

# EMERGENCY MEDICAL SERVICES



## OVERVIEW

Emergency Medical Services provides oversight for the prehospital (paramedics and emergency medical technicians) and trauma systems as well as maintains the Prehospital Database, the Trauma Registry and the Statewide Integrated Traffic Records System Database (SWITRS) for injury crashes occurring in San Diego County. As part of the County's ongoing commitment to quality services and research, data are collected, analyzed and disseminated.

The San Diego County emergency patient care delivery system consists of 30 ambulance providers including two Advanced Life Support aeromedical providers, 47 first responders agencies, the County Sheriff's Aerial Support to Regional Enforcement Agencies (ASTREA) and 24 hospitals with permits for emergency services. Of these 24 hospitals, eight are designated base hospitals; five designated adult trauma centers and one pediatric trauma center.

The prehospital system provides on-scene treatment for medical and trauma patients and transportation to appropriate facilities. The base hospitals provide on-line medical direction and control, linking the prehospital provider to a designated base hospital physician and mobile intensive care nurse. In cases of major trauma, prehospital providers bypass community hospitals in favor of designated trauma centers. The trauma centers have personnel and equipment available 24 hours a day to provide a wide range of diagnostic and treatment services. Currently there are six trauma centers serving San Diego County: Scripps Mercy Hospital and Health Center, Palomar Medical Center, Scripps Memorial Hospital, Sharp Memorial Hospital, UCSD Medical Center and Children's Hospital and Health Center.

This section includes injury data from prehospital providers, trauma registries and Medical Examiner's office for fiscal year 1996/97 to portray the patterns of emergency medical care in San Diego County. Calculated rates are based on January 1, 1997 population estimates provided by San Diego Association of Governments (SANDAG). The rates in this section are per 100,000 population unless otherwise noted.

For more detailed information please refer to the San Diego County Trauma System Annual Report and the San Diego County Prehospital Annual Report. These and other injury related reports are available from Emergency Medical Services.

**DATA LIMITATIONS:**

1. Injury rates may be under-reported because some patients may transport directly to emergency rooms for treatment bypassing the "911" emergency response system. Patients who go to their private physicians, and patients who do not seek treatment for their injuries are not included.
2. The data is reported by place of INCIDENCE by ZIP CODE not place of RESIDENCE. Adjustments are made in the data to transform zip codes into aggregations of census tracts in order to develop population based rates.

The prehospital data includes all paramedic emergency responses. All death information is from the Medical Examiner's Data and all serious injuries refer to Trauma Registry patients. To be entered into the trauma registry, a patient must meet modified MTOS criteria by meeting one of the following: admission to the hospital for three days, admission to an intensive or intermediate care unit, interfacility transfer to or from an acute care hospital or death from traumatic injuries.

In comparing San Diego County injury death rates to national rates and 2010 targets, San Diego is already lower than the 2010 goal for firearm and overall motor vehicle-related deaths. However, San Diego County still exceeds the 2010 goals for pedestrian related-deaths and fall-related deaths.

Goal	Baseline	2010 Target	San Diego FY96/97
Reduce firearm related deaths	13.9/100,000 in 1995	13.9/100,000	9.84/100,000
Reduce deaths caused by overall motor vehicle crashes	15.8/100,000 in 1996	11.4/100,000	10.64/100,000
Reduce pedestrian deaths	2.0/100,000 in 1996	1.7/100,000	2.24/100,000
Reduce deaths from falls	1.6/100,000 in 1995 (age adjusted)	2.3/100,000	3.82/100,000



**TABLE 9.1 Leading Causes of Injury-Related Mortality and Morbidity In San Diego County During FY 96/97 by Age Group**

Age Group	Death	Severe Injury	Paramedic Response
0-4	Motor Vehicle Occupant Pedestrian (second) Struck by, against (second)	Fall Pedestrian Motor Vehicle Occupant	Fall Motor Vehicle Occupant Pedestrian
5-9	Pedestrian Motor Vehicle Occupant Firearm	Fall Motor Vehicle Occupant Pedestrian	Fall Motor Vehicle Occupant Pedestrian
10-14	Motor Vehicle Occupant Pedalcycle Firearm (third) Pedestrian (third)	Fall Motor Vehicle Occupant Struck by, against	Motor Vehicle Occupant Fall Struck by, against
15-19	Motor Vehicle Occupant Firearm Pedestrian	Motor Vehicle Occupant Struck by, against Firearm	Motor Vehicle Occupant Struck by, against Fall
20-24	Firearm Motor Vehicle Occupant Fall (third) Pedestrian (third)	Motor Vehicle Occupant Firearm (second) Motorcyclist (second)	Motor Vehicle Occupant Struck by, against Fall
25-34	Firearm Motor Vehicle Occupant Pedestrian	Motor Vehicle Occupant Fall Cut, pierce	Motor Vehicle Occupant Struck by, against Fall
35-44	Firearm Motor Vehicle Occupant Fall	Motor Vehicle Occupant Fall Struck by, against	Motor Vehicle Occupant Fall Struck by, against
45-54	Firearm Motor Vehicle Occupant Fall	Motor Vehicle Occupant Fall Pedestrian	Motor Vehicle Occupant Fall Struck by, against
55-64	Firearm Motor Vehicle Occupant Fall	Motor Vehicle Occupant Fall Struck by, against	Fall Motor Vehicle Occupant Struck by, against
65-74	Firearm Motor Vehicle Occupant Fall	Motor Vehicle Occupant Fall Pedestrian	Fall Motor Vehicle Occupant Struck by, against
75-84	Fall Firearm Motor Vehicle Occupant	Motor Vehicle Occupant Fall Pedestrian	Fall Motor Vehicle Occupant Pedestrian
85+	Fall Firearm Motor Vehicle Occupant (third) Pedestrian (third)	Fall Motor Vehicle Occupant Pedestrian	Fall Motor Vehicle Occupant Struck by, against

Source: Emergency Medical Services, Health and Human Services Agency, County of San Diego; Medical Examiner's Data, Trauma Registry and Prehospital Patient Records, FY 96/97.  
Please note: Table excludes Other and Unknown causes.

**TABLE 9.2 Leading Causes of Injury-Related Mortality and Morbidity In San Diego County During FY 96/97 by HHS Region**

HHS Region	Death	Severe Injury	Paramedic Response
Overall San Diego County	Firearm Motor Vehicle Occupant Fall	Motor Vehicle Occupant Fall Struck by, against	Motor Vehicle Occupant Fall Struck by, against
Central	Firearm Fall Pedestrian	Fall Motor Vehicle Occupant Pedestrian	Fall Motor Vehicle Occupant Struck by, against
North Central	Firearm Motor Vehicle Occupant Fall	Motor Vehicle Occupant Fall Pedestrian	Motor Vehicle Occupant Fall Struck by, against
South	Firearm Motor Vehicle Occupant Fall	Motor Vehicle Occupant Fall Cut, pierce	Fall Motor Vehicle Occupant Struck by, against
North Coastal	Firearm Motor Vehicle Occupant Pedestrian	Motor Vehicle Occupant Fall Pedestrian	Fall Motor Vehicle Occupant Struck by, against
East	Firearm Motor Vehicle Occupant Fall	Motor Vehicle Occupant Fall Pedestrian	Fall Motor Vehicle Occupant Struck by, against
North Inland	Motor Vehicle Occupant Firearm Fall	Motor Vehicle Occupant Fall Pedestrian	Motor Vehicle Occupant Fall Struck by, against

Source: Emergency Medical Services, Health and Human Services Agency, County of San Diego; Medical Examiner's Data, Trauma Registry and Prehospital Patient Records, FY 96/97.  
Please note: Table excludes Other and Unknown causes.

Tables 9.1 and 9.2 compare the leading causes of traumatic death, severe injury and paramedic response by age group and region. Firearm is the leading cause of death for individuals aged 20 to 74 years of age. A comparison between this column and the paramedic response column shows that the leading cause of paramedic response for injury for those aged 10 to 54 was motor vehicle occupant. With minor exceptions, the patterns of injury are the same throughout the county. For all regions except North County Inland firearm is the leading cause of traumatic death, while in North County Inland the leading cause is motor vehicle occupant. Similarly, for all regions except Central, motor vehicle occupant is the leading cause of severe injury; in Central, fall is the most common traumatic injury.

The injury groupings in the above tables are based on Center for Disease Control and Prevention (CDC) recommended categorizations by mechanism adopted in 1997. While this grouping methodology answers the question of how many firearm injuries occurred, it does not account for the intent; i.e. unintentional, assault, self-inflicted or other. If this table included groupings by intent rather than mechanism, homicide would be the leading cause of deaths for children under the age of five.

Tables 9.3 and 9.4 show the incidence and rate of injury mechanisms by intent for severe injury and death based on Trauma Registry and Medical Examiner's data. Mortality is further explored in Figure 9.1. Comparing injury related mortality with morbidity by mechanism and intent, it is evident that the majority of firearm deaths are self-inflicted (suicide) while the majority of firearm severe injuries are assaults. The highest rates of both severe injuries and deaths overall are unintentional, and the majority of these are motor vehicle-related.

**TABLE 9.3**

**Severe Injury-Related Morbidity  
In San Diego County During FY 96/97 by Mechanism/Cause and Manner/Intent**

Mechanism/Cause	Manner/Intent									
	Unintentional		Self-Inflicted		Assault		Other		Total	
	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate
Cut/Pierce	15	0.55	39	1.43	185	6.79	0	---	239	8.77
Fall	721	26.46	15	0.55	23	0.84	0	---	759	27.86
Firearm	23	0.84	13	0.48	142	5.21	6	0.22	184	6.75
MV Traffic	2128	78.11	0	---	0	---	0	---	2128	78.11
<i>Occupant</i>	1469	53.92	0	---	0	---	0	---	1469	53.92
<i>Motorcyclist</i>	213	7.82	0	---	0	---	0	---	213	7.82
<i>Pedalcyclist</i>	95	3.49	0	---	0	---	0	---	95	3.49
<i>Pedestrian</i>	306	11.23	0	---	0	---	0	---	306	11.23
<i>Unspecified</i>	45	1.65	0	---	0	---	0	---	45	1.65
<i>Pedalcyclist, other</i>	134	4.92	0	---	0	---	0	---	134	4.92
<i>Transport, other</i>	167	6.13	0	---	0	---	0	---	167	6.13
Bites and Stings	12	0.44	0	---	0	---	0	---	12	0.44
Struck by, against	135	4.96	0	---	223	8.19	11	0.40	369	13.54
Other	35	1.28	8	0.29	156	5.73	62	2.28	261	9.58
<b>Total</b>	<b>3089</b>	<b>113.38</b>	<b>75</b>	<b>2.75</b>	<b>729</b>	<b>26.76</b>	<b>360</b>	<b>13.21</b>	<b>4253</b>	<b>156.11</b>

Source: Emergency Medical Services, Health and Human Services Agency, County of San Diego; Trauma Registry, FY 96/97.



**TABLE 9.4** Injury-Related Mortality  
In San Diego County During FY 96/97 by Mechanism/Cause and Manner/Intent

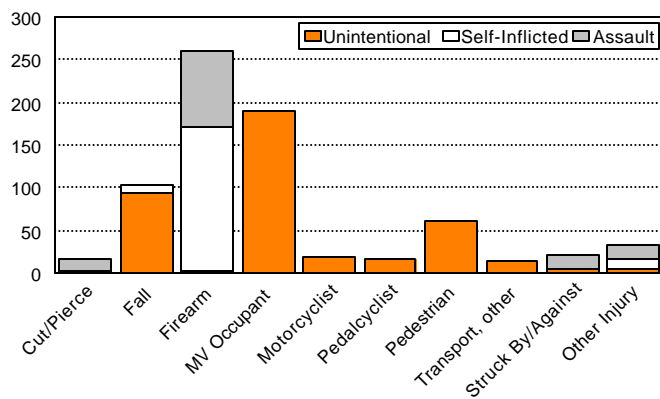
Mechanism/Cause	Manner/Intent									
	Unintentional		Self-Inflicted		Assault		Other		Total	
	#	Rate	#	Rate	#	Rate	#	Rate	#	Rate
Cut/Pierce	0	---	2	*	16	0.59	0	---	18	0.66
Fall	93	3.41	11	0.40	0	---	0	---	104	3.82
Firearm	3	*	169	6.20	88	3.23	8	0.29	268	9.84
MV Traffic	290	10.64	0	---	0	---	0	---	290	10.64
Occupant	190	6.97	0	---	0	---	0	---	190	6.97
Motorcyclist	20	0.73	0	---	0	---	0	---	20	0.73
Pedalcyclist	18	0.66	0	---	0	---	0	---	18	0.66
Pedestrian	61	2.24	0	---	0	---	0	---	61	2.24
Unspecified	1	*	0	---	0	---	0	---	1	*
Pedalcyclist, other	1	*	0	---	0	---	0	---	1	*
Transport, other	14	0.51	0	---	0	---	0	---	14	0.51
Bites and Stings	0	---	0	---	0	---	0	---	0	---
Struck by, against	5	0.18	0	---	16	0.59	0	---	21	0.77
Other	6	0.22	10	0.37	18	0.66	4	*	38	1.39
<b>Total</b>	<b>361</b>	<b>13.25</b>	<b>192</b>	<b>7.05</b>	<b>138</b>	<b>5.07</b>	<b>63</b>	<b>2.31</b>	<b>754</b>	<b>27.68</b>

Source: Emergency Medical Services, Health and Human Services Agency, County of San Diego: Medical Examiner's Data, FY 96/97  
Rates are calculated on cells with 5 or more incidents.

Paramedics and Emergency Medical Technicians respond to medical as well as injury calls. In fact, two thirds of these calls are in response to medical complaints. The leading medical complaints are neurological and cardiac.

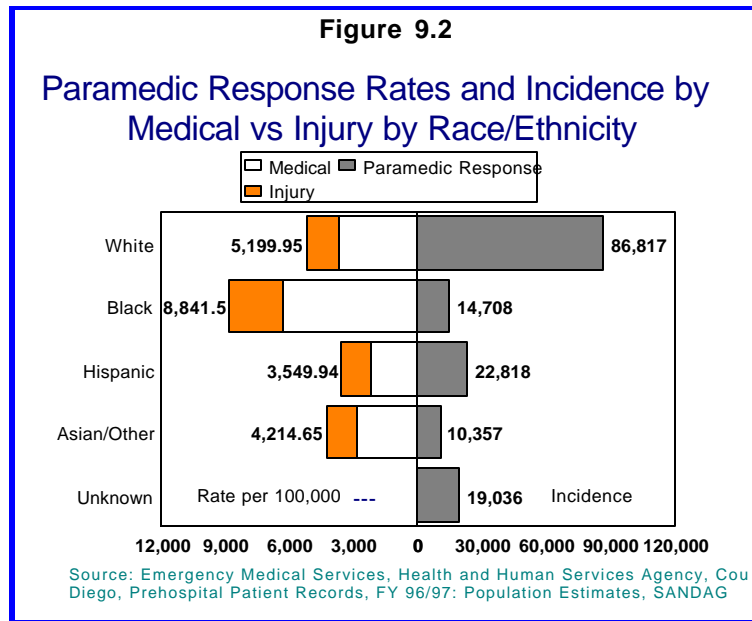
While Whites access the system much more often than any other racial/ethnic group, Blacks have the highest rate of access (Figure 9.2). Across all racial/ethnic groups, approximately one third of calls are due to injury and two thirds are due to medical complaints. Hispanics have a slightly higher percentage of injury-related complaints.

**Figure 9.1**  
Injury-Related Mortality by Manner/Intent and Mechanism



Source: Emergency Medical Services, Health and Human Services Agency, County of San Diego, Medical Examiner's Data, FY 96/97

The patterns of type of complaint differ significantly by age group (Figure 9.3). The 75 plus age group has not only the highest usage but also the highest rate of calls. One out of every four persons in this oldest age group accessed paramedic services during the year. One-fifth of these calls were due to injury, the highest rate of any age group. In children ages 5 to 14, almost all of the calls are injury-related.



Motor vehicle-related injuries are a leading cause of death and disability in San Diego County. Alcohol and other drugs were causal factors in 9.9% of all motor vehicle crashes resulting in injury. The highest rates of alcohol/drug related crashes occurred in the North Inland (5.91), North Central (5.76) and East (5.70) regions. The region with the lowest rate of crashes per population was North Coastal (4.58) (Figure 9.4). Death, severe injury, and paramedic response for motor vehicle and motor vehicle pedestrian crashes are detailed by geographic area in Appendix B.

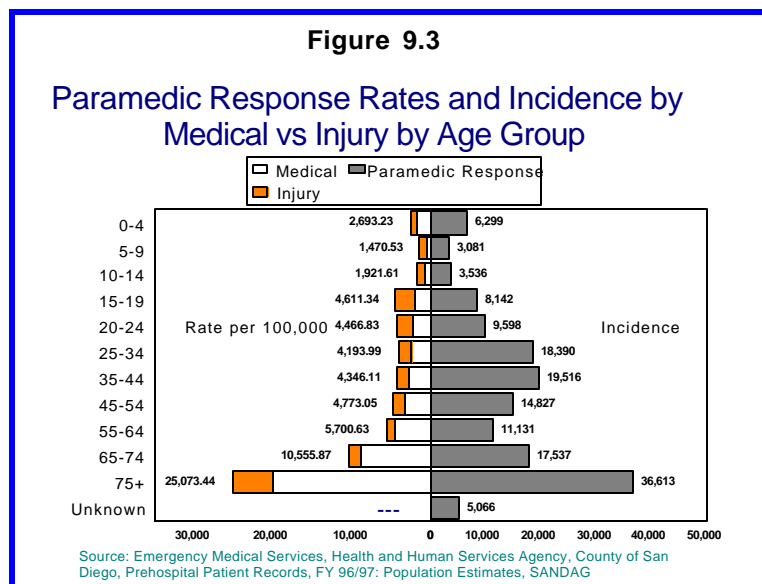
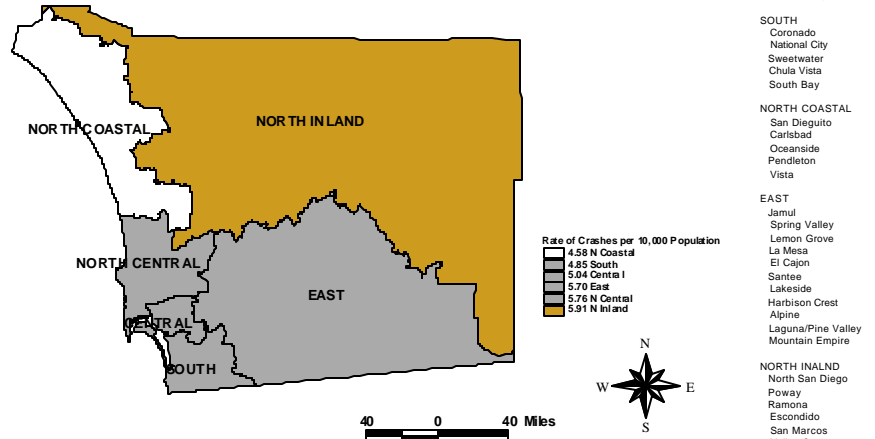


Figure 9.4  
**Injury Crashes Involving Alcohol or Drugs**  
 Rates (per 10,000) by Regional Area In San Diego County: FY96-97



**Regional Areas**

- CENTRAL  
 Central San Diego  
 Southeast San Diego  
 Mid City
- NORTH CENTRAL  
 Peninsula  
 Kearny Mesa  
 Coastal  
 University  
 Del Mar/ Mira Mesa  
 Miramar  
 Elliott Navajo
- SOUTH  
 Coronado  
 National City  
 Sweetwater  
 Chula Vista  
 South Bay
- NORTH COASTAL  
 San Dieguito  
 Carlsbad  
 Oceanside  
 Pendleton  
 Vista
- EAST  
 Jamul  
 Spring Valley  
 Lemon Grove  
 La Mesa  
 El Cajon  
 Santee  
 Lakeside  
 Harbison Crest  
 Alpine  
 Laguna/Pine Valley  
 Mountain Empire
- NORTH INLAND  
 North San Diego  
 Poway  
 Ramona  
 Escondido  
 San Marcos  
 Valley Center  
 Pauma  
 Fallbrook  
 Palomar/Julian  
 Anza Borrego Springs

Source: SWITRS data, Emergency Medical Services, Health and Human Services Agency, County of San Diego, FY1996-1997