

## TRAFFIC SAFETY FACTS

# Emergency Medical Services

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### INTRODUCTION

In 2016, there were 34,439 fatal crashes and countless more injury crashes in the United States. Increased coordination between first responders, hospitals, and other traffic safety stakeholders, along with better-quality EMS data collection, would enhance planning efforts to improve first responder time to collisions. In emergency medicine, practitioners have a “golden hour,” sometimes less, following traumatic injury wherein prompt medical attention offers the highest chance to prevent death. Thus, improved timeliness and technologies, proximity to care, and roadway access increase a victim’s chance of survival.

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 and is 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.

The Haddon Matrix is a model which applies basic principles of public health to motor vehicle-related injuries. It is based on three phases of a crash and the factors that impact the prevention, severity, and survivability of crashes. Applying the Haddon Matrix, Emergency Medical Services (EMS) play a critical role

in all facets of the model, especially in the post-crash phase, as seen in the table below, to minimize the consequences of a crash. Response time, proximity to an appropriate trauma center, and access to first responders with the appropriate equipment and training are all key factors for reducing the chance of fatalities. In traffic safety, EMS is recognized as a critical component.

**Emergency Medical Services Haddon Matrix**

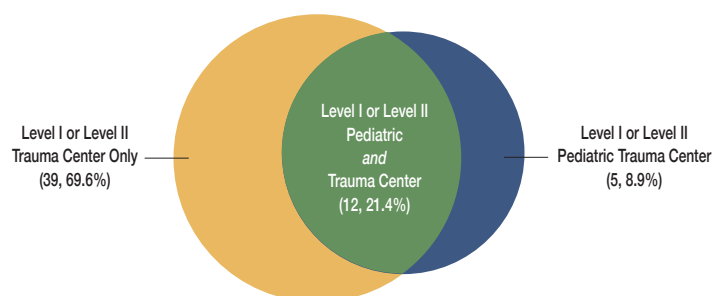
	Pre-Crash	Crash	Post-Crash
<b>Human Factors</b>	<ul style="list-style-type: none"> <li>• Education and licensing</li> <li>• Driver impairment</li> <li>• Crash avoidance maneuvers (braking, turning, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Health at time of crash</li> <li>• Sitting properly in restraint</li> <li>• Impairment</li> </ul>	<ul style="list-style-type: none"> <li>• Response to EMS</li> <li>• Severity of injury</li> <li>• Type of injury</li> </ul>
<b>Vehicle/ Equipment Factors</b>	<ul style="list-style-type: none"> <li>• Crash avoidance equipment and technology (lights, tires, collision avoidance, etc.)</li> <li>• Vehicle design</li> <li>• Vehicle load</li> </ul>	<ul style="list-style-type: none"> <li>• Speed of travel</li> <li>• Functioning of safety equipment (seat belts, air bags, child restraints)</li> <li>• Energy absorption of vehicle</li> </ul>	<ul style="list-style-type: none"> <li>• Ease of extraction from vehicle</li> <li>• Integrity of fuel systems and battery systems</li> </ul>
<b>Physical Environment</b>	<ul style="list-style-type: none"> <li>• Road hazards</li> <li>• Distractions</li> <li>• Weather conditions</li> </ul>	<ul style="list-style-type: none"> <li>• Roadside features</li> <li>• Guardrails</li> <li>• Type and size of object struck</li> </ul>	<ul style="list-style-type: none"> <li>• Distance of EMS personnel</li> <li>• Notification of EMS personnel</li> <li>• Accessibility to crash victims</li> </ul>
<b>Social/ Economic</b>	<ul style="list-style-type: none"> <li>• Enforcement activities</li> <li>• Insurance incentives</li> <li>• Social norming</li> <li>• Ability to use safety equipment appropriately</li> </ul>	<ul style="list-style-type: none"> <li>• Laws concerning use of safety equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Trauma system equipment, personnel, training</li> <li>• Information sharing</li> </ul>

## CALIFORNIA FACTS

### CALIFORNIA DATA

- California's EMS system management has 33 local EMS systems serving all 58 counties through seven regional EMS systems and 26 single-county agencies.
- The state's trauma center network comprises 81 hospitals and admits over 70,000 trauma patients per year, though not all related to motor vehicle collisions. Over two-thirds (69.1%) offer Level I or II trauma services along with other comprehensive resources providing definitive care, and over one-fifth (21.0%) 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 56 licensed hospitals designated as a Level I or II trauma center, over one-fifth (21.4%) are designated as both a Level I or II trauma center and a Level I or II pediatric trauma center.
- In California in 2016, there were 3,623 fatalities from motor vehicle collisions and 13,171 severe injuries.
- A typical crash response in California puts fifteen people (including law enforcement, fire department, EMS, towing, and Caltrans responders) potentially in harm's way, and an injury collision occurs every three minutes. A responder is in harm's way 2.7 million times each year in the state. Between 2010 and June 2017, there were 30 responders killed in the line of duty.
- As of January 2018, 27.9% of first responders were trained in SHRP-2 TIM, approaching the national goal of 30%. By improving TIM training, California could reduce congestion related to traffic crashes and the risk of secondary collisions.

### Trauma Centers in California by Designation



### REFERENCES

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