



Syndromic Surveillance in Action: Examining ED Visits Due to Wisconsin Flooding

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Wisconsin Flooding (Aug-Sept 2018)



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- 1 Confirmed Death – Dane County
- Estimated Damages > \$232 Million
- Counties impacted: Adams, Calumet, Columbia, Crawford, Dane, Dodge, Fond du Lac, Green Lake, Iron, Jefferson, Juneau, La Crosse, Lincoln, Marquette, Monroe, Ozaukee, Richland, Sauk, Sheboygan, Vernon, and Washington
- State Executive Orders #303 (Aug 21), #306 (Aug 29), #308 (Sept 14), #310 (Oct 9), and #311 (Oct 10)
- Presidential Declaration of Disaster (Oct 18)

Wisconsin Recovery Phase

- Goal: Return community's systems and activity to normal
- Recovery includes infrastructure, economic and case management support, in collaboration with FEMA
- Crisis Counseling Assistance and Training Program (CCP) – SAMHSA
 - Available in event of presidential declaration
 - Grant application submitted by DCTS
 - Asked for assistance from DPH/OPEHC on person-impact

Person-Impact Data Options

- Hospital Discharge
 - Updated every 6 months
 - Data for timeframe currently unavailable
- Emergency Medical Services – WARDS
 - 1 month lag-time
 - September data recently available (not yet explored)
- Syndromic Surveillance – ESSENCE
 - Updated nightly
 - Rapid surveillance option



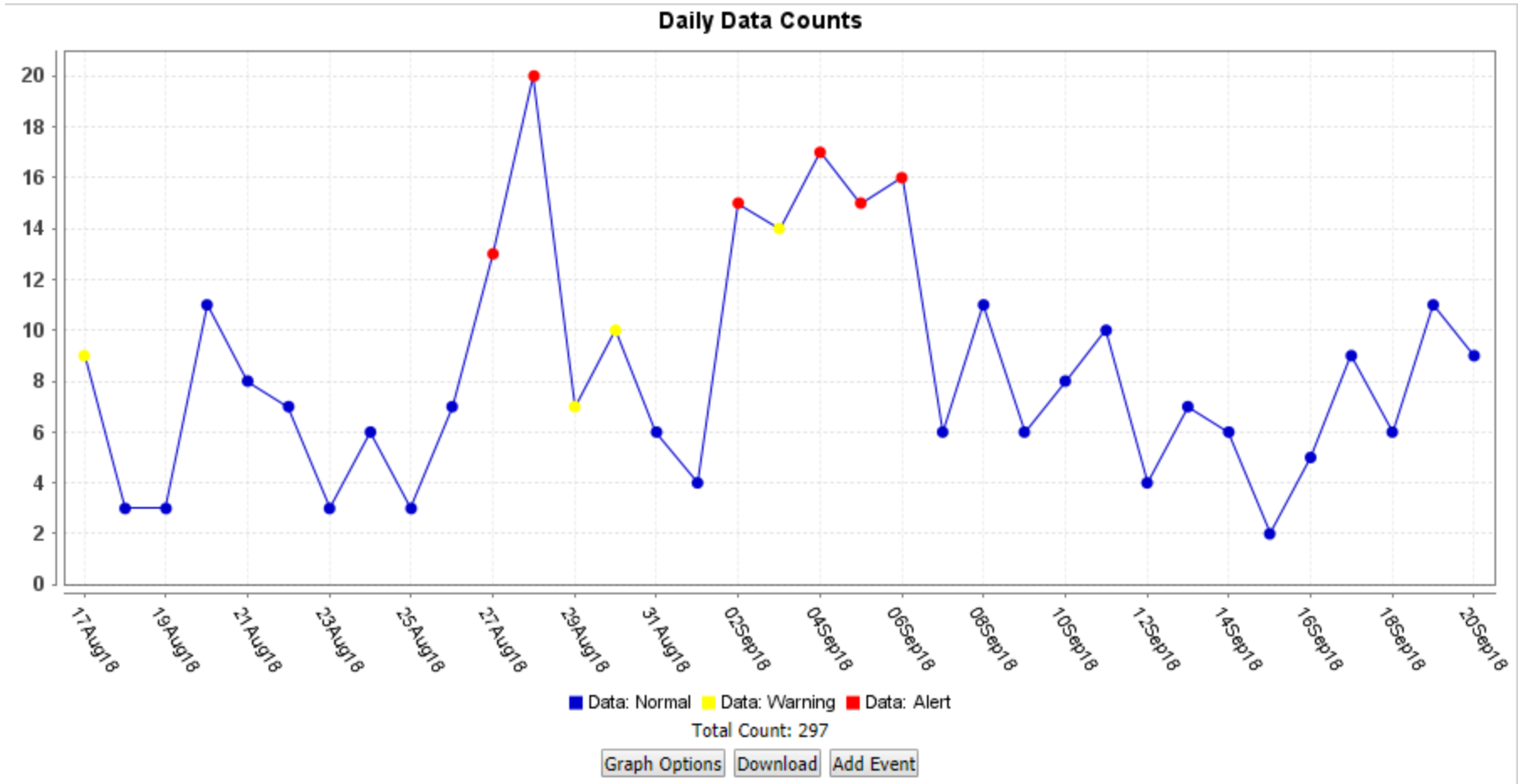
Weather/Storm Query

- **^lightning^,AND,(^bolt^,or,^shot^,or,^shoot^,or,^strike^,or,^struck^,or,^hit^,or,^flash^,or,^heard^,or,^storm^,),or,^[.:/ [COMMA].:/]^,or,^[[COMMA].:/]raining[[COMMA].:/]^,or,^[[COMMA].:/]rained[[COMMA].:/]^,or,^[[COMMA].:/]rainy[[COMMA].:/]^,or,rain[[COMMA].:/]^,or,raining[[COMMA].:/]^,or,rained[[COMMA].:/]^,or,rainy[[COMMA].:/]^,or,^[[COMMA].:/]rain,or,^[[COMMA].:/]raining,or,^[[COMMA].:/]rained,or,^[[COMMA].:/]rainy,or,^storm[[COMMA].:/]^,andnot,(^thyr^ostorm^,),or,^stormi^,or,^stormy^,or,hail[[COMMA].:/]^,or,^[[COMMA].:/]hail[[COMMA].:/]^,or,^[[COMMA].:/]hail,or,hailed[[COMMA].:/]^,or,^[[COMMA].:/]hailed[[COMMA].:/]^,or,^[[COMMA].:/]hailing[[COMMA].:/]^,or,^[[COMMA].:/]hailing,or,hailsto[[COMMA].:/]^,or,^[[COMMA].:/]hailsto,or,^torna^,or,^[[COMMA].:/]wind[[COMMA].:/]^,or,^[[COMMA].:/]windy[[COMMA].:/]^,or,^[[COMMA].:/]gust[[COMMA].:/]^,or,wind[[COMMA].:/]^,or,windy[[COMMA].:/]^,or,gust[[COMMA].:/]^,or,^[[COMMA].:/]wind,or,^[[COMMA].:/]windy,or,^[[COMMA].:/]gust,or,^blow shut^,or,^blew shut^,or,^flood^,or,^blizzard^,or,^[[COMMA].:/]snow^,or,snow^,or,^sleet^,or,^Weather^,or,^X3[0-9]^,or,^W00^,or,^T75.0^,or,^T750^**
- *Applied query to Chief Complaint (CC), Discharge Diagnosis (DD), and Triage Notes Orig*

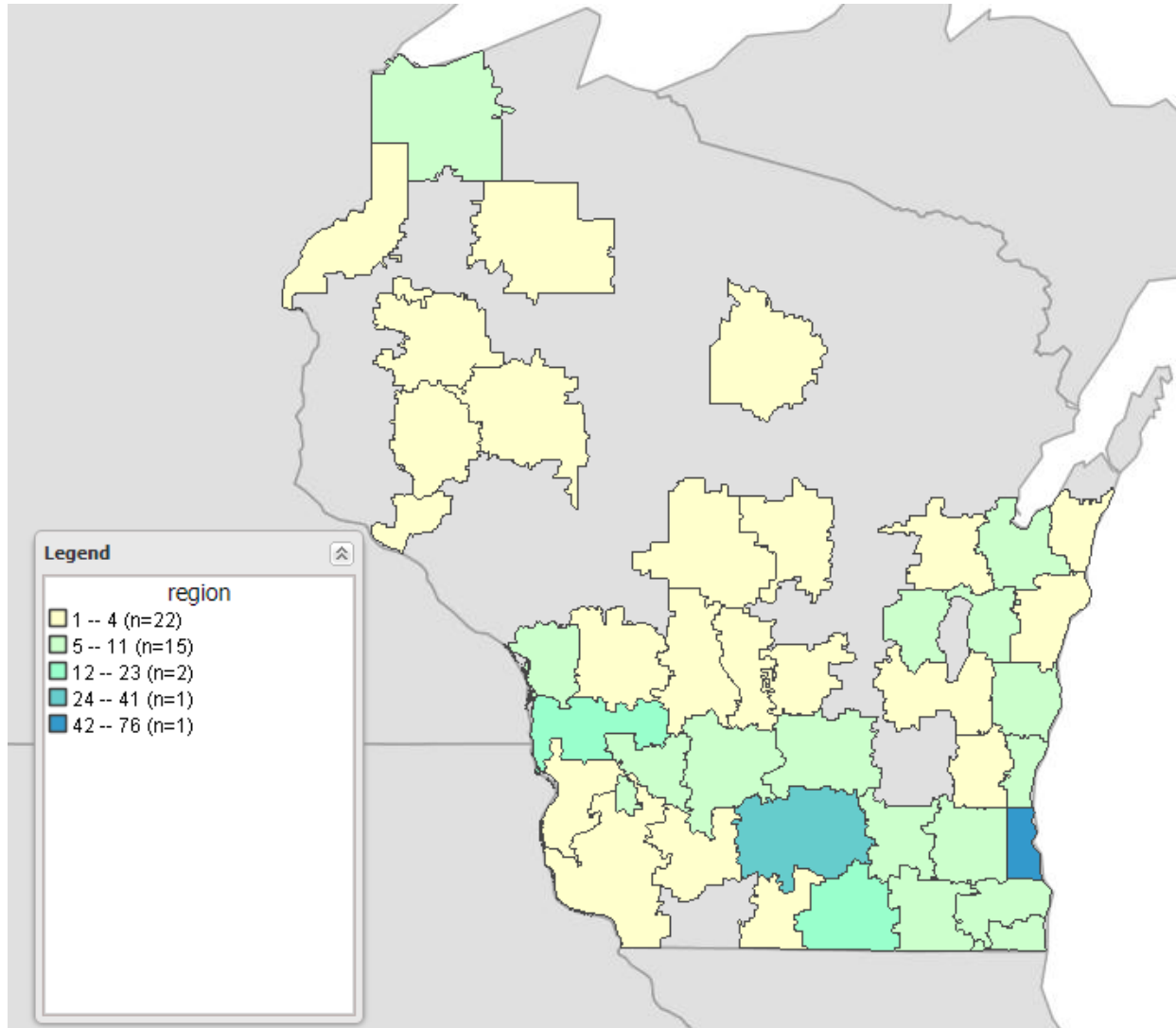
Weather/Storm Query

- Period of analysis:
August 17, 2018 – September 20, 2018
- In total, **297** ED visit cases were identified

“Weather/Storm” ED Visits Time Series



“Weather/Storm” ED Visit Locations



Case Screening Process Examples

- Screened-in Examples
 - “Patient was camping in the woods when he was consumed by flood waters. Wife reports that the creek overflowed and they were holding onto trees for approximately 30 minutes until help could arrive. Patient was submerged in waist deep water for 30 minutes.”
 - “Pt presents with mother with c/o of diarrhea vomiting last on Tuesday evening congestion at night. Mother reports pt was in flood waters in Viola two days ago as well.”
 - “Around 1130 was walking down basement steps - due to flooding the structure was weak - stairs fell away and patient fell down with the stairs.”
- Possible, but Screened-Out Examples
 - “Reports she had a syncopal episode at the casino. States she feels cold because she was standing in the rain because the cab driver does not take debit cards.”
 - “States being worried about all the rain and flooding”
- Definite Screen-Out Examples
 - “No one else in the house is sick and patient has not been traveling out of the country. Nor does patient live or work in the local flooded areas”
 - “Patient started on Azithromycin Wednesday by Doctor Flood for cough.”

Case Screening Results / Limitations

- Preliminary estimate: **58** of the original **297** ED visit cases contained accounts of illness, injury/trauma, or behavioral/mental health issues due to flood, wind, or rain
- Limitations
 - Need for more details to confirm cases due to weather – compare to hospital discharge data
 - Missing data fields and limited subsets of populated data
 - At present, only 84% of hospitals submit to BioSense platform – some counties affected have limited coverage
 - Injuries/illnesses for which patients did not seek care in an emergency department/hospital setting

Take Home

- Syndromic surveillance allows for rapid detection of emergency care events surrounding a health crisis of interest
- Can serve as an initial point of detection for public health interventions or further analysis using more rich data sources
 - Need for regular refinement of text mining queries and review of populated data for follow-up