MMUCC Guideline

Model Minimum Uniform Crash Criteria

Fifth Edition (2017)

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

NHTSA

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Executive Summary

Quality data on motor vehicle crashes is essential to improving highway safety at all levels of government. The data is used to identify issues, determine highway safety messages and strategic communication campaigns, optimize the location of selective law enforcement, inform decision-makers of needed highway safety legislation, and evaluate the impact of highway safety countermeasures.

Unfortunately, the use of State crash data is often hindered by a lack of uniformity. Sharing and comparing data between localities, States, and the federal government can be very difficult when the data elements used by separate agencies to describe the same crash characteristic have different definitions or attributes.

To encourage greater uniformity, a voluntary data collection guideline was developed cooperatively by the National Highway Traffic Safety Administration (NHTSA) and the Governors Highway Safety Association (GHSA) in 1998. The Model Minimum Uniform Crash Criteria (MMUCC) guideline identifies a minimum set of motor vehicle crash data elements and their attributes that States should consider collecting and including in their State crash data systems. MMUCC was updated in 2003, 2008, and 2012. This will be the fifth edition of MMUCC.

The *MMUCC 5th Edition* is the result of an 18-month collaboration between NHTSA, Federal Highway Administration (FHWA), Federal Motor Carrier Safety Administration (FMCSA), National Transportation Safety Board (NTSB), GHSA, and subject matter experts from State Departments of Transportation (DOTs), local law enforcement, emergency medical services, safety organizations, industry partners, and academia. There were also opportunities for the traffic records community and general public to contribute through two online forums and at the 2016 Traffic Records Forum.

A number of important changes were made in this edition. States are given more flexibility in how they collect crash data. Elements were rearranged into four distinct sections to streamline the collection of more detailed information on fatal crashes, crashes involving commercial motor vehicles or vehicles placarded as carrying hazardous materials, and crashes involving non-motorists. A new type of data element—the dynamic data element—is introduced for the first time to capture data on topics that are changing rapidly.

As changes to State datasets and systems can be costly and difficult to implement, it is anticipated that no further changes will be made to MMUCC for five years (with the exception of the dynamic data elements). During this period, each of the data elements and their attributes will be monitored for usefulness and reliability. The next update of MMUCC is tentatively scheduled for 2022.

Introduction

According to the Centers for Disease Control and Prevention (CDC), motor vehicle crashes are the leading cause of death for youth aged 5 to 24. In addition, the National Highway Traffic Safety Administration (NHTSA) has reported increases in many significant motor vehicle crash statistics: in 2015, 35,092 people were killed in motor vehicle crashes—a 7.2% increase from 2014; and an estimated 2,443 million people were injured in motor vehicle crashes in 2015—a 4.5% increase from 2014. The number of fatal crashes also increased 7%, non-fatal injury crashes increased 4.1%, and property-damage-only crashes increased by 3.7% during that same period. Although much of the increase can be attributed to an improved economy and an increase in the number of miles that Americans drove, those two factors alone fail to fully explain this troubling increase. Good data about motor vehicle crashes is critical to help explain yearly fluctuations in motor vehicle deaths and injuries and guide policy makers as they consider appropriate investments to reduce those deaths and injuries.

Law enforcement officials collect data either electronically or manually about every motor vehicle crash (above a State-specified threshold) on police crash reports. The data on each crash report is then submitted to a State's centralized database where it is edited, reported and analyzed by a wide range of stakeholders. The State engineer or local public works director, for example, uses the data to determine which roadways or intersections are unsafe and need improvement. The commander of a State or local law enforcement agency uses the data to determine where to do selective enforcement. The State Highway Safety Office (SHSO) may use the data to determine whether to develop a new safety communication campaign. The State legislator may use the data to introduce safety legislation addressing a specific problem, such as distracted or drunk driving. High quality safety data is essential to identify safety problems, assess the impact of alternative safety countermeasures, communicate safety issues to the media and the public, make better programming and resource allocation decisions, and enable better program monitoring and evaluation.

Although law enforcement officials collect data about motor vehicle crashes, there are significant inconsistencies in the way that such data is collected. Data element definitions, the number and type of data elements, the number and specificity of attributes and the threshold for data collection often vary from jurisdiction to jurisdiction. This makes it especially difficult for data to be compared across State and local agencies, between States, and between States and the federal government. Determining larger patterns and trends in motor vehicle crash data becomes much more challenging under these circumstances.

To encourage greater uniformity and consistency, a voluntary guideline was created to help State and local agencies with the motor vehicle crash data elements and attributes they should consider collecting. The Model Minimum Uniform Crash Criteria (MMUCC) was first developed in 1998 cooperatively by NHTSA and the Governors Highway Safety Association (GHSA). MMUCC has been updated three times—in 2003, 2008 and 2012. This 2017 version is the fifth edition of MMUCC.

What is MMUCC?

MMUCC is a voluntary guideline that represents a minimum, model set of variables (data elements) that describe a motor vehicle crash. Typically, the data elements and their values (attributes) describe who was involved, where the crash took place, when and under what circumstances it took place, what the impacts of the crash were, and why the crash happened. When used by a reporting agency, MMUCC data elements record what happened during and after a crash. Since this data is so critical to State and local decision-making, State and local

agencies are encouraged to collect as many of the recommended MMUCC data elements and their attributes as possible.

Data elements were incorporated into MMUCC if they were deemed necessary (needed for decision-making purposes) and comprehensive (included all aspects of the issue or problem being described). The MMUCC guideline is based on another standard, the ANSI D16 *Manual on Classification of Motor Vehicle Traffic Crashes*. It was also developed in close cooperation with NHTSA's Fatality Analysis Reporting System (FARS) and, in fact, some of the biggest changes in this 5th Edition of MMUCC were a result of efforts to better harmonize MMUCC and FARS. Data elements mandated by the Federal Motor Carrier Safety Administration (FMCSA) are also included in MMUCC. In addition, data elements recommended under the Model Inventory of Roadway Elements (MIRE) developed by the Federal Highway Administration (FHWA) were considered in the development process.

Every data element includes a definition, a set of attribute values, a rationale and edit checks (if applicable). The attributes may be divided into one or more subfields, and the number of times a characteristic should be reported is represented in MMUCC by labeled boxes. For an illustrative example, see "MMUCC Data Elements" (p. 7). The data is divided into crash, vehicle, person and roadway data elements.

While this 5th Edition of MMUCC presents for the first time a coding value for each attribute of an element, States are still free to implement their own coding system. States also have the option of designing the content and format of their crash report as well as the systems for data collection and data coding to meet their needs. However, a model crash report, which can be used electronically or manually, was developed for the 5th edition of MMUCC and is included in this document in "Appendix C: MMUCC Crash Report" (p. 183).

A process for comparing a State's current set of data elements and attributes with those recommended in this 5th edition of MMUCC is also included in Mapping to MMUCC 5*th* Edition (p. 128). The *Mapping to MMUCC 5th Edition* delineates a process for making the comparison and identifies rules that the traffic records expert must consider when doing the mapping. The intent of this document is to help States identify weaknesses in their data collection systems and then prioritize those data elements and attributes that need to be changed when the State or locality updates its crash report.

Development Process

As with previous versions of MMUCC, an Expert Panel oversaw the development and revision processes. Public comment was also solicited at meetings such as the Traffic Records Forum and online.

For the 5th edition, the Expert Panel was comprised of representatives from law enforcement, State and local traffic engineers, State highway safety offices, emergency medical services, a motor vehicle manufacturer and researchers. Representatives from the three federal safety agencies (NHTSA, FHWA and FMCSA), as well as the National Transportation Safety Board (NTSB), also served on the Expert Panel. A liaison from the ANSI D16 revision effort also served as an Expert Panel member. (See "Appendix A: MMUCC 2016-2017 Expert Panel Members" (p. 175) for the complete list)

An online forum was developed to collect comments from the public, the traffic records community, and the Expert Panel. The online forum asked questions about specific data elements and solicited changes or improvements to MMUCC. The results of the online forum were aggregated and presented to the first meeting of the Expert Panel in July 2016. Suggestions for improving MMUCC from NHTSA, FMCSA, and FHWA were also presented. A number of

small working groups were formed to further hammer out suggested changes for specific data elements and their attributes.

Following the first meeting, the preliminary recommendations of the Expert Panel were presented to participants, and their comments were solicited, at the 2016 Traffic Records Forum (TRF) in Baltimore, MD.

A second online forum was subsequently posted with additional questions about the preliminary recommendations and other issues.

The Expert Panel met in October 2016 to review the comments made at the TRF and the results of the second online forum. The small working groups presented their recommendations for the data elements and attributes to which they were assigned. The Panel made final recommendations for changes. Following the meeting, the changes were incorporated into a draft of the 5th edition and sent to the Expert Panel for final review and approval.

A summary of changes to MMUCC from the 4th edition to the 5th edition is shown in Appendix B.

New Features of MMUCC in the 5th Edition

Several significant changes were made in this edition of MMUCC.

First, the data elements are no longer divided into the categories: collected at the scene, derived from other data sources or linked to other databases (such as EMS, hospital, driver licensing, or roadway databases). States now have the autonomy of deciding how to collect each element based upon their individual capabilities. Data elements that were previously indicated as linked or derived are now shown in both the table of contents and by the data element name with the symbol 🔗.

Second, elements were divided into sections to streamline data collection and provide more in-depth information. The new sections address fatal crashes, crashes involving commercial motor vehicles and hazardous materials, and non-motorist crashes. Certain data elements will trigger the new sections and are indicated by **. In an electronic crash report, the new sections should appear on the form once the specific trigger is given.

Third, the document has been reformatted to eliminate multiple “subfields” to collect multiple attributes. A single set of attributes is provided along with the recommended number of selections. The number of selections that MMUCC recommends be collected for certain elements (or subfields of an element) is shown by the term “Select x – y” along with the number of boxes corresponding to the maximum number of allowable selections. Therefore, if an element says, “Select 1 – 2,” MMUCC is recommending that up to two attributes be selected from the accompanying list.

Fourth, many of the lists of attributes have been reordered. When the listing of attributes did not have an implicit ordering, they were grouped alphabetically. When they had an implicit set of groupings, they were listed alphabetically within each group.

Fifth, a coding value is suggested for each attribute in a list. As stated earlier, while these are suggestions, States are free to use their own coding system. In addition, where appropriate, each element or subfield also has the attributes “98 Not Applicable” and “99 Unknown.”

Sixth, as noted previously, suggested edit checks were added to every data element to provide guidance to States and localities so that their collected data is internally consistent and usable for analysis. However, these edit checks are not exhaustive and States are free (and are encouraged) to develop their own edit checks.

Finally, a new type of data element is introduced for the first time. Dynamic Data Elements focus on issues that are so fluid and changeable that they must be evaluated more frequently than once every five years. “DV1. Motor Vehicle Driving Automation System(s)” is an example of a Dynamic Data Element. This field is developing so rapidly that NHTSA plans to review the element every year in conjunction with the annual Traffic Records Forum.

Reporting Threshold

In addition to specifying the minimum set of uniform data elements that should be collected, MMUCC also indicates for which crashes data should be collected by recommending the threshold for reporting be the most significant motor vehicle crashes.

Without collection of data on the most important crashes, a State or locality’s data will paint an incomplete picture of the motor vehicle crash problem in that jurisdiction. Analysis of the data will be skewed as a result, and the jurisdiction may end up allocating resources inappropriately.

MMUCC recommends the following threshold for all motor vehicle crashes, including those involving non-motorists:

- All crashes statewide involving death, personal injury, or property damage of $1,000 or more should be reported and entered into the statewide database.
- Crash data should be reported for all persons involved.
- Each State should adopt, and encourage their localities to adopt, a reporting threshold that is uniform and consistently implemented statewide.

MMUCC Crash Reporting Tools and Future Updates

The *MMUCC 5th Edition*, *Mapping to MMUCC 5th Edition*, electronic spreadsheet and the MMUCC crash report form are posted online, available to all States and stakeholders.

MMUCC is generally updated every five years. The next update is tentatively scheduled for 2022. In the months preceding the next update, traffic records experts and the general public will have an opportunity to provide suggestions for improving the 5th Edition.

MMUCC Data Elements

Element Format:

(Group + Type) Number. Data Element Name

Definition ENTER HERE

Attribute Values:

	Subfield 1 **Subfield Name/Category**	**Select 1**
00	**None**	
01	Attribute one	
02	Attribute two	
03	Attribute three	
04	Attribute four	
…	…	
97	**Not Applicable**	
98	**Other**	
99	**Unknown**	

	Subfield 2 **Subfield Name/Category**	**Select 2**
00	**None**	
01	Attribute one	
02	Attribute two	
…	…	
97	**Not Applicable**	
98	**Other**	
99	**Unknown**	

Rationale ENTER HERE

Edit Checks:

E(GT)#.01	Edit check one
E(GT)#.02	Edit check two
…	…
E(GT)#.*n*	Edit check *n*

Note: "Not Reported" has not been listed as an attribute in this guideline, but signifies that no value was reported for a data element where one was expected (also termed "empty field" or "blank"). This differs from the value "Unknown," which is recorded by the police officer when they are unable to ascertain the correct value for that data element.

Shorthand References

The Fifth Edition of MMUCC now incorporates attribute number designations, like most State crash reports and FARS. This enables users to easily reference a particular elemental attribute. The shorthand to reference a particular element and attribute combination should be formatted the following way:

(Group + Type) Number. Subfield Number. Attribute Number

Example: To designate First Harmful Event, Overturn/Rollover: ***C7.1.07***

C7 = First Harmful Event

1 = First Subfield

07 = Overturn/Rollover

Crash Data Elements

The crash data elements describe the overall characteristics of the crash.

C1. Crash Identifier

Definition The unique identifier within a given year that identifies a given crash within a State.

Attribute Values: **Specify 1**

xyz…n State-Specific Identifier

Rationale Used to document a specific crash. If this identifier is available at the scene, it can also be recorded on the EMS record for linkage purposes. Enables subfiles to be created for analyses and linked back to the crash data file.

Edit Checks:

E(C)01.01 Minimum Length: x (State should set to its own minimum)

E(C)01.02 Maximum Length: n (State should set to its own maximum)

C2. Crash Classification

Definition **Subfield 1** of this element is used to identify ownership of the land where the crash occurred. **Subfield 2** of this element is used to identify the characteristics of the crash with respect to its location on or off a trafficway. Refer to "Figure 1: Diagram of the Trafficway" (p. 10) for examples. **Subfield 3** of this element includes a motor vehicle traffic crash within a traffic incident scene or within a traffic queue in either direction resulting from a prior traffic incident.

Attribute Values:

Subfield 1 **Ownership** **Select 1**

01 Public Property

02 Private Property

Subfield 2 **Characteristics** **Select 1**

01 Trafficway, On Road

02 Trafficway, Not on Road

03 Non-Trafficway

Note *An example diagram of the trafficway can be found in Figure 1: Diagram of the Trafficway.*

Subfield 3	**Secondary Crash?**	**Select 1**
01	No	
02	Yes	

Rationale The information this data element provides is used to classify the crash as being a motor vehicle traffic crash or not based on the location where it occurred. Collecting this data on the crash report allows research and resources to be targeted and countermeasures to be evaluated based on the characteristics of the crash.

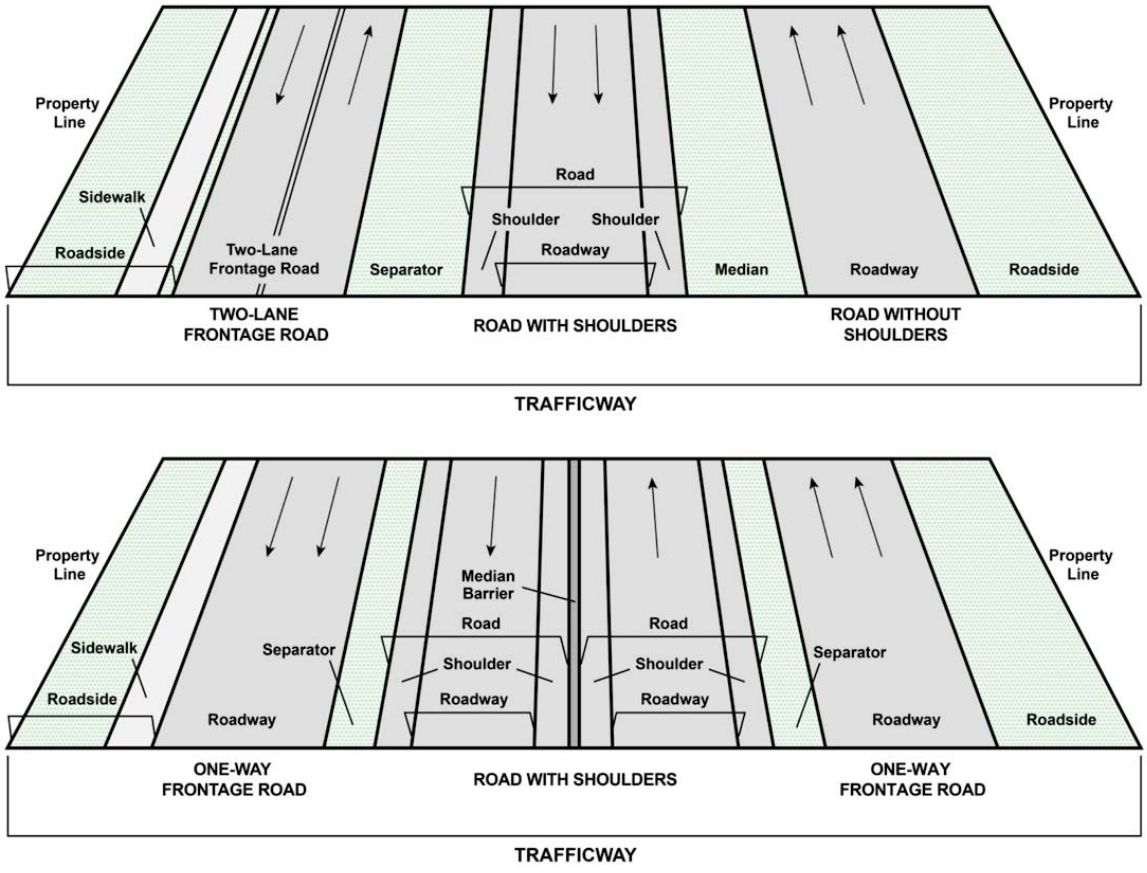
Edit Checks:

E(C)02.01 If "C2. Crash Classification" Subfield 2 = 01 (Trafficway, On Road) or 02 (Trafficway, Not on Road), then "V14. Trafficway Description" is a required field for each vehicle involved in the crash.

E(C)02.02 If "C2. Crash Classification" Subfield 2 = 01 (Trafficway, On Road) or 02 (Trafficway, Not on Road), then "V15. Total Lanes in Roadway" is a required field for each vehicle involved in the crash.

E(C)02.03 If "C2. Crash Classification" Subfield 2 = 01 (Trafficway, On Road) or 02 (Trafficway, Not on Road), then "V16. Roadway Alignment and Grade" is a required field for each vehicle involved in the crash.

Figure 1: Diagram of the Trafficway



C3. Crash Date and Time

Definition **Subfield 1**: The date (year, month, and day) and time (00:00-23:59) at which the crash occurred, formatted as YYYYMMDDHHMM. **Subfield 2** provides the time that all lanes are available for traffic flow.

Attribute Values:

	Subfield 1 **Crash Date and Time**	**Specify 4**
Current	Year (YYYY)	
01-12	Month (MM)	
01-31	Day (DD)	
0000-2359	Valid Military Time (HHMM) - (Code Midnight as "0000")	
99	Unknown (***not*** to be used for YYYY)	
	Example: 2017, 99, 99, 99 denotes only the year is known. 2017, 02, 99, 2251 denotes February 2017 at 2251 hours, but day of month was unknown.	

	Subfield 2 **Time of Roadway Clearance**	**Specify 1**
0000-2359	Valid Military Time (HHMM) - (Code Midnight as "0000")	
99	Unknown	

Rationale Important for management/administration, evaluation, and linkage.

Edit Checks:

E(C)03.01	Crash date cannot be greater than the current date.
E(C)03.02	Time fields must be in the range 0000 to 2359.
E(C)03.03	DD should not exceed the number of days in MM.
E(C)03.04	In a leap year, DD may be 1-29 if MM=02.

C4. Crash County

Definition The county or equivalent entity in which the crash physically occurred.

Attribute Values:

		Specify 1
001-996	County Name *GSA Geographic Locator Codes (GLC) found at www.gsa.gov.*	

Rationale Important for analyses of local programs. Critical for linkage of the crash file to other State data files (EMS, hospital, roadway, etc.). Important for intrastate comparisons.

Edit Checks:

E(C)04.01 The value of "C5. Crash City/Place (political jurisdiction)" must be within the boundary of the value of "C4. Crash County".

E(C)04.02 The value of "C6. Crash Location" must be within the boundary of the value of "C4. Crash County".

C5. Crash City/Place (Political Jurisdiction)

Definition The city/place (political jurisdiction) in which the crash physically occurred.

Attribute Values:

Specify 1

0001-9996 City/Place Name
GSA Geographic Locator Codes (GLC) found at www.gsa.gov.

9997 Other

9999 Unknown

Rationale Important for analyses of local area programs or for linkage of the State crash file to other State data files (EMS, hospital, roadway, etc.).

Edit Checks:

E(C)05.01 The value of "C5. Crash City/Place (political jurisdiction)" must be within the boundary of the value of "C4. Crash County".

E(C)05.02 The value of "C6. Crash Location" must be within the boundary of the value of "C5. Crash City/Place (political jurisdiction)."

C6. Crash Location

Definition The exact location in the trafficway to document where the first harmful event of the crash occurred.

Note: It is not expected that States collect all three attributes. The following attributes are presented in order of preference/accuracy.

Attribute Values:

Specify 2

dd.mm.ss D Latitude (degrees.minutes.seconds + compass direction)
dd.mm.ss D Longitude (degrees.minutes.seconds + compass direction)

or

LRS value 1 Linear Referencing System (LRS)
LRS value 2

or

Link Node # Link Node + Offset System (not recommended)
Offset

Rationale

Critical for problem identification, prevention programs, engineering evaluations, mapping, and linkage purposes. The location information in a crash file must have the capability to be linked to location information in other traffic records systems to study site-specific safety issues.

Latitude/Longitude: The optimum method for recording crash locations is by Lat/Long coordinates, which are universal. States can collect the GPS coordinates by one of three recommended methods: 1) directly through the use of GPS devices available on scene, 2) through use of clickable maps integrated into electronic crash reporting software, or 3) through conversion of a LRS coordinate to Lat/Long coordinates. It should be noted that use of GPS units requires data collection agencies to verify the relative accuracy of those units and to maintain them (regular calibration, etc.) to ensure quality data.

LRS: An LRS can create complex overlays of multiple events or occurrences along a route to support corridor planning, pavement rehabilitation, or other complex analysis. An LRS permits users to share information maintained by different data providers across different data layers. An LRS is not created by the geographic information system (GIS), but is actually replicated to model what is in the field. All linear data (traffic volumes, pavement types, speed limit zones, etc.) and point data (crashes, signs, etc.) collection efforts need only specify the location or endpoint locations in terms of the LRS components.

Edit Checks:

E(C)06.01 States should set up the minimum and maximum value for latitude and longitude based on the State boundaries.

C7. First Harmful Event

Definition

The first harmful event is defined as the first injury- or damage-producing event of the crash.

Attribute Values:

	Non-Collision Harmful Events	Select 1
01	Cargo/Equipment Loss or Shift	
02	Fell/Jumped From Motor Vehicle	
03	Fire/Explosion	
04	Immersion, Full or Partial	
05	Jackknife	
06	Other Non-Collision	
07	Overturn/Rollover	
08	Thrown or Falling Object	

Collision With Person, Motor Vehicle, or Non-Fixed Object

09 Animal (live)
10 Construction Equipment (backhoe, bulldozer, etc.)
11 Farm Equipment (tractor, combine harvester, etc.)
12 Motor Vehicle in Transport
13 Other Non-Fixed Object
14 Other Non-motorist
15 Parked Motor Vehicle
16 Pedalcycle
17 Pedestrian
18 Railway Vehicle (train, engine)
19 Strikes Object at Rest from MV in Transport
20 Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle

Collision With Fixed Object

21 Bridge Overhead Structure
22 Bridge Pier or Support
23 Bridge Rail
24 Cable Barrier
25 Concrete Traffic Barrier
26 Culvert
27 Curb
28 Ditch
29 Embankment
30 Fence
31 Guardrail End Terminal
32 Guardrail Face
33 Impact Attenuator/Crash Cushion
34 Mailbox
35 Other Fixed Object (wall, building, tunnel, etc.)
36 Other Post, Pole, or Support
37 Other Traffic Barrier
38 Traffic Sign Support
39 Traffic Signal Support
40 Tree (standing)
41 Utility Pole/Light Support

99 Unknown

Rationale Needed for uniformity in reported motor vehicle crash statistics, understanding crash causation, and identifying possible crash avoidance countermeasures. For analytic purposes, it may be desirable to collect and use information about subsequent events, some of which may be harmful. See “V20. Sequence of Events.”

Edit Checks:

E(C)07.01 If “C7. First Harmful Event” = 17 (Pedestrian) then at least one involved person must have “P4. Non-Motorist Person Type” = 06 (Pedestrian).

E(C)07.02 If “C7. First Harmful Event” = 16 (Pedalcycle) then at least one involved person must have “P4. Non-Motorist Person Type” = 04 (Bicyclist) or “P4. Non-Motorist Person Type” = 05 (Other Cyclist).

E(C)07.03 If “C7. First Harmful Event” = 14 (Other Non-motorist) then at least one involved person must have “P4. Non-Motorist Person Type” = 07 (Other Pedestrian (wheelchair, person in a building, skater, pedestrian conveyance)), 08 (Occupant of a Non-Motor Vehicle Transportation Device), or 09 (Unknown type of Non-Motorist).

E(C)07.04 If “C7. First Harmful Event” = 12 (Motor Vehicle in Transport) or 15 (Parked Motor Vehicle) then “C9. Manner of Crash/Collision Impact” cannot be blank.

E(C)07.05 If “C7. First Harmful Event” = 15 (Parked Motor Vehicle) then “V18. Motor Vehicle Maneuver/Action” for the struck vehicle must = 09 (Parked).

E(C)07.06 If “C7. First Harmful Event” = 17 (Pedestrian), 16 (Pedalcycle), or 14 (Other Non-motorist) then the “NM4. Non-motorist Location at Time of Crash” cannot be blank.

E(C)07.07 If “C7. First Harmful Event” does not = 12 (Motor Vehicle in Transport) or 15 (Parked Motor Vehicle) then “C9. Manner of Crash/Collision Impact” must = 00 (Not a Collision Between Two Motor Vehicles).

E(C)07.08 If “C7. First Harmful Event” = 12 (Motor Vehicle in Transport), 15 (Parked Motor Vehicle), 19 (Strikes Object at Rest from MV in Transport) or 20 (Struck by Falling, Shifting Cargo or Anything Set in Motion by MV), then “C20. Number of Motor Vehicles Involved 🔗” should include a minimum of two vehicles.

E(C)07.09 If “C7. First Harmful Event” = 15 (Parked Motor Vehicle) then “V18. Motor Vehicle Maneuver/Action” must = 09 (Parked) for at least one motorized vehicle in the crash.

C8. Location of First Harmful Event Relative to the Trafficway

Definition The location of the first harmful event as it relates to its position within or outside the trafficway. See “Figure 1: Diagram of the Trafficway” (p. 10) for diagrams of the trafficway.

Attribute Values:

Select 1

01	Gore
02	In Parking Lane or Zone
03	Median
04	Off-Roadway, Location Unknown
05	On Roadway
06	On Shoulder, Left Side
07	On Shoulder, Right Side
08	Outside Road/Right-of-Way
09	Roadside
10	Separator/Traffic Island
99	Unknown

Rationale Important to identify highway geometric deficiencies.

Edit Checks:

E(C)08.01 If “C7. First Harmful Event” = 24 (Cable Barrier), 25 (Concrete Traffic Barrier), 27 (Curb), 28 (Ditch), 29 (Embankment), 31 (Guardrail End), 32 (Guardrail Face), 38 (Traffic Sign Support), 39 (Traffic Signal Support), 41 (Utility Pole/Light Support) then “C8. Location of First Harmful Event Relative to the Trafficway” should = 01 (Gore), 03 (Median), 09 (Roadside) or 10 (Separator/Traffic Island).

C9. Manner of Crash/Collision Impact

Definition The identification of the manner in which two motor vehicles in transport initially came together without regard to the direction of force. This data element refers only to crashes where the first harmful event involves a collision between two motor vehicles in transport. See “Figure 2: Manner of Collision and Associated Crash Diagrams” (p. 17) for a diagram of the manner of collision.

Attribute Values:

Select 1

00	Not a Collision Between Two Motor Vehicles
01	Angle
02	Front to Front
03	Front to Rear
04	Rear to Rear
05	Rear to Side
06	Sideswipe, Opposite Direction
07	Sideswipe, Same Direction
98	Other
99	Unknown

Rationale Important for evaluation of occupant injuries and structural defects. This data element can be used in conjunction with “V18. Motor Vehicle Maneuver/Action” to describe the crash.

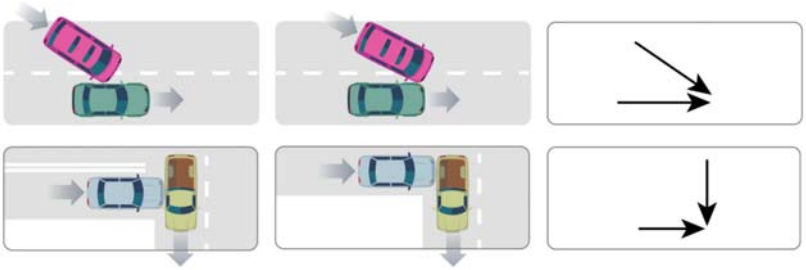
Edit Checks:

E(C)09.01	If “C7. First Harmful Event” does not = 11 (Motor Vehicle in Operation) or 14 (Parked Motor Vehicle) then “C9. Manner of Crash/Collision Impact” must be blank.
E(C)09.02	If “C7. First Harmful Event” = 11 (Motor Vehicle in Operation) or 14 (Parked Motor Vehicle) then “C9. Manner of Impact” must contain values and must not = 00 (Not a Collision Between Two Motor Vehicles).
E(C)09.03	If “C7. First Harmful Event” = 40 (Unknown) then “C9. Manner of Crash/Collision Impact” must = 99 (Unknown).
E(C)09.04	If “C20. Number of Motor Vehicles Involved”= 01 then “C9. Manner of Crash/Collision Impact” must be blank.
E(C)09.05	If “V13. Direction of Travel Before Crash” contains values showing vehicles traveling the same direction, “C9. Manner of Crash/Collision Impact” cannot be any of the following: 02 (Front to Front), 06 (Sideswipe, Opposite Direction), 05 (Rear to Side), or 04 (Rear to Rear).
E(C)09.06	If “V13. Direction of Travel Before Crash” contains values showing vehicles traveling in opposing directions, “C9. Manner of Crash/Collision Impact” cannot = 03 (Front to Rear), 07 (Sideswipe, Same Direction), or 05 (Rear to Side).
E(C)09.07	If “V13. Direction of Travel Before Crash” contains values showing vehicles traveling in perpendicular directions, “C9. Manner of Crash/Collision Impact” must = 02 (Front to Front), 01 (Angle), 05 (Rear to Side), 98 (Other) or 99 (Unknown).

Figure 2: Manner of Collision and Associated Crash Diagrams

Front to Rear Collision Example and Crash Diagram

Front to Front Collision Examples and Crash Diagram

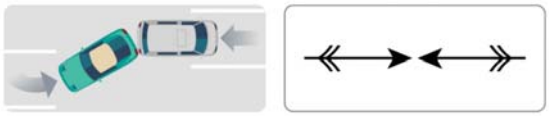


Angle Collision Examples and Crash Diagram

Sideswipe, Same Direction Collision Example and Crash Diagram

Sideswipe, Opposite Direction Collision Example and Crash Diagram

Rear to Side Collision Example and Crash Diagram



Rear to Rear Collision Example and Crash Diagram

C10. Source of Information

Definition Affiliation of the person completing the crash report.

Attribute Values:

	Subfield 1 **Source of Information**	**Select 1**
01	Law Enforcement Agency	
02	Civilian	

	Subfield 2 **Law Enforcement Agency Identifier**	**Specify 1**
9 characters	NCIC Originating Agency Identifier (OAI)	
999999997	Not Applicable	

Rationale Important for quality control and identification purposes. The Law Enforcement Agency Identifier is critical to report SAFETYNET crashes.

Edit Checks:

E(C)10.01 If only law enforcement agencies are allowed to complete form and enter data into the State database, the value cannot = 02 (Civilian).

C11. Weather Conditions

Definition The prevailing atmospheric conditions that existed at the time of the crash.

Attribute Values:

		Select 1-2
01	Blowing Sand, Soil, Dirt	
02	Blowing Snow	
03	Clear	
04	Cloudy	
05	Fog, Smog, Smoke	
06	Freezing Rain or Freezing Drizzle	
07	Rain	
08	Severe Crosswinds	
09	Sleet or Hail	
10	Snow	
98	Other	
99	Unknown	

Rationale Important for management/administration and evaluation. Critical for prevention programs and engineering evaluations.

Edit Checks:

E(C)11.01 If the value of "C11. Weather Condition" = 06 (Freezing Rain or Freezing Drizzle), 07 (Rain), 09 (Sleet or Hail), or 10 (Snow), then "C13. Roadway Surface Condition" cannot = 01 (Dry).

E(C)11.02 If 03 (Clear) is selected, a second occurrence of this element should not be selected.

C12. Light Condition

Definition The type/level of light that existed at the time of the motor vehicle crash.

Attribute Values:

Select 1

01 Daylight
02 Dawn/Dusk
03 Dark – Lighted
04 Dark – Not Lighted
05 Dark – Unknown Lighting

98 Other
99 Unknown

Rationale Important for management/administration and evaluation. Critical for prevention programs and engineering evaluations.

Edit Checks:

E(C)12.01 If the crash occurred between 1800 and 0700 (*States should adjust the time period to fit their situations*) and months *x* to *y*, "C12. Light Condition" Subfield 2 should not = 01 (Daylight).

E(C)12.02 If the crash occurred between 0700 and 1500, (*States should adjust the time period to fit their situations*) and months x to y, "C12. Light Condition" Subfield 2 should not = any of the following: 02 (Dawn), 03 (Dusk), 04 (Dark – Lighted), 05 (Dark – Not Lighted), 06 (Dark – Unknown Lighting).

NOTE: These are examples of edit checks that States may wish to use as a warning.

C13. Roadway Surface Condition

Definition The roadway surface condition at the time and place of the crash.

Attribute Values:

Select 1

01	Dry
02	Ice/Frost
03	Mud, Dirt, Gravel
04	Oil
05	Sand
06	Slush
07	Snow
08	Water (standing, moving)
09	Wet
98	Other
99	Unknown

Rationale Important to identify and correct high wet-surface crash locations and provide information for setting coefficient of pavement friction standards. Critical for prevention programs and engineering evaluations.

Edit Checks:

E(C)13.01 If the value of "C11. Weather Condition" = 06 (Freezing Rain or Freezing Drizzle), 07 (Rain), 09 (Sleet or Hail), or 10 (Snow), then "C13. Roadway Surface Condition" cannot = 01 (Dry).
Note: There may be unusual circumstances, like a tunnel that remains dry even when the weather conditions differ. States may wish to include this edit check as a warning.

E(GT)13.02 If the crash occurred during May to September, the value of "C13. Roadway Surface Condition" should not = any of the following (*States should adjust the months to fit their situations*): 02 (Ice/Frost), 06 (Slush), or 07 (Snow).

NOTE: These are examples of edit checks that States may wish to use as a warning.

C14. Contributing Circumstances – Roadway Environment

Definition Apparent environmental or roadway conditions which may have contributed to the crash.

Attribute Values:

Select 1-2

00	None
01	Animal(s)
02	Debris
03	Glare
04	Non-Highway Work
05	Obstructed Crosswalks
06	Obstruction in Roadway
07	Prior Crash
08	Prior Non-Recurring Incident
09	Regular Congestion
10	Related to a Bus Stop
11	Road Surface Condition (wet, icy, snow, slush, etc.)
12	Ruts, Holes, Bumps
13	Shoulders (none, low, soft, high)
14	Toll Booth/Plaza Related
15	Traffic Control Device
16	Traffic Incident
17	Visual Obstruction(s)
18	Weather Conditions
19	Work Zone (construction/maintenance/utility)
20	Worn, Travel-Polished Surface
98	Other
99	Unknown

Rationale Important to identify existence of unusual conditions that could be useful in determining the need for additional traffic control devices or geometric improvements. (Non-motorists are covered in traffic units.) Important to determine highway maintenance and possible engineering needs.

Edit Checks:

E(C)14.01	If "C14. Contributing Circumstances, Roadway Environment" = 18 (Weather Conditions), then the value of "C11. Weather Condition" cannot = 03 (Clear).
E(C)14.02	If "C14. Contributing Circumstances, Roadway Environment" = 00 (None), no other attributes can be selected.
E(C)14.03	If "C14. Contributing Circumstances, Roadway Environment" = 15 (Traffic Control Device), then "V17. Type of Traffic Control" must not = 00 (No Controls).
E(C)14.04	If "C14. Contributing Circumstances, Roadway Environment" = 19 (Work Zone (construction/maintenance/utility)), then "C18. Work Zone Related" Subfield 1 must = 02 (Yes); and Subfields 2, 3, 4, and 5 must not be blank.

C15. Relation to Junction

Definition The coding of this data element is based on the location of the first harmful event of the crash. It identifies the crash's location with respect to presence in a junction or proximity to components typically in junction or interchange areas. See "Figure 3. Diagram of an Interchange" (p. 23) and "Figure 4. Diagram of an Intersection" (p. 24).

Attribute Values:

Subfield 1 **Within Interchange Area?** **Select 1**

01	No
02	Yes
99	Unknown

Subfield 2 **Specific Location** **Select 1**

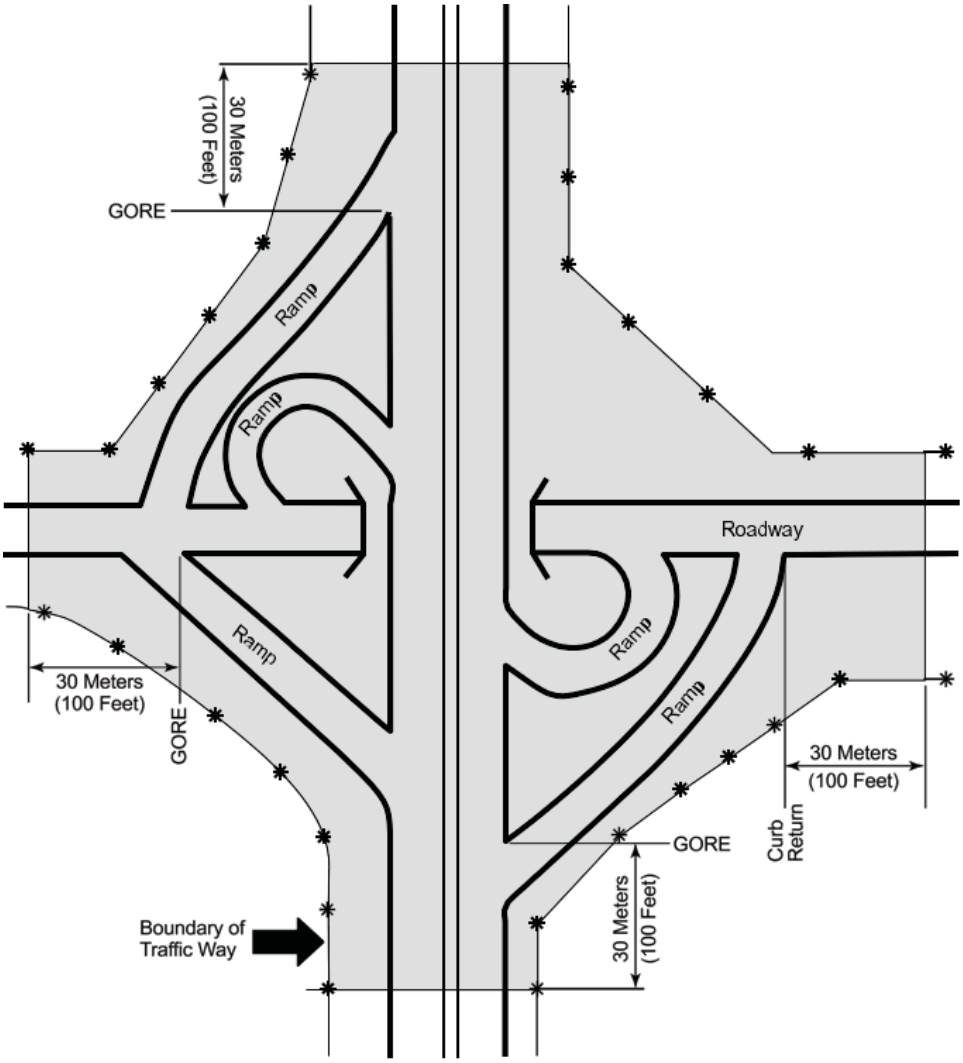
00	Not an Interchange Area
01	Acceleration/Deceleration Lane
02	Crossover-Related
03	Driveway Access or Related
04	Entrance/Exit Ramp or Related
05	Intersection or Related
06	Non-Junction
07	Railway Grade Crossing
08	Shared-Use Path or Trail
09	Through Roadway
10	Other Location Not Listed Above Within an Interchange Area (median, shoulder and roadside)
99	Unknown

Rationale Important for site-specific safety studies to identify locations with actual or potential problems.

Edit Checks:

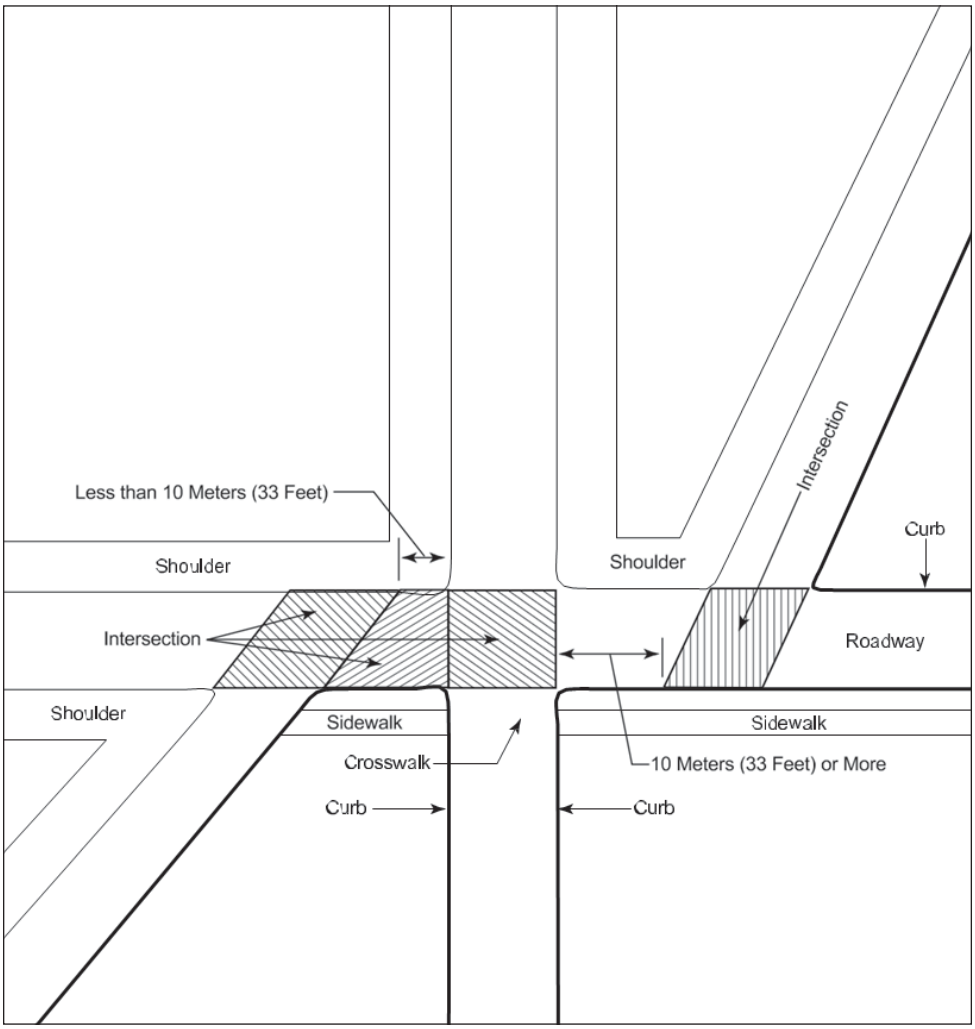
E(C)15.01	If "C8. Location of First Harmful Event Relative to the Trafficway" = 02 (In Parking Lane or Zone) then Subfield 1, Within Interchange Area cannot = 02 (Yes).
E(C)15.02	If "C16. Type of Intersection" = 00 (Not an Intersection) then "C15. Relation to Junction" Subfield 2 must not = 05 (Intersection or Related).
E(C)15.03	If "C16. Type of Intersection" Subfield 1 does not = 00 (Not an Intersection), then "C15. Relation to Junction" Subfield 2 must = 05 (Intersection or Related).
E(C)15.04	If "C15. Relation to Junction" Subfield 1, Within Interchange Area? = 02 (Yes), Subfield 2, Specific Location cannot = 06 (Non-Junction).
E(C)15.05	If "C15. Relation to Junction" Subfield 1, Within Interchange Area? = 01 (No), Subfield 2, Specific Location cannot = 09 (Through Roadway) or 10 (Other Location Not Listed Above Within an Interchange Area).

Figure 3. Diagram of an Interchange



Source: ANSI D16.2-2007 *Manual on Classification of Motor Vehicle Traffic Accidents, Seventh Edition*

Figure 4. Diagram of an Intersection



Source: ANSI D16.2-2007 *Manual on Classification of Motor Vehicle Traffic Accidents, Seventh Edition*

C16. Type of Intersection

Definition An intersection consists of two or more roadways that intersect at the same level. See “Figure 5: Overall Intersection Geometry Examples” (p. 26) for examples of overall intersection geometry.

Attribute Values:

Subfield 1 **Number of Approaches** — **Select 1**

01	Not an Intersection
02	(2) Two
03	(3) Three
04	(4) Four
05	(5+) Five or more

Subfield 2 **Overall Intersection Geometry** — **Select 1**

01	Angled/Skewed
02	Roundabout/Traffic Circle
03	Perpendicular
97	Not Applicable/Not an Intersection

Subfield 3 **Overall Traffic Control Device** — **Select 1**

01	Signalized
02	Stop – All Way
03	Stop – Partial
04	Yield
05	No Controls
97	Not Applicable/Not an Intersection

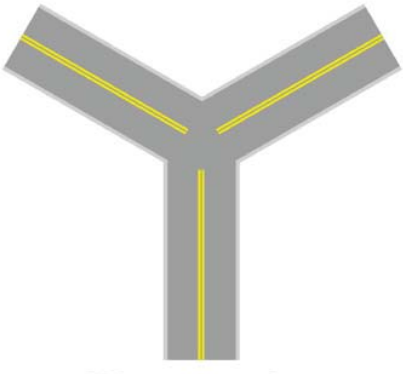
Rationale Important for site-specific safety studies to identify actual or potential safety problem locations.

Edit Checks:

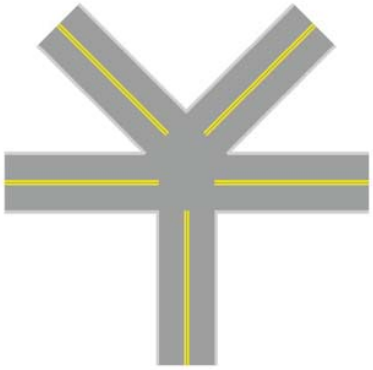
E(C)16.01	If “C14. Contributing Circumstances, Roadway” = 15 (Traffic Control Device) then “C16. Type of Intersection” Subfield 3 must not = 05 (No Control).
E(C)16.02	If “C7. First Harmful Event” = 38 (Traffic Signal Support) then “C16. Type of Intersection” Subfield 3 must not = 05.
E(C)16.03	If any “C16. Type of Intersection” Subfield = Not Applicable/Not an Intersection then all must = Not Applicable/Not an Intersection.
E(C)16.04	If “C15. Relation to Junction” Subfield 2 Specific Location = 05 (Intersection or Related) then no “C16. Type of Intersection” Subfield can = Not Applicable/Not an Intersection.

Figure 5: Overall Intersection Geometry Examples

Angled/Skewed Intersection Examples

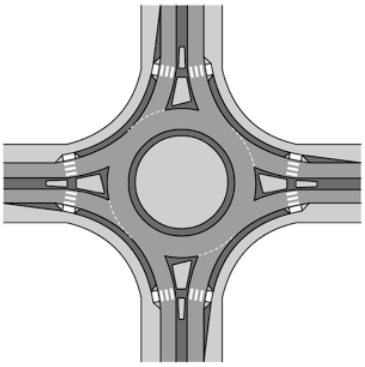


Y-Intersection



Five or more legs and not circular

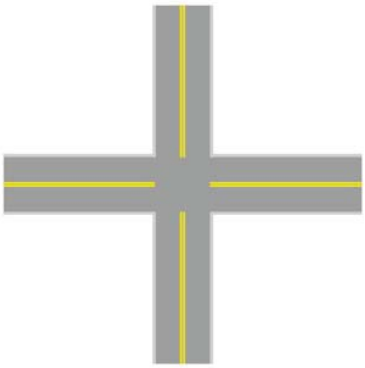
Roundabout/Traffic Circle Intersection Examples



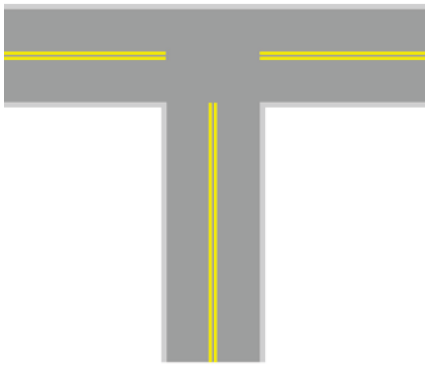
Roundabout

Other circular intersections (e.g., rotaries, neighborhood traffic circles)

Perpendicular Intersection Examples



Cross-Intersection (four legs)



T-Intersection

Source: Model Inventory of Roadway Elements, Version 1.0

C17. School Bus-Related

Definition Indicates whether a school bus or motor vehicle functioning as a school bus for a school-related purpose is involved in the crash. The "school bus," with or without a passenger on board, must be directly involved as a contact motor vehicle or indirectly involved as a non-contact motor vehicle (children struck when boarding or alighting from the school bus, two vehicles colliding as the result of the stopped school bus, etc.).

Attribute Values:

Select 1

01	No
02	Yes, School Bus Directly Involved
03	Yes, School Bus Indirectly Involved

Rationale Important in determining where and how school children are at the greatest risk of injury when being transported by a school bus and the extent to which school bus operations affect overall traffic safety.

Edit Checks:

E(C)17.01 If any involved vehicle has "V10. Special Function of Motor Vehicle in Transport" = 01 (Bus – School (Public or Private)) or 02 (Bus – Childcare/Daycare), then "C17. School Bus Related" must = 02 (Yes, School Bus Directly Involved).

C18. Work Zone-Related (Construction/Maintenance/Utility)

Definition A crash that occurs in or related to a construction, maintenance, or utility work zone, whether or not workers were actually present at the time of the crash. "Work zone-related" crashes may also include those involving motor vehicles slowed or stopped because of the work zone, even if the first harmful event occurred before the first warning sign. See "Figure 6: Diagram of a Work Zone Area" (p. 29) for a diagram of the work zone area.

Attribute Values:

Subfield 1 **Was the crash in a construction, maintenance, or utility work zone or was it related to activity within a work zone?** **Select 1**

01	No
02	Yes
99	Unknown

Subfield 2 **Location of the Crash** **Select 1**

01	Before the First Work Zone Warning Sign
02	Advance Warning Area
03	Transition Area
04	Activity Area
05	Termination Area
98	Not Applicable/Not Within or Related to a Work Zone

Subfield 3 **Type of Work Zone** **Select 1**

01 Lane Closure
02 Lane Shift/Crossover
03 Work on Shoulder or Median
04 Intermittent or Moving Work
05 Other Type of Work Zone

98 Not Applicable/Not Within or Related to a Work Zone

Subfield 4 **Workers Present** **Select 1**

01 No
02 Yes

98 Not Applicable/Not Within or Related to a Work Zone
99 Unknown

Subfield 5 **Law Enforcement Present** **Select 1**

01 No
02 Yes

98 Not Applicable/Not Within or Related to a Work Zone

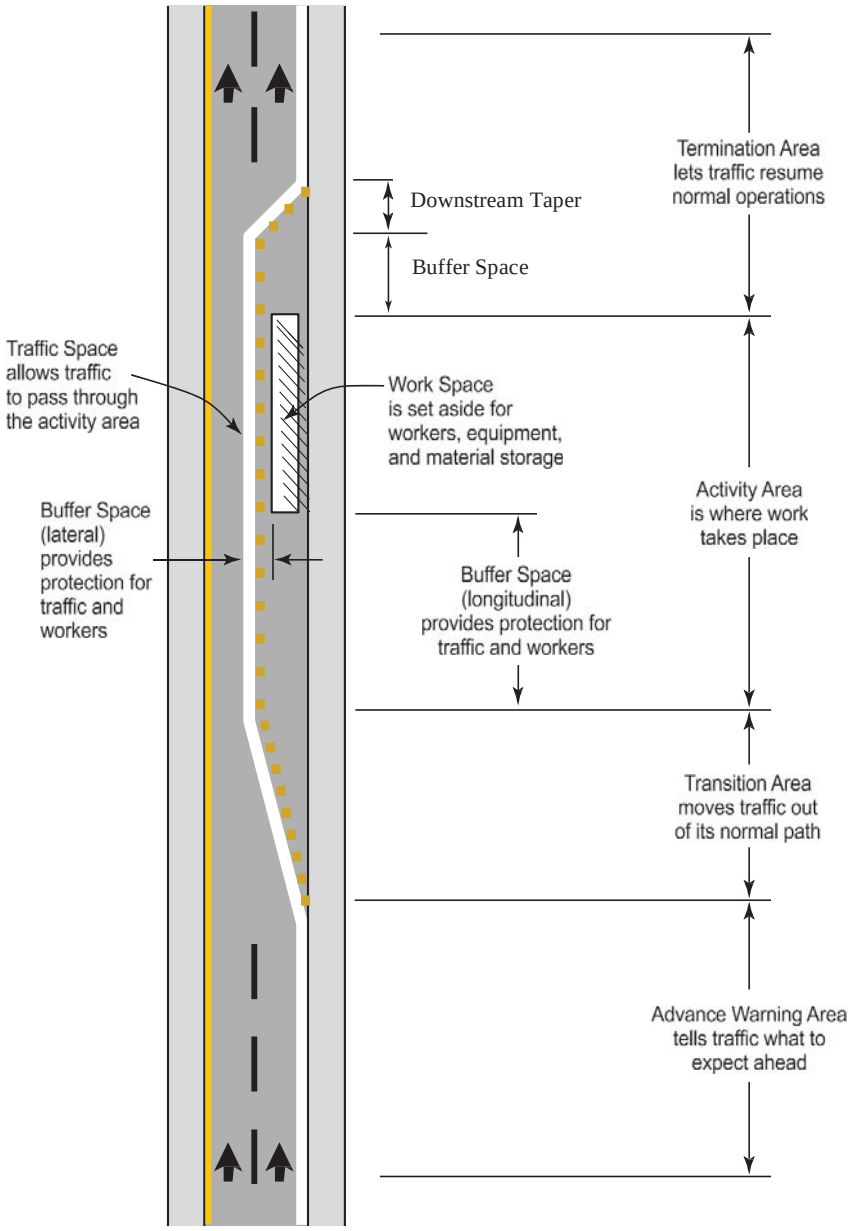
Rationale Important to assess the impact on traffic safety of various types of on-highway work activity, to evaluate Traffic Control Plans used at work zones, and to make adjustments to Traffic Control Plans for the safety of workers and the traveling public. This data element needs to be collected at the scene because work zones are temporary or moving operations that are not recorded in permanent road inventory files.

Edit Checks:

E(C)18.01 If "C7. First Harmful Event" = 19 (Work Zone/Maintenance Equipment) then Subfield 1 must = 02 (Yes), and Subfield 2, Subfield 3, Subfield 4, and Subfield 5 cannot = 98 (Not Applicable/Not Within or Related to a Work Zone).

E(C)18.02 If "C18. Work Zone-Related (Construction/Maintenance/Utility)" Subfield 1 = 01 (No), Subfields 2, 3, 4 and 5 must = 98 (Not Applicable/Not Within or Related to a Work Zone).

Figure 6: Diagram of a Work Zone Area



C19. Crash Severity

Definition The severity of a crash based on the most severe injury to any person involved in the crash.

Source: Derived from "P5. Injury Status" for each person involved in the crash.

Attribute Values:

Select 1

01	(K) Fatal Injury**
02	(A) Suspected Serious Injury
03	(B) Suspected Minor Injury
04	(C) Possible Injury
05	(O) Property Damage-Only
99	Unknown

Rationale Provides a classification of the severity of the crash for the user without having to search through the person level records. This simplifies the use of the crash data file for producing reports by crash severity.

****If attribute is selected the Fatal Crash Section must be completed.****

Edit Checks:

E(C)19.01 If attribute 01 ((K) Fatal Injury) is selected, elements "F1. Attempted Avoidance Maneuver," "F2. Alcohol Test Type and Results," and "F3. Drug Test Type and Results" must not be blank.

C20. Number of Motor Vehicles Involved

Definition The total number of motor vehicles (automobiles, single-unit trucks, truck combinations, motorcycles, etc.) that are involved in the crash.

Source: Derived by counting the number of motor vehicles involved in a crash as indicated in "V2. Motor Vehicle Unit Type and Number."

Attribute Values:

Specify 1

x	Number of motor vehicles involved

Rationale Provides a count of the number of motor vehicles involved in the crash without having to count the number of motor vehicle records. This simplifies the use of the crash data file for producing reports in which the number of involved motor vehicles is needed.

Edit Checks:

E(C)20.01 If "C7. First Harmful Event" = 11 (MV in Transport), 14 (Parked MV), 18 (Struck by Falling, Shifting Cargo or Anything Set in Motion by MV) or 19 (Work Zone/Maintenance Equipment) then "C20. Number of Motor Vehicles Involved" must = 2 or more.

C21. Number of Motorists

Definition The total number of motorists refers to the count of occupants of motor vehicles involved in the crash.

Source: Derived by counting the number of motorists involved in the crash as indicated in "P4. Person Type."

Attribute Values:

x Number of Motorists — **Specify 1**

Rationale Provides a count of the number of occupants of motor vehicles involved in the crash without having to count the number of person level records. This simplifies the use of the crash data file for producing reports or carrying out analyses in which the number of motorists is needed or in identifying crashes involving motorists.

Edit Checks:

E(C)21.01 "C21. Number of Motorists" should be greater than or = to "C20. Number of Motor Vehicles" unless "C7. First Harmful Event" = 14 (Parked MV) or V19 Subfield 1 = 00 (Non-collision) or V19 Subfields 2 or 3 = 16/04 (Vehicle Not at Scene).

C22. Number of Non-Motorists

Definition The total number of non-motorists refers to the count of persons that are not occupants of motor vehicles (pedestrians, pedalcyclists, etc.).

Source: Derived by counting the number of non-motorists involved in the crash as indicated in "P4. Person Type."

Attribute Values:

x Number of Non-Motorists — **Specify 1**

Rationale Provides the total count of non-motorists involved in the crash without having to manually count the number of non-motorist records. This should be derived when possible.

Edit Checks: None

C23. Number of Non-Fatally Injured Persons

Definition The total number of persons injured, excluding fatalities within 30 days in the crash.

Source: Derived by counting the number of persons with suspected serious (A), suspected minor (B) or possible (C) injuries resulting from the crash as indicated in "P5. Injury Status."

Attribute Values:

x Number of Non-Fatally Injured Persons — **Specify 1**

Rationale Provides a count of the number of persons injured in the crash without having to search through the person level records. This simplifies the use of the crash data file for producing reports in which the number of injured persons is needed.

Edit Checks:

E(C)23.01 "C23. Number of Non-Fatally Injured Persons" must not be greater than the sum of "C21. Number of Motorists" and the number of persons coded as 04 (Non-Motorist) in "P4. Person Type."

C24. Number of Fatalities

Definition The total number of fatalities (motorists and non-motorists) that resulted from injuries sustained as the result of a specific motor vehicle crash. In reporting fatality statistics, a 30-day counting rule is generally used (only deaths that occur within 30 24-hour periods of a crash are counted).

Source: Derived by counting number of persons fatally injured in the crash from *(K) Fatal Injury* listed in "P5. Injury Status."

Attribute Values:

x Number of Fatalities — **Specify 1**

Rationale Provides a count of the number of persons fatally injured in the crash without having to search through the person level records. This simplifies the use of the crash data file for producing reports in which the number of fatalities is needed or in identifying crashes involving a fatality.

Edit Checks:

E(C)24.01 "C24. Number of Fatalities" must not be greater than the sum of "C21. Number of Motorists" plus the number of persons coded as 04 (Non-Motorist) in "P4. Person Type."

E(C)24.02 If Number of Fatalities > 0, elements "F1. Attempted Avoidance Maneuver," "F2. Alcohol Test Type and Results," and "F3. Drug Test Type and Results" must not be blank.

C25. Alcohol Involvement

Definition Law enforcement suspected or documented that at least one driver or non-motorist involved in the crash had used alcohol, regardless of legal limit.

Source: Derived from the driver and non-motorist elements, "P20. Law Enforcement Suspects Alcohol Use" and "P21. Alcohol Test."

Attribute Values:

Select 1

01 No
02 Yes

99 Unknown

Rationale Provides a way to easily identify alcohol-related crashes without having to search through the person level records.

Edit Checks: None

C26. Drug Involvement

Definition Law enforcement suspected or documented that at least one driver or non-motorist involved in the crash had used drugs.

Source: Derived from the driver and non-motorist elements, "P22. Law Enforcement Suspects Drug Use" and "P23. Drug Test."

Attribute Values:

Select 1

01 No
02 Yes

99 Unknown

Rationale Provides a way to easily identify drug-related crashes without having to search through the person level records.

Edit Checks: None

C27. Day of Week

Definition The day of the week on which the crash occurred.

Source: Derived from the element "C3. Crash Date and Time."

Attribute Values:

Select 1

01	Sunday
02	Monday
03	Tuesday
04	Wednesday
05	Thursday
06	Friday
07	Saturday

Rationale Permits the user to quickly obtain this information for crash analyses without having to translate the date.

Edit Checks: None

Vehicle Data Elements

The motor vehicle data elements describe the characteristics, events, and consequences of the motor vehicle(s) involved in the crash.

V1. Vehicle Identification Number (VIN)

Definition A unique combination of alphanumeric characters assigned to a specific motor vehicle that is designated by the manufacturer.

Attribute Values:

xyz…n	Manufacturer-assigned number (permanently affixed to the motor vehicle)	**Specify 1**

Rationale Important to identify specific motor vehicle design characteristics and occupant protection systems for effectiveness evaluations.

Edit Checks:

E(V)01.01 Where VIN decoding software is used, check for a valid decode and match values for "V5. Motor Vehicle Make" and "V6. Motor Vehicle Model Year".

V2. Motor Vehicle Unit Type and Number

Definition Motor vehicle unit type and number assigned to uniquely identify each motor vehicle involved in the crash. This number is not assigned to non-motorists.

Attribute Values:

Subfield 1	**Type**	**Select 1**
01	Motor Vehicle in Transport	
02	Parked Motor Vehicle	
03	Working Vehicle/Equipment	
Subfield 2	**Number**	**Specify 1**
	Sequential Number	

Rationale Uniquely identifies each motor vehicle unit involved in the crash. Permits occupants to be assigned to the appropriate motor vehicle.

Edit Checks:

E(V)02.01 If "C7. First Harmful Event" = 11 (Motor Vehicle in Transport) then at least one involved vehicle must = "V2. Motor Vehicle Unit Type and Number" Subfield 1 = 01 (Motor Vehicle in Transport).

E(V)02.02 If "C7. First Harmful Event" = 14 (Parked Motor Vehicle) then at least one involved vehicle must = "V2. Motor Vehicle Unit Type and Number" Subfield 1 = 02 (Parked Motor Vehicle) and another vehicle in the crash must = "V2. Motor Vehicle Unit Type and Number" Subfield 1 = 01 (Motor Vehicle in Transport).

E(V)02.03 If "C7. First Harmful Event" = 19 (Work Zone/Maintenance Equipment) then at least one involved vehicle must have "V2. Motor Vehicle Unit Type and Number" Subfield 1 = 03 (Working Vehicle/Equipment) and another vehicle in the crash must have "V2. Motor Vehicle Unit Type and Number" Subfield 1 = 01 (Motor Vehicle in Transport).

E(V)02.04 If "V2. Motor Vehicle Unit Type and Number" Subfield 1 = 01 (Motor Vehicle in Transport), then "V18. Motor Vehicle Maneuver/Action" must not = 09 (Parked) for the same vehicle.

E(V)02.05 If "V2. Motor Vehicle Unit Type and Number" Subfield 1 = 02 (Parked Motor Vehicle), then "V18. Motor Vehicle Maneuver/Action" must = 09 (Parked) for the same vehicle.

V3. Motor Vehicle Registration State and Year

Definition The State, commonwealth, territory, Indian nation, U.S. Government, foreign country, etc., issuing the registration plate and the year of registration as indicated on the registration plate displayed on the motor vehicle. For foreign countries, MMUCC requires only the name of the country. Border States may want to collect the name of individual Canadian Provinces or Mexican States. Refer to "Appendix E: ANSI State FIPS and USPS Codes" (p. 197) and "Appendix F: ISO 3166-2 Codes for Canada and Mexico" (p. 199).

Attribute Values:

Subfield 1	**Identifier**	**Specify 1**
00	No Driver Present	☐
Appendix E	State Identifier	
Appendix F	*State, foreign country, U.S. government, Indian Nation, etc.*	
99	Unknown	
Subfield 2	**Motor Vehicle Registration**	**Specify 1**
YYYY	Year of Motor Vehicle Registration	☐

Rationale This element is critical in providing linkage between the crash and motor vehicle registration files to access the motor vehicle identification number.

Edit Checks:

E(V)03.01 Motor Vehicle Registration year cannot be greater than current year.

V4. Motor Vehicle License Plate Number

Definition The alphanumeric identifier or other characters, exactly as displayed, on the registration plate or tag affixed to the motor vehicle. For combination trucks, motor vehicle plate number is obtained from the truck tractor.

Attribute Values:

xyz…n Alphanumeric Identifier
(Assigned by the State, foreign country, U.S. Government, or Indian Nation)

Specify 1

Rationale Critical for linkage between the crash and motor vehicle registration files.

Edit Checks: None

V5. Motor Vehicle Make

Definition The manufacturer-assigned, coded name applied to a group of motor vehicles.

Attribute Values:

Name
Assigned by motor vehicle manufacturer

Specify 1

Rationale Important for use in identifying motor vehicle make, for evaluation, research, and crash comparison purposes.

Edit Checks: None

V6. Motor Vehicle Model Year

Definition The year that is assigned to a motor vehicle by the manufacturer.

Attribute Values:

YYYY	Model Year *(Year as assigned by motor vehicle manufacturer and obtained from the vehicle registration.)*	**Specify 1**

Rationale Important for use in identifying motor vehicle model year for evaluation, research, and crash comparison purposes.

Edit Checks:

E(V)06.01	The value of "V6. Motor Vehicle Model Year" cannot exceed current year.
E(V)06.02	If YYYY is not derived from VIN, compare YYYY to decoded value from VIN position 10.

V7. Motor Vehicle Model

Definition The manufacturer-assigned code denoting a family of motor vehicles (within a make) that have a degree of similarity in construction, such as body, chassis, etc.

Attribute Values:

Model code	Code for Model *(Assigned by motor vehicle manufacturer and obtained from the vehicle registration.)*	**Specify 1**

Rationale Important for use in identifying the motor vehicle model for evaluation, research, and crash comparison purposes.

Edit Checks: None

V8. Motor Vehicle Body Type Category

Definition The category indicating the general configuration or shape of a motor vehicle distinguished by characteristics such as number of doors, rows of seats, windows, or roof line. Personal conveyances—such as skateboards, motorized toy cars, and wheelchairs—are not considered motor vehicles.

Attribute Values:

Subfield 1	**Body Type Category**	**Select 1**
01	All-Terrain Vehicle/All-Terrain Cycle (ATV/ATC)	☐
02	Golf Cart	
03	Snowmobile	
04	Low Speed Vehicle	
05	Moped or motorized bicycle	
06	Recreational Off-Highway Vehicles (ROV)	
07	2-Wheeled Motorcycle	
08	3-Wheeled Motorcycle	
09	Autocycle	
10	Passenger Car	
11	Passenger Van (< 9 seats)	
12	(Sport) Utility Vehicle	
13	Pickup	
14	Cargo Van**	
15	Construction Equipment (backhoe, bulldozer, etc.)	
16	Farm Equipment (tractor, combine harvester, etc.)	
17	Single-Unit Truck**	
18	Truck Tractor**	
19	Motor Home	
20	9- or 12-Passenger Van**	
21	15-Passenger Van**	
22	Large Limo**	
23	Mini-bus**	
24	School Bus**	
25	Transit Bus**	
26	Motorcoach**	
27	Other Bus Type**	
28	Other Trucks	
98	Other	

Subfield 2	**Number of Trailing Units**	**Select 1**
01-03	Number of trailers	☐
97	Not Applicable (vehicle with no trailing units)	

Subfield 3 **Vehicle Size**

Note: GVWR is used for single-unit trucks and other body types.
GCWR is used for combination trucks or any vehicle with a trailing unit.

Select 1

01 Light (Less than 10,000 lbs. GVWR/GCWR)
02 Medium (10,001 – 26,000 lbs. GVWR/GCWR)**
03 Heavy (Greater than 26,000 lbs. GVWR/GCWR)**

Subfield 4 **Did this motor vehicle display a hazardous materials (HM) placard?**

Select 1

01 No
02 Yes**

Rationale Important to identify the specific type of motor vehicle involved in the crash for evaluation and comparison purposes.

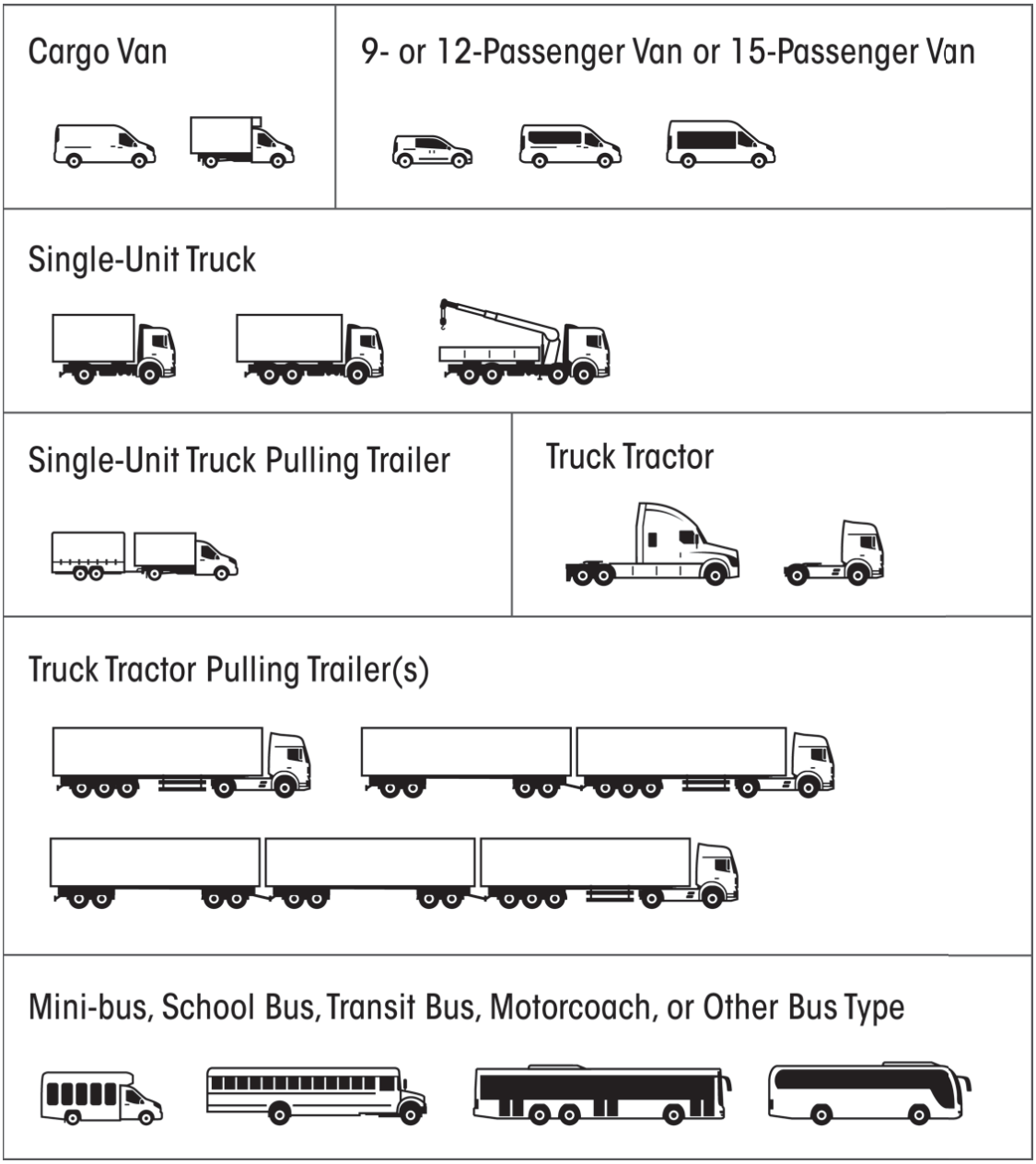
****If attribute is selected from Subfield 1, 3 or 4, the Large Vehicle/Hazardous Materials Section must be completed.** See "Figure 7. FMCSA Body Types Requiring Large Vehicle and Hazardous Materials Section Completion" (p. 41)**

Edit Checks:

E(V)08.01 If any value in "V8. Motor Vehicle Body Type Category" Subfield 1, 3, or 4 is one of the marked large vehicle codes (indicated by **), ["V23. Towed Due to Disabling Damage" = 02 (Towed Due to Disabling Damage) **and/or** (the sum of "C22. Number of Non-Fatally Injured Persons" and "C23. Number of Fatalities" is greater than 0)], then the Large Vehicle/Hazardous Materials Section must be completed.

E(V)08.02 If "V8. Motor Vehicle Body Type Category" Subfield 2 is not = 97, and the LV section is required (see E(V)08.01), then trailing unit information in LV2, LV3, LV4, LV5, and LV6 is required and must have the same number of Subfields completed (maximum of 4) as the number shown in V8 Subfield 2.

Figure 7. FMCSA Body Types Requiring Large Vehicle and Hazardous Materials Section Completion



V9. Total Occupants in Motor Vehicle

Definition The total number of injured and uninjured occupants in this motor vehicle involved in the crash, including persons in or on the motor vehicle at the time of the crash.

Attribute Values:

x Total number of injured and uninjured occupants including the driver **Specify 1**

Rationale Important for the officer at the scene to indicate how many people (injured and uninjured) are involved for reporting purposes. Useful for evaluating the effectiveness of countermeasures that prevent or reduce injury and injury severity.

Edit Checks:

E(V)09.01 Value of "V9. Total Occupants in Motor Vehicle" must = the total number of Person Records for this vehicle number.

V10. Special Function of Motor Vehicle in Transport

Definition The type of special function being served by this vehicle regardless of whether the function is marked on the vehicle, at the time of the crash. Buses are any motor vehicle with seats to transport nine (9) or more people, including the driver seat, but not including vans owned and operated for personal use.

Attribute Values:

Select 1

00 No Special Function

01 Bus – School (Public or Private)
02 Bus – Childcare/Daycare
03 Bus – Transit/Commuter
04 Bus – Charter/Tour
05 Bus – Intercity
06 Bus – Shuttle
07 Bus – Other

08 Farm Vehicle
09 Fire Truck
10 Highway/Maintenance
11 Mail Carrier
12 Military

13 Ambulance
14 Police
15 Public Utility
16 Non-Transport Emergency Services Vehicle
17 Safety Service Patrols – Incident Response
18 Other Incident Response

19 Rental Truck (Over 10,000 lbs.)
20 Towing – Incident Response
21 Truck Acting as Crash Attenuator

22 Taxi
23 Vehicle Used for Electronic Ride-hailing (transportation network company)

98 Other
99 Unknown

Rationale Important to evaluate the outcome of vehicles used for special uses that are involved in crashes.

Edit Checks:

E(V)10.01 If "C17. School Bus Related" = 02 (Yes, School Bus Directly Involved) then there must be at least one vehicle with "V10. Special Function of Motor Vehicle in Transport" = 01 (Bus – School (Public or Private)).

E(V)10.02 If "V8. Motor Vehicle Body Type Category" = 20, 21, 23-27, "V10. Special Function of Motor Vehicle in Transport" must = 1-7.

V11. Emergency Motor Vehicle Use

Definition Indicates operation of any motor vehicle that is legally authorized by a government authority to respond to emergencies with or without the use of emergency warning equipment, such as a police vehicle, fire truck, or ambulance while actually engaged in such response.

Attribute Values:

Select 1

01 Non-Emergency, Non-Transport
02 Non-Emergency Transport
03 Emergency Operation, Emergency Warning Equipment Not in Use
04 Emergency Operation, Emergency Warning Equipment in Use

97 Not applicable
99 Unknown

Rationale Driver behavior related to emergency vehicle response is an emerging national issue. This is true for both operators of emergency vehicles and operators of vehicles in the vicinity of an emergency vehicle engaged in a response. It is the intent of this element to gather information that will guide development of training or other countermeasures to reduce the number of crashes involving emergency vehicle response.

Edit Checks:

E(V)11.01 If "V11. Emergency Motor Vehicle Use" = 01-04, "V10. Special Function of Motor Vehicle in Transport" must not = 00-08, 11, 19, 22, or 23.

V12. Motor Vehicle Posted/Statutory Speed Limit

Definition The posted/statutory speed limit for the motor vehicle at the time of the crash. The authorization may be indicated by the posted speed limit, blinking sign at construction zones, etc.

Attribute Values:

xx	Posted/Statutory Value (miles per hour)	**Select 1**
97	Not Applicable	
99	Unknown	

Rationale Important for evaluation purposes (even though the speed of the motor vehicle at the time of the crash may differ significantly from the authorized speed limit).

Edit Checks:

E(V)12.01 Value should be divisible by 5 with no remainder. *States may wish to make this a warning in case there are other speed limits posted not ending in 0 or 5.*

V13. Direction of Travel Before Crash

Definition The direction of a motor vehicle's travel on the roadway before the crash. Notice that this is not a compass direction, but a direction consistent with the designated direction of the road. For example, the direction of a State-designated North-South highway must be either northbound or southbound even though a motor vehicle may have been traveling due east as a result of a short segment of the highway having an east-west orientation.

Attribute Values:

Select 1

00	Not on Roadway
01	Northbound
03	Eastbound
06	Southbound
09	Westbound
99	Unknown

Rationale Important to indicate direction the motor vehicle was traveling before the crash for evaluation purposes.

Edit Checks:

E(V)13.01 Value of "V13. Direction of Travel Before Crash" should match a valid choice for this location based on the roadway description found for "C6. Crash Location" in the roadway file/inventory.

V14. Trafficway Description

Definitions Indication of whether or not the trafficway for this vehicle is divided and whether it serves one-way or two-way traffic and the type of lane this vehicle was using.

Subfield 1 identifies whether the trafficway associated with this vehicle serves one-way or two-way traffic. **Subfield 2** identifies whether or not the trafficway for this vehicle is divided. **Subfield 3** identifies the configuration of the HOV/HOT lane if this vehicle's involvement in the crash was related to its entry, use of, or exit from an HOV/HOT lane. **Subfield 4** identifies the type of lane this vehicle was using when involved in the crash.

Attribute Values:

Select 1

Subfield 1	**Travel Directions**
01	One-Way
02	Two-Way

Subfield 2 **Divided?** **Select 1**

00 Not Divided

01 Not Divided, With a Continuous Left-Turn Lane
02 Divided, Flush Median (greater than 4ft wide)
03 Divided, Raised Median (curbed)
04 Divided, Depressed Median

99 Unknown

Subfield 3 **Barrier Type** **Select 1**

00 No Barrier

01 Cable Barrier
02 Concrete Barrier (e.g. Jersey Barrier)
03 Earth Embankment
04 Guardrail

98 Other

Subfield 4 **HOV/HOT Lanes** **Select 1**

00 None present

01 Separated, Barrier, Flush (greater than 4ft wide), Raised or Depressed Median
02 Not Separated, Painted Pavement Markings, Post-Mounted Delineators

Subfield 5 **Crash Related to HOV/HOT Lane?** **Select 1**

01 No
02 Yes

Rationale Used in classifying crashes as well as identifying the environment of a particular crash. Note that the data must be in a road inventory file or collected by the reporting officer at the scene. It is not readily derived from other road data such as classification or route. Important to guide future trafficway design and traffic control.

Edit Checks:

E(V)14.01 Values in Subfields 1-4 of "V14. Trafficway Description" should match the roadway description found for "C6. Crash Location" in the roadway file/inventory.

E(V)14.02 If "V14. Trafficway Description" Subfield 1 = 01 (One Way) then Subfield 2 must = 00 (Not Divided)

E(V)14.03 If "V14. Trafficway Description" Subfield 2 = 00 (Not Divided) or 01 (Not Divided, With a Continuous Left-Turn Lane), then Subfield 3 must = 00 (No Barrier).

V15. Total Lanes in Roadway

Definition Total number of lanes in the roadway on which this MV was traveling. Through lanes also includes shared through/turn lanes but excludes turn-only lanes' auxiliary lanes, such as collector-distributor lanes, weaving lanes, frontage road lanes, parking lanes, acceleration/deceleration lanes, toll collection lanes, and truck climbing lanes. Total lanes are collected in two parts as total through lanes and total auxiliary lanes.

Attribute Values:

		Specify 2 Values
	Undivided Trafficways	
xx	Enter the total through lanes in both directions, excluding auxiliary lanes.	
yy	Enter the total auxiliary lanes in both directions	
97	Not Applicable	
	Divided Trafficways	
xx	Enter the total through lanes in the vehicle's direction, excluding auxiliary lanes.	
yy	Enter the total auxiliary lanes in the vehicle's direction	
97	Not Applicable	

Rationale Used in classifying crashes as well as identifying the environment of a particular crash. Note that the data must be in a road inventory file or collected by the reporting officer at the scene. It is not readily derived from other road data such as classification or route. Important to guide future trafficway design and traffic control.

Edit Checks:

E(V)15.01 If Subfield 2 of "V14. Trafficway Description" = 00 (Not Divided) or 01 (Not Divided, With a Continuous Left-Turn Lane) then "V15. Total Lanes in Roadway" must be completed.

E(V)15.02 If Subfield 2 of "V14. Trafficway Description" = 02 (Divided, Flush Median) or 03 (Divided, Raised Median) or 04 (Divided, Depressed Median) then "V15. Total Lanes in Roadway" must be completed.

V16. Roadway Alignment and Grade

Definition The geometric or layout and inclination characteristics of the roadway in the direction of travel for this vehicle.

Attribute Values:

Subfield 1 **Horizontal Alignment** **Select 1**

01	Straight
02	Curve Left
03	Curve Right

Subfield 2 **Grade** **Select 1**

01	Level
02	Uphill
03	Hillcrest
04	Downhill
05	Sag (bottom)

Rationale Important to document the horizontal alignment and grade of the roadway as it relates to this specific vehicle involved in the crash for the purpose of evaluating vehicles that run-off-road, rollover, or are runaways.

Edit Checks:

E(V)16.01	If “V16. Roadway Alignment and Grade” Subfield 1 does not = 01, then “R2. Roadway Curvature” must not = 97.
E(V)16.02	If “V16. Roadway Alignment and Grade” Subfield 1 does not = 01, then “R3. Grade” Subfield 2 must not = 0.

V17. Traffic Control Device Type

Definition The type of traffic control device (TCD) applicable to this motor vehicle at the crash location.

Attribute Values:

Subfield 1	**TCD Type(s)**	**Select 1-4**
00	No Controls	
01	Person (including flagger, law enforcement, crossing guard, etc.)	
	Signs	
02	Bicycle Crossing Sign	
03	"Curve Ahead" Warning Sign	
04	"Intersection Ahead" Warning Sign	
05	Other Warning Sign	
06	Pedestrian Crossing Sign	
07	Railroad Crossing Sign	
08	"Reduce Speed Ahead" Warning Sign	
09	School Zone Sign	
10	Stop Sign	
11	Yield Sign	
	Signals	
12	Flashing Railroad Crossing Signal (may include gates)	
13	Flashing School Zone Signal	
14	Flashing Traffic Control Signal	
15	Lane Use Control Signal	
16	Other Signal	
17	Ramp Meter Signal	
18	Traffic Control Signal	
	Pavement Markings	
19	Bicycle Crossing	
20	Other Pavement Marking *(excluding edgelines, centerlines, or lane lines)*	
21	Pedestrian Crossing	
22	Railroad Crossing	
23	School Zone	
98	Other	
99	Unknown	

Subfield 2	**Are any Inoperative or Missing?**	**Select 1-4**
00	None inoperative or missing	
01-99	*See attributes from Subfield 1*	

Rationale This element needs to be collected at the scene because the presence of specific devices is better verified at the time of the crash. It is also important for ascertaining the relationship between the use of various traffic control devices (TCD) and crashes and identifying the need for upgraded TCDs at specific crash locations.

Edit Checks:

E(V)17.01 If "C7. First Harmful Event" = 38 (Traffic Signal Support), then V17 Subfield 1 must not = 00 (No Controls).

V18. Motor Vehicle Maneuver/Action

Definition The controlled maneuver for this motor vehicle prior to the beginning of the sequence of events.

Attribute Values:

Select 1

01	Backing
02	Changing Lanes
03	Entering Traffic Lane
04	Leaving Traffic Lane
05	Making U-Turn
06	Movements Essentially Straight Ahead
07	Negotiating a Curve
08	Overtaking/Passing
09	Parked
10	Slowing
11	Stopped in Traffic
12	Turning Left
13	Turning Right
98	Other
99	Unknown

Rationale Important for crash evaluation, particularly when combined with sequence of events.

Edit Checks:

E(V)18.01 If "V18. Motor Vehicle Maneuver/Action" is = to 09 (Parked), then "V2. Motor Vehicle Unit Type and Number" Subfield 1 must not = 01 (Motor Vehicle in Transport).

V19. Vehicle Damage

Definition

Subfield 1 of this element is intended to collect the approximate contact point on this vehicle associated with this vehicle's initial harmful event. If the initial harmful event does not involve a collision, then code the attribute, Non-Collision (refer to glossary). If the initial harmful event for this vehicle involves striking another vehicle, person, or property (a collision event) by virtue of a load/cargo that falls from or is propelled by the vehicle, then code the attribute, Cargo Loss. If the vehicle is not at the scene for the officer to assess the initial point of contact, location of damaged area(s), or resulting extent of damage, then code the attribute, Vehicle Not at Scene, for all three Subfields.

Subfield 2 identifies all areas damaged on the vehicle as a result of this crash.

Subfield 3 identifies the extent to which the damage identified in Subfield 2 affects the vehicle's operability rather than the cost to repair.

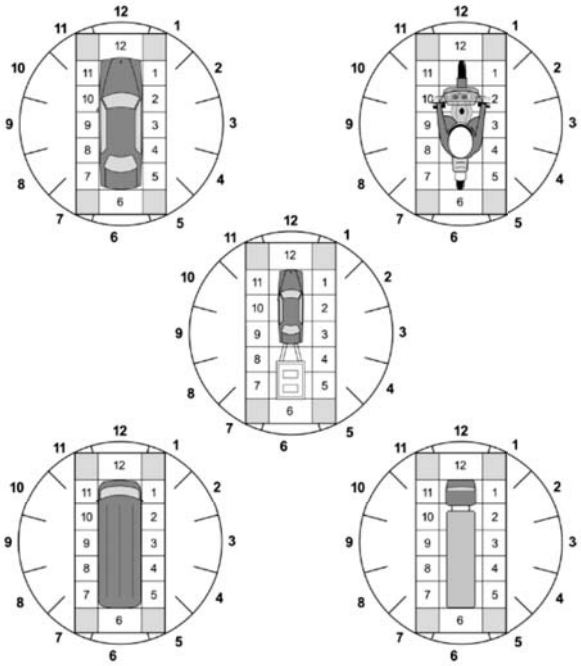
Refer to "Appendix H: Clock-point Diagrams for Different Types of Motor Vehicles" (p. 203) for a larger version of the clock-point diagrams.

Attribute Values:

Subfield 1 **Initial Point of Contact** — **Select 1**

00 Non-Collision

01
02
03
04
05
06
07
08
09
10
11
12



13 Top
14 Undercarriage
15 Cargo Loss

16 Vehicle Not at Scene

99 Unknown

Subfield 2 **Location of Damaged Area(s)** **Enter 1-13**

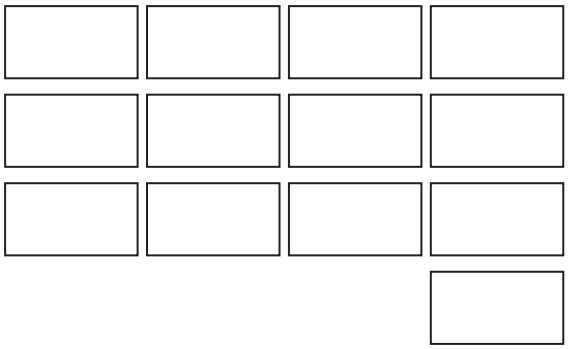
00 No Damage

01-12 12-Point Clock Diagram
See clock diagrams from Subfield 1

13 Top
14 Undercarriage

15 All areas

16 Vehicle Not at Scene

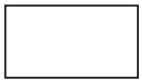


Subfield 3 **Resulting Extent of Damage** **Select 1**

00 No Damage

01 Minor Damage
02 Functional Damage
03 Disabling Damage

04 Vehicle Not at Scene



Rationale Important for use in evaluating injury severity in relation to motor vehicle impact and crash severity.

Edit Checks:

E(V)19.01 If "V19. Vehicle Damage" Subfield 1 = 16 (Vehicle Not at Scene), then V19. Subfield 2 = 16 (Vehicle Not At Scene) and V19. Subfield 3 = 4 (Vehicle Not At Scene)

E(V)19.02 If "V19. Vehicle Damage" Subfield 2 (V19) = 00 (No Damage), then V19. Subfield 3 = 00 (No Damage)

E(V)19.03 If "V19. Vehicle Damage" Subfield 3 (V19) = 00 (No Damage), 01 (Minor Damage), or 02 (Functional Damage), then "V23. Towed Due to Disabling Damage" must not = 02 (Towed Due to Disabling Damage)

E(V)19.04 If "V23. Towed Due to Disabling Damage" = 02 (Towed Due to Disabling Damage), then "V19. Vehicle Damage" Subfield 3 must = 03 (Disabling Damage)

V20. Sequence of Events

Definition The sequence of events are events in sequence related to this motor vehicle, including non-harmful events, non-collision harmful events and collision events. For examples, refer to Appendix G: Sequence of Events Examples.

Attribute Values:

Select 1-4

Non-Harmful Events

01 Cross Centerline
02 Cross Median
03 End Departure (T-intersection, dead-end, etc.)
04 Downhill Runaway
05 Equipment Failure (blown tire, brake failure, etc.)
06 Ran Off Roadway Left
07 Ran Off Roadway Right
08 Reentering Roadway
09 Separation of Units
10 Other Non-Harmful Event

Non-Collision Harmful Events

11 Cargo/Equipment Loss or Shift
12 Fell/Jumped From Motor Vehicle
13 Fire/Explosion
14 Immersion, Full or Partial
15 Jackknife
16 Other Non-Collision Harmful Event
17 Overturn/Rollover
18 Thrown or Falling Object

Collision With Person, Motor Vehicle, or Non-Fixed Object

19 Animal (live)
20 Motor Vehicle in Transport
21 Other Non-Fixed Object
22 Other Non-Motorist
23 Parked Motor Vehicle
24 Pedalcycle
25 Pedestrian
26 Railway Vehicle (train, engine)
27 Strikes Object at Rest from MV in Transport
28 Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle
29 Work Zone/Maintenance Equipment

Collision With Fixed Object

30 Bridge Overhead Structure
31 Bridge Pier or Support
32 Bridge Rail
33 Cable Barrier
34 Concrete Traffic Barrier
35 Culvert
36 Curb
37 Ditch
38 Embankment
39 Fence

40 Guardrail End Terminal
41 Guardrail Face
42 Impact Attenuator/Crash Cushion
43 Mailbox
44 Other Fixed Object (wall, building, tunnel, etc.)
45 Other Post, Pole, or Support
46 Other Traffic Barrier
47 Traffic Sign Support
48 Traffic Signal Support
49 Tree (standing)
50 Utility Pole/Light Support
51 Unknown Fixed Object

Rationale Important for use in conjunction with "V21. Most Harmful Event for this MV" and "V18. Motor Vehicle Maneuver/Action" to generate complete information about the crash.

Edit Checks:

E(V)20.01 If value of "V20. Sequence of Events" = 48 (Traffic Signal Support), then "V17. Traffic Control Device" must not = 00 (No Controls).

E(V)20.02 If value of "V20. Sequence of Events" = 24 (Pedalcycle), at least one "P4. Person Type" in the crash must = 04 (Bicyclist) or 05 (Other Cyclist).

E(V)20.03 If value of "V20. Sequence of Events" = 25 (Pedestrian), then at least one "P4. Person Type" in the crash must = 06 (Pedestrian) or 07 (Other Pedestrian (wheelchair, person in a building, skater, personal conveyance, etc.)).

E(V)20.04 If value of "V20. Sequence of Events" = 20 (Motor Vehicle In Transport), 23 (Parked Motor Vehicle), 28 (Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle), or 29 (Work Zone/Maintenance Equipment), then "C20. Number of Motor Vehicles Involved" must = 2 or more.

E(V)20.05 If "V2. Motor Vehicle Unit Type and Number" Subfield 1 = 01 (Motor Vehicle in Transport) for this vehicle and any Subfield of "V20. Sequence of Events" = 20 (Motor Vehicle In Transport), then there must be another vehicle record with "V2. Motor Vehicle Unit Type and Number" Subfield 1 = 01 (Motor Vehicle in Transport).

E(V)20.06 If "V2. Motor Vehicle Unit Type and Number" Subfield 1 = 01 (Motor Vehicle in Transport) for this vehicle and any Subfield of "V20. Sequence of Events" = 23 (Parked Motor Vehicle), then there must be another vehicle record with "V2. Motor Vehicle Unit Type and Number" Subfield 1 = 02 (Parked Motor Vehicle).

E(V)20.07 If "V2. Motor Vehicle Unit Type and Number" Subfield 1 = 01 (Motor Vehicle in Transport) for this vehicle and any Subfield of "V20. Sequence of Events" = 29 (Work Zone/Maintenance Equipment), then there must be another vehicle record with "V2. Motor Vehicle Unit Type and Number" Subfield 1 = 03 (Work Zone/Maintenance Equipment).

E(V)20.08 If "V20. Sequence of Events" includes only one value in the range from 11-51 (a harmful event), then "V21. Most Harmful Event for this Motor Vehicle" must be the same as "V20. Sequence of Events".

E(V)20.09 If value of "V20. Sequence of Events" = 01 (Cross Centerline), then "V14. Trafficway Description" Subfield 1 should = 02 (Two-Way) for this vehicle.

E(V)20.10 If value of "V20. Sequence of Events" = 02 (Cross Median), then "V14. Trafficway Description" Subfield 1 should = 02 (Two-Way) and Subfield 2 should = 02 (Divided, Flush Median (greater than 4ft wide)), 03 (Divided, Raised Median), or 04 (Divided, Depressed Median).

V21. Most Harmful Event for this Motor Vehicle

Definition Event that resulted in the most severe injury or, if no injury, the greatest property damage involving this motor vehicle.

Attribute Values: **Select 1**

Non-Collision Harmful Events

01 Cargo/Equipment Loss or Shift
02 Fell/Jumped From Motor Vehicle
03 Fire/Explosion
04 Immersion, Full or Partial
05 Jackknife
06 Other Non-Collision Harmful Event
07 Overturn/Rollover
08 Thrown or Falling Object

Collision With Person, Motor Vehicle, or Non-Fixed Object

09 Animal (live)
10 Motor Vehicle in Transport
11 Other Non-Fixed Object
12 Other Non-Motorist
13 Parked Motor Vehicle
14 Pedalcycle
15 Pedestrian
16 Railway Vehicle (train, engine)
17 Strikes Object at Rest from MV in Transport
18 Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle
19 Work Zone/Maintenance Equipment

Collision With Fixed Object

20 Bridge Overhead Structure
21 Bridge Pier or Support
22 Bridge Rail
23 Cable Barrier
24 Concrete Traffic Barrier
25 Culvert
26 Curb
27 Ditch
28 Embankment
29 Fence
30 Guardrail End Terminal
31 Guardrail Face
32 Impact Attenuator/Crash Cushion
33 Mailbox
34 Other Fixed Object (wall, building, tunnel, etc.)
35 Other Post, Pole, or Support
36 Other Traffic Barrier
37 Traffic Sign Support
38 Traffic Signal Support
39 Tree (standing)
40 Utility Pole/Light Support
41 Unknown Collision With Fixed Object

Rationale Important for use in conjunction with “V20. Sequence of Events” to generate complete information about the crash.

Edit Checks:

E(V)21.01 If “V21. Most Harmful Event for this Vehicle” = 15 (Pedalcycle), at least one “P4. Person Type” in the crash must = 04 or 05 and at least one Subfield of “V20. Sequence of Events” must = 26 (Pedalcycle)

E(V)21.02 If “V21. Most Harmful Event for this Vehicle” = 16 (Pedestrian), then at least one “P4. Person Type” in the crash must = 06 or 07 and at least one Subfield of “V20. Sequence of Events” must = 27 (Pedestrian)

E(V)21.03 “V21. Most Harmful Event for this Vehicle” must = at least one subfield of “V20. Sequence of Events”.

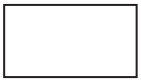
V22. Hit and Run

Definition Refers to cases where the vehicle or the driver of the vehicle in transport is a contact vehicle in the crash and departs the scene without stopping to render aid or report the crash.

Attribute Values:

01 No, Did Not Leave Scene
02 Yes, Driver or Car and Driver Left Scene

Select 1



Rationale Important for uniformity, quality control, and identification purposes in reported motor vehicle crash statistics.

Edit Checks:

E(V)22.01 “V22. Hit and Run” should not = 02 (Yes, Driver or Car and Driver Left Scene) for more than one vehicle record.

V23. Towed Due to Disabling Damage

Definition Disabling damage implies damage to the motor vehicle that is sufficient to require the motor vehicle to be towed or carried from the scene. “V23. Towed Due to Disabling Damage” identifies whether a vehicle involved in a crash is removed from the scene. Towing assistance without removal of the vehicle from the scene, such as pulling a vehicle out of a ditch, is not considered to be “towed” for the purposes of this element.

Attribute Values:

Select 1

00 Not towed

01 Towed, But Not Due to Disabling Damage
02 Towed Due to Disabling Damage

Rationale Towed Due to Disabling Damage is important for identifying non-injury, “tow-away” crashes due to damage sustained in the crash. This information is vital to Federal Motor Carrier Safety Administration in their selection criteria for truck and bus crashes.

Edit Checks:

E(V)23.01 If any value in V8 Subfield 1, 3, or 4 is one of the marked large vehicle codes (indicated by **), and [“V23. Towed due to Disabling Damage” = 02 (Towed Due to Disabling Damage) **and/or** (the sum of “C22. Number of Non-Fatally Injured Persons” and “C23. Number of Fatalities” is greater than 0)], then the Large Vehicle/Hazardous Materials Section must be completed.

V24. Contributing Circumstances, Motor Vehicle

Definition Pre-existing motor vehicle defects or maintenance conditions that may have contributed to the crash.

Attribute Values:

Select 1

00	None
01	Brakes
02	Exhaust System
03	Body, Doors
04	Steering
05	Power Train
06	Suspension
07	Tires
08	Wheels
09	Lights (head, signal, tail)
10	Windows/Windshield
11	Mirrors
12	Wipers
13	Truck Coupling/Trailer Hitch/Safety Chains
98	Other
99	Unknown

Rationale Important for determining the significance of pre-existing problems, including equipment and operation, in motor vehicles involved in crashes that could be useful in determining the need for improvements in manufacturing and consumer alerts.

Edit Checks:

None

Person Data Elements

The person data elements describe the characteristics, actions, and consequences to the persons involved in the crash.

Level 1: All Persons Involved

P1. Name of Person Involved

Definition The full name of the individual involved in the crash.

Attribute Values:

	Name	**Specify 1**

Rationale This data element should be collected to facilitate linkage when names are available in the health and insurance files and to corroborate the driver license number of drivers. When possible, obtain this information from the driver license.

Edit Checks:

E(P)01.01 Compare to current record in the Driver License File.

P2. Date of Birth

Definition The year, month, and day of birth (or age to be used only when date of birth cannot be obtained) of the person involved in a crash.

Attribute Values:

Subfield 1	**Date of Birth**	**Specify 1**
YYYY	Year (YYYY)	
01-12	Month (MM)	
01-31	Day (DD)	
99	Unknown	
	Example: 2017, 99, 99 denotes only the year is known. *2017, 02, 99 denotes February 2017, but day of month was unknown.*	
Subfield 2	**Age**	**Specify 1**
AAA	Age	

Rationale Accurate reporting of date of birth is used to assess the effectiveness of occupant protection systems for specific age groups, and to identify the need for safety programs directed toward them. This element is also critical in providing linkage between the crash, EMS, and hospital records.

Edit Checks:

E(P)02.01 If "P4. Person Type" Subfield 1 = 01 (Driver), compare to Date of Birth in the Driver License File.

P3. Sex

Definition The sex of the person involved in the crash.

Attribute Values:

Select 1

01 Female
02 Male

99 Unknown

Rationale Necessary, for example, to evaluate the effect of sex of the person involved on occupant protection systems and motor vehicle design characteristics.

Edit Checks:

E(P)03.01 If "P4. Person Type" Subfield 1 = 01 (Driver), compare to current value in the Driver License File.

P4. Person Type

Definition Type of person involved in a crash.

Attribute Values:

Subfield 1 **Person Type** **Select 1**

Motorist
01 Driver
02 Passenger
03 Occupant of MV Not in Transport

Non-Motorist

04 Bicyclist**
05 Other Cyclist**
06 Pedestrian**
07 Other Pedestrian (wheelchair, person in a building, skater, personal conveyance, etc.)**
08 Occupant of a Non-Motor Vehicle Transportation Device**
09 Unknown Type of Non-Motorist**

99 Unknown

Subfield 2 **Incident Responder?** **Select 1**

01 No

Yes, Type of Incident Responder

02 EMS
03 Fire
04 Police
05 Tow Operator
06 Transportation (i.e. maintenance workers, safety service patrol operators, etc.)

98 Other
99 Unknown

Rationale Person type and presence of incident responders allows classification to evaluate specific countermeasures designed for specific groups of people.

****If attribute is selected from Subfield 1, the Non-Motorist Crash Section must be completed.****

Edit Checks:

E(P)04.01 If "P4. Person Type" Subfield 1 = 04 - 09, then Non-Motorist Crash Section must be completed.

E(P)04.02 If "P4. Person Type" Subfield 1 = 01 (Driver) or 02 (Passenger), then "V2. Motor Vehicle Unit Type and Number" Subfield 1 must = 01 (Motor Vehicle in Transport) for the vehicle number identified in "P6. Occupant's Motor Vehicle Unit Number".

E(P)04.03 If "P4. Person Type" Subfield 1 = 03 (Occupant of MV Not in Transport), then "V2. Motor Vehicle Unit Type and Number" Subfield 1 must = 02 (Parked Motor Vehicle) or 03 (Working Vehicle/Equipment) for the vehicle number identified in "P6. Occupant's Motor Vehicle Unit Number".

P5. Injury Status

Definition

The injury severity level for a person Involved in a crash. The determination of which attribute to assign should be based on the latest information available at the time the report is completed, except as described below for fatal Injuries.

Fatal Injury (K): A fatal injury is any injury that results in death within 30 days after the motor vehicle crash in which the injury occurred. If the person did not die at the scene but died within 30 days of the motor vehicle crash in which the injury occurred, the injury classification should be changed from the attribute previously assigned to the attribute "Fatal Injury."

Suspected Serious Injury (A): A suspected serious injury is any injury other than fatal which results in one or more of the following:

- Severe laceration resulting in exposure of underlying tissues/muscle/organs or resulting in significant loss of blood
- Broken or distorted extremity (arm or leg)
- Crush injuries
- Suspected skull, chest or abdominal injury other than bruises or minor lacerations
- Significant burns (second and third degree burns over 10% or more of the body)
- Unconsciousness when taken from the crash scene
- Paralysis

Suspected Minor Injury (B): A minor injury is any injury that is evident at the scene of the crash, other than fatal or serious injuries. Examples include lump on the head, abrasions, bruises, minor lacerations (cuts on the skin surface with minimal bleeding and no exposure of deeper tissue/muscle).

Possible Injury (C): A possible injury is any injury reported or claimed which is not a fatal, suspected serious, or suspected minor injury. Examples include momentary loss of consciousness, claim of injury, limping, or complaint of pain or nausea. Possible injuries are those that are reported by the person or are indicated by his/her behavior, but no wounds or injuries are readily evident.

No Apparent Injury (O): No apparent injury is a situation where there is no reason to believe that the person received any bodily harm from the motor vehicle crash. There is no physical evidence of injury and the person does not report any change in normal function.

Attribute Values:

01	(K) Fatal Injury**	**Select 1**
02	(A) Suspected Serious Injury	
03	(B) Suspected Minor Injury	
04	(C) Possible Injury	
05	(O) No Apparent Injury	

Rationale Necessary for injury outcome analysis and evaluation. This element is also critical in providing linkage between the crash, EMS, and hospital records.

Note: The Federal Highway Administration's (FHWA) Safety Performance Management Measures Final Rule (23 CFR 490) and the National Highway Traffic Safety Administration's (NHTSA) Uniform Procedures for State Highway Safety Grants Program Interim Final Rule (23 CFR 1300) establish a single, national definition for States to report serious injuries per the Model Minimum Uniform Crash Criteria (MMUCC) 4th Edition "Suspected Serious Injury (A)" attribute found in the "Injury Status" element.

****If attribute is selected, the Fatal Crash Section must be completed.****

Edit Checks:

E(P)05.01 If "P5. Injury Status" = 01 ((K) Fatal Injury), the Fatal Crash Section must be completed.

Level 2: All Occupants

P6. Occupant's Motor Vehicle Unit Number

Definition The unique number assigned for this crash to the motor vehicle in which this person was an occupant. Persons ejected or who fall from a vehicle are still considered occupants.

Attribute Values:

01-*n*	Number to indicate in which motor vehicle the occupant was located	**Specify 1**

Rationale Important to link occupants back to motor vehicles in which they were riding. Necessary, for example, to evaluate the effect motor vehicle type and specific make/model have on occupant protection effectiveness and injury status.

Edit Checks: None

P7. Seating Position

Definition The location for this occupant in, on, or outside of the motor vehicle prior to the first event in the sequence of events. Refer to “Figure 8: Example Seating Positions for Typical Vehicle Types” (p. 65) for diagram of common vehicle types, to include ambulance seating/positioning.

Attribute Values:

Select 1-2

Row

01 Front
02 Second
03 Third
04 Fourth
05 Other Row (bus, 15 passenger van, etc.)
06 Unknown Row

Seat

07 Left *(usually the motor vehicle or motorcycle driver except for postal vehicles and some foreign vehicles)*
08 Middle
09 Right
10 Unknown Seat

Other Location

11 Other Enclosed Cargo Area
12 Riding on Motor Vehicle Exterior (non-trailing unit)
13 Sleeper Section of Cab (truck)
14 Trailing Unit
15 Unenclosed Cargo Area

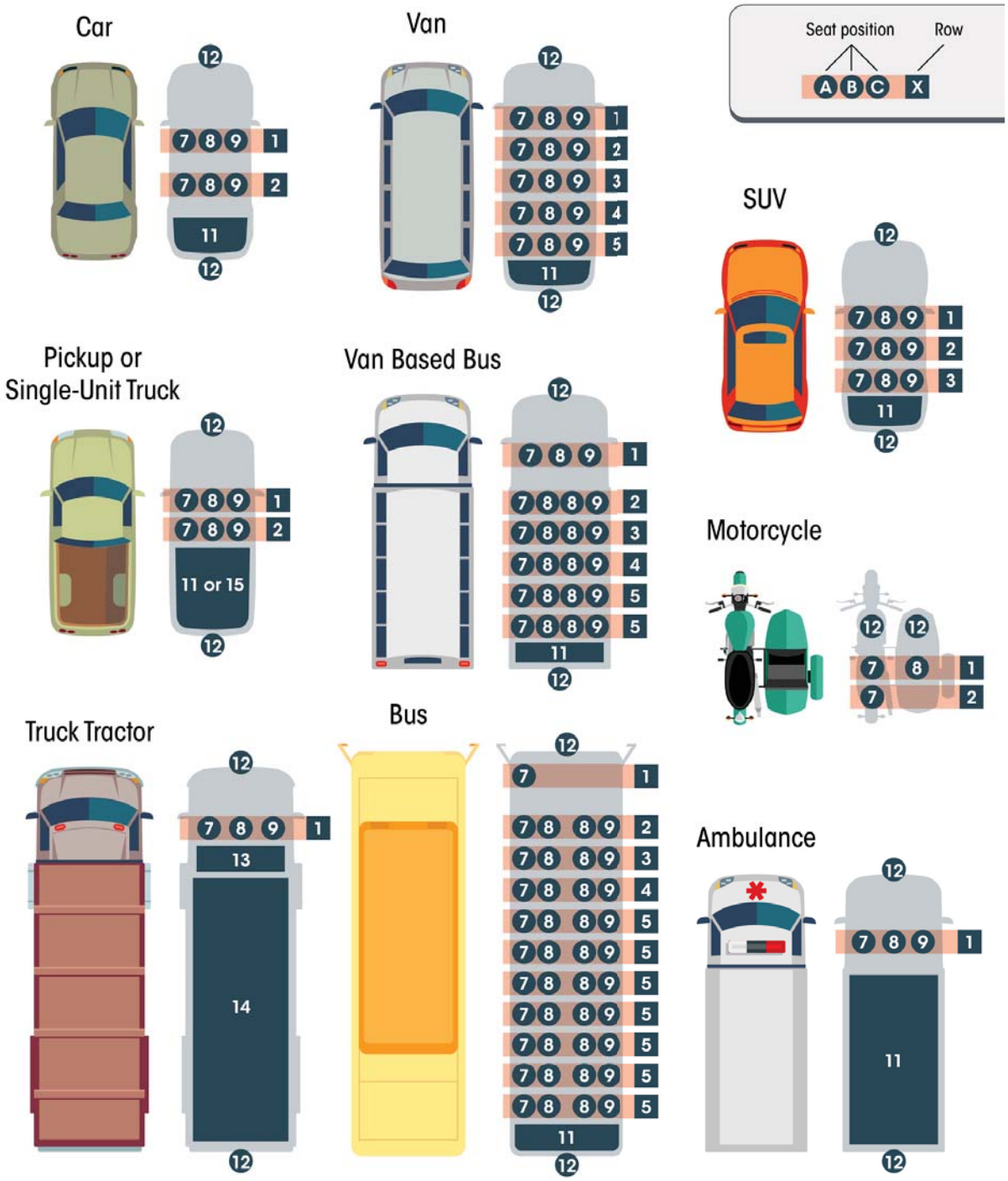
98 Not Applicable
99 Unknown

Rationale Without known seating position for each person in the motor vehicle, it is not possible to fully evaluate, for example, the effect of occupant protection programs.

Edit Checks:

E(P)07.01 If “P7. Seating Position” = 05 (Other Row (bus, 15 passenger van, etc.)), “V8. Motor Vehicle Body Type Category” should = 20-26.
E(P)07.02 If “P7. Seating Position” = 11-15, 98, or 99 then only this one value may be used.
E(P)07.03 If “P7. Seating Position” first field is not = to 11-15, 98, or 99 then it must = 01-06 and the second field must = 07-10.

Figure 8: Example Seating Positions for Typical Vehicle Types



P8. Restraint Systems/Motorcycle Helmet Use

Definition The restraint equipment in use by the occupant, or the helmet use by a motorcyclist, at the time of the crash.

Attribute Values:

Subfield 1 **Restraint Systems** **Select 1**

01	Booster Seat
02	Child Restraint System – Forward Facing
03	Child Restraint System – Rear Facing
04	Child Restraint – Type Unknown
05	Lap Belt Only Used
06	None Used – Motor Vehicle Occupant
07	Restraint Used – Type Unknown
08	Shoulder and Lap Belt Used
09	Shoulder Belt Only Used
10	Stretcher
11	Wheelchair
	Motorcycle Helmet Use
12	DOT-Compliant Motorcycle Helmet
13	Not DOT-Compliant Motorcycle Helmet
14	Unknown If DOT-Compliant Motorcycle Helmet
15	No Helmet
97	Not Applicable
98	Other
99	Unknown

Subfield 2 **Any Indication of Improper Use?** **Select 1**

01	No
02	Yes

Rationale Proper classification of the use of available occupant restraint systems and helmet use is vital to evaluating the effectiveness of such equipment.

Edit Checks:

E(P)08.01 If “V8. Motor Vehicle Body Type Category” = 05 (Moped or motorized bicycle), 07 (2-Wheeled Motorcycle), or 08 (3-Wheeled Motorcycle) for the vehicle in “P6. Occupant’s Motor Vehicle Unit Number” then “P8. Restraint Systems/Motorcycle Helmet Use” must = 12-15 or 98-99.

P9. Air Bag Deployed

Definition Deployment status of an airbag relative to the position in the vehicle for this occupant. See “Figure 9: Air Bag Diagram” (p. 68).

Attribute Values:

		Select 1-4
00	Not Deployed	
	Deployment	
01	Curtain	
02	Front	
03	Side	
04	Other (knee, air belt, etc.)	
05	Deployment Unknown	
97	Not Applicable	

Rationale Necessary to evaluate the effectiveness of airbags and other occupant protection equipment.

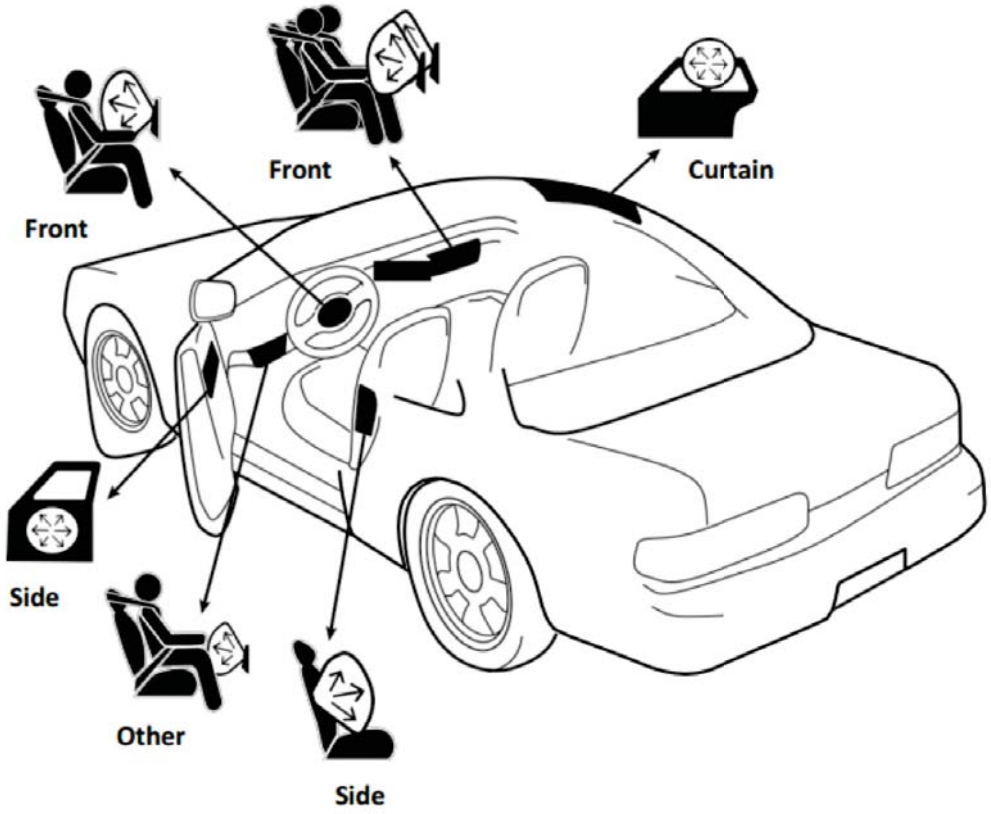
Edit Checks:

E(P)09.01 If “P9. Air Bag Deployed” = 01-05 then “V6. Motor Vehicle Model Year” should be > 1997 for the vehicle in “P6. Occupant’s Motor Vehicle Unit”.

E(P)09.02 If “P9. Air Bag Deployed” = 01-05 then “P7. Seating Position” should = the outboard seats in the first three rows.

E(P)09.03 If “P9. Air Bag Deployed” = 02 (Front) then “P7. Seating Position” should = 01 (Front) row.

Figure 9: Air Bag Diagram



P10. Ejection

Definition Occupant completely or partially thrown from the interior of the motor vehicle, excluding motorcycles, as a result of a crash.

Attribute Values:

Select 1

00 Not Ejected
01 Ejected, Partially
02 Ejected, Totally

97 Not Applicable
99 Unknown

Rationale Occupant protection systems prevent or mitigate ejections to various degrees. Analyses of the effectiveness of safety systems depend on information from this data element.

Edit Checks:

E(P)10.01 If "V8. Motor Vehicle Body Type Category" = 05 (Moped or motorized bicycle), 07 (2-Wheeled Motorcycle), or 08 (3-Wheeled Motorcycle) for the vehicle in "P6. Occupant's Motor Vehicle Unit Number" then "P10. Ejection" must = 97 (Not Applicable).

E(P)10.02 If "P10. Ejection" = 00 (Not Ejected), 01 (Ejected, Partially), or 02 (Ejected, Totally) then "P7. Seating Position" must not = 13 (Riding on Motor Vehicle Exterior).

Level 3: All Drivers

P11. Driver License Jurisdiction

Definition The geographic or political entity issuing a driver license. Includes the States of the United States (including the District of Columbia and outlying areas), Indian Nations, U.S. Government, Canadian Provinces, and Mexican States (including the *Distrito Federal*), as well as other jurisdictions.

Attribute Values:

Subfield 1 **Type** — **Select 1**

00 Not Licensed

01 Canada
02 Indian Nation
03 International License (other than Mexico or Canada)
04 Mexico
05 State
06 U.S. Government

97 Not Applicable
99 Unknown

Subfield 2 **Name of Jurisdiction (ANSI Code)** — **Specify**

Provide the specific State, Province, or Nation indicated on the Driver's License (see "Appendix E: ANSI State FIPS and USPS Codes" (p. 197) or "Appendix F: ISO 3166-2 Codes for Canada and Mexico" (p. 199)

Rationale Necessary to evaluate the effectiveness of various licensing laws. This element is also critical in providing linkage between the crash and driver license files at the State level.

Edit Checks: None

P12. Driver License Number, Class, CDL and Endorsements

Definition

A unique set of alphanumeric characters assigned by the authorizing agent issuing a driver license to the individual. See “Figure 10: FMCSA CDL Endorsements, Visor Card (Front)” (p. 71) and “Figure 11: FMCSA CDL Commercial Motor Vehicle Groups, Visor Card (Back)” (p. 72) for reference.

Class indicates the type of driver license issued by the State and the type of motor vehicle the driver is qualified to drive.

Class A: Any combination of vehicles with a gross combination weight rating (GCWR) of 26,001 pounds or more provided the GVWR of the vehicle(s) being towed is in excess of 10,000 pounds.

Class B: Any single vehicle with a GVWR of 26,001 or more pounds, or any such vehicle towing a vehicle not in excess of 10,000 pounds GVWR.

Class C: Any single vehicle, or combination of vehicles, that does not meet the definition of Class A or Class B, but is either designed to transport 16 or more passengers, including the driver, or is used in the transportation of materials found to be hazardous, which require the motor vehicle to be placarded.

Class M: Motorcycles, Mopeds, Motor-Driven Cycles.

Regular Driver License Class: Any regular or standard driver license issued for the operation of automobiles and light trucks by States that separate these vehicles from Class C. Other class designation codes such as “D,” “R” and others may be used by States to indicate a regular driver license class.

Commercial Driver License (CDL): This indicates whether the driver license is a commercial driver license (CDL). In addition, this information is important to separate the non-commercial licenses included by some States in Class C with the commercial licenses.

Endorsements: This indicates any endorsements to the driver license, both commercial and non-commercial.

Attribute Values:

Subfield 1 **License Number** — **Specify**

License Number – Alphanumeric identifier assigned by the authorizing jurisdiction (State, foreign country, U.S. government, Indian Nation, etc.).

Subfield 2 **Class** — **Select 1**

00 None

01 Class A
02 Class B
03 Class C
04 Class M
05 Regular Driver License Class

97 Not Applicable

Subfield 3 **Commercial Driver License (CDL)** **Select 1**

01 No
02 Yes

Subfield 4 **Endorsements** **Select 1**

00 None/Not Applicable

01 H - Hazardous Materials
02 N - Tank Vehicle
03 P - Passenger
04 S - School
05 T - Double/Triple Trailers
06 X - Combination of Tank Vehicle and Hazardous Materials
07 Other non-commercial license endorsements (e.g., motorcycle, etc.)

Rationale This information is mandated by FMCSA for commercial drivers. This element is critical to providing linkage between the crash and driver license files at the State level.

Edit Checks: None

Figure 10: FMCSA CDL Endorsements, Visor Card (Front)

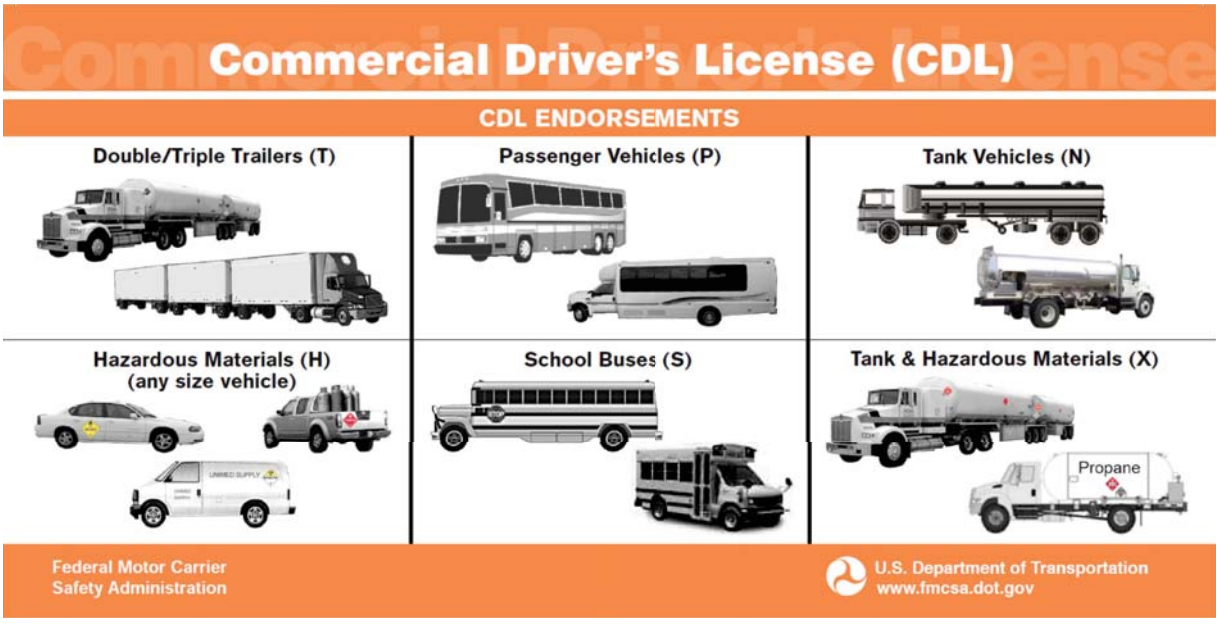
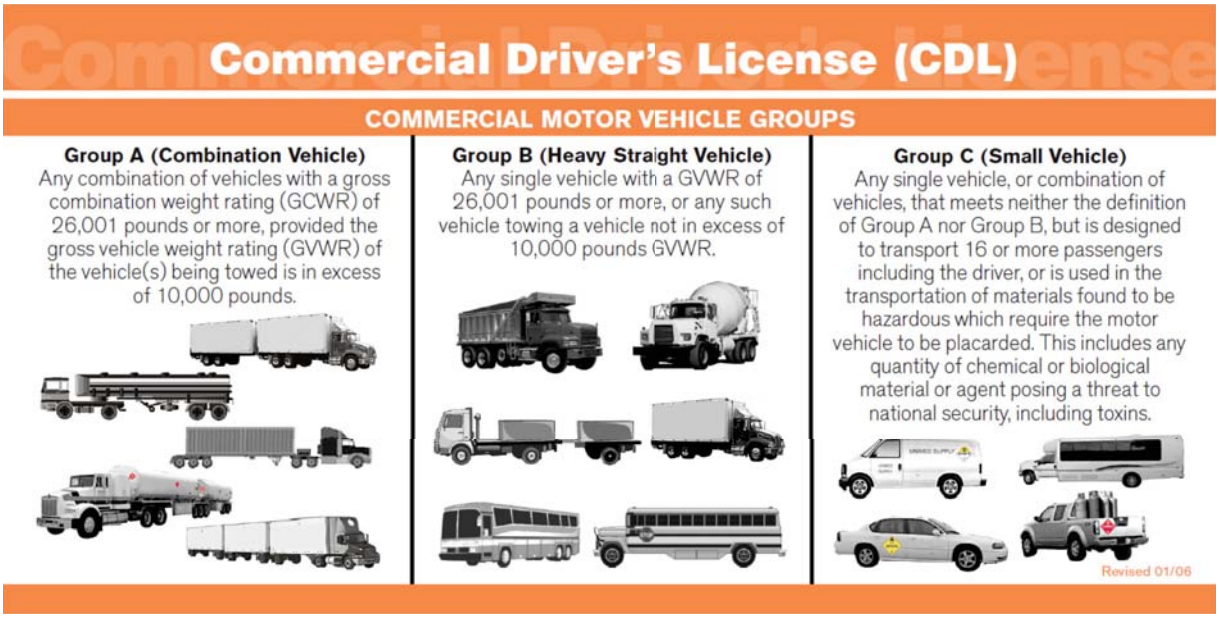


Figure 11: FMCSA CDL Commercial Motor Vehicle Groups, Visor Card (Back)



P13. Speeding-Related

Definition Indication of whether the investigating officer suspects that the driver involved in the crash was speeding based on verbal or physical evidence and not on speculation alone.

Attribute Values:

Select 1

01 No
02 Exceeded Speed Limit
03 Racing
04 Too Fast for Conditions

99 Unknown

Rationale Important for evaluating preventive programs and engineering assessments.

Edit Checks:

E(P)13.01 If "P13. Speeding-Related" = 01 (Exceeded Speed Limit) then "V12. Motor Vehicle Posted/Statutory Speed Limit" must not = 97 (Not Applicable) or 99 (Unknown)

P14. Driver Actions at Time of Crash

Definition The actions by the driver that may have contributed to the crash. This data element is based on the judgment of the law enforcement officer investigating the crash and need not match "P15. Violation Codes."

Attribute Values:

		Select 1-4
00	No Contributing Action	
01	Disregarded Other Road Markings	
02	Disregarded Other Traffic Sign	
03	Failed to Keep in Proper Lane	
04	Failed to Yield Right-of-Way	
05	Followed Too Closely	
06	Improper Backing	
07	Improper Passing	
08	Improper Turn	
09	Operated Motor Vehicle in Inattentive, Careless, Negligent, or Erratic Manner	
10	Operated Motor Vehicle in Reckless or Aggressive Manner	
11	Over-Correcting/Over-Steering	
12	Ran Off Roadway	
13	Ran Red Light	
14	Ran Stop Sign	
15	Swerved or Avoided Due to Wind, Slippery Surface, Motor Vehicle, Object, Non-Motorist in Roadway, etc.	
16	Wrong Side or Wrong Way	
98	Other Contributing Action	
99	Unknown	

Rationale Important for evaluating the effect that dangerous driver behavior has on crashes.

Edit Checks:

E(P)14.01 If "P14. Driver Actions at Time of Crash" = 13 (Ran Red Light) or 14 (Ran Stop Sign) then "V17. Traffic Control Device" must not = 00 (No Control).

P15. Violation Codes

Definition The two most critical motor vehicle-related violations codes, if any, which apply to this driver. *States are encouraged to collect as many additional violation codes they deem appropriate and necessary.*

Attribute Values:

		Specify 1-2
00	No Violation	
	State Violation Code(s)	
99	Unknown	

Rationale Important for evaluation of safety laws and enforcement practices. This information is not available from the driver license file.

Edit Checks:

E(P)15.01 If "P13. Speeding-Related" does not = 01 (Exceeded Speed Limit) or 99 (Unknown), "P15. Violations Codes" must not = 00 (No Violation) or 99 (Unknown).
Note: States may consider similar edit checks for selected values of "P14. Driver Actions at Time of Crash," requiring a violation code for those items that should result in a citation.

E(P)15.02 If "P15. Violation Codes" does not = 00 (No Violation) or 99 (Unknown), check for corresponding citations in the State citation tracking system.

P16. Driver License Restrictions

Definition Restrictions assigned to an individual's driver license by the license examiner.

Source: Obtained by linking "P12. Driver License Number, Class, CDL and Endorsement" for in-State drivers to the driver license number in the driver history data system.

Attribute Values:

		Specify 1-3
Subfield 1	**Driver License Restrictions**	
00	None	
01	Alcohol Interlock Device	
02	CDL Intrastate Only	
03	Corrective Lenses	
04	Farm Waiver	
05	Except Class A Bus	
06	Except Class A and Class B Bus	
07	Except Tractor-Trailer	
08	Intermediate License Restrictions	
09	Learner's Permit Restrictions	

10 Limited to Daylight Only
11 Limited to Employment
12 Limited-Other
13 Mechanical Devices (special brakes, hand controls, or other adaptive devices)
14 Military Vehicles Only
15 Motor Vehicles Without Air Brakes
16 Outside Mirror
17 Prosthetic Aid

98 Other

Subfield 2 **Alcohol Interlock Present?** **Select 1**

01 No
02 Yes

99 Unknown

Rationale Used to identify if a driver involved in crash has limitations on their driver license.

Edit Checks:

E(C)16.01 If "P4. Person Type" Subfield 1 = 01 (Driver), "P16. Driver License Restrictions" Subfield 1 = 01 (Alcohol Interlock Device) and Subfield 2 = 01 (No), then "P15. Violation Codes" should not = 00 (No Violation) or 99 (Unknown).

P17. Driver License Status

Definition The current status of an individual's driver license at the time of the crash.

Source: Obtained by linking "P12. Driver License Number, Class, CDL and Endorsement" with the Driver History data file.

Attribute Values:

Subfield 1 **Type Applicable for This Person** **Select 1**

01 Non-CDL Driver license
02 Non-CDL Restricted Driver license (Learner's permit, Temporary/ Limited, Graduated Driver license, etc.)
03 Commercial Driver License (CDL)

Subfield 2 **Status** **Select 1**

00 Not Licensed

01 Canceled or Denied
02 Disqualified (CDL)
03 Expired
04 Revoked
05 Suspended
06 Valid License

99 Unknown

Rationale Used to identify if a driver involved in crash is in compliance with the limitations of their driver license.

Edit Checks:

E(P)17.01 If "P4. Person Type" Subfield 1 = 01 (Driver) and "P17. Driver License Status" Subfield 2 (*Status*) does not = 06 (Valid License) then "P15. Violation Codes" should not = 00 (No Violation) or 99 (Unknown).

E(P)17.02 If "P4. Person Type" Subfield 1 = 01 (Driver), "V8. Motor Vehicle Body Type Category" = any of the marked commercial vehicle types (marked with **), and "P17. Driver License Status" Subfield 1 does not = 03 (Commercial Driver License) then "P15. Violation Codes" should not = 00 (No Violation) or 99 (Unknown).

Level 4: All Drivers and Non-Motorists

P18. Distracted By

Definition Distractions that may have influenced driver/non-motorist performance, involving both an action taken by the driver/non-motorist and the source of the distraction.

Attribute Values:

Subfield 1 **Action** — **Select 1**

00	Not Distracted
01	Talking/listening
02	Manually Operating (texting, dialing, playing game, etc.)
03	Other Action (looking away from task, etc.)
99	Unknown

Subfield 2 **Source** — **Select 1**

01	Hands-Free Mobile Phone
02	Hand-Held Mobile Phone
03	Other Electronic Device
04	Vehicle-Integrated Device
05	Passenger/Other Non-Motorist
06	External (to vehicle/non-motorist area)
07	Other Distraction (animal, food, grooming)
97	Not Applicable (Not Distracted)
99	Unknown

Rationale Important to identify specific driver behavior during a crash and understand and mitigate the effects of distracting activities.

Edit Checks:

E(P)18.01 If "P18. Distracted By" Subfield 1 = 02 (Manually Operating (texting, dialing, playing game, etc.)), then Subfield 2 should not = 05 (Passenger/Other Non-Motorist) or 06 (External (to vehicle/non-motorist area)).

E(P)18.02 If "P18. Distracted By" Subfield 1 = 00 (Not Distracted), then Subfield 2 must = 97 (Not Applicable (Not Distracted)).

P19. Condition at Time of the Crash

Definition Any relevant condition of the individual (driver or non-motorist) that is directly related to the crash.

Attribute Values:

Select 1-2

00 Apparently Normal

01 Asleep or Fatigued
02 Emotional (depressed, angry, disturbed, etc.)
03 Ill (sick), Fainted
04 Physically Impaired
05 Under the Influence of Medications/Drugs/Alcohol

97 Not Applicable
98 Other
99 Unknown

Rationale Important for evaluating the effect that fatigue, medications/alcohol/drugs, or other conditions have on the crash.

Edit Checks:

E(P)19.01 "P19. Condition at Time of Crash" should not have 00 in 2nd position.

E(P)19.02 If "P19. Condition at Time of Crash" = 00 in the first position, the 2nd position should be blank.

P20. Law Enforcement Suspects Alcohol Use

Definition Driver or non-motorist involved in the crash suspected by law enforcement to have used alcohol.

Attribute Values:

Select 1

01 No
02 Yes
99 Unknown

Rationale Alcohol-related crashes remain a serious traffic safety problem. Identifying crashes in which alcohol may have been involved will help evaluate the effectiveness of programs to decrease the incidence of drunk driving or to identify problem areas.

Edit Checks:

E(P)20.01 If "P20. Law Enforcement Suspects Alcohol Use" = 02 (Yes), then "P21. Alcohol Test" Subfield 1 (*Test Status*) should not = 00 (Test Not Given) or 99 (Unknown if Tested), and P21 Subfield 2 and Subfield 3 should not = 97 (Not Applicable).

Note: States may wish to use this as a warning edit if their practices allow officers to indicate suspicion without testing the BAC.

P21. Alcohol Test

Definition Indication of the presence of alcohol by test, type, and result.

Attribute Values:

Subfield 1 **Test Status**

Select 1

00 Test Not Given
01 Test Given
02 Test Refused
99 Unknown if Tested

Subfield 2 **Type of Test**

Select 1

01 Blood
02 Breath
03 Urine
97 Not Applicable (Test Not Given)
98 Other

Subfield 3 **BAC Test Result** 🔗 **Specify 1**

Value	Value
01	Pending
97	Not Applicable (Test Not Given)
99	Unknown

Rationale Alcohol remains the most prevalent drug involved in motor vehicle crashes. Capturing alcohol concentration whenever a driver or non-motorist is tested will provide an accurate assessment of the role of alcohol involvement. The type of test used to obtain the alcohol concentration also is important information to collect.

Edit Checks:

E(P)21.01 If "P21. Alcohol Test" Subfield 3 reports a BAC test value, then P21 Subfield 1 and P21 Subfield 2 must not = 97 (Not Applicable/test not given); P21 Subfield 1 should not = 00 (Test not given) or 99 (Unknown if Tested); and P21 Subfield 2 must not be blank.

P22. Law Enforcement Suspects Drug Use

Definition Driver or non-motorist involved in the crash suspected by law enforcement to have used drugs.

Attribute Values:

Select 1

01	No
02	Yes
99	Unknown

Rationale Drug-related crashes remain a serious traffic safety problem. Identifying crashes in which drugs may have been involved will help evaluate the effectiveness of programs to decrease the incidence of driving while under the influence of drugs.

Edit Checks:

E(P)22.01 If "P22. Law Enforcement Suspects Drug Use" = 02 (Yes), "P23. Drug Test" Subfield 1 should not = 00 (Test not given) or 99 (Unknown if Tested).

P23. Drug Test

Definition Indication of the presence of drug test, type, BAC result, and overall result. Excludes drugs administered post-crash.

Attribute Values:

Subfield 1 **Test Status** — **Select 1**

00	Test Not Given
01	Test Given
02	Test Refused
99	Unknown if Tested

Subfield 2 **Type of Test** — **Select 1**

01	Blood
02	Saliva
03	Urine
97	Not Applicable (Test Not Given)
98	Other

Subfield 3 **Drug Test Result** — **Select 1-4**

01	Negative
	Positive Test Results
02	Amphetamine
03	Cocaine
04	Marijuana
05	Opiate
06	Other Controlled Substance
07	PCP
08	Other Drug (excludes post-crash drugs)
97	Not Applicable (Test Not Given)
99	Unknown

Rationale Identifying drug-related crashes help develop and evaluate programs directed at reducing their involvement. Whenever evidence of other drug use is available, it should be captured.

Edit Checks:

E(P)23.01 If “P23. Drug Test” Subfield 3 = 01 (Negative) or 02 (Positive), then Subfield 1 should not = 00 (Test Not Given) and Subfield 2 should not = 97 (Not Applicable (Test Not Given)).

Level 5: All Injured

P24. Transported to First Medical Facility By

Definition Type and identity of unit providing transport to the first medical facility receiving the patient.

Attribute Values:

Subfield 1 **Source of Transport to First Medical Facility** — **Select 1**

00	Not Transported
01	EMS Air
02	EMS Ground
03	Law Enforcement
98	Other
99	Unknown

Subfield 2 **EMS Response Agency Identifier** — **Specify**

ID for EMS agency that responds

Subfield 3 **EMS Response Run Number** — **Specify**

EMS Response Run Number

Subfield 4 **Medical Facility Receiving Patient** — **Specify**

Name or Number of Medical Facility Receiving Patient

Rationale Important to trace victim from the scene of crash through the health care system. Facilitates linkage of injured crash victims with Emergency Medical Services data files.

Edit Checks:

E(P)24.01 If "P24. Transported to First Medical Facility By" Subfield 1 = 00, then P24. Subfields 2, 3, and 4 must be blank

E(P)24.02 If "P24. Transported to First Medical Facility By" Subfield 1 = 1-3, then P24. Subfields 2, 3, and 4 must include valid values.

P25. Injury Area

Definition

The primary or most obvious area of the person's body injured during the crash. Area of injury as indicated in a matrix or narrative in the EMS records or as a hospital discharge code (ICD-9-CM, or ICD-10, if implemented) in the emergency department, hospital or insurance records. The following list represents the major areas of the body subject to injury.

Source: Obtained by linking current identifiers for the person, such as "P2. Date of Birth," "P3. Sex" "P24. Transported to First Medical Facility By," and crash location information including "C3. Crash Date and Time," "C4. Crash County," "C5. Crash City/Place (Political Jurisdiction)," "C6. Crash Location," "C10. Source of Information," etc., to pre-hospital EMS, emergency department, and/or hospital discharge data files. Linkage to the National Emergency Medical Services Information Service (NEMSIS) is recommended, if possible, to obtain this data.

Attribute Values:

Select 1

01	Head
02	Face
03	Neck
04	Upper Extremity
05	Thorax (chest)
06	Spine
07	Abdomen and Pelvis
08	Lower Extremity
09	Unspecified

Rationale

This type of information will help to distinguish between multiple injuries in the same crash and help evaluate motor vehicle design, restraint, and safety equipment.

Edit Checks:

E(P)25.01 If "P27. Injury Severity" = 05 (No injury) then "P25. Injury Area" should be blank.

P26. Injury Diagnosis

Definition

Type of injury inflicted to primary "P25. Injury Area."

Source: Obtained from linked crash and injury data systems (EMS, emergency department, and/or hospital discharge). Linkage to the National Emergency Medical Services Information Service (NEMSIS) is recommended, if possible, to obtain this data.

Attribute Values:

Specify

Description of the injury according to data elements included in the files being linked such as the body areas and types of injuries listed on the crash and EMS records and/or the ICD-10 codes listed on the hospital discharge records.

Rationale Important to distinguish between multiple injuries in the same crash and help evaluate motor vehicle design, restraint and safety equipment.

Edit Checks: None

P27. Injury Severity

Definition The injury severity for a person involved in a crash as determined through linkage of crash and injury outcome records.

Source: Attributes for this element may differ by State depending on which clinical health dataset crash records are linked to and the system of injury classification States choose. States may opt to collect a clinically derived score, such as the Injury Severity Score (ISS) or the Maximum Abbreviated Injury Scale (M aIAIS) or develop a taxonomy similar to that of Injury Status (P5). The following is provided only as an example of a list of attributes States may choose:

Attribute Values:

Select 1

01	Fatal
02	Serious
03	Moderate
04	Minor
05	No Injury
99	Unknown

Rationale Necessary for more precise injury outcome analysis and evaluation. Clinically derived crash injury assessments are critical to improve behavioral and roadway safety investments.

Edit Checks:

E(P)27.01 If “P27. Injury Severity” = 01-04, then “P25. Injury Area” should not be blank.

Roadway Data Elements

Roadway data elements are generated by linking crash to roadway inventory and highway data. The data elements used for linkage include "C6. Crash Location" and others as necessary, depending upon the type of roadway inventory system implemented by the State**.** When a State does not have a roadway inventory, as many of the data elements as possible should be collected at the scene.

The **Model Inventory of Roadway Elements (MIRE) Guideline** complements MMUCC and greatly expands on the number of MMUCC Roadway Data Elements.

R1. Bridge/Structure Identification Number

Definition

A unique federal inspection/inventory identifier assigned to a bridge, underpass, overpass, or tunnel bridge/structure that is also linkable to the National Bridge Inventory.

Source: Obtained by linking "C6. Crash Location" to the National Bridge Inventory file.

Attribute Values:

Number as described in *Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges*, December 1995, Federal Highway Administration.

Specify 1

Rationale

Important to link specific geometric data describing the bridge/structure for problem identification analysis and for determining the relationship between bridge/structure characteristics and crashes.

Edit Checks:

E(R)01.01 If "C7. First Harmful Event" = 21 (Bridge Overhead Structure), 22 (Bridge Pier or Support), or 23 (Bridge Rail), "R1. Bridge/Structure Identification Number" should not be blank.

R2. Roadway Curvature

Definition The measurement of the curvature in the roadway expressed in terms of its radius, length, and superelevation. The unit of measurement is feet.

Source: Obtained by linking "C6. Crash Location" to the Roadway Inventory data. See "V16. Roadway Alignment and Grade."

Attribute Values:

		Specify 1-3
xxx	Curve Radius	
yyy	Length	
zzz	Superelevation	
977	Not Applicable	

Rationale Curve data is used in searching for and diagnosing high-crash locations. Important for determining relationship between horizontal alignment-related crashes to guide future highway design, speed limits, and driver skill training (motorcycle curve entering speed, etc.).

Edit Checks: None

R3. Grade

Definition The inclination of the roadway expressed in the rate of rise or falls in feet per 100 feet (percent) of horizontal distance.

Source: Obtained by linking "C6. Crash Location" to the Roadway Inventory data. See "V16. Roadway Alignment and Grade."

Attribute Values:

		Specify
Subfield 1	**Direction of Slope** *Up (+) or Down (-)*	
Subfield 2	**Percent of Slope** *Nearest Percent of Slope*	

Rationale Used to identify possible causes and countermeasures for a high crash location.

Edit Checks: None

R4. Part of National Highway System

Definition Designation as part of the National Highway System.

Source: Obtained by linking "C6. Crash Location" to the Roadway Inventory data.

Attribute Values:

Select 1

01	No
02	Yes
99	Unknown

Rationale Important to monitor highway safety on the National Highway System.

Edit Checks: None

R5. Roadway Functional Class

Definition The character of service or function of streets or highways. The classification of rural and urban is determined by State and local officials in cooperation with each other and approved by the Federal Highway Administration, U.S. Department of Transportation.

Source: Obtained by linking "C6. Crash Location" to the Roadway Inventory data.

Attribute Values:

Select 1

	Rural
01	Interstate
02	Principal Arterial – Other Freeway or Expressway
03	Principal Arterial – Other
04	Minor Arterial
05	Major Collector
06	Minor Collector
07	Local
08	Unknown Rural
	Urban
09	Interstate
10	Principal Arterial – Other Freeway or Expressway

11 Principal Arterial – Other
12 Minor Arterial
13 Collector
14 Local
15 Unknown Urban

99 Unknown

Rationale Important for comparing crash rates/safety experience of highways of similar design characteristics so as to identify those highways or highway sections that have abnormal rates/experience for future improvements as well as generalized study of the highways in a region or State. Knowledge of the land use is needed in analyzing crashes as part of a network analysis.

Edit Checks: None

R6. Annual Average Daily Traffic

Definition The average number of motor vehicles passing a point on a trafficway in a day, for all days of the year, during a specified calendar year.

Source: Obtained by linking "C6. Crash Location" to the Roadway Inventory data.

Attribute Values:

Subfield 1	**AADT (Year)** *AADT (Year) Value*	**Specify 1**
Subfield 2	**AADT** *AADT Value*	**Specify 1**
Subfield 3	**Truck (over 10,000 lbs.) Count or Percentage** *Truck Count or Percentage*	**Specify 1**
Subfield 4	**Motorcycle Count or Percentage** *Motorcycle Count or Percentage*	**Specify 1**

Rationale Important to normalize crash data to account for exposure.

Edit Checks: None

R7. Widths of Lane(s) and Shoulder(s)

Definition Widths (in feet) of the lane(s) and of the shoulder(s) where crash occurred.

Source: Obtained by linking "C6. Crash Location" to the Roadway Inventory data.

Attribute Values:

Subfield 1	**Lane Width** *Width in feet*	**Specify 1**
Subfield 2	**Left Shoulder Width** *Width in feet*	**Specify 1**
Subfield 3	**Right Shoulder Width** *Width in feet*	**Specify 1**

Rationale Important to monitor the association of lane/shoulder widths and the frequency of crashes.

Edit Checks: None

R8. Width of Median

Definition Width from travel lane edge to travel lane edge of the portion of divided highway separating the road for traffic in opposing directions where the crash occurred. If a crash occurs at a mid-block section, the median width is based on the mid-block section. If the crash occurs at an intersection, the median width is based on the median widths at the intersection.

Source: Obtained by linking "C6. Crash Location" to the Roadway Inventory data.

Attribute Values:

xx	Width of Median (feet)	**Specify 1**

Rationale Important to monitor the need for medians to protect motorists from oncoming traffic.

Edit Checks:

E(R)08.01 If "C8. Location of First Harmful Event Relative to Trafficway" = 03 (Median), then "R8. Width of Median" should not be blank.

R9. Access Control

Definition The degree that access to abutting land is fully, partially, or not controlled by a public authority. **Full access control** – Preference given to through traffic movements by providing interchanges with selected public roads, and by prohibiting crossing at-grade and direct driveway connections (i.e., limited access to the facility). **Partial access control** – Preference given to through traffic movement. In addition to interchanges, there may be some crossings at-grade with public roads, but direct private driveway connections have been minimized through the use of frontage roads or other local access restrictions. Control of curb cuts is not access control. **No access control** – No degree of access control exists (i.e., full access to the facility is permitted).

Source: Obtained by linking "C6. Crash Location" to the Roadway Inventory data.

Attribute Values:

01	No Access Control	**Select 1**
02	Partial Access Control	
03	Full Access Control	

Rationale Highly correlated with crash rates and, therefore, useful in identifying high hazard locations. Important to guide future highway design and traffic control.

Edit Checks: None

R10. Railway Crossing ID

Definition A unique US DOT/AAR number assigned for identification purposes to a railroad crossing by a State highway agency in cooperation with the Federal Railroad Administration.

Source: Obtained by linking "C6. Crash Location" to State or Federal Railway Administration data.

Attribute Values:

State specific number assigned by a State in cooperation with the American Association of Railroads. **Specify 1**

Rationale The data is used in high crash locations as well as high-risk corridors. Important for determining the need for additional controls and evaluating the efficacy of various types of controls.

Edit Checks:

E(R)10.01 "RL10. Railway Crossing ID" must = 0000000, nnnnnnA, or 9999999; where n is a number and A is a capital letter.

E(R)10.02 If "C15. Relation to Junction" Subfield 2 Specific Location = 07 (Railway Grade Crossing) then "RL10. Railway Crossing ID" should not be blank or 0000000.

R11. Roadway Lighting

Definition Type of roadway illumination.

Source: Obtained by linking "C6. Crash Location" to the Roadway Inventory data.

Attribute Values:

Select 1

01 Continuous Lighting on Both Sides
02 Continuous Lighting on One Side
03 No Lighting
04 Spot Illumination on Both Sides
05 Spot Illumination on One Side

Rationale Recognized as having a benefit to safe highway operations. Information about the presence of lighting is an important element in analysis of a spot location, a section of highway, or a network analysis. Important for determining the effects of highway illumination on nighttime crashes to guide future installations.

Edit Checks:

E(R)11.01 If "C12. Lighting Condition" = 03 (Dark-Lighted) then "R11. Roadway Lighting" must not = 03 (No Lighting).

R12. Pavement Markings, Longitudinal

Definition The longitudinal markings (paint, plastic, or other) used on the roadway surface to guide or control the path followed by drivers.

Source: Obtained by linking "C6. Crash Location" to the Roadway Inventory data.

Attribute Values:

Subfield 1 **Edgeline Presence/Type** **Select 1**

01 No Marked Edgeline
02 Standard Width Edgeline
03 Wide Edgeline

98 Other

Subfield 2 **Centerline Presence/Type** **Select 1**

01 No Marked Centerline
02 Centerline With Centerline Rumble Strip
03 Standard Centerline Markings

Subfield 3 **Lane Line Markings** **Select 1**

01 No Lane Markings
02 Standard Lane Line
03 Wide Lane Line

Rationale Important to know about the existence of pavement markings for the analysis of crash data. Useful for determining the effects of various types of longitudinal markings on various types of crashes to guide future applications.

Edit Checks: None

R13. Presence/Type of Bicycle Facility

Definition Any road, path, or way that is specifically designated as being open to bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.

Source: Obtained by linking "C6. Crash Location" to the Roadway Inventory data.

Attribute Values:

Subfield 1 **Facility** **Select 1**

00 None
01 Marked Bicycle Lane
02 Separate Bicycle Path/Trail
03 Unmarked Paved Shoulder
04 Wide Curb Lane
99 Unknown

Subfield 2 **Signed Bicycle Route** **Select 1**

01 No
02 Yes
97 Not Applicable
99 Unknown

Rationale Needed to determine usage and safety of bicycle facilities. Needed to determine the location of bicycle crashes in relation to a bicycle facility. Important for ascertaining the relative safety performance of various types/classes of bike paths to guide future design/operation decisions.

Edit Checks: None

R14. Mainline Number of Lanes at Intersection

Definition Number of through lanes on the mainline approaches of an intersection, including all lanes with through movement (through and left-turn, or through and right-turn) but not exclusive turn lanes.

Source: Obtained by linking "C6. Crash Location" to the Roadway Inventory data.

Attribute Values:

Select 1

00	Not an Intersection or Interchange
01	One Lane
02	Two Lanes
03	Three Lanes
04	Four to Six Lanes
05	Seven or More Lanes
99	Unknown

Rationale Important to describe the intersection.

Edit Checks: None

R15. Cross-Street Number of Lanes at Intersection

Definition Number of through lanes on the side-road approaches at intersection including all lanes with through movement (through and left-turn, or through and right-turn) but not exclusive turn lanes.

Source: Obtained by linking "C6. Crash Location" to the Roadway Inventory data.

Attribute Values:

Select 1

00	Not an Intersection or Interchange
01	One Lane
02	Two Lanes
03	Three Lanes
04	Four to Six Lanes
05	Seven or More Lanes
99	Unknown

Rationale Important to describe the intersection.

Edit Checks: None

R16. Total Volume of Entering Vehicles

Definition Total entering vehicles for all approaches of an intersection.

Source: Obtained by linking "C6. Crash Location" to the Roadway Inventory data.

Attribute Values:

Subfield 1	**AADT (Year)** *AADT (Year) Value*	**Specify 1**
Subfield 2	**AADT** *AADT Value*	**Specify 1**

Rationale Important to understand volume of crashes as a measure of exposure for the mainline approaches.

Edit Checks:

E(R)16.01 If "C15. Relation to Junction" Subfield 2 = 00 (Not an interchange area) then "R16. Total Volume of Entering Vehicles" Subfield 2 should be blank.

Fatal Section Data Elements

The analysis of fatal crashes is important for identifying safety risks and developing countermeasures. Many State and national safety programs rely on data derived from fatal crash analyses. The Fatality Analysis Reporting system (FARS) is the primary data system and source for motor vehicle crash statistics. FARS relies on crash reports and—at present—much of the information needed for FARS can only be found in the narrative, when it is in the crash report at all. As a result, FARS analysts are frequently challenged to locate and interpret key data from crash reports to complete the coding of a FARS case.

The addition of three FARS data elements ("Attempted Avoidance Maneuver," "Alcohol Test," and "Drug Test") for fatal crashes would improve the quality of FARS crash data, which currently attempts to collect this information from the crash narrative. Providing a uniform standard for data collection would lessen reliance on narratives and enhance the FARS process significantly.

Note: The Federal Highway Administration's (FHWA) Safety Performance Management Measures Final Rule (23 CFR 490) and the National Highway Traffic Safety Administration's (NHTSA) Uniform Procedures for State Highway Safety Grants Program Interim Final Rule (23 CFR 1300) establish a single, national definition for States to report serious injuries per the Model Minimum Uniform Crash Criteria (MMUCC) 4th Edition "Suspected Serious Injury (A)" attribute found in the "Injury Status" element.

In order to meet the requirements outlined in 23 CFR 490 which establishes performance measures based on fatal and serious injury crashes for States to carry out their Highway Safety Improvement Program, States are strongly encouraged to collect these elements for Suspected Serious Injury ("P5. Injury Status") crashes as well.

Level 3: All Drivers

F1. Attempted Avoidance Maneuver

Definition This element identifies movements/actions taken by the driver after the driver realizes there is an impending danger. This element assesses what the driver action was in response to his/her realization.

Attribute Values:

Select 1

00	No Driver Present/Unknown if Driver Present
01	Accelerating
02	Accelerating and Steering Left
03	Accelerating and Steering Right
04	Braking and Steering Left
05	Braking and Steering Right
06	Braking (Lockup)
07	Braking (Lockup Unknown)
08	Braking (No Lockup)
09	No Avoidance Maneuver
10	Releasing Brakes

11 Steering Left
12 Steering Right

98 Other Actions
99 Unknown

Rationale Attempted avoidance maneuvers occur after the driver has realization of an impending danger. This element assesses what the driver's action(s) was in response to his/her realization.

Edit Checks:

E(F)01.01 If "P14. Driver Actions at Time of Crash" does not = 00 (No Contributing Action), then "F1. Attempted Avoidance Maneuver" must not = 00 (No Driver Present/Unknown if Driver Present).

E(F)01.02 If "V18. Motor Vehicle Maneuver/Action" is not blank or 99 (Unknown), "F1. Attempted Avoidance Maneuver" must not = 00 (No Driver Present/Unknown if Driver Present).

E(F)01.03 If "V9. Total Occupants in Motor Vehicle" = 0 (No Special Function), then "F1. Attempted Avoidance Maneuver" must = 00 (No Driver Present/Unknown if Driver Present).

Level 4: All Drivers and Non-Motorists

F2. Alcohol Test Type and Results

Definition This element identifies the alcohol test type and results for this person.

Attribute Values:

Subfield 1	**Test Type**	**Select 1**
00	Test Not Given	
01	Breath Test (AC)	
02	Blood	
03	Blood Clot	
04	Blood Plasma/Serum	
05	Liver	
06	Preliminary Breath Test (PBT)	
07	Unknown if Tested	
08	Urine	
09	Vitreous	
98	Other Test Type	
99	Unknown Test Type	

Subfield 2	**Test Result**	**Select 1**
000-939	Actual Value	
940	0.94 or Greater	
996	Test Not Given	
997	AC Test Performed, Results Unknown	
998	Positive Reading with No Actual Value	
999	Unknown if Tested	

Edit Checks:

E(F)02.01 If "F2. Alcohol Test Type and Results" Subfield 1 does not = 00 (Test Not Given), then Subfield 2 should not be blank.

E(F)02.02 If "F2. Alcohol Test Type and Results" Subfield 1 does not = 00 (Test Not Given), then Subfield 2 must not = 00 (Test Not Given).

E(F)02.03 If "F2. Alcohol Test Type and Results" Subfield 1 = 00 (Test Not Given), then Subfield 2 must = 00 (Test Not Given).

F3. Drug Test Type and Results

Definition This element identifies the drug test type and results for this person.

Attribute Values:

Subfield 1	**Test Type**	**Select 1**
00	Test Not Given	
01	Blood	
02	Both Blood and Urine	
03	Unknown Test Type	
04	Urine	
98	Other Test Type	
99	Unknown if Tested	

Subfield 2	**Test Result**	**Select 1**
000	Test Not Given	
001	Tested No Drugs Found/Negative	
100-295	Narcotic*	
300-395	Depressant*	
400-495	Stimulant*	
500-595	Hallucinogen*	
600-695	Cannabinoid*	
700-795	Phencyclidine (PCP)*	
800-895	Anabolic Steroid*	
900-995	Inhalant*	
996	Other Drug	
997	Tested for Drugs, Results Unknown	
998	Tested for Drugs, Drugs Found, Type Unknown/Positive	
999	Unknown if Tested	

**See specific drug listings in "Appendix I: FARS Coding Manual – Alphabetical Drug Listing" (p. 204) or "Appendix J: FARS Coding Manual – Drugs By Category Type" (p. 210).*

Edit Checks:

E(F)03.01	If "F3. Drug Test Type and Results" Subfield 1 does not = 00 (Test Not Given), then Subfield 2 should not be blank.
E(F)03.02	If "F3. Drug Test Type and Results" Subfield 1 does not = 00 (Test Not Given), then Subfield 2 must not = 000 (Test Not Given)
E(F)03.03	If "F3. Drug Test Type and Results" Subfield 1 = 00 (Test Not Given), then Subfield 2 must = 000 (Test Not Given).
E(F)03.04	If "F3. Drug Test Type and Results" Subfield 1 = 99 (Unknown if Tested), then Subfield 2 must = 999 (Unknown if Tested).

Large Vehicles and Hazardous Material Section

The Federal Motor Carrier Safety Administration (FMCSA) analyzes crashes involving large vehicles, including trucks with a gross vehicle weight rating greater than 10,000 pounds and any motor vehicle designed primarily to transport nine (9) or more persons, as well as vehicles carrying hazardous materials, in order to identify safety risks and develop and evaluate safety countermeasures. FMCSA relies on crash reports to accomplish this mission and has created the Large Vehicle and Hazardous Materials (LVHM) Section in *MMUCC 5th Edition* to enhance the quality and accuracy of crash data. Following a National Transportation Safety Board (NTSB) recommendation, the LVHM Section incorporates elements to collect data on up to three trailing units.

Currently, there is no Federal database that collects this type of information, and the collection of this data would allow the Agency to study trailer use and safety. In addition to the trailing unit data elements, the LVHM Section includes elements to capture vehicle weights and special permitting (e.g. oversize). If a crash fits the reporting criteria for the LVHM section, both elements in other sections of MMUCC and the LVHM Section must be captured in order to align with the model minimum criteria. For that reason, several elements in MMUCC include triggers to alert the States and law enforcement personnel that they must fill out the LVHM Section based on the attribute(s) selected. Each of these elements is completed only for large vehicles or hazardous material-carrying vehicles.

Figure 12: FMCSA Reportable Crashes, Visor Card (Front)

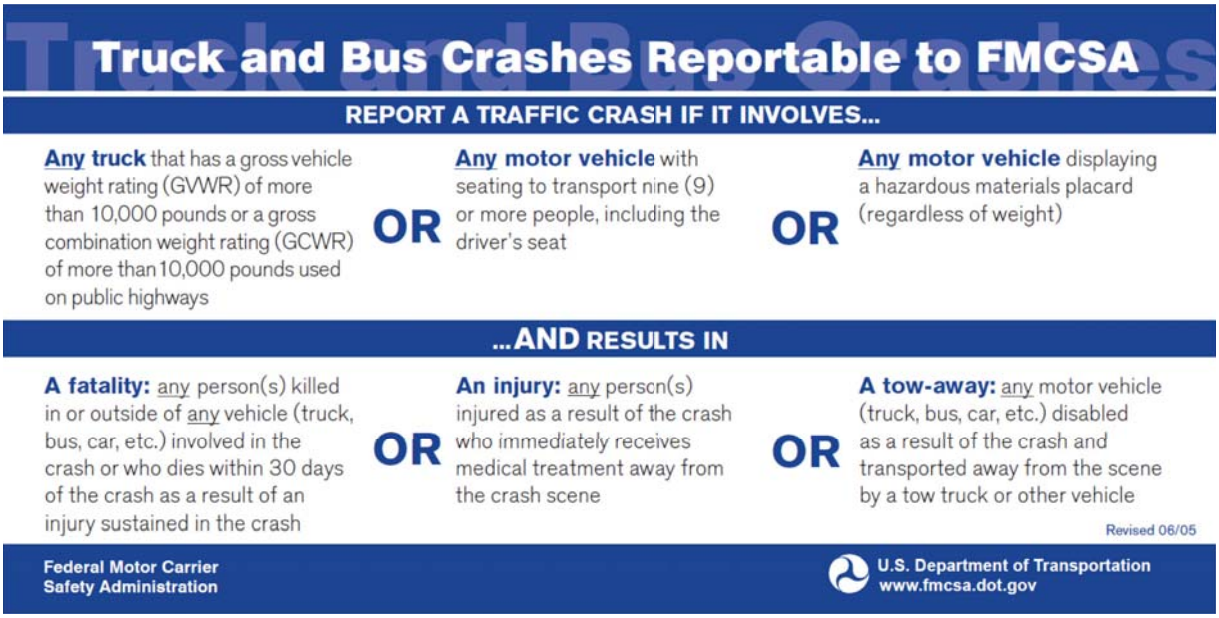
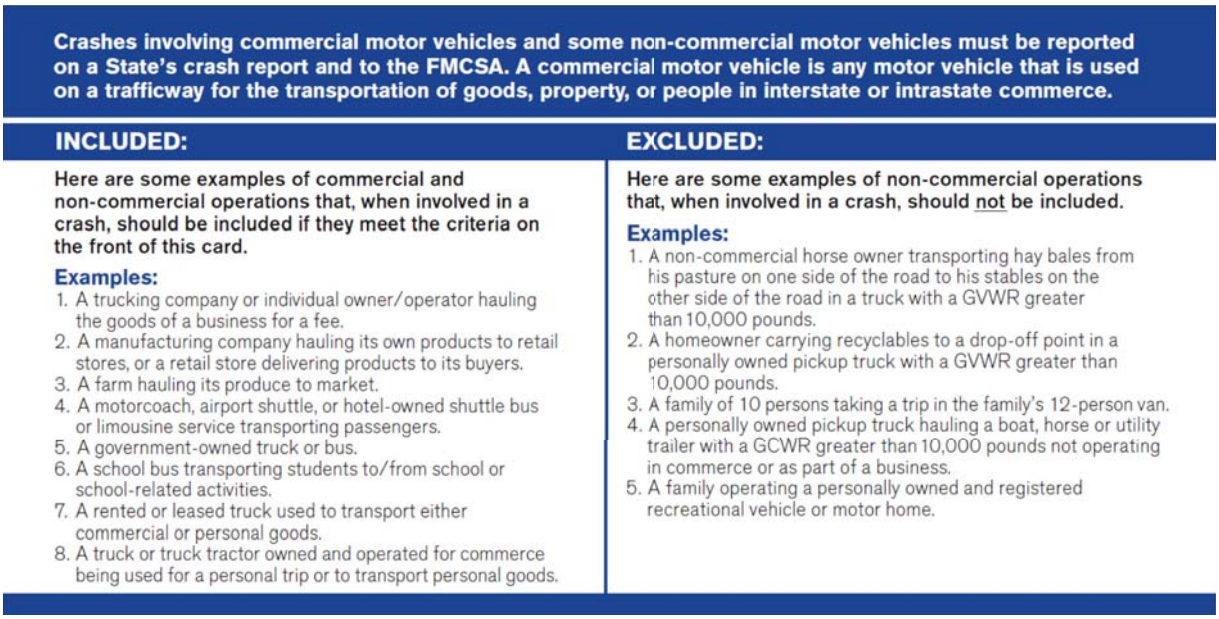


Figure 13: FMCSA Reportable Crashes, Visor Card (Back)



Crashes involving commercial motor vehicles and some non-commercial motor vehicles must be reported on a State's crash report and to the FMCSA. A commercial motor vehicle is any motor vehicle that is used on a trafficway for the transportation of goods, property, or people in interstate or intrastate commerce.

INCLUDED:

Here are some examples of commercial and non-commercial operations that, when involved in a crash, should be included if they meet the criteria on the front of this card.

Examples:

1. A trucking company or individual owner/operator hauling the goods of a business for a fee.
2. A manufacturing company hauling its own products to retail stores, or a retail store delivering products to its buyers.
3. A farm hauling its produce to market.
4. A motorcoach, airport shuttle, or hotel-owned shuttle bus or limousine service transporting passengers.
5. A government-owned truck or bus.
6. A school bus transporting students to/from school or school-related activities.
7. A rented or leased truck used to transport either commercial or personal goods.
8. A truck or truck tractor owned and operated for commerce being used for a personal trip or to transport personal goods.

EXCLUDED:

Here are some examples of non-commercial operations that, when involved in a crash, should not be included.

Examples:

1. A non-commercial horse owner transporting hay bales from his pasture on one side of the road to his stables on the other side of the road in a truck with a GVWR greater than 10,000 pounds.
2. A homeowner carrying recyclables to a drop-off point in a personally owned pickup truck with a GVWR greater than 10,000 pounds.
3. A family of 10 persons taking a trip in the family's 12-person van.
4. A personally owned pickup truck hauling a boat, horse or utility trailer with a GCWR greater than 10,000 pounds not operating in commerce or as part of a business.
5. A family operating a personally owned and registered recreational vehicle or motor home.

Level 3: All Driver(s)

LV1. CMV License Status and Compliance with CDL Endorsements

Definition CDL Status indicates the status for a driver's Commercial Driver's License (CDL) if applicable. Compliance with CDL Endorsements indicates whether the vehicle driven at the time of the crash requires endorsement(s) on a CDL and whether this driver is complying with the CDL endorsements.

Attribute Values:

Subfield 1	**CMV License Status**	**Select 1**
00	No CDL	
01	Canceled or Denied	
02	Disqualified	
03	Expired	
04	Revoked	
05	Suspended	
06	Learner's Permit	
07	Valid	
98	Other – Not Valid	
99	Unknown License Status	

Subfield 2	**Compliance with CDL Endorsement(s)**	**Select 1**
00	No Endorsement(s) Required for the Vehicle	
01	Endorsement(s) Required, Complied With	
02	Endorsement(s) Required, Not Complied With	
03	Endorsement(s) Required, Compliance Unknown	
99	Unknown if Required	

Rationale Used to identify if a driver involved in a crash is in compliance with the limitations and endorsements of their commercial driver's license.

Edit Checks:

E(LV)01.01 If "LV1. CMV License Status and Compliance with CDL Endorsements" Subfield 1 = 07 (Valid) then "P12. Driver License Number, Class, CDL and Endorsements" Subfield 3 must = 02 (Yes) and "P17. Driver License Status" Subfield 1 must = 03 (Commercial Driver License).

E(LV)01.02 If "LV1. CMV License Status and Compliance with CDL Endorsements" Subfield 2 = 00 (No Endorsement(s) Required for the Vehicle), then "LV8. Vehicle Configuration" must not = 03 (Bus (seats more than 15 occupants, including driver), 09 (Truck Tractor/Double), or 10 (Truck Tractor/Triple), "LV9. Cargo Body Type" must not = 03 (Cargo Tank), "LV10. Hazardous Materials (Cargo Only)" Subfield 1 must = 0000 (No HM Placard Displayed), and "V8. Motor Vehicle Body Type Category" of this vehicle must not = 24 (School Bus).

All LVHM Vehicle(s)

LV2. Trailer License Plate Number

Definition The alphanumeric identifier or other characters, exactly as displayed, on the registration plate or tag affixed to each trailer. For combination trucks, trailer plate numbers are obtained for a maximum of three trailers.

Attribute Values:

Subfield 1	**First Trailer Behind Tractor**	**Specify 1**
	License Plate 1 – Alphanumeric identifier	
97	Not Applicable (Bus or truck with no trailing units)	

Subfield 2	**Second Trailer Behind Tractor**	**Specify 1**
	License Plate 2 – Alphanumeric identifier	
97	Not Applicable (Bus or truck with no additional trailing units)	

Subfield 3 **Third Trailer Behind Tractor** **Specify 1**

License Plate 3 – Alphanumeric identifier

97 Not Applicable (Bus or truck with no additional trailing units)

Rationale Critical for linkage between the crash and trailer registration files.

Edit Checks:

E(LV)02.01 The same subfields must be completed for each of LV2, LV3, LV4, LV5, LV6 and LV11.

LV3. Trailer VIN(s)

Definition A unique combination of alphanumeric characters assigned to each trailer that is designed by the manufacturer.

Attribute Values:

Subfield 1 **First Trailer Behind Tractor** **Specify 1**

VIN 1 – *Manufacturer-assigned number permanently affixed to trailer*

97 Not Applicable (Bus or truck with no trailing units)
99 Unknown (information unavailable)

Subfield 2 **Second Trailer Behind Tractor** **Specify 1**

VIN 2 – *Manufacturer-assigned number permanently affixed to trailer*

97 Not Applicable (Bus or truck with no trailing units)
99 Unknown (information unavailable)

Subfield 3 **Third Trailer Behind Tractor** **Specify 1**

VIN 3 – *Manufacturer-assigned number permanently affixed to trailer*

97 Not Applicable (Bus or truck with no trailing units)
99 Unknown (information unavailable)

Rationale Important to identify specific trailer design characteristics and occupant protection systems for effectiveness evaluations.

Edit Checks:

E(LV)03.01 The same subfields must be completed for each of LV2, LV3, LV4, LV5, LV6 and LV11.

LV4. Trailer Make(s)

Definition The distinctive (coded) name applied to a group of trailers by a manufacturer.

Attribute Values:

Subfield 1 **First Trailer Behind Tractor** **Specify 1**

Make 1 – *Name assigned by manufacturer*

97 Not Applicable (Bus or truck with no trailing units)
99 Unknown (information unavailable)

Subfield 2 **Second Trailer Behind Tractor** **Specify 1**

Make 2 – *Name assigned by manufacturer*

97 Not Applicable (Bus or truck with no trailing units)
99 Unknown (information unavailable)

Subfield 3 **Third Trailer Behind Tractor** **Specify 1**

Make 3 – *Name assigned by manufacturer*

97 Not Applicable (Bus or truck with no trailing units)
99 Unknown (information unavailable)

Rationale Important for identifying trailer makes for evaluation, research, and crash comparison purposes.

Edit Checks:

E(LV)04.01 The same subfields must be completed for each of LV2, LV3, LV4, LV5, LV6 and LV11.

LV5. Trailer Model(s)

Definition The manufacturer-assigned code denoting a family of trailers within a make that have a degree of similarity in construction, such as body, chassis, etc.

Attribute Values:

Subfield 1 **First Trailer Behind Tractor** **Specify 1**

Model 1 – *Name assigned by manufacturer*

97 Not Applicable (Bus or truck with no trailing units)
99 Unknown (information unavailable)

Subfield 2 **Second Trailer Behind Tractor** **Specify 1**

Model 2 – *Name assigned by manufacturer*

97 Not Applicable (Bus or truck with no trailing units)
99 Unknown (information unavailable)

Subfield 3 **Third Trailer Behind Tractor** **Specify 1**

Model 3 – *Name assigned by manufacturer*

97 Not Applicable (Bus or truck with no trailing units)
99 Unknown (information unavailable)

Rationale Important for identifying trailer models for evaluation, research, and crash comparison purposes.

Edit Checks:

E(LV)05.01 The same subfields must be completed for each of LV2, LV3, LV4, LV5, LV6 and LV11.

LV6. Trailer Model Year(s)

Definition The year that is assigned to a trailer by the manufacturer.

Attribute Values:

Subfield 1 **First Trailer Behind Tractor** **Specify 1**

Model Year 1 – *Year assigned by manufacturer*

97 Not Applicable (Bus or truck with no trailing units)
99 Unknown (information unavailable)

Subfield 2 **Second Trailer Behind Tractor** **Specify 1**

Model Year 2 – *Year assigned by manufacturer*

97 Not Applicable (Bus or truck with no trailing units)
99 Unknown (information unavailable)

Subfield 3 **Third Trailer Behind Tractor** **Specify 1**

Model Year 3 – *Year assigned by manufacturer*

97 Not Applicable (Bus or truck with no trailing units)
99 Unknown (information unavailable)

Rationale Important for identifying trailer model years for evaluation, research, and crash comparison purposes.

Edit Checks:

E(LV)06.01 The same subfields must be completed for each of LV2, LV3, LV4, LV5, LV6 and LV11.

LV7. Motor Carrier Identification

Definition The identification number, name and address of an individual, partnership, or corporation responsible for the transportation of persons or property as indicated on the shipping manifest. See “Figure 14: Determining Responsible Carrier, FMCSA Visor Card (Front)” (p. 106) and “Figure 15: Determining Responsible Carrier, FMCSA Visor Card (Back)” (p. 107) for reference.

Attribute Values:

Subfield 1 **Identification Type** — **Select 1**

01 US DOT Number
02 State Number

97 Not Applicable
99 Unknown/Unable to Determine

Subfield 2 **Country/State Code** — **Specify 1**

Non-US Country Code (e.g. Mexico or Canada)
US State Code

Subfield 3 **Identification Number** — **Specify 1**

US DOT Number – up to 7 digits, right justified
If not a US DOT Number, include State-issued Identification Number and State

Subfield 4 **Name** — **Specify 1**

Motor Carrier Name

Subfield 5 **Motor Carrier Address** — **Specify 1**

Motor Carrier Address and Country
Street Address 1
Street Address 2
City, State Zip
Country

Subfield 6 **Type of Carrier** — **Select 1**

01 Interstate Carrier
02 Intrastate Carrier
03 Not in Commerce/Government
04 Not in Commerce/Other Truck or Bus

Rationale

***Required by the Federal Motor Carrier Safety Administration (FMCSA) CFR 350.201.** The FMCSA has the authority to fine and sanction unsafe interstate (and some intrastate) truck and bus companies. A key way to identify potentially unsafe motor carriers is to collect crash data by the identification number, name, and address of the company. The street address allows FMCSA to visit carriers and conduct reviews of compliance with the Federal Motor Carrier Safety Regulations and provides a crosscheck for the correct identity of the carrier. The identification number (found on the truck tractor, and assigned by the U.S. DOT or by a State) is a key element for carrier identification in the FMCSA databases for crash and other carrier information. This data element is collected at the scene to meet FMCSA 90 day reporting requirements.

Hierarchy: When Identification Numbers are available from more than one Source (Issuing Authority), the order of reporting priority follows:
1) US DOT number;
2) MC/MX (ICC) number;
3) Mexican or Canadian issued number; or
4) State issued numbers.

Edit Checks: None

Figure 14: Determining Responsible Carrier, FMCSA Visor Card (Front)

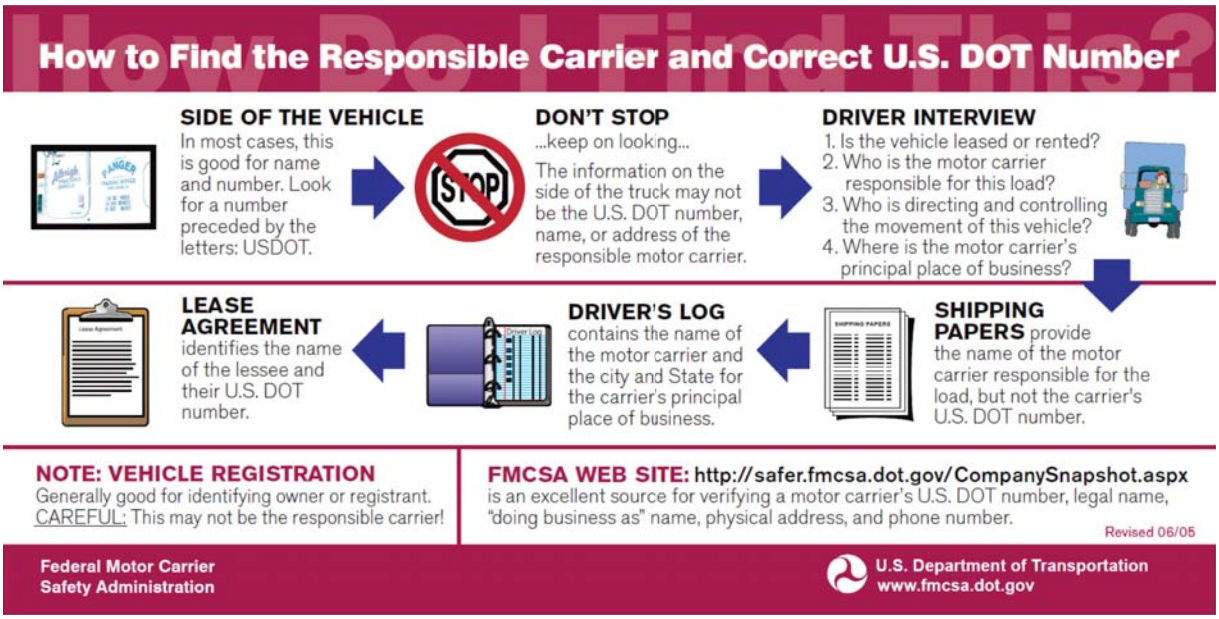
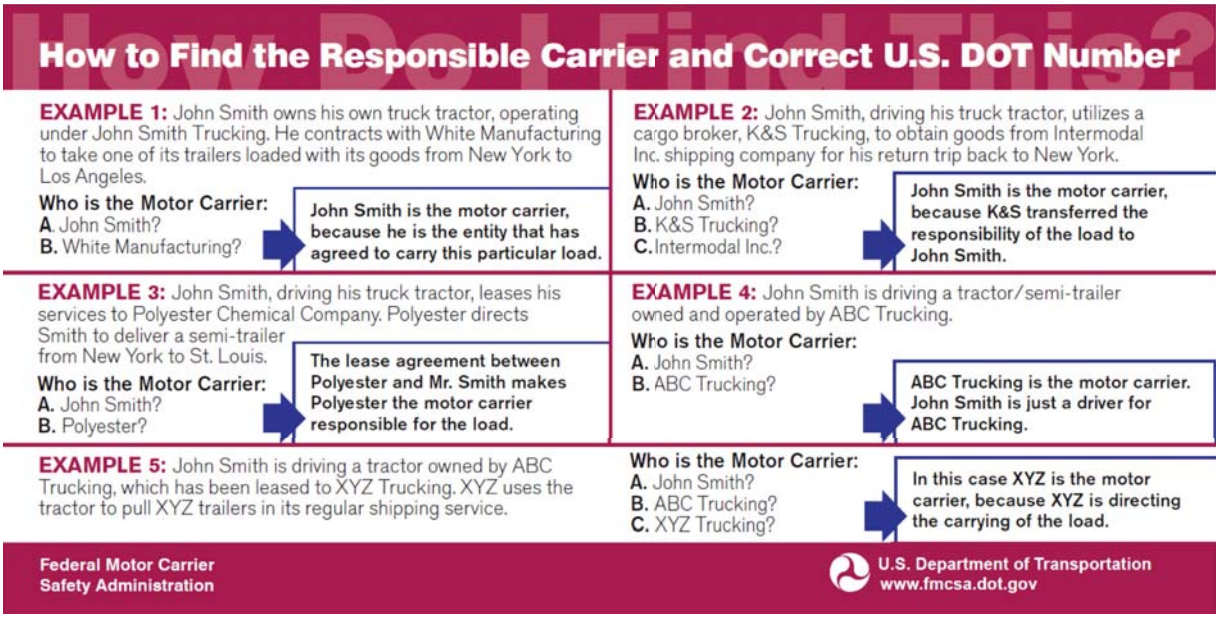


Figure 15: Determining Responsible Carrier, FMCSA Visor Card (Back)



LV8. Vehicle Configuration

Definition Indicates the general configuration of this motor vehicle.

Attribute Values:

Subfield 1 **Vehicle Configuration** — **Select 1**

01	Vehicle 10,000 lbs. or less placarded for hazardous materials
02	Bus/Large Van (seats for 9-15 occupants, including driver)
03	Bus (seats more than 15 occupants, including driver)
04	Single-Unit Truck (2-axle and GVWR > 10,000 lbs.)
05	Single-Unit Truck (3 or more axles)
06	Truck Pulling Trailer(s)
07	Truck Tractor (Bobtail)
08	Truck Tractor/Semi-Trailer
09	Truck Tractor/Double
10	Truck Tractor/Triple
11	Truck More Than 10,000 lbs., cannot classify
99	Unknown

Subfield 2 **Special Sizing** — **Select 1-4**

00	No special sizing
01	Over-height
02	Over-length
03	Over-weight
04	Over-width

Subfield 3	**Permitted?**	**Select 1**
01	Non-Permitted Load	
02	Permitted Load	

Rationale ****Required by the Federal Motor Carrier Safety Administration (FMCSA) CFR 350.201.** This data element provides information about the general configuration of the motor vehicle that is important to evaluate the types of motor vehicles that have the most crashes and the effectiveness of various safety countermeasures. This data element is collected at the scene because FMCSA requires reporting within 90 days.

Edit Checks:

E(LV)08.01 If trailer information is provided in LV2-LV6 and LV11, then "LV8. Vehicle Configuration" Subfield 1 must = 06 (Truck Pulling Trailer(S)), 08 (Truck Tractor/Semi-Trailer), 09 (Truck Tractor/Double), or 10 (Truck Tractor/Triple).

E(LV)08.02 If LV8 Subfield 1 = 02 (Bus/Large Van (seats for 9-15 occupants, including driver)) or 03 (Bus (seats more than 15 occupants, including driver)), then "LV9. Cargo Body Type" must = 01 (Bus) and "V8. Motor Vehicle Body Type Category" of this vehicle must = 20-28 (bus attributes).

LV9. Cargo Body Type

Definition The type of body for buses and trucks more than 10,000 GVWR. Refer to "Figure 16: FMCSA Cargo Body Types" (p. 109) for chart displaying types of cargo body types.

Attribute Values:

Select 1

00 No Cargo Body *(bobtail, light MV with hazardous materials [HM] placard, etc.)*
01 Bus
02 Auto Transporter
03 Cargo Tank
04 Concrete Mixer
05 Dump
06 Flatbed
07 Garbage/Refuse
08 Grain/Chips/Gravel
09 Intermodal Container Chassis
10 Log
11 Pole-Trailer
12 Van/Enclosed Box
13 Vehicle Towing Another Vehicle

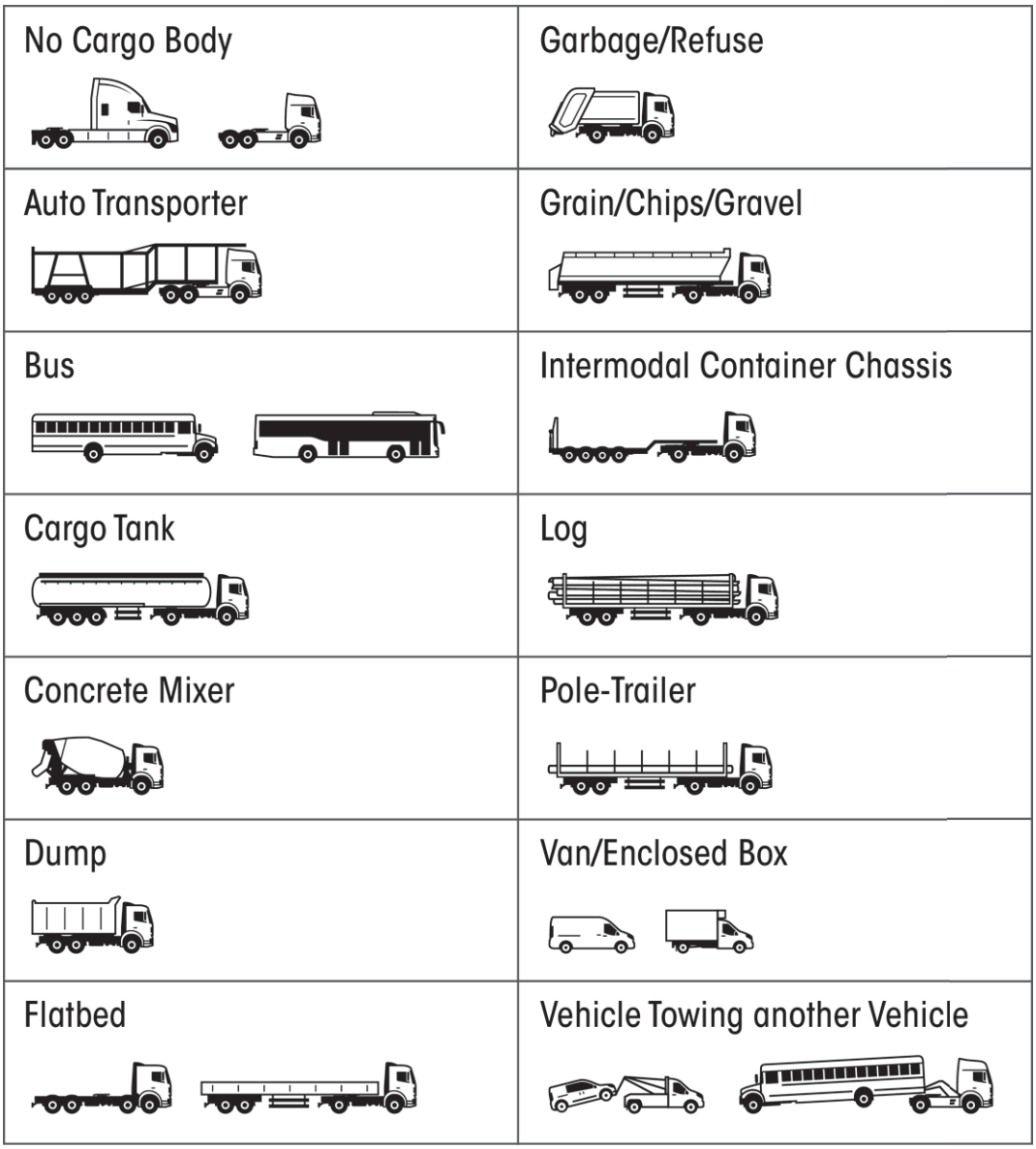
97 Not Applicable *(MV 10,000 lbs. or less, not displaying HM placard)*
98 Other
99 Unknown

Rationale ***Required by the Federal Motor Carrier Safety Administration (FMCSA) CFR 350.201.** This data element provides additional information about the motor vehicle, including all major cargo body types. The information it provides can be important in helping FMCSA make decisions on regulatory strategies for different types of motor vehicles. This data element is collected at the scene because FMCSA requires reporting within 90 days.

Edit Checks:

E(LV)09.01 If trailer information is provided in LV2-LV6 and LV11, then "LV9. Cargo Body Type" must not = 00 (No Cargo Body *(bobtail, light MV with hazardous materials [HM] placard, etc.))*.

Figure 16: FMCSA Cargo Body Types



LV10. Hazardous Materials (Cargo Only)

Definition Indication of the hazardous materials identification and class being transported by the motor vehicle, and whether or not hazardous materials were released. (Refer to "Figure 17: Nine Classes of Hazardous Materials, FMCSA Visor Card (Front)" (p. 111) and "Figure 18: Reporting Hazardous Materials Information, FMCSA Visor Card (Back)" (p. 111) for charts displaying hazardous materials classes and reporting information.)

Attribute Values:

Subfield 1	**Hazardous Materials ID**	**Specify**
0000	No HM Placard Displayed	
xxxx	4-digit Hazardous Materials ID number or name taken from the middle of the diamond or from rectangular box	
9999	Unknown	

Subfield 2	**Hazardous Materials Class**	**Specify**
00	No HM Placard Displayed	
x	1-digit Hazardous Materials Class number from the bottom of diamond	
99	Unknown	

Subfield 3	**Release of hazardous materials from a cargo compartment (e.g. trailer), cargo container (e.g. tank), or from a package?**	**Select 1**
01	No	
02	Yes	
97	Not Applicable	
99	Unknown if Released	

Rationale ***Required by the Federal Motor Carrier Safety Administration (FMCSA) CFR 350.201.** FMCSA devotes special attention to motor carriers that transport hazardous materials (HM), including calculating risk assessments, determining response methods, imposing tighter regulations and conducting compliance reviews on a higher percentage of HM carriers. Getting good data on crashes involving trucks carrying HM and whether HM are spilled during the crashes helps FMCSA focus law enforcement efforts. This data element is collected at the scene because FMCSA requires reporting within 90 days.

Guideline for recording multiple HMs:

- If a HM spill has occurred and you know which material was released, always record that material;
- If 2 HMs at different classes (1-9), report the material from the DOT Hazmat Table 1 (below) and its associated 4-digit UN number before materials in Table 2 (below). Table 1 includes Hazard Class/Divisions 1.1, 1.2, 1.3, 2.3, 4.3, 5.2, 6.1, 7;
- If 2 HMs of the same class, report the material in greatest quantity if information is available, or the first material listed on report if not.

Edit Checks:

E(LV)10.01	If "LV10. Hazardous Materials (Cargo Only)" Subfield 1 = 0000 (No HM Placard Displayed), then Subfield 2 must = 00 (No HM Placard Displayed).
E(LV)10.02	If "LV10. Hazardous Materials (Cargo Only)" Subfield 1 does not = 0000 (No HM Placard Displayed), then "LV7. Motor Carrier Identification" Subfield 1 should = 01 (US DOT Number)

Figure 17: Nine Classes of Hazardous Materials, FMCSA Visor Card (Front)

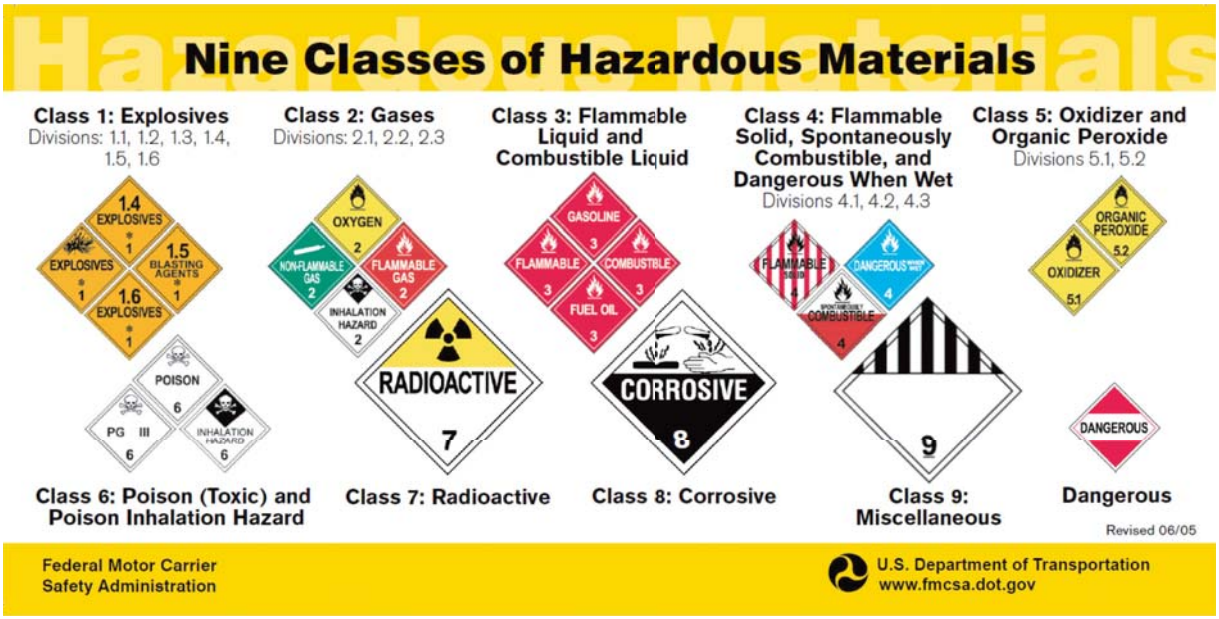


Figure 18: Reporting Hazardous Materials Information, FMCSA Visor Card (Back)

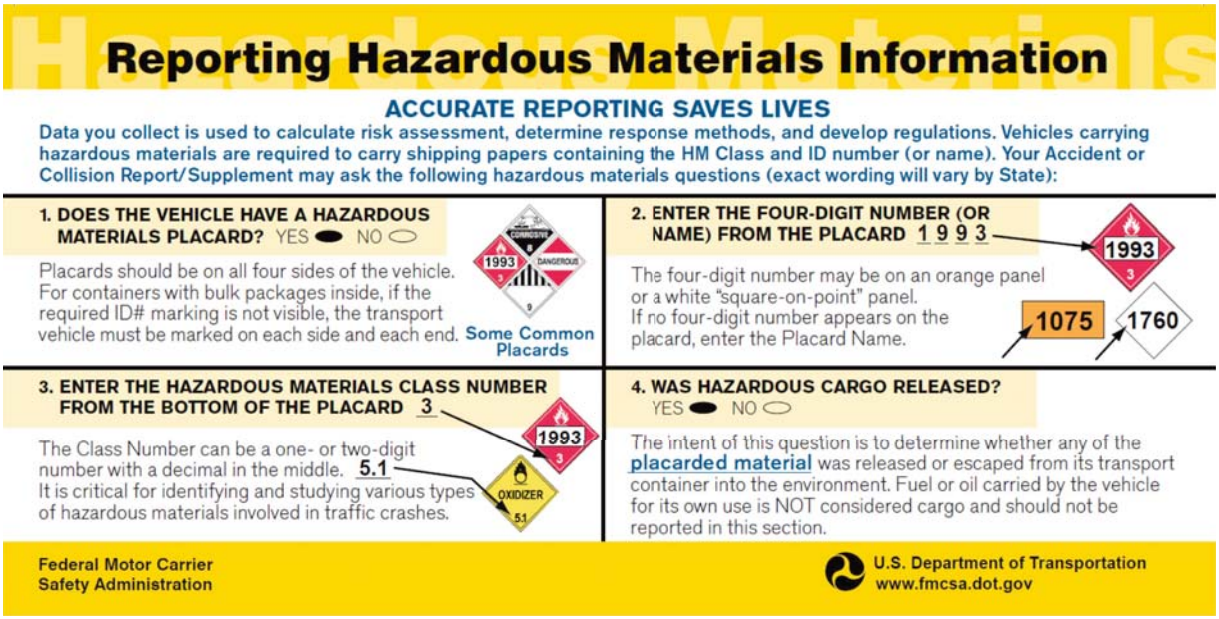


Figure 19: FMCSA Table 1 and Table 2

Table 1

Category of material (Hazard class or division number and additional description, as appropriate)	Placard name	Placard design section reference (§)
1.1	EXPLOSIVES 1.1	172.522
1.2	EXPLOSIVES 1.2	172.522
1.3	EXPLOSIVES 1.3	172.522
2.3	POISON GAS	172.540
4.3	DANGEROUS WHEN WET	172.548
5.2 (Organic peroxide, Type B, liquid or solid, temperature controlled)	ORGANIC PEROXIDE	172.552
6.1 (material poisonous by inhalation (see § 171.8 of this subchapter))	POISON INHALATION HAZARD	172.555
7 (Radioactive Yellow III label only)	RADIOACTIVE[1]	172.556

[1] RADIOACTIVE placards are also required for: All shipments of unpackaged LSA-I material or SCO-I; all shipments required by §§ 173.427, 173.441, and 173.457 of this subchapter to be operated under exclusive use; and all closed vehicles used in accordance with § 173.443(d).

Table 2

Category of material (Hazard class or division number and additional description, as appropriate)	Placard name	Placard design section reference (§)
1.4	EXPLOSIVES 1.4	172.523
1.5	EXPLOSIVES 1.5	172.524
1.6	EXPLOSIVES 1.6	172.525
2.1	FLAMMABLE GAS	172.532
2.2	NON-FLAMMABLE GAS	172.528
3	FLAMMABLE	172.542
Combustible liquid	COMBUSTIBLE	172.544
4.1	FLAMMABLE SOLID	172.546
4.2	SPONTANEOUSLY COMBUSTIBLE	172.547
5.1	OXIDIZER	172.550
5.2 (Other than organic peroxide, Type B, liquid or solid, temperature controlled)	ORGANIC PEROXIDE	172.552
6.1 (other than material poisonous by inhalation)	POISON	172.554
6.2	(None)	
8	CORROSIVE	172.558
9	Class 9 (see § 172.504(f)(9))	172.560
ORM-D	(None)	

LV11. Total Number of Axles

Definition The number of axles in use at the time of the crash on each unit of a large truck or combination-unit vehicle. “Lift” or “tag” axles that are down should be included in this total.

Attribute Values:

Subfield 1 **Truck Tractor** **Specify 1**

xx *Number of Axles*

99 Unknown (information unavailable)

Subfield 2 **First Trailer Behind Tractor** **Specify 1**

xx *Number of Axles*

97 Not Applicable (Bus or truck with no trailing units)
99 Unknown (information unavailable)

Subfield 3 **Second Trailer Behind Tractor** **Specify 1**

xx *Number of Axles*

97 Not Applicable (Bus or truck with no trailing units)
99 Unknown (information unavailable)

Subfield 4 **Third Trailer Behind Tractor** **Specify 1**

xx *Number of Axles*

97 Not Applicable (Bus or truck with no trailing units)
99 Unknown (information unavailable)

Rationale This data element is a recommendation from a Federal Advisory Committee consisting of State and local law enforcement, truck and bus industries and safety advocates. The number of axles can be used as an indicator of vehicle weight and other special vehicle configurations.

Edit Checks:

E(LV)11.01 The same subfields must be completed for each of LV2, LV3, LV4, LV5, LV6 and LV11.

Non-Motorist Section Data Elements

Non-motorists involved in crashes are an important segment of the population and have been increasing in number and percent of the people involved in crashes. Under-reporting of pedestrians and bicyclists in crashes, in particular, makes it difficult to analyze the impact of crashes on this portion of the population, and results in missed opportunities to improve safety. The non-motorist section should be completed for every crash-involved person who was NOT the driver or occupant of a motor vehicle.

If a crash fits the reporting criteria for the Non-Motorist Section, both elements in the main MMUCC and Non-Motorist Section must be captured in order to align with the model minimum criteria. For that reason, some elements in MMUCC include triggers to alert the States and law enforcement personnel that they must fill out this section based on the person type(s) selected. These elements must be completed for non-motorist person types.

NM1. Unit Number of Motor Vehicle Striking Non-Motorist

Definition Number assigned to identify the motor vehicle that struck the non-motorist in the crash.

Attribute Values:

	Unit number of MV that was the first MV to strike the non-motorist	**Specify 1**

Rationale Used for tracking. Important when multiple motor vehicles are involved in the crash.

Edit Checks: None

NM2. Non-Motorist Action/Circumstance Prior to Crash

Definition The action of the non-motorist immediately prior to the crash and an indication of whether the non-motorist was walking/cycling to/from school.

Attribute Values:

Subfield 1	**Action/Circumstance**	**Select 1**
00	None	
01	Adjacent to Roadway (e.g., Shoulder, Median)	
02	Crossing Roadway	
03	In Roadway – Other	
04	Waiting to Cross Roadway	
05	Walking/Cycling Along Roadway Against Traffic (In or Adjacent to Travel Lane)	

06 Walking/Cycling Along Roadway with Traffic (In or Adjacent to Travel Lane)
07 Walking/Cycling on Sidewalk
08 Working in Trafficway (Incident Response)

98 Other
99 Unknown

Subfield 2 **Origin/Destination** **Select 1**

01 Going to or from School (K-12)
02 Going to or from Transit

97 Not Applicable
99 Unknown

Rationale The development of effective roadway design and operation, education, and enforcement measures to accommodate pedestrians and bicyclists and prevent crashes with motor vehicles is enhanced by the collection of the actions and circumstances prior to the crash.

Edit Checks: None

NM3. Non-Motorist Contributing Action(s)/Circumstance(s)

Definition The actions/circumstances of the non-motorist that may have contributed to the crash. This data element is based on the judgment of the law enforcement officer investigating the crash.

Attribute Values:

00 None (No Improper Action) **Select 1-2**

01 Dart/Dash
02 Disabled Vehicle-Related (Working on, Pushing, Leaving/Approaching)
03 Entering/Exiting Parked/Standing Vehicle
04 Failure to Obey Traffic Signs, Signals, or Officer
05 Failure to Yield Right-Of-Way
06 Improper Passing
07 Improper Turn/Merge
08 Inattentive (Talking, Eating, etc.)
09 In Roadway Improperly (Standing, Lying, Working, Playing)
10 Not Visible (Dark Clothing, No Lighting, etc.)
11 Wrong-Way Riding or Walking

98 Other
99 Unknown

Rationale The development of effective roadway design and operation, education, and enforcement measures to accommodate pedestrians and cyclists and prevent crashes with motor vehicles is enhanced by the collection of the actions and circumstances at the time of the crash.

Edit Checks:

E(NM)03.01 If "NM3. Non-Motorist Contributing Action(s)/Circumstances(s)" = 01 (Dart/Dash), then "NM2. Non-Motorist Action/Circumstance Prior to Crash" should = 02 (Crossing Roadway).

E(NM)03.02 If "NM3. Non-Motorist Contributing Action(s)/Circumstances(s)" = 06 (Improper Passing) or 07 (Improper Turn/Merge), then "P4. Person Type" must = 04 (Bicyclist) or 05 (Other Cyclist).

NM4. Non-Motorist Location at Time of Crash

Definition The location of the non-motorist with respect to the roadway at the time of the crash. See "Figure 20: Separated Bike Lanes compared to other bicycle facility types" (p. 118).

Attribute Values:

Select 1

Roadway Facility

01 Intersection – Marked Crosswalk
02 Intersection – Unmarked Crosswalk
03 Intersection – Other
04 Median/Crossing Island
05 Midblock – Marked Crosswalk
06 Shoulder/Roadside
07 Travel Lane – Other Location

Bicycle Facility

08 Signed Route (no pavement marking)
09 Shared Lane Markings
10 On-Street Bike Lanes
11 On-Street Buffered Bike Lanes
12 Separated Bike Lanes
13 Off-Street Trails/Sidepaths

Other Facility

14 Driveway Access
15 Non-Trafficway Area
16 Shared-Use Path or Trail
17 Sidewalk

98 Other
99 Unknown

Rationale The development of effective roadway design and operation, education, and enforcement measures to accommodate pedestrians and cyclists and prevent crashes with motor vehicles is enhanced by the collection of the location of the non-motorist at the time of crash.

Edit Checks:

E(NM)04.01	If "NM4. Non-Motorist Location at Time of Crash" = 01 (Intersection – Marked Crosswalk), 02 (Intersection – Unmarked Crosswalk) or 03 (Intersection – Other) and "C7. First Harmful Event" = 13 (Other Non-Motorist), 15 (Pedalcycle), 16 (Pedestrian), then "C16. Type of Intersection" Subfield 1 should not = 00 (Not an Intersection) and "C15. Relation to Junction" Subfield 2 should not = 00 (Not an Interchange Area).
E(NM)04.02	If "NM4. Non-Motorist Location at Time of Crash" = 08-13 "R13. Presence Type of Bicycle Facility," must not = 00.
E(NM)04.03	If "NM4. Non-Motorist Location at Time of Crash" = 01 (Intersection – Marked Crosswalk), 02 (Intersection – Unmarked Crosswalk) or 03 (Intersection – Other), then "R14. Mainline Number of Lanes at Intersection" and "R15. Cross-Street Number of Lanes at Intersection" must not be blank

Figure 20: Separated Bike Lanes compared to other bicycle facility types

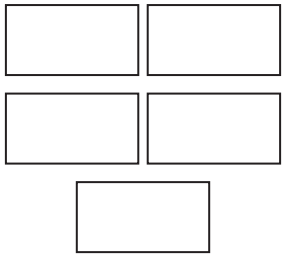
NM5. Non-Motorist Safety Equipment

Definition The safety equipment(s) used by the non-motorist.

Attribute Values:

00	None
01	Helmet
02	Protective Pads Used (elbows, knees, shins, etc.)
03	Reflective Wear (backpack, triangles, etc.)
04	Lighting
05	Reflectors
98	Other
99	Unknown

Select 1-5



Rationale Used to evaluate effectiveness of non-motorist safety equipment. Important to calculate usage statistics for the development and evaluation of the effectiveness of educational countermeasures.

Edit Checks:

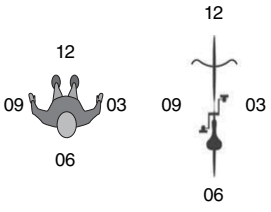
E(NM)05.01 If any "NM5. Non-Motorist Safety Equipment" = 00 (None) or 99 (Unknown) then only that one value may be selected and the other 4 fields must be blank.

NM6. Initial Contact Point on Non-Motorist

Definition Location of the first harmful event on the non-motorist by the motor vehicle.

Attribute Values:

12	Front
03	Right
06	Rear
09	Left
99	Unknown



Select 1

Rationale Important for use in evaluating contributing circumstances, injury severity, and non-motorist trafficway design. Refer back to P4. Person Type to cross-reference type of non-motorist or personal conveyance.

Edit Checks: None

Overhead bicycle illustration Source: Anne C Lusk et al. Inj Prev doi:10.1136/injuryprev-2014-041317.

Dynamic Data Elements

Dynamic data elements are those items that are either in such a state of flux or so new to the evolving discipline in acquisition they cannot yet be measured reliably. These elements are termed "dynamic" because they are provisional and subject to technical correction on a more frequent basis as our understanding of the phenomena evolve.

Motor Vehicle Automation

The 5th edition of the Model Minimum Uniform Crash Criteria (MMUCC) introduces the new dynamic element *"DV1. Motor Vehicle Automated Driving System(s),"* to address the rapidly developing automated vehicle systems technology. Advanced levels of automation and the push to deploy this technology into the motoring arena are creating a paradigm shift to the traditional notion of all aspects of the operation of motor vehicles. Consequently, the discussion regarding this data element raised a number of complex issues, including (a) how to classify vehicle automation technology and (b) the most reliable and practical ways to collect vehicle automation data. Because of the fluidity of this data, NHTSA and GHSA consider this to be a dynamic data element, or an aspirational target. Technological developments and new regulations may precipitate the need for out-of-cycle changes to this data element. As a result, States should consider the following when adopting this dynamic data element:

- Automated vehicle technologies and associated guidance—including the SAE standard referenced in the data element—are fluid and expected to change.
- Collecting information about vehicle automation is difficult because (a) law enforcement considers collecting this data through observation unreliable at best and (b) a centralized database on vehicle automation does not yet exist.

In light of the Department of Transportation's policy on automated vehicle systems and the rapid pace of automated vehicle technologies, NHTSA and GHSA propose continuing engagement on this issue and will host an annual stakeholders' meeting at the International Forum on Traffic Records and Highway Information Systems. These sessions will provide an open forum for continued discussion of crash data collection and emerging automated vehicle technologies with federal, State, and industry stakeholders. This continued engagement will allow NHTSA and GHSA to make timely technical updates to the dynamic data element *"DV1. Motor Vehicle Automated Driving System(s)."*

DV1. Motor Vehicle Automated Driving System(s)

Definition

"The hardware and software that are collectively capable of performing part or all of the dynamic driving task on a sustained basis; this term is used generically to describe any system capable of level 1-5 driving automation." (SAE 2016)

*Refer to "Figure 21: SAE International's Levels of Driving Automation; SAE International Standard J3016 (2014)" (p. 124) for automation level determination.

No Automation*: The full-time performance by the human driver of all aspects of the dynamic driving task, even when enhanced by warning or intervention systems.

Driver Assistance*: Driver assistance system of either steering or acceleration/deceleration using information about the driving environment and with the expectation that the human driver perform all remaining aspects of the dynamic driving task.

Partial Automation*: The driving mode-specific execution by one or more driver assistance systems of both steering and acceleration/deceleration using information about the driving environment and with the expectation that the human driver perform all remaining aspects of the dynamic driving task.

Conditional Automation*: The driving mode-specific performance by an automated driving system of all aspects of the dynamic driving task with the expectation that the human driver will respond appropriately to a request to intervene.

High Automation*: The driving mode-specific performance by an automated driving system of all aspects of the dynamic driving task, even if a human driver does not respond appropriately to a request to intervene.

Full Automation*: The full-time performance by an automated driving system of all aspects of the dynamic driving task under all roadway and environmental conditions that can be managed by a human driver.

Dynamic driving task includes the operational (steering, braking, accelerating, monitoring the vehicle and roadway) and tactical (responding to events, determining when to change lanes, turn, use signals, etc.) aspects of the driving task, but not the strategic (determining destinations and waypoints) aspect of the driving task.

Driving mode is a type of driving scenario with characteristic dynamic driving task requirements (e.g., expressway merging, high-speed cruising, low speed traffic jam, closed-campus operations, etc.).

Request to intervene is notification by the automated driving system to a human driver that s/he should promptly begin or resume performance of the dynamic driving task.

Attribute Values:

Subfield 1	**Automation System or Systems in Vehicle**	**Select 1**
01	No	
02	Yes	
99	Unknown	

Subfield 2	**Automation System Levels in Vehicle**	**Select 1-5**
00	No Automation	
01	Driver Assistance	
02	Partial Automation	
03	Conditional Automation	
04	High Automation	
05	Full Automation	
06	Automation Level Unknown	
99	Unknown	

Subfield 3	**Automation System Levels Engaged at Time of Crash**	**Select 1-5**
00	No Automation	
01	Driver Assistance	
02	Partial Automation	
03	Conditional Automation	
04	High Automation	
05	Full Automation	
06	Automation Level Unknown	
99	Unknown	

Rationale As motor vehicles become increasingly automated, States will have the ability to measure how the different levels of vehicle automation affects traffic safety.

Edit Checks:

None

Figure 21: SAE International's Levels of Driving Automation; SAE International Standard J3016 (2014)

SAE level	Name	Narrative Definition	Execution of Steering and Acceleration/ Deceleration	*Monitoring* of Driving Environment	Fallback Performance of *Dynamic Driving Task*	System Capability *(Driving Modes)*
***Human driver* monitors the driving environment**						
0	**No Automation**	the full-time performance by the *human driver* of all aspects of the *dynamic driving task*, even when enhanced by warning or intervention systems	Human driver	Human driver	Human driver	n/a
1	**Driver Assistance**	the *driving mode*-specific execution by a driver assistance system of either steering or acceleration/deceleration using information about the driving environment and with the expectation that the *human driver* perform all remaining aspects of the *dynamic driving task*	Human driver and system	Human driver	Human driver	Some driving modes
2	**Partial Automation**	the *driving mode*-specific execution by one or more driver assistance systems of both steering and acceleration/ deceleration using information about the driving environment and with the expectation that the *human driver* perform all remaining aspects of the *dynamic driving task*	**System**	Human driver	Human driver	Some driving modes
***Automated driving system* ("system") monitors the driving environment**						
3	**Conditional Automation**	the *driving mode*-specific performance by an *automated driving system* of all aspects of the dynamic driving task with the expectation that the *human driver* will respond appropriately to a *request to intervene*	System	**System**	Human driver	Some driving modes
4	**High Automation**	the *driving mode*-specific performance by an automated driving system of all aspects of the *dynamic driving task*, even if a *human driver* does not respond appropriately to a *request to intervene*	System	System	**System**	Some driving modes
5	**Full Automation**	the full-time performance by an *automated driving system* of all aspects of the *dynamic driving task* under all roadway and environmental conditions that can be managed by a *human driver*	System	System	System	**All driving modes**

Mapping to MMUCC 5th Edition

1. Introduction

Background

The MMUCC Guideline is a voluntary guideline that recommends a minimal set of standardized data elements and attributes that States should use for describing the characteristics of motor vehicle crashes, the vehicles, persons, and environment involved. Since the initial release of the *MMUCC Guideline 1st Edition* (NHTSA, 1998), this data set has been revised four times, to better support improved highway safety decision-making within States and nationally. The *MMUCC 5th Edition* is the most recent edition, containing 115 data elements.

In each of the four previous editions, the MMUCC Guideline did not provide States with guidance on implementation. Historically, States have established their own data collection guidelines, resulting in substantial variation regarding the specific crash data collected. Some States use different formats and names for data elements and attributes, or combine (or split) elements and attributes in their police crash reports and crash databases. Consequently, it is difficult to compare or share crash data among States, between State and Federal data sets, and—in some cases—between different agencies within a State. States are encouraged, but not required, to be more consistent with the *MMUCC 5th Edition,* for their crash reports and databases, at both the element and attribute levels.

To assist States in evaluating their consistency with MMUCC, the Governors Highway Safety Association (GHSA) and NHTSA have developed guidance in their recent publication: *Mapping to MMUCC: A Process for Comparing Police Crash Reports and State Crash Databases to the Model Minimum Uniform Crash Criteria* (DOT HS 812 184) (hereafter called the GHSA/NHTSA Mapping Process). That process standardized how States should compare both their crash reports and crash databases to *MMUCC 4th Edition* with the use of mapping rules. This section updates the rules established in the GHSA/NHTSA Mapping Process for the *MMUCC 5th Edition* and provides supplemental information.

Throughout this section, for many of the MMUCC data elements, there are sub-sections labeled “additional considerations” that present lessons learned from several pilot tests of the MMUCC mapping process. The notes clarify and expand upon the MMUCC mapping guidance and are consistent with NHTSA’s and GHSA’s presentation of the mapping process and rules.

NHTSA currently provides States the opportunity to have their crash report and/or crash database mapped to MMUCC for free, pending available funds. Interested States should contact their NHTSA Regional Program Manager for additional information.

Purpose

The purpose of this section is to build upon the GHSA/NHTSA Mapping Process to provide detailed guidance on mapping State crash data to MMUCC while following the updated rules outlined here. NHTSA and GHSA have developed a methodology for mapping the data collected and maintained on crash databases to the data elements and attributes in the *MMUCC 5th Edition*. This methodology is intended to standardize how States compare both their crash reports and their crash databases to MMUCC. The process recognizes that while State data systems often use different terminology and formatting, different data sets often can be mapped to the recommended MMUCC data elements and attributes. Thus, if an element

or attribute on a State crash report or in its crash database does not match a MMUCC element or attribute verbatim, but is essentially the same, it is assumed to be "mapped" to that MMUCC element or attribute. Throughout this section, the word "element" refers to the data fields on a crash report or in a database and the word "attributes" refers to the values that an element may include.

Benefits

By conducting a MMUCC mapping assessment a State can determine and prioritize changes they could implement to increase their agreement with the *MMUCC 5th Edition*. States can use the information gleaned from the mapping process to plan updates or revisions to their crash report or to their crash database. This standardized process gives States vital information for implementing the *MMUCC 5th Edition*, which should also improve uniformity of crash data nationally.

Organization

This section is organized into the following four sections:

- **Introduction:** information on background, purpose, and benefits of this guide;
- **Process for mapping State crash elements to MMUCC:** preparing for a mapping assessment, general mapping rules and commentary element by element, and an example of how to apply the mapping rules;
- **Computing compatibility scores and ratings:** methods for calculating compatibility scores for (a) each individual element, and (b) overall State-to-MMUCC mappings, and the four-scale rating system;
- **Summary:** general discussion of mapping to the *MMUCC 5th Edition*.

2. Process for Mapping State Crash Elements to MMUCC

The overall purpose of the MMUCC Guideline is to provide a minimal set of data elements that can be used to explain and investigate the status of highway safety within a State, and enable comparisons of the results among different States. In order to do this evaluation, data collected (and derived or linked) must be entered into a crash database, which is typically some form of computerized or electronic file. Typically, a State's crash database is comprised of the corresponding data collected on police crash reports, derived from data collected on crash reports, and obtained from other data sources (e.g., a roadway database). The elements and attributes contained in a State's crash database should be mapped to all 115 MMUCC elements and their attributes, regardless of origin (collected or derived and linked).

In addition to modified and additional elements, the *MMUCC 5th Edition* no longer has elements identified as "collected at the scene," "derived," or "linked." Rather, States are encouraged to determine how individual elements are obtained based upon their individual capabilities. States that have greater electronic capabilities with integration between multiple databases will be able to collect less and link or derive more. The 5th Edition does identify those elements that were previously recommended as being obtained through linkage or derivation. Having removed the distinction that an element should be "collected at the scene" means that the MMUCC elements included on a crash report are likely to vary from State to State. Instead, mappings to the *MMUCC 5th Edition* should be done by comparing the State's crash database to MMUCC.

This section provides States with detailed guidance on how to map their State crash data elements to MMUCC. A mapping process involves comparing a source domain to a target domain. When mapping to MMUCC, the source domain is the State's crash database and the target domain is MMUCC. In general, the mapping process contains two primary steps: preparation and review following the mapping rules. These following sections provide additional information.

2.1 Preparation

Prior to conducting a thorough review of mapping State crash elements to MMUCC, the person conducting the review (the assessor) needs to obtain documentation for both the source and target data elements. The documentation includes, but may not be limited to:

- A police crash report identifying all data elements and any attributes defined on the form, as well as other primary forms (if any) that should be collected;
- Any associated crash report overlay(s) listing attributes for elements on the form;
- Any instruction manual(s) associated with the crash report, providing definitions for elements on the crash report as well as all attributes for those elements;
- Police Instruction Manual (optional, but may be needed if the data dictionary is incomplete); and
- State Crash Data Dictionary.

The data dictionary for the State Crash Database should list all data elements and element attributes used in the crash database. The police crash report form and police instruction manual should not be needed for mapping if the data dictionary contains all relevant terms and definitions.

As a part of the preparation, States are encouraged to use the NHTSA 5th Edition Mapping worksheet to map each of the data elements and associated attributes to determine 5th Edition mapability. This spreadsheet is used for a direct comparison of the elements, attributes to the elements, and attributes in the *MMUCC 5th Edition.* The tabs in the spreadsheet follow the format and organization of the 5th Edition: Crash Data Elements, Vehicle Data Elements, Person Data Elements, Roadway Data Elements, Fatal Section Data Elements, Large Vehicles and Hazardous Materials Section Data Elements, Non-Motorist Section Data Elements, and Dynamic Data Elements.

Interested agencies can obtain the NHTSA-developed mapping spreadsheet, which follows this structure, for free, one of three ways:

- GHSA's website;
- NHTSA's website (under Traffic Records); or
- Contact the NHTSA Regional Office.

The following elements are included within each worksheet:

- **Column A:** Lists the number of each MMUCC element in order, such as C1, C2.
- **Column B:** Lists the name of each MMUCC element.
- **Column C:** Lists the total number of selections for that MMUCC element, by subfield.
- **Column D:** Lists all the MMUCC attributes associated with the MMUCC element. If a MMUCC element has subfields, Column C is the list of attributes for the first subfield.

- **Column E:** The space for recording whether the State has an element/attribute that can be mapped to the corresponding MMUCC element/attribute. Enter "1" if the State element/attribute matches to the MMUCC element/attribute, otherwise, enter "0."
- **Column F:** A field for recording the specific State element/attribute name and number that matches to the MMUCC element/attribute.
- **Column H:** Computes the percentage mapable for each MMUCC element. This is the mapping score for each MMUCC element.

Note: In the basic spreadsheet, the word "Test" is initially listed as the "Source." When using the spreadsheet, the State enters its name in the box shown in the "README" worksheet. The name will replace the word "Test" in all subsequent worksheets.

2.2 Mapping Rules

Once the assessor has set up mapping tables and gathered the needed documentation, they can start conducting a thorough evaluation using the mapping rules and specific notes described in this section. There are both general rules and rules/notes for individual data elements.

2.2.1 General

The GHSA/NHTSA Mapping Process established general rules for mapping State elements and attributes to MMUCC. Those rules in the GHSA/NHTSA Mapping Process have been updated to the elements in the *MMUCC 5th Edition,* and States should adhere to them:

1. The *MMUCC 5th Edition* assumes that States will collect data for all types of crashes (e.g., fatalities, serious injuries, non-motorist, and commercial motor vehicle). The 5th Edition introduced three new sections of data elements collected only when applicable: the Fatal Section Data Elements, Large Vehicles and Hazardous Materials Section Data Elements, and Non-Motorist Section Data Elements. State data elements contained in the crash database and only collected for the same subset of crash types (e.g. only crashes involving a fatality) can be mapped to MMUCC following all other general and specific rules.
2. The State element name does not need to match the MMUCC element name, but the definition should be (essentially) the same. The reverse is not true. If a State element/attribute has the same name as a MMUCC element/attribute, the definitions must be the same for a match. Mapping by name alone will result in errors.
    - Similarly, a State element or attribute may be mapped to a MMUCC element or attribute even if the same term (or name) is not used as long as the State term is synonymous and unambiguous, or has the same definition.
3. An element/attribute on a State crash database that is "close enough" should not be mapped because it will be difficult for others to understand and will corrupt data integrity.
4. If the MMUCC element allows multiple entries from the same list of attributes (shown as boxes in the 5th Edition with either "Select X," "Select X-Y," or "Specify X" above them), the matching State crash database element must have the same number of total entries as allowed by the MMUCC element to map completely.
    - For example, the MMUCC element "C14. Contributing Circumstances – Roadway Environment" allows for the recording of one or two attributes (two boxes in the element). Assuming the State's attributes mapped completely to MMUCC but only provided one value for the element, the State would map at approximately 50% because MMUCC requires two possible values and the State only provides one.

5. A single attribute of a State element may be mapped only to one MMUCC element or attribute. Suppose a State element "Roadway Conditions" has an attribute of "Snow." It may not be mapped to both the attribute "Snow" in MMUCC element "C11. Weather Conditions" and "C13. Roadway Surface Condition" attribute "Snow." Because the State element is "Roadway Conditions," mapping to MMUCC element C13 may be more appropriate. The assessor must choose one and only one that follows the meaning of what the State collects.
6. If a State element has an attribute that combines several terms (i.e., it has a broad definition), it may not be mapped to MMUCC element/attributes that are included in that broad definition. For example, a State's attribute "Frozen Precipitation" may not be mapped to any of the four MMUCC element "C11. Weather Conditions" attributes Snow, Blowing Snow, Sleet or Hail, or Freezing Rain or Freezing Drizzle because it does not distinguish between the four possibilities.
7. Two or more elements on a State crash database may map to a single MMUCC element where the MMUCC element contains multiple attribute clusters.[1] For example, the MMUCC element "P8. Restraint Systems/Motorcycle Helmet Use" may be listed as separate State elements "Restraint Systems" (or "Occupant Protection") and "Motorcycle Helmet Use" on the State crash database.
8. If an element on a State crash database has attributes that map to attributes included in separate MMUCC elements, they are permitted to match to those attributes in those MMUCC elements so long as individual State element attributes are not mapped more than once.
9. A State element that is reported as an open text field—the officer either writes or types in the information and is not limited to a specific set of possible values—may be used to map to a MMUCC element only if the police instruction manual clearly indicates what should be written/typed in the field.
10. Crash database-to-MMUCC mapping is done only at the element/attribute level and not a more detailed level. If a MMUCC element/attribute is present in the crash database in some way, including as a "freeform" or "text" field, then the State element/attribute maps to the MMUCC element/attribute. The number of characters allowed should not matter.
11. For a State element attribute *Other* to map to a MMUCC element attribute *Other*, the State element must possess all of the specific attributes for the MMUCC element in question. For example, Subfield 1 of MMUCC element "P24. Transported to First Medical Facility By" has the following attributes: *Not Transported, EMS Air, EMS Ground, Law Enforcement, Other, and Unknown*. If the State element being mapped has the first four MMUCC attributes, then the State attribute "Other" would map to the MMUCC attribute *Other*. However, if the State element does not have an attribute that mapped to one of the four (for example, *EMS Air*), then *Other* would also not map. The State attribute *Other* treats "EMS Air" as a possible undefined value. A visual representation is shown in "Figure 22: State Crash Report Attribute "Other" Can Be Mapped to the MMUCC" and "Figure 23: State Crash Report Attribute "Other" Cannot Be Mapped to the MMUCC."

1 An attribute *cluster* is a grouping of similar attributes that may depict one piece of an element's information. For example, MMUCC element "P8. Restraint Systems/Motorcycle Helmet Use" contains two clusters, 'Restraint Systems' and 'Motorcycle Helmet Use.'

Figure 22: State Crash Report Attribute "Other" Can Be Mapped to the MMUCC

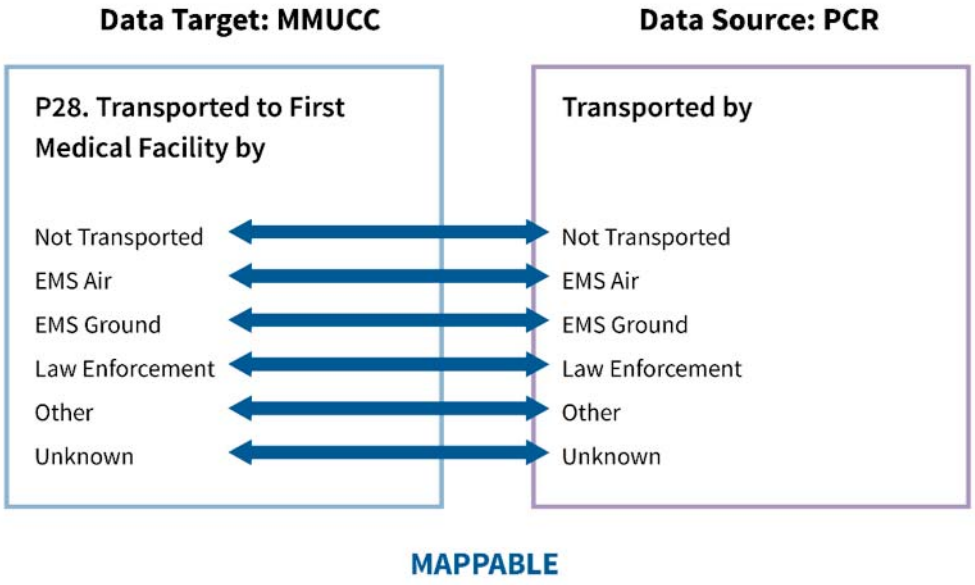
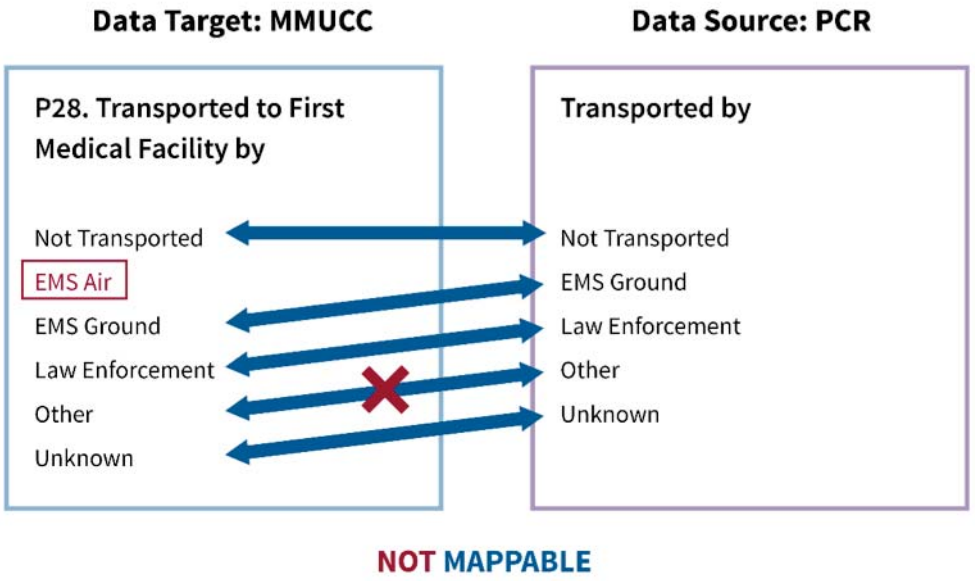


Figure 23: State Crash Report Attribute "Other" Cannot Be Mapped to the MMUCC



12. If a MMUCC element has both attributes *Other* and *Unknown*, then the State attribute *Unknown* will map only if the State element also has the attribute *Other*, regardless of whether or not *Other* mapped. For the previously cited example, it does not matter if the State element being mapped has all five MMUCC attributes (including *Other*), only that the State element has an attribute *Other*.
13. However, if a MMUCC element has the attribute *Unknown* but does not have an attribute *Other*, then the situation is similar to that outlined in General Rule 11 (p. 129) for the attribute *Other*. For example, MMUCC element "P13. Speeding Related" has the attributes *No, Exceeded Speed Limit, Racing, Too Fast for Conditions,* and *Unknown*. If the State element being matched has an attribute *Unknown*, it must have exact matches to the first four MMUCC attributes with no other attributes in order to have a match to *Unknown*.
14. If the list of element attributes on a State crash database does not include a value for "Other" or "Unknown," they can be mapped to a MMUCC element/attribute list, only if the police instruction manual or crash data dictionary directs the officer/user to enter a code (e.g., "00," "99," "UNK") in the event the appropriate response is "Unknown" or falls into an "Other" category.
15. If a State crash database does not contain a typically derived MMUCC element but contains all other elements necessary to derive said element and can obtain said element through a manual process without changes to the system, then credit is given to the State.
    - For example, if a State does not have an automated process to calculate "C26. Day of Week" and does not manually collect this element, but can run a query on their crash database matching "C3. Crash Date and Time" with a calendar to obtain the specific day of week at will, the State will receive credit.
16. If a State crash database does not contain a typically linked MMUCC element but can demonstrate through documentation that all elements necessary to obtain the linked element are accessible through a manual process without changes to the system, then credit is given to the State.
    - For example, if the State crash database has a system bridge to the State roadway inventory file and can obtain roadway attributes at will through linkage with "C6. Crash Location" or similar elements, then the State will be given credit.

2.2.2 Individual Data Elements

The remainder of this section presents only those individual MMUCC elements for which the GHSA, NHTSA, and Crash Data Improvement Program (CDIP) teams developed commentary derived from the pilot tests of State crash report-to-MMUCC mappings. These are considered as supplementary and explanatory information and do not replace the guidance and notes provided in the GHSA/NHTSA Mapping Process.

C2. Crash Classification

State crash reports may have a "Private Property" check box. This can be mapped with the first subfield. (Not selecting "Private Property" would be equivalent to indicating that the crash occurred on public property.) Additionally, if the State does not have a separate element to identify public versus private property but has an element that classifies the location by the type of road on which the crash occurred (e.g., Interstate, Primary, Secondary), then that element can be used to match to this subfield if it includes the attribute "Private Road" or something similar.

Additional Considerations

Other than a check box of "Private Property," there could be an element such as "Roadway System" that can distinguish private property from public property. In general, the State crash report does not need the exact same element; as long as the State element can be used to identify ownership of the land where the crash occurred, it is considered mapable.

For mapping to Subfield 2, the State needs to have an element/attribute that can be used to identify the characteristic of the crash with respect to its location on or off a trafficway.

Note that Subfield 2 is different from MMUCC element "C8. Location of First Harmful Event Relative to the Trafficway." Element C8 only captures the location of the first harmful event, while Subfield 2 captures where the unstabilized situation originated and the harmful events occurred.

C6. Crash Location

States only need to have one of the three location types listed in the element—latitude and longitude coordinates, a linear referencing system (LRS), ***or*** a Link Node System. The State is permitted to use more than one method.

C7. First Harmful Event

This MMUCC element refers to the first harmful event occurring in the entire crash. The State must have a similar element at the crash level.

Additional Considerations

The MMUCC Guideline categorizes this element's attributes into three clusters: Non-Collision Harmful Events; Collision With Person, Motor Vehicle, or Non-Fixed Object; and Collision With Fixed Object. For successful mapping, State attributes must have the same definitions as the MMUCC Guideline.

For example, the MMUCC Guideline has the attribute *Thrown or Falling Object* listed under the cluster "Non-Collision Harmful Events." The State may have this attribute listed under a different cluster, such as "Collision With Person, Vehicle, or Non-Fixed Object." In this case, the State still gets credit as long as the meanings are the same.

The assessor should also consider the following when mapping to the cluster attributes, *Other*:

- To map to the attribute *Other Non-Collision*, the State must possess all other "Non-Collision Harmful Events" cluster attributes.

- To map to attribute *Other Non-Motorist*, the State must have both attributes *Pedestrian and Pedalcycle*.

  Note: "Bicycle" cannot be mapped to the MMUCC attribute Pedalcycle since a pedalcycle includes tricycles, unicycles, pedal cars, and other types of cycles in addition to bicycles.
- To map to attribute *Other Non-Fixed Object*, the State must possess all other "Collision With Person, Motor Vehicle, or Non-Fixed Object" cluster attributes.
- To map to attribute *Other Post, Pole, or Support and Other Fixed Object (wall, building, tunnel, etc.)*, the State must have the same attributes for the list of post, pole or support and for the list of fixed objects for the cluster "Collison With Fixed Object."

C9. Manner of Crash/Collision Impact

Diagrams of collision types are acceptable if what is recorded by the State unambiguously represents the same collision types as the corresponding MMUCC attributes and explained in "Figure 2: Manner of Collision and Associated Crash Diagrams" (p. 17).

Additional Considerations
Some States may have these attributes under element "Crash Type." As long as the definitions are the same as the MMUCC attributes, they are mapable.

The *MMUCC 5th Edition* provides illustrations for each manner of collision in "Figure 2: Manner of Collision and Associated Crash Diagrams" (p. 17). Please refer to these illustrations and definitions before conducting mapping to ensure that the attributes in the crash report represent the exact same manners of collisions as in the MMUCC Guideline. For example, some State crash reports may use "Right Angle" crash rather than "Angle" crash and define the crash type as "two vehicles approaching from non-opposing angular directions collide." However, in the MMUCC Guideline, the angle crash can be caused by two vehicles approaching from any direction. In this case, the State cannot get credit for this mapping due to the definition differences. Some State crash reports may use the crash type "Backing," which is the combination of MMUCC attributes "Rear to Side" and "Rear to Rear." If so, the State cannot map to either of the two MMUCC attributes.

C14. Contributing Circumstances – Roadway Environment

Attributes from "C13. Roadway Surface Condition" and "C14. Contributing Circumstances – Roadway Environment" should not be combined into one field.

The MMUCC Guideline also defines some of the attributes as follows:

- **Glare**: A very harsh, bright, dazzling light that impairs vision.
- **Visual Obstruction**: An object that blocked the driver's sight, contributing to the crash (e.g., bush, tree).

Weather conditions reported in a separate element corresponding to the MMUCC element "C11. Weather Conditions" should not be counted for the "Weather Conditions" attribute of MMUCC element "C14. Contributing Circumstances – Roadway Environment."

Additional Considerations
If the State has environmental contributing circumstances integrated with other types of contributing circumstances such as motor vehicle contributing circumstances, the assessor should not give credit for mapping to this MMUCC element because the attributes cannot be made unambiguous for each type of contributing circumstances even though the attribute lists may match.

In cases where the State does not include this specific data element, but has some of the attributes included in other elements such as “Visual Contributing Circumstances,” the attributes of “Visual Contributing Circumstances” can be mapped only if the definitions match.

C15. Relation to Junction

Additional Considerations
To successfully map to *Subfield 1: Within Interchange Area*, the State must have a similar data element indicating whether the crash occurs within an interchange area or not.

Note that if the State has a data element indicating whether a crash is an intersection crash, it cannot be used to map to Subfield 1 due to the inconsistency with the definition of intersection versus interchange. The MMUCC Guideline provides “Figure 3. Diagram of an Interchange” (p. 23) and “Figure 4. Diagram of an Intersection” (p. 24).

To map Subfield 2, the assessor should be cautious of similar terms used by the State. For example, a State may have an attribute “Crossover in Median” or “Median Crossing,” which cannot be mapped to the MMUCC attribute “Crossover-Related” because crossover-related crashes do not need to occur on a crossover while a crossover-in-median crash does.

The State will get credit if they use “On/Off Ramp” instead of “Entrance/Exit Ramp.” The State can also get credit using “On Ramp Merge Area and Off Ramp Diverge Area” instead of “Acceleration/Deceleration Lane” so long as the State also has attributes for intersection crashes and crossover crashes.

C17. School Bus-Related

The State must have a similar element at the crash level. Having “School Bus” as a vehicle type will not map for either of the two “Yes” attributes. “C17. School Bus-Related” is intended to identify more than school bus-related crashes, including crashes indirectly involving school buses (e.g., children walking away or toward a school bus or a car rear-ending another car stopped for a school bus, etc.).

C18. Work Zone-Related (Construction/Maintenance/Utility)

If the State combines *Subfield 4, Workers Present* and *Subfield 5, Law Enforcement Present* into one field, it must allow two or more selections to capture both.

Additional Considerations
States may have a similar element, such as “Temporary Traffic Control Zone,” which can be mapped with the first subfield. That is, selecting “No” would be equivalent to indicating that the crash is not within a work zone and selecting other types of temporary traffic control zone would be equivalent to selecting “Yes” for the first subfield of this element.

C25. Alcohol Involvement

A State data element that is mapped to MMUCC element “P20. Law Enforcement Suspects Alcohol Use” or “P21. Alcohol Test” cannot also be used to map to C25. C25 is intended as a separate element, derived by the State

Additional Considerations
Similar to C25, States that map to either "P22. Law Enforcement Suspects Drug Use" or "P5. Injury Status"cannot also map to C26. There must be a separate State element equivalent to map.

Vehicle Element

V2. Motor Vehicle Unit Type and Number

Most States will have "Unit Number" separate from "Unit Type." States that have the same attributes under separate elements can map these attributes to those in MMUCC element "V2. Motor Vehicle Unit Type and Number."

Additional Considerations
If the State does not have a separate element to identify motor vehicle unit type, but has an element at vehicle level to indicate the vehicle use (e.g., "Personal, Machinery in Use"), attributes of that element can be used to map to attributes of the subfield with the same definitions.

States may have a "Parked" check box at the vehicle level. This can be mapped with the MMUCC attribute "Parked Motor Vehicle" because selecting "Parked" would be equivalent to selecting the MMUCC attribute "Parked Motor Vehicle."

If the State has attributes that can be mapped to the MMUCC attributes "Parked Motor Vehicle" and "Working Vehicle/Equipment," then the State would get credit for mapping to the MMUCC attribute "Motor Vehicle in Transport" regardless of whether they have this specific attribute because it can be derived by not selecting the other two attributes.

V3. Motor Vehicle Registration State and Year

State of registration and year of registration are often two separate fields on State crash reports. This is acceptable.

Additional Considerations
The *MMUCC 5th Edition* "Appendix E: ANSI State FIPS and USPS Codes" (p. 197) and "Appendix F: ISO 3166-2 Codes for Canada and Mexico" (p. 199) provides a complete list of US States, Canadian Provinces and Mexican States. In order to successfully map to the MMUCC attribute "State Identifier," the State needs to have the same range of values.

V8. Motor Vehicle Body Type Category

This element has changed considerably from previous editions of MMUCC. V8 now includes subfields for *Number of Trailing Units, Vehicle Size,* and whether the vehicle displayed a hazardous materials placard. To map completely to this MMUCC element, the State must collect each of the Subfields for each vehicle involved in the crash. If a State codes these Subfields as separate elements, but does so for each involved vehicle, it will map completely. However, if size of vehicle is only collected for trucks, for example, then that Subfield does not map.

Additional Considerations
Note that this MMUCC element describes body type, not vehicle use. So a State that only lists vehicle uses—such as “School Bus” or” Transit Bus”—is not an acceptable mapping for those corresponding to V8 attributes.

V10. Special Function of Motor Vehicle in Transport

This MMUCC element is different from previous editions of MMUCC. It now contains functions from the old MMUCC element “Bus Use,” as well as an expanded list of other “Special Functions.” A State may have some of these attributes recorded on a different element, but still needs to have this information for each vehicle involved in the crash t

V13. Direction of Travel Before Crash

Arrow diagrams are sufficient if they clearly equate to the MMUCC attributes and follow the MMUCC definition of this element.

Additional Considerations
Many States may have a similar element, such as “Direction of Travel of Vehicle.” It would not be an acceptable mapping unless the instructions clarify that it is the State-designated direction of the road.

V14. Trafficway Description

Additional Considerations
The MMUCC Guideline “Figure 1: Diagram of the Trafficway” (p. 10) provides an illustration of a trafficway. States may have an element “Roadway Description” or similar, rather than “Trafficway Description.” Attributes of the State element can be mapped to the corresponding MMUCC attributes as long as the definitions match.

V16. Roadway Alignment and Grade

If the State has an element that combines Subfield 1, *Horizontal Alignment*, and Subfield 2, *Grade* (for example, “uphill curve left”), it will map to both subfields as long as all possible combinations (there are 15) are listed in the data dictionary. However, if the alignment attribute is “curve” but no direction is given, the State will not be mapped for either *Curve Left* or *Curve*

V18. Motor Vehicle Maneuver/Action

Additional Considerations
States may combine motor vehicle maneuver/action with non-motorist maneuver/action. They can get credit for this element if there is a way to unambiguously identify the actions of motor vehicles.

V19. Vehicle Damage

A State diagram may be used to report both Subfield 1, *Initial Contact Point on Vehicle* and Subfield 2, *Damaged Areas*, if the former is unambiguously identified. A State diagram may contain more than the recommended 12 points (as long as those points can be mapped to the MMUCC 12-point diagram), but the State diagram may not contain fewer points to map to MMUCC. If the State does not carry a diagram for Subfield 2 but codes damaged areas, it

must allow for coding 13 areas (12-points plus *Top* or *Undercarriage*) as in Subfield 2 to fully map.

Additional Considerations
"Appendix H: Clock-point Diagrams for Different Types of Motor Vehicles" (p. 203)provides a 12-point clock diagram.

States may have three separate fields for this one MMUCC element. In order to fully map to V19, States must capture the initial contact point and all damaged areas for each involved vehicle. States that record the most damaged area without allowing officers to record *all* damaged areas will not map to Subfield 2.

In order to map to the Subfield 3, the State must capture the overall extent of damage for each motor vehicle. States may have a similar element, such as "Vehicle Deformity for Most Damaged Area" which cannot be mapped to Subfield 3 due to inconsistent definitions.

V20. Sequence of Events

To fully map to element V20, States must include the non-harmful attributes listed and provide officers a way to capture four attributes.

Additional Considerations
The MMUCC Guideline "Appendix G: Sequence of Events Examples" (p. 200) provides examples of how to encode sequences of events.

V22. Hit and Run

Additional Considerations
States may have a check box for a hit and run crash, which can be mapped to the two V22 attributes. This is because selecting the check box would be equivalent to the MMUCC attribute, *Yes, Driver or Car and Driver Left Scene*. Not selecting the check box is equivalent to the MMUCC attribute, *No, Did Not Leave Scene*. Some States may not have a specific element for hit and run crashes, but have a similar element such as "Disposition of Vehicle," with attributes *Hit and Run* and *Retained by Driver*. The mapping would be acceptable if the definitions match.

V23. Towed Due to Disabling Damage

A State that has an element "Towed" as a checkbox or "Towed, Y/N" will map to this element. However, the attributes to map will depend on how the State instruction manual indicates that "Towed" is to be defined. If it means only "towed due to disabling damage" and not for other reasons, then it can only be mapped to the MMUCC attribute, *Towed Due to Disabling Damage*. If the State instruction manual is unclear as to whether being towed is due to damage, then the State can only map to the State attributes, *unchecked box* or *N* to the MMUCC attribute, *Not Towed*.

Additional Considerations
The State may lack this specific data element, but have an element indicating whether the vehicle was retained by the driver or was towed. If the State does not include the attribute, *Not Towed*, whether or not selecting other attributes would be equivalent to "Not Towed" depends on how instructions direct officers to code. For example, the State has attributes, *Towed*, *Retained by Driver, Towed/Disabled*, but does not have the attribute, *Not Towed*. There are situations where the driver may engage a private company without law enforcement assistance, in which case the officer would code "Retained by Driver" rather than code "Towed." Failure to select any of the other attributes is insufficient proof that the vehicle was not towed.

V24. Contributing Circumstances, Motor Vehicle

Additional Considerations
A State may combine "Contributing Circumstances, Motor Vehicle" with other contributing circumstances, such as roadway and environmental. In this case, the State would not be given credit for mapping to any of the contributing circumstances. The MMUCC Guideline explicitly separates the roadway environment and vehicle contributing circumstance so that officers can choose independently within each category. Combining all of them together will force officers to pick from all of the attributes across categories and thus does not meet the MMUCC mapping rules.

Person Elements

P1. Name of Person Involved

The State must record the name of EACH person involved in the crash including all drivers, all occupants, and all non-motorists. Recording of names for drivers only is insufficient. Name fields in separate sections, i.e., Driver section, Occupant section, etc., are acceptable.

P2. Date of Birth

The MMUCC definition for this element states that Subfield 2, *Age* is "to be used only if the date of birth cannot be obtained." However, the State crash database should have both Subfield 1, *Date of Birth* and Subfield 2, *Age*.

Additional Considerations
Age information must be captured for each person involved in the crash, including drivers, occupants, and non-motorists. If the State does not have "Age" but has "Date of Birth," the State would still get credit for mapping to Subfield 2 since age can be derived from date of birth. However, if the State only has an element for Subfield 2, *Age*, they would not be given credit for mapping to Subfield 1, *Date of Birth* since the exact date of birth could not be derived based on age.

Many States have an open text field for "Date of Birth." States could get credit for mapping to the MMUCC attribute "Unknown" if the instructions demonstrate that blank is equivalent to unknown or if officers are instructed to indicate unknown values in that text field.

P3. Sex

Additional Considerations
An open field "Driver Sex" alone is insufficient.

P4. Person Type

The definition of non-motorist changed to reflect the practical applications as opposed to theoretical uses. As a result, the overall attributes describing person type now include Motorist and Non-Motorist. Occupants of motor vehicles not in transport are now considered Motorists, but are designated as such here. The second major change for element P4 is the inclusion of Subfield 2, *Incident Responder?*.

States that still classify Occupants of Motor Vehicles Not in Transport as non-motorists, but can clearly differentiate them from all other non-motorists, will map to this MMUCC attribute.

P5. Injury Status

Note: The MMUCC 5th Edition *version of element "P5. Injury Status" (p. 62) is unchanged from the 4th Edition. The attribute definitions now reside in the element definition entry for ease of use.*

To fully map to P5, States must capture the attribute, (A) Suspected Serious Injury verbatim, including its definition, mutually exclusive of all other attributes. The Federal Highway Administration's (FHWA) Safety Performance Management Measures Final Rule (23 CFR 490) and the National Highway Traffic Safety Administration's (NHTSA) Uniform Procedures for State Highway Safety Grants Program Interim Final Rule (23 CFR 1300) establish a single, national definition for States to report serious injuries per the *Model Minimum Uniform Crash Criteria (MMUCC) 4th Edition* " Suspected Serious Injury (A)" attribute found in the "Injury Status" element (now "P5. Injury Status" (p. 62)).

A suspected serious injury is defined in the *MMUCC 4th Edition* as any injury other than fatal that results in one or more of the following:

- Severe laceration resulting in exposure of underlying tissues/muscle/organs or resulting in significant loss of blood;
- Broken or distorted extremity (arm or leg);
- Crush injuries;
- Suspected skull, chest, or abdominal injury other than bruises or minor lacerations;
- Significant burns (second and third degree burns over 10% or more of the body);
- Unconsciousness when taken from the crash scene; or
- Paralysis.

States are only considered compliant and mapable with the serious injury definition requirements if they:

(a) Maintain a statewide crash database capable of accurately aggregating the *MMUCC 4th Edition* injury status attribute for "Suspected Serious Injury (A)";

(b) Ensure the State crash database, data dictionary and crash report user manual employs the verbatim terminology and definitions for the *MMUCC 4th Edition* injury status attribute "Suspected Serious Injury (A)";

(c) Ensure the police crash form employs the verbatim *MMUCC 4th Edition* injury status attribute for "Suspected Serious Injury (A).”; and

(d) Ensure that the seven serious injury types specified in the "Suspected Serious Injury (A)" definition are not included in any of the other attributes listed.

While States are required to adopt the "Suspected Serious Injury (A)" attribute, they are strongly encouraged to adopt the full "Injury Status" data element for clarity and ease of use.

States that map completely to the attribute, *(A) Suspected Serious Injury* as detailed above but use synonymous terminology for the remaining attributes *may* be able to map (e.g. "Killed" to "(K) Fatal Injury," "Non-Incapacitating Injury" to "(B) Suspected Minor Injury," "Complaint of Pain" to "(C) Possible Injury," and "No Injury" to "(O) No Apparent Injury") so long as the definitions match MMUCC.

P7. Seating Position

A diagram is acceptable for mapping as long as all MMUCC position attributes are represented.

Additional Considerations

"Figure 8: Example Seating Positions for Typical Vehicle Types" (p. 65) provides diagramed examples. Refer to these figures for mapping to both common motor vehicles and ambulance seating/positioning.

Some States may combine Subfield 1 and Subfield 2, such as having attribute "Front Left" and "Second Row Middle." This is an acceptable mapping if the State has all of the combinations.

P8. Restraint Systems/Motorcycle Helmet Use

This element has been changed in the *MMUCC 5th Edition*. It now consists of two subfields: Subfield 1, *Restraint Systems* and Subfield 2, *Any Indication of Improper Use?*. Subfield 1 combines all potential restraint systems. The State must capture both subfields for each motor vehicle occupant to map to this element.

Additional Considerations

An attribute "Helmet" alone is insufficient to map to any of the helmet types in Subfield 2 except for the "No Helmet" attribute. The State would get credit for mapping to the MMUCC attribute "No Helmet" as this value can be derived by not selecting the attribute "Helmet."

If the State does not specify whether the helmet is compliant with DOT requirements but the instructions direct officers to code "Helmet" only when it is known to be DOT-compliant, then the State would be given credit for mapping to the MMUCC attribute, *DOT-Compliant Motorcycle Helmet.*

P9. Air Bag Deployed

P9 has been updated to capture four (4) attribute selections. States must have the same number of possible entries to fully map. "Figure 9: Air Bag Diagram" (p. 68) provides a diagram of air bag types.

Some States may not have specific attributes for "Not Applicable" or "Deployment Unknown." In those cases, if their instruction documents specify that officers use a code (e.g., "99," dash)

for “Not Applicable” or “Deployment Unknown,” the State would be given credit for mapping to these MMUCC attributes.

P10. Ejection

An “Ejected” checkbox or “Ejected, Y/N” is not sufficient to map to this MMUCC element. However, the MMUCC ejection attributes to which the State maps depends upon how the State instruction manual defines “Ejected.” For example, if “Ejected” means completely ejected, then “Y” maps to the MMUCC attribute, Ejected, Totally. In that case, the State will not be able to map to any of the other MMUCC attributes for this element.

P11. Driver License Jurisdiction

P11 is now a two-subfield element: Subfield 1, Type and Subfield 2, Name of Jurisdiction. An open text field is acceptable for mapping to Subfield 2.

P13. Speeding-Related

The State must have a similar, separate element in order to map. However, States that have one or more of these attributes under a “Contributing Circumstances,” a “Contributing Factors,” or a “Driver Actions” element, may map to certain attributes and only if officers are not limited on the number of factors or circumstances they can report. States with an element like “Speeding: Y/N” or equivalent, can only map to the attribute “No.”

P14. Driver Actions at Time of Crash

States that include these attributes under “Contributing Circumstances” or other, more general State elements may only map to the P14 attributes listed, and only if four driver action attributes may be selected, unencumbered by other selections.

Additional Considerations
Assessors must pay close attention to the following situations:

- Many States do not currently have the MMUCC attribute, Ran Red Light but have a closely related attribute such as “Disregard Traffic Signals.” Such closely related attributes are not equivalent to “Ran Red Light” given that “Disregard Traffic Signals” may include other situations such as ignoring flashing signals.
- An attribute “Disregard Traffic Signs” cannot be mapped to the MMUCC attributes “Ran Stop Signs” or “Disregarded Other Traffic Sign.”

P18. Distracted By

Two major changes were made to the *MMUCC 4th Edition* element, “P16. Driver Distracted By.” First, distraction is now collected at Level 4 (All Drivers and Non-Motorists) instead of Level 3 (All Drivers), which means that distraction must be collected for all involved non-motorists. Secondly, the attribute list was completely changed into a two-subfield set that collects Subfield 1, *Action* and Subfield 2, *Source.*

The new two-subfield element aims at collecting a greater number of combinations without including them in an exhaustive attribute list. Partial data is also possible with this new framework, as officers may know that a person was *Talking/listening* but unsure if it was through their *Hands-free Mobile Phone or Vehicle-Integrated Device.*

Additional Considerations

A State attribute coding for the presence or use of a "Cell Phone" cannot be mapped to any of the Subfield 2 attributes, as "Cell Phone" does not distinguish between hands-free and hand-held. Similarly, the State attribute "Texting" by itself cannot be mapped to the Subfield 1 attribute, *Manually Operating (texting, dialing, playing games, etc.)* given the inconsistent definitions.

General mapping rule 10 (p. 129) applies for both Subfield 1 and 2 "Other" attributes, *Other Action (looking away from task, etc.)* and *Other Distraction (animal, food, grooming).*

P20. Law Enforcement Suspects Alcohol Use

States cannot map to P20 unless the reporting officer may unambiguously indicate whether alcohol use is involved. For example, the State may have a data element combining both alcohol and drug use together, such as "Alcohol/Drug Use Suspected," which cannot be mapped to this MMUCC element unless it is possible to indicate whether alcohol or drug use or both is involved.

P21. Alcohol Test

The State must capture the subfields and associated attributes in order to get credit for mapping. Test results are often obtained after completing the crash report, in which case (until result is obtained), Subfield 3, *BAC Test Result* would be coded "Pending." States that do not include a pending attribute, but instruct their officers to denote that status in another way can map to that attribute.

Additional Considerations

States may have separate data elements for each of the subfields, which is acceptable.

For Subfield 1, many States may count "P21. Alcohol Test" and "P23. Drug Test" as one element, which cannot be mapped to either MMUCC element unless it is possible to unambiguously indicate whether the test was performed for alcohol use or drug use.

For example, a State has an element "Alcohol/Drug Test" with the following attributes: Not Given, Refused, Alcohol, Drug, Both, and Unknown. Then, the State attributes "Not Given" and "Drug" can be mapped to the MMUCC attribute "Test Not Given" for the variable that focuses *only* on alcohol testing. The State attribute "Refused" can be mapped to the MMUCC attribute "Test Refused." The State attribute "Alcohol" in combination with "Both" can be a complete mapping to the MMUCC attribute "Test Given." Lastly, "Unknown" can be mapped to the MMUCC attribute "Unknown if Tested."

For Subfield 2, if the State combines alcohol and drug test into one element, the attributes cannot be mapped to the MMUCC attributes unless there is a way to distinguish between alcohol tests and drug tests. One exception is that the State attribute "Breath" can be mapped to the MMUCC attribute since currently there is no breath test for drug use.

States may have an open text field for BAC Test Result, which can be mapped to both of the MMUCC attributes "Value" and "Pending." If instructions direct officers to enter a code representing "Unknown," the State would be given credit for mapping to the MMUCC attribute "Unknown" as well.

P22. Law Enforcement Suspects Drug Use

States cannot map to P22 unless the reporting officer may unambiguously indicate whether drug use is involved. For example, the State may have a data element combining both alcohol and drug use together, such as "Alcohol/Drug Use Suspected," which cannot be mapped to this MMUCC element unless it is possible to indicate whether alcohol or drug use or both is involved.

P23. Drug Test

The State must capture the subfields and associated attributes in order to get credit for mapping. Test results are often obtained after completing the crash report, in which case (until result is obtained), Subfield 3, Drug Test Result would be coded "Pending." States that do not include a pending attribute, but instruct their officers to denote that status in another way can map to that attribute.

P27. Injury Severity 🔗

This element is explicitly intended to be obtained through linkage to clinical health records. A State data element that maps to "P5. Injury Status" (p. 62) cannot also be used to map to P27. The value(s) used here must be derived from the clinical scale used in the State's linked injury database.

Fatal Section Elements

The elements listed in the Fatal Section are required only when an involved person (motorist or non-motorist) has a resulting fatal injury ("P5. Injury Status" (p. 65), code (K) Fatal Injury). The Fatal Section includes three elements, collected at level 3 (all drivers) and level 4 (all drivers and non-motorists).

"F1. Attempted Avoidance Maneuver" (p. 95) must be collected for all drivers involved in any crash resulting in a fatal injury.

"F2. Alcohol Test Type and Results" (p. 96)and **"F3. Drug Test Type and Results" (p. 97)** must be collected for all drivers and non-motorists involved in any crash resulting in a fatal injury.

Large Vehicles and Hazardous Materials Section Elements

The elements listed in the Large Vehicles and Hazardous Materials (LVHM) Section are required only when a large vehicle or vehicle placarded as hazardous materials is involved in a crash. Specifically, if "V8. Motor Vehicle Body Type Category" (p. 39) has any of the trigger attributes (denoted with **) coded for an involved vehicle, the LVHM must be completed for that vehicle:

Subfield 1: *Cargo Van, Single-Unit Truck, Truck Tractor, 9- or 12-Passenger Van, 15-Passenger Van, Large Limo, Mini-bus, School Bus, Transit Bus, Motorcoach*, or *Other Bus Type*.

Subfield 3: *Medium (10,001 – 26,000 lbs. GVWR/GCWR)* or *Heavy (Greater than 26,000 lbs. GVWR/GCWR)*.

Subfield 4: *Yes*.

The LVHM includes eleven elements. "LV1. CMV License Status and Compliance with CDL Endorsements" (p. 100) is collected for the involved driver(s) of the large vehicle or vehicle placarded as hazardous materials, as specified above for V8. All other elements (LV2-LV11) are collected only for the large vehicle or vehicle placarded as hazardous materials, as specified above for V8.

Non-Motorist Elements

NM2. Non-Motorist Action/Circumstance Prior to Crash

If the State combines NM2 and "NM3. Non-Motorist Contributing Action(s)/Circumstance(s)" as one element, it will map (to both elements partially) only if the State permits coding of at least three attributes. The State must also capture Subfield 2, *Origin/Destination* as a separate element or field for each involved non-motorist.

NM3. Non-Motorist Contributing Action(s)/Circumstance(s)

If the State combines NM2 and "NM3. Non-Motorist Contributing Action(s)/Circumstance(s)" as one element, it will map (to both elements partially) only if the State permits coding of at least three attributes (because of the subfields in these MMUCC elements).

Additional Considerations

To map, the State does not need to use the same terms. States will be given credit as long as the definitions match. For example, a State attribute, *Getting On or Off Vehicle* can be mapped to *Entering/Exiting Parked/Standing Vehicle.*

NM4. Non-Motorist Location at Time of Crash

States cannot map to NM4 based solely on a State element like "Non-Motorist Action" or "Non-Motorist Circumstance." For mapping purposes, the State must have a specific Non-Motorist Location element ("at Time of Crash" is not neces

NM5. Non-Motorist Safety Equipment

Some or all of the attributes of this element may be listed under a more general State element that combines motorist and non-motorist equipment. This is acceptable as long as the Person Type for the reported individual is unambiguously a non-motorist. However, to fully map, the State element must permit at least five entries for the safety equipment for each non-motorist, as indicated in the MMUCC element.

Additional Considerations

Assessors should check the definition of each attribute to ensure that the State attribute has the exact same definition even though the attribute names may be very similar to the MMUCC attribute names. For example, a State attribute "Safety Vest (Ped Only)" cannot be mapped to the MMUCC attribute "Reflective Clothing (jacket, backpack, etc.)" for two reasons: 1) it is for pedestrian only and, 2) in addition to safety vest, reflective clothing also includes jacket, backpack, or similar. Given these, it would not be a complete mapping.

NM6. Initial Contact Point on Non-Motorist

This is a new element in the *MMUCC 5th Edition*. A diagram similar to the one in the guideline is permissible.

2.3 Mapping Example

This section provides an example demonstrating how to map a State element to MMUCC by following the general rules and the specific notes. The example here is from the *GHSA/NHTSA Mapping Process*.

Step 1: Collect both source and target documents. The relevant excerpt of each is shown below.

Target – MMUCC 5th Edition

C11. Weather Conditions

Definition The prevailing atmospheric conditions that existed at the time of the crash.

Attribute Values:

Select 1-2

01	Blowing Sand, Soil, Dirt
02	Blowing Snow
03	Clear
04	Cloudy
05	Fog, Smog, Smoke
06	Freezing Rain or Freezing Drizzle
07	Rain
08	Severe Crosswinds
09	Sleet or Hail
10	Snow
98	Other
99	Unknown

Rationale Important for management/administration and evaluation. Critical for prevention programs and engineering evaluations.

Edit Checks:

E(C)11.01 If the value of "C11. Weather Condition" = 06 (Freezing Rain or Freezing Drizzle), 07 (Rain), 09 (Sleet or Hail), or 10 (Snow), then "C13. Roadway Surface Condition" cannot = 01 (Dry).

E(C)11.02 If 03 (Clear) is selected, a second occurrence of this element should not be selected.

Source – State Crash Database Dictionary

For this example, the State only provides officers a single attribute selection.

(C2) Weather Condition
(1) No Adverse Condition (Clear, Cloudy)
(2) Fog
(3) Mist
(4) Rain
(5) Snow

(6) Sleet / Hail
(7) Smoke / Dust
(8) Other
(9) Blowing Sand, Soil, Dirt, or Snow
(10) Severe Crosswinds

Step 2: Set up a mapping table (or use the NHTSA-supplied spreadsheet) so that data elements and attributes from the MMUCC Guideline and the State element are arranged for a direct comparison, as shown in Table 2: Example of a Mapping Table. Since the MMUCC Guideline allows two attribute selections for "C11. Weather Conditions," the table should be set up to include both subfields.

Table 2: Example of a Mapping Table

Target Data: MMUCC			Ability to Map? 1 = Yes 0 = No	Source: State Element
	Data Element	**Data Attribute (Subfield 1)**		**Data Element/ Data Attribute**
C11	Weather Conditions	Blowing Sand, Soil, Dirt	0	*(9) Blowing Sand, Soil, Dirt, or Snow* cannot be split.
		Blowing Snow	0	
		Clear	0	*(1) No Adverse Condition (Clear, Cloudy)* cannot be split.
		Cloudy	0	
		Fog, Smog, Smoke	1	*(2) Fog* *(7) Smoke/Dust* includes Dust
		Freezing Rain or Freezing Drizzle	0	
		Rain	1	*(4) Rain*
		Severe Crosswinds	1	*(10) Severe Crosswinds*
		Sleet or Hail	1	*(6) Sleet/Hail*
		Snow	1	*(5) Snow*
		Other	0	
		Unknown	0	

Step 3: Map the data attributes from the State to the MMUCC attributes.

- The State attribute *(1) No Adverse Condition (Clear, Cloudy)* cannot be mapped to the MMUCC attributes *Clear* or *Cloudy* because the State attribute combines these MMUCC attributes.
- Likewise, the State attribute *(9) Blowing Sand, Soil, Dirt, or Snow* cannot be mapped to the MMUCC attributes *Blowing Snow* or *Blowing Sand, Soil, Dirt*.
- However, the State attributes *(2) Fog*, and *(7) Smoke/Dust* can be mapped to the MMUCC attribute *Fog, Smog, Smoke*, without a loss in data integrity.

- Four attributes from the State were mapped “one-to-one” to a MMUCC attribute (*Rain, Sleet or Hail, Snow*, and *Severe Crosswinds*).
- According to general mapping rule 13 (p. 131), the State attribute “Other” cannot be mapped since the State did not possess all other C11 attributes.
- The State did not have an attribute to map to the MMUCC attribute *Unknown*.

Ultimately, the State mapped to five attributes. However, C11 provides two attribute selections, which means that any State must provide 24 total attributes (12 C11 attributes, selected twice). This particular State only allows officers to select one attribute. Therefore, this State element can only be mapped to five of the 24 possible.

3. Computing Mapping Scores

Once completed, a MMUCC mapping will yield a series of mapping tables that will show which State elements and attributes map to each MMUCC element/attribute and which did not. These tables can be used by the State to conduct a thorough review of their State elements/attributes, pinpointing which mapped fully, partially and not at all. The resulting tables also provide a way to compute mapping scores at the attribute, element, system and overall levels.

Note: States that choose to use the NHTSA mapping spreadsheet will automatically have all of the above-mentioned scores calculated as part of the spreadsheet. States that choose to participate in NHTSA’s free MMUCC Mapping technical assistance program will have their mapping completed and provided to them, including the resulting mapping scores mentioned.

3.1 Calculating Element Mapping Scores

For each of the MMUCC elements in a MMUCC mapping, the element mapping score is computed:

$$\textbf{MMUCC Element Mapping Score} = \frac{\textbf{Number of Attributes for State Element that Map to MMUCC Element}}{\textbf{Total Number of MMUCC Attributes for Element}^{*}} \times 100$$

**Note: The “Total Number of MMUCC Attributes for Element” is the sum of the number of attributes multiplied by the maximum number of selections provided (“Select” or “Specify” number greater than 1).*

“Table 3: MMUCC Compatibility Rating Scale” provides a suggested Compatibility Rating Scale to be applied to each MMUCC element based on the MMUCC Element Mapping Score to provide a measure of how well the State elements mapped to individual MMUCC elements.

Table 3: MMUCC Compatibility Rating Scale

MMUCC Mapping Score (%)	Rating
100	Full
70 – 99	High
40 – 69	Moderate
1 - 39	Low

Example 1

There are 24 attributes for MMUCC element "C11. Weather Conditions" (12 attributes, selected twice). Of these 24 attributes, the State can map 5 attributes, once. Therefore, the calculation should be:

$$\mathbf{MMUCC\ \ Element\ \ Mapping\ \ Score} = \frac{\mathbf{6}}{\mathbf{12 \times 2}} \times \mathbf{100} = \mathbf{25\%}$$

Referring to Table 3, the State Compatibility Rating for this specific element would be "Low."

A State's Overall MMUCC Mapping Compatibility Rating is based on the average of the individual State element mapping scores. Consequently, a score must be computed for each MMUCC element. Keep in mind that all 115 MMUCC elements are the target. The compatibility rating provides the State with a generalized score as to how well it maps to MMUCC.

The overall State MMUCC Mapping Score is calculated by averaging the individual element mapping scores, mapping the State source elements and attributes to the MMUCC elements and attributes, for all 115 MMUCC elements. The result is the overall State mapping percentage:

$$\mathbf{Overall\ \ State\ \ to\ \ MMUCC\ \ Mapping\ \ Score} = \frac{\sum \boldsymbol{MMUCC\ \ Element\ \ Mapping\ \ Score}}{\mathbf{115}}$$

Table 3 provides a suggested Compatibility Rating Scale that can be applied to the Overall State MMUCC Mapping Score to obtain a measure of how well the State mapped to MMUCC.

Example 2

The total score for the 115 MMUCC elements mapping results is 8111. Therefore, the calculation should be:

$$\mathbf{Overall\ \ State\ \ to\ \ MMUCC\ \ Mapping\ \ Score} = \frac{\mathbf{8111}}{\mathbf{115}} = \mathbf{71}$$

Referring to Table 3, the State Compatibility Rating for mapping crash database to MMUCC would be "High."

Final Considerations

Once a State has calculated its element and overall scores, they can use the information to develop an action plan for updating their crash report (or reporting software) and crash database. Since it may not be possible or desirable to update everything all at once, the State may choose to prioritize the elements that most need to be revised. It would be helpful for States that are considering any changes to establish a template for the development of the action plan and include the following items for each element for which they are considering a change:

- Element,
- Priority for Change,
- Rationale,
- Deadline, and
- Person Responsible.

4. Mapping and Updating MMUCC

MMUCC is typically updated every five years. The next update (the 6th Edition) is scheduled to be published in 2022. By following the GHSA/NHTSA Mapping Process, States can identify how closely their State crash reports and crash databases follow the MMUCC Guideline to establish a baseline of conformance. Over time, improvements in conformance can be used to show measurable progress. States can benefit from the knowledge gained through the MMUCC mapping exercise by (A) knowing how their data elements and attributes compare to the set developed by a national team of experts, and (B) identifying the elements and attributes that could be shared and compared in national crash databases.

Acronyms

AAMVA	American Association of Motor Vehicle Administrators
AASHTO	American Association of State Highway and Transportation Officials
ANSI	American National Standards Institute
ATSIP	Association of Traffic Safety Information Professionals
CISS	Crash Investigation Sampling System *Formally NASS-CDS (National Automotive Sampling System Crashworthiness Data System)*
CRSS	Crash Report Sampling System *Formally NASS-GES (National Automotive Sampling System General Estimate System)*
FAST ACT	Fixing America's Surface Transportation Act
FARS	Fatality Analysis Reporting System
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
GHSA	Governors Highway Safety Association
HSIS	Highway Safety Information System
MAP-21	Moving Ahead for Progress in the 21st Century Act
MIRE	Model Inventory of Roadway Elements
MMUCC	Model Minimum Uniform Crash Criteria
NCIC	National Crime Information Center
NCSA	National Center for Statistics and Analysis
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
PDO	Property Damage Only
SAE	Society of Automotive Engineers
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
TEA21	Transportation Equity Act for the 21st Century
TRCC	Traffic Records Coordinating Committee
USDOT	United States Department of Transportation

Glossary of Terms

Acceleration/Deceleration Lane – A lane in the roadway that is designated for vehicles to either increase vehicle speed to reach traffic speed, or to reduce speed.

Access Control – The degree that access to abutting land in connection with a highway is fully, partially, or not controlled by public authority.

Activity Area – Located adjacent to actual work area, whether workers and equipment were present or not.

Advance Warning Area – Located after the first warning sign but before the work area.

Age – Years of age for the person involved in the crash.

Air Bag Deployed – Deployment status of an air bag relative to position of the occupant.

Alcohol Involvement – Law enforcement suspected or documented that at least one driver or non-motorist involved in the crash had used alcohol. Includes both alcohol use under the legal limit and at or over the legal limit.

Alcohol Test – Indication of presence of alcohol test, type, and result.

Alcohol Test Type and Results – This element identifies the alcohol test type and results for this person.

Alignment – The geometric characteristics or layout of a roadway. Alignment is usually subdivided into horizontal and vertical alignment. Includes straight, curve left, curve right.

Alphanumeric Identifier – Consisting of alphabetic and numerical symbols.

Angle – A crash where two motor vehicles impact at an angle. For example, the front of one motor vehicle impacts the side of another motor vehicle.

Annual Average Daily Traffic – The average number of motor vehicles passing a point on a roadway in a day, for all days of the year, during a specified calendar year.

Asleep or Fatigued – Driver experienced a temporary loss of consciousness, was drowsy or asleep, or was operating in a reduced physical or mental capacity due to weariness, medication, or other drugs.

At Intersection but no Crosswalk – Person at an area that contains a crossing or connection of two or more roadways not classified as a driveway access but without the street crossing distinctly indicated for pedestrian crossing by lines or other markings on the surface of the roadway.

Attempted Avoidance Maneuver – This element identifies movements/actions taken by the driver after the driver realizes there is an impending danger. This element assesses what the driver action was in response to his/her realization.

ATV – All Terrain Vehicle

Autocycle – A large motorcycle with one rear wheel and two front wheels, with either a saddle and handlebars or seat(s) and a steering wheel, that can be fully enclosed, partially enclosed, or unenclosed.

Auto Transporter – Describes a cargo body type that is specifically designed to transport multiple, fully assembled automobiles. Single-unit flatbed tow-trucks hauling cars DO NOT qualify. Auto transporters are typically configured as truck-trailers.

BAC – Blood Alcohol Concentration

Backing – A start from a parked or stopped position in the direction of the rear of the motor vehicle.

Back-up – An accumulation of traffic caused by vehicles slowing or stopping the traffic flow.

Presence/Type of Bicycle Facility – Any road, path, or way which is specifically designated as being open to bicycle travel regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.

Bicycle Lane – (M4)A bikeway adjacent to travel lanes which has been designated for preferential or exclusive use by pedalcyclists through striping, signage or pavement markings.

A portion of roadway that has been designated for preferential or exclusive use by bicyclists by pavement markings and, if used, signs.

Bicycle Reflector – Reflector(s) used to enhance the nighttime visibility of the bicyclist. Reflectors are typically placed as follows: white – front, red – rear, amber/yellow – pedal, white or amber/yellow – wheel(s).

Bicycle Violation – The disregard, intentionally or unintentionally, of the rules or laws governing the operation of a bicycle as a transport device in the location where the violation occurred.

Blowing Sand, Soil, Dirt – Earthen particles being blown about by the wind, reducing visibility.

Blowing Snow – Wind-driven snow that reduces visibility. Blowing snow can be falling snow or snow that has already accumulated but is picked up and blown by strong winds.

Booster Seat – A "belt-positioning seat" that positions a child on a vehicle seat to improve the fit of the child in a lap and shoulder seat belt system.

Bridge – A structure, including supports, carrying a roadway, railroad etc. over an obstruction such as water, a railway, or another roadway, having an opening of 20 feet or more measured along the center of the structure.

Bridge Overhead Structure – Any part of a bridge that is over the reference or subject roadway. In crash reporting, this typically refers to the beams or other structural elements supporting a bridge deck.

Bridge Pier or Support – Support for a bridge structure including the ends (abutments).

Bridge/Structure Identification Number – A unique federal inspection/inventory identifier assigned to a bridge, underpass, overpass, or tunnel that is also linkable to the national bridge inventory.

Bridge Rail – A barrier attached to a bridge deck or a bridge parapet to restrain motor vehicles, pedestrians or other users.

Bus – A motor vehicle with seating for transporting nine or more persons, including the driver.

Cable Barrier – Refers to a flexible barrier system which uses several cables typically supported by steel posts. These can be used on the roadside or as a median barrier. These barriers are designed to help lessen impact or keep vehicles within the confines of the road.

Cargo Body Type – The type of body for buses and trucks more than 10,000 GVWR. Refer to "Figure 16: FMCSA Cargo Body Types" (p. 109) for chart displaying types of cargo *body types*.

Cargo/Equipment Loss or Shift – As a non-collision event in First Harmful Event or Most Harmful Event, the loss or shift would have to cause damage to the motor vehicle or occupants that is transporting the cargo/equipment or the cargo or equipment itself. If cargo/equipment is lost and strikes another vehicle that is a collision event. As a non-collision event in the Sequence of Events, a cargo/equipment loss or shift is not necessarily harmful. For example, the loss or release of the goods being transported from the cargo compartment of the truck, or the shifting off position of the load affecting its balance.

Cargo Loss – Is used for a vehicle when its initial harmful event involves striking another vehicle, person, or property (a collision event) by virtue of a load/cargo that falls from or is propelled by the vehicle. For example, "Cargo Loss" would be selected for a log truck if, in the initial harmful event, logs fall from a log truck onto the top of a vehicle in an adjacent lane.

Cargo Tank – A single-unit truck, truck/trailer, or tractor semi-trailer having a cargo body designed to transport dry bulk (fly, ash, etc.), liquid bulk (gasoline, milk, etc.) or gas bulk (propane, etc.).

Cargo Van – A cargo van is any van where the area behind the driver or cab is designed for transporting cargo or operated for general commercial use.

Changing Lanes – Shift from one traffic lane to another traffic lane while moving in the same direction.

Charter/Tour – A company providing transportation on a for-hire basis and demand-response basis, usually round-trip service for a tour group or outing.

Child Safety Seat Used – Child passenger seated in a forward or rear facing child safety seat. This does not imply correct use or placement of the seat.

Class – Class indicates the type of driver's license issued by the State and the type of motor vehicle the driver is qualified to drive.

Class A – Any combination of vehicles with a gross combination weight rating (GCWR) of 26,001 pounds or more provided the GVWR of the vehicle(s) being towed is in excess of 10,000 pounds.

Class B – Any single vehicle with a GVWR of 26,001 or more pounds, or any such vehicle towing a vehicle not in excess of 10,000 pounds GVWR.

Class C – Any single vehicle, or combination of vehicles, that does not meet the definition of Class A or Class B, but is either designed to transport 16 or more passengers, including the driver, or is used in the transportation of materials found to be hazardous which require the motor vehicle to be placarded.

Class M – Motorcycles, Mopeds, Motor-Driven Cycles.

CMV License Status and Compliance with CDL Endorsements – CDL Status indicates the status for a driver's Commercial Driver's License (CDL) if applicable. Compliance with CDL Endorsements indicates whether the vehicle driven at the time of the crash requires endorsement(s) on a CDL and whether this driver is complying with the CDL endorsements.

Collision Event – Harmful events that involve the collision of a motor vehicle in transport with another motor vehicle, other property, animal or pedestrian.

Collision With Fixed Object – A motor vehicle in transport strikes an impact attenuator/crash cushion, bridge overhead structure, bridge pier or support, bridge rail, culvert, curb, ditch, embankment, guardrail face or end, concrete traffic barrier, standing tree, utility pole/light support, traffic sign or signal support, fence, mailbox, or other fixed object.

Collision With Person, Motor Vehicle, or Non-Fixed Object – A motor vehicle in transport strikes a pedestrian, pedal cycle, railway vehicle, animal, motor vehicle in transport, parked motor vehicle, struck by falling, shifting cargo or anything set in motion by motor vehicle, work zone/maintenance equipment, or other moveable object.

Commercial Driver License Class – This indicates whether the driver license is a commercial driver license (CDL). In addition, this information is important to separate the non-commercial licenses included by some States in Class C with the commercial licenses.

Commercial Motor Vehicle – A commercial motor vehicle is any motor vehicle used for the transportation of goods, property or people in interstate or intrastate commerce.

Concrete Traffic Barrier – Refers to the longitudinal traffic barriers constructed of concrete and located on the outside of the road surface, in a median, or in gore areas. This includes all temporary concrete barriers regardless of location (i.e., temporary barrier on a bridge being used to control traffic during bridge repair/construction).

Condition at Time of the Crash – Any relevant condition of the individual (driver or non-motorist) that is directly related to the crash.

Construction Zone – See Work Zone.

Contributing Circumstances, Motor Vehicle – Pre-existing motor vehicle defects or maintenance conditions that may have contributed to the crash.

Contributing Circumstances – Roadway Environment – Apparent environmental or roadway conditions which may have contributed to the crash.

Crash City/Place (Political Jurisdiction) – The city/place (political jurisdiction) in which the crash physically occurred.

Crash Classification – (Subfield 1) Ownership is used to identify ownership of the land where the crash occurred.

(Subfield 2) Characteristics is used to identify the characteristics of the crash with respect to its location on or off a trafficway. Refer to Figure 1-Figure 4 for examples.

(Subfield 3) Secondary Crash? includes a motor vehicle traffic crash within a traffic incident scene or within a traffic queue in either direction resulting from a prior traffic incident.

Crash County – The county or equivalent entity in which the crash physically occurred.

Crash Cushion – See Impact Attenuator.

Crash Date and Time – (Subfield 1) Crash Date and Time The date (year, month, and day) and time (00:00-23:59) at which the crash occurred, formatted as YYYYMMDDHHMM.

(Subfield 2) Time of Roadway Clearance provides the time that all lanes are available for traffic flow.

Crash Identifier – The unique identifier within a given year that identifies a given crash within a State.

Crash Location – The exact location in the trafficway to document where the first harmful event of the crash occurred.

Crash Severity – The severity of a crash based on the most severe injury to any person involved in the crash.

Crossover – Area in the median of a divided trafficway where motor vehicles are permitted to cross the opposing lanes of traffic or do a U-turn.

Crossover-Related – A crash on approach to or exit from a crossover related to the movement of traffic units through the crossover.

Cross-Street Number of Lanes at Intersection – Number of through lanes on the side-road approaches at intersection including all lanes with through movement (through and left-turn, or through and right-turn) but not exclusive turn lanes.

Culvert – An enclosed structure providing free passage of water under a roadway with a clear opening of less than twenty feet measured along the center of the roadway.

Curb – A raised edge or border to a roadway. Curbs may be constructed of concrete, asphalt or wood typically have a face height of less than 9 inches.

Date of Birth – The year, month, and day of birth, (or age to be used only when date of birth cannot be obtained), of the person involved in a crash.

Dark – Lighted – The scene of the crash is illuminated at night, or another period of darkness, by street lamps or other man-made light sources.

Dark – Not Lighted – The scene of the crash is not illuminated at night, or another period of darkness, by street lamps or other man-made light sources.

Dark – Unknown if Lighted – It is known that the crash occurred at night or during another period of darkness, but it is not known if the crash scene was illuminated by a man-made light source.

Dart/Dash – Non-motorist entering from off the roadway, including running, jogging, or stumbling, etc.

Dawn – The time that marks the beginning of the twilight before sunrise.

Day of Week – The day of the week on which the crash occurred.

Daylight – Whenever the sun is above the horizon at a given location.

Debris – Object(s) in the roadway that may have contributed to the crash, such as cardboard boxes, trash, or vehicle parts or other materials that have fallen from another vehicle.

Deployed Air Bag – Front – Driver or front seat passenger air bag is out of its cover and protruding into driver compartment. Bag is fully or partially deflated or inflated. Refer to “Figure 9: Air Bag Diagram” (p. 68).

Deployed Air Bag – Curtain – Curtain air bag is out of its cover and protruding into driver or passenger compartment. Bag is fully or partially deflated or inflated. Refer to “Figure 9: Air Bag Diagram” (p. 68).

Deployed Air Bag – Side – Air bag on side of motor vehicle is out of its cover and protruding into occupant compartment. Bag is fully or partially deflated or inflated. Refer to “Figure 9: Air Bag Diagram” (p. 68).

Deployed Air Bag – Other – A knee air bag, air belt, or other new air bag technology is deployed. Refer to “Figure 9: Air Bag Diagram” (p. 68)..

Deployment Unknown – Not known if air bag is out of its cover and protruding into occupant compartment.

Direction of Travel Before Crash – The direction of a motor vehicle’s travel on the roadway before the crash. Notice that this is not a compass direction, but a direction consistent with the designated direction of the road. For example, the direction of a State-designated North-South highway must be either northbound or southbound even though a motor vehicle may have been traveling due east as a result of a short segment of the highway having an east-west orientation.

Disabling Damage – Damage that precludes departure of the motor vehicle from the scene of the crash in its usual daylight-operating manner after simple repairs. As a result, the motor vehicle had to be towed, or carried from crash scene, or assisted by an emergency motor vehicle.

Distracted By – Distractions that may have influenced driver/non-motorist performance, involving both an action taken by the driver/non-motorist and the source of the distraction.

Divided Highway – Roadway travel in opposite directions that is physically separated by a median that is painted, raised, suppressed, etc. Excludes 2-way continuous left turn lanes.

Divided Trafficways – A divided trafficway is one on which two-directional roadways are physically separated by a median.

DOT-Compliant Motorcycle Helmet – Motorcycle helmets that are compliant with Federal Motor Vehicle Safety Standards typically weigh approximately 3 pounds, have an inner liner at least one-inch thick of firm polystyrene foam, have an inside label that states the manufacturer, model, and date of manufacture, and have a DOT sticker on the back of the helmet. A DOT sticker alone is not sufficient evidence to indicate that the helmet is DOT-compliant, as counterfeit stickers have been found affixed to non-compliant helmets.

Driver – An occupant who is in actual physical control of a motor vehicle or, for an out- of-control motor vehicle, an occupant who was in control until control was lost.

Driver Actions at Time of Crash – The actions by the driver that may have contributed to the crash. This data element is based on the judgment of the law enforcement officer investigating the crash and need not match "P15. Violation Codes."

Driver License Jurisdiction – The geographic or political entity issuing a driver license. Includes the States of the United States (including the District of Columbia and outlying areas), Indian Nations, U.S. Government, Canadian Provinces, and Mexican States (including the Distrito Federal), as well as other jurisdictions.

Driver License Number, Class, CDL and Endorsements – A unique set of alphanumeric characters assigned by the authorizing agent issuing a driver license to the individual.

Driver License Restrictions – Restrictions assigned to an individual's driver license by the license examiner.

Driver License Status – The current status of an individual's driver license at the time of the crash.

Driveway – A driveway is a private way which provides vehicular access to the public from a trafficway to property, parking, or loading areas outside the boundaries of the trafficway, but is considered to be not open to the public for transportation purposes as a trafficway. A driveway is outside the trafficway and is typically not provided an official identification name or number.

Driveway Access or Related – A traffic crash that (l) occurs adjacent to a driveway, (2) is not a driveway access crash, and (3) results from an activity, behavior, or control related to the movement of traffic units onto or out of a driveway.

Drug Involvement – Law enforcement suspected or documented that at least one driver or non-motorist involved in the crash had used drugs.

Drug Test – Indication of the presence of drug test, type, BAC result and overall result. Excludes drugs administered post-crash.

Drug Test Type and Results – This element identifies the drug test type and results for this person.

Dump – A cargo body type that can be tilted or otherwise manipulated to discharge its load by gravity.

Ejection – Occupant completely or partially thrown from the interior of the motor vehicle, excluding motorcycles, as a result of a crash.

Electronic Communication Device – Includes cell phone, smart phone, pager, 2-way radio and other devices enabling the driver and/or occupants of the vehicle to communicate with others not located in the vehicle.

Embankment – Earthen structure used to support a channel or roadway.

Emergency Motor Vehicle Use – Indicates operation of any motor vehicle that is legally authorized by a government authority to respond to emergencies with or without the use of emergency warning equipment, such as a police vehicle, fire truck, or ambulance while actually engaged in such response.

Emergency Operation, Emergency Warning Equipment in Use – The authorized emergency vehicle has been dispatched to an incident or has initiated an emergency operation and is using an audible siren and/or has illuminated its emergency lighting devices. The emergency vehicle operator is using or is prepared to use emergency vehicle maneuvers as allowed by State law.

Emergency Operation, Emergency Warning Equipment Not in Use – The authorized emergency vehicle has been dispatched to an incident or has initiated an emergency operation and has no emergency lighting or audible siren in use. The emergency vehicle operator may be using emergency vehicle maneuvers as allowed under State law. Examples: a police car in the last mile approaching a bank robbery; transport of a patient in an ambulance for which lights and sirens are not used per protocol.

EMS Response Agency Identifier – Identifier for EMS agency that responds to the crash.

EMS Response Run Number – Usually documented on EMS Run Report

Endorsements – Issued to drivers after successfully completing a specialized test that qualifies them to operate that specific type of vehicle.

Entrance/Exit Ramp or Related – Crash occurs on an approach to or exit from a roadway or results from an activity, behavior or control related to the movement of traffic units entering or exiting a ramp.

Exceeded Speed Limit – When a motor vehicle is traveling above the posted/statutory speed limit on certain designated roadways and/or by certain types of vehicles; e.g., for trucks, buses, motorcycles, on bridge, at night, in school zone, etc.).

Extent of Damage – Estimation of total damage to the motor vehicle caused by the crash. Disabling damage implies damage to the motor vehicle that is sufficient to require the motor vehicle to be towed or carried from the scene.

External Distraction – Driver distractions that occur outside the vehicle, such as a crash in the next lane or on the other side of the median, automated highway signs, interesting objects in the sky, fire off the roadway, etc.

Failed to Keep in Proper Lane – Driver did not maintain position in appropriate travel lane.

Failed to Yield Right-of-Way – Driver failed to yield right-of-way to another motor vehicle or non-occupant as required.

Fatal Injury (K) – A fatal injury is any injury that results in death within 30 days after the motor vehicle crash in which the injury occurred. If the person did not die at the scene but died within 30 days of the motor vehicle crash in which the injury occurred, the injury classification should be changed from the attribute previously assigned to the attribute “Fatal Injury.”

Fell/Jumped From Motor Vehicle – Motor vehicle occupant either involuntarily fell or intentionally leapt from the vehicle.

Fire/Explosion – A fire or explosion that was the cause or result of the crash. A fire/explosion is a non-collision harmful event.

First Harmful Event – The first harmful event is defined as the first injury- or damage-producing event of the crash.

Flagger – A traffic control person controlling traffic with a flag applicable to the motor vehicle at the crash location.

Flashing Traffic Control Signal – A traffic control signal that is flashing or a single light flashing red or yellow.

Flatbed – A single-unit truck, truck/trailer, or tractor/semi-trailer whose body is without sides or roof, with or without readily removable stakes which may be tied together with chains, slats, or panels. This includes trucks transporting containerized loads.

Followed Too Closely – Driver was positioned at a distance behind another motor vehicle or non-occupant that was too close to permit safe response to any change in movement or behavior by the other motor vehicle or non-occupant.

Four-Way Intersection – Where two roadways cross or connect.

Freezing Rain or Freezing Drizzle – A fine mist or rain passing from a liquid to a solid state due to temperature drop.

Front-to-Front – The front end of one vehicle collides with the front end of another vehicle, while the two vehicles are traveling in opposite directions.

Front to Rear – The front end of one vehicle collides with the back of another vehicle, while the two vehicles are traveling in the same direction.

Full Access Control – Preference given to through traffic movements by providing interchanges with selected public roads, and by prohibiting crossing at-grade and direct driveway connections (i.e., limited access to the facility).

Functional Damage – Damage that is not disabling, but affects operation of the motor vehicle or its parts.

Geographic Information System (GIS) – Computerized system that associates information with specific geographic locations, for example roadway characteristics by latitude/longitude.

Glare – A very harsh, bright, dazzling light that impairs vision.

Global Positioning System (GPS) – A system of satellites that transmit geographic locations in terms of latitude and longitude.

Going to or from School (K-12) – The non-motorist was walking or cycling to school during normal arrival time or from school during normal dismissal time.

Golf Cart – A self-propelled vehicle not designed primarily for operation on roadways. A golf cart has a design speed of less than 20 miles per hour, at least three wheels in contact with the ground, and an empty weight of not more than 1,300 lbs.

Gore – An area of land where two roadways diverge or converge. The area is bounded on two sides by the edges of the roadways, which join at the point of divergence or convergence. The direction of traffic must be the same on both sides of these roadways. The area includes shoulders or marked pavement, if any, between the roadways.

Grade – The inclination of a roadway, expressed in the rate of rise or fall in feet (meters) per 100 feet (meters) of horizontal distance. Includes level, hillcrest, uphill, downhill, sag (bottom).

Grain/Chips/Gravel Truck – Describes a cargo body type used for hauling these or other similar bulk commodities. They may be referred to as "open hoppers" or "belly dumps."

Gross Combination Weight Rating (GCWR) – The value specified by the manufacturer(s) as the recommended maximum loaded weight of a combination (articulated) motor vehicle. This is for truck tractors and single-unit trucks pulling a trailer(s). GCWR is the sum of the gross vehicle weight ratings (GVWR) of all units, power unit and its trailer(s). Thus, for single-unit trucks there is no difference between the GVWR and the GCWR.

Gross Vehicle Weight Rating (GVWR) – The value specified by the manufacturer as the recommended maximum loaded weight of a single motor vehicle. This rating includes the maximum rated capacity of a vehicle, including the base vehicle, mounted equipment and any cargo and passengers. Most of the time, the GVWR is the sum of the maximum rated capacity of the axles of the vehicle.

Guardrail – A longitudinal barrier consisting of posts and rails.

Guardrail End Terminal – The end of the guardrail.

Guardrail Face – Surface area of the guardrail other than the end.

Harmful Event – Occurrence of injury or damage.

Hazardous Materials – Any substance or material which has been determined by the U.S. Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce and which has been so designated under regulations of the US DOT.

Hazardous Materials (Cargo Only) – Indication of the hazardous materials identification and class being transported by the motor vehicle, and whether or not hazardous materials were released. (Refer to "Figure 17: Nine Classes of Hazardous Materials, FMCSA Visor Card (Front)" (p. 111) and "Figure 18: Reporting Hazardous Materials Information, FMCSA Visor Card (Back)" (p. 111) for charts displaying hazardous materials classes and reporting information.)

Hazardous Materials Placard – A Hazardous Materials Placard is a sign required to be affixed to any motor vehicle transporting quantities of hazardous materials in quantities above the thresholds established by the U.S. Department of Transportation, or other authorized entity. This placard identifies the hazard class division number, 4-digit hazardous material identification number or name of the hazardous material being transported.

Helmet – Safety helmet worn by non-motorist (bicyclist, skateboarder, etc.).

High Occupancy Toll (HOT) Lane – HOT lanes allow drivers to pay a toll and still use the lanes if they do not have enough passengers or are riding transit services. In this way, HOT lanes provide more options for drivers as well as help communities improve mobility without increasing overall congestion.

High Occupancy Vehicle (HOV) Lane – An HOV lane, sometimes called a carpool lane, is a special lane reserved for the use of carpools, vanpools and buses. They are usually located next to the regular, or unrestricted, lanes. These special lanes enable those who carpool or ride the bus to bypass the traffic in the adjacent, unrestricted ("general purpose") lanes. Lanes are identified as "2+" or "3+" which refers to the minimum number of occupants to qualify.

Highway Traffic Sign – A sign intended to guide, regulate, or inform highway users.

Highway Traffic Post – A pole, post, or structure constructed to support a highway sign.

Hillcrest – The top of a hill.

Hit and Run – Refers to cases where the vehicle or the driver of the vehicle in transport is a contact vehicle in the crash and departs the scene without stopping to render aid or report the crash.

Horizontal Alignment – The change in horizontal direction of a roadway determined at the point of curvature (pc) and expressed in terms of direction, degree of curve and length.

HOV/HOT Lanes – Managed lanes that are intended to improve mobility by limiting access to only vehicles with sufficient occupants (i.e., "2+" or "3+") or by allowing vehicle's without sufficient occupants to pay a toll to use the lanes.

ICD-9, ICD-10 – International Classification of Diseases, 9th edition, and 10th edition in process, developed by the World Health Organization and maintained in the U.S. by the Centers of Disease Control, DHHS. This system codes the type of disease/injury and body area affected for all hospital inpatients that are discharged and to document the cause of death.

Identification Number – A unique number that identifies a person, crash, motor vehicle, bridge/ structure, etc.

Immersion, Full or Partial – Entry of a vehicle into liquid so that it is completely covered or there is damage to the vehicle or harm to an occupant.

Impact Attenuator/Crash Cushion – A barrier at a spot location, less than 25 ft. (7.6 m) away, designed to prevent an errant motor vehicle from impacting a fixed object hazard by gradually decelerating the motor vehicle to a safe stop or by redirecting the motor vehicle away from the hazard.

Incident Response – Government vehicles typically equipped with a variety of tools, emergency medical equipment, traffic cones and control signs, absorbent material (for responding to spills), emergency and work lighting. These multi-purpose response units are intended to assist law enforcement, fire and rescue personnel with trafficway incident management.

Initial Contact Point on Non-Motorist – Location of the first harmful event on the non-motorist by the motor vehicle.

Injury Area – The primary or most obvious area of the person's body injured during the crash. Area of injury as indicated in a matrix or narrative in the EMS records or as a hospital discharge code (ICD-9-CM, or ICD-10, if implemented) in the emergency department, hospital or insurance records. The attributes listed in "P25. Injury Area" represent the major areas of the body subject to injury.

Injury Diagnosis – Type of injury inflicted to primary "P25. Injury Area."

Injury Severity – The injury severity for a person involved in a crash as determined through linkage of crash and injury outcome records.

In Parking Lane or Zone – Crash location outside the roadway in a space designated for parking motor vehicles.

In Roadway – Other – Non-motorist in roadway, such as a child playing or a mechanic working on a motor vehicle.

In Transport – 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 by similar transport vehicles. When applied to motor vehicles, "in-transport" means on a roadway or in motion within or outside the trafficway. A transport vehicle which is also a working motor vehicle at the time of the unstabilized situation is not "in-transport." In roadway lanes used for travel during some periods and for parking during other periods, a parked motor vehicle should be considered to be in-transport during periods when parking is forbidden.

Indian Nation – A federally recognized Indian tribe with sovereign authority to interact on a government-to-government basis directly with federal agencies.

Injury Status – The injury severity level for a person Involved in a crash. The determination of which attribute to assign should be based on the latest information available at the time the report is completed, except as described below for fatal Injuries.

Interchange – A system of interconnecting roadways in conjunction with one or more grade separations, providing for the movement of traffic between two or more roadways on different levels.

Intercity Bus – A company providing for-hire, long-distance passenger transportation between cities over fixed routes with regular schedules (for example, Greyhound bus service between major cities).

Intermediate License Restrictions – The Intermediate License is the second stage of obtaining a full license privilege under most Graduated Driver's License (GDL) programs. It is typically for drivers between the ages of 16 and 17, and does not require total supervision during daylight hours (e.g., adult supervision during the hours of midnight to 5 am). An Intermediate Driver License may be suspended or revoked under certain violations. Other conditions may include conviction-free performance, seat-belt use for occupants, and some age restrictions for passengers. If any restriction is violated, this GDL restriction period can be extended.

Intermittent or Moving Work Zone – Type of work zone designating temporary activity that may move or shift frequently.

International License (other than Mexico or Canada) – Driver license issued by country other than Canada, Mexico or U.S.

Intersection – 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 33 feet, the two areas and the roadway connecting them are considered to be parts of a single intersection.

Intersection or Related – A traffic crash in which the first harmful event (1) occurs on an approach to or exit from an intersection and (2) results from an activity, behavior or control related to the movement of traffic units through the intersection.

Interstate Carrier – A commercial vehicle in the United States where the transit between the points of origin and termination does not occur entirely with the borders of the State of origin. A motor carrier that has authority to operate across State lines. Interstate operators are required to have a USDOT Number by the Federal Motor Carrier Administration.

Intrastate Carrier – A motor carrier that operates entirely within the State and does not have the authority to engage in interstate commerce. Intrastate operators are not required to have a USDOT Number by the Federal Motor Carrier Safety Administration; however, some States do require that certain intrastate operators secure a USDOT Number.

Island – A cement or grassy area in the middle of a trafficway.

Jackknife – An uncontrolled articulation between a tractor and trailer(s) that occurs at any time during the crash sequence.

KABCO – A functional measure of the injury severity for any person involved in the crash. K-Fatal Injury, A-Suspected Serious Injury, B-Suspected Minor Injury, C-Possible Injury, and O-No Apparent Injury.

L-Intersection – This is a two-armed intersection in which one road intersects with another road but neither road extends beyond the other road.

Lane – A strip of roadway used for single line of motor vehicles.

Lane Closure – A type of work zone.

Lane Line – A pavement marking used to separate traffic traveling in the same direction. Lane lines are normally 4 to 6 inches wide.

Lane Shift/Crossover – A type of work zone.

Lap Belt Only Used – Use of a lap safety belt either because the motor vehicle is equipped only with lap belt or because the shoulder belt is not in use.

Law Enforcement Agency Identifier – A unique identifier for the law enforcement agency that provided information on the crash report.

Law Enforcement Suspects Alcohol Use – Driver or non-motorist involved in the crash suspected by law enforcement to have used alcohol.

Law Enforcement Suspects Drug Use – Driver or non-motorist involved in the crash suspected by law enforcement to have used drugs.

Learner's Permit Restrictions – The Learner's Permit is the first stage of obtaining a full license privilege under most Graduated Driver's License (GDL) programs. It is typically for drivers between 14 and 16 years of age, and typically requires total adult supervision, seat-belt use for occupants, and conviction-free performance. If any restriction is violated, this GDL restriction period can be extended.

Leaving Traffic Lane – A motor vehicle moving outside the travel lane.

Light Condition – The type/level of light that existed at the time of the motor vehicle crash.

Light Support – A pole or post constructed to support lighting for the highway.

Light Truck – Trucks (van, mini-van, panel, pickup, sport utility) of 10,000 lbs GVWR or less.

Lighting – Non-motorist use of lights on his/her person or on a motor vehicle not in transport or transport vehicles other than motor vehicle as safety equipment

Linear Referencing System (LRS) – A standardized data format that provides the ability to create complex overlays of multiple events or occurrences along a route to support corridor planning, pavement rehabilitation, or other complex analysis.

Link Node + Offset System – A system that assigns an identifier to each segment of roadway and to specific points or nodes that are useful to reference the location of a crash.

Location of First Harmful Event Relative to the Trafficway – The location of the first harmful event as it relates to its position within or outside the trafficway. See "Figure 1: Diagram of the Trafficway" (p. 10) for diagrams of the trafficway.

Low Speed Vehicle – A low speed vehicle (LSV) is a motor vehicle with four or more wheels whose top speed is greater than 20 miles per hour, but not greater than 25 miles per hour. LSVs are required to be equipped with basic items of safety equipment: headlamps, stop lamps, turn signal lamps, tail lamps, reflex reflectors, parking brake, windshields of either type AS-1 or type AS-5 glazing, rearview mirrors, seat belts and vehicle identification numbers (VINs).

Mainline Number of Lanes at Intersection – Number of "thru" lanes on the mainline approaches at intersection including all lanes with "thru" movement ("thru" and left-turn, or "thru" and right-turn) but not exclusive turn lanes.

Maintenance Zone – Refer to Work Zone.

Manner of Crash/Collision Impact – The identification of the manner in which two motor vehicles in transport initially came together without regard to the direction of force. This data element refers only to crashes where the first harmful event involves a collision between two motor vehicles in transport. See Figure 2 (p. 23) for a diagram of the manner of collision.

Manually Operating (texting, dialing, playing game, etc.) – The driver was in the act of manually manipulating an electronic communication device (cell phone, smart phone, hand-held radio, etc.). The types of device manipulation include dialing, texting, and typing.

Marked Crosswalk – That portion of the roadway that is distinctly indicated for pedestrian crossing by lines or other markings on the surface of the roadway.

Median – An area of trafficway between parallel roads separating travel in opposite directions. A median should be four or more feet wide.

A median can be depressed, raised, or flush with the travel way surface. A median if flush or painted without a barrier must be four or more feet wide.

Medical Facility – The hospital, clinic, or trauma center that received the patient for treatment.

Medium/Heavy Truck – A truck with a GVWR greater than 10,000 pounds.

Minor Damage – Damage that does not affect the operation of or disable the motor vehicle in transport.

Moped or motorized bicycle – Possessing two wheels in contact with the ground, a seat or saddle for driver and passenger, a steering handle bar, and a brake horsepower not exceeding 2 HP. Unlike motorcycles, a moped by definition cannot include an enclosure.

Most Harmful Event for this Motor Vehicle – Event that resulted in the most severe injury or, if no injury, the greatest property damage involving this motor vehicle.

Motor Carrier – The legal business entity, individual, partnership, corporation, or organization that directs, controls, and is responsible for the transportation of goods, property or people.

Motor Carrier Identification – The identification number, name and address of an individual, partnership or corporation responsible for the transportation of persons or property as indicated on the shipping manifest.

Motorcoach – A bus with a gross vehicle weight rating (GVWR) of 11,793 kilograms (26,000 pounds) or greater, 16 or more designated seating positions (including the driver), and at least 2 rows of passenger seats, rearward of the driver's seating position, that are forward-facing or can convert to forward-facing without the use of tools. Motorcoach includes buses sold for intercity, tour, and commuter bus service, but does not include a school bus, or an urban transit bus sold for operation as a common carrier in urban transportation along a fixed route with frequent stops.

Motor Home – A van where a frame-mounted recreational unit is added behind the driver or cab area or mounted on a bus/truck chassis that is suitable to live in and drive across the country.

Motor Vehicle Body Type Category – The category indicating the general configuration or shape of a motor vehicle distinguished by characteristics such as number of doors, rows of seats, windows, or roof line. Personal conveyances – such as skateboards, motorized toy cars, and wheelchairs are not considered motor vehicles.

Motor Vehicle Automated Driving System(s) – "The hardware and software that are collectively capable of performing part or all of the dynamic driving task on a sustained basis; this term is used generically to describe any system capable of level 1-5 driving automation." (SAE 2016) (*see endnote iii*)

***No Automation:** The full-time performance by the human driver of all aspects of the dynamic driving task, even when enhanced by warning or intervention systems.

***Driver Assistance:** Driver assistance system of either steering or acceleration/deceleration using information about the driving environment and with the expectation that the human driver perform all remaining aspects of the dynamic driving task.

***Partial Automation**: The driving mode-specific execution by one or more driver assistance systems of both steering and acceleration/deceleration using information about the driving environment and with the expectation that the human driver perform all remaining aspects of the dynamic driving task.

***Conditional Automation:** The driving mode-specific performance by an automated driving system of all aspects of the dynamic driving task with the expectation that the human driver will respond appropriately to a request to intervene.

***High Automation:** The driving mode-specific performance by an automated driving system of all aspects of the dynamic driving task, even if a human driver does not respond appropriately to a request to intervene.

***Full Automation:** The full-time performance by an automated driving system of all aspects of the dynamic driving task under all roadway and environmental conditions that can be managed by a human driver.

Dynamic driving task includes the operational (steering, braking, accelerating, monitoring the vehicle and roadway) and tactical (responding to events, determining when to change lanes, turn, use signals, etc.) aspects of the driving task, but not the strategic (determining destinations and waypoints) aspect of the driving task.

Driving mode is a type of driving scenario with characteristic dynamic driving task requirements (e.g., expressway merging, high-speed cruising, low speed traffic jam, closed-campus operations, etc.).

Request to intervene is notification by the automated driving system to a human driver that s/he should promptly begin or resume performance of the dynamic driving task.

Motor Vehicle in Transport – A motor vehicle is any motorized (mechanically or electrically powered) road vehicle not operated on rails. When applied to motor vehicles, "in-transport" refers to being 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, etc.

Motor Vehicle License Plate Number – The alphanumeric identifier or other characters, exactly as displayed, on the registration plate or tag affixed to the motor vehicle. For combination trucks, motor vehicle plate number is obtained from the truck tractor.

Motor Vehicle Make – The manufacturer-assigned, coded name applied to a group of motor vehicles.

Motor Vehicle Maneuver/Action – The controlled maneuver for this motor vehicle prior to the beginning of the sequence of events.

Motor Vehicle Model – The manufacturer-assigned code denoting a family of motor vehicles (within a make) that have a degree of similarity in construction, such as body, chassis, etc.

Motor Vehicle Model Year – The year that is assigned to a motor vehicle by the manufacturer.

Motor Vehicle Posted/Statutory Speed Limit – The posted/statutory speed limit for the motor vehicle at the time of the crash. The authorization may be indicated by the posted speed limit, blinking sign at construction zones, etc.

Motor Vehicle Registration State and Year – The State, commonwealth, territory, Indian nation, U.S. Government, foreign country, etc., issuing the registration plate and the year of registration as indicated on the registration plate displayed on the motor vehicle. For foreign countries, MMUCC requires only the name of the country. Border States may want to collect the name of individual Canadian Provinces or Mexican States. Refer to Appendix E: ANSI State FIPS and USPS Codes (p. 196) and Appendix F: ISO 3166-2 Codes for Canada and Mexico (p. 198).

Motor Vehicle Unit Type and Number – Motor vehicle unit type and number assigned to uniquely identify each motor vehicle involved in the crash. This number is not assigned to non-motorists.

Motorcycle, 2-Wheeled, 3-Wheeled – A motor vehicle with two or three wheels in contact with the ground (excluding trailers suitable for motorcycle hauling) and having a seat or a saddle for driver and passenger as well as possessing wheel rim diameters of 10 inches or more. A motorcycle may or may not have an enclosure over the driver and passenger.

Motorist – Any occupant of a motor vehicle.

Name of Person Involved – The full name of the individual involved in the crash.

National Highway System – Includes 160,000 miles of major highways that link most of the U.S. These highways include interstates, principal arterials, strategic highway networks, major strategic highway network connectors, and intermodal connectors.

No Access Control – No degree of access control exists (i.e., full access to the facility is permitted).

No Apparent Injury (O) – No apparent injury is a situation where there is no reason to believe that the person received any bodily harm from the motor vehicle crash. There is no physical evidence of injury and the person does not report any change in normal function.

Non-Collision Harmful Events – Any motor vehicle crash event not involving a collision. Includes overturn/rollover, fire/explosion, immersion, jackknife, cargo/equipment loss or shift, equipment failure, separation of units, ran off road right or left, cross median, cross centerline, downhill runaway, fell/jumped from motor vehicle, thrown or falling object.

Non-Emergency, Non-Transport – The authorized emergency vehicle has been dispatched to an incident or has initiated operation in a non-emergency mode and is not transporting passengers, such as patients or suspects. The emergency vehicle operator is not using emergency lighting, audible siren or emergency vehicle maneuvers.

Non-Emergency Transport – The authorized emergency vehicle has been dispatched to an incident or has initiated a transport-related operation in a non-emergency mode. The emergency vehicle operator is not using emergency lighting, audible siren or emergency vehicle maneuvers. Example: transport of a suspect from one location to another or interfacility transport of a patient in an ambulance to a nursing home.

Non-Highway Work – Maintenance or other types of work occurring near or in the trafficway but not related to the trafficway.

Non-Junction – Roadway that is not an intersection or a connection between a driveway access and a roadway other than a driveway access.

Non-Motorist – Any person who is not an occupant of a motor vehicle. This includes pedestrians, bicyclists, other cyclists, and occupants of transport vehicles other than motor vehicles.

Non-Motorist Action/Circumstance Prior to Crash – The action of the non-motorist immediately prior to the crash and an indication of whether the non-motorist was walking/cycling to/from school.

Non-Motorist Contributing Action(s)/ Circumstance(s) – The actions/circumstances of the non-motorist that may have contributed to the crash. This data element is based on the judgment of the law enforcement officer investigating the crash.

Non-Motorist Location at Time of Crash – The location of the non-motorist with respect to the roadway at the time of the crash.

Non-Motorist Safety Equipment – The safety equipment(s) used by the non-motorist.

Non-Trafficway – Is used for motor vehicle crashes where both of these conditions apply: (1) the unstabilized situation originates outside the boundaries of the trafficway and (2) no harmful event occurs within the boundaries of the trafficway. Example 1: A motor vehicle is driving in a parking aisle (outside the trafficway) and crashes into a parked motor vehicle. Example 2: A motor vehicle is driving on a dirt trail (not a recognized trafficway), and overturns.

Non-Transport Emergency Services Vehicle – Is used for any readily identified (lights and markings) vehicles that do not meet the criteria for *06 (Ambulance)*, *07 (Fire Truck)* or *13 (Incident Response)* and are specifically designed and equipped to respond to fire, hazmat, medical and extrication incidents. This attribute includes light vehicles such as sedans, van, SUVs, pickups, trucks, motorcycles, etc. This attribute includes vehicles that have been dispatched to an incident or have initiated operation in a non-emergency mode and are not transporting passengers, such as patients or suspects. An example of a Non-Transport Emergency Services vehicle is a fire chief's unit, commonly an SUV.

Not a Bus – Vehicles that do not have a bus body type and are not being used as a bus in the crash. This should be used for vehicles with less than 9 seats (including the driver) and personal-use vans with 9 or more seats (including the driver).

Not in Commerce/Government – Any government vehicle whether it is operated by the local, State, or federal government. In most circumstances, the government-owned vehicle will not have a USDOT Number.

Not in Commerce/Other Truck or Bus – Personal rental vehicles (e.g., U-Haul, Ryder, Penske) that qualify by size (Over 10,000 lbs. GVWR/ GCWR) that are operated by a private individual. In these situations the rental company is not the carrier and should not be recorded.

Number of Fatalities – The total number of fatalities (motorists and non-motorists) that resulted from injuries sustained as the result of a specific motor vehicle crash. In reporting fatality statistics, a 30-day counting rule is generally used (only deaths that occur within 30 24-hour periods of a crash should be counted).

Number of Motor Vehicles Involved – The total number of motor vehicles (automobiles, single-unit trucks, truck combinations, motorcycles, etc.) that are involved in the crash.

Number of Motorists – The total number of motorists refers to the count of occupants of motor vehicles involved in the crash.

Number of Non-Fatally Injured Persons – The total number of persons injured, excluding fatalities within 30 days, in the crash.

Number of Non-Motorists – The total number of non-motorists refers to the count of persons that are not occupants of motor vehicles (pedestrians, pedalcyclists, etc.).

Obstruction in Roadway – A blockage in the roadway, such as that caused by a fallen tree or a large boulder.

Occupant's Motor Vehicle Unit Number – The unique number assigned for this crash to the motor vehicle in which this person was an occupant. Persons ejected or who fall from a vehicle are still considered occupants.

Off-Roadway, Location Unknown – The first harmful event is off the roadway, but the location of the property line is unknown.

On Roadway – The portion of the trafficway normally designed for vehicular traffic.

Originating Agency Identifier (ORI Codes) – A unique identifier for each law enforcement agency that is assigned by the Department of Justice.

Other Activity, Electronic Device – The driver was in the act of using an electronic device for some purpose other than communicating, such as operating a navigation device, playing a game, or watching a video.

Other Cyclist – Non-motorist using a non-motorized pedal-powered vehicle other than a bicycle, such as a unicycle or adult tricycle.

Other Fixed Object – Other fixed objects include walls, buildings, tunnels, etc.

Other Inside the Vehicle – Other distractions inside the vehicle affecting the driver. This may include actions taken by the driver such as eating, drinking, smoking, etc., or distractions within the vehicle originating from neither the driver nor passengers, such as a pet or flying insect.

Other Non-Collision – 1) driving off a cliff where damage is not the result of an overturn or a collision with a fixed object, (2) an unbelted passenger hits his or her head on the roof of a vehicle and is injured, when the vehicle travels over a sharp dip in the road, (3) situations where a passenger is sickened or dies due to carbon monoxide fumes leaking from a motor vehicle in transport. (4) This also includes when an occupant of a vehicle is run over by his/her own vehicle after falling from the vehicle.

Other Non-Fixed Object – A collision with an object other than a motor vehicle in-transport, a pedestrian, another road vehicle in transit, a parked motor vehicle, a railway vehicle, a pedalcycle, an animal, or a fixed object. Fallen trees are one example.

Other Post, Pole or Support – Post, pole or support that does not include a highway safety sign.

Other Traffic Barrier – Longitudinal barriers other than guardrails, concrete traffic barriers, or cable barriers. They may be composed of material such as wood or rock.

Outside the Vehicle – The driver was distracted by something outside the vehicle such as birds or other animals or a roadside fire. This may include unspecified external distractions.

Outside Trafficway – Not physically located on any land way open to the public as a matter of right or custom for moving persons or property from one place to another

Overtaking/Passing – A motor vehicle that moves from behind a motor vehicle to being in front of the same motor vehicle.

Overturn/Rollover – A motor vehicle that has overturned at least 90 degrees to its side.

Parked Motor Vehicle – A parked motor vehicle is a motor vehicle not in-transport, other than a working motor vehicle, that is not in motion and not located on the roadway. In roadway lanes used for travel during some periods and for parking during other periods, a parked motor vehicle should be considered to be in-transport during periods when parking is forbidden. Any stopped motor vehicle where the entirety of the vehicle's primary outline as defined by the four sides of the vehicle (e.g., tires, bumpers, fenders) and load, if any, is not within the roadway is parked.

Parking Lane – An auxiliary lane primarily intended for the parking of motor vehicles.

Part of National Highway System – Designation as part of the National Highway System.

Partial Access Control – Preference given to through traffic movement. In addition to interchanges, there may be some crossings at-grade with public roads, but direct private driveway connections have been minimized through the use of frontage roads or other local access restrictions. Control of curb cuts is not access control.

Partially Ejected – The occupant's body was not completely thrown from the motor vehicle as a result of the impact.

Passenger – Occupant of motor vehicle other than the driver. In regard to driver distraction, a passenger can be the source of distraction affecting the driver.

Passenger Car – Motor vehicles used primarily for carrying passengers.

Pavement Markings, Longitudinal – The longitudinal markings (paint, plastic, or other) used on the roadway surface to guide or control the path followed by drivers.

Pedalcycle – Includes bicycles, tricycles, unicycles, pedal cars, etc.

Pedalcyclist – Any rider of a pedalcycle.

Pedestrian – A person who is not an occupant of a motor vehicle in transport or a pedalcyclist. Includes a person who is adjacent to the motor vehicle regardless of their actions.

Person Type – Type of person involved in a crash.

Personal Conveyance – A personal conveyance is a device, other than a transport device, used by a pedestrian for personal mobility assistance or recreation. These devices can be motorized or human powered, but not propelled by pedaling.

Personal Reflector – Reflector(s) used to enhance the nighttime visibility of a pedestrian. Reflectors may be incorporated into clothing/ safety apparel such as high visibility vests or they may be an accessory such as a shoe, leg or arm band(s).

Person (including flagger, law enforcement, crossing guard, etc.) – Includes flaggers, law enforcement personnel, crossing guards, etc.

Placard Number – A number included on the hazardous material placard displayed on trucks that are carrying hazardous materials. Many placards have two numbers, a four-digit number in the middle, and a one-digit number at the bottom.

Pole-Trailer – A trailer designed to be attached to the towing vehicle by means of a reach or pole, or by being boomed or otherwise secured to the towing motor vehicle, and ordinarily used for carrying property of a long or irregular shape.

Police Vehicle – A vehicle equipped with police emergency devices (lights and siren) that is owned or subsidized by any local, county, State or Federal government entity. The police vehicle is presumed to be in special use at all times, although not necessarily in "emergency use." Vehicles not owned by a government entity that are used by law enforcement officers (e.g., undercover) are excluded.

Possible Injury (C) – A possible injury is any injury reported or claimed which is not a fatal, suspected serious or suspected minor injury. Examples include momentary loss of consciousness, claim of injury, limping, or complaint of pain or nausea. Possible injuries are those that are reported by the person or are indicated by his/her behavior, but no wounds or injuries are readily evident.

Presence/Type of Bicycle Facility – Any road, path, or way that is specifically designated as being open to bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.

Private Property – Is used for a crash that occurs and is entirely contained within a location that is not owned by the public. Do not use this selection for crashes that originate on private property where a harmful event occurs on public property. That circumstance should be classified as "public property." For example, a crash where a driver loses control of their vehicle backing from their private driveway and impacts a vehicle on the roadway should be classified as "public property."

Property Damage Only (PDO) – A crash that results in damage to the motor vehicle or other property, but without injury to any occupants or non-motorists.

Protective Pads Used (elbows, knees, shins, etc.) – Padded, shaped attachments were used by the non-motorist to protect specific areas of the body (elbows, knees, shins, etc.).

Public Property – Is used for any crash that occurs and is entirely contained within a location that is owned by the public. Also use this attribute for crashes that originate on a location that is owned by the public where a harmful event occurs on private property. For example, a vehicle that departs the roadway and impacts a tree in a citizen's front yard should be classified as "public property."

Racing – When two or more motor vehicles are engaged in a speed-related competition on the trafficway.

Railway Crossing Device – Any sign, signal, or gate that warns of on-coming trains or train tracks crossing the roadway.

Railway Crossing ID – A unique US DOT/AAR number assigned for identification purposes to a railroad crossing by a State highway agency in cooperation with the Federal Railroad Administration.

Railway Grade Crossing – An intersection between a roadway and train tracks that cross each other at the same level (Grade).

Railway Vehicle (train, engine) – Any land vehicle (train, engine) that is (1) designed primarily 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.

Ran Off Roadway – Failure of the driver to keep the motor vehicle on the roadway.

Ran Red Light – Driver continues through yellow caution light shortly before or after it turns red. This driver action is not included in the list of violation codes.

Rear to Rear – The "rear" of a vehicle makes contact with the "rear" of another. This can happen when two vehicles are backing up.

Rear to Side – The "rear" of a vehicle, and not the front, makes contact with the side of another. This can happen when a vehicle backs up into the side of another vehicle.

Reflective Wear (backpack, triangles, etc.) – Wearable items that reflect light and also return most of that reflection back along the path of the incoming light.

Reflectors – A device that reflects light back toward the source of light.

Regular Driver License Class – Any regular or standard driver license issued for the operation of automobiles and light trucks by States that separate these vehicles from Class "C". Other class designation codes such as "D", "R" and others may be used by States to indicate a regular driver license class.

Relation to Junction – The coding of this data element is based on the location of the first harmful event of the crash. It identifies the crash's location with respect to presence in a junction or proximity to components typically in junction or interchange areas. See Diagram of an Interchange (p. 30) and Diagram of an Intersection (p. 31).

Riding on Vehicle Exterior – Person outside of motor vehicle (on hood, running board, trunk, non-trailing unit, etc.) while riding.

Right of Way – Area with the trafficway.

Road – That part of a trafficway that includes both the roadway and any shoulder alongside the roadway. Includes designated parking areas on a roadway or between the roadway and curb.

Roadside – The outermost part of the trafficway from the property line to other boundary in to the edge of the first road.

Roadway – That part of a trafficway designed, improved, and ordinarily used for motor vehicle travel or, where various classes of motor vehicle are segregated, that part of a trafficway used by a particular class. Separate roadways may be provided for northbound and southbound traffic (as well as eastbound and westbound) or for trucks and automobiles. Bridle paths and bicycle paths are not included in this definition.

Roadway Alignment and Grade – The geometric or layout and inclination characteristics of the roadway in the direction of travel for this vehicle.

Roadway Functional Class – The character of service or function of streets or highways. The classification of rural and urban is determined by State and local officials in cooperation with each other and approved by the Federal Highway Administration, U.S. Department of Transportation.

Roadway Lighting – Type of roadway illumination.

Roadway Surface Condition – The roadway surface condition at the time and place of a crash.

Roundabout/Traffic Circle – Circular traffic patterns in which yield control is used on all entries, circulating vehicles have the right of way, pedestrian access is allowed only across the legs of the roundabout behind the yield line and circulation is counter-clockwise and passes to the right of the central island.

Rut, Holes, Bumps – Irregular roadway surface, either concave in the case of ruts and holes, or convex in the case of bumps.

Safety Service Patrols – Incident Response – Safety Service Patrol vehicles provide short-term emergency response management to traffic incidents, commonly resulting from crashes, debris or disabled vehicles, intended to promote safe movement of people and commerce and reduce traffic delays and congestion.

Sag – The bottom of a hill.

School Bus – A motor vehicle used for the transportation of any school pupil at or below the 12th-grade level to or from a public or private school or school-related activity. It is externally identifiable by the color yellow, the words "school bus", flashing red lights located on the front and rear, and lettering on both sides identifying the school or school district served, or the company operating the bus

School Bus-Related – Indicates whether a school bus or motor vehicle functioning as a school bus for a school-related purpose is involved in the crash. The "school bus," with or without a passenger on board, must be directly involved as a contact motor vehicle or indirectly involved as a non-contact motor vehicle (children struck when boarding or alighting from the school bus, two vehicles colliding as the result of the stopped school bus, etc.).

School Bus [Used as] – Any public or private school or district, or contracted carrier operation on behalf of the entity, providing transportation for K-12 pupils.

School Zone Sign/Device – Signs or devices which change the speed limit on road adjacent to schools on school days, signs which give advance warning of school and signs which warn of children crossing the road.

Seating Position – The location for this occupant in, on, or outside of the motor vehicle prior to the first event in the sequence of events. Refer to Figure 7 (p. 70) for diagram of common vehicle types, to include ambulance seating/positioning.

Second Row – Left Side – Passenger behind driver of motor vehicle or motorcycle.

Second Row – Middle – Passenger in middle of back seat.

Second Row – Right Side – Passenger behind right front seat passenger.

Separated Bike Lanes – An exclusive facility for bicyclists that is located within or directly adjacent to the roadway and that is physically separated from motor vehicle traffic with a vertical element. Separated bike lanes are differentiated from standard and buffered bike lanes by the vertical element. They are differentiated from shared use paths (and sidepaths) by their more proximate relationship to the adjacent roadway and the fact that they are bike-only facilities. Separated bike lanes are also sometimes called "cycle tracks" or "protected bike lanes."

Separation of Units – When the truck or truck tractor becomes separated from the semi-trailer and/or trailer(s) they are pulling.

Separator – A separator is the area of a trafficway between parallel roads separating travel in the same direction or separating a frontage road from other roads.

Sequence of Events – The sequence of events are events in sequence related to this motor vehicle, including non-harmful events, non-collision events and collision events. For examples, refer to Appendix G: Sequence of Events Examples.

Severe Crosswinds – Strong air flow perpendicular to the intended path of travel.

Sex – The sex of the person involved in the crash.

Shared Roadway (Sharrows/Green Lanes) – Lane of a traveled way open to both bicycle and motor vehicle travel with or without pavement markings providing guidance to bicyclists and alerting drivers to potential presence of bicyclists.

Shared-Use Path or Trail – A bikeway physically separated from motor vehicle traffic by an open space or barrier. They may also be used by pedestrians, skaters, wheelchair users, joggers, and other non-motorized users. Most have two-way travel.

Shoulder – That part of a trafficway contiguous with the roadway for emergency use, for accommodation of stopped motor vehicles, and for lateral support of the roadway structure.

Shoulder and Lap Belt Used – Occupant restraint system where both the shoulder belt and lap belt portions are connected to a buckle.

Shoulder Belt Only Used – In a two-part occupant restraint system, only the shoulder belt portion is connected to a buckle.

Shuttle – Private companies providing transportation services for their own employees, non-governmental organizations (such as churches and non-profit groups), and non-educational units of government (such as departments of corrections). (Examples include transporting people from airports, hotels, rental car companies, and business facility to facility.)

Sideswipe, Opposite Direction – Two vehicles traveling in the opposite direction impact one another where the initial engagement does not overlap the corner of either vehicle so that there is no significant involvement of the front or rear surface areas. The impact then swipes along the surface of the vehicle parallel to the direction of travel.

Sideswipe, Same Direction – Two vehicles traveling in the same direction impact one another where the initial engagement does not overlap the corner of either vehicle so that there is no significant involvement of the front or rear surface areas. The impact then swipes along the surface of the vehicle parallel to the direction of travel.

Single-Unit Truck (3 or more axles) – A truck tractor (power unit) that includes a permanently mounted cargo body (also called a straight truck) that has three or more axles.

Single-Unit Truck (2-axle and GVWR > 10,000 lbs.) – A truck tractor (power unit) that includes a permanently mounted cargo body (also called a straight truck) that has only two axles and a GVWR of over 10,000 pounds.

Skater – A person wearing in-line roller skates, roller or bladed skates or using a skateboard.

Sleeper Section of Cab (truck) – Section in back of truck cab where occupants can sleep.

Slope – The change in the elevation of an element of the roadway per unit of horizontal length may be expressed as a percent or a ratio.

Slush – Accumulated snow or ice that has partially melted.

Source of Information – Affiliation of the person completing the crash report.

Special Function of Motor Vehicle in Transport – The type of special function being served by this vehicle regardless of whether the function is marked on the vehicle, at the time of the crash. Buses are any motor vehicle with seats to transport nine (9) or more people, including the driver seat, but not including vans owned and operated for personal use.

Speeding-Related – Indication of whether the investigating officer suspects that the driver involved in the crash was speeding based on verbal or physical evidence and not on speculation alone.

Sport Utility Vehicle – A motor vehicle other than a motorcycle or bus consisting primarily of a transport device designed for carrying ten or fewer persons, and generally considered a multi-purpose vehicle that is designed to have off-road capabilities. These vehicles are generally four-wheel-drive (4x4) and have increased ground clearance. A utility vehicle has a gross vehicle weight rating (GVWR) of 10,000 pounds or less. Utility vehicles with wheelbases greater than 88 inches are classified by overall width. The wheelbase and overall width should be rounded to the nearest inch. Sizes range from mini, small, midsize, full-size and large. Four-wheel automobiles are not considered utility vehicles.

State-Specific Identifier – An identifier that uniquely identifies a given crash in a State for a specific year.

Stop Sign – An eight-sided red sign with "STOP" on it, requiring motor vehicles to come to a full stop and look for on-coming traffic before proceeding with caution.

Stopped in Traffic – Applies to a vehicle which is stopped on the trafficway in an area normally used for vehicle travel (i.e. outside a parking lane). It includes but is not limited to motor vehicles legally stopped for a stop sign or signal, motor vehicles stopped to turn PRIOR to initiating a turn, motor vehicles stopped in traffic due to a slowdown in traffic ahead, and motor vehicles illegally stopped in a traffic lane. A vehicle stopped in traffic may or may NOT have a driver and the vehicle engine may or may NOT be running. Most "double parked" vehicles are actually stopped in traffic rather than parked.

Stretcher Restraint System – The patient–restraining members and the attaching hardware provided by the stretcher manufacturer as original equipment.

NOTE: As opposed to a Stretcher Retention System – a system that provides means for securing a stretcher to the floor and/or side wall of a vehicle.

Strikes Object at Rest from MV in Transport – Used when a motor vehicle in-transport impacts a non-fixed object at rest that is known to have been the cargo or part of another motor vehicle in-transport. *Do not use this attribute for debris from a prior crash. This attribute does not include vehicle occupants that are ejected or fall from a motor vehicle in-transport.*

Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle – Motor vehicle or non-motorist is struck by cargo or other object that was set in motion by a motor vehicle. Examples include logs falling off or coming loose from a truck and striking a vehicle behind the truck, or a motor vehicle striking a parked car and pushes it into a passing pedestrian.

Superelevation – The degree to which the outside edge of a roadway is higher than the inside edge at a specified point on a curve; the change in elevation per unit distance across the roadway from inside to outside edge.

Suspected Minor Injury (B) – A minor injury is any injury that is evident at the scene of the crash, other than fatal or serious injuries. Examples include lump on the head, abrasions, bruises, minor lacerations (cuts on the skin surface with minimal bleeding and no exposure of deeper tissue/muscle).

Suspected Serious Injury (A) – A suspected serious injury is any injury other than fatal which results in one or more of the following:

- Severe laceration resulting in exposure of underlying tissues/muscle/organs or resulting in significant loss of blood
- Broken or distorted extremity (arm or leg)
- Crush injuries
- Suspected skull, chest or abdominal injury other than bruises or minor lacerations
- Significant burns (second and third degree burns over 10% or more of the body)
- Unconsciousness when taken from the crash scene
- Paralysis

Swerved or Avoided – Defensive driver action to defend against an apparent danger in, on, or due to the condition of the roadway or the presence of a motor vehicle or object or non-motorist in the roadway in order to avoid a crash.

T-Intersection – An intersection where two roadways connect in a perpendicular manner and one roadway does not continue across the other roadway. The roadways form a "T."

Talking on a Hand-Held Electronic Device – The driver was conversing on a hand-held electronic device such as a cell phone.

Talking on a Hands-Free Electronic Device – The driver was conversing using a hands-free electronic device such as a Bluetooth equipped headset/earpiece or vehicle-integrated system.

Termination Area – Located after the activity area but before traffic resumes normal conditions.

Through Lane – Sometimes referred to as a "thru" lane, this is a lane that routes traffic straight ahead away from the local or exit lanes. Includes dual-purpose lanes where you can go through or turn.

Through Roadway – A crash would have this code when it is in an Interchange area and it does NOT occur: 1) On an Entrance/Exit ramp, 2) In an Intersection or related to an intersection or other junction.

Thrown or Falling Object – A non-collision event where an Object is thrown or falls on or near a motor vehicle in transport at the time of the crash.

Too Fast for Conditions – Traveling at a speed that was unsafe for the road, weather, traffic or other environmental conditions at the time.

Total Lanes in Roadway – Total number of lanes in the roadway on which this MV was traveling. Through lanes also includes shared through/turn lanes but excludes, turn only lanes' auxiliary lanes, such as collector-distributor lanes, weaving lanes, frontage road lanes, parking lanes, acceleration/deceleration lanes, toll collection lanes and truck climbing lanes. Total lanes are collected in two parts as total through lanes and total auxiliary lanes.

Total Number of Axles – The number of axles in use at the time of the crash on each unit of a large truck or combination-unit vehicle. "Lift" or "tag" axles that are down should be included in this total.

Total Occupants in Motor Vehicle – The total number of injured and uninjured occupants in this motor vehicle involved in the crash, including persons in or on the motor vehicle at the time of the crash.

Total Volume of Entering Vehicles – Total entering vehicles for all approaches of an intersection.

Totally Ejected – Occupant's body completely thrown from the motor vehicle as a result of the crash.

Towed, But Not Due to Disabling Damage – The vehicle did not sustain disabling damage, but the vehicle had been removed from the scene of the crash by tow truck or other vehicle for other reasons (e.g., arrest).

Towed Due to Disabling Damage – Disabling damage implies damage to the motor vehicle that is sufficient to require the motor vehicle to be towed or carried from the scene. Towed Due to Disabling Damage identifies whether a vehicle involved in a crash is removed from the scene. Towing assistance without removal of the vehicle from the scene, such as pulling a vehicle out of a ditch, is not considered to be "towed" for the purposes of this element.

Traffic Barrier – A device that provides a physical limitation through which a motor vehicle would not normally pass and is designed to contain or redirect an errant motor vehicle.

Traffic Circle – An intersection of roads where motor vehicles must travel around a circle to continue on the same road or leave on any intersecting road.

Traffic Control Device Type – The type of traffic control device (TCD) applicable to this motor vehicle at the crash location.

Traffic Control Signal – Controls traffic movements by illuminating systematically, a green, yellow, or red light or by flashing a single color light.

Traffic Incident – An unplanned randomly occurring traffic event that adversely effects normal traffic operations. Examples include but not limited to traffic crashes, disabled vehicles and spilled cargo.

Traffic Sign Support – A pole, post or other type of support for a traffic sign.

Traffic Signal Support – A pole, post or other type of support for a traffic signal.

Traffic Unit – A traffic unit is a land vehicle or a non-motorist including motor vehicles in-transport, motor vehicles not in-transport, railway trains, pedestrians and pedalcyclists, and other non-motorists.

Trafficway – Any land way open to the public as a matter of right or custom for moving persons or property from one place to another.

Trafficway Description – Indication of whether or not the trafficway for this vehicle is divided and whether it serves one-way or two-way traffic and the type of lane this vehicle was using.

Subfield 1 identifies whether the trafficway associated with this vehicle serves one-way or two-way traffic. **Subfield 2** identifies whether or not the trafficway for this vehicle is divided. **Subfield 3** identifies the configuration of the HOV/HOT lane if this vehicle's involvement in the crash was related to its entry, use of, or exit from an HOV/HOT lane. **Subfield 4** identifies the type of lane this vehicle was using when involved in the crash.

Trafficway, Not on Road – Is used for motor vehicle traffic crashes where the unstabilized situation does not originate on the roadway or shoulder and no harmful events occur on the roadway or shoulder. Example 1: A motor vehicle is purposely driving entirely on the roadside (within the trafficway), runs off the roadside and crashes into a tree. Example 2: A motor vehicle is purposely driving entirely in the median and crashes into a traffic sign.

Trafficway, On Road – Is used for motor vehicle traffic crashes where the unstabilized situation originates on the roadway or shoulder or at least one harmful event occurs on the roadway or shoulder. Example 1: A motor vehicle driving on a roadway runs off the road and crashes into a tree. Example 2: A motor vehicle driving on a roadway crosses the centerline and crashes into another motor vehicle. Example 3: A motor vehicle backs out of a private driveway, into the trafficway, and crashes into another motor vehicle on the roadway.

Trailer License Plate Number – The alphanumeric identifier or other characters, exactly as displayed, on the registration plate or tag affixed to each trailer. For combination trucks, trailer plate numbers are obtained for a maximum of three trailers.

Trailer Make(s) – The distinctive (coded) name applied to a group of trailers by a manufacturer.

Trailer Model(s) – The manufacturer-assigned code denoting a family of trailers within a make that have a degree of similarity in construction, such as body, chassis, etc.

Trailer Model Year(s) – The year that is assigned to a trailer by the manufacturer.

Trailer VIN(s) – A unique combination of alphanumeric characters assigned to each trailer that is designed by the manufacturer.

Trailing Unit – Attached trailer of a motor vehicle or occupant of a motorcycle caboose.

Transit Bus – A bus sold for public transportation provided by, or on behalf of a State or local government, that is equipped with a stop-request system and that is not an over-the-road bus. An "Over-the-road bus" means a bus is characterized by an elevated passenger deck located over a baggage compartment.

Transit/Commuter [use] – A government entity or private company providing passenger transportation over fixed, scheduled routes, within primarily urban geographical areas. (For example, inner-city mass transit bus service.)

Transition Area – Where lanes are shifted or tapered for lane closure.

Transported to First Medical Facility By – Type and identity of unit providing transport to the first medical facility receiving the patient.

Travel Lane – Other Location – The non-motorist is in a travel lane of a roadway, but not within a crosswalk or intersection.

Tree (standing) – Tree is upright and in the ground. A standing tree is a fixed object as opposed to a fallen tree that is a moveable object.

Truck Tractor (Bobtail) – A motor vehicle consisting of a single motorized transport device designed primarily for pulling semi-trailers.

Truck Tractor/Double – A truck tractor that is pulling a single semi-trailer and one full trailer.

Truck Tractor/Semi-Trailer – A truck tractor that is pulling a semi-trailer.

Truck Tractor/Triple – A truck tractor that is pulling a single semi-trailer and two full trailers.

Truck/Trailer – A motor vehicle combination consisting of a single-unit truck and a trailer.

Turn Lane – Lane designated for vehicles turning from one trafficway to another. This can include regular left turn or continuous left turn lanes. This excludes through travel lanes.

Two-Way Continuous Left Turn Lane – Undivided center lane that facilitates left turns by traffic from both directions.

Type of Intersection – An intersection consists of two or more roadways that intersect at the same level. See "Figure 5: Overall Intersection Geometry Examples" (p. 26)for examples of overall intersection geometry.

Unit Number of Motor Vehicle Striking Non-Motorist – Number assigned to identify the motor vehicle that struck the non-motorist in the crash.

Unknown If DOT-Compliant Motorcycle Helmet – A helmet was worn by the motorcycle rider, but the investigating officer cannot determine if it is a DOT-compliant motorcycle helmet.

Unknown if Helmet Worn – The investigating officer cannot determine if the motorcycle rider was wearing a helmet of any kind.

Utility Pole/Light Support – Constructed for the primary function of supporting an electric line, telephone line or other electrical/electronic transmission line or cable. This includes the support poles for roadway lighting.

Utility Zone – Refer to Work Zone.

Van/Enclosed Box – A single-unit truck, truck/trailer, or tractor/semi-trailer having an enclosed body integral to the frame of the motor vehicle.

Vehicle Configuration – Indicates the general configuration of this motor vehicle.

Vehicle Damage – *Subfield 1* of this element is intended to collect the approximate contact point on this vehicle associated with this vehicle's initial harmful event. If the initial harmful event does not involve a collision, then code the attribute, Non -Collision (refer to glossary). If the initial harmful event for this vehicle involves striking another vehicle, person, or property (a collision event) by virtue of a load/cargo that falls from or is propelled by the vehicle, then code the attribute, Cargo Loss. If the vehicle is not at the scene for the officer to assess the initial point of contact, location of damaged area(s), or resulting extent of damage, then code the attribute, Vehicle Not at Scene, for all three Subfields.

Subfield 2 identifies all areas damaged on the vehicle as a result of this crash.

Subfield 3 identifies the extent to which the damage identified in Subfield 2 affects the vehicle's operability rather than the cost to repair.

Refer to "Appendix H: Clock-point Diagrams for Different Types of Motor Vehicles" (p. 203)for a larger version of the clock-point diagrams.

Vehicle Identification Number (VIN) – A unique combination of alphanumeric characters assigned to a specific motor vehicle that is designated by the manufacturer.

Vehicle Used for Electronic Ride-hailing (transportation network company) – A transportation network company (TNC) connects (sometimes known as Mobility Service Providers or MSPs), via websites and mobile apps, paying passengers with drivers who provide such passengers with transportation on the driver's non-commercial vehicle.

Violation Codes – The two most critical motor vehicle-related violations codes, if any, which apply to this driver. *States are encouraged to collect as many additional violation codes they deem appropriate and necessary.*

Visual Obstruction(s) – An object that blocked the driver's sight, contributing to the crash (such as a bush, tree, etc.).

Warning Sign – A sign intended to warn traffic of existing or potentially hazardous conditions on or adjacent to a road.

Weather Conditions – The prevailing atmospheric conditions that existed at the time of the crash.

Wheelchair Restraint System – An occupant restraint for which the anchor points for the pelvic-restraint, or both pelvic- and shoulder-restraints, are located on the wheelchair, or on tiedown components not fastened to the vehicle.

NOTE: As opposed to a Wheelchair Retention System – an assembly of hardware and fittings by which loads are transferred directly from the wheelchair tiedown to the vehicle.

Widths of Lane(s) and Shoulder(s) – Widths (in feet) of the lane(s) and of the shoulder(s) where crash occurred.

Width of Median – Width from travel lane edge to travel lane edge of the portion of divided highway separating the road for traffic in opposing directions where the crash occurred. If a crash occurs at a mid-block section, the median width is based on the mid-block section. If the crash occurs at an intersection, the median width is based on the median widths at the intersection.

Work Zone (construction/maintenance/utility) – A work zone is an area of a trafficway where construction, maintenance, or utility work activities are identified by warning signs/signals/indicators, including those on transport devices (e.g., signs, flashing lights, channelizing devices, barriers, pavement markings, flagmen, warning signs and arrow boards mounted on the vehicles in a mobile maintenance activity) that mark the beginning and end of a construction, maintenance or utility work activity. It extends from the first warning sign, signal or flashing lights to the END ROAD WORK sign or the last traffic control device pertinent for that work activity. Work zones also include roadway sections where there is ongoing, moving (mobile) work activity such as lane line painting or roadside mowing only if the beginning of the ongoing, moving (mobile) work activity is designated by warning signs or signals.

Working Vehicle/Equipment – A vehicle not intended for highway transport being used for Construction, maintenance or utility work related to the trafficway. The "work" may be located within open or closed portions of the trafficway, and the vehicle performing these activities can be within or outside the trafficway. Examples of working vehicles include: asphalt/steam roller paving or flattening a roadway, a highway maintenance crew painting lane lines on the road or mowing grass, a street sweeping vehicle, and a utility truck performing maintenance on power lines along the roadway.

Work Zone-Related (Construction/Maintenance/Utility) – A crash that occurs in or related to a construction, maintenance, or utility work zone, whether or not workers were actually present at the time of the crash. "Work zone-related" crashes may also include those involving motor vehicles slowed or stopped because of the work zone, even if the first harmful event occurred before the first warning sign. See Figure 6 for a diagram of the work zone area.

Work Zone Crash – A work zone crash is a traffic crash in which the first harmful event occurs within the boundaries of a work zone or on an approach to or exit from a work zone, resulting from an activity, behavior or control related to the movement of the traffic units through the work zone. Includes collision and non-collision crashes occurring within the signs or markings indicating a work zone or occurring on approach to, exiting from or adjacent to work zones that are related to the work zone. For example: 1) An automobile on the roadway loses control within a work zone due to a shift or reduction in the travel lanes and crashes into another vehicle in

the work zone; 2) A van in an open travel lane strikes a highway worker in the work zone; 3) A highway construction vehicle working on the edge of the roadway is struck by a motor vehicle in transport in a construction zone; 4) a rear-end collision crash occurs before the signs or markings indicating a work zone due to vehicles slowing or stopped on the roadway because of the work zone activity; 5) A pickup in transport loses control in an open travel lane within a work zone due to a shift or reduction in the travel lanes and crashes into another vehicle which exited the work zone; 6) A tractor-trailer approaching an intersection where the other roadway has a work zone strikes a pedestrian outside the work zone because of lack of visibility caused by the work zone equipment. Excludes single-vehicle crashes involving working vehicles not located in trafficway. For example: 1) A highway maintenance truck strikes a highway worker inside the work site; 2) A utility worker repairing the electrical lines over the trafficway falls from the bucket of a cherry picker.

Work Zone/Maintenance Equipment – A motor vehicle in the act of performing construction, maintenance, or utility work related to the trafficway. This "work" may be located within open or closed portions of the trafficway and motor vehicles performing these activities can be within or outside of the trafficway boundaries.

Worn, Travel-Polished Surface – A road surface that is well used, often very smooth or shiny in appearance.

Wrong-Way Riding or Walking – A non-motorist walking or riding in a direction other than required by statute.

Y-Intersection – An intersection where three roadways connect and none of the roadways continue across the other roadways. The roadways form a "Y."

Yield Sign – Three-sided signs that require motor vehicles to give way to other vehicles.

Appendix A: MMUCC 2016-2017 Expert Panel Members

Law Enforcement

Barry Bratt*, District 4 Commander, Colorado State Patrol and Chair, Colorado Traffic Records Coordinating Committee (TRCC)

Scott Carlson, Sergeant, Traffic Crash Reporting Unit, Michigan State Police

Daniel Gerard, University of Cincinnati Institute of Crime Science (Retired Captain, Cincinnati Police Department)

Major Mike McDonald, (Retired) Director of Information Technology/CJIS Systems Officer, Delaware State Police

Ron Replogle, Mothers Against Drunk Driving (Retired Colonel/Superintendent, Missouri State Highway Patrol)

Daniel Sharp, Chief of Police, Oro Valley (Arizona) Police Department

State DOT

Jon Nelson, Traffic Safety Engineer, Missouri Department of Transportation

Warren Stanley, Crash Data and Reporting Branch Manager, Washington Department of Transportation

Local Traffic Engineer

Dean Tekell, Dean Tekell Consulting LLC

Traffic Records Coordinators

Kelly Campbell, Research Analyst, Principal, Idaho Transportation Department

Kathleen Haney*, Traffic Records Coordinator, Office of Traffic Safety, Minnesota Department of Public Safety

Dr. Eric Jackson, Director, Connecticut Transportation Safety Research Center

Chris Osbourn, TITAN Program Director and Tennessee TRCC co-chair, Tennessee Department of Safety and Homeland Security

Research

Scott Henry, Manager of Safety Data Analysis, Ford Motor Company

JoAnn Wells*, Senior Research Scientist, Insurance Institute for Highway Safety (IIHS)

EMS

Steve McCoy, National Association of State EMS Officals

AAMVA

Brian Ursino, Director of Law Enforcement, American Association of Motor Vehicle Administrators (AAMVA)

USDOT

Paul Barron, NHTSA, Crash Investigations Division

Ivan Cheung, Ph.D., NTSB, Safety Studies Division

Ruth Esteban-Muir, NHTSA, Office of Safety Programs

Dennis Flemons*, NHTSA, State Data Reporting Systems Division

Jenny Guarino, FMCSA, Office of Analysis, Research and Technology

Tonja Lindsey*, NHTSA, Data Reporting and Information Division

Sarah Weissman Pascual, NHTSA, National Driver Register and Traffic Records Division

Carol H. Tan, Ph.D.*, FHWA, Office of Safety Research and Development

Philip J. Weiser, NHTSA, Safety Countermeasures Division

Keith Williams, NHTSA, Enforcement and Justice Services Division

US DOT Contractors

Bob Scopatz, Ph.D., Senior Transportation Analyst, VHB

John McDonough*, President, National Institute for Safety Research, Inc. (NISR)

Joan Vecchi, (Retired) Senior Director, State Motor Vehicle Division, Colorado Department of Revenue

**** Served on the 2012 panel***

Appendix B: Summary of Changes to the MMUCC Guideline, 4th Edition (2012)

Crash Level Data Elements				
Element		Changes		
2012	2017 Name	Definition	Attributes	Comments
C2	C2. Crash Classification	X	X	Subfield 3, *Secondary Crash?* was added.
C3	C3. Crash Date and Time	X	X	Subfield 2, *Time of Roadway Clearance* was added.
C7	C7. First Harmful Event		X	Split attribute, *Work Zone/Maintenance* into two attributes: 10 Construction Equipment (backhoe, bulldozer, etc.) 11 Farm Equipment (tractor, combine harvestor, etc.)
C10	C10. Source of Information		X	Subfield 2, *Law Enforcement Agency Identifier* was added.
C12	C12. Light Condition		X	Combined attributes, *Dawn* and *Dusk* into a single attribute, *Dawn/Dusk.*
C14 C15	C14. Contributing Circumstances – Roadway Environment	X	X	Combined MMUCC 4th Edition elements, "C14. Contributing Circumstances, Environment" and "C15. Contributing Circumstances, Road" into single element. Added attributes: *05 Obstructed Crosswalks* *10 Related to a Bus-Stop* *16 Traffic Incident* Deleted the phrase, "Backup Due to" from attributes *07 (Prior Crash), 08 (Prior Non-Recurring Incident)* and *09 (Regular Congestion).*
C16	C15. Relation to Junction		X	Combined 6 related attributes into 3: *03 Driveway Access or Related* *04 Entrance/Exit Ramp or Related* *05 Intersection or Related*
C17	C16. Type of Intersection		X	Revised Element into 3 subfields: Subfield 1, *Number of Approaches*; Subfield 2, *Overall Intersection Geometry*; and Subfield 3, *Overall Traffic Control Device.*
C19	C18. Work Zone-Related (Construction/ Maintenance/Utility)		X	Revised attributes for Subfield 5, *Law Enforcement Present.*
CD1	C19. Crash Severity 🔗			Derived element in MMUCC 4th Edition

Crash Level Data Elements

Element		Changes		
2012	2017 Name	Definition	Attributes	Comments
CD2	C20. Number of Motor Vehicles Involved			Derived element in MMUCC 4th Edition
CD3	C21. Number of Motorists	X		Derived element in MMUCC 4th Edition. Definition of "Motorist" modified to include occupants of all motor vehicles involved in the crash including those in vehicles not in transport
CD4	C22. Number of Non-Motorists			Derived element in MMUCC 4th Edition
CD5	C23. Number of Non-Fatally Injured Persons			Derived element in MMUCC 4th Edition
CD6	C24. Number of Fatalities			Derived element in MMUCC 4th Edition
CD7	C25. Alcohol Involvement			Derived element in MMUCC 4th Edition
CD8	C26. Drug Involvement			Derived element in MMUCC 4th Edition
CD9	C27. Day of Week			Derived element in MMUCC 4th Edition

Vehicle Level Data Elements

Element		Changes		
2012	2017 Name	Definition	Attributes	Comments
V1	V1. Vehicle Identification Number (VIN)			Name change: deleted "Motor".
V2	V2. Motor Vehicle Unit Type and Number		X	Revised into 2 subfields: Subfield 1, *Identifier* and Subfield 2, *MV Registration.*
V5	V5. Motor Vehicle Make	X		Reworded definition.
V8	V8. Motor Vehicle Body Type Category		X	Element revised into 4 subfields that separate Body Type from Size of Vehicle and added subfields for Trailing Units and Hazardous Materials Placarding as follows: Subfield 1, *Body Type Category* Subfield 2, *Number of Trailing Units* Subfield 3, *Vehicle Size* Subfield 4, *Did this motor vehicle display a hazardous materials (HM) placard?*
V10 V22	V10. Special Function of Motor Vehicle in Transport	X	X	Combines MMUCC 4th Edition Elements "V10. Special Function of Motor Vehicle in Transport" and "V22. Bus Use". Revised and added attributes.

Vehicle Level Data Elements				
Element		Changes		
2012	2017 Name	Definition	Attributes	Comments
V14	V14. Trafficway Description		X	Revised into 5 subfields to specify whether or not the trafficway is divided, whether it serves one-way or two-way traffic, the type of lane it is, whether there was a barrier, if HOV/HOT lanes are present and whether they were related to the crash: New subfields include: Subfield 1, *Travel Directions* Subfield 2, *Divided?* Subfield 3, *Barrier Type* Subfield 4, *HOV/HOT Lanes* Subfield 5, *Crash Related to HV/HOT Lane?*
V15	V15. Total Lanes in Roadway	X		Corrected the definition to bring MMUCC in line with the FARS definition. Specifically, the inclusion of auxiliary lanes was different in the MMUCC 4th Edition.
V17	V17. Traffic Control Device Type		X	Reordered and added additional attributes. Increased the number of selections to 4 devices.
V19	V19. Vehicle Damage	X	X	Subfield 1 definition was amended to include additional information on how to code for cargo loss or if the vehicle is not at the scene. Subfield 2, *Damaged Areas* now permits coding of 13 damaged areas on the vehicle. (One less than selecting the attribute, *All areas*)
V20	V20. Sequence of Events	X	X	Definition revised to bring in line with FARS, including the inclusion and labeling of *Non-Harmful Events.* Additionally, the attribute clusters were also reorganized to bring in line with FARS labels, including *Non-Harmful Events.* Attribute *27 (Strikes Object at Rest from MV in Transport)* was added to *Collision with Person, Motor Vehicle, or Non-Fixed Object*.
V21	V21. Most Harmful Event for this Motor Vehicle		X	Attribute *17 (Strikes Object at Rest from MV in Transport)* was added to *Collision With Person, Motor Vehicle, or Non-Fixed Object*.
V25	V24. Contributing Circumstances, Motor Vehicle			Number of Selections changed from 2 to 1

Person Level Data Elements				
Element		Changes		
2012	2017 Name	Definition	Attributes	Comments
P4	P4. Person Type		X	The definition of Motorist and Non-Motorist were changed. Non-Motorist no longer includes "Occupant of MV Not in Trnasport"; that has been shifted to Motorist. Subfield 2, *Incident Responder?* was added.
P8	P8. Restraint Systems/Motorcycle Helmet Use		X	Added attributes *Stretcher* and *Wheelchair*. Element revised into 2 subfields: Subfield 1, *Restraint Systems* Subfield 2, *Any Indication of Improper Use?*
P9	P9. Air Bag Deployed			Revised element to permit selecting up to 4 types of airbags and revised attributes.
P11	Level 3: All Drivers		X	Attributes revised into 2 subfields to collect actual State names: Subfield 2, *Name of Jurisdiction*
PL1	P16. Driver License Restrictions 🔗		X	Linked Element in MMUCC 4th Edition. Attribute *01 (Alcohol Interlock Device)* added to Subfield 1, *Driver Restrictions.* Subfield 2, *Alcohol Interlock Present?* Added.
P16.	P18. Distracted By		X	The element was moved from Level 3 (All Drivers) to Level 4 (All Drivers and Non-Motorists), to enable collection of distraction information on involved non-motorists. The element structure was revised to include two subfields: Subfield 1, *Action* and Subfield 2, *Source*.
P17	P19. Condition at Time of the Crash	X		Change in definition from "motorist or non-motorist " to "driver or non-motorist". Definition of attribute *01 (Asleep or Fatigued)* changed to include "…*was drowsy or asleep".*
P21, PL3	P23. Drug Test		X	MMUCC 4th Edition Linked element "PL3. Drug Test Result" becomes Subfield 4, *Drug Test Result* of MMUCC 5th Edition element "P23. Drug Test".
PL4	P25. Injury Area 🔗	X		Linked Element in MMUCC 4th Edition. The element definition was updated.

Roadway Data Elements

Element		Changes		
2012	2017 Name	Definition	Attributes	Comments
RL5	R5. Roadway Functional Class		X	Attributes were modified to come in line with roadway functional classes listed in MIRE.
RL14	(deleted)			MMUCC 4th Edition element, "RL14. Traffic Control Type at Intersection" was deleted.

Fatal Section Data Elements

Element		Changes		
2012	2017 Name	Definition	Attributes	Comments
	Level 3: All Drivers			New Element in MMUCC 5th Edition
	F2. Alcohol Test Type and Results			New Element in MMUCC 5th Edition
	F3. Drug Test Type and Results			New Element in MMUCC 5th Edition

Large Vehicle and Hazardous Materials Section Data Elements

Element		Changes		
2012	2017 Name	Definition	Attributes	Comments
	LV1. CMV License Status and Compliance with CDL Endorsements			New Element in MMUCC 5th Edition
	LV2. Trailer License Plate Number			New Element in MMUCC 5th Edition
	LV3. Trailer VIN(s)			New Element in MMUCC 5th Edition
	LV4. Trailer Make(s)			New Element in MMUCC 5th Edition
	LV5. Trailer Model(s)			New Element in MMUCC 5th Edition
	LV6. Trailer Model Year(s)			New Element in MMUCC 5th Edition
V28	LV8. Vehicle Configuration	X	X	Two subfields were added: Subfield 2, *Special Sizing,* and Subfield 3, *Permitted?*.
V30	LV10. Hazardous Materials (Cargo Only)			Definition revised to reflect updated set of subfields. Subfield 1, *Did this motor vehicle display a hazardous materials (HM) placard?,* was moved to 5th Edition element V8, Subfield 4.
	LV11. Total Number of Axles			New Element in MMUCC 5th Edition

Non-Motorist Section Data Elements

Element		Changes		
2012	2017 Name	Definition	Attributes	Comments
P23	NM2. Non-Motorist Action/Circumstance Prior to Crash		X	Subfield 2 changed list of attributes.
P25	NM4. Non-Motorist Location at Time of Crash		X	Attributes relating to bicycle facilities updated to better reflect FHWA guidance on bicycle facilities.
P26	NM5. Non-Motorist Safety Equipment		X	Attributes revised.
	NM6. Initial Contact Point on Non-Motorist			New Element in MMUCC 5th Edition

Dynamic Data Elements

Element		Changes		
2012	2017 Name	Definition	Attributes	Comments
	DV1. Motor Vehicle Automated Driving System(s)			New Element in MMUCC 5th Edition

Appendix C: MMUCC Crash Report

MMUCC CRASH REPORT

CRASH DATA ELEMENTS

C1. Crash Identifier

C2. Crash Classification

S1 Ownership
01 Public Property
02 Private Property

S3 Secondary Crash?
01 No
02 Yes

S2 Characteristics
01 Trafficway, On Road
02 Trafficway, Not on Road
03 Non-Trafficway

C3. Crash Date and Time

S1 Crash Date and Time *(YYYYMMDDHHMM)*

S2 Time of Roadway Clearance *(HHMM)*

C4. Crash County

C5. Crash City/Place *(Political Jurisdiction)*

C6. Crash Location

Latitude *(degrees.minutes.seconds + compass direction)*

Longitude *(degrees.minutes.seconds + compass direction)*

C7. First Harmful Event

Non-Collision Harmful Events
01 Cargo/Equipment Loss or Shift
02 Fell/Jumped From Motor Vehicle
03 Fire/Explosion
04 Immersion, Full or Partial
05 Jackknife
06 Other Non-Collision
07 Overturn/Rollover
08 Thrown or Falling Object

Collision With Person, Motor Vehicle, or Non-Fixed Object
09 Animal *(live)*
10 Construction Equipment *(backhoe, bulldozer, etc.)*
11 Farm Equipment *(tractor, combine harvester, etc.)*
12 Motor Vehicle in Transport
13 Other Non-Fixed Object
14 Other Non-motorist
15 Parked Motor Vehicle
16 Pedalcycle
17 Pedestrian
18 Railway Vehicle *(train, engine)*
19 Strikes Object at Rest from MV in Transport
20 Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle

Collision With Fixed Object
21 Bridge Overhead Structure
22 Bridge Pier or Support
23 Bridge Rail
24 Cable Barrier
25 Concrete Traffic Barrier
26 Culvert
27 Curb
28 Ditch
29 Embankment
30 Fence
31 Guardrail End Terminal
32 Guardrail Face
33 Impact Attenuator/Crash Cushion
34 Mailbox
35 Other Fixed Object *(wall, building, tunnel, etc.)*
36 Other Post, Pole, or Support
37 Other Traffic Barrier
38 Traffic Sign Support
39 Traffic Signal Support
40 Tree *(standing)*
41 Utility Pole/Light Support

99 Unknown

C8. Location of First Harmful Event Relative to the Trafficway
01 Gore
02 In Parking Lane or Zone
03 Median
04 Off-Roadway, Location Unknown
05 On Roadway
06 On Shoulder, Left Side
07 On Shoulder, Right Side
08 Outside Road/Right-of-Way
09 Roadside
10 Separator/Traffic Island

99 Unknown

C9. Manner of Crash/ Collision Impact
00 Not a Collision Between Two Motor Vehicles

01 Angle
02 Front to Front
03 Front to Rear
04 Rear to Rear
05 Rear to Side
06 Sideswipe, Opposite Direction
07 Sideswipe, Same Direction

98 Other
99 Unknown

C10. Source of Information

S1 Source of Information
01 Law Enforcement Agency
02 Civilian

S2 Law Enforcement Agency Identifier
9 characters NCIC Originating Agency Identifier (OAI)

999999997 Not Applicable

C11. Weather Conditions *(choose up to 2)*
01 Blowing Sand, Soil, Dirt
02 Blowing Snow
03 Clear
04 Cloudy
05 Fog, Smog, Smoke
06 Freezing Rain or Freezing Drizzle
07 Rain
08 Severe Crosswinds
09 Sleet or Hail
10 Snow

98 Other
99 Unknown

C12. Light Condition
01 Daylight
02 Dawn/Dusk
03 Dark – Lighted
04 Dark – Not Lighted
05 Dark – Unknown Lighting

98 Other
99 Unknown

C13. Roadway Surface Condition
01 Dry
02 Ice/Frost
03 Mud, Dirt, Gravel
04 Oil
05 Sand
06 Slush
07 Snow
08 Water *(standing, moving)*
09 Wet

98 Other
99 Unknown

C14. Contributing Circumstances – Roadway Environment *(choose up to 2)*
00 None

01 Animal(s)
02 Debris
03 Glare
04 Non-Highway Work
05 Obstructed Crosswalks
06 Obstruction in Roadway
07 Prior Crash
08 Prior Non-Recurring Incident
09 Regular Congestion
10 Related to a Bus Stop
11 Road Surface Condition *(wet, icy, snow, slush, etc.)*
12 Ruts, Holes, Bumps
13 Shoulders *(none, low, soft, high)*
14 Toll Booth/Plaza Related
15 Traffic Control Device
16 Traffic Incident
17 Visual Obstruction(s)
18 Weather Conditions
19 Work Zone *(construction/ maintenance/utility)*
20 Worn, Travel-polished Surface

98 Other
99 Unknown

C15. Relation to Junction

S1 Within Interchange Area?
01 No
02 Yes

99 Unknown

S2 Specific Location
00 Not an Interchange Area

01 Acceleration/Deceleration Lane
02 Crossover-Related
03 Driveway Access or Related
04 Entrance/Exit Ramp or Related
05 Intersection or Related
06 Non-Junction
07 Railway Grade Crossing
08 Shared-Use Path or Trail
09 Through Roadway

10 Other Location Not Listed Above Within an Interchange Area *(median, shoulder and roadside)*

99 Unknown

C16. Type of Intersection

S1 Number of Approaches
00 Not an Intersection
02 (2) Two
03 (3) Three
04 (4) Four
05 (5+) Five or more

S2 Overall Intersection Geometry
00 Angled/Skewed
02 Roundabout/Traffic Circle
03 Perpendicular

97 Not Applicable/Not an Intersection

S3 Overall Traffic Control Device
01 Signalized
02 Stop – All Way
03 Stop – Partial
04 Yield
05 No Controls

97 Not Applicable/Not an Intersection

C17. School Bus-Related
01 No
02 Yes, School Bus Directly Involved
03 Yes, School Bus Indirectly Involved

Linked or Derived S# Subfield Number

1

MMUCC CRASH REPORT

CRASH DATA ELEMENTS (Cont.)

C18. Work Zone-Related (Construction/Maintenance/Utility)

S1 Was the crash in a construction, maintenance, or utility work zone or was it related to activity within a work zone?

01 No
02 Yes

99 Unknown

S2 Location of the Crash

01 Before the First Work Zone Warning Sign
02 Advance Warning Area
03 Transition Area
04 Activity Area
05 Termination Area

98 Not Applicable/Not Within or Related to a Work Zone

S3 Type of Work Zone

01 Lane Closure
02 Lane Shift/ Crossover
03 Work on Shoulder or Median
04 Intermittent or Moving Work
05 Other Type of Work Zone

98 Not Applicable/Not Within or Related to a Work Zone

S4 Workers Present

01 No
02 Yes

98 Not Applicable/Not Within or Related to a Work Zone
99 Unknown

S5 Law Enforcement Present

01 No
02 Yes

98 Not Applicable/Not Within or Related to a Work Zone

C19. Crash Severity

01 **(K)** Fatal Injury**
02 **(A)** Suspected Serious Injury
03 **(B)** Suspected Minor Injury
04 **(C)** Possible Injury
05 **(O)** Property Damage-Only

99 Unknown

**If attribute is selected the Fatal Crash Section must be completed.

C20. Number of Motor Vehicles Involved

C21. Number of Motorists

C22. Number of Non-Motorists

C23. Number of Non-Fatally Injured Persons

C24. Number of Fatalities

C25. Alcohol Involvement

01 No
02 Yes

99 Unknown

C26. Drug Involvement

01 No
02 Yes

99 Unknown

C27. Day of Week

01 Sunday
02 Monday
03 Tuesday
04 Wednesday
05 Thursday
06 Friday
07 Saturday

CRASH DESCRIPTION:

CRASH DIAGRAM:

Linked or Derived S# Subfield Number

2

MMUCC CRASH REPORT

VEHICLE DATA ELEMENTS

V1. Vehicle Identification Number *(VIN)*

V2. Motor Vehicle Unit Type and Number

S1 Type
01 Motor Vehicle in Transport
02 Parked Motor Vehicle
03 Working Vehicle/Equipment

S2 Number

V3. Motor Vehicle Registration State and Year

S1 Identifier
00 No Driver Present

Appendix E State Identifier
Appendix F *State, foreign country, U.S. government, Indian Nation, etc.)*

99 Unknown

S2 Motor Vehicle Registration

Year of Motor Vehicle Registration *(YYYY)*

V4. Motor Vehicle License Plate Number

V5. Motor Vehicle Make

V6. Motor Vehicle Model Year *(YYYY)*

V7. Motor Vehicle Model

V8. Motor Vehicle Body Type Category

S1 Body Type Category
01 All-Terrain Vehicle/ All-Terrain Cycle *(ATV/ATC)*
02 Golf Cart
03 Snowmobile
04 Low Speed Vehicle
05 Moped or motorized bicycle
06 Recreational Off-Highway Vehicles *(ROV)*
07 2-Wheeled Motorcycle
08 3-Wheeled Motorcycle
09 Autocycle

10 Passenger Car
11 Passenger Van *(< 9 seats)*
12 (Sport) Utility Vehicle
13 Pickup
14 Cargo Van**
15 Construction Equipment *(backhoe, bulldozer, etc.)*
16 Farm Equipment *(tractor, combine harvester, etc.)*

17 Single-Unit Truck**
18 Truck Tractor**

19 Motor Home
20 9- or 12-Passenger Van**
21 15-Passenger Van**
22 Large Limo**
23 Mini-bus**
24 School Bus**
25 Transit Bus**
26 Motorcoach**

27 Other Bus Type**
28 Other Trucks

98 Other

S2 Number of Trailing Units
01-03 Number of trailers

97 Not Applicable *(vehicle with no trailing units)*

S3 Vehicle Size
Note: GVWR is used for single-unit trucks and other body types. GCWR is used for combination trucks or any vehicle with a trailing unit
01 Light *(Less than 10,000 lbs. GVWR/GCWR)*
02 Medium *(10,001 – 26,000 lbs. GVWR/GCWR)***
03 Heavy *(Greater than 26,000 lbs. GVWR/GCWR)***

S4 Did this motor vehicle display a hazardous materials (HM) placard?
01 No
02 Yes**

**If attribute is selected from Subfield 1, 3 or 4, the Large Vehicle/Hazardous Materials Section must be completed.

V9. Total Occupants in Motor Vehicle

V10. Special Function of Motor Vehicle in Transport

00 No Special Function

01 Bus – School *(Public or Private)*
02 Bus – Childcare/Daycare
03 Bus – Transit/Commuter
04 Bus – Charter/Tour
05 Bus – Intercity
06 Bus – Shuttle
07 Bus – Other

08 Farm Vehicle
09 Fire Truck
10 Highway/Maintenance
11 Mail Carrier
12 Military

13 Ambulance
14 Police
15 Public Utility
16 Non-Transport Emergency Services Vehicle
17 Safety Service Patrols – Incident Response
18 Other Incident Response

19 Rental Truck *(Over 10,000 lbs.)*
20 Towing – Incident Response
21 Truck Acting as Crash Attenuator

22 Taxi
23 Vehicle Used for Electronic Ride-hailing *(transportation network company)*

98 Other
99 Unknown

V11. Emergency Motor Vehicle Use

01 Non-Emergency, Non-Transport
02 Non-Emergency Transport
03 Emergency Operation, Emergency Warning Equipment Not in Use
04 Emergency Operation, Emergency Warning Equipment in Use

97 Not Applicable
99 Unknown

V12. Motor Vehicle Posted/ Statutory Speed Limit

xx *Posted/Statutory Value (miles per hour)*

97 Not Applicable
99 Unknown

V13. Direction of Travel Before Crash

00 Not on Roadway

01 Northbound
03 Eastbound
06 Southbound
09 Westbound

99 Unknown

V14. Trafficway Description

S1 Travel Directions
01 One-Way
02 Two-Way

S2 Divided?
00 Not Divided

01 Not Divided, With a Continuous Left-Turn Lane
02 Divided, Flush Median *(greater than 4ft wide)*
03 Divided, Raised Median *(curbed)*
04 Divided, Depressed Median

99 Unknown

S3 Barrier Type
00 No Barrier

01 Cable Barrier
02 Concrete Barrier *(e.g. Jersey Barrier)*
03 Earth Embankment
04 Guardrail

98 Other

S4 HOV/HOT Lanes
00 None present

01 Separated, Barrier, Flush *(greater than 4ft wide)*, Raised or Depressed Median
02 Not Separated, Painted Pavement Markings, Post-Mounted Delineators

S5 Crash Related to HOV/HOT Lane?
01 No
02 Yes

Linked or Derived S# Subfield Number

MMUCC CRASH REPORT

VEHICLE DATA ELEMENTS (Cont.)

V15. Total Lanes in Roadway

Undivided Trafficways
(specify 2 values)
xx Enter the total through lanes in both directions, excluding auxiliary lanes
yy Enter the total through lanes in both directions, excluding auxiliary lanes

97 Not Applicable

Divided Trafficways
(specify 2 values)
xx Enter the total through lanes in the vehicle's direction, excluding auxiliary lanes
yy Enter the total auxiliary lanes in the vehicle's direction

97 Not Applicable

V16. Roadway Alignment and Grade

S1 Horizontal Alignment
01 Straight
02 Curve Left
03 Curve Right

S2 Grade
01 Level
02 Uphill
03 Hillcrest
04 Downhill
05 Sag *(bottom)*

V17. Traffic Control Device Type

S1 TCD Type(s)
(choose up to 4)
00 No Controls
01 Person *(including flagger, law enforcement, crossing guard, etc.)*

Signs
02 Bicycle Crossing Sign
03 "Curve Ahead" Warning Sign
04 "Intersection Ahead" Warning Sign
05 Other Warning Sign
06 Pedestrian Crossing Sign
07 Railroad Crossing Sign
08 "Reduce Speed Ahead" Warning Sign
09 School Zone Sign
10 Stop Sign
11 Yield Sign

Signals
12 Flashing Railroad Crossing Signal *(may include gates)*
13 Flashing School Zone Signal
14 Flashing Traffic Control Signal
15 Lane Use Control Signal
16 Other Signal
17 Ramp Meter Signal
18 Traffic Control Signal

Pavement Markings
19 Bicycle Crossing
20 Other Pavement Marking *(excluding edgelines, centerlines, or lane lines)*
21 Pedestrian Crossing
22 Railroad Crossing
23 School Zone

98 Other
99 Unknown

S2 Are any Inoperative or Missing? *(choose up to 4)*
00 None inoperative or missing

01–99 *See attributes from Subfield 1*

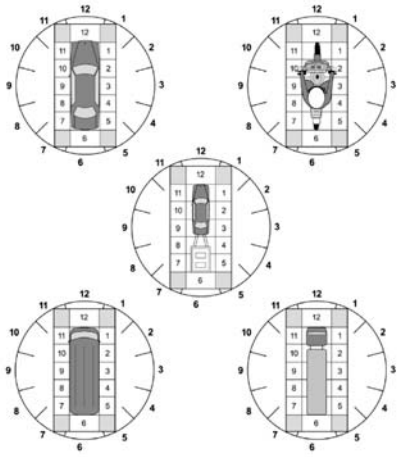
V18. Motor Vehicle Maneuver/Action

01 Backing
02 Changing Lanes
03 Entering Traffic Lane
04 Leaving Traffic Lane
05 Making U-Turn
06 Movements Essentially Straight Ahead
07 Negotiating a Curve
08 Overtaking/Passing
09 Parked
10 Slowing
11 Stopped in Traffic
12 Turning Left
13 Turning Right

98 Other
99 Unknown

V19. Vehicle Damage

S1 Initial Point of Contact
00 Non-Collision
01
02
03
04
05
06
07
08
09
10
11
12



13 Top
14 Undercarriage
15 Cargo Loss

16 Vehicle Not at Scene

99 Unknown

S2 Location of Damaged Area(s)
(choose up to 13)
00 No Damage

01–12 12-Point Clock Diagram *(See clock diagrams from Subfield 1)*

13 Top
14 Undercarriage

15 All areas

16 Vehicle Not at Scene

S3 Resulting Extent of Damage
00 No Damage

01 Minor Damage
02 Functional Damage
03 Disabling Damage

04 Vehicle Not at Scene

Linked or Derived S# Subfield Number

4

MMUCC CRASH REPORT

VEHICLE DATA ELEMENTS (Cont.)

V20. Sequence of Events *(choose up to 4)*

Non-Harmful Events
01 Cross Centerline
02 Cross Median
03 End Departure *(T-intersection, dead-end, etc.)*
04 Downhill Runaway
05 Equipment Failure *(blown tire, brake failure, etc.)*
06 Ran Off Roadway Left
07 Ran Off Roadway Right
08 Reentering Roadway
09 Separation of Units
10 Other Non-Harmful Event

Non-Collision Harmful Events
11 Cargo/Equipment Loss or Shift
12 Fell/Jumped From Motor Vehicle
13 Fire/Explosion
14 Immersion, Full or Partial
15 Jackknife
16 Other Non-Collision Harmful Event
17 Overturn/Rollover
18 Thrown or Falling Object

Collision With Person, Motor Vehicle, or Non-Fixed Object
19 Animal *(live)*
20 Motor Vehicle in Transport
21 Other Non-Fixed Object
22 Other Non-Motorist
23 Parked Motor Vehicle
24 Pedalcycle
25 Pedestrian
26 Railway Vehicle *(train, engine)*
27 Strikes Object at Rest from MV in Transport
28 Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle
29 Work Zone/Maintenance Equipment

Collision With Fixed Object
30 Bridge Overhead Structure
31 Bridge Pier or Support
32 Bridge Rail
33 Cable Barrier
34 Concrete Traffic Barrier
35 Culvert
36 Curb
37 Ditch
38 Embankment
39 Fence
40 Guardrail End Terminal
41 Guardrail Face
42 Impact Attenuator/Crash Cushion
43 Mailbox
44 Other Fixed Object *(wall, building, tunnel, etc.)*
45 Other Post, Pole, or Support
46 Other Traffic Barrier
47 Traffic Sign Support
48 Traffic Signal Support
49 Tree *(standing)*
50 Utility Pole/Light Support
51 Unknown Fixed Object

V21. Most Harmful Event for this Motor Vehicle

Non-Collision Harmful Events
01 Cargo/Equipment Loss or Shift
02 Fell/Jumped From Motor Vehicle
03 Fire/Explosion
04 Immersion, Full or Partial
05 Jackknife
06 Other Non-Collision Harmful Event
07 Overturn/Rollover
08 Thrown or Falling Object

Collision With Person, Motor Vehicle, or Non-Fixed Object
09 Animal *(live)*
10 Motor Vehicle in Transport
11 Other Non-Fixed Object
12 Other Non-Motorist
13 Parked Motor Vehicle
14 Pedalcycle
15 Pedestrian
16 Railway Vehicle *(train, engine)*
17 Strikes Object at Rest from MV in Transport
18 Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle
19 Work Zone/Maintenance Equipment

Collision With Fixed Object
20 Bridge Overhead Structure
21 Bridge Pier or Support
22 Bridge Rail
23 Cable Barrier
24 Concrete Traffic Barrier
25 Culvert
26 Curb
27 Ditch
28 Embankment
29 Fence
30 Guardrail End Terminal
31 Guardrail Face
32 Impact Attenuator/Crash Cushion
33 Mailbox
34 Other Fixed Object *(wall, building, tunnel, etc.)*
35 Other Post, Pole, or Support
36 Other Traffic Barrier
37 Traffic Sign Support
38 Traffic Signal Support
39 Tree *(standing)*
40 Utility Pole/Light Support
41 Unknown Collision With Fixed Object

V22. Hit and Run
01 No, Did Not Leave Scene
02 Yes, Driver or Car and Driver Left Scene

V23. Towed Due to Disabling Damage
00 Not towed
01 Towed, But Not Due to Disabling Damage
02 Towed Due to Disabling Damage

V24. Contributing Circumstances, Motor Vehicle
00 None
01 Brakes
02 Exhaust System
03 Body, Doors
04 Steering
05 Power Train
06 Suspension
07 Tires
08 Wheels
09 Lights *(head, signal, tail)*
10 Windows/Windshield
11 Mirrors
12 Wipers
13 Truck Coupling/Trailer Hitch/ Safety Chains
98 Other
99 Unknown

Linked or Derived S# Subfield Number

MMUCC CRASH REPORT

PERSON DATA ELEMENTS

Level 1: All Persons Involved

P1. Name of Person Involved

P2. Date of Birth

Date of Birth *(YYYY/MM/DD)*

Age

☐ Unknown

P3. Sex

01 Female
02 Male

99 Unknown

P5. Injury Status

01 **(K)** Fatal Injury**
02 **(A)** Suspected Serious Injury
03 **(B)** Suspected Minor Injury
04 **(C)** Possible Injury
05 **(O)** No Apparent Injury

**If attribute is selected, the Fatal Crash Section must be completed

P4. Person Type

S1 Person Type

Motorist
01 Driver
02 Passenger
03 Occupant of MV Not in Transport

Non-Motorist
04 Bicyclist**
05 Other Cyclist**
06 Pedestrian**
07 Other Pedestrian *(wheelchair, person in a building, skater, personal conveyance, etc.)***
08 Occupant of a Non-Motor Vehicle Transportation Device**
09 Unknown Type of Non-Motorist**

99 Unknown

**If attribute is selected, the Non-Motorist Crash Section must be completed.

S2 Incident Responder?
01 No

Yes, Type of Incident Responder
01 EMS
02 Fire
03 Police
04 Tow Operator
05 Transportation *(i.e. maintenance workers, safety service patrol operators, etc.)*

98 Other
99 Unknown

Level 2: All Occupants

P6. Occupant's Motor Vehicle Unit Number

Number to indicate in which motor vehicle the occupant was located

P7. Seating Position *(choose up to 2)*

Row
01 Front
02 Second
03 Third
04 Fourth
05 Other Row *(bus, 15 passenger van, etc.)*
06 Unknown Row

Seat
07 Left *(usually the motor vehicle or motorcycle driver except for postal vehicles and some foreign vehicles)*
08 Middle
09 Right
10 Unknown Seat

Other Location
11 Other Enclosed Cargo Area
12 Riding on Motor Vehicle Exterior *(non-trailing unit)*
13 Sleeper Section of Cab *(truck)*
14 Trailing Unit
15 Unenclosed Cargo Area

98 Not Applicable
99 Unknown

P8. Restraint Systems/ Motorcycle Helmet Use

Restraint Systems
01 Booster Seat
02 Child Restraint System – Forward Facing
03 Child Restraint System – Rear Facing
04 Child Restraint – Type Unknown
05 Lap Belt Only Used
06 None Used – Motor Vehicle Occupant
07 Restraint Used – Type Unknown
08 Shoulder and Lap Belt Used
09 Shoulder Belt Only Used
10 Stretcher
11 Wheelchair

Motorcycle Helmet Use
12 DOT-Compliant Motorcycle Helmet
13 Not DOT-Compliant Motorcycle Helmet
14 Unknown If DOT-Compliant Motorcycle Helmet
15 No Helmet

97 Not Applicable
98 Other
99 Unknown

S2 Any Indication of Improper Use?
01 No
02 Yes

P9. Air Bag Deployed *(choose up to 4)*

00 Not Deployed

Deployment
01 Curtain
02 Front
03 Side
04 Other *(knee, air belt, etc.)*
05 Deployment Unknown

97 Not Applicable

P10. Ejection

00 Not Ejected
01 Ejected, Partially
02 Ejected, Totally

97 Not Applicable
99 Unknown

Linked or Derived S# Subfield Number

6

MMUCC CRASH REPORT

PERSON DATA ELEMENTS

Level 3: All Drivers

P11. Driver License Jurisdiction

S1 **Type**
00 Not Licensed

01 Canada
02 Indian Nation
03 International License *(other than Mexico or Canada)*
04 Mexico
05 State
06 U.S. Government

97 Not Applicable
99 Unknown

S2 **Name of Jurisdiction (ANSI Code)**

Provide the specific State, Province or Nation indicated on the Driver's License *(see Appendix E: ANSI State FIPS and USPS Codes or Appendix F: ISO 3166-2 Codes for Canada and Mexico)*

P12. Driver License Number, Class, CDL and Endorsements

S1 **License Number**

S2 Class
00 None

01 Class A
02 Class B
03 Class C
04 Class M
05 Regular Driver License Class

97 Not Applicable

S3 **Commercial Driver License (CDL)**
01 No
02 Yes

S4 **Endorsements**
00 None/Not Applicable

01 H - Hazardous Materials
02 N - Tank Vehicle
03 P - Passenger
04 S - School
05 T - Double/Triple Trailers
06 X - Combination of Tank Vehicle and Hazardous Materials
07 Other non-commercial license endorsements *(e.g., motorcycle, etc.)*

P13. Speeding-Related

01 No
02 Exceeded Speed Limit
03 Racing
04 Too Fast for Conditions

99 Unknown

P14. Driver Actions at Time of Crash *(choose up to 4)*

00 No Contributing Action

01 Disregarded Other Road Markings
02 Disregarded Other Traffic Sign
03 Failed to Keep in Proper Lane
04 Failed to Yield Right-of-Way
05 Followed Too Closely
06 Improper Backing
07 Improper Passing
08 Improper Turn
09 Operated Motor Vehicle in Inattentive, Careless, Negligent, or Erratic Manner
10 Operated Motor Vehicle in Reckless or Aggressive Manner
11 Over-Correcting/Over-Steering
12 Ran Off Roadway
13 Ran Red Light
14 Ran Stop Sign
15 Swerved or Avoided Due to Wind, Slippery Surface, Motor Vehicle, Object, Non-Motorist in Roadway, etc.
16 Wrong Side or Wrong Way

98 Other Contributing Action
99 Unknown

P15. Violation Codes *(choose up to 2)*

00 No Violation

State Violation Code(s)

99 Unknown

P16. Driver License Restrictions 🔗

S1 **Driver License Restrictions** *(choose up to 3)*
00 None

01 Alcohol Interlock Device
02 CDL Intrastate Only
03 Corrective Lenses
04 Farm Waiver
05 Except Class A Bus
06 Except Class A and Class B Bus
07 Except Tractor-Trailer
08 Intermediate License Restrictions
09 Learner's Permit Restrictions
10 Limited to Daylight Only
11 Limited to Employment
12 Limited-Other
13 Mechanical Devices *(special brakes, hand controls, or other adaptive devices)*
14 Military Vehicles Only
15 Motor Vehicles Without Air Brakes
16 Outside Mirror
17 Prosthetic Aid

98 Other

S2 **Alcohol Interlock Present?**
01 No
02 Yes

99 Unknown

P17. Driver License Status 🔗

S1 **Type Applicable for This Person**
01 Non-CDL Driver license
02 Non-CDL Restricted Driver license *(Learner's permit, Temporary/Limited, Graduated Driver license, etc.)*
03 Commercial Driver License (CDL)

S2 **Status**
00 Not Licensed

01 Canceled or Denied
02 Disqualified (CDL)
03 Expired
04 Revoked
05 Suspended
06 Valid License

99 Unknown

🔗 Linked or Derived S# Subfield Number

MMUCC CRASH REPORT

PERSON DATA ELEMENTS

Level 4: All Drivers and Non-Motorists

P18. Distracted By

S1 Action
00 Not Distracted

01 Talking/listening
02 Manually Operating *(texting, dialing, playing game, etc.)*
03 Other Action *(looking away from task, etc.)*

99 Unknown

S2 Source
01 Hands-Free Mobile Phone
02 Hand-Held Mobile Phone
03 Other Electronic Device
04 Vehicle-Integrated Device
05 Passenger/Other Non-Motorist
06 External *(to vehicle/non-motorist area)*
07 Other Distraction *(animal, food, grooming)*

97 Not Applicable *(Not Distracted)*
99 Unknown

P19. Condition at Time of the Crash *(choose up to 2)*

00 Apparently Normal

01 Asleep or Fatigued
02 Emotional *(depressed, angry, disturbed, etc.)*
03 Ill *(sick)*, Fainted
04 Physically Impaired
05 Under the Influence of Medications/ Drugs/Alcohol

97 Not Applicable
98 Other
99 Unknown

P20. Law Enforcement Suspects Alcohol Use

01 No
02 Yes

99 Unknown

P21. Alcohol Test

S1 Test Status
00 Test Not Given

01 Test Given
02 Test Refused

99 Unknown if Tested

S2 Type of Test
01 Blood
02 Breath
03 Urine

97 Not Applicable *(Test Not Given)*
98 Other

S3 BAC Test Result 🔗
Value Value
01 Pending

97 Not Applicable *(Test Not Given)*
99 Unknown

P22. Law Enforcement Suspects Drug Use

01 No
02 Yes

99 Unknown

P23. Drug Test

S1 Test Status
00 Test Not Given

01 Test Given
02 Test Refused

99 Unknown if Tested

S2 Type of Test
01 Blood
02 Saliva
03 Urine

97 Not Applicable *(Test Not Given)*
98 Other

S3 Drug Test Result 🔗
(choose up to 4)
01 Negative

Positive Test Results
02 Amphetamine
03 Cocaine
04 Marijuana
05 Opiate
06 Other Controlled Substance
07 PCP
08 Other Drug *(excludes post-crash drugs)*

97 Not Applicable *(Test Not Given)*
99 Unknown

Level 5: All Injured

P24. Transported to First Medical Facility By

S1 Source of Transport to First Medical Facility
00 Not Transported

01 EMS Air
02 EMS Ground
03 Law Enforcement

98 Other
99 Unknown

S2 EMS Response Agency Identifier

S3 EMS Response Run Number

S4 Medical Facility Receiving Patient

P25. Injury Area 🔗
01 Head
02 Face
03 Neck
04 Upper Extremity
05 Thorax (chest)
06 Spine
07 Abdomen and Pelvis
08 Lower Extremity
09 Unspecified

P27. Injury Severity 🔗
01 Fatal
02 Serious
03 Moderate
04 Minor
05 No Injury

99 Unknown

P26. Injury Diagnosis 🔗

Description of the injury according to data elements included in the files being linked such as the body areas and types of injuries listed on the crash and EMS records and/or the ICD-10 codes listed on the hospital discharge records.

🔗 Linked or Derived S# Subfield Number

8

MMUCC CRASH REPORT

ROADWAY DATA ELEMENTS

R1. Bridge/Structure Identification Number 🔗

R2. Roadway Curvature *(specify up to 3)* 🔗
Curve Radius | Length | Superelevation
☐ Not Applicable

R3. Grade 🔗
S1 Direction of Slope (Up (+) or Down (-))
S2 Percent of Slope (Nearest Percent of Slope)

R4. Part of National Highway System 🔗
01 No
02 Yes
99 Unknown

R5. Roadway Functional Class 🔗
Rural
01 Interstate
02 Principal Arterial - Other Freeway or Expressway
03 Principal Arterial – Other
04 Minor Arterial
05 Major Collector
06 Minor Collector
07 Local
08 Unknown Rural

Urban
09 Interstate
10 Principal Arterial – Other Freeway or Expressway
11 Principal Arterial – Other
12 Minor Arterial
13 Collector
14 Local
15 Unknown Urban

99 Unknown

R6. Annual Average Daily Traffic 🔗
S1 AADT (Year)
S2 AADT
S3 Truck *(over 10,000 lbs.)* **Count or Percentage**
S4 Motorcycle Count or Percentage

R7. Widths of Lane(s) and Shoulder(s) 🔗
S1 Lane Width *(Width in feet)*
S2 Left Shoulder Width *(Width in feet)*
S3 Right Shoulder Width *(Width in feet)*

R8. Width of Median 🔗
Width of Median *(feet)*

R9. Access Control 🔗
01 No Access Control
02 Partial Access Control
03 Full Access Control

R10. Railway Crossing ID 🔗

R11. Roadway Lighting 🔗
01 Continuous Lighting on Both Sides
02 Continuous Lighting on One Side
03 No Lighting
04 Spot Illumination on Both Sides
05 Spot Illumination on One Side

R12. Pavement Markings, Longitudinal 🔗
S1 Edgeline Presence/Type
01 No Marked Edgeline
02 Standard Width Edgeline
03 Wide Edgeline
98 Other

S2 Centerline Presence/Type
01 No Marked Centerline
02 Centerline With Centerline Rumble Strip
03 Standard Centerline Markings

S3 Lane Line Markings
01 No Lane Markings
02 Standard Lane Line
03 Wide Lane Line

R13. Presence/Type of Bicycle Facility 🔗
S1 Facility
00 None
01 Marked Bicycle Lane
02 Separate Bicycle Path/Trail
03 Unmarked Paved Shoulder
04 Wide Curb Lane
99 Unknown

S2 Signed Bicycle Route
01 No
02 Yes
97 Not Applicable
99 Unknown

R14. Mainline Number of Lanes at Intersection 🔗
00 Not an Intersection or Interchange
01 One Lane
02 Two Lanes
03 Three Lanes
04 Four to Six Lanes
05 Seven or More Lanes
99 Unknown

R15. Cross-Street Number of Lanes at Intersection 🔗
00 Not an Intersection or Interchange
01 One Lane
02 Two Lanes
03 Three Lanes
04 Four to Six Lanes
05 Seven or More Lanes
99 Unknown

R16. Total Volume of Entering Vehicles 🔗
S1 AADT *(Year)*
S2 AADT

FATAL SECTION DATA ELEMENTS

Level 3: All Drivers

F1. Attempted Avoidance Maneuver
00 No Driver Present/ Unknown if Driver Present
01 Accelerating
02 Accelerating and Steering Left
03 Accelerating and Steering Right
04 Braking and Steering Left
05 Braking and Steering Right
06 Braking *(Lockup)*
07 Braking *(Lockup Unknown)*
08 Braking *(No Lockup)*
09 No Avoidance Maneuver
10 Releasing Brakes
11 Steering Left
12 Steering Right
98 Other Actions
99 Unknown

Level 4: All Drivers and Non-Motorists

F2. Alcohol Test Type and Results
S1 Test Type
00 Test Not Given
01 Breath Test (AC)
02 Blood
03 Blood Clot
04 Blood Plasma/Serum
05 Liver
06 Preliminary Breath Test (PBT)
07 Unknown if Tested
08 Urine
09 Vitreous
98 Other Test Type
99 Unknown Test Type

S2 Test Result
000-939 Actual Value
940 0.94 or Greater
996 Test Not Given
997 AC Test Performed, Results Unknown
998 Positive Reading with No Actual Value
999 Unknown if Tested

F3. Drug Test Type and Results
S1 Test Type
00 Test Not Given
01 Blood
02 Both Blood and Urine
03 Unknown Test Type
04 Urine
98 Other Test Type
99 Unknown if Tested

S2 Test Result
000 Test Not Given
001 Tested No Drugs Found/Negative
100-295 Narcotic*
300-395 Depressant*
400-495 Stimulant*
500-595 Hallucinogen*
600-695 Cannabinoid*
700-795 Phencyclidine (PCP)*
800-895 Anabolic Steroid*
900-995 Inhalant*
996 Other Drug
997 Tested for Drugs, Results Unknown
998 Tested for Drugs, Drugs Found, Type Unknown/Positive
999 Unknown if Tested

***See specific drug listings in Appendix I: FARS Coding Manual – Alphabetical Drug Listing or Appendix J: FARS Coding Manual – Drugs By Category Type.**

🔗 Linked or Derived S# Subfield Number

MMUCC CRASH REPORT

LARGE VEHICLES AND HAZARDOUS MATERIAL SECTION

Level 3: All Drivers

LV1. CMV License Status and Compliance with CDL Endorsements

S1 CMV License Status

00 No CDL
01 Cancelled or Denied
02 Disqualified
03 Expired

04 Revoked
05 Suspended
06 Learner's Permit
07 Valid

98 Other – Not Valid
99 Unknown License Status

S2 Compliance with CDL Endorsement(s)

00 No Endorsement(s) Required for the Vehicle
01 Endorsement(s) Required, Complied With
02 Endorsement(s) Required, Not Complied With
03 Endorsement(s) Required, Compliance Unknown

99 Unknown if Required

LV2. Trailer License Plate Number

S1 First Trailer Behind Tractor

License Plate 1

☐ Not Applicable *(Bus or truck with no trailing units)*

S2 Second Trailer Behind Tractor

License Plate 2

☐ Not Applicable *(Bus or truck with no trailing units)*

S3 Third Trailer Behind Tractor

License Plate 3

☐ Not Applicable *(Bus or truck with no trailing units)*

All LVHM Vehicle(s)

LV3. Trailer VIN(s)

S1 First Trailer Behind Tractor

VIN 1

☐ Not Applicable *(Bus or truck with no trailing units)*
☐ Unknown *(information unavailable)*

S2 Second Trailer Behind Tractor

VIN 2

☐ Not Applicable *(Bus or truck with no trailing units)*
☐ Unknown *(information unavailable)*

S3 Third Trailer Behind Tractor

VIN 3

☐ Not Applicable *(Bus or truck with no trailing units)*
☐ Unknown *(information unavailable)*

LV4. Trailer Make(s)

S1 First Trailer Behind Tractor

Make 1

☐ Not Applicable *(Bus or truck with no trailing units)*
☐ Unknown *(information unavailable)*

S2 Second Trailer Behind Tractor

Make 2

☐ Not Applicable *(Bus or truck with no trailing units)*
☐ Unknown *(information unavailable)*

S3 Third Trailer Behind Tractor

Make 3

☐ Not Applicable *(Bus or truck with no trailing units)*
☐ Unknown *(information unavailable)*

LV5. Trailer Model(s)

S1 First Trailer Behind Tractor

Model 1

☐ Not Applicable *(Bus or truck with no trailing units)*
☐ Unknown *(information unavailable)*

S2 Second Trailer Behind Tractor

Model 2

☐ Not Applicable *(Bus or truck with no trailing units)*
☐ Unknown *(information unavailable)*

S3 Third Trailer Behind Tractor

Model 3

☐ Not Applicable *(Bus or truck with no trailing units)*
☐ Unknown *(information unavailable)*

LV6. Trailer Model Year(s)

S1 First Trailer Behind Tractor

Year 1

☐ Not Applicable *(Bus or truck with no trailing units)*
☐ Unknown *(information unavailable)*

S2 Second Trailer Behind Tractor

Year 2

☐ Not Applicable *(Bus or truck with no trailing units)*
☐ Unknown *(information unavailable)*

S3 Third Trailer Behind Tractor

Year 3

☐ Not Applicable *(Bus or truck with no trailing units))*
☐ Unknown *(information unavailable)*

LV7. Motor Carrier Identification

S1 Identification Type

01 US DOT Number
02 State Number

97 Not Applicable
99 Unknown/Unable to Determine

S2 Country/State Code
Non-US Country Code (e.g. Mexico or Canada)
US State Code

S3 Identification Number
US DOT Number – up to 7 digits, right justified

If not a US DOT Number, include State issued Identification Number and State

S4 Name

Motor Carrier Name

S5 Motor Carrier Address

Street Address 1

Street Address 2

City, State Zip

Country

S6 Type of Carrier

01 Interstate Carrier
02 Intrastate Carrier
03 Not in Commerce/Government
04 Not in Commerce/Other Truck or Bus

Linked or Derived S# Subfield Number

MMUCC CRASH REPORT

LARGE VEHICLES AND HAZARDOUS MATERIAL SECTION (Cont.)

LV8. Vehicle Configuration

S1 Vehicle Configuration

01 Vehicle 10,000 lbs. or less placarded for hazardous materials
02 Bus/Large Van *(seats for 9–15 occupants, including driver)*
03 Bus *(seats more than 15 occupants, including driver)*
04 Single-Unit Truck *(2-axle and GVWR more than 10,000 lbs.)*
05 Single-Unit Truck *(3 or more axles)*
06 Truck Pulling Trailer(s)
07 Truck Tractor *(bobtail)*
08 Truck Tractor/Semi-Trailer
09 Truck Tractor/Double
10 Truck Tractor/Triple
11 Truck More Than 10,000 lbs., cannot classify

99 Unknown

S2 Special Sizing *(choose up to 4)*

00 No special sizing

01 Over-height
02 Over-length
03 Over-weight
04 Over-width

S3 Permitted?

01 Non-permitted Load
02 Permitted Load

LV9. Cargo Body Type

00 No Cargo Body *(bobtail, light MV with hazardous materials [HM] placard, etc.)*
01 Bus
02 Auto Transporter
03 Cargo Tank
04 Concrete Mixer
05 Dump
06 Flatbed
07 Garbage/Refuse
08 Grain/Chips/Gravel
09 Intermodal Container Chassis
10 Log
11 Pole-Trailer
12 Van/Enclosed Box
13 Vehicle Towing Another Vehicle

97 Not Applicable *(MV 10,000 lbs. or less, not displaying HM placard)*
98 Other
99 Unknown

LV10. Hazardous Materials (Cargo Only)

S1 Hazardous Materials ID

0000 No HM Placard Displayed

xxxx 4-digit Hazardous Materials ID number or name taken from the middle of the diamond or from rectangular box

0999 Unknown

S2 Hazardous Materials Class

00 No HM Placard Displayed

x 1-digit Hazardous Materials Class number from the bottom of diamond

99 Unknown

S3 Release of hazardous materials from a cargo compartment (e.g. trailer), cargo container (e.g. tank) or from a package?

01 No
02 Yes

97 Not Applicable
99 Unknown if Released

LV11. Total Number of Axles

S1 Truck Tractor

xx Number of Axles

99 Unknown *(information unavailable)*

S2 First Trailer Behind Tractor

xx Number of Axles

97 Not Applicable *(Bus or truck with no trailing units)*
99 Unknown *(information unavailable)*

S3 Second Trailer Behind Tractor

xx Number of Axles

97 Not Applicable *(Bus or truck with no trailing units)*
99 Unknown *(information unavailable)*

S4 Third Trailer Behind Tractor

xx Number of Axles

97 Not Applicable *(Bus or truck with no trailing units)*
99 Unknown *(information unavailable)*

Linked or Derived S# Subfield Number

MMUCC CRASH REPORT

NON-MOTORIST SECTION DATA ELEMENTS

NM1. Unit Number of Motor Vehicle Striking Non-Motorist

NM2. Non-Motorist Action/Circumstance Prior to Crash

S1 Action/Circumstance
00 None

01 Adjacent to Roadway *(e.g., Shoulder, Median)*
02 Crossing Roadway
03 In Roadway – Other
04 Waiting to Cross Roadway
05 Walking/Cycling Along Roadway Against Traffic *(In or Adjacent to Travel Lane)*
06 Walking/Cycling Along Roadway with Traffic *(In or Adjacent to Travel Lane)*
07 Walking/Cycling on Sidewalk
08 Working in Trafficway *(Incident Response)*

98 Other
99 Unknown

S2 Origin/Destination
01 Going to or from School *(K-12)*
02 Going to or from Transit

97 Not Applicable
99 Unknown

NM3. Non-Motorist Contributing Action(s)/Circumstance(s) *(choose up to 2)*

00 None *(No Improper Action)*

01 Dart/Dash
02 Disabled Vehicle Related *(Working on, Pushing, Leaving/Approaching)*
03 Entering/Exiting Parked/Standing Vehicle
04 Failure to Obey Traffic Signs, Signals, or Officer
05 Failure to Yield Right-Of-Way
06 Improper Passing
07 Improper Turn/Merge
08 Inattentive *(Talking, Eating, etc.)*
09 In Roadway Improperly *(Standing, Lying, Working, Playing)*
10 Not Visible *(Dark Clothing, No Lighting, etc.)*
11 Wrong-Way Riding or Walking

98 Other
99 Unknown

NM4. Non-Motorist Location at Time of Crash

Roadway Facility
01 Intersection – Marked Crosswalk
02 Intersection – Unmarked Crosswalk
03 Intersection – Other
04 Median/Crossing Island
05 Midblock – Marked Crosswalk
06 Shoulder/Roadside
07 Travel Lane – Other Location

Bicycle Facility
08 Signed Route *(no pavement marking)*
09 Shared Lane Markings
10 On-Street Bike Lanes
11 On-Street Buffered Bike Lanes
12 Separated Bike Lanes
13 Off-Street Trails/Sidepaths

Other Facility
14 Driveway Access
15 Non-Trafficway Area
16 Shared-Use Path or Trail
17 Sidewalk

98 Other
99 Unknown

NM5. Non-Motorist Safety Equipment *(choose up to 5)*

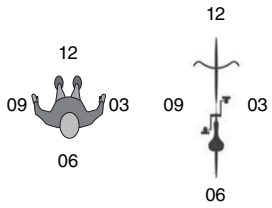
00 None
01 Helmet
02 Protective Pads Used *(elbows, knees, shins, etc.)*
03 Reflective Wear *(backpack, triangles, etc.)*
04 Lighting
05 Reflectors

98 Other
99 Unknown

NM6. Initial Contact Point on Non-Motorist

12 Front
03 Right
06 Rear
09 Left

99 Unknown



DYNAMIC DATA ELEMENTS

DV1. Motor Vehicle Automated Driving System(s)

S1 Automation System or Systems in Vehicle
01 Yes
02 No

99 Unknown

S2 Automation System Levels in Vehicle
00 No Automation
01 Driver Assistance
02 Partial Automation
03 Conditional Automation
04 High Automation
05 Full Automation

06 Automation Level Unknown

99 Unknown

S3 Automation System Levels Engaged at Time of Crash
00 No Automation
01 Driver Assistance
02 Partial Automation
03 Conditional Automation
04 High Automation
05 Full Automation

06 Automation Level Unknown

99 Unknown

Linked or Derived S# Subfield Number

12

Appendix D: MMUCC and MIRE Road-Related Terminology Crosswalk

The Model Inventory of Roadway Elements (MIRE) provides a model structure, set of definitions, and attributes for roadway inventory data elements maintained in the States. MMUCC and MIRE are intended to complement each other and be linked where applicable to best leverage the safety data they prescribe. To that end, the table below addresses differences in terminology between MMUCC and MIRE associated with the MMUCC term "trafficway" and two of its defined components. The table aligns the terms in MMUCC to their respective complement in MIRE.

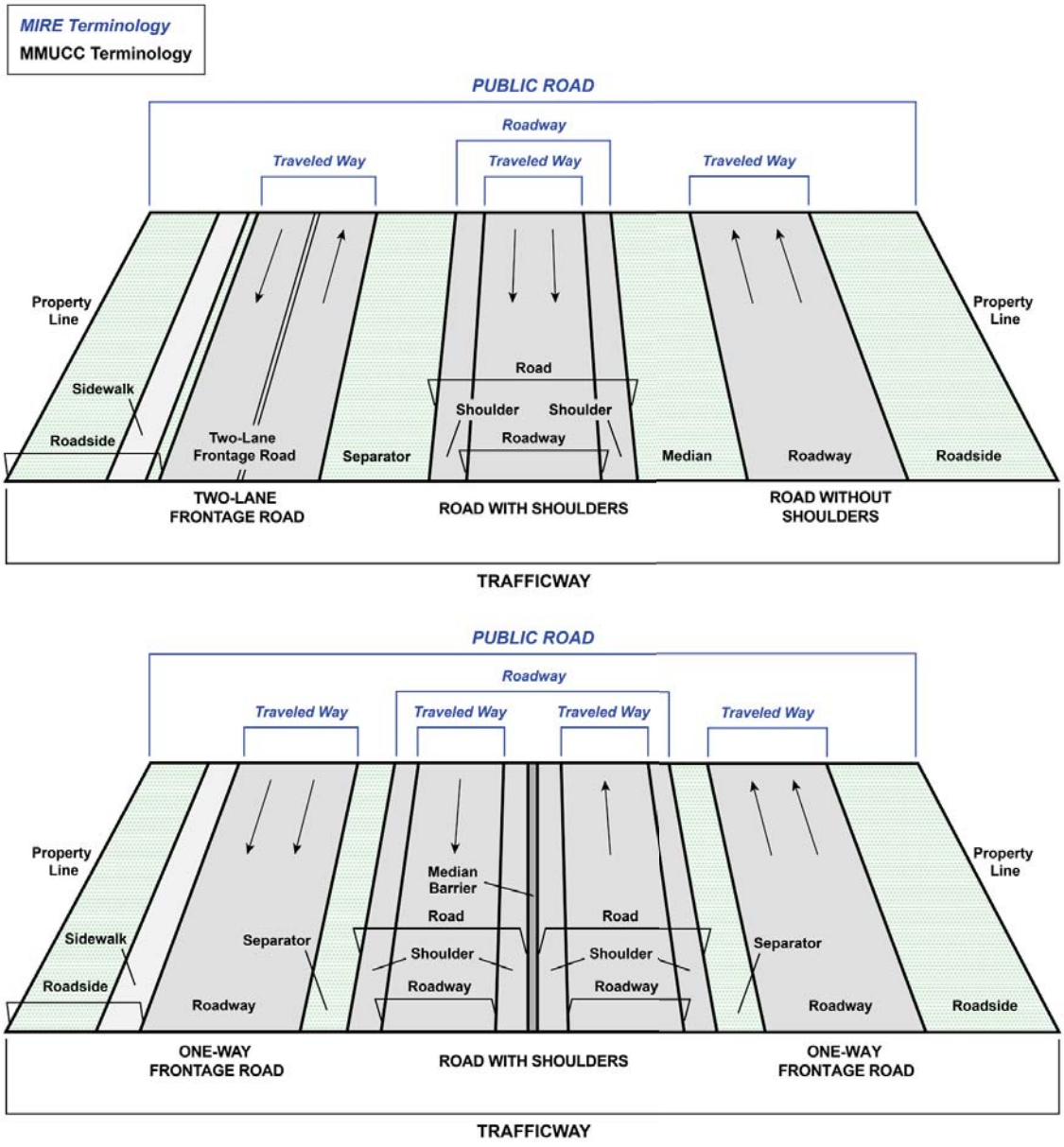
The terms "*trafficway*" and "*public road*" are italicized below because they are not directly matching terms (i.e., not equivalent / synonymous). A **public road** is any road or street owned and maintained by a public authority and open to public travel. In contrast, the definition of the term "trafficway" does not make a distinction based on ownership and maintenance but rather by access to the public for "moving persons or property from one place to another" (i.e., transportation). Consequently, all "public roads" are "trafficways" but not all "trafficways" are "public roads".

This distinction (between MIRE "*Public Road*" and MMUCC "*Trafficway*") exists because the broader "trafficway" is a key term associated with crash data collection tied to motor vehicle traffic crashes (MMUCC) and general motor vehicle safety associated with motor vehicle transportation. However, with respect to data on the design and engineering of highways within the public domain, it becomes desirable to separately define a subset, "public roads", that would be addressed in the data captured in the State's highway inventories (MIRE).

MMUCC	MIRE
Trafficway	*Public Road*
Road	Roadway
Roadway	Traveled Way

The diagrams included here illustrate a selection common configurations and components of public roads and trafficways.

Figure 24: Trafficway Diagram Showing MMUCC and MIRE Terminology



Appendix E: ANSI State FIPS and USPS Codes

American National Standards Institute (ANSI) Codes for States, the District of Columbia, Puerto Rico, and the Insular Areas of the United States, as provided by CENSUS.GOV.

Name	FIPS State Numeric Code	Official USPS Code
Alabama	01	AL
Alaska	02	AK
Arizona	04	AZ
Arkansas	05	AR
California	06	CA
Colorado	08	CO
Connecticut	09	CT
Delaware	10	DE
District of Columbia	11	DC
Florida	12	FL
Georgia	13	GA
Hawaii	15	HI
Idaho	16	ID
Illinois	17	IL
Indiana	18	IN
Iowa	19	IA
Kansas	20	KS
Kentucky	21	KY
Louisiana	22	LA
Maine	23	ME
Maryland	24	MD
Massachusetts	25	MA
Michigan	26	MI
Minnesota	27	MN
Mississippi	28	MS
Missouri	29	MO

Name	FIPS State Numeric Code	Official USPS Code
Montana	30	MT
Nebraska	31	NE
Nevada	32	NV
New Hampshire	33	NH
New Jersey	34	NJ
New Mexico	35	NM
New York	36	NY
North Carolina	37	NC
North Dakota	38	ND
Ohio	39	OH
Oklahoma	40	OK
Oregon	41	OR
Pennsylvania	42	PA
Rhode Island	44	RI
South Carolina	45	SC
South Dakota	46	SD
Tennessee	47	TN
Texas	48	TX
Utah	49	UT
Vermont	50	VT
Virginia	51	VA
Washington	53	WA
West Virginia	54	WV
Wisconsin	55	WI
Wyoming	56	WY

Area Name	FIPS State Numeric Code	Official USPS Code	Status
American Samoa	60	AS	1
Federated States of Micronesia	64	FM	3
Guam	66	GU	1
Marshall Islands	68	MH	3
Commonwealth of the Northern Mariana Islands	69	MP	1
Palau	70	PW	3
Puerto Rico	72	PR	1
U.S. Minor Outlying Islands	74	UM	2
U.S. Virgin Islands	78	VI	1

Status:
1. Under U.S sovereignty
2. An aggregation of nine U.S. territories: Baker Island, Howland Island, Jarvis Island, Johnston Atoll, Kingman Reef, Midway Islands, Navassa Island, Palmyra Atoll, and Wake Island. Each territory is assigned an ANSI County Code in INCITS 31:2009, and may be individually identified through a combination of the ANSI State Code (74 or UM) and the appropriate ANSI County Code.
3. Independent nation that operates under a Compact of Free Association with the United States of America.

Appendix F: ISO 3166-2 Codes for Canada and Mexico

"ISO 3166-2 is part of the ISO 3166 standard published by the International Organization for Standardization (ISO), and defines codes for identifying the principal subdivisions (e.g., provinces or States) of all countries coded in ISO 3166-1. The official name of the standard is Codes for the representation of names of countries and their subdivisions – Part 2: Country subdivision code.

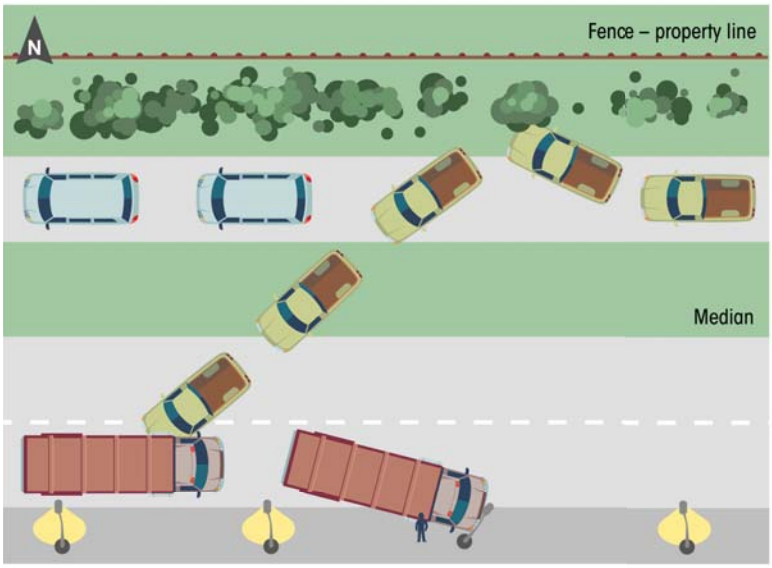
Each complete ISO 3166-2 code consists of two parts, separated by a hyphen: 1) The first part is the ISO 3166-1 alpha-2 code of the country; and 2) the second part is a string of up to three alphanumeric characters, stemming from coding systems already in use in the country concerned."

Name (Mexico)	ISO 3166-2 Code
Ciudad de Mexico (Federal District)	MX-CMX
Aguascalientes (State)	MX-AGU
Baja California (State)	MX-BCN
Baja California Sur (State)	MX-BCS
Campeche (State)	MX-CAM
Coahuila (State)	MX-COA
Colima (State)	MX-COL
Chiapas (State)	MX-CHP
Chihuahua (State)	MX-CHH
Durango (State)	MX-DUR
Guanajuato (State)	MX-GUA
Guerrero (State)	MX-GRO
Hidalgo (State)	MX-HID
Jalisco state (State)	MX-JAL
México (State)	MX-MEX
Michoacán (State)	MX-MIC
Morelos (State)	MX-MOR
Nayarit (State)	MX-NAY
Nuevo León (State)	MX-NLE
Oaxaca (State)	MX-OAX
Puebla state (State)	MX-PUE
Querétaro (State)	MX-QUE
Quintana Roo (State)	MX-ROO
San Luis Potosí (State)	MX-SLP
Sinaloa (State)	MX-SIN
Sonora state (State)	MX-SON
Tabasco (State)	MX-TAB
Tamaulipas (State)	MX-TAM

Name (Mexico)	ISO 3166-2 Code
Tlaxcala (State)	MX-TLA
Veracruz (State)	MX-VER
Yucatán (State)	MX-YUC
Zacatecas (State)	MX-ZAC

Name (Canada)	ISO 3166-2 Code
Alberta (Province)	CA-AB
British Columbia (Province)	CA-BC
Manitoba (Province)	CA-MB
New Brunswick (Province)	CA-NB
Newfoundland and Labrador (Province)	CA-NL
Nova Scotia (Province)	CA-NS
Ontario (Province)	CA-ON
Prince Edward Island (Province)	CA-PE
Québec (Province)	CA-QC
Saskatchewan (Province)	CA-SK
Northwest Territories (Territory)	CA-NT
Nunavut (Territory)	CA-NU
Yukon (Territory)	CA-YT

Appendix G: Sequence of Events Examples



Narrative

Vehicle #1 (V1), a pickup, was traveling in the right-hand lane of northbound State Route 7 (SR7) following Vehicle #2 (V2), a van. V2 slowed suddenly. Driver #1 (D1) did not notice V2 slowing in time and swerved to the right to avoid striking V2. V1 struck a tree off the right side of the road. V1 veered off the tree and proceeded to cross over the center median grass striking Vehicle #3 (V3) traveling in the right-hand southbound lane injuring the driver of V1.

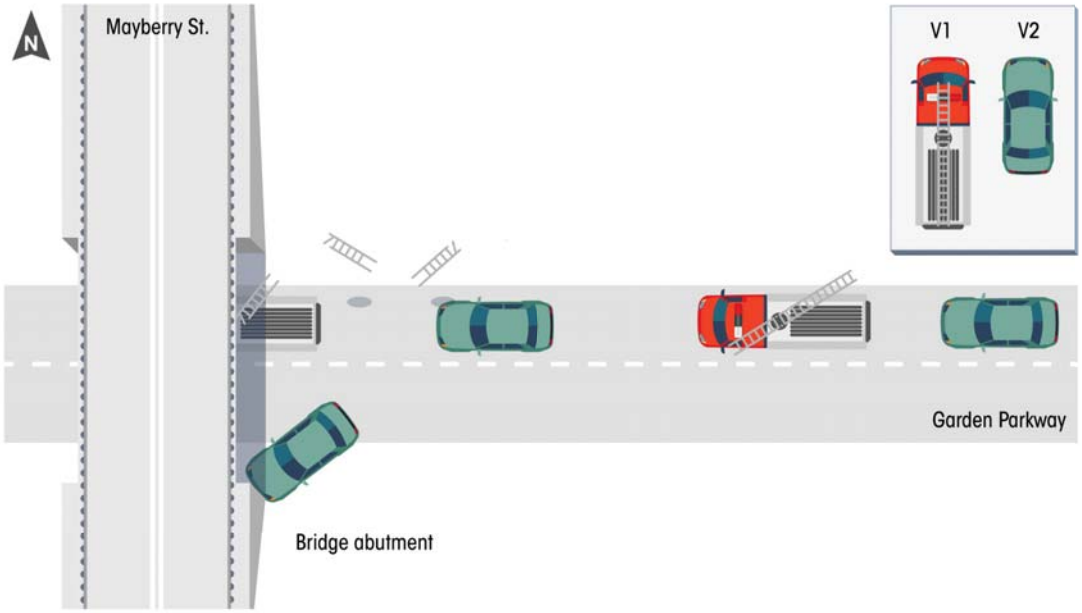
After being struck by V1, V3 struck the curb on the right-hand side of the road, crossed over the sidewalk, and struck a pedestrian and then a light pole. V2 did not know the crash had occurred and kept on driving.

Vehicle #2 From Diagram:

There would be no Sequence of Events coded for this vehicle as it was a “non-contact” vehicle.

Vehicle #1 Sequence of Events (V20)	Vehicle #3 Sequence of Events (V20)
07 Ran off Roadway Right	20 Motor Vehicle in Transport
49 Tree (standing)	36 Curb
~~**08 Reentering Roadway****~~	~~07 Ran off Roadway Right**~~
02 Cross Median	25 Pedestrian
20 Motor Vehicle in Transport	50 Utility Pole/Light Support

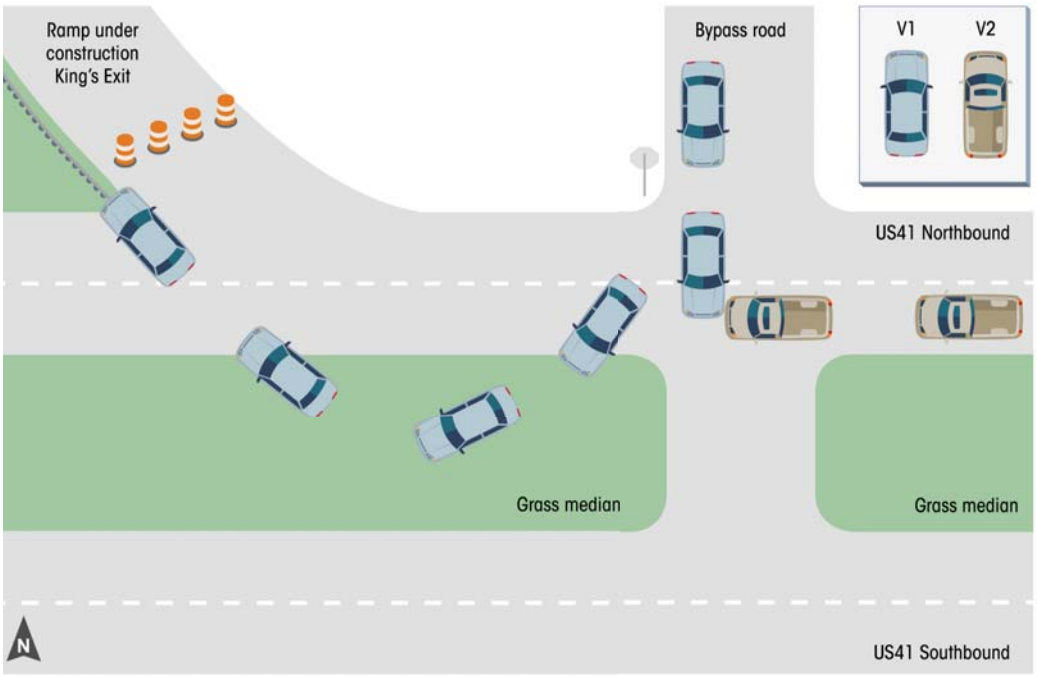
**MMUCC recommends a minimum of four events be recorded by the State. In cases like the one described here, where there might be more than four events, it is recommended that non-harmful events be eliminated first (shown here as struck through).



Narrative

Vehicle #1 (V1), a firetruck returning from an emergency, was traveling west on Garden Parkway approaching the Mayberry Street underpass when a malfunction in the hydraulic system of its hook and ladder apparatus caused the ladder to raise and swing to the right of the vehicle. When V1 went under the Mayberry Street overpass the ladder and bucket struck the bottom of the bridge, breaking off the top portion of the ladder. The ladder piece struck the right front quarter panel of Vehicle #2 (V2), which was following directly behind V1. V2 lost control and struck the underpass bridge abutment on the eastbound side of the road.

Vehicle #1 Sequence of Events (V20)	Vehicle #3 Sequence of Events (V20)
05 Equipment Failure (blown tire, brake failure, etc.)	28 Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle
30 Bridge Overhead Structure	01 Cross Centerline
11 Cargo/Equipment Loss or Shift	06 Ran Off Roadway Left
20 Motor Vehicle in Transport	31 Bridge Pier or Support



Narrative

Driver #1 (D1) was stopped at the stop sign on the south end of the bypass road around the King's Mine Overpass construction. Upon entering US41 with the intention of crossing over the northbound lanes and then turning to the south, D1 failed to see Vehicle #2 (V2) northbound on US41. V2 struck the front driver's side of V1 causing it to spin clockwise.

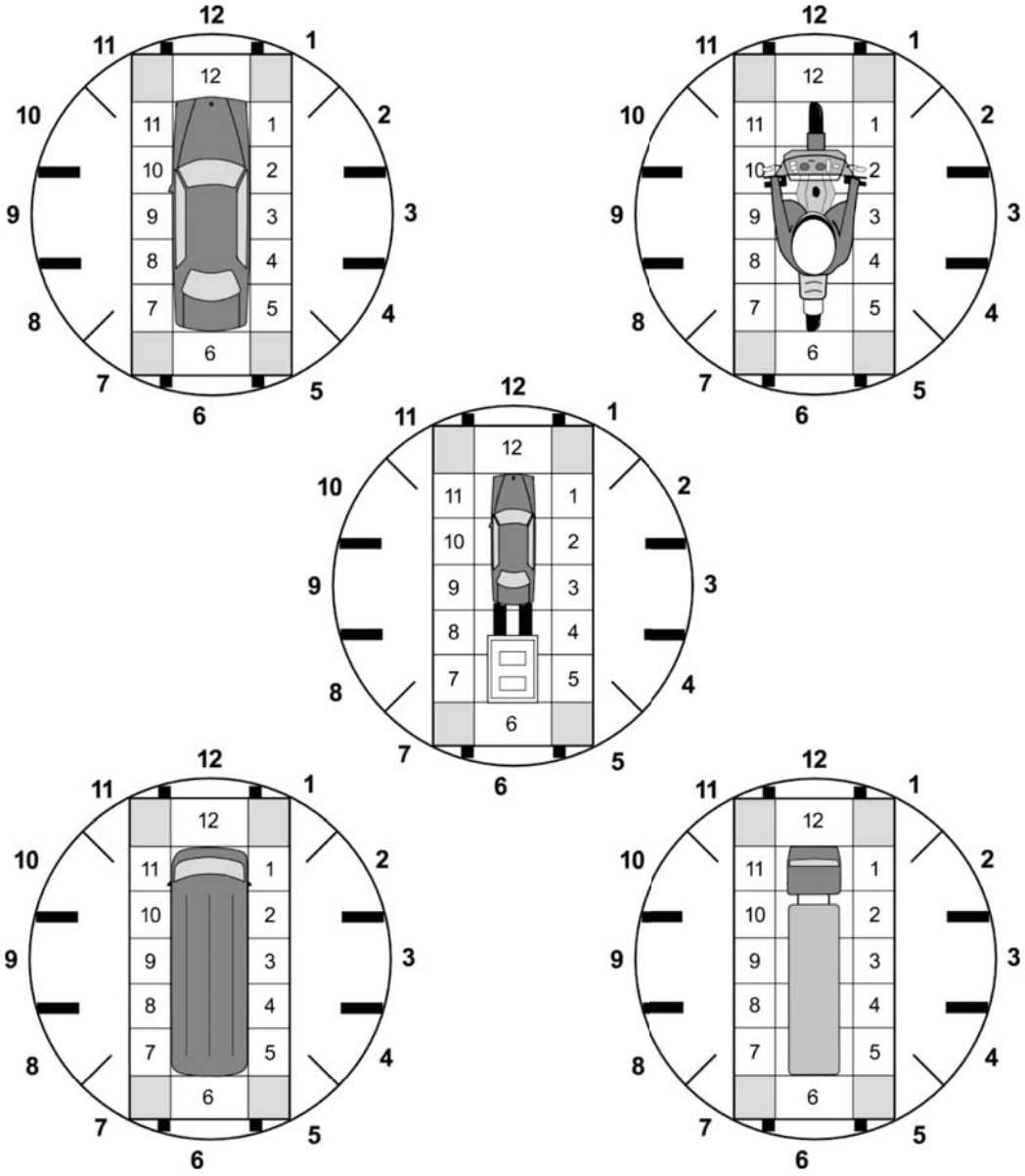
D1 was either unconscious or disoriented. D1 apparently had her foot on the accelerator and went approximately 1,000 feet to the north in the median and then crossed over northbound US41.

After crossing the northbound lanes, V1 started up the ramp at the King's Mine Interchange which is currently closed for construction. V1 went head-on into the guardrail end terminal on the west side of the ramp.

Vehicle #1 Sequence of Events (V20)	Vehicle #3 Sequence of Events (V20)
20 Motor Vehicle in Transport	20 Motor Vehicle in Transport
06 Ran Off Roadway Left	
08 Reentering Roadway**	
07 Ran off Roadway Right	
40 Guardrail End Terminal	

**MMUCC recommends a minimum of four events be recorded by the State. In cases like the one described here, where there might be more than four events, it is recommended that non-harmful events be eliminated first (shown here as struck through).

Appendix H: Clock-point Diagrams for Different Types of Motor Vehicles



Source: FARS Coding Manual

Appendix I: FARS Coding Manual – Alphabetical Drug Listing

Butalbital 308
Butobarbital (butethal) 389
Butorphanol 218
Butly Nitrite 923
Calusterone 839
Camazepam 309
“Cannabinoid, Type Unknown” 695
Carbamate 310
Carfentanil 125
Carisoprodol 376
Cathine (Norpseudoephedrine) 404
Cathinone 429
Chloral betaine 311
Chloral Hydrate 312
Chlordiazepoxide 313
Chlorhexadol 314
Chloroform 926
Chlorotestosterone 801
Chlorphentermine 405
Clobazam 315
Clonazepam 316
Clonitazene 126
Clorazepate Dipotassium 317
Clortermine 406
Clostebol 827
Clotiazepam 318
Cloxazolam 319
Coca Leaves 430
Cocaine 407
Codeine 128
Codeine combiniation product 90 mg/du 240
Codeine preparations – 200 mg/100 ml or 100 gm 241
Codeine & Isoquinoline 222
Codeine methylbromide 127
Codeine-N-oxide 223
Cyprenorphine 129
Dehydrochloromethyltestosterone 803
Delorazepam 320
Delta 1-dihydrotestosterone 840
Delta 9 600
“Depressants, Type Unknown” 395
Desomorphine 130
Dexfenfluramine 383
Dextroamphetamine 408
Dextromoramide 131
Dextropropoxyphene (dosage forms) 224
Diampromide 133
Diazepam 321
Dichloralphenazone 431
Diethylpropion 409
Diethylthiambutene 134
Diethyltryptamine (DET) 503
Difenoxin 135
Difenoxin 1 mg/25ug AtSO4/du 242
Difenoxion preparations – 0.5 mg/25 ug AtSO4/du 243
Dihydrocodeine 136
Dihydrocodeine combination product 90 mg/du 244
Dihydrocodeine preparations 10 mg/100 ml or 100 gm 245
Dihydroetrophine 226
Dihydromorphine 137
Dihydrotestosterone 804
Dimenoxadol 138
Dimepheptanol (Racemethadol) 139
Dimethoxyamphetamine (DMA) 504
Dimethoxyethylamphetamine 535
Dimethoxy-(n)-propylthiophenethylamine 536
Dimethylthiambutene 140
Dimethyltryptamine (DMT) 505
Dioxaphetyl Butyrate 141
Diphenoxylate 142
Diphenoxylate preparations 2.5 mg/25 ug AtSO4 246
Dipipanone 143
Diprenorphine 227
Diprenorphine Hydrochloride 144

Poppy Straw 237
Poppy Straw Concentrate 238
Prazepam 360
Pregabalin 396
Proheptazine 205
Properidine 206
Propiram 207
Propoxyphene (Dextropropoxyphene, bulk (non-dosage forms)) 208
Propylhexedrine 425
Psilocybin 519
Psilocyn 520
Pyrovalerone 426
“Pyrrolidine (PCPy, PHP, TCPy)” 706
Quazepam 361
Racemethorphan 209
Racemoramide 210
Racemorphan 211
Remifentanil 239
Secobarbital 362
Secobarbital & noncontrolled active ingred. 397
Secobarbital suppository dosage form 398
Sibutramine 385
SPA 427
Stanolone 822
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Appendix J: FARS Coding Manual – Drugs By Category Type

100-295 Narcotics

100 Acetaminophen + Codeine
101 Acetorphine
102 Acetyl-alpha-methylfentanyl
103 Acetyldihydrocodeine
104 Acetylmethadol
105 Alfentanil
106 Allylprodine
107 Alpha-Methylfentanyl
108 Alphamethythiofentanyl
109 Alpha-meprodine
110 Alphamethadol
111 Alphaprodine
112 Anileridine
113 APC + Codeine
114 Aspirin + Codeine
117 Benzylmorphine
118 Beta-hydroxyfentanyl
119 Betacetylmethadol
120 Beta-meprodine
121 Betamethadol
122 Betaprodine
123 Bezitramide
124 Buprenorphine
125 Carfentanil
126 Clonitazene
127 Codeine methylbromide
128 Codeine
129 Cyprenorphine
130 Desomorphine
131 Dextromoramide
133 Diampromide
134 Diethylthiambutene
135 Difenoxin
136 Dihydrocodeine
137 Dihydromorphine
138 Dimenoxadol
139 Dimepheptanol (Racemethadol)
140 Dimethylthiambutene
141 Dioxaphetyl Butyrate
142 Diphenoxylate
143 Dipipanone
144 Diprenorphine Hydrochloride
145 Drotebanol
146 Ethylmethylthiambutene
147 Ethylmorphine
148 Etonitazene
149 Etorphine
150 Etoxeridine
151 Fentanyl
152 Fiorinal + Codeine
153 Furethidine
154 Heroin (Diacetylmorphine)
155 Hydrocodone
156 Hydromorphinol
157 Hydromorphone
158 Hydroxypethidine
159 Isomethadone
160 Ketobemidone
161 Levomoramide
162 Levophenacylmorphan
163 Levomethorphan
164 Levorphanol Tartrate
165 Meperidine (Pethidine)
166 Metazocine
167 Methadone

168 Methyldesorphine
169 Methyldihydromorphine
170 Methylfentanyl
171 Methyl-phenyl-propionoxypiperidine (MPPP)
172 Metopon
173 Moramide - intermediate
174 Morpheridine
175 Morphine methylsulfonate
176 Morphine methylbromide
177 Morphine
178 Myrophine
179 Nalorphine
180 Nicocodeine
181 Nicomorphine
182 Noracymethadol
183 Norlevorphanol
184 Normethadone
185 Normorphine
186 Norpipanone
187 Opium
188 Oxymorphone
189 Oxycodone
190 Para-fluorofentanyl
191 Paregoric
192 Parepectolin
193 Pentazocine
195 Phenadoxone
196 Phenampromide
197 Phenanthrine
198 Phenazocine
199 Phenomorphan
200 Phenoperidine
202 Pholcodine
203 Piminodine
204 Piritramide
205 Proheptazine
206 Properidine
207 Propiram
208 Propoxyphene (Dextropropoxyphene, bulk (non-dosage forms))
209 Racemethorphan
210 Racemoramide
211 Racemorphan
212 Sufentanil
213 Thebacon
214 Thebaine
215 Thiofentanyl
216 Tilidine
217 Trimeperidine
218 Butorphanol
220 Alphacetylmethadol
221 Beta-Hydroxy-3-methylfentanyl
222 Codeine & Isoquinoline
223 Codeine-N-oxide
224 Dextropropoxyphene (dosage forms)
226 Dihydroetrophine
227 Diprenorphine
228 Levo-alphacetylmethadol
229 Levorphanol
230 Methylthiofentanyl
231 Morphine-N-oxide
232 Opium extract
233 Opium Fluid Extract
234 Opium Poppy
235 Opium Tincture
236 Phenylethyl-phenylacetoxypiperidine (PEPAP)
237 Poppy Straw
238 Poppy Straw Concentrate
239 Remifentanil
240 Codeine combination product 90 mg/du
241 Codeine preparations – 200 mg/100 ml or 100 gm
242 Difenoxin 1 mg/25ug AtSO4/du
243 Difenoxin preparations – 0.5 mg/25 ug AtSO4/du
244 Dihydrocodeine combination product 90 mg/du

245 Dihydrocodeine preparations 10 mg/100 ml or 100 gm
246 Diphenoxylate preparations 2.5 mg/25 ug AtSO4
247 Ethylmorphine combination product 15 mg/du
248 Ethylmorphine preparations 100 mg/100 ml or 100 gm
249 Hydrocodone & isoquinoline alkaloid<15 mg/du
250 Hydrocodone combination product<15 mg/du
251 Meperidine intermediate-A
252 Meperidine intermediate-B
253 Meperidine intermediate-C
254 Methadone intermediate
255 Morphine combination product/50 mg/100 ml or gm
256 Opium combination product 25 mg/du
257 Opium preparations – 100 mg/100 ml or/100 gm
258 Opium, granulated
259 Opium, powdered
260 Oripavine
295 “Narcotics, Type Unknown”

300-399 Depressants

300 Alprazolam
301 Amobarbital
302 Barbital
303 Barbiturates
304 Benzodiazepines
305 Benzylfentanyl
306 Bromazepam
307 Butabarbital (secbutabarbital)
308 Butalbital
309 Camazepam
310 Carbamate
311 Chloral betaine
312 Chloral Hydrate
313 Chlordiazepoxide
314 Chlorhexadol
315 Clobazam
316 Clonazepam
317 Clorazepate Dipotassium
318 Clotiazepam
319 Cloxazolam
320 Delorazepam
321 Diazepam
322 Estazolam
323 Ethchlorvynol
324 Ethinamate
325 Ethyl loflazepate
326 Fiorinal
327 Fludiazepam
328 Flunitrazepam
330 Glutethimide
331 Halazepam
332 Haloxazolam
333 Hexobarbital
334 Hydroxyzine
335 Ketazolam
336 Loprazolam
337 Lorazepam
338 Lormetazepam
339 Mebutamate
340 Mecloqualone
341 Medazepam
342 Mephobarbital (Methylphenobarbital)
343 Meprobamate
344 Methaqualone
345 Metharbital
346 Methohexital
347 Methyprylon
348 Midazolam
349 Nimetazepam
350 Nitrazepam
351 Nordiazepam

352 Oxazepam
353 Oxazolam
354 Paraldehyde
355 Pentobarbital
356 Petrichloral
357 Phencyclohexylamine
358 Phenobarbital
359 Pinazepam
360 Prazepam
361 Quazepam
362 Secobarbital
363 Sulfondiethylmethane
364 Sulfonethylmethane
365 Sulfonmethane
366 Talbutal
367 Temazepam
368 Tetrazepam
369 Thenylfentanyl
370 Thiamylal
371 Thiopental (Pentothal)
372 Tiletamine/ Zolazepam (Telazol)
373 Traizolam
374 Tybamate
376 Carisoprodol
377 Gamma-Hydroxybutyric Acid (GHB)
378 Amobarbital & non-controlled active ingred.
379 Aprobarbital
380 Barbituric Acid Derivative
383 Dexfenfluramine
384 Flurazepam
385 Sibutramin
386 Zaleplon
387 Zolpidem
388 Amobarbital suppository dosage form
389 Butobarbital (butethal)
390 Embutramide
391 Gamma Hydroxybutyric Acid preparations
393 Pentobarbital & noncontrolled active ingred.
394 Pentobarbital suppository dosage form
395 “Depressants, Type Unknown”
396 Pregabalin
397 Secobarbital & noncontrolled active ingred.
398 Secobarbital suppository dosage form
399 Zopiclone

400-495 Stimulants

400 Amphetamine Sulfate
401 Amphetamine
402 Benzoylecgonine
403 Benzphetamine
404 Cathine (Norpseudoephedrine)
405 Chlorphentermine
406 Clortermine
407 Cocaine
408 Dextroamphetamine
409 Diethylpropion
410 Ecgonine
411 Fencamfamin
412 Fenethylline
413 Fenfluramine
414 Fenproporex
415 Mazindol
416 Mefenorex
417 Methamphetamine
418 Methylphenidate
419 N-Ethylamphetamine
420 Pemoline
421 Phendimetrazine
422 Phenmetrazine
423 Phentermine
424 Pipradrol
425 Propylhexedrine
426 Pyrovalerone
427 SPA

428 Aminorex
429 Cathinone
430 Coca Leaves
431 Dichloralphenazone
432 Methcathinone
433 Modafinil
434 Vinbarbital
435 Methylone
436 Lisdexamfetamine
437 Methoxy-Methylenedioxyamphetamine
438 N, N-Dimethylamphetamine (Dimethylamphetamine)
439 N-Benzylpiperazine
440 Stimulant compounds previously excepted
495 “Stimulants, Type Unknown”

500-595 Hallucinogens

500 Amphetamine Variants
501 Bufotenine
503 Diethyltryptamine (DET)
504 Dimethoxyamphetamine (DMA)
505 Dimethyltryptamine (DMT)
506 DMA
507 Dronabinol
508 N-Ethyl-3piperdyl benzilate
509 Ibogaine
511 Lysergic Acid
512 Mescaline
513 Methylenedioxymethamphetamine (MDMA)
514 Methoxyamphetamine (PMA)
515 Methylenedioxyamphetamine (MDA)
516 Nabilone
517 Peyote
518 Phenylacetone (P2P)
519 Psilocybin
520 Psilocyn
521 Trimethoxy amphetamine
522 Ketamine
523 Alpha-Ethyltryptamine
524 Bromo-dimethoxyamphetamine
525 Bromo-dimethoxyphenethylamine
527 Lysergic Acid Amide
528 Lysergic Acid Diethylamide (LSD)
529 Methylaminorex
530 Meth-dimethoxyamphetamine
531 Methylenedioxy-Nethylamphetamine
533 N-Ethyl-1-phenylcyclohexylamine
534 Alpha-methyltryptamine
535 Dimethoxyethylamphetamine
536 Dimethoxy-(n)-propylthiophenethylamine
537 Methoxy-NN-diisopropyltryptamine
538 N-Hydroxymethylenedioxy-amphetamine
539 N-Methylpiperidyl benzilate
595 “Hallucinogens, Type Unknown”

600-695 CANNABINOID

600 Delta 9
601 Hashish Oil
602 Hashish
603 Marijuana/Marihuana
604 Marinol
605 Tetrahydrocannabinols (THC)
695 “Cannabinoid, Type Unknown”

700-795 PCP

700 Ethylamine
701 Parahexyl (Synhexyl)
702 Phencyclidine
703 Phencyclidine Analogs
704 Phenylcyclohexylamine
705 Piperidinocyclohexane-carbonitrile (PCC)
706 “Pyrrolidine (PCPy, PHP,TCPy) ”
707 Thiophene

708 Thienyl Cyclohexyl/piperidine
709 Phenylcyclohexyl-Pyrrolidine
710 Thienyl Cyclohexyl Pyrrolidine
795 “PCP, Type Unknown”

800-895 Anabolic Steroids

800 Boldenone
801 Chlorotestosterone
803 Dehydrochloromethyltestosterone
804 Dihydrotestosterone
805 Drostanolone
806 Ethylestrenol
807 Fluoxymesterone
808 Formebulone (Formebolone)
809 Mesterolone
810 Methandienone
811 Methandranone
812 Methandriol
813 Methandrostenolone
814 Methenolone
815 Methyltestosterone
816 Mibolerone
817 Nandrolone
818 Norethandrolone
819 Oxandrolone
820 Oxymesterone
821 Oxymetholone
822 Stanolone
823 Stanozolol
824 Testolactone
825 Testosterone
826 Trenbolone
827 Clostebol
828 Alpha, Beta-dihydroxy-alphaandrostane
829 Alpha-methyl-alpha-betadihydroxy- alpha-androstane
830 Alpha-methyl-beta-betadihydroxy- alpha-androstane
831 Alpha-methyl-beta-betadihydroxy-androstene
832 Alpha-methyl-delta 1-dihydrotestosterone
833 Alpha-methyl-hydroxynandrolone
834 Androstanedione
835 Androstenediol
836 Androstenedione
837 Beta, beta-dihydroxy-alphaandrostane
838 Bolasterone
839 Calusterone
840 Delta 1-dihydrotestosterone
841 Furazabol
842 Hydroxy-Nortestosterone
843 Hydroxytestosterone
844 Mestanolone
845 Methyldienolone
846 Methyltrienolone
847 Norandrostenediol
848 Norandrostenedione
849 Norbolethone
850 Norclostebol
851 Normethandrolone
852 Stenbolone
853 Tetrahydrogestrinone
854 Boldione
855 Desoxymethyltestosterone
856 Dienedione
895 “Anabolic Steroid, Type Unknown”

900-995 Inhalant

900 Volatile Solvents (toluene)
901 Plastic Cement (airplane glue)
902 Paint and Paint Removers
903 “Petroleum Products (gasoline, kerosene)”
904 Lacquer Thinners
920 Anesthetic Gases
921 Amyl Nitrite

923 Butly Nitrite
924 Nitrous Oxide
925 Ether
926 Chloroform
940 Aerosols (hydrocarbon gases)
941 Hair spray
942 Insecticides
943 Glass Chillers
944 Frying Pan Lubricants
945 Cyclohexl Nitrite
946 Enflurane
947 Halothane
995 “Inhalants, Type Unknown”

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Figure 4. Diagram of an Intersection – Source: ANSI D16.2-2007 Manual on Classification of Motor Vehicle Traffic Accidents, Seventh Edition

Figure 5: Overall Intersection Geometry Examples: – Source: Model Inventory of Roadway Elements, Version 1.0

Figure 19: FMCSA Table 1 and Table 2 – Source: https://www.law.cornell.edu/cfr/text/49/172.504

Figure 20: Separated Bike Lanes compared to other bicycle facility types – Source: from FHWA https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/separated_bikelane_pdg/page01.cfm#chapter1.

Figure 21: SAE International's Levels of Driving Automation; SAE International Standard J3016 (2014) – Source: SAE International Standard J3016 (2014)

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