# MURI 2013 Review

Carl A. B. Pearson & Burton H. Singer

Emerging Pathogens Institute, University of Florida

September 21, 2013

# Overview

- development of simulation framework,
- intra-MURI projects,
- extra-MURI projects

# Simulation Framework

- Basic problem: lots of graph metrics, so what?
- Limited closure of inductive-deductive loop
- Experimental options restricted
- Want simple tool to try mechanics
- so: need piping connecting
  - initial graph generation
  - dynamic graph evolution
  - "message" passing and observation model
  - agent-to-agent behavior
  - agent-to-broadcast (and vv.) behavior
  - interventions
  - plus computational concerns (e.g., IO, cluster computation)

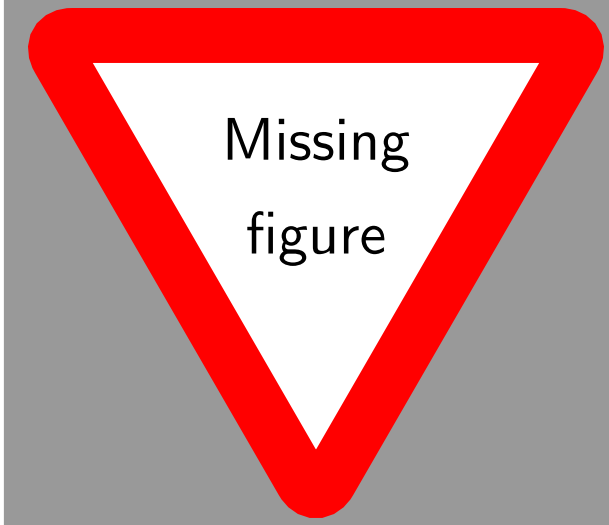
# Simulation Framework Progress

- ✓ initial graph generation
- ✗ dynamic graph evolution
- ✓ "message" passing and observation model
- ✓ agent-to-agent behavior
- ✗ agent-to-broadcast (and vv.) behavior
- ✗ interventions
- ≈ plus computational concerns (e.g., IO, cluster computation)

# Results Reported at Sunbelt

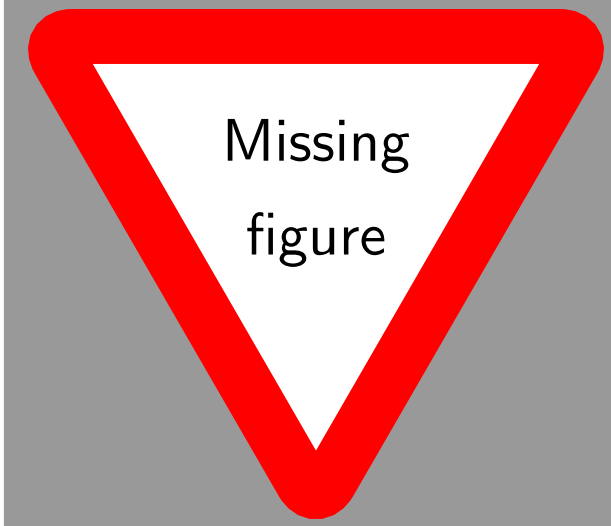
- simple graph generation:
  - households into communities
  - clanestine manager + cliqued groups of subordinates
- simple message passing - “Good” vs. “Bad”

# Sample Graph




toss in sunbelt example

# Sample Results Analysis




toss in sunbelt example

# Intra-MURI Projects

Shapiro using telephony data to parametrize graph generation

Shapiro identification with evolving SIMs

Lazar simulate firm-induced vs background donations

# Extra-MURI Projects

- D. Bright – agent/process-based models of meth production
- K. Carley – adding broadcast/mean-field perspectives to agent-models
- SAIC/L. Gerdes – geo-temporal hashing, specifically estimating between-observation distribution
- Assorted EPI – cryptic infections (equivalent to rumor spreading source ID), using large Montreal WiFi access metadata