MULTIDISCIPLINARY ACCIDENT INVESTIGATION
DATA FILE

Encoding and Transcription of New Variables

John A. Green
Wendy H. Barhydt
Marion J. Compton
Joseph C. Marsh IV
Highway Safety Research Institute
The University of Michigan
Ann Arbor, Michigan 48109

March 1977

Final Report
Contract DOT-HS-6-01303

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.

4. Title and Subtitle	5. Report Date
Multidisciplinary Accident Investigation Data File. Encoding and Transcription of New Variables	March 1977
	6. Performing Organization Code
	8. Performing Organization Report No.
7. Author's) J. A. Green, W. H. Barhydt, M. J. Compton, J. C. Marsh IV	UM-HSRI-77-11

9. Performing Organization Name and Address	10. Work Unit No. (TRAIS)
Highway Safety Research Institute The University of Michigan Ann Arbor, Michigan 48109	11. Contract or Grant No. DOT-HS-6-01303
	13. Type of Report and Period Covered
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Washington, D.C. 20590	Final Report January 12, 1976 to March 31, 1977
	14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

Since 1969, the Highway Safety Research Institute at The University of Michigan has developed and maintained a computerized data set of all Multidisciplinary Accident Investigation (MDAI) reports. The main objective of this study was to improve the computerized information on fatal crashes in the MDAI data sets in two ways: (1) all fatal crashes were coded on a special form and a "Fatal Factors File" or FFF data set was constructed from these forms, and (2) AIS coding for fatally injured occupants was redone to reflect the AIS76 modification to the injury scaling.

17. Key Words	18. Distribution Statement
MDAI CPIR Revision 3 AIS Accident Data	Document is available to the U.S. Public through the National Technical Information Service, Springfield, Virginia 22161

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	51	
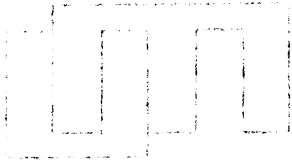
Form DOT F 1700.7 (8-72)   Reproduction of completed page authorized

March 28, 1977

Office of Management
  Systems (N48-42)
National Highway Traffic
  Safety Administration
Department of Transportation
400 Seventh Street, S.W.
Washington, D.C.   20590

Dear Sirs:

    I have enclosed five copies, plus one reproducible copy, of the Technical Summary and Final Report on Contract DOT-HS-6-01303 as required by the contract document. The termination date of this contract is March 31, 1977.

<div style="text-align:center">

Sincerely,

John A. Green
Project Director
</div>

JAG/m

cc: Linda L. Sink (NHTSA)
    HSRI Administration
    L. Filkins
    R. Kaplan
    J. Green
    J. Marsh
    M. Compton
    Project File

MAR 2 8 1977

CONTRACTOR Highway Safety Research Institute The University of Michigan, Ann Arbor, Michigan 48109	CONTRACT NUMBER DOT-HS-6-01303
REPORT TITLE Multidisciplinary Accident Investigation Data File. Encoding and Transcription of New Variables.	REPORT DATE March 1977
REPORT AUTHOR(S) J. A. Green, W. H. Barhydt, M. J. Compton, J. C. Marsh IV	

Since 1969, the Highway Safety Research Institute has maintained computerized sets of all Multidisciplinary Accident Investigation (MDAI) reports. The main objective of this contract was to improve the available information on fatal crashes in the MDAI data sets in two ways: (1) all fatal crashes were coded on a special form, and a "Fatal Factors File" (or FFF) data set was constructed; and (2) AIS coding for fatally injured occupants was redone to reflect the AIS76 modification to the injury scaling.

The need for this work became apparent through the years as the computerized data sets were used to analyze available information. The original Abbreviated Injury Scale (AIS) used by MDAI teams confounded the issues of injury severity and patient mortality. As an example, two accident victims who received identical injuries might be assigned different AIS codes if one died from the injury while the other did not. The 1976 modification to the AIS removed this confounding factor. Additionally, due to the nature of the field reporting form used by MDAI teams, there is no clear cut way to identify crashes in the MDAI data sets; information is always referenced by vehicle. Development of the FFF data set permits an analysis of fatal MDAI crashes on many data elements not previously available.

To accomplish the program objectives, all available sources were searched to generate an inventory of fatal crashes investigated by MDAI teams. This inventory includes investigations supported by the Canadian Department of Transport and the Motor Vehicle Manufacturers Association as well as those sponsored by the National Highway Traffic Safety Administration. As cases were identified, the injury coding for all occupants in all vehicles involved in the crash were recoded using the AIS76 convention. The case was then transcribed onto the Human Factors Analysis Report Form and subsequently added to the computerized FFF data set.

The work performed on the contract is significant, since it will result in the first large-scale application of the AIS76 scale. In addition, the FFF data set will provide a compendium of fatal MDAI crash data not previously available.

The computerized data sets of MDAI information maintained by HSRI are regularly accessed more than 10 times a week by Government and Industry personnel around the continent. The work performed by this project will directly affect the analysis results obtained by these users.

(Continue on additional pages)

PREFACE

The work reported in this document is part of a long-term comprehensive program conducted by HSRI. The purpose of the overall program, supported in part by the National Highway Traffic Safety Administration, is to collect, analyze, and disseminate data relating to motor-vehicle collisions.

The efforts of the following people in completing the program are gratefully acknowledged by the authors:

Jesse Watt, of the Accident Investigation Division at NHTSA, who was Contract Technical Manager for the program;

James C. Fell, of the Accident Investigation Division at NHTSA, who provided the original impetus for this program;

Tom Lawson, who performed the data processing;

Cheri Schick, who performed the computer programming.

The support of numerous others in completing the project is also gratefully acknowledged.

CONTENTS

1.0 INTRODUCTION

In 1968 the National Highway Traffic Safety Administration (NHTSA) began a program of in-depth, multidisciplinary investigations of motor-vehicle crashes in the United States. These Multidisciplinary Accident Investigation (or MDAI) studies were performed in contract with various Universities and other research organizations.

Since 1969, reports that result from these MDAI investigations have been edited, transcribed into digital format, and made available for retrieval or statistical analysis via computer techniques by the Highway Safety Research Institute (HSRI) of The University of Michigan. Case reports from all sources (including the Canadian Department of Transport and the Motor Vehicle Manufacturers Association as well as NHTSA) are processed by HSRI into common data sets that are subsequently made available for direct analysis through use of the Institute's Automated Data Access and Analysis System (ADAAS) (1).* These data sets are generally referred to by the title "CPIR Revision 3," since the field form used in the MDAI investigations has evolved from the "Collision Performance and Injury Report Form, Revision 3" developed by the General Motors Corporation (2). References throughout this report to CPIR

*Numbers in parentheses designate references at the end of the report.

Revision 3 (or simply CPIR) data sets refer, therefore, to these computer files maintained by HSRI.

Important changes have occurred since 1968,however, in the field of accident data recording and analysis. Techniques that were "state-of-the-art" at the time the investigation program began have been found lacking in certain respects for the analytical uses to which the data have been put. Evolution of the Abbreviated Injury Scale (AIS) (3,4) is an important case in point. One of the contract tasks reported in the document was to recode occupant injury information items contained in the CPIR data sets to reflect current scaling practices.

The main objective of the contract was to review and recode injury data, using current injury scaling practices, and to code additional information on fatal crashes not previously available from the CPIR data sets. A summary of each of the tasks accomplished in this program is presented below. The remainder of the report discusses each task in detail.

1.1 The Fatal Factors Data Set

The NHTSA Accident Investigation Division (AID) created the "Human Factors Analysis Report Form" and transcribed 141 MDAI fatal crashes using this form. A copy of the form may be found in Appendix A. HSRI computerized

these forms to create the MDAI Fatal Factors data set under contract DOT-HS-9-00898 (5). Under the current contract, the transcription of data from all MDAI fatal crash reports available at HSRI onto the Human Factors form has been completed, resulting in a FFF data set that documents 1004 crashes. These data are available to users through the facilities of The University of Michigan Computing Center and the Institute's on-line data access system ADAAS.

1.2 The Recoding of AIS for Fatally Injured Occupants

One of the prime motivations for the 1976 revision of the Abbreviated Injury Scale was the need to separate injury severity from patient mortality (4). These distinct issues were, unfortunately, confounded in the original scale. Conversion of the old scale to the AIS76 is not a simple matter of numerical recoding. Hard-copy case reports for each fatal crash involving case vehicles were reviewed at the same time the Human Factors Analysis Report form was completed, and occupant AIS scores were reevaluated for all occupants of these vehicles.

1.3 Conversion of the OIC to the CPIR Injury Matrix

A second recent development in the quantification of occupant injury is the Occupant Injury Classification (OIC)(6,7). The OIC is a scheme for classifying specific

.

occupant injuries in a manner that permits the correlation of injury sources with specific injuries. In the traditional CPIR structure, occupant injuries are described in a matrix format that relates only the overall injury received by a body region to a set of possible vehicle contact areas that might have caused the injury.

Because injury details are now being redundantly recorded in both OIC and the CPIR injury matrix format, there is a requirement for generation of the injury matrix from the OIC. This would permit field investigators to record injuries using the OIC as required in the Occupant Supplement form (7), and would eliminate the need for manual recoding. HSRI has modified its computer program that formats Occupant Supplement records to additionally derive the CPIR injury matrix from the occupant OIC's.

1.4 Development of a Vehicle Name Coding Scheme

At present, the CPIR data sets maintained by HSRI do not contain specific information on the model name of the vehicle involved in a crash (e.g., Plymouth Fury, Ford Mustang, etc.). A scheme has been developed, using the VINDICATOR program developed by the Highway Loss Data Institute (8), to derive vehicle model names from the V.I.N. information currently recorded in the CPIR data.

2.0 THE FATAL FACTORS DATA SET

In 1973, NHTSA/AID staff personnel inventoried all MDAI fatal crashes as part of an internal study. At that time 141 cases were coded onto a special "Human Factors Analysis Report Form." This form is presented in Appendix A. Under Contract DOT-HS-4-00898 (5), HSRI coded an additional 192 crashes and computerized the resulting 333 cases to create a "Fatal Factors File," or "FFF" data set.

An inventory of all fatal crashes investigated by MDAI teams sponsored by NHTSA, by the Canadian Department of Transport (CDOT), or by the Motor Vehicle Manufacturers Association (MVMA) produced a total of 671 additional fatal crashes. Consequently, as of February 28, 1977, a total of 1004 fatal crashes were identified for inclusion in the FFF data set. Table 1 shows the number of cases by team sponsor for cases processed as part of the contract work, as well as for all cases in the data set.

TABLE 1
Summary of Cases in the FFF Data Set by Sponsor

Sponsor	# Cases (This Contract)	# Cases (Previous Contract)	# Cases (Total)
NHTSA	436	333	769
CDOT	74	0	74
MVMA	161	0	161
TOTALS	671	333	1,004

The following sources of information were used to identify the CPIR fatal crashes:

(a) The CPIR Revision 3 data sets maintained by HSRI;

(b) The Traffic Unit Compendium (or TUC) data set maintained by HSRI;

(c) NHTSA case logs.

This inventory produced all cases that could be identified as involving a fatality and that could be located in hard-copy form. The inventory included not only crash-related fatalities, but also identifiable fatalities that occurred prior to the crash (i.e.,heart-attacks) or that occurred after the crash but were not directly crash-induced (i.e., drowning, asphyxiation, etc.).

After cases had been identified as proper candidates for the FFF file, the Human Factors Analysis Report Form was completed for each crash, the forms were keypunched and verified, and the cases were added to the computer data set.

The complete data set is available via HSRI's Automated Data Access and Analysis System. A codebook describing the variable names, code names, and univariate frequencies for each code value has been submitted to NHTSA as a product of the current effort. The data set contains 52 accident variables that classify the collision and roadway types. The next variables describe vehicle #1

(striking vehicle). Details on the driver's record, age, sex, trip plan, conditions, and injury are included along with counts of all occupants in the vehicle. These variables are repeated for vehicle #2 (struck) and vehicle #3 (struck). Twelve pedestrian variables are then followed by seven post-crash factor variables.

3.0 THE RECODING OF AIS FOR FATALLY INJURED OCCUPANTS

Since their inception, all MDAI investigations have recorded the injury severity to a vehicle occupant in terms of the Abbreviated Injury Scale (or AIS). Table 2 shows the values of the AIS as currently implemented in the CPIR Revision 3 data sets maintained by HSRI.

TABLE 2
Abbreviated Injury Scale
from CPIR Revision 3 Data Sets

AIS	Meaning
0	None
1	Minor
2	Non-Dangerous, Moderate
3	Non-dangerous, Severe
4	Dangerous, Serious
5	Dangerous, Critical
6	Fatal Lesions in 1 Region
7	Fatal Lesions in 1 Region plus serious
8	Fatal Lesions in 2 Regions
9	Fatal Lesions in 3 or More Regions
10	Fatal (Details Unknown)
98	Presence of Injury Unknown
99	Injury (Severity Unknown)

Since AIS values depend on the survival probability as well as the severity of the injury, the scale is not a true injury severity measure. For example, two people with the same injury might receive different AIS values; one might die of the injury and be coded as AIS 6, while the other could survive and be coded as AIS 5.

To remove the interdependence of injury severity and victim mortality a new AIS has been defined: the "AIS76."

The definition of this injury scale is presented in Table 3.

TABLE 3
New Abbreviated Injury Scale
"AIS76"

AIS	Meaning
0	No Injury
1	Minor
2	Moderate
3	Severe (Not Life Threatening)
4	Serious (Life Threatening, Survival Probable)
5	Critical (Survival Uncertain)
6	Maximum (Currently Untreatable)
98	Presence of Injury Unknown
99	Injury (Severity Unknown)

With this scale, an injury can be rated without regard to victim mortality.

As fatal crashes were identified by the inventory process carried out in conjunction with the FFF task, injury information for each occupant in case vehicles with a fatally injured occupant were reviewed, edited, and recoded according to the AIS76 scheme. It was necessary to review each occupant in the vehicle and not simply the fatally injured occupant, since the CPIR Revision 3 data sets contain summary variables such as the "Overall Case Vehicle Injury Severity (V576)."

4.0 CONVERSION OF THE OIC TO THE CPIR INJURY MATRIX

The current field data form in use by field investigators (7) employs two separate methods to record occupant injury:

(a) The traditional occupant injury matrix from the CPIR data form (2);

(b) The Occupant Injury Classification (OIC) (7) contained in the Occupant Supplement.

To pave the way for the elimination of this redundant coding, the existing computer programs used at HSRI as an integral part of the CPIR Occupant Supplement file build procedures have been modified to produce the CPIR injury matrix from the OIC coding.

The algorithm for filling the injury matrix is as follows:

(1) Initialize all AIS values to zero and all occupant contacts to 99;

(2) Read an OIC. If there are no more OIC's for the occupant, go to step 8;

(3) Find the appropriate body region;

(4) Find the lesion;

(5) If the AIS for this OIC is greater than the AIS value in the matrix for the body region and lesion defined in (3) and (4), replace the matrix AIS by the OIC AIS;

(6) Replace the four possible areas of contact in the matrix by the OIC contact area codes;

(7) Go to step 2;

(8) Compute the overall injury to each body region.

The exact formula for related OIC codes to matrix body regions is defined in Table 4. The conversion format defined by Table 4 is an ordered procedure. That is, the steps must be applied from the top down to determine the first condition that applies.

TABLE 4
OIC/Injury Matrix Conversion Table

OIC Region	OIC Aspect	OIC System/Organ	Injury Matrix Body Region
--	--	L,H,Q,G,K,P	Internal Organs
M	--	D	Internal Organs
--	--	B	Brain
F,H,N,S, C,M,P,O	--	--	Same as OIC region
X,A,E,R,W	R	--	Right Upper Limb
X,A,E,R,W	L		Left Upper Limb
X,A,E,R,W	B	--	Right and Left Upper Limbs
Y,T,K,L,A	R	--	Right Lower Limb
Y,T,K.L,Q	L	--	Left Lower Limb
Y,T,K,L,Q	B	--	Right and Left Lower Limbs
B	S	--	Chest & Upper Back
B	not S	--	.Lower Back
U	U	U	Whole Body

5.0 DEVELOPMENT OF A VEHICLE NAME CODING SCHEME

The purpose of this task was to develop a scheme that would encode vehicle name (e.g., Dodge Charger) in the CPIR data sets rather than just make and model (e.g., Dodge, Intermediate). The chosen scheme is based on the VINDICATOR program (8) developed by the Highway Loss Data Institute (HLDI) to decode Vehicle Identification Numbers (VIN). Several other VIN decoding systems were also considered: an HSRI-developed program, and the R.L. Polk Co. "VINA" program. For reasons of cost, ease of updating, and applicability for this task, these approaches were rejected in favor of the VINDICATOR system. Recent changes to VINDICATOR have been made to extend coverage to include 11 model years of passenger cars and many light trucks. The software has been implemented on the Michigan Terminal System as a user-interactive program that can be exercised by remote users (see Appendix B).

Using a VIN, the VINDICATOR will generate a make, series, and model year code (among other options). The make and series codes defines a car name (e.g., Plymouth Satellite). Unfortunately the series codes are unique only within any one model year; i.e., the same series codes are used for different cars in different model years. To resolve this ambiguity, unique car name codes were assigned for each make (Appendix C) and tables were created that

provides a unique name code for each model year and VINDICATOR series code combination. The complete name code list by make is included as Appendix C.

6.0 RECOMMENDATIONS

As a result of the extensive data cataloging and editing efforts that have been performed as part of this contract, a number of recommendations for future work have become apparent. These recommendations are listed below without regard to priority.

6.1 FFF Coding Rectification

Because NHTSA personnel coded the first 141 FFF cases, while the remainder were coded by HSRI, there are some inconsistencies in the data set that should be corrected. In particular, the NHTSA cases were coded using the old AIS definition while the later cases utilized the new AIS76 format. It is recommended, therefore, that the coding inconsistencies that exist be corrected.

6.2 Dual Injury Coding

At present, occupant injury is coded by field investigators in two different ways on the current Annotated CPIR Revision 3 form. It is recommended that use of the injury matrix convention be dropped and that injury severity be recorded only in the OIC format implemented in the Occupant Supplement.

6.3 FFF Periodic Updates

Since a considerable amount of effort has gone into the FFF data set at its current state of development, it is recommended that periodic updates be performed as new cases become available. While all Traffic Units with fatally injured occupants can be identified in the HSRI-maintained TUC file, detailed information is only available on traffic units in the CPIR data sets. Unless the FFF is updated, then, most information on non-CPIR traffic units in fatal crashes is available only in hard copy.

REFERENCES

(1) Brown, Barbara, C., and Green, John A., "Multidisciplinary Accident Investigation Report Automation and Utilization, Data Users Operating Manual." Highway Safety Research Institute, December 1973

(2) "Collision Performance and Injury Report," Revision Number 3, Form PG2070, September 1969, General Motors Corporation.

(3) "Rating the Severity of Tissue Damage: I. The Abbreviated Scale," Committee on Medical Aspects of Automotive Safety, Journal of the American Medical Association, 215:277-280, 1971.

(4) "The Abbreviated Injury Scale (AIS) (1976 Revision, Including Dictionary)." The American Association for Automotive Medicine, 1976.

(5) "Multidisciplinary Accident Investigation Data File." 1974 Final Report. Contract DOT-HS-4-00898, Highway Safety Research Institute, March 1975.

(6) Marsh, J. C., "An Occupant Injury Classification Procedure Incorporating the Abbreviated Injury Scale," NATO Committee on the Challenges of Modern Society, Road Safety Pilot Study, Accident Investigation Final Workshop, Brussels, Belgium, June 28-29, 1973

(7) "Multidisciplinary Accident Investigation Data File. Editing Manual and Reference Information." Volume I, 1976 Editing Manual, Report UM-HSRI-76-8-1, Highway Safety Reserch Institute, March 1976.

(8) "VINDICATOR 77 User's Guide," Release No. 1, September 1976, Highway Loss Data Institute.

APPENDIX A

Human Factors Analysis Report Form

MDAI FATAL ACCIDENTS
HUMAN FACTORS ANALYSIS
REPORT FORM

● Identification Data:

1 Multidisciplinary Accident Investigation Team ___ ___
                                                  1   2

(01) Ann Arbor or HSRI-III   (20) Univ. of So. California
(02) Baylor College of Medicine   (21) Stanford Res. Institute (2)
(03) Boston University   (22) Stanford Res. Institute (1)
(04) Calspan IIIA   (23) Stanford University
(05) Calspan IIIB   (24) Southwest Res. Institute
(06) Ministry of Transport, Ottawa   (25) UCLA
(07) Georgia Institute of Technology   (26) Tulane University
(08) Highway Safety Res. Institute   (27) Univ. of California (Siegel)
(09) Indiana University   (28) University of Houston
(10) McGill University, Montreal   (29) University of Kentucky
(11) University of Miami   (30) Univ. of Michigan (Huelke)
(12) Maryland Medical/Legal   (31) University of Oklahoma
(13) Univ. of Montreal, Ecole   (32) University of Toronto
        Polytechnique   (33) University of Utah
(14) Univ. of New Brunswick   (34) University of Alberta
(15) University of New Mexico   (35) Univ. of British Columbia
(16) Oakland County, HSRI-III   (36) University of Manitoba
(17) Ohio State University   (37) Univ. of Saskatchewan
(18) Research Triangle Institute   (38) Univ. of Western Ohio
(19) University of Rochester

2 Case Number   ___ ___ ___ ___ ___ ___ ___ ___ ___ ___
  (Team Designation)   3   4   5   6   7   8   9   10 11 12

3 Date of Collision   MO.   DAY   YR.

  (999999) Unknown   ___ ___/___ ___/___ ___
                                   13 14 15 16 17 18

4 First Harmful Event Classification
                                                    ___ ___
                                                    19 20
Non-Collision   Motor Vehicle in Transport
                                      (same roadway)
(01) Overturn (rollover)   (10) Head-on
(02) Fire/Explosion   (11) Rear-end   (32) Sideswipe
(03) Immersion   (12) Angle   (34) Other
(04) Gas Inhalation   (91) Configuration Unknown
(05) Other _____
                                      Motor Vehicle in Other Roadway
Collision With
                                      (13) Head-on
(06) Pedestrian   (14) Rear-end   (33) Sideswipe
(07) Pedacycle   (15) Angle   (35) Other
(08) Railway Train   (92) Configuration Unknown
(09) Animal
(16) Parked Motor Vehicle   (See next page)

Fixed Object

(17) Bridge or Overpass	(25) Guard Rail (bridge rail)
(18) Building	(26) Light Support
(19) Culvert	(27) Sign Post
(20) Curb or Wall (not building)	(28) Tree or Shrubbery
(21) Ditch	(29) Utility Pole
(22) Divider (including islands, but not guard rail)	(30) Other Poles/Supports
	(31) Other Object _____
(23) Embankment	
(24) Fence (Right-of-Way)	(00) Unknown

5   Location of First Harmful Event

$\overline{21}\ \overline{22}$

On Roadway

(01) Non-Junction
(02) Intersection
(03) Intersection Related
    (04) Interchange Area (Freeway Only)
    (05) Frontage Road (Freeway only)
    (06) Driveway Access

Off Roadway, Intersection-Related

(11) Shoulder
(12) Roadside
(13) Outside Right-of-Way

(00) Unknown

Off Roadway, Non-Junction

(07) Shoulder
(08) Roadside
(09) Outside Right-of-Way
(10) Median

6   Subsequent Harmful Events - Classification
(Use codes for First Harmful Event)
   (Choose three)

Classification

$\overline{23}\ \overline{24}$

$\overline{25}\ \overline{26}$

$\overline{27}\ \overline{28}$

7   Subsequent Harmful Events - Location
(Use codes for First Harmful Event Location)
   (Same order as above)
    (Choose three)

Location

$\overline{29}\ \overline{30}$

$\overline{31}\ \overline{32}$

$\overline{33}\ \overline{34}$

8   Time (0000-2359)

(9999) Unknown

$\overline{35}\ \overline{36}\ \overline{37}\ \overline{38}$

9   Day of Week

    (1) Sunday   (5) Thursday
    (2) Monday   (6) Friday
    (3) Tuesday   (7) Saturday
    (4) Wednesday   (0) Unknown

<div align="right">39</div>

10   Number of Fatalities

    (99) Unknown

<div align="right">40 41</div>

11   Fatality(s) Occurred to
    (record up to three types)

    (1) Driver of most responsible vehicle
    (2) Occupant(s) of most responsible vehicle
    (3) Driver of not responsible vehicle
    (4) Occupant(s) of not responsible vehicle
    (5) Pedestrian
    (6) Motorcyclist
    (7) Bicyclist
    (8) Other
    (9) No One
    (0) Unknown

<div align="right">42</div>

<div align="right">43</div>

<div align="right">44</div>

● Roadway Data for Vehicle #1 Roadway (12-22)

12   Accident Site

    (1) Open Road   (6) Acceleration/
    (2) Midblock   Deceleration Lane
    (3) Intersection   (7) Bridge, Tunnel, Viaduct
    (4) Railroad Crossing (9) Other _____
    (5) Ramp   (0) Unknown

<div align="right">45</div>

13   Roadway Type

    (1) Freeway   (5) Thru Street/Road
    (2) Expressway   Collector
    (3) Parkway   (6) Local
    (4) Arterial/Major Highway (9) Other _____
                       (0) Unknown

<div align="right">46</div>

14   Vertical Alignment

    (1) Level   (5) 6.1-8%
    (2) 0-2%   (6) >8%
    (3) 2.1-4%   (0) Unknown
    (4) 4.1-6%

<div align="right">47</div>

15   Slope

    (1) Positive (+ or going up) (3) Not Applicable
    (2) Negative   (0) Unknown

<div align="right">48</div>

16   Horizontal Alignment

    (1) Straight or Tangent   (3) Right Curve $\overline{49}$
    (2) Left Curve   Radius ___ ___ ___
           Radius ___ ___ ___   (0) Unknown

17   Pavement Type

    (1) Asphalt (Bituminous Concrete)   (3) Gravel $\overline{50}$
    (2) Concrete   (4) Other (e.g., Dirt, Brick)
                                       (0) Unknown

18   Surface Condition

    (1) Dry   (4) Ice $\overline{51}$
    (2) Wet   (9) Other (e.g., Wet Leaves,
    (3) Snow   Spills)
                                       (0) Unknown

19   Coefficient of Friction

                                                    $\overline{52}$ $\overline{53}$
    (00) Unknown

20   Pavement Width (ft.)
    Includes Unpaved Roadways and all driving lanes at point $\overline{54}$ $\overline{55}$
    of impact.

    (00) Unknown

21   Shoulder Width (ft.)
    Code Shoulder Involved, Otherwise Code Right Shoulder $\overline{56}$ $\overline{57}$

    (99) Not applicable
    (00) Unknown

22   Speed Limit (mph)
    Posted, Advisory, or Prima Facie $\overline{58}$ $\overline{59}$

    (00) Unknown

Applies to All Vehicles (23-26)

23   Pre-impact Speeds (mph) of vehicles in transport   Vehicle #1 ___ ___
                                                          60   61
    (97) 97 or greater
    (98) Not Applicable, parked car or no vehicle   Vehicle #2 ___ ___
    (99) Unknown   62   63

                                              Vehicle #3 ___ ___
                                                       64   65

24   Intersection Traffic Controls Functioning

    (1) Signal Operating Properly   (4) Sign Defective $\overline{66}$
    (2) Signal Operating Improperly   (5) Not Applicable, Not Intersec-
    (3) Sign Appropriate   tion or No Controls
                                     (0) Intersection, but Unk. Controls

Select the Most Significant Vehicle Independently for Each Question (25-36)

25 Sight Distance Limitation (some contributory role required)

                                                                           67

(1) None   (5) Hill/Curve
(2) Structure   (6) Other _____
(3) Signing   (0) Unknown
(4) Foliage

26 If Struck Pole, Pole Mounting

                                                                           68

(1) Did not strike pole   (5) Other Breakaway
(2) Rigid
(3) Slip Base   (0) Unknown
(4) Fracture Base

27 If Struck Pole, Distance from Pavement Edge (ft.)

                                                              69 70

(99) Not applicable
(00) Unknown

28 If Struck Restraining/Guiding Devices

                                                                   71

(1) Did not strike "restraining/guiding devices"
(2) Guardrails
(3) Bridge Rail
(4) Median Barrier
(5) Impact Attenuator
(6) Other _____
(0) Unknown

If Struck Guardrail: 29-31 Apply to the Same Vehicle

29 Impact Angle

                                                             72 73

(99) Did not strike   (00) Unknown

30 Exit Angle

                                                               74 75

(99) Did not strike   (00) Unknown

31 Guardrail performance

                                                             76

(1) Redirected (under some control)
(2) Penetrated (Crashed through)
(3) Pocketed (trapped)
(4) Went over (completely over)
(5) Rode/Hungup (Partially over)
(6) Deflected out of control (not over)
(8) Other: _____
(9) Did not strike
(0) Unknown

End of
Card 01

32-33 Apply to the Same Vehicle

32   If Struck Attenuator

      (1) Plastic Barrels (Fitch)   (6) Van Zelm Dragnet
      (2) Torshok Barrier   (7) Tire Crash Cushion
      (3) Hi-dro Cushion Crash Barrier   (8) Other _____
      (4) Steel Drum   (9) Not Applicable (did not strike
      (5) Vermiculite Concrete Barrier   attenuator)
                                        (0) Unknown

                                                                                1

33   Barrier Deformation (ft.) (_attenuator_ deformation only)

    (99) Not Applicable   (00) Unknown   2 3

If Struck Median: 34-36 Apply to the same median

34   Median Width

    (99) Not Applicable   (00) Unknown   4 5

35   Median Type (Choose Two)

                                                                   6
      (1) Flush   (5) Depressed
      (2) Curbed   (6) Other _____
      (3) Flat   (9) Not Applicable   7
      (4) Crowned   (0) Unknown

36   Median Side Slope

                                                                     8
      (1) 4:1   (4) Other _____
      (2) 5:1   (9) Not Applicable
      (3) 6:1   (0) Unknown

●   Vehicle #1 (striking vehicle):

37   Driver Culpability

                                                                     9
      (1) Most Responsible   (3) Not Responsible
      (2) Contributing   (4) Unknown

38   Drivers License (Code most specific)

                                                    10 11
      (01) Auto   (07) Learner
      (02) Bus   (08) None, No License
      (03) Motorcycle   (09) Unknown
      (04) Regular Truck   (10) School Bus
      (05) Truck and Semi   (11) Operator
      (06) Other Truck   (12) Chauffeur

39 License Status

(01) Valid, restriction compliance unknown $\overline{12}$ $\overline{13}$
(02) Valid, Compliance with restrictions, or no restrictions
(03) Valid, non-compliance with restrictions
(04) Expired (not renewed)
(05) Suspended (source unknown)
(06) Suspended (driver violation)
(07) Suspended (by financial responsibility laws)
(08) Revoked
(09) Never had a license
(10) Under age
(11) Valid (this State) but suspended in another state
(12) No license, reason unknown
(00) Unknown

40 License Restrictions

$\overline{14}$

(0) No Restrictions   (6) Limit Drive
(1) Corrective Lenses   (7) Other _____
(2) Mechanical Aid   (8) Unknown
(3) Prosthetic Aid   (9) Not Applicable, No License
(4) Automatic Transmission   (9, 10 or 12 above)
(5) OSR Mirror

41 Span of Driver Record (years)

$\overline{15}$ $\overline{16}$

(00) Less than 1 year
(98) No Reported Record
(99) Unknown

42 Driver Previous Moving Violations

$\overline{17}$

(0) None   (5) Five
(1) One   (6) Six
(2) Two   (7) Seven
(3) Three   (8) Eight or More
(4) Four   (9) Unknown or No Record

43 Driver Previous Accidents

$\overline{18}$

(0) None   (5) Five
(1) One   (6) Six
(2) Two   (7) Seven
(3) Three   (8) Eight or More
(4) Four   (9) Unknown or No Record

44 Driver Alcohol and Criminal Convictions (Choose three)

$\overline{19}$

(1) None   (5) Criminal (felony)
(2) DWI   (6) Multiple Alcohol-Related
(3) DUIL, DUI, etc.   Convictions $\overline{20}$
(4) Public Intoxication   (0) Unknown or No Record

$\overline{21}$

45   Driver Alcohol-Related Arrests
     (Choose three)   ___
                                                                        22
     (1) None   (4) Public Intoxication
     (2) DWI   (5) Multiple Alcohol-Related   ___
     (3) DUIL, DUI, etc.   Arrests   23
                                 (0) Unknown or No Record   ___
                                                                  24

46   Driver Education
                                                                  ___
     (1) None   (6) Professional (bus or truck) 25
     (2) High School   (8) Other _____
     (3) Commercial   (9) Yes, Source Unknown
     (4) Informal   (0) Unknown
     (5) Military

47   Driver Age
                                                              ___ ___
     (00) Unknown   26 27
     (01) One
          •
          •
          •
     (99) Ninety-Nine or older

48   Driver Sex
                                                                  ___
     (1) Male   28
     (2) Female
     (3) Unknown

● Driver Trip Plan
49   Origin
                                                                  ___
     (1) Home   (6) Restaurant/Bar/Party   29
     (2) Work   (7) Church
     (3) Shopping Area   (8) School
     (4) Recreational Area   (9) Other _____
     (5) Friend's or Relative's Home (0) Unknown

50   Destination
                                                                  ___
     (1) Home   (6) Restaurant/Bar/Party   30
     (2) Work   (7) Church
     (3) Shopping   (8) School
     (4) Recreational Area   (9) Other _____
     (5) Friend's or Relative's Home (0) Unknown

51 Purpose

(1) Business
(2) Recreational (picnic, golf, etc.)
(3) Shopping
(4) Social (party, dinner, visit, etc.)
(5) Pleasure ride
(6) Routine
(7) Other _____
(0) Unknown

<u>31</u>

52 Time of Departure

(0000-2359)
(9999) Unknown

<u>32</u> <u>33</u> <u>34</u> <u>35</u>

53 Expected Time of Arrival

(0000-2359)
(9999) Unknown

<u>36</u> <u>37</u> <u>38</u> <u>39</u>

54 Driver Marital Status

(1) Single   (5) Divorced
(2) Married   (6) Widowed
(3) Common Law   (7) Unknown
(4) Separated

<u>40</u>

Driver Conditions

55 Permanent Physiological Conditions

<u>41</u>

(1) Infirmities   (5) Vision/Hearing Restricted
    (Arthritis, Senility, etc.)   (6) Respiratory Condition
(2) Diabetes   (7) Paraplegic, Amputee
(3) Brain (Epilepsy, Stroke)   (8) Other, or Unknown Type Exists
(4) Cardio-Vascular (Heart   (9) None
    Failure, Angina, Infarction) (0) Unknown if Condition Exists

56 Did Above Contribute to Collision (Team Statement)

<u>42</u>

(1) Yes
(2) No, No Team Statement
(3) Not Applicable, No Condition (9 Above)
(0) Team Stated "Unknown" or 0 above

57   Transient Physiological Conditions
    (Choose two)   43   44

    (00) Unknown   (08) Drug or Medication
    (02) None   (09) Flu, headcold, etc.
    (03) Blackouts   (10) Fractured member   45   46
    (04) Dozing/Fell Asleep   (11) Menstrual Period
    (05) Fatigue   (12) Pregnancy
    (06) Intoxicated (BAC ≥ .10%   (13) Hangover
         or clinical evaluation)   (14) Not wearing corrective lenses
    (07) Drinking (BAC < .10% or   (99) Other _____
         clinical evaluation)

58   Physiological or Medical Failure Initiated Crash

                                         47

    (1) No   (5) Pre-crash fatal (heart
    (2) Heart Related   related)
         (pre-crash, non-fatal)   (6) Post-crash fatal (drowning)
    (3) Seizure   (7) Other non-impact Fatal
    (4) Other _____   (0) Unknown

●   Alcohol and Drugs

59   Driver Alcohol Involvement

                                         48

    (1) No alcohol consumption   (6) BAC > .20%
         detected/no BAC test req'd   (7) Drinking detected
    (2) BAC .01-.05%   (Team or Police Evaluation)
    (3) BAC .06-.09%   (8) Driver intoxicated (impaired,
    (4) BAC .10-.14%   Drunk (Team/Police Evaluation)
    (5) BAC .15-.19%   (0) Unknown

60   Driver arrested for drinking or intoxication as a result of this crash

    (1) Yes   (4) Related Arrest (e.g.,
    (2) No   reckless driving, DTE,   49
    (3) Not Applicable   etc.)
         (e.g., driver died)   (0) Unknown

61   Pharmacological Agents Noted

                                         50

    (1) Yes, Unknown type or   (6) Depressants, Over-the-
         Other: _____   Counter (Alcohol, Sleeping Com-
    (2) None noted   pounds)
    (3) Stimulants, Prescriptive/   (7) Antihistamines
         Narcotics (Amphetamines,   (8) Hallucinogens (LSD, DMT, Mesc.,
         Cocaine, Bennies)   Psilocybin)
    (4) Stimulants, Over-the-counter   (9) Marijuana
         (Caffeine, "No-Doz," etc.)   (0) Unknown
    (5) Depressants, Prescriptive/
         Narcotics (Barbiturates,
         Opiate, Heroin, Tranquilizers,
         Seconal)

62 Driver Speeding Involvement

    (1) No
    (2) Over speed Limit
    (3) Too fast for conditions
    (4) Unusually slow (as to present a hazard)
    (0) Unknown

$\overline{51}$

63 Driver Avoidance Maneuvers

    (0) None   (4) Acceleration
    (1) Braking   (5) Acceleration & Steering
    (2) Steering   (6) Brake Release
    (3) Braking and Steering   (7) Deceleration (e.g., engine braking)
                                 (8) Other
                                 (9) Unknown

$\overline{52}$

● Injury Data:

64 Driver AIS Rating (New AIS)

    (00) None   (98) Injury Unknown
    (01) Minor   (99) Injured, Severity Unknown
    (02) Moderate
    (03) Severe
    (04) Serious
    (05) Critical
    (06) Maximum

$\overline{53}$ $\overline{54}$

65 Number of Occupants in Vehicle (including driver)
    (99) Unknown

$\overline{55}$ $\overline{56}$

66 Fatally Injured Occupant(s) Seated Locations (Choose five)

    (01) Driver   (06) Right Rear
    (02) Center Front   (07) Front
    (03) Right Front   (08) Rear
    (04) Left Rear   (09) Other _____
    (05) Center Rear   (00) Unknown
                              (10) None, No Fatality
                                    or No Occupant

$\overline{57}$ $\overline{58}$

$\overline{59}$ $\overline{60}$

$\overline{61}$ $\overline{62}$

$\overline{63}$ $\overline{64}$

$\overline{65}$ $\overline{66}$

67 Fatally Injured Occupant(s) Restraint Usage
(List in same order as above. Choose five)   67

   (1) Not Available   (5) Shoulder only   68
   (2) None Used (available)   (6) Unknown (available)
   (3) Lap belt only   (7) Not applicable, No Fatality
   (4) Lap and Shoulder used   or No Occupant   69
                               (8) Passive System
                               (0) Unknown   70

                                                 71

68 Highest AIS in this Vehicle

(New AIS)   72 73
00-06,98,99

```
┌─────────────┐
│   End of    │
│   Card 02   │
└─────────────┘
```

● Vehicle #2 (struck vehicle): (in transport)

69 Driver Culpability   1

   (1) Most Responsible   (3) Not Responsible
   (2) Contributing   (4) Unknown
   (8) Not Applicable, No Vehicle #2
      SKIP 70-100

70 Drivers License   Code most specific   2   3

   (01) Auto   (07) Learner
   (02) Bus   (08) None, No License
   (03) Motorcycle   (09) Unknown
   (04) Regular Truck   (10) School Bus
   (05) Truck and Semi   (11) Operator
   (06) Other Truck   (12) Chauffeur

71 License Status   4   5

   (01) Valid, restriction compliance unknown
   (02) Valid, compliance with restrictions, or no restrictions
   (03) Valid, non-compliance with restrictions
   (04) Expired (not renewed)
   (05) Suspended (source unknown)
   (06) Suspended (driver violation)
   (07) Suspended (by financial responsibility laws)
   (08) Revoked
   (09) Never had a license
   (10) Under age
   (11) Valid (this State) but suspended in another state
   (12) No license, reason unknown
   (00) Unknown

72   License Restrictions

    (0) No Restrictions   (6) Limit Drive
    (1) Corrective Lenses   (7) Other _____
    (2) Mechanical Aid   (8) Unknown
    (3) Prosthetic Aid   (9) Not Applicable, No License
    (4) Automatic Transmission   (9, 10 or 12 above)
    (5) OSR Mirror

                                                          <u>6</u>

73   Span of Driver Record (years)

    (00) Less than 1 year
    (98) No Reported Record
    (99) Unknown

                                                      <u>7</u> <u>8</u>

74   Driver Previous Moving Violations

    (0) None   (5) Five
    (1) One   (6) Six
    (2) Two   (7) Seven
    (3) Three   (8) Eight or More
    (4) Four   (9) Unknown or No Record

                                                           <u>9</u>

75   Driver Previous Accidents

    (0) None   (5) Five
    (1) One   (6) Six
    (2) Two   (7) Seven
    (3) Three   (8) Eight or More
    (4) Four   (9) Unknown or No Record

                                                         <u>10</u>

76   Driver Alcohol and Criminal Convictions (Choose three)

    (1) None   (5) Criminal (felony)
    (2) DWI   (6) Multiple Alcohol-Related
    (3) DUIL, DUI, etc.   Convictions
    (4) Public Intoxication   (0) Unknown or No Record

                                                         <u>11</u>

                                                         <u>12</u>

                                                         <u>13</u>

77   Driver Alcohol-Related Arrests (Choose three)

    (1) None   (5) Multiple Alcohol-Related
    (2) DWI   Arrests
    (3) DUIL, DUI, etc.   (6) Unknown or No Record
    (4) Public Intoxication

                                                         <u>14</u>

                                                         <u>15</u>

                                                         <u>16</u>

78   Driver Education

    (1) None   (6) Professional
    (2) High School   (8) Other _____
    (3) Commercial   (9) Yes, Other Source
    (4) Informal   (0) Unknown
    (5) Military

                                                         <u>17</u>

79 Driver Age

(00) Unknown
(01) One

    ⋮

(99) Ninety-Nine or older

$\overline{18}$ $\overline{19}$

80 Driver Sex

(1) Male
(2) Female
(3) Unknown

$\overline{20}$

● <u>Driver Trip Plan</u>

81 Origin

(1) Home   (6) Restaurant/Bar/Party
(2) Work   (7) Church
(3) Shopping Area   (8) School
(4) Recreational Area   (9) Other _____
(5) Friend's or Relative's Home   (0) Unknown

$\overline{21}$

82 Destination

(1) Home   (6) Restaurant/Bar/Party
(2) Work   (7) Church
(3) Shopping Area   (8) School
(4) Recreational Area   (9) Other _____
(5) Friend's or Relative's Home   (0) Unknown

$\overline{22}$

83 Purpose

(1) Business
(2) Recreational (picnic, golf, etc.)
(3) Shopping
(4) Social (party, dinner, visit, etc.)
(5) Pleasure ride
(6) Routine
(7) Other _____
(0) Unknown

$\overline{23}$

84 Time of Departure

(0000-2359)
(9999) Unknown

$\overline{24}$ $\overline{25}$ $\overline{26}$ $\overline{27}$

85 Expected Time of Arrival

(0000-2359)
(9999) Unknown

$\overline{28}$ $\overline{29}$ $\overline{30}$ $\overline{31}$

86   Driver Marital Status

    (1) Single   (5) Divorced
    (2) Married   (6) Widowed
    (3) Common Law (0) Unknown
    (4) Separated

$\overline{32}$

● **Driver Conditions**

87   Permanent Physiological Conditions

$\overline{33}$

    (1) Infirmities   (5) Vision/Hearing Restricted
        (Arthritis, Senility, etc.) (6) Respiratory Condition
    (2) Diabetes   (7) Paraplegic, Amputee
    (3) Brain (Epilepsy, Stroke) (8) Other, or Unknown Type Exists
    (4) Cardio-Vascular (Heart   (9) None
        Failure, Angina, Infarction) (0) Unknown if Condition Exists

88   Above Contribute to Collision (Team Statement)

$\overline{34}$

    (1) Yes
    (2) No, No Team Statement
    (3) Not Applicable, No Condition (9 Above)
    (0) Team Stated "Unknown" or 0 above

89   Transient Physiological Conditions (Choose two)

$\overline{35}$ $\overline{36}$

    (00) Unknown   (08) Drug or Medication
    (02) None   (09) Flu, headcold, etc.
    (03) Blackouts   (10) Fractured Member $\overline{37}$ $\overline{38}$
    (04) Dozing/Fell Asleep   (11) Menstrual Period
    (05) Fatigue   (12) Pregnancy
    (06) Intoxicated (BAC ≥.10% or (13) Hangover
        clinical evaluation)   (14) Not wearing corrective lenses
    (07) Drinking (BAC < .10% or   (99) Other _____
        clinical evaluation)

90   Physiological or Medical Failure Initiated Crash

$\overline{39}$

    (1) No   (0) Unknown
    (2) Heart Related (pre-crash,   (5) Pre-crash fatal (heart related)
        non-fatal)   (6) Post-crash fatal (drowning)
    (3) Seizure   (7) Other non-impact fatal
    (4) Other

● Alcohol and Drugs

91   Driver Alcohol Involvement

(1) No alcohol consumption
detected/No BAC test req'd
(2) BAC .01-.05%
(3) BAC .06-.09%
(4) BAC .10-.14%
(5) BAC .15-.19%

(6) BAC > .20%
(7) Drinking detected
(Team or Police Evaluation)
(8) Driver intoxicated (impaired,
drunk) Team/Police Evaluation
(0) Unknown

40

92   Driver arrested for drinking or intoxication as a result of this crash

(1) Yes
(2) No
(3) Not Applicable
(e.g., driver died)

(4) Related Arrest (e.g.,
reckless driving, DTE,
etc.)
(0) Unknown

41

93   Pharmacological Agents Noted
(Noted but not necessarily causal)

42

(1) Yes, Unknown type or
Other: _____
(2) None noted
(3) Stimulants, Prescriptive/
Narcotics (Amphetamines,
Cocaine, Bennies)
(4) Stimulants, Over-the-Counter
(Caffeine, "No-Doz," etc.)
(5) Depressants, Prescriptive/
Narcotics (Barbiturates, Opiate,
Heroin, Tranquilizers, Seconal)

(6) Depressants, Over-the-Counter
(Alcohol, Sleeping Compounds)
(7) Antihistamines
(8) Hallucinogens (LSD, DMT, mesc.,
Psilocybin)
(9) Marijuana
(0) Unknown

94   Driver Speeding Involvement

43

(1) No
(2) Over speed limit
(3) Too fast for conditions

(4) Unusually slow (as to
present a hazard)
(0) Unknown

95   Driver Avoidance Maneuvers

44

(0) None
(1) Braking
(2) Steering
(3) Braking and Steering

(4) Acceleration
(5) Acceleration and Steering
(6) Brake Release
(7) Deceleration (e.g., engine braking)
(8) Other
(9) Unknown

● <u>Injury Data:</u>

96 Driver AIS Rating   New AIS   ‾45‾ ‾46‾

    (00) None   (05) Critical
    (01) Minor   (06) Maximum
    (02) Moderate   (98) Injury Unknown
    (03) Severe   (99) Injured, Severity Unknown
    (04) Serious

97 Number of Occupants in Vehicle (including driver)
   (9) Unknown   ‾47‾

98 Fatally Injured Occupant(s) Seated Locations
   (Choose five)   ‾48‾ ‾49‾

    (01) Driver   (06) Right Rear
    (02) Center Front (07) Front   ‾50‾ ‾51‾
    (03) Right Front   (08) Rear
    (04) Left Rear   (09) Other _____   ‾52‾ ‾53‾
    (05) Center Rear   (00) Unknown
                  (10) None, No Fatality or No Occupant   ‾54‾ ‾55‾

                                                        ‾56‾ ‾57‾

99 Fatally Injured Occupant(s) Restraint Usage   ‾58‾

    (1) Not Available   (5) Shoulder only
    (2) None Used (available)   (6) Unknown (available)
    (3) Lap belt only   (7) Not applicable, No   ‾59‾
    (4) Lap and shoulder used   Fatality or No Occupant
                                 (8) Passive System   ‾60‾
                                 (0) Unknown

                                                        ‾61‾

                                                        ‾62‾

100 Highest AIS in this vehicle
    (New AIS)   ‾63‾ ‾64‾
    00-06,98,99

                                                                                         | End of
                                                                                      Card 03

● <u>Vehicle #3 (struck vehicle)</u>: (In transport)

101 Driver Culpability

    (1) Most Responsible   (3) Not Responsible $\overline{1}$

    (2) Contributing   (4) Unknown

                         (8) Not Applicable, No Vehicle #3
                            SKIP 102-132

102 Drivers License Code most specific

                                      $\overline{2}$ $\overline{3}$

    (01) Auto   (07) Learner

    (02) Bus   (08) None, No License

    (03) Motorcycle   (09) Unknown

    (04) Regular Truck   (10) School Bus

    (05) Truck and Semi   (11) Operator

    (06) Other Truck   (12) Chauffeur

103 License Status

                                        $\overline{4}$ $\overline{5}$

    (01) Valid, restriction compliance unknown

    (02) Valid, compliance with restrictions, or no restrictions

    (03) Valid, non-compliance with restrictions

    (04) Expired (not renewed)

    (05) Suspended (source unknown)

    (06) Suspended (driver violation)

    (07) Suspended (by financial responsibility laws)

    (08) Revoked

    (09) Never had a license

    (10) Under age

    (11) Valid (this State) but suspended in another state

    (12) No license, reason unknown

    (00) Unknown

104 License Restrictions

                                        $\overline{6}$

    (0) No Restrictions   (6) Limit Drive

    (1) Corrective Lenses   (7) Other _____

    (2) Mechanical Aid   (8) Unknown

    (3) Prosthetic Aid   (9) Not applicable, No license

    (4) Automatic Transmission   (9, 10 or 12 above)

    (5) OSR Mirror

105 Span of Driver Record (years)

                                      $\overline{7}$ $\overline{8}$

    (00) Less than 1 year   (99) Unknown

    (98) No Reported Record

106 Driver Previous Moving Violations

                                        $\overline{9}$

    (0) None   (5) Five

    (1) One   (6) Six

    (2) Two   (7) Seven

    (3) Three   (8) Eight or More

    (4) Four   (9) Unknown or No Record

107 Driver Previous Accidents

    (0) None   (5) Five
    (1) One   (6) Six
    (2) Two   (7) Seven
    (3) Three   (8) Eight or More
    (4) Four   (9) Unknown or No Record

                                                    10

108 Driver Alcohol and Criminal Convictions
    (Choose three)

    (1) None   (5) Criminal (felony)
    (2) DWI   (6) Multiple Alcohol-Related
    (3) DUIL, DUI, etc.   Convictions
    (4) Public Intoxication   (0) Unknown or No Record

11
12
13

109 Driver Alcohol-Related Arrests
    (Choose three)

    (1) None   (5) Multiple Alcohol-Related
    (2) DWI   Arrests
    (3) DUIL, DUI, etc.   (0) Unknown or No Record
    (4) Public Intoxication

14
15
16

110 Driver Education

    (1) None   (6) Professional
    (2) High School   (8) Other
    (3) Commercial   (9) Yes, Source Unknown
    (4) Informal   (0) Unknown
    (5) Military

17

111 Driver Age

    (00) Unknown
    (01) One
         ⋮
    (99) Ninety-Nine or older

18 19

112 Driver Sex

    (1) Male
    (2) Female
    (3) Unknown

20

● **Driver Trip Plan**

113 Origin

    (1) Home
    (2) Work
    (3) Shopping Area
    (4) Recreational Area
    (5) Friend's or Relative's Home

    (6) Restaurant/Bar/Party
    (7) Church
    (8) School
    (9) Other _____
    (0) Unknown

21

114 Destination

    (1) Home
    (2) Work
    (3) Shopping Area
    (4) Recreational Area
    (5) Friend's or Relative's Home

    (6) Restaurant/Bar/Party
    (7) Church
    (8) School
    (9) Other _____
    (0) Unknown

22

115 Purpose

    (1) Business
    (2) Recreational (picnic, golf, etc.)
    (3) Shopping
    (4) Social (party, dinner, visit, etc.)
    (5) Pleasure ride
    (6) Routine
    (7) Other _____
    (0) Unknown

23

116 Time of Departure
    (0000-2359)

    (9999) Unknown

24 25 26 27

117 Expected Time of Arrival
    (0000-2359)

    (9999) Unknown

28 29 30 31

118 Driver Marital Status

    (1) Single   (5) Divorced
    (2) Married   (6) Widowed
    (3) Common Law (0) Unknown
    (4) Separated

32

● **Driver Conditions**

119 Permanent Physiological Conditions

<div style="text-align:right">33</div>

(1) Infirmities
     (Arthritis, Senility, etc)
(2) Diabetes
(3) Brain (Epilepsy, Stroke)
(4) Cardio-Vascular (Heart
     Failure, Angina, Infarction)

(5) Vision/Hearing Restricted
(6) Respiratory Condition
(7) Paraplegic, Amputee
(8) Other, or Unknown Type Exists
(9) None
(0) Unknown if Condition Exists

121 Transient Physiological Conditions
     (Choose two)

34   35

(00) Unknown
(02) None
(03) Blackouts
(04) Dozing/Fell Asleep
(05) Fatigue
(06) Intoxicated (BAC $\geq$.10%
      or clinical evaluation)
(07) Drinking (BAC < .10% or
      clinical evaluation)

(08) Drug or Medication
(09) Flu, headcold, etc.
(10) Fractured Member
(11) Menstrual Period
(12) Pregnancy
(13) Hangover
(14) Not wearing corrective lenses
(99) Other _____

36   37

122 Physiological or Medical Failure Initiated Crash

<div style="text-align:right">38</div>

(1) No
(2) Heart Related
     (pre-crash, non-fatal)

(3) Seizure
(4) Other _____
(0) Unknown
(5) Pre-crash fatal (heart related)
(6) Post-crash fatal (drowning)
(7) Other non-impact fatal

● **Alcohol and Drugs**

123 Driver Alcohol Involvement

<div style="text-align:right">39</div>

(1) No alcohol consumption
     detected/no BAC test req'd
(2) BAC .01-.05%
(3) BAC .06-.09%
(4) BAC .10-.14%
(5) BAC .15-.19%

(6) BAC > .20%
(7) Drinking detected
     (Team or Police Evaluation)
(8) Driver Intoxicated (impaired,
     drunk (Team or Police Evaluation)
(0) Unknown

124 Driver arrested for drinking or intoxication as a result of this crash

(1) Yes
(2) No
(3) Not Applicable
     (e.g., driver died)

(4) Related arrest (e.g.,
     reckless driving, DTE,
     etc.
(0) Unknown

40

125 Pharmacological Agents Noted
(noted but not necessarily causal)   ‾‾4‾1‾‾

    (1) Yes, Unknown type or   (6) Depressants, Over-the-Counter
        Other: _____   (Alcohol, Sleeping Compounds)
    (2) None noted   (7) Antihistamines
    (3) Stimulants, Prescriptive/   (8) Hallucinogens (LSD, DMT, mesc,
        Narcotics (Amphetamines,   psilocybin)
        Cocaine, Bennies)   (9) Marijuana
    (4) Stimulants, Over-the-Counter (0) Unknown
        (Caffeine, "No-Doz," etc.)
    (5) Depressants, Prescriptive/
        Narcotics (Barbiturates, Opiates,
        Heroin, Tranquilizers, Seconal)

126 Driver Speeding Involvement
                                   ‾‾4‾2‾‾

    (1) No   (4) Unusually slow (as to
    (2) Over the speed limit   present a hazard)
    (3) Too fast for conditions   (0) Unknown

127 Driver Avoidance Maneuvers
                                     ‾‾4‾3‾‾

    (0) None   (4) Acceleration
    (1) Braking   (5) Acceleration and Steering
    (2) Steering   (6) Brake Release
    (3) Braking and Steering   (7) Deceleration (e.g., engine brak-
                          ing)
                          (8) Other
                          (9) Unknown

● Injury Data:

128 Driver AIS Rating
                                 ‾‾4‾4‾‾ ‾‾4‾5‾‾

    (00) None   (05) Critical
    (01) Minor   (06) Maximum
    (02) Moderate   (98) Injury Unknown
    (03) Severe   (99) Injured, Severity Unknown

129 Number of Occupants in Vehicle (including driver)
    (99) Unknown   ‾‾4‾6‾‾ ‾‾4‾7‾‾

130 Fatally Injured Occupant(s) Seated Locations
    (Choose five)   ‾‾4‾8‾‾ ‾‾4‾9‾‾

    (01) Driver   (06) Right Rear
    (02) Center Front   (07) Front   ‾‾5‾0‾‾ ‾‾5‾1‾‾
    (03) Right Front   (08) Rear
    (04) Left Rear   (09) Other
    (05) Center Rear   ‾‾5‾2‾‾ ‾‾5‾3‾‾

                   (00) Unknown
                   (10) None, No Fatality or ‾‾5‾4‾‾ ‾‾5‾5‾‾
                       No Occupant
                                 ‾‾5‾6‾‾ ‾‾5‾7‾‾

131 Fatally Injured Occupant(s) Restraint Usage
(List in same order as above. Choose five)

   (1) Not available
   (2) None Used (available)
   (3) Lap belt only
   (4) Lap and shoulder used

   (5) Shoulder only
   (6) Unknown (available)
   (7) Not applicable, No
        Fatality or No
        Occupant
   (8) Passive System
   (0) Unknown

```
‾58‾

‾59‾

‾60‾

‾61‾

‾62‾
```

132 Highest AIS in this vehicle
(New AIS)
00-06,98,99

```
63  64
```

```
┌─────────┐
│ End of  │
│ Card 04 │
└─────────┘
```

● __Pedestrian Data__ (Includes Pedalcyclists):

133 Pedestrian Age (Years)

   (00) Unknown or No Pedestrian

```
1  2
```

137 Pedestrian Sex

   (1) Male
   (2) Female
   (0) Unknown
   (8) No Pedestrian, SKIP 138-142

```
‾3‾
```

138 Pedestrian Alcohol Involvement

   (1) No alcohol consumption
       detected
   (2) BAC .01-.05%
   (3) BAC .06-.09%
   (4) BAC .10-.14%
   (5) BAC .15-.19%

   (6) BAC ≥ .20%
   (7) Drinking Detected
       (Team or Police Evaluation)
   (8) Pedestrian Intoxicated (impaired,
       drunk) Team/Police Evaluation
   (0) Unknown

```
‾4‾
```

139 Pedestrian AIS Rating (New AIS)
00-06,98,99

```
5  6
```

140 Pedestrian Crossed:
(Choose two)

   (1) Against the signal
   (2) From in front of or behind
      a parked car
   (3) At a bus stop
   (4) In front of the bus

   (5) Behind the bus
   (6) In front of standing
      traffic
   (7) Other _____
   (0) Unknown

```
‾7‾

‾8‾
```

141 Pedestrian was:
(Choose two)   9

(1) Running
(2) Not in Roadway   10
(3) Not attempting to cross
    roadway
(4) Getting in or out of
    vehicle

(5) Going to or from ice
    cream truck or vendor
(6) Crossing with other peds.
(7) Not aware vehicle was
    backing up
(8) Other _____
(0) Unknown

142 Pedestrian:
(Choose two)   11

(1) Appeared suddenly in path of vehicle   12
(2) Attempted evasive action (swerved or slowed to avoid)
(3) Was working on or pushing vehicle
(4) Was a city resident
(5) Walked or ran into vehicle
(6) Was working on the roadway
(7) Other _____
(0) Unknown

● **Post Crash Factors:** Any Vehicle

143 Type of Occupant Extrication Performed
(Choose two)   13 14

(01) None
(02) Lifting (hydraulic jack,   15 16
        etc.)
(03) Prying
(04) Battering
(05) Pulling

(06) Cutting
(07) Disassembly
(08) Fire Protection
(09) Submersion (Scuba)
(00) Unknown
(10) Other _____

144 Extrication Problems Indicated   17

(1) Yes
(2) No

(3) Not Applicable, No Extrication
(0) Unknown

**145 Response Time for EMS (from time of notification to time of
first medical treatment)**   18

(1) ≤ 10 min.
(2) 11-20 min.
(3) 21-30 min.
(4) 31-60 min.
(5) 1-2 hours

(6) 2-3 hours
(7) > 3 hours
(8) Not Applicable, Not Called
(0) Unknown

146 Medical Treatment Problems Indicated

    (1) Yes
    (2) No
    (0) Unknown

147 EMS Contributory to Severity (as stated by team)

Was EMS contributory to injury severity or fatality, e.g., because of delays or due to improper/insufficient/no treatment on-scene or in transport?

    (1) Yes
    (2) No, Not Contributory or No EMS
    (3) Invalid Code
    (4) Exemplary EMS
    (0) Unknown

148 Team Case Accident Number
    (For Linked Cases Use Lowest Numbered Case with Fatality)

    21 22   23 24 25 26 27

End of
Card 05

APPENDIX B

The HSRI V.I.N.   Decoder Program

PURPOSE

This program decodes and analyzes Vehicle Identification Numbers (VIN).

DESCRIPTION

Each new automobile sold in the United States is required to carry a Vehicle Identification Number (VIN). VINs consist of individually unique alphanumeric strings of up to 15 characters, whose format and content vary by individual manufacturer and, in some cases, by car line and model year. When decoded and analyzed, VINs yield detailed information as to an individual vehicle's make, model year, series, and other identifying and descriptive variables.

HSRI:VIN is a computer program which decodes and analyzes VINs for twelve domestic and sixteen foreign makes of passenger cars plus seven makes of vans, light trucks and multi-purpose vehicles, within the overall model year span 1967-1977. The program uses a subroutine, vindicator 77, developed by the Highway Loss Data Institute to decode the VINs.

EXECUTION

The program is invoked by the $RUN command.

      EXAMPLE: $RUN HSRI:VIN

INPUT

A brief set of instruction will be printed by the program and followed by the prompt: $ENTER VIN (AND MODEL YEAR)". Type in the VIN (up to 15 alphanumeric characters) and optionally the model year (separated by a blank). Some VINs will require a model year because their format is used for several different years. The program will prompt for model year when required (see case #2 in example). The program will decode as many VINs as desired, one at a time. Type "STOP" to terminate the program.

OUTPUT

1. REMARK:

Comments on the degree of success obtained while decoding the input VIN are
printed. If there were "NO ERRORS" the decode results are printed.

2. YEAR:

The first and last possible model years are printed. Any 1967/1977 ambiguity
is reported under the REMARK: output (above).

3. MAKE:

One of 35 possible makes is printed for the model year spans indicated in the
table below. Makes and model years not included in the table are not decoded.

MAKE VALUES	MAKE NAME	MODEL YEAR SPAN
1	Chevrolet	1967-1977
2	Ford	1967-1977
3	Pontiac	1967-1977
4	Buick	1967-1977
5	Plymouth	1967-1977
6	Oldsmobile	1967-1977
7	Dodge	1967-1977
8	Volkswagen	1967-1976
9	Mercury	1967-1977
10	Cadillac	1967-1977
11	American	1967-1977
12	Chrysler	1967-1977
13	Lincoln	1967-1977
14	Opel	1967-1976
15	Datsun	1967-1976
16	Toyota	1967-1976
17	Capri	1972-1976
18	Mazda	1967-1976
19	Fiat	1972-1976
20	Volvo	1972-1976
21	Audi	1972-1976
22	Colt	1972-1976
23	Honda	1973-1976
24	Porsche	1972-1976
25	MG	1970-1976
26	Subaru	1972-1976
27	Arrow	1976-1977
28	GM of Canada	1968-1977
29	Chevrolet Truck	1973-1977
30	GMC Truck	1972-1977
31	Ford Truck	1973-1977
32	Dodge Truck	1973-1977
33	Plymouth Truck	1975-1977
34	Jeep	1973-1977
35	International	1975-1976

4. SERIES:

The   series name (e.g., Fury, Nova) is printed.

5. MODEL:

The model name within each series is printed.

6. BODY:

The number of doors (2, 3, 4+); the body shell (wagon, sedan, hardtop, convertible) and the passenger capacity (2-3, 4-6, 7+) are printed.

7. ENGINE:

Typical output will be "8-250-1V" denoting, respectively, 8 cylinders, 250 cubic inches of displacement, and a 1-barrel carburetor. Where the exact engine cannot be determined a "250/320" would denote a displacement range of 250 to 320 cubic inches, for example.

8. TRANS:

For AMC cars, the transmission type is printed.

9. WEIGHT:

The minimum curb weight (in pounds) is printed for all vehicles of this make series, and model year. For example, the minimum curb weight for all 1970 Plymouth Satellites was 3,210 pounds.

10. WHLBS:

The wheelbase to the nearest inch is printed.

11. HP:

The minimum and maximum Horsepower available is printed. Where exact horsepower is obtainable, these two values will be identical. Gross horsepower is used for model years 1967-1971. Net is used for 1972 and all subsequent model years.

12. WGT/HP:

The maximum and minimum Weight/Horsepower Ratios multiplied by a scale factor of 100 are printed. See items 9 and 11.

APPENDIX C

Vehicle Name Code List

VEHICLE NAME CODE LIST

The vehicle name code values derived from the coding scheme based on the VINDICATOR program (see Section 5) are presented below for each car make. Numbers in parenthesis following each vehicle make are the VINDICATOR Make codes. For each make, the code name values and corresponding vehicle names are listed.

Chevrolet (01)

11	Bel Air
12	Biscayne
13	Brookwood
21	Camaro
22	Caprice
23	Chevelle
24	Corvair
25	Corvette
31	El Camino
41	Impala
42	Kingswood
43	Laguna
51	Monte Carlo
52	Monza
61	Nova
71	Townsman
81	Vega
82	Vega Kammback
83	Vega Panel TRK

Ford (02)

11	Country Sedan
12	Custom 500
13	Custom Ranch
21	Elite
22	Falcon
23	Ford
31	Galaxie
32	Galaxie 500
33	Granada
41	LTD
42	LTD II
43	Maverick
44	Mustang
45	Mustang II
51	Pinto
61	Ranchero
71	Thunderbird
72	Torino
81	XL

Pontiac (03)

11	Astre
12	Bonneville
13	Catalina
21	Firebird
22	Executive
31	Grand Am
32	Grand Lemans
33	Grand Prix
34	Grand Safari
35	Grandville
41	Laurentian
42	Lemans
51	Sunbird
61	Ventura
62	Ventura II

Buick (04)

11	Apollo
21	Centurion
22	Century
31	Electra 225
32	Estate
41	Lesabre
42	Lesabre Custom
43	Lesabre Luxus
51	Riviera
61	Skyhawk
62	Skylark
63	Special
64	Sport
71	Wildcat

Plymouth (05)

01	Barracuda
10	Fury
11	Fury I
12	Fury II
13	Fury III
14	Fury GR Sedan
15	Fury G Coupe
21	GR Coupe
22	GR Sedan
23	GR Fury
24	GR Fury Custom
25	GR Fury Brougham
31	Satellite
32	Suburban
41	Valiant
42	Valiant Duster
43	Valiant Scamp
51	Volare

Oldsmobile (06)

11	Custom Cruiser
12	Cutlass
21	Delmont 88
22	Delta 88
31	Jetstar 88
41	Ninety Eight
42	Omega
51	Starfire
61	Toronado
71	Vista Cruiser

Dodge (07)

11 Aspen

21 Challenger
22 Charger
23 Coronet

31 Dart
32 Dart Demon
33 Dart Swinger
34 Dart Swinger Spec.
35 Dart Sport

41 Monaco

51 Polara

VW (08)

11 Beetle

21 Commercial
31 Dasher
41 Karmann Ghia

51 Rabitt
52 Scirocco

61 The Thing
62 Type 3 Fast Back
63 Type 3 Squareback

71 411
72 412

Mercury (09)

11 Bobcat
12 Brougham

21 Comet
22 Cougar

31 Lemoyne
41 Marauder
42 Marquis
43 Monarch
44 Montcalm
45 Montego
46 Montego MX
47 Monterey
48 Monterey Custom
49 Montcalm

51 Rideau
52 Rideau 500

61 Versailles

Cadillac (10)

11 Calais
12 Commercial

21 DeVille
31 Eldorado
41 Fleetwood 60
42 Fleetwood 75
43 Fleetwood Brougham

51 Seville

American (11)

11 Ambassador
12 AMX

21 Gremlin
31 Hornet
32 Hornet Sportabout
41 Javelin

51 Marlin
52 Matador

61 Pacer
71 Rambler

Chrysler (12)

11 300
21 Cordoba

31 Imperial
32 Imperial Lebaron

41 New Yorker
42 Newport
43 Newport Custom

61 Town/Country

Lincoln (13)

11 Continental

21 Mark III
22 Mark IV
23 Mark V

Opel (14)

11 1900

21 Coupe
31 GT
41 Kadett
51 Manta

Datsun (15)	Toyota (16)	Capri (17)
11 610	11 Carina	11 Sport Coupe
12 700	12 Celica	
	13 Corolla	
21 1200	14 Corona	
22 1600	15 Crown	Mazda (18)
23 2000		11 808
	21 Land Cruiser	12 1300
31 240/60/80Z	31 Mark II	13 1600
32 240Z		
33 260Z	91 Short Pickup	21 Custom Coupe
34 280Z	92 Long Pickup	
		31 RX-2
41 B-210		32 RX-3
42 PL411		33 RX-4
43 PL510		
		91 B1600 Pickup
91 Short Pickup		92 Rotary Pickup
92 Long Pickup		

Fiat (19)	Volvo (20)	Audi (21)
11 124	11 140	11 100 GL Fox
12 128	12 142	12 100LS
13 131	13 144	
	14 145	21 Fox
21 850 Spider		
31 X V9	21 160	Colt (22)
	22 164E	
		11 Colt
	31 240	
	32 260	
	41 1800	

Honda (23)	Porche (24)	MG (25)
11 Accord	11 911	11 Midget
	12 911 Targa	12 MGB
21 Civic		13 MGB/GT
22 Civic AIR	21 912 Coupe	
23 Civic CVCC	31 914 Roadster	
	41 Turbo Carrera	

Subaru (26)	Arrow (27)	GM/Canada (28)
11 DL	11 Arrow Hatchback	11 Acadian
		12 Astre
21 G		21 Beaumont
22 GF		31 Gr Parisienne
23 GL		41 Laurentian
		51 Parisienne
31 STD		61 Strato Chief

Make 29-35 (trucks)
Use the Series code number as the Name Code--no translation tables.