



TEXAS
Health and Human
Services

Texas Department of State
Health Services

Shelter Surveillance in TX

Herminia Alva, MPH, CPH
Disaster Epidemiologist



Objectives

- Review basis for conducting shelter surveillance in Texas
- Describe SMOC shelter surveillance operations during the Hurricane Harvey response
- Share upcoming changes



Harvey making landfall
on San Jose Island
(Source: NSW)

Epidemiological Basis for Shelter Surveillance



TEXAS

Health and Human Services

Texas Department of State
Health Services

Epidemiologic Triad

Crowded living conditions
Limited hygiene and sanitation



Infectious agent
Easily transmitted
Novel disease

Residents/staff young and older
Pre-existing health conditions
Pregnant women
Unvaccinated and susceptible

Legal Basis for Shelter Surveillance



TEXAS

Health and Human Services

Texas Department of State
Health Services

- Chapter 418 Texas Govt Code
 - Establishes state emergency management plan
 - Governor's disaster declaration activates plan
 - Plan maintained by Texas Division of Emergency Management (TDEM)
- Plan assigns DSHS as lead state agency for public health and medical (also known as ESF-8)
- Plan's Annex H (2013) describes ESF-8 activities
 - Shelter surveillance is an ESF-8 activity
 - LHDs/PHRs conduct shelter surveillance
 - DSHS [HQ] provides shelter surveillance tools with min. data requirements to be collected statewide

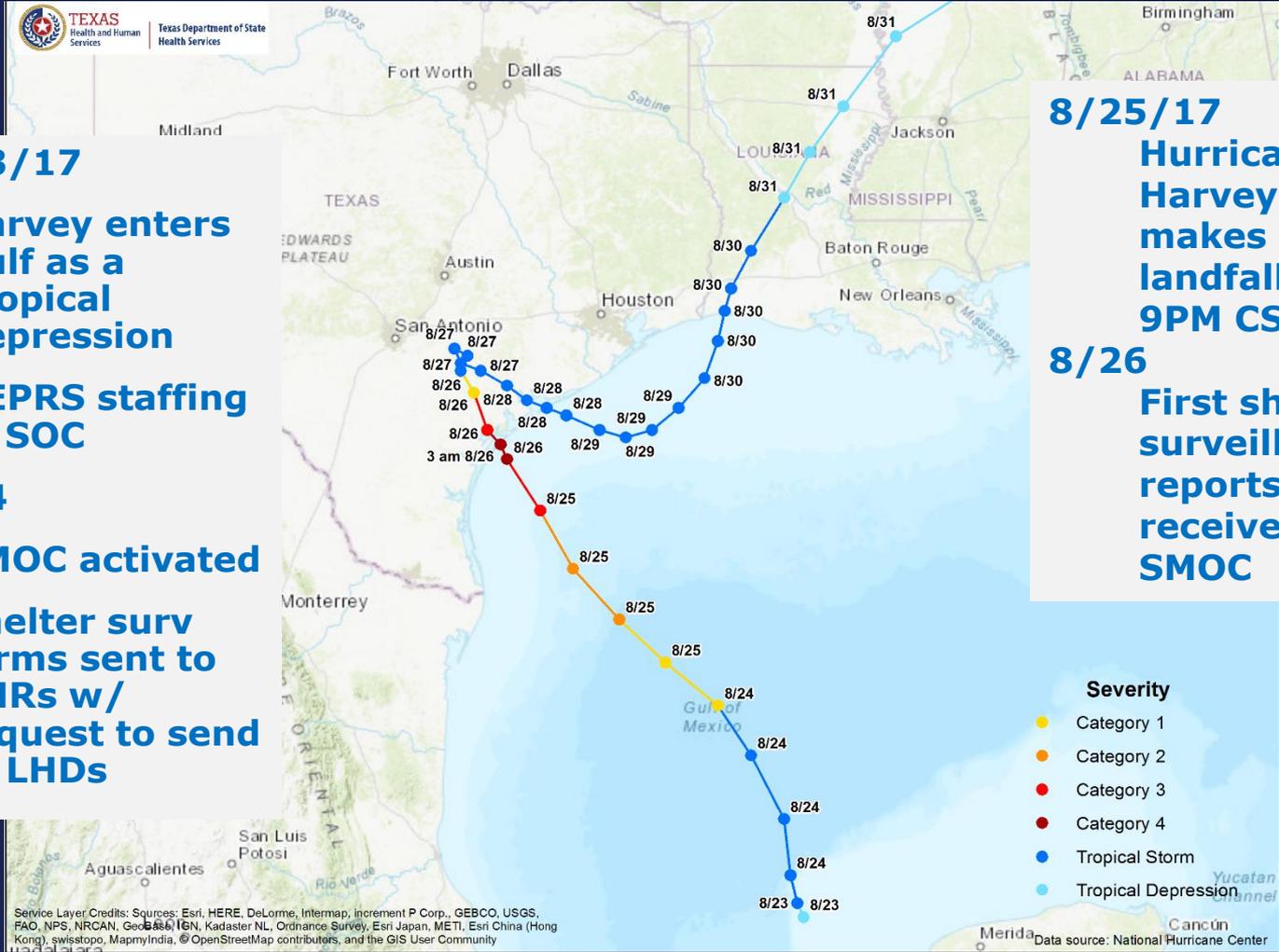
Hurricane Harvey Response



TEXAS

Health and Human Services

Texas Department of State Health Services



8/23/17

- Harvey enters Gulf as a Tropical Depression
- HEPRS staffing at SOC

8/24

- SMOC activated
- Shelter surv forms sent to PHRs w/ request to send to LHDs

8/25/17

Hurricane Harvey makes landfall, 9PM CST

8/26

First shelter surveillance reports received at SMOC

Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeBCO, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Data source: National Hurricane Center

Shelter Surveillance Operations



TEXAS
Health and Human Services

Texas Department of State
Health Services



TEXAS
Health and Human Services
Texas Department of State
Health Services

10/5/17

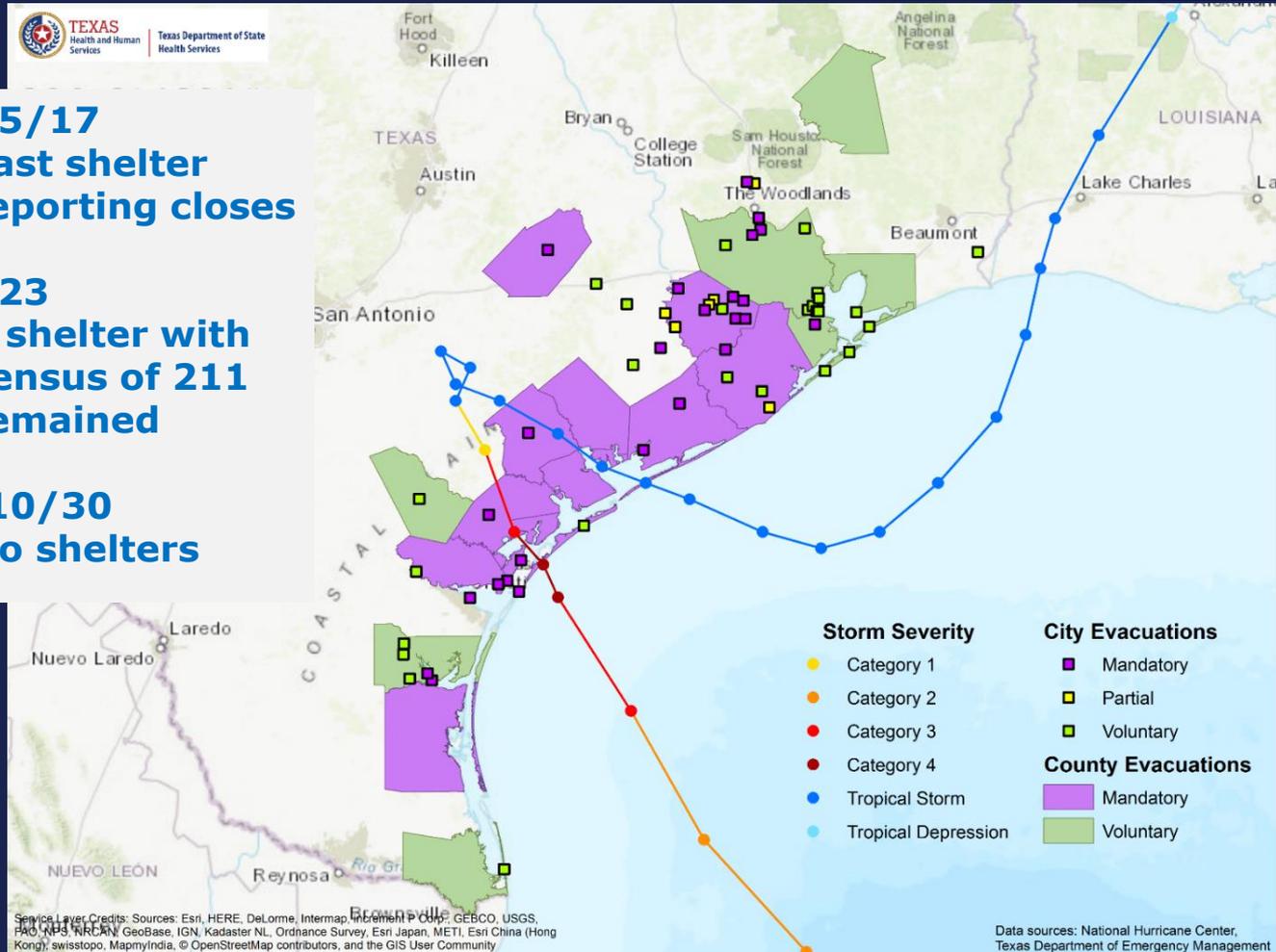
- Last shelter reporting closes

10/23

- 1 shelter with census of 211 remained

By 10/30

- No shelters



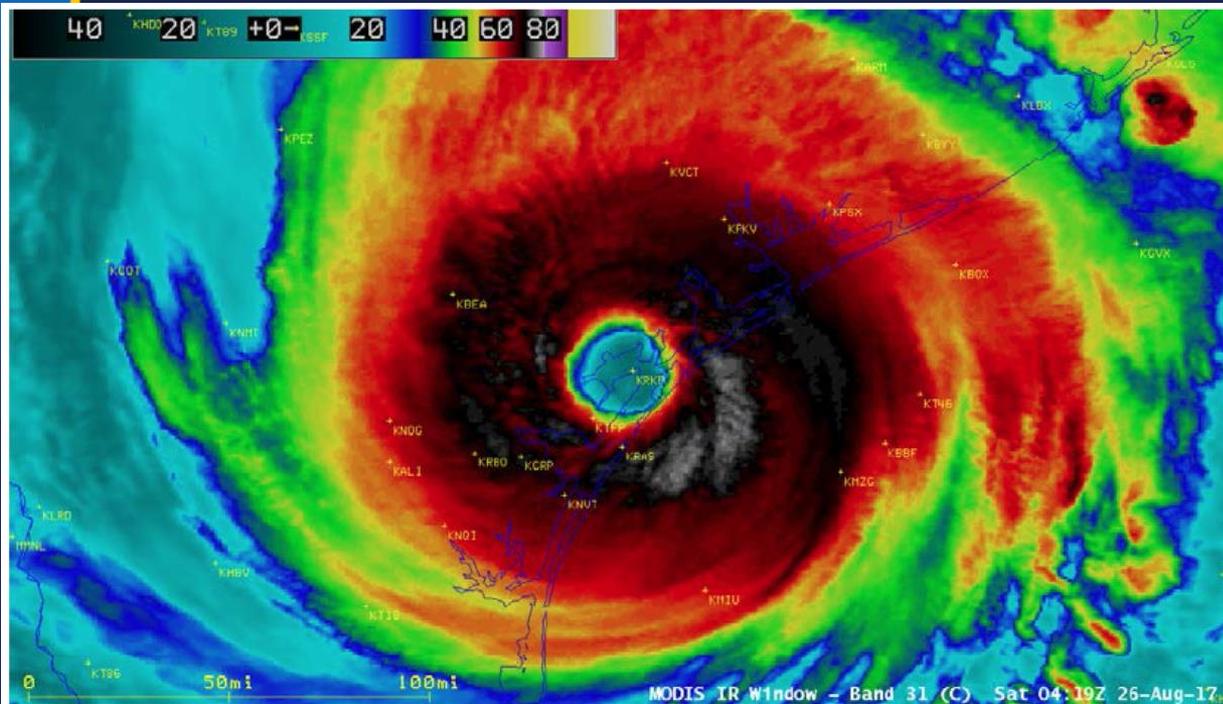


TEXAS
Health and Human Services

Texas Department of State
Health Services

Hurricane Harvey Stats

2nd costliest hurricane in U.S. history



NASA TERRA MODIS INFRARED IMAGE OF HARVEY AT 0419 UTC 26 AUGUST 2017 JUST AFTER LANDFALL AS A CATEGORY 4 HURRICANE IN TEXAS. IMAGE COURTESY OF UW/CIMSS.

Highest storm total rainfall record in U.S.

- *60.58 in near Netherland, TX*

SE TX areas experienced 1000-yr floods or greater

Shelter Surveillance

- SMOC received shelter surveillance information from 8/26 – 10/5/17
 - 8/31/17 - Peak # of shelters reporting
 - 55 different shelters reporting with 4,413 total census
 - 9/1/17 – Peak census among shelters reporting
 - 5,808 total census across 48 shelters reporting



TEXAS
Health and Human Services

Texas Department of State
Health Services

Health dept staff working shelter surveillance activities by phase

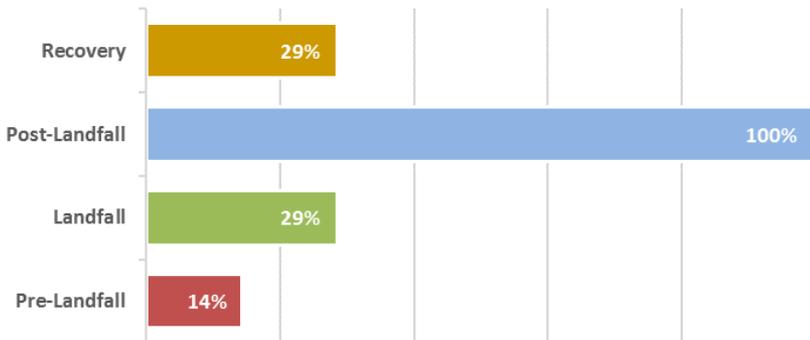


TEXAS
Health and Human Services

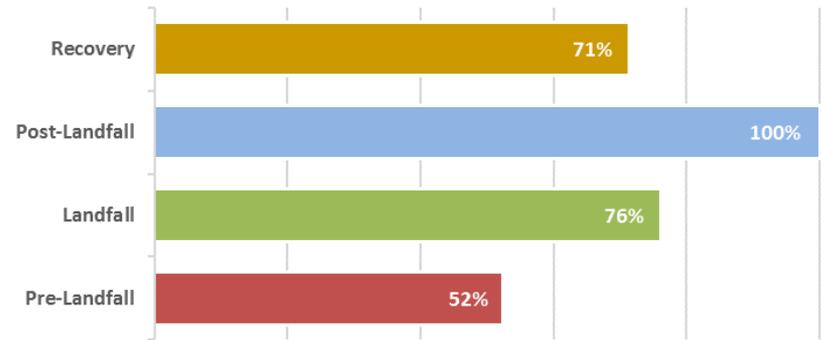
Texas Department of State
Health Services



DSHS SMOC Shelter Surveillance Team,
7 Staff



Regional and Local Health Departments,
21 Jurisdictions



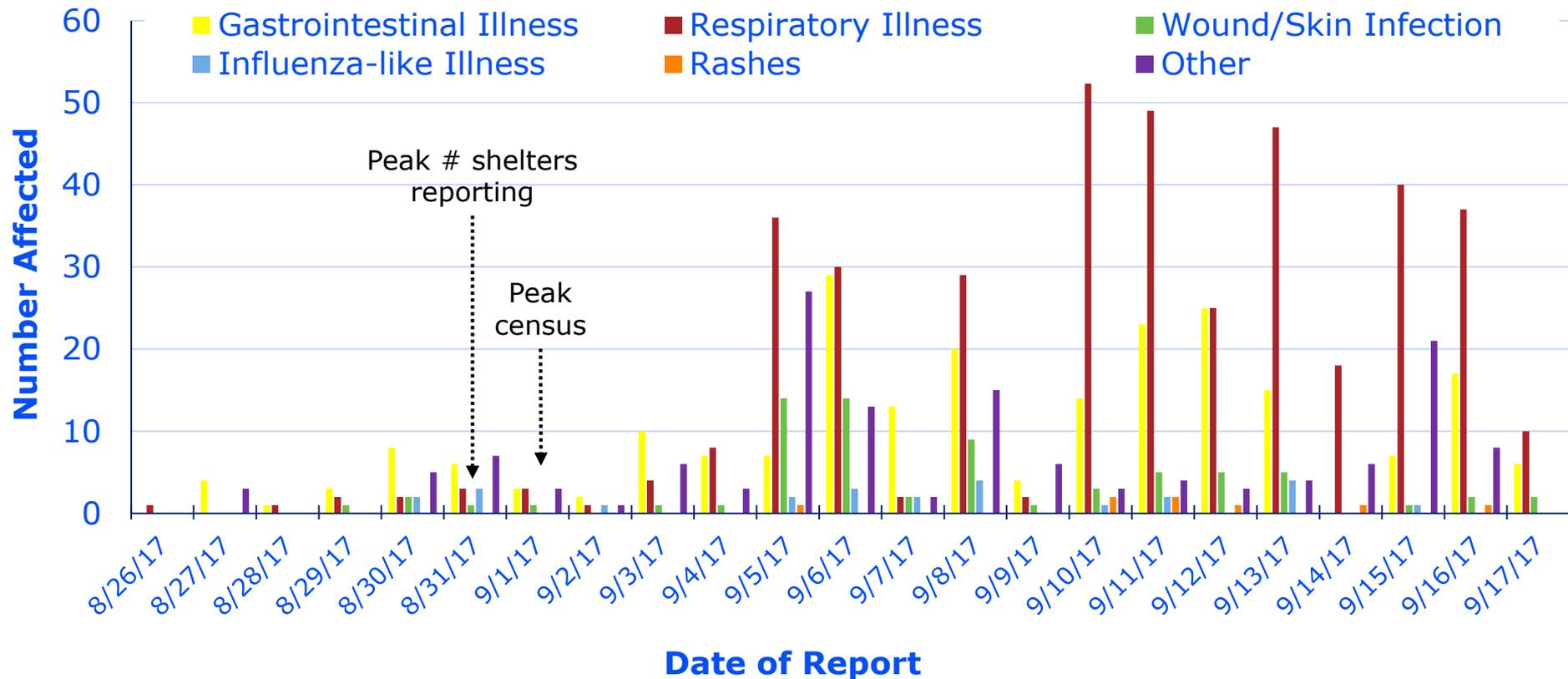
Hurricane Harvey Shelter Surveillance



TEXAS
Health and Human
Services

Number Affected by Date of Report, Aug. 26 – Sept. 17, 2017

Texas Department of State
Health Services





TEXAS
Health and Human Services

Texas Department of State
Health Services

Lessons Learned

- Capture better data
 - ~ 250 different shelters open & active in TX
 - At most captured 55 different shelters
 - Situational awareness on only 22%
- Ask about...
 - Listing of different shelters known to Regions or LHDs
 - # different shelters open and active
 - # of different shelters where surveillance was established
 - # of different shelters reporting
 - Gain situational awareness of gaps in shelter surveillance



TEXAS
Health and Human Services

Texas Department of State
Health Services

Lessons Learned

- Ask about...
 - daily # complaints received for each event/syndrome, (previously asking only about increases)
- Provide...
 - Standardization for how individual complaints are categorized into health events

Upcoming changes



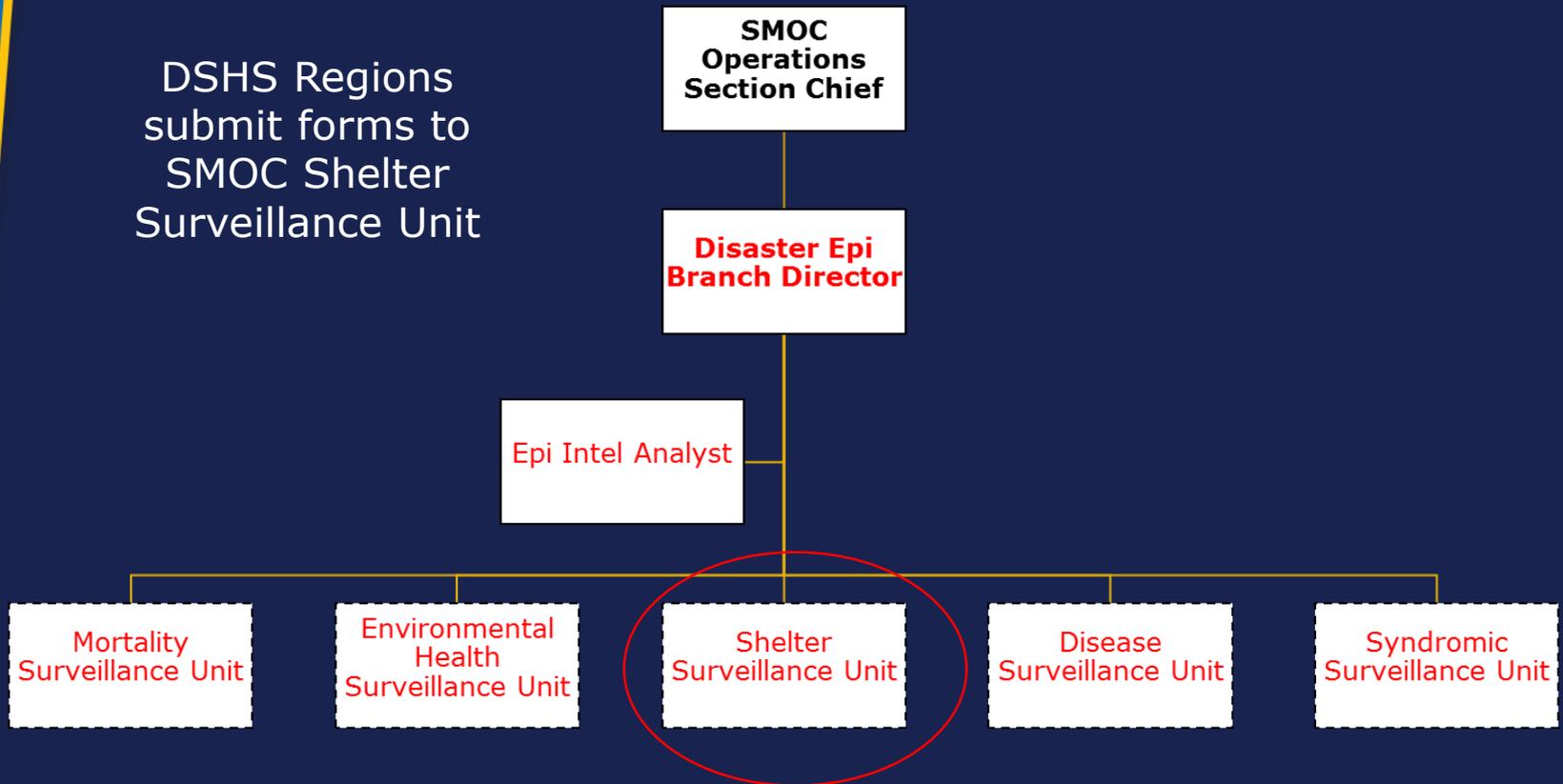
TEXAS

Health and Human Services

Texas Department of State
Health Services

New SMOC Disaster Epi Branch

DSHS Regions
submit forms to
SMOC Shelter
Surveillance Unit



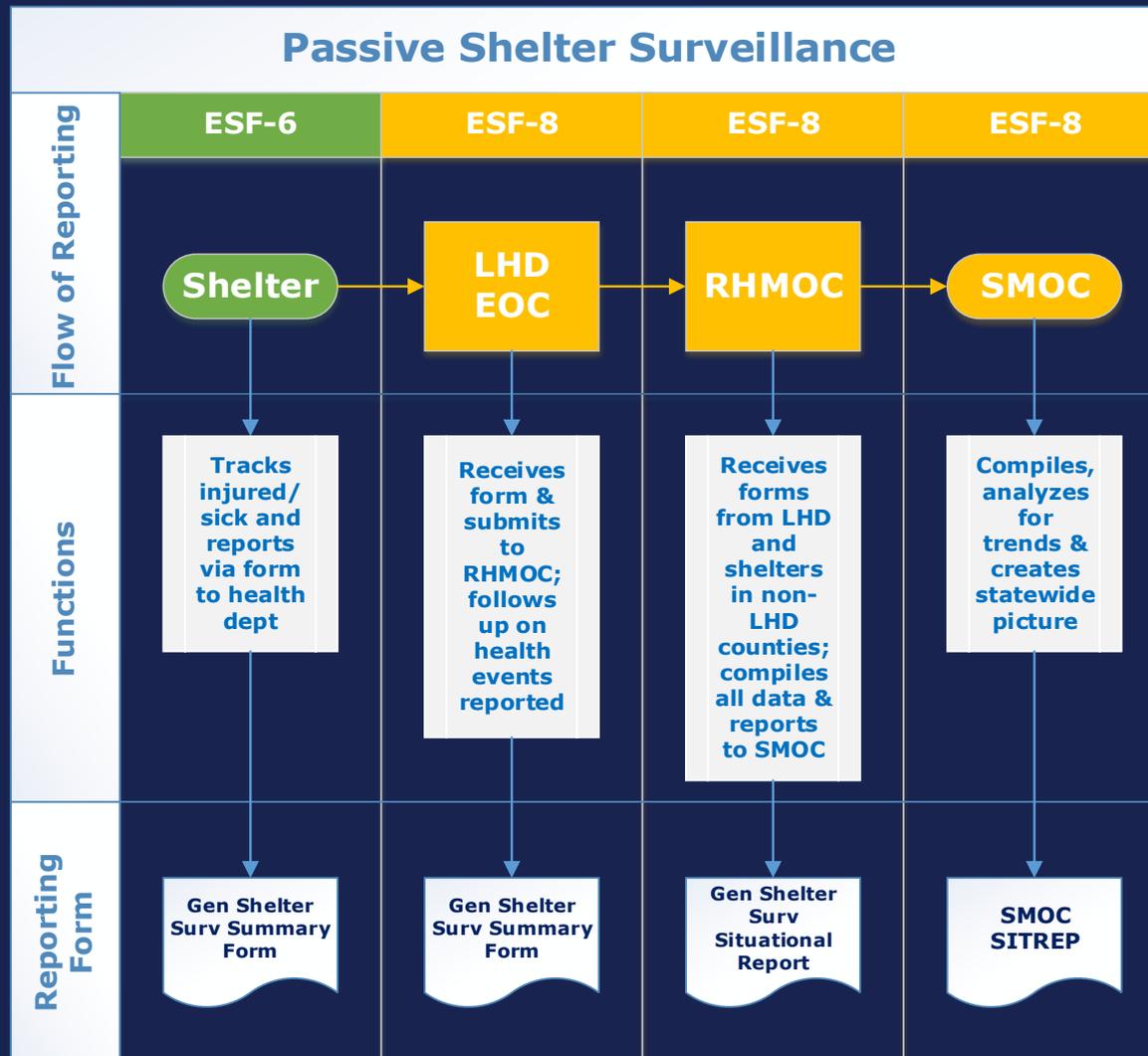
Shelter Surveillance Concept for Texas



TEXAS

Health and Human Services

Texas Department of State
Health Services



24-Hour Reporting Period for Shelters



TEXAS

Health and Human Services

Texas Department of State
Health Services

- Shelter reporting period within a 24-hr EOC operational period
- Shelter reporting period within a 12-hr EOC operational period
- Allows for next day creation of statewide picture
- Up to 2-day delay in creating statewide picture
- American Red Cross uses a standard reporting period
 - 4PM - 3:59PM



Summary

- Legal and epidemiological basis for shelter surveillance
- Harvey lessons learned being incorporated into shelter surveillance operations
- Passive surveillance concept applied to shelter surveillance



TEXAS
Health and Human
Services

Texas Department of State
Health Services

Thank you

Herminia Alva, MPH, CPH
Disaster Epidemiologist
**Health Emergency and Preparedness and
Response Section**

Herminia.Alva@dshs.texas.gov