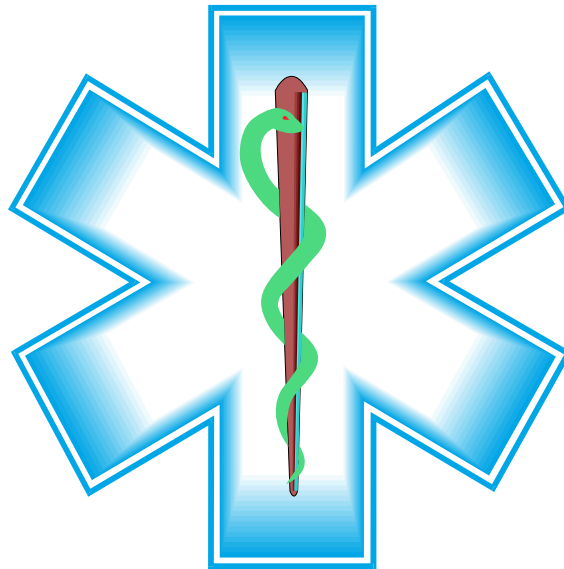

Tuolumne County
Emergency Medical Services Agency

2011 Annual Statistical Report



February 22, 2012

Prepared by: Clarence I. Teem, MS, EMT-P, EMS Coordinator
Tuolumne County Emergency Medical Services Agency
20111 Cedar Road North, Sonora California 95370 (209) 533-7460

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INTRODUCTION

The 2011 Annual Statistical Report compiles and condenses an entire year's worth of data (call volume, response time and patient demographic information) about the Tuolumne County EMS system. The data included in this report is derived from pre-hospital patient care records (PCRs) completed by Tuolumne County Ambulance Service personnel, unless otherwise noted.

Since July 1, 1993, Tuolumne County Ambulance has collected PCR data 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 Tuolumne County EMS agency where the data is imported into a central version of EMS DataPro®. The EMS agency then validates the data.

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 (located in Merced County) 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., and the Groveland Fire Dist.
- U.S. Forest Service, Tuolumne County Sheriff's Search and Rescue, Don Pedro Recreation Agency, Dodge Ridge Ski Patrol provides specialized BLS response services.
- Tuolumne County Ambulance Service provides advanced life support (ALS) service. Mercy Medical Transport from Mariposa County provides the Lake Don Pedro area ALS Ambulance service.
- PHI provides air ambulance services with day-to-day mutual aid from the California Highway Patrol (CHP) Air Operations Division, Air Methods (formerly Medi-Flight of Northern California), CALSTAR and R.E.A.C.H. Air Ambulances.

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.

In July 2007, Tuolumne General Hospital closed leaving only one acute care hospital in Tuolumne County. Sonora Regional Medical Center assumed the duties of the county's Disaster Control Facility and Mountain Counties South Control Facility.

In 2008, EMSSystem was expanded to include data elements for the Department of Health and Human Services HAvBED (Hospital Available Beds for Emergencies and Disasters). This capability allows for accurate and consistent polling of hospital resources nationwide.

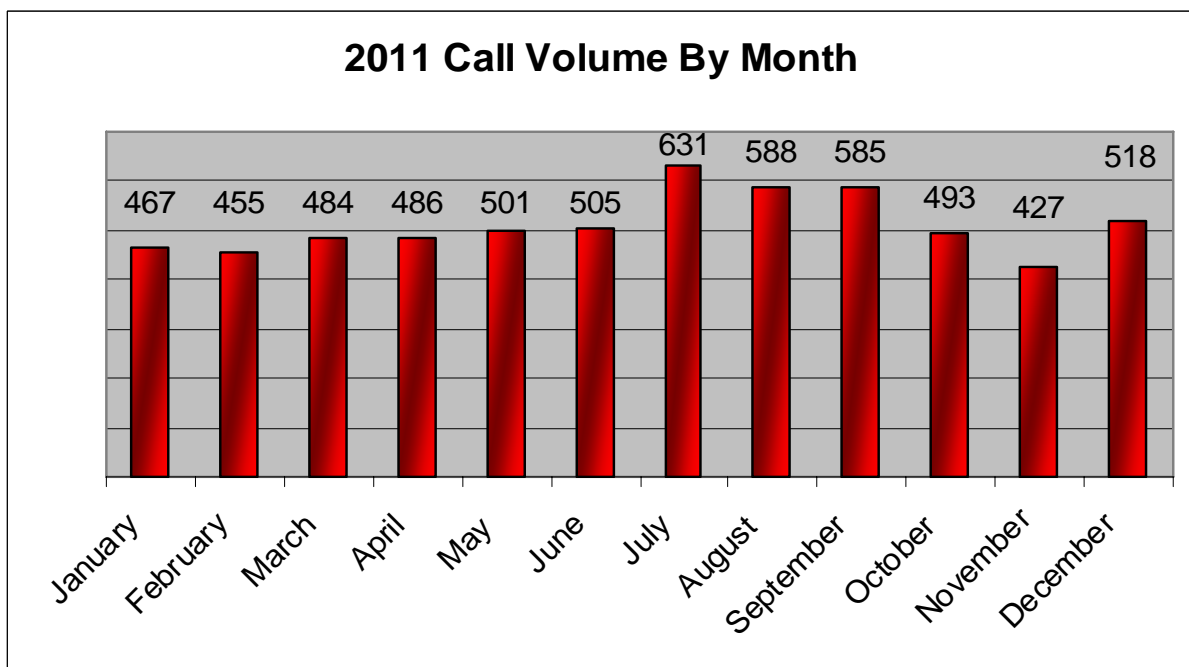
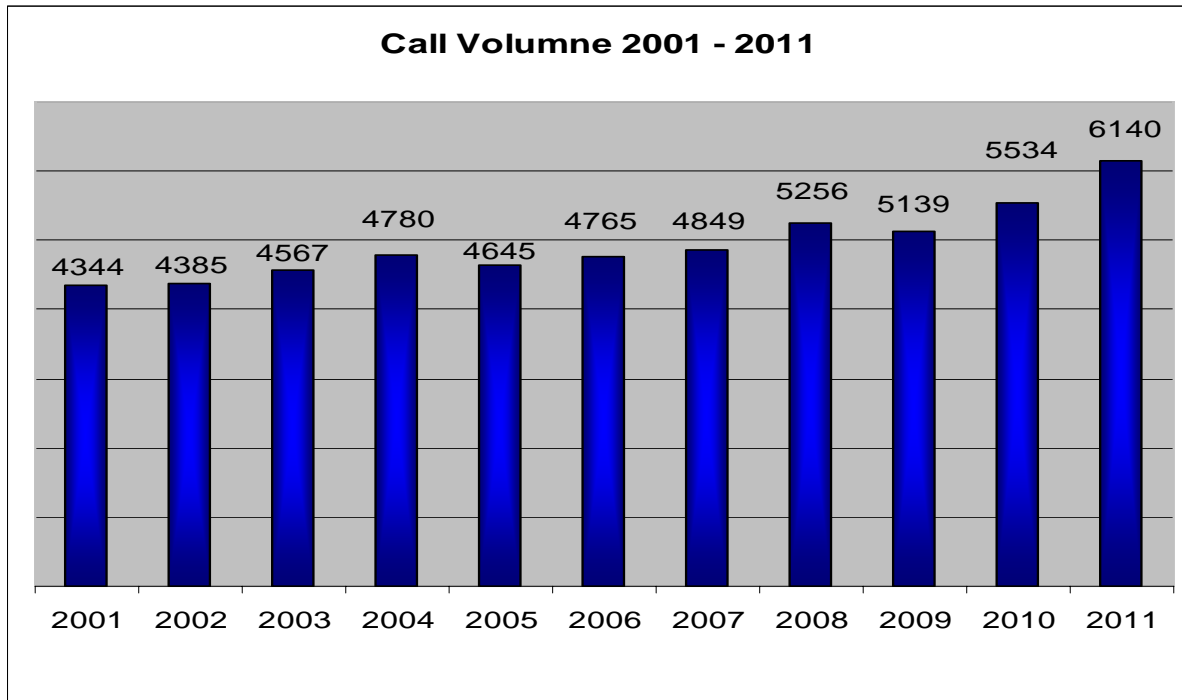
In June of 2009, Tuolumne County EMS Agency was instrumental in the development of the Central Regional Trauma Coordinating Committee (CRTCC), a twelve county regional committee. The purpose of the committee is to standardize and improve the provision of trauma care within the region. The CRTCC, working in coordination with four other Regional Trauma Coordinating Committees and the State EMS Authority to build a strong, cohesive statewide trauma system.

In 2010, Tuolumne County EMS implemented an S-T Elevation Myocardial Infarction (STEMI) triage policy. This allows Paramedics in the field to transport, usually by air ambulance, a patient experiencing a serious cardiac event to be transported directly to a hospital capable of Percutaneous Coronary Intervention (PCI). Decreasing the time from the recognition of a STEMI to PCI greatly decreases the injury to the cardiac muscle and increases the survival rate of these patients.

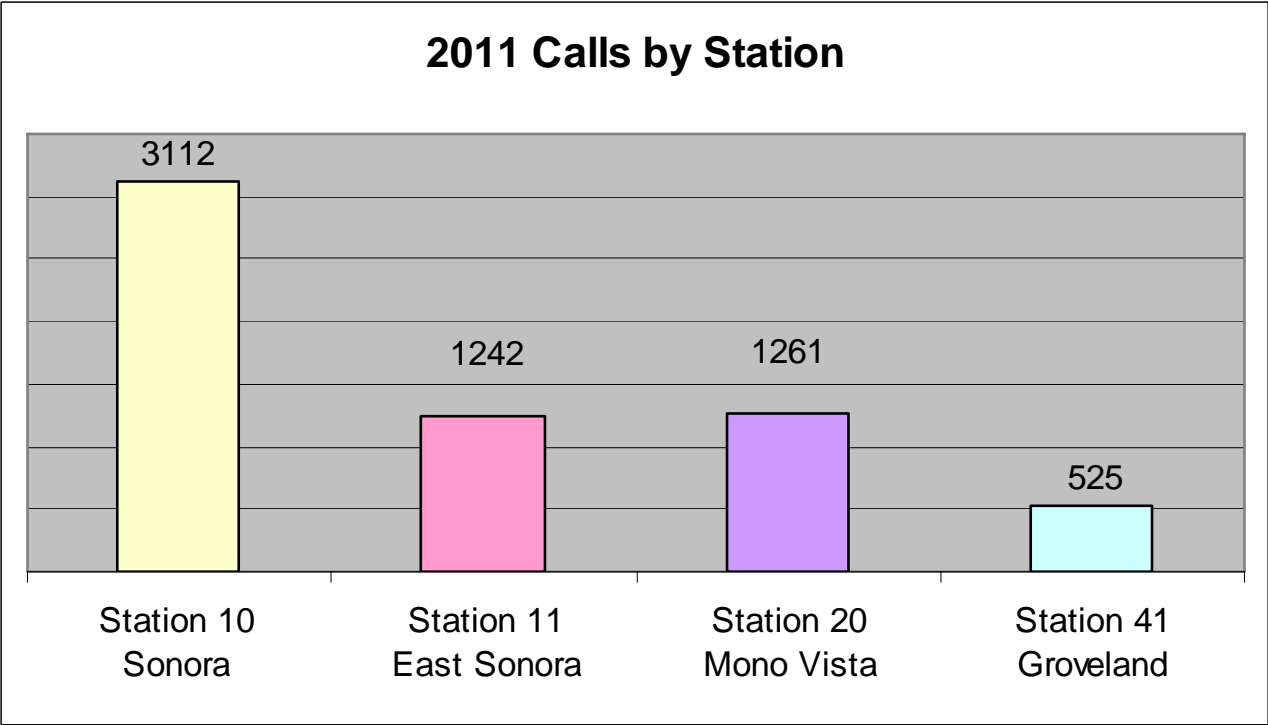
In September of 2011, Tuolumne County adopted the CRTCC Trauma Triage Criteria. This criteria is based on the Centers for Disease Control (CDC) trauma triage guidelines. Studies are underway, at the time of this report, to compare the efficacy of the previous and current Trauma Triage Criteria.

OVERVIEW OF CALL VOLUME

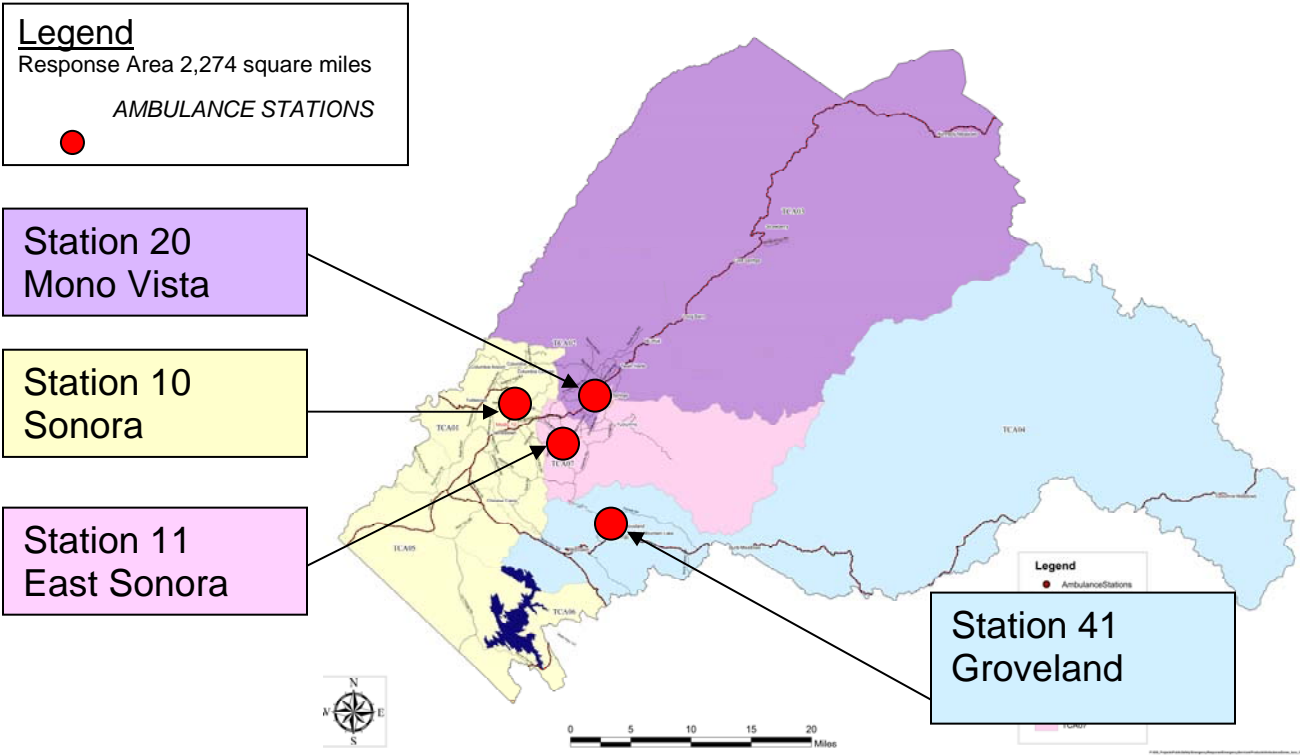
As illustrated in the graphs below, 2011 was the busiest year to date; in 2011 there was an 11% increase in calls for EMS services from 2010. Since 2001, there has been a 30% increase in the call volume. Unless otherwise specified EMS requests include both scene and transfer call types.



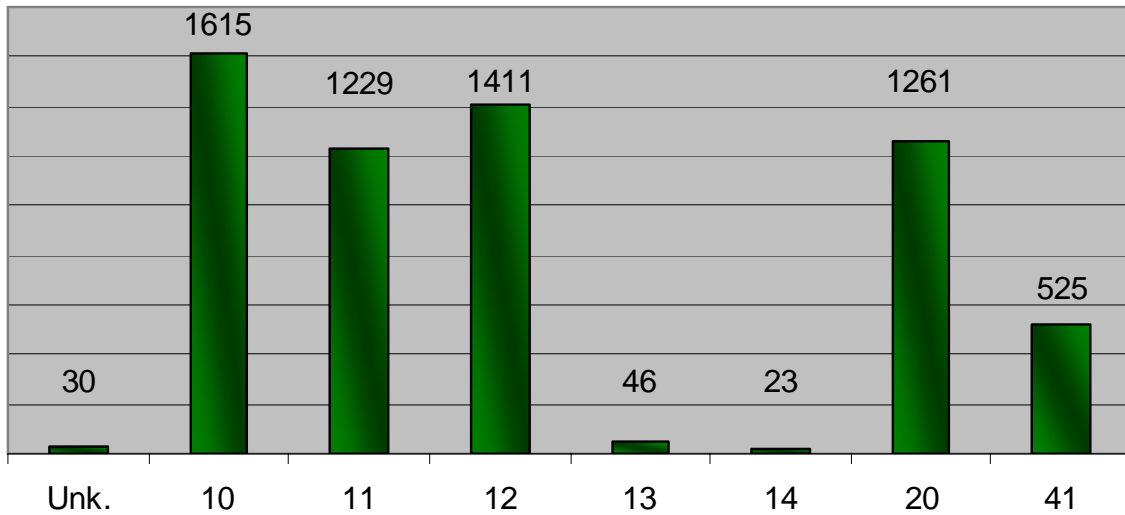
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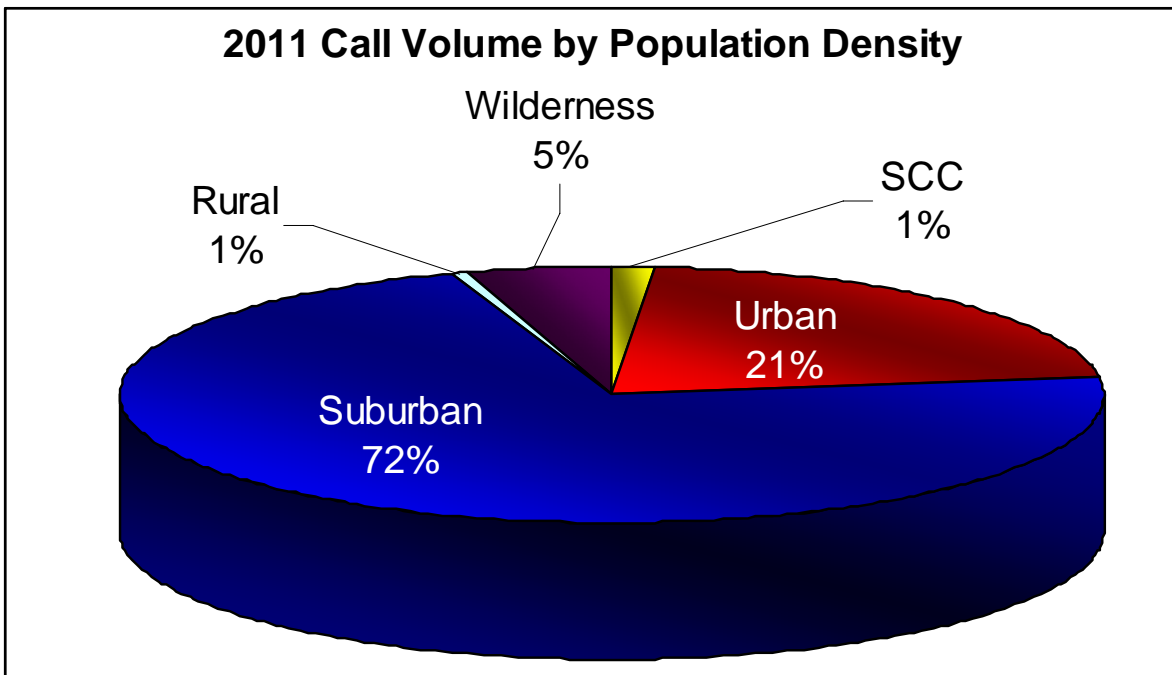
As illustrated above, Station 10 responded to the majority of all EMS requests.



2011 Call Volume by Medic Unit



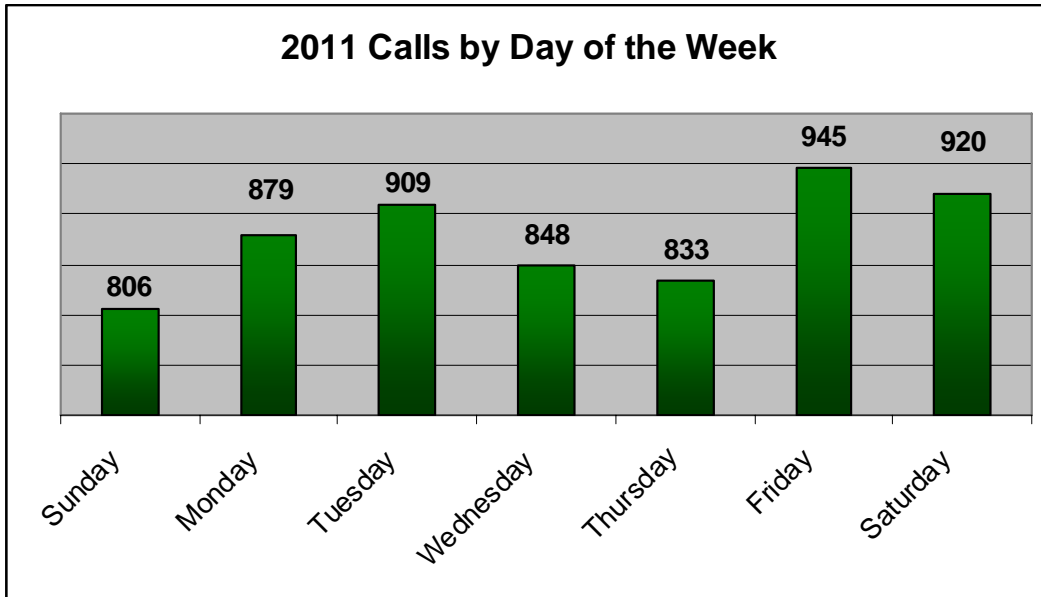
2011 Call Volume by Population Density



The breakdown of EMS requests by location reveals that the majority (72%) of requests occur in the suburban areas of Tuolumne County, where the majority of Tuolumne County residents live.

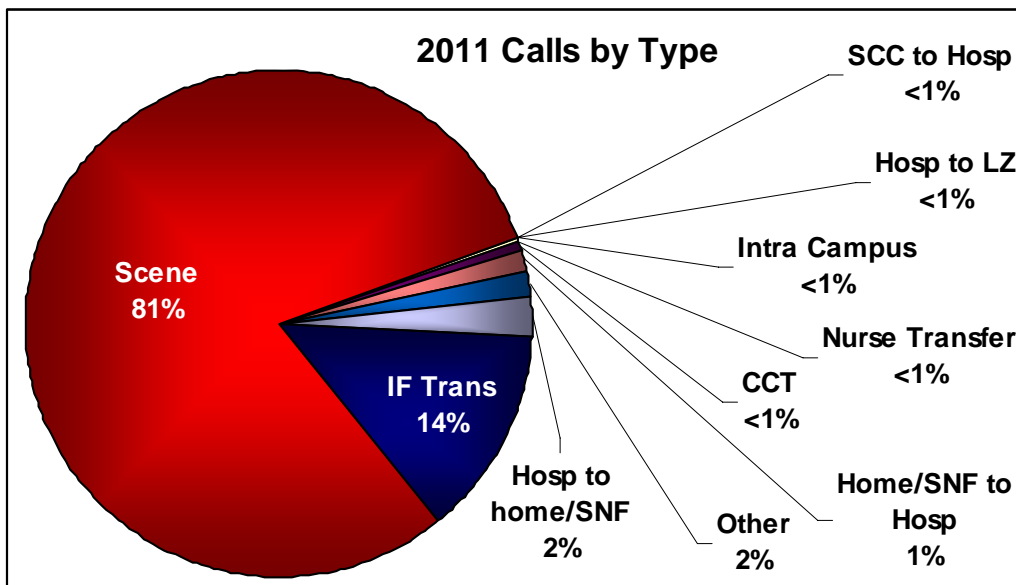
Call Volume 2011

A breakdown of requests by day and time of day shows that call volumes may vary widely during the week, with the highest volumes on Fridays and Saturdays.

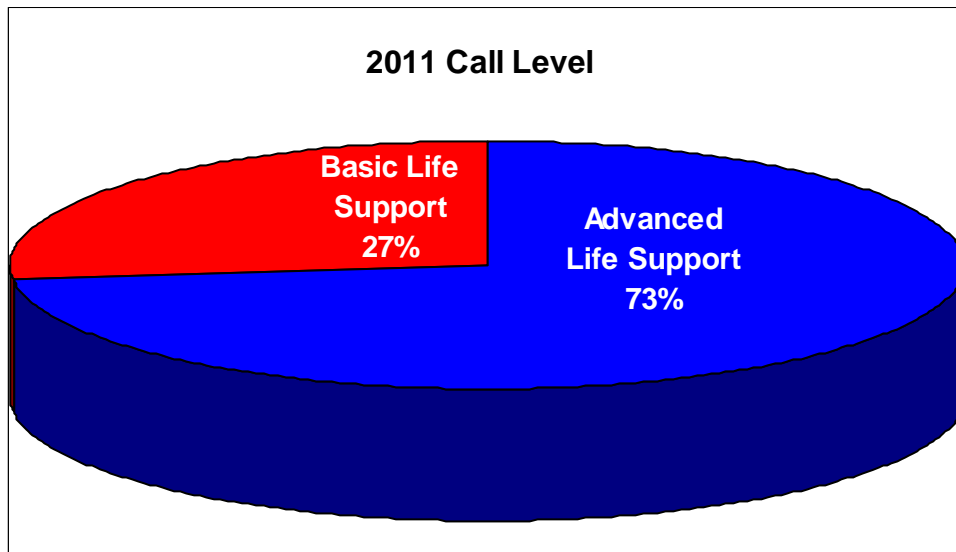


Calls by Type

In 2011, scene emergencies accounted for 81% of the total EMS requests for service. Transfers make up the remaining 19% of EMS requests for services. Transfers consist of ambulance interfacility transfers (IFT), 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.



73% of all requests for service resulted in the delivery of advanced life support (ALS) procedures and/or medications administered to the patient.



Response Times

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

| | BLS 1 st Response | BLS AED 1 st Response | ALS Amb |
|-------------------|------------------------------|----------------------------------|------------|
| <i>Urban</i> | 5 minutes | 5 minutes | 8 minutes |
| <i>Suburban</i> | 15 minutes | ASAP | 20 minutes |
| <i>Rural</i> | 15 minutes | ASAP | 20 minutes |
| <i>Wilderness</i> | ASAP | ASAP | ASAP |

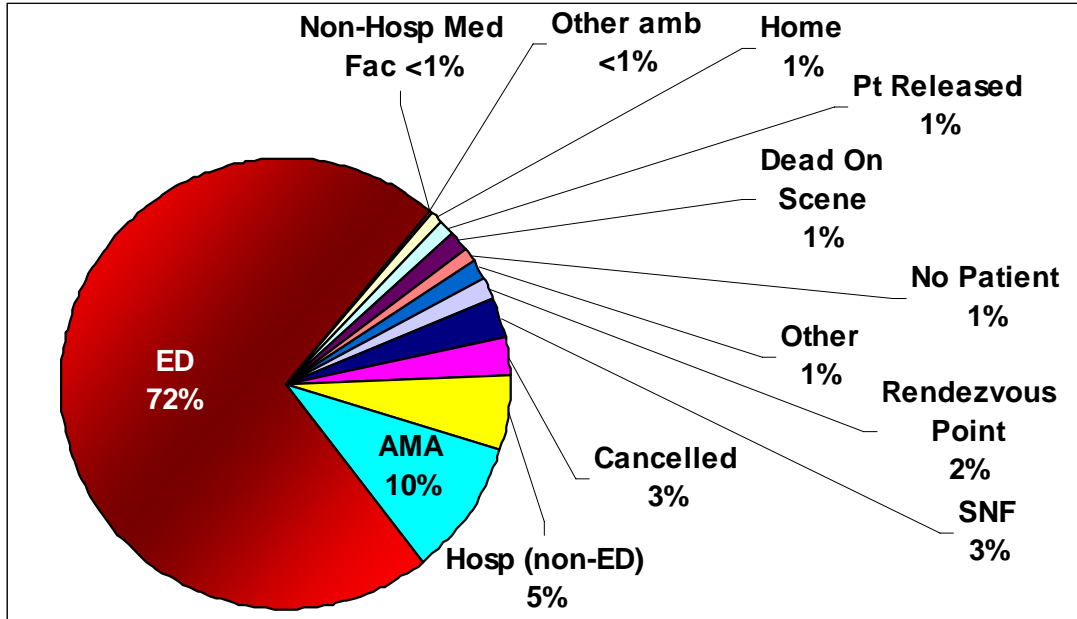
Urban = 101 to 500 people per mile² *Suburban* = 51 to 100 people per mile²
Rural = 7 to 50 people per mile² *Wilderness* = less than 7 people per mile²
SCC = Sierra Conservation Center (secured facilities may be exempted from response time requirements)

| | Urban | Suburban | Rural | SCC | Wilderness |
|-----------------|------------|------------|------------|------------|------------|
| Min: | 0.00 mins | 0.00 mins | 8.00 mins | 0.00 mins | 0.00 mins |
| Max: | 33.00 mins | 70.00 mins | 70.00 mins | 24.00 mins | 80.00 mins |
| Ave: | 6.10 mins | 10.76 mins | 27.92 mins | 16.97 mins | 31.93 mins |
| 90 %ile: | 10.00 mins | 17.00 mins | 39.00 mins | 22.00 mins | 49.00 mins |

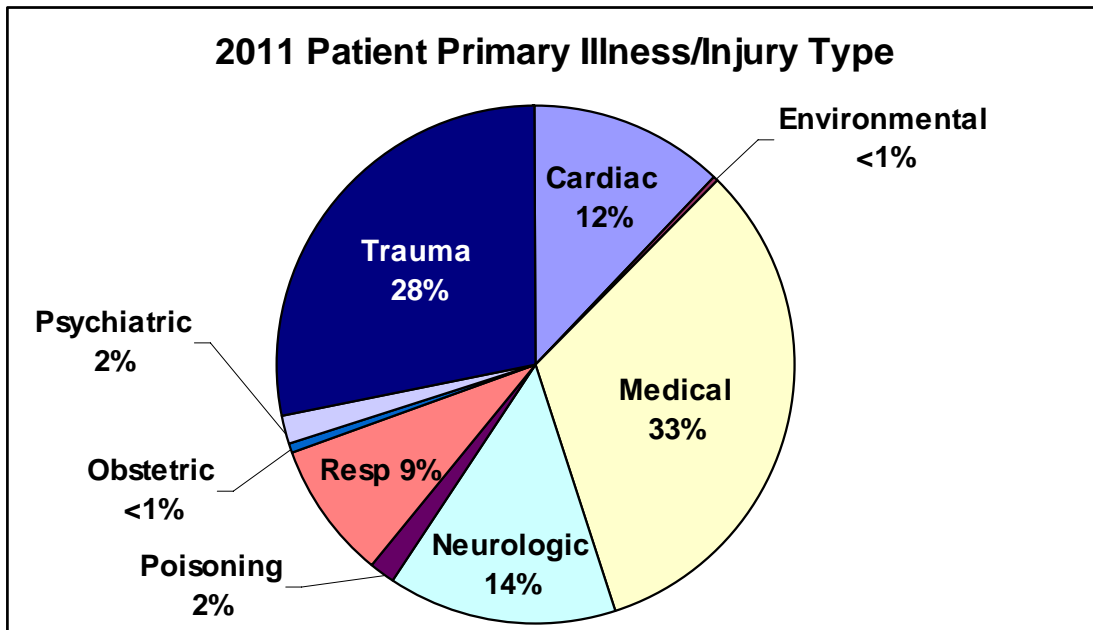
PATIENT AND HOSPITAL DATA

Call Disposition

The table below illustrates that 72% of all requests for service resulted in the patient being transported to an emergency department.

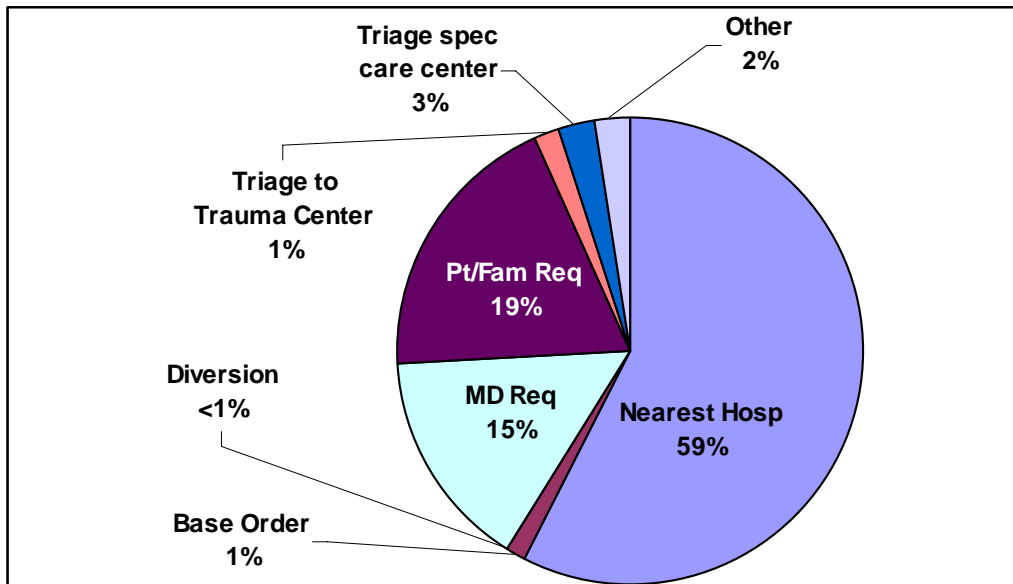


Poisoning/Overdose category does not differentiate between accidental and intentional ingestion or overdose. Nor does it differentiate between prescription and illicit drugs. Medication reactions and anaphylaxis are included in the Medical category.

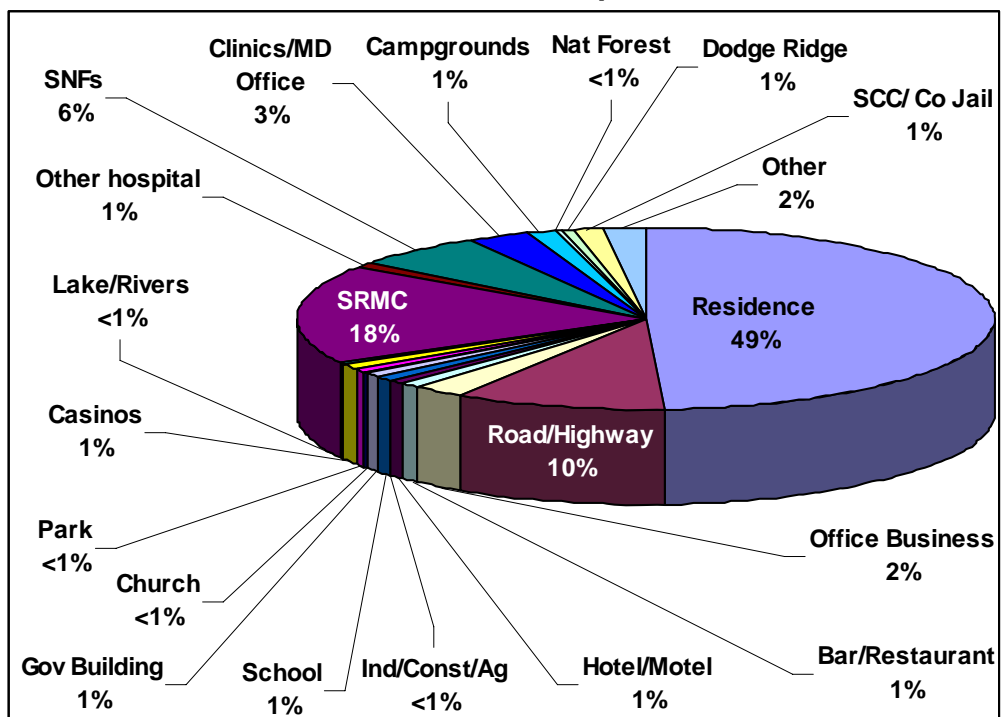


As shown in the chart below, for those patients transported to a hospital, approximately 59% of all transports are made to the nearest hospital and 19% of the patients were transported to the hospital of the patient's or family's choice.

2011 Patient Destination Decision



2011 Scene Descriptions

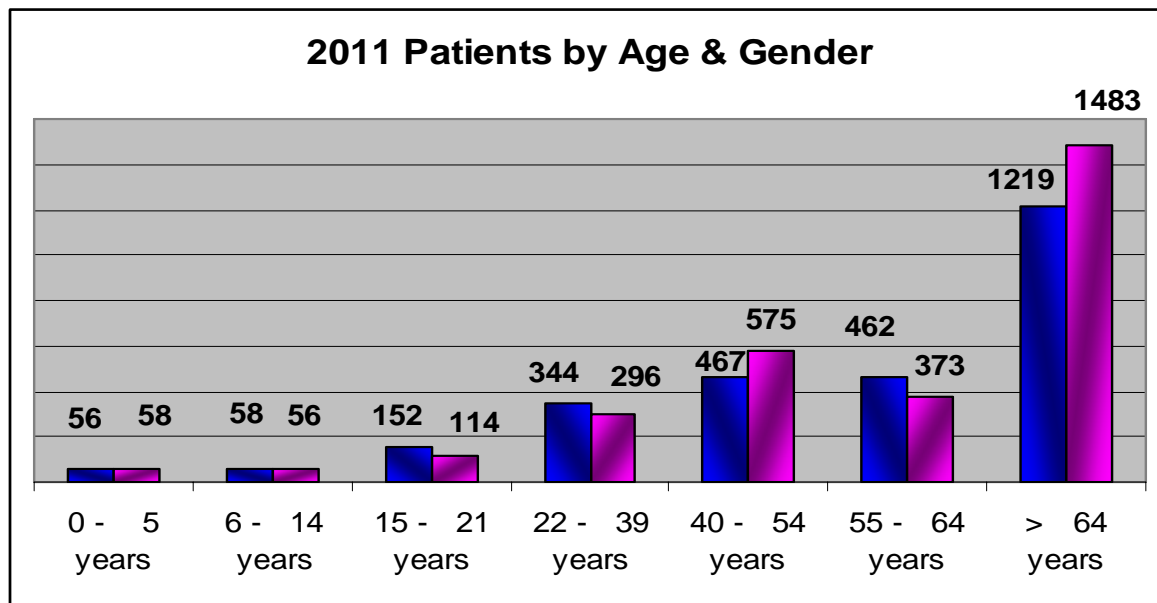


The chart below shows the patient distribution by receiving facilities, including transfers.

| | | | |
|-----------------------------------|---|--------------------------------|------|
| Kaiser Oakland | 1 | Dameron | 5 |
| Other Alameda County Hospital | 1 | Emanuel | 5 |
| Clovis Community Hospital | 1 | Lucile Packard Children's Hosp | 6 |
| Other Fresno County Hospital | 1 | Mark Twain-St. Josephs' | 8 |
| Merced Community MC | 1 | St Josephs | 8 |
| Sutter Roseville MC | 1 | VA Palo Alto | 11 |
| Mercy General Hospital | 1 | Mercy Hospital, Merced | 13 |
| Mercy San Juan Hospital | 1 | Sonora Community Hospital | 15 |
| Sierra Vista Adolescent Hospital | 1 | Valley Children's Hospital | 16 |
| Shriner's Hospital | 1 | Kaiser Manteca | 16 |
| Sequoia Hospital | 1 | CPMC | 19 |
| Oak Valley | 1 | San Joaquin General | 20 |
| TGMF | 1 | U.C.S.F. | 23 |
| VA Livermore | 2 | Oakland Children's | 25 |
| Other Sacramento County Hospital | 2 | U.C. Davis | 35 |
| R. K. Davies | 2 | Stanford | 42 |
| St Joseph's Behavioral Health | 2 | Modesto Rehab | 56 |
| Stanislaus Behavioral | 2 | Other Hospital Not Listed | 87 |
| Kaiser Sacramento | 4 | MMC | 110 |
| Other Santa Clara County Hospital | 4 | DMC | 444 |
| Mt Diablo Hospital | 5 | SRMC | 3840 |
| Central California Children's | 5 | | |

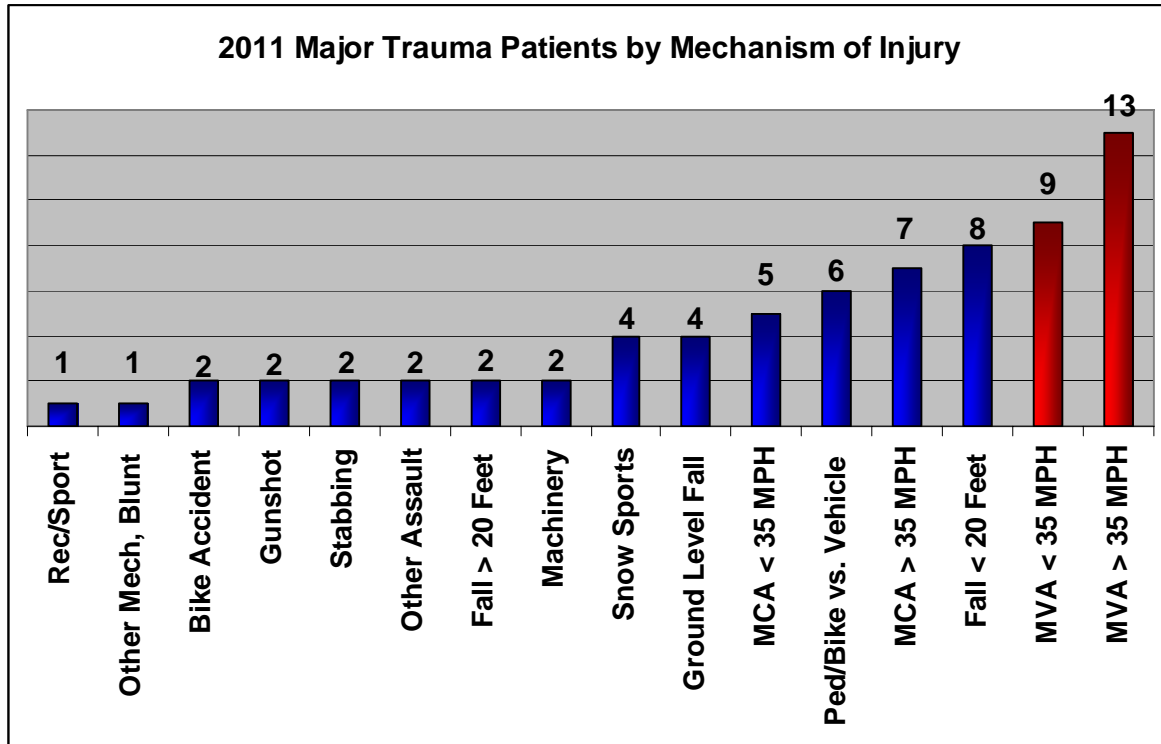
2011 EMS Demographics

Patients greater than 64 years of age account for approximately 47% of ambulance patients. Males comprise 48% of ambulance patients and 52% are females.

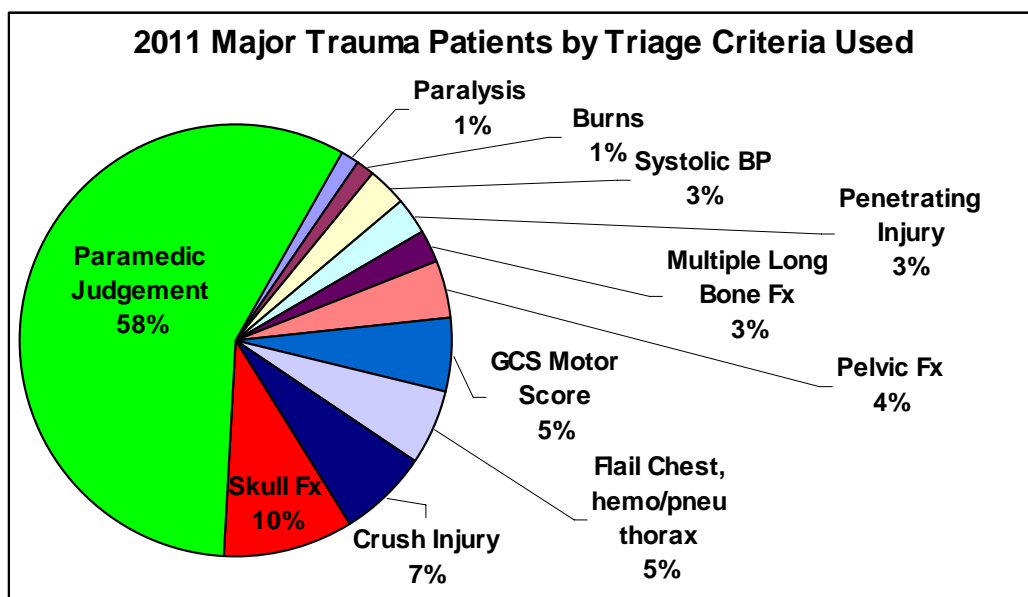


TRAUMA SYSTEM

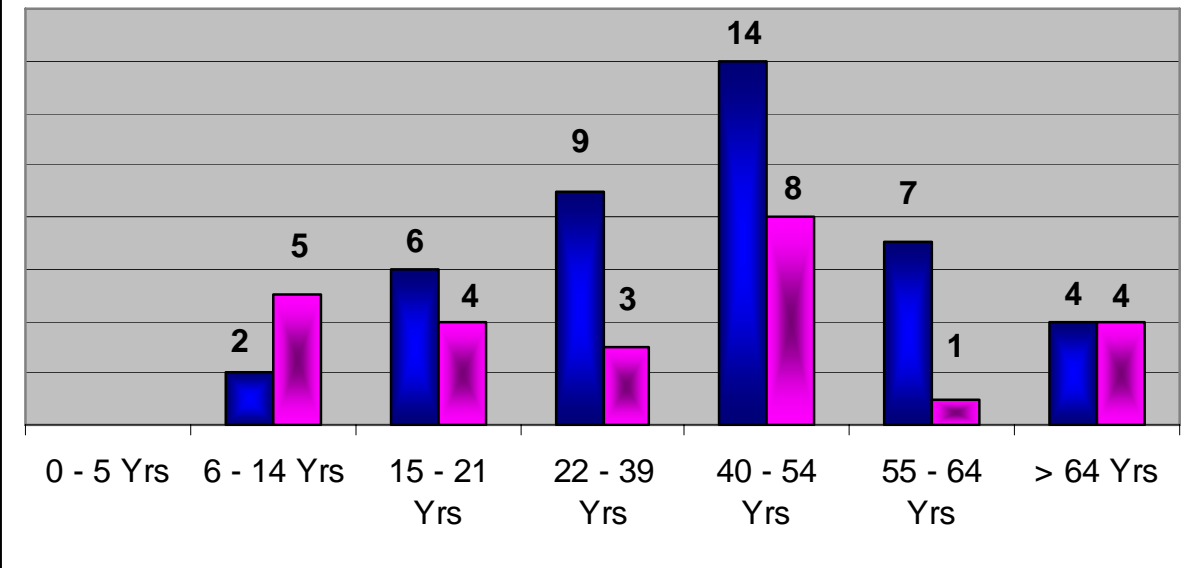
The chart below shows the mechanism of injury for major trauma victims in Tuolumne County in 2011.



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 58% of the time.

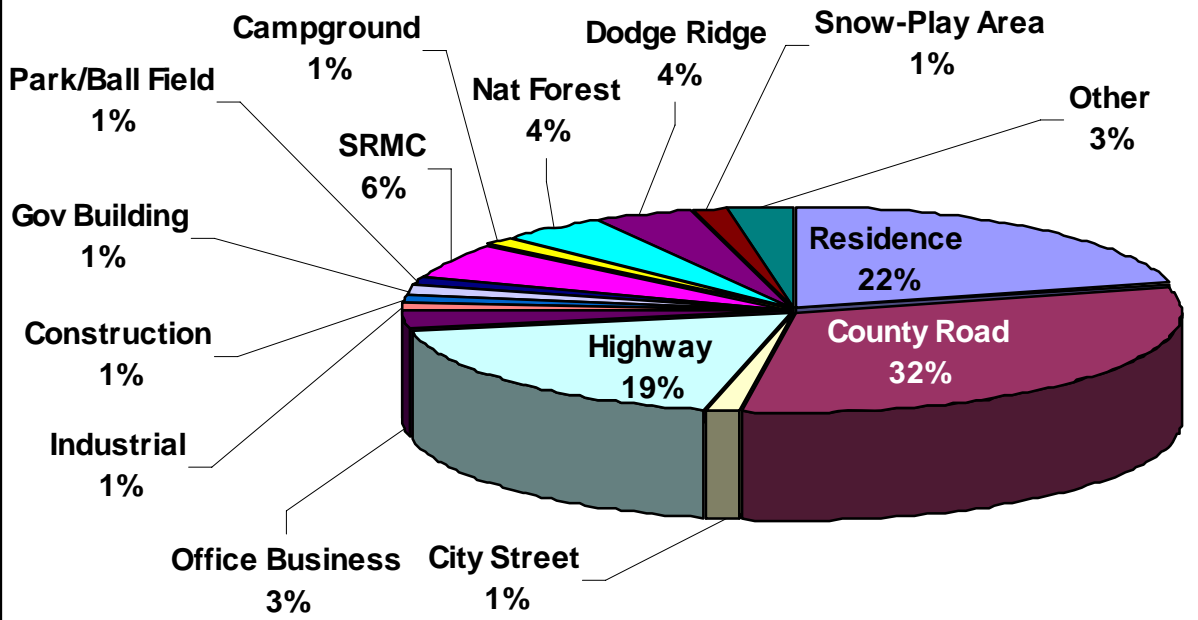


2011 Major Trauma Patients by Age & Gender



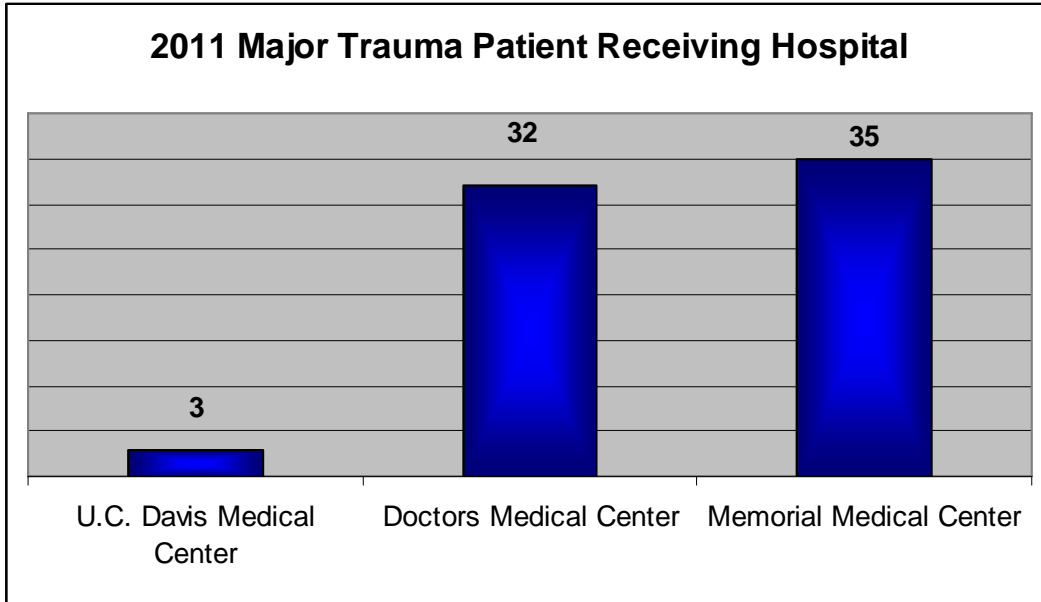
Males comprise 63% of all major trauma patients and lead or tied all age groups except age 6 - 14 years.

2011 Major Trauma Patient Scene Description

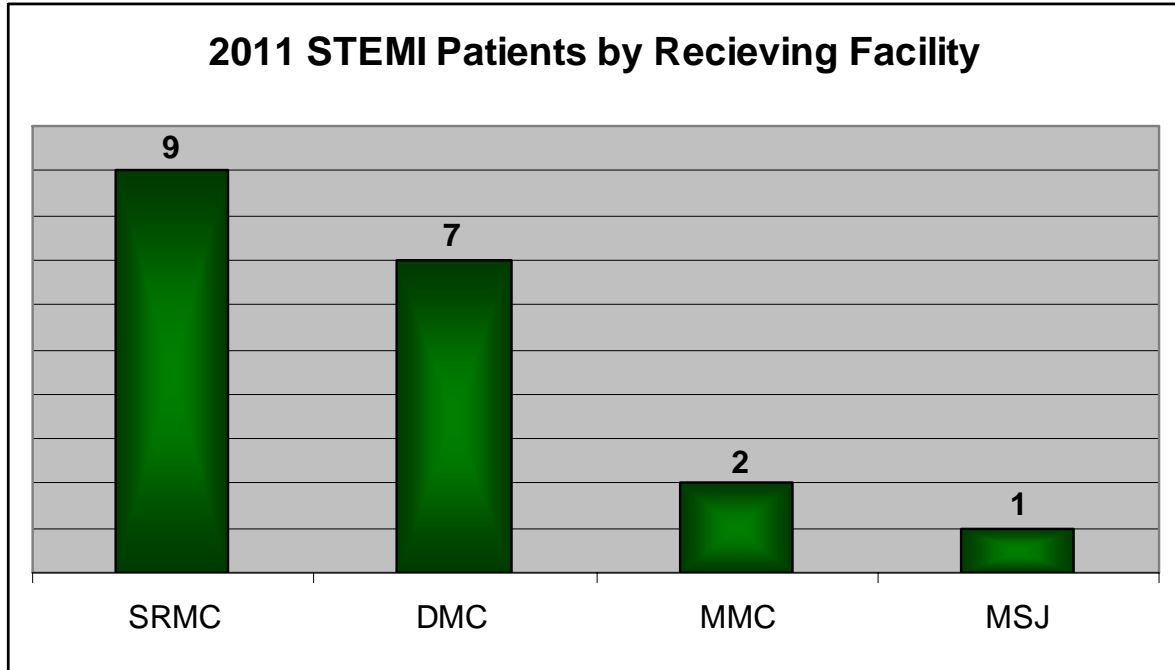


The Tuolumne County Trauma Plan has identified three major trauma patient destinations.

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



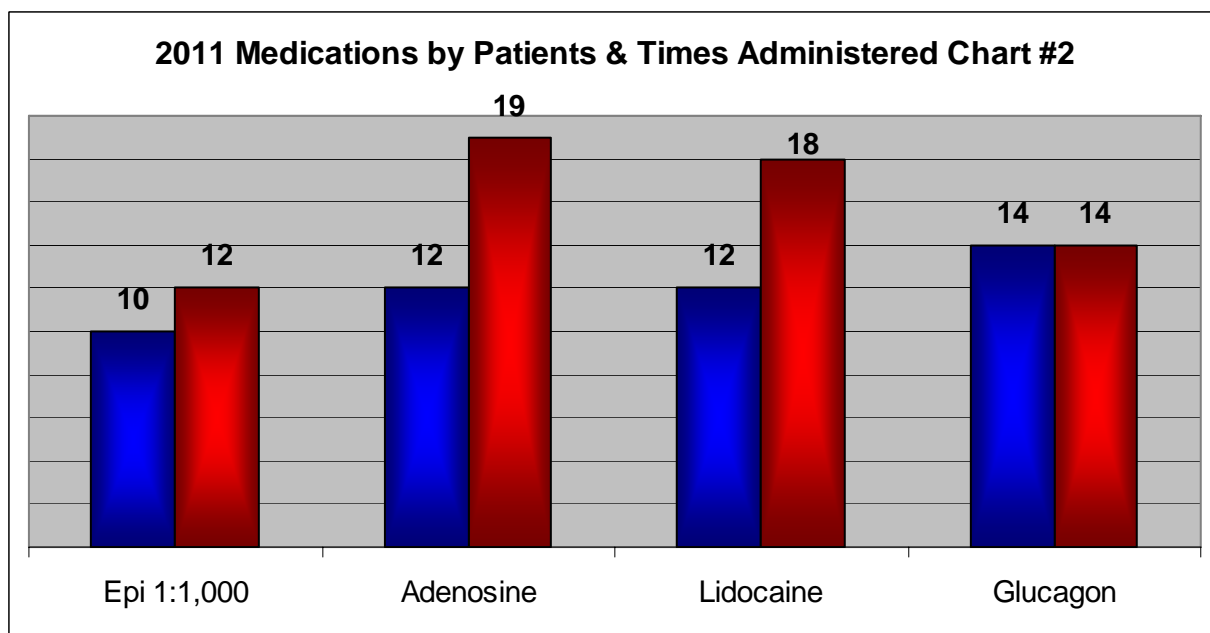
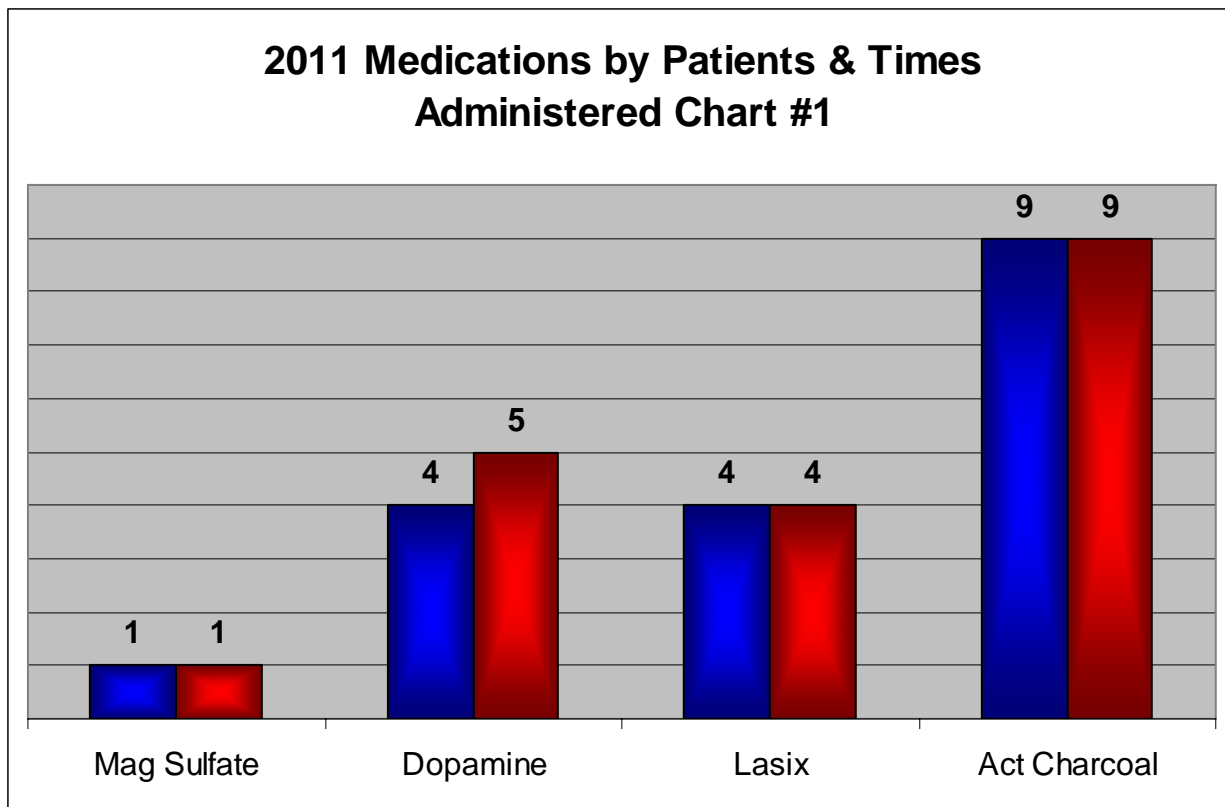
S-T Elevation Myocardial Infarction (STEMI)



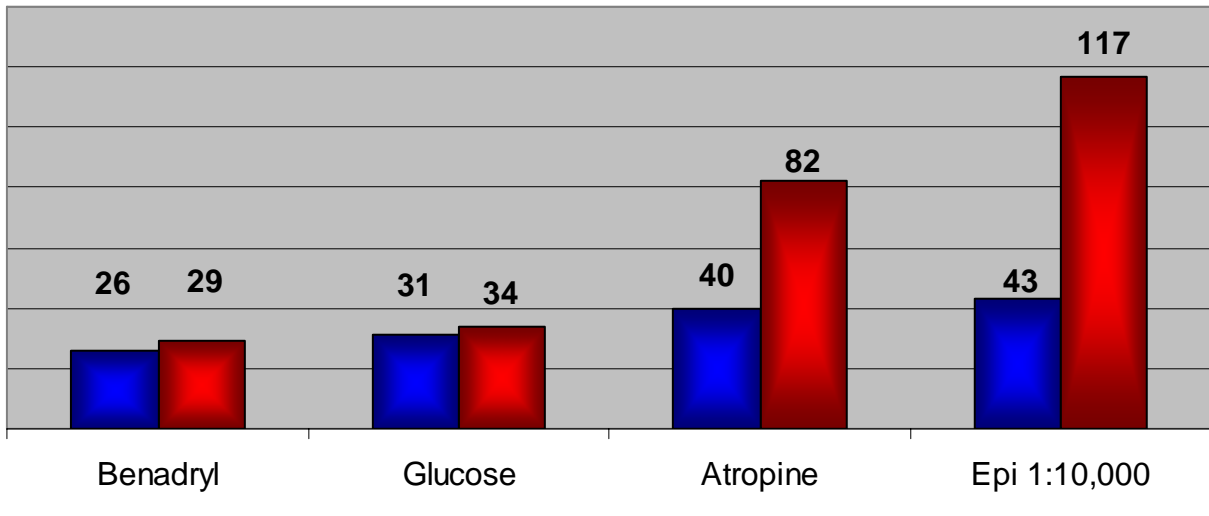
In 2011, 19 patients met the STEMI triage criteria; nine of them were transported to SRMC by ground ambulance, the remainders were transported by air ambulance to Doctors Medical Center, Memorial Medical Center and Mercy San Juan Hospital. The age ranged from 37 years to 95 years old. Males comprised 53% of STEMI patients, 47% female. Median Age is 65 years (67 year for males, 62 years for females).

ALS MEDICATIONS

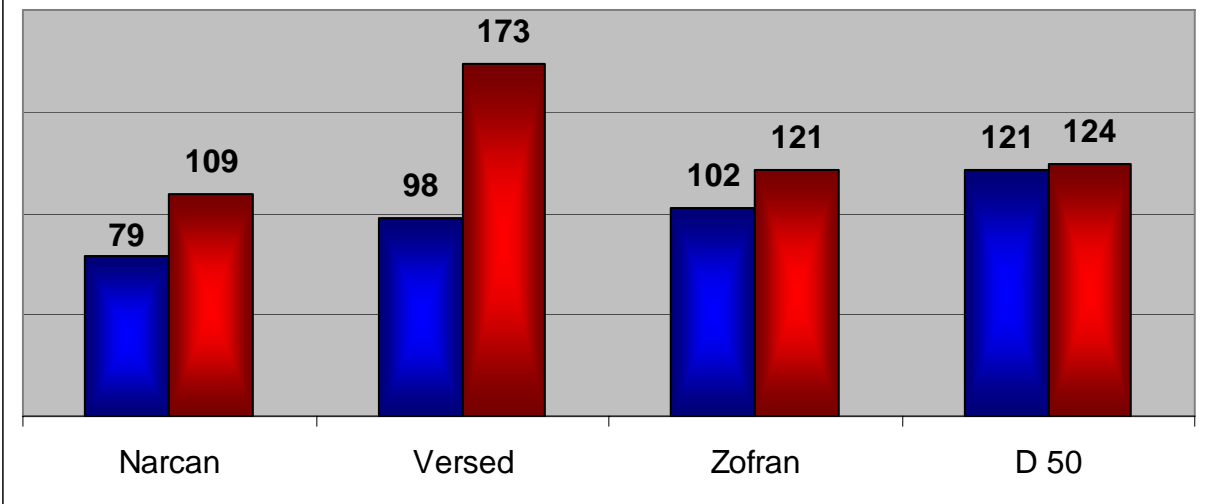
The charts below represent the number of times a medication was administered and how many patients received the medication.



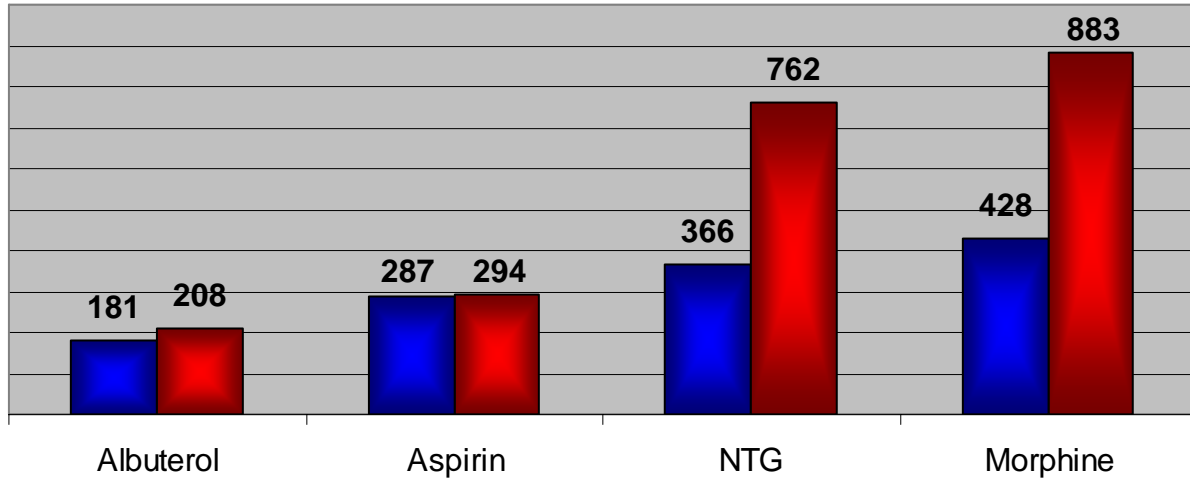
2011 Medications by Patients & Times Administered Chart #3



2011 Medications by Patients & Times Administered Administered Chart #4

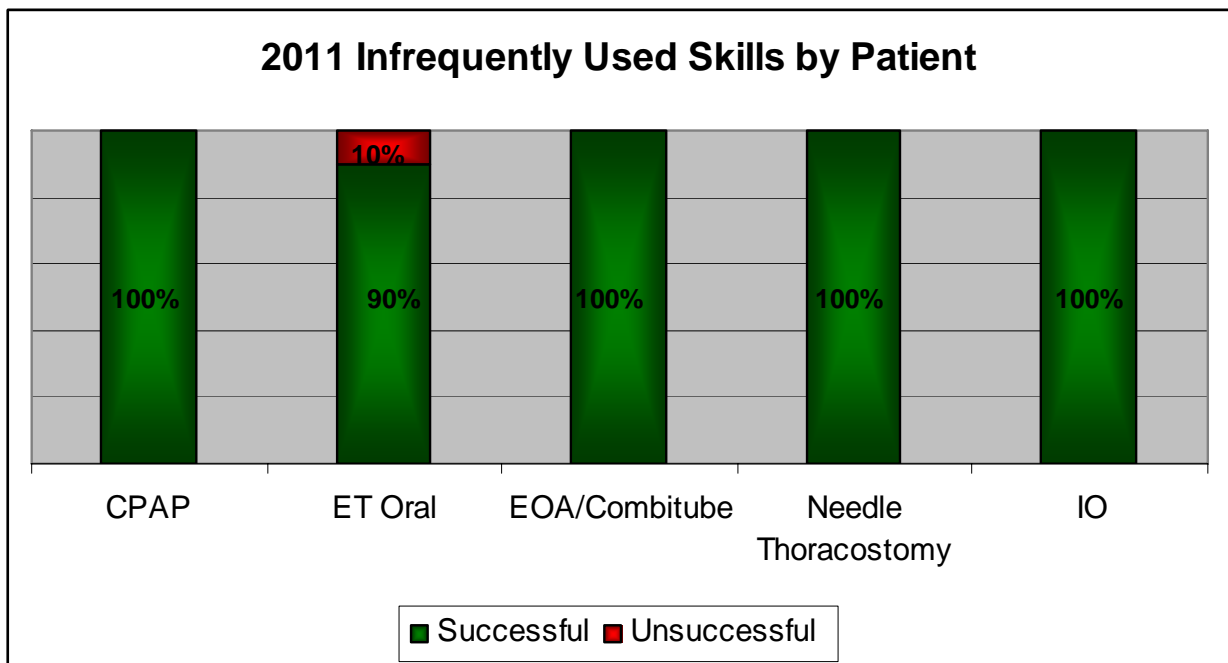
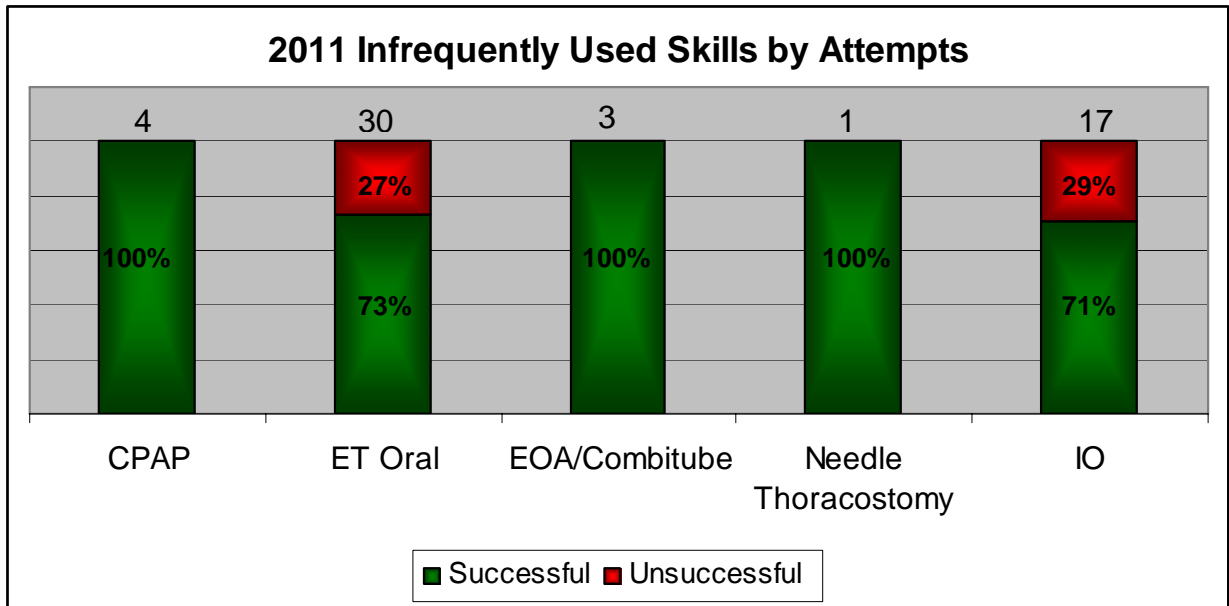


**2011 Medications by Patients & Times Administered
Chart #5**



ALS INFREQUENTLY USED SKILLS

The data on Infrequently Used Skills shows that 13% of all patients that ET intubations were successfully performed required more than one attempt; 90% of the patients that ET intubations were attempted were successfully intubated. The remainder of these patients (3) had a backup advanced airway (EOA, Combitube or King Airway) successfully placed on the first attempt.



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, its citizens and visitors. The eleven-year trend shows a general increase in calls for EMS service, particularly along the Highway 108 corridor.

The changing environment of the upcoming years will afford us many opportunities and challenges to improve the EMS System. Aging durable medical equipment will need to be replaced in the coming years; other equipment and software need to be upgraded in order meet the expected standard of care and to better manage 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.