

Disaster-related Mental Health Syndromic Surveillance

NSSP CoP Syndrome Definition Subcommittee

National Syndromic Surveillance Program
Community of Practice

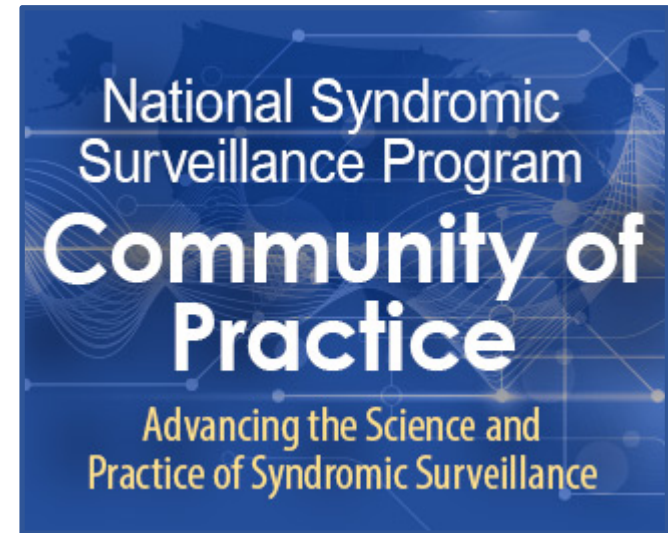
Resources that Advance the Science and Practice of Syndromic Surveillance

The NSSP CoP is supported by Cooperative Agreement # 6NU38OT000297-02-01 between the Centers for Disease Control and Prevention (CDC) and the Council of State and Territorial Epidemiologists.
Its contents are solely the responsibility of the authors and do not necessarily represent the official views of CDC.

NSSP Community of Practice



- Promotes knowledge sharing, training, innovation, and timely exchange of syndromic surveillance data among STLT public health agencies and partners
- Membership is voluntary and open to any person or organization interested in advancing syndromic surveillance



Email syndromic@cste.org to be added to the NSSP CoP or any of its related groups

The background is a solid orange color. Overlaid on this is a network of thin white lines that intersect at various points. At these intersection points, there are small white circles of varying sizes. Some lines are straight, while others are curved, creating a complex, web-like pattern that suggests a network or data flow.

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Syndrome Definition Subcommittee

Create, validate, and refine syndrome definitions, link users with similar syndrome definition needs, and create documentation along the way. We are seeking to be a resource for collaboration and best practices in the syndrome definition creation process.

Co-Chairs: Rosa Ergas & Rasneet Kumar



SD Syndrome Development Process

1. Scope and purpose
2. Compile the components
3. Refine the syndrome
4. Disseminate the syndrome

DEVELOPING, EVALUATING, AND DISSEMINATING
DEFINITIONS FOR SYNDROMIC SURVEILLANCE IN
PUBLIC HEALTH PRACTICE: A GUIDANCE DOCUMENT

JANUARY 2019
VERSION 1



SDC Syndrome Development Process

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Scope – Needs are identified

Let's Vote!

- Persons experiencing homeless
 - Pregnancy
 - Injection drug use
 - Firearm injury
 - **Mental health**
 - Climate Related
 - Traumatic brain injury
 - RSV
 - Road traffic injuries
- Topics solicited from the CoP through forum posts and at the ISDS conference
 - SD members voted on a topic



Scope - defined

- Mental health emergency department visits during and immediately post a disaster
 - Disaster was defined as:
 - natural disasters (e.g., floods);
 - human-made, nonintentional technological disasters (e.g., the nuclear accident at Chernobyl);
 - human-made, intentional acts such as mass violence and terrorism



Scope - defined

- Mental health emergency department visits during and immediately post a disaster
 - Mental health was defined as:
 - Stress
 - Anxiety
 - Panic



Scope - defining mental health

1. Literature Review

2. Subject matter experts

- CDC – Deborah Gould & Achintya Dey
- CSTE Mental Health Subcommittee

Posttraumatic stress disorder (PTSD)

Generalized anxiety disorder

Panic disorder

Non-specific psychological distress

Perceived stress

Phobias

Prolonged grief disorder

Suicide

Remorse

Major depressive disorder

Substance use disorder

Scope - defining mental health

3. ESSENCE data review

Posttraumatic stress disorder (PTSD)

PTSD acute ICD 10	^Post Traumatic Stress^,or,^PTSD^,or,^Pain T S D^,or,^Posttraumaticstress^,or,^[;/]F43.11^,or,^[;/]F4311^
PTSD unspecified ICD 10	^Post Traumatic Stress^,or,^PTSD^,or,^Pain T S D^,or,^Posttraumaticstress^,or,^[;/]F43.10^,or,^[;/]F4310^

Generalized anxiety disorder

^[;/]F41^,or,^[;/]F41.[1389]^,or,^[;/]F41[1389]^,or,^anxiety^,or,^anxious^

Panic disorder

^ Panic^,or,Panic^,or,^[; /]F41.0^,or,^[;/]F410^



Scope - defining mental health

Perceived stress

(,^[; /]F43.[089]^,or,^[; /]F43[089]^,or,^[; /]r45.7^,or,^[; /]r457^,or,^acute stress^,or,^stressed out^,or,^stressing out^,or,^stress out^,or,^feeling stress^,or,^extreme stress^,or,^felt stress^,or,^am stress^,or,^is stress^,or,^severe stress^,or,^severely stress^,or,^very stress^,or,^really stress^,or,(,^stress^,and,(,^emotional^,or,^mental^,),),),andnot,^post traumatic^

Phobias

^[; /]F40^



Scope - defining mental health

	Alaska	Nebraska
Posttraumatic stress disorder (PTSD)	No increase	No increase
Generalized anxiety disorder	Slight increase	Slight increase
Perceived stress	Increase	Increase
Phobias	No increase	No increase
Panic disorder	Slight increase	No increase



Scope - finalized

- Mental health conditions likely to increase in emergency department (ED) frequency during and after natural or human-caused disaster events.
 - Disaster was defined as:
 - natural disasters (e.g., floods);
 - human-made, nonintentional technological disasters (e.g., the nuclear accident at Chernobyl);
 - human-made, intentional acts such as mass violence and terrorism
 - Mental health conditions include:
 - Stress, Panic, Anxiety



Compile

- Subject matter experts
- Literature
- Existing syndrome definitions

Stress_v1

ICD-10-CM

F43.0 - Acute Stress Reaction

F43.8 - Other reactions to severe stress

F43.9 - Reaction to severe stress

R45.7 - State of emotional shock and stress

Chief Complaint Keywords

Stress

Overwhelm

^[; /]F43.[089]^,or,^[; /]F43[089]^,or,^[; /]r45.7^,or,^[; /]r457^,or,^overwhelm^,or,(,[/ ;.]stress^,or,stress^,andnot,(^stress test^,or,^fetal stress^,))

Anxiety & Panic_v1

ICD-10-CM

F41.0 Panic disorder [episodic paroxysmal anxiety]

F41.1 Generalized anxiety disorder

F41.3 Other mixed anxiety disorders

F41.8 Other specified anxiety disorders

F41.9 Anxiety disorder, unspecified

Chief Complaint Keywords

anxiety

anxious

anxiuos

anxiuus

anxioos

aniety

axiety

nervous

panic

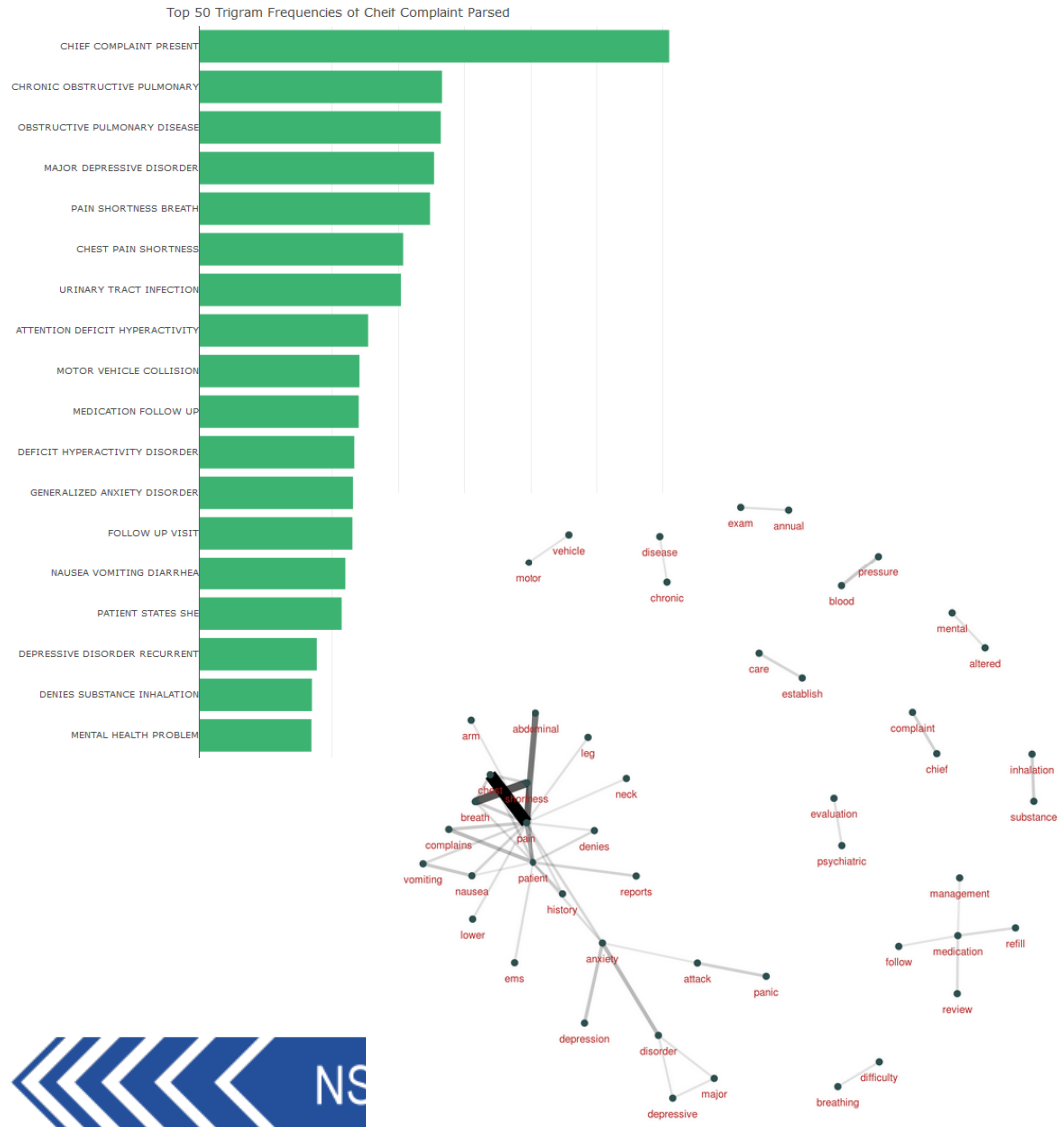
^[; /]F41^,or,^anxiety^,or,^anxi[ou][ou]s^,or,^anxiety^,or,^axiety^,or,^nerv[ou][ou]s^,or,^panic^



Compile

- Created bigrams, trigrams and word co-occurrence
- Created first draft

[^/]F41^,or,[^/]F43.[089]^,or,[^/]F43[089]^,or,[^/]r45.7^,or,[^/]r457^,or,^overwhelm^,or,(,[^/]stress^,or,stress^,andnot,(^stress test^,or,^fetal stress^,),),or,^anxiety^,or,^anxi[ou][ou]s^,or,^aniety^,or,^axiety^,or,^anexiy^,or,^aniexty^,or,^ansxiety^,or,^anxety^,or,^anxity^,or,^nerv[ou][ou]s^,or,^panic^,or,^mental health^,or,^MH eval^,or,^MHE^,or,^situational crisis^,or,^crisis eval^,or,(^Psych^,and,(^eval^,or,^consult^,),),



Refine

- Two step evaluation process
 1. Line level review
 2. Trend analysis
- Volunteers with syndromic surveillance data from a disaster event were recruited for evaluation
 - Nebraska : Flood
 - Alaska: Earthquake
 - Florida: Hurricane
 - Texas: Mass shooting



Refine – Line-level review

- Conducted multiple iterations of line level review using, national and local level data.
- Each visit was classified as:
 - Probable
 - Ruled out
 - Undermined
- Percentage of probable visits were calculated for each keyword and ICD code in the query
- Changes were made based on the results of each review



Refine – Line-level review

Term/ICD Code	Nebraska		Alaska		Florida		Texas		CCQVT	
	Frequency	% Probable	Frequency	% Probable	Frequency	% Probable	Frequency	% Probable	Frequency	% Probable
STRESS	4	100%	8	100%	1	100%	3	75%	-	-
MENTAL_HEALTH	12	100%	10	90%	2	100%	-	-	6	100%
PANIC	13	92%	23	87%	29	76%	6	67%	16	81%
ANXIOUS	15	40%	30	50%	1	100%	17	72%	6	50%
PSYCHandEVAL	68	100%	27	85%	26	100%	7	100%	2	100%
ANXIETY	74	88%	101	77%	62	87%	78	81%	70	99%
NERVOUS	-	-	2	100%	1	0%	2	0%	2	100%
SITUATIONAL_CRISIS	-	-	-	-	2	100%	-	-	-	-
OVERWHELM	-	-	-	-	1	100%	-	-	-	-



Trend Analysis

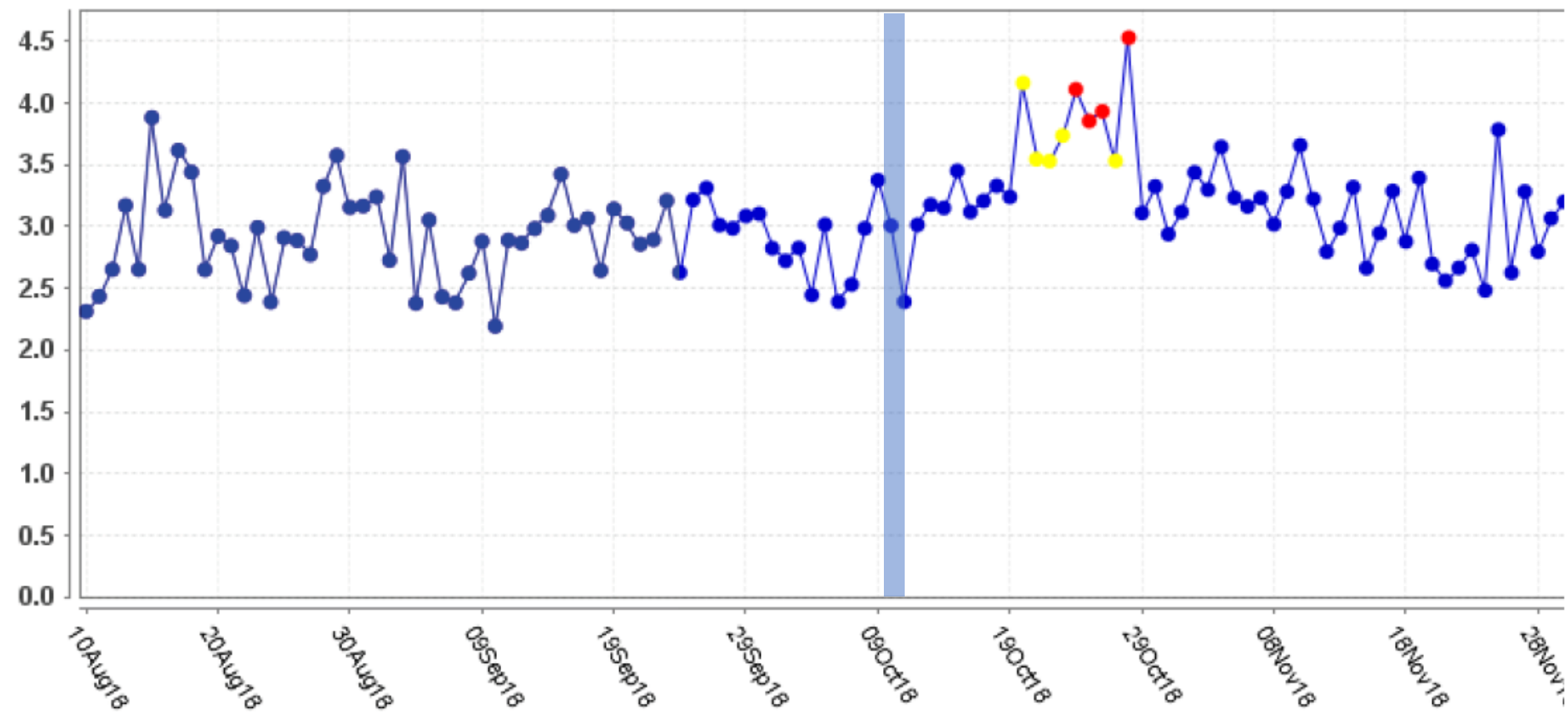
- Volunteers were asked to run the syndrome for two months before and two months the disaster event
- Evaluated the number of visits and the percent of total visits for increase in mental health presentations during or the disaster event

State	Disaster Type	Count	Percent
Nebraska	Flood	No	Maybe
Alaska	Earthquake	Yes	Yes
Florida	Hurricane	Yes	Yes
Texas	Mass shooting	No	No

Results- Hurricane (Florida)

Disaster: Hurricane Michael

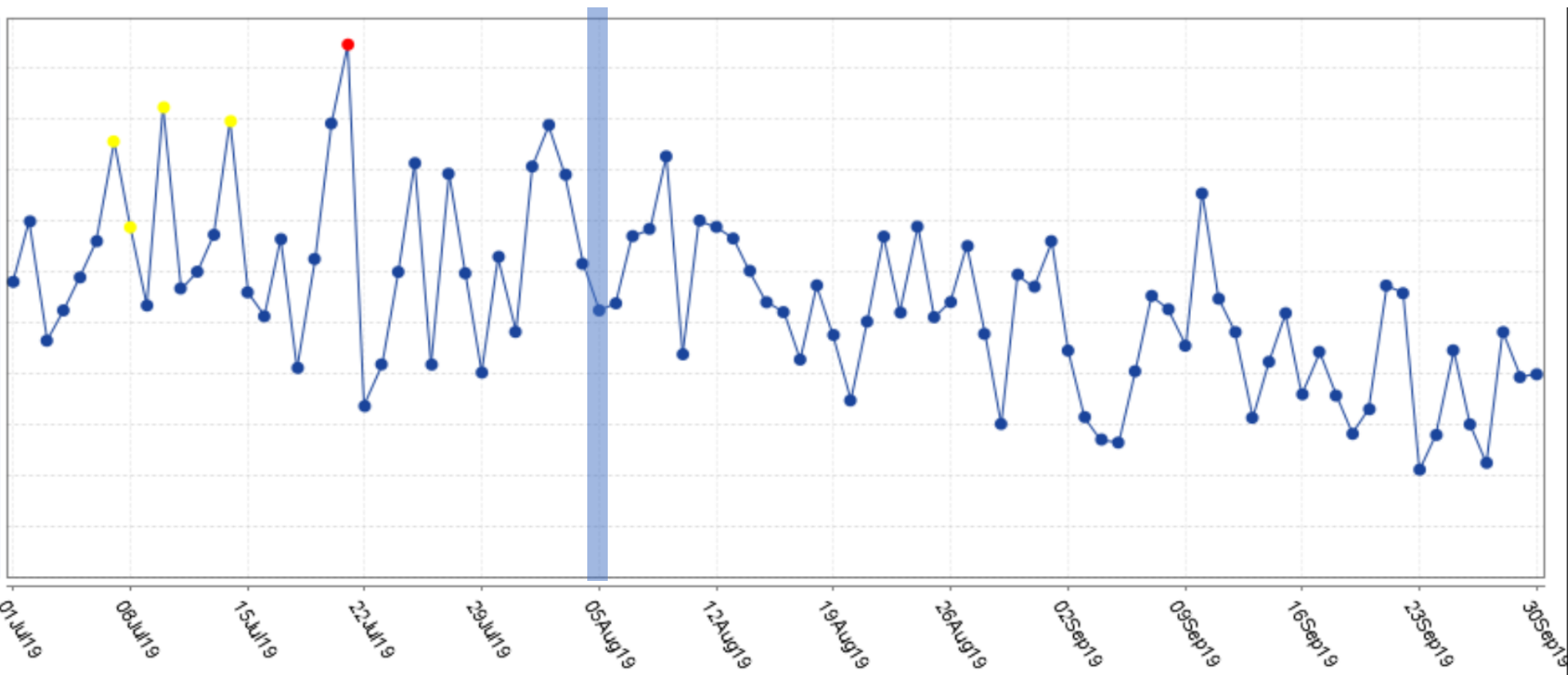
Dates: October 10, 2018. The storm was clear of the state by 7pm 10/10/2018.



Results- Mass shooting (Texas)

Disaster: Mass shooting

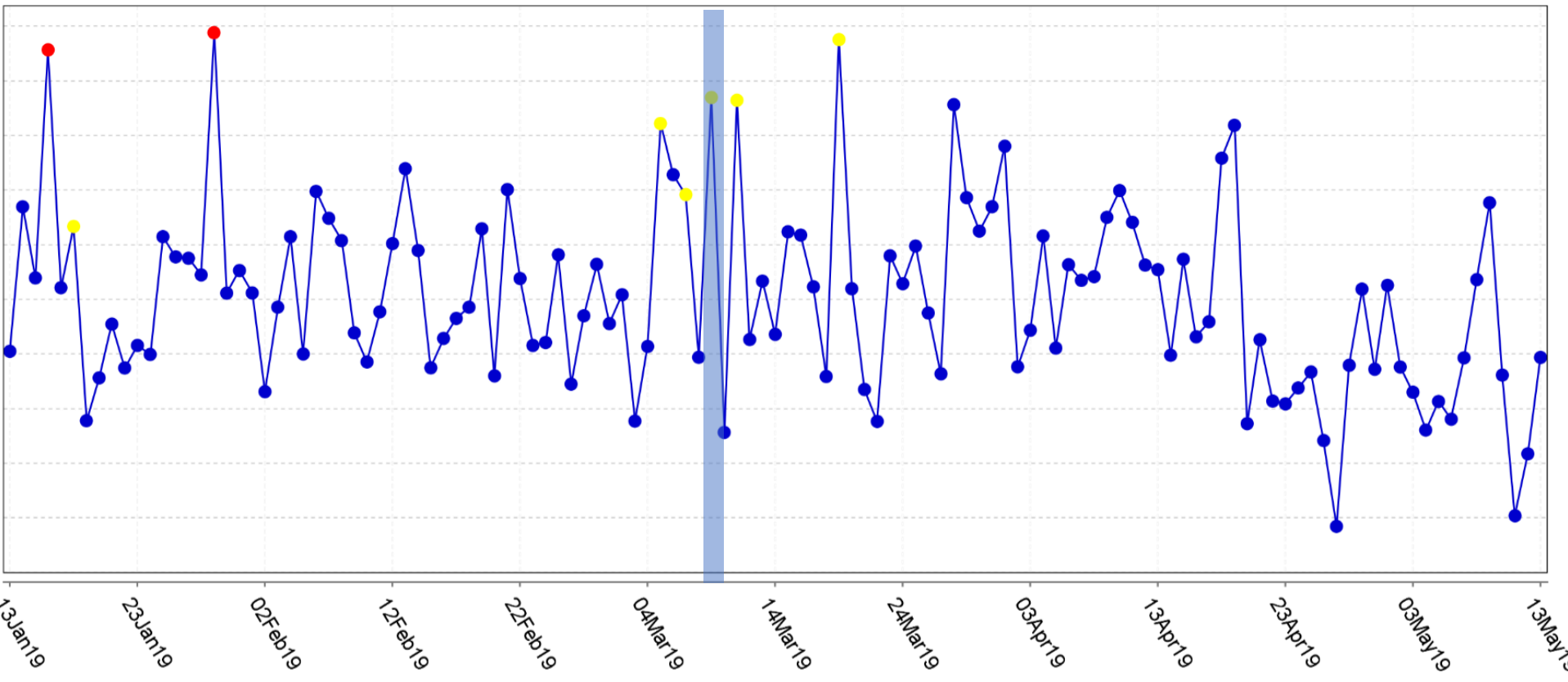
Date: August 3, 2019.



Results- Nebraska (Flooding)

Disaster: Winter storm and flooding

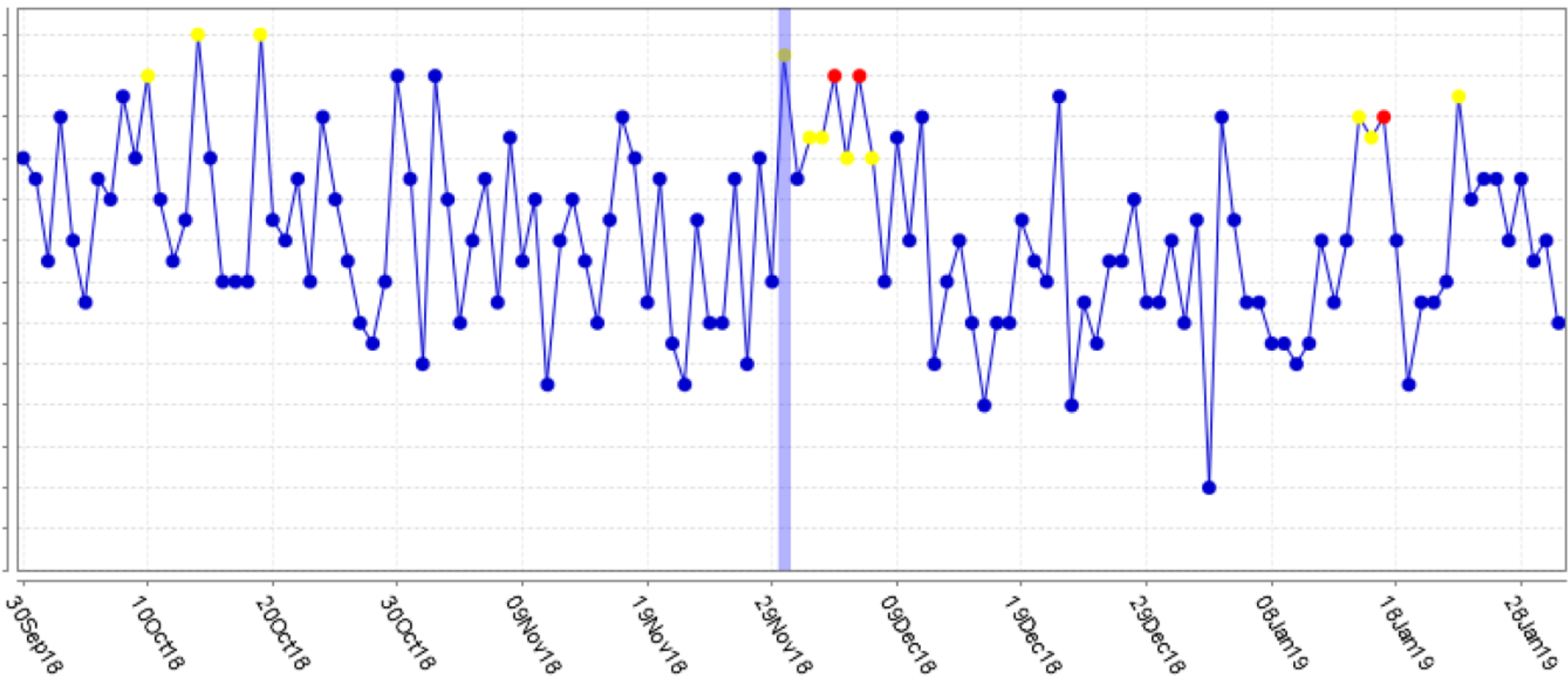
Date: March 9, 2019 – March 13, 2019



Results- Nebraska (Flooding)

Disaster: Earthquake

Date: November 30, 2018



Dissemination

- CC and DD Category in NSSP ESSENCE:
 - SDC Disaster Related Mental Health V1
- [Knowledge Repository](#)

- Final Query

^[;:/]F41.[0138]^,or,^[;:/]F41[0138]^,or,^[;:/]F43.[089]^,or,^[;:/]F43[089]^,or,^[;:/]r45.7^,or,^[;:/]r457^,or,^overwhelm^,or,(^[;:/]stress^,or,^stress^),andnot,(^stress test^,or,^fetal stress^,or,^stress fracture^,or,^stressfracture^),or,^anxiety^,or,^anxi[ou][ou]s^,or,^anxiety^,or,^anxiety^,or,^anexiy^,or,^aniexty^,or,^ansiety^,or,^anxety^,or,^anxiety^,or,^nerv[ou][ou]s^,or,^panic^,or,^mental health^,or,^MHEval^,or,^MHE^,or,^situational crisis^,or,^crisis eval^,or,(^Psych^,and,(^eval^,or,^consult^),):



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www.cste.org/nsspcop

Rasneet Kumar rskumar@Tarrantcounty.com

Zach Stein Zachary.Stein@icf.com

Rosa Ergas rosa.ergas@state.ma.us

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