

Tracking Injury Deaths Related to Hurricane Ike, Texas (2008)



(AP Photo/David J. Phillip)



David Zane
Ryan Beal
Crystal Beasley

Outline

- Orientation to Public Health in Texas
- The Public Health Challenge – Tracking Deaths Related to Hurricane Ike
- Surveillance Effort Described
- Results
- Innovative Characteristics
- Barriers and Obstacles
- Impact
- STIPDA's Disaster Epi Forum

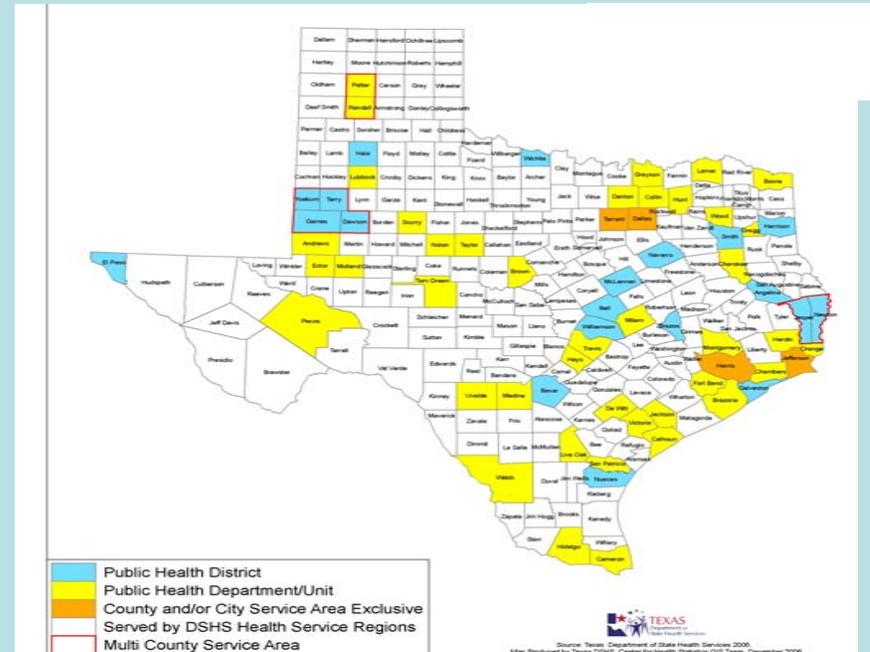
Texas Background

- 24 + million population
- Contains 3 of the 10 largest cities in the nation (Houston, San Antonio, and Dallas)
- 254 counties (*population range from 60 – 3.9 million*)
- Roughly 800 x 800 miles



Public Health in Texas

- System is complex
- DSHS is responsible for oversight and implementation of public health and behavioral health services
- Texas is “home rule” state – local autonomy
 - 144 local health departments or districts
 - ~ 80% of state population is served by local health departments



Background

- No State Medical Examiner in Texas;
 - a mixed ME and Justice of the Peace system exists
- DSHS and CDC provided 2 trainings on disaster related mortality
- DSHS developed standardized mortality form modeled after CDC's

Hurricane Ike (9/13/2008)

- Category 2 but with a storm surge equal to a category 4 storm
- Storm tides with 10-15 foot surges
- Winds up to 110 mph
- Rainfall 10+ inches
- 1.9 million evacuated
- Power lost to 4.5 million people



(National Oceanic and Atmospheric Administration)

Ike Surveillance Objectives

1. Report the number of deaths attributed to Ike,
2. Describe the cause of deaths, and
3. Identify strategies to prevent or reduce future hurricane-related mortality

Data Reporters

- Medical Examiners
- Justices of the Peace (e.g., coroners)
- Forensic Center
- Public Health Officials
- Hospitals

Data Elements

- Collected preliminary information
 - demographics
 - circumstances,
 - causes, and dates of deaths
- Completed forms faxed or emailed daily to DSHS

CONFIDENTIAL
Disaster-related Mortality Surveillance Form
Email to dshs.dmls@dsbs.state.tx.us or fax to (512) 532-4950

Part I Decedent Information		
1. Case / medical record number:	2. Name: <input type="checkbox"/> Unknown First Middle Last	
3. Date of Birth: <input type="checkbox"/> Unknown (MM/DD/YY)	4. Age in years: <input type="checkbox"/> < 1 yr <input type="checkbox"/> Unknown	
5. Residence of decedent: Address _____ City _____ State _____	6. Ethnicity: <input type="checkbox"/> Hispanic <input type="checkbox"/> Non-Hispanic <input type="checkbox"/> Unknown	7. Race: <input type="checkbox"/> American Indian or Alaskan Native <input type="checkbox"/> White <input type="checkbox"/> Black or African American <input type="checkbox"/> Asian <input type="checkbox"/> Native Hawaiian or other Pacific Islander <input type="checkbox"/> Other race
8. Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Undetermined	9. Date of Death: (MM/DD/YY) _____ <input type="checkbox"/> Unknown	10. Time of Death: _____ (24 hr clock) <input type="checkbox"/> Unknown
11. Place of death: <input type="checkbox"/> Decedent's home <input type="checkbox"/> Other person's home <input type="checkbox"/> Prison or detention center <input type="checkbox"/> Nursing Home / long-term care facility		
12. Location of death: City _____ County _____ State _____		
13. Was the individual paid or volunteer worker involved in disaster response? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown		
Part II Probable Cause and Circumstance of death (check one that best applies)		
14. Cause of death— Injury <input type="checkbox"/> Drowning <input type="checkbox"/> Electrocution <input type="checkbox"/> Lightning <input type="checkbox"/> Motor Vehicle occupant/driver <input type="checkbox"/> Pedestrian/bicyclist struck by vehicle <input type="checkbox"/> Structural collapse <input type="checkbox"/> Fall <input type="checkbox"/> Cut/struck by object/tool <input type="checkbox"/> Poisoning/toxic exposure: <input type="checkbox"/> CO exposure <input type="checkbox"/> Inhalation of other fumes/smoke, dust, gases <input type="checkbox"/> Ingestion of drug or substance <input type="checkbox"/> Other (specify) _____ <input type="checkbox"/> Suffocation/asphyxia <input type="checkbox"/> Burns (flame or chemical) <input type="checkbox"/> Firearms/gunshot <input type="checkbox"/> Heat (e.g., hyperthermia, dehydration) <input type="checkbox"/> Cold (e.g., hypothermia) <input type="checkbox"/> Other (specify) _____ <input type="checkbox"/> Unknown cause of injury	15. Cause of death— Illness <input type="checkbox"/> Neurological disorders <input type="checkbox"/> Respiratory failure <input type="checkbox"/> Cardiovascular failure <input type="checkbox"/> Renal failure <input type="checkbox"/> GI and endocrine <input type="checkbox"/> Sepsis <input type="checkbox"/> Allergic reaction <input type="checkbox"/> Other (specify) _____ <input type="checkbox"/> Unknown cause of illness	16. Probable relationship of cause of death to disaster: <input type="checkbox"/> Direct <input type="checkbox"/> Possible <input type="checkbox"/> Indirect <input type="checkbox"/> Unrelated
17. Probable manner (intent) of death: <input type="checkbox"/> Suicidal <input type="checkbox"/> Suicide <input type="checkbox"/> Accident <input type="checkbox"/> Pending <input type="checkbox"/> Homicide <input type="checkbox"/> Undetermined		
18. Circumstance of death: (free text)		
Part III Reporting Person and Agency		
Contact Person: _____	Agency: _____	Telephone: _____
Date of report completed: (MM/DD/YY)		_____

Results

- The majority of deaths were indirectly related to the hurricane
- Results indicated that injury was the leading cause of death
- Carbon monoxide poisoning, drowning, and hit by fallen trees were the leading causes of injury-related deaths



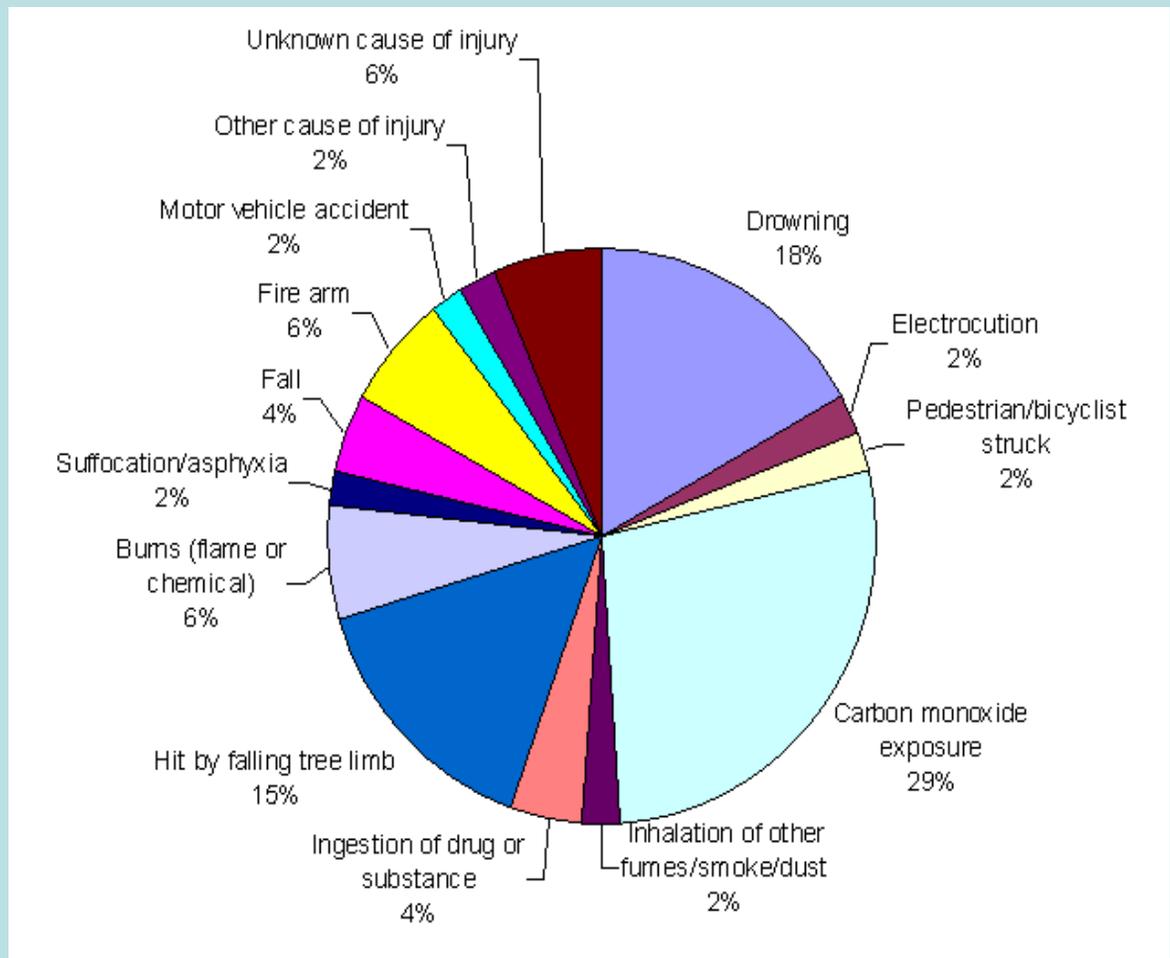
(David J. Phillip-Pool/Getty Images)

Deaths Due to Injury

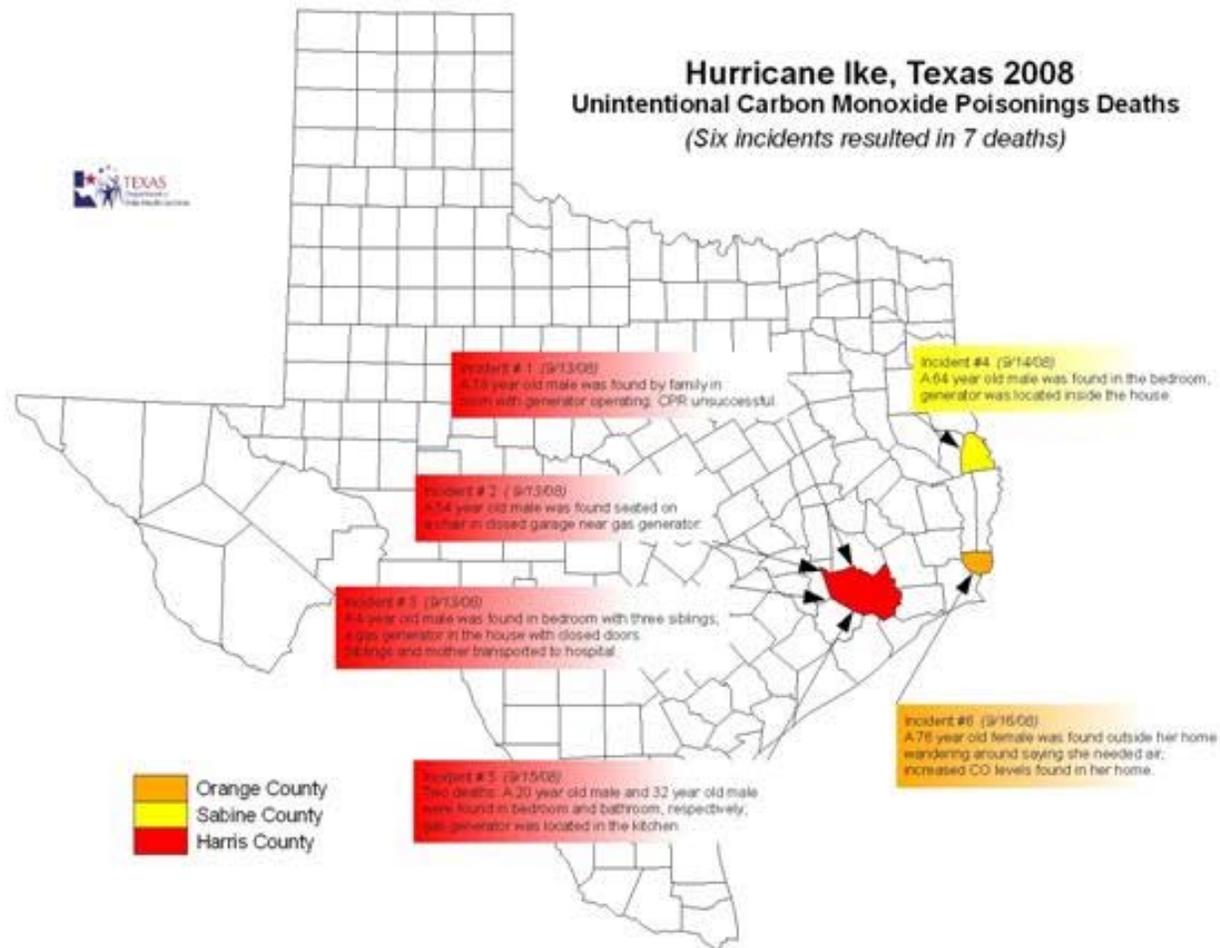
- Total: 47 Deaths (64%)

Top Five Causes of Injury:

- Carbon Monoxide Exposure
- Drowning
- Hit by Falling Tree Limb
- Burns
- Firearm (suicide)



Proper Use of Gas-Powered Generators



Source: Texas Department of State Health Services, Community Preparedness, Disaster Preparedness, Tracy Heywood, January 2009

Safe Preparedness Activities

- A child was struck and killed by a falling tree limb cut down in preparation for the hurricane
- A man was electrocuted when he drilled into live wiring while reinforcing his roof with additional screws



New York Times

Safe Recovery/Cleanup Activities

- Four individuals were killed by falling trees during cleanup activities
 - This included a utility company employee who was killed when he was hit by a falling tree while clearing debris from power lines



Innovative Characteristics

- Active and timely surveillance system
- Provided training to local and regional health departments in advance
- Collaborative effort
 - Local, regional, state, and federal with data reporters
- State injury program provided “surge” epi capacity

Barriers and Obstacles

- Communicating a consistent case definition
- Collecting data from storm impacted areas
- Competing local priorities (data collection vs. search/rescue or disaster response)

Impact

- Surveillance critical in determining the magnitude, manner, cause and circumstances of deaths
- Provided daily information to local, state, federal public health and emergency management
- Served as an early warning alert system to detect patterns where public health action could be taken
- Helpful in responding to media requests

Acknowledgements

- Participating data reporters
- DSHS Disaster Surveillance Workgroup
- Dr. John Hellsten
- Tracy Haywood

STIPDA's Disaster Epidemiology Special Interest Group (SIG) is Forming!

- **A forum for STIPDA members to:**
 - Express ideas,
 - Learn of best practices, and
 - Contribute to expert discussions with peers and colleagues
- **To learn more about how you can join and participate, please contact David Zane (Texas) (david.zane@dshs.state.tx.us)**