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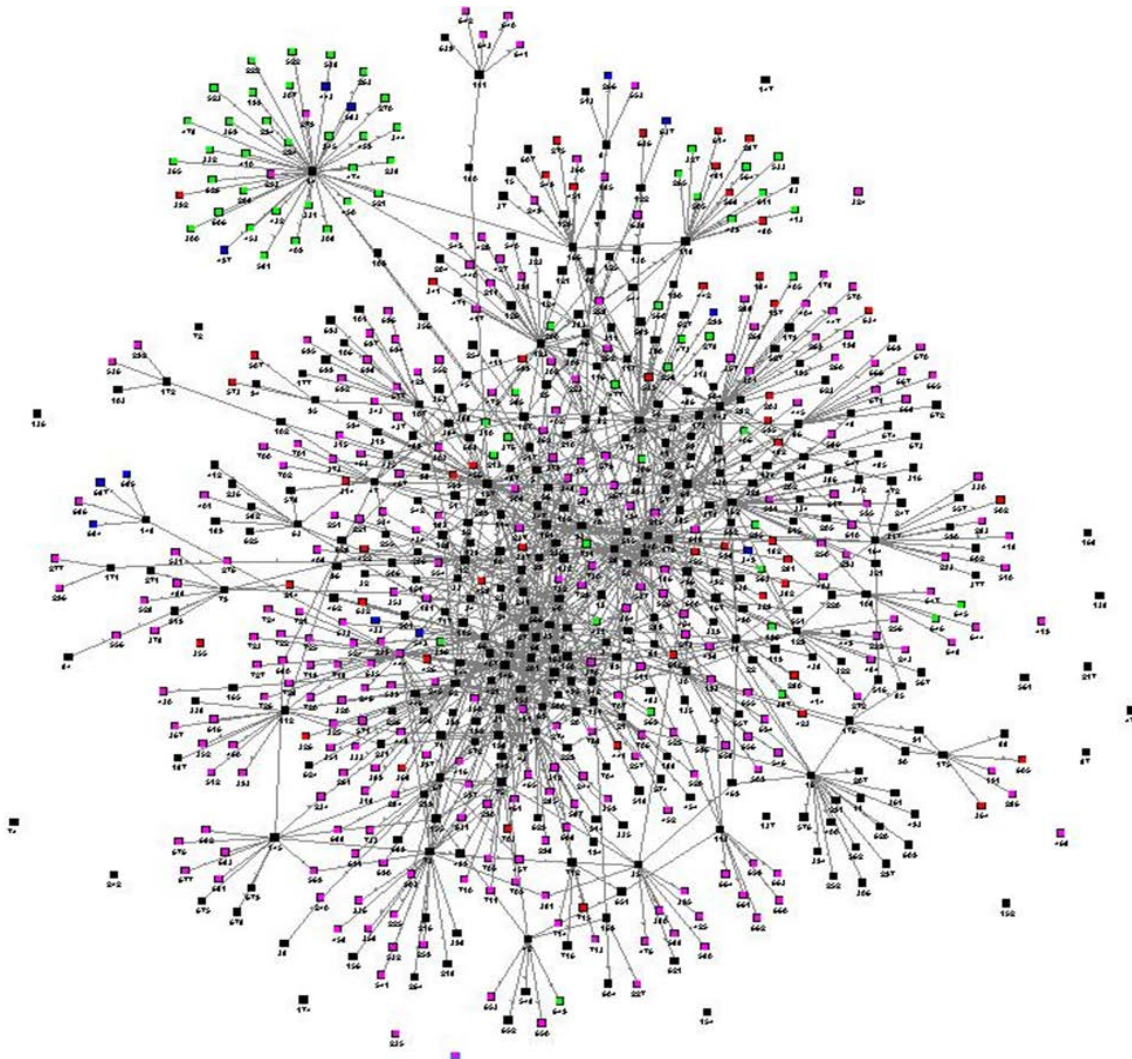
**NETWORKS FOR BUSINESS INNOVATION
IN CORNER BROOK, NL**

Jose Lam, Ken Carter, Louise McGillis, Candice Pike, Marion McCahon & Kelly Vodden
April 2013



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[Networks for Business Innovation Research Committee]



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1. INTRODUCTION

Corner Brook is an economy in transition with uncertainty surrounding the traditional resource-based sectors and a growing post-secondary sector. Previous studies on the region (Greenwood, Pike & Kearley, 2011) have cited the need to move to a knowledge-based economy in order to grow the local economy, compete globally and mitigate risks in the resource-based economy.

Recent studies have cited the broader social aspects of innovation beyond individual firms (Wolfe, 2009; Greenwood, 2011). Often innovation literature cites the firm and individual entrepreneurs as the only important actors (Greenwood et al., 2011). However, other social issues such as the interaction of a broad range of economic actors both locally and externally, spaces for and opportunities for collaboration (e.g. coffee shops and other public gathering spaces), social entrepreneurship and leadership (e.g. from knowledge support organizations) also have a role to play in the development of innovative products, processes and markets at the local/regional level.

The transition toward a knowledge-based economy and subsequent economic development is grounded in highly-integrated networks of individuals who also maintain a focus on turning to global ideas and trends for inspiration and knowledge. That is, "the most productive tool for generating good ideas remains a circle of humans at a table, talking shop" (Johnson, 2010, p.61). This leads to the question of how these innovation networks can be strengthened in Corner Brook.

Research into territorial innovation models including innovative milieu, clusters, regional innovation systems and industrial districts illustrates the importance of networks of firms and support institutions that compete and collaborate and thereby create new innovative products and processes. This focus on networks has lacked an empirical agenda, however, that would lead to a better understanding of linkages between actors in the economy and give insight into how these can be strengthened. Social Network Analysis is one response to this problem with its interest in investigating knowledge and idea flows within a specific region.

Recent literature in economic geography has examined the transition to a knowledge-based economy and how regions support learning, knowledge creation and dissemination, and innovation (OECD, 1996). Both local and global knowledge flows into and within a network are important for stimulating innovation. 'Local buzz' includes reciprocity and trust among firms, knowledge institutions, governments, and support agencies within a particular geographic area. These institutions can then easily transfer first-hand knowledge to each other. Local buzz has been shown to be a factor in fostering innovation (Wolfe, 2006). On the other hand, 'global pipelines,' or strong connections to external sources that allow knowledge to flow into an area, can also spur new ideas and regional innovation (Coe, Hess, Yeung, Dicken & Henderson, 2004; Storper & Venables, 2002). An ideal network for innovation contains a strongly integrated core (representing local buzz) and many loose connections to a peripheral network of diverse individuals outside of the area (the global pipelines). An example of a 'smart' network can be seen in Figure 1 (page 12) Further discussion of these ideas in a Newfoundland and Corner Brook context can be found in Greenwood et al. (2011).

The Networks for Business Innovation (NBI) committee, a research collective led by members from Grenfell Campus, Memorial University of Newfoundland and College of the North Atlantic-Corner

Brook Campus, in conjunction with the Rural Secretariat, Government of Newfoundland and Labrador, the City of Corner Brook, the Department of Advanced Education and Skills, the Department of Innovation, Business, and Rural Development, the Humber Economic Development Board, and the Greater Corner Brook Board of Trade, was established to examine existing and emerging innovation networks in the city. This study seeks to investigate the local and global knowledge flows within networks in Corner Brook using Social Network Analysis. The project used interviews and an online survey to better understand the current state of linkages among economic actors including firms, government employees, and nongovernmental organizations. The data and findings emerging from this study are intended to spur action to strengthen innovation networks and inspire broader interest in a more focused innovation strategy for the region.

2. LITERATURE REVIEW

The *Networks for Business Innovation* initiative builds on local studies that have investigated different aspects of economic development in the Corner Brook region. First, *The Business Retention and Expansion Report (BR&E)* (Burden, 2008) was produced by the Greater Corner Brook Board of Trade. The *BR&E* surveyed 79 local businesses and evaluated the business retention and expansion potential that exists in the city. The study highlighted where there is the potential for joint efforts among community members. Initiatives such as collaborative training, marketing, and mentoring were suggested. Through the course of this research, Burden found that a community focus on fostering innovation and embracing technology may improve business processes and expand business operations. Although the *BR&E* study highlights this opportunity, it doesn't go on to investigate the potential for "innovation" in this context, nor where there are specific opportunities for collaborative efforts to support innovation and technology adoption. This points to a knowledge gap which the Networks for Business Innovation Project seeks to address.

Second, *The Social Foundations of Innovation in Newfoundland and Labrador* (Wolfe project) was part of a national project on cluster-based development led by political scientist David Wolfe at the University of Toronto. The Wolfe project investigated the potential for increased innovation and the development of a knowledge-based economy in Corner Brook. Results from this study were consistent with local lore, indicating concerns that the existing Corner Brook business community is risk adverse and that it is hard to penetrate the "cliques" and tight, isolated social networks that exist in the city. The need to build greater external connections in support of innovation was identified as something to address and has helped inspire some of the follow-up actions included in this report. Additionally, it should also be noted that several examples of innovation and cooperation were observed in Corner Brook through the Wolfe project such as the arts community, the Metal Workers Network and the culture around small coffee shops (Greenwood et al., 2011). This indicates areas where projects taken on by the NBI committee might focus in order to gain traction.

One of the critical issues tackled in the Wolfe project was the need for adaptive local governance structures to promote economic clusters and innovation (Wolfe, 2009; Greenwood et al., 2011). Wolfe argues for the need to forge better linkages among institutions and economic development (Wolfe, 2009). He suggests that in the current knowledge-based and innovation-intensive era, this requires both civic leaders willing to build broad and inclusive local development coalitions, as well as policy coordination focused at the city region level (Wolfe, 2009). Wolfe cites the need for strategic planning processes to mobilize knowledge assets to drive new directions for the economies of city regions. An important example of this is the European *Research and Innovation Strategies for Smart Specialization* (RIS3) approach (Foray et al., 2012). More on this approach follows below.

Proximity and distance

Innovation literature has pointed to the importance of both proximity and distance for regional innovation development (Coe et al., 2001). Generally proximity reduces the uncertainty of economic activity, supports the coordination among economic actors and facilitates learning and innovation (Harmaakorpi, Tura & Melkas, 2011; Boschma, 2005). While geographers tend to focus on physical proximity, there is a distinction to be made between different kinds of proximity. Three important forms of proximity are physical, cognitive and social: physical proximity refers to the spatial closeness

of economic actors; cognitive proximity to the closeness in ways of thinking and knowledge bases; and social proximity refers to the intensity of trust-based social relations (Harmaakorpi et al., 2011).

Harmaakorpi et al. (2011) suggest there is a ‘critical dilemma’ between proximity and distance in innovation policy. Cognitive, social and physical proximity are important for localized knowledge spillovers that are critical to innovation, particularly tacit knowledge that tends to be locally based (Harmaakorpi et al., 2011, Boschma 2005). However, there can be negative aspects of the different forms of proximity. Proximity can limit external knowledge flows that are seen as critical to innovation (Boschma, 2005). Distance then, is also critical for regional innovation, and can renew the local knowledge base through openness to new ideas (Boschma, 2005). Social, cognitive and physical distance becomes important in terms of a diversity of actors, different ways of thinking and external connections that trigger new and innovative ideas at the local level (Harmaakorpi et al., 2011). This is important in the Corner Brook context where previous studies have shown tight trust-based local networks that are difficult to penetrate (Greenwood et al., 2011).

The proximity/distance issue also ties into the idea of related variety or cognitive/spatial distance across sectors or clusters (Jacobs, 1969). Jacobs argues that differences between actors and ideas can trigger innovation and economic growth through cross-sectoral contact. This thinking favours diversity and difference in economic actors and suggests this leads to increased learning and knowledge flows at the regional level. Cooke posits the concept of related variety as a way of viewing proximity/distance that can lead to local competitive advantage. This implies cognitive connections across sectors or clusters (Cooke, 2007). Building on the concept of related variety Cooke suggests that regional innovation platforms combine and reconfigure existing regional social, technological and business strengths. Regional development platforms can be defined as resource configurations from past development that present future development potential to produce competitive advantage (Harmaakorpi et al., 2011).

Peripheral regions and innovation

The literature distinguishes peripheral and core or central regions in terms of innovation capacity. Following Polese & Shearmur (2003), a peripheral region is defined as one that is at least one-and-a-half hours from a major metropolitan area (MMA) while a central area is within easy access to an MMA. An MMA has a population over 500,000 people. Todtling & Trippl (2005) suggest peripheral regions are usually characterized by their deficiencies and innovation challenges. They suggest five critical issues limiting innovation and economic development in peripheral regions. The first of these is remoteness from markets, leading to higher transportation costs and less competition. Second, peripheral areas face low levels of human capital, often due to outmigration and aging populations. This is particularly true of skilled and professional workers. Third, lower levels of knowledge infrastructure can mean lack of technological opportunities and knowledge flows from higher institutes of learning. Fourth, due to lower and more dispersed populations there are fewer local markets opportunities. Finally, Todtling & Trippl suggest that peripheral areas suffer from a thin institutional and organizational fabric. Though there are often many support entities in smaller peripheral regions there are fewer specialized support organizations (Todtling & Trippl, 2005), such as specific industry associations or knowledge support entities (e.g. technology transfer office). There is also often less willingness on the part of funders (particularly private banks) to invest in these regions due to perceived or real higher levels of risk.

Peripheral regions are also said to be less innovative because of an absence and/or weak clusters of economic activity (Todtling & Trippl, 2005). The economic structure of peripheral areas, with higher levels of resource-based industries, tourism and public services, also means there are limited numbers of non-traditional, technologically centred industries (Davies, 2010). Todtling & Trippl (2005) also point to poorly developed regional networks between firms, and between firms and support organizations. Network development is often referenced in conjunction with peripheral areas as a way to mimic agglomeration economies naturally occurring in large urban areas (Visser & Atzema, 2008).

Innovation Models

The importance of innovation networks often arises in regional or territorial models of innovation. Models of innovation stress the role and impacts of knowledge flows, networks and social ties on regional economic development. Numerous authors have categorized the nature of regional or spatial innovation models (Moulaert & Mehmood, 2010, Guiliani, 2011, De Propris & Crevoisier, 2011). For our purposes it is worth mentioning four: first, the Milieu Innovateur model (arising from the Groupe de Recherche Europeen sur les Milieux Innovateurs (GREMI), which stresses the role of local institutions in producing innovative firms where organizational factors lead to a region becoming an 'active space' for learning, creating local dynamism from endogenous resources and collectively enhancing the immediate environment (Proulx, 1992); second, the industrial districts model focused on endogenous growth dynamics of SME's in particular spaces, with the Italian manufacturing industry as one often cited example (Becattini, 1989); third, the regional innovation systems approach which focuses on a dynamic and evolutionary approach to the learning economy by focusing on interactions between the knowledge creation institutions and support organizations on the one hand and the regional production capacity comprised of local firms on the other (Cooke, 1996; Cooke & Morgan, 1998); and fourth, the cluster model where geographic concentrations of interconnected companies and institutions in a particular field lead to specialization agglomeration economies (Porter, 1998) or diversification across industries lead to learning (Jacobs, 1969).

Separate from models of innovation are more practically oriented implementation strategies that are often based on some combination of these innovation models. One recent European-based strategy loosely based on the RIS and cluster models is the Research and Innovation Strategies for Smart Specialization (RIS3) approach. RIS3 is a recent European Commission guide for policy makers and regional innovation actors in the implementation of regional innovation strategies (Foray et al., 2012). This guide outlines a series of steps for the implementation of such a strategy. These are: first, the analysis of the regional context and potential for innovation; second, ensuring participation and ownership through appropriate governance mechanisms; third, the elaboration of an overall vision for the future of the region; fourth, an identification of priorities; fifth, definitions of a coherent policy mix, roadmap and action plan; and sixth, the integration of monitoring and evaluation mechanisms. This guide offers a practical approach to designing innovation strategies at the regional level and is loosely based on the regional innovation systems approach outlined in this paper. As noted earlier, one of the important findings of the national Wolfe project is the need for strategic planning for innovation at city region level (Wolfe, 2009).

What all of these models and strategies share is a focus on the importance of innovation/learning networks to regional development and growth in a knowledge-based economy (Guiliani, 2011). Guiliani sets out three common elements to innovation networks across these different models: first, a

broad array of market based interactions including market transactions among members, regional labour market exchanges and technology spill-overs (traded interdependencies); second, non-market relationships including shared cultural backgrounds and close social ties that lead to learning and reduced transaction costs (untraded interdependencies); and third, mutual dependence on and support for public institutions and policies at the sub-regional level. Networks are considered to be a major channel of knowledge diffusion (Boschma & Frenken, 2011; Ter Wal, 2009; Sorensen, Rivkin & Fleming, 2006).

The importance of networks to innovation is stressed in the literature. Giuliani (2011) argues that network advantages are striking with regard to innovation since innovation is a social process. Burt (1992) claims that firms in well-structured networks have higher rates of return and that this, in turn, is critical for the development of the local economy. And while the importance of innovation networks to regional economic growth is a fundamental aspect of the innovation literature, there is frustration at the lack of clarity on what these networks look like and how these traded and untraded interdependencies and knowledge flows occur. Paul Krugman, for example, famously says that knowledge flows are invisible and immeasurable (Krugman, 1991). Storper calls strong spatial, social and cultural ties in networks the 'dark matter' of regional economies (Storper, 2009).

One recent response to this lack of clarification and quantification from a methodological perspective has been social network analysis (SNA). This is a tool that can help map out the relationships amongst different actors in a community to explore and thereby understand the role that internal (local) and external (global) connections play in supporting and improving the innovation and growth of regional economies (Cross & Parker, 2004; Krebs & Holley, 2004). In this context, SNA can be a powerful way of tracking knowledge flows for innovation studies (Van der Valk, 2010). Van der Valk suggests SNA can be used to map collaboration in innovation, the strength of communication networks and networks based around technology. Innovation depends on the circulation of knowledge and how well innovation system components are connected. If we consider that actor relationships are critical to knowledge flows and innovation, then one form of analysis of rural and peripheral knowledge flows is to map the networks of connections. It is critical that SNA studies measure both local and global connections. SNA can be a valuable way of measuring how well connected critical actors are locally, and how well they are connected to appropriate resources outside the region (Van der Valk, 2010). The NBI project seeks to use SNA to better understand the current state of knowledge flows in the Corner Brook region and to use this understanding in practical ways to encourage more networks to develop through increased interaction between firms, support organizations, local education and research capacity, all levels of government and local economic development agencies.

A complimentary process to use in conjunction with SNA is network weaving (Holley, 2011). SNA is a powerful tool for mapping and analysing existing relationships. Network weaving tackles the work of strengthening the relationships by both building on the local core and external relationships or periphery. Holley outlines the roles of the network weaver as follows: connector role maps and analyses networks, strengthening relationships and building trust; project coordinators form action groups, help coordinate activities, and share learning in the larger network; the network catalyst brings groups together to form networks and helps to define the purpose and agendas of smaller networks; and finally network guardians support the needs of networks, including communication systems such as social media, sourcing resources needed for networks to operate, providing evaluation support and training network weavers (Holley, 2011, p.39). The knowledge mobilization phase of the NBI project

seeks to implement these network weaving roles in the Corner Brook region as a path to building stronger innovation networks.

For Holley, the goal of network weaving is to create a local innovation ecosystem (Holley, 2011). The essential components of this are creating a network culture that supports innovation, identifying innovation assets, tuning up your local network for innovation, training people in the skills needed and adding key support structures to enhance innovation (Holley, 2011, p. 197). The goal of this innovation ecosystem is to engage, support and empower as many people as possible to initiate action. Such an ecosystem values diversity, is creative, and is focused on learning through experimentation (Holley, 2011, p. 196). This ecosystem is ultimately geared to transformational change and innovation.

In summary, this literature review has focused on key aspects of enhancing innovation at the regional level. Models of innovation tend to stress the social nature of innovation; that knowledge flows across RIS components (firms, academic and research institutions and economic support organizations) are important to innovation at the regional level. Learning and knowledge flows through innovation networks are emphasized as critical to competitive advantage and economic growth. This study is primarily focused on network development. All of the critical elements mentioned above depend on strong and diverse networks for innovation. Networks are the building blocks of an innovative region and can be measured using SNA. Once mapped and measured, the process of network weaving can strengthen these networks and help build a local innovation ecosystem.

3. METHODS

Methodologies developed by Krebs et al (2004) and Cross et al (2004) to study social networks and understand the role of network structure in specific geographic locations form the cornerstone of this project. This project also builds on a research plan and methodology piloted on the Great Northern Peninsula of Newfoundland and Labrador by Vodden, Tucker, Gibson & Holley et al., 2011. The Corner Brook NBI Project Committee worked together to design and undertake this research. The process was divided into four phases:

Phase I – The Interviews

To begin the practical research portion of this project, the research team decided to carry out a series of interviews with individuals perceived as innovators in Corner Brook. The aim of these interviews was to generate a body of localized information on innovation in Corner Brook and also to inspire the first draft of questions to be included in Phase 2, the online survey. The interviews also served as a useful way to connect the research team to any existing innovation networks and to ask interview participants to identify names of other innovators, which then were used to help build the list of survey participants (Doreian & Woodard, 1992).

The NBI committee initially drafted a list of 35 potential interview participants currently involved in local business and innovation. In the autumn of 2011, twenty-one of the individuals on this list consented to be interviewed by members of the research team. At the time, they were all directly involved in local businesses operations ranging in scale from sole proprietorships to multi-million dollar corporations. This strategy of devising names and interview questions was based on work done by Vodden et al., forthcoming; Vance-Borland & Holley, 2011; Krebs et al, 2004; Cross et al, 2004; Doreian et al, 1992. The questions posed in these interviews served to identify who the respondent has worked with, how they develop ideas, who their mentors are, who they would like to work with in the future, who the most influential people are in the Corner Brook business community, and what local factors contributed to their successes and challenges. This initial set of interviews provided an understanding of the interrelated factors that enable and inhibit innovation in Corner Brook and suggested a number of initiatives that could be undertaken to build on current gaps in services and projects. Following completion of the interviews, a research assistant analysed the qualitative data emerging from these interviews and identified key themes and recurring suggestions. These insights were used to develop the survey distributed in Phase II. A list of all individual names mentioned by the initial interviewees was also created at this point to form the basis for the group of people who would be invited to participate in the survey.

Phase II – The Survey

Following the interviews, an online survey was developed based on the answers given by the interview respondents as well as the research interests of the NBI committee. This survey was distributed to 156 people. In addition to standard demographic details, the questionnaire included close-ended questions that asked about local business priorities and gaps in local resources. Additionally, the survey was designed to identify the relationships between network members; participants were asked to list the individuals they had worked with in the past, those that they had not yet worked with but would like to in the future, and those from whom they get ideas.

After a list of all the organizations and names mentioned in the initial interviews was compiled, this was reviewed by the research team. Individuals who no longer lived, worked or were connected in the region were removed from the list of potential interviewees. It was also decided to focus on individual names instead of organizations, so that when analysing the resulting network, network nodes could be narrowed down to individuals with whom more direct contact for follow-up actions could be made. To this list were also added key contacts and organisations whose members worked within economic development or innovation, because of the presumed close proximity of their work to the innovation networks.

To capture the survey data, the team initially devised a survey using a Google Docs Form that categorically listed all identified names and organizations and allowed respondents to select whether they had worked with this person or their organization in the past, got ideas from them, or would like to work with them in the future. However, to respect the privacy of individuals the survey was redesigned to utilise June Holley's social network analysis web-survey format where respondents could enter in the name of individuals they have worked with, received ideas from, and/or would like to work with into a blank field. This may have impacted the research findings as it relied far more heavily on people's free recall to identify names of people they had worked with, rather than reviewing a list of names (as in Vodden et al., 2011). It also only allowed participants to include 15 names in each category. As a result the networks illustrated in this study reflect the relationships that were “top of mind” for respondents. These may therefore reflect respondents’ most recent, active (e.g. high frequency of interaction) and/or important relationships (Doreian et al, 1992).

A link to the online survey was distributed using personalised e-mails to the participant list. As the results were monitored, a snowball technique was implemented and the survey was sent to other people who were named four or more times, or were recommended to the research committee as essential to survey due to their contributions to business innovation in the community. Duplicate names for the same person and people whose identity or contact information could not be confirmed were removed from the sample.

In social network analysis it is critical to have a high survey response rate, to ensure a realistic depiction of the network. However, initial responses to the e-mail survey were low, and so three personalised reminder e-mails were sent to most participants. To increase the response rate the deadline for completion was extended and phone calls were made to encourage responses. In some cases, the NBI committee arranged telephone and in-person interviews to complete the survey with respondents who preferred this to the online survey option. Information from the Phase I interviewees was also added into the Phase II survey format to ensure these key respondents were included without asking

them to provide responses a second time. Using a snowballing survey technique and through an intensive data collection period, 111 out of 156 invited participants responded to the survey or completed an interview, representing a 71% response rate.

Survey responses were then cleaned up and coded by the research assistant and mapped using Smart Network Analyzer. The research team received training and guidance throughout the project on these tools by experienced advisers in this field, Ken Vance-Borland and June Holley.

Phase III – Data Analysis

Phase III involved qualitative and quantitative analysis of the data collected from both the interviews and the survey and employed social network analysis techniques developed through previous research projects (Vance-Borland et al, 2011; Vodden et al., 2011; Krebs & Holley, 2006; Krebs et al, 2004). In February 2012 the NBI group worked with Ken Vance-Borland who provided an overview of how to use Smart Network Analyzer and UCINET and advised on the project.

Based on the data collected via the survey, social network analysis maps were generated to provide a picture of the interactions amongst individuals in Corner Brook, while exploring external connections that may have a role in supporting innovation in the City. Analysis of the patterns illustrated within the network maps, a review of the demographic details of participants and calculated frequencies of responses, together with insights from Phase 1 interview results form the basis for the suggested action steps that conclude this project.

Phase IV – Knowledge Mobilisation

The knowledge mobilisation phase of this project began in Winter 2013 and will continue through 2013. It will involve information sessions held with key sectors, businesses, support agencies and networks, and other relevant community organizations. These sessions will be designed to raise awareness of the research results, to identify ideas for network weaving and to find volunteers (individual and/or organizations) who are willing to take on aspects of this role. The knowledge mobilisation sessions will facilitate relationship building amongst loosely connected network members and help to identify applied research and innovation projects and collaborations with research institutions, funding agencies and other network members that can address the innovation needs of local businesses. Consistent with recent work in this field (Vodden et al. 2011, Vance-Borland et al, 2011, Krebs et al, 2006), these knowledge mobilization sessions will lay the groundwork for an on-going network weaving process that the NBI committee partners will continue once the formal stages of the project are complete.

4. RESEARCH FINDINGS AND OPPORTUNITIES

Two sets of data form the basis for these research findings – Phase I interview data and Phase II survey data. The section 4.1 highlights some of the key trends related to innovation which were identified through the interviews. Section 4.2 summarizes survey data using SNA and mapping methodologies.

Key Trends from the Interview Data

Previous studies have mentioned Corner Brook's tight networks (Wolfe, 2009; Greenwood et al., 2011). Interviewees for the NBI study were mixed on this issue with some suggesting that the community has tight vertical networks, while others perceive more openness and opportunity in Corner Brook than ever. The results suggest an emerging innovation focus within particular groups in the city; and as stated in the RIS3 approach (Foray et al., 2012), this also suggests the dynamic changing nature of innovation systems. Nonetheless, more informal networks and cross-sectoral connections are needed.

In the 21 interviews completed, participants were asked who they rely on most for accurate information or advice to help them in their work. Generally the connections tended to be in the same industry or sector (e.g. arts, industrial). Another popular response was that participants turn to in-company managers and staff. This is a key finding; that business turns to business. This again points to a limited number of cross-sectoral connections. The literature suggests that knowledge flows across sectors can be an important source of innovation, but the interviews did not show a lot of this kind of cross fertilization happening. This could be a focal point of networking weaving activities going forward.

Following this, interviewees were asked who they look to for new ideas for their business and again respondents said that most new ideas came from industry peers (and sometimes competitors). Industry media, such as online papers and magazines, newsletters, and conferences were mentioned by some participants, as a way to keep on top of trends and innovations, as were industry associations. Additionally, some said that new ideas come from co-workers, staff, and managers from within the company. They also named people they would like to work with in the future. Those most often named were well known local business people with a few named from outside the region. The enthusiasm of interviewees for working with others in the future suggests fertile ground for future network weaving exercises.

About half the interviewees named outside contacts, though often not that far afield (e.g. western Newfoundland and St. John's). Interviewees again most often named external connections that are in the same industry rather than cross-sectoral external connections. Interviewees also named networks they were engaged in (e.g. NLOWE). One interviewee cited the importance of external connections for new ideas and innovation, but this was not widely stressed across the interviews. Improving external connections and building on cross-sectoral connections could be areas of focus for network weaving.

The idea of improving and building on the existing networks as well as forming new ones was brought up often in the interviews. Several interviewees mentioned the need for more informal networks in the city. Another cited the importance of NLOWE and learning through the network of women entrepreneurs. A suggestion was made by another interviewee for Grenfell Campus to host networking events with business leaders and students/faculty.

Following on the need for mentoring identified in the BR&E study (Burden, 2008), the interviewees placed significant importance on mentors. They were most often local, industry related colleagues. Support professionals such as accountants and lawyers were mentioned as mentors. Others named parents or other relatives. There were a few who said they didn't have a mentor, but generally interviewees cited the importance of mentors to their success. Several interviewees were interested in better connections to successful business leaders and support professionals including lawyers and accountants. The innovators of Corner Brook most often named by interviewees included entrepreneurs Frank Coleman, Peter Ollerhead, Lilian and Stoyan Zahanov, Bill Barry, Darren Brake, and David Maggs. These were named multiple times as innovators, while quite a few others were named once.

In terms of support organizations within Corner Brook, participants gave examples of government organizations they have worked with. Many provincial government departments were mentioned, along with federal departments and government funding organizations. The focus did not seem to be on any of these departments/organizations generating creativity, but rather providing the means to allow for individual innovation. This includes both funding opportunities as well as the accessibility of space, human resources, technological resources, and promotional opportunities. The importance of support institutions is clearly evident but some interviewees were challenged by the bureaucratic structure of these organizations. Also interviewees would like to see greater alignment to the needs of business in order to develop more effective working relationships.

The interviewees mentioned the Corner Brook Board of Trade, the Downtown Business Association and Business Wings as useful business organizations. There were several comments about the need for these organizations to continue to represent the needs of the firms. The Business Wings program was cited as an important group that was developing the business leaders of the future.

Several of the interview participants stated that they have had assistance with innovation from a post-secondary institution. Both Memorial University (particularly Grenfell Campus) and College of the North Atlantic (Corner Brook and Stephenville Campuses) were mentioned, sometimes as a general resource, but often because of a specific individual or department. At Grenfell Campus, many interviewees had worked with business faculty, communications/media staff and visual arts faculty. For the College of the North Atlantic (CNA), many of the contacts were related to market research, adventure tourism and culinary programs. Some interviewees suggested an expanded role for Grenfell Campus and CNA in the economic development in the city, while acknowledging the importance of the institutions as a customer for city businesses, as well as a training ground for managers and entrepreneurs.

The importance of all support institutions including business organizations, governments and knowledge institutions was generally acknowledged. Interviewees suggested supports such as business planning, business consulting, HR capacity building, business incubators and mentoring by successful entrepreneurs were all seen as important. Based on the interviews, getting better access to advice from other entrepreneurs as well as joint initiatives on accessing business support services are areas where future networking activities could be focused.

The interviews suggest that an innovation strategy that clearly laid out priorities for the future and that brought together resources and institutions would be well received by the business community.

Aligning support organizations to the needs of business and organizing opportunities for cross-sectoral networking would be important components of such as strategy.

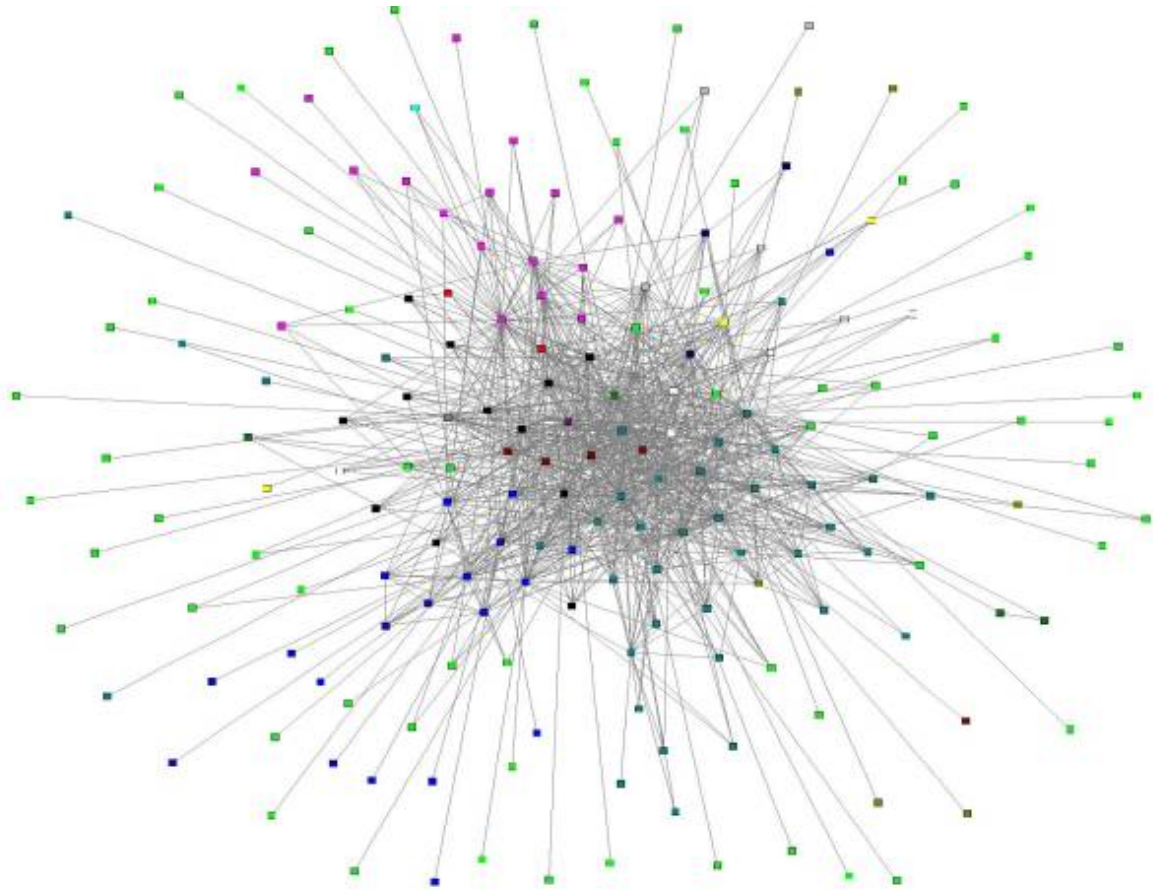
Analysis of the Network Maps

Smart Network Analyzer and UCINET combinations of survey data, based on research priorities set by the NBI, were used to create network maps. These priorities included: understanding how individuals are connected within and across different sectors, determining innovation priorities, mapping connections for education and research, and finally discovering who respondents look to for new ideas or would like to work with in the future to assist with the establishment of future connections. For each map, observations as well as some potential action steps are listed (see appendix A) to encourage future network weaving. These potential actions are derived from the survey data, individual interviews, as well as ideas and priorities established by the NBI Committee. More maps can be generated as needed. For confidentiality reasons individual names are not included in this report. However the maps will be used to help identify potential network weavers who can lead action activities that build connections within the networks, as well as to identify specific individuals who can be connected to strengthen networks for business innovation in the Corner Brook area. Those individuals who have agreed to share their names with the NBI research team will be contacted to gauge their interest in participating in knowledge mobilization and networking activities.

Ideal Smart Network and Corner Brook

An ideal smart network (figure 1) has a tightly connected/dense core of overlapping connections and a large periphery with many diverse connections, where the periphery is often 3-5 times the size of the core (Krebs et al, 2004; Vodden et al., 2011). The strongly integrated core supports ‘local buzz’, meaning reciprocity and trust among companies, knowledge institutions and government, all of which contribute to innovation (Wolfe, 2006). This connectivity in the core also helps information flow more easily through the network, thus enhancing the potential for innovation and economic growth. It is also important for innovation that the network has a large periphery with many connections to individuals outside of the area. These ‘global pipelines’ bring new knowledge and ideas into an area and promote regional innovation. (Coe et al, 2004; Storper et al, 2002).

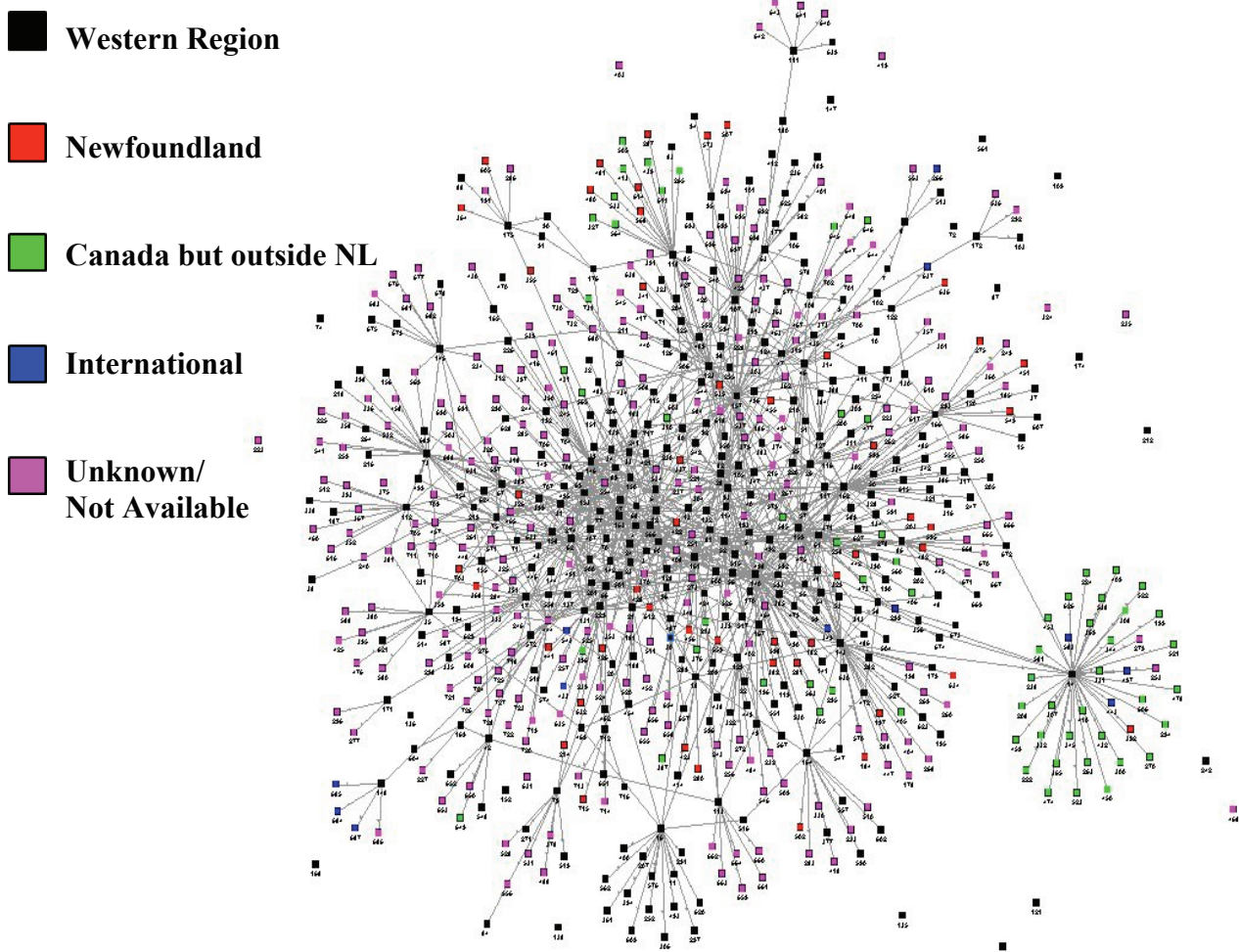
Figure 1 – Map of Ideal Network (Holly, 2011)



The 111 people surveyed and interviewed listed a total of 733 unique names of individuals they have worked with in the past, would like to work with in the future, and/or people they get ideas from. Figure 2 below maps out all these connections within the overall network examined in this study.

When the network map of Corner Brook (figure 2) is examined in relation to the ideal smart network map (figure 1) we find that the Corner Brook area is loosely connected and without a dense core or many overlapping clusters. Also, the periphery does not show a lot of connections external to the city. These results suggest that weaving local connections in the network and increasing “global pipelines” on the periphery should be key follow-up priorities for this research project.

Figure 2 – Complete Network, Now living in...



Clusters in Corner Brook

Despite the observation above that the network does not have many overlapping clusters, sectoral or organizational category affiliations are not clustered and segregated in Corner Brook as much as initially expected or as reported in past research of the area (Greenwood et al., 2011). Figure 3 shows that organizations are not as densely connected as they should be in an ideal network.

Figure 3 – Complete Network by Organization

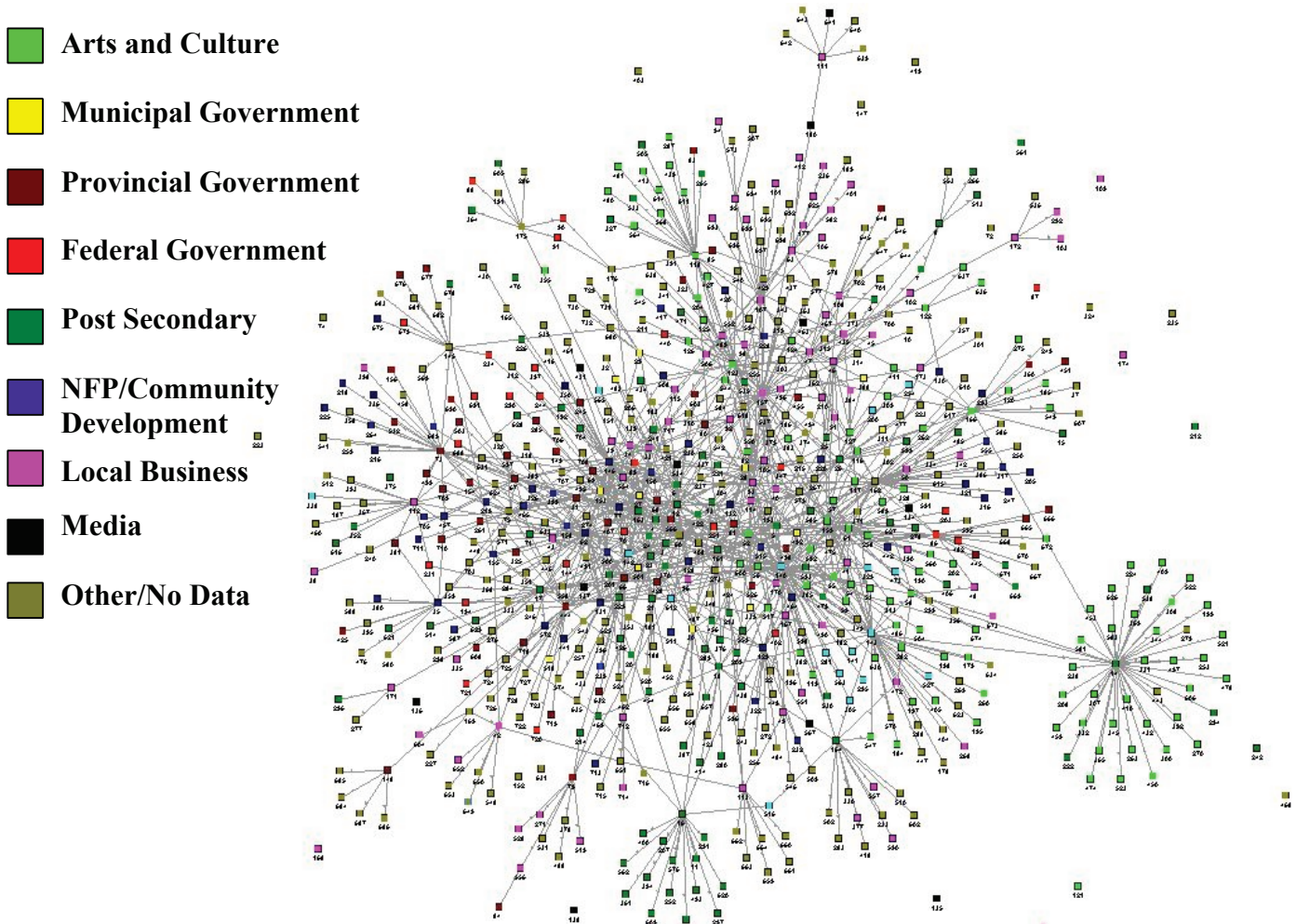


Figure 3 also shows an emerging arts cluster in Corner Brook, which is somewhat disconnected from other categories. There are some sectors that are more tightly interwoven, or that are missing links to other clusters. For example, government and not-for-profit representatives are tightly integrated but neither is strongly connected to the loose network of those working in the arts (figure 4). There seems to be a high number of respondents (22.5% of the sample population) who self-identify as belonging to the arts sector. This may be because these individuals were mentioned often by others, and thus added as survey respondents as part of the snowball technique, due to a perception that they are highly innovative or potentially because many respondents who were initially categorized by the research team as involved in the post-secondary or local business sectors self-identified as part of the arts sector instead (for example, they may teach art at a post-secondary level or run a gallery or arts education business). In many instances this speaks to where Grenfell Campus' Fine Arts Programs straddles both arts and post-secondary communities; for example, professors in the program are also practising artists.

Figure 4 – Survey Respondents by Sector

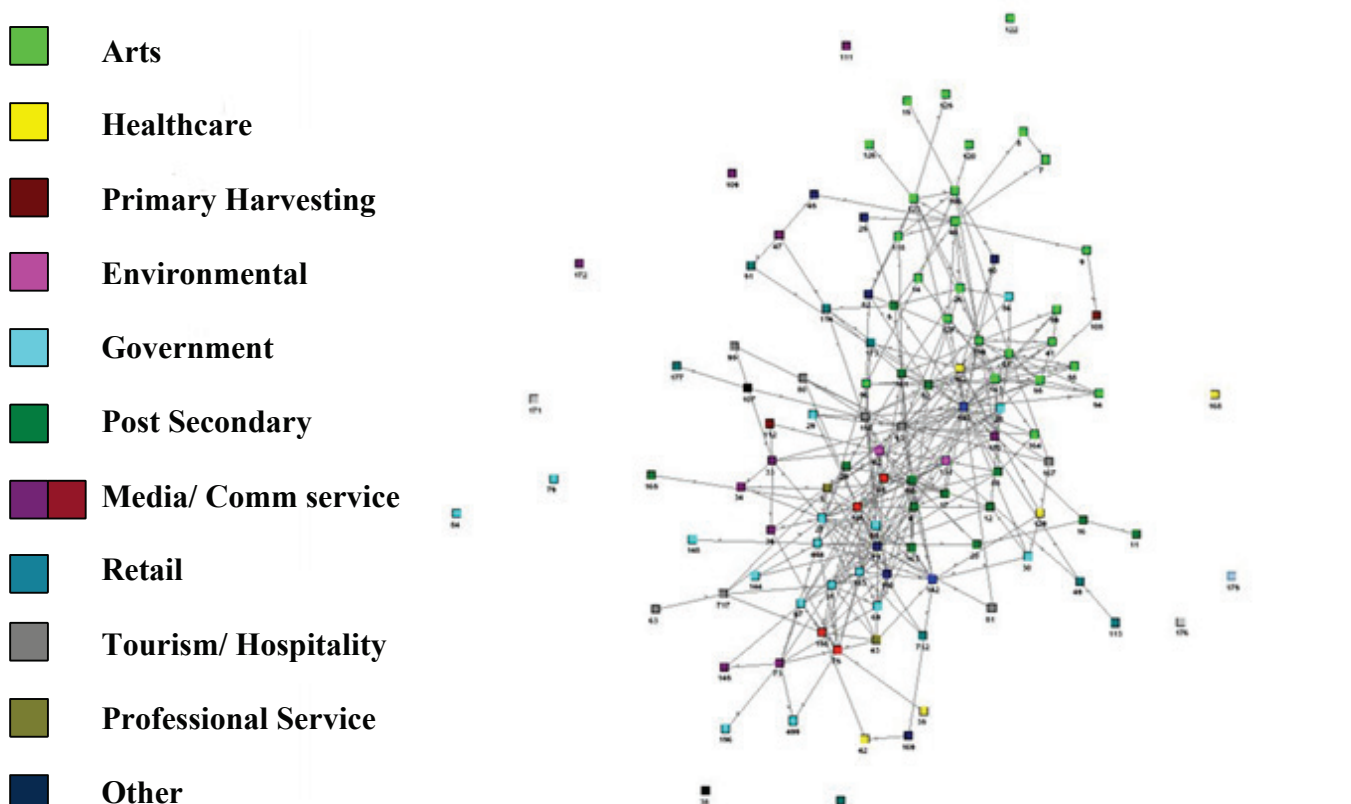
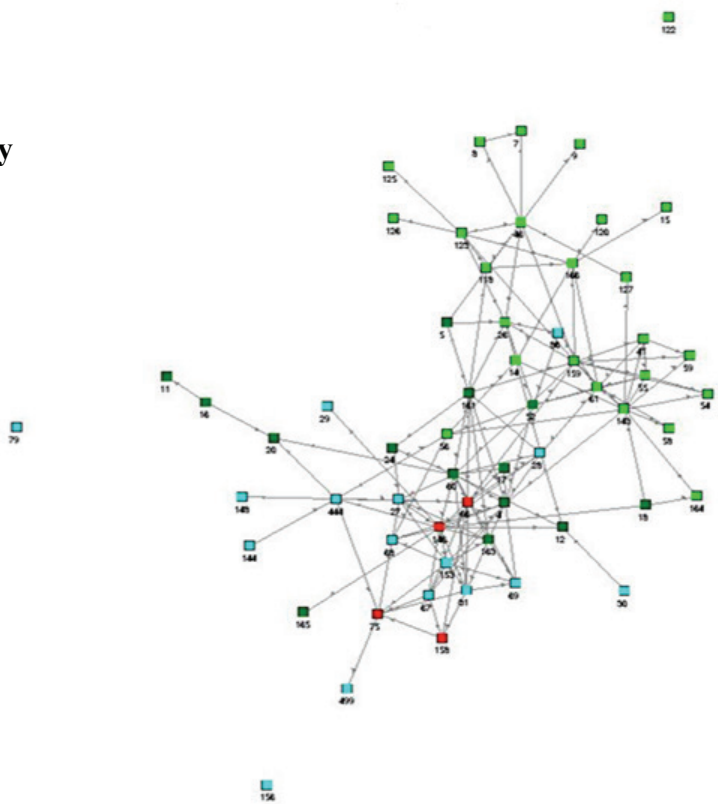


Figure 5 – Government /Arts Sector connected by Post-Secondary Sector

- Arts
- Government
- Post Secondary
- Community Development

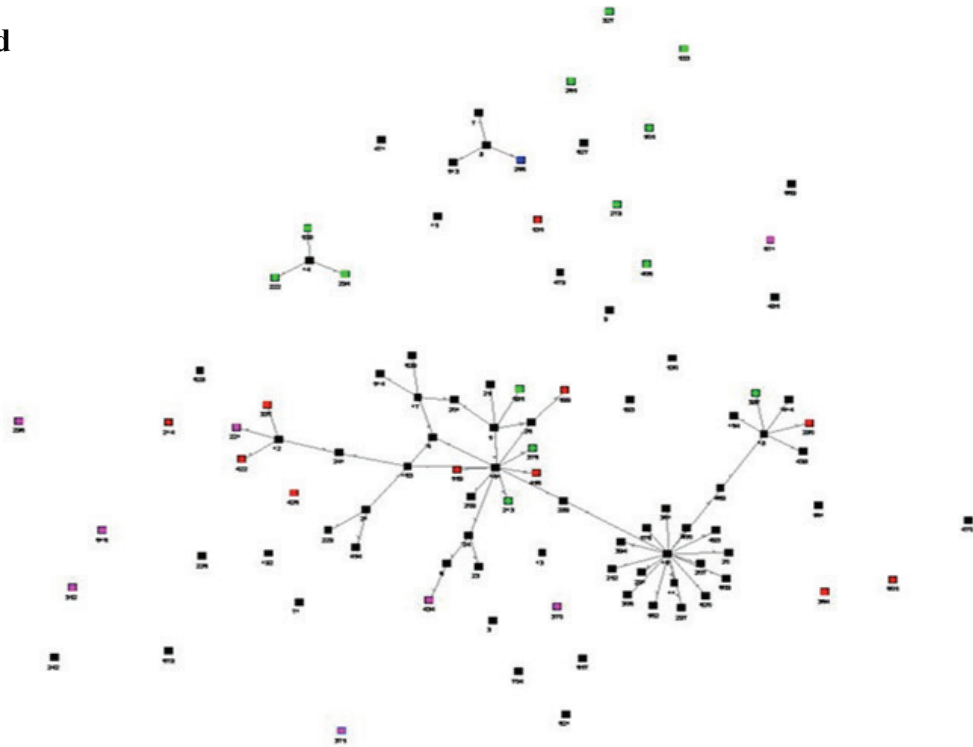


Mapping limited to government, not-for-profit, arts, and post-secondary respondents indicates that there is potential for those involved in post-secondary education, to be key intermediaries in the arts and government/NGO clusters, due to their good connections in both sectors (figure 5). There is a small cluster of individuals working in government, post-secondary education, and arts all looking for support with education and research. This finding suggests that there are opportunities to develop more connections between the government and non-profit sector to the arts sector (figure 5). More information is needed as to what types of education and research activities respondents are looking for. This could inform discussions, knowledge sharing and network building with those working in post-secondary education who likely have the ability to develop educational programs and experience with many different types of research.

There were, in contrast, few respondents from what is seen to be an emerging environmental cluster in Corner Brook. It may be that, unlike the arts, those working in post-secondary or government sectors but also affiliated with the environmental sector were unlikely to identify themselves as part of the environmental sector (figure 6). The status and networks within this cluster in the region warrants further investigation. The low number of references to individuals within this sector as innovators suggests that the sector may require particular support in fostering networks for innovation.

Figure 6. Complete Network, Working in Post-secondary Sector, by Location

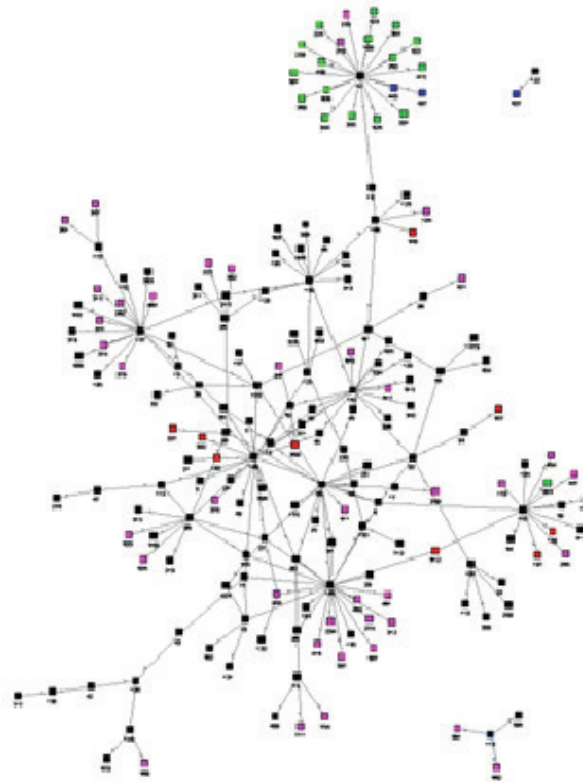
- Western Region**
- Newfoundland**
- Canada**
- International**
- No Data**



Future networks and outlook for Corner Brook

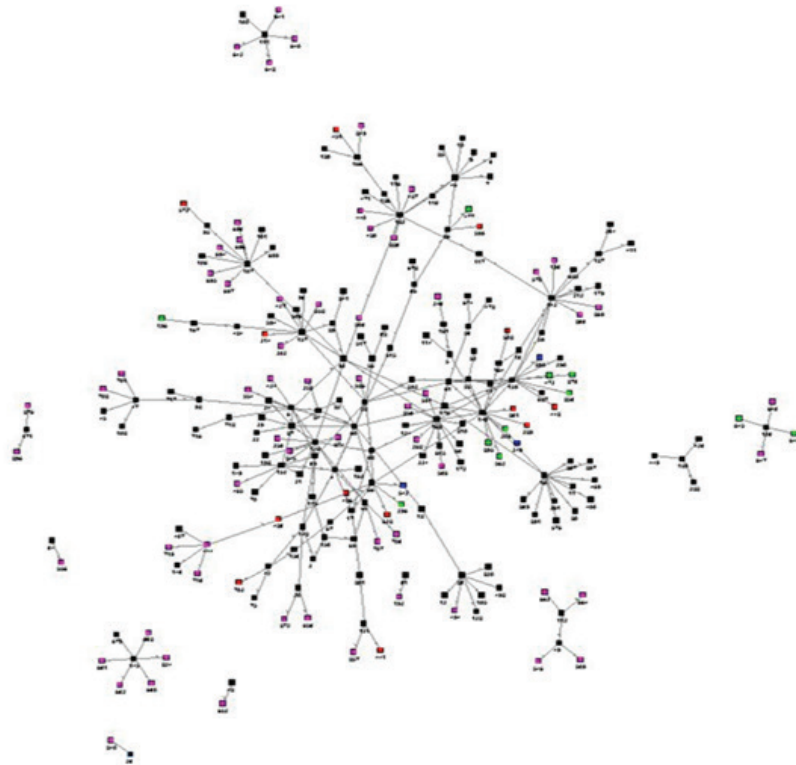
The previous maps (figures 2-6) have shown all of the connections for past, future, and ideas amongst the respondents. The next step in the survey involved surveying respondents and asking them who they would like to work with in the future. Figure 7 is a relative small map because not all respondents identified individuals that they would like to work with in the future. The results indicate both a challenge and an opportunity. It identifies network weaving opportunities where these individuals are not already connected through past relationships. The loose network indicates that some respondents may be reluctant to work with others, feeling that their business was at capacity. On the other hand, these results offer opportunities to encourage more people to get involved and work together, as well as to break down existing barriers.

Figure 7. Entire Network-Future-Location



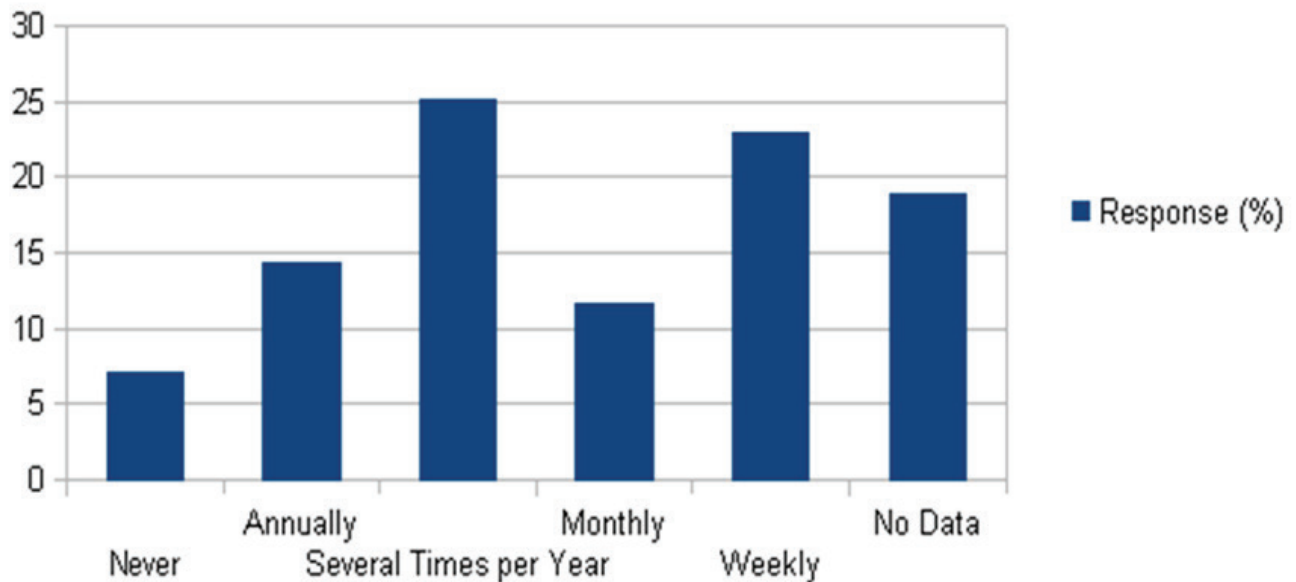
Just as it is possible to look at the “future” network in figure 7, it is also possible to isolate the ideas network. While we see the general patterns of who people are looking to for ideas, it is also useful to look at the graph indicating how often survey respondents look to international trends as this is a good indicator of innovation and seeking new ideas (figure 8). In the Phase I interviews, when asked who respondents look to for new ideas, it was apparent that most new ideas come from industry peers and even competition. Industry media, such as magazines, newsletters, and conferences were mentioned by some participants as a way to keep on top of trends and innovations. Similarly, industry associations were also mentioned. Additionally, they noted that several new ideas came from co-workers, staff, and managers from within the company who deal directly with the public.

Figure 8. Complete Network, Ideas, by Location



The ideas network, consisting of 279 connections (figure 8), is a little bigger than the future network (figure 7), consisting of 215 connections, but still relatively small. Most of the names people provided through the survey were those that they have previously worked with. The past network has 861 connections. These results suggest that when respondents were asked who they wanted to work with in the future, they replied with names of people that they have already worked with or are currently working with. One explanation may be that these respondents may be satisfied with their current networks and may not have had the opportunity to get involved in projects with other people. Moreover, a high percentage of respondents do look to trends quite regularly. Twenty-five percent of respondents check international trends several times a year and over 20% do so, on a weekly basis (figure 9).

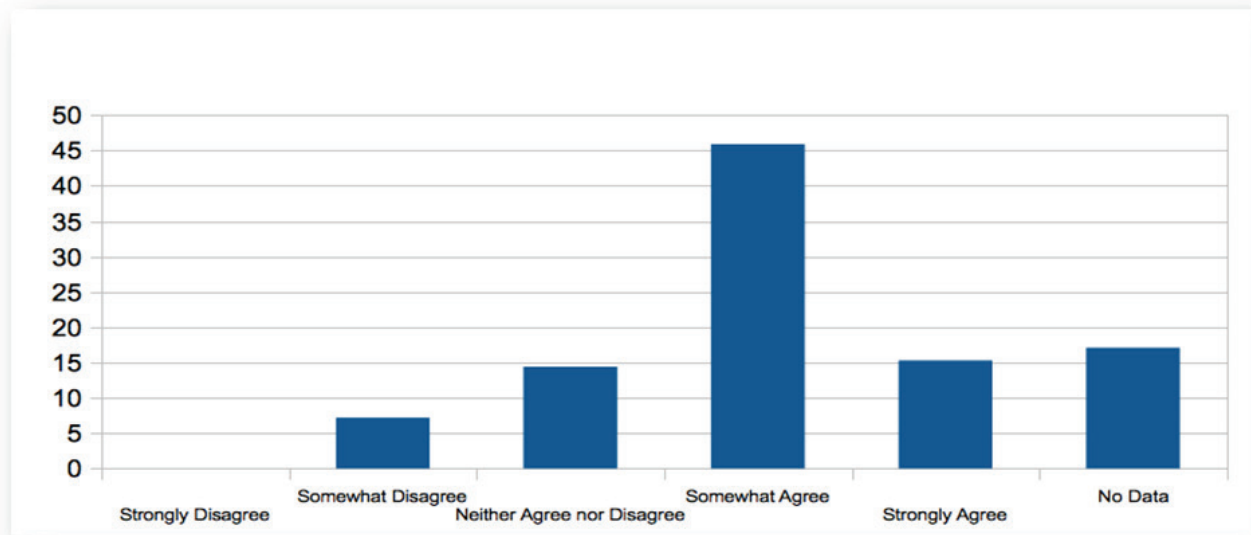
Figure 9. Monitoring International Trends



Survey participants were asked to comment on their level of optimism about the business community in the Corner Brook network. It is assumed that having an optimistic outlook regarding the prospects for Corner Brook's economy is a factor in one's willingness to get involved in local business initiatives and opportunities. The mapping also indicated that the optimistic people are networked, but loosely, indicating there is a real opportunity here to develop a tighter core network of optimistic individuals who may be willing to further invest in the area's future.

To get a sense of the attitudes present in this Corner Brook network, survey participants were asked to rate how they felt about the statement: "I am optimistic about the prospects of the business community in Corner Brook." A breakdown of their responses is illustrated in Figure 10, with those who were optimistic illustrated.

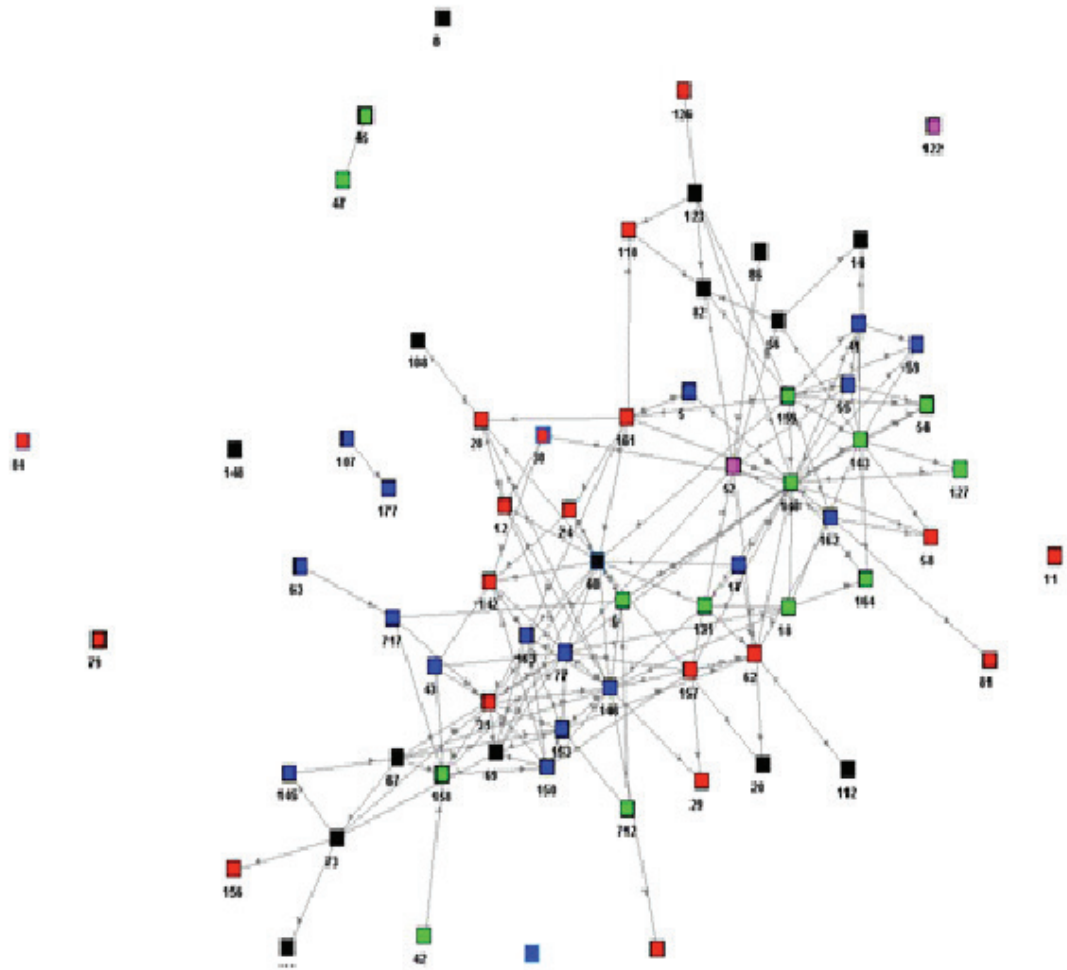
Figure 10. Level of optimism in the Business Community



During the initial interviews it seemed that a positive attitude may have been correlated to the age of the person. However, the survey found that the majority of people who responded are optimistic about prospects in Corner Brook. Although this network of optimistic people was loosely connected, the survey found that these people ranged in age from young (age 18-30) to old (age 61-70). In addition, the survey found that many of the optimistic people were in the 18-30 and 31-40 age brackets (figure 11).

Figure 11. Network, Future Optimism for Business Prospects by Age

- 18-30
- 31-40
- 41-50
- 51-60
- 61-70



Innovation Priorities in Corner Brook

Participants were asked to select an innovation priority in which they would like to be involved. The top priority, identified by 28% of survey respondents, was to be involved with in-person networking events. Many types of networking events were proposed by interviewees and survey respondents and can be found in figure 12. Figure 13 shows this breakdown of priorities visually.

Figure 12. Innovation Priorities (graph)

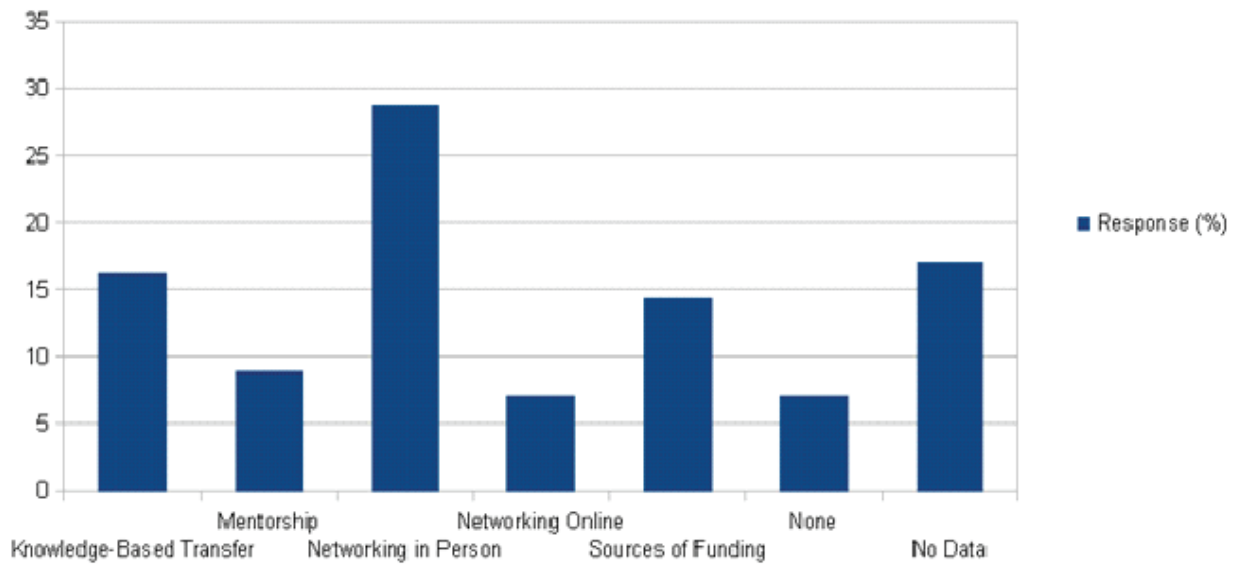
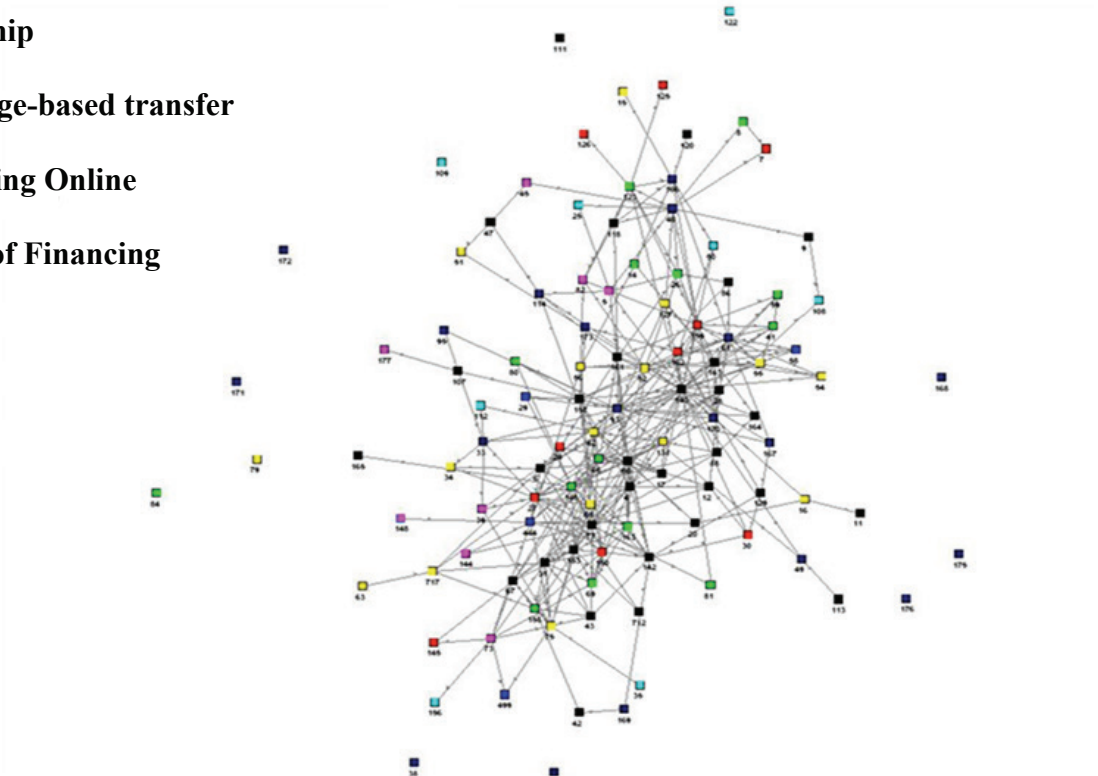


Figure 13. Innovation Priorities (map)

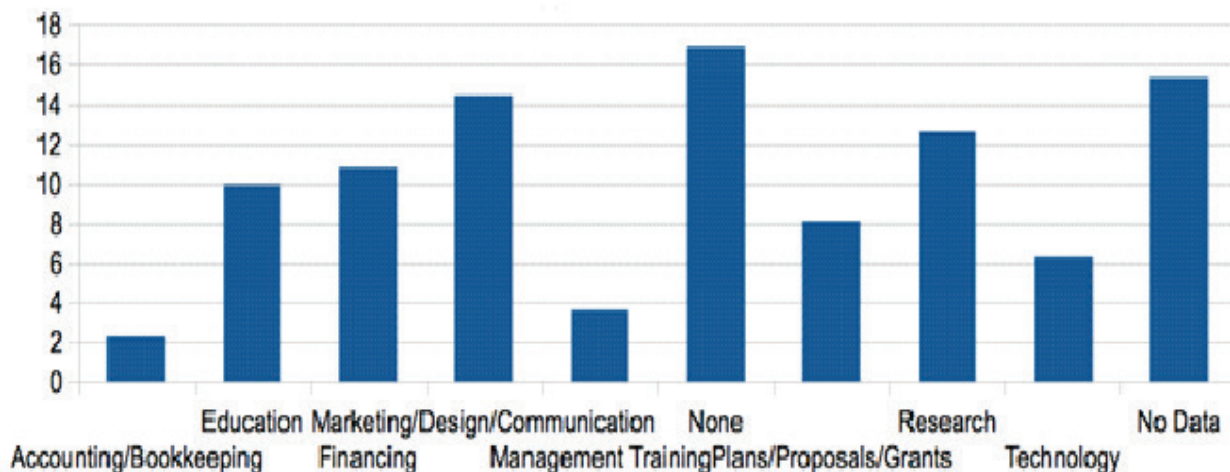
- Networking in Person
- Mentorship
- Knowledge-based transfer
- Networking Online
- Sources of Financing
- none



Role of Support Organizations

Local organizations that provide business support services play a role in promoting innovation. Marketing, design, and communication services were selected by 14.4% of survey respondents as support services they were interested in, though the desire for assistance with these services did not significantly correlate to any particular sector or demographic group (figure 14). This affords the opportunity to offer both business support services and some cross-sectoral networking at a single event.

Figure 14. Business Support Priorities



5. Knowledge Mobilization

A list of potential actions has been compiled from the recommendations listed throughout the report. These actions can form the core activities of those interested in network weaving. They are merged to reduce redundancy and thematically categorized into the following:

Connecting Community through Networking

Networking among business

Sector based networking initiatives

Mentoring

Social media

Creating an innovation culture in Corner Brook is not something that can be instituted by government, or individual groups. It will require collaboration and joint action by a host of different actors in the region including firms, government departments and agencies, development organizations, research institutions and individuals. The NBI research team envisions teams of cross-sectoral network weavers undertaking these actions to further innovation in the region.

The following table differentiates between policy level actions, program level actions and practices. Policy in this context is understood as higher level actions by governments to encourage programs and good practice. Programs are understood as more specific initiatives with support and initiative coming from different organizations. Practices are seen to be collaborative actions undertaken across numerous entities to achieve innovative results. Nonetheless, an overarching strategy is needed to bring all of these elements together.

Table 1. Policies, programs and practices

	Policy	Program	Practices
Connecting Community	Encourage and support network collaboration between NGOs and other agencies that deal with social issues Build external connections	Establish a social planning council Create a “not-for-profit wings” modeled after the successful “Business Wings” Strategic potential to pursue linkages through internationalization office and community-based researchers	Promote skill building in not-for-profit sector Host and promote public lectures to the community Build collaborative research projects Hosts events with international presence, eg. the 2013 CUExPO and the 40th College Chemistry Canada Conference
Promoting networking among businesses	Promote informal networks Create an innovation incubation centre	Develop “natural” networking spots for brainstorming new business ideas Promote case studies on successful business ideas and innovation successes	Organize speed networking events; Organize “Networking Breakfasts and “Innovation Drinks” Bring international speakers to the business community Develop sessions for business owners on issues relevant to their businesses, such as opportunities, funding, etc. Show benefits of cross-sectoral knowledge flows (local and global)
Sector based initiatives: Arts, tourism, environmental, and industrial	Integrate and promote collaboration among individuals from different sectors, including artists, local businesses, development agencies, education, and government	Establish formal networks for specific industries Create space for public art Develop smaller art facilities Re-initiate a craft Co-op	Encourage funders to understand diverse needs of artists Develop low-costs/low risks venues to sell art Develop and host business development skills workshops Use Navigate as a network weaver to continue its green breakfast and business networking sessions
Mentoring	Create support mentoring programs	Encourage initiatives that transfer knowledge from retirees to younger people	Find mentorships brokers to help facilitate meaningful connections between interested parties
Use of Technology/Social Media	Promote partnerships amongst people interested in sharing knowledge about social media	Utilise Skype and webinar to highlight external success stories; Build a virtual sandbox for sharing tips, tricks, and questions about social media	Create a list of Corner Brook twitter and blog feeds and connect them to the NBI mobilization phase

6. CONCLUSION AND NEXT STEPS FOR POLICY AND PRACTICE

Through the use of Social Network Analysis and building on previous work (Burden, 2008; Wolfe, 2009; Greenwood et al., 2011), this research project has assessed the innovation network in Corner Brook and identified opportunities for enhancing and adding to this network in order to support increased innovation within the City and the surrounding region. Improvements to the network include actions to strengthen integration in the core of the network and to enhance the range of external and peripheral connections.

Following knowledge mobilisation, a key next step will be to identify potential network weavers to take a lead on delivering on these opportunities. The Networks for Business Innovation Committee has a role to play in initiating the network weaving process and encouraging the delivery of some of the actions listed above. The committee would also act as a central hub for reporting and recording these developments, answering questions about the network weaving process and mobilizing support. In addition they would help to identify one or more representatives of the group who would be responsible for following up with those who have agreed to take on initiatives and weaving efforts, to keep them accountable and inspired.

Along with the general need to strengthening integration in the core and enhancing external connections, several other network weaving opportunities stand out. First, cross-sectoral connections are limited and enhancing these, both locally and externally is cited in the literature as important for innovation. Second, numerous interviewees spoke of their interest in working with other entrepreneurs and these connections could lead to new business opportunities. Third, mentoring was cited as an important way of sharing ideas and experience. And fourth, entrepreneurs suggested strengthening ties between the broad range of support organizations, including Grenfell Campus and CNA, business organizations and all levels of government.

A separate conclusion supported both by the literature and the interviews is the need for a broad and inclusive innovation strategy for the city of Corner Brook. An example of such a process is laid out in the RIS3 document, discussed earlier in this report. RIS3 offers a roadmap for such a strategy. The interviewees have suggested that they believe institutions such as the City of Corner Brook, Grenfell Campus, CNA and various departments and agencies of the provincial and federal governments have a role to play in outlining a vision for enhanced innovation in the region and marshalling resources and people to make it become a reality. This report and previous studies help in defining a path and represent a continuation towards steps 1 and 2 outlined by Foray et al. (2012).

This project highlights the great potential for building on existing innovation (both within business and community) in Corner Brook and supporting and connecting the work of existing innovators to enhance networks for knowledge sharing, research, business support and generation of new ideas and collaborations. The next step is to bring partners together to implement the opportunities identified in this report.

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APPENDIX A – Specific Actions

Connecting Community through Networking

- Form a social planning council which would bring together a variety of NGOs and other departments that work on social issues to encourage collaboration
- Using the successful Business Wings program as a model, develop a “Not-For-Profit Wings” to share and build skills amongst those in the not-for-profit sector
- Undertake initiatives to improve community aesthetics e.g. community clean-ups, painting buildings, etc.
- Host and promote public lectures on research topics of interest to the community in places where people commonly gather.

Connecting and Networking among business

- Organize a Speed Networking event loosely based on June Holley's speed networking activity in the Network Weaver Handbook (2011, p. 102)
- Develop a “natural” networking spot for brainstorming new business ideas. Many people interested in networking emphasized that *informal* networking was key.
- Organize a regular “Innovation Drinks” event, modelled on Green Drinks, an informal pub-night open to any individual wanting to talk about innovation, ideas, creativity, and potential opportunities in the community.
- Create a business incubation centre to encourage small business development. Business operators will work in close proximity, which will likely lead to idea sharing and increased local buzz.
- Promote case studies regarding the business and creative successes that have been achieved when individuals connect with and work with others
- Bring international guest speakers to present in the community or work with local groups
- Show the benefits of cross-sectoral knowledge flows (local and global)
- Develop sessions for businesses owners to provide clear and concise information (e.g. funding opportunities, educational support services, customer service and HR issues).

Sector based initiatives: Arts, Tourism, Environmental and Industrial

- Host trade shows for different sectors and establish more formal networks for specific industries.
- Collaboration among artists, local businesses, development agencies and governments to market the region in an integrated and holistic manner.

- Create space for public art. This includes actions like soliciting art work (visual art, film, music, and so on) from local as well as encouraging sculpture on public property
- Support for the development of a smaller arts facility or shared space for artists
- Re-initiate a craft co-op, especially geared toward young people. Interview data suggests that such a group was successful in the past
- Encourage funders to understand the diverse needs of different art forms (e.g. funding, scholarships, travel, space requirements)
- Develop low cost/low risk venues to sell art work.
- Develop and host business development skills workshops geared towards artists, craftspeople, and entertainers.

Mentoring

- Investigate strengths and weaknesses of mentoring programs that already exist and what kind of support is required to reach a wider group of people.
- Appoint a mentorship broker to help facilitate meaningful connections between interested parties and follow up with them.
- Encourage initiatives that transfer knowledge from retirees to younger employees, such as succession planning.

Use of Technology and Social Media

- Utilise Skype and webinar technology to highlight external success stories
- Create a list of Corner Brook twitter and blog feeds and connect them to the NBI knowledge mobilization phase
- Arrange partnerships amongst people interested in sharing questions and knowledge about social media.
- Build a virtual sandbox for sharing tips, tricks and questions about social media: an example can be found in Network Weaving Handbook (Holley, 2011, p. 305)

APPENDIX B. Interview Questions

1. Please list key individuals and organizations, both local and external, that you have collaborated with on business projects and ideas during the past two years. Can you describe this collaboration?
2. Who do you rely on most for accurate information or advice to help you in your work?
3. Who do you look to for new ideas for your business?
4. Do you have a business mentor? If yes, in what ways has he/she helped you? Can you tell us your mentor's name?
5. Is there anyone you would like to work with or you think can support you on a business project or idea?
- 6a) Have post secondary institutions assisted you with innovation? If yes, which departments and individuals?
- 6b) Have business associations assisted you with innovation? If yes, which departments and individuals?
- 6c) Have government organizations assisted you with innovation? If yes, which departments and individuals?
7. Which individuals or organizations stand out as having made a significant contribution to business innovation in Corner Brook?
8. Who do you feel are the most critical people / organizations for success for innovation in Corner Brook? Please provide names of specific individuals.
9. What kind of support is needed to develop an innovative business in Corner Brook?

Thank you for your taking the time to participate in this study. Would you be interested in participating in a follow-up focus group? (If yes, record name on a separate sheet).



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