

Zero to Five
Missoula County
Collaborative

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SOCIAL NETWORK ANALYSIS

Carly Holman, MS | Annie Glover, PhD | Megan Nelson



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Executive Summary

Background

The Zero to Five Missoula County Collaborative was established in November 2018. The University of Montana Center for Children, Families, and Workforce Development partnered with local Zero to Five Collaboratives to conduct a social network analysis October 19, 2020 – December 4, 2020 utilizing the PARTNER (Program to Analyze, Record, and Track Networks to Enhance Relationships) Tool [1]. The research team invited 76 organizations and 8 parents/community members in the Zero to Five Missoula County Collaborative to participate in the survey. Of the 76 organizations in the network, 50 (66%) respondents completed the survey and 13 partially completed the survey, totaling 63 respondents (83%).

Network Composition

The Zero to Five Missoula County Collaborative includes organizations from seven sectors, with Social Services (43%) as the sector with the most representation.

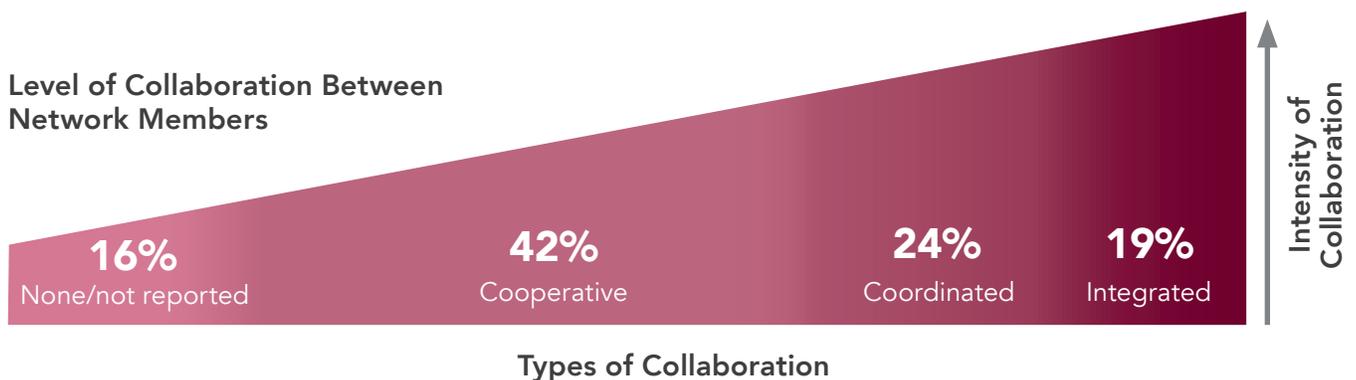
Partnerships

Network members reported the partnerships they have with other organizations in the network. For this social network analysis, “partnership” is defined as the relationship between member organizations that worked together on an early childhood project in the last year. Fifty-one organizations reported 476 partnerships across the Zero to Five Missoula County Collaborative.

A quarter (25%) of respondents credited relationships to the Zero to Five Missoula County Collaborative.

Levels of Collaboration

Network members classified their relationships with other members as cooperative, coordinated, or integrated. Cooperative activities involve lower levels of collaboration (e.g., exchanging information), and integrated activities are the highest form of collaboration (e.g., shared programming, joint proposal).



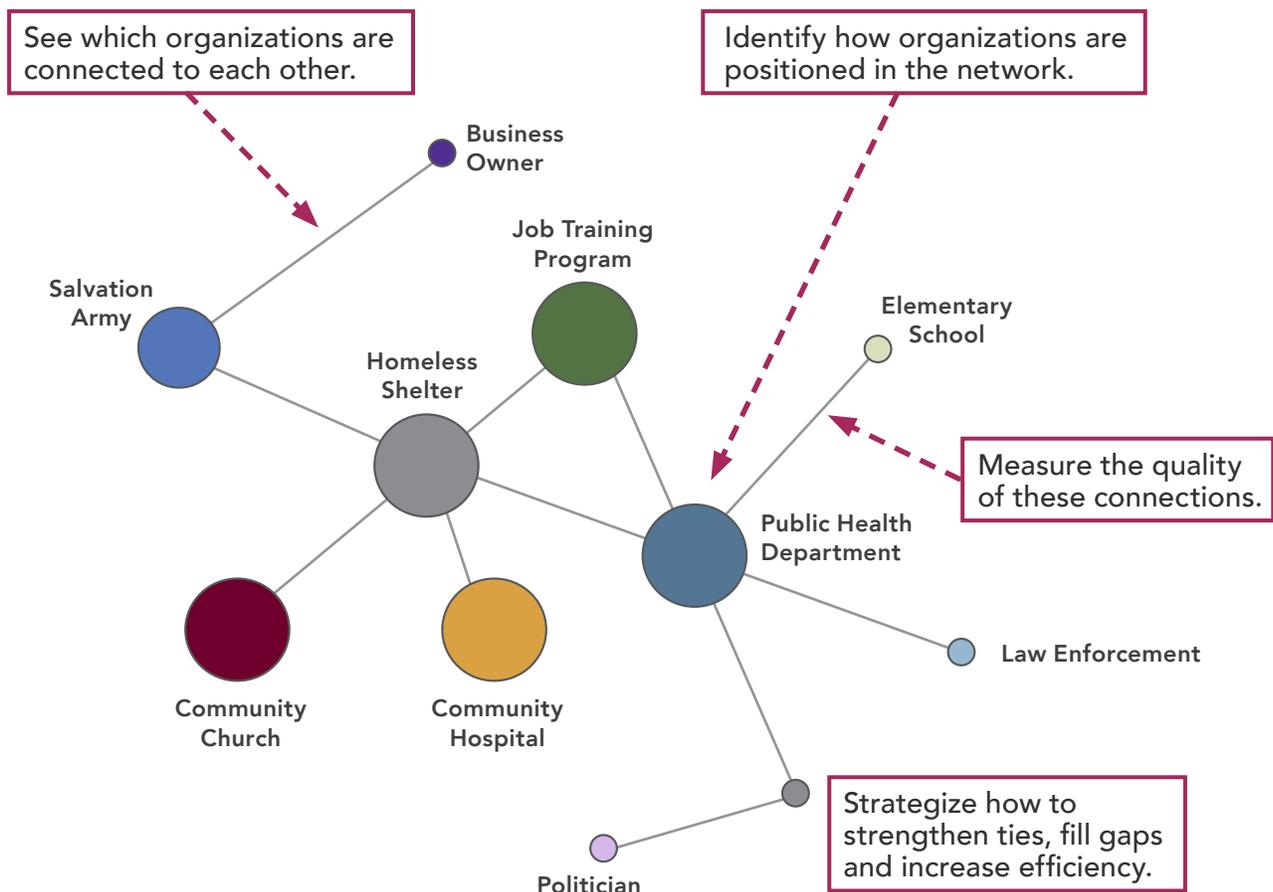
Network Impact on Members

Network members reported that participation in the Collaborative helped their organization make meaningful connections with other organizations (65%), share information with other organizations (59%), and respond to the opportunities and challenges related to early childhood (55%).

What is Social Network Analysis?

Coalitions and collaboratives are frequently established to bring together partners from both the public and private sectors to address complex health and social issues [2]. Even though collaboration is key to improving community health, there is often little emphasis placed on measuring how Collaborative networks build capacity and evolve [3].

Social Network Analysis (SNA) is a research methodology that measures how organizations participate in a network and the quantity and quality of relationships between partners [4]. SNA can help networks identify ways to improve how partners work together to achieve desired outcomes. SNA can inform strategies to strengthen relationships, leverage resources, and monitor change in networks over time.



KEY



Image adapted from Visible Network Labs
<https://visiblenetworklabs.com/>

Zero to Five Missoula County Collaborative Social Network Analysis

Background

The Zero to Five Initiative has local early childhood initiatives across western Montana, including the Zero to Five Missoula County Collaborative [5]. A core strategy of the Zero to Five Initiative is the development of local early childhood collaboratives to leverage resources and develop effective interventions to address early childhood issues. The Collaboratives bring together partners across sectors to increase community participation and engagement around early childhood. The Missoula County Collaborative was established in November 2018. In the Fall of 2020, the Collaborative participated in an SNA study.

Methods

The Center for Children, Families, and Workforce Development conducted the SNA survey from October 19, 2020 to December 4, 2020, utilizing the PARTNER (Program to Analyze, Record, and Track Networks to Enhance Relationships) Tool [1]. Network members reported when they had a partnership with another organization in the network. For this social network analysis, “partnership” is defined as the relationship between member organizations that worked together on an early childhood project in the last year. The network and organizational level measures included:

- **Density:** the number of relationships reported as a fraction of the total number of possible relationships across the entire network.
- **Value:** the average of all members’ ratings on their partners’ value to the network in three areas *level of power and influence, level of involvement, and resource contribution* (all items were rated on a scale of 1 “not at all” to 4 “a great deal”).
- **Level of Collaboration:** the proportion of all relationships reported as *cooperative, coordinated, and integrated*.
- **Attribution:** the proportion of all relationships attributed to the Zero to Five Collaborative.
- **Degree of Centrality:** the number of connections an organization has to others as a proportion of all possible connections.

Survey Respondents

The research team invited 76 organizations and 8 parents/community members in the Zero to Five Missoula County Collaborative to participate in the survey. Of the 76 organizations in the network, 50 (66%) respondents completed the survey and 13 partially completed the survey, totaling 63 respondents (83%).

Additional information on the methodology is in Appendix A.

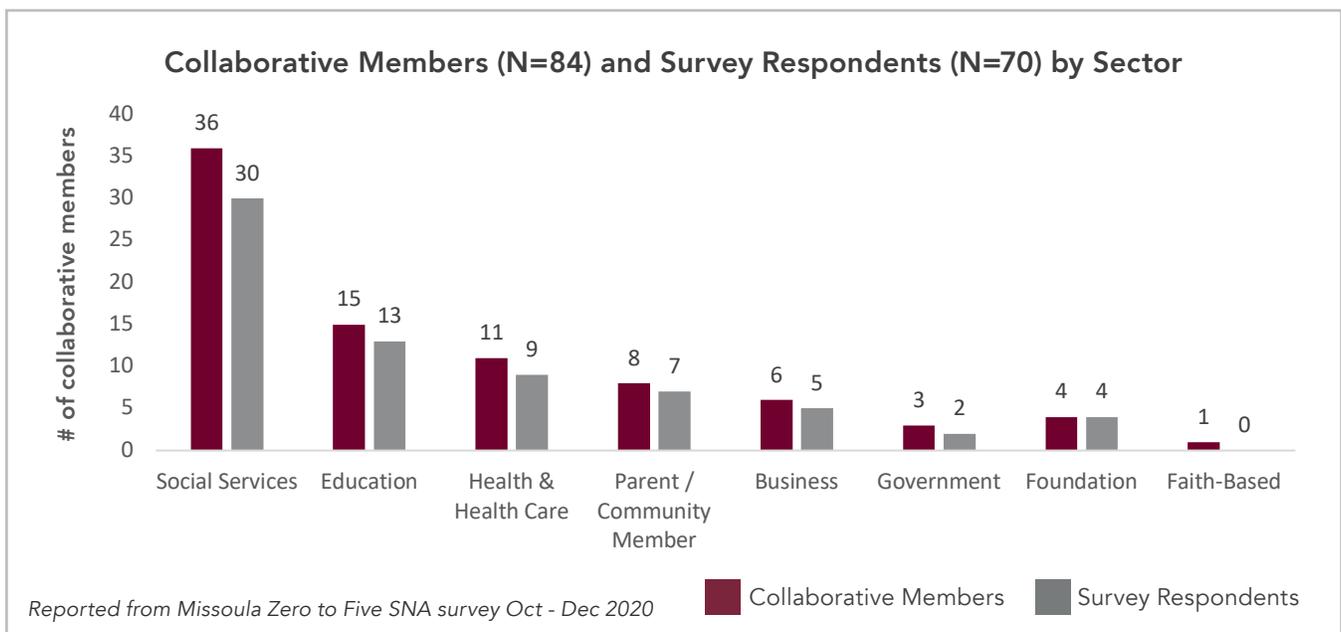


Results

Network Composition

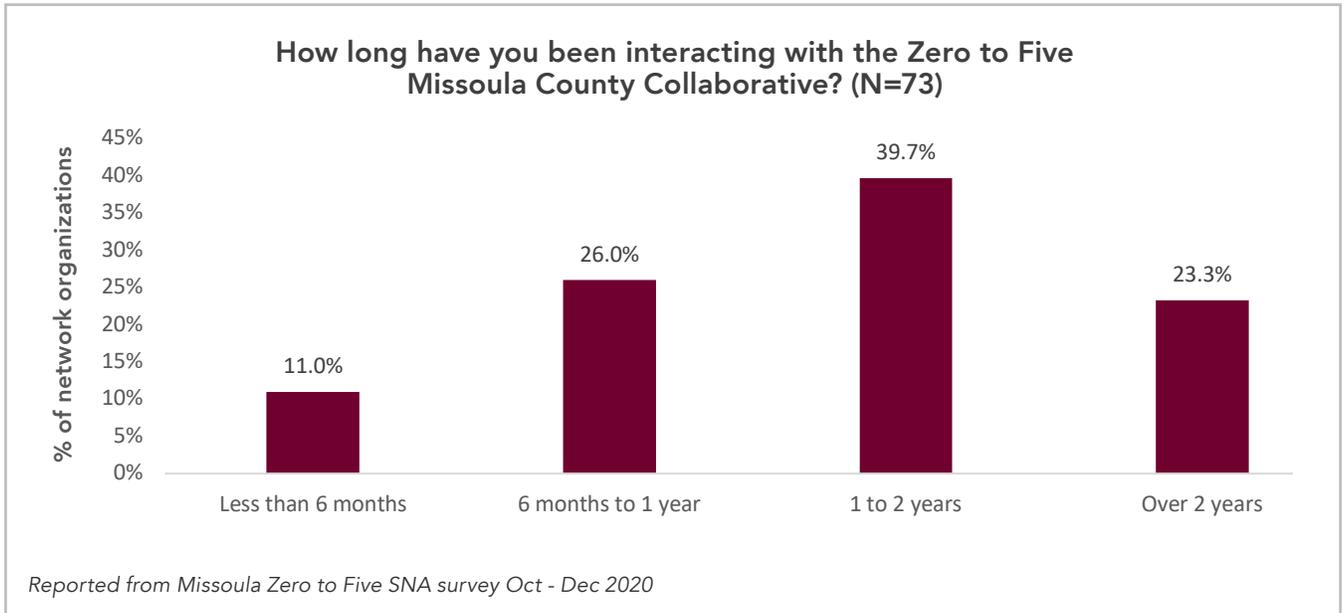
The Zero to Five Missoula County Collaborative includes organizations from seven sectors, Social Services, Education, Health & Health Care, Business, Government, Community Foundation, and Faith-Based. Parents and community members not affiliated with an organization also participate in the Collaborative. In Figure 1, the maroon bars show the number of collaborative members by sector, and the grey bars show how many network members from each sector completed the survey. As illustrated in Figure 1, the distribution of survey respondents in our sample closely resembles the distribution of the sectors that comprise the collaborative. The sectors with the highest representation in the Collaborative include Social Services, followed by Education and Health & Health Care (Figure 1).

Figure 1. Collaborative Members and Survey Respondents by Sector



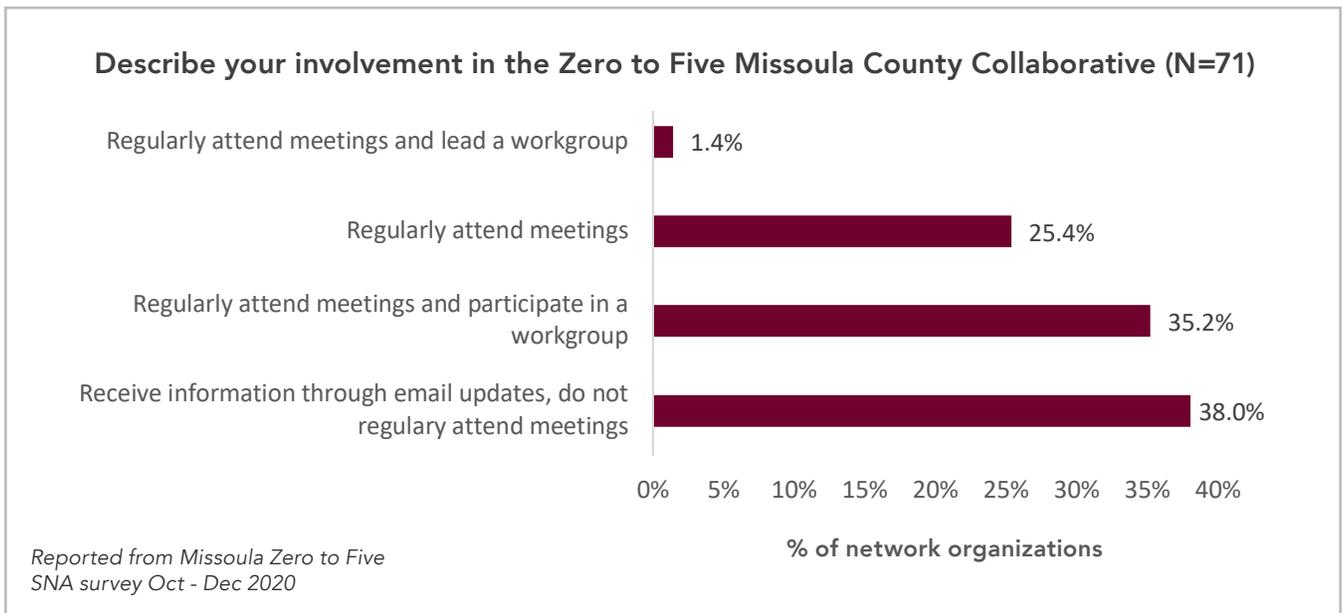
Network members reported how long they have been interacting with the Zero to Five Missoula County Collaborative. Close to half of respondents (40%) have been involved for 1 to 2 years (Figure 2).

Figure 2. Length of Involvement in Zero to Five Missoula County Collaborative



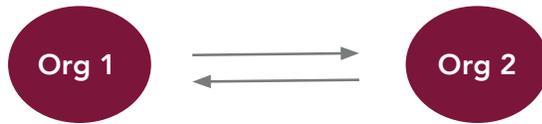
Network members can participate in a variety of ways in the Zero to Five Missoula County Collaborative. The least intensive form of participation involves staying connected through email updates from the Local Collaborative Coordinator. Other options to participate include attending meetings, participating in a workgroup, and leading a workgroup. In the Zero to Five Missoula County Collaborative, 38% of members receive information through email updates and do not regularly attend meetings and 35% of members regularly attend meetings and participate in a work group (Figure 3).

Figure 3. Levels of Involvement in the Zero to Five Missoula County Collaborative



Quantity and Quality of Connections Between Members

Network members reported the partnerships they have with other organizations in the network. For this social network analysis, “partnership” is defined as the relationship between member organizations that worked together on an early childhood project in the last year. The survey instrument asked respondents to select organizations with whom their organization has a partnership. Fifty-one organizations reported 476 partnerships across the Zero to Five Missoula County Collaborative. In the image below, each arrow represents a reported partnership.



A quarter (25%) of respondents credited relationships to the Zero to Five Missoula County Collaborative, and 42% of respondents credited the Collaborative for strengthening pre-existing relationships (Table 1).

A quarter (25%) of respondents credited relationships to the Zero to Five Missoula County Collaborative.

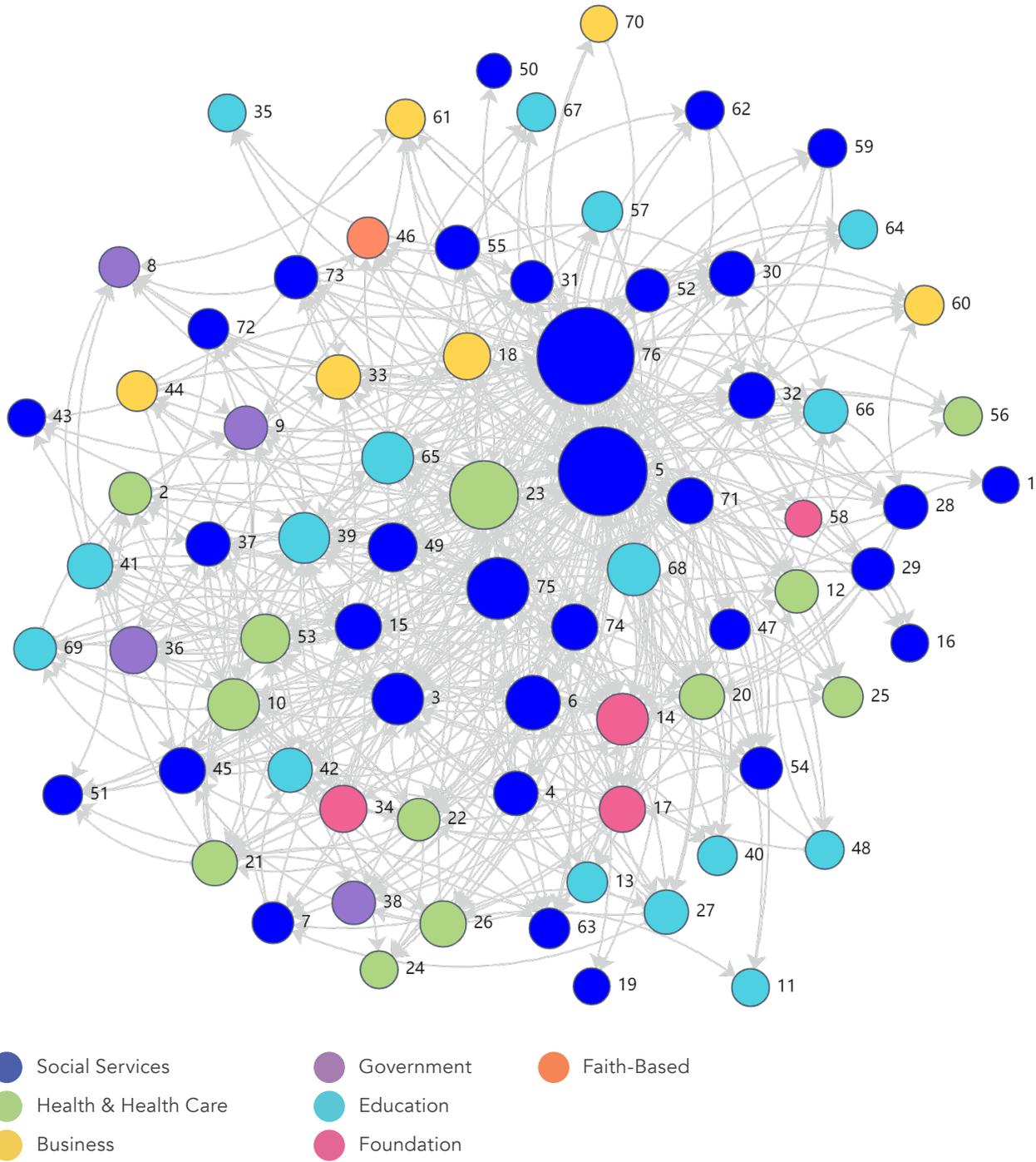
Table 1. Relationship Development

Describe how your relationships with each of these partners started (N=476)	n (%)
Through the Collaborative meetings, trainings, or other activities	118 (24.8)
Our relationship was not initiated through the Collaborative, but the Collaborative made our relationship stronger	199 (41.8)
Other	142 (29.8)
Don't know	1 (0.2)
No response	16 (3.4)



The network map (Figure 4) includes colored circles that each correspond to one member of the network. Each member of the network shared a connection with at least one other member. The lines show relationships between network members. Circle colors denote the organization's sector, and circle sizes denote the number of connections the organization has to other organizations in the network. Circle size increases to indicate increasing levels of organizational integration in the network. See Appendix B for the legend of organizations and map labels.

Figure 4. Zero to Five Missoula County Network Map



Reported from Missoula Zero to Five SNA survey Oct - Dec 2020
 Organizations that are not connected to any other organizations are not included in the map.

Degree Centrality

The degree of centrality measures an organization's position in a network. It provides information on how many connections the organization has to other partners [6]. Organizations with high degrees of centrality maintain many ties across the network, and those with few ties have lower degrees of centrality [6]. Centrality provides information on each member's role in the functioning of the network. It shows if one or two organizations are the primary points of coordination or if most organizations hold similar positions [7].

The Zero to Five Missoula County program has the highest degree of centrality at 89%. Child Care Resources also has a high degree of centrality at 77%, and the Health Department Health Start Early Childhood Coalition has moderate centrality at 48%. Large networks with high breadth often have high centrality with a few organizations serving as the primary points of coordination and connection between partners [8].

Density

Density provides information about the overall cohesion of the network. It captures where connections are present between network members [3]. Network density compares the number of actual ties in a network with the total number of possible ties [7]. The network has a density score of 9%. The Zero to Five Missoula County Collaborative includes 84 partners from seven sectors. As networks increase in size, they often become less dense as it is more difficult to sustain connections with so many partners [9].

Value

Value measures include power/influence, level of involvement, and resource contribution. These represent different ways organizations bring value to the network. For this social network analysis, "partnership" is defined as the relationship between member organizations that worked together on an early childhood project in the last year. The survey instrument asked respondents to select organizations with whom their organization has a partnership, and to evaluate that partner on their power/influence, level of involvement and resource contribution. Network members rated partners' on their value to the network in these three areas from 1=not at all, 2=a small amount, 3=a fair amount, 4=a great deal. Table 2 shows the mean network value score across the three value measures.

Table 2. All Members' Perception of Value Zero to Five Missoula County Collaborative

Value Measures	Definition	Partnerships	Value Score
Power/Influence	This partner holds a prominent position in the community by being powerful, having influence, success as a change agent, and showing leadership.	410	3.0
Level of Involvement	This partner is strongly committed and active in the partnership and gets things done.	373	3.1
Resource Contribution	This partner brings resources to the relationship like funding, information, or other resources.	370	2.9



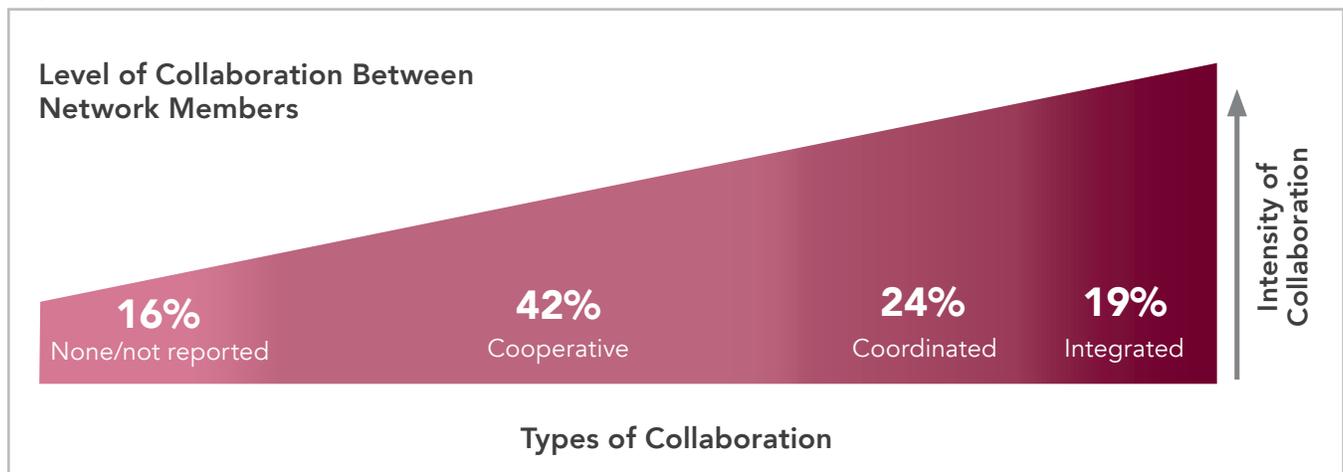
Levels of Collaboration

Network members classified their relationships with partners as cooperative, coordinated, or integrated [1].

Cooperative	Coordinated	Integrated
Involve exchanging information, attending meetings together, and offering resources to partners.	Include cooperative activities in addition to intentional efforts to enhance each other's capacity for the mutual benefit of programs.	In addition to cooperative and coordinated activities, this is the act of using commonalities to create a unified center of knowledge and programming that supports work in related content areas.

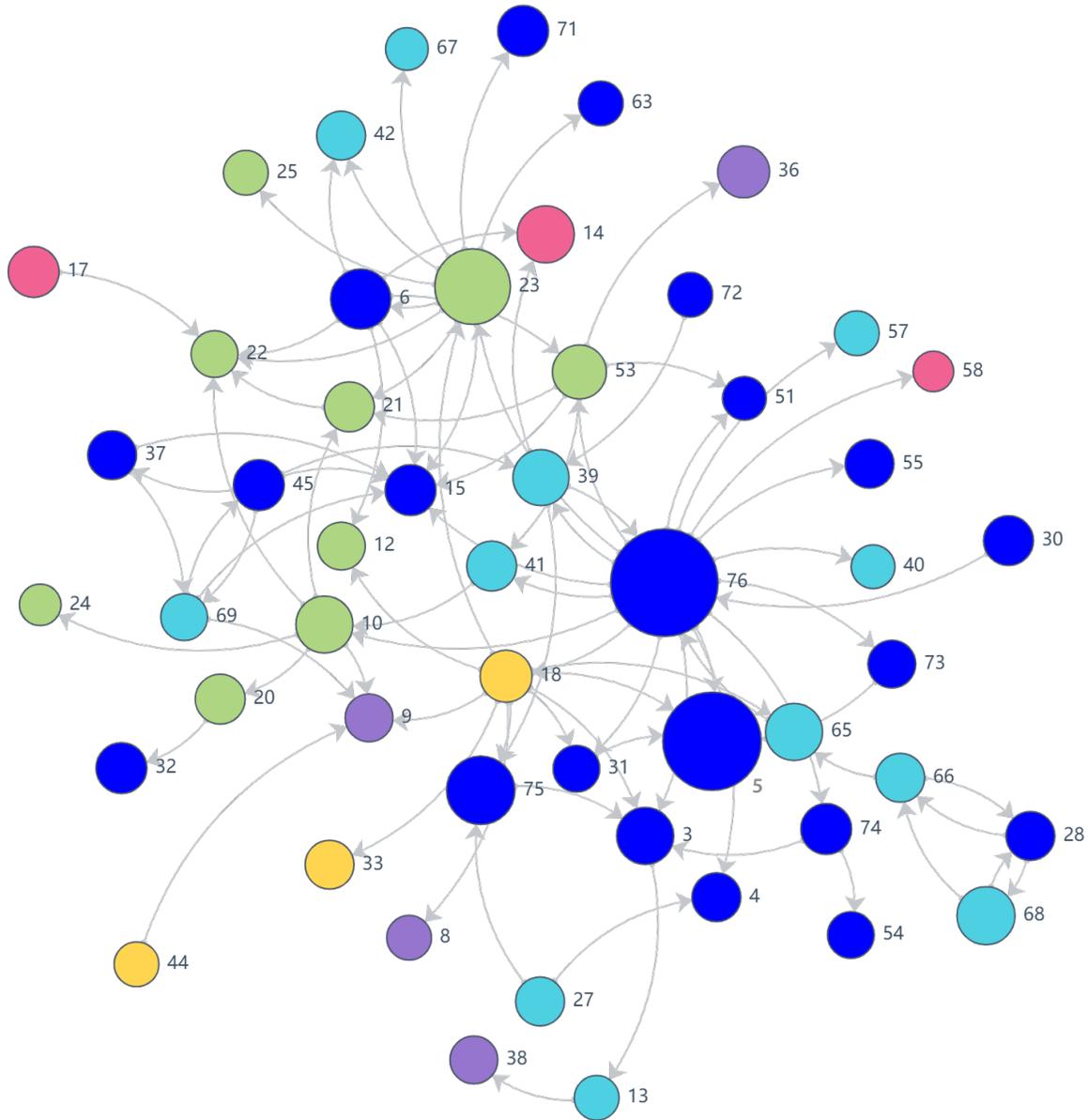
Network members classified most relationship activities as cooperative (42%), followed by coordinated (24%), and integrated (19%) (Figure 5).

Figure 5. Level of Collaboration Between Network Members



The network map below shows the partners with integrated relationship activities (19%), the most intensive type of collaboration (Figure 6). See Appendix B for the legend of organizations and map labels.

Figure 6. Integrated Relationship Activities between Network Members



- Social Services
- Health & Health Care
- Business
- Government
- Education
- Foundation

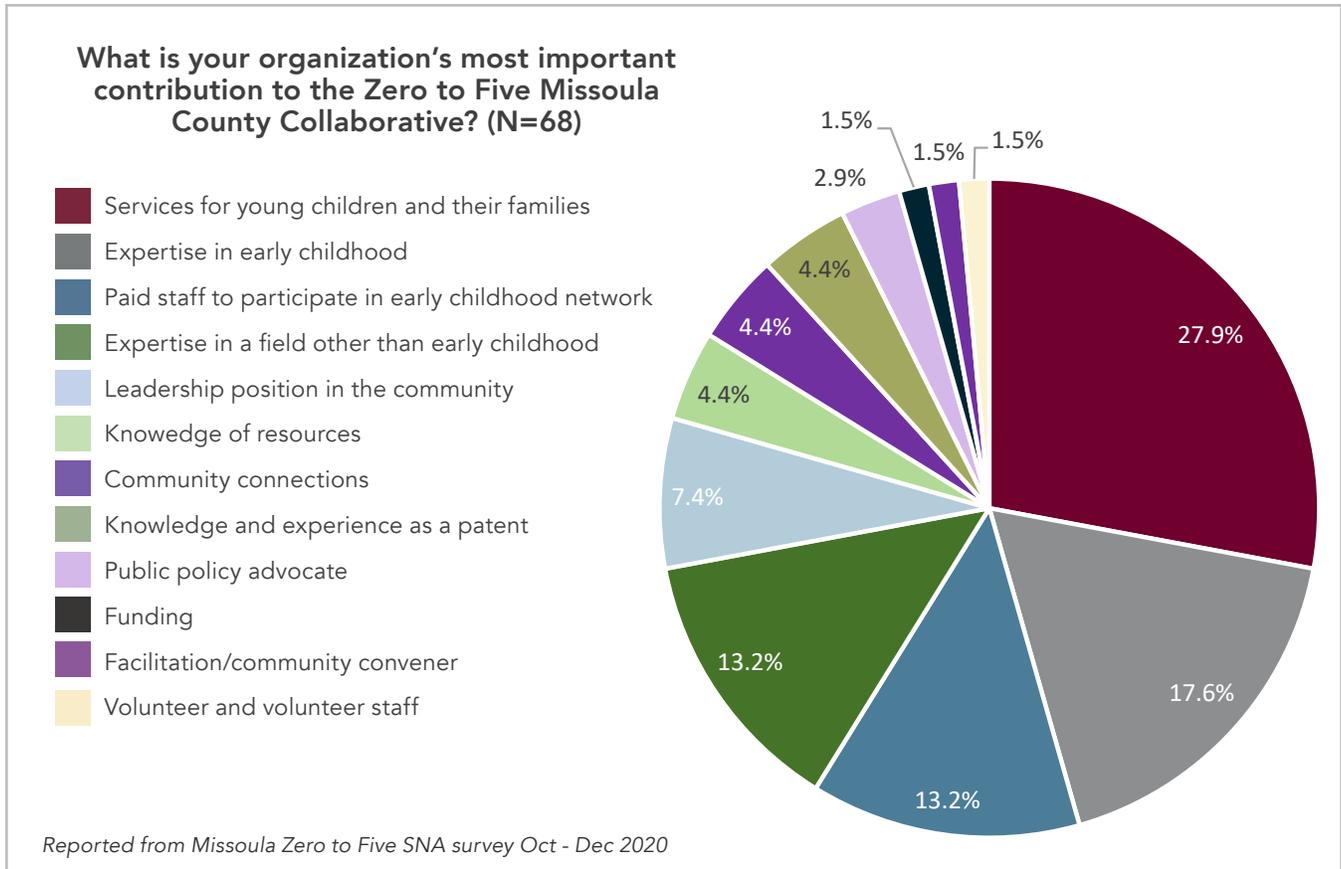
Reported from Missoula Zero to Five SNA survey Oct - Dec 2020

Resource Contribution

Network members reported the resources their organization contributes to the Collaborative. Respondents most frequently (68%) named community connections, knowledge of resources (53%), and services for children and their families (49%). The resources the fewest organizations can contribute to the Collaborative include funding (6%) and volunteers and volunteer staff (7%).

Figure 7 illustrates the contributions that organizations reported to be the most important for the Collaborative; respondents named services for young children and families (28%), expertise in early childhood (18%), and paid staff to participate in the early childhood network (13%) (Figure 8).

Figure 7. Most Important Contribution to the Zero to Five Missoula County Collaborative



Barriers and Facilitators to Network Participation

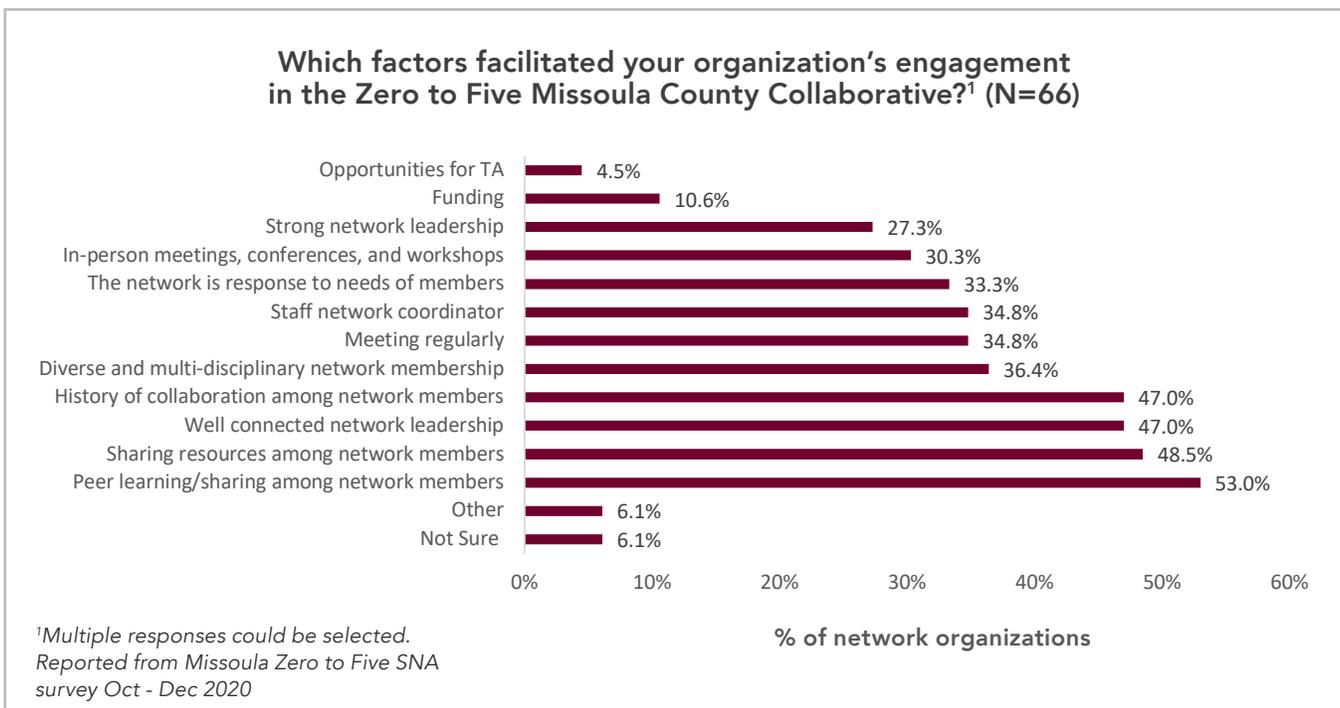
Network members reported barriers to their organization's participation in the Collaborative. Network members most frequently reported lack of capacity for advocacy work (23%), difficulty bringing stakeholders together (19%), and lack of time/staff capacity (15%) as barriers to participation (Figure 8).

Figure 8. Barriers to Participation in Zero to Five Missoula County Collaborative



Network members reported factors that facilitate their organization's participation in the Collaborative. Respondents named peering learning and sharing among network members (53%), sharing resources among network members (49%), well-connected network leadership (47%), and history of collaboration (47%) as the top facilitators (Figure 9).

Figure 9. Facilitators to Participation in Zero to Five Missoula County Collaborative

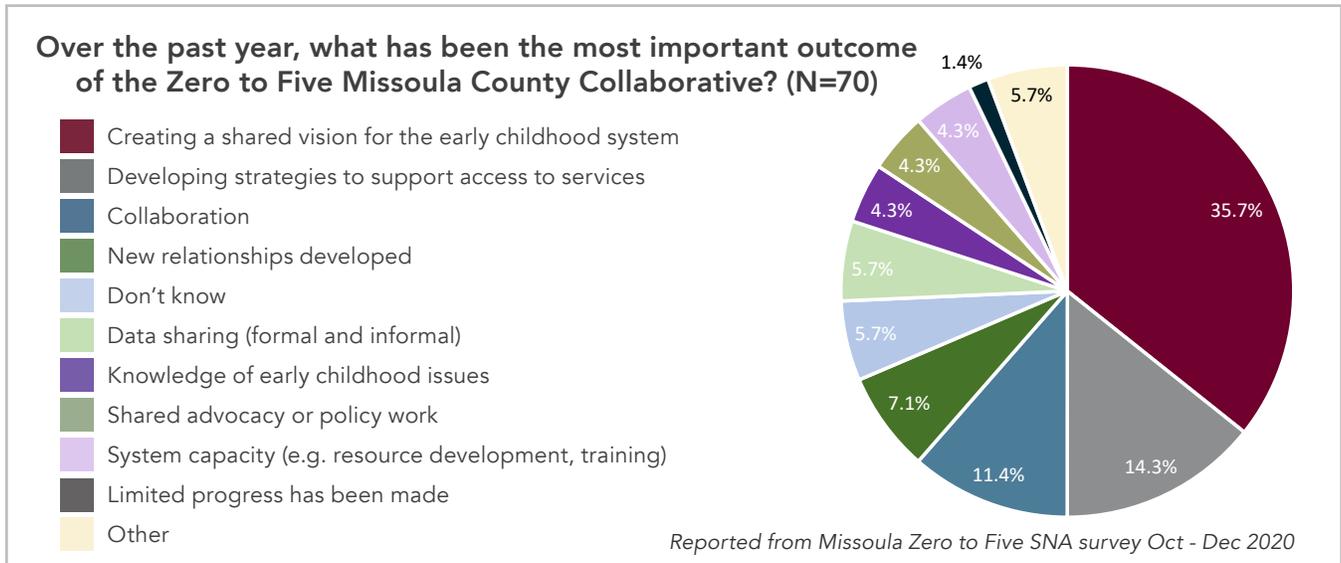


Outcomes of the Network

Network members reported the most important outcome from the Zero to Five Missoula County Collaborative in the past year. Respondents most frequently (36%) named creating a shared vision for the early childhood system, developing strategies to support access to services (14%), and collaboration (11%) (Figure 10).

“By bringing all of the partners into the same room for discussion is a big way Missoula Zero to Five improves health and human services in the community. We have to come to consensus and move forward with a coordinated effort to make the most impact. That is what the Zero to Five Collaborative offers; that chance to coordinate.” — Network Member

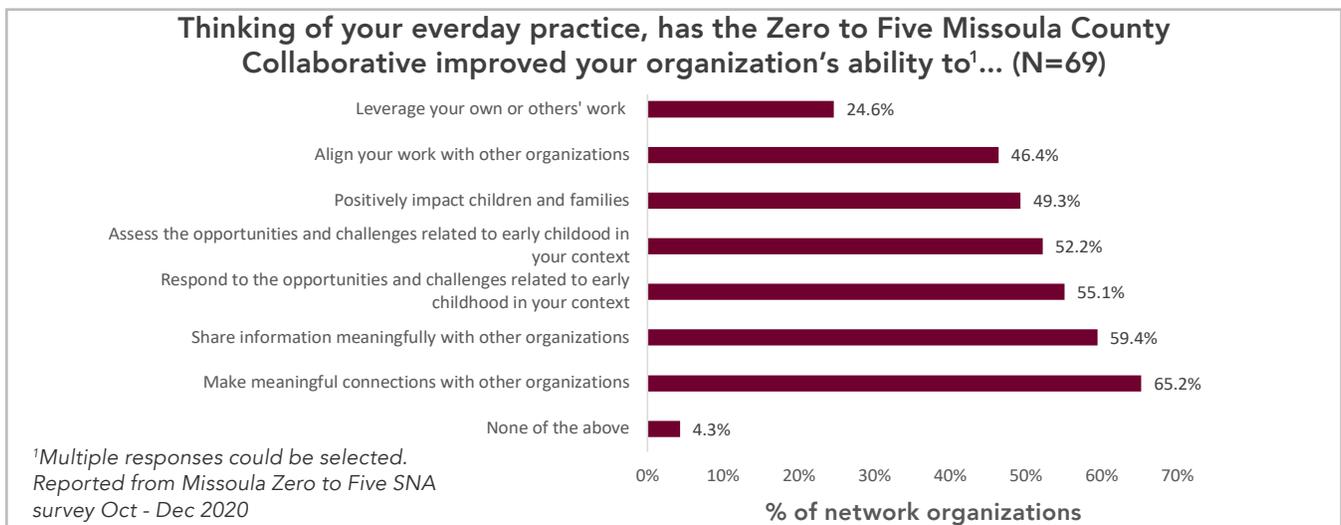
Figure 10. Outcomes of the Zero to Five Missoula County Collaborative



Network members reported that participation in the Collaborative helped their organization make meaningful connections with other organizations (65%), share information with other organizations (59%), and respond to the opportunities and challenges related to early childhood (55%) (Figure 11).

The Collaborative supports cross communication among all the partners that serve families of young children. It is great to have a space to find organizations that can help solve many problems faced by parents.” — Network Member

Figure 11. Network Impact on Zero to Five Missoula County Network Members





Discussion

The Zero to Five Missoula County program has successfully brought together and coordinated a large and diverse network. Network members have high levels of engagement in the Zero to Five Missoula County Collaborative, with over half (63%) regularly attending meetings. The results of the SNA show a network with low density and high breadth. Networks with low density and high breadth often have high centrality, with a few organizations serving as the primary points of coordination and connection between partners [8]. The Zero to Five Missoula County program has the highest degree of centrality and plays a crucial role in creating relationships across the network. Several other early childhood organizations also have high degrees of centrality, including Child Care Resources and the Healthy Start Early Childhood Coalition.

An organization's centrality score provides information on its position in the network. It shows if the organization holds an integrated position (maintaining many ties to others) or resides on the network's periphery with only a few connections [6]. In large networks, more connections can be detrimental rather than beneficial to functioning. Too much density across the network can lead to duplication and overburden network members [10]. Organizations with high centrality hold a critical role by creating bridges between otherwise disconnected members. These bridges provide a means to leverage resources across the network without overburdening partners with unnecessary ties that take time to uphold [9]. The Zero to Five Missoula County Collaborative includes five workgroups with a diverse membership. Over a third (35%) of collaborative members participate in a workgroup. Workgroups elevate the role of partner organizations in the network and contribute to a dispersion of leadership and coordination responsibilities. Sharing power, leadership, and coordination across networks contributes to higher levels of engagement and satisfaction of members [4]. We recommend network leadership engage integrated partners in more intensive forms of leadership and management of network activities.

The Collaborative continues to engage new partners, with 37% of members joining within the last year. As the Collaborative grows, we recommend network leadership balance two forms of engagement 1) creating dense, close relationships through the intentional connection of partners and the formation of partner-led workgroups, and 2) retaining weak ties to organizations on the periphery of the network with less connection to the day-to-day work. Targeted partnerships can take several forms. These might include inviting a new member to present about their organization at a Collaborative meeting or identifying a partnership opportunity and introducing two members. Targeted connections create new pathways for resource sharing across the network and lead to collaboration [9]. Maintaining weak ties to organizations on the periphery of the network will provide access to their distinct perspectives and resources without overburdening these organizations with unnecessary connections [10].

Conclusion

Visible Network Labs outlines four phases in the Lifecycle of a Sustainable Network [11]. Phase 1 and Phase 2 involve creating relationships and connecting members on the network's periphery. In Phase 3, the network creates more ties to tighten connections. In Phase 4, the network breaks into subgroups to support sustainable engagement over time [11]. The results of this SNA suggest that the Zero to Five Missoula County Collaborative is in Phase 3-4 of network growth. The Collaborative continues to engage new partners. We expect connections and collaboration to increase as the network grows and adds more community organizations. The dynamics of a network impact its overall effectiveness and ability to achieve desired outcomes [12]. The SNA has provided a baseline assessment of network characteristics for the Zero to Five Missoula County Collaborative. We recommend the continued collection of network data to understand the evolution and impact of these connections on the early childhood system in Missoula County.

Collaboration is an important prerequisite to community-level social change and ensuring that social service, health, education, and other service providers coordinate prevention services and cooperatively work toward the same goals. Montana's state and local systems of care are at varying stages of collaboration with many still competing against one another for limited funding, personnel, volunteers, space, and similar resources. The Zero to Five initiative encourages collaboration among local early childhood providers to promote positive change and improve the identification and sharing of limited resources. By creating more collaborative and efficient local early childhood infrastructures with less competition and more collaboration, communities can improve their capacity to reduce many common social determinants of health.

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Appendix A

Methodology

Instrument

The research team adapted the PARTNER validated tool for this study. The PARTNER tool is designed for public health Collaboratives and collects information on the quantity and quality of partnerships and non-relational questions about overall network functioning [2].

Participants

The research team conducted a whole network study that collected information from all members of the Zero to Five Collaborative. The Local Collaborative Coordinator provided the research team with a list of Collaborative members. Organizations with multiple Collaborative members chose one person to represent the organization, or the research team broke out the organization by programs. The representative answering the survey responded on behalf of their organization or program, not as an individual. The research team sent parents and community members a separate survey through Qualtrics that did not include the relational questions to maintain confidentiality.

Survey Administration

The research team distributed the survey from October 19, 2020 to December 4, 2020 through the PARTNER platform and Qualtrics. The first page of the survey obtained informed consent. The survey remained open for six weeks, and participants received email reminders weekly. Mid-way through the recruitment period, the research team mailed a letter and called participants that had not completed the survey. This study received approval from the University of Montana Institutional Review Board.

Data Analysis

The research team utilized the PARTNER platform to conduct descriptive analyses, including visual maps of the network. The research team considered a relationship to be present if one of the network members reported it as present. This allowed us to capture some data about network members who did not respond or provided incomplete data using other network members' answers.

Limitations

The surveys were completed by one person on behalf of an organization and might not represent the organization. The response rate was 83%, with some partial responses. SNA surveys are long, especially for organizations with many partners, which can contribute to survey fatigue. Missing data impacts the network measures and does not represent the complete network. The research team administered the survey during the COVID-19 pandemic and in the final months of the 2020 United States election. Agencies involved in public health collaboratives are often a part of the COVID-19 response in their communities. Elections bring an increase in email, mail, and phone calls to individuals. These two factors might have impacted the survey response rate.

Appendix B

Network Map Legend

Organization	Map Label	Organization	Map Label	Organization	Map Label
ASUM Child Care	1	Hellgate Elementary	27	Partnership Health Center	53
All Nations Health Center	2	Learning and Belonging	28	Partnership for Children	54
Boys and Girls Club of Missoula County	3	Lolo Preschool	29	Primrose Montessori	55
Camp Fire Western Montana	4	MT AEYC	30	Providence Saint Patrick Hospital	56
Child Care Resources	5	MT Child Care Resource and Referral Network	31	Saint Joseph School	57
Child Development Center	6	MTDPHHS - Child Care Licensing	32	Seeley Lake Community Foundation	58
Child Start Head Start	7	Missoula Area Chamber of Commerce	33	Spirit at Play	59
City of Missoula - City Council	8	Missoula Community Foundation	34	Submittable	60
City of Missoula - Mayor's Office	9	Missoula Community School	35	Submittable - Kid Care	61
City of Missoula - Parks and Recreation	10	Missoula County - Commissioners	36	The Growing Tree	62
Clark Fork School	11	Missoula County - Missoula Public Library	37	The Parenting Place	63
Community Medical Center	12	Missoula County - Superintendent of Schools	38	University of Montana - Blackstone Launchpad	64
DeSmet Elementary	13	Missoula County Public Schools	39	University of Montana - Center for Children, Families, and Workforce Development	65
Dennis and Phyllis Washington Foundation	14	Missoula County Public Schools - Chief Charlo	40	University of Montana - Early Childhood Education Program	66
Families First Learning Lab	15	Missoula County Public Schools - Lowell	41	University of Montana - Linking Systems of Care	67
Fort Courage Child Care	16	Missoula Early Head Start	42	University of Montana - Phyllis J Washington School of Education	68
Foundation for Community Health	17	Missoula Early Learning Center	43	University of Montana - spectrUM	69
Grow, Build, Lead	18	Missoula Economic Partnership	44	WGM Group	70
Growing up Green	19	Missoula Food Bank and Community Center	45	Watson Children's Shelter	71
Health Department-Environmental Health	20	Missoula Interfaith Collaborative	46	Western Montana Mental Health Center - Flagship Program	72
Health Department-Health Equity	21	Missoula Job Service	47	Wild Wonders	73
Health Department-Health Promotion	22	Missoula Valley Montessori	48	YMCA of Missoula	74
Health Department-Healthy Start (ECC)	23	Mountain Home	49	YMCA of Missoula - Child Care	75
Health Department-Let's Move	24	MyVillage	50	Zero to Five	76
Health Department-Nurse Family Partnership	25	North Missoula Community Development Corporation	51		
Health Department-WIC	26	Origins Education	52		

Appendix B

Glossary

Attribution: the proportion of all relationships attributed to the Zero to Five Collaborative.

Breadth: the proportion of different types of organizations that are members of the network.

Business: organized efforts and activities to produce and sell goods and services for profit.

Cooperative Relationship Activities: involve exchanging information, attending meetings together, and offering resources to partners.

Coordinated Relationship Activities: include cooperative activities in addition to intentional efforts to enhance each other's capacity for the mutual benefit of programs.

Degree of Centrality: the number of connections an organization has to others as a proportion of all possible connections.

Density: the number of relationships reported as a fraction of the total number of possible relationships across the entire network.

Education: provide systematic instruction, including at a preschool, school, or university.

Faith-Based Organization: an organization that is based in a particular faith.

Government: governing body of a community or state.

Health & Health Care: promotes and protects the health of people and the communities and the organized provision of medical care (including mental health care) to individuals or a community.

Integrated Relationship Activities: in addition to cooperative and coordinated activities, this is the act of using commonalities to create a unified center of knowledge and programming that supports work in related content areas.

Level of Collaboration: the proportion of all relationships reported as cooperative, coordinated, and integrated.

Parent / Community Member: network members that are not affiliated with an organization.

Partnership: a member had worked with another organization on an early childhood project in the last year.

Social Network Analysis: a research methodology that measures how organizations participate in a network and the quantity and quality of relationships between partners.

Social Services: services to promote social well-being including financial support, job training, child care, and public assistance.

Value: the average of all members' ratings on their partners value to the network in three areas level of power and influence, level of involvement, and resource contribution (all items were rated on a scale of 1 "not at all" to 4 "a great deal").