

TRAFFIC SAFETY FACTS

Emergency Medical Services

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PROBLEM IDENTIFICATION AND DATA ANALYSIS

There are 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 United States Department of Transportation uses the Safe System Approach to bring traffic deaths and serious injuries to zero. The Safe System Approach recognizes human mistakes and vulnerabilities, and designs a system with many redundancies in place to protect everyone. The Federal Highway Administration (FHWA) names “Post-Crash Care” as a key element of a Safe System. Specifically, post-crash care refers to emergency first response and transport to medical facilities, as well as forensic analysis of the crash site and traffic incident management.

The Haddon Matrix applies basic principles of public health to motor vehicle-related injuries (see Figure 1). 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, specifically upgrading from an analog to a digital system. Next Generation 911 (NG911) improves success and reliability of the 911 system by allowing 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 to first responders. NG911 will allow first responders to more accurately locate crash victims to assess their injuries, thereby improving patient outcomes.

Figure 1: Haddon Matrix

	Human	Vehicle	Environment
Pre-Crash			
Crash			
Post-Crash			

Source: NHTSA, 2016.

KEY FINDINGS

NATIONAL DATA

In 2020, there were 38,824 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. 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.

Each crash puts motorists and first responders at risk of secondary crashes while also increasing congestion. In response, the Federal Highway Administration (FHWA)

developed the national Traffic Incident Management (TIM) Responder Training to help transportation agencies and first responders establish coordinated processes to quickly detect, respond to, and remove traffic incidents to restore traffic capacity and flow as quickly and safely as possible. TIM became the national standard of practice for law enforcement, EMS, and others responding to roadway incidents. Through 2020, more than half a million responders, primarily those working on interstates and high-speed roads, were trained to clear traffic incidents. The latest FHWA Everyday Counts 6 (EDC-6) initiative introduces a new enhanced next-generation TIM (NextGen TIM) with an emphasis on local agencies and off-interstate applications. Specifically, it integrates emerging technologies, tools, and training to improve incident detection and reduce safety response and clearance times.

CALIFORNIA DATA

State Emergency Medical Services (EMS) System

California's EMS system management includes 33 local EMS systems that serve all 58 counties through 7 regional EMS systems and 26 single-county agencies. Regional systems were more typical for less-populated 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 serving thirty counties in rural areas with extensive tourism; a multi-county EMS agency is defined as an entity of three or more counties.

As of April 2021, the state's trauma center network consisted 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 farther 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.

State Traffic Incident Management

Preliminary data indicate that there were 3,558 fatal crashes and 13,162 serious injury crashes on California roadways in 2020. This means that responders were at risk of injury while responding to over 45 fatal or serious injury crashes each day. In 2021, California extended "Move Over, Slow Down" provisions to apply to local streets and roads in addition to freeways. Despite this, first responders continue to be killed in the line of duty. As of July 2021, California had 27,296 first responders trained in TIM, which represented 38.3 percent of the state's first responder workforce. California ranked 30th in terms of percent of the workforce trained in TIM and was one of 25 states who fell below the national goal of 45 percent or more responders trained. By improving TIM training, California could reduce traffic crashes related to stopped vehicles and the subsequent risk of secondary crashes.

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