Community Resiliency and Health Status:
What are the Links?

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Executive Summary

This report describes the results of a study that addressed the subject of community resiliency in three Central Alberta communities—two rural resource-reliant communities and one urban neighborhood.

Rural sustainability has been recognized as an ongoing issue for some time, particularly because the majority of rural communities depend on one or several resources that provide them with uncertain economic futures. This study was intended to ascertain the links between the experiences and perceptions of resiliency among community members in resource-reliant communities, and the impact of this resiliency on their health status. Inclusion of an urban neighbourhood allowed for further comparisons and understanding of community resiliency within an urban context.

For this study, "rural" was defined as being outside the commuting zones of large urban centres (Mendelson & Bollman, 1999). "Resiliency" was seen as the ability of a community to deal with adversity, and in so doing to reach a higher level of functioning (Kulig, 1998; 1999; 2000). Previous studies had identified a community-resiliency process that includes: the community experiencing interactions as a collective unit; development of an expression of a sense of community; and community action to deal with issues (Kulig, 2000).

Three communities were included in the current study:

- Hardisty, an agricultural community, the economy of which is supplemented by the region's oil wells. This town had recently experienced the proposed introduction of an Intensive Livestock Operation

(ILO), but had been successful in defeating the proposal through a community-organizing movement (see Report 001);

- Hinton, a mining community that had experienced several mine closures, the most recent in 2003. The economy of Hinton has always been dependent on natural resources, including oil and lumber as well as mining (see Report 002);
- Riverside Meadows, an urban neighbourhood within Red Deer, Alberta. This community was originally a French Canadian village known as North Red Deer (see Report 003).

The purpose of this pilot study was to explore the health implications of living in resource-reliant communities in Alberta. Three methodological approaches—qualitative interviews, household surveys, and examinations of existing health-data bases—were used to explicate this understanding.

The specific research questions were:

1. What is the meaning of "community resiliency" for rural communities that are undergoing or potentially undergoing economic changes, and are the potential location for industry?
2. What are the local, regional, social, economic and political factors that impact on the resiliency of rural resource-reliant communities?
3. What is the impact of these changes on resiliency?
4. What are the key physical, social and economic characteristics that are associated with health status in resource-reliant communities of rural Alberta?

5. What are the links between community resiliency and health status?
6. What do different methodological approaches tell us about the relationships between resource-reliant communities, community resiliency, and health status of residents?

Extensive time was spent in establishing community engagement throughout the study. An advisory board, consisting of three members from each participating community, was established. Three face-to-face meetings were held in the respective communities between May, 2003 and March, 2004. As well, teleconference meetings were held on a regular basis (every six weeks) to ensure input from the advisory panel about the project in general. The advisory-board members provided locally relevant advice and information about such issues as the most appropriate times of the year for community meetings, the best way to conduct the household surveys, and the most appropriate manner for dissemination of the findings. The importance of the commitment of these advisory-board members to the success of the research project cannot be overstated.

A community meeting was held in each of the participating communities in May/ June, 2003 to explain the study and its implications for the community. Follow-up community meetings were also held to present the findings to each respective community; these occurred in Riverside Meadows and Hardisty in June, 2004, and in Hinton in September, 2004. Attendance at each of the community meetings was encouraged through advertisements in local media, the use of posters, as well as personal invitations through telephone calls. In December, 2004, presentations about the study were also made to the staff of the David Thompson Health Region responsible for

Riverside Meadows and to Red Deer City Council. Key community members in Hardisty and Hinton were invited to additional community meetings held in March, 2005, in an attempt to ensure that the information would be used in their community planning.

A project coordinator was hired to help with the everyday issues related to the study, and to assist with data analysis. Three local research assistants (RAs) and transcribers were hired to conduct the qualitative interviews and to make confidential transcriptions of the taped interviews. The first author, who was also the principal investigator (PI), trained the three RAs with assistance from the second author, who was one of the co-investigators.

In total, 82 interviews were conducted: 25 in Hinton, 30 in Hardisty and 27 in Riverside Meadows. In each community the RA, with the assistance of the local advisory board members, compiled a list of potential participants. The RA approached the individuals, explained the study and asked if they would be willing to be involved. There were no refusals. After an interview date was set, the RA went to the home, obtained informed consent (Appendix A), completed the demographic sheet (Appendix B) and conducted the interview (Appendix C). The interviews were conducted between May, 2003 and September, 2003. Overall, the average interview took an hour, with the range being from 30 minutes to 2.5 hours. All of the RAs also collected field notes that consisted of their general impressions of the interview settings. These notes were also included in the analysis.

Data collection and analysis were conducted simultaneously. Tentative themes and categories were generated by the principal investigator on the basis of the data, and confirmed through further analysis. An auditor served as an additional check of the data

analysis. This individual was chosen because of her background in both method (qualitative research) and content expertise (community). Three transcripts from each participating community were sent to the auditor, who subsequently sent a detailed commentary on her analysis of each set. The first author did not read her comments until after data analysis was completed. The auditor's notes were then read and compared to the analysis conducted by the first author and the project coordinator. The auditor's comments confirmed the data analysis conducted by the first author and project coordinator, while enhancing the data-analysis process overall and helping to achieve rigour and trustworthiness.

A summary of all 82 participants indicate that the majority were female (n = 45), married (n = 64), with two children (n = 48), in the 35 to 49 age category (n = 37), with 13 to 16 years of education (n = 44), had been born in small towns (n = 39), were Canadian (n = 37), and had no particular religious affiliation (n = 36). Forty-nine of the participants lived in rural communities at the time of the interviews. Fifty-three of the participants worked full-time, 12 worked part-time, and the remaining 17 were either retired or were currently not working. The participants worked in a variety of positions including farming, mining, logging, office or business work (insurance sales, secretarial), social services, health and education (nursing, pharmacy, teaching, social work), and retail (florist). Fifty-seven of the total sample worked where they resided, with the remainder of those who worked commuting to a specific area near to their main residence. The longest time spent living or working in a rural area was 20 to 29, years for 11 and 19 members of the total sample respectively.

Main themes identified from the interviews are as follows:

- "Communities" were described as places with connections among people who identify common goals;
- Categories of characteristics that describe communities include infrastructure (e.g., gathering places), geography (e.g., location) or physical appearance (e.g., nature), people (e.g., all age groups) or individual characteristics (e.g., diligence), and conceptual characteristics (e.g., sense of community);
- A number of the participants, particularly those in Hardisty, were concerned about the rise of individualism and the negative impact it has on community functioning;
- Both Hardisty and Hinton were seen by residents as rural, but some Hinton participants perceived Hinton as rural with urban infrastructure due to the availability of retail and health services;
- Differences were noted in the communities due to economic variations. Thus, Hardisty, being an agricultural community, had specific cycles related to planting and harvest, while Hinton was distinguished by the shift schedules of the workers;
- The communities had also experienced different types of challenges—Hardisty had been faced with a proposed ILO, Hinton had dealt with economic challenges associated with mine closures, and Riverside Meadows had struggled with its image within the larger community of Red Deer;
- Problem-solving processes were identified in each community. These included problem identification, a mechanism to bring people together to discuss the problem, generation and application of solutions, with ongoing maintenance to ensure the problem was solved;

- Despite the community differences, all the participants were able to discuss resiliency, which they saw as the ability of their communities to move on despite the challenges they were facing or had faced;
- Specific characteristics of resiliency, when combined for all communities included infrastructure (e.g., common goals and purpose), people characteristics (e.g., open-minded people), social infrastructure (e.g., pride), conceptual characteristics (e.g., proactive), and problem-solving processes (e.g., collective effort);
- Barriers to resiliency were also identified, including challenging events (e.g., loss of industry), infrastructure (e.g., lack of support from local government), conceptual characteristics (e.g., failure to be proactive), people characteristics (e.g., limited vision) and attitudinal characteristics (e.g., complacency);
- The participants perceived their communities as healthy, and commented that living within their community enhanced their health. This was particularly noticeable in Hardisty and Hinton, where people spoke about how being part of a rural community positively impacted their health;
- Social interactions were seen as essential to enhancing participants' emotional health;
- Concerns were raised about environmental health issues, such as the air quality related to the pulp mill in Hinton, the refuse from the proposed ILO in Hardisty and the remnants from the paint shop in Riverside Meadows;
- Public goods such as recreational services, retail outlets, and access to health care were also recognized as being available in each of the communities.

Limitations of the study include the following: 1) the findings may only be generalizable to other similar communities; 2) there were variations in the quality of the

interview data among communities; 3) the findings may only represent the communities at a given point in time; 4) the household survey samples were small; and, 5) information from provincial physician claims data bases represents utilization of health care services and cannot provide the true incidence of disease.

The following recommendations are based upon the study findings:

Recommendation #1: Rural communities need to develop a forum in which to discuss their success stories and challenges with one another;

Recommendation #2: Rural communities should develop a wider, county-level focus in order to provide a greater range of services for the majority of the population;

Recommendation #3: Communities need to be provided with such resources as mentoring programs and leadership and community-capacity workshops in order to enhance their problem-solving processes;

Recommendation #4: Health and social-service agencies need to take theoretical notions of community resiliency into consideration as they develop community programs;

Recommendation #5: Rural communities should reframe the way they view economic and social development to incorporate and apply the theoretical notions of community resiliency; and

Recommendation #6: Existing bylaws within rural communities should be reviewed in order to identify issues that may need to be addressed or updated to further enhance the health status of community residents.

Community Resiliency and Health Status: What are the Links?

This report presents the details of a recent research study that addressed the topic of community resiliency in three communities—two rural resource-reliant communities and one urban neighborhood, all in central Alberta. The literature review provides background information on the main concepts relating to the issue of resiliency. Details regarding data collection and study findings are included. The final section of the report presents general conclusions and recommendations.

Literature Review

"Sustainability" has been increasingly recognized as an issue affecting rural communities across Canada. It has often been discussed in relation to economic downturns, an increase in corporate farming including intensive livestock operations (ILOs), migration of youth to urban locations, and urban-centric policies that are not supportive of the rural lifestyle. Rural communities are usually resource-reliant (i.e., dependent on agriculture, mining, forestry, fishing) or single-industry towns (i.e., dependent upon one resource only rather than a combination), and thus are particularly sensitive to negative external forces such as downturns in global markets. When such changes occur, it is not always possible for individuals or communities as a whole to recover on their own.

Theoretical frameworks need to be examined in an attempt to explain community responses to external forces while also addressing how such responses impact individual and community health. One such framework is that of "community resiliency," or the ability of a community not only to deal with adversity, but also to become strengthened in spite of such adversity (Brown & Kulig, 1996/97; Kulig, 1999; 2000; Kulig & Hanson,

1996). This study focused on generating meaning about community resiliency within three communities (two rural, one urban neighbourhood), and examined how this concept related to the health of the individual residents as well as the community at large.

For this study, “rural” was defined as being outside commuting zones of large urban centres (Mendelson & Bollman, 1999). The term “health status” was interpreted to include health conditions (e.g., diabetes, asthma), human function (e.g., functional health, activity limitation) and well being (self-rated health and self-esteem) (Canadian Institute for Health Information, 1999). Indicators of non-medical determinants of health (e.g., working conditions, housing affordability, income inequality) were also considered health indicators of interest (Canadian Institute for Health Information, 1999).

Rural Sustainability

Rural sustainability includes an array of policies and programs that address socio-economic issues in rural communities in general, and are designed to fill the gaps present in those communities, however, in this study, our emphasis is on rural resource-reliant communities, specifically mining and agricultural communities in Alberta.

For our purposes, “community” refers to “a group of people who are socially interdependent, who participate together in discussion and decision-making, and who share practices that both define the community and are nurtured by it” (Bellah, Madsen, Sullivan, Swidler, & Tipton, 1996, p. 333). Furthermore, community is seen as a social system within which interactions are key (Hawe, 1994).

The following discussion focuses on several constructs and their inter-relationships: rural sustainability; sense of identity; sense of community; and community resiliency. From a lay perspective, the push for rural sustainability emerges from a

combination of a sense of identity and a sense of community, and the drive and desire to maintain a particular kind of lifestyle. Community identity includes six broad elements: locus; distinctiveness; identification; orientation; evaluation of the quality of community life; and, evaluation of community functioning (Puddifoot, 1995). A “psychological sense of community” is a feeling of belonging and a shared emotional connection between people (McMillan & Chavis, 1986 cited in Brodsky & Marx, 2001). McMillan (1996) further concludes that “sense of community” starts with a spirit of belonging together which builds into trust, and that a “sense of community” provides meaning and perspective to one’s life (Sarason, 1974 cited in Hawe, 1994). A theoretical premise of this study is that when rural residents experience a sense of identity and a sense of community, there exists the basis for the process of community resiliency as noted in the following discussion.

Historically, ideas about resiliency were based on research with children that identified protective and risk factors that could buffer problems or increase their risks (Cohler, 1991; Rutter, 1985; Werner, 1986; 1990). Individuals with more protective factors were thought to be more “resilient.” In reality, such factors can be both protective and harmful depending upon the circumstances. More recent work has challenged the thinking that resiliency is a product, by applying resiliency at the community level and suggesting that it is a process (Kulig & Hanson, 1996). Such studies have either looked at communities as collectives or else have considered individual families in relation to collective issues. For example, (Pyle, 1992) examined the resilience of households in Sudan during a famine and found that their ability to survive was influenced by socio-economic and political factors, which in turn affected their support systems. Breton

(2001) noted that a neighbourhood's resiliency is dependent upon both physical and social capital, such as neighbour networks, social and physical infrastructure (e.g., health and social services), and active local voluntary associations. Policies from the public and corporate sector also affect a neighbourhood's resiliency. Public celebrations such as fairs, festivals, and feasts contribute to the viability and vitality of communities, and hence to their resiliency, by adding to a sense of self, place and community (Porter, 2000).

A series of studies has been conducted on community resiliency as a preliminary attempt to understand the concept of "resiliency" at the collective level, and to examine resiliency from the perspectives of rural residents. Two studies were conducted in a former coal-mining town that is becoming a destination for individuals desiring time away in a quiet, beautiful mountain community (Brown & Kulig, 1996/97; Kulig, 1996). The findings from both studies concluded that resiliency is a process that is influenced by variables such as the presence of community leadership, proactive members, and the ability to use a community problem-solving process. These variables contributed to the development of community cohesiveness, an important precursor to community resiliency. One subsequent, inter-related study examined how community-based workers enhanced community resiliency (Kulig, 1998; 1999; 2000). From this study, an identifiable community-resiliency process emerged:

- The community experiences interactions as a collective unit, including "getting along" and "a sense of belonging;"
- This leads to an expression of a "sense of community," exemplified by community togetherness and a shared mentality and outlook;

- Consequently, community action occurs, as illustrated by an ability to cope with divisions, an ability to deal with change in a positive way, the presence of visionary leadership, and the emergence of a community problem-solving process.

Although the community-resiliency process is internal to the community, it is open to such outside influences as new ideas.

Generating information about community resiliency in other rural resource-reliant communities, in order to refine or confirm the process described above, is an important next step in the investigation of the community-resiliency concept. In addition, it has been hypothesized that resiliency may be "intervenable," or able to be influenced through programs and resources. If this is the case, then understanding resiliency is of paramount importance in addressing rural sustainability.

Another hypothesis is the notion that resiliency and health status are linked. Carver (1998) has suggested that a community that exhibits resiliency will have healthier people. If this is indeed the case, then there should be ways in which we can demonstrate links between community resiliency and health status as measured by various indicators of health (i.e., health conditions, human function and well-being). Additional studies are therefore needed in rural resource-reliant communities that are experiencing social or economic change—including the influx of outsiders or a relocation of industry—in order to determine the communities' experiences of resiliency and any changes in physical or mental health.

Rural Communities

Previous studies have demonstrated that economic changes in rural communities can impact community health. Diderichsen and Janlert (1992) found that morbidity was higher in a rural community where profound socio-economic changes had occurred, compared to a neighbouring industrial community that did not experience such changes. On a similar note, health status and functioning are significantly related to "perceived community quality," in terms of both the social quality and the physical environment (Molinari, Ahern, & Hendryx, 1998).

The impact of economic changes associated with rural industry can have consequences for the nature of community relationships and resiliency. Denham, Quinn, and Gamble (1998) found that community organizing, particularly in relation to citizen participation and control, is a promising strategy for addressing health issues and health promotion. Community organizing can result in increased community competence and unity. However, until now no research has examined the effects of economic changes on community resiliency, in spite of recommendations for future research on resiliency in rural populations (Markstrom, Marshall, & Tryon, 2000).

Mining communities.

Mining communities have been the focus of a number of studies on issues ranging from community resistance (Fisher, 1993) to the health effects of the mining process (Guernsey, Dewar, Weerasinghe, Kirdland, & Veugelers, 2000; Veugelers & Guernsey, 1999). Mining communities, regardless of the actual material being extracted, are associated with boom-and-bust cycles and the inter-related issues of decrease in population and resources. In some coal regions, coal camps were developed by large,

outside companies to extract the coal, leaving the communities with limited resources to maintain their economic bases (Couto, 1994).

In such areas as the Appalachian region of the southeast United States, coal mining has been studied in relation to social class and the resulting organization by local residents to address perceived circumstances of injustice (Collins, Dewees, & Eller, 1996; Couto, 1994). One poignant example occurred in Buffalo Creek, West Virginia in 1972, where a mining company had stored its slag (coal-mining leftovers) for a number of years. A dam, believed to hold 132 million tons of waste, broke and destroyed one village and damaged several others (Erikson, 1976). Not only were lives lost, but a sense of communality was also broken, and the community took considerable time to heal.

Coal mining in Canada occurs in Alberta, British Columbia, Ontario, the Maritimes and the northern territories. Here, too, there have been boom-and-bust cycles and other difficult times. Intense disputes between management and workers have occurred, with strikes, walkouts and lockouts not uncommon. Mining accidents have also occurred, further emphasizing the fundamental truth that coal mining is the most dangerous occupation in the world (Pickett, Hartling, Brison, & Guernsey, 1999). The worst mine disaster in Canada occurred at the Hillcrest Mine in the Crowsnest Pass in Alberta in 1914, leaving 189 men dead and 400 children without fathers. Mine disasters such as this one often brought communities together to deal with the tragedy and help each other cope (Kulig, 1996).

Mechanization of the coal-mining industry has led to a reduction of employment in recent years; overall, there has been a movement away from underground or pit mining

toward strip or open-face mining. In addition, a number of coal-mining communities have experienced a loss of viability due to loss of contracts for their particular kind of coal.

From resource-dependent community to tourist destination.

In some cases, mining communities have begun to redefine themselves as tourist destinations because of their location in mountainous areas. Such a change is not without difficulties, as it frequently leads to an increase in the number of part-time or retired residents who do not contribute to the community. The influx of new residents can also lead to challenges of values that are longstanding and widely accepted, which can lead, in turn, to divisions (Brown & Kulig, 1996/97; Kulig, 1996).

The appeal of tourism lies largely in its generation of employment and the subsequent potential to diversify the base of the economy as well as keep labour and capital in the region (Walmsley, 2003). Tourism is clean, less costly and easier to set up than manufacturing (Lewis, 1998; Wilson, Fesemair, & Van Es, 2001). Moreover, tourism provides a base for small businesses, works well with existing enterprises and, finally, requires little investment credit, training capital or dependence on outside firms (Wilson, Fesemair, & Van Es., 2001).

Due to these characteristics, the development of tourism in rural areas is a successful global phenomenon. In non-metropolitan counties in the United States, tourism accounts for 3.1percent of all jobs and 4.5 percent of all income (English, Marcouiller, & Cordell, 2000). Furthermore, there are 767,000 jobs in the United States across the lodging, eat/drink, retail/trade and recreation sectors, accounting for $11.8 billion in income (English, Marcouiller, & Cordell, 2000).

One of the arguments against the development of tourism in rural areas has been the fact that wages generated by tourism are relatively low, lowering household income in an expensive real estate area. Research has not supported this hypothesis. According to a study conducted by English, Marcouiller, and Cordell (2000) in the United States, counties dependent on tourism had higher per-capita income levels than nondependent counties. Interestingly however, the average household income was not significantly greater, and despite these differences, there was no difference in the proportion of people living in poverty (English, Marcouiller, & Cordell, 2000).

The seasonal nature of the tourism industry has also been a concern for rural communities in relation to their economies. In 1996, Keith and Fawson explored the issue of employment stability in rural Utah. They hypothesized that local planners who are pursuing tourist-based development over traditional resource extraction may be trading long-term boom-and-bust employment cycles for shorter cycles determined by tourist expenditures and seasons (Keith & Fawson, 1996). This hypothesis was supported—indicating that tourism may not be the answer for eliminating employment instability in rural areas but that developers should consider diversified economies which rely on extractive industries and permanent populations (English, Marcouiller, & Cordell, 2000; Keith & Fawson, 1996).

The primary function of community, according to MacMillan and Chavis (1986 as cited in Huang & Stewart, 1996), is to satisfy its members' needs through a process called "reinforcement." In a community where everyone has a similar background, residents tend to identify with and help each other achieve common goals (MacMillan & Chavis, 1986 as cited in Huang & Stewart, 1996). Reinforcement therefore gives a

community incentive to bond and produce solidarity. The individual and the community are mutually reinforcing as they establish social norms to control behaviour, and at the same time produce feelings of belonging and self-identity (MacMillan & Chavis, 1986 as cited in Huang & Stewart, 1996). Through this process, individuals use their community membership to protect them from the perceived threat of "outsiders" who have different language, dress and rituals (MacMillian & Chavis, 1986 as cited in Huang & Stewart, 1996). Therefore, reinforcement ultimately promotes solidarity and feelings of security inside the community (Huang & Stewart, 1996).

These processes are threatened and conflict arises when local forces seek to develop tourism in a resistant community. The intrusion of tourism into a community can affect the solidarity of that community by either influencing the community to lose its culture and shared identity, or by forcing the community to fight to build and preserve its culture and shared identity (Huang & Stewart, 1996).

One impact of tourism is the pressure to conform to an "ideal town" image. Residents form an image of what their town should be like and then they adjust their behaviour to perpetuate it. This shared image then becomes a source of bonding, as tourists expect residents to fulfill the roles present in an ideal town, and the residents' efforts to do so binds them together—especially old-timers and newcomers (Huang & Stewart, 1996).

However, sharing the community with others of different cultures and social backgrounds changes how old-timers and newcomers see their community, and may weaken solidarity because shared culture is no longer a link (English, Marcouiller, & Cordell, 2000; Huang & Stewart, 1996). When this happens, the basis of community

solidarity may change from a shared culture to a psychological investment of working together to develop a town image; in this case, the local culture can become staged and meaningless to the residents (Huang & Stewart, 1996).

Another impact of tourism development is the increased delineation of social boundaries among groups. There is a heightened distinction between “us” and “them,” and subsequent division into cliques that may not change regardless of the length of time spent in a community (Huang & Stewart, 1996).

Apparent positive impacts of tourism noted by residents of tourism communities include economic improvements; more recreation and parks; improved quality of life; development of new friendships; improved town appearance; and encouragement of cultural activities (Andereck & Vogt, 2000; Snepenger, Reiman, Johnson, & Snepenger, 1998). However, according to residents, the perceived negative consequences (e.g., need for costly improved infrastructure, adjustments to lifestyle, impacts on traffic and crime, disappearance of the traditional rural community atmosphere) outweigh the positive ones (Andereck & Vogt, 2000; Lewis, 1998; Snepenger, Reiman, Johnson, & Snepenger, 1998).

Agricultural communities.

Rural agricultural communities are faced with many challenges, including the decline in the number of family farms and the concomitant decrease in the number of individuals available to contribute to communities in rural areas. Current agricultural trends in Canada indicate that there are fewer census farms (agricultural holdings with some agricultural products for sale), with Alberta reporting the largest drop in the number of census farms. At the same time, there has been a steady increase in the number of

larger farms (Bollman & Rothwell, 2002). In Canada, including Alberta, only farms that had more than 1600 acres increased in number between 1996 and 2001 (Statistics Canada, 2001). As the overall number of farms has decreased, farm employment has also plummeted. Similarly, there has been a decrease in the number of livestock farms, but a steady increase in the average farm size. There is now more animal production relative to crop production, and hog and pig farming have provided increasing employment in the past two years (Bollman & Rothwell).

The growth in intensive livestock operations.

Related to the decrease in family farms, the increase in the number of intensive livestock operations (ILOs) has become a growing concern. In Canada, these are of particular interest in rural Alberta, which had the greatest share of the national livestock population in Canada in 1996 (34.1%). In addition, beef cattle in Alberta are among the largest livestock populations found in high-density areas, with high concentrations in rural areas near Lethbridge, Red Deer and Edmonton. Concerns have been expressed about the impact of such industrialized agriculture on air and water quality. The storage, transfer, and disposal of manure are important issues, with the possibility of accidents or spills resulting in greater environmental risks (Statistics Canada, 2001).

Accordingly, there has been increasing conflict and controversy in Canada over farming practices, the increasing number of large-scale production units, and resource use. These conflicts raise the question of the long-term sustainability of agriculture in general, and of rural communities in particular (Owen, Howard, & Waldron, 2000). Communities that are faced with the possibility of an ILO can become tense and divided. The often long, drawn-out appeal processes that often ensue can consume significant

amounts of money, and use a vast amount of physical and emotional energy that could be used in other community activities.

A few studies have examined the physical and mental health of rural residents living in the vicinity of intensive feeding operations, and have reported decreased resident health and quality of life. Soils, water sources, and the air may become polluted with different pathogens and pollutants, resulting in health consequences for nearby rural residents (Donham, 2000). Wing and Wolf, (2000) found that incidences of respiratory and gastrointestinal problems, as well as irritation of mucous membranes, were elevated among community members living near a hog operation. Specific problems including headaches, runny nose, sore throat, excessive coughing, diarrhea, and burning eyes were reported. Community members also reported greater than average numbers of episodes when they were not able to open their windows or enjoy outdoor activities.

Another study examined the effect of odours from swine facilities on the mental health of people living near the facility, and found significantly higher levels of depression, tension, anger, fatigue, and confusion compared to a control group (Schiffman, Sattely Miller, Suggs, & Graham, 1995). In a replication study, Thu, Donham, Ziegenhorn, Reynolds, Thorne, Subramanian, et al. (1997) did not find any differences in mood between those who lived near the large hog operations and those who did not. However, (Schiffman, Sattely Miller, Suggs, & Graham, 1995)and (Thu, et al., 1997) did learn that there were four clusters of symptoms among hog-barn workers. In addition, these researchers discovered that the owner of the ILO in the communities under study was viewed as having violated the rural values associated with being a good neighbour. These values included working toward egalitarian relationships, mutual

respect, sharing information, and reciprocal exchange such as the sharing of time when the need arises.

Other studies have examined issues such as odours from manure and found that barns generate more odours than lagoons or tanks, but that all odours decrease by 80 percent within 250 meters downwind regardless of container (Zhu & Li, 2000). There has also been concern about the antimicrobials found in manure fields and the possibility of their leeching through the soil to the ground- and surface-water supplies. It has been speculated that these circumstances are contributing to antimicrobial-resistant bacterial pathogens which enter the human population through drinking water or water sports (Campagnolo, et al., 2002; Marks, 2001).

Environmental injustice is another important factor to consider when examining ILOs, as pollution and offensive odours from hog production may have disproportionate impacts on poor and non-white communities. As these populations have been shown to be more dependent on well water for drinking, and to have more limited access to medical care (Wing, Cole, & Grant, 2000), this raises public-health concerns. Related research conducted in Mississippi by Wilson, Howell, Wing and Sobsey (2002) found that while some confined-animal feeding operations (CAFOs) are in low-poverty areas, most hog CAFOs are in areas with greater than 22 percent of people living in poverty, or in counties where at least 22 percent of the population is African American. Interestingly, however, counties with both poverty *and* high populations of African Americans did not have greater than average hog CAFOs (Wilson, Howell, Wing, & Sobsey, 2002). Cole, Todd and Wing (2000) recommend future studies that focus on the unique characteristics

of, and impacts on, the populations at risk for exposure to the pollutants and pathogens caused by concentrated swine-feeding operations.

Hudson (2000) states that large-scale farms tend to have adverse impacts on the economic health of the counties in which they are located. The loss of family farms has led to a decline in auction barns, packers, packing plants and buying stations, forcing family farmers to travel further to market their hogs (Hudson, 2000). In addition, the lack of competition in the market has lowered hog prices (Hudson, 2000). Finally, departing ILO operators have damaged county roads and failed to take proper care of their lagoons—leaving the mess, and the bill, for county taxpayers (Hudson, 2000; Weida, 2000; 2001a).

The economic impacts of CAFOs and the changes in agricultural practices from family farms to large corporate farms have undoubtedly affected community and society as a whole. Although the social consequences of hog CAFOs have not been studied, some authors discuss the social impacts that a hog CAFO may have on a community. For example, when hog CAFOs move in nearby, core values such as honesty and reciprocity are threatened (Weida, 2001b). Weida (2001b) charges that isolated rural regions tend to be tightly bound cohesive communities where residents depend on each other to fill the void created by the lack of a full-service economy. When CAFOs do not operate on these principles, citizen trust is destroyed and often, neighbours have no chance of political recourse, which can cause anger, frustration and levels of stress to escalate (Hudson, 2000).

Community Settings

To ensure a comprehensive examination, the three communities that were included in the study were considered within their historical contexts. Each of the communities is described here, followed by a summary that emphasizes their commonalities and differences.

Riverside Meadows: An Urban Neighborhood

Riverside Meadows, now a neighborhood within the city of Red Deer, was once an independent, predominantly French village known as North Red Deer. The original settlers arrived in the area in 1884, followed by the railway in 1890; by 1911, with 304 residents, North Red Deer was officially recognized as a village. Community industries included a sawmill, which was originally operated by the Great West Lumber Company from 1904 to 1916. Like many similar communities, education was provided in a one-room school house. Due to the predominantly French population, French Roman Catholic priests visited the area, and a Catholic Church and convent were built in 1909. A separate school system was established in the same year (North Side Community Association and the Red Deer and District Museum Society [NCA-RD&DMS], 1987).

Eventually, it became financially difficult for North Red Deer to maintain itself as a separate village. In 1947, it became part of the city of Red Deer (NCA-RD&DMS, 1987). Although the name of the neighborhood was never officially changed to Lower Fairview, it became locally known as such after the development of Upper Fairview, a housing area on the hill above it. In addition, the neighborhood became known as an area of low-income housing. The community association, which had a long history of being proactive and working with the residents to ensure services and community celebrations

took place, took the lead to have the name changed. Thus, the neighborhood became officially known as Riverside Meadows in 2000, with the community association changing its name to the Riverside Meadows Community Association the following year (see Report 003).

Hinton: A Mining Community

Hinton is literally halfway between Edson and Jasper in north-central Alberta. It has always been a natural-resource community, predominantly dependent upon coal mining and logging for its economic foundation. Hinton was declared a new town by the provincial government in 1956 and was incorporated as the Town of Hinton in 1958 (Bargery & Fissel, 1999). However, underground coal mining in the area had been taking place since the 1910s along Alberta's Coal Branch—the rail line bordering Jasper National Park, which had been built to service the more than 18 coal-mining towns in the area, including Luscar and Mountain Park. Coal-mine tragedies such as gas explosions were not uncommon in the area, and they resulted in the deaths of over 70 miners in a 25-year span from 1921 to 1946 in the Coal Branch mines. However, the Hinton underground mine, which only operated from 1927 to 1942, experienced only two fatalities. Open-pit mining did not commence in Hinton until the 1980s.

Hinton is the site of Alberta's first pulp mill, which opened in 1956; this venture increased the size of the community substantially, from 200 to over 3,500. Hinton is the site of the first Kymr-digester pulp mill in the world to make pulp using lodge pole pine (Bargery & Fissel, 1999). Due to the type of labor intensive industries in Hinton, the citizens have always been younger than the province's average, transient, and from a variety of locations across Canada and even the world.

In 1986, Hinton was the location of one of Canada's worst train accidents. A passenger train from Vancouver crashed into a freight train 19 km east of Hinton, leaving 23 dead and 93 others in need of treatment at the local hospital.

Hardisty: An Agricultural Community

Due to the wide regional impact of a proposed ILO in the Hardisty area, communities surrounding Hardisty within Flagstaff County in east central Alberta were also included in this study. First Nations people (Cree, Blackfoot and, to a lesser extent, the Assiniboine) were the original inhabitants of present day Hardisty and Killam, which together are historically referred to as the Battle River Valley (Hardisty History Book Committee [HHBC], 1981; Killam Historical Society [KHS], 1993). The historical dividing line of the Cree and Blackfoot nations is Iron Creek, which flows through the Killam area (KHS, 1993). Anthony Henday of the Hudson's Bay Company was the first European in the area; he visited in 1754 (HHBC, 1981; KHS, 1993). However, Robert Rundle, a missionary, is believed to have been the first European to have wintered in the area, when he established residence among the First Nations people in 1840 (HHBC, 1981).

The railway first came to the Hardisty area in 1904, and reached Killam in 1906 (HHBC, 1981; KHS, 1993). This stimulated further growth, and Hardisty soon became known as a trading centre. Facilities offering both formal education and organized religion were available in the area by 1907, and the first physician arrived in 1908. The Sisters of St. Joseph arrived in the early 1930s and subsequently established the Killam General Hospital (KHS, 1993).

Currently, Killam and Hardisty are highly productive agricultural communities (raising both crops and cattle), as well as being centres for major oil and gas production. Killam is also a regional service centre, drawing business from throughout eastern Alberta and western Saskatchewan. However, both have experienced decreases in their population sizes from the previous census: Hardisty's population in 2003 was 740 residents, while Killam's was 1,004. This trend toward population loss is also true of the other communities included in the study, which included Sedgewick (population 865), Forestburg (population 870), Galahad (population 161) and Lougheed (population 228). The population of the Flagstaff County as a whole was 3,697 in 2001.

The possibility that an ILO might be established in this area first surfaced on March 18, 2000. The community soon learned that the Taiwan Sugar Corporation (TSC) planned to erect 14 hog barns on five sites within Flagstaff County. A community-organizing movement resulted in the development of the Flagstaff Family Farm Promotional Society (FFFPS), established to oppose the development permit that had been issued to the TSC by the Flagstaff County Council. Over the next year, members of the FFFPS developed strategies, as well as meeting with the county council in order to ask questions and provide input. After a long and arduous struggle, the FFFPS was successful in defeating the proposed ILO in October, 2003, and the Society is currently attempting to obtain monies that are owed to it as a result of the legal battle (L. Love, personal communication, January, 21, 2004).

Study Design

The purpose of this pilot study was to explore the health implications of living in resource-reliant communities in Alberta. Three methodological approaches—qualitative

interviews, household surveys and examinations of existing health-data bases—were used to extend this understanding within two rural communities and one urban neighborhood.

The specific research questions were:

1. What is the meaning of community resiliency for rural communities that are undergoing or potentially undergoing economic changes, and are the potential location for industry?
2. What are the local, regional, social, economic and political factors that impact on the resiliency of rural resource-reliant communities?
3. What is the impact of these changes on resiliency?
4. What are the key physical, social and economic characteristics that are associated with health status in resource-reliant communities of rural Alberta?
5. What are the links between community resiliency and health status?
6. What do different methodological approaches tell us about the relationships between resource-reliant communities, community resiliency and health status of residents?

Extensive time was spent in establishing community engagement throughout the study. An advisory board, consisting of three members from each participating community, was established. Three face-to-face meetings in each of the respective communities were held between May, 2003 and March, 2004. As well, teleconference meetings were held on a regular basis (every six weeks) to ensure input was received from the board and to update them about the project in general. Advice provided by the advisory-board members included information about the appropriate times of the year for

community meetings, how to conduct the household surveys, and the most appropriate manner for dissemination of the findings. It cannot be understated how much the commitment of the advisory board members contributed to the success of the research.

A community meeting was held in each of the participating communities in May or June, 2003, to explain the study and its implications for the community. Follow-up meetings to present the findings to each respective community were also held—one in Riverside Meadows (June, 2004), two in Hardisty (June, 2004 and March, 2005), and two in Hinton (September, 2004 and March, 2005). For each of the community meetings, promotion included advertisements through local media, the use of posters, and personal telephone invitations.

A project coordinator had been hired to help with the everyday issues related to the study. This individual was located in central Alberta, and assisted by arranging meetings, providing information to the advisory board members and other research team members, and preparing media information. In addition, she assisted with data analysis, providing comments regarding the interviews that had been conducted.

Three local research assistants (RAs) and transcribers were hired to conduct the qualitative interviews and confidentially transcribe the taped interviews in each community. The first author, who was also the principal investigator (PI), trained the three RAs with assistance from the second author, who was one of the co-investigators. The training involved such issues as how to obtain informed consent as well as instruction on how to conduct the interviews.

During the data-collection period, the PI held teleconference meetings with the RAs and the project coordinator to ensure that data-collection methods were consistent

among sites, and to address any questions or concerns. Before these meetings, all of the RAs, the first author and the project coordinator also read the transcripts from each of the communities, as an additional method of addressing the rigour and trustworthiness of the data. The demographic information about each of the participants was also sent to the first author while the interviews were being conducted to ensure that a full range of participants (vis á vis, for example, age religious and employment background) was achieved. For example, checking the demographics made sure that individuals of a variety of backgrounds had been included.

Data Collection

In total, 82 interviews were conducted: 25 in Hinton, 30 in Hardisty and 27 in Riverside Meadows. First, with the assistance of local advisory-board members, the RA compiled a list of potential participants. The RA then approached the individuals, explained the study and asked if they would be willing to be involved. (No one refused.) On the pre-arranged interview date, the RA went to the home of the interviewee, obtained informed consent (Appendix A), completed the demographic sheet (Appendix B) and then conducted the interview (Appendix C). The interviews were conducted from May, 2003 to September, 2003. Overall, the average interview took an hour, with the range being from 30 minutes to 2.5 hours. All of the RAs also collected field notes that consisted of their general impressions of the interview settings. These notes were also included in the analysis. All personnel associated with the project (advisory board members, RA, transcribers, project coordinator and auditor) were required to sign the Statement of Confidentiality (Appendix D).

Data collection and analysis were conducted simultaneously. Tentative themes and categories were generated and confirmed through further analysis. An auditor was also used as another way to check the data analysis. This individual was chosen because of her background and expertise in both method (qualitative research) and subject matter (community). Three transcripts from each participating community were sent to the auditor, who subsequently sent the PI a detailed commentary of her analysis of each set. After data analysis was completed, the first author read the auditor's notes and compared them with the analysis conducted by the first author and the project coordinator. The auditor's comments confirmed the data analysis conducted by the first author and project coordinator, while enhancing the data-analysis process overall and helping to achieve rigour and trustworthiness.

The interviews in Hinton were all conducted with individuals who resided within that community. In Hardisty, interviews were conducted with residents of the communities of Hardisty, as well as the surrounding communities of Killam, Sedgewick, Forestburg, Galahad and Lougheed. This was due to the impact of the proposed ILO on all of these communities. Interviews in Riverside Meadows were conducted mostly with individuals from the neighborhood; the exceptions were three individuals who had lived previously in the area, were involved in its development, or worked there.

Qualitative Interviews: Findings

Demographics

The demographics were compiled by student research assistants. Figures 1 to 10 provide comparisons of each of the participating communities.

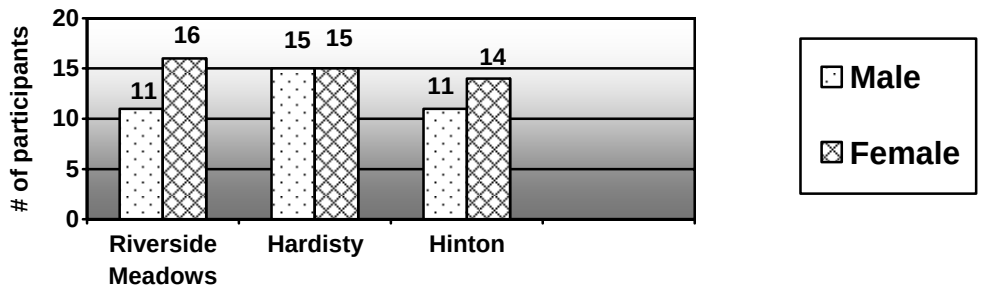

Figure 1. Gender of interview participants.

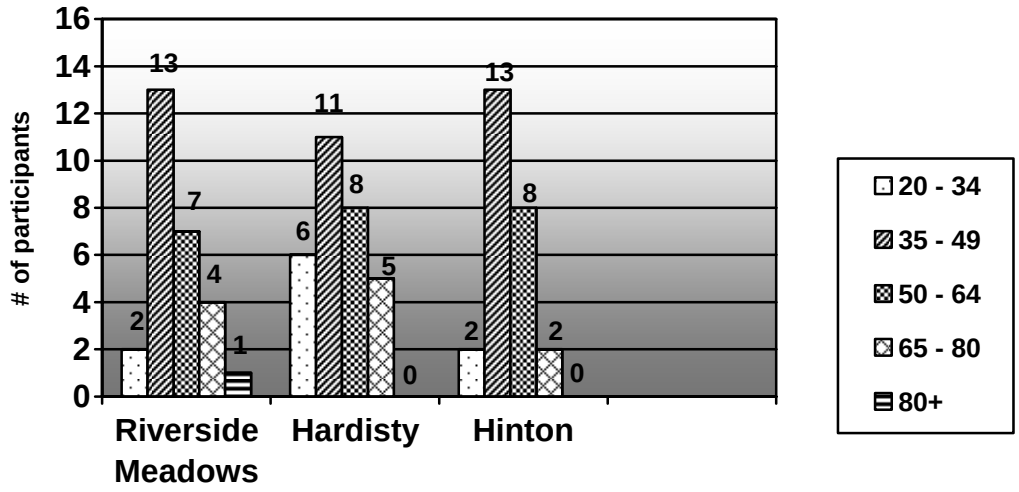

Figure 2. Age of interview participants.

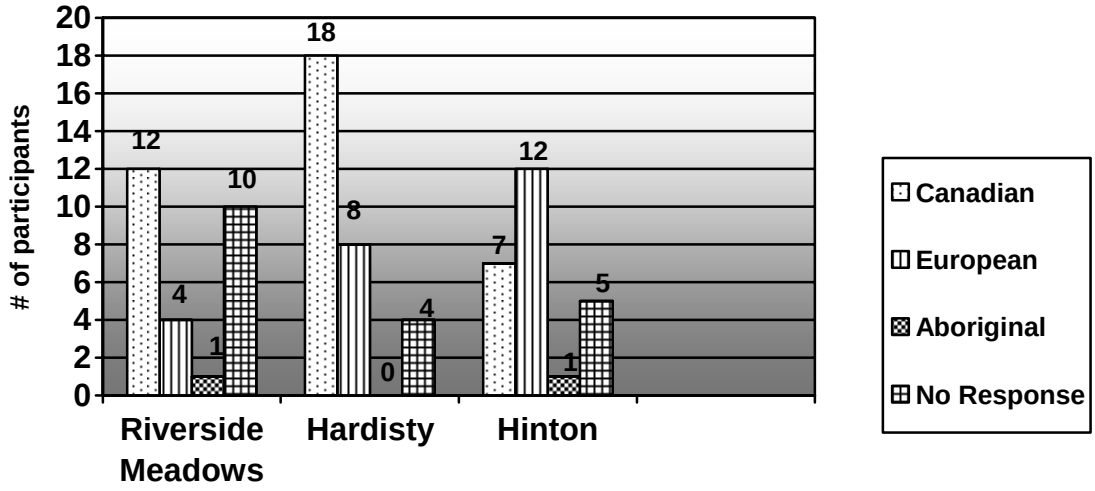

Figure 3. Ethnicity of interview participants.

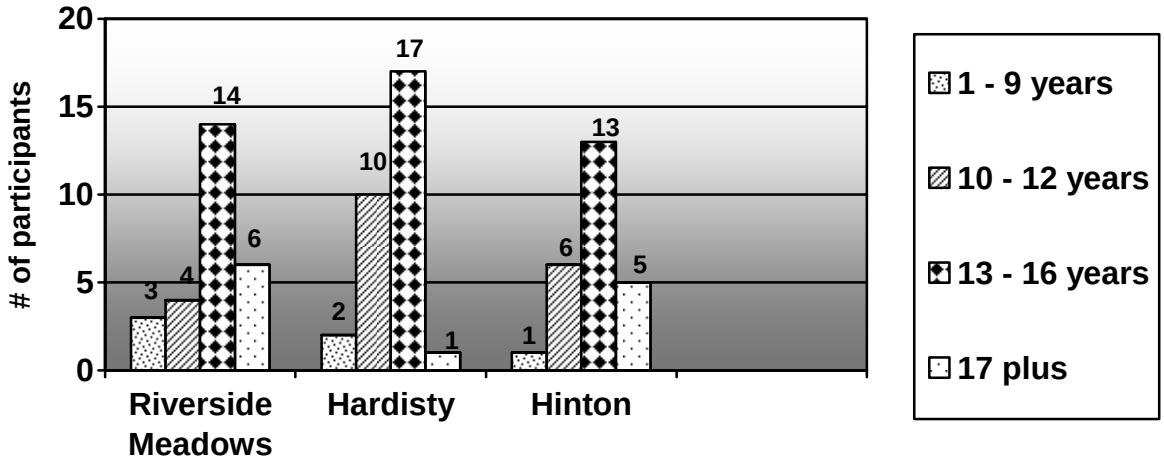

Figure 4. Education of interview participants.

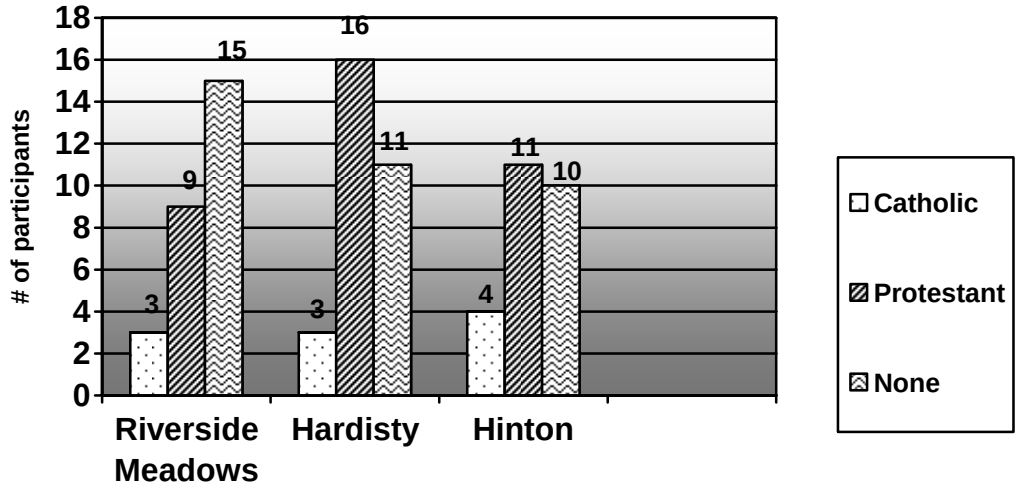

Figure 5. Religious affiliation of interview participants.

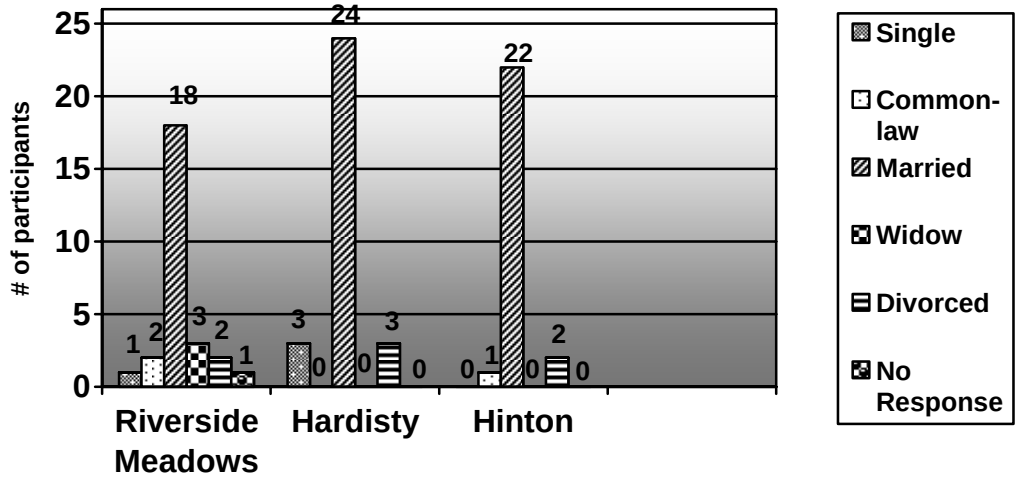

Figure 6. Marital status of interview participants.

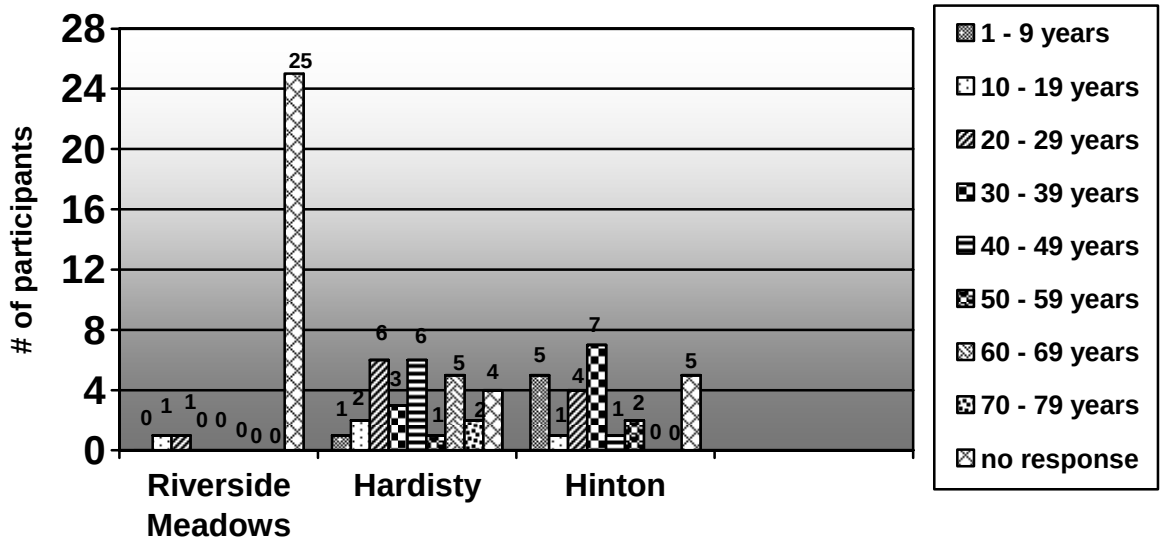

Figure 7. Length of time (in years) that interviewees had lived in rural area.

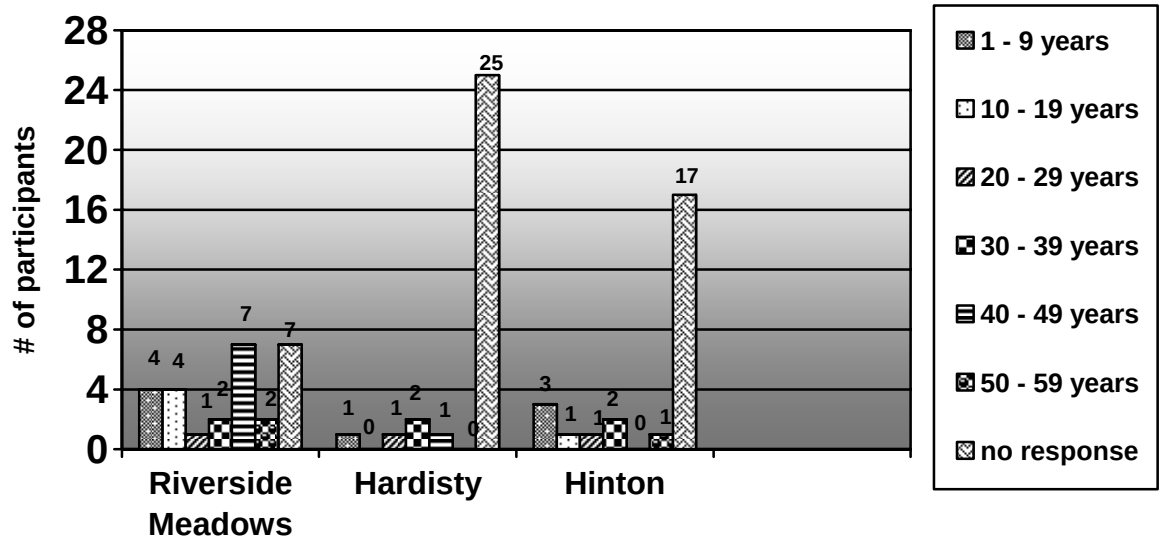

Figure 8. Length of time (in years) that interviewees had lived in urban area.

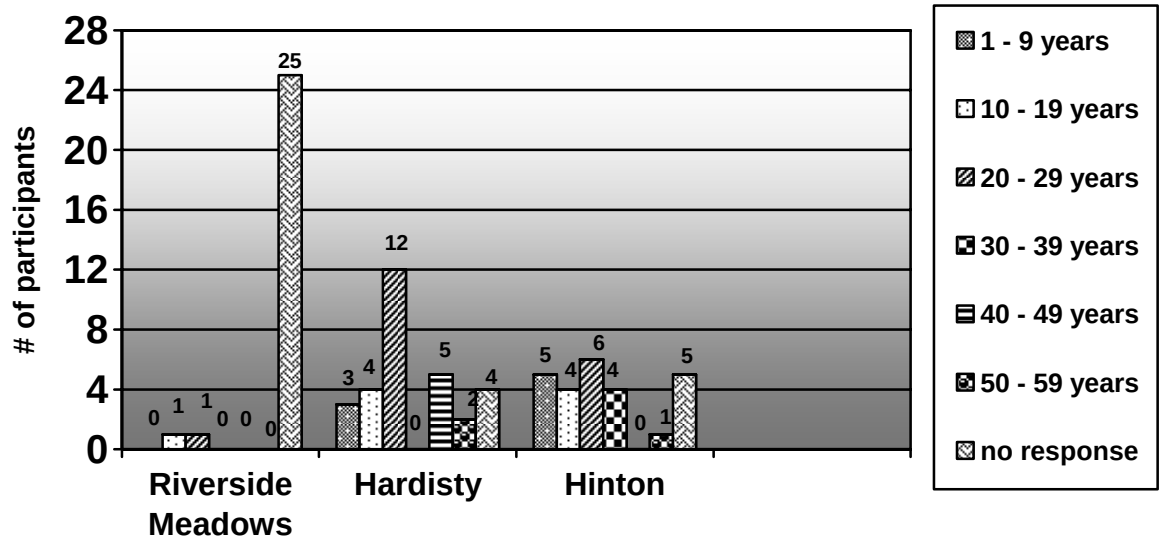

Figure 9. Length of time (in years) that interviewees had worked in rural area.

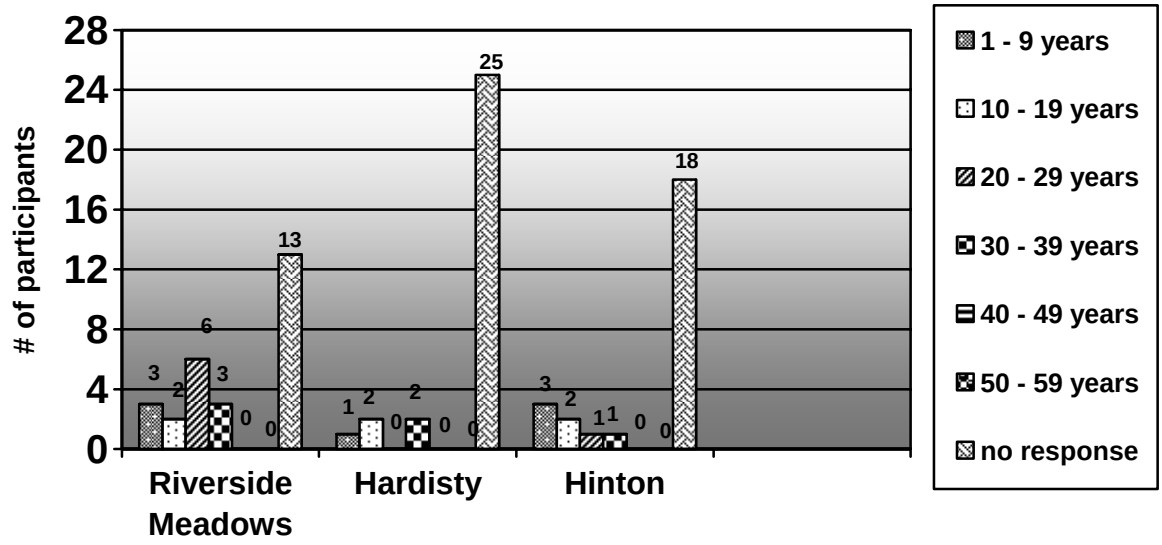

Figure 10. Length of time (in years) that interviewees had worked in urban area.

A summary of the demographics of all 82 participants as shown in Figures 11 to 15 indicate that the majority was female (n = 45), married (n = 64), in the 35-49 age category (n = 37), with 13 to 16 years of education (n = 44), had been born in small towns (n = 39), was Canadian (n = 37) and had no particular religious affiliation (n = 36).

The demographic survey also revealed that 49 of the participants lived in rural communities at the time of the interviews. Fifty-three of the participants worked full-time, 12 worked part-time, and the remaining 17 were either retired or were currently not working. The participants worked in a variety of positions including farming, mining, logging, office or business work (insurance sales, secretarial), social services, health and education (nursing, pharmacy, teaching, social work), and retail (florist). Fifty-seven of those in the sample who were working, worked in the same community where they resided, with the remainder commuting to a specific area close by their main residence. Of the total sample, 11 interviewees had lived in rural areas and 19 had worked in rural areas for between 20 and 29 years; no one had lived or worked in a rural area longer than that.

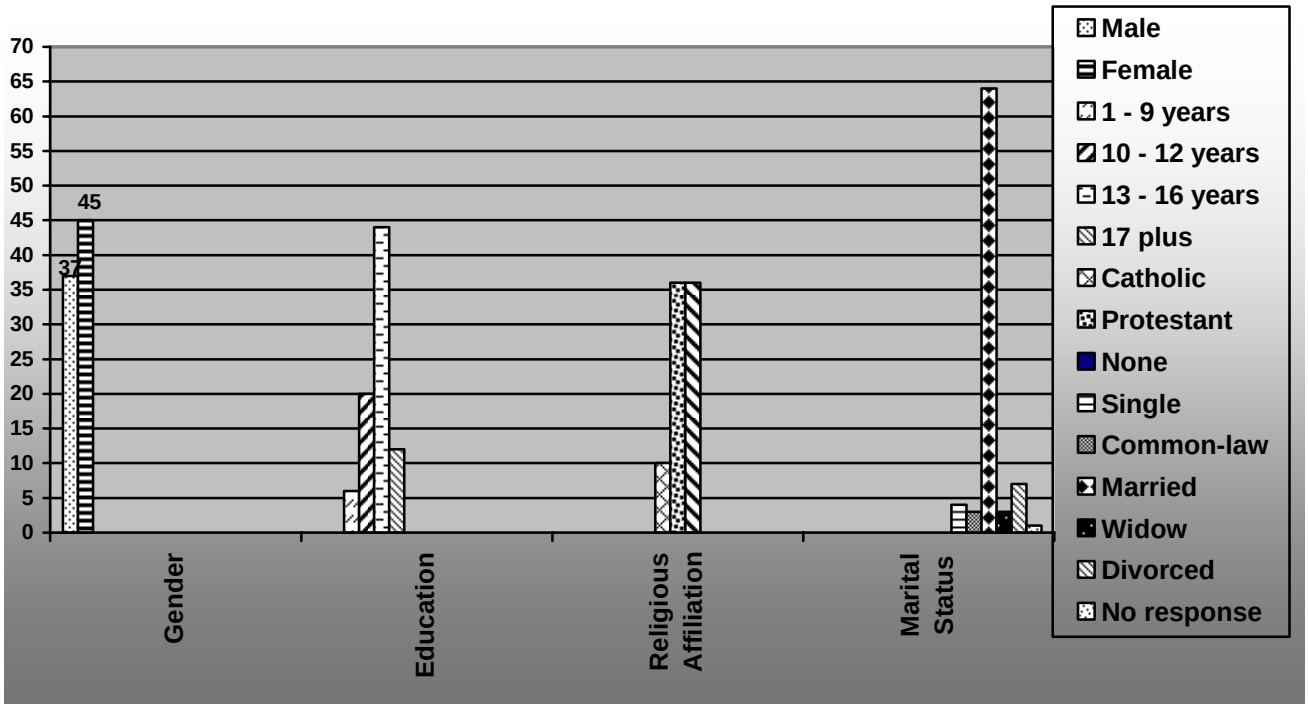

Figure 11. Gender/education/religious affiliation/marital status statistics for interviewees from all three communities studied.

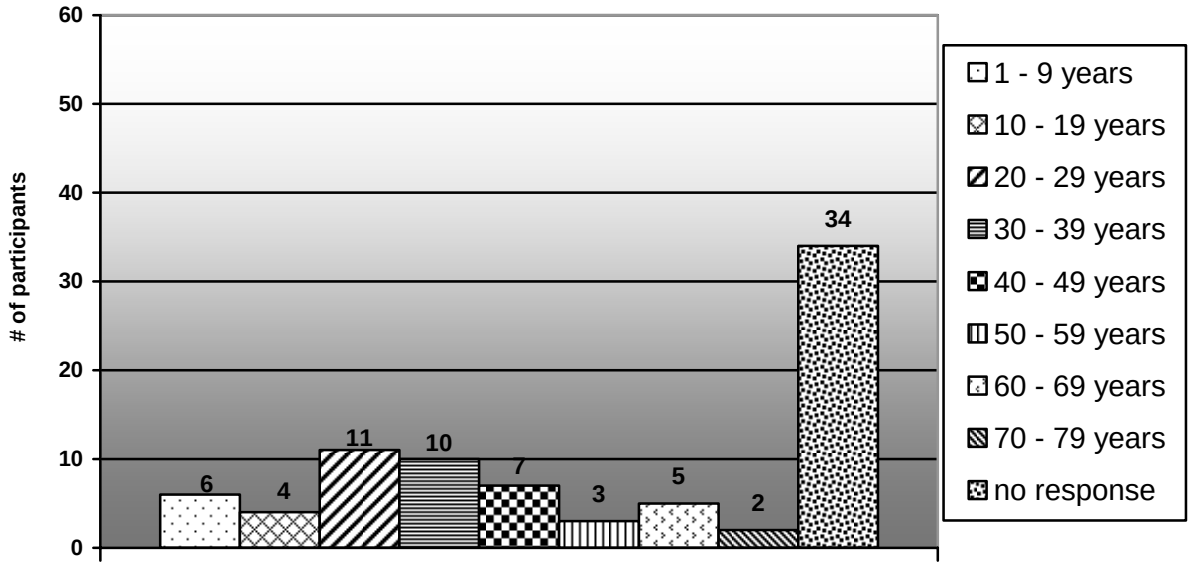

Figure 12.Years of residence in rural areas for interviewees from all three communities studied.

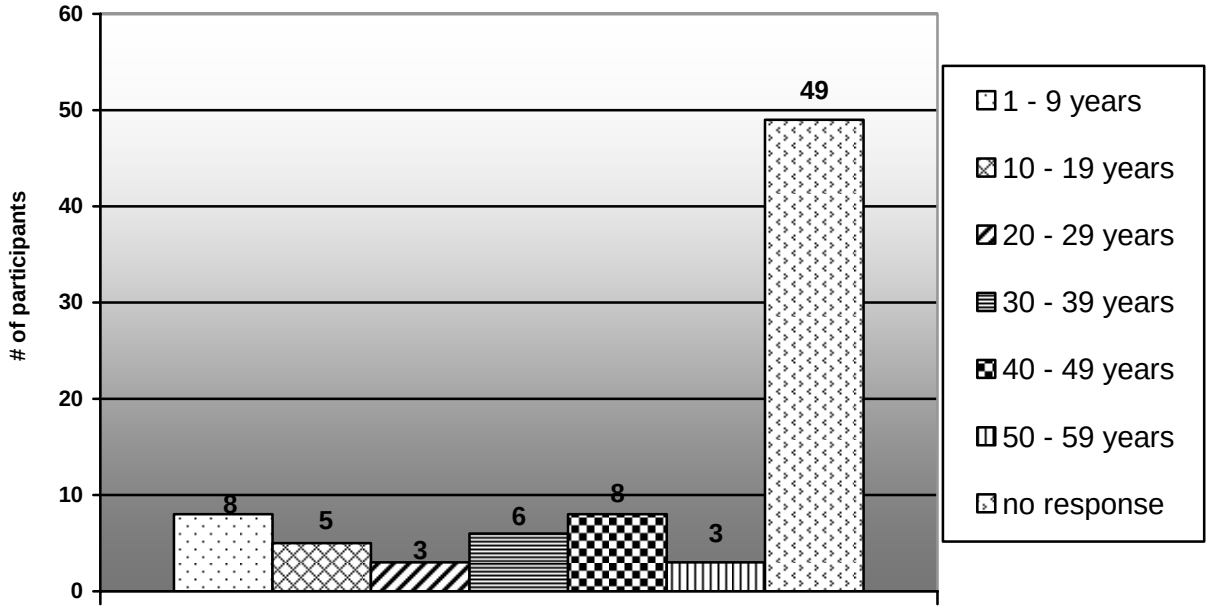

Figure 13. Years of residence in urban areas for interviewees from all three communities studied.

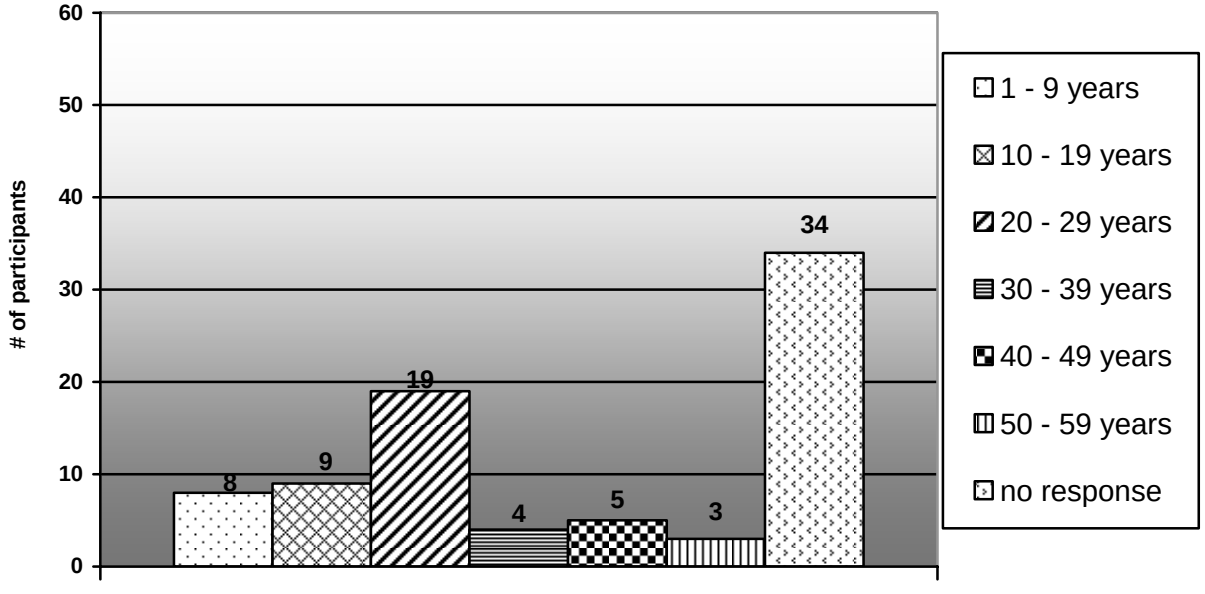

Figure 14. Number of years interviewees from all three communities worked in rural area.

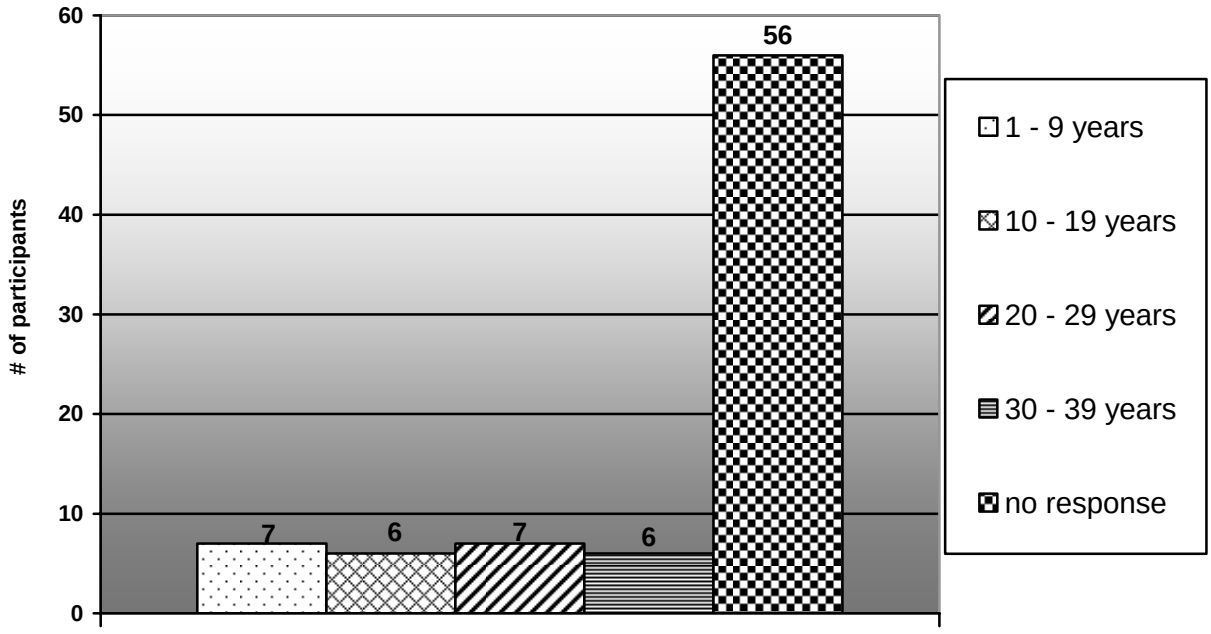

Figure 15. Number of years interviewees from all three communities worked in urban area.

Interviews

The following discussion provides a summary of the themes generated from all of the interviews that were conducted. When appropriate, comparisons are made between different communities. This is done in order to advance our theoretical understanding of the concepts under study, and to speculate on differences among communities.

Describing community.

All of the participants were asked to describe their experiences as members of the community. The three individuals in Riverside Meadows who did not live in the community were encouraged to speak about their experiences working or interacting with the community. For some of the participants at the Hardisty site, the challenge in discussing what was community was related to what community they considered as their own. Unlike Riverside Meadows and Hinton, some communities in the Hardisty area had

experienced school and church closures, which meant that respondents experienced their children going to school in one place, receiving their mail in another and shopping in yet another community. Specifically, some of these individuals identified their community based on where they socialized, which demonstrates the fluidity of the concept of "community" and illustrates one of ramifications of the decrease of rural sustainability.

Examples were provided by all of the participants of community events that they had participated in, such as sporting events, annual celebrations (fairs, parades) or addressing tragedies. Overall, "community" was seen as a place where people lived and worked together, and was characterized by interdependence and interactions among its members. In addition, the community was seen as providing social support to its members. Communities were also described as places with commonly held goals. One male participant from Hardisty described the community this way:

> A community is a group of people, living and working together for the betterment of society, and hopefully to raise [children] in a proper moral manner and to educate their children and enjoy life.

A male participant from Riverside Meadows said:

> There has to be interaction between the residents in the area to actually make a community. If there's no interaction, as far as I'm concerned, it's not a community: it's just a bunch of people living in the same area.

Almost all of the participants perceived that they "fit" in their respective communities. The exceptions were individuals who had felt excluded from community problem-solving processes, or individuals who felt they belonged in some ways and not others. For example, they may have fit in with young mothers because they had children of the same age, but were not able to fit in with other groups in the community due to lack of shared interests. Several spoke about the importance of learning how to fit in; they

felt that being adaptable and finding out about the local community assisted in this process.

All of the participants were asked about the characteristics of communities. Table 1 illustrates the commonalities and differences among the communities as described by respondents. When examined in totality, the characteristics focus on: infrastructure; how people work together; what the community looks like; and, the abstract nature of relationships. All of the characteristics are positive in nature, emphasizing the perception of respondents of communities as desirable places to live, work and raise families.

Hardisty	**Hinton**	**Riverside Meadows**
• Infrastructure: gathering places • Geography: physical location • People: all age groups, religions, employment backgrounds; followers, leaders and participants • Conceptual Characteristics: working together, sense of community, interdependence, sense of togetherness, warmth, openness and friendliness, inclusiveness, caring, and cooperation	• Infrastructure: resources (health care), amenities (retail) • Physical Appearance: nature, mountains • Individual Characteristics: diligence, entrepreneurialism, innovation • Conceptual Characteristics: small-town spirit, sense of belonging, pride, identity, sense of well being, optimism, confidence, hope, being proactive, caring for others	• Infrastructure: gathering places, resources, economic opportunities, business opportunities, churches • Physical Appearance: maintained yards, pleasing environment including parks and playgrounds, topography & location • Individual Characteristics: diversity of socio-economic status among families, people who work together for a common goal • Conceptual Characteristics: history & tradition, pride of community, support, togetherness, people getting along, being proactive, friendship, neighbouring, inclusive process of problem-solving.

Table 1. Characteristics of "community" provided by interviewees, by community.

The extent to which the concepts noted above were important to each of the communities varied. For example, the Hardisty participants emphasized the importance of working together and the significance of interdependence in the quest to survive as a community. In addition, Hardisty participants did not emphasize physical appearance as much as the other communities and, more importantly, did not talk about *individual* characteristics, but rather about overall characteristics of the members of the group, or "*people"* characteristics. Furthermore, the Hardisty interviews were distinctive in that there were frequent comments and detailed discussion about how societal values have changed from a community-based to an individual orientation in recent years. This change was not viewed positively by interviewees, who felt it led to less commitment to community goals, while contributing to a decrease in rural sustainability.

There was some suggestion that the rise of individualism was an issue for the Riverside Meadows community as well. One male participant from this community said:

> People's attitude would be the first thing that would cause trouble. People that don't really care, and again we're facing a lot of that these days. Some people care and some people don't care. Some people just back away and don't get involved. Others raise a real ruckus about a change… and then there's ones that think the government should do it all.

Some of the Hinton residents talked about individualism as well, but in that set of interviews, the concern was over individual attitudes. Among this sample, there was a perception that if individuals had a positive attitude, then communities would be successful in their endeavours. One female Hinton participant said, "You go on because there is a core of people who want a community to exist here, and they will find a way."

In Hinton, there was less emphasis on working together as a united group than in the other two groups. Indeed, the Hinton interviews emphasized the ways in which the

community was perceived as being fragmented, with not a lot of collaboration in the planning of events, and as a place that most often came together only when there were identified problems. One female participant from Hinton said:

> I think the main feature that strikes me is how fragmented it is. People do things in isolation. It doesn't seem to occur to them—or if it does, it doesn't seem to interest them—to check out what else is happening that day. People do things in their own circles and I think it has always seemed to me it is very difficult to get the whole community motivated in one direction, unless it is something like the Hinton train disaster where just about everyone did something to help out.

Variations in responses.

Four factors may be related to the differences identified by the different communities in relation to community participation: 1) the agricultural nature of Hardisty compared to Hinton and Riverside Meadows; 2) the demographic differences among the individuals interviewed in the participating communities; 3) the kinds of problems and challenges experienced by each community; and, 4) the kinds of groups of people within each community.

Nature of the communities.

Hardisty is predominantly an agricultural community, with oil and gas being recent additions to its economy. In agricultural communities, it is common for individual farm families to help each other with planting and harvest. This need to help others is magnified if there has been a tragedy or another unexpected event that would prevent a family from doing the essential chores on their land. Such interdependence and hard work was continually emphasized by the participants of this community.

Residents of Riverside Meadows and Hinton were interdependent in some ways as well, but their level and type of commitment was different from that of Hardisty. In Riverside Meadows, the community had come together to address a stigma they

perceived and experienced. The participants fondly remembered their history as a unique community that had always had an active community association. This history, combined with the stimulation from community champions, and a natural vehicle for expression through the Riverside Meadows Community Association, led their community on a path of positive change and growth.

On the other hand, Hinton was described by some of its residents as a “mountain town”—a “company town” that had been created due to its natural resources (mining and logging). They saw its population as transient, primarily due to the cyclical nature of resource availability and market-driven demands for growth. Although the residents came from around the globe and learned to rely on one another due to the absence of their own extended families, the sense of attachment to Hinton as a community was less obvious than it was for those in Riverside Meadows and Hardisty.

There are signs that Hinton has changed in this regard; contrary to expectation, for example, recent mine closures did not result in a large number of individuals and families leaving the town. Instead, the participants talked about how Hinton had become their home, and how they were committed to staying. Some laid-off miners were considering other forms of employment to allow them to stay in Hinton, and town officials had encouraged them in this regard by providing information about other employment opportunities in the area.

Demographic differences.

The second factor to consider when assessing the variations in response among communities is the demographic backgrounds of the participants. Interestingly, of the three communities the participants from the Hardisty area were most homogeneous in

terms of education, religious background, ethnicity and length of time in the community. Generally speaking, this community's population is stable, with only a few individuals joining it from time to time, perhaps as a result of marrying into a farming family or finding work in the region in the oil industry. It is only recently that other families (e.g., low income) have moved to the area, and concerns about them were raised because these families are perceived as lacking social support and the resources to contribute to the community at large.

Riverside Meadows also has a core group of individuals and families who have lived and worked in the region for a long time, but of the three communities, Riverside Meadows has the highest number of new families moving in. These tend to be low income and lacking social support. The core group of individuals is seen as the most proactive; it was widely acknowledged that the community would be in great difficulty when these individuals finally decided to no longer be involved.

Hinton has routinely experienced population turnover and change since its inception as a community. The group that was interviewed included the highest number of individuals who came from outside the community, and their perspectives were discussed from a more global context with less emphasis on commitment to one community.

Problems and challenges.

A third factor that may explain variations in responses is the nature of the problems or challenges each community had faced. Hardisty participants talked about a variety of issues their communities had addressed throughout the years, including loss of community buildings due to fires, and the most recent event that led to a widespread

community reaction—the proposed ILO. Riverside Meadows had dealt with their perceptions of stigma over a number of years, and faced other challenges associated with trying to create a community that could offer services to its residents. The Hinton participants had difficulties in listing problems that they had addressed as a community. In part, this was because of the nature of the community itself and the kind of residents who lived in Hinton. Most of the issues that Hinton had dealt with were beyond individual control (mine closures, for example), and could not be altered even if a whole community organized to address it. Finally, due to the transient nature of Hinton residents, experiences with issues and challenges in the community varied considerably among respondents.

Since Hinton is a mining community, one might have expected that the community would have experience in dealing with mining disasters. However, Hinton has been more fortunate than most mining communities in this regard. Mining accidents in the region that have occurred over the years have taken place within mining camps and in communities along the nearby Coal Branch area, and occurred a number of decades ago, and were therefore not part of the experience of the participants who were interviewed in this study.

Group differences.

The fourth factor that may have influenced the differences in perceptions of community by the three participating groups is the varying perception of group separation in the communities. Table 2 notes the nature of these separations, which were most apparent in Hardisty and Hinton.

Hardisty	Hinton	Riverside Meadows
Separated into four groups: • urban/rural • farm/town • county vs individual-community loyalty • 4. established members/newcomers	Separated into four groups: • old-timers/newcomers • transferred to Hinton to work/raised in Hinton • left for education & returned/never left • 4. "boss"/worker	No formal separation into groups

Table 2. Perceived groups within communities in the study.

As previously noted, Hardisty was the most demographically stable of the three communities that participated in the study. However, a number of comments from interviewees illustrated the presence of distinct groups within the community. Some said, for example, that Hardisty was considered urban because it had accessibility to services not available to those who lived on the farms. In addition, the participants talked about the differences between "farm" and "town" living and how this ultimately played out in the differences in priorities between the two groups. One female participant from Hardisty said it this way:

> I find in this community there is maybe a bit of separation between town people and farm people, you know, and a lot of community goals and things are more town-centred. Farm people are often—not forgotten, but not a priority issue for the community as a whole. Any of the recreational facilities are completely town-based.

That people in this region perceived differences among groups was further exemplified by statements indicating that some individuals supported the county as a whole, while others were more attached to their local community. It was the opinion of some participants that in order for any of the communities to survive, a different definition of "community" would need to be generated. These individuals spoke about focusing on community at the county level, with conscious decisions being made regarding where to

place services and resources (e.g., arenas, retail services) to benefit the most residents. One female participant said:

> I think we can have pride in our own community and still develop the county-community pride and development. It's going to be a long hard haul, but I think it can happen if people are really understanding, and really admit that it's important that we continue as a county-community and that it really doesn't matter whether X or Y community gets something. We've got to lose that.

Comments were also generated from the participants in Hardisty about the challenges in being a newcomer; in this regard, one female participant noted:

> It takes a long time to work yourself into the core families […] For them, their social life revolves around their extended family. So we find ourselves in these communities that we've only lived in a few years at a time, […] you end up befriending other folks that are from away.

Hardisty was described as being "clique-y" and interview participants said that newcomers did better in the community if they volunteered and became involved in the local activities and events. An exchange with a female participant who had moved into this community went as follows:

> Participant: I feel at home here. I guess because we do like small towns in the first place and know the expectations and whatever to fit in.
> RA: What kind of expectations are there?
> Participant: I think it's an interesting mix of what I called rugged individualism and community spirit. I don't find that people go out of their way to make you welcome, but you sort of find your way in and then you make those connections.

Hinton was also described as a community that tends to separate into different groups. In part, this is because of the geographic and historical nature of the community, which resulted in the community's being separated into the "hill" and "valley" areas. Like Hardisty, Hinton has also experienced population changes due to the cyclical nature of the natural resources that are the predominant economic mainstay of the community, which leads to some people being considered "old-timers" and some being "newcomers."

The third, and significant, group division within the community is the separation between "bosses" and "workers." This division is interrelated with the history of mining as a corporate entity and hard-won battles to create unions for protection of the workers. One participant said:

> This is the leadership side of the union movement, the leadership side of the corporate mindset. Here, the leadership side of even the social systems that we have are [based on] very strong foundational beliefs and haven't been challenged very often to integrate, compared to many communities who haven't got those histories or the necessity to integrate themselves more. [However] those things that polarize people at the organizational level tend not to do so at the local level. People get along on the operating level and I want to be clear, the leaders, they know they have to get along and they do in certain ways, but the nature of the institutions they represent are pretty dogmatic about their priorities…. Hinton has been somewhat fiercely independent in those three or four silos at a high power level.

A separation in Hinton was also suggested between the environmentalists and the industrialists. Mining and logging activities are associated with environmental issues; hence, it is not uncommon for such concerns to be raised in the Hinton area.

Understanding the dimensions of "rural."

All of the participants from all areas were asked to discuss their community in terms of whether or not it was "urban" or "rural" in nature. Although it would seem likely that Riverside Meadows would automatically be considered by residents as "urban," and Hardisty and Hinton both as "rural," this was not the case. In fact, participants from Riverside Meadows emphasized that their community had retained its rural nature or character because of the friendliness of the people, the ways in which they interacted and because of the physical appearance. In addition, Riverside Meadows was described as being physically separated from greater Red Deer due to the road structure and the presence of lots of trees, the absence of public transportation and riverside walking area.

The majority of participants believed that Hardisty was rural. One of the three exceptions perceived Hardisty as “both urban and rural,” another that it was “exclusively urban,” and the third was unsure how to describe it. These exceptions can be explained by where the individual respondents lived, and by the fact that the towns themselves were seen as having resources and services not found immediately adjacent to the farms.

Responses in Hinton were much more varied, with 12 of the 25 participants seeing their community as rural, five describing it as “rural with urban features,” four seeing it as urban, two as “urban within a rural area” and one describing it as a “resource community.” These differences in opinion can be explained by the availability of resources and services (such as magnetic resonance imaging, or MRI, as well as more complex surgeries) that are available to Hinton residents that are not normally available to residents of small towns. Thus, although the majority recognized the list of characteristics that follows as accurately descriptive of the rural nature of Hinton, they also acknowledged that there urban aspects to the town as well.

Descriptions of Hardisty and/or Hinton as “rural” included the following characteristics:

- small population size;
- community focus on agriculture or resources;
- limited resources and services over a large geographic area;
- less diversity within the population than is typical of urban centres;
- slower pace than urban life;
- rural “attitude” (described, e.g., as concern and care about others);

- involvement in one's community;
- higher quality of life than is available in urban areas.

The interviews from Hardisty generated the most discussion about rural sustainability, and this topic was raised by participants with no prompting. This is not surprising because, as a predominantly agricultural community, residents of this area have the most to lose out of all three areas studied if rural communities begin to dwindle in numbers. For Hardisty-area residents, agriculture is a necessity for the population at large, whereas in communities like Hinton the economic base has always fluctuated among industries and been less certain. For the Hardisty group of participants, there was a clear *philosophical* commitment to living in a rural area, and to being "good stewards" of the land. In addition, there was a spiritual nature to the discussion that went beyond having chosen farming for economic reasons; participants talked, for example, about choosing farming as a lifestyle, and the opportunities rural life provided to raise their children in a way they perceived as ideal. Thus, their concerns about corporate farming, including ILOs, are rooted in their beliefs regarding family farming and the importance of rural living for creating the next generation of rural residents.

Addressing problems in communities.

All of the participants were asked to provide examples of issues that had been experienced by their community, and the manner in which the issues had been addressed. The range of issues that were put forward varied from changing the name of the neighborhood in Riverside Meadows, through addressing the proposed ILO in Hardisty, to dealing with methadone-abuse problems in Hinton. Hinton participants had the most difficulty in providing examples of issues that the community had addressed. This may be

related to the overall transient nature of the community or the lower level of community involvement described by the participants. In addition, Hinton participants more often mentioned issues that were beyond their control, such as mine closures, further suggesting that community residents lacked experience in addressing community-identified problems. The lack of response in this area may also be related to the previously mentioned divisions between mine bosses and workers, or between corporate structures and workers; such systems may lead community members to become accustomed to problems being addressed by a larger infrastructure.

Regardless of community, all of the participants agreed that an effective problem-solving process needed to include several key steps: 1) recognition of the problem; 2) information sharing and communication with the larger community; 3) identification of a group to address the issue; 4) generation of solutions; and 5) acceptance and implementation of solutions. These steps were described in various ways by members of the different communities, as set out in Table 3.

Hardisty	**Hinton**	**Riverside Meadows**
• discussion about the problem among a small group • information shared with the larger community • input received to address the problem • activities and events undertaken to address the problem (e.g., bringing in guest speakers, conducting research) • public meetings to discuss the problem • generation of solutions • continual work to have the problem solved	• recognizing the concern • discussing it with others • forming committees or a similar mechanism to address the concern • using the media to discuss the concern and inform the general public • holding public meetings • developing and implementing a plan of action	• problem identification • a group of concerned citizens take initiative to begin addressing the problem • people brought together (e.g., community meetings, information in the newsletter) • development of formal means to address the issue (e.g., letters to the editor) • open, public meetings • making and implementing a decision

Table 3. Community problem-solving processes, by community.

Despite individual community efforts, not all residents felt that they had been part of decisions that were made. However, the extent to which individuals took responsibility for becoming informed and involved was not examined directly in this study in relation to individual responses, so reflection on this comment is not possible.

The degree of success in dealing with its problems was also perceived to have been different in each community. For example, when discussing Hinton's reaction to the amalgamation of the public and private school systems, one male participant said:

> The steps weren't always constructive steps. There was a lot of rallying and polarizing that occurred from time to time, rather than sort of a reflection and acknowledgement of people's feelings and issues, and separation of those issues from the concrete issues…. [There are] three critical ingredients you need all at once: the leadership, and a solid involvement process, and a strong idea, and so that's one area that to this day I regret […] because we didn't solve it as a community. The government solved it for us, and to me that's a failure.

The matter of how well problems had been addressed was of particular concern in Hardisty, where the proposed ILO had resulted in a lengthy community organizing process that had cost the community $120,000. One female said:

> I guess the problem that arose in our community was that a very small part of it wanted to have these huge pig operations move in, beside all of our homes—whereas the majority of people, I won't say "community" any more, it was "county," this was a big county issue, it was a big fight of the majority against the minority.

Not all felt that the proposed ILO had been dealt with appropriately. One male participant from the area said:

> I think the biggest disappointment was the community not being able to analyze it on a scientific or even economic basis, but [having to analyze it] strictly on an emotion. To let that emotion cancel something.
> RA: What was your role in this situation?
> Participant: Very little. I guess I was supporting the project. I believed it was a viable project.

A number of the Hardisty-area participants felt that the community was either healed or was in the process of healing despite the upheaval that the proposed ILO had caused.

Finally, the participants from all communities were asked to speculate on whether or not any community could ever be problem-free. The responses were very clear—interviewees felt that if a community perceived itself to have no problems, it was in a state of denial, and that it was not addressing issues or not communicating with one another. A Riverside Meadows female participant stated, “If you see a community that doesn’t look like there’s problems, the problem that it has is that they don’t have any involvement with each other.” Hardisty participants commented that if there ever were problem-free communities, they would be places that were maintained through diversification, where residents were open-minded, attended issues through total community involvement, and demonstrated substantial energy and awareness.

Understanding resiliency.

The main focus of the study was to understand community resiliency in the three communities that were included. Hence, a large portion of the discussion of each interview was devoted to this topic. Only a few participants out of the total of 82 were unable to define “resiliency” without prompting. After prompting, almost all of the remaining could also discuss it with the RA. Only a very few referred to resiliency in a negative sense, describing it as “resistance.”

The majority of definitions emphasized that resiliency was a way in which the community demonstrated a capacity to address challenges. Phrases such as “bouncing

back" and "carrying on" despite odds against it were commonly mentioned. One male participant from Riverside Meadows said the following about resiliency:

> A community that's willing to pick up an issue, work with it and decide what they want to do about it… without blowing the place apart. This community has gone through a lot of changes in the last four years and it hasn't hurt anybody really—except maybe somebody had to get out and clean up their yard. We still don't have all those yards done, but I mean, they've done a fantastic job…. It's considerably different than what it was four or five years ago.

A female participant from Hinton said, "Resiliency is having the power to bounce back from a really bad situation. What would it look like? Well it would look a little bit like a rubber band."

In general, then, resiliency was seen as positive and something that the community worked on together through a variety of characteristics or resources, most of which were found right in the community. However, there was acknowledgement that some communities no longer exist because they could not demonstrate resiliency, and therefore outlived their usefulness.

Study participants noted that communities display their resiliency through the presence of industry and a diverse economy that ensures individuals can work, the presence of a stable population, and the presence of individuals (leaders and followers) who work together to identify and address the community's issues and/or to identify goals. Respondents felt that communities that were proactive were in particular displaying resiliency. In addition, communities displayed their resiliency through being self-sustaining, and by having attained indicators such as a particular level of education and health status. Hinton was perceived to be displaying resiliency because the population had remained stable despite the recent mine closures. Other ways in which the

community displayed resiliency was through honouring its history, having regular events and activities, and making continual changes and improvements.

Table 4 shows the characteristics of resiliency as noted by participants from the three communities. Residents of Hinton and Riverside Meadows view these characteristics in a much different way than do those of Hardisty. Hardisty's study participants seemed to view community as a collection of individuals that, when combined, needs to be proactive and work together in the face of problems. However, Hinton and Riverside Meadows view the importance of individual traits (e.g., being future-oriented, community pride) as leading to a grouping of traits that, taken together, can create community resiliency. In addition, unlike those of Hinton and Riverside Meadows, residents of Hardisty seemed to take for granted such notions as "community," "working together" and "the need for leadership." To them, these were basic assumptions. In other words, it was less actual *work* for Hardisty to function as a community in the face of new problems; it simply operated as it always had, in part because of the stability of the population and the depth of the ties that bound the residents together.

Hinton and Riverside Meadows emphasized the importance of leaders in the resiliency process. Participants felt that without community champions, issues would not be addressed. However, the leader had to be the "right" kind; in other words, effective leaders needed to have visionary ideas, be committed and be charismatic in encouraging other individuals in the community to follow along with them. One male participant from Hinton said:

> [Leaders are] people with vision and the ability to realize that vision, and they're hard to get. You may have the visionaries, but they can't act. You may have the doers who don't have a vision.

One of the female participants from Riverside Meadows talked about the community association and its ability to provide leadership for the community:

> They can help anybody. They can help answer anybody's questions within the community and they can get together and look forward to the future, to what the community should be like, rather than communities where there is no association, where developers come in and just put in whatever they want, whenever they want. With the community association we do have some fight there, so you can go against the City a little bit and if need be, try and have it changed to better suit the community.

Furthermore, for Hinton participants, the perception was that the residents needed to have the "right kind of attitude" in order to be successful and display resiliency. A female participant from this community said:

> I think the biggest thing is that they have to have a positive outlook on what's happening and what's going to happen, and [on the] future for Hinton. […] There can be no negative feelings or comments or anything like that.

Regardless of community, it was seen as important to community resiliency that there be a sense of togetherness and attachment to community, and that there be people with the "right attitudes" available to address the identified issues.

Hardisty	Hinton	Riverside Meadows
• Infrastructure Characteristics: common goals and purpose among community members; strong town council; a variety of industries • People Characteristics: having people available who are open-minded, flexible, and honest, and who have a positive attitude • Conceptual Characteristics: community needs to be proactive, creative and utilize networking to achieve its goals; sense of togetherness and community also important	• Infrastructure Characteristics: diverse economy and workforce; access to health and education; a supportive elected council • Social Infrastructure: social support, commitment, pride, "stick-to-it-tiveness"; being a proactive and caring community • People Characteristics: presence of leaders and supporters or "thinkers and doers;" leaders need to be visionary, think divergently and be able to achieve the vision; need access to resources and others with power to assist the community; supporters or followers need to be community-minded, enthusiastic, creative, determined to "fight the fight," knowledgeable about local resources, able to operate interdependently • Attitudinal Characteristics: future-oriented; flexible, tolerant and optimistic; willingness to change • Problem-solving Process: community requires a collective process for decision-making	• Infrastructure Characteristic: availability of physical gathering places (e.g., parks); the community association • Social Infrastructure: concern and care about the community as a whole and neighbours as individuals; a community's shared history and tradition • People Characteristics: visionary leadership with viable ideas; dedicated, committed residents to help contribute to shared goals; politically minded people with knowledge and resources that they can share; teamwork; ability among community members to get along • Attitudinal Characteristics: pride in the community; a belief that the community will be successful • Problem-solving Processes: transparent collective problem-solving process; a supportive city council

Table 4. Characteristics identified as leading to community resiliency, by community.

Barriers to resiliency were also noted by all of the participants, as summarized in Table 5. These included challenging events including loss of industry, and the need to deal with successive negative events. Once again, participants from Hinton and Riverside Meadows differed from those from Hardisty in the perception of barriers to resiliency.

For example, the lack of volunteers or community residents participating in community issues was noted among Hinton and Riverside Meadows participants as barriers, while for Hardisty participants, it was not the lack of people but the lack of specific characteristics among the people (e.g., lack of knowledge and education) that was the issue.

Infrastructure was listed as a potential barrier in all three participating communities. Hardisty participants noted one infrastructure barrier as the government's taking away choices from residents—a response that may be related to their recent experiences with the proposed ILO. Attitudinal characteristics were noted as important potential barriers in all three communities, but they were particularly significant for the participants from Hinton. By way of examples, Hinton interviewees mentioned citizens who are apathetic and do not contribute to communities, and therefore decrease the resiliency of the community. A male participant from Hinton expressed it this way, "Most things in life come down to attitude, just the way you look at things. I think if you have a negative attitude, then you're not going to bounce back."

Complementing this notion, another male participant from Riverside Meadows said:

> People's attitude would be the first thing that would cause trouble. People that don't really care, and again we're facing a lot of that these days. Some people care and some people don't care. Some people just back away and don't get involved. Others raise a real ruckus about a change…and then there's ones that think the government should do it all.

Hardisty	Hinton	Riverside Meadows
• Challenging Events: loss of industry • Infrastructure Characteristics: ageism and gender bias; economics, geography, isolation,; shift work among community members; lack of support from council; having choices taken away by the government • Conceptual Characteristics: failure to be proactive • People Characteristics: lack of knowledge and education; limited vision; jealousy, ignorance, prejudice and fear of change; lack of communication; low self-esteem; not believing you are acting appropriately • Attitudinal Characteristics: being rigid and negative; individualism	• Challenging Events: a series of negative events occurring successively so that the community does not have the opportunity to deal with one event before another occurs; sudden, unexpected events such as a natural disaster; loss of industry • Infrastructure Characteristics: limited money or no access to health and post-secondary educational opportunities; living in a community with a high crime rate • Social Infrastructure: failure to be proactive, particularly in combination with a lack of community spirit; lack of communication • People Characteristics: a lack of people available to participate or become involved; reluctance among those who are available to participate or become involved; lack of leadership; lack of caring; lack of vision; having things come easily within the community, which decreases the need for people to be involved; convergent thinking • Attitudinal Characteristics: complacency; negative attitude; apathy; insularity, individualism; powerlessness; lack of belief in the community; fear; lack of acceptance of others; unwillingness to develop partnerships	• Challenging Events: loss of industry; changes in zoning that may impede community's development; close proximity to industrial sites • Infrastructure Characteristics: lack of education; having limited money either at the community or individual level; a decrease in population; perception that the local community association is so competent that no additional external support is required • Social Infrastructure: negative neighbourhood perception or reputation • People Characteristics: A lack of leaders and dedicated community residents; lack of teamwork; people who will not become involved or who do not care about the community or neighbourhoods • Attitudinal Characteristics: Narrow-mindedness; prejudice; selfishness and stubbornness; "not getting along."

Table 5. Barriers to resiliency, by community.

Almost all of the participants perceived that their communities displayed resiliency. The exceptions were those who felt that the community was healing from challenges, or needed to demonstrate over the next time period that it was resilient. All the participants were asked how individuals can contribute to community resiliency. The main emphasis was on having the right attitude, having community pride and spirit, being willing to work with others and contribute to the greater good, sharing one's talents, and helping to form partnerships.

Theoretical understandings of resiliency.

Combining the ideas generated from all the participants results in the list of characteristics noted in Table 6 that are seen by these individuals as significant for resiliency. Generally speaking, all of these characteristics focus on social processes of resiliency. Thus, participants felt that a clear understanding of community was essential in order for resiliency to occur; therefore, a sense of belonging and a sense of community were seen as important components of group membership and important to the process of resiliency. Another aspect that was seen by all three communities as essential to resiliency was a community's capacity to be proactive—communities that were reactive only were not seen as being ready for what lay ahead. Community champions were also noted as significant for community resiliency, because they provided the stimulation for the community to demonstrate its proactive behaviours through taking risks and addressing challenges.

Infrastructure Characteristics	Social Infrastructure	People Characteristics	Conceptual Characteristics	Problem-solving Processes
• diverse economy • gathering places	• social support • commitment • pride • "stick-to-it-tiveness" • caring • community history and traditions	• open-mindedness • flexibility • honesty • positive attitude • future-oriented • willingness to change • presence of visionary leaders and supports • access to resources and knowledge • ability to act interdependently	• proactivity • creativity • ability to utilize networks • sense of togetherness and community • community pride	• transparent collective process for decision-making • supportive community-elected council

Table 6. Characteristics of community resiliency: Responses from all communities combined.

Describing the health of the communities.

The final section of the interviews involved discussing with the participants their perceptions of the health of their communities. Here, questions were asked about social interactions, and about emotional health, physical health and environmental issues within the community that had the potential to impact health. Other questions focused on how individuals contribute to their community's health, and their involvement in creating opportunities for health.

For the most part, the participants perceived their respective communities as healthy. Hinton participants, for example, noted that their community was generally safe, had a healthy economy, and included individuals who were willing to act as community volunteers. Comments were made in the Hardisty interviews that when a community's economy suffers, so does the individual's health.

There were differing opinions among individuals about the level of health or why a community was not healthy. For example, some Hinton participants felt that there was

some indication of unhealthy behaviours in their communities, such as the problems with illegal substances like methadone. Some comments from Hardisty participants revealed that their health is still being affected by the proposed ILO and the energy it took to defeat that initiative. Riverside Meadows participants also talked about some unhealthy behaviours or characteristics within the community at large (e.g., used needles in the neighbourhood).

Even those who indicated their communities were healthy noted that all communities have some flaws that need to be addressed.

There was general acknowledgement that social interactions within the community assisted with promoting good emotional health. Participants in the rural communities of Hinton and Hardisty talked about the support they received from such interactions, and said that this positively impacted their state of well being. One woman from Hinton said: “Running into good people every day just in general reminds you why you live here, and why this is the place you want to be.” Even Riverside Meadows, despite its status as an urban neighborhood, was noted by the participants as a place that provided support to those in need. This support may have included conducting errands for the homebound or just checking up on one another to make sure that all was well. All of the participants also talked about how physical activities, and access to things such as walking trails, the mountains or nature in general, were positively related to their state of health.

The discussion about the environmental health of the communities generated a number of interesting comments. In Hardisty, there was an emphasis on how the proposed ILO would have negatively impacted on the community’s health and therefore

on the health of individuals. As previously mentioned, the participants viewed the proposed ILO as a faith-based issue because they believed that they were called to be stewards or protectors of the earth. Therefore, their own spiritual, physical and mental health was linked to the health of the earth. General concerns were raised about future health if the proposed ILO had been approved, but individual health effects that interviewees related directly to the ILO even in its proposal phase were also mentioned; these included symptoms of stress, emotional strife and physical problems such as raised blood pressure. One female participant noted that a male relative "couldn't go [to meetings about the ILO] because his blood pressure couldn't take it." In relation to perceived after-effects of the ILO proposal, another female participant said:

> We are still living in the past and living in that bog versus being resilient and coming back to the point where we're growing and attracting and bringing new services in and having energy to make something different and to move into a different level of functioning.

For Hinton participants, discussion of environmental issues was reflective of the mining and logging industries that are the economic mainstays of the community. In this community, a number of comments were made about the smell from the Weldwood Pulp Mill, with a number of participants commenting about its negative impact on their health and/or the health of their family members. However, their comments are also framed by a dilemma which is the need of the community for economic opportunities, and individual need to provide for one's family. For example, one male participant said:

> But in the same breath it is our bread and butter here and that smell you smell is the smell of money and that's made a lot of opportunities for a lot of families. I do think there are some issues with health, that's my own personal feeling. But is it enough to make me move? No. But asking me that question is making me think really hard about it, makes me think that I'm not (being) morally responsible for raising my family in this community. But I don't think it's to that degree.

In some of the communities, bylaws exist to protect the public's health. The most common ones were bylaws that forbid smoking in public places. Other examples were bylaws directed at animal control.

Most of the participants felt they were involved in creating opportunities for health in their communities through their involvement in regular community activities and events. They also contributed by sharing information and participating in decision-making.

The participants provided a variety of responses as noted in Table 7 when asked to list public goods that were available in their communities.

Hardisty	**Hinton**	**Riverside Meadows**
• recreational services (e.g., campsites, parks, lakes, soccer club) • gathering places (e.g., community halls) • infrastructure (e.g., water treatment) • professionals (e.g., physicians, lawyers, dentists, chiropractors, dentists, family and child services) • service clubs (e.g., Elks) • sense of physical safety	• recreational services (e.g., a variety of sports and sporting facilities—such as hockey arenas, ball diamonds; green spaces; recreational centre; outdoor activities such as fishing, hiking, skiing, snowmobiling) • people characteristics (e.g., concerned-citizen groups, willingness to help others during tragedies) • social and health resources (e.g., physiotherapy, hospital with surgical facilities, counseling services, blood-donor clinic, sexual-health nurse, kidney dialysis, dentists, churches, theatre, DARE program, adult day centre) • education facilities (e.g., educational consortium, rural nursing program, environmental training program) • infrastructure (e.g., water treatment	• recreational services (e.g., skating rinks with attached shelter, walking trails, BMX track for dirt biking, proximity to Bower Ponds, playgrounds, parks, green space) • people characteristics (e.g., friendly, helpful neighbours) • social and health resources (e.g., nursing home, social services, optometrist, dentist, Loaves & Fishes, People's Place, charitable organizations, Citizens on Patrol [COPS], churches) • heritage (e.g., story stones, history) • education facilities (e.g., private school) • infrastructure (e.g., water-treatment facilities, development restrictions in certain areas)

Table 7. Public goods described by interviewees as being available in their communities, across all communities.

Other public goods noted as desirable potential additions to the communities in future were more recreational and health services, more professional services (e.g., lawyers) and unique businesses for the area.

If we examine how resiliency and health are inter-related, we can ascertain that social support in communities enhances individual health. Furthermore, stress in communities (arising from issues or unresolved issues) can cause health problems, decreasing the availability of residents to participate in ongoing events or to help face unexpected challenges. Social interactions also positively enhance people's emotional health. The resiliency process described by the participants focuses on social processes, and therefore having healthy individuals is essential for individual participation.

Household Survey And Provincial Database Analysis

In order to examine whether there is a relationship between community resiliency and health status, the researchers proposed two complementary study designs: 1) a household survey; and 2) examination of existing health databases for historical trends. The household survey was conducted in the three study areas from March through May 2004. A description of the study design, consultation, questionnaire development, sampling decisions, and combined findings follows. The section concludes with commentary as to the meaning of the health survey results with respect to community resiliency.

Study design.

A population-based, household survey was perceived to be the ideal method to gather current information about the health status of community residents in the three study areas. Some time was spent determining how to ascertain accurate population

denominators, given that the researchers did not have access to provincial enumeration rolls or health databases. After discussing the advantages and disadvantages of telephone, face-to-face and mailed surveys (Dillman, 2000), the advisory board unanimously agreed that the household survey should be administered through the mail. We discovered that Canada Post enumerates households by carrier route, and in the end, this service was utilized.

Questionnaire development.

Previously tested survey items were incorporated into the body of the questionnaire, including questions from the Canadian Community Health Survey (CCHS) (Statistics Canada, 2003), New Rural Economy (NRE) Household Survey (Reimer, 2003), and community-resiliency questions previously administered in Crowsnest Pass, Alberta (Kulig, 1996). The advisory board provided active input into the questionnaire design over the months of December, 2003 to March, 2004. The 14-page questionnaire was produced in booklet format and inquired about the following topics: household composition; length of time in community; current employment information; work in agriculture, forestry, petroleum or mining; general health of the household; self-reported health; amount of stress; sense of belonging; height and weight; tobacco use; coping strategies; self-reported chronic health conditions (n=24); self-reported injuries; perception of community services; community participation; financial and educational information. There were five open-ended questions pertaining to the participants' opinions of the future of the community (see Appendix E). In addition to the aforementioned variables, a map of each community was reproduced in the respective

questionnaires; participants were asked to draw a circle on the map to represent their definition of community boundaries.

Sampling strategy.

Sampling-size calculations were based on a one-sample proportion (Cochran, 1977) using a prevalence of 25 percent of respondents reporting current health as "excellent" (Health and Welfare Canada, 1993) and a total of 7643 total households in the three communities. The sampling strategy allowed for a 40 percent non-response rate (see Appendix F for details of sampling calculations). Based on these calculations, surveys were to be distributed to Hinton (n=400), Riverside Meadows (n=400) and evenly (n=400) between four communities in Flagstaff county: Killam, Sedgewick, Lougheed, and Hardisty.

The Canada Post on-line, unaddressed admail service (Canada Post, 2004) was used to distribute surveys to households within Hinton and the Hardisty-area communities. Due to the overlap of Canada Post carrier routes in Riverside Meadows with adjacent neighbourhoods, local advisory board members from Riverside Meadows suggested that the best way to deliver the surveys would be through a door-to-door delivery, using an individual who was familiar with the boundaries of Riverside Meadows. Thus, in Riverside Meadows, surveys were hand-delivered to every even-numbered household in the community.

Prior to questionnaire delivery, members of the study's advisory board who live in each study area distributed colourful posters announcing the survey in the community, and there was also media coverage via local neighbourhood paper and radio. Each survey contained a cover letter explaining the study, as well as a self-addressed, stamped return

envelope. Envelopes were addressed to “Household Members” and were marked with the University of Lethbridge logo to distinguish them from junk mail. A total of 1200 surveys were delivered to the three study sites on March 31, 2004. Four weeks later, a reminder postcard was delivered to each household that had previously received a questionnaire—thanking those who had already participated, and urging those who had not done so to complete the survey and mail it in (Appendix G). Data collection was complete by May 14, 2004.

Response rate and data analysis.

Two-hundred ten (n=210) households responded overall to the survey, resulting in a 17.5 percent response rate. The response rate varied by community: Hinton (16.3%); Hardisty (25%); and, Riverside Meadows (11.3%). The returns were disappointing, particularly in light of the door-to-door delivery in Riverside Meadows, the media coverage and the follow-up postcard; the researchers had hoped for at least a 50 percent return rate. Given the poor response, the findings from the household survey must be viewed with caution and should be viewed as exploratory.

Responses were entered into the database ACCESS® designed with macros to prevent incorrect data entry; the database was then downloaded into SPSS 12.0® for data analysis. Initially, all frequencies were scrutinized for outliers. Cross-tabulation and chi-square analysis of variables was done by community to further describe the sample and to provide comparisons.

Findings.

Demographic variables.

Household participants were primarily female; despite all communities having more female respondents, Hinton had a more equal representation of genders and the difference was statistically different (Table 8). Age groupings (Figures 16-17), educational levels and household incomes (Appendix H, Tables H9-H10) did not differ

			Community			Total
			Hinton	Hardisty	Riverside	
GENDER	Female	Count (%)	37 (56.9%)	71 (71%)	35 (77.8%)	143
	Male	Count (%)	22 (33.8%)	26 (26%)	10 (22.2%)	58
		Chi-square 9.44, df=4, p = 0.05				
AGE		Mean	48.1 yrs	51.1 yrs	45.8 yrs	48.9 yrs
		Mean Square 456.39, F=2.23, p=0.1				

Table 8. Demographic characteristics of the study sample, Health Status & Community Resiliency Study, 2004.

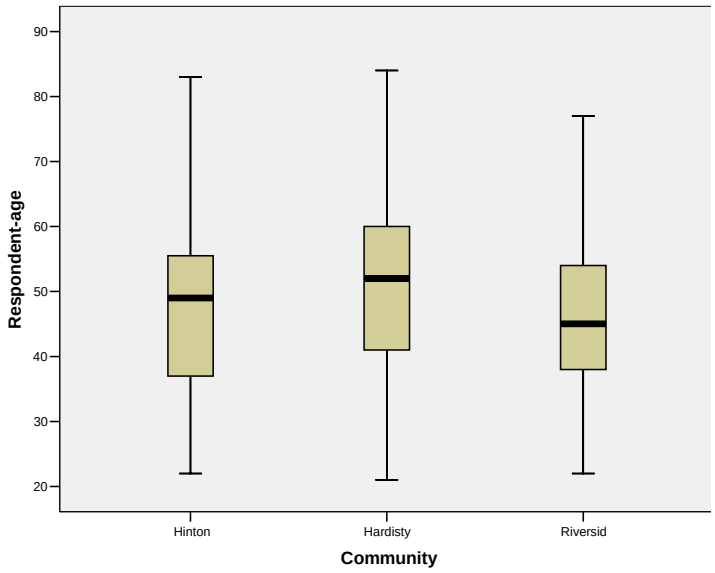

Figure 16. Boxplot comparisons of respondent age by community, 2004.

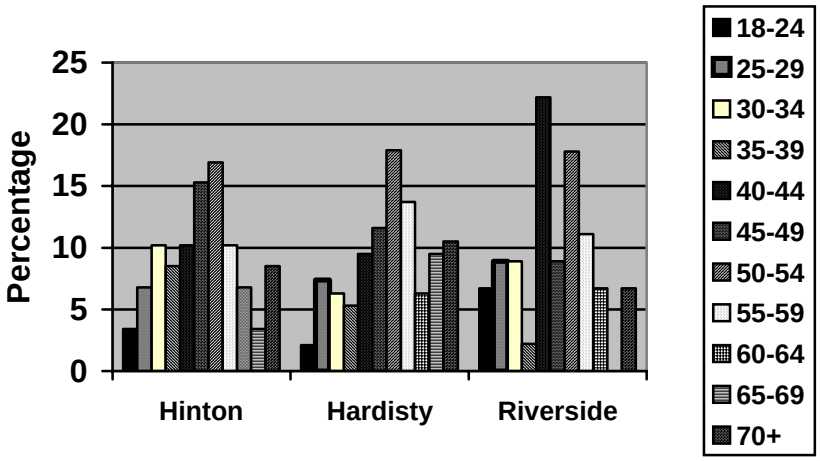

Figure 17. Age groupings of household survey, by community, Health Status & Community Resiliency Study, 2004.

among the three study sites. Differences among the communities were found with respect to amount of home ownership, length of time in community and place of work (Table 9). Twenty percent more respondents from Hinton and Hardisty area reported owning their own homes compared with residents of Riverside Meadows. Furthermore, more than 33 percent of residents in both Hinton and the Hardisty area had resided in their

Household ownership		Community			Total
		Hinton	Hardisty	Riverside	
Own	Count (%)	57 (87.7%)	86 (87.8%)	30 (68.2%)	173
Rent	Count (%)	6 (9.2%)	10 (10.2%)	14 (31.8%)	30
Other	Count (%)	2 (3.1%)	2 (2.0%)		4
Total	Count	65	98	44	207

Chi-square 14.48, df=4, *p*=0.006*

Length of time in community

Time in Years	< 1 year	Count	2	0	7	9
		%	3.2%	.0%	15.9%	4.4%
	1-5 yrs	Count	11	11	18	40
		%	17.7%	11.1%	40.9%	19.5%
	6-10 yrs	Count	8	10	7	25
		%	12.9%	10.1%	15.9%	12.2%
	11-15 yrs	Count	5	4	3	12
		%	8.1%	4.0%	6.8%	5.9%
	16-20 yrs	Count	2	6	1	9
		%	3.2%	6.1%	2.3%	4.4%
	21-30yrs	Count	13	26	3	42
		%	21.0%	26.3%	6.8%	20.5%
	>30 yrs	Count	21	42	5	68
			33.9%	42.4%	11.4%	33.2%
Total			62	99	44	205
Chi-square 49.637, df=12, p>0.0001*						
Work in primary industry – agriculture, forestry, petroleum or mining — for at least 1 year						
	Yes	Count	37	61	12	110
		%	57.8%	61.6%	28.6%	53.7%
	No	Count	27	38	30	95
Chi-square 13.595, df=2, p=0.001*		%	42.2%	38.4%	71.4%	46.3%

Table 9. Home ownership, length of time in community, and work in a primary industry, Health Status & Community Resiliency Study, 2004.

communities for more than 30 years, whereas 11 percent of Riverside Meadows participants reported the same. The number of individuals who worked in a primary industry presented as a clear difference amongst communities, but this was expected given the varied economies of the study sites.

Self-reported health behaviours.

Only one self-reported behaviour significantly varied among communities: 13 percent more Riverside Meadows residents reported smoking than the total sample

(p=0.009*) (Figure 18). The higher level of smoking in Riverside Meadows is consistent with the higher level of diagnosed circulatory diseases reported among respondents in

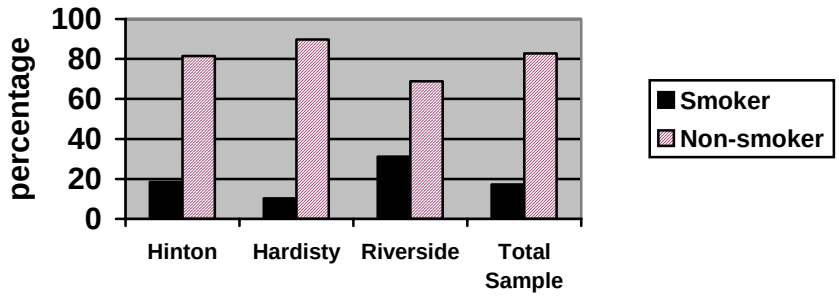

Figure 18. Cigarette-smoking behaviour, by community, Health Status & Community Resiliency Study, 2004.

this community. In contrast, there was no significant difference in blood-pressure monitoring (Figure 19) or in the number of individuals who were considered to be obese, as measured by the body mass index (kg/m2) (Figure 20). The mean BMI for the entire sample was nearly 28 (mean= 27.7, SD=5.3, range 18-48.4), which is classified by Statistics Canada as "overweight" (Gilmore, 1999). Forty-five percent of Riverside Meadows participants were of "acceptable weight," compared with one-third of respondents from Hinton and Hardisty. In 2000-2001, 43 percent of Canadians

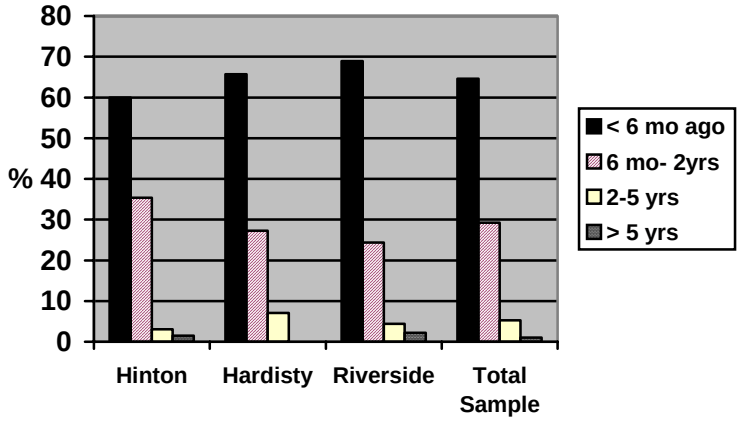

Figure 19. Last blood-pressure measurement, by community, Health Status & Community Resiliency Study, 2004.

were of acceptable weight (BMI 20-24.9), whereas 32 percent were classified as overweight (BMI >27.0) in the Canadian Community Health Survey (CCHS) (Statistics Canada, 2003). From the same national survey, nearly 23 percent of Canadians reported smoking (Tremblay, Ross, & Berthelot, 2002).

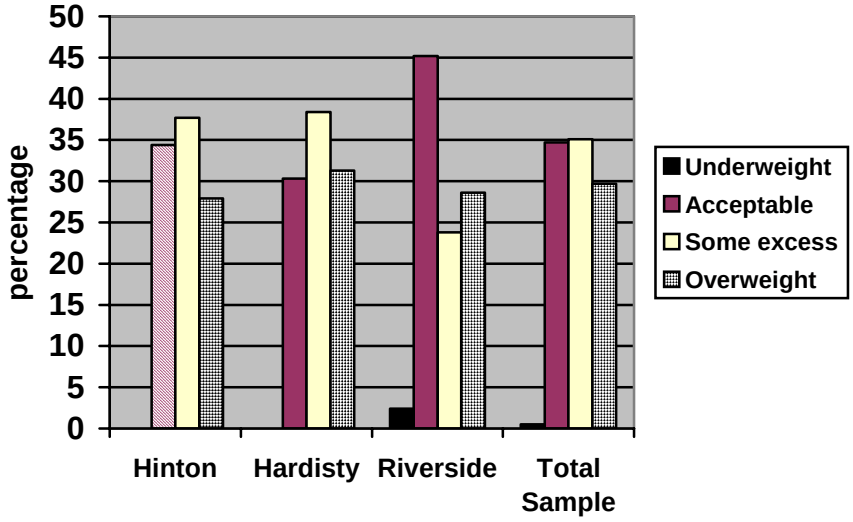

Figure 20. Calculated body mass index (BMI), by community, Health Status & Community Resiliency Study, 2004.

Health conditions.

The mailed questionnaire invited respondents to list health conditions affecting them that had been diagnosed by a health professional (Figure 21). Respondents from Riverside Meadows reported a higher proportion of circulatory problems, diabetes, depression and asthma than did those from the other two communities. Slightly more Hinton respondents reported thyroid disorders, while residents of the agricultural area of Flagstaff county reported a significantly higher level of cancer (p=0.045). Further examination of three-year averaged provincial rates (1998-2000) indicates that that cancer incidence for the three study sites (Hinton, Hardisty and Riverside Meadows being

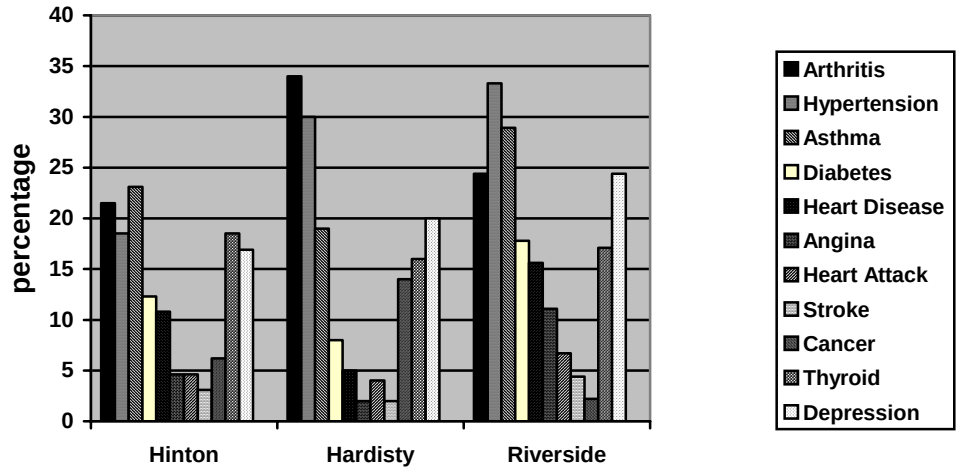

Figure 21. Selected health conditions, by community, Health Status & Community Resiliency Study, 2004.

located within the Alberta health regions of Westview, East Central and David Thompson respectively) did not vary from the provincial rates (Murphy, Bryant, & Dover, 2003). Using data from the CCHS, comparable proportions for self-reported hypertension, diabetes, asthma and depression reported Canada-wide and for the 2000-2001 Alberta

health regions of Westview, East Central and David Thompson are presented for comparison in Figure 22.

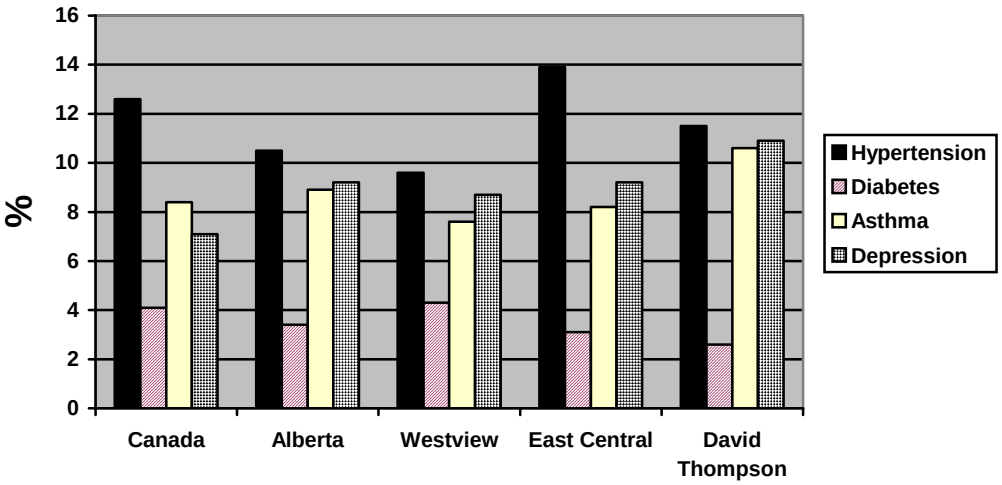

Figure 22. Selected health conditions, by selected Alberta health regions, CCHS, 2000/01.

Exploration of provincial databases was undertaken between November, 2004 and March, 2005 through a contractual arrangement with the Research & Evidence division of Alberta Health & Wellness. Three databases were accessed: 1) SESE (physician claims), 1994-2003; 2) ambulatory care (outpatient), 1997-2002; and, 3) morbidity (inpatient), 1994-2002. Data were filtered by *a-priori* medical diagnosis using the international disease classification system (ICD-9). Diagnoses by year were merged with Alberta population files for 1994 to 2003. Datasets were derived with recipients, their age, and gender; these were then merged with the appropriate postal codes for the study sites. Indirect standardization was then applied, resulting in the rates presented in this report. Indirect standardization for age and gender is appropriate when specific rates are unstable or unknown (Last, 1995), as was the case with the rates for the three study

communities. A flow diagram of the procedures undertaken by the Research & Evidence division is found in Appendix I, with calculated rates by community reported in Appendix J.

Examination of the standardized rates provides possible explanations for three findings in from the household survey: those of self-reported depression, asthma and cancer diagnoses. Consistently in all three databases, utilization of health-care services for mental diseases was highest in Riverside Meadows (Figures 23-25), which is congruent with the higher self-reported depression from the household survey in this neighbourhood (24%). Asthma was proportionately reported by more household respondents in Riverside Meadows (29%) than in either of the rural communities; while the physician claim data does not support this finding from the survey, outpatient and inpatient rates for asthma clearly do (Appendix J). Self-reported diagnosis of cancer in the household survey was highest in the Hardisty area (14%). As has been previously mentioned, the latest provincial statistics do not indicate elevated incidence rates in the East Central health region compared to the provincial average. Yet, the outpatient and inpatient utilization rates, where most cancer treatments occur, are highest for the Hardisty area communities among the three communities studied (Appendix J). Cancer was perceived in the qualitative interviews and in community meetings in Hardisty to be a health concern. Given the stability of the region, where most people know each other, the higher utilization rates lend support to the communities' perception of higher risk.

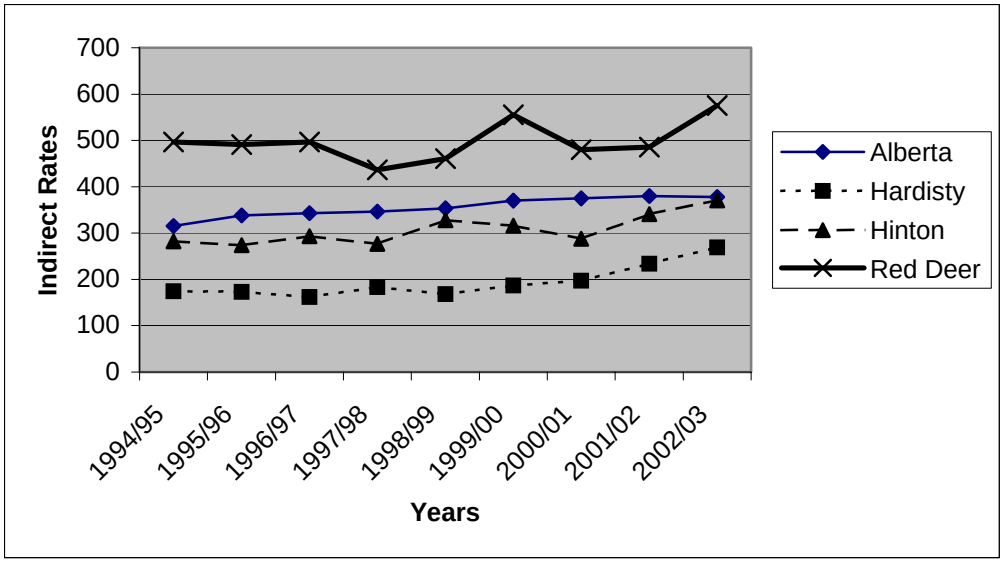

Figure 23. Indirect age-sex adjusted rates for mental diseases, per Alberta Health & Wellness physician claims, 1994-2003.

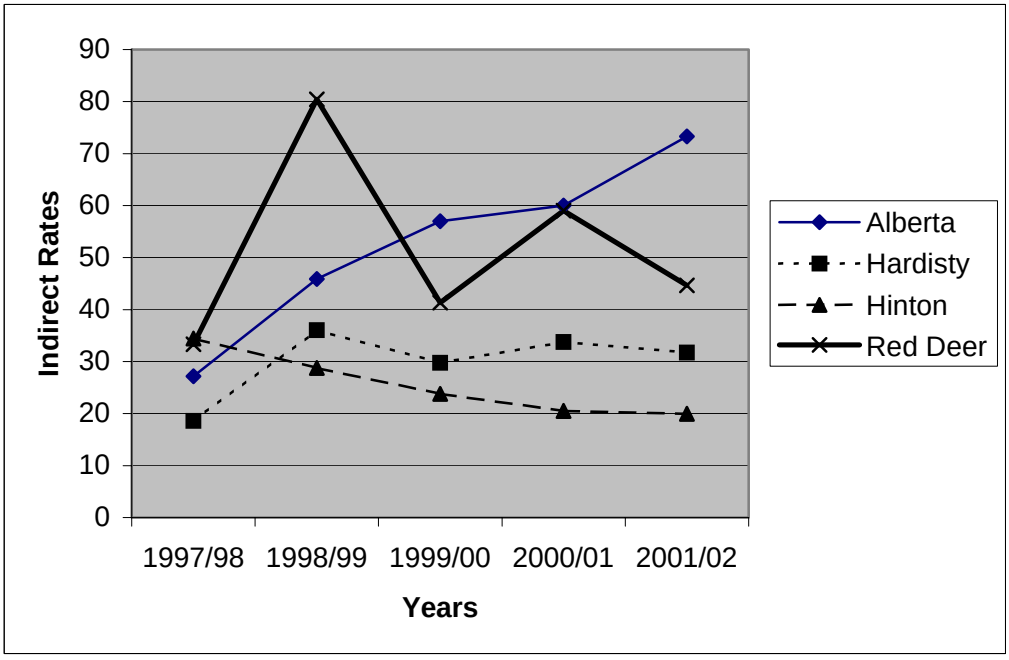

Figure 24. Indirect age-sex adjusted rates for mental diseases, per Alberta Health & Wellness outpatient claims, 1997-2002.

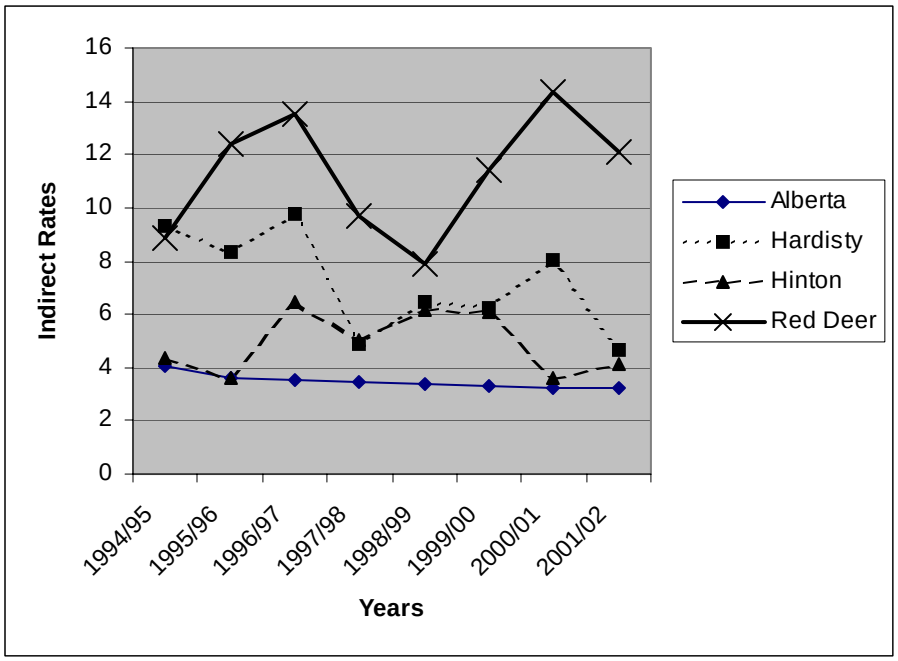

Figure 25. Indirect age-sex adjusted rates for mental diseases, per Alberta Health & Wellness inpatient hospitalizations, 1994-2002.

Stress, perceived health and sense of belonging.

Stress was measured by one question that sought to identify the amount of stress perceived by the respondent on most days (see Q13, Appendix E). Although 25 percent of Hardisty-area respondents reported "quite a bit of stress" on most days, which was the highest proportion within the study (Figure 26), there was no significant difference

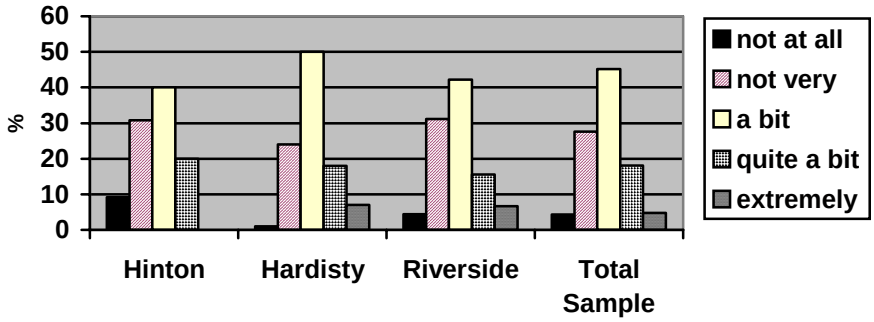

Figure 26. Reported daily stress in household survey, by community, Health Status & Community Resiliency, 2004.

among study sites with respect to stress (Appendix H, Table H11).

Several investigations have confirmed that self-perceived health is a reliable measure of health status (Heistaro, Jousilahti, Lahelma, Vartiainen, & Puska, 2001; Kaplan & Camacho, 1983; Miilunpalo, Vuori, Oja, Pasanen, & Urponen, 1997; Ross, 2002). No differences were found among the study communities on self-rated health (Figure 27; Appendix H, Table H13). When compared to the provincial findings of the 2000/01 CCHS, all three study communities had lower proportions of respondents reporting “excellent” health.

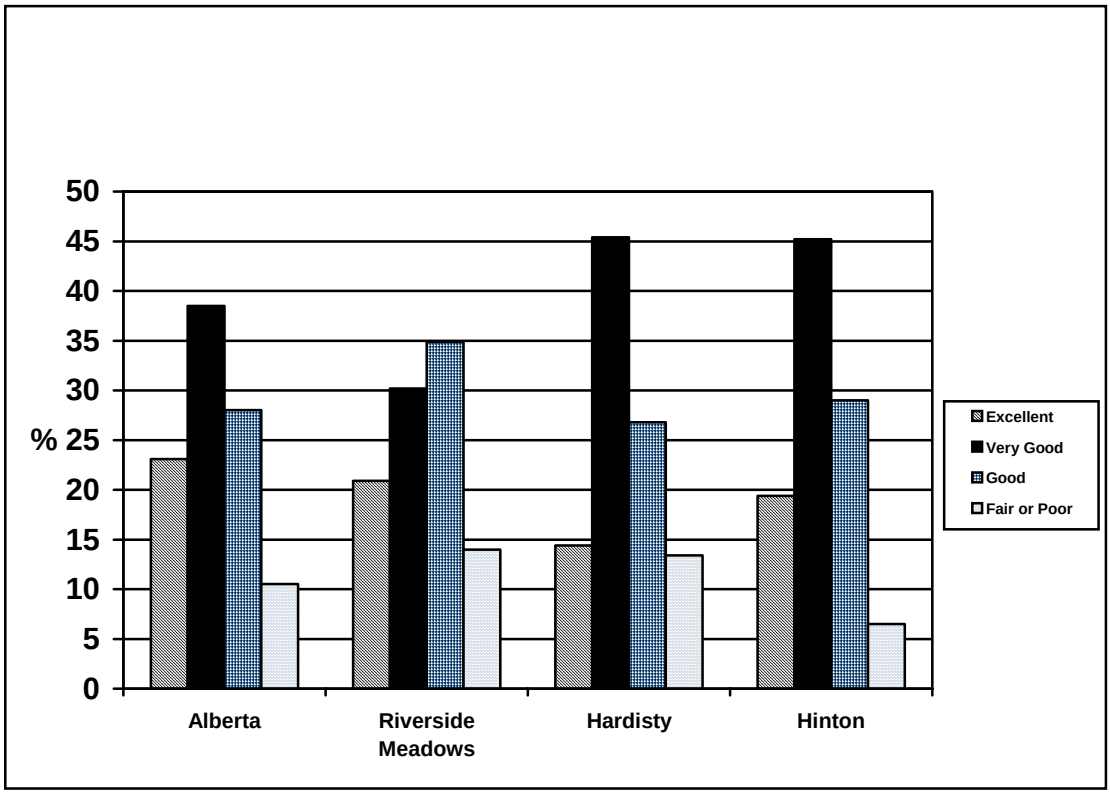

Figure 27. Self-reported health, 2000/01 provincial data and study communities, Health Status & Community Resiliency, 2004.

Nearly 83 percent of respondents from the Hardisty area reported either having a somewhat strong or very strong “sense of belonging” within the community (Figure 28). The strong sense of belonging among residents of Hardisty was statistically different

(χ=21.56, p=0.006) from the other two study communities, and reinforces the qualitative findings of a philosophical commitment to living in a rural area.

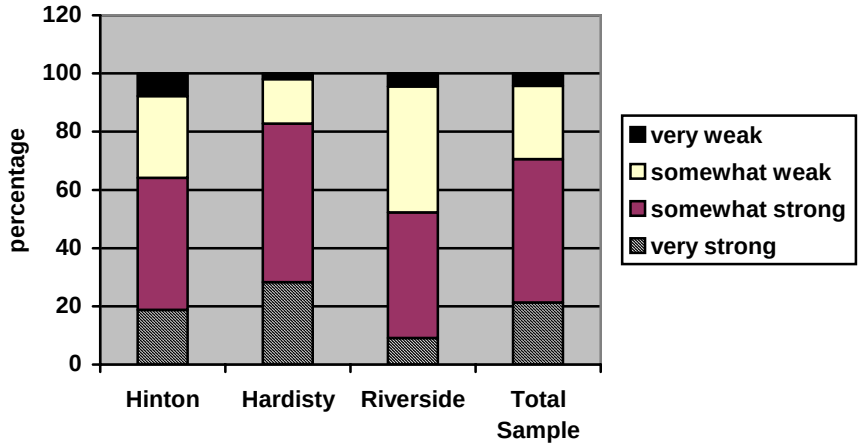

Figure 28. Reported sense of belonging, by community, Health Status & Community, 2004.

A 15-item, five-point scale (Kulig, 1996) required that respondents rate their ability to cope, as well as the cohesiveness within their community (Q26, Appendix E). A summated score was used to determine the degree of resilient behaviour rated by respondents; possible scores were from 5 (low satisfaction & resilience) to 75 (high coping behaviour & resilience). The reliability coefficient of the scale was 0.85, indicating a high degree of concordance between the scale's items. The mean score for the entire study population was 51, and there was no statistical difference among the communities on this calculated variable (Table 10).

SUPPORT	Hinton	Hardisty	Riverside	Total
N	65	99	45	209
Mean	50.42	52.36	48.84	51.00
Std. Deviation	9.97	8.44	11.14	9.61
Std. Error	1.24	.85	1.66	.66
Minimum	23	9	18	9
Maximum	75	72	69	75

ANOVA df=2, Mean Sq.=207.6, F=2.78, p=0.11

Table 10. Comparison of calculated variable, "support," by community, 2004.

For the entire study population, no significant relationship was found between self-reported health and a respondent's perception of "fit" in the community (χ^2= 6.6, p=0.16). Significant positive associations in the entire sample were observed between a person's perception of "fit" in the community and their participation in the community (χ^2=4.5, p =0.03); the amount of stress reported and self-reported health (r=0.14, p=0.04); sense of belonging and participation in the community (χ^2=29.1, p<0.0001); sense of belonging and feeling of "fit" in the community (χ^2=44.7, p<0.0001); and, sense of belonging and self-rated health (r=0.18, p=0.01).

Discussion.

The household survey results, albeit exploratory and non-generalizable, provide preliminary connections between the self-reported health and sense of belonging in one's community; furthermore, the findings from the anonymous household survey were consistent with the themes that emerged in the qualitative interviews. In addition, valuable insights regarding survey methodology—in particular, the use of admail and the limitations of administrative databases—have been gained.

It is not fully known why the response rate did not meet our expectations, but several possibilities exist. One possibility relates to the focus of our investigation. Community resiliency is a harder concept to grasp and to respond to in a mailed survey than is a concrete topic such as "health-services delivery" or a particular disease entity, like cancer. Also, the totally anonymous distribution of the survey may have been detrimental. Future investigations should strive to: 1) gain access to individual names for distribution; 2) provide clear anticipated benefits of the study in the accompanying cover letter; 3) use a more colourful envelope; 4) ensure additional rigour in questionnaire

development (Theis, Frood, Nishri, & Marrett, 2002); and, 5) consider including small monetary tokens of appreciation for respondents' efforts in responding to the survey—five dollars, for example.

Administrative databases can provide trends on utilization but cannot determine true incidence rates of diseases within a population. Although specific ICD-9 codes were requested as part of the analysis carried out by Alberta Health & Wellness, the small counts for each study community prohibited calculation of specific disease rates (e.g., hypertension). Instead, indirect rates were calculated for groupings of disease, with obvious limitations. Physician claim data, as well as outpatient and inpatient data, reflects disease patterns within a locale, physician practice preferences, availability of health-care services, technological advances, and health-care policy changes. The coding quality of the diagnoses in physician claims databases can be an issue; physicians are reimbursed on the procedures they bill, and regardless that the first diagnosis code is mandatory for reimbursement, such codes may not always be reflective of a patient's health condition (personal communication, K. Luong, April 8, 2005). Used alone, as was done in this exploration, such databases are most useful for hypothesis-generation.

Through our collaboration with the Research and Evidence division of Alberta Health & Wellness, the researchers gained a new understanding of the amount of time required to obtain useable output from administrative databases. We benefited from the liaison with Research and Evidence division and intend to foster this new relationship with future research endeavours.

The importance of place, such as rural environments and neighbourhoods, is gaining renewed recognition as having impacts upon individual (Feldman, McMullan, &

Abernathy, 2004; Macintrye, Ellaway, & Cummins, 2002; Martinez, Pampalon, Hamel, & Raymond, 2004; Ross, Tremblay, & Graham, 2004) and community health (Duerden, 2004; Eberhardt & Pamuk, 2004; Hartley, 2004; Robards & Alessa, 2004; Veenstra, 2003). Community resiliency is a process that is generated by many factors – place, being one of them. We were not able to engage in multi-level analysis in this pilot investigation because of our small study sample. In future work, however, it will be imperative to use more sophisticated statistical methods (Subramanian, Jones, & Duncan, 2003) to better understand the inter-relationships among place, socioeconomic factors, community resiliency and health of a community.

Limitations

The limitations of this study include the following:

- The data collected from the communities included within the study may only be generalizable to other similar communities;
- The data represents communities at a particular time period; because communities are always changing, the information may no longer accurately describe the community processes and dynamics of each individual community;
- Despite best efforts to ensure that the interview data collected from each community was of uniform quality, there were variations among the communities that were related in part to the research assistants' skills and interests;
- The household survey represented a small sample and caution must be taken in generalizing the results from this aspect of the study;

- The existing data bases that were used for this study are limited; although such data can raise questions about underlying health conditions in communities, true incidence of disease cannot be calculated.

Recommendations

A number of implications arise from the findings generated by this study. Considered together, these implications speak to the issue of sustainability of communities, whether they are rural or urban in nature, and lead in turn to recommendations for possible community action.

Community-Building

The description of communities and their characteristics included discussion of activities at both the individual and community level that are essential to the "building" of communities. Ensuring that gathering places, such as schools or community halls, are available is an important first step. Regular, ongoing activities such as parades and rodeos are also important, because it allows for social interaction while providing opportunities for people to work together on implementing a successful event. Such events need to appeal to all age groups, both genders, and a variety of economic and religious backgrounds—in other words, to be inclusive—if true community collaboration and participation is going to occur. Threats to individual community survival, including economic instability and closure of facilities such as schools and churches, can work against community-building initiatives.

Recommendation #1: Rural communities need to develop a forum in which to discuss their success stories and challenges with one another.

Recommendation #2: Rural communities should develop a wider, county-level focus, in order to provide a greater range of services for the majority of the population.

Problem-Solving Processes

All three participating communities talked about the need for inclusive problem-solving processes that allow for the generation of ideas, to address identified challenges.

Recommendation #3: Communities need to be provided with such resources as mentoring programs and leadership and community-capacity workshops in order to enhance their problem-solving processes.

Community Resiliency

Community resiliency was perceived as a proactive process that could only occur with the right combination of visionary leaders and other community members who were willing to implement the vision. Having a positive attitude was seen as important in this process. Infrastructure—both economic and social—was also seen as important if resiliency was to occur. Residents' commitment to their community was also seen as vital to resiliency.

Recommendation #4: Health and social-service agencies need to take theoretical notions of community resiliency into consideration as they develop community programs.

Recommendation #5: Rural communities should reframe the way they view economic and social development to incorporate and apply the theoretical notions of community resiliency.

The Health Status of Community Residents

Rural living was seen as by study participants as contributing to health status. Some respondents mentioned particular issues in this regard, such as concerns over air

quality (environmental concerns) and the ethical questions raised by being forced by economics to choose particular forms of employment that might pose potential health threats to one's family.

Recommendation #6: Existing bylaws within rural communities should be reviewed in order to identify issues that may need to be addressed or updated to further enhance the health status of community residents.

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