

Santa Clara County  
Emergency Medical  
Services



# Annual Report 2022

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# Our Mission

The Santa Clara County Emergency Medical Services Agency is an essential service dedicated to ensuring the provision of quality patient care to the people of Santa Clara County through collaboration, facilitated regulation and system management.

## Our Values

1

Dignity and Respect: We treat people with dignity and respect.

2

Progressive Innovation: We are dedicated to the continuous improvement of our processes and systems based on science, data, and best practices.

3

Professionalism and Objectivity: We treat all individuals and organizations professionally, fairly, and without prejudice.

4

Leadership: We lead through collaboration and facilitation to ensure accountability, the provision of quality patient care, while ensuring fiscal and operational stability.

5

Participation: We value the contributions of the public, other agencies, and organizations in the development, implementation, and evaluation of the Santa Clara County EMS System.



# Director's Report

On behalf of the Santa Clara County Emergency Medical Service Agency (SCCEMSA), I am pleased to present the Annual Report for 2022. SCCEMSA is an essential service dedicated to ensuring the provision of quality patient care to the people of Santa Clara County through collaboration, facilitated regulation, and system management. The residual effects of COVID continued to materialize with the initial omicron wave remaining in January and February 2022. The EMS agency has maintained our special relationships with the community and our healthcare partners to address the challenges, by providing exceptional pre-hospital medical care to the residents and visitors of Santa Clara County during these demanding times. Together, we have achieved remarkable milestones and faced numerous challenges head-on, all while striving to fulfill our mission of providing clinically superior and culturally competent care. This past year has been extraordinary in many ways, marked by record breaking call volume that put our skills and resilience to the ultimate test. SCCEMSA also continued to explore ways to expand our skills and stay ahead of the constantly changing landscape of pre-hospital emergency medicine.

Key findings of this report include the following:

- SCCEMSA conducted re-designation site surveys in 2022 for all ten Stroke Receiving Centers, eight STEMI Receiving Centers and one Trauma Center.

- SCCEMSA established the EMS for children (EMSC) program in July 2022, designating nine hospitals for the preferred designation for critically ill or severely injured pediatric patients.
- Convened a paramedic training workgroup to examine mitigations of current workforce shortages.
- Successfully submitted 294,000 electronic patient care records into the California Emergency Medical Services Information System (CEMSIS), achieving a submission rate of 99.47%.
- Conducted a stakeholder group analysis of potential EMS Service Model in preparation for the development and release of a future Request for Proposal (RFP).

I extend my deepest gratitude to our dedicated staff, and the unwavering support of our stakeholders. Together, we have risen above challenges, set new records, and made a lasting impact on the lives of those we serve. As we move forward, let us continue to evolve a cost-effective, collaborative, and outcome-based EMS delivery system that produces clinically superior and culturally competent care.

I look forward to collaborating with all our stakeholders and County leadership in the future.



Jackie Lowther, RN, MSN, MBA

# EMS Training and Education Overview



The Training and Education Unit serves the educational needs of the public, current and future EMS providers in Santa Clara County.

The goal of provider education is to ensure and enhance the knowledge, skills, and abilities of current EMTs and Paramedics working in Santa Clara County and beyond.

The Training and Education unit works with the current and prospective EMS Training Programs located in Santa Clara County to meet the needs of future EMTs and Paramedics.

Public education and outreach efforts taken on by the EMS agency work to prevent illness and injury through health education.

# EMS Training and Education- Provider Education



The Local System Orientation Exam is administered to ensure providers are knowledgeable in the protocols and policies specific to SCCEMSA.



The exam is administered to personnel who are new to SCCEMSA or are returning after a lapse in employment. In 2022, 699 tests were successfully passed by EMTs(555) and Paramedics(144). 1,015 total tests were administered.



Successful completion of the exam is a requirement of the credentialing process for EMS system providers.

## EMT

555 Passed

66% Pass Rate



144 Passed

85% Pass Rate

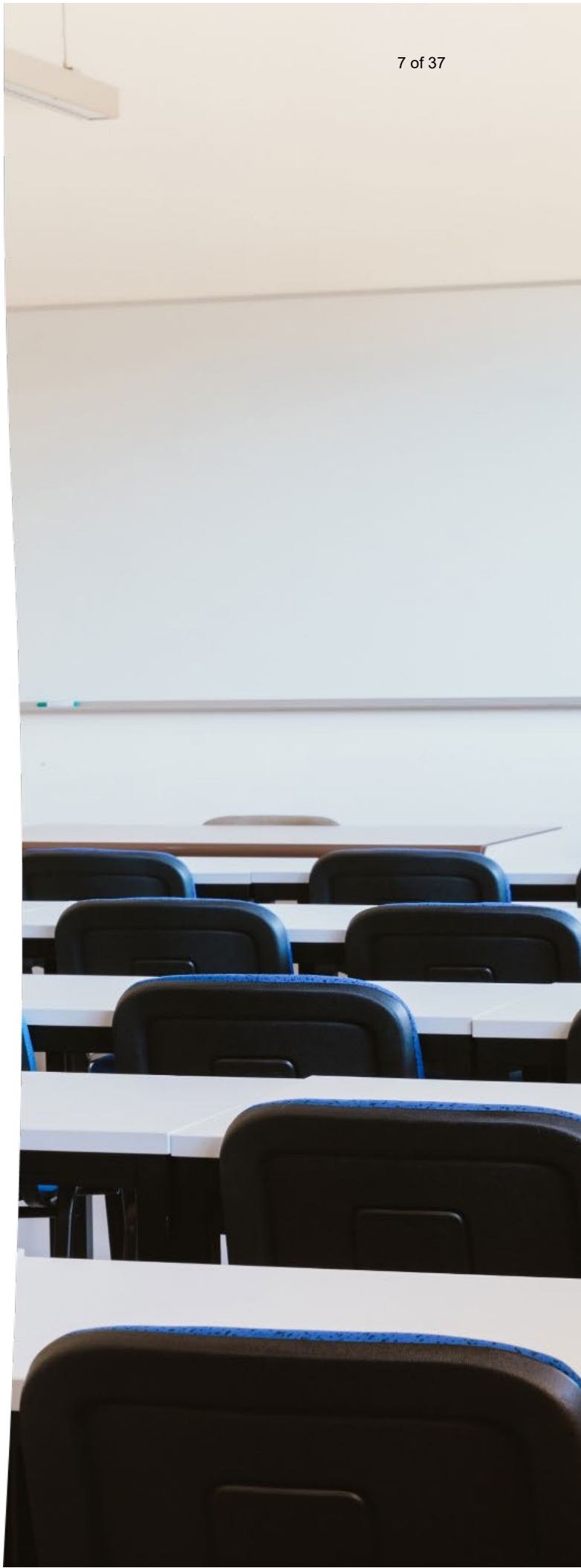
## Paramedic

## EMS Training and Education- Continuing Education

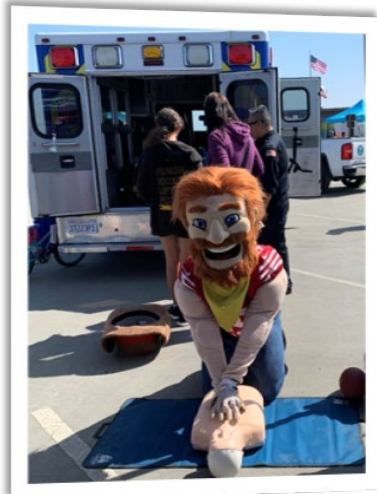
Continuing Education Providers are the backbone of EMS Education in any EMS System. They provide the education to current EMTs and Paramedics to maintain and enhance their knowledge, skills, and abilities to provide quality patient care.

There are 19 EMS Continuing Education (EMS CE) providers authorized by the EMS Agency. In 2022 those providers offered 1,719 courses.

The EMS Agency commends them for providing numerous quality educational opportunities. Without the continuing education provided, EMTs and Paramedics would not be able to meet the requirements to maintain their certification or licensure.



## EMS Training and Education- Public Education



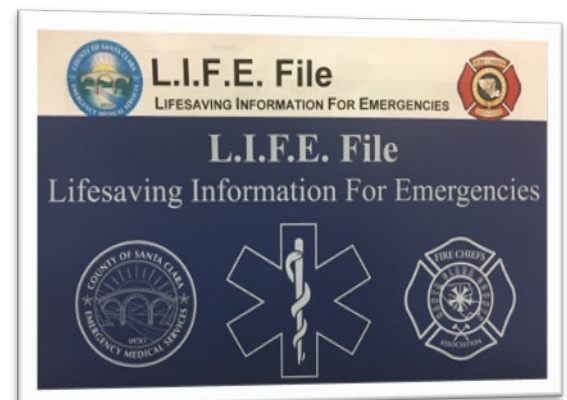
### Hands Only CPR

CPR is a lifesaving intervention. Bystanders providing chest compressions until rescuers arrive can make a significant difference in survival rates.

SCCEMSA is active in training the public in Hands Only CPR at large community events such as the annual Day on the Bay event with more than 150 participants trained and other smaller events.

### L.I.F.E. File

The Lifesaving Information For Emergencies File is a magnetic envelope that can be placed on a refrigerator or other visible place to provide rescuers important information when responding to a medical emergency. SCCEMSA provides these files at no cost to the public and distributes them at community events or upon request. More than 7,000 files have been distributed in 2022.



### Stroke Education

SCCEMSA is committed to educating the public on the signs of stroke. Stroke is the leading cause of disability and one of the leading causes of death in the United States. We hope that through education disability and death can be reduced/prevented due to stroke. In Spring 2022, each of the Stroke Centers distributed 5,000 cards to community centers, grocery stores and schools.



# EMS Personnel Certification

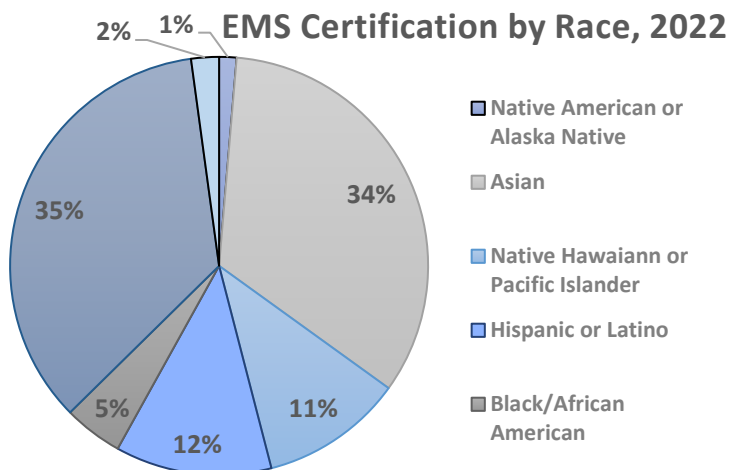
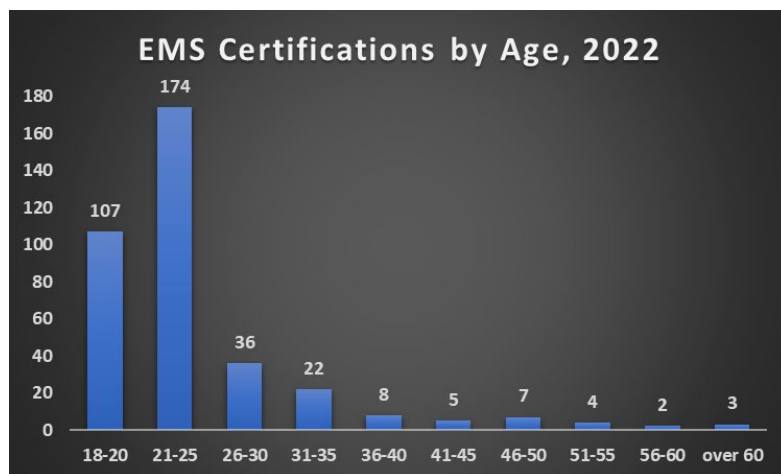
## Total Licensed Personnel, 2022



EMT	2,847
Paramedic	751
Registered Nurse	184
Mobile Intensive Care Nurse	44

Within the EMS System there are Emergency Medical Technicians (EMT), Paramedics, Critical Care Transport Registered Nurses (CCT-RN), Mobile Intensive Care Nurses (MICN), Emergency Field Supervisors (EFS) and EMS Duty Chiefs. When a new provider enters the EMS System, they are required to submit an application to SCCEMSA, complete a Department of Justice and FBI background check and submit the required completed training documents. Once an individual completes the application and examination process, they are provided an EMS System Identification Badge and are eligible to work in our EMS System. Every two years, EMS personnel must recertify with the EMS Agency.

The average age of the EMS workforce in the United States is 36 years old. As with other healthcare professions, the EMS workforce is facing an aging crisis with many experienced providers retiring. The EMS system has the advantage of workers entering at a younger age by being offered training programs in high school and community college. In 2022, 368 initial certifications were issued, and 86% of these were to individuals under the age of 30.

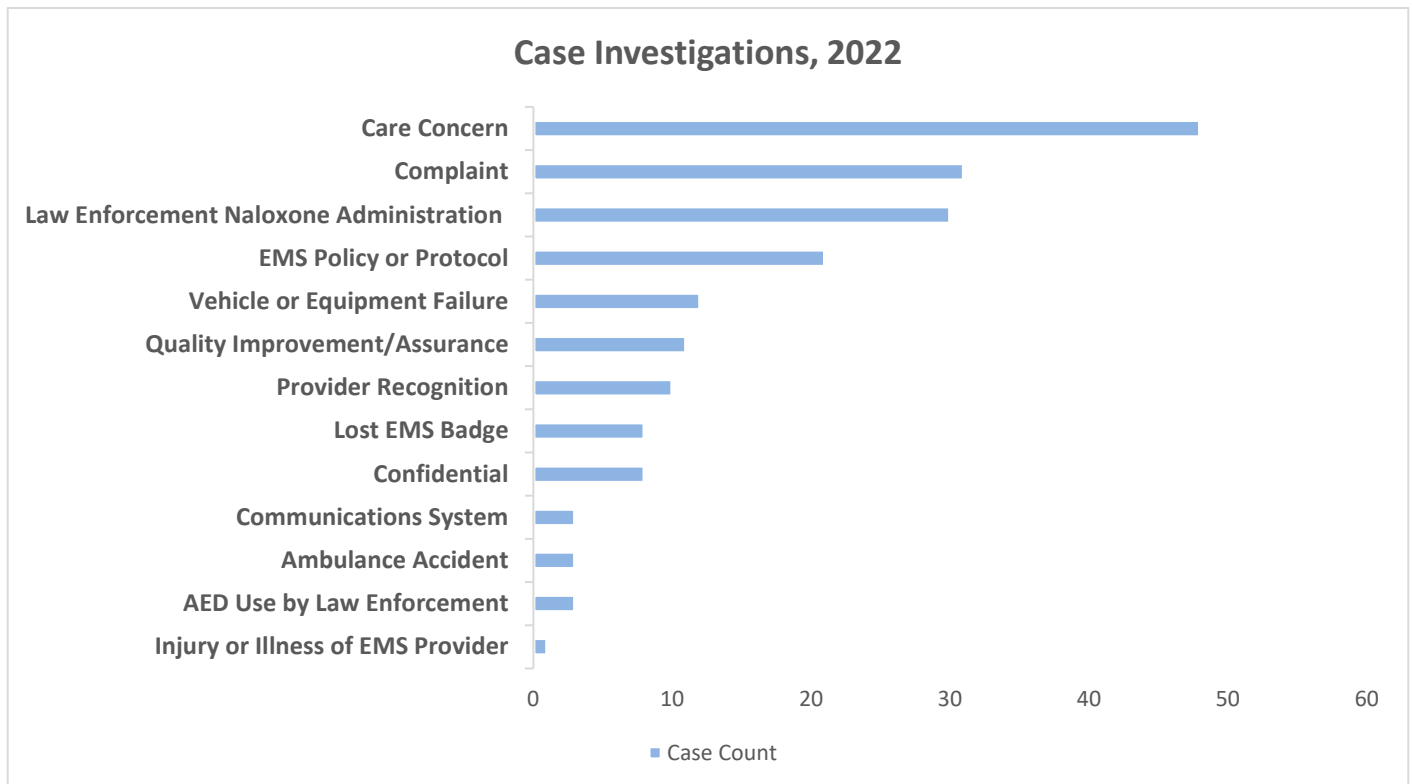


Having a diverse workforce that resembles that of the community is essential to providing the best care possible. It ensures EMS providers are more likely to understand community needs, offers language and cultural parity and breakdown bias. This leads to a more positive patient experience. The diversity of new EMS certifications closely resembles that of Santa Clara County, with 35% White and 34% Asian and 5% Black/African American. However, there is a lower percentage of Hispanic/Latino providers which is 12% compared to 25% of the population.

# Investigations and Enforcement

SCCEMSA is responsible for ensuring that emergency medical personnel who are credentialed through the agency and work in the EMS System uphold established laws and regulations. If an issue arises, the EMS Agency will work with the individual's employer to ensure that a formal investigation is completed. Depending on the issue, SCCEMSA may be required to refer the case to the State EMS Authority. Upon completion of an investigation, the SCCEMSA Medical Director may take action against a holder's certification, which may include denial, suspension, revocation, or placing the certification on probation.

SCCEMSA conducted 189 formal investigations in 2022.



# Inspections and Permitting

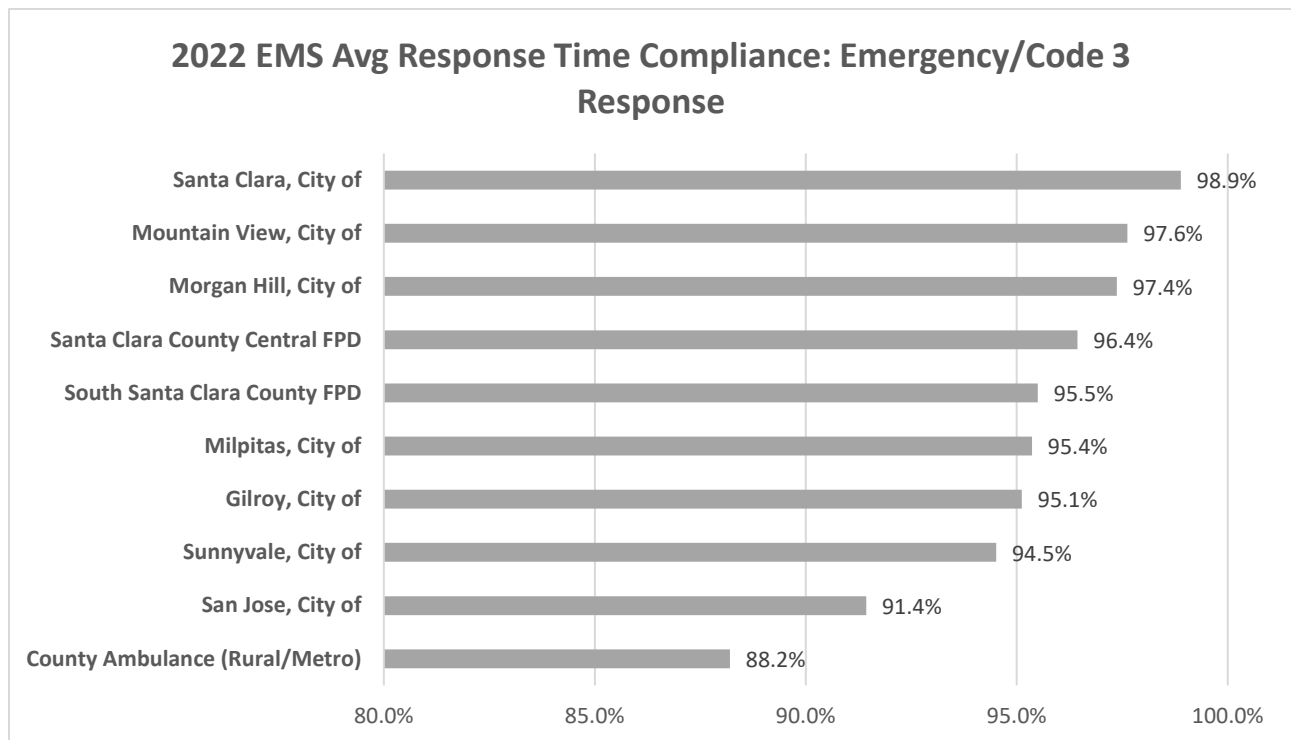
SCCEMSA inspects all emergency medical vehicles entering the EMS System, collects vehicle maintenance audit reports and performs provider initiated or random audits. The purpose of these audits is to ensure that all emergency medical vehicles in the system are safe and meet the required standards for each level of service.

In 2022, EMS Agency staff collected monthly mileage and inspection reports for 56 County Ambulances and conducted 22 inspections.

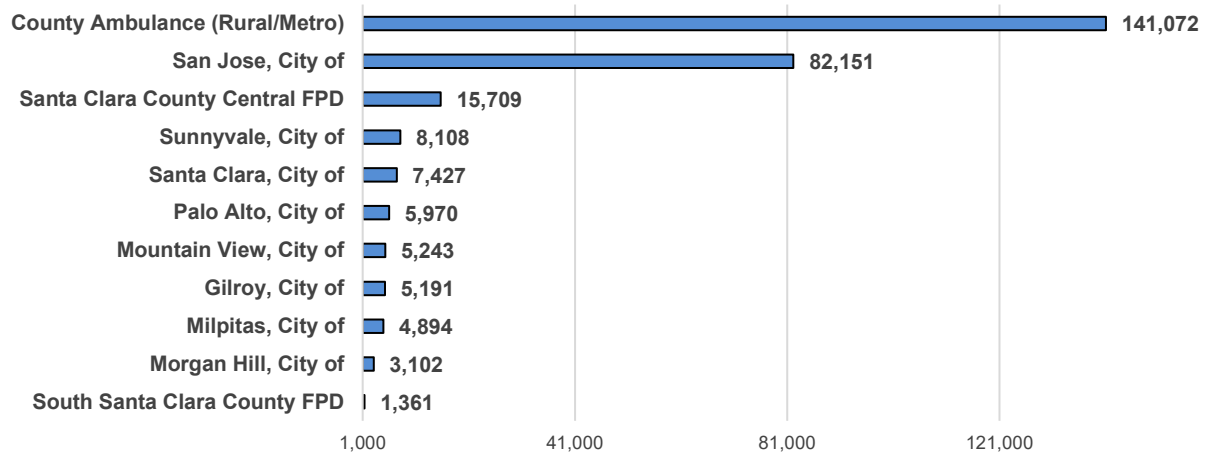
Provider	Levels of Service	Santa Clara County Ambulances
American Medical Response - IFT	CCT, BLS	14
CALSTAR	Air	2
Falcon Critical Care Transport	CCT, BLS	21
Gilroy Fire Department	ALS	1
Milpitas Fire Department	ALS	1
Morgan Hill Fire Department	ALS	1
NORCAL Ambulance	CCT, BLS	18
ProTransport-1	CCT, ALS, BLS	28
Royal Ambulance	CCT, BLS	43
Rural/Metro (County Ambulance)	ALS	61
San Jose Fire Department	ALS	5
Santa Clara City Fire Department	ALS	1
Stanford Life Flight	Air	1
Westmed Ambulance	CCT, ALS, BLS	31

## Response and Transport Performance

The County currently maintains ten (10) agreements for emergency medical services. Response time performance is a key performance indicator for assessing compliance with the agreement requirements. Response time performance is measured monthly. The minimum performance standards for response time performance are 90%. The following chart measured month-to-month average Code 3 (lights and sirens) response performance for 2022.

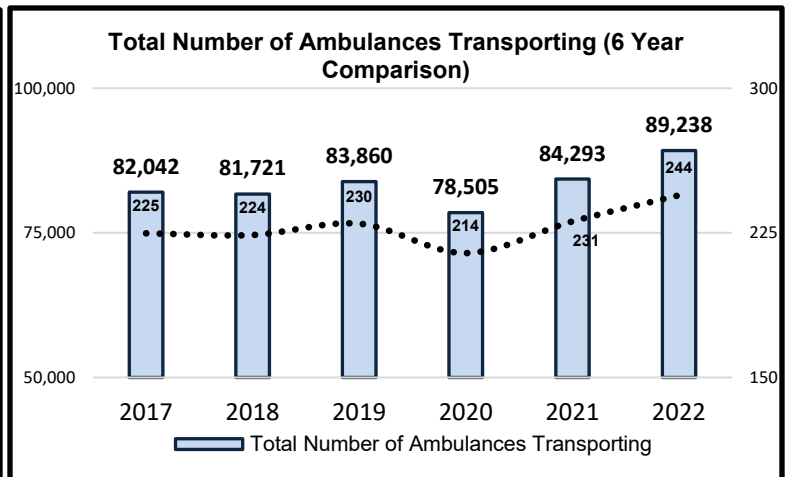
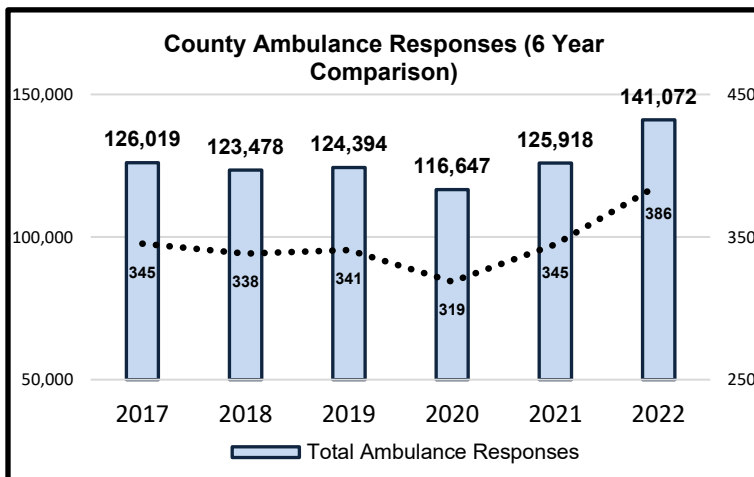


### EMS Responses by Agency, 2022



## Response and Transport Performance

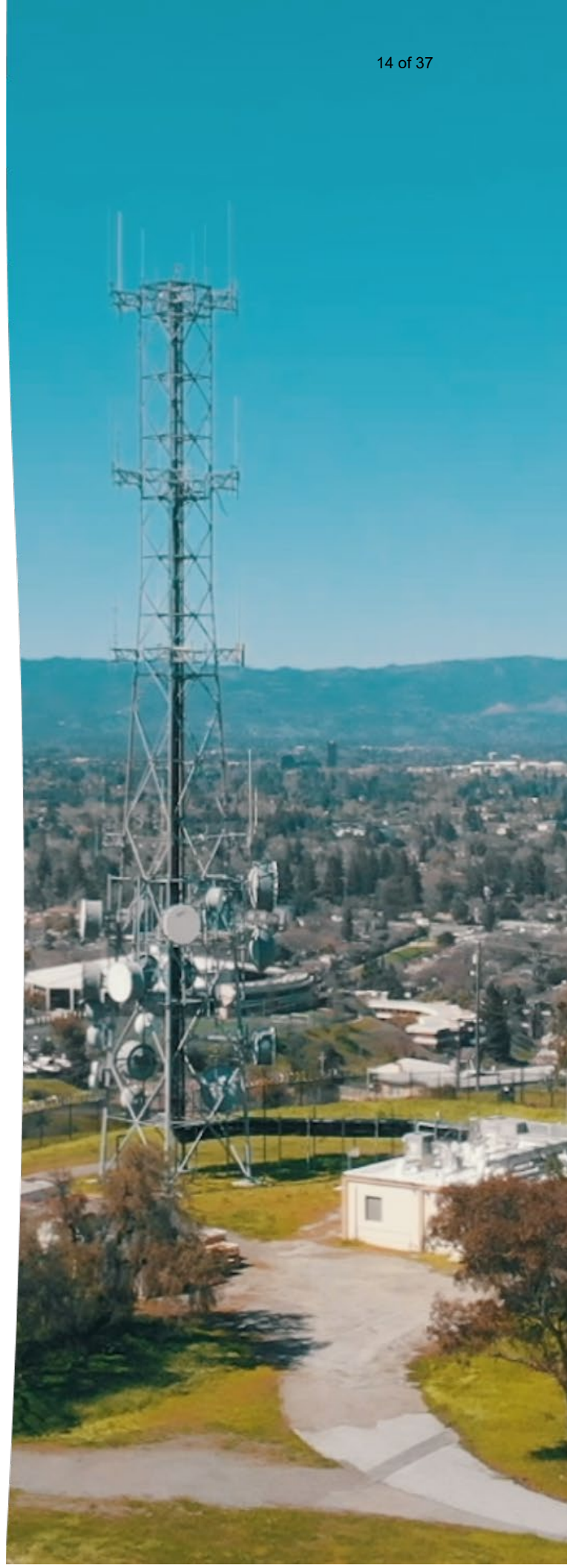
Another key performance indicator used to measure system performance is response and transport utilization. In 2022, the County Emergency Ambulance provider responded to 141,072 calls for service. Those responses resulted in 89,238 ambulance transports to local hospitals, which averaged to 244 transports per day. From an average daily perspective (24 hour), the County Emergency Ambulance provider responded to 386 calls for service. From a narrower perspective, there were 16 responses per hour, or one response every 3 minutes and 45 seconds. In 2022, ambulance responses increased by 12% from the previous year and transport utilizations increased by 6% from the previous year.



# 911 County Communications

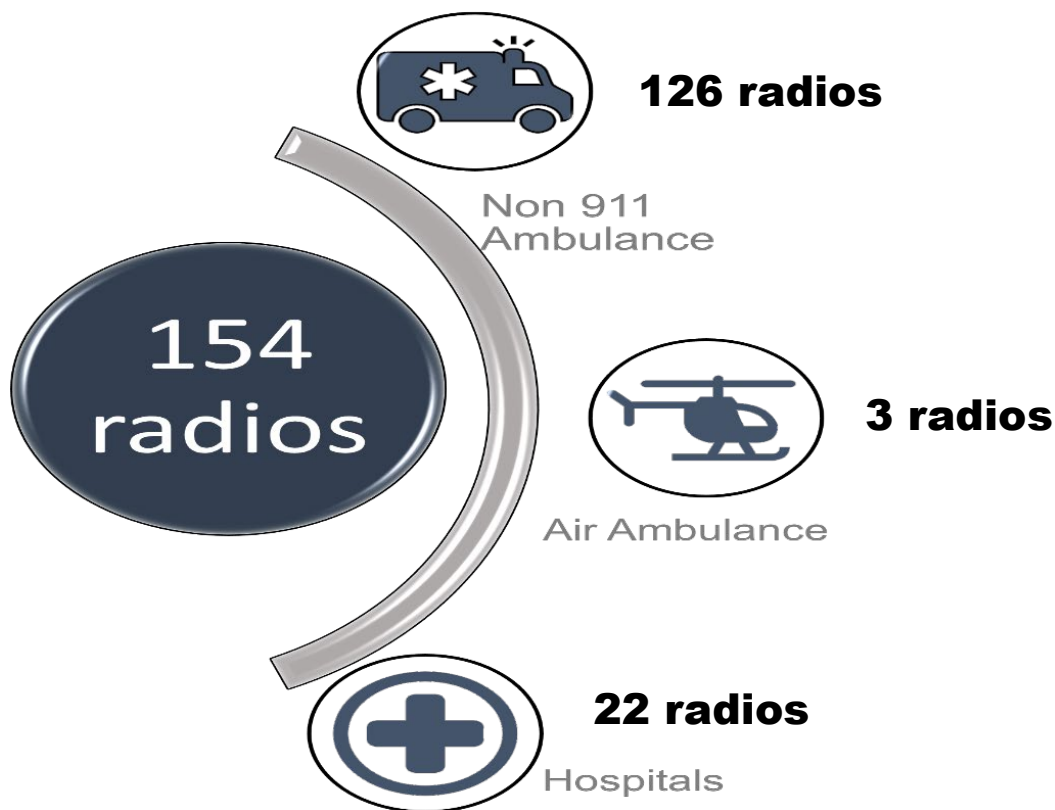
Over the course of the past four years, SCCEMSA has been actively collaborating with Santa Clara County 911 Communications on the development and implementation of a new computer-aided dispatch system (CAD). This new CAD system holds the potential to significantly enhance the tracking of resources and ambulance responses within the EMS system. Moreover, it is expected to contribute to more informed decision-making regarding EMS responses by leveraging data collected from the new system.

The rollout of the new CAD system is slated to take place in September 2023, marking a significant milestone in the ongoing efforts of SCCEMSA and Santa Clara County 911 Communications.



## 911 County Communications

Within the EMS system, a total of 370 radios are currently deployed by SCCEMSA. These radios are distributed among various stakeholders, including non-911 ambulance providers, air providers, hospital safety officers, and EMS agency staff. Notably, all radios are programmed to operate on the 700 MHz digital system, ensuring efficient and reliable communication.



Moreover, SCCEMSA has allocated 49 radios for future providers, preserving them for upcoming needs. With the remaining radios, seven radio caches have been established. These caches are strategically positioned to be utilized during times of disaster or preplanned large-scale events, effectively bolstering communication capabilities and response coordination.

## Disaster Medical Response and Preparedness



### Medical-Health Operational Area Coordinator (MHOAC) Program

The Medical-Health Operational Area Coordinator (MHOAC), in cooperation with the Public Health Department, SCCEMSA, Environmental Health and Behavioral Health are responsible for ensuring Medical-Health disaster planning, response, mitigation, and recovery for their respective operational area. SCCEMSA is responsible for the day-to-day operations and management of the MHOAC Program.

### Continued Response

The MHOAC managed medical-health response operations for COVID-19, Monkeypox, and RSV surges in 2022. They supported incident management, polled facility beds and metrics, and approved and reviewed resource requests. The MHOAC attended after-action reviews, revised the State Multi-Agency Coordination Guide, and managed the distribution of rapid antigen tests for essential personnel. More than 38,340 tests were allocated to public safety personnel.



### Medical Volunteers for Disaster Response (MVDR) Program

The MVDR Program participated in community outreach events in 2022, providing Hands Only CPR Training and Public Education. The County did not see a significant increase in volunteer numbers. The County has two sets of rostered volunteers in the State of California Disaster Health Volunteers (DHV) database: spontaneous volunteers and MVDR Program members. The membership is diverse and spans a large range of medical capabilities and support functions.

<b>MEMBERSHIP TYPE</b>	<b>ACTIVE VOLUNTEERS</b>
<b>Medical Volunteers for Disaster Response (MVDR)</b>	94
<b>Disaster Health Volunteers (DHV)</b>	137
<b>Total</b>	231



## EMS All Hazards Coordination

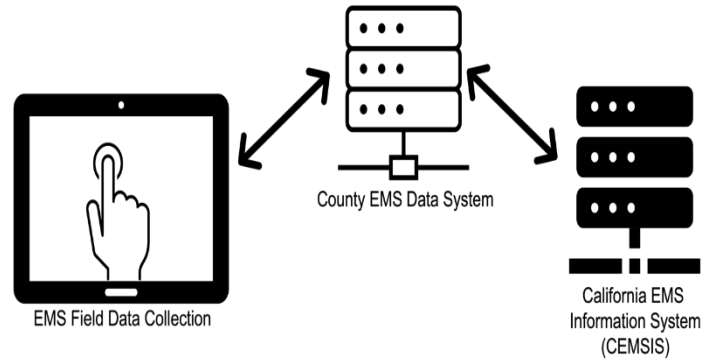
In 2022, The EMS All Hazards Coordination included the following activities:

- Managed and coordinated the EMS-Fire Mobile Vaccination Program for in-home medically fragile patients through April 2022.
- Coordinated Medical-Health Situational Status Reporting to the Region and State.
- Increased visibility of the Medical Health Operational Area Coordinator Program.
- Refined resource requesting process and goods storage for all Medical-Health mutual aid within the Operational Area.
- Developed and submitted requests in response to State Homeland Security Grants Program.
- Conducted equipment training and maintenance.
- Coordinated the establishment of a working group to review response to Incidents of Mass Violence.
- Facilitated training all response personnel in the County's Core100.
- Facilitated the delivery of the Operational Response to Mass Casualty Incidents Course for the Operational Area and Region.
- Managed a three-day power system failure at Valley Medical Center in San Jose.



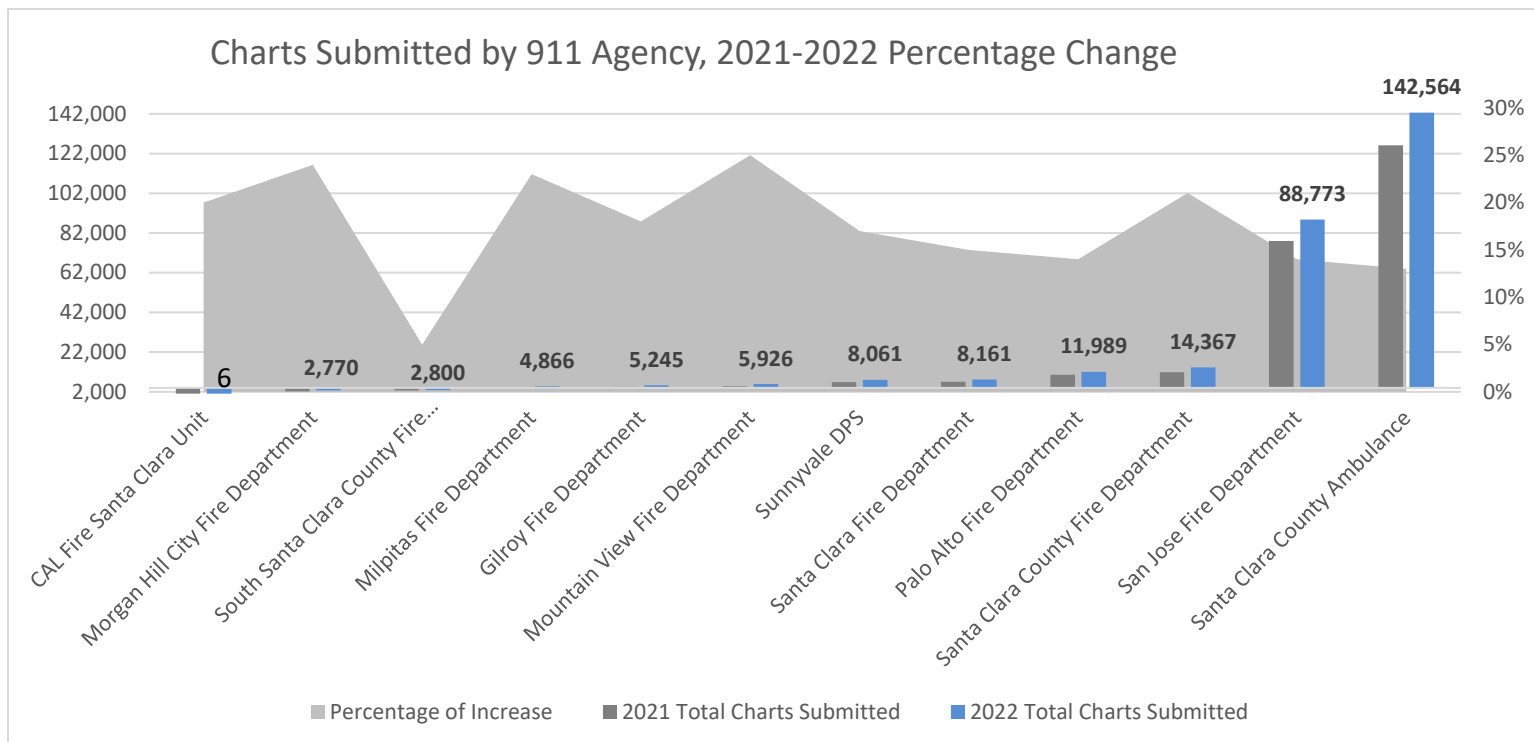
## Data Systems

The SCCEMSA Data System has received a total of 362,036 charts within the calendar year of 2022. This includes all charts documenting any inter-facility ground or air ambulance transport and all charts documenting any 911 incident within the Operational Area (OA) of Santa Clara County. Overall, this is a 13.9% increase from 2021.



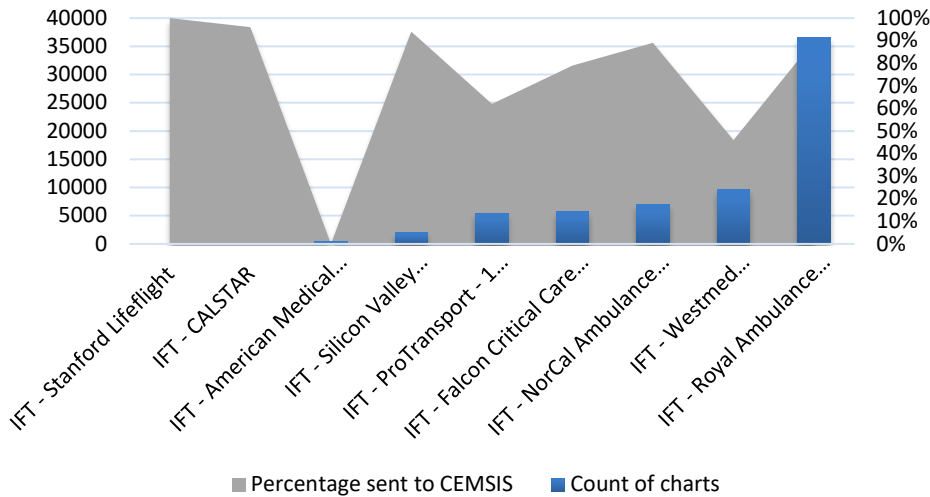
## 911 System Data Collection and CEMSIS Submission

The SCCEMSA Data System has received 295,518 charts documenting 911 incidents within the OA during 2022. Of those 911 charts submitted to the EMS Data System, 294,045 (99.47%) charts have been successfully submitted to the California EMS Information System (CEMSIS). Once the data transfer of each chart has been successfully received by CEMSIS. The State in turn submits this data to the National EMS Information System (NEMSIS). There has been a 14.2% increase in submission to both the SCCEMSA EMS Data System and CEMSIS when comparing 2021 and 2022.



## Non-911 System Data Collection and CEMSIS Submission

### Charts Submitted by IFT Agency, 2022

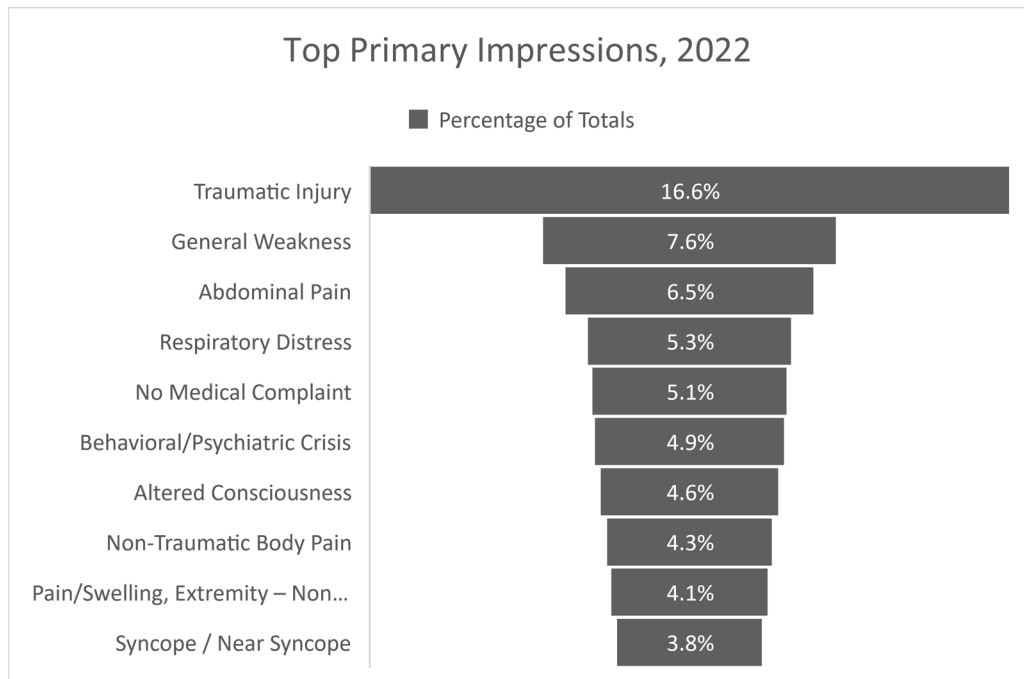


SCCEMSA has been focused on submitting 911 incidents to CEMSIS. Inter-facility transports (IFTs) are a vital component of the EMS system, and the agencies are working to improve the submission rate for non-911 incidents. In 2022, the total charts submitted to the County EMS Data System were 66,518, while only 53,333 were sent to CEMSIS or 80% of the total.

## 911 System Primary Impression

CEMSIS requires a concise category describing the primary reason for a medical encounter to be documented in every patient chart. There are a total of sixty-four (64) values allowed by CEMSIS. This table displays the top ten primary impressions documented and successfully submitted to CEMSIS during 2022. Traumatic Injury has remained the number one impression for several years in a row.

### Top Primary Impressions, 2022

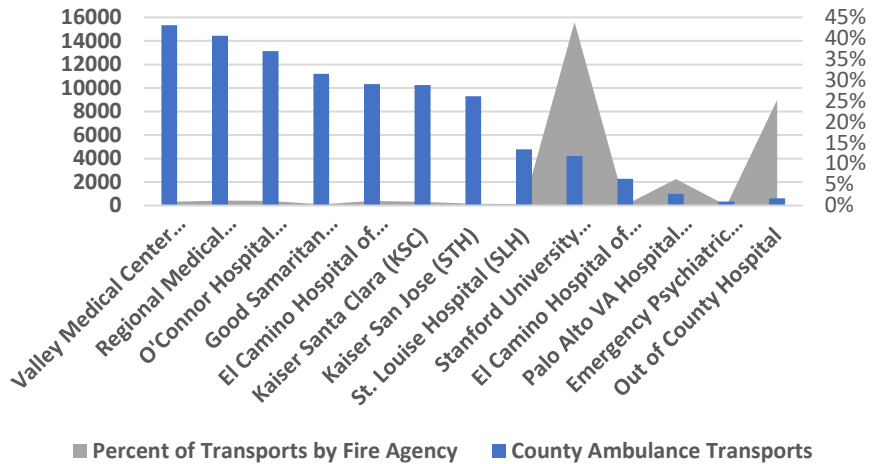


# Patient Destination

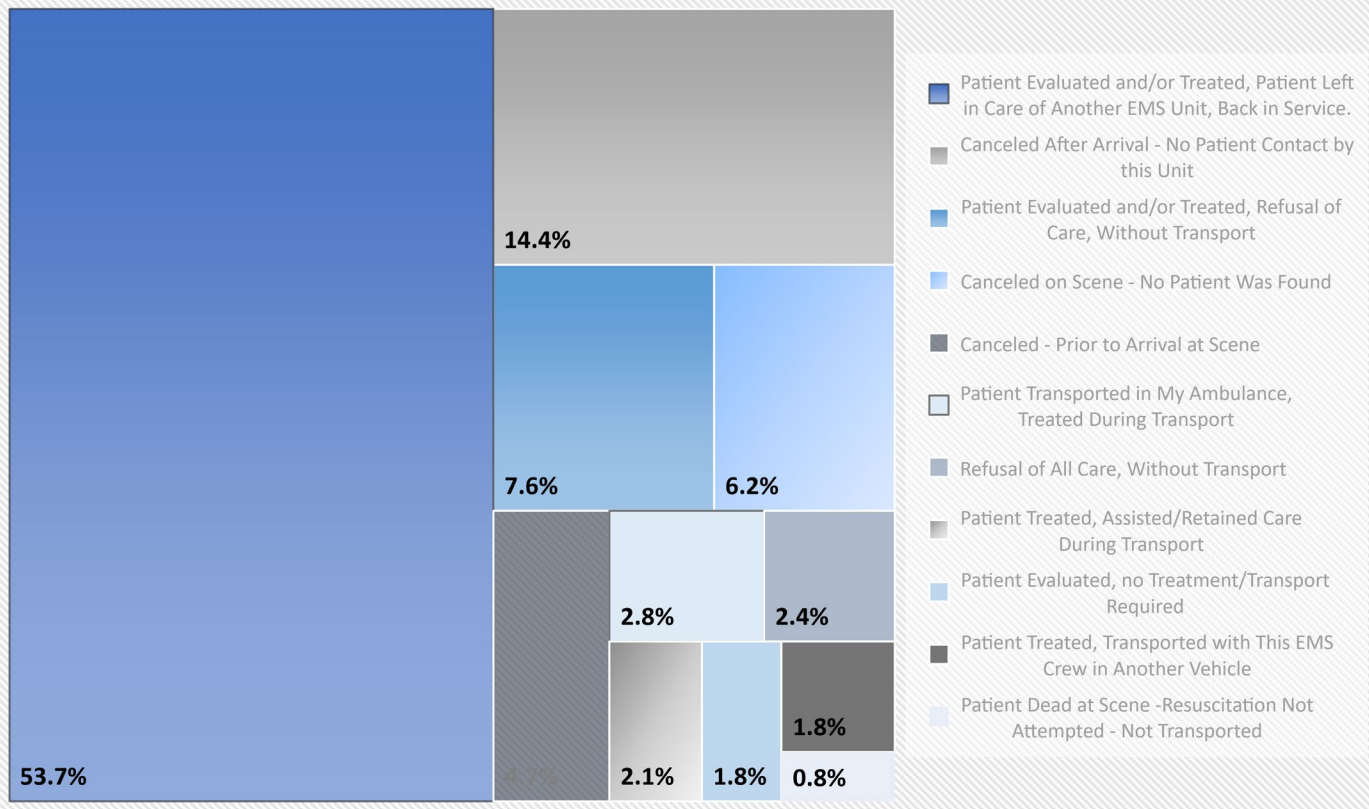
Santa Clara County Fire Agencies are often first response to the scene, but not all have transport ambulances; after it is determined a patient needs transport, care will be handed over to County Ambulance for transport. In 2022, 53% of patient care was transferred from fire, 14% of responses were cancelled without contact, and 7% refused transport.

During 2022, there were 101,524 total patient contacts documented. County ambulance provided care for 97,201 while the Fire Agency's accounted for an additional 4,323 patients. The volume of Fire Agency transports is consistent with agencies that have Fire based ambulances.

### 911 Patient Destination for County Ambulance and Fire Agencies, 2022



### Fire First Response to Patient Disposition, 2022

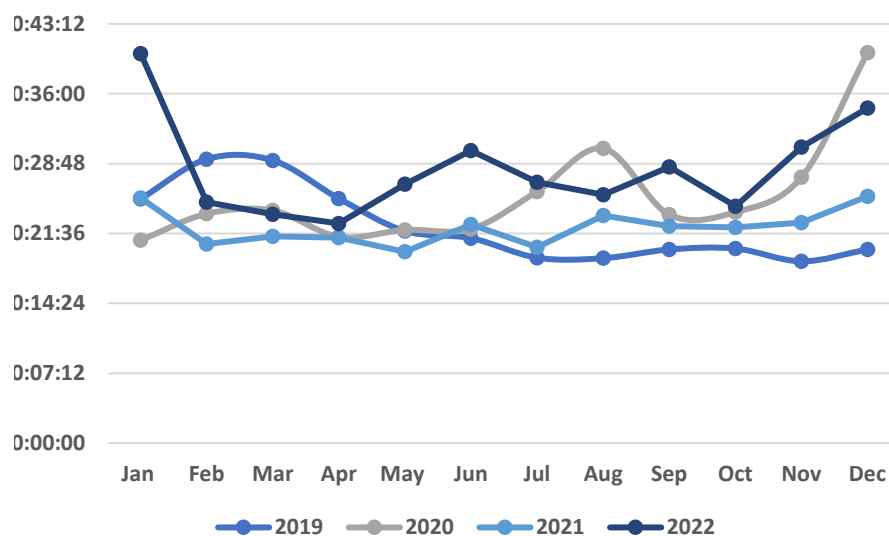


# Ambulance Patient Off-load Times

Hospitals play a critical role in ensuring that 9-1-1 ambulances are available for the next call. The time it takes to offload a patient to an Emergency Department bed impacts the ambulance's ability to respond to another call. This time, known as Ambulance Patient Offload Time (APOT), is recorded, and tracked for all hospitals in Santa Clara County.

In 2021, the target average ambulance patient offload time (APOT) for each emergency department was changed from 25 minutes to 20 minutes, in alignment with the State EMS Authority's standards. For 2022, the aggregate average rose to 28:18 minutes, which is six minutes higher than the previous year, and the highest average over the last four years. Emergency Departments experienced higher patient volumes in January, November, and December 2022, which directly correlates with longer APOT times and more bypass hours.

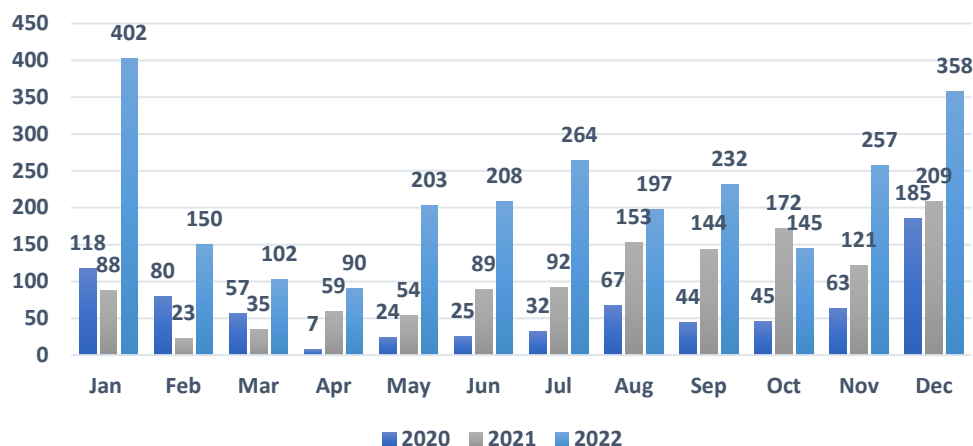
Aggregated APOT 4-Year Comparison



# ED Bypass

Hospitals can temporarily bypass EMS patients when their patient load exceeds emergency department or specialty center resources. Ambulances will proceed to the next closest or most appropriate facility. Bypass status can last for no more than 60 minutes.

Aggregate Ambulance Bypass Hours by Month, 2000-2022



This chart displays the total hours for all hospitals in Santa Clara County. There is a comparison by month for 2020, 2021 and 2022. January 2022, there were four times the hours of the previous years at 402. Similarly, November and December 2022, saw more than double the number of hours in past years at 257 and 358 respectively. This correlates with COVID, influenza and RSV surge experienced in the region.

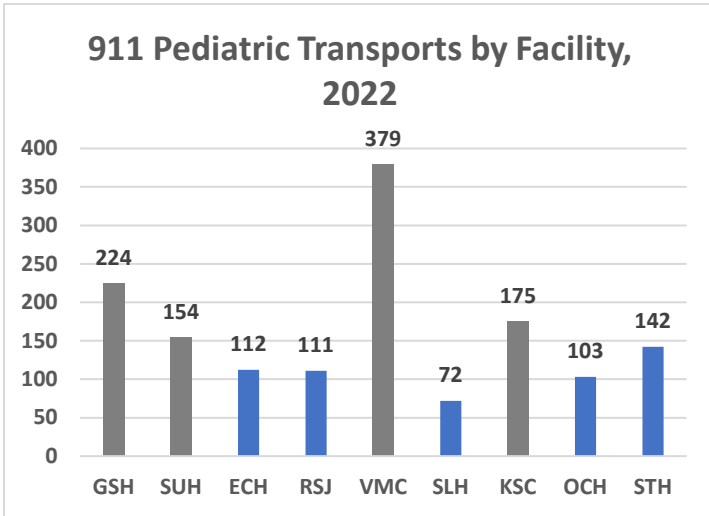
# Specialty Care Programs and Special Interest Projects

**Specialty Care Program.** There are 11 hospitals in Santa Clara County that receive emergency ambulance transports. SCCEMSA has developed guidelines for first responders to ensure that patients are transported to the most appropriate facility for their condition. In some cases, this may be a specialty center such as a trauma center, stroke center, STEMI center, or burn center. The following is an overview of the hospitals in our EMS System and the specialty care that each provides.

	Emergency Department	SAFE Center	Psychiatric Care	STEMI Receiving Center	Primary Stroke Receiving Center	Comprehensive Stroke Receiving Center	Adult Trauma Center	Burn Center	Pediatric Trauma Center	General Pediatric Receiving Center	Advanced Pediatric Receiving Center
Santa Clara County Receiving Center	✓										
El Camino Health-Los Gatos (LGH)	✓						✓				
El Camino Health-Mountain View (ECH)	✓			✓	✓			✓		✓	
Good Samaritan Hospital (GSH)	✓			✓	✓			✓			✓
Kaiser San Jose Medical Center (KSJ)	✓					✓	✓			✓	
Kaiser Santa Clara Medical Center (KSC)	✓					✓		✓			✓
O'Connor Hospital (OCH)	✓					✓	✓			✓	
Palo Alto Veterans Administration Hospital (PAVH)	✓			✓							
Regional Medical Center of San Jose (RSJ)	✓					✓		✓	✓	✓	
Saint Louise Regional Medical Center (STH)	✓						✓			✓	
Santa Clara Valley Medical Center (VMC)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Stanford Health & Lucile Packard Children's Hospital (SUH)	✓	✓	✓	✓	✓			✓	✓	✓	✓

**Special Interest Projects.** SCCEMSA participates in special initiatives at the request of government officials, partner agencies or the director. These may be short or long-term projects that involved collecting data for surveillance, monitoring grants or other funds awarded to the agency or community outreach campaigns. Some of these projects are highlighted in the next section.

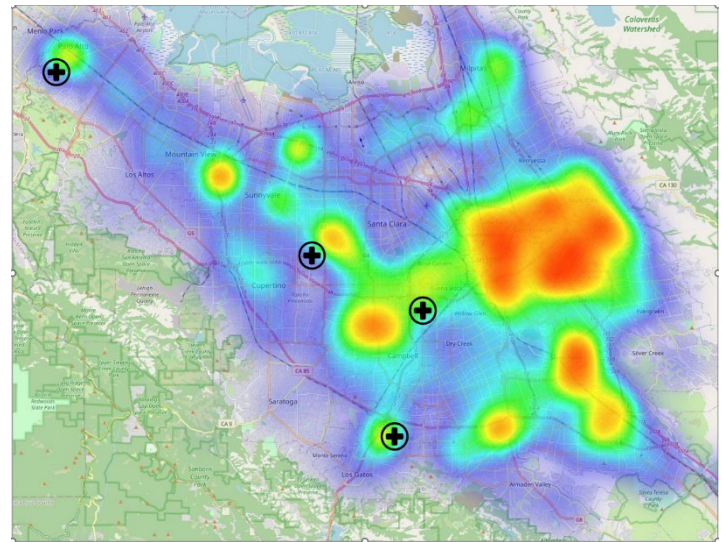
## Emergency Medical Care for Children (EMSC)



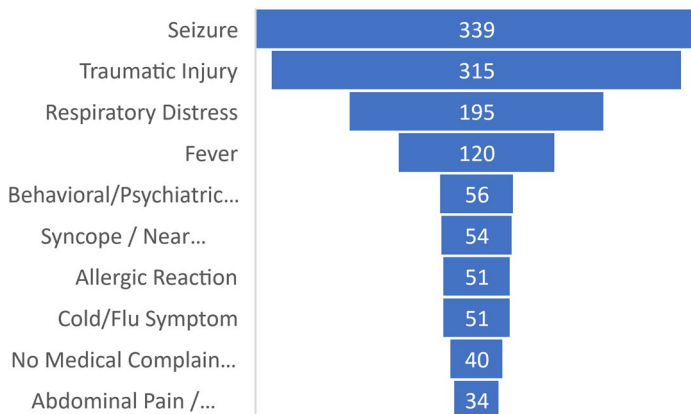
In July of 2022, nine hospitals participated in the designation process to become a pediatric receiving center for SCCEMSA. The goal was to identify hospitals with the appropriate equipment, staff, and training to receive critically ill or injured children, so that EMS can transport to the facilities most prepared to care for these patients under 15 years of age. Four hospitals (indicated in grey) achieved Advanced Receiving Center designation and five hospitals (indicated in blue) achieved General Receiving Center designation. This graph provides the volume of patients received after designation was established.

### Incident Location for Children Under 15 Years

- This heat map shows incident (scene) locations for patients under the age of 15 who require 911 transport to a hospital from July 1, 2022, to December 31, 2022
- Hospitals with Advanced Pediatric Receiving Centers can admit patients to their PICU or NICU. From top to bottom: Stanford Health, Kaiser Santa Clara Medical Center, Good Samaritan Hospital
- 911 ambulance crews have been trained to bypass General Pediatric Receiving Centers to transport their patient to an Advanced Pediatric Receiving Center when their patients meet critically ill criteria.



### Pediatric Top 10 Primary Impressions



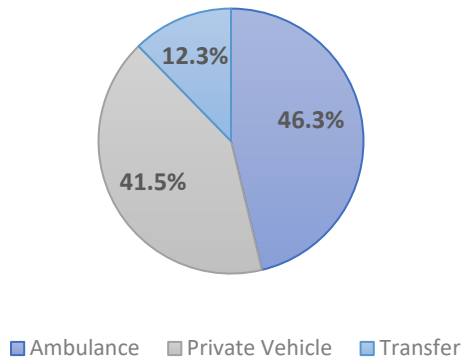
### Primary Impressions, 2022

The initial assessment by the EMS provider helps determine a primary impression or reason for the medical encounter. The EMSC program monitors Primary Impression data to guide policy development, EMS training, and community education. Seizures, Traumatic Injury, which can include non-trauma related injuries, and Respiratory Distress account for more than 60% of the transport volume since the EMSC program was initiated. The EMSC Committee will continue to trend this data to develop a parent community education campaign for 2023.

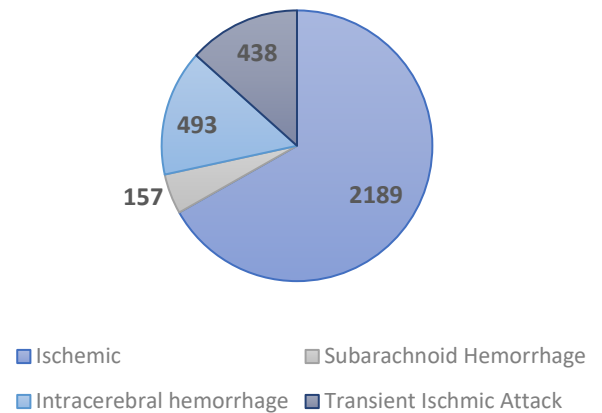
# Stroke System

A Stroke is a serious medical emergency that happens when the blood supply to part of the brain is cut off. This can happen because of a blood clot (ischemic) or a bleed (hemorrhagic) in different parts of the brain (intracerebral/subarachnoid). A transient ischemic attack is a brief blockage of blood supply to the brain, often a warning sign for an ischemic stroke. The sooner the symptoms are recognized, and treatment begins the less damage is likely to happen. EMS transport for a stroke provides the opportunity for early assessment and delivery to the correct Emergency Department for treatment. Community education continues to focus on EMS activation for stroke symptoms. In Santa Clara County, 67% of diagnosed strokes were ischemic, similar to the national average.

Mode of Arrival for Stroke Patients, 2022



Type of Stroke, 2022



In 2022, SCCEMSA conducted site visits to verify hospitals meet the standards to receive and care for patients experiencing a stroke. There are different levels of designation based on the ability to provide more advanced treatment, ongoing care, and rehabilitative services. Five hospitals were re-designated as Primary Stroke Centers, capable of rapidly diagnosing and treating ischemic strokes with a medication known as a thrombolytic. Two hospitals were designated as Thrombectomy-capable Stroke Centers, offering additional care through advanced imaging and the ability to perform a procedure to remove a clot in the brain. Three hospitals were designated as Comprehensive Stroke Centers, able to provide the highest-level care, treat hemorrhagic strokes and have rehabilitative services.

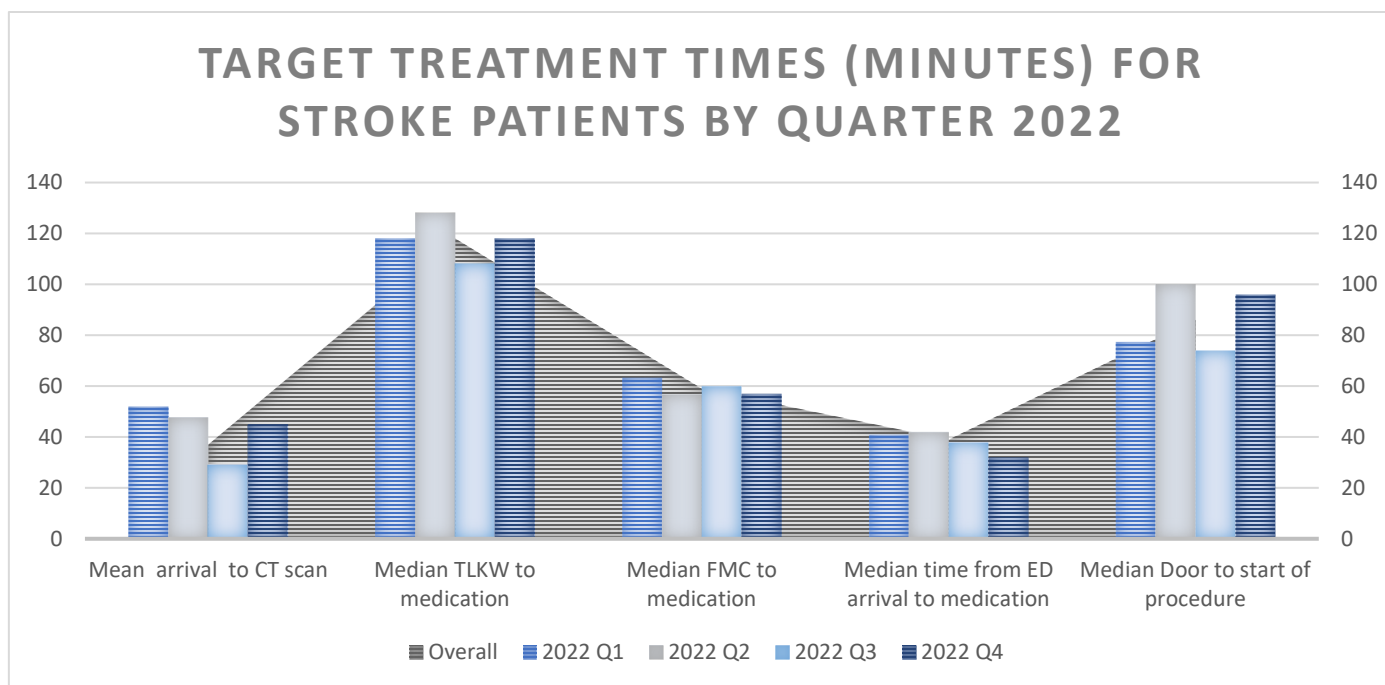


## Stroke System

There is a narrow treatment window for ischemic stroke patients, in which a medication to dissolve the clot (thrombolytic) may be given. Establishing when the patient was last known well (TLKW) or seen well, is critical in guiding treatment options. The benchmark is to treat patients within 4.5 hours from the TLKW. Due to this short time, often a small number of stroke patients receive this medication. In Santa Clara County, 12.8% of stroke patients receive a thrombolytic and 6.2% of patients undergo a thrombectomy.

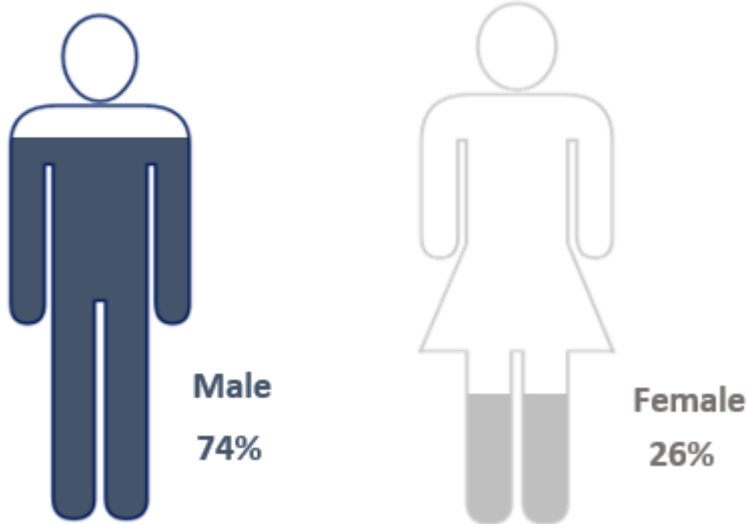
All patients receive a CT scan prior to receiving the medication. The target time from arrival to receiving the CT is 20 minutes. After the CT scan is read, the medication to dissolve the clot may be given. The target benchmark is to administer the medication within 60 minutes, 50% of the time. Some patients may benefit from more advanced care, in which the clot is removed (thrombectomy). The goal is to perform this procedure within 8 hours of TLKW and within 90 minutes of patient arrival. All these benchmarks are tracked as part of ongoing quality improvement and for re-designation.

The graph below provides the aggregate times for each quarter of 2022. The average time from patient arrival to receiving a CT scan is 37 minutes, 17 minutes above the target time. The median TLKW to receiving medication is 118 minutes. The median first medical contact by EMS (FMC) to medication is 59 minutes, whereas the median time from ED arrival to receiving medication is 39 minutes, 89% of all patients received medication within 60 minutes of arrival. SCCEMSA reviews FMC to medication time to determine if EMS activation improves treatment times compared to those arriving by private vehicle. Lastly, for patients receiving a thrombectomy, the median time from ED arrival to the start of the procedure is 86 minutes.

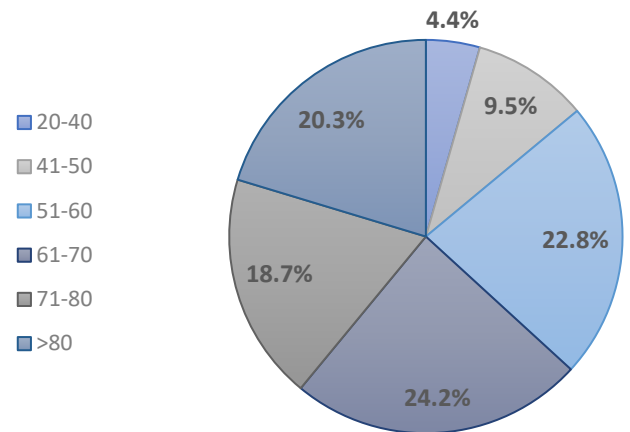


# STEMI Patient Demographics

STEMI Patients by Sex, 2022



STEMI Patients by Age Group, 2022

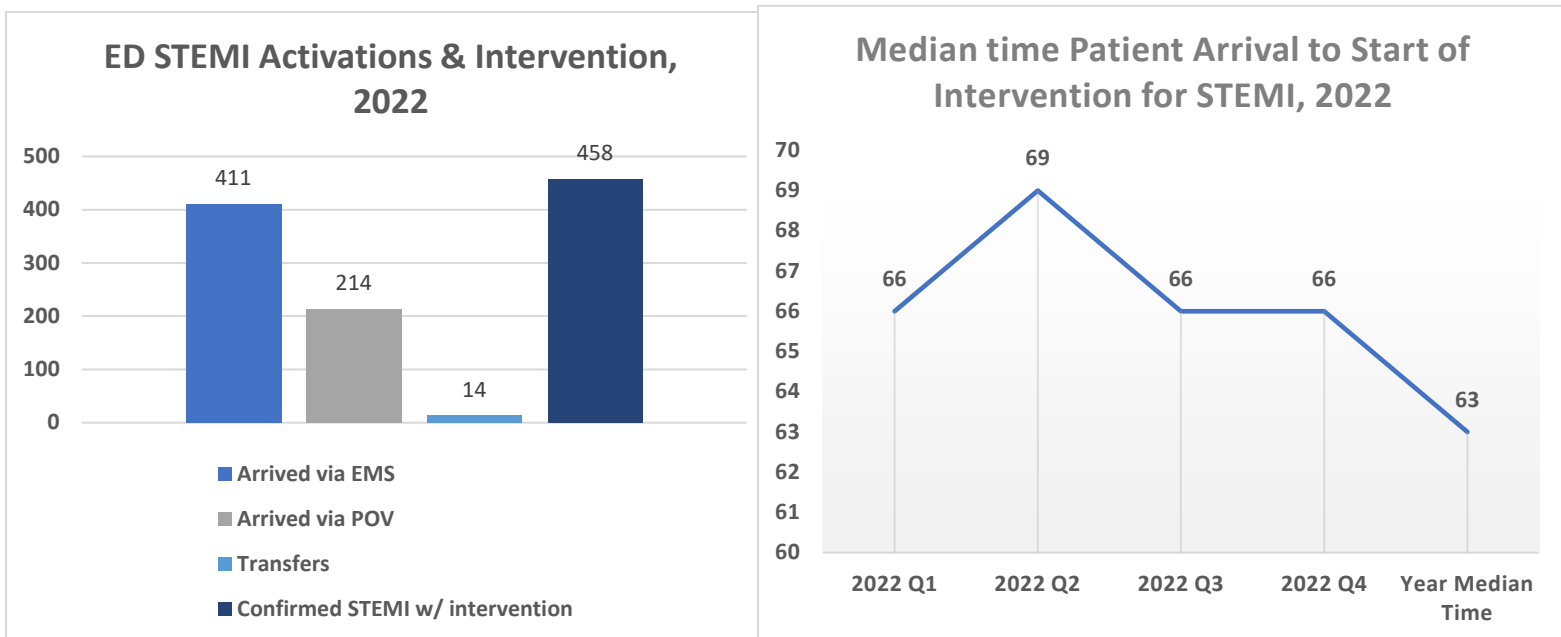


## ST-Elevation Myocardial Infarction (STEMI)

A STEMI is a type of heart attack that occurs when a blood clot completely blocks an artery that supplies blood to the heart muscle. This blockage causes the heart muscle to die from lack of oxygen. STEMI is the most serious type of heart attack and requires immediate medical attention. These types of heart attacks occur more often in males and older adults. In 2022, 74% of patients evaluated in Santa Clara County STEMI receiving centers were male and 89% were over the age of 50 years. The largest age group was 61-70 years (25%) followed by 51-60 years (23.7%).

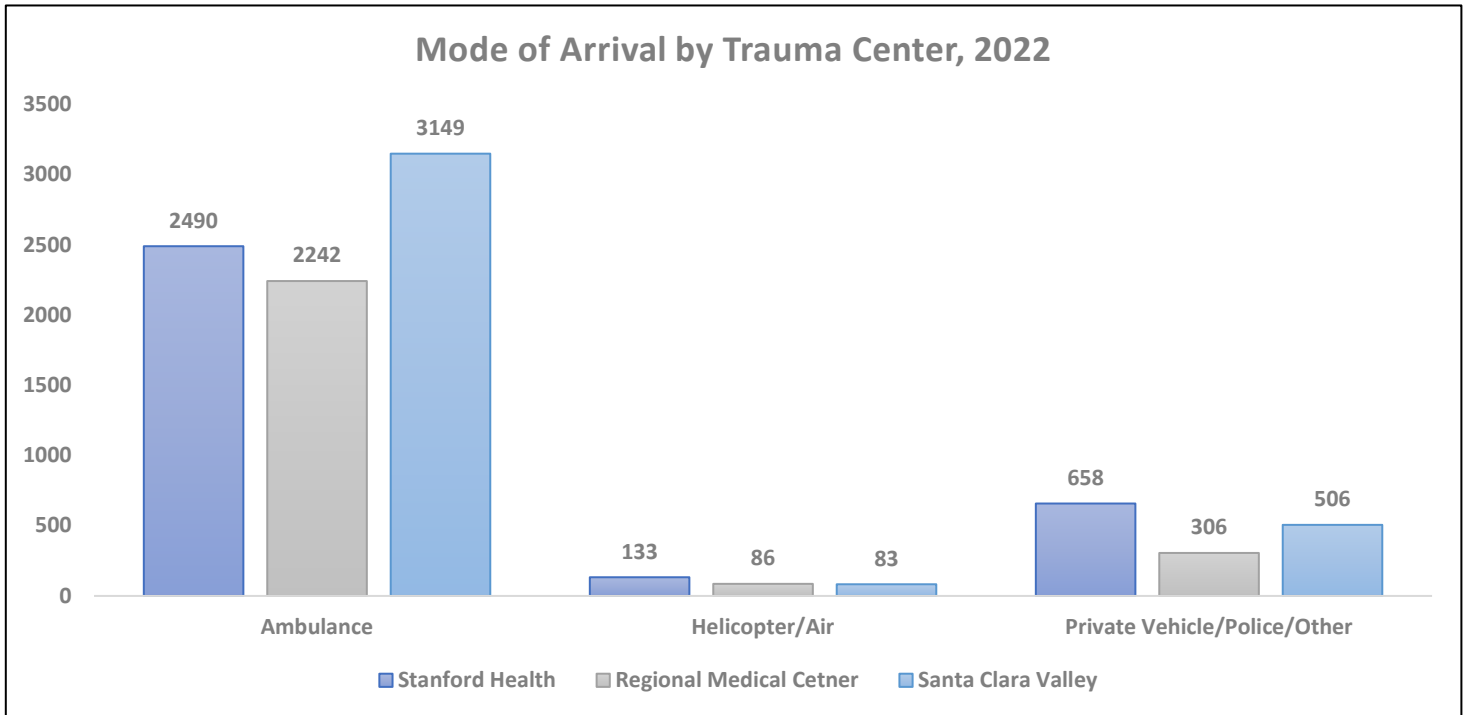
Santa Clara County has eight hospitals that are designated to receive STEMI patients for immediate evaluation and treatment. In 2022, the EMS agency conducted site visits to verify hospitals meet the standards to receive and care for patients with a ST-elevation MI.

## STEMI System



Early recognition of a ST-elevation MI on a 12-lead ECG offers the ability to quickly treat a patient by performing a percutaneous coronary intervention (PCI). During this procedure, the arteries of the heart are inspected for clots and blockages. If a clot is present a Cardiologist will remove it, whereas if a blockage is present, they will insert a balloon and a small stent to re-open the artery. This common intervention has national benchmarks to evaluate a STEMI receiving centers ability to rapidly manage care. The benchmark metric includes, measuring the time the patient arrives at the emergency department to when the balloon is inflated in the blocked artery. This is known as Door to Balloon time, with the goal time for each case being less than 90 minutes. In 2022, 639 patients were evaluated for STEMI signs and symptoms while 458 received PCI intervention. Of the patients receiving PCI intervention, 47% arrived by private vehicle while the rest arrived by ambulance. The median Door to Balloon for the eight STEMI receiving centers is detailed by quarter in the graph. In 2022, the median of 63 minutes was well below the national benchmark of 90 minutes.

## Trauma System

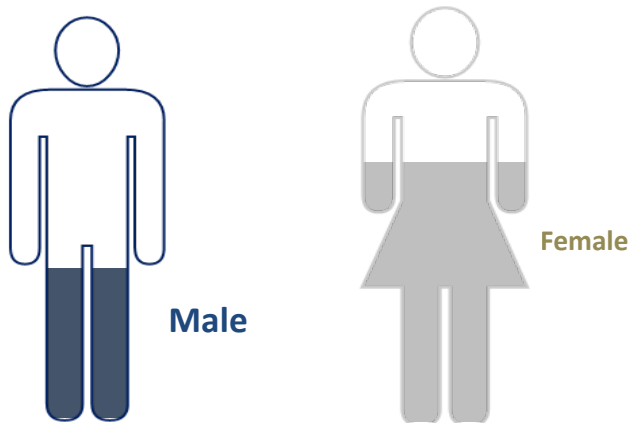


Santa Clara County has three designated trauma centers. The American College of Surgeons (ACS) designated Stanford Health Care as a Level I Adult and Pediatric Trauma Center, Santa Clara Valley Medical Center as a Level I Adult and Level II Pediatric Trauma Center and Regional Medical Center as a Level II Adult Trauma Center. In December 2022, Regional Medical Center underwent their redesignation process. The other trauma centers anticipate site visits in Spring 2023. Each of the trauma centers are assigned a catchment area to assist EMS in transporting to the closest trauma center with the goal of reduced transport times and improving trauma survival. Over 70% of the trauma patients seen, experienced the traumatic injury within Santa Clara County while 15% of trauma volume comes from neighboring San Mateo County. Stanford Health is the closest trauma center for this county and serves as their designated trauma center. Only 2% of the trauma volume comes from outside of the regional Bay Area.

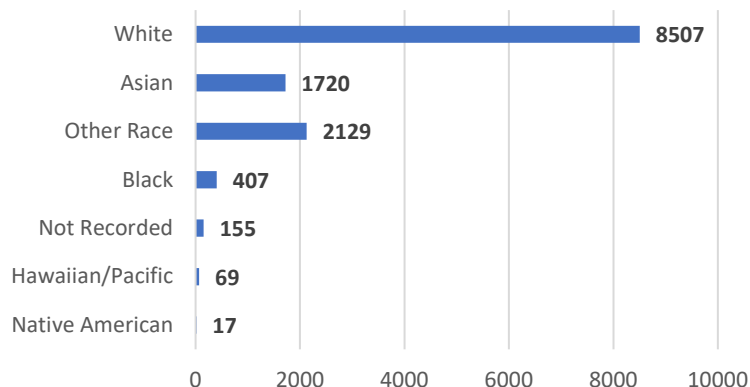
The Trauma System saw 9,653 patients in 2022, with more than 80% being transported by ambulance. Of these, 848 patients were pediatric patients less than 15 years old. The most prevalent type of trauma remains blunt injuries (9,042) followed by penetrating injuries (602) and burns (4).

# Trauma Patient Demographics

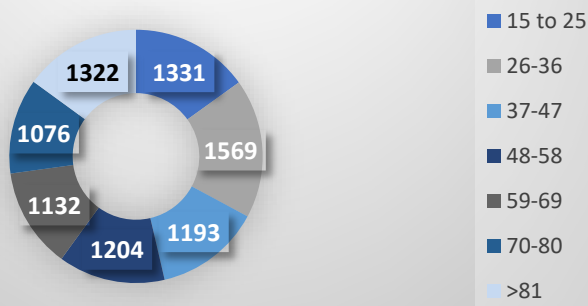
Trauma Patients by Sex, 2022



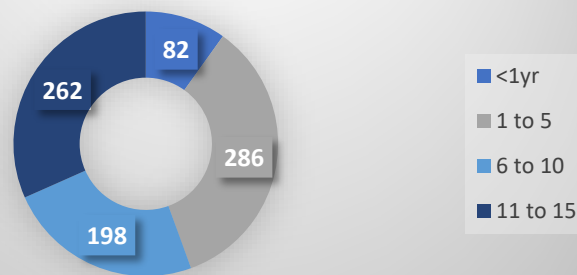
Race of Trauma Patient, 2022



Adult Trauma Patients by Age, 2022



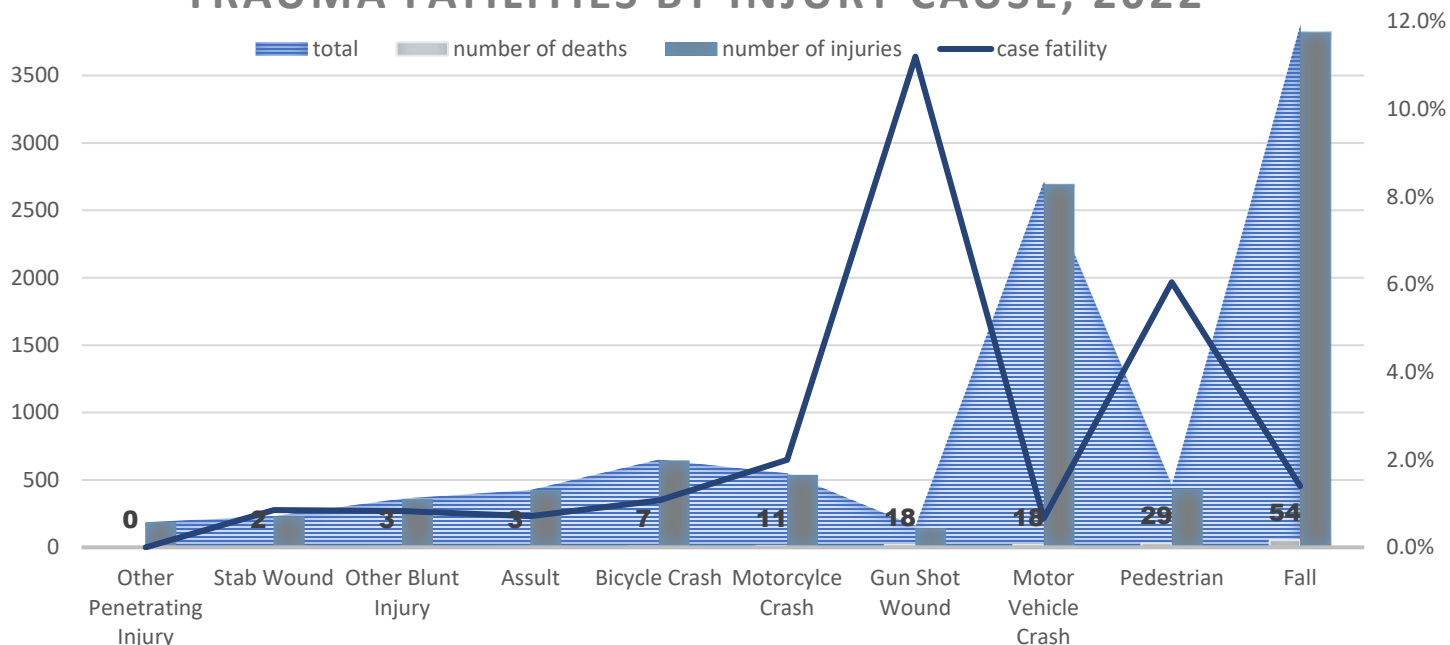
Pediatric Trauma Patients by Age, 2022



The demographics of a trauma patient can help SCCEMSA track trends and identify potential risk factors. This information can then be used to provide targeted care and lead prevention efforts. However, some demographics may remain static or match population data, which indicates that they are not necessarily a trend of concern but rather an expected result.

The dashboard above details the 2022 demographics. Females account for 62% of the trauma patient volume and age is evenly distributed across all sections. Pediatric patients ages 6 years to 15 years account for more 55% of the volume, with children less than one are the smallest portion at 10%. The Trauma registry collects Hispanic/Latino or non-Hispanic as an ethnicity question secondary to race. Of all race information collected, 35% identify as being Hispanic/Latino ethnicity. More than 80% of trauma patients identify their race as white which is a significantly higher representation than the 49.7% identified in population census.

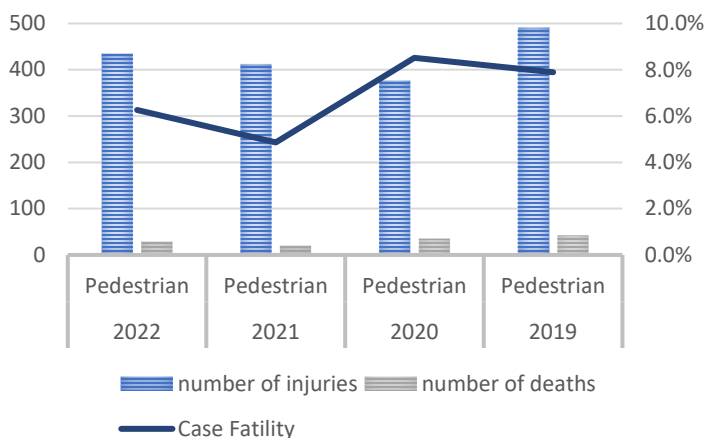
## TRAUMA FATALITIES BY INJURY CAUSE, 2022



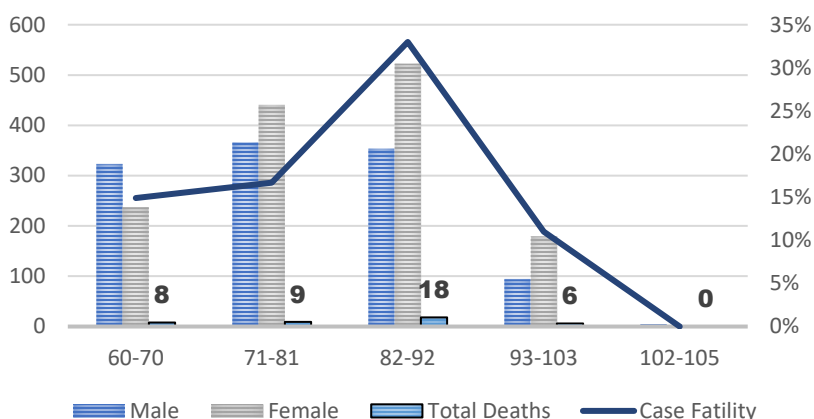
### Trauma Mechanism of Injury and Case Fatality

Gun Shot Wound Trauma continues to have the highest case fatality yet a relatively low number of incidents (161) when compared to Falls, which has the highest number of incidents 3,874 incidents with a 1.4% case fatality. However, 41 of the 64 deaths occurred in patients over the age of 60, which yields a 33% case fatality in patients age 82-92. Pedestrian accidents with injury have the second highest case fatality at just over 65 in 435 incidents. Many local governments have noticed an increase incidence of pedestrian deaths, so this data has been trended over the last four years. Case fatality is lower than 2019 and 2021, but there is a 1.4% increase from 2021. Pedestrian accidents and falls are part of ongoing quality improvement initiatives at SCCEMSA.

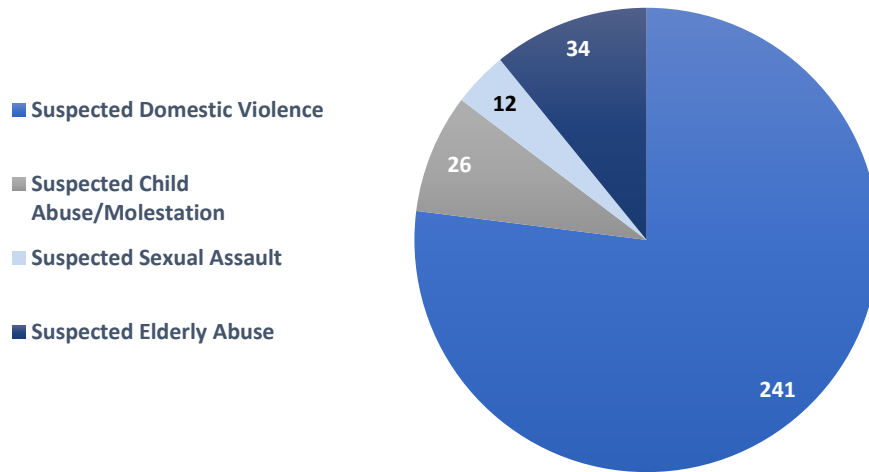
### PEDESTRIAN TRAUMAS, 2019-2022



### FALLS IN 60 YEARS AND OLDER, 2022



### 2022 Suspected Assault Victims Assessed by EMS n=313



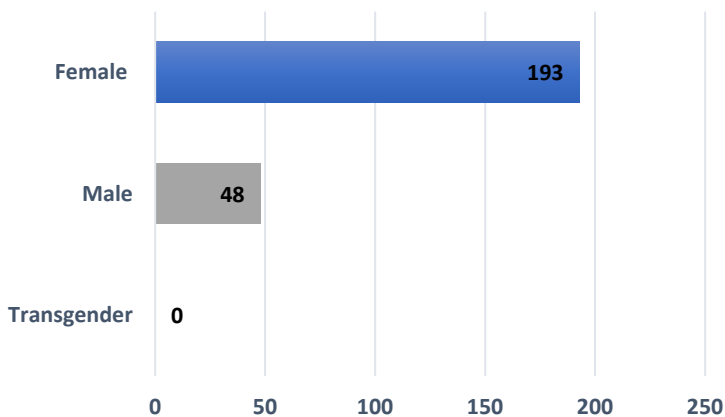
## Victims of Abuse and Domestic Violence

SCCEMSA continues to report suspected assault data to monitor trends in the community. Suspected domestic assault continues to be the leading type of assault treated by EMS, followed by suspected elderly abuse. There was no increase in the number of domestic violence cases, however the suspected child abuse cases doubled over the previous year. Surveillance of domestic assaults with strangulation showed a slight increase to 66 cases from 64 cases in 2021.

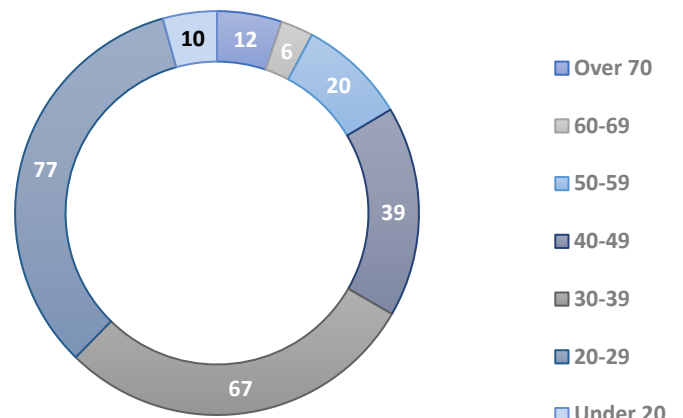
Victims who identify as female remain the most at risk for domestic violence. The number of people identifying as male, or transgender have both reduced.

In 2022, the most at-risk age group of domestic violence remains 20-29-year-old followed by 30-39-year-old with no significant change in the numbers reported for each age group.

2022 Suspected Domestic Violence Victims by Gender n=241



2022 Suspected Domestic Violence by Age



## **EMS Trust Fund**

The EMS Trust Fund was created in 2000 with revenue from liquidated damages paid by Rural/Metro for failing to meet response time standards. Funds are used to fund projects that benefit the EMS System, such as:

- Category A: EMS System Reserve Investment (20% of revenue)
- Category B: EMS System Support-Training, Education and Recognition
- Category C: Benefit to EMS System Stakeholders
- Category D: Strategic Initiatives

In Fiscal Year 23, which runs From July 1, 2021, through June 30, 2022, Category C funds were allocated to fire departments for various projects, including:

- Hardware and software to support the County EMS System Data Project
- First Responder tactical gear and supplies
- CPR training equipment and software

Category D funds were used for reimbursement to Rural/Metro for training programs, maintenance of the EMS System Data Hub, and EMS operational costs.

Overall, the EMS Trust Fund is used to fund projects that improve the EMS System in Santa Clara County.



## Future Emergency Ambulance Service System

The County is nearing the end of its current contract with its emergency ambulance service provider for its exclusive operating area (EOA). SCCEMSA recognized an opportunity to assess the County's current emergency ambulance service model and to identify action-oriented solutions that will improve the system to best serve people within the County.

To this end, two consulting firms were hired to assist SCCEMSA in coordinating EMS System Stakeholder involvement and secondly, to provide an extensive financial review of different emergency ambulance service models.

SCCEMSA identified a broad selection of administrators, services providers, and other system stakeholders to understand their perspectives regarding the County's emergency transport needs. The engagement process consisted of monthly meetings at which members reviewed system data and other existing models and heard from speakers including Behavioral Health Services Department representatives, as well as two sets of structured interviews to gather participant questions and priorities, respectively.

EMS System Stakeholders reviewed the following four emergency ambulance service transport models as implemented in four separate localities to determine the best fit for the County:

1. **Private Ambulance Service:** In this model, the EMS agency delegates service to a private company or companies; this is the current County model.
2. **Public Third Service:** In this model, the County has created an EMS Department (or "Third Service") for providing EMS services separate from the Fire and Police Departments, as in Travis County (Austin), TX.
3. **Combination or Alliance:** In the Combination or Alliance model, the EMS agency delegates service provision to a combination of local fire district(s) and private company(s) who coordinate service based on geographic regions, as in Contra Costa County, CA.
4. **Municipal Fire Service:** In this model, the Fire Department provides EMS services, providing initial medical response as well as hospital transport, as in the City & County of San Francisco, CA.

At the conclusion of the model review meetings, EMS System Stakeholders identified the anticipated strengths and challenges of each model, solicited the best fit and ranked EMS transport priorities. EMS System Stakeholders ranked the following priorities as most important for EMS transport in Santa Clara County

- Response times
- Equitable service delivery throughout County
- Alternative means of transport
- Transport to alternative destinations
- Use of both Advanced Life Support (ALS) and Basic Life Support (BLS) ambulances

The financial consultant conducted an in-depth costs analysis of the current provider. The study focused on vertical analysis of the various components of the provider's income and financial statements. Horizontal analysis of several years of financial data and comparing to determine growth rates of the various cost components. The analysis included comparison of financial performance benchmarks from other counties with similar economics. The consultant then applied those findings to the four different models. The following chart reflects the anticipated annual costs for each model.

	Private Ambulance Service	Combination or Alliance Service	Public Third Service	Municipal Fire Service
Total Cost Per Year	\$65M	\$65M to \$81M	\$75M	\$81
Net Cost, Including Revenue from Patient Billing	\$0	\$0 to \$15M	\$9M	\$15M
Net Cost per Capita, Estimate per Year	\$0	\$0 to \$8	\$5	\$8

# From the EMS Medical Director

## Dr. Kenneth Miller

The EMS system in Santa Clara County is large and complex with many and varied stakeholders. It is the totality of those stakeholders, their governance, and most importantly their practitioners that collectively provide quality patient care.

The trauma system is mature with many decades of practice and quality management. The stroke system has evolved substantially in the past 7 years. The ST-elevation myocardial infarction system is in evolution with ongoing refinement, and the EMS for Children Program is new in 2022. The introduction of a current generation computer-aided dispatch system in 2023 will improve communication efficiency during 911 EMS dispatches, responses, and incident management as well as improve 911 ambulance resource and data management.

EMS system data systems remain modern and continually mature with technologies. The development and integration of artificial intelligence systems has potential to assist EMS practitioners to incorporate clinical patient data into in-the-moment decision making.

The current configuration of the 911 EMS system is largely fire service- and public safety-based EMT and paramedic first response followed by private sector EMT and paramedic ambulance transport. Modern EMS operations and healthcare economics challenge that model. EMS systems, along with other open access healthcare portals like hospital emergency departments, have become and remain the safety net for persons uninsured or underinsured. Behavioral crisis and chronic mental disorders have become a substantial part of the EMS mission. Innovation in patient assessment, transport, and destination options as well as healthcare resource selection other than ambulance transport to acute care hospitals is necessary. Current State of California regulations substantially limit the scope of community paramedicine programs so that innovation will have to come from local EMS systems.

The challenges in modern EMS systems are great but the mission greater. Service to patients and community are core to the provision of emergency medical services systems.



The Employee Excellence Awards Program is an opportunity for Santa Clara County to acknowledge outstanding employees who represent extraordinary public service consistently through exemplary leadership, demonstration of the County's core values, and outstanding contributions to their agencies/departments/districts. Patricia Natividad was selected as the Employee Excellence Award recipient for the month of September 2022.

Patricia has been with Santa Clara County for 22 years and is relentless in her commitment to excellence, personal integrity, and a strong work ethic. She is a quiet professional who began her journey at the EMS Agency in 2001. During her tenure she has functioned in multiple roles continually demonstrating an advanced ability to excel and lead others in a professional manner. Until 2016, the EMS Agency reported to Public Health and had a great deal of assistance in areas such as HR, budget, Legislative filings, contracts, etc. When the EMS Agency became their own department in 2016 her job duties became all-inclusive, with no support. She handled the transition with ease and learned to multitask skillfully and patiently. Patricia took the added responsibility as a challenge and mastered it. Patricia exemplifies the Santa Clara County Mission and sets a very high standard for her work at the EMS Agency. She has the ability to effectively communicate with multiple agencies across the county. She now handles the Agency contracts, budget, HR matters, assists with all stakeholder contract issues, vendors, Trust Fund, grants, employees and putting out necessary fires.

Through her efforts Patricia fosters an environment of open and honest communication that has allowed people to challenge her and each other as they work through problems and opportunities. She recognizes the strengths of people, technical and personal style, and empowers people to make professional improvements. She has worked with multiple individuals to take classes, expand their knowledge base, and improve their work environment.

She is a valued member of the EMS Agency team, and her continued contributions are vital for us to continue to be successful in meeting our mission, vision, and values.

Congratulations Patricia!

# Employee Excellence Award



**Patricia Natividad**  
**Senior Management**  
**Analyst**



**Santa Clara**  
**County EMS**  
**Agency**

# Team Acknowledgement

The Santa Clara County EMS Agency has a dedicated team of professionals. They provide essential services to the EMS System to ensure the community is best served by our work. Thank you for all you do.

**Jackie Lowther**  
Director

**Dr. Kenneth Miller**  
Medical Director

**Patricia Natividad**  
Senior Management  
Analyst

**Camille Ortiz**  
Executive Assistant

**John Blain**  
EMS Specialist

**Michael Cabano**  
EMS Specialist

**Michael Clark**  
EMS Specialist

**Jason Weed**  
EMS Specialist

**John Sampson**  
EMS Specialist

**David Sullivan**  
EMS Specialist

**Christopher Duncan**  
EMS Specialist

**Isaac Quevedo**  
EMS Specialist

**Daniel Franklin**  
EMS Specialist

**Dustin Gonzalez**  
EMS Specialist

**Lisa Vajgrt-Smith**  
Specialty Programs Nurse  
Coordinator

**Richard Alameda**  
EMS Specialist

**Aaron Herrera**  
EMS Specialist

**Manuel Eilas**  
Office Specialist III

**Evangelina Ortiz**  
Administrative Assistant