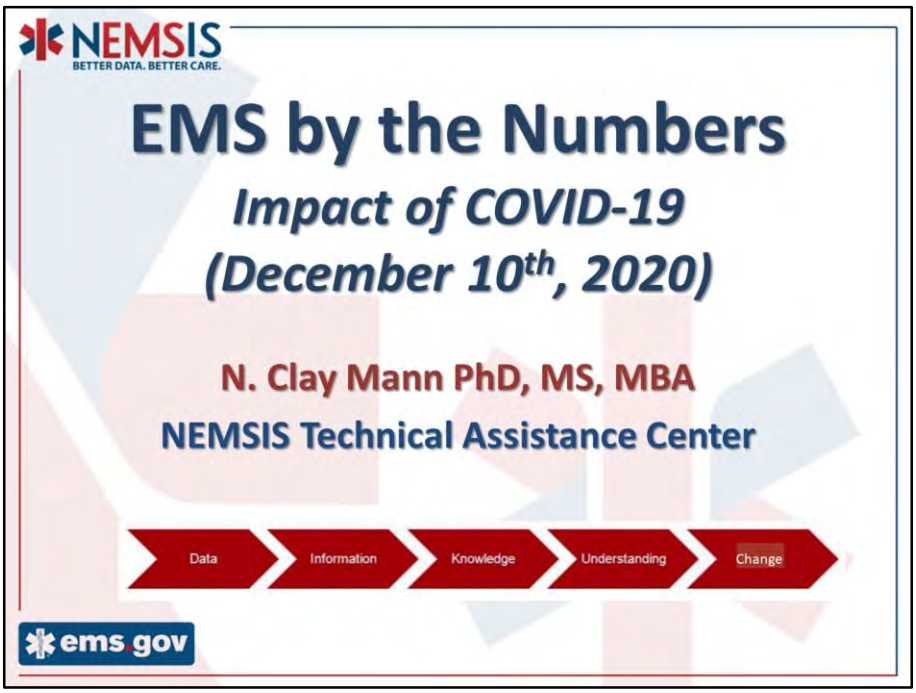
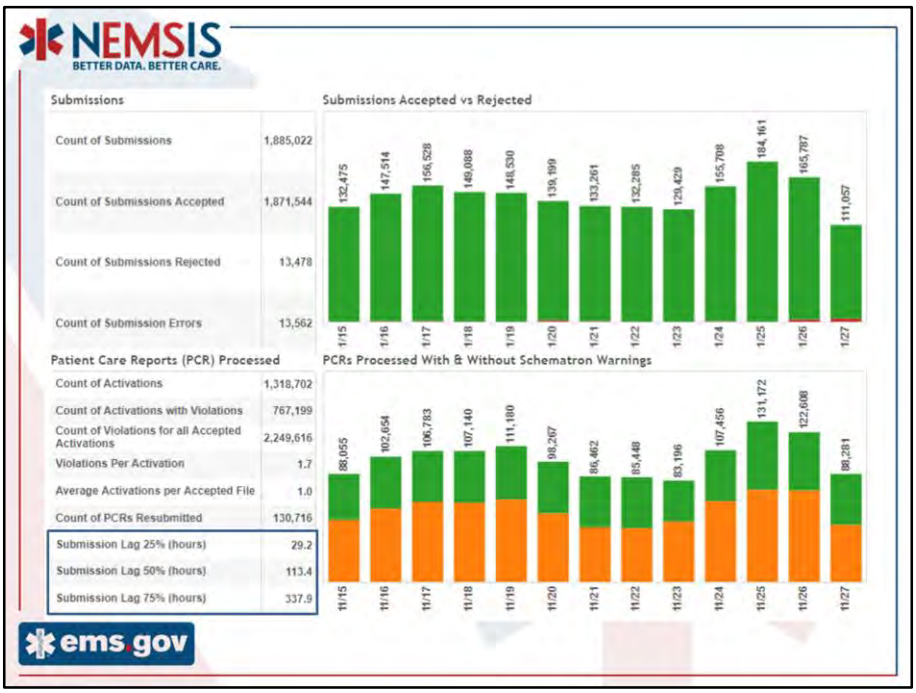


This document is provided by NHTSA in an effort to help State EMS Officials track particular EMS activations occurring during the COVID-19 pandemic. This document will be updated periodically to provide current information regarding temporal variations in the type and characteristics of EMS activations occurring in the U.S. during the COVID-19 outbreak.



When assessing data contained in the National EMS Repository, it is important to recognize that there can be a lag in the submission of patient care reports to the Repository. Looking in the lower left-hand corner, the definition of “Submission Lag” is the date/time difference (in hours) between the completion of an EMS activation (eTimes.13 - Unit Back in Service Date/Time) and the arrival date/time of the record in the National EMS Repository.

29 hours ~ 1 day
113 hours ~ 4.5 days
338 hours ~ 14 days ~ 2 weeks

Thus, the generalizability of a “count” or “rate” associated with any week or day should be assessed in light of the completeness of data for that date.

NEMSIS
BETTER DATA. BETTER CARE.

Identification of ILI

- 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

ems.gov

The definition of Influenza-Like Illness (ILI) is based on the record inclusion criteria provided in the User Guide for the National NEMSIS ILI Surveillance Dashboard. The ILI Surveillance Dashboard User Guide can be found at: https://wiki.utahdcc.org/confluence/x/BAKXAg.

Provided in this slide are examples of the two types of ICD-10-CM codes included in the ILI criteria.

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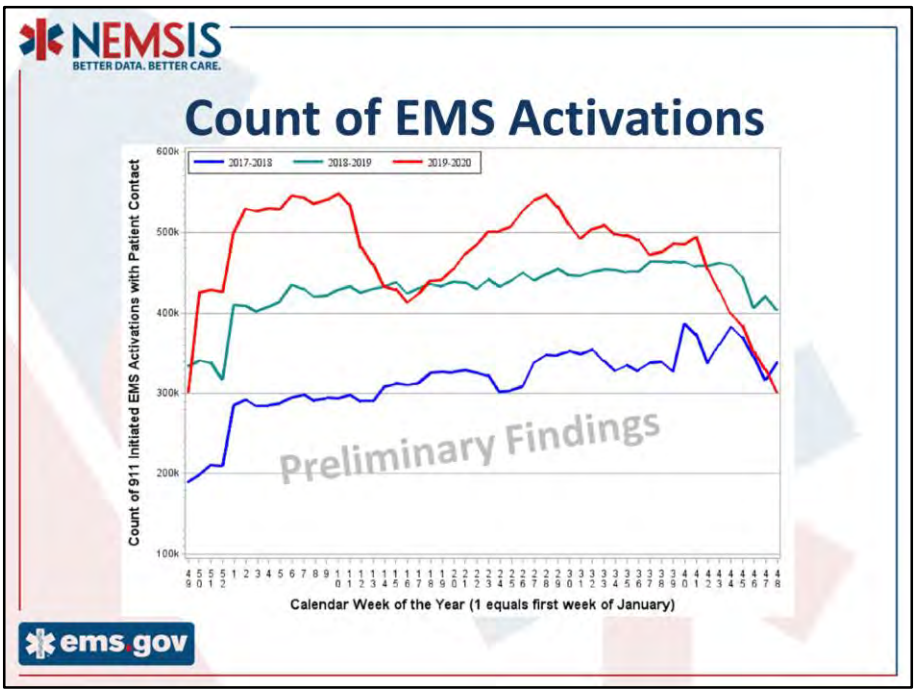
Research Sample

- Time Period 1 (49th week of 2017 to the 48th week of 2018): 16,371,313
- Time Period 2: (49th week of 2018 to the 48th week of 2019): 22,356,566
- Time Period 3: (49th week of 2019 to the 48th week of 2020): 24,607,201

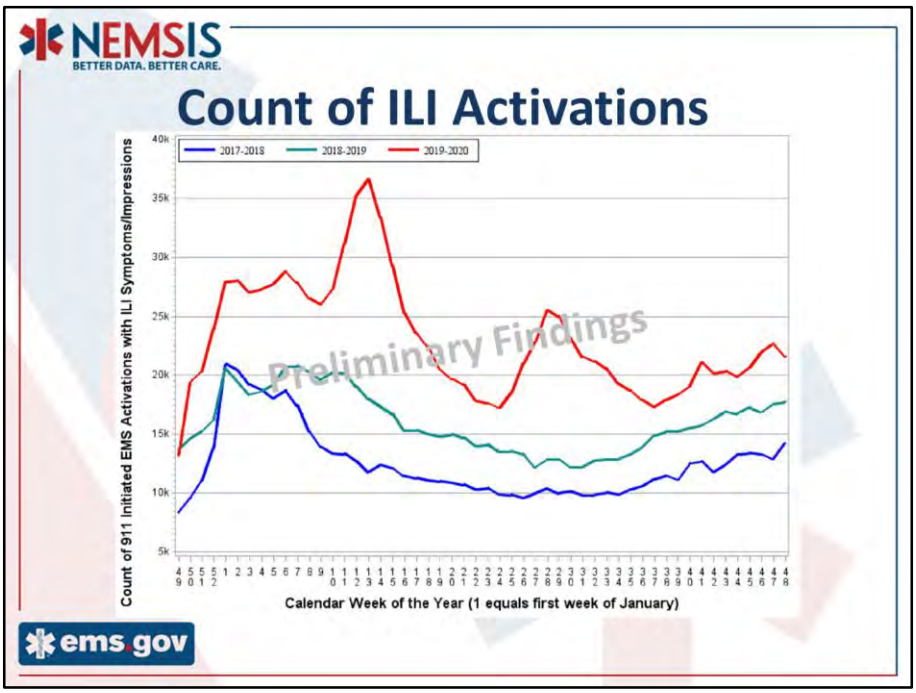
ems.gov

Three date/time samples of EMS activations are included in this assessment of the COVID-19 pandemic. Two date/time periods (from the 49th week [early December] of the previous year to the 48th week [end of November] of the next year) are included to provide reference comparison to the third time period of interest (the 49th week of 2019 through the 48th week of 2020). The total sample includes 63,335,080 9-1-1 initiated EMS activations resulting in patient contact.

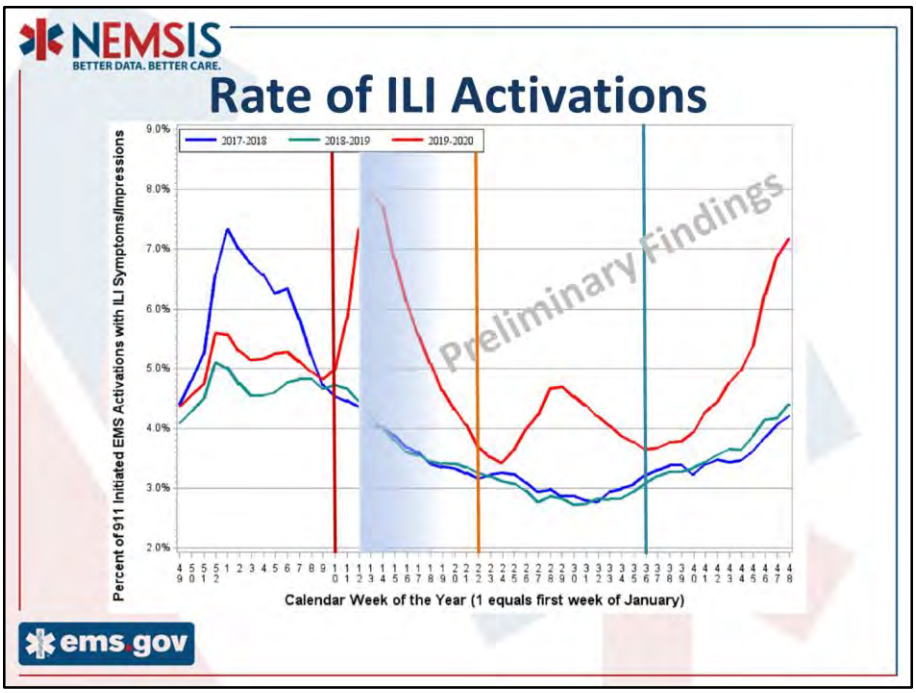


The number of States submitting to the National EMS Repository increased over the study period (2017 – 32 States, 2018 – 40 States, 2019 – 44 States). The District of Columbia submitted PCRs in each time period. States enrolling in the National EMS Repository commonly begin submitting PCRs at the beginning of the calendar year. No state has stopped submitting PCRs once enrolled. The States that do not submit patient care reports to the National EMS Repository are: Delaware, Idaho, Hawaii, Massachusetts, Missouri and Ohio.

The number of EMS activations decreased by approximately 34% between Week 10 (March 2nd to March 8th) and Week 17 (April 20th through April 26th 2020). The number of EMS activations began a second downward trend in Week 28.



The count of EMS activations related to ILI symptoms, greatly increased beginning in Week 10 through Week 14, with a dramatic precipitous drop thereafter through Week 24. Because of the variation in the count of EMS activations through time, rates were calculated to remove difference due solely the count of submitted records.



Using the count of 9-1-1 initiated EMS activations with patient contact as the denominator, the rate of ILI activations is presented. This rate will increase with the introduction of the change to the ILI inclusion criteria discussed earlier. The rate of ILI-related EMS activations demonstrates the expected increase during the traditional "flu season", but higher than expected rates beginning in Week 10 and beginning to drop-off dramatically in Week 14. To provide some context to the timing of these rate fluctuations, "headline events" are listed for Week 10 and Week 12.

Week 9-10:

Feb. 26: CDC reports community spread; Vice President Pence to lead task force

March 3: U.S. surpasses 100 cases

Week 12:

March 13: President Trump declares national public health emergency

March 16: 15 days to slow the spread

Trump issued guidelines that called for Americans to avoid social gatherings of more than 10 people for the next 15 days and to limit discretionary travel, among other guidelines.

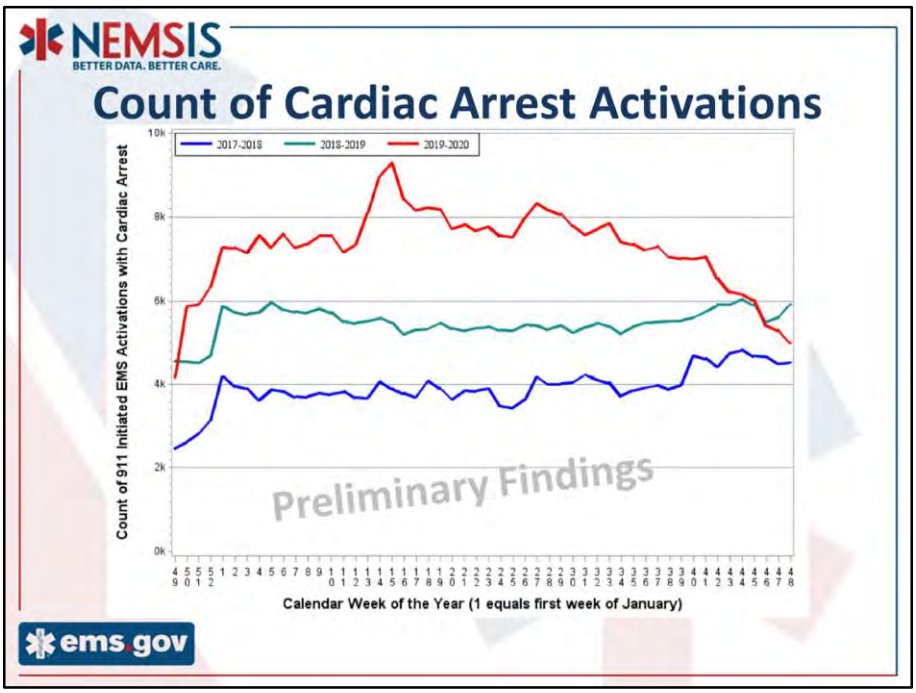
Many States initiate Stay-at-Home orders with orders beginning to phase-out in Week 19.

Week 22:

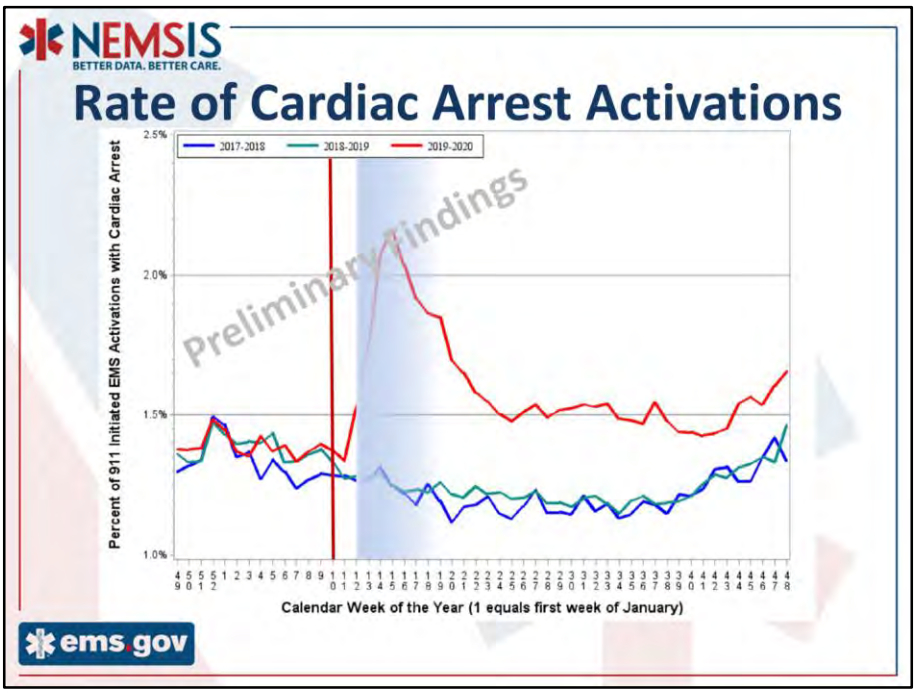
May 25: Memorial Day

Week 36:

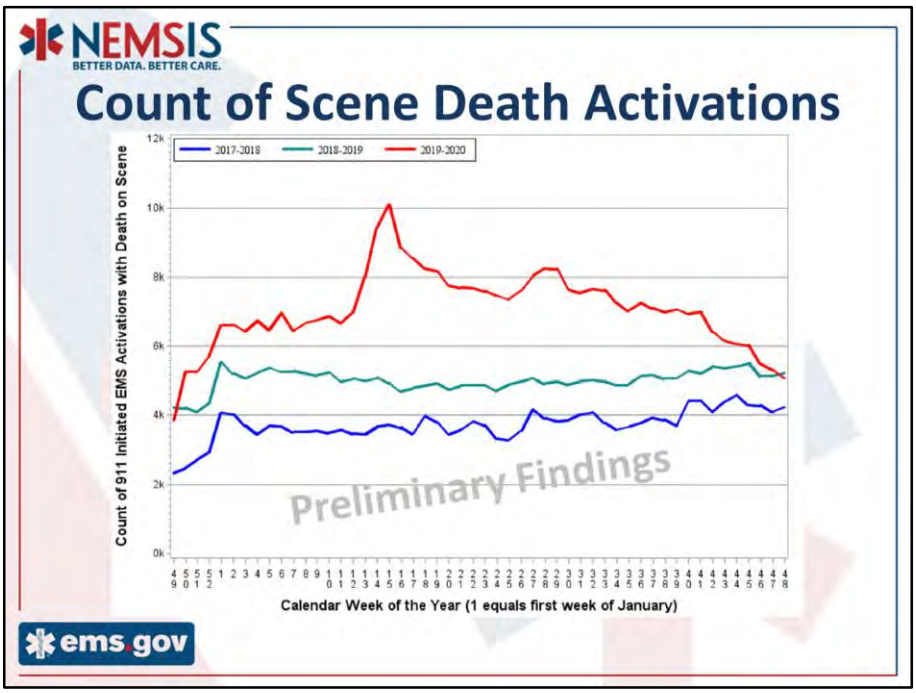
Start of Labor Day weekend



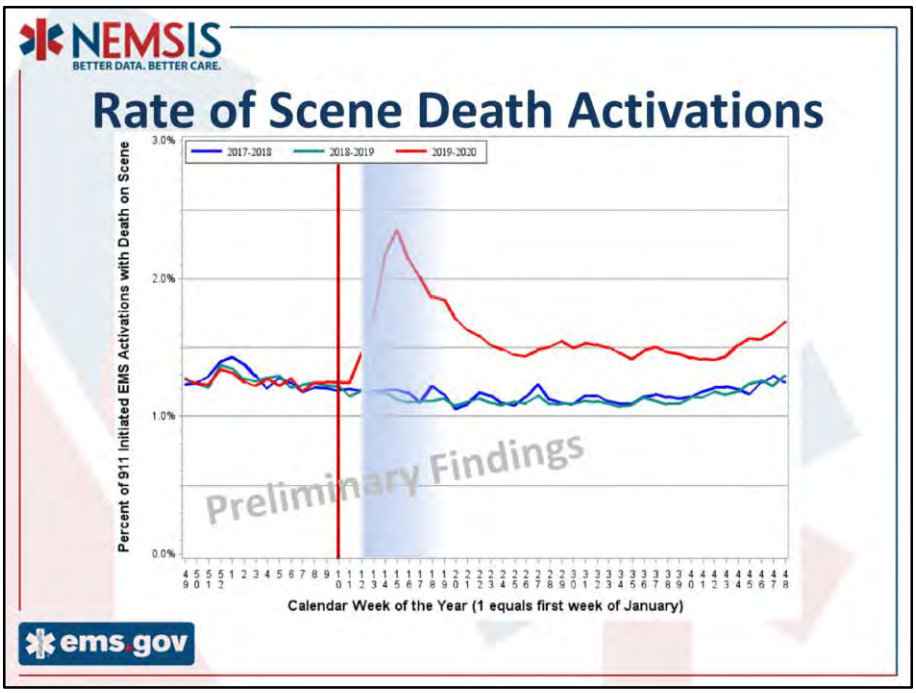
The count of cardiac arrest is created by summing the NEMSIS element eArrest.01 - Cardiac Arrest: Yes, Prior to EMS Arrival AND Yes, After EMS Arrival. The increased number of EMS attended cardiac arrests from week 10 through week 15 represent approximately 1,000 additional cardiac arrests.



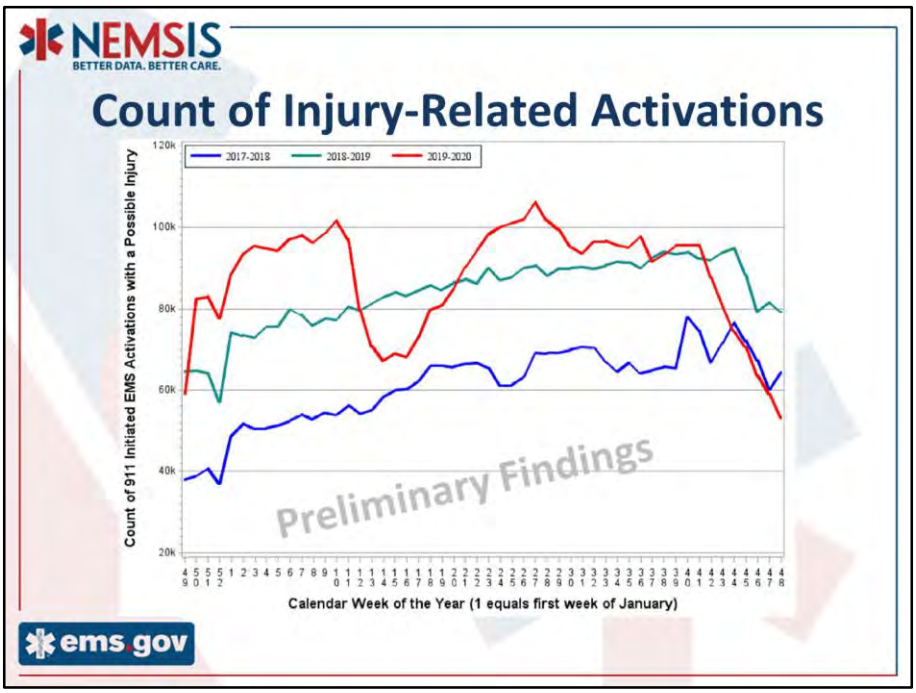
The rate of EMS attended cardiac arrest traditionally increases slightly during the winter months, probably due to additional witnessed arrests. Similar date stamps are superimposed across the dramatic shifts in rate of EMS attended cardiac arrests.



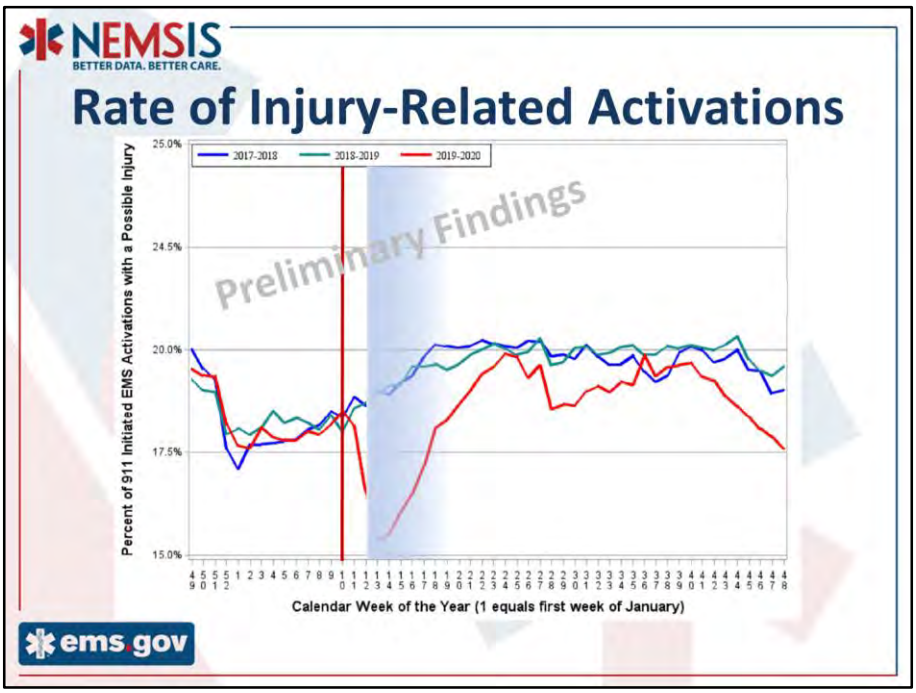
The count of EMS attended scene deaths results from summing the NEMSIS element eDisposition.12 - Incident/Patient Disposition: Patient Dead at Scene - With (or Without) Resuscitation Attempted and With (or Without) Transport.



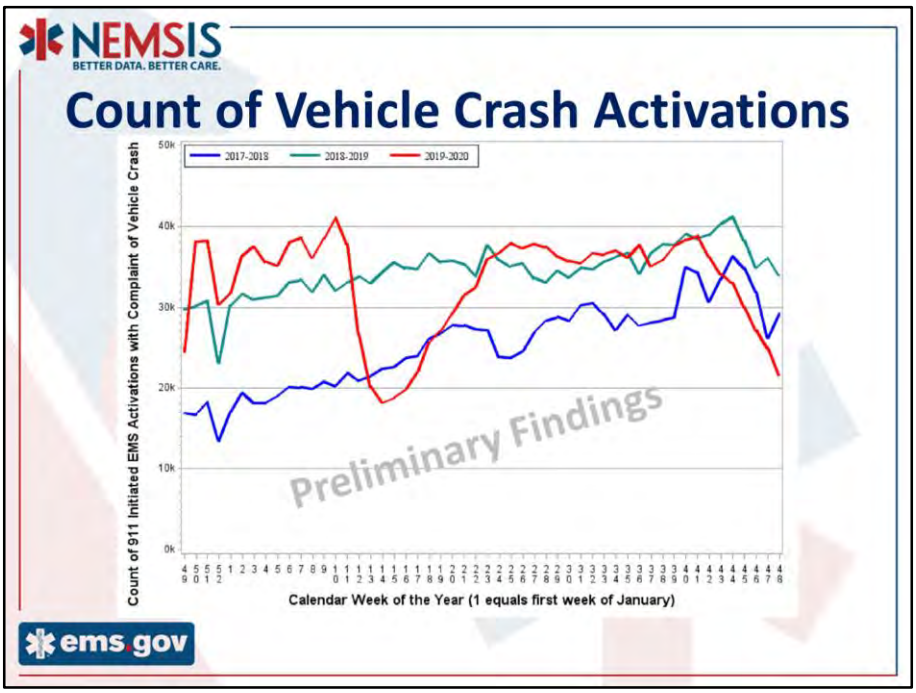
Similar date stamps are superimposed across the dramatic shifts in rate of EMS attended scene deaths.



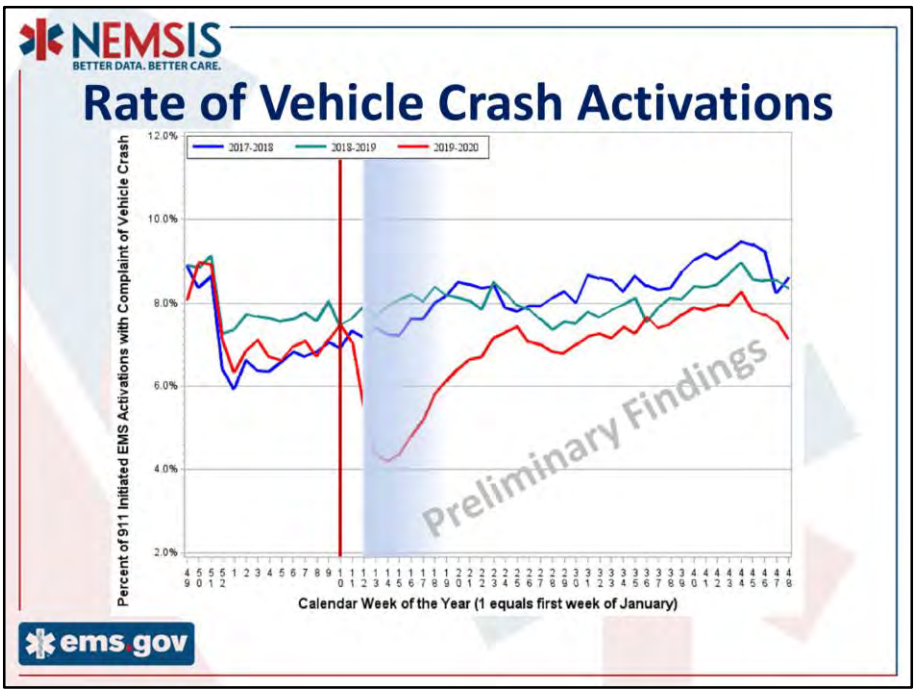
Let's look at an EMS activation trend, one would hypothesize, might decrease with the "Stay-at-Home" orders in place. The count of "injury-related" EMS activations was acquired by summing eSituation.02 - Possible Injury: "Yes."



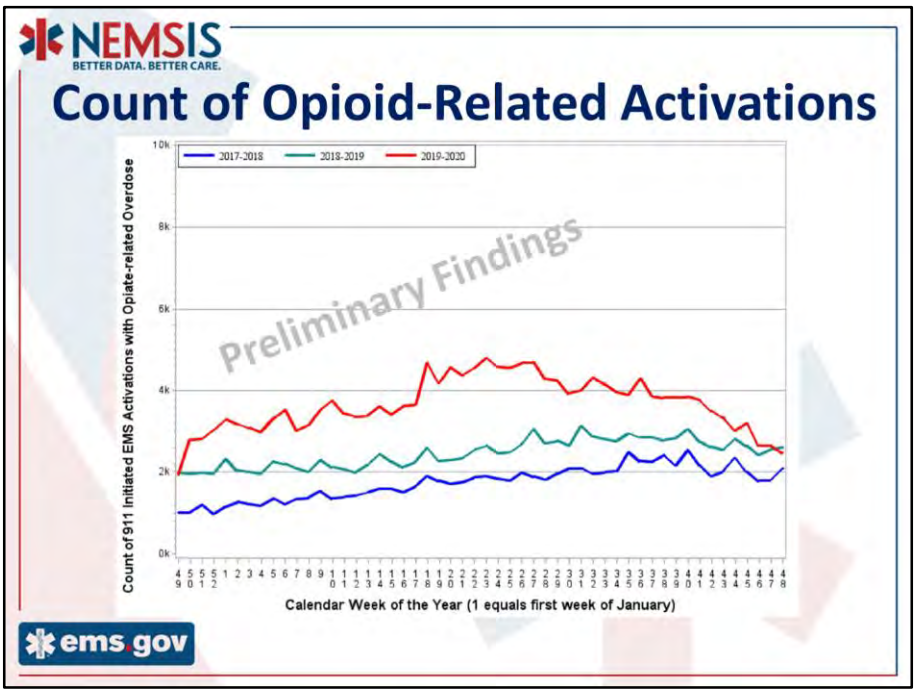
The rate of possible injury-related EMS activations demonstrates the expected increase during warmer months, but lower than expected rates beginning in Week 10 and beginning to increase in Week 13. Similar date stamps are superimposed across the dramatic shifts in rate of EMS activations reporting a possible injury.



The count of EMS activations related to vehicle crashes results from summing the NEMSIS element eDispatch.01 - Complaint Reported by Dispatch: Traffic/Transportation Incident.

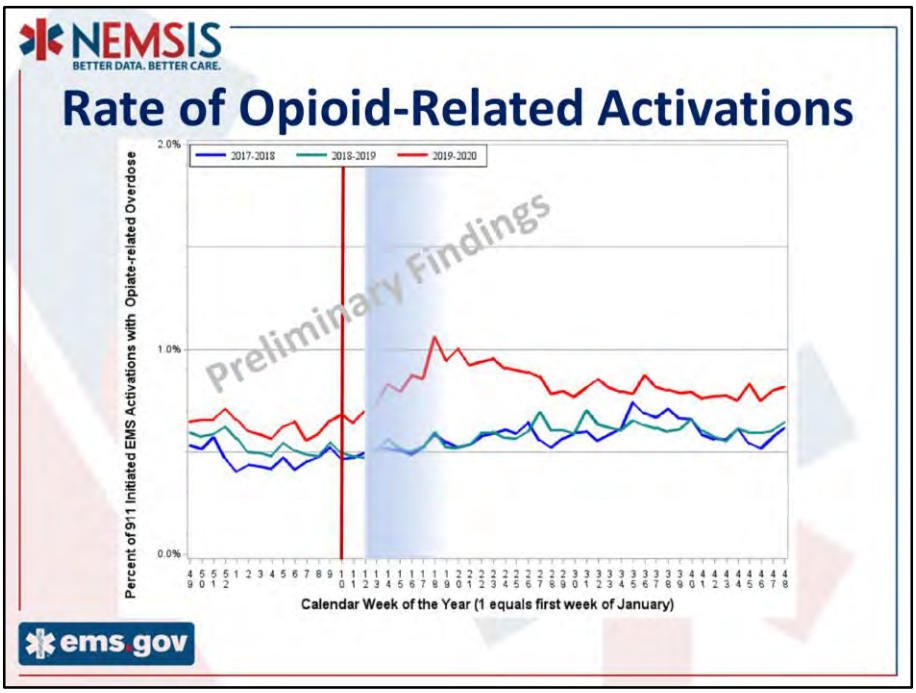


Similar date stamps are superimposed across the dramatic shifts in rate of EMS activations associated with a Traffic/Transportation Incident.

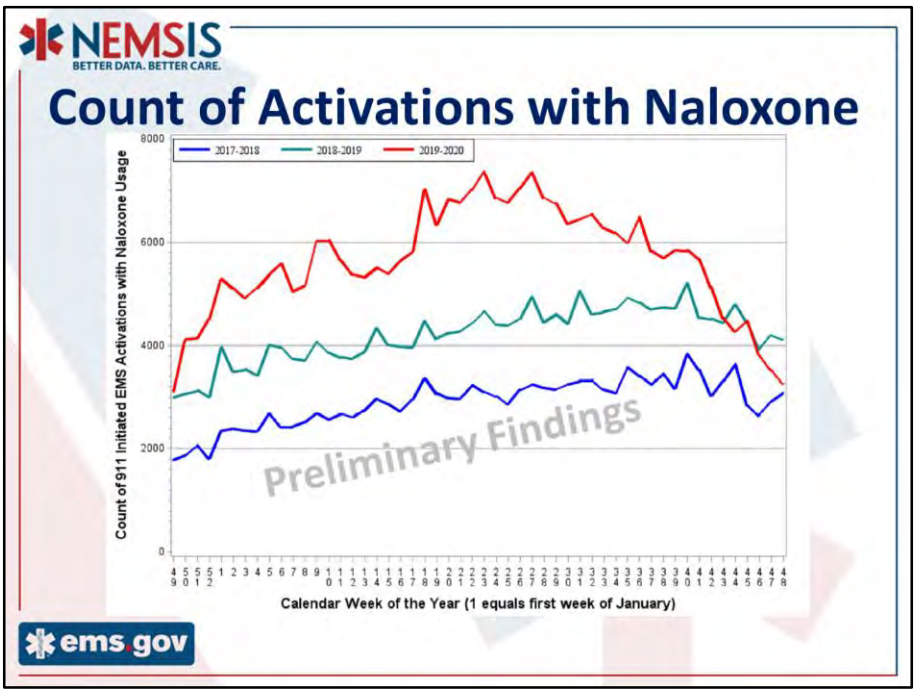


The count of opioid-related EMS activations results from summing the NEMSIS elements: eSituation.11 - Provider's Primary Impression, AND eSituation.12 - Provider's Secondary Impressions, AND eSituation.09 - Primary Symptom, AND eSituation.10 - Other Associated Symptoms with any of the following ICD-10-CM codes:

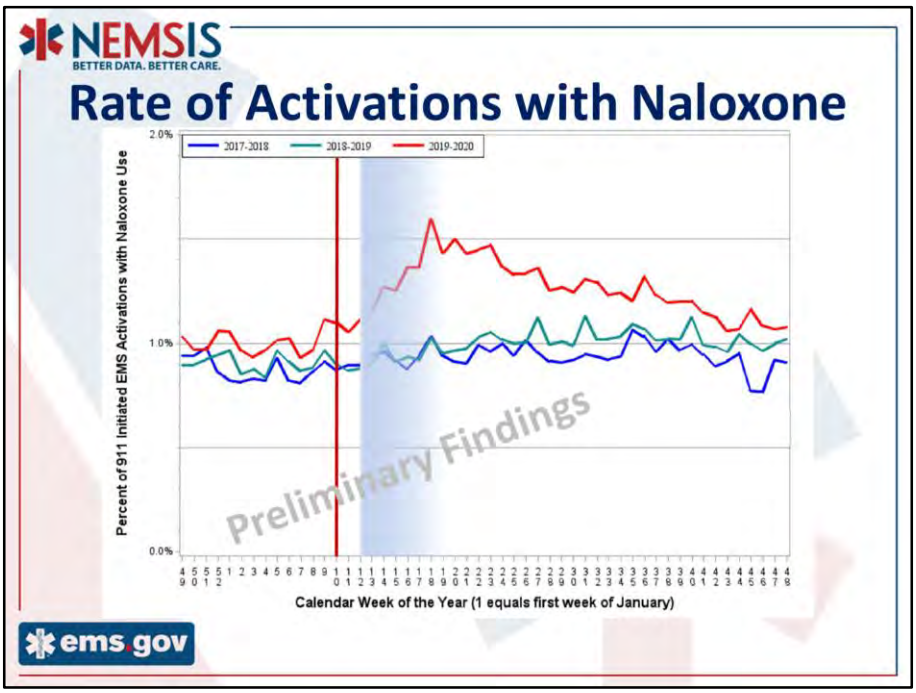
Codes
F11 codes – Opioid-related disorders
T40 codes - Poisoning by (and adverse effects of) opioid-related drugs



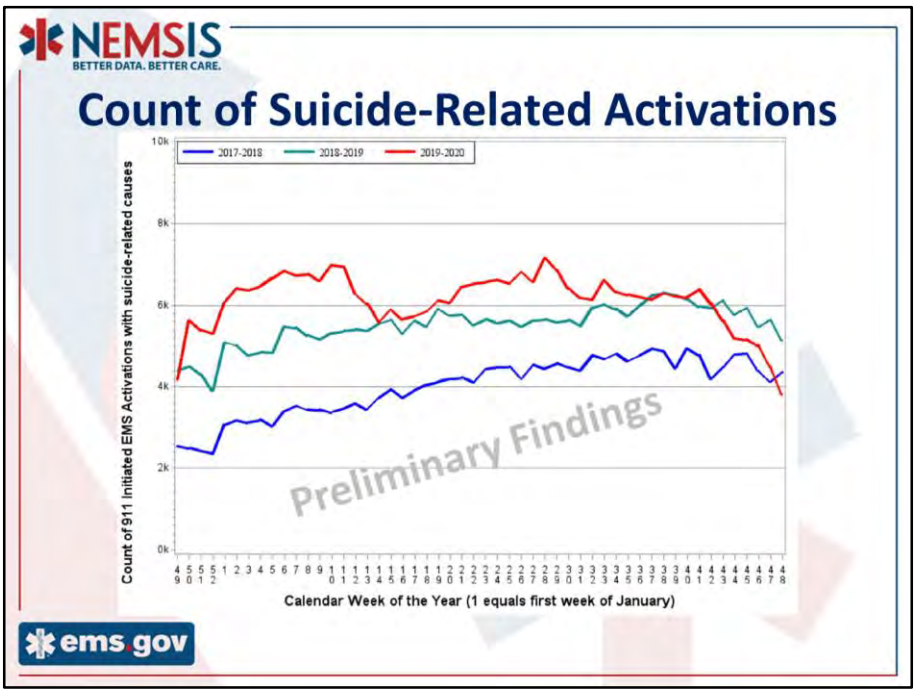
Similar date stamps are superimposed across shifts in the rate of EMS activations documenting opioid-related issues.



The count of EMS activations with documented use of Naloxone results from summing the NEMSIS element: eProcedures.03 – Procedures performed on the Patient. An EMS activation indicating multiple administrations of Naloxone to the same patient is counted only once.

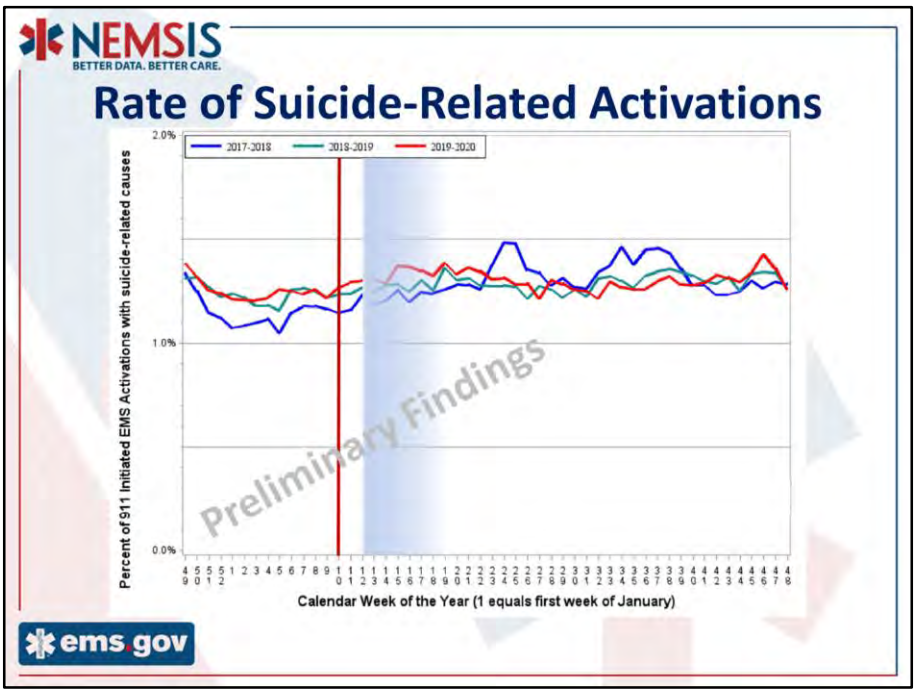


Similar date stamps are superimposed across shifts in the rate of EMS activations with documented Naloxone use.

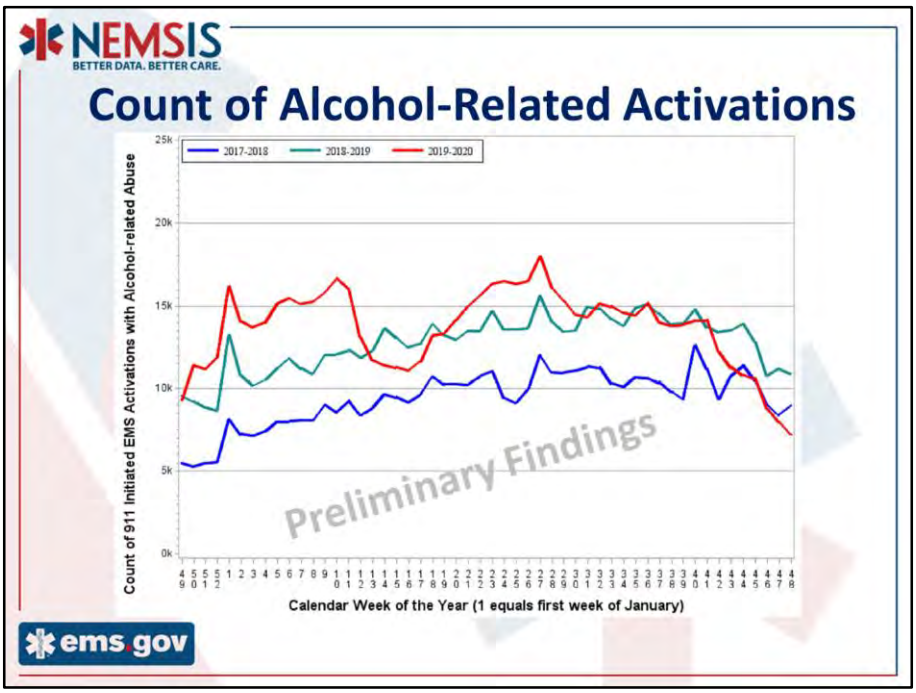


The count of EMS activations related to suicide/self-harm results from summing the NEMSIS elements: eSituation.11 - Provider's Primary Impression, AND eSituation.12 - Provider's Secondary Impressions, AND eSituation.09 - Primary Symptom, AND eSituation.10 - Other Associated Symptoms with any of the following ICD-10-CM codes:

R45 codes - Suicidal ideations
T14.91 - Suicide attempt
T40 codes - Poisoning by medicaments, intentional self-harm
T50 codes - Poisoning by unspecified drugs, medicaments and biological substances, intentional self-harm
T65 codes - Toxic effect of specified and unspecified substances, intentional self-harm
X71 through X83 codes - Intentional self-harm by specified and unspecified means

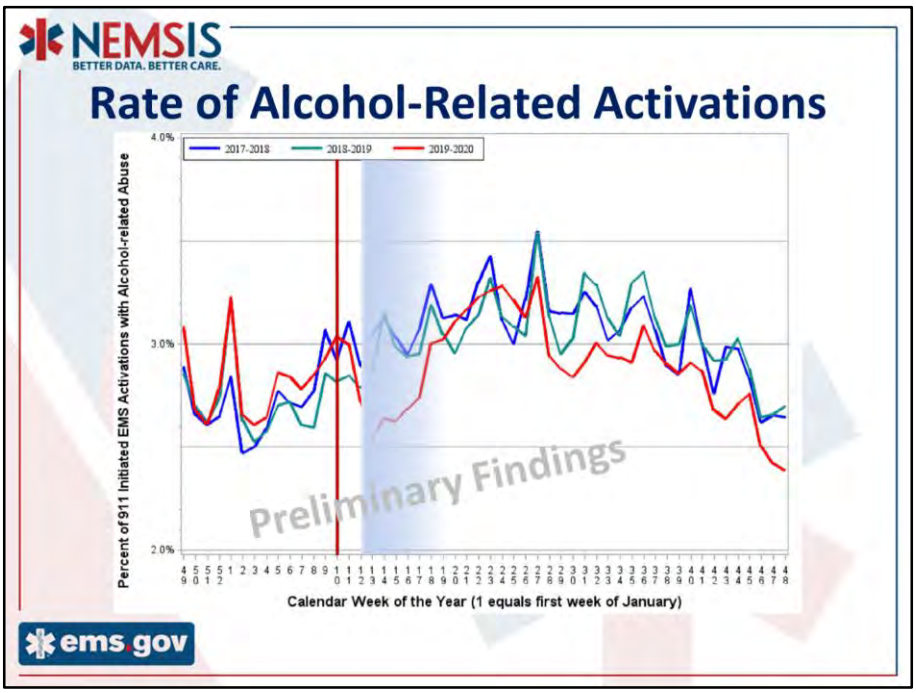


Similar date stamps are superimposed across shifts in the rate of EMS activations documenting suicide/self harm issues.

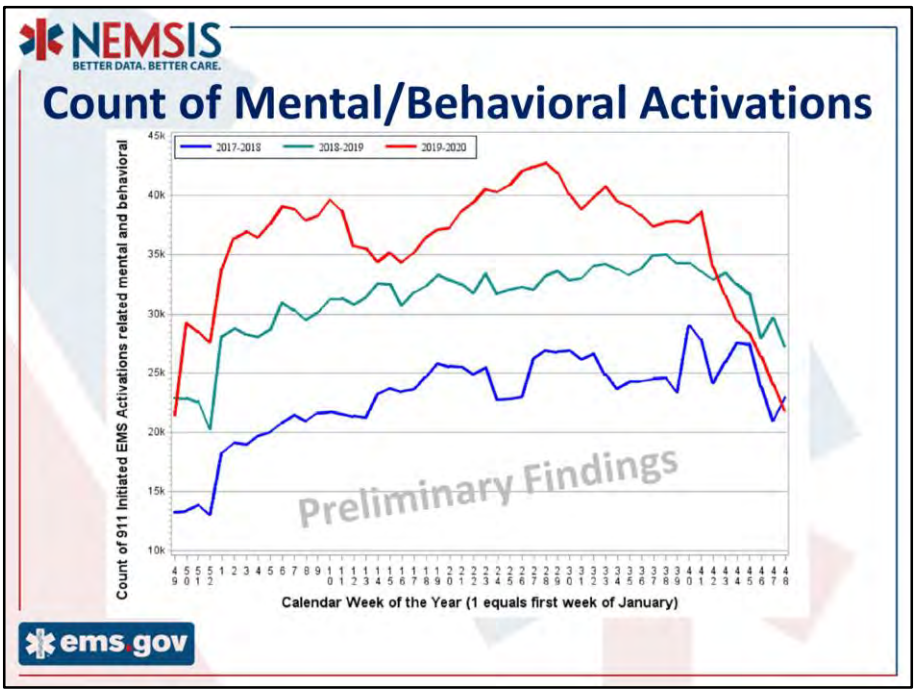


The count of EMS activations documenting alcohol-related issues as an impression or symptom results from summing the NEMSIS elements: eSituation.11 - Provider's Primary Impression, AND eSituation.12 - Provider's Secondary Impressions, AND eSituation.09 - Primary Symptom, AND eSituation.10 - Other Associated Symptoms with any of the following ICD-10-CM codes:

F10 codes – Alcohol-related disorders

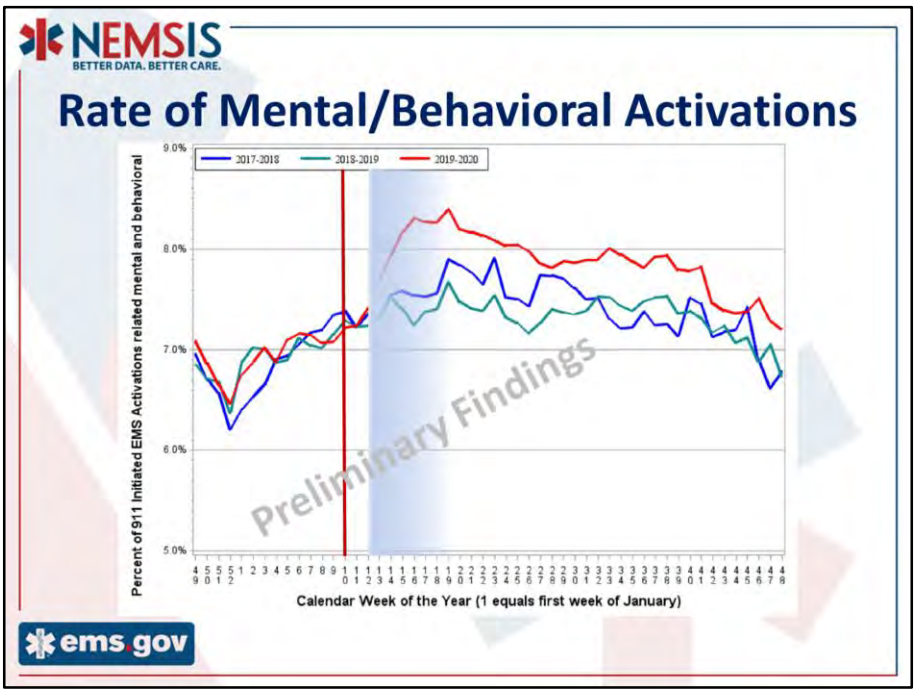


Similar date stamps are superimposed across shifts in the rate of EMS activations documenting alcohol-related issues as an impression or symptom.

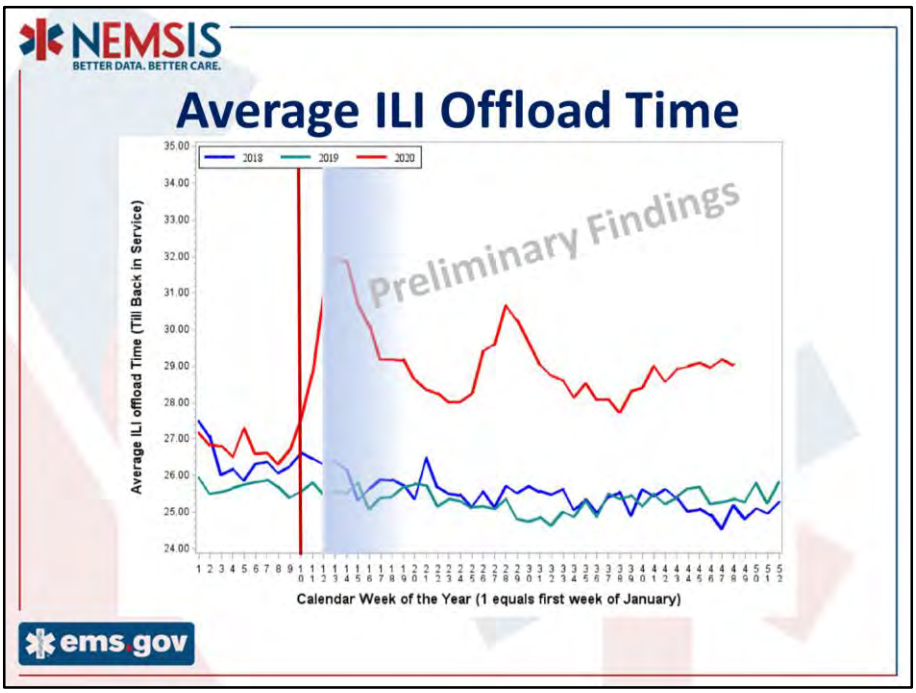


The count of EMS activations related to mental/behavioral health issues results from summing the NEMSIS elements: eSituation.11 - Provider's Primary Impression, AND eSituation.12 - Provider's Secondary Impressions, AND eSituation.09 - Primary Symptom, AND eSituation.10 - Other Associated Symptoms with any of the following ICD-10-CM codes:

F41.9 – Anxiety, NOS
F41.1 - Generalized anxiety disorder
R41.82 - Altered mental status, unspecified
F32.9 - Major depression, NOS
F99 - Mental disorder, NOS
R45.89 - Other symptoms and signs involving emotional state
R45.7 - State of emotional shock and stress, unspecified
R46.2 - Strange and inexplicable behavior
R46 - Symptoms and signs involving appearance and behavior
R45.82 - Worries

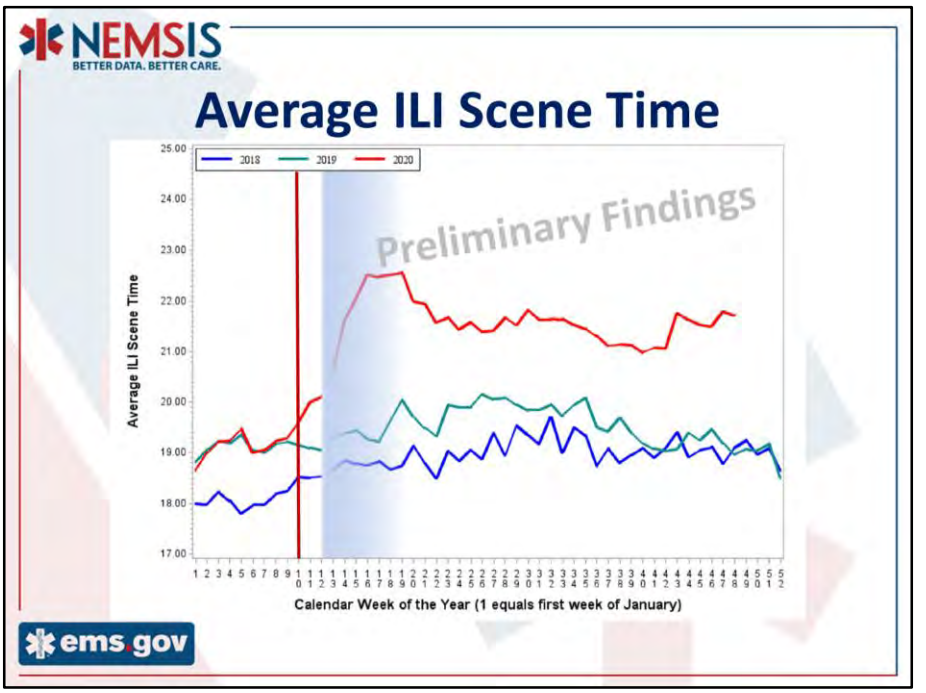


Similar date stamps are superimposed across shifts in the rate of EMS activations associated with mental/behavioral health issues.



A measure of stress in the emergency care system may be calculated as the elapsed time from the arrival of an ambulance, with a patient, to the Emergency Department of a hospital until the ambulance unit is back in service. This measure is calculated, using NEMSIS elements, as: eTimes.13 (Unit Back in Service Date/Time) - eTimes.11 (Patient Arrived at Destination Date/Time). During the COVID-19 pandemic, this elapsed time will include two important components of stress to the emergency care system:

a. The elapsed time from ambulance arrival at the hospital until the time the hospital has the available personnel and resources to take responsibility for the care of the patient.
b. The elapsed time from when the hospital accepts the patient until the ambulance is cleaned, decontaminated, and ready to return to service.



Another potential measure of stress in the emergency care system may be the additional time needed at the scene, when caring for a patient, to ensure proper precautions are taken to protect the patient, bystanders, and EMS clinicians during the COVID-19 pandemic. This measure is calculated, using NEMSIS elements, as: eTimes.09 (Unit Left Scene Date/Time) - eTimes.06 (Unit Arrived on Scene Date/Time).

Please contact the NEMSIS Technical Assistance Center for updates to this document. Contact N. Clay Mann at clay.mann@hsc.utah.edu.