

## TRAFFIC SAFETY FACTS

# Emergency Medical Services

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### INTRODUCTION

There are typically many contributing factors in motor vehicle crashes. Emergency Medical Services (EMS) play a critical role post-crash to reduce fatalities and serious injuries. Recent studies show that an effective emergency trauma care system can improve survival from serious injuries by as much as 25 percent and county-level coordinated systems of trauma care can reduce crash fatalities rates as much as 50 percent.

The Haddon Matrix (see Figure 1) applies basic principles of public health to motor vehicle-related injuries. The matrix looks at the factors in the pre-crash, crash, and post-crash phases to see how the driver, vehicle, and environment affect the outcome. Specifically, it identifies the factors that impact the prevention, severity, and survivability of crashes. For EMS, some factors are response time, proximity to an appropriate trauma center, and access to first responders with the appropriate equipment and training.

The national 911 system was implemented over 50 years ago to provide efficient public access to emergency assistance. While effective, the 911 system must also evolve with technological improvements. A 911 system update is planned in the near future which will allow users to securely send text messages, video, and photos to 911, and in turn allow 911 dispatchers to transmit this information along with location information on to first responders. This enhanced 911 system will allow first responders to more accurately locate crash victims to assess their injuries, thereby improving patient outcomes. In 2019, 33 states - including California - the District of Columbia, and two tribal nations were awarded grant funding to upgrade their Next Generation 911 capabilities.

### KEY FINDINGS

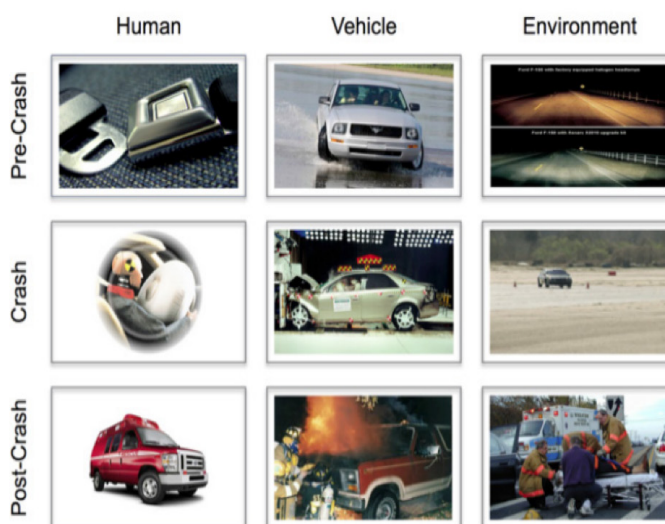
#### NATIONAL DATA

In 2019, there were 36,096 people killed in motor vehicle crashes and countless more who were injured on United States roadways. As seen in the Haddon Matrix, increased coordination between first responders, hospitals, and other traffic safety stakeholders, enhanced training, and EMS system improvements would increase survivability from a crash (See Figure 1). In emergency medicine, the quicker a traumatic injury victim receives medical attention, the better the chance of preventing death. Improved timeliness and technologies, proximity to care, and roadway access increase a victim's chance of survivability.

Traffic incidents put travelers' and responders' lives at risk; the corresponding congestion can lead to secondary crashes that further increase safety risk and economic costs. The National Traffic Incident Management (TIM) Responder Training was developed to help first responders quickly detect, respond to, and remove traffic incidents to restore traffic capacity as quickly and safely as possible. The Federal Highway Administration (FHWA) has prioritized TIM under its "Every Day Counts"

initiatives since 2012. They are currently working to improve its data collection and encouraging the adoption of three national TIM performance measures: reducing roadway clearance time, incident clearance time, and the number of secondary crashes.

Figure 1: Emergency Medical Services Haddon Matrix



Source: NHTSA, 2016.

## CALIFORNIA DATA

### State Emergency Medical Services System

California's EMS system management includes 33 local EMS systems that serve all 58 counties through seven regional EMS systems and 26 single-county agencies. Regional systems are usually comprised of smaller, more rural counties, whereas single-county systems are generally in larger and more urban counties. Of the seven regional EMS systems, six are multi-county agencies, which serve 30 counties in rural areas that have substantial tourism; multi-county EMS agencies are comprised of three or more counties.

As of April 2021, the state's trauma center network consists of 79 designated trauma centers and admitted over 70,000 trauma patients per year, though not all related to motor vehicle crashes. Almost three-quarters of the designated trauma centers (73.4 percent) offer Level I or Level II trauma services alongside other comprehensive resources needed for providing definitive care. Nearly one quarter (24.1 percent) of the designated trauma centers are designated pediatric trauma centers. Six counties do not have a designated trauma center within their boundaries but have approved trauma plans. Rural California faces more barriers to trauma care due to limited access to higher level trauma centers and more remote distances to care.

Of the 58 licensed hospitals designated as a Level I or Level II trauma center, one-quarter (24.1 percent) are designated as both a Level I or Level II trauma center and a Level I or Level II pediatric trauma center by the American College of Surgeons (ACS), the Local EMS Agency (LEMSA), or both.

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### State Traffic Incident Management

In California, preliminary 2019 data shows that there were 3,606 fatalities from motor vehicle crashes and 16,427 serious injuries<sup>1</sup>.

Since the typical crash response in California puts fifteen people (including numerous law enforcement, fire department, EMS, towing, and Caltrans responders) potentially in harm's way and an injury crash occurs every three minutes, a responder is placed in harm's way 2.7 million times each year in California. On California's highways between 2010 and April 2021, there were 49 responders killed in the line of duty. As of February 2021, California had 26,449 first responders trained in Strategic Highway Research Project (SHRP2) TIM, which represented 37.1 percent of the state's first responder workforce. While this percentage fell shy of the national goal of 45 percent or more, California ranked fourth in the nation in the number of responders trained in SHRP2 TIM. By improving TIM training, California could reduce congestion related to traffic crashes and the risk of secondary crashes.

<sup>1</sup> The fatality figure is from 2019 FARS ARF and the serious injury number is from 2019 SWITRS data provisional as of March 2021.

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