

ROBERT WOOD JOHNSON FOUNDATION EVALUATION SERIES

# Using Social Network Analysis in Evaluation

A Report to the Robert Wood Johnson Foundation

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# Using Social Network Analysis in Evaluation: A Report to the Robert Wood Johnson Foundation

## EXECUTIVE SUMMARY

In 2013, the Robert Wood Johnson Foundation (RWJF) commissioned a study of the Foundation's use of social network analysis (SNA) to evaluate nine of their initiatives. The purpose of the study was to look at how social network analysis was used during these different projects in order to:

- Understand how and when it is best to use social network analysis
- Understand the challenges associated with using social network analysis
- Identify lessons learned
- Provide recommendations for the future

Using data gathered from telephone interviews with the program officers, email surveys from project directors, and supplemental information from nine project summaries (see [Appendix 1](#) for the summaries), this report:

- Describes how the Foundation took deliberate steps to create an emerging learning community to support using social network analysis to understand and evaluate its funded work
- Illustrates how social network analysis can be used in many applications, ranging from a one-time study to longitudinal studies, with a summative purpose (to evaluate the success of a particular intervention) or formative purpose (for learning and improvement)
- Identifies the challenges associated with using social network analysis, in terms of understanding the methodology's limits or constraints, the implications presented by the size and scope of the projects, and the need to develop the technical expertise and capacity to manage the projects and use the data

This report also describes best practices, lessons learned, and recommendations for the future relating to:

- The need to develop the capacity to understand the applicability of the methodology and manage future projects
- The need to ensure that the findings are useful, actionable, and widely disseminated

## DATA COLLECTION

As part of the study, data were collected on nine of the Foundation’s initiatives where SNA was used for evaluation; see [Appendix 1](#) for descriptions of the SNAs for each of these initiatives:

1. *State Health Leadership Initiative* (PHL)
2. *Healthy Eating Research* Program (HER)
3. *Ladder to Leadership: Developing the Next Generation of Community Health Leaders* (ELP)
4. *Consumer Voices for Coverage* Program (SSCA)
5. Project L/EARN: Enlarging the Pipeline of Health Researchers from Underrepresented Groups Through an Internship Model
6. Public Health Communications Network (PHC)
7. *Robert Wood Johnson Foundation Initiative on the Future of Nursing* (IFN)
8. *Childhood Obesity Initiatives, 2011–2012* (COB)
9. *RWJF Alumni Network’s Website in Engaging Alumni and Its Value to Them* (Alumni)

Telephone interviews with the program officers for these initiatives were conducted using an open-ended interview protocol (see [Appendix 2](#), Interview Protocol). The interviews were recorded and transcribed. Data were also collected through a short, open-ended email survey of the project directors (see [Appendix 3](#), Email Survey).<sup>1</sup> A content analysis of these data was conducted in order to identify common themes and lessons learned. These data were supplemented with information gathered from the project narrative summaries and information from the broader literature about social network analysis (see [Appendix 4](#), Study Data).<sup>2</sup>

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<sup>1</sup> Mary Nakashian, PhD, and Mary B. Geisz, PhD, conducted the interviews with the program officers and wrote the summary reports of the projects. Molly McKaughan of RWJF emailed the project directors to collect their answers to the survey questions.

<sup>2</sup> Kimberly A. Fredericks, PhD, MPA, RD, and Joanne G. Carman, PhD, conducted the content analysis and prepared the report.

## HISTORY OF SOCIAL NETWORK ANALYSIS

Social network analysis (SNA) has its foundation in a number of fields, including mathematics, spatial geometry, sociology, and anthropology, and focuses on the nature and characteristics of relationships (Fredericks and Durland, 2005).<sup>3</sup> In the last 15 years, the development and proliferation of network analysis software have made it possible for researchers and evaluators to incorporate social network analysis into their work (Luke & Harris, 2007). These advances coincided with greater interest and attention being paid to the importance of social networks, as they relate to public health, security and terrorism, and the social sciences.

For example, in the area of public health, researchers have been looking at the role of peer networks and their influence on smoking, substance abuse, and obesity in order to understand how to support better health outcomes (Christakis and Fowler, 2007; Tracy, Kim, Brown, Min, Jun, and McCarty, 2012; Wipfli, Fujimoto and Valente, 2010). In the area of national security, social network analysis has been used to map terrorist cells, outside threats, and political violence (Perliger and Pedahzur, 2011). In the social sciences, social network analysis has been used to understand the importance of social capital (Hewitt and Forte, 2006), social support (Sjolander and Ahlstrom, 2012), collaboration (Dall’Asta, Marsili, and Pind, 2012), and communication networks (Diesner and Carley, 2005).

In recent years, evaluators have begun to incorporate social network analysis into their work, recognizing that social relationships and networks play a pivotal role in a program or initiative’s development, implementation, impact, and sustainability (Abma, 2006; Fredericks, 2005; Hargreaves and Podems, 2012). Social network analysis can help evaluators to:

- Understand the overall network that is embedded within a program or initiative, in terms of its density, connectedness, balance, or centralization
- Identify subsets within the network, such as the presence of cliques and key nodes
- Identify important characteristics about the individuals or actors in the network, such as gatekeepers and isolates in the network
- Measure the degrees of centrality and similarity for individuals or actors within the network (Fredericks and Durland, 2005)

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<sup>3</sup> See [References](#) section of this report for full references.

## SOCIAL NETWORK ANALYSIS AND RWJF

According to the interviews and research conducted for this study, RWJF's interest in social network analysis began in the beginning of the 2000s. Through its [Pioneer Portfolio](#), the Foundation supported the early work of Nicholas Christakis, MD, PhD, MPH, who examined the relationships between social networks and health outcomes.<sup>4</sup> Columbia University began to offer short courses about social network analysis for RWJF's *Health & Society Scholars* program (in 2004 and 2007). The evaluation of the *Reclaiming Futures* initiative (2002–2007) was one of the first national evaluations to incorporate social network analysis into the research design, using surveys to track changes in the way staff in different agencies in eight communities interacted over time (Melichar, 2007; Robert Wood Johnson Foundation, 2008; Yahner and Butts, 2007).<sup>5</sup>

Both the program officers and the project directors reported that they had participated in various workshops sponsored by the Foundation (and others) about social network analysis. According to the interviews with the program officers, the appeal of social network analysis was its focus on the relationships and connections. As one program officer described:

*What was appealing about SNA [social network analysis] was the idea that all the work that we were doing that, up until that point, was un-measurable. [It] was around relationships. We pride ourselves in having convening power and making connections. You think about the “five Cs” [communicating, convening, coordinating, connecting, and counting].<sup>6</sup> The SNA tool was a concrete way to measure some of how we are doing with the five Cs. Those connections and collaborations we were so proud of, SNA was one way of assessing whether those connections and collaborations were real or perceived.*

Another program officer explained that while a grant may have ended, the legacy of the grant still had value:

*People continued to use the connections they made, for a variety of purposes, whether it be links, ties....people could access the network for advice, for employment, for creating coalitions to advance some aim, for personal friendships and so forth.*

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<sup>4</sup> ID# 67919. See Grantee Story about Christakis, “How Our Friends (and Our Friends’ Friends) Influence our Health. Available online at <http://www.rwjf.org/en/about-rwjf/newsroom/newsroom-content/2011/09/how-our-friends-and-our-friends-friends-influence-our-health.html>.

<sup>5</sup> ID# 42777 (\$2,000,000; May 1, 2002 to September 30, 2009)

<sup>6</sup> For more on the five Cs see <http://www.rwjf.org/en/research-publications/find-rwjf-research/2006/01/to-improve-health-and-health-care-volume-ix/foreword.html>.

This was particularly true for RWJF’s research and scholar programs, where the networks that are created through these initiatives remain in place and are able to sustain field building after grants have ended.

## **TIMING AND USE OF THE SOCIAL NETWORK ANALYSIS PROJECTS**

The timing and use of the social network analysis evaluations varied considerably across the nine initiatives. With respect to the timing, some implemented the social network analysis component in the very beginning of the project, while others were implemented mid-cycle or near the end of the project. The purpose or use of the SNAs ranged as well.

For example, for five of the initiatives, the social network analysis component was included as part of the overall evaluation design. Four of these initiatives (HER [*Healthy Eating Research*], ELP [*Ladder to Leadership*], SSCA [*Consumer Voices for Coverage*], and Project L/EARN) were new Foundation initiatives funded by multi-year grants. These evaluations used cross-sectional or repeated surveys to collect data from the initiatives’ participants. The social network analysis component was used to examine relationships, communication, collaboration, and/or knowledge sharing among the initiatives’ participants. It was also used to help determine the extent to which the initiative was having an impact.

For PHL (*State Health Leadership*), social network analysis was also included as part of the overall evaluation design, but PHL had already been in place for a number of years. While this evaluation also used repeated surveys to gather information from initiatives’ participants and social network analysis to understand relationships and knowledge sharing, it incorporated follow-up interviews to provide greater contextual information in order to understand the social network analysis findings.

While these projects used social network analysis as part of overall evaluation efforts, two of the nine social network analysis evaluations were somewhat different. PHC (Public Health Communications) used social network analysis to examine online communication networks. IFN (*Initiative on the Future of Nursing*) used social network analysis to examine the personal and professional networks of the members of an advisory committee.

In both of these cases, the purpose of the social network analysis was not to evaluate the success of a particular intervention or initiative (which would be more summative in nature) or look at changes over time. Rather, these were one-time studies with a more descriptive purpose: They were intended to see if the social network analysis could add value or contribute recommendations to improve the initiative (which is more formative in nature).



In reflecting upon the different projects and the Foundation’s history using social network analysis, one of the program officers we spoke with identified this distinction as well:

*I think [social network analysis] had been used in evaluation before in more of a summative evaluation way. When we funded Christakis, we were just supporting what he was already doing. It was more about methods, testing things out. When we engaged Fredericks and her team, we really needed the knowledge and it was very much formative evaluation. We needed the knowledge to improve that program in real time. So, we used it in different ways.*

The other two initiatives encountered implementation problems, relating to size and scale of the social network analysis evaluation (Obesity) and the communications platform being used to implement the initiative (Alumni).

## **SOFTWARE**

In addition to variations in the timing and use of the social network analysis, the project directors reported using a wide range of software for the work, including Cytoscape, NodeXL, Nexology, and UCINet. This was not surprising, given that the type of software that is used for a project is dependent upon the nature of the data collection.

The collection of social media tags, text relationships or longitudinal data analysis would each require different software for the analysis, such as Nexology, Automap, and RSiena. In contrast, if descriptive or predictive analysis were being conducted, UCINET, ORA, or Netminer would very likely be used. The specific software is often a matter of user preference or cost (See [Appendix 5: Social Network Analysis Software Programs](#)).

## **CONTRIBUTIONS OF THE SOCIAL NETWORK ANALYSIS EVALUATION METHODOLOGY**

When we asked the program officers to describe how social network analysis provided a unique or added value from other evaluation methodologies, most of the program officers described the value in terms of the types of information that can be captured in the maps. This included being able to identify central nodes and ties within the network, illustrate the strengthening of collaborations and information sharing, and show how these relationships can change over time.

As one program officer put it, “The idea that you’re capturing information about how people are connected and in what ways and how strongly, and being able to put it all in one statistic and one graph is pretty powerful.” Another said:

*If you're supporting something where there is a network component, it's a natural piece of what you would want to evaluate and understand. What are the characteristics of that network? What does it look like? Who's in, who's out? And then try to understand how that network evolves over time. I think those are key elements of a lot of the work the Foundation does across the board.*

Another program officer also described how learning about social network analysis has helped the Foundation to understand how to engage with new partners and think about the other sectors that influence health status in the country and the work that they do (e.g., business, transportation, and education).

At the same time, the program officers acknowledged that the context in which social network analysis is being used has to make sense. One program officer summed it up this way:

*It's another tool in the evaluator's tool kit. I don't think it's appropriate for every evaluation. But I think that if the program has certain characteristics, if there are networks, then I think this can be a tool that an evaluator can use, just as he or she may use qualitative analyses or quantitative analyses or other mixed methods. It's just one more option.*

Others also described how social network analysis is “just another tool” or “the methodology you would use to measure certain kinds of relationships,” noting that in the future, it will be important for a project to “defend its worth in relation to the specific questions we would pose about a research program.” Program officers cautioned against using the tool for the sake of using the tool.

## **SUCCESSSES**

We asked the program officers to describe the biggest successes or most useful findings from the social network analysis evaluations. In doing so, they described specific contributions and findings from the projects, including how the networks added value by showing where RWJF grantees are positioned in the network, identifying influential individuals and/or the strength of relationship ties, as well as patterns and changes in relationships in the networks over time.

For some projects, the program officers were able to recall specific contributions. For example, for the *Consumer Voices for Coverage Program* (SSCA):

*It was highlighting some of the limitations of the networks in the early days of the program and highlighting how they grew and strengthened over time. How they filled in some of the pieces. How they demonstrated new folks were coming into the network. I think that all reassured us as a Foundation that our support was having an effect. But it was also useful feedback for the grantees.*

For the *Healthy Eating Research* (HER) program, the social network analysis showcased the importance of creating a diverse portfolio of individuals and not relying on just two key nodes (Program Director Mary Story and her Deputy Karen Kaphingst) in the obesity research field. The findings also stressed the need to have growth in collaboration and communication with decision-making audiences. For the *RWJF Initiative on the Future of Nursing* (IFN), the social network analysis identified that there was a lack of representation from community colleges and businesses on the advisory board.

For the other evaluation projects, the program officers described the successes or contributions more generally. For example, one program officer commented about the added value of being able to present the evaluation findings in a visual way—which made them more interesting. Another commented about social network analysis’ ability to quantify the extent to which different groups of people are interrelated, explaining “This interrelatedness matters because you can show that it affects these other things.”

## CHALLENGES

We asked the program officers and the project directors to describe the biggest challenges that they encountered with the social network analysis evaluation projects. Three themes emerged from the data relating to challenges associated with the methodology, issues related to the size and scope of the social network projects, and issues related to technical expertise and capacity.

### Methodology

For these nine initiatives, the purpose of using social network analysis was to measure and map the relationships or communications between the participants of RWJF-funded initiatives, key stakeholders, or groups. Theoretically, in order to truly understand these relationships and the networks, 100 percent participation is required, although a minimum 75 percent would maintain validity. In practice, this means that if data are being collected through surveys, the response rates need to be as high as possible.

For two of the projects (Obesity and Alumni), the very low survey response rates were, for all intents and purposes, unrecoverable. For the other projects, survey response rates were more manageable. These tended to be social analysis evaluation projects for

initiatives with smaller numbers of participants and initiatives that had little participant movement or attrition over time.

The project directors described how they used different strategies to secure the high response rates that were needed, which included:

- Enlisting the support of others to encourage participation and secure buy-in (i.e., program officers or community partners)
- Offering incentives (i.e., random drawing for prizes for completing a survey)
- Intensive follow up (i.e., multiple emails and telephone calls to participants)
- Relying upon interviews and resumes to collect the needed data, noting a survey would not lend itself well to gathering data from high-level executives with extensive professional networks (one project—IFN)

In addition to needing a high response rate, social network analysis using survey data requires complete information. Unlike other types of data analysis methods where item non-response or missing data can be accommodated (i.e., by dropping cases or imputing values), social network analysis is unable to adjust or accommodate for missing or incomplete data when looking at reciprocal relationships or true intensity. Therefore, the quality of the analysis suffers if the response burden is too high for participants or if participants are sensitive or reluctant to ‘name names.’ Project directors described this as being an issue in two of the social network analysis projects, which included [Childhood Obesity](#) and the [RWJF Alumni Network](#).

Other methods not used by the projects here are discussed in [Methodology: Data Collection](#).

## Size and Scope

For more than half of the projects, one of the greatest challenges was trying to manage the size and the scope of the social network analysis evaluation project. In practice, this typically required limiting the number of research questions or survey items, narrowing the scope or focus of the project, or shifting the unit of analysis from individuals to organizations to minimize the response burden. Yet, even with these adjustments, project directors reported that there were challenges in sorting through the volume of data that was collected. As one project director noted:

*It was challenging figuring out how to summarize and disseminate all of the findings from three time points across eight cohorts. We have all of the data output and we have used a few items as key findings from the evaluation, but we haven't shared all of the findings systematically.*

Another project director described how their team would have budgeted differently if they had known how much data they would have had to sort through and code. As one program officer noted, “Grantees need to stop promising the moon and RWJF [needs to] stop asking for it.”

Several program officers also observed that because social network analysis projects typically use surveys to gather information, perhaps they are better suited for smaller projects. As one program officer put it, “If you have 1,000 people in your network, you shouldn’t use [social network analysis]. Or find some other way [besides a survey] of doing it.”

### Technical Expertise and Capacity Issues

Unlike most evaluation projects which involve using conventional social science methods, projects that involve social network analysis require a unique set of skills and training. While the use of social network analysis is growing, there are still very few consultants or academics who regularly use social network analysis for evaluation purposes. Finding the right skill set in a consultant or contractor, therefore, can be challenging.

For these nine initiatives, there was considerable variability in terms of the technical expertise and in-house capacity among the project directors to carry out the social network analysis work. Some of the project directors described how they relied on consultants to do the social network analysis.

For example, one project director noted, “I was familiar with SNA prior to using it for *Ladder to Leadership*, but only on the surface....” They hired a consultant to do the analysis. Another project director described having a “passing familiarity” with social network analysis as a result of attending a workshop sponsored by RWJF, and also hired a consultant. A third project director explained:

*We have several in-house researchers who have specialized in SNA, working with the project teams for these evaluations. We have also engaged external consultants with special expertise, to advise our staff as needed.*

In contrast, other project directors described themselves as having strong in-house expertise with social network analysis. As one project director noted, “I would say I have extensive knowledge and use in the field of evaluation.” Another described a history of being a collaborator on various social network analysis projects, saying “SNA continues to be a very important focus of my evaluation practice.”

A third project director described how he had used social network analysis in a variety of ways on different projects, including using it to understand what a particular network looks like (e.g., number of ties; strength of association); to document changes over time in the size, structure, and strength of ties in a network; and to understand the key participants and flow of information in a network.

With respect to the RWJF program officers, while the Foundation had sponsored a variety of workshops about social network analysis in order to foster an emerging learning community, several program officers expressed some frustration about not having a greater understanding of the tool and the challenges that this posed in trying to manage the projects. For example, one program officer said:

*We didn't have enough information about where it was ideal to use it and where it wasn't in terms of the scope of the groups that we're trying to do these analyses for.... We didn't understand that to use SNA effectively you have to have 100 percent participation.*

Other program officers echoed the sentiment, describing how there is a need to develop greater expertise within the Foundation. Having to rely on outside consultants put Foundation in the position of having to trust that the consultants know what they are doing, with one saying:

*I was thrilled to bring in the consultant we used because of her reputation. I had to trust her that she had sound science behind what she was doing. I am not in that situation very often.*

## UTILIZATION

We asked the project directors and the program officers to tell us how the findings from the social network analysis projects were utilized. In responding, one project director simply recapped the findings from the project. Two project directors answered this question more generally by describing how they presented the findings and recommendations to RWJF and the grantees, with one noting that the findings for the *Consumer Voices for Coverage Program (SSCA)* were eventually published in the *American Journal of Evaluation* and *Health Affairs*. Two project directors said they didn't know how the findings were utilized.

The project director for Project L/EARN, however, described specific changes that occurred as a result the project in this way:

*They [the SNAs] have helped us think through the types of advising we want to ensure our trainees receive. They have also helped us formalize the training of our students in network building and*

*utilization per se, rather than counting on them to independently learn how to do so.*

The responses from the program officers echoed these themes, providing descriptions about presenting the findings to grantees, as well as to internal staff, and noting how the findings were presented at the American Evaluation Association's annual conference and published in *American Journal of Evaluation*. Two program officers also said they didn't know how the findings were utilized.

Four of the program officers, however, described how the social network analysis projects helped to create a change in the Foundation's approach to evaluation and the work that they do. For example, one program officer observed, "It helps us have a more complete picture of how behavior spreads. I think that has infiltrated the whole Foundation." Another noted how "[social network analysis] represented a new model of how to evaluate advocacy campaigns." A third described how the projects helped the Foundation to understand how its networks are an important asset that can be fostered and expanded.

## LESSONS

The data collected for this study suggest that the Foundation has learned several lessons using social network analysis.

1. ***It is important to understand the specialized nature of the methodology.*** Very few experts use social network analysis in an applied setting; it requires specific software, and it can be very labor intensive.
2. ***Program officers need to develop greater familiarity with social network analysis.*** Not only would this help the Foundation to better understand when its use is appropriate (i.e., considering the size and scale of the project, understanding the need for full participation and complete information), but also this would help to provide greater assurance to the Foundation when using contractors or subcontractors for future social network analysis projects.
3. ***It is important to ensure that the findings are useful and actionable.*** While there was consensus that the maps and analysis added value to the projects, and that presenting the findings from these projects (internally and externally) was helpful to the Foundation in general, there were fewer observations about how the findings were actually utilized after the final presentations of the work.



## BEST PRACTICES

These projects provide us with an opportunity to reflect on the best practices for using social network analysis, especially as they relate to the timing of the projects, securing buy-in, data collection, and its application.

### Timing

Timing of the implementation of the data collection is vital to its proper use. If a study is looking at the formation of connections and expansion of networks, it is important to plan and implement the SNA at the beginning of the process, during the planning phase. Not only does this ensure that baseline data are collected, but then repeated measures can be incorporated into the project.

### Buy-In

As with any evaluation, it is important to get buy-in from the stakeholders. Yet, because social network analysis is a fairly new methodology, many grantees and project participants (and even some program officers) are not very familiar with it.

Time must be taken to ensure that the stakeholders understand the purpose of social network analysis, why it is being utilized in the project evaluation, and how the results will be used. It is also important to illustrate how full participation and complete data are required for the analysis.

### Methodology: Data Collection

While most of these projects relied on surveys to collect the data, it is important to recognize that other strategies can be used to collect or supplement the data needed for SNA. For example:

- Interview data can be transcribed, coded, and used for the analysis.
- Electronic records of communication can be coded and used for the analysis.
- Other evaluation data can also be sources of information. For example:
  - Demographic information can be used as node attributes.
  - Meeting minutes or an individual's resume can help to identify and verify connections.
  - Other documents, surveys, reports, and other sources of secondary data can also provide information about the context of the connections and help to verify relationships.

These strategies can help limit data collection costs and response burden.



Creating opportunities to maximize participation is also critical, given the importance of securing high response rates and completeness.<sup>7</sup> For example:

- Having a survey be part of a reporting mechanism that is already being used
- Offering incentives
- Making funding contingent upon data collection completion
- Capitalizing on opportunities to collect data where there is a captured audience (i.e., at a meeting or conference)

## Application

Like all methodologies, the conditions need to be suitable for its application. Social network analysis is an excellent tool for understanding relational data. Evaluation questions (with respect to individuals, groups, or organizations) typically examine:

- Who is talking to whom
- Who works with whom
- Who gives and seeks advice or mentors others
- Who gives resources to whom
- Who is related to whom
- Who has access to whom

The methodology can be very useful for conducting a stakeholder analysis, examining communications and the use of social media, and assessing the extent to which relational networks expand and intensify.

These networks often grow and the relationships become stronger due to the implementation of program activities or participation in events. Allowing people the opportunity to get to know one another and work together often expanded the relationship of the ego or intensified the relationship from perhaps a colleague to a collaborator.

In addition to being descriptive or cross-sectional in nature, social network analysis can also be used in longitudinal studies and in predictive ways, providing opportunities to explore how the nature and intensity of relationships can change over time, and identifying the factors that inhibit or promote relationships over time.

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<sup>7</sup> Typically, a minimum response rate of 70% is recommended when using surveys (Borgatti, Carley, and Krackhardt, 2006).

## RECOMMENDATIONS

Given the experiences of these projects, we suggest three recommendations for future social network analysis evaluation projects as they relate to the need to support continuous learning and use, develop greater in-house capacity to manage future projects of this kind and use the findings, and selecting contractors and subcontractors.

### Support Continuous Learning and Use

As with many evaluations, the data collected from this study suggest that there are still opportunities to improve the use of the social network analysis evaluation findings to support continuous learning. In this case, the Foundation began by creating a learning community around how social network analysis could be used to examine and evaluate the relationship building that happens as part of the initiatives that they fund.

Indeed, the Summary Reports describe the specific contributions and findings for each of the projects. And, even in the two cases where the projects didn't proceed as planned, the program officers were able to identify and share the useful lessons that were learned through those experiences (with respect to how to collect data for a social analysis project and the suitability of its application).

With a few exceptions (such as the SSCA and L/EARN projects), there was little data to suggest that this learning has continued. Moreover, there seems to be a considerable amount of data that can be mined for future use, as well as be more widely disseminated through peer review journals, as well as other outlets.

For example, in *Ladder to Leadership* (ELP), a one-of-a-kind dataset has been assembled for the eight cohorts of community leaders who participated in the program and the study. Preliminary analysis (conducted outside the scope of the grant because the social network analysis ended before all of the data were collected) suggests that gender plays a key role in tie formation, with women still being more likely to form relationships with other women than with men.

For the field of leadership, this is an interesting finding that can (and should) be explored more fully. In addition, the analysis discovered that individuals in this initiative were also more likely to create more intense relationships with those in their working groups. We know that contact is still one of the most important factors in forming and developing relationships. From this finding, in the future, we know that leadership programs should be helping individuals to work with many different groups to increase the heterogeneity of their relationships.

The findings from these kinds of analyses can have broader implications that extend beyond the scope of the original social network analysis project, with respect to leadership development in other female-dominated professions, such as social work,

human services, and other health-related professions. As such, they should be widely disseminated.

### **Develop In-House Capacity to Manage Future Projects**

Because social network analysis naturally lends itself to the type of work that the Foundation does (i.e., building relationships, creating communities of scholars, etc.), its utility and applicability will very likely only continue to increase, especially as the use of social network analysis becomes more common in the field of evaluation and as the software becomes more accessible. While the Foundation has already learned a number of lessons about the suitability of its application, developing greater in-house capacity could be very beneficial, in that this would help with:

- Knowing how and when to use social network analysis
- Having the technical ability to write detailed and reasonable requests for proposals
- Selecting and screening potential contractors
- Managing the project (in terms of being satisfied with the analysis and deliverables)
- Being able to translate the findings into action for the grantees and others
- Following up on its use
- Ensuring that the findings and broader implications are widely disseminated, so as to balance the investment of time and resources

At a minimum, if social network analysis is warranted for a particular research question or project, we would suggest including a consultant to provide advice relating to the development, feasibility, and suitability of the project. Moreover, if there is a failure of grantees or consultants to properly conduct the analysis or if there are challenges in the field, there would then be a potential resource who can step in and assist with the project.

### **Be Rigorous When Contracting for Social Network Analysis**

Finally, the project directors for these nine projects had varying levels of experience using social network analysis—particularly with using it in an applied setting and for evaluation purposes. While requiring potential contractors and subcontractors to provide references and a sample evaluation report that illustrates their ability to do social network analysis is an important part of the screening and selection process, also build additional mechanisms into the contracting process.

For example:

- Include language specifying how the final deliverables should not just report the findings from the social network analysis, but also focus on the use of the social network analysis findings, next steps, and plans for dissemination.
- Plan projects in such a way that allows for ample time for the contractors to explain the methodology and educate stakeholder groups about the purpose of the project to help secure buy-in and participation.
- Allocate time at the end of the project for debriefing and sharing the findings with stakeholder groups.
- Involve project directors and program officers in following up on what happens with the projects once they conclude.

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## APPENDIX 1

### Summary Reports on Social Network Analysis Projects

This appendix contains nine summary reports on social network analysis evaluation projects funded by RWJF.

#### **SOCIAL NETWORK ANALYSIS IN THE EVALUATION OF THE STATE HEALTH LEADERSHIP INITIATIVE**

This project used social network analysis to examine relationships among state health officials. Through a survey and interviews, researchers investigated the current state of knowledge exchange among state health officials and the impact of select components of the *State Health Leadership Initiative* on those relationships.

Launched in 1998, the goal of the *State Health Leadership Initiative* is to rapidly develop the leadership capacity of newly appointed state or territorial health officers through a multifaceted program that includes, among other activities, a one-week retreat conducted by faculty at the Harvard Kennedy School of Government and a peer-to-peer mentoring program. The program continues through June 2014. The Association of Maternal and Child Health Programs serves as the national program office. Lacy M. Fehrenbach, MPH, is national program director.

#### **The Social Network Analysis**

A 2002 assessment of the *State Health Leadership Initiative* found that a major benefit of the program is the strong ties that are developed among state health officers—which are critical resources to the officers both during their tenure and after leaving office.

Beginning in January 2006<sup>8</sup>, RWJF engaged David M. J. Lazer, PhD, and colleagues at the Kennedy School to use social network analysis to examine relationships among state health officers. While the overall *State Health Leadership Initiative* is a human capital model focused on improving knowledge and skills, the evaluation focused on social capital—the extent to which the health officers shared insights and knowledge with each other. Special attention was paid to the extent to which the Kennedy School retreat influenced the network of state health officers and to the effects of the peer-to-peer mentoring relationship on organizational performance.

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<sup>8</sup>ID# 53543 (\$149,825; January 1, 2006 to March 31, 2008)

## Methodology

To address their questions researchers conducted:

- A mailed survey of all current (2006) health officers (response rate of 91%) that allowed analysis of the pattern of connections among the officers. The survey included questions about the mentoring program.
- Interviews with 90 percent of the current health officers to provide contextual insight into the survey results.

## Key Findings

Researchers reported key findings in a report entitled *An Evaluation of the Impact of State Health Leadership Initiative on the Social Capital among State Health Officials*.

- **There is a general lack of connections among state health officers.** About one in four reported no communication with other officers on substantive issues, while most of the others had limited interactions. Drivers of this lack of social capital include:
  - The short tenure (median of three years) of state health officers, which allows little time to build relationships with other officers
  - The lack of a professional identity around the state health officer role
  - The local focus of state health officers
  - Perceptions that local experiences are unique and useful lessons from other jurisdictions are unlikely
  - Availability of local information resources, such as career staff
  - Lack of resources (such as travel funds) to build external networks
- **Region, adjacency, and proximity are related to the likelihood of a tie between state health officers.** Regional meetings facilitate connections, many public health problems cross state borders, and it is easier and cheaper to meet with nearby officers.
- **The State Health Leadership Initiative Kennedy School retreat had a significant and positive impact on the probability of ties among state health officers.** However, fewer than 10 officers participate each year, so the potential for a large impact on the overall social capital of officers is limited.
- **Although there were cases where mentoring had a large and positive impact, four out of five state health officers reported little or no communication after the initial contact with their mentor.**

Prepared by: [Mary B. Geisz](#)

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## SOCIAL NETWORK ANALYSIS OF *HEALTHY EATING RESEARCH*

*Healthy Eating Research: Building Evidence to Prevent Childhood Obesity* supports studies that identify and evaluate policies and environmental approaches with potential to improve children's diets, especially among lower-income and racial and ethnic groups at highest risk for obesity, targeting children ages 3 to 18 and their families. The program's evaluation included an analysis of networks created over the course of the program and the identification of levels of research-related collaborations developed between 2007 and 2010.

*Healthy Eating Research* aims to:

- Establish a research base for policy and environmental factors that influence healthy eating and body weight in children
- Build a multidisciplinary field of research and network of researchers
- Ensure that findings are communicated effectively to inform policies and guide the development of effective solutions

In seven rounds of grantmaking between 2005 and March 2013, *Healthy Eating Research* funded 121 studies totaling \$17.7 million. It also convened 13 issue-based working groups comprised of grant recipients and others, and designed and led strategic communications and advocacy efforts.

Mary Story, PhD, directs *Healthy Eating Research*, which is housed at the University of Minnesota School of Public Health. The RWJF Board of Trustees authorized the program for up to \$30,152,316 from January 2005 to February 2015.

For more information about *Healthy Eating Research*, see the [Program Results Report](#).

### Evaluating *Healthy Eating Research*

Seth L. Emont, PhD, principal at White Mountain Research Associates in Danbury, N.H., directed a multifaceted evaluation<sup>9</sup> of *Healthy Eating Research* to determine whether the program was achieving its three major goals. Emont noted the significance of starting the analysis early and continuing it over time. “We deliberately chose annual snapshots of the national program office to document changes in its partnerships and the strength of these partnerships over time, since part of the charge of the national program office was around field building. . .”

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<sup>9</sup> ID# 56631 (\$308,011; October 1, 2006 to September 30, 2011). These funds supported the entire evaluation, which included several activities in addition to this analysis.

Evaluators created tracking indicators, surveyed grant recipients and national program staff annually, interviewed grantees and other funders, and used concepts of social network analysis to document the growth of networks in the field over time.

## The Social Network Analysis

The social network analysis<sup>10</sup> component of the evaluation focused on answering the following question: “To what extent has the program helped build the field and professional networks of its grantees?” National program office staff completed surveys annually from 2008 to 2011. Funded researchers completed surveys annually starting when they received their grants. Findings were reported for 2007–2008, 2008–2009, 2009–2010, and 2010–2011.

Evaluators used a social network analysis package called Ucinet to document the annual research and policy networks of the national program office. All six members of the national program office completed each annual survey. Data were exported to Cytoscape, open source bioinformatics software, to generate the final sociograms.

Funded researchers were asked to report on levels of research- and policy-related collaboration with individuals (in and out of their department, institution, and field) and with community groups, philanthropies, government agencies, schools, and others using a modification of the *Levels of Collaboration Scale*. Response rates from researchers were generally high for the first survey but dropped significantly for subsequent surveys.

### Key Findings

Emont's report *Evaluation of the Robert Wood Johnson Foundation's Healthy Eating Research Program: Evidence Building, Field Building and Policy Impact* noted the following key findings of his analysis:

- **The national program office reported 29 partnership ties in 2007–2008, and 114 ties in 2010–2011.**
- **The national program office's active ties with other RWJF childhood obesity initiatives increased from 31 in 2007–2008 to 93 in 2010–2011.**
- **Healthy Eating Research-funded investigators reported increases in policy-related collaboration with federal government agencies, advocacy groups, school systems, and policy-makers.**

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<sup>10</sup> Laura C. Leviton, RWJF's Senior Adviser for Evaluation, noted in an interview that Emont's evaluation used “concepts from social network analysis, but doesn't do social network analysis” and that “what Seth did was not social network analysis as such because that analysis did not name the individuals and organizations with whom ties had come closer.” She adds, “In retrospect I feel that was an advantage because it made the task doable.”

- **Funded investigators reported the most collaboration with other researchers.** However, there was a slight drop in research collaboration with researchers in their departments and an increase in collaboration with researchers outside their institutions and outside their field.

Prepared by: Mary Nakashian

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## **SOCIAL NETWORK ANALYSIS OF LADDER TO LEADERSHIP**

*Ladder to Leadership: Developing the Next Generation of Community Health Leaders* was a 16-month training program for emerging nonprofit health care leaders working with vulnerable populations. The social network analysis measured the share of possible collaborative relationships among the fellows before and after the program.

*Ladder to Leadership* provided leadership training to 219 mid-career professionals working in nonprofit agencies<sup>11</sup> in eight targeted regions and communities<sup>12</sup> across the United States. Each region comprised a cohort. The program aimed to build a pipeline of future leaders for health-related nonprofit organizations and communities by bolstering leadership capacity through promoting collaboration and encouraging innovation.

The 16-month fellowship experience included three multiday training sessions on:

- Collaboration, conflict resolution, decision-making, and other leadership skills
- “360-degree assessments” in which fellows received feedback from supervisors, peers and employees
- One-on-one coaching and mentoring
- A team “action learning project” in which fellows broke into teams to address a health-related challenge in their community

**The \$3.6 million program ran from September 2007 through August 2012. The Center for Creative Leadership in Greensboro, N.C., served as the national program office. David G. Altman, PhD, executive vice president, was the national program director.**

**Heather Champion, PhD, headed a team at the Center for Creative Leadership that evaluated the program. Fellows completed a Web-based survey at the outset of the**

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<sup>11</sup> Examples of these agencies include an agency focused on AIDS, a research center on minority health and health disparities, and a county health department.

<sup>12</sup> Seven rural counties in central New York; Cleveland; Birmingham, Ala.; Albuquerque, N.M., seven rural counties in eastern North Carolina; Portland, Ore., Newark, N.J., and Kansas City, Mo.

program, at its end, and one year later. Evaluators also surveyed fellows' supervisors and co-workers during and after the program, and interviewed fellows, co-workers, sponsors of the local action projects, and others.

For more information about *Ladder to Leadership* and overall findings from the evaluation, see the [Program Results Report](#).

## The Social Network Analysis

The center contracted with the author of this report to conduct the social network analysis. Fredericks measured the share of possible collaborative relationships among the fellows in each cohort before and after the program. Collaboration included sharing information, sharing resources, or jointly implementing an activity.

### Key Findings

Fredericks reported the following key findings from the social network analysis:

- **Some 80 percent of fellows and 76 percent of their colleagues reported an increase or a significant increase in work-related social networking among the fellows.**
- **Collaborative relationships among the fellows in each cohort increased from 6 percent to 20 percent, or an average of 13 percent.**

In a 2010 report on the evaluation, Champion noted that the social network analysis maps of relationships among fellows prior to beginning the program and after graduation demonstrate that “the change between the beginning and the end of the program is significant. . . . Prior to *Ladder to Leadership*, 15 of the collaborative relationships reported were based on joint implementation of a shared activity. After participating in *Ladder to Leadership* for 16 months, 42 of the collaborative relationships were based on joint implementation of a shared activity.”

Prepared by: Mary Nakashian

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## SOCIAL NETWORK ANALYSIS IN THE EVALUATION OF RWJF'S CONSUMER VOICES FOR COVERAGE PROGRAM

*Consumer Voices for Coverage* seeks to strengthen the consumer voice in health care reform through state-based advocacy networks. Evaluation of the program included a social network analysis to assess the activities and relationships of network members.

Launched in 2008 by the Robert Wood Johnson Foundation (RWJF), *Consumer Voices for Coverage* provides grants to state-based advocates in 12 states to strengthen the consumer voice in health care reform implementation by building statewide, integrated consumer health care advocacy networks. RWJF made three-year grants to 12 networks that included a grantee organization and a “leadership team.”<sup>13</sup> [Community Catalyst](#), a Boston-based national health care advocacy organization, serves as the national program office. Susan T. Sherry directs the program, which runs through April 2014.

## The Social Network Analysis

The social network analysis was part of a larger evaluation of *Consumer Voices for Coverage* conducted for RWJF by Debra A. Strong and colleagues at Mathematica Policy Research.<sup>14</sup> The evaluation addressed:

- How the advocacy networks were structured and operated
- Whether the networks’ advocacy capacity increased over the life of the program
- How the networks influenced state health coverage policy

### Methodology

Evaluators used a mixed methods approach. Qualitative methods included individual and group interviews, focus groups, and document review. The social network analysis was a quantitative method that assessed the activities and relationships of network members. Evaluators also developed scales to measure six core advocacy capacities.

To collect data for the social network analysis, evaluators sent surveys to all 130 organizations that belonged to the 12 state networks about the constituency and size of the organization and its relationships with the other leadership team member organizations. They administered the survey (customized for each coalition) during the first grant year (2008) and again in 2010. Some 96 provided complete data.

### Key Findings

Evaluators reported key first-year findings from the social network analysis in an [article](#)<sup>15</sup> in the *American Journal of Evaluation*:

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<sup>13</sup> Leadership teams were a core group of partners in each network who agreed to collaborate and contribute to advocacy efforts led by the RWJF grantees. Partner organizations represented a range of consumer groups as well as organizations focused on legal issues, public policy, consumer rights, and other issues.

<sup>14</sup> ID# 63275 (\$996,882; October 1, 2007 to March 31, 2011) and ID# 68020 (\$225,000; October 1, 2010 to October 31, 2011)

<sup>15</sup> Honeycutt TC and Strong DA. “Using Social Network Analysis to Predict Early Collaboration within Health Advocacy Coalitions.” *American Journal of Evaluation*. 33(2):221–239, 2012. Abstract available at

- **Coalitions that engaged in advocacy efforts with others early in their formation were significantly associated with higher levels of collaboration.**
- **Communication activities had the strongest association with increased collaboration between organizations.**
- **Coalitions with more resources (e.g., number of policy-maker contacts, grants received) had statistically stronger social networks.**

Evaluators reported key final findings from the social network analysis in a report to RWJF at the end of the evaluation:

- **Eight teams maintained or built high levels of communication and collaboration over time.**
- **Across all 12 networks, nearly two-thirds of between-member relationships were rated as productive by the members.**
- **While forming and maintaining cohesive networks could be challenging, the more cohesive networks had greater influence on policy, according to interviews conducted with policy-makers.**
- **Adding non-traditional allies, such as businesses and providers, was somewhat challenging.**

Prepared by: Mary B. Geisz

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## **SOCIAL NETWORK ANALYSIS OF PROJECT L/EARN**

**Project L/EARN** (“Learn While You Earn”) builds research capacity among undergraduate students from diverse backgrounds through intensive summer internships. The two-phase social network analysis evaluated the structure and effectiveness of interns’ school and career networks.

Project L/EARN is an intensive 10-week summer internship in health-focused social science research for undergraduate students from groups underrepresented in research. The program provides full-time instruction in research writing, research methods, statistics, and other topics, as well as one-on-one faculty mentoring and guidance in a full-fledged research project. Interns receive a financial stipend and three academic credits as well as room and board during the program.

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<http://www.rwjf.org/en/research-publications/find-rwjf-research/2012/06/using-social-network-analysis-to-predict-early-collaboration-wit.html>.

Project L/EARN is managed at the Rutgers University Institute for Health, Health Care Policy and Aging Research by Faculty Director Jane E. Miller, PhD, and Program Director Diane Davis. The program launched in 1991. Robert Wood Johnson Foundation (RWJF) support, which began in 2008, runs through May 2014<sup>16</sup>. See the [Progress Report](#) for more information on Project L/EARN.

### The Social Network Analysis

Consultants Marcela Gutierrez, PhD,<sup>17</sup> and Guy Hagen, MA,<sup>18</sup> collaborated with Project L/EARN directors to evaluate, through a social network analysis, the structure and effectiveness of interns' school and career networks in connecting them with opportunities to pursue health research careers. Specific goals of the two-phase social network analysis were to describe:

- The nature of the network of Project L/EARN advisors who assist alumni in the first few years post-program
- The types of advising received related to undergraduate experiences, post-baccalaureate research/clinical training, and the graduate school application process
- How the number, strength, and usefulness of advising ties varies according to alumnus/a status and advisor affiliation

### Cross-Sectional Social Network Analysis

The cross-sectional social network analysis focused on students participating from 2006 through 2009. Some 29 of 33 eligible alumni participated in an online survey in which they named up to 10 people who had helped them plan their professional career activities and graduate school applications. Then they answered questions about each advisor, such as type of support provided, usefulness of advice received, and relationship strength.

### Key Findings

As reported by consultants and program directors to RWJF, **the analysis identified:**

- **The wide range of topics for which interns and alumni received advising related to graduate school and professional development,** such as:
  - Deciding whether to pursue a post-baccalaureate work experience pre-graduate school
  - How to look for graduate schools in one's area of interest

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<sup>16</sup> The social network analysis is funded as part of the grant for Project L/EARN: ID# 60184 (\$2,827,791 [includes work other than the social network analysis]; October 1, 2008 to May 31, 2014).

<sup>17</sup> Gutierrez Consulting Partnerships

<sup>18</sup> Innovation Insights



- Writing the application essay and getting letters of recommendation
- **The extent to which alumni were given entrée into networks of graduate school faculty and health researchers**
- **The amount of guidance and support offered for their educational and career goals.**

**The mentoring relationship with the Project L/EARN mentor appears to be stronger and more multidimensional than it is with other mentors** such as a professor in the student’s major. “We think that kind of enrichment is important, partly because of the topics but also because it shows that interns and alumni have a very close relationship with their Project L/EARN mentor,” according to Faculty Director Miller.

Program Director Davis believes that Project L/EARN interns, at a very early stage of their careers, “have much richer advising networks than you would expect to see for an undergraduate student.”

### Prospective Study of Advising Networks

The second phase of the social network analysis is a four-year prospective study of the advising networks of Project L/EARN alumni. Starting with the 2010 cohort through the 2013 cohort, each group of interns completes a survey about their advising networks (number of advisers, who they are, what topics they discussed) before the summer program and one year and two years later. The study addresses questions such as:

- Do students lose advisers after graduation? Do they pick up new advisers over time?
- Are there certain advisers who stick with the students? If so, are the Project L/EARN advisers the ones who stick with them?
- Do the topics about which they receive advising change as they progress from their last years of college to post-baccalaureate activities to early graduate school?

The prospective study follows the 2010 through 2013 cohorts through 2014. Thus, findings are not yet available.

Prepared by: Mary B. Geisz

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## CONDUCTING A SOCIAL NETWORK ANALYSIS OF THE PUBLIC HEALTH COMMUNICATIONS NETWORK

Evaluators from the [Leadership Learning Community](#)<sup>19</sup> used social network analysis to develop an understanding of communication patterns among the network of people and

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<sup>19</sup> 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



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,<sup>20</sup> 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.

## The Social Network Analysis

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.<sup>21</sup> The Robert Wood Johnson Foundation (RWJF) supported this project between December 2010 and May 2011 with a grant<sup>22</sup> of \$91,481 to the [Tides Center](#).<sup>23</sup> The project was conducted by staff from the Leadership Learning Community, which received the funding through the Tides Center.

### *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,”

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community offers learning opportunities for its members and consulting services for foundations and leadership development programs.

<sup>20</sup> 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.

<sup>21</sup> Reinelt is director of evaluation and research, and Castaneda is marketing and communications director at the Leadership Learning Community.

<sup>22</sup> ID# 68545 (\$91,481; December 1, 2010 to May 31, 2011)

<sup>23</sup> 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.

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 are they 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 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.<sup>24</sup> 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

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<sup>24</sup> Examples of keywords used include food desert, rural health, walkability, corporate wellness, healthy schools, smart growth, and health social justice.

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 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 Smith<sup>25</sup> [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 wiki<sup>26</sup> that they established for the use of the project and other RWJF public health social network analysis projects.

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<sup>25</sup> Smith is featured on a Leadership Learning Committee [blog post](#).

<sup>26</sup> 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.

- 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 Reinelt<sup>27</sup>
- An article on the social media (Twitter and blogs) analysis: “[Applying Social Network Analysis to Online Communications Networks](#)” by Castaneda.<sup>28</sup>

## 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.**<sup>29</sup> By partnering with this

<sup>27</sup> 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](#).

<sup>28</sup> Leadership Learning Community: Natalia Castaneda’s Blog. “Applying Social Network Analysis to Online Communications Networks.” Posted January 24, 2012. Available [online](#).

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.
- 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.

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<sup>29</sup> Eat Smart, Move More is a statewide movement that promotes increased opportunities for healthy eating and physical activity. See also [online](#).

- **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 Play<sup>30</sup> 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 cohealth.”
- 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.

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<sup>30</sup> Save Play is a philosophy and strategy of KaBOOM!, a Washington-based national nonprofit organization dedicated to saving play for America’s children.

- 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.

## **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](http://Completestreets.org) for the National Complete Streets Coalition
  - [TheCityFix.com](http://TheCityFix.com), an online resource for news about sustainable transport
  - [FoodSafetyNews.com](http://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)

Prepared by: Mary B. Geisz

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## ANALYZING STAKEHOLDER PERCEPTIONS AND SOCIAL NETWORK CONNECTIONS IMPORTANT FOR THE FUTURE OF NURSING

On October 5, 2010, the Robert Wood Johnson Foundation (RWJF) and the Institute of Medicine released the report of the *Robert Wood Johnson Foundation Initiative on the Future of Nursing, at the Institute of Medicine*,<sup>31</sup> a collaborative effort to examine “the capacity of the nursing workforce to meet the demands of a reformed health care and public health system.” The report offered eight key recommendations that called for substantive changes in nursing education, clinical practice, nursing workforce development, policy-making, and leadership.

A multidisciplinary strategic advisory committee guides the implementation phase of the *Initiative on the Future of Nursing*. To assist in this phase, RWJF engaged researchers

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<sup>31</sup> The *Initiative on the Future of Nursing* evolved from the original effort, to a report with recommendations, and on to a campaign to implement the recommendations. The initiative website describes its status as of 2012 (available [online](#)). For background information about the launch of the initiative, see the RWJF [website](#).



from The Sage Colleges to ascertain stakeholder perceptions as to issues the advisory committee will face and to lead a multilevel analysis of the social network connections and collaborations among members and other key stakeholders. Researchers at Sage interviewed advisory committee members, RWJF staff, and other stakeholders; identified the social networks for each; and analyzed the resulting networks using specialized software.

## The Social Network Analysis Project

To assist the implementation of the initiative’s recommendations, RWJF engaged researchers Kimberly A. Fredericks, PhD, MPA, RD, (author of this report)<sup>32</sup> and Kathleen Kelly, PhD, MPH, MS, FNP,<sup>33</sup> from The Sage Colleges, to lead a multilevel analysis of the social network of members of the strategic advisory committee and other key stakeholders. RWJF supported this project between December 2010 and September 2011 with a grant<sup>34</sup> of \$84,370 to The Sage Colleges.

“It became apparent that there was a need to look at the strategic advisory committee, which was appointed following the release of the report, and what sort of networks they have to move the report forward,” explains Kelly.

Fredericks says, “Social network analysis can be a tool to help understand not just who is present and who is missing, but also the strategy for making connections and determining the people who need to be reached.”

Fredericks, Kelly, and colleagues collected and analyzed both qualitative and quantitative data. The team:

- Conducted 23 interviews (six in person and 17 by telephone) with 12 committee members, seven RWJF staff, and four additional stakeholders. The interviews were designed to ascertain respondents’ perceptions of the issues the advisory committee will face in implementing the recommendations and to identify committee members’ ties to other individuals and organizations likely to have interest or influence in the area.
- Identified the social networks for each committee member from the information contained in the interview transcripts. They created multiple datasets for different types of analyses that included: individuals, organizational affiliations of the individuals, attributes of the organizations and of the individuals, strength of the association between the individuals and their organizations, and others. The result

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<sup>33</sup> Kelly is assistant professor of nursing, Sage Colleges School of Health Sciences, Albany, N.Y. and translational researcher at St. Peter’s Hospital, Albany, N.Y.

<sup>34</sup> ID # 68498

was 1,799 individual affiliations and 1,752 organizational affiliations within the entire network.

Researchers used specialized statistical software (UCINET) to analyze the social network data. A visualization package embedded within UCINET called NetDraw allowed for graphic representation of the resulting networks.

## Findings

### *Qualitative Findings From the Interviews*

Researchers reported the major themes resulting from the interviews in a social network analysis report to RWJF and in an interview. Key themes include:

- A **“clear, agreed upon” strategic plan, some call it a “road map,” is needed that addresses how the recommendations will be implemented.** “The lack of a strategic plan is probably the strongest idea that we heard,” says Kelly.

Associated ideas expressed by interviewees include:

- “We have to create a strategy first. The messages come second. We’ve gotten out of the box too quickly with tactics before we had a strategy in place.”
  - Approach the issues from multiple angles in an interdisciplinary manner. “This is not about nursing, it’s not about doctors. Rather, it’s about patients!”
  - Proper “framing” of the message could defuse tensions and open lines of communication. For example, according to one interviewee: “‘Practicing to the full extent of licensure/training/education’ is not that controversial. The controversy is ‘independence.’ That’s where you lose physicians.”
  - The plan should connect interdisciplinary networks and create ways to “maintain enthusiasm around the issue” in the long term. Influential people on “all sides of the issue” can write about it and raise both professional and public awareness.
- **The business case for implementation of some of the recommendations (especially that 80% of nurses become bachelor’s prepared by 2020) is not being discussed; cost savings must be demonstrated in order for those involved to be willing to work to make such changes.** As Kelly explains, the question is: “Where is the economic argument for how that will improve the quality of care and be worth the financial investment in additional training and education?”

Concerns specifically associated with the “80/20” recommendation include:

- The impact on community and four-year colleges, since there is already a recognized shortage of qualified nursing faculty.

- The impact on the health care system if bachelor’s level nurses are not interested in providing direct bedside care, and therefore, who would fill this role given the current shortage of practicing nurses.
- **Education leaders at all levels, but especially those representing community colleges, are “critically” needed on the strategic advisory committee.** While historically many nurses have been prepared at the community college level, the *Future of Nursing* report calls for major streamlining of nursing education from the associate up to the doctoral level. “But,” Fredericks asks, “How can you make significant decisions relating to how to fast track or streamline the initial educational process, if you don’t have people involved in that entry level at the table?”
- **Representation from the business community, including Fortune 500 companies, is needed on the strategic advisory committee, and the business community must be included in implementation efforts.** Both large and small companies are vitally concerned about productivity and health care cost containment and have a vested interest in the reforms called for by the *Initiative on the Future of Nursing*. A strong economic argument must be made to engage them.

“If you are trying to make major changes within nursing education and health care in general, you need to have the business community on board,” Kelly explains. “They see things through a different lens than policy-makers, government leaders, politicians and educators.”

- **Despite many issues on which physician and nursing organizations can agree, scope of practice is a major roadblock to progress.**
  - Said one interviewee: “Despite the best of intentions, the nature of the report and the subsequent reactions have moved us, not down the road toward affirming the role of nursing as part of the team, but have created some divisiveness.”
  - Conclude the researchers: “Clearly common ground and mutual understanding must be achieved before a united implementation effort can be initiated.”
- **Implementation efforts must be “bipartisan.”**
  - It is important to include individuals who represent a variety of views so that ideas for implementation are not limited.
  - The political climate in Washington is of concern and the advisory committee should connect with major bipartisan organizations to promote its agenda.
- **Individual perceptions of the advisory committee’s “charge” vary widely, which suggests some miscommunication about their roles and associated expectations.**

### **Quantitative Findings From the Social Network Analysis**

The researchers reported the findings from the quantitative analysis of the strategic advisory committee members’ social networks. These findings are detailed, cover a wide

range of connections, and are shown graphically in the *Social Network Analysis Report*. Key findings with relevance to successful implementation of the initiative's recommendations include:

- **Members of the strategic advisory committee had the most connections with membership and advocacy organizations.** These 1,093 ties were 19.32 percent of the 5,656 connections in the social network and represented 272 different organizations and initiatives. Among the 10 organizations with the strongest ties to committee members were: the National Quality Forum, National Paid Sick Days Coalition, National Priorities Partnership, and Leadership Conference on Civil and Human Rights.
- **Strategic advisory committee members had a broad range of connections within the health care field.** Some 14.44 percent of the connections were in this sector, representing 341 institutions such as hospitals, health systems, insurers, health care companies (e.g., pharmaceutical companies), and health-related organizations (e.g., hospital associations). Of these, 49 percent were with hospitals and others providing direct care.
- **While advisory committee members had a fair number of connections with universities and colleges (12.92% of all connections, representing 267 different institutions), almost all of these were with large public universities or top private institutions, with only four connections to community colleges.**
- **The advisory committee members had notable connections with:**
  - Federal, state, and local government institutions: 10.62 percent of all connections (74 federal, 65 state, and 7 local)
  - Professional associations: 8.43 percent of all connections (126 different associations)
- **The advisory committee members had fewer connections with the business sector: only 4.63 percent of the total connections in the network, representing 168 different organizations such as corporations, attorneys, and trade associations.**
- **The fewest connections (3.06% or less) were with charities, think tanks, philanthropic organizations, rural health providers, and the media.**

### **Limitations**

Kelly and Fredericks noted the following limitations to the analysis:

- Complete, standardized, and uniform network data, collected from interviews, are critical in social network analysis. Nonresponse and unequal contributions of some respondents, along with the refusal of some respondents to answer specific questions, presented a limitation to the capture of full network data.

- Lack of an overview presentation to strategic advisory committee members on the methodology and its importance (due to time constraints) may have resulted in some confusion about the data requested and committee members' recall of all relationships.

These limitations may have resulted in the finding that some of the network's ties were sparse and may indicate that a number of the networks may not have been fully captured.

## Recommendations

As a result of their analyses, Kelly and Fredericks made the following recommendations:

- Develop a comprehensive and well-coordinated strategic plan to guide implementation.
- Add a representative from the community college arena to the advisory committee.
- Add a business leader to the advisory committee.
- Increase connections with state-level agencies.
- Conduct analyses across select state-level action coalition initiatives to streamline nursing education and improve overall program efficiency and effectiveness.
- Include additional expertise in social change theory and practice, given the magnitude of the proposed changes in nursing education, practice and workforce development.
- Give attention to current and changing health care payment systems for nursing services.

## Lessons Learned

1. **Enlist assistance from key stakeholders to encourage busy leaders to schedule interviews for a time-sensitive project.** Researchers found it difficult to schedule interview time with some members of the strategic advisory committee who were not aware of the time sensitivity of the work. Contact from RWJF staff and others helped to facilitate the scheduling of these interviews. (Project Directors)

Prepared by: Mary B. Geisz

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## LOOKING FOR SOCIAL NETWORK CONNECTIONS TO COMBAT CHILDHOOD OBESITY

From January 15 through December 14, 2011, researchers at [LeCroy & Milligan Associates, Inc.](#), a private consulting firm in Tucson, Ariz., sought to analyze the network of organizations working in the field of childhood obesity in 2011. The analysis intended

to discover and describe the relationships among people and organizations in the network, determine where the Robert Wood Johnson Foundation (RWJF) was positioned, and identify connections RWJF and others wanted to develop in the future.

LeCroy & Milligan Associates (Project Director Elena Malofeeva, PhD, and colleagues) surveyed 27 key informants in order to identify the most influential people and organizations working on childhood obesity prevention, and then, after a failed attempt to get 849 respondents from 500 organizations to describe their relationships with those they collaborated with in advocacy/policy, training/technical assistance, or research, ended up surveying 263 participants from 196 organizations about their top 10 connections within the childhood obesity prevention field.

### **The Social Network Analysis Project**

The goals of this study were to provide initial understanding of the network of organizations working in the area of childhood obesity prevention in 2011, to determine where RWJF was positioned among influential organizations, and to identify connections RWJF and others would like to develop in the future. LeCroy & Milligan Associates, a Tucson, Ariz.-based private consulting firm specializing in human services program evaluation and training, conducted the study. Elena Malofeeva, PhD, senior evaluation associate, was project director. RWJF provided two grants totaling \$116,182 to support the project.

The study examined existing childhood obesity prevention social networks by exploring:

- Connections within and across three dimensions:
  - Advocacy/policy
  - Training/technical assistance
  - Research
- Connections involving RWJF's childhood obesity prevention national programs
- Connections across RWJF's six childhood obesity prevention priority areas:<sup>35</sup>
  1. Ensure that all foods and beverages served and sold in schools meet or exceed the most recent Dietary Guidelines for Americans.
  2. Increase access to high-quality, affordable foods through new or improved grocery stores and healthier corner stores and bodegas.
  3. Increase the time, intensity, and duration of physical activity during the school day and out-of-school programs.

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<sup>35</sup> See descriptions of the six priority areas [online](#).

4. Increase physical activity by improving the built environment in communities.
  5. Use pricing strategies—both incentives and disincentives—to promote the purchase of healthier foods.
  6. Reduce youths’ exposure to unhealthy food marketing through regulation, policy, and effective industry self-regulation.
- Connections with 13 different constituencies: advocacy groups, community-based organizations, federal government agencies, local government agencies, media, medical practitioners, philanthropies, policy-makers, private and for-profit organizations, professional organizations, research organizations, school systems, and state government agencies

The study also examined connections that RWJF and other childhood obesity organizations would like to develop in the future.

### ***Methodology: The Key Informant Questionnaire and Social Network Analysis Survey***

LeCroy & Milligan Associates first consulted with RWJF staff and other health experts about the questions to be asked and desired information. The stakeholders wanted all the information about *all* connections among *all* the members and potential members of the network of people working on childhood obesity prevention. Unfortunately, the stakeholder requests were not realistic in light of what could be done via a survey. In spite of their concerns about this expectation, both the RWJF program officer (Leviton) and LeCroy & Milligan felt an obligation to try to get the desired information.

Project staff created an online Key Informant Questionnaire and, in March–April 2011, surveyed 49 individuals. The questionnaire asked respondents to identify organizations and individuals considered instrumental in reversing the childhood obesity epidemic. Twenty-seven participants responded.

LeCroy & Milligan Associates then sent a Social Network Analysis Survey to 849 individuals representing 500 organizations<sup>36</sup> in May 2011. LeCroy asked each respondent to describe his or her relationship with those they collaborated with in advocacy/policy, training/technical assistance, or research. This created a huge burden on potential respondents and, not surprisingly, had an unacceptable response of only 77 respondent organizations (15.4%). They halted the survey. RWJF’s Leviton calls this round of the study “embarrassing.”

LeCroy researchers then re-surveyed the same 849 individuals in the same organizations in June–July 2011, asking them to focus on the 10 most influential organizations or

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<sup>36</sup> The surveyed organizations and individuals included those identified through the Key Informant Questionnaire, as well as relevant RWJF staff and grantee organizations.



individuals that advanced RWJF's goal of reversing childhood obesity. In total, 263 people representing 196 unique organizations (39% of the original 500 organizations) responded. Most respondents (90.7%) had received funds from RWJF within the past decade.

This survey collected demographic information about the person and the organization responding and asked respondents to identify:

- Ten organizations with which they had ties in advocacy/policy, training/technical assistance, or research, and the nature of those ties
- Whether they or their organization were affiliated with any RWJF childhood obesity prevention national programs, and the nature and extent of the affiliation
- Which of RWJF's six priority areas they addressed, their ties to others in the priority areas, names of organizations that connected priority areas, and where RWJF fit within those connections
- To which of the 13 constituencies they related and how, and the names of organizations that most connected to multiple constituencies
- With which individuals and organizations RWJF should connect, with which its grantees should connect, and with which the respondents themselves would like to be more connected

## **Results**

The study provided a limited amount of information on a large number of organizations making up the RWJF childhood obesity prevention network in 2011, including:

- **A list of names and attributes of organizations that experts consider influential in reversing the childhood obesity epidemic**
- **Narrative and pictorial descriptions of how organizations connect to one another for advocacy/policy, training/technical assistance, and research—and the strength of those connections**
- **Descriptions of how factors such as geographical proximity and area of focus within the field influence the composition of networks**
- **Descriptions of the connections of the RWJF's childhood obesity prevention national programs**
- **An examination of how six priority areas identified by RWJF influence the network structure**
- **An analysis of how organizations that work in childhood obesity prevention related to 13 specific types of constituency (e.g., advocacy groups, media, medical practitioners)**



- **A list of organizations that RWJF should be connected with to advance its goal of reversing the childhood obesity epidemic by 2015**
- **A list of organizations that other respondents should be connected with to advance RWJF’s goal**
- **An updated database of current contact and other information about all organizations identified through the analysis.**

### *Findings*

Malofeeva and Leviton reported the following overall findings in separate interviews:

- “We tried to accommodate our stakeholders, although as we expected, it was not realistic to try to ask almost 900 people about their connections with almost 900 other people,” said Leviton. “I think we discovered some limitations of formal social network analysis methodology, both in terms of response burden and some of the awkwardness of the available software.”
- “We found that there were organizations at the periphery that were not closely connected to the rest of the network,” said Malofeeva. “A few of them were ‘peripheral hubs’ in that they were connected to others at the periphery.” On this point, Leviton noted, “The study showed us which groups were influential on a particular issue but were not connected to the core of the network. Those are groups we should think about working with or find ways to connect to the core.” Later, Leviton added, “The limitations of the survey method make this difficult to substantiate—if you are only asking about the 10 most important contacts, you are going to miss quite a few overall and quite a few that will appear to be peripheral when in fact they might have been your 50th most important contact.”
- **“Through the analysis we were able to identify the RWJF national programs most connected to the childhood obesity network, and the national programs least connected,” reported Malofeeva.**
- **“One interesting finding that we were fairly sure of before, was that we are not working closely enough with some constituencies,” said Leviton.** “For example, we need to work more with business. This finding will be helpful as we develop our obesity advocacy strategy.”
- **The study found some clusters by priority area within the field of childhood obesity**—which “confirmed what we already knew,” observed Leviton, “that people involved with food might be connected with one another, but might not be involved with groups working on physical activity. In retrospect we did not need to do this study, which was expensive, and the first round of which was just unrealistic, to find this out.”

LeCroy & Milligan Associates reported additional findings in a 2011 unpublished report to RWJF:

- **RWJF is one of the most influential organizations in the childhood obesity prevention network in the United States, according to most of the respondents.** Leviton notes that these respondents “were in our network and were our grantees, responding to a survey we funded, so this is not much of a finding.”
- **Many of the organizations that connected to each other in one of the three networks—advocacy/policy, training/technical assistance, and research—also connected in one or both of the other two networks.** However, in each network, different organizations constituted the core and others the periphery, depending upon the degree of connectivity.

- Two RWJF national programs, *National Policy and Legal Analysis Network to Prevent Childhood Obesity* and *Leadership for Healthy Communities*, were among the top 10 influential organizations in the training/technical assistance network.

Two RWJF national programs, *Active Living Research* and *Healthy Eating Research*, were among the top 10 organizations in the research network.

No RWJF national programs were among the top 10 in the advocacy/policy network.

- Among universities: Yale University’s Rudd Center for Food Policy and Obesity, San Diego State University (where the national program office of *Active Living Research* is located) and the University of North Carolina at Chapel Hill (where the national program office of a former program, *Healthy Eating by Design*, and an active program, *Healthy Kids, Healthy Communities*) were among the top four organizations in both the advocacy/policy and research networks. The University of Arkansas (where RWJF’s Center to Prevent Childhood Obesity<sup>37</sup> was located at the time of this grant) was among the top six in advocacy/policy as well as training/technical assistance. The University of Minnesota (where the national program office for *Healthy Eating Research* is located) was a key connector in advocacy/policy and research.
- Other key organizations—highly connected to RWJF and to other network organizations—included:
  - Centers for Disease Control and Prevention (within the top eight in all three networks)
  - PolicyLink, Public Health Law and Policy, and YMCA of the USA (within the top six for advocacy/policy and training/technical assistance networks)
  - National Institutes of Health (third in the research network).

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<sup>37</sup> RWJF closed the center in early 2012.

These organizations are important hubs that might be used for distributing resources and information from RWJF to the rest of the network.

- Some peripheral organizations had their own networks that were not connected to the main hub. These organizations are locally influential. Examples included:
  - SWAH (Self Wealth and Health) Empowerment and the Tulane University School of Public Health and Tropical Medicine (advocacy/policy and training/technical assistance)
  - Stapleton Foundation for Sustainable Urban Communities (for research).
- **Most organizations responding to the survey had an affiliation with at least one RWJF childhood obesity national program, and one-third had more than one national program affiliation.** This is partly because the survey oversampled RWJF staff and grant recipients.
  - *Active Living Research* was the most connected national program.

A list of organizations that reported affiliation with five or more national programs was also generated. These organizations acted as important bridges connecting multiple national programs.

- **Responding organizations were typically involved in more than one of RWJF's six priority areas, and 28 were involved in all six areas.**
  - Childhood obesity prevention organizations working in multiple priority areas have a lot of contacts. They may be able to influence organizations involved in fewer areas or build synergies among them.
  - RWJF priority areas represent more than shared interests. They are the way responding organizations identify their place in the childhood obesity prevention network.
  - Organizations working in priority area #4 (“Increase physical activity by improving the built environment in communities”) were most likely to be connected with each other, using the survey methodology.
  - Organizations involved in priority area #5 (“Use pricing strategies—both incentives and disincentives—to promote the purchase of healthier foods”) were least likely to be connected with each other, using this survey methodology.
  - Geographic region influenced involvement in specific priority areas. For example, East and Mountain West respondents were more likely to be involved with priority area #1 (“Ensure that all foods and beverages served and sold in schools meet or exceed the most recent Dietary Guidelines for Americans”), while South and West respondents were less likely to be involved with this priority area.

- **Organizations in the childhood obesity prevention network interface with a variety of constituencies.** The type of organization, region, size, age, and funding influenced the type of constituency to which organizations were connected.
  - Organizations that have strong ties to multiple constituencies may be particularly important as change agents. These organizations can make connections between childhood obesity prevention networks and the broader environment outside the childhood obesity field.
  - Advocacy groups, policy-makers, and research organizations were more likely to have connections with childhood obesity prevention organizations in RWJF's network. It was least likely for this to be the case for private/for-profit organizations, medical practitioners, professional organizations, and media, which is not surprising as RWJF generally does not fund medical practitioners or these other groups.

### ***Limitations***

LeCroy & Milligan Associates noted the following study limitations in the report to RWJF:

- The study did not assess a full network due to the large number of existing members and issues related to the respondent burden.
- The study did not analyze the emerging members of the three networks and their connections.
- Asking respondents to report on their relationships with only the 10 most influential organizations favored well-connected, highly visible, and influential organizations over smaller, peripheral ones.
- The findings provided limited analysis of how respondents were connected to RWJF childhood obesity prevention and the staff of RWJF national program offices. This information was available only when a respondent identified an RWJF program as one of the 10 most influential organizations.
- The study estimated the strength of connections but did not address the impact of those connections on RWJF's goal.
- The study did not address social media.
- The study provides only limited understanding of how childhood obesity grantee organizations and staff were connected to grantee organizations of other RWJF interest areas such as vulnerable populations. The focus was on external connections.
- The study assessed connections and networks in 2011, but did not analyze how networks had been changing over time.

## Recommendations

LeCroy & Milligan Associates offered these recommendations in the report to RWJF:

- **Develop strategies to better utilize hub organizations in advocacy/policy, training/technical assistance, and research—including hubs at the core of the network and hubs at the periphery.**
- **Identify strategies for how RWJF’s childhood obesity prevention national programs could play a more central role in communications, especially with organizations in the advocacy/policy network.**
- **Continue monitoring national program communications and standing in the field and identify gaps and areas of emphasis.** More connected national programs and priority areas might be favored as targets for influence by RWJF, as these bring together larger numbers of other organizations.
- **Learn from successful initiatives to improve the effectiveness of the childhood obesity prevention campaign.** For example, organizations working on priority area #3 (“Increase the time, intensity, and duration of physical activity during the school day and out-of-school programs”) and priority area #4 (“Increase physical activity by improving the built environment in communities”) were substantially more likely to be working directly together than two organizations working in other priority areas. Lessons from these collaborations could be useful for other priority areas or initiatives.
- **Prioritize constituencies and organizations to target for connection.** Organizations with which RWJF should connect that respondents recommended, and organizations that respondents indicated they wanted to connect with themselves, suggested the priorities. Also, lessons may be learned from studying constituencies that are more intensively networked, such as community organizations, advocacy groups, policy-makers, and research organizations.

## Lessons Learned

1. **SNA may simply be unrealistic for a project of this kind.** It was simply not feasible to collect complete information on everyone’s contacts using survey methods. It is not clear what other methods would have produced more useful information. (Program Officer/Leviton)
2. **Consider end users more carefully before undertaking such a project.** Leviton notes that in this case, social network analysis (SNA) was a method in search of a question to answer. “Although internal stakeholders were enthusiastic about trying out the SNA approach, it was never clear how people would, in fact, use the information. If the goal were simply to generate a list of contacts, that was accomplished in the very first phase. It is possible that certain findings, such as the

presence of peripheral hubs, might be verified through other methods, but the question of usefulness still needs to be answered first.”

3. **During initial project planning, ensure that the scope of work specified is feasible within the timetable allowed.** According to Project Director Malofeeva, the six-month timeline in the original RWJF grant was too short, and the scope of work was very broad. “There was too much, too quickly, to be done too soon. It was important to work with RWJF staff as to realistic expectations for social network analysis,” Malofeeva noted. She said that issues related to the timetable and scope of work were resolved by working with RWJF throughout the project. Leviton agrees: “When you are trying out a new method for a new purpose, a realistic timeline is about three times the length you expect.”
4. **Sometimes, consulting internal stakeholders can simply confuse the issues.** Generally speaking, it is a good idea to consult both internal and external stakeholders for a research project, because that helps to ensure usefulness and buy-in. But, in this case, it did neither. The internal stakeholders had an unrealistic view of what SNA could provide, and both the program officer and the contractor needed to be more firm about what was realistic to accomplish. (Program Officer/Leviton)

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## EVALUATING THE SUCCESS OF THE RWJF ALUMNI NETWORK'S WEBSITE IN ENGAGING ALUMNI AND ITS VALUE TO THEM

In April 2011, the Robert Wood Johnson Foundation (RWJF) launched the *Alumni Network*, an online community designed to promote collaboration among alumni of RWJF human capital programs.<sup>38</sup> One component of the *RWJF Network* evaluation aimed to use a modified social network analysis to describe interactions among alumni. However, evaluators used only the mapping feature of social network analysis software and were not able to do a formal social network analysis.

The *RWJF Alumni Network* website provides an online venue for communication and collaboration. Members log on to identify synergies in fields of research, policy and

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<sup>38</sup> Alumni of the following programs are eligible to join the Network: *Developing Leadership in Reducing Substance Abuse*, *Generalist Physician Faculty Scholars*, *Harold Amos Medical Faculty Development Program*, *Innovators Combating Substance Abuse*, *Ladder to Leadership: Building the Next Generation of Community Leaders*, *New Connections: Increasing Diversity of RWJF Programming*, *Medicaid Leadership Institute*, *RWJF Center for Health Policy at Meharry Medical College*, *RWJF Center for Health Policy at the University of New Mexico*, *RWJF Clinical Scholars*, *RWJF Community Health Leaders*, *RWJF Executive Nurse Fellows*, *RWJF Health Policy Fellowships*, *RWJF Health & Society Scholars*, *RWJF Investigator Awards in Health Policy Research*, *RWJF Nurse Faculty Scholars*, *RWJF Physician Faculty Scholars*, and the *State Health Leadership Initiative*.

practice, and geographic concentrations of fellow alumni. The Network uses webinars, resource guides, and live chats to promote leadership and career opportunities.

RWJF envisioned that the *Alumni Network* and its online and in-person events would provide graduates of RWJF Human Capital programs a way to continue communicating regularly with one another and with the Foundation.

RWJF managed the *Alumni Network* in-house, and funded Seth L. Emont, PhD, principal at White Mountain Research Associates in Danbury, N.H., to conduct the evaluation.<sup>39</sup>

## Evaluating the *Alumni Network*

The evaluation aimed to document the extent to which alumni used the website, RWJFAlumniNetwork.org (only available to alumni), for networking and for access to resources. RWJF staff also wanted to document the value of the Network to users. The evaluation asked:

- To what extent are alumni using the website, and what resources are they accessing?
- What fields of practice are registered users engaged in, and what proportion holds senior positions?
- To what extent are alumni engaged in online discussions with other alumni, and are they connecting to people they may not have otherwise connected to?
- To what extent are alumni collaborating with other alumni?

## The Social Network Analysis

Emont proposed to use elements of social network analysis to answer the last two questions. He created an online survey administered by RWJF in May–June 2012 exploring whether Network registrants collaborated with other alumni and whether the Network contributed to their professional growth. Some 647 registrants responded (a response rate of 22%). The survey was envisioned to establish a baseline that would be followed by subsequent surveys allowing for tracking changes over time.

### *Problems Encountered*

RWJF experienced delays launching the *Alumni Network* Online Community and recruiting alumni to use the online community. Therefore, the survey was limited to a baseline and follow-up surveys were not conducted.

These delays and technical difficulties logging onto and registering with the Network limited the number of alumni who joined. Therefore, RWJF reallocated the evaluation

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<sup>39</sup> ID# 69040 (\$76,694; May 16, 2011 to April 16, 2013). Some of the funding was reallocated for other use.



funds and the social network analysis did not proceed. Emont used only the network analysis mapping feature and only to visualize which alumni scholars had contacts with other alumni scholars in the online community.

Because of low enrollment in the original Network and the technical difficulties, RWJF is reconfiguring the *Alumni Network* to a new RWJF Human Capital Network in which human capital grantees and alumni join via LinkedIn. The transition is taking place over the summer and fall of 2013.

### ***Key Findings from the Online Survey***

- Nearly 80 percent of respondents said they were either not active or had a low level of participation on the website. Only 2.9 percent reported a high level of participation.
- About one-third of alumni had not registered. Some 35 percent had registered but had not used the Network, and 27.1 percent had used it “just a few times in the past year.”
- Respondents offered reasons for not using the website: lack of time, lack of interest or perceived relevance, lack of awareness of the website, and problems with access.
- Only 10 percent of respondents who said they collaborated with other alumni said the collaboration was made through the *Alumni Network*.

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## APPENDIX 2

### Interview Protocol for Program Officers

Regarding social network analysis in general:

1. How would you describe your knowledge of and exposure to SNA?
2. How did RWJF start getting involved in the use of SNA for the purposes of evaluation?
3. From your perspective, what features of SNA are unique and provide added value that is different from traditional evaluation methodologies?

The following questions relate to your experience as program officer on grant ID# \_\_\_\_:

4. At what point in the project lifecycle was SNA utilized or decided upon? In your opinion, was that the appropriate timing?
5. What have been your biggest challenges managing evaluative SNA projects? Consider both overarching challenges and project-specific challenges.
6. How were these challenges managed?
7. What do you think are the biggest successes or most useful findings from the SNA project?
8. How has RWJF utilized the findings from this type of analysis?
9. What lessons have you garnered from the work?
10. What do you see as the future application of this work?
11. Is there anything else I should know about your experience with SNA on this project or your views on the use of SNA in general?

## APPENDIX 3

### Email Survey for Project Directors

Regarding social network analysis in general:

1. How would you describe your knowledge of and exposure to SNA in general? Using SNA for evaluation?

Regarding Specific RWJF Projects

2. Did you use “in-house” expertise or hire a consultant to do this work?
3. At what point in the project lifecycle was SNA utilized or decided upon? Do you feel that was appropriate timing?
4. What have been your biggest challenges in this SNA project? How did you manage these challenges?
5. What do you think are the biggest successes or most useful findings of the project? (Describe why you think it was successful or useful, in what context.)
6. How have the findings from this type of analysis been utilized?
7. If you were to do it all over again, what changes would you make to the SNA project and why?

## APPENDIX 4

### Study Data

1. Evaluation of the *State Health Leadership Initiative* (PHL)
  - Summary report
  - Email survey of Project Director, David Lazar
  - Interview with Program Officer, Debra Perez
2. Evaluation of RWJF's *Healthy Eating Research* program (HER)
  - Summary report
  - Email survey of Project Director, Seth Emont
  - Interview with Program Officer, Laura Leviton
3. *Ladder to Leadership: Developing the Next Generation of Community Health Leaders* (a.k.a.: *Emerging Leaders Program*) (ELP)
  - Summary report
  - Email survey of Project Director, Heather Champion
  - Interview with Program Officer, Sallie Anne George
4. Evaluation of RWJF's *Consumer Voices for Coverage* program (SSCA)
  - Summary report
  - Email survey of Project Director, Debra Strong
  - Interview with Program Officer, Katherine Hempstead
  - Interview with Program Officer, Brian Quinn
5. Project L/EARN: Enlarging the Pipeline of Health Researchers from Underrepresented Groups through an Internship Model
  - Summary report
  - Email survey of Project Director, Jane Miller
  - Interview with Program Officer, Debra Perez
6. Conducting a Social Network Analysis of the Public Health Communications Network
  - Summary report

- Email survey of Project Director, Claire Reinelt
  - Interview with Program Officer, Debra Perez
7. Conducting a Social Network Analysis of Key Stakeholders in Implementation of Recommendations for the *Initiative on the Future of Nursing*
- Summary report
  - Email survey of Project Director, Kim Fredericks
  - Interview with Program Officer, Lori Melichar
8. Using Social Network Analysis to Evaluate RWJF’s Childhood Obesity Initiatives, 2011–2012
- Summary report
  - Interview with Program Officer, Laura Leviton
9. Evaluating the Success of the *RWJF Alumni Network’s* Website in Engaging Alumni and Its Value to Them
- Project description on RWJF website
  - Email survey of Project Director, Seth Emont
  - Interview with Program Officer, Nancy Weiler Fishman

## APPENDIX 5

### Social Network Analysis Software Programs

Program	Main Functionality	Cost	Advantages	Disadvantages	URL
UCINET Suite that comes with NetDraw and Pajek	A comprehensive package for the analysis of social network data, as well as other 1-mode and 2-mode data	Approx. \$250 per license, \$50 for students	Windows-based menus; has become more user friendly; many theoretical and practical workshops given on this software and SNA in general across the globe; good customer service and user groups which help	Currently no Mac version; requires a basic level of technical sophistication and familiarity with SNA	<a href="http://www.analytictech.com/">http://www.analytictech.com/</a>
ORA	Social Network Analysis, Network Visualization, Meta-Network Analysis, Trail Analysis, Geospatial Network Analysis, and Network Generation (includes Automap)	Currently free for academics, researchers, and nonprofit institutions	Handles multimode, multiplex, multilevel networks	Will potentially have a fee associated with it in the future; only Windows based; requires a basic level of technical sophistication and familiarity with SNA	<a href="http://www.casos.cmu.edu/projects/ora/software.html">http://www.casos.cmu.edu/projects/ora/software.html</a>
NodeXL	Allows users to easily output a customizable network graph	An open source template for Excel 2007/2010	Works with Excel: separate spreadsheets for edges, vertices, groups, group vertices, and overall metrics; Windows based	Need to understand proper data format; limited to only descriptive analysis; have not been many workshops on how to use this; mostly “learn as you go”	<a href="http://nodexl.codeplex.com">http://nodexl.codeplex.com</a>
Statnet suite of packages for the R statistical programming language	Provides a suite of packages for a full array of quantitative and visual analysis of networks	Open source freeware	Can work on any platform; now some courses and training in how to use R; good online user groups and now an online text (used both in general for statistical analysis and specific to SNA, more SNA researchers are writing code for R	Is command driven and does not have a good GUI (graphical user interface); often not easy to learn; code is provided often by other researchers; need to download the R suite	<a href="http://www.rstudio.com">http://www.rstudio.com</a>

Program	Main Functionality	Cost	Advantages	Disadvantages	URL
InFlow	Intended for business users, and is designed for ease-of-use; multiple networks per node set	Commercial, site, and academic licenses available; \$299 for regular version and \$499 for premium edition	Training and mentoring in SNA, data gathering, and software application, some of which is included in purchase; many custom formats can be done	Cost, JAVA platform can sometimes be slow; data must be precisely formatted	<a href="http://www.orgnet.com/index.html">http://www.orgnet.com/index.html</a>
Cytoscape	Used for visualizing complex networks and integrating these with any type of attribute data. many apps available for various kinds of problem domains, including bioinformatics, SNA, and semantic web	Open source freeware	Can work on any platform, has drop down window features and tool bars, great with visualization	Must load various applications into the program to get any network metrics for analysis, similar to R packages	<a href="http://www.cytoscape.org/download.html">http://www.cytoscape.org/download.html</a>
RSiena	Software developed to estimate dynamic social network models (longitudinal analysis)	Open source freeware	Can be executed on all platforms for which R is available: Windows, Mac, UNIX/Linux,	In the R platform which is not user friendly, also the models take a lot of computing capacity and time	<a href="http://www.stats.ox.ac.uk/~snijders/siena/siena_r.htm">http://www.stats.ox.ac.uk/~snijders/siena/siena_r.htm</a>