

# Syndromic Surveillance Overview

Texas Syndromic Surveillance (TxS2) and  
North Texas Syndromic Surveillance (NTXSS)



# Agenda

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- Syndromic Surveillance Overview
- ESSENCE Introduction
- Use Cases



# Syndromic Surveillance Context and Purpose

## ORIGINAL PURPOSE

- Bioterrorism
- Epidemic detection

## CURRENT PURPOSE

- Situational awareness
- Outbreak characterization
- Retrospective analysis



# Value of Syndromic Surveillance

- Tool for population health surveillance
- Analytics go beyond EHRs
- Approach can be applied to different types of data
  - *Urgent Care*
  - *Emergency Medical Services*
  - *Reportable Disease*
  - *Poison Control*
  - *Vital Statistics*
  - *Weather Data*
  - *Absenteeism*





# Syndromic Surveillance Limitations

- Timeliness vs. accuracy
- Variability
- Data completeness

*Should be analyzed with other data sources!*



ESSENCE 101



# ESSENCE

- **Electronic Surveillance System for the Early Notification of Community-based Epidemics**
- Conceived to identify outbreaks associated with bioterrorism but epidemiologists found the system useful in monitoring trends of naturally occurring diseases.
- Widespread use
  - National Syndromic Surveillance Program (NSSP)
  - Federal Agencies
  - Other States and Local Jurisdictions

# Query Portal

Query Wizard

Datasource: ER Data by Patient Location Time Resolution: Daily Detector: Regression/EWMA 1.2 As Percent Query: No Percentage Query Start Date: 14Sep18 End Date: 13Dec18

Available Query Fields

- ER Data by Patient Location
  - MyFilters
- Geography System
  - Region
  - Zipcode
  - Facility
  - Facility Location
- Public Health Region By Patient Loc.
- Public Health Region By Hospital Loc.
- Medical Grouping System
  - ChiefComplaintSubSyndromes
  - Syndrome
  - ChiefComplaints

Selected Query Fields

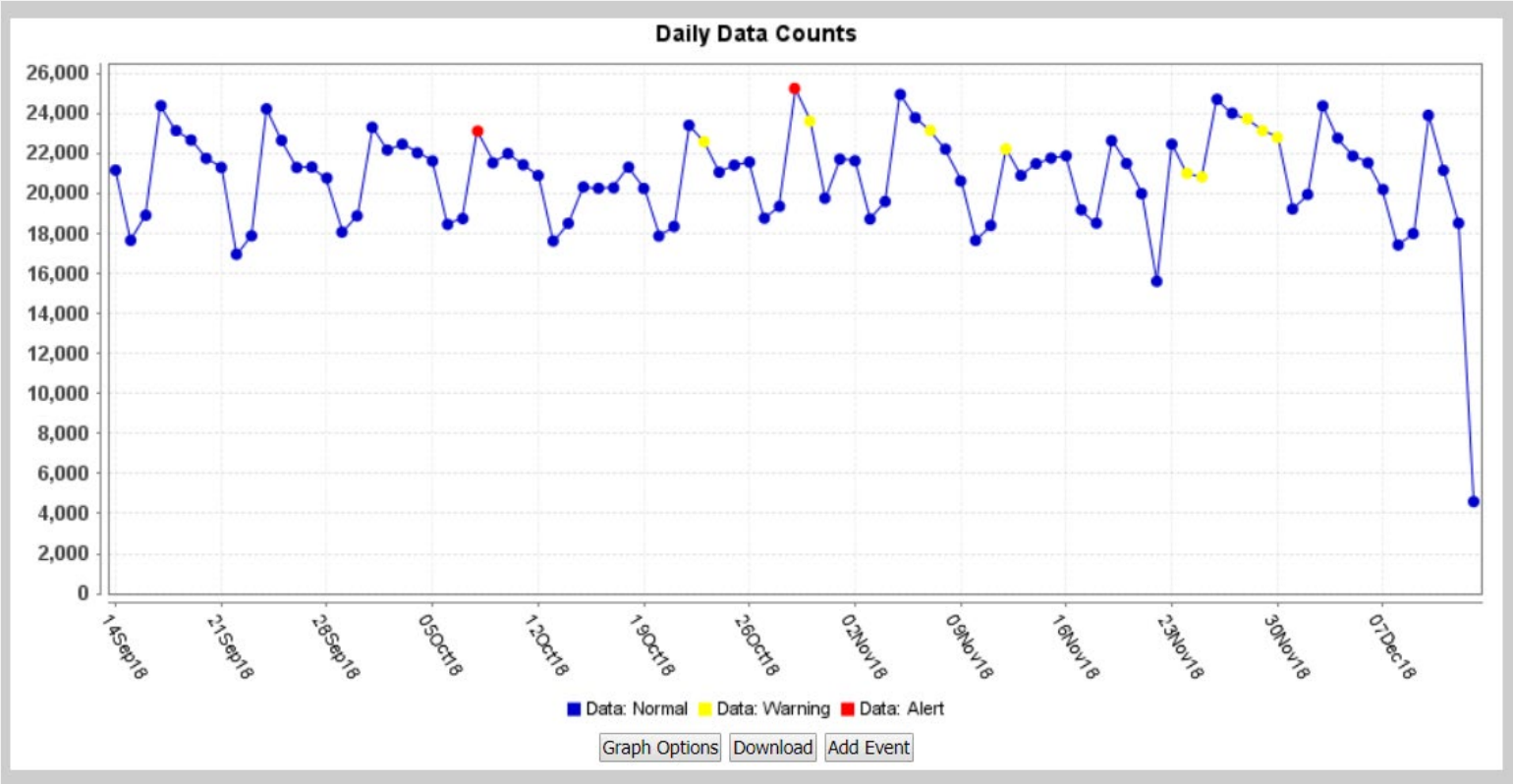
- Geography System
  - Region
- Medical Grouping System
  - ESSENCESyndromes

Table Builder | Time Series | Data Details | Graph Builder | Overview | Adv Qry | Explain Qry | Reset

MyFilter:  Create



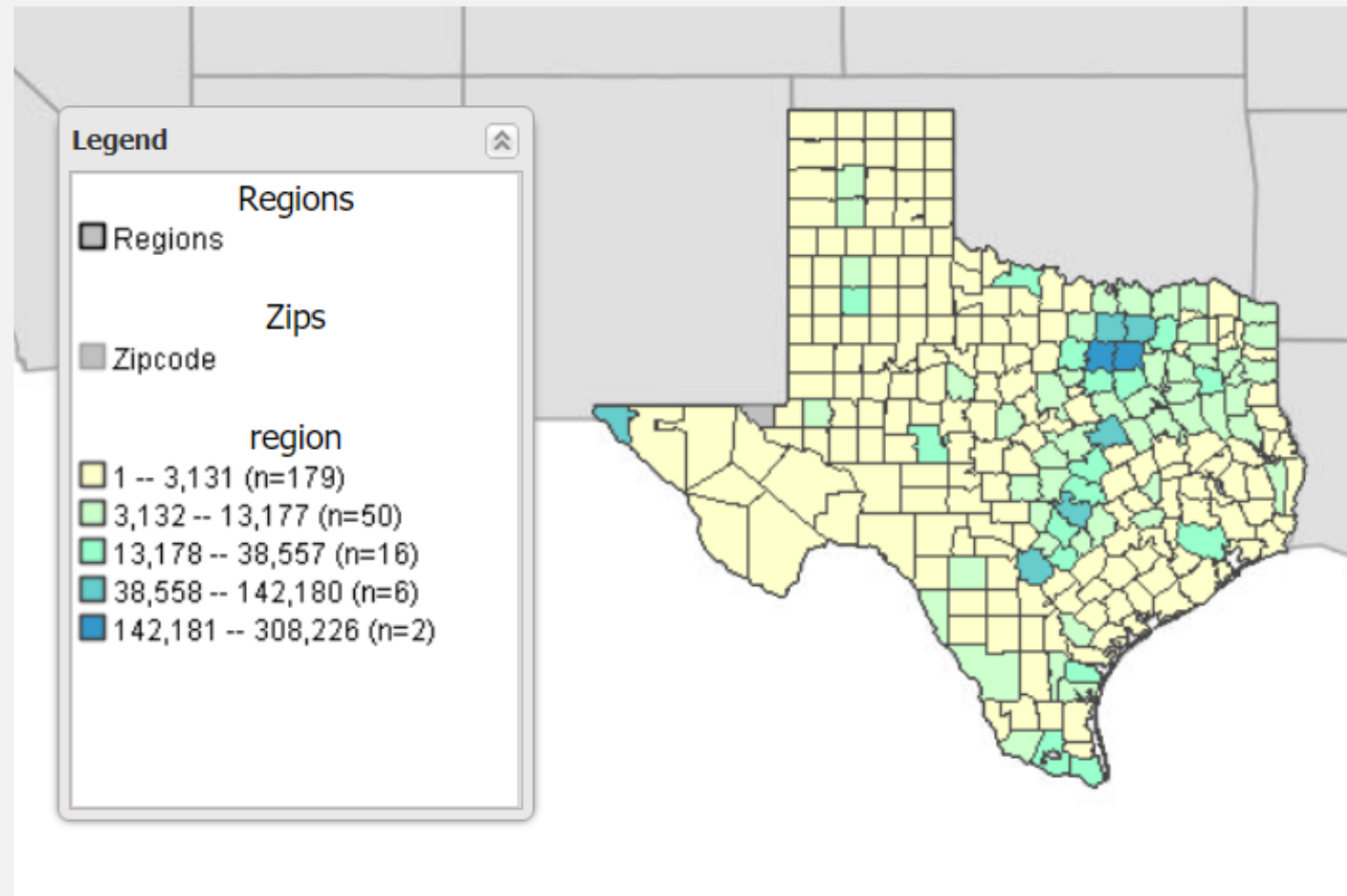
# Time Series



# Data Details

Age	Sex	District	Zipcode	Category_flat	ChiefComplaintOrig ↓
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
21	Female	McLennan, TX	76707	;Injury;	PSYCH EVAL;Suicide Attempt;
51	Female	McLennan, TX	76624	;Other;	PSYCH EVAL;Psychiatric Evaluation;
24	Female	McLennan, TX	76705	;GI;	PREGNANCY PROBLEM;Abdominal Pain;
2	Male	Anderson, TX	75763	;Neuro;	PALESTINE/SEIZURE;
42	Female	Nueces, TX	78412	;Other;	PAIN TO BUTTOCK;
76	Female	Hopkins, TX	75482	;Other;	PAIN IN LEFT ARM;
57	Female	Nueces, TX	78418	;Other;	PAIN AFTER SURGERY --HERNIA REPAIR;
7	Male	Lampasas, TX	76522	;Other;	Other specified disorders of penis;
1	Male	Bell, TX	76502	;Other;	Other specified disorders of eustachian tube, bilateral;
3	Male	McLennan, TX	76708	;Other;	Other specified disorders of eustachian tube, bilateral;
83	Female	McLennan, TX	76710	;GI;	NV HA BODY ACHES;Nausea/Vomiting;

# Map View



# Technical Training on ESSENCE



Using Queries

<https://www.surveillancerepository.org/essence-training-using-queries>



Building Queries

<https://www.surveillancerepository.org/essence-training-building-queries>



Sharing Queries

<https://www.surveillancerepository.org/essence-training-sharing-queries>



Texas Department of State  
Health Services

# How to get Assistance

Email [syndromic-surveillance@dshs.texas.gov](mailto:syndromic-surveillance@dshs.texas.gov)



Texas Department of State  
Health Services



# North Texas Syndromic Surveillance Program (NTXSS)

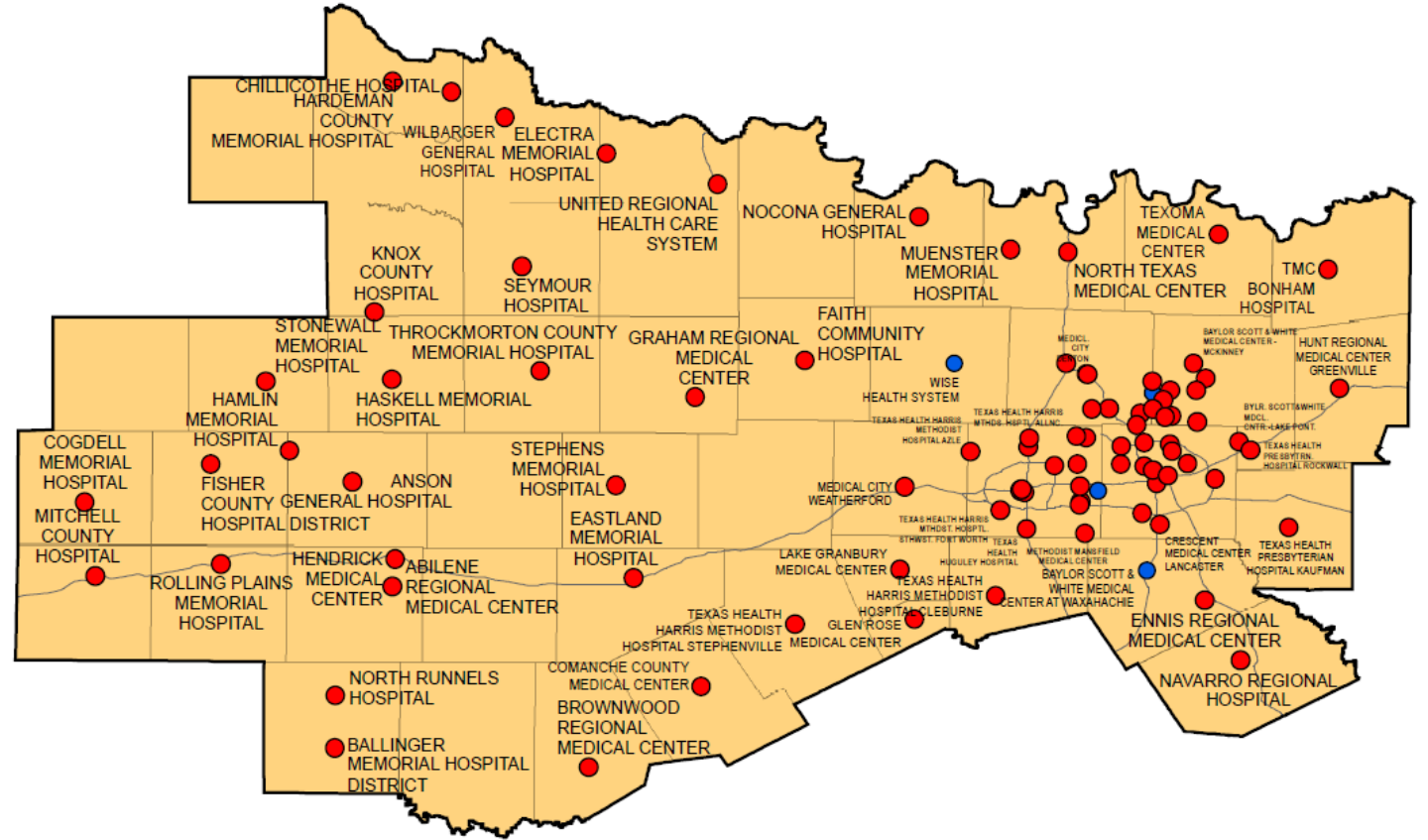
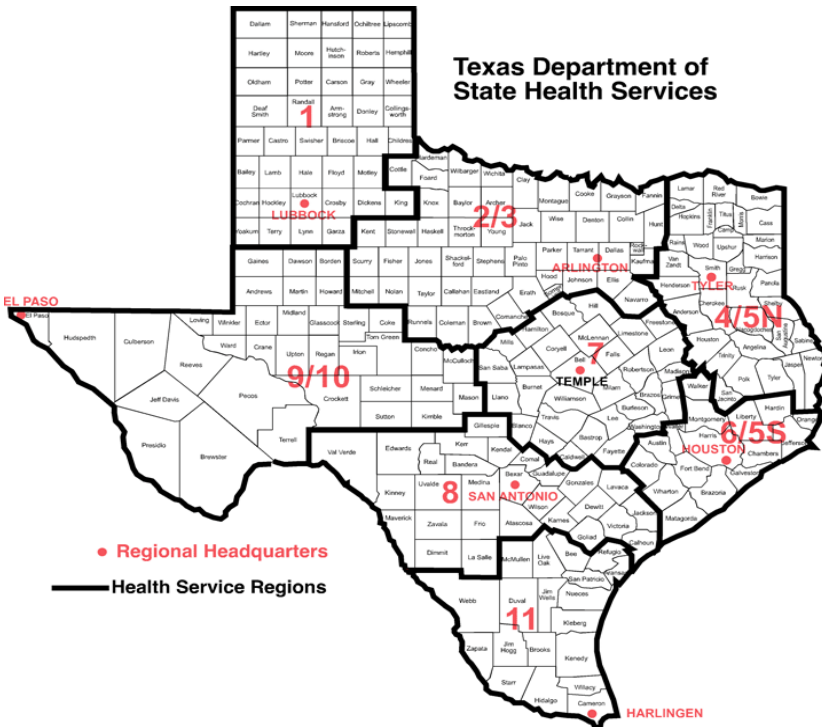


**Tarrant County  
Public Health**

September 16, 2019



Active and Onboarding Target Hospitals in Region 2/3 for Syndromic Surveillance



**Status**

- Active
- On Boarding

These data were prepared by Tarrant County Public Health for its use, and may be revised any time, without notification. Tarrant County Public Health does not guarantee the correctness or accuracy of any features on this map. Tarrant County assumes no responsibility in connection therewith. Said data should not be edited by anyone other than designated personnel, or through written approval by GIS Manager. These data are for informational purposes only and should not create liability on the part of Tarrant County Government, any other and/or employees thereof.



5/18/2018



Hourly →



**Tarrant County  
Public Health**

NTXSS

Hourly ↗



Daily ↘



**TEXAS**  
Health and Human  
Services

Texas Department of State  
Health Services

# Syndromic Surveillance Use Cases

How do we use the data we collect?

# Trend Analysis

## **Utility of the ESSENCE system for surveillance of Influenza-like Illness (ILI) in Miami-Dade County**

**Claudio Micieli, MPH, Rodlescia Sneed, MPH, Erin O'Connell, MPH, Rene Borroto-Ponce, Guoyan Zhang, MD MPH,  
Fermin Leguen, MD MPH**

*Miami-Dade County Health Department (MDCHD), Florida Department of Health*



**HEAT-RELATED ILLNESS SYNDROME QUERY: A GUIDANCE  
DOCUMENT FOR IMPLEMENTING HEAT-RELATED ILLNESS  
SYNDROMIC SURVEILLANCE IN PUBLIC HEALTH PRACTICE**

## **Monitoring suicide-related events using National Syndromic Surveillance Program data**

**Marissa L. Zwald, Kristin M. Holland, Francis Annor, Aaron Kite-Powell, Steven A. Sumner,  
Daniel Bowen, ALANA M. VIVOLO-KANTOR, Deborah M. Stone, Alex E. Crosby**

**Identifying and Describing the Health of People Who Inject Drugs in Maricopa County,  
Arizona, with the National Syndromic Surveillance Program's Biosense Platform**

**Kaitlyn J. Sykes, MPH, Rasneet Sandhu Kumar, MPH and Jessica R. White, DrPH, MS,  
Maricopa County Department of Public Health**



# Case Finding

Illinois monitors Vaping-associated  
Illness



Syndromic Surveillance

**Success Stories**

**Syndromic Surveillance for  
Arboviral Diseases in Arizona**

# Planned Enhanced Surveillance



## Syndromic Surveillance **Success Stories**

*West Virginia Department of Health and Human Resources*  
**Syndromic Surveillance for Mass Gatherings**

**Burns Reported to the BioSense System During the Independence Day Holiday**  
**William E. Lei, MPH<sup>1</sup>, Stephen Benoit, MD, MPH<sup>2</sup>, Gabriel Rainisch, MPH<sup>1</sup> and Jerome Tokars, MD, MPH<sup>2</sup>**  
*<sup>1</sup>SRA International, <sup>2</sup>Centers for Disease Control and Prevention*

### **Surveillance for Mass Gatherings: NCAA Final Four 2017 in Maricopa County, Arizona**

**William E. Smith\*<sup>1</sup>, Kate Goodin<sup>1</sup>, Rasneet S. Kumar<sup>1</sup>, Vjollca Berisha<sup>1</sup>, Craig Levy<sup>1</sup>, Siru Prasai<sup>1</sup> and Kristen Pogreba-Brown<sup>2</sup>**

# Disaster Surveillance



## Syndromic Surveillance **Success Stories**

*North Carolina Integrates Data from*  
**Disaster Medical Assistance Teams for  
Improved Situational Awareness**



## Syndromic Surveillance **Success Stories**

**Syndromic Surveillance Shows Medical Surge in  
Dallas–Fort Worth during Hurricane Harvey, 2017**

**Application of Syndromic Surveillance to Describe  
Gunshot-related Injuries in Houston**

Ryan M. Arnold\*, Wesley McNeely, Kasimu Muhetaer, Biru Yang and Raouf R. Arafat

# Thank You!

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health.tarrantcounty.com

## Social Media:



# Thank you!

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