

EMS Transport Safety Data – Wading thru the MMUCC

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ABSTRACT

Background: EMS transportation safety performance data is of recent research interest, however there is little focus on the manner this data is captured

Objective: To identify the data fields and manner in which ambulance collision data is captured

Methodology: Search of USA motor vehicle crash data standards and guidelines for nature of ambulance crash data fields and definitions. American National Standards Institute (ANSI) D16.1-2007, 7th Edition Manual on Classification of Motor Vehicle Traffic Accidents, and the Model Minimum Uniform Crash Criteria (MMUCC) 3rd Edition July 2008 and respective guidelines, were studied.

Results: Search of ANSI D16.1-2007, revealed no reference to ‘ambulance vehicles’, or to ‘fire trucks’, 4 references to ‘police vehicles’, and 11 references to ‘police’ activities, and 2 references to ‘emergency vehicles’. There were specifics for other transport ‘vehicles’ – (Burro carrying a load of firewood, Army tank, Balloon, Dirigible and Spacecraft). Search of MMUCC revealed 5 references to ambulances, 5 to police vehicles and 3 to fire trucks. The MMUCC definition for ‘ambulance’ includes, “vehicles serving dual purposes such as a hearse used for both funeral and emergency purposes” A ‘fire truck’ is defined as “a vehicle which is owned by any local, county, state or fire protection agency.” As regards emergency response – “Yes - is used if the motor vehicle was on an emergency response, regardless of whether the emergency equipment was actuated”. This data is captured at a State level in police report forms. Nationally, MMUCC compliance is approximately 75%.

Conclusions: These findings suggest that data capture system for identifying ambulance vehicles may create bias towards inaccurate and underreporting of ambulance crash events, also ambulances may be miscoded as fire trucks but not visa versa. Additionally, the designation of ‘emergency response’ is almost arbitrary. Any analysis of data on ambulance vehicle collisions should take into account the manner in which this data is captured and be cognizant of the potential biases and failures of reliable data capture. Furthermore – it is the responsibility of the leadership in the EMS community to ensure that there is proper input to the ongoing development of these transport data bases.

BACKGROUND

Whilst there have been a number of papers published in recent years addressing ambulance crashes – the data sources have been primarily originally traffic records data, that is State based data that is fed into national data bases.

There has to date been no formal analysis of the data definitions that are utilized by these traffic records system as regards the terms ‘ambulance’, ‘ambulance crash’, and ‘emergency response mode’

OBJECTIVE

To identify the data fields and manner in which ambulance collision data is recommended to be captured

METHODS

Search of USA motor vehicle crash data standards and guidelines for nature of ambulance crash data fields and definitions. American National Standards Institute (ANSI) D16.1-2007, 7th Edition Manual on Classification of Motor Vehicle Traffic Accidents, and the Model Minimum Uniform Crash Criteria (MMUCC) 3rd Edition July 2008 and respective guidelines, were studied (Fig 1). Both electronic search and a manual search of each document was conducted.

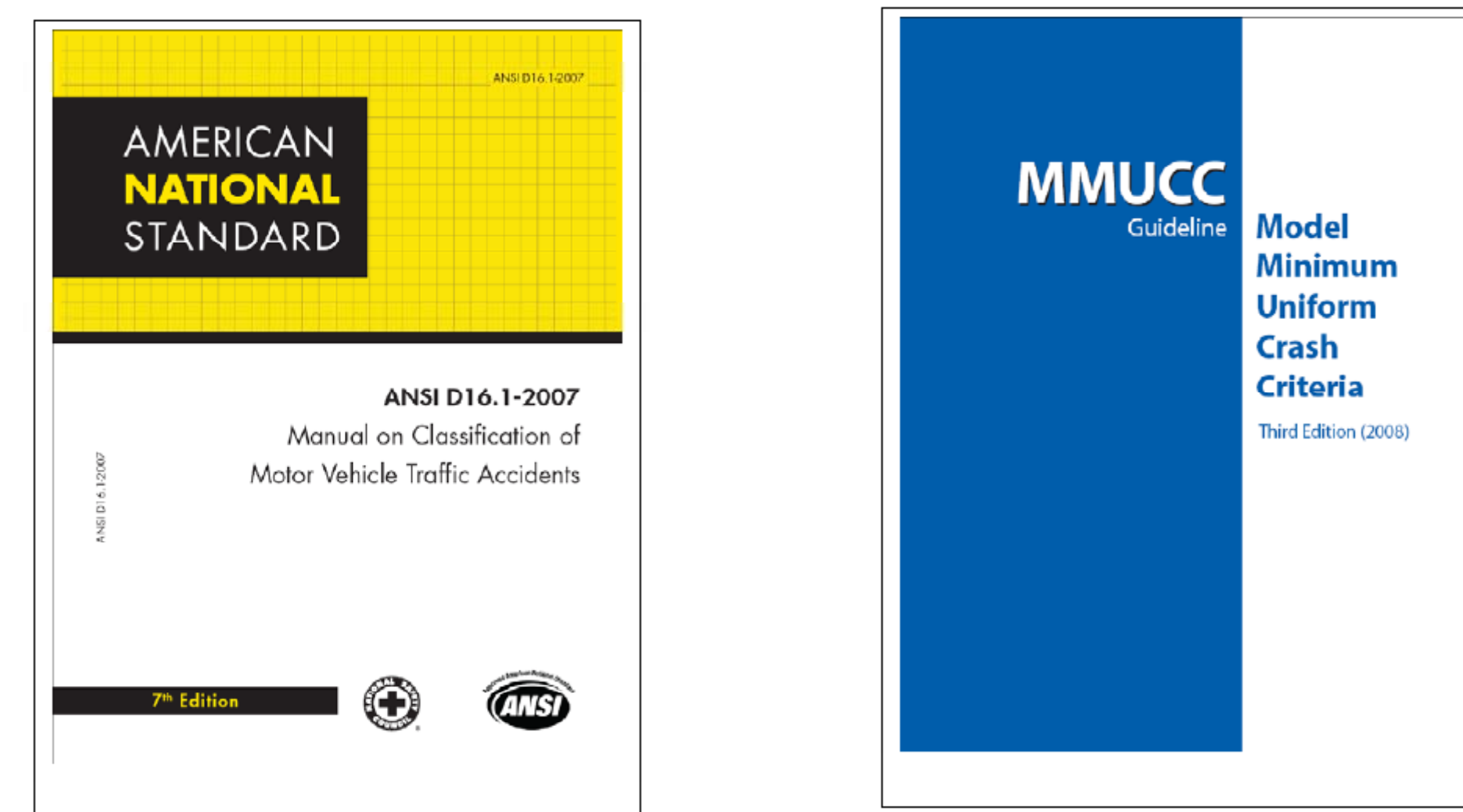


Fig. 1 D16.1-2007 and MMUCC 2008 documents

RESULTS

ANSI D16 - Search of ANSI D16.1-2007, revealed no reference to ‘ambulance vehicles’, or to ‘fire trucks’, 4 references to ‘police vehicles’, and 11 references to ‘police’ activities, and 2 references to ‘emergency vehicles’. There were specifics for other transport ‘vehicles’ – (Burro carrying a load of firewood, Army tank, Balloon, Dirigible and Spacecraft). Emergency vehicles were exempt from being a ‘working vehicle’ 2.2.7.2, (Fig. 2) and appeared not to be exempt from being a ‘commercial vehicle’ 2.2.7.3 when services were being remunerated (Fig. 2). The focus on emergency vehicles was largely skewed toward police vehicles.

MMUCC - Search of MMUCC revealed 5 references to ambulances, 5 to police vehicles and 3 to fire trucks. The MMUCC definition for ‘ambulance’ includes, “vehicles serving dual purposes such as a hearse used for both funeral and emergency purposes” (Fig. 3). A ‘fire truck’ is defined as “a vehicle which is owned by any local, county, state or fire protection agency” (Fig. 4). As regards emergency response – “Yes - is used if the motor vehicle was on an emergency response, regardless of whether the emergency equipment was actuated” (Fig. 5). This data is what is required to be captured in the traffic records compiled at a State level in police report forms. Nationally, currently MMUCC compliance is approximately 75%.

RESULTS

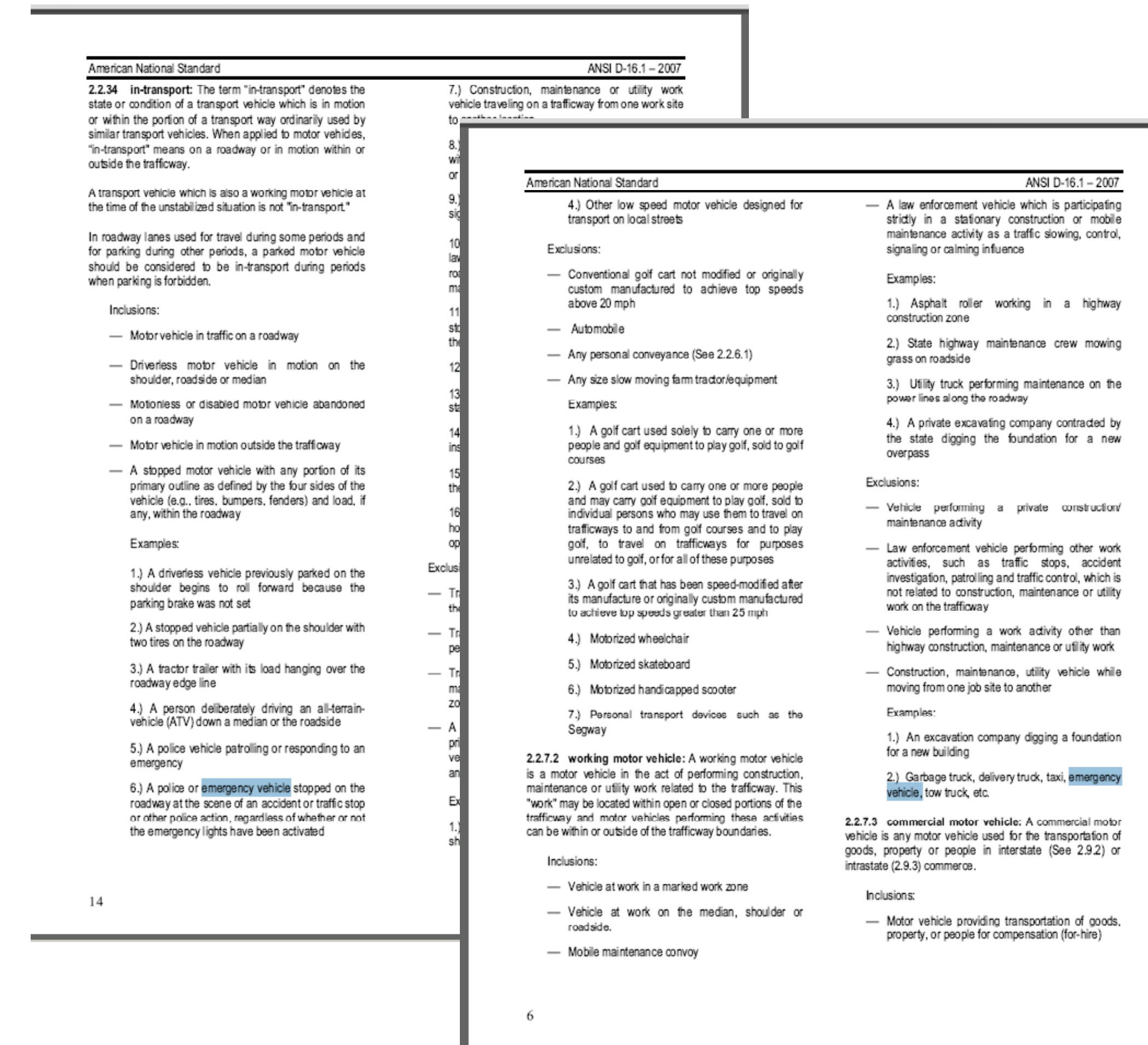


Fig 2. ANSI D16 references to Emergency Vehicles

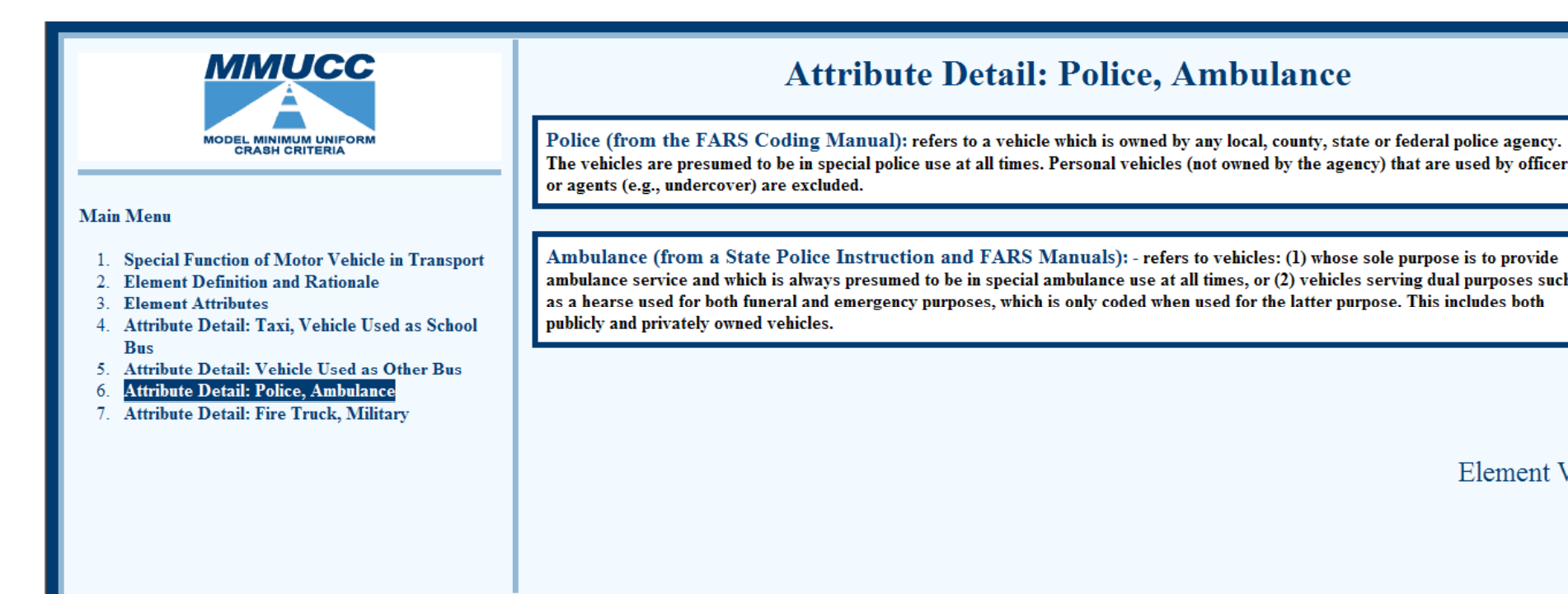


Fig 3. MMUCC Ambulance definition

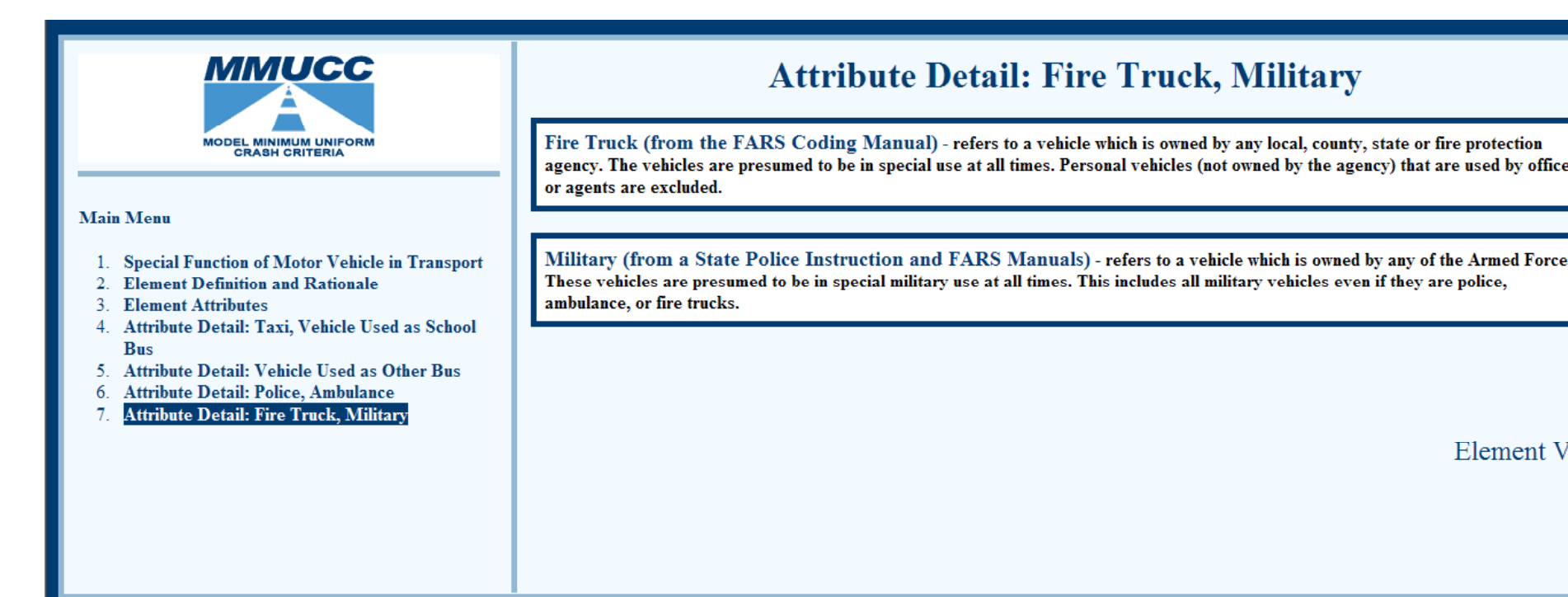


Fig 4. MMUCC Fire Truck definition

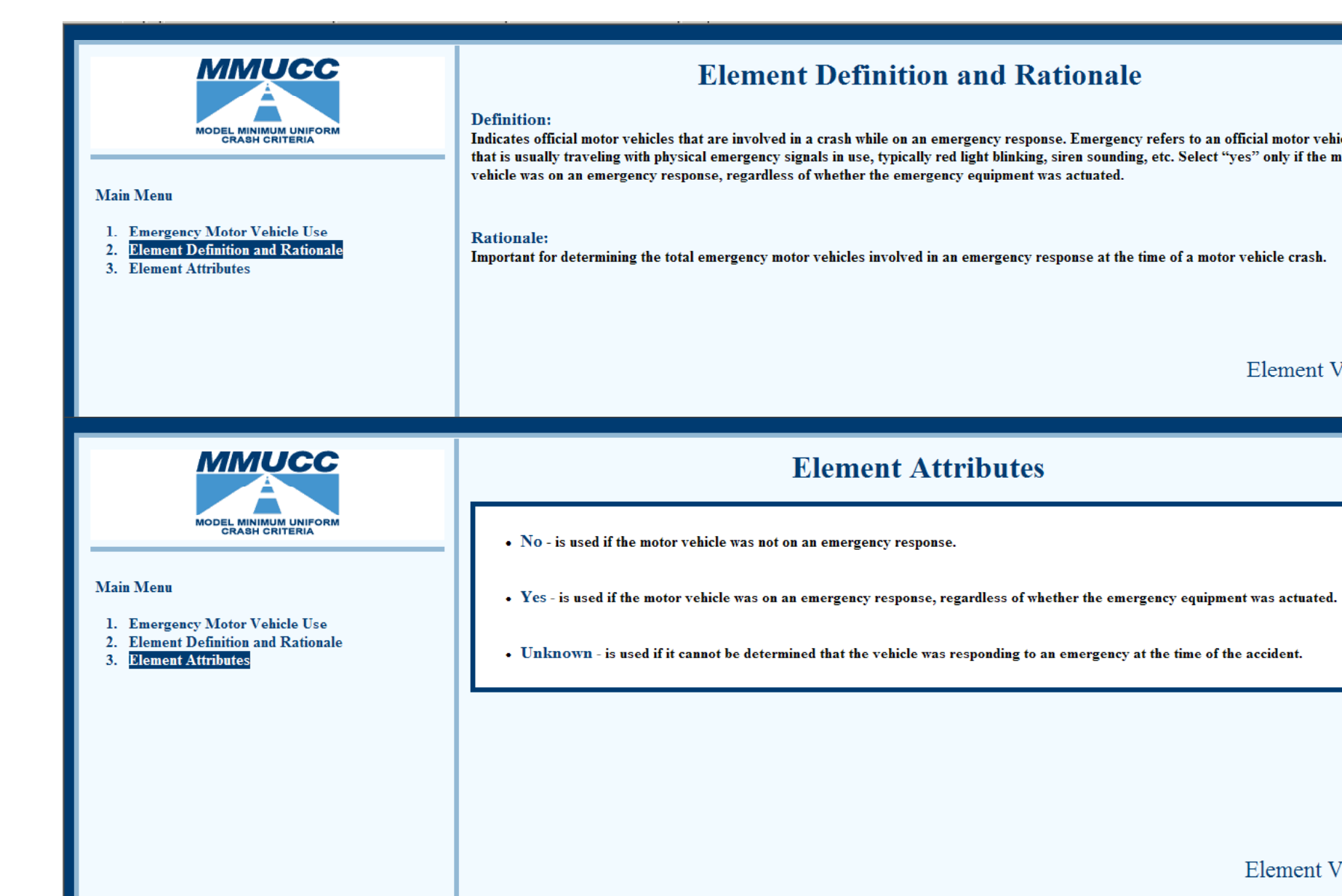


Fig 5. MMUCC Emergency Motor Vehicle Use

DISCUSSION

Although EMS collisions have been the subject of a number of peer-reviewed papers, citing their frequency and incidence, this study highlights the importance of clear determination of the foundation data elements that are being used to identify these vehicle events of interest.

To have a definition of an ambulance compiled with a police car, and quite confoundingly defining an ‘ambulance’ as an ‘ambulance’ or a ‘hearse when used for emergency purposes’ is problematic (Fig. 3)

Also, to have fire vehicles described in the same definition section as a military vehicle is similarly problematic. Furthermore, given this definition outlined (Fig. 4) it would seem that for any EMS service run by a fire service, then the ambulance would be coded as a ‘fire truck’ and not as an ambulance.

As regards ‘Emergency Motor Vehicle Use’, the definitions and attributes render this category virtually meaningless, yet this is a parameter that is instrumental in the review of ambulance operations risk management and its analysis.

Furthermore – it also demonstrates that even if the definitions as outlined in MMUCC were used with 100 % reliability that there would be serious confounding and confusion and also an underestimate of ambulance crash events given the terminology definitions that are currently recommended to be recorded

Although one member of the Consensus Committee was designated as an EMS representative for D16 – it appears that there has been no substantive focus on EMS in the final document.

LIMITATIONS

This study is focused on the recommended data capture fields, not the actual data capture fields at each State level in the traffic records data collection.

CONCLUSION

These findings suggest that the recommended data capture system for traffic records data collection may create unidirectional bias towards identifying ambulance vehicles, resulting in inaccurate and underreporting of ambulance crash events, also ambulances may be miscoded as fire trucks but not visa versa. Additionally, the designation of ‘emergency response’ is almost arbitrary. Any analysis of data on ambulance vehicle collisions should take into account the manner in which this data is captured and be cognizant of the potential biases and failures of reliable data capture. Furthermore – it is the responsibility of the leadership in the EMS community to ensure that there is proper EMS input to the ongoing development of these transport data bases.

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