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Understanding Community Resiliency in Rural Communities Through Multimethod Research

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Abstract

Community resiliency is a theoretical framework and social process that attempts to explain how communities address adversity. Generating information about this concept has largely been accomplished through qualitative research methods and the development of the Resiliency Scale, which was based upon previous qualitative research on the topic. A multimethod study was used to explore community resiliency in two rural communities and one urban neighborhood. In this article we specifically examine: "What are the merits of employing different research methods to explore community resiliency and health status?" Qualitative interviews, a household survey, and analysis of provincial health databases were all used. The understanding of community resiliency as identified from each of these three methods as well as a discussion of the advantages and disadvantages of each method is presented.

1.0 Introduction

Community resiliency can be viewed as both a theoretical framework and social process that explains community responses to external forces, such as economic downturns, natural disasters, or other threats to sustainability. This article discusses a comparison of three different research methods in a two-year multimethod study that focused on the meaning of community resiliency in two rural communities and one urban neighborhood in western Canada (Kulig & Edge, 2005). The meaning of community resiliency from qualitative and quantitative perspectives, as well as insights into the relationship between community resiliency and health status, was

explored through the three different research methods that were used. The lessons learned regarding the conceptual meaning of resiliency and the merits of using the different methods provide valuable insight for other researchers attempting to combine methods.

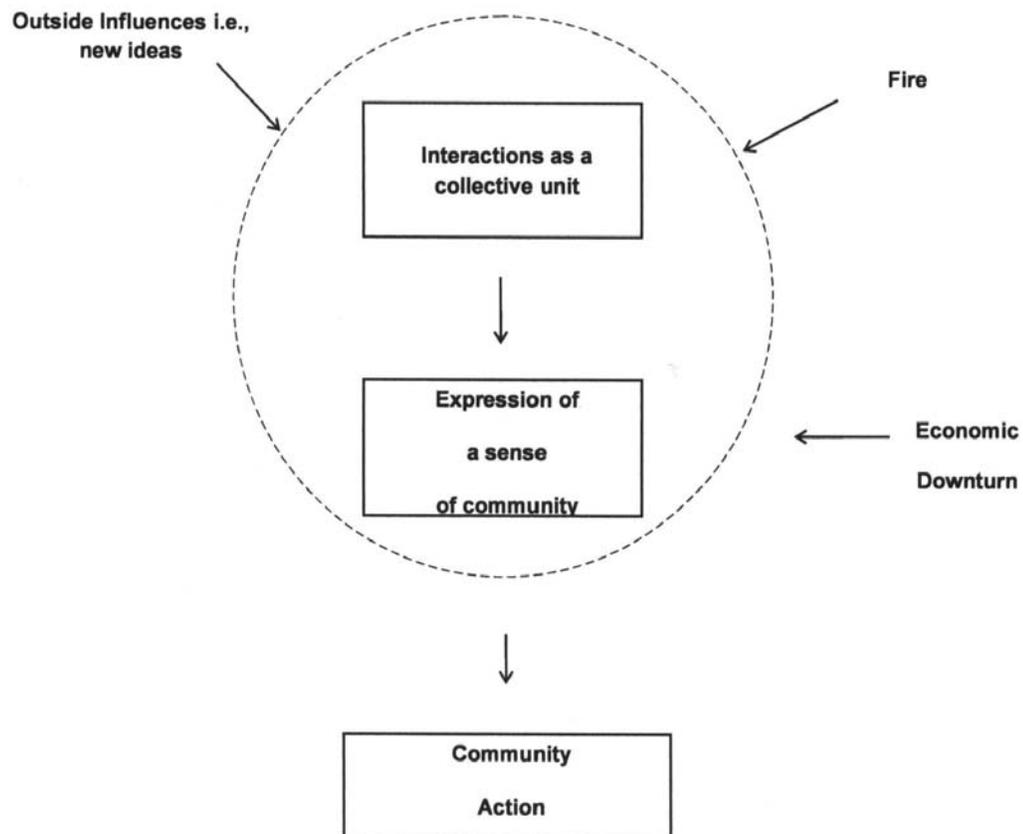
1.1 Background on Community Resiliency

Community resiliency has been defined as the ability of a community not only to deal with adversity but also to gain strength as a result of it (Brown & Kulig, 1996/7; Kulig, 1999, 2000; Kulig & Hanson, 1996). As a theoretical framework it provides an explanation for how communities operate as collectives. Community resiliency has been discussed as a process, with communities changing as their circumstances are altered (Kulig & Hanson, 1996). Events such as fairs, festivals, and feasts add to the viability and vitality of communities, and also their resiliency, by enhancing a sense of self, place, and community (Porter, 2000). Breton (2001) has noted that resiliency is dependent upon neighbor networks and active local voluntary associations.

A series of studies conducted on community resiliency has generated knowledge and understanding about “resiliency” at the collective level from the perspectives of rural residents. Two studies were conducted in a former coal-mining town that was becoming a tourist destination (Brown & Kulig, 1996/7; Kulig, 1996). Both of these studies concluded that resiliency is a process that is influenced by variables such as proactive members, the ability to use a community problem-solving process, and the presence of community leadership. These variables helped enhance the development of community cohesiveness, an important step toward the development of community resiliency. One other study investigated how community-based workers enhanced community resiliency (Kulig, 1998, 1999, 2000).

The following community-resiliency process emerged from these investigations: (a) the community experiences interactions as a collective unit, including “a sense of belonging” and “getting along”; (b) this leads to an expression of a “sense of community,” exemplified by a shared mentality and outlook and community togetherness; and, (c) consequently, some type of community action occurs, noted by the presence of visionary leadership, an ability to deal with change in a positive way, an ability to cope with divisions, and the emergence of a community problem-solving process. Explaining community responses to such challenges has been addressed through application of the Community Resiliency Model (see Figure 1). Simultaneously, the model can be used to stimulate community reaction and generate public policy at the local and regional level. Finally, community resiliency has been hypothesized to be linked to health status (Carver, 1998), and if this is the case, multimethod studies need to be pursued in order to generate sufficient detail about how these linkages occur. However, the effectiveness of using these methods to understand the concept has not been well explored. Thus, this article is an attempt to analyze this scenario as a result of a recently completed study. Specifically we examine: What are the merits of employing different research methods to explore community resiliency and its link to health status?

Figure 1. Revised Community Resiliency Model.¹



¹From “Sensing collectivity and building skills: Rural communities and community resiliency,” by J. C. Kulig, 1999. In W. Ramp, J. Kulig, I. Townshend, & V. McGowan (Eds.), *Health in rural settings: Contexts for action*, p. 232. Copyright 1999 by the University of Lethbridge. Reprinted with permission of the authors.

2.0 Research Questions and Study Setting

In order to explore community resiliency in depth, six key research questions were addressed:

1. What is the meaning of community resiliency for rural communities undergoing or potentially undergoing economic changes and are potential locations for industry?
2. What are the differences in community resiliency between rural and urban communities?
3. What are the local, regional, social, economic, and political factors that impact on the resiliency of rural resource-reliant communities?
4. What is the impact of these changes on resiliency?
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?

The study was conducted over three years, from 2003 to 2005, in three Alberta communities; ethical clearance was obtained from the first author's institution. Two of the communities were rural in nature, defined as small towns outside the commuting zones of urban locations with more than 10,000 residents (du Plessis, Beshiri, Bollman, & Clemenson, 2001). Each participating community was chosen based on experiences of adverse situations that resulted in community organizing movements. One of the communities was agriculturally based, with a county population of 3,697 (Statistics Canada, 2002), and where residents had recently successfully defeated the development of an intensive livestock operation (ILO). The second community, with a population of 9,405 (Statistics Canada, 2002), was dependent upon mining and logging and had recently undergone a mine closure; the third was an urban neighborhood of under 2,000 residents that had originally been a separate village but was amalgamated into a nearby city. In all three jurisdictions, local governments supported the study: A local advisory group helped identify key stakeholders and advised the research team about presentations to the community and when to conduct the household survey. Inclusion of the urban neighborhood offered an opportunity to compare resiliency between urban and rural communities.

3.0 Methods

Multimethod studies, also referred to as mixed methods, allow for the generation of data from different sources to arrive at a more comprehensive understanding of the research question (Brewer & Hunter, 2006; Morgan, 1998). To address the research questions, three different methods were employed sequentially: qualitative interviews, a household survey, and analysis of health-care databases. At the conclusion of the study, the findings were discussed by the research team from all three viewpoints to determine if we arrived at a more in-depth understanding of community resiliency.

3.1 Qualitative Interviews

Community-based research assistants (RAs) conducted the interviews in each of the participating communities. With training and continual guidance from the first and third authors, the RAs conducted the interviews over a 6-month time period. Purposive sampling was used to identify participants in each community; the RAs, with key stakeholders, identified potential participants. Once contacted and after informed consent was obtained from participants, the interviews were conducted in the participants' homes beginning with the collection of demographic information. An open-ended interview guide was then used to address several topics, including their definition of community, their understanding of community resiliency, and how their community addressed issues. The taped interviews were confidentially transcribed and the transcripts were analyzed while the data collection continued. Codes and themes were developed during this process while also conducting quality checks on the interviews. The first author was the primary individual to conduct the analysis, but an auditor was also used to assist in establishing rigor and trustworthiness (Lincoln & Guba, 1985).

3.2 Household Survey

A population-based household survey was determined as the ideal method to gather current information about the health status of community residents in the three study areas based upon the assumption that there is a link between community resiliency and health status. That is, when communities exhibit resiliency, individuals experience higher levels of health status. 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.

Previously tested survey items (Kulig, 1996; Reimer, 2003; Statistics Canada, 2003) were incorporated into the body of the questionnaire with active input from the advisory board. 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; and financial/educational information. There were five open-ended questions pertaining to the participants' opinions of the future of the community.

Prior to questionnaire delivery, local advisory board members who provided advice and assistance throughout the study distributed colorful posters announcing the survey in their communities; in addition, local neighborhood papers and radio promoted the survey. 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 first author's university logo to distinguish them from junk mail.

The Canada Post unaddressed admail service (Canada Post, 2004) was used to distribute surveys to households within the rural communities. Due to the overlap of Canada Post carrier routes in the urban setting with adjacent neighborhoods, local advisory board members in the urban community 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 neighborhood boundaries. Surveys were therefore hand-delivered to every even-numbered household in the study's urban community.

A desired sample size of 726 household surveys was calculated based on a one-sample proportion (Cochran, 1977) using an estimated prevalence of 25% of respondents reporting their current health as "excellent" (Health & Welfare Canada, 1993) and using a fixed total of 7,643 households, based on community population statistics. Allowing for a 40% nonresponse rate, a total of 1,200 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. Data collection was complete by May 14, 2004.

3.3 Provincial Health Databases

Exploration of provincial databases was undertaken between November 2004 and March 2005 through a contractual arrangement with the provincial Research & Evidence Division (now referred to as The Strategic Intelligence Unit, Planning and Performance Branch) of Alberta Health and Wellness. Three databases were accessed: (a) physician claims (SESE), 1994–2003; (b) ambulatory or outpatient care claims, 1997–2002; and (c) morbidity, from inpatient records, 1994–2002. Data were filtered by a priori medical diagnosis using the international disease classification system (ICD-9 and ICD-10). 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 here. 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. The databases were included to identify, where possible, any health trends that may be related to individual experiences of community resiliency and therefore to corroborate the household survey findings.

4.0 Understanding Community Resiliency across Communities and Methods

4.1 Qualitative Interviews

In total, 82 participants were interviewed for the study; a great proportion were female ($n = 45$), married ($n = 64$), with two children ($n = 48$), with 13 to 16 years of education ($n = 44$), between 35 to 49 years of age ($n = 37$), and reported a small town as birthplace ($n = 39$). The details of the participants' perceptions of community and community resiliency have been described elsewhere (Kulig, Edge, & Joyce, in press).

The goals for using qualitative interviews to study resiliency were to: (a) generate more information about resiliency in general in rural communities of differing economic basis; (b) refute, confirm, or revise the Community Resiliency Model by generating information about the specific aspects of the model; and (c) continue to determine which aspects of the community resiliency process are “intervenable” and therefore useful for policy development. Not all of these goals were realized, but the information generated from the interviews enhanced our understanding of the first and second goals. This shortfall points to the challenges of generating information from qualitative interviews: (a) the information is based upon individual perceptions and experiences and (b) the study is limited to a set number and type of communities.

The qualitative interviews generated a range of ideas and perceptions about resiliency and the individual community's experiences with it. They allowed for in-depth discussion about topics, such as the meaning of resiliency, barriers to resiliency, and how resiliency can be enhanced. The 82 participants across the three participating communities agreed that resiliency was a positive process through which a community demonstrated its ability to deal with adversity based on individual support. According to respondents, communities that display their resiliency illustrate a number of characteristics that support the original model of resiliency. Understandably, there were variations in the answers between the

communities regarding other aspects of resiliency (see Table 1). While the agricultural community viewed *community* as a collection of individuals working together to be proactive and to address their problems, the other two communities focused on individual traits (e.g., community pride) that collectively can create community resiliency. How issues were addressed was historically developed and demonstrated. The stable population and the deep ties between and among the residents within the agricultural community meant that issues were addressed from a whole-community approach.

Reported barriers to community resiliency also varied by community (see Table 2). Perceptions of barriers differed among the participants from the mining/logging community and the urban neighborhood compared to the agricultural community. For example, the lack of volunteers or community residents participating in community issues was noted as a barrier among the mining community and the urban neighborhood participants; yet, in the agricultural community, the issue was not the lack of people but a deficit of specific skills and knowledge among local residents.

The qualitative interviews generated information about resiliency while also helping explain the variations in resiliency between communities. One example is that while examining the data, we discovered that three variables contributed to the response variations between communities on resiliency: (a) the nature of the participating communities; (b) individual characteristics of participants; and (c) the nature of community challenges and adversity. Details regarding these variables have been discussed elsewhere (Kulig, Edge & Joyce, in press). Clearly the data confirmed that the underlying values and cultures of the communities varied. In agricultural communities, it is common for individual farm families to help each other with planting and harvest. This altruistic behavior is magnified in times of tragedy or other unexpected events that prevent a family from doing the essential chores on their land. Such interdependence and hard work were continually emphasized by the participants of the agricultural study community. Residents of the other two communities did not display the same level of interdependence as noted by their responses.

Participant characteristics also were diverse between communities. The agricultural community participants had the most homogenous backgrounds with similar education, religious affiliation, ethnicity, and length of time spent 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.

Different challenges faced each community. The agricultural respondents 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. Residents of the urban neighborhood had dealt with their perceptions of stigma over a number of years and faced challenges while trying to create a viable community. The mining community respondents had difficulties in listing problems they had addressed as a community. Perceived community control may potentially explain this finding. Actual or potential mine closures, a recurring issue for this community, may be perceived as being beyond individual control. Such threats to a community often cannot be altered, even if residents organized. With no recent modifiable threat

Table 1. *Characteristics Identified as Leading to Community Resiliency, by Community*

	Infrastructure characteristics	Social infrastructure	People characteristics	Attitudinal characteristics	Problem-solving processes
Agricultural community ¹	Common goals and purpose among community members; strong town council; a variety of industries		Having open-minded people with a positive attitude		Collective process for decision making
Mining and logging community	Diverse economy and workforce; access to health and education; a supportive elected council	Social support, commitment, pride, “stick-to-it-iveness”; proactive and caring community	Presence of leaders and supporters or thinkers and doers; visionary leaders; access to resources and others with influence who are community minded, enthusiastic, creative, determined to “fight the fight,” knowledgeable about local resources, and interdependent	Future-oriented; flexible, tolerant and optimistic; willing to change	
Urban neighborhood	Availability of physical gathering places (e.g., parks); the community association	Concern and care about the community as a whole and neighbors as individuals; a community’s shared history and tradition	Visionary leadership; dedicated, politically astute, committed residents with knowledge and resources; ability among community members to get along and work as a team	Pride and belief it will be successful	Transparent, collective problem-solving process; a supportive city council

¹Characterized conceptually as being proactive and creative and willing to network to achieve goals as well as being seen to possess a sense of togetherness and community.

Table 2. *Barriers to Resiliency, by Community*

	Challenging events	Infrastructure characteristics	Social infrastructure	People characteristics	Attitudinal characteristics
Agricultural community ¹	Loss of industry	Ageism and gender bias; economics, geography, isolation; shift work among community members; lack of support from council; choices removed by the government		Lack of knowledge and education; limited vision; jealousy, ignorance, prejudice, and fear of change; lack of communication; low self-esteem	Being rigid and negative; individualism
Mining and logging community	Repeated negative events; sudden, unexpected events such as a natural disaster; loss of industry	Limited money; no access to health and post-secondary educational opportunities; high crime rate	Failure to be proactive, with a lack of community spirit; lack of communication	Limited or no participation by residents; lack of leadership; lack of caring; lack of vision; convergent thinking	Complacency; negative attitude; apathy; insularity, individualism; powerlessness; lack of belief in the community; fear; lack of acceptance of others; unwillingness to develop partnerships
Urban neighborhood	Loss of industry; zoning changes may impede community's development; close proximity to industrial sites	Lack of education; limited finances; population decrease; perception that additional external support is not required	Negative neighborhood perception or reputation	A lack of leaders and dedicated caring community residents; lack of teamwork	Narrow-mindedness; prejudice; selfishness and stubbornness; not getting along

¹Characterized conceptually by a failure to be proactive.

to address, it could be argued that the mining community has not had the opportunity to coalesce, leaving residents wrestling to identify instances of community action.

Finally, the researchers identified distinct group demarcations within two of the study communities. The agricultural community separated into four groups: urban/rural; farm/town; county versus individual-community loyalty; and, established members/newcomers. The mining community identified people as: old-timers/newcomers and the “boss”/worker. Interestingly, no clear groups self-identified in the urban neighborhood.

4.2 Household Survey

The primary goal of the household survey was to demonstrate a link between resiliency and health status, as hypothesized by Carver (1998). This link would result in a more objective measure of resiliency. A larger, representative sample was needed to demonstrate such a link. Two other goals were to develop a preliminary resiliency scale to begin to establish reliability and validity and to generate information about the health status of rural communities, a largely neglected area of research.

The survey generated responses from 210 households, for an overall 17.5% response rate. The pattern of response varied by community. The urban neighborhood had the lowest survey participation (11%), whereas 16% of the households in the mining community responded, and 25% responded from the agricultural community. The returns were disappointing, particularly in light of the door-to-door delivery in the urban setting, the media coverage, and the follow-up postcard; the researchers had hoped for at least a 50% return rate. Given the poor response, the findings from the household survey must be viewed with caution and are considered to be exploratory.

Survey responses were entered into an ACCESS[®] database 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. Respondents did not vary by age, educational levels, or household incomes by community. For the total sample, the average household respondent was nearly 49 years of age, with a range of 20 to 81 years. Household participants were primarily female in the agricultural and urban communities (71% and 78%, respectively), whereas the mining community had more equal representation by gender (57% female) and the difference was statistically different ($\chi^2 = 9.44$, $df = 4$, $p = 0.05$). Differences among the communities were found with respect to amount of home ownership, length of time in community, and place of work (see Table 3). Twenty percent more respondents from the rural communities reported owning their own homes compared with their urban counterparts. Furthermore, more than 33% of rural residents had resided in their communities for more than 30 years, while only 11% of urban participants reported the same. The number of individuals who worked in a primary industry was a clear difference among communities, but this was expected, given the known variation in the economies of the study sites.

The survey generated information about the links between health status and community resiliency based on the assumption that individuals would experience

more health problems if they lived in an environment that was not displaying resiliency. The mailed questionnaire invited respondents to report from a list of 24 health conditions any problems that had been diagnosed by a health professional. Respondents from the urban neighborhood reported a higher proportion of circulatory problems, diabetes, depression, and asthma than did those from the other two communities. Slightly more respondents from the mining community reported thyroid disorders, while residents of the agricultural area reported a significantly higher prevalence of cancer ($p = 0.045$) in comparison.

A 15-item, 5-point scale used in the household survey (Kulig, 1996) asked respondents to rate their ability to cope, as well as the cohesiveness within their community. A summated score was used to determine the degree of resilient behavior rated by respondents; possible scores were from 5 (low satisfaction and resilience) to 75 (high coping behavior and 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 (range 9–75, S.D. = 9.6), and there was no statistical difference among the communities on this calculated variable. Self-rated health was weakly correlated with a high score on the summated resiliency score ($r = 0.13$, $p = 0.06$).

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

Self-report of physician-diagnosed cancer among household survey respondents was highest in the agricultural community (14%). Cancer incidence rates in the same time period were not elevated in the agricultural health region compared to the reported provincial average (Murphy, Bryant, & Dover, 2003). However, our examination of outpatient and inpatient utilization age-sex adjusted rates from 1997 to 2002 for neoplasms revealed that rates were consistently highest for the agricultural area among the three communities studied, as well as being higher than the provincial rate. For example, during this time frame the outpatient visits in the agricultural community ranged from 6 to 12 outpatient visits per 1,000 population per year, in contrast to the provincial rate of slightly more than 4 visits per 1,000 per year. The outpatient and inpatient data reflect treatment and survival factors, which in turn affect the prevalence of cancer observed in the community. Accordingly, cancer was perceived to be a health concern during qualitative interviews and community meetings in the agricultural study area. Given the residential stability of the region, where most people know each other, the higher utilization rates validate the rural agricultural community's perception of higher risk.

Perceived health and sense of belonging. 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. When compared to the provincial findings of the 2000/01 Canadian Community Health Survey

(Statistics Canada, 2003) all three study communities had lower proportions of respondents reporting “excellent” health.

Table 3. *Health Status & Community Resiliency Study, 2004: Home Ownership, Length of Time in Community, and Work in a Primary Industry*

Household ownership	Community			
	Mining <i>n</i> (%)	Agricultural <i>n</i> (%)	Urban <i>n</i> (%)	Total
Own	57 (87.7%)	86 (87.8%)	30 (68.2%)	173
Rent	6 (9.2%)	10 (10.2%)	14 (31.8%)	30
Other	2 (3.1%)	2 (2.0%)	–	4
Total	65	98	44	207
$\chi^2 = 14.48, df = 4, p = 0.006^{**}$				
Length of time in community				
< 1 year	2 (3.2%)	–	7 (15.9%)	9
1–5 yrs	11 (17.7%)	11 (11.1%)	18 (40.9%)	40
6–10 yrs	8 (12.9%)	10 (10.1%)	7 (15.9%)	25
11–15 yrs	5 (8.1%)	4 (4.0%)	3 (6.8%)	12
16–20 yrs	2 (3.2%)	6 (6.1%)	1 (2.3%)	9
21–30yrs	13 (21.0%)	26 (26.3%)	3 (6.8%)	42
> 30 yrs	21(33.9%)	42 (42.4%)	5 (11.4%)	68
Total	62 (100%)	99 (100%)	44 (100%)	205
$\chi^2 = 49.64, df = 12, p > 0.0001^{***}$				
Work in primary industry (agriculture, forestry, petroleum, or mining) for at least 1 year				
Yes	37 (57.8%)	61 (61.6%)	12 (28.6%)	110
No	27 (42.2%)	38 (38.4%)	30 (71.4%)	95
$\chi^2 = 13.595, df = 2, p = 0.001^{**}$				

Nearly 83% of respondents from the agricultural area reported either having a somewhat strong or very strong sense of belonging within the community. The strong sense of belonging among rural agricultural residents was statistically different ($\chi^2 = 21.56$, $p = 0.006$) compared with the other two study communities and reinforces the qualitative findings of a philosophical commitment to living in a rural area.

Inherent within the community resiliency process is the expression of a sense of community, evident in community pride and spirit and operationalized as sense of belonging to one's community. Interestingly, the urban neighborhood had the lowest reported sense of belonging, which supports the first premise of the community resiliency model. We found a higher proportion of self-reported, physician-diagnosed depression and subsequent utilization of health-care services for mental diseases in the urban neighborhood compared with the two rural communities. The quantitative findings provide tentative evidence of a linkage between community resiliency and health status.

These findings led to another revision of the Community Resiliency Model (see Figure 2). This represents the first time quantitative data have supported the model and led to a revision of it. Specifically, the revised model incorporates characteristics, including shared mentality and ability to cope with change, within the component Interactions as a Collective Unit. Furthermore, sense of belonging and community pride are both *results* of a sense of community rather than sense of belonging leading to a sense of community. The entire process of community resiliency influences health status.

An incidental finding was the 15-item, 5-point scale used in the household survey. The scale is a modification of an interview schedule previously used in the first author's qualitative work (Kulig, 1998). We found that the summated score was weakly positively correlated with higher levels of self-rated health and lends support to the premise that community resiliency is linked to individual health. Based on the correlation and the high internal consistency of the scale, further psychometric testing is warranted. The small sample size likely contributed to the nonsignificant results, necessitating replication in future studies with larger sample sizes.

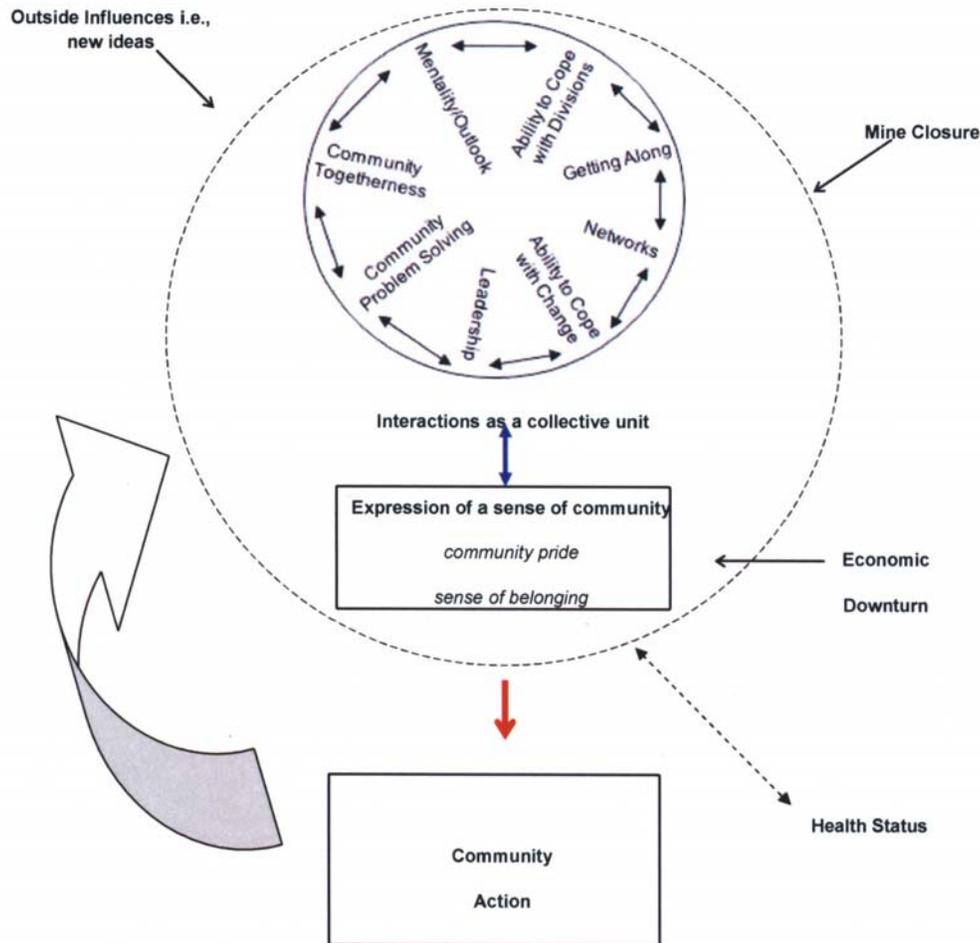
4.3 Existing Databases

If resiliency is linked to health status as hypothesized, then existing databases should illustrate health trends in communities that have undergone adversity and not demonstrated resiliency. Our first goal was therefore to generate information from such databases to support Carver's hypothesis. A second goal was that in studying more communities through health status data, we would be able to confirm, refute, or revise the current Community Resiliency Model. This has application for policy development regarding enhancing the resiliency of communities through proactive interventions or activities. Finally, further differentiation about the health of rural communities would be realized by focusing on the existing databases and the information provided there.

Our examination of the standardized rates from the provincial databases provides corroboration for the differing proportions of self-reported depression, asthma, and cancer found between the communities in the survey. Consistently in all three databases, utilization of health-care services for mental diseases was highest in the urban neighborhood, which is congruent with the higher self-reported depression

from the household survey among urban participants (24%) and may be related to available services in the urban setting. Asthma was proportionately reported by more urban household respondents (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 (data not shown).

Figure 2. Updated Community Resiliency Model (2007).



Note. Adapted from "Sensing collectivity and building skills: Rural communities and community resiliency," by J. C. Kulig (1999). In W. Ramp, J. Kulig, I. Townshend, & V. McGowan (Eds.), *Health in rural settings: Contexts for action*, p. 232. Copyright 1999 by the University of Lethbridge. Reprinted with permission of the authors.

5.0 Measuring Resiliency: What Do We Know from Multimethod Studies?

Each research method has specific advantages and disadvantages when studying resiliency (see Table 4). Their inherent individual differences become complimentary when combined in a study like the one described here. Triangulating data sources to study concepts such as resiliency should be the emphasis of future studies in order to further theoretically develop this concept.

5.1 Qualitative Interviews

Conducting the qualitative interviews helped generate information about the meaning and experience of resiliency by the individual participants in communities of different economic bases. For example, the participants could identify how they contributed in the process of community resiliency by participating in events. Specific characteristics of resiliency were also clarified. However, the significance of these characteristics varied between the communities, which may be explained at least partially due to the differences in their economic bases. For example, the agricultural community was routinely identified as being unique in the way it interacted as a collective unit. The mining community was noted as changing, because after the mine closure, a mass exodus of the residents did not occur. These differences are important to identify because they help in understanding how rural communities function and develop in unique ways.

Qualitative information, such as the above examples, helps to understand what is useful for policy development, thereby assisting with rural sustainability. Thus, this investigation revealed that gathering places, such as schools and post offices, help ensure interactions between individuals. Supporting policies that help create conditions in communities to enhance resiliency are therefore essential.

Although the individual differences in perspectives are important, interviews have a downside when attempting to understand resiliency. Most participants have limited experiences with other communities and are often influenced by the perspectives of their friends and family, which can restrain how unique their perspectives can be while also leading to a type of “group-think” on certain topics. The subjective nature of interviews can reveal passionate, although restricted views. Finally, interviews are costly and can be difficult to analyze; they remain a subjective measure that may not be generalizable to other situations or, in this case, communities (see Table 4).

5.2 Household Survey

The mailed survey was devised to gather data on household health status, participation in community events, and community resiliency. Our goal was to determine through quantitative methods whether a relationship between community resiliency and health status exists. If such a relationship can be demonstrated, then Carver’s work would be supported and further exploration to assess whether interventions to strengthen community resiliency would be justified.

Findings from the survey suggest a theoretical link between health status and community resiliency, given the positive correlation between the summated community resiliency score and self-rated health. Survey methodology using probability sampling can gather representative data from all sectors of the population, allowing for a greater number of diverse responses than what can be achieved with in-depth interviews. Use of multiple methods to approach community resiliency led to the assessment of convergence or divergence of findings with each research question (Brewer & Hunter, 2006). In our study, we were able to confirm one qualitative aspect of resiliency—sense of belonging—through the household survey. This was an incidental but important finding and not one of our original goals.

Table 4. *Comparison of Research Methods*

Research method	Example of how community resiliency is understood	Advantages	Disadvantages
Qualitative interviews	Sense of belonging and sense of community verified Specific attitude (i.e., positive, proactive) verified as essential for resiliency to occur	Participants have opportunities to challenge what is meant and understood about resiliency Subjective measures: passion and beliefs are generated	Challenges to analyze Costly Not always generalizable Participants have limited access to social networks and other community experience
Household survey	Summated score of resiliency linked to health status Revised the original Community Resiliency Model through quantitative data and analysis of sense of belonging	Respondents have access to multiple social networks Objective indicators	Low response rates Less opportunities for respondents to challenge the meaning and understanding of resiliency
Existing databases	Confirmation of proportions of disorders	Objective indicators	Costly Difficult to access No index construction available; assume that resiliency can be measured by an objective health status measure Unable to confirm, refute, or revise Community Resiliency Model

Despite the gains we made in understanding and corroborating qualitative findings with the household survey, there are inherent difficulties and limitations. For one, as in our case, there is the potential for less than desirable survey response rates, challenging the internal validity of the survey findings. Secondly, the study was cross-sectional in design, which negated the link between the occurrence and timing of community events and the relationship to the development of community resiliency. Finally, survey methodology does not afford the opportunity for

respondents to challenge the definition of community resiliency, nor provide in-depth discussion about its parameters.

5.3 Provincial Health Databases

Provincial health databases provide administrative indicators of health status and allow access to multiple communities simultaneously. Existing databases confirmed differing proportions of disorders, such as self-reported depression and asthma. However, using databases is costly and requires extensive clearance to access them. In the case of community resiliency, the existing databases have no clear indicator to assess resiliency. Rather, there are assumptions that if communities do not demonstrate resiliency then the individuals who live within them will experience unhealthy states. One of our goals was to determine if there were health trends within the databases that would help support this presumption. However, at the present time, there are no index constructions available for resiliency within databases. Other assumptions about the nature of the relationship between individual and community resiliency have not been resolved. Our other goal, to confirm, refute, or revise the Community Resiliency Model, was not met in this investigation through the use of existing databases.

In conclusion, using multiple methods to study and understand concepts such as community resiliency is a challenging process that is not without difficulty. Although there is potential to generate greater understanding of community resiliency, inconsistencies between the different methods do not automatically allow for triangulation of the data. Despite these challenges, the study reported here enhanced our understanding of community resiliency and provides guidance for similar future studies. Finally, the information generated enhances our understanding of rural communities and the challenges they face, as well as their strengths exemplified through demonstrating resiliency.

6.0 References

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