

Better Health Together

Assessment of Eastern Washington's inter-organizational collaboration, referral, and data exchange networks to improve community health

Key Takeaways

What are some of the most noteworthy things we learned?

Key Takeaways

- Organizations in the Better Health Together region have become better connected through collaboration, referral, and data exchange since 2016/2017.
- Better Health Together helped facilitated 350 new partnerships among 150 organizations.
- Organizations work extensively across sectors and geographic service areas to serve people living in BHT's 6-county region.

Introduction to Network Science and Analysis

What is it and how can it be used to better understand how organizations collaborate, refer, and exchange data to improve community health?

What is a network?

A collection of entities that are interconnected with links. For example:

- **Web pages** that **link** to one another
- **People** who are **friends**
- **Organizations** that **collaborate**



Network Science

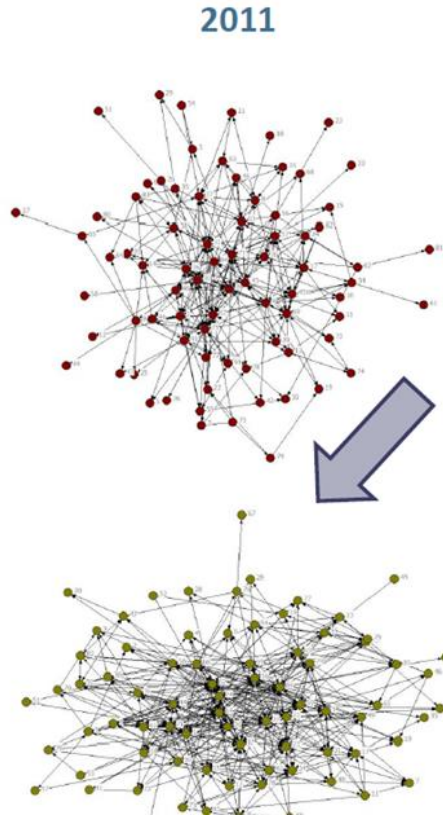
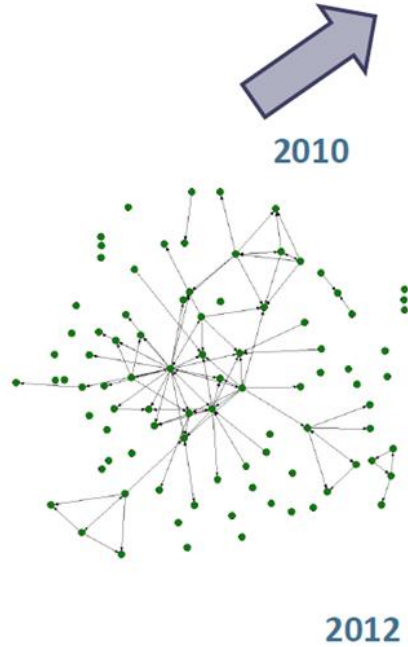
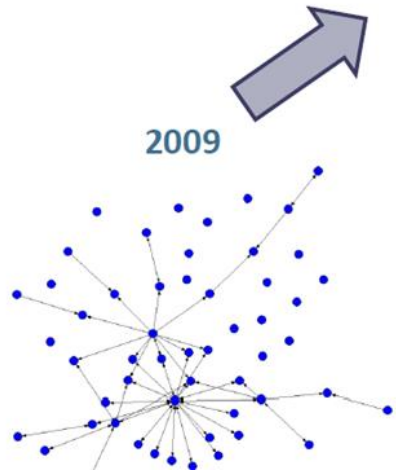
What is it?

The study of network representations of physical, biological, and social phenomena leading to descriptive and predictive models of these phenomena (United States National Research Council)

Where does it come from?

- **Graph theory** from **mathematics**
- **Statistical mechanics** from **physics**
- **Data mining** and **information visualization** from **computer science**
- **Inferential modeling** from **statistics**
- **Social structure** from **sociology**

| Year | # | Density | Avg # ties |
|------|----|---------|------------|
| 2009 | 55 | 2.2% | 1.2 |
| 2010 | 90 | 2.7% | 2.4 |
| 2011 | 85 | 5.3% | 4.5 |
| 2012 | 82 | 8% | 6.88 |



Network Analysis

Structural Metrics (entire network)

- Graph density
- Diameter
- Clustering

Individual Metrics (node-specific)

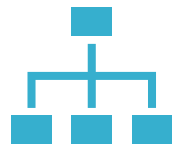
- Degree
- Hub
- Centrality

Network Analysis for Continuous Improvement



Assess

Working siloes (cliques)
Influential, bridging, and periphery organizations
Needed connections



Plan

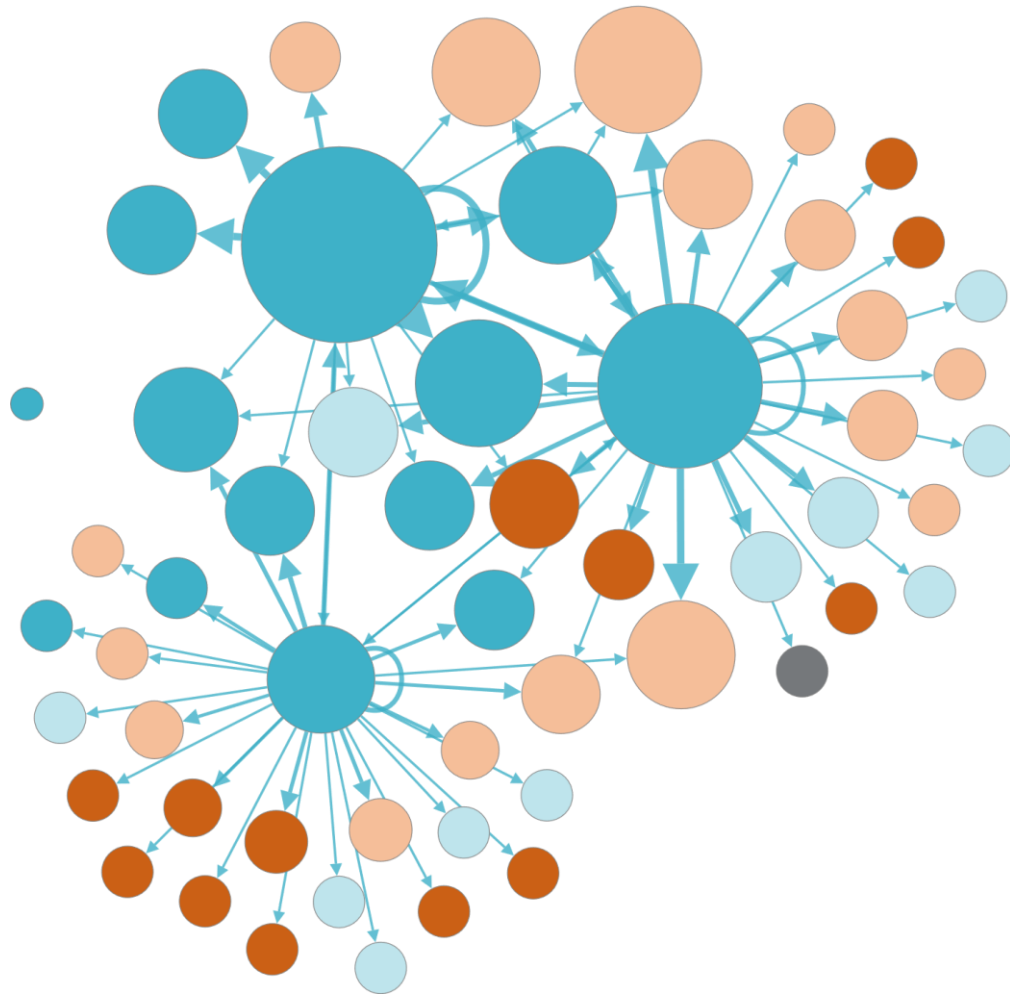
Strategic relationship improvement, creation, and consolidation
Network building or restructuring












Evaluate

Change in network structure over time
Change in quality and type of connections over time

Interpreting Network Maps



| NODES AND EDGES KEY | |
|---|--------------------------------------|
|  | Social Sector Organization |
|  | Health Sector Organization |
|  | Public Sector Organization |
|  | Education Sector Organization |
|  | Business Sector Organization |
|  | Less Active |
|  | |
|  | More Active |
|  | |

Technical Notes

Methods and Limitations

Methods

Conceptual frames:

Accountable Communities of Health Model

Collective action

Cross-sector collaboration

Collaborative governance

Units of analysis:

Network (population & social determinants of health system)

Organization (health system participants)

Dyad (linkage)

Population: 617 cross-sector organizations across 6 counties and 3 tribal nations

Data collection: Web survey (xx% individual response rate; xx% network response rate)

Limitations



Results reflect individual reports of inter-organizational relationships.

Organizations are complex institutions



All health system participants did not receive a direct invitation to respond to the survey.

Xx/xx organizations received a direct invite



Survey research poses inherent limitations.

Respondent fatigue
Closed-ended questions



Identified surveys may not yield the most accurate results.

Utility of identified networks
Intentional follow-up and connections



Responses are limited by Alliance member involvement.

Staff turnover at partner organizations
Low engagement

Preliminary Network Findings

What's changed?

Full-network comparison; not directly comparable

| | 2017 Collaboration + Referral + Data Exchange + Financial Support + Education | 2019 Collaboration + Referral + Data Exchange | Change |
|---|--|---|---------------------------|
| # of identified organizations in system | 564 | 617 | + 53 organizations |
| # organizations with reported activity | 508 | 593 | + 85 active organizations |
| % organizations with reported activity | 90% | 96% | + 6% active organizations |
| Silos | 62 | 28 | - 34 silos |
| Reported partnerships | 9,039 | 7,219 | - 1,820 linkages |

What's changed?

Limited network comparison; directly comparable

| | 2017 Collaboration + Referral + Data Exchange | 2019 Collaboration + Referral + Data Exchange | Change |
|---|---|---|----------------------------|
| # of identified organizations in system | 564 | 617 | + 53 organizations |
| # organizations with reported activity | 402 | 593 | + 85 active organizations |
| % organizations with reported activity | 71% | 96% | + 25% active organizations |
| Silos | 167 | 28 | - 139 silos |
| Reported partnerships | 5,885 | 7,219 | + 1,334 linkages |

What's changed?

| | 2017 | 2019 | Change |
|--------------------|------|------|--------|
| # Survey Responses | | | |
| Response rate | | | |
| Represented Orgs | | | |
| By GSA | | | |
| By Sector | | | |

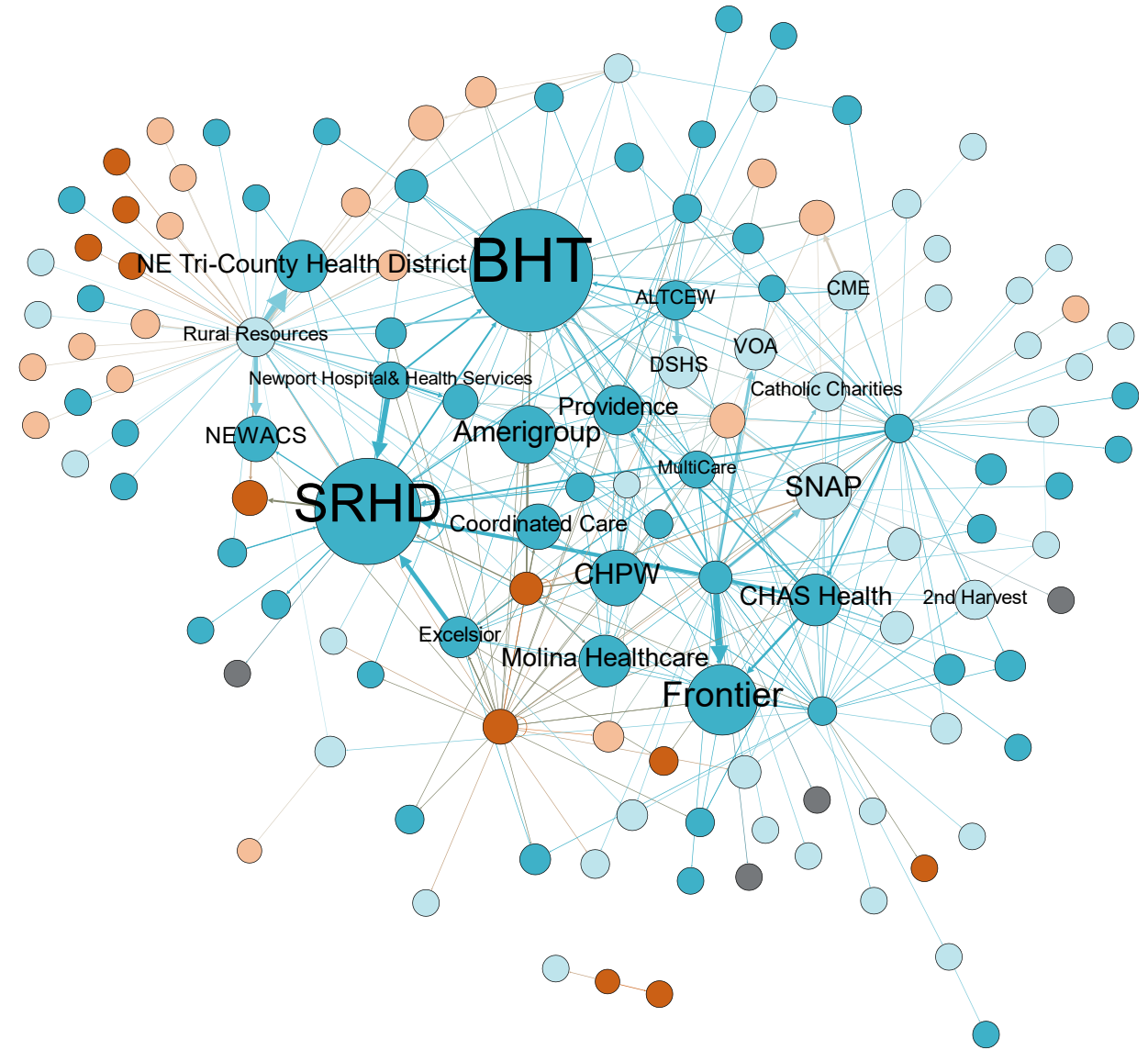
BHT-Facilitated Linkages

This network map shows linkages that Better Health Together helped to create or maintain.

- Some linkages may represent more than one type of linkage.

Each circle represents an organization.

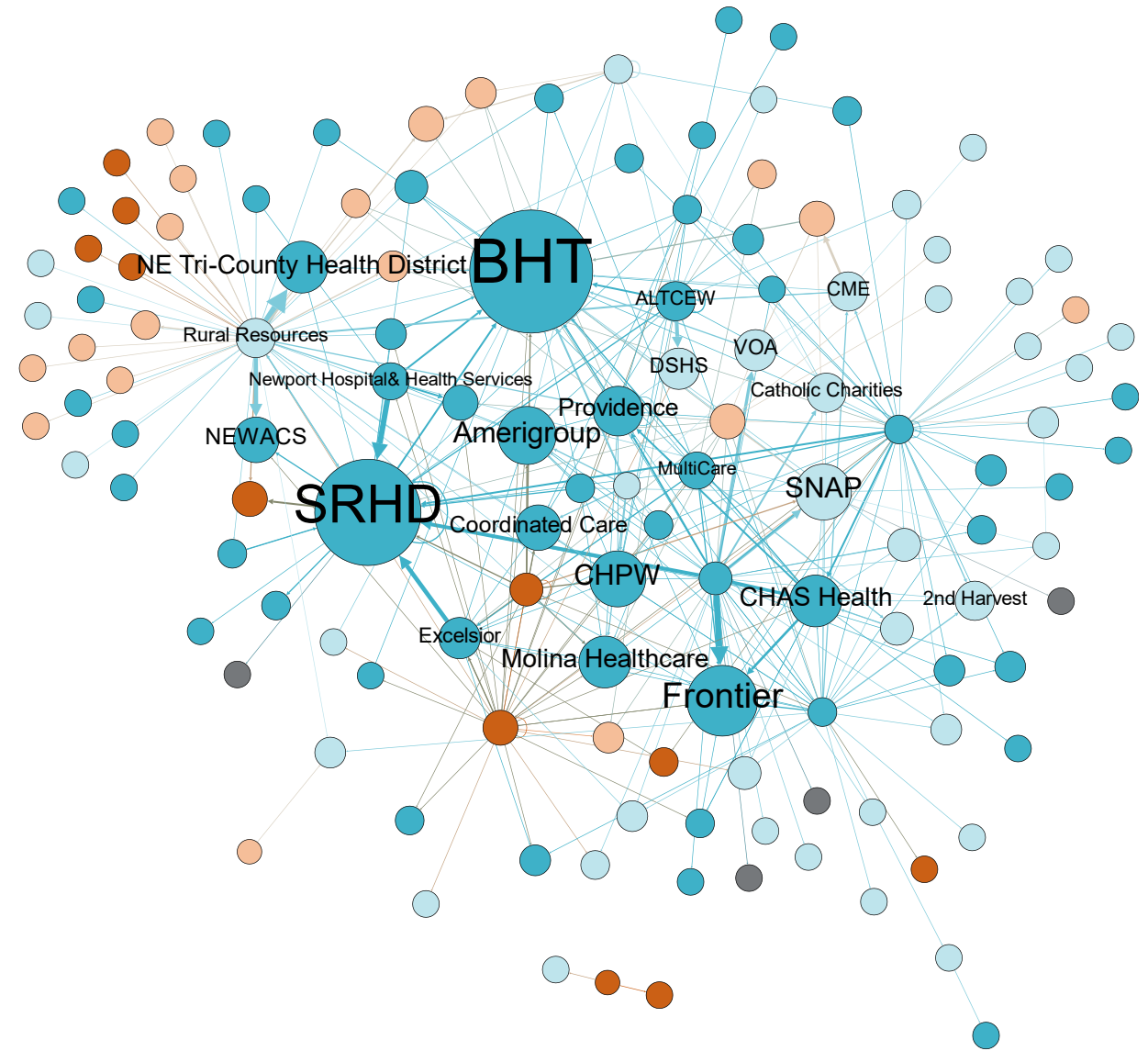
Circles are sized by the number of times another organization reported BHT facilitating a linkage with that organization; the larger the circle, the more times BHT helped the community connect with that organization.



BHT-Facilitated Linkages

We learned that BHT:

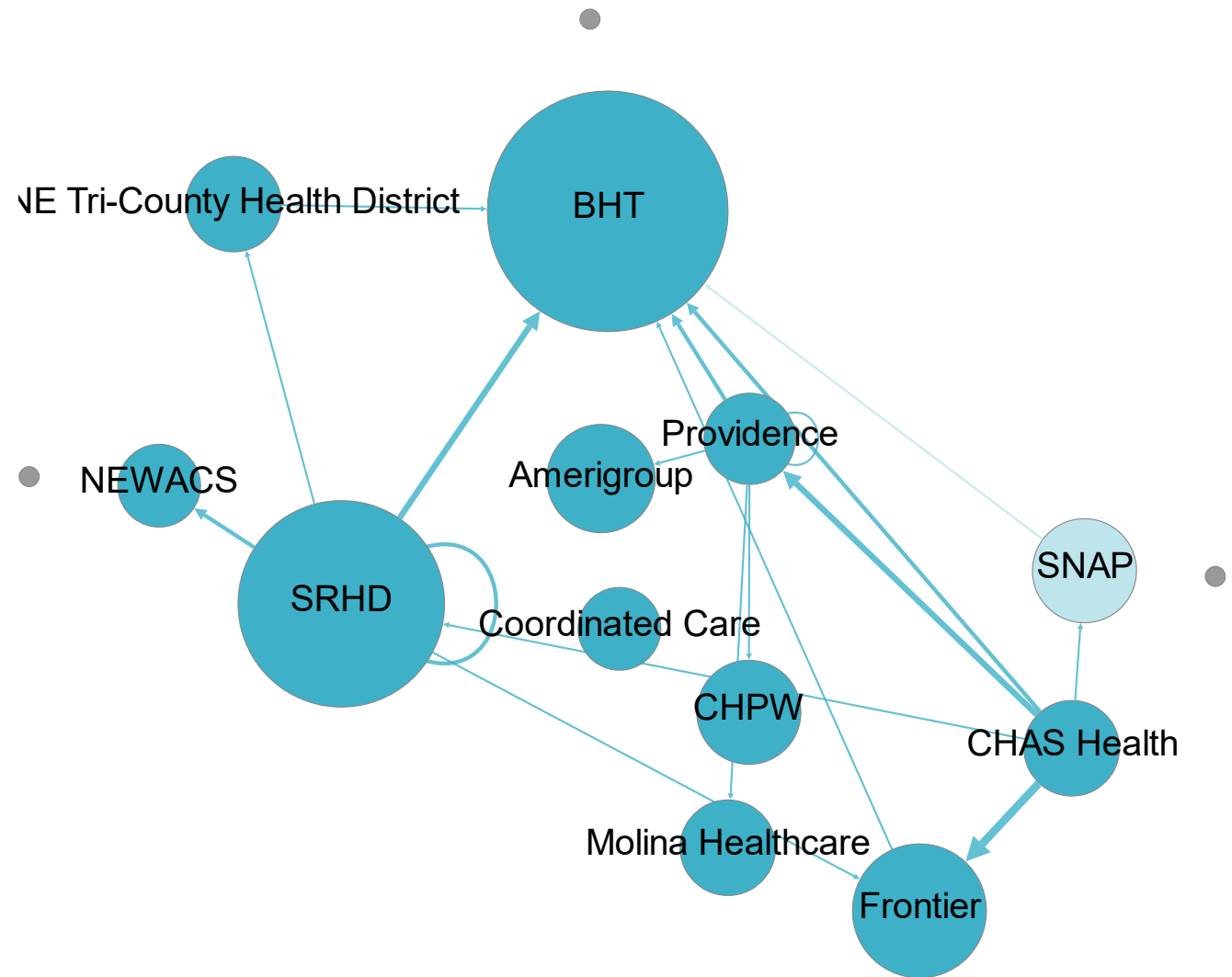
- Helped 130 organizations connect to one another.
- Facilitated 350 inter-organizational relationships of various linkage types.
- Was most helpful facilitating linkages to:
 - Health and social sector organizations
 - Regional, Spokane County, and Northeast Tri-County organizations



BHT-Facilitated Linkages

BHT facilitated 10 or more linkages between Eastern WA organizations and the following partners (# linkages shown in parentheses):

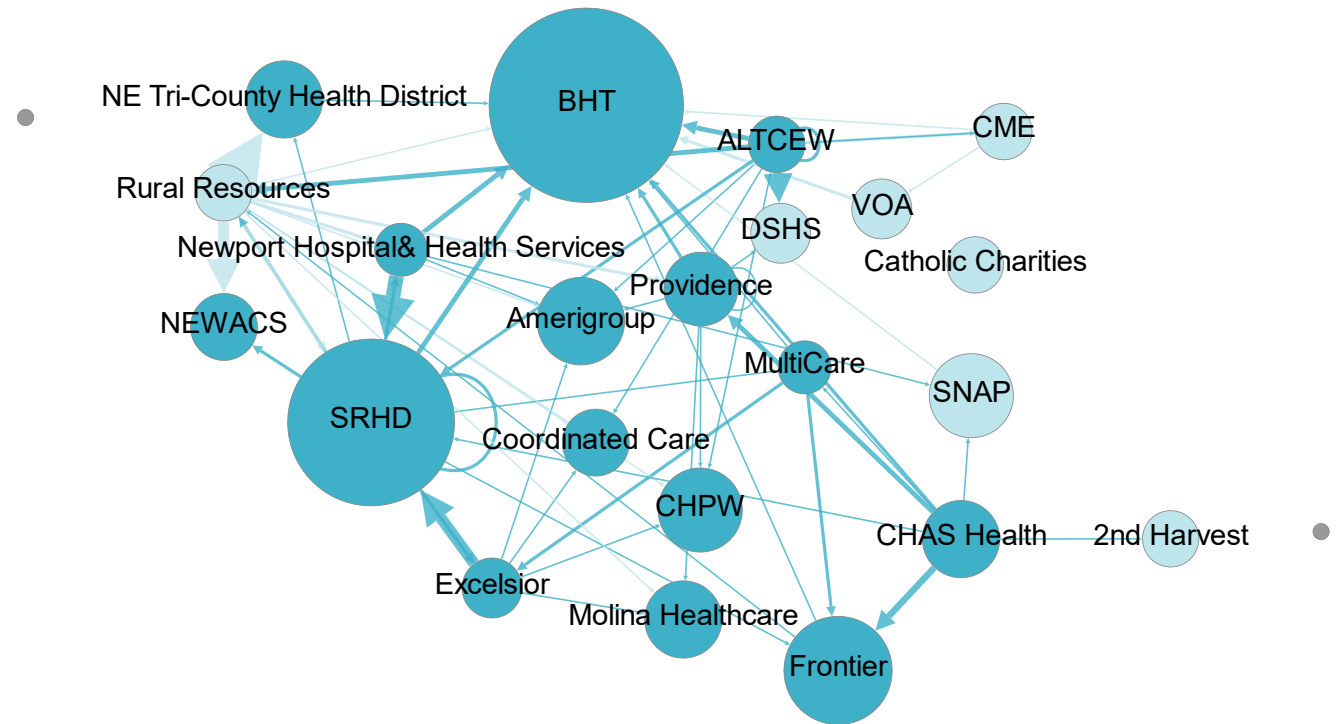
- Better Health Together (47)
- Spokane Regional Health District (39)
- Frontier Behavioral Health (22)
- Amerigroup (16)
- Community Health Plan of Washington (15)
- SNAP (Spokane Neighborhood Action Partners) (15)
- CHAS Health (13)
- Molina Healthcare (13)
- Northeast Tri-County Health District (13)
- Providence Health & Services (12)
- Coordinated Care (10)
- Northeast Washington Alliance Counseling Services (NEWACS) (10)



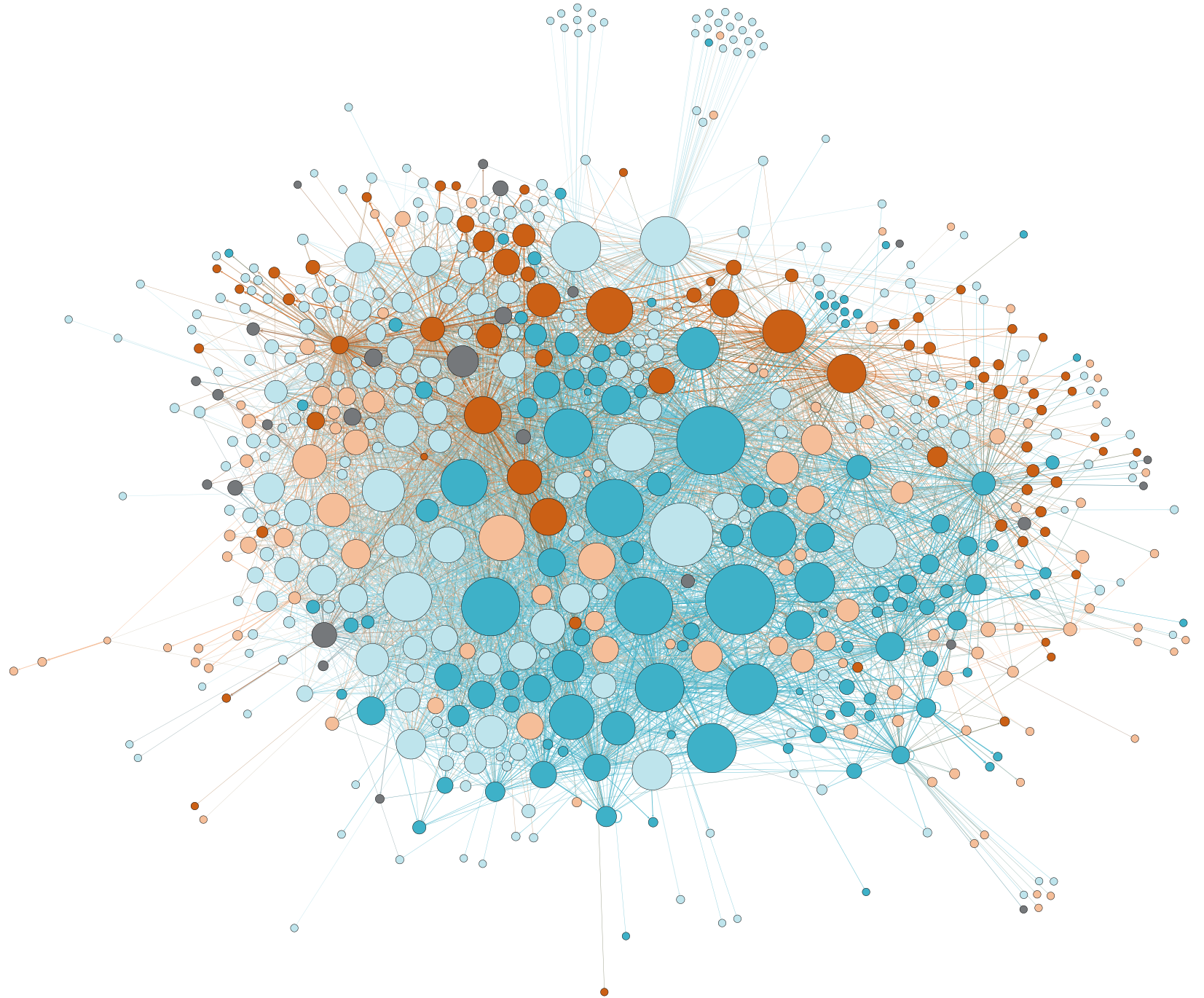
BHT-Facilitated Linkages

...and more than 5 linkages between Eastern WA organizations and the following partners:

- Volunteers of America Eastern Washington and Northern Idaho (8)
- Department of Social and Health Services (DSHS) (8)
- Excelsior Holistic Schools (8)
- Catholic Charities (7)
- Community-Minded Enterprises (7)
- Second Harvest (7)
- Aging & Long Term Care of Eastern WA (ALTCEW) (7)
- Rural Resources Community Action (7)
- MultiCare Health System INW (6)
- Newport Hospital & Health Services (6)

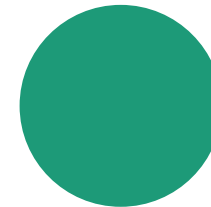


Collaboration
in Eastern
Washington

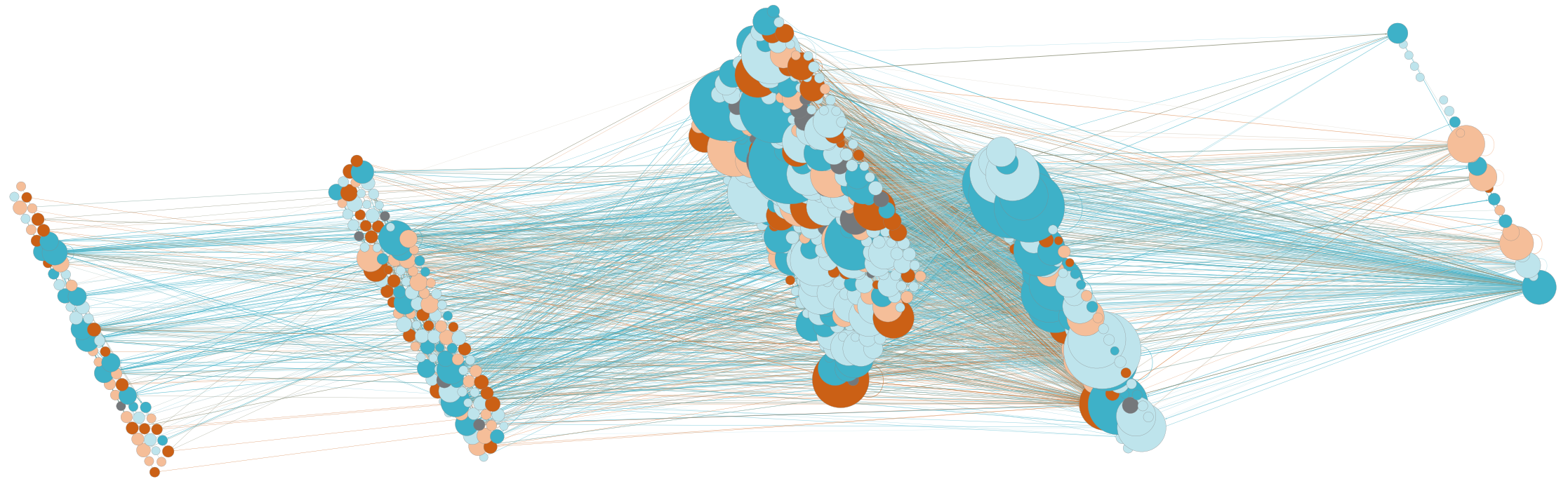


- 94% of BHT health system participants are active in the collaboration network.
- It is common for organizations to collaborate across boundaries to serve people living in BHT's 6-county region.
- Organizations collaborate across sectors more frequently than across geographic service areas (62% of collaborative linkages happen across sectors vs. 48% across geographic service areas).
- 1% of all possible collaborative partnerships were reported across the region.
- 43 collaboration silos exist across the region.
- On average, each organization maintains collaborative partnerships with 8 other organizations.

Collaboration Overview



Collaboration Across Counties



**Adams & Lincoln
Counties**

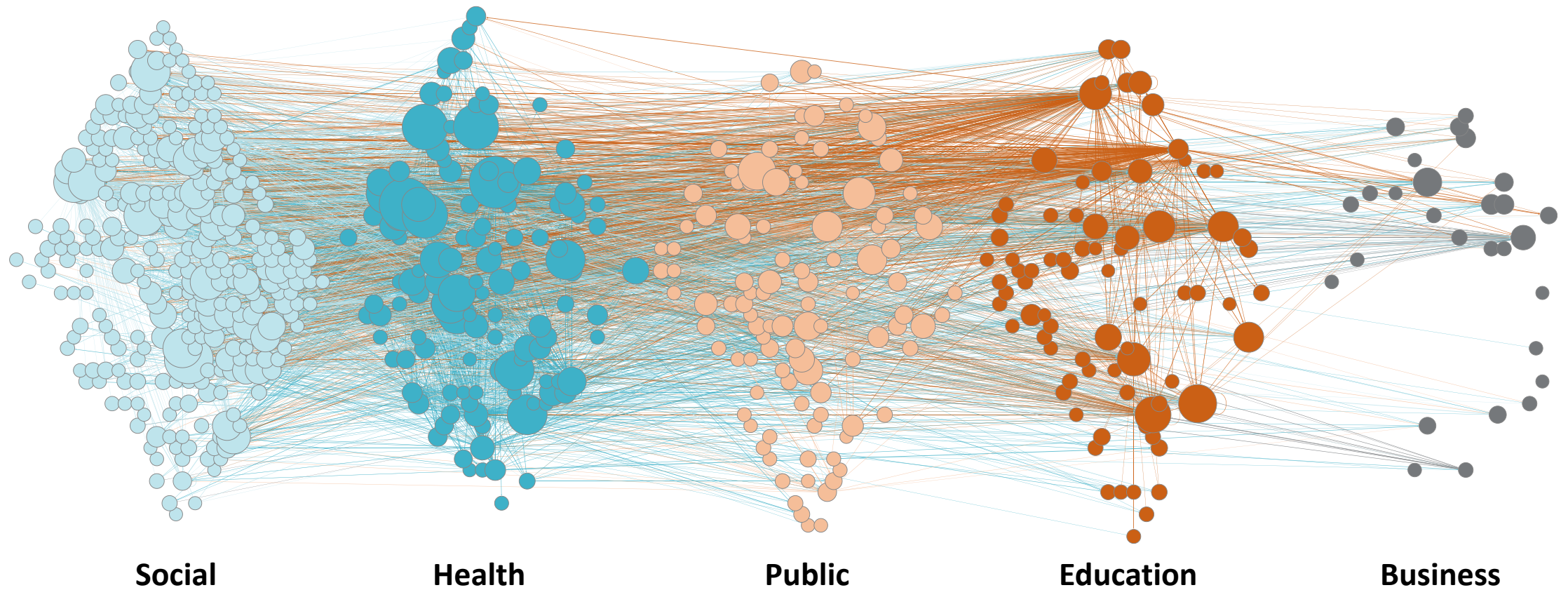
**Northeast
Tri-County**

**Spokane
County**

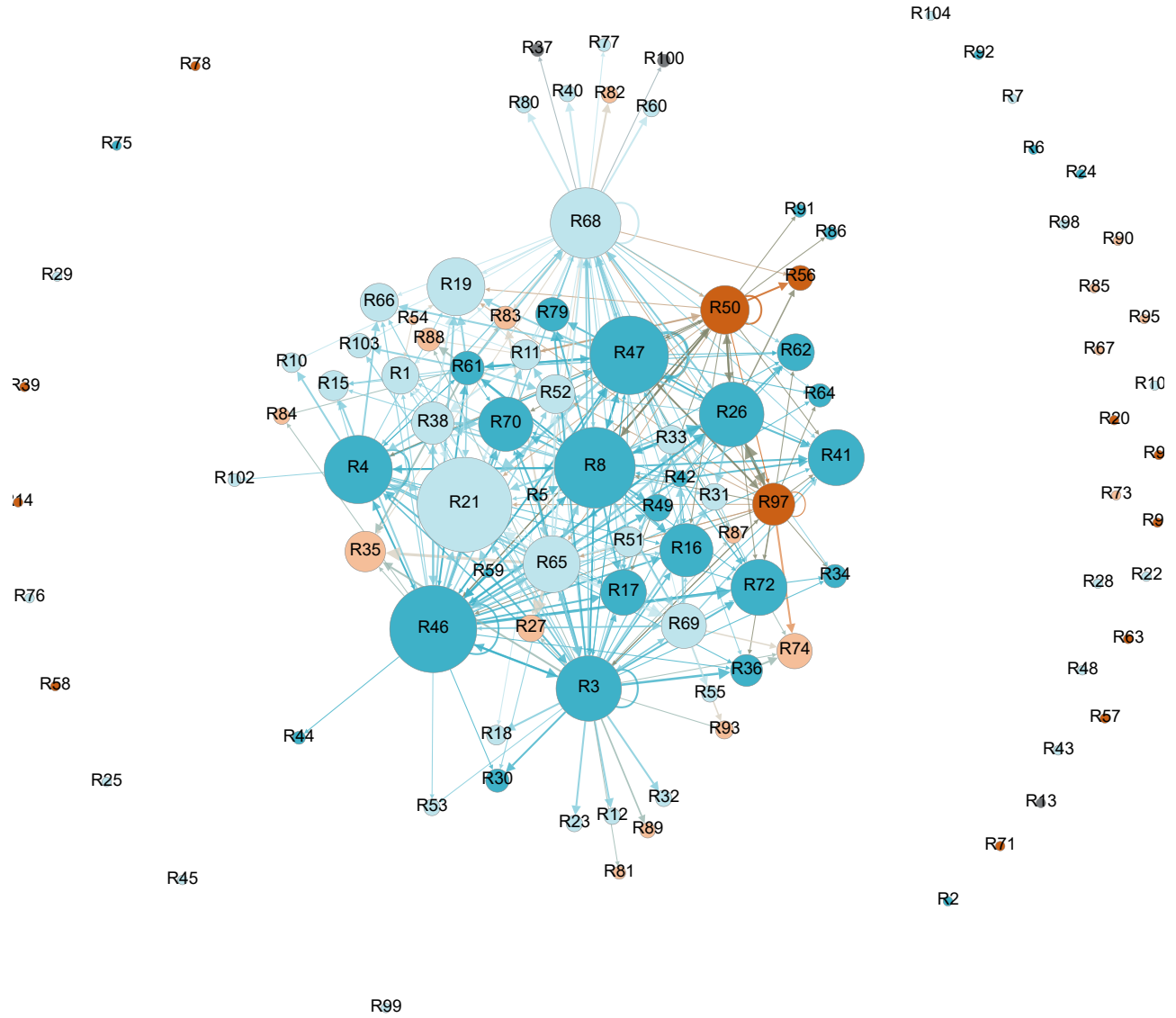
Regional

Tribal

Collaboration Across Sectors



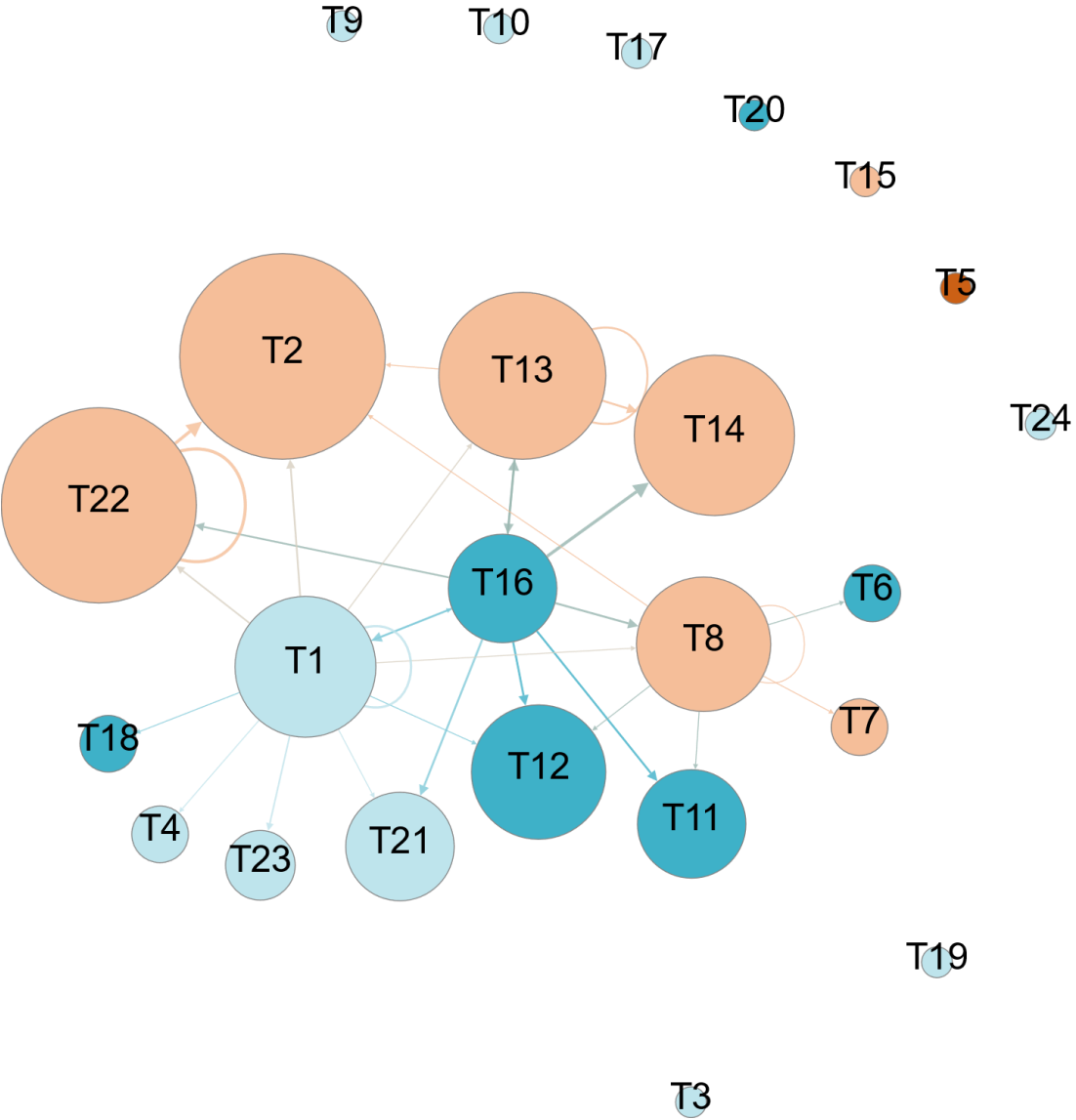
Collaboration among Regional Organizations



Collaboration among Regional Organizations

- 94% of regional organizations are active in the collaboration network.
- 66% of regional organizations collaborate with one another.
- Most regional organization collaboration linkages are with Spokane County organizations (61% of collaboration linkages); regional organizations collaborate least with tribal organizations (6% of reported linkages) and organizations in Adams & Lincoln Counties (6% of reported linkages).
- 3% of all possible collaborative partnerships were reported among regional organizations.
- 40 collaboration silos exist within the collaboration network of regional organizations.
- On average, each regional organization maintains 3 collaborative partnerships with other regional organizations.

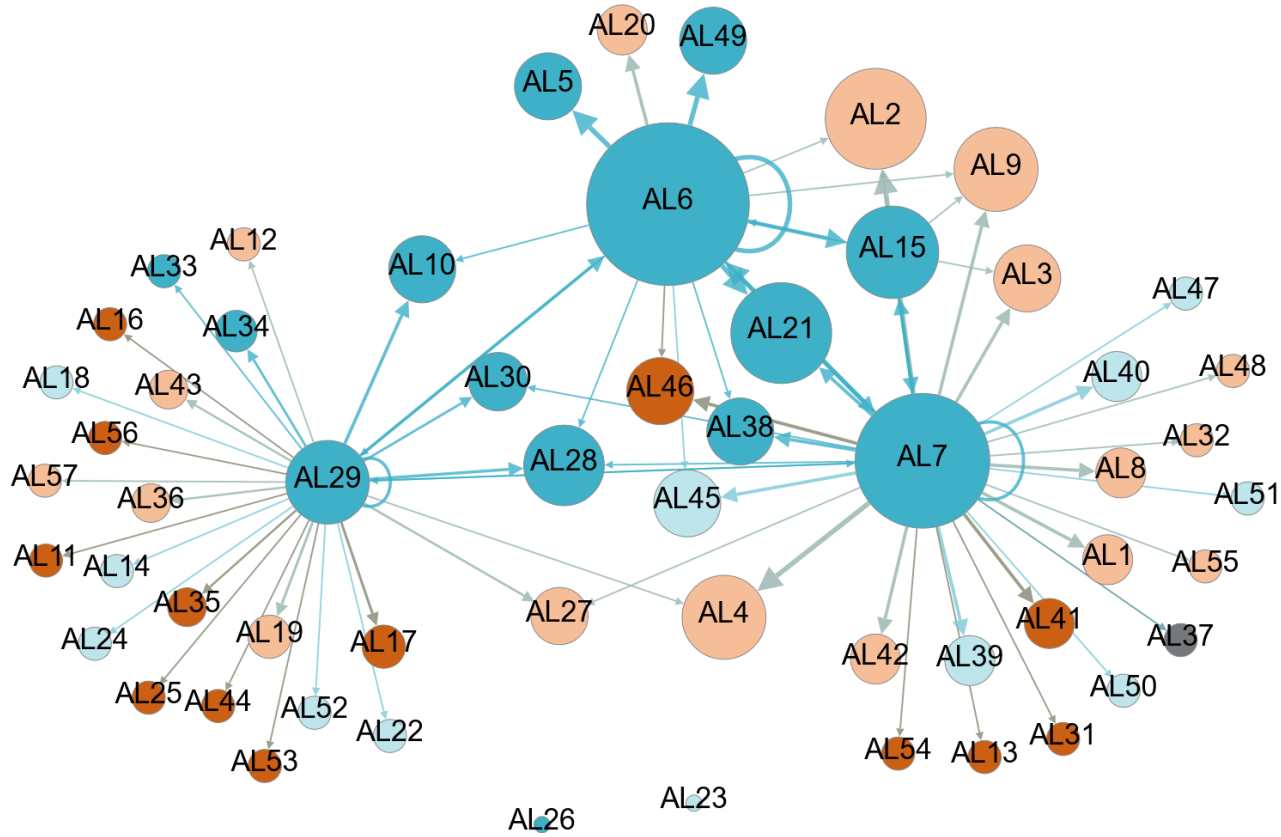
Collaboration among Tribal Organizations



Collaboration among Tribal Organizations

- Tribal organizations collaborate extensively across geographic services areas (GSAs), with 92% of reported collaboration linkages made with organizations in other GSAs.
- 75% of tribal organizations are active in the collaboration network.
- 63% of regional organizations collaborate with one another.
- Most tribal organization collaboration linkages are with Spokane County organizations (45% of collaboration linkages) and regional organizations (37%); there was no reported collaboration between tribal organizations and organizations in Adams and Lincoln Counties.
- 6% of all possible collaborative partnerships were reported among tribal organizations.
- 12 collaboration silos exist within the collaboration network of tribal organizations.
- On average, each tribal organization maintains 1 collaborative partnerships with other tribal organizations.

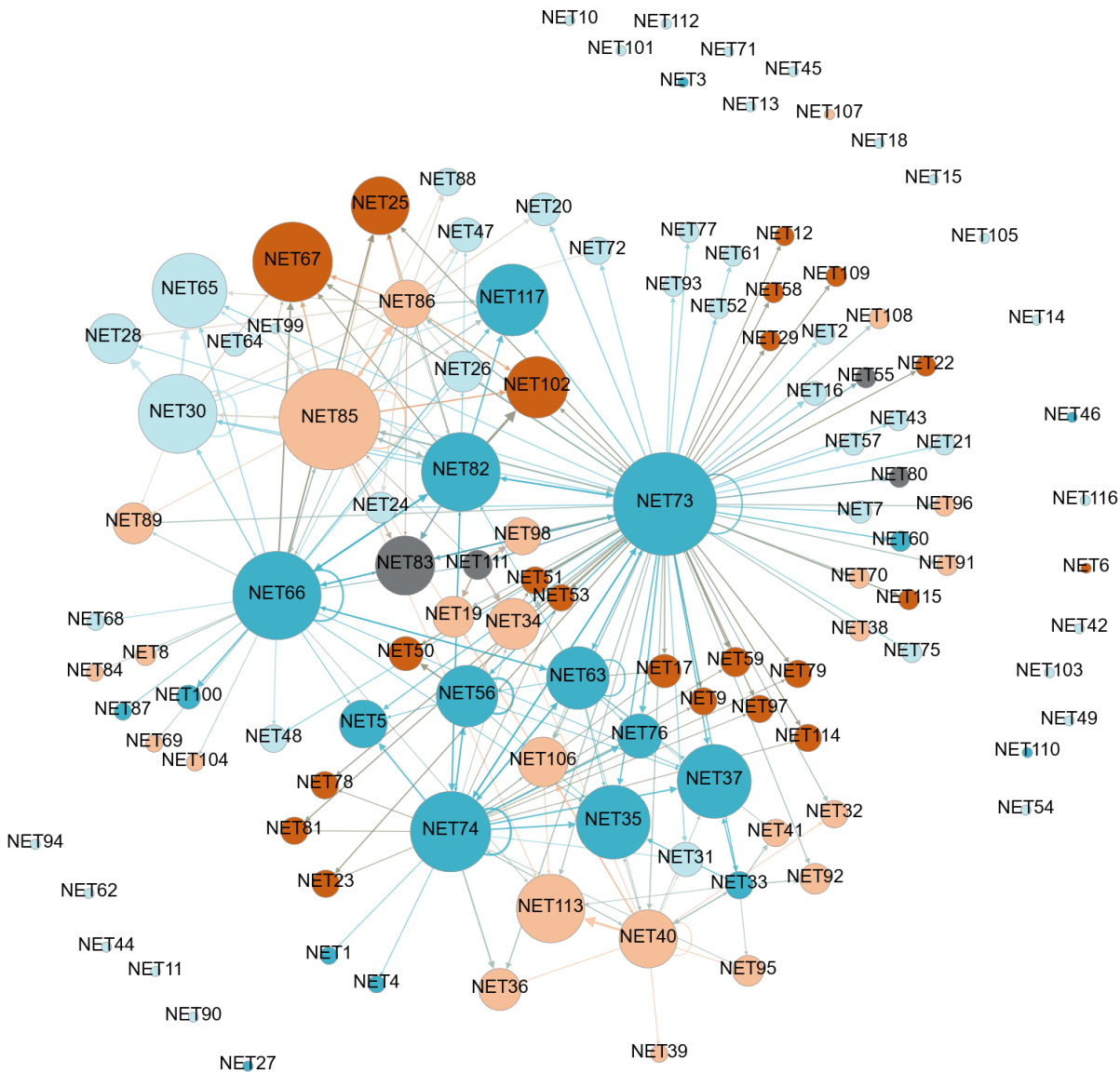
Collaboration
in Adams &
Lincoln
Counties



Collaboration in Adams & Lincoln Counties

- Adams & Lincoln Counties had the highest percentage of within-county collaboration of all geographic service areas (GSAs).
- Although Adams & Lincoln Counties have the highest representation of public organizations of the five GSAs, none of these organizations reported working with one another.
- 98% of Adams & Lincoln County organizations are active in the collaboration network.
- 96% of Adams & Lincoln County organizations collaborate with one another.
- Most Adams & Lincoln County organization collaboration linkages are with regional organizations (48% of collaboration linkages) and with other Adams & Lincoln County organizations (27%); there was no reported collaboration between Adams & Lincoln County organizations and tribal organizations and only 7% of Adams & Lincoln County collaboration was with Northeast Tri-County organizations.
- 3% of all possible collaborative partnerships were reported among Adams & Lincoln County organizations.
- 4 collaboration silos exist within the collaboration network of Adams & Lincoln County organizations.
- On average, each Adams & Lincoln County organization maintains 1 collaborative partnerships with other Adams & Lincoln County organizations.

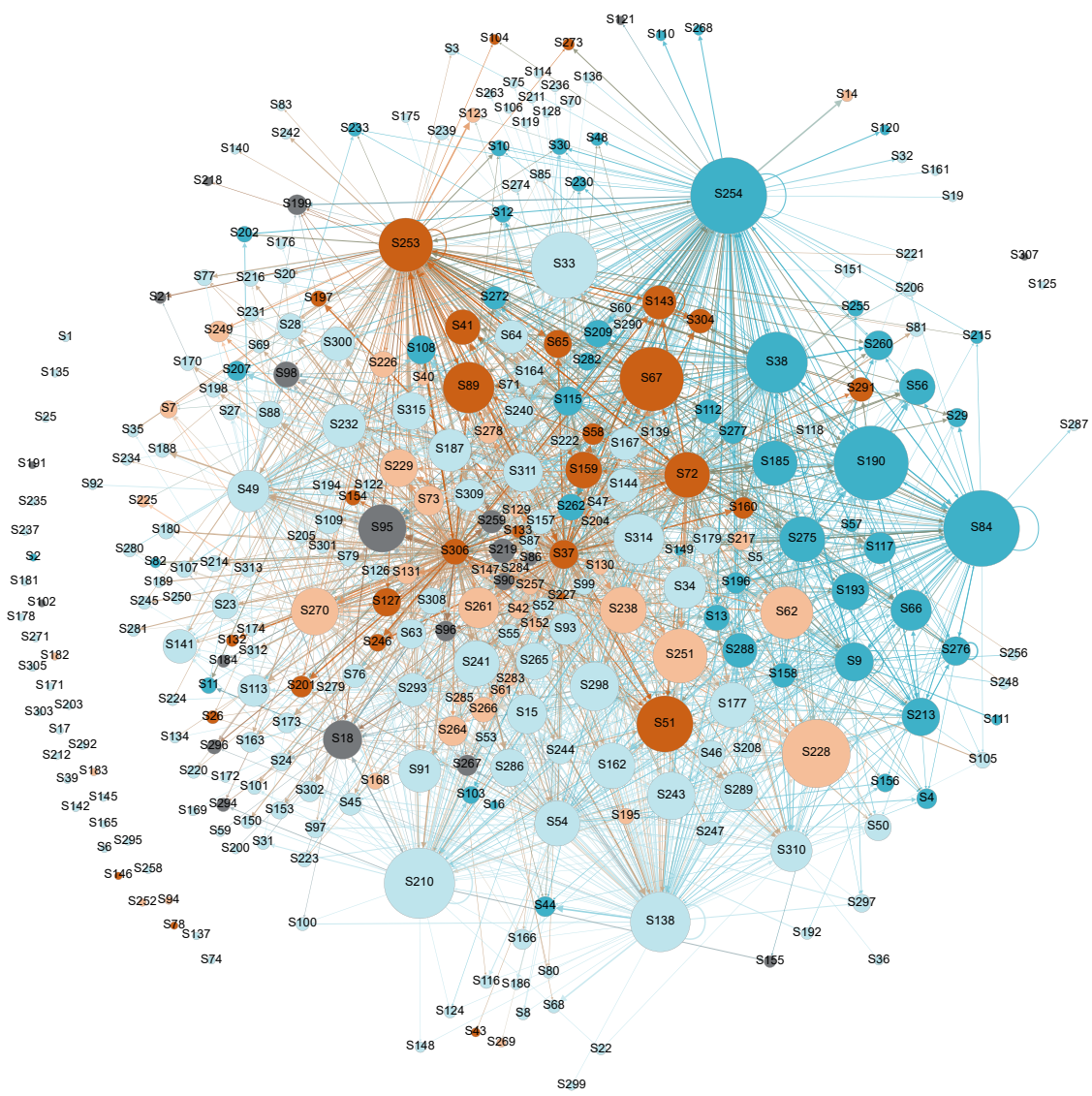
Collaboration in Northeast Tri-County



Collaboration in Northeast Tri-County

- 88% of Northeast Tri-County organizations are active in the collaboration network.
- 78% of Northeast Tri-County organizations collaborate with one another.
- Most Northeast Tri-County organization collaboration linkages are with regional organizations (43% of collaboration linkages) and with other Northeast Tri-County organizations (31% of linkages); there was little reported collaboration between Northeast Tri-County organizations and tribal organizations (5% of linkages) and Adams & Lincoln County organizations (3% of linkages).
- 2% of all possible collaborative partnerships were reported among Northeast Tri-County organizations.
- 30 collaboration silos exist within the collaboration network of Northeast Tri-County organizations.
- On average, each Northeast Tri-County organization maintains 2 collaborative partnerships with other Northeast Tri-County organizations.

Collaboration in Spokane County



Collaboration in Spokane County

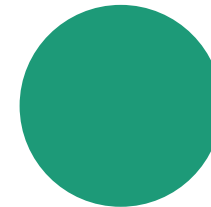
- Spokane County organizations collaborate extensively with one another and with regional organizations (90% of collaboration linkages), with relatively little collaboration reported in other geographic services areas (10% of linkages).
- 97% of Spokane County organizations are active in the collaboration network.
- 89% of Spokane County organizations collaborate with one another.
- Most Spokane County organization collaboration linkages are with other Spokane County organizations (53% of collaboration linkages) and regional organizations (38 % of linkages); it was least common for Spokane County organizations to collaborate with Adams & Lincoln County organizations (1% of linkages).
- 2% of all possible collaborative partnerships were reported Spokane County organizations.
- 41 collaboration silos exist within the collaboration network of Spokane County organizations.
- On average, each Spokane County organization maintains 6 collaborative partnerships with other Spokane County organizations.

Collaboration Takeaways

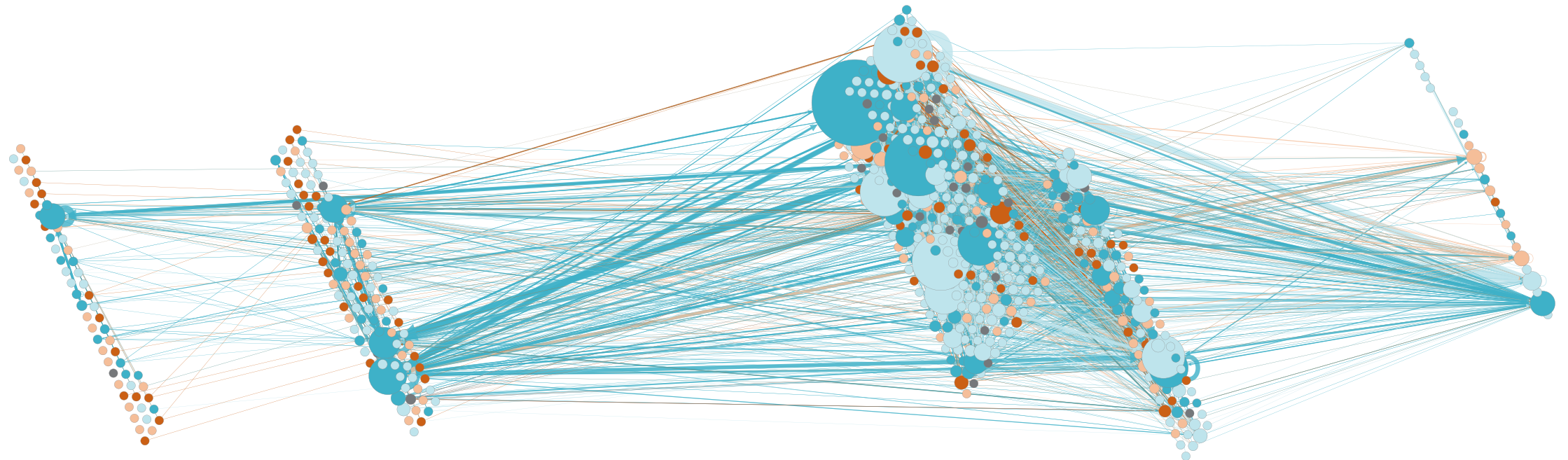
- Nearly all health system participants are involved in collaborating to serve people living in BHT's 6-county region.
- Regional organizations play a major role in collaboration across the BHT region.
- Organizations in several geographic service areas (GSAs) collaborate most frequently with regional organizations and other organizations in their own GSA.

- Organizations refer extensively across counties and sectors.
 - This points to the need to find a standard referral system that functions across boundaries.
- 49% of referrals (n=1,891) were made across GSAs and 59% of referrals (n=2,264) were made across sectors.
- 83% of BHT health system participants are active in the referral network.
- Organizations collaborate across sectors more frequently than across geographic service areas (62% of collaborative linkages happen across sectors vs. 48% across geographic service areas).
- 1% of all possible referral linkages were reported across the region.
- 174 referral silos exist across the region.
- On average, each organization sends/receives referrals with 6 other organizations.

Referrals Overview



Referrals Across Counties



**Adams & Lincoln
Counties**

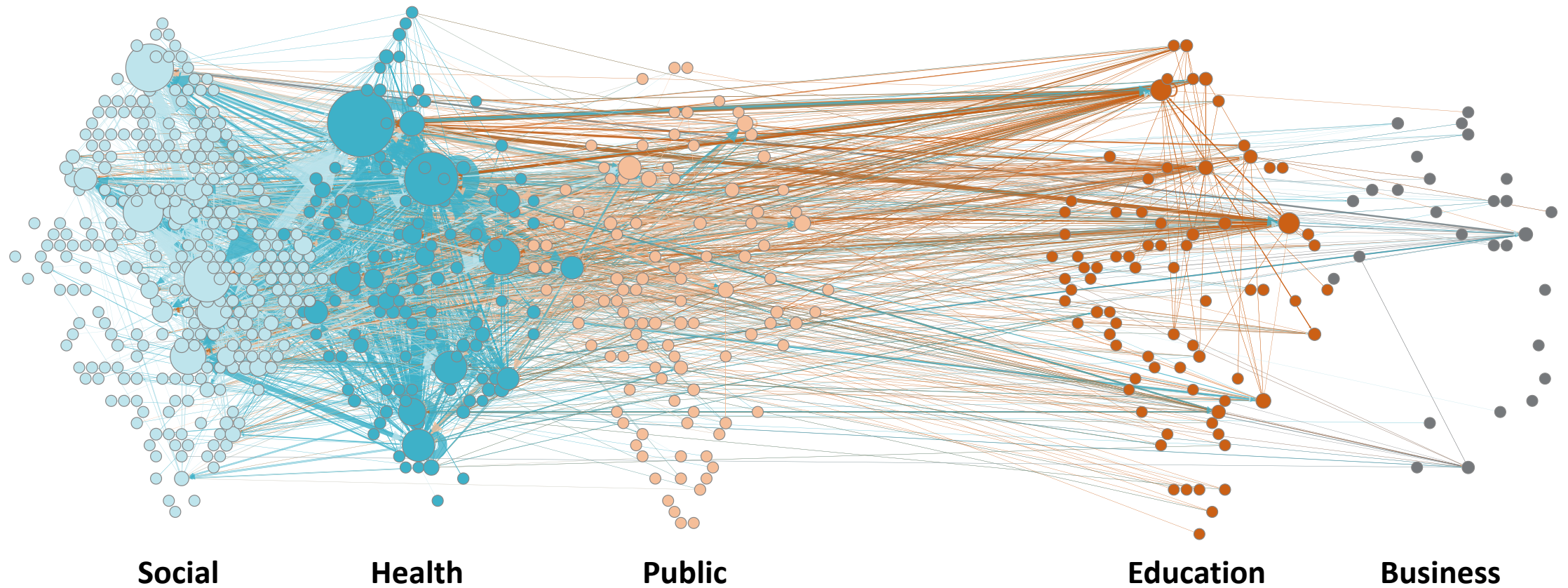
**Northeast
Tri-County**

**Spokane
County**

Regional

Tribal

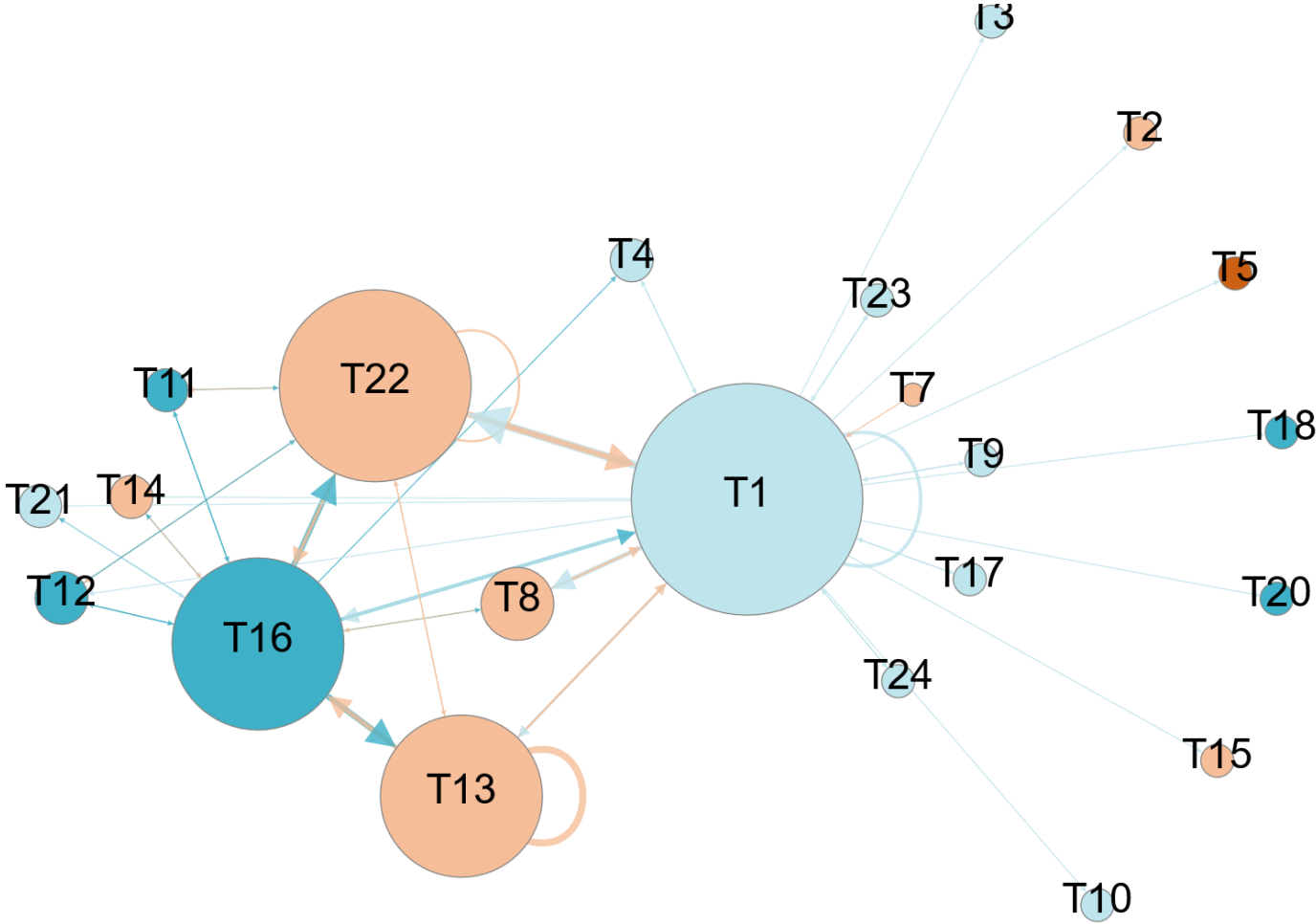
Referrals Across Sectors



Referrals among Regional Organizations

- 83% of regional organizations are active in the referral network.
- 50% of regional organizations referral with one another.
- 87% of regional organization referrals were sent/received across geographic service areas.
- Most regional organization referral linkages are with Spokane County organizations (66% of referral linkages); regional organizations refer least with organizations in Adams & Lincoln Counties (3% of reported referrals).
- 2% of all possible referral linkages were reported among regional organizations.
- 56 referral silos exist within the referral network of regional organizations.
- On average, each regional organization exchanges 2 referrals with other regional organizations.

Referrals
among Tribal
Organizations



Referrals among Tribal Organizations

- Tribal organizations refer extensively across geographic services areas (GSAs), with 89% of reported referral linkages made with organizations in other GSAs.
- 92% of tribal organizations are active in the regional referral network.
- 92% of tribal organizations refer to other tribal organizations (compared to the region average of 73%).
- Most tribal organization referral linkages are with Spokane County organizations (52% of referral linkages) and regional organizations (23%); there were few reported referrals between tribal organizations and organizations in Adams & Lincoln Counties (1% of referral linkages).
- 10% of all possible referral linkages were reported among tribal organizations.
- 4 referral silos exist within the referral network of tribal organizations.
- On average, each tribal organization maintains 2 referral linkages with other tribal organizations.

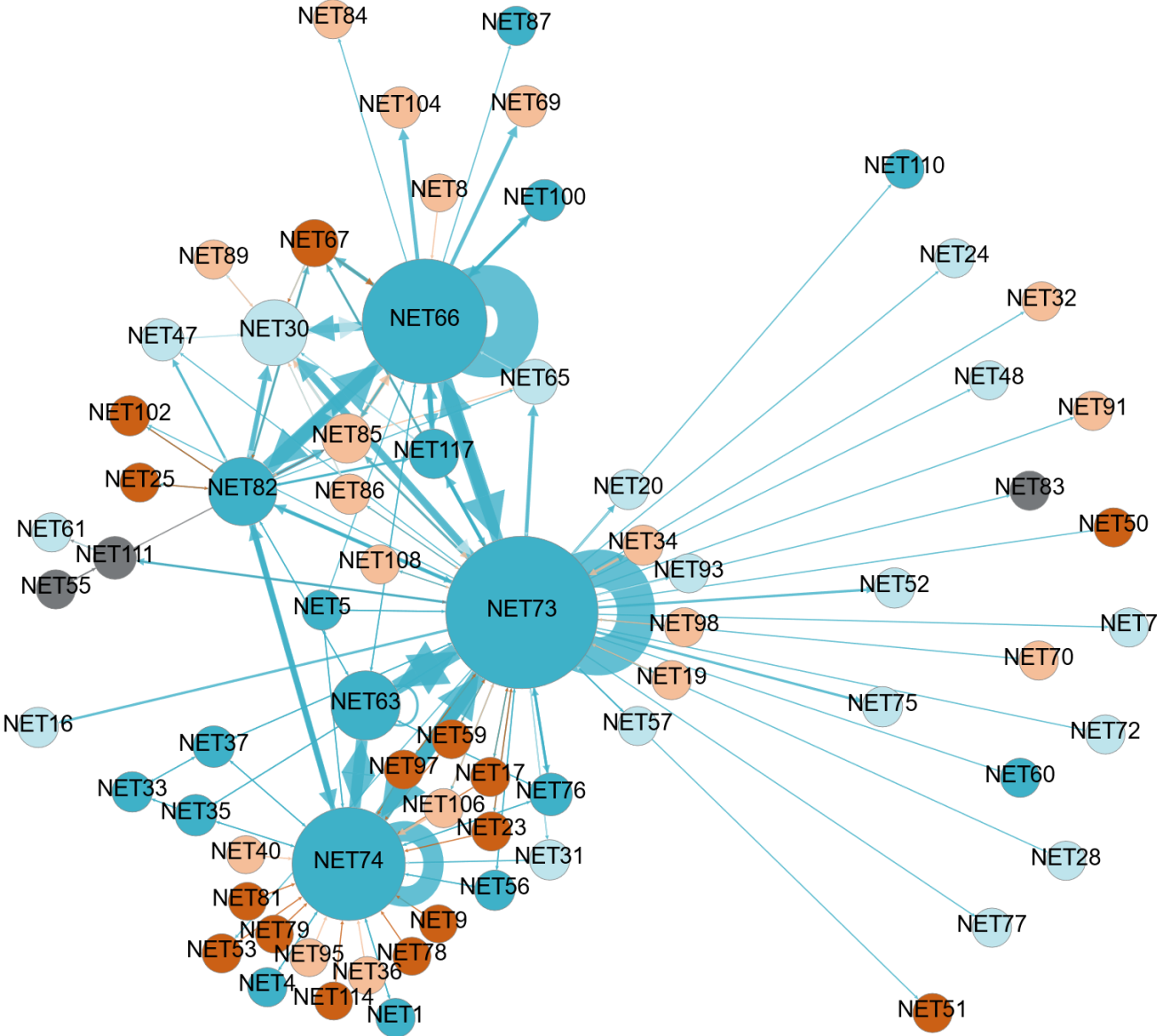
Referrals in Adams & Lincoln Counties



Referrals in Adams & Lincoln Counties

- 61% of Adams & Lincoln County organizations are active in the regional referral network.
- 47% of Adams & Lincoln County organizations refer with one another.
- Most Adams & Lincoln County organization referral linkages are with regional organizations (32% of referral linkages), with other Adams & Lincoln County organizations (27%), and with Spokane County organizations (26%); there were few reported referrals between Adams & Lincoln County organizations and tribal organizations (3% of referral linkages).
- 1% of all possible referral linkages were reported among Adams & Lincoln County organizations.
- 31 referral silos exist within the referral network of Adams & Lincoln County organizations.
- On average, each Adams & Lincoln County organization maintains 1 referral linkages with other Adams & Lincoln County organization.

Referrals in Northeast Tri-County



Referrals in Northeast Tri-County

- 68% of Northeast Tri-County organizations are active in the regional referral network.
- 62% of Northeast Tri-County organizations refer with one another.
- Most Northeast Tri-County organization referral linkages are with other Northeast Tri-County organizations (32% of referral linkages) and with regional organizations (30% of referral linkages); there were few reported referrals between Northeast Tri-County organizations and Adams & Lincoln County organizations (3% of referral linkages).
- 1% of all possible referral linkages were reported among Northeast Tri-County organizations.
- 49 referral silos exist within the referral network of Northeast Tri-County organizations.
- On average, each Northeast Tri-County organization maintains 2 referral linkages with other Northeast Tri-County organizations.

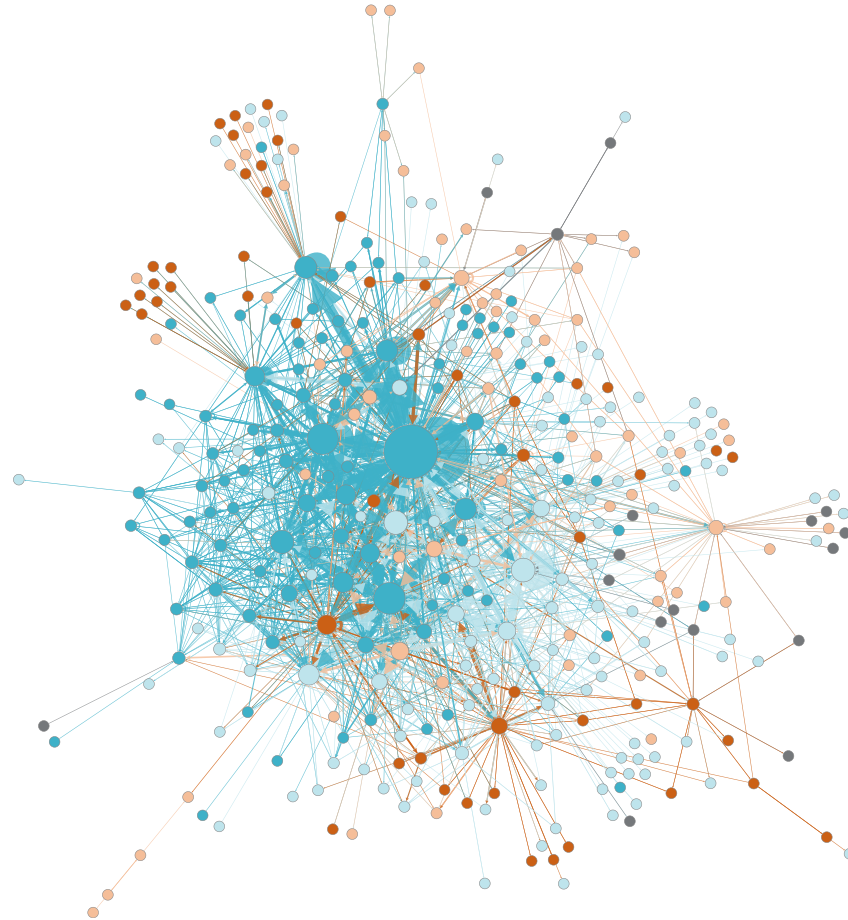
Referrals in Spokane County

- 72% of Spokane County organizations are active in the regional referral network.
- 67% of Spokane County organizations refer with one another.
- Most Spokane County organization referral linkages are with other Spokane County organizations (50% of referral linkages) and with regional organizations (35% of referral linkages); there were few reported referrals between Spokane County organizations and Adams & Lincoln County organizations (1% of Spokane County referral linkages).
- 2% of all possible referral linkages were reported among Spokane County organizations.
- 108 referral silos exist within the referral network of Spokane County organizations.
- On average, each Spokane County organization maintains 5 referral linkages with other Spokane County organizations.

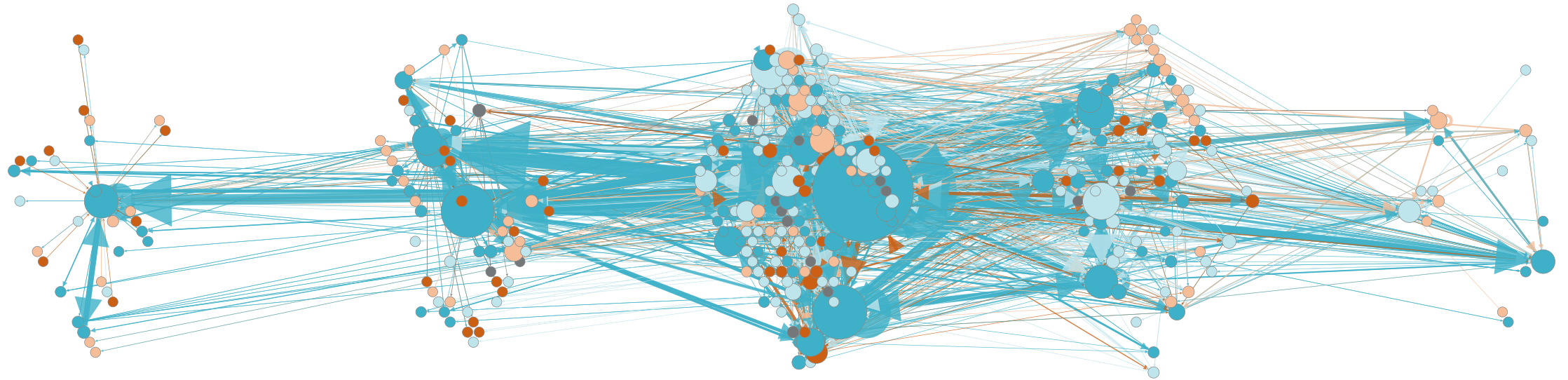
Referrals Takeaways

- Most geographic service areas (GSAs) primarily refer across GSAs (73%-89% of referral linkages); Spokane County is the exception, with only 50% of referral linkages reported across GSAs.
- About three out of every four health system participants send and/or receive referrals in BHT's 6-county region.
- Spokane County organizations and Regional organizations play a major role in referrals across the BHT region.

Data Exchange in Eastern Washington



Data Exchange Across Counties



**Adams & Lincoln
Counties**

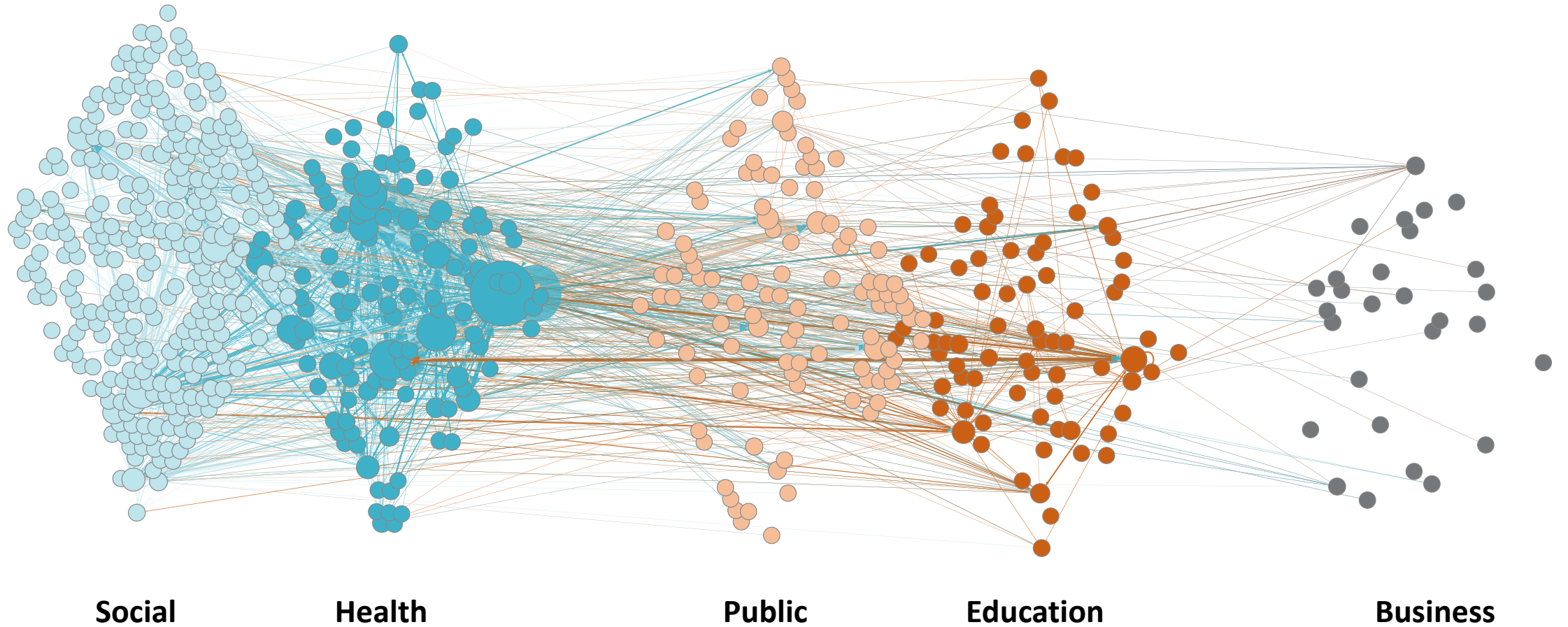
**Northeast
Tri-County**

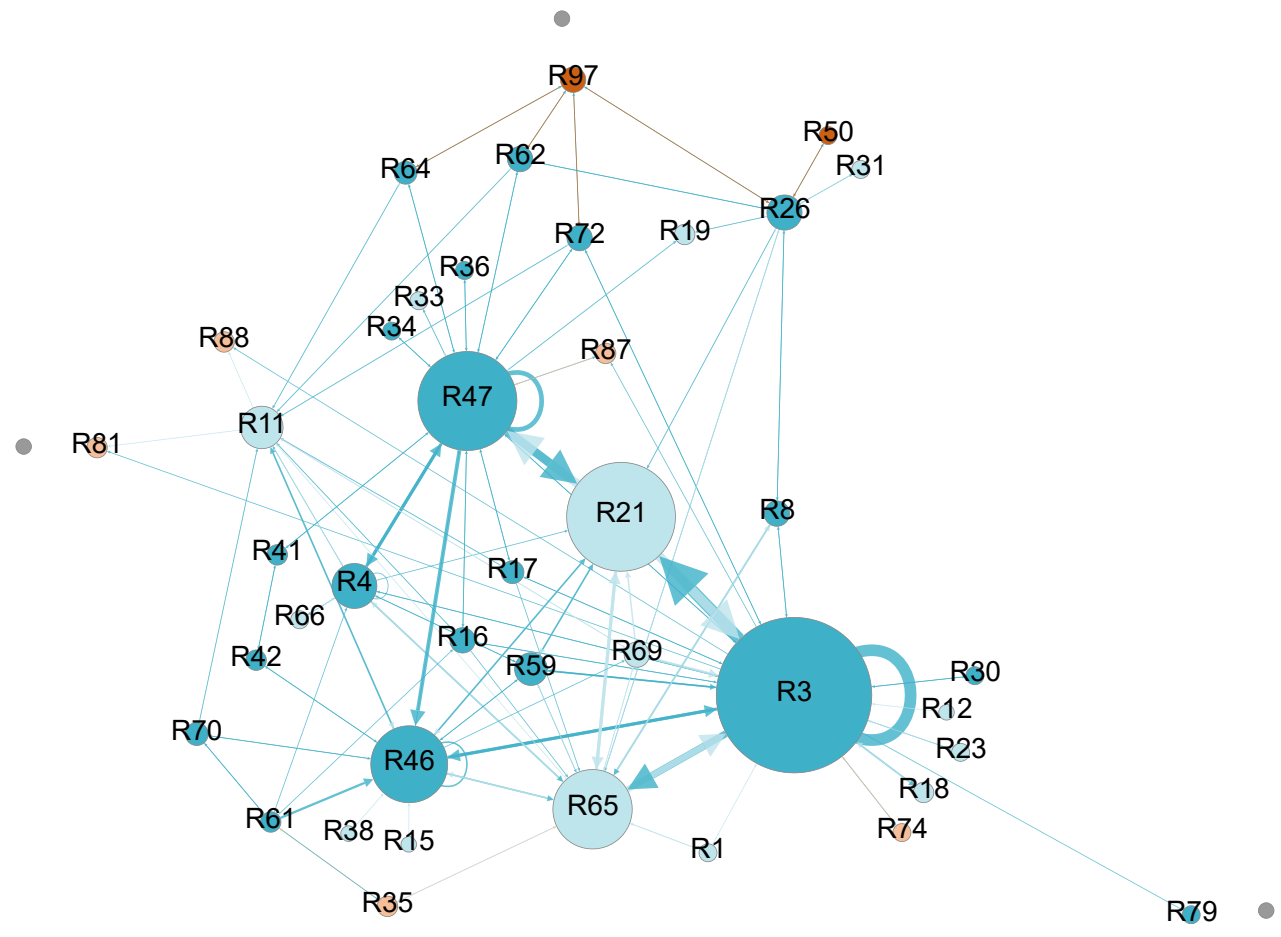
**Spokane
County**

Regional

Tribal

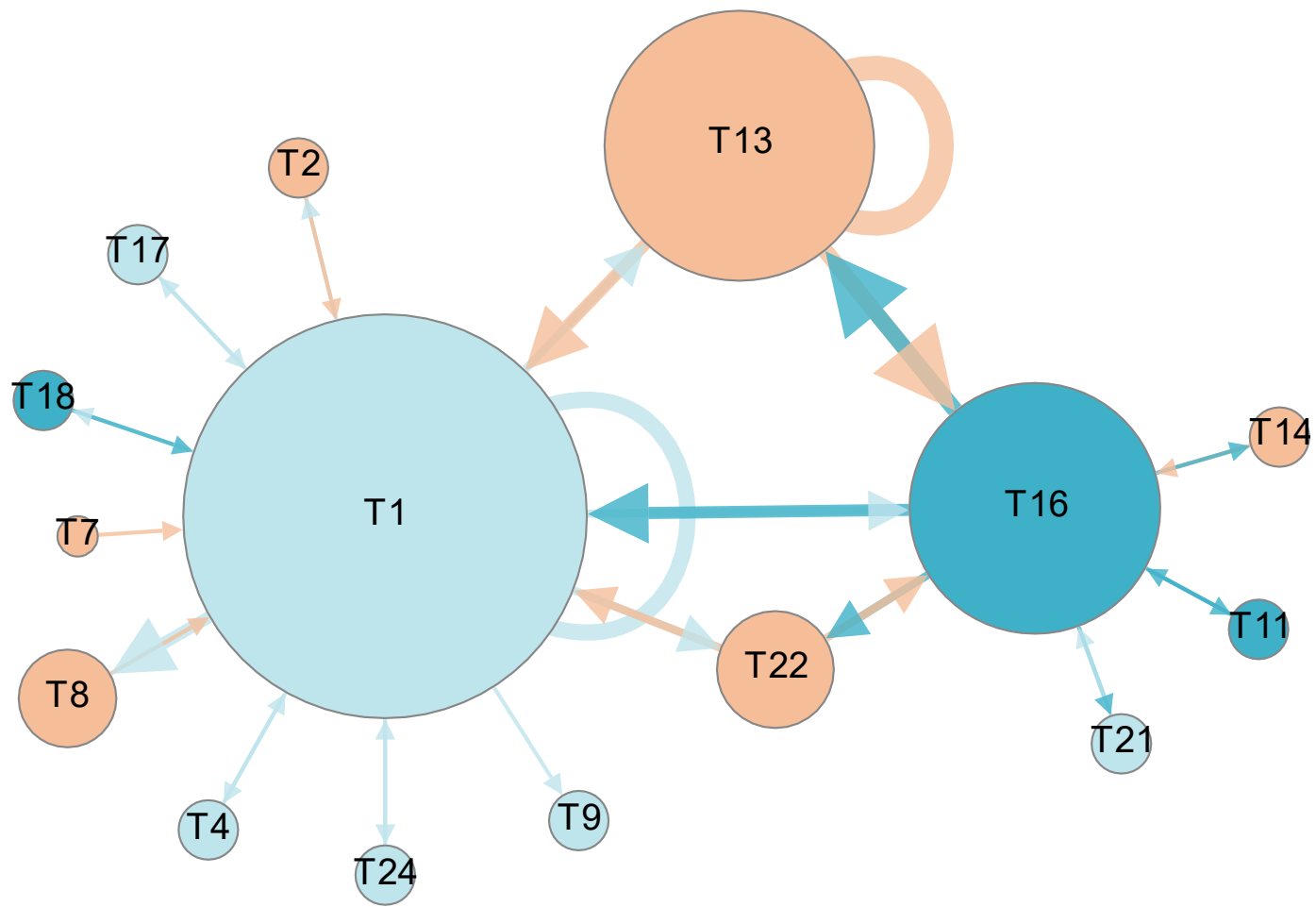
Data Exchange Across Sectors





Data Exchange among Regional Organizations

- # same-GSA partnerships
 - Most active orgs – least active orgs.
- # cross-GSA partnerships
 - Adams/Lincoln
 - Northeast Tri
 - Spokane
 - Tribal
 - Regional



Key Tribal Data Exchangers

Active Collaborators

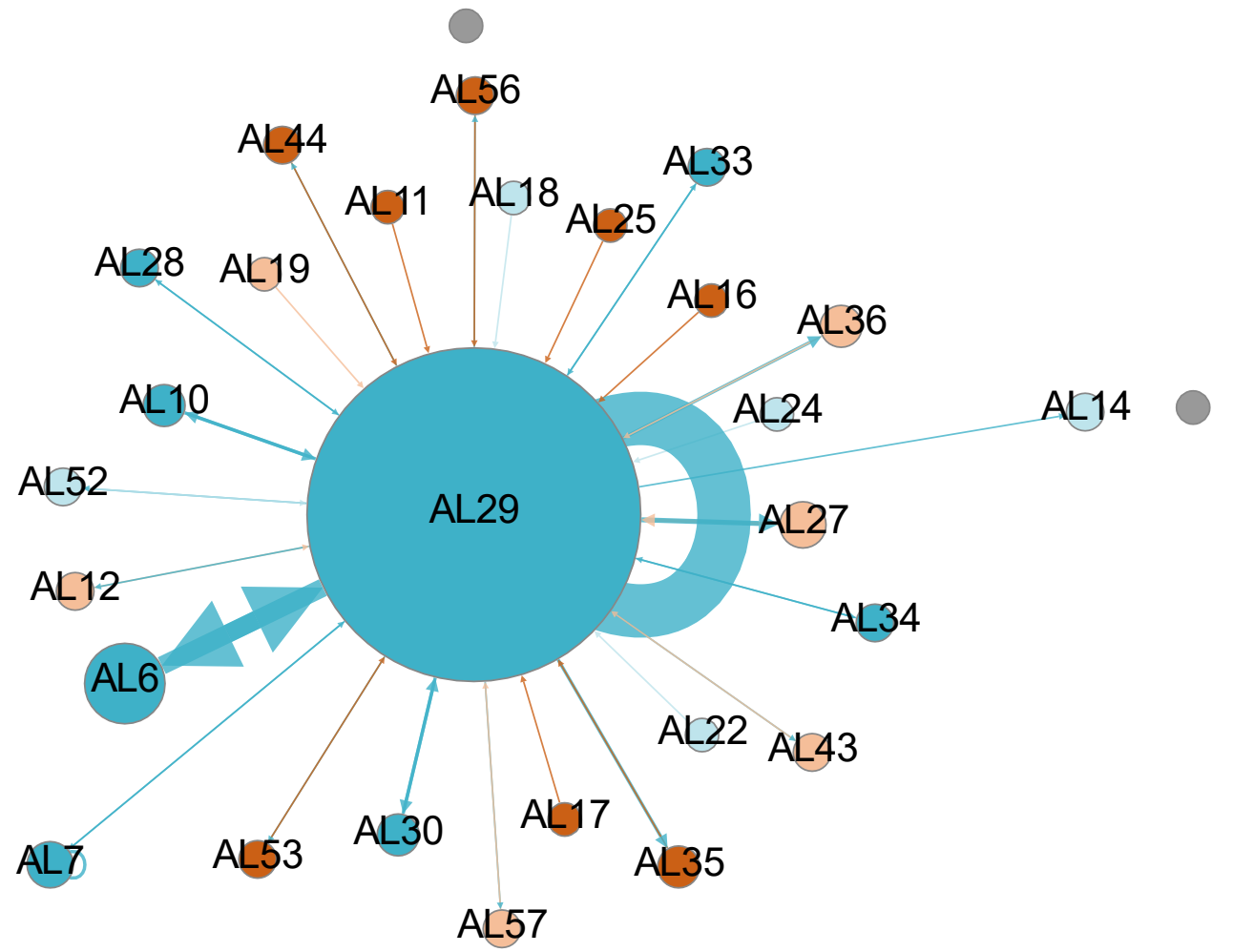
- Bureau of Indian Affairs
- Spokane Tribe of Indians
- Kalispel Tribe of Indians
- KALTRAN Tribal Transit
- American Indian Community Center

Collaboration Brokers

- The NATIVE Project
- Confederated Tribes of the Colville Reservation
- American Indian Community Center
- Kalispel Tribe of Indians
- Spokane Tribe of Indians

Data Exchange among Tribal Organizations

- # same-GSA partnerships
 - Most active orgs – least active orgs.
- % orgs not engaged with other Tribal orgs
- # cross-GSA partnerships
 - Adams/Lincoln
 - Northeast Tri
 - Spokane
 - Regional

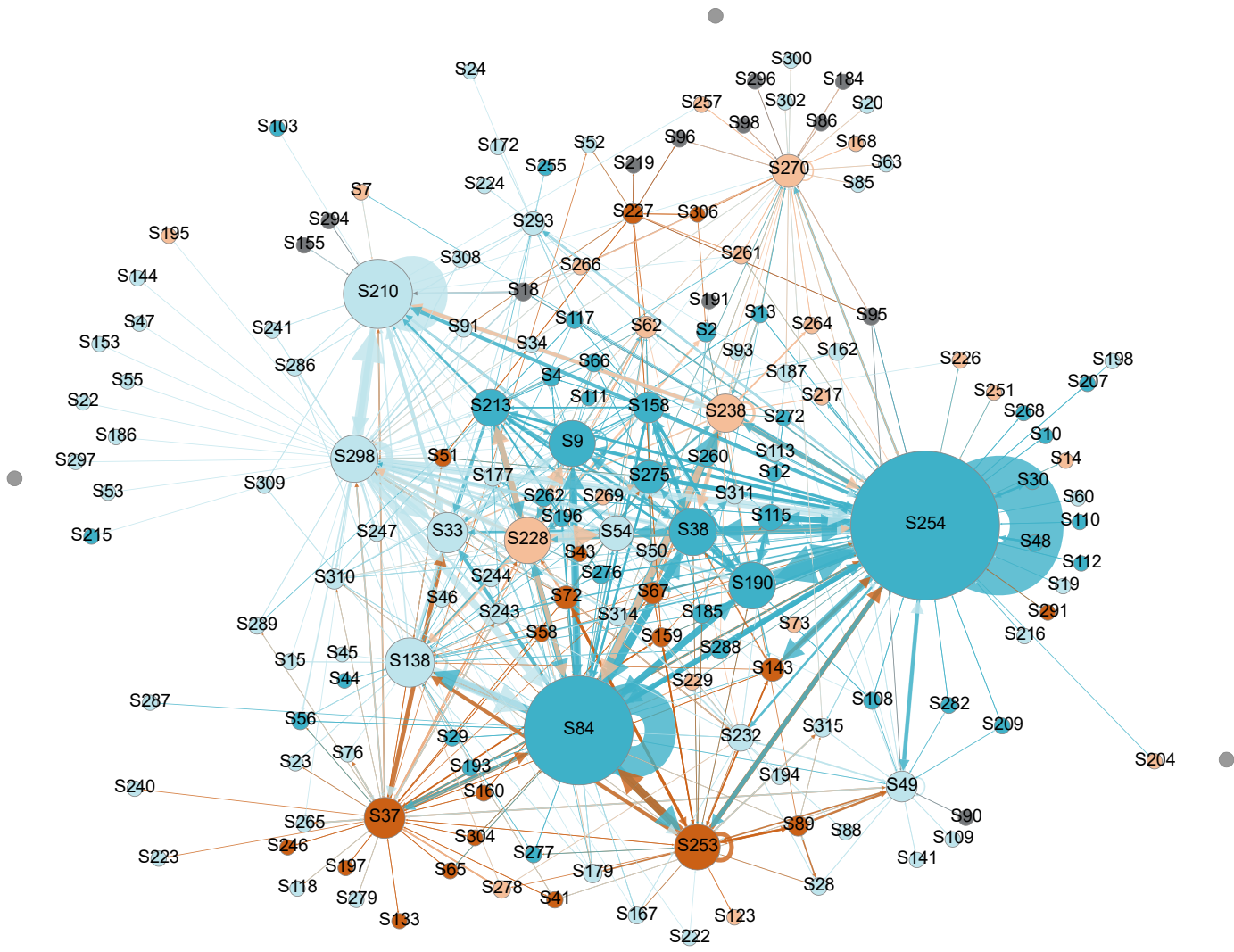


Data Exchange in Adams & Lincoln Counties

- # same-GSA partnerships
 - Most active orgs – least active orgs.
- # cross-GSA partnerships
 - Northeast Tri
 - Spokane
 - Tribal
 - Regional

Data Exchange in Northeast Tri-County

- # same-GSA partnerships
 - Most active orgs – least active orgs.
- # cross-GSA partnerships
 - Adams/Lincoln
 - Northeast Tri
 - Spokane
 - Tribal
 - Regional



Data Exchange in Spokane County

- # same-GSA partnerships
 - Most active orgs – least active orgs.
- # cross-GSA partnerships
 - Adams/Lincoln
 - Northeast Tri
 - Tribal
 - Regional

Data Exchange Takeaways