Local health department engagement with other local health departments on Twitter

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Local health department adoption of social media
(2012)

Are health departments tweeting to the choir?

More Twitter followers for LHDs with..

• Larger jurisdiction population
• Bigger budget
• Public information specialist on staff
• More tweets

Follower types in a typical network

- 32% Individuals without health focus
- 30% Organizations without health focus
- 28% Organizations with health focus
- 10% Individuals with health focus

Are health departments tweeting more about local health problems? The case of diabetes
What do health department tweets focus on?

- **Cues to action** (n=699)

- **Risk** (n=358)
  - “Nearly 26 million Americans have diabetes, the seventh leading U.S. cause of death” (Will County Health Department, IL)

- **Benefits** (n=82)
  - “Tuesday is Diabetes Alert Day. Improve your chances of avoiding type 2 diabetes by eating balanced meals and being physically active.” (Ross County Health District, OH)

What is social media engagement?

- Many definitions and metrics
- Neiger and colleagues proposed an engagement hierarchy for public health

<table>
<thead>
<tr>
<th>Engagement Level</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
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<tbody>
<tr>
<td>Agreement/preference for content</td>
<td>Participate in creating, sharing, and using content, influencing others</td>
<td>Engage in offline events as consumer, partner, volunteer, sponsor</td>
<td></td>
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Program Involvement
How does social media engagement work?
How else does social media engagement work?

Bear River Health @BearRiverHealth · Jan 21
It looks like our PM 2.5 numbers are climbing again. Please protect your health. This legend will help explain ow.ly/sObk0
Collapse  Reply Retweet Favorite More
2:13 PM - 21 Jan 2014 · Details

Jake Neeley @jakeneely · Jan 21
@BearRiverHealth I hate this... I like to ride my bike to work but when the air is bad I can notice a difference, then I want to just drive
Expand

Bear River Health @BearRiverHealth · Jan 23
@jakeneely I know it is so important to protect your health. Do you have the app downloaded to see the most current conditions?
Expand

Jake Neeley @jakeneely · Jan 23
@BearRiverHealth didn't know there was an app... What's it called?
How does social media work outside public health?
Engagement with other local health departments

• Why?
  – Build an information-sharing network
  – Reduce message development workload for any given health department (especially small depts)
  – LHDs have similar goals nationwide

• How?
  – Retweet or share messages from other local health departments
Data collection and characteristics

• Used Nvivo Ncapture tool to collect all tweets from 284 LHDs known to be using Twitter as of 2013
  – 162,670 total messages sent via Twitter
  – 1,124 (.6%) were retweets sent by one LHD and retweeted by another LHD
  – 140 LHDs (49.3%) retweeted something from another LHD

• Used R-statnet to develop a statistical model of the network

• Coded tweets for CDC categories using a consensus coding process (2 coders reach agreement)
  – Healthy living, disease, environmental health, emergency preparedness, injury prevention, data & stats, global health, other
Network terminology

**Node**: a network member

**Degree**: number of ties a node has

**Tie**: a connection between network members

**Shared partners**: number of connections both members of a dyad have in common

**Dyad**: Two network members
Comparing the retweet network and a random network of the same size and density

Observed retweet network

Random network with the same size and density
The purpose of statistical modeling

- What we observe in the world is often different than what would happen by random chance
- Statistical models aim to explain the differences between random chance and what we observe
How is the observed retweet network different from a random network?

1. Distribution of degree

2. Distribution of shared partners

3. Number of mutual ties
Which processes contribute to differences between observed & random networks?

**Homophily**: connecting with similar people and organizations

**Sociality**: variation in the number of ties

**Reciprocity**: tendency to form mutual ties

**Transitivity**: the friend of my friend is often my friend

Golder & Yardi, 2010; Goodreau et al., 2009
Statistical network model to explain differences between observed and random networks

- Exponential random graph modeling (ERGM, “er-gum”)
- Like logistic regression for networks
  - Predicts the probability of a tie
  - Can incorporate network member characteristics
  - Accounts for dependency in data
- In this case, we hypothesized that health depts retweet other health departments that:
  - Have more resources (staffing, per cap spending), larger populations, and were in close geographic proximity
  - Tweet more often
  - They followed
### Results: characteristics associated with engagement between health departments

<table>
<thead>
<tr>
<th>More likely to be retweeted</th>
<th>NOT more likely to be retweeted</th>
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</thead>
<tbody>
<tr>
<td>• Health departments tweeting more often</td>
<td>• Health departments serving larger populations</td>
</tr>
<tr>
<td>• Health departments in the same state</td>
<td>• Health departments with a public info specialist</td>
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<tr>
<td>• Health departments that are following AND followed by the retweeter</td>
<td>• Health departments spending the most per capita</td>
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Which topics sent by one health department are retweeted by another

- **Healthy living**: 474
- **Disease**: 231
- **Environmental**: 142
- **Emergency prep**: 119
- **Injury prev**: 114
- **Data & stats**: 50
- **Global**: 26
- **Workplace**: 21
Implications and recommendations

• Health departments are engaging with geographically proximate peer departments
  – Good for local relevance, bad for diversity of messaging

• Health departments are engaging with peer departments that tweet more
  – Aim to tweet 3-4 times per day to engage more peers

• Health departments that follow each other, retweet each other
  – Follow any health departments following you…follow some that are not following you

• Health departments retweet healthy living
  – Focus messages on healthy living to engage more peers
Next steps...

- What engages the public with public health information?
#THANKYOU!

- Research funded through an RWJF PHSSR mentored research scientist award
- Contact me at harrisj@wustl.edu
- Follow me @jenineharris
- Subscribe to my Twitter lists:
  - https://twitter.com/jenineharris/lists/local-health-departments
  - https://twitter.com/jenineharris/lists/state-health-departments