Disaster Epidemiology: Examples of Medical Surveillance in KY

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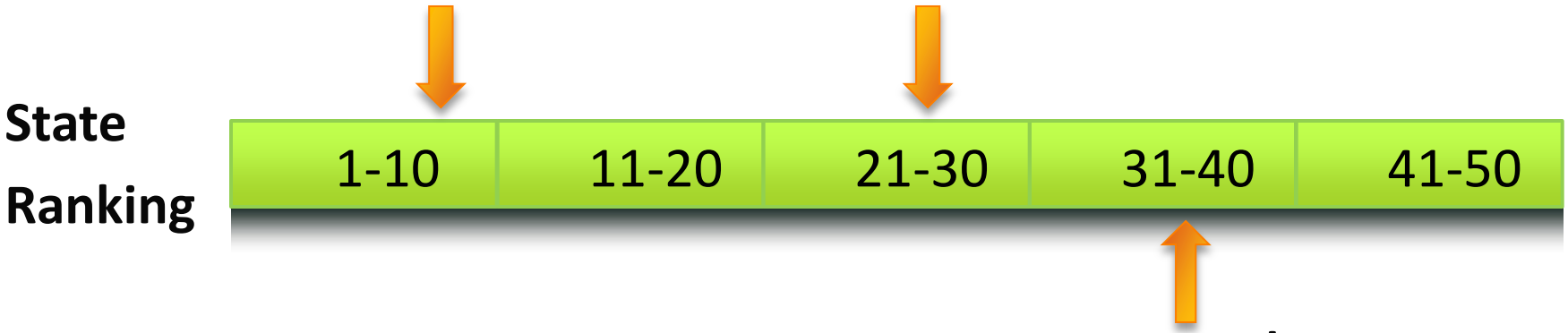
Kentucky: Disaster-Prone State

Number of Disasters

Kentucky ranks 8th in the number of declared disasters since the 1960s

Population

Kentucky ranks 26th population



Land Area

Kentucky ranks 36th in land area

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January 2009 Ice Storm- Kentucky

- Large footprint, freezing temps
- Power grid: Almost 800,000 units without power (36% of the state), including hospitals and nursing homes
- Water: over 100 public water systems inoperable

Infrastructure Impacted

- Communications: cell and land lines out for days
- Roadways: many impassable
- Water: over 100 public water systems down
- Temperatures: single digits to 50's for days/weeks later

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Storm-Related Deaths

- 36 fatalities
- Cause of death
  - CO poisoning (10), hypothermia (7), cardiac disease (5), fall (3), fire/burn/smoke inhalation (3), motor vehicle accidents (3), asthma/emphysema (3), drowning (1), and electrocution (1)
- Age range 4–93 years, median 56 years
- 23/34 (68%) male
- 21/26 (81%) white, 5/26 (19%) black

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CO Case Definition

- Council of State and Territorial Epidemiologists' case classification system
  - Probable and Suspected
    - Signs and symptoms consistent with CO poisoning
    - History of exposure
  - Confirmed
    - Carboxyhemoglobin level ≥12% or elevated environmental monitoring sample
- Kentucky residents
- January 26–February 14, 2009

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CO Poisonings

- 144 confirmed or probable cases
- 10 deaths resulting from 7 incidents
  - Median age 58 years, range 26–76 years
  - 2 (20%) immigrants
- 28 persons received hyperbaric oxygen treatment
  - Median age 38 years, range 1–79 years

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Sources of CO Poisoning

	Deaths (%)	HBOT's (%)
Generator	8 (80%)	16 (57%)
Kerosene heater		1 (4%)
Propane heater	1 (10%)	
Propane cooking device		5 (18%)
Indoor charcoal use	1 (10%)	5 (18%)
Vehicle running in garage		1 (4%)

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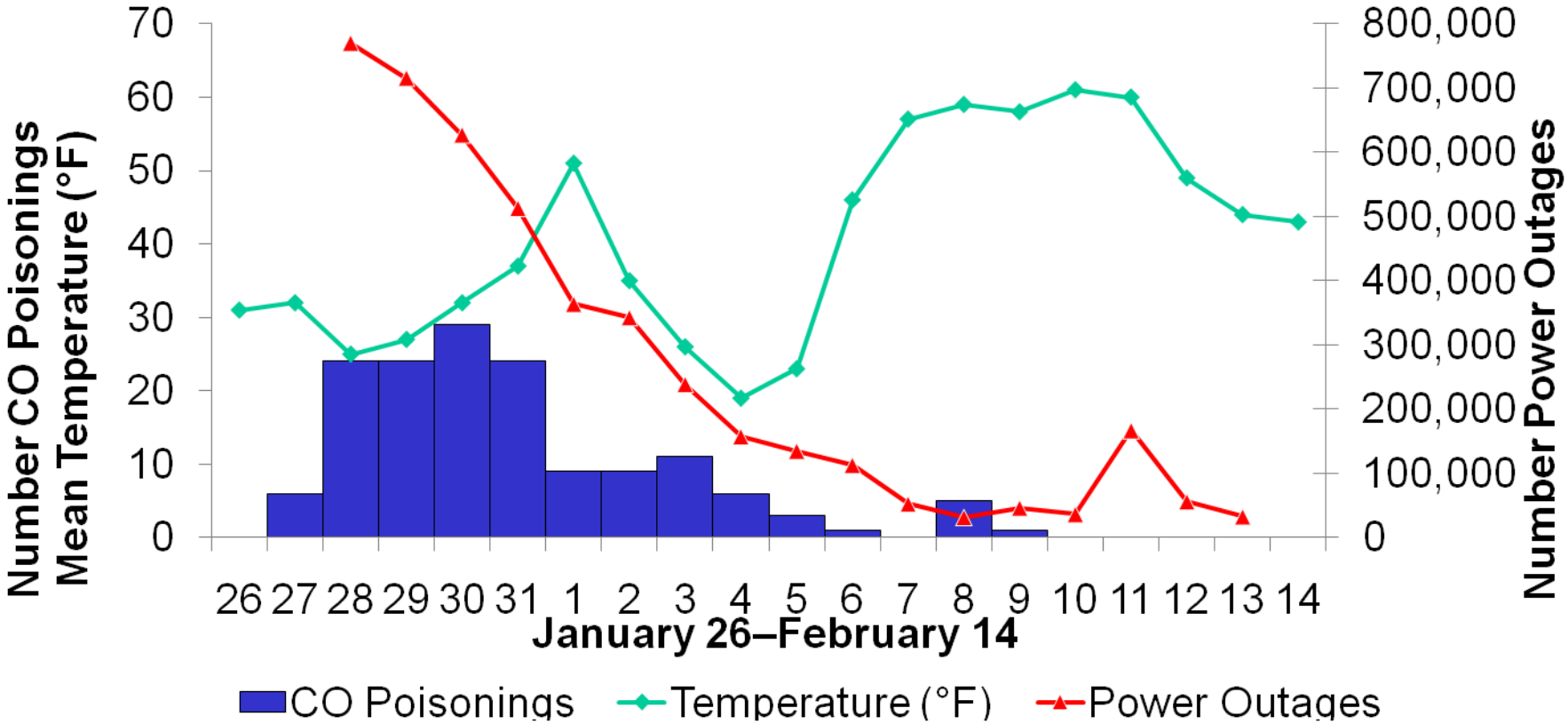
CO Poisonings By Day



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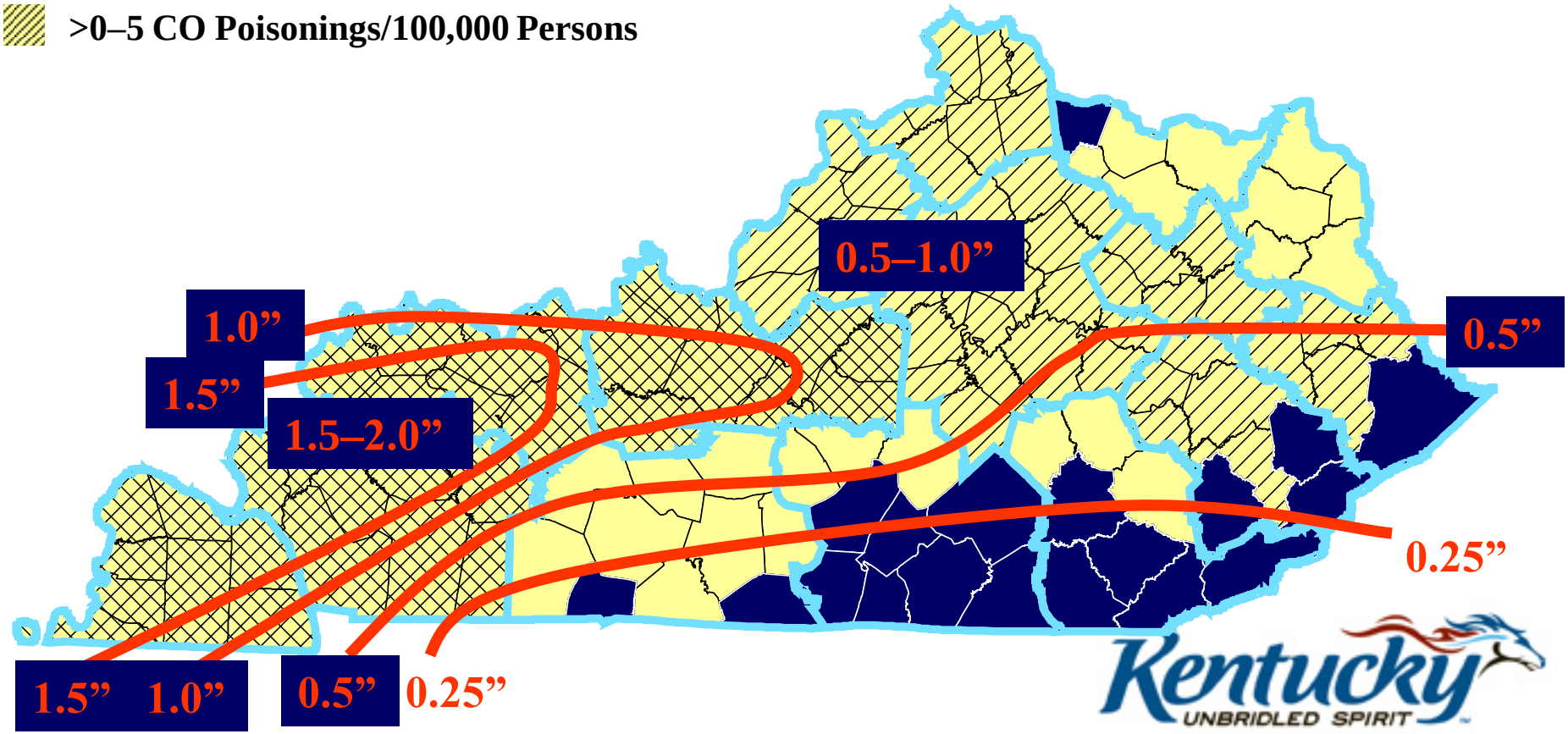
Ice Accumulation

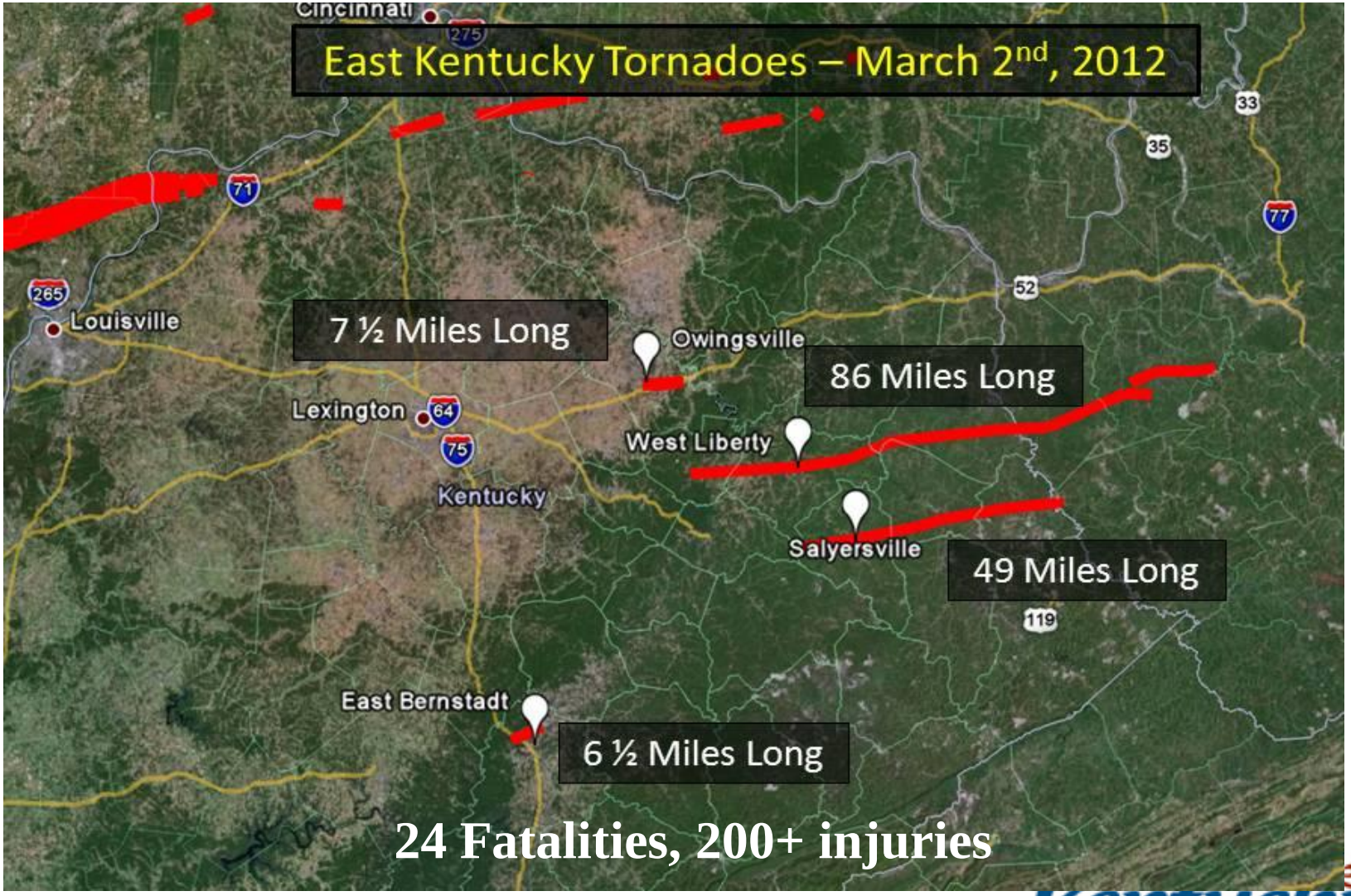
Presidential Emergency Declaration

>5 CO Poisonings/100,000 Persons

>0–5 CO Poisonings/100,000 Persons



KY Tornadoes: March 2012



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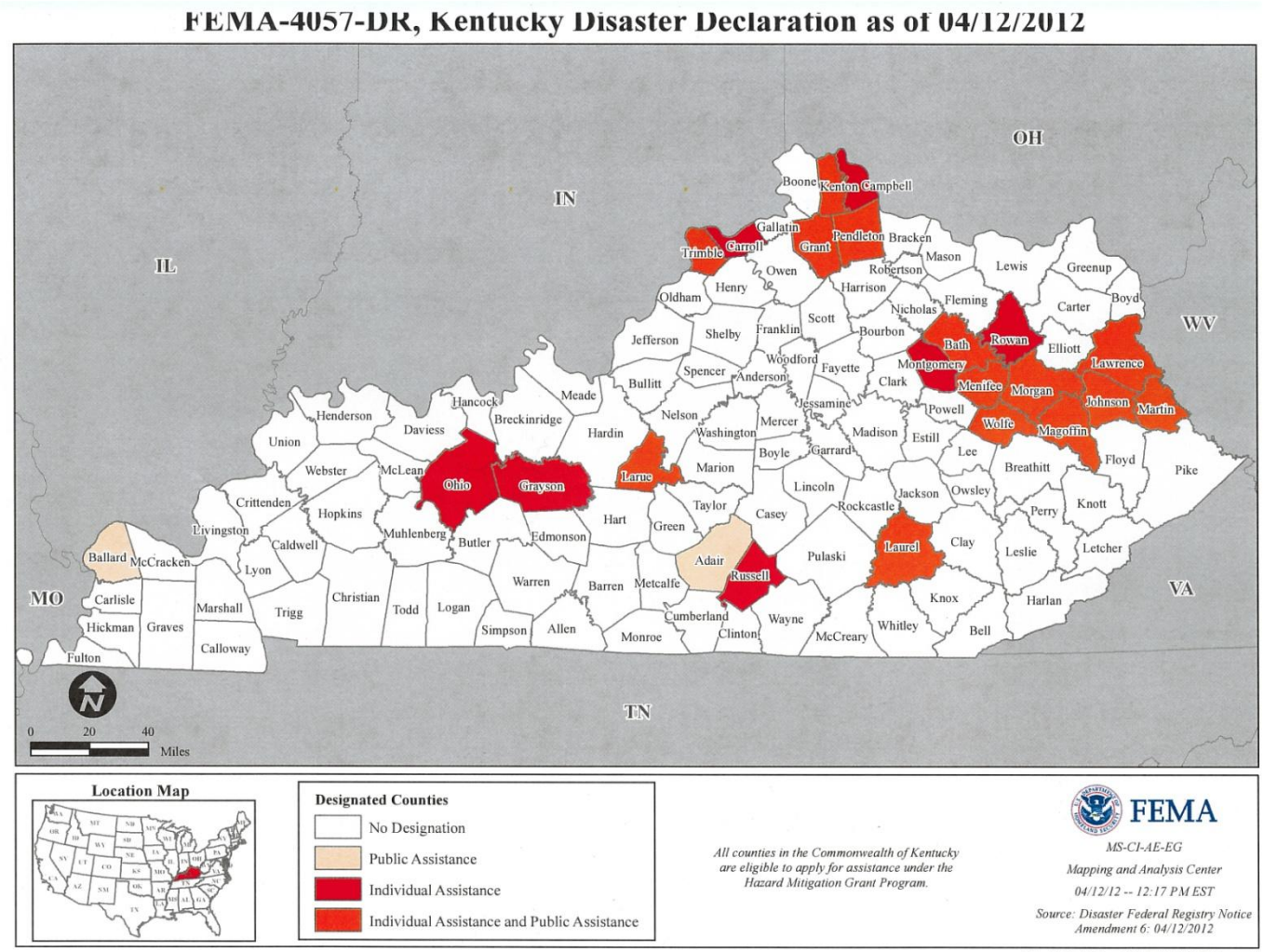
Spring 2012 Storms



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Downtown West Liberty, KY

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Fatality Management

- State Coroner/ME Response Team activated
- Hospital morgue and funeral homes without power requested refrigerated body trailer
- 22 direct fatalities + 2 related fatalities
- Mortality Data Management System –
  - Coordinated with County Coroners
  - Consistent fatality reports statewide
  - Detailed information on where victim was from and where they actually died

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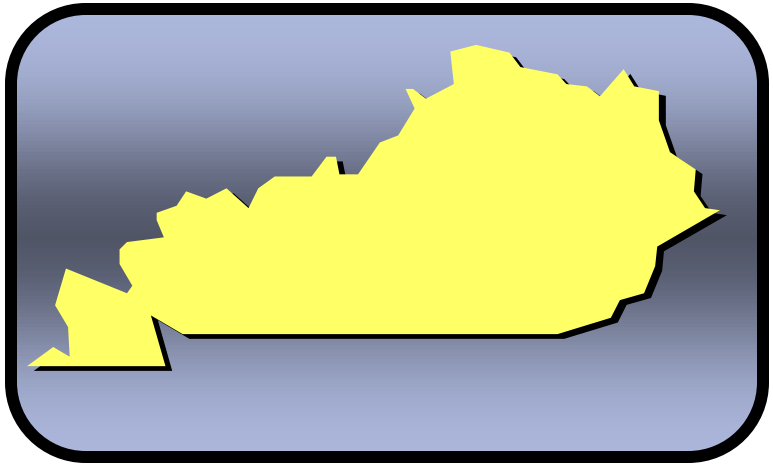
Mortality Data Management System

Deceased

Next of Kin

The mortality data management system MDMs is a secure online repository for surveillance and documentation of victims during specific incidents.



KY MDM is made up of two databases (1) Records of the deceased and (2) Antemortem information on missing and presumed dead.

The centralized decedent database can serve to quickly track the location and circumstances of mortality state-wide. Government officials and other agencies with a need-to-know can access the information online with their username and secure password.

During the recovery phase of an incident, it will serve to provide vital information to next-of-kin in a manner that may not have been possible during the actual incident.

Injury Surveillance

Disaster-related Injury Surveillance Form

Complete the form for all known injuries related to a disaster: This information should be obtained from hospitals, LTC, or shelter administration. **Please, complete one form per facility. Submit completed form daily to KY Department for Public Health via Fax (502-564-0477). For questions phone (502-564-3418).**

Part I **General information**

1.Type of disaster:

- ☐ Hurricane (name_____)
- ☐ Heat wave
- ☐ Tornado
- ☐ Winter Storm
- ☐ Technological disaster
- ☐ Flood
- ☐ Terrorism
- ☐ Earthquake
- ☐ Other (specify)_____

2. Facility type (info source): Please check one that best applies.

☐ Hospital ☐ LTC ☐ Shelter providing medical care

☐ Other (specify)_____

If Hospital or LTC: Is the facility operational?

☐ YES ☐ NO

Is the facility on Diversion?

☐ YES ☐ NO

Are there any unconscious/non-communicative patients that still need to be connected with family members?

☐ YES ☐ NO

Do you have any unidentified patients (John Smith/Jane Doe)

☐ YES ☐ NO

3. Facility:

Facility Name:_____

Street _____

County/parish_____ State_____

4. Contact person (informant) at facility:

Name_____

Phone number_____

Email Address_____

Part II **Aggregate Injury Information**

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Injury Surveillance

Part II Aggregate Injury Information

5. Total number of patients with disaster-related injuries: _____

6. Severity of Injuries Counts:

Life Threatening: _____
Serious: _____
Minor: _____
Deaths: _____

7. Number transferred to this facility _____

From: _____

8. Number transferred from this facility _____

To: _____

9. Number patients from out-of-state transported to facility _____

10. Breakdown of Mechanism or Cause of Injuries (number of patients in each category)

_____ Drowning _____ Electrocution _____Lightning _____Motor Vehicle occupant/driver
_____ Fall _____ Structural collapse _____Pedestrian/bicyclist struck by vehicle _____Firearm/gunshot
_____ Cut/struck by object/tool _____Suffocation/asphyxia
_____ Burns (flame or chemical) _____ Extreme heat (e.g., hyperthermia) _____ Extreme cold (e.g., hypothermia)
_____ Other (specify)_____
_____ Unknown cause of injury
Poisoning/toxic exposure: (If any, has facility had to activate decontamination equipment? ☐ YES ☐ NO)
_____ CO exposure _____ Ingestion of drug or substance
_____ Inhalation of other fumes/smoke, dust, gases _____ Other Poisoning (specify) _____

11. Date of report completed:

(MM/DD/YY) _____/_____/_____

Form v1.1
Rev.03/3/2012

12. Name of person submitting:

_____

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