

North Carolina Community Health Worker Association Social Network Analysis

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Background

The North Carolina Community Health Worker Association (NCCHWA) has been supporting Community Health Workers (CHWs) within Community-Based Organizations (CBOs), healthcare systems, and public health organizations in order to lift the voices of the workforce within NC. CommUnity Healing through Activism + Strategic Mobilization (CHASM) is building a formal network for existing relationships / partnerships and to foster future relationships / partnerships.

The objectives of the analysis was to: 1) Understand the formal network of NCCHWA partnerships to best support and sustain the CHW workforce in the state; 2) Explore the role of organizations within the NCCHWA network; 3) Understand resources within the NCCHWA network for the workforce; and 4) Assess factors that influence these professional partnerships. The data will help the NCCHWA gain an understanding of existing partnerships and can help foster more meaningful relationships for the CHW workforce in NC.

The data were used to evaluate the organizational partnerships and to improve partnership opportunities in order to advance the CHW workforce. An assumption was undertaken that the NCCHWA network structure and the properties of that structure have significant implications on the outcome of interest. In this study, the outcome of interest is the partnerships among these organizations in the network and how NCCHWA can support those collaborations. The data have been developed into a summary report that includes social network maps which will help the NCCHWA, and their anchor partners understand how to best support the CHW workforce in the state of North Carolina.

Methodology

The survey was sent out to 41 organizations. Thirteen responses were collected between June 28, 2024, and July 8, 2024. However, the number of responses varies by survey question as not all 13 respondents completed every question. A combination of qualitative and quantitative were collected. The organization representative should have a high level of knowledge about the partnerships of their organization that improve their ability to support the CHW workforce in NC.

The survey includes 25 questions: multiple choice, Likert style questions, and open-ended questions. Questions were asked about demographic information including if the CHW was an ally or not, what race the CHW is, ethnicity, language, population served. The main survey tool includes questions about understanding the 5 most influential organizational partnerships including identifying supported initiatives, resources, types of interaction, dosage (i.e., number of times interacted). Questions were also asked about the trainings in relation to partnerships. Open ended comments were asked about barriers / challenges, technical assistants, and any other comments respondents would like to share.

The social network analysis was conducted within UCInet software. Netdraw is a visualization tool embedded within the UCInet software. Netdraw was used to develop the SNA maps. In this first phase of the network analysis, we are building an incomplete network. Although The NCCHW Association is a bounded network^[1], the membership list cannot be included in this survey to protect the confidentiality of individuals who did not consent for their information to be shared as part of the survey. In other words, because we cannot provide a roster of all members to survey participants, we instead used a name generator question^[2]. By asking each respondent (as a representative of their respective organization) to generate a list of their five most influential professional connections, we are generating the network list that can be used for future research. These data are collected to develop a network of professional connections among the NCCHW Association. These data were input into UCInet, social network analysis software, to develop visuals of the network and calculate measures of centrality^[3]. The

output can be analyzed to answer the following question: Who are the central actors of the NC CHW Association?

Finally, respondents were presented with a series of open-ended questions to be able to voice their experiences with partnerships around their CHW work in NC. These are more traditional program evaluation questions that can be used to provide context to the network data. First, they were asked to describe their barriers/challenges they have experienced in their partnerships. Second, respondents were asked to describe the facilitators/successes they have experienced in their partnerships. Finally, respondents were given a space to describe any TA needed to advance their partnerships.

By asking about the survey respondent's name, organization, email address, CHW or CHW ally, race and ethnicity, primary role of respondent, and type of organization, we are building the network roster. Although the phase one survey did not begin with a roster, members of the NCCHW association were invited to participate and voluntarily agreed to enter their information for use in the network study.

We conclude this report with recommendations for the phase two survey in which these data presented in this report could be used to present a roster to survey respondents. In the phase two survey, respondents could be provided with a list of these individuals and asked a series of questions about each organization in an effort to develop a more completed network.

[1] https://visiblenetworklabs.com/wp-content/uploads/2019/07/VNL-BRIEF_-3.pdf

[2] <https://shs.hal.science/halshs-00512180/document>

[3] <https://www.sciencedirect.com/science/article/pii/S1877050923003575>

[4] <https://visiblenetworklabs.com/2024/03/11/identify-influencers-using-social-network-analysis/>

[5] <https://journal-bcs.springeropen.com/articles/10.1186/s13173-017-0055-x>

[6] <https://www.stata.com/meeting/1nasug/simpson.pdf>

[7] This assumption of this question is that there is enough overlap between the respondents that we are able to develop a coherent (connected network). It is possible that there is minimal or no overlap between the respondents in phase one. In this case, our network measures will be limited.

Survey Respondents

Of the 12 survey respondents, seven identified their organization as a “CHW Ally” and the remaining five identified their organization as a “CHW Organization” (Figure 1). Moreover, one respondent represented a government organization, two respondents represented a local health department, two respondents represented healthcare systems, five respondents represented community-based organizations (CBOs), and one respondent represented an organizational type not listed (specified as “public health advocacy organization” (Figure 2).

Figure 1

Role of Survey Respondent: CHW or CHW Ally

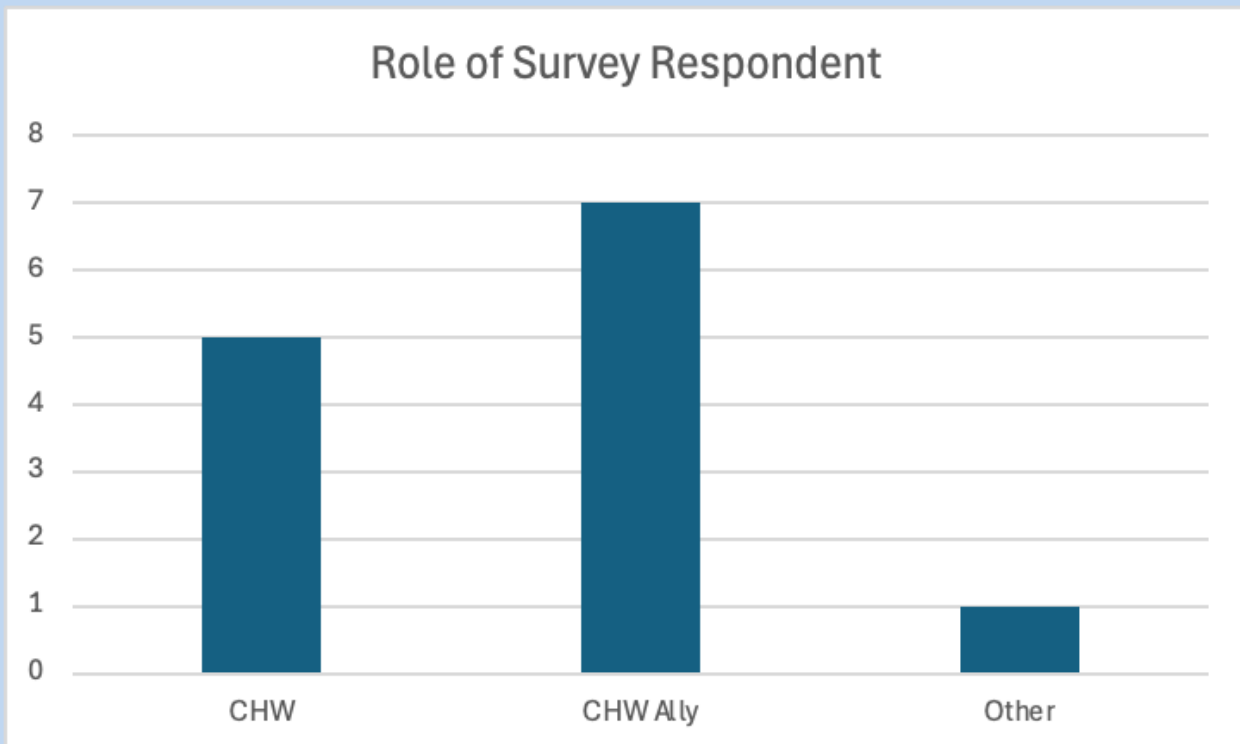
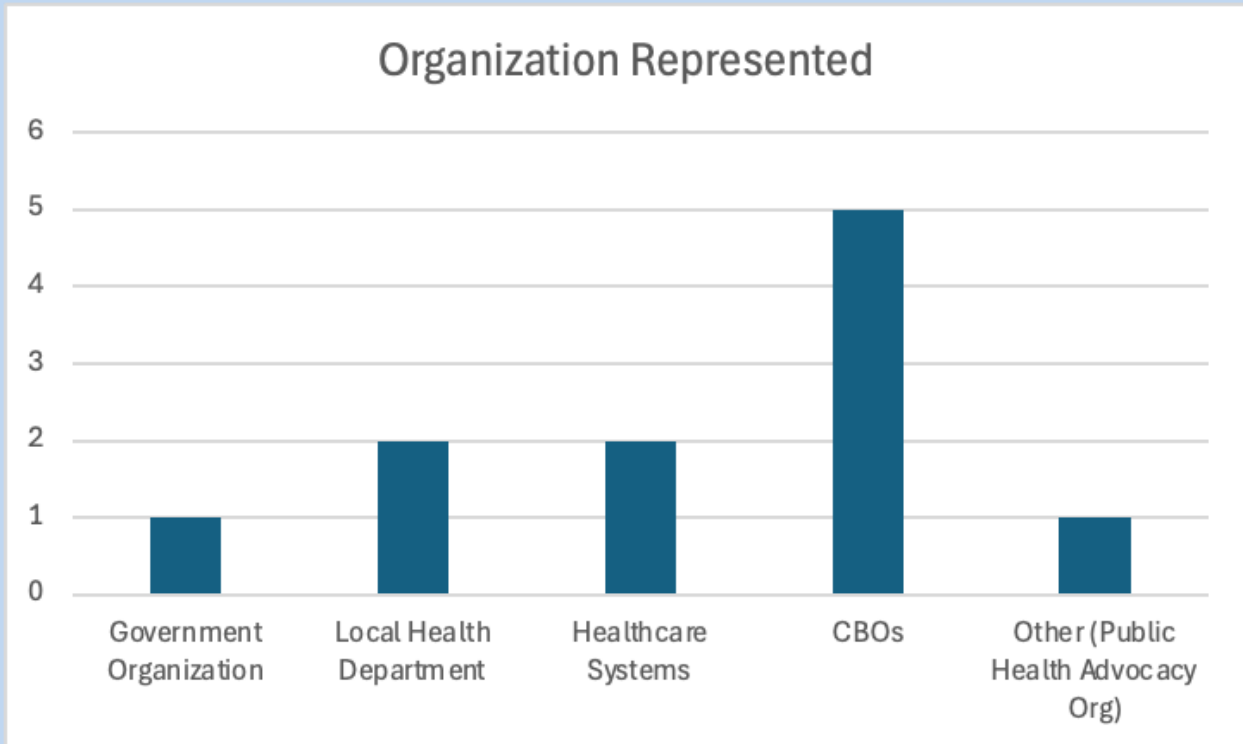


Figure 2

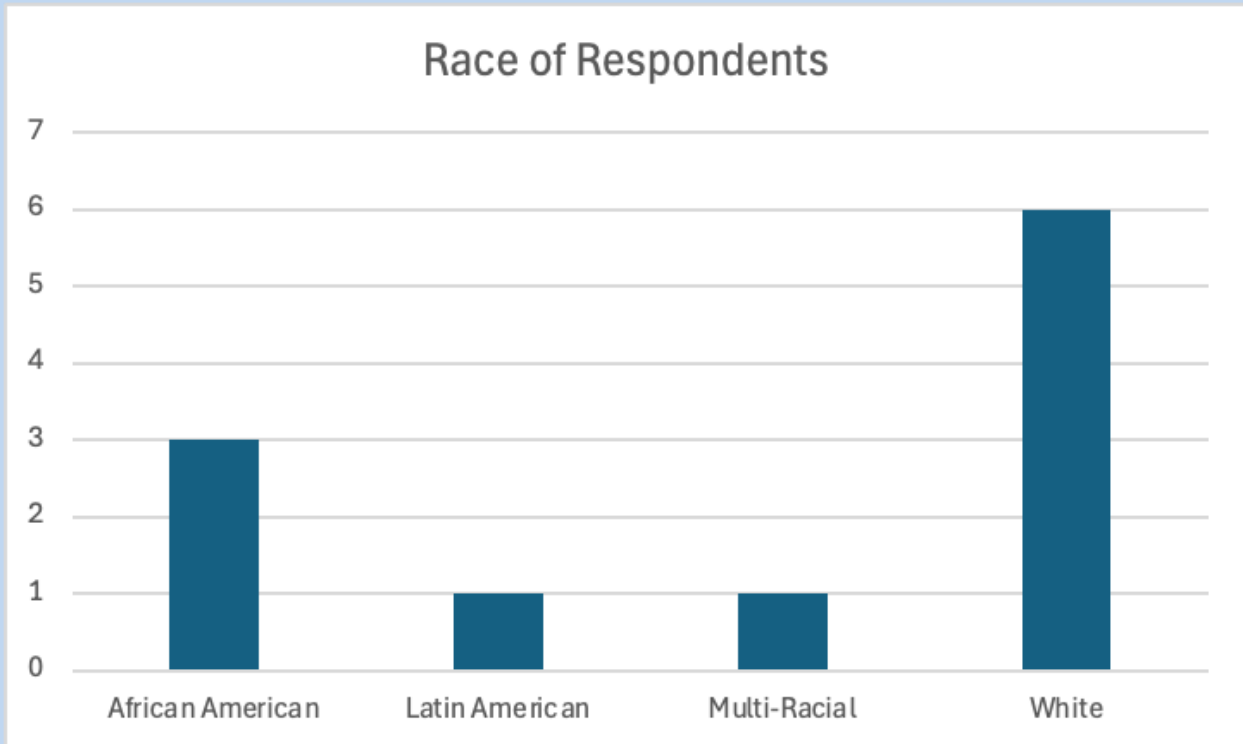
Respondent Organization Type



Respondents were asked “Please select your race” and “Please identify your ethnicity.” There was diversity in ethnicity among the 12 respondents (Figure 3), with three respondents identifying as African American, one respondent identifying as Latin American, one respondent identifying as Multi-racial (African American and Jewish), and six respondents identifying as White. Additionally, two respondents identified as Hispanic.

Figure 3

Race of Respondents



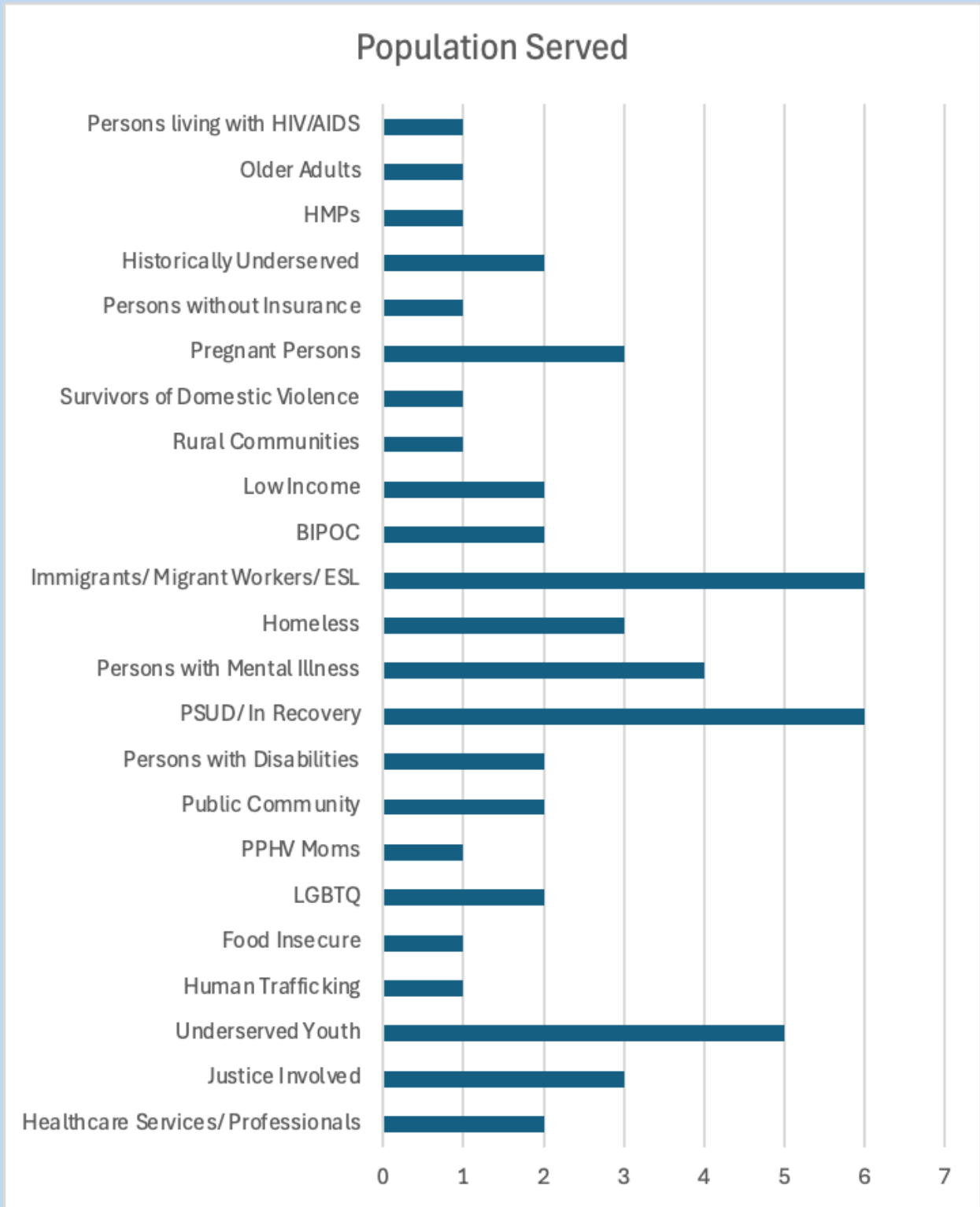
Respondents were asked to describe (in their own words), what population they serve. The respondents are provided below (verbatim) in Table 1 . The responses included represent multiple diverse and intersecting sociodemographics. The responses were coded into the categories presented in the visual provided in Figure 4 . The populations that were listed most frequently were migrant populations (n=6), persons with substance use disorder (n=6), and underserved youth (n=5). These responses are valuable for future surveys of this population as they would allow for the development of categories and allow respondents to “select all” populations that they serve. Future social network analysis research could explore the existing relationships and gaps in partnerships among organizations who serve the same or similar populations.

Table 1

Population Served

As a coach I support healthcare practices, specifically FQHCs and RHCs who employ or are trying to hire CHWs.
Justice involved, underserved, at risk youth, human trafficking, food insecure LGBTQ
PPHV Moms and Public Community
Persons with disabilities, persons with substance use disorder, persons with mental illness, and homeless persons,
justice involved, opportunity youth, persons with substance use disorder, formerly incarcerated, persons with mental illness
Health care professionals in Brunswick, Columbus, Duplin, Pender, and New Hanover; Novant Health employees, patients, families, and care givers; AHEC employees in other services lines and their constituents.
immigrants, BIPOC, low income, rural community, migrant workers, families
inmigrantes/refugiados, adultos mayores, adolescentes, sobrevivientes de violencia doméstica y sexual, personas LGBTQ+,
Homeless/Unsheltered, Persons with SUD, persons with English as their second language, infants/children, maternity persons, persons in recovery, persons with low-income/poverty, persons without insurance
Persons in communities that are historically underserved, communities of color, HMPs, persons with disabilities, persons with substance use disorder (opioids), homeless persons, immigrants/refugees, older adults, persons at risk of or living with HIV/AIDS, adolescents, infants/children, pregnant women, migrant workers, LGBTQ+ persons, formerly incarcerated individuals, domestic and sexual violence survivors, and persons with mental illness, and anyone else with a social need that touches the hospital system.

Figure 4 *Population Served*



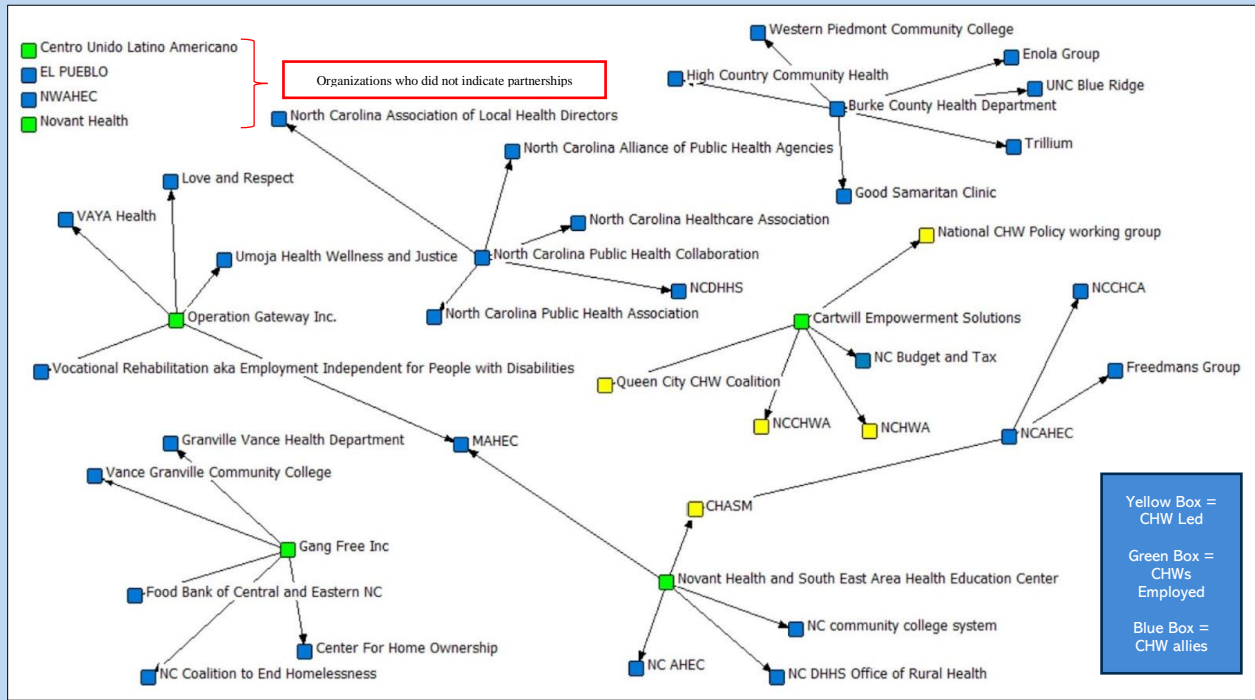
Social Network Analysis- Organizational Partnerships

As presented in the sociogram below (Figure 5), the organizations who completed the partnership questions on the survey (n=8) provided between one and five partners each as “organizational partnerships who are most supportive for CHW work.” In the sociogram:

- **Squares and Color Codes:** All squares are actors in the network. This includes the survey respondents and their partner organizations. Green squares are used to indicate respondents who identified themselves as CHW organizations (i.e organizations led by CHWs). Yellow squares are used to indicate organizations that are CHW organizations by name (i.e., organizations that employ CHWs). Blue squares are used to indicate organizations that are CHW allies.
- **Lines:** The lines between the squares represent a partnership. The arrowhead on the line shows the direction of the partnership. If there are no lines connecting an organization (note the four in the top right corner), these organizations are considered “isolates” within this network. In this study, these organizations are isolated because they did not list any partner organizations and were not listed by either organization who took the survey as partners.

Recommendation based on Sociogram: This sociogram depicts the relationships between 12 respondents and their partner organizations. It does not include data from the partner organizations listed by the respondents or from the 32 organizations who do not respond to the survey. Analysis of the sociogram yields the recommendation to conduct further analysis by reaching out to all organizations listed; this recommendation is further discussed in methods and the recommendations section of this report. This would allow evaluators to assess the relationships between listed organizations, better assess the level of support they provide to their partners, and to evaluate the resources that are available through the network.

Figure 5
CHW Network Sociogram



Regarding these partnerships, respondents were asked, “On a scale of 1 to 5, please rank your organizational partnerships with 1 being most supportive and 5 being least supportive.” Responses (n=19) indicated that CHASM, the Food Bank of Central and Eastern NC, Trillium, and MAHEC were the most supportive organizational partners in the network, with MAHEC ranked as “1” by two respondents.

Respondents worked on the following projects with the partners presented in Figure 4 (listed below). Because of the diversity of the list, it is presented verbatim (in alphabetical order) without further coding. If this survey were conducted on a larger scale, future research could better assess the services that are most common, the estimated number of individuals who are impacted by or receive the services, and what kinds of organizations tend to provide what kind of service. This data could then be used to conduct an assessment in gaps in services.

- Adult learning
- Advocate-Collaborate-Educate (ACE)
- Certification
- CHW Integration Pilot, Health Equity Pilot
- Community Health Worker class
- Connecting orgs to VR resources
- Coordinating Homeless families to housing stabilization
- Exploratory meetings
- Food resources, snap benefits
- Generally, the whole NC AHEC CHW initiative
- Home ownership classes
- Homeownership workshops
- Housing homeless utilizing the HMIS system
- NC FIT
- Several food programs TEFAP, Daily pantry, emergency food pantry, fill your bag, student pantries
- Slaying behavioral health stigma
- The integration toolkit
- Trauma Informed care for students

Respondents were asked “Please describe briefly why you consider these organizational partnerships to be your 5 most supportive relationships.” The open-ended responses were coded into one of five categories: that the partner is a CHW organization (n=2), funding opportunities (n=3), opportunities for education (n=7), structure (n=3), and support (n=3). These categories can be used and expanded in future research to better evaluate the support that CHW organizations receive from their partners.

Table 2*How Respondents are Supported by their Partners*

Code	Response (Verbatim)
CHW Organization	chw org
	chw org
Funding	funding
	paid internships
	provides funding
Opportunity they Provide	Educate a high percentage of renters to become homeowners
	Getting the adult community back in school
	Helping the homeless population get stable safe housing
	Partnered with several projects to encourage health education, vaccinations access to care
	provides education
	providing the resources for people who are food insecure
	convening and professional development
Structure	provides connections
	provides structure
	Reps take part in the integration pilot.
Support	Provide resources and are willing to partner on exploring financial sustainability.
	provides support
	Training, present in pilot and overall support.

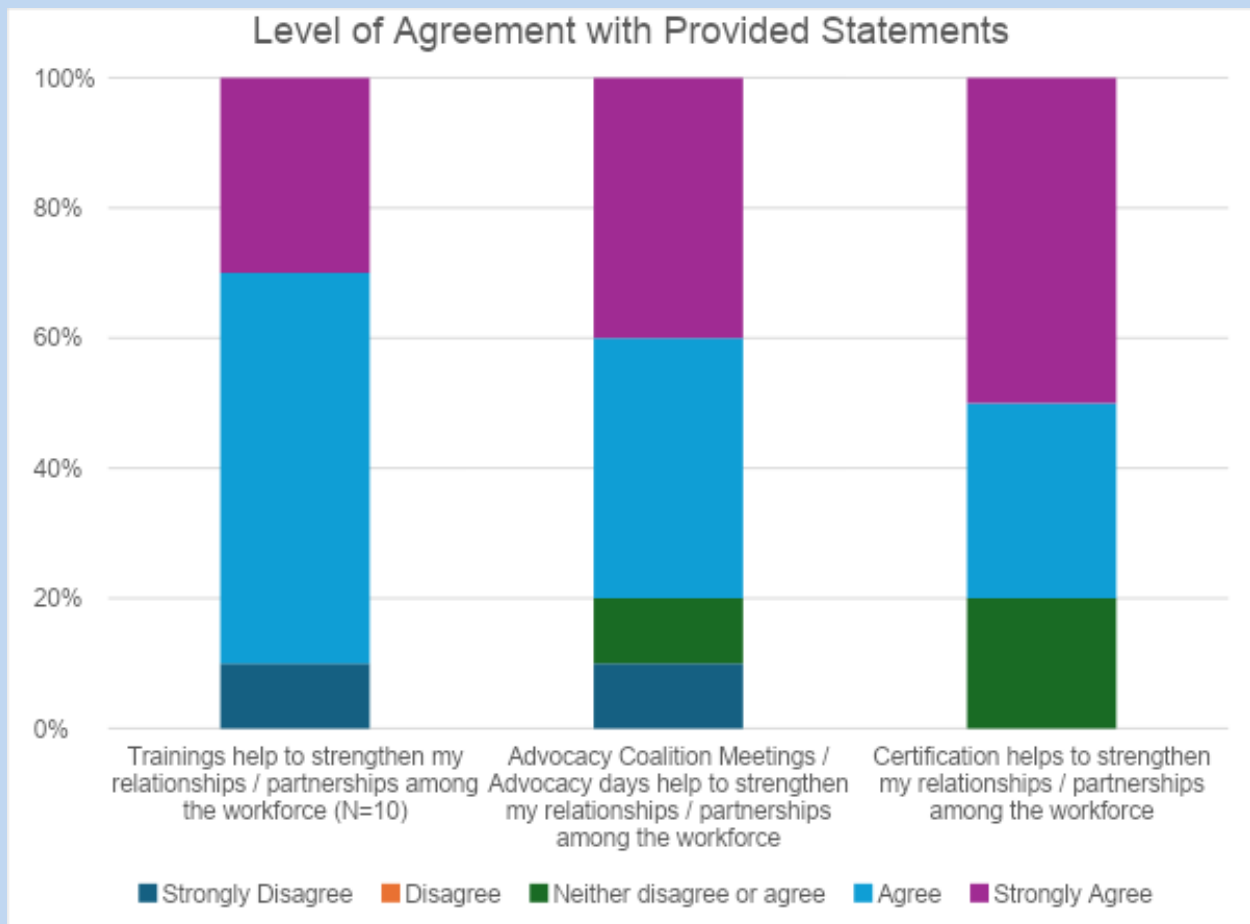
Level of Agreement with Statements about Value of Resources

Respondents were then provided a series of statements and asked to provide their level of agreement from strongly disagree to strongly agree. The distribution of the responses for the ten respondents to this question is provided in Figure 6. When assessing the “agree” and “strongly agree” values for the statements, respondents felt that the resources and services (trainings, meetings, and certification) were valuable to

strengthening their partnerships. Fifty percent of respondents (n=5) strongly agree that “certification days help to strengthen” partnerships among the CHW workforce in NC. Forty percent of respondents (n=4) strongly agreed that “advocacy coalition meetings / advocacy days help to strengthen” partnerships among the CHW workforce in NC. The least amount of agreement was given to “training days” to help strengthen partnerships in the state, in which thirty percent (n=3) strongly agreed with the statement that “trainings help to strengthen my relationships/ partnerships among the workforce.”

Figure 6

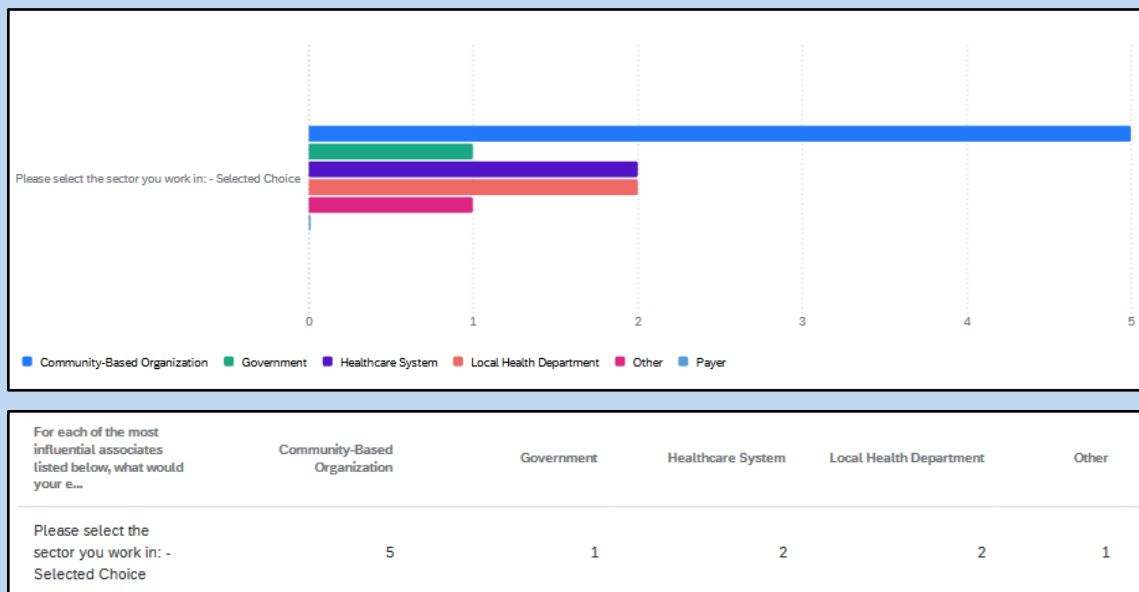
Level of Agreement with Statements Regarding Resource



Frequency of Interaction

The next question asked about how often there was an interaction with the CHW organizations. It shows that the greatest frequency of interactions took place with CBOs whereas the least amount of dosage took place with payers and government entities. Healthcare systems and local health departments (i.e., public health departments) had the same amount of dosage.

Figure 6



Barriers / Challenges

Three of the 12 respondents provided open-ended comments on the barriers/ challenges they experience. The following comments were given for barriers / challenges in partnerships for CHW initiatives in NC when asked “Please use this space to describe any barriers / challenges you’ve experienced in your partnerships for CHWs working in NC.” One comment relates to funded and two relate to an understanding of the role of CHWs:

- *NCCHCA reps were often unaware of their role in meetings with practices. They were present on calls but did not support our pilots. They may be more involved with their FQHCs in other ways*
- *Funding to keep CHW's on staff*
- *Getting everyone on the same page; understanding who who is and who needs to be at a particular event; knowing the whole picture*

In general, comments show there is a lack of resources to support the CHW workforce in NC. These resources included the need for more systems champions who support CHWs as well as resources such as funding. Organizations / individuals also tend to be siloed and not aware of the CHW initiative each may be working in.

Technical Assistance / Resources

Next, respondents were asked, “Please describe any Technical Assistance or resources that would help you to advance your partnerships for CHW work in NC.” Two comments were provided in this space, however one comment indicated “none.” The only TA comment indicated the need for “training”; however, this was not specified on which type of training.

Overall comments

Finally, respondents were provided with a space to enter any additional comments. Only one response was entered: “*Thank you NCCHWA for all you do to strengthen the workforce of CHW's.*” “

Limitations

In the sociogram visual, the blue actors in the network may be a CHW or CHW-organization. Without further data collection, it cannot be known which organizations could be further coded. Additionally, it is known that there are partnerships among the actors in Figure 5 that are not depicted. Additional data collection in which all actors in the network are invited to respond is needed to assess the true nature of collaboration and support within this network. The data analysis was further limited by the small

sample size. Specifically, respondents were asked, “Please rank the top 3 ways in which you interacted with each of your most supportive organizational connections to address CHW efforts.” Only one respondent provided responses to this question. As such, it was not included in the data analysis.

Summary of Findings and Associated Recommendations

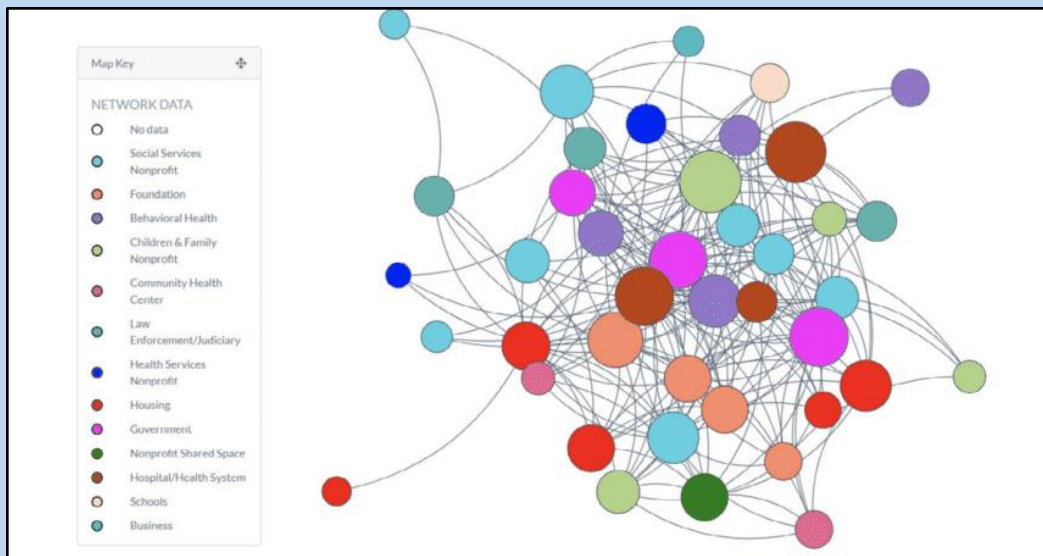
The findings show that overall, there is a siloed approach among partnerships for CHW initiatives taking place in NC. The diversity of partner organization, of populations served, and of services provided is evident in this preliminary research and yields the need for future studies. For example, the 12 respondents were asked about populations served and when coded, even with overlap between the organizations, this produced a list of 23 different populations. This provides, however, many opportunities to better support the partnerships of these CHW organizations. More specifically, the findings reveal that respondents perceive benefit to the trainings, meetings, and certifications available to them. More support could be provided within this support to better connect organizations and foster partnerships. The siloed approach leads to barriers for sustainable funding, certification, trainings for CHWs, etc. This leads to the following recommendations.

Social Network Recommendations

SNA is a valuable tool for examining the relationships within a network. By understanding the overall structure of the NCCHWA network, we can get an idea of roles and central actors in the network. The social network portion of this research can provide insight into (1) the central actors (most influential individuals/organizations) in the NCCHWA and the effectiveness of the association in fostering relationships and (2) the factors that lead to centrality within the network. Network analysis can give us an idea of how network members view the value of their network connections, as well as their perceptions of barriers and facilitators to forming relationships within the network. The survey provides a snapshot of the current network, but also serves as a baseline for capturing growth in any future surveys. For example, if the results of this survey yield recommendations for how NCCHWA can better support partnership formation, a

future survey can be conducted to re-assess the network and compare the metrics to the baseline network assessed in the first survey. If the organization continues to collect network data, it is recommended that these could be used as an interactive data dashboard showing the social network map from the organizational and individual level on the NCCHWA platform. An example of such a visual is provided in the figure below and can be developed through programs such as NodeXL.

Figure 7: Example of SNA



The social network map included in this report lends itself as a sampling frame for a second SNA survey in which the organizations in the map are contacted to get a better idea of the connections among them. In showing the connections among these organizations, the flow of resources between CHW and CHW Ally organizations can be better understood. This information could be mapped geographically, with weights for the strength of the partnership, and with symbols to show what resources are exchanged between the organizations.

Survey and Sampling Recommendations

As the sample size limited the analyze of the findings that could be drawn from this survey, it is recommended to conduct the survey at a larger scale to gather more data on partnerships among CHW organizations in NC. For instance, the survey link could be

distributed during meetings / conferences (open up time to take survey) to promote ongoing data collection. Furthermore, a small token of appreciation or free membership to the Association could be offered. Incentives should be tied in for a higher response rate.

Given the diverse codes that were generated in coding the populations served, future research is recommended to use these codes to provide a close-ended categorical question (with an “other” option) on future surveys. Relatedly, future research could further refine the categories presented within this report to create a typology of resources partner organizations can provide. Such questions were asked, however, were not completed by respondents. CHASM has created a tailored network map that can show specific resources linked to partnerships by area of focus such as payment, policy, evaluation, etc. which could garner robust information for the NCCHWA.