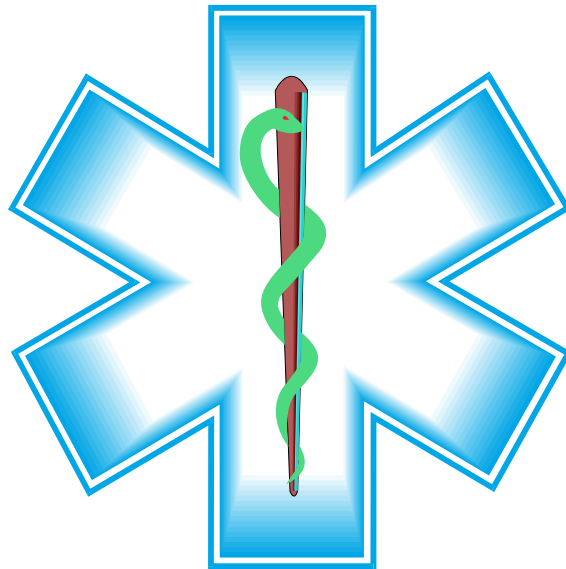

Tuolumne County
Emergency Medical Services Agency

2008 Annual Statistical Report



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INTRODUCTION

The 2008 Annual Statistical Report compiles and condenses an entire year's worth of call volume, response time and patient demographic information about the Tuolumne County EMS system for public review. The data included in this report is derived from pre-hospital patient care records (PCRs) completed by Tuolumne County Ambulance personnel and base/receiving logs completed by emergency department personnel from Tuolumne General Hospital and Sonora Regional Medical Center.

Since July 1, 1993, Tuolumne County Ambulance has collected PCR information using the software program EMS DataPro™ (formerly the EMS Database System) provided for their use by the Tuolumne County EMS Agency. Once entered in EMS DataPro™, the data is submitted in an electronic format to the EMS agency where the data is imported into a central version of EMS DataPro™. The EMS agency then validates and combines the data submitted by Tuolumne County Ambulance with patient outcome data derived from the base/receiving logs submitted by Sonora Regional Medical Center.

In September 2000, Tuolumne County Ambulance, with the assistance of the EMS agency, initiated a program for completing PCRs using EMS Outfielder™ (a laptop based PCR data entry program developed by CompuCounsel, now called Inspironix, of Sacramento in conjunction with Manteca District Ambulance). EMS Outfielder™ has replaced hand-written PCR forms and billing tickets. EMS Outfielder™ provides immediate data availability for daily quality assurance/quality improvement reviews and imports patient billing information directly into the billing system used by Tuolumne County Ambulance.

The Tuolumne County Emergency Medical Services (EMS) System is comprised of four 9-1-1 answering points including Tuolumne County Sheriff's Dispatch, City of Sonora Police Department Dispatch, CHP Dispatch and Mariposa County Sheriff's Dispatch.

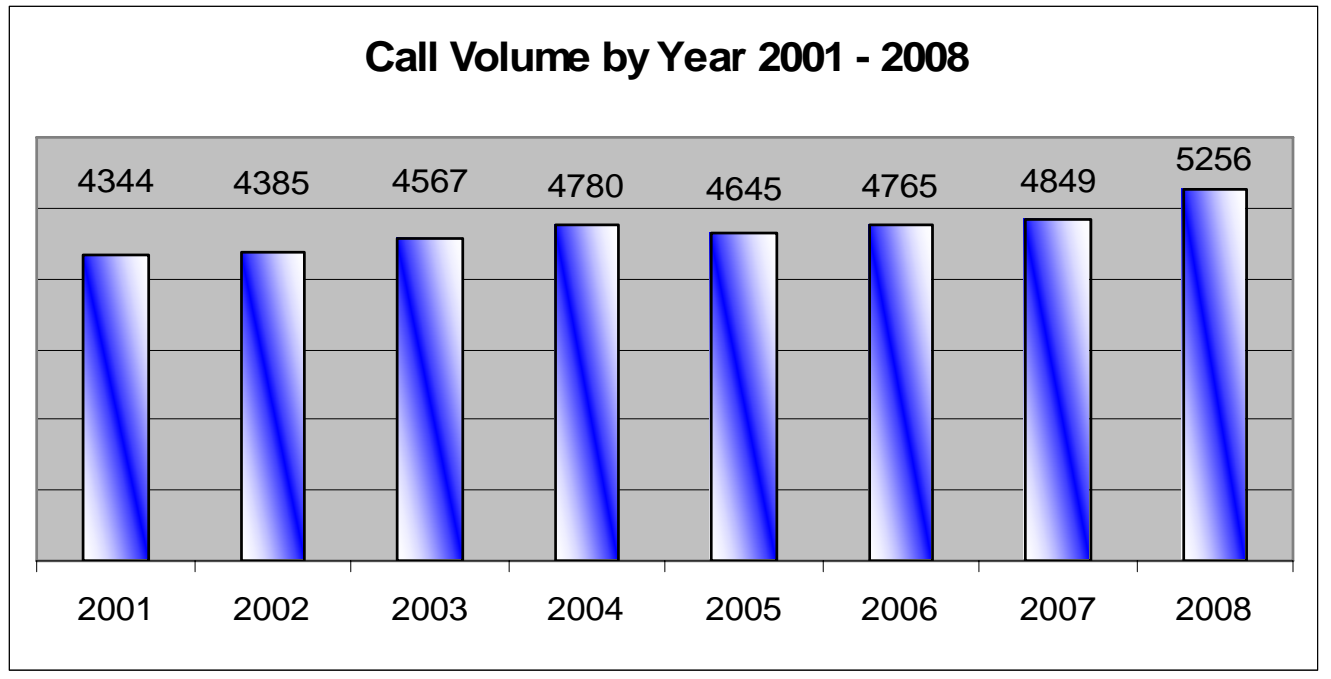
- Ambulance dispatching is provided by the Tuolumne County Sheriff's Dispatch Center.
- Basic life support (BLS) first response services are provided by Tuolumne County Fire Dept., Tuolumne City Fire Dist., Columbia College Fire Dept., Twain Harte Fire Dist., Columbia Fire Dist., Sonora City Fire Dept., Miwuk-Sugarpine Fire Dist., Tuolumne City Fire Dist., and the Groveland Fire Dist.
- Specialized BLS response services are provided by U.S. Forest Service, County Search and Rescue, Don Pedro Recreation Agency, Dodge Ridge Ski Patrol.
- Advanced life support (ALS) service is provided by Tuolumne County Ambulance Service. Mercy Medical Transport in Mariposa County provides the Lake Don Pedro area ALS Ambulance service.
- Petroleum Helicopter Inc. (PHI) provides air ambulance services with day-to-day mutual aid from the California Highway Patrol (CHP) Air Operations Division, Medi-Flight of Northern California, CALSTAR and R.E.A.C.H. Air Ambulance.

In June 2003, grant funds were made available to the Tuolumne County EMS Agency for the purpose of purchasing and installing EMSsystem™ communication software and related computer hardware for the emergency departments of Tuolumne General Hospital and Sonora Regional Medical Center and the EMS agency office. In early 2004, EMSsystem™ linked Tuolumne County's EMS system with the other ten (10) counties of OES Region IV, enabling Tuolumne General Hospital, as the county's Disaster Control Facility, to view real-time emergency department availability when determining patient disbursement during a multi-casualty incident (MCI).

In 2004, The Tuolumne County Emergency Medical Services System developed and implemented a Trauma Plan, in conjunction with Memorial Medical Center, Doctors Medical Center of Modesto, Mountain Valley EMS Agency, El Dorado County EMS Agency, Central California EMS Agency, Northern California EMS Agency, Sacramento County EMS Agency, and Santa Barbara County EMS Agency. The Trauma Plan provides a framework that assures that the citizens and visitors of Tuolumne County receive comprehensive prehospital and hospital trauma care. Tuolumne County relies on Trauma Centers throughout Northern California for in-hospital trauma care. Air Ambulances are used as the primary means of transportation for patients meeting Tuolumne County's major trauma patient criteria.

OVERVIEW OF CALL VOLUME

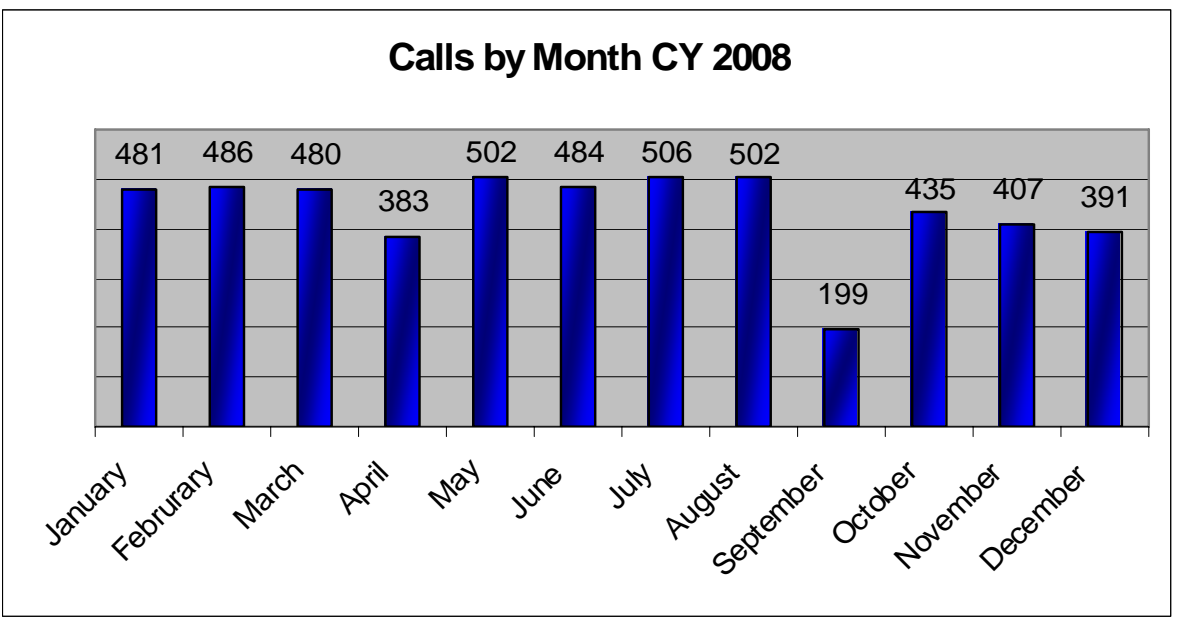
As illustrated in the graphs below, in 2008 there was an 8% increase in calls for EMS services from 2007. 2008 was the busiest year on record for emergency medical service (EMS) requests in Tuolumne County. Since 2001, there has been an 18% increase in the call volume. Unless otherwise specified EMS requests include both scene and transfer call types.



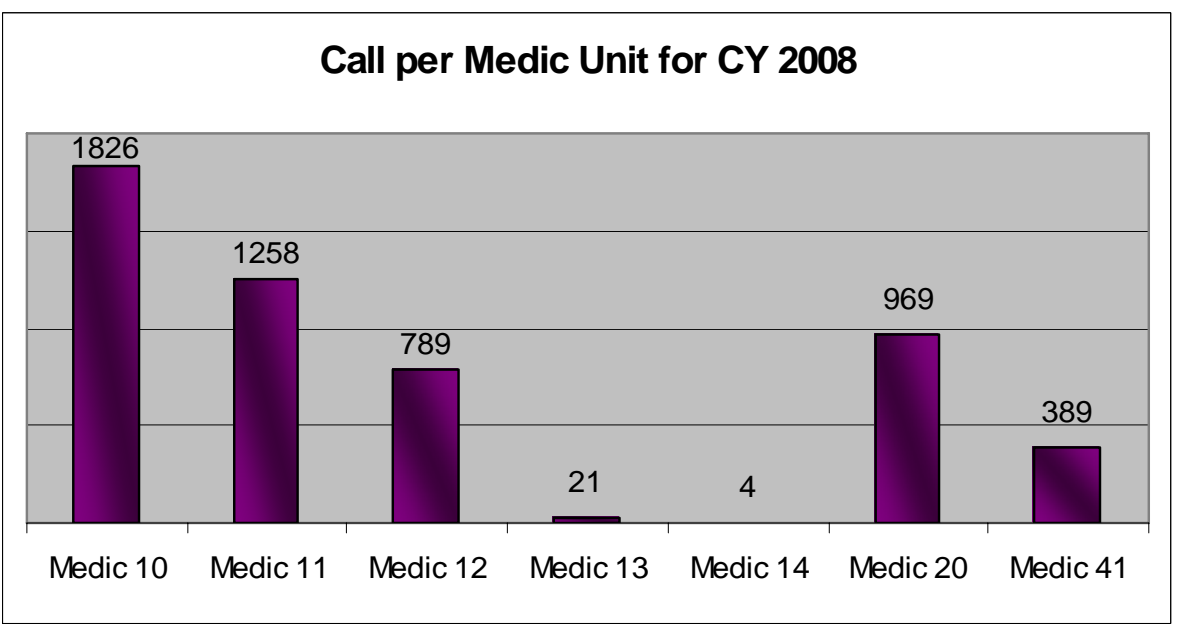
EMS Requests by Month and Year

The summer months and December have traditionally been the busiest time for EMS in Tuolumne County. Historically, July has been the busiest month of all.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2001	383	355	358	357	330	377	396	379	366	354	308	382
2002	383	327	407	344	370	330	426	436	354	352	326	330
2003	390	318	380	363	325	368	442	381	383	393	403	421
2004	392	397	385	337	391	376	453	425	390	389	376	469
2005	363	369	399	354	414	389	467	414	365	377	355	379
2006	379	396	428	403	395	450	419	356	391	344	402	402
2007	407	373	406	386	443	397	399	414	411	380	389	444
2008	481	486	480	383	502	484	506	199	435	435	407	391



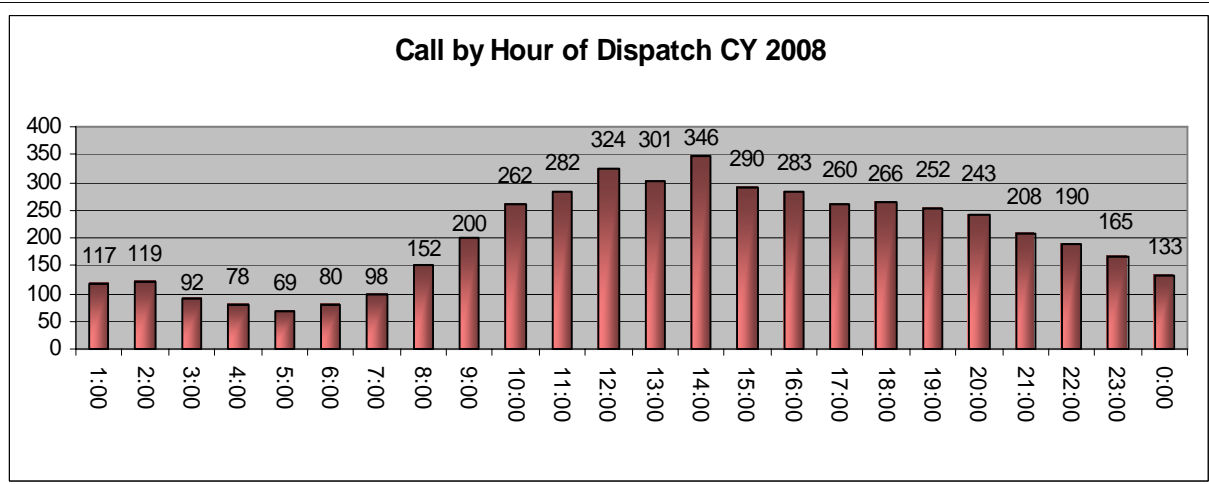
As illustrated below, Medics 10 and 11 responded to the majority of all EMS requests. The Sonora area has a call volume rate more than three times greater than any other area of the County.



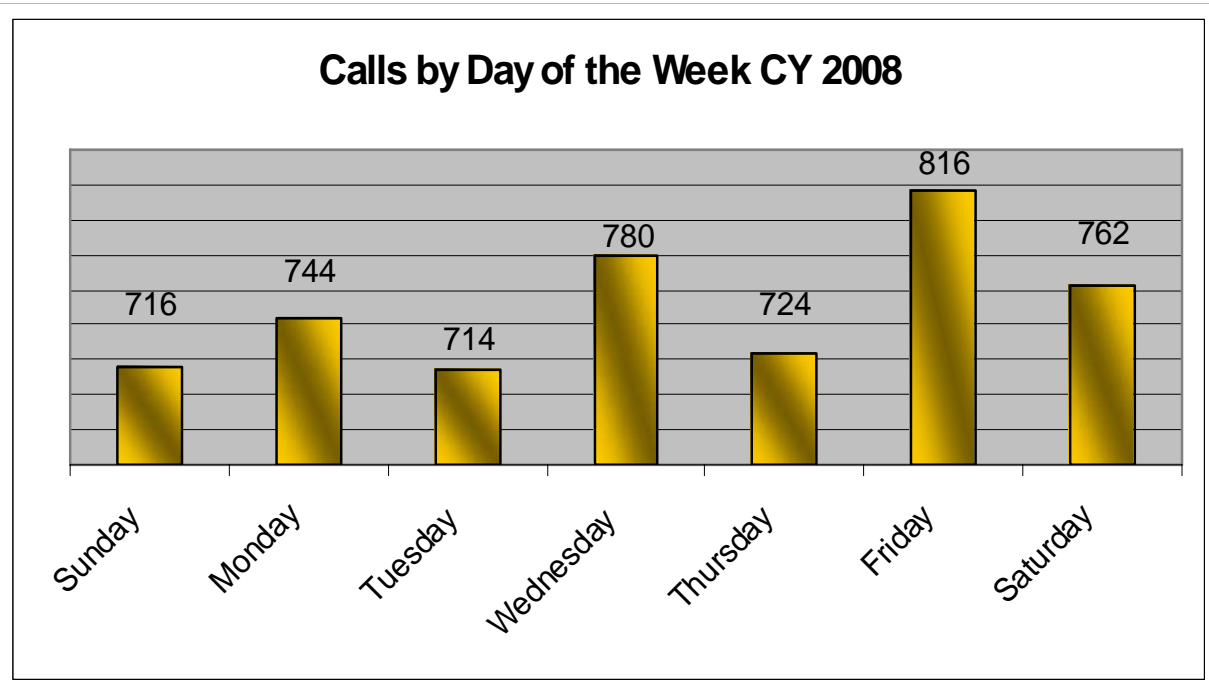
Unit(s)	Unit Location
Medic 10	Sonora
Medic 11	East Sonora
Medics 12, 13 & 14	Flexibly Deployed
Medic 20	Soulsbyville
Medic 41	Groveland

Call Volume 2008

A breakdown of requests by day and time of day shows that call volumes may vary widely during the week.

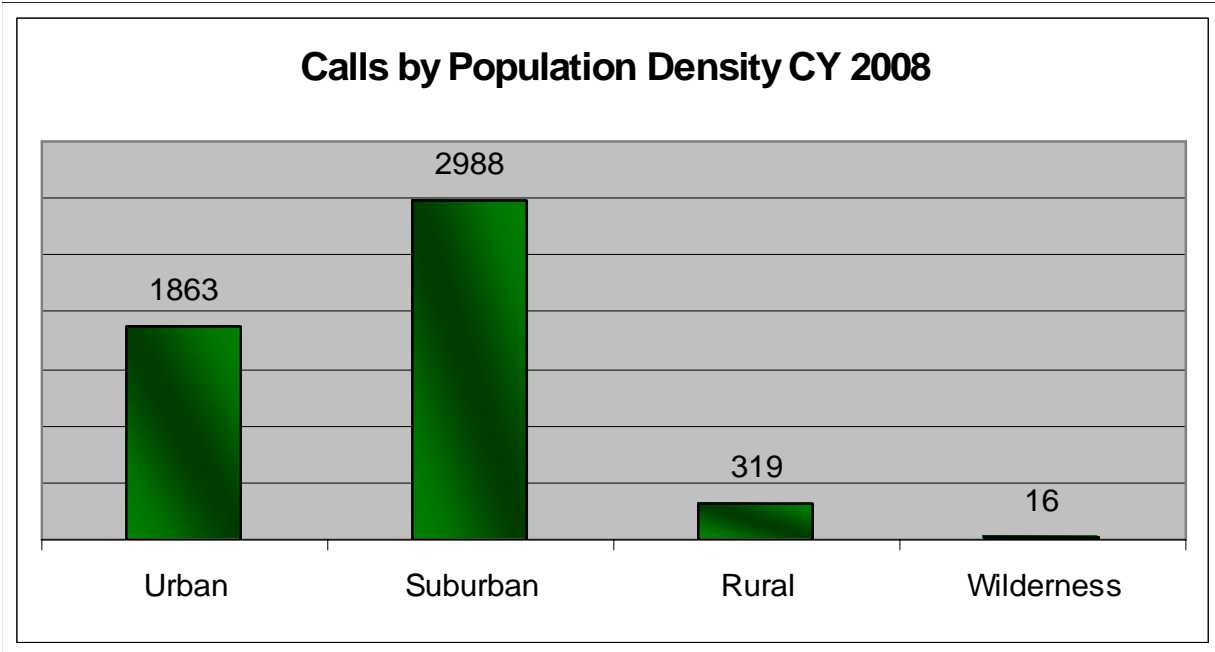


The chart below illustrates that Friday is the busiest day of the week, followed by Wednesday. The chart also shows that Tuesday is the slowest day followed closely by Sunday.

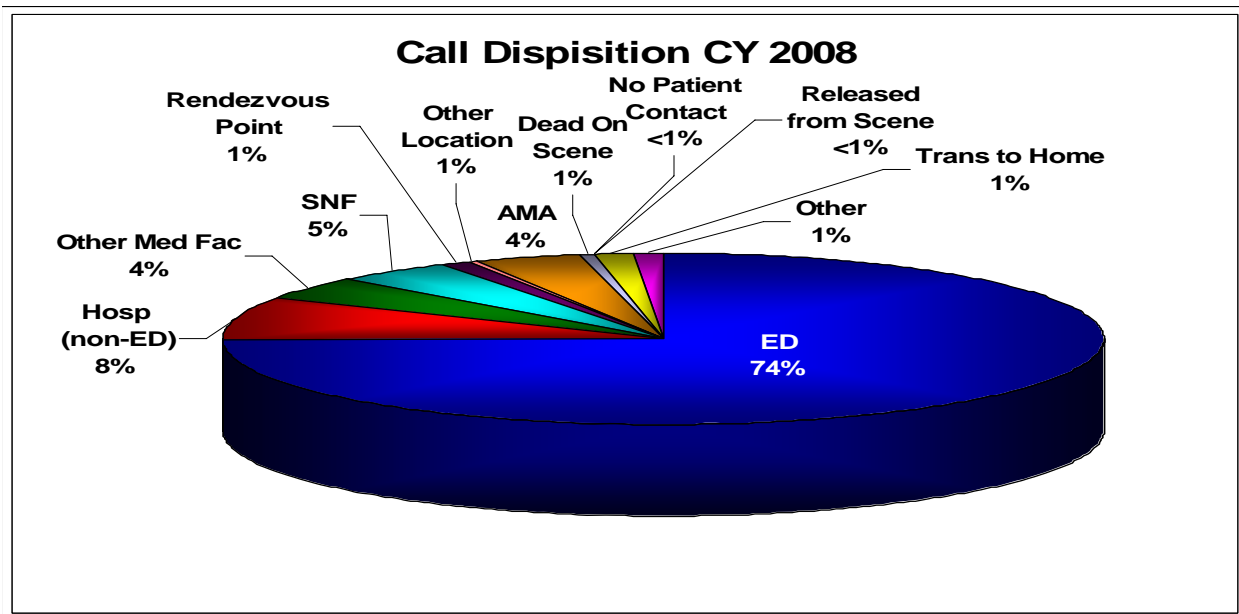


Call Volume 2008

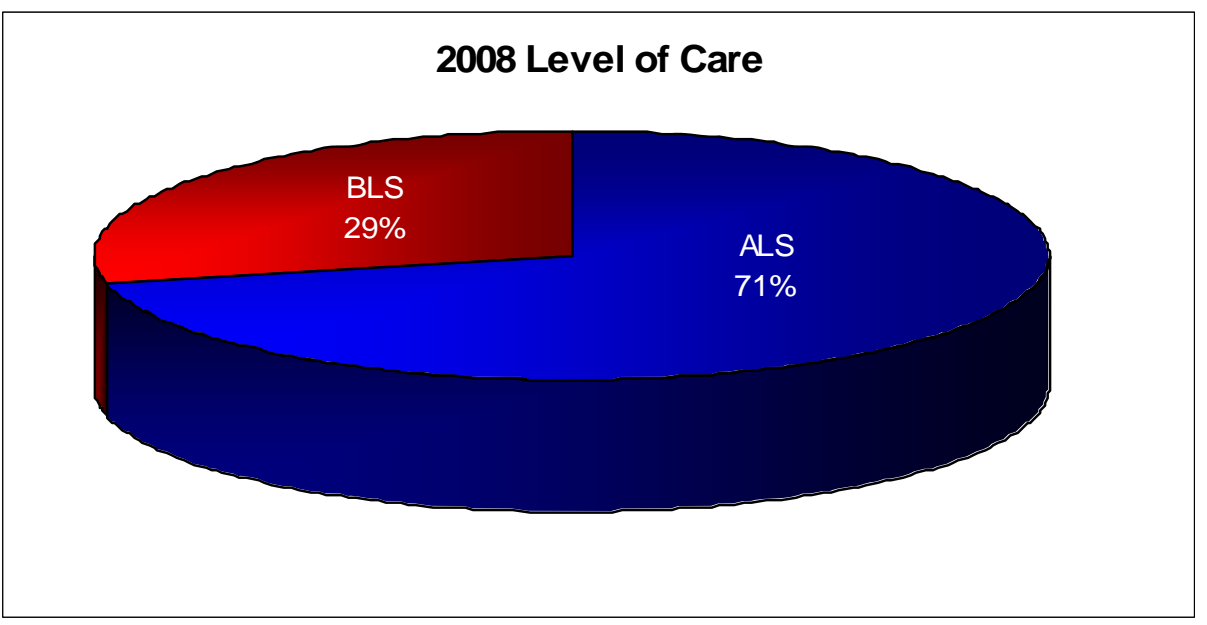
The breakdown of EMS requests by location reveals that the majority (52%) of requests occur in the suburban areas of Tuolumne County, where the majority of Tuolumne County residents live.



The table below illustrates that 74% of all requests resulted in the patient being transported to an emergency department.

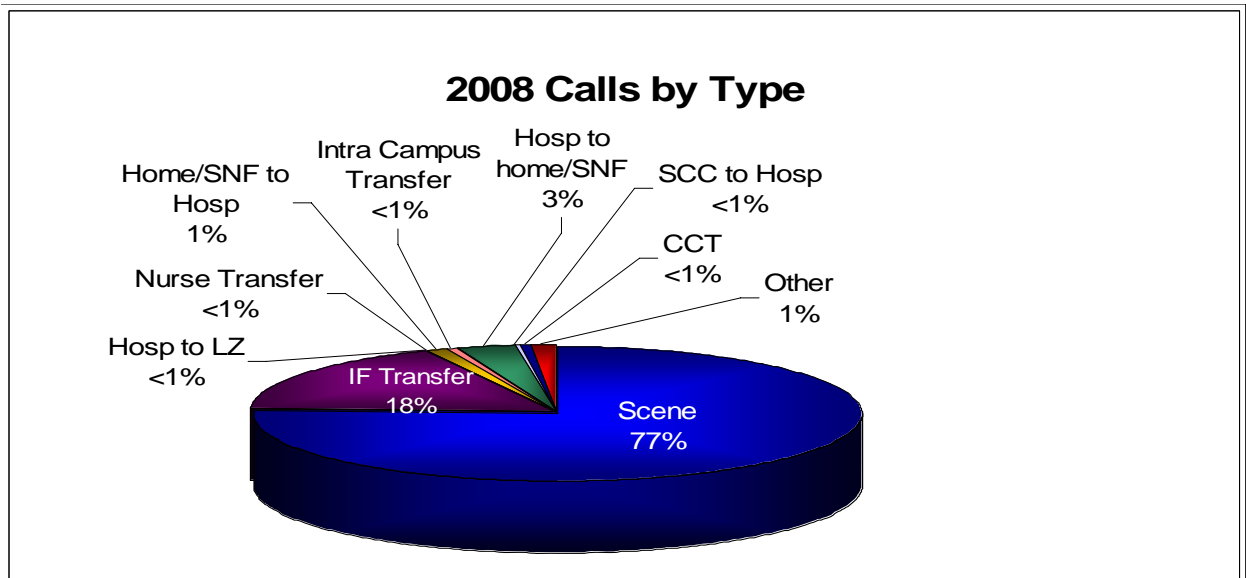


71% of all requests resulted in the delivery of advanced life support (ALS) procedures and medications administered to the patient.



Calls by Type

In 2008, scene emergencies accounted for 77% of the total EMS requests for service. Transfers make up the remaining 23% of EMS requests for services. Transfers consist of ambulance interfacility transfers, air ambulance transfers from a hospital to a landing site, critical care transfers, transfers to and from a patient's home to a hospital, and transports for diagnostic service such as transporting a patient for an MRI.



Response Times

The State of California Emergency Medical Services Authority has established recommended guidelines for Code 3 response time standards to EMS requests, based on population density. The State of California Emergency Medical Services Authority recommends that EMS responses meet these response time guidelines at least 90% of the time.

	BLS First Response	BLS AED First Response	ALS Ambulance
Urban = 101 to 500 people per square mile	5 minutes	5 minutes	8 minutes
Suburban = 51 to 100 people per square mile	15 minutes	ASAP	20 minutes
Rural = 7 to 50 people per square mile	15 minutes	ASAP	20 minutes
Wilderness = less than 7 people per square mile	ASAP	ASAP	ASAP

The chart below shows the 90th percentile Code 3 response time for an ALS ambulance in the **urban area** of Tuolumne County is 10.00 minutes with an average response time of 6.14 minutes. In Tuolumne County, only the City of Sonora is classified as an urban area.

Code 3 Response Time Interval in Minutes (Urban)	
Minimum Response Time	0.00 minutes
Maximum Response Time	25.00 minutes
Average Response Time	6.14 minutes
Standard Deviation	3.06 minutes
90 th percentile	10.00 minutes
95 th percentile	11.00 minutes

The chart below shows that the 90th percentile Code 3 response time for an ALS ambulance in the **suburban areas** of Tuolumne County is 16:00 minutes with an average response time of 10.21 minutes. Suburban areas of Tuolumne County include the map zones for Mono Village, Mono Vista, Crystal Falls, Cedar Ridge, Sonora CDF, Moccasin, Twain Harte, Tuolumne City, Columbia, Jamestown, Mi-Wuk/Sugarpine, Groveland and Columbia College.

Code 3 Response Time Interval in Minutes (Suburban)	
Minimum Response Time	0.00 minutes
Maximum Response Time	51.00 minutes
Average Response Time	10.21 minutes
Standard Deviation	5.15 minutes
90 th percentile	16.00 minutes
95 th percentile	19.00 minutes

The chart below shows that the 90th percentile Code 3 response time for an ALS ambulance in the **rural areas** of Tuolumne County is 41:00 minutes with an average response time of 25.62 minutes. Suburban areas of Tuolumne County include the first response areas of Dodge Ridge, Pine Crest, Strawberry, Long Barn, Don Pedro, and the Sierra Conservation Center.

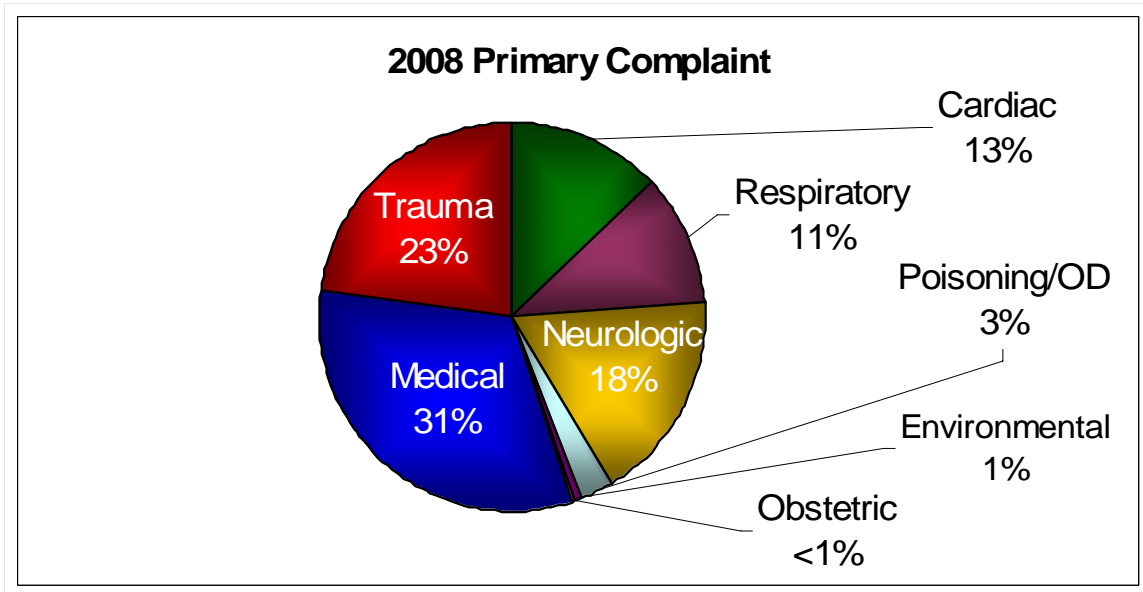
Code 3 Response Time Interval in Minutes (Rural)	
Minimum Response Time	4.00 minutes
Maximum Response Time	86.00 minutes
Average Response Time	25.62 minutes
Standard Deviation	12.26 minutes
90 th percentile	41.00 minutes
95 th percentile	51.00 minutes

The chart below shows that the 90th percentile Code 3 response time for an ALS ambulance in the **wilderness area** of Tuolumne County is 64:00 minutes with an average response time of 44.86 minutes. Wilderness areas of Tuolumne County include the Portions of the Immigrant Wilderness, Carson Iceberg Wilderness, Yosemite National Park, and the Cherry Lake Area.

Code 3 Response Time Interval in Minutes (Rural)	
Minimum Response Time	4.00 minutes
Maximum Response Time	72.00 minutes
Average Response Time	44.86 minutes
Standard Deviation	16.21 minutes
90 th percentile	64.00 minutes
95 th percentile	64.00 minutes

Code 3 Response Time Interval in Minutes (Cumulative)	
Minimum Response Time	0.00 minutes
Maximum Response Time	86.00 minutes
Average Response Time	11.09 minutes
Standard Deviation	7.94 minutes
90 th percentile	19.00 minutes
95 th percentile	25.00 minutes

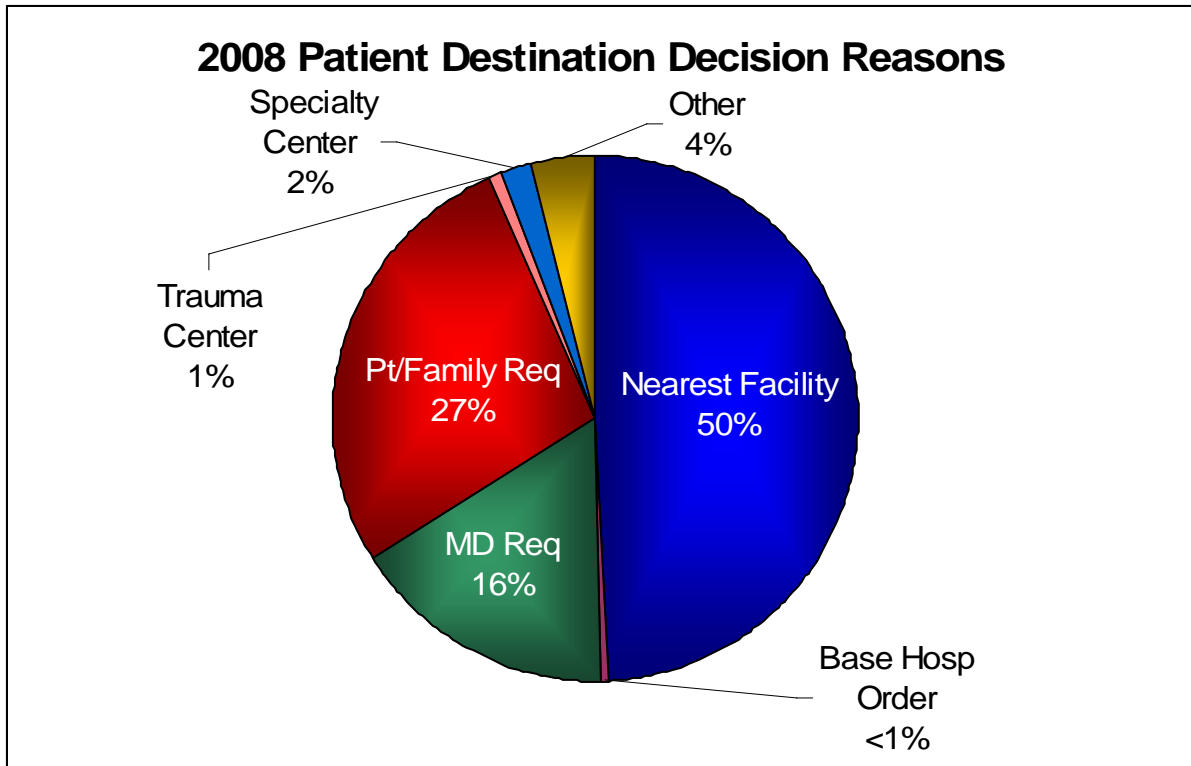
PATIENT AND HOSPITAL DATA



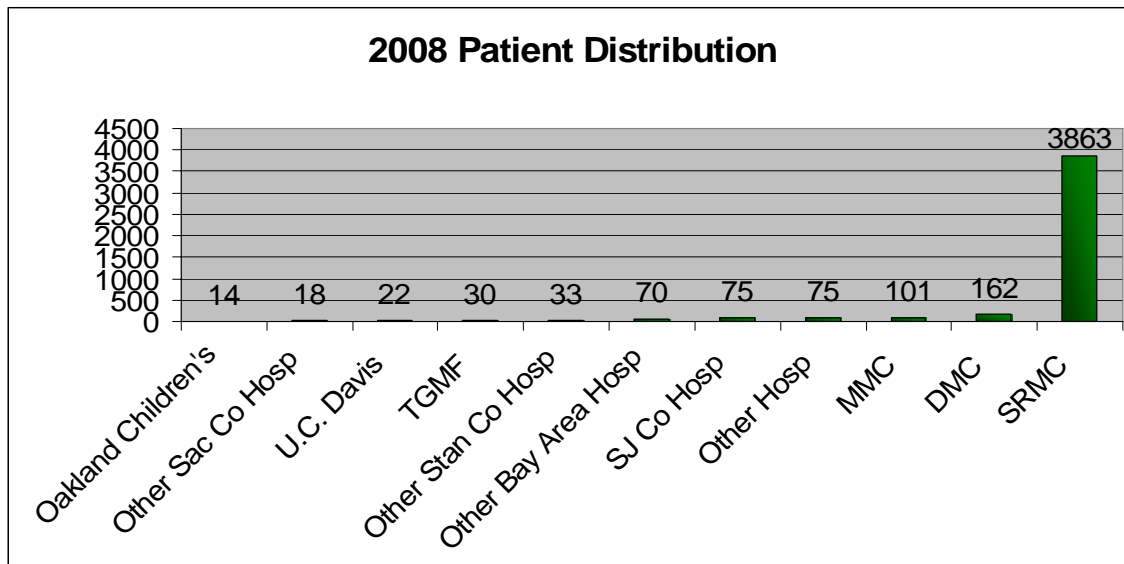
Primary Illness/ Injury Complaint	Patients
Cardiac	581
Respiratory	502
Neurologic	798
Poisoning	134
Environmental	25
Obstetric	15
Medical	1462
Trauma	1037

* Poisoning/Overdose category does not differentiate between accidental and intentional ingestion or overdose. Nor does it differentiate between prescription and illicit drugs. Medication reactions and anaphylaxis are included in the Medical category.

As shown in the chart below, for those patients transported to a hospital, approximately 50% of all transports are made to the nearest hospital and 27% of the patients were transported to the hospital of the patient's or family's choice.

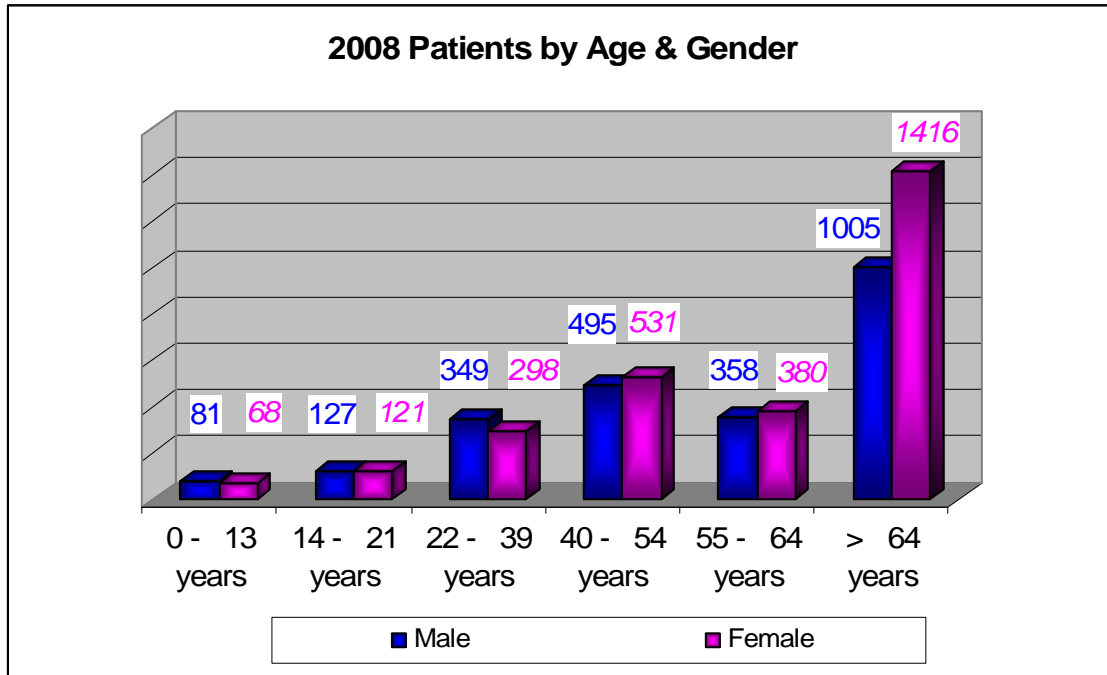


The chart below shows the patient distribution by receiving facilities, including transfers.



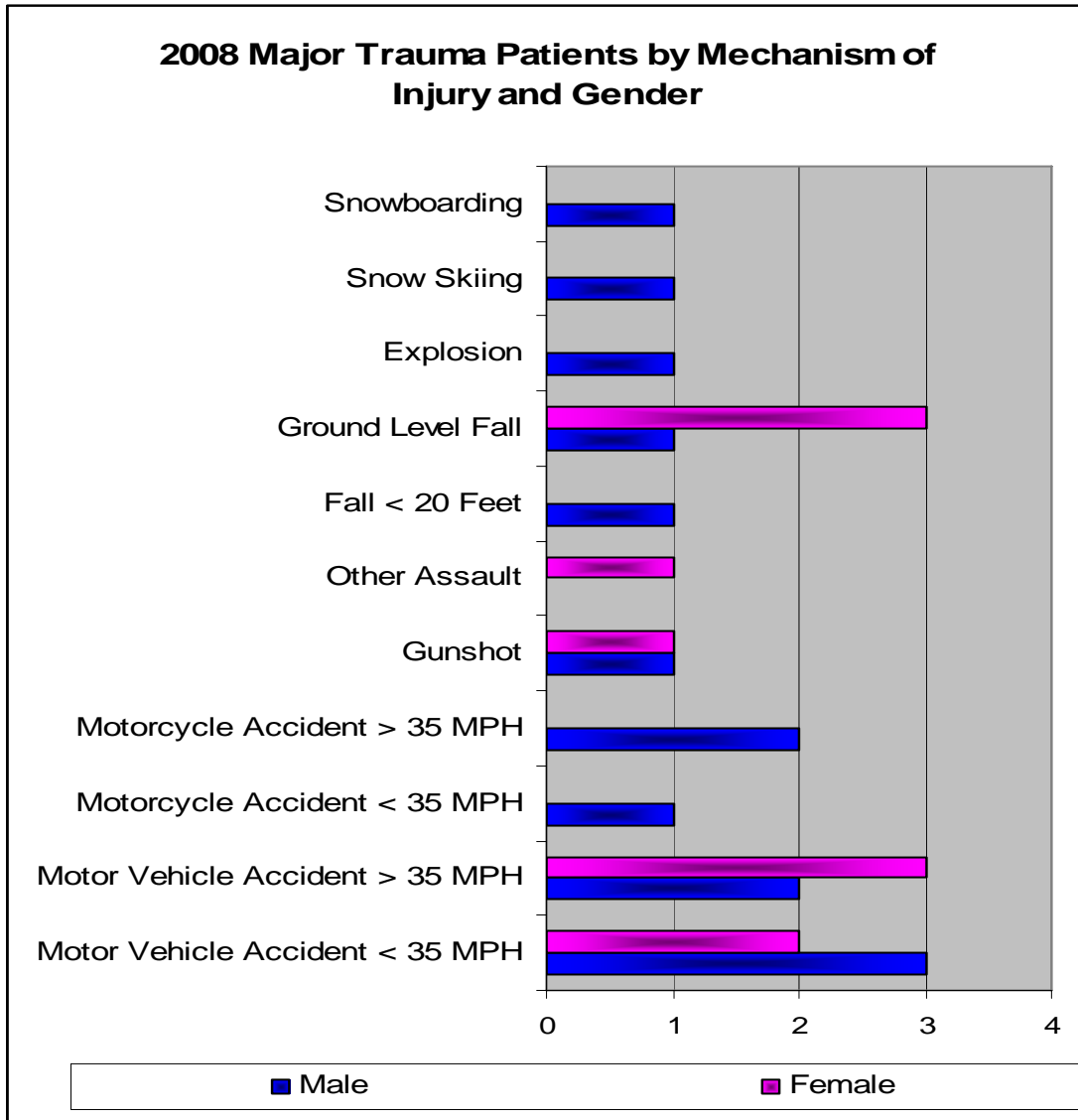
2008 EMS Demographics

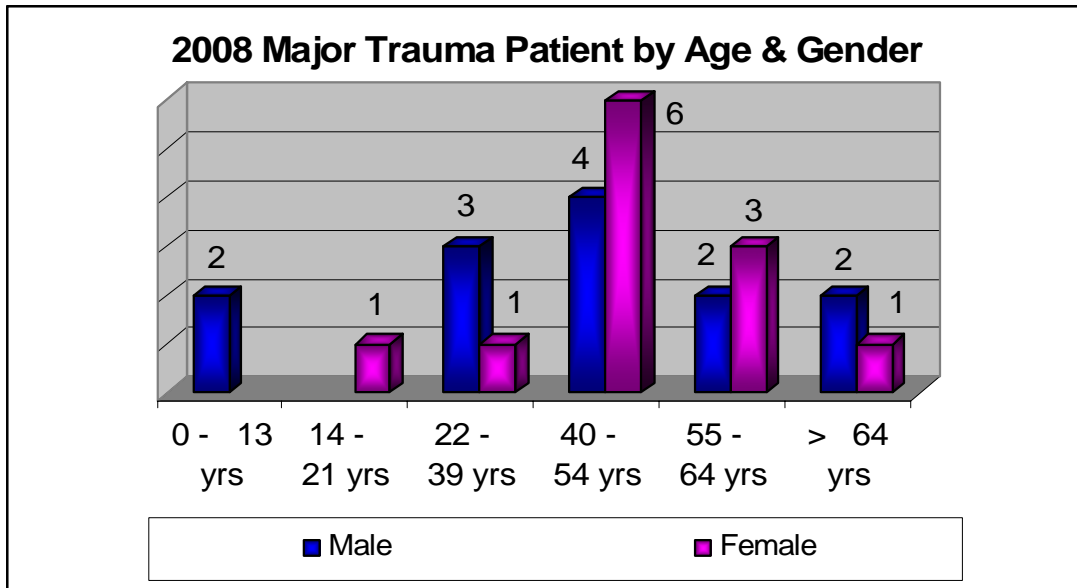
Patients greater than 64 years of age account for 46% of ambulance patients. Males comprise 46% of ambulance patients and 54% are females. The average age of ambulance patients is 60 years old; males average 57 years old and females average 62 years old.



TRAUMA SYSTEM

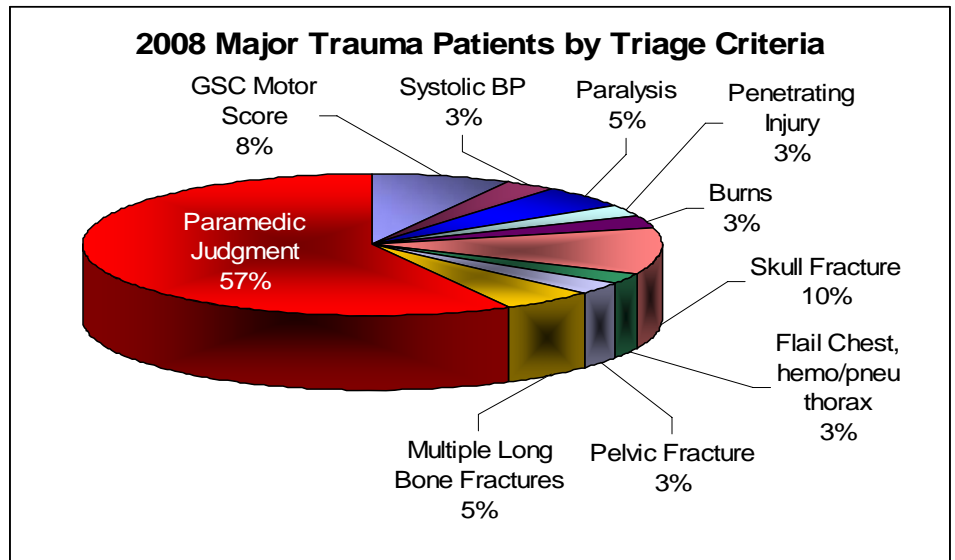
The chart below shows the mechanism of injury for major trauma victims in Tuolumne County in 2007. Motor vehicle accidents are the greatest mechanism of injury for major trauma victims in Tuolumne County.





The Tuolumne County Trauma Plan has defined ten separate trauma triage criteria. The criteria are designed to categorize those trauma patients with an increased risk of mortality and morbidity due to their injuries. Paramedic judgment was the criteria used 57% of the time.

Triage Criteria	#
GSC Motor Score	3
Systolic BP	1
Paralysis	2
Penetrating Injury	1
Burns	1
Skull Fracture	4
Flail Chest, hemo/pneumothorax	1
Pelvic Fracture	1
Multiple Long Bone Fractures	2
Paramedic Judgment	22



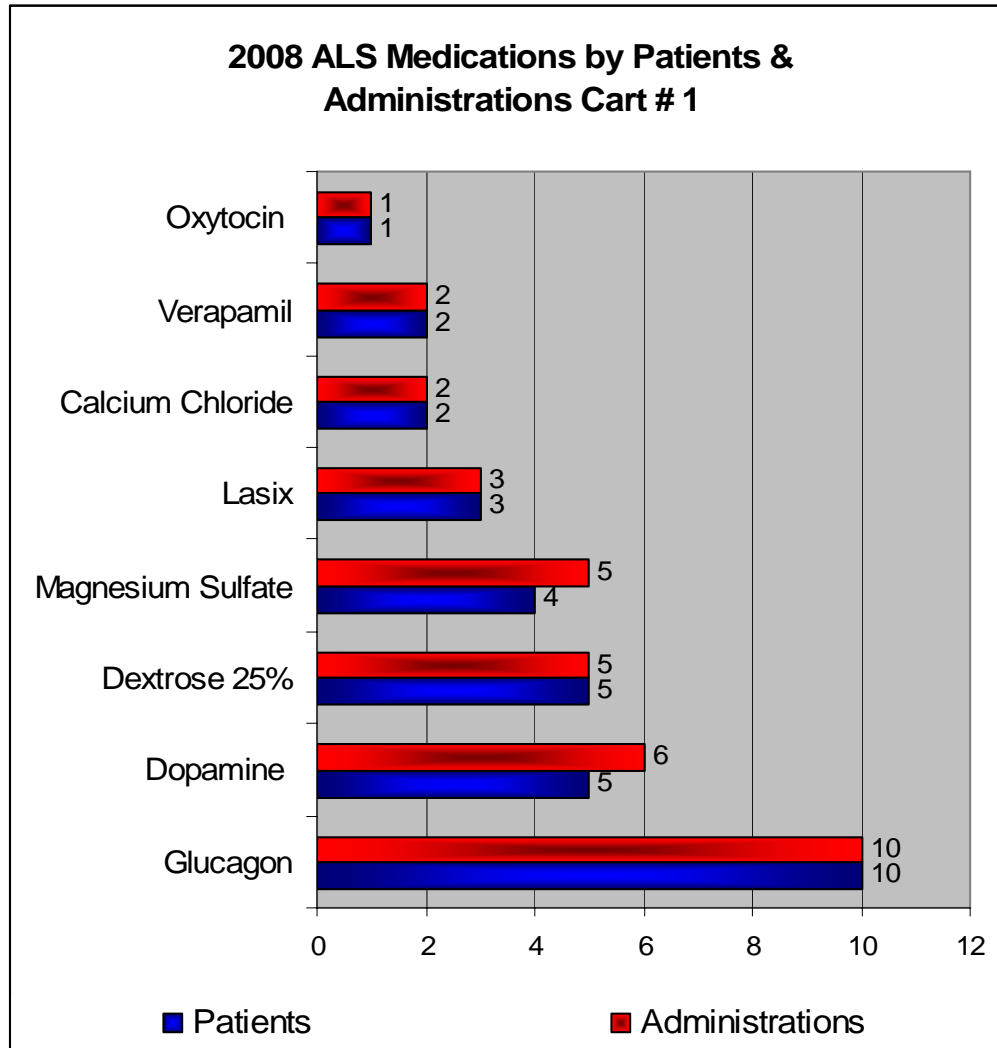
The Tuolumne County Trauma Plan has identified three major trauma patient destinations.

1. Doctors Medical Center (adult)
2. Memorial Medical Center (adult)
3. U.C. Davis Medical Center (adult & pediatric)

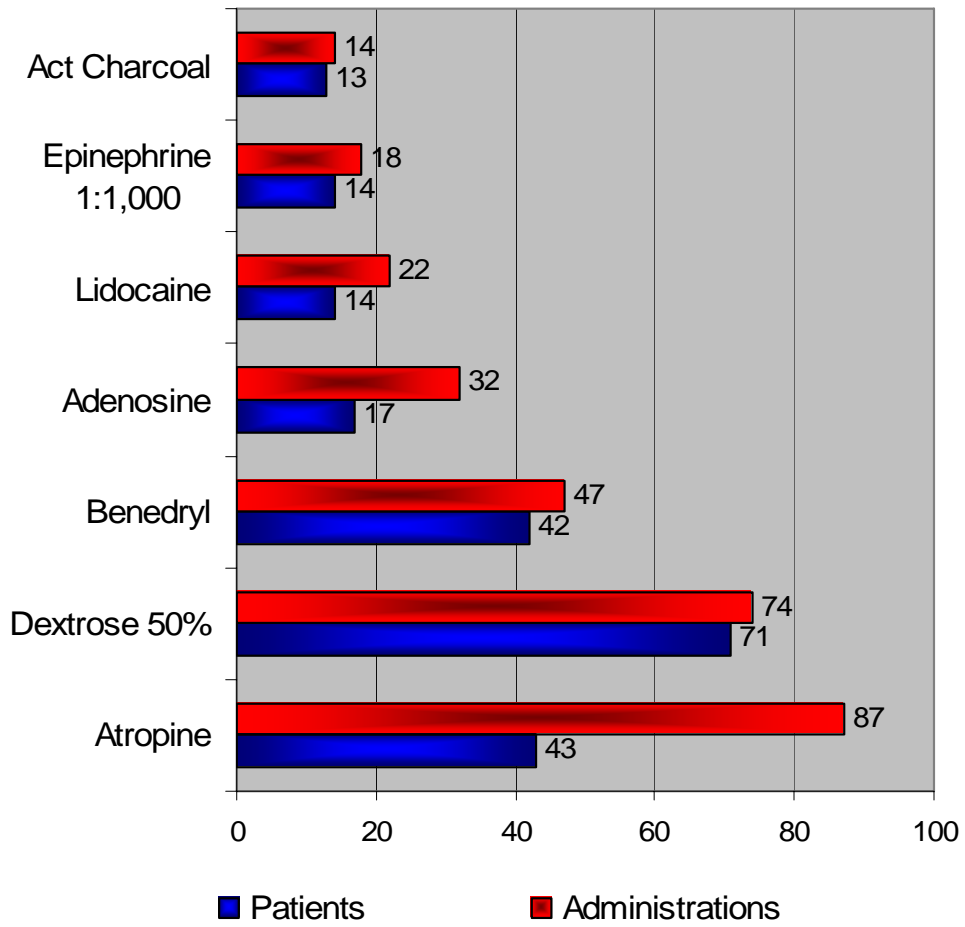
However, under some circumstances (such as poor weather or surgical staff availability) major trauma patients may be taken to another Trauma Center, such as Sutter Roseville Medical Center, or other non-Trauma Center Hospital.

ADVANCED LIFE SUPPORT MEDICATIONS

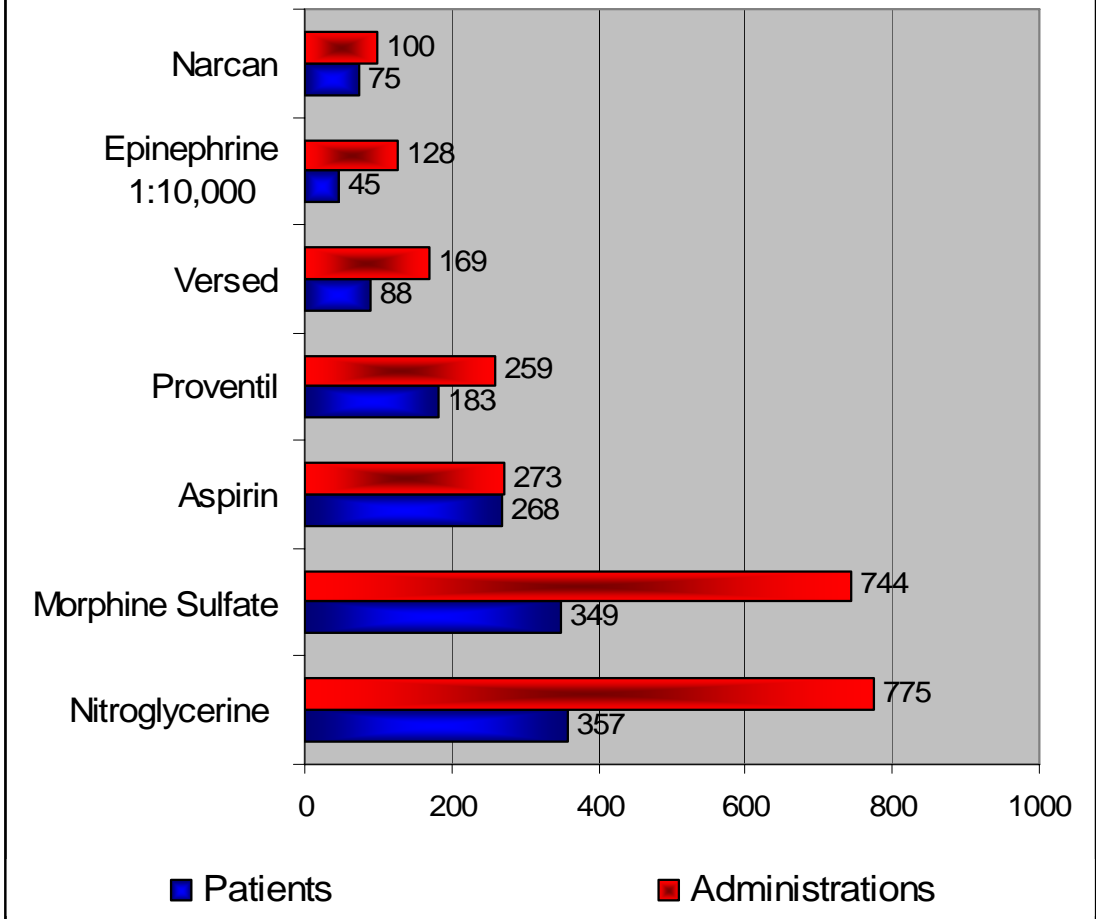
The charts below represent the number of times a medication was administered and how many patients received the medication.



**2008 ALS Medications by Patients & Administration
Chart # 2**



2008 ALS Medications by Patients & Administrations Chart # 3



SUMMARY

I would like to thank Tuolumne County Ambulance Service, and Sonora Regional Medical Center for providing the data that made this report possible. I would also like to thank all of the First Response Agencies for the excellent service they provide to the County of Tuolumne.

The Tuolumne County EMS System remains a strong asset to the County and its citizens and visitors. 2008 has been the busiest in the history of Tuolumne County EMS; the eight-year trend shows a general increase in calls for EMS service, particularly along the Highway 108 corridor. The response times for scene calls has increased, probably due to the nearly 20% increase in call volume over the past eight years without a corresponding increase in unit hours. The relocation of Medic 10, from Sanguinetti Road to Forest Road, should improve response times in western areas of the County.

The changing environment of the upcoming years will afford us many opportunities to improve the EMS System. The decreasing reimbursement for services rendered and increasing costs will provide many challenges to the County of Tuolumne, maintenance and expansion of the EMS system should be one of the top priorities of the County. The almost constant evolving science of prehospital medicine will require updating of treatment guidelines, training practices, and equipment.