



Understanding Communication Patterns in North Carolina's Public Health Community

Conducting a social network analysis of the Public Health Communications Network

SUMMARY

Evaluators from the [Leadership Learning Community](#)¹ used social network analysis to develop an understanding of communication patterns among the network of people and organizations engaged in public health activities and initiatives, and the connections among those who create and disseminate public health content online. For the project, the team focused on the 2011 release of the [County Health Rankings & Roadmaps](#) in North Carolina,² for which they analyzed and mapped three network datasets: several North Carolina public health initiatives (the action network) and two online social media channels: Twitter and blogs.

Key Findings

North Carolina Action Network Findings:

- The core of the North Carolina public health action network includes 34 initiatives, with connected organizations, that work closely to build a movement for healthy communities in the state.
- The initiative with the highest capacity to bridge to other initiatives and organizations in the network is Eat Smart, Move More.

Twitter Findings:

- The @CHRankings account does not attract many individuals who are not already connected to the account's core community.

¹ Leadership Learning Community is a nonprofit organization based in Oakland, Calif., focused on leadership development. Its membership is a diverse group of funders, practitioners, and consultants. The community offers learning opportunities for its members and consulting services for foundations and leadership development programs.

² The [County Health Rankings & Roadmaps](#) program, a partnership of RWJF and the University of Wisconsin Population Health Institute, annually provides information for every county in the United States about factors such as education, jobs, income, environment, and access to health care and the role they play in how healthy people are and how long they live.

- The 2010 and 2011 health rankings conversations attracted only people already connected to each other.

Blog Findings:

- Blogs that cover the *County Health Rankings & Roadmaps* tend to address state or local news, while those that talk about RWJF generally discuss broader topics, such as health policy and social justice.
- The blogs fell into three topical clusters:
 - Urban (city planning, urban development, etc.)
 - Food (including discussions of food deserts)
 - General public health

Funding

The Robert Wood Johnson Foundation (RWJF) supported this project between December 2010 and May 2011 with a grant³ of \$91,481 to the [Tides Center](#).⁴ The project was conducted by staff from the Leadership Learning Community, which received the funding through the Tides Center.

CONTEXT

America spends more money on health care than any other nation: \$2 trillion annually. Yet, more than 95 percent of spending goes to sick care—medical interventions and health care services. While access to quality health care is essential, new ways to prevent disease and health crises in the nation’s communities must be identified. A strong public health system that builds evidence for what works, collaborates with a range of partners, and puts ideas into action will make staying healthy easier for everyone.

RWJF’s Interest in This Area

RWJF follows a targeted strategy in public health that focuses on three interconnected areas. Those areas, and examples of RWJF-supported initiatives in each, include:

- **Discovering what works for improving health.** An example is the *County Health Rankings & Roadmaps* program. A partnership between RWJF and the University of Wisconsin Population Health Institute, the program includes rankings of the health of nearly every county in the country—using both traditional health outcomes as well as

³ Grant ID # 68545

⁴ Tides Center, headquartered in San Francisco, provides financial and management services to individuals and organizations engaged in social change. Tides Center is the financial sponsor of the Leadership Learning Community.

a broad range of factors that can influence health—and shows, through “roadmaps,” what can be done to create healthier places to live, learn, work, and play.

- **Advancing smarter laws and policies.** For example, the *Network for Public Health Law* provides fast, reliable legal assistance to public health officials, attorneys, and advocates.
- **Strengthening public health departments.** For example, the *Public Health Accreditation Board* began accrediting state, local, and tribal health departments in 2011, using consistent standards and the motivation of accreditation to help build a stronger public health system.

Public Health Communications Network

In 2010 RWJF staff recognized a need to strengthen the capacity of the individuals and organizations comprising the public health network to spread innovations and evidence-based practices by using social media more effectively and better connecting online and offline advocacy efforts. To do this required understanding the state of the network of people and organizations, identifying gaps and areas of opportunity, and developing recommendations to improve the network and increase the Foundation’s influence on it.

Social Network Analysis

RWJF is interested in how social networks can improve both programming and evaluation activities. Social networks are integral to the Foundation’s efforts to generate and share information and to promote impact. Social network analysis measures relationships between individuals and groups by mapping these relationships and assessing their patterns. The map that is created provides a unique picture of how network participants are communicating and behaving.

RWJF staff believed that this technique would provide information valuable to an understanding of the network of individuals and organizations involved in public health, and would identify ways to improve that network. In addition to the project reported here, RWJF-funded evaluations that use social network analysis methods include: two leadership programs, two initiatives that involved research across disciplines, one advocacy program, one network across a broad field, and one nursing initiative.⁵

⁵ Evaluations using social network analysis techniques include: *Ladder to Leadership: Developing the Next Generation of Community Health Leaders*, the *State Health Leadership Initiative*, *Healthy Eating Research*, *Strengthening the Performance and Impact of Public Health Departments*, *Consumer Voices for Coverage: Strengthening State Advocacy Networks to Expand Health Coverage*, *Childhood Obesity Prevention Networks*, and the *Initiative on the Future of Nursing*.

THE PROJECT

Evaluators from the Leadership Learning Community used social network analysis to develop an understanding of how individuals and organizations involved with public health communicate with one another in North Carolina—and the connections among those who are creating and disseminating public health content online. Claire Reinelt, PhD, MA, was project director, working closely with Natalia Castaneda.⁶

County Health Rankings

Reinelt and Castaneda focused on the *County Health Rankings & Roadmaps* program. “The request for proposal from RWJF was very broad—to look at communications and social media in public health,” says Reinelt. “We needed something to hang this on and apply it to. The second round of the *County Health Rankings* was being launched at the time and there was a big communications push around that. We thought there would be real-time benefits that could produce useful data.”

The national *County Health Rankings & Roadmaps* initiative effort to promote awareness of the *Rankings* featured five states, including North Carolina. The team chose North Carolina as the state to study. “North Carolina has a huge public health infrastructure,” notes Reinelt, “and they have done a lot at the state and local level. RWJF has also invested a lot of resources there. It was a good lens through which to look at public health communications.”

Approach

The approach taken by the research team included several core components:

- Stakeholder interviews: Researchers interviewed six individuals associated with the *Rankings*, including RWJF staff, grantees, and consultants, asking questions such as:
 - How do people get their information on public health?
 - Who are influencers in the communication of the *Rankings*?
 - How they are linked to each other and to other public health leaders and influencers outside health care?
 - What is RWJF’s position within this network?
- Landscape interviews: Researchers interviewed 14 public health, business, media, foundation, nonprofit, and academic leaders in North Carolina about innovations and opportunities to advance community health. They also asked interviewees to identify

⁶ Reinelt is director of evaluation and research and Castaneda is marketing and communications director at the Leadership Learning Community.

individuals, organizations, and agencies that are important to the improvement of community health in North Carolina.

- Keyword strategy: Researchers identified and tested the keywords and search terms of high relevance to the national *County Health Rankings & Roadmaps* communications and engagement strategy.⁷ They identified these through interviews (with RWJF staff, North Carolina stakeholders, Twitter publishers, and bloggers), monitoring of RWJF social media channels, and online research. They used these keywords and search terms to guide their exploration in the Twitter and blog spaces.
- Analysis and mapping of three networks (North Carolina stakeholders, Twitter publishers, and bloggers) to identify strategic clusters, find key influencers, and understand the position of RWJF and its grantees in the networks:
 - A set of North Carolina public health action initiatives (identified by the evaluators, who called these the action network) that engage a cross-section of organizations and people to take action on issues concerned with the social and economic determinants of health. “We used them for intelligence on what was going on in North Carolina,” explains Reinelt, “and where they thought there were things happening that had some momentum and were important.”
 - Two online social media channels, Twitter and blogs. “We wanted to identify influencers, particularly in social media,” says Castaneda, “and decided to focus on Twitter and blogs.” Researchers chose these for analysis because technology is available to collect and analyze data from them and RWJF has a strong interest in these channels. Through this analysis, says Reinelt, “We were able to provide insights about the social media landscape that could be used by RWJF staff.”
- Technology testing: Researchers tested two new technologies:
 - [NodeXL](#), a free open-source Excel template for network graphs. Researchers used NodeXL for the Twitter data.
 - [Nexalogy](#), analytical software for use with social media data. Researchers used Nexalogy for the blog data.

Challenges

The experimental nature of the project resulted in several challenges, according to Reinelt and Castaneda:

- **Identifying appropriate software was not easy.** “There weren’t a lot of examples or templates that we could find,” notes Castaneda. “We had to do a lot of research to find the best tools and talk to the providers to figure out how we could produce maps

⁷ Examples of keywords used include food desert, rural health, walkability, corporate wellness, healthy schools, smart growth, and health social justice.

for the project.” The researchers ultimately worked directly with software developers to tailor programs to their needs.

For the Twitter data “we worked closely with developer Marc Smith⁸ [from the [Connected Action](#) consulting group] who helped us with NodeXL to prioritize the data and set parameters so we could better work with that.”

For the blog data, Castaneda found Nexalogy. “We used their software to collect the data and with their help to refine the keywords.” Reinelt considers the Nexalogy tool to be “amazing in the amount of data it could process and the kinds of semantic analysis that can be done with blogs.”

- **Developing a budget for the project was challenging.** “Because it was experimental and there was so much that was unknown when we started, we didn’t really know what it would take to do it” explains Reinelt. “We made it work but went significantly over budget. But the learning opportunity was incredible. ”

RESULTS

The project team developed the following products and included them on a wiki⁹ that they established for the use of the project and other RWJF public health social network analysis projects.

- North Carolina action network dataset and analysis report
- Final keyword list and strategy
- Twitter dataset and analysis report
- Blog dataset and analysis report
- An online profile of Twitter publisher Fran Melmed, as an example of an influencer

Communications Results

Reinelt and Castaneda wrote two articles they posted on their blogs on the Leadership Learning Community website:

- An article on the North Carolina action network analysis: “[Visualizing the Landscape of Action Networks: An Application of Social Network Analysis](#)” by Reinelt¹⁰
- An article on the social media (Twitter and blogs) analysis: “[Applying Social Network Analysis to Online Communications Networks](#)” by Castaneda.¹¹

⁸ Smith is featured on a Leadership Learning Committee [blog post](#).

⁹ A wiki is a website that allows users to make changes to its content. Access to the [wiki](#) developed for this project is restricted to those connected with the related RWJF projects.

¹⁰ Leadership Learning Community: Natalia Castaneda’s Blog. “Visualizing the Landscape of Action Networks: An Application of Social Network Analysis.” Posted January 24, 2012. Available [online](#).

See the [Bibliography](#) for details.

FINDINGS AND RECOMMENDATIONS

The research team reported the findings of the three analyses in a report to RWJF, *County Health Rankings: Three Applications of Social Network Analysis*, and offered recommendations for maximizing the potential of each.

North Carolina Action Network

Through Web-based research and individual interviews, the researchers mapped the landscape of organizations invested in public health issues and those influential organizations that bridge public health and other sectors.

Findings

- **The core of the North Carolina public health action network includes 34 initiatives, with connected organizations, that work closely to build a movement for healthy communities in the state.**
- **Universities play a central role in advancing public health in North Carolina.** Many are RWJF grantees.
- **The initiative with the highest capacity to bridge to other initiatives and organizations in the network is Eat Smart, Move More.¹²** By partnering with this initiative, messages about the *County Health Rankings & Roadmaps* would travel further and faster, in the fewest steps, than with any other initiative.
- **Network hubs—which connect to parts of the network that would otherwise be disconnected—include: Healthy Carolinians, Institute for Emerging Issues, North Carolina Action for Healthy Kids, and Smart Start.** These are other potential partners for communicating messages about the *County Health Rankings & Roadmaps*.

Recommendations

Researchers offered the following recommendations for agencies involved in the North Carolina Action Network:

- Partner with others that are collecting county health data.

¹¹ Leadership Learning Community: Natalia Castaneda's Blog. "Applying Social Network Analysis to Online Communications Networks." Posted January 24, 2012. Available [online](#).

¹² Eat Smart, Move More is a statewide movement that promotes increased opportunities for healthy eating and physical activity. See also [online](#).

- Collaborate with key individuals in the media (e.g., Rose Hoban, an NPR health reporter located in North Carolina, and Pulse + Signal blog writer Andre Blackman) to expand the reach of messages about the rankings in North Carolina.
- Connect the resources and networks of local partners of county level initiatives in order to create more momentum.
- Explore ways to add value to efforts that make the business case for caring about health.
- Leverage the North Carolina public health action network by connecting network hubs that may be bridges to other networks, thereby increasing the public health network's influence and extending its reach.

Twitter

RWJF uses Twitter to raise awareness of and engage people in key issues, including the *County Health Rankings & Roadmaps*. Researchers analyzed relevant RWJF Twitter accounts and conversations related to urban health (terms such as smart growth, walkability, and complete streets) and the food angle (terms such as food desert, access to healthy food, and food and social justice).

Findings

- **The @CHRankings account does not attract many individuals who are not already connected to the account's core community.** The core community is highly connected, indicating more of an in-group conversation.
- **The @RWJF_PubHealth account attracts a more diverse group, including a significant number who are not highly connected to one another.** This is an opportunity to connect these people and diversify the core.
- **The 2010 and 2011 health rankings conversations attracted only people who are connected to each other.** More than half of the top 10 participants in both conversations were RWJF-related accounts.
- **The analysis of conversations on different topics indicated different patterns.** For example:
 - Conversations about complete streets, walkability, and smart growth are distinct but highly interconnected.

- The conversation about Save Play¹³ is highly interconnected, with participants retweeting and responding to each other, but with many fewer bridges to other clusters of participants.
- The pattern for healthy food access shows more of a group broadcasting of messages and less of a conversation.
- The conversation about rural health attracts many isolates (individuals not connected to others), which is a potential audience.

Recommendations

Researchers offered the following recommendations for RWJF regarding use of Twitter:

- Increase visibility by identifying potential users and following them. “Once you follow them, they are likely to follow back. After you monitor their messages and retweet them, they are more likely to follow you back and even retweet some of your content,” so it is important to generate quality content.
- Connect with influencers: hubs (people highly connected in the network) and bridgers (people active in multiple conversations).
- Streamline accounts and extend reach with audiences that likely share common interests.
- Especially participate in the most active and relevant conversations, such as: complete streets, smart growth, save play, food desert, healthy schools, and co_health.”
- Maintain momentum by continuing to announce additional research and stories on #healthrankings and tie them to news and events.
- Close triangles by introducing people who are connected to RWJF but not to each other, thereby strengthening the network core.
- Participate in relevant events such as TED (the Technology, Entertainment, Design conferences) and SXSW (South by Southwest), which focuses on online innovations.

Blogs

Blogs are an important source of content in social media. Researchers analyzed blog-based conversations and identified keywords with larger numbers of blogs associated and blogs that bridge multiple conversations. They also examined how the keywords RWJF and county health rankings are positioned in the blogosphere.

¹³ Save Play is a philosophy and strategy of KaBOOM! A Washington-based national nonprofit organization dedicated to saving play for America’s children.

Findings

- **Blogs that cover the *County Health Rankings & Roadmaps* tend to address state or local news, while those that talk about RWJF generally discuss broader topics, such as health policy and social justice.**
- **The blog research uncovered three topical clusters:**
 - Urban angle (city planning, urban development, etc.)
 - Food angle (including discussions of food deserts)
 - General public health angle
- **General public health blogs are highly connected to urban angle blogs.**
- **The general public health cluster has the highest number of influencers, followed by the urban angle.**
- **The food angle blogs are not highly connected to the urban and general health angles.** There is no leader driving the food angle discussion, indicating an opportunity to strengthen blogging in this area.

Recommendations

Researchers offered the following recommendations for RWJF regarding connections with blogs:

- Connect with influencers, i.e., hubs that discuss multiple issues and with bridgers that connect clusters.
- Leverage sites that are already talking about RWJF, such as:
 - Completestreets.org for the National Complete Streets Coalition
 - TheCityFix.com, an online resource for news about sustainable transport
 - FoodSafetyNews.com for reporting on food safety issues
- Actively participate in important conversations. For example: discuss food topics on RWJF channels, reach out to blogs in this area, and participate in conversations in other blogs in order to strengthen the food category, since blogs in this group are not connected to other clusters and have low visibility and influence.
- Increase audience engagement by, for example, closing triangles (connecting people connected to RWJF but not to each other), hosting webinars to share ideas and content, and using the NewPublicHealth.org blog to ask questions and request feedback on *County Health Ranking* ideas and projects.

LESSONS LEARNED

1. **Budget plenty of time to generate keywords for Twitter and blog analysis.** While researchers were able to develop a list of highly relevant keywords linked to conversations about healthy communities and social determinants of health, the process was much more time-consuming than expected. (Project Director)
2. **Be sure to connect with the individuals that will implement research recommendations.** Such interaction will offer context for data collection and for testing recommendations. Otherwise, questions asked may not be the most relevant and the most credible data may not result. (Project Director)
3. **Employ a phased approach when budgeting experimental projects.** Revisiting the budget and learning priorities midway through the project, given the many unknowns at project initiation, can help minimize cost overruns. (Project Director)

AFTERWARD

The project concluded with the end of the grant. As of June 2012, Reinelt and Castaneda are exploring opportunities to share the action network mapping with others in North Carolina and use the project findings to help get messages out to a broad array of people working in the public health arena.

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BIBLIOGRAPHY

(Current as of date of the report; as provided by the grantee organization; not verified by RWJF; items not available from RWJF.)

Reports

County Health Rankings: Three Applications of Social Network Analysis. Oakland, CA: Leadership Learning Community, 2011.

Communications or Promotions

Leadership Learning Community: Natalia Castaneda's Blog. "Applying Social Network Analysis to Online Communications Networks." Posted January 24, 2012. Available [online](#).

Leadership Learning Community: Claire Reinelt's Blog. "Visualizing the Landscape of Action Networks: An Application of Social Network Analysis." Posted March 29, 2012. Available [online](#).