



LOS ANGELES COUNTY EMS SYSTEM REPORT

DECEMBER 1, 2019

ISSUE 8

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SPECIAL POINTS OF INTEREST:

- EMS Mechanisms of Injury (pages 6 & 7)
- ED Disposition and Patient Type (page 11)
- Injury Severity Scores (pages 14-15)
- Comprehensive Stroke Centers (page 20)

Message from the Director and Medical Director

This is the last report of the decade!

We are pleased to present the 2019 Emergency Medical Services (EMS) System data report. This comprehensive report provides the data for our EMS system that demonstrates the breadth and quality of our pre-hospital care to the public. This report informs our stakeholders about the care from the prehospital setting to the emergency department. As one of the largest EMS systems in the United States we work collaboratively with our prehospital, emergency medicine and inpatient providers to integrate all settings of care for outcome optimization.

The EMS Agency and providers have done a lot of work related to data from 2010 - 19. The initiation of electronic data capturing in the field has been a tremendous effort for the providers, vendors, and the agency staff. The addition of electronic data capturing has allowed us to be more nimble and accurate with our data reporting and system monitoring. Though, not easy, it has created great opportunities for our system.

We have successfully implemented Provider Impression which empowers the EMS professionals to provide specific prehospital care based on our protocols. In response to this change from a chief complaint-based system of care to a Provider Impression based care, we are able to better define patient needs, provide more specific care, and evaluate that care in our quality improvement plan for the county.

Our Trauma system has been in effect for over 35 years and provides needed trauma care to over 22,000 trauma patients per year. This report outlines mechanism of injury and identifies falls as the leading mechanism of injury in our county. These data provide the basis of local and regional injury prevention programs.

Our ST elevation myocardial infarction (heart attack) centers continue to provide rapid treatment of heart attack and also serve as cardiac arrest centers where patients receive post resuscitation care. We have

worked collaboratively with public health to increase training in hands only cardiopulmonary resuscitation (CPR) which has led to an increase in bystander CPR rates 12% to 31%. We have also seen a continued increase in our return of spontaneous circulation (ROSC) rates from 14% to 45% in 2018. What an achievement for all our EMS providers and our system.

In 2017, 2018 and 2019 the EMS Agency and fire department partners received the American Heart Association Mission Lifeline GOLD award for data submission. This is a huge achievement for our system and offers a vision for our future collaborations that will improve patient care and outcome.

In 2018 we implemented a two-tier stroke system that designates both Primary and Comprehensive stroke centers. This expansion of comprehensive services allows for patients to be identified by paramedics that have severe strokes and then transported to the Comprehensive stroke center which has the ability to rapidly treat the stroke by emergent removal of offending blood clots in the circulation of the brain. This change in our system has resulted in greater access of this important therapy for patients as well as improved outcomes.

In 2019, our Stroke System received an award from the Los Angeles County Productivity and Quality Commission, recognizing

Innovative Ideas. In addition, our data is being used to critically analyze our EMS system performance. On the national level, data has helped us to set the standards for other systems.

Throughout this report, the data show that we are meeting basic standards for care, particularly in time performance, such as field time, time to EKG, to specialty center and to critical intervention. The next decade, 2020, we will be pushing to not just meet performance standards but to exceed them when appropriate and in the best interest of the patient.

Many thanks to our EMS Agency data staff and the leadership and talent of Richard Tadeo, Assistant Director, for not only their work on this report but for the daily efforts in managing and ensure the data quality for the system.



Cathy Chidester
Director



Dr. Marianne Gausche-Hill
Medical Director

2019 System Demographics

71 9-1-1 Receiving Hospitals

- 38 EDAP (Emergency Department Approved for Pediatrics)
- 10 Pediatric Medical Centers
- 7 Pediatric Trauma Centers
- 15 Trauma Centers
- 21 Paramedic Base Hospitals
- 36 STEMI Receiving Centers
- 18 Comprehensive Stroke Centers
- 34 Primary Stroke Centers
- 54 Perinatal Centers
- 45 Hospitals with Neonatal Intensive Care Unit
- 8 SART (Sexual Assault Response Team)
- 13 Disaster Resource Centers

EMS Provider Agencies

- 31 Public Safety EMS Provider Agencies
- 34 Licensed Basic Life Support Ambulance Operators
- 17 Licensed Advanced Life Support Ambulance Operators
- 20 Licensed Critical Care Transport Ambulance Operators
- 6 Licensed Ambulette Operators

EMS Practitioners

- 4,512 Accredited Paramedics
- 8,123 Certified EMTs by LA Co EMS Agency
- 883 Certified Mobile Intensive Care Nurses

9-1-1 EMS Providers by Service Planning Area (SPA)

SPA 1 - Antelope Valley (1 Provider)

Los Angeles County Fire Department
Assessment Engines = 8
Paramedic Engines = 2
Rescue Squads = 7

SPA 2 - San Fernando Valley (3 Providers)

Burbank Fire Department
Assessment Engines/Trucks = 8
Rescue Ambulances = 4
Los Angeles Fire Department
Assessment Engines/Trucks = 33
Rescue Ambulances = 32
Los Angeles County Fire Department
Assessment Engines = 3
Rescue Squad = 7

SPA 3 - San Gabriel Valley (13 Providers)

Alhambra Fire Department
Assessment Engines/Trucks = 5
Rescue Ambulances = 2
Arcadia Fire Department
Rescue Ambulances = 3
La Habra Heights Fire Department
Paramedic Engine = 1
La Verne Fire Department
Assessment Engines/Trucks = 3
Rescue Ambulances = 2
Los Angeles County Fire Department
Assessment Engines/Trucks = 7
Paramedic Engine = 1
Rescue Squads = 19
Monrovia Fire Department
Assessment Engines = 2
Rescue Squads = 3
Monterey Park Fire Department
Assessment Engines = 2
Rescue Ambulances = 3
Pasadena Fire Department
Assessment Engines/Trucks = 16
Rescue Ambulances = 11
San Gabriel Fire Department
Assessment Engines = 2
Rescue Ambulances = 3
San Marino Fire Department
Assessment Engines = 2
Rescue Ambulance = 1
Sierra Madre Fire Department
Assessment Engines = 1
Rescue Ambulance = 2
South Pasadena Fire Department
Assessment Engine = 1
Rescue Ambulances = 2
West Covina Fire Department
Assessment Engines/Trucks = 6
Rescue Ambulances = 3

SPA 4 - Metro (4 Providers)

Glendale Fire Department
Assessment Trucks = 3
Paramedic Engines = 13
Rescue Ambulances = 2
Los Angeles Fire Department
Assessment Engines/Trucks = 24
Rescue Ambulances = 29
Los Angeles County Fire Department
Rescue Squads = 2

SPA 4 (continued)

Vernon Fire Department
Assessment Engines = 2
Rescue Ambulances = 2

SPA 5 - West (5 Providers)

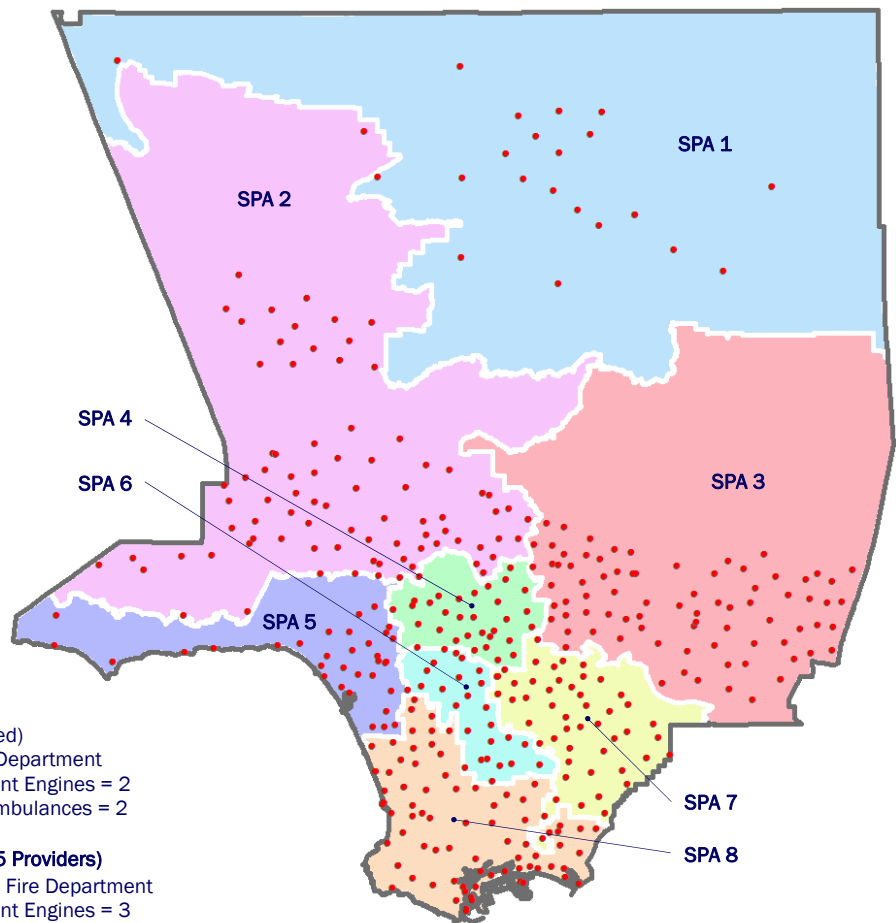
Beverly Hills Fire Department
Assessment Engines = 3
Rescue Ambulances = 5
Culver City Fire Department
Assessment Engines = 2
Paramedic Engine = 1
Rescue Ambulances = 3
Los Angeles Fire Department
Assessment Engines/Trucks = 9
Rescue Ambulances = 11
Los Angeles County Fire Department
Assessment Engines = 3
Paramedic Engine = 1
Rescue Squads = 10
Santa Monica Fire Department
Paramedic Engines = 6
Rescue Ambulances = 2

SPA 6 - South (3 Providers)

Compton Fire Department
Rescue Ambulances = 3
Los Angeles Fire Department
Assessment Engines/Trucks = 11
Rescue Ambulances = 15
Los Angeles County Fire Department
Assessment Engine = 1
Rescue Squads = 3

SPA 7 - East (4 Providers)

Downey Fire Department
Paramedic Engines = 4



SPA 7 (continued)

Montebello Fire Department
Assessment Truck = 1
Paramedic Engines = 3
Los Angeles County Fire Department
Assessment Engines = 4
Rescue Squads = 12
Santa Fe Springs Fire Department
Assessment Engines = 3
Rescue Squad = 1

SPA 8 - South Bay (7 Providers)

El Segundo Fire Department
Assessment Engines/Truck = 3
Rescue Ambulances = 2
Manhattan Beach Fire Department
Paramedic Engines = 2
Rescue Ambulances = 2
Long Beach Fire Department
Assessment Engines = 11
Rescue Ambulances = 9
Los Angeles Fire Department
Assessment Engines/Trucks = 8
Rescue Ambulances = 8
Los Angeles County Fire Department
Assessment Engines = 8
Paramedic Engines = 3
Rescue Squads = 18

SPA 8 (continued)

Redondo Beach Fire Dept.
Assessment Engines = 5
Rescue Ambulances = 2
Torrance Fire Department
Assessment Engines = 6
Paramedic Engine = 1
Rescue Ambulances = 2
Rescue Squads = 2

ALL SPAs

LA County Sheriff's Dept.
Rescue Squads = 4

Helicopter EMS

Los Angeles Fire Department
LA County Fire Department
LA County Sheriff's Dept.

Rescue Boats

Long Beach Fire Department
Los Angeles Fire Department
LA County Lifeguards

9-1-1 Receiving Hospitals by Service Planning Area (SPA)

SPA 1 - Antelope Valley

2 Hospitals

Antelope Valley Hospital
Palmdale Regional Medical Center

SPA 2 - San Fernando Valley

17 Hospitals

Adventist Health—Glendale
Dignity Health—Glendale Memorial Hospital
Dignity Health—Northridge Hospital Medical Center
Encino Hospital Medical Center
Henry Mayo Newhall Medical Center
Kaiser Foundation Hospital—Panorama City
Kaiser Foundation Hospital—Woodland Hills
Mission Community Hospital
Olive View—UCLA Medical Center
Pacifica Hospital of the Valley
Providence Holy Cross Medical Center
Providence St. Joseph Medical Center
Providence Tarzana Medical Center
Sherman Oaks Hospital
USC Verdugo Hills Hospital
Valley Presbyterian Hospital
West Hills Hospital & Medical Center

SPA 3 - San Gabriel Valley

13 Hospitals

Alhambra Hospital Medical Center
Emanate Health—Foothill Presbyterian Hospital
Emanate Health—Intercommunity
Emanate Health—Queen of the Valley
Garfield Medical Center
Greater El Monte Community Hospital
Huntington Hospital
Kaiser Foundation Hospital—Baldwin Park
Methodist Hospital of Southern California
Monterey Park Hospital
Pomona Valley Hospital Medical Center
San Dimas Community Hospital
San Gabriel Valley Medical Center

SPA 4 - Metro

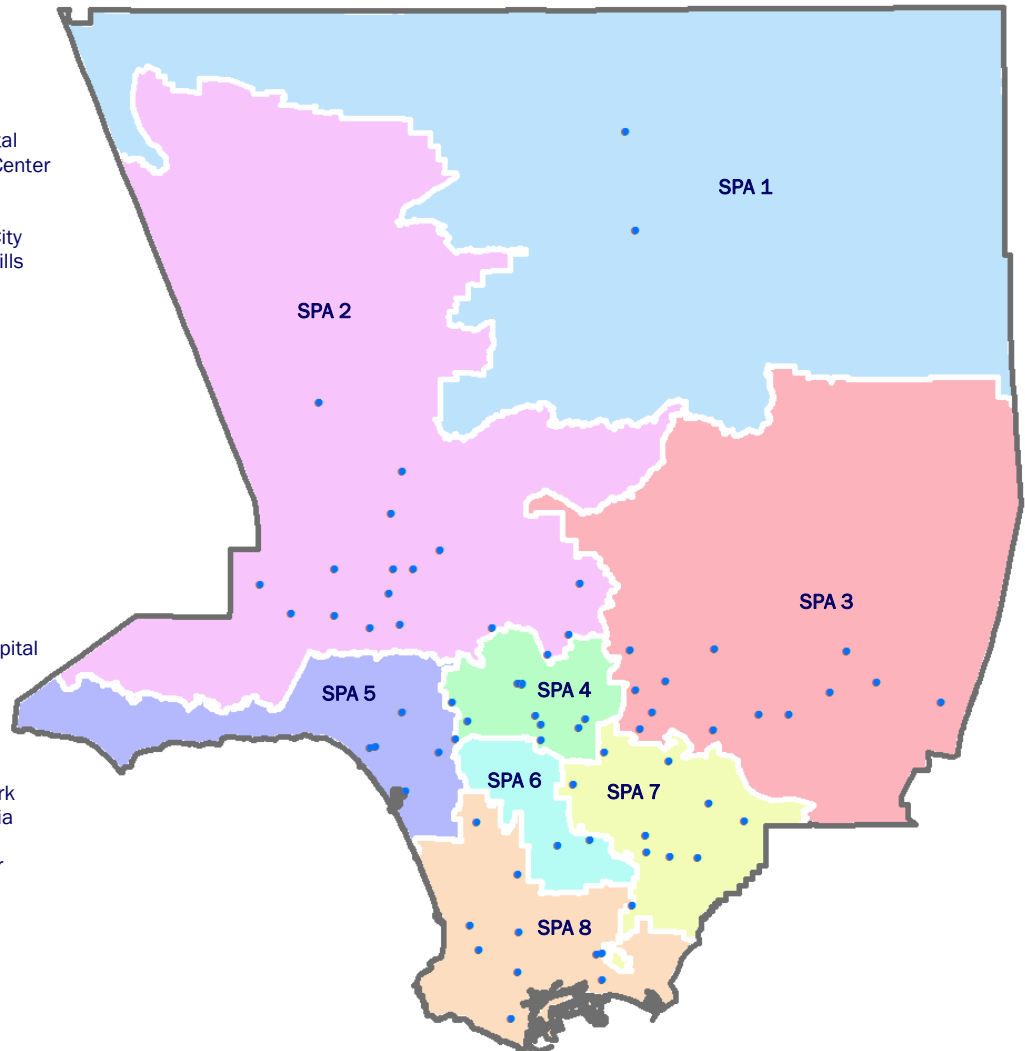
12 Hospitals

Adventist Health—White Memorial
Cedars Sinai Medical Center
Children's Hospital of Los Angeles
Community Hospital of Huntington Park
Dignity Health—California Hospital Medical Center
East Los Angeles Doctors Hospital
Good Samaritan Hospital
Hollywood Presbyterian Medical Center
Kaiser Foundation Hospital—Los Angeles
LAC+USC Medical Center
Olympia Medical Center
St. Vincent Medical Center

SPA 5 - West

6 Hospitals

Cedar Sinai Marina Del Rey Hospital
Kaiser Foundation Hospital—West Los Angeles
Providence St. John's Health Center
Ronald Reagan UCLA Medical Center
Southern California Hospital of Culver City
Santa Monica—UCLA Medical Center



SPA 6 - South

2 Hospitals

Martin Luther King Jr. Community Hospital
St. Francis Medical Center

SPA 7 - East

8 Hospitals

Beverly Hospital
Coast Plaza Doctors Hospital
Kaiser Foundation Hospital—Downey
Lakewood Regional Medical Center
Los Angeles Community Hospital of Norwalk
PIH Health Hospital Whittier
PIH Health Hospital Downey
Whittier Hospital Medical Center

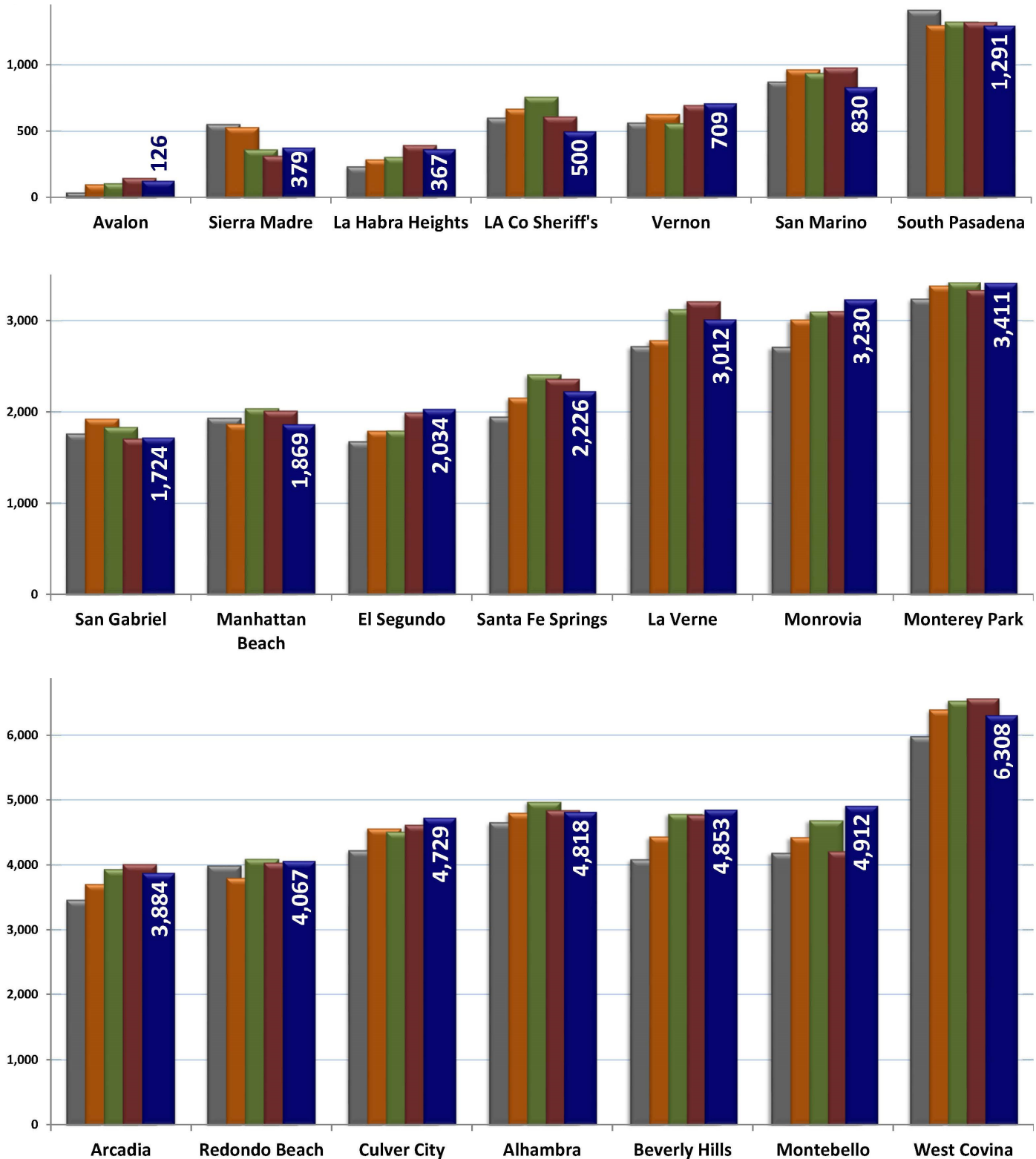
SPA 8 - South Bay

11 Hospitals

Catalina Island Medical Center
Cintinela Hospital Medical Center
College Medical Center
Dignity Health St. Mary Medical Center
Kaiser Foundation Hospital—South Bay
Memorial Hospital of Gardena
Harbor-UCLA Medical Center
MemorialCare Long Beach Medical Center
Providence Little Company of Mary—Torrance
Providence Little Company of Mary—San Pedro
Torrance Memorial Medical Center

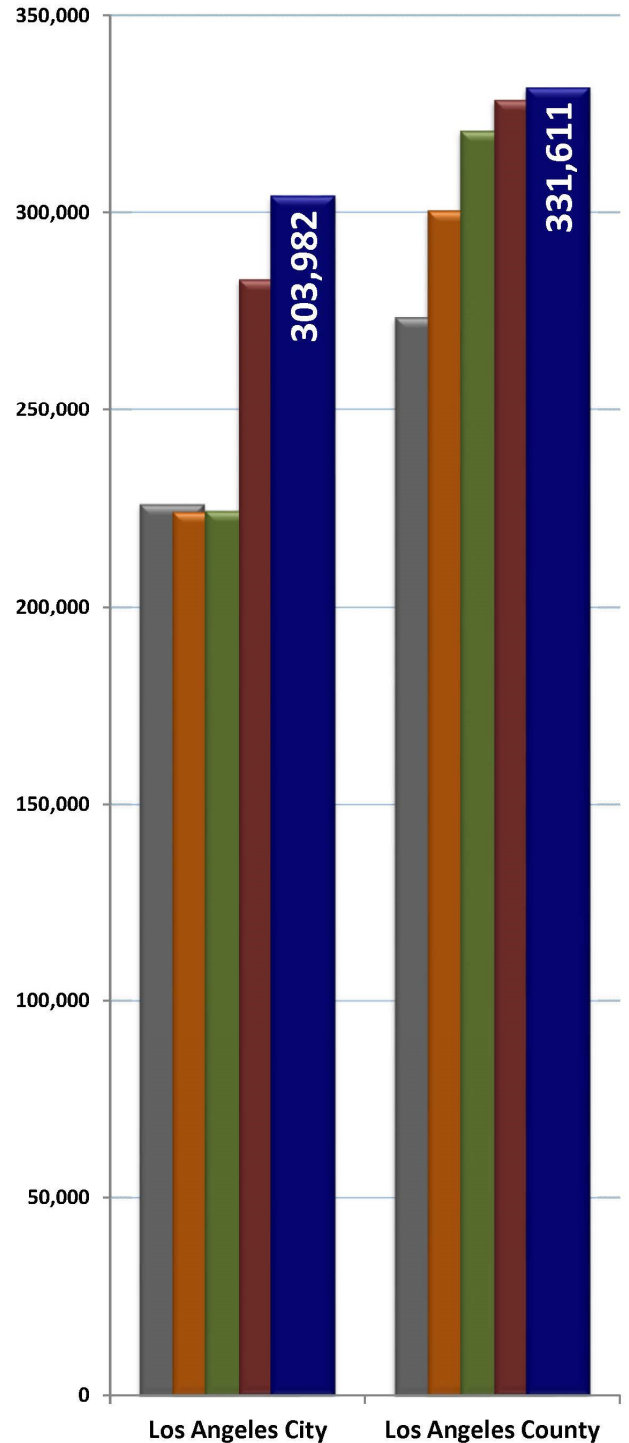
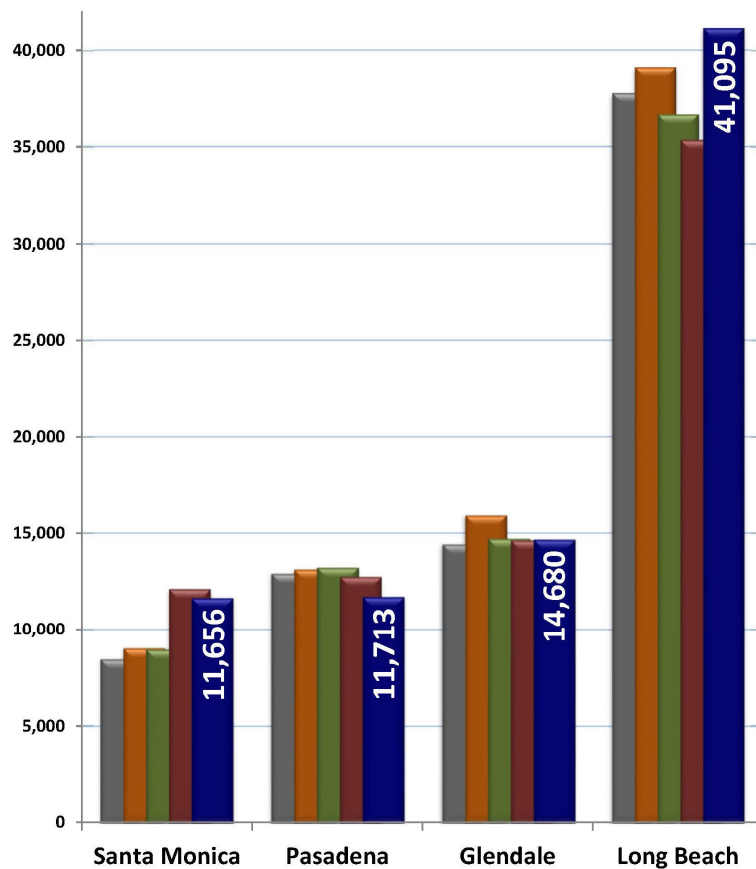
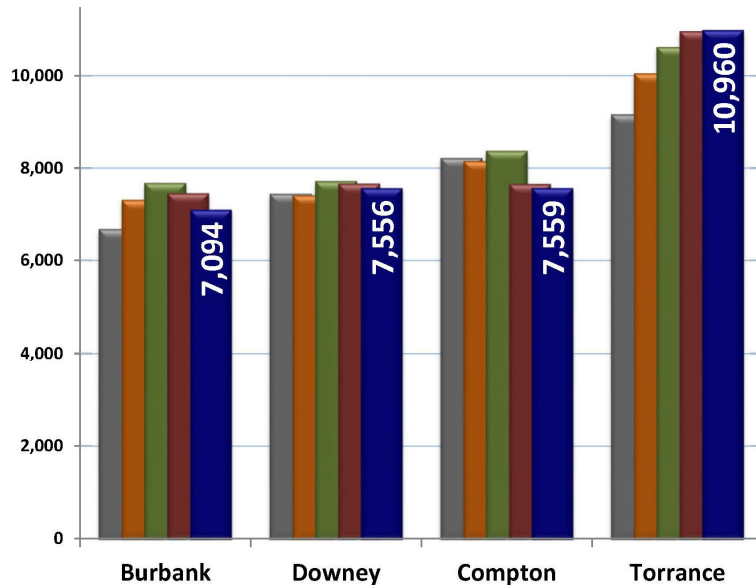
EMS Responses by 9-1-1 Jurisdictional Provider Agency

2014 2015 2016 2017 2018



EMS Responses by 9-1-1 Jurisdictional Provider Agency

■ 2014 ■ 2015 ■ 2016 ■ 2017 ■ 2018



ADULT PROVIDER IMPRESSIONS (TOP 10)

	2018	Percent
Traumatic Injury	127,585	16%
Behavioral / Psychiatric Crisis	59,823	7%
Weakness - General	57,031	7%
No Medical Complaint	55,124	7%
Body Pain - Non-Traumatic	40,734	5%
Abdominal Pain/Problems	37,592	5%
Altered Level of Consciousness	31,245	4%
Syncope / Near Syncope	26,312	3%
Seizure - Postictal	23,159	3%
Nausea / Vomiting	22,137	3%
TOTAL - Top 10 Provider Impressions	480,742	59%
TOTAL - Adult EMS Responses	819,320	

ADULT TRANSPORTS (TOP 10)

	2018	Percent
Traumatic Injury	83,518	16%
Weakness - General	44,777	9%
Behavioral / Psychiatric Crisis	41,367	8%
Altered Level of Consciousness	34,109	6%
Abdominal Pain / Problems	33,801	6%
Body Pain - Non-Traumatic	33,547	6%
Chest Pain - Suspected Cardiac	20,316	4%
Syncope / Near Syncope	19,833	4%
Respiratory Distress - Other	16,386	3%
Seizure - Postictal	16,355	3%
TOTAL - Top 10 Adult EMS Transports	344,009	65%
TOTAL - Adult EMS Transports	526,568	

ADULT MECHANISMS OF INJURY (TOP 10)

	2018	Percent
Fall	45,953	36%
Motor Vehicular Accident	36,832	29%
Assault	16,536	13%
Pedestrian/Bicycle struck by Motor Vehicle	8,882	7%
Motorcycle / Moped Accident	2,376	2%
Sports / Recreational	2,163	2%
Gunshot Wound	1,565	1%
Stabbing	1,484	1%
Work Related	1,012	0.8%
Accidental Self-Inflicted Injury	1,000	0.8%
TOTAL - Top 10 Adult Mechanisms of Injury	117,803	92%
TOTAL - Adult Mechanisms of Injury	127,585	

PEDIATRIC PROVIDER IMPRESSIONS (TOP 10)	2018	Percent
Traumatic Injury	8,559	23%
No Medical Complaint	5,377	15%
Seizure - Postictal	4,533	12%
Behavioral / Psychiatric Crisis	1,860	5%
Cold / Flu	1,690	5%
Fever	1,531	4%
Respiratory Distress - Other	1,038	3%
Respiratory Distress - Bronchospasm	1,026	3%
Syncope / Near Syncope	989	3%
Nausea / Vomiting	913	2%
TOTAL - Top 10 Pediatric EMS Responses	27,516	75%
TOTAL - Pediatric EMS Responses	36,919	

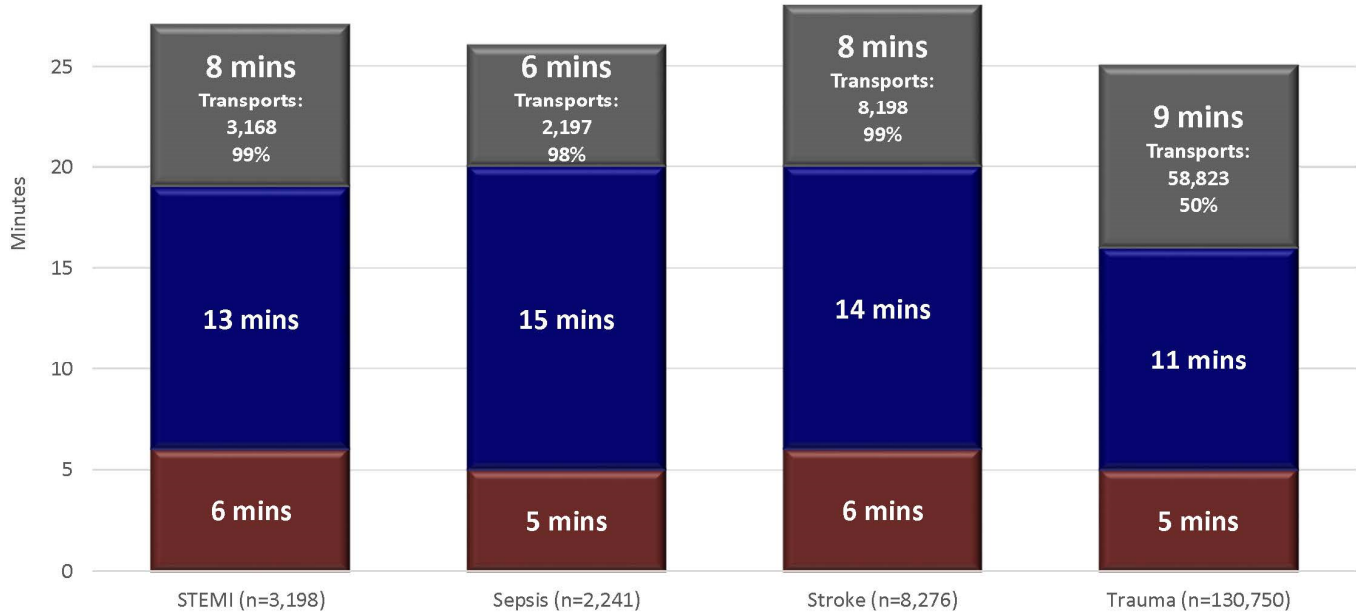
PEDIATRIC TRANSPORTS (TOP 10)	2018	Percent
Traumatic Injury	5,328	22%
Seizure - Postictal	4,234	18%
Behavioral / Psychiatric Crisis	1,270	5%
Fever	1,074	4%
Cold / Flu	982	4%
Respiratory Distress - Bronchospasm	855	4%
Respiratory Distress - Other	848	4%
Syncope / Near Syncope	784	3%
Allergic Reaction	641	3%
Seizure - Active	596	2%
TOTAL - Top 10 Pediatric EMS Transports	16,612	69%
TOTAL - Pediatric EMS Transports	24,031	

PEDIATRIC MECHANISMS OF INJURY (TOP 10)	2018	Percent
Fall	3,278	38%
Motor Vehicular Accident	2,564	30%
Sports / Recreational	789	9%
Pedestrian/Bicycle struck by Motor Vehicle	728	9%
Assault	475	6%
Animal Bite	328	4%
Accidental Self-Inflicted Injury	133	2%
Thermal Burn	93	1%
Intentional Self-Inflicted Injury	44	0.5%
Crush Injury	34	0.4%
TOTAL - Top 10 Pediatric Mechanisms of Injury	8,466	99%
TOTAL - Pediatric Mechanisms of Injury	8,559	

EMS Times (Median)

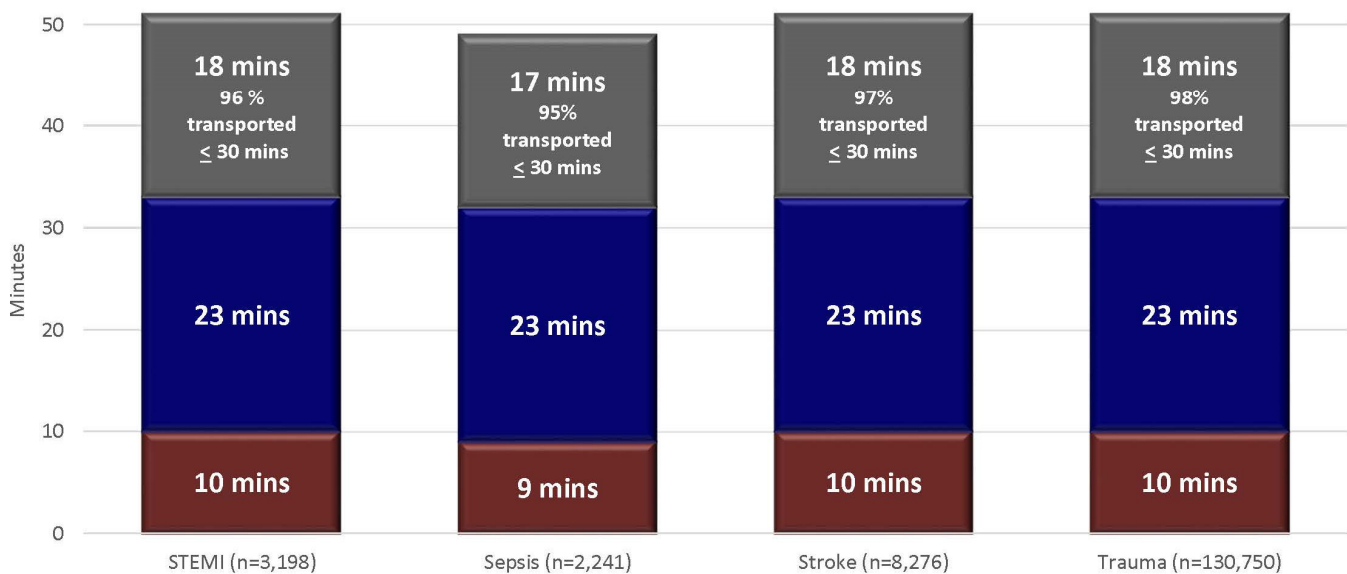
LA County EMS Transport Time to a Specialty Care Center (STEMI, Stroke, Trauma Centers): ≤ 30 minutes

- Transport Time (Time Left Scene to Time Arrived at Hospital)
- Scene Time (Time Arrived at Scene to Time Left Scene)
- Response Time (Time of Dispatch to Time Arrived at Scene)



EMS Times (90th Percentile)

- Transport Time (Time Left Scene to Time Arrived at Hospital)
- Scene Time (Time Arrived at Scene to Time Left Scene)
- Response Time (Time of Dispatch to Time Arrived at Scene)



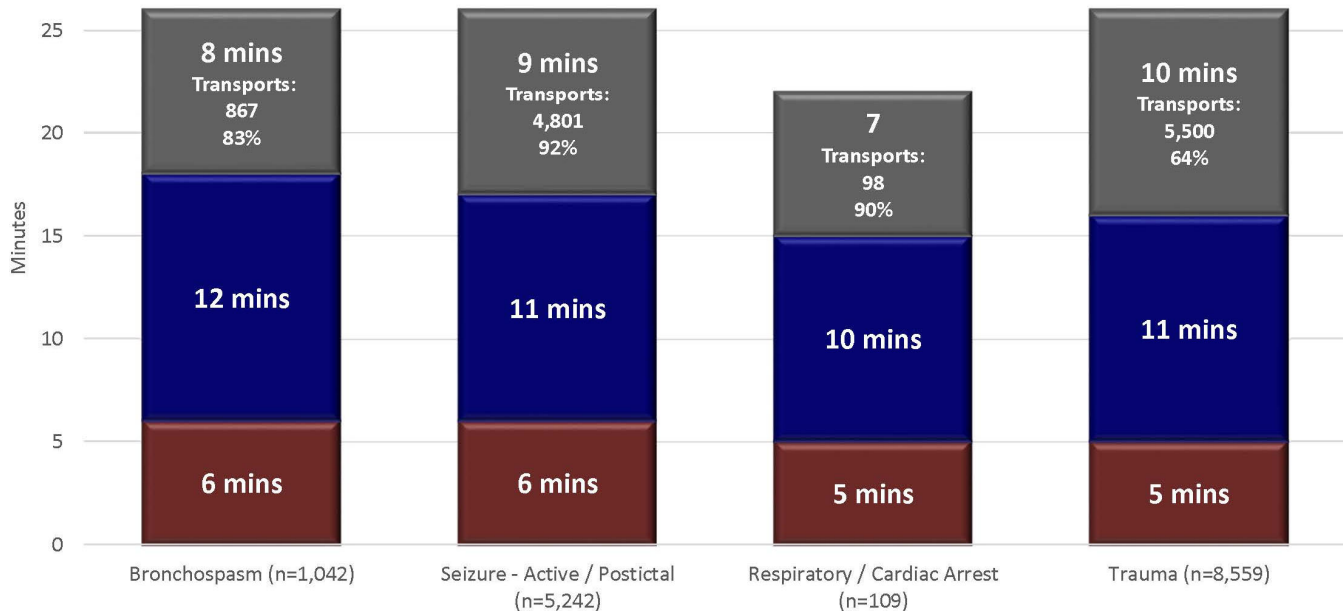
EMS Times: Pediatric (Median)

LA County EMS Transport Time to a Specialty Care Center (Pediatric Medical/Trauma Centers): ≤ 30 minutes

■ Transport Time (Time Left Scene to Time Arrived at Hospital)

■ Scene Time (Time Arrived at Scene to Time Left Scene)

■ Response Time (Time of Dispatch to Time Arrived at Scene)

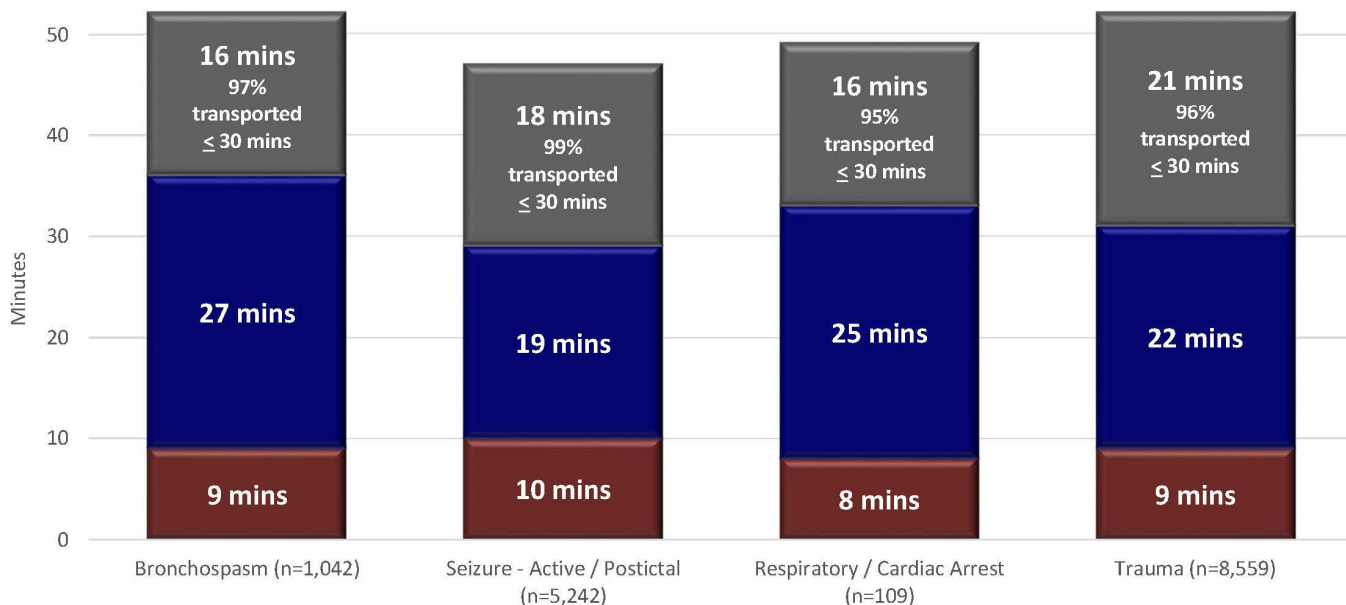


EMS Times: Pediatric (90th Percentile)

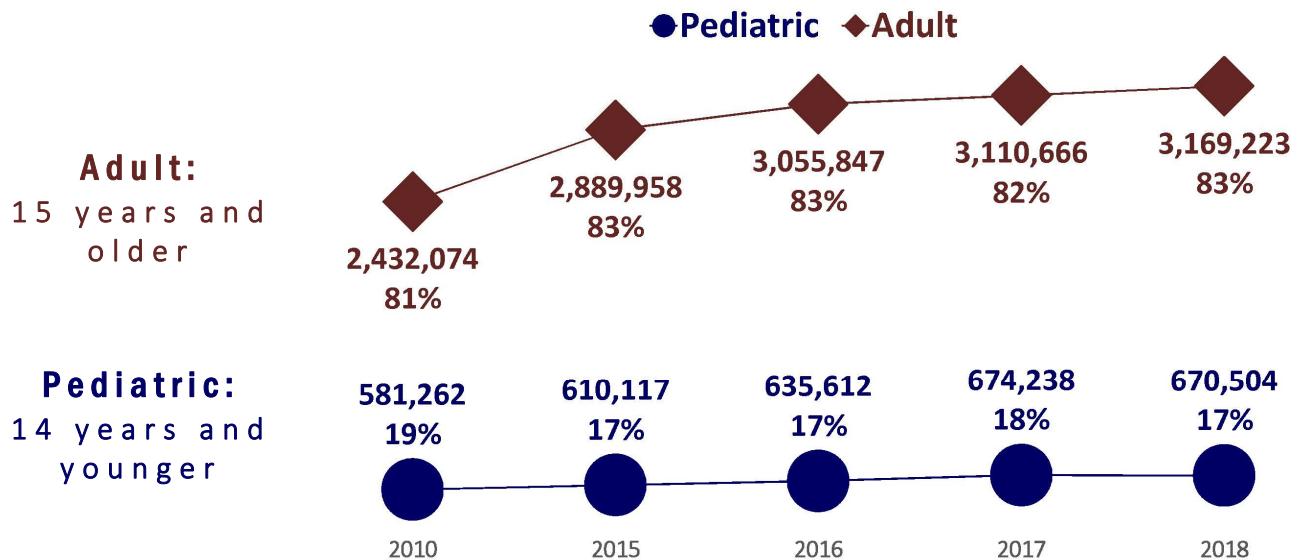
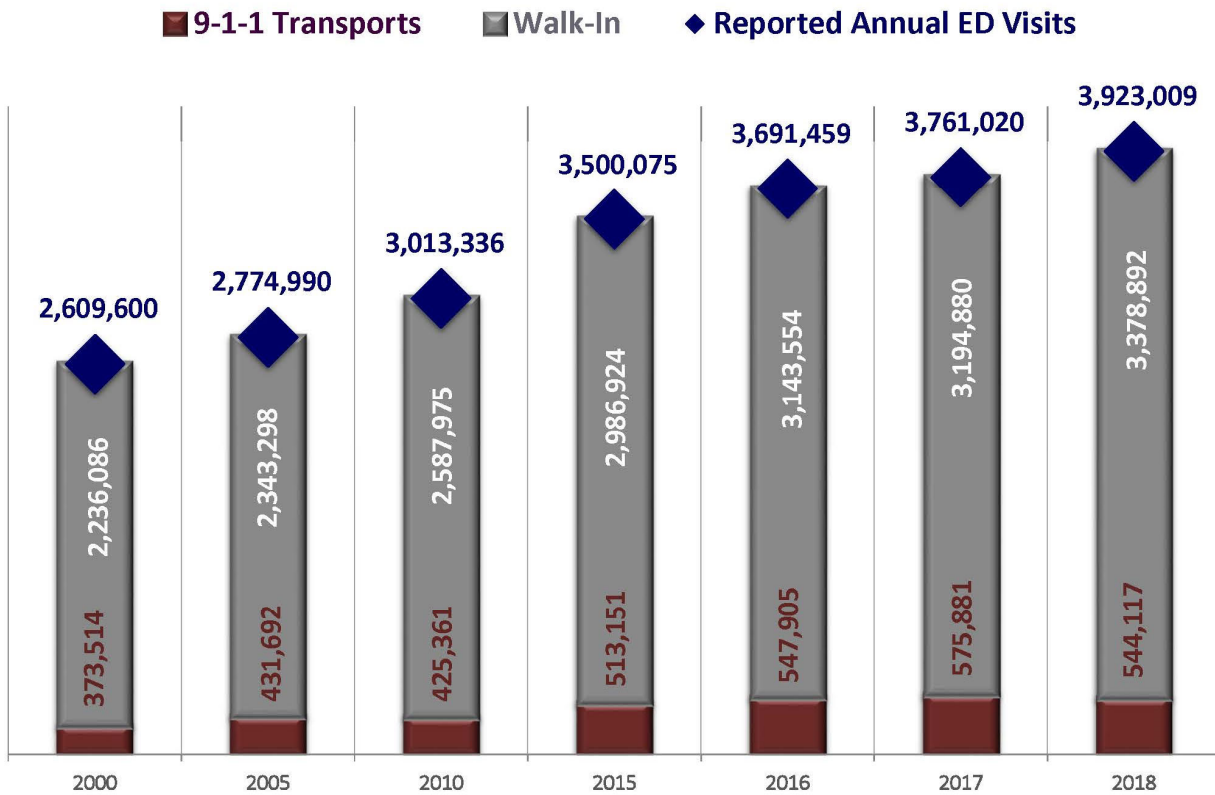
■ Transport Time (Time Left Scene to Time Arrived at Hospital)

■ Scene Time (Time Arrived at Scene to Time Left Scene)

■ Response Time (Time of Dispatch to Time Arrived at Scene)

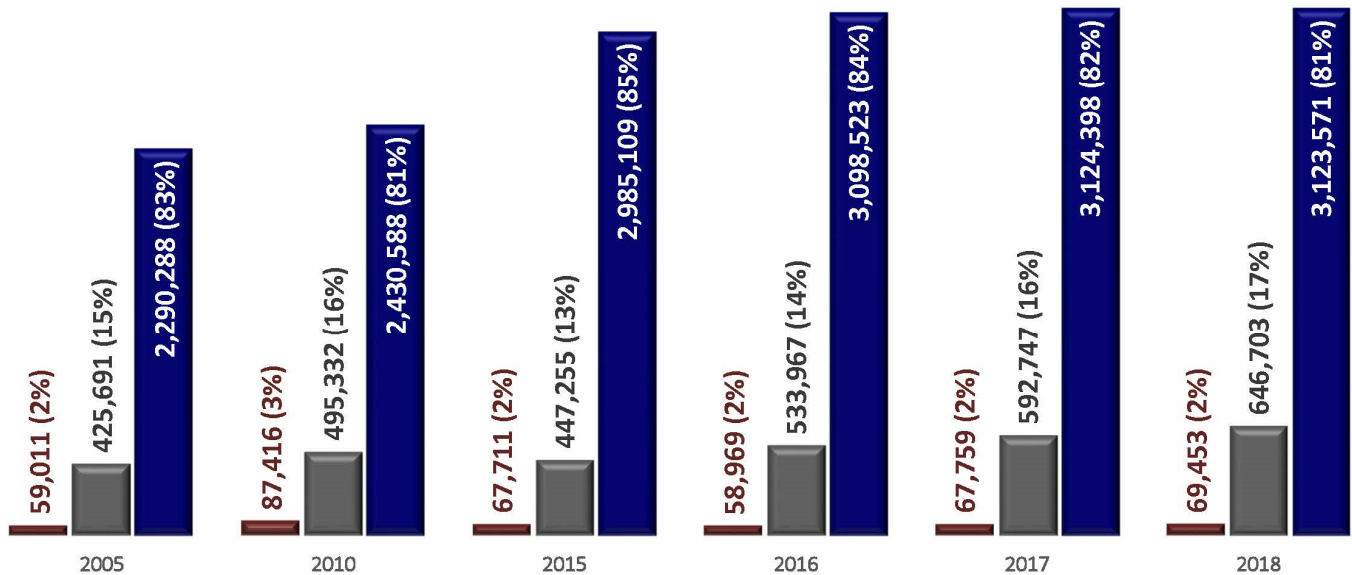


Emergency Department Volume



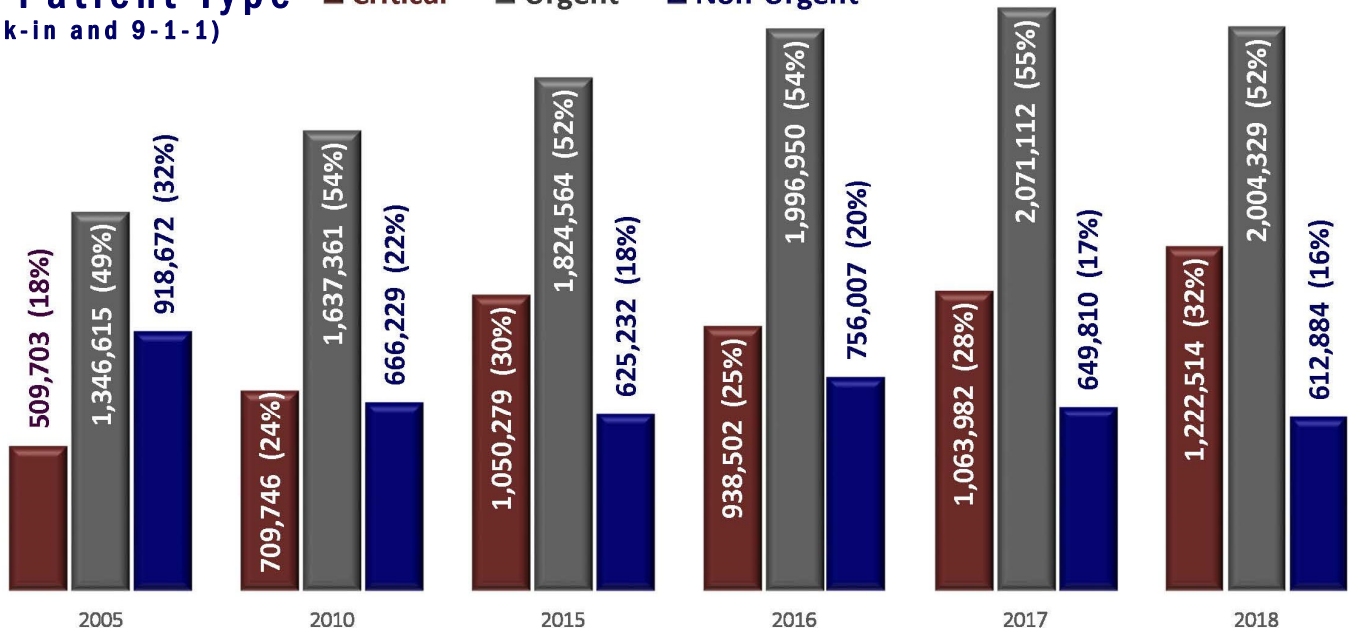
ED Patient Disposition (walk-in and 9-1-1)

- Admitted to Intensive Care Unit
- Admitted to Non-Intensive Care Unit Area
- Discharged from ED/24 hr Observation



ED Patient Type (walk-in and 9-1-1)

- Critical
- Urgent
- Non-Urgent



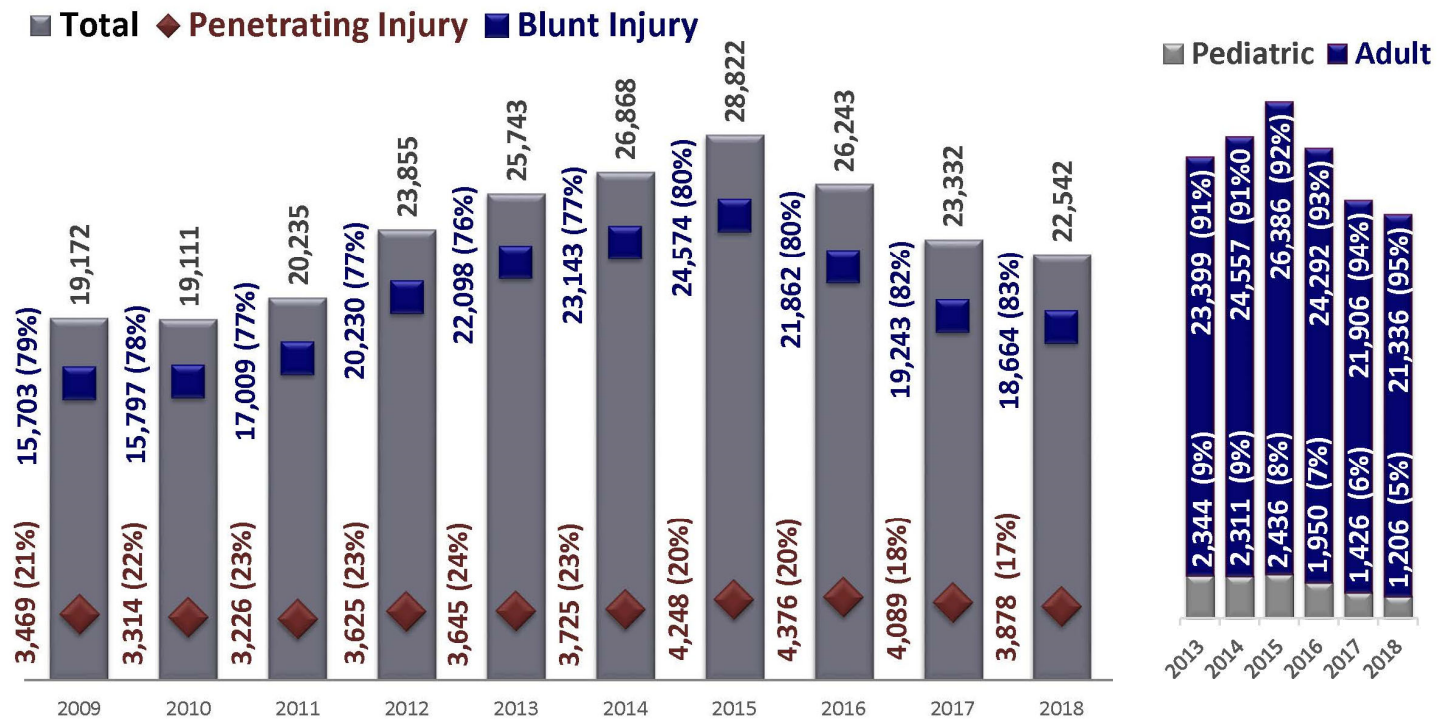
Critical—a patient presents an acute injury or illness that could result in permanent damage, injury or death (head injury, vehicular accident, shooting). Applicable Current Procedural Terminology (CPT) codes for this level of service would be 99284 (detailed history, detailed physical, and medical decision making of moderate complexity) or 99285 (medical decision making of high complexity) or 99291 (critical care, evaluation and management).

Urgent—a patient with an acute injury or illness, loss of life or limb is not an immediate threat to their well-being, or a patient who needs timely evaluation (fracture or laceration). Applicable CPT codes for this level of service would be 99282 (medical decision making of low complexity) or 99283 (medical decision making of moderate complexity).

Non-Urgent—a patient with a non-emergent injury, illness or condition; sometimes chronic; that can be treated in a non-emergency setting and not necessarily on the same day they are seen in the ED (pregnancy tests, toothache, minor cold, ingrown toenail). An applicable CPT code for this level of service would be 99281 (straight forward medical decision making).

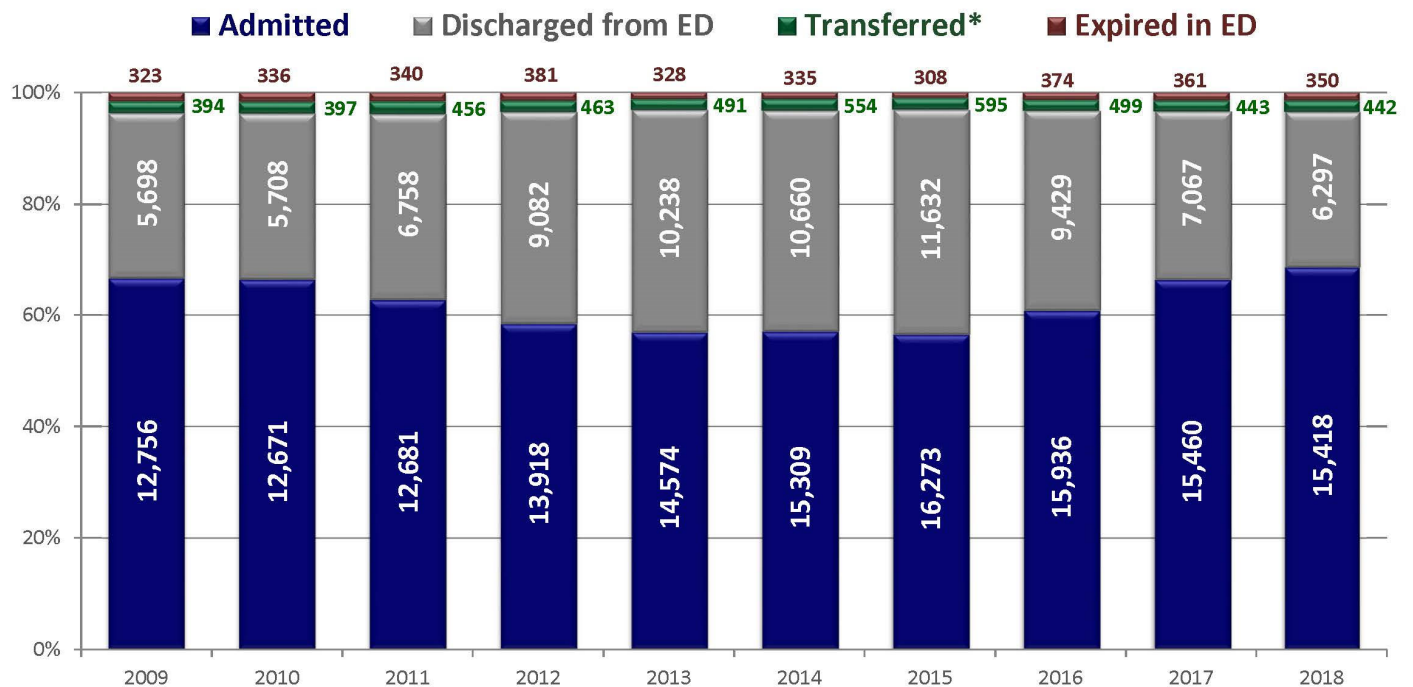


Trauma Center Volume



2012: LA County adopted the Centers for Disease Control and Prevention Guidelines for Field Triage of Injured Patients
 2015 : Trauma Center Registry inclusion criteria was reduced.

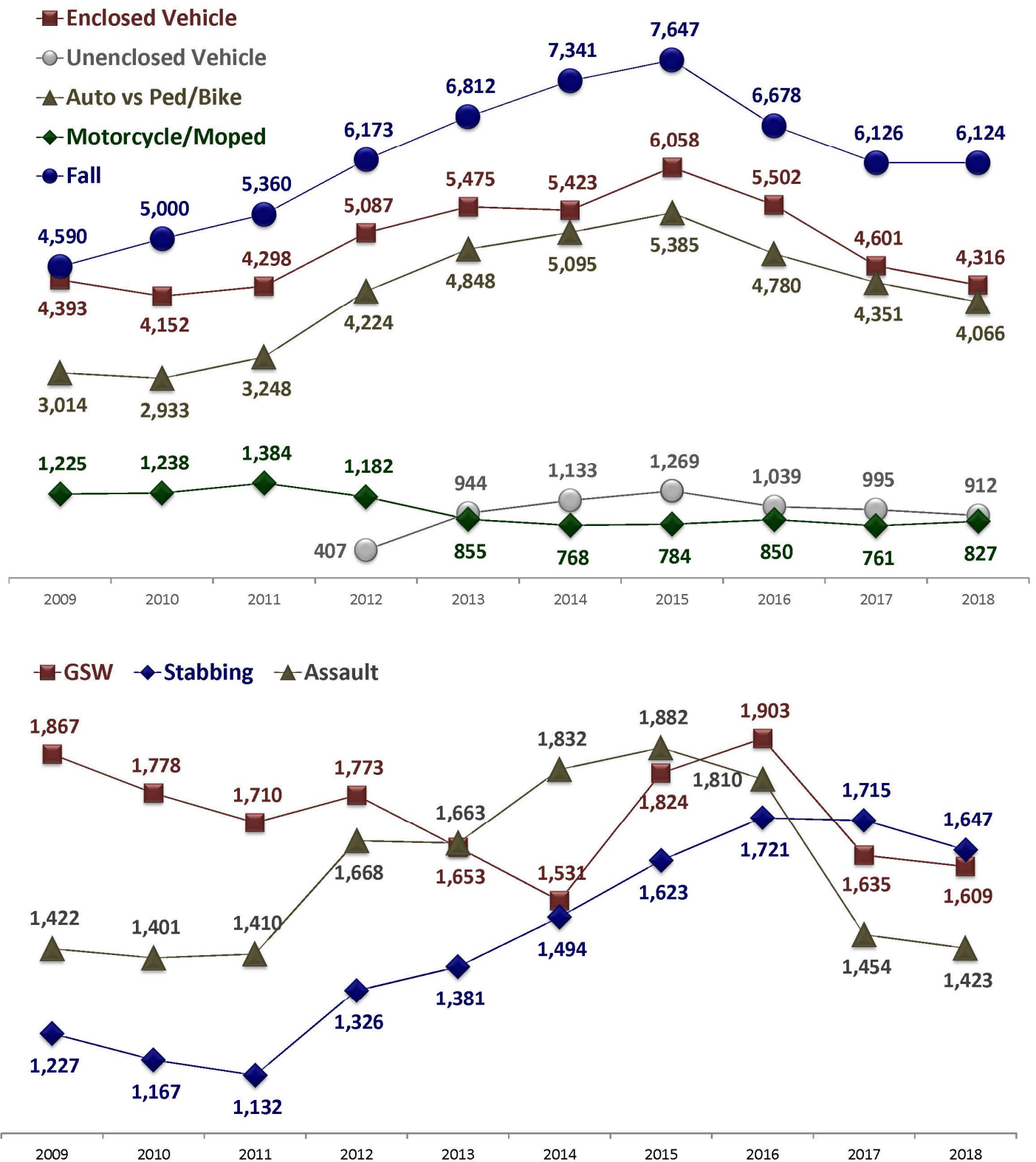
Patient Disposition of Trauma Center Patients



* Transferred to another health facility



Mechanism of Injury: Patients Transported to Trauma Centers



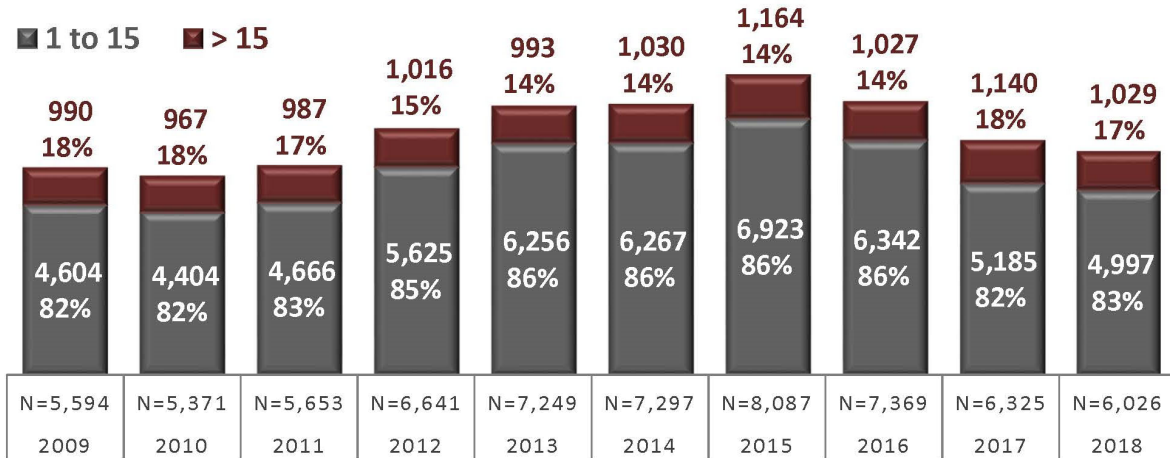


Injury Severity Score by Mechanism of Injury

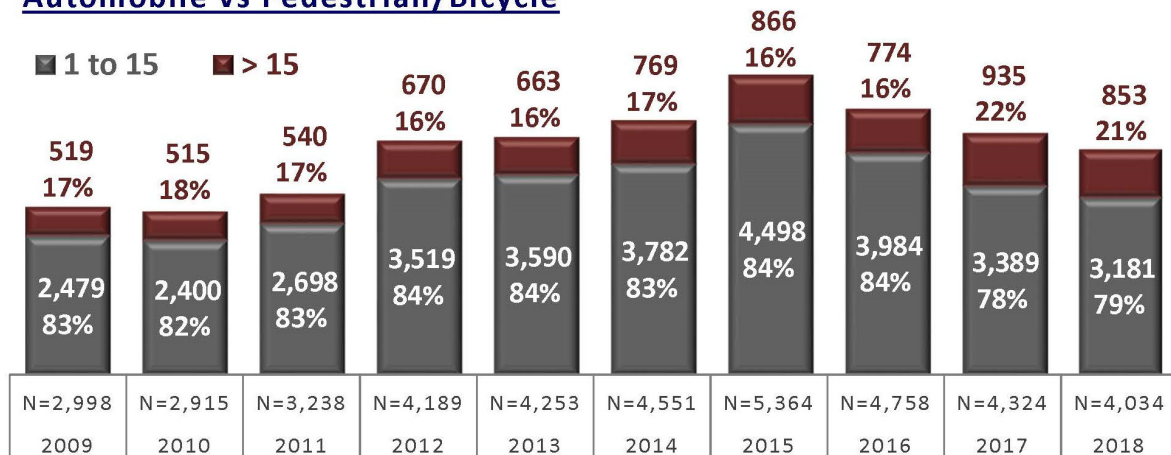
Injury Severity Score (ISS): Is an established medical score to assess trauma severity. It correlates with mortality, morbidity and hospitalization time after trauma. It is used to define the term major trauma.

A major trauma (or polytrauma) is defined as the ISS being greater than 15.

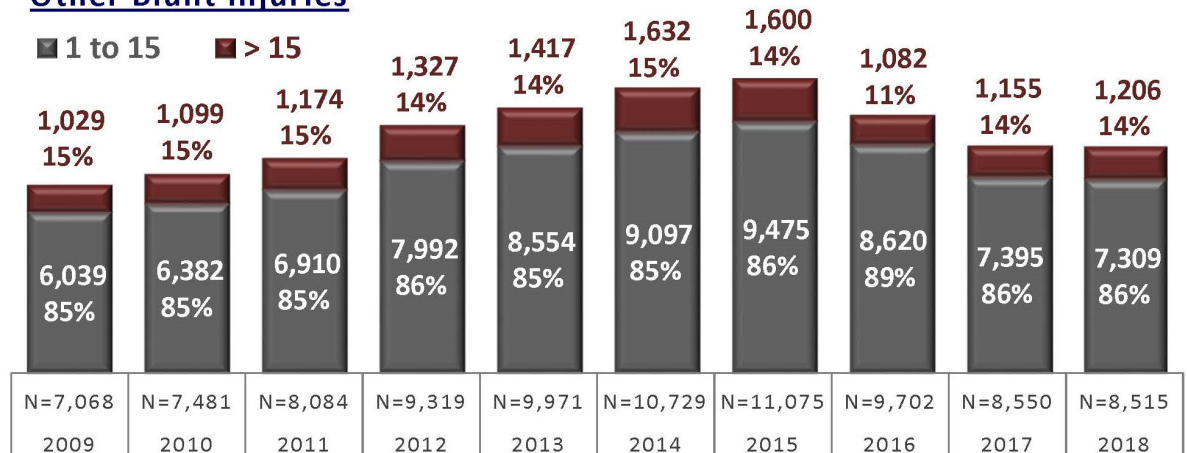
Motor Vehicular Accident



Automobile vs Pedestrian/Bicycle



Other Blunt Injuries

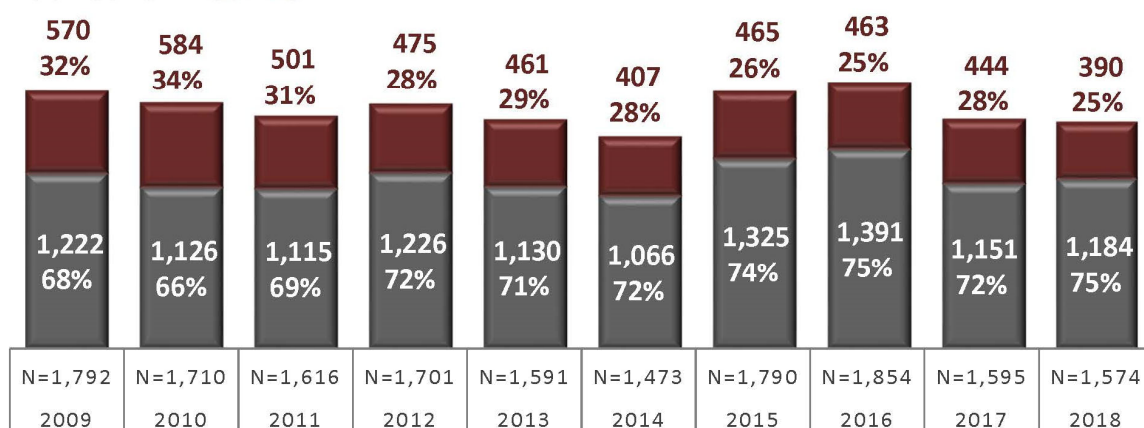




Injury Severity Score by Mechanism of Injury

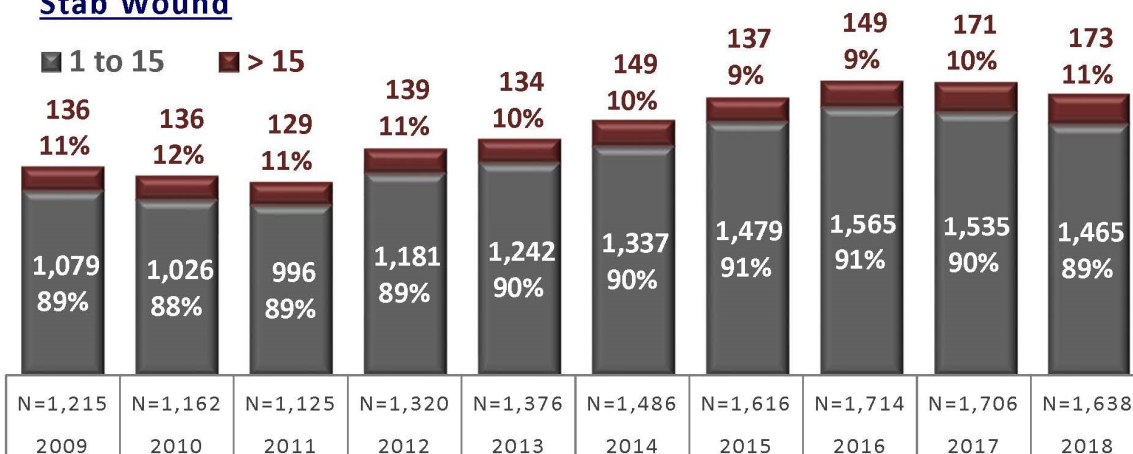
Gunshot Wound

■ 1 to 15 ■ > 15



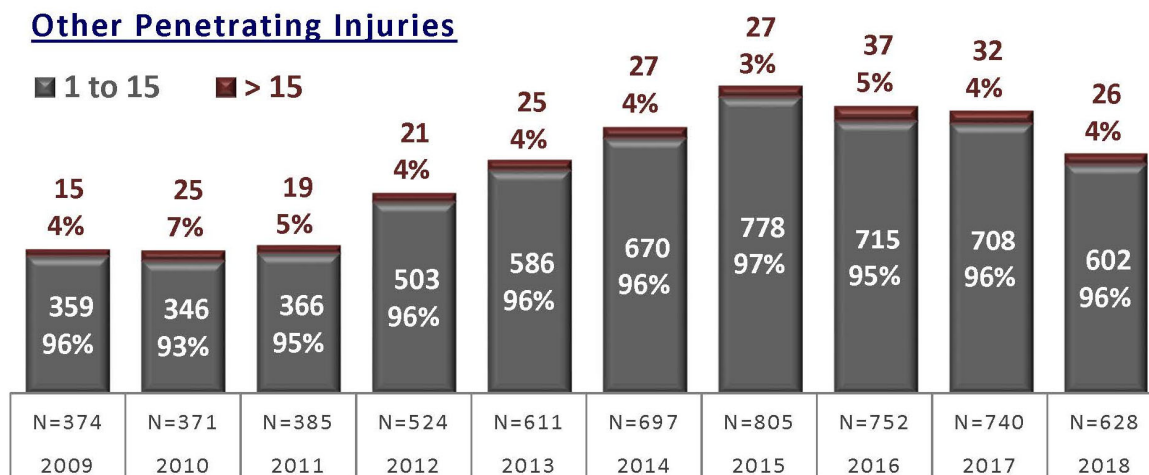
Stab Wound

■ 1 to 15 ■ > 15



Other Penetrating Injuries

■ 1 to 15 ■ > 15

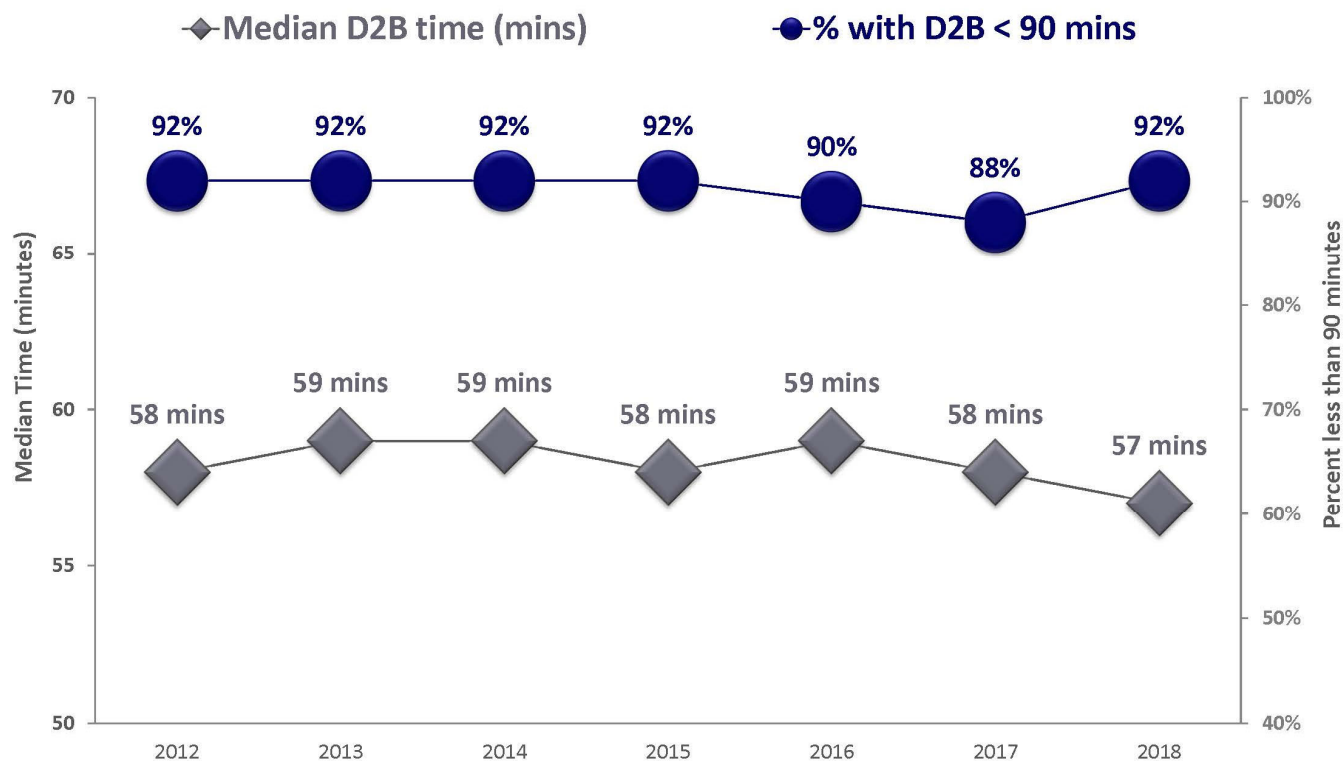




ST-Elevation Myocardial Infarction (STEMI)

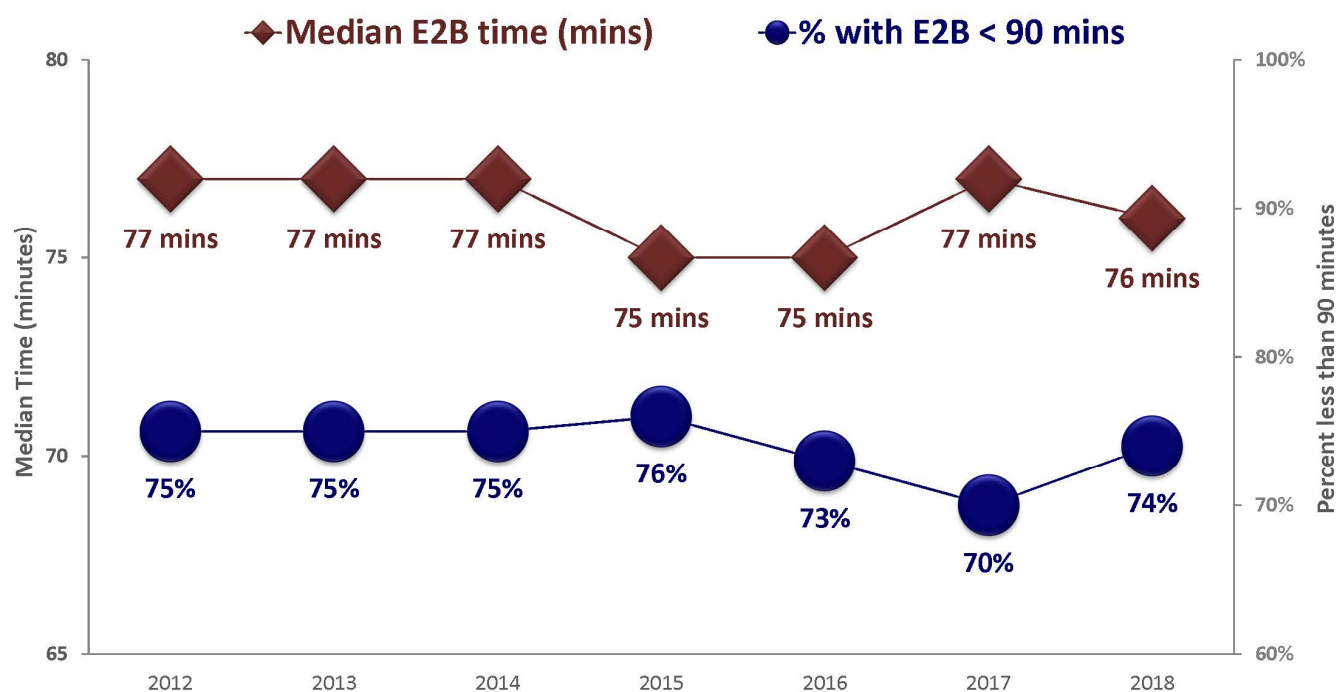
STEMI Receiving Center: Door-to-Balloon (D2B) Time

LA County Standard: 90 minutes 90% of the time



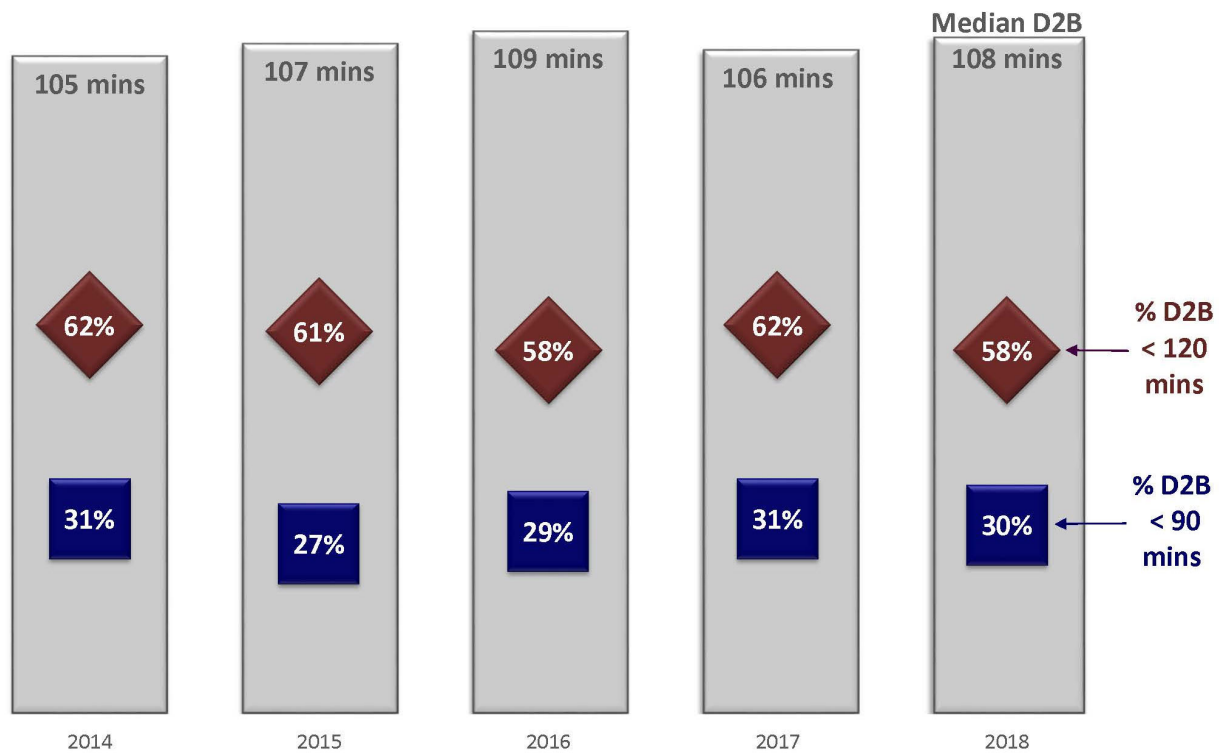
STEMI Receiving Center: EMS Medical Contact-to-Balloon (E2B) Time

LA County Standard: 90 minutes 75% of the time



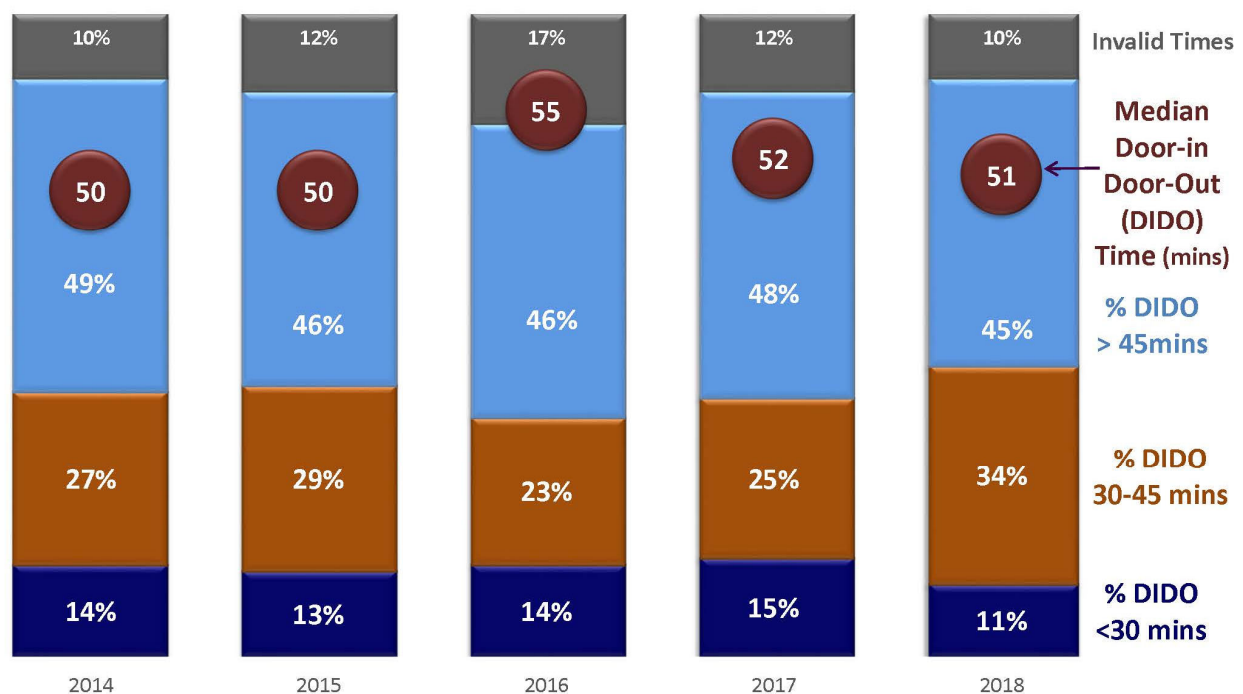


STEMI Referral Facility: Door-to-Balloon (D2B) Time



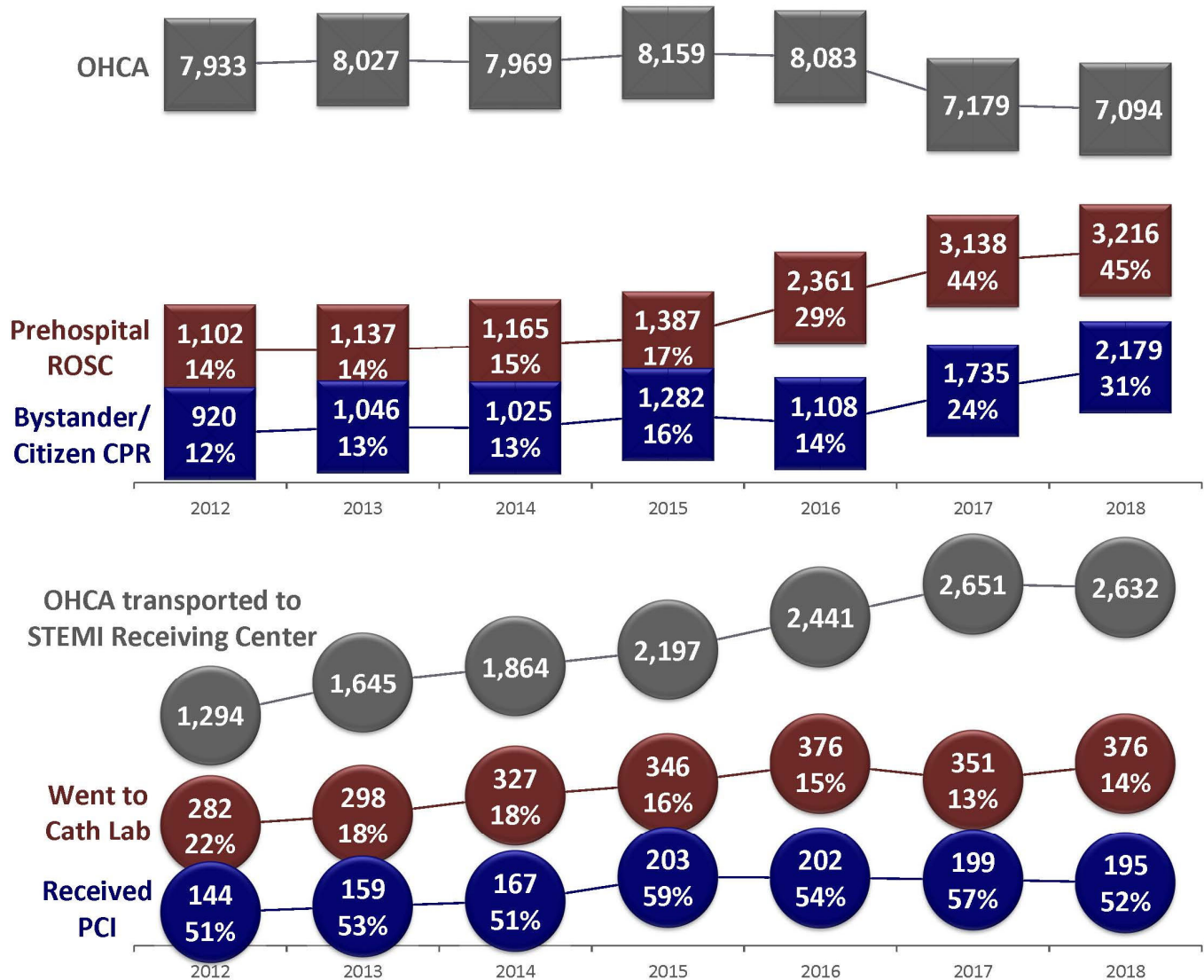
STEMI Referral Facility: Door-In Door-Out (DIDO) Time

LA County Goal: <30 minutes



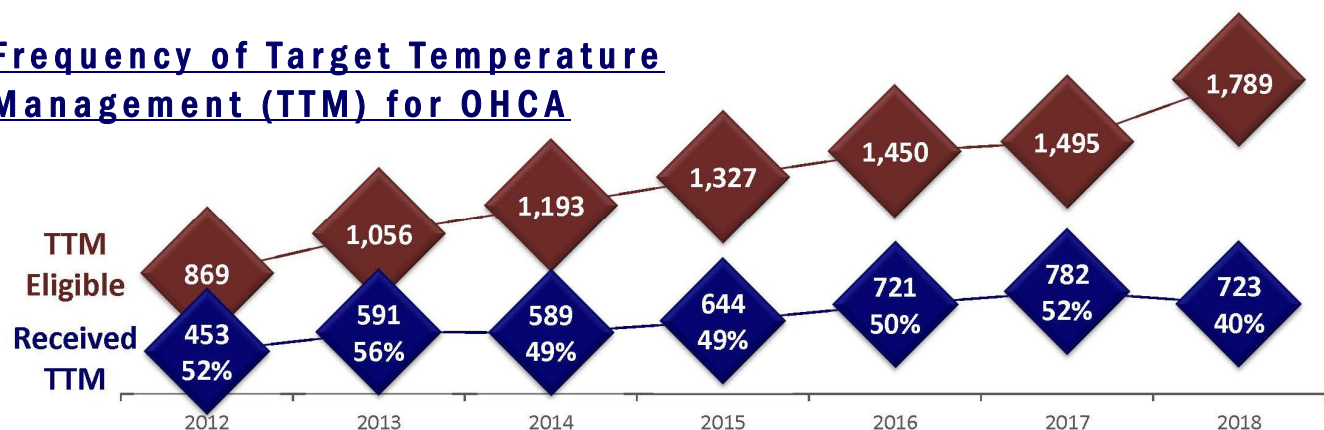


Out of Hospital Cardiac Arrest (OHCA) Return of Spontaneous Circulation (ROSC)



PCI - Percutaneous Coronary Intervention is a procedure used to open or widen a narrowed or block coronary artery to restore blood flow supplying the heart.

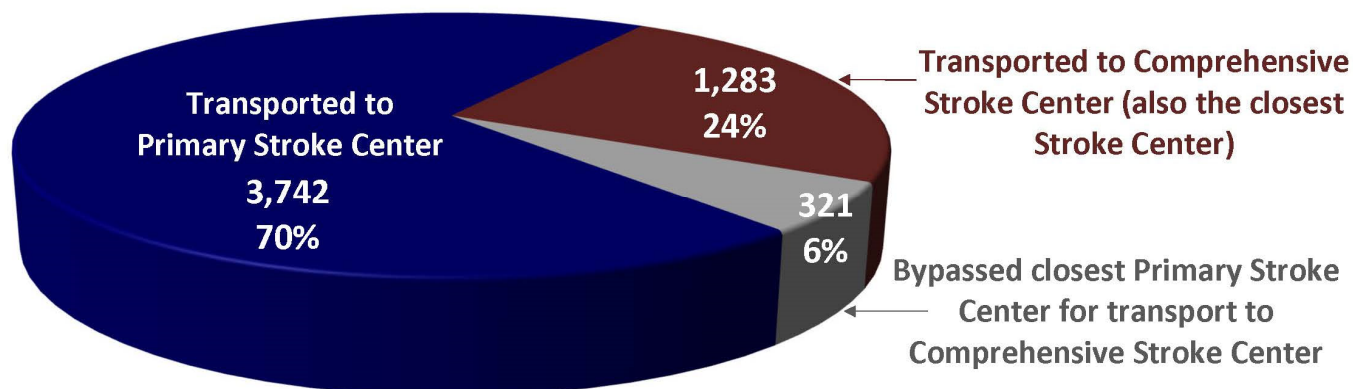
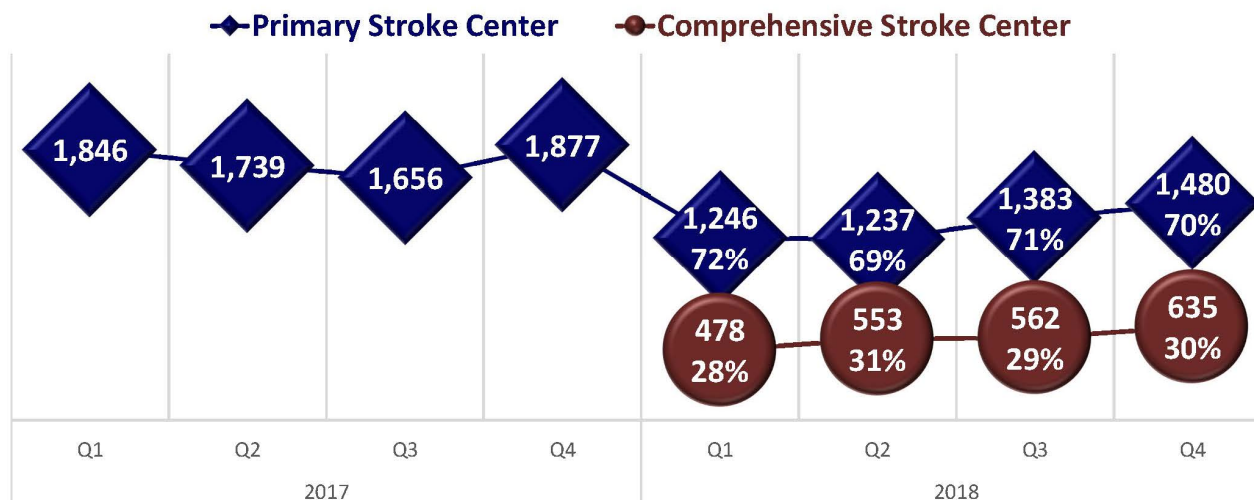
Frequency of Target Temperature Management (TTM) for OHCA





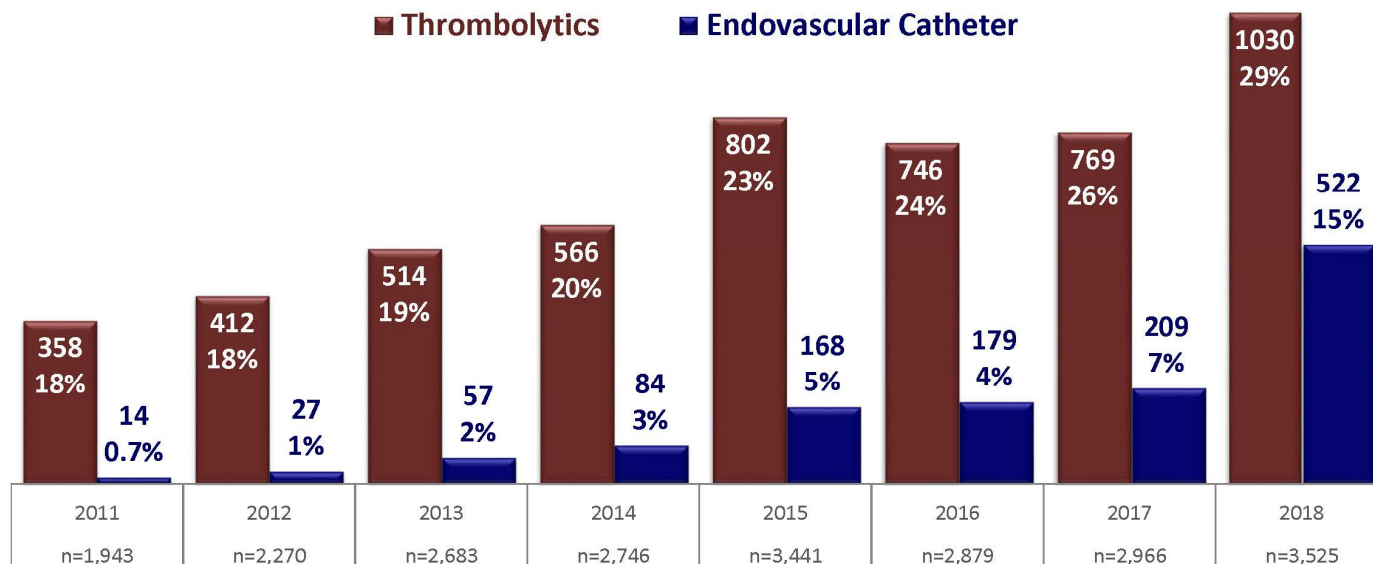
Suspected Stroke Patient Destination

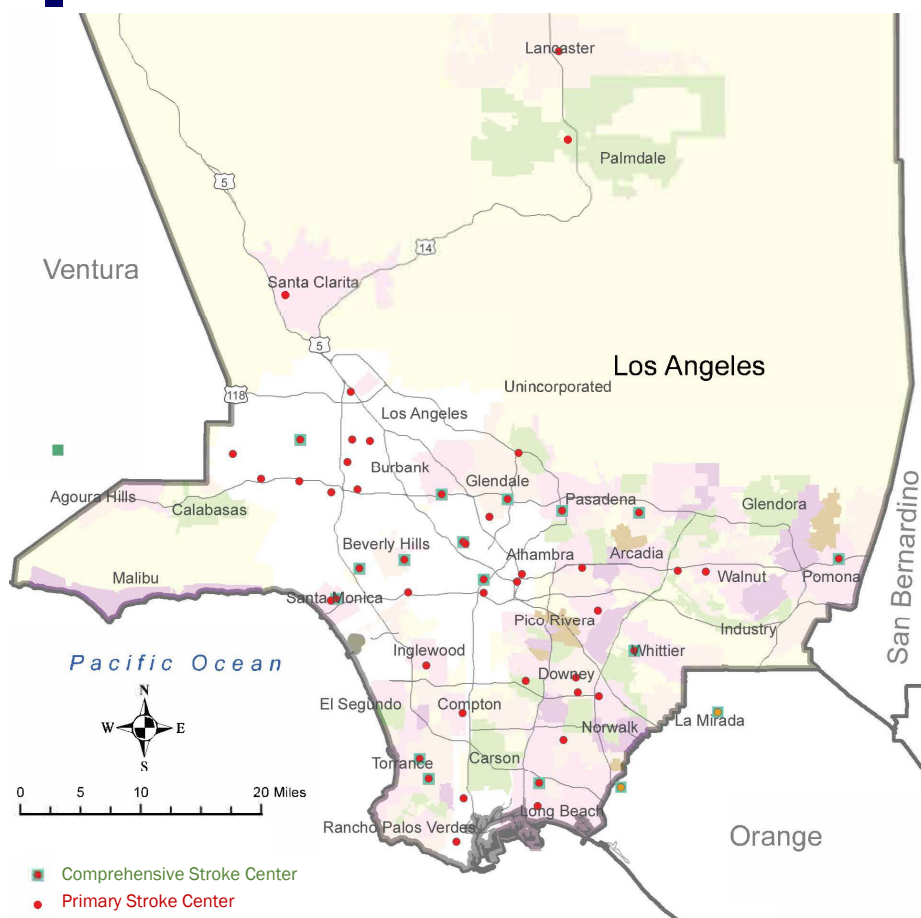
The routing of suspected stroke patients with large vessel occlusions based on a Los Angeles Motor Scale (LAMS) score of 4 or 5 to designated Comprehensive Stroke Centers began on January 8, 2018.



Treatment—All Ischemic Stroke

■ Thrombolytics ■ Endovascular Catheter





Since the implementation of a two-tiered stroke routing system in Los Angeles County on January 8, 2018, thrombectomy access increased to 93% of the population and the frequency of thrombectomy more than doubled. Interfacility transfers for higher level of care declined.

Comprehensive Stroke Centers Designated by Los Angeles County

Adventist Health—Glendale
Cedars Sinai Medical Center
Dignity Health—Northridge Hospital Medical Center
Good Samaritan Hospital
Huntington Hospital
Kaiser Foundation Hospital—Los Angeles
Los Alamitos Medical Center (Orange County)
Los Robles Hospital & Medical Center (Ventura County)
MemorialCare Long Beach Medical Center
Methodist Hospital of Southern California
PIH Health Hospital—Whittier
Pomona Valley Hospital Medical Center
Providence Little Company of Mary—Torrance
Providence Saint John's Health Center
Providence Saint Joseph Medical Center
Ronald Reagan UCLA Medical Center
Saint Jude Medical Center (Orange County)
Torrance Memorial Medical Center



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