Research Poster Presentation

Identifying authoritative Twitter users in mosquito-borne illness conversations

Peyton N. Beattie
Graduate Student
University of Florida
411 Rolfs Hall
PO Box 110540
Gainesville, FL 32611
pbeattie@ufl.edu

Ashley N. McLeod-Morin
Graduate Student, University of Florida
Public Relations Specialist, UF/IFAS Public Issues Education Center
101A Bryant Space Science Center
PO Box 112060
Gainesville, FL 32611
ashleynmcleod@ufl.edu

Taylor K. Ruth
Assistant Professor
University of Illinois at Urbana-Champaign
274E Bevier Hall
905 South Goodwin Avenue
Urbana, IL 61801
tkruth@illinois.edu

Ricky W. Telg
Professor, University of Florida
Director, UF/IFAS Public Issues Education Center
101B Bryant Space Science Center
PO Box 112060
Gainesville, FL 32611
rwtelg@ufl.edu

Identifying authoritative Twitter users in mosquito-borne illness conversations

Introduction

Mosquitoes cause almost 800,000 deaths worldwide per year, making mosquitoes the most common vectors of disease (World Health Organization, 2017). Various mosquito species can infect people with a range of diseases, including Zika, West Nile, Chikungunya, dengue, and malaria (Centers for Disease Control and Prevention [CDC], 2016). Since 2015, 231 cases of presumed locally transmitted Zika virus disease were reported in the United States and nearly 6,000 cases acquired through travel to affected areas were reported (CDC, 2019). After locally transmitted Zika virus disease was reported in Florida in 2016, many residents became fearful and some tourists cancelled plans to visit the state (Sun & Dennis, 2016). Given the prevalence of mosquitoes as vectors of disease, it is important to determine which individuals or organizations are communicating about mosquito-borne illnesses and how they are influencing the messages associated with mosquito-borne illnesses. The focus of this study was to determine the influencers, or opinion leaders, on Twitter who lead conversations around mosquito-borne diseases in Florida. This research supported priority area one of the national research agenda: public and policy maker understanding of agriculture and natural resources (Enns, Martin, & Spielmaker, 2016).

Conceptual Framework

Opinion leadership is often held by those who are respected within a certain social system because of their knowledge, social capital, and their acceptance of the beliefs of the social system (Rogers, 2003). Rogers (2003) noted opinion leaders are uniquely positioned in the social system because of their abilities to communicate new ideas, innovations, and messages. Katz and Lazarsfeld (1955) indicated "an opinion leader can best be thought as a group member playing a key communications role" (p. 33). The opinion leaders gain their ideas from a mass media source in which the opinion leader then acts as the liaison between their social system and the mass media in a process of two-step flow of communication (Katz & Lazarsfeld, 1955). Currently, social media is a platform that can be used by influential individuals to disseminate innovations and influence the public given their online social capital (Gillin, 2008; Uzunoglu & Kip, 2014). An attribute of an influencer is someone who is sought for advice and gives advice (Freberg, Graham, McGaughey, & Freberg, 2011). The degree of influence the person has is measured by the person's authority (Sysomos, n.d.).

Methods

Sysomos, a social analysis platform that allows users to search topics and analyze related results located on blogs, online forums, and social media sites, was used to address the purpose of this study. Researchers created a Boolean search query to apply to the Sysomos search. In order to determine what Twitter users were discussing mosquito-borne illnesses, the following query was developed: ("mosquito" OR mosquitoes") AND ("zika" OR "dengue" OR "equine encephalitis" OR "west nile" OR "vector"). After noticing an influx of unrelated tweets, the search was edited to eliminate tweets that included "@theOnion" OR "Trump." The search was also limited to Florida, due to the recent outbreak of mosquito-borne illnesses. The search was confined to April 1, 2018, through October 26, 2018, to produce a recent sample that included peak breeding season for mosquitoes. The search produced 3,031 tweets. Sysomos determines authority of a Twitter account by analyzing the number of followers each user has, the frequency the user mentions the search terms, and how frequently the user engages with the person's audience (Sysomos, n.d.). Based on these factors, Sysomos assigns an authority score to the user. The authoritative scale is 1-10, where 10 represents an individual or organization who has very high reach and influence (Sysomos, n.d.). A low authority user has a rating of 4 or less, while a medium authority user has a rating between 5 and 8, and a high authority user has a rating

between 8 and 10 (Sysomos, n.d.). The high authority users Sysomos identified for the topic of mosquito disease in Florida have been referred to as *influencers* throughout the abstract.

Results

Of the most authoritative individuals in Florida communicating about mosquito disease, 3.7% of individuals had *high* authority, 73.9% had *medium* authority, and 22.4% had *low* authority. Fourteen of the influencers had *high* authority (see Table 1). Half (n = 7) of the influencers with a *high* authority were TV news stations, two were newspapers, four were individuals or groups, and one was a university. However, the influencers that were tweeting the most (i.e., 20-100 tweets) about mosquito disease had *medium* authority. The only influencer with *high* authority that had seven or more tweets related to mosquito disease was DRC Group (16 tweets).

Table 1

Most Authoritative Influencers Communicating about Mosquitoes

Influencer	# of Followers	Authority Score
WKRG (Mobile, AL News Station)	73,200	10
10News (Tampa Area News Station)	156,900	10
University of Miami	85,000	10
The Palm Beach Post (West Palm Beach, FL Newspaper)	168,700	10
CBS4 Miami (Miami, FL News Station)	85,100	10
WESH 2 News (Orlando/Daytona, FL News Station)	201,700	10
Spectrum News 13 (Orlando News Station)	259,800	10
Ana Navarro (The View cohost, Coral Gables, FL)	1,000,000	10
South Florida Sun Sentinel (Miami-Dade/Fort Lauderdale, FL Newspaper)	257,900	10
Aunt Crabby calls Bullshit	198,900	10
WPBF 25 News (West Palm Beach, FL News Station)	116,700	10
WPTV (Palm Beach County, FL News Station)	152,600	10
DRC Group (Disaster Resistant Communities Group, Tallahassee, FL)	7,249	8
Le Chat Proud Democrat	10,700	8

Note. Authority score: 1-4 = *low authority*; 5-7 = *medium authority*, 8-10 = *high authority*

Conclusions and Recommendations

The results of this study indicated that influencers with *high* authority that were communicating about mosquito-borne illnesses were news channels in the south Florida area. However, influencers with *medium* authority were communicating about mosquito-borne illnesses the most, in terms of number of tweets. Therefore, the majority of opinion leaders in Florida regarding mosquito-borne illnesses are *medium* authority influencers, but the *high* authority influencers might be better positioned to inform the public about mosquito-related illnesses (Katz & Lazarsfeld, 1955; Rogers, 2003). Entities in Florida that are interested in communicating about mosquito disease should utilize news stations as influencers to disseminate information because of their level of *high* authority. Universities in states at risk for mosquito-borne diseases, such as University of Florida, should consider conducting communication and outreach regarding mosquito disease due to the likelihood of being an influencer with *high* authority and the ability to disseminate unbiased, research information.

Future research could be conducted in this area to determine influencers of mosquito disease messages in other mosquito-prevalent states or regions. A content analysis of messages shared by influencers with high authority should be conducted to determine if accurate information is being disseminated.

References

Centers for Disease Control and Prevention. (2016). *Mosquito-borne diseases.* Retrieved from https://www.cdc.gov/niosh/topics/outdoor/mosquito-borne/zika.html

Centers for Disease Control and Prevention. (2019). *Zika cases in the United States.* Retrieved from https://www.cdc.gov/zika/reporting/case-counts.html

Enns, K., Martin, M., & Spielmaker, D. (2016). Research Priority 1: Public and policy maker understanding of agriculture and natural resources. In T. G. Roberts, A. Harder, & M. T. Brashears (Eds.), *American Association for Agricultural Education national research agenda: 2016-2020.* Gainesville, FL: Department of Agricultural Education and Communication. Retrieved from http://aaaeonline.org/resources/Documents/AAAE_National_Research_Agenda_2016-2020.pdf

Freberg, K., Graham, K., McGaughey, K., & Freberg, L. A. (2011). Who are the social media influencers? A study of public perceptions of personality. *Public Relations Review, 37*, 90-92. doi: 10.1016/j.pubrev.2010.11.001

Gillian, P. (2008). New media, new influencers and implications for the public relations profession. *Journal of New Communications Research, 2*(2), 1-10. Retrieved from http://www.palliativecare.issuelab.org/resources/928/928.pdf

Katz, E., & Lazarsfeld, P. F. (1955). *Personal influence: The part played by people in the flow of mass communication*. New York, NY: Free Press.

Rogers, E. M. (2003). *Diffusion of innovations*. New York, NY: Free Press.

Sun, L. H., & Dennis, B. (2016). *U.S. confirms Florida Zika cases are first local transmission in any state.* Retrieved from https://www.washingtonpost.com/news/to-your-health/wp/2016/07/29/florida-announces-zika-is-likely-spreading-by-mosquitoes-in-the-continental-u-s-2/?noredirect=on&utm_term=.6eda10b64ce2

Sysomos. (n.d.). *Twitter ranking insights: Judge by following*. Retrieved from https://sysomos.com/inside-twitter/twitter-rankings/

Uzunoglu, E., & Kip, S. M. (2014). Brand communication through digital influencers: Leveraging blogger engagement. *International Journal of Information Management, 34*, 592-602. doi: 10.1016/j.ijinfomgt.2014.04.007

World Health Organization. (2017). *Vector-borne diseases.* Retrieved from https://www.who.int/en/news-room/fact-sheets/detail/vector-borne-diseases