

Running head: OUT OF THE LOOP: SOCIAL NETWORK ISOLATION

Mount Saint Vincent University
Department of Family Studies and Gerontology

Out of the Loop: Social Network Isolation in Long-Term Care in Nova Scotia

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Abstract

The purpose of this study is to better understand the nature, characteristics and reasoning as to why some directors of care in nursing homes are isolated from the social network of their peers. Using data from the Translating Research in Elder Care (TREC) project “Advice Seeking Networks in Long-Term Care”, this study sought to explore the descriptive characteristics of Directors of Care (DOC) who are social network isolates in Nova Scotia and what factors contribute to their isolation within the network. Furthermore, it addressed the question: what are the implications of social network isolation at an individual level, facility/organization level, and for the network as a whole?

The research is embedded in the diffusion of innovation theoretical framework that explains how and why new innovations and interventions are spread throughout a network. In this case of social network isolates, one might assume that with limited connectivity to the network, opportunities for spreading new innovations and best practices will be limited.

The project utilized findings from the quantitative survey of the TREC project for the selection of social network isolates (n=10), identified by visually observing the network maps and using low centrality scores. Semi-structured interviews were conducted with the social network isolates (n=6). Interviews addressed demographic factors that may lead to network isolation and the implications of a limited social network.

Overall, few commonalities exist among the characteristics of social network isolates. The nursing homes where isolates are employed vary in size and ownership model; however, nine of the ten isolates are in rural locations. Participants are unaware of their isolation and did not perceive any difficulty when accessing information regarding best practices and innovations in long-term care. They reported that rurality or proximity to other network actors is not influential on their advice seeking behaviours or access to information. However, it has been determined that the innovations they implement within their facilities are not considered to be particularly novel in the sector. This finding confirms their lack of access and opportunities to learn about new innovations in long-term care, reinforcing that social network isolates are laggards when adopting innovations. These DOCs feel largely disconnected from the Department of Health and Wellness, who are responsible for licensing and funding long-term care. Participants state that recent budget cuts and a lack of funding have negatively impacted the quality of care they are able to provide.

Introduction

Problem Statement

As the aging demographic in Atlantic Canada continues to grow, it is essential to the quality of care for older adults that new innovations and best practices are spread efficiently through the long-term care sector. The Nova Scotia Department of Health and Wellness (2013) describes long-term care as providing personal and nursing care (including administration of medications, bathing, and dressing) on a 24-hour basis. Long-term care is utilized by older adults who have chronic health issues and who require constant care. According to Statistics Canada (2011), 29.6% of adults 85 and over reside in long-term care facilities, thus highlighting the importance of quality care services and treatments. While the long-term care industry continues to grow, there is an eagerness to promote health and independence among older adults to encourage them to remain living in their own homes well in to older age. Despite efforts to shift away from relying on institutionalized care, nursing homes are and will continue to be a crucial provider of care for many older adults in Canada (Hirdes, Mitchell, Maxwell and White, 2011).

As the Canadian population continues to age, the older adults who require institutional care will also increase (Blomqvist and Busby, 2012). Currently, there is an increasing amount of research and innovation occurring within the long-term care sector due to industry growth. As new innovations and best practices are developed and implemented, it is essential that they spread throughout the sector, from large, urban facilities to rural, privately owned manors to improve the quality of care within the long-term care sector. Therefore, all administrators within the long-term care sector must have

equal access to these new innovations. Through a better understanding of the existing network, researchers and provincial level decision makers might disseminate innovations quickly and efficiently.

Social network analysis (SNA) is described as the interrelatedness of social units (Wasserman and Faust, 1994), thus social networks can be simply understood as a set of actors and the ties among these actors. SNA can further be thought of as the effort made to understand the structure of these actors and their ties and how this structure influences the functioning of the group. SNA has been used across various disciplines to map and explore the connections experienced within a network and measure the strength of the connections that are used for communication and the spread of new information (Chambers, Wilson, Thompson, Harden and Coiera, 2012). Within the health care sector, SNA is suggested as a valuable method for the adoption of public health interventions, informing dissemination strategies, mapping the spread of infectious disease, and highlighting the importance of social networks on recovery (Pow, Gayen. Elliott and Raeside, 2012).

Formal (quantitative) SNA can help to evaluate and understand networks and the flow of information (Edwards, 2010); however, it fails to explain *why* some individuals are connected and others are disconnected from the network. To develop an accurate picture of a network, it is equally important to understand the lack of connections as it is to understand existing connections. Pow et al. (2012) describe a lack of connectedness as “structural holes” that hinder the flow of information and those who are disconnected from the network as “social network isolates”. Social network isolates can inhibit the flow of information, preventing a cohesive network (Scott, 2012). Therefore, it is

important to analyze networks that contain isolates to achieve an accurate depiction of these networks. This analysis and understanding of social network isolates will enable a consistent and effective flow of information that can reach all actors within a network (Pow et al. 2012).

According to Wasserman and Faust (1994), there are two distinct variables used for data collected in SNA, structural variables and composition variables. Structural variables measure ties between network actors and composition variables measure actor's attributes. Social network analysis can be conducted in one of two streams: whole-network or egocentric-network designs. SNA is initially conducted using data collected through self-reported instruments, such as surveys or questionnaires (Marsden, 2005). Whole-network, and egocentric networks both use these methods of data collection; however, their samples are selected in different ways. Whole-network analysis sampling consists of one set of interrelated network actors linked by one set of relationships at one specific occasion (Freeman, 1979). Whole-network analysis design requires a specific set of actors who are of interest and aims to have respondents recognize their networks rather than to recall them (a roster of potential people). All actors are then interviewed. Egocentric network design focuses on relationships surrounding a particular network actor and all other actors linked to this particular individual (Marsden, 2005). Egocentric studies typically involve large populations, which requires recall from the network actors (no boundaries, not known beforehand). Typically, populations are so large that it is not feasible to interview all network actors; rather, selected individuals describe the links and relationships within their network. Whole-network analysis and egocentric analysis are not mutually exclusive methods of SNA because egocentric networks can be contained

within whole-networks (Marsden, 2003). According to Kirke (1996) egocentric networks can be contained within whole-networks if they are densely connected.

In Nova Scotia, a Director of Care (DOC) has a managerial role that serves as the link between nursing staff and other managerial/leadership staff (R.K. Macdonald Nursing Home, 2017). Key responsibilities of this role include overall management and delivery of nursing services, ensuring delivery of quality and safe nursing care, and adhering to applicable care standards and policies. Individuals in this role are expected to have extensive gerontological clinical knowledge as well as leadership experience. For this reason, DOCs are responsible for educating themselves about the latest innovations in long-term care and ensuring their frontline staff are maintaining such innovations in their daily practices to improve quality of care.

Social network connections between DOC and equivalent senior leaders within nursing homes in Canada are largely unknown. It is crucial to understand such connections because these managerial positions are likely to have a profound impact on the quality of care and quality of life of nursing home residents. As interest in best practices and quality of care of older adults continues to grow and the body of research regarding care practices advances, nursing home DOCs must be kept aware of innovations within the field. Social connections and integration within the sector ensures opportunities to share the best care possible within long-term care facilities. It is possible that DOCs who are disconnected (social network isolates) are at a disadvantage due to their limited access to innovation regarding best care practices. This disadvantage may be reflected in the quality and delivery of care to their residents. Outdated practices and

inadequate care are not acceptable in a field that is experiencing significant growth and constantly developing and new best practices.

Research Question

My research will focus on social network isolates in the Nova Scotia long-term care system. I will address three research questions:

- What are the descriptive characteristics of Directors of Care (DOCs) who are social network isolates in Nova Scotia and what are factors that contribute to their isolation within the network?
- What are the implications of social network isolation at an individual level, facility/organization level, and for the network as a whole?
- Are there implications specific to the access and application of best care practices that might also extend to other practice innovations?

Theoretical Framework

Diffusion of innovation is the theoretical framework used to describe how and why new innovations and interventions are spread throughout a network, developed by Rogers in 1983 (Rogers, 2003). The theory can be utilized as a guide for studying dissemination and implementation of various best practices (Svenkerud and Signhal, 1998). Diffusion of innovation is a theory applied in SNA that explains the spread of new innovations and best practices within a network (Valente, 2005). This diffusion is made possible through interpersonal communication and social factors, such as personality, attitude and lifestyle, which are the most influential contributors to the spread and adoption of new information and innovations (Valente, 2005). It is important to be

mindful of the attributes of innovation (Table 1) when considering diffusion: relative advantage, compatibility, complexity, trial-ability, and observability (Rogers, 2003).

Table 1
Attributes of Innovation

Relative Advantage	Is the innovation superior to the previously used idea or method?
Compatibility	Does the innovation align the needs for potential adopters and their values?
Complexity	Is the innovation difficult to understand and use?
Trial-ability	Can the innovation be experimented on a trial basis?
Observability	Are the results of the innovation easily observed by others?

Diffusion of innovation theory explains the spread of innovation and information throughout a network; however it does not explain why individuals in the network are disconnected - only how social network isolates inhibit the efficient flow of information.

Several essential steps exist for information to be diffused through a network (Dingfelder and Mandell, 2011). Orlandi et al. (1990) have built upon the original framework developed by Rogers (2003) as outlined below in Table 2.

Table 2
Steps of Diffusion of Innovation Theory

Rogers (2003)	Orlandi et al. (1990)
	Innovation (new)
Dissemination	Dissemination
Adoption	Adoption
Implementation	Implementation
Maintenance	Maintenance
	Sustainability (new)
	Institutionalization (new)

The innovation stage, described by Orlandi et al. 1990, is when an idea, practice or object is perceived as new by an individual or group with the potential of adoption. The innovation may have existed for some time; however, the individual or group must perceive that it is new or novel. Dissemination is described as the planned effort to make a new innovation widely available; adoption is when the uptake of the innovation occurs; implementation is the planned effort to implement the innovation in a specific setting; and maintenance is the ongoing use of the innovation (Rogers, 2003). Orlandi et al. (1990) added two additional components: sustainability and institutionalization. Sustainability is the degree to which the innovation is continued following the trial phase after the initial resources have been used. The final stage is institutionalization, where the innovation becomes routine and incorporated in to various policies and legislation (Orlandi et al. 1990).

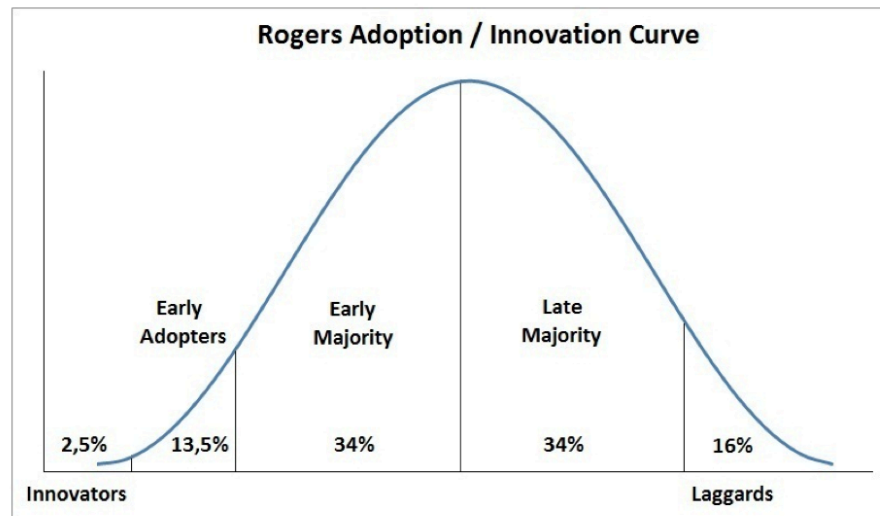
Adler and Kwon (2002) theorize that diffusion of innovation has the potential to gain and spread benefits throughout an existing network. They suggest that network actors are influenced by their internal and external ties (i.e. ties within their organization as well as those outside). To implement and maintain new innovations, a network actor must leverage both external and internal network ties. However, Adler and Kwon (2002) suggest that by building and investing in external ties, there is the opportunity to gain increased access to information, power, and solidarity. If such ties are not periodically maintained, the ability to leverage such networks becomes less effective (Adlers and Kwon, 2002). Coleman (1988) emphasizes the importance of a densely connected network (i.e. the amount of an actor's contacts that are themselves connected) to

supporting the effective flow of information and helping ensure trustworthiness of the information being exchanged.

Network actors are categorized by their role in innovation adoption and are described as having certain characteristics. Those actors who choose to utilize new interventions are termed “early adopters”. Rogers (2003) describes various roles within the adoption process: early adopters, early majority, late majority and laggards (Illustration 1). Rogers (2003) states that early adopters and late adopters have different characteristics. Compared to early adopters, late majority and laggard adopters are less eager to seek information about innovation, less connected to others, have fewer interpersonal channels, have less perceived control over their future, are not particularly positive about change, and have fewer years of education. Rogers (2003) suggests that social network isolates are typically late adopters because they tend to have fewer opportunities and less motivation to become early adopters, thus they possess limited opinion leadership.

Illustration 1

Rogers Adoption of Innovation Curve



Source: Damien Ross, Davidson Technology, <http://www.davidsonwp.com/change-is-not-a-dirty-word/>

Diffusion theory tries to answer the question of why certain network actors adopt new innovations and practices before others, making them “early adopters”, and why other network actors are laggards (i.e. what influences a network actor to become early adopters?). Exposure to new innovations and higher numbers of individuals within a person’s network who are early adopters increase the likelihood of adoption (Valente, 2005). Valente’s (2005) finding helps to explain diffusion theory in relation to isolation. If a network actor has limited exposure within their network, they are less likely to be affected by the exposure to a new innovation because they have limited exposure to other adopters. This exposure does not need to be face-to-face, but rather knowing the attitudes or behaviours of the other actors (Wasserman and Galaskiewicz, 1994). For influence from a network actor to take effect, it need not be deliberately imposed on a network actor. Rather, early adopters exude their desire for new and exciting innovations, which can influence others within their network to also adopt these changes (Wasserman and

Galaskiewicz, 1994). Social network isolates do not have access to this influence, meaning they are unable to benefit from new and innovative practices.

Social Network Analysis

SNA is a technique that emerged in the 1930's to understand and analyze human relationships, their links, and the effect of said links on various social groups (Farine and Whitehead, 2015). Since its inception, SNA has gained popularity due to the flexibility of the technique to describe social structure in a variety of settings and subjects. Edwards (2010) describes quantitatively driven SNA as generating “numerical data on social relations” using technology to map data. However, traditional SNA is based in qualitative approaches to analyze data and is once again gaining popularity (Heath, Fuller and Johnston, 2009). Social scientists across many disciplines are now advocating for a mixed-methods approach for data and analysis (Edwards, 2010). SNA enables the study of structural characteristics of a network, such as how densely or loosely a network is connected, which is a reflection of the true connectedness of a network (Meisel, Clifton, Mackillop, Miller, Campbell and Goodie, 2013). According to Martinez, Dimitriadis, Rubia, Gomez and de la Fuente, (2003), quantitative SNA is a method used to describe and analyze the relationship among actors within a network and to explore what effect these patterns have on individuals and organizations. These patterns offer information about actors contained within a network and how information is distributed within a network. However, quantitative SNA is not sufficient in understanding all features and actors within a network, thus qualitative SNA is also employed for data analysis to understand the underlying meaning of a network (Granovetter, 2007). All networks are unique because they present in varied blends of network clusters: dyads (groups of two),

tryads (groups of three), subgroups (small groups), and groups (large clusters) (Wasserman and Faust, 1994).

Granovetter (1973) describes ties in a network as strong or weak, referring to strong ties as an individual's friendship (a person with whom they interact frequently) and weak ties as acquaintances (individuals with whom they interact infrequently). Interpersonal ties within a social network gain strength through the amount of time invested in the relationships and the reciprocity between two actors (Granovetter, 1973). While SNA often emphasizes the importance of strong ties, the importance of weak ties should not be dismissed as they often act as bridges between network actors. Weak ties between network actors have the ability to yield more diverse sources of information because actors are likely to be involved in and connected to different circles from one another. In the workplace, Granovetter (1973) describes weak ties as colleagues who do not meet outside of the workplace; however, chance meetings or mutual friends have the capabilities to strengthen such ties. This suggestion demonstrates how actors can receive important information from weak ties that they may have otherwise forgotten. Weak ties have important implications for network isolation. Rather than encouraging local cohesion within a network, weak ties act as bridges, which prevent isolation. Granovetter (1973) theorizes that strong ties within a network are what lead to fragmentation. Strong ties are often a product of similarity and common interest, and strongly tied network actors have the tendency to interact with the same individuals rather than gaining novel information from weak ties (Kirkland, 2011). Formal SNA methods identify ties but do not explore tie strength. A qualitative methods approach to network analysis allows the description of such ties, which enriches the formal SNA understanding of why a network

appears as it does and captures the value of weak ties to bridge networks that may otherwise be unconnected.

The Importance of Centrality and Network Connections

Centrality is an essential concept in network analysis when identifying the “most important” network actor(s) (Everett and Borgatti, 2005). Centrality is measured through three categories: degree, closeness, and betweenness (Freeman, 1979). Degree centrality is defined as the number of actors looking to one specific actor (Everett and Borgatti, 2005). A degree score measures how connected a network actor is based on their ties to other network actors (Buttner, Scheffler, Czycholl and Krieter, 2015). Closeness centrality measures the closest path that a network actor has to focal network actors, which can mean direct or indirect access to the focal actor. Because no other pathways exist for isolated dyads, they do not have a closeness centrality score (Buttner et al. 2015). Betweenness centrality is similar to closeness centrality but measures the closest path to other individuals within the group rather than a network leader. (Buttner et al. 2015). A lack of betweenness centrality within a network causes network fragmentation, which is where isolates and subgroups emerge.

Characteristics of Isolates

The literature on social network isolates is considerably less than the wealth of literature on central network actors. For this reason, it is easier to comprehend isolates (low-centrality) by contrasting them to actors with high centrality, i.e. non-isolates. Walker, Wasserman and Wellman (1994) state that centrality signifies how important or prominent an individual is within a network. Centrality is measured through the number of ties (described as a relationship or a degree) an individual has in a network. When a

network actor has many ties, they are more likely to provide help to others within their network (Wasserman and Wellman, 1994). Due to the multitude of connections that a central actor possesses, he or she has the ability to connect other network actors because he or she has a large number of network connections. Employing the theory of diffusion of innovation, Burkhardt and Brass' (1990) study of a network analysis within the work place discovered that employees increased their centrality following the introduction of a new technology if they were early adopters. In other words, early adopters of a new innovation increased their in-degree (incoming nominations) scores significantly more than late adopters. Due to the relationship between centrality and early adoption, isolates likely fall on the late adoption or laggard end of the spectrum (or possibly off-spectrum) because otherwise their centrality score would be higher.

Isolates within a network are not an unusual occurrence; however, very little research has been conducted to understand why they occur within a network. Thus, it is important for isolates to be better understood in terms of why they appear as such in a network (Hanneman and Riddle, 2005). Investigating how isolates present themselves within a network and the number of isolates in a network can help to describe a network while also becoming an important feature for further analysis (Hanneman and Riddle, 2005). Ennett and Bauman (1994) define social network isolates as having few links, or none at all, within the network. Due to this lack of links, isolates are unable to influence network leaders. They also have restrained access and exposure to new innovations and best practices because they are not well-integrated within the network (Wasserman and Faust, 1994). If the diffusion of innovation and best practices is going to be efficient and effective, isolates must become connected within the network. When targeting network

actors to begin the diffusion process, it is best to target individuals who are highly connected within the network because they are more likely to become early adopters than individuals who are social network isolates (Scott and Carrington, 2011). Nevertheless, isolates are not to be overlooked within the network because of the implications for them, their nursing home, and the entire network.

Causes and consequences of network isolation. Working relationships are often formed among colleagues throughout an individual's career. These relationships can be maintained when individuals obtain employment elsewhere and former colleagues can become a source of advice for others during their career (Ter Wal and Boschma, 2008). However, for an individual who has recently obtained a position as a Director of Care or who is new to the long-term care sector, these prior relationships may not exist and they may be limited in terms of opportunities to seek advice from individuals outside of their organization. This suggests that tenure in the network can be influential on how connected or isolated an individual is within it. When turnover is recurrent in the long-term care sector, the quality of care is negatively impacted regardless of the type of worker, (e.g. direct care workers, social workers, administrators/directors) (Zhang, Unruh, Lui and Wan, 2006). Additionally, the tenure of the DOC often leads to low rates of turnover among front line staff (Anderson, Corazzini and McDaniel, 2004), meaning a low turnover rate for DOCs can positively impact the level of care that is provided. Although exact figures of retention rates within the long-term care sector in Nova Scotia are unavailable, it is evident that turnover is an issue, which can directly impact the care of older adults (Zhang et al. 2006). An individual's ability to cope with job-related stress

could increase when they have the appropriate resources (Wasserman and Galaskiewicz, 1994).

When a network actor is isolated from the network, they lack resources to receive advice and mentorship, resulting in less access to the best practices and innovations that can relieve burnout for themselves and other long-term care staff members. Individuals who have diverse sources of information within their networks (liaisons) find that support and information is easily accessible (Wasserman and Galaskiewicz, 1994). An individual's ability to cope with job-related stress could increase when they have the appropriate resources (Wasserman and Galaskiewicz, 1994). Isolates are often lacking these forms of social support. This suggests that a lack of a diverse network of support and advice in among long-term care leaders can negatively impact the quality of care being delivered to the long-term care residents.

There are potential mental health consequences for social network isolates. Pescosolido and Georgianna (1989) found that network actors who are socially well-integrated experience less stress and have the resources to receive more support to cope with stress. Therefore, isolates likely do not have access to the appropriate amount of support and resources within their cluster because the individuals from whom they are seeking advice do not appear to be connected to others within the network. Long-term care is an industry dominated by females as care leaders, providers and receivers. Walker, Wasserman and Wellman (1994) suggest that women tend to offer emotional aid and companionship. However, a lack of support within a high stress work place has the risk of leading to consequences such as burnout and turnover. Krackhardt and Brass (1994) studied the impact of turnover on networks among employees of a fast-paced restaurant.

In such networks, when one individual leaves, especially if they are key network actors, others within their network may also be more likely to leave. Thus, one individual who seeks employment elsewhere can greatly affect staff retention. Based on these findings, it is evident that social integration and workplaces with high retention rates are beneficial for mental health and support (Krackhardt and Brass 1994). Social network isolates are restricted in their ability to access such benefits of such network connections.

There are many reasons why central network actors have an advantageous position compared to the isolates in their network. According to Krackhardt and Brass (1994), central network actors not only have increased access to resources, information, and communication, but they also have more power and control over such resources. Other actors within the network of a central actor are dependent on them to access these resources; however, central network actors are much less dependent on others. The implication of this finding for social network isolates is that, due to the limitations of their network, they experience limited access to resources, which can hinder them from becoming an early adopter.

Homophily. There are many reasons why ties in social networks are formed, but the reason they are maintained can be explained through homophily. Homophily is a word derived from *homo*, meaning same, and *philous*, meaning attraction or preference of something (Homophilous, n.d.). It is a social phenomenon, which asserts that individuals have strong bonds and associations with those perceived to be similar to themselves. Not only are people more attracted to individuals with similarities and shared interests to them, but bonds between similar individuals will be stronger, more stable, and enduring than those bonds with dissimilar individuals (Hafen, Laurensen, Burk, Kerr and Stattin,

2011). Similar individuals also have a tendency to communicate quite frequently (Flynn, Reagans, Guillory and King, 2010) and form stronger friendships (Walker et al. 1994). The degree of similarity could also impact the effectiveness of support being received during a stressful time. Various foundations of a strong relationship such as similar characteristics and shared interest, have the ability to create understanding and increase support (Lazarsfeld and Merton, 1954). A tie within one's network that serves multiple purposes (support, friendship, advice, mentorship) is known as a multiplexity relationship and generates stronger, more supportive relationships and has positive implications for social support and mental health (Hirsch, 1980). Festinger's (1954) theory of social comparison asserts that we are drawn towards those similar to us but tend to have less influence on network actors who differ in their opinions or behaviours (Marsden and Friedkin, 1994). Social network isolates in contrast may feel as though they do not share the same interests, goals or characteristics with other actors, which creates challenges in establishing and nurturing long-standing relationships.

Geographic and social proximity. Formal SNA is a widely used technique for measuring, observing and analyzing networks in various domains; however, only recently has there been a focus on the importance of geography and the influence that distance may have on a network (Ter Wal and Boschma, 2008). Knowledge and advice flow more effectively across short distances, which results in cluster and network density. Some individuals may present as isolates because they are geographically distanced from other network actors, specifically influential actors. (Ter Wal and Boschma, 2008). According to Walker and colleagues (1994), proximity leads to more frequent contact and connections. When two network actors are in close proximity, this enables interpersonal

influence. Based on these findings, it is possible that disconnection from the network could be attributed, in part, to rural settings. If a network contains a high percentage of rural communities, that may be experiencing difficulties becoming integrated within the network, networks may appear less dense. Low density suggests less connectivity. These findings suggest a cyclical relationship between geographic and social proximity as significant factors that contribute to connection (or disconnection) within a network.

Gaps in the Literature

SNA literature that references social network isolates often focuses on the social factors that lead to an individual's isolation. An understanding of isolation from an organizational perspective is lacking in the literature. It is unclear, within the literature, if isolates are a product of an individual's work environment (such as the long-term care sector or a particular facility) or if an individual's characteristics influence their position within a network, or both.

Formal SNA has been critiqued for placing emphasis on the structure of ties rather than their content. Tie content is defined as the type of tie and what kind of information flows through the tie (Borgatti, Brass, and Halgin, 2014). Formal network analysts are historically most interested in who a network actor is connected too, rather than the attributes of an actor (Edwards, 2010). For these reasons, the interview guide used for this study addressed both of these areas. The interviews probed for the type of information the interviewee receives from the network actors listed in the survey as well as exploring attributes of the interviewee relevant to the literature on isolates that may suggest reasons for disconnection. Borgatti et al. (2014) theorize that network structures are unique and dynamic; however, social network analysts have a tendency to ignore new

ties being developed and the loss of existing ties. Thus, the interview guide also addressed how the interviewee's network connections have changed since they completed the survey, if at all.

This study intends to explore how corporations can contribute to isolation. The study not only aims to understand how the DOC's social factors may lead to network isolation, but also if their corporation may hinder network connections. The interview guide will seek to identify the individual level characteristics, facility or corporation level characteristics as well as the participant's perceptions of the sector as a whole in consideration of the implications and contributing factors of network isolation. Finally, this study intends to reveal how diffusion of information is inhibited by network isolation from the perspective of the isolated network actors.

Methodology

Advice Seeking Networks in Long-Term Care

This research is part of a pan-Canadian study led by Dr. Carole Estabrooks from the University of Alberta, which includes eight provinces and three territories. The purpose of the larger study is to identify the social networks that exist within the long-term care sector. The study involves investigators and leaders in residential long-term care across North America who designed a social network analysis, which is the first of its kind in long-term care. Analysis of these social networks will allow planned innovations and best practices to be spread through the sector more efficiently.

As part of the Advice Seeking Networks in Long-Term Care project, a senior leader from each nursing home in Nova Scotia was sent an online survey to complete

during the fall of 2014. The online survey had several parts. First, participants were asked basic information about themselves (name, position, location) as well as the names and locations of the nursing homes where they are employed. The second part of the survey enquired about interpersonal relationships by requesting participants list one to three individuals within their network from whom they seek advice in regards to residents' care, external to their organization. The survey requested the name of these individuals as well as their position, nursing home or organization they are employed by, and whether they are known personally or by reputation. The third part of the survey focused on inter-organizational networks by having participants list one to three nursing homes that are valued sources of advice, external to their organization. Participants simply listed the name and location of these homes. The final section was optional and focused on more detailed demographic information about the survey participants. These questions included gender, age, level of education, professional background, years worked in long-term care, years worked at their current nursing homes, years worked in current role, the last three organizations where they were employed, and whether these organizations were long-term care facilities.

NOORO was the survey platform used in this project which was developed by the Knowledge Utilization Studies Program (KUSP) at the University of Alberta and all emails were sent from this platform. NOORO followed up with non-respondents using email reminders throughout the data collection period. Survey data was then cleaned and prepared for the analytic software, UCINET and GEPHI. Network sociograms were developed to depict the social network and to allow analysis of the network. The sociograms were analyzed for various network measures, including: in-degree (the

number of ties a single actor had) and density (the proportion of observed relationships contained within clusters). All data was stored in the Health Research Data Repository (HRDR), a secure virtual research environment owned by and based within the Faculty of Nursing at the University of Alberta.

Response rate is an essential factor when analyzing a network. For an accurate depiction of a network, response rate must reach at least 50%; however, to be truly confident of an accurate network structure, a response rate of 70% is ideal. Nova Scotia was selected as the setting for this study and had a respectable response rate of 65%.¹

My study is an egocentric network analysis because it focused on the relationships surrounding the isolate. It is designed to focus on the existing relationships contained within the isolated clusters but also to identify the lack of connections amongst some actors to the larger, densely connected cluster. The survey that was sent to all DOCs in Nova Scotia as part of the original study was used to select my sample. They were not given a roster to select from. I employed both structural and composition variables in my study. Each of these variables can be used to study the behavioural science behind networks and particular network actors. For the purposes of my study, structural variables were used because I examined the existing ties and the lack of ties of the isolated dyads. The lack of ties was used to determine who the isolates are within the network but I also examined who exactly the isolate is looking to for advice within their dyad. Compositional variables were used during the interviews to understand why particular

¹ In the Atlantic Provinces there were 212 nursing homes at the time of data collection; however, only 202 potential respondents due to several senior leaders having responsibility for more than one facility. Ultimately, 130 homes responded to the survey (65%) and 122 individuals completed the survey (61%). Based on the number of homes represented, the response rate for New Brunswick is 75%, Newfoundland

individuals are isolated; and how this relates to their characteristics, position, and history within the network.

It is important to note that while my study used primary data analysis of qualitative interviews, secondary data from the Advice Seeking Networks in Long-Term Care study played an important role in my research. The survey allowed me to identify participants as isolates and select them to be included in my sample. I also utilized the information provided in the survey to analyze demographic factors of the isolates as well as who these individuals seek advice from, primarily focused on the interpersonal network rather than the inter-organizational network.

Case Study

A case study approach was used in this study. The case study method is becoming an increasingly popular method of qualitative inquiry within nursing homes and has been utilized to examine care workers' responses to death and dying (Black and Rubinstein, 2004), study residents with dementia self-maintaining dignity through narrative analysis (Heggstad and Slettebø, 2015), and the challenges of receiving long-term care for residents experience multiple health problems (Cirminiello, Terjesen and Lunney, 2009). The larger study sought to identify and analyze the advice and relationships flowing among central network actors in Nova Scotia while my study sought an in-depth analysis of the experience of network isolation and the impact it has spanning from the micro to macro level. To obtain a detailed overview of a particular social situation relevant to a microcosm within a larger social system (Richard and Morse, 2013), I focused my data collection on one jurisdiction - Nova Scotia. According to Stake (1995), case studies aim to capture the complexities of the cases of interest. This statement accurately reflects the

goals of this study due to the multitude of factors that can contribute to network isolation and the unique way that each network actor presents themselves within a particular network. These factors align with the case study method because each case is treated as a unique phenomenon to be explained and not necessarily as a formula that will be found across all cases of isolation. The intent of case studies is not to understand all cases of isolation, but rather to understand each case in and of itself and make connections through coding and analysis. By interviewing all isolates that agreed to participate in my study, a unique and rich picture of network isolation was developed.

Study Setting

At the time of the survey, there were nine health districts in Nova Scotia; however, as of April 1st 2015 the nine health districts merged into one. Nursing homes in the Province are owned and operated by private (nonprofit or for profit) and public providers and licensed and funded by the Department of Health and Wellness (Department of Health and Wellness, 2013). The Health Association of Nova Scotia (HANS) is a not-for-profit, membership-based association that supports the long-term care sector. The majority of nursing homes within the province are members. HANS established the Health Association Nova Scotia Continuing Care Council that works under the values of quality, collaboration, communication, evidence, and accountability (Continuing Care Council, 2017). The Continuing Care Council was established as the advisory to the HANS Board of Directors regarding health systems issues that impact nursing homes and care providers, issues related to operation and administrator of HANS, and provide support and facilitate informed discussion regarding these issues and recommendations (Continuing Care Council, 2015).

The Atlantic Provinces have the highest proportion of older adults in Canada, which suggests high rates of long-term care consumption (Canadian Health Care Association, 2009). The current percentage of older adults 65 and older living in Nova Scotia is 19.4%, a figure that will continue to grow steadily (Statistics Canada, 2016). However, it is the rising number of older adults aged 85 and older who are in greater need of long-term care and increase the demand for additional beds in the province. According to Fraser (2013), elderly Nova Scotians are accessing long-term care much later in life, meaning they are experiencing more complicated and chronic illnesses. This increases the demand on care staff, an already overburdened portion of the long-term care workforce. As a Province, Nova Scotia is experiencing an increase in the number of individuals with cognitive impairment and dementia, the highest rate of arthritis and rheumatism, the second highest rate of diabetes, and the lowest disability-free life expectancy in Canada (Nova Scotia Health and Wellness, 2006). The significant health issues experienced by older Nova Scotians have put increased pressure on the long-term care sector and also have financial implications. As a result, the provincial government is committed to facilitating older adults to live independently by making health care services and their communities more accessible (Nova Scotia Health and Wellness, 2015).

Study Sample

Ten social network isolates in Nova Scotia were identified by setting out specific criteria:

1. Visually observing the network maps.
2. Without ties to network actors aside from their out-degree scores.
3. An in-degree score of zero.

The formal SNA framework used in the larger study allowed me to identify and characterize social network isolates from the Nova Scotia data set. Due to a lack of in-degree scores and an out-degree score no higher than three, social network isolates were visually identified as an outlying cluster with no more than four network actors contained within the cluster. Degree measurements were used in my study because other network actors have not nominated isolates as a source of advice, thus they have an in-degree score of zero and an out-degree score ranging from 1-3. Once the isolates were identified, the unique identification number was matched to the survey respondent using the survey data stored within the HRDR. This match enabled access to the contact information for these individuals as well as the location of their facility. Following identification, contact was made via email or telephone, reminding them of their participation in the original survey and requesting that they participate in a second stage of research to help us better understand their advice seeking behaviours. Respondents, non-respondents, and isolates were geographically mapped to create a visualization of where each facility is located as well as the number of other facilities (respondents and non-respondents) that physically surrounded them.

Sample description. The Advice Seeking Networks in Long-Term Care survey contained an optional section for participants to provide demographic information about themselves (Table 3). All isolates completed this section. Please note that these figures represent data that was collected roughly two years prior to the qualitative interviews.

Table 3
Demographic Information of Isolates

	All Isolates		Interviewed Isolates	
Age				
35-39	2		2	
40-49	3		2	
50-59	3		1	
60+	1		1	
Missing	1			
Sex				
Male	3		2	
Female	7		4	
Highest Degree Obtained				
Diploma	3		1	
Bachelor's Degree	7		5	
Educational Background				
Nursing	9		5	
Business Administration	1		1	
Tenure				
	Range	Average	Range	Average
Years Worked in Long-Term Care Throughout Career	3-22	10.9	3-22	4.7
Years Worked in Role	1-15	5.2	1-7	4.7
Years Worked in Current Role	0.5-8	3.25	0.5-7	3.25

Table 4 categorizes survey respondents, non-respondents and isolates as rural or urban (Statistics Canada, 2001). Evidently, there are more rural nursing homes in the province than urban nursing homes. In addition, social network isolates are more rurally located than survey respondents who are better connected. These findings also indicate that homes, which are located in urban settings, are better connected due to their higher rate of survey response and lower percentage of social network isolates. Non-respondents are more likely to be rurally located, which suggests less connectedness as well as less investment in research than nursing homes in urban settings.

Table 4**Nursing Homes in Nova Scotia by Rural/Urban Location**

	Rural	Percentage	Urban	Percentage	Total
Survey Respondents, Social Network Isolates²	9	90%	1	10%	10
Survey Respondent, Non-Isolate	17	37.8%	28	62.2%	45
Survey Non-Respondent	23	67.7%	11	32.4%	34
Total	49	55%	40	45%	89

Ethics

Before contacting individuals for participation in my study, a secondary data and standard application for ethics clearance through the University Research Ethics Board (UREB) at the Mount Saint Vincent University was submitted and approved (Ethics Certificate #2015-145 and #2016-014). The request to complete 1-2 observations at isolated sites was not approved by UREB thus this component of my research design was abandoned.³ Upon interest in participating, a consent form and information sheet was emailed to each participant asking him or her to read, sign, and forward the signed form back to me.

Data Collection

Six of the ten individuals, identified as per the steps above as social network isolates, participated in an interview. Of the four non-participants, one individual declined participation, two did not respond following multiple efforts to recruit them, and

² All 6 interviews were with isolates located in rural areas.

³ Ethics clearance was not provided to complete observations because there were concerns about who could provide consent for the staff and residents who are being observed. A second concern was how observations will yield information relevant to the purpose of the study (to better understand the nature and characteristics of isolates in order to explain why some DOCs are isolated from the network).

one individual could not be found due to outdated contact information. Prospective participants were contacted via telephone or email with an invitation to participate in the study. Upon expressing interest in participating in the study, individuals were forwarded a copy of the consent form and information sheet to be signed and returned prior to the interview. All six interviews were conducted over the telephone due to significant distance between the participants and myself. The interviews took place between August 16th and November 21st, 2016 and were 20 to 38 minutes long. First, participants were asked to confirm bed size, ownership and operator of their facility. Participants were then asked a series of semi-structured, open-ended questions. These questions (see Appendix B) explored their advice seeking behaviours, including the individuals who they listed on the survey, with the potential to indicate reasons for disconnection from the network. The interviews also explored whether the participant had experienced difficulty accessing necessary advice and information. The interviews aimed to understand the implications of network isolation at an individual level, facility/organizational level, and the network as a whole by exploring factors that are found to contribute to isolation such as geography, social and professional factors among others. The interviews concluded with several personal demographic questions such as age, sex, educational background and tenure because demographic information was not a mandatory section of the online survey.

Data Analysis

Following each interview, using MAXQDA software, I transcribed and coded the interviews in an effort to make the necessary adjustments to my interview questions and process based on my initial analysis. While mine is not a grounded theory study, a grounded theory approach was used for coding and analysis. Adhering to this strategy of

qualitative data analysis, I began coding soon after data collection and transcription of each interview was completed. The questions that participants were asked were intended to explore the process and outcomes related to network isolation. Due to the amount of time that had passed between survey data collection and interviews (roughly two years), I inquired about the participant's experience over time. My data collection revealed a trajectory of events, characteristics, conditions, causes, antecedents, and consequences of network isolation and by making these connections through data analysis; I generated theoretical insights and concepts.

Because the interview guide did not address isolation or disconnection explicitly, patterns and connections were made from the data that relate to the theoretical factors that contribute to network isolation. The codes related back to consequences of network isolation, which were explored appropriately through a combination of open and axial coding. Open coding, which intends to "open up the data, identifying concepts that seem to fit the data" (Richards and Morse, 2013), allowed me to categorize concepts with tentative labels before I began the axial coding process. By employing axial coding, I was able to reconstruct my coding scheme by identifying relationships among the codes to conceptualize casual relationships (Bryman, 2012) among network isolation, the participant, the nursing home setting and culture as well as the provincial structure and policies. This method of coding and analysis provided the flexibility to explore the concepts presented within the data while relating them back to the contributing factors to network isolation and its consequences. Richard and Morse (2013) suggest that coding helps to discover new ideas, and the final steps within this coding process are forming linkages and connections among categories and noting the relationships among

categories. Demographic information and profiles of the home at which each participant worked were included at the beginning of the transcript to aid in the analysis and coding by developing a rich picture of each case. I reached saturation when the final interview did not yield new data that contributed to the concepts I had developed through coding and when I became satisfied with the concepts developed through the axial coding process. Constant comparison is a grounded theory technique that I continuously employed throughout the coding and data analysis process. This technique was used because it allowed me to examine the similarities and differences among each case of isolation in terms of possible causes of isolation as well as the implications and challenges of disconnection. Through constant comparison, I was able to capture the complexity of each case and the intricacies that were occurring from the micro to macro level.

I have organized my research questions to be analyzed using Bronfenbrenner's (1977) ecological framework. I explored the implications of network isolation from the microsystem, mesosystem, exosystem, and macrosystem levels, but also investigated the possible causes of isolation. Bronfenbrenner's (1977) ecosystem would place the isolate at the center, moving to the facility or corporation where they are employed, then the provincial policies and practices and finally the context of the province as the outer layer. Axial coding allowed me to analyze the reciprocal interplay among these layers by making connections and relationships among the categories of codes.

Profile of Interview Participants

Claressa is a Nurse Manager at a long-term care home; however, she was in a different role at a different home at the time of the survey. She listed one individual in the survey, a public health nurse who has since retired.

Ken was the Administrator at a rurally located, large long-term care home but was no longer in this role when he was interviewed for this study. Ken listed three individuals in the survey, all of which are connected to him from his time working in a previous role.

Kim is the Director of Facility and Resident Care at a small, corporately owned and operated long-term care home that is rurally located. In the survey, Kim listed the Administrator at the same nursing home and a labor relation's lawyer employed by the provincial government.

Tara is the Client Care Coordinator at a medium-sized, corporately owned and operated facility that is rurally located. She listed a Care Coordinator for the Department of Health and Wellness as a source of advice as well as a Public Health Nurse specialized in disease and infection control and a local pharmacist.

Mary is the Director of Resident Care at a large, rurally located nursing home. She listed three individuals from the same nursing home in the survey, the Administrator, the Assistant Director of Care, and the physician assigned to this facility.

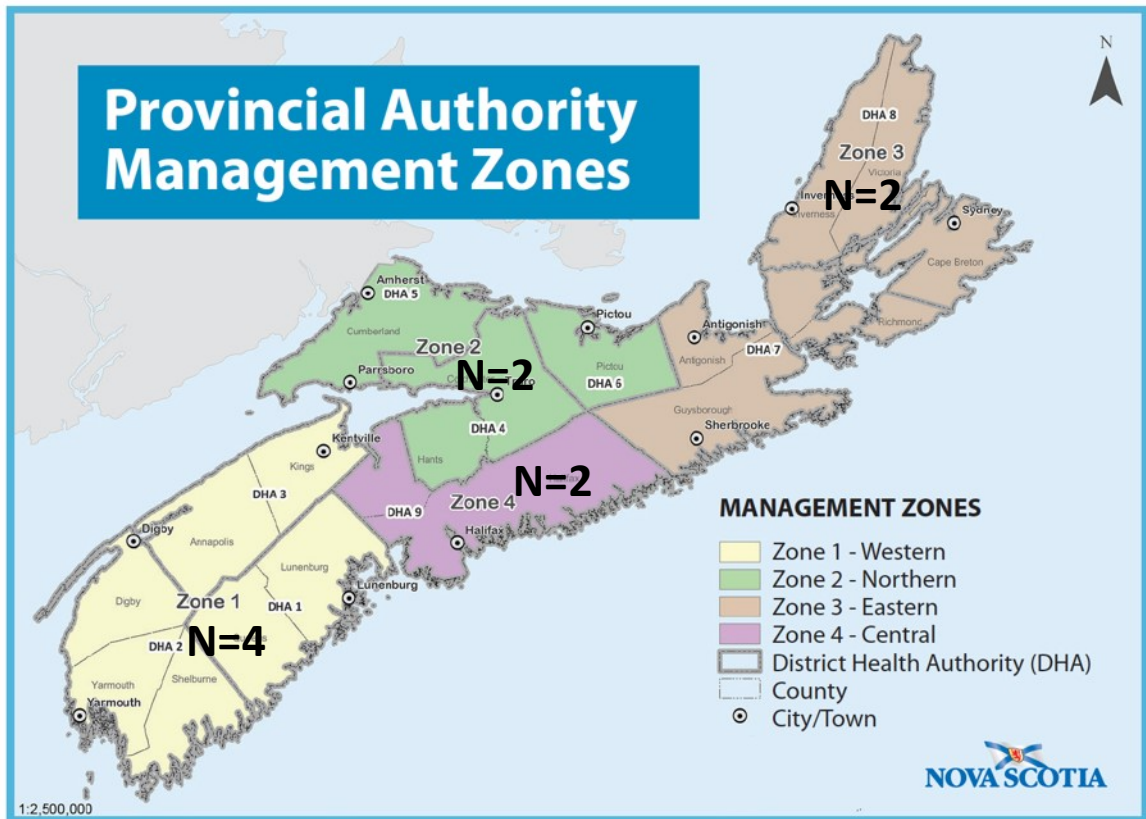
Seth is the Director of Resident Care at a medium-sized facility in a rural area. In the survey, he listed three individuals from the same facility, the Administrator, Director of Support Services and the Care Coordinator, and Educator who previously worked in his role at Director of Resident Care.

Considerations of Secondary Data

There are several components of the survey that must be addressed prior to the discussion and interpretation of findings as they may have impacted why social network isolates appeared in the network and why particular individuals were found to be isolated. In Nova Scotia, the survey response rate was 65%, a respectable figure that gives a fair amount of confidence in the data's representation of the network. However, it is possible that if non-respondents geographically surround a survey respondent, then that respondent will appear to be isolated when they do in fact have a connection to a larger network. In other words, if an isolate's network did not participate in the study, they are isolated in the network analysis but not truly isolated outside of this data. To control for this, I geographically mapped the location of all respondents, non-respondents, and isolates (Illustration 2, Table 5). While it is evident that all but one of the isolated sites are located in rural areas, most the nursing homes are surrounded by other survey respondents or are not located near other long-term care facilities. Nonetheless, P77, an isolate that is surrounded by many non-respondents, was included in my sample for interviews to evaluate the validity of the survey data.

Illustration 2

Location of Isolates within Nova Scotia Management Zones



Source: District Health Authority Consolidation Transition & Design Team, <http://transformphc.sites.olt.ubc.ca/files/2014/04/NS-Management-Zones.pdf>

Table 5
Survey Respondent Type within Nova Scotia Management Zones

	Survey Respondents	Survey Non-Respondents	Isolates
Zone 1	12	11	4
Zone 2	9	8	2
Zone 3	11	12	2
Zone 4	10	7	2

A second consideration of the survey data is who completed the survey. The survey was distributed to DOC/DONs or an equivalent role that is responsible for making clinical care decisions. The survey was completed by individuals with various titles who were identified as social network isolates (health services manager, RN team leader,

client care coordinator, site manager, and administrator). It is unclear whether all individuals that completed the surveys were fully responsible for clinical care decisions or if the survey should have been completed by another individual within their facility. These are the correct position titles for these individuals because within the survey, a blank space was provided to be completed rather than a drop down menu with limited options. It is important to remember that regional level and provincial level DOC meetings are a source of advice for many DOCs across the province. Individuals with different job titles or positions may not have access to these meetings, thus their networks may appear more isolated within this data set than primarily DOC/DON advice-seeking networks.

A final key consideration of this data set is that survey participants were instructed to list 1-3 individuals from outside of their own organization. Two of the six isolates listed only individuals who also worked at the same nursing home, thus unless another survey respondent also listed these individuals, there was no opportunity for the isolate's network to extend beyond their cluster. These two individuals were included in the interview sample. While my study focused on the interpersonal connections among network actors, inter-organizational maps were also developed for the Advice Seeking Networks in Long-Term Care study. This type of map depicted the connections and opinion leaders among organizations (various nursing homes, corporations, etc.) rather than among individuals. When referencing the inter-organizational maps, these individuals were connected through their organization but not interpersonally (i.e. their nursing homes are connected to a larger cluster of other organizations but the individual

is not). Had the survey been completed properly, these participants may have been connected to a larger cluster.

Findings

A formal SNA (quantitative) enables an understanding of the “structure of relations”, but it fails to explain the underlying meaning of why networks present as they do (Granovetter, 2007). By incorporating qualitative aspects of SNA, researchers can leverage a better understanding of the meaning and social relations contained within a network (Fuhse and Mutzel, 2011).

Factors that Contribute to Network Isolation

My first research question sought to explore the factors that contribute to network isolation. Several key themes and sub-themes emerged throughout the interviews, these include: homophily, professional relationships, proximity, and rurality.

Homophily. Homophily is a social concept, which suggests that individuals have strong bonds and associations with those perceived to be similar to themselves. This phenomenon was addressed throughout the interviews in several ways. First by enquiring about the nature of the relationship the isolate has with the individuals they listed as sources of advice on the survey. Second, by probing about other network connections they may have, primarily former colleagues. And third, by asking whether the goals and aspirations they have for the long-term care sector are shared with others in their network.

When discussing the nature of the relationship that the participant has with the individuals they listed on the survey, relationships were often described based on their function within the network or their experience working in long-term care. Participants

tended to have professional connections and lack personal relationships that were characteristic of homophily. The 2-3 personal relationships that were present among the six participants' networks originated from living in a small, rural community (e.g. family connections or the advice giver is the participant's personal pharmacist). Mary describes how these relationships do not withstand the test of time if the information is no longer relevant to their current role:

It depends on what I'm looking for for advice [if I reach out to former colleagues]. If it's long-term care related um then the people that I would have used in my past nursing career that may not - that some of them have retired because I'm older, some of them also have gone on to different paths that really wouldn't be applicable to long-term care.

Consequently, such relationships appear to remain professional. For example, the single individual Claressa listed in the survey had retired; thus, she is no longer in contact with this individual, but rather with the person who took over their role. This indicates that the relationships are based on the utility at a particular time or within their current position and not relationships based in homophily.

Participants were asked to describe their personal goals and aspirations for the long-term care sector in Nova Scotia. As a follow up question, they were asked if they had a sense of whether these values are shared with other members within their network. All participants concluded that others included their network in a similar role would be in agreement with their goals and values for the sector.

Proximity. Walker et al. (1994) theorize that proximity between network actors is highly influential on frequency of contact and strength of connections. In addition, information and advice is found to flow more effectively across short distances. All interview participants work in rural areas, suggesting a connection between network

isolation and rurality. Four of six participants reported that the advice givers they listed on the survey were located in the same town. Despite this observation, none of the participants considered proximity as an influential factor on their advice seeking. Berta, Teare, Gilbert, Ginsburg, Lemieux-Charles, Davis, and Rappolt (2005) state that the number of adopters of innovation contained within the same geographic area is highly influential on the adoptive behaviours of other network actors. However, in this study, although the isolates may be in close geographic proximity to their key sources of advice, the advice givers are not early adopters of innovation and new information, meaning the isolates remain late adopters. Although he values the connections he has with other DOCs, Seth remarked on a particular challenge of living in a rural area. His advice seeking is limited to a particular area because these are the individuals he feels comfortable interacting with, so he has not felt it necessary to reach out to other individuals. However, he experiences some of the unique challenges that arise from living in a rural area:

Most of the meetings happen in [Town]. So that's a two-hour drive for me. It's well worth it. It's time well invested I think. So you'll see there's only two of us [in this area] that have to travel to [Town]. We make most of the meetings but when we host meetings on this side of [the area], attendance is much lower because folks have to come over [to the area].

Multiple participants described an attempt at equality for traveling among the meetings they attend of various networks. With many of their contacts also living in rural areas, they make an effort to host meetings on a rotation so that the same individuals are not continuously incurring the cost and time to travel. DOCs in rural areas in the province are adapting in an effort to maintain their networks, noting the convenience of technology (email, videoconferencing, teleconferencing, among others). Participants value the benefits of using technology to enable connections, tightening the gap caused by

geographic distance. Isolates do not consider proximity highly influential on their advice seeking because they had ample access to reliable technology:

I mean with technology it's been wonderful because you can email, you can teleconference, you can webcam. So there's a lot of teaching opportunities that I tap into or we tap into as a group so I think that's a huge asset to us. If we didn't have that technology where budgets continue to be cut because we're able to attend less and less conferences because of the cost um so um the resourcing within each other as nurses has been instrumental.

As Mary describes, DOCs in rural areas will likely benefit from increasing the use of technology as a means of networking and information sharing as travelling to make connections will become more challenging. Although participants are isolated from the network, it is evident that they are making the effort to have a presence within the network despite the challenges presented by rurality.

Implications of Network Isolation

My second research question asked, "What are the implications of social network isolation at an individual level, facility/corporation level, and for the network as a whole?" Furthermore, I sought to explore the implications that social network isolation has specific to access and application of best care practices. I will begin reviewing these from:

1. The individual level (is the interview participant making the effort to have network connections?)
2. The facility/corporation level (how does the culture/characteristics of the facility aid or hinder network connections and implementation of innovation?)
3. The provincial network as a whole (what is occurring provincially that encourages or discourages network connections and information sharing?)

Relationships and Valued Sources of Advice (Microsystem Level)

Role/type of advice giver. Participants listed advice givers on the survey from diverse backgrounds and expertise. In two cases, participants listed advice givers from within their own facility despite being specifically asked about people outside their facility. During the follow-up interview, they reported relying on these individuals because of their many years of experience working at one facility for many years. Although these are valuable sources of advice, they did not adhere to the study question, which sought to map networks extending beyond one's own organization. Consequently, they met the criteria of a social network isolate. Participants mainly sought advice regarding clinical care decisions and best practices. Many isolates listed individuals with clinical backgrounds, such as a public health nurse, pharmacists, assistant DOCs, and medical directors. However, other isolates listed individuals whose work was not relevant to clinical decisions, such as operations managers, labor relations lawyer, and administrators. These individuals are responsible for human resources (HR), management, and placement but their area of expertise is not applicable to the clinical aspect of long-term care. This finding explains why the isolates' networks did not extend beyond their clusters. Better-connected survey participants did not list these sources of advice because they are not relevant for clinical care decisions and best practices in long-term care. While these are unconventional sources of advice for clinical care decisions, they are crucial sources of advice within the limited scope of the isolate's network.

Nature of the relationship. Another area that I explored with isolates is the nature of the advice seeking relationship they have with the advice givers they listed on the survey. How are these relationships formed and why have they been maintained? The

interviews revealed that relationships are largely professional and were formed for the purpose of acquiring advice and information. There are personal aspects to some of these relationships (e.g. personal pharmacist, former employees/colleagues, friend with advice giver's son, etc.). However, these relationships would not have been maintained or utilized had they not been necessary for a particular source of work-related information or had the actors not worked within the same organization. These relationships exist simply for information and are not maintained as the advice givers move on to other positions throughout their career. Rather, these sources of advice are replaced by the individual who has taken over the advice givers' professional role.

Length of relationship. Levin, Whitener and Cross (2006) state that the actor's perceived trustworthiness of a source can be high or low at the beginning of a relationship, but that trust can also shift during the relationship. For this reason, it cannot be suggested that an advice seeking relationship is not valuable or trustworthy if it has only existed for a short time compared with a relationship that spans decades. Rather, the nature of this relationship evolves over time if it is maintained. Relationship length of isolates and the actors they nominated in the survey vary greatly. Isolates have known these individuals for 20+ years or 2-3 years when they started in a new role. The former, long-lasting advice seeking relationships result in satisfaction with their current networks, and seemingly eliminating their perceived need to create additional advice seeking relationships. Intuitively one might assume that the longer the relationship of advice seeking, the more meaningful it is but that did not emerge in this study.

Changes since the survey. There is roughly a two-year period between the participants' survey responses for the Advice Seeking Networks in Long-Term Care

study and the qualitative interviews for my study. I sought to explore whether participants had experienced significant changes in their networks since the original survey responses to discover if their networks have grown or extended to larger clusters or whether they remain largely the same. Participants were asked if they had experienced any significant changes to their networks since their initial survey responses. Tara reported that she is more willing to seek out information herself as she became more comfortable in her position:

I'm more comfortable myself um, going to find things like through the Internet, that type of stuff. I'm more comfortable looking up that type of stuff, practices, myself. Whereas maybe before um when I first went in to the position I'm currently in, I wasn't that familiar with working with computers and you know, using that kind of technology. So I tend to look things up, find more for myself but I still like that one-on-one contact or a verbal contact, that kind of thing.

The growth and accessibility of information on the Internet and through technology presents a wealth of information; however, the use of technology and the Internet also diminishes the experience of contacting individuals within one's network for credible sources of advice and information.

Among the six interviews, isolates were reliant on sources of advice internal to their nursing home and corporation, particularly as they grow more comfortable in their role. Participants noted the advantages of seeking advice from their front line staff and other managers because of their in-depth knowledge of the residents and the facility. Isolates are more inclined to look to internal sources rather than reaching out to external sources. Kim provides an example of the value of internal advice seeking:⁴

⁴ One caution is the potential misinterpretation of the question. If they understood the question to be "where do you seek advice about best practices?" using internal sources may be problematic. However, if they interpreted it as understanding the context in which best practice would work in specific cases then this internal consultation with front line staff would be considered admirable.

I would say that I rely on my staff as well. The staff in your building are often a rich source of information because they worked in other homes so they've seen how things are done.

DOCs that limit their advice seeking primarily to internal staff are much more likely to be isolated as they are not reaching out to other organizations. Participants whose advice and information needs are fulfilled by internal networks have a diminished motivation to seek advice from outside sources.

All but one participant stated that they would not make any changes if they were to respond to the survey again (after two years have elapsed). The majority of participants still rely on the same sources of advice just as much as they did two years prior, with the exception of an individual who retired and was replaced by a new advice giver. Isolates are satisfied with the advice and information they receive from their sources; however, they will likely remain isolated given that their networks have not developed over this two-year period.

The value of experience. The extent to which social network isolates rely on the experience of other network actors to aid them in their position is a recurring theme throughout all 6 interviews. Participants have many years of experience in nursing, long-term care, and/or in a long-term care leadership position yet they value and depend on the experience of others. Participants often look to individuals within their own organization who have worked at the facility for many years. They value the advice and information they receive from these individuals because they believe years of experience with a corporation or at a particular facility is the only way to gain the specific type of knowledge they require. All interview participants were rurally located, meaning that seeking information from resources in-house is significantly easier than trying to reach

others over email, telephone, or travelling for face-to-face meetings. By valuing easy resources, isolates are extremely limited in the scope of information available to them. Additionally, they are receiving advice and information from those who are not connected to others in the Province. If their uptake of information and innovation also falls on the laggard end of the adoption scale, the participant has very few opportunities for early adoption. The limited scope of one's advice seeking network makes them more susceptible to remaining within a small "information bubble". The information isolates receive could even possibly be biased or untrue and they lack the availability of other views.

From Seth's perspective, he is reliant on the experience of others within his facility because he takes on a variety of roles, which is unlike larger corporations that have departments to address different needs in the organization. This work structure leaves him with less time to extend his network beyond those internal to his organization:

Um, in the smaller facilities, you take on many, many different roles in the job. So I'm the one, so you know, the clinical side of things, I deal with the families, I deal with the residents, I also deal with the staff so you know, there's somebody that needs - their performance needs to be address, I'm the guy that does it, if there's attendance issues, I'm the guy that does it. So that's the big different between the big guys and uh, and uh the rural sites. Yeah, to have the experience to lean on is I think huge, I think it's huge.

If isolates are continuously relying on staff that are not well-connected and are not particularly innovative, internal advice seeking will limit the participant's network and their ability to become more innovative and increase their centrality score.

Mary provides an example of her internal advice seeking, which serves as a replacement for seeking advice outside of her organization:

Um newer nurses coming in are from different facilities and they are wonderful resources as well because they come with a wealth of experience.

She utilizes the knowledge coming from external sources that are now internal to her organization, which eliminates her perceived need to access other outside sources. Relying on internal sources may limit information, access to information, and the motivation to access information that is available from better-connected sources of advice. Furthermore, Mary is located in a rural area, so she perceives that the most valuable sources of information are those geographically close to her, rather than reaching out to others who are more difficult to access.

Other network connections and sources of advice. Participants were asked to describe other sources of advice they access aside from the individuals they listed in the survey to explore to what degree they seek out information and where this information and advice originated. These range from individuals, other nursing homes, organizations, and journal articles, among others. For the most part, participants relied on DOC groups as primary sources of advice or to ask questions; however, there are unique sources of information that emerged during the interviews. Participants indicated they rely on textbooks and colleges in regards to the clinical aspect of the position. Participants also identified local pharmacists, physicians, pharmaceutical representatives, psychiatrists, geriatricians, etc. as sources of information. They invite these individuals to their facilities to network and host lunch-and-learns within their economical restraints. Other long-term care facilities did not emerge as go-to sources of advice, yet several participants mentioned the importance of nursing home size in advice and information seeking for the purpose of practical application. Nursing homes that are rurally located

are limited in this aspect because the nearby homes may vary in size, meaning they are not perceived as a source of advice that would be applicable within their facility.

Nursing homes are considered principle sources of information but it is apparent that participants benefit from attending provincial or local DOC meetings in order to network and for educational purposes. However, Claressa described these meetings as primarily clinically-focused with various educational components, rather than an opportunity to network and share information. Participants reported the value of HANS for hosting conferences and when dealing with labor relations, union, and legal issues, but also acknowledged the health authority as a go-to source of information for a new clinically based policy or procedure. Participants noted provincial committees as key sources of information, such as the Alzheimer's Society and the CCA Provincial Advisory Committee. Although participants reported these organizations as valued sources of advice, quantitatively they were identified as disconnected. Conceivably, if the survey did not have a limitation on how many names could be listed, the isolates could have been better connected through these "weak tie" sources.

Participants were asked if they experience any difficulty when attempting to access information and advice. They reported that they do not experience challenges in this area, and they are fortunate to have access to the information they have required in the past. In summary, they are satisfied with their networks as they are able to reach out and network when necessary

Nursing Home/Corporation and Isolation (Mesosystem Level)

Community engagement. Characteristics of the nursing homes where the isolates are employed varied. There was a mixture of ownership and number of beds,

suggesting that ownership and size of nursing home are not influential on network isolation. Participants were asked about their facilities to explore whether nursing homes appear to be isolated from the community or simply from the larger network in the sector.

Participants described their facilities as "community buildings" where various groups are invited in to hold their meetings and events. Considering each of these homes are rurally located, the nursing home in these towns may be the only free-of-charge space available to host large groups.

Participants describe their respective facilities as "open" and engaging with the community through hiring high school students in the community, offering bursaries, inviting CCA and LPN students to complete their clinical work, using the local hospital as a resource, etc. Tara describes the efforts made by her facility to engage with families and the community:

Um I think just our - our philosophy, I don't know if it's unique but our philosophy within the home is treating everyone like an individual, making this as home-like as possible. Incorporating different things besides using medications for our clients. You know we involve other disciplines um to our home to make sure we're doing what is right, we have an open door policy, you know, where we're more than willing to allow other facilities - people from other facilities to come into the home and see what we're doing and um we're very - always open to new ideas. When new people come in we're always asking them "you know what, look around, see if there's anything you think needs changed". We really want to involve families, we really want family involvement so that you know, if you come in to our home and say "gee, I see your staff doing this but maybe if they try this it could be better", we're very open to suggestions that could improve quality of life for our residents. Um our administrator himself is very good at technology so he's developed software that we're more than willing to share with our homes and other sites.

Some participants reported having a core group of volunteers while others, like Kim, have difficulty accessing sufficient volunteers. This can hinder meaningful activities and recreation services for the residents:

Absolutely [we have difficulty finding volunteers]. I mean, right now we get some from the high school. But otherwise, no. There is a difficulty for sure. Um, we're pretty limited here in [Town], I mean we did have - sometimes the daycare will come in and do an activity with the residents or those sorts of things but overall, not as much as I'd like to see.

Lia, Ren, Wu and Hung (2013) suggest that volunteers have an "instinct" to devote their time to a voluntary organization, thus the lack of volunteers that Kim describes is presumably a result of the ownership of this nursing home. Volunteers are much less likely to feel inclined to devote their time to a for-profit nursing home than a home that relies heavily on volunteers to run programming and recreation.

Two of the six participants are employed by facilities that are owned and operated by corporations that are responsible for various nursing homes and other services and housing for older adults. Of their multiple sites, all of them are located in rural areas, causing a lack of connectedness among these homes. Presumably, homes owned by the same corporation would have strong networks, but this is not the case. Being a part of a corporation would provide ample access to other individuals and occasional meetings or other opportunities to network among one another. Berta et al., (2005) asserts that there are obstacles that arise in knowledge transfer among units within a corporation. These obstacles present themselves as the type of knowledge that is being transferred as well as the characteristics of the corporation receiving the information. The ability for proper knowledge transfer and learning capacity is attributed to the corporation's structural supports and replication processes (e.g. standardization and documentation of activities, providing opportunities to network and exchange knowledge at meetings and conferences, etc.). Presumably, long-term care facilities owned by the same corporate entity would have such resources available and standardization among facilities. Network

isolation among corporately owned homes may be a product of the culture and structure of the corporation rather than the isolated network actor.

Isolated nursing homes are feeling the effects of isolation through a lack of volunteerism and recreation for the residents; however, many of these sites appear to be encouraging community involvement. In most cases, isolation is a product of the survey respondent and not encouraged by the nursing home or the corporation/organization under which they are operated. However, in cases of disconnected corporations, it is likely that they do not have strong support and replications processes in place. However, there is small number of cases where the facility/organization appeared isolated along with the participants. Culture of a nursing home can help or hinder innovation (Berta et al., 2005); therefore, despite the efforts of a DOC to create change, culture can create a significant barrier.

Isolation and innovation. Participants were asked about which innovations interest them the most and their experience with innovation. The goal of this question was to evaluate whether the innovations discussed are truly new and innovative and whether the participant demonstrates interest and investment in bringing new and innovative practices in to their facility. Seth provided the following example of an innovation that is of particular interest to him:

That um, there's a push for us to ah, to change from a medical model, which is basically taking residents and admitting them - inserting them in to our routines, so switching from that seen in a hospital to a resident centered model or the Eden approach, which is uh having the resident direct their care and give them choice and work on ah, the boredom and loneliness and helplessness of long-term care. Those are the 3 pillars of the Eden approach where you have to, you have to try and deal with the boredom and the loneliness in your facility and that's what the Eden approach tries to do. So I'd love to see more and more support from the government level on that.

Person-centered care is considered an innovation in long-term care but it is not a recent development and has been implemented in nursing homes for many years. In 2006, the Nova Scotia Department of Health announced a continuing care strategy that employed many of the values and procedures originating from a person-centered care model (Nova Scotia Department of Health, 2009). A decade has passed since this strategy was announced and Seth is working towards implementing this approach within his facility, confirming that he falls on the late adopter or laggard end of the adoption of innovation curve. Without the support of the government to provide resources to aid the shift from task-focused care to person-centered care, many nursing homes (particularly isolated sites) lack the resources to create this change in home culture. This finding is concerning because a widely-used and supported best practice, such as person-centered care, should be supported and implemented in homes across the province as a means to improve quality of care for residents. Along with person-centered care and the Eden Alternative, the innovations described by Seth and other participants are fairly commonly practiced aspects of care in many nursing homes.

The types of innovation described were diverse and fairly simplistic ideas as a means to improve quality of life and quality of care for the residents. At a systems level, innovations ranged from palliative care and using technology to electronically chart care. At an individual program level, participants implement music therapy for residents and the use of personal shadow boxes to maintain a person-centered mindset for staff. The literature on social network isolates describes them as having little interest in innovation or none at all. Participants in my study were found to have interest but were not aware of the most innovative practices occurring in the sector. When asked about their interest and

involvement in innovation, Kim was unclear about what she was being asked and stated the following:

Um, hmm. I - I - I really don't know at this point that there's anything new and innovative that I'm aware of [chuckles]. Not at this point, I think we're pretty current with what's being done out there.

Kim was unable to describe their involvement in innovation and believes she is informed regarding current innovations relevant to long-term care. Not all isolates appear to be disinterested in innovation, but Kim is not investing resources in innovation and lacks the proper network to have access to innovations.

Diffusion of innovations is the theoretical framework used in my study, which describes why and how new innovations and best practices are spread throughout a network. According to this framework, the spread of information is primarily facilitated through interpersonal communication and social factors (e.g. personality, attitude and lifestyle) have the most influence on the spread and adoption of innovations (Valente, 2005). Social network isolates do not possess such social factors that encourage the effective spread of innovation. According to Rogers (2003), social network isolates are described as "laggards" when adopting information, indicating that they are less eager to seek information regarding innovations, less connected to others, and have fewer interpersonal channels. These suggestions were partially confirmed by my study because although my participants were eager to seek out new innovations, the innovations and best practices they discussed were not particularly new. Contemporary innovations in long-term care that are gaining popularity across North America, such as least restraint policies, telemedicine, and assessment tools that encourage person-centered approaches to care, were not under consideration among isolated homes.

As theorized by Adler and Kwon (2002), network actors must leverage ties that are both internal and external to their nursing home for effective spread of innovations. Participants in my study relied heavily on internal ties rather than maintaining their existing external ties. External ties yield increased access to information; which could improve their position when adopting innovations.

DOCs face unique challenges when implementing new practices and innovations. Participants identified the level of cognitive ability of residents as one challenge to implementation. Another challenge Ken identified is getting staff onboard in cases where families and residents are receptive to new innovations and practices:

Families are very receptive. Ah the staff takes a bit of work. Uh one because then it changes how they do their job so they always look at that impact, they're also it - it - if they trust you, they're more apt to do it Then if they don't. And I've also found that leadership is extremely important in innovation and if people think that you're uh doing it for the right reason and that you're - and that they've - if you've done other things that have helped, they will buy in to it. If they see it as a direct order, there's a tendency to not buy in to it as much.

Contrary to Rogers (2003) suggestion that isolates are disinterested in innovations, the majority of participants in my study were not disinterested in innovations as a means to improve care and work life for their staff, but rather they were limited in their access to cutting edge practices and innovations and do not have the network or resources to support effective implementation. Claressa attributed challenges to implementing innovation to overburdened staff, stating that "Staff, it takes a little longer, anything new or anything you know out of the ordinary - that is the most challenging". Berta et al., (2005) state that there are many factors involved in the uptake of innovation in health care, but the fit of the innovation that aligns best with the interests of the DOC, nursing home staff, families, and residents will be adopted most quickly and efficiently,

particularly when compared to the scientific evidence behind such innovations. In a long-term care setting, garnering interest and support from staff, residents, and families is the most effective tool when attempting to implement an innovation, which proves challenging for social network isolates.

Participants are limited in the scope of their ability to access information regarding innovations while also lacking the motivation to seek this information themselves. When they are unable to implement the practices that currently interest them, social network isolates are less likely to seek out new innovations as they arise in the field. It is easy to blame a lack of funding and support from the government, yet isolates seem to abandon their attempt at implementation when obstacles arise. Better-connected individuals are motivated to see innovations through despite these difficulties.

Provincial Impact of Isolation (Exosystem Level)

Participants were asked to describe their goals, values, and aspirations for the long-term care sector in Nova Scotia; however, all participants began to describe the challenges they face within their roles. Participants, Mary in particular, spoke in detail about the struggles faced at a provincial level where there is a perceived detachment between the long-term care sector and the Department of Health:

Um I think there's a big disconnect with Department of Health. With things that are happening within the Department of Health, we're - we're kind of told after the fact, we're not involved with the process so um we hear things, a lot of hearsay as you say, about how much our budget is gonna be cut or how much nursing is gonna be cut but we don't have any input in to that until we actually get a letter or an email indicating that. So we are lacking in having input in to things that we feel is relevant or things that we may feel we may have more knowledge or experience with that we're not provided with the opportunity.

Significant budget cuts were made to long-term care, announced by the provincial government at the time of the interview with Mary. The struggles described by Mary may be a symptom of her network isolation, as DOCs who are better connected may have had the opportunity to provide their opinion on budgetary decisions. Mary may have experienced detachment because of the limitations of her network, as she was not contacted to discuss these budgetary decisions nor did she have the motivation or ability to reach out to decision makers. The Department of Health lacks the proper tools and mechanisms to provide opportunities for all long-term care staff in managerial roles to provide their opinion regarding decisions that will impact their facility.

Regardless of public or private ownership, participants described funding as a hindrance to providing enhanced quality of care as well as providing education and networking opportunities for staff. The negative impact from a lack of funding not only affects the residents and their quality of care but also creates workplace burnout and increased turnover within the sector due to insufficient staffing ratios. Innovations and best practices that could enhance care are not able to be implemented properly when staff are overburdened and the funding is not available to ease workload demands to provide nursing care. Kim recounts the impact that minimal funding has on the care provided at her facility:

So funding is getting cut, it restrains you in terms of being able to always provide the person centered care because sometimes that means cutting staffing hours or you know our activity budget or whatever that's going to be so it turns the staff in to more task focused because they need to get a certain amount of things done in a certain amount of time with maybe less people.

A lack of funding forces DOCs and other long-term care managerial roles to limit the services they can offer to enhance care. Participants discussed the lack of interest and

funding from the government to provide meaningful activities for the residents. According to Seth, the combination of a lack of funding and proper support from the government for long-term care is increasing the burden on nursing homes to provide care to a sicker cohort of older adults. The resources put forth by the provincial government, while well intentioned, are putting additional strain on the long-term care sector because of a lack of monetary resources for long-term care. Tara described issues with coordinating care when residents are transferred between hospital and long-term care due to a disconnection with the Department of Health. She also described the difficulty of coordinating medications and treatment, stating that some residents are not always able to follow the same treatment protocols when they are transferred between the hospital and long-term care, which causes additional workload demands and increases stress on front line staff.

The challenges described by social network isolates often stem from difficulties at the provincial level. It is clear that isolates may not feel disconnected from other DOCs or other nursing homes, but they do feel largely disconnected from the Department of Health. Although time, energy, and money are being invested in other aspects of care, the focus on home care results in long-term care facilities becoming overburdened as they continue to welcome residents who are sicker and require an elevated level of care. Social network isolates impact the provincial network because they delay the spread of information; consequently, they may experience this disconnection more than DOCs and nursing homes that are better connected. Nevertheless, a perceived lack of funding, geriatric knowledge, and support from the provincial government negatively impacts a

social network isolate's ability to implement the latest innovations and best practices within their home to enhance care.

Contextual Influence on Isolation (Macrosystem Level)

At the macro level, there are several factors that are influential on the disconnections found among DOCs in Nova Scotia and should be considered in this analysis due to the impact they may have at the micro, meso, and exo level. According to Statistics Canada (2011), 43% of Nova Scotians live in a rural area. As previously stated, advice and information flow more effectively across short distances and network isolates are likely to be living in rural areas. Therefore, it is evident that the geography and population distribution within this province makes it highly susceptible to disconnections.

Like many other provinces, Nova Scotia is focusing many resources towards home care, allowing older adults to live independently for a longer period of time (Gorman, 2016). The investment in home care places a burden on the long-term care sector, meaning that the older adults entering long-term care are in need of a higher level of care, resulting in additional workload demands on care staff. Nova Scotia claims the highest proportion of older adults in Canada (Statistics Canada, 2014), indicating that the burden on long-term care will continue to increase. As workload demands increase along with the aging population and decreases in funding, DOCs and nursing home staff are attempting to provide quality, person-centered care, resulting in less time and resources for network actors to foster advice and information-driven relationships.

Discussion

My research analyzed descriptive characteristics related to being isolated from the network and sought to identify the implications of being an isolate at the micro, meso, exo, and macro level. Overall, few commonalities were observed. Isolates are diverse in age and gender, possess moderate levels of education, and most had a nursing background - a common and anticipated feature of DOCs. Isolates in this study had many years of experience working in long-term care but had not been in their current role for a particularly long time. The nursing homes where isolates are employed varied in size and ownership type; however, all were located in rural areas. Isolates did not perceive that rurality or proximity affected their access to information or contact with other network actors; however, isolates did limit their advice seeking to those actors nearby. No isolates extended their advice seeking networks beyond their immediate areas.

At the individual level, network isolates appeared to be largely unaware of the limitations of their network and believed their information needs were satisfied with their small networks. At the micro level, this study revealed that while participants do have network connections, they do not have the motivation that well-connected network actors have to expand their networks. Wasserman and Galaskiewicz (1994) suggest that diverse sources of information from many network actors provide easily accessible support and information. Rather than valuing the information and advice that is available through external sources, participants tended to look internally for information regarding best practices and clinical care decisions. Their method of accessing external sources was mainly through their front-line staff, who have previously been employed elsewhere.

Participants value the experience and knowledge of their professional relationships but they are reliant on convenient sources.

My research has also contributed to the knowledge regarding the impact that network isolation has at the meso level. Krackhardt and Brass (1994) reported that social network isolates have less control over resources than central network actors and it was evident in my study that garnering support of front line staff for best practices was in fact difficult for participants. This lack of control hinders their ability to increase their centrality score and rate of adoption of new innovations. From this study, it is clear there are few opportunities for isolates to become better connected and increase their centrality score. Participants have very limited exposure to new innovations, likely in part due to rurality, and they may not be desirable targets for adoption of innovation and practices in the future if they remain disconnected. The innovations that participants reported being interested in or in the process of trying to implement in their homes would not be considered particularly new or innovative in the field. This finding confirms the diffusion of innovation theoretical framework that isolates would fall towards the laggard end of the adoption of innovation curve (Rogers, 2003). The culture of a nursing home or organization can help or hinder the implementation of innovations, which requires the investment from staff and administration (Dingfelder and Mandell, 2011).

From the exo level perspective, while some DOCs in Nova Scotia may feel connected to the Department of Health and Wellness (DHW), isolates not only perceived themselves to be disconnected with the department but many also blamed the DHW for the challenges they face in their roles. This perceived disconnection from provincial level entities results in isolates continuing to look inward for information rather than seeking

out new sources. Furthermore, isolates are not connected to the provincial network by their definition – therefore an outcome may be an inherent delay in the spread of innovation. This delay may further reinforce a stronger sense of disconnection than other DOCs and nursing homes that are well connected. These findings indicate that network isolation is a multi-level issue; however, provincial level departments and organizations are influential on the density of a network. Network isolation should not be blamed exclusively on the individual, as the department should invest in creating a cohesive and equitable network.

Analysis of network isolation at the macro level has made it clear that the continual economic decline in Nova Scotia has an impact on network isolation. Nova Scotia has experienced the worst economic performance, on average, of any province over the last two decades and has not shown significant signs of improvement (The Canadian Press, 2014). This results in limited health care funding, particularly for long-term care as the financial focus has been placed on home care and living independently, which increased the financial and workload burden on long-term care. As this burden continues to grow, the need and benefit for DOCs to be part of a densely connected network is necessary to improve care and share resources that are otherwise stretched thin. To enable a more cohesive and densely connected network among DOCs, the proper resources must be in place to provide external networking opportunities but for many DOCs, these resources are currently unavailable. This is particularly challenging for a province with a high rate of rurality because often travel or reliable technology are necessary to create and maintain network connections, but such resources may not be widely available.

Theoretical contributions. In addition to making contributions at the micro, meso, exo and macro level, my study has contributed to the existing theoretical knowledge pertaining to social network analysis, network isolates, and the diffusion of innovation theoretical framework. Using qualitative research methods, I was able to confirm that isolates have limited access to information regarding innovations despite their perception that they do not experience challenges with access to such information. Many factors can contribute to or cause isolation – my research suggests these factors exist in the micro, meso, exo, and macro levels and work simultaneously to create network isolation. In the long-term care sector, network isolation cannot be attributed to one cause but rather it is a multidimensional phenomenon that can only be properly understood by examining each case individually. However, it is evident that there is a link between employment at a rurally located home and network isolation. According to diffusion theory, network isolates would be classified as laggards when adopting innovations. Contrary to Rogers (2003) suggestions, participants in this study were not found to be disinterested in innovations, but rather they tend to adopt innovations that have been present within the larger network for many years.

Formal SNA suggests that network isolates create “structural holes” in a network, hindering the flow of information (Pow et al., 2012). However, network analysts and consumers of this research must understand that these individuals were defined as network isolates according to the network design used in the Advice Seeking Networks in Long-term Care study. Upon qualitative analysis of network isolation, it was clear that some of the attributes assigned to isolates in the literature apply to the participants of this study while some do not. Participants did not perceive a lack of access to information or a

lack of network connections, yet the term “isolate” suggests they do not have connections to others in the network and implies a negative connotation. Network isolates in this setting likely experience limited access to information in comparison to well-connected DOCs however they did not explicitly report the lived-experience or disadvantages of isolation. For this reason, it is crucial to consider that if the participants do not describe themselves as isolated, then perhaps as researchers we should not define them as isolated, or lacking access and connections, outside of the highly-descriptive data, such as sociograms.

Implications: Policy and Practice

Policy. In August 2016, the provincial government announced a one-per cent budget cut for over 100 long-term care facilities in Nova Scotia (Gorman, 2016). With 103 of 134 NS long-term care facilities (including residential care facilities) affected by the cuts (Tutton, 2016), nursing home administrators are now forced to develop new ways to find savings, such as cutting hours, reducing overtime, leaving vacancies unfilled, and focusing additional efforts on fundraising. Nova Scotia is comprised of both large, corporate providers of long-term care as well as small, rurally located facilities. In policy development and budgetary decisions, it is essential that stakeholders and decision-makers consider the differential effect these decisions have at various models of ownership, size, and location of nursing homes. This research reinforces the need for flexibility in policy implementation, meaning there is no one-size fits all solution.

The advice seeking network within Nova Scotia revealed a disproportional amount of isolates compared to the other Atlantic Provinces (Keefe, Estabrooks, Beacom, Berta, Dearing, and Squires, 2016). The sole commonality found among the

characteristics of isolates is that nine of the ten isolates are located rurally. This indicates a systemic issue of insufficient networking opportunities and supports available to those DOCs in rural areas compared to those located in urban areas. Across the Province, DOC meetings take place regularly. However, these meetings are contained to specific geographical regions, meaning that the same individuals are meeting continuously and opportunities to network with DOCs in more remote areas of the province do not exist. Other provinces within the Atlantic region have high levels of rurality but they do not experience the same isolation. Nova Scotia policy makers need to consider how to reconnect these isolates to the larger network to improve diffusion of innovation.

Practice. The purpose of mapping the advice seeking networks within long-term care facilities in Canada was to ultimately understand how to diffuse innovation and best practices. Diffusion, or spread of best practices, can take a long time; however, strong relationships within a network have the ability to spread best practices more effectively. The larger TREC project sought to identify and understand who the informal opinion leaders were within a network. Once we know who these individuals are, the diffusion of innovation can become a more efficient process. Those network actors who are isolated from the network limit this diffusion. The contribution of my study to the overall TREC project was to identify characteristics of isolates that are not connected and assess the ways in which practices can be introduced to create a better connectivity to the larger network.

To enhance the efficiency and accessibility of diffusion of innovations and best practices, I advocate for the development of a Community of Practice (CoP) designed for DOCs in Nova Scotia. CoPs are formed across various settings with the goal of

“collective learning in a shared domain of human endeavor” (Wenger-Trayner and Wenger-Trayner, 2015). The three essential features of CoPs are:

- The shared domain of interest that implies membership and commitment
- The community, engaging and helping one another
- The practice, a shared repertoire of resources

I am proposing that this CoP involve all DOCs in the province and meet quarterly in various settings with goals that differ from the already established DOCs meetings that occur within separate regions. Face to face meetings will create and/or reinforce advice seeking relationships among DOCs to produce a denser overall network. The participants will decide the topics of these meetings beforehand on a needs basis. These topics may include strategies to become better connected with the Department of Health and Wellness, how to become involved with research and innovation implementation, education regarding new and innovative practices in long-term care, among others. Quarterly meetings will provide the opportunity to share resources and help one another, bridging geographical distance with the goal of improving practice.

Limitations

There are several limitations to this study. To begin, roughly two years have passed between survey participation and recruitment for my study and some participants were no longer in the same position as they had retired or taken a position elsewhere. I was able to find updated contact information for some of these participants; however, one other I was unable to locate. My goal was to interview seven of the ten isolates but given turn-over, no response, and two individuals declining participation, I interviewed six isolates in total.

A second limitation of this study is the transferability of the findings to other provinces and territories involved in the Advice Seeking Networks in Long-Term Care study. The structure of long-term care is incredibly diverse among these provinces; therefore, DOCs in other provinces likely face different challenges of availability of information and network connections than those participants in Nova Scotia.

Because the original study adhered to egocentric network design, survey participants were limited to naming up to three individuals from whom they seek advice. If the study did not have a limitation on how many individuals a participant could list, isolates may have been connected through weak ties, thus bridging clusters of network actors. For example, the isolate that identified geriatricians is connected through weak ties.

Recommendations for Further Research

As previously mentioned, the literature on social network isolates across a variety of disciplines is quite limited. For this reason, to have an understanding of network isolation within long-term care in Nova Scotia, isolation should be examined in other provinces who were included in the Advice Seeking Networks in Long-Term Care study and have isolates present within the network maps. While not all provinces had a substantial amount of isolates, an interesting addition to the larger study would be to compare the provinces with many isolates versus those with few isolates and examine how the structure and policies of long-term care in these provinces differ. This opportunity would provide a rich understanding of what is occurring at the exo and macro level that encourages network connections or disconnections across Atlantic Canada.

While the Advice Seeking Networks in Long-Term Care study focused on connectedness and high centrality of network actors within 39 qualitative interviews, my suggestion for further research would be to compare and contrast the findings of network actors with high centrality scores and low centrality scores. A comparative study would provide an understanding of the characteristics of network actors that influence connections or disconnections within a long-term care setting.

In addition, my recommendation for further social network analysis research pertaining to network isolation is to reconsider how we define and describe network isolates, particularly in qualitative research. Quantitative SNA describes isolates by a lack of degree scores (connections) but when employing a mixed-methods approach to SNA, it is evident there is an important narrative behind isolation. Qualitative interviews gives voice to participants and enhances the understanding of SNA researchers by giving participants an active role in sharing their experience. This is an aspect of research that is missed through quantitative SNA research. The experiences reported by the participants should validate the quantitative findings and if this is not the case, is it fair to label network actors as isolated? For this reason, I am suggesting further use of a mixed-methods approach to SNA where isolates are present to evaluate the validity of using the label “isolate”. While this term might be appropriate and applicable for quantitative SNA, researcher should reconsider the transferability of this term to qualitative SNA. Because the findings in this study have both confirmed and refuted the literature regarding the characteristics of network isolates, further research on network isolates is necessary to redefine an otherwise overwhelmingly negative label.

Conclusions

This study aimed to contribute to the body of existing knowledge pertaining to network isolation applied in a long-term care setting in Nova Scotia. This goal was achieved through a qualitative approach, which sought to explore:

- What are the descriptive characteristics of Directors of Care who are network isolates in Nova Scotia and what are factors that contribute to their isolation within the network?
- What are the implications of social network isolation at an individual level, facility/organization level, and for the network as a whole?
- Are there implications specific to the access and application of best care practices (that might extend to other practice innovations)?

As previously stated, network isolation should not be viewed as generalizable across all cases of isolation. Ultimately, in social network analysis, there are various causes of network isolation in research design but also across each case. While all cases of isolation are unique, what can be generalized from these findings is that network isolation has an impact spanning from the micro level to the macro level.

Diffusion of innovation theory states that isolates hinder the efficient flow of information throughout a network. Network isolates tend to fall toward the laggard end of the adoption of innovation scale, which was confirmed by my study. Although most isolates are interested in innovations and best practices, the innovations they implement within their facilities are often outdated. While it is evident that participants valued the few sources of advice they presently have, they lacked the motivation to extend their networks to other clusters of advice givers within the province and instead looked inward

for easily accessible sources. When isolates come across professional relationships with those who they perceive as exceptionally experienced, they fulfill their information needs and rarely steer away from these individuals

The descriptive characteristics of network isolates suggest that a strong commonality among these individuals is living in a rural area. While many nursing homes in the province are rurally located, the main issue for network isolates working in rural areas is that they have limited access to network actors with early adoptive behaviours and high centrality scores, thus their network is limited in its ability to grow. Participants perceived the availability of technology to eliminate many of the challenges presented by rurality and they believed that having adapted to living in a rural community, they have become resilient to these challenges. However, it appears that this belief has caused them to focus inward for advice and information. Although participants did not report proximity to influence their access to information, it is clear that if they work in an urban setting, such as Halifax, they would have increased access to information and would not face obstacles to attending various networking opportunities.

Ultimately, network isolates do not perceive themselves as socially isolated or as having limitations in their network in terms of access to information regarding best practices and innovations. Participants have advice seeking networks, although small and limited in their scope that satisfy their information needs and are not pursuing additional network connections to the larger, denser network in Nova Scotia.

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Appendix A - Information Letter and Consent Form



INFORMATION LETTER and CONSENT FORM

Study Title: Social Network Analysis in Long-Term Care in Nova Scotia: Validation of Network Mapping

Research

Investigator: Supervisor (if applicable):

NAME: Erin McAfee

Professor Supervisor: Dr. Janice Keefe

ADDRESS: Halifax, Nova Scotia

ADDRESS: Halifax, Nova Scotia

Mount Saint Vincent University

Mount Saint Vincent University

EMAIL: erin.mcafee@msvu.ca

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PHONE NUMBER: XXX-XXX-XXXX

PHONE NUMBER: 902-457-6226

Background

- You are being asked to be in this study because you participated in the Advice Seeking Networks in Long-Term Care online survey, which asked you to list up to three individuals from whom you seek advice. From this information, you have been identified as an individual whose advice seeking behaviour is of interest to better understand the network in Nova Scotia.
- An Advice Seeking Network in Long-Term Care project team member from Nova Scotia provided your contact information (email and/or phone number) as a method to contact you to complete the online survey in Fall 2014. This information has since been securely stored and has been accessed to contact you following Mount Saint Vincent University's Research Ethics Board's approval for this study.
- This study is being conducted as part of my thesis requirements for my Master of Arts in Family Studies and Gerontology degree.

Purpose

- The purpose of this research is to better understand advice-seeking behaviours in the long-term care sector in Nova Scotia as a means of fostering network integration/connections and the efficient spread of information that can be helpful to enhance resident care.

Study Procedures

- Data collection will take place over several months and will include semi-structured interviews in various sites. The interviews will occur individually and will take place at the nursing home in which the participant is employed or over the phone. The responsibility of the participant is to participate in an interview for the duration of approximately one hour. Interviews will be audio-recorded to allow the data to be transcribed for analysis. .
 - I intend to complete 10 semi-structured interviews for the duration of approximately 45-60 minutes each.
 - If you wish to receive a copy of the transcript for your interview, it will be made available to you upon request.

Benefits

- We hope that the information we get from doing this study will help us better understand the social networks of the long-term care sector in Nova Scotia as a method of spreading helpful information and advice that is accessible to all Directors or Care/Directors of Nursing in the province.
- There are no costs involved or compensation for participating in this study.

Risk

- There are no foreseeable risks to the participant that may arise from participation in this study.

Voluntary Participation

- You are under no obligation to participate in this study. The participation is completely voluntary. You are not obliged to answer any specific questions throughout participation.
- You can opt out without penalty and can ask to have any collected data withdrawn from the database and not included in the study. Even if you agree to be in the study you can change your mind and withdraw at any time. In the event of opting out, your data will immediately be deleted and/or destroyed.

Confidentiality & Anonymity

- The intended use of this study is for a graduate thesis. You will not be personally identified in any future publications or presentations.
- The data will be kept confidential, but my thesis committee and/or members of the Advice Seeking Networks in Long-Term Care study will have access to the anonymized data upon request.
- All identifying information (names, locations, etc.) will be removed from the transcripts to ensure anonymity.

- Data are to be kept in a secure place for a minimum of 5 years following completion of research project. Data will be stored electronically and password protected and when appropriate destroyed in a way that ensures privacy and confidentiality.
- A report of the social network analysis findings of long-term care in Nova Scotia can be available upon request.
- The data may be used in future as part of the Advice Seeking Networks in Long-Term Care project but it will first be approved by a Research Ethics Board. The data you provide may be used again as for further analysis to contribute to the larger Advice Seeking Networks in Long-Term Care project or as secondary data for student thesis work however, all reporting and presentations will remain anonymous and the data will remain securely stored.

Further Information

- If you have any further questions regarding this study, please do not hesitate to contact Dr. Janice Keefe, janice.keefe@msvu.ca.
- The plan for this study has been reviewed for its adherence to ethical guidelines by a Research Ethics Board at Mount Saint Vincent University. For questions regarding participant rights and ethical conduct of research, contact the Research Ethics Office at (902) 457-6467.

Consent Statement

I have read this form and the research study has been explained to me. I have been given the opportunity to ask questions and my questions have been answered. If I have additional questions, I have been told whom to contact. I agree to participate in the research study described above and will receive a copy of this consent form. I will receive a copy of this consent form after I sign it.

Participant's Name (printed) and	Signature	Date

Name (printed) and Signature of Person Obtaining	Consent	Date

Appendix B: Interview Guide

Preamble: In Fall 2014, you responded to the Advice Seeking Networks in Long-Term Care online survey which asked you to list up to three individuals from whom you seek advice in regards to resident care. From the survey results, advice seeking maps have been created to provide a visual representation of the network in Nova Scotia. These visual representations have helped me to identify you and several other individuals in the network as someone I would like to learn more about in terms of advice seeking behaviours.

I have been working as a Research Trainee on the Advice Seeking Networks in Long-Term Care project for a period of 17 months and as part of the requirements of my degree in Family Studies and Gerontology, I am conducting interviews across the province for my graduate thesis. These interviews are intended provide a better understanding of the survey data and overall network in Nova Scotia.

You will not be asked to divulge any confidential information. I will be speaking with a number of survey participants across the province and they will be asked the same questions regarding their advice seeking behaviour. Reporting of the results of interview data analysis will remain anonymous.

Do you have any questions before we proceed?

Facility characteristics/attributes:

Confirm bed size and owner/operator information.

1. In the survey, you identified [Network actor 1, 2 & 3] as someone from whom you seek advice? Can you describe your advice seeking relationship with each of these individual?

- what is their position?
- How long have you known them? How did your relationship begin?
- How frequently do you interact?
- Proximity to this individual?
- what type of advice and information do they provide you with? What are your motivations in seeking advice from [network actor]
- What mode of communication is used?

2. Do you have the opportunity to learn about new and innovative practices within the long-term care sector? If so, which specific innovations interest you the most?

- Which have you implemented or would you like to have implemented within your facility?
- Who do you go to for support when you're looking to implement a new practice? Does your organization/facility support and encourage new ideas and practices?

- Do you personally have the opportunities to spread innovations within your facility? Are you ever been approached to try out new and innovative practices in your facility? Are you able to act on implementing these innovations?
3. What resources do you access when trying to learn (or gain expertise) about a new practice, policy, or innovation in long-term care?
- committees within you network? How did you come to join this group?
 - Meetings?
 - Internet?
 - Tell me about a time when you had difficulty accessing the information you needed.
4. What are some of your goals/values/aspirations for the long-term care sector in Nova Scotia?
- do you have a sense that these are shared with other individuals in your network?
 - do you see value in having established networks within the long-term care sector?
5. How does proximity to other individuals influence your advice seeking behaviours?
6. In your opinion, how does the long-term care sector in Nova Scotia facilitate networking opportunities?
- Are there other opportunities or venues to network and make connections that you wish to see within the network?
7. When seeking information and advice, do you reach out to former colleagues who may have the answers or the connections to get you answers?
8. Have you experienced any significant changes in your network since responding to the survey up until this point?
- How has your advice seeking evolved since you first started in your position?
 - Would you change any of your original responses?
 - What changes within the sector have you noted since you started in your position?
9. If someone new was coming in to a position similar to yours within the long-term care sector in Nova Scotia, what kind of advice would you give them to help them make connections within the sector?
- Which sources would you lead them to? Specific facilities or individuals?
10. What is it about your organization/facility that is unique to the sector?

11. Is there anything else that you could tell me that would help to understand the advice seeking networks in Nova Scotia or your advice seeking behaviours generally?

Individual attributes/characteristics:

How long have you worked in long-term care?

How long have you worked at this facility?

Where did you work before working in long-term care?

What is your educational background?

Age & gender