Pertinent data such as scrapes, scratches, buckling, paint transfers, and other indications of engagement or relative motion are reported on this page. In addition, sketch the vehicle damage profile on the outlines provided, using the established protocol as below.

- Outline the damage profile produced by the impact.

- Use cross hatches to indicate direct damage.

- Highlight induced damage and/or remote buckling with diagonal lines.

The following sketch exemplifies these procedures on the overhead profile.

INSTRUCTIONS FOR COMPLETION OF VEHICLE DAMAGE SKETCH   (2)

Although researchers are reporting a vehicle's accident related damage, other damage may be observed which existed prior to the accident. These damaged areas, in addition to any towing related damage, are indicated and annotated accordingly.

Relevant measurements are required on the Vehicle Damage Sketch page in order to support other coded and noncoded data elements. Wheelbase and overhang measurements are necessary to provide relative measurements in support of documented crush profiles. Wheelbase and overhang are required from both sides of the vehicle for all vehicles inspected. Extent zone measurements are also required; although, only the measurements which pertain to the damage plane are needed (i.e., hood length for frontal, side extents for side impacts, etc.). Obtain all measurements which may be needed when questions arise regarding the damaged plane. If doubt exists concerning whether an impact is to a frontal or a side plane, obtain both front and side extent zone measurements.

The example below provides wheel base, overhang, and extent zone data for a frontal impact.

| Bumper corner | [84] | [99] | [39] | Bumper corner |
| Stringline | [39½] | | [40⅞] | Stringline |

Additional data required on the Vehicle Damage Sketch page includes.

● Original dimensions including: wheelbase, overall length, maximum width, curb weight, average track, and overhangs

● The engine displacement (i.e., 302 cu. in. or 5.0 L) and number of cylinders (i.e., 4, 6 or V8)

● The transmission type: automatic or manual (3, 4, 5 speed, etc.)

● The drive wheels: front wheel drive, rear wheel drive, or four wheel drive

● Approximate cargo weight

Variable Name: 1st C.D.C. - Accident Event Sequence Number
                 2nd C.D.C. - Accident Event Sequence Number

Element Values:

    Blank No event
    01-98 Code the sequence number of the event selected for inclusion in
           the adjacent variables (i.e., Object Contacted, EV05 and EV13; and
           CDCs, EV06-EV11 and EV14-EV19).

Source: Primary sources are the scene and vehicle inspections; secondary
          sources include the police report and interviewee.

Remarks:

In accidents involving multiple events, the events are numbered in sequence by
chronology in reference to the entire sequence. This total accident event
sequence number is coded adjacent (EV04 or EV12) to the CDC that was produced
during this event. For example, three cars are waiting at a red light. A
pickup truck rear ends the third car in line and pushes it into the second car
which in turn is pushed into the first car. The sequential event numbers in
this accident would be as follows.

    Event number 1 - pickup vs. 3rd car
    Event number 2 - 3rd car vs. 2nd car
    Event number 3 - 2nd car vs. 1st car

Do not forget that the numbers are actually encoded in accordance with CDC
prioritization. Refer to the Overview section of the CDC Related Remarks
(variables EV06-EV11, EV14-EV19 page 2) entitled "CDC Ranking" for comments on
selecting the events to be encoded in the CDC variables.

Code "Blank" (No event) cannot occur for EV04, 1st C.D.C. - Accident Event
          Sequence Number.

Variable Name: 1st C.D.C. - Object Contacted
                2nd C.D.C. - Object Contacted

Element Values:

    01-30 - Vehicle Number: If the object contacted by the vehicle under
            consideration was a motor vehicle in-transport, code the Vehi-
            cle Number assigned to that vehicle.

Noncollision
31 Overturn - rollover
32 Fire or explosion
33 Jackknife
34 Other intraunit damage
    (specify):
35 Noncollision injury
38 Other noncollision
    (specify):
39 Noncollision - details
    unknown

Collision with Fixed Object
41 Tree (≤ 4 inches in diameter)
42 Tree (> 4 inches in diameter)
43 Shrubbery or bush
44 Embankment

45 Breakaway pole or post (any
    diameter)

Nonbreakaway Pole or Post
50 Pole or post (≤ 4 inches in
    diameter)
51 Pole or post (> 4 inches but
    ≤ 12 inches in diameter)
52 Pole or post (> 12 inches in
    diameter)
53 Pole, post - diameter
    unknown

54 Concrete traffic barrier
55 Impact attenuator

56 Other traffic barrier
    (specify):
57 Fence
58 Wall
59 Building
60 Ditch or culvert
61 Ground
62 Fire hydrant
63 Curb
64 Bridge
68 Other fixed object
    (specify):
69 Unknown fixed object

Collision with Nonfixed Object
71 Motor vehicle not in-
    transport
72 Pedestrian
73 Cyclist or cycle
74 Other nonmotorist or
    conveyance (specify):
75 Vehicle occupant
76 Animal
77 Train
78 Trailer, disconnected in
    transport
88 Other nonfixed object
    (specify):
89 Unknown nonfixed object

98 Other event (specify):
99 Unknown event or object

Source: Primary sources are the scene and vehicle inspections; secondary
         sources include the police report and interviewees.

Remarks:

Code the appropriate object contacted for each event only if the event is CDC
applicable. Events in which there is not a corresponding CDC (i.e., fire,
explosion, or a noncollision injury), are identified on the Accident Form
only. If an impact causes a fire or explosion, the impact is coded and the

Variable Name: 1st C.D.C. - Object Contacted (cont'd.)
                 2nd C.D.C. - Object Contacted (cont'd.)

fire or explosion is annotated. The object contacted codes are the same as those listed in the Accident Form under variable AC16, et.al., Vehicle Number or Object Contacted.

The coding priority of object contacted elements is based upon the highest and second highest delta V impacts. Refer to the overview of the "CDC Related Remarks" (EV06-EV11, EV14-EV19).

Code "31" (Overturn - rollover) is used whenever a vehicle rolls over or over-turns. This event is reported in the accident sequence variables or the Accident Form (AC12-AC18, AC19-AC25, etc.). It is assumed a rollover will generally involve contact with the road surface or ground. In this situation, the object contacted is encoded "31" (Overturn - rollover) and not code "61" (Ground). In the event another object in the environment is contacted during the rollover sequence, the rollover event is listed on the Accident Form, but may not be encoded in the CDC variables on the Exterior Vehicle Form (EV04-EV11, EV12-EV19), unless the rollover is applicable to CDC.

Code "32" (Fire or explosion) refers to those events which result from a non-impact caused fire or explosion. No impact can be associated with this event. If an impact causes a fire or explosion, the impact is encoded and the fire or explosion is annotated by the researcher. This event is outside the scope of CDC and is not encoded in vari-ables EV04-EV19, Collision Deformation Classification.

Code "33" (Jackknife) is used whenever there is sufficient uncontrolled rota-tion (articulation) between a towing unit and a trailing unit such that they contact each other resulting in direct damage to the towing unit. Jackknife may occur to any vehicle which is pulling a trailing unit by a fixed linkage so long as the trailing unit and the pulling vehicle are capable of rotating (articulating) with respect to each other.

Code "34" (Other intraunit damage) refers to situations where damage to the towing unit is caused by the trailing unit, but a jackknife did not occur.

Code "35" (Noncollision injury) refers to situations where an occupant, of a vehicle not involved in an impact, sustains an injury. This in-cludes "falling from vehicle". This event is outside the scope of CDC and is not encoded in variables EV04-EV19, Collision Deformation Classification.

Variable Name: 1st C.D.C. - Object Contacted (cont'd.)
                 2nd C.D.C. - Object Contacted (cont'd.)

Code "38" (Other noncollision) is used when a vehicle sets an object in motion
that strikes or is struck by a vehicle before the object stabilizes.
Examples include dislodged cargo, spewed gravel, etc.   It may be
used in other situations subject to consulation with the zone cen-
ter.   If this event is outside the scope of CDC, it is not encoded
in variables EV04-EV19, Collision Deformation Classification.

Code "39" (Noncollision - details unknown) is used when it is known that the
event was a noncollision but specifics are not known.   If this event
is outside the scope of CDC, it is not encoded in variables EV04-
EV19, Collision Deformation Classification.

Codes "41" [Tree ($\leq$ 4 inches in diameter)] and "42" [Tree (> 4 inches in dia-
meter)] refer to the diameter of the tree measured on the horizontal
plane at the point of impact.

Code "43" (Shrubbery or bush) refers to vegetation which is usually of a woody
multi-stemmed variety and in most instances is low growing rather
than tall.   Some common examples are boxwood, hawthorn, and mountain
laurel.

Code "44" (Embankment) is used only when damage or injury results from im-
pacting the embankment.

Codes "45" [Breakaway pole or post (any diameter)] and "50" through "53" (Pole
or post ....) use the words "pole" and "post" in a general sense and
include all types of supports for utility lines, light standards,
post mounted mailboxes, warning devices, signs, and traffic control
signals.   Privately owned, as well as publicly owned, highway de-
vices are included in these codes.   They may be made of wood, metal,
or concrete and may have various cross-sectional shapes and dimen-
sions.   The pole or post must be nontemporary (i.e., have a perman-
ent base or be anchored in the ground).   Fence posts are not in-
cluded in these codes.

Variable Name: 1st C.D.C. - Object Contacted (cont'd.)
                 2nd C.D.C. - Object Contacted (cont'd.)

The following diagrams indicate the proper measurement for determining the "diameter" for use in coding pole/post attributes "45" [Breakaway pole or post (any diameter)] and "50" through "53" (Pole or post ....).

Code "45" [Breakaway pole or post (any diameter)] refers to a pole or post which is mounted on a base designed to readily disengage or fracture from an impacting vehicle above a predetermined force level. A pole or post fitted with such a device is a breakaway pole or post; otherwise, it is a nonbreakaway pole. Common types of breakaway bases are illustrated on the following pages.

Code "50" [Pole or post (≤ 4 inches in diameter)] refers to a pole or post whose diameter, when measured using the method shown above, is less than or equal to 4 inches, and the pole or post is not mounted on a breakaway base.

Code "51" [Pole or post (> 4 but ≤ 12 inches in diameter)] refers to a pole or post which is not mounted on a breakaway base and whose diameter is within the range specified.

Code "52" [Pole or post (> 12 inches in diameter)] refers to poles or posts which are of the correct size and are not mounted on a breakaway base.

Code "53" (Pole, post - diameter unknown) is used for any pole or post, not on a breakaway base, of unknown diameter.

Variable Name: 1st C.D.C. - Object Contacted (cont'd.)
                 2nd C.D.C. - Object Contacted (cont'd.)

Sign
Support

Upper
Base
Plate

Lower Base
Plate

Concrete Base

Sign
Support

Upper
Base
Plate

Lower
Base
Plate

Concrete Base

Sign
Support

Upper
Base
Plate

Lower
Base
Plate

Concrete Base

Base Plate

HORIZONTAL
SLIP BASE

Base Plate

INCLINED
SLIP BASE

Base Plate

TRIANGULAR
SLIP BASE

Pipe
Sign
Support

Pipe
Coupling

Concrete Base

PIPE WITH
PIPE COUPLING

Aluminum

Pipe
Sign
Support

Cut in
Pipe

Concrete Base

BASE BENDING

Sign
Support

Upper
Base
Plate

Lower
Base
Plate

Frangible
Coupling

Concrete Base

OTHER

Variable Name: 1st C.D.C. - Object Contacted (cont'd.)
2nd C.D.C. - Object Contacted (cont'd.)

CAST ALUMINUM SHOE BASE/INSERT (FRANGIBLE)

CAST ALUMINUM
TRANSFORMER BASE
(FRANGIBLE)

PROGRESSIVE SHEAR
TRANSFORMER BASE

NOTCHED BOLT
INSERT

SLIP BASE

FLUTED ALUMINUM
BREAKAWAY COUPLING

EV-12

Variable Name: 1st C.D.C. - Object Contacted (cont'd.)
                 2nd C.D.C. - Object Contacted (cont'd.)

Code "54" (Concrete traffic barrier) refers to the longitudinal traffic barri-
         ers constructed of concrete and located: on the outside of the road
         surface, in a median, or in gore areas. Concrete walls (vertical
         side surfaces) do not apply here, see code "58" (Wall). Below are a
         few of the common designs of concrete traffic barriers.

(Footing & Reinforcing Varies)

MB S
Concrete Median Barrier

Continuously poured, reinforced, sloped
faced, concrete section. Barrier can be
anchored by dowels or an asphalt key.

Concrete Safety Shape

Code "55" (Impact attenuator) refers to crash cushions which are barriers
         placed in front of fixed objects on the highway to absorb energy,
         and thus, to mitigate the injury effects of collisions at such
         sites. A number of common impact attenuating devices may be encoun-
         tered; therefore, be sure to photograph them when encountered. Some
         common types are shown on continuation pages (12) and (13).

Code "56" (Other traffic barrier) refers to any longitudinal barrier not con-
         structed of concrete. This includes all guardrails, median barri-
         ers, and bridge rails. See code "64" (Bridge) for additional coding
         conventions for bridge structures.

Variable Name: 1st C.D.C. - Object Contacted (cont'd.)
                 2nd C.D.C. - Object Contacted (cont'd.)

Code "57"   (Fence) includes both the fence material and the support posts.

Code "58"   (Wall) refers to solid, vertical faced, concrete, brick, stone, or other structurally sound roadside devices which may act as a traffic barrier in some locations. Do not confuse this code with "Fence" (code "57") or "Building" (code "59"). In most instances a wall will be backfilled with soil and will act as a vertically faced embankment.

Code "59"   (Building) is used when the vehicle impacts a roofed and walled structure built for permanent use. The type of construction material used is not of interest, nor is the use of the building.

Code "60"   (Ditch or culvert) refers to: (1) a man-made structure for drainage purposes, or (2) a man-made structure that allows passage over a drainage area and is that part of the structure which is intended to channel flow through the structure and maintain the stability/integrity of the road bed. If the culvert structure has a portion above the road surface which is of sufficient height to engage above the wheels of an errant CDS applicable vehicle and redirect it, that part of the structure is considered an "Other traffic barrier" (code "56"). When the sides of the ditch are approximately of equal height, it makes no difference which side of the ditch was struck; however, if the struck side is substantially higher than the other side, code the impact with the struck side as an "Embankment" (code "44"). Substantial means that an embankment existed had the ditch not been present.

Code "61"   (Ground) refers to an impact with the ground. Collisions which may be classified using this code include (but are not limited to) vehicles which sustain undercarriage damage by (1) straddling the pavement and shoulder and impacting a prominent pavement lip, or (2) free falls or vaults from the road surface to the ground.

Code "62"   (Fire hydrant) refers to the roadside device used by fire departments to provide water for fighting fires. Usually made of steel, these devices are also referred to as fireplugs or fire standpipes in some areas.
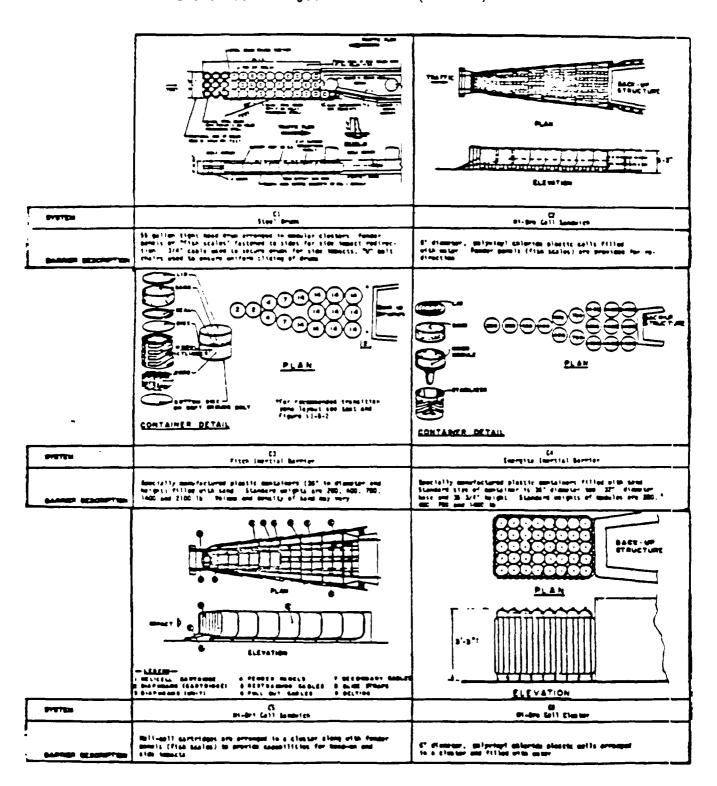
Variable Name: 1st C.D.C. - Object Contacted (cont'd.)
                 2nd C.D.C. - Object Contacted (cont'd.)

Code "63" (Curb) is used when the vehicle contacts a raised element at the
        edge of a roadway. Curbs are used to: control drainage, act as
        deterrents to vehicles leaving the pavement at hazardous points,
        delineate the edge of the pavement, present a more finished appear-
        ance, and assist in the orderly development of the roadway edge.
        Often a curb serves two or more of these purposes. Some typical
        highway curbs are illustrated in the diagrams below. Note that the
        dimensions are typical dimensions and may differ from the installa-
        tions observed in the field.

Barrier Curbs

Mountable Curbs

Typical Highway Curbs

Code "64" (Bridge) encompasses all structural members of an overpass structure
        used for vehicular or pedestrian traffic. This code excludes bridge
        rails; however, it does include bridge piers, bridge abutments,
        bridge parapet ends, wing walls associated with bridge abutments,
        and support columns. See continuation page (14) for a descriptive
        drawing.

Variable Name: 1st C.D.C. - Object Contacted (cont'd.)
                2nd C.D.C. - Object Contacted (cont'd.)

Code "68" (Other fixed object) is used for any other object of sufficient mass
           or anchored such that it is not readily movable; compare with code
           "88" (Other nonfixed object). Examples include large boulders,
           large logs (fallen trees), etc.

Code "69" (Unknown fixed object) is used when it is known that the vehicle
           struck a fixed object but the specific type of object is not known.

Code "71" (Motor vehicle not in transport) refers to a motor vehicle which is
           not on the roadway <u>and</u> not in motion (e.g., vehicle located in
           parking lane).

Code "72" (Pedestrian) is defined as any person who is on a trafficway or on a
           sidewalk or path contiguous with a trafficway, and who is not in or
           on a nonmotorist conveyance. This includes persons who are in con
           tact with the ground, roadway, etc., but who are holding onto a
           vehicle. A nonmotorist conveyance is defined as any human-powered
           device by which a nonmotorist may move, or by which a pedestrian or
           nonmotorist may move another nonmotorist, other than by pedaling. A
           nonmotorist conveyance includes the following: baby carriage,
           coaster wagon, ice skates, roller skates, push cart, scooter, skate
           board, skis, sled, wheelchair, rickshaw, etc. This includes those
           persons in a nonmotorist conveyance who hold onto a motor vehicle in
           motion. Excluded are pedalcyclists.

Code "73" (Cyclist or cycle) refers to any occupant of a pedalcycle (see ANSI
           D16.1-1983, section 2.2.16, page 9), the cycle, or both. This in-
           cludes those cyclists who hold onto a motor vehicle in motion.

Code "74" (Other nonmotorist or conveyance) refers to a person who is not an
           occupant of a motor vehicle in-transport, a pedestrian, or a cy-
           clist. Use this code if the impact was with a nonmotorist convey-
           ance or a nonmotorist associated with a nonmotorist conveyance [if
           an animal is associated with this impact, see code "76" (Animal)].
           This code also would be used for the occupants of a motor vehicle
           not in-transport, but only if they become separated from the not in-
           transport vehicle [see code "71" (Motor vehicle not in transport)].

Variable Name: 1st C.D.C. - Object Contacted (cont'd.)
2nd C.D.C. - Object Contacted (cont'd.)

Code "75" (Vehicle occupant) is used when the object contacted was any person who was an occupant of a motor vehicle in-transport; two examples follow. Use this code for an occupant who falls from a vehicle and is subsequently run over before stabilization occurred. In addition, use this code for any motorcyclist who separates from his/her motorcycle during impact and subsequently impacts a motor vehicle before stabilization occurred.

Code "76" (Animal) is used if the object contacted was an animal (stationary or nonstationary). Where a nonmotorist was associated with the animal (i.e., on the animal, or on or in an animal powered nonmotor vehicle transport device) use the following scheme. If the contact is to:

- (1) the animal; the animal and the person; the animal and the conveyance; or the animal, conveyance, and the person; code "76" (Animal);
- (2) the conveyance, or to the person, or to both the conveyance and the person, code "74" (Other nonmotorist or conveyance).

Code "77" (Train) refers to any railway train, moving or not moving.

Code "78" (Trailer, disconnected in transport) is used when the vehicle is contacted by or contacts a trailer which has become detached from its towing unit while the towing unit was in-transport. The type of trailer is not of interest; the only factors to consider are the detachment of the trailer and the transport status of the towing unit.

Code "88" (Other nonfixed object) refers to any moveable object that is either readily moveable or is moving and is not specifically named above. Examples include trash cans, grocery carts, unoccupied pedalcycles, small boulders, etc.

Code "98" (Other event) is used when an event occurs which cannot be classified using one of the existing codes or definitions. A complete description should be given as well as describing the event on the Case Summary Form.

Code "99" (Unknown event or object) is used whenever the object contacted is not known or if an unknown event which occurs and the researcher cannot determine what the event consisted of and how to code it.

Variable Name: 1st C.D.C. - Object Contacted (cont'd.)
                  2nd C.D.C. - Object Contacted (cont'd.)

Variable Name: 1st C.D.C. - Object Contacted (cont'd.)
2nd C.D.C. - Object Contacted (cont'd.)

Guard Rail Energy Absorbing Terminal (G.R.E.A.T.)

CODE 7

CODE 8

CODE 8

* The cartridge may also be filled with Hex-Foam which is a matrix of hex-shaped cardboard honeycomb filled with polyurethane foam. The cardboard is stacked in one-inch layers in a cross-hatched fashion.

Variable Name: 1st C.D.C. - Object Contacted (cont'd.)
                 2nd C.D.C. - Object Contacted (cont'd.)

Bridge Components

* Individual components of a bridge collectively become the bridge.

CDC RELATED REMARKS

Direct Damage

The CDC generated for a particular impact is based upon damage resulting from direct contact only; it does not include induced damage. All CDCs are based entirely upon the procedures in SAE J224 MAR80.

No CDCs may be entered in variables EV06-EV11 and/or EV14-EV19 unless those CDCs are known in their entirety (i.e., "documented" CDCs). Partial CDCs, such as 99-F9EN-99, may be entered on the CDC WORKSHEET (Page 3 of the Exterior Vehicle Form), but are not applicable for coding in the CDC variables [i.e., a partial CDC is coded as an unknown CDC (99-9999-99) in variables EV06-EV11 and/or EV14-EV19]. Only those CDCs which are fully documented or unknown (i.e., 99-9999-99) are applicable for coding in the automated file (i.e., EV06-EV11 and EV14-EV19). Events which are outside the scope of CDC are not listed on the Exterior Vehicle Form in variables EV04-EV19. These events include: fire, intraunit damage caused by cargo shift, noncollision injury, etc.

Intraunit Damage

Intraunit direct damage (e.g., jackknife) is coded for the power (i.e., towing) unit only. The towed unit (if towed by a fixed linkage) is considered cargo, and even if that unit is another vehicle, a CDC is not applicable for any damage it may sustain. If the impact is to the cargo unit only and induced damage is incurred by the power unit, no CDC is generated for the induced damage to the power unit. If, during an impact, cargo located in the bed of a pickup truck causes damage to the pickup truck, no CDC is generated for that damage.

Add-on Components

Add-on components (e.g., snow plow blade, pickup cap, etc.) are considered cargo, and a CDC is not generated for direct damage sustained by the add-on component.

Overlapping Damage

During some accident sequences, a vehicle will sustain "overlapping damage" (i.e., multiple impacts in the same area of the vehicle). If the direct damage caused by each object contacted cannot be separated and described with individual CDCs, then one CDC is generated to describe all of the damage and this CDC is encoded in variables EV06-EV11.

Next, researchers must choose the object which caused most of the damage and enter: (1) the object's element number (i.e., "01"-"88") in variable EV05, 1st C.D.C. - Object Contacted, and (2) the event number in variable EV04, 1st C.D.C. - Accident Event Sequence Number. Finally, the object which caused the second greatest amount of damage is encoded in variable EV13, 2nd C.D.C. - Object Contacted; its event sequence number is encoded in EV12, 2nd C.D.C. - Accident Event Sequence Number, and an unknown CDC (99-9999-99) is entered in variables EV14-EV19.

CDC RELATED REMARKS (2)

Verbal Descriptions

Verbal descriptions by drivers, occupants, or owners may not form the basis for a CDC except in pedestrian accidents or very minor accidents (ro residual damage); the vehicle must have been inspected. In cases involving ro residual damage and where the vehicle is involved with another vehicle cr object, that other vehicle or object must be inspected.

Additional Information

Refer to the document entitled: "Collision Deformation Classifica-tion/Truck Deformation Classification Advanced Reference Module", for more detailed discussions regarding CDC guidelines.

Single Impact/Event

If the vehicle sustained only one impact/event, the corresponding CDC (i.e., documented or unknown) is entered in EV06-EV11 and variables EV12-EV.9 are left "Blank".

Multiple Impacts/Events

If the vehicle is involved in multiple impacts/events, the corresponding CDCs are ranked in order of highest delta V [i.e., greatest change in velocity experienced by the occupant(s) in the vehicle is usually the "most severe" impact]. If the CRASH program is applicable for every impact, the resultant delta Vs determine the CDC ranking. If CRASH is not applicable for every impact sustained by the vehicle, the CDC ranking must still reflect the greatest change in velocity as determined by the researcher.

All entries selected for coding in variables EV06-EV11 and EV14-EV19 must have encoded a corresponding event sequence number (EV04 and EV12) and object contacted (EV05 and EV13).

Variable Name: 1st C.D.C. - Direction of Force
                 2nd C.D.C. - Direction of Force

Element Values:

    Range: Blank, 00-12, 20-32, 40-52, 60-72, 80-92, 99

    Blank No C.D.C.
    00 Nonhorizontal force   07   7 o'clock
    01 1 o'clock   08   8 o'clock
    02 2 o'clock   09   9 o'clock
    03 3 o'clock   10 10 o'clock
    04 4 o'clock   11 11 o'clock
    05 5 o'clock   12 12 o'clock
    06 6 o'clock   99 Unknown

    Incremental Values for Above Force Directions

    00 No shift
    20 End shift vertical—up; top shift—forward
    40 End shift vertical—down; top shift—rearward
    60 End or top shift lateral—right
    80 End or top shift lateral—left

Source: Restricted to vehicle inspection or photographs.

Remarks:

Code the principal direction of force incremented to indicate: (1) vertical
or lateral shifting of vehicle basic end structures which occurred during
horizontal force application, or (2) longitudinal or lateral shifting to the
top structure resulting from nonhorizontal force application to the top. In
other words, the combined value (Direction of Force + Incremental Value of
Shift) is coded under this variable.

    Code "00" (Nonhorizontal) (plus any Incremental Value of Shift for a top
    structure impact) any time a vehicle becomes inverted and impacts
    any object or vehicle while inverted. In addition, use this code in
    any other circumstance which is consistent with the directions con-
    tained in SAE J224 MAR80.

An estimated CDC is indicated for each impact (Page 3, Exterior Vehicle Form).
In this estimate, write the direction of principal force in increments of ten
degrees rather than in clock positions. Thus, if the direction appeared to be
approximately ten degrees to the right of straight-ahead, indicate "010". If
the direction of force appeared to be ten degrees left of straight-ahead,
indicate "-010" (or "350"). The final coding of the CDC on Page 4 (Exterior
Vehicl Form) reflects the direction of force in clock positions. For example
if the principal direction of force (PDOF) is closest to ten degrees to the
right of straight-ahead, "010" ["-005" ("355") to "025"], then the estimated
Direction of Force is coded according to the clock direction—either "12" or
"01" as determined by examining all available inputs to ensure accuracy for

Variable Name: 1st C.D.C. - Direction of Force (cont'd.)
                  2nd C.D.C. - Direction of Force (cont'd.)

force assignments.   If, upon examining all the available inputs, the
researcher believes the PDOF is more likely to be within +015 to +025 and
classifies the clock direction (EV06 or EV14) as "01", then **Page 3** (Direction
of Force) still reflects the original value: "010".

When occasional differences which seem to be inconsistent (e.g., PDOF = 010^c
and clock position = 01) are encountered, they actually reflect the investiga-
tive method; therefore, reconcile the differences by reviewing the entire case
and any CRASH output to determine if the difference is reasonable.   This pro-
cedure allows the zone center reviewer to appreciate what the researcher
thought the PDOF (**Page 3**) was, to the closest 10 degrees, based upon examina-
tion of that vehicle alone, while the clock position representing the force or
Page 4 reflects the final determination after examining all sources (vehicles,
objects contacted, scene evidence, CRASH program, etc.).   In other words, it
is not necessary for the force directions on **Page 4** and the PDOFs on **Page 3** to
be compatible.   However, any force direction on the final CRASH output must be
compatible with the force direction coded in variable EV06 or EV14.

Refer to the document entitled: "Collision Deformation Classification Train-
ing Program: Intermediate Level - Training/Reference Module", for detailed
definitions of the element values as well as instruction on proper usage.
This document is based upon SAE J224 MAR80.

See the discussion in CDC Related Remarks (EV06-EV11, EV14-EV19) for coding
clarifications and procedures.

Code "Blank" (No C.D.C.) cannot occur for EV06, 1st C.D.C. - Direction of
        Force.

Variable Name: 1st C.D.C. - Deformation Location
                 2nd C.D.C. - Deformation Location

Element Values:

    Blank No C.D.C.
    F   Front
    R   Right side
    L   Left side
    B   Back (rear)
    T   Top
    U   Undercarriage
    9   Unknown

Source: Restricted to vehicle inspection or photographs.

Remarks:

Refer to the document entitled: "Collision Deformation Classification Train-ing Program: Intermediate Level - Training/Reference Module", for detailed definitions of the element values as well as instruction on proper usage. This document is based upon SAE J224 MAR80.

See the discussion in CDC Related Remarks (EV06-EV11, EV14-EV19) for coding clarifications and procedures.

Code "Blank" (No C.D.C.) cannot occur for EV07, 1st C.D.C. - Deformation Loca-tion.

Variable Name: 1st C.D.C. - Specific Longitudinal or Lateral Location
                 2nd C.D.C. - Specific Longitudinal or Lateral Location

Element Values:

    Blank   No C.D.C.

Horizontal Impacts	Top or Undercarriage
D Distributed—side or end	D Distributed (F+P+B)
L Left—front or rear	F Front Section
C Center—front or rear	P Center Section
R Right—front or rear	B Rear Section
F Side front—left or right	Y F+P
P Side center section—L or R	Z P+B
B Side rear—left or right	9 Unknown
Y Side (F + P) or end (L + C)	
Z Side (P + B) or end (C + R)	
9 Unknown	

Source: Restricted to vehicle inspection or photographs.

Remarks:

Element values "F", "P", "B", "Y", "Z", and "D" must be used for vehicles with top or undercarriage deformation ("T" or "U" in variable EV07 and/or EV15).

Refer to the document entitled: "Collision Deformation Classification Training Program: Intermediate Level - Training/Reference Module", for detailed definitions of the element values as well as instruction on proper usage. This document is based upon SAE J224 MAR80.

See the discussion in CDC Related Remarks (EV06-EV11, EV14-EV19) for coding clarifications and procedures.

Code "Blank" (No C.D.C.) cannot occur for EV08, 1st C.D.C. - Specific Longitudinal or Lateral Location.

Variable Name: 1st C.D.C. - Specific Vertical or Lateral Location
                 2nd C.D.C. - Specific Vertical or Lateral Location

Element Values:

   Blank   No C.D.C.

   CDC (Vertical - Front, Rear, or Side Impacts)
   A   All
   H   Top of frame to top
   E   Everything below belt line
   G   Belt line and above
   M   Middle—top of frame to belt line or hood
   L   Frame—top of frame, frame, bottom of frame (including
       undercarriage)
   W   Below undercarriage level (wheels and tires only)
   9   Unknown

   CDC (Lateral - Top and Undercarriage Impacts)
   D   Distributed
   L   Left
   C   Center
   R   Right
   Y   Left and Center (L + C)
   Z   Right and Center (R + C)
   9   Unknown

Source: Restricted to vehicle inspection or photographs.

Remarks:

Refer to the document entitled: "Collision Deformation Classification Train-
ing Program: Intermediate Level - Training/Reference Module", for detailed
definitions of the element values as well as instruction on proper usage.
This document is based upon SAE J224 MAR80.

See the discussion in CDC Related Remarks (EV06-EV11, EV14-EV19) for coding
clarifications and procedures.

Code "Blank" (No C.D.C.) cannot occur for EV09, 1st C.D.C. - Specific Vertical
          or Lateral Location.

EV10
EV18

Variable Name: 1st C.D.C. - Type of Damage Distribution
                2nd C.D.C. - Type of Damage Distribution

Element Values:

    Blank No C.D.C.
    W Wide impact area
    N Narrow impact area
    S Sideswipe
    O Rollover (includes side)
    A Overhanging structure
    E Corner
    K Conversion in impact type
    U No residual deformation
    9 Unknown

Source: Restricted to vehicle inspection or photographs.

Remarks:

Refer to the document entitled: "Collision Deformation Classification Training Program: Intermediate Level - Training/Reference Module", for detailed definitions of the element values as well as instruction on proper usage. This document is based upon SAE J224 MAR80.

See the discussion in CDC Related Remarks (EV06-EV11, EV14-EV19) for coding clarifications and procedures.

Code "Blank" (No C.D.C.) cannot occur for EV10, 1st C.D.C. - Type of Damage Distribution.

Variable Name: 1st C.D.C. - Deformation Extent Guide
                 2nd C.D.C. - Deformation Extent Guide

Element Values:

      Blank No C.D.C.
      01 One
      02 Two
      03 Three
      04 Four
      05 Five
      06 Six
      07 Seven
      08 Eight
      09 Nine
      99 Unknown

Source: Restricted to vehicle inspection or photographs.

Remarks:

Extent zone is coded from direct damage only, even when a body panel is torn loose from the vehicle frame due to impact; consider body panels torn loose from the frame as not representative of residual crush.

Refer to the document entitled: "Collision Deformation Classification Training Program: Intermediate Level - Training/Reference Module", for detailed definitions of the element values as well as instruction on proper usage. This document is based upon SAE J224 MAR80.

See the discussion in CDC Related Remarks (EV06-EV11, EV14-EV19) for coding clarifications and procedures.

Code "Blank" (No C.D.C.) cannot occur for EV11, 1st C.D.C. - Deformation Extent.

CRUSH PROFILE OVERVIEW

For the section entitled "Crush Profile", code the CDC associated damage dimensions for the Highest Delta "V" CDC (EV4-EV11) and the Second Highest Delta "V" (EV12-EV19. The encoded "L", "C"s and "D" values must be the actual data set used in the reconstruction program (i.e., CRASH or OLDMIS).

If the damage measurements are known, code the appropriate measurements to the nearest inch regardless of whether a reconstruction algorithm was completed. If only two or four C-values are collected (rare occasions), then leave the remaining C-value fields blank.

For additional information on the collection and use of field measurements in reconstruction refer to the NASS Accident Investigation Procedures Manual.

Variable Name: 1st Crush Profile - L
                 2nd Crush Profile - L

Element Values:

Range: 001 through 250 inches, Blank

        Code measured value to the nearest inch.
        Blank No crush profile for most severe impact(s)

Source: Vehicle inspection

Remarks:

        These variables are the "L" dimensions normally used in the CRASH3 (or
OLDMIS) input for the highest (EV04-EV11) and second highest (EV12-EV19) delta
V impacts sustained by the vehicle. The damage measurements associated with
one of these CDCs may be encoded regardless of the use of a reconstruction
program (e.g., when the assumptions of the reconstruction program are not
valid).

Leave "Blank" when a reconstruction program is used but no value is entered
            into the reconstruction program or the measurement is unknown (i.e.,
            CDC only run or OLDMISS where this vehicle's data are missing).

Variable Name: 1st Crush Profile - C1-C6
                 2nd Crush Profile - C1-C6

Element Values:

Range: 00 through 99, Blank

    Code measured value to the nearest inch.
    Blank   No crush profile for most severe impact(s)
    99   99 inches or greater

Source: Vehicle inspection

Remarks:

    The damage measurements associated with a priority (i.e., 1st or 2nd highest) CDC are coded regardless of the use of a reconstruction program. Code the obtained C-values for each impact (highest two delta V impacts) to the nearest inch in the space provided.

    If a reconstruction program is used, the encoded values of "C" (i.e., C1, C2, C3, C4, C5, and C6) must be the same as the C-values used in the reconstruction program, and they may differ from C-measurements made in the field (e.g., averaged measurements for override).

Leave "Blank" when a reconstruction program is used but no value is entered into the reconstruction program or the measurements are unknown (i.e., CDC only run or OLDMISS where this vehicle's data are missing).

Code "99" if there is 99 or more inches of crush.

Variable Name: 1st Crush Profile - D
                 2nd Crush Profile - D

Element Values:

Range: -120 to -001, +000, +001 to +120 inches, Blank

     Code measured value to the nearest inch.
     Blank No crush profile for most severe impact(s)
     +000   Greater than -0.5 and less than +0.5

Source: Vehicle inspection

Remarks:

The damage measurement associated with a priority (i.e., 1st or 2nd highest)
CDC is coded regardless of the use of a reconstruction program. Encode the
measurement normally used in the computer program.

Code "+000" if the measured or calculated "D" value for the particular crush
          profile is "0" (i.e., greater than -0.5 and less than +0.5) inches;
          otherwise, code the value to the nearest inch.

Leave "Blank" when a reconstruction program is used but no value is entered
          into the reconstruction program or the measurement is unknown (i.e.,
          CDC only run or OLDMISS where this vehicle's data are missing).

Variable Name: Are CDCs Documented but Not Coded on the Automated File

Element Values:

    0 No
    1 Yes

Remarks:

A CDC must be known in its entirety to be considered "documented". An unknown
(i.e., 99-9999-99) CDC is not a "documented" CDC, nor is a partial CDC (e.g.,
12-F9EN-99).

Code "1"   (Yes) if any "documented" CDC is written on the "CDC Worksheet"
           (Page 3 of the Exterior Vehicle Form), and it is not coded in vari-
           ables EV06-EV11 or EV14-EV19 (Collision Deformation Classification);
           otherwise, code this variable "0" (No).

Variable Name: Researcher's Assessment of Vehicle Disposition

Element Values:

    0 Not towed due to vehicle damage
    1 Towed due to vehicle damage
    9 Unknown

Source: Primary source is the vehicle; secondary source is interviewee(s).

Remarks:

Whereas variable GV09, Police Reported Vehicle Disposition, reports this vehicle's manner of leaving the scene based <u>solely</u> on the police report data, determine this variable (EV27) based on vehicle inspection (which is supplemented by interview data for a repaired vehicle).

"Towing" is defined identically to the definition in variable GV09 (i.e., towing must be a result of event-related disabling damage; towing must occur directly from the scene, etc.). A gray area exists, however, when attempting to define the term "disabling damage".

A police officer may categorize damage such as broken headlights, broken taillights, flat or restricted tires, etc., as "disabling", when, in fact, the vehicle is capable of being driven from the scene. Therefore, when the PAR indicates it was towed due to damage, use the following guideline.

> Determine the severity of the damage during the vehicle's inspection. Code "0" (Not towed due to vehicle damage) if the damage is "minor" (i.e., minor mechanical repairs <u>could</u> have been completed at the scene). "Minor mechanical repairs" refers to items such as: replacing headlights or taillights, changing tires, pulling sheet metal away which may be restricting a wheel, etc.

> NOTE: These repairs need not have been completed at the scene. They are merely examples of situations which do <u>not</u> require the vehicle to be categorized "disabled" for the NASS CDS study.

Code this variable independently of variable GV09, Police Reported Vehicle Disposition. The tow status reported here is determined primarily during vehicle inspection; however, if the vehicle was repaired, then code this variable based on input from an interviewee. Under no circumstance should the PAR be used as a source for coding this variable.

Annotate the reason for the encoded choice in the blank space at the bottom of Page 4 of the Exterior Vehicle Form. For example, a researcher selects code "0" (Not towed due to vehicle damage) and provides the following annotation: "The vehicle received only broken headlights in the collision; police required that the vehicle be towed".

Code "0" (Not towed due to vehicle damage) when the vehicle was driven from the scene, or when the vehicle was unnecessarily towed from the scene (i.e., could have been driven).

Variable Name: Researcher's Assessment of Vehicle Disposition (cont'd.)

Code "1" (Towed due to vehicle damage) when the vehicle sustained damage from the accident such that towing was required.

Code "9" (Unknown) when:

- the vehicle was towed from the scene but the reason for the towing cannot be determined, or

- the disposition of the vehicle from the scene cannot be determined.

Variable Name: Original Wheelbase

Element Values:

Code to the nearest tenth of inch.
9999 Unknown

Source: Primary and secondary source materials are listed in variable GV19, Vehicle Curb Weight.

Remarks:

The wheelbase dimension is obtained from source materials and not from vehicle measurements. This dimension is encoded to the nearest tenth of an inch.

Code "9999" (Unknown) is used when this vehicle's original specification is not available.

INTERIOR VEHICLE FORM

1. Primary Sampling Unit Number   —— ——

2. Case Number – Stratum   —— —— —— ——

3 Vehicle Number   —— ——

INTEGRITY

4. Passenger Compartment Integrity   —— ——

(00) No integrity loss

Yes Integrity Was Lost Through
(01) Windshield
(02) Door (side)
(03) Door/hatch (rear)
(04) Roof
(05) Roof glass
(06) Side window
(07) Rear window
(08) Roof and roof glass
(09) Windshield and door (side)
(10) Windshield and roof
(11) Side and rear window
(98) Other combination of above (specify)

_____

(99) Unknown

Door, Tailgate Or Hatch Opening

5. LF ___ 6. RF ___ 7. LR ___ 8. RR ___ 9. TG/H ___

(0) No door/gate/hatch
(1) Door/gate hatch remained closed and operational
(2) Door/gate/hatch came open during collision
(3) Door/gate/hatch jammed shut
(8) Other (specify)

_____

(9) Unknown

Damage/Failure Associated with Door, Tailgate or Hatch Opening in Collision. If IV05-IV09 ≠ 2, Then Code 0.

10. LF ___ 11. RF ___ 12. LR ___ 13. RR ___ 14. TG/H ___

(0) No door/gate/hatch or door not opened

Door, Tailgate, or Hatch Came Open During Collision
(1) Door operational (no damage)
(2) Latch/striker failure due to damage
(3) Hinge failure due to damage
(4) Door structure failure due to damage
(5) Door support (i.e., pillar, sill, roof side rail, etc.) failure due to damage
(6) Latch/striker and hinge failure due to damage
(8) Other failure (specify)

_____

(9) Unknown

GLAZING

Glazing Damage from Impact Forces

15. WS ___ 16 LF ___ 17. RF ___ 18. LR ___ 19 RR ___

20. BL ___ 21. Roof ___ 22. Other ___

(0) No glazing damage from impact forces
(2) Glazing in place and cracked from impact forces
(3) Glazing in place and holed from impact forces
(4) Glazing out-of-place (cracked or not) and not holed from impact forces
(5) Glazing out-of-place and holed from impact forces
(6) Glazing disintegrated from impact forces
(7) Glazing removed prior to accident
(8) No glazing
(9) Unknown if damaged

Glazing Damage from Occupant Contact

23. WS ___ 24. LF ___ 25. RF ___ 26. LR ___ 27. RR ___

28. BL ___ 29. Roof ___ 30. Other ___

(0) No occupant contact to glazing or no glazing
(1) Glazing contacted by occupant but no glazing damage
(2) Glazing in place and cracked by occupant contact
(3) Glazing in place and holed by occupant contact
(4) Glazing out-of-place (cracked or not) by occupant contact and not holed by occupant contact
(5) Glazing out-of-place by occupant contact and holed by occupant contact
(6) Glazing disintegrated by occupant contact
(9) Unknown if contacted by occupant

If No Glazing Damage And No Occupant Contact or No Glazing, Then Code IV 31 Through IV 46 As 0

Type of Window/Windshield Glazing

31. WS ___ 32. LF ___ 33. RF ___ 34. LR ___ 35. RR ___

36. BL ___ 37. Roof ___ 38 Other ___

(0) No glazing contact and no damage or no glazing
(1) AS-1 – Laminated
(2) AS-2 – Tempered
(3) AS-3 – Tempered-tinted
(4) AS-14 – Glass/Plastic
(8) Other (specify)

_____

(9) Unknown

Window Precrash Glazing Status

39. WS ___ 40. LF ___ 41. RF ___ 42. LR ___ 43. RR ___

44. BL ___ 45. Roof ___ 46. Other ___

(0) No glazing contact and no damage or no glazing
(1) Fixed
(2) Closed
(3) Partially opened
(4) Fully opened
(9) Unknown

TOP VIEW Longitudinal

Lateral   Lateral

Longitudinal

LEFT SIDE VIEW Vertical

Longitudinal   Longitudinal

RIGHT SIDE VIEW Vertical

Longitudinal   Longitudinal

Vertical

INTRUDED COMPONENT	LOCATION OF INTRUSION	DOMINANT CRUSH DIRECTION	COMPARISON VALUE	−	INTRUDED VALUE	=	INTRUSION
				−		=	
				−		=	
				−		=	
				−		=	
				−		=	
				−		=	
				−		=	
				−		=	
				−		=	
				−		=	
				−		=	
				−		=	
				−		=	
				−		=	
				−		=	

OCCUPANT AREA INTRUSION

Note: If no intrusions, leave variables IV 47-IV 86 blank.

	Location of Intrusion	Intruding Component	Magnitude of Intrusion	Dominant Crush Direction
1st	47_____	48_____	49___	50___
2nd	51_____	52_____	53___	54___
3rd	55_____	56_____	57___	58___
4th	59_____	60_____	61___	62___
5th	63_____	64_____	65___	66___
6th	67_____	68_____	69___	70___
7th	71_____	72_____	73___	74___
8th	75_____	76_____	77___	78___
9th	79_____	80_____	81___	82___
10th	83_____	84_____	85___	86___

LOCATION OF INTRUSION

Front Seat
(11) Left
(12) Middle
(13) Right

Second Seat
(21) Left
(22) Middle
(23) Right

Third Seat
(31) Left
(32) Middle
(33) Right

Fourth Seat
(41) Left
(42) Middle
(43) Right

(98) Other enclosed area (specify):

_____

(99) Unknown

INTRUDING COMPONENT

Interior Components
(01) Steering assembly
(02) Instrument panel left
(03) Instrument panel center
(04) Instrument panel right
(05) Toe pan
(06) A-pillar
(07) B-pillar
(08) C-pillar
(09) D-pillar
(10) Door panel
(11) Side panel/kickpanel
(12) Roof (or convertible top)
(13) Roof side rail
(14) Windshield
(15) Windshield header
(16) Window frame
(17) Floor pan
(18) Backlight header
(19) Front seat back
(20) Second seat back
(21) Third seat back
(22) Fourth seat back
(23) Fifth seat back
(24) Seat cushion
(25) Back panel or door surface
(26) Other interior component (specify):

_____

Exterior Components
(30) Hood
(31) Outside surface of vehicle (specify):

_____

(32) Other exterior object in the environment
(specify): _____
(33) Unknown exterior object

(98) Intrusion of unlisted component(s)
(specify): _____
(99) Unknown

MAGNITUDE OF INTRUSION
(1) ≥ 1 inch but < 3 inches
(2) ≥ 3 inches but < 6 inches
(3) ≥ 6 inches but < 12 inches
(4) ≥ 12 inches but < 18 inches
(5) ≥ 18 inches but < 24 inches
(6) ≥ 24 inches
(9) Unknown

DOMINANT CRUSH DIRECTION
(1) Vertical
(2) Longitudinal
(3) Lateral
(9) Unknown

STEERING COLUMN COLLAPSE

Steering Column Shear Module Movement

SHEAR CAPSULE

Left ___

Right ___   V = _____ ''

Direction and Magnitude of Steering Column Movement

Extruder

Extruder

Residual
Extruder

Extruder
Retainer (Mini Column)
or Flared
Tube (Mod Column)

Grooves Indicating
Column Recovery

E = ___

STEERING COLUMN MOVEMENT

Vertical Movement

Instrument Panel

Dashpanel

Lateral Movement

Longitudinal Movement

Instrument Panel

Dashpanel

	COMPARISON VALUE	—	DAMAGED VALUE	=	MOVEMENT
VERTICAL		—		=	
LATERAL		—		=	
LONGITUDINAL		—		=	

STEERING RIM/SPOKE DEFORMATION

COMPARISON VALUE	—	DAMAGED VALUE	=	DEFORMATION
	—		=	
	—		=	

STEERING COLUMN

87. Steering Column Type ___
(1) Fixed column
(2) Tilt column
(3) Telescoping column
(4) Tilt and telescoping column
(8) Other column type (specify)

_____

(9) Unknown

88. Steering Column Collapse Due to Occupant Loading ___ ___

_____ Code actual measured movement to the nearest inch. See coding manual for measurement technique(s).
(00) No movement, compression, or collapse
(01-49) Actual measured value
(50) 50 inches or greater

Estimated movement from observation
(81) Less than 1 inch
(82) ≥ 1 inch but < 2 inches
(83) ≥ 2 inches but < 4 inches
(84) ≥ 4 inches but < 6 inches
(85) ≥ 6 inches but < 8 inches
(86) Greater than or equal to 8 inches

(97) Apparent movement, value undetermined or cannot be measured or estimated
(98) Nonspecified type column
(99) Unknown

Direction And Magnitude of Steering Column Movement

89. Vertical Movement $\pm$ ___ ___ ___

90. Lateral Movement $\pm$ ___ ___ ___

91. Longitudinal Movement $\pm$ ___ ___ ___
Code the actual measured movement to the nearest inch. See Coding Manual for measurement technique(s)
(+00) No Steering column movement
(±01 – ±49) Actual measured value
(±50) 50 inches or greater

Estimated movement from observation
(±81) ≥ 1 inch but < 3 inches
(±82) ≥ 3 inches but < 6 inches
(±83) ≥ 6 inches but < 12 inches
(±84) ≥ 12 inches

(___97) Apparent movement > 1 inch but cannot be measured or estimated
(___99) Unknown

92. Steering Rim/Spoke Deformation ___

_____ Code actual measured deformation to the nearest inch.
(0) No steering rim deformation
(1-5) Actual measured value
(6) 6 inches or more
(8) Observed deformation cannot be measured
(9) Unknown

93. Location of Steering Rim/Spoke Deformation ___ ___

(00) No steering rim deformation

Quarter Sections
(01) Section A
(02) Section B
(03) Section C
(04) Section D

Half Sections
(05) Upper half of rim/spoke
(06) Lower half of rim/spoke
(07) Left half of rim/spoke
(08) Right half of rim/spoke

(09) Complete steering wheel collapse
(10) Undetermined location
(99) Unknown

INSTRUMENT PANEL

94. Odometer Reading ___ ___ ___ ,000

_____ miles – Code mileage to the nearest 1,000 miles
(000) No odometer
(001) Less than 1,500 miles
(300) 299,500 miles or more
(999) Unknown

Source: _____

95. Instrument Panel Damage from Occupant Contact ___
(0) No
(1) Yes
(9) Unknown

96. Knee Bolsters Deformed from Occupant Contact ___
(0) No
(1) Yes
(8) Not present
(9) Unknown

97. Did Glove Compartment Door Open During Collision(s) ___
(0) No
(1) Yes
(8) Not present
(9) Unknown

VEHICLE INTERIOR SKETCHES

Instrument Panel

Dashpanel

POINTS OF OCCUPANT CONTACT

Contact	Interior Component Contacted	Occupant No. If Known	Body Region If Known	Supporting Physical Evidence	Confidence Level of Contact Point
A					
B					
C					
D					
E					
F					
G					
H					
I					
J					
K					
L					
M					
N					

CODES FOR INTERIOR COMPONENTS

FRONT
(01) Windshield
(02) Mirror
(03) Sunvisor
(04) Steering wheel rim
(05) Steering wheel hub/spoke
(06) Steering wheel (combination of codes 04 and 05)
(07) Steering column, transmission selector lever, other attachment
(08) Add on equipment (e g., CB, tape deck, air conditioner)
(09) Left instrument panel and below
(10) Center instrument panel and below
(11) Right instrument panel and below
(12) Glove compartment door
(13) Knee bolster
(14) Windshield including one or more of the following front header, A-pillar, instrument panel, mirror, or steering assembly (driver side only)
(15) Windshield including one or more of the following front header, A-pillar, instrument panel, or mirror (passenger side only)
(16) Other front object (specify)

_____

LEFT SIDE
(20) Left side interior surface, excluding hardware or armrests
(21) Left side hardware or armrest
(22) Left A pillar
(23) Left B pillar
(24) Other left pillar (specify)·

_____
(25) Left side window glass or frame

(26) Left side window glass including one or more of the following· frame, window sill, A-pillar, B-pillar, or roof side rail
(27) Other left side object (specify):

_____

RIGHT SIDE
(30) Right side interior surface, excluding hardware or armrests
(31) Right side hardware or armrest
(32) Right A pillar
(33) Right B pillar
(34) Other right pillar (specify).

_____
(35) Right side window glass or frame
(36) Right side window glass including one or more of the following: frame, window sill, A-pillar, B-pillar, or roof side rail
(37) Other right side object (specify)·

_____

INTERIOR
(40) Seat, back support
(41) Belt restraint webbing/buckle
(42) Belt restraint B-pillar attachment point
(43) Other restraint system component (specify)· _____
(44) Head restraint system
(45) Air cushion
(46) Other occupants (specify):

_____
(47) Interior loose objects

(48) Child safety seat (specify)

_____
(49) Other interior object (specify)

_____

ROOF
(50) Front header
(51) Rear header
(52) Roof left side rail
(53) Roof right side rail
(54) Roof or convertible top

FLOOR
(56) Floor including toe pan
(57) Floor or console mounted transmission lever, including console
(58) Parking brake handle
(59) Foot controls including parking brake

REAR
(60) Backlight (rear window)
(61) Backlight storage rack, door, etc.
(62) Other rear object (specify)

_____

CONFIDENCE LEVEL OF CONTACT POINT

(1) Certain
(2) Probable
(3) Possible
(4) Unknown

AUTOMATIC RESTRAINTS

NOTES Encode the data for each applicable front seat position The attributes for the variables may be found below Restraint systems should be assessed during the vehicle inspection then coded on the Occupant Assessment Form.

		Left	Center	Right
F I R S T	Availability			
	Function			
	Failure			

Automatic (Passive) Restraint System Availability

(0) Not equipped/not available
(1) Airbag
(2) Airbag disconnected (specify)

_____

(3) Airbag not reinstalled
(4) 2 point automatic belts
(5) 3 point automatic belts
(6) Automatic belts destroyed or rendered inoperative
(9) Unknown

Automatic (Passive) Restraint Function

(0) Not equipped/not available

Automatic Belt
(1) Automatic belt in use
(2) Automatic belt not in use
(3) Automatic belt use unknown

Air Bag
(4) Airbag deployed during accident
(5) Airbag deployed inadvertently just prior to accident
(6) Deployed, accident sequence undetermined
(7) Nondeployed
(8) Unknown if deployed
(9) Unknown

Did Automatic (Passive) Restraint Fail

(0) Not equipped/not available
(1) No
(2) Yes (specify): _____
(9) Unknown

MANUAL RESTRAINTS

NOTES   Encode the applicable data for **each seat position** in the vehicle. The attributes for the variables may be found below Restraint systems should be assessed during the vehicle inspection then coded on the Occupant Assessment Form

If a child safety seat is present, encode the data on the back of this page

If the vehicle has automatic restraints available, encode the appropriate data on the back of the previous page

		Left	Center	Right
F I R S T	Availability			
	Use			
	Failure Modes			
S E C O N D	Availability			
	Use			
	Failure Modes			
T H I R D	Availability			
	Use			
	Failure Modes			
O T H E R	Availability			
	Use			
	Failure Modes			

Manual (Active) Belt System Availability

(0) Not available
(1) Belt removed/destroyed
(2) Shoulder belt
(3) Lap belt
(4) Lap and shoulder belt
(5) Belt available – type unknown
(8) Other belt (specify):

_____

(9) Unknown

Manual (Active) Belt System Use

(00) None used, not available, or
        belt removed/destroyed
(01) Inoperative (specify):

_____

(02) Shoulder belt
(03) Lap belt
(04) Lap and shoulder belt
(05) Belt used – type unknown

_____

(08) Other belt used (specify)

_____

(12) Shoulder belt used with child safety seat
(13) Lap belt used with child safety seat
(14) Lap and shoulder belt used with child safety seat
(15) Belt used with child safety seat – type unknown
(18) Other belt used with child safety seat (specify)

_____

(99) Unknown if belt used

Manual (Active) Belt Failure Modes During Accident

(0) No manual belt used or not available
(1) No manual belt failure(s)
(2) Manual belt failure(s) (encode all that apply above)
[A] Torn webbing (stretched webbing not included)
[B] Broken buckle or latchplate
[C] Upper anchorage separated
[D] Other achorage separated (specify)

_____

[E] Broken retractor
[F] Other manual belt failure (specify):

_____

(9) Unknown

CHILD SAFETY SEAT FIELD ASSESSMENT

When a child safety seat is present enter the occupant's number in the first row and complete the column below the occupant's number using the codes listed below Complete a column for each child safety seat present.

Occupant Number						
1. Type of Child Safety Seat						
2. Child Safety Seat Orientation						
3. Child Safety Seat Harness Usage						
4. Child Safety Seat Shield Usage						
5. Child Safety Seat Tether Usage						
6 Child Safety Seat Make/Model	Specify Below for Each Child Safety Seat					

1. Type of Child Safety Seat

   (0) No child safety seat
   (1) Infant seat
   (2) Toddler seat
   (3) Convertible seat
   (4) Booster seat
   (7) Other type child safety seat (specify):

   _____

   (8) Unknown child safety seat type
   (9) Unknown if child safety seat used

2. Child Safety Seat Orientation

   (00) No child safety seat

   Designed for Rear Facing for This Age/Weight
   (01) Rear facing
   (02) Forward facing
   (03) Other orientation (specify):

   _____

   (04) Unknown orientation

   Designed for Forward Facing for This Age/Weight
   (11) Rear facing
   (12) Forward facing
   (18) Other orientation (specify):

   _____

   (19) Unknown orientation

   Unknown Design or Orientation for This Age/
   Weight, or Unknown Age/Weight
   (21) Rear facing
   (22) Forward facing
   (28) Other orientation (specify):

   _____

   (29) Unknown orientation

   (99) Unknown if child safety seat used

3. Child Safety Seat Harness Usage

4. Child Safety Seat Shield Usage

5. Child Safety Seat Tether Usage

   Note Options Below Are Used for Variables 3-5.

   (00) No child safety seat

   Not Designed with Harness/Shield/Tether
   (01) After market harness/shield/tether
        added, not used
   (02) After market harness/shield/tether used
   (03) Child safety seat used, but no after market
        harness/shield/tether added
   (09) Unknown if harness/shield/tether
        added or used
   Designed with Harness/Shield/Tether
   (11) Harness/shield/tether not used
   (12) Harness/shield/tether used
   (19) Unknown if harness/shield/tether used

   Unknown if Designed with Harness/Shield/Tether
   (21) Harness/shield/tether not used
   (22) Harness/shield/tether used
   (29) Unknown if harness/shield/tether used

   (99) Unknown if child safety seat used

6. Child Safety Seat Make/Model
   (Specify make/model and occupant number)

   _____

   _____

   _____

   _____

HEAD RESTRAINTS/SEAT EVALUATION

NOTES   Encode the applicable data for each seat position in the vehicle. The attributes for these variables may be found at the bottom of the page. Head restraint type/damage and seat type/performance should be assessed during the vehicle inspection then coded on the Occupant Assessment Form.

		Left	Center	Right
FIRST	Head Restraint Type/Damage			
	Seat Type			
	Seat Performance			
SECOND	Head Restraint Type/Damage			
	Seat Type			
	Seat Performance			
THIRD	Head Restraint Type/Damage			
	Seat Type			
	Seat Performance			
OTHER	Head Restraint Type/Damage			
	Seat Type			
	Seat Performance			

Head Restraint Type/Damage by Occupant at This Occupant Position

(0) No head restraints
(1) Integral — no damage
(2) Integral — damaged during accident
(3) Adjustable — no damage
(4) Adjustable — damaged during accident
(5) Add-on — no damage
(6) Add-on — damaged during accident

(8) Other (specify) _____
(9) Unknown

Seat Type (This Occupant Position)

(00) Occupant not seated or no seat
(01) Bucket
(02) Bucket with folding back
(03) Bench
(04) Bench with separate back cushions
(05) Bench with folding back(s)
(06) Split bench with separate back cushions
(07) Split bench with folding back(s)
(08) Pedestal (i.e., van type)

(09) Other seat type (specify) _____
(99) Unknown

Seat Performance (This Occupant Position)

(0) Occupant not seated or no seat
(1) No seat performance failure(s)

(2) Seat performance failure(s)
(Encode all that apply)

[A] Seat adjusters failed
[B] Seat back folding locks failed
[C] Seat tracks failed
[D] Seat anchors failed
[E] Deformed by impact of passenger from rear
[F] Deformed by impact of passenger from front
[G] Deformed by own inertial forces
[H] Deformed by passenger compartment intrusion (specify)

_____

_____

_____

[I] Other (specify): _____

_____

(9) Unknown

DESCRIBE ANY INDICATION OF ABNORMAL OCCUPANT POSTURE (I.E. UNUSUAL OCCUPANT CONTACT PATTERN)

EJECTION/ENTRAPMENT DATA

Complete the following if the researcher has any indications that an occupant was either ejected from or entrapped in the vehicle Code the appropriate data on the Occupant Assessment Form.

EJECTION   No [ ]   Yes [ ]

Describe indications of ejection and body parts involved in partial ejection(s)·

_____

_____

_____

_____

_____

Occupant Number						
Ejection						
Ejection Area						
Ejection Medium						
Medium Status						

Ejecti n
  (1) Complete ejection
  (2) Partial ejection
  (3) Ejection, unknown degree
  (9) Unknown

Ejection Area
  (1) Windshield
  (2) Left front
  (3) Right front
  (4) Left rear
  (5) Right rear
  (6) Rear

(7) Roof
(8) Other area (e.g., back of pickup, etc.) (specify):

_____

(9) Unknown

Ejection Medium
  (1) Door/hatch/tailgate
  (2) Nonfixed roof structure
  (3) Fixed glazing
  (4) Nonfixed glazing (specify):

_____

(5) Integral structure
(8) Other medium (specify):

_____

(9) Unknown

Medium Status (Immediately Prior to Impact)
  (1) Open
  (2) Closed
  (3) Integral structure
  (9) Unknown

ENTRAPMENT   No [ ]   Yes [ ]

Describe entrapment mechanism: _____

_____

_____

_____

_____

Component(s): _____

_____

(Note in vehicle interior diagram)

Variable Name: Passenger Compartment Integrity

Element Values:

    00 No integrity loss

    Yes, Integrity Was Lost Through:
    01 Windshield
    02 Door (side)
    03 Door/hatch (rear)
    04 Roof
    05 Roof glass
    06 Side window
    07 Rear window
    08 Roof and roof glass
    09 Windshield and door (side)
    10 Windshield and roof
    11 Side and rear window
    98 Other combination of above (specify):
    99 Unknown

Source: Vehicle inspection

Remarks:

Consider the passenger compartment as a "package" which is designed to contain the occupant. If an opening occurs of sufficient magnitude through which an occupant could have been ejected totally or partially (although it is not necessary for an occupant to have been ejected), the integrity of the compartment should be considered to have been lost. While it is difficult to define the magnitude of the opening in a universal manner, the minimum size of the opening would be equivalent to the head of most adults. Components which may lose their integrity are restricted to the windshield glazing, window glazing (side, rear, or roof), door or roof.

The question of integrity loss is assessed with respect to impact related damage. The damage can be either direct or induced. Damage which is not impact related (e.g., fire, extrication) is not considered.

Doors which open upon impact or glazing that is broken during the impact sequence are considered integrity loss. However, doors which were left open prior to an impact do not constitute damage related loss of integrity and should be reported under IV05-IV09 (Door, Tailgate Or Hatch Opening) code "8" (Other).

Code "00" (No integrity loss) is encoded when the doors, roof, and glazing (as listed below) remained intact during the impact sequence.

Code "01" (Windshield) is encoded when the glazing is either holed/slit or displaced sufficiently to allow an adult size head to pass through.

Variable Name: Passenger Compartment Integrity (cont'd.)

Code "02" [Door (side)] refers to the door structure and excludes glazing
           areas. All side doors, whether hinged or sliding are considered
           here.

Code "03" [Door/hatch (rear)] identifies integrity loss of the rear door
           structure and not the glazing. Rear doors include hatchback, tail-
           gate, and liftback. In situations where the rear hatch or upper
           portion of the tailgate is entirely made of glazing material and
           secured with a latching mechanism, only the latching mechanism
           should be considered for this code. Integrity loss through shat-
           tered or displaced rear window glazing is identified in code "07"
           (Rear window).

Code "04" (Roof) refers only to the roof structure and not glazing areas.
           Roof structures containing metal panels (e.g., "T" top roofs) are
           reported here as well as closed convertible tops.

Code "05" (Roof glass) reports glazing material in the roof structure which is
           broken or displaced.

Code "06" (Side window) refers to glazing which was broken or displaced during
           the accident sequence. Glazing which was totally open prior to the
           accident and broken (i.e., sidelight rolled down into the door area)
           is not coded as integrity loss.

Code "07" (Rear window) includes backlights, hatchbacks/tailgates/liftbacks,
           and rear door glazing which were broken or displaced.

Code "08" (Roof and roof glass) is coded when each specific component experi-
           ences integrity loss.

Code "09" [Windshield and door (side)] identifies integrity loss through wind-
           shield glazing and side door structure, but excludes sidelight glaz-
           ing.

Code "10" (Windshield and roof) refers to integrity loss of the windshield
           glazing and roof structure. Windshield and roof glass is included
           in Code "98" (Other combination of above).

Code "11" (Side and rear window) identifies integrity loss to glazing areas or
           either side of the vehicle in combination with hatchback/tail-
           gate/liftback and rear door glazing.

Code "98" (Other combination of above) includes any combination of codes "01"-
           "07" above which are not listed in elements "08"-"11". Integrity
           loss in areas not identified by elements "01"-"07" (e.g., floor) is
           not considered for this variable.

Variable Name: Passenger Compartment Integrity (cont'd.)

Code "99" (Unknown) is used in the following situations:

- extrication damage masked integrity loss, and

- integrity loss could not be determined due to circumstances beyond the researcher's control.

DOOR, TAILGATE, OR HATCH OPENING OVERVIEW
(IV05 - IV14)

It is the intent of variables IV05-IV09 to capture whether a passenger compartment door, tailgate, or hatch opened or remained closed during the accident sequence. Variables IV10-IV14 only document reasons for why doors came open during the accident.

The areas of interest include the left front, right front, left rear, right rear, and tailgate/hatch doors (i.e., LF, RF, LR, RR, TG/H, respectively). The LF and RF doors are the forwardmost side doors on the left and right sides of a vehicle and the LR and RR doors are the next door (or set of doors) rearward of the LF and RF doors. There are situations where two adjacent doors are used to cover a single opening (i.e., side or rear of a cargo van). These should be treated as a single door. Side doors are applicable whether hinged or on tracks.

Generally, hatch doors meet the following criteria:

● provide access to the rear cargo area of a passenger car type vehicle, through a large opening backlight,

● are composed primarily of glass and may or may not be framed,

● are hinged at the top and latched at the bottom, and

● are not used in conjunction with a lower door or tailgate.

Some vehicles are equipped with frameless glass hatches which may shatter as a result of an impact. This situation is considered a glazing loss (refer to variables IV15-IV46) rather than a hatch opening unless the hatch did, in fact, open prior to the glass breaking (i.e., release of the latching/hinging mechanism). Some glass hatches may be bordered by a narrow band of metal. The condition of this metal band is the focus of this variable group. These remarks also apply when the upper window of a tailgate assembly is being considered.

Generally, tailgates exist on the rear end plane of station wagon type vehicles. They may be one or two piece assemblies. In the instance of a two piece unit, they will be hinged at the top and bottom with a horizontal seam. One piece units may be hinged at the top for some vehicles or at the bottom with retracting rear windows for others. Pickup truck tailgates are not included in these variables.

Rear doors may be single or double units covering a single opening. The rear doors are hinged on one or both sides with a vertical seam present in dual door applications. Rear doors are most commonly found on van type vehicles.

Variable Name: Door, Tailgate Or Hatch Opening - LF
                 Door, Tailgate Or Hatch Opening - RF
                 Door, Tailgate Or Hatch Opening - LR
                 Door, Tailgate Or Hatch Opening - RR
                 Door, Tailgate Or Hatch Opening - TG/H

Element Values:

   0 No door/gate/hatch
   1 Door/gate/hatch remained closed and operational
   2 Door/gate/hatch came open during collision
   3 Door/gate/hatch jammed shut
   8 Other (specify):
   9 Unknown

Source: Vehicle inspection

Remarks:

This variable identifies the operational status of a door, tailgate or hatch
during an accident sequence. Priority is given to doors which open during the
collision. Where multiple doors cover a single opening, and the disposition
of each door was different, select the code for the door which is first ident-
ified in the following priority list: "2" (... came open during collision),
"3" (... jammed shut), "8" (Other), "1" (... remained closed and operational),
and "9" (Unknown). As an example, if one door came open and the other was
jammed shut, the proper code would be "2" (... came open during collision).
Gaps caused by body deformation are not coded as door opening events. These
gaps will be encoded in variable IV04, Passenger Compartment Integrity.

Code "0"   (No door/gate/hatch) is used when no door, tailgate, or hatch exists
           in the appropriate area (i.e., LF, RF, LR, RR, TG/H).

Code "1"   (Door/gate/hatch remained closed and operational) for any door,
           tailgate, or hatch which did not open during the accident sequence
           and remained operational.

Code "2"   (Door/gate/hatch came open during collision) is coded when the door
           assembly opened during the accident sequence, irrespective of the
           cause. Further, the magnitude of the opening created is inconse-
           quential when encoding this value. Note, if this code is used then
           the matching area in variables IV10-IV14 must not equal "0". The
           Researcher must consider the potential that a sprung-mass situation
           may exist. In this condition, the door may have been opened after
           the accident, but due to vehicle body stresses the door cannot be
           shut. This is an important consideration when assessing whether the
           door came open during the collision.

Variable Name: Door, Tailgate Or Hatch Opening - LF (cont'd.)
                Door, Tailgate Or Hatch Opening - RF (cont'd.)
                Door, Tailgate Or Hatch Opening - LR (cont'd.)
                Door, Tailgate Or Hatch Opening - RR (cont'd.)
                Door, Tailgate Or Hatch Opening - TG/H (cont'd.)

Code "3" (Door/gate/hatch jammed shut) is used when a door is rendered inoperable due to being jammed shut. Inoperable is defined as the inability of the Researcher to open the door wide enough (through the use of reasonable force) to allow passage of an adult head. It is irrelevant whether the jamming is a result of latch or hinge failure, the displacement of adjacent body panels, or direct damage. Undamaged locked doors should not be coded as jammed or inoperable. Doors which were pried open following the accident are an indication of jamming and should be closely examined. In this situation, the Researcher should thoroughly annotate and photograph the door area to support this conclusion.

Code "8" (Other) is used for those situations which cannot be identified with elements "0"-"3". Doors which are open prior to the accident take this code (e.g., hatchbacks open for cargo reasons, ventilation, etc.).

Code "9" (Unknown) is used when the researcher could not make a performance assessment of the door, tailgate or hatch.

Variable Name: Damage/Failure Associated with Door, Tailgate, Or
               Hatch Opening In Collision - LF
               Damage/Failure Associated with Door, Tailgate, Or
               Hatch Opening In Collision - RF
               Damage/Failure Associated with Door, Tailgate, Or
               Hatch Opening In Collision - LR
               Damage/Failure Associated with Door, Tailgate, Or
               Hatch Opening In Collision - RR
               Damage/Failure Associated with Door, Tailgate, Or
               Hatch Opening In Collision - TG/H

Element Values:

    0 No door/gate/hatch or door not opened

    Door, Tailgate, or Hatch Came Open During Collision
    1 Door operational (no damage)
    2 Latch/striker failure due to damage
    3 Hinge failure due to damage
    4 Door structure failure due to damage
    5 Door support (i.e., pillar, sill, roof side rail, etc.) failure
       due to damage
    6 Latch/striker and hinge failure due to damage
    8 Other failure (specify):
    9 Unknown

Source: Vehicle inspection

Remarks:

This variable is designed to capture the reason a door opened during the collision sequence as identified by code "2" (Door/gate/hatch came open during collision) in variables IV05-IV09, respectively.

Code "0"   (No door/gate/hatch or door not opened) is used when no door, tailgate, or hatch exists or the door/tailgate/hatch did not open during the accident sequence. This code is also used when the door/tailgate/hatch is jammed shut. Doors which were open prior to the accident (hatchbacks open for cargo reasons, ventilation, etc.) also take this code.

Code "1"   [Door operational (no damge)] is used when the door, tailgate, or hatch opened during the accident sequence, but the unit was undamaged and remained operational.

Code "2"   (Latch/striker failure due to damage) is used when the door, tailgate, or hatch opened as a result of a failure of the latch/striker

INTERIOR VEHICLE FORM

IV10
IV11
IV12
IV13
IV14
(2)

Variable Name: Damage/Failure Associated with Door, Tailgate, Or
                  Hatch Opening In Collision - LF (cont'd.)
                  Damage/Failure Associated with Door, Tailgate, Or
                  Hatch Opening In Collision - RF (cont'd.)
                  Damage/Failure Associated with Door, Tailgate, Or
                  Hatch Opening In Collision - LR (cont'd.)
                  Damage/Failure Associated with Door, Tailgate, Or
                  Hatch Opening In Collision - RR (cont'd.)
                  Damage/Failure Associated with Door, Tailgate, Or
                  Hatch Opening In Collision - TG/H (cont'd.)

assembly. The failure must be due to damage, either direct or in-
duced, and must result in the forced unlatching of the latch/striker
assembly or shearing of the striker post.

Code "3"   (Hinge failure due to damage) is used to indicate that a hinge fail-
ure exists as a result of either direct or induced damage. A hinge
failure includes the complete separation of the hinge assembly from
the door structure, pillar or of the two or more components which
comprise the hinge assembly.

Code "4"   (Door structure failure due to damage) is used anytime the door
structure sustained damage which allowed the latch, striker, or
hinge to separate from the mounting surface (i.e., torn metal). The
door structure is defined as all components of the door assembly
exclusive of the door skin.

Code "5"   [Door support (i.e., pillar, sill, roof side rail, etc.) failure due
to damage] is used to define situations where the latch/striker
assembly did not fail, but the door support areas are damaged suffi-
ciently to allow for the door to open. This includes, but is not
limited to, the failure of pillars, sills and/or roof side rails at
its most severe level. Code "6" (Latch/striker and hinge failure
due to damage) is used to describe situations where the entire door
and adjacent components (i.e., pillars) are torn away by an impact.

Code "6"   (Latch/striker and hinge failure due to damage) is used when both a
latch/striker and hinge failure exists. Failure must be present to
the latch/striker and at least one hinge, resulting in the door
opening (i.e., door partially or completely torn off).

Code "8"   (Other failure) is used to indicate that an opening exists which
cannot be described with codes "1"-"6" above. This includes vehi-
cles with a canvas roof and door structure (i.e., Jeeps, etc.).

Variable Name: Damage/Failure Associated with Door, Tailgate, Or
                Hatch Opening In Collision - LF (cont'd.)
                Damage/Failure Associated with Door, Tailgate, Or
                Hatch Opening In Collision - RF (cont'd.)
                Damage/Failure Associated with Door, Tailgate, Or
                Hatch Opening In Collision - LR (cont'd.)
                Damage/Failure Associated with Door, Tailgate, Or
                Hatch Opening In Collision - RR (cont'd.)
                Damage/Failure Associated with Door, Tailgate, Or
                Hatch Opening In Collision - TG/H (cont'd.)

Code "9" (Unknown) is used when it cannot be determined if an accident re-
          lated door, tailgate, or hatch opening exists [i.e., IV05 - IV09 =
          "9" (Unknown)] or when it cannot be determined which code (elements
          "1"-"8") applies.

GLAZING DAMAGE OVERVIEW
(IV15-IV46)

Glazing is defined for these variables as a covering for openings in the vehicle's structure which has the ability to allow light to pass. The areas of interest include: the windshield, sidelight windows, backlight (hatchback, tailgate, liftback, rear window), and roof. Composition of glazing materials in use today include: glass, plastic, and glass-plastic.

The potential for occupant ejection is a major concern of rulemakers at NHTSA. Variables IV15-IV46 are designed to record the successes and failures of occupant containment by glazing when there is an occurrence of occupant contact to the glazing, or glazing damage by impact forces or vehicle damage.

Current use of glass-plastic (such as Inner Shield, Securiflex, etc.) involves a plastic anti-lacerative layer applied to the inner surface of windshields. Recently, Federal Motor Vehicle Safety Standard 205 was modified to allow voluntary (not compulsory) installation of this type of glazing. Glass-plastic should not be confused with the current design of laminate windshields which are made with a layer of plastic (Polyvinyl Butyral) between two layers of annealed glass. It should be noted that future considerations and uses of glass-plastic involve the side, rear, and roof glazing areas.

Researchers are required to thoroughly inspect all glazing for direct occupant contact/damage and encode their findings. This information is recorded independent of occupant ejection.

Glazing variables are divided into four sections.

- Glazing Damage from Impact Forces (IV15-IV22)
- Glazing Damage from Occupant Contact (IV23-IV30)
- Type of Window/Windshield Glazing (IV31-IV38)
- Window Pre-crash Glazing Status (IV39-IV46)

These sections are further divided into eight specific areas of interest.

- WS = windshield
- LF = left front window (driver's window)
- RF = right front window
- LR = left rear window (adjacent to LF window)
- RR = right rear window (adjacent to RF window)
- BL = backlight, tailgate/hatchback/liftgate window
- Roof = sun roof, moon roof, "T" roof, etc.
- Other = other sidelights, door wing windows, and any other light not identified above

The "other" category (as noted) encompasses areas where glazing may be directly contacted by occupants or damaged from impact forces and not identified by a specific location. This would include wing windows located in door areas. In the event more than one "other" area was involved, select the area with the highest priority number as ranked in variables IV15-IV30. When more than one glazing has the highest priority code, the Researcher should select the glazing which is closest to the front of the vehicle with the left side taking precedence over the right side. The Researcher must specify the selected glazing in the space provided on the form.

IV15
IV16
IV17
IV18
IV19
IV20
IV21
IV22

Variable Name: Glazing Damage From Impact Forces - WS
Glazing Damage From Impact Forces - LF
Glazing Damage From Impact Forces - RF
Glazing Damage From Impact Forces - LR
Glazing Damage From Impact Forces - RR
Glazing Damage From Impact Forces - BL
Glazing Damage From Impact Forces - Roof
Glazing Damage From Impact Forces - Other

Element Values:

0 No glazing damage from impact forces
2 Glazing in place and cracked from impact forces
3 Glazing in place and holed from impact forces
4 Glazing out-of-place (cracked or not) and not holed from impact forces
5 Glazing out-of-place and holed from impact forces
6 Glazing disintegrated from impact forces
7 Glazing removed prior to accident
8 No glazing
9 Unknown if damaged

Source: Vehicle Inspection

Remarks:

These variables identify damage to the glazing as a result of impact forces and/or vehicle damage. Damage caused by direct occupant contact should be recorded in variables IV23-IV30, Glazing Damage From Occupant Contact.

Code "0" (No glazing damage from impact forces) is used when there was no damage to the glazing. Glazing damage for these variables is defined as cracking, holed, out-of-place or disintegrated. Glazing which is scratched is considered not damaged.

Code "2" (Glazing in place and cracked from impact forces) is used when the glazing remained within the confines of its specific area and was cracked. Displaced glazing which was not totally separated from the vehicle should be treated as "in place". This would include windshields with partial bond separation and dislodged side glazing.

Code "3" (Glazing in place and holed from impact forces) is used when the glazing was "holed". "Holed" refers to a hole or slit in the glazing which is large enough in size to allow passage of an adult head.

IV15
IV16
IV17
IV18
IV19
IV20
IV21
IV22
(2)

Variable Name: Glazing Damage From Impact Forces - WS (cont'd.)
                Glazing Damage From Impact Forces - LF (cont'd.)
                Glazing Damage From Impact Forces - RF (cont'd.)
                Glazing Damage From Impact Forces - LR (cont'd.)
                Glazing Damage From Impact Forces - RR (cont'd.)
                Glazing Damage From Impact Forces - BL (cont'd.)
                Glazing Damage From Impact Forces - Roof (cont'd.)
                Glazing Damage From Impact Forces - Other (cont'd.)

For the purpose of this variable, the hole or slit must have been produced by impact force and/or vehicle damage and not by direct occupant contact.

Code "4"   [Glazing out-of-place (cracked or not) and not holed from impact forces] refers to glazing which was totally separated from the vehicle as the result of impact forces and/or vehicle damage. Windshields with 100 percent bond separation should receive this code. Caution must be exercised by the Researcher not to consider shattered tempered glass (i.e., sidelights, etc.) as out-of-place. This situation should be identified under code "6" (Glazing disintegrated from impact forces).

Code "5"   (Glazing out-of-place and holed from impact forces) refers to glazing that was totally separated from the vehicle during the accident sequence and was holed/slit as the result of impact forces or vehicle damage. "Holed" refers to a hole or slit in the glazing which is large enough in size to allow passage of an adult head.

Code "6"   (Glazing disintegrated from impact forces) refers to glazing that was totally destroyed by impact forces or vehicle damage. This usually occurs with shattered tempered glass (i.e., sidelights, etc.). Windshields that are separated from the vehicle should not be considered disintegrated. Uncertainty may exist when determining the cause of shattered sidelight glazing when the collision occurred adjacent to an occupied seat. As a rule of thumb, impact forces and/or vehicle damage generally cause disintegration of the sidelight prior to occupant contact.

Code "7"   (Glazing removed prior to accident) includes sun roofs, "T" tops, etc. which were removed from their respective areas prior to the accident. Glazing retracted into vehicle body panels (i.e., fully open) is assessed under codes "0"-"6" above and are not considered in this element.

IV15
IV16
IV17
IV18
IV19
IV20
IV21
IV22
(3)

Variable Name: Glazing Damage From Impact Forces - WS (cont'd.)
                Glazing Damage From Impact Forces - LF (cont'd.)
                Glazing Damage From Impact Forces - RF (cont'd.)
                Glazing Damage From Impact Forces - LR (cont'd.)
                Glazing Damage From Impact Forces - RR (cont'd.)
                Glazing Damage From Impact Forces - BL (cont'd.)
                Glazing Damage From Impact Forces - Roof (cont'd.)
                Glazing Damage From Impact Forces - Other (cont'd.)

Code "8"   (No glazing) is used for specific areas where the body structure was not designed to accept glazing (i.e., solid roof structure, etc.).

Code "9"   (Unknown if damaged) is used in the following situations.

● The degree of damage could not be determined as the result of post impact damage (i.e., extrication, towing operations, etc.).

● Due to factors beyond the Researcher's control, an adequate determination of glazing damage could not be made (i.e., catastrophic type vehicle damage, etc.). This should be a rare occurrence.

● The cause of glazing damage (i.e., impact forces versus occupant contact) could not be determined by the Researcher. Caution, it is anticipated this reason will be rarely used. When confronted with this dilemma, every effort must be made to code a known value for damaged glazing.

IV23
IV24
IV25
IV26
IV27
IV28
IV29
IV30

Variable Name: Glazing Damage from Occupant Contact - WS
                  Glazing Damage from Occupant Contact - LF
                  Glazing Damage from Occupant Contact - RF
                  Glazing Damage from Occupant Contact - LR
                  Glazing Damage from Occupant Contact - RR
                  Glazing Damage from Occupant Contact - BL
                  Glazing Damage from Occupant Contact - Roof
                  Glazing Damage from Occupant Contact - Other

Element Values:

0 No occupant contact to glazing or no glazing
1 Glazing contacted by occupant but no glazing damage
2 Glazing in place and cracked by occupant contact
3 Glazing in place and holed by occupant contact
4 Glazing out-of-place (cracked or not) by occupant contact and not holed by occupant contact
5 Glazing out-of-place by occupant contact and holed by occupant contact
6 Glazing disintegrated by occupant contact
9 Unknown if contacted by occupant

Source: Vehicle inspection

Remarks:

These variables report direct occupant contact to the glazing during the acci-
dent sequence. The codes are arranged in an increasing number priority scheme
[i.e., code "3" (Glazing in place and holed by occupant contact) takes prece-
dence over code "2" (Glazing in place and cracked by occupant contact), etc.].

Code "0" (No occupant contact to glazing or no glazing) is used when there
          are no direct occupant contacts detected to the glazing or when
          variables IV15-IV22, Glazing Damage from Impact Forces, are coded
          "7" (Glazing removed prior to accident) or "8" (No glazing).

Code "1" (Glazing contacted by occupant but no glazing damage) is used when
          an occupant directly contacted the glazing, but the contact did not
          result in glazing damage.

Code "2" (Glazing in place and cracked by occupant contact) refers to glazing
          that was damaged (not holed) by direct occupant contact. The term
          "in place" describes glazing which has remained within the confines
          of its specific area. Displaced glazing which was not totally sepa-

INTERIOR VEHICLE FORM

IV23
IV24
IV25
IV26
IV27
IV28
IV29
IV30
(2)

Variable Name: Glazing Damage from Occupant Contact - WS (cont'd.)
Glazing Damage from Occupant Contact - LF (cont'd.)
Glazing Damage from Occupant Contact - RF (cont'd.)
Glazing Damage from Occupant Contact - LR (cont'd.)
Glazing Damage from Occupant Contact - RR (cont'd.)
Glazing Damage from Occupant Contact - BL (cont'd.)
Glazing Damage from Occupant Contact - Roof (cont'd.)
Glazing Damage from Occupant Contact - Other (cont'd.)

rated from the vehicle should be treated as "in place". This would include windshields with partial bond separation and dislodged side glazing.

Code "3" (Glazing in place and holed by occupant contact) is used when the glazing was "holed". "Holed" refers to a hole or slit in the glazing which was produced by direct occupant contact. This opening is equivalent in size to the space necessary to allow passage of an adult head.

Code "4" [Glazing out-of-place (cracked or not) by occupant contact and not holed by occupant contact] refers to glazing which was directly contacted by an occupant and was totally separated from the vehicle during the accident sequence. Windshields with 100 percent bond separation take this code. Caution must be exercised by the researcher not to consider shattered tempered glass (i.e., side-lights, etc.) as out-of-place. This situation is reported under code "6" (Glazing disintegrated by occupant contact).

Code "5" (Glazing out-of-place by occupant contact and holed by occupant contact) refers to glazing which was contacted and holed by direct occupant contact and totally separated from the vehicle during the accident sequence. "Holed" refers to a hole or slit in the glazing which was produced by direct occupant contact. This opening is equivalent in size to the space necessary to allow passage of an adult head.

Code "6" (Glazing disintegrated by occupant contact) refers to glazing that was totally destroyed by direct occupant contact. This usually occurs with shattered tempered glass (i.e., sidelights, etc.). Windshields that were separated from the vehicle should not be considered disintegrated.

Code "9" (Unknown if contacted by occupant) is used in the following situations.

IV23
IV24
IV25
IV26
IV27
IV28
IV29
IV30
(3)

Variable Name: Glazing Damage from Occupant Contact - WS (cont'd.)
                 Glazing Damage from Occupant Contact - LF (cont'd.)
                 Glazing Damage from Occupant Contact - RF (cont'd.)
                 Glazing Damage from Occupant Contact - LR (cont'd.)
                 Glazing Damage from Occupant Contact - RR (cont'd.)
                 Glazing Damage from Occupant Contact - BL (cont'd.)
                 Glazing Damage from Occupant Contact - Roof (cont'd.)
                 Glazing Damage from Occupant Contact - Other (cont'd.)

- Direct occupant contact/damage could not be determined due to post impact damage (i.e., extrication, towing operations, etc.).

- Due to factors beyond the researcher's control, an adequate determination of direct occupant contact/damage could not be made.

IV31
IV32
IV33
IV34
IV35
IV36
IV37
IV38

Variable Name: Type of Window/Windshield Glazing - WS
                 Type of Window/Windshield Glazing - LF
                 Type of Window/Windshield Glazing - RF
                 Type of Window/Windshield Glazing - LR
                 Type of Window/Windshield Glazing - RR
                 Type of Window/Windshield Glazing - BL
                 Type of Window/Windshield Glazing - Roof
                 Type of Window/Windshield Glazing - Other

Element Values:

    0 No glazing contact and no damage, or no glazing
    1 AS-1 - Laminated
    2 AS-2 - Tempered
    3 AS-3 - Tempered-tinted
    4 AS-14 - Glass/Plastic
    8 Other (specify):
    9 Unknown

Source: Vehicle inspection

Remarks:

Glazing types are identified by unique AS (American Standard) numbers which
are etched in the glazing surface. The AS numbers are generally grouped with
other glazing information and together make up an informational symbol re-
ferred to as a "water mark" (see diagram below).

                    INNER SHIELD
                      SHADED
                    SOFT-RAY

        SAFETY | DCL | FLO-LITE
        AS-14 |_____| D -86

                  LAMINATED
                      8
                  DOT-19 M-65

The following codes record information for specific areas identified in vari-
able groups IV15-IV22, Glazing Damage from Impact Forces, and IV23-IV30, Glaz-
ing Damage from Occupant Contact.

Code "0" (No glazing contact and no damage, or no glazing) is used when any
          glazing area was not identified as either damaged from impact forces
          or contacted by an occupant in variables IV15-IV30. In addition,

IV31
IV32
IV33
IV34
IV35
IV36
IV37
IV38
(2)

Variable Name: Type of Window/Windshield Glazing - WS (cont'd.)
                 Type of Window/Windshield Glazing - LF (cont'd.)
                 Type of Window/Windshield Glazing - RF (cont'd.)
                 Type of Window/Windshield Glazing - LR (cont'd.)
                 Type of Window/Windshield Glazing - RR (cont'd.)
                 Type of Window/Windshield Glazing - BL (cont'd.)
                 Type of Window/Windshield Glazing - Roof (cont'd.)
                 Type of Window/Windshield Glazing - Other (cont'd.)

use this code when codes "7" (Glazing removed prior to accident) or "8" (No glazing) in variables IV15-IV22, Glazing Damage from Impact Forces, were encoded.

Codes "1"-"4", or "8" are used when any glazing area was identified as damaged from impact forces or direct occupant contact in variable groups IV15-IV22 and IV23-IV30. When all side and rear windows have been broken out, examine the window track or frame for remnants of broken glass. If such glass is present and the remnants are small clear granules (or cracked in granule size pieces), then it is permissible to code "2" (AS-2 - Tempered). If these remnants are tinted, then it is permissible to code "3" (AS-3 - Tempered-Tinted). If these remnants have any plastic tint shield klinging to them, then it is permissible to code "8" (Other).

Code "1"   (AS-1 - Laminated) refers to a layer of plastic between two layers of glass. This type of glazing is widely used in current winshield installations.

Code "2"   (AS-2 - Tempered) refers to glass which has the ability to break into small glass granules when damaged.

Code "3"   (AS-3 - Tempered-tinted) refers to manufactured tinted (privacy) glass which has the ability to break into small glass granules when damaged. Glazing which has an aftermarket plastic tint shield applied should be listed under code "8" (Other).

Code "4"   (AS-14 - Glass/Plastic) refers to glazing which uses plastic on its inner surface. This is used in anti-lacerative windshields (i.e., Inner Shield, Securiflex, etc.).

Code "8"   (Other) refers to any glazing which has an AS number different from AS-1, AS-2, AS-3 and AS-14. Write the AS number of the glazing in the space provided. This includes plastic (AS-11C), bullet proof (AS-10), aftermarket plastic tint shield, etc.

IV31
IV32
IV33
IV34
IV35
IV36
IV37
IV38
(3)

Variable Name: Type of Window/Windshield Glazing - WS (cont'd.)
                 Type of Window/Windshield Glazing - LF (cont'd.)
                 Type of Window/Windshield Glazing - RF (cont'd.)
                 Type of Window/Windshield Glazing - LR (cont'd.)
                 Type of Window/Windshield Glazing - RR (cont'd.)
                 Type of Window/Windshield Glazing - BL (cont'd.)
                 Type of Window/Windshield Glazing - Roof (cont'd.)
                 Type of Window/Windshield Glazing - Other (cont'd.)

Code "9"   (Unknown) is used in the following situations.

●   Due to factors beyond the researcher's control, an adequate
    determination of glazing damage and/or direct occupant contact
    could not be made.

●   A reasonable determination of the AS number could not be made.

                                                                    IV39
                                                                    IV40
                                                                    IV41
                                                                    IV42
                                                                    IV43
                                                                    IV44
                                                                    IV45
                                                                    IV46

Variable Name: Window Pre-crash Status - WS
                Window Pre-crash Status - LF
                Window Pre-crash Status - RF
                Window Pre-crash Status - LR
                Window Pre-crash Status - RR
                Window Pre-crash Status - BL
                Window Pre-crash Status - Roof
                Window Pre-crash Status - Other

Element Values:

    0 No glazing contact and no damage, or no glazing
    1 Fixed
    2 Closed
    3 Partially opened
    4 Fully opened
    9 Unknown

Source: Vehicle inspection.

Remarks:

These variables record the operational modes of the glazing prior to the acci-
dent.

Code "0"   (No glazing contact and no damage, or no glazing) is used when any
           glazing area was not identified as either damaged from impact forces
           or directly contacted by an occupant in variables IV15-IV30. In
           addition, use this code when codes "7" (Glazing removed prior to
           accident) or "8" (No glazing) in variables IV15-IV22, Glazing Damage
           from Impact Forces, are encoded.

Code "1"   (Fixed) identifies glazing which is not designed to operate (e.g.
           windshields, etc.).

Code "2"   (Closed) refers to any operable glazing which was fully closed
           (i.e., no air gaps).

Code "3"   (Partially opened) refers to any operable glazing which is not firm-
           ly closed (i.e., air gaps present) and not fully opened. Note, the
           Researcher should code the placement of the window in relationship
           to the opening and not by window design limitations.

Code "4"   (Fully opened) refers to any operable glazing which is attached to
           the vehicle (i.e., window tracks) and was placed in the open posi-
           tion such that the glazing was not restricting the opening of the

IV39
IV40
IV41
IV42
IV43
IV44
IV45
IV46
(2)

Variable Name: Window Pre-crash Status - WS (cont'd.)
                 Window Pre-crash Status - LF (cont'd.)
                 Window Pre-crash Status - RF (cont'd.)
                 Window Pre-crash Status - LR (cont'd.)
                 Window Pre-crash Status - RR (cont'd.)
                 Window Pre-crash Status - BL (cont'd.)
                 Window Pre-crash Status - Roof (cont'd.)
                 Window Pre-crash Status - Other (cont'd.)

vehicle structure. This element is assessed independently of window design limitations (i.e., side windows designed to only roll down halfway cannot receive this code).

Code "9"   (Unknown) is used in the following situations.

● Damage due to impact forces and/or glazing contact by an occupant could not be determined due to post-impact damage (i.e., extrication, tow operations, etc.).

● Due to factors beyond the Researcher's control, an adequate determination of damage and/or direct occupant contact could not be made.

● A reasonable determination of the glazing pre-crash status could not be determined.

OCCUPANT AREA INTRUSION OVERVIEW
(IV47-IV86)

Intrusion results whenever the internal boundary surface of the passenger compartment is moved inward due to direct or indirect damage resulting from the application of a crushing force to the exterior surface of a vehicle. A passenger compartment is defined as that interior occupant space which is normally available for occupant seating, based upon both the vehicle design and seat configuration at the time of the accident. Adjacent cargo areas and other enclosed areas are included for consideration in the following situations.

- The area behind the last row of seats designed by the manufacturer for cargo is integral with the passenger compartment.

- An area where a seat row was either removed or folded down to accomodate cargo.

Intrusion can occur from the vertical, longitudinal, or lateral direction. Intrusion can also occur from the displacement of interior seatbacks and/or seat cushions.

Measurement of Passenger Compartment Intrusion

Types of Intrusion. Two types of intrusions occur most often in accidents. They are:

Type A: Intrusion which is limited to one part of the passenger compartment and where the other side of the vehicle remains relatively free of distortion. This is likely to be the case in the majority of accidents. In many cases it will be possible to obtain undeformed vehicle dimensions as the vehicle is symmetrical about the longitudinal centerline.

Type B: Intrusion which occurs in many sections of the passenger compartment with little of the vehicle remaining free of distortion. In this case, it will be necessary to obtain "original" dimensions by comparison with a second (unintruded) vehicle of the same type.

OCCUPANT AREA INTRUSION OVERVIEW   (2)

An example of Type A and Type B intrusions are shown in Figure 1.

Figure 1

<u>Establishment of Reference Axis.</u> In order to compare one side of a vehicle with the other or compare two vehicles, a coordinate system within the vehicle is required.

OCCUPANT AREA INTRUSION OVERVIEW

(3)

This system is defined by an orthogonal set of axes (x-y-z) and an origin (0) as shown in Figure 2. The position of the origin is typically on the longitudinal centerline of the vehicle and has an arbitrary location, both vertically and longitudinally. However, its location must be identical for the intruded and "reference" vehicle. Note, the axes are referenced to the floor plane of the vehicle.

Figure 2

The x-axis is on the longitudinal centerline of the vehicle. This could be set up along the transmission drive shaft tunnel for a rear wheel drive vehicle or along a centerline which is equidistant from the sides of the vehicle in a front wheel drive vehicle.

The y-axis is in a side-to-side or lateral direction. This plane may be set up in any convenient location which can be readily established in the "reference" vehicle.

The z-axis is the vertical axis. A location at the top of the transmission drive shaft tunnel may be convenient to reference roof collapse in many cases. The point established by these intersecting planes defines the origin (0).

Establishing a frame of reference and measuring intrusion can be simplified.

- In a frontal collision, there is rarely intrusion at the rear, and vice-versa for a rear collision.

- Side impacts generally damage only one side of the vehicle.

- Roof impacts leave the floor pan undistorted.

Not all intrusions require the establishment of all three axes.

The ordering of intrusions reflects the intrusion severity as recorded in column three (i.e., Magnitude of Intrusion variables).

OCCUPANT AREA INTRUSION OVERVIEW   (4)

An intruded component is assessed for its Dominant Crush Direction (IV50 et al.) as determined from the Magnitude of Intrusion (IV49 et al.). This component must not be coded as having greater than one Dominant Crush Direction in any specific sector.

Code the ten most severe intrusions in descending order, beginning with the most severe, then the second most severe component, etc. If there is no intrusion, variables IV47-IV50 should be left "Blank". If there are less than ten intruding components, the lines following the last encoded intrusion should be left "Blank".

Displacement of less than one inch is not coded as an intrusion.

A passenger compartment that has been damaged catastrophically is encoded as "99", "99", "6", "9" in variables IV47-IV50.

Variable Name: Location of Intrusion
                 (1st through 10th)

Element Values:

    Front Row
    11 Left
    12 Middle
    13 Right

    Second Row
    21 Left
    22 Middle
    23 Right

    Third Row
    31 Left
    32 Middle
    33 Right

    Fourth Row
    41 Left
    42 Middle
    43 Right

    98 Other enclosed area (specify):
    99 Unknown

Source: Vehicle inspection

Remarks:

The interior space of a vehicle is divided into specific sectors as outlined
in the following diagram. These sectors are based upon seat rows and not
occupant seat locations. Cargo areas open to the passenger area (i.e., sta-
tion wagons, vans, etc.) are assessed in these variables. Intrusion into the
trunk area of an automobile with a rear seat position or into a cargo area
covered by a privacy curtain/shelf is excluded.

Row 1	Row 2	Row 3	Row 4		
13	23	33	43		
12	22	32	42	98	Other enclosed area
11	21	31	41		

Variable Name: Location of Intrusion (cont'd.)
                (1st through 10th)

Front Row, Second Row, Third Row, Fourth Row are identified by the presence of an installed seat. Each row is equally divided into three sectors. As an example, the Front Row is divided into sectors 11, 12, 13 regardless of the seating configuration.

In the situation where half of the row is folded down (i.e., split back seats) to accomodate cargo, the entire lateral area (wall-to-wall) is divided into three equal sectors. When the entire seat row is folded down or removed prior to the accident, this area is considered an "Other enclosed area" (code "98").

The following rules guide us in the determination of "seat rows" versus "other enclosed areas" and in the derivation of the lateral dimension of each row sector.

- Cargo areas in passenger cars which are separated from the passenger compartment are not considered for intrusion. This would include trunk areas and rear cargo areas of hatchbacks and station wagons which were covered by a privacy curtain/shelf. The area above the privacy curtain/shelf is considered for intrusion and would be listed under code "98" (Other enclosed area).

- The lateral occupant space dimension for the front seat row is obtained by measuring the distance from the vehicle's side-surface to side-surface (undamaged dimension)- and dividing by three. Note, there is no implied correlation between seating capacity and sectors.

- The area behind the front row of a pickup truck where jump seats are installed should be identified by the status of these seats prior to the accident. When at least one seat was in the operational mode (i.e., open) at the time of the accident, the entire area is divided into three sectors (i.e., "21", "22", "23"). Otherwise, this area is assessed under code "98" (Other enclosed area).

- A problematic area in vans is the situation where a row was removed prior to the accident. A seat row area that was removed prior to an accident should be encoded as an "Other enclosed area" (code "98"); however, it should be tabulated as a seat row to identify any sequential rows.

- Vans with single seating positions behind the Front Row (usually high back swivel chairs) are compressed into a single seat row.

- The fifth row in a van (envisioned as a rare occurrence) is identified as an "Other enclosed area" (code "98").

Variable Name: Location of Intrusion (cont'd.)
                 (1st through 10th)

Code "11" (Left) is defined as the left sector of the Front Row. The lateral
         dimension of this area is mathematically determined by dividing the
         original wall-to-wall dimension by three.

Code "12" (Middle) is defined as the center sector of the Front Row.

Code "13" (Right) is defined as the right sector of the Front Row.

Code "21" (Left) is defined as the left sector of the Second Row. The lateral
         dimension of this sector is mathematically determined by dividing
         the original wall-to-wall dimension by three.

Code "22" (Middle) is defined as the center sector of the Second Row.

Code "23" (Right) is defined as the right sector of the Second Row.

Code "31" (Left) is defined as the left sector of the Third Row. The lateral
         dimension of this sector is mathematically determined by dividing
         the original wall-to-wall dimension by three.

Code "32" (Middle) is defined as the center sector of the Third Row.

Code "33" (Right) is defined as the right sector of the Third Row.

Code "41" (Left) is defined as the left sector of the Fourth Row. The lateral
         dimension of this sector is mathematically determined by dividing
         the original wall-to-wall dimension by three.

Code "42" (Middle) is defined as the center sector of the Fourth Row.

Code "43" (Right) is defined as the right sector of the Fourth Row.

Code "98" (Other enclosed area) is an area where no defined row exists. This
         would include an area where the entire seat row was folded down
         prior to the accident. Occassionally, the mid seat row in a passen-
         ger van will be removed leaving only the front and rearmost seat
         rows. If intrusion occurs within this area, the location should be
         identified here and specified.

Code "99" (Unknown) is used in the following situations

         • The vehicle was repaired.

         • The vehicle interior was catastrophically damaged.

Variable Name: Intruding Components
                     (1st through 10th)

Element Values:

    Interior Components
    01 Steering assembly
    02 Instrument panel left
    03 Instrument panel center
    04 Instrument panel right
    05 Toe pan
    06 A-pillar
    07 B-pillar
    08 C-pillar
    09 D-pillar
    10 Door panel
    11 Side panel/kickpanel
    12 Roof (or convertible top)
    13 Roof side rail
    14 Windshield
    15 Windshield header
    16 Window frame
    17 Floor pan
    18 Backlight header
    19 Front seat back
    20 Second seat back
    21 Third seat back
    22 Fourth seat back
    23 Fifth seat back
    24 Seat cushion
    25 Back panel or door surface
    26 Other interior component (specify):

    Exterior Components
    30 Hood
    31 Outside surface of vehicle (specify):
    32 Other exterior object in the environment (specify):
    33 Unknown exterior object

    98 Intrusion of unlisted component(s)
    99 Unknown

Source: Vehicle inspection

Remarks:

Code "01" (Steering assembly) consists of the steering column and steering
        rim, hub, and spokes.

Code "02" (Instrument panel left) refers to the left side of the instrument
        panel. This should correlate with the same lateral dimension gener-

Variable Name: Intruding Components (cont'd.)
                 (1st through 10th)

             ated for the sector space "11" (Front Seat - Left) in variables IV47
             et al., Location of Intrusion.

Code "03"   (Instrument panel center) refers to the center third area of the
             instrument panel. This should correlate with the same lateral di-
             mension generated for the sector space "12" (Front Seat - Middle) in
             variables IV47 et al., Location of Intrusion.

Code "04"   (Instrument panel right) refers to the right side of the instrument
             panel. This should correlate with the same lateral dimension gener-
             ated for the sector space "13" (Front Seat - Right) in variables
             IV47 et al., Location of Intrusion.

Code "05"   (Toe pan) refers to the front portion of the floor that angles up to
             meet the dash panel.

Code "06"   (A-pillar) refers to the upper and lower portion of the forward most
             structural post of the passenger compartment on both side planes.

Code "07"   (B-pillar) refers to the upper and lower portion of the structural
             post located at the rear edge of the front doors on both side
             planes. It should be noted, some vehicles do not have upper B-pil-
             lars.

Code "08"   (C-pillar) refers to the upper and lower portion of the structural
             side post located at the rearmost edge of the rear door of a four
             door vehicle or the upper portion of the structural side post lo-
             cated between the backlight and side window glass on two door vehi-
             cles.

Code "09"   (D-pillar) refers to the upper and lower portion of the rearward
             most structural post, usually available on station wagons, vans, or
             utility vehicles. The D-pillar is not to be confused with the C-
             pillar which is the rearmost pillar of the passenger compartment on
             most two and four door vehicles.

Code "10"   (Door panel) refers to the side interior surface and related compon-
             ents of a door.

Code "11"   (Side panel/kickpanel) refers to the interior panel located on the
             side of the vehicle directly below the instrument panel and forward
             of the front doors.

Code "12"   (Roof or convertible top) refers to the top structural member of the
             greenhouse supported by the side pillars, windshield header and
             backlight header.

Variable Name: Intruding Components (cont'd.)
                 (1st through 10th)

Code "13" (Roof side rail) refers to the longitudinal horizontal stiffeners located along the edge of the roof.

Code "14" (Windshield) refers to the lateral glazing located at the forward most surface of the greenhouse.

Code "15" (Windshield header) refers to the front forward lateral edge of the roof directly above the windshield.

Code "16" (Window frame) refers to the longitudinal frame that encloses the side window glazings and composes that portion of the door above the window sill.

Code "17" (Floor pan) refers to the floor of the vehicle. The lower portion of the passenger compartment.

Code "18" (Backlight header) refers to the rear most lateral edge of the roof directly above the backlight.

Code "19" (Front seat back) refers to the back support of the front seat.

Code "20" (Second seat back) refers to the back support of the second seat.

Code "21" (Third seat back) refers to the back support of the third seat.

Code "22" (Fourth seat back) refers to the back support of the fourth seat.

Code "23" (Fifth seat back) refers to the back support of the fifth seat.

Code "24" (Seat cushion) refers to the horizontal portion of the seat assembly that was designed for seating.

Code "25" (Back panel or door surface) refers to the interior surface and related components of the back door or if no door exists, the interior surface of the back wall.

Code "26" (Other interior component) refers to any interior component that may intrude into an occupant seating position.

Code "30" (Hood) refers to the horizontal structure covering the front compartment of the vehicle located forward of the windshield.

Code "31" (Outside surface of this vehicle) is used when any outside surface of this vehicle not mentioned above has violated the internal boundary surface of the passenger compartment (e.g., spare tire, jack, outside mirror, etc.).

Variable Name: Intruding Components (cont'd.)
                (1st through 10th)

Code "32" (Other exterior object in the environment) refers to an object ex-
         ternal to the vehicle (trees, poles, other vehicle, etc.) which
         penetrates the internal boundary of this vehicle.

Code "33" (Unknown exterior object) is used if there is evidence that an ob-
         ject intruded but its unknown what that object was.

Code "98" [Intrusion of unlisted component(s)] is used if there is intrusion
         of any component not listed above.

Code "99" (Unknown) is used if it is unknown whether intrusion occurred or
         not.

Variable Name: Magnitude of Intrusion

Element Values:

    1   $\geq$ 1 inch but < 3 inches
    2   $\geq$ 3 inches but < 6 inches
    3   $\geq$ 6 inches but < 12 inches
    4   $\geq$ 12 inches but < 18 inches
    5   $\geq$ 18 inches but < 24 inches
    6   $\geq$ 24 inches
    9   Unknown

Source: Vehicle inspection

The extent of component intrusion into a row sector is identified by ranges listed in codes "1"-"6". It should be noted the beginning value of a range should not exceed the pre-impact dimension of that sector. For example, the left front door intruded laterally through sector 11 and continued ten inches into sector 12 [see IV47 et al., code "11" (Front Seat - Left) and code "12" (Front Seat - Middle)]. If each sector had a pre-impact dimension of twenty inches, then for sector 11 code "5" ($\geq$ 18 inches but < 24 inches) and for sector 12 code "3" ($\geq$ 6 inches but < 12 inches).

As described in the intrusion overview, intrusions are listed in order of severity (i.e., code "6" takes priority over code "5", etc.) with only the ten highest intrusions encoded. Although sector 12 was encoded as the second highest intrusion in the simplistic example listed above, there may be situations where sector 12 would not be captured due to higher intrusion magnitudes in other sectors.

To determine sector dimensions, refer to the measurement techniques outlined in the intrusion overview and variables IV47 et al., Location of Intrusion.

Code "6"   ($\geq$ 24 inches) is used when an intrusion in a sector exceeds twenty-four inchs or when the passenger compartment was damaged catastrophically.

Code "9"   (Unknown) is used in the following situations.

    ● The researcher cannot determine if there was any intrusion.

    ● The vehicle was under repair at the time of inspection.

    ● The Researcher was not able to measure the intrusion.

Variable Name: Dominant Crush Direction

Element Values:

    1   Vertical
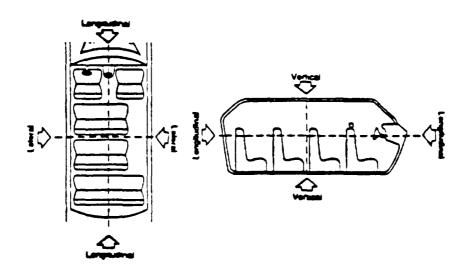   2   Longitudinal
    3   Lateral
    9   Unknown

Source: Vehicle inspection

Remarks:

This variable assesses the direction of displacement for the component identi-
fied in variables IV47 et al.   The direction of movement is determined inde-
pendently from the PDOF applied to the vehicle.

Code "1"   (Vertical) refers to components which intrude into the passenger
           compartment from either an upward or downward direction.

Code "2"   (Longitudinal) refers to components which move forward or rearward
           into the passenger compartment.

Code "3"   (Lateral) refers to components which are displaced either left or
           right within the passenger compartment.

Code "9"   (Unknown) is used for the following situations.

     • The Researcher cannot determine if there was any intrusion.

     • The vehicle was under repair at the time of inspection.

     • The passenger compartment was damaged catastrophically.

STEERING COLUMN DATA
(IV87 - IV93)

Variables IV87-IV93 identify specific areas of interest involving the steering column and steering rim/spokes. Information obtained from these components is crucial to the understanding of injury causation.

The researcher is required to identify steering column types, make assessments of column movement, and analyze steering rim/spokes (treated as one group) for deformation.

The researcher is required to either directly measure or estimate movement data as outlined in the ensuing variables. It is understood that in some situations exact measurements of component movement will be very difficult to obtain. Researchers will have to repeatedly rely upon their skill and knowledge of vehicle components to obtain the required data as accurately as possible.

As indicated in the respective variables, a "hard" line measurement procedure (i.e., the establishment of one procedure to measure all vehicles) was not developed. Instead, a referencing measurement approach is used in situations when direct measurement of component movement cannot be obtained. Note, the referencing approach will vary from situation to situation and from researcher to researcher. For example, when measuring the vertical displacement of a steering column, an assessment can be made by either measuring from the roof, floor, or projecting to the original column location. Even though three methods are suggested for this example, the researcher is not restricted to these three.

Variable Name: Steering Column Type

Element Values:

    1 Fixed column
    2 Tilt column
    3 Telescoping column
    4 Tilt and telescoping column
    8 Other column type (specify):
    9 Unknown

Source: Vehicle inspection

Code "1"   (Fixed column) refers to a standard nonadjustable steering column.

Code "2"   (Tilt column) refers to a steering column designed to allow the steering wheel to be tilted at an angle selected by the operator to improve driving comfort. The presence of tilt columns can generally be verified by the existence of an extra control stalk on the column. This stalk is separate from turn signal, headlight or wiper controls and is usually mounted near the bend point of the tilt column. Characteristically, the tilt column control stalk is unmarked and may be located on the left or right side of the column in relative proximity to the steering wheel end.

Code "3"   (Telescoping column) refers to a steering column that has an adjustable length. The column can be shortened or lengthened to suit operator comfort. The telescoping feature can generally be identified by the presence of a knurled ring around the column. Rotating this ring allows the column to be lengthened or shortened, while retightening the ring locks the column at the desired adjustment.

Code "4"   (Tilt and telescoping column) refers to a column that has both the tilt wheel and adjustable length features.

Code "8"   (Other column type) includes steering columns which cannot be described by elements "1"-"4". This would include swing away columns, etc.

Variable Name: Steering Column Collapse Due to Occupant Loading

Element Values:

    Range: 00-50,81-86,97-99
    00 No movement, compression, or collapse
    Code actual measured movement to the nearest inch.
    01-49 Actual measured value
    50 50 inches or greater

    Estimated movement from observation
    81 Less than 1 inch
    82 $\geq$ 1 inch but < 2 inches
    83 $\geq$ 2 inches but < 4 inches
    84 $\geq$ 4 inches but < 6 inches
    85 $\geq$ 6 inches but < 8 inches
    86 $\geq$ 8 inches

    97 Apparent movement, value undetermined or cannot be measured or
        estimated
    98 Nonspecified type column
    99 Unknown

Source: Vehicle inspection

Remarks:

Two steering column types, which are designed to move in response to driver
loading, will be assessed for movement in this variable. The types are: col-
umns with shear modules and columns with extruders. Any other column type is
encoded as a "Nonspecified type column" (code "98").

Shear modules generally consist of a column mounted shear plate and instrument
panel mounted shear capsules. Although two shear capsules are most often
used, the modules are not limited to this number.

A measurement of this movement to the nearest inch is required. The following
diagram illustrates the measurement procedure.

Encode the actual "V" dimension to the nearest inch.

Code "1" is used for a value greater than zero but less than 1.5 inches.

Variable Name: Steering Column Collapse Due to Occupant Loading (cont'd.)

In the event of multiple shear capsules, obtain a measurement from all cap-
sules and average to obtain the codeable value. When it is not possible to
measure all shear capsules, the average of available capsules should be en-
coded.

In situations where the shear capsules are separated, the column should be
held in its original position prior to measuring.

The extruder type column is designed with a support bracket (extruder) which
allows the column to slip during occupant loading. A flare or flange on the
column is installed against the extruder (i.e., no gaps). It is designed to
prevent the column from being displaced through the extruder into the passen-
ger compartment. Note, some columns are equipped with a retainer ring rather
than a flare/flange (see Figure 1).

Figure 1

IV-38

Variable Name: Steering Column Collapse Due to Occupant Loading (cont'd.)

When there is sufficient occupant loading force, the column moves axially forward (toward the front of the vehicle) sliding through the extruder. This results in a gap between the two components (see "A" in Figure 2). To measure the movement, the dimension between the extruder and flare/flange is measured and encoded to the nearest inch. Figure 2 demonstrates the measurement procedure.
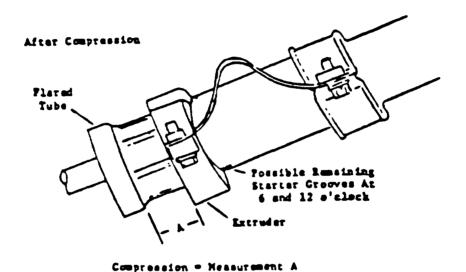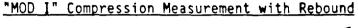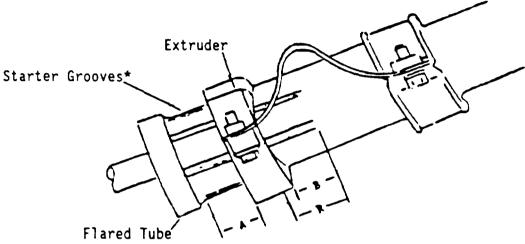

Figure 2

Generally, four grooves are produced on the column as the column slides through the extruder. These can aid the researcher in detecting movement. Note, a steering column may experience a rebound phenomenon. Researchers must inspect the column for grooves between the extruder and the upper column attachments (driver's side) . If these are present, adjust the initial measurement by adding the length of these grooves and add a value of 0.25 inch. The sum of these values is encoded. Refer to Figure 3 for measurement procedure.

Variable Name: Steering Column Collapse Due to Occupant Loading (cont'd.)

"MOD I" Compression Measurement with Rebound

*   Starter Grooves should be disregarded in all compression measurements.

Figure 3

The measurement of compression on a steering column that has experienced re-bound is made as follows (see Figure 3 above):

1. Measure the length of grooves "B" and add 0.25 inch to find "R".

2. Make the column compression measurement "A".

3. Add "R" and "A" to determine the total compression with rebound resulting from driver impact of the steering wheel and column.

Code "00" (No movement, compression, or collapse) is used when the steering column remained stationary (original position).

Code "01" is used when a measurement is greater than zero but less than 1.5 inches.

Codes "81" through "86" (Estimated movement from observation) are used "ONLY" in situations where movement is observed and cannot be directly measured. Even though these values are estimates, every effort should be made to reference this movement to structural components. Guesswork should be avoided.

Code "97" (Apparent movement, value undetermined or cannot be measured or estimated) is used when movement is observed but cannot be esti-mated.

Variable Name: Steering Column Collapse Due to Occupant Loading (cont'd.)

Code "98" (Nonspecified type column) identifies steering columns which do not have a shear module or an extruder.

Code "99" (Unknown) is used for the following situations.

- When it is uncertain whether the shear module was displaced or there was column extrusion.

- When it cannot be determined whether the vehicle was equipped with a shear module or an extruder.

Variable Name: Direction And Magnitude of Steering Column Vertical Movement
Direction And Magnitude of Steering Column Lateral Movement
Direction And Magnitude of Steering Column Longitudinal
Movement

Element Values:

Range: -84 to -81, -50 to -01, _00, +01 to +50, +81 to +84, _97, _99
_00 No steering column movement
Code the actual measured movement to the nearest inch.
±01-±49 Actual measured value
±50 50 inches or greater

Estimated movement from observation
±81 ≥ 1 inch but < 3 inches
±82 ≥ 3 inches but < 6 inches
±83 ≥ 6 inches but < 12 inches
±84 ≥ 12 inches

_97 Apparent movement > 1 inch but cannot be measured or estimated
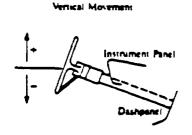_99 Unknown

Source: Vehicle inspection

Remarks:

The steering column movement is measured along three axes and encoded with
either an actual movement value or an estimated movement value. All measure-
ments should be obtained by using the center of the steering wheel hub as the
measurement point for comparison with original specifications when available.
In most situations, however, the researcher will determine the actual movement
by comparing the measurements obtained to those of an undamaged vehicle.
Longitudinal and lateral movements are measured parallel to the floor; the
vertical movement is measured perpendicular to the floor. The measurements
must be one inch or greater to be considered as movement.

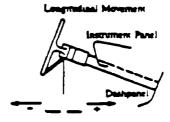The positive and negative signs specify the directional movement; see below.

● VERTICAL: plus (+) = up;   minus (-) = down

● LATERAL: plus (+) = right;   minus (-) = left

● LONGITUDINAL: plus (+) = forward; minus (-) = rearward

Variable Name: Direction And Magnitude of Steering Column Vertical
Movement (cont'd.)
Direction And Magnitude of Steering Column Lateral
Movement (cont'd.)
Direction And Magnitude of Steering Column Longitudinal
Movement (cont'd.)

VERTICAL MOVEMENT

Vertical movement refers to the upward or downward displacement of the steer-
ing assembly. To obtain the vertical movement, measure from the steering
wheel hub to the windshield header directly above the hub. If the vehicle is
equipped with a tilt column, then center the column prior to measuring. This
value is measured and recorded for comparison with the original dimension. A
difference of one inch or greater is encoded to the nearest inch.

If the roof/header is deformed or displaced as a result of the impact, then
estimate the original position of this component to secure the measurement.

If the roof/header is damaged such that the original position cannot be esti-
mated, an alternative component such as the floor pan can be used. Exercise
caution to ensure that the original position of the floor pan is used.

The following diagram illustrates this measurement.

Figure 1

TO WINDSHIELD HEADER

LATERAL MOVEMENT

Lateral movement refers to displacement of the steering assembly to the left
or right, relative to the driver's position. The measurement is obtained by
measuring perpendicular from the belt line to the steering wheel hub. The
measurement is compared with an original dimension.

Variable Name: Direction And Magnitude of Steering Column Vertical
                 Movement (cont'd.)
                 Direction And Magnitude of Steering Column Lateral
                 Movement (cont'd.)
                 Direction And Magnitude of Steering Column Longitudinal
                 Movement (cont'd.)

If the belt line is displaced, then attempt to locate the original position of the component when making the measurement.

If the belt line is damaged such that the original position cannot be estimated, then the centerline or opposite belt line can be used to obtain measurements for later comparison.
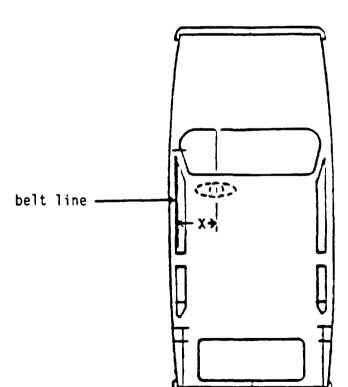
The following diagram illustrates this measurement.

Figure 2

belt line

LONGITUDINAL MOVEMENT

The recommended approach for documenting the longitudinal displacement of the steering column (see Figure 3) involves locating the steering wheel hub with regard to the rear maximum extent stringline for the vehicle being inspected.

IV89
IV90
IV91
(4)

Variable Name: Direction And Magnitude of Steering Column Vertical
                Movement (cont'd.)
                Direction And Magnitude of Steering Column Lateral
                Movement (cont'd.)
                Direction And Magnitude of Steering Column Longitudinal
                Movement (cont'd.)

The following recommended procedure involves the use of the contour gauge
support pole.

- Extend the pole laterally between the two front doors estab-
  lishing a reference line as near the steering wheel hub as
  possible.

- Square the pole by measuring equal distances from identical
  undamaged components on either side of the vehicle (e.g., the
  C-pillars, rear axle, or a rear maximum extent stringline).
  Select undamaged components as near the pole as possible to
  enhance measurement accuracy.

- Measure from the rear stringline to the reference line and
  record the measurement (X value).

- Measure from the reference line to the center of the steering
  wheel hub (Y value).

- The sum of these two measurements (X and Y) will be compared to
  the original position of the column as measured in a similar
  vehicle.

Figure 3

Reference line

Measure this
distance (Y)

X

X

Variable Name: Direction And Magnitude of Steering Column Vertical
                 Movement (cont'd.)
                 Direction And Magnitude of Steering Column Lateral
                 Movement (cont'd.)
                 Direction And Magnitude of Steering Column Longitudinal
                 Movement (cont'd.)

The sum of "X" and "Y" will be used for comparison.

Code " 00" (No steering column movement) is used when the column has not moved
        or the movement is less than 1 inch.

Codes "±01-±49" (Actual measured value) are used to encode the actual movement
        of the steering column to the nearest inch. Movement of less than
        one inch should be coded " 00".

Code "±50" (50 inches or greater) is used when the steering column movement is
        equal to or greater than 49.5 inches.

Rare situations exist where researchers cannot accurately determine the dis-
placement of the steering column. In these situations, apply the following
codes.

Code "±81" (≥ 1 inch but < 3 inches) is used when the estimated movement is
        greater than or equal to one inch, but less than three inches.

Code "±82" (≥ 3 inches but < 6 inches) is used when the estimated movement is
        greater than or equal to three inches, but less than six inches.

Code "±83" (≥ 6 inches but < 12 inches) is used when the estimated movement is
        greater than or equal to six inches, but less than twelve inches.

Code "±84" (≥ 12 inches) is used when the estimated movement is greater thar
        twelve inches.

Code " 97" (Apparent movement > 1 inch but cannot be measured or estimated) is
        used when there is an apparent displacement of the steering column,
        but the extent of the movement cannot be measured or estimated
        This element does not require a plus or minus sign to be encoded
        Leave the plus/minus column blank.

Code " 99" (Unknown) is used when it is unknown if the steering column was
        displaced. This element does not require a plus or minus sign to be
        encoded. Leave the plus/minus column blank.

Variable Name: Steering Rim/Spoke Deformation

Element Values:

    0 No steering rim deformation
    Code actual measured deformation to the nearest inch.
    1-5 Actual measured value
    6 6 inches or more
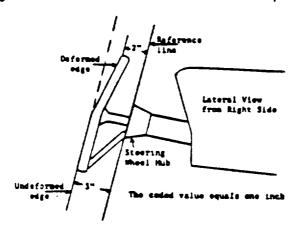   8 Observed deformation cannot be measured
    9 Unknown

Source: Vehicle inspection.

Remarks:

The intent is to capture deformation caused by occupant contact rather than induced damage.

The center of the steering wheel hub is the reference plane for determining magnitude of deformation. A measurement is taken from this reference plane to that area of the rim which has the greatest deformation. This measurement should be referenced to an undisplaced area of the rim or compared to the rim of a similar undamaged vehicle.

The following diagram illustrates this measurement procedure.

Code "0" (No steering rim deformation) is used when there was no deformation of the rim or spokes. Check your observation by placing a flat object (i.e., clipboard) across the plane of the steering rim prior to selecting this code.

Code "1" is used when the deformation is greater than zero but less than 1.5 inches.

Code "6" (6 inches or more) is used when deformation equals or exceeds 5.5 inches.

Variable Name: Steering Rim/Spoke Deformation (cont'd.)

Code "8"   (Observed deformation cannot be measured) is used when the situation does not permit the direct measurement of a deformed rim.

Code "9"   (Unknown) is used in the following situations.

- It is not known if the rim was deformed by occupant contact.

- An assessment of rim damage cannot be made because the vehicle is repaired.

Variable Name: Location of Steering Rim/Spoke Deformation

Element Values:

    00 No steering rim deformation

    Quarter Sections
    01 Section A
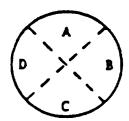   02 Section B
    03 Section C
    04 Section D

    Half Sections
    05 Upper half of rim/spoke
    06 Lower half of rim/spoke
    07 Left half of rim/spoke
    08 Right half of rim/spoke

    09 Complete steering wheel collapse
    10 Undetermined location
    99 Unknown
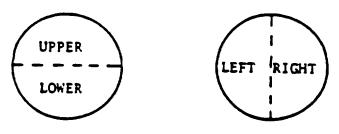
Source: Vehicle inspection

Remarks:

The steering wheel rim is divided into four quarter sections (A through D) and four half sections (upper half, lower half, left half, right half). Note, the half designation should not be considered as a grouping of quarter sections. The accompanying diagrams identify the location of the quarter and half sections.
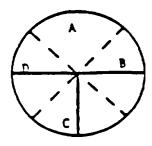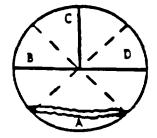
Quarter Sections

Half Sections

Variable Name: Location of Steering Rim/Spoke Deformation (cont'd.)

Evaluate the deformation of the rim with respect to the wheel design and not the wheel position observed during the vehicle inspection. For example, if the designed top section was deformed and rotated to the bottom position, then the correct response for this variable is "01" (Section A); see below.

Straight Ahead
Position

Post-impact
Position

When evaluating which quarter or half to encode, place primary emphasis upor downward deflection since the coding captures occupant caused deformation. When two half sections are deformed, select the half with the greatest defor-mation.

Code "09" (Complete steering wheel collapse) is used in the event two half sections are deformed axially downward, beyond the hub.

Code "10" (Undetermined location) is used when it is known the rim was de-formed, but as the result of extrication or other post-impact activ-ity the original deformed section could not be determined.

Code "99" (Unknown) is used in the following situations.

- It is not known if the rim was deformed by occupant contact.

- An assessment of rim damage could not be made as the vehicle was repaired.

Variable Name: Odometer Reading

Element Values:

Range: 000, 001 through 300, 999

     Miles - Code mileage to the nearest 1,000 miles
     000 No odometer
     001 Less than 1,500 miles
     300 299,500 miles or more
     999 Unknown

Source: Primary source is the vehicle inspection.

Remarks:

This variable measures the vehicle's mileage as indicated on the odometer. However, in cases where it is known that the odometer was working but had turned over (i.e., recycled) the coded value represents the total mileage on the vehicle rather than the reading on the odometer. Annotate the source of information when it is determined that the odometer had turned over.

Code to the nearest 1,000 miles as in the examples below.

Mileage:	7,498	Mileage:	18,342
Code:	"007"	Code:	"018"
Mileage:	7,502	Mileage:	147,687
Code:	"008"	Code:	"148"

Code "000" (No odometer) is used for vehicles manufactured without an odometer.

Code "001" (Less than 1,500 miles) if the mileage is less than 1,500 miles.

Code "999" (Unknown) is used when:

- it is known that the odometer was disconnected or broken before the collision;

- the vehicle is equipped with an electronic instrument cluster and an analog "back-up" odometer is not present; or

- the mileage is unknown.

Variable Name: Instrument Panel Damage from Occupant Contact

Element Values:

    0 No
    1 Yes
    9 Unknown

Source: Vehicle inspection only.

Remarks:

Instrument panel damage is defined as damage caused by occupant contact during the impact sequence. This damage includes: breakage, dents, scratches, and abrasions. Deformities resulting from impact forces such as lateral shift or buckling are excluded.

The instrument panel is defined as that panel extending horizontally from A-pillar to A-pillar (Figure 1) and vertically from the lower part of the windshield to the lowest vertical edge of the panel (Figure 2). This excludes the steering assembly and all center mounted consoles.

Figure 1   Figure 2

Code "0" (No) is used when the instrument panel was not damaged by occupant contact.

Code "1" (Yes) is used when the instrument panel was damaged by occupant contact.

Code "9" (Unknown) is used when the instrument panel is under repair or replaced.

Variable Name: Knee Bolsters Deformed from Occupant Contact

Element Values:

    0 No
    1 Yes
    8 Not present
    9 Unknown

Source: Vehicle inspection.

Remarks:

Knee bolsters are defined as energy absorbing panels fitted to the lower portion of the instrument panel to help restrict forward movement of the front seat occupant's lower body during an accident. Knee bolsters may or may not extend from A-pillar to A-pillar depending on the vehicle make and model. Vehicles equipped with a passive restraint system using only an upper torso (shoulder) belt or an airbag are generally equipped with a knee bolster. This padded attachment is designed to prevent the occupant from submarining under the shoulder belt and instrument panel during an impact. The diagram below illustrates the location of the knee bolster in relation to the vehicle occupant.

Right Side Lateral View

A=Knee Bolster

This variable reports deformation (indentation) of the knee bolster as a result of occupant contact and not as a result of impact related damage.

Code "0" (No) is used when there is no occupant caused deformation of the
        knee bolster. Minor scuffing and transfers are not considered deformation.

Variable Name: Knee Bolsters Deformed from Occupant Contact (cont'd.)

Code "1" (Yes) is used when occupant caused deformation is present on the
knee bolster. Minor dents are considered deformation; however,
scuffing and transfers are not deformation. Occupant contact evi-
dence is included on the Vehicle Interior Sketches page, Points of
Occupant Contact page, and highlighted in the photographs.

Code "8" (Not present) is used when no knee bolster is present.

Code "9" (Unknown) is used when knee bolster deformation is present but it is
unknown if it was occupant caused.

Variable Name: Did Glove Compartment Door Open During Collision(s)

Element Values:

    0 No
    1 Yes
    8 Not present
    9 Unknown

Source: Researcher determined; inputs include the vehicle inspection and interview.

Remarks:

This variable reports the status of the glove compartment door (if present) during an accident. The primary objective is to determine whether the door latch mechanism released during a collision(s).

Code "0"   (No) is used when the door did not open.

Code "1"   (Yes) is used when the door opened. Reasons may include: occupant contact, shifting or buckling of vehicle components, or impact forces.

Code "8"   (Not present) is used when no glove compartment door is available (i.e., vans).

Code "9"   (Unknown) is used when:

    ● that portion of the instrument panel is under repair, or

    ● the glove box door is known to be open but it is unknown whether the door opened as a result of the accident [i.e., door could have been open prior to the accident, or it could have been opened after the accident (e.g., to remove driver registration information)].

INSTRUCTIONS FOR COMPLETION OF VEHICLE INTERIOR SKETCHES
AND POINTS OF OCCUPANT CONTACT PAGES

The VEHICLE INTERIOR SKETCHES page and corresponding POINTS OF OCCUPANT CONTACT page provide a valuable link between vehicle interior documentation and occupant injury data. Properly completed, these records identify evidence of occupant contact points and relate the contact points to the part of the occupant's body that produced the evidence.

In completing the Vehicle Interior Sketches, assess the occupant trajectory in conjunction with the impact configuration, direction of force, and use of restraints. As contact points are identified, they should be documented as follows.

- Sketch the damaged area on the instrument panel outline (e.g., radio, glove compartment, damage to instrument panel structure).

- Annotate the contacted area with a letter (begin with A) and list on the Points of Occupant Contact page.

- In the column adjacent to the respective letter, identify the interior component contacted. Specify the number of the contacting occupant if it can be determined.

- Identify the type of evidence present (i.e., scuff, tissue transfer, tooth, etc.) in the "Supporting Physical Evidence" column.

- Specify the level of confidence which you feel best represents your conclusion using the scale of: 1 (Certain), 2 (Probable), 3 (Possible), or 4 (Unknown).

- Within the vehicle, highlight the contact with yellow (or similar) tape for photographic purposes.

An example of a completed Vehicle Interior Sketches (Page 4) and Points of Occupant Contact (Page 5) page follow. If sufficient space is not available to identify all contacts, use the back of the Page 4.

INSTRUCTIONS FOR COMPLETION OF VEHICLE INTERIOR SKETCHES
AND POINTS OF OCCUPANT CONTACT PAGES   (2)

National Accident Sampling System – Crashworthiness Data System: Interior Vehicle Form   Page 4

INSTRUCTIONS FOR COMPLETION OF VEHICLE INTERIOR SKETCHES
AND POINTS OF OCCUPANT CONTACT PAGES   (3)

National Accident Sampling System — Crashworthiness Data System Interior Vehicle Form   Page 5

POINTS OF OCCUPANT CONTACT

Contact	Interior Component Contacted	Occupant No if Known	Body Region if Known	Supporting Physical Evidence	Confidence Level of Contact Point
A	01	1	head	dark hair, windshield contact	1
B	09	1	head ?	deformation, tissue transfer	1
C	09	1	L. knee	plastic cracked, broken scuff	1
D	20	1	shoulder ?	deformed outward	1
E	06	1	chest	rim deformed, hub on floor	1
F	15	2	head	mirror cracked, contact windshield	1
G	10	2	UNK.	control knob missing	2
H	12	2	knees ?	plastic door shattered	1
I	40	3	torso	deformed forward, scuffed, torn	1
J	54	3	head	hair lodged in coarse fabric	1
K	30	3	UNK.	door handle missing	3
L	40	3	—	blood deposit, probable FRP #3	2
M					
N					
O					

CODES FOR INTERIOR COMPONENTS

FRONT
(01) Windshield
(02) Mirror
(03) Sunvisor
(04) Steering wheel rim
(05) Steering wheel hub spoke
(06) Steering wheel (combination of codes 04 and 05)
(07) Steering column transmission selector lever other attachment
(08) Add on equipment (e.g. CB tape deck, air conditioner)
(09) Left instrument panel and below
(10) Center instrument panel and below
(11) Right instrument panel and below
(12) Glove compartment door
(13) Knee bolster
(14) Windshield including one or more of the following front header, A-pillar, instrument panel, mirror, steering assembly
(15) Windshield including one or more of the following front header, A-pillar, instrument panel, mirror
(16) Other front object (specify)

LEFT SIDE
(20) Left side interior surface excluding hardware or armrests
(21) Left side hardware or armrest
(22) Left A pillar
(23) Left B pillar
(24) Other left pillar (specify)

(25) Left side window glass or frame

26 Left side window glass including one or more of the following frame, window sill, A-pillar, B-pillar, roof side rails
27 Other left side object (specify)

RIGHT SIDE
(30) Right side interior surface excluding hardware or armrests
(31) Right side hardware or armrest
(32) Right A pillar
(33) Right B pillar
(34) Other right pillar (specify)

(35) Right side window glass or frame
(36) Right side window glass including one or more of the following frame, window sill, A-pillar, B-pillar, roof side rails
(37) Other right side object (specify)

INTERIOR
(40) Seat back support
(41) Belt restraint webbing/buckle
(42) Belt restraint B-pillar attachment point
(43) Other restraint system component (specify)
(44) Head restraint system
(45) Air cushion
(46) Other occupants (specify)

(47) Interior loose objects

(48) Child/infant restraint (specify)

(49) Other interior object (specify)

ROOF
(50) Front header
(51) Rear header
(52) Roof left side rails
(53) Roof right side rails
(54) Roof or convertible top

FLOOR
(56) Floor including toe pan
(57) Floor or console mounted transmission lever including console
(58) Parking brake handle
(59) Foot controls including parking brake

REAR
(60) Backlight (rear window)
(61) Backlight storage rack, door etc.
(62) Other rear object (specify)

CONFIDENCE LEVEL OF CONTACT POINT

(1) Certain
(2) Probable
(3) Possible
(4) Unknown

MANUAL RESTRAINTS

Restraint usage data, recorded on the noncoded section of the Interior Vehicle Form under the title "MANUAL RESTRAINTS", is based solely on the evidence obtained during the vehicle inspection.

An indication of restraint usage is determined for every seating position in the vehicle, regardless of whether the seating position is occupied. The "indication of usage" represents "recent usage" rather than "usage ever", whenever possible. The following evidence is sought when assessing restraint usage:

- belts/fittings damaged by occupant loading: deformed anchor components, stretched webbing, latch metal peening (loading impression on metal);

- placement of belts: on, behind, or under seatbacks or cushions; and,

- condition of belts: dirty, dust covered, mechanically unusable, knotted, size adjustment on fixed length belts, cut for convenience or comfort (out of the way, near housings), or cut for occupant extraction by emergency personnel (usually at an easily accessible position).

Restraint "usage in this accident" is not generally determined on the Interior Vehicle Form. Vehicle evidence along with police report information, interviews, relationship of contact points to seat position given the PDOF applied to the vehicle, presence of belt-caused occupant injuries, and presence or absence of ejection are considered before encoding restraint usage on the Occupant Assessment Form.

CHILD SAFETY SEAT FIELD ASSESSMENT

For each child safety seat present in the vehicle, assign (unless you have knowledge regarding what the occupant's number is) the seat a temporary occupant number. Determine the correct answer for each of the six row variables present on the reverse side of Page 6. Due to the transient nature of child safety seats, annotate questions regarding its position for use during the interview. From this data, the actual position of the child safety seat at the time of the accident and the occupant's correct number can be determined for the inclusion on the Occupant Assessment Form.

U S Department of Transportation
National Highway Traffic Safety
Administration

Form Approved
O M B No 2127-0021
NATIONAL ACCIDENT SAMPLING SYSTEM
CRASHWORTHINESS DATA SYSTEM

OCCUPANT ASSESSMENT FORM

1. Primary Sampling Unit Number ___ ___

2. Case Number – Stratum ___ ___ ___ ___

3. Vehicle Number ___ ___

4 Occupant Number ___ ___

OCCUPANT CHARACTERISTICS

5. Occupant's Age ___ ___
Code actual age at time of accident.
(00) Less than one year old (specify by month).
_____
(97) 97 years and older
(99) Unknown

6. Occupant's Sex ___
(1) Male
(2) Female
(9) Unknown

7. Occupant's Height ___ ___
Code actual height to the nearest inch.
(99) Unknown

8. Occupant's Weight ___ ___ ___
Code actual weight to the nearest pound.
(999) Unknown

9. Occupant's Role ___
(1) Driver
(2) Passenger
(9) Unknown

10. Occupant's Seat Position ___ ___

Front Seat
(11) Left side
(12) Middle
(13) Right side
(14) Other (specify): _____

Second Seat
(21) Left side
(22) Middle
(23) Right side
(24) Other (specify): _____

Third Seat
(31) Left side
(32) Middle
(33) Right side
(34) Other (specify): _____

Fourth Seat
(41) Left side
(42) Middle
(43) Right side
(44) Other (specify): _____

(97) In or on unenclosed area
(98) Other seat (specify): _____

11. Occupant's Posture ___
(0) Normal posture
(1) Abnormal posture (specify)·
_____
(9) Unknown

EJECTION/ENTRAPMENT

12. Ejection ___
(0) No ejection
(1) Complete ejection
(2) Partial ejection
(3) Ejection, unknown degree
(9) Unknown

13. Ejection Area ___
(0) No ejection
(1) Windshield
(2) Left front
(3) Right front
(4) Left rear
(5) Right rear
(6) Rear
(7) Roof
(8) Other area (e.g., back of pickup, etc.)
   (specify): _____
(9) Unknown

14. Ejection Medium ___
(0) No ejection
(1) Door/hatch/tailgate
(2) Nonfixed roof structure
(3) Fixed glazing
(4) Nonfixed glazing (specify):
_____
(5) Integral structure
(8) Other medium (specify):
_____
(9) Unknown

15. Medium Status (Immediately Prior to Impact) ___
(0) No ejection
(1) Open
(2) Closed
(3) Integral structure
(9) Unknown

16. Entrapment ___
(NOTE: Entrapped means that part of the person was in the vehicle and mechanically restrained; jammed doors and immobilizing injuries by themselves are not sufficient to constitute entrapment.)
(0) Not entrapped
(1) Entrapped
(9) Unknown

RESTRAINT SYSTEM AND SEAT EVALUATION

17. Manual (Active) Belt System Availability —
  (0) Not available
  (1) Belt removed/destroyed
  (2) Shoulder belt
  (3) Lap belt
  (4) Lap and shoulder belt
  (5) Belt available — type unknown
  (8) Other belt (specify)
  _____
  (9) Unknown

18. Manual (Active) Belt System Use — —
  (00) None used, not available, or belt
    removed/destroyed
  (01) Inoperative (specify)
  _____
  (02) Shoulder belt
  (03) Lap belt
  (04) Lap and shoulder belt
  (05) Belt used — type unknown
  (08) Other belt used (specify)·
  _____
  (12) Shoulder belt used with child safety seat
  (13) Lap belt used with child safety seat
  (14) Lap and shoulder belt used with child safety
    seat
  (15) Belt used with child safety seat — type unknown
  (18) Other belt used with child safety seat
    (specify)· _____
  (99) Unknown if belt used

19. Proper Use of Manual (Active) Belts —
  (0) None used or not available
  (1) Belt used properly
  (2) Belt used properly with child safety seat

  Belt Used Improperly
  (3) Shoulder belt worn under arm
  (4) Shoulder belt worn behind back or seat
  (5) Belt worn around more than one person
  (6) Lap belt worn on abdomen
  (7) Lap belt or lap and shoulder belt used
    improperly with child safety seat (specify):
  _____
  (8) Other improper use of manual belt system
    (specify):
  _____
  (9) Unknown

**20. Manual (Active) Belt Failure Modes
During Accident** —
  (0) No manual belt used or not available
  (1) No manual belt failure(s)
  (2) Manual belt failure(s) (check all that apply)
  [ ] Torn webbing (stretched webbing not included)
  [ ] Broken buckle or latchplate
  [ ] Upper anchorage separated
  [ ] Other anchorage separated (specify):
  _____
  [ ] Broken retractor
  [ ] Other manual belt failure (specify):
  _____
  (9) Unknown

**21. Automatic (Passive) Restraint
System Availability** —
  (0) Not equipped/not available
  (1) Airbag
  (2) Airbag disconnected (specify)·
  _____
  (3) Airbag not reinstalled
  (4) 2 point automatic belts
  (5) 3 point automatic belts
  (6) Automatic belts destroyed or
    rendered inoperative
  (9) Unknown

22. Automatic (Passive) Restraint Function —
  (0) Not equipped/not available

  Automatic Belt
  (1) Automatic belt in use
  (2) Automatic belt not in use
  (3) Automatic belt use unknown

  Air Bag
  (4) Airbag deployed during accident
  (5) Airbag deployed inadvertently just prior
    to accident
  (6) Deployed, accident sequence
    undetermined
  (7) Nondeployed
  (8) Unknown if deployed
  (9) Unknown

23. Did Automatic (Passive) Restaint Fail —
  (0) Not equipped/not available
  (1) No
  (2) Yes (specify):
  _____
  (9) Unknown

24. Police Reported Restraint Use —
  (0) None used
  (1) Police did not indicate restraint use
  (2) Shoulder belt
  (3) Lap belt
  (4) Lap and shoulder belt
  (5) Belt used, type not specified
  (6) Child safety seat
  (7) Other or automatic restraint (specify):
  _____
  (8) Restrained, type unknown
  (9) Police indicated "unknown"

**25. Head Restraint Type/Damage by Occupant
at This Occupant Position** —
  (0) No head restraints
  (1) Integral — no damage
  (2) Integral — damaged during accident
  (3) Adjustable — no damage
  (4) Adjustable — damaged during accident
  (5) Add-on — no damage
  (6) Add-on — damaged during accident
  (8) Other (specify):
  _____
  (9) Unknown

26. Seat Type (This Occupant Position)   ___ ___
    (00) Occupant not seated or no seat
    (01) Bucket
    (02) Bucket with folding back
    (03) Bench
    (04) Bench with separate back cushions
    (05) Bench with folding back(s)
    (06) Split bench with separate back cushions
    (07) Split bench with folding back(s)
    (08) Pedestal (i e., van type)
    (09) Other seat type (specify)
    _____
    (99) Unknown

27. Seat Performance (This Occupant Position)   ___
    (0) Occupant not seated or no seat
    (1) No seat performance failure(s)
    (2) Seat performance failure(s)
        (check all that apply)
    [ ] Seat adjusters failed
    [ ] Seat back folding locks failed
    [ ] Seat tracks failed
    [ ] Seat anchors failed
    [ ] Deformed by impact of passenger from rear
    [ ] Deformed by impact of passenger from front
    [ ] Deformed by own inertial forces
    [ ] Deformed by passenger compartment
        intrusion (specify):
    _____
    _____
    _____
    [ ] Other (specify)·
    _____
    (9) Unknown

CHILD SAFETY SEAT

28. Child Safety Seat Make/Model   ___ ___ ___
    (000) No child safety seat
    Applicable codes are found in your NASS CDS
    Data Collection, Coding, and Editing Manual
    (997) Other make/model (specify):
    _____
    (998) Unknown make/model
    (999) Unknown if child safety seat used

29. Type of Child Safety Seat   ___
    (0) No child safety seat
    (1) Infant seat
    (2) Toddler seat
    (3) Convertible seat
    (4) Booster seat
    (7) Other type child safety seat (specify):
    _____
    (8) Unknown child safety seat type
    (9) Unknown if child safety seat used

30. Child Safety Seat Orientation   ___ ___
    (00) No child safety seat

    Designed for Rear Facing for This Age/Weight
    (01) Rear facing
    (02) Forward facing
    (08) Other orientation (specify)·
    _____
    (09) Unknown orientation

    Designed for Forward Facing for This Age/Weight
    (11) Rear facing
    (12) Forward facing
    (18) Other orientation (specify):
    _____
    (19) Unknown orientation

    Unknown Design or Orientation for This
    Age/Weight, or Unknown Age/Weight
    (21) Rear facing
    (22) Forward facing
    (28) Other orientation (specify):
    _____
    (29) Unknown orientation

    (99) Unknown if child safety seat used

31. Child Safety Seat Harness Usage   ___ ___

32. Child Safety Seat Shield Usage   ___ ___

33. Child Safety Seat Tether Usage   ___ ___
    Note: Options below applicable to
    Variables OA31-OA33.
    (00) No child safety seat

    Not Designed with
    Harness/Shield/Tether
    (01) After market harness/shield/tether added, not
        used
    (02) After market harness/shield/tether used
    (03) Child safety seat used, but no after market
        harness/shield/tether added
    (09) Unknown if harness/shield/tether
        added or used

    Designed with Harness/Shield/Tether
    (11) Harness/shield/tether not used
    (12) Harness/shield/tether used
    (19) Unknown if harness/shield/tether used

    Unknown If Designed with Harness/Shield/Tether
    (21) Harness/shield/tether not used
    (22) Harness/shield/tether used
    (29) Unknown if harness/shield/tether used

    (99) Unknown if child safety seat used

INJURY CONSEQUENCES

34. Injury Severity (Police Rating)   ___
    (0) O – No injury
    (1) C – Possible injury
    (2) B – Nonincapacitating injury
    (3) A – Incapacitating injury
    (4) K – Killed
    (5) U – Injury, severity unknown
    (6) Died prior to accident
    (9) Unknown

35. Treatment – Mortality   ___
    (0) No treatment
    (1) Fatal
    (2) Fatal – ruled disease

    Nonfatal
    (3) Hospitalized
    (4) Transported and released
    (5) Treatment at scene – nontransported
    (6) Treatment later
    (8) Treatment – other (specify):

    _____

    (9) Unknown

36. Type of Medical Facility (for Initial Treatment) ___
    (0) Not treated at a medical facility
    (1) Trauma center
    (2) Hospital
    (3) Medical clinic
    (4) Physician's office
    (5) Treatment later at medical facility
    (8) Other (specify):

    _____

    (9) Unknown

37. Hospital stay   ___ ___
    ____ Code number of days (up through 60)
    that the occupant stayed in the hospital
    (00) Not hospitalized
    (61) 61 days or more
    (99) Unknown

38. Working Days Lost   ___ ___
    ____ Code the number of days
    (up through 60) that the occupant
    lost from work due to the accident
    (00) No working days lost
    (61) 61 days or more
    (62) Fatally injured
    (97) Not working prior to accident
    (99) Unknown

39. Time to Death   ___ ___
    ____ Code number of hours from time of
    accident to time of death up through 24
    hours. If time of death is greater than 24
    hours, code number of days. (Note: 1 day =
    31, 2 days = 32, ... n days = 30 + n up through
    30 days = 60)
    (00) Not fatal
    (96) Fatal – ruled disease
    (99) Unknown

40. 1st Medically Reported Cause of Death   ___ ___

41. 2nd Medically Reported Cause of Death   ___ ___

42. 3rd Medically Reported Cause of Death   ___ ___
    ____ Code the Occupant Injury from line
    number(s) for the medically reported
    injury(s) which reportedly contributed to
    this occupant's death
    (00) Not fatal or no additional causes
    (97) Other result (specify):

    _____

    (99) Unknown

43. Number of Recorded Injuries for
    This Occupant   ___ ___
    ____ Code the actual number of
    injuries recorded for this occupant.
    (00) No recorded injuries
    (97) Injured, details unknown
    (99) Unknown if injured

UPDATE CANDIDATE   NO [ ]   YES [ ]

*** STOP HERE ***
IF THERE ARE NO RECORDED INJURIES
(I.E., OA43=00, 97, 99)

Variable Name: Vehicle Number

Element Values:

    Range: 01 through 30

Source: Researcher assigned.

Remarks:

Code the Vehicle Number for the vehicle, in or on which, this occupant was riding (i.e., as a driver or as a passenger--in or on the vehicle). See GV03, Vehicle Number.

Assume that only one occupant is in a hit-and-run vehicle (unless reliable evidence to the contrary exists), and assume this person is the driver.

This variable is a file structuring variable.

Variable Name: Occupant Number

Element Values:

Range: 01 through 50

Source: Researcher assigned.

Remarks:

Occupant numbers must be assigned sequentially, beginning in the enclosed area with "01". No numbers may be skipped. Assign numbers left to right and front to back among occupants.

Assign numbers last to persons on the vehicle or in an unenclosed area. Persons appended to vehicle for motion (e.g., bicyclist holding onto vehicle) are either pedestrians or other nonmotorists and not occupants; therefore, no form is completed, and no number is assigned.

Drivers do not have to be coded "01" (e.g., right hand drive vehicles containing left front occupant). However, code the assumed driver of a hit-and-run vehicle as "01".

An occupant on or in the lap of another person should be assigned a number one higher than the person whose lap they were on or in.

Occupants sharing a seating position should be assigned numbers using the guidelines stated in the first paragraph above.

This variable is a file structuring variable.

OCCUPANT'S CHARACTERISTICS OVERVIEW
(OA05 - OA10)

The Occupant's characteristics section of the Occupant Assessment Form consists of two areas, physical characteristics, and role/position. These two areas provide a coded sketch of the occupant. Physical characteristics are noted in the variables OA06 (Occupant's Sex), OA07 (Occupant's Height), and OA08 (Occupant's Weight). The demographics of the occupant are completed by the variable OA05 (Occupant's Age). Position and function of the occupant are also critical bits of information in the overall picture of the accident. These are provided by the variables OA10 (Occupant's Seating Position) and OA09 (Occupant's Role).

This section provides a base of information that is vital to the analytical process. Ergonomic engineers design the interior of vehicles to be most comfortable for a range of occupants. The height and weight for a particular age bracket are considered in establishing the leg room, head room, and other interior dimensions for a vehicle. Restraint design relies heavily on this type of information. Initial designs of active belts were determined to be very uncomfortable and difficult to wear. The use of a wider range of heights and weights, which also has a bearing on seat adjustments, resulted in belts which were much more comfortable to wear and therefore encouraged use.

Occupant demographics and position play an important role in the injury mechanism, restraint system effectiveness, and vehicle design analysis. For example, the vehicle design, which includes the restraint system, must take into consideration the differences between a five foot four inch, 100 pound driver and a six foot six inch, 300 pound passenger. Both of these occupants must be provided with the same amount of protection by the vehicle in an accident.

Societal costs are also derived from these variables and the related injury assessment variables in this and the Occupant Injury Form.

In many cases the only source for this information is the interview. For this reason the researcher should ask probing questions to elicit complete and accurate responses to these, and all other, variables.

Federal Motor Vehicle Safety Standards--FMVSS 202 (Head Restraints), FMVSS 206 (Door Locks and Door Retention Components), FMVSS 207 (Seating Systems), FMVSS 208 (Occupant Protection), FMVSS 212 (Windshield Mountings), FMVSS 213 (Child Restraint System), and FMVSS 214 (Side Door Strength), are all assessed relative to their potential for reduction of injury to occupants. For this reason it is necessary to have the occupant's characteristics as complete as possible for correct and accurate assessment of the various vehicle components and FMVSS's which apply.

Variable Name: Occupant's Age

Element Values:

    Range: 00-97, 99
    00 Less than one year old
    97 97 years and older
    99 Unknown

Source: Primary source is interviewee; secondary sources include police reports and other official records (i.e., medical records).

Remarks:

The occupant's age at the time of the accident is recorded with respect to the occupant's last birthday.

If you are unable to obtain the age of a driver, request a driver's license record. This action must be discussed and a policy determined with your zone center and COTR. Licensing file data takes precedence over police or interview data.

Variable Name: Occupant's Sex

Element Values:

    1 Male
    2 Female
    9 Unknown

Source: Primary source is interviewee; secondary sources include police
           report and official records (e.g., medical).

Remarks:

Self-explanatory.

Variable name: Occupant's Height

Element Values:

    Range: 12 through 85 inches
    99 Unknown

Source: Researcher determined--inputs include interviewee or official records (e.g., medical).

Remarks:

Code actual height to nearest inch. Code "85" is used for any occupant whose height equals or exceeds seven feet one-half inch.

The PAR may be used as a source if it contains this data, but it is superceded if other data exists.

Autopsies often include this information; use it when present.

Variable Name: Occupant's Weight

Element Values:

Range: 005 through 300 pounds
999 Unknown

Source: Researcher determined--inputs include interviewee or official records (e.g., medical)

Remarks:

Code actual weight to nearest pound. Code "300" is used for any occupant whose weight equals or exceeds 300 pounds.

The PAR may be used as a source if it contains this data, but it is superceded if other data exists.

Autopsies often include this information; use it when present.

Variable Name: Occupant's Role

Element Values:

    1 Driver
    2 Passenger
    9 Unknown

Source: Primary source is interviewee; secondary source is police report.

Remarks:

Hit-and-run vehicles are assumed to have only one occupant (unless reliable evidence to the contrary exists), and that person is assumed to be the driver. All other persons riding in or on the vehicle are considered to be passengers.

Variable Name: Occupant's Seat Position

Element Values:

Front Seat		Third Seat	
11	Left side	31	Left side
12	Middle	32	Middle
13	Right side	33	Right side
14	Other (specify)	34	Other (specify)

Second Seat		Fourth Seat	
21	Left side	41	Left side
22	Middle	42	Middle
23	Right side	43	Right side
24	Other (specify)	44	Other (specify)

    97 In or on unenclosed area
    98 Other seat (specify)
    99 Unknown

Source: Primary source is interviewee; secondary source is police report.

Remarks:

Seat position is coded by the location of the occupant in relation to the seat row and the forward longitudinal axis of the vehicle.

More than one person may be assigned the same seating position; however, this is allowed only when a person is sitting on or in someone's lap (e.g., child on or in mother's lap).

In seat rows designed for only two passengers, use codes "11", "13", "21", "23", "31", "33", "41", "43", or "98".

Code "11 (Front Seat - Left side) should be assigned to the assumed driver of a hit-and-run vehicle unless evidence indicates a different position for the person or persons.

Codes "14", "24", "34", "44", (... - Other) and "98" (Other seat) can be used to record the position of someone sitting on the floor or lying across the seat. In addition, when two or more persons are sitting abreast of one another in the same seating location (as opposed to on or in someone's lap), since only one can be assigned the seat's position, the "other" seat position codes as noted above must be used. Assign the seat position to the person using the restraint; if no restraint was used, then assign the seat position to the older person.

If the only seat in the front seating area is a driver's seat (e.g., bucket, pedestal, etc.) and the occupant was in the area but not in the seat, code "14" (Front Seat - Other) should be used. This situation could occur because

Variable Name: Occupant's Seat Position (cont'd.)

of vehicle design or seat removal. The same logic applies to other seat areas. A person in the fourth seat row but not in a seat would be coded "44" (Fourth Seat - Other), and the actual position described.

Code "97" (In or on unenclosed area) includes those occupants riding on a fender, the boot of a convertible, the open cargo box on a light truck, etc.

Code "98" (Other seat) should be used for anyone in the fifth or higher numbered seat area, in an enclosed area where no defined seating exists, or using a fold-down type seat in its folded down position should use this code too.

If seating in the vehicle is longitudinal rather than lateral, use the basic idea of a vehicle interior being divided laterally into roughly equal thirds and visualize lateral rows of seats to determine what seat position is the best descriptor. The diagram below illustrates the intended seat positions for areas of a vehicle.

For rearward facing seats use the basic idea described above in the previous paragraph to describe the occupants seat position. The fact that the seat does not face forward is addressed in OA11, Occupant's Posture.

	Row 1	Row 2	Row 3	Row 4	Row 5
Right	1 3	2 3	3 3	4 3	9 8
FRONT	1 2	2 2	3 2	4 2	9 8
Left	1 1	2 1	3 1	4 1	9 8

Using the diagram above, coding for seat positions "11", "13", "21", "22", "23", "31", "41", and "98" are self-explanatory. For someone seated in the far right third of the offset seat in row three, the proper code should be "32" (Third Seat - Middle). A person in the center of that same seat (i.e., row three) should be coded "34" (Third Seat - Other).

Variable Name: Occupant's Seat Position (cont'd.)

If a seat row has more than three designated seat positions, the occupants
should have their positions assigned as usual for the left and right posi-
tions, while the two center positions would be coded as "Other" (i.e., "14",
"24", "34", "44", or "98") depending upon the seat row.

Persons appended to the vehicle for motion are not considered to be occupants
of the vehicle.

Variable Name: Occupant's Posture

Element Values:

    0 Normal posture
    1 Abnormal posture (specify)
    9 Unknown

Source: Primary source is interviewee; secondary sources include vehicle inspection, police report, or official records (i.e., medical).

Remarks:

This variable is designed to capture those instances where an occupant was not in the usual upright, forward facing seated position.

Code "1" (Abnormal posture) includes but is not limited to:

    o sitting sideways in the seat,
    o sitting normally in a seat yet turned in a nonforward facing direction,
    o sitting normally in a designed rearward or side-facing seat,
    o bracing with feet or hands on a surface in front of the occupant,
    o standing on the floor,
    o standing on a seat,
    o kneeling on a seat,
    o lying back in a reclined seat,
    o lying across a seat,
    o turned to talk to another occupant or to look out a rear window,
    o leaning over in the seat,
    o etc.

It is extremely important in locating injuries associated with various items within the passenger compartment to know as much as possible about the occupant's trajectory or path inside the vehicle during the collision. The accuracy of this analysis depends on knowing exactly where the occupant was before the collision. Therefore, details about the occupant's posture are necessary.

As an example, if the right front passenger was sitting sideways in the seat facing the driver immediately prior to a frontal collision, it is reasonable to assume that his injuries would be confined to the right side of his body from contact with the instrument panel area. If he is reported simply as "sitting on the seat", his normal position would be with his right toward the door. For the same collision situation described above he would probably then contact the instrument panel with the front of his body rather than the side.

Code "9" (Unknown) if the occupant's posture cannot be determined.

EJECTION/ENTRAPMENT OVERVIEW
(OA12 - OA16)

Variables in this section provide a coded assessment of the occurrence of entrapment or ejection of this occupant. There is one variable which addresses entrapment OA15, Entrapment. It is a presence or absence variable. There is no further assessment of entrapment in a coded format. Ejection has a more complete coded description regarding (a) occurrence, OA11, Ejection, (b) route of ejection, OA12, Ejection Area, (c) type of opening the occupant was ejected through, OA13, Ejection Medium, and (d) condition of the opening prior to impact OA14, Medium Status. All of the variables in this section are considered final assessments which are coded at the end of all field research and interviewing. Much of the information regarding them will come from the vehicle inspection. Verification of questionable ejection or entrapment will come from the interview.

Historically, ejection from the vehicle has been a major cause of fatalities and more serious injuries. The chances of being killed if ejected are about 1 in 5; whereas, if the occupant remains inside the vehicle, the chances of dying are reduced to about 1 in 200 for all fatal accidents. Unfortunately ejection from the vehicle is not that uncommon and has become a significant part of the fatality (30%) and severe (15%) injury accidents. Further contributing to the ejection problem is the increase in window surface area and more hatchback models. Despite the current emphasis on restraint use through legal requirements for occupants to be buckled up, a significant portion of the population continues to be unrestrained and at risk to ejection. All evidence indicates that this trend will continue into the foreseeable future.

A problem not often addressed is that of partial ejection. This refers to those instances where some part but not all of an occupant's body is, at some time during the accident sequence, outside the occupant compartment. Although it would not seem to be a problem it can be, and often is, fatal if the part outside is the occupant's head. Because of the dynamics of the vehicle and the kinematics of the occupants during an ejection sequence, it is often the occupant's own vehicle which causes the injury as it rolls onto the occupant.

Entrapment poses a different problem area. Recent years have brought about a vast improvement in the delivery of emergency medical attention to motor vehicle accident victims. This improvement has been achieved through the establishment of regional trauma centers, well equipped Mobile Intensive Care Units manned by trained paramedics even in rural areas, and a general increase in the knowledge of how to treat acute trauma. This improvement has not helped those victims who are restrained within the vehicle by deformed components. The improved care cannot be delivered because the personnel are unable to get to the victim, remove the victim from the vehicle, and deliver the victim to a treatment facility in a reasonable amount of time. Also, previous extrication tools used by rescue personnel were crude and sometimes injury causing themselves, an example of which is the large metal cutting saws. Within the last few years a device known as the "Jaws of Life" was developed and widely distributed. It is a hydraulically driven mechanism which can be used to increase the size of openings, extricate entrapped occupant's limbs and force open doors which are jammed. This development came about because of the perceived need for an extrication tool which operated quickly yet did not further injure the occupant.

EJECTION/ENTRAPMENT OVERVIEW   (2)

Federal Motor Vehicle Safety Standards (FMVSS) which were developed in response to the problems seen in these areas are FMVSS 201 (Occupant protection in interior impact), FMVSS 205 (Glazing Materials), FMVSS 206 (Door locks and door retention components), FMVSS 212 (Windshield mounting), and FMVSS 214 (Roof crush resistance passenger cars).

Analytically this group of variables is a stand alone package most of the time. It can form the basis of an analysis without the use or comparison to any other variables. This would be used mostly in exploring the number and types of ejections and entrapments. Expanding the scope somewhat to include injury severity allows a determination of the increase or decrease in the ejection problem. Inclusion of injury source would provide an idea of the severity of all occurrences of entrapment and ejection. Injury source also provides an idea of the kinematics of the occupant during the sequence. The addition of a cross-tabulation for AIS level would show the relative severity between the injuries incurred inside the vehicle and those outside the vehicle.

Other areas of interest to the analyst are the ejection route and performance of integral structures. The integral structure performance is directly governed by the FMVSS 206 and 212. These areas are of increasing interest to NHTSA since the real world performance can help support the findings from the staged collisions and will help determine the effectiveness of the standards.

Lastly, new glazing techniques are being introduced in windshields and some side windows. These new types of window have a plastic layer on the interior surface of the window. Tests have shown a reduction in lacerative injuries which was the primary objective but also an increased resistance to ejection through the window. Further study of real world performance is needed to provide an accurate evaluation of this secondary benefit.

Gathering the data, which will allow the researcher to accurately code the variables, is a multistage process. It will begin with the PAR which may give an indication of either ejection or entrapment. Inspection of the vehicle will provide the evidence needed to substantiate either occurrence. Further, documentation should be obtained through the scene inspection, interview, and injury data. Only at the end of the data gathering process should these variables be coded. Particular attention should be paid to the vehicle inspection since most evidence of ejection will be less apparent and not easily discerned.

In summary, this group of variables assesses the level of a very significant problem in today's accident picture. Correct accurate assessment is a result of a multistage research process which will be individualized by case. Attention to detail will result in a correct assessment. This is one area which is directly tied to the FMVSS, and all gathered data results in a direct evaluation of the applicable standards.

RESTRAINT SYSTEM AND SEATS OVERVIEW

and passive systems has long been a priority of the accident research effort of the NHTSA. Problems with systems and failures many times receive an inordinate amount of attention compared to the success rate. It becomes important to all concerned that the performance be evaluated in an objective manner and problems which deter use, such as active torso restraints being uncomfortable, be thoroughly documented.

Less attention is paid to the head restraint and seat performance issue, but it is no less important in the overall injury picture. Neck and back injuries are some of the most common and most debilitating that occur in motor vehicle accidents. No accurate assessment of the societal loss due to reduced or poor productivity of occupants related to neck and back injuries has been made. Many times a person with this type of injury does not miss any days of work but is at a reduced level of productivity and has to undergo therapy or treatment for a long period of time. Head restraint design and performance is critical to reduction of trauma to the neck and back.

Seat performance, especially the seat back, is critical to injury reduction in the more severe collisions. Deformation limits of the seat back are covered by specifications in FMVSS 207. These limits are responsible for injury reduction in that the seat back must contain the occupant, either from the front or the back, while absorbing energy from the impact. It is also critical that the adjusters and seat tracks not fail since failure can cause more severe injuries than would otherwise be expected. Increased injury severity has been reported with seat failure even when the occupant is belted.

Analysts consider these variables to be key areas of interest. Correlations between these variables and the injury coding variables are of particular interest. The most common comparisons are, of course, restraint usage versus injury severity, restraint availability versus use, and passive versus active availability. The more detailed analyses involve three-way comparisons (e,g. restraint use versus injury severity versus delta V). Injury severity is less when the occupant is restrained as delta V increases until the delta V reaches a certain level. At this juncture the injury severity for belted occupants becomes the same as for unrestrained ones.

The uses for the data from these variables are too numerous to list, but they are varied and relate to all other forms and areas of data in the case. The researcher should remember that these variables are not coded only from one source of data. The primary source is the vehicle inspection; it is supported by interviewee and injury data. Inspection of the vehicle should be very detailed, and the researcher should examine closely for all possible clues and evidence. Obvious belt use indicated by stretched or frayed webbing is the easiest to find. Also, a deformed seat back or headrest would indicate damage by one of the occupants. Less obvious are signs of regular use such as a lack of dust around the buckle area or slightly frayed areas on the belt, close to the tongue, indicating frequent adjustment.

Indicators which support the assumption of belt use are a low number of minor injuries and no knee contusions or facial lacerations. Probing questions in the interview will aid the researcher in assessing use. Proper use can be

Variable Name: Ejection

Element Value:

    0 No ejection
    1 Complete ejection
    2 Partial ejection
    3 Ejection, unknown degree
    9 Unknown

Source: Researcher determined--inputs include the vehicle inspection, inter-
           viewee, and the police report.

Remarks:

Ejection refers to persons being completely or partially thrown from the
vehicle as a result of an impact or rollover.

Code "0"   (No ejection) for any persons riding on the exterior of a vehicle,
           such as the fenders (this does not include pickup beds, boot of a
           convertible, and persons riding on open tailgates).

Code "1"   (Complete ejection) refers to a situation where the occupant's body
           is entirely outside the vehicle but may be in contact with the vehi-
           cle.

Code "2"   (Partial ejection) refers to a situation where part of the occu-
           pant's body remains in the vehicle. This does not apply to occu-
           pants who are not initially in the seating compartment of the vehi-
           cle [e.g., pickup beds, boot of a convertible, and persons riding on
           open tailgates, since any ejection for them is coded as "1" (Com-
           plete ejection)].

Police reported ejections may be coded if there is no vehicle inspection or
occupant interview, provided that the ejectee was in the seating compartment
of the vehicle, and there is no evidence which contradicts the reported ejec-
tion.

Variable Name: Ejection Area

Element Values:

    0 No ejection
    1 Windshield
    2 Left front
    3 Right front
    4 Left rear
    5 Right rear
    6 Rear
    7 Roof
    8 Other area (e.g., back of pickup, etc.) (specify)
    9 Unknown

Source: Researcher determined--inputs include the vehicle inspection, inter-
           viewee, and the police report.

Remarks:

Code "0"   (No ejection) applies to persons who are not ejected, or to persons
           riding on fenders.

Code "6"   (Rear) is restricted to persons riding in a passenger compartment,
           who are ejected through the rear window, tailgate (e.g., station
           wagon), hatchback, etc.

Code "7"   (Roof) applies to all hardtops, convertibles, sun roofs, t-bar
           roofs, and detachable hardtops (such as fiberglass tops) that are
           used to cover areas designed for passenger protection.

Examples follow for how variables OA14, Ejection Medium, and OA15, Medium
Status, should be coded when OA13 equals 7 (Roof).

OA12	Roof Type	OA13	OA14	OA15
Ejection 1-3	Hardtop, ripped open during crash	7	5	3
Ejection 1-3	Removable hardtop, detached prior to crash	7	2	1
Ejection 1-3	Convertible, in down or open position	7	2	1
Ejection 1-3	Convertible, in closed position	7	2	2
Ejection 1-3	Sun or t-bar, ripped open during crash	7	2	2
Ejection 1-3	Sun or t-bar, open/removed prior to crash	7	2	1
Ejection 1-3	Sun or t-bar, closed prior to crash	7	2	2

Variable Name: Ejection Area (cont'd.)

Codes "1" through "7" are designated for use with areas designed for passenger protection (e.g., passenger cars, vans, light truck cabs, self-contained mini-RVs and mini-motor homes). Trailers, add-on campers, etc., are to be assigned code "8" (Other area).

Code "8" (Other area) also applies to persons riding on open tailgates.

Code "9" (Unknown) if the sole source for the ejection is the police report, unless the PAR provides a clear, distinguishable avenue of occupant ejection.

Variable Name: Ejection Medium

Element Values:

    0 No ejection
    1 Door/hatch/tailgate
    2 Nonfixed roof structure
    3 Fixed glazing
    4 Nonfixed glazing (specify)
    5 Integral structure
    8 Other medium (specify)
    9 Unknown

Source: Researcher determined--inputs include the vehicle inspection, inter-
           viewee, and the police report.

Remarks:

Code "0"   (No ejection) applies to persons who are not ejected, or to persons
           riding on fenders.

Code "1"   (Door/hatch/tailgate) includes any door, hatch, or tailgate that is
           opened during the course of the impact sequence.

Code "2"   (Nonfixed roof structure) applies only to convertible, sun roofs, t-
           bar roofs, and removable hardtops when detached.

Codes "3" (Fixed glazing) and "4" (Nonfixed glazing) refer to any glazing in
           the vehicle.

Code "5"   (Integral structure) includes removable hardtops when attached to
           the vehicle.

Code "8"   (Other medium) applies to persons riding in pickup beds, on open
           tailgates, and for other situations which cannot be classified in
           codes "1" through "5". In addition, use this code when someone is
           ejected from a trailer, add-on camper, etc.

Code "9"   (Unknown) if the sole source for the ejection is the police report,
           unless the PAR provides a clear, distinguishable avenue of occupant
           ejection.

Variable Name: Medium Status

Element Values:

    0 No ejection
    1 Open
    2 Closed
    3 Integral structure
    9 Unknown

Source: Researcher determined--inputs include the vehicle inspection, inter-
           viewee, and the police report.

Remarks:

This variable is a description of the status of the area through which an
occupant was ejected.

Code "0"   (No ejection) applies to persons who are not ejected, or to persons
           riding on fenders.

Code "1"   (Open) applies to convertible roofs, sun roofs, t-bar roofs, win-
           dows, doors or tailgates that are completely or partially open imme-
           diately prior to impact, or to other open areas of vehicles such as
           pickup beds, etc.

Codes "1" (Open) and "2" (Closed) refer to the status of the medium immediate-
           ly prior to the impact.

Code "2"   (Closed) refers to a window that is completely closed when damaged,
           or to a convertible, sun, or t-bar roof that is closed when damaged.
           Sun and t-bar roofs are coded here if the ejection occurred through
           the designed opening in the sun or t-bar roof. However, if the roof
           was of a sun or t-bar type but the ejection occurred because a size-
           able opening was torn in the roof structure, then code "3" (Integral
           structure) should be used.

Code "2"   (Closed) also refers to a door that is closed, but when damaged,
           experiences latch and/or hinge failure causing the door to open.

Code "3"   (Integral structure) should be used when any vehicle structure, not
           designed to be opened (e.g., standard roof), is torn open during the
           accident such as to permit ejection.

Code "9" (Unknown) if the sole source for the ejection is the police report,
           unless there is a clear indication on the PAR of the medium status.

Variable Name: Entrapment

Element Values:

    0   Not entrapped
    1   Entrapped
    9   Unknown

Source: Researcher determined--inputs include the vehicle inspection, inter-
            viewee, and the police report.

Remarks:

Code "1"   (Entrapped) means that part of the occupant was <u>in</u> the vehicle and
           mechanically restrained by a damaged vehicle component; jammed doors
           and immobilizing injuries, by themselves, are not sufficient to
           constitute entrapment. Entrapment by cargo shift is also not suffi-
           cient.

Persons who are completely or partially ejected and subsequently become pinned
by their own vehicle and any surface other than their own vehicle are not
considered entrapped.

If the vehicle is not inspected and/or the occupant is not interviewed but the
police report states that the person was "trapped", the researcher must verify
through the officer, emergency personnel, or other witnesses that the person
was, in fact, in the vehicle and mechanically restrained. This is because the
above definition is more restrictive than common usage of the term. Code "9"
(Unknown) if unable to obtain verification in the above situation.

An occupant is not considered entrapped (OA16 = 1) when their seat belt buckle
release mechanism is jammed as a result of their accident. If this occurs,
then OA20 [Manual (Active) Belt Failure Modes During Impact] must be coded "2"
(Yes, manual belt failure), and a Potential Safety Problem Bulletin should be
submitted.

RESTRAINT SYSTEM AND SEATS OVERVIEW
(OA17 - OA27)

Variables in this section are designed to describe the availability, function, and use of restraint systems, seats, and head restraints. The variables are grouped by area assessed. Variables OA17 through OA20 are concerned with the active belts; OA20 through OA22 describe passive restraints; OA24 refers to police reported restraint use, and OA25 through OA27 assess head restraint and seat performance.

Active belts are the keystone to occupant protection during collisions. Restraint presence has been mandated by law since the 1968 model year. Manual (Active) Belt System Availability (OA17) describes the type of restraint that this occupant had the opportunity to use. The use of the restraint is then coded in OA18, Manual (Active) Belt System Use. Correct use has become a very large issue since many of the torso restraints are reportedly uncomfortable to wear especially for shorter persons. This information is captured in OA19, Proper Use of Manual (Active) Belts. Failure of the system, while rare, occurs often enough to be of interest to the rule making section of the NHTSA. Failures are coded in OA20, Manual (Active) Failure Modes During Accident.

Passive restraint systems are being installed in an increasing range of vehicles. The description of a passive restraint system and its function is coded in variables OA21, Automatic (Passive) Restraint System Availability, OA22, Automatic (Passive) Restraint Function, and OA23, Did Automatic (Passive) Restraint Fail.

The accuracy of "restraint use", when the PAR is the only source of data, has long been a concern. Since the PAR has been used in the past as a source of data, the police assessment is now coded as a separate variable OA24, Police Reported Restraint Use.

Head restraint type and performance are coded in a single variable OA25, Head Restraint Type/Damage By Occupant At This Occupant Position. Protection of the occupant from neck and back injuries has long been a concern, especially in rear-end impacts. FMVSS 202 (Head Restraints) specifies the requirements for head restraints.

Seat type and performance, which are delineated by FMVSS 207 (Seating Systems), have received increased attention in recent years because of the potential for significantly more severe injuries when the seat fails. This information is captured in variables OA26, Seat Type (This Occupant Position), and OA27, Seat Performance (This Occupant Position).

From a historical standpoint, these variables (OA17 through OA27) have received more attention from the NHTSA, automakers, and the general public than any other injury reduction area. Much controversy has resulted over the introduction and mandating of passive restraint systems, laws requiring use of active restraints, and what is seen as government interference in the private lives of persons. Despite all the uproar and protests, the facts remain that if any form of restraint is used properly, the number of injuries and their severity will be reduced. Passive restraints, which have an increasing presence in the accident picture today, are some of the most effective occupant protection devices available. Evaluation of the effectiveness of both active

RESTRAINT SYSTEM AND SEATS OVERVIEW   (2)

and passive systems has long been a priority of the accident research effort of the NHTSA. Problems with systems and failures many times receive an inordinate amount of attention compared to the success rate. It becomes important to all concerned that the performance be evaluated in an objective manner and problems which deter use, such as active torso restraints being uncomfortable, be thoroughly documented.

Less attention is paid to the head restraint and seat performance issue, but it is no less important in the overall injury picture. Neck and back injuries are some of the most common and most debilitating that occur in motor vehicle accidents. No accurate assessment of the societal loss due to reduced or poor productivity of occupants related to neck and back injuries has been made. Many times a person with this type of injury does not miss any days of work but is at a reduced level of productivity and has to undergo therapy or treatment for a long period of time. Head restraint design and performance is critical to reduction of trauma to the neck and back.

Seat performance, especially the seat back, is critical to injury reduction in the more severe collisions. Deformation limits of the seat back. are covered by specifications in FMVSS 207. These limits are responsible for injury reduction in that the seat back must contain the occupant, either from the front or the back, while absorbing energy from the impact. It is also critical that the adjusters and seat tracks not fail since failure can cause more severe injuries than would otherwise be expected. Increased injury severity has been reported with seat failure even when the occupant is belted.

Analysts consider these variables to be key areas of interest. Correlations between these variables and the injury coding variables are of particular interest. The most common comparisons are, of course, restraint usage versus injury severity, restraint availability versus use, and passive versus active availability. The more detailed analyses involve three-way comparisons (e,g. restraint use versus injury severity versus delta V). Injury severity is less when the occupant is restrained as delta V increases until the delta V reaches a certain level. At this juncture the injury severity for belted occupants becomes the same as for unrestrained ones.

The uses for the data from these variables are too numerous to list, but they are varied and relate to all other forms and areas of data in the case. The researcher should remember that these variables are not coded only from one source of data. The primary source is the vehicle inspection; it is supported by interviewee and injury data. Inspection of the vehicle should be very detailed, and the researcher should examine closely for all possible clues and evidence. Obvious belt use indicated by stretched or frayed webbing is the easiest to find. Also, a deformed seat back or headrest would indicate damage by one of the occupants. Less obvious are signs of regular use such as a lack of dust around the buckle area or slightly frayed areas on the belt, close to the tongue, indicating frequent adjustment.

Indicators which support the assumption of belt use are a low number of minor injuries and no knee contusions or facial lacerations. Probing questions in the interview will aid the researcher in assessing use. Proper use can be

RESTRAINT SYSTEM AND SEATS OVERVIEW (3)

elicited by asking questions about the comfort of the belt and location on the body (e.g., "Where was lap portion of belt, low on the hips, waistline, etc.?").

Seat type/performance and head restraint type/performance should be assessed primarily from the vehicle inspection. At times it is possible to get this information from other sources such as the interviewee, but anything beyond the interviewee is almost impossible. Many times deformation of the seat back can be visually observed. The obvious time to expect that type of damage is when the vehicle has sustained a rear impact. Seat back deformation also occurrs with frontal impacts and unrestrained rear occupants. It is important to remember that many seat backs are now adjustable, especially bucket seats, and just because a seat appears to be out of correct vertical alignment does not indicate seat back damage.

Head restraint damage is fairly obvious since the restraint should follow the line of the seat back. If it deviates significantly from that line ther there is a presumption of damage, and a careful examination should be conducted.

All of the above mentioned variables require expertise and concern with detail. Researchers should realize that the most obvious choice is sometimes not the best assessment. Careful thought and weighing of numerous factors are required in this area to obtain the best possible assessment.

Variable Name: Manual (Active) Belt System Availability

Element Values:

    0 Not available
    1 Belt removed/destroyed
    2 Shoulder belt
    3 Lap belt
    4 Lap belt and shoulder belt
    7 Belt available - type unknown
    8 Other belt (specify)
    9 Unknown

Source: Researcher determined--inputs include vehicle inspection, inter-
          viewee, police report, and medical records.

Remarks:

Select the system which was available for use, if so desired, by the occupant.
Restraints which were installed but subsequently removed or destroyed should
be coded "1" (Belt removed/destroyed). In other words, availability is deter-
mined by presence and functional status; use is not to be considered in making
this determination.

Belts which are knotted, buckled at the rear of the seat bench, stored below
the bench, etc., should be considered as available if they were otherwise
operative.

Persons such as children who are held by another person are not considered to
be restrained, nor to have restraints available.

Identify any "other" restraint if the variable is coded "8" (Other belt). If
there is no vehicle inspection or interview but the PAR indicates that: (1)
belts were used, or (2) belts were not used, then code "5" (Belt available -
type unknown) should be used. If the PAR indicates the type of belt available
and there was no vehicle inspection or interview, then the appropriate code
"2" (Shoulder belt), "3" (Lap belt), or "4" (Lap and shoulder belt) may be
used.

Variable Name: Manual (Active) Belt System Use

Element Values:

    00 None used, not available, or belt removed/destroyed
    01 Inoperative (specify)
    02 Shoulder belt
    03 Lap belt
    04 Lap and shoulder belt
    05 Belt used - type unknown
    08 Other belt used (specify)
    12 Shoulder belt used with child safety seat
    13 Lap belt used with child safety seat
    14 Lap and shoulder belt used with child safety seat
    15 Belt used with child safety seat - type unknown
    18 Other belt used with child safety seat (specify)
    99 Unknown if belt used

Source: Researcher determined--inputs include vehicle inspection, inter-
          viewee, police report (use caution), and medical records.

Remarks:

Select the system which was in use at the time of the accident by the
occupant. The correctness of the use is not assessed on this variable [see
variable OA19, Proper Use of Manual (Active) Belts].

Code "00" (None used, not available, or belt removed/destroyed) is used if
           OA17, Manual (Active) Belt System Availability, is coded "0" (Not
           available).

Code "01" (Inoperative) includes belts which are knotted, cut, jammed, or in
           any other fashion rendered unusable.

Code "02" (Shoulder belt) if a manual shoulder belt alone was in use. This
           code should be used very infrequently.

Code "03" (Lap belt) if a manual lap belt alone was in use. Note, it is pos-
           sible to have a manual lap belt used in conjunction with a two-point
           passive restraint system [see OA21, Automatic (Passive) Restraint
           System Availability, and OA22, Automatic (Passive) Restraint Func-
           tion].

Code "04" (Lap and shoulder belt) is used when the occupant is "encompassed"
           both in the lap and upper torso region by a lap and shoulder belt
           combination. If a person has an integral lap and shoulder belt but
           is only "encompassed" by the lap portion (having the shoulder belt
           behind his or her back), use this code.

Note, the presence of an air bag system does not mean that there are no active
belts present. In fact, most if not all air bag equipped vehicles also have
some manual restraint system installed in the seat positions protected by the
air bags.

Variable Name: Manual (Active) Belt System Use [cont'd.]

Code "05" (Belt used - type unknown) if there is no vehicle inspection or
          interview and the PAR indicates "belts were used". However, code
          "00" (None used, not available, or belt removed/destroyed) if the
          PAR indicates "belts were not used".

The PAR is a legitimate source for belt usage only if no interview was con-
ducted, no vehicle inspection was completed, and the PAR indicates both re-
straint availabiltiy and restraint usage. In most states these code(s) are
collapsed and while they may be used for coding of restraint availability,
they are too vague to actually indicate restraint usage. Teams should consult
their zone center for proper coding of restraint usage with the PAR as the
sole source of data.

Codes "12" through "18" (... with child seat) refer to the use of the vehicles
          manual belt system being used to anchor a child safety seat to the
          vehicle. They do not refer to the belts which are part of the child
          seat itself.

Code "15" (Belt used with child safety seat - type unknown) refers to the
          vehicle belt type being unknown not the child seat type.

Code "99" (Unknown if belt used) should be used if the researcher is unable to
          determine whether or not a manual belt was in use by the occupant at
          the time of the accident.

Variable Name: Proper Use of Manual (Active) Belts

Element Values:

    0 None used or not available
    1 Belt used properly
    2 Belt used properly with child seat

    Belt Used Improperly
    3 Shoulder belt worn under arm
    4 Shoulder belt worn behind back or seat
    5 Belt worn around more than one person
    6 Lap belt worn on abdomen
    7 Lap belt or lap and shoulder belt used improperly
       with child safety seat (specify)
    8 Other improper use of manual belt system (specify)
    9 Unknown

Source: Researcher determined--inputs include vehicle inspection, inter-
        viewee, police report, and medical records.

Remarks:

This variable must be assessed by the researcher using all available data. An
improperly used manual belt can cause a large variety of injuries by itself
or, depending upon the way it is improperly used, it can allow other injuries
to occur which would not happen if the restraint were properly used. In se-
vere cases an improperly worn belt can be the cause of death. An improperly
used belt can also lead to belt failure which is addressed in variable OA20,
Manual (Active) Belt Failure Modes During Accident. If there is an improperly
used belt and/or a belt system failure, they should be noted on the Case Sum-
mary Form.

Code "2" (Belt used properly with child seat) is to be indicated only when
        the safety seat is installed so as to comply with the manufacturer's
        directions (i.e., seat must be integrated with the vehicle via the
        seat belts) and it is occupied by a child.

Code "4" (Shoulder belt worn behind back or seat) if a person has an integral
        lap and shoulder belt but is only "encompassed" by the lap portion
        (having the shoulder belt behind his or her back).

Code "7" (Lap belt or lap and shoulder belt used improperly with child safety
        seat) is to be indicated when a child safety seat is not installed
        according to the manufacturer's directions, and it is occupied by a
        child. Specify how the belt was used improperly.

Code "9" (Unknown) is used:

        o when it is not known whether the belts used were used properly
          or improperly, and

Variable Name: Proper Use of Manual (Active) Belts [cont'd.]

    o when a child safety seat is occupied by a child, but it is
       unknown if the seat was installed (using either the manufactur-
       er's or the vehicle's belts) according to the manufacturer's
       directions.

Variable Name: Manual (Active) Belt Failure Modes During Accident

Element Values:

    0 No manual belt used or not available
    1 No manual belt failure(s)
    2 Manual belt failure(s) (check all that apply)
    [ ] Torn webbing (stretched webbing not included)
    [ ] Broken buckle or latchplate
    [ ] Upper anchorage separated
    [ ] Other anchorage separated (specify)
    [ ] Broken retractor
    [ ] Other manual belt failure (specify)
    9 Unknown

Source: Researcher determined--primary input is vehicle inspection; addi-
           tional input may include interviewee and police report.

Remarks:

If any component of the manual belt system fails during the impact for any
reason, the failure should be encoded on this variable. The failure should
also be recorded on the Case Summary Form and documented with photographs and
diagrams as needed.

Code "0"   (No manual belt used or not available) should be used when OA18,
           Manual (Active) Belt System Use, equals "00" (None used, not avail-
           able, or belt removed/destroyed), or "01" (Inoperative).

Code "2"   [Manual belt failure(s)] is used for any failure of the restraint
           system. The appropriate mode of failure should be indicated by
           checking the box or boxes which describe the failure. If a failure
           occurs a complete, and documented, description of the failed compo-
           nent and the way it failed must accompany the case. This should
           include photographs of the failed component(s).

Code "9"   (Unknown) should be used when OA18, Manual (Active) Belt System Use,
           equals "99" (Unknown if belt used) or when there is no vehicle in-
           spection.

Variable Name: Automatic (Passive) Restraint System Availability

Element Values:

    0 Not equipped/not available
    1 Airbag
    2 Airbag disconnected (specify)
    3 Airbag not reinstalled
    4 2 point automatic belts
    5 3 point automatic belts
    6 Automatic belts destroyed or rendered inoperative
    9 Unknown

Source: Researcher determined--inputs include vehicle inspection, inter-
           viewee, police report (if listed), and medical records.

Remarks:

Code "0"   (Not equipped/not available) if the vehicle did not have any auto-
           matic restraints. Automatic (passive) restraints are for front seat
           positions in post-1971 passenger cars. Thus, if the vehicle is not
           a post-1971 passenger car or the occupant is not in a front seat
           seating position, this variable should be encoded with element value
           "0" (Not equipped/not available).

Code "1"   (Airbag) if the vehicle was equipped with an airbag. Note, deploy-
           ment of an airbag is considered in variable OA22, Automatic (Pas-
           sive) Restraint Function.

The following illustrations are: of a typical General Motors airbag system, a
Ford airbag system, and a driver airbag--which is the most easily identified
part of an airbag system. All presently available airbag systems have a very
similar steering wheel which is easily distinguishable.

TYPICAL G.M. AIRBAG

Variable Name: Automatic (Passive) Restraint System Availability [cont'd.]

TYPICAL FORD AIRBAG

AIRBAG STEERING WHEEL

Code "2"   (Airbag disconnected) is used when components of the system are rendered inoperative prior to the collision (e.g., fuse removed).

Code "3"   (Airbag not reinstalled) is used when the bag is not repositioned, the gas container is not charged, etc., following a deployment previous to the present accident.

Code "4"   (2 point automatic belts) is used when a passive belt system has a torso belt anchored--at the inboard edge of the seat and at the upper door pillar (usually the window frame), and a knee bolster installed. Some systems have a small electric motor mounted on a track along the upper door frame which moves the belt into and out of position .

Code "5"   (3 point automatic belts) is used for those passive belt restraint systems with three anchorage points (i.e., inboard edge of seat, outboard edge of seat, and upper B-pillar or door frame). These systems became available in certain 1980 model vehicles.

Code "6"   (Automatic belts destroyed or rendered inoperative) is used if the vehicle was, at least at one time, equipped with passive belts which, at the time of the accident, were removed, destroyed, or in any way made useless.

Variable Name: Automatic (Passive) Restraint System Availability [cont'd.]

Add-on passive restraints are available for pre-1972 model year vehicles. However, if a vehicle is not inspected and no interview is obtained, code "9" (Unknown) for front seat occupants of post-1971 passenger cars, and code "0" (Not equipped) for non-front seat occupants and occupants of all other CDS applicable vehicles.

Variable Name: Automatic (Passive) Restraint Function

Element Values:

    0 Not equipped/not available

    Automatic Belt
    1 Automatic belt in use
    2 Automatic belt not in use
    3 Automatic belt use unknown

    Airbag
    4 Airbag deployed during accident
    5 Airbag deployed inadvertently just prior to accident
    6 Deployed, accident sequence undetermined
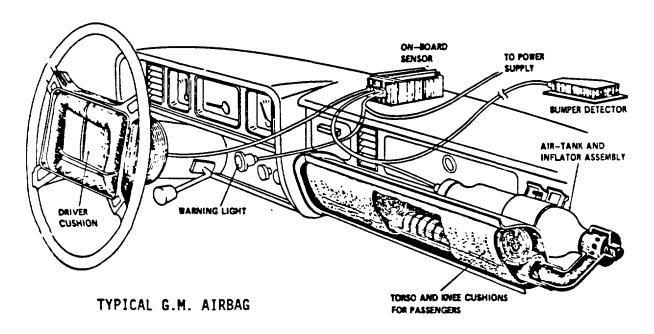   7 Nondeployed
    8 Unknown if deployed
    9 Unknown

Source: Researcher determined--inputs include vehicle inspection, interviewee, police report (if listed), and medical records.

Remarks:

Automatic (passive) restraints are for front seat positions in post-1971 passenger cars. Thus, if the vehicle is not a post-1971 passenger car or the occupant is not in a front seat seating position, this variable should be coded with element value "0" (Not equipped/not available).
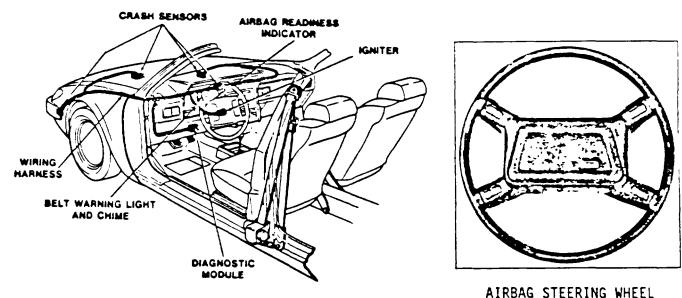
Code "1" (Automatic belt in use) can only be used if OA21, Automatic (Passive) Restraint System Availability, equals "4" (2 point automatic belts) or "5" (3 point automatic belts).

Code "2" (Automatic belt not in use) if the shoulder belt is disconnected or placed behind the person's back.

Code "3" (Automatic belt use unknown) is used when OA21, Automatic (Passive) Restraint System Availability, equals "4" (2 point automatic belts) or "5" (3 point automatic belts), and the researcher is unable to determine if the restraints were used.

Code "4" (Airbag deployed during accident) when the vehicle is equipped with an airbag [OA21, Automatic (Passive) Restraint System Availability, equals "1" (Airbag)] and the airbag deployed as a result of an impact. Note, an airbag is not designed to deploy in every collision.

Code "5" (Airbag deployed inadvertently just prior to accident) refers to those situations where an airbag deploys without an impact causing its deployment, and the vehicle is subsequently involved in an accident.

Variable Name: Automatic (Passive) Restraint Function [cont'd.]

Code "6"   (Deployed, accident sequence undetermined) should be used if the researcher cannot determine if the airbag deployed before or during the accident. If the vehicle sustained an impact and an airbag deployed, there is a rebuttable assumption that the airbag deployed as a result of the impact.

Code "7"   (Nondeployed) is used when an airbag equipped vehicle has an impact but the airbag did not inflate.

Note: Any accident involving a deployed or undeployed airbag should be reported immediately to your zone center or COTR.

Code "8"   (Unknown if deployed) is used when it is known that the vehicle was equipped with an airbag but the researcher is unable to determine if the airbag deployed (for whatever reason).

If the vehicle was not inspected and no interview was obtained and no mention of function is on the PAR or medical records, code "9" (Unknown) for front seat occupants of post-1971 passenger cars, and code "0" (Not equipped/not available) for non-front seat occupants and occupants of all other CDS applicable vehicles.

Code "9"   (Unknown) is used when it is unknown if either automatic belts or airbags were available.

Variable Name: Did Automatic (Passive) Restraint Fail

Element Values:

    0 Not equipped/not available
    1 No
    2 Yes (specify)
    9 Unknown

Source: Researcher determined--primary input is vehicle inspection; additional inputs may include interviewee and police report.

Remarks:

This variable should capture failures in the function of an automatic (passive) restraint system. The intent is not to determine whether or not an airbag should have deployed; that information is captured in variable OA22, Automatic (Passive) Restraint Function.

Below are a few of the failure modes found in a passive belt restraint system. This list is not complete, and there are many other modes of failure which could occur.

    o Torn webbing (stretched webbing not included)
    o Broken buckle or latchplate
    o Outboard anchorage separated (from door)
    o Broken motorized track
    o Broken retractor
    o Unknown reason for nondeployment
    o Other automatic restraint failure

An airbag failure could be a cut in or blowout of the fabric, a cover which does not open properly causing a misaligned deployment, partial inflation, or any number of other problems. If a failure is suspected document the condition with slides and notes, then call your zone center for assistance.

Any failure should be reported immediately to your zone center or COTR.

If the vehicle was not inspected and no interview was obtained and no mention of failure is on the PAR or medical records, code "9" (Unknown) for front seat occupants of post-1971 passenger cars, and code "0" (Not equipped/not available) for non-front seat occupants and occupants of all other CDS applicable vehicles.

Variable Name: Police Reported Restraint Use

Element Values:

    0 None used
    1 Police did not indicate restraint use
    2 Shoulder belt
    3 Lap belt
    4 Lap and shoulder belt
    5 Belt used, type not specified
    6 Child safety seat
    7 Other or automatic restraint (specify)
    8 Restrained, type unknown
    9 Police indicated "unknown"

Source: Police report

Remarks:

This variable encodes what was documented on the PAR regarding occupant use of available vehicle restraints (i.e., belts, child safety seat, or automatic restraints). Code the first attribute which applies.

Code "1"   (Police did not indicate restraint use) refers to two instances. The first is when the PAR has a space, box, line, etc. to indicate restraint use but there is no response present. The other is when there is no area of the PAR for the officer to report restraint use.

Code "5"   (Belt used, type not specified) should be used in those instances where the PAR indicates that available belts were used, but it is unclear what type of belts were actually in use. If the PAR indicates that some type of restraint was in use but the type of restraint is not clear, use code "8" (Restrained, type unknown).

Variable Name: Head Restraint Type/Damage by Occupant at This Occupant
                 Position

Element Values:

    0 No head restraints
    1 Integral - no damage
    2 Integral - damaged during accident
    3 Adjustable - no damage
    4 Adjustable - damaged during accident
    5 Add-on - no damage
    6 Add-on - damaged during accident
    8 Other (specify)
    9 Unknown

Source: Researcher determined--primary input is vehicle inspection; addi-
          tional inputs are interviewee and police report.

Remarks:

Many passenger cars have head restraints for the front outboard seat posi-
tions. The head restraints can be of any design but must meet the require-
ments of FMVSS202 (Head Restraints). Some examples of head restraint styles
are shown below.

INTEGRAL   ADJUSTABLE

(Codes 1 or 2)   (Codes 3 or 4)

Any damage to a head restraint caused by the occupant in the seat position
having the head restraint should have codes "2", "4", or "6" (... - damaged
during accident) assigned.

Code "0"   (No head restraints) if no head restraint is available for this
           occupant's seating position. This code applies in situations where
           there had been a head restraint but it had been removed prior to the
           accident.

Code "1"   (Integral - no damage) and code "2" (Integral - damaged during acci-
           dent) refer to head restraints which are a continuous part of the
           seat back structure or those which are a separate structure but are
           not vertically adjustable.

Code "3"   (Adjustable - no damage) and code "4" (Adjustable - damaged during
           accident) apply to:

Variable Name: Head Restraint Type/Damage By Occupant At This Occupant
                 Position (cont'd.)

           o head restraints which can be moved vertically to accommodate
              occupants of varing heights, and

           o head restraints which have a fixed outer framework and a sepa-
              rate center section which is adjustable vertically.

Code "5" (Add-on - no damage) and code "6" (Add-on - damaged during accident)
          refer to clamp-on, strap-on, or even bolt-on head restraints on a
          vehicle not originally equipped with head restraints. These two
          codes should be infrequently used.

Code "9" (Unknown) if there is no knowledge of head restraint type, or if it
          is unknown if damage to the restraint was caused by an occupant in
          the appropriate seat position.

Note, some manufacturers are providing head restraints for rear seat occu-
pants. These head restraints may be the same or similar to those used in the
front seats, or they may be a slight rise in the rear seat back. Any damage
to a rear seat head restraint by the occupant in the seat position must be
coded regardless of the height of the restraint.

Variable Name: Seat Type (This Occupant Position)

Element Values:

        00   Occupant not seated or no seat
        01   Bucket
        02   Bucket with folding back
        03   Bench
        04   Bench with separate back cushions
        05   Bench with folding back(s)
        06   Split bench with separate back cushions
        07   Split bench with folding back(s)
        08   Pedestal (i.e., van type)
        09   Other seat type (specify)
        99   Unknown

Source: Researcher determined--primary input is vehicle inspection; addi-
          tional input is interviewee.

Remarks:

This variable assesses the type of seat occupied by this occupant.

The type of seat in which an occupant is positioned may have an effect on the
occupant kinematics. For this reason the type of seat is important to anal-
ysts.

Code "00" (Occupant not seated or no seat) refers to persons who are standing
          on the floor, lying on the floor, or not in an area with seats
          (i.e., rear area of a cargo van).

Below are examples of some seats and appropriate codes.

BUCKET

(Codes 01 or 02)

BENCH

(Code 03)

BENCH WITH
SEPARATE BACK
CUSHIONS
(Code 04)

BENCH WITH FOLDING BACK(S)

(Code 05)

SPLIT BENCH

(Code 06 or 07)

PEDESTAL

(Code 08)

Variable Name: Seat Type (This Occupant Position) (cont'd.)

Code "08" (Pedestal) includes both swivel and non-swivel type pedestal seats.
        A pedestal seat can be differentiated from a bucket seat by the
        presence of a column supporting the pedestal seat.

The term "folding back(s)" as used in codes "02", "05", and "07" refers to
seat backs which fold forward to allow easier access to the area behind the
seat. Seats which recline rearward are not considered to be folding backs.
The seat back for the occupant in that seat position is the determining factor
for folding back presence. If the seat back does not fold at that position do
not use codes "02", "05", and "07". Folding backs, because of the additional
possibility of failure of the folding mechanism, take precedence over solid or
separate back cushions. For example, a bench seat with separate back cushions
which fold forward would be coded "05" [Bench with folding back(s)].

The rear seats in many late model vehicles may be of unusual design. The
researcher is cautioned to view only the seat type for the occupant's posi-
tion. If the seat is of a bench type and the back cushion for the position
folds, then the proper code is "05" [Bench with folding back(s)]. The fact
that the seat cushion may also fold is not considered.

If the occupant was in a seat position with the seat folded prior to the acci-
dent (i.e., second seat area of a station wagon, etc.), then the proper code
would be "00" (Occupant not seated or no seat).

Code "99" (Unknown) if there is no vehicle inspection or if the seat type
        cannot be determined.

Variable Name: Seat Performance (This Occupant Position)

Element Values:

    0 Occupant not seated or no seat
    1 No seat performance failure(s)
    2 Seat performance failure(s) (check all that apply)
    [ ] Seat adjusters failed
    [ ] Seat back folding locks failed
    [ ] Seat tracks failed
    [ ] Seat anchors failed
    [ ] Deformed by impact of passenger from rear
    [ ] Deformed by impact of passenger from front
    [ ] Deformed by own inertial forces
    [ ] Deformed by passenger compartment intrusion (specify)
    [ ] Other (specify)
    9 Unknown

Source: Vehicle inspection

Remarks:

This variable assesses the performance of the seat occupied by this occupant.

Code "0"   (Occupant not seated or no seat) for occupants not in a seat or in
           an area without seating (i.e., rear of a cargo van).

Code "1"   [No seat performance failure(s)] if the seat was not deformed or no
           portion of the seat structure failed during the accident.

Code "2"   [Seat performance failure(s)] if the seat failed or was deformed in
           any way. Minor smudges, scrapes, dents, etc. are not considered
           deformation. If there are failures or deformation, check the appro·
           priate boxes on the field form and document with diagrams and expla·
           nations, as well as photographs, all of the failure(s) or deforma·
           tion.

Code "9"   (Unknown) if there is no vehicle inspection or if the researcher is
           unable to determine if the seat was deformed or failed in the acci·
           dent.

CHILD RESTRAINT OVERVIEW
(OA28 - OA33)

These variables are designed to capture a description of child restraints used in all the towed CDS applicable vehicles involved in the accident. Information about the seat is of two types: characteristics and usage. Characteristics are described in OA28, Child Safety Seat Make/Model and OA29, Type of Child Safety Seat. Usage of the seat is coded in OA30, Child Safety Seat Orientation and OA31-OA33, Child Safety Seat Harness/Shield/Tether Usage.

Injury and death of young children has long been a significant part of the motor vehicle accident problem. Unrestrained children have a much greater tendency to be out of place (i.e. not in a designated seating position and generally standing or kneeling on the seat cushion). On impact this makes them very susceptible to injury or death since they are unrestrained. For a number of years, motor vehicle accidents have been the leading cause of injury and death to children under the age of five. Many states have attempted to address this problem by legislation requiring young children to be protected by some sort of child restraint. While these efforts have resulted in a reduction of injuries and death, little data on the real world performance of the child seats has been gathered. Police reports many times fail to note the use of such a restraint.

Specifications for these seats comes from Federal Motor Vehicle Safety Standard (FMVSS) 213 (Child seating systems). Approval of design and testing is the responsibility of the NHTSA. Most states with child restraint laws require the use of a DOT approved seat.

From an analyst's point of view, presence and performance are the two key issues. Presence of a child restraint in a vehicle is established by noting its make, model and type. The ratio of presence to applicable occupants is an area that will be of great interest to the analysts. This will provide an indication of risk exposure for these children.

Performance of the seat is also an extremely critical issue. Other than staged laboratory tests, very little data exists on what happens to these seats and how well they perform in protecting the occupants. Analysts will compare use, injury severity levels, and delta V's for initial gross performance levels. Once that type of analysis is done, source of injury will be examined, along with seat type and make/model. All of these analyses will initially be used to evaluate the effectiveness of FMVSS 213 and help determine if the standard should be updated or modified. The other main use of performance analysis is to determine if any type or make/model has any significant problems.

All of the analyses are very dependent on having enough data. Researchers noting that a child younger than five years is an occupant in a CDS applicable vehicle must pursue the interview questions with the presumption that a child seat was present, especially if the jurisdiction has a child restraint law or ordinance. Probing questions should be asked during the interview, and whenever possible, an inspection of the seat should take place. Of course, if the seat is still with the vehicle it should be inspected at the same time as the vehicle. However, finding the seat with the vehicle is not a common occurrence. This is another area where the perseverance of the researcher pays off in needed information.

CHILD RESTRAINT OVERVIEW   (2)

Child restraints are a major issue, and data collection in this area has a high priority. Much information is needed to provide a reliable evaluation of the real world performance of these restraints.

Variable Name: Child Safety Seat Make/Model

Element Values:

Model Code	Make/Model	Includes	Manufacturer
000	No child safety seat		
Infant Safety Seats			
101	GM Love Seat		Century Products
102	Century Infant Car Seat	570, 580	Century Products
103	Century Infant Love Seat		Century/Chrysler
104	Cuddle Shuttle		Collier-Keyworth
105	Cosco TLC		Cosco
106	Trav-L-Ette		Cosco/Peterson
107	Cosco First Ride		Cosco/Peterson
108	Evenflo Infant Car Seat		Evenflo
109	Dyn-O-Mite		Evenflo*
110	Infant Carrier		Ford
111	Snug Seat		Graco
112	Rock 'N' Ride		Kolcraft
113	Swinger		Romer/KFS
114	Rockit Seat 640		Strolee
Toddler/Convertible Seats			
201	Century 100	100 Series	Century Products
202	Century 200	200 Series	Century Products
203	Century 300	300 Series	Century Products
204	Century 400	400 Series, XL	Century Products
205	Century 1000 S.T.E.		Century Products
206	Century 2000 S.T.E.		Century Products
207	Century 3000 S.T.E.		Century Products
208	Child Love Seat	GM Child Love Seat	Century Products
209	Safe & Sound	II	Collier-Keyworth
210	Roundtripper		Collier-Keyworth
211	Voyager		Collier-Keyworth
212	Cosco Auto Trac		Cosco
213	Cosco Safe & Easy		Cosco
214	Cosco Safe & Snug		Cosco
215	Commuter	5-Pt	Cosco
216	Explorer		Cosco
217	Safe-T-Seat		Cosco/Peterson
218	Safe-T-Shield		Cosco/Peterson
219	Safe-T-Mate		Cosco/Peterson
220	Peterson Safety Shield		Cosco/Peterson
221ͻ	Evenflo Convertible		Evenflo
222	Seven-Year Car Seat		Evenflo
223	Bobby Mac	Deluxe II, Champion, Super, Lite	Evenflo*
224	One-Step		Evenflo*
225	Fisher-Price		Fisher-Price
226	Gerry Guardian		Gerico, Inc.

Variable Name: Child Safety Seat Make/Model [cont'd.]

Toddler/Convertible Seats (cont'd.)
227	Little Trav'ler	310,315	Graco
228	GT 100		Graco
229	Teddy Tot Astroseat	9100/9300 Series	International
230	Hi-Rider XL	"7"	Kolcraft
231	Redi-Rider		Kolcraft
232	Quikstep		Kolcraft
233	Ultra Ride		Kolcraft
234	Nissan Child Safety Seat	Infant/Child	Nissan
235	Pride-Ride	820 & 830 series	Pride-Trimble
236	Kantwet Care Seat		Questor/Kantwet
237	Kantwet Safe Guard		Questor/Kantwet
238	Peggy		Romer/KFS
239	Tip-up		Romer/KFS
240	Wee Care	500 Series	Strolee
241	Wee Care	600 Series	Strolee
242	GT	2000, 3000	Strolee
243	Quick Click		Strolee
244	Volvo Child Seat		Volvo
245	Child Cushion		Volvo
246	Welsh Travel Tot		Welsh

Booster Safety Seats
301	Century Commander		Century Products
302	Safe-T-Rider	II, Deluxe	Century Products
303	Co-Pilot	II	Collier-Keyworth
304	Cosco Explorer I		Cosco
305	Travel Hi-Lo	Deluxe High Back	Cosco/Peterson
306	Evenflo Booster		Evenflo
307	Wings	by Bobby Mac	Evenflo*
308	Tot Guard		Ford
309	Gerry Voyager		Gerico, Inc.
310	Teddy Tot Astrorider	6000 Series	International
311	Quick-Step Tot-Rider	XL	Kolcraft
312	Flip 'N' Go	II	Kolcraft
313	#812		Pride-Trimble
314	Click-N-Go	890 Series	Pride-Trimble
315	Vario		Romer/KFS
316	Wee Care Booster Seat	600 Series	Strolee
317	Quick Click 605 Booster		Strolee

Special Need Safety Seats
401	Swinger Infant Car Bed		Evenflo
402	Britax		Evenflo*
403	E-Z-On Vest		Rupert
404	Carrie Car Seat System		Tumbleforms

Variable Name: Child Safety Seat Make/Model (cont'd.)

Model
Code   Make/Model   Includes   Manufacturer

997 Other make/model (specify)
998 Unknown make/model
999 Unknown if child safety seat used

 * This Evenflo model was formerly produced by Questor/Kantwet

Source: Researcher determined--inputs include vehicle inspection, inter-
         viewee, and police report.

Remarks:

Code "000" (No child safety seat) if (1) this person is not an infant or child
         (i.e., less than 50 pounds and less than 40 inches or less than six
         years old if height and weight not known), or (2) this person is an
         infant or child, but no infant or child seat was available. If
         height and weight information is absent, then use age to establish
         if this person should be classified as an infant or child. Persons
         six years of age and older are not classified as an infant or child;
         thus, this variable should be coded "000".

If a qualifying infant or child was in the vehicle and a child seat was avail-
able [see OA18, Manual (Active) Belt System Use], then document the make/model
from the list provided above and code the make/model's number.

If it can be determined from a reliable source that a hit-and-run vehicle
contained an infant or child at the time of its involvement in the accident,
then code this variable from available information. If no information is
available on the hit-and-run occupants, then this variable is to be coded
"000" (No child safety seat).

Code "997" (Other make/model) if a qualifying infant or child and a child
         safety seat are present but the make/model is not listed above.

Code "998" (Unknown make/model) if a qualifying infant or child and a child
         safety seat are present but the make/model is not known.

Code "999" (Unknown if child safety seat used) when it is unknown if the per-
         son under consideration is an infant or child, or you do not know if
         a child safety seat was available.

Variable Name: Type of Child Safety Seat

Element Values:

    0 No child safety seat
    1 Infant seat
    2 Toddler seat
    3 Convertible seat
    4 Booster seat
    7 Other type child safety seat (specify)
    8 Unknown child safety seat type
    9 Unknown if child safety seat used

Source: Researcher determined--inputs include vehicle inspection, inter-
           viewee, and police report.

Remarks:

Code "0" (No child safety seat) if (1) this person is not an infant or child
           (i.e., less than 50 pounds and less than 40 inches or less than six
           years old if height and weight not known), or (2) this person is an
           infant or child, but no infant or child seat was available.

Use the person's age (i.e., less than six versus six and older) to determine
if this person is an infant or child when height and weight information is
absent. Child carriers that are not designed as safety seats are to be clas-
sified as "No child safety seat". Examples of these child carriers are shown
below.

| Kolcraft | Century | Cosco |
| "Baby's First Touch" | "Kanga-Rocka-Roo" | "Day Cradle/Carrier" |

If it can be determined from a reliable source that a hit-and-run vehicle
contained an infant or child at the time of its involvement in the accident,
then code this variable from available information. If no information is
available on the hit-and-run occupants, then this variable is to be coded "0"
(No child safety seat).

Variable Name: Type of Child Safety Seat (cont'd.)

Code "1"   (Infant seat) if the seat is designed to only face the rear of the vehicle and the maximum capacity is 17-20 pounds (this information will usually be found on the manufacturer's label). Infant safety seats are equipped with a five-point harness (straps) to secure the infant to the safety seat and use the vehicle's safety belt system to secure the seat to the vehicle. The five-point infant seat system includes a pair of straps that go over the infant's shoulders, a crotch strap, and the vehicle's belts as lap belts to secure the seat to the vehicle. The seat is tub-shaped and cradles the baby in a generally reclined position. Examples are shown below.

Cosco/Peterson   Questor
"First Ride"   "Dyn-o-mite"

Code "2"   (Toddler seat) if the seat is designed to only face the front of the vehicle and to carry a child weighing approximately 20-50 pounds (this information will usually be found on the manufacturer's label). The toddler seat may also be referred to as a "child seat". Most have a five-point harness system (straps) to secure the child to the seat. All models secure the safety seat to the vehicle with the vehicle's safety belts and, in addition, some models have a tether strap which must be attached to the rear safety belt or deck lid to prevent tipping forward. The child is restrained by a shield, a harness, or a combination of the two in a generally upright sitting position, although some seats have multiple positions. Examples are shown below.

Variable Name: Type of Child Safety Seat (cont'd.)

Shield Type   Harness Type

Code "3"   (Convertible seat) if the seat is designed to face the <u>front or</u> the
           <u>rear</u> of the vehicle and to carry a child ranging from birth to
           approximately 50 pounds (this information will usually be found on
           the manufacturer's label). Most have a harness system (straps) to
           secure the child to the seat. All models secure the safety seat to
           the vehicle with the vehicle's safety belts and, in addition, some
           models have a tether strap which <u>must</u> be attached to the rear safety
           belt or deck lid to prevent tipping forward.   The child is re-
           strained by a shield, a harness, or a combination of the two in
           either a generally reclined rearward facing position (for small
           infants--birth to 20 pounds) or a generally upright forward sitting
           position (for larger children--20-50 pounds).   Examples are shown
           below:

Harness Type   Combination Harness and Shield
Century "200"   Type Cosco/Peterson "SAFE & SNUG"

Variable Name: Type of Child Safety Seat (cont'd.)

Code "4"   (Booster seat) if the seat is designed as a forward facing platform
           without a back (except for one Cosco/Peterson model which has a
           back) and adjusts to children up to 60 pounds. The seat restraints
           the child in a raised upright sitting position with either a harness
           or shield. Booster seats are designed primarily to fill the gap
           between when a child outgrows the standard child safety seat and
           when the child can use the adult belt and still see out the window.
           Some models can also be used for smaller childern, as small as 20
           pounds. Examples of booster seats are shown below.

Auto Belt

Harness Types   Shield Type

Strolee   Century   Collier Keyworth
"Wee Care"   "Safe-T-Rider"   "Co-Pilot"

Some of the above infant, child, convertible and   Used with Lap Belt and Harness
booster seats require a tether. For restraint de-
vices placed in the vehicle's front seat, the tether
should run over the top of the seat and attach to a
rear seat belt or possibly to one of the anchors for
a front seat belt. For restraint devices placed in   Auto Belt
the vehicle's rear seat, the tether should run over
the top of the rear seat and attach to an anchor on
the rear window shelf or possibly pass through the
rear window shelf and attach to one of the anchors
for a rear seat belt.

Code "7"   (Other type child safety seat) if the infant or child safety seat
           does not fall into one of the categories coded "1" through "4".
           Specify the type.

Code "8"   (Unknown child safety seat) if a qualifying infant or child and
           child seat are present but the type of child safety seat is unknown.

Code "9"   (Unknown if child safety seat used) when it is unknown if the person
           under consideration is an infant or child, or you do not know if a
           child safety seat was used.

Variable Name: Child Safety Seat Orientation

Element Values:

00   No child safety seat

Designed for Rear Facing for This Age/Weight
01   Rear facing
02   Forward facing
08   Other orientation (specify)
09   Unknown orientation

Designed for Forward Facing for This Age/Weight
11   Rear facing
12   Forward facing
18   Other orientation (specify)
19   Unknown orientation

Unknown Design or Orientation for This
Age/Weight, or Unknown Age/Weight
21   Rear facing
22   Forward facing
28   Other orientation (specify)
29   Unknown orientation

99   Unknown if child safety seat used

Source: Researcher determined--inputs include vehicle inspection, inter-
          viewee, and police report.

Remarks:

Code "00" (No child safety seat) if (1) this person is not an infant or child
          (i.e., less than 50 pounds and less than 40 inches or less than six
          years old if height and weight not known), or (2) this person is an
          infant, but no infant or child seat was available. Use the person's
          age (i.e., less than six versus six and older) to determine if this
          person is an infant or child when height and weight information is
          absent.

If it can be determined from a reliable source that a hit-and-run vehicle
contained an infant or child at the time of its involvement in the accident,
then code this variable from available information.   If no information is
available on the hit-and-run occupants, then this variable is to be coded "OC"
(No infant or toddler seat)

If this person is an infant or toddler and a child seat was in use, then the
researcher must determine from the seat, using the Child Safety Seat Identifi-
cation Guide, the designed orientation for this person.   Next, the actual
orientation of the seat at-impact must be determined to obtain the correct
code.

Variable Name: Child Safety Seat Orientation (cont'd.)

For example, a one and one-half year old child whose weight is 17 pounds was sitting in a forward facing Century 300 child safety seat. The correct code based upon the Child Safety Seat Identification Guide is "02" (Forward facing). At this age and weight the convertible seat should be rear facing but was forward facing.

Before using any code the researcher must carefully review the subcategories and choose the appropriate code based on designed orientation at the occupant's age and weight.

Code "01", "11", or "21" (Rear facing) or "02", "12", or "22" (Forward facing) if at the time of the accident the seat was facing the rear of the vehicle or the front of the vehicle, respectively. Do not code with respect to the vehicle's direction of travel (e.g., backing vehicle).

Code "08", "18", or "28" (Other orientation) if the seat was facing other than rear or forward at the time of the accident (e.g., on the floor, sideways, on top or underneath something).

Code "09", "19", or "29" (Unknown orientation) if a qualifying child and a child safety seat are present but the orientation at the time of the accident is unknown (e.g., at the time of vehicle inspection the child safety seat is not present or is unattached and there is no information from an interview or the PAR).

Code "99" (Unknown if child safety seat used) when it is unknown if the person under consideration is an infant or child, or you do not know if a child safety seat was available.

Variable Name: Child Safety Seat Harness Usage
                 Child Safety Seat Shield Usage
                 Child Safety Seat Tether Usage

Element Values:

    00 No child safety seat

    Not Designed with Harness/Shield/Tether
    01 After market harness/shield/tether added, not used
    02 After market harness/shield/tether used
    03 Child safety seat used, but no after market harness/shield/tether
        added
    09 Unknown if harness/shield/tether added or used

    Designed with Harness/Shield/Tether
    11 Harness/shield/tether not used
    12 Harness/shield/tether used
    19 Unknown if harness/shield/tether used

    Unknown If Designed with Harness/Shield/Tether
    21 Harness/shield/tether not used
    22 Harness/shield/tether used
    29 Unknown if harness/shield/tether used

    99 Unknown if child safety seat used

Source: Researcher determined--inputs include vehicle inspection, inter-
          viewee, and police report.

Remarks:

Code "00" (No child safety seat) if (1) this person is not an infant or child
          (i.e., less than 50 pounds and less than 40 inches or less than six
          years old if height and weight not known), or (2) this person is an
          infant, but no infant or child seat was available. Use the person's
          age (i.e., less than six versus six and older) to determine if this
          person is an infant or child when height and weight information is
          absent.

If it can be determined from a reliable source that a hit-and-run vehicle
contained an infant or child at the time of its involvement in the accident,
then code this variable from available information. If no information is
available on the hit-and-run occupants, then this variable is to be coded "00"
(No child safety seat). The design of each child safety seat must be assessed
regarding harness, shield, and tether use.

In order to properly code these variables, the researcher must refer to the
Child Safety Seat Identification Guide to ascertain the design of the seat and
the applicability of the harness, shield, and tether to each seat individual-
ly.

OA31
OA32
OA33
(2)

Variable Name: Child Safety Seat Harness Usage (cont'd.)
                Child Safety Seat Shield Usage (cont'd.)
                Child Safety Seat Tether Usage (cont'd.)

An "after market" harness/shield/tether is one added by the user to a child safety seat not originally designed to use the device.

Code "99" (Unknown if child safety seat used) when it is unknown if the person under consideration is an infant or child, or you do not know if a child safety seat was used.

INJURY/CONSEQUENCES OVERVIEW
(OA34 - OA43)

These variables are grouped into two areas. First, how severely was this occupant injured, and second, what were the injury consequences for this occupant. Variables which address the first area are OA34, Injury Severity (Police Rating), OA43, Number of Recorded Injuries for this Occupant, and OA35 Treatment-Mortality. The second area is addressed by the variables OA35 Treatment-Mortality, OA36, Type of Medical Facility (for Initial Treatment) OA37, Hospital Stay, OA38, Working Days Lost, and OA39, Time to Death. Treatment - Mortality (OA35) addresses both areas because of its format.

Variables OA40 through OA42, Medically Reported Cause of Death, indicate which of the recorded injuries on the Occupant Injury Form were reported by a physician or lay coroner, to be the cause of death.

Treatment and delivery of care for minor to moderately injured accident victims has improved and is being provided in areas where it was not available previously. The long term results of trauma continue to be lessened through this improved care delivery and treatment system. Availability of care has increased due to competition in the medical industry. Neighborhood clinics have become prevalent in all areas, especially in some of the smaller rural communities. This expansion of care has not been fully documented for the motor vehicle accident picture and leaves the injury assessment area with some data loss. Persons that formerly went to the emergency room of the local hospital to see their family doctor, now may go to the neighborhood minor emergency medical clinic. This change is also somewhat a result of the improved protection for occupants from injuries caused by vehicle interiors during accidents.

Another factor that is changing rapidly is the length of time spent in a hospital. The current emphasis is to get the patient out of the hospital as quickly as possible and into a home environment for convalescence. For this reason the overall days lost are changing.

All of these changes are a direct reflection of changes in societal costs, both in terms of direct cost (e.g., injury and treatment) and indirect costs (e.g., lost productivity due to days lost while the vehicle is repaired). Since this is a rapidly changing picture, more documentation needs to be provided for good analysis.

Coding these variables is based primarily on medical records. There are only two variables which do not come from an official record, and they are Working Days Lost (OA38) and Type of Medical Facility (for Initial Treatment) (OA36). Sometimes no records are available, for example, when a treatment facility will not provide records, or when there was no treatment. In the case of no records, interviewee data are the primary source for all variables except the Injury Severity (Police Rating) (OA34), Time to Death (OA39), and Medically Reported Cause of Death (OA40 - OA42).

INJURY/CONSEQUENCES OVERVIEW (2)

In summary, information from these variables forms the basis for analysis of several critical areas related to of the occupant. Most of the information comes from official records, and the rest is completed by interviewee information. Perseverance in pursuit of this information will result in a high completion rate for these variables.

Variable Name: Injury Severity (Police Rating)

Element Values:

    0   0 - No injury
    1   C - Possible injury
    2   B - Nonincapaciting injury
    3   A - Incapacitating injury
    4   K - Killed
    5   U - Injury, severity unknown
    6   Died prior to accident
    9   Unknown

Source: Police report.

Remarks:

Code the police reported injury severity for this occupant. It is possible
that the police could have updated the PAR between the time it was stratified
and when it was picked up. For example, a person might have been listed
originally with incapacitating injuries ("3"). Later the person dies ("4"),
and the PAR is changed accordingly. Therefore, use the latest information on
the PAR at the time it was obtained from the police agency.

If the police report contains a detailed description of the injuries but does
not translate the injuries into the KABCO codes, use the police method for
doing so. For example, injuries which are considered to be of an incapacita-
ting nature are classified as "A" (code "3"), nonincapacitating-evident inju-
ries are classified as "B" (code "2"), and possible injuries are "C" (code
"1"). Property damage only is classified as "0" (code "0").

Code "5"   (U - Injury, severity unknown) if the police report indicates a "U"
           or in any other way communicates the idea that the person was in-
           jured but their severity is unknown.

Code "6"   (Died prior to accident) should only be coded if the police explic-
           itly so indicate.

As a general rule, if the PAR is "blank" where the injury severity is assessec
and the person was at the scene during the police investigation, code "0" (0 -
No injury). If the PAR is "blank" and the person was not present during the
police investigation, code "9" (Unknown).

Not all states use the KABCOU scheme. Listed below, by state, are alternative
schemes; a mapping to the NASS scheme is provided.

Variable Name: Injury Severity (Police Rating) [cont'd.]

State	PAR Code/Definition	NASS Scheme/Code
Alabama	K = Killed	K - 4
	A = Visible or carried from scene	A - 3
	B = Bruise/abrasion/swelling	B - 2
	C = No visibility - has pain/faint	C - 1
	Blank = No documentation of driver or occupant injury	Blank - 0
	= No set unknown code	- 9
Arizona	1 = No injury	0 - 0
	2 = Possible injury	C - 1
	3 = Nonincapacitating injury	B - 2
	4 = Incapacitating injury	A - 3
	5 = Fatal	K - 4
	6 = Unknown	U - 9
California	1 = Fatal	K - 4
	2 = Severe wound/distorted member	A - 3
	3 = Other visible injury	B - 2
	4 = Complaint of pain	C - 1
	Blank = Occupant present	0 - 0
	Blank = Occupant not present	- 9
Colorado*	5 = Fatal	K - 4
	4 = Evident - incapacitating	A - 3
	3 = Evident - nonincapacitating	B - 2
	2 = Possible injury	C - 1
	1 = No injury	0 - 0

* There is a box at the top of the PAR indicating number of persons inju-
red. If this box is marked 0 and the injury code is left "blank", assume
"No injury". If the box is marked 1 (or more) pertaining to the vehicle
occupants in question and the injury code is "blank", assume "Injured,
severity unknown". If "blanks" are present in both the persons injured
box and the injury code box, assume "Unknown".

Florida	1 = No injury	0 - 0
	2 = Fatal "in 90 days" injury	K - 4
	3 = Incapacitating injury	A - 3
	4 = Nonincapacitating injury	B - 2
	5 = Possible injury	C - 1
	6 = Non-traffic fatality	K - 4
	= No set unknown code	- 9

Variable Name: Injury Severity (Police Rating) [cont'd.]

State	PAR Code/Definition			NASS Scheme/Code
	Nature of Most Severe Injury	Location of Most Severe Injury	Victim's Injury Status	
Indiana	1-11 Any Entry	1-12 Any Entry	6 Dead	K - 4
	1-11 Any Entry	1-12 Any Entry	2 Semiconscious 3 Incoherent 4 Unconscious	A - 3
	1 Severed 2 Internal 4 Severe Burn 7 Severe Bleed (Arterial) 8 Fracture/ dislocation	1-12 Any Entry	1 Conscious 5 Shock 7 Refused Med	A - 3
	3 Minor Burn 6 Minor Bleed 10 Complaint of Pain 11 None Visible	3 Eye	1 Conscious 5 Shock 7 Refused Med	A - 3
	3 Minor Burn 6 Minor Bleed	1-2, 4-12 (Any EXCEPT Eye)	1 Conscious 5 Shock 7 Refused Med	B - 2
	5 Abrasion 9 Contusion/ Bruise	1-12 Any Entry	1 Conscious 5 Shock 7 Refused Med	B - 2
	10 Complaint of Pain 11 None Visible	1-2, 4-12 (Any EXCEPT Eye)	1 Conscious 5 Shock 7 Refused Med	C - 1
	11 None Visible	Blank or Slashed	1 Conscious	0 - 0
	Blank or Slashed	Blank or Slashed	Blank or Slashed	0 - 0
	Unknown	Unknown	Unknown	U - 9

Variable Name: Injury Severity (Police Rating) [cont'd.]

State	PAR Code/Definition	NASS Scheme/Code
Maryland	5 = Fatal	K - 4
	4 = Incapacitating	A - 3
	3 = Nonincapacitating	B - 2
	2 = Possible injury	C - 1
	1 = No injury/Damage only	0 - 0
	Blank = No documentation of driver or occupants on front of PAR	
Nebraska	4 = Fatal	K - 4
	3 = Incapacitating injury	A - 3
	2 = Nonincapacitating injury	B - 2
	1 = Possible injury	C - 1
	0 = No injury	0 - 0
	Blank = Occupant present	0 - 0
	Blank = Occupant not present	- 9

State	Location of Injury	Type of Injury	Victim's Condition	NASS Scheme/Code
New Jersey	Any entry	Any entry	Killed	K - 4
	Any entry	Any entry	Incapacitated	A - 3
	Any entry	amputation, concussion, internal, fracture/dislocation	Moderate injury complaint of pain	A - 3
	Eye	burn, bleeding, complaint of pain	Moderate injury Complaint of pain	A - 3
	Any entry	bleeding, contusion, bruise, abrasion	Moderate injury	B - 2
	Any entry (except eye)	complaint of pain	Complaint of pain	C - 1
	-	-	-	0 - 0
	U	U	U	- 9

Variable Name: Injury Severity (Police Rating) [cont'd.]

State	PAR Code/Definition			NASS Scheme/Code
New York	Location of Injury	Type of Injury	Victim's Status	
	Any entry	Any entry	Apparent death	K - 4
	Any entry	Any entry	Unconscious, Semi-conscious, Incoherent	A - 3
	Any entry	amputation, concussion, internal, severe bleeding, severe burn, moderate burn, fracture - dislocation	Shock, Normal	A - 3
	Eye	minor bleeding, minor burn, complaint of pain	Shock, Normal	A - 3
	All but eye	minor bleeding, minor burn	Shock, Normal	B - 2
	Any entry	contusions-bruise, abrasion	Shock, Normal	B - 2
	All but eye	complaint of pain	Shock, Normal	C - 1
	-	-	-	0 - 0
	X	X	X	- 9

Variable Name: Injury Severity (Police Rating) [cont'd.]

State	PAR Code/Definition	NASS Scheme/Code
Pennsylvania	0 = No injury	0 - 0
	1 = Death	K - 4
	2 = Major injury	A - 3
	3 = Moderate injury [and] Type of Apparent Injury - amputation - broken bone(s)	A - 3
	3 = Moderate injury [and] Type of Apparent Injury - abrasions/contusions/bruises - burns - bleeding - concussion - other	B - 2
	4 = Minor injury [and] Type of Apparent Injury - complaint of pain - dizziness - shock	C - 1
Tennessee	4 = Dead at time of report	K - 4
	3 = Bleeding wound, distorted member	A - 3
	2 = Bruises, abrasions, swelling, limping, etc.	B - 2
	1 = Complaint of pain, no visible injury	C - 1
	Blank = No documentation of driver or occupants on front of PAR or on supplement	0 - 0
Washington	1 = No injury	0 - 0
	2 = Dead at scene	K - 4
	3 = Dead on arrival	K - 4
	4 = Died in hospital	K - 4
	5 = Disabling injury	A - 3
	6 = Nondisabling injury	B - 2
	7 = Possible injury	C - 1
	Blank = Unknown	- 9

Variable Name: Treatment - Mortality

Element Values:

    0 No treatment
    1 Fatal
    2 Fatal - ruled disease

    Nonfatal
    3 Hospitalized
    4 Transported and released
    5 Treatment at scene - nontransported
    6 Treatment later
    8 Treatment - other (specify)
    9 Unknown

Source: Researcher determined--inputs include interviewee, police report, and medical records.

Remarks:

Official sources (if they exist) take precedence over interview data.

Code "0" (No treatment) includes persons transported to a hospital but who refuse treatment. As long as there was transportation directly from the scene, a refusal of treatment will not, on its own, affect the stratification of the case.

Code "1" (Fatal) when death occurs within 30 days of the accident. Death must have occurred as a consequence of injuries sustained in the traffic accident. Interview information alone should not be sufficient to select this code.

Code "2" (Fatal - ruled disease) is used in two situations. The first is when the effects of a disease can be deemed as a cause of the accident. Cause means that the on-set of the disease occurred prior to the first harmful event. When determining the time of on-set (relative to the first harmful event), the researcher can use any information source available. The researcher makes his/her determination after weighing all the evidence. (NOTE: The use of all available information sources is restricted to the determination of when the on-set occurred.)

Code "2" (Fatal - ruled disease) is used additionally when a medical examiner (or other official vested by the state to verify the cause of death) or an official medical report verifies that the death resulted from either (1) a diseased condition, or (2) not from accident related injuries.

Code "3" (Hospitalized) when hospitalization occurs as a result of injury (need not be taken directly to a hospital). See Hospital Stay

Variable Name: Treatment - Mortality (cont'd.)

(OA37) for hospitalization criteria. Also use this code if a person is treated and released then subsequently hospitalized as a result of injuries sustained in the accident.

Code "4" (Transported and released) when the person went <u>directly</u> from the accident scene to a treatment facility (hospital, clinic, doctor's office, etc.), and the person <u>is examined</u> for injuries at the facility. The person need not have been injured. The means of transportation is <u>not</u> a consideration.

Code "5" (Treatment at scene - nontransported) includes treatment at scene such as: first aid, self-treatment, EMT treatment, doctor treatment, etc.--and the person is not transported or does not go to a treatment facility (e.g., doctor, clinic, hospital, etc.) as a result of injuries sustained in this accident.

Code "6" (Treatment later) includes only professional treatment (e.g., doctor, clinic, hospital, etc.) where the person (1) did not go directly from the scene to treatment, and (2) was treated and released. If a person is treated at the scene, is not transported from the scene, and subsequently receives later treatment (without being hospitalized), then use this code.

Code "8" (Treatment - other) includes nonprofessional treatment such as first aid, self-treatment, etc., not at the scene of the accident. If this code is used, then OA36, Type of Medical Facility (for Initial Treatment), must be coded "0" (Not treated at a medical facility).

If a person survives the injuries and receives treatment at a hospital, but is not admitted for hospitalization, that person's treatment is to be coded as either "4" (Transported and released) or "6" (Treatment later), depending upon whether the person went directly or indirectly to the hospital. It does not matter if the person is treated for one hour or twelve, only that the person is released following treatment. Nor does it matter if the treatment begins prior to midnight and spans into the following day.

Variable Name: Type of Medical Facility (for Initial Treatment)

Element Values:

    0 Not treated at a medical facility
    1 Trauma center
    2 Hospital
    3 Medical clinic
    4 Physician's office
    5 Treatment later at medical facility
    8 Other (specify)
    9 Unknown

Source: Researcher determined--inputs include police report, interviewee, official records, and the American College of Surgeons classification criteria.

Remarks:

The treatment of injuries by a physician immediately (i.e., within one hour) following an accident is of utmost importance in serious injury accidents. In order to assess the quality of immediate care available to the victims in CDS accidents, the following criteria are used to categorize the various treatment facilities.   Teams must develop a listing of treatment facilities serving their PSU and categorize each into this variable's coding scheme. Teams must communicate their list to their respective zone center.

Code "0"   (Not treated at a medical facility) if the person was not injured or receives nonprofessional treatment such as first-aid, self-treatment, etc. In addition, use this code for persons who "died" at the scene or "died in-route" to a medical facility. Treatment at the scene or in-route to a medical facility by emergency medical personnel is <u>not</u> considered initial treatment for the purposes of this variable. This is true even if the facility has radio communications with their EMTs. If a person arrives at a medical facility and subsequently dies or is declared dead,· then use one of the following codes. For example, an occupant arrives with no vital signs, CPR in progress, and a "flat" EKG and is declared "dead on arrival" on the ER report, code the facilities classification from one of the codes below.

Code "1"   (Trauma center) if the occupant was initially treated at a Level 1 or Level II Trauma Center as defined by the American College of Surgeon's Committee on Trauma report entitled: "Hospital and pre-hospital resources for optimal care of the injured patient", <u>Ameri-can College of Surgeons Bulletin</u>, Vol. 71, No. 10, October 1986, pp. 4-12.

The fact that a medical facility calls itself a "Trauma Center" or something of the same nature does not mean that it satisfies the criteria for code "1" (Trauma center). The facility must meet the criteria as noted in the preceding paragraph. Teams should contact their "hospitals" and ask each what they

Variable Name: Type of Medical Facility (for Initial Treatment) [cont'd.]

consider themselves to be (according to criteria referenced above). Teams should also be alert for communication releases (i.e., newspapers, radio, TV, etc.) which concern the trauma capability status of their area emergency rooms.

Code "2" (Hospital) for all "hospitals" which do not fall into the definition of a Level I or Level II Trauma Center as defined.

Code "3" (Medical clinic) for treatment facilities which provide outpatient medical care with related in-house laboratory facilities (e.g, x-ray). These are usually a group practice in which several physicians work cooperatively. This code also includes school clinics, work place clinics, or similar facilities if they are staffed by a physician while open. If a doctor is not normally present at a clinic while it is open, then the appropriate code is "8" (Other).

Code "4" (Physician's office) when the person is initially treated in an office of a professional health care provider which does not qualify for codes "1" (Trauma center), "2" (Hospital), or "3" (Medical clinic).

Code "5" (Treatment later at medical facility) should be used if a person's initial treatment by a health care professional (i.e., doctor) took place more than one hour after the accident. This code will be used for virtually all instances when OA35, Treatment-Mortality, is coded "6" (Treatment later).

Code "8" (Other) when a health care provider's facility is used for the initial treatment, and the facility does not qualify for one of the codes "1" (Trauma center), "2" (Hospital), "3" (Medical clinic), or "4" (Physician's office) above.

Code "9" (Unknown) when it is unknown what type of initial treatment facility was used or when it is unknown if treatment of any kind was obtained.

Variable Name: Hospital Stay

Element Values:

    Range: 00-61, 99
    00 Not hospitalized
    Code the number of days (up through 60) that the occupant stayed in
    the hospital
    61 61 days or more
    99 Unknown

Source: Researcher determined--inputs include interviewee and medical re-
           ports.

Remarks:

Official sources (if they exist) take precedence over interview data.

Code "00" (Not hospitalized) if not injured or injured but not admitted to the
         facility (i.e., admission to the facility's emergency room is not
         "admission" to the facility for the purposes of the hospitalization
         question). In addition, use this code if fatal at scene, pronouced
         dead on arrival, or survival does not extend beyond the emergency
         room.

The basis for the number of days coded is an overnight criterion. Every time
a person remains past midnight subsequent to admission, it is one day. One
exception is when a person dies on the same day as the admission. The only
other exception occurs when a person is <u>admitted</u> in the early morning hours
(and thus after midnight), usually for observation, but is subsequently re-
leased later in the same day (usually late afternoon or early evening). Code
"01" should be used because the person was hospitalized [OA35, Treatment -
Mortality, equals "3" (Hospitalized)].

In the event that the person survives the emergency room but dies subsequent.
to admission, then code at least "01", even if the person expires the same day
as admitted.

If a person is admitted, lived four days in the hospital, then expired, code
"04".

Variable Name: Working Days Lost

Element Values:

    Range: 00-62, 97, 99
    00 No working days lost
    Code the number of days (up through 60) that the occupant lost from work
    due to the accident
    61 61 days or more
    62 Fatally injured
    97 Not working prior to accident
    99 Unknown

Source: Primary source is the interviewee; a secondary source is the per-
          son's employer.

Remarks:

Report the actual number of "work" days lost due to the accident by an em-
ployed person or a full-time college student. Children, adolescents, retir-
ees, or unemployed persons are not included [code "97" (Not working prior to
accident)].

Employed is defined to mean that the person was scheduled to work at least
four hours on each of the days lost. Each such day is counted as a full day
so long as the person was scheduled to work at least four hours on the day
lost. Do not accumulate the hours and convert to equivalent full-time days;
however, indicate on the form if the person works less than full-time but
greater than four hours per day by annotating "part-time" or "PT".

If during the interview a reasonable projection of future days lost can be
made, then add those days to those already known to have been lost. If a
reasonable projection cannot be made, then code "99" (Unknown).

The days lost need not be due to injury.

Days lost include Saturdays, Sundays, and afternoon and evening shifts if so
scheduled. Do not count double shifts or days at time and one-half pay, etc.,
as more than one day.

Code "62" (Fatally injured) is used if a person is "fatal - ruled disease",
          fatal at scene, pronounced dead on arrival, or survival does not
          extend beyond the emergency room. In addition, if a person expires
          within thirty days following the accident, use this code regardless
          of whether or not the person missed any working days.

Code "97" (Not working prior to accident) if a person is not employed, not a
          full-time college student, or works less than four hours per day.
          This code includes all persons (except fatals) who do not qualify to
          lose working days.

Variable Name: Working Days Lost (cont'd.)

If the reported work days lost includes a fraction, round one-half (1/2) day or greater up to a whole day. Less than one-half day should be excluded (rounded down).

If someone loses their job as a result of the accident, count only the work days lost between the accident and the date of termination, inclusive.

Do not include days lost by persons who were not directly involved in the accident but who lost days because of it (e.g., husband who was not in accident but stayed home to take care of wife who was injured and required assistance).

If an involved person changes their work schedule as a result of an accident (e.g., to take care of someone injured in the accident), then the work time, which was given up as a result of the accident, shall not be considered as lost.

If no interview is obtained, there is a rebuttable presumption that persons over 65 or under 17 are not employed full-time; for these persons code "97" (Not working prior to accident) should be used unless the person is fatally injured [codes "1" (Fatal) or "2" (Fatal - ruled disease) for OA35, Treatment - Mortality].

Variable Name: Time to Death

Element Values:

Range: 00 through 24, 31 through 60, 96, 99
00 Not fatal
96 Fatal - ruled disease
99 Unknown

Source: Police report, hospital/medical records, autopsy report, or other official records for actual time of death for fatally injured occupants.

Remarks:

Code "00" (Not fatal) should identify (from any source) all occupants who are not fatally injured (i.e., death does not occur, or death does not occur within thirty days of the accident). Occupants of hit-and-run vehicles are assumed not killed.

All occupants who die within thirty days of the accident should have their time-of-death recorded unless their death meets the criteria of the Fatal - ruled disease, code "96".

Code "01" should identify occupants who die within (less than) one and a half hours of the time of the accident.

Codes "02" through "24" should identify occupants who die in the period of time between one and a half hours from the time of the accident to twenty-four hours after the accident. The variable should be coded to the nearest hour except for code "24" which is used only for the period between twenty-three and a half hours after the accident and twenty-four hours after the accident.

Codes "31" through "60" should identify occupants who die in the period of time between greater than twenty-four hours after the accident and thirty days after the accident (24 hours and one minute is coded as "31" while 24 hours is coded as "24"). (NOTE: One day = "31", two days = "32", ..., twenty-nine days = "59", and thirty days = "60".) The number of days should be rounded off to the nearest whole day except for code "60" which is used for the period between twenty-nine days and twelve hours and thirty days after the accident.

Code "96" (Fatal - ruled disease) is used in two situations. The first is when the effects of a disease can be deemed as a cause of the accident. Cause means that the on-set of the disease occurred prior to the first harmful event. When determining the time of on-set (relative to the first harmful event), the researcher can use any information source available. The researcher makes his/her determination after weighing all the evidence. (NOTE: The use of all available information sources is restricted to the determination of when the on-set occurred.)

Variable Name: Time to Death (cont'd.)

Code "96" (Fatal - ruled disease) is used additionally when a medical examiner (or other official vested by the state to verify the cause of death) or an official medical report verifies that the death resulted from either (1) a diseased condition, or (2) not from accident-related injuries.

The exact time period which applies to each code is shown in the table below.

Code	Time period in hours	Code	Time period in days
01	0 - < 1 1/2	31	> 1 - < 1 1/2
02	1 1/2 - < 2 1/2	32	1 1/2 - < 2 1/2
03	2 1/2 - < 3 1/2	33	2 1/2 - < 3 1/2
04	3 1/2 - < 4 1/2	34	3 1/2 - < 4 1/2
05	4 1/2 - < 5 1/2	35	4 1/2 - < 5 1/2
06	5 1/2 - < 6 1/2	36	5 1/2 - < 6 1/2
07	6 1/2 - < 7 1/2	37	6 1/2 - < 7 1/2
08	7 1/2 - < 8 1/2	38	7 1/2 - < 8 1/2
09	8 1/2 - < 9 1/2	39	8 1/2 - < 9 1/2
10	9 1/2 - < 10 1/2	40	9 1/2 - < 10 1/2
11	10 1/2 - < 11 1/2	41	10 1/2 - < 11 1/2
12	11 1/2 - < 12 1/2	42	11 1/2 - < 12 1/2
13	12 1/2 - < 13 1/2	43	12 1/2 - < 13 1/2
14	13 1/2 - < 14 1/2	44	13 1/2 - < 14 1/2
15	14 1/2 - < 15 1/2	45	14 1/2 - < 15 1/2
16	15 1/2 - < 16 1/2	46	15 1/2 - < 16 1/2
17	16 1/2 - < 17 1/2	47	16 1/2 - < 17 1/2
18	17 1/2 - < 18 1/2	48	17 1/2 - < 18 1/2
19	18 1/2 - < 19 1/2	49	18 1/2 - < 19 1/2
20	19 1/2 - < 20 1/2	50	19 1/2 - < 20 1/2
21	20 1/2 - < 21 1/2	51	20 1/2 - < 21 1/2
22	21 1/2 - < 22 1/2	52	21 1/2 - < 22 1/2
23	22 1/2 - < 23 1/2	53	22 1/2 - < 23 1/2
24	23 1/2 - 24	54	23 1/2 - < 24 1/2
		55	24 1/2 - < 25 1/2
		56	25 1/2 - < 26 1/2
		57	26 1/2 - < 27 1/2
		58	27 1/2 - < 28 1/2
		59	28 1/2 - < 29 1/2
		60	29 1/2 - 30

OA40
OA41
OA42

Variable Name: 1st Medically Reported Cause of Death
                 2nd Medically Reported Cause of Death
                 3rd Medically Reported Cause of Death

Element Values:

        00 Not fatal or no additional causes
        Code the Occupant Injury from line number(s) for the medically reported
        injury(s) which reportedly contributed to this occupant's death
        97 Other result (specify)
        99 Unknown

Source: Official records

Remarks:

This variable records the injury(s) which was/were determined by the medical
professional completing the report to be the cause of death. If the occupant
was not fatally injured, then these variables must all be coded "00" (Not
fatal or no additional causes). If the occupant was killed but no official
medically reported cause of death is provided, then code all varialbes as "99"
(Unknown).

Code the row number(s) of the injury(s), from the Occupant Injury Form, which
caused the death. If only one injury is reported as a cause of death, code
that injury row's number for OA40 and code OA41 and OA42 "00" (Not fatal or no
additional causes). The same logic applies if two injuries are reported.

Code "97" (Other result) should be used when it is determined that the occu-
        pant qualifies for code "2" (Fatal-ruled disease) in variable OA35,
        Treatment - Mortality. This code is also used when the cause of
        death is reported from a source other than directly from a coded
        injury (i.e., as from complications or consequences of injuries).

        If no cause of death is directly from an injury, then encode OA40 as
        "97" (Other result) and OA41 and OA42 as "00" (Not fatal or no
        additional causes).

Variable Name: Number of Recorded Injuries for This Occupant

Element Values:

    Range: 00-96, 97, 99
    00 No recorded injuries
    Code the actual number of injuries recorded for this occupant
    97 Injured, details unknown
    99 Unknown if injured

Source: Researcher determined--inputs include official medical records and interviewee.

Remarks:

Record this occupant's total number of coded injuries that were encoded on the Occupant Injury Form.

Code "00" (No recorded injuries) if the occupant is uninjured.

Code "97" (Injured, details unknown) if the occupant is injured but the details are unknown (i.e., UUUU-7),

Code "99" (Unknown if injured) if it is unknown if the occupant was injured.

If "00", "97", or "99" are coded, then no injuries are coded on the Occupant Injury Form.

U.S. Department of Transportation

National Highway Traffic Safety
Administration

OCCUPANT INJURY FORM

1. Primary Sampling Unit Number   ___ ___   3. Vehicle Number   ___ ___

2. Case Number – Stratum   ___ ___ ___ ___   4. 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 twenty injuries have been documented, encode the balance on the Occupant Injury Supplement.

	Source of Injury Data	O.I.C. – A.I.S. Body Region	Aspect	Lesion	System Organ	A.I.S. Severity	Injury Source	Injury Source Confidence Level	Direct/ Indirect Injury	Occupant Area Intrusion No.
1st	5. __	6. __	7. __	8. __	9. __	10. __	11. __ __	12. __	13. __	14. __ __
2nd	15. __	16. __	17. __	18. __	19. __	20. __	21. __ __	22. __	23. __	24. __ __
3rd	25. __	26 __	27. __	28. __	29. __	30. __	31. __ __	32. __	33. __	34. __ __
4th	35. __	36. __	37. __	38. __	39. __	40. __	41. __ __	42. __	43. __	44. __ __
5th	45. __	46. __	47. __	48. __	49. __	50. __	51. __ __	52. __	53. __ .	54. __ __
6th	55. __	56. __	57. __	58. __	59. __	60. __	61. __ __	62. __	63. __	64. __ __
7th	65. __	66. __	67. __	68. __	69. __	70. __	71. __ __	72. __	73. __	74. __ __
8th	75. __	76. __	77. __	78. __	79. __	80. __	81. __ __	82. __	83. __	84. __ __
9th	85. __	86. __	87. __	88. __	89. __	90. __	91. __ __	92. __	93. __	94. __ __
10th	95. __	96. __	97. __	98. __	99. __	100. __	101. __ __	102. __	103. __	104. __ __
11th	105. __	106. __	107. __	108. __	109. __	110. __	111. __ __	112. __	113. __	114. __ __
12th	115. __	116. __	117. __	118. __	119. __	120. __	121. __ __	122. __	123. __	124. __ __
13th	125. __	126. __	127. __	128. __	129. __	130. __	131. __ __	132. __	133. __	134. __ __
14th	135. __	136. __	137. __	138. __	139. __	140. __	141. __ __	142. __	143. __	144. __ __
15th	145. __	146. __	147. __	148. __	149. __	150. __	151. __ __	152. __	153. __	154. __ __
16th	155. __	156. __	157. __	158. __	159. __	160. __	161. __ __	162. __	163. __	164. __ __
17th	165. __	166. __	167. __	168. __	169. __	170. __	171. __ __	172. __	173. __	174. __ __
18th	175. __	176. __	177. __	178. __	179. __	180. __	181. __ __	182. __	183. __	184. __ __
19th	185. __	186. __	187. __	188. __	189. __	190. __	191. __ __	192. __	193. __	194. __ __
20th	195. __	196. __	197. __	198. __	199. __	200. __	201. __ __	202. __	203. __	204. __ __

HS Form 433B
1/88

OCCUPANT INJURY DATA SUPPLEMENT

| | Source of Injury Data | OIC.–A.I.S. | | | | | Injury Source | Injury Source Confidence Level | Direct/ Indirect Injury | Occupant Area Intrusion No |
		Body Region	Aspect	Lesion	System Organ	AIS Severity				
21st	—	—	—	—	—	—	— —	—	—	— —
22nd	—	—	—	—	—	—	— —	—	—	— —
23rd	—	—	—	—	—	—	— —	—	—	— —
24th	—	—	—	—	—	—	— —	—	—	— —
25th	—	—	—	—	—	—	— —	—	—	— —
26th	—	—	—	—	—	—	— —	—	—	— —
27th	—	—	—	—	—	—	— —	—	—	— —
28th	—	—	—	—	—	—	— —	—	—	— —
29th	—	—	—	—	—	—	— —	—	—	— —
30th	—	—	—	—	—	—	— —	—	—	— —
31st	—	—	—	—	—	—	— —	—	—	— —
32nd	—	—	—	—	—	—	— —	—	—	— —
33rd	—	—	—	—	—	—	— —	—	—	— —
34th	—	—	—	—	—	—	— —	—	—	— —
35th	—	—	—	—	—	—	— —	—	—	— —
36th	—	—	—	—	—	—	— —	—	—	— —
37th	—	—	—	—	—	—	— —	—	—	— —
38th	—	—	—	—	—	—	— —	—	—	— —
39th	—	—	—	—	—	—	— —	—	—	— —
40th	—	—	—	—	—	—	— —	—	—	— —
41st	—	—	—	—	—	—	— —	—	—	— —
42nd	—	—	—	—	—	—	— —	—	—	— —
43rd	—	—	—	—	—	—	— —	—	—	— —
44th	—	—	—	—	—	—	— —	—	—	— —
45th	—	—	—	—	—	—	— —	—	—	— —

OFFICIAL INJURY DATA — SOFT TISSUE INJURIES

Indicate the *Location, Lesion, 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.)

SOURCE OF INJURY DATA

OFFICIAL

(1) Autopsy records with or without hospital medical records
(2) Hospital medical records other than emergency room (eg discharge summary)
(3) Emergency room records only (including associated X rays or other lab reports)
(4) Private physician walk-in or emergency clinic

UNOFFICIAL

(5) Lay coroner report
(6) E M S personnel
(7) Interviewee
(8) Other source specify

(9) Police

INJURY SOURCE

FRONT

(01) Windshield
(02) Mirror
(03) Sunvisor
(04) Steering wheel rim
(05) Steering wheel hub spoke
(06) Steering wheel (combination of codes 04 and 05)
(07) Steering column transmission selector lever other attachment
(08) Add-on equipment (e g CB tape deck air conditioner)
(09) Left instrument panel and below
(10) Center instrument panel and below
(11) Right instrument panel and below
(12) Glove compartment door
(13) Knee bolster
(14) Windshield including one or more of the following front header A-pillar instrument panel mirror or steering assembly (driver side only)
(15) Windshield including one or more of the following front header A-pillar instrument panel or mirror (passenger side only)
(16) Other front object specify

LEFT SIDE

(20) Left side interior surface excluding hardware or armrests
(21) Left side hardware or armrest
(22) Left A pillar
(23) Left B pillar
(24) Other left pillar (specify)

(25) Left side window glass or frame

(26) Left side window glass including one or more of the following frame window sill A-pillar B pillar or roof side rail
(27) Other left side object (specify)

RIGHT SIDE

(30) Right side interior surface excluding hardware or armrests
(31) Right side hardware or armrest
(32) Right A pillar
(33) Right B pillar
(34) Other right pillar (specify)

(35) Right side window glass or frame
(36) Right side window glass including one or more of the following frame window sill A-pillar B pillar roof side rail
(37) Other right side object (specify)

INTERIOR

(40) Seat back support
(41) Belt restraint webbing buckle
(42) Belt restraint B-pillar attachment point
(43) Other restraint system component (specify)

(44) Head restraint system
(45) Air cushion
(46) Other occupants (specify)

(47) Interior loose objects
(48) Child safety seat (specify)

(49) Other interior object (specify)

ROOF

(50) Front header
(51) Rear header
(52) Roof left side rail
(53) Roof right side rail
(54) Roof or convertible top

FLOOR

(56) Floor including toe pan
(57) Floor or console mounted transmission lever including console
(58) Parking brake handle
(59) Foot controls including parking brake

REAR

(60) Backlight (rear window)
(61) Backlight storage rack door etc
(62) Other rear object (specify)

EXTERIOR OF OCCUPANT'S VEHICLE

(65) Hood
(66) Outside hardware (e g outside mirror antenna)
(67) Other exterior surface or tires (specify)

(68) Unknown exterior objects

EXTERIOR OF OTHER MOTOR VEHICLE

(70) Front bumper
(71) Hood edge
(72) Other front of vehicle (specify)

(73) Hood
(74) Hood ornament
(75) Windshield roof rail A-pillar
(76) Side surface
(77) Side mirrors
(78) Other side protrusions (specify)

(79) Rear surface
(80) Undercarriage
(81) Tires and wheels
(82) Other exterior of other motor vehicle (specify)

(83) Unknown exterior of other motor vehicle

OTHER VEHICLE OR OBJECT IN THE ENVIRONMENT

(84) Ground
(85) Other vehicle or object (specify)

(86) Unknown vehicle or object

NONCONTACT INJURY

(90) Fire in vehicle
(91) Flying glass
(92) Other noncontact injury source (specify)

(97) Injured unknown source

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

OCCUPANT INJURY CLASSIFICATION

O.I C Body Region						
(M)	Abdomen	(W)	Wrist – hand	(G)	Detachment, separation	(I)	Integumentary

O.I C Body Region		Aspect of Injury		Lesion		System/Organ		Abbreviated Injury Scale	

O.I C Body Region

(M)	Abdomen
(Q)	Ankle – foot
(A)	Arm (upper)
(B)	Back – thoracolumbar spine
(C)	Chest
(E)	Elbow
(F)	Face
(R)	Forearm
(H)	Head – skull
(U)	Injured unknown region
(K)	Knee
(L)	Leg (lower)
(Y)	Lower limb(s) (whole or unknown part)
(N)	Neck – cervical spine
(P)	Pelvic – hip
(S)	Shoulder
(T)	Thigh
(X)	Upper limb(s) (whole or unknown part)
(O)	Whole body

(W)	Wrist – hand

Aspect of Injury

(A)	Anterior – front
(C)	Central
(I)	Inferior – lower
(U)	Injured unknown aspect
(L)	Left
(P)	Posterior – back
(R)	Right
(S)	Superior – upper
(W)	Whole region

Lesion

(A)	Abrasion
(M)	Amputation
(V)	Avulsion
(B)	Burn
(K)	Concussion
(C)	Contusion
(N)	Crush

(G)	Detachment, separation
(D)	Dislocation
(F)	Fracture
(Z)	Fracture and dislocation
(U)	Injured unknown lesion
(L)	Laceration
(O)	Other
(P)	Perforation puncture
(R)	Rupture
(S)	Sprain
(T)	Strain
(E)	Total severance transection

System/Organ

(W)	All systems in region
(A)	Arteries – veins
(B)	Brain
(D)	Digestive
(E)	Ears
(O)	Eye
(H)	Heart
(U)	Injured unknown system

(I)	Integumentary
(J)	Joints
(K)	Kidneys
(L)	Liver
(M)	Muscles
(N)	Nervous system
(P)	Pulmonary – lungs
(R)	Respiratory
(S)	Skeletal
(C)	Spinal cord
(Q)	Spleen
(T)	Thyroid other endocrine gland
(G)	Urogenital
(V)	Vertebrae

Abbreviated Injury Scale

(1)	Minor injury
(2)	Moderate injury
(3)	Serious injury
(4)	Severe injury
(5)	Critical injury
(6)	Maximum (untreatable)
(7)	Injured unknown severity

OFFICIAL INJURY DATA: SKELETAL INJURIES

Indicate the *Location, Lesion, 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.)
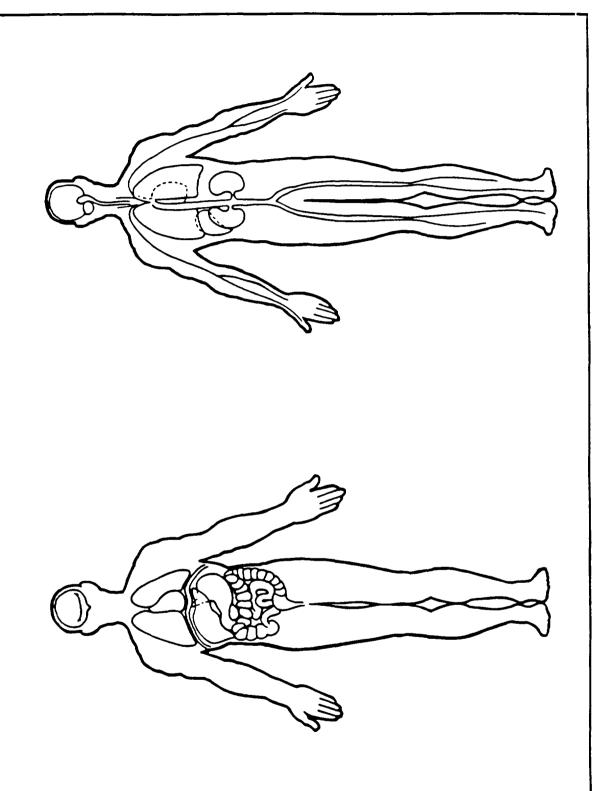
OFFICIAL INJURY DATA — INTERNAL INJURIES

Indicate the *Location, Lesion, 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 DATA OVERVIEW
(OI05 et al. - OI14 et al.)

The Occupant Injury Form is a complete coded reduction of all injuries sustained by each injured occupant of a CDS applicable vehicle. The injuries are reported using a series of codes for a description of the injury, its severity, and associated information. The associated information includes the source of the injury data, the source of the injury, the confidence the researcher has in assigning that particular injury source, the directness of the injury as a result of a remotely applied force, and the relatedness of the injury to a vehicle intrusion. These data are grouped by columns and titles as seen on the form. The variable numbers are consecutive, and there is no theoretical upper limit to the number of injuries that can be coded.

Historically, injury information has provided a measure of the severity of the accident from the occupant's frame of reference. The CDS has adopted a combination of the Occupant Injury Classification, which describes the injury location and type with a four place alphabetic code, and the Abbreviated Injury Scale severity, which indicates the severity of the injury by a single digit numeric code. The AIS is assigned based on a number of factors such as survivability of the injury, long term disability, and complications from the injury. This provides a complete coded description of the injury in an analyzable format that is widely accepted and can be compared against other injury assessment studies. In the past, injury information by itself was often used as a measurement scale but still was incomplete in that the mechanism causing the injury was unknown. To rectify this situation, variables were added to report the object which caused the injury and whether or not the injury was caused by direct contact with the object. Since the codes for these variables are based at times on less than concrete evidence, it was necessary to evaluate the reliability of the data by adding a variable for confidence level.

Accuracy of injury data has long been a concern. In many of the prior accident research studies, injury data were accepted only from a medically qualified source such as a hospital or a physician. Problems in acquiring these data have led to allowing the researcher to obtain injury descriptions from the occupant or selected surrogates. In allowing interviewee medical data, it was necessary to segregate the data by source since interviewee data are known to be less than totally reliable at times. Source of Injury Data (OI05) answers this need.

The addition of these associated variables to the coded injuries (O.I.C. and A.I.S.) has created a data base which can.be analyzed for direct evaluation of some of the Federal Motor Vehicle Safety Standards (FMVSS). These standards came into being because of concerns about the injuries sustained in accidents in the early 1960's. Areas such as driver education and training and driver licensing criteria were found to be an inefficient means of reducing accidents on the highways. Accident causation was evaluated for a time but no effective means of reducing the "driver decision" problem was ever uncovered. This left occupant protection and injury reduction as the areas to focus upon. Attention was focused on the vehicle. Hard, unforgiving interior surfaces were removed; steering columns were designed to collapse into the engine compartment rather than impale the driver, and many of the projecting knobs and other surfaces were rounded, moved, or softened. Vehicles were designed to absorb the impact forces rather than transfer the force to the

INJURY DATA OVERVIEW   (2)

occupants. Many other improvements in overall vehicle design have taken place to satisfy the requirements specified by the FMVSS. These improvements were implemented by the automakers and are monitored and tested by NHTSA. Much of the monitoring now comes from analyzing data provided by real world experience. All the standards can be evaluated to some extent using data from these variables.

Analysts may use these data to identify the injury severity levels of accidents, search for particular injury sources, determine direct versus indirect injury mechanism ratios, relate percentage of injuries by OIC Body Region, OIC Lesion, and AIS severity level, and compare many other data combinations. These relationships can be determined by using the data from these variables. Comparisons with other variable groups can also be used to explore additional relationships. For example, comparisons of restraint use versus type of injuries (lesions, AIS level) should show a direct correlation between restraint use and injury reduction. If such a correlation is not demonstrated, further exploration into the data and possibly additional detailed analyses are needed. Addition of delta V (GV30) levels to the comparison might show that at some speeds (e.g. very low and very high), the injury levels are the same regardless of restraint use. To continue the analyses, type of injury would be examined in the areas where AIS levels are the same. Also, the number of injuries (OA43) would be a relevant data item for inclusion in the comparison.

All of the above mentioned comparisons and analyses are just a few examples of the uses for the data that are encoded here. For the researcher, these variables, for the most part, represent a distillation of several data sources. The injuries will be coded from information found on the medical records, supplemented by the interviewee descriptions. The Injury Source (OI11 et al.) and Occupant Area Intrusion Number (OI14 et al.) will be obtained from the inspection of the vehicle interior. Injury Source Confidence Level (OI12 et al.) and Direct/Indirect Injury (OI13 et al.) are assessments that are based on the researcher's efforts. A complete, well documented set of injuries is the goal for every case. Much thought and effort will be put into these variables. The researcher must remember that thorough documentation in the vehicle inspection, probing questions in the interview, and an understanding of the occupant's movements during the accident sequence will make the task of completing the Occupant Injury Form much more complete and, in fact, easier.

INJURY DATA OVERVIEW (3)

Official Injury Data
Specific Medical Record Data Used in Coding OIC/AIS

The injury data from official medical records should be indicated on the appropriate diagram. There are three Official Injury Data diagrams. The first, for soft tissue injuries, is on **Page 2** of the Occupant Injury Form. The second, on **Page 3**, is for skeletal injuries; the third, on the reverse of **Page 3**, is for injuries to internal organs. Injuries should be clearly and precisely located on the diagrams, and the medical record classification of the injury and its extent should be completely annotated. All data used to code the OIC/AIS of injuries [e.g., size of lacerations, the first observed level -of consciousness by a medical authority, loss of consciousness, size of hematoma or hemothorax (in "cc"s of blood), etc.] should be written with the diagram.

INJURY DATA OVERVIEW   (4)

NASS Injury Coding Procedures

1. An AIS-6 should be used only for injuries specifically coded AIS-6 in the
    Abbreviated Injury Scale and not because the victim died.

    Watch your "6"s

2. Use the following procedure in order to associate contact points and "same type"
    integumentary lesions/injuries (abrasions, avulsions, contusions, lacerations) for
    a particular OIC body region.

    Associate injury
    source with
    integumentary
    lesions

    a. Code one OIC for "same type" lesions, choosing the highest AIS per type if
        they are produced by the same or unknown components.

    b. "Same type" lesions to a body region due to different contact points will be
        coded as separate injuries. For instance, two facial lacerations caused by two
        distinct components (e.g., steering wheel and windshield) will have two lines
        of code.

    c. When the same lesion occurs to ≥ 2 OIC body regions of the upper (A,E,R, or W)
        or lower (T,K,L, or Q) extremity, code one OIC and AIS (use OIC body region
        X or Y) if the criterion in "a." is satisfied. For example, contusions of the
        left upper arm and forearm caused by contact with the side panel will be coded
        XLCI-1.

        NOTE: Code right and left side separately.

3. The researcher should take care not to code the same injury twice simply because
    information concerning it is available from two different sources. For example,
    if the interview is used in gathering data, only the injuries not already coded
    based upon medical records should be coded.

    Don't double count

4. Definitions and procedures for NASS for coding Injury Source for direct, induced,
    and noncontact injuries are:

    Injury Sources

    direct injury - an injury to a particular OIC body region caused by the
    traumatic contact of that OIC body region with a vehicle component or other
    object. The vehicle component or other object is coded as the injury source
    for that injury. Brain injuries, anatomic or diffuse, and skull injuries
    may be caused by the face or head striking a component or object. For these
    cases, consider the brain or skull injury as a direct injury.

    indirect or induced injury - an injury to a particular OIC body region caused
    by a blow or a traumatic contact in some other OIC body region (e.g.,
    knee/acetabulum). The injury source for an induced injury would be the
    vehicle component contacted by the other OIC body region (i.e., the occupant
    contact that initiates the injury mechanism).

    Injury source is, therefore, defined as the vehicle component or object that
    initiated the injury mechanism (induced injury) or directly caused the injury
    (direct injury).

5. The noncontact injury source codes ("90", "91", and "92") are to be used only
    for the following specific types of injuries:

    Noncontact Injury
    Sources -- "90",
    "91", and "92"

    a. head or neck injuries in which the torso is supported (e.g., by seat back or
        belt) and head or neck experiences traumatic forces due to inertial motion -
        "92";

    b. flying glass injuries - "91",

    c. burns due to chemicals or gaseous inhalation - "92"; and

    d. burns due to flame - "90".

INJURY DATA OVERVIEW (5)

The following examples should be helpful in illustrating the above definitions.

Injury	Injury Mechanism Determined from Crash Evidence	Injury Source
Example 1		
Neck strain NPTM-1	a. head strikes windshield	a. (01) windshield
	b. forehead hits roof or convertible top	b. (54) roof or convertible top
	c. head strikes steering wheel rim	c. (04) steering wheel rim
	d. back hits seatback, no head restraint, head rolls back over seat	d. (92) noncontact injury source
	e. neck forced into lateral flexion by impact forces	e. (92) noncontact injury source
	f. torso restrained by belt, head and neck inertia causes neck injury	f. (92) noncontact injury source
	g. back hits seat back, head hits head restraint, neck is injured	g. (44) head restraint
Example 2		
Hip Dislocation P.DJ-3	Knee strikes knee bolster forces transmitted along femur forcing femoral head out of the acetabulum	(13) knee bolster
Example 3		
Shoulder-elbow-wrist fracture/ dislocation _.2J-2	Occupant braced hands on instrument panel, transmitting forces to wrist, elbow, and shoulder	(11) instrument panel
Example 4		
Acute lumbar strain BITM-1	Jackknife over seat belt, rotation about seat belt stretches back muscles	(41) belt restraint

6. When no other injury information is available, data from the PAR are to be coded if specific injuries are detailed. — *Coding PAR injury data*

   If the PAR provides enough information for a specific injury to code at least one of the OIC row variables, then code Number of Recorded Injuries for This Occupant (OA43>01) and complete the Occupant Injury Form (OI05 et al.). Example: Minor bleeding, head--HLUU-7.

   If the PAR indicates "complaint of pain", then code OA43 as "97" (Injured, details unknown). The Occupant Injury Form is not submitted.

   If a PAR indicates "not injured", "unknown if injured", or if a "K", "A", "B", or "C" severity rating is the only information available, an OIC is not coded. The Occupant Injury Form is not submitted.

7. If the PAR is "blank" where the injury severity is accessed and the person was at the scene during the police investigation, then code: No recorded injuries (OA43=00). However, if the person was not present during the police investigation, then code: Unknown if injured (OA43=99). — *Presumption of "No Injury" or "Unknown if injured" from Par*

8. NASS does not code unsubstantiated injuries. If the words "possible" or "probable" are used, then do not code the injury. — *Unsubstantiated injuries*

INJURY DATA OVERVIEW (6)

NASS Injury Coding Conventions

1. If an AIS is determined to be one of two consecutive numbers, but a clear
   indication cannot be made after reviewing all the information provided, assign the
   lower AIS.

   Uncertainty Rule #1--code lower AIS

2. When there is uncertainty about the location of minor multiple abrasions,
   contusions, and lacerations, etc. to the body surface, follow the guidelines
   below:

   Uncertainty Rule #2 -whole body integumentary injuries

   a. If any of the words multiple, numerous, several, or the plural of a lesion is
      used to describe the injuries, enter one line of code (e.g., multiple chest
      contusions--code CWCI-_).

   b. Multiple integumentary injuries with uncertainty of body region location;
      aggregate, regardless of location(s), into OW_I-1.

   c. If multiple contusions, abrasions, or lacerations occur to a single body region,
      code the body region and aspect W (e.g. multiple facial abrasions -- code
      FWAI-_).

   d. Multiple integumentary injuries located on one side of body; aggregate into
      OL_I-1 or OR_I-1.

   e. Single integumentary injury with uncertainty of location; code UU_I-1.

   f. OW_I-1 is the default if unknown which of the above situations (b-d) exists.

3. If the medical or interview information indicates a contused knee, elbow, wrist,
   ankle, etc., and does not specifically state whether the contusion is to the bone
   or joint, code the injury as integumentary, _ CI-1. If the contusion is known to
   be to the bone, use _ CS-_; if to the joint, use _ _CJ-_. Example: contused
   knee, K.CI-1.

   Uncertainty Rule #3--most super- ficial system if unknown system/ organ

4. Cervical spine strain may, in some cases, still be referred to as "whiplash".
   "Whiplash" is not a medical term and is not used in AIS-85. If an injury is
   described as "whiplash", it should be coded as cervical spine strain (no
   fracture or dislocation) NPTM-1, provided the guidelines below are followed:

   "Whiplash" NPTM-1

   a. Interviewee reports: "Whiplash".
      ER reports: "Pain", "stiffness", or "limited ROM" in
                             neck but does not diagnose strain.
      Code: Do not code whiplash since ER, in
                             essence, ruled it out.

   b. Interviewee reports: "Whiplash".
      ER reports: "Neck supple" and does not diagnose
                             strain.
      Code: Do not code whiplash since ER, in
                             essence, ruled it out.

   c. Interviewee reports: "Whiplash".
      ER reports: (No medical attention sought.)
      Code: Code whiplash, data source "7" (since it
                             is the only data available).

   d. Interviewee reports: "Whiplash".
      ER reports: (No indication that neck was
                             specifically examined.)
      Code: Code whiplash, data source "7" (since ER
                             did not rule out its possibility).

5. All internal structures of the month, with the exception of the teeth, are coded
   as part of the digestive system (D). Teeth are coded as sketetal (S).

   Mouth (except teeth) = D, Teeth = S

6. Body region code 0 (whole body) should be used only if 50% or more of the whole
   body surface (0) is affected. An exception is made for burns affecting more than
   one body region (see below). Aspect code W (whole region) is used only if 50% or
   more of the body region is affected.

   50% rule

INJURY DATA OVERVIEW (7)

7. If a lesion involves more than one aspect of a body region:

    a. Try to determine if one of the aspects is predominant. If so, code that aspect.

    b. If not, use the aspect code W (whole).

                                                  Aspect Whole (W) Code

8. Burn injuries should be coded using the Rule of Nines to assign the AIS severity level for (a), (b), (c), and (d) below; see the Rules of Nines diagram: *Burn injuries and the rule of nines*

    a. If only one body region is burned, use that body region code (e.g., ARBI-1, burned right upper arm 1^0).

    b. If more than one body region is burned, but a single injury code will adequately describe the regions affected, use the single injury code (e.g., XRBI-2, burned right whole arm 2^0).

    c. If more than one body region is burned and one injury code cannot be used to specify the body regions involved, the injury is coded OWBI-_. This will be the most likely case coding burns.

    d. If both arms or legs are burned, use the code OWBI-_.

9. The following definitions have been used traditionally to differentiate "sprain" and "strain" injuries: *Strain versus sprain*

        sprain - a *joint* injury which causes pain and disability depending on the degree of injury to ligaments and muscle tendons near the joint.

        strain - an injury to a muscle or musculotendinous unit that results from overstretching and may be associated with a sprain or fracture.

In common medical practice, however, physicians often do not adhere strictly to these definitions, and may use the terms interchangeably. AIS-85 distinguishes sprains from strains. Care should be exercised in selection of the proper code, use _ _SJ for sprains (joint injuries) and _ _TM-1 for strains (muscle injuries).

Neck injuries may sometimes be described as "strains" and sometimes as "sprains". For NASS purposes, neck injuries should be coded as "strains" (see above definitions). *No sprains to neck*

10. Coding of substantiated anatomic lesions to the brain: *Coding anatomic/ diffuse brain lesions*

    a. If substantiated anatomic lesions to the brain and the level of consciousness are known, the OIC and AIS for each substantiated anatomic lesion to the brain will be coded as it is specified in the "Anatomic Lesions" section (see HEAD, Part B, Anatomic Lesions). In addition, one OIC and AIS will be coded for the level of consciousness data as they appear in Part C, Diffuse Lesions.

    b. If there are no substantiated anatomic lesions to the brain, the OIC and AIS will be coded as they appear in the Diffuse Lesions section (see HEAD, Part C, Diffuse Lesions).

11. When an injury is described as a "_____ type of laceration" (e.g., avulsion type laceration, flap laceration) use the "V" (avulsion) lesion code. For all ambiguous situations, use "laceration" over puncture or avulsion. *Laceration type injuries*

12. The AIS codes individual injuries only. Injuries to body parts which are present on both sides of the body (bilateral) are coded as two separate injuries. It should be remembered that within the OIC, "Aspect" measures the location of the injury being reported. *Bilateral not used - except ribs*

Exception - Aspect "B" (Bilateral) is added for the purpose of coding bilateral rib fractures only. Adjacent and/or nonadjacent bilateral rib fractures are assigned one OIC and AIS code. For example, a fracture to right 6-7 and left 4-6 ribs, ≥ 4 ribs fractured, is coded CBFS-3.

INJURY DATA OVERVIEW   (8)

13. The distinction in coding individual skull fractures versus subsuming them under   **Crushed skull**
the crush classification lies in the displacement of brain tissue. If it can be
determined that brain matter is forcibly extracted from or massively injured within
the cranium in conjunction with extensive fracturing, then the term "crushed skull"
is applicable.

   Lack of specificity regarding the displacement of brain tissue tells the researcher
not to use the crush code and to code the fracturing as individual injuries. An
HUUB-7 may be added if brain injuries are present but not specifically described.

14. If the injury description states only "tear", then: **Tears**

   a.   If involving internal organs, use lesion "laceration".

   b.   If involving the external integumentary system, use lesion "laceration" or
        "avulsion" as appropriate. If unknown which to choose, code "laceration".

15. For multiple fractures to the same bone: **> 1 fracture in a bone**

   a.   If multiple fractures to the same bone are determined, code each separately.

   b.   If the fractures cannot be differentiated, or if the fracture is nonspecific,
        then it should be considered as one comminuted fracture. Assign one OIC code
        with an upgraded AIS (where appropriate).

   c.   Exception:

        o ribs - multiple fractures to the same rib are assigned one OIC code and
           the AIS is upgraded.

        o pubis - multiple fractures to the pubis (right, left, inferior, and/or
           superior) are assigned one OIC code; upgrade AIS if appropriate.

16. For "seat belt bruises" due to a three-point system, code: **Seat belt contusions**

   S.CI-1 (. = R,L)
   C_CI-1 (_ = R,L,C,W)
   N_CI-1 (_ = R,L,C,S,1,W)

   Code S.CI-1, CCCI-1, and NCCI-1 if unspecified.
   [Note: Code only those injuries that are consistent with the type of restraint
   worn (e.g., do not code S.CI-1 or C_CI-1 if only a lap belt was used).]

17. For open (compound) fractures, do not code any accompanying laceration unless the   **Open fractures**
laceration was not caused by the fracture. This is because, by definition, an
open fracture penetrates the external skin. Simply raise the AIS for the open
fracture, where permitted by a footnote.

   Exception: open fracture of skull lacerating brain matter (code as two codes).

18. If a deep laceration or puncture penetrates the soft tissue and it can be   **Lesions involving skin and internal structures**
determined that it is associated with a similar lesion to a related internal
structure, only the injury with the higher AIS (the internal injury) should be
coded.

   If in doubt that the external and internal lesion are related, code both.

19. The following terms may be used as a guide in differentiating between superficial,   **Internal lacerations/ punctures**
major, or complex lacerations or punctures to internal organs of the throat, tho-
rax, and abdomen.

   Superficial = minor, partial thickness, small
   Major   = deep, full thickness, large (massive)
   Complex   = tissue loss, segmental loss, stellate (abdominal)

   NOTE: When organs are lacerated/punctured and the medical report indicates mas-
   sive, extensive, or significant blood loss, code the higher AIS.

   However, the final choice of whether or not to use the "superficial" or "major"
   AIS levels depends on the term within the context of the entire injury
   description.

INJURY DATA OVERVIEW   (9)

20. AIS codes for joint injuries (i.e., fracture, dislocation, or fracture and dislocation) occurring to the extremities incorporate associated ligament/tendon lesions. Thus, do not code ligament/tendon injuries separately.

    However, if the injury is described as an evulsion/chip fracture, treat this injury as a ligament injury and code the lesion as a rupture.

    Joint-ligament injuries

21. For multiple internal injuries to an organ of the thorax or abdomen, code one OIC per lesion type, choosing the highest AIS for each particular lesion.

    Multiple internal lesions

        Example: contusion liver, one extensive laceration liver, one superficial laceration liver. Code contusion (MRCL-2) and laceration (MRLL-4).

    For multiple injuries to an artery/vein or nerve located in the same OIC body region or the same region of the spinal cord (example: cervical), code only one OIC code, choosing the lesion with the highest AIS among all the lesions present.

        Example: laceration aorta, severance aorta. Code only one code, severance (CCEA-6).

22. If the medical indicates "soft tissue injury" and a specific lesion cannot be determined from the medical or some other source (e.g., interview), code the injury as a contusion.

    Soft tissue injury

23. A single linear skull fracture that crosses several bones should be given a representative single line of code.

    Linear skull fracture involving > 1 bone

    a. One fracture through several bones receives one line of code with the best aspect assigned.

    b. Multiple (i.e., an unspecified number) fractures receive one line of code.

    c. A known number of fractures are coded with an equal number of coded lines.

    d. If both base and vault are involved in a single line situation, use the higher AIS fracture.

OI05
et al.

Variable Name: Source of Injury Data
                (1st through 20th or higher)

Element Values:

Official
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 (in-
   cluding associated x-rays or
   other lab reports)
4 Private physician, walk-in or
   emergency clinic

Unofficial
5 Lay coroner report
6 E.M.S. personnel
7 Interviewee
8 Other source (specify)
9 Police

Source: Element chosen

Remarks:

Code "1" (Autopsy records with or without hospital/medical records) excludes
          records from lay, nonmedical personnel; they must be the result of
          an autopsy by a physician or other similarly qualified life scien-
          tist. A non-invasive external examination by a physician, though,
          should be coded either "2" (Hospital medial records other than emer-
          gency room) or "4" (Private physician, walk-in or emergency clinic)
          since it is generally a superficial listing of external injuries and
          possible internal injuries; therefore, injuries from a non-invasive
          exam should not be grouped with those from a thorough autopsy re-
          port.

Code "2" [Hospital/medical records other than emergency room (e.g., discharge
          summary)] is used whenever the injury is listed on the official
          post-emergency room records of a hospital or medical facility. If
          the injury was also listed on a facility's associated emergency room
          records, then the "2" code takes precedence. If the injury is also
          contained in an autopsy record--where the autopsy was performed by a
          physician or similarly qualified life scientist--then, code "1"
          (Autopsy records with or without hospital/medical records) takes
          precedence. However, this code includes non-invasive (external)
          examinations conducted by a physician on a deceased victim and docu-
          mented as a hospital or medical examiner's record.

Code "3" [Emergency room records only (including associated x-rays or other
          lab reports)] is used when the injury only appears on a facility's
          emergency room record or on records that were completed in support
          of the person's examination in an emergency room. For example, an
          x-ray report that was completed because the emergency room physician
          requested it as a part of his/her examination would be included

Variable Name: Source of Injury Data
                 (1st through 20th or higher)

under this code. This code should not be used if the injury is subsequently listed on a post-emergency room record in a medical autopsy.

If both types of records (emergency room and post-emergency room) refer to the same injury, code "2" [Hospital/medical records other than emergency room (e.g., discharge summary)] is used as the code even if the detail provided on the emergency room records exceeds the detail provided on the post-emergency room records.

Code "4"   (Private physician, walk-in or emergency clinic) refers to any physician (in private practice) who saw the injured person and who has records of that treatment (i.e., other than hospital or autopsy records). Also included in this code are non-invasive (external) examinations conducted by a private physician or similarly qualified life scientist on a deceased victim and documented as other than a hospital record (e.g., coroner's report).

In summary, examinations of deceased persons are distinguished first by qualifications of examiner [official (codes "1", "2", and "4") versus unofficial (code "5")], second by the type of examination [autopsy (code "1") versus non-invasive (codes "2" or "4")], and third by type of examination record [hospital (code "2") versus other than hospital (code "4")].

Code "5"   (Lay coroner report) is used if the injury data is contained in a report where a non-invasive examination of the deceased was performed a non-physician, or lay coroner.

Code "6"   (E.M.S. personnel) refers to a person certified by the state as trained in emergency medical service techniques. This code should not be used for ambulance attendants, police, or other personnel not trained in E.M.S. techniques.

Code "7"   (Interviewee) refers to the person who was interviewed to get the information on this form (not necessarily the person described on this form). The interviewee is defined in a log variable.

Code "8"   (Other source) is used when data are obtained from an unofficial source different from those explicitly listed above (e.g., chiropractors).

Code "9"   (Police) can be used, but only when no other source of injury information is available.

Variable Name: O.I.C. - Body Region
                 (1st through 20th or higher)

Element Values:

M	Abdomen	K	Knee
Q	Ankle - foot	L	Leg (lower)
A	Arm (upper)	Y	Lower limb(s) (whole or unknown
B	Back - thoracolumbar		part)
	spine	N	Neck - cervical spine
C	Chest	P	Pelvic - hip
E	Elbow	S	Shoulder
F	Face	T	Thigh
R	Forearm	X	Upper limb(s) (whole or unknown
H	Head - skull		part)
U	Injured unknown	O	Whole body
	region,	W	Wrist - hand

Source: Variables OI05 et al., respectively

Remarks:

The 1988 NASS Injury Coding Manual contains a listing of most injuries. Use
the manual to code, for each injury, its O.I.C. body region and record it on
the form.

Variable Name: O.I.C. - Aspect of Injury
                 (1st through 20th or higher)

Element Values:

A	Anterior - front	L	Left
B	Bilateral (bilateral rib	P	Posterior - back
	fractures only)	R	Right
C	Central	S	Superior - upper
I	Inferior - lower	W	Whole region
U	Injured, unknown aspect		

Source: Variables OI05 et al., respectively

Remarks:

The 1988 NASS Injury Coding Manual contains a listing of most injuries. Use the manual to code, for each injury, its O.I.C. aspect and record it on the form.

Variable Name: O.I.C. - Lesion
                (1st through 20th or higher)

Element Values:

A	Abrasion	Z	Fracture and dislocation
M	Amputation	U	Injured, unknown lesion
V	Avulsion	L	Laceration
B	Burn	O	Other
K	Concussion	P	Perforation, puncture
C	Contusion	R	Rupture
N	Crush	S	Sprain
G	Detachment, separation	T	Strain
D	Dislocation	E	Total severence, transection
F	Fracture		

Source: Variables OI05 et al., respectively

Remarks:

The 1988 NASS Injury Coding Manual contains a listing of most injuries. Use the manual to code, for each injury, its O.I.C. lesion and record it on the form.

Variable Name: O.I.C. - System/Organ
                 (1st through 20th or higher)

Element Values:

W	All systems in region	L	Liver
A	Arteries - veins	M	Muscles
B	Brain	N	Nervous system
D	Digestive	P	Pulmonary - lungs
E	Ears	R	Respiratory
O	Eye	S	Skeletal
H	Heart	C	Spinal Cord
U	Injured, unknown system	Q	Spleen
I	Integumentary	T	Thyroid, other endocrine gland
J	Joints	G	Urogenital
K	Kidneys	V	Vertebrae

Source: Variables OI05 et al., respectively

Remarks:

The 1988 NASS Injury Coding Manual contains a listing of most injuries. Use
the manual to code, for each injury, its O.I.C. system/organ and record it on
the form.

Variable Name: Abbreviated Injury Scale
                 (1st through 20th or higher)

Element Values:

    1 Minor injury
    2 Moderate injury
    3 Serious injury
    4 Severe injury
    5 Critical injury
    6 Maximum (untreatable)
    7 Injured, unknown severity

Source: Variables OI05 et al., respectively

Remarks:

The 1988 NASS Injury Coding Manual contains a listing of most injuries. Use the manual to code, for each injury, its A.I.S. value and record it on the form.

Variable Name: Injury Source
                (1st through 20th or higher)

Element Values:

Front
01 Windshield
02 Mirror
03 Sunvisor
04 Steering wheel rim
05 Steering wheel hub/spoke
06 Steering wheel (combination of codes 04 and 05)
07 Steering column, transmission, selector lever, other attachment
08 Add on equipment (e.g.', CB, tape deck, air conditioner)
09 Left instrument panel and below
10 Center instrument panel and below
11 Right instrument panel and below
12 Glove compartment door
13 Knee bolster
14 Windshield including one or more of the following: front header,
    A-pillar, instrument panel, mirror, or steering assembly (driver
    side only)
15 Windshield including one or more of the following: front header,
    A-pillar, instrument panel, or mirror (passenger side only)
*16 Other front object (specify)

Left Side
20 Left side interior surface, excluding hardware or armrest
21 Left side hardware or armrest
22 Left A pillar
23 Left B pillar
*24 Other left pillar (specify)
25 Left side window glass or frame
26 Left side window glass including one or more of the following:
    frame, window sill, A-pillar, B-pillar, or roof side rail
*27 Other left side object (specify)

Right Side
30 Right side interior surface, excluding hardware or armrest
31 Right side hardware or armrest
32 Right A pillar
33 Right B pillar
*34 Other right pillar (specify)
35 Right side window glass or frame
36 Right side window glass including one or more of the following:
    frame, window sill, A-pillar, B-pillar, or roof side rail
*37 Other right side object (specify)

Variable Name: Injury Source (cont'd.)
                 (1st through 20th or higher)

Interior
40 Seat, back support
41 Belt restraint webbing/buckle
42 Belt restraint B pillar attachment point
*43 Other restraint system component (specify)
44 Head restraint system
45 Air cushion
*46 Other occupants (specify)
47 Interior loose objects
*48 Child safety seat (specify)
*49 Other interior object specify)

Roof
50 Front header
51 Rear header
52 Roof left side rail
53 Roof right side rail
54 Roof or convertible top

Floor
56 Floor including toe pan
57 Floor or console mounted transmission lever, including console
58 Parking brake handle
59 Foot controls including parking brake

Rear
60 Backlight (rear window)
61 Backlight storage rack, door, etc.
*62 Other rear object (specify)

Exterior of Occupant's Vehicle
65 Hood
66 Outside hardware (e.g., outside mirror, antenna)
*67 Other exterior surface or tires (specify)
68 Unknown exterior objects

Exterior of Other Motor Vehicle
70 Front bumper
71 Hood edge
*72 Other front of vehicle (specify)
73 Hood
74 Hood ornament
75 Windshield, roof rail, A-pillar
76 Side surface

Variable Name: Injury Source (cont'd.)
(1st through 20th or higher)

    77 Side mirrors
    *78 Other side protrusions (specify)
    79 Rear surface
    80 Undercarriage
    81 Tires and wheels
    *82 Other exterior of other motor vehicle (specify)
    83 Unknown exterior of other motor vehicle

    Other Vehicle or Object in the Environment
    84 Ground
    *85 Other vehicle or object (specify)
    86 Unknown vehicle or object

    Noncontact Injury
    90 Fire in vehicle
    91 Flying glass
    *92 Other noncontact injury source (specify)

    97 Injured, unknown source

Source: Researcher determined--inputs include vehicle inspection, inter-
viewee, and medical records.

Remarks:

Code "06" (Combination of hub and rim/spokes) when there is an unspecified
steering wheel injury source.

Code "14" [Windshield including one or more of the following: front header,
A-pillar, instrument panel, mirror, or steering assembly (driver
side only)] should be used for contacts on the left (driver) side of
the vehicle interior. This code applies only when there is a con-
tinuous or simultaneous contact to the windshield and one of the
listed components by a single OIC body region of the occupant.

Code "15" [Windshield including one or more of the following: front header,
A-pillar, instrument panel, or mirror (passenger side only)] should
be used for contacts on the right (passenger) side of the vehicle
interior. This code applies only when there is a continuous or
simultaneous contact to the windshield and one of the listed compon-
ents by a single OIC body region of the occupant.

Codes "26" and "36" [Left (Right) side window glass including one or more of
the following: frame, window sill, A-pillar, B-pillar, or roof side
rail] apply when there is a simultaneous or continuous contact by a
single OIC body region of an occupant to the appropriate side window
glass and at least one of the listed components. The window sill

Variable Name: Injury Source (cont'd.)
(1st through 20th or higher)

consists, for this attribute, of the upper portion of the side interior surface immediately adjacent to the bottom of the side window opening.

Child restraining devices have caused confusion when they are the source of the injury. The child restraint (i.e., infant/child seat, booster seat, etc.) is considered to be an integral restraint (e.g., the whole seat is the restraint). When the restraint is used by an infant or child it should be coded as one unit. In the CDS the analyst is concerned with the complete seat and its performance.

Code "48" (Child safety seat) if contact with a child safety seat occurs from either (a) an infant or child restrained by the child safety seat or (b) any passenger including an infant or child who contacts child safety seat but is not restrained by that seat.

When any body member of an infant or child restrained by child safety seat contacts an interior object other than the child safety seat, then code the appropriate interior object (i.e., Seat, back support - code "40"; Head restraint system - code 44" etc.)

Code "85" (Other vehicle or object) if an occupant of a vehicle in-transport impacts a parked (not in-transport) vehicle.

Code "90" (Fire in vehicle) is used for injuries which resulted from heat or flame from fire. The origin of the fire unimportant.

Code "91" (Flying glass) is used for injuries which resulted from interior flying glass. Interior flying glass refers to the occupant being injured by glass which has already fractured due to an impact to the vehicle containing the glazing before the occupant's kinematics allowed the person to physically come into contact with the glazing. The flying glass may or may not be airborne when it injures the occupant. This does not refer to an occupant injury caused by glazing which shattered upon being impacted by the occupant.

Code "92" (Other noncontact injury source) is used for injuries which resulted from impact force (no contact), battery acid, etc. For a more detailed discussion see NASS Injury Coding Procedure number 5.

Use Page 3 (or its reverse side) of the Interview Form to record the interviewee reported injury source evidence and pages four and five of the Vehicle Interior Form to record the physical injury source evidence. The researcher should record only those contact mechanisms which can be documented by some physical evidence (e.g., scuffs, hair, smudges, dents, cracks, etc.).

Variable Name: Injury Source (cont'd.)
                 (1st through 20th or higher)

The element values encoded can be based on physical evidence, occupant kine-
matics, and interviewee information. Although physical evidence is preferred,
it does not have to be present to support a contact mechanism.

  * Note: Whenever an "other" code (i.e., "16", "24", "27", "34", "37", "43",
            "46", "48", "49", "62", "67", "72", "78", "82", "85", or "92") is
            encoded as injury source, clearly identify, in the space provided
            next to each code on the reverse side of Page 2 of the Occupant
            Injury Form, a description of the "other" source.

Variable Name: Injury Source Confidence Level
                  (1st through 20th or higher)

Element Values:

    1 Certain
    2 Probable
    3 Possible
    9 Unknown

Source: Researcher determined--inputs include vehicle inspection, inter-
           viewee, and medical records.

Remarks:

The intent of this variable is to give analysts an assessment of the re-
searcher's confidence in the injury source coded for a specific injury.

Code "1"   (Certain) if there is no reasonable doubt in the mind of the re-
           searcher, based on occupant location, accident dynamics, contact
           points, and injury mechanism.

Code "2"   (Probable) in those situations where there is not a certainty based
           on the factors noted above for code "1" (Certain).

Code "3"   (Possible) if there is no supporting physical evidence but all fac-
           tors point to an area of the vehicle or an object as the injury
           source.

Code "9"   (Unknown) if the injury source is "97" (Injured, unknown source).

Variable Name: Direct/Indirect Injury
                 (1st through 20th or higher)

Element Value:

    1 Direct contact injury
    2 Indirect contact injury
    3 Noncontact injury
    7 Injured, unknown source

Source: Researcher determined--inputs include vehicle inspection, inter-
          viewee, and medical records.

Remarks:

The distinction between direct and indirect is covered in greater detail in
NASS Injury Coding Procedure number 4.

Code "1"   (Direct contact injury) if the coded injury results from a force
           impacted directly on the injured body region by the component/object
           coded as the Injury Source (OI11 et al.).

Code "2"   (Indirect contact injury) if the coded injury results from a force
           transmitted from the component/object coded as the injury source
           (OI11 et al.) through another body region to the injured body region
           (e.g., knee contacts dash, force transmitted through knee and femur
           causing a fractured pelvis).

If an occupant's O.I.C. Body Region (OI06 et al.) impacts an object producing
an injury to the same O.I.C. Body Region, but the force was transmitted
through the occupant's eyeglass, objects in the person's pocket, etc., code
the injury as a direct contact ("1").

Code "3"   (Noncontact injury) is used when the respective OI11 et al. equals
           "90" (Fire in vehicle), "91" (Flying glass), or "92" (Other noncon-
           tact injury source).

Code "7"   (Injured, unknown source) is used whenever the Injury Source is
           coded "97" (Injured, unknown source).

OI14
et al.

Variable Name: Occupant Area Intrusion Number
                 (1st through 20th or higher)

Element Values:

    Range: 00-10, 99
    00 No intrusion or injury not associated with a documented intrusion
    99 Unknown

Source: Researcher determined--inputs include vehicle inspection, inter-
          viewee, and medical records.

Remarks:

Code "00" (No intrusion or injury not associated with a documented intrusion)
          when the O.I.C. Injury Source (OI11 et al.) is not caused by an
          intruding component or when there is no intrusion coded on the Vehi-
          cle Interior Form (VI47-VI86). This code also applies when there is
          an intrusion which is not coded because of the ordering of intru-
          sions by severity.

Code "99" (Unknown) when the injury, the injury source, or intrusions are
          unknown. In addition, use this code when the vehicle is not in-
          spected or when the vehicle had been repaired prior to inspection.

For all other situations, code the row number of the intruding component which
caused the injury. The Intruding Component (VI48 et al.) should be the same
or a part of the injury source (OI11 et al.) coded for this injury row (i.e.,
1st through 20th or higher).

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

INTERVIEW FORM

NATIONAL ACCIDENT SAMPLING SYSTEM
CRASHWORTHINESS DATA SYSTEM

Primary Sampling Unit Number ___ ___   Interviewee(s) Role(s) or Name(s) _____

Case Number – Stratum ___ ___ ___ ___   _____

Vehicle Number   ___ ___   _____

Review the Interview Cue Sheet prior to conducting interview(s) to ensure the acquisition of all pertinent data.

GENERAL DESCRIPTION OF ACCIDENT SEQUENCE

SPECIFIC QUESTIONS

Key to Researcher. Have you obtained the following through the interviewee(s) description and specific questions?

[ ] PRE-CRASH, AT IMPACT   [ ] Speed estimates (precrash/at   [ ] Previous vehicle damage
    vehicle travel/driver intention   impact)   [ ] Glazing type
[ ] Direction of travel   [ ] Post-impact trajectory   [ ] Vehicle glazing status
[ ] Avoidance maneuvers   [ ] Door status (precrash/postcrash)   [ ] PAR clarifications
[ ] Impact description/orientation [ ] Final rest position   [ ] Glove box status

Cargo?   No [ ]   Yes [ ]   Interviewee's Estimated Cargo Weight _____

Description of Cargo _____

Present Location of Vehicle (if not yet inspected)?: _____

ACCIDENT DIAGRAM

◯

NORTH

The use of this diagram is *optional.* It may serve to aid in relating interviewee accident trajectory data (i.e. pre-impact to FRP orientations) to identifiable objects in the environment.

OCCUPANT DATA

Enter the occupant's seat position in the first row and complete the column below it using the information from the interviewee(s).

SEAT POSITION				
AGE/SEX				
HEIGHT (IN.)				
WEIGHT (LBS.)				
POSTURE				
EJECTED? [ ]No [ ]Yes				
DESCRIBE THE EJECTION				
ENTRAPPED? [ ]No [ ]Yes				
DESCRIBE ENTRAPMENT				
TYPE OF RESTRAINT AVAILABLE?				
HOW WERE THE BELTS WORN?				
DESCRIBE ANY RESTRAINT FAILURE MODE				
TYPE OF TREATMENT				
DAYS IN HOSPITAL?				
NO. OF LOST WORK DAYS?				

OCCUPANT DATA				
SEAT POSITION				
AGE/SEX				
HEIGHT (IN.)				
WEIGHT (LBS.)				
POSTURE				
EJECTED? [ ]No [ ]Yes				
DESCRIBE THE EJECTION				
ENTRAPPED? [ ]No [ ]Yes				
DESCRIBE ENTRAPMENT				
TYPE OF RESTRAINT AVAILABLE?				
HOW WERE THE BELTS WORN?				
DESCRIBE ANY RESTRAINT FAILURE MODE				
TYPE OF TREATMENT				
DAYS IN HOSPITAL?				
NO. OF LOST WORK DAYS?				

PSU Number ___ ___   Case Number – Stratum ___ ___ ___ ___   Vehicle Number ___ ___   Occupant Number ___ ___

INJURY DATA FROM INTERVIEWEE(S)

Indicate the *Location, Lesion, Detail,* and *Source* of all injuries. Specify interviewee(s): _____

SOFT TISSUE/INTERNAL INJURIES

SKELETAL INJURIES

The space provided on the back of this page may be used to document injuries noted by the interviewee(s).

OCCUPANT INJURY DATA

Indicate the *Location, Lesion, Detail,* and *Source* of all injuries indicated by the interviewee(s).

	LOCATION (Body Region/Aspect/ System Organ)	LESION	DETAIL CONCERNING LESION	INJURY SOURCE
HEAD/ NECK				
CHEST/ BACK				
ABDOMEN PELVIS				
EXTREMITIES				
ADDITIONAL INJURIES				

INJURY DATA FROM INTERVIEWEE(S)

Indicate the *Location*, *Lesion*, *Detail*, and *Source* of all injuries. Specify interviewee(s): _____

SOFT TISSUE/INTERNAL INJURIES

SKELETAL INJURIES

The space provided on the back of this page may be used to document injuries noted by the interviewee(s).

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HEAD/ NECK				
CHEST/ BACK				
ABDOMEN PELVIS				
EXTREMITIES				
ADDITIONAL INJURIES				

PSU Number ___ ___   Case Number – Stratum ___ ___ ___ ___   Vehicle Number ___ ___   Occupant Number ___ ___

INJURY DATA FROM INTERVIEWEE(S)

Indicate the *Location, Lesion, Detail,* and *Source* of all injuries. Specify interviewee(s): _____

SOFT TISSUE/INTERNAL INJURIES

SKELETAL INJURIES

The space provided on the back of this page may be used to document injuries noted by the interviewee(s).

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HEAD/ NECK				
CHEST/ BACK				
ABDOMEN PELVIS				
EXTREMITIES				
ADDITIONAL INJURIES				

APPENDICES

- Uniform Symbols for Scene Markings

- Uniform Symbols for Accident Diagramming

- Photography Instructions

- Variable Computer Formats

UNIFORM SYMBOLS FOR SCENE MARKING

ROAD

- Mark to show beginning of rear skidmarks. Arrow shows direction of travel. Number indicates identity of vehicle involved.

- Mark to show beginning of front skidmarks. Arrow shows direction of travel. Number indicates identity of vehicle involved.

- Position of rear wheels at impact; | Notes end of post-impact skid

- Position of front wheels at impact; | Notes end of post-impact skid.

- Rear wheel at final position

- Front wheel at final position

- Position of impact point   1-First impact
                              2-Second impact

- Indicative mark for scratches

- Indicative mark for gouges

- Indicative mark for scuffs

- Indicative mark for centripetal curve scuffs

- Indicative mark for rotating tire print

- Indicative mark for puddle (liquids)

- Indicative mark for puddle with run-off

  (Initials--G for gasoline; M for motor oil; R for radiator coolant; T for transmission oil; B for battery acid; F for brake fluid; W for water; and H for blood--to be inserted inside the circles for further identification).

- Indicative mark for debris; Arrow to show direction of force

- Male body (arrow pointing toward feet)

- Female body (cross indicating direction of feet)

UNIFORM SYMBOLS FOR ACCIDENT DIAGRAMMING

Vehicle and Pedestrian Symbols

Automobile (pre-impact or at-impact position) Exception: draw solid outline if stopped at-impact.

Automobile (final rest position)--showing damaged area

Automobile (final position on its top)

Automobile (final position on its left side) (reverse for right side)

Automobile involved in the accident as a temporary environmental factor, but not physically involved in the collision. (Noncontact Unit)

Parked automobile not struck (give it a number if it was struck)

Vehicle in which a witness was an occupant

Truck (Panel, Van, Dump, etc.)

Truck tractor and semi-trailer

Utility trailer

Bus or streetcar

Motorcyclist: bicyclist (handlebars are curved opposite the direction of travel)

⊖ ⊖ ⊖ ⊗ ⊖   Pedestrian [pointer oriented to show direc-
                   tion of movement and dot spacing to show
⊖⊖⊖   rate of movement (i.e., 3' apart walking
                   and 6' apart running)]

                   Final position of body

                   Pedestrian who witnessed accident

All symbols referring to colliding vehicles (plus Noncontact, Witness and
Parked vehicles) are to have a broken outline if they are moving at the point
in which they are depicted; the outline should be solid if the vehicle is
stopped where depicted, or at final rest. Be careful to insure proper place-
ment (location) or orientation on the diagram.

Scene Road Marking

⊕   Point of impact

━ ━━ ━ ━━ ━ ━ ━ ━ ━ ━ ━ ━ ━━━   Skidmarks

‾‾‾‾‾‾‾‾‾‾‾‾‾‾‾   Centripetal curve scuffs

ιιιιιιι ιιιι ιιιιιιιιιιιιιιιιιιιιιιι   Tire scuff marks

■ ■ ■■ ■■ ■ ■■ ■ ■ ■■ ■ ━ ━ ━ ━ ━   Rotating tire print

⬭ ₀ ⬭   Gouges

╱ ╱╱ ╱ ╱╱ ╱   Scratches

Liquids (puddle and run-off)

Debris (funnel out away from point of im-
        pact to show direction of force)

Any other accident-induced markings, components from vehicles, etc. should te
shown in their approximate location and a reasonable likeness sketched on the
diagram.   However, do not clutter diagram; make an additional diagram, if
necessary.

Topographical Highway & Environment Symbols

———————————————————————— Pavement edge

～～～～～～～～～～～～～～～～～～ Shoulder edge line (non-formal)

—— — —— —— — Shoulder edge line (formal)

—   ———   · Broken center or lane lines (15' long - 25' apart)

▬——————— ═══════· Broken center line with No-Passing line

════════════════════════ Double yellow center lines

┌────────────┬─────────────┐
│ .Concrete· ./│ Grass ─── │
└────────────┴─────────────┘ Raised island and Grass median

▨▨▨▨▨▨▨▨▨▨▨▨▨▨ Painted median

————————————————————— Curb

◪◪◪◪◪◪◪◪◪◪◪◪◪◪ Paved shoulders with diagonal lines

➥ ➦ ➡ Turn arrows

▭▭▭▭▭▭▭▭▭▭▭▭▭▭▭▭ Wall

▩▩▩▩▩▩▩▩▩▩▩▩▩▩▩▩ Bridge abutment and railing

—▾——▾——▾——▾——▾——▾— Guardrail

Topographical Highway & Environmental Symbols (Cont'd.)

Fence

Railroad tracks

Embankment (arrows show "DOWN")

Shrubbery - hedges

Trees (draw trunk and perimeter of foliage to approximate size)

RED
GREEN

Traffic signal

RED
AMBER

Flashing light

Traffic signs back to back

Sign (indicate words or symbols)

Street light and pole (arm length may change with scene)

Street light without arm

Public utility pole

Building

Fire Hydrant

Street Sign

Delineator post

All crosswalks, road surface symbols and other relevant markings should be depicted and drawn to approximate scale on the diagram as much as possible.

Case photographs are an important part of each CDS case for several reasons: (1) they document details which are often difficult to describe, (2) they permit subsequent interpretation of factors which are not otherwise recorded, (3) they are essential in the quality control program to ensure that all teams interpret and record information uniformly, and (4) they provide a verification of encoded data.

Equipment

Equipment for this type of program is a 35 mm camera with a 50 mm lens or 35 mm wide angle lens and an electronic flash unit. The use of a film such as Kodak Ektachrome-X, ASA 64 is recommended. Processing is simple and the ASA 64 film works well for the type of photography typically performed by accident researchers. In discussing research photography, it should be noted that a common error involves the failure to use the flash unit. Even in daylight, under overcast conditions or where background lighting is a problem, the flash should be used for vehicle exterior photography. The flash should be used for all interior photographs.

Relative size of objects in slides is sometimes difficult to determine. To alleviate this problem, a scale should be used in all close-up view photographs. The scale should have alternating solid (dark colored) and blank (white) coloring at one-inch increments, and each foot should be clearly noted by a visible target and foot number given (see Figure 1). A four foot long scale is suggested. The scale should be placed immediately adjacent to the principal item of interest in a given photograph in such a way as to avoid hiding significant features of interest of the object struck. Align the scale so as to minimize distortion of the scale in the resulting photograph (i.e., if the camera is aimed near horizontal, place the scale in a vertical position; if the camera is essentially looking down on top of a structure, place the scale horizontally).

Photographic Coverage

Photographs in this study are taken for the specific purpose of documenting the condition of the vehicle interior and exterior (with emphasis on vehicle damage and occupant contact points) and the accident scene and scene evidence. The coverage indicated in the sketches in this section represents the minimum number of photographs required. At least 9 exterior and 5 interior photographs should be taken for each vehicle. Four scene photographs are also required as a minimum. However, in most cases, it will be clear that additional photographs will be needed to document the damage and occupant contacts properly. The cost of a roll of film is far less than that of the data lost if a sufficient number of photographs are not taken. The slides contained within a case should be considered as photographic verification of all coded and noncoded data.

Vehicle

Photographs should be taken from a crouched position at a level slightly above the vehicle belt line. General camera placement for typical accident types is illustrated on the following page. In end impacts (see Figure 2), one photograph should be taken directly in front of the damaged end [A], one directly along each side of the vehicle [B] to illustrate any body distortion, and one at 45 degrees to each corner to show the damaged end and sides [C].

Figure 1

All close-up photographs

must include this scale.

4"

Figure 2

VEHICLE: FRONT AND REAR IMPACT

NOTE: If an impact involves underride or override, photograph damage at the appropriate height to properly document the extent. If additional photographs are needed to provide adequate coverage in certain cases, they should be taken.

A sixth and seventh photograph [D] should be taken at a right angle to the end damage photographs. These photographs should provide right angle views along the foremost part of the car. Photograph [E] is a centered side view of the entire car, and [F] is a three-quarter view of the two undamaged sides of the vehicle. Take additional shots as needed.

Interior photographs (see **Figure 2**) should include one from the right front door [G] (or left front, if necessary or appropriate) and three from the rear seat [H] to show occupant contacts. The latter should be taken of the left, center, and right front interior, as illustrated. These views should overlap somewhat and include the area from the header to the lower instrument panel (for a normal size vehicle you will need to turn the camera 90 degrees). An additional photograph [I] is needed to document driver contacts. This should be taken in a crouched position through the open door and should include the lower instrument panel. Close-ups of all other possible interior contact areas are also required.

In side impacts (see **Figure 3**) a side photograph of the damaged area only [B], a centered side view of the entire vehicle [A], and two angled photographs to show depth of penetration [C]--one taken from forward and the other taken from the rear of the damaged area, are needed. Two photographs should be taken from either front or rear (as best illustrates distortion or bowing of the vehicle) along the body line [D]. A final three-quarter view should be taken of the undamaged side of the vehicle [E] (from the rear if the [D] photographs are from the front, and from the front if [D] are taken from the rear).

Two photographs should be taken of the front and rear interior from the side of the vehicle which was not damaged [F] (see **Figure 3**). These photographs are to show intrusion (or lack thereof) as well as occupant contacts. Take two photographs from the rear seat into both A-pillar and door areas [G] to show occupant contacts. Be sure that photographs document all possible areas of intrusion and occupant contacts (including rear-seated occupants and their restraint system availability and usage).

Scene

In general, a photograph should be taken along the path of each vehicle from perhaps ten feet behind the first tire markings (if present) at the point of the unstabilized event or the first harmful event--whichever occurs first. All photographs should be taken at increments of twenty-five feet. The point of impact should also be shown. Uniform symbols for scene marking, made with yellow lumber crayons or paint, should highlight the available physical evidence and be clearly visible in the photographs. The uniform symbols simplify the communication between the researcher and reviewer regarding interpretation of scene evidence.

Photographic documentation of the approach roadway upstream from the accident location is required. Photographs of the approach roadway beginning at approximately 1000 ft. upstream and at approximately 200 ft. intervals should document this need. One photograph looking in the opposite direction of travel should also be taken. Be sure that the lane lines, edge lines, highway signs and signals are visible in the photographs.

Figure 3

VEHICLE: SIDE IMPACT

Undamaged Ⓔ
Area

Exterior

Ⓓ Distortion

Penetration Ⓒ

Ⓒ Penetration

Damaged
Area Only Ⓑ

Damaged
Area

Ⓐ Entire Side

Intrusion/Contacts

Ⓕ

Interior

Ⓖ

NOTE: If an impact involves underride or override, photograph damage
          at the appropriate height to properly document the extent.
          Take additional photographs, as needed, to provide adequate
          coverage.

Roadside

In collisions in which a case vehicle ran off the road, additional photographs of the roadside are required to provide information on the role of the roadside in the event. Photographs of the approach roadway as specified above are also required. In addition, photographs at approximately 50-100 foot intervals along the likely path of the vehicle(s) after the vehicle(s) left the road are required.

For impacts involving a roadside fixed-object, more extensive photographic coverage is required to adequately document the event. It is possible that additional data may be desired at a later date on certain data items and photographs become the only available source of information. In general, the following photographs will be required in fixed-object collisions in addition to (1) the vehicle and scene photographs required for all CDS cases, and (2) the required vehicle path photographs for all roadside collisions:

1. For each impact, two photographs should be taken showing general views of the accident site in the direction of vehicle travel. These photographs should be taken at different distances (e.g., 50-100 feet apart) from the point of impact.

2. For each impact, two photographs should be taken showing general views of the accident site opposite the direction of vehicle travel. These photographs should be taken at different distances from the point of final rest or separation from the struck object.

3. One or more photographs should be taken along the path of vehicle travel between impacts so as to provide complete coverage of the accident sequence from the point of departure from the roadway to the point of final rest.

4. For each roadside structure/object struck, at least two photographs should be taken. One photograph should show a general view of the roadside structure/object contacted while the second photograph should be a close-up view which includes the scale in Figure 1 to illustrate the damage sustained by the roadside structure/object.

Usually the damage sustained by the roadside structure/object cannot reasonably be described in one close-up photograph, thus several close-up photographs of damage and vehicle marks will be required. For example, the following photographs should be taken for guardrail, median barrier and bridge rail collisions:

If the distance between the point of impact and the point of separation is greater than twenty-five (25) feet, additional photographs covering the vehicle's path of travel should be taken.

Name	SAS Variable Identifier	Variable Number	Variable Type	Variable Column Length	Beginning Column Number
Primary Sampling Unit Number	AC01		Numeric	2	1
Case Number - Stratum	AC02		Alphanumeric	4	3
Number of Vehicle Forms Submitted	AC03		Numeric	2	7
Date of Accident	AC04		Numeric	6	9
Time of Accident	AC05		Numeric	4	15
SS12 - Anti-lacerative Windshield	AC06		Numeric	1	19
SS13	AC07		Numeric	1	20
SS14	AC08		Numeric	1	21
SS15	AC09		Numeric	1	22
SS16	AC10		Numeric	1	23
Number of Recorded Events in This Accident	AC11		Numeric	2	24
1st Accident Event Sequence Number	AC12		Numeric	2	26
1st Vehicle Number	AC13		Numeric	2	28
1st Class of Vehicle--1st	AC14		Numeric	2	30
1st General Area of Damage--1st	AC15		Alphanumeric	1	32
1st Vehicle Number or Object Contacted	AC16		Numeric	2	33
1st Class of Vehicle--2nd	AC17		Numeric	2	35
1st General Area of Damage--2nd	AC18		Alphanumeric	1	37
2nd Accident Event Sequence Number	AC19		Numeric	2	38
2nd Vehicle Number	AC20		Numeric	2	40
2nd Class of Vehicle--1st	AC21		Numeric	2	42
2nd General Area of Damage--1st	AC22		Alphanumeric	1	44
2nd Vehicle Number or Object Contacted	AC23		Numeric	2	45
2nd Class of Vehicle--2nd	AC24		Numeric	2	47
2nd General Area of Damage--2nd	AC25		Alphanumeric	1	49
3rd Accident Event Sequence Number	AC26		Numeric	2	50
3rd Vehicle Number	AC27		Numeric	2	52
3rd Class of Vehicle--1st	AC28		Numeric	2	54
3rd General Area of Damage--1st	AC29		Alphanumeric	1	56
3rd Vehicle Number or Object Contacted	AC30		Numeric	2	57
3rd Class of Vehicle--2nd	AC31		Numeric	2	59
3rd General Area of Damage--2nd	AC32		Alphanumeric	1	61
4th Accident Event Sequence Number	AC33		Numeric	2	62
4th Vehicle Number	AC34		Numeric	2	64
4th Class of Vehicle--1st	AC35		Numeric	2	66
4th General Area of Damage--1st	AC36		Alphanumeric	1	68
4th Vehicle Number or Object Contacted	AC37		Numeric	2	69
4th Class of Vehicle--2nd	AC38		Numeric	2	71
4th General Area of Damage--2nd	AC39		Alphanumeric	1	73
5th Accident Event Sequence Number	AC40		Numeric	2	74
5th Vehicle Number	AC41		Numeric	2	76
5th Class of Vehicle--1st	AC42		Numeric	2	78
5th General Area of Damage--1st	AC43		Alphanumeric	1	80
5th Vehicle Number or Object Contacted	AC44		Numeric	2	81
5th Class of Vehicle--2nd	AC45		Numeric	2	83
5th General Area of Damage--2nd	AC46		Alphanumeric	1	85
6th Accident Event Sequence Number	AC47		Numeric	2	86
6th Vehicle Number	AC48		Numeric	2	88
6th Class of Vehicle--1st	AC49		Numeric	2	90
6th General Area of Damage--1st	AC50		Alphanumeric	1	92
6th Vehicle Number or Object Contacted	AC51		Numeric	2	93
6th Class of Vehicle--2nd	AC52		Numeric	2	95
6th General Area of Damage--2nd	AC53		Alphanumeric	1	97
7th Accident Event Sequence Number	AC54		Numeric	2	98
7th Vehicle Number	AC55		Numeric	2	100
7th Class of Vehicle--1st	AC56		Numeric	2	102
7th General Area of Damage--1st	AC57		Alphanumeric	1	104
7th Vehicle Number or Object Contacted	AC58		Numeric	2	105
7th Class of Vehicle--2nd	AC59		Numeric	2	107
7th General Area of Damage--2nd	AC60		Alphanumeric	1	109
8th Accident Event Sequence Number	AC61		Numeric	2	110
8th Vehicle Number	AC62		Numeric	2	112
8th Class of Vehicle--1st	AC63		Numeric	2	114
8th General Area of Damage--1st	AC64		Alphanumeric	1	116
8th Vehicle Number or Object Contacted	AC65		Numeric	2	117
8th Class of Vehicle--2nd	AC66		Numeric	2	119
8th General Area of Damage--2nd	AC67		Alphanumeric	1	121

Accident F rm (C ntinued)

Name	Variable Identifier	SAS Variable Number	Variable Type	Variable Column Length	Beginning Column Number
9th Accident Event Sequence Number	AC68		Numeric	2	122
9th Vehicle Number	AC69		Numeric	2	124
9th Class of Vehicle--1st	AC70		Numeric	2	126
9th General Area of Damage--1st	AC71		Alphanumeric	1	128
9th Vehicle Number or Object Contacted	AC72		Numeric	2	129
9th Class of Vehicle--2nd	AC73		Numeric	2	131
9th General Area of Damage--2nd	AC74		Alphanumeric	1	133
10th Accident Event Sequence Number	AC75		Numeric	2	134
10th Vehicle Number	AC76		Numeric	2	136
10th Class of Vehicle--1st	AC77		Numeric	2	138
10th General Area of Damage--1st	AC78		Alphanumeric	1	140
10th Vehicle Number or Object Contacted	AC79		Numeric	2	141
10th Class of Vehicle--2nd	AC80		Numeric	2	143
10th General Area of Damage--2nd	AC81		Alphanumeric	1	145

Gen ral V hicl Form

Name	Variable Identifier	SAS Variable Number	Variable Type	Variable Column Length	Beginning Colum Number
Primary Sampling Unit Number	GV01		Numeric	2	.
Case Number - Stratum	GV02		Alphanumeric	4	?
Vehicle Number	GV03		Numeric	2	7
Vehicle Model Year	GV04		Numeric	2	9
Vehicle Make	GV05		Numeric	2	1'
Vehicle Model	GV06		Numeric	3	1.
Body Type	GV07		Numeric	2	1.
Vehicle Identification Number	GV08		Alphanumeric	17	18
Police Reported Vehicle Disposition	GV09		Numeric	1	3!
Police Reported Travel Speed	GV10		Numeric	2	3.
Police Reported Alcohol or Drug Presence	GV11		Numeric	1	38
Alcohol Test Result For Driver	GV12		Numeric	2	3.
Speed Limit	GV13		Numeric	2	4.
Attempted Avoidance Maneuver	GV14		Numeric	2	4.
Accident Type	GV15		Numeric	2	4.
Driver Presence In Vehicle	GV16		Numeric	1	4.
Number of Occupants This Vehicle	GV17		Numeric	2	4.3
Number of Occupant Forms Submitted	GV18		Numeric	2	5.)
Vehicle Curb Weight	GV19		Numeric	3	5.
Vehicle Cargo Weight	GV20		Numeric	2	5.
Towed Trailing Unit	GV21		Numeric	1	57
Is Trajectory Data Documented For This Vehicle	GV22		Numeric	1	53
Post Collision Condition of Tree or Pole (For Highest Delta V)	GV23		Numeric	1	5.
Rollover	GV24		Numeric	1	6.
Front Override/Underride (This Vehicle)	GV25		Numeric	1	61
Rear Override/Underride (This Vehicle)	GV26		Numeric	1	62
Heading Angle for This Vehicle	GV27		Numeric	3	63
Heading Angle for Other Vehicle	GV28		Numeric	3	65
Basis for Total Delta V (Highest)	GV29		Numeric	1	6.
Total Delta V	GV30		Numeric	2	7.
Longitudinal Component of Delta V	GV31		Numeric	3	72
Lateral Component of Delta V	GV32		Numeric	3	75
Energy Absorption	GV33		Numeric	4	78
Confidence In Reconstruction Program Results (for Highest Delta V	GV34		Numeric	1	82
Type of Vehicle Inspection	GV35		Numeric	1	83

Exterior Vehicle Form

AP-17

Name	Variable Identifier	SAS Variable Number	Variable Type	Variable Column Length	Beginning Column Number
Primary Sampling Unit Number	EV01		Numeric	2	1
Case Number - Stratum	EV02		Alphanumeric	4	3
Vehicle Number	EV03		Numeric	2	7
1st C.D.C. - Accident Event Sequence Number	EV04		Numeric	2	9
1st C.D.C. - Object Contacted	EV05		Numeric	2	11
1st C.D.C. - Direction of Force	EV06		Numeric	2	13
1st C.D.C. - Deformation Location	EV07		Alphanumeric	1	15
1st C.D.C. - Specific Longitudinal or Lateral Location	EV08		Alphanumeric	1	16
1st C.D.C. - Specific Vertical or Lateral Location	EV09		Alphanumeric	1	17
1st C.D.C. - Type of Damage Distribution	EV10		Alphanumeric	1	18
1st C.D.C. - Deformation Extent	EV11		Numeric	2	19
2nd C.D.C. - Accident Event Sequence Number	EV12		Numeric	2	21
2nd C.D.C. - Object Contacted	EV13		Numeric	2	23
2nd C.D.C. - Direction of Force	EV14		Numeric	2	25
2nd C.D.C. - Deformation Location	EV15		Alphanumeric	1	27
2nd C.D.C. - Specific Longitudinal or Lateral Location	EV16		Alphanumeric	1	28
2nd C.D.C. - Specific Vertical or Lateral Location	EV17		Alphanumeric	1	29
2nd C.D.C. - Type of Damage Distribution	EV18		Alphanumeric	1	30
2nd C.D.C. - Deformation Extent	EV19		Numeric	2	31
1st Crush Profile - L	EV20		Numeric	3	33
1st Crush Profile - C1-C6	EV21		Numeric	12	36
1st Crush Profile - D	EV22		Numeric	4	48
2nd Crush Profile - L	EV23		Numeric	3	52
2nd Crush Profile - C1-C6	EV24		Numeric	12	55
2nd Crush Profile - D	EV25		Numeric	4	67
Are CDCs Documented but Not Coded on the Automated File	EV26		Numeric	1	71
Researcher's Assessment of Vehicle Disposition	EV27		Numeric	1	72
Original Wheelbase	EV28		Numeric	4	73

Interior Vehicl Form

Name	Variable Identifier	SAS Variable Number	Variable Type	Variable Column Length	Beginning Column Number
Primary Sampling Unit Number	IV01		Numeric	2	1
Case Number - Stratum	IV02		Alphanumeric	4	3
Vehicle Number	IV03		Numeric	2	7
Passenger Compartment Integrity	IV04		Numeric	2	9
Door, Tailgate or Hatch Opening - LF	IV05		Numeric	1	11
Door, Tailgate or Hatch Opening - RF	IV06		Numeric	1	12
Door, Tailgate or Hatch Opening - LR	IV07		Numeric	1	13
Door, Tailgate or Hatch Opening - RR	IV08		Numeric	1	14
Door, Tailgate or Hatch Opening - TG/H	IV09		Numeric	1	15
Damage/Failure Associated With D/TG/H Opening In Collision - LF	IV10		Numeric	1	16
Damage/Failure Associated With D/TG/H Opening In Collision - RF	IV11		Numeric	1	17
Damage/Failure Associated With D/TG/H Opening In Collision - LR	IV12		Numeric	1	18
Damage/Failure Associated With D/TG/H Opening In Collision - RR	IV13		Numeric	1	19
Damage/Failure Associated With D/TG/H Opening In Collision - TG/H	IV14		Numeric	1	20
Glazing Damage from Impact Forces - WS	IV15		Numeric	1	21
Glazing Damage from Impact Forces - LF	IV16		Numeric	1	22
Glazing Damage from Impact Forces - RF	IV17		Numeric	1	23
Glazing Damage from Impact Forces - LR	IV18		Numeric	1	24
Glazing Damage from Impact Forces - RR	IV19		Numeric	1	25
Glazing Damage from Impact Forces - BL	IV20		Numeric	1	26
Glazing Damage from Impact Forces - Roof	IV21		Numeric	1	27
Glazing Damage from Impact Forces - Other	IV22		Numeric	1	28
Glazing Damage from Occupant Contact - WS	IV23		Numeric	1	29
Glazing Damage from Occupant Contact - LF	IV24		Numeric	1	30
Glazing Damage from Occupant Contact - RF	IV25		Numeric	1	31
Glazing Damage from Occupant Contact - LR	IV26		Numeric	1	32
Glazing Damage from Occupant Contact - RR	IV27		Numeric	1	33
Glazing Damage from Occupant Contact - BL	IV28		Numeric	1	34
Glazing Damage from Occupant Contact - Roof	IV29		Numeric	1	35
Glazing Damage from Occupant Contact - Other	IV30		Numeric	1	36
Type of Window/Windshield Glazing - WS	IV31		Numeric	1	37
Type of Window/Windshield Glazing - LF	IV32		Numeric	1	38
Type of Window/Windshield Glazing - RF	IV33		Numeric	1	39
Type of Window/Windshield Glazing - LR	IV34		Numeric	1	40
Type of Window/Windshield Glazing - RR	IV35		Numeric	1	41
Type of Window/Windshield Glazing - BL	IV36		Numeric	1	42
Type of Window/Windshield Glazing - Roof	IV37		Numeric	1	43
Type of Window/Windshield Glazing - Other	IV38		Numeric	1	44
Window Precrash Glazing Status - WS	IV39		Numeric	1	45
Window Precrash Glazing Status - LF	IV40		Numeric	1	46
Window Precrash Glazing Status - RF	IV41		Numeric	1	47
Window Precrash Glazing Status - LR	IV42		Numeric	1	48
Window Precrash Glazing Status - RR	IV43		Numeric	1	49
Window Precrash Glazing Status - BL	IV44		Numeric	1	50
Window Precrash Glazing Status - Roof	IV45		Numeric	1	51
Window Precrash Glazing Status - Other	IV46		Numeric	1	52
1st Location Of Intrusion	IV47		Numeric	2	53
1st Intruding Component	IV48		Numeric	2	55
1st Magnitude Of Intrusion	IV49		Numeric	1	57
1st Dominant Crush Direction	IV50		Numeric	1	58
2nd Location Of Intrusion	IV51		Numeric	2	59
2nd Intruding Component	IV52		Numeric	2	61
2nd Magnitude Of Intrusion	IV53		Numeric	1	63
2nd Dominant Crush Direction	IV54		Numeric	1	64
3rd Location Of Intrusion	IV55		Numeric	2	65
3rd Intruding Component	IV56		Numeric	2	67
3rd Magnitude Of Intrusion	IV57		Numeric	1	69
3rd Dominant Crush Direction	IV58		Numeric	1	70
4th Location Of Intrusion	IV59		Numeric	2	71
4th Intruding Component	IV60		Numeric	2	73
4th Magnitude Of Intrusion	IV61		Numeric	1	75
4th Dominant Crush Direction	IV62		Numeric	1	76
5th Location Of Intrusion	IV63		Numeric	2	77
5th Intruding Component	IV64		Numeric	2	79
5th Magnitude Of Intrusion	IV65		Numeric	1	81
5th Dominant Crush Direction	IV66		Numeric	1	82

Int rior Vehicle Form (Continu d)

Name	Variable Identifier	SAS Variable Number	Variable Type	Variable Column Length	Beginning Column Number
6th Location Of Intrusion	IV67		Numeric	2	83
6th Intruding Component	IV68		Numeric	2	85
6th Magnitude Of Intrusion	IV69		Numeric	1	87
6th Dominant Crush Direction	IV70		Numeric	1	88
7th Location Of Intrusion	IV71		Numeric	2	89
7th Intruding Component	IV72		Numeric	2	91
7th Magnitude Of Intrusion	IV73		Numeric	1	93
7th Dominant Crush Direction	IV74		Numeric	1	94
8th Location Of Intrusion	IV75		Numeric	2	95
8th Intruding Component	IV76		Numeric	2	97
8th Magnitude Of Intrusion	IV77		Numeric	1	99
8th Dominant Crush Direction	IV78		Numeric	1	100
9th Location Of Intrusion	IV79		Numeric	2	101
9th Intruding Component	IV80		Numeric	2	103
9th Magnitude Of Intrusion	IV81		Numeric	1	105
9th Dominant Crush Direction	IV82		Numeric	1	106
10th Location Of Intrusion	IV83		Numeric	2	107
10th Intruding Component	IV84		Numeric	2	109
10th Magnitude Of Intrusion	IV85		Numeric	1	111
10th Dominant Crush Direction	IV86		Numeric	1	112
Steering Column Type	IV87		Numeric	1	113
Steering Column Collapse Due to Occupant Loading	IV88		Numeric	2	114
Direction & Magnitude of Steering Column Vertical Movement	IV89		Numeric	3	116
Direction & Magnitude of Steering Column Lateral Movement	IV90		Numeric	3	119
Direction & Magnitude of Steering Column Longitudinal Movement	IV91		Numeric	3	122
Steering Rim/Spoke Deformation	IV92		Numeric	1	125
Location of Steering Rim/Spoke Deformation	IV93		Numeric	2	126
Odometer Reading	IV94		Numeric	3	128
Instrument Panel Damaged from Occupant Contact	IV95		Numeric	1	131
Knee Bolsters Deformed from Occupant Contact	IV96		Numeric	1	132
Did Glove Compartment Door Opened During Collision(s)	IV97		Numeric	1	133

Occupant Assessment Form

Name	SAS Variable Identifier	Variable Number	Variable Type	Variable Column Length	Beginning Column Number
Primary Sampling Unit Number	OA01		Numeric	2	1
Case Number - Stratum	OA02		Alphanumeric	4	3
Vehicle Number	OA03		Numeric	2	7
Occupant Number	OA04		Numeric	2	9
Occupant's Age	OA05		Numeric	2	11
Occupant's Sex	OA06		Numeric	1	13
Occupant's Height	OA07		Numeric	2	14
Occupant's Weight	OA08		Numeric	3	16
Occupant's Role	OA09		Numeric	1	19
Occupant's Seat Position	OA10		Numeric	2	20
Occupant's Posture	OA11		Numeric	1	22
Ejection	OA12		Numeric	1	23
Ejection Area	OA13		Numeric	1	24
Ejection Medium	OA14		Numeric	1	25
Medium Status (Immediately Prior To Impact)	OA15		Numeric	1	26
Entrapment	OA16		Numeric	1	27
Manual (Active) Belt System Availability	OA17		Numeric	1	28
Manual (Active) Belt System Use	OA18		Numeric	2	29
Proper Use of Manual (Active) Belts	OA19		Numeric	1	31
Manual (Active) Belt Failure Modes During Impact	OA20		Numeric	1	32
Automatic (Passive) Restraint System Availability	OA21		Numeric	1	33
Automatic (Passive) Restraint Function	OA22		Numeric	1	34
Did Automatic (Passive) Restraint Fail	OA23		Numeric	1	35
Police Reported Restraint Use	OA24		Numeric	1	36
Head Restraint Type/Damage by Occupant at This Occupant Position	OA25		Numeric	1	37
Seat Type (This Occupant Position)	OA26		Numeric	2	38
Seat Performance (This Occupant Position)	OA27		Numeric	1	40
Child Safety Seat Make/Model	OA28		Numeric	3	41
Type of Child Safety Seat	OA29		Numeric	1	44
Child Safety Seat Orientation	OA30		Numeric	2	45
Child Safety Seat Harness Usage	OA31		Numeric	2	47
Child Safety Seat Shield Usage	OA32		Numeric	2	49
Child Safety Seat Tether Usage	OA33		Numeric	2	51
Injury Severity (Police Rating)	OA34		Numeric	1	53
Treatment - Mortality	OA35		Numeric	1	54
Type Of Medical Facility (for Initial Treatment)	OA36		Numeric	1	55
Hospital Stay	OA37		Numeric	2	56
Working Days Lost	OA38		Numeric	2	58
Time to Death	OA39		Numeric	2	60
1st Medically Reported Cause of Death	OA40		Numeric	2	62
2nd Medically Reported Cause of Death	OA41		Numeric	2	64
3rd Medically Reported Cause of Death	OA42		Numeric	2	66
Number of Recorded Injuries for This Occupant	OA43		Numeric	2	68

Occupant Injury Form

Name	Variable Identifier	SAS Variable Number	Variable Type	Variable Column Length	Beginning Column Number
Primary Sampling Unit Number	0101		Numeric	2	1
Case Number - Stratum	0102		Alphanumeric	4	3
Vehicle Number	0103		Numeric	2	7
Occupant Number	0104		Numeric	2	9
1st Source of Injury Data	0105		Numeric	1	11
1st O.I.C. - Body Region	0106		Alphanumeric	1	12
1st O.I.C. - Aspect	0107		Alphanumeric	1	13
1st O.I.C. - Lesion	0108		Alphanumeric	1	14
1st O.I.C. - System/Organ	0109		Alphanumeric	1	15
1st Abbreviated Injury Scale Severity	0110		Numeric	1	16
1st Injury Source	0111		Numeric	2	17
1st Injury Source Confidence Level	0112		Numeric	1	19
1st Direct/Indirect Injury	0113		Numeric	1	20
1st Occupant Area Intrusion Number	0114		Numeric	2	21
2nd Source of Injury Data	0115		Numeric	1	23
2nd O.I.C. - Body Region	0116		Alphanumeric	1	24
2nd O.I.C. - Aspect	0117		Alphanumeric	1	25
2nd O.I.C. - Lesion	0118		Alphanumeric	1	26
2nd O.I.C. - System/Organ	0119		Alphanumeric	1	27
2nd Abbreviated Injury Scale Severity	0120		Numeric	1	28
2nd Injury Source	0121		Numeric	2	29
2nd Injury Source Confidence Level	0122		Numeric	1	31
2nd Direct/Indirect Injury	0123		Numeric	1	32
2nd Occupant Area Intrusion Number	0124		Numeric	2	33
3rd Source of Injury Data	0125		Numeric	1	35
3rd O.I.C. - Body Region	0126		Alphanumeric	1	36
3rd O.I.C. - Aspect	0127		Alphanumeric	1	37
3rd O.I.C. - Lesion	0128		Alphanumeric	1	38
3rd O.I.C. - System/Organ	0129		Alphanumeric	1	39
3rd Abbreviated Injury Scale Severity	0130		Numeric	1	40
3rd Injury Source	0131		Numeric	2	41
3rd Injury Source Confidence Level	0132		Numeric	1	43
3rd Direct/Indirect Injury	0133		Numeric	1	44
3rd Occupant Area Intrusion Number	0134		Numeric	2	45
4th Source of Injury Data	0135		Numeric	1	47
4th O.I.C. - Body Region	0136		Alphanumeric	1	48
4th O.I.C. - Aspect	0137		Alphanumeric	1	49
4th O.I.C. - Lesion	0138		Alphanumeric	1	50
4th O.I.C. - System/Organ	0139		Alphanumeric	1	51
4th Abbreviated Injury Scale Severity	0140		Numeric	1	52
4th Injury Source	0141		Numeric	2	53
4th Injury Source Confidence Level	0142		Numeric	1	55
4th Direct/Indirect Injury	0143		Numeric	1	56
4th Occupant Area Intrusion Number	0144		Numeric	2	57
5th Source of Injury Data	0145		Numeric	1	59
5th O.I.C. - Body Region	0146		Alphanumeric	1	60
5th O.I.C. - Aspect	0147		Alphanumeric	1	61
5th O.I.C. - Lesion	0148		Alphanumeric	1	62
5th O.I.C. - System/Organ	0149		Alphanumeric	1	63
5th Abbreviated Injury Scale Severity	0150		Numeric	1	64
5th Injury Source	0151		Numeric	2	65
5th Injury Source Confidence Level	0152		Numeric	1	67
5th Direct/Indirect Injury	0153		Numeric	1	68
5th Occupant Area Intrusion Number	0154		Numeric	2	69
6th Source of Injury Data	0155		Numeric	1	71
6th O.I.C. - Body Region	0156		Alphanumeric	1	72
6th O.I.C. - Aspect	0157		Alphanumeric	1	73
6th O.I.C. - Lesion	0158		Alphanumeric	1	74
6th O.I.C. - System/Organ	0159		Alphanumeric	1	75
6th Abbreviated Injury Scale Severity	0160		Numeric	1	76
6th Injury Source	0161		Numeric	2	77
6th Injury Source Confidence Level	0162		Numeric	1	79
6th Direct/Indirect Injury	0163		Numeric	1	80
6th Occupant Area Intrusion Number	0164		Numeric	2	81

Occupant Injury Form (Continued)

Name	Variable Identifier	SAS Variable Number	Variable Type	Variable Column Length	Beginning Column Number
7th Source of Injury Data	0165		Numeric	1	83
7th O.I.C. - Body Region	0166		Alphanumeric	1	84
7th O.I.C. - Aspect	0167		Alphanumeric	1	85
7th O.I.C. - Lesion	0168		Alphanumeric	1	86
7th O.I.C. - System/Organ	0169		Alphanumeric	1	87
7th Abbreviated Injury Scale Severity	0170		Numeric	1	88
7th Injury Source	0171		Numeric	2	89
7th Injury Source Confidence Level	0172		Numeric	1	91
7th Direct/Indirect Injury	0173		Numeric	1	92
7th Occupant Area Intrusion Number	0174		Numeric	2	93
8th Source of Injury Data	0175		Numeric	1	95
8th O.I.C. - Body Region	0176		Alphanumeric	1	96
8th O.I.C. - Aspect	0177		Alphanumeric	1	97
8th O.I.C. - Lesion	0178		Alphanumeric	1	98
8th O.I.C. - System/Organ	0179		Alphanumeric	1	99
8th Abbreviated Injury Scale Severity	0180		Numeric	1	100
8th Injury Source	0181		Numeric	2	101
8th Injury Source Confidence Level	0182		Numeric	1	103
8th Direct/Indirect Injury	0183		Numeric	1	104
8th Occupant Area Intrusion Number	0184		Numeric	2	105
9th Source of Injury Data	0185		Numeric	1	107
9th O.I.C. - Body Region	0186		Alphanumeric	1	108
9th O.I.C. - Aspect	0187		Alphanumeric	1	109
9th O.I.C. - Lesion	0188		Alphanumeric	1	110
9th O.I.C. - System/Organ	0189		Alphanumeric	1	111
9th Abbreviated Injury Scale Severity	0190		Numeric	1	112
9th Injury Source	0191		Numeric	2	113
9th Injury Source Confidence Level	0192		Numeric	1	115
9th Direct/Indirect Injury	0193		Numeric	1	116
9th Occupant Area Intrusion Number	0194		Numeric	2	117
10th Source of Injury Data	0195		Numeric	1	119
10th O.I.C. - Body Region	0196		Alphanumeric	1	120
10th O.I.C. - Aspect	0197		Alphanumeric	1	121
10th O.I.C. - Lesion	0198		Alphanumeric	1	122
10th O.I.C. - System/Organ	0199		Alphanumeric	1	123
10th Abbreviated Injury Scale Severity	01100		Numeric	1	124
10th Injury Source	01101		Numeric	2	125
10th Injury Source Confidence Level	01102		Numeric	1	127
10th Direct/Indirect Injury	01103		Numeric	1	128
10th Occupant Area Intrusion Number	01104		Numeric	2	129
11th Source of Injury Data	01105		Numeric	1	131
11th O.I.C. - Body Region	01106		Alphanumeric	1	132
11th O.I.C. - Aspect	01107		Alphanumeric	1	133
11th O.I.C. - Lesion	01108		Alphanumeric	1	134
11th O.I.C. - System/Organ	01109		Alphanumeric	1	135
11th Abbreviated Injury Scale Severity	01110		Numeric	1	136
11th Injury Source	01111		Numeric	2	137
11th Injury Source Confidence Level	01112		Numeric	1	139
11th Direct/Indirect Injury	01113		Numeric	1	140
11th Occupant Area Intrusion Number	01114		Numeric	2	141
12th Source of Injury Data	01115		Numeric	1	143
12th O.I.C. - Body Region	01116		Alphanumeric	1	144
12th O.I.C. - Aspect	01117		Alphanumeric	1	145
12th O.I.C. - Lesion	01118		Alphanumeric	1	146
12th O.I.C. - System/Organ	01119		Alphanumeric	1	147
12th Abbreviated Injury Scale Severity	01120		Numeric	1	148
12th Injury Source	01121		Numeric	2	149
12th Injury Source Confidence Level	01122		Numeric	1	151
12th Direct/Indirect Injury	01123		Numeric	1	152
12th Occupant Area Intrusion Number	01124		Numeric	2	153
13th Source of Injury Data	01125		Numeric	1	155
13th O.I.C. - Body Region	01126		Alphanumeric	1	156
13th O.I.C. - Aspect	01127		Alphanumeric	1	157
13th O.I.C. - Lesion	01128		Alphanumeric	1	158
13th O.I.C. - System/Organ	01129		Alphanumeric	1	159
13th Abbreviated Injury Scale Severity	01130		Numeric	1	160
13th Injury Source	01131		Numeric	2	161
13th Injury Source Confidence Level	01132		Numeric	1	163
13th Direct/Indirect Injury	01133		Numeric	1	164
13th Occupant Area Intrusion Number	01134		Numeric	2	165

Occupant Injury Form (Continued)

Name	SAS Variable Identifier	Variable Number	Variable Type	Variable Column Length	Beginning Column Number
14th Source of Injury Data	01135		Numeric	1	167
14th O.I.C. - Body Region	01136		Alphanumeric	1	168
14th O.I.C. - Aspect	01137		Alphanumeric	1	169
14th O.I.C. - Lesion	01138		Alphanumeric	1	170
14th O.I.C. - System/Organ	01139		Alphanumeric	1	171
14th Abbreviated Injury Scale Severity	01140		Numeric	1	172
14th Injury Source	01141		Numeric	2	173
14th Injury Source Confidence Level	01142		Numeric	1	175
14th Direct/Indirect Injury	01143		Numeric	1	176
14th Occupant Area Intrusion Number	01144		Numeric	2	177
15th Source of Injury Data	01145		Numeric	1	179
15th O.I.C. - Body Region	01146		Alphanumeric	1	180
15th O.I.C. - Aspect	01147		Alphanumeric	1	181
15th O.I.C. - Lesion	01148		Alphanumeric	1	182
15th O.I.C. - System/Organ	01149		Alphanumeric	1	183
15th Abbreviated Injury Scale Severity	01150		Numeric	1	184
15th Injury Source	01151		Numeric	2	185
15th Injury Source Confidence Level	01152		Numeric	1	187
15th Direct/Indirect Injury	01153		Numeric	1	188
15th Occupant Area Intrusion Number	01154		Numeric	2	189
16th Source of Injury Data	01155		Numeric	1	191
16th O.I.C. - Body Region	01156		Alphanumeric	1	192
16th O.I.C. - Aspect	01157		Alphanumeric	1	193
16th O.I.C. - Lesion	01158		Alphanumeric	1	194
16th O.I.C. - System/Organ	01159		Alphanumeric	1	195
16th Abbreviated Injury Scale Severity	01160		Numeric	1	196
16th Injury Source	01161		Numeric	2	197
16th Injury Source Confidence Level	01162		Numeric	1	199
16th Direct/Indirect Injury	01163		Numeric	1	200
16th Occupant Area Intrusion Number	01164		Numeric	2	201
17th Source of Injury Data	01165		Numeric	1	203
17th O.I.C. - Body Region	01166		Alphanumeric	1	204
17th O.I.C. - Aspect	01167		Alphanumeric	1	205
17th O.I.C. - Lesion	01168		Alphanumeric	1	206
17th O.I.C. - System/Organ	01169		Alphanumeric	1	207
17th Abbreviated Injury Scale Severity	01170		Numeric	1	208
17th Injury Source	01171		Numeric	2	209
17th Injury Source Confidence Level	01172		Numeric	1	211
17th Direct/Indirect Injury	01173		Numeric	1	212
17th Occupant Area Intrusion Number	01174		Numeric	2	213
18th Source of Injury Data	01175		Numeric	1	215
18th O.I.C. - Body Region	01176		Alphanumeric	1	216
18th O.I.C. - Aspect	01177		Alphanumeric	1	217
18th O.I.C. - Lesion	01178		Alphanumeric	1	218
18th O.I.C. - System/Organ	01179		Alphanumeric	1	219
18th Abbreviated Injury Scale Severity	01180		Numeric	1	220
18th Injury Source	01181		Numeric	2	221
18th Injury Source Confidence Level	01182		Numeric	1	223
18th Direct/Indirect Injury	01183		Numeric	1	224
18th Occupant Area Intrusion Number	01184		Numeric	2	225
19th Source of Injury Data	01185		Numeric	1	227
19th O.I.C. - Body Region	01186		Alphanumeric	1	228
19th O.I.C. - Aspect	01187		Alphanumeric	1	229
19th O.I.C. - Lesion	01188		Alphanumeric	1	230
19th O.I.C. - System/Organ	01189		Alphanumeric	1	231
19th Abbreviated Injury Scale Severity	01190		Numeric	1	232
19th Injury Source	01191		Numeric	2	233
19th Injury Source Confidence Level	01192		Numeric	1	235
19th Direct/Indirect Injury	01193		Numeric	1	236
19th Occupant Area Intrusion Number	01194		Numeric	2	237
20th Source of Injury Data	01195		Numeric	1	239
20th O.I.C. - Body Region	01196		Alphanumeric	1	240
20th O.I.C. - Aspect	01197		Alphanumeric	1	241
20th O.I.C. - Lesion	01198		Alphanumeric	1	242
20th O.I.C. - System/Organ	01199		Alphanumeric	1	243
20th Abbreviated Injury Scale Severity	01200		Numeric	1	244
20th Injury Source	01201		Numeric	2	245
20th Injury Source Confidence Level	01202		Numeric	1	247
20th Direct/Indirect Injury	01203		Numeric	1	248
20th Occupant Area Intrusion Number	01204		Numeric	2	249