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Let's Work Together: Documenting Collaboration in Michigan's Early Childhood Mixed Delivery System A Social Network Analysis

Authors: Jingtong Pan, Danielle Riser, Lauren Stargel, Isabella Hernandez, Marina Castro, and Ann-Marie Faria | Michigan PDG Social Network Study

In 2020, the Michigan Department of Education (MDE) Office of Great Start was awarded the Preschool Development Birth Through Five (PDG B-5) renewal grant. Strengthening partnerships in Michigan's birth-through-age-5 mixed delivery system is one purpose for the grant. To effectively serve families, multiple agencies must work together to provide programs, services, and supports. Because this system intends to promote health, development, and well-being, MDE, the Michigan Department of Health and Human Services (MDHHS), the Department of Licensing and Regulatory Affairs (LARA), and the Department of Technology, Management and Budget (DTMB)—along with other early childhood care and education stakeholders—should collaborate to provide all the components that comprise the early childhood care and education (ECCE) mixed delivery system.

In 2019, the American Institutes for Research® (AIR®) conducted a needs assessment that reported challenges in collaboration across agencies.¹ Based on findings from the needs assessment, the state contracted with AIR to launch a survey to gauge how staff across Michigan agencies worked together. The purpose of this survey was to collect data to answer four main research questions about collaboration across Michigan agencies (see Exhibit 1). To answer these research questions, social network analysis offers a useful approach to understanding interactions among staff in the ECCE mixed delivery system. This report describes how individuals across Michigan agencies work together in a collaborative social network as well as their beliefs about collaboration. Participants in the collaboration study include staff from MDE, MDHHS, LARA, DTMB, and other early childhood care and education stakeholders.

SOCIAL NETWORK ANALYSIS

Social network analysis is a research method that focuses on measuring and mapping relationships, analyzing the structure of the relationships, and assessing the influence of individuals in the network.

In social network analysis, every time a survey participant names another individual with whom they collaborate, it creates a connection. Connections represent collaboration across the people in the social network.

Exhibit 1. Research Questions

Research Questions

1. Where and in what ways does collaboration exist within the ECCE mixed delivery system?
2. To what extent does collaboration happen only within silos in each agency?
3. Where and in what ways does collaboration need to be established or strengthened within the ECCE mixed delivery system?
4. What are the barriers and facilitators of collaborations in the ECCE mixed delivery system?

¹ For a detailed description of the mixed delivery system and its core components, please refer to *Needs Assessment of Michigan's Prenatal through Age Five Mixed Delivery System*: https://www.michigan.gov/documents/mde/MI-PDGB5-Needs-Assessment-508_708036_7.pdf.

THE STUDY INVITED 1,022 INDIVIDUALS IN THE MICHIGAN ECCE MIXED DELIVERY SYSTEM TO TAKE THE SURVEY.

Program directors at MDE, MDHHS, LARA, and DTMB identified staff who worked in the early childhood system to complete the collaboration survey. The study team sent 1,022 online survey invitations; 534 staff responded (52% response rate). Some groups had higher response rates (Great Start Collaborative directors at 77%); others had lower rates (DTMB at 38%). Most groups had response rates around 50%.

The survey asked staff to (a) share their thoughts about collaboration and (b) list individuals with whom they collaborated around early childhood topics in the past 3 months. Survey participants named an additional 1,507 individuals who worked in the early childhood mixed delivery system. Because these additional individuals were named as collaborators, they were included in the analyses to understand where and in what ways collaboration exists within the ECCE mixed delivery system, making a total sample size of 2,528 individuals. Note that because only 16 DTMB staff were included in the study sample, findings related to DTMB staff may not accurately reflect collaborations within or across DTMB.

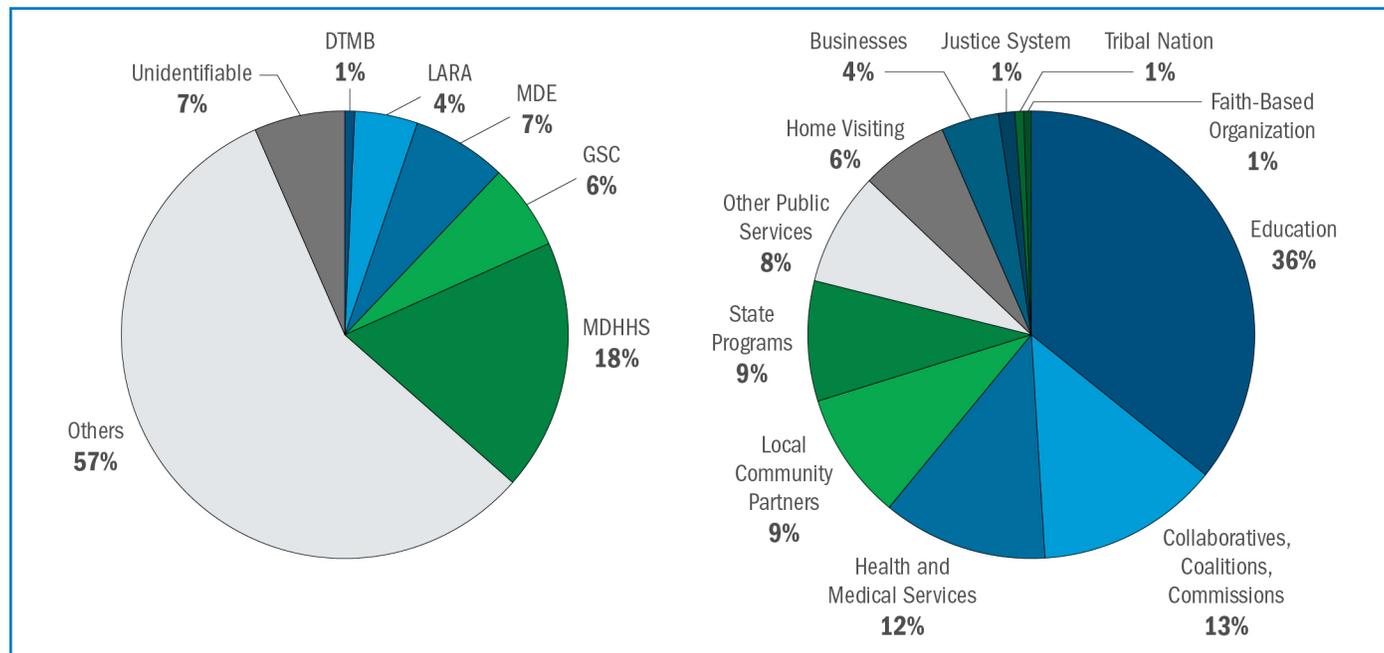
The study team used the survey responses to map the ways in which staff collaborate, creating a social network map with bidirectional relationships. The social network analyses identified all of the connections across staff in four areas of collaboration: communication, information sharing, problem solving, and understanding of each other’s professional knowledge and skills. All of the analyses in this report share the overall connections, regardless of collaboration type.

Who was in the early childhood social network?

The early childhood care and education mixed delivery system included 2,528 staff from government agencies as well as community partnerships.

More than half of the staff identified in the social network analysis came from nongovernment organizations or community partners (1,440 or 57%); the rest were from government agencies (922 or 36%). Nongovernment entities included intermediate school districts (ISDs), health providers, mental health service providers, and early learning and care programs (Exhibit 2). A small percentage (166 or 7%) of individuals in the social network did not have an identifiable affiliation.

Exhibit 2. Staff included in the ECCE social network analysis included government agency staff and community partners.

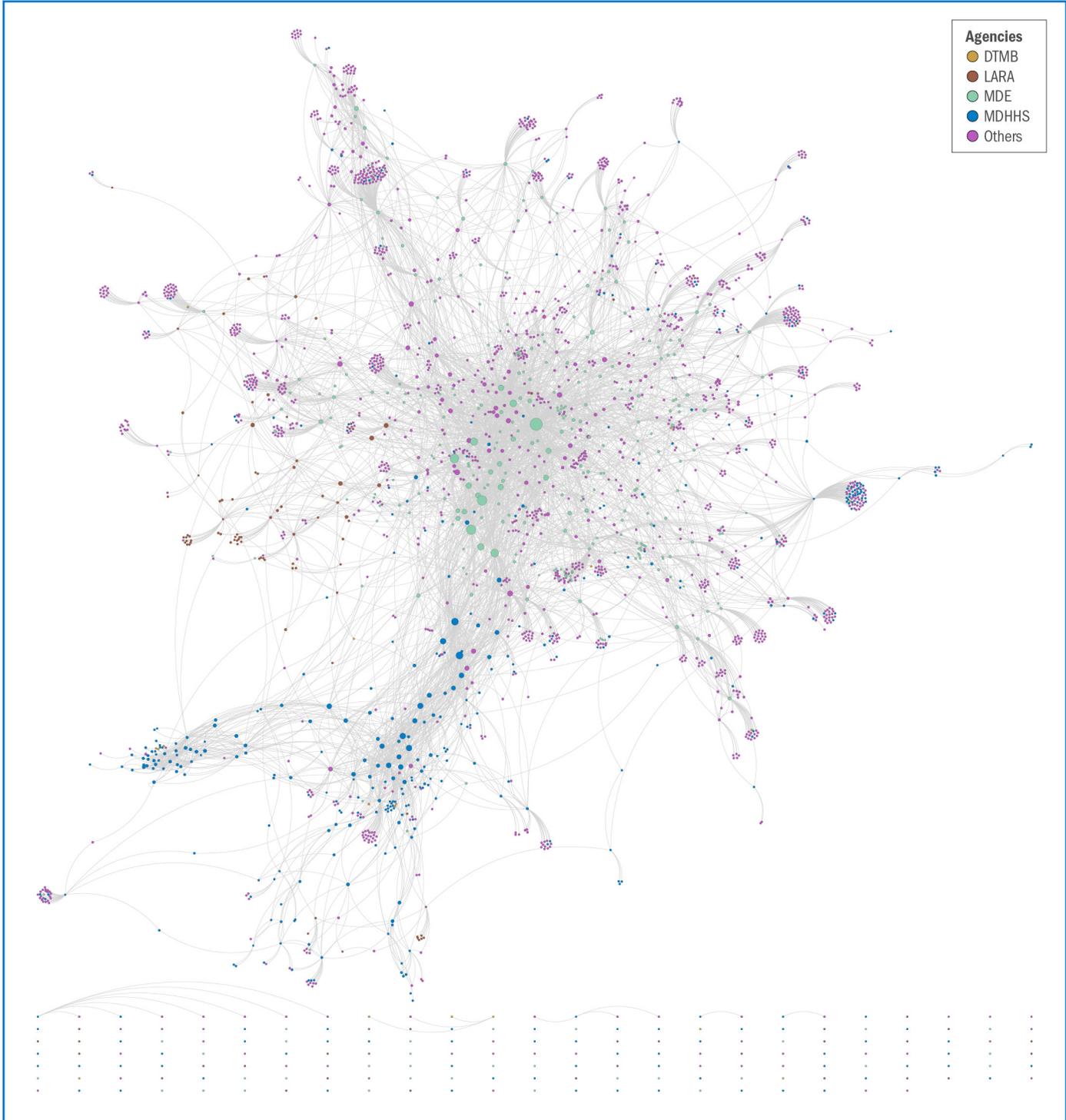


Note. The Education category includes preschool (9%), K-12 (23%), and higher education (4%).

Individuals within the ECCE mixed delivery system identified more than 5,000 collaborative relationships.

Exhibit 3 depicts the ECCE mixed delivery system, representing each person as a node or dot and each connection with a line. The larger the node, the more connections that person has within the network. A total of 5,485 collaborative relationships were identified.

Exhibit 3. The study identified more than 5,000 collaborative relationships among 2,528 individuals.



Note. Each node represents a person, and the size of the node represents total number of collaborators; the bigger the size, the more collaborators that person has. The minimum number of collaborators is 0; the maximum is 55.

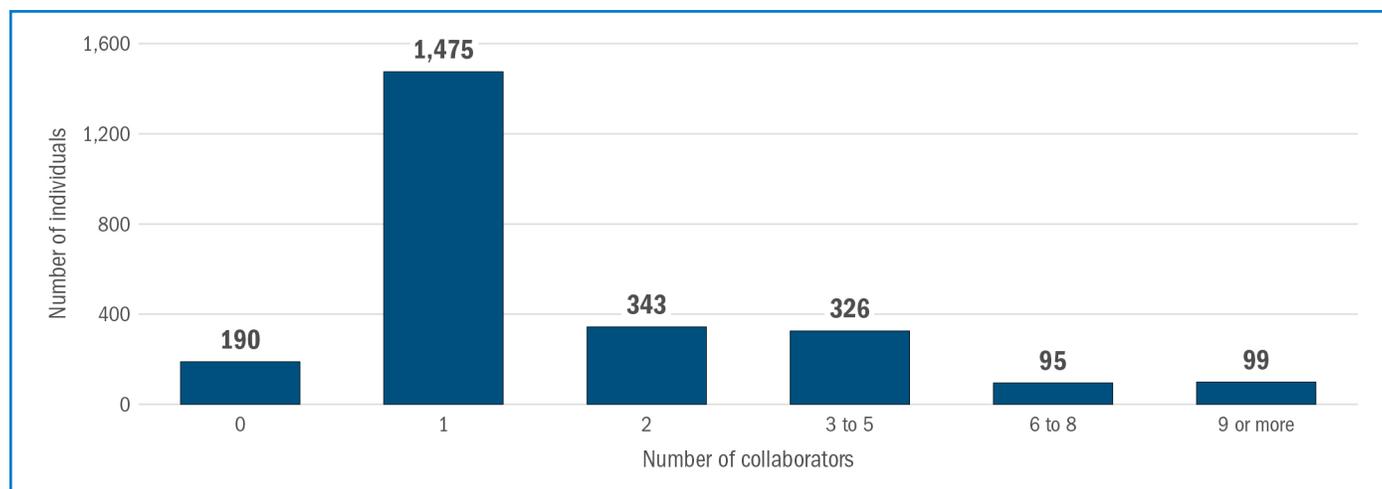
Where and in what ways does collaboration exist within the ECCE mixed delivery system?



On average, an individual was connected to two other people in the Michigan ECCE mixed delivery system.

On average, staff were named by 2.2 other individuals as someone they had communicated or worked with in the last 3 months (with a standard deviation of 3.3), but the number of connections ranged from 0 to 55 (Exhibit 4). More than half of the individuals in the sample (58%) were named by just one other person in the network. This finding suggests that collaboration in the broader ECCE network may be happening only in small groups or on a small scale. Overall, collaborations were sparsely distributed in the network, and many people were not collaborating with the rest of their colleagues.

Exhibit 4. More than 60% of the individuals in the sample were identified as a collaborative partner by at least one other person.



There were nearly 100 staff who served as central actors in the network, meaning they collaborated with at least nine other staff.

Most staff were nominated by just one or two other staff, but some well-connected staff collaborated with other network members.

- For example, nine or more people nominated 99 individuals (4%).
- Also, 20 or more colleagues nominated 16 individuals (1%).

The 99 staff nominated by nine or more people are central actors in the Michigan ECCE collaborative network and represent different organizations or collaborators in Michigan. Among them are five staff from LARA, 29 from MDE, 30 from MDHHS, and 35 from other organizations (including nine from the Early Childhood Support Network, five from Great Start to Quality, and three from Early On Michigan) across the network.

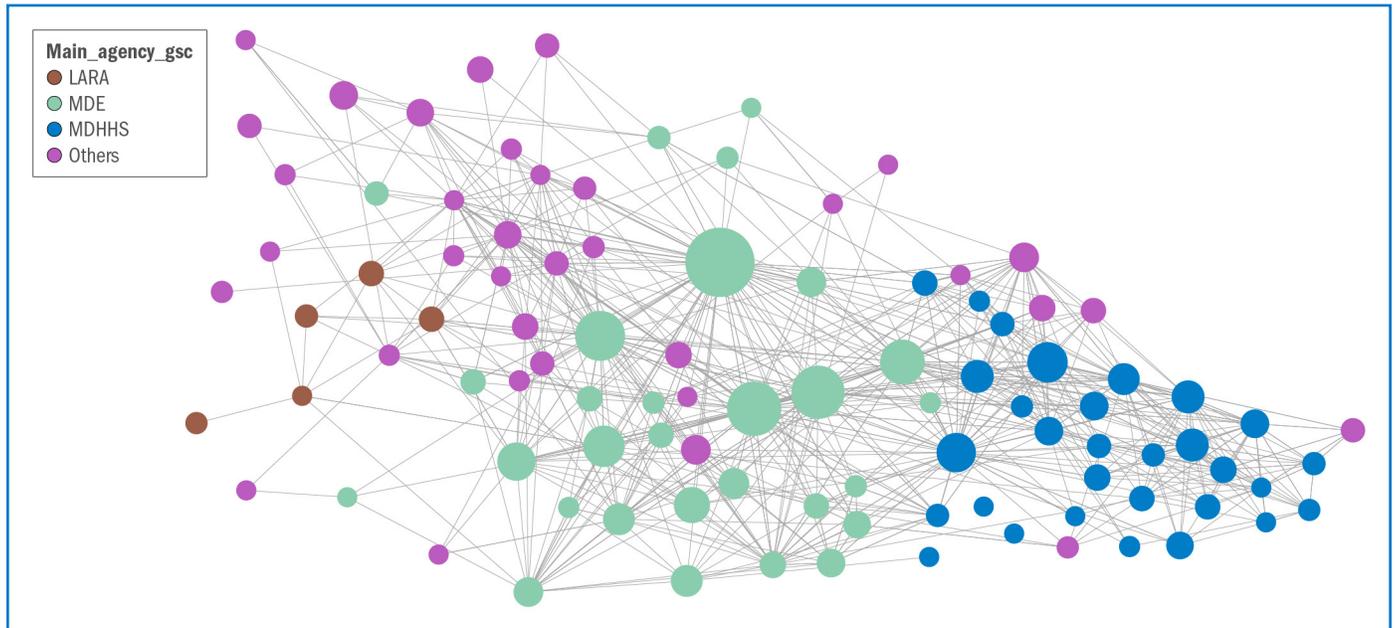
Staff nominated by 20 or more colleagues were exclusively from MDE (10) or MDHHS (six). These staff were from divisions such as Early Childhood Development and Family Education, Child Development and Care, Home Visiting, Early Childhood Health Section, Preschool and Out-of-School Time Learning, and Head Start State Collaboration. Exhibit 5

CENTRAL ACTORS

We define central actors as those who have significantly more connections than an average individual in the collaborative network. In the study, we used two times the standard deviation above the average connections as the cutoff for central actors.

shows how the 99 central actors, which are color-coded by agency, collaborated with one another in the network. Exhibit 5 depicts each central actor with a dot; the larger the dot, the more connections that staff member has in the network.

Exhibit 5. There were 99 central actors in the Michigan ECCE collaborative network.



Note. The size of the node represents the total number of nominators; the bigger the size, the more nominators. The maximum number of nominees is 55; the minimum is nine. This sociogram reflects only a small portion of the larger network depicted in Exhibit 3.

Among the 99 central actors, 41 served as liaisons and had strong connections within and outside of their agency.

Of all the central actors, 41 staff had strong connections across agencies, indicating they may serve as liaisons across those agencies. These staff are well-connected not just within their agency or division but also across agencies serving children and families in Michigan, effectively connecting the cross-agency collaborative network. Among these 41 liaisons, 16 were from MDE (one analyst, three consultants, two coordinators, seven directors, two managers, and one specialist); four from MDHHS (two consultants, one coordinator, and one unknown role²); 20 from other nongovernment agencies (one administrator, six directors, one manager, one specialist, and 11 unknown roles); and one from LARA (manager). This finding may suggest that there are critical connectors who are not part of the government agencies.



To what extent does collaboration happen only within silos in each agency (MDE, MDHHS, LARA, and DTMB)?

Although the first research question focused on describing the overall collaborative network, our second research question focused on subsets of collaborations within the network to understand how collaborations may be happening in silos. In this section, we outline a few key findings that help answer this question.

² Role is “unknown” if the participant did not take the survey or did not report their role/title in the survey.

Within-agency collaboration was more common at LARA and MDHHS, while MDE had similar within- and cross-agency collaboration.

The social network analyses made clear that the system includes collaboration both within government agencies (e.g., MDE staff collaborated with other MDE staff) and across them (e.g., MDE staff collaborated with MDHHS staff or with community partners and vice versa; see Exhibit 6). First, we found that within-agency collaboration varied by agency. For example, of all the connections among MDE staff, 42% were with other MDE staff. Conversely, this means MDE staff often collaborated with community partners (44%; Exhibit 7). However, at MDHHS and LARA, the pattern was different: More than two thirds of MDHHS staff connections occurred with other staff within the agency (Exhibit 6). This finding might be explained by the fact that MDHHS is much larger than MDE and cross-division collaborations may be essential to complete their work, or it might be a product of the strong collaboration between MDE and Great Start Collaborative (GSC) staff; however, more research is needed to understand why this occurred.



Exhibit 6. Most collaboration happened within agency for LARA and MDHHS, with the exception of MDE, where staff collaborated more often with community partners.

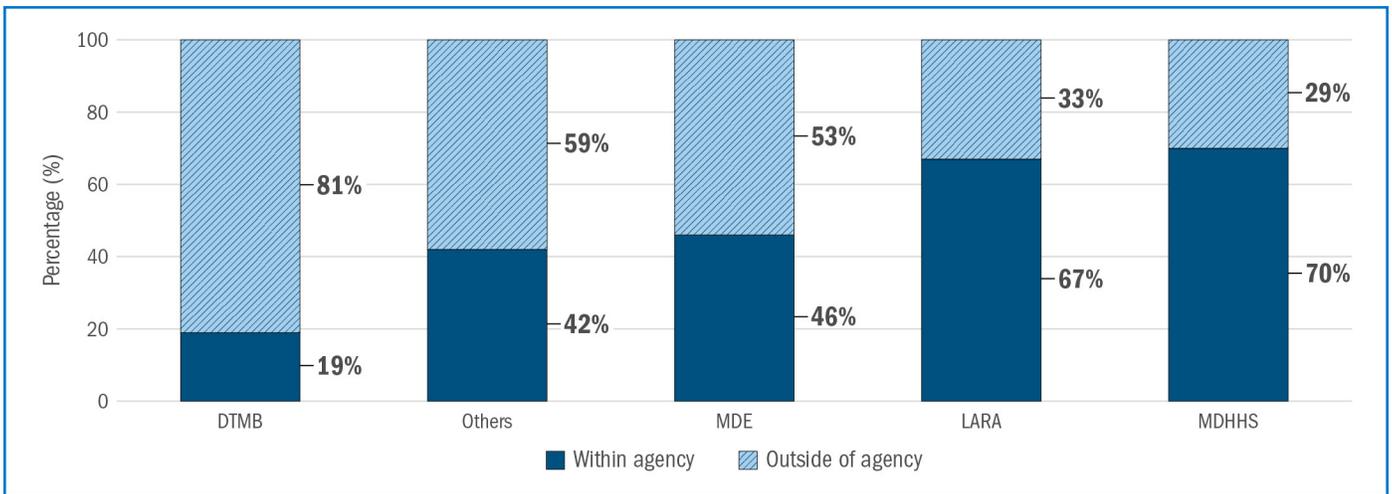
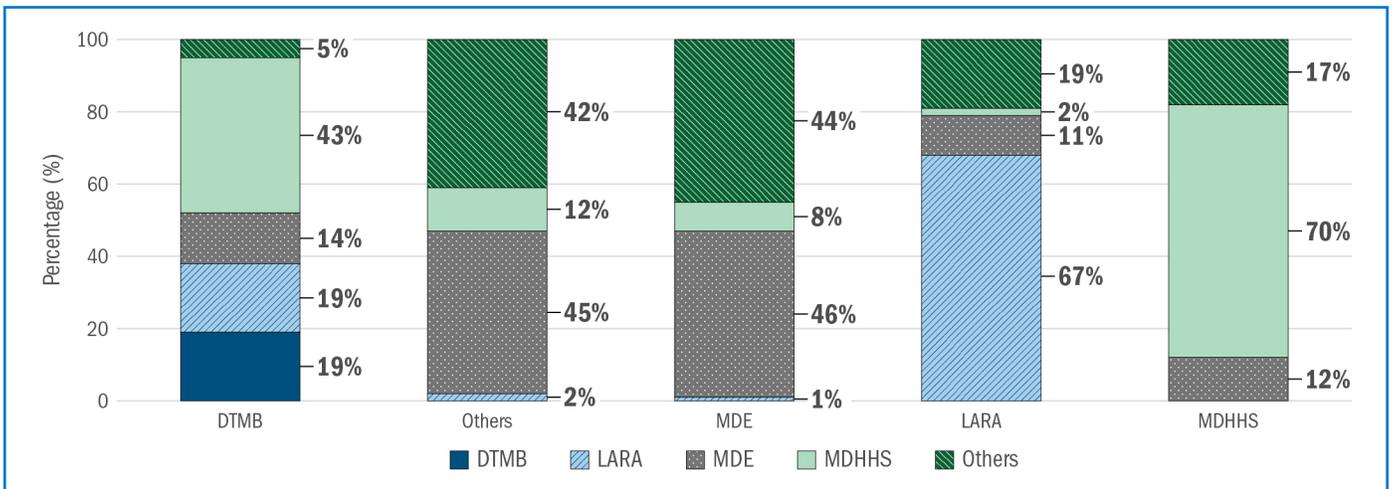


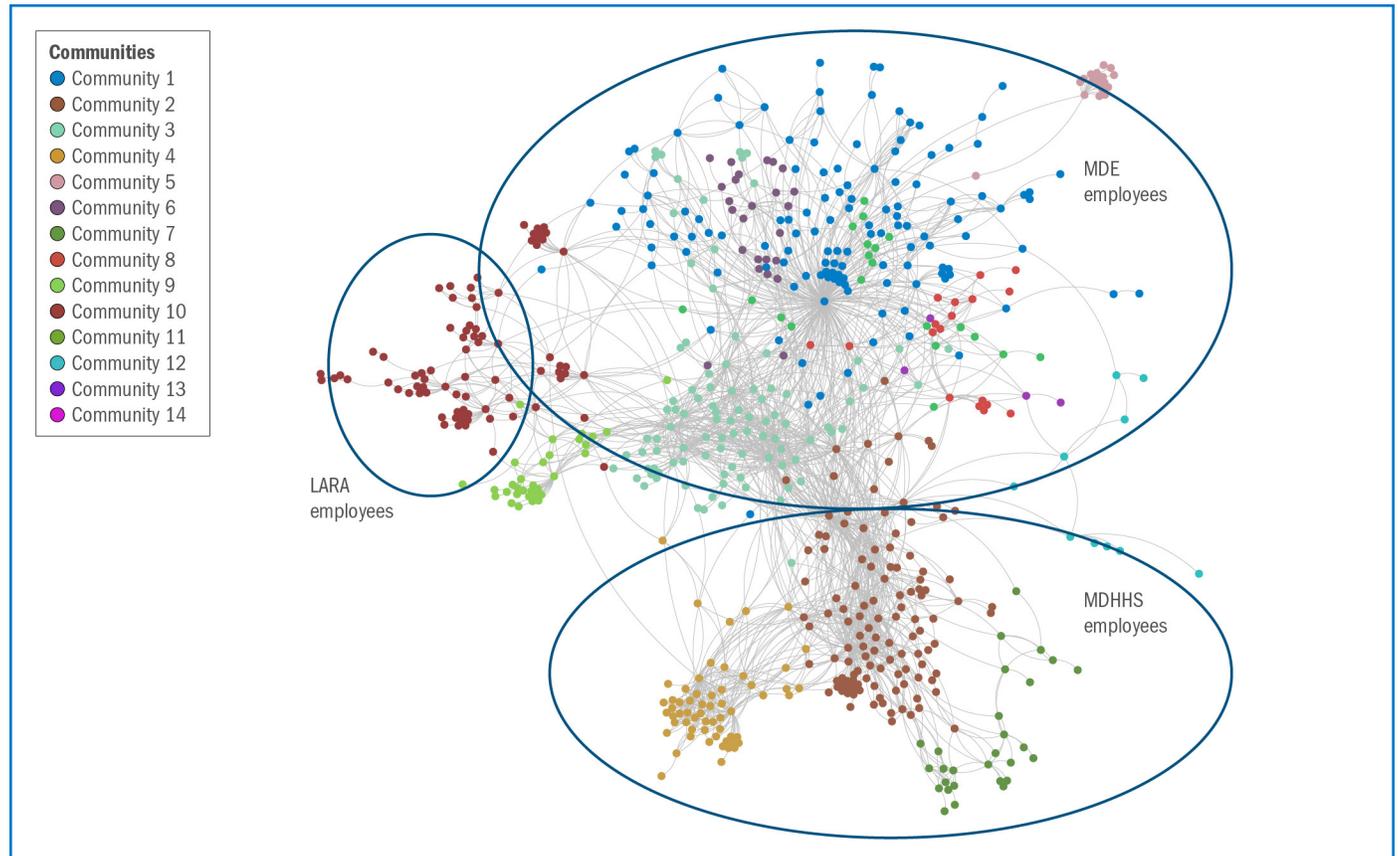
Exhibit 7. Detailed patterns of cross-agency collaboration suggest the relationships between MDE and MDHHS could be strengthened.



There were 14 communities of collaboration within the ECCE mixed delivery system, suggesting clusters of strong collaboration.

We also examined smaller communities of collaborative staff within the overall social network and found 14 communities of collaboration (Exhibit 8). Eleven of these communities were within-agency collaborations (e.g., all or most staff were from either MDE or MDHHS), and three represented cross-agency partnerships (where staff in the group came from multiple agencies or divisions).

Exhibit 8. There were 14 communities of collaboration across the Michigan ECCE social network.



In addition, these communities tended to overlap with divisions or service areas within an agency. For example, Community 1 represented the GSCs and included nearly all GSC directors and parent liaisons (94 of 98 members) and four other MDE staff. Community 4 represented the childcare licensing community at LARA, and Community 5 represented the Women, Infants & Children (WIC) staff within MDHHS. We also found some communities with cross-division collaborations within an agency (e.g., Communities 2 and 3), where staff from multiple divisions or program areas work together in a community.

Three communities included staff from multiple agencies (Communities 4, 8, and 9) and represent collaborations between GSC and the division of services to children and families at MDHHS or collaboration between GSC directors and child welfare staff at Children's Services Agency (CSA). These communities suggest that GSC is an effective way to build cross-agency

GROUPING INDIVIDUALS BY COLLABORATION

The analysis used the Louvain method for community detection to extract communities from large networks. The algorithm was set to randomly group individuals within a network and iteratively optimize the grouping solutions by maximizing the density within a group; at the same time, it would minimize connections between groups until the model reached the best possible grouping for the network. For this analysis, we excluded the 190 individuals not named by any survey participants.

collaboration, centered on a key topic in early childhood (e.g., family-facing services or child welfare/foster care prevention or support).

Other communities were location-based, such as Community 10, where most of the members were from Jackson County. Most members in Community 11 were from Saginaw, Clare-Gladwin, and Gratiot-Isabella Counties.

The findings indicate communities of strong collaborations within the Michigan ECCE system. Many of these communities tended to overlap with divisions or service areas within an agency, or they tended to share similar geographic locations. Although these small communities do not necessarily indicate silos, they may suggest the need to form more cross-agency, cross-division collaboration communities. For example, collaborations can be established or strengthened between WIC employees and colleagues from other health, childcare, and education divisions to provide more holistic and cohesive support to children and their families. Exhibit 9 shows the agencies and divisions with the highest concentration of staff by each community.

Exhibit 9. There were 14 communities of collaboration within the social network, including within-agency and cross-agency collaboration.

Community	DTMB	LARA	MDE	MDHHS	Leading Agency	Leading Divisions or Programs
Community 1: GSCs*	2	2	98*	28	MDE	Great Start Collaborative
Community 2: MDHHS Cross-Division Collaborations (Maternal and Infant Health, Early Childhood Health, Lead Services, Many Others)*	3	0	8	108*	MDHHS	Division of Maternal and Infant Health, with many other divisions
Community 3: MDE Cross-Division Collaborations (Preschool & Out-of-School Time Learning and Early Childhood Development & Family Education)*	0	3	72*	19	MDE	Preschool & Out-of-School Time Learning and Early Childhood Development & Family Education
Community 4: Childcare Licensing	1	54*	10	14	LARA, MDE, MDHHS	Childcare Licensing Bureau
Community 5: WIC*	3	0	1	55*	MDHHS	WIC
Community 6: MDE (Child Development & Care)*	0	1	26*	5	MDE	Child Development & Care
Community 7: MDHHS (Newborn Screening)*	0	0	0	28*	MDHHS	Newborn Screening Section
Community 8: GSC and Division of Services to Children & Families Collaboration	0	0	17	8	MDE, MDHHS	GSC and Division of Services to Children & Families
Community 9: GSC and CSA Collaboration	0	0	11	9	MDE, MDHHS	GSC and CSA
Community 10: Jackson County GSC*	0	0	18*	0	MDE	GSC (Jackson County)
Community 11: Saginaw County and Clare and Gladwin Counties GSCs*	0	0	14*	4	MDE	GSC (Saginaw County; Clare-Gladwin County; Gratiot-Isabella; Bay-Arenac; Midland)
Community 12: MDHHS Small Cluster*	0	0	0	10*	MDHHS	CSA
Community 13: MDE Small Cluster 1*	0	0	3*	1	Too small; interpret with caution	
Community 14: MDE Small Cluster 2*	0	0	2*	0	Too small; interpret with caution	

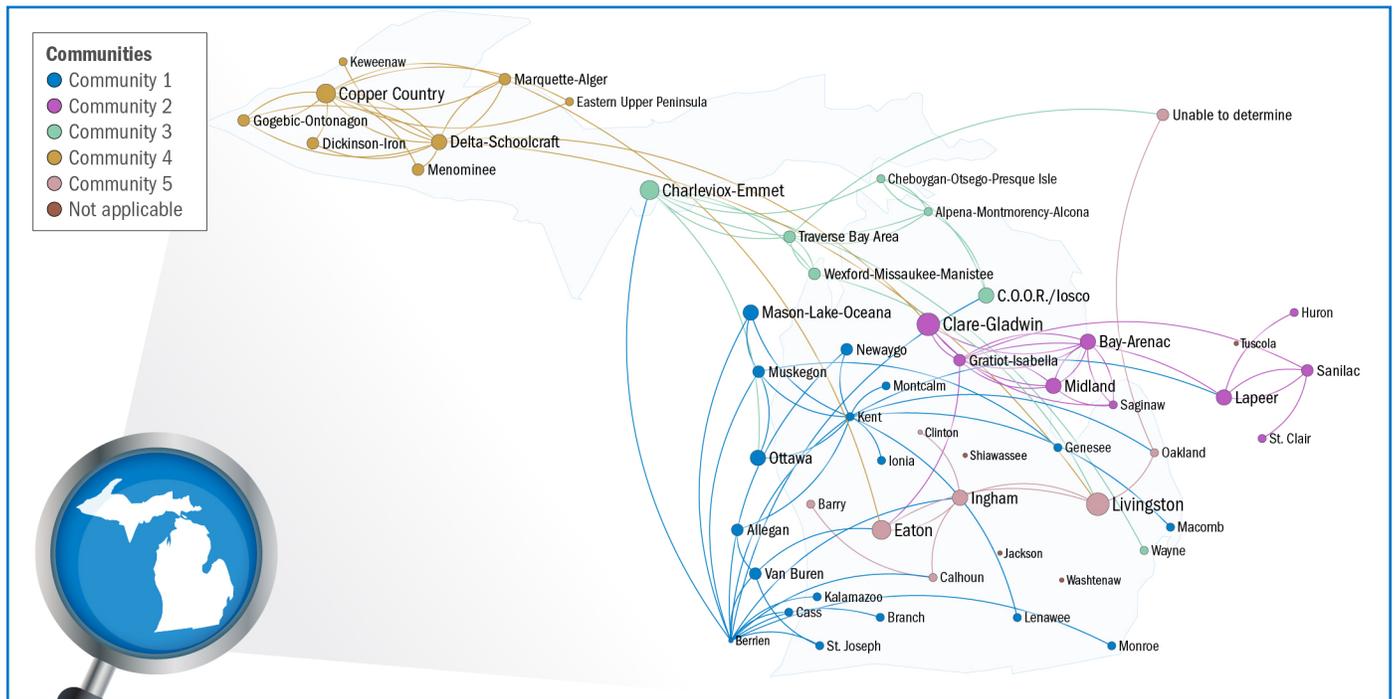
Note. Numbers are individuals. Asterisks (*) indicate that more than 75% of the employees were from the same agency. Information in the Leading Divisions or Programs column was based on data from approximately half of the participants who reported their divisions or programs and should be interpreted with caution.

Great Start Collaboratives also partnered with each other within the ECCE mixed delivery system.

The analysis described previously suggests that GSCs emerged as an effective collaboration strategy connecting staff across the state. In addition, GSC members tended to collaborate more often with members from other nearby counties.

In this analysis, we aggregated GSC members to the county level, assigned them to the approximate geographic location on a map, and applied the same grouping method described previously to identify communities (Exhibit 10). We found five communities of collaboration in different quadrants on a map.

Exhibit 10. Great Start Collaborative directors and parent liaisons worked together to form cross-county partnerships.



Note. The size of the node represents the total number of collaborative relationships; the bigger the node, the more connections among the GSCs.

- Community 1 included Berrien and Kent Counties as well as many other GSCs that were nominated by either Berrien or Kent. However, very few of these relationships were reciprocal.
- Community 2 represented reciprocal collaboration in the central and eastern region of the state, including the Bay-Arenac, Clare-Gladwin, Midland, Gratiot-Isabella, and other GSCs.
- Community 3 captured reciprocal collaboration in the Traverse Bay area, with GSCs partnering across Charlevoix-Emmet, Traverse Bay, Cheboygan-Otsego-Presque Isle, Alpena, and other GSCs.
- Community 4 captured reciprocal collaborations among Eaton, Ingham, and Livingston GSCs. This community was also connected to Community 5 through an Eaton/Copper County connection.
- Community 5 captured collaboration in Copper County and Delta-Schoolcraft with many other nearby GSCs participating in the partnership.

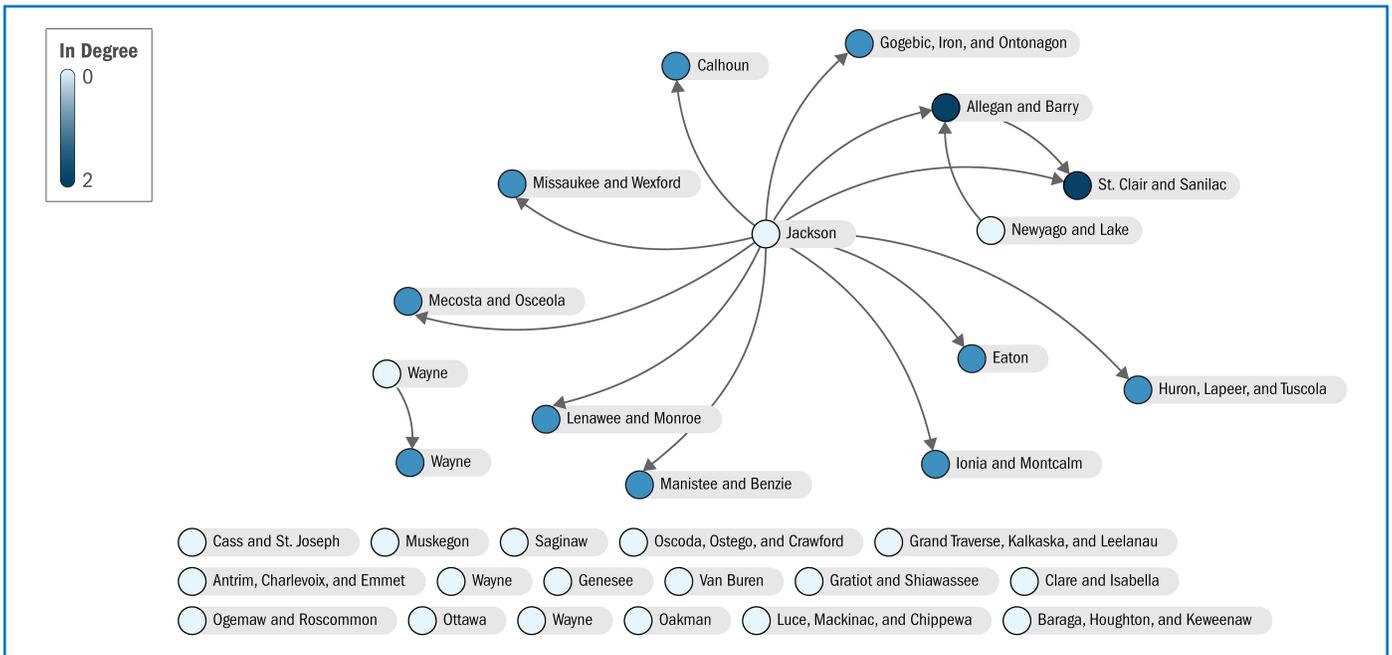
Cross-county Children's Services Agency collaboration may need to be strengthened.

AIR also analyzed responses from 68 CSA county directors to understand the ways in which they work together to support families and prevent entry into foster care. Of the 68 directors, 32 responded to the collaboration survey. Using these data, AIR conducted a social network analysis with just the county directors to understand how much collaboration exists across counties. However, we found little collaboration across county directors (see Exhibit 11). This social network revealed that county directors rarely nominated each other as collaborators. The maximum number of connections across directors was only two. The directors of St. Clair and Sanilac Counties and Allegan and Barry Counties each were nominated



by two other directors. However, most county directors were not nominated by any other directors as someone with whom they collaborated and are represented as single nodes at the bottom of the map. Other directors were nominated only once, all by the director in Jackson County (the node in the middle of the map). However, if the Jackson County director is excluded from the map, few connections remain among the other county directors. This finding suggests that very little collaboration occurs across CSA county directors. Instead, county directors appear to collaborate more closely with other local groups within their counties (e.g., school districts, direct mental and behavioral health agencies, larger multiservice human service organizations). (See the Child Welfare assessment brief for more information.)

Exhibit 11. Collaboration was limited within Children’s Services Agency county directors.



Where and in what ways does collaboration need to be established or strengthened within the ECCE mixed delivery system?

Our third research question focused on areas that may be strengthened to support collaborations in the mixed delivery system. In this section, we outline two key findings that help answer this question.

About 8% of staff did not collaborate with others in the network.

As shown in Exhibit 12, 190 (8%) of the 2,528 members of the network were not named by any members as collaborators, suggesting isolation within the mixed delivery system. Isolated staff were most commonly from CSA, WIC, Childcare Licensing Bureau, or the Child and Adult Care Food Program; the rest were dispersed across the network (Exhibit 12). This finding may suggest that some divisions, such as CSA or WIC, may be more isolated than others in the network. More collaborations could be established for these divisions to better serve children and families.

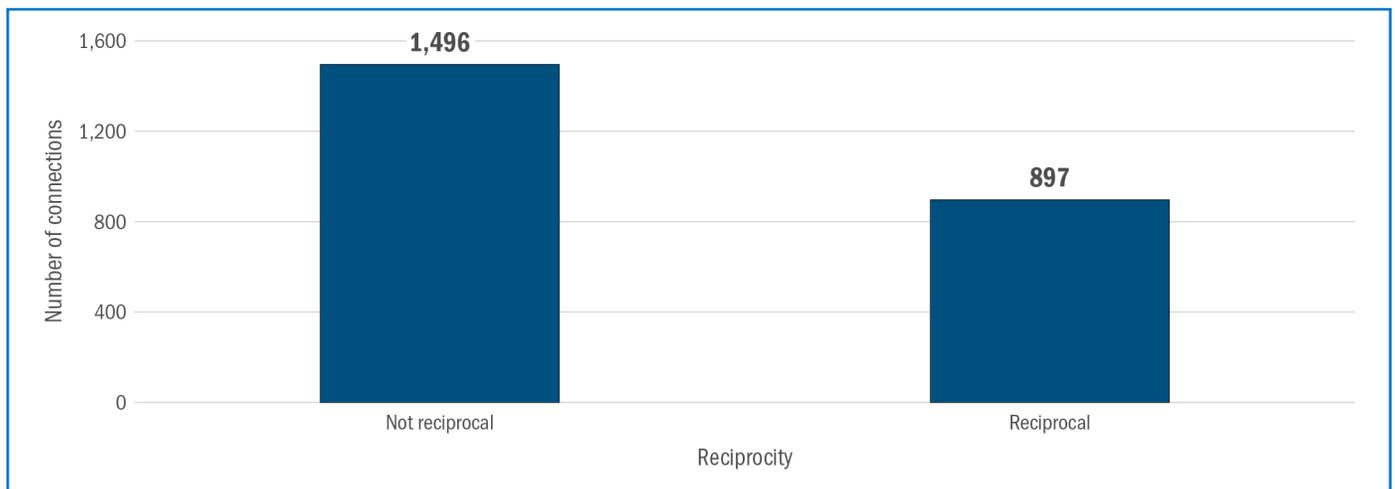
Exhibit 12. There were 190 individuals who were isolated from the network.

	Agency						Total
	MDHHS	LARA	MDE	DTMB	ECSN	Other	
Number of Isolated Individuals	76	36	34	5	5	34	190
Most Common Divisions	CSA (35), WIC (9)	Childcare Licensing Bureau (36)	Child and Adult Care Food (10), Child Development & Care (7), GSC (5)	Division name not provided	Division name not provided	Division name not provided	

Among the 534 survey respondents, reciprocal connections may need to be strengthened.

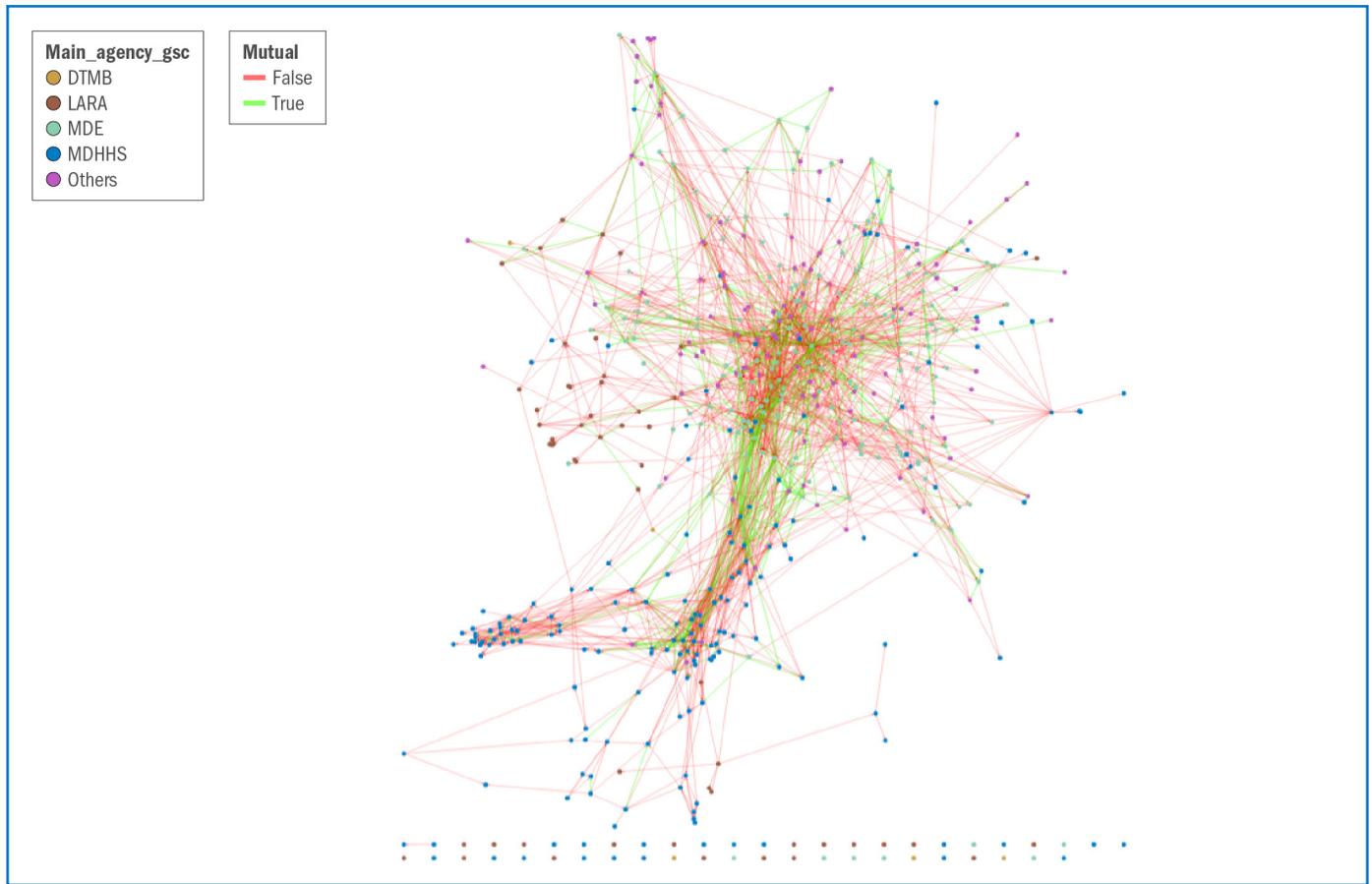
The connections we measured were bidirectional. For example, these connections can be one sided (i.e., Taneisha says she works with Marsha, but Marsha does not name Taneisha as someone she works with) or reciprocal (i.e., Taneisha says she works with Marsha, and Marsha says she works with Taneisha). Reciprocity is the extent to which connections are bidirectional. Although not all connections need to be bidirectional (e.g., sharing information), collaboration requires working together in a mutually beneficial manner. Therefore, reciprocity in the data can indicate a strong collaborative relationship. To better understand reciprocity, we examined a subsample of 534 participants who responded to the survey. In this sample, every participant had the opportunity to nominate another individual in the network as a collaborator, a prerequisite to measure bidirectional connections. In the data, 2,393 collaborative connections were reported among the 534 participants, with most connections (63%) not reciprocal; 37% of the connections were reciprocal. Exhibit 13 depicts the number of reciprocal and nonreciprocal connections.

Exhibit 13. Reciprocity was low among connections.



Moreover, reciprocal connections happened more among colleagues within the same agency (545 connections, 61%) than across agencies (352 connections, 39%). Reciprocity is also depicted on a social network map in Exhibit 14.

Exhibit 14. Social network map indicates low reciprocity in the Michigan ECCE social network (by agency).



Note. Green line indicates a reciprocal connection; red line indicates a nonreciprocal connection. $N = 534$.

What are the facilitators and barriers of collaborations in the ECCE mixed delivery system?

In the survey, we included a questionnaire that focused on general collaboration contexts (i.e., benefits, shared goals, resources, barriers, communication, and trust) that may be used to explain facilitators of collaboration in the ECCE mixed delivery system, as well as barriers to them. The last research question focuses on participants' responses to the questionnaire about what they think of the collaboration in the ECCE mixed delivery system.

Study participants reported both facilitators and barriers of collaboration.

In November 2021, we submitted a brief that focused on the analysis of the questionnaire data. We summarize the responses to the questionnaire in this section.

Potential Facilitators

- Almost all sampled participants understood the benefits of collaboration.
- Staff were well-informed about information within their agency and within their area.

- Participants noted strong communications from the leadership team.
- Staff have a lot of respect for the other people and agencies serving children ages 0–5 and generally think people trust each other.



Potential Barriers

- A clear understanding is needed of what other agencies serving children ages 0–5 are trying to accomplish.
- More resources, including time and funding, are needed to support cross-agency collaboration.
- Staff are not well informed about information outside of their agency.
- About three in 10 staff said structural barriers discourage them from collaborating with others.

Conclusion

The study team found evidence of collaboration throughout the Michigan ECCE mixed delivery system. More than 90% of people in the network had at least one collaborator, suggesting that collaboration is common among state government agencies and nongovernment partners. However, the level of collaboration tended to be low, with an average of two collaborators per network member. Conversely, although most people have one to three collaborators, a small cluster of members had more than nine collaborators, a significantly higher number than average. These people, a majority of whom were from MDE and MDHHS, are what we called central actors who played a significant role in connecting members throughout the ECCE network.

Findings also suggest that people form communities of collaboration across the ECCE mixed delivery system. Although within- and cross-agency collaborations were found in the network, within-agency collaboration was more common for MDHHS and LARA employees. Network members tended to work together based on commonality, such as shared division or location. Among staff who were connected across agencies, GSCs emerged as an effective collaboration strategy. A small number of network members—including staff from CSA, WIC, Childcare Licensing Bureau, and the Child and Adult Care Food Program—were isolated from the collaborative network.

Findings from the questionnaire suggest that respondents want more collaboration across divisions to better serve children and families. However, insufficient time emerged from the findings as an obstacle to cross-agency collaboration. Information sharing among agencies also was identified as an area to be strengthened.



1400 Crystal Drive, 10th Floor | Arlington, VA 22202-3289 | 202.403.5000
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