COLORADO
REGIONAL HEALTH CONNECTORS

A Social Network Analysis of the Regional Health Connectors

EXECUTIVE SUMMARY

Regional Health Connectors (RHCs) are an innovative workforce serving the entire state of Colorado since 2017. Twenty-one RHCs work in 21 distinct regions to ensure that the right systems and clinical and community-based resources are in place to help Coloradans live their healthiest lives.

RHCs do this by connecting primary care providers and local partners to promote health both within and outside of traditional medical settings of care.

Networks are a key piece of this work. RHCs develop and strengthen networks of partner organizations that include providers, government agencies, community-based groups, and others working to improve the health of Coloradans.

These networks not only strengthen the connections between providers and local partners, but are leveraged to coordinate activities to reduce gaps in the health system and integrate clinical and community-based strategies to address local health priorities.

Because the success of RHCs is intimately tied to the success of these networks, the RHC program regularly evaluates network strengths and areas for improvement. Methods from the field of social network analysis are used to understand how the partner organizations within RHC networks work with both the RHCs and one another.

This analytic approach was first applied to the RHC program in 2017. It was repeated in 2018 to understand how RHC networks continue to grow and evolve. This report from the Colorado Health Institute (CHI) outlines findings from this analysis. CHI and Trailhead Institute co-developed the RHC program, with funding from the Colorado State Innovation Model and EvidenceNOW Southwest.

Survey responses from nearly 500 organizational partners provide insights into the complexity of networks across the state, the role played by RHCs in developing these networks, and what has changed since 2017. The survey found that:

Partner organizations valued the contributions of other organizations within their RHC networks more in 2018 than they did in 2017. As the RHC program has matured, organizations report finding greater value in their partners' power and influence, level of involvement, and resource contribution. As in 2017, partners reported higher levels of trust and value in relationships that the RHCs had helped to create or strengthen.

The work of RHCs and partner organizations within their networks is becoming more intertwined. In 2018, 97 percent of partner organizations reported that they were involved in RHC work, and 88 percent reported that RHCs were involved in the work of their organization or department. This is up from the 2017 rates of 93 percent and 82 percent, respectively.

Most partner organizations strongly value the presence of an RHC in their region. More than 300 partner organizations (75 percent) said their region needs an RHC. When asked specifically about the value of RHCs in their region, partner organizations emphasized the increased knowledge and access to resources that RHCs provide. They also cited improvements in cross-sector communication — of the nearly 3,000 connections that partner organizations say were created or deepened by the RHCs, most (65 percent) crossed sectors.

The survey suggests that RHCs play a valued role in the work of partner organizations within their networks and have facilitated cross-sector relationships in their regions. This report offers a deeper dive into these and other findings that are key to understanding the RHC networks.

Background on the RHC Program and Social Network Analysis

Introduction

The Regional Health Connector program is based on the idea that a better-connected health system can help improve the well-being of all Coloradans. Primary care, behavioral health, public health, social service, and other community organizations share many goals, but often don't have established ways to connect. That's where Regional Health Connectors come in.

RHCs connect primary care providers and local resources to ensure communities have systems that include and extend beyond clinics. The RHC program launched in 2015 in one region, and reached full force in 2017 with RHCs in 21 regions.

Since 2017, RHCs have created or deepened nearly 3,000 relationships among organizations across sectors in every region of Colorado. The organizations in their networks report that the RHCs are valued and trusted partners who increase access to information and programs, reduce health disparities, and create needed systems-level and policy change in their regions. And three-quarters of organizations that partner with RHCs say that this workforce — which did not exist just four years ago — is necessary in their region.

How are we able to track these relationships and perceptions? Social network analysis, an evidence-based approach to answering questions about networks of people and organizations, is a powerful tool to understand complex networks like those developed by RHCs.

Since 2017, the RHC program has partnered with Visible Network Labs (VNL), formerly part of the Center on Network Science, to evaluate the RHC program's networks using the Platform to Analyze, Record, & Track Networks to Enhance Relationships (PARTNER) tool. This report from CHI is based on 2018 survey responses from nearly 500 organization that partnered with RHCs across the state.

The survey found that partner organizations valued the contributions of other organizations within their RHC networks more in 2018 than they did in 2017; that the work of RHCs and partner organizations within their networks is becoming more intertwined; and that most partner organizations strongly value the presence of an RHC in their region.

This report describes the state of the RHCs' networks in 2018 and examines how they have evolved since 2017.

The Regional Health Connector Program

The RHC program is supported by two federally funded initiatives: The Colorado State Innovation Model (SIM), which is funded by the Centers for Medicare & Medicaid Services, and EvidenceNOW

Southwest (ENSW), which is funded by the Agency for Healthcare Research and Quality. SIM funding for the RHC program is administered by the Colorado Health Institute through a contract with the Colorado SIM office. ENSW funding is administered by the Trailhead Institute through a contract with the University of Colorado.

The RHC program's mission is "to improve health in Colorado by connecting the systems that keep us healthy—including primary care, public health, social services, and other community resources."

To achieve this mission, RHCs engage in four main activities:

- **Connecting** primary care with community-based behavioral health and social services;
- **Developing** unique projects to advance community health;
- **Partnering** with clinical quality improvement teams to help practices prepare for new models of care and reach their goals;
- **Recommending** reliable resources to improve health outcomes.

There are 21 RHCs in Colorado, each responsible for a region of the state (see Map 1). Every RHC is hosted by a local organization with existing relationships in the area and a history of community-based work. These host organizations are funded to help implement the RHC program. They were selected because they are familiar with the unique challenges in their region and have a history of facilitating local multisector partnerships. This experience allows host organizations to guide the RHC work in the most effective, community-led way.

More information about the RHC program, host organizations, and RHCs themselves is available online at **regionalhealthconnectors.org**

Milestones in the RHC Program

September 2015
First two RHCs hired in the metro Denver region

2016

Winter/Spring 2016
Three RHCs hired in Colorado Springs and the Eastern Plains

2017

Winter/Spring 2017
Fifteen RHCs hired across the Western Slope, Central Mountains, and the Front Range

May 2017
Twenty-first RHC hired in Jefferson County; RHCs present in every region of Colorado

Summer 2017
RHCs conduct regional assessments and develop workplans to address local priorities

Fall 2017-present
Implementation and revision of local workplans

2018

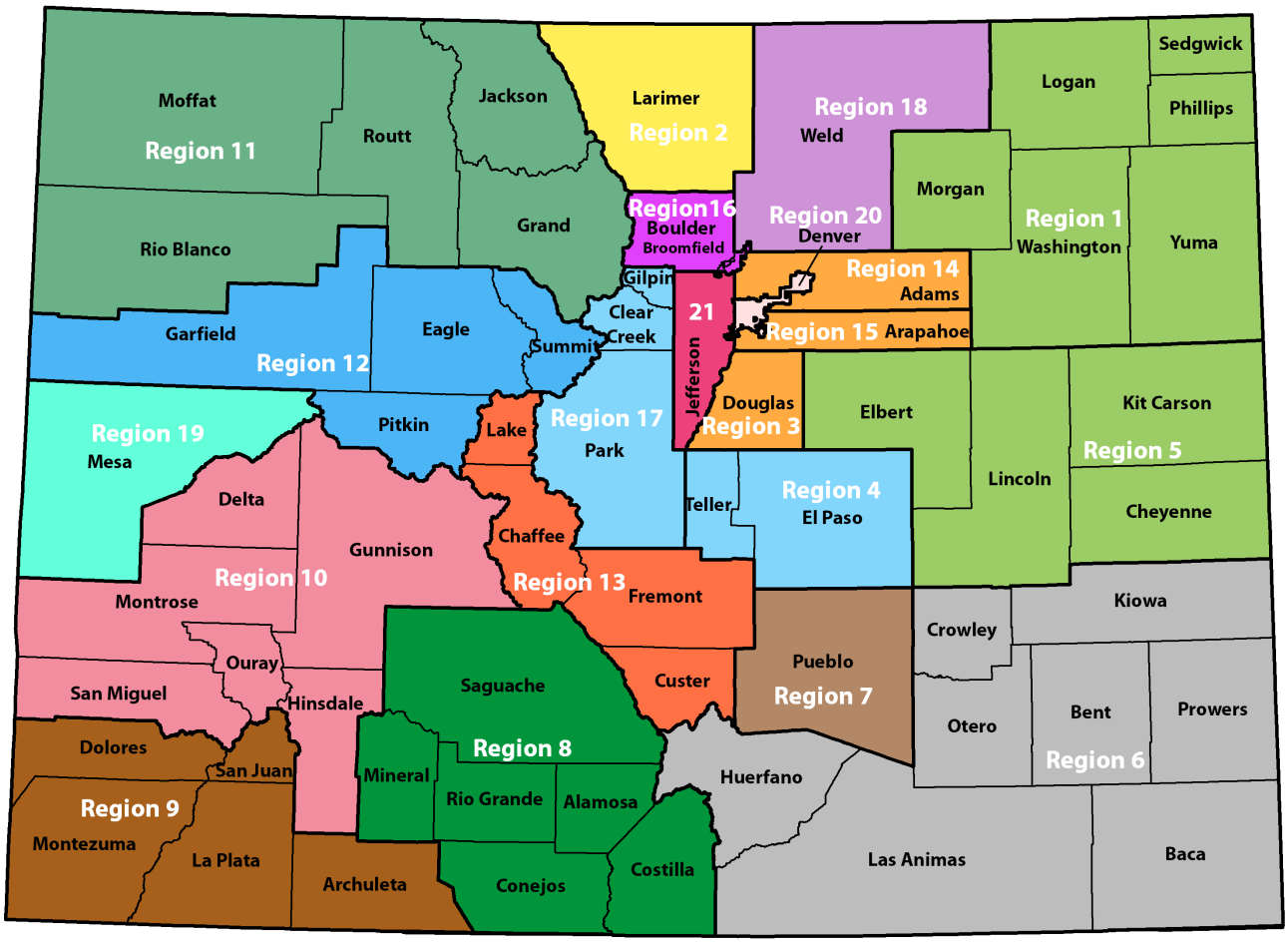
November 2017
First PARTNER survey

November 2018
Second PARTNER survey

2019

June 2019
Initial grant funding for the RHC program ends

Map 1. RHC Regions, Counties, and Host Organizations



RHC Region	Host Organization or Collaboration	Counties
1	Centennial Area Health Education Center	Logan, Morgan, Phillips, Sedgwick, Washington, Yuma
2	Health District of Northern Larimer County	Larimer
3	Tri-County Health Department	Douglas
4	Central Colorado Area Health Education Center	El Paso, Teller
5	Centennial Area Health Education Center	Elbert, Lincoln, Kit Carson, Cheyenne
6	Otero County Health Department	Baca, Bent, Crowley, Huerfano, Kiowa, Las Animas, Otero, Prowers
7	Pueblo City-County Health Department	Pueblo
8	San Luis Valley Behavioral Health Group	Alamosa, Conejos, Costilla, Mineral, Rio Grande, Saguache
9	Southwestern Colorado Area Health Education Center	Archuleta, Dolores, La Plata, Montezuma, San Juan
10	Tri-County Health Network	Delta, Gunnison, Hinsdale, Montrose, Ouray, San Miguel

RHC Region	Host Organization or Collaboration	Counties
11	Northwest Colorado Community Health Partnership	Grand, Jackson, Moffat, Rio Blanco, Routt
12	West Mountain Regional Health Alliance	Eagle, Garfield, Pitkin, Summit
13	Chaffee County Health Alliance	Chaffee, Custer, Fremont, Lake
14	Tri-County Health Department	Adams
15	Tri-County Health Department	Arapahoe
16	City and County of Broomfield Health and Human Services & Boulder County Public Health	Boulder, Broomfield
17	Central Colorado Area Health Education Center	Clear Creek, Gilpin, Park
18	North Colorado Health Alliance	Weld
19	Mesa County Health Department	Mesa
20	Mile High Health Alliance	Denver
21	Jefferson County Public Health	Jefferson

Regional Health Connector Networks

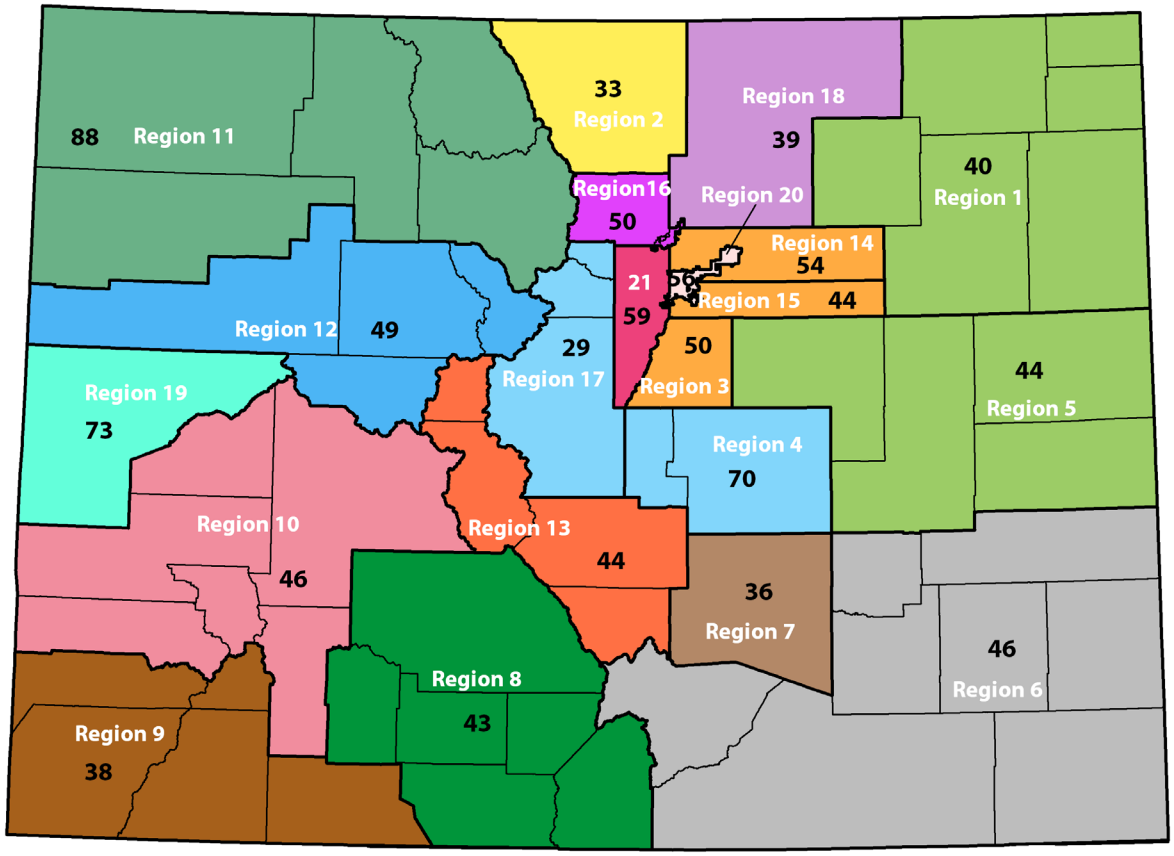
RHC networks are comprised of partner organizations in a region that are working together to improve the health of Coloradans. RHCs, in collaboration with their respective host organizations, create the list of partners whose connections define that region's network. These lists consist of key clinical or community partners that participate in RHC activities or have direct connections with one another.

These connections often form organically, though many are strategic and intentional. Many connections predate the RHC program and others were developed through an RHC. RHCs also help to strengthen existing connections. For instance, in southwest Colorado, the local public health agency has partnered with behavioral health providers and the school district to share resources about suicide prevention. The RHC in that region is now convening these partners as a suicide prevention coalition that plans community events, offers training, and influences local policies.

In 2018, RHCs identified 1,031 partner organizations that make up the 21 RHC networks — a 15 percent increase in overall network size from 2017, when 896 organizations were identified as partners. See Map 2 for a map of RHC networks and the number of key partner organizations in each.

The network lists do not represent every organization RHCs have engaged across the state: RHCs were encouraged to include between 30 and 60 organizations in their lists, chosen intentionally to reflect key partnerships and to limit the length of the survey, which increases with each key partner added to the network list.

Map 2. RHC Regions and Number of Key Organizational Partners, 2018



RHC Region	Partner Organizations Identified
1	40
2	33
3	50
4	70
5	44
6	46
7	36
8	43
9	38
10	46
11	88
12	49
13	44
14	54
15	44
16	50
17	29
18	39
19	73
20	56
21	59
Total	**1,031**

Social Network Analysis

The RHC program is using social network analysis tools from the field of network science to better understand how RHC networks develop and operate. These tools can help to answer questions such as:

- What key partner organizations are part of the RHC network?
- What are the characteristics of these relationships?
- To what extent do RHCs contribute to network change and system evolution?
- Do partner organizations feel an RHC is necessary to help them achieve their goals?

The RHC program uses the Platform to Analyze, Record, & Track Networks to Enhance Relationships (PARTNER) developed by Visible Network Labs (VNL), a social enterprise dedicated to advancing the study of networks between organizations. PARTNER includes an online survey to collect data from each partner organization and a program to analyze survey responses. The survey is multidirectional, with respondents providing data about one another as well as RHCs.

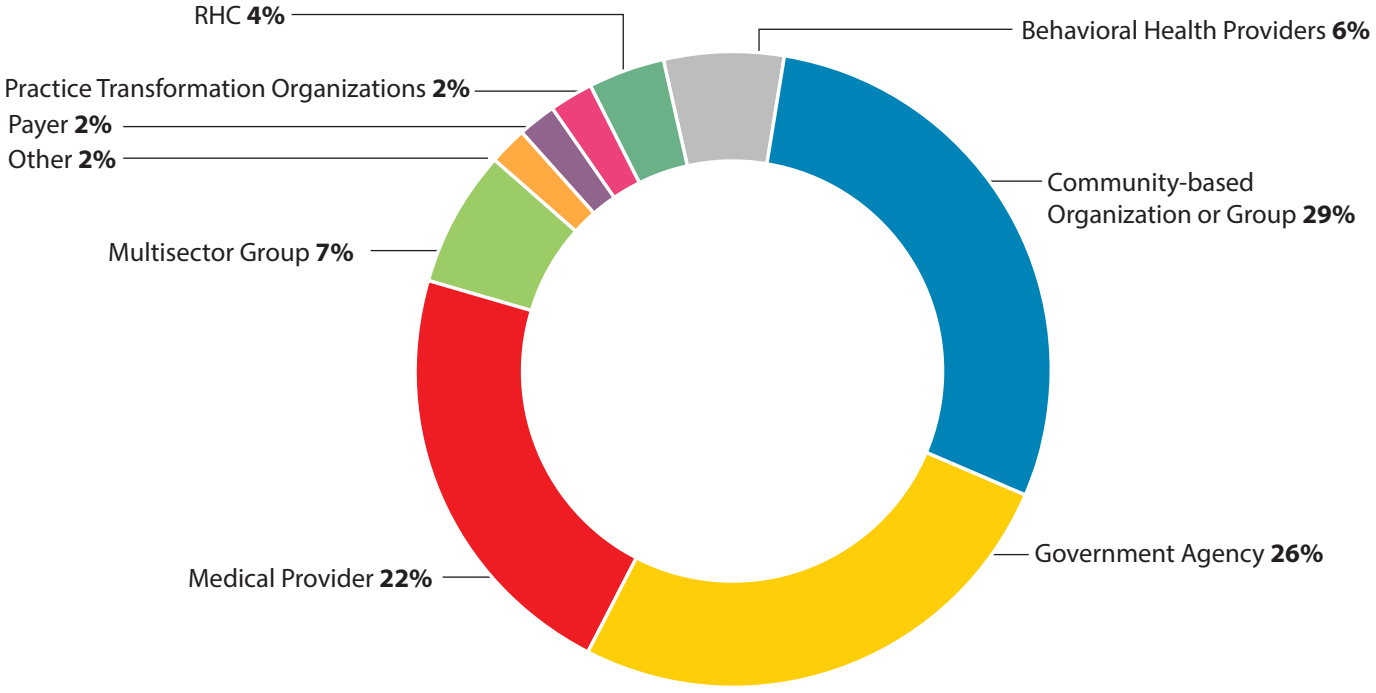
Data were collected in November 2018, about a year and a half after the RHC program was active in all 21 RHC regions. An earlier survey, administered in November 2017, serves as the baseline for much of this analysis.

Organizations responding to the PARTNER survey are asked to provide more information about the nature of these connections and how they were made. These responses allow RHCs, their host organizations, and other partners to understand key characteristics of the networks. The PARTNER tool uses four scoring metrics to characterize networks: trust, value, centralization, and density. It helps capture how RHC networks and relationships within them have developed over time. The survey also includes a space for open-ended responses from partner organizations. Information from those responses is included throughout this report to provide additional context and detail about the RHCs and their networks.

Please see the accompanying "methods" document for more detail on PARTNER and its use in this evaluation.

Figure 1. Sectors Represented by Survey Respondents, 2018

More than 1,000 partner organizations are in the RHC network and 470 provided data via the PARTNER survey in 2018. Most of the respondents were community-based organizations, government agencies, or medical providers.



Overall Network Findings

Colorado's RHC networks are comprised of over 1,000 partner organizations. These organizations include government agencies, medical and behavioral health providers, and community-based organizations. In 2018, 470 organizations responded to the PARTNER survey, a decrease from 607 respondents the previous year. Across both years, a total of 750 unique organizations responded to one or both surveys.

Like all networks studied in social network analyses, each RHC's local network consists of a set of relationships, or connections, between these partner organizations. These connections may be formal, such as contracts between providers and payers, or informal, such as community programs recommended by local public health agencies.

RHC networks are complex, with sizes ranging from 98 unique connections among partner organizations in Region 2, Larimer County, to 700 unique connections in Region 11, Grand, Jackson, Moffat, Rio Blanco and Routt counties. Across all regions, the 470 survey respondents reported 6,007 unique connections in 2018.

Of these unique connections, 4,597 (77 percent) were between partners from different sectors. RHCs focus on such connections between sectors, which can help coordinate complementary services and reduce duplication.

For example, the RHC in the Colorado Springs area connected a primary care clinic with a local food rescue, which now makes weekly fruit and vegetable deliveries to patients at the clinic. Another RHC working on the Eastern Plains is facilitating a partnership between law enforcement agencies and local behavioral health providers to offer opioid overdose reversal trainings and to explore a co-responder model.

One of the law enforcement partners involved in this project has expressed appreciation for the RHC's "ability to travel across the state and evaluate things that work and bring those philosophies to us. Also, the RHC has a set of resources that are totally new to law enforcement and can shed light on things once thought to be 'out of reach.'"

About Connections in RHC Networks

Many organizations in RHC networks have been working together for a long time, while others have developed or strengthened their relationship through their RHC. To measure the contribution of the RHC to the local network, survey respondents were asked to describe how each connection was developed. In 2018, partners reported that 31% of all connections were either developed or strengthened through the RHC. This is an increase from 23% of all connections reported in 2017.

Since 2017, partners have reported nearly 3,000 relationships that were created or strengthened through the RHCs. Most (65 percent) of these new or strengthened connections have crossed sectors, reflecting the RHC focus on facilitating multisector partnerships. For example, RHCs helped clinical care partners, such as doctors' offices and behavioral health providers, make 162 connections with community partners, such as food banks, schools, and transportation providers. And they helped systems partners, which include government agencies and insurers, make 481 connections with clinical care partners.

Table 1. New and Strengthened Relationships, 2017 and 2018

	2017		2018		Both Years, Unique Count	
New Relationships	766	10.3%	909	15.1%	1,354	12.1%
Strengthened Relationships	962	13.0%	968	16.1%	1,632	14.6%
New or Strengthened Relationships	**1,728**		**1,877**		**2,986**	
Pre-existing Relationships	5,293	71.4%	3,335	55.5%	7,116	63.5%
No Relationship or Unsure	391	5.3%	795	13.2%	1,105	9.9%
Total Relationships	**7,412**		**6,007**		**11,207**	

Note: Fewer partners responded to the survey in 2018; therefore, fewer relationships were reported overall in 2018. It is likely that the relationships reported in 2017 still existed in 2018. The unique count across both years accounts for relationships reported in 2017 that were not captured in the 2018 survey

Survey respondents across sectors have expressed gratitude for these new and strengthened connections in their responses to open-ended survey questions:

"[Our RHC] has also been instrumental in the formation of new connections in our area/ region that have helped us bring more partners and providers together working to bridge the gaps that have existed in our rural communities for so many years."

Rural government agency partner

"[The] RHC in our region has been extremely effective in making connections and driving outcomes."

Urban community-based organization partner

"[Our RHC is] helping to bridge gaps and create a network."

Rural medical provider

"RHCs are absolutely vital to health connections throughout the state."

Statewide coalition partner

"[The RHCs have] insight into each region and capacity to make connections."

Statewide behavioral health provider

Community Partners Reported:

326
New or strengthened relationships with other community partners

375
New or strengthened relationships with clinical care partners

345
New or strengthened relationships with systems partners

Clinical Care Partners Reported:

200
New or strengthened relationships with other clinical care partners

162
New or strengthened relationships with community partners

218
New or strengthened relationships with systems partners

Systems Partners Reported:

517
New or strengthened relationships with other systems partners

481
New or strengthened relationships with clinical care partners

362
New or strengthened relationships with community partners




TRUST

Trust within a network is the degree to which partner organizations view one another as reliable and honest. Trust scores are based on each organization's perception of the partners in their network with whom they have a connection. Specifically, the scores measure perceptions of whether each partner organization:

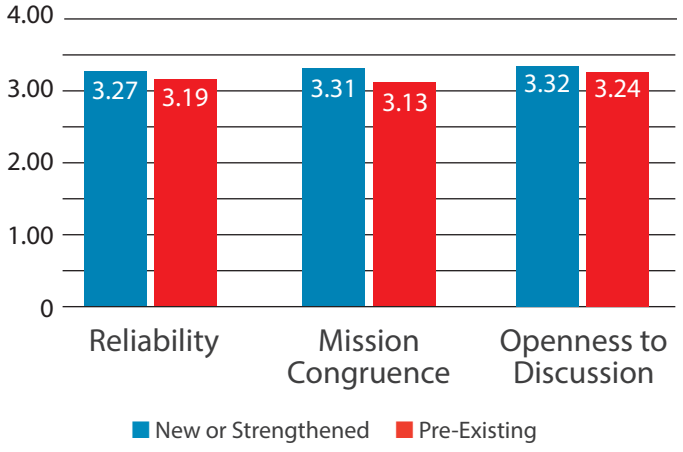
- Reliably meets commitments (referred to in this report as reliability);
- Shares in the mission to build a more connected system in the region (mission congruence); and
- Is open to frank, honest, and civil discussion (openness to discussion).

Survey respondents answer these questions for each partner organization in their network.

Table 2. Network Trust Scores by Dimension, 2018

Trust Score	Network Average	Network Range
Overall	3.25	2.77 to 3.64
Reliability	3.24	2.56 to 3.64
Mission Congruence	3.23	2.87 to 3.71
Openness to Discussion	3.29	2.73 to 3.60

Figure 2. Network Trust Scores by Relationship Type, 2018



Trust can impact key elements of organizational relationships, including negotiations, conflict resolution, and, ultimately, outcomes. High trust among partner organizations helps build capacity and effectiveness within a network.

The PARTNER tool measures trust on a scale of one to four, with one representing the lowest level of trust and four representing the highest level of trust. A trust score of three or higher demonstrates a relatively high level of trust, while scores below three indicate that there is room for improvement.

The overall level of trust between partner organizations was high in 2017 and continued to be high in 2018. All dimensions of trust — reliability, mission congruence, and openness to discussion — received high scores across most networks. On average, survey respondents reported higher levels of trust in the relationships that were developed or strengthened by the RHC than in pre-existing relationships.

Since 2017, the greatest improvement in a trust score has been around mission congruence. However, this is still the lowest-scoring trust dimension. Trust scores around reliability went down slightly between 2017 and 2018. This may reflect the growing dependence that partner organizations have on one another: A lapse in reliability is only felt when there is a degree of reliance.

Trust scores vary across RHC regions, but do not follow any notable geographic patterns.

Trust scores can also be examined by partner organization sector. All sector types received "good" ratings of 3.0 or higher, on average. Regional Health Connectors were the most trusted group in 2018: Partners gave RHCs an overall average trust score of 3.62, compared with an overall average of 3.25 for other sectors. RHCs also topped the list of most trusted partners in 2017. Trust is a foundation of an effective network, and these data show that RHCs are developing and sustaining high levels of trust in their networks.

Open-ended responses to the survey highlight RHC strengths in all three measures of trust:

- **Reliability –** One community-based organization in an urban area shared that the "RHC is always

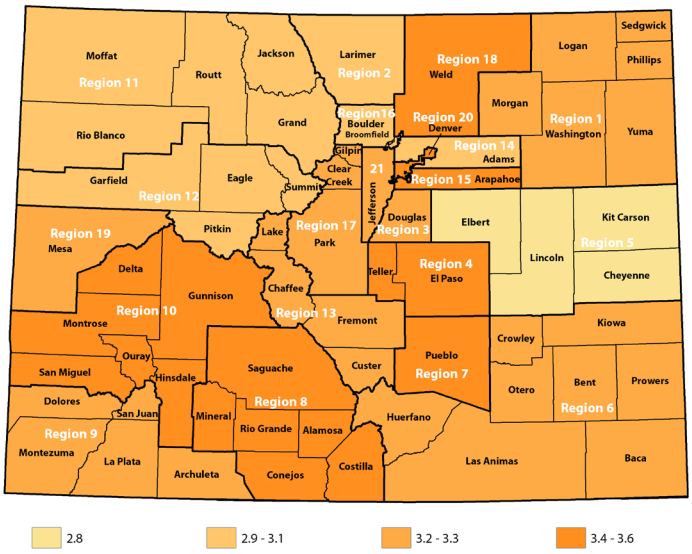
Table 3. Network Trust Scores by Dimension and Year, 2017 and 2018

Year	Overall	Reliability	Mission Congruence	Openness to Discussion
2017	3.23	3.27	3.17	3.26
2018	3.25	3.24	3.23	3.29

responsive [and] does not neglect communication. [We] don't have to pursue/pressure [the RHC] to respond to communication. [This is] much appreciated when too often communications with health organizations/individuals go into black holes and responses take repeated requests." In another region, a government official noted that the follow-through from the RHC was "tremendous." While most partners gave their RHCs high marks on reliability, some partners shared concerns about reliability in the open-ended responses. One government agency partner said that "[our RHC] is only sporadically in attendance at what I think are major meetings concerning community health – I'd like to see [the RHC] more, [they're] great!" This type of comment did not appear to lower the rankings that partners gave RHCs on this measure, which may indicate that partners view this as a capacity issue rather than an issue of unreliability.

- **Mission Congruence –** RHCs focus on connecting organizations with compatible missions. "The [RHC] connections between various agencies who have similar projects or missions has been so helpful to moving efforts forward," according to a government agency partner. A medical provider echoed that sentiment, saying "we appreciate working with the RHC because it helps us understand the broader health care community and find services for our patients and ways to partner with other organizations toward improving public health."
- **Openness to Discussion –** Many partners commented on the willingness of RHCs to have honest conversations. One practice transformation organization noted that the RHC was "always willing to meet or support where [they] can." Some partners see the RHC as a neutral convener, which may contribute to their perception of openness. As one partner representing a multisector coalition noted, "the RHC brings a unique perspective to our work, sharing insights from partners [and] serving as a neutral connector, among other things." A community-based organization in another region sees the RHC as "a neutral partner (without responsibilities that compete with partners' responsibilities) but one that has the core goal of building/strengthening a system to bring resources together to wrap around community members and their needs." In this way, partners report that the RHC focus on making connections allows them to do so in an unbiased way.

Map 3. Network Trust Scores by Region, 2018



When taken together, the trust scores and open-ended survey responses show a clear link between the role of the RHC, which is focused explicitly on building and facilitating connections, and the uniquely trusted position they hold in their networks. This link is especially apparent in the measures of mission congruence and openness to discussion, while the reliability scores may be more dependent on the individual in each role. These results suggest that RHCs quickly become trusted partners within a network as a result of the responsibilities of this role.

Table 4. Network Trust Scores by Sector, 2018

Respondent Sector	Average Overall	Average Reliability	Average Mission Congruence	Average Openness to Discussion
Medical Provider	3.04	3.05	3.06	3.01
PTOs	3.10	3.18	2.98	3.13
Behavioral Health Providers	3.22	3.19	3.28	3.19
Community-Based Organization or Group	3.29	3.26	3.24	3.38
Government Agency	3.31	3.30	3.29	3.35
Payer	3.34	3.29	3.32	3.42
Multisector Group	3.42	3.38	3.40	3.49
RHC	3.62	3.56	3.66	3.63
Overall	**3.25**	**3.24**	**3.23**	**3.29**

Note: The network trust scores by sector are calculated by averaging the ratings that all other partners assigned to partners in that sector. For example, respondents from all other sectors rated the RHCs at an average overall trust score of 3.62. All sectors were rated at an average trust score of 3 or higher, which demonstrates a relatively high level of trust.

VALUE

Value measures the degree to which partner organizations believe others in their network offer a worthwhile contribution towards the goal of building a more connected system in the region. As with trust, value scores gauge each organization's perception of other partners in their network. Value scores are based on:

- Perceptions of whether each partner organization in their network wields power and influence in the region (referred to in this analysis as power and influence);
- Their estimate of other organizations' levels of involvement (level of involvement); and
- The extent to which they feel these partners contribute resources (resource contribution).

Organizational partners that highly value one another are key to an effective network. Not all partners provide value in the same way. Some partners' main contribution to a network will be the ability to influence key decision-makers, while others may focus on contributing resources to meet network goals. Measuring how these values are perceived is important because it allows partner organizations to evaluate whether they are leveraging their network's unique assets. Information about perceived value in a network can lead to new ways to identify assets and utilize existing partnerships.

The PARTNER tool measures value on a scale of one to four, with one representing the lowest and four representing the highest level of value. A score of three or higher is considered a high value score, while scores below three indicate room for improvement.

In 2018, the dimension of value most frequently recognized by partner organizations was other organizations' level of involvement, while the perception of resource contribution scores were lower.

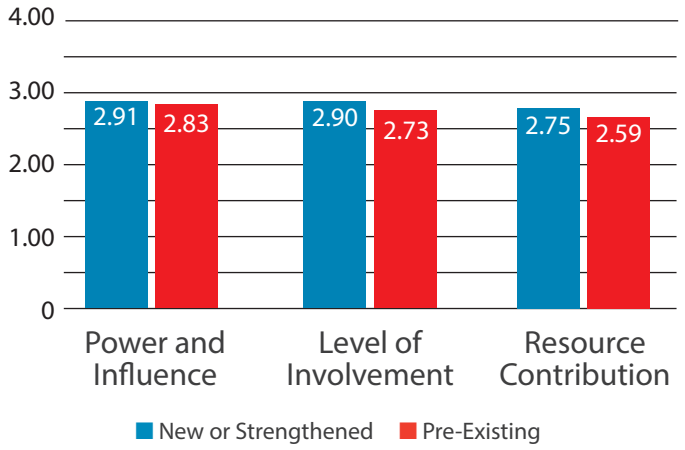
Survey respondents reported that the new and strengthened relationships, facilitated by RHCs, were more valuable than pre-existing relationships.

The overall value score among networks grew to 2.74 in 2018 from 2.64 in 2017. Most of this increase was driven by a rise in the dimension of resource contribution, though all dimensions of value — power and influence, level of involvement, and resource contribution — received higher overall scores in 2018 than in 2017.

Table 5. Network Value Scores by Dimension, 2018

Value Score	Network Average	Range
Overall	2.74	2.47 to 3.10
Power and Influence	2.79	2.45 to 3.10
Level of Involvement	2.80	2.40 to 3.21
Resource Contribution	2.65	2.36 to 3.12

Figure 3. Network Value Scores by Connection Type, 2018



Value and trust scores tend to track with one another. Regions and sectors that report high levels of trust also recognize the value in their partnerships.

As with trust, respondents reported the greatest level of value in their relationships with Regional Health Connectors, at 3.20 in 2018 (See Table 7). RHCs also topped this list in 2017.

Medical providers were assigned a relatively lower level of value by partners in other sectors. Among the individual measures of value, medical providers received especially low ratings on level of involvement and resource contribution. In contrast, RHCs scored especially high on these two measures. This indicates an opportunity for medical providers to improve their perceived value in these networks by partnering with the RHCs to increase their level of involvement or resource contribution.

Open-ended responses to the survey offer insight on the strengths of the RHCs across all three measures of value:

- **Power and Influence –** Partners reported that all organization types have similar levels of power and influence, but still rated RHCs at the top of the list in this measure. This may be due to the RHC role in making connections between organizations. One community-based organization reports that its RHC is "a very strong connector. We rely on [them] to make connections in very tough cases where collective thinking and action is needed." In another region, a government agency shares that "the RHC has facilitated connections with health systems in the community that we have had a difficult time connecting with." These responses indicate that RHCs are able to influence partners where previous attempts have failed.

- **Level of Involvement –** RHCs are ranked far above average in level of involvement across regions. Partners attribute this to the nature of the RHC role, which entails a unique capacity to be highly engaged in collective efforts. A statewide community partner who works with RHCs across many regions says that RHCs "are able to devote most of their time to cultivating and maintaining relationships, which is not a goal that most organizations or employees have due to funding constraints, patient demands, etc. They are one of the few individuals in a community who is able to focus on connecting with all the partners and trying to establish common goals across agencies." A statewide government partner says RHCs "are doing the work that no one is usually paid to do, and that falls to the end of most people's lists – building relationships between agencies and partners." This view is shared by host organizations that have hired RHCs, as noted in this host organization response: "The RHC is able to dedicate their time to developing relationships and convening stakeholders, which has been a barrier in the past due to capacity and funding requirements."

- **Resource Contribution –** In addition to the staffing capacity offered by the RHC, partners report a wide array of resource contributions. "[The RHC] is so knowledgeable and has wonderful resources that have led to our practices screening more for social determinants of health. [They have] saved me so much time and [are] a great support to the practices we work with," according to a practice

Table 6. Network Value Scores by Dimension and Year, 2017 and 2018

Year	Overall	Power and Influence	Level of Involvement	Resource Contribution
2017	2.64	2.73	2.73	2.47
2018	2.74	2.79	2.80	2.65

transformation organization partner. Partners also appreciate the information and resources that RHCs often share through regional and statewide connections. One community-based organization appreciates "having a representative who is exposed to health issues and trends across a broader section of the state." A government agency partner in another region agrees: "Our RHC is invaluable. [The RHC] brings people together across our region that I would not otherwise even know exist. There are programs being conducted and amazing things happening across our entire region that would simply not be possible without our RHC."

As with the trust scores, the value scores and open-ended survey responses indicate a link between the role of the RHC — focused explicitly on building and facilitating connections — and the valued position they hold in their networks. This link is strongest within the "level of involvement" measure, which partners directly attribute to the role of the

Map 4. Network Value Scores by Region, 2018

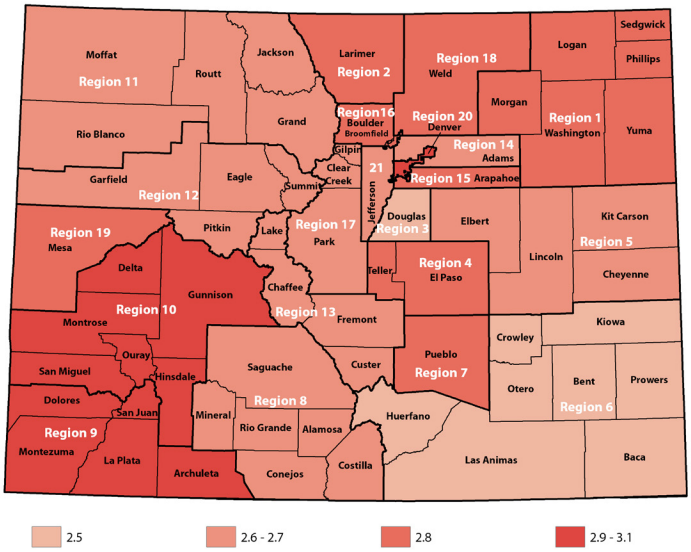


Table 7. Network Value Scores by Sector, 2018

Respondent Sector	Average Overall	Average Power and Influence	Average Level of Involvement	Average Resource Contribution
Medical Provider	2.55	2.63	2.57	2.44
PTOs	2.68	2.93	2.67	2.45
Multi-Sector Group	2.75	2.83	2.90	2.72
Behavioral Health Providers	2.76	2.85	2.77	2.67
Community-Based Organization or Group	2.77	2.76	2.83	2.72
Government Agency	2.79	2.87	2.87	2.68
Payer	2.81	2.87	2.95	2.62
RHC	3.20	3.01	3.38	3.21
Overall	2.74	2.79	2.80	2.65

Note: The network value scores by sector are calculated by averaging the ratings that all other partners assigned to partners in that sector. For example, respondents from all other sectors rated the RHCs at an average overall value score of 3.20. A score of 3 or higher is considered a high value score, while scores below 3 indicate room for improvement.

RHC. The link may also be mutually reinforcing: The role of the RHC may enable an individual RHC to gain high levels of trust and value in the network, while high levels of trust and value may in turn be key to success in their role of building cross-sector relationships.

While the RHC role offers the capacity needed to establish high levels of trust and value with many partners, RHCs still struggle to do it all. One practice transformation organization partner lamented in the qualitative responses that "I want to see the RHC more involved with practices, especially pediatric practices. They have given information and then I don't see them again. Practices need constant touch as needs change. More involvement!!" Several partners suggested that their region needs more RHC support. One health alliance partner suggested that "the RHC area is so big, it's conceivable that two staff are needed. We have barely touched the surface in the rural/frontier/non-urban areas within [our county] that have their own unique needs." Partners in one multicounty region even suggested that the region be divided among three full-time RHCs.

DENSITY

Network density scores highlight the number of connections reported between partner organizations. The density score is the percentage of connections reported divided by all possible connections across an entire network.

Across all RHC networks, the overall density score was 19 percent — in other words, in an average network, 19 percent of possible connections between partner organizations were reported. RHC networks generally had lower density scores in 2018 than they did in 2017.

At first blush, this indicates that a huge number of connections between organizations that could be used to promote RHC activities are not being leveraged compared with the prior year. However, the low score may be attributable to the fact that the survey had fewer respondents in 2018 than in 2017. In 2018, there were an average of 22 partners responding per network, down from an average of 29 in 2017. Greater numbers of responses typically lead to higher density scores because connections that are not reported are considered connections that don't exist. This drop in respondents may be related to the length of the survey, which can take 45 minutes to complete. Partners who had experienced the length of the survey in 2017 may have been hesitant to respond again in 2018. Several partners commented on the length of the survey in the open-ended responses, with one community-based organization stating simply, "This survey is too long!"

A high density score is not an inherently positive or negative attribute of a network. Higher-scoring networks likely have a strong level of connectedness and can leverage this to find new solutions and efficiencies. On the other hand, some social network analyses have found that dense networks can lead to rigidity and stifle creative problem-solving. Density scores do not correlate with levels of trust or value.

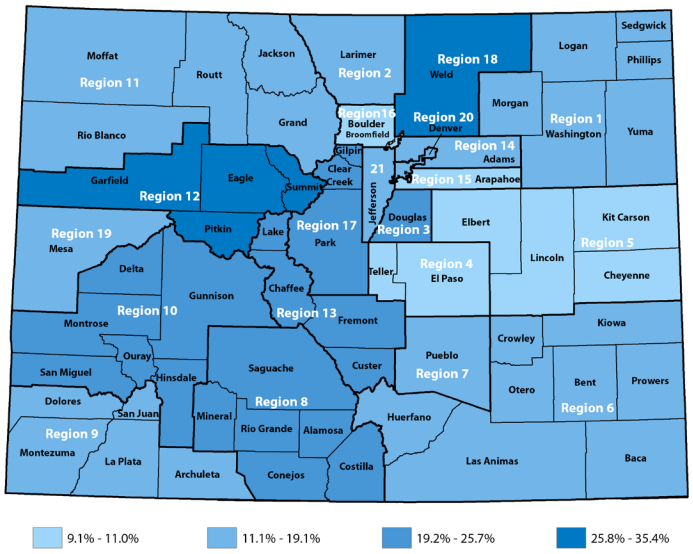
Perhaps surprisingly, there does not appear to be a correlation between network density and population density. The populous Denver metro region has a density similar to the rural Eastern Plains. Mountain regions, especially Region 12 (Eagle, Garfield, Pitkin, and Summit counties), have some of the highest density scores in the state. This suggests that population density may be only one of several factors that influence network density.

Geography and the unique history of collaboration in each region also influence these scores. For example, partners in Region 12 have a long history of collaborating between counties on shared health initiatives like regional community needs assessments. Meanwhile, one survey respondent from a government agency in the Denver region feels

Table 8. Network Density Scores by Year, 2017 and 2018

Year	Network Average	Network Range
2017	29%	18% to 42%
2018	19%	9% to 35%

Map 5. Network Density Scores by Region, 2018



that an RHC is necessary because "Denver is resource rich and coordination poor. We need more people connecting existing efforts and coordinating work across programs, systems and sectors." RHCs on the Eastern Plains may also be helping to fill a historical gap in coordination between counties, with one statewide community partner reporting that "the RHC for this region has been almost entirely my sole extension into these counties… I am super grateful for [their] presence in counties that I otherwise would have had almost no connection to."

CENTRALIZATION

Network centrality measures the extent to which network connections are centralized around small numbers of partner organizations versus spread out evenly across the network. A low centralization score indicates a more sprawled or diffused network — in other words, a network without an obvious hub.

As with density, high centralization scores are neither inherently good nor inherently bad. Decentralized networks can be more participatory or egalitarian; more centralized networks may be more efficient and reflect clearer access points to populations served. The appropriate degree of centralization is the level that works best for a given RHC network and the health of its residents. Centralization scores do not correlate with levels of trust or value.

Across all networks, the average centralization score was 66 percent. This indicates that RHC networks were, on average, slightly more centralized in 2018 than they were in 2017.

It is tempting to assume that the modest increase in centralization is related to a decrease in the average density score. As connections between organizations mature and settle, perhaps those partnerships that bear more fruit will strengthen while those less productive will fade away. However, the experience of RHC networks does not bear out this theory. Regions with higher degrees of centralization actually have more connections across the network. This indicates that hub organizations — including RHCs and their host organizations — may promote more diverse connections between partner organizations.

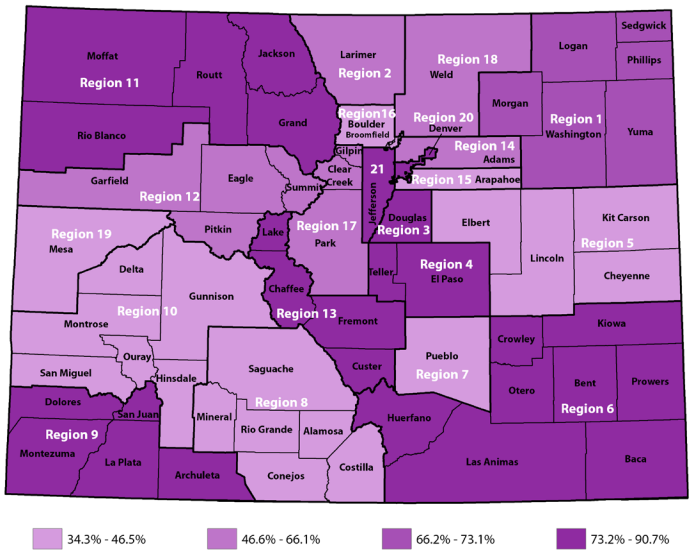
The role that the RHCs and their host organizations play as the central hubs in RHC networks can be seen in network maps as well as open-ended responses to the survey. One government agency partner appreciates "their knowledge of what others in the area are doing and helping with directing a focused regional approach." A medical provider in another region believes "the RHC is the glue that brings the community's resources together." A payer in the metro area adds that "having a geographically based point person keeps information flowing and gives everyone a place to connect."

Centralization scores vary greatly across the state. As with density, the degree of centralization for RHC networks does not seem related to whether the network is in an urban or rural setting. Urban counties in RHC regions 4, 20, and 21 (Teller, El Paso,

Table 9. Network Centralization Scores by Year, 2017 and 2018

Year	Network Average	Network Range
2017	63%	42% to 81%
2018	66%	34% to 91%

Map 6. Network Centralization Scores by Region, 2018



Denver, and Jefferson counties) have the highest scores in the state, yet the lowest scores also belong to urban counties in RHC regions 7 and 15 (Pueblo and Arapahoe).

Working With RHCs

Partner organizations were also asked to share their thoughts on work led by the RHC in their network, including the RHC's involvement with their efforts, their involvement with RHC efforts, and the importance of this relationship.

Since 2017, partner organizations reported that RHCs helped to create 1,354 new relationships with other organizations and helped to strengthen another 1,632. Of these new or strengthened relationships, most (65 percent) crossed sector types. Partner organizations reported higher levels of trust and value in the relationships that RHCs helped to deepen or create than they reported in existing relationships that have not been impacted by the RHC.

In general, partners reported greater involvement in RHC work in 2018 than they did in 2017 (see Figure 4). Most (74 percent) report at least occasional involvement in the work of the RHCs.

Medical providers were more likely than other sectors to report that their involvement with RHCs was minimal or nonexistent. Lower levels of medical provider involvement are likely due to lingering silos between clinical and community initiatives. One government agency believes RHCs are addressing this issue by "having a knowledgeable person who can facilitate information and relationships between the medical community and agencies. The medical community doesn't have a natural avenue to connect with community resources." A coalition of local partners in another region agrees: "The most important contribution [of the RHC] is developing public health and clinical relationships. We do not have the depth of relationship with the clinical agencies, nor the capacity to develop these relationships and we do need to continue developing these connections."

Despite these long-standing challenges, the open-ended responses also provide evidence that the RHCs are successfully engaging clinical partners. According to one medical provider, "the awareness that there is a person connected to all the health entities and can help create new opportunities through their knowledge has been beneficial in moving toward integrated care. [Our RHC] has been very helpful and informative." A behavioral health provider expressed appreciation for the RHC's "ability to see from a macro lens recognizing the gaps in connections and resources and being able to see how [the RHC] can connect agencies/clinics together to activate programmatic change and partnerships." Some clinical partners are even reporting early results. "My relationship with [the RHC] has transformed [our hospital's] relationship with our local community, providing access and opportunities to serve. We are very grateful," reports a senior hospital leader.

While RHCs are making inroads with hard-to-reach sectors and the majority of partner organizations are reporting higher levels of involvement in the RHC work, some respondents still expressed confusion about the role of the RHC in their regions. One community-based organization partner confessed that, "to be honest I don't feel very involved or knowledgeable specifically about the RHC's work to build a more connected system in our region." A local chamber of commerce representative suggested that "the community needs a very simple explanation/understanding of what [the] RHC does and why the organization is critical to our organization."

Figure 4. Partner Organizational Involvement in RHC Work in Their Region

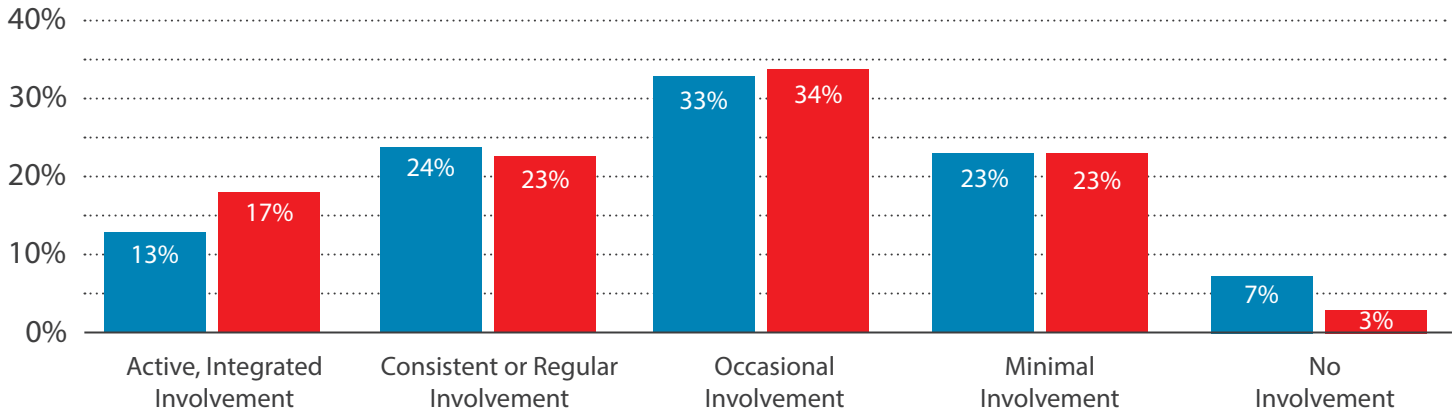
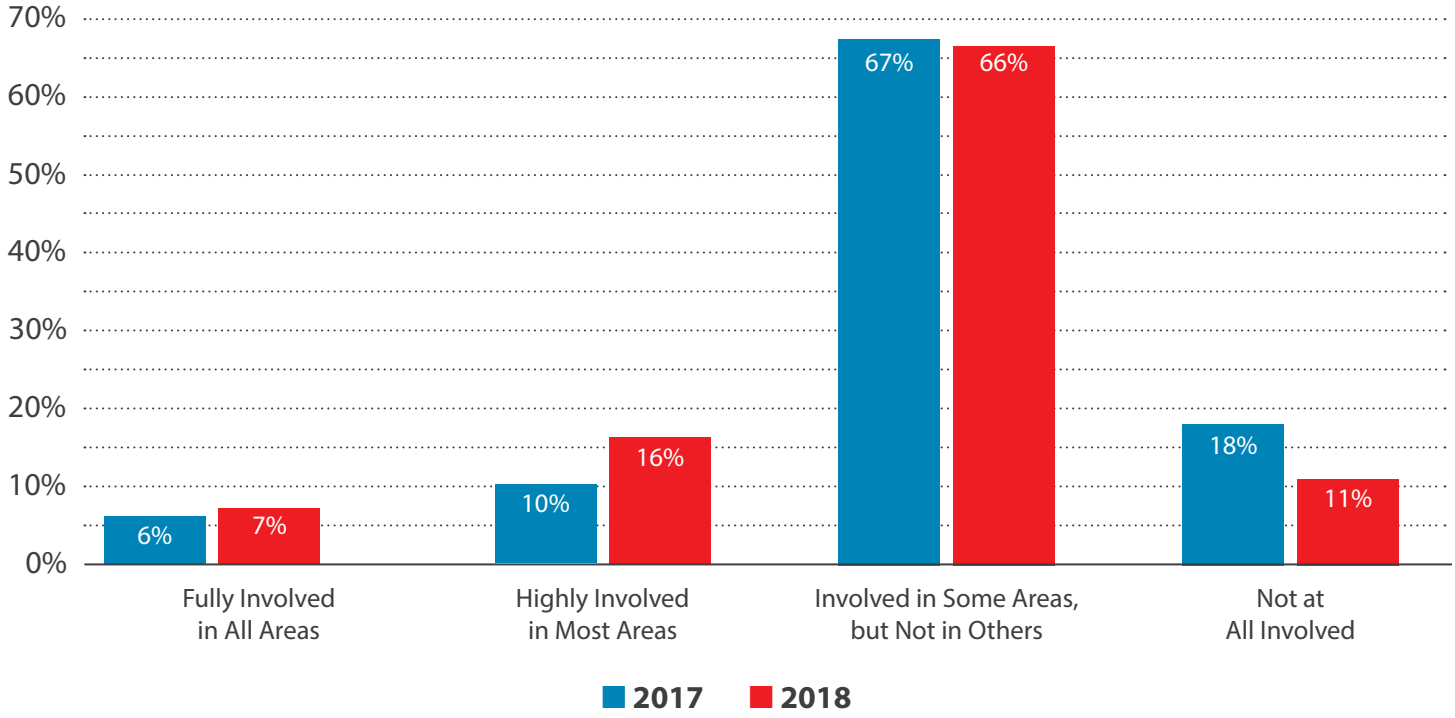


Figure 5. RHC Involvement in Partner Work



These responses demonstrate the challenge of clearly defining the RHC role to a large group of stakeholders across sectors; the RHC program has more work to do to in engaging these partners.

As partners reported more involvement with RHC work, the degree to which partner organizations report RHC involvement in their work also increased. While nearly one in five (18 percent) reported that RHCs were not at all involved in their work in 2017, by 2018 just one in 10 (11 percent) did.

One local government agency partner appreciates "having an advocate who understands my community, my community's values, and is willing to partner with us as we look for the way(s) and means to move forward with our goals/our dreams. Our RHC … keeps us motivated, engaged, and on track with the projects we have chosen to pursue." A community-based organization reports that "the RHC has provided a connection within the community that provides health care information and needed health services. It is an easy place to refer families to."

Figure 6. When Asked, "Do You Feel Your Region Needs an RHC?" Most Partner Organizations Say Yes.

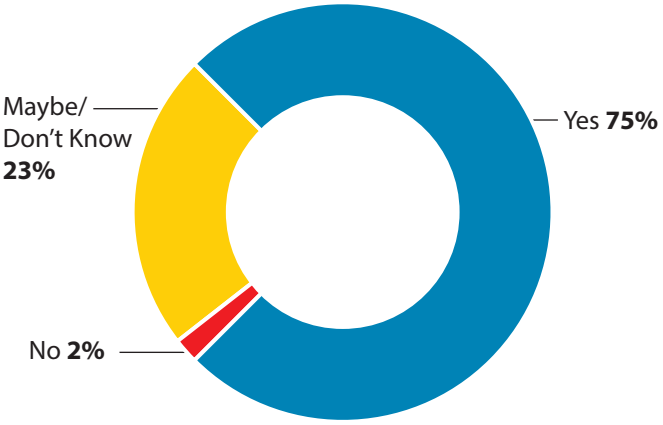


Table 10. Percent of Organizations Reporting Their Region Needs an RHC by Sector, 2018

Respondent Sector	Percent
Community-Based Organizations or Groups	83%
Multisector Groups	80%
Payers	71%
Behavioral Health Providers	70%
Medical Providers	69%
Government Agencies	68%
Practice Transformation Organizations	67%
Overall	**75%**

Increased knowledge-sharing and communications were among the most common outcomes partner organizations cited as a result of their work with the RHCs. Partners also reported increased regional collaboration and coordination towards shared health goals. For example, a regional foundation reports that the "RHC's work has resulted in developing a collective vision for addressing substance/opioid use in our community and [the ability to] to leverage that collective vision to draw funding for resources and solutions." A library in another region shared that "this partnership will lead to a better, more connected system as [the] RHC will facilitate our access to needle disposal boxes [and] Narcan, and we will offer the RHC use of our community rooms for educational and outreach programs."

Just 45 partner organizations (10 percent) reported that they had not seen any outcomes as a result of this work.

The extent to which partner organizations value the presence of an RHC depends on the outcomes the organization attributes to the RHC program.

It follows, then, that most partner organizations reported that their region needs an RHC (see Figure 6). Only 2 percent were confident that RHCs were not necessary to the work in their region; another 23 percent were unsure.

Community-based organizations and groups were the most likely to report that their region needed an RHC.

Among organizations that felt the RHC program had resulted in a reduction of health disparities, nearly all (94 percent) agree that their region needs an RHC (See Table 11). Organizations that reported the RHC work has resulted in significant changes in policy, law, regulations, or systems were also very likely (92 percent) to report that their region needs an RHC. Conversely, just 35 percent of organizations that cited no outcomes as a result of RHC work said their region needs an RHC.

It appears that RHCs play a key role in the development of relationships within many of the networks. Overall, more than a quarter (28 percent) of partner organizations said that before the RHC initiative began, partners in the region were not successful at collaborating with one another.

Many partners expressed hope that the RHC program will continue. One community-based organization shared the perspective that the work of the RHCs is necessary and also just beginning: "I hope they have the time to bring the understanding they've developed of the communities in the region and the fledgling relationships they've developed to bear fruit. For now, these are the most identifiable outcomes. They are hugely important. Nothing 'measurable' is liable to come out of this groundwork itself. But without laying it, we'll never get to the point where we really can effect change. I'm a huge supporter of RHCs." This response highlights the

Figure 7. Outcomes Cited by Partner Organizations, 2018

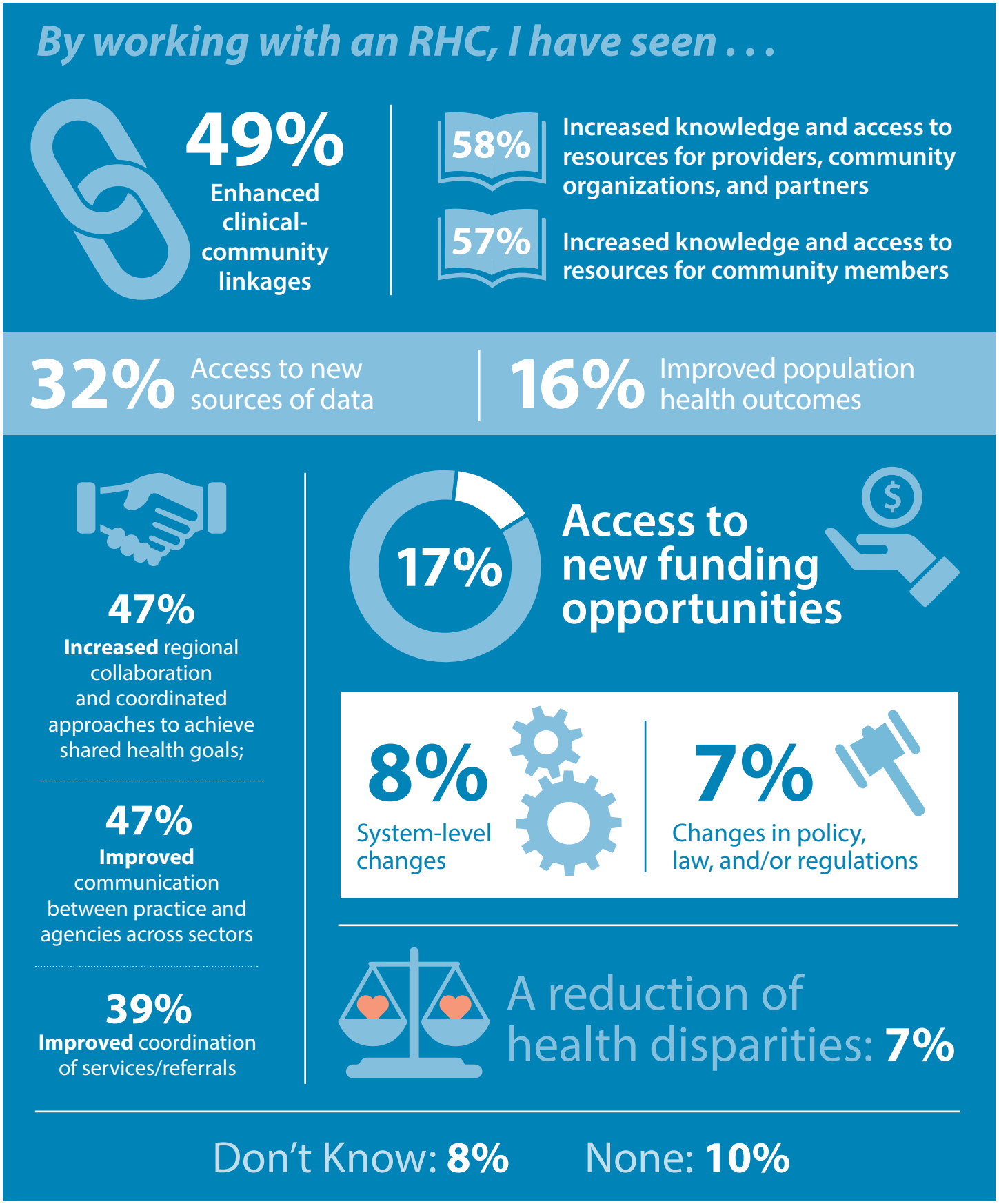


Table 11. Percent of Organizations Reporting Their Region Needs an RHC by Outcomes Cited, 2018

Among organizations who reported the RHC work had resulted in a reduction of health disparities, nearly all (94%) agree that their region needs an RHC.	
Of those who reported these outcomes …	**… this percentage say they need an RHC**
Reduction of health disparities	94%
System-level changes	92%
Changes in policy, law, and/or regulations	92%
Improved communication between practices and agencies across sectors	87%
Improved coordination of services/referrals	87%
Increased regional collaboration and coordinated approaches to achieve shared health goals	87%
Access to new sources of data	86%
Improved population health outcomes	86%
Increased knowledge and access to resources for providers, community organizations, and partners	85%
Enhanced clinical-community linkages	85%
Increased knowledge and access to resources for community members	84%
Access to new funding opportunities	83%
Don't know	56%
None	35%

need for additional investment in local relationship-building efforts. Relationships are critical to the success of any health improvement initiative; however, local partners are struggling to fund these efforts in an increasingly outcomes-driven funding environment.

Conclusion

This report provides a picture of the RHC program in 2018 and its relationship with partner organization networks across Colorado. It shows that RHCs play a key role in the development of trusted and valued relationships across providers, government agencies, and community organizations.

Complex, multisector relationships can take years to fully develop, and the 2018 PARTNER survey was administered only 18 months after the RHC workforce was present in each region of Colorado. Yet even in this short time, RHCs and their networks became more intertwined and more valued by partners.

The PARTNER survey suggests that RHCs are trusted and valued figures in their networks. Most partner organizations believe that RHCs have had a positive impact on networks and, in many cases, on the health of Coloradans. Organizations that report progress toward important outcomes like reducing health disparities were likely to say that RHCs play a necessary role in their regions.

In 2018, three in four partner organizations reported that their region "needed" an RHC. This suggests that the RHC program identified and met a previously unmet need in Colorado's communities.

In less than three years, RHCs developed valued relationships and became hubs of connections and knowledge throughout the state. While we cannot predict what will happen to RHCs and their networks, this analysis demonstrates that medical practices, community organizations, and others working to improve health in Colorado see value in this unique and innovative workforce.

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