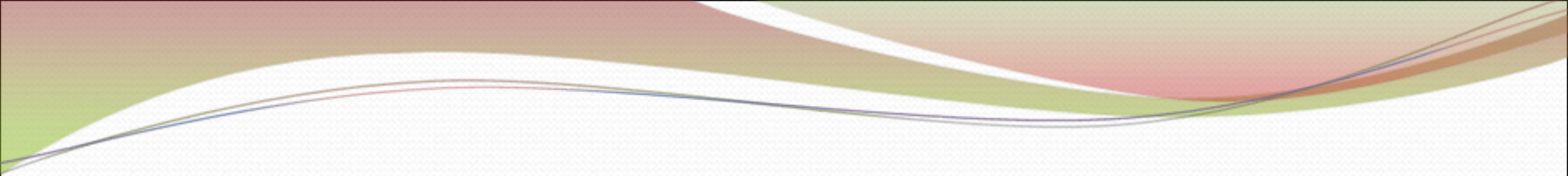


# Lessons from Katrina: A Six Year Retrospective

Knox Andress, RN, FAEN  
Designated Regional Coordinator  
Louisiana Region 7 Hospital Preparedness  
LSU Health – Shreveport  
Louisiana Poison Center



“To know where you’re going  
you’ve got to know where you’ve  
been”

*author unknown*

# Louisiana Hospital Preparedness Updates

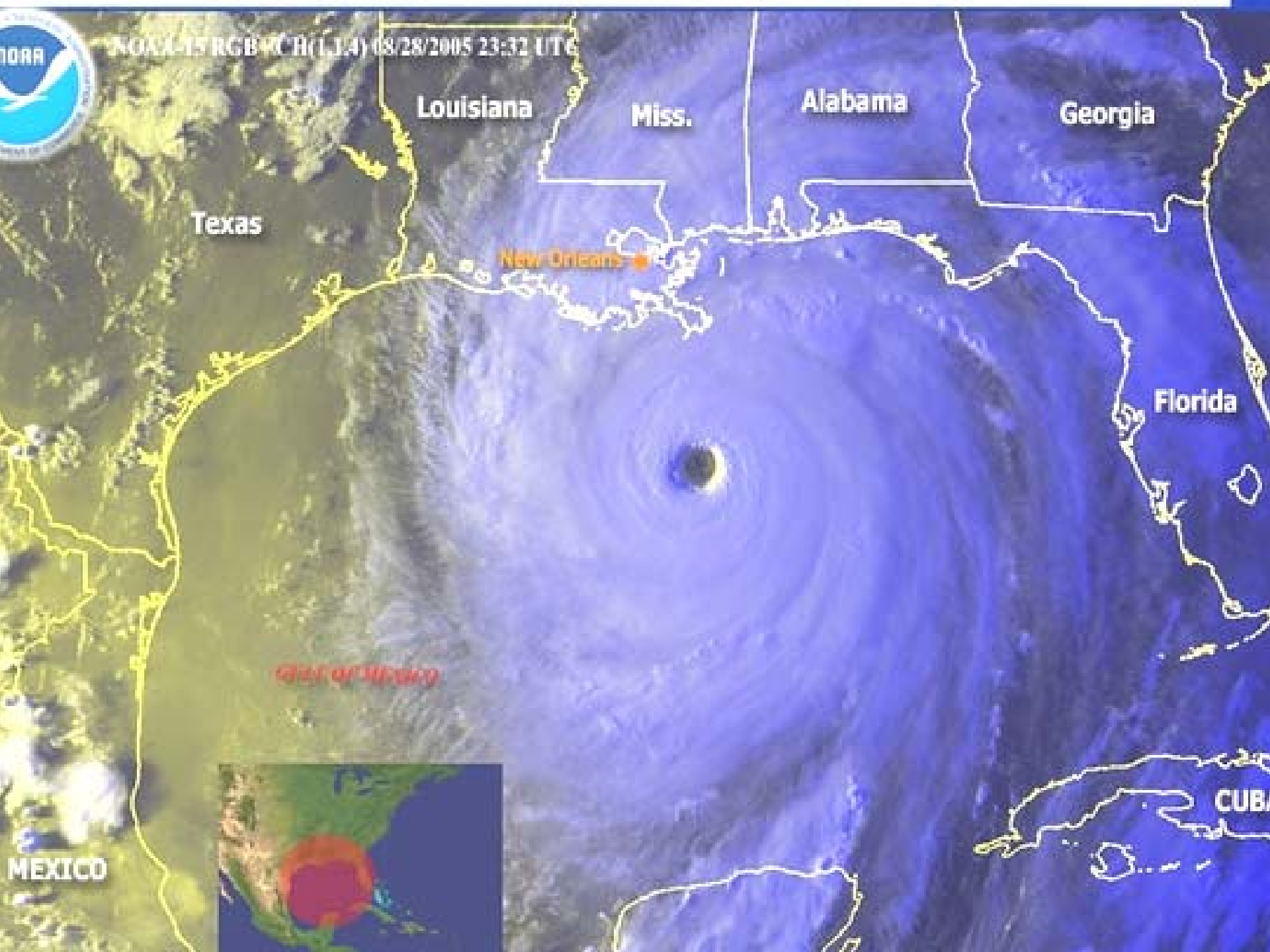
- Background
  - Regionalization
  - Hazards
- Planning updates the LHA “Preparedness” Website
  - Hurricanes
  - Training/Education
  - Pandemic
  - Communications / Information Management

# Louisiana Hazards Impacting Hospitals

- Hurricanes
  - Katrina and Rita - 2005
  - Gustav and Ike - 2008
- Pandemic (H1N1) - 2009
- Hazmat (B.P. Gulf Horizon) - 2010
- Flooding (Mississippi River) - 2011



NOAA-15 RGB-CH (L1.4) 08/28/2005 23:32 UTC



Louisiana

Miss.

Alabama

Georgia

Texas

New Orleans

Florida

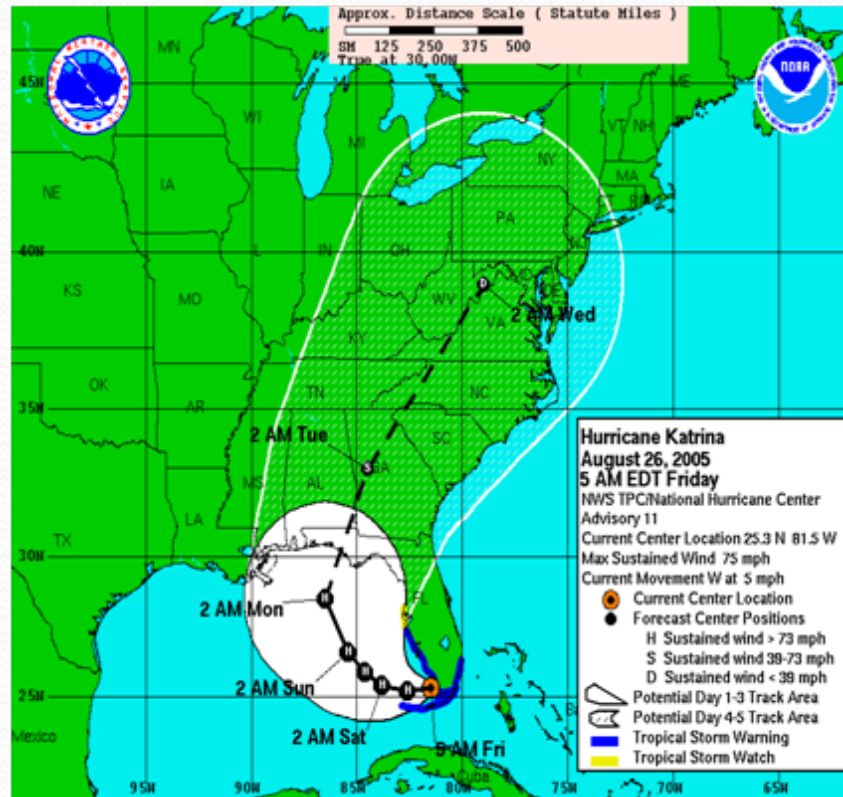
Gulf of Mexico

CUBA

MEXICO



# 2005 – Katrina: Predictions and History



11:40AM EDT 31-AUG-2005



©2005 AccuWeather, Inc.

accuweather.com

# Impact - Canal Breeches

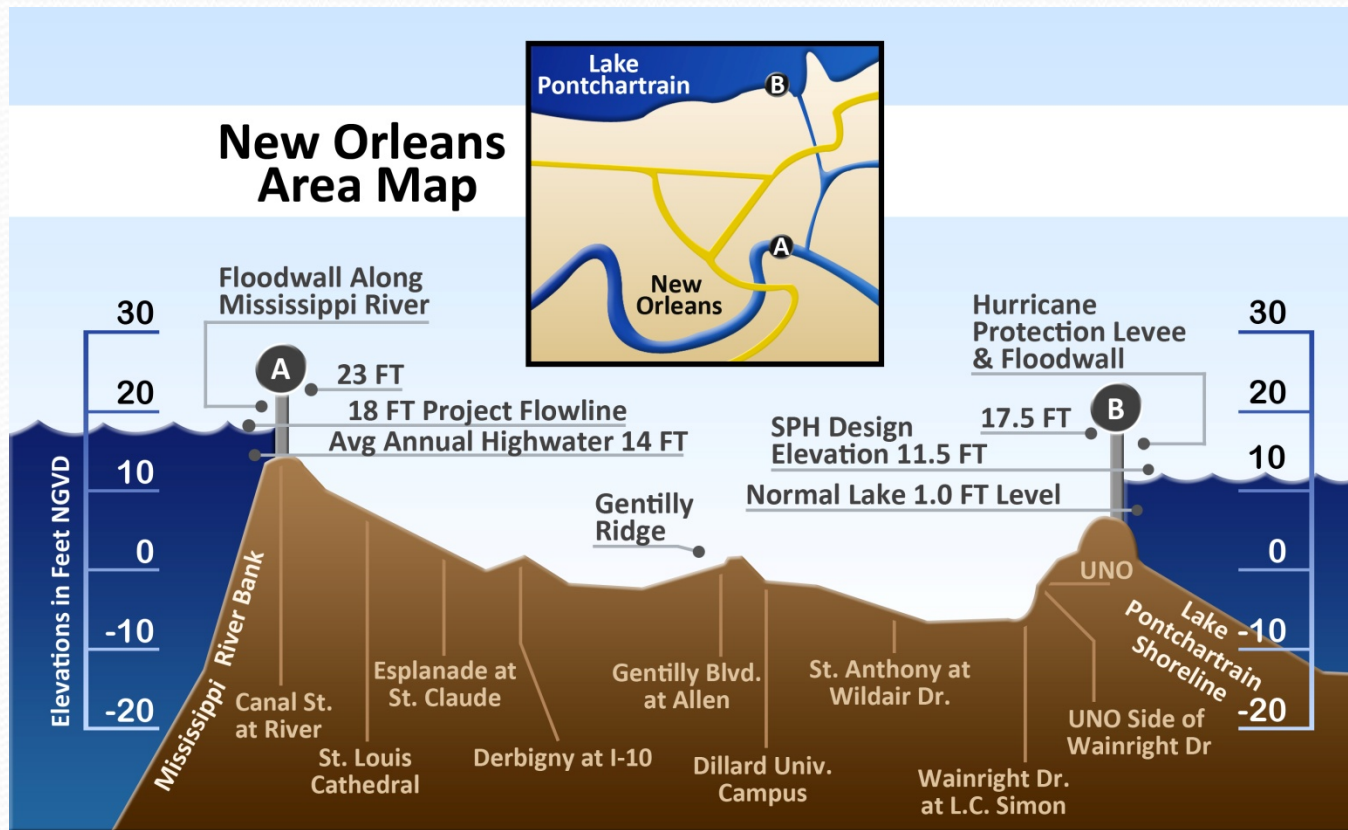
## London Avenue Canal



## Industrial Canal



# A potential “soup-bowl”



## City of New Orleans Ground Elevations

From Canal St. at the Mississippi River to the Lakefront at U.N.O.



# Hospital Impact – New Orleans



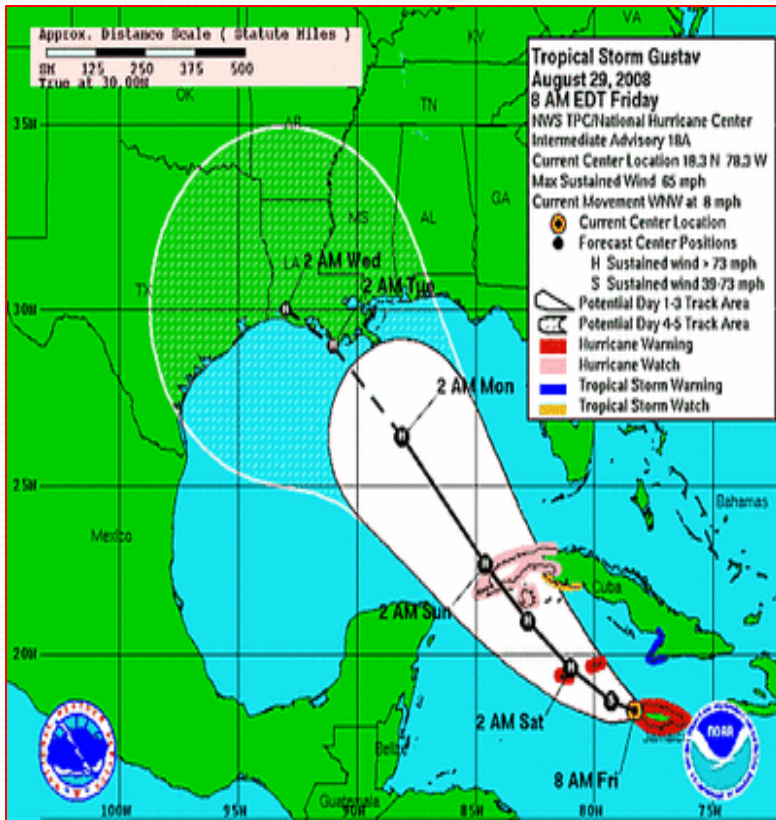
# 2005 - Katrina Dynamics

- **Hurricane Katrina –**

- Entered Gulf of Mexico – August 26, 2005<sup>1</sup>
- Predictions: “Category 1” projected to become a “Category 5”
- Hurricane warnings: Louisiana central coastline to Florida panhandle
- Landfall: August 29, 2005; Burras, LA (Southeast Louisiana); “Category 3” w/ 125 mph winds
- Storm surges: 10’ – 19’.
- Levee breaches: = 53; 80% New Orleans & neighboring parishes flooded.
- Louisiana fatalities: 986 storm-related<sup>2</sup>
- Estimated 100 billion dollars in LA property damage/loss<sup>3</sup>

<sup>1</sup>NOAA, 2005; <sup>2</sup>Brunckard et al, Hurricane Katrina Deaths, 2008

# 2008 – Gustav: Predictions and History



9:23AM EDT 2-SEP-2008



©2008 AccuWeather, Inc.

accuweather.com

# 2008 - Gustav Dynamics

- **Hurricane Gustav –**
  - Entered: Gulf of Mexico – August 31, 2008<sup>1</sup>
  - Predictions: “Category 1” projected to become a “Category 5”
  - Hurricane warnings: Cameron Parish to Ala/Fla border
  - Landfall: September 1, 2008; Cocodrie, LA – (Central coastal Louisiana); “Category 2” w/ 105 mph winds
  - Louisiana storm surges: 10 – 14 feet.
  - Levee “topping” - No (o) levee breaks
  - Louisiana Fatalities: 48 storm-related<sup>2</sup>
  - Estimated 4.3 billion in LA property damage/loss

# Louisiana Hospital Evacuations – Katrina (2005) vs. Gustav (2008)<sup>1</sup>

Hurricane Katrina	Pre Storm	Post Storm	Total
Total Hospital Evacuation	8	26	34
Partial Hospital Evacuation	5		5
<b>Total</b>	<b>13</b>	<b>26</b>	<b>39</b>

Hurricane Gustav*	Pre Storm	Post Storm	Total
Total Hospital Evacuation	38	7	45
Partial Hospital Evacuation	25	3	28
<b>Total</b>	<b>63</b>	<b>10</b>	<b>73</b>

\*Gustav - approximately 1000 patients evacuated pre-storm; 223 patients were evacuated post-storm.

<sup>1</sup>Hurricane Gustav and Ike, Louisiana ESF-8, Health and Medical Response After-Action-Report; Louisiana Department of Health and Hospitals; November 5, 2008.

# Impacting Hospitals - Gustav: Nursing Home Evacuations<sup>6</sup>

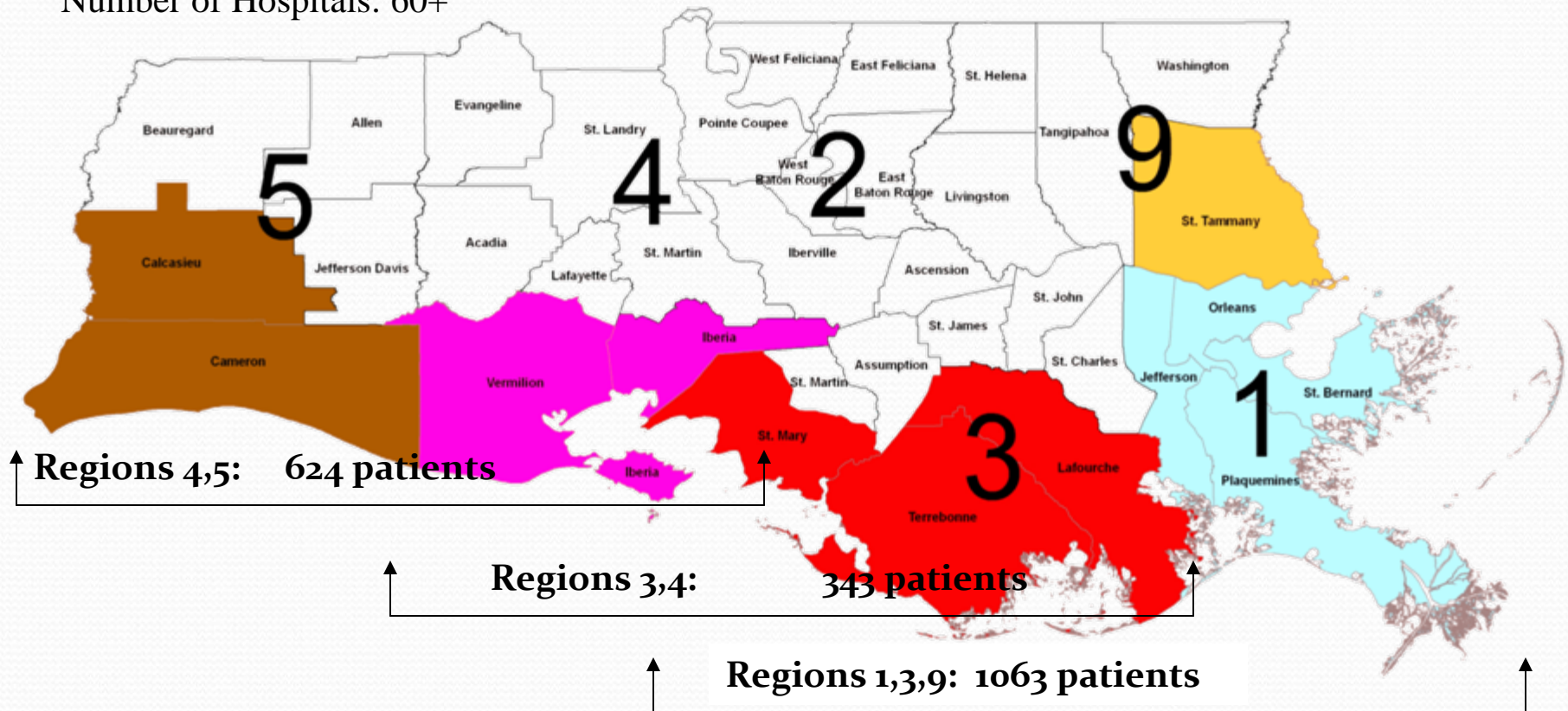
---

<b>Hurricane Gustav</b>	<b>Pre Storm</b>	<b>Post Storm</b>	<b>Total</b>
<b>Complete Evacuation</b>	<b>94</b>	<b>2</b>	<b>96</b>
<b>Partial Evacuation</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total</b>	<b>94</b>	<b>2</b>	<b>96</b>

8,401 residents evacuated pre-storm; 160 residents evacuated post-storm

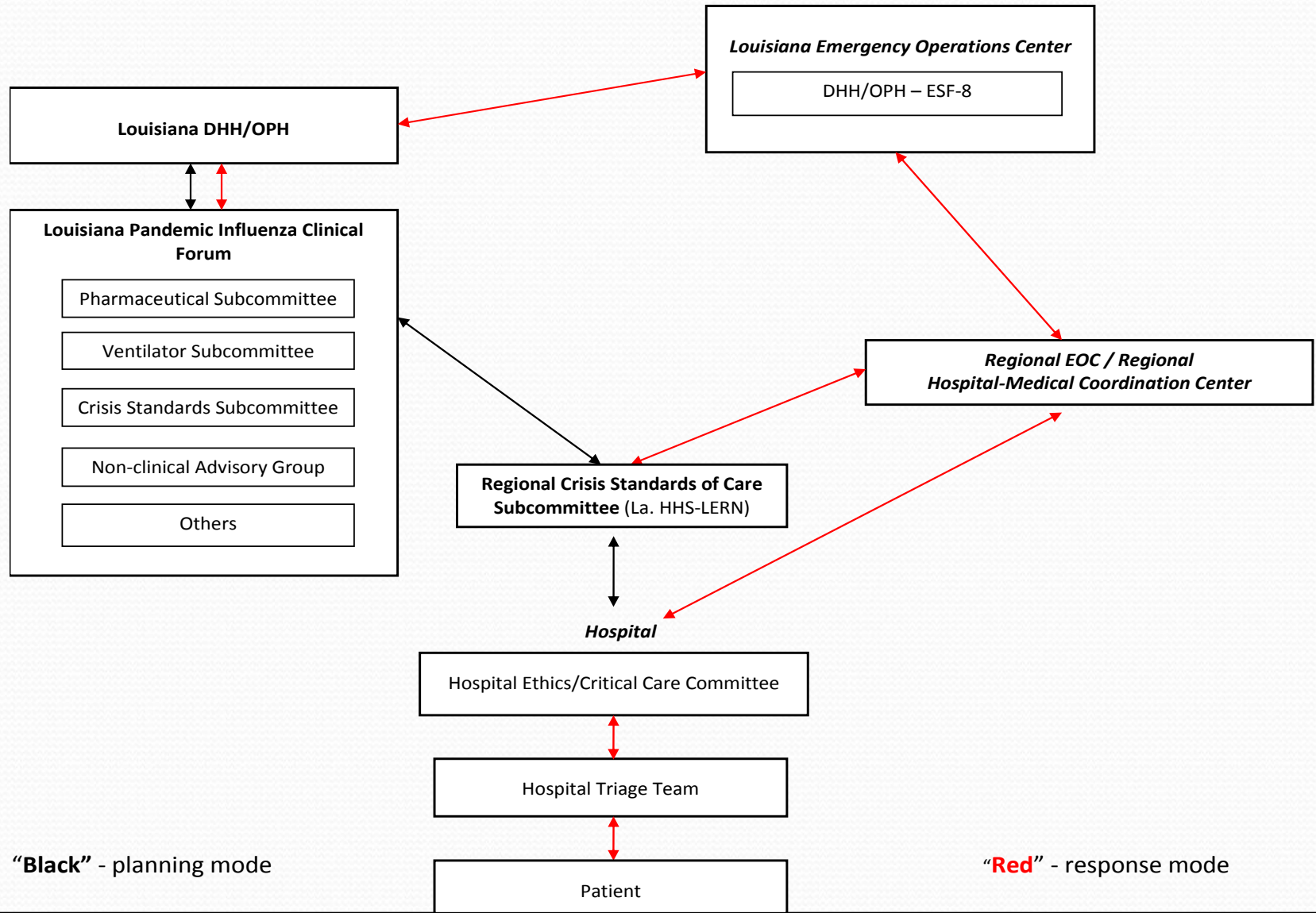
# What is the potential throughput?

Number of Parishes: 12  
Number of Hospitals: 60+



Anticipated Planning Range: low - high  
343 - 1063 (reasonable “worst case” planning scenarios)

# Pandemic - Crisis Standards of Care

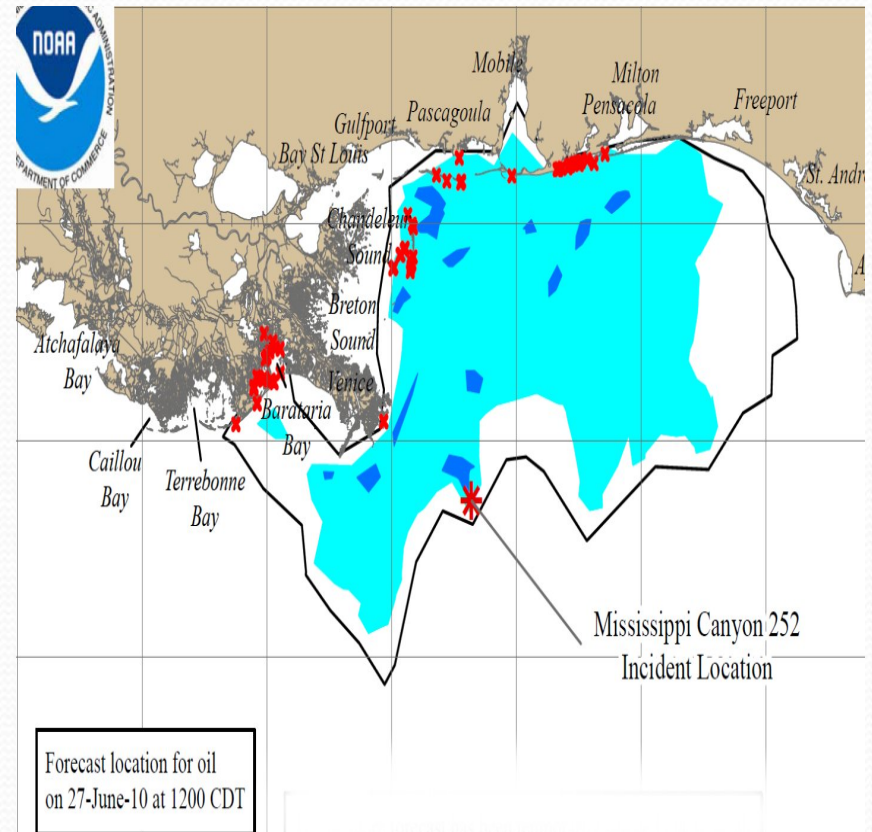




# B.P. Gulf Horizon Oil Spill

April 20, 2010

Est. 92,340,117 gallons leaked  
(U.S.)





# Louisiana ESF-8 Dashboard

## June 8 – June 14



### CONTENTS OF DASHBOARD

Background

Critical Events by Week

MSC 252 – Impact Summary

BP Activities to Date

US EPA Monitoring Efforts

NOAA

LA Department of Wildlife and Fisheries

Parishes with State of Emergency Declaration



LA Department of Health and Hospitals

Seafood Safety Program

Seafood Surveillance Data

MSC 252 Oil Spill Surveillance Report

Air Surveillance Data

Info for Response Workers and General Public

Health Threats for Responders

Mental Health

Hotlines and Relief Centers

Existing Fact Sheets

Contact Us

### LOUISIANA DEPARTMENTS

- [Governor's Office of Homeland Security and Emergency Preparedness](#)
- [Louisiana State Police](#)
- [Louisiana Dept of Wildlife and Fisheries](#)
- [Louisiana Dept of Corrections](#)
- [Louisiana Dept of Health and Hospitals](#)
- [Louisiana Dept of Social Services](#)
- [Louisiana Work Force Commission](#)
- [Louisiana Oil Spill Coordinator's Office](#)
- [Louisiana Dept of Natural Resources](#)
- [Louisiana National Guard](#)
- [Governor's Office of Coastal Activities](#)
- [Louisiana Dept of Environmental Quality](#)
- [Louisiana Attorney General's Office](#)
- [Louisiana Economic Development](#)
- [Louisiana Dept of Transportation and Development](#)
- [Division of Administration](#)
- [Louisiana Dept of Agriculture & Forestry](#)

**DISCLAIMER:** The Dashboard was developed using available sitreps and web-based links. The intent of this Dashboard was to organize and share available information in a centralized document for visibility of a multi-agency response effort. Should there be questions regarding an Agency's response effort, the Agency should be contacted directly. Each slide has been sourced to access further details.



# Louisiana Hospital Association “Preparedness” Website – [www.lhaonline.org](http://www.lhaonline.org)

- **Reflections of:**

- Hurricane Planning
- Meetings/Trainings
- Pandemic Flu Planning
- Communications / Information Management
- Others

# “Hurricane Planning”

- ESF-8 State/Federal Plan
- Louisiana Hospital Emergency Preparedness Planning Network
- “H-Hour” calculation
- Hospital Aeromedical Transfer Form
- Shelter-in-place recommendations
- DRC/DRH organization

# “Education / Trainings”

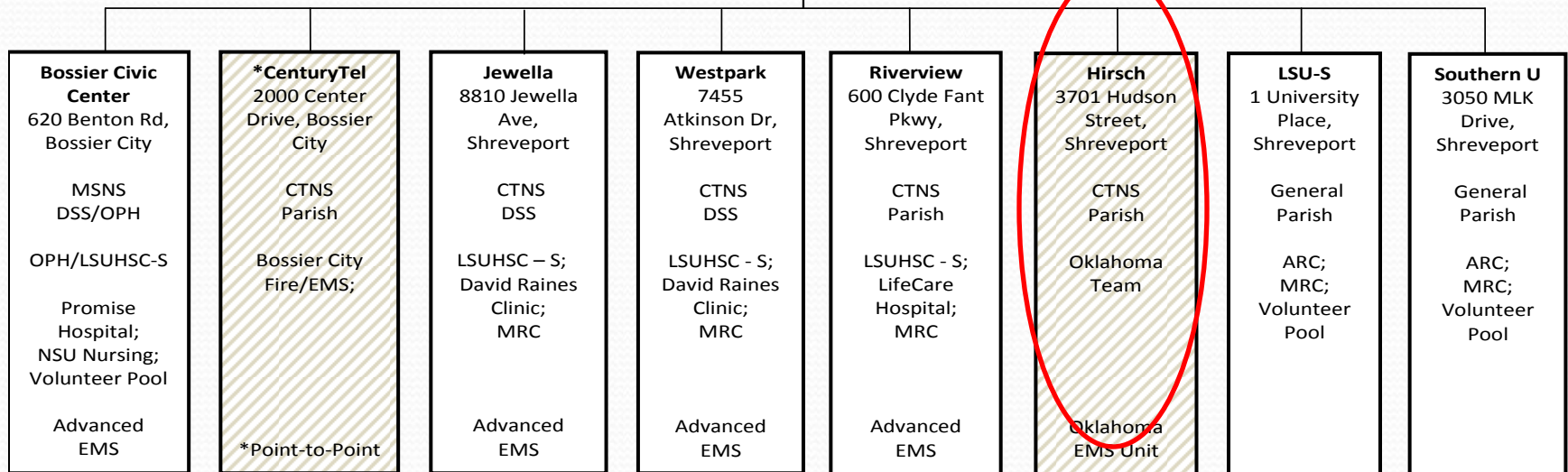
- Regional Hospital Hazmat Education
- Hurricane Shelter Response Training
  - Oklahoma Shelter Response Team – Hirsch Coliseum, Shreveport, Louisiana
- Earthquake – National Level Exercise (NLE)
  - Tracking Emergency Patients (TEP) Exercise

# Oklahoma - Shelter Support, Shreveport, La.

## EOC - Caddo-Bossier OHSEP Coordinates...

Mass Care - Sheltering  
(ESF-6)  
(DSS, ARC)

Public Health, Medical,  
Mental Health,  
(ESF-8)



**ARC** – American Red Cross  
**CBOHSEP** – Caddo - Bossier Office of Homeland Security and Emergency Preparedness  
**CTNS** – Critical Transportation Needs Shelter  
**DSS** – Department of Social Services  
**EOC** – Emergency Operations Center  
**ESF** – Emergency Support Function  
**MRC** - Medical Reserve Corps  
**MSNS** – Medical Special Needs Shelter  
**OPH** – Office of Public Health  
**Pool** – volunteer resources from hospitals, clinics, MRC, LAVA, ESAR-VHP, etc

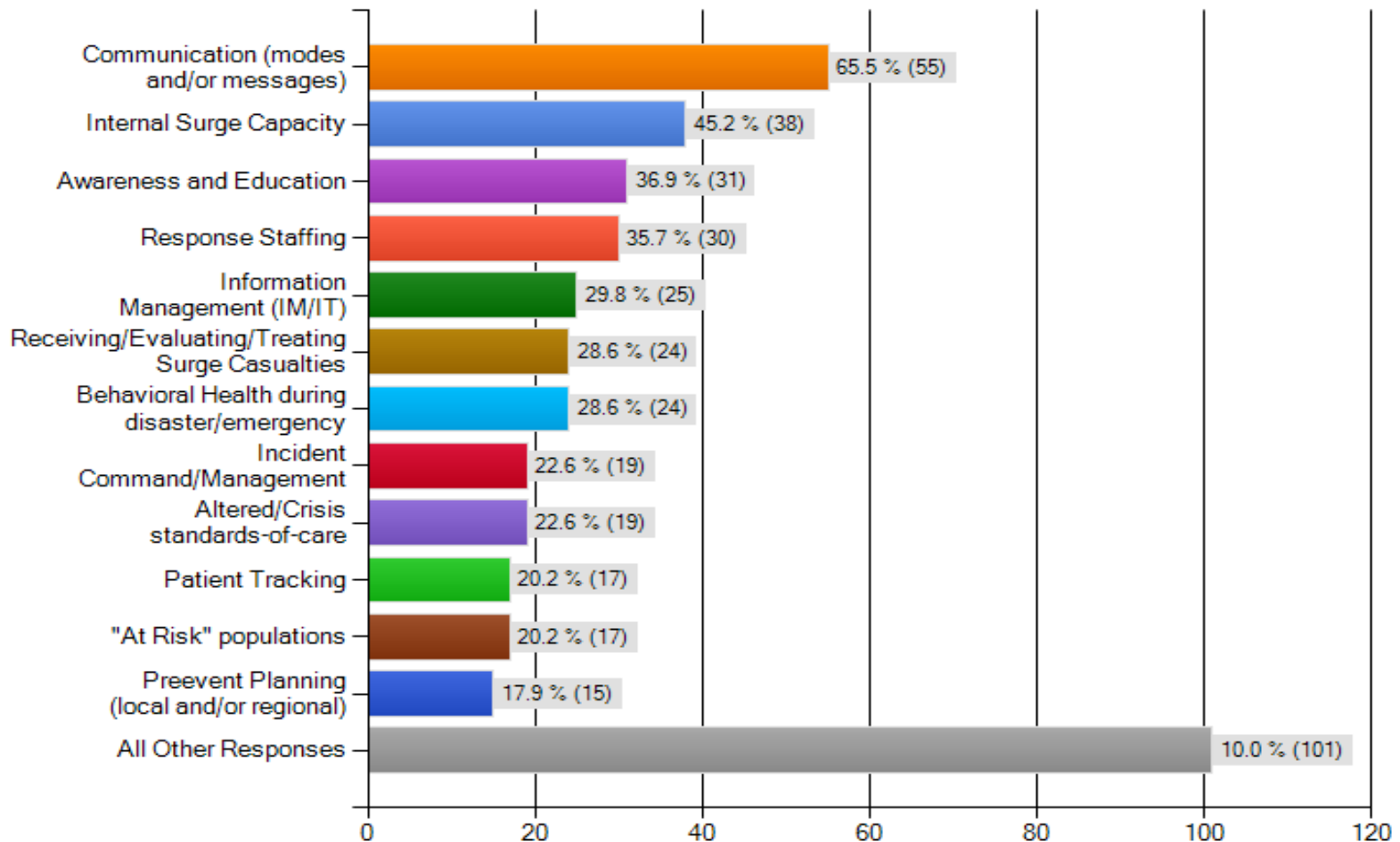
# “Communications / Information Management”

- A Preparedness Priorities Survey
- Louisiana DHH ESF-8 Web Portal
- Tracking Emergency Patients (TEP) exercise
- “Virtual USA” - via “Virtual Louisiana”/B.P. Gulf Horizon



# Preparedness Priorities<sup>1</sup> (n=84)

Locally - Please select the top five priority preparedness issues you perceive for your hospital.



<sup>1</sup>Andress, ENA Journal of Emergency Nursing 2011

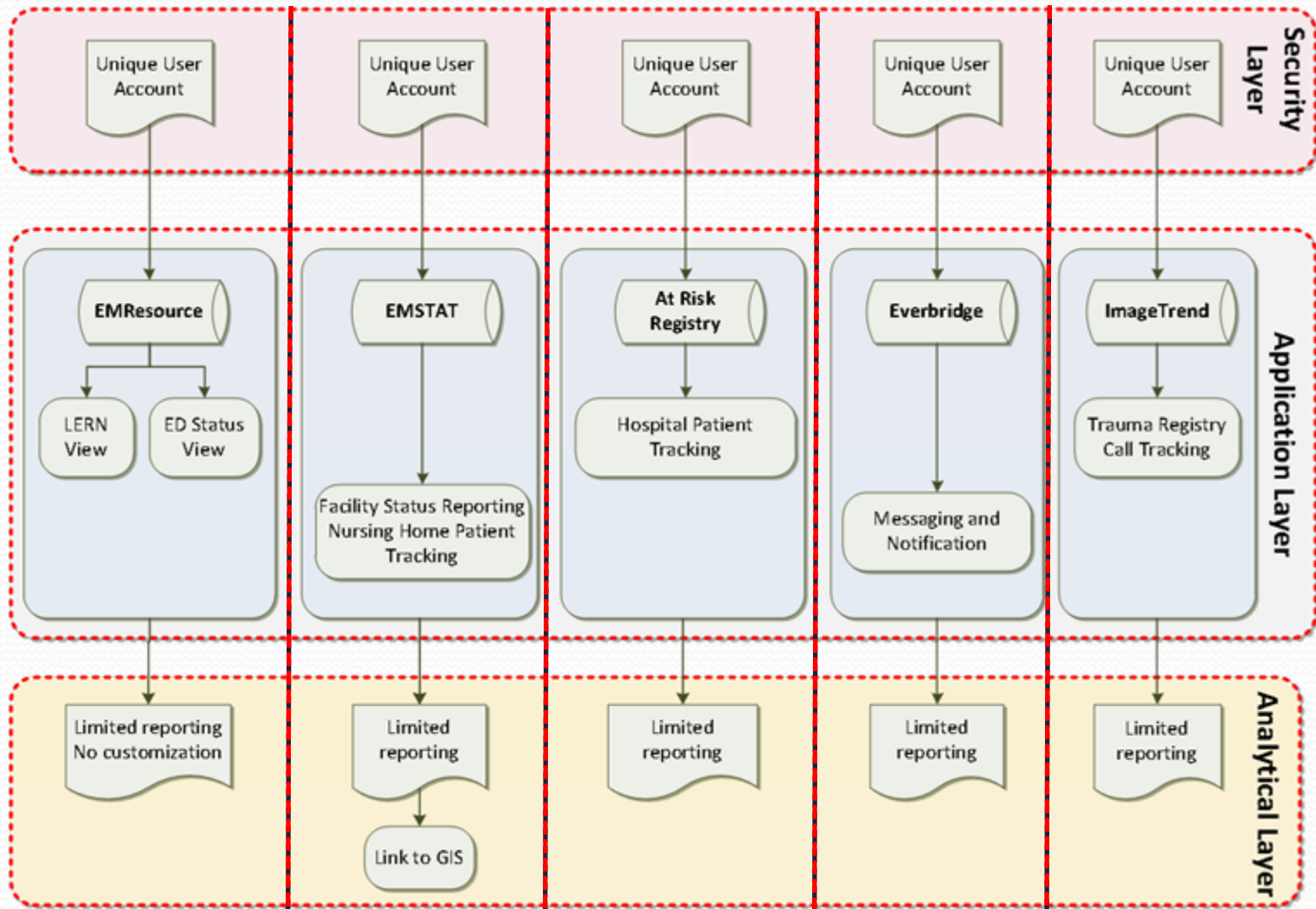
# Communication and Information Management – the Louisiana DHH “ESF-8 Web Portal”

- Needs and components:
  - Site and User Security
  - Resource Status and Capability
  - Incident Management
  - Communication – Messaging
  - Survey

# 2009 to 2010: The Basics

SILOS

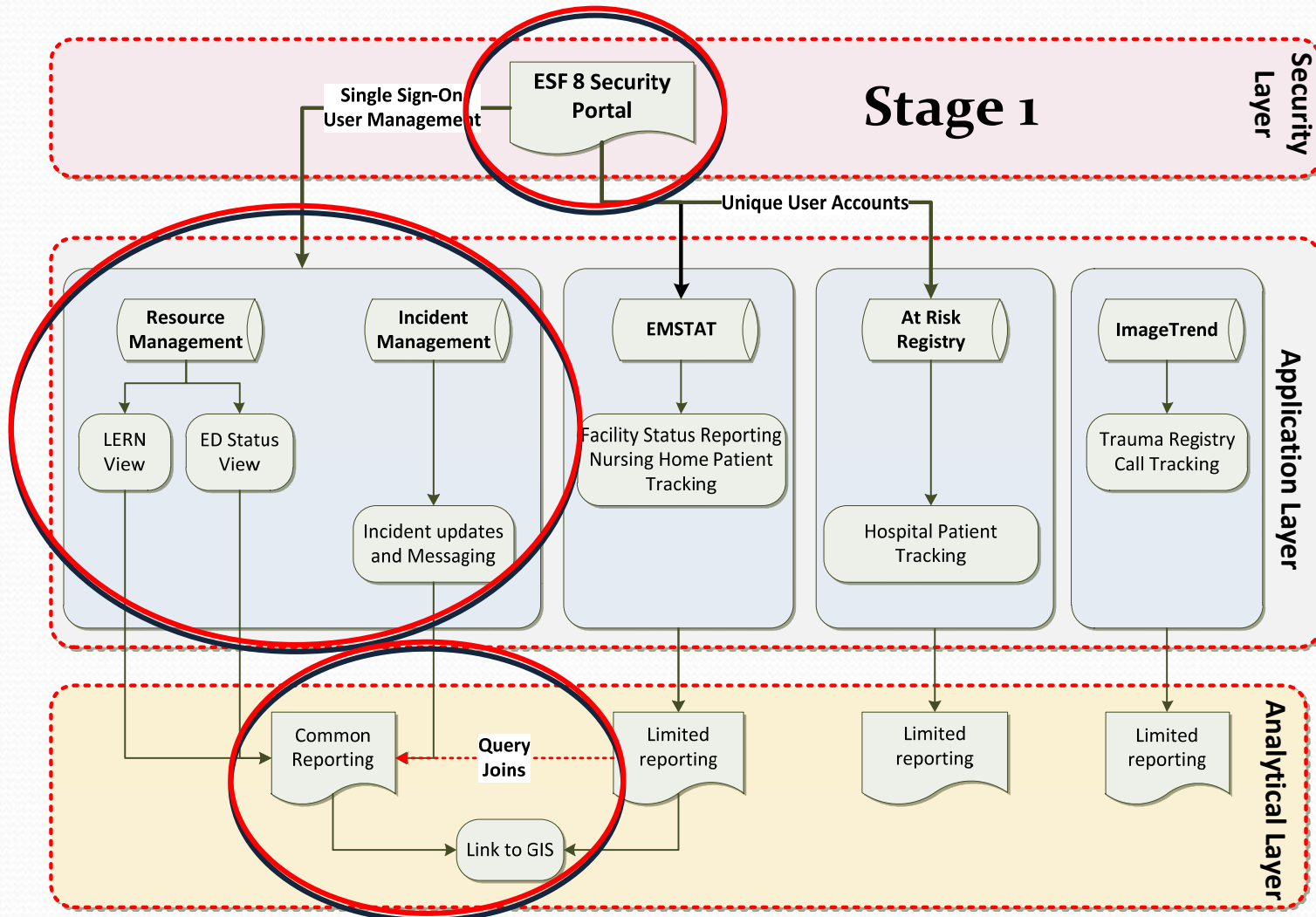
SILOS



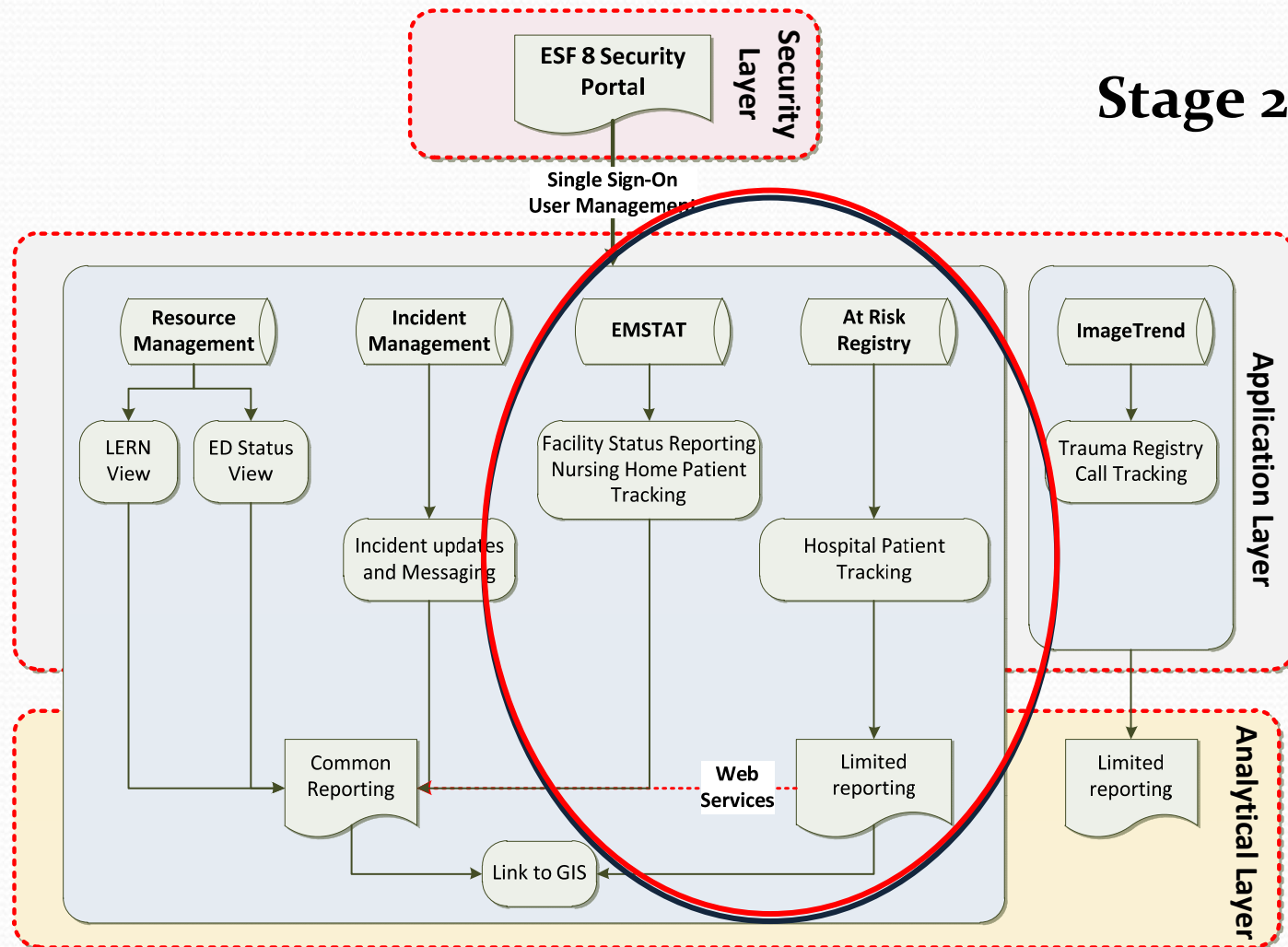
# A New Strategy for 2011 and Beyond

- Acquire a module that could serve as a secure web portal for end users, with “single sign-on” access to all the applications they need
- Acquire a module that offered robust incident management and notification capabilities
- Acquire a comprehensive resource management module that could expand as needed.
- Develop more advanced analytics, connected to the databases in real-time

# Result of the Initial Investments



# “ESF 8” Will Complete the Plan



# National Level Exercise (NLE) - & TEP



- Overview –
  - Simulated evacuated patient data from multiple states shared across disparate systems using the TEP draft standard (Tracking Emergency Patients).
- To Louisiana –
  - Simulated patient data from Missouri Hospital evacuations shared to two Louisiana patient tracking systems and a faux “National Reunification Center”

## Missouri Hospital Evacuation

1



**1-** May 19, 2011 Missouri hospital enters 35 patients into EMTrack for evacuation (paper patients) to be moved to another State for Hospitalization and/or Treatment



1 Send

## Missouri Airport

2



**2 -** Missouri EMTrack Receipt of Patient arrival at airport

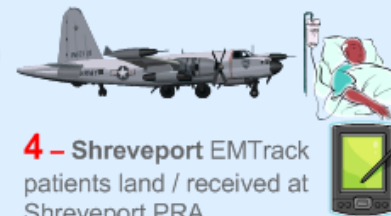
**3 -** Missouri EMTrack assign 35 patients to Shreveport, LA Region 7 NDMS hospitals



2,3 Send

## Shreveport PRA Landing

3



**4 -** Shreveport EMTrack patients land / received at Shreveport PRA

**5 -** Shreveport EMTrack assign patients to ambulances destined to specified local hospitals



8 4,5 Send

## IPAWS OPEN

1,2,3 7 4,5,6



7 Send (16-19 May) 8 Send (19 May)



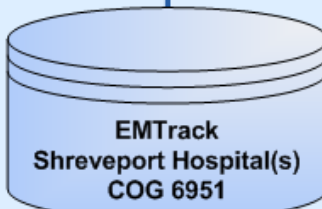
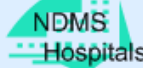
Mississippi & Wisconsin

**7 & 8-** May 16-19, 2011 SEPARATE from and parallel with the end-to-end tracking of the 35 patients, HC Standard sends TEP updates to Tennessee (UPP) and later to EMTrack for up to 1000 total patients

4



6 Send



**6-** EMTrack patient arrival at each Shreveport hospital

Hospitals provide HAVBed updates

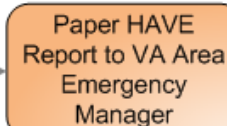
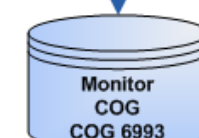


3 4,5,6

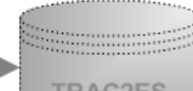
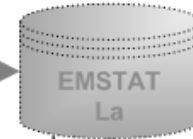


Shreveport PRA

All Messages (1-8)



Manual





# Virtual USA Participant Examples:

**VIRTUAL USA**  
The Value of Viewers | The Need for Sharing | The Solution | Resources | Contact Us

### Geospatial Visualization: *Seeing the Whole Picture*

Over the past several years, many states have built geospatial visualization systems that allow decision makers to compare and relate different types of critical information in a visual context—enabling improved recognition of important relationships between data. Examples include:

- Predicted paths of storms in relation to evacuation routes and gasoline supplies
- Locations of schools and nursing homes in relation to hazardous waste materials and incidents
- Locations of available hospital beds in relation to a major fire or accident

These state visualization systems improve decision making and can speed up response time, often significantly.

Click on the screen shots from the state systems to find out more about what states are doing:

**Chris McIntosh**  
Chief, Operations Section  
Virginia Emergency Operations Center  
Virginia Dept. of Emergency Management

00:00 00:00

VIPER video by Chris McIntosh of Virginia.  
[Download Flash Viewer](#)

Florida's Geospatial Assessment Tool for Operations and Response (GATOR)

Oregon Geospatial Enterprise Office (GEO)

Virginia Interoperability Picture for Emergency Response (VIPER)

Virtual Alabama

Virtual Louisiana

# Oil Spill Exposures: “Virtual Louisiana” - Hospitals and Public Health.



1. Event – B.P. DeepWater Horizon Explosion
2. Resulting actions – seeking medical advice/attention
3. Challenges for an overloaded resource.
4. Oil spill exposure occurrences
  - a. Types
    - i. Workers
    - ii. Non-workers
  - b. Ages
  - c. Major complaints
5. Surveillance systems in Louisiana
  - a. Louisiana Poison Center
  - b. Hospital surveillance systems
  - c. Public Health “Hotline”
  - d. Physician –clinic offices
  - e. Collected by Louisiana DHH
6. vLouisiana DHH agency data layer
7. Challenges – Real-time vs Delayed Reporting
8. Impacts on health care resources in Louisiana

# "Virtual Louisiana" - By "Parish"

## Data Filter

The screenshot displays the Google Earth EC interface. The main map shows Louisiana with parish boundaries and various data points represented by red circular icons with a pulse symbol. The left sidebar contains a 'Layers' panel with the following items:

- LDHH
- LDHH Oil Spill Surveillance Report...
- ~GE2D8D.kmz
- LDHH Oil Spill Surveillance Report Week 26 From 06/27/2010 - 07/07/2010
- Location of Exposure - Parish** (checked, red arrow pointing to it)
  - Total - 178
  - Work - 145
- Plaquemines (Total: 36)
- St. Bernard (Total: 5)
- Orleans (Total: 11)
- Jefferson (Total: 23)
- St. Tammany (Total: 5)

The map labels include: Shreveport, Other, Region 9 - Northshore, Other Parish, St. Tammany, Region 5 - Lake Charles, Lafayette, Baton Rouge, Jefferson, Orleans, Offshore / Out of S, Region 4 - Lafayette, Region 3 - Houma/Thibodaux, Lafourche, St. Bernard, and Plaquemines. A tooltip at the bottom left of the map reads: 'Show or hide roads, borders and other items in the 3D viewer'. The bottom status bar shows coordinates: 30°57'08.46" N 91°07'03.63" W elev 0 ft, and distance: Eye alt 369.50 mi. The system tray at the bottom right shows the time as 8:18 PM.

7th WCDM: Increasing Situational and Resource Awareness via "Virtual USA"

# Nurse – Preparedness Roles found in Louisiana

- Patient care
  - Within the facility
  - Community
  - Internationally
- Leadership
  - Response/Operations
  - Planning
  - Policy
- Education
- Research
- Public Health
- Private Industry



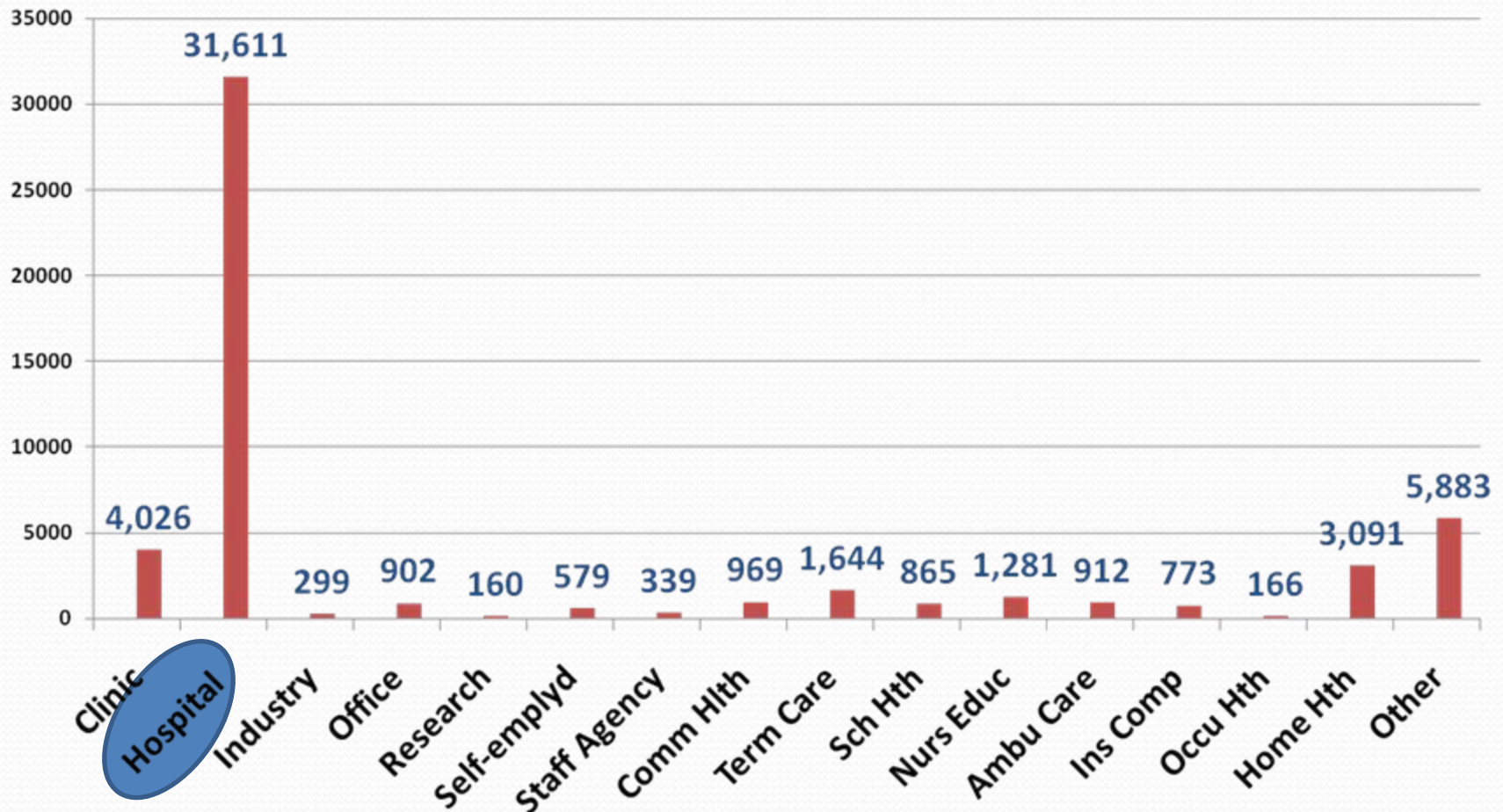
# Training and Education – *SAFER*

## Louisiana Nursing Schools

- April 23, 2010 - Louisiana Nursing SAFER (Schools Aligned for Emergency Responsiveness)
  - Invitational program for leadership from all Louisiana programs.
  - Discover
    - disaster impact on Louisiana nursing programs
    - Roles of nursing programs in disaster response
    - Competencies taught and disaster resources available

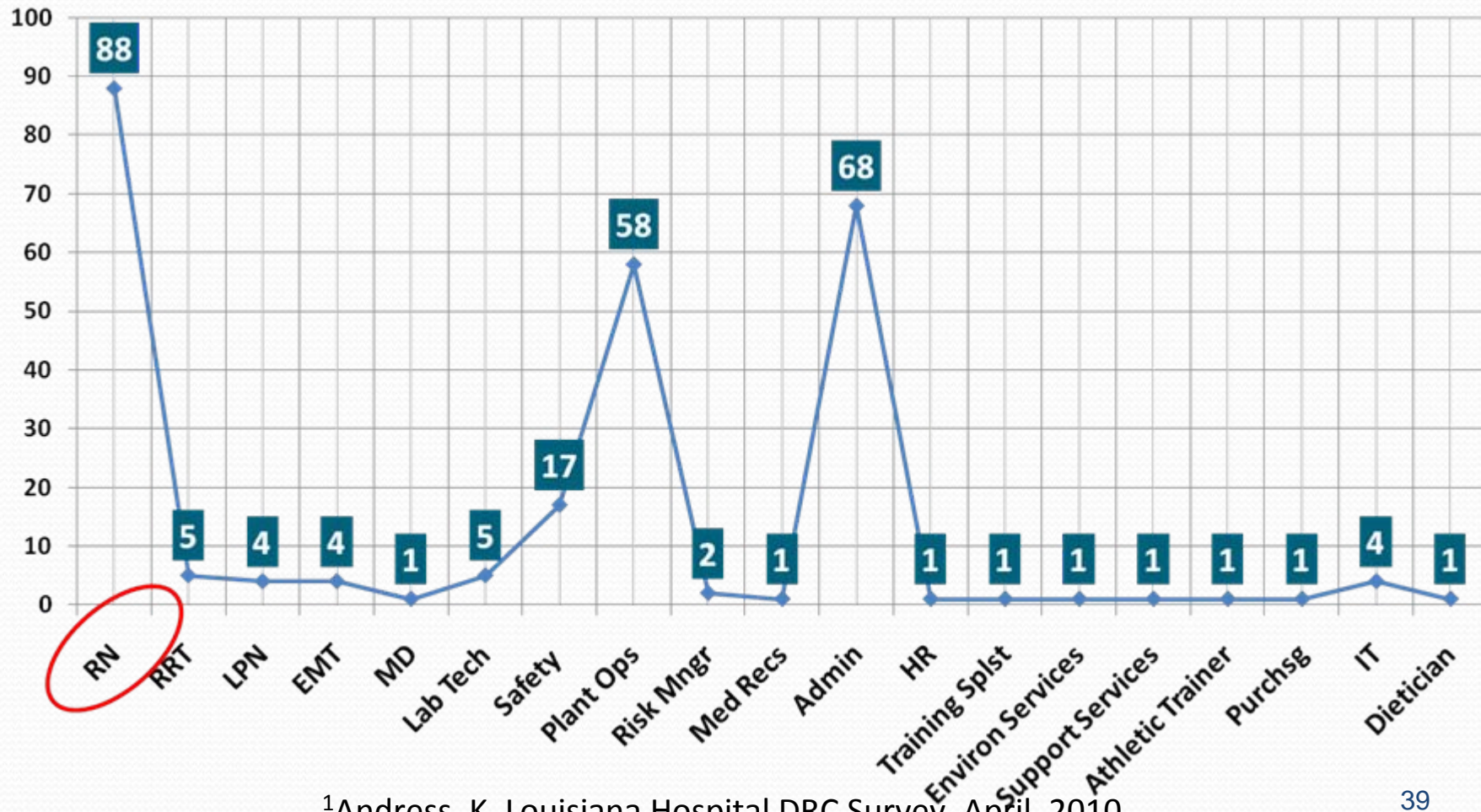
# Practice Settings - Louisiana Registered Nurses<sup>1</sup>

Registered Nurses by Occupation, Jan 2010



<sup>1</sup>Louisiana State Board of Nursing, 2010, single licensee

# HHS-ASPR Hospital Preparedness Program - Hospital Grant Coordinators in Louisiana<sup>1</sup>



<sup>1</sup>Andress, K, Louisiana Hospital DRC Survey, April, 2010

# “SAFER” post conference findings

- Increased nursing program preparedness awareness (possible reference for the future)
- Facilitates coordination - 1<sup>st</sup> such survey of all Louisiana nursing programs;
- 47% completed survey – admirable number
- Disaster exercise participation - 40% involved
- Nursing programs recognized potential disaster response roles and resources
- Nursing programs plan to implement disaster competencies and/or content
- Visibility to the Louisiana Health Workforce Commission



# Summary -

- Retrospectives of Preparedness via
  - Planning & regionalization
  - Hazard recognition
  - Hurricanes
  - Training/Education
  - Pandemic
  - Communications / Information Management



# Thank you,

Knox Andress, RN, FAEN

Designated Regional Coordinator

Louisiana Region 7 Hospital Preparedness

LSU Health – Shreveport

Louisiana Poison Center

Of (318) 813-3311

[wandri@lsuhsc.edu](mailto:wandr1@lsuhsc.edu)