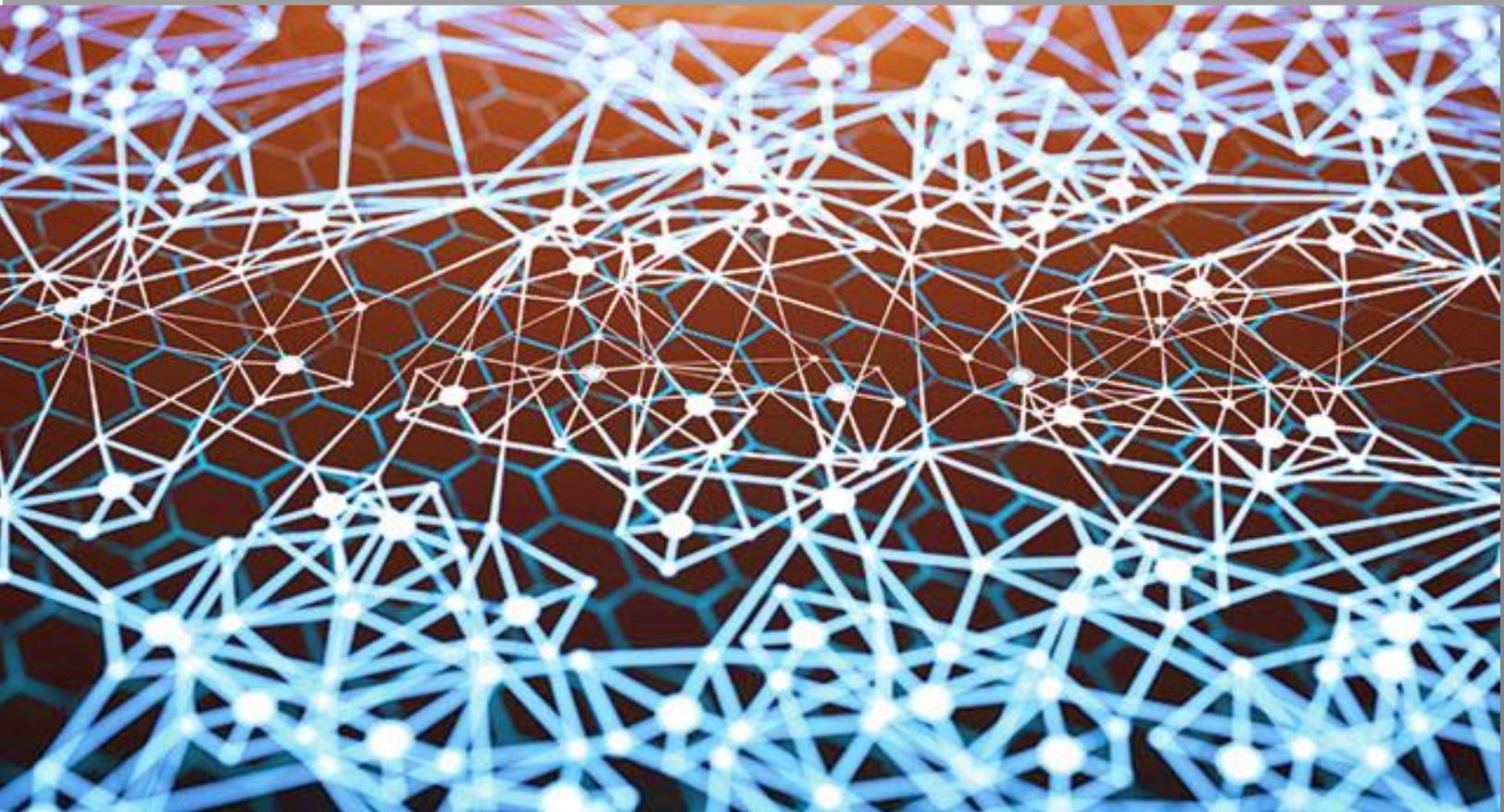


# *Construction Safety & Health Research:*

## *A Social Network Analysis Primer*



## About This Primer

In 2017, CPWR approached Visible Network Labs to conduct a Social Network Analysis (SNA) of the partners in the National Campaign to Prevent Falls in Construction, also known as the Falls Campaign. In addition to wanting to better understand the network developed through the Falls Campaign, the pilot project was used to explore when and how construction safety and health researchers could use SNA to evaluate their research projects. In the case of the Falls Campaign, for example, the lead organizations (OSHA, NIOSH and CPWR) wanted to learn about the potential combined and interconnected partner networks and mechanisms that had been brought together to prevent falls.

This desire to add a systems thinking lens to construction safety and health research requires new tools, theories, and methods. Researchers across sectors have responded to systemic questions by developing methods and approaches that can account for the interconnectedness of people, organizations, and other factors that may influence safety outcomes. SNA is one such method.

While SNA is not a new method (it has deep roots in mathematics as a tool for solving complex problems), its application to the social sciences is more recent, especially as a method for gaining insights on how the data may be used to transform and improve practice. SNA includes several components – methods for collecting data to demonstrate the connection between objects, analysis that helps us understand what those data mean, and network mapping to visually illustrate the ties between the data. Derivatives of SNA include systems mapping, asset mapping, stakeholder mapping, and concept mapping. The uniqueness of SNA in comparison to these other methods is its emphasis on collecting data from members of a network to most accurately describe the nature, quality, and outcomes of the relationships. For this reason, SNA is most often done by collecting data from network members, however, if other data on the quality, nature, and outcomes of ties is already available, primary data collection is not required.

This primer provides information to help you decide if SNA is right for your research project and key steps for conducting your own SNA. Throughout the primer, information from the Falls Campaign SNA is used to ground the content in a real-life example. A research brief of the study is included in Appendix A. While there are different SNA tools available to researchers, since the PARTNER tool (Program to Analyze, Record, and Track Networks to Enhance Relationships – [www.partnertool.net](http://www.partnertool.net)) was used for the pilot project with the Falls Campaign, it is used to illustrate how an SNA tool can be applied to construction safety and health research.

This primer is divided into five parts:

**Section 1:** When is Social Network Analysis (SNA) a Fit for Construction Safety and Health Research?

**Section 2:** An Introduction to SNA Methods and Tools

**Section 3:** Getting Started on Your SNA

**Section 4:** Using an SNA Tool to Evaluate a Network

**Section 5:** Collecting & Analyzing Personal (Ego-Centric) Network Data

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## SECTION 1: When is Social Network Analysis (SNA) a Fit for Construction Safety and Health Research?

Construction research has many dimensions, and there are a variety of these that may be appropriate for Social Network Analysis (SNA). One dimension may include questions about the network of organizations that work in partnership to promote a certain issue (e.g., safety education about falls). Another dimension may focus on individual personal networks of, for example, construction workers, and how those personal networks impact or influence a particular issue (e.g., suicide prevention). A third dimension may be focused on how a system of support can be assessed to develop interventions for prevention of serious issues like opioid use by construction workers. The common thread between these dimensions is the question of how connections between people and/or organizations – a “network” of relationships – influence specific outcomes. This is sometimes referred to as the “network effect”. These networks can be made up of researchers, intermediaries (e.g., insurance companies, unions, trade associations and manufacturers), as well as the target audiences for the results of the research (e.g., workers, contractors).

If your research or evaluation includes questions about how the relationships in a network impact outcomes, then the principles of SNA may be useful to your work.

Conducting an SNA with your **network** will help increase your understanding of the relationships between the individuals and organizations who will be important to the success of your project and may ultimately use your research findings. The information collected about the relationships, including how they connect, who they reach, and how these connections are used to share knowledge, can inform your dissemination strategy and practice, such as how to invest resources in partnership building based on information that illustrates the value of partnerships on outcomes<sup>1</sup>.

By understanding these critical relationships, and how they can be supported and leveraged, you will be better positioned to more effectively move safety and health research into practice and foster new connections with target audiences that the individual members or partners in your network could not reach alone.

The following are three brief examples of how SNA can be used to support construction safety and health research studies:

✧ **Example 1 – Determine if your network has the right mix of participants:** *A researcher can use SNA data to think about whether new connections are desired between the existing research partners in their network, and whether any connections are present that do not need to be (that is, if there is redundancy in the network and the elimination of certain ties*

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<sup>1</sup> Metrics generated by social media sites like Facebook and LinkedIn are only one indicator of the number of potential people reached with a message, however, these statistics miss the interactions taking place between individuals and organizations that can help you understand the flow of information to a target audience.

will free up space for new relationships to be created). Network visualizations (e.g., maps) may help identify organizations that should be added or where organizations are well-connected and can be used for a specific activity.

- \* **Example 2 – Leverage network resources:** SNA data can help efforts to strategize how to leverage available resources. For example, if an industry association is willing to help, but the target audience is not directly connected to that association, the next step might be to identify a “bridging” organization that can make the connection.
  
- \* **Example 3 – Create a network to address a specific issue:** SNA data can support the identification of organizations that can be coordinated to work together around a complex issue or hazard, such as how best to address addiction and overdose deaths due to opioid use among construction workers. In this case, a strategy to develop a coordinated network of support for these workers might include bridging organizations from different sectors.

## SECTION 2: An Introduction to SNA Methods and Tools

This section introduces the method, terms and definitions, types of network analysis, the science of networks, and examples of tools and resources.

### What is SNA?

Social Network Analysis (SNA) is a method that lets you study the structural relationships among members of a network and the resulting effect on the network (how those relationships produce varying effects). The following are key terms that are frequently referred to throughout this primer and Appendix B contains a more detailed glossary of terms and definitions.

- \* **Network** is any interconnected group or system and can be made up of any group of three or more individuals, organizations, or both (multi-modal network). For the purposes of this primer, networks refer to a formal partnership created between three or more people or organizations to achieve mutually desired objectives, referred to as cross-sector interorganizational networks.
- \* **Node** is any person, place, or thing that either gives or receives connections. Often also referred to as “actors,” “partners,” or “members” of a network. Members are referred to throughout this primer, except when the discussion focuses on the SNA of the Falls Campaign, which refers to partners.
- \* **Dyad** is any two nodes and the relationship between them.
- \* **Edge** is the line that shows the connections in a network map; it lies between two nodes. If a node is **adjacent** then it is connected to another node with at least one edge.
- \* **Geodesic** is the shortest path between any two nodes.
- \* **Triples** are any three nodes and the connections between them.
- \* **Length of a tie** is not an actual distance, but the number of edges between two nodes. For example, if it takes two steps to get from node X to node Y, then we would say that

the distance is two. If that is the shortest path between those two nodes, then we would say that is also the geodesic distance.

The fundamental property of this methodology is the ability to determine how connected members of a **network** are to one another. SNA collects data on who is connected to whom, how those connections vary and change, and focuses on patterns of relations based on the interconnectedness of **nodes**. SNA provides insights into individual or organizational connections and relationships, the nature of those relationships, and the role those relationships play in sharing knowledge and influencing behavior and outcomes. It allows you to make assumptions about networks that tell us more about the network than we would know by just understanding its structure. For example, if a network has few or weak ties, with long paths between them, then you might assume that the network has low solidarity, a slow response to stimuli, and a tendency to fall apart. On the other hand, if a network has more or stronger ties, with shorter paths, you might assume that it is a more robust network, able to respond quickly and effectively. This might not always be true, but these kinds of assumptions are the kind that you can make using SNA.

### What Questions Can SNA Help to Answer?

When thinking about how an SNA might apply to your research, it is helpful to consider the questions you would want to answer.

For the **Falls Campaign**, for example, the research questions focused on the following areas:

- ❖ What organizations are part of the Falls Campaign network, and how are they working together?
- ❖ What are the benefits and challenges of participating in the Falls Campaign?
- ❖ Who are the audiences that the Falls Campaign is reaching?
- ❖ Who are the potential audiences that the Falls Campaign could reach through its partners?
- ❖ Is the Falls Campaign impacting those who are most at risk of falling?
- ❖ What encourages partners to become involved and remain involved in the Falls Campaign?

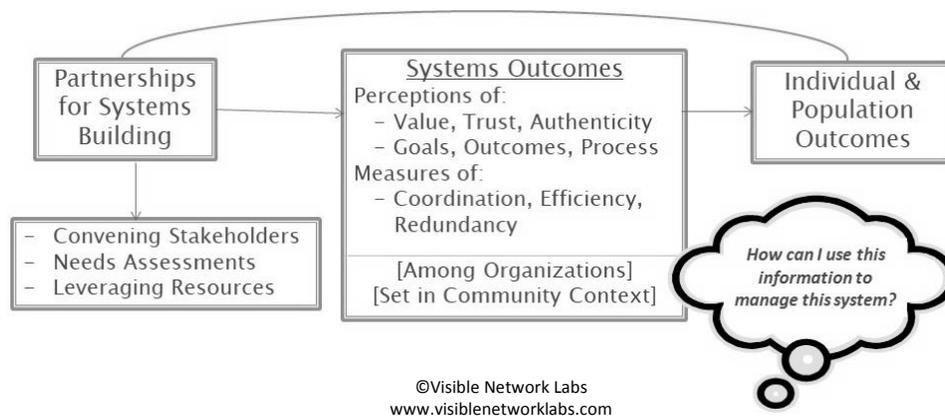
Section 3 and Appendix C include additional information on the research/evaluation questions raised for the **Falls Campaign** SNA.

### What are Network (Systems) Outcomes?

We are often trying to understand the connection between taking a network approach to solving a problem (like bringing partners together, leveraging resources, etc.) and how that leads to individual and population outcomes. Evaluation methods that focus on the characteristics of individuals or organizations and how those factors impact behaviors and outcomes do not examine the process that is the primary outcome of building a network of partners to solve a problem. An important aspect about using SNA, versus other types of methods, to evaluate networks is the focus on outcomes related to the types and processes of networked relationships among people and organizations. SNA lets us more systematically and accurately

understand how the process of building a network leads to individual and population outcomes. Outcomes in an SNA differ from population or client outcomes, but also complement them. **Network (or systems) outcomes** make up the intermediary outcomes that reflect the way that organizations interact, share resources, and implement work. These are often also known as process outcomes and emphasize the process that makes networks successful. In Figure 1, the center box demonstrates the types of measures and outcomes generated from an SNA.

Figure 1. A Framework for Identifying Systems/Network Outcomes



### Types of Network Analysis

When considering using a network analysis for your research it is important to understand that there are two types of network analysis. The first is **whole network analysis**, which captures the relationships between a complete set of bounded members of a network.

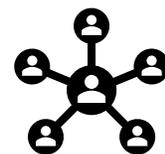
This approach focuses on a bounded, closed network, such as everyone involved in a specific construction safety and health research project, and on the structure of the network (density) that may explain or drive outcomes.

This approach provides insights into different patterns of interaction within defined groups. The benefit of this type of analysis is that you can get a picture of the entire network, including both direct and indirect ties between individuals and organizations in the network.

The limitations are that it is very time intensive because all respondents are asked about every other member in the network, and it requires a very clearly defined, bounded network.



The second is **ego-centric or personal network analysis**. This differs from whole network analysis in that it allows you to sample people from a population and ask only about the relationship they have with others. There is no pre-determined list of individuals or organizations to choose from. Rather, this approach focuses on a single person's direct relationships with others – referred to as "alters". For example, the sample could be people from construction trade associations, unions, and insurers with ties to a specific segment of the industry who are asked about who they network with to get ideas for other groups that could support their research and dissemination. This approach focuses on individual personal or organizational networks (many stand-alone networks, which may or may not overlap with one



another). It provides insights into events or factors that affect individual entities across different settings, the people (or types of people or organizations) in networks that provide resources, support, or influence on the individual. The benefit of this approach is that it is less labor intensive. The limitations include not getting a full picture of the network because only information on the direct ties to the respondents is collected (vs. direct and indirect ties captured in the whole network approach).

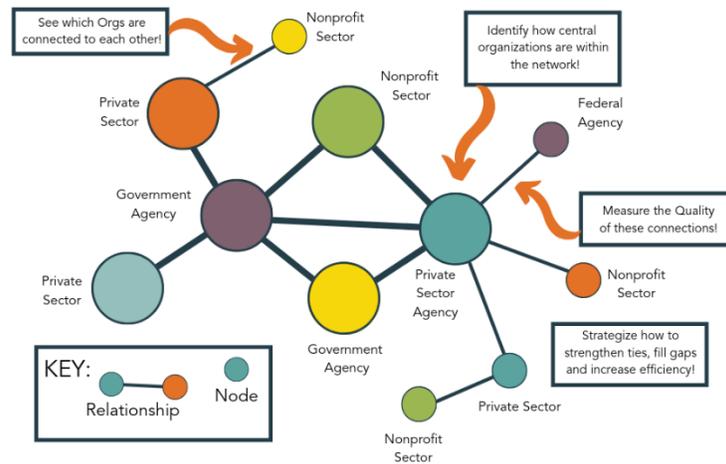
**Network Measures:** In general, SNA network measures focus on the following types of network characteristics and the nature of various types of relationships between members of a network. The data generated can help researchers analyze the quality, quantity, and context of the relationships in a network.

Network Characteristics:	Nature of Relationships Between Network Members:
<ul style="list-style-type: none"> <li>* <b>Centralization</b> – extent to which there are key members in the network who you can reach many others through.</li> <li>* <b>Cliques</b> – extent to which there are “mini-networks” within the larger network.</li> <li>* <b>Cohesion</b> – extent to which the network remains connected even when some ties are severed.</li> <li>* <b>Connectivity</b> – extent to which members are linked directly or indirectly.</li> <li>* <b>Density</b> – extent to which many members/partners are connected to one another.</li> <li>* <b>Distance</b> – smallest number of connections separating one member from a particular other member.</li> <li>* <b>Homogeneity</b> – how similar are members to one another.</li> <li>* <b>Size</b> – how many members are in the network.</li> </ul>	<ul style="list-style-type: none"> <li>* <b>Duration</b> – how long members/partners have been connected to one another.</li> <li>* <b>Frequency of contact</b> – how frequently members connect with one another.</li> <li>* <b>Level of intimacy</b> – level of intensity and depth between two members.</li> <li>* <b>Multiplexity</b> – extent to which members interact in different ways (e.g., socially professionally, support exchanged).</li> <li>* <b>Nature of ties or relationships between members/partners</b> – types of activities and relationships present between members of the network.</li> <li>* <b>Member/Partnership outcomes</b> – types of outcomes that have been achieved or come out of relationships with network members.</li> <li>* <b>Reciprocity</b> – in a directed network, the likelihood of members to be mutually linked (they picked each other as members).</li> </ul>

## Social Network Mapping

SNA measures can be used to develop network maps that visualize the relationships in the network. The image below is an example of a network map. The network members (also referred to as **nodes**) are depicted as circles and the lines between them indicate the relationships that connect them. The call out boxes in the example illustrate how these kinds of network maps can help a researcher understand the relationships and use the data to inform practice.

Figure 2. Example of a Network Map



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## The Science of Networks and Its Applications to SNA

Using SNA to understand the quality, quantity, and context of members in a network can help researchers, their research partners, funders and other stakeholders identify ways to continuously improve how they work with one another to achieve common goals. The information can help a researcher build relationships and leverage resources among network members, assess the quality, content, and outcomes of the relationships, monitor changes in relationships over time, and develop strategies and action steps to fill gaps and leverage strengths.

Behind the methodology is a science that provides guiding concepts and theories to help make sense of the data. Below is a summary of a couple of network science concepts, and an explanation for how they provide insight that may not be intuitive without them<sup>2</sup>.

❖ **The “More is Not Better” Concept.** Perhaps the most meaningful network science principle is the **“Strength of Weak Ties”** theory, published by Mark Granovetter<sup>3</sup> in 1973. In seeking to understand how people got jobs, Granovetter’s hypothesis that people are more

<sup>2</sup> Varda, D. (2018, October 15). We want to let you in on a network science secret – better networking is less networking [Blog post]. Retrieved from <https://visiblenetworklabs.com/2018/10/25/we-want-to-let-you-in-on-a-network-science-secret-better-networking-is-less-networking/>.

<sup>3</sup> Granovetter, Mark S., "The Strength of Weak Ties," *American Journal of Sociology* 78, no. 6 (May, 1973): 1360-1380.

likely to get jobs through their social connections was proven correct. Surprisingly, he also found that those jobs were not acquired through people we are most strongly connected to, but rather through those who we are connected to through our “weak ties.” Our strong ties are to people with whom we share a lot of commonality (in network science terms this is called “homophily” meaning “birds of a feather flock together”). These are the people with whom we often spend most of our time – those who we share resources, belief systems, and interests, and like to do the same things as us. In contrast, our weak ties are to people who are different from us – they know things, do things, and have access to knowledge and resources that we do not. Consequently, Granovetter found that our weak ties were better at helping us find jobs than those to whom we are most closely connected. The Strength of Weak Ties concept is fundamental to network science, and the strong desire we all have to build bigger networks of relationships. It explains the advantages to working across diverse boundaries and building networks of people and organizations that are different from us. However, it also leaves us with a complicated idea that more connections are better. This is unattainable given that we simply cannot exponentially grow networks without incurring costs attributed to that approach.

- ❖ **An Alternative Strategy – Filling Your Network with Holes.** While the appeal to create a more diverse network is strong, the reality is that we have **limited relationship budgets** – that is, limited resources to build and manage diverse networks. We know that networks have advantages but there is a limit on how many relationships we can manage before we lose the collaborative advantage altogether.<sup>4</sup> Ron Burt, who focuses on creating competitive advantages in careers, organizations, and markets via network strategies, recognized this dilemma and published<sup>5</sup> a solution that emphasizes reducing redundancies in a set of network relationships. This strategy, in turn, creates intentional “holes” in the network, while maintaining key connections to leverage the collaborative advantage and strategically managing resources committed to building relationships.

These network science concepts are just a few examples of how information about the relationships among partners in a network can influence the network’s outcomes. While the concepts are helpful, it is nearly impossible to implement them in practice without having data that we can evaluate to make sense of our own networks. For that reason, an SNA is an excellent source of data that allows us to apply these kinds of concepts to create more efficient and effective networks.

### **SNA Tools & Resources**

There are several tools available to help you plan and conduct an SNA. The following are brief descriptions of some of these tools.

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<sup>4</sup> Huxham and Vangen. 2005. *Managing to Collaborate: Theory and Practice*. Routledge, New York, NY.

<sup>5</sup> Burt, Ron. 1995. *Structural Holes: The Social Structure of Competition*. Harvard University Press, Cambridge, MA.

**UCINET**<sup>6</sup>: This is a software package to analyze social network data developed by Lin Freeman, Martin Everett and Steve Borgatti. Within UCINET you have the ability to load in previously collected 1-mode and 2-mode network data and run in-depth network analysis including regression analysis, Qap Correlations and Qap Regression, TTest, transitivity, triad analysis, univariate statistics, subgroups and cliques, structural holes, Structural Equivalence, Homophily, Eigenvectors, ego network analysis, cohesion, cluster analysis, and multiple measures of density and centralization. More information: <http://www.analytictech.com/archive/ucinet.htm>.

**NetDraw**: This is the visualization tool that comes with UCINET. It is a comprehensive network visualization tool which allows the user to incorporate various network analysis measures into the maps as an attribute. Within NetDraw you can hide, highlight, and locate specific parts (or measures) of the data that can help in translating the data back to practice. NetDraw is helpful in dealing with complex social network data and can handle a large number of nodes and ties. More information: <https://sites.google.com/site/netdrawsoftware/home>.

**Gephi**: This is a network analysis and visualization tool used by data analysts to understand graph data. Gephi's visualizations are interactive and provide the user with various layout algorithms to choose from. There is also the ability to analyze common social network analysis metrics like density, centrality, clustering, and coefficient. Gephi can handle networks with up to 100,000 nodes and 1,000,000 edges. More information: <https://gephi.org/>.

**Kumu**: This is a network mapping tool that allows a user to map data in different ways, including for social network maps, systems maps, stakeholder maps, organizational charts, community and asset maps, concept maps, and Lombardi diagrams. You can either import your existing data or create your maps by hand. More information: <https://kumu.io/>.

**PARTNER (Program to Analyze, Record, and Track Networks to Enhance Relationships)**: PARTNER, is a platform that includes a methodology, a learning lab, and the online tools necessary to implement an SNA. This tool includes the PARTNER Survey Builder and Analysis Tool, and the Person-Centered Network App for personal network mapping. PARTNER is designed to build capacity of sectors to measure and monitor collaboration among organizations.<sup>7</sup> It is used by cross-sector networks to analyze how their members are connected, how resources are exchanged, and the levels of trust and perceived value among network members, and to link outcomes to the process of collaboration. PARTNER includes a validated 19 question survey and an analysis tool. It is unique from other tools in that it connects your survey (and all its modifications) automatically to its analysis dashboard and network mapping tools. Funded by the Robert Wood Johnson Foundation in 2008, PARTNER was developed through research and has been used in data tracking and evaluation of over 3500 community networks. More information: [www.partnertool.net](http://www.partnertool.net).

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<sup>6</sup> Borgatti, S.P., Everett, M.G. and Freeman, L.C. 2002. Ucinet for Windows: Software for Social Network Analysis. Harvard, MA: Analytic Technologies.

<sup>7</sup> Varda, Danielle M., Anita Chandra, Stefanie Stern, and Nicole Lurie (2008). "Core Dimensions of Connectivity in Public Health Collaboratives" *Journal of Public Health Management and Practice*, 14(5): E1-E7.

**Person-Centered Network (PCN) App:** The PCN App, which is included in the PARTNER Platform, is a cross-platform app that provides a user-friendly interface to collect ego-centric (personal) network data. Survey questions can be loaded into the app, along with a series of “relational” questions that allows the respondent to use their finger to “swipe” connections between the people they identify in their networks. These data are captured in real time and sent to a database that provides easy export and access to a dashboard with a comprehensive analysis capability. The PCN app is available on the Google Playstore and Apple App Store. To use the app you will need a PARTNER account. More information: [www.visiblenetworklabs.com/pcnapp](http://www.visiblenetworklabs.com/pcnapp).

## SECTION 3: Getting Started on Your SNA

This next section provides tips to help you design your SNA. Getting started means spending time determining the network’s purpose and goals, articulating a theory of change, and identifying your study questions.

### Determining Your Network’s Goals

Before you can use social network data to create action steps, it is important to define your network’s specific goals. It is useful to have a sense of what the “ideal” network would look like – who would be a member, how they would be connecting, what kinds of qualities and characteristics your network members would have both in terms of attributes and relationships. To implement the methodology, first work with a subset of your network members (in-person) to get them to identify their “ideal” network. Consider asking them to construct their networks based on their ideal conceptualization of the members and relationships between them, while tracking constraints such as policy and financial challenges. The identification of goals such as these is best conducted as a collaborative effort. Once goal identification is complete, then what is missing from your network should be clearer.

### Articulating a Theory of Change

A recommended next step after articulating the network’s goals is to develop a theory of change that your network is working within. As with all theories of change, this is a way to definitely state the assumptions you are making about why individuals and organizations participate in your network and their role in achieving the research goals.

Some examples of theories of change that relate to networks include:

1. If we are able to build on the momentum in the construction safety and health space in our segment of the industry through **sharing, linking, aligning** and **leveraging** what is working, we will have better outcomes at the system, industry and jobsite levels, which will ultimately mean better outcomes for workers.
2. Through bringing together champions from construction safety and health systems across the country, facilitating shared learning, supporting collaborative projects, and sharing our knowledge as an expert in the space, we will accelerate adoption of safer work practices that will narrow inequities for those most at risk.

## Identifying Study Questions

Once you articulate your theory of change, it will guide your network evaluation questions and logic model (to guide your measures). Examples of study questions include:

- \* How should organizations invest resources to build or strengthen safety and health partnerships?
- \* How are cross-sector partnerships leading to safety and health outcomes?
- \* Which sectors are already working together and where are there gaps?
- \* What kinds of resources are organizations leveraging collaboratively?
- \* Which sectors report higher/lower perceptions of one another around value and trust?
- \* What are the gaps and opportunities that exist? What are strategies for how to leverage existing relationships?

Once you have decided on a theory of change and specific evaluation questions, you are ready to start your SNA. You can start your study using any survey questions that you develop, and your choice of network analysis and mapping tools.

### Example: Falls Campaign SNA - Theory of Change & Evaluation Questions

The following is an example of the theory of change and examples of related evaluation questions from the Falls Campaign SNA.

*Network Goals:* The Falls Campaign Network Goals are to increase the reach and dissemination of research, materials, and support for construction industry stakeholders to promote fall safety and prevention across a national network of partners.

*Theory of Change:* When members of a national network participate in the education and implementation of a common safety campaign by building a network of connection across as many partners as possible, the message will remain standardized and the reach of the campaign will increase.

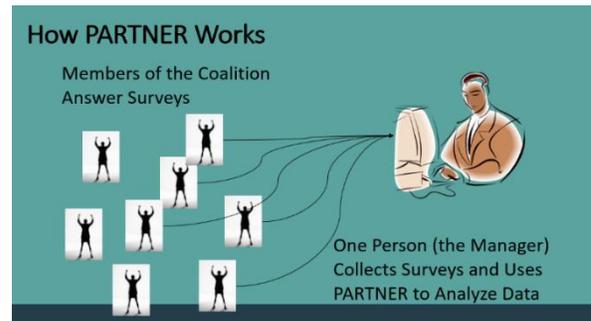
#### Example Evaluation Questions:

- Who are critical and highly active individuals/organizations that are involved in the Falls Campaign network?
  - We have our choir - who else is involved? Are the high-level decision makers involved?
  - How would they define their constituents (the individuals/organizations) they reach directly? High level decision makers? Contractors who employ at risk workers. Workers at risk for falls?
  - How active are they (the 'partners') in the Falls Campaign network (before, during, and after formal events are over)?
  - How did they initially decide to participate?
  - How do they make decisions about ways to participate and level of involvement?
  - Of the three main Falls Campaign organizers, OSHA, NIOSH and CPWR, who has had the greatest influence over their involvement in the Falls Campaign?

- ❑ What are the characteristics of the individual/organizational networks involved in the Falls Campaign that affect their ability to transfer information and practices about fall protection to those most in need of the information (contractors and workers)?
  - What is their motivation for being involved?
  - How many key players are involved in ACCSH, the NORA Sector Councils, etc.?
  - Who do they view as their key point of contact for the Falls Campaign network? And why? (How do they hear about Falls Campaign events? Who do they turn to for materials and help?)
  - Beyond the top three organizations (OSHA, NIOSH and CPWR), has anyone else had an influence over their participation in the Falls Campaign? Who and how?
  - What other individuals/organizations do they receive information from (e.g., materials, campaign events, training, etc.)? How would they describe these relationships/activities?
  - How much are they interacting with their constituents about the network? What individuals/organizations do they share information with (e.g., materials, campaign events, training, etc.)? How would they describe these relationships/activities? Were there bottlenecks in the flow of information? Were there informal communications channels and were they effective?
  - What barriers or challenges have they encountered in sharing Falls Campaign information?
- ❑ What is their perceived impact of the Falls Campaign network on fall prevention behavior?
  - What do they believe are the benefits of participating in the Falls Campaign?
  - Are they connecting with new individuals/organizations because of the Falls Campaign?
  - Have they noticed an increased awareness of fall hazards and fall prevention activities (e.g. use of fall protection, use of engineering or administrative controls, improved training methods, inspections, etc.) with their constituency (workers, contractors, etc.)?
  - Have they noticed an improvement in their overall safety and health initiatives with topics other than falls?
- ❑ Other Examples:
  - Are we seeing a change in culture?
  - Are the people at risk of falling benefiting?
  - How are construction employment trends affecting the Falls Campaign's impact?
  - Market penetration - what percent of contractor/workers are we touching?
  - Small businesses - how effective are we at reaching small contractors and their employees compared to reaching large contractors and their employees?

## SECTION 4: Using an SNA Tool to Evaluate a Network

While there are several tools for data analysis, it can be tricky to figure out where to start, what questions to ask, and how to develop an analysis with all the data that you get from an SNA. This section provides a real-life example of using an SNA tool, in this case PARTNER, to evaluate a construction safety and health network – the Falls Campaign network.

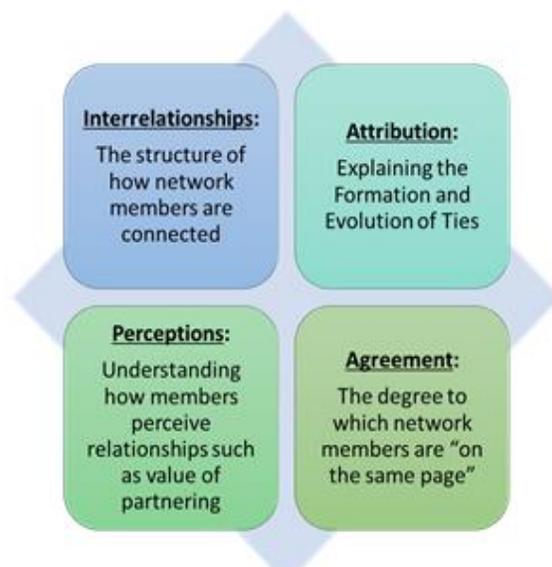


As noted earlier, since the PARTNER tool was used for the pilot SNA of the Falls Campaign, a more detailed description of the tool is included in order to illustrate how SNA can be applied to a construction safety and health initiative. PARTNER was selected for this pilot project because it provided a validated survey that could be customized to address the research questions (see page 7) raised by the lead organizations. While the data could have been exported into another data analysis and mapping tool, the analysis tools in PARTNER were used to visualize, analyze, and develop reports.

### Leveraging the PARTNER Network Evaluation Framework for the Falls Campaign

The PARTNER Network Evaluation Framework includes four primary areas of measurement: **Interrelationships**, **Attribution**, **Perceptions**, and **Agreement**. These measurements are built into all PARTNER research and evaluation designs, are foundational in the PARTNER survey, and are used to guide the analysis and assessments. All four of these measurements help with understanding the structure of the network, assessing the strength and quality of the network, and providing data to inform network leadership (the process of making decisions). (Figure 3).

Figure 3. PARTNER Evaluation Framework



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❖ **Interrelationships:** This measurement tells you about the structure and strength of your network, including the actual relationships among members, and the intensity, quality, and content of the relationships. The PARTNER Network Survey uses SNA methodology to assess the interrelationships of the network, and allows you to then assess how attribution, perception, and agreement are associated with the structure of the network.

- ❖ **Attribution:** Many networks are facilitated and organized by a primary organization, sometimes called a Lead Organization, a Network Administrative Organization, or a Backbone organization. Others are governed by a group of organizations. In the case of construction research, it could be an industry partnership, a researcher, or a research institution. This step provides insight into how the relationships in a network started and are fostered over time.
- ❖ **Perceptions:** It is important for network leaders to understand the perceptions that members hold of one another, as well as perceptions of the network itself. The PARTNER Network Survey collects data on both of these aspects. Specifically, it provides information about members' perceptions of one another in terms of the value of the partnership (measured as power/influence, resource contribution, and time commitment) and trust (measured as mission congruence, reliability, and communication).
- ❖ **Agreement:** The extent to which members agree on the way the network is functioning is a key component to network leadership. Whether the members report that the network is or is not achieving its outcomes is as important as whether or not they agree on these assessments. The degree to which a network's members agree on these assessments is an indicator for a network leader of whether the network is functioning well or not.

While the data you get from the PARTNER SNA tool allows you to address each piece of this network evaluation framework and the information you need to describe your network, it does not tell you if your network is “good” or performing well. There is no p-value to help you know if behaviors in your network are statistically significant (although there are many advanced SNA methodologies that you can use to run these kinds of analysis on your network – not covered in this SNA primer). However, if you have articulated your network's goals and theory of change, you can use these measures to assess how far you are from “where you are” to “where you want to be”.

For the **Falls Campaign** SNA, this framework enabled the lead organizations to use the data collected to develop recommendations and action steps to strengthen the network. See Appendix A for details on the recommendations.

### **Preparing to Collect Falls Campaign Data Using the PARTNER Survey Builder**

When you are ready to start collecting data, you can use the PARTNER survey builder to customize your online survey. Like other online survey tools (e.g., Qualtrics, SurveyMonkey) you can add or customize any questions. The **Falls Campaign** SNA used the PARTNER survey builder because it contains a 19-question validated survey designed specifically for network surveys and additional questions could be added to address the research questions. Additionally, the survey links to an analysis tool so users do not have to design a new analysis or clean their data, and everything that was customized automatically translates into the analysis and mapping dashboard.

Using the survey builder requires the following 4 steps; however, before you can get started, it is important to identify a “manager” who will take the lead in coordinating the network members, administering the survey, and completing the analysis. The manager can be a member of the research/evaluation team, the network, or an outside person who is willing to take on this responsibility. In the case of the **Falls Campaign SNA**, CPWR took the lead in coordinating these activities.

### Step 1: Enter Respondent Information

**Identifying Who to Include in Your Network – Bound Your Network.** To conduct an SNA, the first step is to “**bound the network**” or identify what organizations (or individuals if appropriate) are members in your network, including, for example, organizations, agencies, contractors, trade associations, unions, programs, and initiatives.

For some, identifying who is part of their network is one of the hardest steps, but it is a critical first step. The list of members you include in your bounded network will be the entities that show up in the survey questions and the network maps and the specific contacts identified for each will be the ones who will be asked to respond to the survey on behalf of their organization. Because of this, it is critical that the process of bounding your network be both **collaborative** and **intentional**. If your organization (e.g., agency, university) plays a role in the network be sure to include it in the list if you want your organization be to a part of the results.

First, reach out to the key members of your network and ask them which organizations they consider to be part of your system (target audience, intermediaries, etc.). Next, think about who is not currently considered part of the system but perhaps could or should be involved. There may be some organizations for whom you do not already have an established contact possessing the high-level perspective needed to participate in the survey on behalf of their organization. Should cases like this arise, seek input from your existing network members on the best-suited individual from those organizations to participate.

Figure 4. PARTNER How-To Guide



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**Tips & Advice for Bounding Your Network.** Remember, the organizations you choose to include as you bound your network will be the entities that show up in the network maps representing your network. As such, each person and organization you include must have a unique node label or they will be redundant in your survey. Make sure:

- \* Each organization has identified a specific contact to respond to the survey.
- \* To reach out to key members of your network to ask them which organizations they consider to be part of your network. Keep doing this until you get a list that you feel is comprehensive and covers all perspectives that are important to answering your questions.
- \* To think about who is not currently considered part of your network but maybe could or should be involved. It is important to seek input from many partners as a first step because they may have a view of the network you do not have.
- \* Your list includes specific contacts who have "sat at the table" and can answer the survey questions about the network itself, along with questions about the specific partnerships their organizations maintain with other groups.
- \* The list is not so long that people will not respond because of the burden (longer lists mean longer times to take the survey).

If you are having trouble deciding who to include in the list, you might want to consider the following:

- \* Include some "VIPs" chosen by key informants or the lead organizations that are already highly engaged in the network.
- \* Include those **most** mentioned by others, and are known to be active in the network. Look for redundant mentions of these people or organizations.
- \* Then add the unusual suspects and organizations that are strategically beneficial to the outcome of your network but may not be as active.

If you absolutely cannot determine your bounded list you can use a "**name generator**" approach. In this approach, you ask people already identified in your network to "list" others. You can also use this approach if your research question is "who is in the network?" However, if that is a question you are trying to answer through your SNA, it is best to separate that question from your network survey because the name generator list will need a lot of data cleaning. The data cleaning required to analyze the data can be resource intensive. If you are new to SNA and use this approach, it is recommended that you consult with key informants and experts in the network to validate your assumptions about when to combine a node or not.

**Completing Your Respondent Information Worksheet.** Once you have finalized your list and determined who you will include in the survey process, all respondents' information must be entered into the online survey tool. If multiple people from an organization are on the list, one person needs to be chosen who will best represent that member organization as the survey respondent. Alternatively, you can list an organization and include the individuals under different programs/departments within the organization as different entries (e.g., OSHA Construction Directorate, OSHA Directorate of Cooperative and State Programs).

TIP: Don't include multiple people from the same organization. Have them work together to answer the survey. If you do include multiple contacts from one group, add a title or department to differentiate between them.

Think about if the multiple contacts represent the organization in the SAME way or if they represent the organization in UNIQUE ways. It is important to note that each organization listed becomes its own node in the network maps. Some of the analysis conducted in PARTNER seeks to describe the dynamics and relationships between key groups involved in your network. When filling out the Respondent Information Worksheet, the user designates groups for each organization. These groups will provide a rich way to analyze the data in the evaluation.

### Step 1 Example: Falls Campaign Network Respondent Information

The Falls Campaign network was a mixture of a formal, **bounded network** and a broader, more informal network. To bound the Falls Campaign network the lead organizations created a list of participating organizations. This list consisted of 157 organizations that they considered known Falls Campaign partners and included representation from a variety of sectors. From each of these 157 organizations, one individual was identified by the lead organizations as having knowledge and experience around the Falls Campaign. These individuals were invited to answer the PARTNER survey on behalf of their organization.

Since one of the questions the SNA was trying to answer was “What organizations are part of the Falls Campaign network?” a “**name generator**” method was used. In the survey, the known Falls Campaign partners were asked to list all of the organizations that they work with around the Falls Campaign. From this, 117 “new” Falls Campaign partners were identified, resulting in a total of 274 organizations identified for their involvement in the Falls Campaign. These newly identified partners did not receive the network survey; however, the connections described by these partners with organizations outside of the formal network demonstrated the broader informal network that had been created through the Falls Campaign. The nature of the relationships between and among these organizations ranged from prospective to highly organized and formal partnerships.



### Step 2: Customize the Survey for Dissemination

While you can modify all of the questions in the PARTNER Network Survey, the 19 questions are designed specifically for cross-sector, inter-organizational network evaluations.

- ❖ Questions 1-9 ask about the network members or the network itself. These include resources contributed by members, perception of outcomes achieved, perception of success, and time spent in the network.
- ❖ Question 10 lists all organizations on the bounded list when the survey was set up. Respondents of the survey pick a subset of that list to answer questions about their interactions with those specific members.
- ❖ Questions 11-18 are the “relational” questions that create the network visualizations and populate the dyad data. Relational questions capture what respondents report about other members or potential members in the network and are used to create network maps. Specifically, question 11 and 12 define the “lines” in the network maps during analysis. Currently, these are set as Likert scale (ordinal) questions. In other words, they allow response options that are in a specific valued order (e.g., smallest to largest) and respondents can only select one answer. For example, default question 11 asks “How frequently does your organization work with this organization on issues related to this community’s collaborative goals?”, and respondents are expected to choose a single answer on a scale of the lowest level of frequency (once a year) to the highest (every day). Note that for a construction safety and health researcher this question could be modified to read “... on issues related to the research project’s goals?”
- ❖ Question 19 is a final open-ended question for the respondent to add any questions or comments.

Recognizing that some evaluations may be better if focused on different categories of interaction rather than a scaled level of interaction, this survey can be completely modified to create categories from which respondents can choose more than one type that applies to their relationship. For example, a construction safety and health research network focused on hearing loss prevention may have different organizations within it working on various initiatives and a PARTNER manager may want to distinguish who is working on what initiative together. Therefore, they may choose to modify these questions to determine whether organizations are interacting to address the cause of hearing loss or preventions. Respondents could then choose both, just one, or neither.

### **Step 2 Example: Falls Network Customizing the Survey**

The default survey was modified for the **Falls Campaign** context and to appropriately answer the research questions related to partner interactions, the content and quality of those interactions, perceptions of trust and value among partners, and barriers and challenges related to participation. In addition, 13 new questions were added to the survey (see Appendix D).

### Step 3: Collect Data

Since the higher the response rate the better, it is important to notify participants about the survey well in advance of when they will be asked to respond. This can be at a meeting, through an email sent from your own email account, or an email sent through the PARTNER tool. It is important to let them know why the survey is being done, when and how they will receive the survey, the amount of time they should set aside to complete the survey, the survey deadline, and who they should contact with questions. This helps to create buy-in from respondents before the survey starts.

Once the survey is underway – particularly if you are not receiving the response rate you were hoping for – it is important to remind participants. One way to encourage participation and increase the response rate is to report initial findings back to your network at various intervals.

Even with reminders, response rates will vary depending on your network. While it is important to have as many respondents as possible to evaluate your network, it may not be possible to get a 100% response rate. Sixty percent (60%) is a good target, but as was the case with the **Falls Campaign SNA**, a lower response rate yielded enough results to draw conclusions and make recommendations. The response rate should be included (perhaps as a strength or a limitation) when reporting the overall SNA results.

#### Step 3 Example: Falls Campaign Data Collection

For the Falls Campaign PARTNER survey, a letter was sent from the lead organizations in September 2017 introducing the project to the 157 identified organizations via email. Following the introduction letter, an email was sent to invite all known network partners to take the survey using a personalized link. Multiple reminders were sent to non-respondents by email and phone. The survey was closed in October 2017. The final response rate was 49%.

Figure 5. Recommended Data Collection Schedule

Recommended schedule for sending survey invite and reminder emails:						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1 Send Intro Email	2
3	4 Send Invite Email	5	6 Send 1 <sup>st</sup> Reminder Email	7	8 Send 2 <sup>nd</sup> Reminder Email	9
10	11	12 Send 3 <sup>rd</sup> Reminder Email	13	14	15 Send 4 <sup>th</sup> Reminder/ Survey Extension Email	16
17	18	19	20 Send 5 <sup>th</sup> Reminder Email	21	22 Send Last Reminder Email	23

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Figure 5 is the recommended data collection schedule for the PARTNER survey. It runs over ~3 weeks, with 2 weeks of the initial data collection and a 1 week “planned extension”.

#### Step 4: Analyze Data and Communicate Results

The PARTNER tool analysis functions are built into the PARTNER Dashboards. Users can run an analysis by selecting from a menu of options, which can be accessed online, or access the raw data in a CSV file. Analysis options include network visualizations (maps), network scores, and descriptive results and graphs of aggregated responses. Users can also access the “Insights Library” for help with understanding the maps and data.

Once you have completed your analysis, depending on the purpose and goals of your SNA, you may want to share the findings with your network members, other stakeholders who may be interested in supporting your research, and existing or potential funders.

**Network Members.** Your network members will likely be interested in how your network has been functioning, where there are gaps in the relationships, and how communication can be improved. You will want to respect any potential sensitivities in sharing particular data on relationships between particular organizations. However, sharing overall network scores (e.g., connectivity, density) can describe whether you are working together in a way that will help achieve your stated goals. In addition, a network visualization can show which organizations are collectively identified as central to the network. These data can help determine whether having these organizations as central or core is actually strategically appropriate for achieving the goals.

**Other Industry Stakeholders.** Other industry stakeholders with an interest in your research may want to learn about the activities of the network, particularly when strengthened relationships and new partnerships can be linked to improvements in construction safety and health.

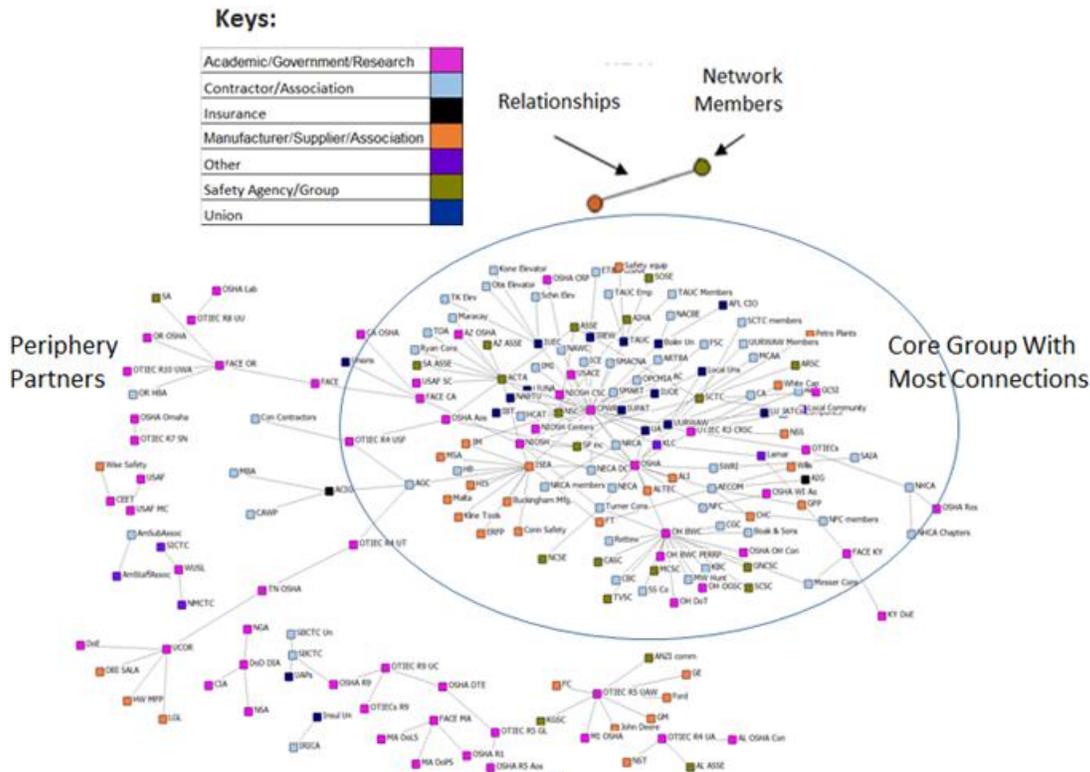
**Existing and Potential Funders.** The network scores and maps also can provide important information for funders, both existing and new. For example, if you have a multi-year grant from a funder, you may want to conduct the survey at key points over the course of the grant (before the grant begins, at one point during, and at the end of the grant). This longitudinal data can show funders how the collaborative relationships have improved over time, how strengthened relationships can be linked to the success of the research project and potential for impact, and where efficiency in working relationships has been streamlined. You may want to highlight the redundancy score, which shows how efficiently your network works and how you are able to maximize resources to achieve a goal.

### Step 4 Example: Falls Campaign SNA Map and Selected Results

The network visualizations (maps) and data generated for the Falls Campaign SNA responded to the research questions, providing important insights into the network demographics, reach and activities, as well as identifying areas where it could be strengthened to help achieve the Falls Campaign’s overall goals.

For example, the Falls Campaign Network maps helped visualize and answer the questions: What organizations are part of the Falls Campaign network, and how are they working together? Who/what are the audiences that the Falls Campaign is reaching? Who/what are the potential audiences that the Falls Campaign could reach through its partners? In the network map (Figure 6), all connections (lines) between organizations (colorful squares) that were reported by Falls Campaign partners are shown. A line demonstrates that an organization said they had a relationship with another organization around activities related to the Falls Campaign. The color of each node represents the sector of that particular organization. The key shows which color is associated with each sector. The large cluster on the right shows the interconnectedness of a core group of partners that are connected to one another through a number of other organizations. The periphery on the left shows organizations that are less connected with the core group but may represent diverse or unusual partners that have the potential to expand the reach of the Falls Campaign.

Figure 6. Falls Campaign Network Map



The responses to questions that included more descriptive information provided insights in the benefits and challenges of participating, what encourages partners to become and remain involved, and the impact. The following are highlights of what was learned.

✧ **What are the benefits and challenges of participating in the Falls Campaign?** Partners reported a number of benefits and challenges; The following Table includes the top three.

Top 3 Benefits	Top 3 Challenges
1. Being part of a national campaign	1. Finding time to conduct a Stand-Down or other Falls Campaign event
2. Access to training resources and campaign materials	2. Uncertainty about the impact of your activities
3. Increased opportunities to share resources	3. Generating interest in the Falls Campaign

✧ **What encourages partners to become involved and remain involved in the Falls Campaign?** The most common reason that partners became initially involved with the Falls Campaign was receiving an invitation from one of the lead organizations. However, the most common reason for staying involved in the Falls Campaign was to demonstrate an overall corporate or organizational commitment to safety.

✧ **Is the Falls Campaign impacting those who are most at risk of falling?** The majority of partners who responded said they have seen an increase around fall prevention activities within their organization or within the industry as a whole, as well as an improvement in overall safety and health initiatives on topics other than falls within their organization or the construction industry. In terms of reaching the most at-risk contractors (small residential contractors and their employees), nearly half said the Falls Campaign is reaching these populations, and a third felt these populations were being reached but more could be done. The rest were either uncertain or felt these contractors were not being reached.

The types of maps and data generated allowed the lead organizations to better understand the potential reach and effectiveness of the Falls Campaign and identify ways to use the network to strengthen the Falls Campaign moving forward.

For more details on the findings and results of the **Falls Campaign SNA**, see Appendix A.

## SECTION 5: Collecting & Analyzing Ego-Centric Network Data

In addition to using SNA to look at whole networks (and specifically, the relationships among organizations), there are times when you may want to collect ego-centric (personal) network data. An ego-centric network analysis collects data on only one person at a time. Instead of asking everyone to pick from a list of members, this method always asks the respondent to generate their own list of people and organizations that they are connected to.

This method can help researchers and others understand the social interactions among individuals (e.g., construction workers) and think about the social connectedness. Knowing this may help construction safety and health researchers and other industry stakeholders understand how people in the industry are forming social networks that can enhance their ability to get jobs, have access to safety and health resources, and connect to others in ways that can assure strong social connectedness.

In addition to helping to identify the strengths in a person's social connectedness an ego-centric network analysis can also be used to identify the gaps. With that information, strategies can be considered that can bridge ties among people in the industry and tackle critical issues. For example, one such issue facing the construction industry where this method might prove useful is helping to address the opioid epidemic among construction workers. It is recognized that a root cause of addiction is suffering from adverse social connectedness. Although we are all embedded in personal support networks, they are invisible, not only to ourselves, but also to the people who care for us. An ego-centric network analysis allows you to see the social connectedness of a person, find the strengths and identify the gaps. It provides a new way to think about how we might intervene to help fill the gaps in a person's social connectedness that may be leading them to further addictions. When we can see where people are struggling, we can build strategies to connect them with appropriate resources.

The combination of this approach with a user-friendly tool can be a window into the gaps and strengths in the personal support networks of people who work in the construction industry. There are a few ways and tools available to track these kinds of networks.

- ✧ Programs such as NodeXL or the Twitter API can be used to pull data from social media accounts of certain individuals using publicly available data or searchable handles (#). With these tools, you can pull data about a population to analyze from these social media accounts without having to collect any data from people.
- ✧ The Person-Centered Network App (PCN) (see page 13) is different from social media connections. This tool can be used to ask individuals who and what they are connecting to, as a way to understand what the social connections look like. The data collected can be analyzed as an entire population or by different demographics. For example, you could see what the social connections of women in construction look like, compared to the connections of male construction workers, and link that to outcomes like employment opportunities or safety concerns. The tool allows you to identify and visualize a social support system, including people like friends and family that, in the case of an opioid

addiction, could help coordinate care for them, and help the industry prioritize how to meet their immediate needs. This tool puts the individual at the center of their care experience, acknowledging and leveraging their personal relationships as a part of their wellness plan, and it helps to narrow in on strategic referrals to the support services and systems. When used in combination with the PARTNER Survey Builder, construction safety and health researchers and stakeholders can track the connections between resources offered by organizations, and the gaps and possible connections for people who can be served by those systems.

# The National Campaign to Prevent Falls in Construction: A Social Network Analysis Executive Summary



Center on Network Science  
SCHOOL OF PUBLIC AFFAIRS  
UNIVERSITY OF COLORADO **DENVER**

VisibleNetworkLabs

## Executive Summary

### What is the National Campaign to Prevent Falls in Construction?

The National Campaign to Prevent Falls in Construction, also known as the Falls Campaign, is an initiative led by CPWR-The Center for Construction Research and Training, the Occupational Safety and Health Administration (OSHA), and the National Institute for Occupational Safety and Health (NIOSH). It was created to encourage contractors to **PLAN** ahead to get the job done safely; **PROVIDE** the right equipment to workers; and **TRAIN** everyone to use the equipment safely year-round (CPWR, 2014). The Falls Campaign provides research, materials, and support for construction industry stakeholders to promote fall safety and prevention.

### About this project.

In 2017, five years after the Falls Campaign's conception, CPWR approached the Center on Network Science (CNS) at the University of Colorado Denver, to conduct a Social Network Analysis (SNA) on the network that has been developed through the Falls Campaign. This project focused on the following areas:

- What organizations are part of the Falls Campaign network, and how are they working together?
- What are the benefits and challenges of participating in the Falls Campaign?
- Who/what are the audiences that the Falls Campaign is reaching?
- Who/what are the potential audiences that the Falls Campaign could reach through its partners?
- Is the Falls Campaign impacting those who are most at-risk of falling?
- What encourages partners to become involved and remain involved in the Falls Campaign?

### Methods.

To answer these research questions, the Center on Network Science conducted a Social Network Analysis using an online survey via the PARTNER Tool ([www.partnertool.net](http://www.partnertool.net)). Key informant interviews were held to inform the revisions of the Falls Campaign PARTNER survey, and representatives from leadership organizations provided feedback throughout the survey development process. The survey was distributed to 157 known Falls Campaign partners (organizations that participate in the Falls Campaign). As part of the survey, these partners were asked to list and answer questions about the organizations that they work with in regard to the Falls Campaign, and their relationships with those organizations. *More detail can be found in the Methods section of this report.*

### Findings.

**Network Demographics.** In total, **157 partners** were identified by the lead organizations (OSHA, NIOSH, and CPWR) to participate in the SNA (they each received the Falls Campaign PARTNER Survey). Of the original 157 partners that received the survey, **77 responded (49%**

**response rate**). In turn, these 77 partners listed an additional **117 organizations** as partners that they work with around the Falls Campaign, resulting in a total of **274 organizations** identified for their involvement in the Falls Campaign.

The 274 total partner organizations represented a variety of sectors, including:

- ❖ **Academic/Government/Research** (105 organizations);
- ❖ **Contractors and related Associations** (67 organizations);
- ❖ **Manufacturers, Suppliers, and related Associations** (44 organizations);
- ❖ **Unions** (23 organizations);
- ❖ **Safety Agencies, Groups, Associations and Insurance** (25 organizations); and
- ❖ **Other** (10 organizations).

**Network Reach.** In addition to varying by sector, organizations involved in the Falls Campaign also varied in size and possible reach. Partner organizations represented the following levels of reach:

- ❖ **68 International** (includes businesses in the United States with an international market);
- ❖ **67 National**;
- ❖ **111 State and Regional**;
- ❖ **16 Local**; and
- ❖ **12 Unknown**.

When asked in an open-ended question to self-identify their organization's full audience, including their work outside of the Falls Campaign, the primary audiences were **workers in general** (which may or may not include contractors) (N=25 respondents), and **contractors and subcontractors** (N=23 respondents). Other audiences reached included groups such as university students and industrial hygienists (N=14 respondents for all other audiences).

Although it is not possible to know the total number of unique individuals reached through the Falls Campaign (since individuals may be receiving information from multiple organizations they are involved with), partners reported reaching anywhere from **36 individuals to 2,500,000 individuals a year** (excluding the lead organizations – OSHA, NIOSH, and CPWR). Some respondents described their audience in terms of how many organizations they reach, rather than the number of individuals; these **5 partners** reported reaching **30,760 organizations** a year cumulatively, which equates to a much larger number of individuals.

**Network Activity.** Respondents reported a great deal of activity, particularly **leading up to and during the National Safety Stand-Down** (an annual event where contractors take time to stop work and educate workers about fall prevention). In fact, **71%** of respondents said their organization is most active during these times (N=122 total responses).

As far as promoting the Falls Campaign to their specific audiences, **75%** of respondents said that they have conducted “**a fair amount**” or “**a great deal**” of promotion over the past year.

The most commonly reported activities that Falls Campaign partners participated in (N=63 respondents) were:

- ❖ **Distribution or posting of Falls Campaign materials** (79% of respondents);
- ❖ **Newsletter articles or blog posts** (70% of respondents); and
- ❖ **Email promotions** (70% of respondents).

Out of the 77 partners that responded, **46 respondents** described **208 unique partnerships** that they have with other organizations around the Falls Campaign. A partnership is defined as any two people or organizations and the relationship between them (also known as a dyad). These partnerships have led to **951 Falls Campaign-related activities**. When describing activities that their organization participated in with their Falls Campaign partners, the most common activities included:

- ❖ **Sharing information between organizations** (85% of partnerships);
- ❖ **Specifically providing information or materials to another organization** (76% of partnerships); and
- ❖ **Promoting the Falls Campaign** (70% of partnerships).

All of these activities highlight the strength of the Falls Campaign network as an **information sharing network**. While respondents reported a great deal of information sharing and communication, organizational participation seemed to decline around more time- or resource-intensive activities, such as performing equipment audits or fall safety drills at their organizations.

**Who are the main points of contact?** The lead organizations (OSHA, NIOSH, and CPWR) play a key role in both gaining partner engagement and distributing information. In fact, **62%** of respondents reported that they became involved in the Falls Campaign because of **an invitation from OSHA, NIOSH and CPWR** (N=61 respondents).

Other primary points of contact in the network were spread across sectors. When excluding the lead organizations, **Academic/Government/Research** partners still accounted for much of the information distribution, reaching **57 organizations** with information about the Falls Campaign (**42%** of activity). The second most active information distributors were **Contractors and related Associations**, reaching **27 organizations** (**20%** of activity).

**Partner Motivation for Initial and Current Involvement.** The most common reason that partners became initially involved with the Falls Campaign was receiving an **invitation from OSHA, NIOSH or CPWR** (**62% of respondents**, N=61 respondents). However, the most common

reason for staying involved in the Falls Campaign was to **demonstrate an overall corporate or organizational commitment to safety (56% of respondents, N=61 respondents).**

**Benefits and Challenges for Falls Campaign Partners.** Partners reported a number of benefits that their organizations receive from participating in the Falls Campaign. **Note:** \*\*Respondents could select multiple responses.

The **top benefits** selected (N=76 respondents) were:

- ❖ **Being part of a national campaign** (80% of respondents);
- ❖ **Access to training resources and campaign materials** (70% of respondents);
- ❖ **Increased opportunities to share resources** (67% of respondents);
- ❖ **Motivation to focus on fall safety** (66% of respondents); and
- ❖ **Improved relationships with other stakeholders** (66% of respondents).

The **most commonly experienced challenges** reported by Falls Campaign partners (N=75 respondents) included:

- ❖ **Finding time to conduct a Stand-Down or other Falls Campaign event** (35% of respondents);
- ❖ **Uncertainty about the impact of your activities** (33% of respondents); and
- ❖ **Generating interest in the Falls Campaign** (33% of respondents).

**Perceptions of Value and Trust.** Ratings of trust (measured as reliability, mission support, and open to discussion) and value (measured as: power/influence, level of involvement, and resource contribution) among partners was captured in the survey. The scores below reflect average scores when a respondent answered a question about their partners regarding their perception of that partner’s value and trust on a scale of 1-4: (1) not at all, (2) a small amount, (3) a fair amount, or (4) a great deal. Overall, respondents reported high levels of trust in their Falls Campaign partnerships, with scores that averaged above 3 in all categories, as indicated in **Table 1**. Several of the network’s value scores fell slightly below an average of 3. The value scores that fall between 2 and 3 indicate that partners believe that other organizations involved in the Falls Campaign network

on average have a lesser amount of resource contribution and organizational involvement in the Falls Campaign.

<b>Overall Value Score</b>	<b>2.85</b>	<b>Overall Trust Score</b>	<b>3.52</b>
<b>Power/Influence</b>	<b>3.12</b>	<b>Reliability</b>	<b>3.55</b>
<b>Level of Involvement</b>	<b>2.97</b>	<b>Mission Support</b>	<b>3.43</b>
<b>Resource Contribution</b>	<b>2.47</b>	<b>Open to Discussion</b>	<b>3.58</b>

**Network Outcomes.** When asked if they have noticed an increase around fall prevention activities within their organization or within the industry as a whole, the majority of respondents said they have seen **“a fair amount” (61% of respondents)** or **“a great deal” (14% of respondents)** of change (N=59 respondents). Similarly, respondents said that they have observed **“a fair amount” (47% of respondents)** or **“a great deal” (25% of respondents)** of improvement in overall safety and health initiatives on topics other than falls within their organization or the construction industry (N=60 respondents).

**Reaching at Risk Contractors.** Since reaching the most at-risk contractors (small residential contractors and their employees) is a core priority of the Falls Campaign, respondents were asked if they believed those most at-risk of falls were receiving Falls Campaign information. While **nearly half (47%)** of respondents said the Falls Campaign **is reaching these populations (33%) or is reaching these populations but could do more (14%)**, some partners felt the Falls Campaign was **not reaching (12%)** the most at-risk contractors, or they were **uncertain (17%)** about whether this population was receiving the information (N=58 respondents, 24% of respondents had a response categorized as “Other”).

**Role of Falls Campaign Leadership.** The Falls Campaign leaders (OSHA, NIOSH and CPWR) each received **high overall trust and value** scores from respondents who selected them as an organizational partner. The leadership organizations were also identified as the primary distributors of information in the network. In fact, **nearly a third (29%)** of respondents reported **receiving information directly** from OSHA, CPWR, and/or NIOSH (15, 9, and 8 respondents, respectively). This highlights the importance of these lead organizations’ roles, which is primarily that of information exchange.

The top outcomes that partners reported when working with the lead organizations included (N=35 respondents):

- ❖ **Increased organizational capacity to address falls** (83% of respondents);
- ❖ **Improved relationships between their organization and the lead organizations** (80% of respondents); and
- ❖ **Increased organizational knowledge around fall prevention** (66% of respondents).

### Conclusion/Recommendations.

The Falls Campaign network has proven to be highly effective as an information sharing network, with considerable information flow occurring from Falls Campaign leadership down to the full network, from partners back up to leadership, and between partners. However, there are certain recommendations that leadership might consider to help the network develop further and function more effectively to reach the Falls Campaign’s overarching goals. These recommendations are laid out by topic area below.

## Partner Engagement.

1) **Utilize the pull of leadership organizations to engage “hard to reach” partners.** Since invitations from leadership organizations were significant for gaining initial partner engagement, leadership should consider what types of direct outreach may be helpful in gaining new members and retaining the existing network. Reaching out to smaller or more “difficult to connect with” partners directly demonstrates a willingness to work together on behalf of the leadership and provides validation to the organization being contacted.

Additionally, connecting with these more non-traditional intermediary type partners may provide beneficial insight into how to reach the more difficult populations, such as at-risk contractors, at the individual level.

A suggestion for how to build a focused strategy for this recommendation may be to use the data in the PARTNER tool to identify those “hard to reach” and “non-traditional” partners that were rated as the most influential, and target outreach to those specific organizations. These data are included in the dataset and if this strategy is selected, can be pulled to inform the work.

2) **Be strategic in partner engagement.** What sectors and types of partners are currently missing, or are less engaged in the network? Are the current partners all of the right partners, and are current partners engaged at the appropriate level to meet the goals of the Falls Campaign?

Several partners reported that they were incentivized to join the Falls Campaign because they wanted to gain new and improved partnerships. For these partners, and in general, consider how the Falls Campaign might be able to promote more interconnectedness between partners rather than being primarily “top-down” in nature. In the world of Network Science, this would be called increasing the “density” of your network; in essence, creating more “ties” or relationships among members rather than the network being centralized around a small number of organizations.

3) **Play the “National Campaign” card.** Many respondents reported that being part of a national-level campaign was an important benefit for their organization. How can leadership use this to incentivize new and increased participation? Is there any funding or recognition that can be organized to help promote participation? Another federal-level public health network, for example, created something called Network “Champions”. These “Champion” organizations were high functioning network members, and this campaign praised and highlighted their hard work by, for example:

listing their initiative's website on the campaign website, and news about the work of these organizations was posted and distributed as examples for other partners.

Creating some type of recognition, reward, or other type of incentive program would also help partners to “demonstrate an organizational commitment to safety”— something which was a strong motivator for many respondents. For more information about what motivated organizations to participate in the Falls Campaign, see pages 32 & 33.

4) **Consider options for a new governance structure.** Currently, the Falls Campaign is primarily managed by the lead organizations. Formally integrating leadership from partner organizations at the regional or local levels to increase shared accountability and facilitation of Falls Campaign related work can ensure that the work can be sustained. Building a localized governance structure could help to both expand reach and ensure longer sustainability opportunities.

#### **Partner Activity.**

5) **Evaluate the level of activity of different partners.** Consider the partners who reported being less active around promoting the Falls Campaign, or partners who showed overall less engagement (for example: not responding to the survey, only participating in limited activities, etc.). Think about why these partners may not be currently engaged, and how these relationships can be developed.

Partners reported being most active before or during Stand-Down events. Consider if it would be beneficial to try to engage partners throughout the year or in conjunction with other industry events. Different types of engagement may be appropriate at different points throughout the year.

6) **Incentivize participation in more “difficult” activities.** The network has already demonstrated effectiveness in low resource activities, such as sending emails or sharing Falls Campaign materials. However, activities which required more staff time or financial resources were much less frequent. Think about how these more resource intensive activities, such as formal presentations or drills, might be incentivized for partners by either providing something beneficial to the organizations or reducing the level of “burden” on the organization.

7) **Build strategies to increase perceptions of lead organizations' openness to discussion.** Some respondents reported that the lead organizations appeared to be less open to discussion. While these scores represent perceptions of these organizations and may not be realized in practice this same way, the perception that partners have of one

another is powerful in terms of how relationships are built and sustained. When organizations are identified as being less open to discussion, it could mean that partners find them difficult to contact or that the exchanges they have with these organizations are not authentic and transparent. In this case, it could be helpful to dive deeper into these reported perceptions and identify if there are adverse effects of this, or whether the network continues to perform as expected, even with these varying perceptions of the lead organizations.

### Addressing Challenges.

8) **Helping partners “find the time” to promote fall safety.** Over 25% of respondents stated that their greatest challenge with participating in the Falls Campaign is finding the time to conduct an event, such as a Stand-Down. Similar to the previous recommendation, consider how time and resource intensive activities, like hosting an event, can be incentivized for partners by either providing something beneficial to the organizations or reducing the “burden” on them.

9) **Removing uncertainty for partners.** A large number of respondents expressed uncertainty around understanding or demonstrating the impact of their work around the Falls Campaign. Some reported difficulties with knowing or tracking how many people are being reached, whether information is reaching those workers most at-risk, and whether this has led to increased fall safety. Greater partner buy-in may be generated by helping Falls Campaign partners to measure the impact of using fall safety and prevention practices at their organizations, thus more effectively demonstrating the benefits of participation. Consider how leadership might provide partners with more resources or support to track, understand, and demonstrate the impact of their work around the Falls Campaign.

### What’s next for the Falls Campaign?

As described in this report, the Falls Campaign is a very successful effort that is reporting a broad reach in terms of exposure and connection to people in the construction industry. The lead organizations play an influential role in the network and seem to be leaders that people respect and look to for guidance on the Falls Campaign work. Partner organizations that participate in the Falls Campaign report many benefits and a few challenges. As the Falls Campaign moves ahead, focusing on outreach to a high-risk audience, developing a governance structure that includes partners at the local level, and strategizing to reach goals while minimizing the amount of resources required could help to take the Falls Campaign to the next level.

## Appendix B: Glossary

**Action Steps:** Steps to get you from where you “are” to where your goals indicate you “should be” (act).

**Attributes:** A characteristic of an object (person, thing, etc.) used to identify each organization/individual.

**Key Players:** Network members/partners who hold key positions in the network because of the number and placement of their connections within the whole network.

**Centrality:** A measure of how network structure and position contribute to a node’s importance -- value associated with every node. Centrality measures include degree centrality and closeness centrality.

**Centralization:** A measure of the extent to which a network is dominated by one or a few very central hubs (i.e., nodes with high degree and betweenness centrality). In a highly centralized network, these central hubs represent single points of failure which, if removed or damaged, quickly fragments the network into unconnected sub-networks. A less centralized network has fewer points of failure and exhibits greater resilience, since many nodes or links can fail while allowing the remaining nodes to still reach each other over other network paths.

**Connectivity:** The state of being connected between two or more points in a network.

**Degree centrality:** A count of the number of connections a network member has to other members of the network. It is often thought that a member with a high number of connections holds a central position by being highly embedded in the network. This is an indication of direct influence and how well connected everyone is.

**Degree centralization:** Degree centralization refers to how well connected the members of the network are, collectively. Lower centralization scores indicate that fewer network members hold highly central positions; positions of brokerage and information sharing are held by only a small number of members and power/control may be centralized. Higher network centralization indicates that members are more equally interconnected, which in turn may increase their willingness to support the collaborative’s goals.

**Density:** The concentration of individuals who are connected to each other in a network. An increase in connections means an increase in density.

**Embedded:** The nature by which a network member is contained within the relationships of others in a network.

**Network Map:** A visualization that displays the members of a group and the relationships among them. Nodes (usually represented as circles) represent the members of the network and the presence of a line connecting any two nodes represents the presence of a relationship.

**Network:** A formal or semi-permanent partnership created between three or more people or organizations in order to better achieve mutually desired objectives.

**Nodes:** Usually represented as circles in a network map represent the members of the network and the presence of a line connecting any two nodes represents the presence of a relationship. A node can be a person, organization, department, etc.

**Quality Improvement:** Quality Improvement includes a Plan, Do, Study, Act process that involves evaluating performance measures through data collection to identify and use benchmarks to identify and document the necessity for change.

**Reciprocity:** The mutual exchange between people, organizations, or groups.

**Redundancy:** Repetitive or a duplication.

**Relationship budgeting:** Making discriminate choices between collaboration alternatives, considering the cost, quality, and possible outcomes of a strategic approach to collaborative management. The primary question driving a relationship budget is: How many relationships can effectively be managed with the resources available and still achieve the outcomes we desire?

**Score:** A number indicating quality or performance.

**Social Network Analysis:** The study of the structural relationships among interacting network members — individuals, organizations, etc.—and how those relationships produce varying effects. The fundamental property of network analysis is the ability to determine, through mathematical algorithms, whether network members are connected—and to what degree—to one another in terms of a variety of relationships like communication, resource sharing, or knowledge exchanges. Network analysis provides a mathematical approach to measure the number, the paths, and the strength of those connections. In addition, visual representations of the network can be created as graphs.

**Structural Holes:** Lack of ties or missing connections among alters of one ego. Alters are only connected to ego, not to each other.

## Appendix C: The Falls Campaign PARTNER Research Questions

- 1. Who are critical and highly active individuals/organizations involved in the Falls Campaign?**
  - a. We have our choir - who else is involved? Are the high level decision makers involved?
  - a. How would they define their constituents (the individuals/organizations) they reach directly? High level decision makers? Contractors who employ at risk workers. Workers at risk for falls?
  - b. How active are they (the 'partners') in the Falls Campaign (before, during, and after formal events are over)?
  - c. How did they initially decide to participate?
  - d. How do they make decisions about ways to participate and level of involvement?
  - e. Of the three main Falls Campaign organizers, OSHA, NIOSH and CPWR, who has had the greatest influence over their involvement in the Falls Campaign?
  
- 2. What are the characteristics of the individual/organizational networks involved in the Falls Campaign that affect their ability to transfer information and practices about fall protection to those most in need of the information (contractors and workers)?**
  - a. What is their motivation for being involved in the Falls Campaign?
  - b. How many key players for the Falls Campaign are involved in ACCSH, the NORA Sector Councils, etc.?
  - c. Who do they view as their key point of contact for the Falls Campaign? And why? (How do they hear about Falls Campaign events? Who do they turn to for materials and help?)
  - d. Beyond the top three organizations (OSHA, NIOSH and CPWR), has anyone else had an influence over their participation in the Falls Campaign? Who and how?
  - e. What other individuals/organizations do they receive information from (e.g., materials, campaign events, training, etc.)? How would they describe these relationships/activities?
  - f. How much are they interacting with their constituents about the Falls Campaign? What individuals/organizations do they share information with (e.g., materials, campaign events, training, etc.)? How would they describe these relationships/activities? Were there bottlenecks in the flow of information? Were there informal communications channels and were they effective?
  - g. What barriers or challenges have they encountered in sharing Falls Campaign information?
  
- 3. What is their perceived impact of the falls campaign on fall prevention behavior?**
  - a. What do they believe are the benefits of participating in the Falls Campaign?
  - b. Are they connecting with new individuals/organizations because of the Falls Campaign? Where is OSHA today because of the Falls Campaign? How has this extended who OSHA is talking to?
  - c. Have they noticed an increased awareness of fall hazards and fall prevention activities (e.g. use of fall protection, use of engineering or administrative controls, improved training methods, inspections, etc.) with their constituency (workers, contractors, etc.)?
  - d. Have they noticed an improvement in their overall safety and health initiatives with topics other than falls?

**Other:**

- a. Are we seeing a change in culture?
- b. Are the people at risk of falling benefiting?
- c. How are construction employment trends affecting the Fall Campaign's impact?
- d. Market penetration - what percent of contractor/workers are we touching?
- e. Small businesses - how effective are we at reaching small contractors and their employees compared to reaching large contractors and their employees?

**New Questions:** (added throughout the development of the Falls Campaign PARTNER survey)

- a. Of the three main Falls Campaign organizers, OSHA, NIOSH and CPWR, who is perceived to be the most involved in partnerships?
- b. Beyond the top three organizations (OSHA, NIOSH and CPWR), who else is perceived to be highly involved in the Falls Campaign? Who and how?
- c. What is the potential reach of the Falls Campaign?
- d. What partners could enhance the reach of the Falls Campaign?

## Appendix D: The Falls Campaign PARTNER Survey

### PARTNER Falls Campaign & Stand-Down Survey Questions

#### **Falls Campaign Survey Instructions**

Thank you very much for taking this survey. The survey is part of a new and novel approach CPWR, OSHA, and NIOSH are using to evaluate the Campaign to Prevent Falls in Construction by learning about the network of relationships that has been created because of the Campaign. This includes understanding how information flows through the network and where we can identify gaps and overlaps in linkages. The participation of as many members of the network as possible is especially important in this type of research and will help us both demonstrate the power of the network we have created and understand where to focus future strategies. As an incentive to complete the survey, upon completion, we will enter you in **a drawing to win 1 of 7 Kindle Fires**.

#### **Survey Structure**

In the first set of questions, you will provide information about your organization and your organization's perspective on the Falls Campaign. The next set of questions will ask you to list partners that you interact with on the Campaign, and you will be asked to answer questions about each of those partners.

Note: The questions in this survey refer to the Falls Campaign overall (year round), but if your main participation is centered on the Stand-Down simply respond in relation to that effort.

#### **Falls Campaign Background**

Falls are the leading cause of construction injuries and fatalities. The Campaign to Prevent Falls in Construction began in 2012 with construction industry stakeholders seeking a way to raise awareness and reduce or eliminate the risk. The Campaign is a year-round effort to encourage contractors to better PLAN ahead to get the job done safely, PROVIDE the right equipment, and TRAIN everyone to use the equipment safely.

In 2014, a new element was added to the Campaign: the National Safety Stand-Down. Originally begun by OSHA as a Falls Campaign activity to raise awareness of the severity of fall hazards in construction and the importance of preventing them, the Stand-Down is now considered the main event of the Campaign. It occurs for one week in May when industry stakeholders pause work to focus on fall prevention, conducting a variety of activities such as training, equipment inspections, and fall protection demonstrations.

Q#	Question Text	Question Response Options	Falls Campaign Questions This Will Answer (NEW indicates a research question that was added throughout the development of this survey)
1	Your organization should be listed below. If it is not, please return to the original email and click on that link.		
2	What is your job title?		
3	How long has your organization been actively engaged in the Falls Campaign? (in months) Please answer with a numeral.		
4	What are the benefits to your organization of participating in the Falls Campaign? (select all that apply)	<ol style="list-style-type: none"> <li>1. Access to data resources including data sets, collection and analysis</li> <li>2. Access to expertise on how to improve employee safety</li> <li>3. Access to expertise on how to prevent falls</li> <li>4. Access to training resources and campaign materials</li> <li>5. Being part of a national campaign</li> <li>6. Improvement in organizational policies</li> <li>7. Improved relationships with federal organizations</li> <li>8. Improved relationships with other stakeholders</li> <li>9. Increased attention to removal and replacement of faulty equipment with safer alternatives</li> <li>10. Increased communication between management and workers</li> <li>11. Increased compliance with safety standards</li> </ol>	<p>3a. What do they believe are the benefits of participating in the campaign?</p> <p>3c. Have they noticed an increased awareness of fall hazards and fall prevention activities (e.g. use of fall protection, use of engineering or administrative controls, improved training methods, inspections, etc.) with their constituency (workers, contractors, etc.)?</p> <p>3d. Have they noticed an improvement in their overall safety and health initiatives with topics other than falls?</p>

		<ul style="list-style-type: none"> <li>12. Increased opportunities to share resources</li> <li>13. Motivation to focus on fall safety</li> <li>14. Opportunities to participate in safety events</li> <li>15. Reduction of falls on job sites</li> <li>16. Other</li> </ul>	
5	What is the <u>most important benefit</u> that your organization receives from participating in the Falls Campaign? (select one)	Same as #4, select one	Same as question 4
6	What barriers or challenges has your organization experienced while participating in the Falls Campaign? (select all that apply)	<ul style="list-style-type: none"> <li>1. Costs associated with providing a training, or holding a Stand Down or other Campaign event (e.g. food, supplies, etc.)</li> <li>2. Distributing materials to the appropriate audience</li> <li>3. Finding time to conduct a Stand Down or other Campaign event</li> <li>4. Generating interest in the Campaign</li> <li>5. Getting cooperation from other stakeholders</li> <li>6. Getting organizational buy-in to participate</li> <li>7. Lack of access to Technical Assistance</li> <li>8. Lack of access to training or other campaign training materials</li> <li>9. Uncertainty about the impact of your activities</li> <li>10. Other</li> </ul>	2g. What barriers or challenges have they encountered in sharing campaign information?
7	What was the <u>most significant barrier or challenge</u> your organization experienced while participating in the Falls Campaign? (select one)	Same as #6, select one	Same as 6

8	In the last 12 months, how active has your organization been in promoting the Falls Campaign?	<ol style="list-style-type: none"> <li>1. Not at all</li> <li>2. A small amount</li> <li>3. A fair amount</li> <li>4. A great deal</li> </ol>	1c. How active are they (the 'partners') in the campaign (before, during, and after formal events are over).
9	When is your organization most active in the Campaign? (select all that apply)	<ol style="list-style-type: none"> <li>1. Leading up to the Stand-Down</li> <li>2. During the Stand-Down</li> <li>3. Immediately after the Stand-Down</li> <li>4. All year long</li> <li>5. In conjunction with another organization or industry event</li> </ol>	
10	<p>In this next part of the survey, we would like you to please list the names of organizations or businesses that you discuss the Falls Campaign with.</p> <p>These could be organizations that you seek assistance from about the Falls Campaign, organizations that you reach with Falls Campaign efforts at your organization, or groups that you distribute information to.</p> <p>For example: NIOSH, OSHA (federal level), OSHA field office, CPWR, specific contacting companies (large and small), unions (and union membership), contractor associations, equipment suppliers, FACE program, FACE program state-level, among others.</p> <p>Please be as specific as possible (full org names, detail specific departments, etc.).</p> <p>In subsequent questions you will be asked to answer questions about each organization.</p>		<p>1a. We have our choir - who else is involved? Are the high level decision makers involved?</p> <p>1b. How would they define their constituents (the individuals/organizations) they reach directly? High level decision makers? Contractors who employ at risk workers? Workers at risk for falls?</p> <p>Other question e. Small businesses - how effective are we at reaching small contractors and their employees compared to reaching large contractors and their employees?</p>

11	With regard to the Falls Campaign, how would you describe your organization's activities with this organization? (select all that apply)	<ol style="list-style-type: none"> <li>1. Our organizations held a Stand Down together</li> <li>2. Our organizations shared information with one another</li> <li>3. Provided information or materials to this organization</li> <li>4. Provided training or other assistance to this organization</li> <li>5. Received information or materials from this organization</li> <li>6. Received training or other assistance from this organization</li> <li>7. We attend training, Stand Down, or other Campaign events together</li> <li>8. We conduct research together</li> <li>9. We create/implement safety standards together</li> <li>10. We work on regulation or policy changes together</li> <li>11. We worked to promote the Campaign together</li> <li>12. Other</li> </ol>	<p>2c. Who do they view as their key point of contact for the campaign? And why? (How do they hear about campaign events? Who do they turn to for materials and help?)</p> <p>2e. What other individuals/organizations do they receive information from (e.g., materials, campaign events, training, etc.)? How would they describe these relationships/activities?</p> <p>2f. How much are they interacting with their constituents about the campaign? What individuals/ organizations do they share information with (e.g., materials, campaign events, training, etc.)? How would they describe these relationships/ activities? Were there bottlenecks in the flow of information? Were there informal communications channels and were they effective?</p>
12	This relationship has [select all]:	<ol style="list-style-type: none"> <li>1. Improved my organization's capacity to address falls</li> <li>2. Improved my organization's capacity to conduct other safety efforts</li> <li>3. Improved our safety climate</li> <li>4. Improved safety practices at my organization</li> <li>5. Increased my organization's knowledge around fall prevention</li> <li>6. Led to an exchange of resources</li> <li>7. Led to improved relationships between our organizations</li> </ol>	<p>3b. Are they connecting with new individuals/organizations because of the campaign? Where is OSHA today because of this campaign? How has this extended who OSHA is talking to?</p> <p>3c. Have they noticed an increased awareness of fall hazards and fall prevention activities (e.g. use of fall protection, use of engineering or administrative controls, improved training methods, inspections, etc.) with</p>

		8. Led to increased compliance with existing safety guidelines or standards 9. Reduced the number of fall related injuries 10. Has not resulted in any change 11. Has not resulted in any change, but we anticipate that it will	their constituency (workers, contractors, etc.)?  3d. Have they noticed an improvement in their overall safety and health initiatives with topics other than falls?
13	To what extent does this organization have power and influence to impact the overall success of the Falls Campaign?  *Power/Influence: The organization/company holds a prominent position in the industry by being powerful, having influence, success as a change agent, and showing leadership.	1. Not at all 2. A small amount 3. A fair amount 4. A great deal	1f. Of the three main campaign organizers, OSHA, NIOSH and CPWR, who has had the greatest influence over their involvement in the campaign? 2d. Beyond the top three organizations (OSHA, NIOSH and CPWR), has anyone else had an influence over their participation in the campaign? Who and how?
14	What is this organization's level of involvement in the Falls Campaign? *Level of Involvement: The organization/company is strongly committed and active in the Falls Campaign and gets things done.	1. Not at all 2. A small amount 3. A fair amount 4. A great deal	NEW. Of the three main campaign organizers, OSHA, NIOSH and CPWR, who is perceived to be the most involved in partnerships? NEW. Beyond the top three organizations (OSHA, NIOSH and CPWR), who else is perceived to be highly involved in the campaign? Who and how?
15	To what extent does this organization contribute resources to the Falls Campaign? *Contributing Resources: The organization/company brings	1. Not at all 2. A small amount 3. A fair amount 4. A great deal	NEW. Of the three main campaign organizers, OSHA, NIOSH and CPWR, who is perceived offer the most resources in partnerships?

	resources such as funding, information, or training to the Falls Campaign.		NEW. Beyond the top three organizations (OSHA, NIOSH and CPWR), who else is perceived offer the most resources in the campaign? Who and how?
16	<p>How reliable is this organization?</p> <p>*Reliable: This organization/company is reliable in terms of following through on commitments.</p>	<ol style="list-style-type: none"> <li>1. Not at all</li> <li>2. A small amount</li> <li>3. A fair amount</li> <li>4. A great deal</li> </ol>	<p>NEW. Of the three main campaign organizers, OSHA, NIOSH and CPWR, who is perceived to be the most reliable partners?</p> <p>NEW. Beyond the top three organizations (OSHA, NIOSH and CPWR), who else is perceived to be reliable partners in the campaign? Who and how?</p>
17	<p>To what extent does the organization share the Falls Campaign's mission to prevent fatal falls from roofs, ladders, and scaffolds by encouraging construction contractors to:</p> <ul style="list-style-type: none"> <li>• PLAN ahead to get the job done safely.</li> <li>• PROVIDE the right equipment.</li> <li>• TRAIN everyone to use the equipment safely.</li> </ul> <p>*Mission Congruence: This organization/company shares a common vision of the end goal of what working together should accomplish.</p>	<ol style="list-style-type: none"> <li>1. Not at all</li> <li>2. A small amount</li> <li>3. A fair amount</li> <li>4. A great deal</li> </ol>	<p>NEW. Of the three main campaign organizers, OSHA, NIOSH and CPWR, who is perceived to have the most mission congruence partnerships?</p> <p>NEW. Beyond the top three organizations (OSHA, NIOSH and CPWR), who else is perceived to be have the most mission congruence with each other in the campaign? Who and how?</p>
18	How open to feedback or communications is this organization?	<ol style="list-style-type: none"> <li>1. Not at all</li> <li>2. A small amount</li> <li>3. A fair amount</li> </ol>	NEW. Of the three main campaign organizers, OSHA, NIOSH and CPWR,

	<p>*Open to Discussion: This organization/company is willing to engage in frank, open and civil discussion (especially when disagreement exists). The organization/company is willing to consider a variety of viewpoints and talk together (rather than at each other). You are able to communicate with this organization/company in an open, trusting manner.</p>	<p>4. A great deal</p>	<p>who is perceived to be the most open to communication?</p> <p>NEW. Beyond the top three organizations (OSHA, NIOSH and CPWR), who else is perceived to be the most open to communication? Who and how?</p>
19	<p>How many people would you estimate that this organization can reach to distribute information about the Falls Campaign? We understand these are best guesses.</p>	<ol style="list-style-type: none"> <li>1. Not sure</li> <li>2. Under 100 people</li> <li>3. Under 1,000 people</li> <li>4. Under 5,000 people</li> <li>5. Under 10,000 people</li> <li>6. Over 10,000 people</li> <li>7. Over 25,000 people</li> </ol>	<p>NEW. What is the potential reach of the Campaign?</p>
20	<p>Which events or activities did your organization engage in while participating in the Falls Campaign? (select all that apply)</p>	<ol style="list-style-type: none"> <li>1. Creation of materials</li> <li>2. Distribution or posting of materials (e.g. hardhat stickers, flyers, handouts, posters)</li> <li>3. Drills or practices for falls</li> <li>4. Email promotions</li> <li>5. Equipment inspections or audits</li> <li>6. Equipment or Personal Fall Arrest System demonstrations</li> <li>7. Newsletter articles or blog posts</li> <li>8. Presentations or webinars</li> <li>9. Safety meetings</li> <li>10. Sharing of videos</li> <li>11. Training or Toolbox Talks</li> <li>12. T-shirt or other giveaway</li> <li>13. Other</li> </ol>	

21	Are there any other activities that you have engaged in related to the National Falls Campaign that were not listed in the previous question?	[Open Ended]	
22	What <u>INITIALLY</u> motivated your organization to become involved with the Falls Campaign? (select one)	<ol style="list-style-type: none"> <li>1. A fall incident or fatality that happened within our company or the industry</li> <li>2. A recommendation from another stakeholder</li> <li>3. A request from someone within our organization</li> <li>4. An invitation from OSHA, NIOSH, or CPWR</li> <li>5. Insurance incentive</li> <li>6. Recognition by OSHA (a certificate)</li> <li>7. To demonstrate corporate/organizational commitment to safety</li> <li>8. Other</li> </ol>	<p>1d. How did they initially decide to participate?</p> <p>2a. What is their motivation for being involved in the campaign?</p>
23	What is <u>CURRENTLY</u> motivating your organization to stay involved with the Falls Campaign? (select one)	<ol style="list-style-type: none"> <li>1. A fall incident or fatality that happened within our company or the industry</li> <li>2. A recommendation from another stakeholder</li> <li>3. A request from someone within our organization</li> <li>4. An invitation from OSHA, NIOSH, or CPWR</li> <li>5. Insurance incentive</li> <li>6. Recognition by OSHA (a certificate)</li> <li>7. To demonstrate corporate/organizational commitment to safety</li> <li>8. Other</li> </ol>	
24	Are there any other factors that motivated your initial or current involvement in the Falls Campaign	[Open Ended]	

	that was not mentioned in the previous two questions?		
25	<p>How would you quantify your organization's audiences broadly (not only related to the Falls Campaign) (both in size/number and geographic area)? Please provide as much detail as possible.</p> <p>Examples:  We employ about 15,000 workers across jobsites in Pennsylvania, Ohio, and Kentucky.  We are a national organization and estimating the size of our audience is difficult, but our mailing list contains 50,000 people.</p>	[Open Ended]	Other questions c: How are construction employment trends affecting the campaign's impact?
26	<p>Within each of your audiences, how many contractors and workers do you think you are reaching specifically related to the Falls Campaign on a yearly basis? Please indicate if that number has grown and over what time period.</p>	[Open Ended]	Other questions d: Market penetration - what percent of contractor/workers are we touching?
27	<p>In your audiences, from your perspective, are the people most at risk of falling being reached by the Falls Campaign?  If not, or if you are unsure, can you describe in more detail why you feel this way?</p>	[Open Ended]	Other questions b: Are the people at risk of falling benefiting
28		<ol style="list-style-type: none"> <li>1. Not at all</li> <li>2. A small amount</li> </ol>	

	To what degree have you noticed an increase in fall prevention activities (e.g. use of fall protection, inspections, etc.) at your organization or in the industry?	<ul style="list-style-type: none"> <li>3. A fair amount</li> <li>4. A great deal</li> </ul>	3c. Have they noticed an increased awareness of fall hazards and fall prevention activities (e.g. use of fall protection, use of engineering or administrative controls, improved training methods, inspections, etc.) with their constituency (workers, contractors, etc.)?
29	To what degree have you noticed improvement in overall safety and health initiatives with topics other than falls at your organization or in the industry?	<ul style="list-style-type: none"> <li>1. Not at all</li> <li>2. A small amount</li> <li>3. A fair amount</li> <li>4. A great deal</li> </ul>	<p>3a. What do they believe are the benefits of participating in the campaign?</p> <p>3d. Have they noticed an improvement in their overall safety and health initiatives with topics other than falls?</p>
30	Identify one significant impact or outcome your organization has experienced as a result of participation in the Campaign (e.g. increased awareness of fall hazards, lower incident rates).	[Open Ended]	
31	Are there any potential partners (e.g. organizations, businesses, universities, associations, etc.) that are not already involved in the National Falls Campaign, whose membership would enhance the reach of the Campaign?	[Open Ended]	NEW. What partners could enhance the reach of the Campaign?
32	Can we follow up with you to learn more about your experience with the Falls Campaign? If yes, please list the best contact information to reach you at below.	[Open Ended]	

