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# TECHNICAL REPORT HOUSEHOLD SURVEY RESULTS,

Technical Report

## THE HOUSEHOLD SURVEY

## **Background**

Mounting concerns about individual and community preparedness for disasters are being voiced, in part because natural disasters are increasing. In Canada, circumstances such as pine beetle infestations, reduced precipitation coupled with above normal temperatures, and an increased number of homes in forested areas contribute to the increased occurrence of wildfires and their impact on humans. In order to understand community responses to wildfires, a mixed method study was conducted (2008-2010) in two communities in western Canada: Barriere, British Columbia and La Ronge, Saskatchewan (ruralwildfire.ca). These two communities were selected since they had endured wildfires that resulted in community evacuation with significant loss of property (McClure fire in BC, 2003; and, Mallard fire in SK, 1999).

Specifically, the study was developed to determine the types of local social dynamics and institutional structures which contribute to resiliency in rural settlements that have experienced disasters and to determine how resiliency is manifested under these circumstances at: a) an individual or household level and, b) a collective level. Local advisory boards were created and local individuals were hired to work as research assistants. Qualitative interviews were initially conducted with the simultaneous development of community profiles of the participating communities. Household surveys were also conducted in each community and another community which did not experience a wild-fire (Coaldale, Alberta). This technical report presents the findings from the household survey that was conducted in La Ronge, SK and the surrounding area.

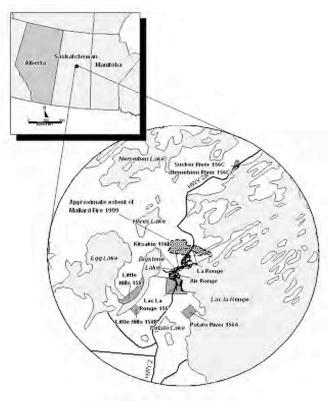


Figure 1 La Ronge Study Area

Northlands College
Photo Courtesy of J.C. Kulig

"If you don't have a disaster, you're never going to plan for one. If you see it once, then you'll say, Well, next time it happens we'll be ready. I think that has taught us a lesson here."

Community Member

#### ETHICAL CONSIDERATIONS

Institutional ethical approval was granted by the University of Lethbridge for the project. In addition, the project was reviewed and approved by the Mamawetan Churchill River Health Region.

#### SURVEY DEVELOPMENT

In the original research proposal, we proposed to conduct a mailed household survey in the participating communities. Four of the research team members worked by distance throughout 2008 to devise a questionnaire that would capture the wildfire experience of residents and their perceptions of social support, social cohesion, community resiliency, health and well-being, as well as residents' reported behaviours of community participation. The literature, findings from the qualitative interviews, and the researchers' past experience with previously developed tools guided the development of the questionnaire.

The General Inventory Questionnaire for Disasters¹ was modified to specifically inquire about wildfires. For those participants in Barriere and La Ronge, respondents were asked about the amount of warning they had to prepare for the wildfire, the danger and damage experienced by the wildfire, and experience of evacuation. A series of questions on social support were replicated from the New Rural Economy (NRE) project², as well as from the General Social Survey³. The previously designed questions were modified to capture participant actions before, during and after the wildfire. Social cohesion questions asked about the feelings of respondents living in their respective communities. The questions were taken from the NRE survey and originally were based on the Neighborhood Cohesion Instrument⁴. Questions related to community resiliency were based on a previous mailed survey used in Alberta ⁵. The questionnaire also contained questions on self-reported health and selected questions on chronic health problems, taken from the Canadian Community Health Survey (CCHS) and a question on stress from the NRE survey. Queries about active involvement at the local community level and rural well-being were based on work by Hungerford and Townshend⁶. Demographic variables were constructed to mirror the information gathered in national surveys, such as the CCHS.

Members of the local advisory teams in Barriere and La Ronge provided input and feedback about the content, format and length of the questionnaire and plans for mail delivery. It was during an onsite visit to La Ronge in October 2008 that the researchers realized that distributing the questionnaire via the mail would not result in the desired response rate. After much discussion, a decision was made to re-fashion the questionnaire into a structured interview tool and to hire local research assistants to gather the information by interviews with residents from randomly selected households. This revised strategy was applied to the two communities that had experienced wildfires, as well as the control community. The final versions of the structured interview guide and the participant selection guide, tailored for each community, were finalized in January 2009. Standardized training sessions for the research assistants were conducted in February 2009 in Barriere, and in La Ronge at the end of April 2009.

#### SELECTING THE HOUSEHOLD SAMPLE & REPRESENTATIVENESS

A sampling strategy was developed to choose randomly selected households within the study region. The sample frame of households was developed as follows:

- 1. a GIS (Geographical Information Systems) software (MapInfo Professional) was used to identify a 25 km buffer region surrounding the population centre of La Ronge for which coordinates were derived from the National Atlas of Canada. This region included the communities of La Ronge, Air Ronge, Lac La Ronge Indian Band, Kitsakie, as well as some outlying reserves such as Sucker River (see Figure 1),
- 2. All postal codes lying within the 25 km buffer region were identified.,
- 3. An electronic route planning software with combined electronic telephone directory (Street Atlas USA 2009+) was used to identify all residential names/addresses matching these postal codes (n=1635).
- 4. All of these addresses were geocoded to identify residential location. The geocoding produced four levels of geocoding accuracy; exact street and address accuracy; street-level accuracy; FSA



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TECHNICAL REPORT
HOUSEHOLD SURVEY RESULTS. LA RONGE SK. 201

(Forward Sortation Area) accuracy; and regional accuracy. The last two provide unreliable locational information in terms of household contacts and so only those households with exact or street-level accuracy were retained in the sampling frame (*n*= 647).

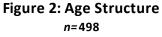
From the sample frame of 647 households with reasonable location accuracy, two sets of 250 randomly selected (without replacement) households were identified, with a third set comprised of the remaining 147 addresses. Each set was mapped over a series of one km by one km grids using the GIS to check for adequate sample coverage throughout the populated portions of the study area. Each sample set functioned as the primary, secondary, and tertiary sampling lists for the researchers conducting the face-to-face interviews.

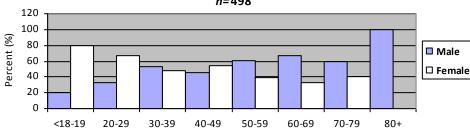
A day-long training session was held in La Ronge during March 2009 for locally hired interviewers by one of the researchers (D.Edge). Research procedures, including use of the sampling lists, issues of confidentiality, and practice using the structured questionnaire guide occurred during the training session. Face-to-face structured interviews were carried out by a team of local research assistants: each was assigned a share of the primary, secondary, and tertiary sample lists. Households on the primary list were approached, and to ensure random selection of male and female respondents, and an adult with the most recent birthday was invited to participate in the survey. Members of the household were ineligible to participate if they did not reside in the community during the wildfire. If participants were ineligible, or if there was no response or contact after three visits, an address from the secondary sample list (or tertiary list if required) was used as a substitute. Household contacts continued in this manner from May to August 2009. Guidance to interviewers was provided through a weekly scheduled teleconference call during the duration of the data collection.

The household survey in the La Ronge region yielded 111 useable responses. Although not an optimal sample size, time constraints and surveying difficulties made it impossible to obtain the desired 250 responses. Nevertheless, assuming a population of 1635 households in the area, the sample data provides a margin of error of +/- 9.0% at the 95.0% confidence level and +/-7.6% at the 90% confidence level.

## WHO WERE THE PARTICIPANTS?

In the La Ronge household survey, the largest proportion of respondents were male (n=59, 53%) (see Figure 2). Males were slightly over-represented amongst La Ronge respondents by approximately 4% compared to the proportion of La Ronge males reported in the 2006 Census (49% male). The households ranged in size from 1-9 persons with 53% composed of two people. The vast majority of responding households had no minors living with them (n=78, 70%). Fiftyfour percent of the respondents were between the ages of 45 and 64 (n=60), an overrepresentation of this age group compared to the 2006 census by 31% (n=620, 23%). The greatest proportion of residents of La Ronge were between ages 25 and 44 in 2006. The overrepresentation of the older age group is not surprising, as our eligibility criteria required that a household resident had to have lived in La Ronge during the 1999 Mallard fire. More married people participated in the survey compared to the total La Ronge population in 2006 (60% vs. 42%). The majority of responses (76%) had some form of post-secondary education, with nearly 3% reporting being unemployed, 70% were employed or self-employed, and 19% of respondents reported being retired. Annual household income for 40% of respondents was reported to be \$100,000 or more, which is higher than the median income of \$60,554 for all census families in La Ronge in 2005.







Wild rice Plant
Photo Courtesy of J.C. Kulig

"...after that it was like dreaming about each room burning down and stuff like that. And I think the worst thing too was seeing my children, yeah, seeing them go through the rubble and trying to find trophies and awards and stuff like that."

Community Member



Photo Courtesy of J.C. Kulig

#### HOUSEHOLD SURVEY RESULTS.



All Saints Anglican Church Photo Courtesy of J. Kulig

"...a lot of people said that it was like the hottest, fastest fire ever. Like usually when there's a fire when you go back to you home maybe half your fireplace is still standing or you can find a metal something or other. It was just black holes"

Community Member

## EVACUATION EXPERIENCES

Of the 111 individuals who responded, 82% (n=91) did not have a chance to prepare for the evacuation. Of the 20 respondents who reported having a chance to prepare, most had 1 to 12 hours of warning time regarding the fire, whereas about 1/3 had less than one hour to prepare. Those who reported having time to prepare were asked about their preparation to deal with the fire and 20 responded. Of these 9 had previous training, 13 reported previous knowledge, and 14 had previous experience dealing with fires. Of the total sample, 62% (n=69) were overwhelmed by the suddenness of the fire and the same proportion (62%) were overwhelmed by the severity of the disaster. Despite the severity of the fire, only 8% (n=9) reported coming near death, yet none had thought it likely that they would die. Fourteen participants (13%) reported that someone close to them came near death due to the fire.

Forty-two La Ronge respondents (38%) reported the hours they fought the Mallard fire. Among this group, the hours spent fighting the fire ranged from one - 96 hours. The mean number of hours fighting the fire was 17 hours (SD=17.2). Among the household survey respondents, 18 (16%) indicated that they defended their property against the fire. Twenty-five (23%) respondents reported being trapped by the fire and two were injured, but did not respond about injury severity.

Forty-six percent (n=51) of household respondents were evacuated. Of this total, 96% (n=48) were evacuated once, and one household was evacuated twice, and one, three times. Among those evacuated, 43% (n=22) reported being separated from family members during the evacuation process.

Three participants reported damage or partial destruction of their homes, and three reported their business was destroyed. In addition, 16 respondents (14%) reported loss of their neighborhood and 56 (51%) lost their town due to the fire, with most indicating that their town was partially destroyed.

After the fire, 6% (n=7) of respondents indicated that they had lost their ability to work. For this sub-group of respondents, unlike Barriere, none indicated that their workplace was destroyed by the fire. One individual had lost a personal ability to work and six others indicated that there were other reasons for not working after the fire. Many of the reasons were directly related to the fire, loss of clientele due to fire or being traumatized.

The clean-up after the fire also required time for those who had been evacuated and then returned to their property to deal with the damage. The range of clean-up days was from zero (n =87, 78%) to 20 days (*n*=1, 0.9%).

After the fire, only 6% (n=7) indicated that they had lost their ability to work. For some, their workplace and opportunity to work in the community had ended. For example, 9.0% (n = 1) had lost a personal capability to work. Some (n=5, 5%) of the respondents indicated that there were other reasons for not working after the fire. Some reasons were directly related to the fire, including that self-employed citizens took down time from the fire and people were traumatized by the fire.

Beyond the responses to the specific questions, there were numerous individual responses regarding the positive and negative impacts of the fire. People disclosed that they had lots of clean -up activities. The majority of reported changes were positive, including a major change in mind-set and realization of vulnerability which prompted steps in emergency preparedness. Community members had a plan for evacuation and became better prepared for future disasters. One person reported that they no longer go below a half a tank of gas: now the car is filled up with gas everyday so the household is ready to go if there is a problem. One respondent mentioned that after a fire experience they know now what is valuable in life, which initiated further emergency preparedness.



The Uniplex (Evacuation Centre) Photo Courtesy of J. Kulig

#### SOCIAL SUPPORT NETWORKS

After the fire, there were many changes that the individuals within the affected communities had to address. For those in the La Ronge area, 11% (n = 12) of the individuals experienced a change in their living arrangement, 11% (n= 12) experienced a change in their financial income,

## TECHNICAL REPORT HOUSEHOLD SURVEY RESULTS, LA RONGE SK, 2010

5% (n= 6) experienced a change in their employment, and 11% (n=12) experienced a change in their health after the fire (see Figure 3). Changes in their financial income and health were identified as being the ones with the **greatest impact** (n=9, 8%), followed by living arrangements (n=7, 6%), other changes (n=6, 5%), and then parenting, child care, education, and personal achievements (n=4, 4%). The respondents were also asked about the outcome of the change with the greatest impact; 75% (n=36) indicated it was resolved and 25% (n=12) stated it was ongoing.

From a list of possible communication resources used, the respondents chose the following most frequently: radio (41%, n=46), TV (10%, n=11), newspapers (8%, n=9), and other media resources (6%, n=6). The most common family resources were associated with relationships, friends (19%, n=21), close personal friends and work mates, or neighbors (12%, n=13; 12%, n=13; 12%, n=13, respectively). The most common professional resources were employers (14%, n=15), community or volunteer organizations (7%, n=7), and government staff (6%, n=7).

There were both positive and negative impacts due to the changes that were experienced. The ones that had more positive changes were personal safety (29%, n=32), friends (20%, n=22), and family (19%, n=21), whereas the remainder were more negative: (mental well being (10%, n=11), and physical health (5%, n = 6)).



Jonas Roberts Memorial Community Centre
Photo Courtesy of J. Kulig

Figure 3: Degree of Change (positive or negative)

8
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Pageting Child Cafe

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Linite Artalganeric

Reading Reading Child Cafe

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Other Change

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"...probably because we're three funded different communities. I think that's where the tensions lie. I think that's what creates a lot of situations sometimes because of the different levels of government"

## HEALTH & WELL-BEING

As noted in Figure 4, the respondents most often reported their health as 'very good' or 'excellent' (52%). This compares to nearly 59% of Saskatchewan residents who reported their perceived health as 'very good' or 'excellent' in June 2010.7. Seventy-four individuals (67%) reported that their health was about the same compared to before the fire, with 25 (23%) reporting it as somewhat worse or much worse. In total, 61 (55%) of the respondents indicated that their life was somewhat stressful, whereas 28 (25%) indicated it was not stressful, 9 (8%) said it was not at all stressful, and 9% (n=10) reported their life as very stressful.

A 21-item scale measuring anxiety was used in the survey. Scores could range from 0 to 63, with a higher score indicating a higher level of anxiety. The average anxiety levels in all three communities were low and highly positively skewed, with an overall mean of 4.59 (SD=6.5). In La Ronge, the scores ranged from 0 to 34, with a mean score of 4.89 (SD=6.69), slightly higher than the combined mean. There was no difference in anxiety scores between any of the communities (Kruskal-Wallis, p=0.107).

Survey participants were presented with 14 medical diagnoses and asked to comment if anyone in their household had been diagnosed with the condition(s). The most common household chronic conditions among the sample were: high blood pressure (34%), arthritis (26%), and chronic back pain (23%). If an answer was affirmative, respondents were then asked if the diagnosis had occurred after the wildfire in their community. Proportionally, the greatest increased diagnosis following the wildfire was anxiety disorder. This also held true for the comparison community of Barriere, BC.



Photo Courtesy of J. Kulig



Town of La Ronge
Photo Courtesy of J. Kulig

#### Figure 4: Self-Reported Health n = 11050 40 8 30 Percent 20 10 0 Strongly Disagree Neutral Agree Strongly agree disagree

#### SOCIAL RELATIONS

The participants were all asked to respond to questions about living in La Ronge. The responses reinforce their satisfaction living in this rural area. For example, 87% (n=96) strongly agreed and agreed and likewise felt like they belonged in the community. Furthermore, the respondents strongly agreed and agreed that La Ronge gave them a sense of community (n=100; 90%), fellowship between themselves and their neighbors (n=83, 75%) and that they had a sense of rootedness (n=86, 77%) in the area. Only 68 (61%) strongly agreed or agreed that they would move out of La Ronge if given the opportunity. In total, 95 (86%) strongly agreed and agreed that they would remain a resident in La Ronge for a number of years in the future.

Having positive connections with their neighbors was clearly evident in their strongly agree and agree responses shown below:

- 81 (74%) indicated that they visit with their neighbors,
- 103 (94%) noted that the friendships and associations they have in their community mean a lot to them.
- 107 (96%) said that neighbors help in emergencies,
- 103 (93%) would go to someone in their community if they needed advice,
- 97 (88%) felt loyal to the people in their community,
- 99 (89%) regularly stop and talk with the people in their community,
- 77 (70%) noted that they borrow and exchange favours with their neighbors,
- 38 (34%) strongly disagreed and disagreed that they rarely have neighbors over, and
- 60 (54%) agreed that they rarely had neighbors over.

The respondents also noted that they strongly agreed and agreed that they agreed with their fellow residents about what was most important in their life (n=58, 52%) and that they saw themselves as most similar to others in La Ronge (n=71%).

Any planning in the community was seen as a process that involves "we" rather than "they" (strongly agree and agree: n=70, 63%), however 2% (n=26) had a neutral response to this question. In addition, 103 (93%) strongly agreed and agreed that they would be willing to work on things together with their fellow residents.



La Ronge Health Centre
Photo Courtesy of J. Kulig

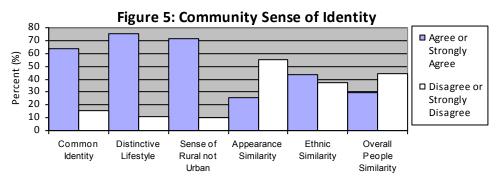


Figure 6: Feel Like I Belong in La Ronge

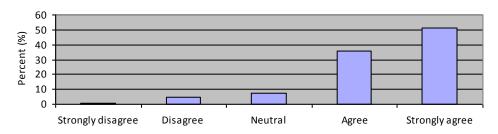
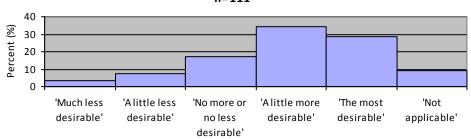


Figure 7: Community Desirability

n=111



## COMMUNITY RESILIENCY

All the participants were asked to respond to the 15 item Community Resiliency Scale. Over a third felt isolated from the rest of the province (strongly agree and agree: 51%; n=57) although 25% (n=28) felt neutral in this regard. Eighty-five percent (n=94) either strongly agreed or agreed that people in the community helped one another. A fair number of participants agreed that the people in the community shared similar values (strongly agree and agree: 45%, n=50). Only 7% (n=8) strongly agreed that people in their community were open to new ideas while 32% (n=36) were neutral in regards to this statement. The participants also indicated that:

- The changes in their community were positive (strongly agree and agree: 64%, *n*=70),
- They believed that residents of the community participated in community events (strongly agree and agree: 74%, n=82),
- There was strong community leadership (strongly agree and agree: 43%, *n*=47) and that leaders listened to the residents (38%, *n*=42),
- There was a sense of community pride (68%, n=75),
- Community members were able to deal with problems (strongly agree and agree: 74%, n=82).
- There was satisfaction with the quality of current health care services in their community (strongly agree and agree: 63%, *n*=70)

As individuals, they did not believe that the physical environment negatively affected their lives (strongly disagree and disagree: 76%; n=84), that they do things to stay healthy (strongly agree and agree: 84%; n=93), they have support from others to stay healthy (strongly agree and agree: 89%; n=99) and they can deal with problems in their life (strongly agree and agree: 93%; n=103).



Village of Air Ronge
Photo Courtesy of J. Kulig

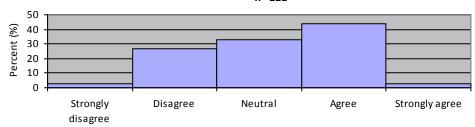


Lac La Ronge Indian Band Photo Courtesy of J. Kulig



Photo Courtesy of J. Kulig

## Figure 8: My Community Has Strong Leadership n = 111



#### COMMUNITY & POLITICAL PARTICIPATION

The majority of the respondents noted that they always voted in municipal/local (n=74, 67%), provincial (n=77, 70%), and federal (n=79, 72%) elections (See Figure 8).

The respondents were also asked to identify how often they used community facilities. For the following facilities, the largest response was "never:" sport facility (n = 31, 28%), library (n = 31, 28%), lib 52, 47%), church (n=51, 46%), and day care (n=100, 91%). They accessed the medical clinic, and the pharmacy less than once a month (n=87, 79%; n=57, 51% respectively), restaurants once a month (n=22, 20%), and the gas station, convenience store, and restaurants five or more times a month (n=45; 41%, n=34, 31%; n=22; 20% respectively).

## COMMUNITY IDENTITY

Several statements were included that focused on community identity. When asked about how similar people are in their community: 30% (n=33) agreed or strongly agreed that their ten nearest neighbors were similar to them but 44% (n=49) either disagreed or strongly disagreed with this statement. They believed that people in their community were easily recognizable by their ethnic background (43%, n=48) but not by their clothing (55%, n=60). There was strong agreement that their community was more rural than urban (strongly agree and agree: 71%, n=79) and that a rural lifestyle is more distinctive than an urban lifestyle (76%, n=84). Finally, 64% (n=71) felt that there was a common sense of identity among the residents.

Most of the participants indicated that their community was trusting, welcoming, supportive and friendly and noted that they would feel sad if they had to move away (See Figure 9). Fifty-one percent (n=56) noted that they were much more satisfied living in La Ronge than elsewhere and that 29% (n=32) felt it was the most desirable place to live. They also believed that outsiders would see their community as struggling (28%, n=30) or average (43%, n=47). Finally, when asked what percentage of visiting with their neighbors involves their own family, almost 40% indicated zero and almost 20% indicated half of their visiting with neighbors involved their own family members.



Figure 9

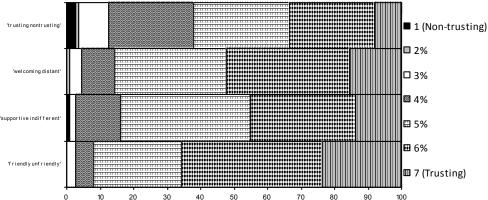




Photo Courtesy of Judith C. Kulig



Photo Courtesy of Brent Krayetski



Photo Courtesy of Todd Pidhaychuck



Photo Courtesy of La Ronge Northerner

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