NEMSIS

BETTER DATA. BETTER CARE.

2022 NATIONAL EMS DATA REPORT

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NEMSIS DATA REPORT 2022

WHAT IS NEMSIS?

NEMSIS is the National Emergency Medical Services Information System supported by the National Highway Traffic Safety Administration (NHTSA), Office of Emergency Medical Services (OEMS).

States and territories across the nation voluntarily submit EMS data to the NEMSIS Technical Assistance Center (TAC). The TAC receives the data and stores it in the National EMS Database.

NATIONAL EMS DATABASE

It is the largest publicly available database of prehospital medical care in the United States.

NEMSIS is NOT a patient registry. One patient may require multiple EMS encounters or transports, and not every EMS response has a patient encounter. While very robust and extensive, the database is not a full census of EMS activations because there are a few states/territories that do not contribute data. It is a database of EMS activations.

PUBLIC DATA

The public dataset is comprised of data elements and values that are made available to the public. States and territories submit some data that are not open to public use without explicit authorization from that state/territory. The restricted data include geographical identifiers such as incident ZIP Code, EMS agency name, and receiving facility ZIP Code.

No personal health information (PHI) is reflected in the data provided by states.

NATIONAL DATA STANDARD

NEMSIS is responsible for establishing and maintaining a National EMS Data Standard through extensive collaboration with industry stakeholders. State/territory EMS data managers, EMS software vendors, clinicians, billers, researchers and national partners all contribute to the development of and updates to the data standard.

Data elements represented in the standard are identified as National, State, Optional, and Custom. Only National data elements are submitted to the NEMSIS TAC for inclusion in the National EMS Database.

NEMSIS v3.4 DATA STANDARD

The 2022 EMS data reflected in this report are primarily submitted in the NEMSIS v3.4 standard. Some states/territories submitted their data in the previous version of the standard.

Of the 585 data elements present in the v3.4 standard, 165 are national and collected by the NEMSIS TAC. Each state/territory determines which additional elements they will require, and EMS agencies may also implement the collection of elements specific to their service.

DATA QUALITY

Much care is taken to ensure that national NEMSIS data are as clean as possible. All data collected by EMS clinicians are exposed to several hundred error checking rules at the time of data entry, and again when data are submitted to the state and national repositories.

Any data errors that remain when data are submitted to the national repository are reported back to states and agencies on a weekly basis. Corrected data can be resubmitted to state and national repositories and will automatically update existing records.

COVID-19

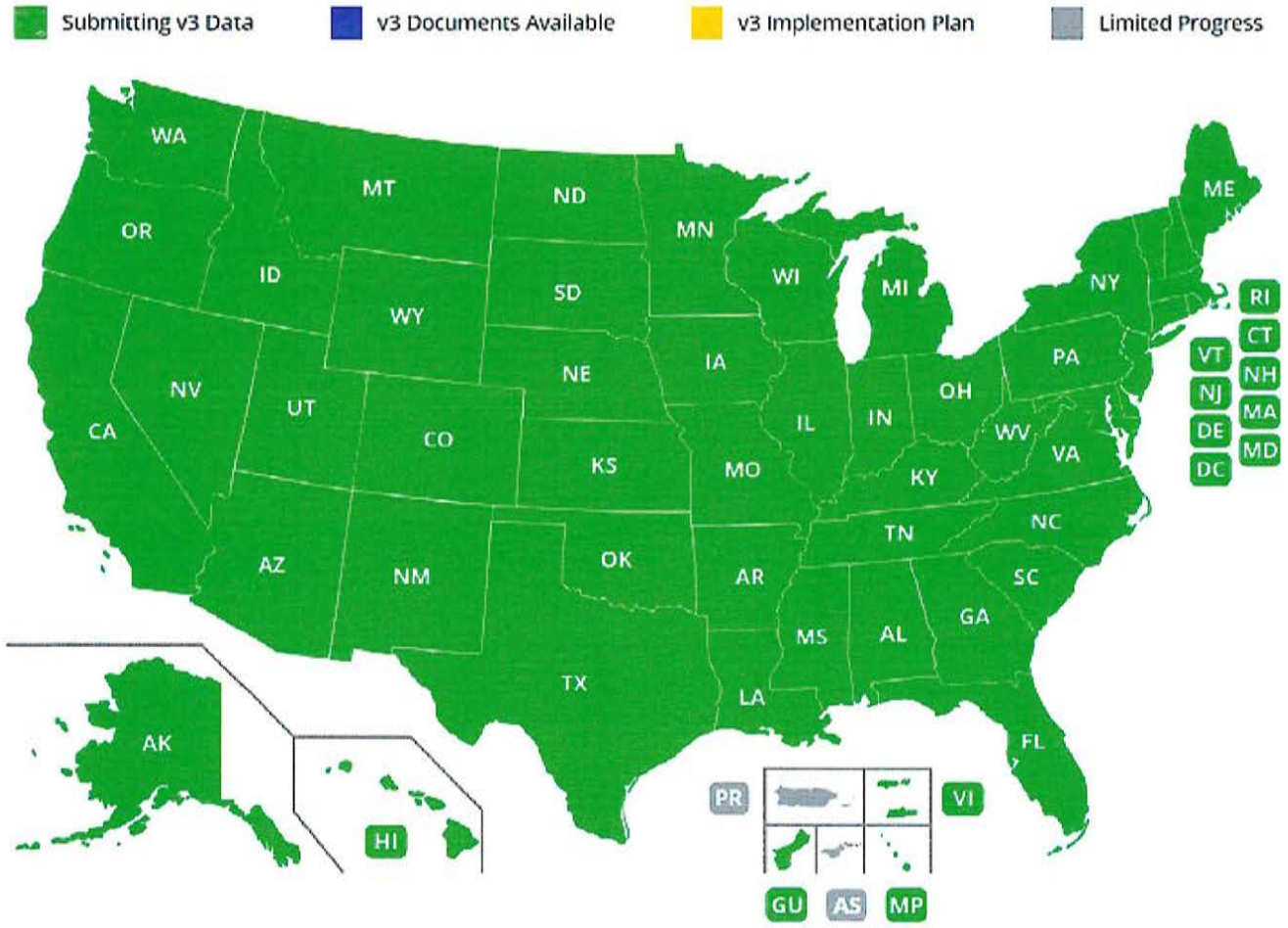
The COVID-19 global pandemic had a significant impact on EMS response. The widespread public concern affected patient's willingness to call for

ambulance service. It also increased response and turn-around times, impacted agency staffing, and exacerbated clinician burn-out.

In this report, COVID-19 infection is not identified directly due to the lack of early diagnosis capabilities in the prehospital setting. It is captured under the case definition of Influenza-like Illness (ILI) which presents clinically in a similar way to COVID-19 in prehospital settings. Please refer to the case definition here for more details: https://nemsis.org/case-definitions/

Additional information is found in the section, EMS By the Numbers: Impact of COVID-19, on pages 13-14.

All States, DC, Guam, Mariana Islands and the Virgin Islands submitted EMS activations to the National EMS Database in 2022.



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OVERVIEW

Total Number of Activations

53,179,492

Participating States/Territories

54

Number of Agencies

13,778

Treated and Transported 911 Response

42,448,729

An EMS activation is an occurrence which initiates an EMS response with the potential of patient medical care. This is also referred to as an EMS "call" or "run". An activation can include: 911 calls, critical care transports, interfacility transports, standby events, or scheduled medical transports. The data are reflected as the number of activations instead of the number of patients because there can be more than one activation per patient per call.

TYPICAL PATIENT (OVERALL)

Age 71-80 - 5,624,628 (16.1%)
Race White - 18,517,430 (64.3%)
Sex Female - 17,967,428 (51.3%)
EMS Transport Method Ground-Ambulance - 27,213,228 (98.8%)

Inclusion criteria: 911 initiated and patient contact was made. Values that were marked Not Applicable or Not Recorded are removed.

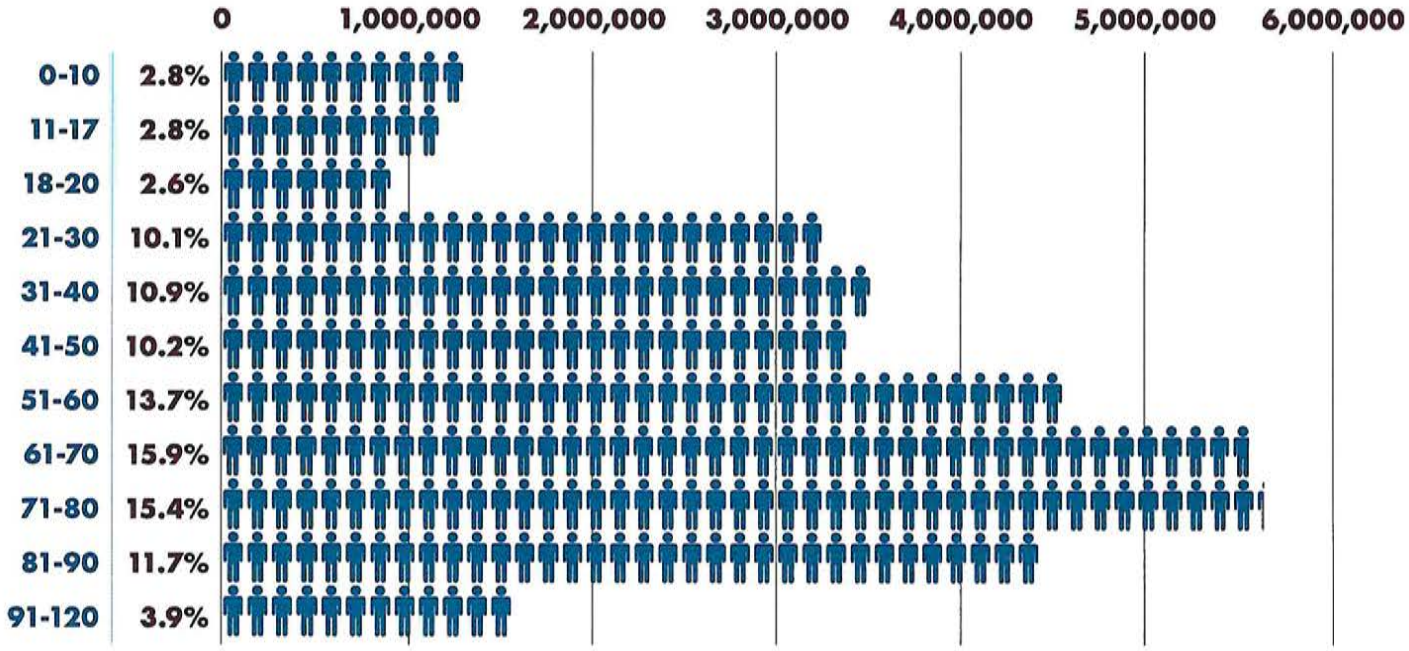
TYPICAL PEDIATRIC PATIENT

Age 17 - 225,514 (10.4%)
Race White - 918,522 (47.6%)
Sex Male - 1,250,734 (51.8%)
EMS Transport Method Ground-Ambulance - 2,472,442 (98.4%)

Inclusion criteria: 911 initiated and patient contact was made. Values that were marked Not Applicable or Not Recorded are removed.

PATIENT AGE

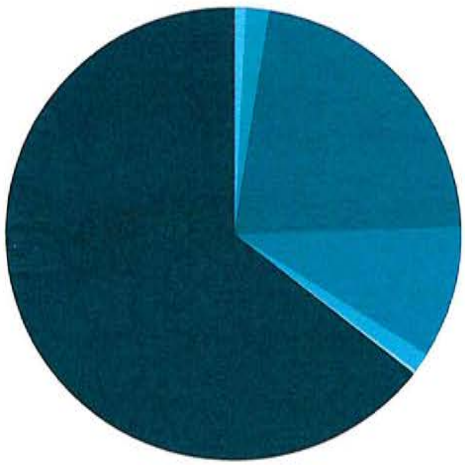
ePatient.15 - The patient's age (either calculated from date of birth or best approximation).

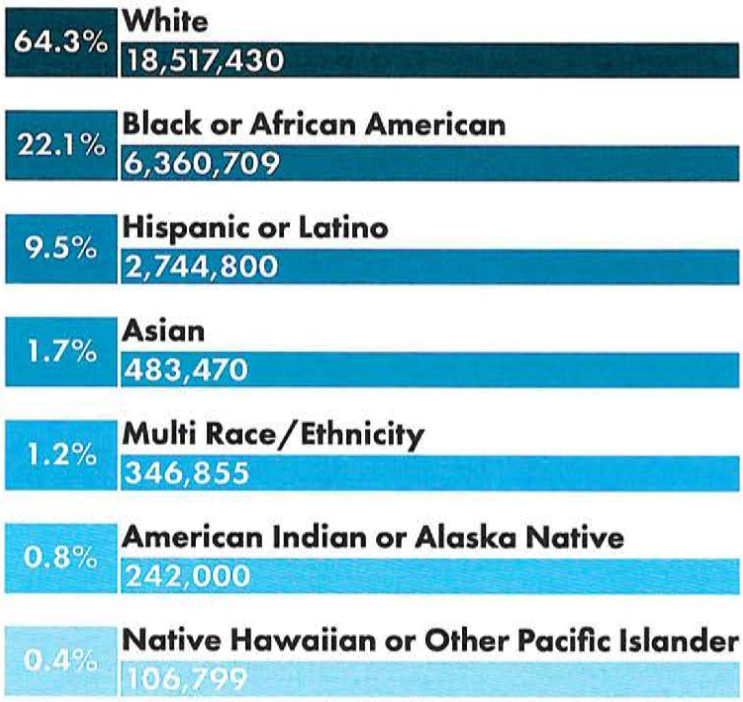


Inclusion criteria: 911 initiated and patient contact was made. Values that were marked Not Applicable or Not Recorded are removed.

RACE/ETHNICITY

ePatient.14 - Patients can indicate more than one race.
The patient's race as defined by the OMB (US Office of Management and Budget).
OMB requirements are provided at: https://grants.nih.gov/grants/guide/notice-files/NOT-OD-15-089.html

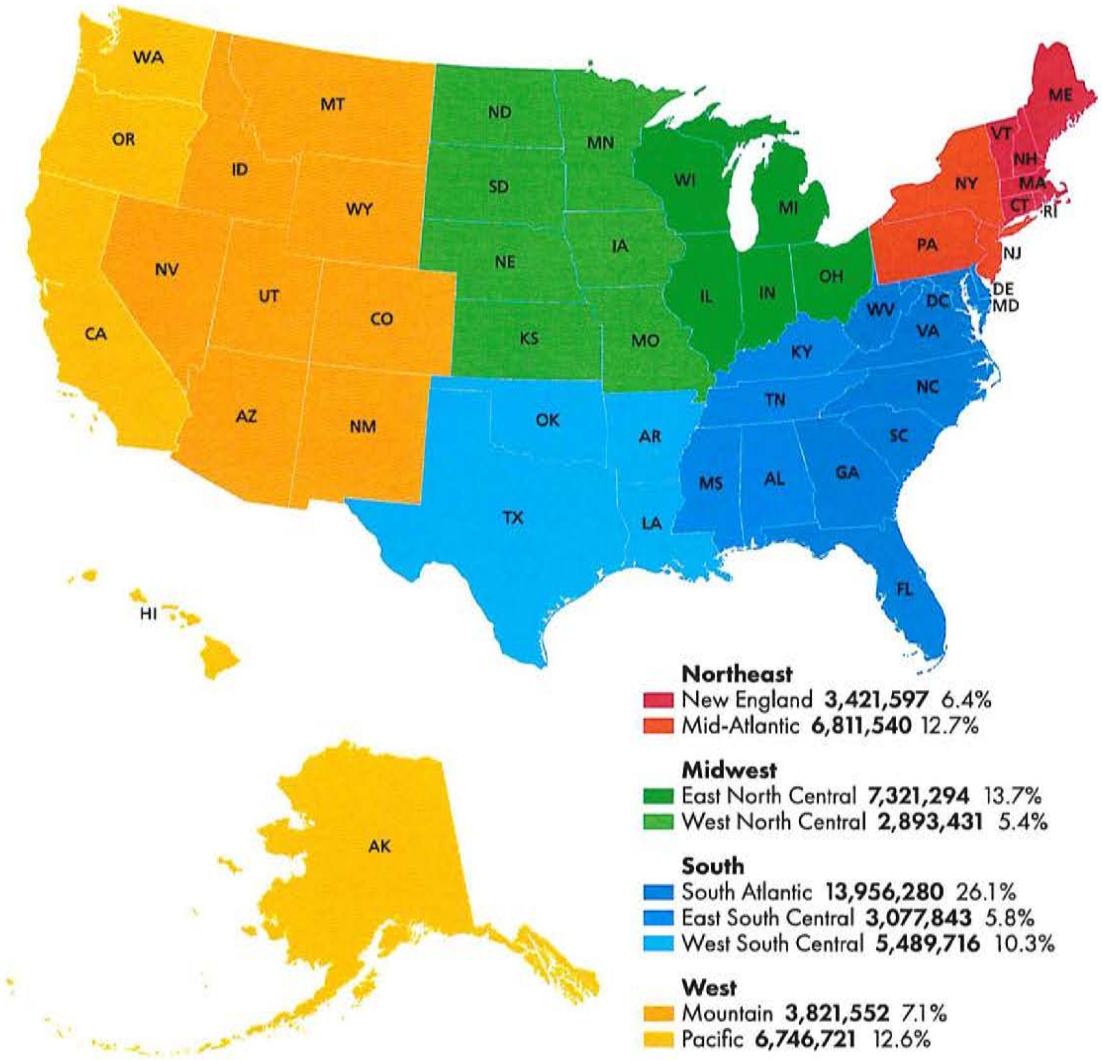




Inclusion criteria: 911 initiated and patient contact was made. Values that were marked Not Applicable or Not Recorded are removed.

US CENSUS DIVISION REGION OF EMS ACTIVATION

eScene.23 - The census tract in which the incident occurred.



Northeast
- New England **3,421,597** 6.4%
- Mid-Atlantic **6,811,540** 12.7%

Midwest
- East North Central **7,321,294** 13.7%
- West North Central **2,893,431** 5.4%

South
- South Atlantic **13,956,280** 26.1%
- East South Central **3,077,843** 5.8%
- West South Central **5,489,716** 10.3%

West
- Mountain **3,821,552** 7.1%
- Pacific **6,746,721** 12.6%

URBANICITY OF EMS INCIDENT LOCATION

Urbanicity is calculated using the 2013 USDA Urban Influence Codes to best classify geographic areas. Read more here: https://www.ers.usda.gov/data-products/urban-influence-codes/documentation.aspx

Urbanicity	Count of Events	Percent of Total
Urban	**36,001,854**	87.5%
Rural	**2,416,390**	5.9%
Suburban	**2,174,478**	5.3%
Wilderness	**570,764**	1.4%
TOTAL	**41,163,486**	

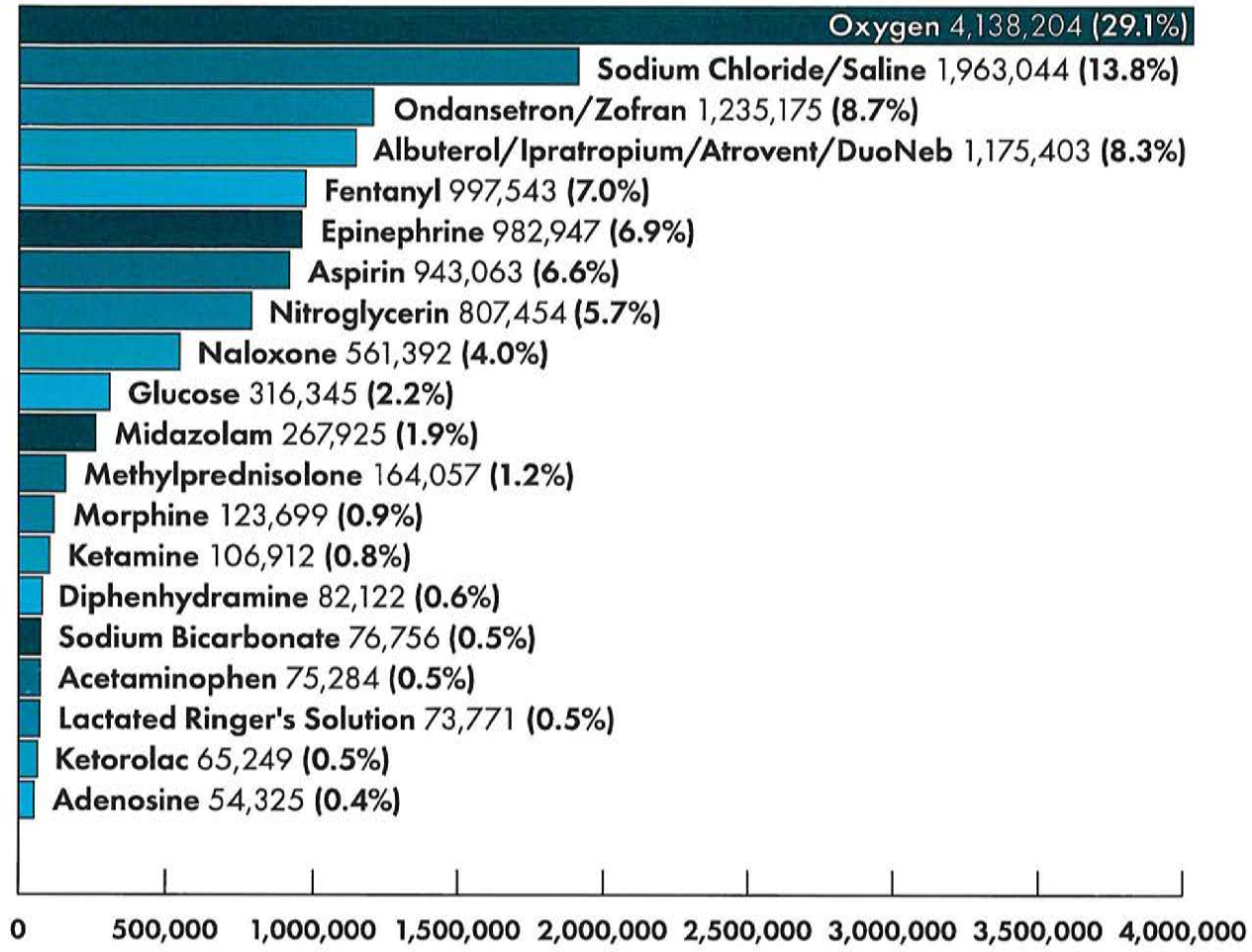
EMS AGENCY ORGANIZATIONAL STATUS

dAgency.12 - The primary organizational status of the agency. The definition of Volunteer or Non-Volunteer is based on state or local definitions.

Organizational Status	Count of Events	Percent of Total
Non-Volunteer	**42,691,548**	79.7%
Mixed	**9,929,550**	18.5%
Volunteer	**950,999**	1.8%
TOTAL	**53,572,097**	

TOP 20 MEDICATIONS GIVEN

eMedication.03 - Medication given. List of medications based on RxNorm (RXCUI) codes.



Inclusion criteria: 911 initiated and patient contact was made. Values that were marked Not Applicable or Not Recorded are removed.

TOP 20 CAUSES OF INJURY

eSituation.11 - The reported/suspected external cause of the injury. Based on ICD-10 codes.

Cause of Injury ICD-10 Name	Count of Events	Percent of Total
Falls (including Tripping, Slipping, Fall from Furniture/Stairs, Ice/Snow)	**3,001,842**	52.8%
Motor Vehicle Crash (including Car Accident, Collision, Motorcycle, Occupant Injured)	**1,587,555**	27.9%
Assault (including by Bodily Force, by Blunt Object, by Stabbing, by Other Means)	**430,532**	7.6%
Other Specified Events, Undetermined Intent	**85,099**	1.5%
Injury, Unspecified	**82,014**	1.4%
Intentional Self-Harm (including Suicide Attempt)	**70,080**	1.2%
Homicide (Attempted)	**61,480**	1.1%
Contact with Unspecified Sharp Object, Undetermined Intent	**56,602**	1.0%
Accidental Hit, Strike, Kick, Twist, Bite, Bump, or Scratch by Another Person	**40,400**	0.7%
Contact with Blunt Object, Undetermined Intent	**34,494**	0.6%
Striking Against or Struck by Other Objects	**34,120**	0.6%
Contact with or Bitten by Dog	**32,773**	0.6%
Slipping, Tripping and Stumbling without Falling	**29,755**	0.5%
Activities, Other Specified	**25,566**	0.4%
Other Specified Effects of External Causes	**23,752**	0.4%
Contact with Knife, Sword or Dagger	**23,586**	0.4%
Firearm Discharge	**18,204**	0.3%
Caught, Crushed, Jammed or Pinched in or Between Objects	**17,814**	0.3%
Fracture	**16,357**	0.3%
Struck by Thrown, Projected or Falling Object	**15,955**	0.3%
TOTAL	**5,687,980**	

Inclusion criteria: 911 initiated and patient contact was made. Values that were marked Not Applicable or Not Recorded are removed.

PROVIDER'S PRIMARY IMPRESSION

eSituation.11 - The EMS personnel's impression of the patient's primary problem or most significant condition which led to the management given to the patient (treatments, medications, or procedures). Based on ICD-10 codes.

Primary Impression ICD-10 Name	Count of Events	Percent of Total
Weakness	**2,239,477**	14.2%
Injury, Unspecified	**1,558,049**	9.9%
Change in Mental Status	**1,163,764**	7.4%
Acute Pain, not Elsewhere Classified	**1,029,368**	6.5%
Generalized Abdominal Pain	**1,002,867**	6.4%
Syncope and Collapse	**883,857**	5.6%
Chest Pain, Unspecified	**774,456**	4.9%
Respiratory Distress	**742,688**	4.7%
Encounter for General Examination Without Complaint, Suspected or Reported Diagnosis	**724,395**	4.6%
Encounter for Adult Health Check-Up	**629,665**	4.0%
Other Malaise	**611,642**	3.9%
Mental Illness	**605,098**	3.8%
Back Pain	**566,087**	3.6%
Shortness of Breath	**491,219**	3.1%
Unspecified Injury of Head	**476,273**	3.0%
Light-Headedness	**472,179**	3.0%
Generalized Pain	**460,803**	2.9%
Severe Abdominal Pain (Generalized) (with Abdominal Rigidity)	**454,028**	2.9%
Anxiety	**453,086**	2.9%
Other Chest Pain	**434,453**	2.8%
TOTAL	**15,773,454**	

Inclusion criteria: 911 initiated and patient contact was made. Values that were marked Not Applicable or Not Recorded are removed.

PATIENT/CREW DISPOSITION

eDisposition.12 - Type of disposition and/or transport of the patient by this EMS Unit. For additional information, see the Extended Data Definitions here: https://nemsis.org/wp-content/uploads/2018/09/Extended-Data-Definitions_v3_Final.pdf

Incident/Patient Disposition Name	Count of Events	Percent of Total
Patient Treated, Transported by EMS	24,401,373	57.7%
Canceled (Prior to Arrival At Scene)	2,716,275	6.4%
Patient Treated, Transferred Care to Another EMS Professional	2,585,542	6.1%
Patient Refused Evaluation/Care (Without Transport)	2,488,982	5.9%
Patient Treated, Released (AMA)	2,127,742	5.0%
Canceled on Scene (No Patient Contact)	1,800,859	4.3%
Canceled on Scene (No Patient Found)	1,354,482	3.2%
Patient Evaluated, No Treatment/Transport Required	1,131,573	2.7%
Patient Treated, Released (per protocol)	950,522	2.2%
Assist, Unit	763,221	1.8%
Assist, Public	487,296	1.2%
Assist, Agency	413,704	1.0%
Standby-Public Safety, Fire, or EMS Operational Support Provided	328,154	0.8%
Patient Dead at Scene-No Resuscitation Attempted (Without Transport)	322,213	0.8%
Patient Dead at Scene-Resuscitation Attempted (Without Transport)	138,301	0.3%
Standby-No Services or Support Provided	136,804	0.3%
Patient Treated, Transported by Private Vehicle	64,481	0.2%
Patient Treated, Transported by Law Enforcement	51,324	0.1%
Patient Refused Evaluation/Care (With Transport)	24,951	0.1%
Patient Dead at Scene-No Resuscitation Attempted (With Transport)	7,979	0.02%
Patient Dead at Scene-Resuscitation Attempted (With Transport)	4,170	0.01%
Transport Non-Patient, Organs, etc.	2,410	<0.01%
TOTAL	**42,302,358**	

Inclusion criteria: 911 initiated and patient contact was made. Values that were marked Not Applicable or Not Recorded are removed.

TYPE OF SERVICE REQUESTED

eResponse.05 - The type of service or category of service initiated of the EMS Agency responding for this specific EMS event.

Type of Service	Count of Events	Percent of Total
911 Response (Scene)	**42,302,358**	79.0%
Medical Transport	**5,758,167**	10.7%
Interfacility Transport	**4,697,465**	8.8%
Public Assistance/Other Not Listed	**278,152**	0.5%
Standby	**204,649**	0.4%
Mutual Aid	**172,782**	0.3%
Intercept	**158,524**	0.3%
TOTAL	**53,572,097**	

Inclusion criteria: 911 initiated and patient contact was made. Values that were marked Not Applicable or Not Recorded are removed.

TYPE OF DESTINATION

eDisposition.21 - The type of destination to which the patient was transported or transferred.

Type of Destination	Count of Events	Percent of Total
Hospital-Emergency Department	**24,016,095**	90.2%
Hospital-Non-Emergency Department Bed	**1,863,294**	7.0%
Other EMS Responder (ground)	**198,770**	0.7%
Other	**188,520**	0.7%
Freestanding Emergency Department	**130,988**	0.5%
Home	**69,811**	0.3%
Nursing Home/Assisted Living Facility	**51,031**	0.2%
Other EMS Responder (air)	**45,011**	0.2%
Medical Office/Clinic	**34,223**	0.1%
Morgue/Mortuary	**19,648**	0.1%
Urgent Care	**5,670**	0.02%
Police/Jail	**4,523**	0.02%
TOTAL	**26,627,584**	

Inclusion criteria: 911 initiated and patient contact was made. Values that were marked Not Applicable or Not Recorded are removed.

PATIENT'S PRIMARY SYMPTOM

eSituation.09 - The primary sign and symptom present in the patient or observed by EMS personnel. Based on ICD-10 codes.

Primary Symptom ICD-10 Name	Count of Events	Percent of Total
Weakness	**2,409,234**	14.5%
Change in Mental Status	**1,535,917**	9.3%
Generalized Pain	**1,411,062**	8.5%
Other General Symptoms and Signs	**1,144,350**	6.9%
Shortness of Breath	**1,110,123**	6.7%
Chest Pain, Unspecified	**997,311**	6.0%
Encounter for Adult Health Check-Up	**975,554**	5.9%
Encounter for General Examination without Complaint, Suspected or Reported Diagnosis	**773,826**	4.7%
Back Pain	**674,182**	4.1%
Dyspnea, Unspecified	**668,322**	4.0%
Syncope and Collapse	**583,057**	3.5%
Hemorrhage	**582,344**	3.5%
Headache	**559,585**	3.4%
Light-Headedness	**543,681**	3.3%
Other Malaise	**530,425**	3.2%
Generalized Abdominal Pain	**470,075**	2.8%
Other Chest Pain	**429,561**	2.6%
Pain in Limb, Hand, Foot, Fingers and Toes	**418,333**	2.5%
Worries	**388,170**	2.3%
Nausea	**375,543**	2.3%
TOTAL	**16,580,655**	

Inclusion criteria: 911 initiated and patient contact was made. Values that were marked Not Applicable or Not Recorded are removed.

TRANSPORT MODE FROM SCENE

eResponse.23 - The indication whether the response was emergent or non-emergent. An emergent response is an immediate response as determined by local or state protocols.

Transport Mode from Scene	Count of Events	Percent of Total
Non-Emergent	**17,585,742**	69.7%
Emergent (Immediate Response)	**7,190,541**	28.5%
Emergent Downgraded to Non-Emergent	**345,407**	1.4%
Non-Emergent Upgraded to Emergent	**101,260**	0.4%
TOTAL	**25,222,950**	

EMS PROVIDER LEVEL OF CARE

eResponse.15 - The level of care (BLS or ALS) the unit is able to provide based on the units' treatment capabilities for this EMS response.

Level of Care	Count of Events	Percent of Total
ALS-Paramedic	**31,994,608**	75.6%
BLS-Basic /EMT	**7,681,294**	18.2%
ALS-AEMT	**816,496**	1.9%
Specialty Critical Care	**642,468**	1.5%
BLS-First Responder/EMR	**377,814**	0.9%
ALS-Intermediate	**360,873**	0.9%
BLS-AEMT	**320,068**	0.8%
BLS-Intermediate	**51,912**	0.1%
ALS-Nurse	**25,543**	0.1%
ALS-Community Paramedicine	**22,174**	0.1%
ALS-Physician	**5,410**	<0.1%
BLS-Community Paramedicine	**3,698**	<0.1%
TOTAL	**42,302,358**	

EMS BY THE NUMBERS: IMPACT OF COVID-19 ON EMS RESPONSE

The following graphs demonstrate the rate of Influenza-like Illnesses (ILI) as a measure to capture suspected COVID-19 infections. Diagnosing COVID-19 in the prehospital setting is often out of scope for EMS agencies. ILI symptoms present in a similar way to COVID-19 symptoms and have proven to be an acceptable way to assess EMS activations that may include COVID-19 suspected patients.

Rate of ILI activations charts include, within the defined period, all EMS activations in which the Type of Service Requested [eResponse.05] is a 911 response AND Arrived at Patient Date/Time [eTimes.07] is not blank OR Incident/Patient Disposition [eDisposition.12] indicates that patient contact occurred.

The Case Definition of ILI in the prehospital setting is based on the record inclusion criteria provided in the Companion Guide for the National NEMSIS ILI Surveillance Dashboard. The ILI Surveillance Dashboard Companion Guide can be found at: ILI Dashboard Companion Guide. Provided below are examples of data elements which include ICD-10 codes for ILI criteria.

EMS Primary and Secondary Impression

- B79 codes: SARS and other Coronavirus
- J09 codes: Influenza
- J15 codes: Pneumonia

Patient Primary and Associated Symptoms

- R05 codes: Cough
- R06 codes: Shortness of Breath
- R50 codes: Fever
- J02 codes: Pharyngitis

The global inclusion criteria define the minimum characteristics each event record must meet for inclusion in any of the calculations for v3 Surveillance Dashboards. For details on each element, it's code, and range of values see the NEMSIS Version 3.4 Data Dictionary.

The criteria for including ICD-10 codes to represent influenza-like illness were drawn from guidance provided by the CDC (Centers for Disease Control), ILI dashboards provided by EMS software vendors, and codes utilized by EMS clinicians and archived in the National EMS Database (i.e., internal validity monitoring).

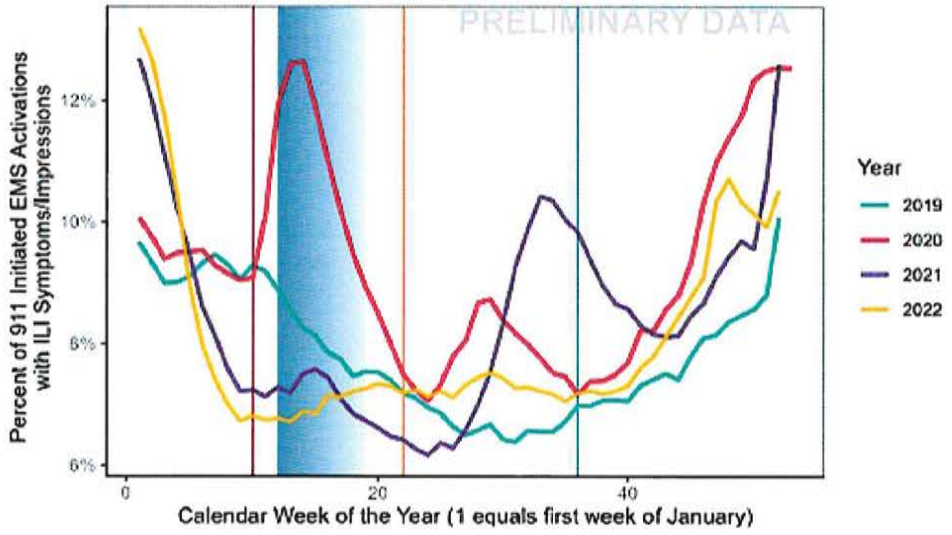
The breadth of codes considers the unique presentation of patients, coding variation found in available EMS software, and lack of definitive diagnosis capabilities in the prehospital environment. The inclusion criteria are intended to capture EMS interactions that could be consistent with an influenza diagnosis. This is not a COVID-19 specific report.

There are also vertical-colored lines which represent key dates:

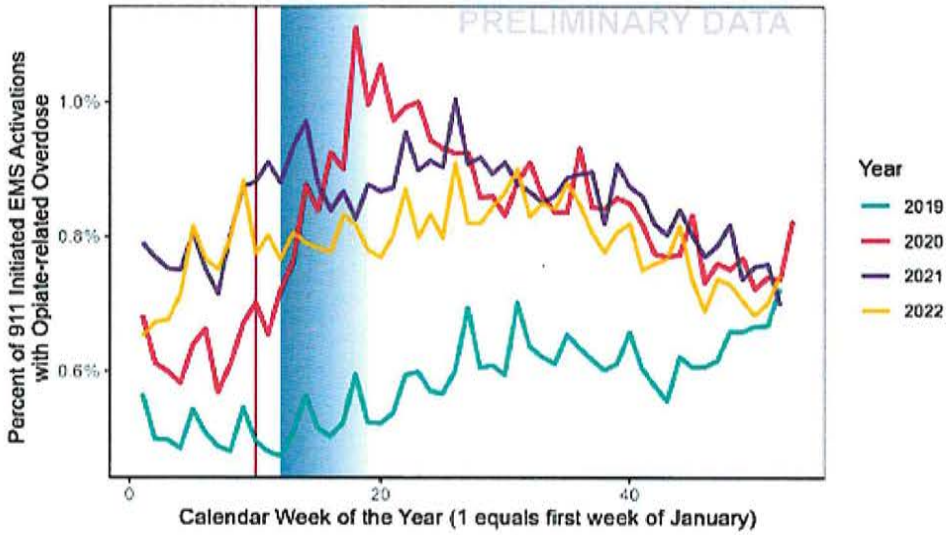
- The red line marks when the CDC announced COVID-19 community spread in 2020.
- The orange line shows Memorial Day.
- The yellow line marks Labor Day.
- The green line marks Thanksgiving.
- The blue shaded area represents when "Stay-At-Home" orders were generally established by states in 2020.

The COVID-19 pandemic had other significant impacts on EMS. Graphs of rates for mental and behavioral health, as well as opioid events are included in this report. These rates increased significantly during the 2020 pandemic. Additional response characteristics are available in the EMS by the Numbers report, published weekly on nemsis.org.

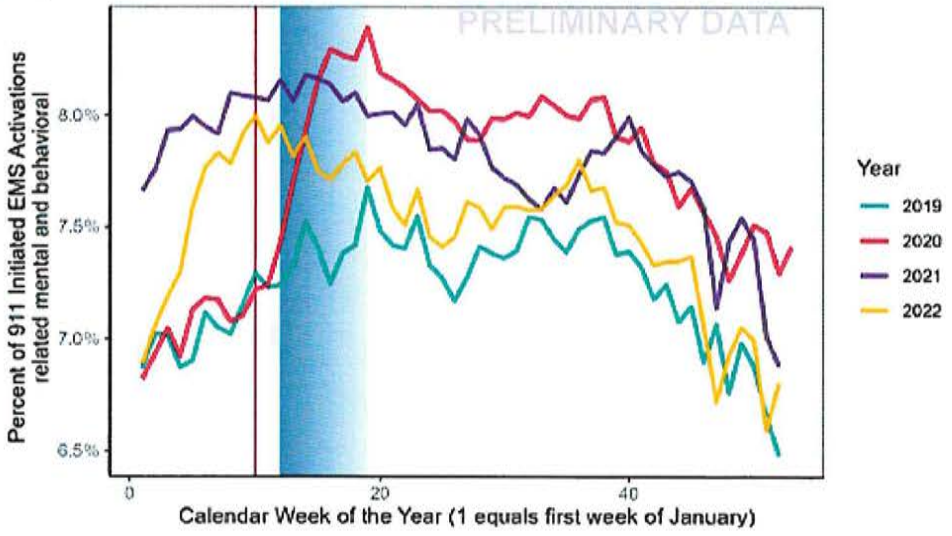
RATE OF ILI ACTIVATIONS



RATE OF OPIOID-RELATED ACTIVATIONS



RATE OF MENTAL/BEHAVIORAL ACTIVATIONS



NEMSIS DATA REPORT 2022

ACKNOWLEDGMENTS

No publication using NEMSIS data would be possible without the dedication and professionalism of EMS clinicians across the country. Likewise, the support and technical guidance provided by state/territory offices of EMS, EMS software vendors, and national partners create the foundation through which EMS data can inform policies, procedures, and protocols to improve EMS evidence-based medical care.

ASSUMPTIONS OF EMS DATA

Hundreds of thousands of EMS clinicians from every walk of life and demographic, document their patient encounters. There is no single right way to complete a patient care report (PCR) and documentation training is varied.

As such, EMS data are rarely collected in calm, sterile, predictable environments. States, territories, and agencies all impact the methods, requirements and codes used to document EMS response activities. This is why there are many descriptions (or codes) used to describe similar injury or illness characteristics. (See Cause of Injury graphic on page seven for an example of the many methods and requirements used to document a "fall".)

RESEARCHERS

A Public-Release Research Dataset is available to researchers. These very large files (SAS, STATA, ASCII) contain all the public data for one year. Researchers can create and run their own queries and as a static dataset, their results may be validated by other researchers. The Public-Release Research Datasets are used frequently in peer-reviewed scholarly publications.

The Public-Release Research Dataset does not contain information that identifies patients, EMS agencies, receiving hospitals, or reporting states. EMS events submitted by states/territories to NEMSIS do not necessarily represent all EMS activations occurring within a state. In addition, states may vary in criteria used to determine the types of EMS activations submitted to the NEMSIS dataset.

Request a copy of the NEMSIS Public-Release Dataset here:
https://nemsis.org/using-ems-data/request-research-data/

CITATION

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AUTHORS

Christopher Karl Hoffman
Skyler Peterson
Benjamin Fisher

FOR MORE INFORMATION

Please visit
https://www.NEMSIS.org
for additional details or email
NEMSIS@hsc.utah.edu with any questions.