

Santa Clara County Emergency Medical Services Agency



2021 Annual Report

To the Board of Supervisors' Health and Hospital Committee

Message from the Director

It is my great privilege to present the 2021 Santa Clara County Emergency Medical Services (SCCEMS) Annual Report. The staff of SCCEMS are pleased to provide this document to our community and our stakeholders highlighting some of the efforts and initiatives of our agency over the last year. I hope you find this report an engaging example of one of our many efforts to communicate the story of SCCEMS in a transparent and informative format.

This last year was certainly challenging in many respects for our community as well as our department. Nonetheless, SCCEMS thrived and continued to provide excellent service to our community. I am proud of the collective efforts of our staff and their commitment to professionalism, innovation, and collaboration.

We fully acknowledge the toll it has taken on our entire EMS system to sustain the intense level of performance for 18 months straight, and also recognize that no words can adequately reflect the gratitude, admiration, and deep respect we have for the thousands of individuals that comprise our EMS system. There is an ongoing effort to improve our services, effectiveness, and efficiency through innovation and ongoing analysis of our outcomes in all aspects of department operations.

A handwritten signature in blue ink, reading "Jackie M. Lanthier". The signature is written in a cursive style with a large initial "J".

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EMS STATISTICS

COUNTYWIDE (CY2021)

Population: 1,984,370 (2021 estimate)

911 Dispatch Centers: 15

Fire Departments: 11

Ground Ambulance Services: 9

Air Ambulance Agencies: 2

9-1-1 Receiving Hospitals: 11

Adult Trauma Centers: 3

Pediatric Trauma Centers: 2

Burn Center: 1

Primary Stroke Centers: 6

Comprehensive Stroke Centers: 4

STEMI (Cardiac) Centers: 8

PERSONNEL

Emergency Medical Technicians: 1,609

Paramedics: 486

Mobile Intensive Care/Critical Care Transport Nurses: 153

AMBULANCE SERVICES/PERMITTED VEHICLES – CY2021

Ambulance Providers (2021):

Provider	Levels of Service
American Medical Response - Sutter	CCT, BLS
Bay Medic Ambulance	CCT, BLS
CALSTAR	Air
Falcon Critical Care Transport	CCT, BLS
Gilroy Fire Department	ALS
Milpitas Fire Department	ALS
NORCAL Ambulance	CCT, BLS
ProTransport-1	CCT, ALS, BLS
Royal Ambulance	CCT, BLS
Rural/Metro (County Ambulance)	ALS
San Jose Fire Department	ALS
Santa Clara City Fire Department	ALS
Silicon Valley Ambulance	ALS, BLS
Stanford Life Flight	Air
Westmed Ambulance	CCT, ALS, BLS

Number of Ambulance Resources (2021):

Provider	Santa Clara County Ambulances
American Medical Response - Sutter	10
Bay Medic Ambulance	4
CALSTAR	3
Falcon Critical Care Transport	13
Gilroy Fire Department	1
Milpitas Fire Department	1
NORCAL Ambulance	13
ProTransport-1	29
Royal Ambulance	42
Rural/Metro (County Ambulance - 911)	62
San Jose Fire Department	5
Santa Clara City Fire Department	1
Silicon Valley Ambulance	9
Stanford Life Flight	1
Westmed Ambulance	23

Number of EMS Agency Field Inspections of Ambulances and Fire Apparatus (2021)

Resource Type	Inspections
Ambulances, Fire Apparatus, and Quick Response Vehicles	42

AMBULANCE PATIENT OFF LOAD TIME (APOT) – CY2021

The role hospitals play in assuring that 9-1-1 ambulances are available for the next 9-1-1 call is critical. Ambulance offload delay, the time it takes to transfer a patient to an emergency department (ED) stretcher for the ED staff to assume responsibility for the care of the patient, may have more impact on ambulance turnaround time than ambulance bypass. Ambulance patient offload times (APOT) are calculated for all hospitals who receive patients in Santa Clara County. In 2015, the Health and Safety Code 1797.120 required the California Emergency Medical Services Authority to develop a standard methodology for calculation of, and reporting by, a Local EMS Agency of ambulance patient offload time. The EMS Agency has placed significant effort into working with hospital administrators focusing on the time it takes to get ambulances back into service once they have arrived in their EDs. Decreases in offload delays will improve the time patients receive definitive care, better pain control and antibiotics when needed.

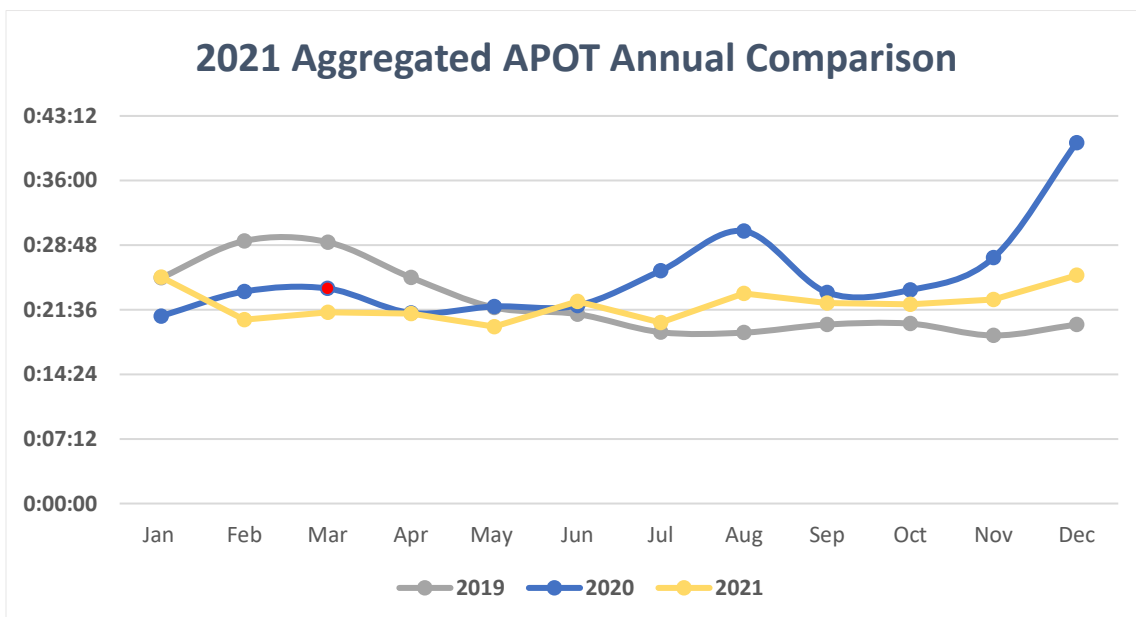
Over the last two years, the EMS system as well as the hospitals have seen unprecedented changes and have been required to pivot and adapt to changes necessitated by the COVID-19 pandemic. Patient volume variations continued over the year for EMS as well as many hospitals' EDs. All EDs have worked diligently throughout these continual, challenging times to improve ambulance patient offload times and work collaboratively with the EMS Agency. The EMS Agency officially changed the benchmark for offload times to 20 minutes in August of 2021 to align with the State EMS Authority, which has had this benchmark in place since 2015. In December 2021, transport volume began to increase remarkably and hospitals began to see increased inpatient volume.



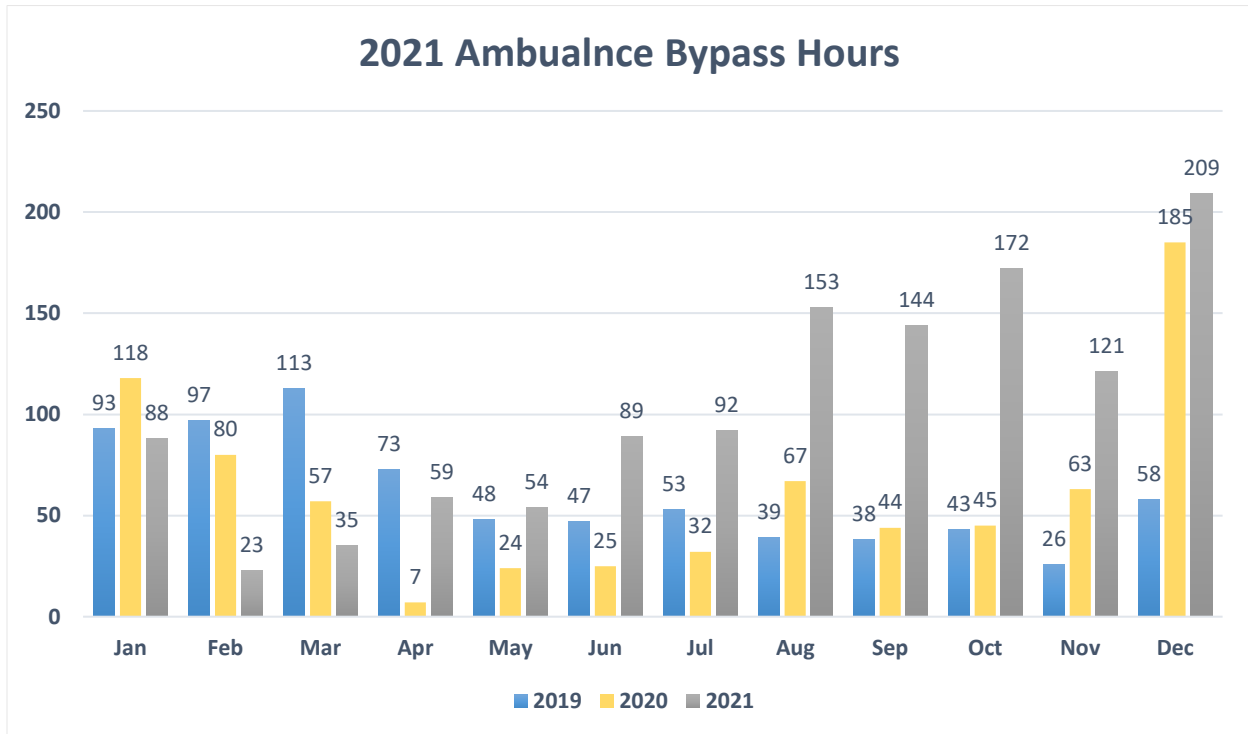
AMBULANCE PATIENT OFF LOAD TIME (APOT) CONTINUED – CY2021

The hospitals that have APOT times greater than 20 minutes have been working on a plan to improve times. The hospitals send the EMS Agency updates on a regular basis whenever there are obstacles to achieving these improvements. There have been significant improvements over the last year in ambulance offload times. Delays are multifactorial, but overwhelmingly they are due to ED overcrowding, whether because of high volume/high acuity of patients or the inability to move admitted patients through care and discharge. In addition, many hospitals are asserting an increase in staffing shortages in multiple areas.

In 2021, the ambulance patient offload times (APOT) returned to the statistical normalcy seen before the SARS-CoV-2 pandemic. March 2020 (represented with a red marker) was the start of Santa Clara County’s initial shelter in place order, which resulted in a reduction in ambulance transport volume that subsequently increased the aggregated 90th percentile times during the 2020 calendar year. Comparing 2021 APOT aggregate against 2020, with the exception of June, the monthly APOT times were below the times seen in 2020. Making this same comparison against the 2019 aggregate, 2021 outperformed the beginning of the year until June. After the intersection of June, which was the common intersection of all years, 2019 starts to outperform 2021’s aggregate. When comparing total aggregate averages for 2019 (0:22:23) and 2021 (0:22:14), the two years were separated by nine (9) seconds illustrating 2021’s return to pre-pandemic APOT values.



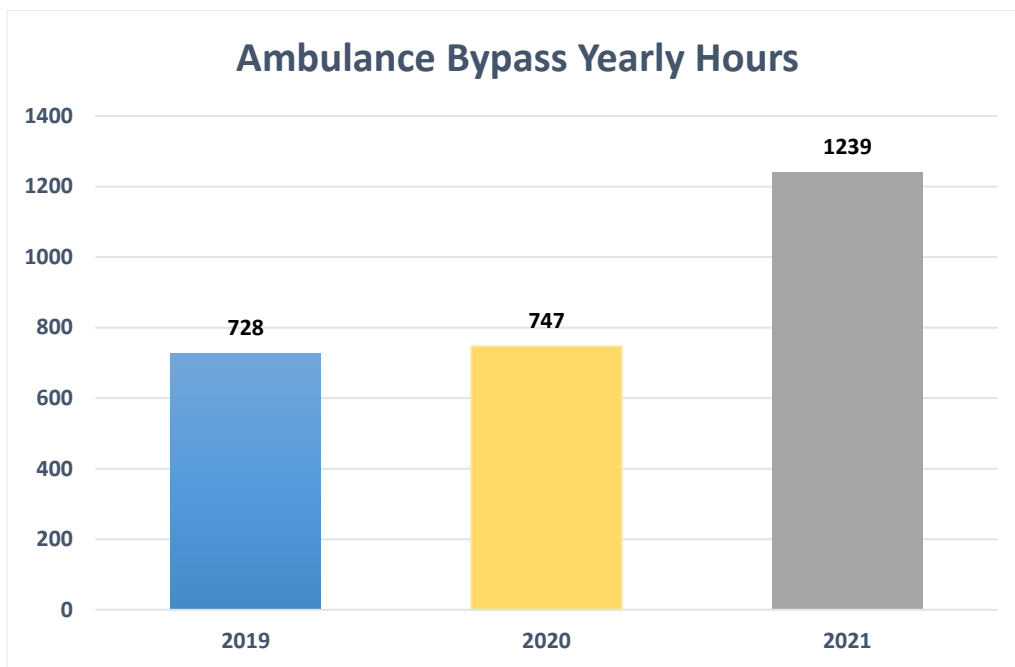
AMBULANCE BYPASS – CY2021



Ambulance bypass occurs when an ED reaches its capacity to accept and treat incoming ambulance patients. The main contributing factors that can affect an ED’s ability to accept patients are the amounts of patients seeking treatment, severity, and the resources available to treat these patients. Contributing factors such as was experienced during the pandemic, or patient generating events within the EMS system, such as large vehicle accidents, can create increased demands on EDs and exhaust available resources throughout the hospital. Ambulance bypass allows these impacted EDs to temporarily stop receiving patients by ambulance to enable them to mitigate their current patient demands without adding additional patients to confound the current situation. The EMS Agency keeps surveillance of ambulance bypass hours to better understand the demand on the system. During 2021 there was a total of 1,239 hours of ambulance bypass. This was a 65.86% increase from 2020. This large uptick in ambulance bypass hours during the 2021 calendar year illustrates the return to system demand normalcy following two years of the SARS-CoV-2 global pandemic. ambulance transports in 2020, during the height of the pandemic, saw a 6.38% reduction in transport volume. This reduction could be attributed to shelter in place orders and general hesitancy in the population to seek medical attention at hospitals during the pandemic, as well as the decrease in volume to local EDs.

AMBULANCE BYPASS – CY2021

During 2021, ambulance transports increased 7.37% (84,293) from 2020. In fact, 2021 had the most ambulance transports recorded since 2012. Whenever there is a fluctuation of volume which is against projection, it triggers a systemic adjustment period. In the case of 2020 with lowered transport volume, it resulted in a surplus of staffing and resources. These resources then became reallocated to other areas of need. Conversely, when the transport volume sharply returns to pre-pandemic values, doubling the projected 3% average growth, hospitals and EDs have adjustment periods where resources become overmatched. This is illustrated in the increased volume bypass hours. As hospitals adjust to a return to normal daily system demand, ambulance bypass hours should return to the yearly average number of hours (735).



DISASTER MEDICAL RESPONSE AND PREPAREDNESS

Medical-Health Operational Area Coordinator (MHOAC) Program

Medical-Health Operational Area Coordinator (MHOAC) Program

The Medical-Health Operational Area Coordinator (MHOAC), in cooperation with the Public Health Department, EMS Agency, Environmental Health and Behavioral Health Services are responsible for ensuring Medical-Health disaster planning, response, mitigation, and recovery for their respective operational area. The Santa Clara County EMS Agency is responsible for the day-to-day operations and management of the MHOAC Program. During 2021, the program managed medical-health response operations for the County's continued response to COVID-19 which included incident management support and approval and review of resource requests for personnel, medical supplies, pharmaceuticals, and antigen tests. In 2021, the MHOAC Program had received and dispositioned a total of 266 requests for resources related to COVID-19.

COVID-19 Response

In 2021, as the County continued to see COVID-19 cases spiking and increased its vaccination efforts, the EMS Agency remained dedicated and committed to their involvement in the County's response. This was achieved through a variety of different roles that EMS Agency personnel staffed over the course of the year.

A role that continued to be filled by the EMS Agency was the management of the Operations Section of the Emergency Operations Center (EOC) that consisted of managing various branches and their respective units. For part of this coverage, the EMS Agency dedicated two full-time staff members to fill the role of Operations Section Chief and a dual role of Medical-Health Branch Director/Medical-Health Operational Area Coordinator (MHOAC). Coverage was provided at the EOC, five days a week, working 12-hour operational periods and on call for weekend operations/calls. These roles were continued until the EOC was decentralized, at which point one full time staff member remained committed to providing coverage of both roles, remotely.

After the decentralization of the EOC, EMS Agency personnel shifted their efforts to supporting the increase of vaccination efforts throughout the County. The EMS Agency developed and implemented an expanded scope of practice training program and skills verification process that allowed for paramedics and emergency medical technicians (EMT) working within the County to provide COVID-19 vaccinations to assist with the overall delivery of vaccines to the local community. This plan, training and protocol were approved by the State EMS Authority and allowed for over 230 Paramedics and EMTs from the County to be trained in this vital skill. As a result, the EMS Agency assisted the Santa Clara County Fire Department with the operation of the first ever XSC Public Safety Vaccine Clinic. This clinic was activated to assist with the delivery of vaccines to personnel from all Santa Clara County Law Enforcement, Fire Department and EMS Agencies within the operational area.

DISASTER MEDICAL RESPONSE AND PREPAREDNESS

Medical-Health Operational Area Coordinator (MHOAC) Program Continued

The clinic was operated Monday through Friday from 0800-1800 hours and was fully staffed by Public Safety personnel from Law Enforcement, Fire, EMS, and the Public Health Pharmacy. EMS Agency staff filled the roles of Deputy Incident Commander over the Clinic as well as Medical Group Supervisor and Vaccine Task Force Leader. These roles were tasked with oversight of the daily clinic and staff operations, supervision of vaccine and pharmacy personnel, and supervision of the vaccination groups. It was quickly identified that the Clinic had the ability and expertise to increase its vaccination efforts, at which time the clinic began to vaccinate not only Public Safety Personnel, but those serving in critical infrastructure roles within the County from schools, public transportation, and local government. During the five months the clinic operated, it was able to successfully provide a total of 31,187 COVID-19 vaccinations to the population described above, without incident.

Upon the demobilization of the XSC Public Safety Vaccine Clinic, EMS and Fire personnel trained to provide vaccinations shifted their efforts and focus to providing vaccinations to some of the most vulnerable populations within the County, homebound seniors, or other medically fragile adults. As part of this process, the EMS Agency created and delivered a mobile vaccination training program that all vaccinators completed, preparing them for some of the challenges they may face with these vulnerable populations. This reaffirmed the EMS Agency's commitment to delivering safe, effective, and efficient patient care in a variety of different environments.

The deployment model for this program allowed for two to three person teams of EMS or Fire personnel to provide vaccinations throughout the County or within their jurisdiction to these vulnerable populations Monday through Friday with shifts ranging from 5-12 hours. The EMS Agency dedicated two full-time staff members to this program throughout 2021, working two to three shifts per week vaccinating between 10-20 people per day. Over the course of 2021, EMS and Fire personnel were able to provide over 1,000 vaccinations to these vulnerable populations. These efforts highlighted the commitment of EMS and Fire personnel from throughout the County to provide superior service and care to its residents.

The EMS Agency's commitment to the County's 2021 COVID-19 response solidified the Agency as a strong partner within the County and ultimately has led to the fostering of strong relationships with other local, county, regional, and state agencies.

DISASTER MEDICAL RESPONSE AND PREPAREDNESS

All Hazards Coordinator (EMS)

In 2021, the EMS All Hazards Coordinator executed the following:

- Served as the Operations Section Chief, Medical-Health Branch Director, and Safety Officer at the County Emergency Operations Center for the following incidents:
 - County COVID-19 Response.
 - Successfully trained over 230 paramedics and EMTs in the administration of the COVID-19 vaccine through an expanded scope of practice.
 - Served as the Deputy Incident Commander for the Public Safety Vaccine Clinic.
 - Managed, implemented and coordinated the EMS-Fire Mobile Vaccination Program for in-home medically fragile patients.
 - Coordinated Medical-Health Situational Status Reporting to the Region and State.
 - Increased visibility/knowledge about the Medical Health Operational Area Coordinator.
- Worked with Office of Emergency Management to establish a clear and concise resource requesting process for all requests for mutual aid within the Operational Area.
- Developed and submitted requests in response to State Homeland Security Grants Program.
- Conducted equipment training and maintenance.



DISASTER MEDICAL RESPONSE AND PREPAREDNESS

EMS Designated Infection Control Officer

The EMS Agency continued its efforts to ensure that first responders who were exposed receive notice when a hospital confirms the presence of a reportable infectious disease or condition. In 2021, the EMS Agency provided 4,309 notices to first responders. This was an increase from the 3,425 notices sent out during 2020.

Year	Month	Notifications	Avg
2021	January	1746	56.32
2021	February	502	17.93
2021	March	181	5.84
2021	April	98	3.27
2021	May	56	1.81
2021	June	60	2.00
2021	July	123	3.97
2021	August	522	16.84
2021	September	285	9.50
2021	October	210	6.26
2021	November	149	4.97
2021	December	377	12.16

Provider	Percentage of Notices
CNT	3.08%
FLC	0.05%
GIL	2.98%
MLP	1.44%
MRG	0.49%
MTV	0.85%
NOR	0.23%
PAF	1.67%
PRO	0.05%
ROY	2.96%
SCC	0.49%
SJS	28.22%
SNC	2.21%
SNY	2.80%
SVA	2.18%
WMA	0.69%
XSCA	49.60%
Total	100.00%

The table above provides the number of notices by month and the average number of notices sent out each day. The table to the right shows the percentage of the 4,309 notices that each provider received.

DISASTER MEDICAL RESPONSE AND PREPAREDNESS

Medical Volunteers for Disaster Response (MVDR) Program

In 2021, the MVDR Program did not see a significant increase in volunteer numbers, as onboarding was affected by our countywide COVID-19 response as well as efforts by the State of California to recruit volunteers to assist with response. The efforts of the State caused confusion for individuals seeking paid opportunities versus volunteer opportunities to misregister with local programs, when in fact they were seeking the salaried positions with the State.

The County of Santa Clara currently has two sets of rostered volunteers active in the State of California Disaster Health Volunteers (DHV) database. The first set of 50 volunteers is typically referred to as spontaneous and elect only to be activated and vetted during a significant disaster. The second roster contains 85 MVDR Program members. The membership continues to be diverse and spans a large range of medical capabilities and support functions including logistics personnel, physicians, pharmacists, nurses, paramedics, EMTs, dispatchers, and allied health personnel.

Over the next year, the MVDR Program will be focused on increasing the number of deployable members through recruitment outreach.



PUBLIC OUTREACH

The EMS Agency continued to focus its support of the Santa Clara County Public Health Department in messaging on the COVID-19 pandemic. In addition to supporting Public Health, the EMS System focused on a monthly campaign pertaining to topics that are relevant to EMS and preventing or recognizing medical emergencies. These included STROKE awareness, heart related emergencies and how different people may experience different symptoms, water safety and drowning prevention, heat related emergencies, and others.

The Lifesaving Information for Emergency (L.I.F.E.) Files continue to be distributed throughout the County with over 20,000 files given out during 2021. The L.I.F.E. File is a simple tool individuals and families may use to assist the emergency medical responders during a medical emergency. The completed L.I.F.E. File form that is contained within the pouch will allow emergency medical responders to quickly learn about the patient's past medical history, current medications the patient is taking, be alerted to any medication allergies the patient may have and much more information to assist the first responders in providing the best care possible for the patient.



TRAINING AND EDUCATION

Education and Training efforts continued utilizing virtual classrooms during 2021, apart from in-person testing for the EMS System Orientation Exam, and social media platforms were key tools in delivering public education materials throughout the EMS System. With pediatric emergency care being a focus in the EMS System, the EMS Agency, in partnership with the Stanford Pediatric Emergency Department and Lucille Packard Children's Hospital, was able to host multiple trainings on topics including Pediatric Febrile Seizures, Rapid Pediatric Assessment, and Pediatric Stroke. In addition, the EMS Agency, in partnership with the Lucille Packard Children's Hospital, Stanford Healthcare, Stanford Medicine, and Revive Initiative for Resuscitation Excellence offered an interactive pediatric trauma simulation. The simulation was filmed and used as a training aid to better prepare first responders and hospital staff in caring for pediatric trauma patients.

During the 2021 annual update for the EMS Providers, the EMS Agency introduced the Laryngeal Mask Airway (LMA) as standard scope of practice to all basic life support providers within the county. The LMA, which had previously been an optional scope of practice for basic life support (BLS) providers, may be used as an immediate life-saving measure to secure an airway in an adult patient.

**Laryngeal Mask
Airway
(LMA-Supreme™)**



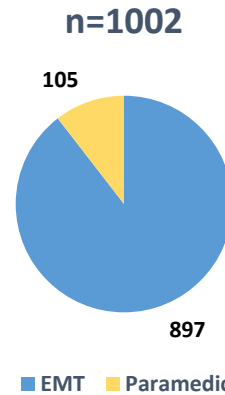
TRAINING AND EDUCATION

EMS Exam

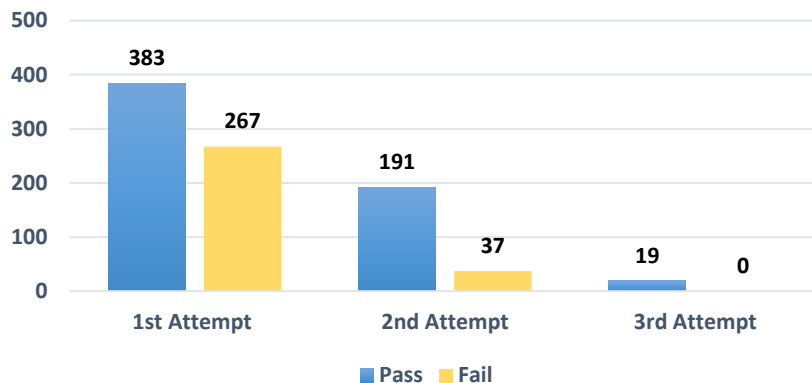
Due to the continued impact of the COVID-19 pandemic, the EMS Agency continued to offer the EMS System Orientation Exam in smaller, more frequent sessions.

To improve our registration process, the EMS Local System Orientation exam was moved online. Registrants can now sign up through links provided on the EMS Agency website to schedule, change and cancel their exam date/time. This change removed phone calls and emails as the previous method of signing up for the EMS exam.

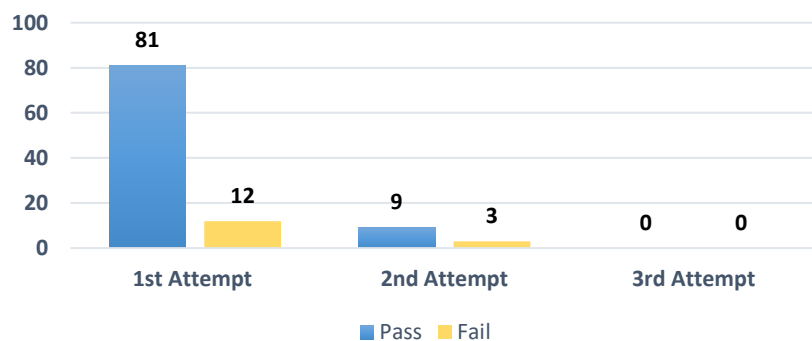
2021 EMS Exams by Level of Service



2021 EMT Examination by Attempt n=897



2021 Paramedic Examination by Attempt n=105



TRAINING AND EDUCATION

EMS Field Supervisor (EFS) and EMS Duty Chief (EMDC) Joint Training

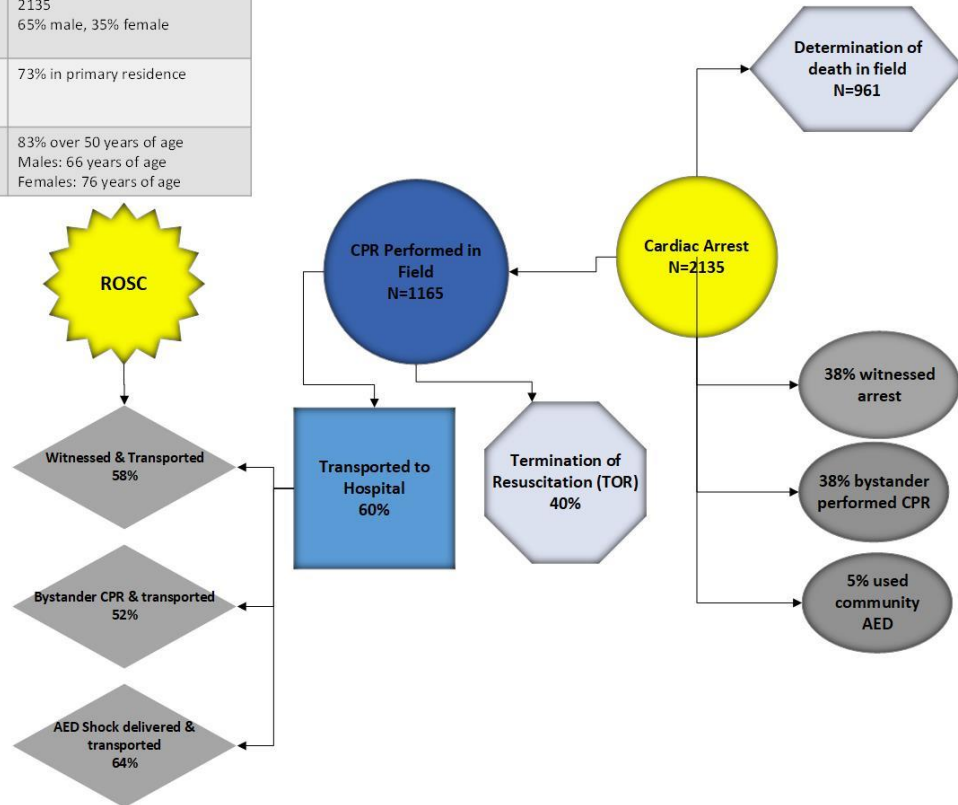
In 2021, the EMS Agency began hosting monthly training sessions with the EFS staff at County Ambulance. The sessions in 2021 included Management of Emergencies within the Medical-Health System and handling of behavioral health patients within the EMS system. Each EMDC is assigned a specific month to present a subject. Each presentation is presented virtually and is intended to be an interactive training session.



QUALITY IMPROVEMENT

Sudden Cardiac Arrest

Cardiac Arrest Statistics 2021	
Total number of Cardiac Arrest cases	2135
Gender:	65% male, 35% female
Most common location of occurrence	73% in primary residence
Age:	83% over 50 years of age
Median age:	Males: 66 years of age Females: 76 years of age



The Santa Clara EMS System cared for 2,135 patients who suffered a non-traumatic cardiac arrest in 2021. The distribution for gender and age remains consistent to previous years, with more men (65%) than women (35%) suffering a cardiac arrest and those over 50 years of age account for more than 80% of the cases. For 1,165 patients, cardiopulmonary resuscitation or CPR was performed in the field. CPR attempts to restore blood circulation to the heart until more advanced medical interventions can be provided to a person suffering cardiac arrest. The goal is to have any community member initiate CPR prior to EMS arrival, this occurred in 38% of the calls which matched the number of witness arrests also reported. Applying an Automatic External Defibrillator or AED, to deliver an electrical shock to the heart, resetting the rhythm is another medical intervention to improve survival. This occurred in only 5% of the total cardiac arrest patients; however, with 73% of cardiac arrests occurring in a primary residence, access to a community AED is limited.

Return of spontaneous circulation (ROSC) is when the heart returns to a rhythm that sustains circulation and perfusion of the body. Overall, the rate of achieving ROSC was 31% (accounting for both transported and termination of resuscitation). However, when cardiac arrest was witnessed, CPR was performed and an AED shock was delivered, ROSC was achieved 64% of the time. Achieving a higher ROSC rate with more medical interventions supports the need for continued emphasis on community education and training for CPR and AED use.

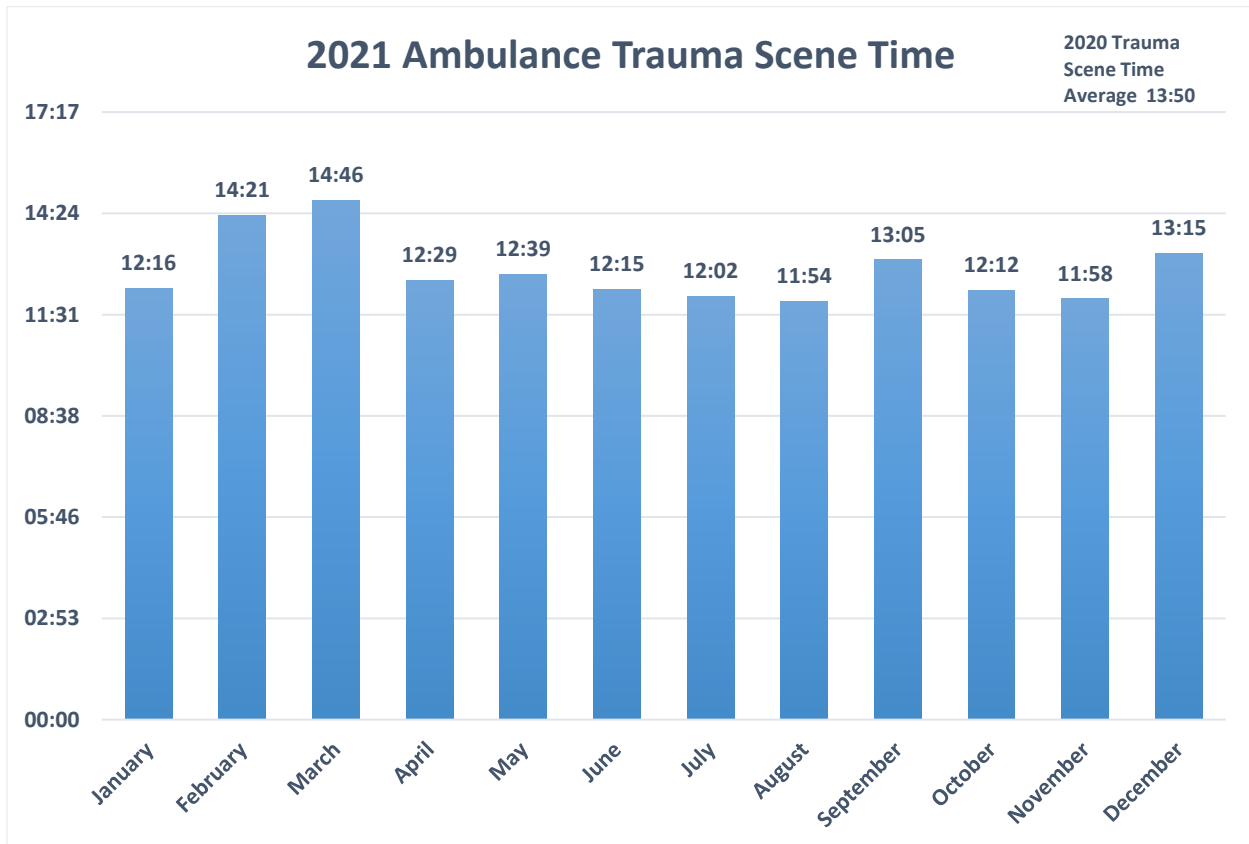
QUALITY IMPROVEMENT

Scene Times

Trauma, stroke and STEMI (ST-elevation myocardial infarction) specialty care patients require rapid response and short scene times to achieve optimal outcomes and reduce mortality. Research universally supports ensuring critically sick patients get to definitive care with advanced medical services versus staying on-scene providing care or performing procedures. All three specialty services have established time benchmarks that are monitored by Santa Clara EMS and the hospitals receiving patients. Specialty Care Teams and Alert protocols exist to ensure when the patient arrives at the emergency department, they are fast-tracked for tests and interventions.

Trauma Patients

For trauma patients, the “golden hour” is a well-practiced benchmark of advanced EMS Systems, in which the goal to get patients with head, thoracic or abdominal injuries to the operating room within the first hour of sustaining the injury. Santa Clara County, having three advanced Trauma Centers, has an EMS scene-time benchmark of 15 minutes. In 2021, the average scene time of a trauma patient was 13 minutes, 52 seconds. There was not any month in the year in which the benchmark was not achieved.



QUALITY IMPROVEMENT

Prehospital Key Performance Indicators

Quality assurance is a process of routinely monitoring patient care records to review if newly implemented treatment protocols are being followed. This can help understand what issues, such as equipment, training or processes impact the ability for an EMS crew to utilize a treatment protocol. The EMS Quality Improvement Committee decided to continue several of the Key Performance Indicators (KPI) selected in 2020 for calendar year 2021, while also adding additional elements. Some of the data related to these KPIs will be detailed under the Specialty Programs section of this report.

- **Respiratory Assessment for Pediatric Patients:** This is a continued monitor for 2021. There must be documentation of respiratory rate and pulse oximetry for all transports under age 15.
- **Behavioral Sedation:** This is a continued monitor for 2021 to assess adherence to the treatment protocol initiated in 2020.
- **Intravenous (IV) Acetaminophen Usage:** This is a continued monitor for 2021 to assess adherence to the treatment protocol initiated in 2020.
- **Stroke and GFAST Assessment/Treatment:** Continue to monitor GFAST scale use and treatment protocol adherence. This is also a requirement for California EMS Authority (EMSA) Core Measures.
- **Trauma Best Practices:** Continue monitoring scene times, triage, and correct destination of adult and pediatric trauma patients. This is also a requirement for California EMSA Core Measures.
- **Base Station Call Review:** Continue to partner with the base hospital to review base tapes to determine if additional protocols or system-wide educational opportunities are needed.
- **Acute Coronary Syndrome (ACS) Protocols:** Continue monitoring for timely electrocardiograms (ECGs), administration of aspirin, Nitro (nitroglycerin), and oxygen in chest pain patients potentially experiencing a myocardial infarction.

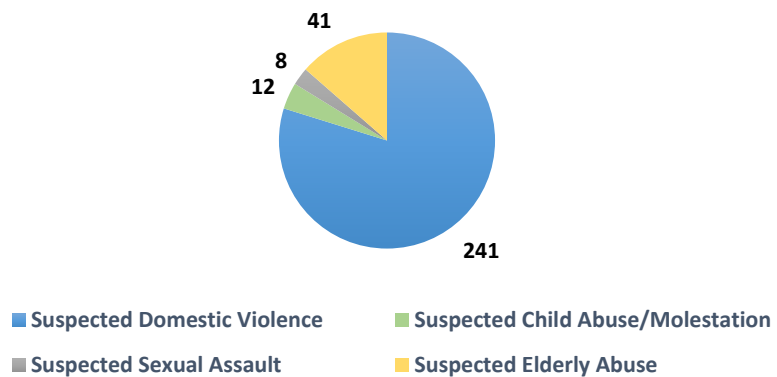
EMS SYSTEM INITIATIVES

Victims of Abuse

In 2021, the EMS Agency continued the Victims of Abuse system initiative that was started in 2019 at the request of stakeholders. This initiative was launched to help identify potential victims of domestic violence, sexual assault, child abuse and elderly abuse that may not have been captured by law enforcement. Continuing surveillance of this initiative has provided a better understanding of the impact of the SARS-CoV-2 pandemic and its associated periods of shelter in place on domestic abuse and how those trends could potentially change as county transitions back to normalcy.

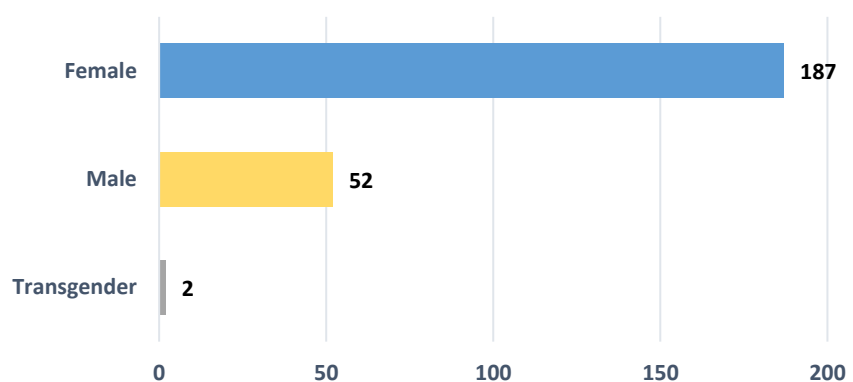
In 2021, domestic violence was the predominant form of suspected abuse assessed by EMS. Domestic violence rose 7.58% from 2020. Suspected elderly abuse had the largest increase from 2020 at 78.26%, and both suspected sexual assault and child abuse showed reductions of 55.55% (sexual assault) and 36.84% (child abuse).

2021 Suspected Assault Victims Assessed by EMS n=302



The female gender continues to be the most at risk for domestic abuse. Female victims rose 39.55% in 2021. The male gender had the largest annual statistical increase of 85.71%. 2021 also had the first transgender victims since data collection started.

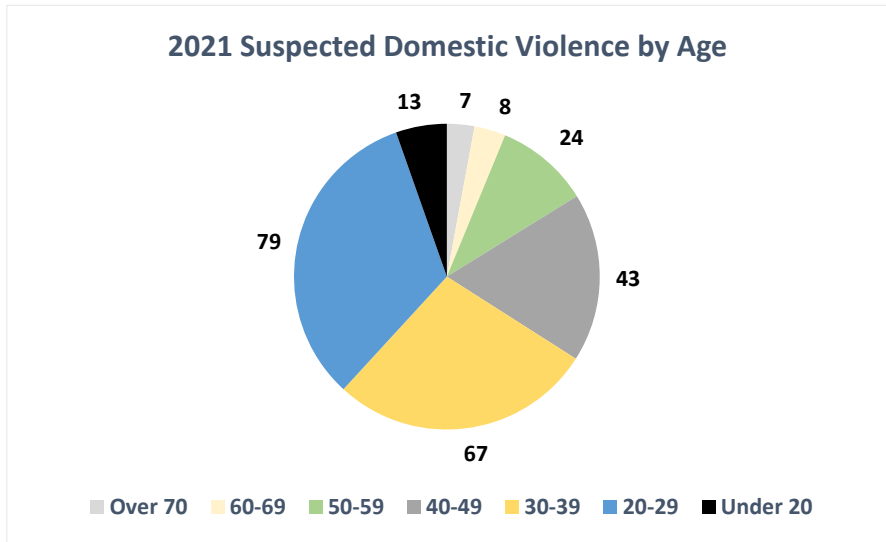
2021 Suspected Domestic Violence Victims by Gender n=241



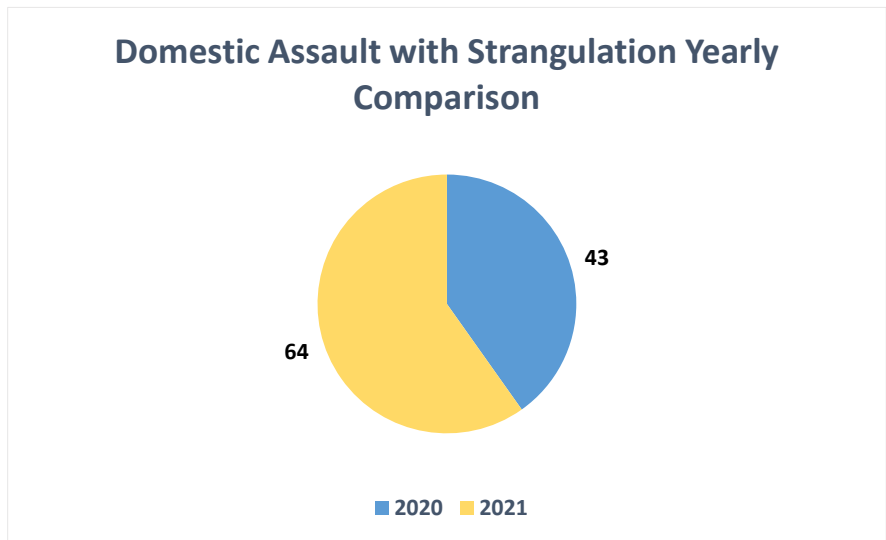
EMS SYSTEM INITIATIVES

Victims of Abuse

In 2021, the most at risk age groups of domestic violence were the 20-29 followed by the 30-39 demographics. Each advancing age demographic showed a correlating reduction in cases from the younger demographic. The largest reduction occurred in the transition of the 50-59 to 60-69 demographic at 66.60%.



Domestic assault with strangulation has been a key data collection component during surveillance due to its significance medically and as a warning sign for future abuse. This specific data point was added to patient care reports during 2021. In addition to the data point, mandatory strangulation training was completed by the EMS system.



In 2021, domestic assault with strangulation increased 48.83% from 2020. The average age of the victims was 35 years old with the youngest victim being 16 and the oldest victim being 63 years old. All 27 victims were female.

EMERGENCY DEPARTMENT

Hospital Volume and Destinations

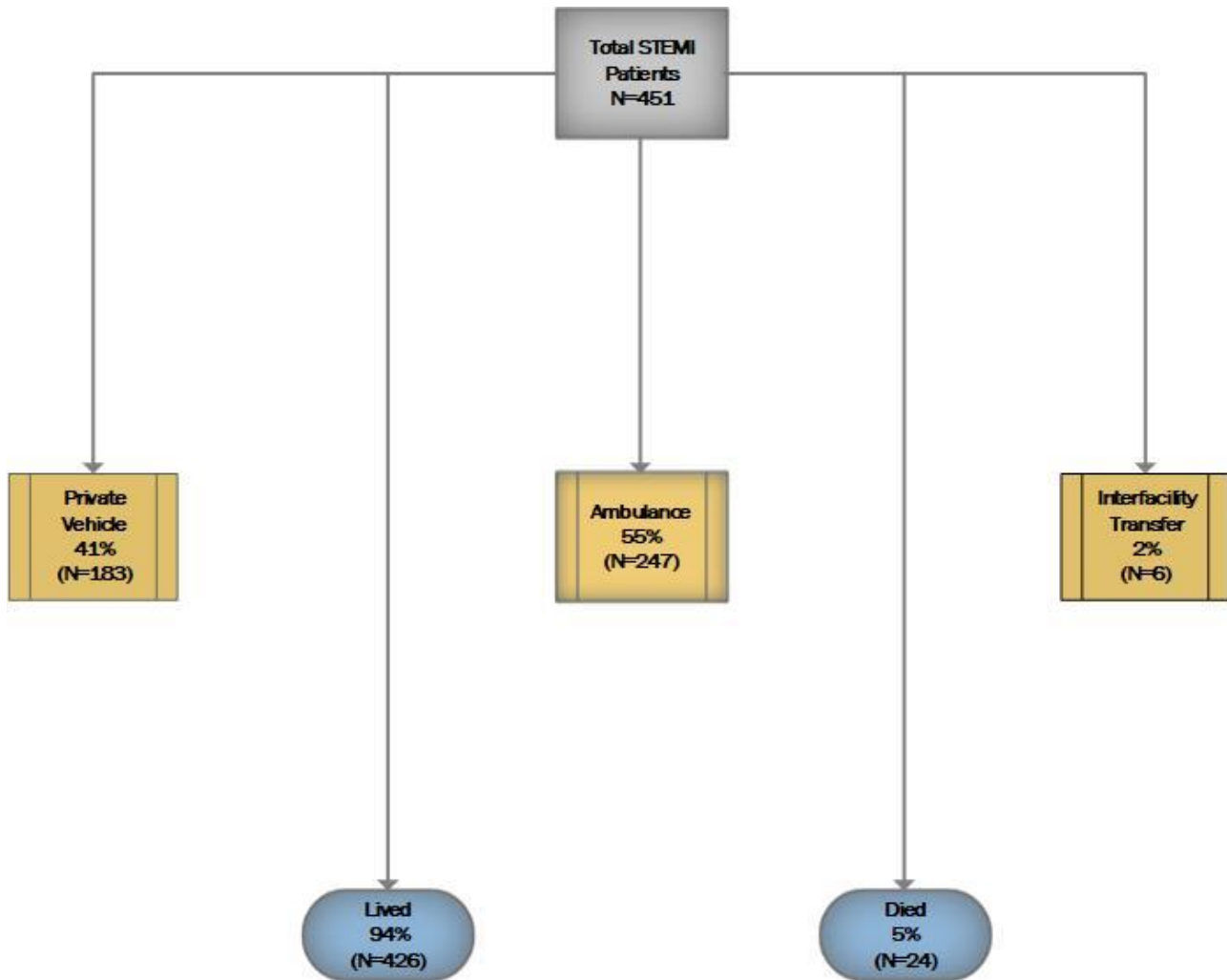
In 2021, there were 89,759 patients transported to one of our many approved receiving facilities from the 911 system. Roughly 40 patients had a transport destination of a “helispot” where they were transferred to an air ambulance resource from the scene and then flown to a receiving facility.

Below is the breakdown of the number of transports to each facility. This data was collected only from 911 advanced life support (ALS) or a basic life support (BLS) transport ambulances.

Destination Name	Count of Incidents	Percentage of Grand Total
Valley Medical Center	14,782	16.47%
Regional Medical Center	13,603	15.16%
O'Connor Hospital	11,274	12.56%
El Camino Hospital of Mountain View	9,616	10.71%
Good Samaritan Hospital	9,105	10.14%
Kaiser Santa Clara	8,731	9.73%
Kaiser San José	8,420	9.38%
Stanford Univ. Hospital	6,140	6.84%
St. Louise Hospital	4,374	4.87%
El Camino Hospital of Los Gatos	1,693	1.89%
Palo Alto VA Hospital	926	1.03%
EPS	323	0.36%
Kaiser Redwood City	275	0.31%
Kaiser Fremont	198	0.22%
Washington Hospital	184	0.20%
Hazel Hawkins Hospital	46	0.05%
Other (Helispot, ED)	40	0.04%
Sequoia Hospital	29	0.03%
Grand Total	89,759	100.00%

SPECIALTY CARE CENTERS (STEMI)

ST-Elevation Myocardial Infarction (STEMI) Centers



Santa Clara County STEMI Patient Overview 2021

A ST-Segment Elevation Myocardial Infarction (STEMI) is a very serious type of heart attack. It occurs when there is an occlusion of one or more coronary arteries in the heart resulting in tissue ischemia, ECG changes, and chest pain. Medical professionals often use patients' symptoms and a 12-lead electrocardiogram (ECG) to diagnose and treat this type of heart attack. In 2021, the case fatality rate of those experiencing a STEMI was 5.32%.

SPECIALTY CARE CENTERS (STEMI)

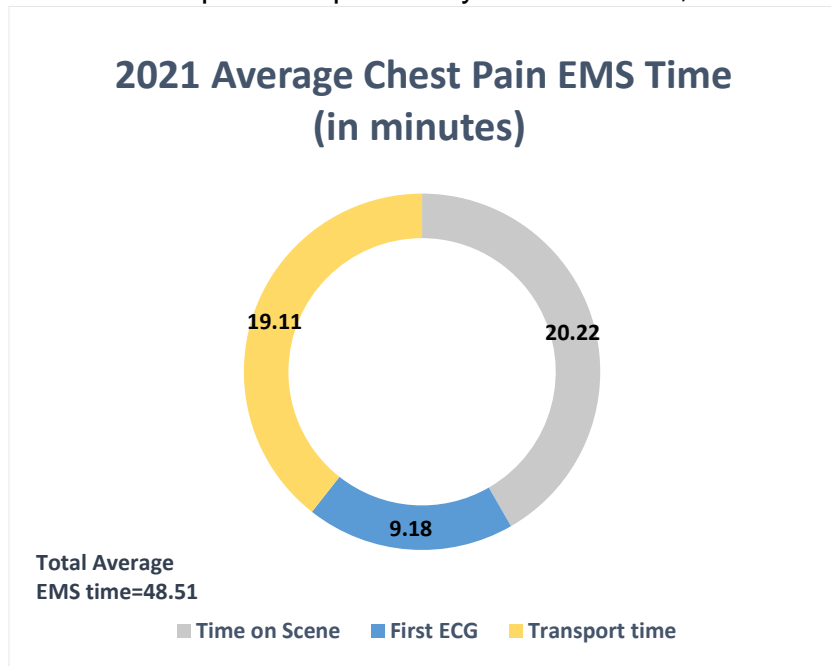
ST-Elevation Myocardial Infarction (STEMI) Centers

For patients experiencing symptoms of chest pain and potentially a heart attack, there are two time-based benchmarks.

The first benchmark is the time the EMS crew arrives at the patient and obtains an ECG and the time they spend on scene to hospital arrival.

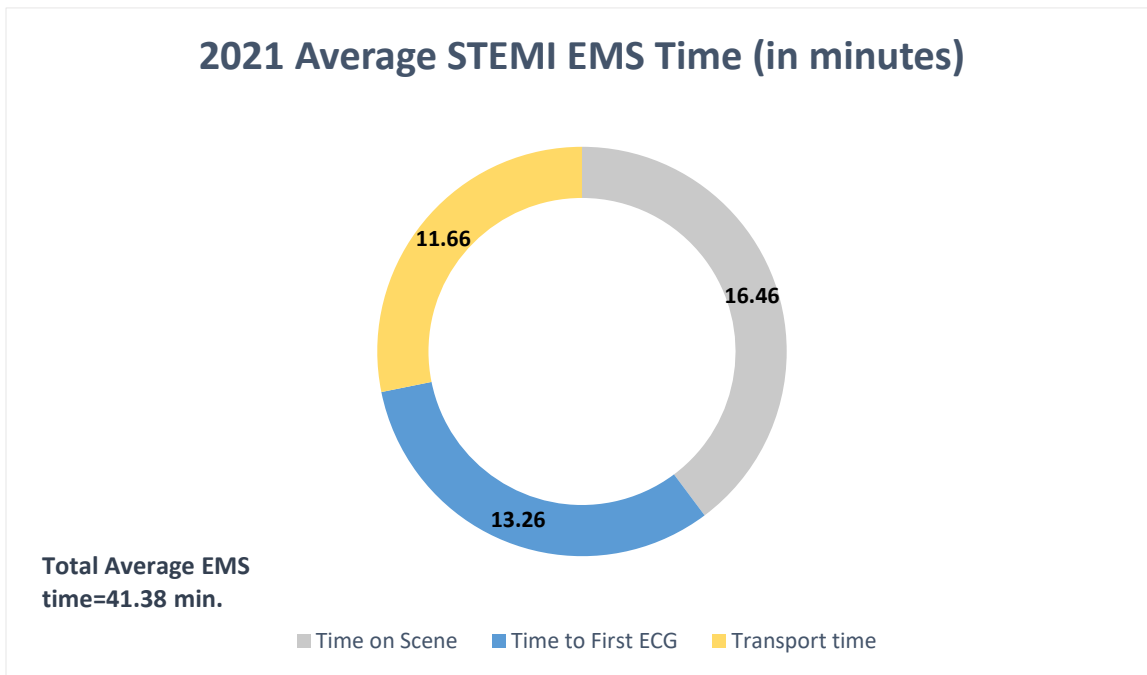
The faster a patient receives the ECG and a rhythm known as a ST-elevation is identified, the sooner a paramedic can activate advanced notification to the hospital. This allows preparation to provide advanced treatment of the patient while the patient is in transport. Patients suffering from ST-elevation myocardial

infarctions often have a coronary catheterization to find blocked arteries in the heart and place a stent to re-open the artery, restoring blood flow. The target benchmark for obtaining a 12-lead ECG is 10 minutes from arrival at the patient. The scene time should be less than 20 minutes and total EMS time (arrival at the patient to ED arrival) should be less than 30 minutes. The data below is presented using two different primary impressions, chest pain, and STEMI.



SPECIALTY CARE CENTERS (STEMI)

ST-Elevation Myocardial Infarction (STEMI) Centers

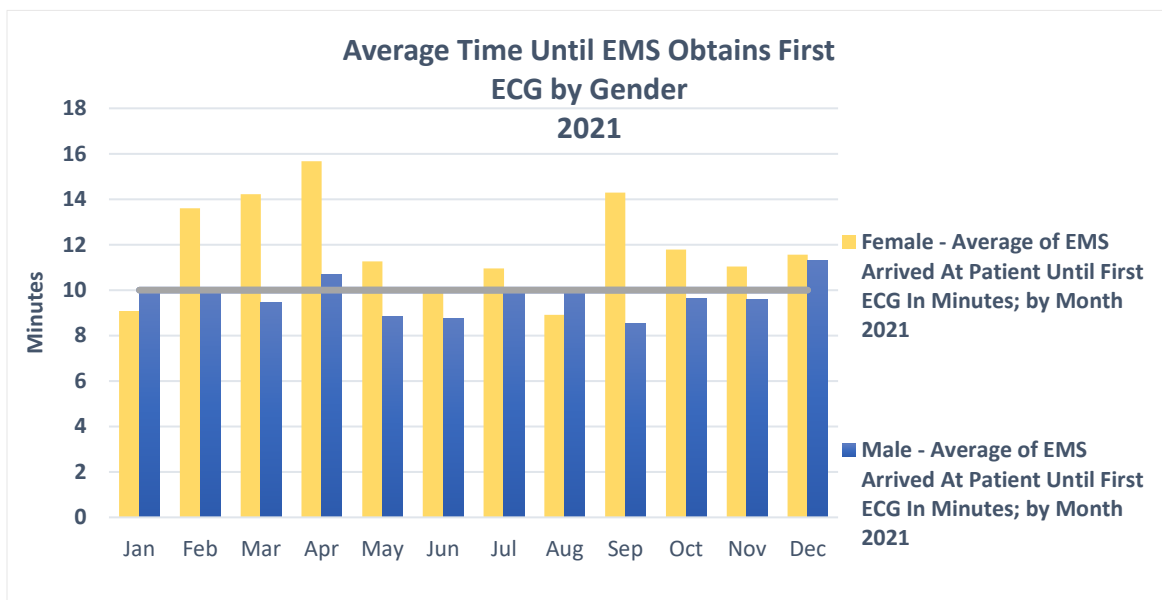


A Primary Impression of STEMI means the paramedic made the determination the patient's ECG shows a possible ST-elevation, indicating a high probability of a heart attack. The Primary Impression of Chest Pain is also evaluated for this benchmark because not all heart attack patients present with this ECG change or the ECG change has not occurred at the time the paramedic obtained the ECG. As demonstrated, the time to obtain first ECG for Chest Pain falls below the target benchmark of 10 minutes, at 9.18 minutes, versus the 13.26 minutes for a STEMI patient. Scene time and transport time are shorter for STEMI identified patients, 16.46 minutes and 11.66 minutes, respectively. STEMI patients have an average total EMS time of 41.38 minutes, slightly higher than the 30-minute goal.

SPECIALTY CARE CENTERS (STEMI)

ST-Elevation Myocardial Infarction (STEMI) Centers

The ability to obtain a 12-lead ECG quickly can expedite transport to the closest of eight, STEMI Receiving Centers in Santa Clara County. The benchmark of 10 minutes has been established. In 2021, the average ECG time for males was 9.6 minutes and females was 11.6 minutes. In the 2021 International Consensus on CPR and Emergency Cardiovascular Care report, it was noted women received delays in obtaining an ECG, with times averaging 15 minutes nationally¹. Although Santa Clara County's average falls below this time, it is noted that the higher ECG times impact the overall ECG benchmark previously reported and there were four months in which the ECG time was well above the 10 minutes. Considering that a STEMI is a more serious type of heart attack, reperfusion of the vessels and heart muscle as timely as possible yields the best outcomes for the patient. This is mostly accomplished through percutaneous intervention (PCI); a minimally invasive procedure in which a catheter is used to remove blockages and restore blood flow in the heart. This is also known as "going to the cath lab".

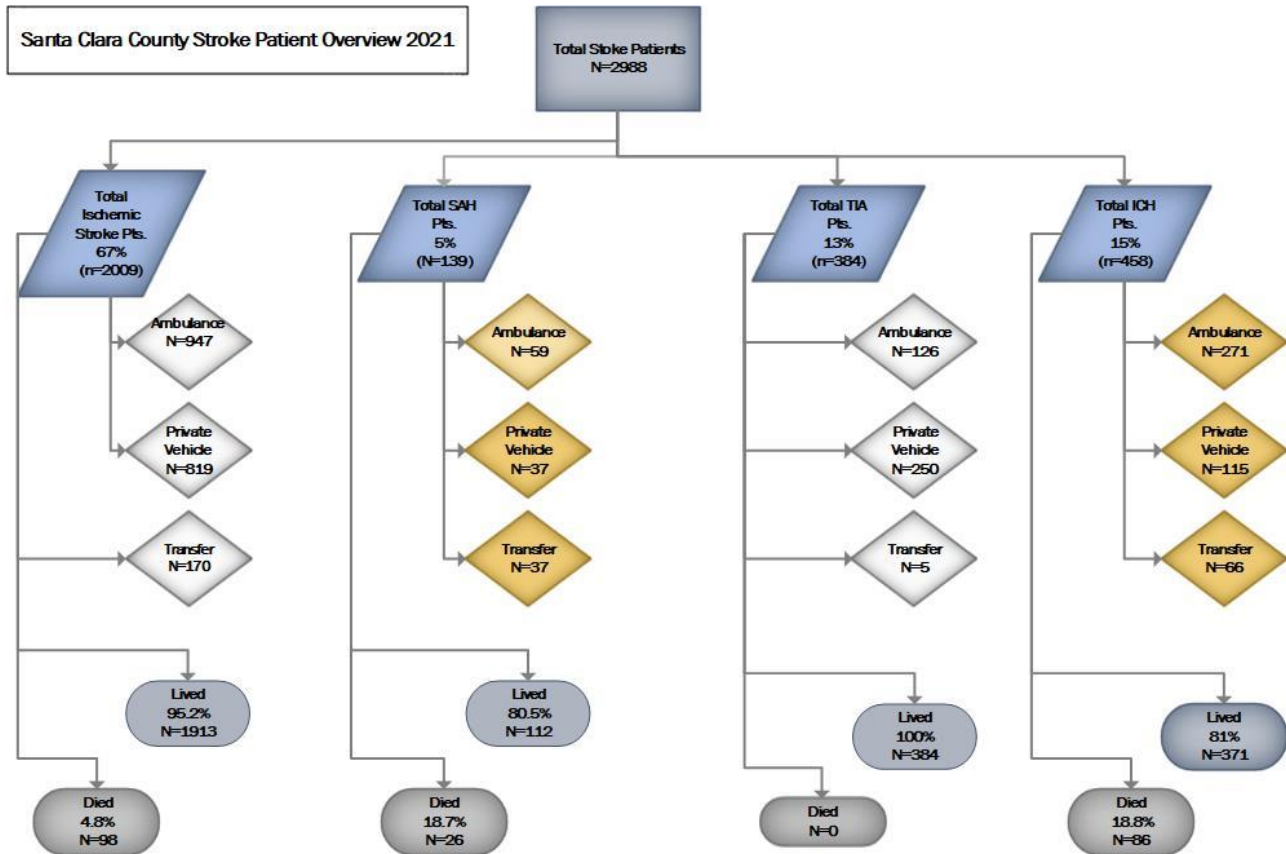


The *Mission Lifeline* criteria sets a goal of 90 minutes from when the patient arrives at the ED to when the patient undergoes a PCI. This calculation, Door-to-Device time (D2D), can be greatly improved by having EMS obtain the first 12-lead ECG and transmitting to the hospital prior to patient arrival. Of the 451 ECG confirmed STEMI cases, 361 continued to the cath lab for reperfusion therapy, 55% arriving via EMS. As demonstrated in the chart below, nearly 10 minutes of treatment time are saved in patients arriving by EMS.

¹ https://www.ahajournals.org/doi/10.1161/CIR.0000000000001017?utm_campaign=sciencenews21-22&utm_source=science-news&utm_medium=phd-link&utm_content=phd-11-11-21

SPECIALTY CARE CENTERS (STROKE)

Stroke Centers

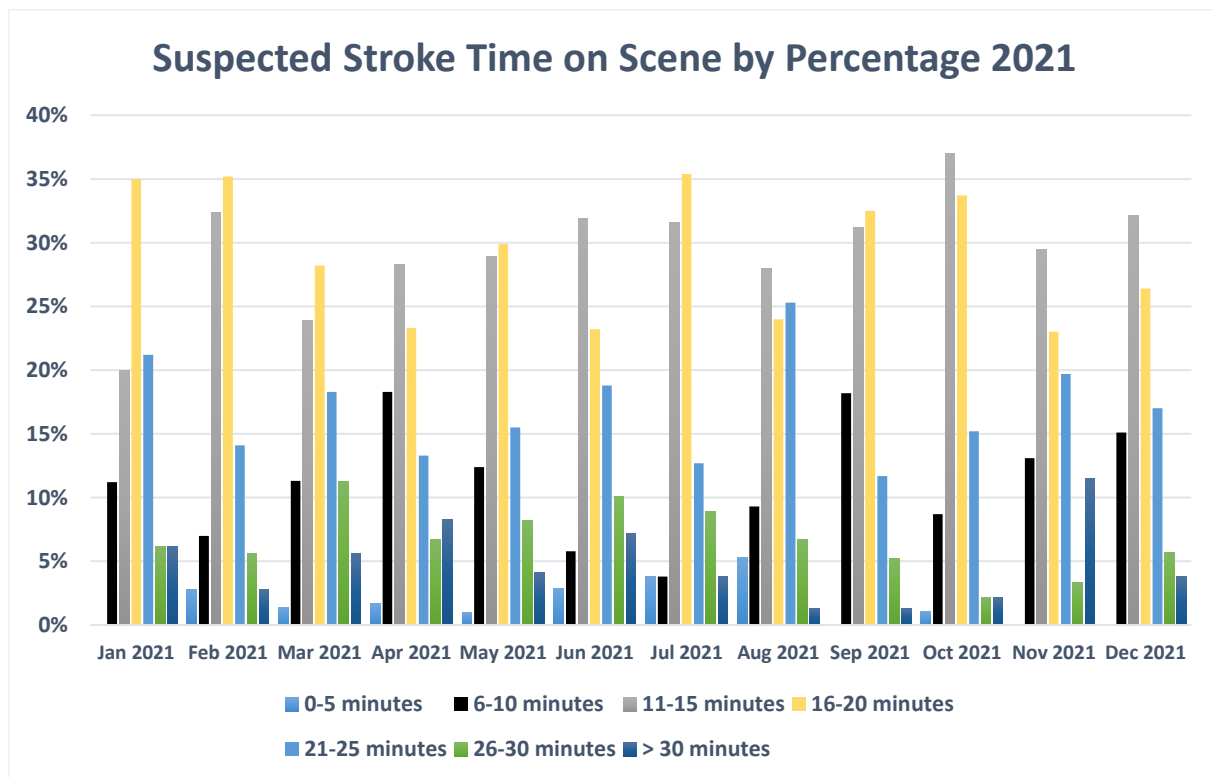


There was a total of 2,988 stroke patients treated at Santa Clara County stroke receiving centers in 2021. The type of stroke relates to the location of the blocked blood vessel in the brain and determines the appropriate treatment required. Similar with national trends, ischemic strokes are the most common type of stroke experienced by patients treated in Santa Clara County with 67% of the total volume.

SPECIALTY CARE CENTERS (STROKE)

Stroke Patients

When a person is suffering symptoms of a stroke, early diagnosis for the type of stroke is the key to providing the appropriate advanced medical treatment. Paramedics use a scale to identify key stroke systems, conduct patient and family interviews and then transport the person to an appropriate stroke receiving hospital. Scene time should be limited to this focused assessment so hospitals can conduct the diagnostic tests needed. The American Heart Association has established a 20 minute or less scene-time benchmark. Scene time for suspected stroke patients fell below 20 minutes in 69% of the cases. On average, a scene time of greater than 30 minutes was experienced in less than 5% of suspected stroke patients for 2021. April and November 2021 had slightly higher incidents of scene times longer than 30-minutes, with April having 8.3% and November having 11.5% of suspected stroke patients above the 30-minute threshold.

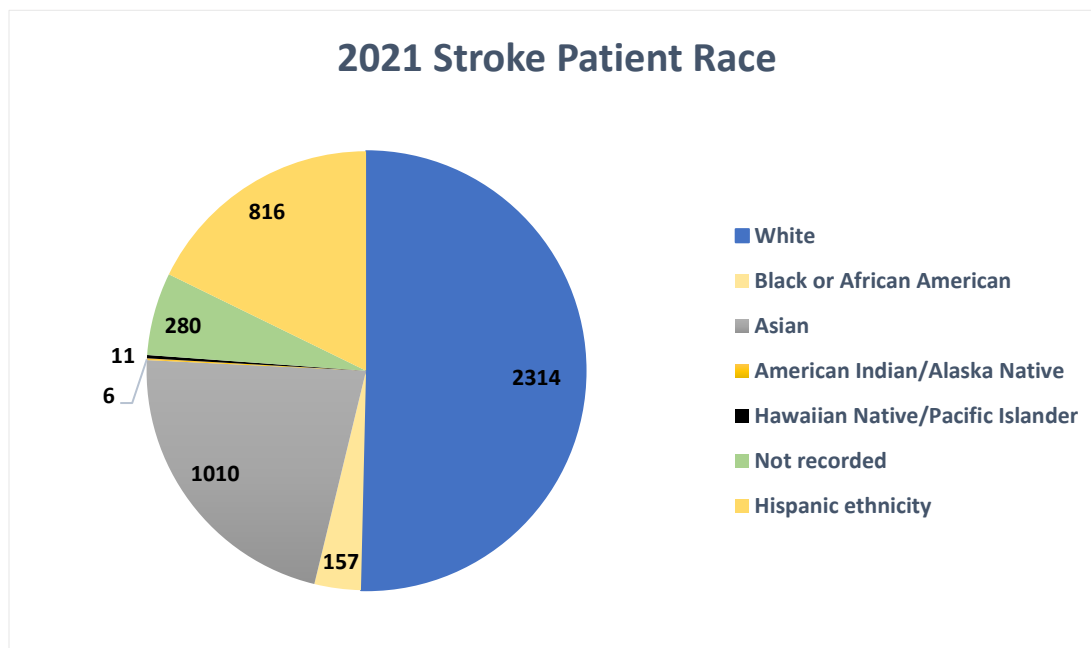


SPECIALTY CARE CENTERS (STROKE)

Stroke Centers

The second most common type of stroke is one in which a vessel in the brain bleeds and is referred to as a hemorrhagic stroke. There are two types of hemorrhagic strokes depending on the location. Subarachnoid strokes (SAH) occur in the space that surrounds the brain, while an intracerebral hemorrhage (ICH), occurs from bleeding within the brain tissue. These types of strokes accounted for 5% (SAH) and 15% (ICH) of the patients treated in 2021. Fatality in these patients is higher than the other two types of strokes nearing 19%. Transient ischemic attacks (TIA) often referred to as “mini strokes” are caused by a temporary disruption in blood supply and lack of oxygen to the brain. These are often precursors to the other types of strokes. Thirteen percent of patients treated in 2021 were TIA patients and no fatalities occurred in this population.

The chart below represents 2021 stroke patients by race in Santa Clara county.

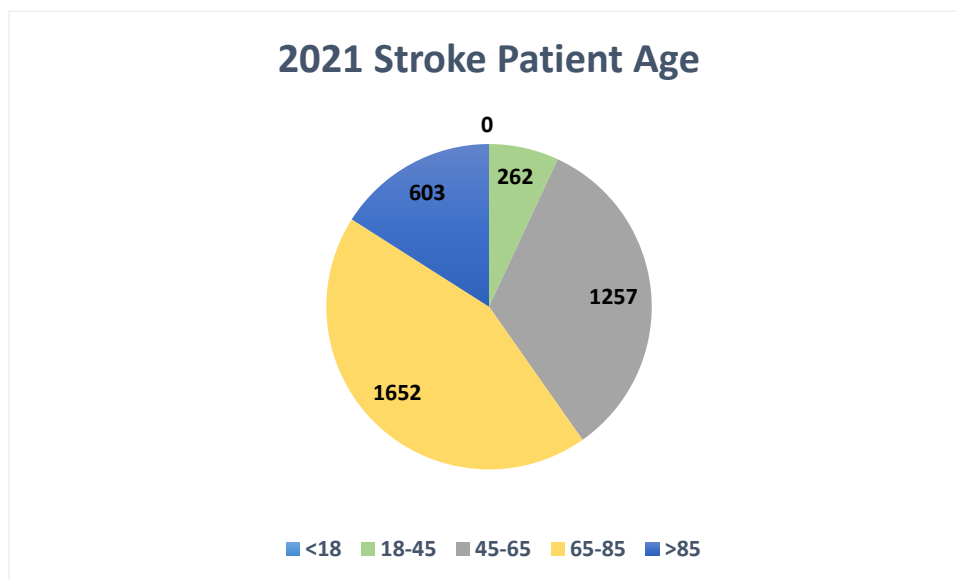


SPECIALTY CARE CENTERS (STROKE)

Stroke Centers

Early recognition of stroke symptoms, calling 911 and immediate transport to a specialty center able to treat the type of stroke offers the best chance for survivability and limiting severe disability. Santa Clara County hospitals are seeing 40% of patients arriving by personal vehicle (POV). In late 2021, the EMS agency in partnership with the hospitals launched an educational campaign to improve this metric. Demographic data was utilized to ensure target populations were included.

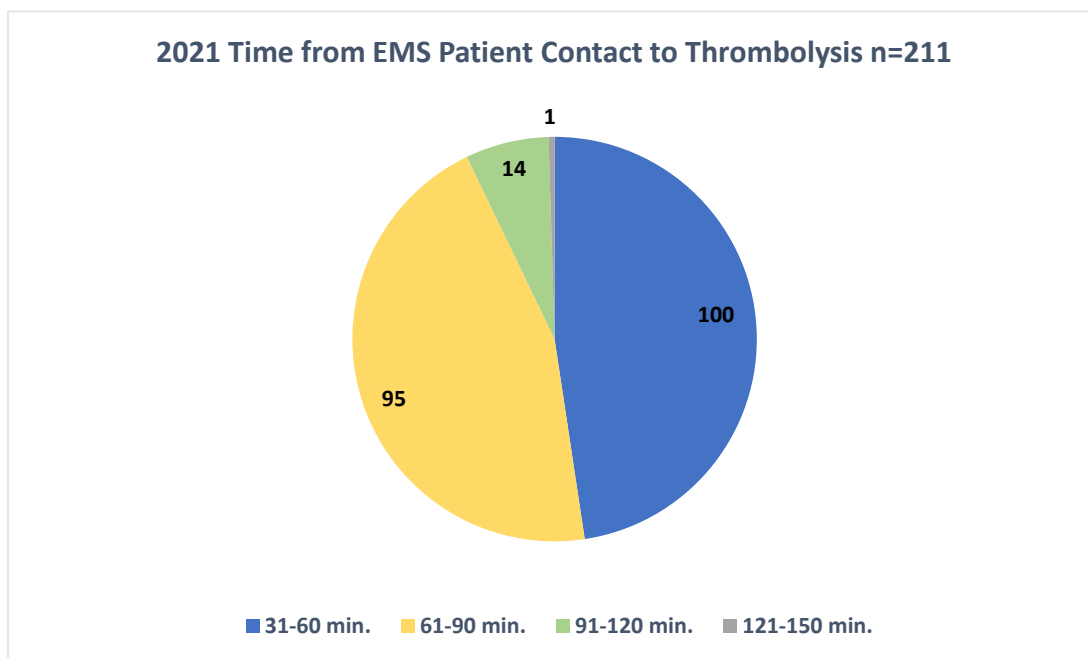
The first chart below displays 2021 stroke patients by age in Santa Clara county, and the second chart is part of the County's educational campaign on the signs of stroke.



SPECIALTY CARE CENTERS (STROKE)

Stroke Centers

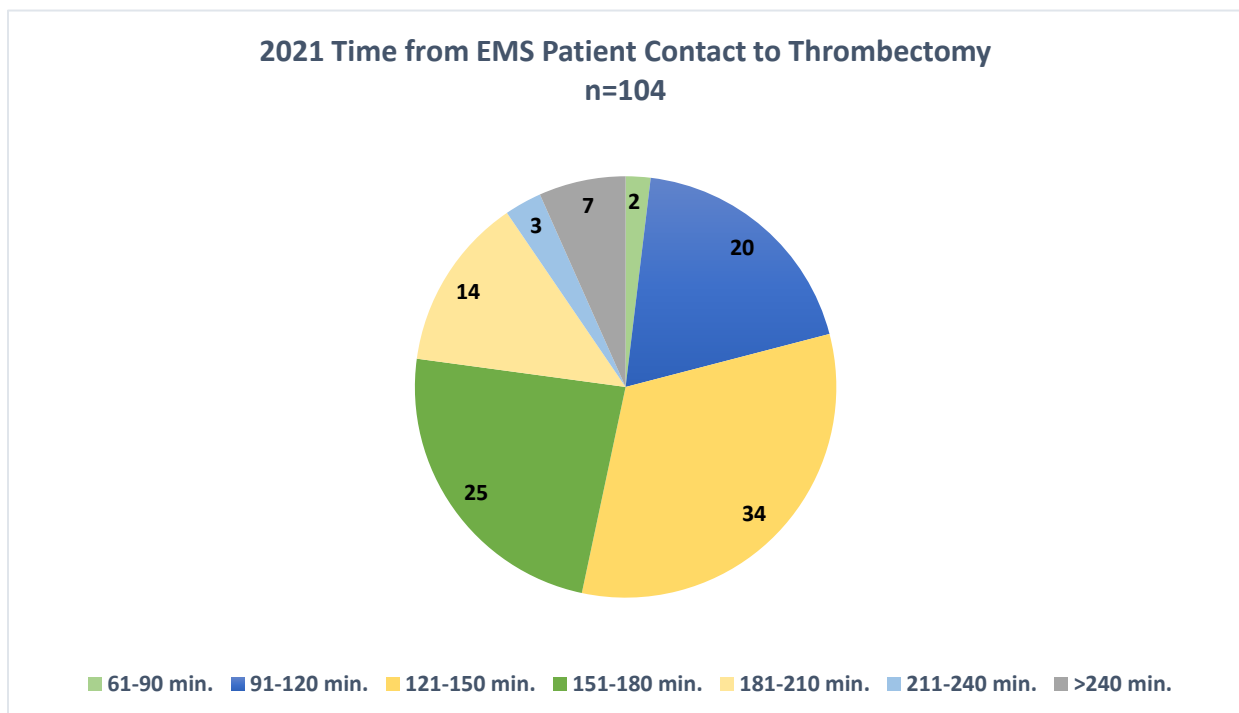
Thrombolysis, or the administration of an intravenous medication to dissolve the clot blocking a major vessel is the preferred treatment for ischemic strokes. This medication must be given within 4.5 hours from the onset of stroke symptoms. All ten stroke receiving centers have the capability to administer this medication. The EMS System monitors the time the EMS crew makes patient contact to thrombolysis to ensure the time on scene is less than 20 minutes and the total time to treatment is below the national benchmark of administering the thrombolysis medication within 60 minutes of arrival to the ED more than 75% of the time. In 2021, the median time from EMS contact to thrombolysis was 60.3 minutes.



SPECIALTY CARE CENTERS (STROKE)

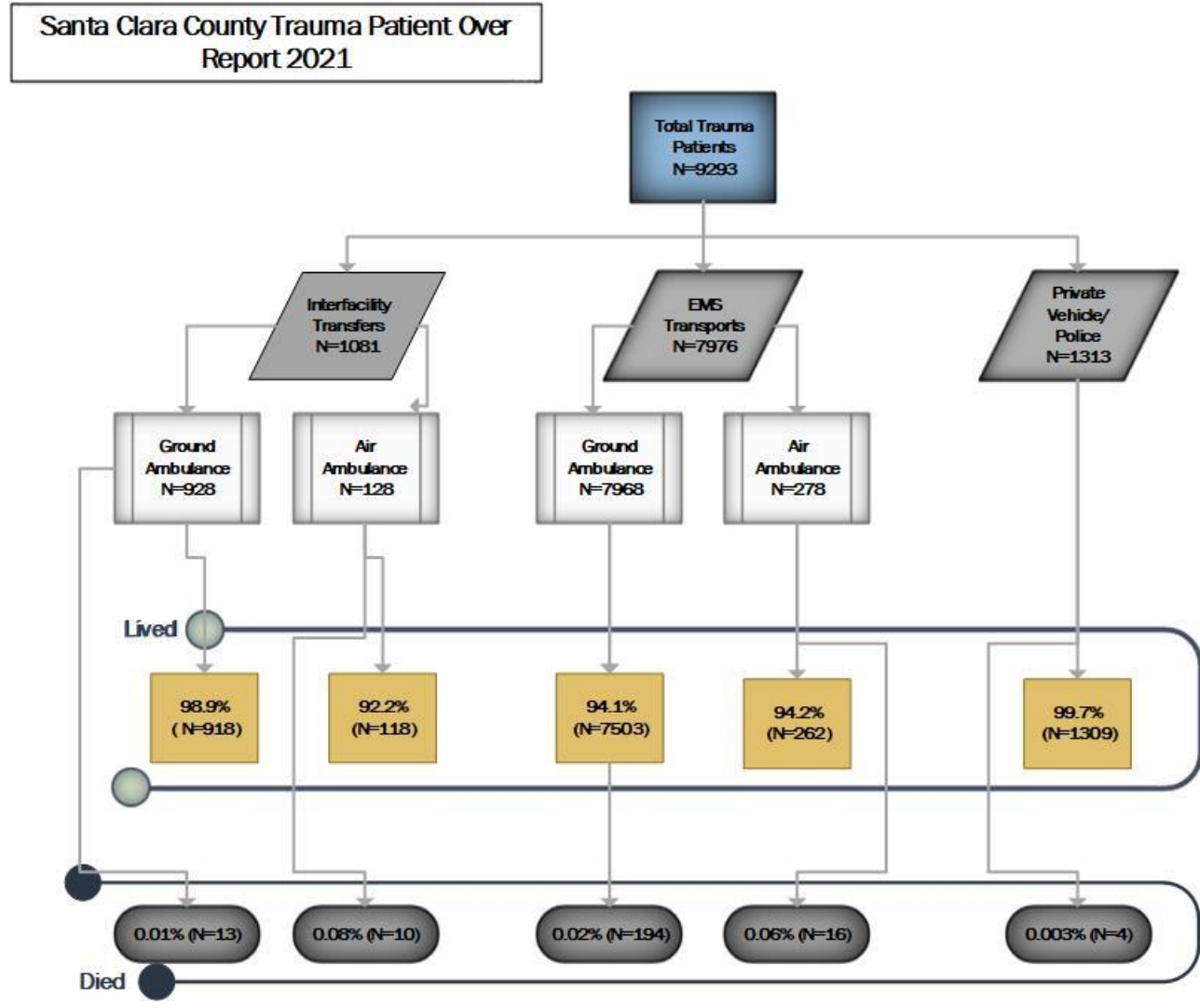
Stroke Centers

Large vessel occlusion strokes occur from a lack of oxygen and a large vessel in the brain being blocked by a clot. These patients often present with very prominent symptoms. Santa Clara County EMS uses the G-FAST (Gaze, Facial Droop, Arm Drift, Speech, Time) scale to identify these types of strokes from the other type of strokes. The G-FAST scale has paramedics quickly assess a person's gaze, facial muscles, speech, and arm movement. If they have positive characteristics in each of the categories, they may require a different medical intervention and transport to a more advanced stroke center that can perform a procedure known as a thrombectomy. This is when a wire is inserted into an artery reaching the affected portion of the brain and the clot is either removed or broken up with medication. There are four hospitals capable of treating this type of stroke. The door-to-device (from when the patient arrives to when the first pass with thrombectomy device) time should be less than 90 minutes for direct arrivals and 60 minutes for any transfers in at least 50% of the cases. In 2021, the median time from first EMS contact to device activation was 146.5 minutes. Forty-three percent of the patients transported by EMS meet the national benchmark set for measuring from ED arrival to intervention. This highlights the importance of 911 activation and directed designation of stroke patients to advanced centers.



SPECIALTY CARE CENTERS (TRAUMA)

Trauma Centers

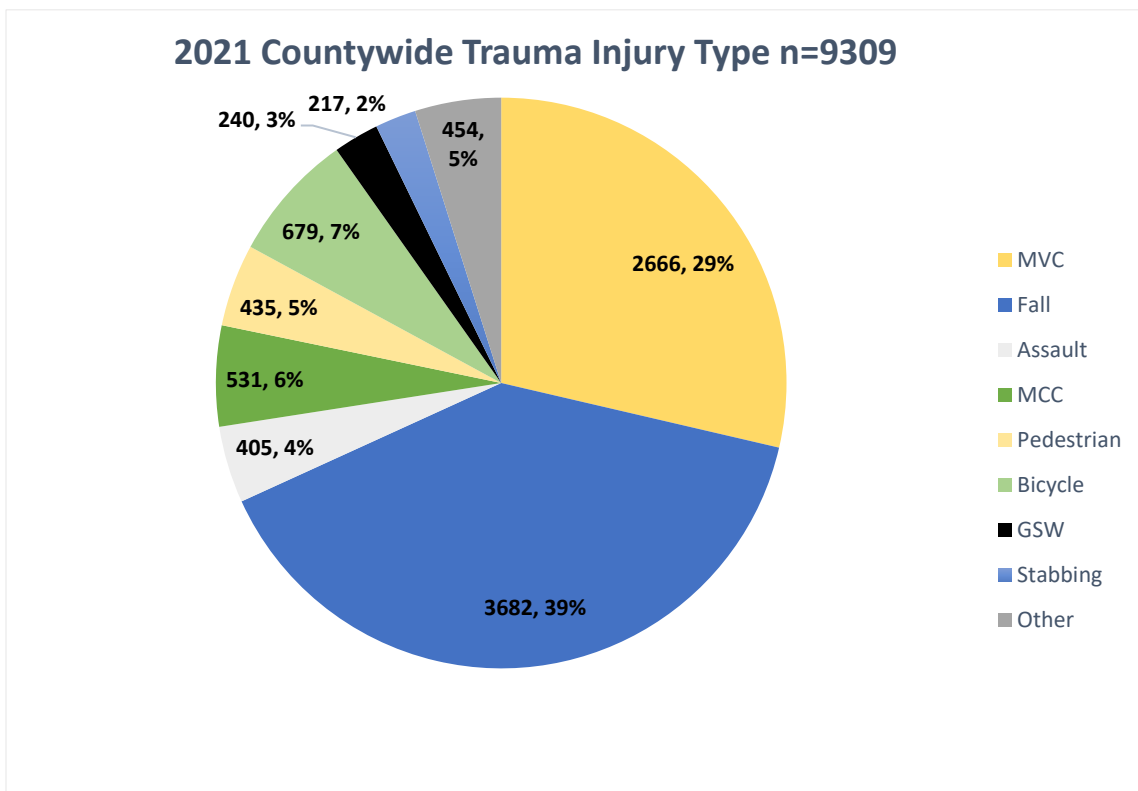


In 2021, there were 9,293 total trauma patients treated between the three trauma centers, 9,057 patients were transported by EMS. The preferred method of arrival to a Trauma Center is by air or ground ambulance, 14.1% of patients self-transported (POV) to the hospitals, staying consistent with data from past years. Overall, fatality from a trauma is relatively low, with 237 people or 2.5%. A slightly higher percentage of fatalities were observed in those transported by air ambulance; this would be consistent with policy that ensures air transports are reserved for patients meeting Major Trauma Victim injury criteria, thus sustaining more severe, life-threatening injuries.

SPECIALTY CARE CENTERS (TRAUMA)

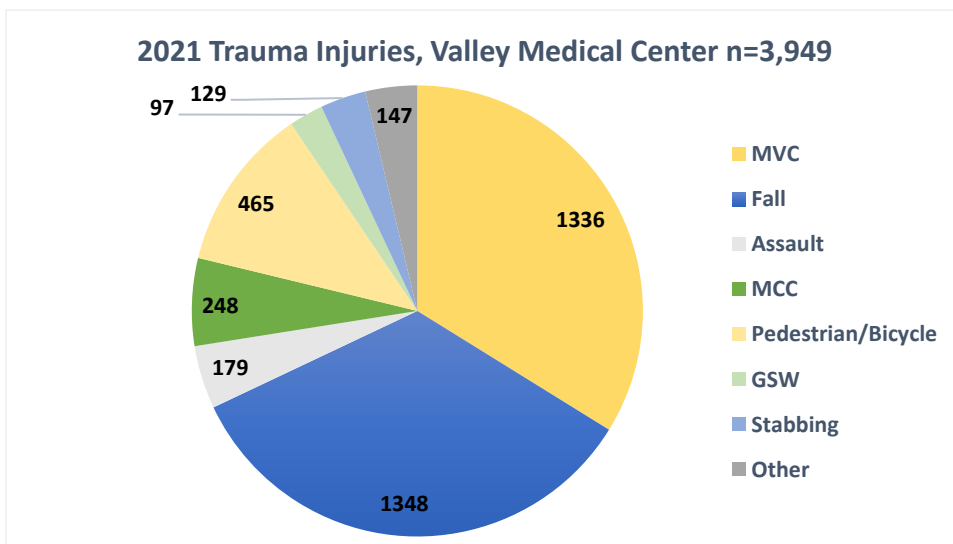
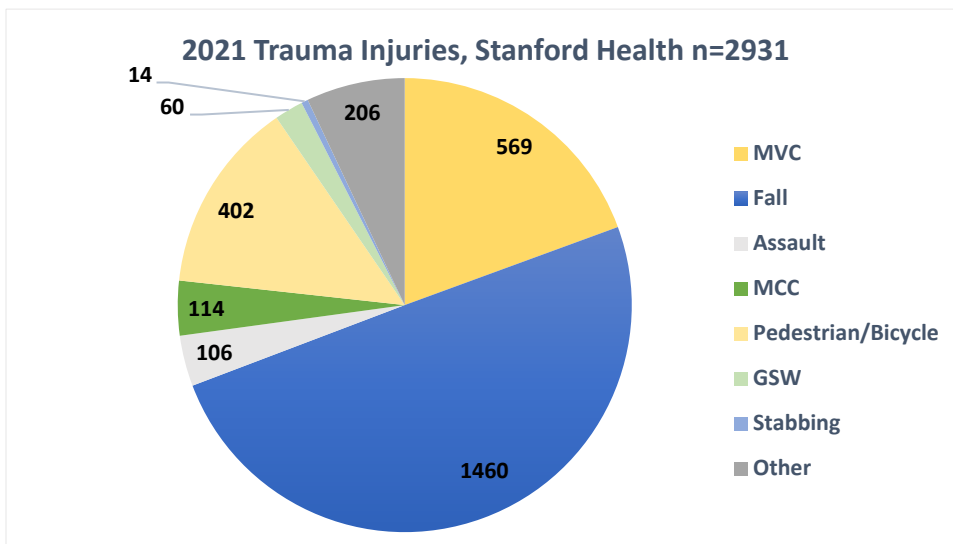
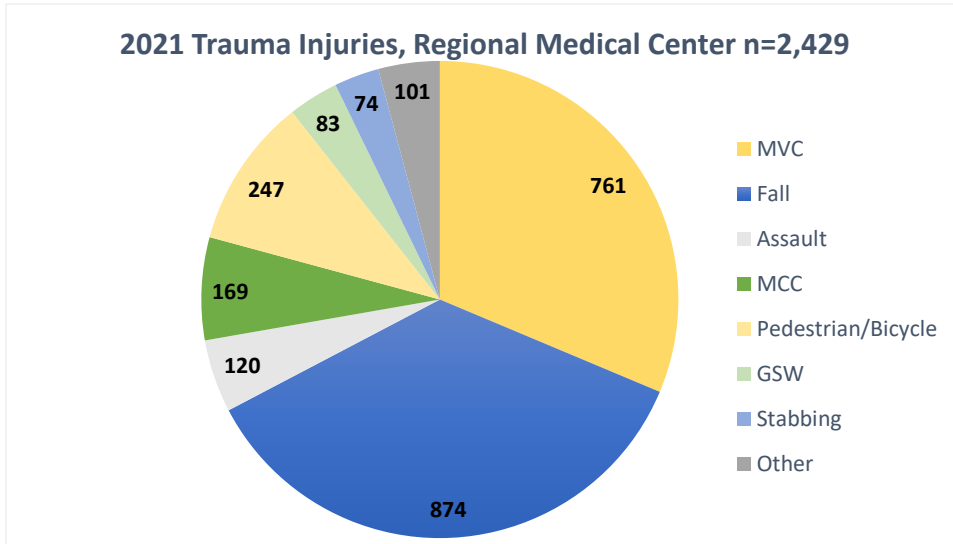
Mechanism of Injury by Trauma Center Catchment Area

Countywide, motor vehicle crashes (29%) and falls (39%) are the most common mechanism of injury, accounting for 68% of the total amount. This is consistent within the trauma catchment area for Santa Clara Valley Medical Center (VMC), and Regional Medical Center (RMC) with both falls and motor vehicle crashes accounting for roughly the same percentages. Stanford Health Care saw a higher volume of falls at 50%, and a lower number of motor vehicle crashes at 19%. The below graph illustrates the percentages of trauma injury type, the abbreviations of MVC represents motor vehicle crash, MCC represents motorcycle crash and GSW represents gunshot wound.



SPECIALTY CARE CENTERS (TRAUMA)

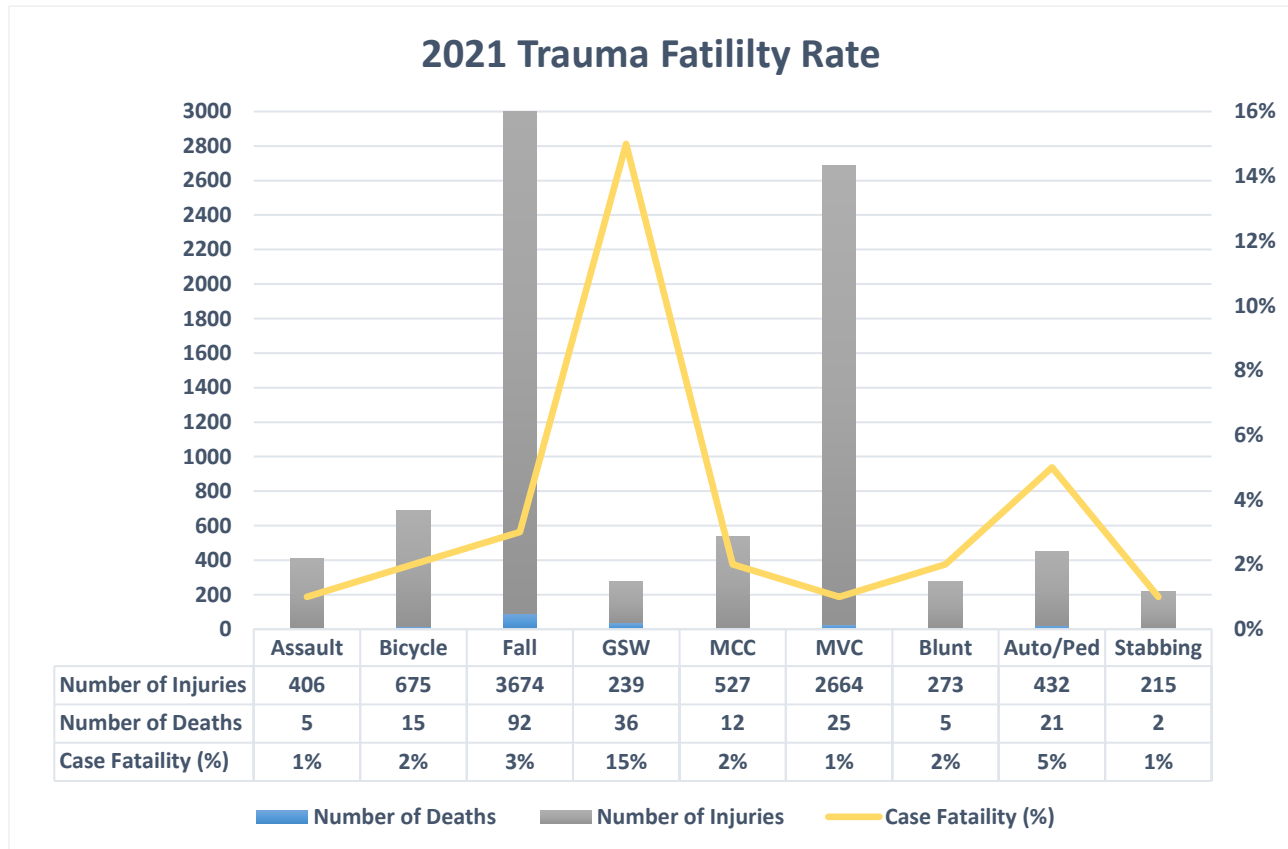
Mechanism of Injury by Trauma Center Catchment Area



SPECIALTY CARE CENTERS (TRAUMA)

Trauma Centers

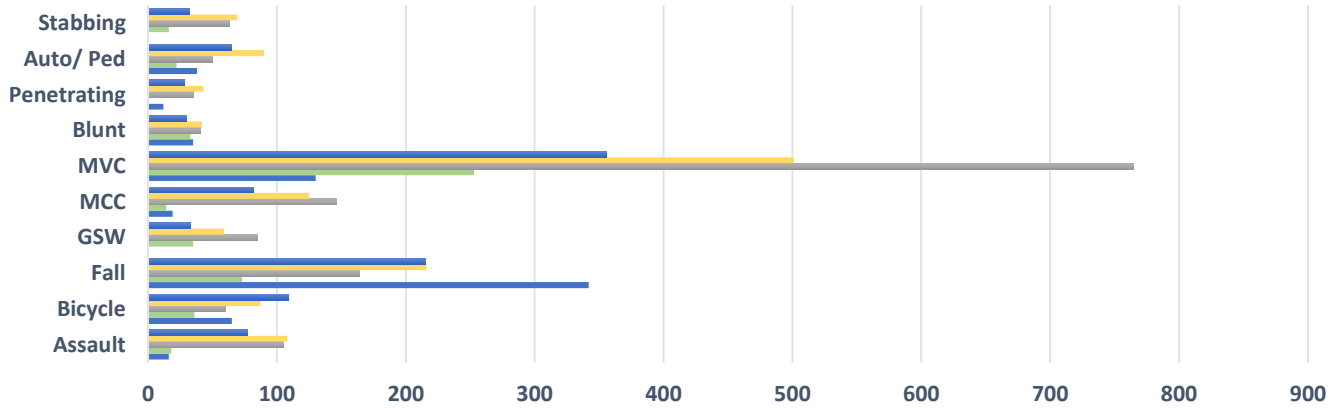
While falls was the primary mechanism of injury overall, motor vehicle accidents (MVA) were the leading cause of injury for patients ages 15-49 years of age. Falls were most prevalent in people over 50 years of age as well as under 15 years of age. The mortality rate for MVAs remains very low at 1%, while for falls it is 3%. Persons suffering from gunshot wounds (GSW) had the highest mortality rate at 15%.



SPECIALTY CARE CENTERS (TRAUMA)

Trauma Centers

2021 Mechanism of Trauma by Age Group n=5038



	Assault	Bicycle	Fall	GSW	MCC	MVC	Blunt	Penetrating	Auto/ Ped	Stabbing
40-49	77	109	215	33	82	356	30	28	65	32
30-39	108	87	216	59	125	501	42	43	90	69
20-29	105	60	164	85	146	765	41	35	50	63
15-19	18	36	73	35	14	253	33	0	22	16
0-14	16	65	342	0	19	130	35	12	38	0

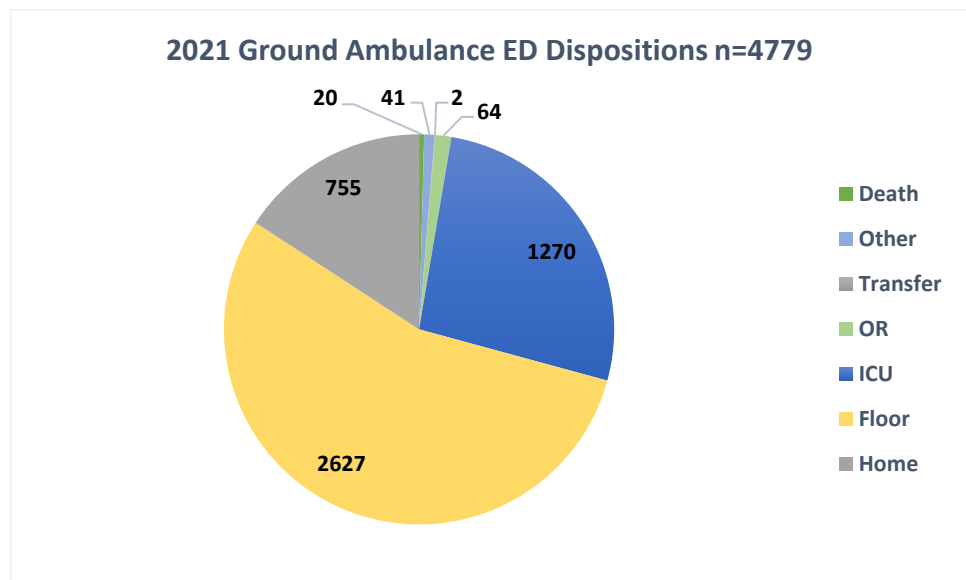
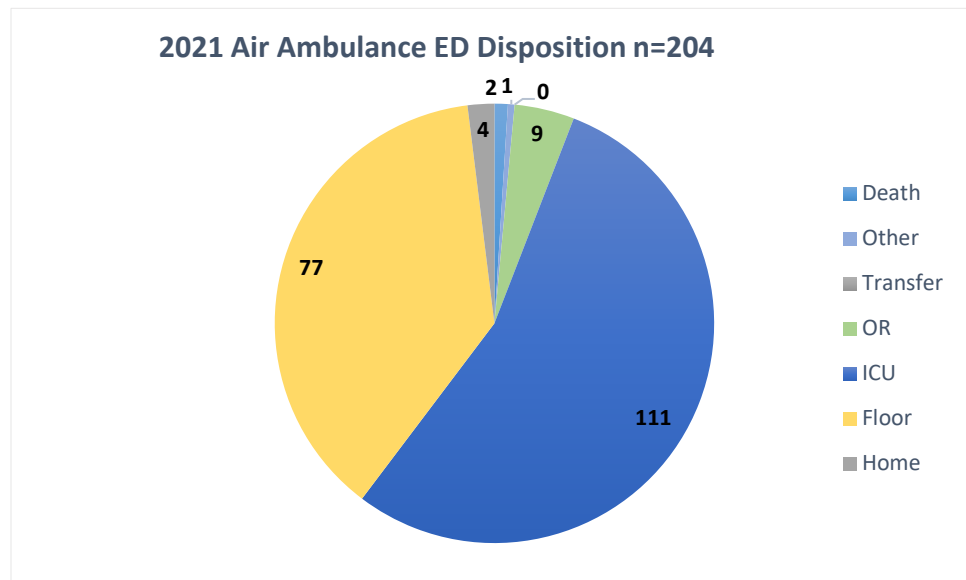
■ 40-49 ■ 30-39 ■ 20-29 ■ 15-19 ■ 0-14



SPECIALTY CARE CENTERS (TRAUMA)

Trauma Patient Emergency Department Disposition

Emergency Department (ED) disposition is where the patient goes after being transported to the ED for treatment. If a patient is discharged home, this would indicate their injury was less severe versus a person who may have gone directly to the Operating Room (OR) or to the Intensive Care Unit (ICU). The use of an air ambulance would suggest the patient has critical injuries requiring treatment, thus admission to the ICU would be likely. If a patient death occurred in the ED, it is likely the trauma injuries were very severe. The EMS Agency monitors the ED

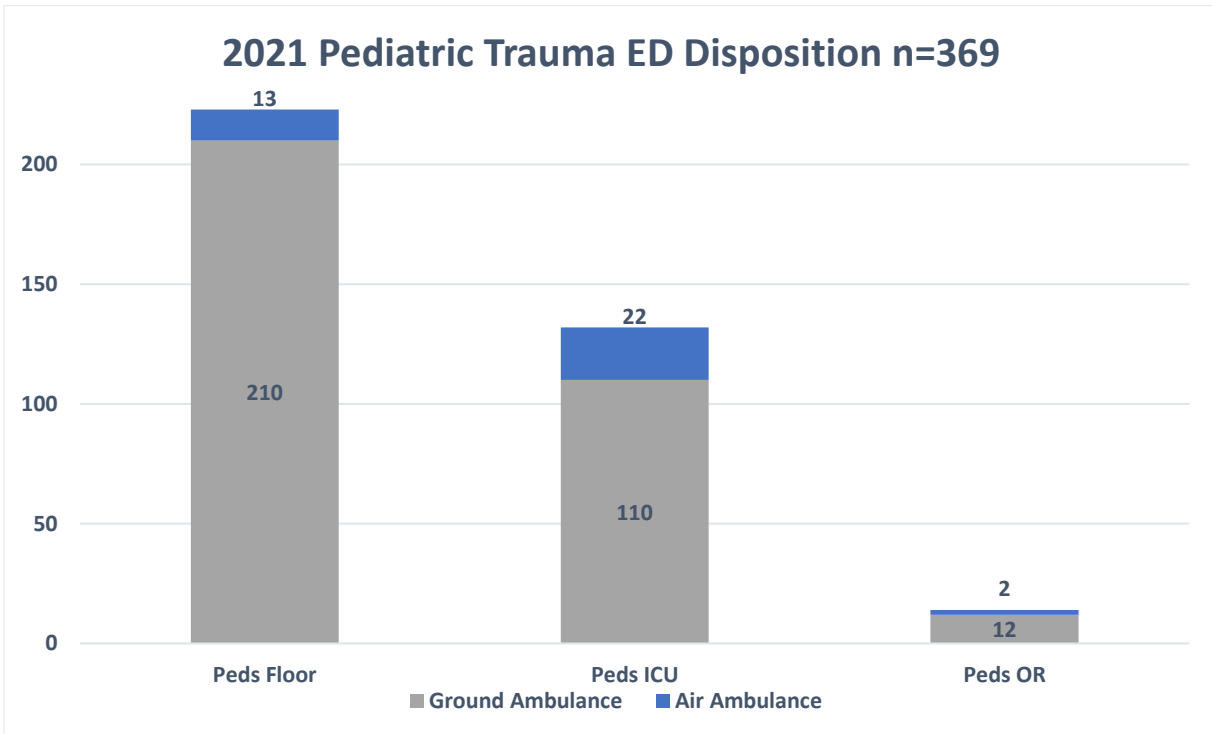


disposition as a way of understanding patient triage in the field. For ground ambulance transports, 55% were admitted to a medical surgical or similar unit and 27% were admitted to an ICU. Conversely, 54% of trauma patients transported by air ambulance were admitted to the ICU. Both types of transport groups saw a very low fatality with a 1% fatality rate.

SPECIALTY CARE CENTERS (TRAUMA)

Trauma Patient Emergency Department Disposition

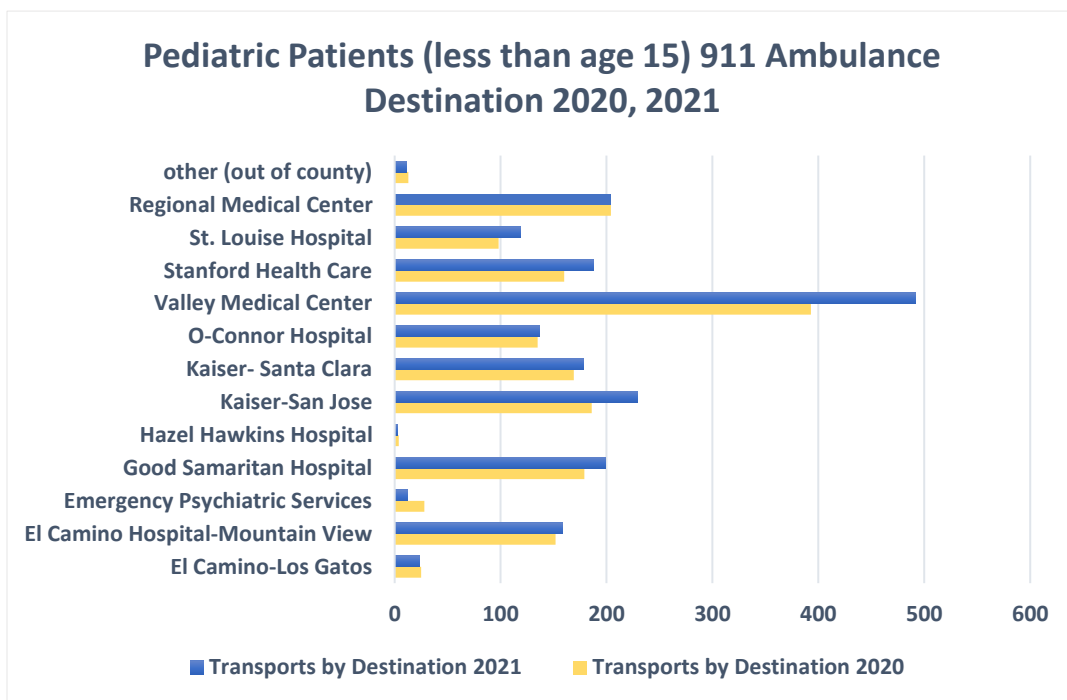
The majority of pediatric trauma patients were transported by ground ambulance with 57% being admitted to a pediatric unit. As expected, a larger proportion (59%) of pediatric patients transported by air ambulance were admitted to the Pediatric Intensive Care Unit.



SPECIALTY CARE CENTERS (EMS FOR CHILDREN)

EMS For Children (EMSC)

The development of the EMS for Children (EMSC) Program continued in 2021. The goal is to complete site visits and Pediatric Receiving Center designation by July 2022. The purpose of the Pediatric Receiving Center designation is to ensure each hospital ED has the correct resources, staff, and training to provide emergency medical care to children. This will ultimately help reduce the number of pediatric patients transferred from one facility to another, which can be costly to the hospital, the patient's family, or both, and can delay definitive care.



COMMUNICATIONS

Over the past three years the Santa Clara County EMS Agency has been working in conjunction with County Communication on the new computer aided dispatch system (CAD). The new CAD system will enable better resource tracking and ambulance responses in the EMS system.

The new CAD system will also assist with decisions related to EMS responses based on data collected from the new system.

The new CAD system is expected to be rolled out in late 2022.



The EMS Agency has 319 radios in the EMS system. These radios are distributed to all the non-911 ambulance providers, air providers, hospitals safety officers, and the EMS agency staff.

These radios are programmed for the 700 MHz digital system. The EMS Agency along with County Communications rolled out the new system and training in September 2020.

The EMS Agency has retained 42 radios for future providers. With the remaining radios, seven radio caches were established to be used in a disaster or preplanned large-scale event.

Below is a breakdown of issued radios to the non-911 ambulance providers, air ambulance providers, and hospitals.

Radio Distribution	
Non-911 Ambulance Providers	Radios Issued
American Medical Response Sutter	10
Bay Medic Transportation	4
Falcon Critical Care	8
NorCal Ambulance	17
Pro Transport-1	31
Royal Ambulance	25
Silicon Valley Ambulance	9
WestMed Ambulance	31
Air Ambulance Providers	Radios Issued
CALSTAR	3
Stanford Life Flight	1
Hospitals	Radios Issued
	22
Total Radios Issued	161

EMS DATA SYSTEMS

911 System Data Collection and Submission

Within the calendar year 2021, the EMS patient care record (PCR) data system had a total of 259,036 documented incidents for the 911 system. This marked an increase of roughly 5% over 2019's value of 246,803 total documented incidents.

Of the 259,036 PCRs that were entered into the County's system, roughly 99.54% of these were successfully uploaded to the California EMS Information System (CEMSIS) and then on to the National EMS Information System (NEMSIS). The 99.54% success rate was greater than what was achieved in 2019, which came in at 96.49%. The breakdown of PCR submissions by each 911 provider for the 2021 calendar year follows:

Agency Name (dAgency.03)	Total Incidents	Sent to CEMSIS	Percent of Grand Total
911 - CAL Fire Santa Clara Unit	5	5	0.00%
911 - Gilroy Fire Department	4,459	4,421	1.72%
911 - Milpitas Fire Department	3,970	3,938	1.53%
911 - Morgan Hill City Fire Department	2,236	2,227	0.86%
911 - Mountain View Fire Department	4,741	4,723	1.83%
911 - Palo Alto Fire Department	10,553	10,553	4.07%
911 - San Jose Fire Department	78,046	77,858	30.13%
911 - Santa Clara County Ambulance	126,279	125,754	48.75%
911 - Santa Clara County Fire Department	12,028	11,772	4.64%
911 - Santa Clara Fire Department	7,108	7,089	2.74%
911 - South Santa Clara County Fire District	2,685	2,672	1.04%
911 - Sunnyvale DPS	6,926	6,830	2.67%
Grand Total	259,036	257,842	99.98%
Percent of Grand Total	100.00%	99.54%	

EMS DATA SYSTEMS

911 System Data Collection and Submission

The top 10 primary impressions that were documented by the 911 prehospital crews within the 2021 calendar year are displayed within the chart below. The primary impression is a concise statement describing the symptom, problem, or condition that is the reason for a medical encounter. Traumatic injury came in at the top of the list having been documented 31,868 times.

Situation Provider Primary Impression (eSituation.11)	Count of Incidents	Percent of Grand Total
Traumatic Injury (T14.90)	31,848	12.29%
General Weakness (R53.1)	13,948	5.38%
Abdominal Pain / Problems (GI/GU) (R10.84)	12,468	4.81%
Behavioral/Psychiatric Crisis (F99)	10,704	4.13%
Respiratory Distress / Other (J80)	10,227	3.95%
No Medical Complaint / Findings (Z00.00)	9,693	3.74%
ALOC - (Not Hypoglycemia or Seizure) (R41.82)	9,535	3.68%
Non-Traumatic Body Pain (G89.1)	8,413	3.25%
Pain/Swelling - Extremity - Non-Traumatic (M79.60)	8,043	3.10%
Syncope / Near Syncope (R55)	7,114	2.75%



EMS DATA SYSTEM

911 System Data Collection and Submission

For each PCR that is submitted, there must be a patient disposition. For a majority of the 911 incidents, there was a patient who was treated and then transported to a hospital. Below are the transport unit dispositions ranked in order of use

Patient Disposition (eDisposition.12)	Count of Incidents	Percent of Grand Total
Patient Transported in My Ambulance, Treated During Transport	89,488	69.01%
Canceled After Arrival - No Patient Contact by this Unit	18,575	14.32%
Canceled - Prior to Arrival at Scene	9,648	7.44%
Patient Evaluated and/or Treated, Refusal of Care, Without Transport	4,734	3.65%
Canceled on Scene - No Patient Was Found	3,131	2.41%
Refusal of All Care, Without Transport	1,027	0.79%
Patient Evaluated, No Treatment/Transport Required	878	0.68%
Canceled Prior to Enroute	433	0.33%
Patient Dead at Scene - Resuscitation Attempted - Not Transported	396	0.31%
Patient Treated, Assisted/Retained Care During Transport	324	0.25%
Patient Dead at Scene - Resuscitation Not Attempted - Not Transported	219	0.17%
Standby - Public Safety, Fire, or EMS Operational Support Provided	219	0.17%
Standby - No Services or Support Provided	144	0.11%
Patient Transported in My Ambulance With a Refusal of Care	130	0.10%
Not Reported	97	0.07%
Patient Treated, Then Transported by Private Vehicle	90	0.07%
Patient Treated, Then Transported by Law Enforcement	39	0.03%
Public Assist Only ("Lift Assist"/Non-Medical Call)	36	0.03%
Patient Treated, Transported With This EMS Crew in Another Vehicle	35	0.03%
Patient Evaluated and/or Treated, Patient Left in Care of Another EMS Unit, Back in Service.	31	0.02%
Patient Treated, Released (per protocol)	1	0.00%
Grand Total	129,675	99.99%

EMS DATA SYSTEM

911 System Data Collection and Submission

Below are the non-transport (fire department crew) first responder's PCR dispositions ranked in order of use:

Patient Disposition (eDisposition.12)	Count of Incidents	Percent of Grand Total
Patient Evaluated and/or Treated, Patient Left in Care of Another EMS Unit, Back in Service.	71,944	55.64%
Canceled After Arrival - No Patient Contact by this Unit	19,502	15.08%
Patient Evaluated and/or Treated, Refusal of Care, Without Transport	9,042	6.99%
Canceled on Scene - No Patient Was Found	7,811	6.04%
Canceled - Prior to Arrival at Scene	6,839	5.29%
Refusal of All Care, Without Transport	3,370	2.61%
Patient Evaluated, no Treatment/Transport Required	2,685	2.08%
Patient Treated, Assisted/Retained Care During Transport	2,344	1.81%
Patient Treated, Transported with This EMS Crew in Another Vehicle	1,902	1.47%
Patient Dead at Scene -Resuscitation Not Attempted - Not Transported	1,110	0.86%
Patient Dead at Scene - Resuscitation Attempted - Not Transported	525	0.41%
Patient Treated, Then Transported by Private Vehicle	521	0.40%
Canceled Prior to En Route	460	0.36%
Standby - Public Safety, Fire, or EMS Operational Support Provided	412	0.32%
Not Reported	289	0.22%
Patient Treated, Then Transported by Law Enforcement	203	0.16%
Standby - No Services or Support Provided	180	0.14%
Public Assist Only ("Lift Assist"/Non Medical Call)	128	0.10%
Patient Transported in My Ambulance, Treated During Transport	20	0.02%
Assisted Only, Other Agency	6	0.00%
Patient Treated, Released (per protocol)	5	0.00%
Grand Total	129,298	100.00%

EMS DATA SYSTEM

Non 911 System Data Collection and Submission

Within the calendar year 2021, the EMS patient care record (PCR) Non-911 data system had a total of 58,844 total documented incidents. This was a great start to the data submission of PCR into the County’s Elite data solution as most of these providers only began to submit to the Agency in 2021.

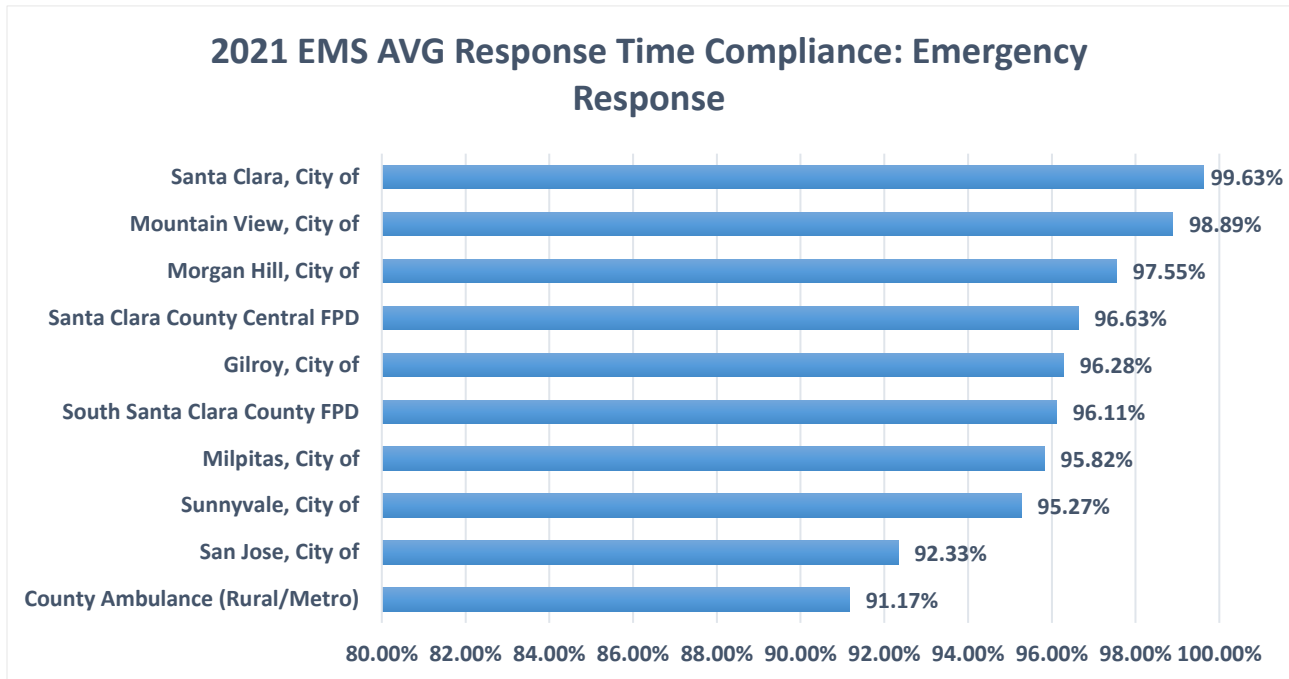
The EMS Agency will continue to work with our private ambulance partners to further enhance their data submission capabilities for the 2022 calendar year.

Agency Name (dAgency.03)	Count of Incidents	Percent of Grand Total
IFT - Falcon Critical Care Transport	6,125	10.40%
IFT - NorCal Ambulance Services	7,031	11.94%
IFT - ProTransport - 1 Ambulance Services	3,074	5.22%
IFT - Royal Ambulance Services	29,560	50.21%
IFT - Silicon Valley Ambulance	4,199	7.13%
IFT - Stanford Lifeflight	3	0.01%
IFT - Westmed Ambulance Service	8,852	15.04%
Grand Total	58,844	99.95%



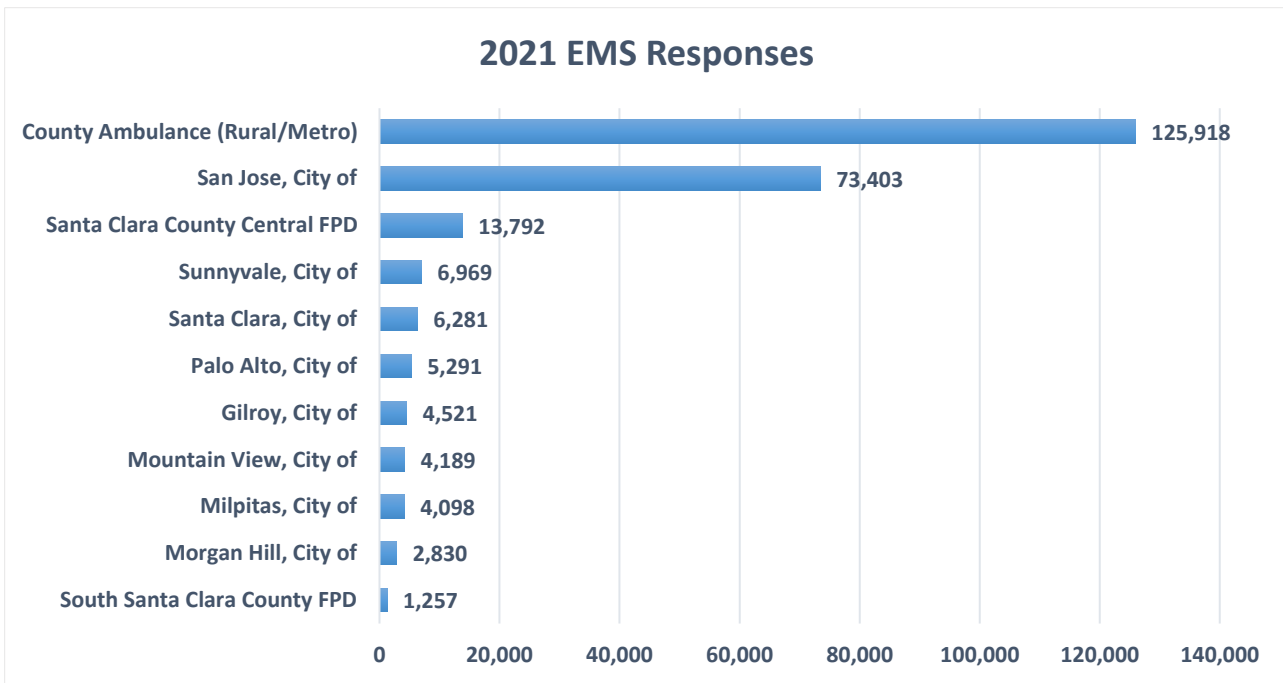
RESPONSE AND TRANSPORT PERFORMANCE

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 90.00%. The following chart measured month-to-month average Code 3 (lights and sirens) response performance for 2021.

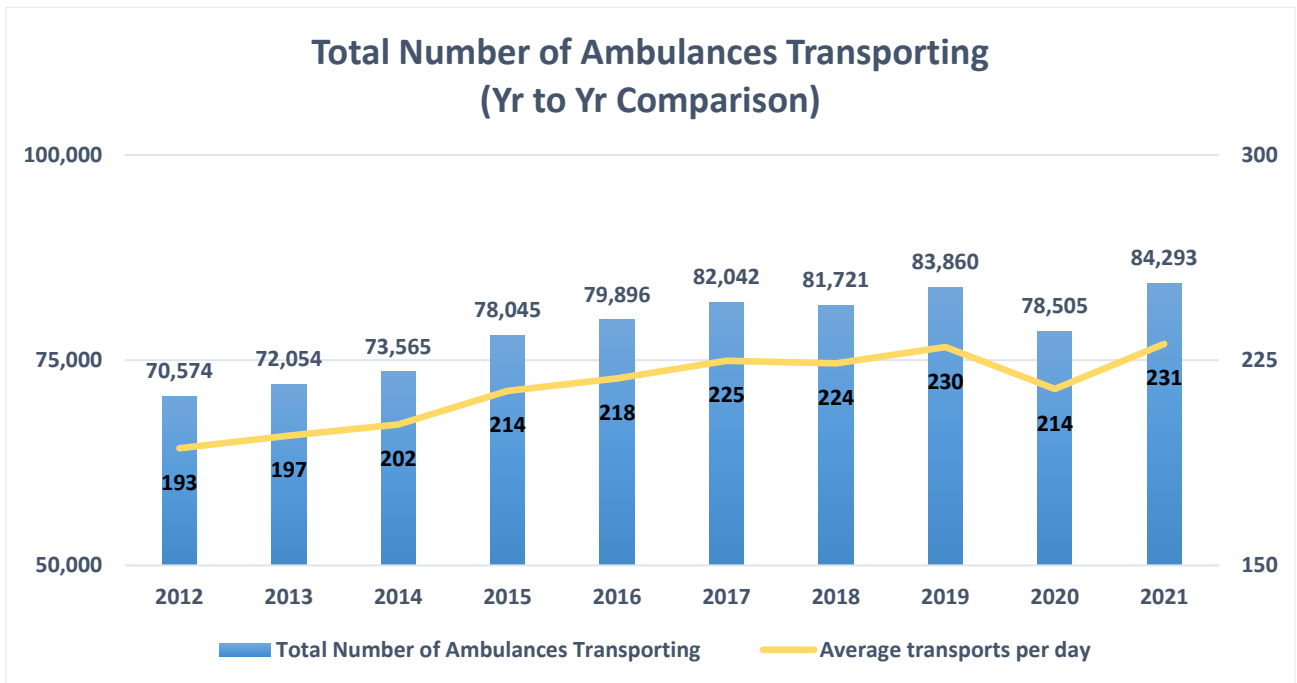
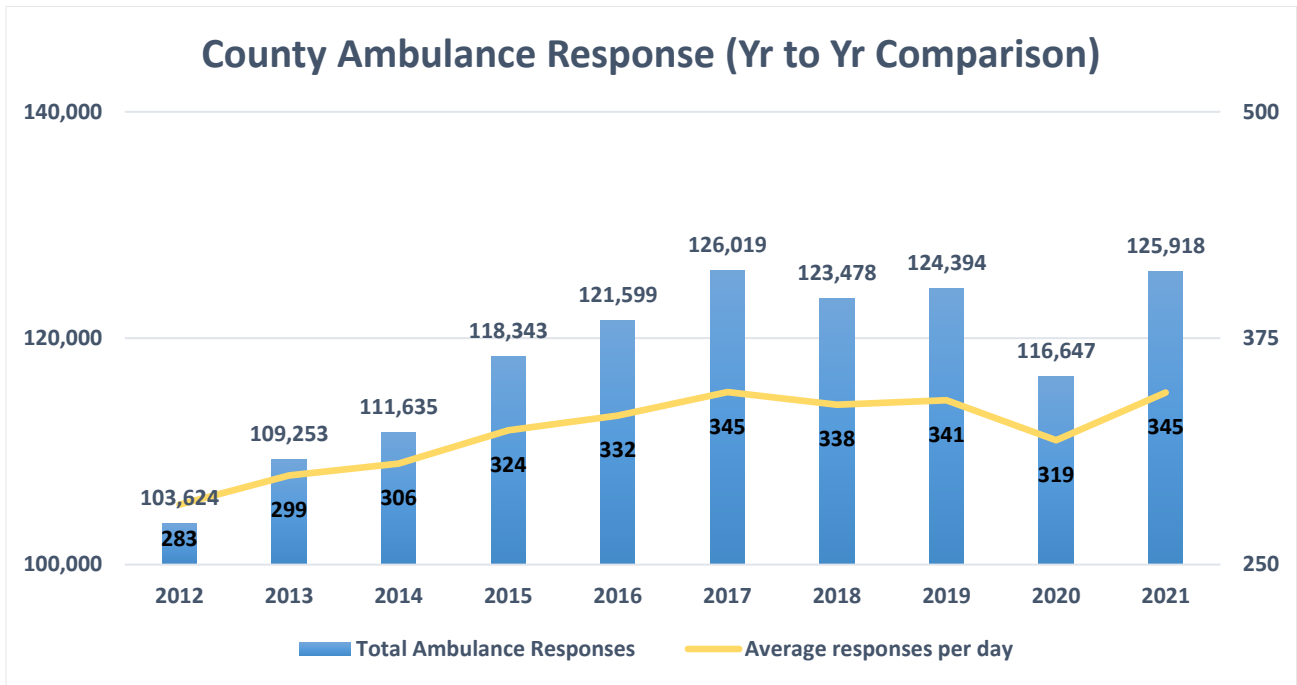


RESPONSE AND TRANSPORT PERFORMANCE

Another key performance indicator used to measure system performance is response and transport utilization. In 2021, the County Emergency Ambulance Provider responded to 125,918 calls for service. Those responses resulted in 84,293 ambulance transports to local hospitals, which averaged to 231 transports per day. From an average daily perspective (24 hour), the County Emergency Ambulance Provider responded to 345 calls for service. From a narrower frequency perspective, there were 14 responses per hour or one response every 4.5 minutes. In 2021, response and transport utilizations increased from the previous year by over 7%.



RESPONSE AND TRANSPORT PERFORMANCE



SANTA CLARA COUNTY PREHOSPITAL POLICY

The EMS System is continuously reviewing the Santa Clara County Prehospital Policy. Each year, selected EMS System policies are reviewed and then revised to ensure that they are maintained and updated, as necessary. The standard review includes presentations to EMS System committees and work groups, a public comment period, and then a train-the-trainer session for those policies that require all field EMTs and paramedics to be trained.

Policy #	Policy Name	Change
700-A01	Abdominal Emergencies	Updated
700-A02	Seizure	Updated
700-A04	Sepsis	Updated
700-A06	Burns	Updated
700-A07	Cardiac Arrest	Updated
700-A08	Chest Pain-Suspected Cardiac Ischemia	Updated
700-A09	Environmental Emergencies	Updated
700-A14	Tachycardia with Pulses	Updated
700-A15	Poisoning and Overdose	Updated
700-A16	Trauma Care	Updated
700-A19	Crush Injury Syndrome	Updated
700-A20	Behavioral Emergency - Combative	Updated
700-M10	Transcutaneous Pacing	Updated
700-M12	Continuous Positive Airway Pressure	Updated
700-P02	Pediatric Seizure	Updated
700-P07	Pediatric Cardiac Arrest	Updated
700-P09	Pediatric Environmental Emergencies	Updated
700-P14	Pediatric Tachycardia with Pulses	Updated
700-P15	Pediatric Poisoning and Overdose	Updated
700-S04	Routine Medical Care Adult	Updated
700-S05	Routine Medical Care Pediatric	Updated
700-X01	Airway Management (BLS Optional Scope)	Updated
302	Prehospital Care Asset - Minimum Inventory Requirements	Updated
315	EMT AED Service Provider Program Approval	New Policy
409	Stroke Critical Care System	Replaced 412
411	Stroke Care System Quality Improvement	Updated
417	Cardiac Care System Quality Improvement	Updated
620B	Interfacility Transfer - Ground Ambulance Trauma	Updated
620C	Interfacility Transfer - Ground Ambulance Stroke	Updated

ACHIEVEMENTS

Employee Excellence Award

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. Chris Duncan was selected as the Employee Excellence Award recipient for the month of April 2021.

The last 18 months have been very unpredictable with continual changing priorities and Chris has faced the challenge. He served as one of the Medical Health Branch Directors in the Emergency Operations Center at the onset of the COVID-19 pandemic. One of his duties included redesign of the mechanism for collecting data from hospitals daily. He helped spearhead the DICO (Designated Infections Control Officer) program. This program functioned as the channeling conduit from the Hospital Infectious Disease Departments back to the frontline EMS Healthcare Providers. This undertaking took a great amount of skill, patience, and tenacity to initiate; in addition, it was accomplished in record time. Chris was also the Duty Chief on the day of the horrific events that occurred at VTA in May 2021, his professionalism and leadership during this tragedy were exceptional.

Chris has worked diligently at improving quality care for all first responders.

Chris volunteers with a group called Angels on Stage, which is a nonprofit organization which enhances the lives of children and young adults with special needs through the medium of professional performing arts.

He is a tremendous asset to the EMS Agency and to Santa Clara County. Congratulations Chris!



SUMMARY

While this report captures a portion of the accomplishments and data from SCCEMS, there is so much to it. The substance of this Annual Report focuses on details and data from the EMS Agency's programs, projects, and performance. As a department and community, we continue to emerge from the pandemic and use the lessons learned to perform to the best of our abilities ensuring the safety and health of our members and the community we serve. It is my honor and privilege to serve as the EMS Director of Santa Clara County EMS Agency and work with such a dedicated group every day. We could not do all of this without our stakeholders who have continually had to face an ever-changing environment. Everyone's ability to remain flexible and adaptive in the moment for whatever comes their way has helped save so many lives - all while risking their own. We are indebted to each one of them, always and forever.

As we reflect on the accomplishments of this great group of people, we are focusing on what is yet to come for the Santa Clara County Emergency Medical Services Agency and the incredible community we serve.

ACKNOWLEDGMENTS

Santa Clara County EMS has dedicated staff who continue to support our community through their commitment. Thank you.

Jackie Lowther, Director

Dr. Kenneth Miller, Medical Director

Patricia Natividad, Senior Management Analyst

Ramona Aguilar, Executive Assistant I

John Blain, EMS Specialist

Michael Cabano, EMS Specialist

Michael Clark, EMS Specialist

Christopher Duncan, EMS Specialist

Daniel Franklin, EMS Specialist

Daniel Peck, EMS Specialist

Isaac Quevedo, EMS Specialist

John Sampson, EMS Specialist

David Sullivan, EMS Specialist

Jason Weed, EMS Specialist

Aaron Herrera, EMS Specialist

Richard Alameda, EMS Specialist

Lisa Vajgrt-Smith, Specialty Programs Nurse Coordinator

Ashanti Corey, Senior Epidemiologist

Manuel Elias, Office Specialist III

Evangelina Ortiz, Administrative Assistant

SYSTEM PARTNERS

Hospitals	
LGH	El Camino Hospital of Los Gatos
ECH	El Camino Hospital of Mountain View
GSH	Good Samaritan Hospital
STH	Kaiser Medical Center San Jose
KSC	Kaiser Medical Center Santa Clara
OCH	O'Connor Hospital
RSJ	Regional Medical Center of San Jose
SLH	Saint Louise Medical Center
VMC	Santa Clara Valley Medical Center
SUG	Stanford Health Care
PAV	Palo Alto Veterans Administration Hospital
Fire Departments	
SCU	CAL Fire Santa Clara Unit
GIL	Gilroy Fire Department
MLP	Milpitas Fire Department
MRG	Morgan Hill Fire Department
MTV	Mountain View Fire Department
MOF	NASA-Ames Fire Department
PAF	Palo Alto Fire Department
SJS	San Jose Fire Department
SCC	Santa Clara Fire Department
CNT	Santa Clara County Fire Department
SNY	Sunnyvale Fire Department of Public Safety
Ambulance Service Providers	
XSCSA	County Ambulance Provider (Rural Metro)
AMR	American Medical Response-Sutter
FLC	Falcon Critical Care Transport
NOR	NORCAL Ambulance
PRO	Pro Transport-1
ROY	Royal Ambulance
SVA	Silicon Valley Ambulance
UTD	United Ambulance Services
WMA	WestMed Ambulance
Air Ambulance Resources	
CAL	CALSTART
RCH	REACH Air Medical Services
LIF	Stanford Life Flight

ACRONYMS

Acronym	Definition
ACS	Acute Coronary Syndrome
AED	Automatic External Defibrillator
AHA	American Heart Association
ALOC	Altered Level of Consciousness
ALS	Advanced Life Support Transport
AMA	Against Medical Advice
APOT	Ambulance Patient Off-load Time
BLS	Basic Life Support Transport
CAD	Computer Aided Dispatch
CCT	Critical Care Transport
CEMSIS	California EMS Information System
COVID	Coronavirus Disease
CPR	Cardiopulmonary Resuscitation
D2D	Door to Device Time
D4	Board of Supervisor District 4
ECG	Electrocardiogram
ED	Emergency Department
EFS	EMS Field Supervisor
EMDC	EMS Duty Chief
EMS	Emergency Medical Services
EMSC	Emergency Medical Services for Children
EMT	Emergency Medical Technician
EOC	Emergency Operations Center
EPCR	Electronic Patient Care Record
Floor	Basic Inpatient unit of a Hospital
GFAST	Gaze, Face, Arms, Speech, Time
GI/GU	Gastrointestinal/Genitourinary
GSW	Gunshot Wound
ICH	Intracerebral Hemorrhage
ICU	Intensive Care Unit
KPI	Key Performance Indicators
LMA	Laryngeal Mask Airway
MCC	Motorcycle Crash
MHOAC	Medical-Health Operational Area Coordination
MICN	Mobile Intensive Care Nurse
MVA	Motor Vehicle Crash
MVDR	Medical Volunteer for Disaster Response
NEMSIS	National EMS Information System
OR	Operating Room
PCI	Percutaneous Intervention
PCR	Patient Care Record
POV	Personally Operated Vehicle
QA	Quality Assurance

ACRONYMS

Acronym	Definition
QI	Quality Improvement
ROSC	Return of Spontaneous Circulation
SAH	Subarachnoid Hemorrhage
SCA	Sudden Cardiac Arrest
SCCEMS	Santa Clara County Emergency Medical Services
STEMI	ST-Elevation Myocardial Infarction
TIA	Transient Ischemic Attack
TOR	Termination of Resuscitation
XSC	An acronym used for Santa Clara EMS Agency