



## EMS SRC SYSTEM REPORT

### *Live Well San Diego*

*Live Well San Diego* is a regional vision adopted by the San Diego County Board of Supervisors in 2010 that aligns the efforts of County government, community partners and individuals to help all San Diego County residents be healthy, safe, and thriving. The vision includes three components. *Building Better Health*, adopted on July 13, 2010, focuses on improving the health of residents and supporting healthy choices; *Living Safely*, adopted on October 9, 2012, focuses on protecting residents from crime and abuse, making neighborhoods safe, and supporting resilient communities; and, *Thriving*, adopted on October 21, 2014, focuses on cultivating opportunities for all people to grow, connect and enjoy the highest quality of life.

The ongoing efforts of the STEMI receiving centers, County of San Diego Emergency Medical Services, and partner organizations to provide the best care possible for patients suffering from a STEMI directly supports *Live Well San Diego*. These efforts not only include providing the best clinical care but also providing educational materials to patients who have suffered from, or may be at risk of, a STEMI (a type of heart attack). Outreach efforts are important opportunities to teach the public to recognize symptoms of a heart attack and to educate about the health behaviors that increase the risk of heart attack. These activities help residents to live healthy, safe, and thriving lives.

# EMS SRC SYSTEM REPORT

## List of Tables & Figures

Tables		
Table 1	Mode of Arrival and Activation Per Quarter, County of San Diego STEMI Receiving System	Page 1
Table 2	Mode of Arrival and Activation Per Year, County of San Diego STEMI Receiving System	Page 2
Table 3	Mean Door-To-Device Time by Mode of Arrival, County of San Diego STEMI Receiving System	Page 3
Table 4	Median Door-To-Device Time by Mode of Arrival, County of San Diego STEMI Receiving System	Page 4
Figures		
Figure 1	Percent of Prehospital Activations per Year, County of San Diego STEMI Receiving System, 2007-2013	Page 2
Figure 2	Number of 9-1-1 Activated, Non-Activated, and Walk-In CCL/PCI Cases Submitted per Quarter and Year: County of San Diego STEMI Receiving System, 2011-2013	Page 3
Figure 3	Percent of 9-1-1 Activated CCL/PCI Cases with Door-To-Device Time $\leq$ 90 Minutes per Quarter and Year: County of San Diego STEMI Receiving System, 2011-2013	Page 4
Figure 4	Mean Door-To-Device Time of 9-1-1 Activated CCL/PCI Cases per Quarter and Year: County of San Diego STEMI Receiving System, 2011-2013	Page 5
Figure 5	Median Door-To-Device Time of 9-1-1 Activated CCL/PCI Cases per Quarter and Year: County of San Diego STEMI Receiving System, 2011-2013	Page 5
Figure 6	Percent of Non-Activated CCL/PCI Cases with Door-To-Device Time $\leq$ 90 Minutes per Quarter and Year: County of San Diego STEMI Receiving System, 2011-2013	Page 6
Figure 7	Mean Door-To-Device Time of Non-Activated CCL/PCI Cases per Quarter and Year: County of San Diego STEMI Receiving System, 2011-2013	Page 7
Figure 8	Median Door-To-Device Time of Non-Activated CCL/PCI Cases per Quarter and Year: County of San Diego STEMI Receiving System, 2011-2013	Page 7
Figure 9	Percent of Walk-In CCL/PCI Cases with Door-To-Device Time $\leq$ 90 Minutes per Quarter and Year: County of San Diego STEMI Receiving System, 2011-2013	Page 8
Figure 10	Mean Door-To-Device Time of Walk-In CCL/PCI Cases per Quarter and Year: County of San Diego STEMI Receiving System, 2011-2013	Page 9
Figure 11	Median Door-To-Device Time of Walk-In CCL/PCI Cases per Quarter and Year: County of San Diego STEMI Receiving System, 2011-2013	Page 9
Figure 12	9-1-1 Activated and Non-Activated PCI Cases: Percent Deaths, County of San Diego SRC System	Page 11
Figure 13	9-1-1 Activated and Non-Activated PCI Cases: Percent Deaths $\leq$ 24 Hours after PCI, County of San Diego SRC System	Page 11
Figure 14	9-1-1 Activated and Non-Activated PCI Cases: Percent LOS $>$ 5 Days, County of San Diego SRC System	Page 12
Figure 15	9-1-1 Activated and Non-Activated PCI Cases: Percent CABG $\leq$ 24 Hours, County of San Diego SRC System	Page 12
Figure 16	Overall STEMI Diversion Bypass Hours by Month, 2011-2013	Page 13
Figure 17	Overall STEMI Diversion Bypass Hours by Year, 2011-2013	Page 14

SRC System Overview  
Mode of Arrival and 911 Activations

Since 2007, there were 6,477 ST-segment elevation myocardial infarction (STEMI) patients who arrived at a STEMI Receiving Center (SRC) via 911 or Walk In. Of the 79.5% 911 Arrivals, 73.5% were activated from the field. This equates to a quarterly average of 184 911 STEMI Arrivals of which 135 were activated from the field. The quarterly average of Walk In Arrivals was 47.

Table 1. **Mode of Arrival and Activation Per Quarter**  
**County of San Diego STEMI Receiving System**

Year	Quarter	# Arrive By 911	# 911 Activations	# 911 Non Activated	% 911 Activations	# Walk-Ins
2007†	1st Qtr	145	108	37	74.5	32
	2nd Qtr	198	138	60	69.7	50
	3rd Qtr	161	110	51	68.3	39
	4th Qtr	174	133	41	76.4	39
2008	1st Qtr	198	159	39	80.3	50
	2nd Qtr	167	137	30	82.0	50
	3rd Qtr	177	143	34	80.8	37
	4th Qtr	187	149	38	79.7	35
2009	1st Qtr	171	140	31	81.9	54
	2nd Qtr	159	120	39	75.5	56
	3rd Qtr	186	157	29	84.4	35
	4th Qtr	183	142	41	77.6	37
2010	1st Qtr	164	130	34	79.3	50
	2nd Qtr	155	124	31	80.0	39
	3rd Qtr	217	169	48	77.9	36
	4th Qtr	208	157	51	75.5	54
2011	1st Qtr	252	197	55	78.2	55
	2nd Qtr	232	166	66	71.6	60
	3rd Qtr	209	153	56	73.2	39
	4th Qtr	210	136	74	64.8	47
2012	1st Qtr	211	140	71	66.4	53
	2nd Qtr	169	111	58	65.7	53
	3rd Qtr	144	95	49	66.0	47
	4th Qtr	217	140	77	64.5	56
2013	1st Qtr	182	114	68	62.6	57
	2nd Qtr	158	111	47	70.3	45
	3rd Qtr	169	120	49	71.0	62
	4th Qtr	148	89	59	60.1	59
<b>Overall</b>		<b>5151</b>	<b>3788</b>	<b>1363</b>	<b>73.5</b>	<b>1326</b>

Source: County of San Diego HHSA EMS SRC Database 2007-2013  
†January 16, 2007 - December 31, 2007

SRC System Overview  
Mode of Arrival and 911 Activations

The annual average number of 911 Arrivals was 736. On average 541 (73.5%) of these were activated from the field. The highest number of 911 cases was in 2011 with 903. Activations peaked in 2008 with 80.7% but have gradually declined since. The annual average number of Walk In Arrivals was 189.

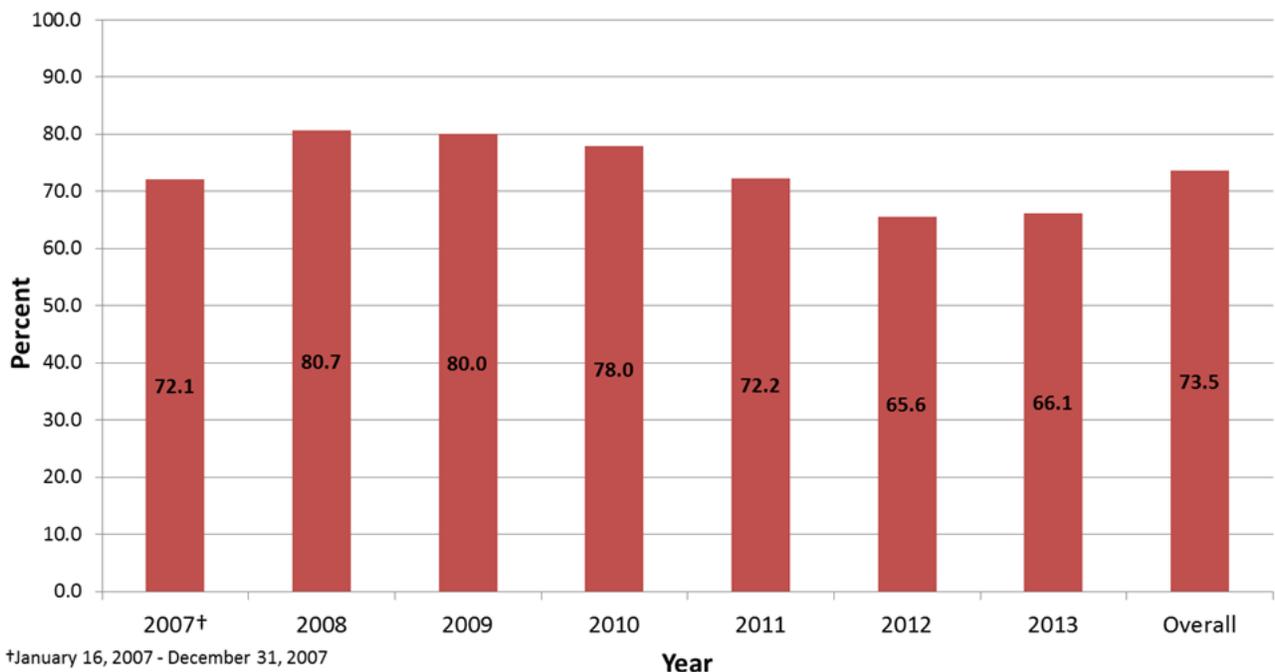
Table 2. **Mode of Arrival and Activation Per Year**  
**County of San Diego STEMI Receiving System**

Year	# Arrive By 911	# 911 Activations	# 911 Non Activated	% 911 Activations	# Walk-Ins
2007†	678	489	189	72.1	160
2008	729	588	141	80.7	172
2009	699	559	140	80.0	182
2010	744	580	164	78.0	179
2011	903	652	251	72.2	201
2012	741	486	255	65.6	209
2013	657	434	223	66.1	223
<b>Overall</b>	<b>5151</b>	<b>3788</b>	<b>1363</b>	<b>73.5</b>	<b>1326</b>

Source: County of San Diego HHSA EMS SRC Database 2007-2013  
†January 16, 2007 - December 31, 2007

Figure 1.

**Percent of Prehospital Activations per Year**  
**County of San Diego STEMI Receiving System, 2007-2013**



### SRC System Overview Mode of Arrival and CCL/PCI

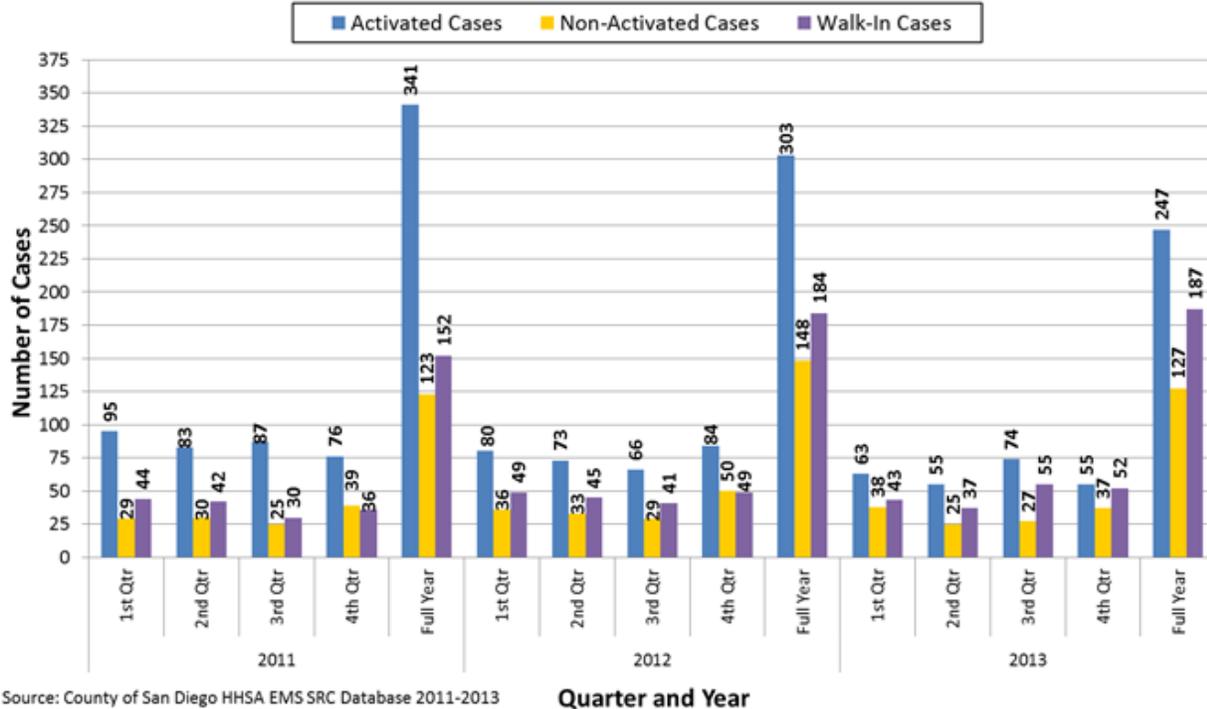
Starting in 2011 the SRC System changed data collection methods to include Door-To-First-Device Time (DTD), replacing the previously collected Door-To-Balloon-Time. Therefore the following graphs include data from 2011 to 2013.

Regardless of Mode of Arrival STEMI patients may go to the Cardiac Catheterization Lab (CCL) and receive Percutaneous Coronary Intervention (PCI) to treat narrowed arteries. In the County of San Diego SRC System PCI treatments may include Guidewire Introduction, Balloon inflation, Stent placement, Thrombectomy/Aspiration, Rotational Atherectomy.

The number of STEMI patients who went to the CCL and received PCI by Mode of Arrival are shown in the graph below.

Figure 2.

**Number of 9-1-1 Activated, Non-Activated, and Walk-In CCL/PCI Cases Submitted per Quarter and Year: County of San Diego STEMI Receiving System**



Source: County of San Diego HHSA EMS SRC Database 2011-2013

## SRC System Overview

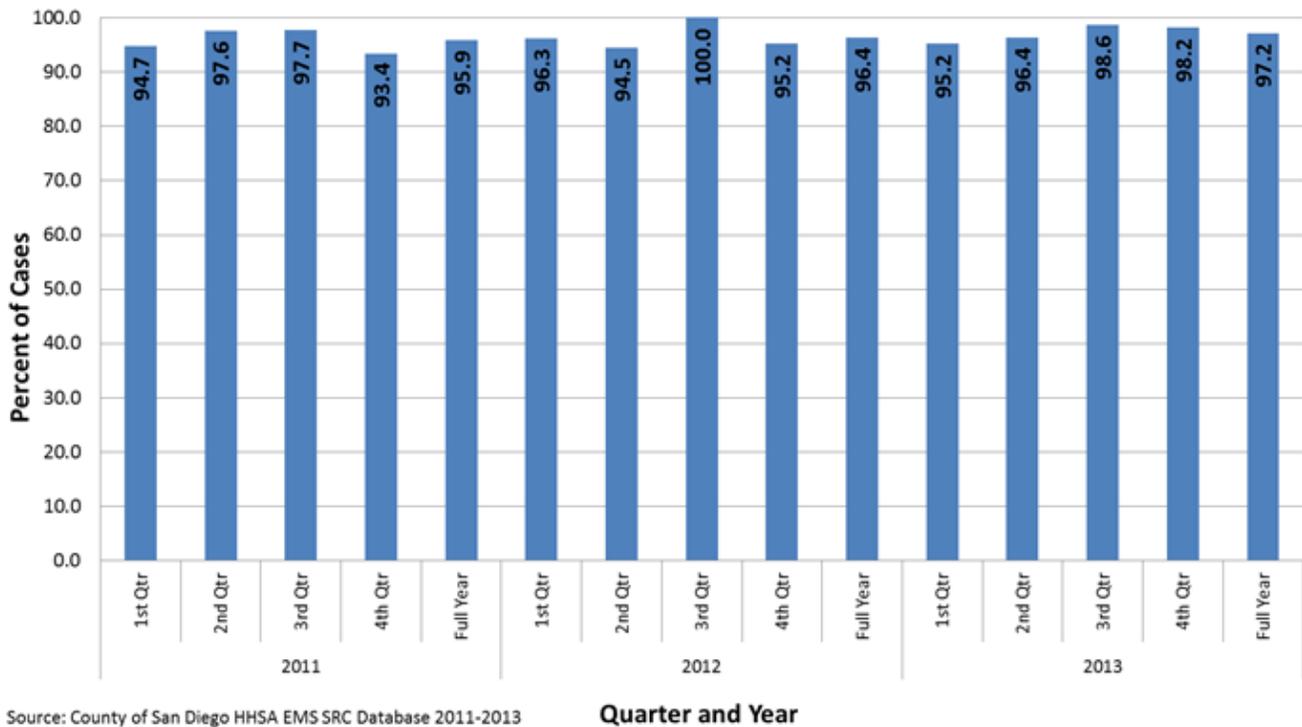
### 911 Activated Door-To-First-Device Time

For patients suffering a STEMI, The American College of Cardiology (ACC) and the American Heart Association (AHA) recommend a Door-To-Device Time of no more than 90 minutes. Therefore, the local SRC System measures Door-To-Device Times against this recommended benchmark.

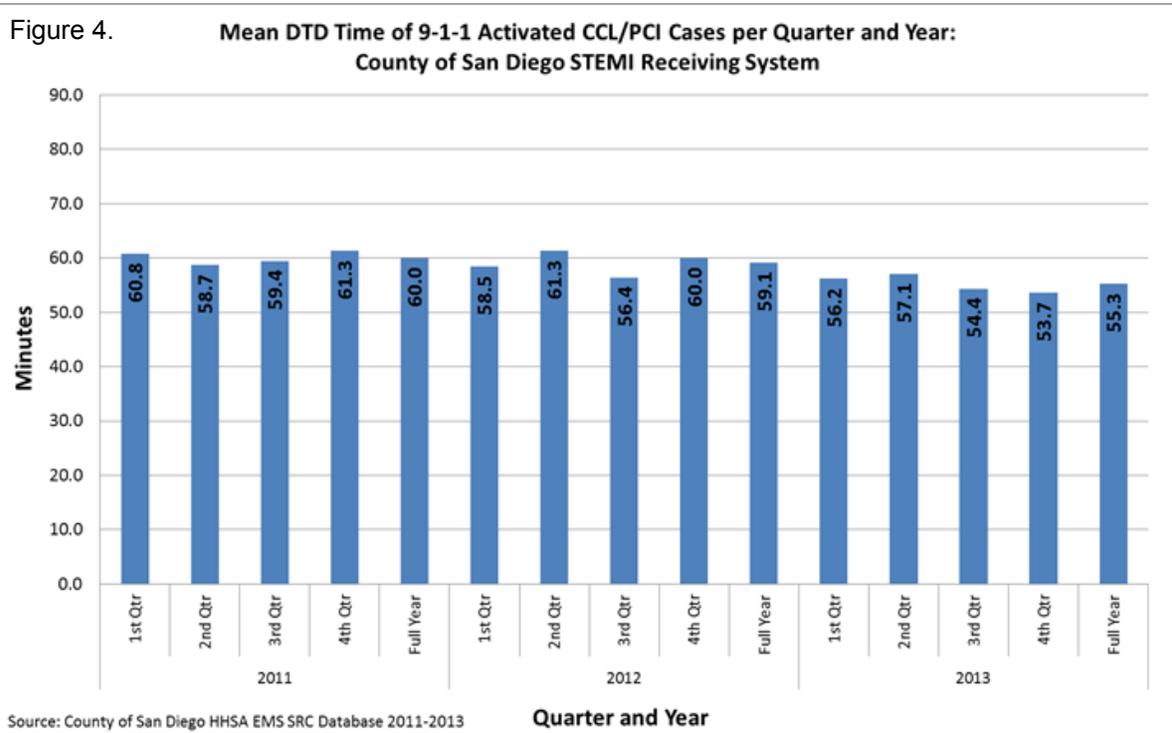
Since first the quarter of 2011, 93% 911 Activated patients that went to the CCL and had PCI received the procedure in 90 minutes or less. The quarterly range was 93.4% to 100.0%.

Figure 3.

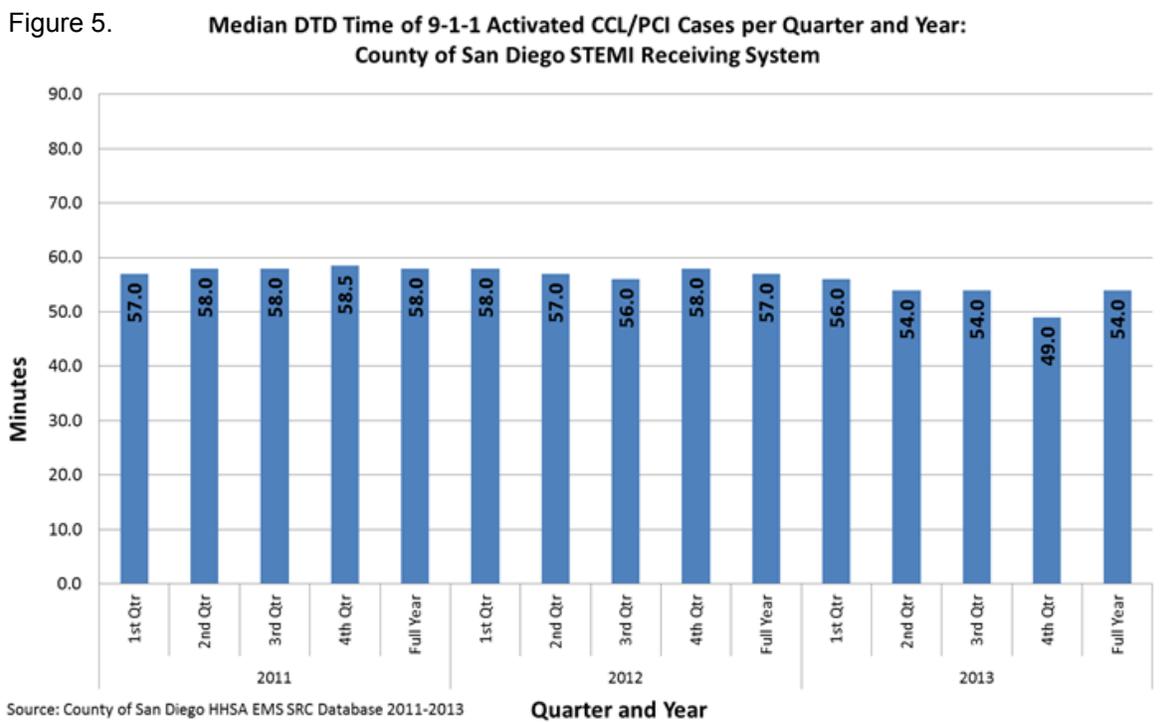
**Percent of 9-1-1 Activated CCL/PCI Cases with DTD Time ≤ 90 Minutes per Quarter and Year: County of San Diego STEMI Receiving System**



## SRC System Overview 911 Activated Door-To-First-Device Time



The mean and median Door-To-Device Time for 911 Activated patients was well below the ACC/AHA recommended 90 minute guideline for each quarter and year. This measure was lowest in the 4th quarter 2013.



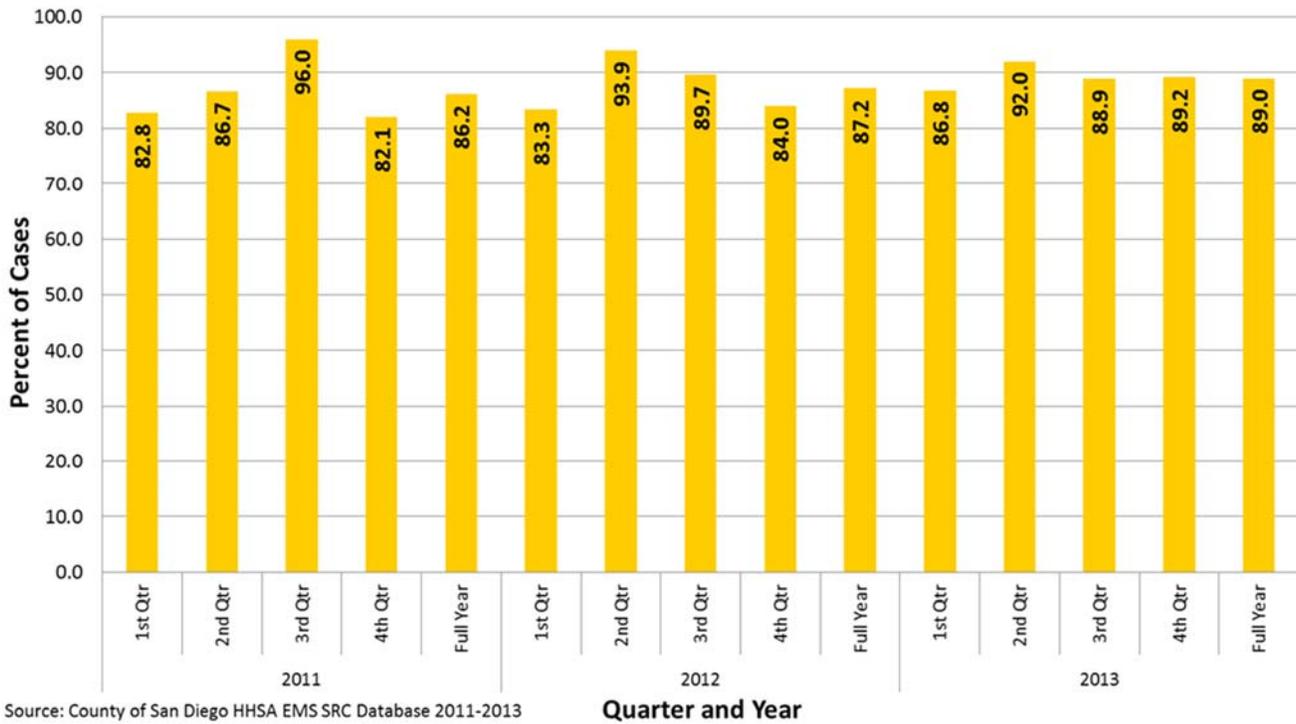
## SRC System Overview

### 911 Non-Activated Door-To-First-Device Time

Across all quarters and years 911 Non-Activated patients that went to the CCL and had PCI received the procedure in 90 minutes or less at least 82% of the time. This is lower than the 93% for the 911 Activated group.

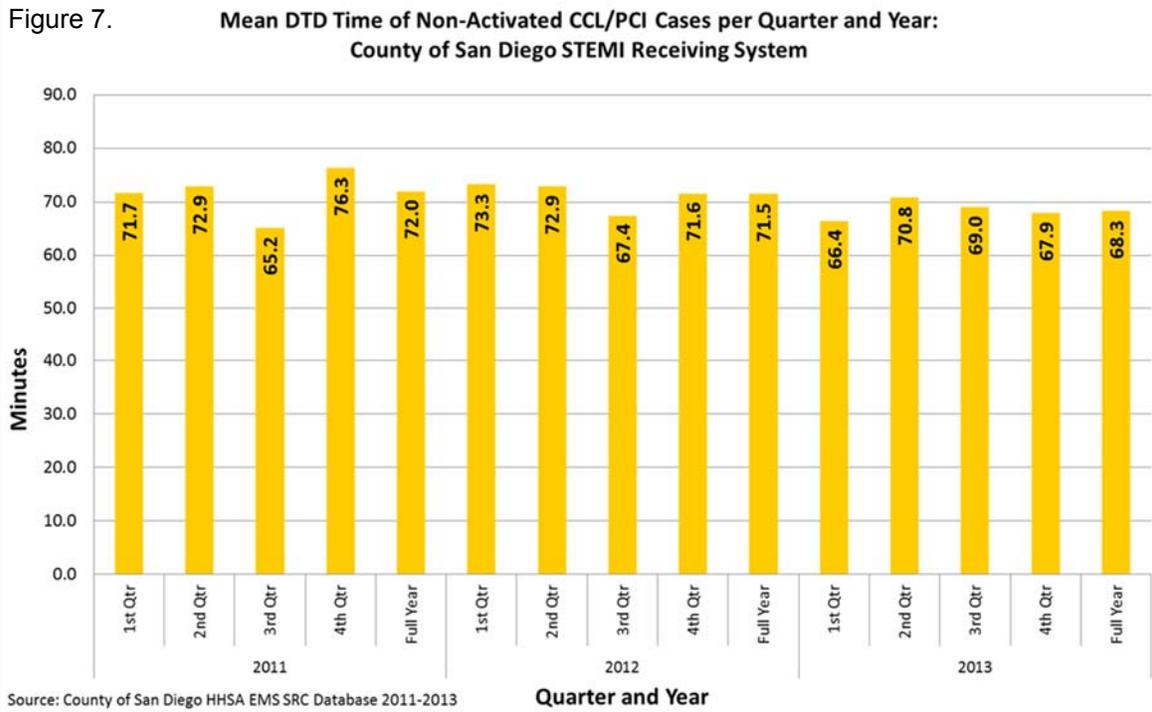
Figure 6.

**Percent of Non-Activated CCL/PCI Cases with DTD Time ≤ 90 Minutes per Quarter and Year: County of San Diego STEMI Receiving System**

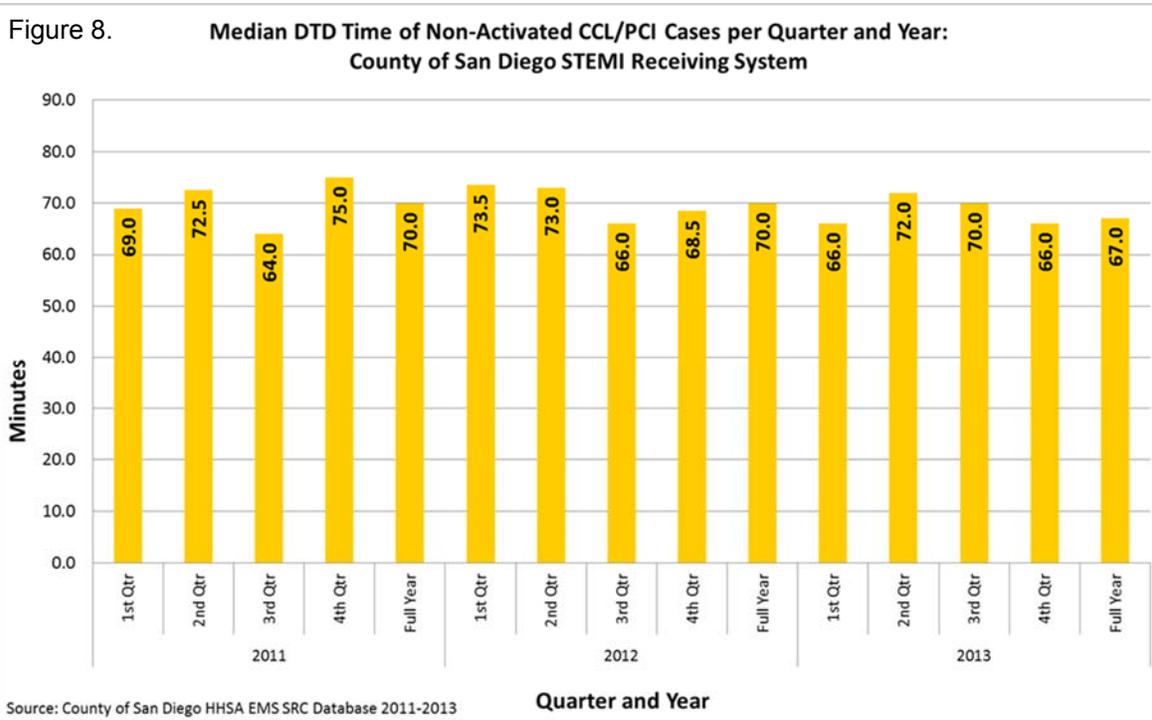


Source: County of San Diego HHSA EMS SRC Database 2011-2013

SRC System Overview  
911 Non-Activated Door-To-First-Device Time



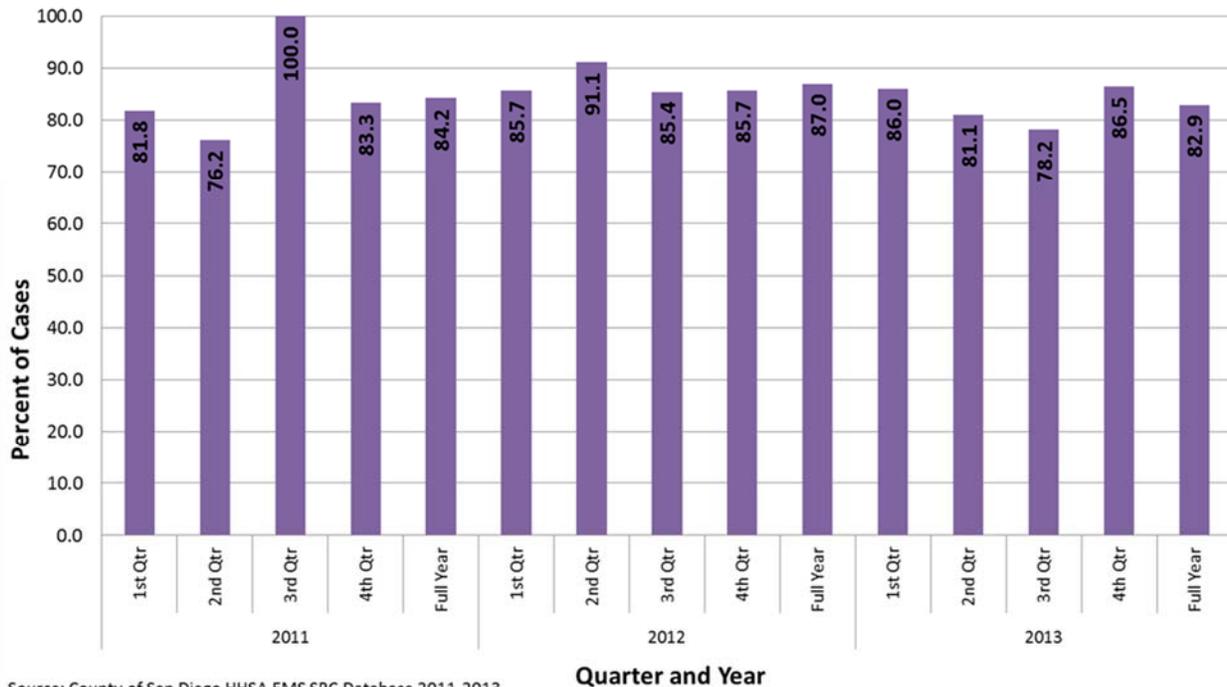
Similar to the 911 Activated patients, both the quarterly and annual mean and median Door-To-Device Time for 911 Non-Activated patients was well below the ACC/AHA recommended 90 minute guideline. This measure was lowest in the 3rd quarter 2011.



### SRC System Overview Walk In Door-To-First-Device Time

Across all quarters and years Walk-In patients that went to the CCL and had PCI received the procedure in 90 minutes or less at least 76% of the time. This is lower than the 911 Activated group (93%) and the 911 Non-Activated group (82%).

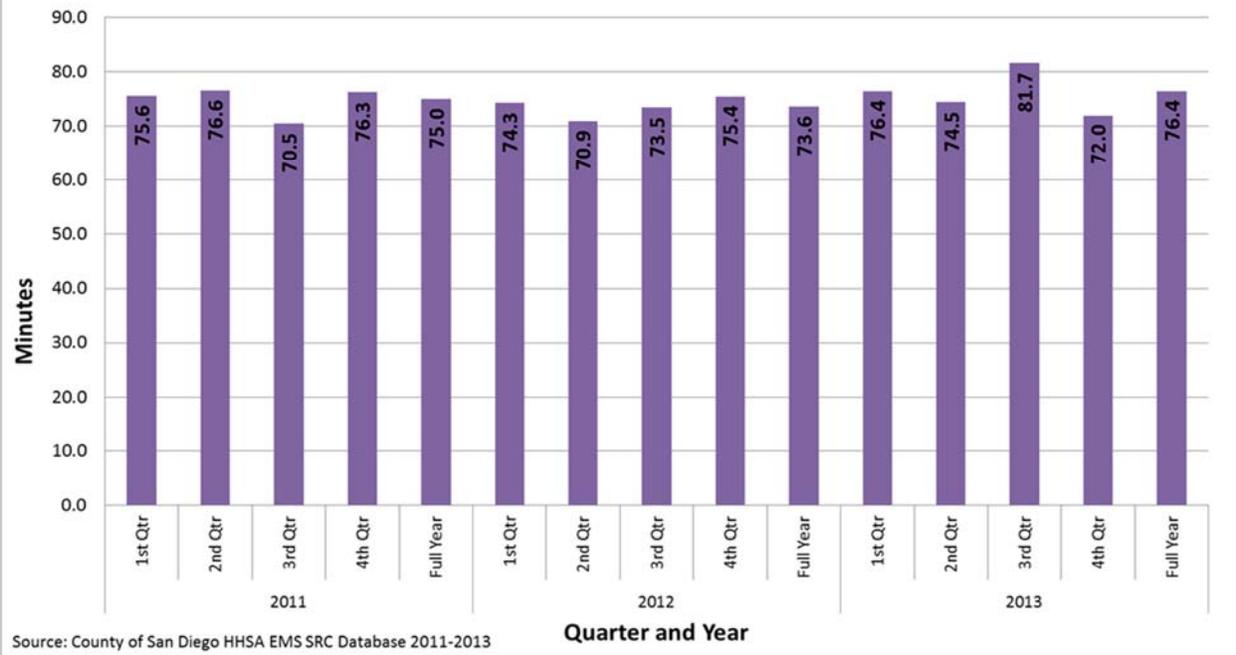
Figure 9. Percent of Walk-In CCL/PCI Cases with DTD Time ≤ 90 Minutes per Quarter and Year: County of San Diego STEMI Receiving System



Source: County of San Diego HHSa EMS SRC Database 2011-2013

SRC System Overview  
Walk In Door-To-First-Device Time

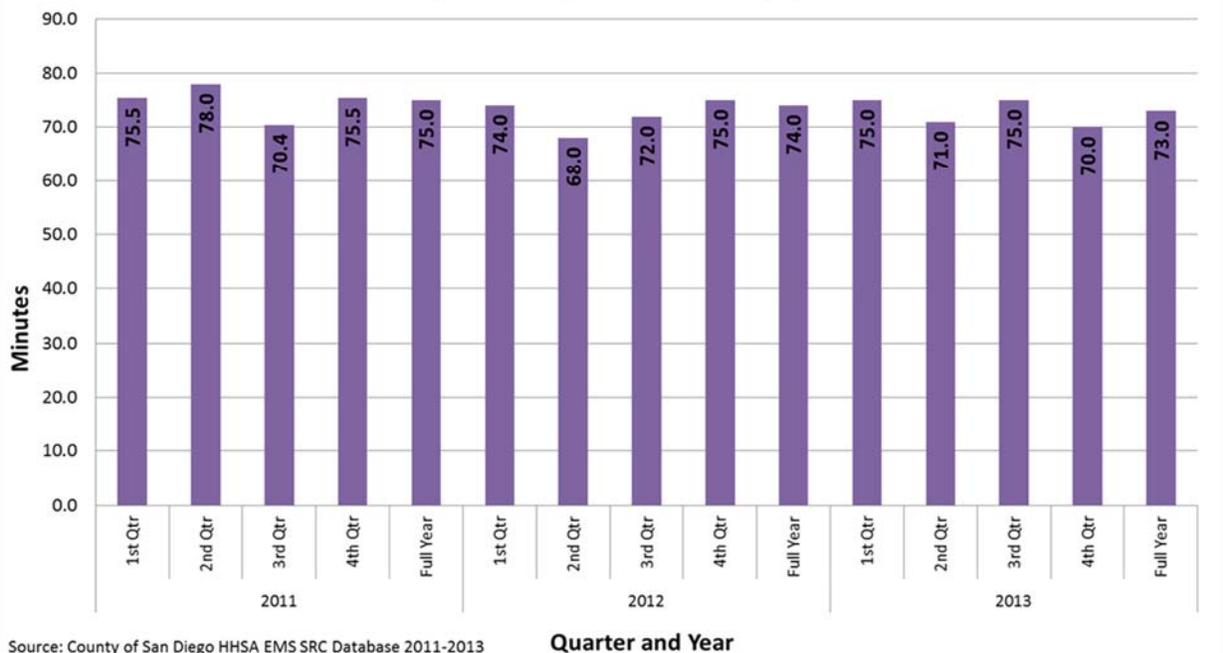
Figure 10. Mean DTD Time of Walk-In CCL/PCI Cases per Quarter and Year: County of San Diego STEMI Receiving System



Source: County of San Diego HHSA EMS SRC Database 2011-2013

Walk-In patients also had quarterly and annual mean and the median Door-To-Device Times below the ACC/AHA recommended 90 minute guideline. The mean for Walk-In patients was lowest in the 3rd quarter 2011.

Figure 11. Median DTD Time of Walk-In CCL/PCI Cases per Quarter and Year: County of San Diego STEMI Receiving System



Source: County of San Diego HHSA EMS SRC Database 2011-2013

## SRC System Overview

### All Modes of Arrival Door-To-First-Device Time

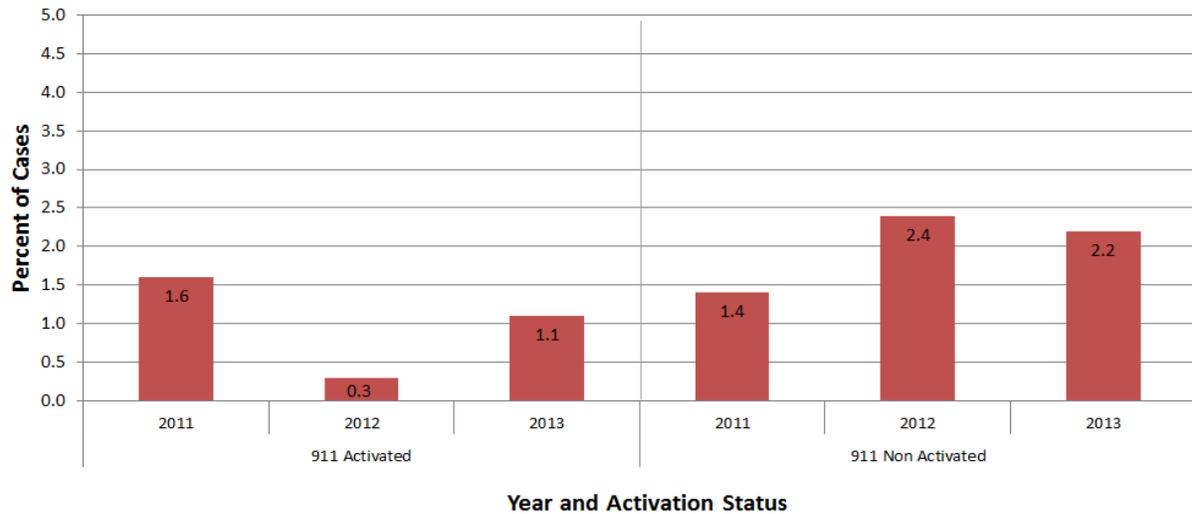
Each year the 911 Activated patients had the lowest mean and median Door-To-Device Times across all groups, followed by the 911 Non-Activated group. These measures for 911 Activated patients reach lows in 2013 with 55.3 minutes and 54.0 minutes, respectively. Lows for 911 Non-Activated was also in 2013. Mean Walk In Door-To-Device Time was lowest in in 2012.

<b>Table 3. Mean Door-To-Device Time (minutes)</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
<b>911 Activated</b>	60.0	59.1	55.3
<b>911 Non-Activated</b>	72.0	71.5	68.3
<b>Walk-Ins</b>	75.0	73.6	76.4

<b>Table 4. Median Door-To-Device Time (minutes)</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>
<b>911 Activated</b>	58.0	57.0	54.0
<b>911 Non-Activated</b>	70.0	70.0	67.0
<b>Walk-Ins</b>	75.0	74.0	73.0

## SRC System Overview 911 Activated Outcomes

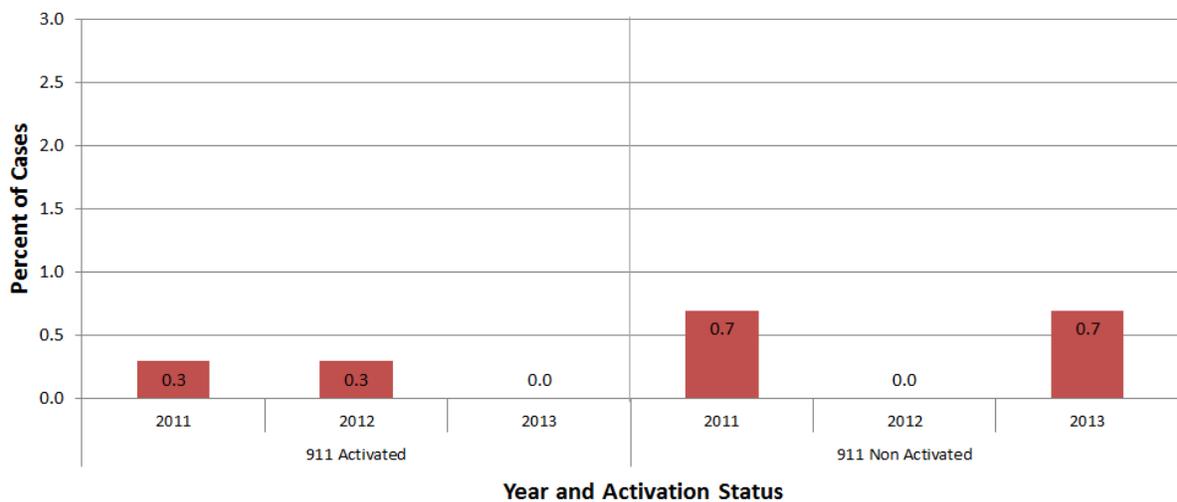
**Figure 12. 9-1-1 Activated and Non Activated PCI Cases: Percent Deaths  
County of San Diego SRC System**



Note: Excludes PCI Pts, with an occurrence of VT/VF/Arrest/Hypotension or Cardiogenic Shock prior to PCI  
Source: County of San Diego HHSA EMS SRC Database 2011-2013

Between 2011 and 2013 the percent of deaths for 911 patients who received PCI ranged from 0.3% to 2.4%. The percent of deaths within 24 hours after PCI ranged from 0.0% to 0.7%. Overall, 911 Activated patients had a lower percent. It is important to note deaths for patients with complications of VT/VF/Arrest/Hypotension or Cardiogenic Shock prior to PCI were excluded from these calculations.

**Figure 13. 9-1-1 Activated and Non Activated PCI Cases: Percent Deaths ≤ 24 Hours after PCI  
County of San Diego SRC System**

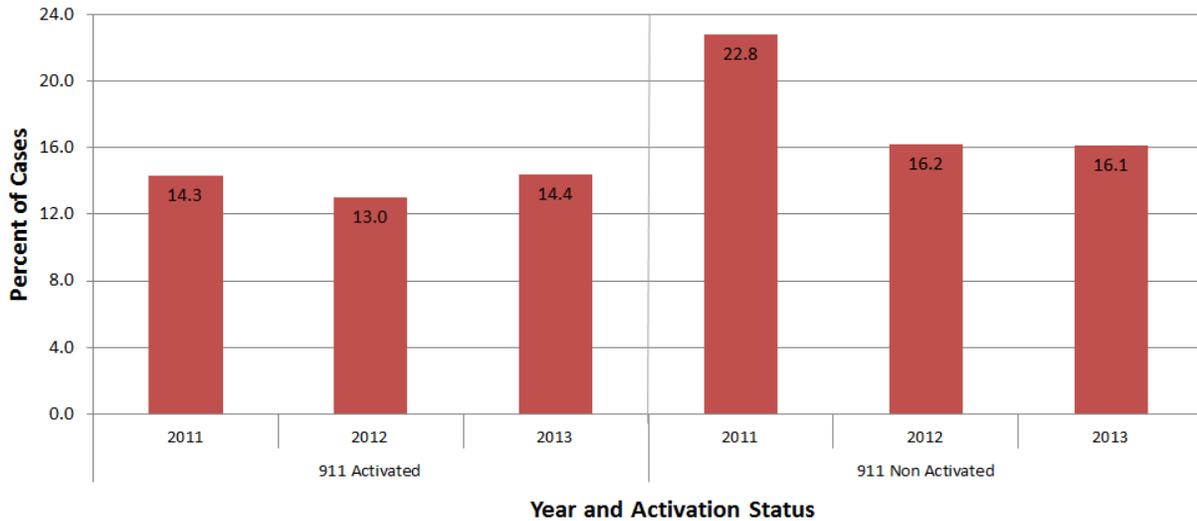


Note: Excludes PCI Pts, with an occurrence of VT/VF/Arrest/Hypotension or Cardiogenic Shock prior to PCI  
Source: County of San Diego HHSA EMS SRC Database 2011-2013

SRC System Overview  
911 Activated Outcomes

Figure 14.

9-1-1 Activated and Non Activated PCI Cases: Percent LOS > 5 Days  
County of San Diego STEMI Receiving System

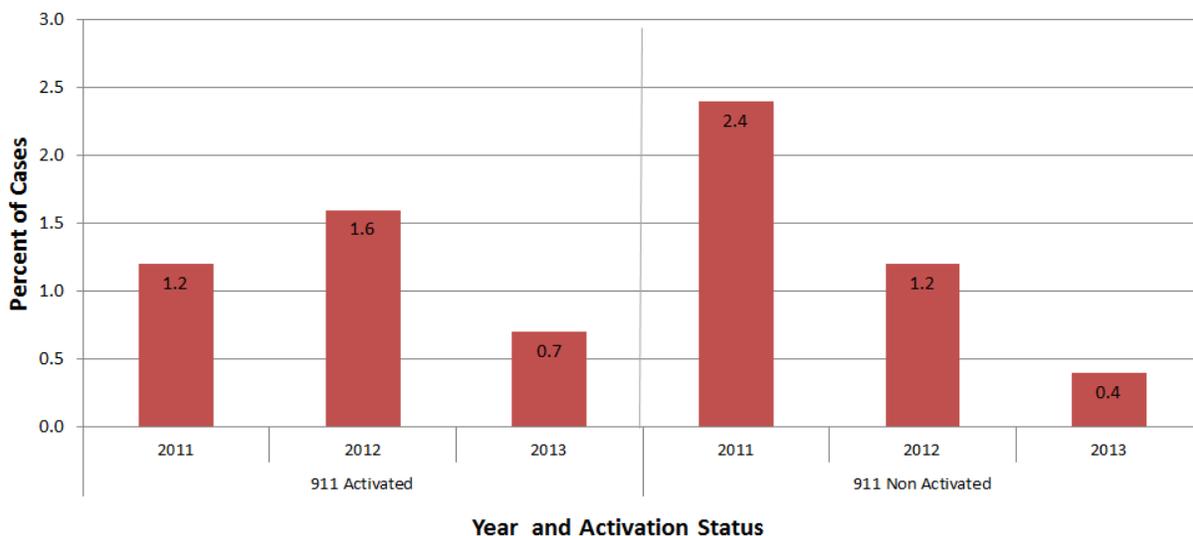


Source: County of San Diego HHSA EMS SRC Database 2011-2013

Across years the percent of 911 Activated PCI patients with a length of stay (LOS) over 5 days has remained consistent (range of 13% to 14.4%) and lower than the Non-Activated percent. CABG within 24 hours for 911 Activated PCI patients ranged between 0.7% to 1.6% per year. Non-Activated patients has a slightly larger range with 0.4% to 2.4%.

Figure 15.

9-1-1 Activated and Non Activated PCI Cases: Percent CABG ≤ 24 Hours  
County of San Diego STEMI Receiving System

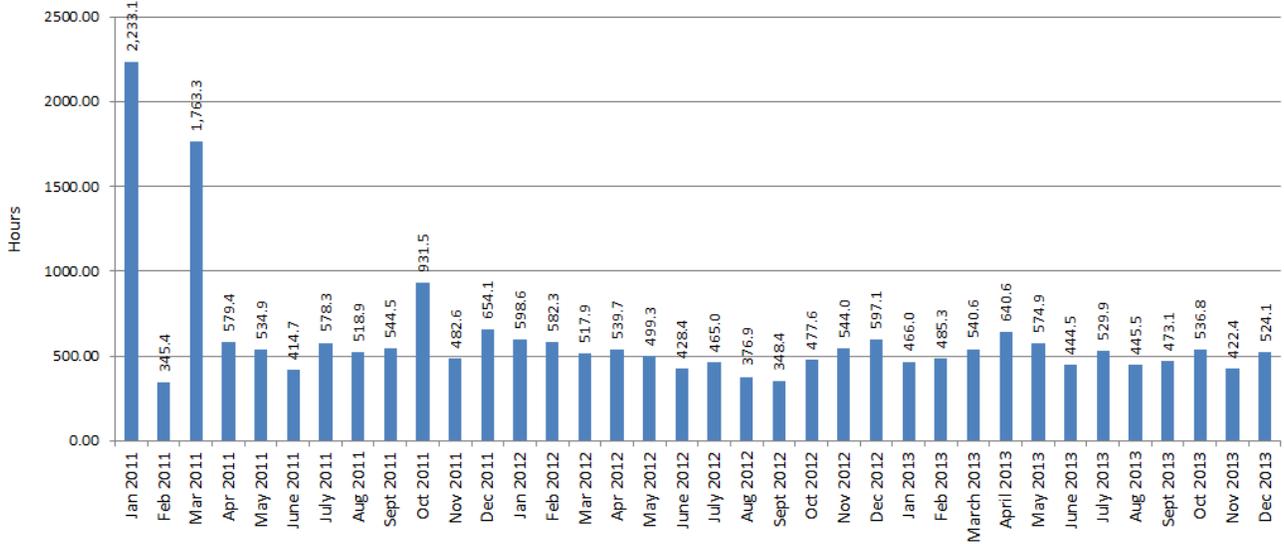


Source: County of San Diego HHSA EMS SRC Database 2011-2013

SRC System Overview—STEMI Bypass

Figure 16.

**Overall STEMI Diversion Bypass Hours by Month  
2011-2013**

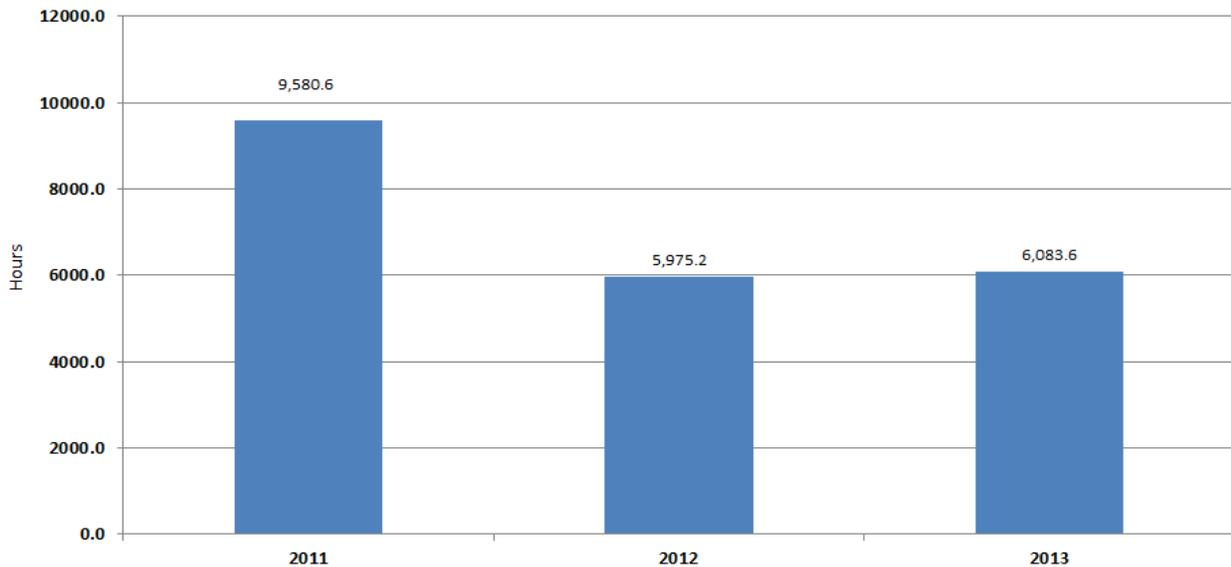


Source: County of San Diego HHSA EMS PrehospitalQCS-C Database 2011-2015

Since early 2011 the number of STEMI Bypass hours has decreased. The monthly average in 2011 was 798.4 hours and decreased to 507.0 hour in 2013. The annual average for 2011-2013 is 7213.1 hours.

Figure 17.

**Overall STEMI Diversion Bypass Hours by Year  
2011-2013**



Source: County of San Diego HHSA EMS PrehospitalQCS-C Database 2011-2013

## EMS SRC SYSTEM REPORT

### COUNTY OF SAN DIEGO EMERGENCY MEDICAL SERVICES

**Bruce Haynes, M.D.**  
**Medical Director**

**Marcy Metz, RN**  
**Chief**

6255 Mission Gorge Road  
San Diego, CA 92120  
Phone: 619-285-6429  
Fax: 619-285-6531

#### MISSION STATEMENT

Emergency Medical Services (EMS) ensures that emergency medical services, including 9-1-1 ambulance services, and trauma care services are of the highest quality. EMS also provides services in two ambulance districts and is involved in community education, prevention and research projects.

#### DID YOU KNOW?

A Branch of the County of San Diego Health and Human Services Agency, Emergency Medical Services (EMS) coordinates the activities of prehospital, trauma center and specialty service center providers for all residents and visitors of San Diego. The Branch has been designated as the County's "local EMS agency" (LEMSA) pursuant of the Health and Safety Code, and serves as the primary regulatory agency for the local EMS system. In addition, EMS has twelve different programs ranging from Disaster Medical Services to Automated External Defibrillators (AEDs).

##### EMS Programs

- County Service Area Administration
- Base Hospital and Specialty Care Systems
- Prehospital System Operations
- Prehospital System Emergency Medical Personnel
- Automated External Defibrillator (AED) Program
- Sexual Assault Response Team Program
- Epidemiology and Surveillance
- Community Health Statistics
- Information Communications, Systems and Technologies
- Disaster Medical Services
- Health Emergency Preparedness
- Community Health Preparedness

