



# LOS ANGELES COUNTY EMS SYSTEM REPORT

MAY 1, 2021

ISSUE 9

## INSIDE THIS ISSUE:

<b>COVID-19 BY SPA</b>	<b>2</b>
<b>EMS VOLUME</b>	<b>4</b>
<b>PROVIDER IMPRESSIONS</b>	<b>6</b>
<b>EMS TIMES</b>	<b>8</b>
<b>EMERGENCY DEPARTMENT</b>	<b>10</b>
<b>TRAUMA SYSTEM</b>	<b>12</b>
<b>STEMI SYSTEM</b>	<b>16</b>
<b>OHCA ROSC</b>	<b>18</b>
<b>STROKE SYSTEM</b>	<b>19</b>

## SPECIAL POINTS OF INTEREST:

- EMS Mechanisms of Injury (pages 6 & 7)
- ED Disposition and Patient Type (page 11)
- Injury Severity Scores (pages 14-15)
- Paramedic Base Hospital Contact Volume (page 20)

## Message from the Director and Medical Director

We are dedicating this issue of the EMS System Report to Michelle Williams, Chief, Data Systems Management for our agency. Michelle has worked with the EMS Agency for the past 9 years. She has served as the lead of our Data Management Section since 2018.

Michelle has been instrumental in moving the EMS Agency and our system to electronic data collection, ensuring data quality and consistency, and educating our providers and hospitals on the importance of quality data to direct our system and patient care.



Cathy Chidester  
Director

Michelle worked tirelessly, starting from scratch, to evolve our system from a predominantly pen and paper system to the 100% electronic system we have today. She has worked with each provider agency, hospital and digital system to convert LA County over to an entirely new platform. Her understanding of data management has enabled us to utilize this critical information to make vital decisions and conduct quality improvement and research on behalf of the over 10 million people

who live in and visit our county. She dedicated countless hours this past year collecting and verifying COVID hospital assessment data which was critical to the county's understanding of the pandemic and provided support to policy decisions.

Michelle has recently left our EMS Agency to pursue personal goals. Her talent and drive will be sorely missed. I hope you will join us in wishing Michelle the best in her new endeavors and thanking her for instilling excellence in our EMS program and systems.

This last year has been a challenging one for all of EMS. As the pandemic wanes we honor all

those who participated in the response locally and regionally. Data played a critical role in the management of the pandemic and allowed for opportunities for the system to predict surge. Thanks to all for their dedication in caring for our EMS community this last year.



Dr. Marianne Gausche-Hill  
Medical Director

## 2020 System Demographics

### 70 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
- 44 Hospitals with Neonatal Intensive Care Unit
- 8 SART (Sexual Assault Response Team)
- 13 Disaster Resource Centers

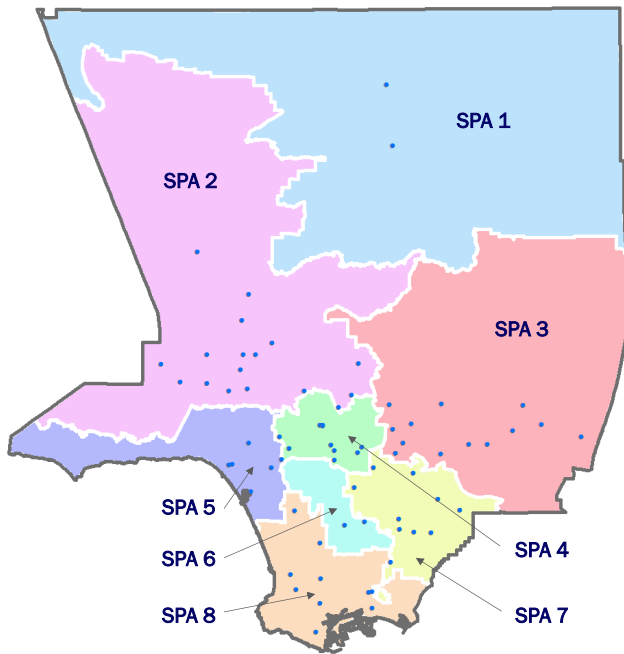
### EMS Provider Agencies

- 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

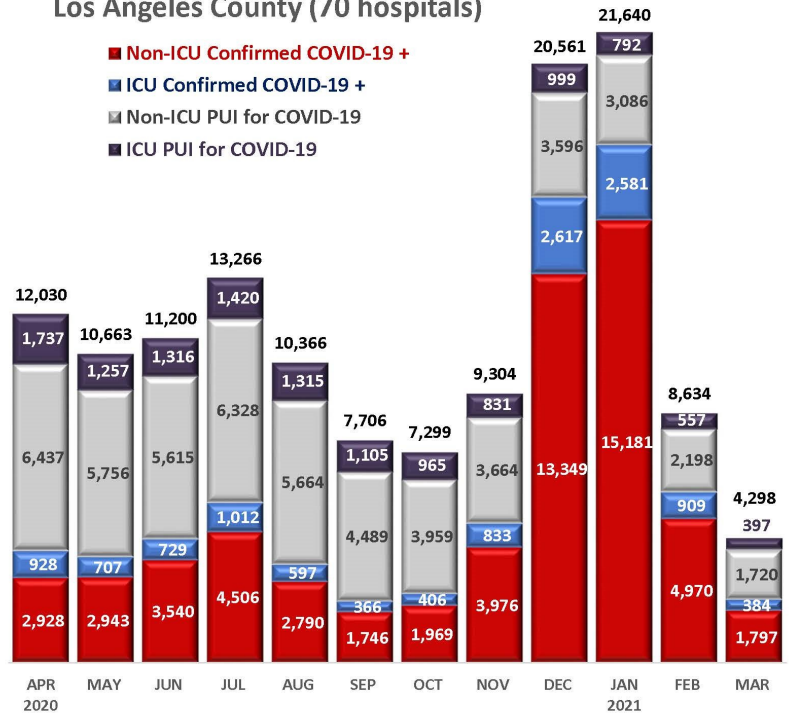
### EMS Practitioners

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

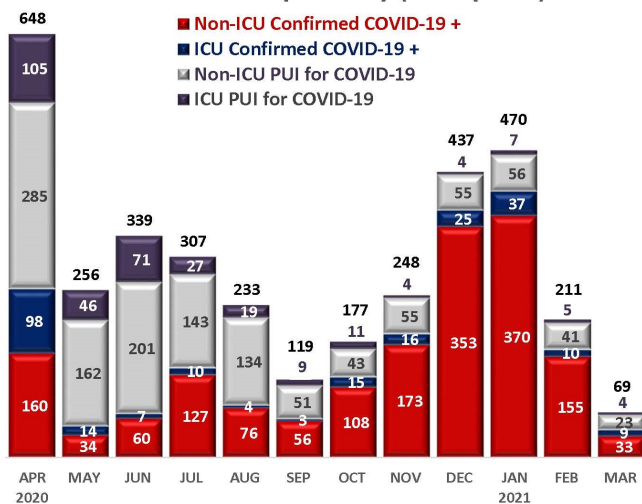
## COVID-19 Hospitalizations by Month and by Service Planning Area (SPA) Confirmed and Person Under Investigation (PUI) (Age 15 years and older)



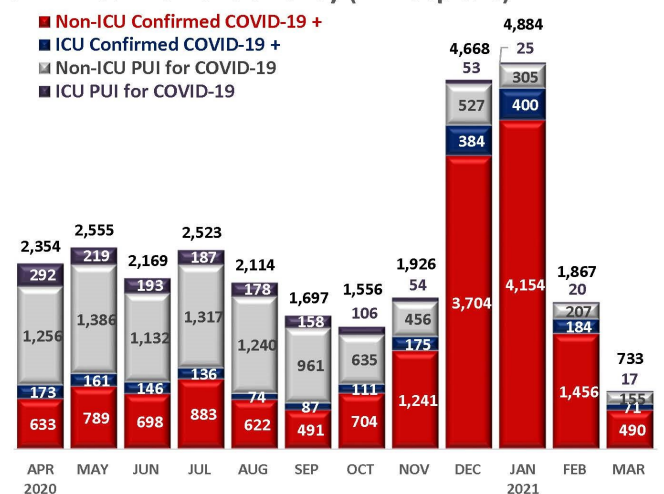
Los Angeles County (70 hospitals)



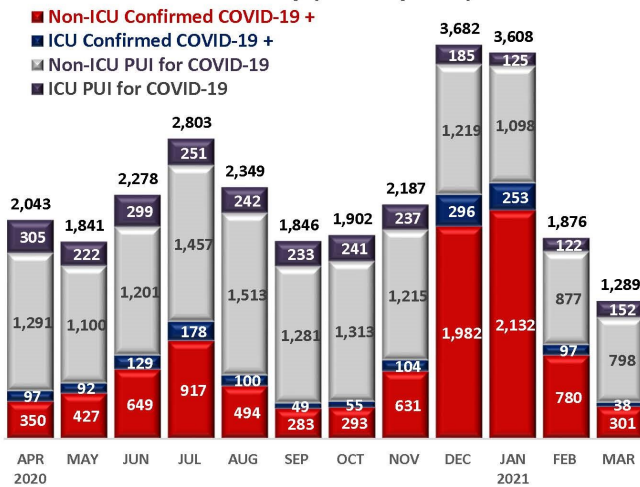
SPA 1 - Antelope Valley (2 hospitals)



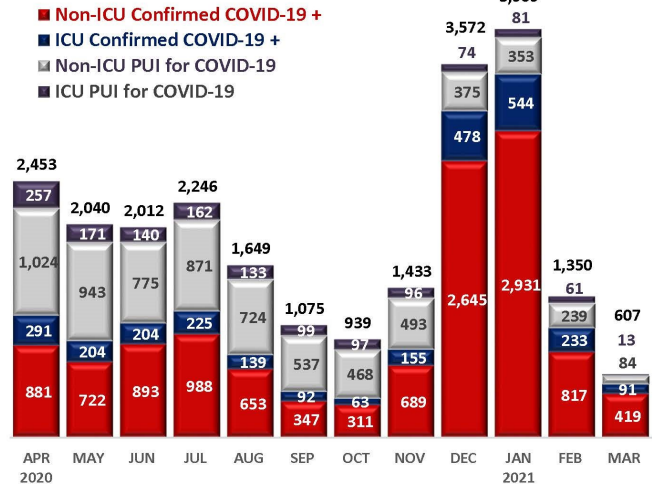
SPA 2 - San Fernando Valley (17 hospitals)



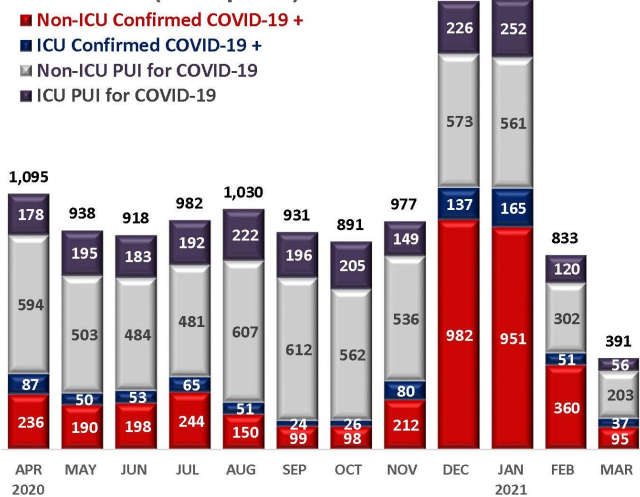
## SPA 3 - San Gabriel Valley (13 hospitals)



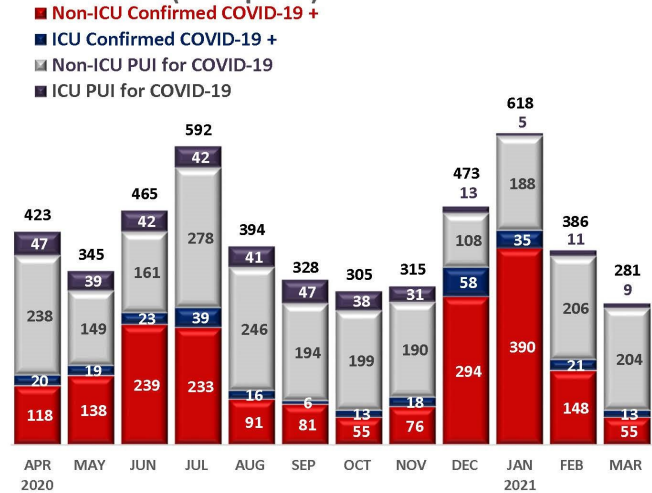
## SPA 4 - Metro (11 hospitals)



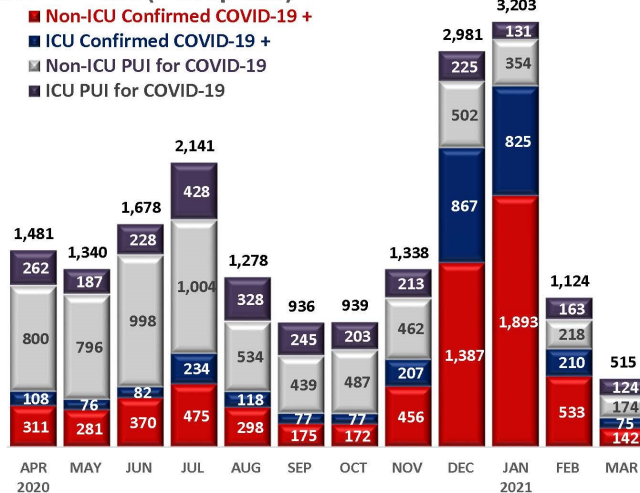
## SPA 5 - West (6 hospitals)



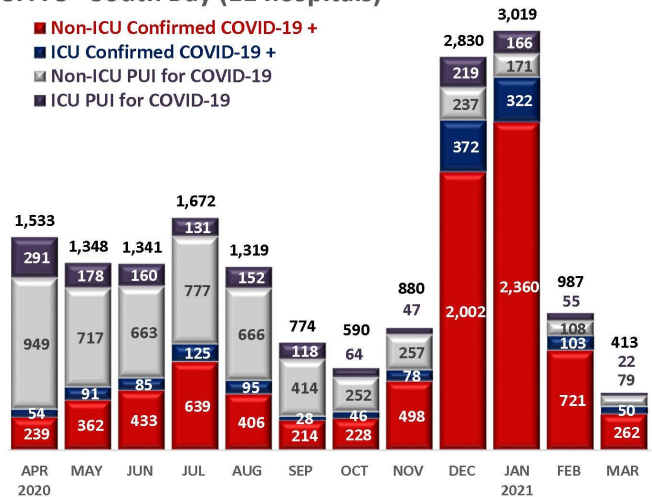
## SPA 6 - South (2 hospitals)



## SPA 7 - East (8 hospitals)

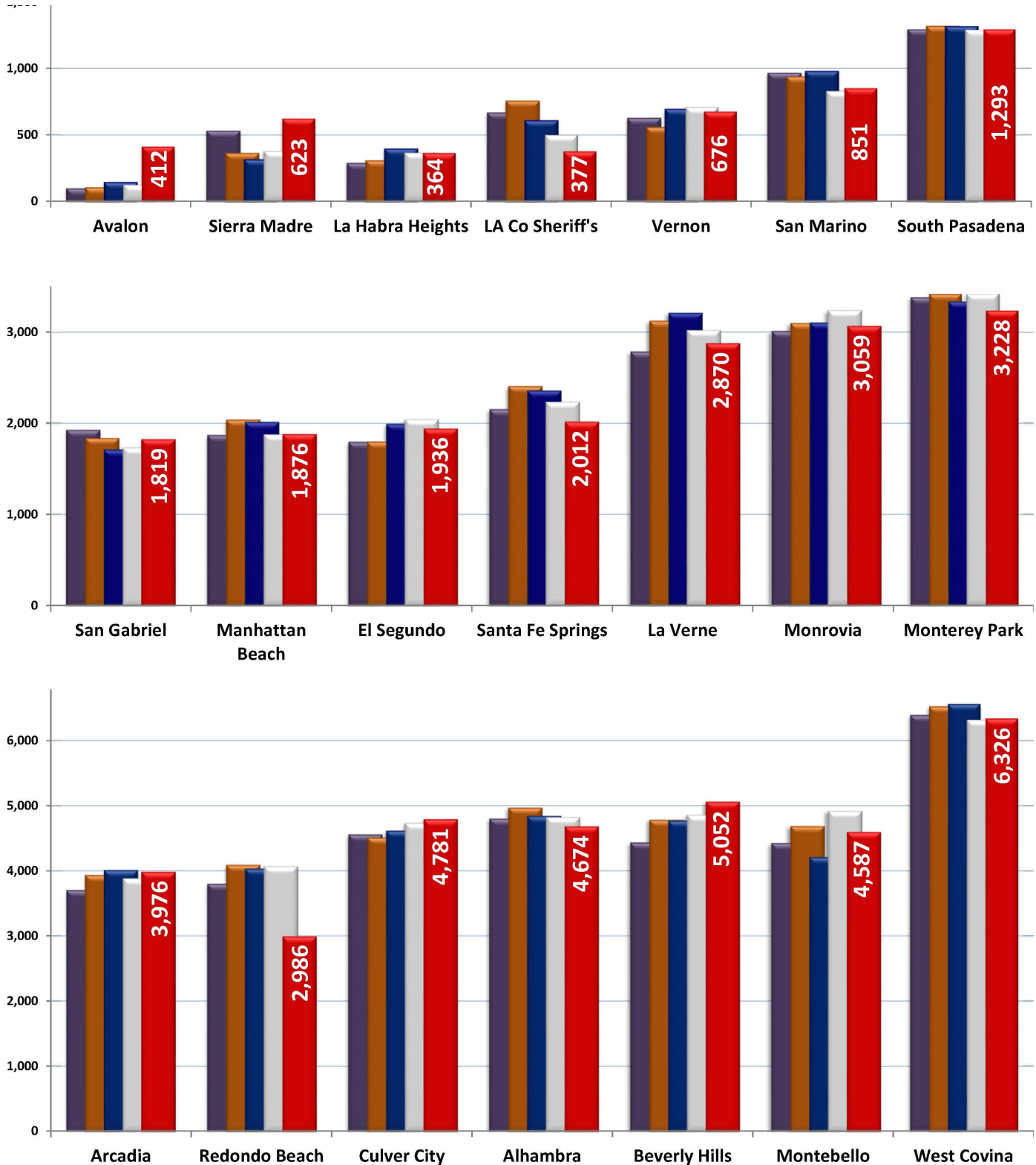


## SPA 8 - South Bay (11 hospitals)



## EMS Responses by 9-1-1 Jurisdictional Provider Agency

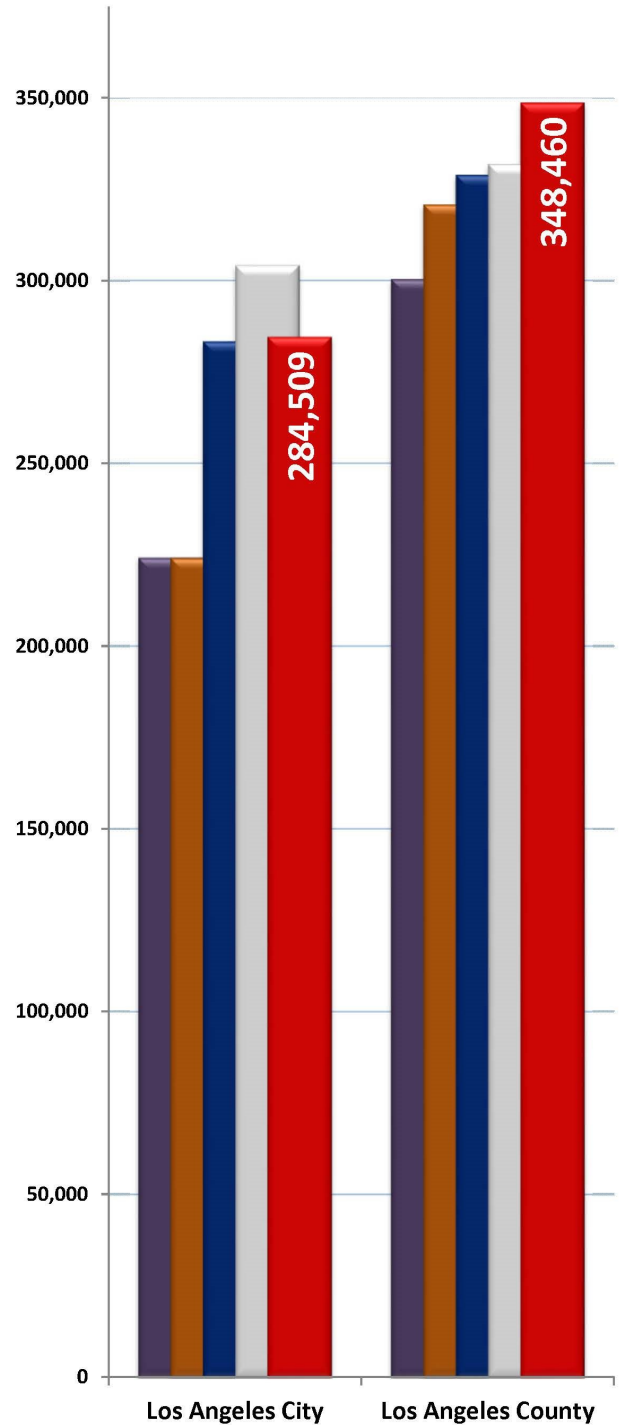
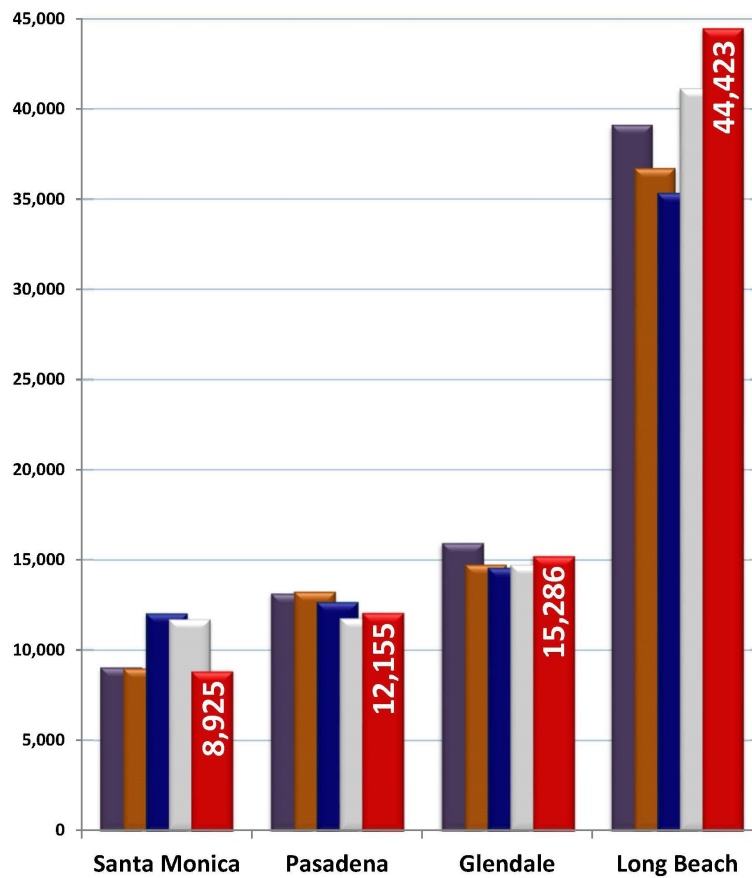
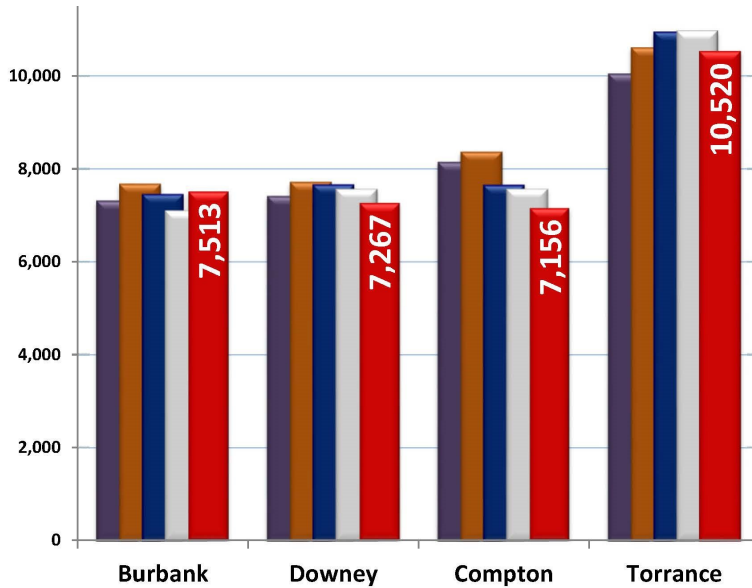
■ 2015 ■ 2016 ■ 2017 ■ 2018 ■ 2019





## EMS Responses by 9-1-1 Jurisdictional Provider Agency

■ 2015 ■ 2016 ■ 2017 ■ 2018 ■ 2019



**ADULT PROVIDER IMPRESSIONS (TOP 10)**

	2018	%	2019	%
Traumatic Injury	127,585	16%	112,114	14%
Behavioral / Psychiatric Crisis	59,823	7%	58,874	8%
Weakness - General	57,031	7%	53,333	7%
No Medical Complaint	55,124	7%	47,817	6%
Body Pain - Non-Traumatic	40,734	5%	43,654	6%
Abdominal Pain/Problems	37,592	5%	32,584	4%
Altered Level of Consciousness	31,245	4%	27,743	4%
Syncope / Near Syncope	26,312	3%	24,268	3%
Seizure - Postictal	23,159	3%	19,299	2%
Chest Pain - Suspected Cardiac	21,582	3%	17,947	2%
<b>TOTAL - Top 10 Provider Impressions</b>	<b>480,742</b>	<b>59%</b>	<b>437,633</b>	<b>56%</b>
<b>TOTAL - Adult EMS Responses</b>	<b>819,320</b>		<b>777,556</b>	

**ADULT TRANSPORTS (TOP 10)**

	2018	%	2019	%
Traumatic Injury	83,518	16%	78,521	15%
Weakness - General	44,777	9%	42,942	8%
Behavioral / Psychiatric Crisis	41,367	8%	41,430	8%
Altered Level of Consciousness	34,109	6%	27,293	5%
Abdominal Pain / Problems	33,801	6%	30,062	6%
Body Pain - Non-Traumatic	33,547	6%	37,076	7%
Chest Pain - Suspected Cardiac	20,316	4%	17,411	3%
Syncope / Near Syncope	19,833	4%	19,136	4%
Respiratory Distress - Other	16,386	3%	16,558	3%
Seizure - Postictal	16,355	3%	17,205	3%
<b>TOTAL - Top 10 Adult EMS Transports</b>	<b>344,009</b>	<b>65%</b>	<b>327,634</b>	<b>62%</b>
<b>TOTAL - Adult EMS Transports</b>	<b>526,568</b>		<b>527,233</b>	

**ADULT MECHANISMS OF INJURY (TOP 10)**

	2018	%	2019	%
Fall	45,502	34%	39,706	32%
Motor Vehicle Accident	36,039	27%	38,292	31%
Assault	16,544	12%	13,315	11%
Pedestrian/Bicycle struck by Motor Vehicle	8,561	6%	8,968	7%
Animal Bite	1,913	1%	2,473	2%
Sports / Recreational	2,164	2%	1,940	2%
Motorcycle / Moped Accident	2,378	2%	1,582	1%
Stabbing	1,485	1%	1,573	1%
Gunshot Wound	1,577	1.2%	1,462	1.2%
Accidental Self-Inflicted Injury	1,000	0.8%	1,100	0.9%
<b>TOTAL - Top 10 Adult Mechanisms of Injury</b>	<b>117,163</b>	<b>88%</b>	<b>110,411</b>	<b>88%</b>
<b>TOTAL - Adult Mechanisms of Injury</b>	<b>132,868</b>		<b>125,465</b>	

**PEDIATRIC PROVIDER IMPRESSIONS (TOP 10)**

	2018	%	2019	%
Traumatic Injury	8,559	23%	8,234	23%
No Medical Complaint	5,377	15%	4,709	13%
Seizure - Postictal	4,533	12%	4,988	14%
Behavioral / Psychiatric Crisis	1,860	5%	1,827	5%
Cold / Flu	1,690	5%	1,771	5%
Fever	1,531	4%	1,467	4%
Respiratory Distress - Other	1,038	3%	1,050	3%
Respiratory Distress - Bronchospasm	1,026	3%	1,066	3%
Syncope / Near Syncope	989	3%	1,014	3%
Nausea / Vomiting	913	2%	907	3%
<b>TOTAL - Top 10 Pediatric EMS Responses</b>	<b>27,516</b>	<b>75%</b>	<b>27,033</b>	<b>75%</b>
<b>TOTAL - Pediatric EMS Responses</b>	<b>36,919</b>		<b>36,151</b>	

**PEDIATRIC TRANSPORTS (TOP 10)**

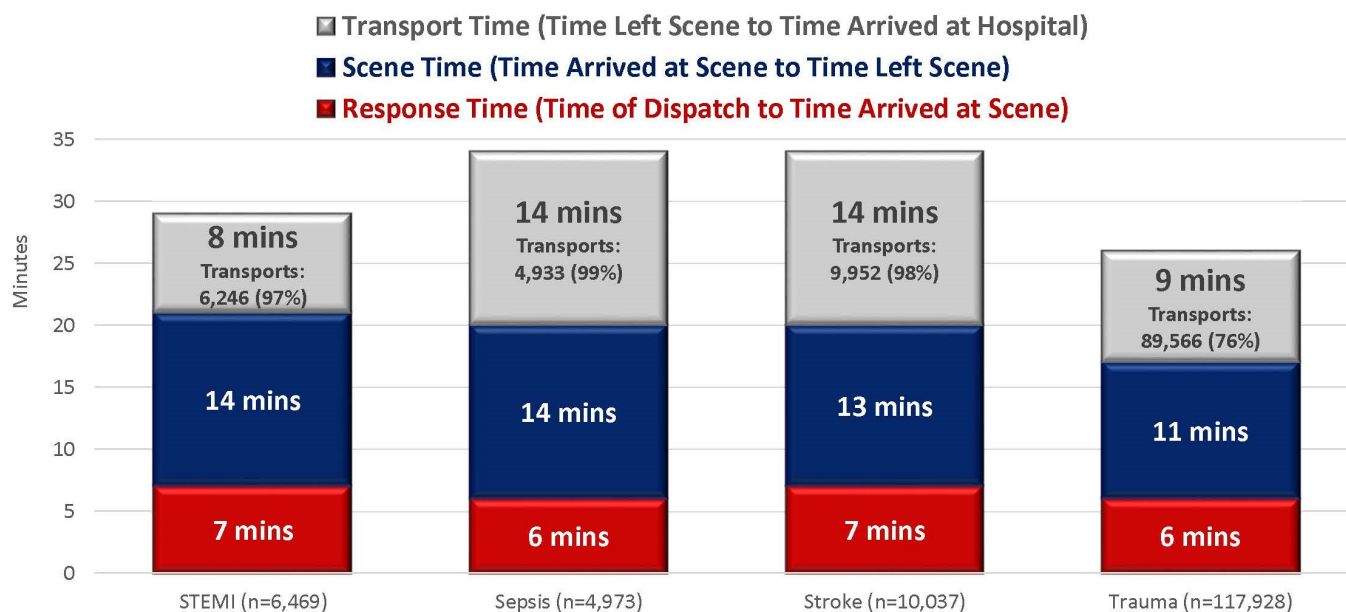
	2018	%	2019	%
Traumatic Injury	5,328	22%	5,108	22%
Seizure - Postictal	4,234	18%	4,551	19%
Behavioral / Psychiatric Crisis	1,270	5%	1,166	5%
Fever	1,074	4%	1,023	4%
Cold / Flu	982	4%	947	4%
Respiratory Distress - Bronchospasm	855	4%	890	4%
Respiratory Distress - Other	848	4%	853	4%
Syncope / Near Syncope	784	3%	736	3%
Allergic Reaction	641	3%	636	3%
Seizure - Active	596	2%	567	2%
<b>TOTAL - Top 10 Pediatric EMS Transports</b>	<b>16,612</b>	<b>69%</b>	<b>16,477</b>	<b>70%</b>
<b>TOTAL - Pediatric EMS Transports</b>	<b>24,031</b>		<b>23,517</b>	

**PEDIATRIC MECHANISMS OF INJURY (TOP 10)**

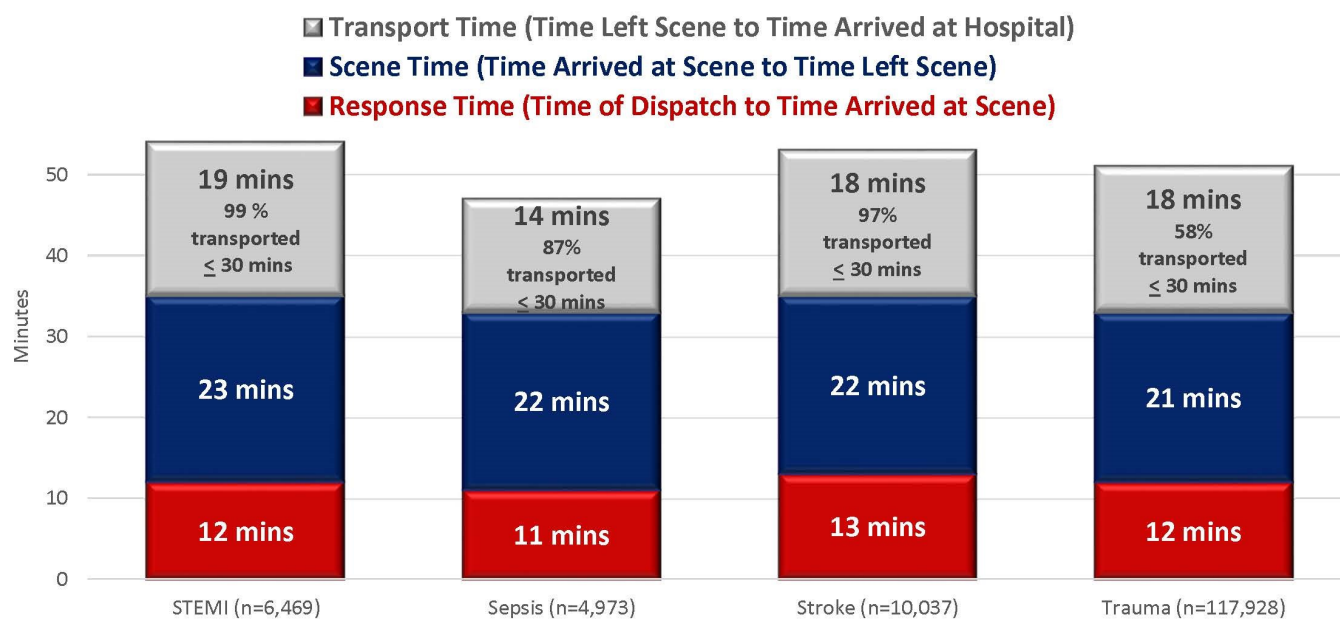
	2018	%	2019	%
Fall	3,215	31%	2,859	28%
Motor Vehicle Accident	2,503	24%	2,882	28%
Sports / Recreational	789	8%	758	7%
Pedestrian/Bicycle struck by Motor Vehicle	728	7%	778	8%
Animal Bite	328	3%	452	4%
Assault	475	5%	449	4%
Accidental Self-Inflicted Injury	133	1%	160	2%
Thermal Burn	93	1%	112	1%
Intentional Self-Inflicted Injury	44	0.4%	33	0.3%
Crush Injury	34	0.3%	29	0.3%
<b>TOTAL - Top 10 Pediatric Mechanisms of Injury</b>	<b>8,342</b>	<b>80%</b>	<b>8,512</b>	<b>84%</b>
<b>TOTAL - Pediatric Mechanisms of Injury</b>	<b>10,416</b>		<b>10,123</b>	

## 2019 EMS Times: Adult (Median)

LA County EMS Transport Time of ADULT Patients with Provider Impressions STEMI, Stroke, Sepsis and Traumatic Injuries



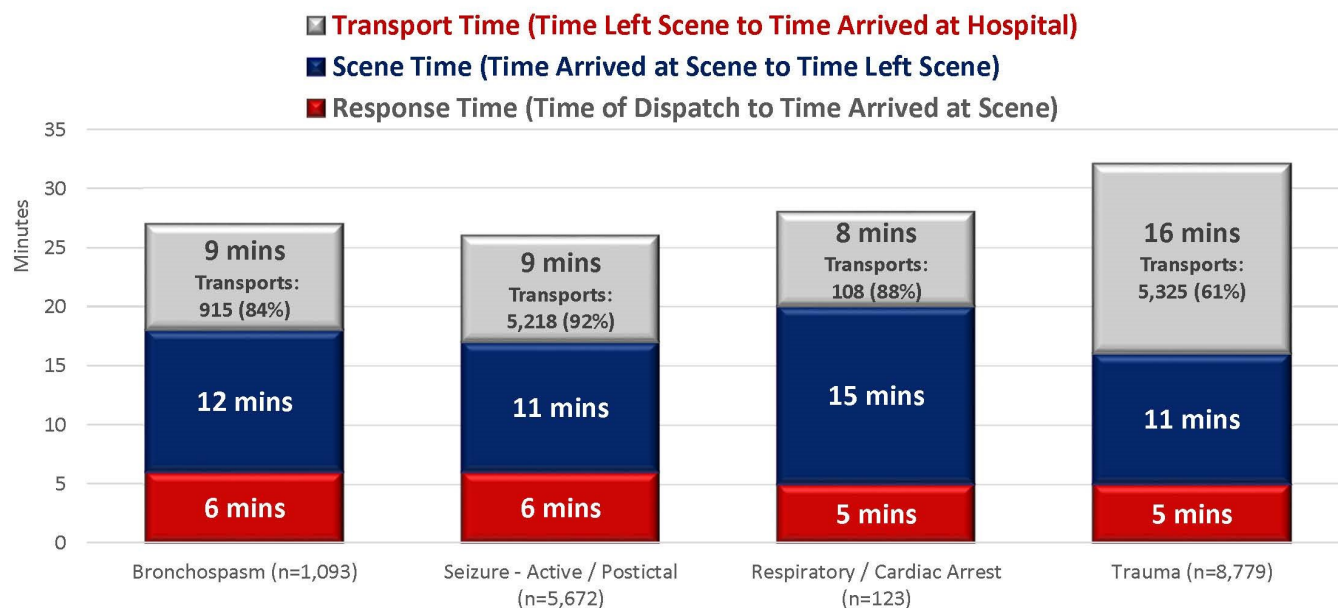
## 2019 EMS Times (90<sup>th</sup> Percentile)



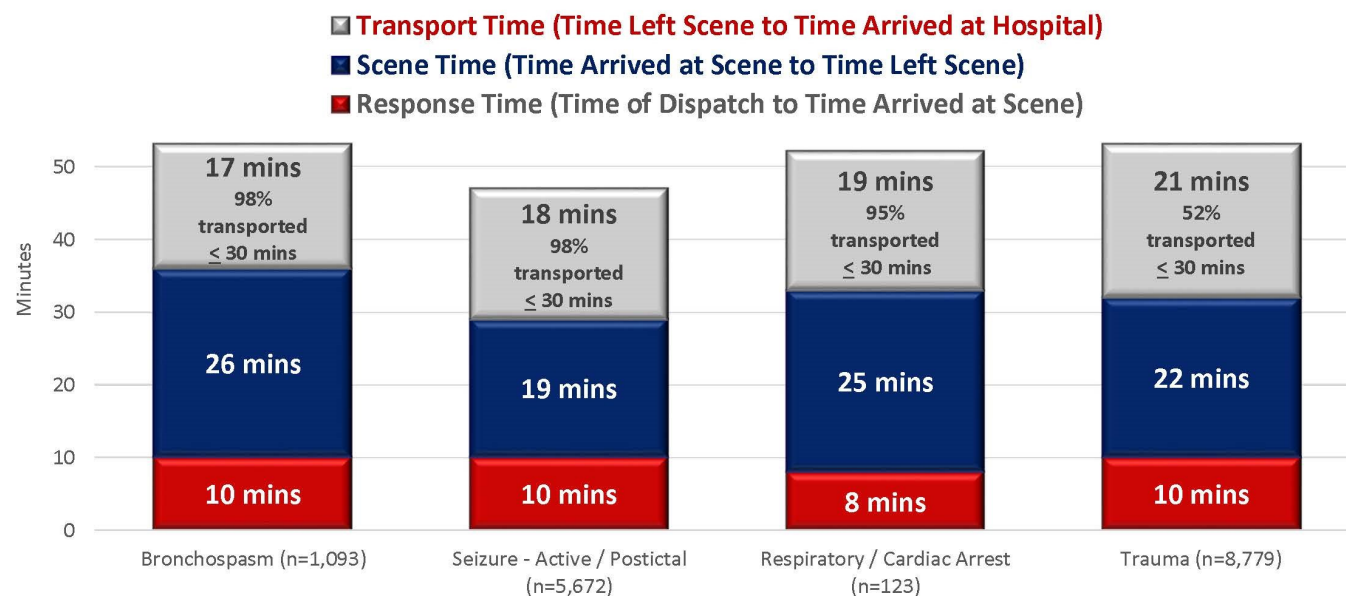


## 2019 EMS Times: Pediatric (Median)

LA County EMS Transport Time PEDIATRIC Patients with Provider Impressions  
Bronchospasm, Seizure, Respiratory/Cardiac Arrest and Traumatic Injuries

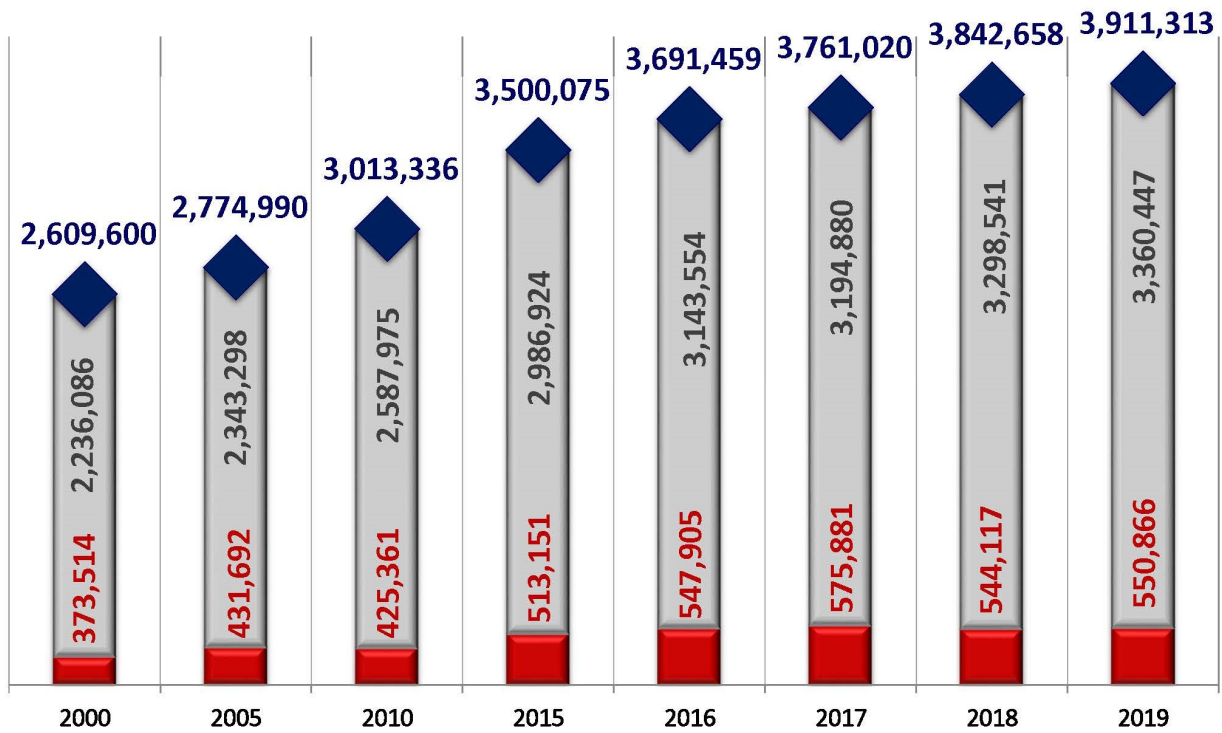


## 2019 EMS Times: Pediatric (90<sup>th</sup> Percentile)

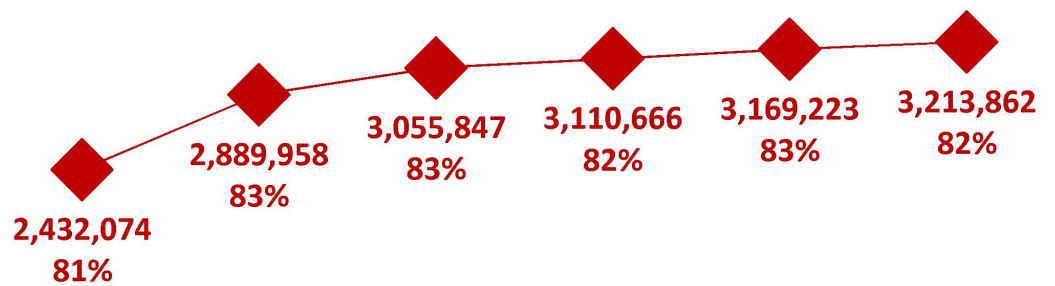


## Emergency Department Volume

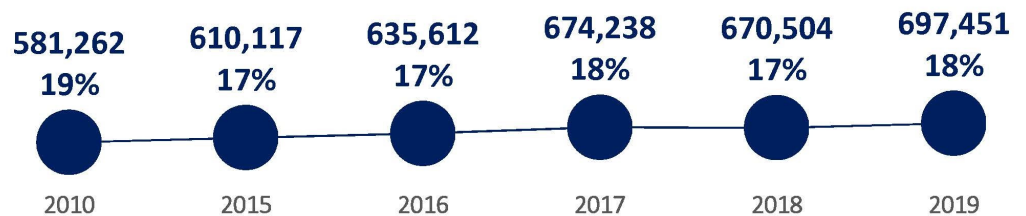
■ 9-1-1 Transports    ■ Walk-In    ◆ Reported Annual ED Visits



**Adult:**  
15 years and  
older



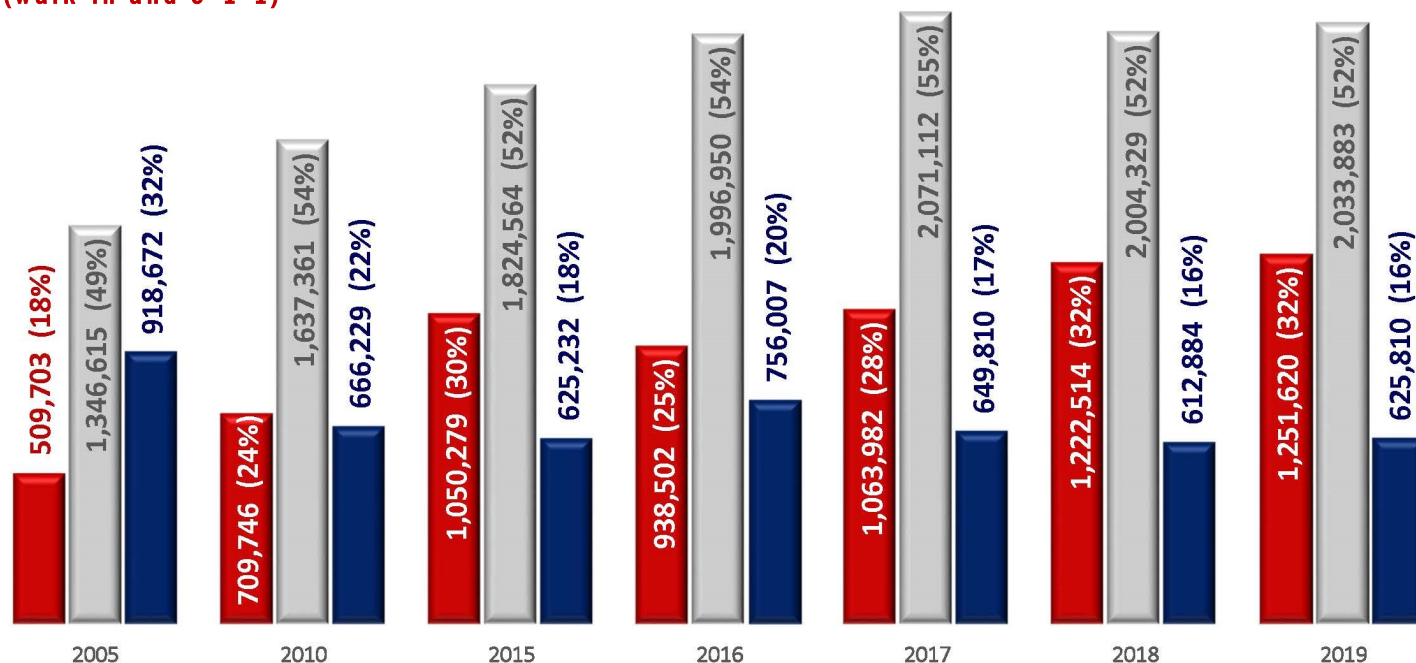
**Pediatric:**  
14 years and  
younger



## 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).

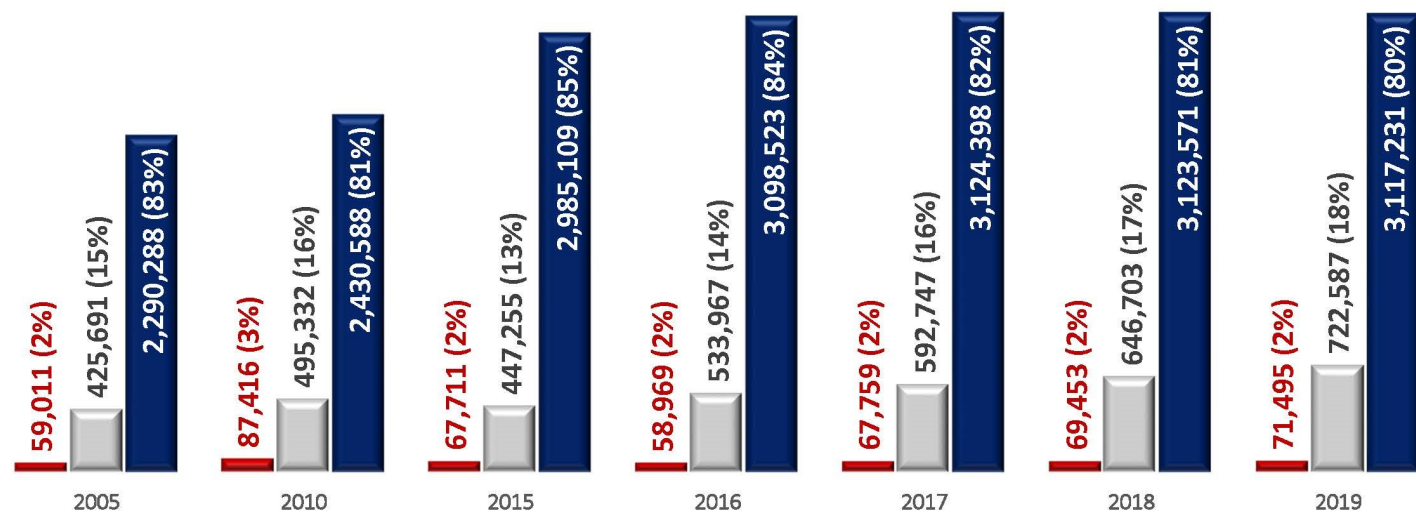
**Urgent**—a patient with an acute injury or illness, loss of life or limb is not an immediate threat to their well-being, or a patient who needs timely evaluation (fracture or laceration). Applicable CPT codes for this level of service would be 99282 (medical decision making of low complexity) or 99283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

## ED Patient Disposition

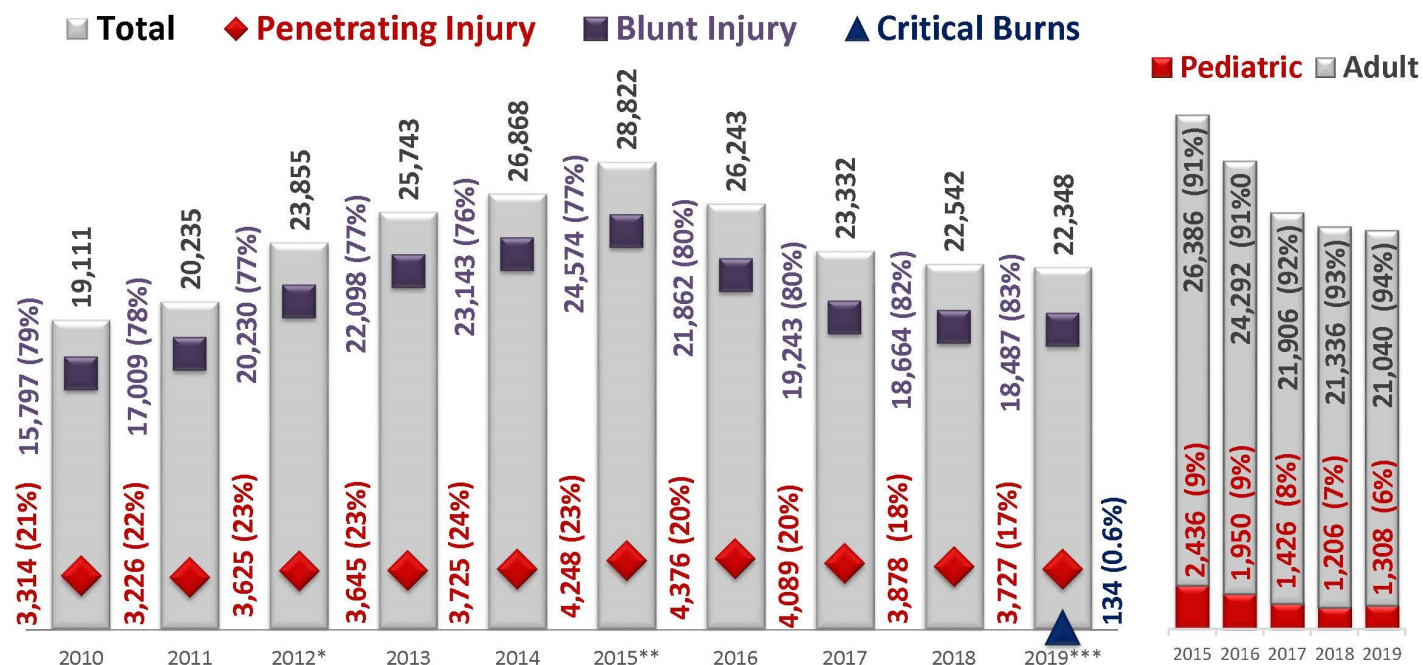
(walk-in and 9-1-1)

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





## Trauma Center Volume

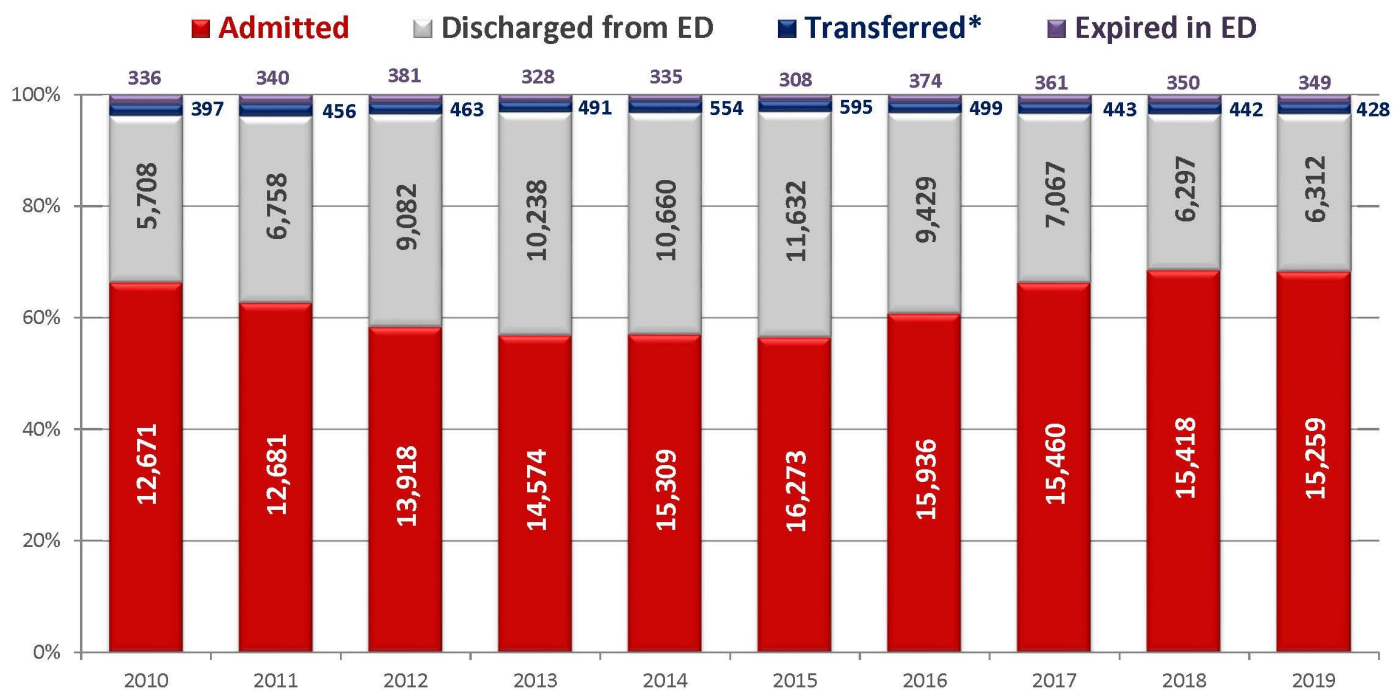


\*2012: LA County adopted the Centers for Disease Control and Prevention Guidelines for Field Triage of Injured Patients

\*\*2015: Trauma Center Registry inclusion criteria was reduced.

\*\*\*2019: Critical Burns added as a Trauma Center Criteria

## Patient Disposition of Trauma Center Patients

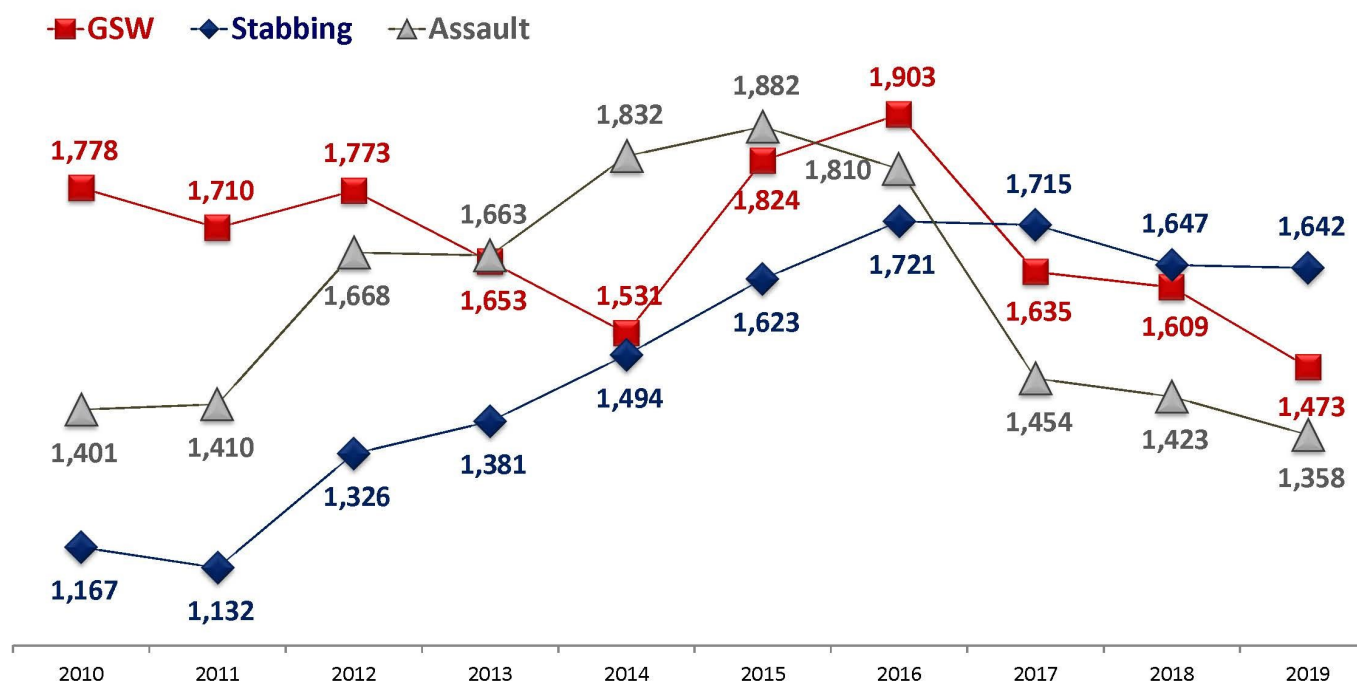
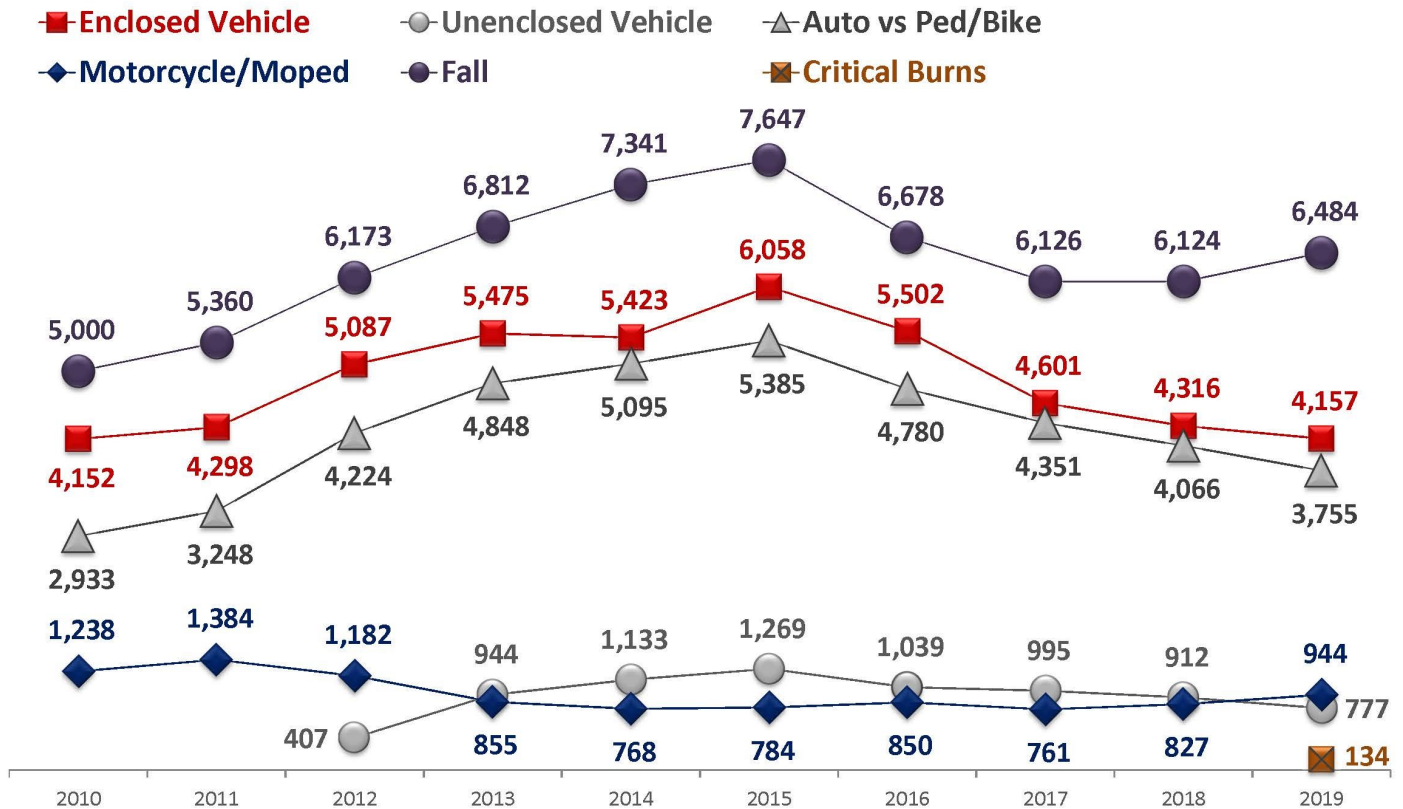


\* Transferred to another health facility





## Mechanism of Injury: Patients Transported to Trauma Centers





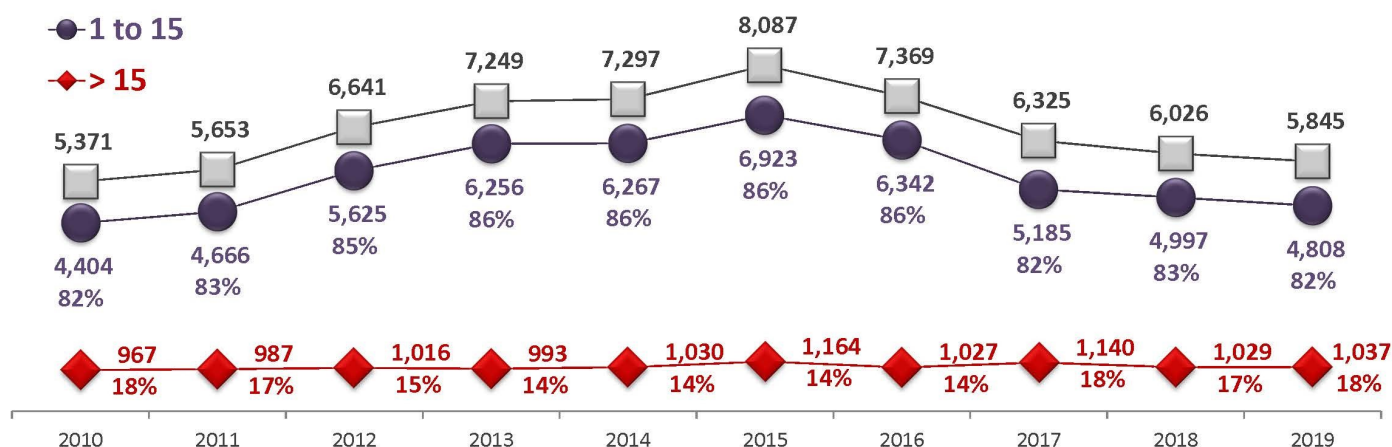
## Injury Severity Score by Mechanism of Injury

**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 Vehicle Accident

● 1 to 15

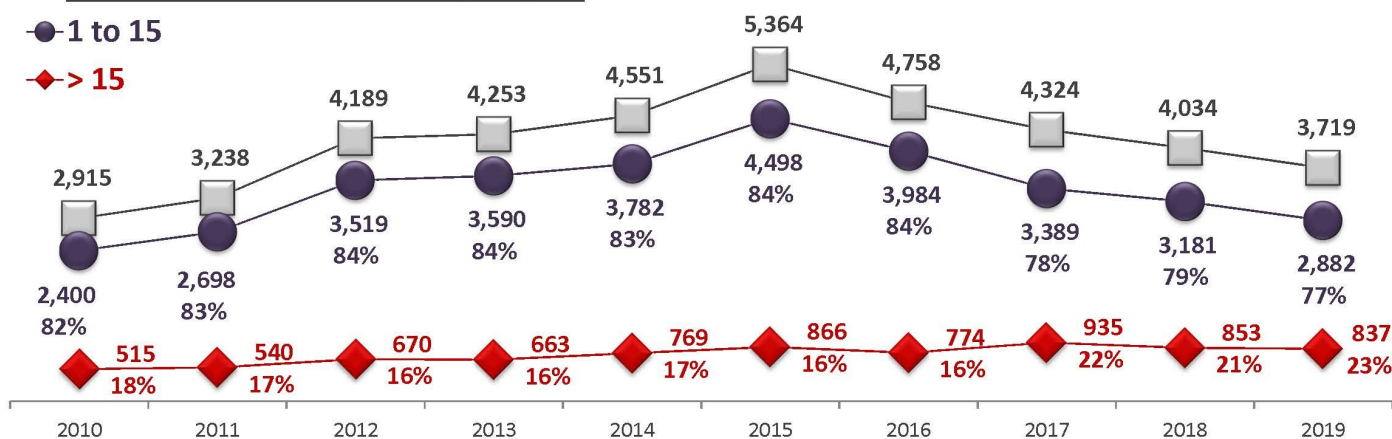
◆ > 15



### Automobile vs Pedestrian/Bicycle

● 1 to 15

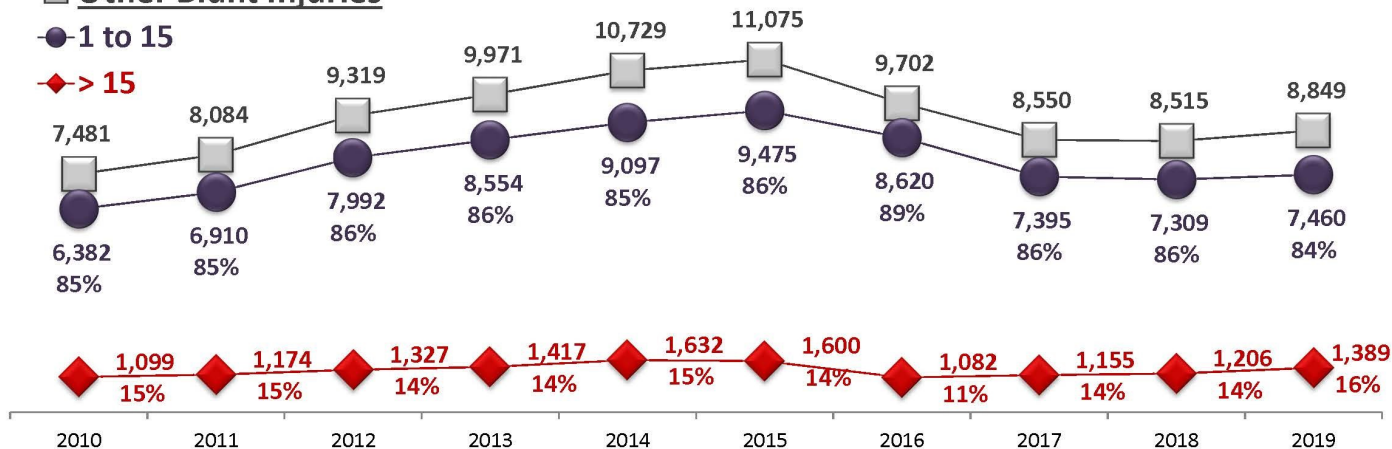
◆ > 15



### Other Blunt Injuries

● 1 to 15

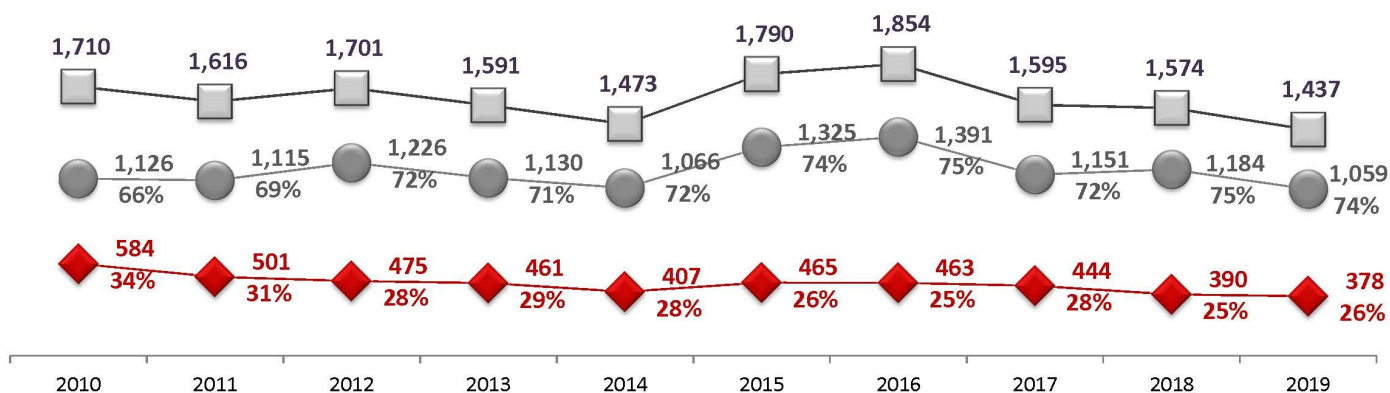
◆ > 15



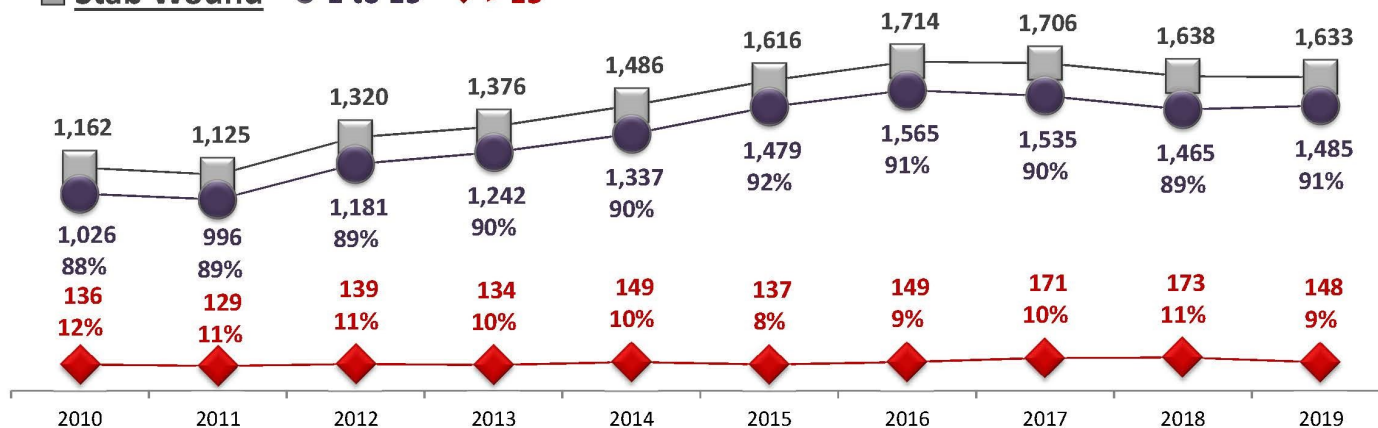


## Injury Severity Score by Mechanism of Injury

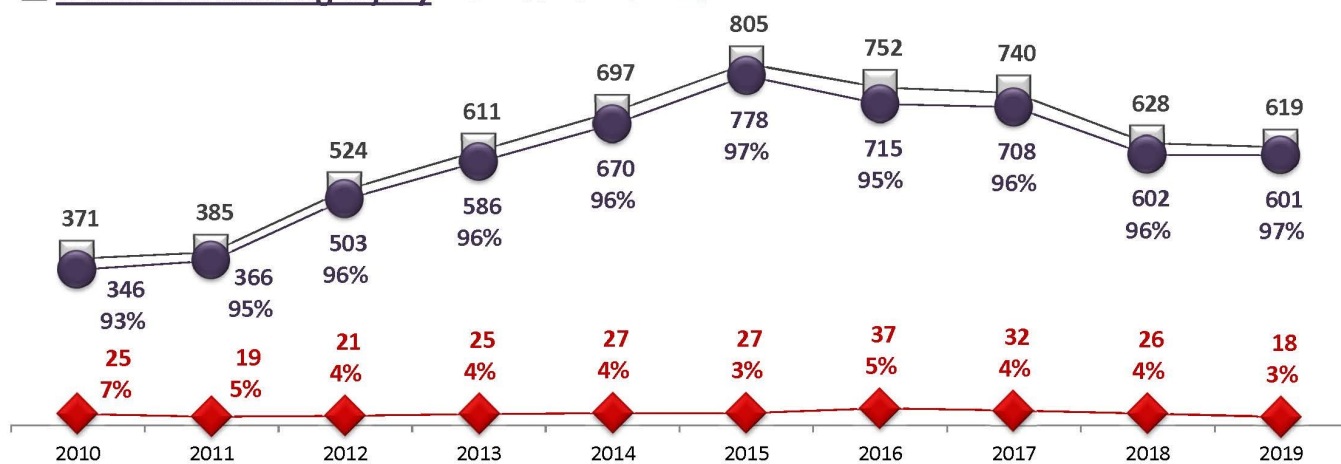
**Gunshot Wound**    ● 1 to 15    ◆ > 15



**Stab Wound**    ● 1 to 15    ◆ > 15



**Other Penetrating Injury**    ● 1 to 15    ◆ > 15



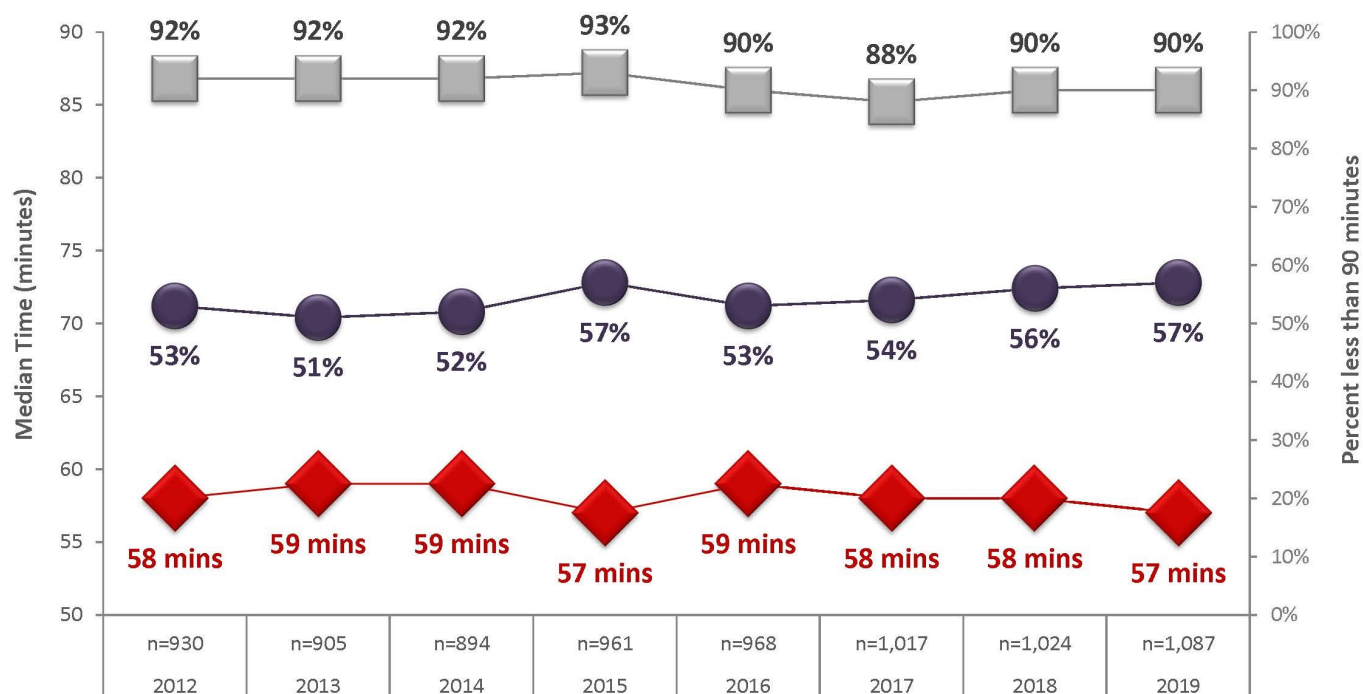


## ST-Elevation Myocardial Infarction (STEMI)

### STEMI Receiving Center: Door-to-Device (D2B) Time

LA County Target: within 90 minutes 90% of the time and within 60 minutes 75% of the time

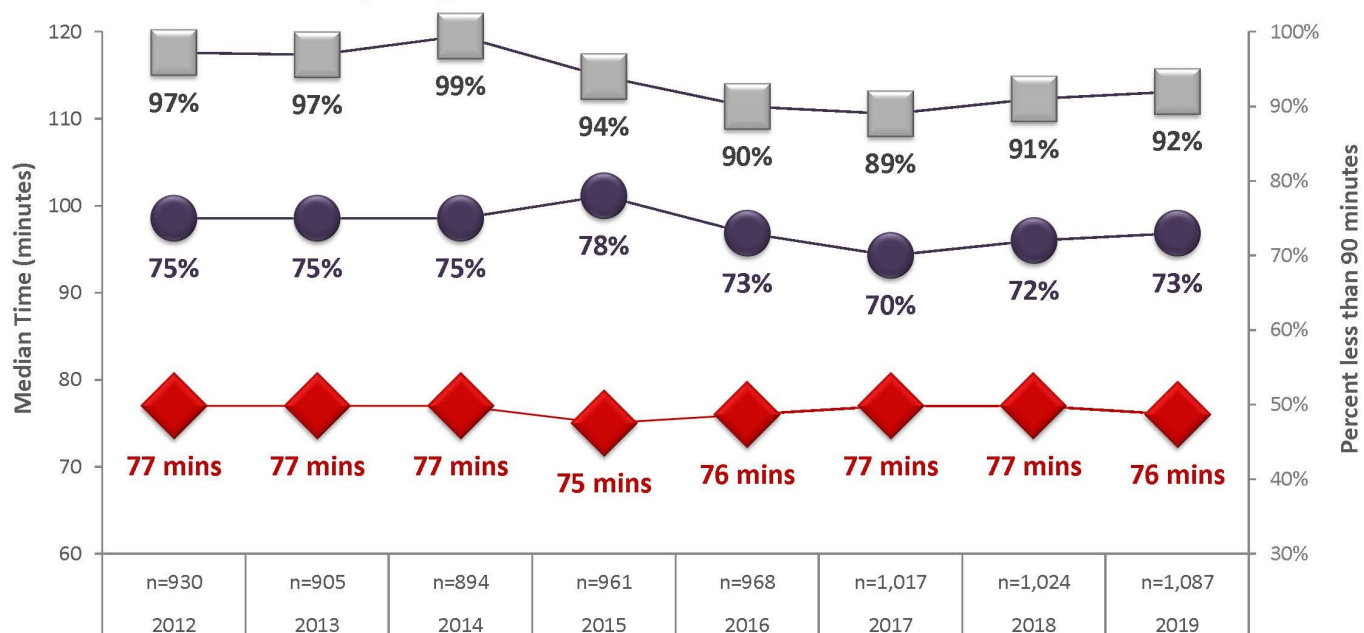
◆ Median D2B time (mins)    □ % with D2B ≤ 90 mins    ● % with D2B ≤ 60 mins



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

LA County Target: within 120 minutes 90% of the time and within 90 minutes 75% of the time

◆ Median E2B time (mins)    □ % with E2B ≤ 120 mins    ● % with E2B ≤ 90 mins

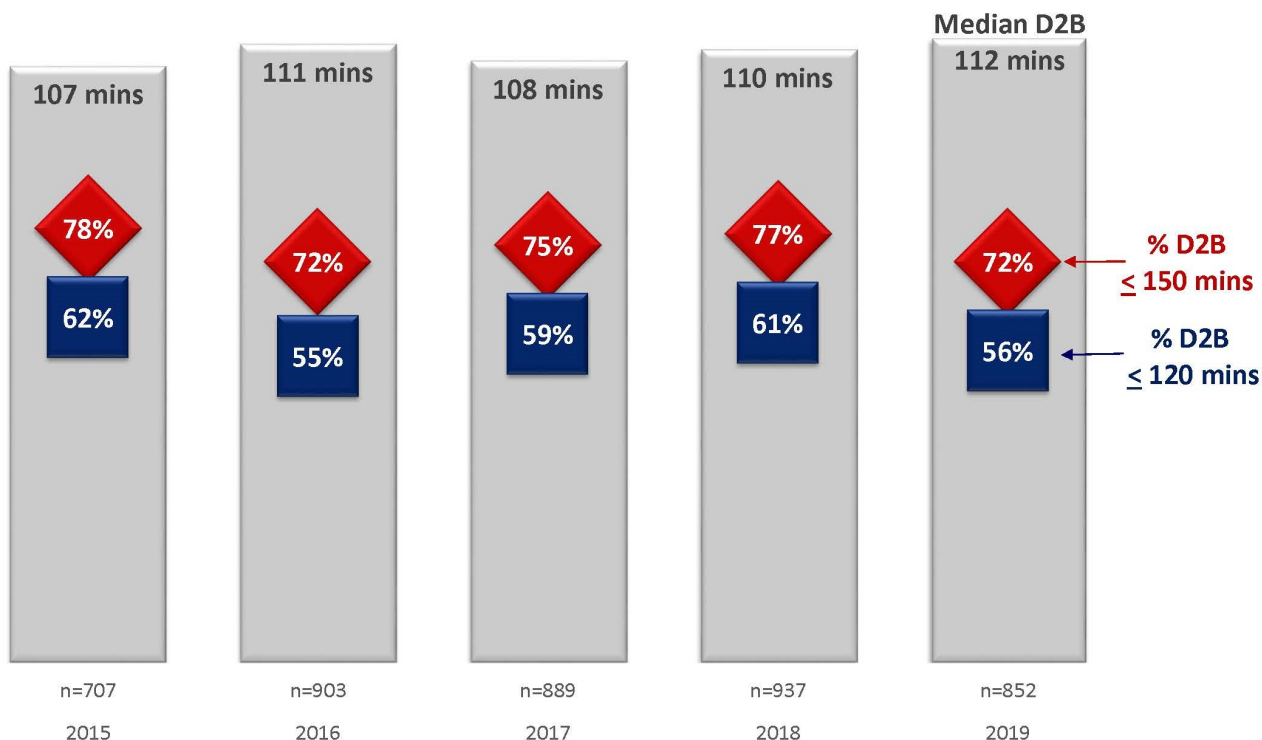






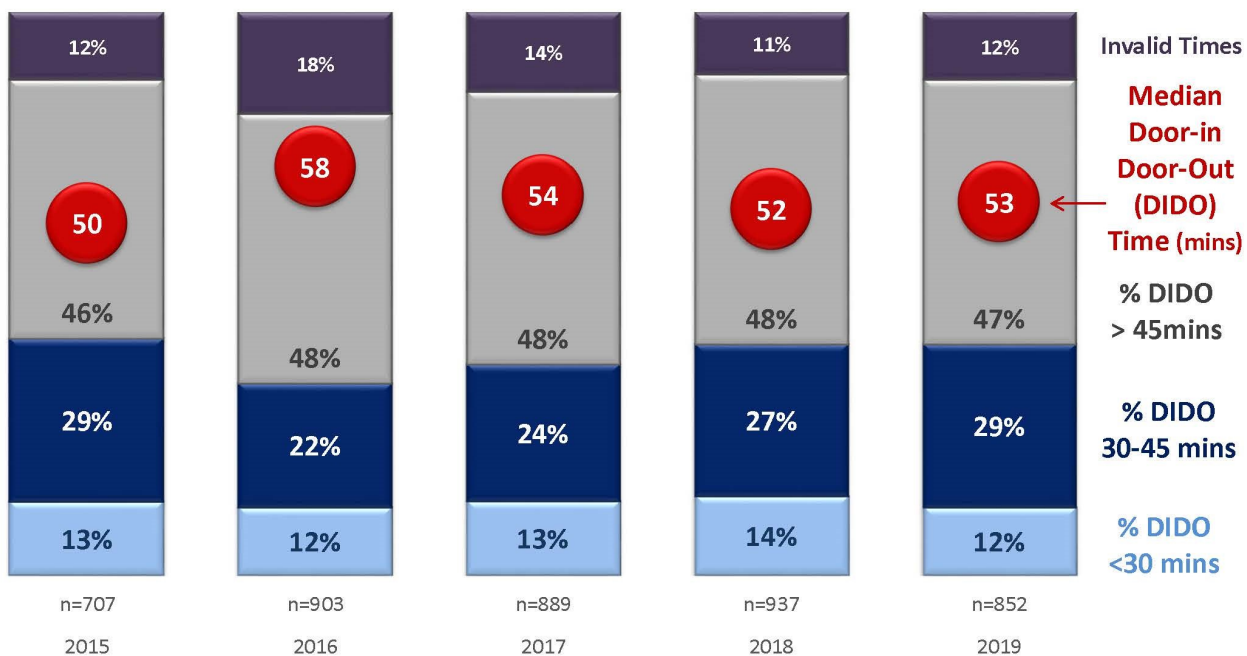
## STEMI Referral Facility: Door-to-Device (D2B) Time

LA County Target: within 150 minutes 90% of the time and within 120 minutes 75% of the time



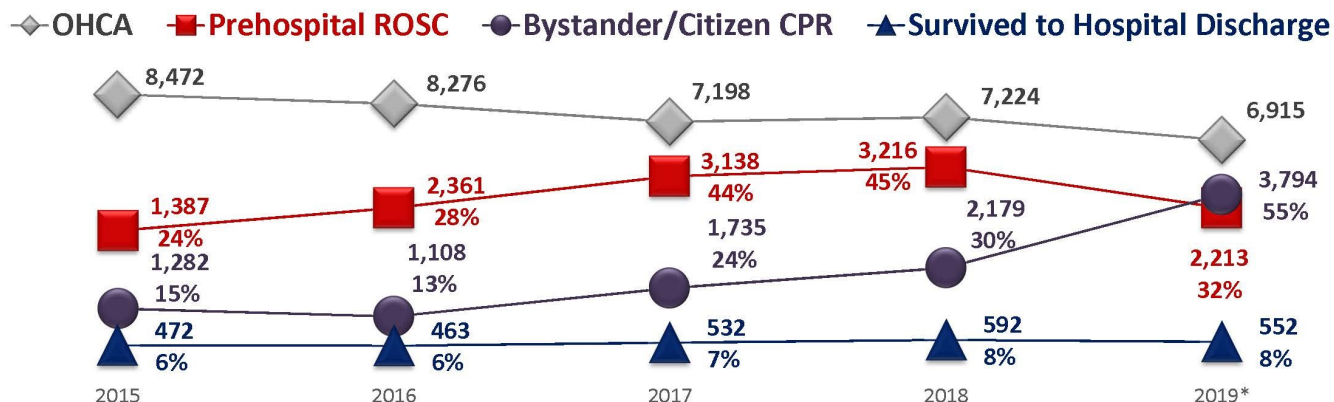
## STEMI Referral Facility: Door-in Door-out (DIDO) Time

LA County Target: < 30 minutes

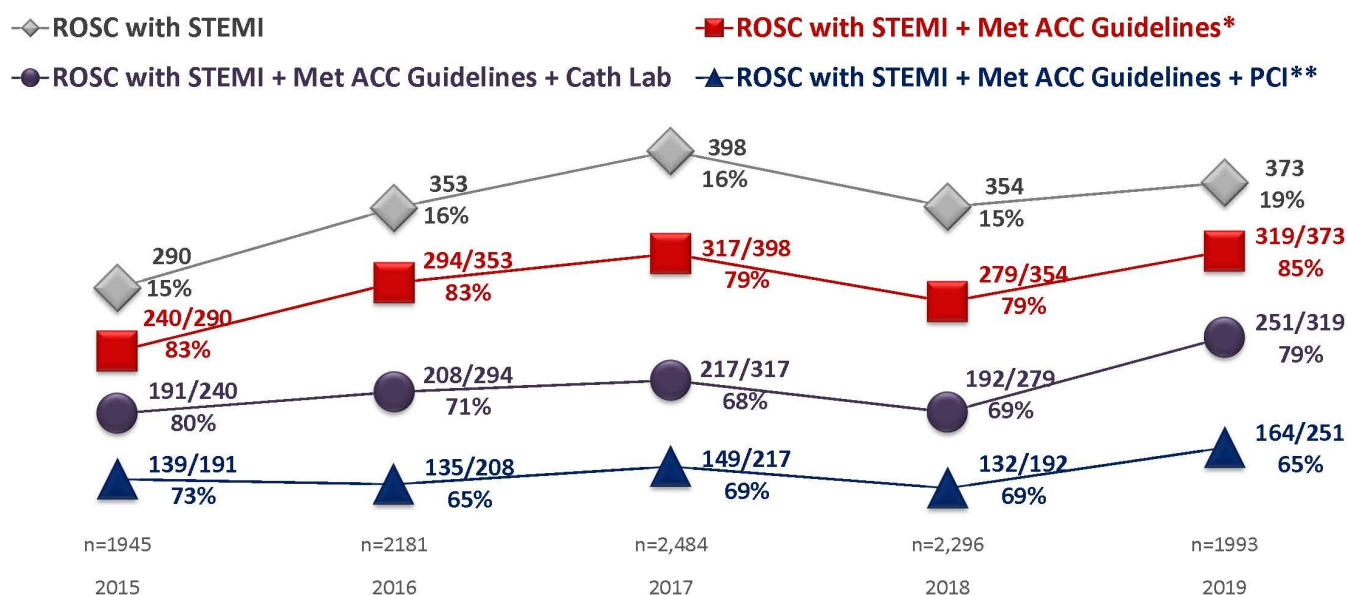




## Out of Hospital Cardiac Arrest (OHCA) Return of Spontaneous Circulation (ROSC)

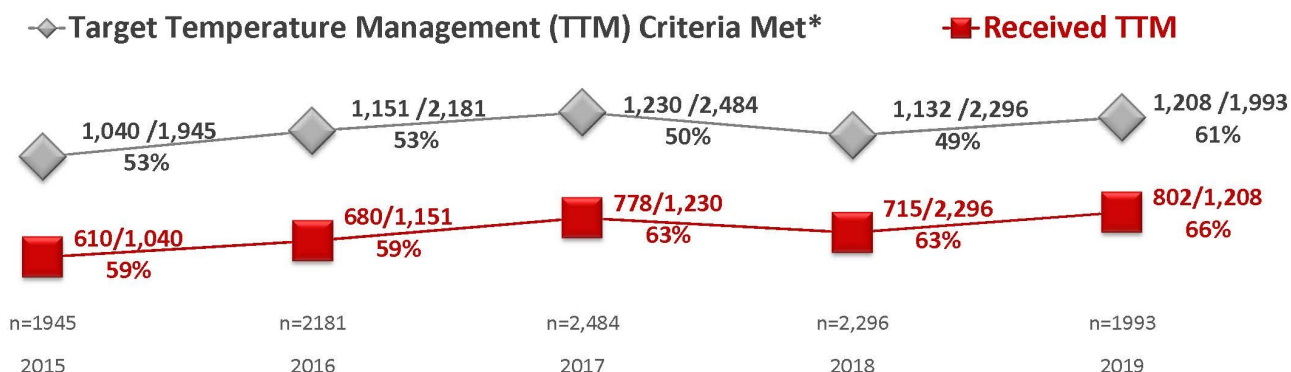


\*2019 OHCA population is based on Provider Impression Cardiac Arrest Non-Traumatic, which was fully implemented April 1, 2019. DOAs were excluded. 2015-2018 OHCA population was based on Chief Complaint of Cardiac Arrest.



\*ACC Guidelines for coronary angiography include: Age ≥18, pt did not expire, no DNR, no medical condition, treatment not refused and CL available.

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

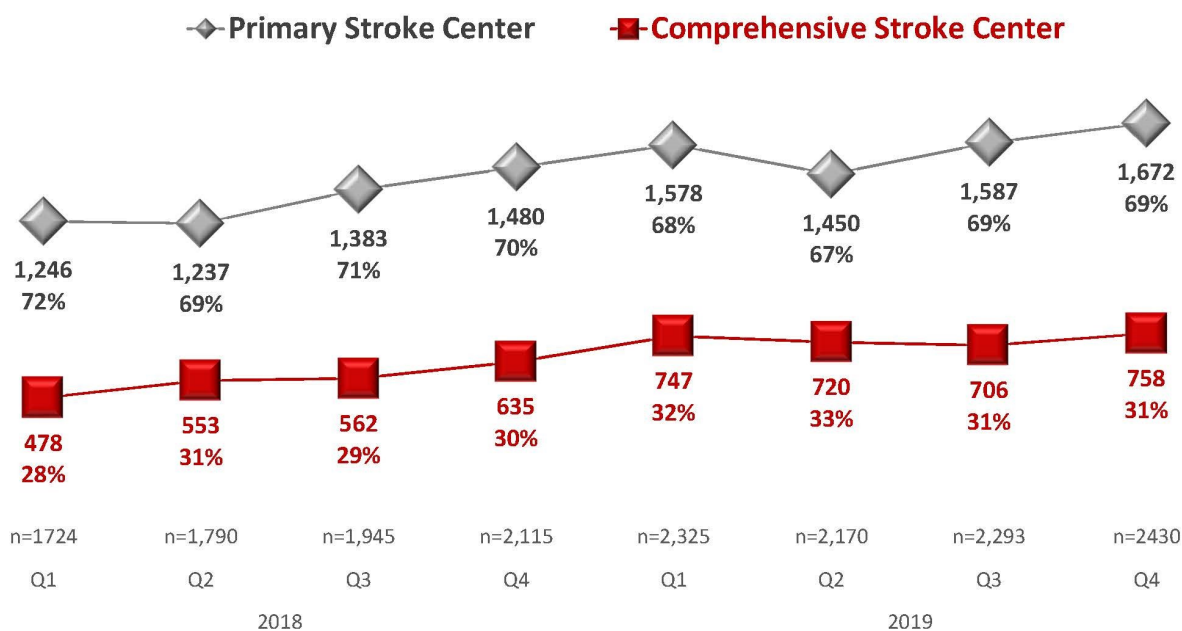


\*TTM criteria excludes: died in ED, age <18, awake/responsive, end stage terminal illness, core temp <35 and pre-existing DNR

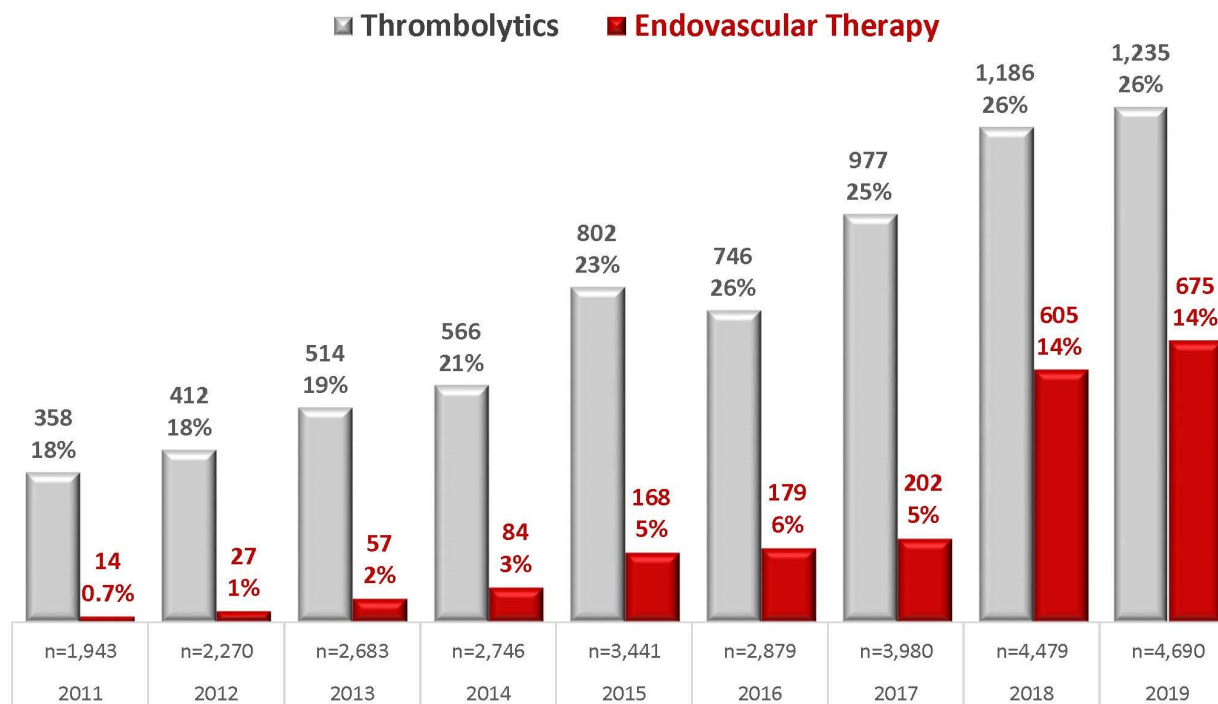


## Suspected Stroke Patient Destination

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.

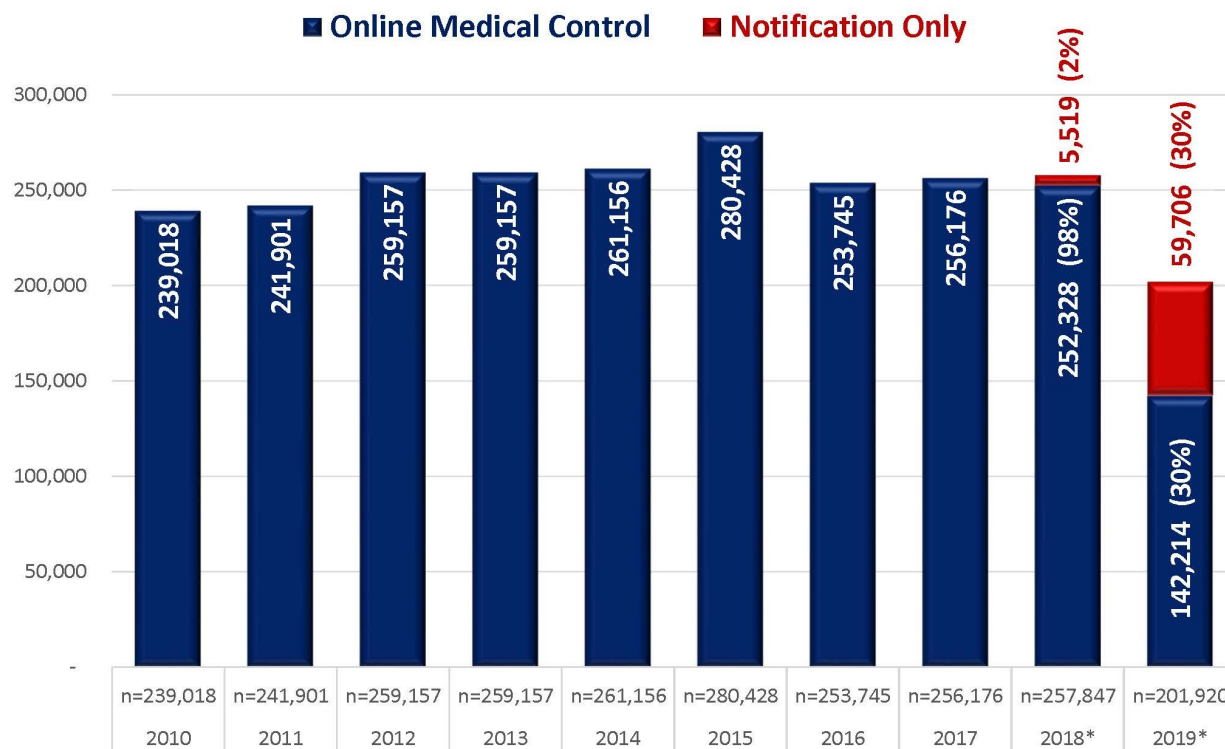


## Treatment—All Ischemic Stroke





## Paramedic Base Hospital Contact Volume



\* Phased-in implementation of New Treatment Protocols started in July 1, 2018 and was fully implemented in April 1, 2019. The New Treatment Protocols reduced the number of EMS responses requiring online medical control.



**EMS STRONG**  
READY FOR TODAY. PREPARING FOR TOMORROW

### EMS AGENCY



*To ensure timely, compassionate, and quality emergency and disaster medical services.*

10100 Pioneer Boulevard, Ste. 200

Phone: 562-378-1500

Web: <http://ems.dhs.lacounty.gov>

#### EDITORIAL BOARD

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