

# Pandemic Propagation

## *Applications of Social Media Analytics*

Biodefense Summit

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# Pandemic Propagation

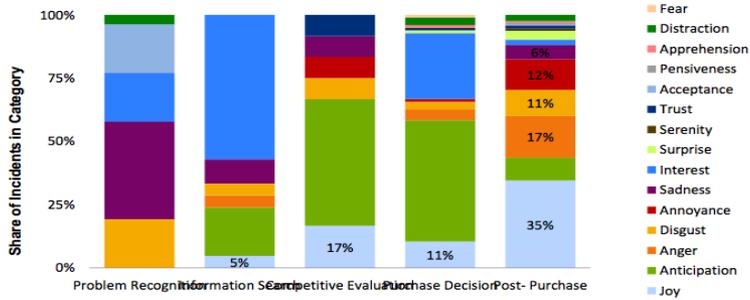
## *Understanding Human Behavior*

- Predicting and controlling the propagation of pandemic requires the understanding of human geography
  - Human behavior in crisis
  - *Real-time*, geo-located population behavior
- Human behavior in epidemic crisis not always well understood nor predictable, particularly in the developing world
  - *e.g. West Africa Ebola epidemic*

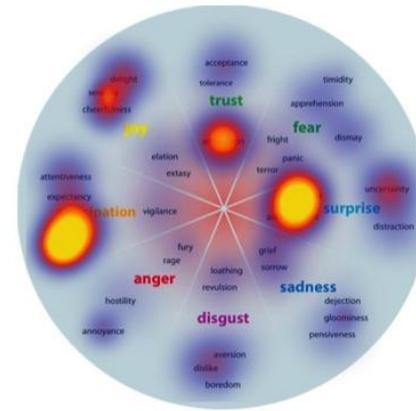
# Social Media Analytics

- Social Media Analytics highly developed for monitoring, predicting, and influencing human behavior
  - Advertising — *consumer behavior, message strategy*
  - Intelligence — *key influencers, social upheaval*
  - Information Operations — *message effectiveness*
- Social Media Analytics Technology
  - Big Data processing of media content
  - Identification and extraction of emotions content
  - Correlation emotions metrics with behavior indicators

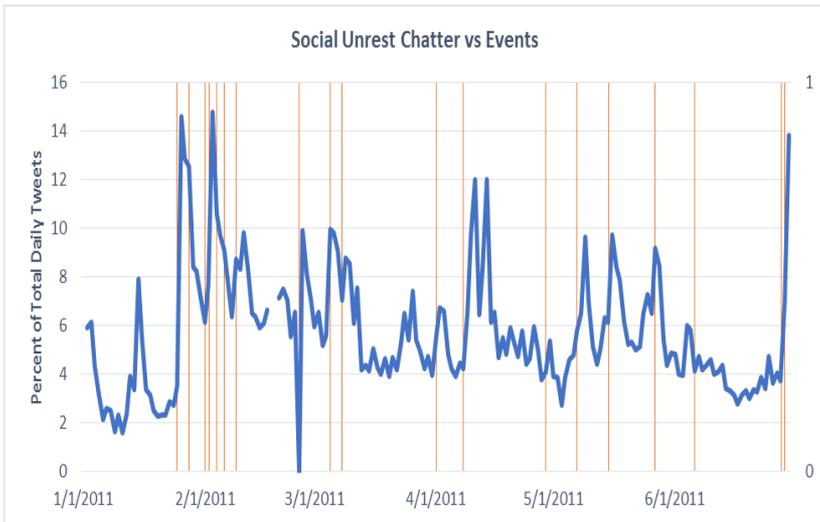
# Examples



**Purchasing Behavior**



**Viral Messaging**



**Violent Social Upheaval**



**Message Effectiveness**

# Pandemic Applications

- Message Effectiveness
  - *West Africans disbelieved health care messaging*
  - *Messages need to be tuned to emotional response*
- Key Influencers
  - *Key influencers are not those who message most but affect behavior most*
- Micro-demographics
  - *Different population sectors respond differently to events and messages*
  - *Messages must be tuned to target groups*
- Population Mobility
  - *Population movements can be tracked by cell-phone data*
- Propagation Modeling
  - *Agent Based Models (ABM) for propagation simulation successful in U.S. and Europe, unsuccessful in the developing world*
  - *Accurate behavior models are necessary for avatars*

# Challenge

- Apply social media analytics to understanding human behavior in pandemics
- Requirements
  - Linguistics — Emotions/Language correlation
  - Big Data — processing in native languages
  - Statistics — Emotions Metrics/ Behavior Indicators
  - Psycho-Sociology, Anthropology — Behavior Analysis
- Objective
  - *Model to support analysis, prediction, control of pandemics*