



# The 2016 Motor Vehicle Occupant Safety Survey: Emergency Medical Services

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## Background

Emergency medical services (EMS) play a crucial role in traffic safety: In the United States, approximately one-third of all EMS responses for patients with an injury were motor-vehicle-crash-related in the period from 2012 to 2016 (National Highway Traffic Safety Administration, 2019). According to the Fatality Analysis Reporting System (FARS), during the same period, two out of every five people killed in motor vehicle crashes (MVCs) were alive at the scene of the crash. For this group of crash victims, receiving care from EMS clinicians may be the difference between life and death. Strengthening trauma systems may also prevent traffic deaths; a 2019 study documented that 13 percent of MVC fatalities in a sample of over 2,000 counties may have been prevented if EMS response times were shorter (Byrne et al., 2019). By providing optimal emergency care and field trauma triage to route a crash victim to the appropriate facility for care, EMS clinicians can prevent many traffic injuries from becoming fatal.

The National Highway Traffic Safety Administration has supported comprehensive national EMS system development for more than 50 years. NHTSA's Office of EMS provides Federal leadership to improve prehospital emergency medical care, including promoting countermeasures that mitigate MVC injuries, such as field trauma triage protocols and evidence-based guidelines for prehospital care. NHTSA has also supported the collection of timely and accurate EMS data to improve patient outcomes and EMS systems. Future efforts to link EMS data to FARS, hospital, and/or other data on patient outcomes may provide valuable insight into the impact of EMS care on MVC-related morbidity and mortality and help save lives (Cherry et al., 2018).

## Methods

The 2016 Motor Vehicle Occupant Safety Survey (MVOSS), the seventh in a series of periodic national surveys, consists of two questionnaires administered to a nationally representative sample of approximately 12,000 people. The second

survey included 32 questions about EMS that are reported here. Survey administration began June 14, 2016, and ended February 24, 2017. Respondents 18 years or older were recruited using address-based sampling to create a probability-based, nationally representative sample. Respondents received \$1 upon receipt of the survey invitation and \$5 for returning a completed survey.

MVOSS contacted a random sample of 24,000 households allocated proportionally across the 10 NHTSA Regions (all United States and territories). The final sample included 5,410 completed surveys. About half (49%) of respondents completed the online survey. The data is weighted to yield national estimates.

## Results

### EMS and 911 Usage

Overall, 57 percent of respondents reported calling 911 or another emergency number at least once. Among respondents who had ever placed an emergency call, more than half (54%) reported their most recent call had been to request an ambulance, rescue squad or EMS.

Among callers who used a wireless phone to report an emergency while driving or riding in a motor vehicle, 62 percent were calling to report a motor vehicle crash (see Table 1).

**Table 1. Kind of Emergency Reported by Respondents Who Called 911 From a Motor Vehicle\***

Kind of Emergency	Percentage
Motor vehicle crash	62%
Reckless/aggressive driver	31%
Drunk driver	29%
Broken down or disabled vehicle	26%
Pedestrian walking or cycling on roadway	1%
Other	32%

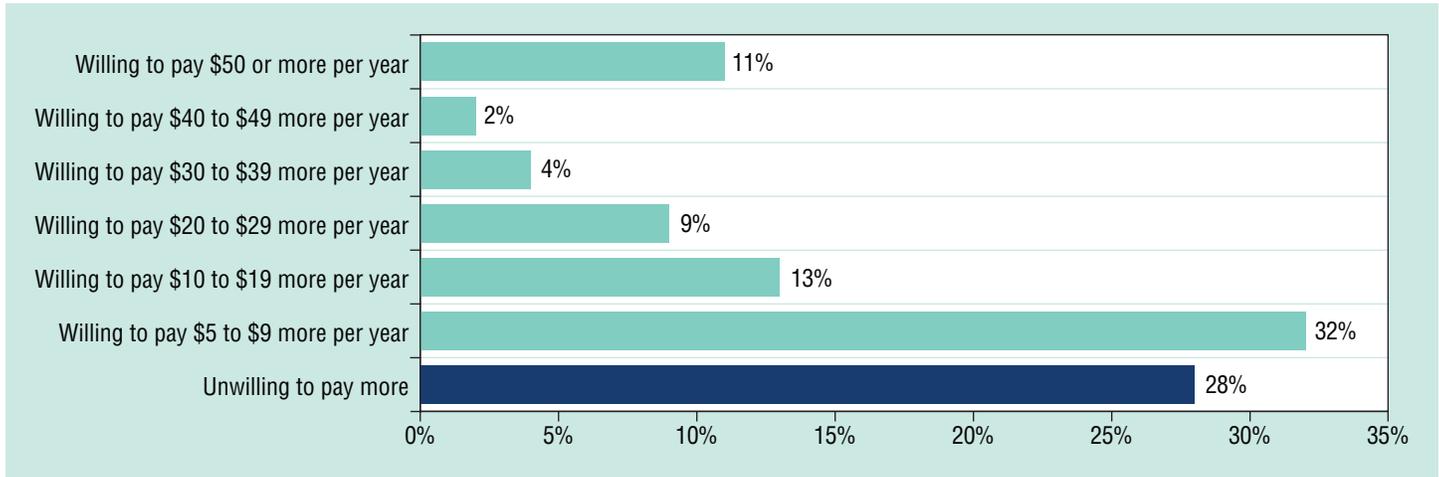
\*Total exceeds 100 percent because multiple responses were accepted.

### EMS as an Essential Service

Ninety-two percent of respondents considered EMS to be an essential government service. Among respondents who had ever called 911, this figure was significantly higher (94%,  $\chi^2=15.5$ ,  $df=1$ ,  $p<.0001$ ). Respondents also indicated high levels of trust in EMS clinicians, with 99 percent reporting they were very or somewhat confident that an ambulance, rescue squad, or EMS worker responding to a 911 call would know what to do.

Over three-quarters of all respondents (77%) believed communities should fund EMS in the same way as police and fire department services. Seventy-two percent of all respondents and 75 percent of respondents who had ever called 911 reported they were willing to pay at least \$5 or more in fees or taxes to fund improved EMS equipment and training.

**Figure 1. Willingness to Pay for Community’s EMS System to Improve EMS Equipment and Training**



### Discussion

Results from MVOSS demonstrated the strong link between EMS and MVC and the high degree to which the public values and trusts EMS clinicians. Nearly all (99%) respondents reported confidence in EMS clinicians. This level of trust is striking, given the high levels of skill that may be required for the provision of effective prehospital triage and treatment. The majority of respondents considered EMS to be an essential service. However, these perceptions are not consistent with how EMS is classified and funded at State and local levels. A 2014 NHTSA report indicated that only four States (California, Colorado, North Carolina, and Oregon) had designated EMS as an essential service and no localities in any State had designated EMS as essential (Van Milligan et al., 2014).

After EMS clinicians arrive at the scene of a crash, they assess injuries and may treat at the scene and/or while transporting victims to hospitals or trauma centers for higher levels of care. In 2017 and 2018, EMS transported 64 percent of patients in motor-vehicle-crash-related responses to facilities for additional medical care (NHTSA, 2019). Delivering MVC victims to the appropriate level of care is crucial to improving outcomes; one study demonstrated that moderately to severely injured adults treated at Level 1 trauma centers had a 25 percent lower risk of death, compared to their counterparts who were treated at non-trauma centers (Mackenzie et al., 2006). Unfortunately, from 2011 to 2015, more than one-third of severely injured MVC victims in the United States were estimated to have not been initially transported to a Level 1

or 2 trauma center (NHTSA, 2014). It is crucial that the EMS system provides a patient with the right care at the right time. Establishing field trauma triage protocols, educating EMS clinicians on their necessity, and evaluating how well protocols are followed may help EMS systems achieve the appropriate provision of care.

### Future Directions

Collecting consistent data on these metrics is important for supporting these efforts. NHTSA funds this data collection through the National Emergency Medical Services Information System (NEMSIS; <https://nemsis.org>), which serves as a universal standard for how patient care information from an EMS response should be documented. NEMSIS is a collaborative system to improve patient care through the aggregation and utilization of point-of-care EMS data at local, State and national levels. Linking NEMSIS data to FARS and other data sources may provide a more complete picture of MVC-related injury and death and identify opportunities for EMS intervention (Cherry et al., 2018).

Educating and empowering bystanders to provide medical assistance to crash victims before EMS arrives could also improve outcomes. To this end, the Federal Emergency Management Agency developed a bystander training program called “You are the Help Until Help Arrives” (<https://community.fema.gov/until-help-arrives>), and the Department of Defense developed the “Stop the Bleed” campaign, which seeks to better prepare the public to stop life-threatening bleeding ([www.bleedingcontrol.org](http://www.bleedingcontrol.org)).

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