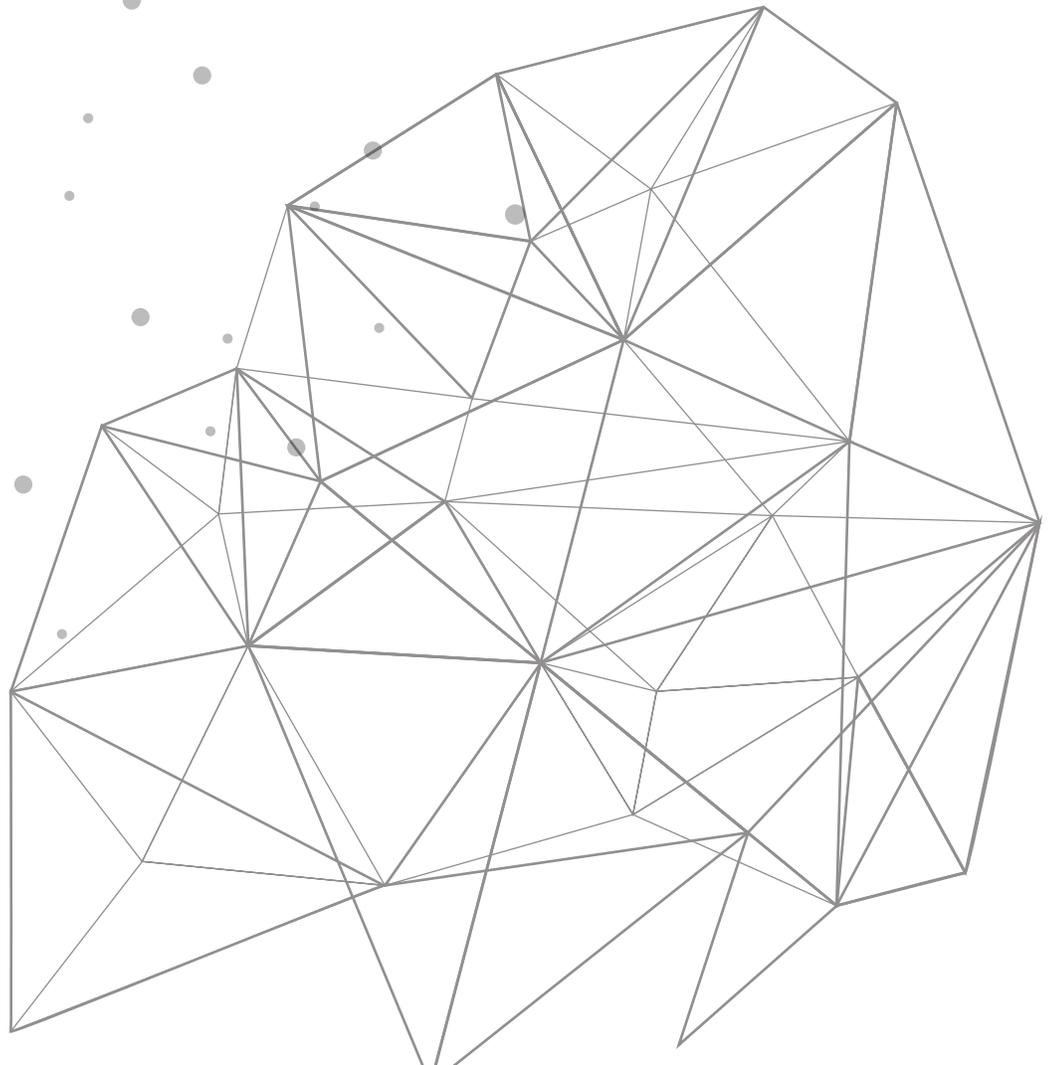




MANAGING NETWORKS: OUR APPROACH

Dana Kayser
Fels Institute of Government
2021



THEORY OF CHANGE

Introduction

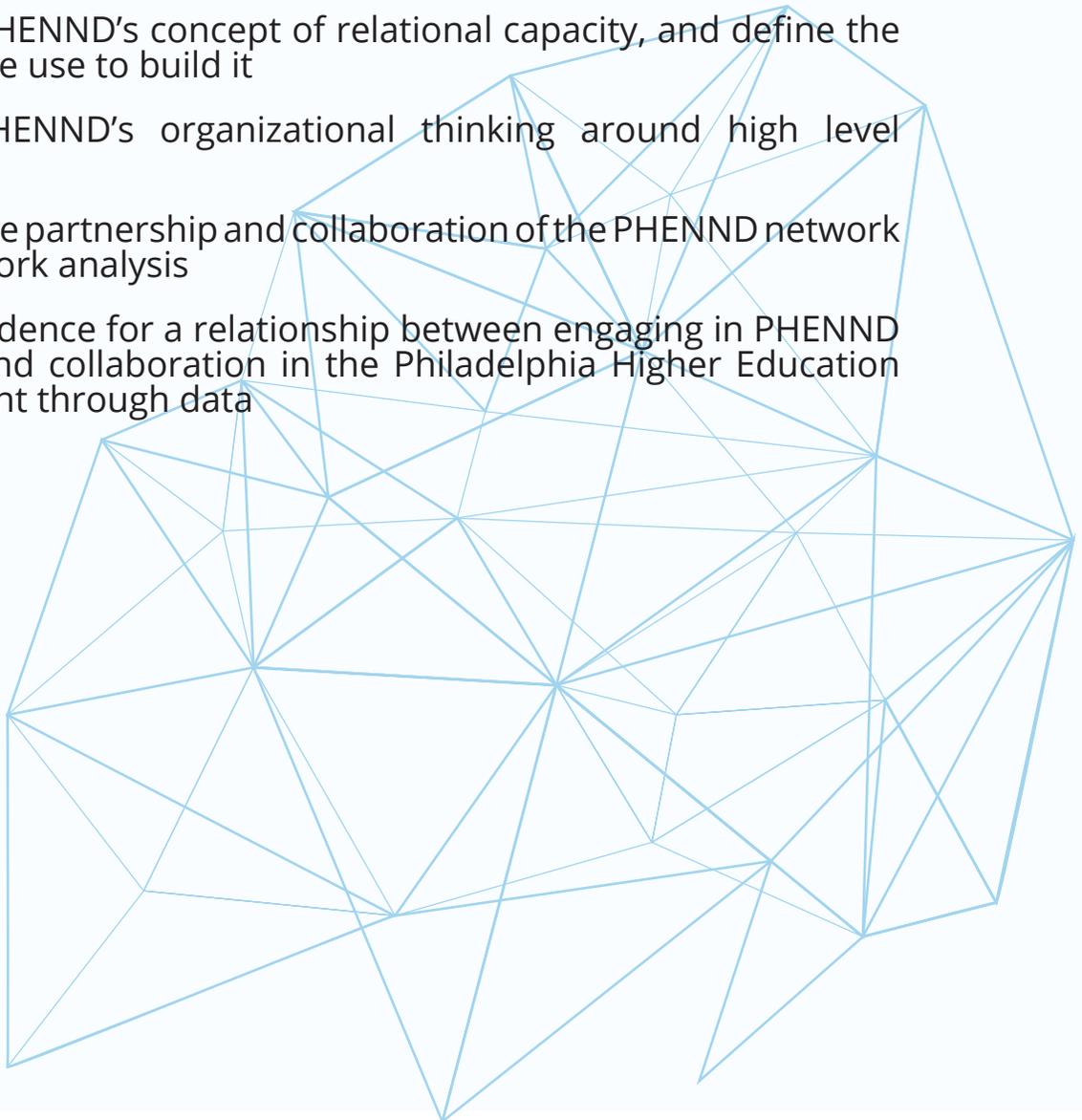
In order to fully realize the impact that campuses can have in the communities in which they exist, campuses must be connected to not only the community itself, but also each other in coalition. The Philadelphia Higher Education Network for Neighborhood Development (PHENND) seeks to build those connections in service of the realization of a more sustainable and just Philadelphia region, with an emphasis on a successful educational pipeline from kindergarten through college (K-16) and beyond.

PHENND has taken on the not insignificant challenge of combating the tendency of institutions of higher education to silo themselves from each other and the community. In “Better Together” Robert Putnam testifies to the importance of this:

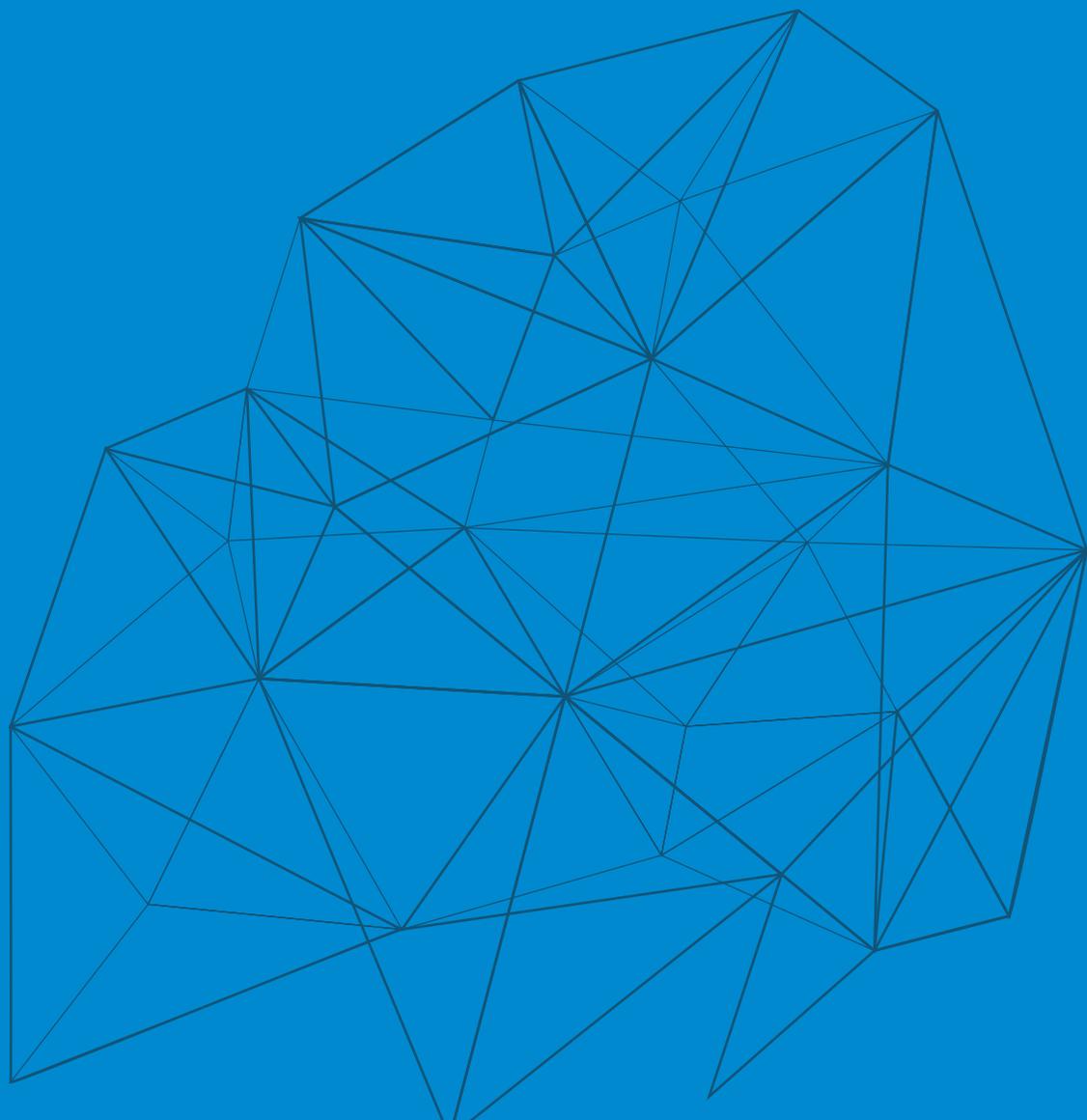
[S]ocial capital refers to social networks, norms of reciprocity, mutual assistance, and trustworthiness. The central insight of this approach is that social networks have real value both for the people in those networks... as well as for bystanders.

In an early evaluation, the beneficiaries of PHENND's work- which includes higher education, nonprofit, and community professionals in Philadelphia and beyond (conceptualized by PHENND staff as PHENND network members) were described along a spectrum, those who saw PHENND as a source of inspiration and information, and on the other end, those whose partnerships developed through PHENND had a large impact on their programs. Part one of this project describes the PHENND mission and impact that both populations receive, part two of this project zooms in on the latter group, exploring the collaborations facilitated at the center of a very wide network. This project seeks to:

- Define the need PHENND hopes to address through capacity building
- Describe PHENND's concept of relational capacity, and define the methods we use to build it
- Explore PHENND's organizational thinking around high level outcomes
- Illustrate the partnership and collaboration of the PHENND network using network analysis
- Provide evidence for a relationship between engaging in PHENND activities and collaboration in the Philadelphia Higher Education environment through data



*Connecting
Campus to
Community*



Need

PHENND has historically been concerned with persistent gaps in achievement in education for students in City of Philadelphia schools. Students experiencing poverty had a graduation rate of 61% in 2016; as opposed to 70% for students not experiencing poverty (Pew, 2017). Nationally, the 4-year graduation rate for public high school students was 84%; 78% of economically disadvantaged students graduated (Pew, 2017).

Philadelphia public education stakeholders increasingly acknowledge the importance for schools to strategically leverage partnerships to support the growth of children. This acknowledgment is not simply a response to the decades of underfunding of Philadelphia public schools, but also due to an increasingly sophisticated understanding of the extra supports children in poverty need to help them thrive. Families experiencing poverty send their children to public schools in Philadelphia more frequently. Only 2% of all students experiencing poverty in attended high achieving elementary or middle schools (Pew, 2018).

Over time, PHENND has become more concerned about the persistent gaps in achievement, not just at the K-12 level but also at the college level. Most of our campus members have initiatives aimed at eliminating achievement gaps for school-aged children. The long-term goal of these programs is for those children to grow up to be healthy, productive adults. Increasingly, that means having a college degree. What happens to these children when they get to college? Unfortunately, many of them don't persist, eventually dropping out with debt and no degree (Pew, 2018).

Institutional inequities in education are key in the persistence of multi-generational poverty in Philadelphia. Philadelphia's relatively low rate of adults with higher education degrees when compared with similar cities (34% vs. 53% in Boston or 60% in DC), has been said to be related closely to the city's economic disadvantages when compared to those same cities (Pew, 2019). When considering persistence in higher education, beyond simply access, the story becomes one of equity, as Philadelphians with some college credits but no degree are disproportionately Black and female compared with the city's overall population (Pew, 2019).

As a network of colleges and universities, PHENND is uniquely positioned to address these needs. By building locally focused partnerships aimed at increasing student success and degree completion, PHENND leverages relationships to increase capacity for institutions of higher education to better support students in not just access, but persistence and success. This is crucial particularly for low-income, first generation students – who are often the beneficiaries of campus' K-12 outreach. These students often go on to attend, in large numbers, the same Philadelphia-area institutions that worked with their schools through K-12, creating a pipeline of K-16 access, persistence, and success in Philadelphia.

PHENND ACTIVITIES

PHENND facilitates network activities, encouraging relationships to develop among Philadelphia IHEs and communities

Actors in the PHENND network build relational capacity. Institutions of Higher Education have access to diverse expertise, collaborative opportunities, and more resources

RELATIONSHIPS AS INCREASED CAPACITY

HIGH IMPACT PRACTICES

Practices such as service-learning, internships, and capstone projects connect students to community as well as provide richer and more realistic learning environments

Increased student access and persistence
Improved student experience. Higher education more effectively reinforces equitable society.

INCREASED STUDENT SUCCESS

Figure 1

Intended Impact

PHENND is working toward *students in Philadelphia succeeding and persisting in education from K-12 through college and beyond, while supported by a well-connected network of campus and community-based organizations.*

PHENND's relational capacity building serves to positively impact student outcomes in access and persistence via the increased and improved implementation of high impact practices.



PROGRAM OVERVIEW

High Impact Practices

PHENND's capacity building is targeted towards IHE's use of high impact practices. While the broader problem is educational persistence and success, PHENND is a capacity building organization. PHENND is meeting so called secondary needs – the needs of the providers serving the population. PHENND builds capacity, and in particular, relational capacity to address K16 student success and persistence through high impact practices.

PHENND leverages innovative ways of teaching and learning which have an evidence base of success and are empowering to communities. The need of Philadelphia K16 Students is undeniable. PHENND believes the need can and should be addressed through a mobilization of resources and practices to support existing school communities. PHENND addresses student need by building capacity toward known “high impact practices.” The Association of American Colleges and Universities coined the term “High Impact Practices” as techniques to use in concert between school and community to increase desired outcomes for students such as engagement, GPA, and satisfaction. These practices include things like internships, service-learning, and capstone projects. Service-learning in particular is part of PHENND's mission.

Relational Capacity

Capacity building is about effectiveness and sustainability, and whatever it takes to get there (Philbin, 2006). Capacity building has taken several configurations- funds, people, plans, skills and knowledge, tools and equipment, and so on. When we frame effectiveness and sustainability in terms of our ultimate impact, and not in terms of an individual organization's perpetuation- collaboration and partnership are irremovable foundations of that premise.

PHENND's work is based on a basic premise: that relationships are capacity. Especially in situations that the non-profit and higher ed sectors find themselves in today- where the idea of competition has been artificially imported from the private sector, and organizations are pitted against each other, in competition for evidence, beneficiaries, funding, and reputation (Burstyn, 2003)- collaborative learning networks like the ones managed by PHENND, stand out as ways to intentionally disrupt a pattern of manufactured competition in favor of collaborative and collective action.

PHENND focuses on developing relationships and collaboration to build capacity. It is PHENND's mission to build the capacity of its member institutions and community partners to develop mutually beneficial, sustained, and democratic community-based partnerships.

Relationships build capacity by amplifying impact through peer learning, exchange of expertise, elimination of redundancies, and field building. A strong infrastructure of relationships allows collections of actors to accomplish more than any one of them could alone. PHENND's work includes both maintaining connections among higher eds, community organizations, and K-12 schools in Philadelphia, and fostering relationships and managing highly collaborative initiatives as they develop.

Network Management

PHENND acts as a facilitator of relationships and collaboration. To both maintain a large-scale campus-community network and facilitate specific instances of collective action, PHENND understands network dynamics through two frameworks and adapts our strategies accordingly. The first, seen in figure 2, conceptualizes the steps leading to fully collaborative relationships, and the second, seen in figure 3, defines the necessary components of collective action.

Partnership can be measured through examination of defined roles, communication, trust, collaborative decision making, and to what degree actors share information, resources, and ideas. In Hogue's model of community linkage there are five stages of partnership: networking, cooperation, coordination, coalition, and collaboration (Hogue, 1993). Depending on the structure of the network, or the current ongoing collaborations and projects, individuals and institutions may go up or down on this scale from networking to collaboration. Understanding linkages between the larger network make it easier for PHENND to maintain an ecosystem of relationships across a large network.



COLLABORATION

COALITION

COORDINATION

COOPERATION

NETWORKING

Figure 2

Network Management

At the highest level of collaboration, organizations come together in collective action. Collective action is most often defined as the process by which cross-sectoral entities come together and put aside their individualized agendas to focus on one set of goals, measured in the same way. It is the shared commitment of a group of diverse actors to a common strategy to address a specific problem that is key to models of collective action (Kania, 2011). When managing specific collaborative initiatives PHENND facilitates five conditions of the network to create a context in which these kinds of movements can succeed. These conditions are:



Backbone Support Organization

A singular organization provides skills and human capacity required to facilitate collective action



Shared Measurement

Individual organizations exchange their own indicators of success for a joint approach to collecting data and measuring results



Common Agenda

Actors share their vision of impact, as well as their shared understanding of underlying assumptions of plan



Mutually Reinforcing Activities

Participants contribute the work that they are both best suited to do, and will make maximum impact on the goals of the collective when amplified by the work of the others



Continuous Communication

Organizations and individuals communicate often in order to facilitate mutually reinforcing activities and build trust

Figure 3

PHENND believes that foundational and weak-tie relationships are pre-requisite to collective action. In these models, while networking is considered at the low-end of partnership, PHENND's experience is that it's the networking that makes collaboration possible. Collaborations will come and go as they are needed (or in some cases as they are funded), but a strong, vibrant, and diverse network allows many collaborations to flourish. When they do eventually dissolve, for whatever reason, their successes and failures live on through the network. PHENND's work is carried out in two ways- first, maintaining a consistent environment at the networking level among higher eds, community organizations, and K-12 schools in Philadelphia, and second fostering relationships and managing initiatives up the scale of partnership, all the way to collaboration and even collective action on occasion, as a project manager, convener, communicator, or consultant.

OUR WORK

Core Components

PHENND’s network management spans programmatic components of PHENND’s work, including service and service-learning, communities of practice, cross sector convenings, and project management. Each of PHENND’s initiatives can be categorized into these core components (what we do), while the strategies outlined below are the cross-cutting approaches employed across all our specific buckets of work.

CORE COMPONENT	DESCRIPTION	EXAMPLES
National Service and Service Learning	Addressing community need collaboratively through volunteer power, reflection, and learning.	<ul style="list-style-type: none"> • PHENND Fellows • Next Steps • Service Leader’s Summit
Communities of Practice	Organizing groups of professionals to learn, share resources, and collectively address pressing community concerns and needs.	<ul style="list-style-type: none"> • Civic Engagement Director’s meeting • K16 Partnerships Network • College Access and Success • Sustainability Council
Cross Sector Convenings	Creating space for multiple actors from many different areas to come together to maintain consistent connections across communities.	<ul style="list-style-type: none"> • Annual Conference • K16 Institute • College Success Webinars
Project Management	Facilitating and overseeing projects of collective action by acting as a backbone support organization, center of record keeping and facilitator of continuous communication.	<ul style="list-style-type: none"> • GEAR UP

Core Strategies

PHENND is successful because of the foundational focus of relational capacity, demonstrated through 5 strategies PHENND employs across all our work to reinforce the networking to collective action evolution. In order to successfully implement our programs in all of the above core components, PHENND staff engage in these core strategies across all of the work we do in order to reinforce our values.

Clearinghouse of Information



PHENND acts as a disseminator of information. PHENND works to bridge worlds and disseminate diverse information to diverse constituencies for the betterment of campus-community partnership. The role of PHENND is to be a “Connector” between projects, people, and ideas in various campus-based and community-based constituencies. This speaks also to the value of weak ties, who represent the potential of expansion or opportunity. Though balancing central network actors as well as unique network members who lack the density of mutual relationships central actors do, PHENND is an ideal connector for the campus-community partnership movement.

Matchmaker



Somewhat related to PHENND’s role as a clearinghouse of information, is PHENND’s role as a matchmaker. Whether the goal is a collaborative product that no single actor can do on their own, or an exchange of expertise to continually improve process, PHENND’s number of both strong tie (many mutual relationships) and weak tie (few mutual relationships) (Granovetter, 1973) connections with schools, organizations, and institutions in the higher ed region is certainly a significant resource for network members looking for expertise, experience, or partnership. PHENND staff speak to seeing themselves as vintage switchboard operators- patching through connections and collaborations as they come up.

Hub of Networking



An important part of PHENND’s work has been to create forums for direct connections between campuses and community organizations which can take place without the need for PHENND to broker each relationship. These forums are also primarily opportunities for training and program development but their secondary role as hubs of networks cannot be overestimated. The ripple effects of collaborative projects built based on relationships made at these forums reverberate through the network and often come full circle into initiatives of collective action.

Training and Technical Assistance Provider



A critical element of the PHENND model is the provision of flexible training and technical assistance to both member institutions and community-based organizations. PHENND draws from methods of community organizing to meet campus and community-based organizations where they are. Time and attention are paid to listening to individuals and learning about their interests, strengths, and resources rather than presenting them with a set agenda or program that they can “take or leave.” Through the process of providing technical assistance and training, PHENND can then connect actors to the larger network based on their specific and individualized needs. This method also allows PHENND to have a big-tent approach; instead of limiting our focus to community service, service-learning, and/or civic engagement, PHENND chooses to work in all these spheres and more.

Funder and Resource Provider



At various points in PHENND’s development, the organization has been able to re-grant funds to member institutions and others to create and maintain campus-community partnerships. Through each of these grant processes, careful attention is paid to cultivating relationships that will last beyond the life of the grant. PHENND’s approach is not about implementing a specific service-learning project with a finite beginning and end, but rather about cultivating a culture of service-learning and community partnership through the Philadelphia region, which it sees as a long-term proposition.

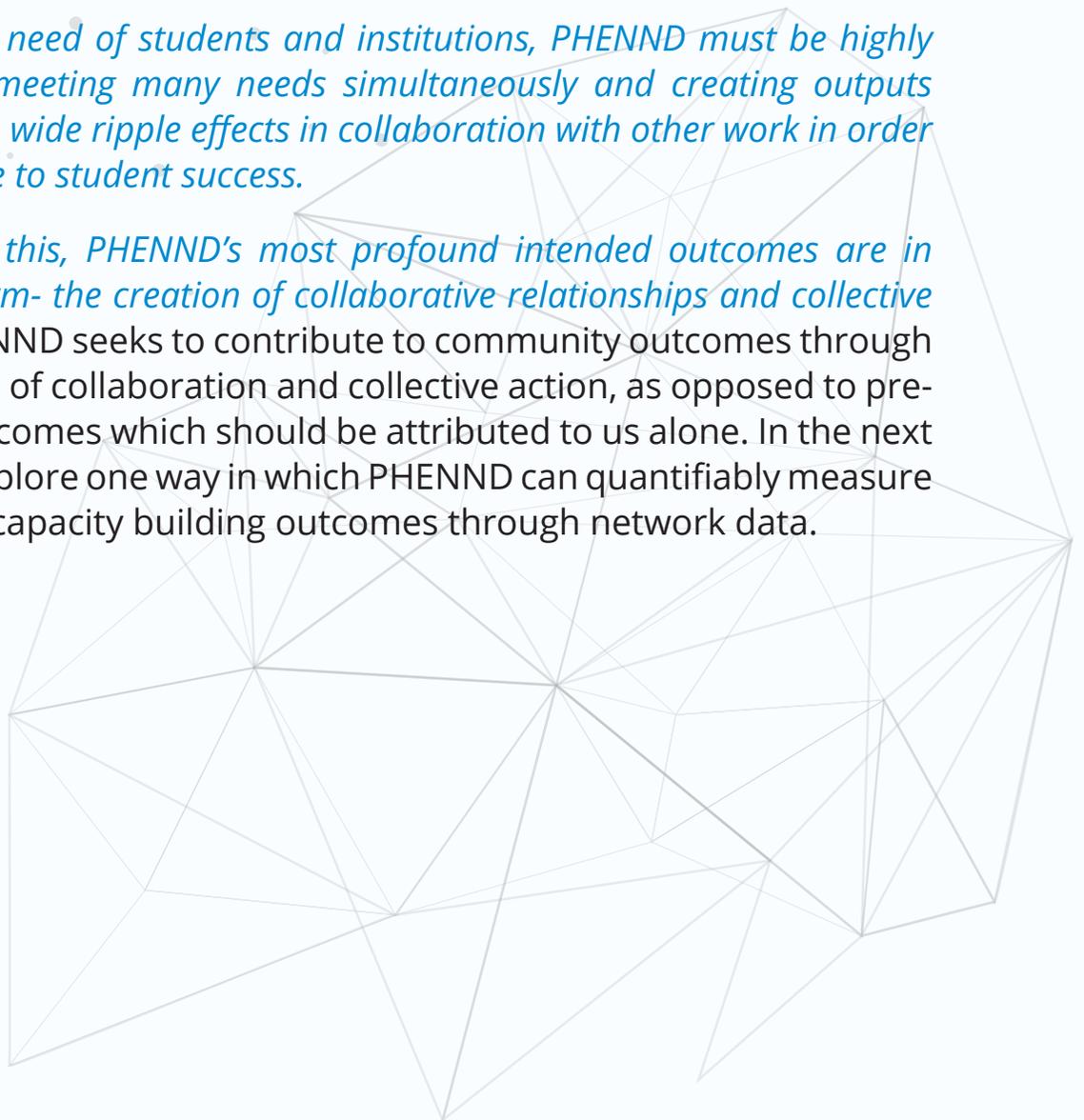
Outcomes

As a capacity building organization, PHENND's outcomes can often feel disconnected from our activities. Connection leads to collaboration leads to capacity leads to student success. Many links of this chain are variable and difficult to predict. PHENND sees itself as a facilitator of the conditions in which collaborations happen, and a manager of collective action when needed- but needs vary throughout time.

- Collaboration can be unpredictable and intended outcomes which are predicted or defined through a macro capacity building lens, become irrelevant quickly.

To meet the need of students and institutions, PHENND must be highly adaptable- meeting many needs simultaneously and creating outputs which create wide ripple effects in collaboration with other work in order to contribute to student success.

Considering this, PHENND's most profound intended outcomes are in the short term- the creation of collaborative relationships and collective action. PHENND seeks to contribute to community outcomes through this process of collaboration and collective action, as opposed to pre-defined outcomes which should be attributed to us alone. In the next section, I explore one way in which PHENND can quantifiably measure short term capacity building outcomes through network data.



DATA ANALYSIS

Introduction

PHENND is working toward students in Philadelphia succeeding and persisting in education from K-12 through college and beyond, while supported by a well-connected network of campus and community-based organizations. PHENND's relational capacity building serves to positively impact student outcomes in access and persistence via the increased and improved implementation of high impact practices. PHENND's work is based in a basic premise: that relationships are capacity. PHENND focuses on developing relationships and collaboration to build capacity. It is PHENND's mission to build the capacity of its member institutions and community partners to develop mutually beneficial, sustained, and democratic community-based partnerships.

PHENND acts as a facilitator of relationships and collaboration. To both maintain a large-scale campus community network and facilitate specific instances of collective action, PHENND can measure partnership through examination of defined roles, communication, trust, collaborative decision making, and to what degree actors share information, resources, and ideas.

To evaluate the success with which PHENND creates collaborative partnerships in their network of Higher Education Institutions, this study used social network analysis (SNA) to assess the relationship between PHENND activities and relational outcomes. This relationship reflects the first link in a chain of attribution which begins with PHENND's network management and ends with student persistence and success as illustrated in our Theory of Change in the first part of this project.

PHENND has a history of using SNA methods to evaluate work in individual self-contained networks which exist as a part of PHENND programming. Most notably, PHENND has implemented a SNA evaluation of individual schools participating in the PHENND Fellows Community Partnership Coordination Program. However, historically, PHENND has not defined success quantitatively on an organizational level. *The purpose of this evaluation is to explore whether using SNA on an overall network level could help to define organization wide short-, medium-, and long-term outcomes.*

Methodology

Research Questions

The intended end results of this network-wide SNA evaluation are to determine:

- What is the distribution of partnership and collaboration among Philadelphia higher eds in reference to campus community partnership work and,
- Which PHENND activities are most successful in the facilitation of networking, cooperation, coordination, coalition, and collaboration?

On a more specific level, this evaluation seeks to address the following questions:

1. *What is the distribution of partnership and collaboration among core members of the PHENND network?*
2. *Who are the most central actors in the PHENND network?*
3. *To what extent does attendance at specific PHENND events relate to an actor's centrality in the PHENND network?*
4. *To what extent does mutual attendance at PHENND events predict relationships between actors in the PHENND network?*

Together, these four questions collectively address the current state of collaboration between institutions of higher education in Philadelphia in the realm of campus-community partnership as well as how PHENND contributes to that collaboration.

The basic assumption that underlies the theory of change in part one is that *an increased level of partnership in the network will lead to improved student outcomes for the students in those schools*. Therefore, through a capacity building lens, the short-term outcomes in this model would be the increase in strength of relationships between network actors, operationalized by level of collaboration or stage of partnership. Longer term, we would expect to see these strong relationships increase the capacity of institutions ability to fulfill their mission, creating a long-term impact of more effective, efficient, or more widespread positive outcomes in campus community partnerships in Philadelphia. SNA methods allow us to uncover these relationships in the short-term outcomes through the output of network maps, or sociograms, and analyze patterns in engagement in the school network.

The results of this evaluation will be used in four primary ways. First, to provide the first quantitative evidence to prove that PHENND's model contributes to the ecosystem of institutions of higher education in Philadelphia. Second, to determine if there are specific activities which are more effective than others in facilitating collaboration. Third, to identify central actors with a high level of betweenness to leverage their experience and connection in the overall network. Finally, to identify network gaps in order to take advantage of the opportunities that weak ties present to the network as potential.

Data Collection

Social network analysis methodology studies relationships between actors, and between actors and attributes to draw conclusions. SNA methods allow us to uncover these relationships through the output of network maps, or sociograms, and analyze patterns in engagement in the PHENND network.

To conduct this study, PHENND distributed a survey to community partnership and civic engagement officers, directors, and specialists in the PHENND network. The survey collected social network analysis data on the partnership levels of the respondents through self-evaluation. The survey also collected information on PHENND services that the respondent used and found most useful. The survey itself was implemented in the summer of 2020.

In addition to questions soliciting feedback, survey respondents were asked about their participation in specific PHENND activities and events, their frequent collaborators, and the nature of their collaboration with those who they listed. They were also asked about their needs and priority issue areas to provide PHENND with specific feedback on possible future initiatives and programming.

Sampling

In terms of sampling, PHENND engaged a snowball sampling plan, beginning with the core members of the PHENND network. “Core Members” in this case is defined by the PHENND steering committee and PHENND Civic Engagement Directors Community of Practice. Each respondent in their survey suggested several additional PHENND network members who they deem important to be included. The benefit of this is to naturally define the network through leveraging the expertise of our members.

Independent Variable

The key independent variable in this study is participation in PHENND activities and events. This is measured both independently (individual variables which indicate use or non-use of a specific PHENND activity), as well as an aggregate measure of total activities participated in, and an aggregate of total mutual activities participated in between dyads. There were 13 key activities at which respondents self-reported participation. These activities are ones that PHENND has offered for at least the past 5 years. I used this variable in two distinct ways: first, individually to analyze the value of each individual activity, and second, collectively. A measure of total number of activities participated in or participated in mutually (for network analysis) was considered in final analyses.

Upon first inspection, some of the data received from the survey seemed to include error when compared to personal observational data. I completed a validity check on all the data by comparing self-reported presence to whether PHENND’s administrative data was consistent with the self-report. This method is not fool proof since the validity check was not always completed on the individual level. Through a combination of observed institutional presence and observed RSVPs (though not necessarily observed presence) I concluded only one observation of self-report data was not consistent with administrative data. I followed up with the respondent and the data was updated to reflect a better understanding of the survey instrument.

Control Variables

Control variables for this study include aspects of an actor’s existence in the Network which may also contribute to that actor’s centrality or connection to others- these include the size of the respondent’s home institution, the length of time in the PHENND network, and whether they are internal to the City of Philadelphia.

Partnership & Network Measures

The key dependent variable in this evaluation's analysis is partnership and collaboration. In this study, I used Hogue's model of model of community linkage, where there are five stages which depict different levels of partnership: networking, cooperation, coordination, coalition, and collaboration (Hogue, 1993). Each of these levels is characterized by a specific rubric in terms of awareness, understanding, decision making, trust, and communication. In this study, partnership was measured through the SNA survey.

NETWORKING	Organizations are aware of each other and may understand the role the other takes in a shared space, there is little communication and decisions are made completely independently.
COOPERATION	Organizations provide information to each other, there may be formal communication and a definition of distinction in roles. Decisions continue to be made independently
COORDINATION	Organizations share information and resources, they define their roles in relation to each other, they communicate frequently and can engage in collaborative decision making on occasion.
COALITION	Actors share ideas and resources, prioritize frequent communication, and collaborate on decision making.
COLLABORATION	Actors belong to a centralized system, communication is characterized by trust, and consensus is used to make decisions.

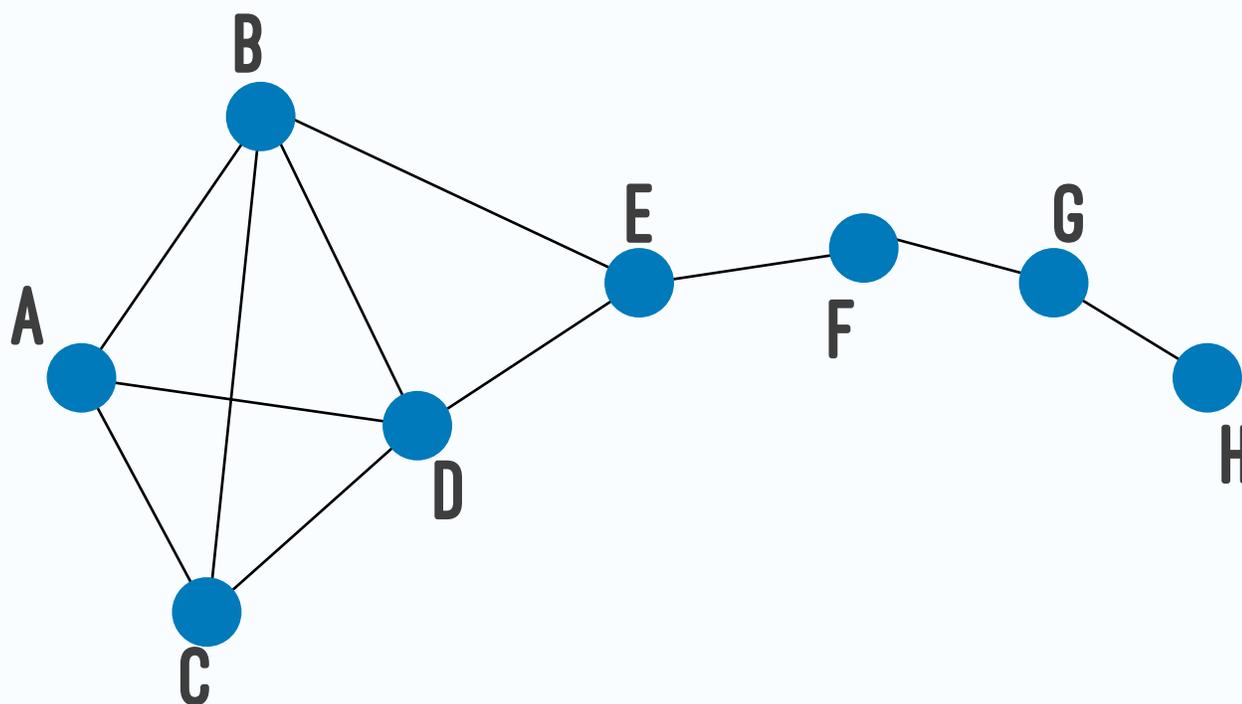
Additional dependent variables include measures which are calculated using network positionality. After creating the network map, quantitative analyses are applied to the sociogram to calculate density and centrality.

Density is a reflection on the percentage of relationships which do exist out of the total universe of those that can possibly exist. Density can be calculated directionally or non-directionally. A directional sociogram considers both sides of a relationship, whether A reports a connection to B AND B reports a connection to A. Non-directional sociograms calculate relationships in the dyad, whether there is a reported connection between A and B. For example, if a network comprises of three actors, and two of them know each other the network has a .333 density. This study calculates directional density.

Density also can be weighted or non-weighted. This study calculates weighted density in that relationships are weighted 1-5 and follow Hogue's definition of partnership. If a partnership is in the coordination stage, it is weighted 3, if it is in the coalition stage, it is weighted 4 and so on.

This study also uses measures of centrality to determine network leaders. While there are many ways to calculate centrality, this study focuses on betweenness centrality- as a measure of potential to be a connector for other actors. Specifically, betweenness centrality measures the degree to which an actor lies between other actors in the network. Actors with high betweenness centrality have high potential to connect weak ties together, as well as act as a key communicator.

In the figure below, the subgroup of A, B, C, and D have high density while the subgroup of E, F, G, and H, have low density. Node E exhibits high betweenness centrality, while node H exhibits low betweenness centrality.



Analysis Procedure

Evaluating capacity building initiatives is unwieldy even in the most common circumstances; in the case of relational capacity, even less is established in the mainstream. The evaluation has turned to the lesser-used methodology of social network analysis to illustrate the scope and shape of a community network. Social network analysis methodology studies relationships between actors, and between actors and attributes to draw conclusions.

This evaluation seeks to explore which exact components and strategies can potentially affect network positionality. While we cannot prove causality in the study as implemented, PHENND hopes to determine relationships between specific methods of engagement in PHENND programming (like the PHENND update, annual conference, communities of practice, or other programs) and SNA measures which reflect robust collaboration in the network, and whether communities form in the PHENND network due to participation in collaborative programming. PHENND will use network data in OLS regression, QAP Regression, and groups differences tests to determine these relationships.

- To determine the distribution of partnership in the network, I calculated network density and the distribution of partnership. This analysis also consists of creation of a network map, or sociogram.
- To determine network leaders, I calculated measures of centrality with and without PHENND actors, focusing on betweenness centrality.
- To explore the relationship between participation in individual PHENND activities, and network centrality I conducted groups differences tests on betweenness centrality for groups which participated in or did not participate in 13 different PHENND activities.
- To determine whether mutual participation in PHENND activities predicts higher levels of participation between dyads in the network, I conducted network regression on matrices of reported relationship and mutual participation in PHENND activities.

Response

VARIABLE	MEAN	SD	N	% MISSING	RANGE	
					MIN	MAX
Longevity	9.35	6.43	29	0		
Institution Size***	2.94	1.39	29	0	1	5
Internal to Philadelphia	0.59	0.51	29	0	0	1
Betweenes Centrality	0.03	0.09	*	*	0	.35
Participation**	9.23	2.25	17	41.1%	5	13
Partnership	2.53	1.2	289	41.4%	1	5

*Betweenness Centrality was calculated for all actors despite response, as non-respondent actors still include in-degree connections

**In some analyses, activities were taken as binary per activity. In others, they were taken as a sum of all activities out of a total of 13 activities

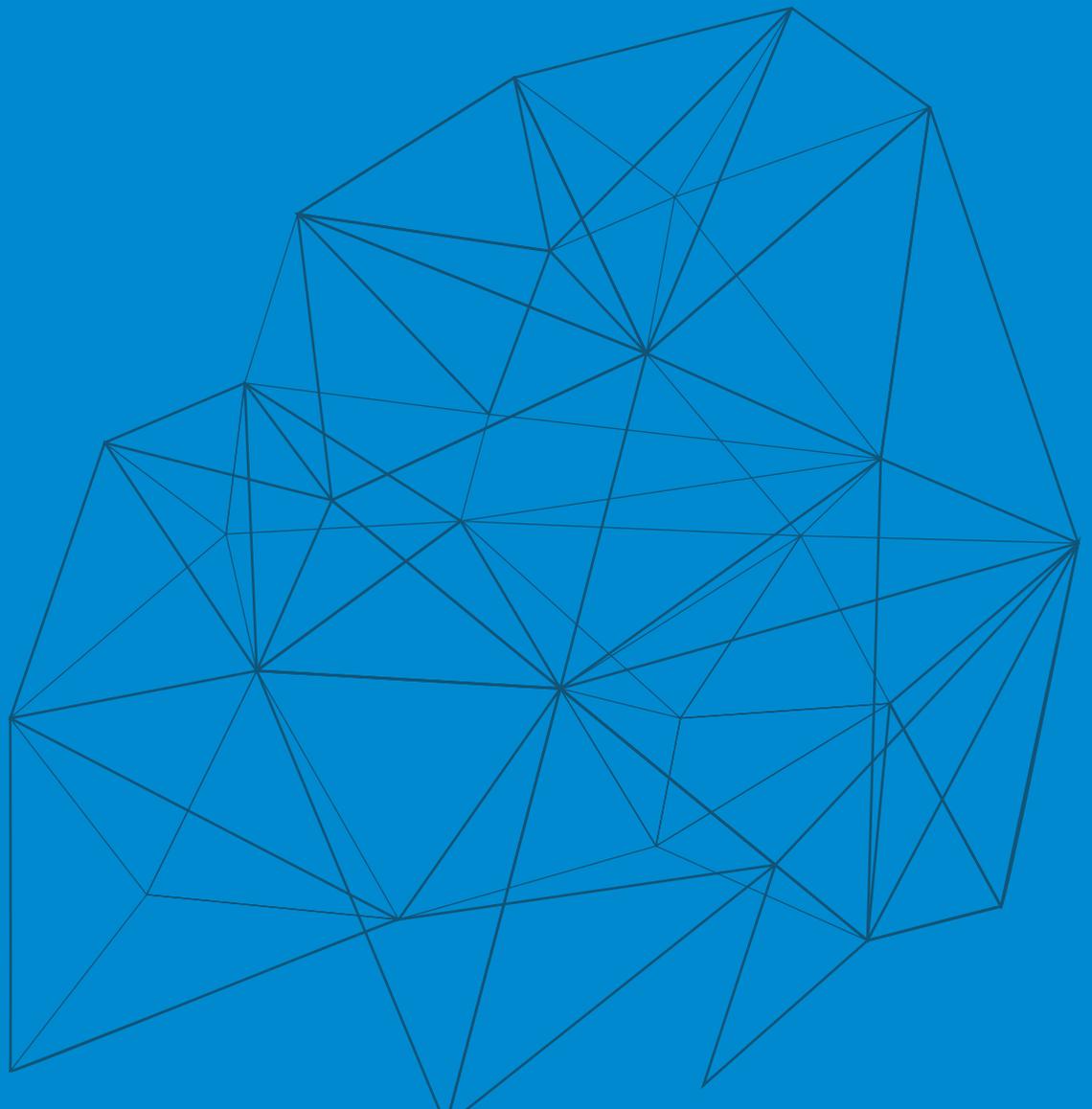
***Administrative data available was limited for institution size as defined by full time staff, so this analysis used an ordinal scale from 1-5, 1 indicating <200 full time staff, 5 indicating >10,000 full time staff

Total response rate was 17/29, 58.6%

FINDINGS

&

RECOMMENDATIONS



FINDINGS

The PHENND network is tightly connected and densely interwoven.

The PHENND network has a .17 unweighted density. This means, of the core members of the PHENND network surveyed, 17% of all possible relationships between actors do exist. The weighted density considers the degree of partnership in the density calculation. Connections who are completely collaborative and are totally integrated as partners are weighted more highly than those who remain in the networking only stage. The network has a .09 weighted density and an average edge (relationship) weight of 2.48, the overall PHENND network does hover in the cooperation/coordination zone of partnership engagement as defined by Hogue. The levels of partnership engagement displayed by the network is centered on cooperation and drops off in frequency at the coalition and collaboration stages. Figure 4 illustrates the distribution of all the reported relationships between respondents from the network survey. Each respondent had the opportunity to report on the strength of 28 relationships, this visualization includes all 146 reported relationships.

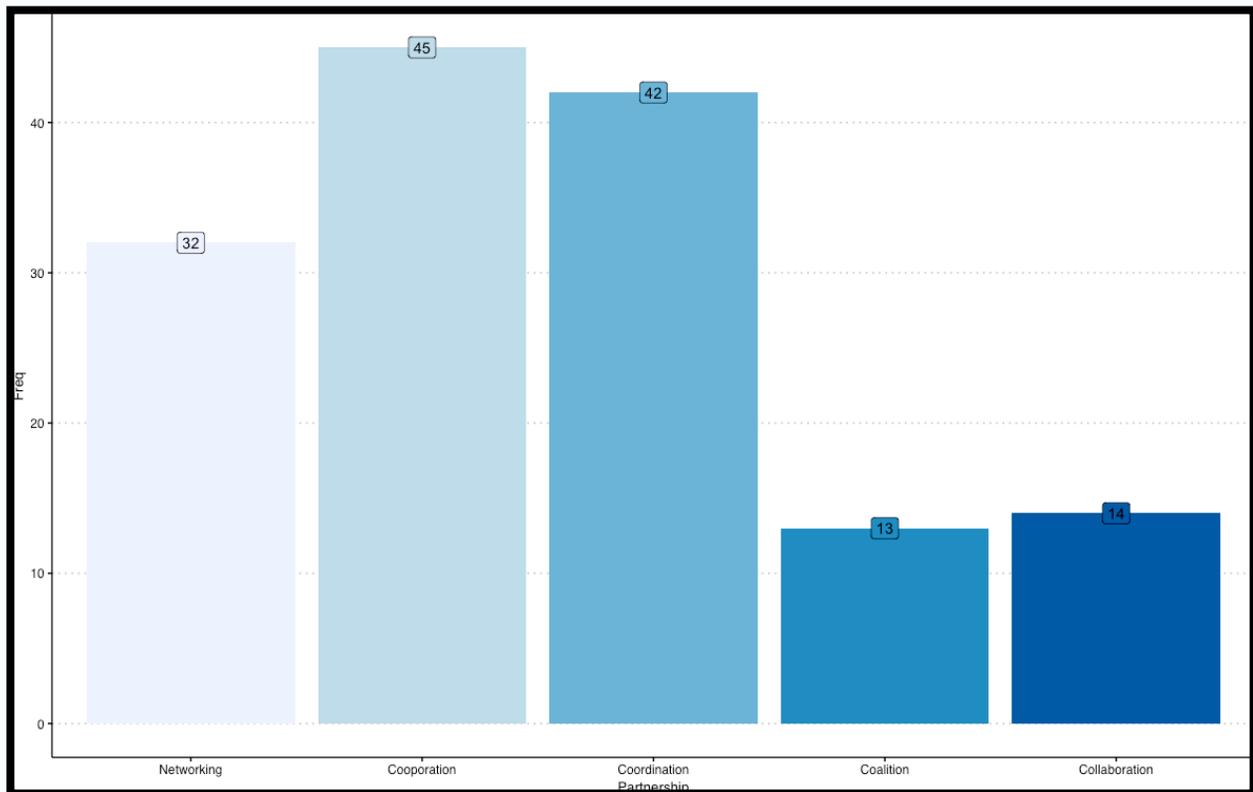


Figure 4

The PHENND Director has a high degree of centrality.

Betweenness centrality reflects the number of times an actor acts as a bridge between two other actors. Based on PHENND's positionality, it is no surprise that the PHENND Director displays the highest degree of betweenness centrality- especially considering the role PHENND plays as a "connector"; she acts as a matchmaker and coordinator between weak ties to facilitate partnership.

In figure 5, which has been anonymized, the nodes (representing survey respondents) are sized according to their betweenness centrality. By far, the most central actor in the network is PHENND Director Hillary Kane. Hillary is represented by the central and largest node in the sociogram, reflecting her high level of centrality. Indicating that she holds the highest potential to be a key connector and communicator in the network as defined.

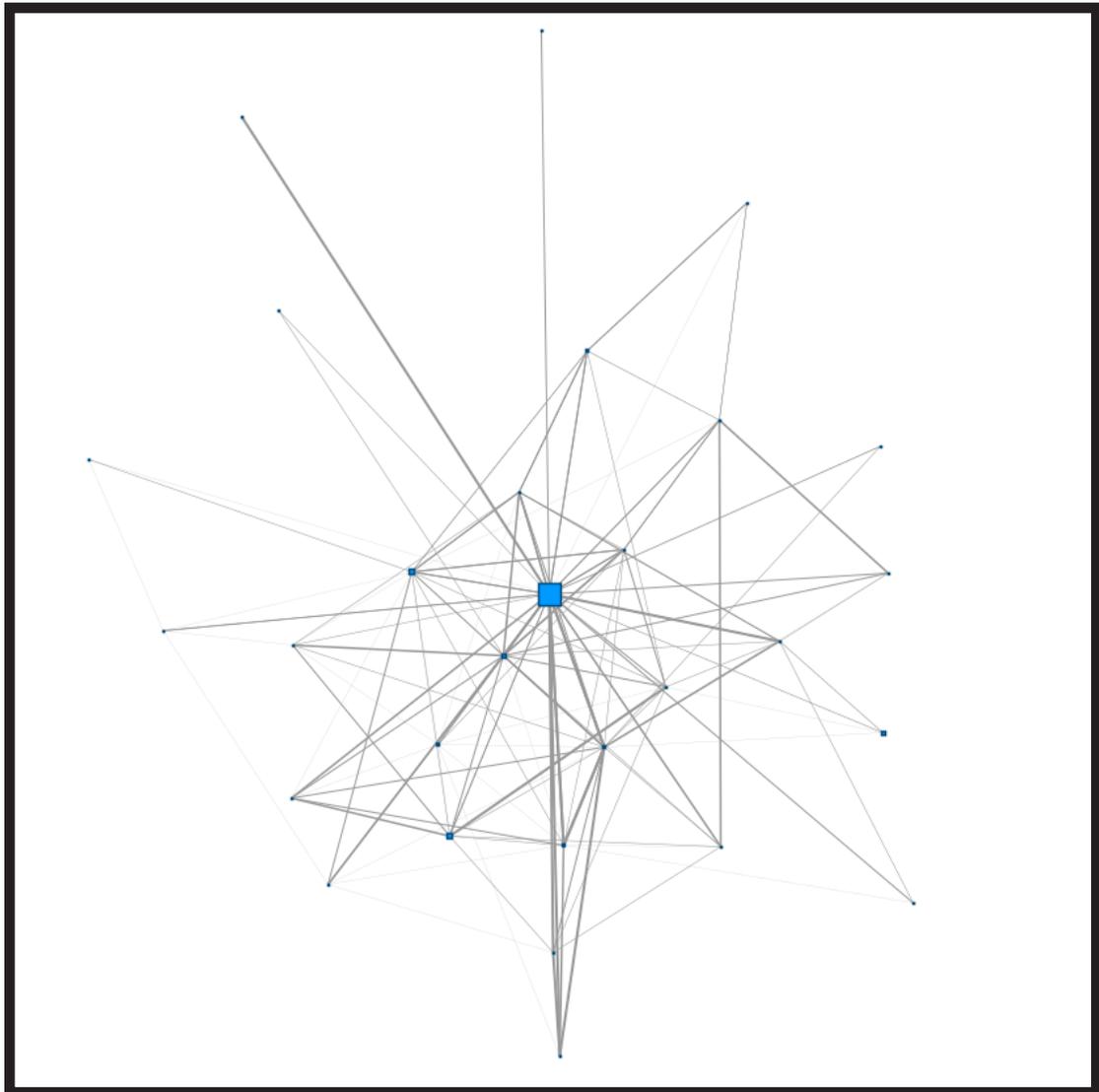


Figure 5

Network Leaders come from Diverse Institutions, but PHENND is crucial to connecting many of them.

When PHENND Director Hillary Kane is removed from the map along with all other PHENND staff, the network remains without isolates, and central actors appear. It reflects the cross-institutional nature of PHENND that the next 3 highest actors in the network come from completely different institutions in the area, and that none of these next tier network leaders come from the same parent institution as PHENND (University of Pennsylvania).

Like the figure 5, in figure 6, nodes are sized according to their betweenness centrality, but in this case, nodes representing PHENND actors have been removed. In this case, several other central actors emerge in the network- these leaders are all from different Philadelphia institutions of higher education- showing how widespread PHENND's reach is. The network also becomes larger in that the average number of connections that must be followed from one node to another increases- meaning there are more steps in communication between more isolated network actors, inhibiting the flow of information.

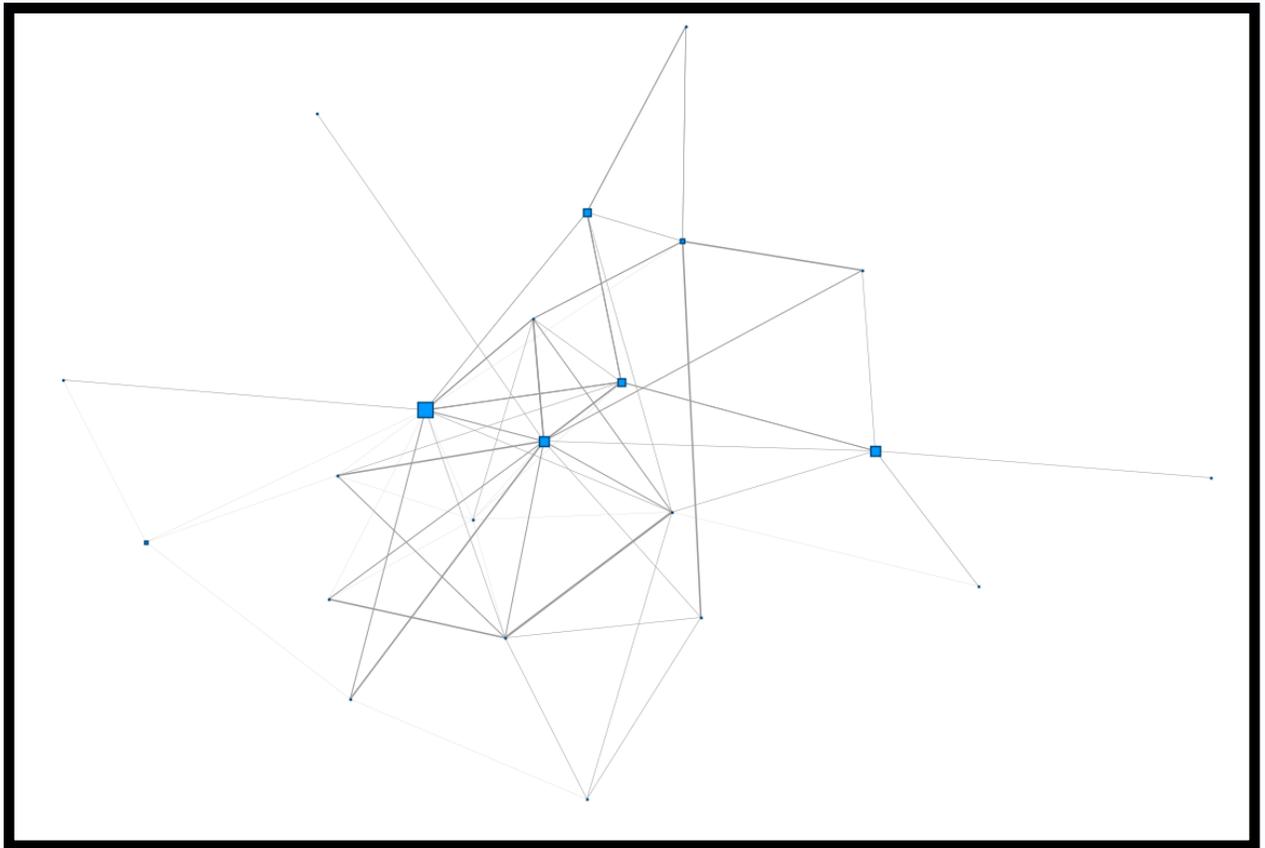


Figure 6

Mutual participation in PHENND activities predict a high level of collaboration between actors, though no specific activity is key to network centrality.

By comparing a matrix of relationships within the respondents and a matrix of the number of mutual PHENND activities participated in, we see a strong predictive relationship between how many PHENND activities a dyad of network actors mutually participates in and the strength of their partnership in terms of collaboration. At the same time there are no meaningful group differences in centrality across all PHENND activities between those who do and do not participate. This supports the conclusion that the key to collaborative relationships is not any one PHENND activity, but the sum of them over time.

The plot below shows the count of the intersection between partnership and the number of shared activities. Each point on this plot indicates a dyad of network actors, measured in terms of how many mutual activities they participate in through PHENND (x) and their reported level of partnership (y) (n=272).

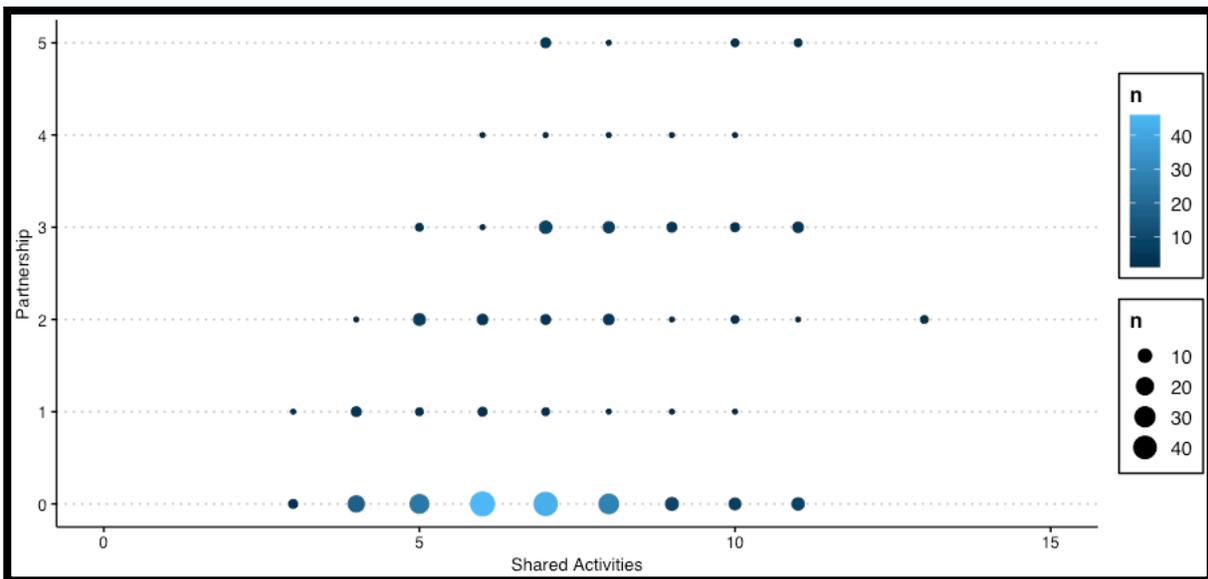


Figure 7

To explore this relationship mathematically, we turn to Quadratic Assignment Procedures (QAP) in order to calculate a regression based on matrix data. In this method of social network analysis, practically we test whether we are able to predict a relationship between actors in one relation, based on another type of relationship between them. The key aspect of QAP regression is that the method does not rely on normality assumptions and does not assume independence. This makes QAP regression ideal for use in testing statistical significance using network data (Whitbred, 2011).

Using this method, I found a statistically significant relationship ($p < .001$) between the number of mutual activities engaged in, and strength of partnership between respondents. The coefficient (0.207) and r-squared value (0.088) for this test were low, but PHENND is undeniably a contributor to these relationships and collaboration. The bottom line is that no singular activity is the key to the network or to collaboration. Alternatively– it is the sum of mutual activities that makes for a collaborative relationship between network members. Translated into odds, by using logistic regression, we find that dyads in the PHENND network are 216% more likely to exist in the coordination partnerships stage or above if they attend more than 6 activities together ($p < .05$).

RECOMMENDATIONS

Based on the findings of this study, I recommend more detailed methods of incorporating more formal data analyses and evaluations into day-to-day PHENND operations:

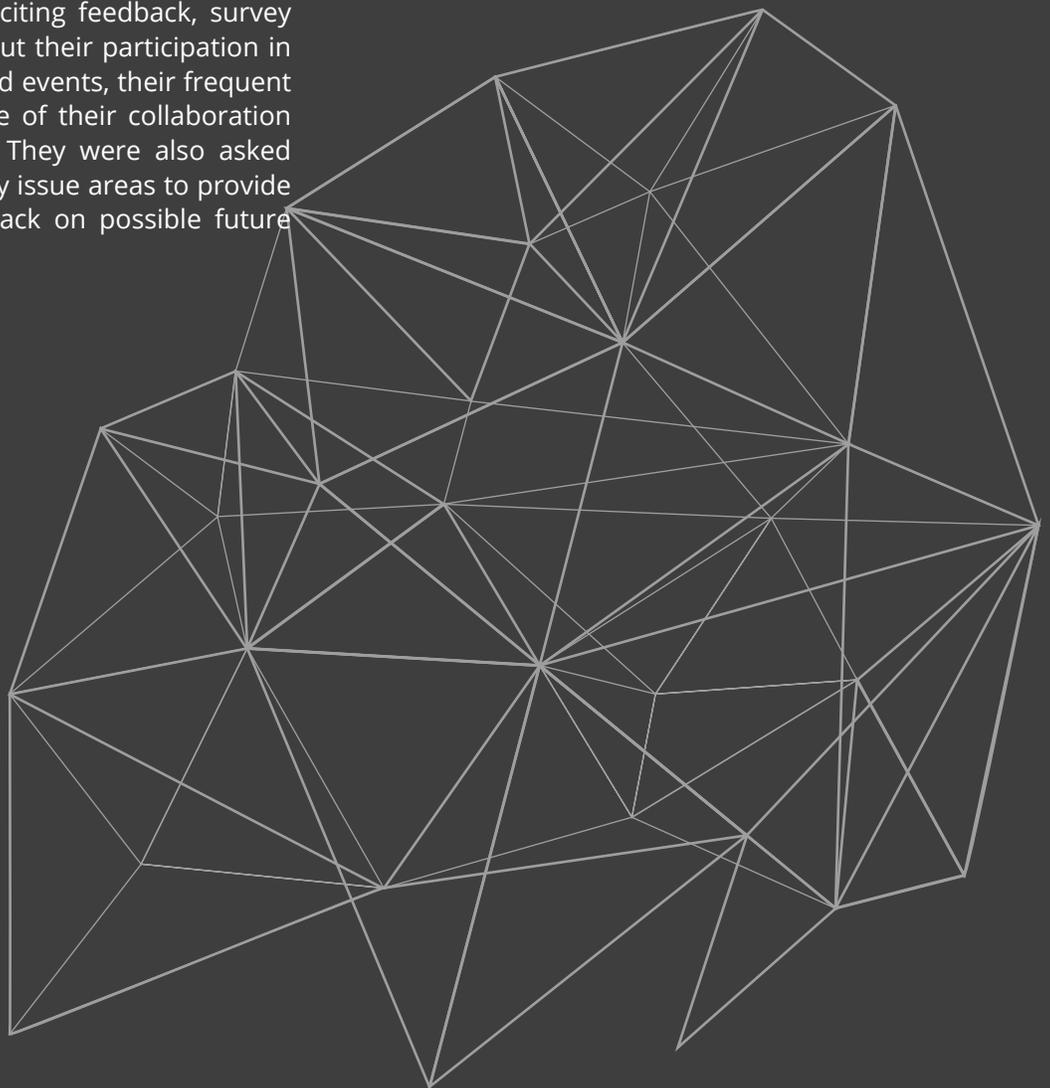
- Simplify network survey and distribute it to the wider PHENND network
- Consider initiating a project which examines and compares each PHENND member institution's operationalizations of student outcomes of persistence
- Define short term outcome organizationally as partnership level in the wider PHENND network, and explore ways of measuring this through observational data collection

Limitations

Social network analysis methodology studies relationships between actors, and between actors and attributes to draw conclusions. SNA methods allow us to uncover these relationships through the output of network maps, or sociograms, and analyze patterns in engagement in the PHENND network.

To conduct this study, PHENND distributed a survey to community partnership and civic engagement officers, directors, and specialists in the PHENND network. The survey collected social network analysis data on the partnership levels of the respondents through self-evaluation. The survey also collected information on PHENND services that the respondent used and found most useful. The survey itself was implemented in the summer of 2020.

In addition to questions soliciting feedback, survey respondents were asked about their participation in specific PHENND activities and events, their frequent collaborators, and the nature of their collaboration with those who they listed. They were also asked about their needs and priority issue areas to provide PHENND with specific feedback on possible future initiatives and programming.



Conclusion

PHENND is a dynamic, flexible, and entrepreneurial organization with a long-track record of accomplishments. PHENND has an elastic structure which allows it to be extremely flexible and dynamic. This elasticity leads to challenges however when it comes to defining PHENND's impact. PHENND's mission is to build the capacity of its member institutions and community partners to develop mutually beneficial, sustained, and democratic community-based partnerships, but in what way? When resources are scarce, which activities take precedence? How are we measuring our long-term impact? How does that get regularly reported to key stakeholders? These are all questions that PHENND continues to wrestle with as it defines itself. Turning to social network analysis and theories of collective action, however, have been a clear step forward in defining that impact, and building on PHENND's existing success. This study reinforces through more formal analysis PHENND staff's institutional knowledge of our impact- that the activities of PHENND encourage collaboration and relationship building among siloed IHEs in Philadelphia as well as between IHEs and the community.

It is clear to PHENND that higher educational institutions can function as permanent anchors and partners for community improvement. Moreover, it is deeply in their interests to do so; their futures are intertwined with that of their neighborhoods. PHENND provides a vehicle for coordinating and, where appropriate, combining the efforts of higher eds so that they can make a significant contribution to improving the entire Philadelphia region.

PHENND's growth signals an increasing recognition that significant curricular and co-curricular benefits can result when student and faculty members focus their research on working with the community. PHENND provides increased hope that higher educational institutions will work together to help solve our country's most pressing problems. For the Philadelphia area, PHENND signals a new kind of democratic partnership that will result in substantial benefits for the colleges, universities, schools, and communities of our region.

REFERENCES

Burstyn, Gerald. 2003. "The Myth of Competition". Stanford Social Innovation Review.

Gladwell, Malcolm. 2000. *The tipping point: How little things can make a big difference*. New York: Little, Brown and Company.

Granovetter, MS. 1973. "The Strength of Weak Ties". *American Journal of Sociology*, Vol 18, No 6. The University of Chicago Press.

Hogue, T. 1993. "Community-based collaboration: Community wellness multiplied". Bend, OR: Chandler Center for Community Leadership.

Kania, John and Kramer, Mark. 2011. "Collective Impact". Stanford Social Innovation Review.

Kuh, George. 2008. "High Impact Educational Practices: What They Are, Who Has Access to Them, and Why They Matter." Association of American Colleges and Universities.

Pew Charitable Trusts. 2017. "Philadelphia's Poor: Who They Are, Where They Live, and How That Has Changed." Retrieved From: <https://www.pewtrusts.org/en/research-and-analysis/reports/2017/11/philadelphias-poor>

Pew Charitable Trusts. 2018. "Philadelphia's Poor: Experiences From Below the Poverty Line." Retrieved From: <https://www.pewtrusts.org/en/research-and-analysis/reports/2018/09/26/philadelphias-poor-experiences-from-below-the-poverty-line>

Pew Charitable Trusts. 2018. "Who's Not Finishing College in Philadelphia." Retrieved From: <https://www.pewtrusts.org/en/research-and-analysis/articles/2018/08/15/whos-not-finishing-college-in-philadelphia>

Pew Charitable Trusts. 2019. "The State of Philadelphians Living in Poverty, 2019." Retrieved From: <https://www.pewtrusts.org/en/research-and-analysis/fact-sheets/2019/04/the-state-of-philadelphians-living-in-poverty-2019>

Philbin, Ann. 2006. "Capacity Building in Social Justice Organizations". Ford Foundation.

Putnam Robert. 2000. *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon & Schuster.

Whitbred, R. 2011. "Quadratic assignment procedure (qap)". B. G. A. (Ed.), *Encyclopedia of social networks*, Vol. 1, pp. 733–734. Thousand Oaks, California: SAGE Publications, Inc.