

# 2018 Mid-Year Data Report

**Bureau of  
Emergency Medical  
Services  
September 2018**



**pennsylvania**  
DEPARTMENT OF HEALTH

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# Executive Summary

Annually, the Pennsylvania Department of Health (Department) Bureau of Emergency Medical Services (Bureau) publishes a statewide data report. While it is important to note that past reports have been limited to very limited datasets, advancements made within various statewide data collection systems and the transition to the National Emergency Medical Services Information System (NEMSIS) version 3.4 means the Bureau is now capable of using data to create a substantial report demonstrating the commonwealth's EMS systems capabilities. The Bureau will continue to issue this comprehensive report annually to showcase the EMS system. In the first half of 2018 the EMS system in Pennsylvania responded to 974,425 calls for service, the overwhelming majority of which were to emergency scenes.

As part of the Department's role in combating the opioid crisis, the Bureau has provided the Opioid Command Center various reports related to EMS utilization of naloxone. To highlight the EMS role in combating the opioid crisis, in the first six months of 2018, a total of 7,707 administrations of naloxone were reported to the state EMS data bridge. Of these 7,707 administrations, the Bureau can identify that there were 5,653 unique patient encounters in which EMS providers administered naloxone.

Recruitment and retention remains a topic that has generated a significant amount of discussion. With the implementation of the new EMS registry, the Bureau can, for the first time, provide information on the aggregate characteristics of individuals who are leaving the EMS profession. To demonstrate the ongoing discussions of recruitment and retention, between Jan. 1, 2018 and June 30, 2018, a total of 1,844 EMS providers allowed their EMS certification to expire, removing them from the commonwealth's EMS workforce. While the number of individuals seeking to become certified as an EMT is increasing statewide, the rate of newly certified providers does not balance the rate of loss.

To demonstrate this, the highest number of provider certifications to expire by level were those certified as emergency medical technicians (EMTs), totaling 1,246 individuals. Of these 1,246 expired EMT certifications, 36.27 percent are under the age of 30. Retaining younger individuals in the commonwealth's EMS system must be a priority for EMS leaders. The number of individuals who are choosing to become EMTs is increasing statewide. However, the rate is not increasing as fast as the rate at which we are losing them.

The accuracy of certain data elements and datasets contained within this report are only as accurate as the information provided by field providers through the electronic Patient Care Records (ePCR) system. For example, if an EMS provider only documents the administration of a medication in the narrative portion of the ePCR, it will not be reflected in datasets reported. The Bureau is aware that the datasets are not perfect but demonstrates a reasonable account of the efficacy of the commonwealth's EMS system. Compliance with reporting data varied widely between the first and second quarter as the commonwealth finalized the transition to NEMSIS 3.4 standard. It is the belief of the Bureau that, once EMS providers within the system see their data being utilized to advance patient care, the accuracy of reporting within the ePCR systems will continue to improve.

EMS leaders at all levels should continue to utilize data for a variety of different decision-making processes which include protocol and policy development. Additionally, this data can be used to address operational and staffing concerns throughout the commonwealth. It is the Bureau's intent that this report can serve as a benchmark to help individual agencies and municipalities assess their EMS system performance against statewide datasets.

If there are questions regarding any of the information contained in this report, please contact the Bureau of Emergency Medical Services.



Dylan J Ferguson  
Director, Bureau of Emergency Medical Services

## Methods

The Bureau of Emergency Medical Services utilized a variety of sources to obtain the data to construct this comprehensive report. Most of the raw data came from the state EMS data bridge. Pursuant to 28 PA Code 1021.8 and 1021.41, all ambulance agencies are required to submit electronic patient care records to this state data bridge. In 2017, the commonwealth's EMS system began the transition from NEMSIS version 2.2 to version 3.4.

This was a very intensive process that required efforts and collaboration between EMS agencies, Bureau staff, regional councils, and PCR vendors. For this report, the Bureau utilized data that had been uploaded to the state data bridge as of July 15, 2018, with an incident date identified between Jan. 1, 2018 to June 30, 2018. Unless otherwise specified with the notation of "all calls," the data in this report is isolated to those calls for service that are emergency responses or what can be considered responses to 911 requests for emergency service.

Other sources of data in this report include the National Registry of EMTs, and the Bureau's EMS certification registry, reported between Jan. 1, 2018 and June 30, 2018.

All source data was downloaded into a Microsoft Excel format. Once in Excel, a pivot table function was utilized for categorizing and sorting the various data sets.

QRS (Quick Response Service) agencies are currently exempted from submitting data to the state EMS data bridge and are only required to complete paper PCRs. As a result, information related to calls, interventions, medications, etc., provided by a QRS may not be reflected in this report. This is particularly important to note regarding the naloxone data contained within this report. Naloxone administration from QRSs, the public or law enforcement may not be reflected in this report, unless an EMS transport provider documented the medication as given prior to EMS arrival.

# Findings

## Summary Figures

Table 1 below details the overall number of EMS responses and types.

**Table 1. EMS Data Summary Figures, 01/01/2018 - 06/30/2018**

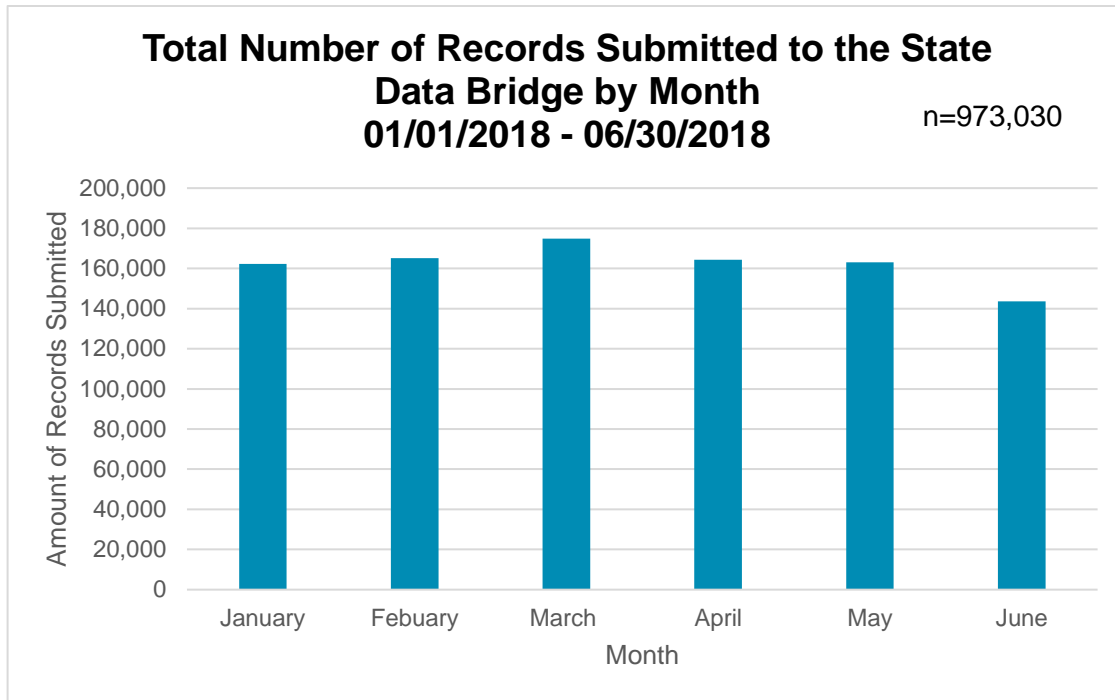
<b>Metric</b>	<b>Count</b>	<b>% of Total</b>
<b>Type of Service Requested</b>	<b>974,425</b>	
*911 response (scene)	740,905	76%
Medical transport	114,707	12%
Interfacility transfer	101,090	10%
Standby	7,805	1%
*Intercept	6,964	< 1%
*Public assist	1,503	< 1%
*Mutual Aid	1,451	< 1%
<b>Total Emergency 911 Records</b>	<b>750,823</b>	
<b>911 Calls by Gender</b>		
Female	312,896	53%
Male	274,222	47%
<b>911 Calls by Age</b>		
0 to 18 years	31,735	5%
18 years and older	553,419	95%
<b>Cardiac Arrest</b>		
By primary impression "cardiac arrest"	6,671	<1%
<b>Naloxone Administration</b>		
Total number of naloxone doses (911)	<b>7,707</b>	
Total number of EMS patients given naloxone	<b>5,653</b>	

Source: Pennsylvania State EMS Data Bridge, 2018

**Note: For the purposes of this report, all types of service requested that have an \* notated above are considered as a 911 record/scene response, regardless of how a call was received.**

Figure 1 below displays the number of PCR records submitted to the state databridge by month.

**Figure 1. Total Number of Records Submitted to the State Data Bridge by Month, 01/01/2018 - 06/30/2018**



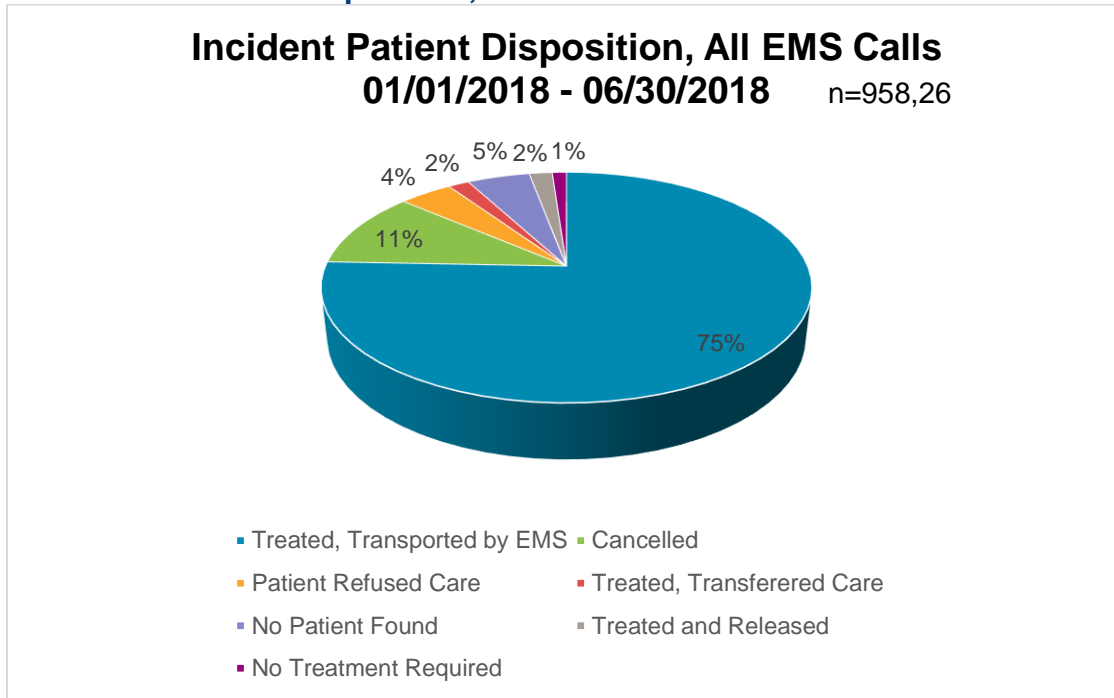
Source: Pennsylvania State EMS Data Bridge, 2018

Figure 1 displays a consistent rate of submission each month. The submission rate for the month of June is slightly less. This is likely due to some EMS agencies having not yet submitted their data for the month of June, by the time this report had been compiled.

Figure 2 on the following page below displays the overall patient disposition percentages, for all types of EMS calls.

## Patient Disposition

**Figure 2. Incident Patient Disposition, All EMS Calls 01/01/2018 - 06/30/2018**



Source: Pennsylvania State EMS Data Bridge, 2018

Figure 2 shows that two-thirds of all EMS patient contacts result in a patient being transported to a health care facility. EMS agencies can utilize this number to assist in benchmarking refusal rates of patients against the state average, and can utilize it along with locally available information for budgetary and revenue projections. Table 2 below displays the detailed findings of figure 2.

**Table 2. Incident Disposition for All EMS Calls, 01/01/2018 - 06/30/2018**

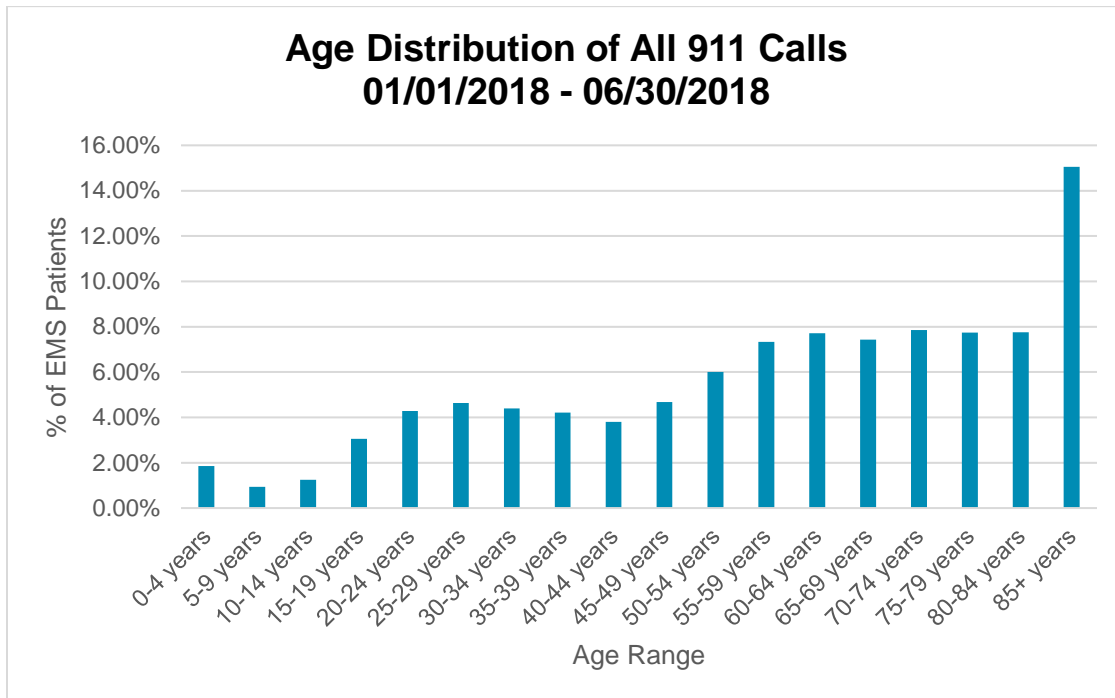
<i>Incident Patient Disposition</i>	<i>Number of Disposition</i>	<i>Percentage of all Dispositions</i>
<i>Treated, transported by EMS</i>	717,272	74.85%
<i>Cancelled</i>	101,369	10.58%
<i>Patient refused care</i>	39,818	4.16%
<i>Treated, transferred care</i>	15,629	1.63%
<i>No patient found</i>	46,637	4.87%
<i>Treated and released</i>	17,147	1.79%
<i>No treatment required</i>	10,673	1.11%
<i>Dead at scene</i>	8,704	0.91%
<i>Treated, transported by private vehicle</i>	505	0.05%
<i>Treated, transported by law enforcement</i>	512	0.05%
	<b>N=958,266</b>	

Source: Pennsylvania State EMS Data Bridge, 2018



Table 2 displays the final patient disposition, the number that disposition occurred, and the percentage of time that specific disposition occurred within the commonwealth. Figure 3 displays the distribution of patients age, that present to the EMS system.

**Figure 3. Age Distribution of All 911 Calls, 01/01/2018 - 06/30/2018**

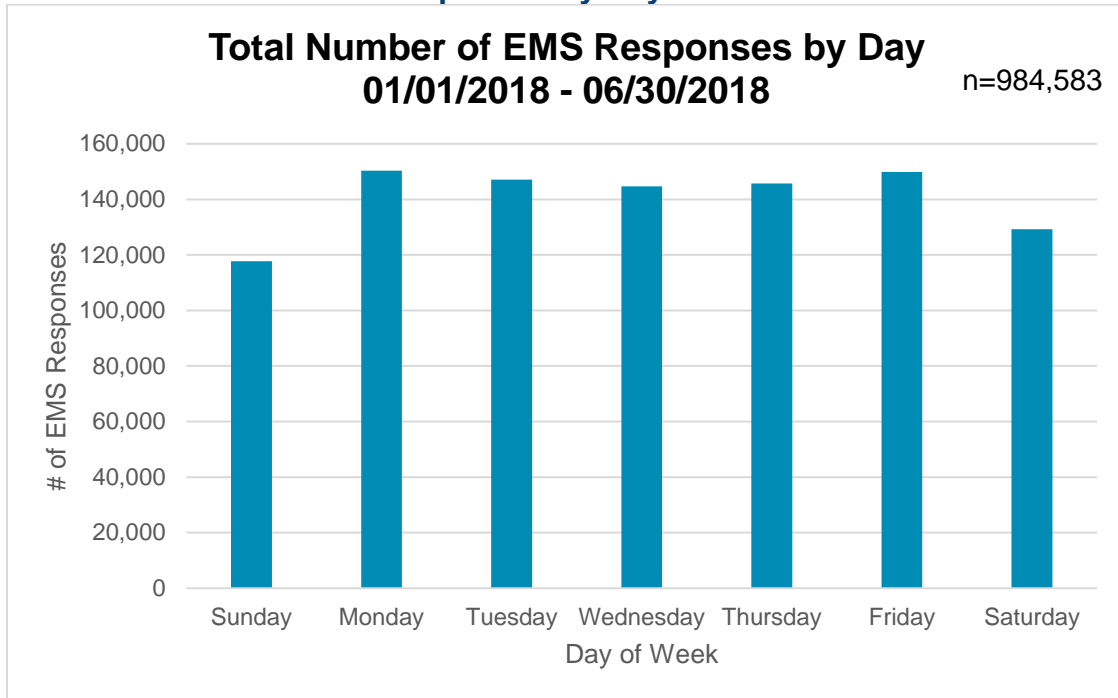


Source: Pennsylvania State EMS Data Bridge, 2018

Figure 3 displays that the age demographic by percentage that presents to the EMS system for 911 calls. The age group with the highest percentage utilization is 85 years of age and older. The five year to nine year age demographic presented to the EMS system the least. Figure 4 on the following page displays the number of EMS incidents, for all types of service requested by day of week.

## Operational Deployment

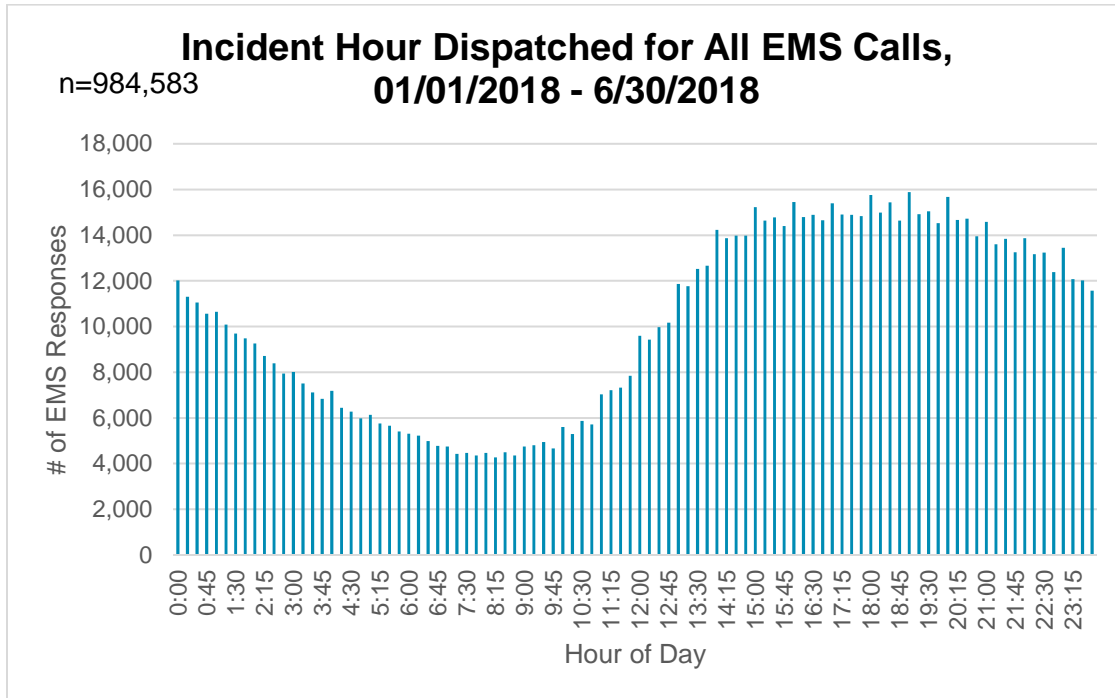
Figure 4. Total Number of EMS Responses by Day 01/01/2018 - 06/30/2018



Source: Pennsylvania State EMS Data Bridge, 2018

Figure 4 shows that the number of calls for service by day is consistent from day to day. Sunday has the lowest number of requests for service. EMS leaders can utilize this data, and local versions of this data to assist with resource deployment decisions. Figure 5 on the following page displays the distribution of EMS calls for service by hour of day.

**Figure 5. Incident Hour Dispatched for All EMS Calls, 01/01/2018 - 06/30/2018**

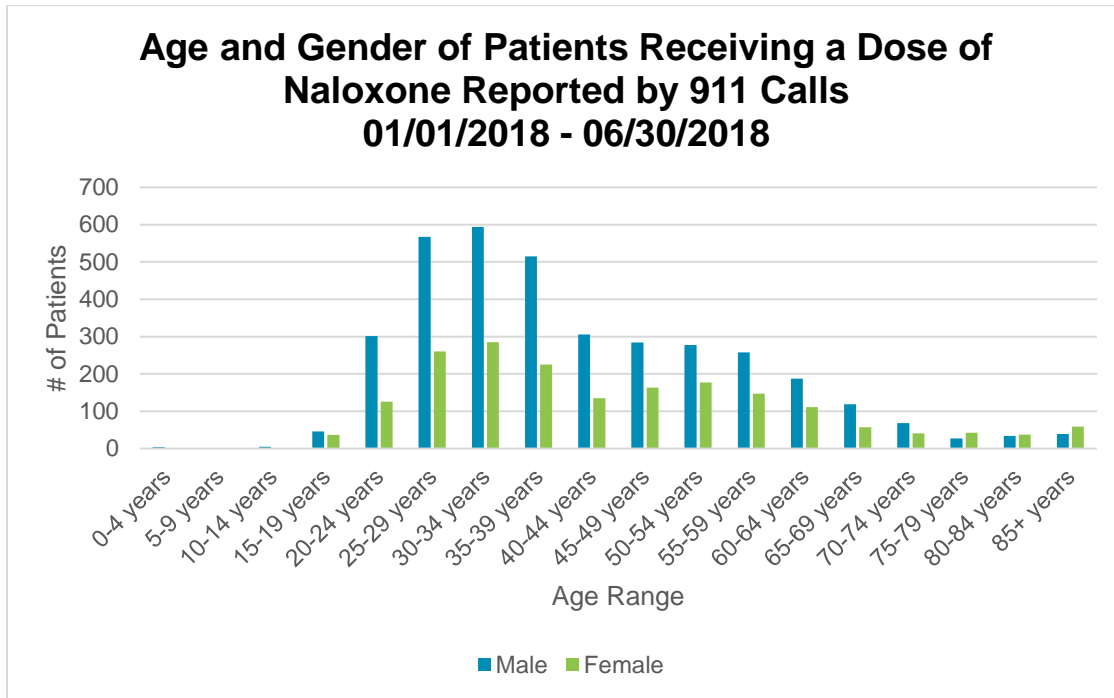


Source: Pennsylvania State EMS Data Bridge, 2018

Figure 5 shows the number of EMS responses by hour of day. The hour of day is displayed along with how many EMS calls for service were received during that time frame. There is a peak of requested responses in the early evening hours, before beginning to decrease after the midnight hour, and ultimately picking up again in the noon hour. Figure 6 on the following page displays the age and sex demographics of patients receiving naloxone during a 911 call.

## Drugs, Alcohol and Toxicity

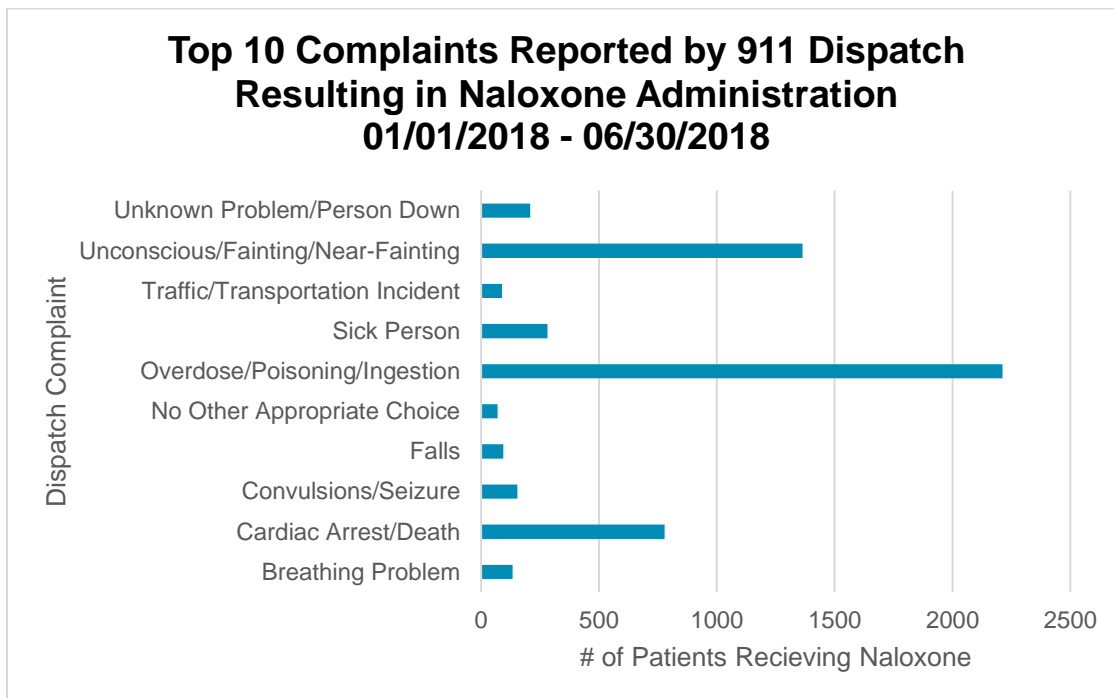
**Figure 6. Age and Gender of Patients Receiving a Dose of Naloxone Reported by 911 Calls 01/01/2018 - 06/30/2018**



Source: Pennsylvania State EMS Data Bridge, 2018

Figure 6 shows that males in the 30-34 year age group have received the most doses of naloxone, compared to all other groups. This information is of particular importance to EMS and public health leaders alike in developing a comprehensive response to the opioid crisis. Figure 7 on the following page displays the top reported dispatch complaints for patients who received a dose of naloxone.

**Figure 7. Top 10 Complaints Reported by 911 Dispatch Resulting in Naloxone Administration 01/01/2018 - 06/30/2018**



Source: Pennsylvania State EMS Data Bridge, 2018

Figure 7 displays the top ten complaints reported by dispatch that resulted in naloxone administration by EMS. Table 3, which is below displays the location type reported by EMS when naloxone was given.

**Table 3. Reported Location Type of EMS 911 Calls with Documented Naloxone Administration, 01/01/2018 - 06/30/2018**

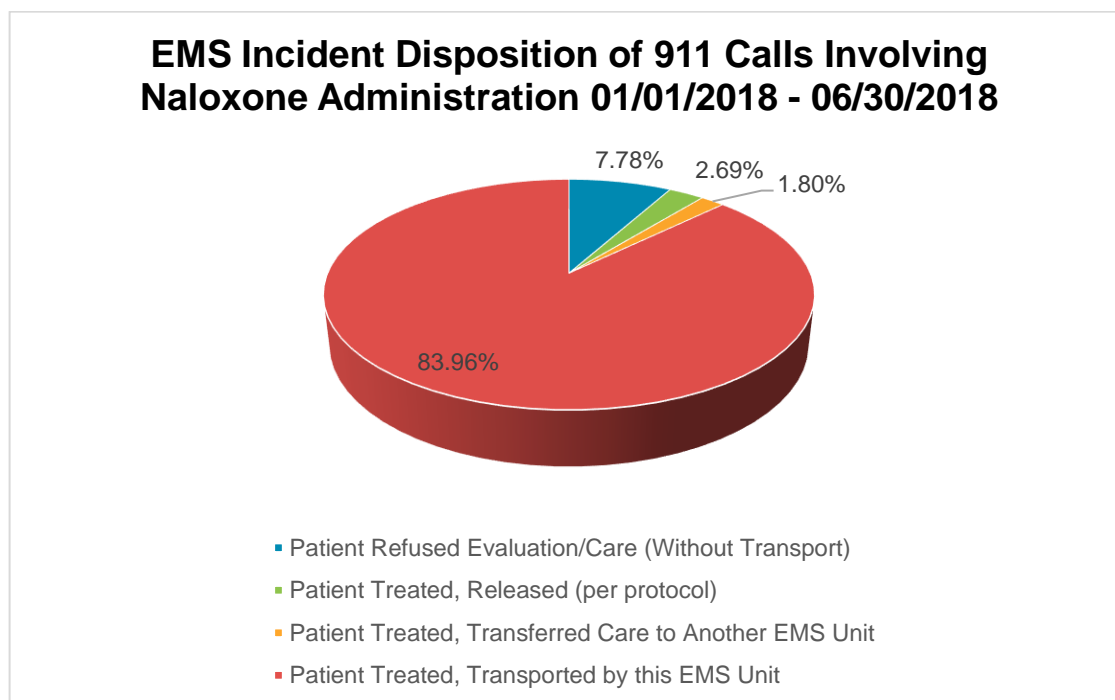
<b><i>Incident Location Type</i></b>	<b><i>% of Total Patients Receiving Naloxone</i></b>
<i>Agricultural site/farm</i>	0.07%
<i>Apartment</i>	2.5%
<i>Cultural building</i>	0.18%
<i>Health care provider office</i>	0.77%
<i>Hospital</i>	0.18%
<i>Industrial or construction site</i>	0.13%
<i>Not applicable</i>	0.72%
<i>Not recorded</i>	20.70%
<i>Nursing home</i>	0.83%
<i>Other ambulatory health services</i>	0.07%
<i>Other institutional residence</i>	0.13%
<i>Other place</i>	5.31%
<i>Other private residence</i>	5.80%
<i>Prison</i>	0.24%
<i>Private residence</i>	5.80%

<b>Incident Location Type</b>	<b>% of Total Patients Receiving Naloxone</b>
Public administrative building	1.41%
Recreation area	0.53%
Religious institution	0.07%
Retail building	3.56%
School	0.18%
Sidewalk	0.48%
Sports area	0.07%
Vehicle	1.76%
Wilderness area	0.13%

Source: Pennsylvania State EMS Data Bridge, 2018

Table 3 displays the reported incident location when a patient received a dose of naloxone administered by EMS providers. An incident location selection was only selected for 4,555 responses. During data analysis it is noted that 19% of records had no data submitted. Most of data reported the location as that of a private residence at 54.20%. Increasing the accuracy of this measurement and through active tracking of this metric, EMS can assist in the improvement of public health during the opioid crisis. This will allow public health partners and the Department to better focus local and regional needs for public access naloxone deployment. Figure 8 displays the disposition of patients who received a dose of Naloxone

**Figure 8. EMS Incident Disposition of 911 Calls Involving Naloxone Administration, 01/01/2018 - 06/30/2018**



Source: Pennsylvania State EMS Data Bridge, 2018

Figure 8 shows that nearly 84% of patients who receive naloxone are transported to a medical facility. Table 4 on the following page displays the detailed findings of figure 8.

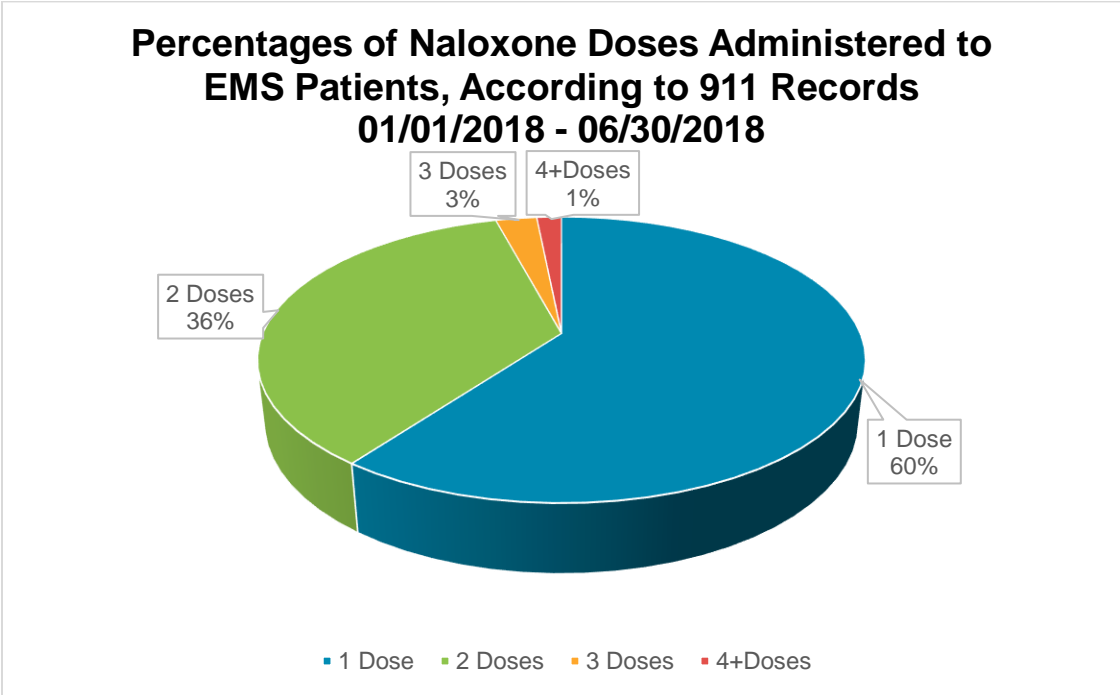
**Table 4. EMS Incident Disposition of 911 Patients Receiving Naloxone, 01/01/2018 - 06/30/2018**

<i>Incident Disposition</i>	<i>% of Dispositions</i>
<i>Assist, agency</i>	0.94%
<i>Assist, public</i>	0.02%
<i>Assist, unit</i>	0.19%
<i>Canceled (prior to arrival at scene)</i>	0.11%
<i>Canceled on scene (no patient contact)</i>	0.02%
<i>Canceled on scene (no patient found)</i>	0.48%
<i>Patient dead at scene-no resuscitation attempted (without transport)</i>	0.12%
<i>Patient dead at scene-resuscitation attempted (with transport)</i>	0.02%
<i>Patient dead at scene-resuscitation attempted (without transport)</i>	0.78%
<i>Patient evaluated, no treatment/transport required</i>	0.04%
<i>Patient refused evaluation/care (with transport)</i>	0.02%
<i>Patient refused evaluation/care (without transport)</i>	7.78%
<i>Patient treated, released (AMA)</i>	0.87%
<i>Patient treated, released (per protocol)</i>	2.69%
<i>Patient treated, transferred care to another EMS unit</i>	1.80%
<i>Patient treated, transported by law enforcement</i>	0.16%
<i>Patient treated, transported by private vehicle</i>	0.02%
<i>Patient treated, transported by this EMS unit</i>	83.96%

Source: Pennsylvania State EMS Data Bridge, 2018

Table 4 show that approximately 85% of patients receiving naloxone are transported to a medical facility for further care and treatment. Tracking of this metric can assist state, regional and local leaders in identifying opportunities for participation in the EMS naloxone leave-behind program endorsed by the Department of Health and the Bureau of EMS. The increase in effectiveness of data reporting in NEMSIS 3.4 not only allows stakeholders to better respond to the opioid crisis but also to greatly improve other aspects of public health as well. Figure 9 on the following page displays information related to the number of doses of naloxone given to a single patient.

**Figure 9. Percentages of Naloxone Doses Administered to EMS Patients, According to 911 Records, 01/01/2018 - 06/30/2018**



Source: Pennsylvania State EMS Data Bridge, 2018

Figure 9 provides a visual representation of the number of naloxone doses given to a single patient, as well as the frequency of that dosage number. In total, 60% of patients are given only one dose of naloxone, 36% required a follow-up dose, and only 1% required 4 or more doses of naloxone. Table 5 on the following page displays the frequency of naloxone administration by day of week and hour.



**Table 5. Heat Map of Total Naloxone Administrations by Day of Week and Hour (911 Records Only), 01/01/2018 - 06/30/2018**

Hour	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
12 AM	11	8	8	9	12	14	18
1 AM	26	10	12	14	16	16	15
2 AM	6	8	9	10	11	10	22
3 AM	8	3	13	4	6	13	13
4 AM	8	6	4	9	9	2	11
5 AM	10	6	4	4	7	10	11
6 AM	3	4	0	6	3	4	4
7 AM	9	3	3	2	3	5	8
8 AM	2	3	1	8	4	7	3
9 AM	2	1	4	2	5	4	4
10 AM	2	2	5	4	4	5	7
11 AM	3	2	8	2	7	5	5
12 PM	8	6	3	3	7	8	4
1 PM	6	4	5	8	7	8	6
2 PM	9	6	5	10	11	8	8
3 PM	10	3	8	2	5	16	13
4 PM	10	7	9	13	5	5	11
5 PM	6	7	8	12	17	10	9
6 PM	14	10	10	15	7	11	6
7 PM	10	10	13	7	18	13	10
8 PM	13	16	18	16	7	12	12
9 PM	8	9	7	14	13	17	9
10 PM	10	10	8	15	14	14	12
11 PM	17	17	14	13	20	15	10

Source: Pennsylvania State EMS Data Bridge, 2018

Table 5 displays, via the heatmap method, Naloxone administrations by EMS providers on 911 calls. To allow for the greatest sampling of data, the on-scene date and time was used for compiling this graphic. Darker shades of red represent the highest number of patients receiving naloxone, whereas lighter shades of red and pure white represent lower numbers. The number of occurrences is included within the table for reference. Sunday mornings in the 01:00 hour has the highest number of patients receiving naloxone. Table 6 on the following page displays the frequency of patient encounters resulting in naloxone administration in the ten counties with the highest number of doses administered by EMS.

**Table 6. EMS Patient Encounters Resulting in Naloxone Administration by County (Top 10), 01/01/2018 - 06/30/2018**

<i>County</i>	<i>Number of EMS Patient Contact Resulting in Naloxone Administration</i>	<i>Percentage of Total</i>
<i>Allegheny</i>	627	11.09%
<i>Bucks</i>	321	5.68%
<i>Cambria</i>	111	1.96%
<i>Chester</i>	121	2.14%
<i>Delaware</i>	320	5.66%
<i>Lehigh</i>	189	3.34%
<i>Luzerne</i>	221	3.91%
<i>Montgomery</i>	135	2.39%
<i>Philadelphia</i>	1,830	32.37%
<i>Westmoreland</i>	161	2.85%

Source: Pennsylvania State EMS Data Bridge, 2018

Table 6 displays the 10 counties with the highest number of EMS naloxone administrations. These 10 counties account for 71.39% of the documented naloxone administrations by EMS providers.

Table 7 below displays the county of residence as documented on the PCR, of patients who receive naloxone. A significant difference between the county of residence and the incident county would indicate travel patterns and could be a helpful tool in identifying focused areas needed for inpatient treatment.

**Table 7. EMS Patient Encounter by Documented County of Residence (Top 10), 01/01/2018 - 06/30/2018**

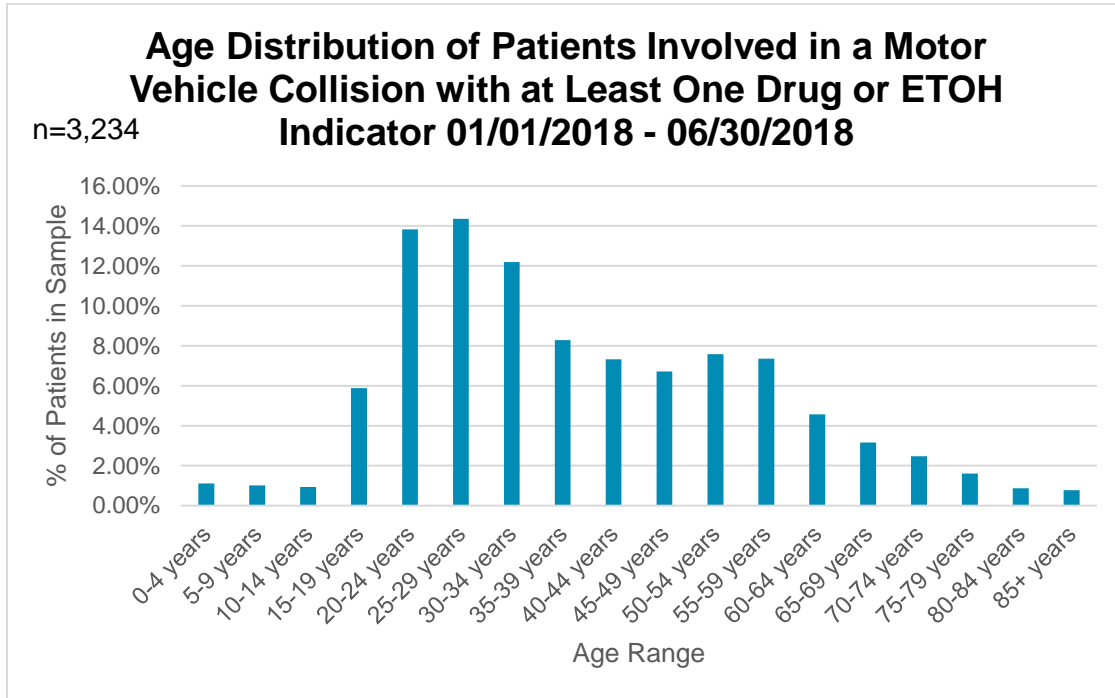
<i>County</i>	<i>Number of Unique Incidents Appearing as County of Residence</i>	<i>Percentage of Total</i>
<i>Allegheny</i>	399	7.06%
<i>Bucks</i>	337	5.96%
<i>Chester</i>	130	2.30%
<i>Delaware</i>	324	5.73%
<i>Lehigh</i>	168	2.97%
<i>Luzerne</i>	194	3.43%
<i>Montgomery</i>	140	2.48%
<i>Unspecified, Pennsylvania</i>	439	7.77%
<i>Philadelphia</i>	1,562	27.63%
<i>Westmoreland</i>	146	2.58%

Source: Pennsylvania State EMS Data Bridge, 2018

Table 7 displays the top 10 counties that had the highest number of occurrences of being documented as the patient's county of residence. There is significant overlap with the incident county measure outlined in table 6. Figure 10 below displays the age distribution of

patients involved in a motor vehicle collision, when there was at least one drug or alcohol related indicator selected in the patient care report.

**Figure 10. Age Distribution of Patients Involved in a Motor Vehicle Collision with at Least One Drug or ETOH Indicator, 01/01/2018 - 06/30/2018**

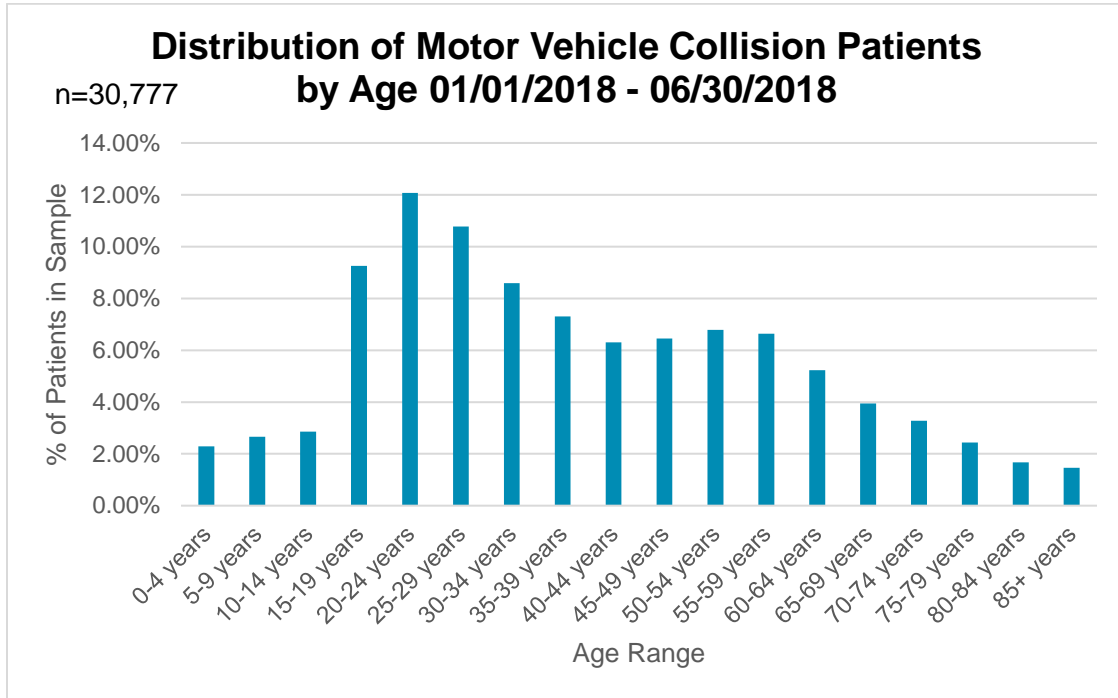


Source: Pennsylvania State EMS Data Bridge, 2018

Figure 10 displays the percentage of patients by age range that make up the population of patients that were involved in a motor vehicle collision where there was at least one drug or alcohol factor documented. The greatest number of patients involved in all documented motor vehicle collisions with a drug or alcohol indicator was the 25-29 year old age group. Figure 11 on the following page displays the age group distribution of all patients involved in motor vehicle collisions.

## Trauma Indicators

**Figure 11. Distribution of Motor Vehicle Collision Patients by Age 01/01/2018 - 06/30/2018**



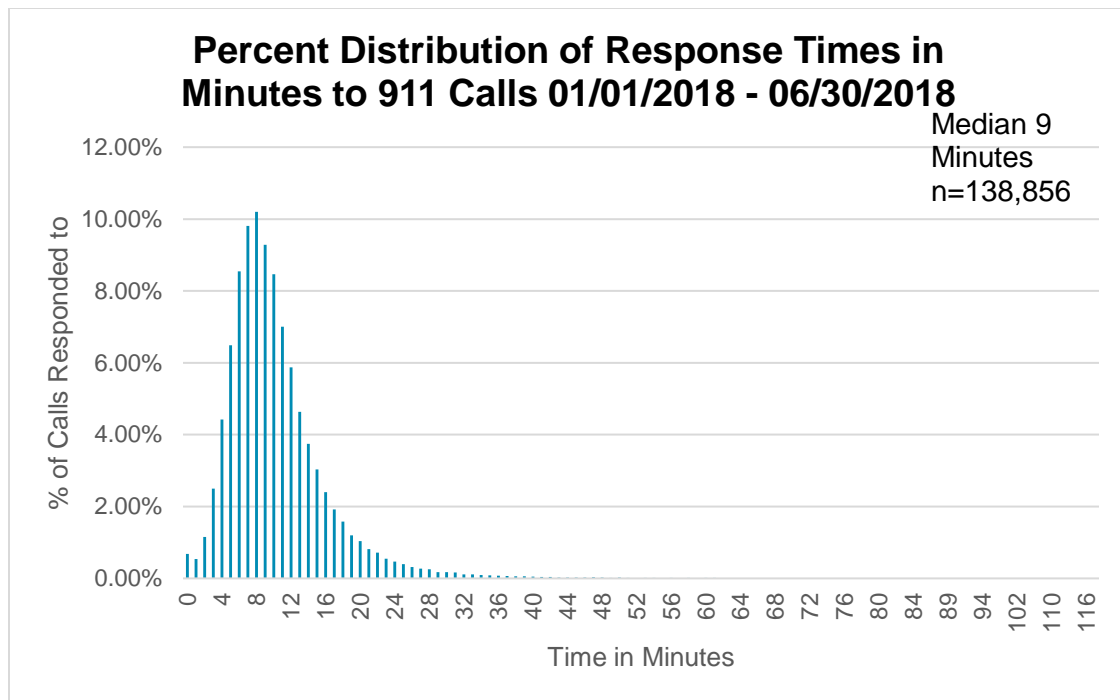
Source: Pennsylvania State EMS Data Bridge, 2018

Figure 11 displays the percentage of patients by age range that make up the population of patients that were involved in a motor vehicle collision. The greatest number of patients involved in all documented motor vehicle collisions was the 20-24 year old age group.

The Bureau is continuing to investigate future trauma metrics that we can reliably report data on in future reports. Figure 12 on the following page displays the distribution of EMS response times to 911 calls

## Response Time

**Figure 12. Percent Distribution of Response Time in Minutes to 911 Calls Only, 01/01/2018 - 06/30/2018**



Source: Pennsylvania State EMS Data Bridge, 2018

Figure 12 displays what percentage of 911 calls for service had a response time of a given number of minutes. Response time is defined as the difference between the EMS unit's arrival on scene and the time of dispatch. Both data points had to be present to be calculated. Most of the records rejected in data analysis to create this calculation did not have a dispatch time present.

Figure 12 demonstrates that majority of 911 calls have a response time of fifteen minutes or less. The commonwealth median response time is 9 minutes.

Table 8 on the following page displays the most common primary impression of EMS patient contacts.

## Clinical Markers

**Table 8. Top 25 EMS Provider Primary Impression, 01/01/2018 - 06/30/2018**

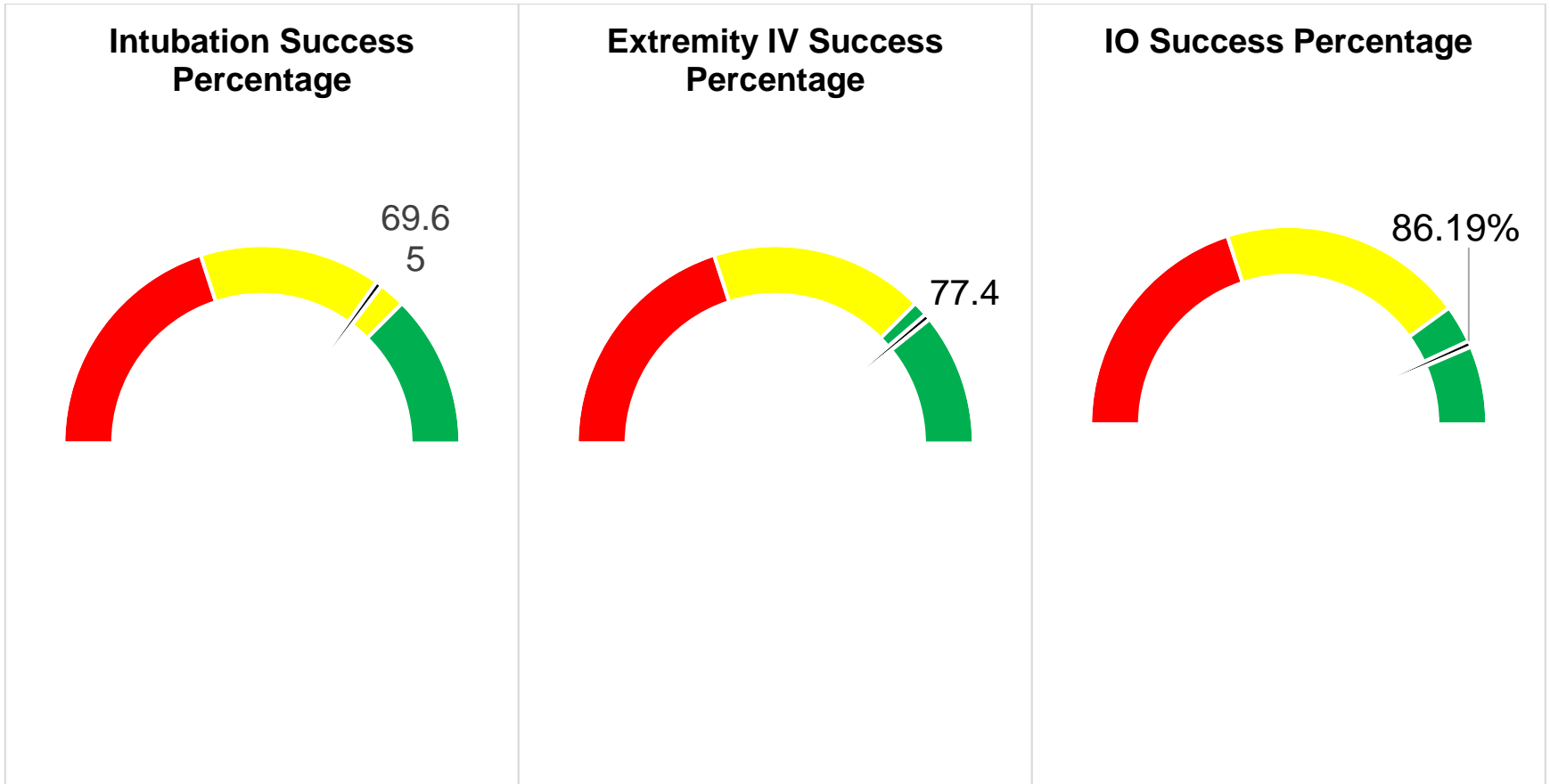
<i>Primary Impression</i>	<i>Count of Impression</i>
<i>Injury, unspecified</i>	54060
<i>Generalized abdominal pain</i>	45073
<i>Altered mental status</i>	31846
<i>Respiratory distress, acute</i>	29024
<i>Chest pain, other [non-cardiac]</i>	24161
<i>Weakness</i>	22450
<i>Syncope and collapse</i>	15717
<i>Acute pain, not elsewhere classified</i>	15241
<i>Respiratory disorder</i>	11187
<i>Encounter, adult, no findings or complaints</i>	9562
<i>Cardiac arrhythmia/dysrhythmia</i>	7776
<i>Seizures with status epilepticus</i>	7767
<i>Hypoglycemia</i>	7485
<i>Malaise</i>	7300
<i>Cardiac arrest</i>	6671
<i>Back pain</i>	6660
<i>Injury of head</i>	6304
<i>TIA</i>	5633
<i>Alcohol use, with intoxication</i>	5101
<i>Seizures without status epilepticus</i>	4790
<i>Death</i>	4519
<i>Fever</i>	3970
<i>Angina</i>	3905
<i>Headache</i>	3679
<i>Respiratory condition due to noxious fumes</i>	3399

Source: Pennsylvania State EMS Data Bridge, 2018

Table 8 displays the top 25 provider primary impressions for all EMS calls for service between Jan. 1, 2018 and June 30, 2018. Accurate reporting of primary impression creates an accurate picture as to the clinical severity and demographic of the patient population. Information such as this can help drive protocol development in the future.

Figure 13 on the following page displays the success rates for various Advanced Life Support (ALS) procedures. ALS services are encouraged to utilize this data to benchmark their agencies performance against the commonwealth as a whole. Proficiency in these procedures is indicative of safe and quality pre-hospital care.

Figure 13. Statewide Skill Percentages, 01/01/2018 - 06/30/2018



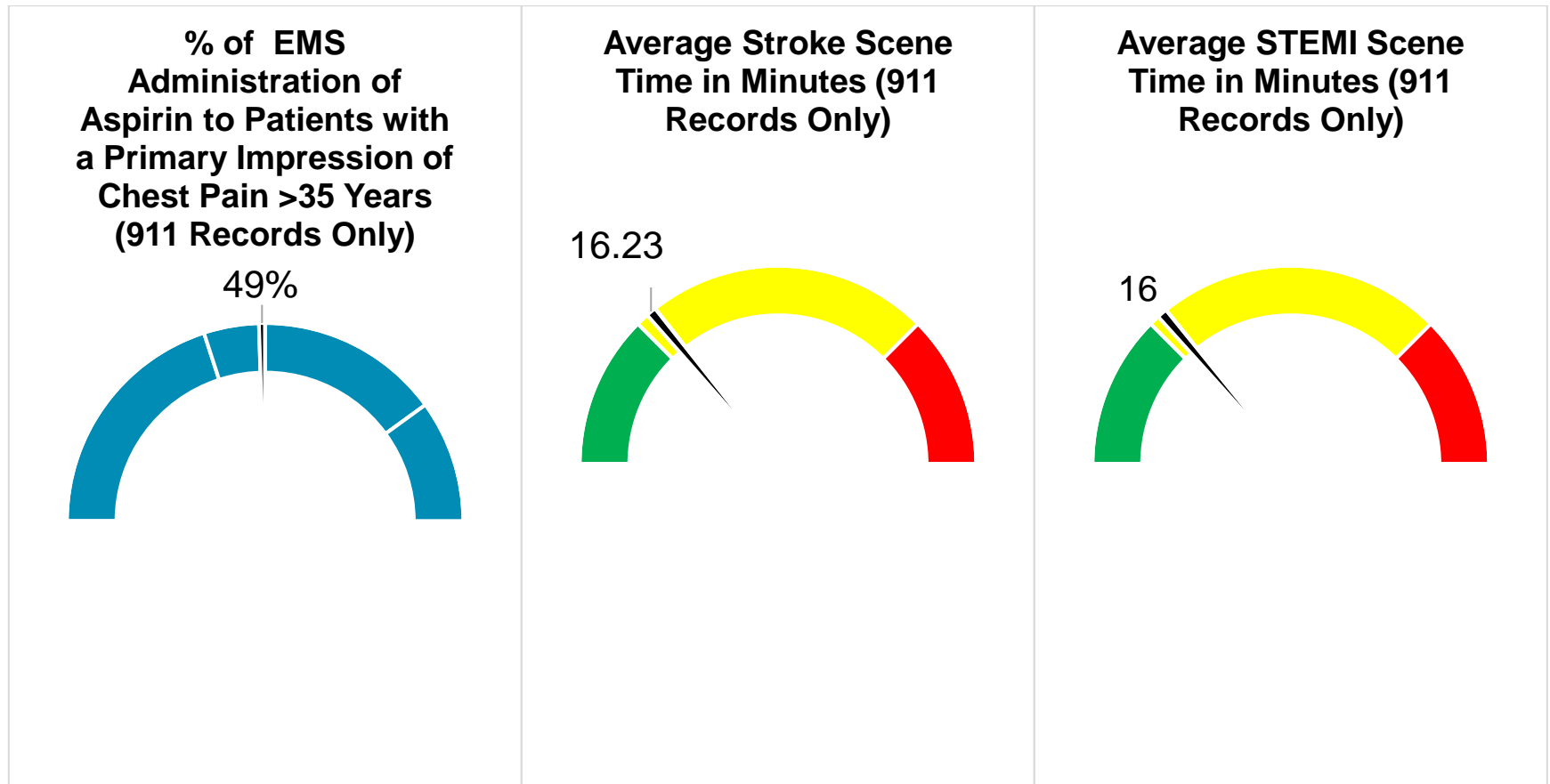
Source: Pennsylvania State EMS Data Bridge, 2018

Figure 14 on the following page display various clinical performance benchmarks. EMS agencies can utilize these Statewide averages as a way to benchmark their performance. The administration rate for aspirin in cases of chest pain is a metric utilized by the American Heart Association and is also part of the EMS Compass performance metric project. For this measure there is not a designated rate of success.

Evidence based standards state that EMS scene times should be kept to a minimum, and that timely transport to definitive care is the most effective treatment. Industry goals for stroke and ST segment elevated myocardial infarction (STEMI) scene times are fifteen minutes or less.



Figure 14. Statewide Clinical Performance Metrics, 01/01/2018 - 06/30/2018



Source: Pennsylvania State EMS Data Bridge, 2018

Table 9 displays the frequency of administration of various medications in the 911 setting.

**Table 9. Medication Administration Counts, (911 Records Only), 01/01/2018 - 06/30/2018**

<b>Medication</b>	<b>Number of Administrations</b>
<i>Acetaminophen (e.g., Tylenol, Anacin)</i>	422
<i>Adenosine (e.g., Adenocard)</i>	1029
<i>Albuterol (e.g., Proventil, Ventolin, AccuNeb)</i>	20525
<i>Albuterol /ipratropium (e.g., Combivent, Duoneb)</i>	3574
<i>Amiodarone (e.g., Cordarone)</i>	580
<i>Aspirin</i>	17615
<i>Atropine</i>	923
<i>Calcium chloride</i>	139
<i>D10 (dextrose 10%)</i>	422
<i>D25 (dextrose 25%)</i>	60
<i>D5 Injectable Solution (dextrose 5%)</i>	325
<i>D50 (dextrose 50% solution)</i>	2211
<i>Dexamethasone (e.g., Decadron)</i>	112
<i>Diazepam (e.g., Valium)</i>	330
<i>Diltiazem (e.g., Cardizem)</i>	740
<i>Diphenhydramine (e.g., Benadryl)</i>	1249
<i>Dopamine</i>	63
<i>Enalapril (e.g., Vasotec)</i>	14
<i>Epi 1:1,000 (epinephrine 1 mg/ml)</i>	1176
<i>Epi 1:10,000 (epinephrine 0.1 mg/ml)</i>	16678
<i>Epinephrine auto-injector, adult (0.3 ml of Epi 1.0 mg/ml)</i>	36
<i>Epinephrine auto-injector, junior (0.3 ml of Epi 0.5 mg/ml)</i>	10
<i>Epinephrine, Racemic HCl</i>	8
<i>Etomidate (e.g., Amidate)</i>	240
<i>Fentanyl</i>	11281
<i>Furosemide (e.g., Lasix)</i>	46
<i>Glucagon</i>	897
<i>Glucose oral gel (e.g., Glutose, Insta-Glucose)</i>	1904
<i>Heparin</i>	50
<i>Ipratropium (e.g., Atrovent)</i>	911
<i>Ketamine (e.g., Ketalar)</i>	360
<i>Ketorolac (e.g., Toradol)</i>	13
<i>Lactated Ringers (e.g., LR, RL)</i>	82
<i>Lidocaine</i>	477
<i>Lorazepam (e.g., Ativan)</i>	1136
<i>Magnesium sulfate</i>	281
<i>Methylprednisolone (e.g., Solu-Medrol)</i>	5504
<i>Midazolam</i>	2796

<b>Medication</b>	<b>Number of Administrations</b>
<i>Morphine</i>	1830
<i>Naloxone (e.g., Narcan)</i>	7707
<i>Nicardipine (e.g., Cardene)</i>	14
<i>Nitroglycerin</i>	20129
<i>Nitrous oxide</i>	39
<i>Norepinephrine (e.g., Levophed)</i>	24
<i>Ondansetron (e.g., Zofran)</i>	15005
<i>Rocuronium (e.g., Zemuron)</i>	230
<i>Sodium bicarbonate</i>	469
<i>Sodium Chloride 0.45% Injectable Solution (NaCl 0.45%)</i>	82
<i>Succinylcholine (e.g., Anectine)</i>	94
<i>Vecuronium (e.g., Norcuron)</i>	30
<i>Verapamil</i>	42

Source: Pennsylvania State EMS Data Bridge, 2018

Table 9 displays the number of medication administrations, only for 911-related calls. Normal saline and oxygen were excluded. In addition, any medication that had less than 7 administrations was excluded from publishing. Table 10 below displays the number of certification holders whose EMS certification expired during the reports time period.

## Recruitment and Retention

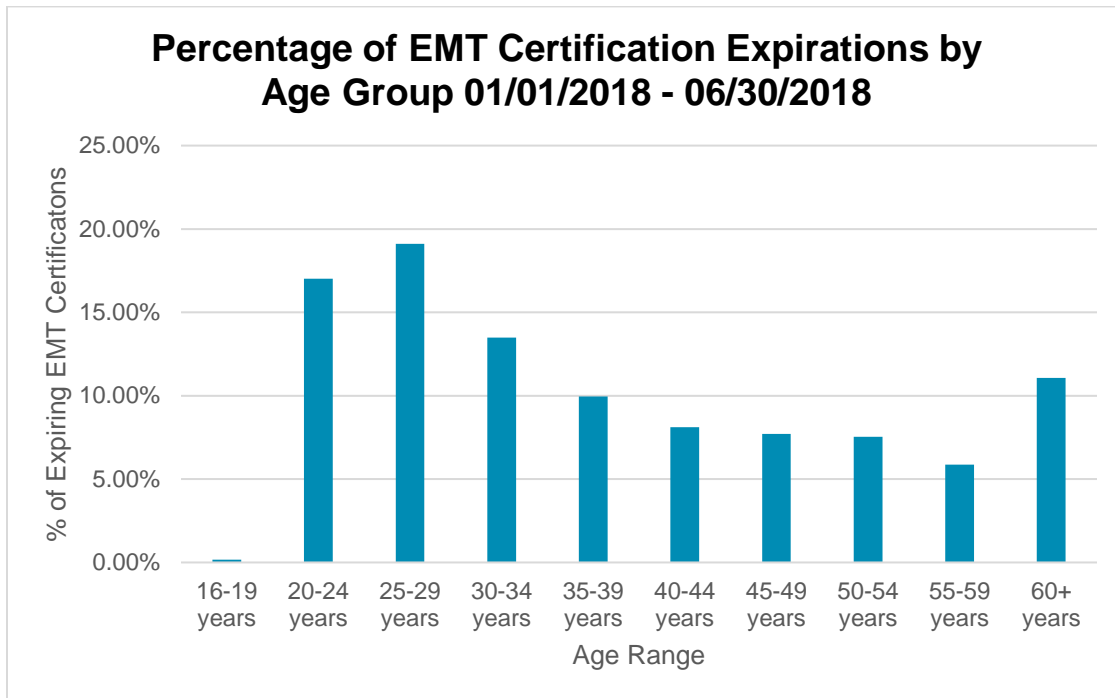
**Table 10. Number of Pennsylvania EMS Certifications Expiring, by Certification Type, 01/01/2018 - 06/30/2018**

<b>Primary Certification</b>	<b>Number of Certifications Expiring</b>
<i>EMSVO</i>	10
<i>EMR</i>	320
<i>EMT</i>	1,246
<i>AEMT</i>	4
<i>Paramedic</i>	206
<i>PHRN</i>	58

Source: Pennsylvania State EMS Certification Registry, 2018

Table 10 shows that the EMT certification level had the most expirations. This data is crucial to EMS leaders working to recruit and retain EMS personell across the commonwealth. Figure 15 on the following page displays the percentage breakdown by age group of EMT's allowing their certification to expire.

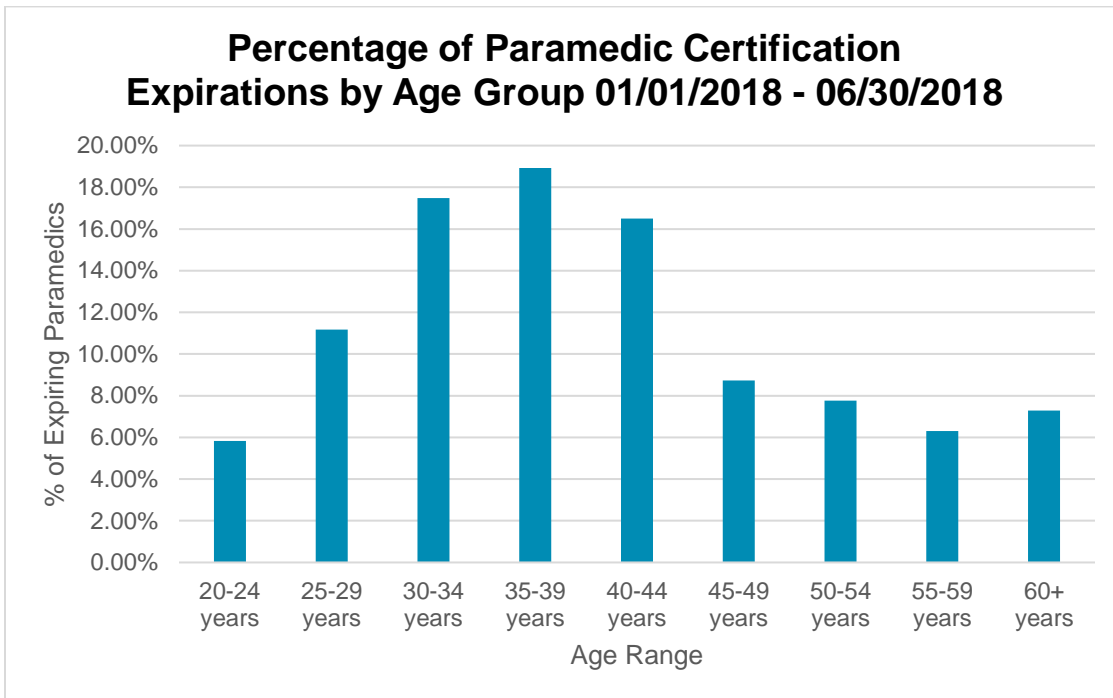
**Figure 15. Percentage of EMT Certification Expirations by Age Group 01/01/2018 - 06/30/2018**



Source: Pennsylvania State EMS Certification Registry, 2018

Figure 15 shows that nearly 60% of individuals with an expiring certification were under the age of forty. Approximately 36% of expiring EMT's are under the age of 30. The rate at which younger EMT's are leaving the EMS system is concerning. This information is important to monitor and trend to allow for targeted retention strategies to be implemented at the state, regional, and local levels. Figure 16 on the following page displays similar information, but is focused on paramedics.

**Figure 16. Percentage of Paramedic Certification Expirations by Age Group 01/01/2018 - 06/30/2018**



Source: Pennsylvania State EMS Certification Registry, 2018

Figure 16 shows that nearly 53% of individuals with an expiring certification were under the age of forty. Approximately 17% of expiring paramedics are under the age of 30. The rate at which younger paramedics are leaving the EMS system is still concerning, but not to the extent as the EMT level. This information is important to monitor and trend to allow for targeted retention strategies to be implemented at the state, regional, and local levels. Table 11 on the following page displays by county the rate of expiration for EMS provider certifications.

**Table 11. Number of EMS Certification Expirations by County (EMSVO, EMR, EMT, AEMT, Paramedic, PHRN Only), 01/01/2018 - 06/30/2018**

<b>County of Residence</b>	<b>EMS Certifications Expiring</b>	<b>% of Total Certification Expirations</b>
Adams County	12	0.76%
Allegheny County	176	11.08%
Armstrong County	11	0.69%
Beaver County	22	1.39%
Bedford County	7	0.44%
Berks County	46	2.90%
Blair County	8	0.50%
Bradford County	11	0.69%
Bucks County	69	4.35%
Butler County	16	1.01%
Cambria County	26	1.64%
Cameron County	<5 Redacted	0.13%
Carbon County	10	0.63%
Centre County	20	1.26%
Chester County	42	2.64%
Clarion County	6	0.38%
Clearfield County	6	0.38%
Clinton County	8	0.50%
Columbia County	8	0.50%
Crawford County	29	1.83%
Cumberland County	29	1.83%
Dauphin County	21	1.32%
Delaware County	56	3.53%
Elk County	<5 Redacted	0.19%
Erie County	41	2.58%
Fayette County	14	0.88%
Franklin County	16	1.01%
Fulton County	<5 Redacted	0.25%
Greene County	6	0.38%
Huntingdon County	7	0.44%
Indiana County	20	1.26%
Jefferson County	11	0.69%
Juniata County	6	0.38%
Lackawanna County	27	1.70%
Lancaster County	67	4.22%
Lawrence County	7	0.44%
Lebanon County	18	1.13%
Lehigh County	45	2.83%
Luzerne County	38	2.39%

<b>County of Residence</b>	<b>EMS Certifications Expiring</b>	<b>% of Total Certification Expirations</b>
Lycoming County	14	0.88%
McKean County	7	0.44%
Mercer County	22	1.39%
Mifflin County	6	0.38%
Monroe County	34	2.14%
Montgomery County	56	3.53%
Montour County	<5 Redacted	0.19%
Northampton County	40	2.52%
Northumberland County	13	0.82%
Perry County	7	0.44%
Philadelphia County	143	9.01%
Pike County	8	0.50%
Potter County	6	0.38%
Schuylkill County	23	1.45%
Snyder County	8	0.50%
Somerset County	17	1.07%
Sullivan County	7	0.44%
Susquehanna County	6	0.38%
Tioga County	8	0.50%
Union County	8	0.50%
Venango County	8	0.50%
Warren County	6	0.38%
Washington County	24	1.51%
Wayne County	10	0.63%
Westmoreland County	58	3.65%
Wyoming County	8	0.50%
York County	52	3.27%

Source: Pennsylvania State EMS Certification Registry, 2018

Table 11 displays by county the number of expiring EMT certifications within the timeframe of this report. Table 12 on the following page displays current statistics related to successful passage of EMS certification exams.

**Table 12. National Registry of Emergency Medical Technician Exam Statistics, 01/01/2018 - 06/30/2018<sup>1</sup>**

<b>Certification Level</b>	<b>Attempting</b>	<b>Passing</b>	<b>Pass Rate</b>
<i>EMT</i>	1,063	781	73%
<i>Paramedic</i>	65	52	80%

Source: National Registry of Emergency Medical Technicians, 2018

Table 12 displays the overall pass rate of the EMT and paramedic exams. The number of individuals attempting the exam are included as well to provide a point of reference of how many EMS providers have become available to the EMS workforce in the first half of 2018. Future metrics that the Bureau has an interest in being able to report include the course completion rate in addition to pass rates. Initiatives are underway to make enhancements to the EMS certification registry to make this possible. Table 13 below displays the number of current EMS certification holders.

**Table 13. Certified EMS Workforce as of 07/15/2018 in Pennsylvania**

<b>Primary Certification</b>	<b>Number of Certification Holders</b>
<i>EMSVO</i>	895
<i>EMR</i>	3,440
<i>EMT</i>	29,652
<i>AEMT</i>	191
<i>Paramedic</i>	7,073
<i>PHRN</i>	1,202

Source: Pennsylvania State EMS Certification Registry, 2018

The above numbers in table 13 are all individuals who hold a certification at that level, and as such are considered part of the available workforce. However, the Bureau of Emergency Medical Services conducted a study to identify the number of unique individuals appearing on an EMS PCR. The Bureau estimates that only 50% of the available workforce is actively engaged in the practice of pre-hospital medicine.



## Citations

1. National Registry of Emergency Medical Technicians. (2018). *Pennsylvania state pass/fail report*. Retrieved from [www.nremt.org](http://www.nremt.org)

## Appendix A – Response Time Information by County (911 Records Only) 01/01/2018 - 06/30/2018

COUNTY	NUMBER OF VALID RECORDS	AVERAGE RESPONSE TIME	MINIMUM RESPONSE TIME	MAXIMUM RESPONSE TIME
ADAMS	1898	0:11:08	0:00:00	1:20:00
ALLEGHENY	22359	0:12:04	0:00:00	1:56:00
ARMSTRONG	1048	0:12:04	0:00:00	0:52:00
BEAVER	27	<b>LESS THAN</b>	<b>30 Records</b>	<b>No Data</b>
BEDFORD	61	0:20:40	0:00:00	0:58:00
BERKS	880	0:11:41	0:00:00	1:05:00
BLAIR	117	0:10:07	0:00:00	0:24:00
BRADFORD	12	<b>LESS THAN</b>	<b>30 Records</b>	<b>No Data</b>
BUCKS	20426	0:09:11	0:00:00	1:51:50
BUTLER	592	0:11:44	0:00:00	1:09:00
CAMBRIA	152	0:10:43	0:03:00	1:07:00
CAMERON	5	<b>LESS THAN</b>	<b>30 Records</b>	<b>No Data</b>
CARBON	51	0:17:36	0:02:00	0:53:16
CENTRE	2983	0:14:05	0:00:00	1:49:00
CHESTER	2026	0:07:57	0:00:00	1:53:00
CLARION	58	0:20:47	0:02:00	0:40:00
CLEARFIELD	61	0:25:49	0:03:00	1:00:00
CLINTON	532	0:11:34	0:00:00	1:11:00
COLUMBIA	78	0:19:09	0:01:00	1:08:00
CRAWFORD	195	0:13:47	0:01:08	1:26:26
CUMBERLAND	4149	0:09:44	0:00:00	1:17:16
DAUPHIN	4392	0:10:00	0:00:00	1:50:00
DELAWARE	2948	0:05:56	0:00:00	0:42:00
ELK	297	0:10:13	0:00:00	0:47:00
ERIE	5026	0:09:27	0:00:00	1:43:45
FAYETTE	897	0:12:25	0:00:00	0:51:00

COUNTY	NUMBER OF VALID RECORDS	AVERAGE RESPONSE TIME	MINIMUM RESPONSE TIME	MAXIMUM RESPONSE TIME
FOREST	10	LESS THAN	30 Records	No Data
FRANKLIN	2078	0:10:17	0:00:00	1:18:00
FULTON	166	0:21:10	0:00:00	1:02:00
GREENE	1142	0:14:11	0:00:00	1:51:00
HUNTINGDON	235	0:18:58	0:00:00	1:05:42
INDIANA	1090	0:12:14	0:00:00	0:41:00
JEFFERSON	426	0:11:57	0:00:00	1:07:00
JUNIATA	118	0:13:10	0:00:00	0:50:00
LACKAWANNA	609	0:09:23	0:00:00	0:52:00
LANCASTER	7743	0:09:49	0:00:00	1:02:20
LAWRENCE	88	0:19:25	0:02:00	0:37:00
LEBANON	615	0:09:04	0:00:00	0:39:48
LEHIGH	8912	0:09:10	0:00:00	1:44:23
LUZERNE	4594	0:09:33	0:00:00	1:25:00
LYCOMING	344	0:13:27	0:00:00	1:52:00
MCKEAN	141	0:13:52	0:02:00	0:53:00
MERCER	16	LESS THAN	30 Records	No Data
MIFFLIN	28	LESS THAN	30 Records	No Data
MONROE	633	0:12:33	0:00:00	0:37:00
MONTGOMERY	9786	0:07:48	0:00:00	1:50:00
MONTOUR	378	0:09:32	0:00:00	0:52:50
NORTHAMPTON	978	0:10:51	0:00:00	1:35:00
NORTHUMBERLAND	40	0:18:00	0:00:00	0:50:00
PERRY	1293	0:14:50	0:00:00	1:41:40
PHILADELPHIA	624	0:10:55	0:00:00	1:59:00
PIKE	352	0:17:13	0:00:00	1:15:00
POTTER	13	LESS THAN	30 Records	No Data
SCHUYLKILL	2259	0:10:55	0:00:00	0:55:56

COUNTY	NUMBER OF VALID RECORDS	AVERAGE RESPONSE TIME	MINIMUM RESPONSE TIME	MAXIMUM RESPONSE TIME
SNYDER	22	LESS THAN	30 Records	No Data
SOMERSET	250	0:12:32	0:00:00	0:47:00
SULLIVAN	95	0:16:58	0:02:00	0:57:00
SUSQUEHANNA	37	0:30:24	0:10:00	1:00:00
TIOGA	14	LESS THAN	30 Records	No Data
UNION	4	LESS THAN	30 Records	No Data
VENANGO	106	0:15:29	0:00:00	0:49:00
WARREN	534	0:11:44	0:00:00	1:02:00
WASHINGTON	2264	0:09:36	0:00:00	1:29:00
WAYNE	83	0:18:35	0:00:00	0:59:00
WESTMORELAND	2195	0:08:56	0:00:00	1:07:00
WYOMING	191	0:14:27	0:00:00	1:11:00
YORK	9611	0:11:11	0:00:00	1:27:09

Source: State EMS Data Bridge

Appendix A analyzes response time for all emergency 911 calls for service. Response time is defined as the difference between the EMS unit's arrival on scene and the time of dispatch. Both data points had to be present to be calculated. Most of the records rejected in data analysis to create this calculation did not have a dispatch time present. For data to be analyzed a county must have had a minimum of 30 valid records.

The average response time was calculated by taking all the valid response times and utilizing the Microsoft Excel average function. The minimum response time is identified by the lowest response time meeting the criteria in each county. The maximum response time is identified by the highest response time meeting the criteria in each county.

