



REGIONAL JUDICIAL OPIOID INITIATIVE
Action Research Partner Report
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EXECUTIVE SUMMARY

There have been more than a half million drug overdose deaths in the United States since 2000, with over 70,000 drug overdose deaths in 2017 alone, a majority involving opioids. Despite interventions at all levels of government, opioid mortality continues to rise, prompting new, innovative solutions to address the opioid epidemic. In particular, court systems, flooded with opioid-related court cases, have a unique opportunity to convene stakeholders, implement evidence-based programs, and share information necessary to address the opioid epidemic.

In 2016, the State Supreme Court of Ohio convened a multi-state collaborative, the Regional Judicial Opioid Initiative (RJOI), among partner judicial agencies in eight states: Illinois, Indiana, Kentucky, Michigan, North Carolina, Ohio, Tennessee, and West Virginia. The explicit intention of RJOI is to develop regional solutions to the opioid epidemic from a court perspective, while strengthening collaboration among stakeholders.

To address data and research needs of RJOI, a data action partner was tasked with collecting, sharing, and analyzing data from the RJOI states to inform decision-making around potential strategies. A data visualization platform of the RJOI states was created to display different measures relevant to addressing the overdose epidemic, such as:

- sociodemographic and economic indicators,
- drug overdose death rates,
- buprenorphine prescribers, and
- prescription drug monitoring program (PDMP) statistics.

An analysis of this data visualization shows several notable overdose hotspots among the RJOI states, particularly along state lines. For example, high rates of overdose deaths appear to be concentrated in the southern regions of West Virginia and Ohio, and along the eastern border of Kentucky. Further, analysis shows a low rate of buprenorphine prescribers within the region, especially in rural areas, as well as a high level of drug-related court filings in both urban and rural areas.

Based on findings from the data visualization as well as recommendations from the Centers for Disease Control and Prevention, researchers propose several evidence-based interventions for addressing the drug overdose epidemic within the RJOI region, including:

- 1) Assessing data infrastructure and collaboration,
- 2) Helping facilitate medication-assisted treatment (MAT) within justice settings,
- 3) Considering harm reduction within a judicial framework, and
- 4) Reducing barriers to care in rural areas.

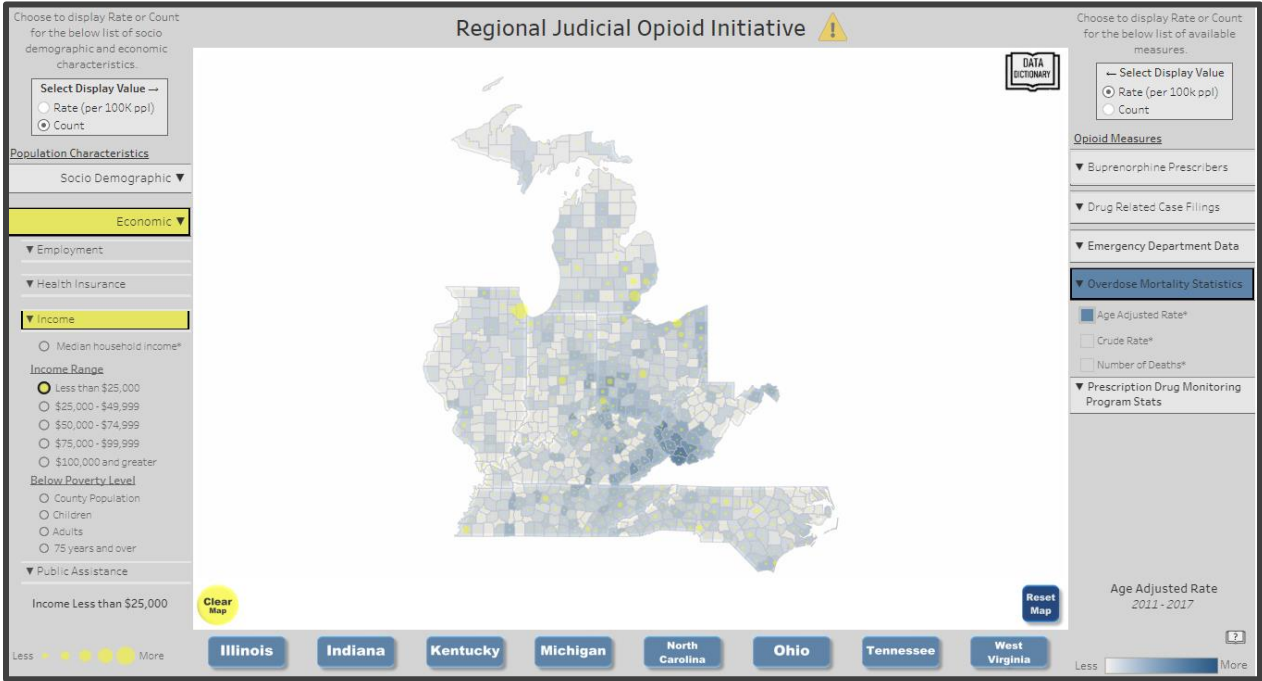
Despite the utility of the data visualization, several limitations to data analysis exist. For example, states varied dramatically in which type of data were available and submitted for the visualization, as well as in terms of how various measures were defined. Further, some states had missing data for some variables. While there are limitations to the visualization developed through the RJOI initiative, this tool can serve as a preliminary way to geographically prioritize interventions aimed at combatting the overdose epidemic.

BACKGROUND

In 2016, the State Supreme Court of Ohio convened a multi-state collaborative, the Regional Judicial Opioid Initiative (RJOI), among partner judicial agencies in eight states: Illinois, Indiana, Kentucky, Michigan, North Carolina, Ohio, Tennessee, and West Virginia. The explicit intention of RJOI is to develop regional solutions to the opioid epidemic from a court perspective, while strengthening collaboration among stakeholders. Participants include chief justices, state courts, state criminal justice agencies, state public health agencies, legislators, treatment providers, medical experts, PDMP managers, regulatory entities, and child welfare representatives. The National Center for State Courts (NCSC) provides project management for the collaborative initiative.

To address data and research needs of RJOI, a data action partner was tasked with collecting, sharing, and analyzing data from the RJOI states to inform decision-making around potential strategies. Dr. Brad Ray oversees the action research for RJOI; these efforts originally started at the Indiana University Center for Health and Justice Research (CHJR) and will transition along with Dr. Ray in his new role as Director of the Center for Behavioral Health and Justice (CBHJ) at Wayne State University. The early results from these efforts have been utilized to develop a data visualization platform which displays different measures relevant to addressing the overdose epidemic. To date, the visualization integrates sociodemographic and economic indicators, as well as rates of drug overdose deaths, buprenorphine prescribers, and prescription drug monitoring program (PDMP) statistics (Figure 1). Using this visualization, along with scholarly literature on evidence-based practices to address opioid overdose and a survey of RJOI membership, this report outlines several broad recommendations for RJOI stakeholders to consider, while providing direction for future research within this initiative.

Figure 1. RJOI Tableau Visualization



THE OVERDOSE EPIDEMIC & EVIDENCE-BASED PRACTICES

There have been more than a half million drug overdose deaths in the United States since 2000, with over 70,000 drug overdose deaths in 2017 alone (1). The majority of these deaths have been opioid-related; however, the role of opioids has varied dramatically across three waves of the epidemic, each resulting in increasing death rates (2). The first wave began in the 1990s and was characterized by prescription opioid-related deaths (3,4). Reduced availability of these prescription medications likely resulted in the second wave of the epidemic which began in 2010 and was driven by increasing heroin use and a corresponding increase in illicit opioid deaths (3,5,6). The third wave started in 2013 and has been driven by illicit fentanyl, a synthetic opioid that is 50 to 100 times more potent than morphine (7,8). There is now growing evidence that the third wave of this epidemic is disproportionately affecting racial and ethnic minorities (9) with the largest relative increase in opioid-related overdoses from 2016 to 2017 occurring among African Americans (10).

As the overdose epidemic persists throughout the United States, several evidence-based practices have been identified to address this public health crisis. By definition, evidence-based practices are those that have been rigorously tested and evaluated for effectiveness. In context of the overdose epidemic, these include practices that work to prevent problematic substance use and overdose, provide treatment and support for those living with substance use disorder (SUD), and promote healthy living and working environments for those in recovery (10). According to the Centers for Disease Control and Prevention (CDC), the four guiding principles of effective overdose prevention strategies should be: 1) know your epidemic, know your response; 2) make collaboration your strategy; 3) nothing about us without us, and 4) meet people where they are (10). As such, overdose prevention stakeholders suggest having a common understanding of the data and extent of collaboration among policymakers and public agencies, but also providing a voice for those directly affected by evidence-based practices—recognizing the diversity of need and stages of behavioral change. Based on these guiding principles, the CDC developed a list¹ of evidence-based strategies for preventing opioid-related overdose specific to the United States, which includes:

- Targeted Naloxone Distribution,
- Medication-Assisted Treatment (MAT),
- Academic Detailing,
- Eliminating Prior-Authorization Requirements OUD Medications,
- Screening for Fentanyl in Routine Clinical Toxicology,
- 911 Good Samaritan Laws,
- Naloxone Distribution in Treatment Centers and Criminal Justice,
- MAT in Criminal Justice Settings and Upon Release,
- Initiating Buprenorphine-based MAT in Emergency Departments, and
- Syringe Services Programs (SSPs).

Within this report, the CDC notes several “trailblazers,” which are local jurisdictions that were the first to implement and generate evidence for practices. Given that local innovation is often the starting point for evidence-based practices—and the fast pace at which prevention and treatment approaches are being adapted, developed, and evaluated—researchers at the Indiana University Richard M. Fairbanks School of Public Health and the Center for Health and Justice Research (CHJR) identified the landscape of strategies currently being used to combat the opioid epidemic nationally, as well as the evidence behind these

¹ Full report here <https://www.cdc.gov/drugoverdose/pdf/pubs/2018-evidence-based-strategies.pdf>

strategies.² Strategies were separated into three categories: prevention, treatment/recovery support, and harm reduction. These strategies were then ranked via a letter grade (A-F) on effectiveness in treating SUD. A modified list of these strategies and their corresponding grades can be found in *Appendix A*. Examples of interventions with a high letter grade include those that provide expanded treatment resources and engagement, funding, education, access to MAT, and have an emphasis on harm reduction.

EVIDENCE-BASED STRATEGIES IN RJOI STATES

In response to early data collection efforts, the data action partner distributed an electronic survey to RJOI stakeholders. In particular, the survey asked RJOI members about their attitudes toward evidence-based practices and the state of implementation of several policies and programs. These included naloxone distribution, Medicaid reimbursement of MAT, overdose toxicology surveillance, 911 Good Samaritan laws, jail- and prison-based treatment, and SSPs. Overall, RJOI members are overwhelmingly receptive to using evidence-based practices. Nearly all survey respondents indicated that they find evidence-based strategies to be useful in practice and are likely or very likely to implement them if training and support are provided.

However, we see evidence of inconsistent knowledge about the availability of several programs, policies, and laws at the state level. For example, nearly a third of survey respondents were unsure if their state engaged in overdose toxicology surveillance. We observed similar levels of uncertainty around Medicaid reimbursement of MAT, 911 Good Samaritan laws, and SSPs. With respect to naloxone distribution and availability of jail- and prison-based treatment, fewer respondents indicated that they were unsure about implementation. Given the salience of the latter two programs, it is intuitive that survey respondents were more familiar with them in the context of their own states. We also saw inconsistency between respondents from the same state on whether an evidence-based practice is in place. For example, respondents from one state were divided on whether their state allows Medicaid reimbursement of MAT: 2 respondents answered “no,” 3 answered “yes,” and 5 were “unsure.” In short, analysis of this survey data reveals an opportunity to better align knowledge of evidence-based practices among RJOI members and more broadly within the region. Future data evaluation efforts should include an inventory of evidence-based programs in place for each state.

² Original report: <https://www.rmff.org/wp-content/uploads/2018/06/Richard-M.-Fairbanks-Opioid-Report-October-2018.pdf>

ANALYSIS OF THE RJOI VISUALIZATION

Before providing recommendations for RJOI stakeholders, the research team aimed to utilize the RJOI visualization tool (*Figure 1, page 5*) to identify key hotspots based on available data and measures. The data integrated into this visualization comes from several publicly available sources (11,12), but also includes elements collected by the evaluation team. It is important to note that states varied dramatically in which type of data were available and submitted for the visualization; perhaps more importantly, states also varied in terms of how measures were “operationalized,” which refers to the process of defining measurable factors. Thus, the operationalization process takes ambiguous concepts and allows them to be measured empirically and quantitatively. For example, for the number of opioids prescribed in a county, one state may count prescriptions by pill, others by morphine milligram equivalents, sometimes considering patches or liquids and other times not. Similarly, many states do not have a standard definition of “drug-related criminal charges,” while others do. While the issue of operationalization does not necessarily impact the quality of the data, it is important to note that, along with missing and unavailable data, CHJR researchers considered these factors in developing the descriptive analysis of the RJOI visualization.

HOT SPOT ANALYSIS

Before presenting the findings within and across each of the RJOI states using the online visualization tool, we begin with a brief overview of the “hotspot” counties within each of the states. *Table 1* uses national data from the CDC to show the top five counties across each of the RJOI states that have the highest age-adjusted overdose mortality rate (per 100,000 persons). As described further below, the overdose data are pooled from 2011 to 2017 to avoid potential suppression (i.e., data are not provided from the CDC when the number of deaths is less than 10) that might under-represent problems in rural areas.

Table 1. Top Five Counties by RJOI State using Age-Adjusted Overdose Rate, Pooled 2011-2017

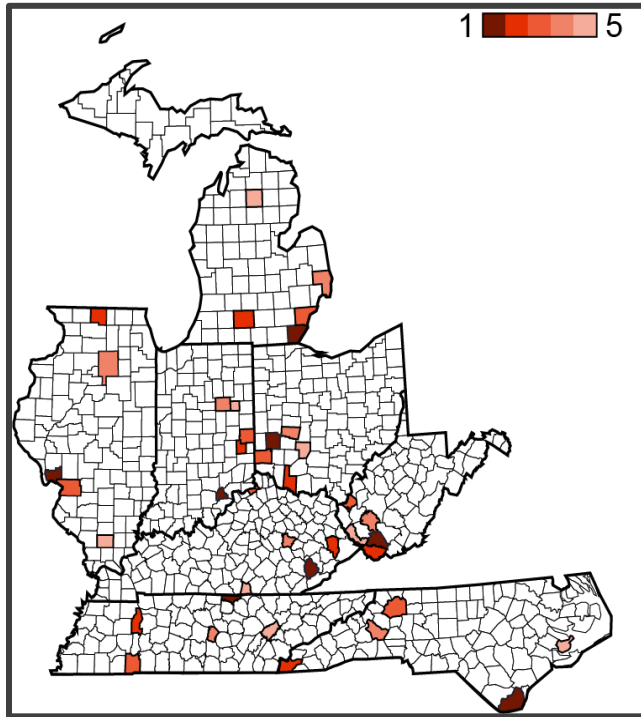
RJOI State	One	Two	Three	Four	Five
Illinois	Jersey (29.1)	Winnebago (28.6)	Madison (24.4)	LaSalle (22.3)	Franklin (22.0)
Indiana	Scott (50.9)	Fayette (46.9)	Wayne (43.0)	Grant (33.7)	Blackford (32.2)
Kentucky	Leslie (61.4)	Floyd (57.2)	Gallatin (55.2)	Estill (54.7)	Clinton (54.4)
Michigan	Monroe (29.1)	Calhoun (26.6)	Wayne (25.8)	St. Clair (25.4)	Crawford (24.2)
North Carolina	Brunswick (31.4)	Cherokee (30.8)	Wilkes (29.4)	Burke (28.0)	Pamlico (26.8)
Ohio	Montgomery (51.3)	Brown (45.3)	Butler (44.9)	Clark (42.4)	Fayette (42.2)
Tennessee	Clay (49.5)	Benton (40.6)	Hardin (37.9)	Cannon (36.8)	Roane (36.7)
West Virginia	Wyoming (85.7)	McDowell (83.1)	Cabell (76.1)	Boone (69.5)	Mingo (67.4)

*Data from CDC WONDER, Accidental Fatal Overdoses (ICD Codes X40-X44)

Figure 2 illustrates the location of those counties that have been heavily impacted as part of the overdose epidemic. It is important to note where these locations overlap among RJOI states but also point out how often these counties are located near state borders. For example, there are observable patterns across southern Indiana and Ohio as well as the western side of West Virginia and eastern Kentucky; even where there is not overlap between states, it is notable that highly impacted areas are located at state borders.

Looking more broadly across the RJOI states, we found high rates of overdose deaths appear to be concentrated in the southern regions of West Virginia and Ohio, and along the eastern border of Kentucky (*Figure 3*). However, it is important to consider that the visualization includes all overdose deaths (not just opioid-related), and that all overdose deaths are pooled, 2011 through 2017. This is due to widespread evidence of the undercounting of opioid-related overdose deaths among the RJOI states (13–15) and the use of data suppression by the CDC for counties with less than 10 cases—disproportionately impacting the ability to visualize data in especially rural counties. While the visualization is not able to distinguish

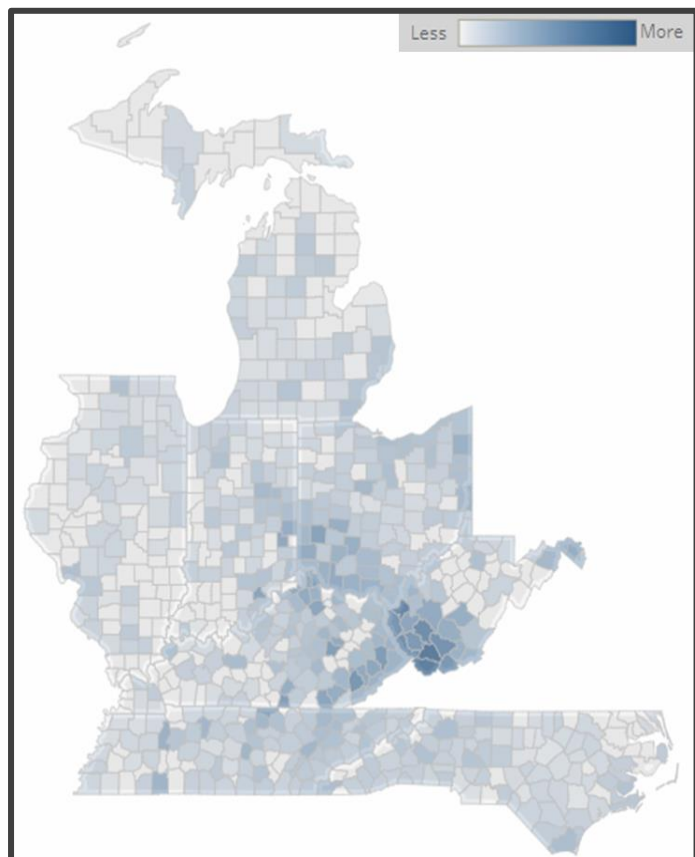
Figure 2. Top Five Counties by RJOI State using Age-Adjusted Overdose Rate, Pooled 2011-2017



between the three waves of the overdose epidemic due to these data constraints, it does illustrate the epicenter of the recent overdose epidemic as resulting from the over-prescription of opioid analgesics. In particular, West Virginia has received nationwide attention for vast over-prescribing among physicians as well as the distribution of large amounts of prescription pills via “pill mills.” Pill mills are locations in which certified healthcare providers prescribe large amounts of opioids to patients despite a lack of medical necessity. A total of 20.8 million prescription opioids were distributed to a small town in Mingo County, West Virginia, where they were then made accessible to patients through physicians who have since been arrested for their role in facilitating opioid addiction (16,17). As shown in *Figure 4*, the rate of prescription opioid pills for Mingo surpassed over 40.8 million pills per 100,000 persons in the county from 2013 through 2017. The distribution of prescription opioids via pill mills has largely affected drug overdose death rates in Mingo and surrounding counties. Comparatively, rates of overdose death in counties in the northern area of

West Virginia have been suppressed, indicating the number is not high enough for the data to be included.

Figure 3. Age Adjusted Overdose Rates by County



It appears buprenorphine providers are concentrated in urban areas. As illustrated by the RJOI visualization in *Figure 5*, the number of buprenorphine providers in many rural areas is suppressed. Even in urban areas of the RJOI region, it appears there are not many buprenorphine providers outside of a few select urban counties. These visualizations reveal an inconsistency between the availability of buprenorphine providers and demonstrated need within the state. For example, Illinois has hundreds of buprenorphine prescribers and most seem to be concentrated in Cook County, which despite being the second most populous county in the United States, has a fatal overdose rate (12.4 per 100K) only half that of smaller urban counties such as Madison (25.1), Franklin (24.9), Marion (24.1), and LaSalle (22.7).

Unfortunately, only a few states were able to provide data on the number of adult or juvenile drug-related court-case filings (Indiana, Michigan, and Kentucky). These states varied in the number of years for which data were available, as well as the operationalization of what

constitutes a “drug-related” case filing. Nonetheless, the visualizations illustrate a high level of court filings not only in urban areas but, when adjusting for population, several rural counties exhibit disproportionately high rates as well. For example, in Indiana, the rate of adult drug-related court filings is more than five times higher in Rush County than Marion County (Indianapolis) which had the highest count. Similarly, in Michigan, the rate is four times higher in Crawford County than Wayne County (Detroit) where the count was the highest (*Figure 6*).

Finally, there are several notable overdose hotspots among the RJOI states, particularly along state lines. For example, the counties along the eastern part of Kentucky and counties along the western part of West Virginia have high rates of age-adjusted fatal overdoses, with Wyoming County having the highest rate of overdose deaths in this area at 98.5 per 100K people. Within Michigan, there are two primary regional hotspots: the southeastern side of the state along the Ohio border and the southwest side of the state bordering Indiana.

For example, St. Clair County has the highest rate of age-adjusted overdose deaths. This hotspot is better reflected in the intersection of Illinois, Indiana, and Michigan along the southern side of Lake Michigan. The large concentration of overdose deaths in the area where Kentucky and West Virginia meet continues down into the northeast region of Tennessee as well, specifically in Clay County. The eastern areas of North Carolina have suppressed rates of overdose deaths; but these rates increase toward the western area of the state as it meets with other RJOI states, specifically Tennessee. As such, North Carolina is also affected by the overdose death hotspot that begins in West Virginia and travels south.

Figure 4. Mingo County, West Virginia

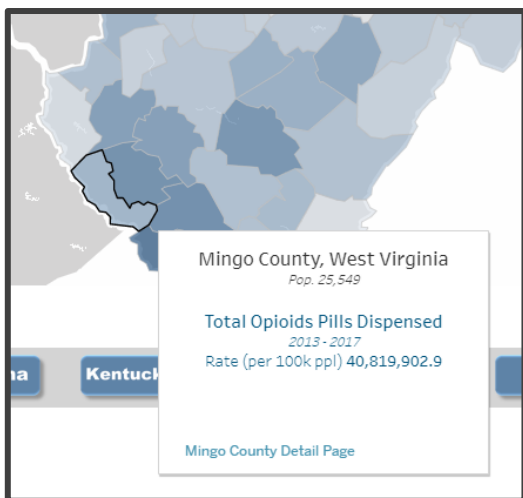


Figure 5. Owen County, Indiana

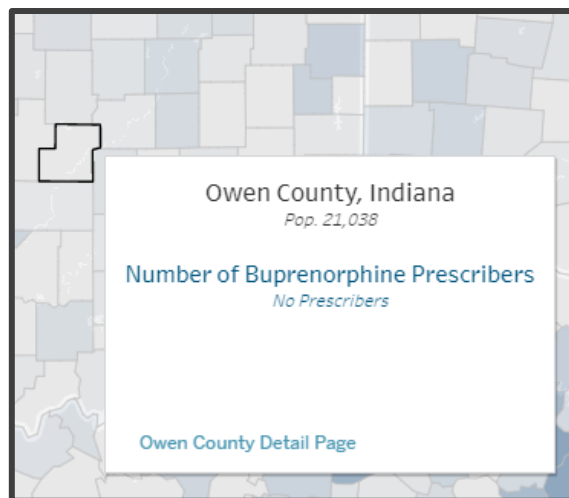
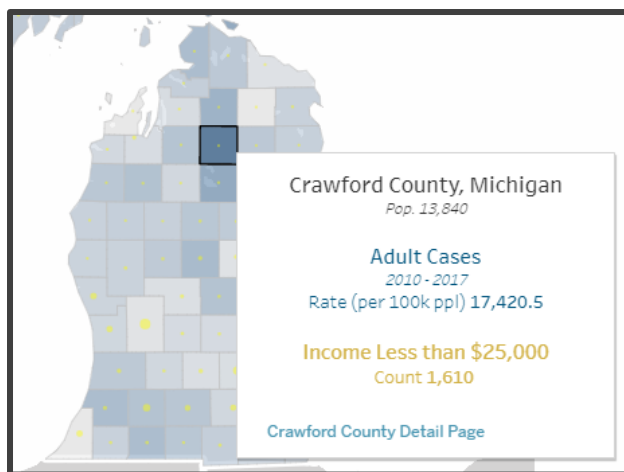


Figure 6. Crawford County, Michigan



RJOI NETWORK SURVEY

Complementary to data visualization and analysis efforts, the research team administered a survey to RJOI members across the eight states. This data was analyzed using social network analysis (SNA) to better understand the ways that individuals interact, the flows of data and information, and key players in the network. Because the explicit intention of RJOI is to develop regional solutions to the opioid epidemic while strengthening collaboration among stakeholders, SNA is particularly appropriate. Results of the network analysis reveal several network structures at the federal, state, and individual level.

In the spring of 2019, an electronic survey was sent to all RJOI participants (n = 172) to capture types and quality of collaboration occurring within the RJOI initiative. The survey asked respondents about their attitudes toward evidence-based practices (EBPs), data- and information-sharing, and their professional network surrounding the opioid epidemic. Questions were presented in both open- and closed-ended formats.

A total of 109 responses were recorded in the Qualtrics survey platform, for an overall response rate of 63.3 percent. However, some of the responses included significant missing data (n = 18) or respondents declined to consent to the study (n = 4). Adjusting for these responses, the final sample size is 87 individuals, or half of the total RJOI membership. *Table 2* describes the distribution of complete survey responses by state. Nearly one-fourth of respondents are employed with an Ohio organization, followed next by Tennessee, Indiana, and Michigan. These four states comprise two-thirds of survey respondents.

Table 2. Survey Respondents by State

State	Respondents	Percent
Ohio	21	24.1
Tennessee	14	16.1
Indiana	12	13.8
Michigan	11	12.6
West Virginia	9	10.3
Kentucky	8	9.2
Illinois	7	8.0
North Carolina	5	5.7
Total	87	100.0

Data collection was discontinued in late May of 2019, and the research team began analysis. Specifically, social network analysis (SNA) was used to understand the nature and quality of collaboration among stakeholders in RJOI states. The aim of SNA is to understand a community by mapping the relationships that connect the network. A network map is a visualization of SNA, where each node represents an individual and each tie represents a social connection between them. Results of these analyses are leveraged to better understand the ways that individuals interact, the flows of information, and key players within the network. Based on captured survey data, the research team identified several networks and subgroups among RJOI participants. While the remainder of this report discusses the most prominent findings, additional network maps and analysis can be found in *Appendix B*.

CHARACTERISTICS OF RJOI STAKEHOLDERS

In addition to capturing the patterns of interaction among RJOI members, the survey data also provides descriptive information about individuals who took part in the survey. Illustrated in *Figure 7*, nearly all respondents hold a leadership position within their organizations. Two-thirds of respondents are upper-level managers, while one-third are mid-level managers. Only a small portion of respondents are front-line employees who interact directly with service recipients. Further, one-fourth of respondents hold an appointed position and another fourth hold elected positions in their organizations (*Figure 8*). Consistent with the mission of RJOI, participants also represent a wide diversity of professional skills illustrated in *Figure 9*. Because RJOI is judicially focused, it is intuitive that one-fifth of survey respondents describe their professional skills as “court professionals/judges.” However, other disciplinary areas are well-represented, including child services and welfare, social services, and public health.

Figure 7. Professional Skills of RJOI Members

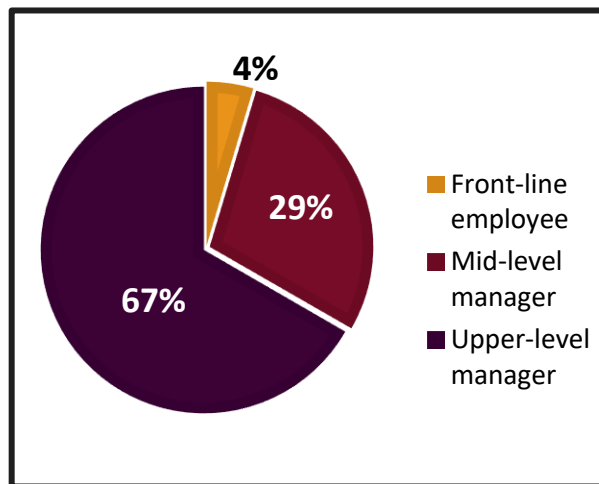


Figure 8. Professional Skills of RJOI Members

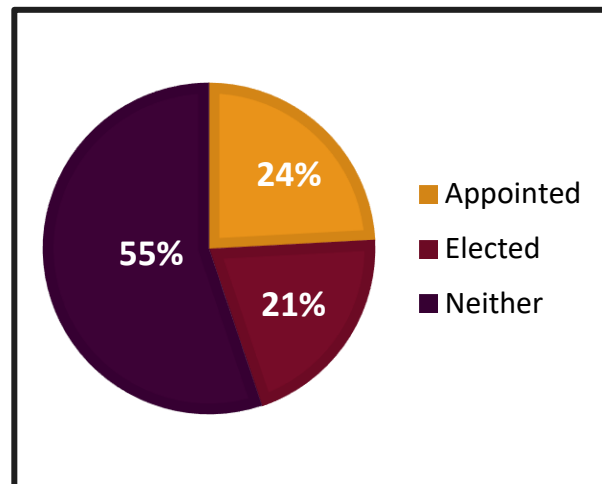
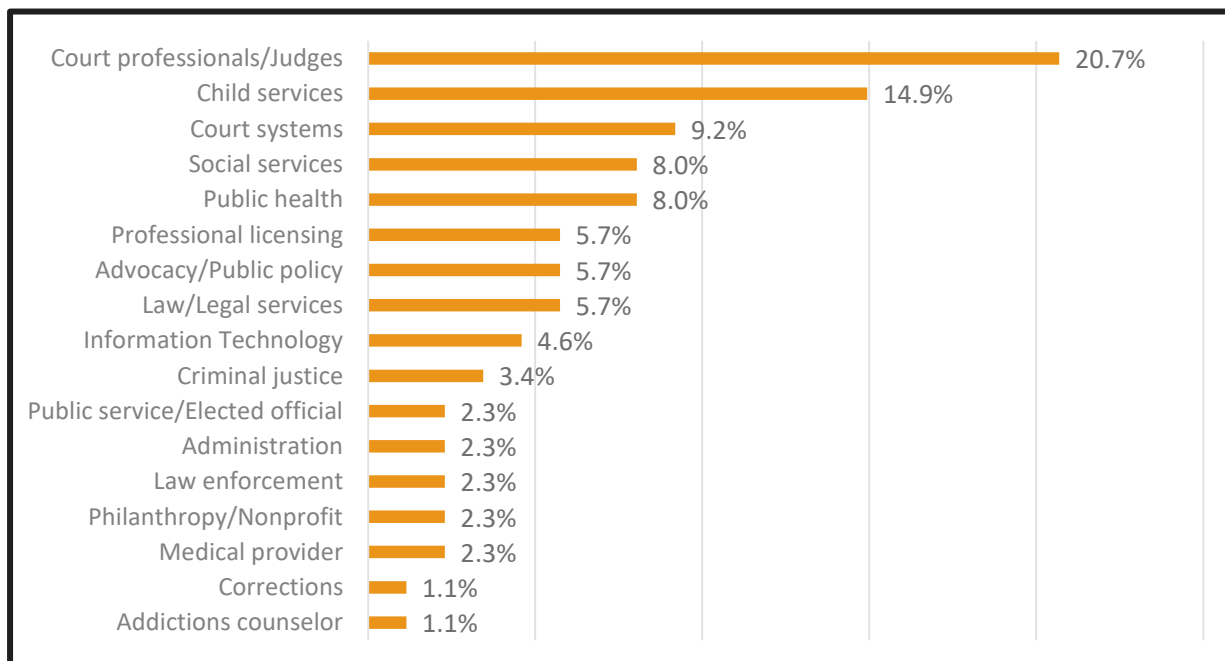


Figure 9. Professional Skills of RJOI Members

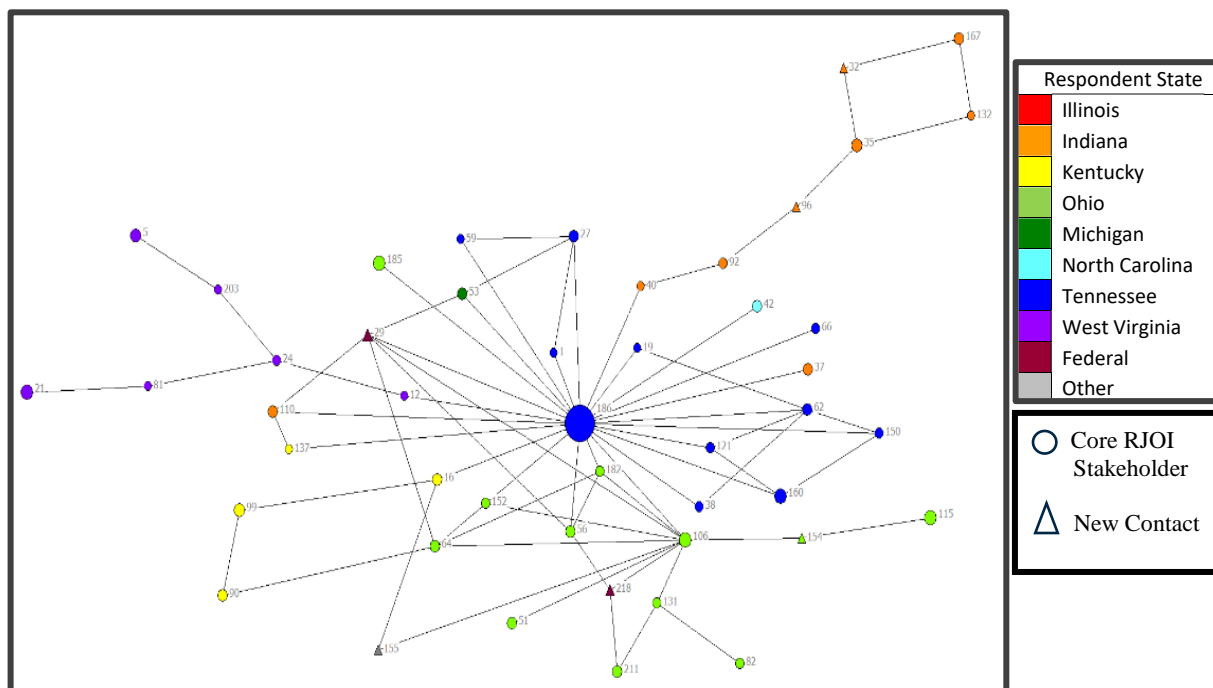


COLLABORATION AMONG RJOI STAKEHOLDERS

In the survey, respondents were asked to identify up to 10 individuals with whom they worked the most in the past year *as it relates to the opioid epidemic*, including individuals both inside and outside their organization. After identifying these individuals, survey respondents were also asked to indicate the frequency of interactions (i.e., weekly, monthly, or yearly) and the venues in which these interactions occur, including formal and informal meetings, collaboration on grants or programs, and sharing data or information. In each network map, the size of each node is relative to the number of interactions each person reported with other RJOI stakeholders (i.e., larger nodes mean more interactions compared to other stakeholders). The shape of each node corresponds with whether that individual was a core RJOI stakeholder (circle) or a new contact captured from the survey (triangle). Finally, the color of each node corresponds to the state with which they are employed, illustrated in the legend. All network models presented here are also available in the Appendix of this report.

Figure 10³ illustrates the core RJOI network where each node has at least three interactions with other members (see Appendix B1 for the full RJOI network). These nodes represent the “key players” within the larger RJOI network. The largest node, indicating the largest number of relationships with other individuals, represents the RJOI Chairman. All key players are existing RJOI stakeholders, with the exception of two nodes that represent the National Center for State Courts (NCSC). Further, nearly all states are represented among the key players, with Ohio, Tennessee, Indiana, and West Virginia heavily represented among the nodes in Figure 10.

Figure 10. Past-Year Interaction among Key Players in the RJOI Network



The research team also isolated interactions by frequency and how they occur. After identifying the 10 individuals with whom they work the most as it relates to the opioid epidemic, respondents were also asked to indicate the frequency with which they interact with each person: weekly, monthly, or yearly. On average, each survey respondent reported less than one weekly interaction, where the bulk of interactions among RJOI members occur on a monthly basis.

³ A larger version of Figure 10 can be found in Appendix B2 of this report.

Table 3. Average Degree Centrality

State	Average Degree
Tennessee	2.74
Federal	2.40
Ohio	2.18
Entire RJOI Network	2.15
Indiana	2.14
Kentucky	2.00
West Virginia	1.96
North Carolina	1.82
Illinois	1.75
Michigan	1.64

Table 4. Average Betweenness Centrality

State	Average Betweenness
West Virginia	509.33
Indiana	441.21
Tennessee	335.07
Ohio	283.85
Entire RJOI Network	272.17
Kentucky	207.67
Federal	174.50
North Carolina	53.53
Michigan	32.47
Illinois	3.30

In addition to mapping visual representations of the RJOI network, SNA also allows the data action partner to assess the extent to which each state participates in the network. *Tables 3 and 4* present two measures of centrality, or the level of importance in the network, for each of the 8 states, as well as federal-level individuals and stakeholders outside of the RJOI states. Both measures are computed for each individual, then averaged across each state to preserve anonymity.

Presented in *Table 3*, “degree centrality” is the number of individuals with whom someone has interacted, while the “average degree centrality” is simply the average of each individual’s degree centrality for a particular state. A higher degree centrality indicates a higher level of engagement in the network. The average degree centrality for the whole RJOI network is 2.15; that is, each stakeholder interacted with an average of 2 individuals per year. However, three groups - Tennessee, Ohio, and Federal - have larger average degree centralities than the average.

Additionally, “betweenness centrality” measures the extent to which an individual connects parts of the network that would otherwise be disconnected, or how often a node lies between other nodes in a network. Similar to degree centrality, a higher betweenness centrality indicates that an individual is more likely to play a central role or act as a “gatekeeper” in the network. Simply put, the betweenness value measures

the number of relationships in which a node could influence, given its position in the network. States or subgroups that exceed the average betweenness centrality for the whole network include West Virginia, Indiana, Tennessee, and Ohio, indicating that these states are integral to connecting RJOI stakeholders to the broader network.

Together, degree centrality and betweenness centrality describe different types of “importance” to the overall RJOI network. While stakeholders in West Virginia and Indiana, on average, interact with less than the average *number* of stakeholders, they serve important roles in the network by connecting otherwise disconnected stakeholders. Conversely, both Michigan and Illinois are less central to the overall RJOI network, in terms of both the number of interactions and the extent to which those interactions bring more cohesion to the overall network.

RJOI STAKEHOLDER INTERACTION IN DIFFERENT VENUES

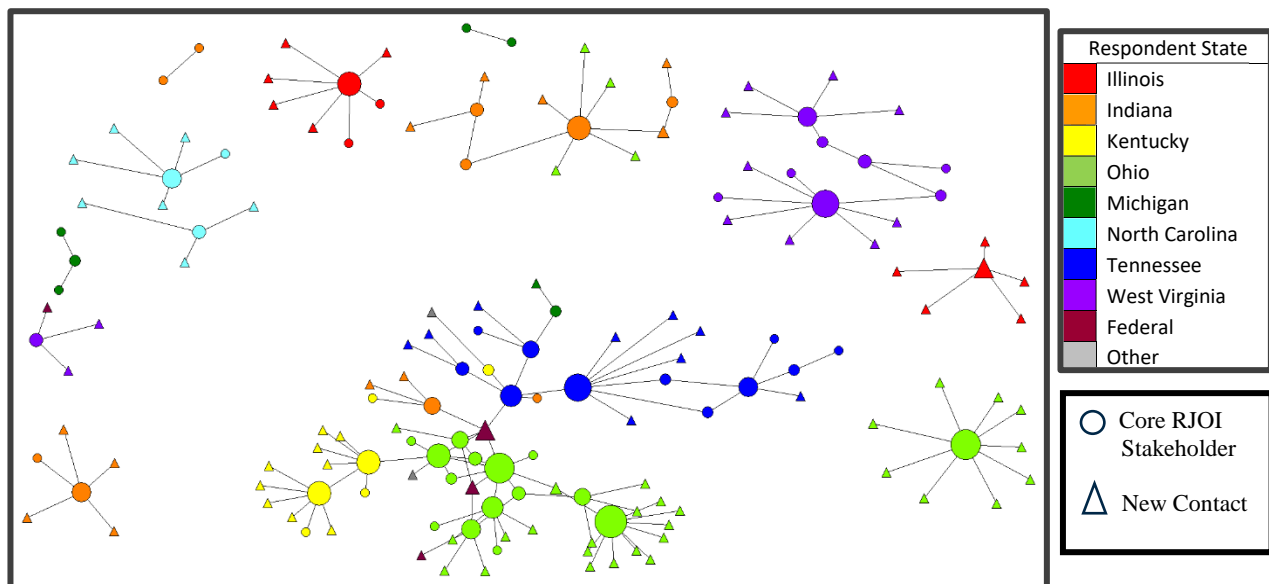
As noted above, respondents were asked to select all venues where these interactions occur, including formal and informal meetings; collaborative work on grants, reports, policies, or programs; mutual participation on a taskforce; and sharing of data or information related to the opioid epidemic. The most common venue of interaction among RJOI stakeholders is formal meetings (*see Appendix B3*). Nearly all RJOI stakeholders in the network identified another individual with whom they interact at formal meetings, with an average of two interactions in this venue for each RJOI stakeholder. By contrast, the network that comprises informal meeting interactions among RJOI stakeholders were siloed by state (*see Appendix B4*).

That is, interactions during informal meetings primarily occur between individuals of the same state, likely due to geographic proximity. There are also fewer nodes within the informal meeting network, signaling that, overall, interpersonal interactions among RJOI stakeholders occur in more formal settings.

Collaboration among RJOI stakeholders on grants or reports is similarly siloed by state (*see Appendix B5*) though there is some collaboration among different states in this venue. For example, one group of nodes includes stakeholders from Ohio, Kentucky, Tennessee, North Carolina, Indiana, and NSCS. Similarly, despite not sharing a border, another group of nodes includes stakeholders from both Michigan and Tennessee. It is possible that future network analyses may reveal more robust collaboration around grants in particular, as RJOI continues to facilitate meaningful interaction among stakeholders from different states. There is also some interstate collaboration on policies or programs related to the opioid epidemic with RJOI stakeholders connected by mutual connections with NCSC (*see Appendix B6*). Again, it is likely that future collaboration in this area will increase over time with continued participation in RJOI.

Finally, survey respondents were also asked about their professional interactions around data and information sharing, illustrated in *Figure 11*.⁴ Again, the size of each node is relative to the number of interactions each person reported with other RJOI stakeholders (i.e., larger nodes mean more interactions compared to other stakeholders). The shape of each node corresponds with whether that individual was a core RJOI stakeholder (circle) or a new contact captured from the survey (triangle). Finally, the color of each node corresponds to the state with which they are employed, as illustrated in the legend.

Figure 11. Interaction among RJOI Stakeholders, Shared Data or Information



Data and information related to the opioid epidemic is mostly shared among stakeholders from the same state, reflecting the data challenges associated with decentralized information across states. Some clusters of nodes, particularly those at the top of the network map, are specific to just one state, like North Carolina, West Virginia, and Illinois. Even further, data- and information-sharing patterns in these states appear to occur most often between new and existing RJOI stakeholders, highlighting the need to engage new stakeholders in the region. However, the largest cluster contains stakeholders from multiple states, especially Ohio, Tennessee, and Kentucky. In isolating this cluster and removing stakeholders with the fewest relationships, the key players with respect to data- and information-sharing are visible (*Figure 11*). In doing so, one stakeholder with NSCS is revealed to connect data-sharing paths between Ohio and Tennessee, which would otherwise be disconnected. In short, the network maps reveal that the convening of RJOI helps to facilitate otherwise interrupted avenues of information related to the opioid epidemic.

⁴ A larger version of Figure 11 can be found in *Appendix B7* of this report.

RJOI STAKEHOLDER RECOMMENDATIONS

Using the available information, researchers have aimed to tailor recommendations to RJOI stakeholders—many of whom are situated in judicial, court, or criminal justice systems—but also to the region more broadly. Dissemination and implementation science advise that “what works” does not always work in every context, but also that sometimes certain pieces of interventions face unique barriers within specific state or community contexts (18,19).

ASSESS DATA INFRASTRUCTURE

One of the key goals at the inception of the RJOI was to utilize data in decision making regarding the opioid epidemic. Taking a data-centered approach has illustrated what many local, state, and federal agencies have already realized: there are major gaps in the data infrastructure. For example, as noted in the RJOI visualization, a measure of all accidental drug overdose deaths was used rather than opioid-related overdose deaths because these data come from vital records which rely on the International Classification of Diseases, 10th Revision (ICD-10) codes. These codes do not record the specific substances involved in a drug-related death (20–23) and thus have fully missed documentation of the rise in fentanyl-related deaths. Moreover, many accidental overdose deaths are coded as undetermined despite the presence of an opioid, with estimates suggesting that the number of overdose deaths associated with opioids could be two to three times higher than previously reported (15,24). For example, *Table 5* indicates overdose deaths coded as unspecified in each of the RJOI states.

This data collection limitation highlights the struggle that jurisdictions face when trying to leverage data to understand trends in overdose deaths. Federal and state officials have called for reform in data collection and sharing regarding the overdose epidemic, which has resulted in innovative surveillance efforts such as using EMS naloxone administration

Table 5. Unspecified Drug Overdose Deaths by State, 2017

State	All Drug Overdose Deaths		Number in Which No Drug Specified		
	All Deaths	Rate per 100,000	Total	Percent of All Deaths	Rate per 100,000
Indiana	1849	27.7	365	19.7%	5.5
Michigan	2692	27.0	316	11.7%	3.2
Kentucky	1564	35.1	164	10.5%	3.7
Tennessee	1773	26.4	111	6.3%	1.7
Illinois	2777	21.7	151	5.4%	1.2
Ohio	5108	43.8	213	4.2%	1.8
North Carolina	2413	23.5	82	3.4%	0.8
West Virginia	974	53.6	14	1.4%	0.8

data, prescription drug monitoring reports, and improved toxicology reporting (25,26). However, as overdose deaths shifted from prescription medications in the 1990s, to heroin in 2010, and then most recently to fentanyl in 2013, researchers and policymakers struggled to understand some of the basic characteristics and shared trajectories among these decedents. Such data limitations motivated the use of the network survey and SNA to facilitate better collaboration in this area.

Because the survey was administered after state data collection efforts, the data action partner also responded to these data challenges by asking RJOI stakeholders about their sources of information, particularly as it relates to the opioid epidemic. *Table 6* illustrates the number and percentage of survey respondents that leverage each source of information. Most respondents indicated that they receive information about the opioid epidemic from individuals outside their organizations, reflecting the aims of RJOI to foster information and data reciprocity. Federal agencies and professional conferences also serve as primary sources of information for RJOI stakeholders. However, only one-fourth of respondents leverage local news media to gain insight into the opioid epidemic, which may signal disconnect between sources of information and on-the-ground conditions within communities.

Table 6. RJOI Stakeholder Opioid Epidemic Information Sources

Source of information, opioid epidemic	Respondents	Percent of total
Talk with others outside of my organization	66	86.8
Use information/data from federal agencies	64	84.2
Professional conferences	64	84.2
Talk with others in my organization	61	80.3
Use information/data from state agencies	59	77.6
Continuing education/training	53	69.7
Use information/data from local agencies	45	59.2
Search engines	39	51.3
Scan professional magazines and journals	31	40.8
Local news media	20	26.3

Finally, use of the network survey highlights opportunities to strengthen collaboration and regional data-sharing, to engage new RJOI stakeholders, and to better understand challenges faced by local communities. As noted above, the network survey asked respondents to identify the 10 individuals with whom they worked most related to the opioid epidemic in the past year. While some survey respondents indicated past-year collaboration with existing RJOI members, many of these interactions occur with individuals who are not actively engaged with the initiative. In total, 132 individuals not actively engaged with RJOI were identified using a snowball sample method, described in *Table 7*. By identifying and engaging with new prospective stakeholders, RJOI leadership and NCSC can ensure sustainability of the initiative. In demonstrating that RJOI is producing regional collaboration across its eight member states, further engagement with new stakeholders will only strengthen interstate relationships. Finally, because monthly formal meetings are the most common venue of interaction for RJOI stakeholders, they should include ongoing discussions regarding data availability and reciprocity and initiative growth and sustainability.

Table 7. New Contacts from Survey

State	New Contacts
Ohio	36
Indiana	17
Illinois	16
North Carolina	14
West Virginia	14
Kentucky	12
Tennessee	11
Michigan	4
Other	8
Total	132

HELP FACILITATE MAT IN CRIMINAL JUSTICE SETTINGS

Across the United States in 2017, it is estimated that nearly 2 million Americans had an opioid use disorder (OUD) (27), a type of SUD defined as a problematic pattern of opioid use that leads to serious impairment or distress (28). The gold standard medical treatment for OUD is MAT, and this evidence-based practice permeates throughout nearly every policy recommendation aimed at addressing the recent opioid epidemic in the United States (29). In short, MAT involves pharmacological treatment of addiction supported by behavioral therapy. The three medications approved for the treatment of OUD in the United States include methadone (an opioid agonist), buprenorphine/Suboxone® (a partial agonist), and naltrexone/Vivitrol® (an opioid antagonist). Methadone and buprenorphine are long-acting opioid medications that prevent withdrawal and decrease opioid cravings, drug seeking, and drug use. Naltrexone is a non-opioid medication that blocks the effect of opioids in the body. People who receive MAT have longer periods of abstinence, reduced risk of overdose and death, and are less likely to become infected with HIV and hepatitis C (30–32). The RJOI visualization shows that there are low numbers of buprenorphine providers relative to fatal overdose rates and, furthermore, prescribers are concentrated in urban areas and are sparse

in many locations with high rates of fatal overdose. States should utilize overdose rates to identify hotspots where strategic implementation of MAT prescription services could prevent overdose deaths. However, simply increasing the number of MAT providers alone does not expand access to key subpopulations at risk of overdose. Despite overwhelming evidence on the effectiveness of these medications, numerous barriers prevent people from accessing or successfully completing MAT services, one of which is involvement in the criminal justice system.

It is ideal for communities to have MAT available outside of criminal justice settings. However, for a variety of sociological and criminological reasons, those with OUD and SUD are disproportionately involved in systems (police, jails, courts, corrections) in which MAT and supported behavioral therapy are often unavailable. As criminal justice interventions aim to reduce recidivism and also protect public safety, it is important to ensure persons with SUD still have access to evidence-based medications, which means assuring that programs integrate MAT. For example, this might entail educating judicial and criminal justice personnel about MAT, assuring that problem-solving courts utilize MAT with appropriate clients, and integrating MAT into correctional settings. In terms of selecting which MAT is appropriate, it is recommended that medical prescribing decisions be based on an evaluation and consideration of past treatment history and setting, as well as patient preferences. Given the likelihood of mortality among this population, it is strongly recommended that all medication types be made available (33). It is also important to note that research demonstrates many people with OUD are unwilling to initiate MAT with naltrexone because it requires a long period of painful detoxification (34–36); it also has higher rates of MAT discontinuation than agonists (37) with studies of Vivitrol® finding that 54% of participants did not complete their treatment course during the study (38). Therefore, patients whose options are limited to naltrexone may be at a disadvantage compared to those who are not.

Few jails throughout the county currently provide methadone or buprenorphine to inmates; however, this may not be the case for much longer (39). Recently, a man living with OUD in Massachusetts won a lawsuit (Civil Action No. 18-11972-DJC) guaranteeing his access to methadone while in jail; the judge ruled it “cruel and unusual punishment” to deny the man of needed medication (39). In Rhode Island, both methadone and buprenorphine have been available to inmates since 2016. As a result of implementing this program, researchers Green, Clarke, and Brinkley-Rubinstein (2018) have found a 61% decrease in death upon release from incarceration between January 1 and June 30 of 2017 (39). Similarly, Massachusetts passed a bill earlier this year implementing a pilot program to offer methadone and buprenorphine in five counties (39).

In order to improve judges’ understanding of how to treat OUD within the criminal justice setting, training should be provided through annual judicial training in addition to short informational guides (e.g., bench cards) produced with a focus on the judicial perspective and relevant information. Bench cards are brief reports or information sheets for use by judges during court to provide more information and context regarding the issue at hand. Several bench cards regarding OUD can be found on the National Judicial Opioid Task Force Resource Center for Courts website. In addition, RJOI should continue to engage new stakeholders at the local level to similarly create pathways for informed decision-making.

CONSIDER HARM REDUCTION WITHIN A JUDICIAL FRAMEWORK

Harm reduction, often discussed in a public health framework, refers to a spectrum of strategies aimed at reducing the negative consequences of high-risk behaviors (such as drug use) on individuals and society. A key component of harm reduction for drug policy is meeting drug users “where they’re at” and giving voice to persons who use drugs to assure that policies are not determined without input of the people who will be affected by them. In short, harm reduction efforts suggest that those affected by opioid use and overdose risk should be involved in the design, implementation, and evaluation of interventions. Given the criminalization of chemical substances in the United States, as well as the dichotomous nature of the law, it can be difficult for those working inside various criminal justice systems to meet drug users “where they’re at.” However, there are legal perspectives that might help with the implementation of harm

reduction in public health by reducing potential judicial barriers. For example, therapeutic jurisprudence is a theory of mental health law (40,41), which argues that the legal system is a social force that can have both therapeutic and anti-therapeutic consequences. As noted by David B. Wexler and Bruce J. Winick in their development of this framework, therapeutic jurisprudence “wants us to be aware of this and wants us to see whether the law can be made or applied in a more therapeutic way so long as other values, such as justice and due process, can be fully respected” (41). Moreover, therapeutic jurisprudence suggests that court personnel utilize procedural justice, which means making fair decisions and showing defendants respect by giving them both voice and validation (42–45).

These judicial perspectives have provided an underlying framework for understanding the success of problem-solving courts (e.g., drug treatment courts, mental health courts, veteran’s courts, community courts, etc.), and better understanding harm reduction strategies could help to promote further innovative judicial interventions aimed at the overdose epidemic. Key examples of harm reduction strategies include Good Samaritan laws which protect individuals from prosecution when they call 911 to the site of an overdose; SSPs which attempt to reduce the additional risk of disease transmission often associated with illicit drug use; or targeted naloxone distribution. Considering these policies through a therapeutic jurisprudence framework could simply mean educating judicial stakeholders on the evidence behind these interventions so that they can assure that the legal system is being applied by positive and therapeutic means for those affected by these policies or is providing voice to those who have benefited from these practices within these judicial settings.

Despite their demonstrated effectiveness, harm reduction strategies often face barriers to full implementation in policy and practice due to the widely held and misinformed view that they condone drug use. There is also a very real danger that not understanding these practices could result in a dramatic threat to public health and safety. As noted above, many have suggested that SSPs can play an important role in addressing the overdose epidemic. The result of not having these services in place was highlighted in Scott County, Indiana in 2015. A recent study highlights the impact an SSP could have had in preventing the HIV outbreak in Scott County. Study results show that if an SSP had been in place prior to the 2015 outbreak, the number of new HIV cases could have been reduced by 80% (46).

REDUCE BARRIERS TO CARE IN RURAL AREAS

As the overdose epidemic continues, rural areas within the United States are experiencing increasingly high rates of drug overdose deaths; in some cases, surpassing overdose death rates within urban settings (49). In 2015, the rate of drug overdose deaths among rural populations was 17.0 per 100,000 people and 16.2 per 100,000 people among urban populations, with opioids such as heroin and fentanyl largely contributing to this increase (49). Researchers point to limited treatment capacity, economic stress, increased accessibility to drugs, as well as high levels of kinship that may facilitate informal drug trafficking as reasons for the large numbers of overdose deaths within rural communities (50,51). According to the Office of Rural Health Policy of the U.S. Census Bureau (2016), approximately 53% of Indiana counties, 61% of Illinois counties, 58% of Ohio counties, 69% of Michigan counties, 72% of Kentucky counties, 56% of Tennessee counties, 62% of West Virginia counties, and 54% of North Carolina counties are rural. Because the RJOI states are largely rural, the issue of limited access to MAT treatment is of particular concern, especially if residents also lack a means of transportation.

In 2010, the Washington Rural Opioid Addiction Management Project trained 120 physicians in rural areas throughout the state on how to prescribe buprenorphine and collected data regarding prescribing barriers (52). Many obtained the Drug Enforcement Administration’s mandated prescribing waiver. Researchers found that after the training, family physicians were five times more likely to prescribe buprenorphine than physicians from other domains. Additionally, having another physician within the practice who also had a prescribing waiver was significantly associated with prescribing buprenorphine (52). An identified barrier to prescribing included lack of institutional support and physicians indicated that access to specialists who can assist with prescribing via telemedicine would be beneficial (52).

Telemedicine has become widely recognized as an effective way to treat OUD among those living in rural areas (53). Patients can interact face-to-face with addiction counselors or peer recovery coaches without the burden of travel or stigma that may result from visiting a provider's office. Research indicates that telemedicine is just as effective at treating mental health illness as in-person treatment (54,55). Recently, telemedicine has been used to prescribe MAT such as buprenorphine to those with OUD. A study evaluating a telemedicine program designed to prescribe buprenorphine in a rural area of Maryland found that 59% of patients (n = 177) remained in treatment after 3 months, and of these patients, 86% had a negative opioid urine screen (56). Indiana fulfills the recommended policy interventions to facilitate MAT prescription via telemedicine by allowing physicians to prescribe controlled substances without a prior in-person visit and by requiring a client-initiated treatment plan for overcoming OUD (57).

CONCLUSION

While there are limitations to the visualization developed through RJOI, this tool can serve as a preliminary way to geographically prioritize interventions aimed at combatting the overdose epidemic. When addressing overdose hotspots within the RJOI states, it is important to implement evidence-based practices that have proven to be effective in order to optimize the use of limited resources and effectively treat OUD. Furthermore, upon implementing public health interventions, it is necessary to adhere to the four guiding principles of effective overdose prevention as proposed by the CDC: (1) know your epidemic, know your response; (2) make collaboration your strategy; (3) nothing about us without us; and (4) meet people where they're at. Using the RJOI visualization, this report lays the foundation for addressing region-specific issues related to the overdose epidemic.

Complementary to the visualizations and hotspot analysis, this report also examines the network of RJOI stakeholders and extent of collaboration that exists in the region. RJOI stakeholders report collaboration in multiple forms with individuals from other states and at different levels of government. Further, several key players (including RJOI leadership and NCSC) occupy a central role in the network, facilitating avenues of collaboration and data sharing that would otherwise not exist. Even more, the use of snowball sampling in the network survey identified prospective RJOI stakeholders to contribute to sustainability of the initiative. While this network analysis uses a cross-sectional approach at a single point in time, future research efforts of similar initiatives, such as the New England Regional Judicial Opioid Initiative (NE RJOI), should investigate how this network changes each year with an annual survey.

Thus far, the RJOI states have established a means to respond to the overdose epidemic through collaboration, an examination of available data sources, and a review of evidence-based practices; however, the recommendations provided above can be implemented within a judicial or policy context to help further the work of this initiative and lead to positive change in the region.

APPENDIX A. EVIDENCE-BASED PRACTICES FOR PREVENTION, TREATMENT, AND HARM REDUCTION⁵

APPENDIX A1. STRATEGIES FOR PREVENTION

Strategies for Prevention					
Intervention name	Rating	Intervention type	Description	Noted and potential implementation challenges	For more information
Prescription Drug Monitoring Programs (PDMP)	A	Program/ Practice	State-level database that tracks prescribing and dispensing information for controlled substances, including opioids.	Policies that prevent data sharing; lack of electronic health record integration	(58–63)
School-based programs	A	Program/ Practice	K-12 programs that provide information about the dangers of substance use and develop resilience.	Many ineffective or untested programs exist	(64–66)
Family-based programs	A	Program/ Practice	Family-focused programs that parenting skills and adolescent substance refusal skills, typically implemented with families of youth who exhibit high-risk behaviors (sometimes combined with classroom strategy components).	Much prior research conducted in rural communities; cultural adaptations likely necessary	(67–69)
Drug take-back programs	A	Program/ Practice	Specific type of supply-side diversion control strategy where community programs accept unused medications at a drop-off location for proper disposal	None identified	(70–72)
Drug utilization reviews (DUR)	B	Program/ Practice	Programs with promising evidence that track and send information to physicians about their individual prescribing patterns with the goal that high prescribers will change their behaviors	Not typically used outside of managed care	(73)
Drug diversion control	B	Program/ Practice	Wide variety of practices aimed at curtailing the diversion of prescription medications to individuals they were not prescribed for (includes supply-side or demand-side approaches)	Clinical diversion practices can increase provider workload	(74)
Overdose fatality review (OFR) teams	B	Program/ Practice	Multi-sector teams conduct confidential reviews of resident drug and alcohol overdose deaths to identify opportunities to improve operations in a way that will prevent future similar deaths	Data sharing between essential member agencies and organizations	(75,76)
Overdose toxicology surveillance	B	Program/ Practice	Required running and reporting of toxicology testing when coroners suspect a death is the result of an overdose	Cost; inconsistencies in coroner training	(9,77)
College programs	B	Program/ Practice	Strategies to prevent or reduce substance misuse among college students	Much of the effectiveness of these programs has been	(67)

⁵ While modified for this report they are based on the "Evidence-Based Practices Tables" and are courtesy of Dr. Dennis P. Watson and colleagues (2018); IUPUI Richard M. Fairbanks School of Public Health: *The Changing Landscape of the Opioid Epidemic in Marion County and Evidence for Action*

				shown for cannabis and alcohol misuse	
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Drug-free workplaces	B	Program/ Practice	Wide variety of programs that encompass a range of activities from education for prevention to workplace drug testing	No evidence-based programs could be identified, but SAMHSA recommends basing prevention activities on general prevention programs with established effectiveness; positive effects of drug testing may be limited to specific industries	(78–80)
Physician/prescriber education	B	Program/ Practice	Training in appropriate pain management and narcotic prescribing practices.	Training often not an effective stand-alone behavior change strategy	(81–85)
Guidelines for pain prescribing	B	Policy/ Law	Provide a basis for physicians at the state and national level to follow consistent chronic and acute opioid pain prescribing practices.	Guidelines differ between federal and state entities; significant room for physician discretion in applying	(86–90)
Public educational campaigns	B	Program/ Practice	Broad category of strategies including initiatives to promote health literacy, reduce stigma, and normalize healthy behaviors.	Can increase stigma if not implemented appropriately	(91–101)
Cannabidiol oil (CBD)	C	Program/ Practice	Use of non-psychoactive component of cannabis plant with anti-inflammatory properties that might benefit people with chronic pain.	None noted, legal in all 50 states	(102,103)
Drug paraphernalia laws	F	Policy/ Law	Thought to dissuade drug use by making it illegal to carry equipment associated with its consumption.	Criminalizes SUD; likely negative impact on effectiveness of certain harm reduction practices (e.g., syringe services programs and fentanyl test strips)	(104–106)
Overdose fatality/homicide laws	F	Policy/ Law	Thought to dissuade dealing by establishing a charge of drug-induced homicide may be brought against opioid suppliers in cases where that substance can be linked to a fatal overdose.	Drug “supplier” not well defined in some cases; criminalizes SUD; likely negative impact on Good Samaritan law effectiveness	(107,108)

APPENDIX A2. STRATEGIES FOR TREATMENT & RECOVERY SUPPORTS

Strategies for Treatment & Recovery Supports					
Intervention name	Rating	Intervention type	Description	Noted and potential implementation challenges	For more information
Medication-assisted treatment (MAT)	A	Program/ Practice	Pharmacological treatment of addiction supported by behavioral therapy.	Community and client stigma; lack of services to support continued engagement (e.g., housing and transportation); burdensome therapy requirements; lack of payment source for some clients; limited choice of MAT treatment type due to unavailability	(109–116)
Jail/prison-based treatment	A	Program/ Practice	Provision of OUD treatment to people in jail/prison: only MAT-based interventions have strong evidence.	Historical lack of support for MAT within the criminal justice system for non-antagonist treatments; lack of Medicaid coverage or other funding for treatment	(117–119)
Treatment for pregnant women	A	Program/ Practice	Provision of OUD treatment for pregnant women: only MAT-based full or partial agonist interventions are evidence-based.	Public and internalized stigma against mothers who use opioids; historical lack of support for MAT in child welfare system	(120–127)
MAT primary care integration	A	Program/ Practice	A wide range of strategies for incorporating MAT into standard, office-based medical settings.	Need stronger incentives; regulations (e.g., HIPAA and 42 CFR) can prevent sharing of important healthcare information between primary care and behavioral health	(128,129)
Drug treatment courts	A	Program/ Practice	Community-based treatment and supervision in lieu of a criminal conviction or incarceration for people with SUD	Historical lack of support for MAT within the criminal justice system for non-antagonist MAT	(130,131)
Expansion of buprenorphine data waivers	A	Policy/Law	Allows primary care providers to increase the number of individuals they treat with buprenorphine. It also extends buprenorphine prescribing privileges to advance practice nurses.	Stigma among providers; waived providers not serving total number of patients allowed	(132,133)
Expanded coverage/payment sources	A	Policy/Law	Allows more people to access Medication-assisted treatment by providing a payment source (typically Medicaid).	Many MAT-prescribing physicians do not take Medicaid; burdensome process can prevent start/completion of Medicaid enrollment	(134)
Opioid use disorder screening	B	Program/ Practice	Screening for opioid use disorder in clinical care, includes Screening, Brief Intervention, and Referral to Treatment (SBIRT).	Lack of reliable screening instruments	(116–119,122,123,135)

Peer recovery coaches (PRCs)	B	Program/ Practice	This service is delivered by a person with a history of addiction and recovery which allows a personal connection with those overcoming addiction through experience.	Policies that prevent hiring people with felony backgrounds; lack of reimbursement mechanisms; strong clinical supervision and supports required to not jeopardize PRC's personal recovery	(34,136–140)
Emergency department (ED)-based initiation and linkage to treatment	B	Program/ Practice	Capitalizes on a critical moment with patients who have OUD when they are receiving care in the ED, typically for an overdose, to provide an immediate bridge prescription for buprenorphine treatment.	ED-based buprenorphine prescribing cannot be successful in communities that do not have MAT providers available for patient referral to continuing treatment.	(141,142)
Telehealth/Telemedicine	B	Program/ Practice	The use of telecommunications and digital technology platforms to provide distance-based provider supervision or direct patient care (including behavioral health care).	Patient privacy concerns; limitation to what medications can be prescribed vary by region; might be less beneficial in urban settings	(143–145)
Pre-booking diversion programs	B	Program/ Practice	Divert people from incarceration for behavioral health issues and help link to treatment; include crisis intervention teams and community triage centers.	Most evidence is for people with co-occurring disorders.	(146,147)
Employee assistance programs (EAPs)	B	Program/ Practice	Provide employees with free short-term counseling and referral services for a variety of psychological and emotional concerns, including substance use disorder. The range of services varies, with some providing direct counseling and treatment services.	Wide range of programs make it difficult to ascertain what is effective for SUD; concerns about confidentiality and potential ramifications to employment may hinder employees from voluntarily accessing this resource	(139,148)
Psychosocial interventions	B	Program/ Practice	Psychotherapy for treating opioid use disorder. Psychotherapy can be used alone or in conjunction with MAT.	Not as effective as MAT; requirements place burdens on MAT patients when no added benefit has been established	(34,120)
Recovery-oriented systems of care (ROSC)	B	Program/ Practice	Coordinated network of community-based and person-centered services and supports for those with or at risk of a substance use disorder.	Lack of strong/concrete implementation guidelines	(140,149,150)
Recovery housing	B	Program/ Practice	Provide short-term housing with peer supports to people living with a SUD (and often with co-occurring serious mental health issues)—typically after the individual enters recovery housing during or after completing outpatient treatment.	Historically rooted in an abstinence-only philosophy that can be problematic for people with OUD who are receiving MAT	(151,152)

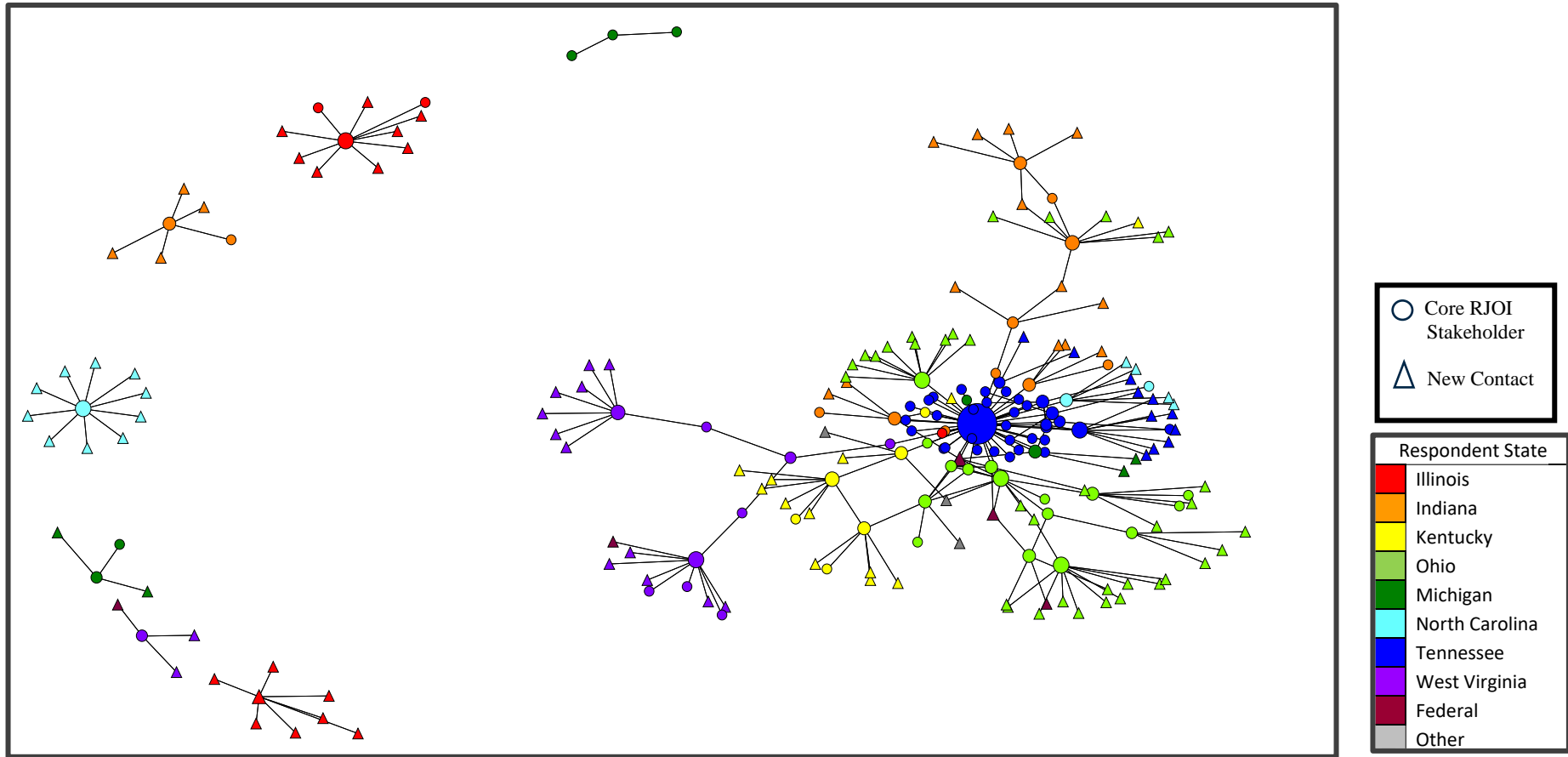
Medication-Assisted Recovery Anonymous (MARA)	B	Program/ Practice	Recovery support group for individuals on MAT	Groups must be developed from within the recovery community, not professionals; potential difficulty finding space for meetings	(153,154)
Bridge device	C	Program/ Practice	Device worn on the ear that theoretically reduces pain associated with opioid withdrawal. It is used to assist in opioid detox prior to beginning naltrexone or abstinence-based treatment.	Detox not generally offered as an option among evidence-based treatment options	(155,156)
Law protecting pregnant women who use illicit opioid	C	Program/ Practice	Seeks to eliminate fear of prosecution and child separation as a barrier for women living with opioid use disorder from seeking out prenatal care	Public and internalized stigma against mothers who use opioids	(121,157)
Abstinence-only treatments	D	Program/ Practice	All treatment options (inpatient, outpatient, residential) that require abstinence from all psychoactive substances, including evidence-based MAT	Abstinence-based approaches can be beneficial for some and should be presented as an option alongside evidence-based treatments	See entry on MAT (158)
Narcotics Anonymous (NA)	D	Program/ Practice	Support group rooted in 12-step, abstinence-only people in recovery from a SUD	Groups must be developed from within the recovery community, not by professionals; potential difficulty finding meeting space; generally, not accepting of people receiving MAT	(154,159–162)
Abstinence only involuntary treatment	F	Policy/Law	Forced abstinence-based treatment of people with OUD, typically as a result of involvement in the criminal justice system	Potential to increase overdose risk	(163)

APPENDIX A3. STRATEGIES FOR HARM REDUCTION

Strategies for Harm Reduction					
Intervention name	Rating	Intervention type	Description	Noted and potential implementation challenges	For more information
Naloxone training & distribution programs	A	Program/ Practice	Harm reduction method of distribution and training on the usage of naloxone as an overdose rescue medication to prevent overdose deaths.	Public awareness low; distribution locations often not convenient or comfortable for people with OUD	(107,164–170)
Take-home naloxone programs	A	Program/ Practice	Provides naloxone to those at high risk for overdose, and who are likely to be in a network with other users of illicit substances, upon release from the hospital, jail, and education.	Historical lack of support for harm reduction within the criminal justice system; high expense for healthcare providers	(171–173)
Syringe services programs (SSP)	A	Program/ Practice	Provide free access to sterile syringes for people who inject drugs and facilitate safe disposal of used syringes.	Lack of funding for syringes; community stigma; lack of political support	(174)
Supervised injection facilities (SIF)	A	Program/ Practice	Legally sanctioned locations where people who use injection drugs can inject under medical supervision.	Community stigma; lack of political and criminal justice support	(175–178)
Housing First	A	Program/ Practice	Low-barrier, immediate housing for people experiencing chronic homelessness. The housing model follows a harm reduction service demonstrated to reduce overdoses.	Resistance to implementing necessary harm reduction components of the intervention	(179,180)
Expanded naloxone access	A	Policy/Law	Expanding naloxone access for lay responders (i.e., people with OUD and others in a position to respond to an overdose).	Requires targeted education and distribution to reach lay responders	(134,174,181–183)
Good Samaritan/ immunity laws	A	Policy/Law	These laws provide immunity or no criminal liability, from arrest, charges, or prosecution for controlled-substance possession when a person calls 911	Fear of police; limited immunity; lack of public knowledge/ understanding	(107,134,184–187)
Pharmacy-syringe programs	B	Program/ Practice	Access to syringes through community pharmacies.	Need specific laws to support	(188,189)
Fentanyl test strips	B	Program/ Practice	Paper strips that can be given to users of illicit opioids to test for the presence of fentanyl.	Drug paraphernalia laws; people might not change use	(190,191)
Safe stations	C	Program/ Practice	Safe stations are areas where people misusing opioids can be monitored by healthcare providers and linked with services, such as clean needles or other resources. While in these safe stations, people are protected by Good Samaritan/immunity laws.	People with OUD might not feel comfortable entering safe station areas, particularly police stations	(134,192)

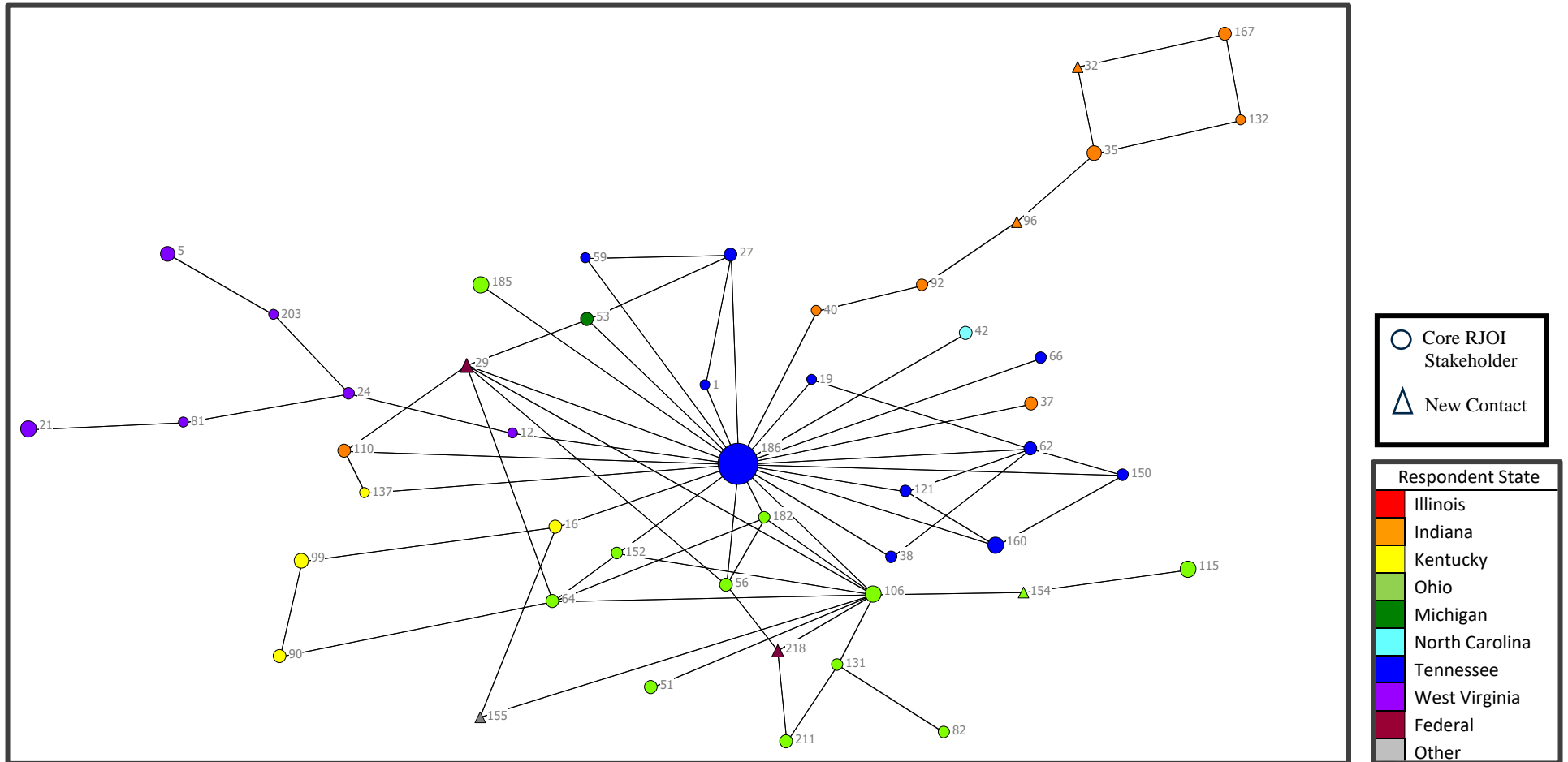
APPENDIX B. NETWORK MAPS

APPENDIX B1. PAST-YEAR COLLABORATION AMONG RJOI STAKEHOLDERS



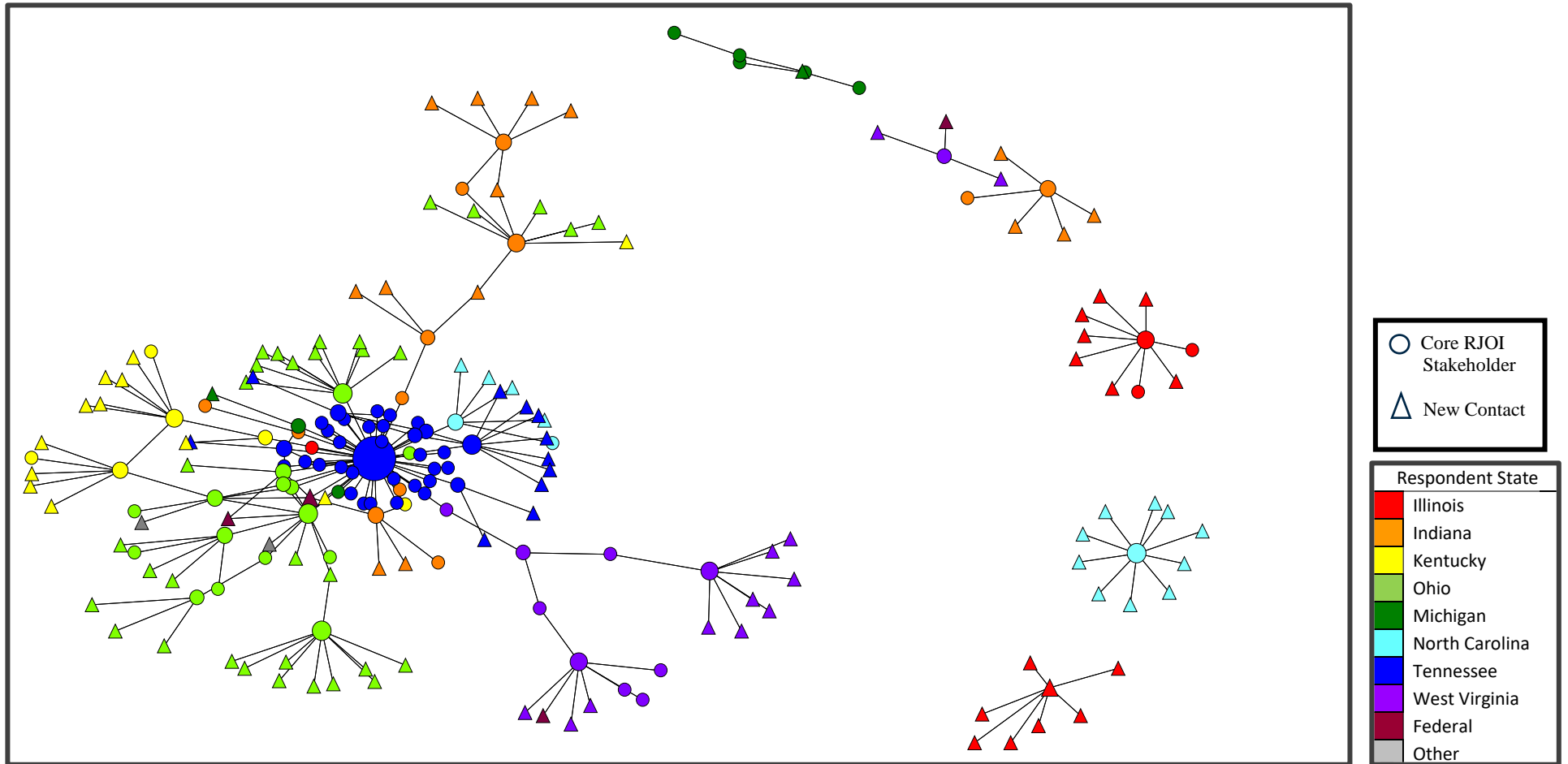
Description: Appendix B1 illustrates the entire RJOI network, which includes 224 individuals, or nodes, connected by 482 relationships. In the network map, the size of each node is relative to the number of interactions each person reported with other RJOI stakeholders (i.e. larger nodes mean more interactions compared to other stakeholders). The shape of each node corresponds with whether that individual was a core RJOI stakeholder (circle) or a new contact captured from the survey (triangle). Finally, the color of each node corresponds to the state with which they are employed, illustrated in the legend.

APPENDIX B2. PAST-YEAR COLLABORATION AMONG KEY PLAYERS



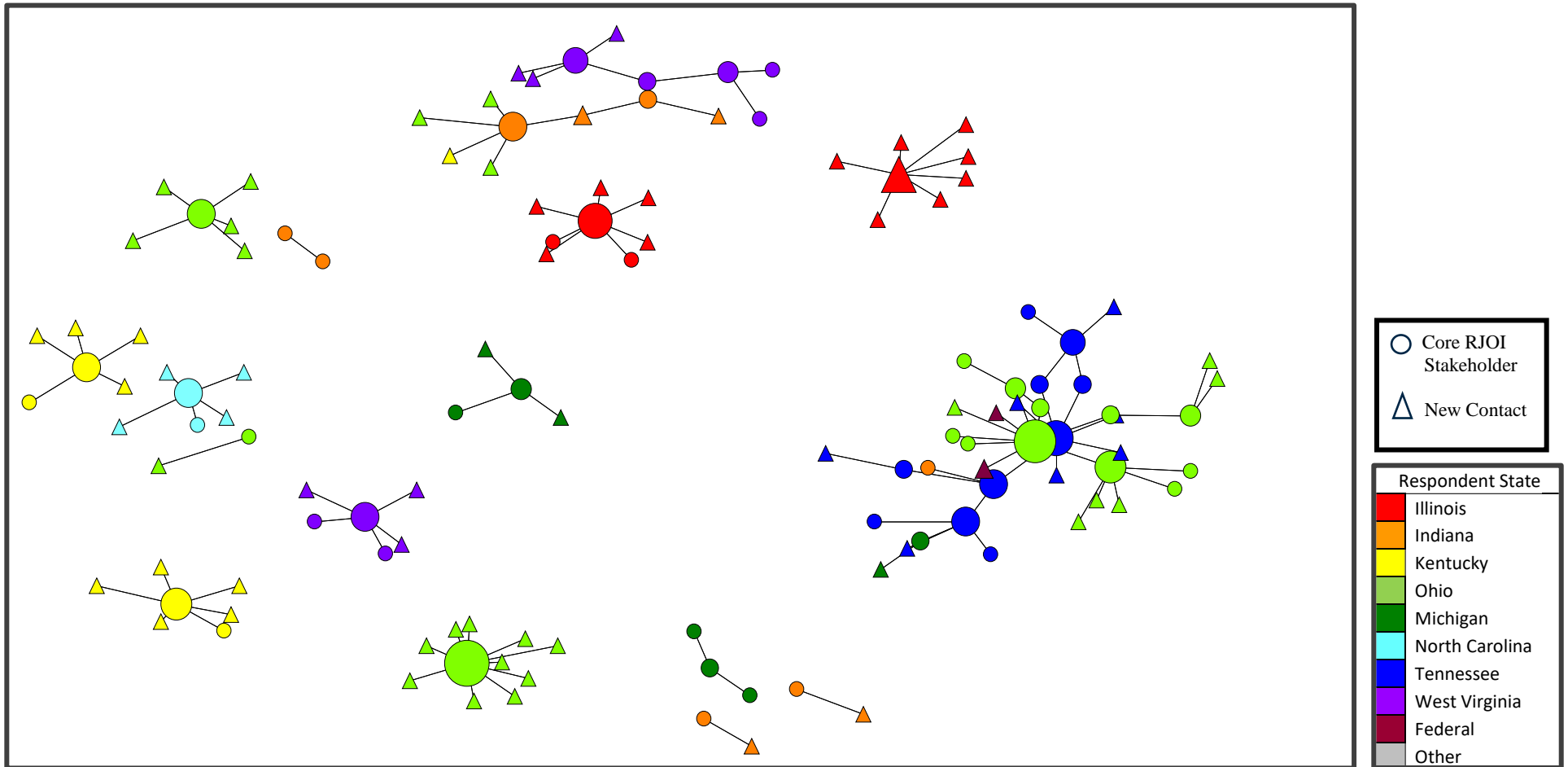
Description: Appendix B2 illustrates the key players within the RJOI network, with each individual collaborating with at least three other stakeholders in the past year. In the network map, the size of each node is relative to the number of interactions each person reported with other RJOI stakeholders (i.e., larger nodes mean more interactions compared to other stakeholders). The shape of each node corresponds with whether that individual was a core RJOI stakeholder (circle) or a new contact captured from the survey (triangle). Finally, the color of each node corresponds to the state with which they are employed, illustrated in the legend.

APPENDIX B3. INTERACTION AMONG RJOI STAKEHOLDERS, FORMAL MEETINGS



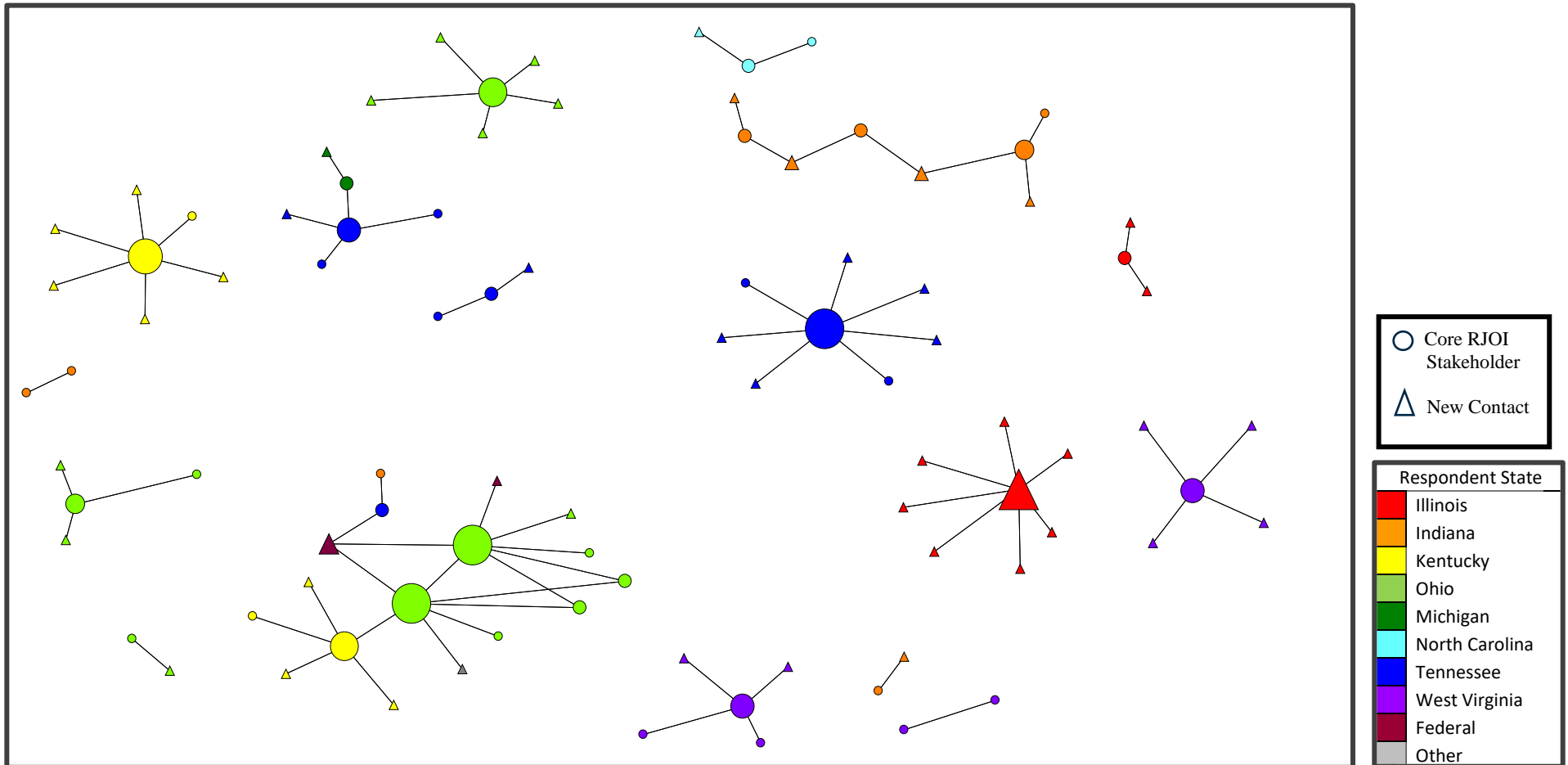
Description: Appendix B3 illustrates the interaction among RJOI stakeholders at formal meetings within the past year. In the network map, the size of each node is relative to the number of interactions each person reported with other RJOI stakeholders (i.e., larger nodes mean more interactions compared to other stakeholders). The shape of each node corresponds with whether that individual was a core RJOI stakeholder (circle) or a new contact captured from the survey (triangle). Finally, the color of each node corresponds to the state with which they are employed, illustrated in the legend.

APPENDIX B4. INTERACTION AMONG RJOI STAKEHOLDERS, INFORMAL MEETINGS



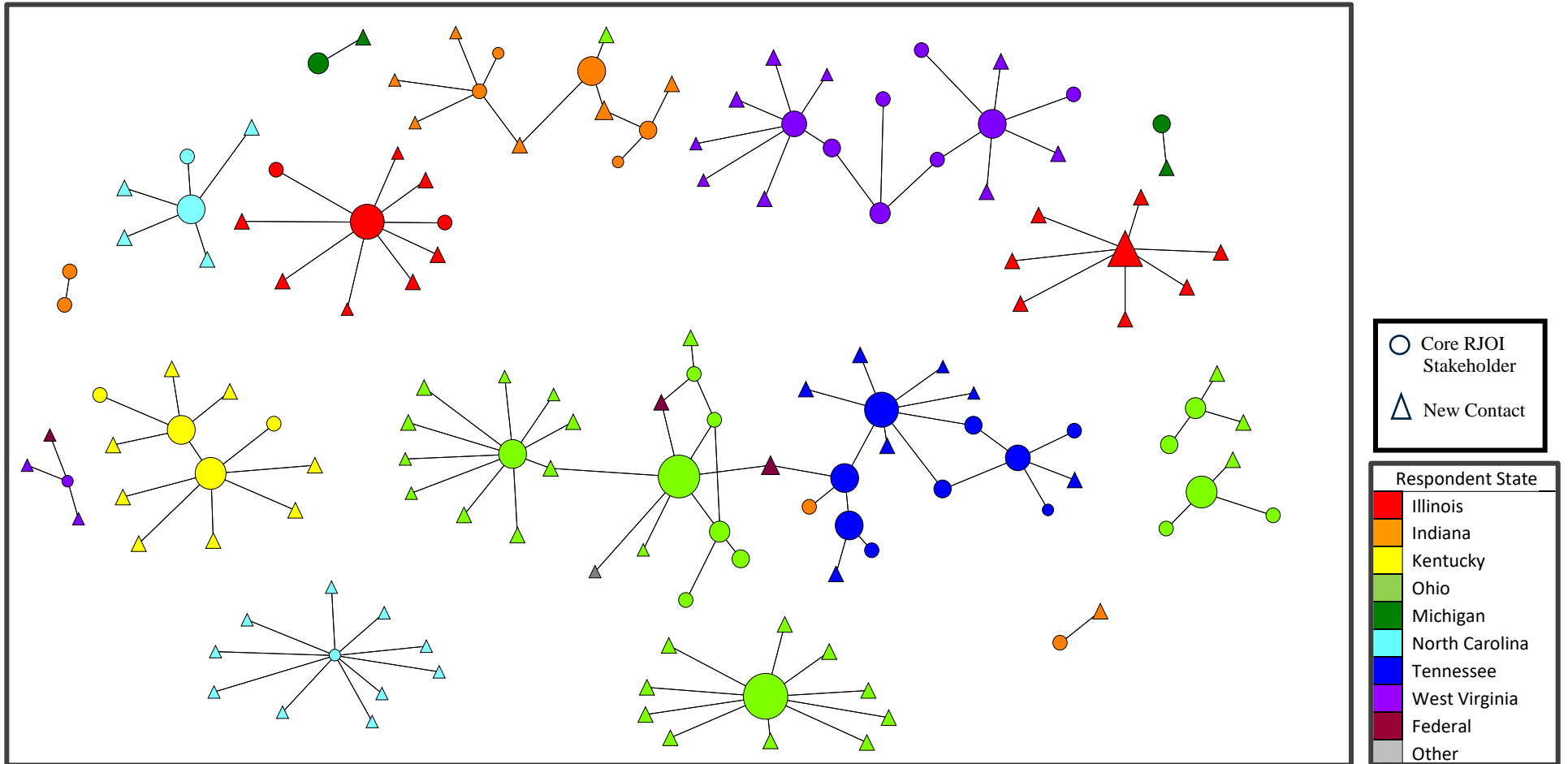
Description: Appendix B4 illustrates the interaction among RJOI stakeholders at informal meetings within the past year. In the network map, the size of each node is relative to the number of interactions each person reported with other RJOI stakeholders (i.e., larger nodes mean more interactions compared to other stakeholders). The shape of each node corresponds with whether that individual was a core RJOI stakeholder (circle) or a new contact captured from the survey (triangle). Finally, the color of each node corresponds to the state with which they are employed, illustrated in the legend.

APPENDIX B5. INTERACTION AMONG RJOI STAKEHOLDERS, GRANTS AND REPORTS



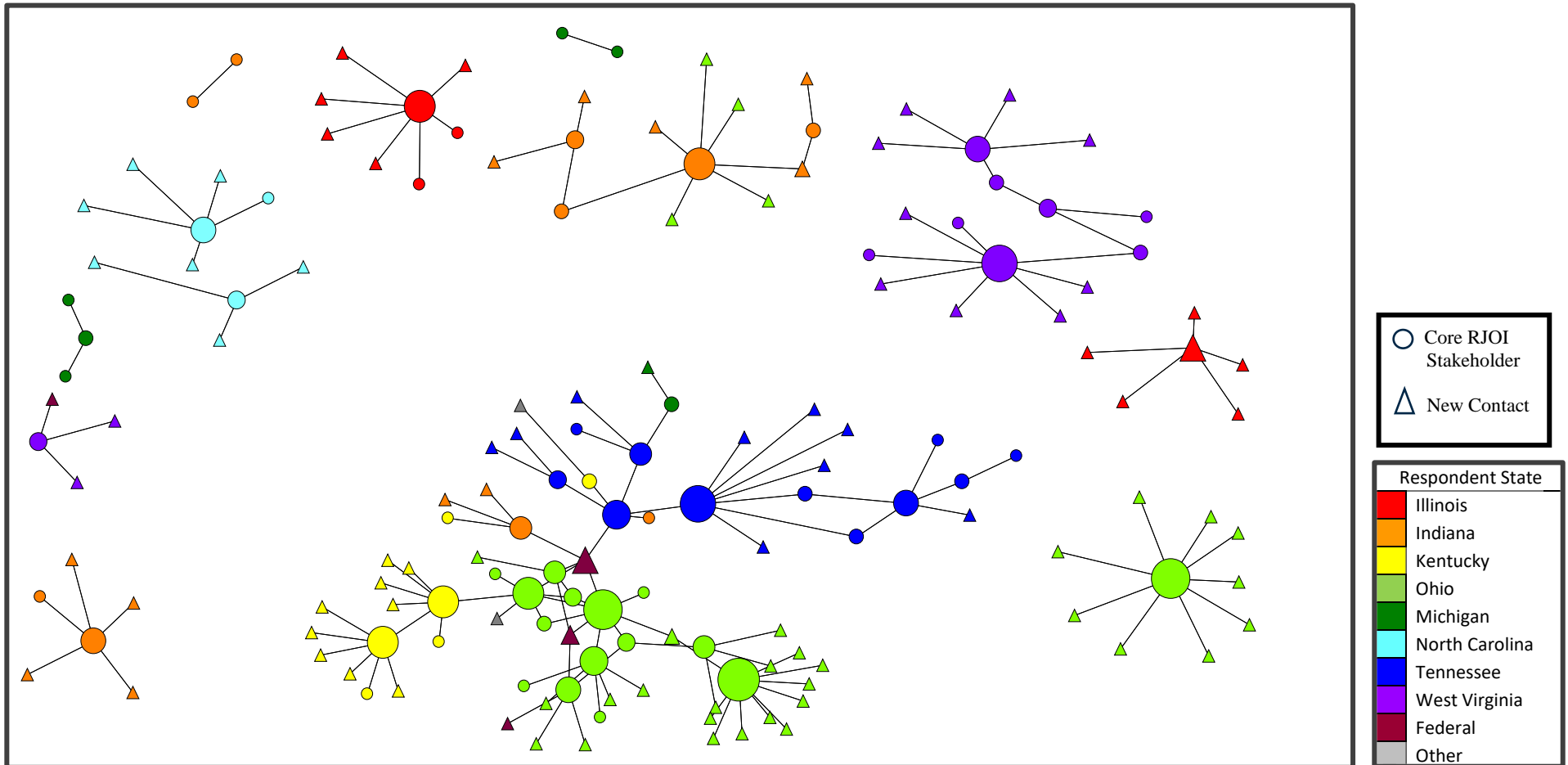
Description: Appendix B5 illustrates the interaction among RJOI stakeholders on grants and reports within the past year. In the network map, the size of each node is relative to the number of interactions each person reported with other RJOI stakeholders (i.e., larger nodes mean more interactions compared to other stakeholders). The shape of each node corresponds with whether that individual was a core RJOI stakeholder (circle) or a new contact captured from the survey (triangle). Finally, the color of each node corresponds to the state with which they are employed, illustrated in the legend.

APPENDIX B6. INTERACTION AMONG RJOI STAKEHOLDERS, IMPLEMENTING POLICIES OR PROGRAMS



Description: Appendix B6 illustrates the interaction among RJOI stakeholders in implementing policies or programs within the past year. In the network map, the size of each node is relative to the number of interactions each person reported with other RJOI stakeholders (i.e., larger nodes mean more interactions compared to other stakeholders). The shape of each node corresponds with whether that individual was a core RJOI stakeholder (circle) or a new contact captured from the survey (triangle). Finally, the color of each node corresponds to the state with which they are employed, illustrated in the legend.

APPENDIX B7. INTERACTION AMONG RJOI STAKEHOLDERS, SHARED DATA OR INFORMATION



Description: Appendix B7 illustrates the data- and information-sharing patterns among RJOI stakeholders within the past year. In the network map, the size of each node is relative to the number of interactions each person reported with other RJOI stakeholders (i.e., larger nodes mean more interactions compared to other stakeholders). The shape of each node corresponds with whether that individual was a core RJOI stakeholder (circle) or a new contact captured from the survey (triangle). Finally, the color of each node corresponds to the state with which they are employed, illustrated in the legend.

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