

Real Time Surveillance for Special Events

Master of Public Health – Epidemiology

Internship Presentation

Kyle McKeown

Overview

- Surveillance Definition and Introduction
- Special Event Surveillance
- Objectives and Goals
- Project Design
- SOP Walkthrough
- Special Event Results
- Challenges Encountered
- Insights and Improvements
- Conclusions

Surveillance Definition and Introduction

- Surveillance:
- “ongoing systematic collection(s) and analysis of data and the provision of information which leads to action being taken to prevent and control a disease...” (Medterms, 2004)
- Active Surveillance
 - Examples: WNV mosquito sampling, March-October
- Passive Surveillance
 - Examples: Influenza reporting.

Why Special Event Surveillance?

- Potential for large-scale, unexpected outbreak
 - Multi-day events, harder to track
 - Single common event amongst otherwise spread-out population
- Agents of interest:
 - Foodborne toxins – *B. Cereus*, *C. Perfringens* Type B, *Shigella* (stx2)
 - Dose-specific, acts within single event/day
 - Transmissible – Anthrax, *C. botulinum*



Special Event Surveillance

- Examples:
 - G8 Convention – 4 days of control monitoring for baseline incidence performed prior to convention start.
 - 2002 Winter Olympic Games – No control period
 - RODS (Real-time Outbreak and Disease Surveillance) used to monitor spikes in incidence for a population > 2 million.



Objectives and Goals

- Primary: Develop Standard Operating Procedures for real-time special event surveillance operable by Maricopa County Department of Public Health staff.
- Secondary: Supplement SOP with venue-specific Field Operation Guides (FOGs)
- Secondary: Develop symptomology incidence baselines for detection of potential outbreaks during the special event.

History of SpES in Maricopa County

- Super Bowl XLII
- Fiesta Bowl 2009
- NBA All-Star Game
- Obama Convocation at ASU

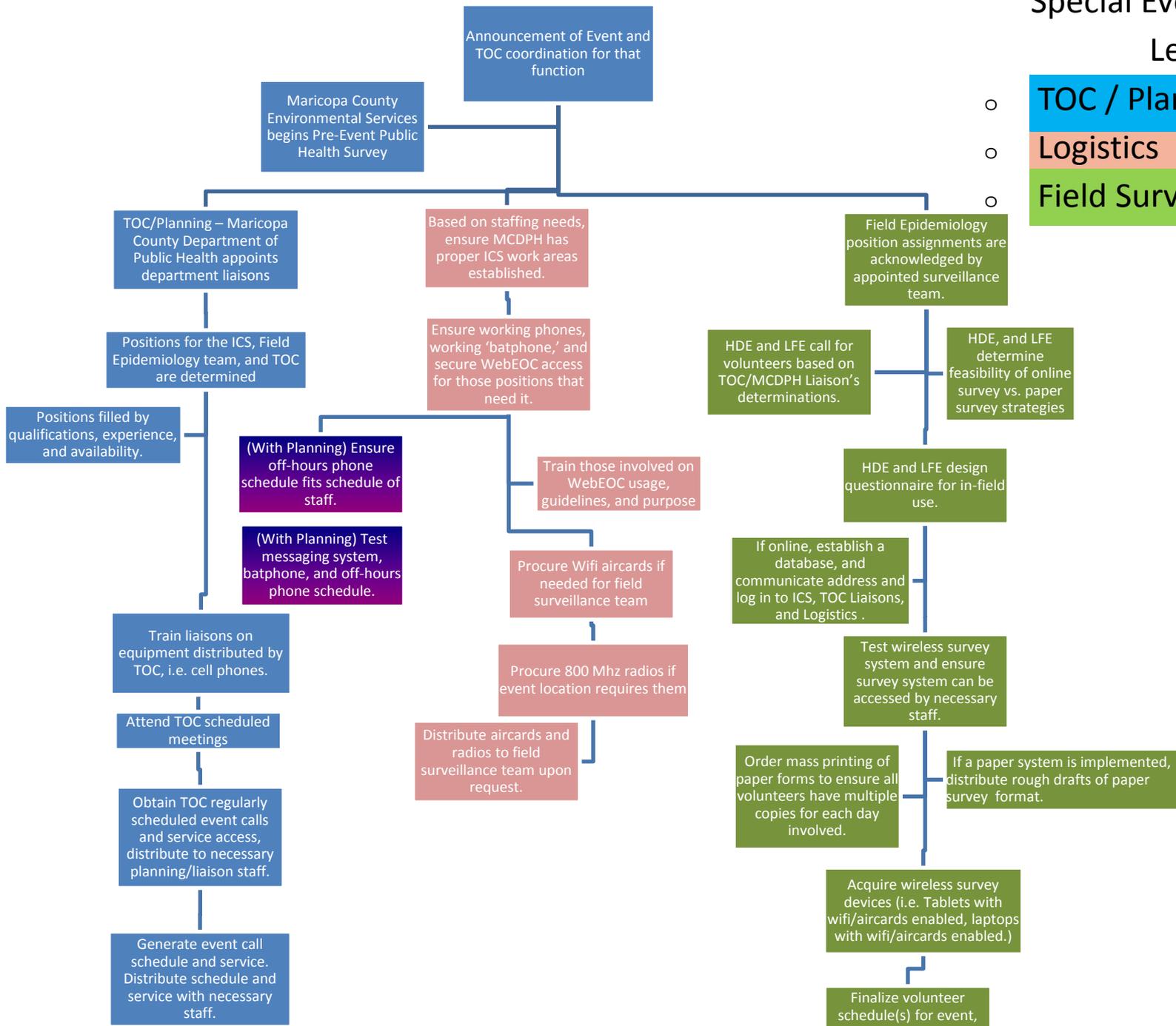
Project Design

- Test the SOP drafted prior to 2011 MLB All-Star Special Event
 - Guidelines in SOP were followed by current SAFER students to conduct special event surveillance for five days.
 - After Action Report filed with MCDPH and included, MCDPH staff, Field Epidemiology Volunteers, and TOC liaisons.
- Revisions to SOP drafted and reviewed based on MLB All-Star event
 - MCDPH prepared for 2012 Glendale Fiesta Bowl
 - Different agencies than with MLB All-Star Event, no TOC.

Special Event Flowchart

Legend

- TOC / Planning
- Logistics
- Field Surveillance



Flowchart Example

If online, establish a database, and communicate address and log in to ICS, TOC Liaisons, and Logistics .

- Each step refers to specific location in SOP.

- Main issues or steps addressed

Distribute aircards and radios to field surveillance team upon request.

- Flowchart accounts for wireless and paper survey formats.

- Color coordinated by MCDPH branch, or combination of branches.

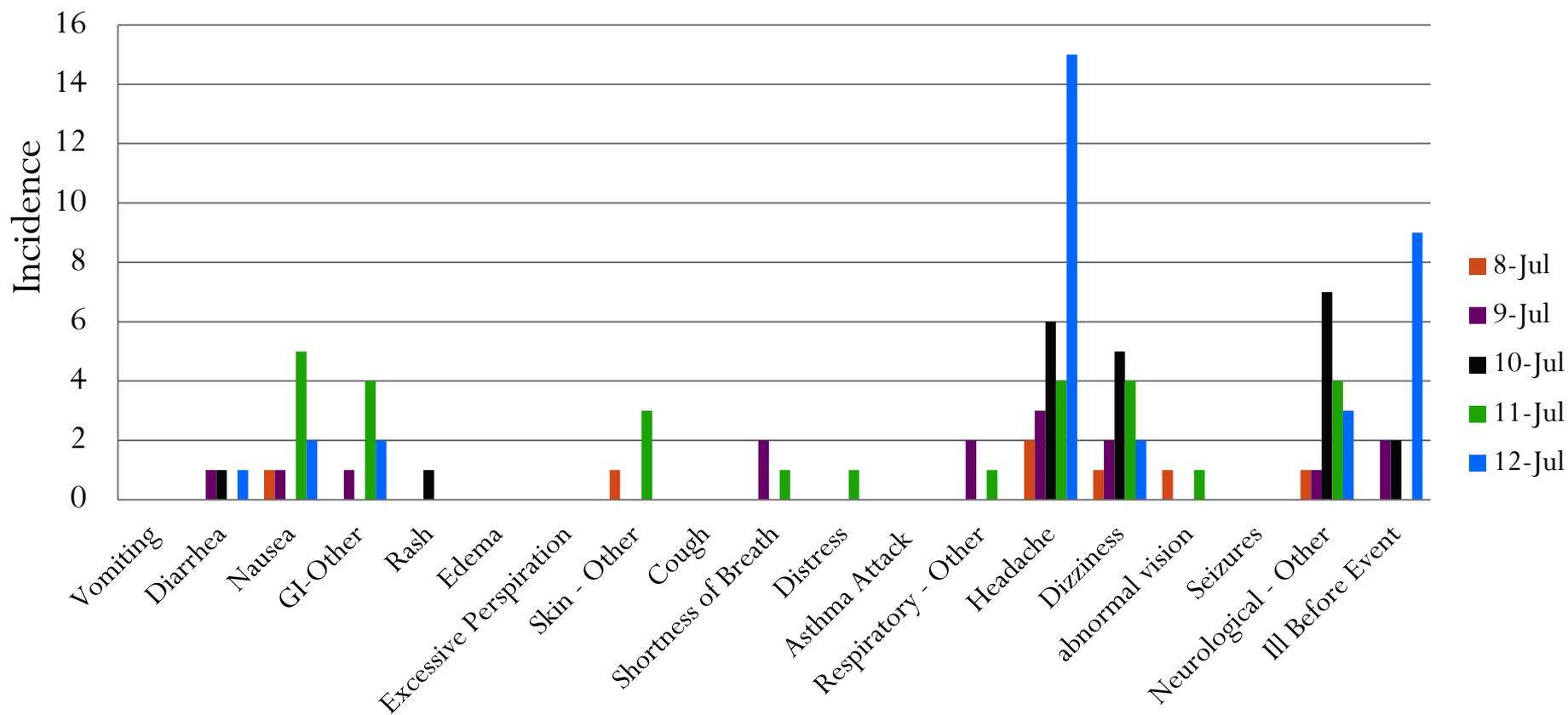
(With Planning) Ensure off-hours phone schedule fits schedule of staff.

Event Conditions

- 2011 MLB All-Star Event
 - Event began at Phoenix Convention Center at 9am, continued until 10pm at Chase Field.
 - Multi-day event, different attractions each day, some repeat patrons.
- 2012 Fiesta Bowl
 - Tail-gating outside began 10am at earliest, game began 6 pm.
- From literature, assumed that special event sample isn't representative of local population (less women, children, and elderly.)

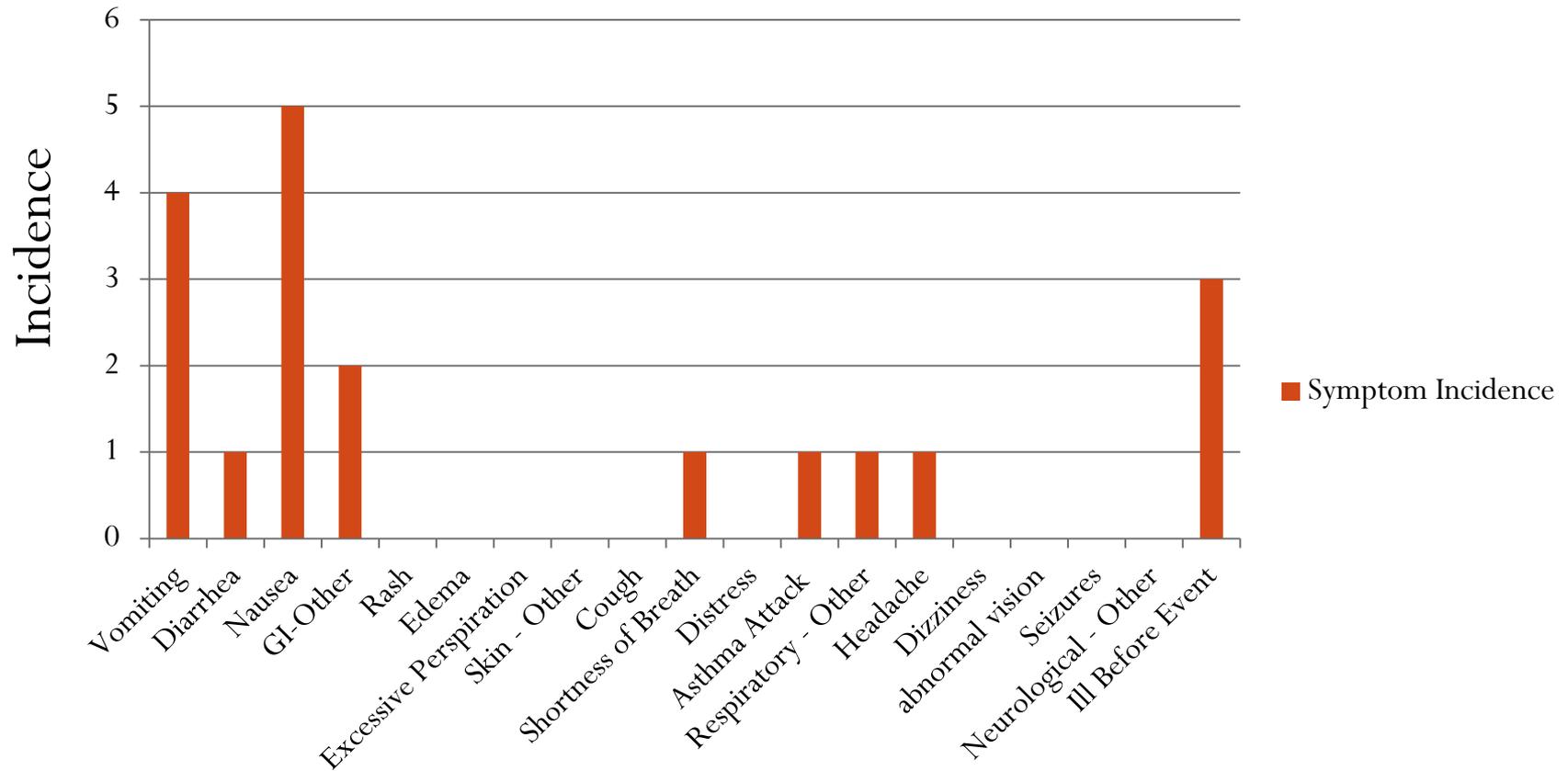
2011 MLB All-Star Results

2011 MLB All-Star Event Symptom Incidence by Day



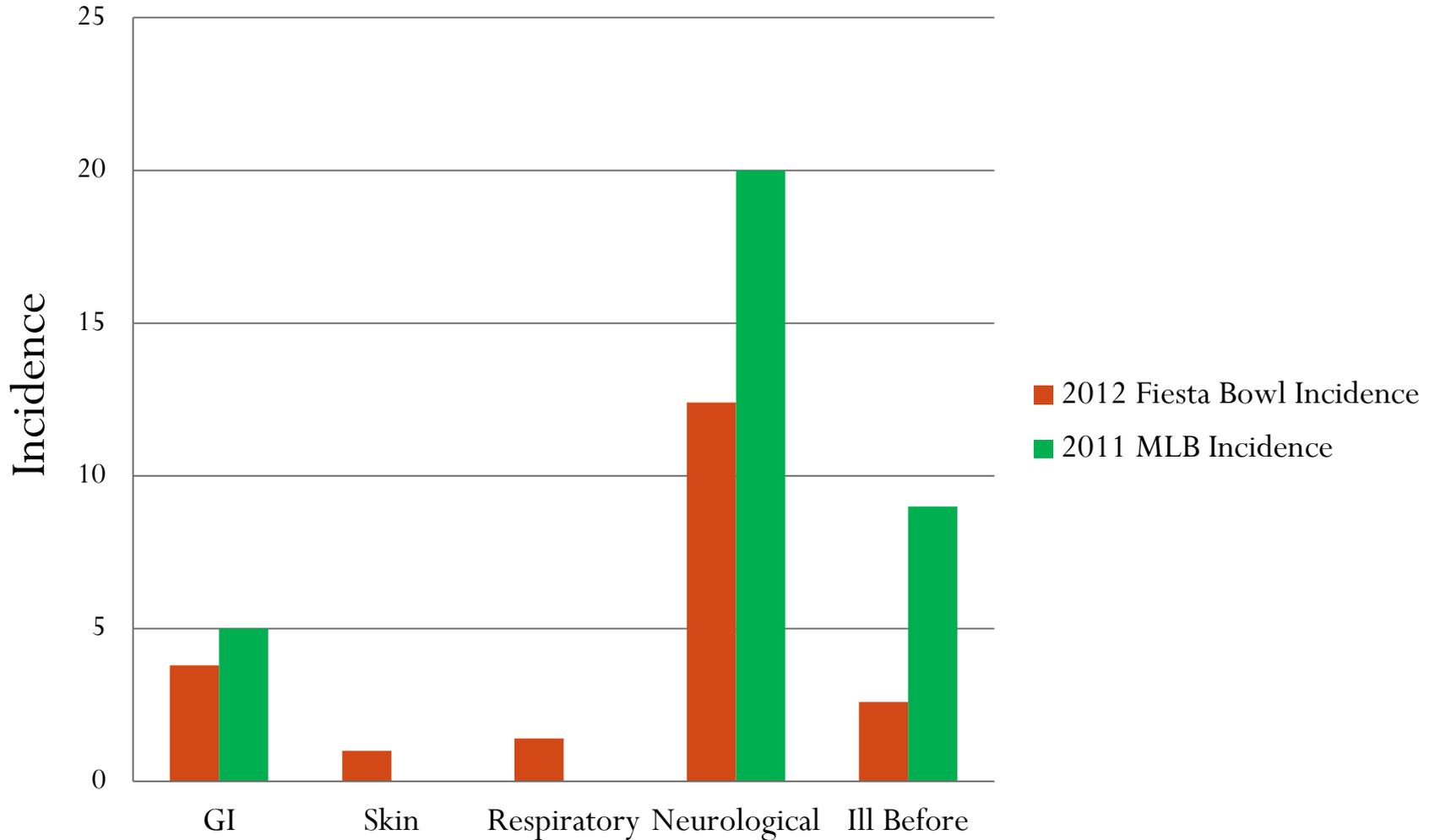
2012 Fiesta Bowl Results

2012 Fiesta Bowl Symptom Incidence



Symptomology Comparison by Incidence

Event Symptom Category Incidence



Challenges Encountered

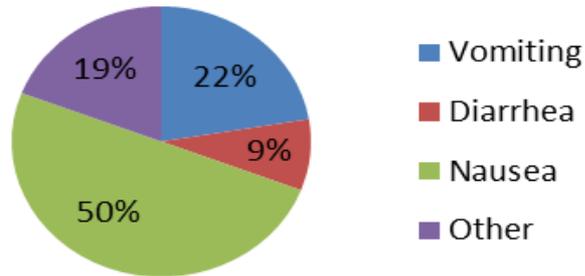
- Loss of communications during peak usage of the event.
 - Backup wireless connections (Wifi, 3G, 4G networks,) are necessary in case of recurrence.
- Control surveys couldn't be administered randomly to event patrons.
- Capturing demographics of patrons

Next Steps

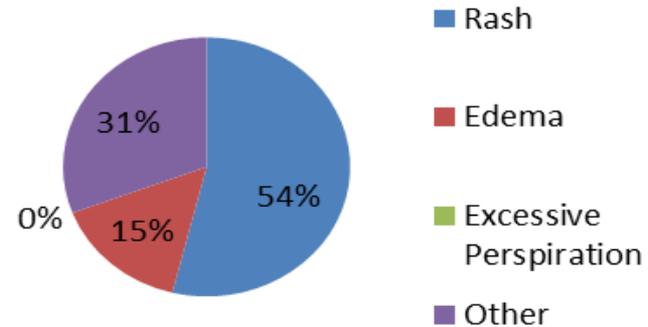
- Use data from all 5 events to calculate baselines for Special Events based on number of people, time of year and venue
- Use baseline values to predict number of syndromic complaints at future events

All Events Combined

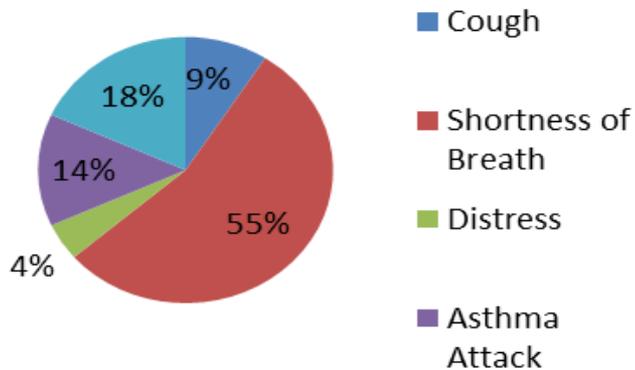
Gastrointestinal Symptoms



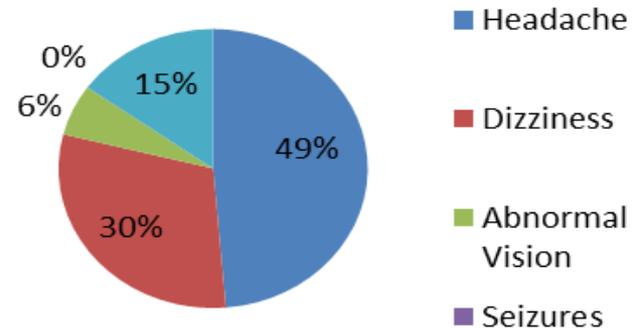
Skin Irritation Symptoms



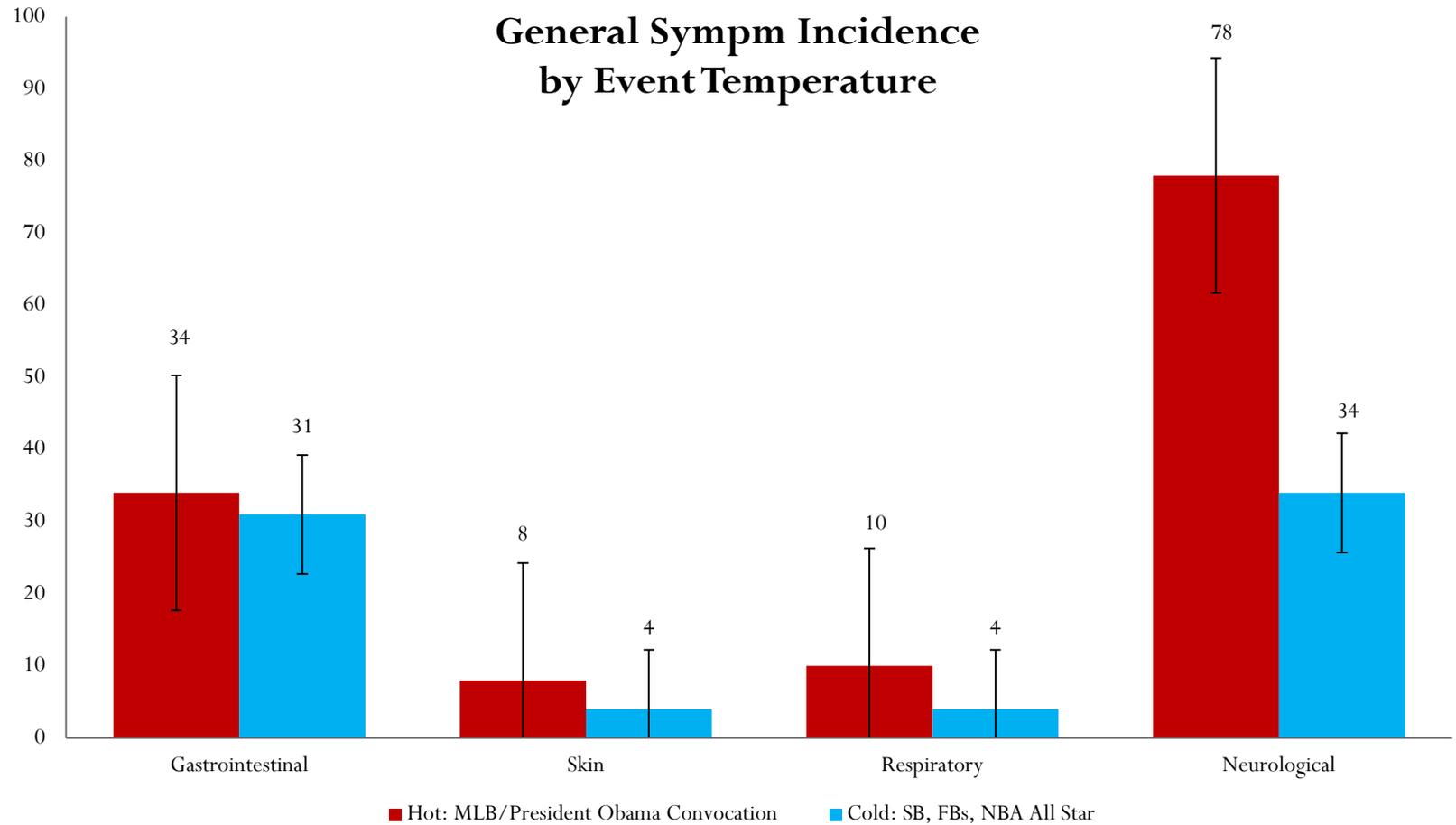
Respiratory Symptoms



Neurological Symptoms



All Events Combined by Temp



Conclusion

- Primary: An executable SOP was drafted for the MCDPH and actively implemented into real-time special event surveillance preparedness. Further revisions being made based on County needs.
- Secondary: FOG construction has begun, and can be updated as special event surveillance at venues arise.
- Secondary: Baseline symptomology values were determined for special event surveillance.
 - Baseline values for outbreak alert determined.
 - Prediction models to be developed.

Acknowledgements

- **MEZCOPH:**

- Kristen Pogreba-Brown
- Dr. Kacey Ernst
- Dr. Zhao Chen
- Dr. Robin Harris

- **MCDPH:**

- Alisa Diggs
- Shawn Tennant
- Aurimar Ayala

- **Phoenix Fire:**

- Brian Lee

- **First Responders Inc.**

- Bob Ziomek

- **Glendale Fire Department:**

- Jannine Wilmoth
- Chris Johnston

- **Field Epidemiologist Volunteers:**

- Sarah Theilman
- Kristen Marquardt
- Paul Kang
- Michael Birnbaum
- Daniel Hauptman
- Adam Resnick
- Megan Hunter
- Catherine O'Grady
- Derel Glashower
- Heather Olson
- Rebecca Ragar

Questions?