

Emergency Department- based Syndromic Surveillance: Outbreak Detection

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Background

- **Florida Department of Health**
 - **Central offices located in Tallahassee**
 - Bureau of Epidemiology
 - **67 County Health Departments (CHDs)**
 - 67 epidemiology sections/departments
 - Reportable disease/conditions follow-up
 - Syndromic surveillance
 - **Bureau of Epidemiology**
 - Advisory role to CHDs
 - Manage data systems
 - Routine analysis of data

Background

- **Earlier Regional Implementations**
 - Miami-Dade County Region (ESSENCE)
 - Hillsborough County Region (STARS)
 - Duval County Region (BioDefend)
- **State Level Implementation**
 - State syndromic surveillance workgroup
 - Invested resources in 2006
 - Implemented ESSENCE in summer of 2007
 - As of 5/2009: 109 hospitals sending data every day
 - Voluntary participation
 - Represents > 50% of all ED visits in Florida

Routine Monitoring

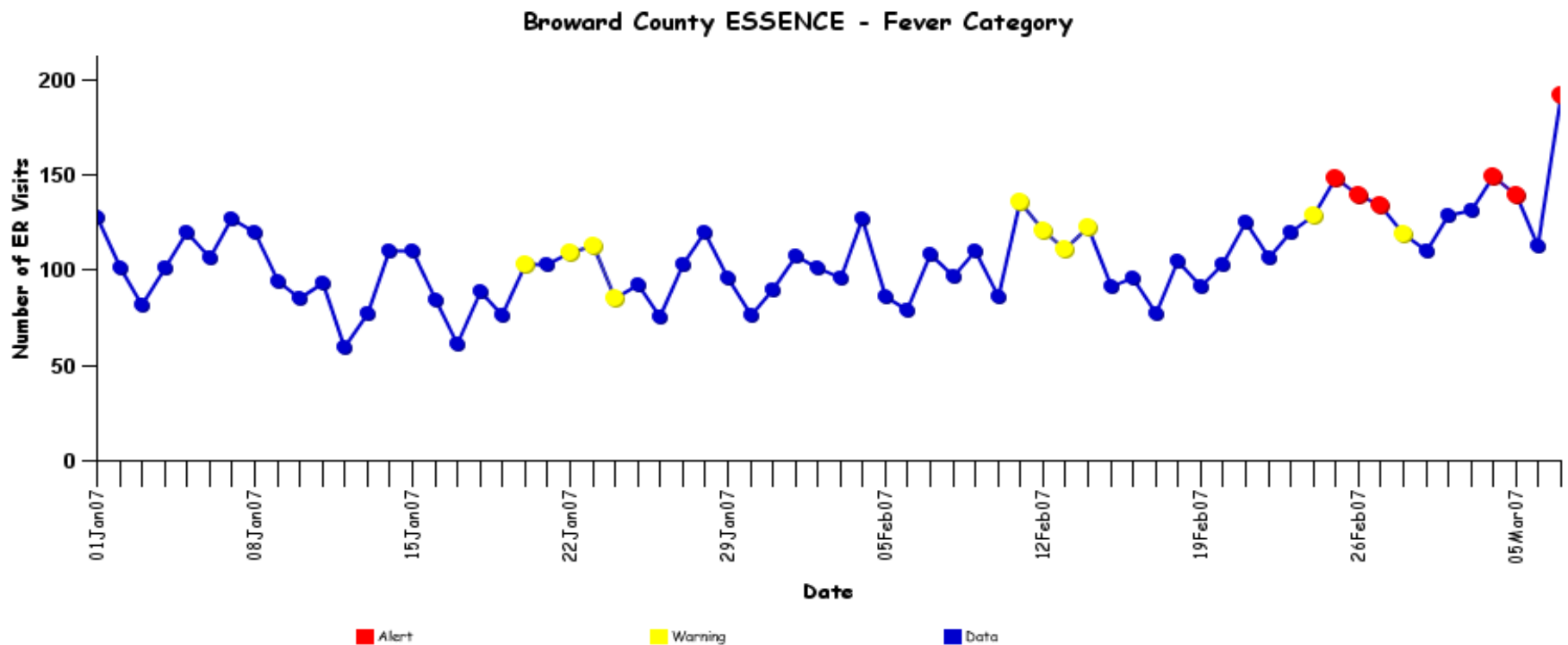
- **Statewide monitoring**
 - 12,000-14,000 ER visits per day
 - State level - daily review by one analyst
 - CHD trainings → improve data analysis at local level
- **County-level monitoring**
 - 28 counties with reporting hospitals
 - No. of hospitals reporting per county ranges from 1–16
 - County-level monitoring process varies widely
 - Perceived value of the data
 - Resources, hospital relationships, and local protocols
 - Level of training

Expectations of ED-based Syndromic Surveillance

- What do we expect from ED-based syndromic surveillance?
 - Situational awareness
 - Detect outbreaks
 - Large seasonal outbreaks (ILI, norovirus)?
 - Smaller clusters of potentially related patients?
- How can we better use existing variables in ED data to improve outbreak detection?

Example 1: Large Outbreak (exercise)

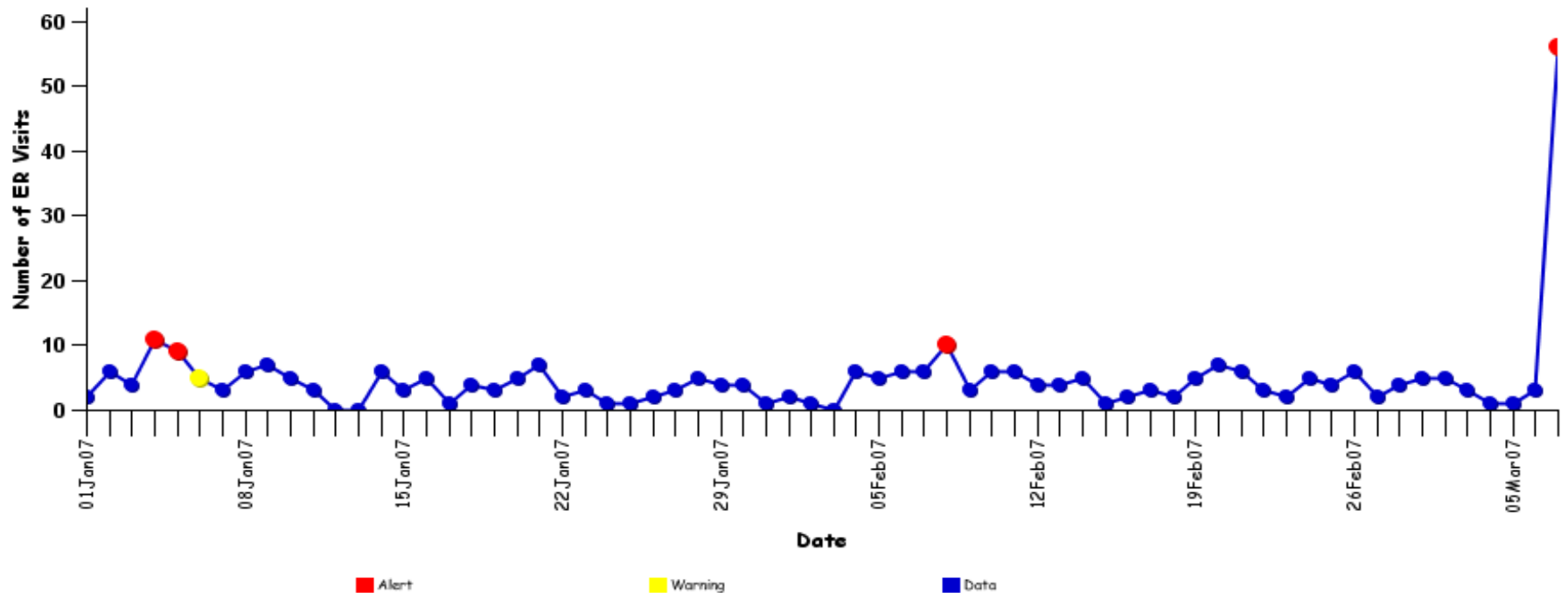
■ South Florida Mass Migration Exercise: Broward County



Example 1: Large Outbreak (exercise)

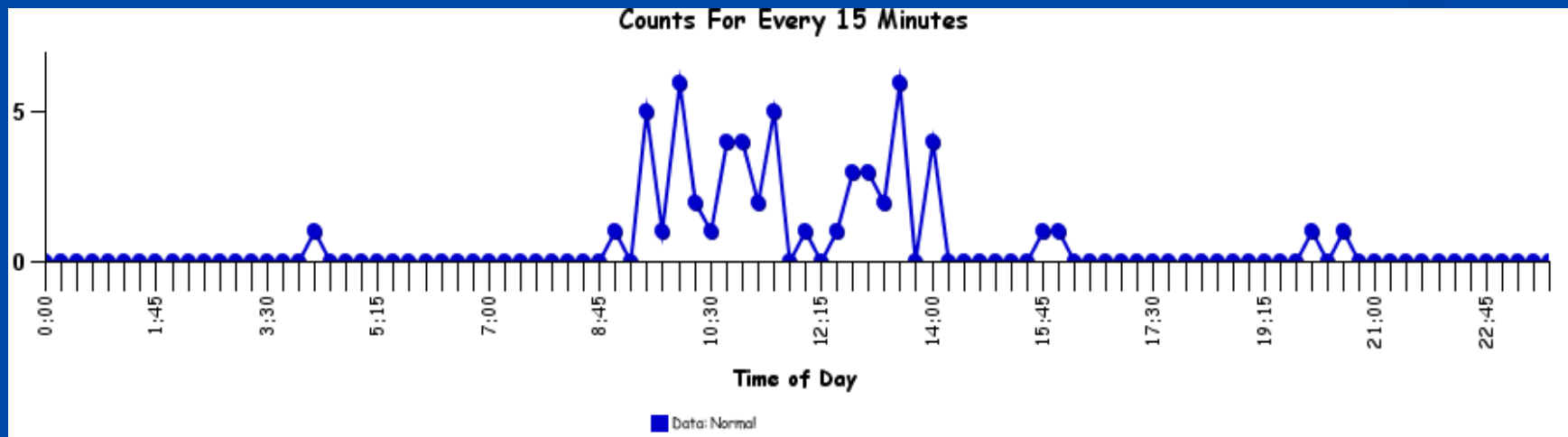
■ South Florida Mass Migration Exercise: Broward County

Broward County ESSENCE - Chills Subcategory



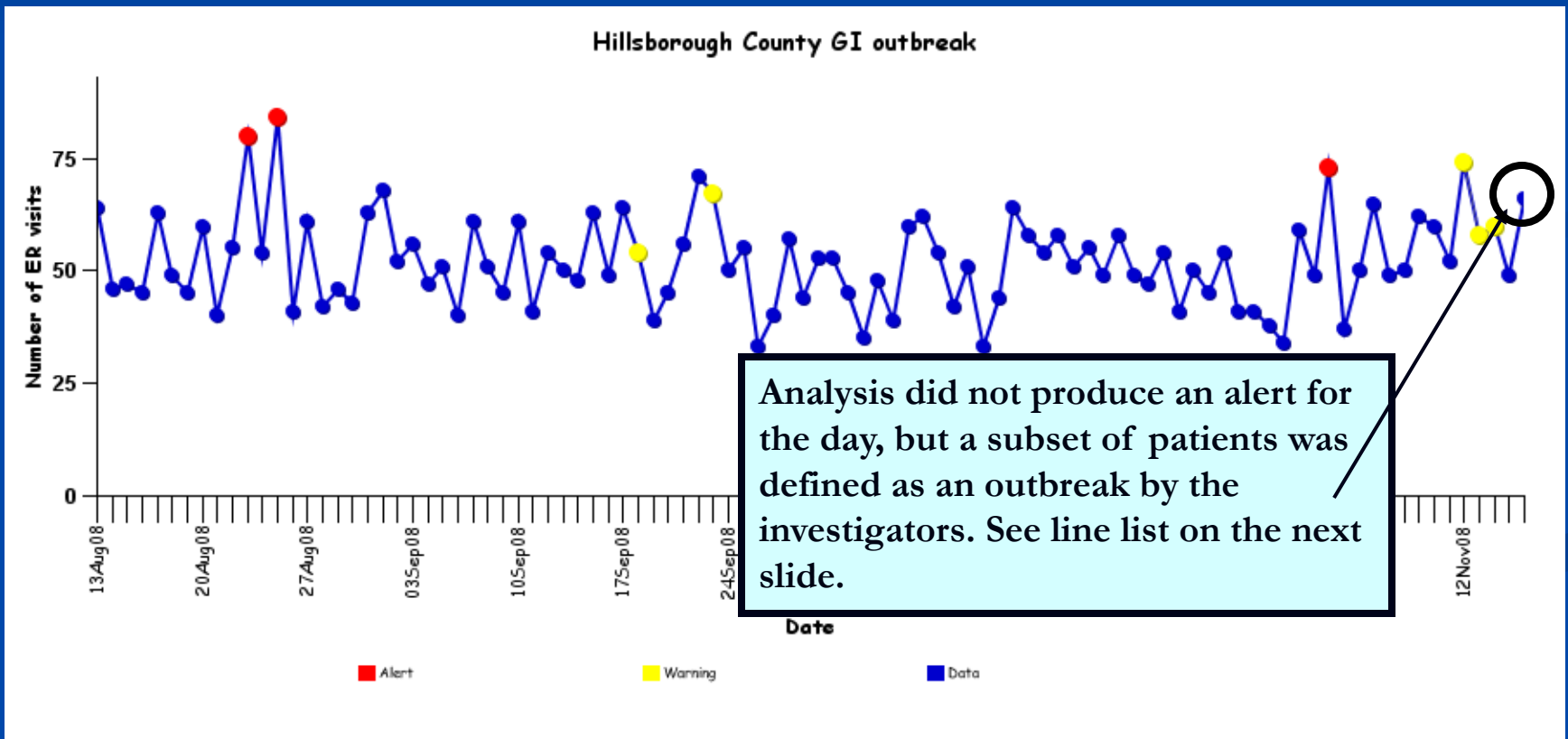
Example 1: Large Outbreak (exercise)

■ South Florida Mass Migration Exercise: Broward County



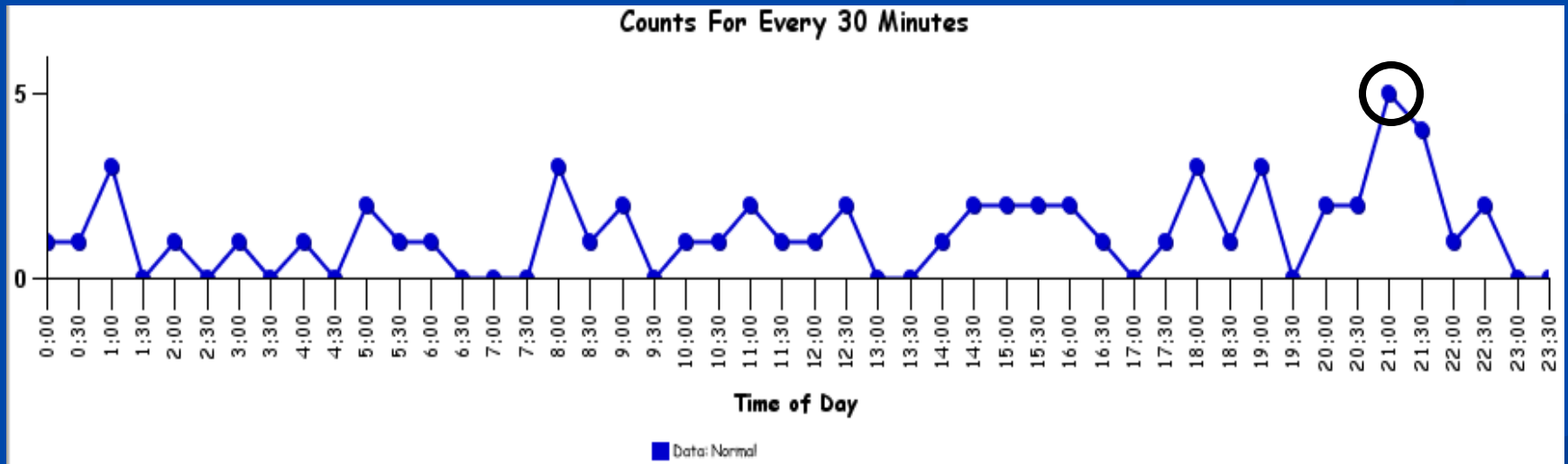
Example 2: Small Outbreak

■ Hillsborough County GI outbreak



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■ Hillsborough County GI outbreak



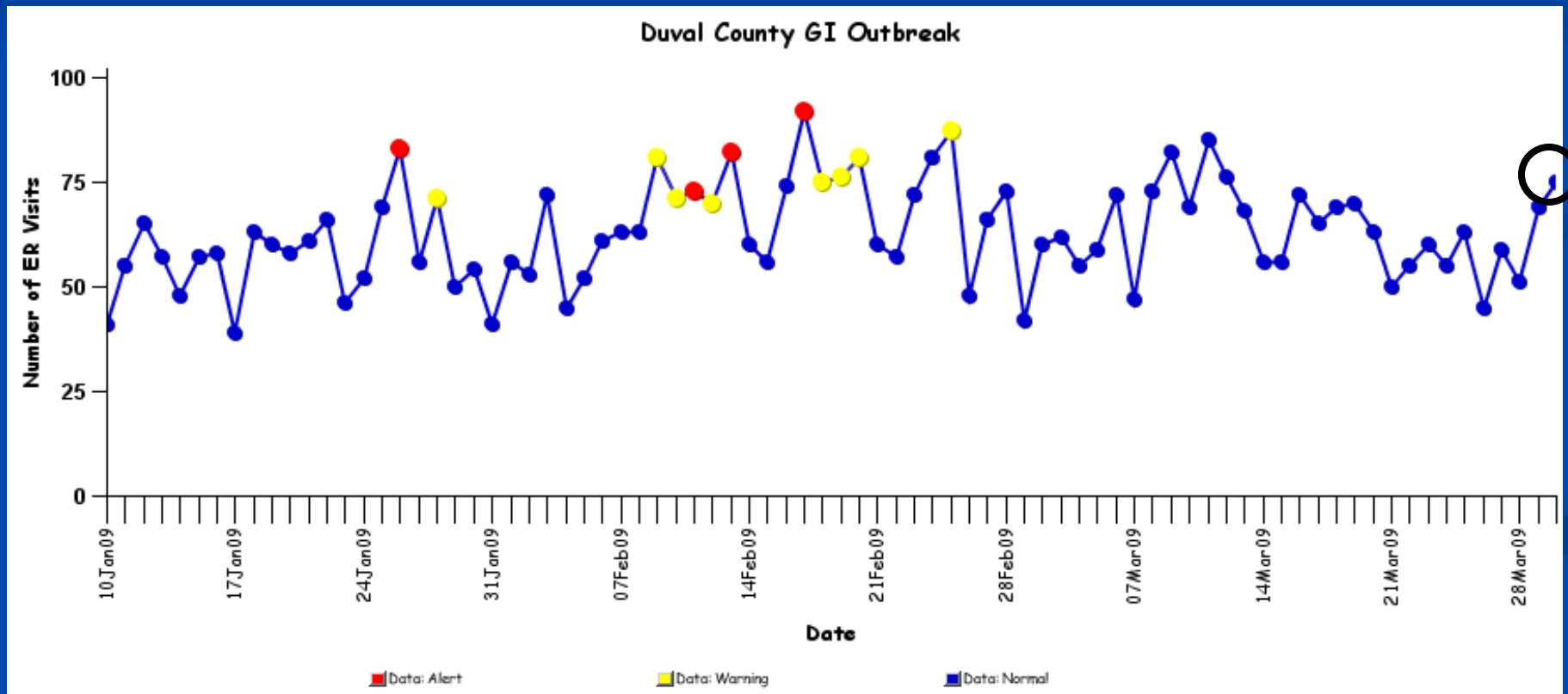
Example 2: Small Outbreak

■ Hillsborough County GI outbreak

Date	Time	Hospital	Zip	County	Age	Sex	Symptoms
11/16/2008	7:05 PM	Hospital E		Hillsborough	05-19	F	FEVER/V
11/16/2008	7:18 PM	Hospital C		Hillsborough	35-54	F	MID ABD PAIN STARTED FRIDAY.N/V.
11/16/2008	7:25 PM	Hospital F		Hillsborough	00-04	M	VOMITING/ABD DISTENTION
11/16/2008	8:05 PM	Hospital F		Hillsborough	00-04	M	FEVER/VOMITING/NOT EATING
11/16/2008	8:11 PM	Hospital D		Hillsborough	00-04	F	VOMITING X 2DAYSFEVERFU
11/16/2008	8:36 PM	Hospital E		Hillsborough	00-04	M	VOMITING COUGH
11/16/2008	8:38 PM	Hospital D		Hillsborough	35-54	F	VOMITINGABD.PN.
11/16/2008	9:06 PM	Hospital C	Zip A	Hillsborough	05-19	M	VOMITING AND DIARRHEA
11/16/2008	9:09 PM	Hospital I		Hillsborough	20-34	F	N/V
11/16/2008	9:16 PM	Hospital C	Zip A	Hillsborough	05-19	M	VOMITING AND DIARRHEA
11/16/2008	9:27 PM	Hospital C	Zip A	Hillsborough	05-19	F	VOMITING AND DIARRHEA
11/16/2008	9:27 PM	Hospital C	Zip B	Hillsborough	05-19	F	VOMITING AND DIARRHEA
11/16/2008	9:30 PM	Hospital C	Zip B	Hillsborough	05-19	F	VOMITING AND DIARRHEA
11/16/2008	9:32 PM	Hospital I		Hillsborough	35-54	F	N/V/ABD PAIN
11/16/2008	9:35 PM	Hospital C	Zip B	Hillsborough	05-19	M	VOMITING AND DIARRHEA
11/16/2008	9:38 PM	Hospital I		Hillsborough	55-74	M	N/V/D
11/16/2008	10:10 PM	Hospital I		Hillsborough	00-04	F	V/FEVER X 1 DAY
11/16/2008	10:42 PM	Hospital E		Hillsborough	05-19	F	VOMITING ABD PAIN
11/16/2008	10:47 PM	Hospital I		Hillsborough	05-19	F	MIGRAINE/VOMITING/EARAC HE
11/16/2008		Hospital A		Hillsborough	20-34	F	VOMITING DIZZY
11/16/2008		Hospital A		Hillsborough	55-74	M	WEAKNESS DIARRHEA
11/16/2008		Hospital G		Hillsborough	05-19	M	CHEST PAIN FEVERVOMITTING

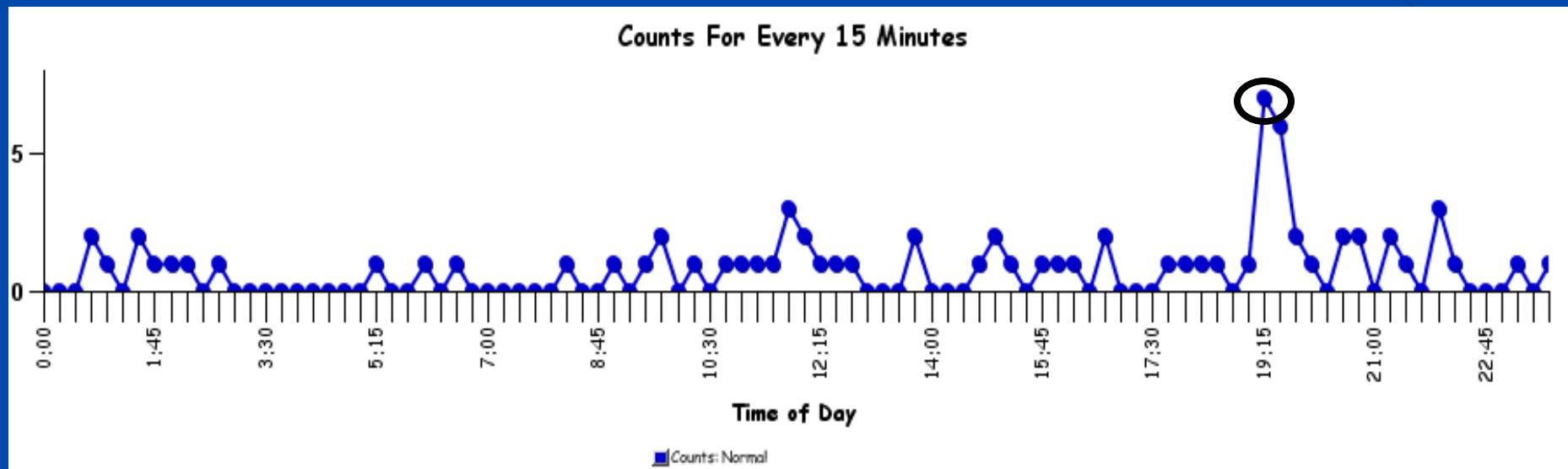
Example 3: Small Outbreak

■ Duval County GI Outbreak



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■ Duval County GI Outbreak

3/1/2009	4:05 PM	Hospital G	32244	County A	35-54	45	Female	NAUSEA,LIGHT HEADED,DIZZY
3/1/2009	4:26 PM	Hospital A	32220	County A	35-54	39	Female	NAUSEA,VOMITING SINCE THURS
3/1/2009	4:52 PM	Hospital A	32210	County A	00-04	2	Male	VOMIT/DIAR/ONT
3/1/2009	4:57 PM	Hospital A	32257	County A	00-04	1	Male	VOMIT,FEVER
3/1/2009	5:49 PM	Hospital C	32206	County A	55-74	65	Female	ABD PN,N/V,COUGH
3/1/2009	6:00 PM	Hospital G	32244	County A	5-19	18	Female	GASTROENTERITIS, INTRACTABLE NAUSEA AND VOMITING
3/1/2009	6:25 PM	Hospital E	32211	County A	75+	83	Male	GEN WEAKNESS N/V
3/1/2009	6:30 PM	Hospital D	32222	County A	5-19	19	Male	VOMITING STOMACHACHE
3/1/2009	7:10 PM	Hospital E	32218	County A	00-04	1	Male	DIARRHEA X 4 DAYS
3/1/2009	7:16 PM	Hospital C	32226	County A	35-54	44	Female	ABD PAIN, N/V/D
3/1/2009	7:18 PM	Hospital C	32226	County A	5-19	9	Female	ABD PAIN, N/V/D
3/1/2009	7:20 PM	Hospital C	32276	County A	00-04	3	Female	ABD PAIN, N/V/D
3/1/2009	7:21 PM	Hospital C	32276	County A	20-34	32	Female	ABD. PAIN, N/V/D, FOOD POISONING
3/1/2009	7:22 PM	Hospital B	32216	County A	20-34	20	Female	n/w/ d since a.m.
3/1/2009	7:25 PM	Hospital F	32216	County A	35-54	48	Male	TERMINAL ILEITIS,LEUKOCYTOSIS,VOMITING/DIARRHEA
3/1/2009	7:28 PM	Hospital G	32208	County A	20-34	22	Female	HA.NAUSEA,STOMACH CRAMPS
3/1/2009	7:30 PM	Hospital C	32246	County A	35-54	49	Female	DIARRHEA. WEAKNESS

Opportunity

- Develop additional analyses that:
 - Look for clustering by the time the patients arrive at the ED.
 - By hospital
 - By patient zip code
- End result could include:
 - Detection of smaller outbreaks
 - Quantification of the “epi-eyeball..”

Questions?

- Contact information:
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