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# HOUSEHOLD SURVEY RESULTS SLAVE LAKE, AB 2012

*Technical Report*

## THE HOUSEHOLD SURVEY

### Describing the Area

The Slave Lake area includes the Town of Slave Lake, the Sawridge First Nation and part of the Municipal District of Lesser Slave River No. 124, with the hamlets of Canyon Creek, Widewater and Wagner. It is located in the heart of northern Alberta, 250 km northwest of Edmonton, at the eastern tip of Lesser Slave Lake.

The area is home to approximately 7,427 residents. The Town contains 90% of the population and acts as the regional centre, with retail, education, health, financial, government, and transportation services. Oil and forestry industries are prevalent in the region.

The May 2011 Slave Lake fires caused the evacuation of the entire population of the Town of Slave Lake, the Sawridge First Nation and a number of residents of the Municipal District of Lesser Slave River No. 124. There was one death of a helicopter pilot but no deaths or major injuries occurred among area residents. The impact of these fires included the destruction or damage of 56 residences and 1 commercial building in the Municipal District communities. About one third of the town was affected. The flames consumed over 400 homes, 3 churches, 19 non-residential buildings, and the Government Centre, which included the municipal library, town administrative offices, and most of the regional provincial government offices. Overall, the magnitude of this wildfire event is unprecedented in recent provincial or national history.

### Purpose of the Household Survey

The household survey was conducted in order to assess the following variables within a larger population within the Slave Lake area postwildfire:

1. What were the evacuation experiences of the Slave Lake area residents?
2. What were the impacts of the wildfires on the families and children that experienced it?
3. What were the impacts of the wildfires on the community's social relations?

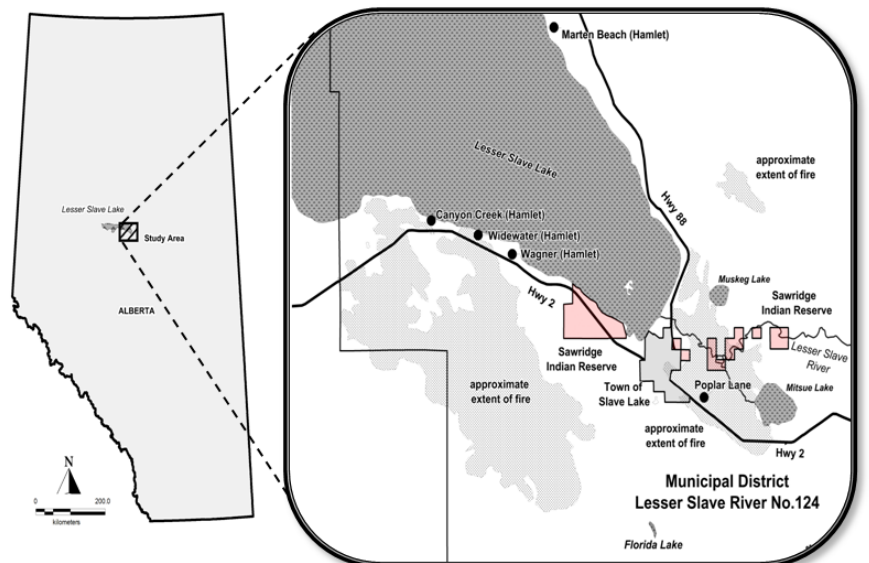


Figure 1. Slave Lake Study Area

## SURVEY DEVELOPMENT

In the original research proposal, we proposed a face-to-face household survey in the participating communities. However, for a variety of reasons (i.e., cost, limited access to research assistants and an overwhelmed community), we opted to conduct the survey using Admail<sup>1</sup>. The questionnaire development for the household survey was an iterative process based upon our experiences from the previous household survey used in Barriere<sup>2</sup> and LaRonge<sup>3</sup>, combined with findings and recommendations from other recent disaster research, input from local advisory board members, and our intention to focus on the impacts of the disaster on families and children. We included specific scales including The General Inventory Questionnaire for Disasters<sup>4</sup>, the Index of Perceived Community Resilience (IPCR)<sup>5</sup>, scales related to Social Relations<sup>6</sup>, and the Post-Traumatic Stress Disorder (PTSD) Index<sup>7</sup> for DSM-IV Parent Version, for the respondents that identified having a child between the ages of 7 and 12 years residing within the household. The PTSD Index is a widely used instrument for the assessment of trauma exposure and posttraumatic stress symptoms. The survey also included a section on demographics and a detailed map to allow the respondents to mark the location of their residence at the time of the fires. This location information was subsequently geo-coded using MapInfo Geographical Information System (GIS) software to enable further spatial analysis of respondent information.

## SELECTING THE HOUSEHOLD SAMPLE AND REPRESENTATIVENESS

The sample frame of households selected through the Admail system included all households (people dwelling in houses, apartments and on ranches and farms) within the relevant postal codes for the Town of Slave Lake, MD of Lesser Slave River No 124 which would automatically include the Sawridge First Nations. Ethical clearance was received from the University of Lethbridge.

Local advertising (i.e., radio, newspaper, and cable television community announcements) were all used to advertise the household survey. Individuals within the community took it upon themselves to access social media to encourage the community members to complete the survey. Each questionnaire included a "Toonie" (\$2) as an incentive, and for an additional incentive, if the respondents desired, they could provide their name and contact information to be entered in a draw for a \$25 gift certificate. A total of 2,877 surveys were sent through Admail, but according to the local postal clerks, 2,777 would be the more accurate number given the loss of apartments and homes and the permanent departure of 100 people from the community. The questionnaires included self-stamped and addressed envelopes which were returned to the University of Lethbridge. Six weeks after the surveys were sent, postcard reminders were distributed through Admail to the 2,877 households listed in this system.

One adult per household was asked to complete the survey. A sample of 550 respondents took part in the household survey from March to June, 2012. The data were entered into a database with Excel software using double-entry techniques to decrease errors. Cronbach's alpha was applied to assess reliability of the various scales used in the survey (e.g., IPCR, PTSD Index). Initial analysis included assessment of data quality using cross-tabulations and histograms to look for outliers. Frequency distributions, percentages, cross-tabulations, correlations, exploratory factor analysis, parametric and non-parametric tests were completed for all variables using IBM SPSS-19 software<sup>8</sup>. Stratified analyses using chi-square statistics were used to describe the findings and to assess potential differences on key variables such as age and gender.

## WHO WERE THE PARTICIPANTS?

In the Slave Lake household survey, the largest proportion of respondents were female (n=357, 65%). The households ranged in size from 1 to 9 persons, with 37% (n=198) composed of 2 people. Forty-four percent (n=89) of the respondents were between the ages of 45 and 64. More married people participated in the survey (n=353, 65%). Educational attainment was varied, but 24% (n=127) had a high school diploma, 26% (n=139) had a college or non-university diploma, and 21% (n=113) had at least one university degree. Three percent (n=17) reported being unemployed, 53% (n=289) were employed full time but not self-employed, and 9% (n=51) reported being retired. The annual household income for 42% (n=210) of respondents was reported to be \$100,000 or more. Only 16% (n=87) reported having a child in the household who was between the ages of 7 and 12 years old. Fifty one percent (n=44) of these children were female.

## EVACUATION EXPERIENCES

Fifty-five percent (n=297) of respondents indicated that they had no chance to prepare themselves beforehand for the disaster. Of the 45% (n=247) who reported having a chance to prepare, the average time to prepare was reported to be 5.9 hours. The majority (82%, n=407) were overwhelmed by the suddenness of the disaster impact. A larger percentage (90%, n=382) said that they were overwhelmed by the severity of the disaster impact. Within the total sample (n=542), 82 respondents (15%) indicated that they had come near death in the disaster. Of these 82, 13% (n=11) thought they would die, 55% (n=45) thought it was possible that they would die because of the wildfires, while 32% (n=26) thought it unlikely that they would die. Twenty-seven percent (n=143) of the 535 survey respondents indicated that someone close to them came near death in the disaster.

Approximately 58% (n=309) of all respondents reported being separated from family during evacuation. Twenty eight percent (n=154) reported being separated from their children, 26% (n=143) reported being separated from their spouse, and the others reported being separated from their siblings, parents and others (13%, n=72; 12%, n=66; 7%, n=39; respectively). One hundred and twenty five (40%) respondents reported being separated from their family for more than one week. Ninety five (31%) respondents reported being separated from family for less than 24 hours. Finally, 16% (n= 49) reported being separated for 24 to 48 hours and 13% (n= 41) reported being separated from family for more than 48 hours. One hundred sixty three respondents (31%) lost their home; 57 (12%) lost their business or farm; 277 (54%) lost their neighbourhood; and 293 (60%) lost their community services due to the fire (Figure 2). Of the seven types of loss shown in Figure 2, 57% of respondents reported more than one type of loss. It took an average of about 15 days after the fires before the respondents returned to their usual activities.

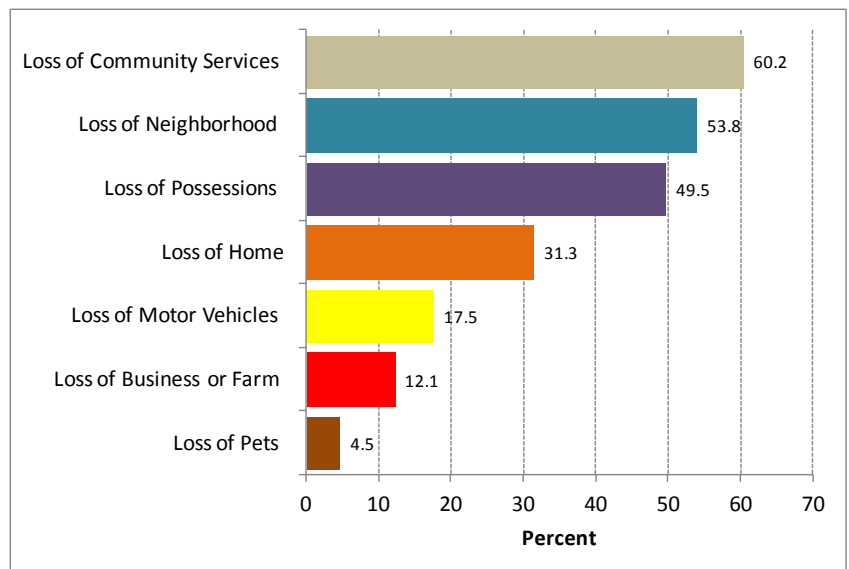


Figure 2. Losses, n=543

After the fire, 136 respondents (25%) indicated that they had lost their ability to work. For this sub-group of respondents, 22 respondents (18%) indicated that their workplace was destroyed by the fire. An additional 18 individuals (15%) noted that their work was not needed and 31 (25%) had lost a personal capacity to work. Seventy eight respondents indicated that there were other reasons for not working after the fire. Many of the reasons were directly related to the fire, including lost time due to the evacuation and damage to workplace or work items. Other reasons were loss of clientele due to their relocation or inability to secure business due to the fire.

Beyond the responses to the specific survey questions, there were numerous individual responses regarding the impact of the fire. People disclosed that they are dealing with high stress, emotional turmoil and depression. Many have had continual financial problems due to the lack of home insurance and loss of their home; others lost their jobs and had to move away or stay and manage on limited incomes.

## SOCIAL SUPPORT NETWORKS

After the wildfire event, there were many changes that the individuals within the affected communities had to address. For those in the Slave Lake area who responded to the survey, 56% (n=310) experienced a change in their living arrangements, 48% (n=264) in their financial income, 33% (n=181) in their family relationships, and 32% (n=178) in their employment. The change in their living arrangements following the wildfires was identified as being the one with the greatest impact (n=181, 33%), followed by financial income (n=88, 16%), health (n=33, 6%), and then employment (n=26, 5%). When the respondents were also asked about the outcome of the change with the greatest impact, 41% (n=223) indicated it was resolved and 40% (n=220) stated it was still ongoing. Finally, 10% (n=53) chose "other important change" when responding to this question and listed examples reflecting individual changes (outlook on life, decreased health after the fire, the loss of three family homes) as well as community changes (sense of community, community outlook).

From a list of possible resources that individuals and families might draw upon for support, the respondents identified the following as most accessed: friends (32%, n=174), Internet (31%, n=171), television (28%, n=155), spouse (27%, n=150), and parents (27%, n=147). The most common family, friends and neighbours' resources were friends in general (32%, n=174), spouse (27%, n=150), parents (27%, n=147) and close personal friends (23%, n=127). The most common government resources were government programs (11%, n=62), government departments (11%, n=58), other local government resources (9%, n=49), and the mayor or council (6%, n=35).

The most common professional resources used were doctors or other health professionals (19%, n=107), counsellors or other social service professionals (12%, n=64), religious/spiritual leaders (10%, n=57), and other professionals (4%, n=21). The most common community or voluntary organizations were religious organizations (7%, n=37), society and public benefit organizations (6%, n=32), and health organizations (5%, n=29). Finally, the most common information or media resources were Internet (31%, n=171), television (28%, n=155), newspapers (27%, n=146), and radio (22%, n=122).

## IMPACTS ON FAMILIES AND CHILDREN

The survey included questions to assess the impacts on families and children, including their closeness and cohesiveness as a family unit. At the time of the fires, 58% (n=309) indicated that they lived with other family members (i.e., immediate or extended family). To assess family cohesion, respondents were asked if they felt their family was closer, about the same, or more distant. Of the 326 respondents who responded to this question, 56% (n=183) indicated that they were about the same in terms of closeness; 35% (n=113) indicated that they were closer, while 9% (n=30) indicated that they were more distant (Figure 3). They were also asked about their strength as a family unit, i.e., were they stronger, weaker or about the same. Of the 321 who responded to this question, 55% (n=177) indicated that they were about the same; 34% (n=110) indicated that they were stronger as a family; whereas 11% (n=34) said that they were weaker as a family (Figure 4).

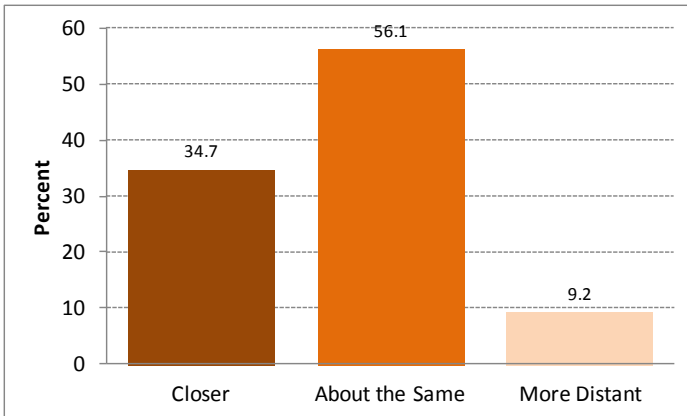


Figure 3. Family Closeness Since Wildfire, n=543

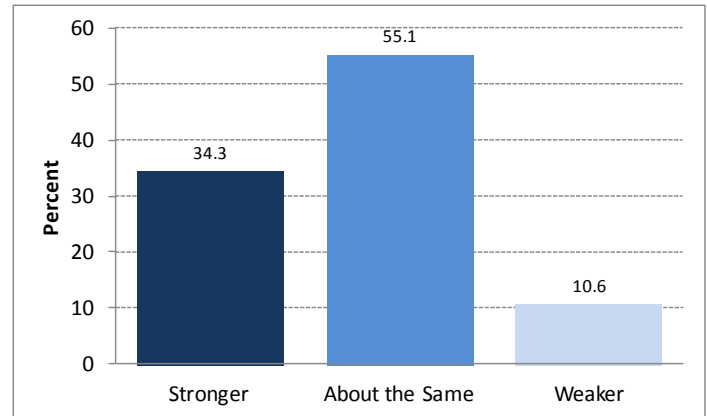


Figure 4. Family Strength Since Wildfire, n=543

Of the 93 respondents who had a child (ages 7 to 12 years) living with them at the time of the fires, 54% (n=50) indicated that this child had difficulties with emotions, concentration, behaviour, or getting along with people. Within this group of 50 respondents most (60%, n=30) said these difficulties were minor, whereas 36% (n=18) had definite difficulties, and 4% (n=2) had severe difficulties. Sixty-eight percent (n=34) noted that the difficulties had been present for 6 to 12 months with 18% (n=9) indicating the difficulties had been present for 1 to 5 months. For 49%

(n=25) of the group of 50 respondents, the difficulties upset the child only a little while, 41% (n=21) noted that the difficulties stressed the child quite a lot while 6% (n=3) said a great deal and 4% (n=2) said not at all. For 55% (n=28) of the respondents, the child's difficulties placed only a little burden on the family, whereas 26% (n=13) ranked the burden as quite a lot, 8% (n=4) as a great deal and 12% (n=6) as not at all. Figure 5 illustrates the level of interference the difficulties have on the child's everyday life in select areas. Figure 5 shows that across most of these areas of children's lives, the majority of parents claim the impacts were either "not at all" or "only a little." Only a minority claim the impacts were "quite a lot" or "a great deal." The greatest impact is identified as classroom learning, where 38% (n=20) of 52 respondents claim the impact has been quite a lot or a great deal.

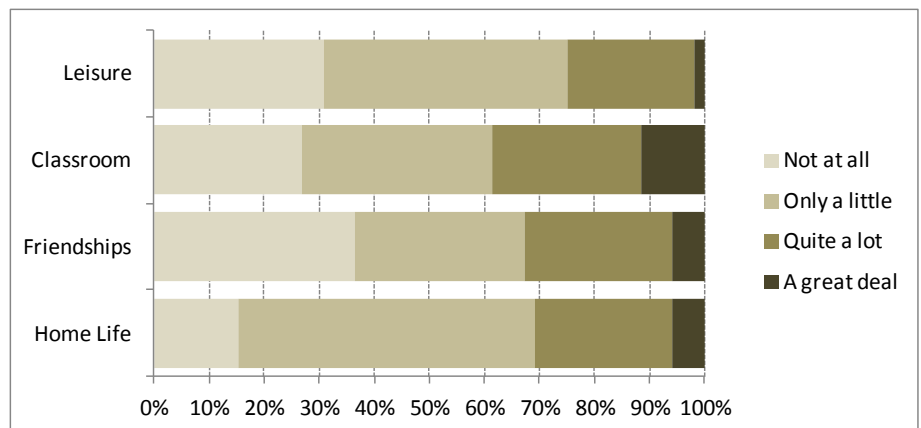


Figure 5. Interference of difficulties on everyday life of children, n=52.

## PTSD RESULTS AMONG CHILDREN

The parents completed the PTSD-RI for the child that they identified was between 7 and 12 years of age and lived with them at the time of the fires. This screening instrument includes two screening sections (Criterion A1 and Criterion A2). In terms of the A1 screening questions, based on parental assessment the majority of the children felt afraid (54%, n=51), feared injury (58%, n=53), feared someone would die (73%, n=67), or feared someone would be injured (74%, n=68). In terms of the A2 screening questions, according to parental assessment, 75% (n=70) of the children felt terrified, 51% (n=47) felt helpless and 69% (n=63) felt confused. In addition, 62% (n=58) claimed that the child felt that what was happening to them was "not real", an indicator of dissociative reaction.

The PTSD-RI questions also include measures of three other PTSD criteria or features, and these are the focus of our discussion: PTSD B (Re-Experiencing), PTSD C (Avoidance), and PTSD D (Increased Arousal) as well as the overall PTSD Severity Score. A coding framework determines if a respondent exceeds a criteria threshold for each of the above, and also determines if a PTSD diagnosis is "Not Likely," a Partial Diagnosis is "Likely," or a Full Diagnosis is "Likely."

Based on parental assessment, no children exhibited symptoms for which a Full PTSD Diagnosis was likely, while 8 out of 68 children referenced in the household survey exhibited symptoms for which a Partial PTSD Diagnosis was likely. Based on parental assessment, 32% (n=27) of the children meet the Re-Experiencing criterion, 2.4% (n=2) meet the Avoidance criterion, and 23% (n=18) meet the Increased Arousal criterion. Parental assessments of their children resulted in a mean overall PTSD Severity Score of 11.8, a value that is considerably lower than what students reported in the school survey<sup>9</sup> which was carried out 6 months after the fire (mean PTSD Severity Score = 22.0) and again at 12 months after the fire (mean PTSD Severity Score = 17.2).

Results from the survey data show no significant ( $p>0.05$ ) different gender differences on overall PTSD Severity scores, among the children (based on parental assessment), and no significant association ( $p>0.05$ ) between gender and PTSD diagnosis category (i.e., No Diagnosis Likely or Partial Diagnosis Likely). Similarly, gender is not significantly ( $p>0.05$ ) associated with meeting the Re-Experiencing, Avoidance, or Increased Arousal criteria of PTSD.

Children referenced by parents in the household survey were classified into 3 age groups (7-8, 9-10, 11-12). Although the 9 to 10 year olds manifest the highest overall PTSD Severity Scores, mean PTSD Severity Scores did not differ significantly ( $p>0.05$ ) by age group.

### COMMUNITY IDENTITY

The survey also included questions about residents' satisfaction with their community and how desirable the community was relative to other places. In this regard, 30% ( $n=162$ ) reported being no more or less satisfied with the community; 19% ( $n=103$ ) said that they were a little more satisfied and 28% ( $n=150$ ) indicated that they were much more satisfied (see Figure 6).

In assessing community desirability prior to the fires, 22% ( $n=121$ ) indicated that the Slave Lake area was no more or less desirable than other communities they had lived in; 27% ( $n=144$ ) indicated it was a little more desirable, and 26% ( $n=140$ ) said it was the most desirable compared to other communities they have lived in (see Figure 7).

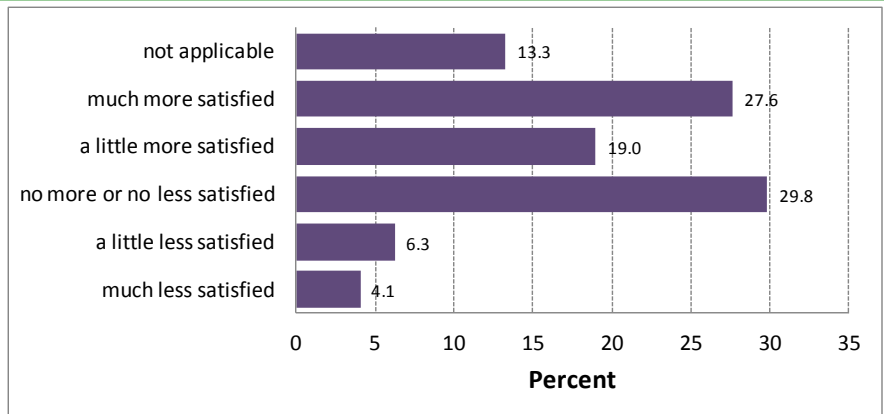


Figure 6. Community Satisfaction, n=543

### SOCIAL RELATIONS

The respondents were also asked other questions about social relations within the community. A small majority (51%,  $n=275$ ) of respondents indicated that most people can be trusted, but 38% ( $n=207$ ) noted that one cannot be too careful in dealing with people. People in the Slave Lake area more often described themselves as friendly, welcoming and supportive (Figure 8).

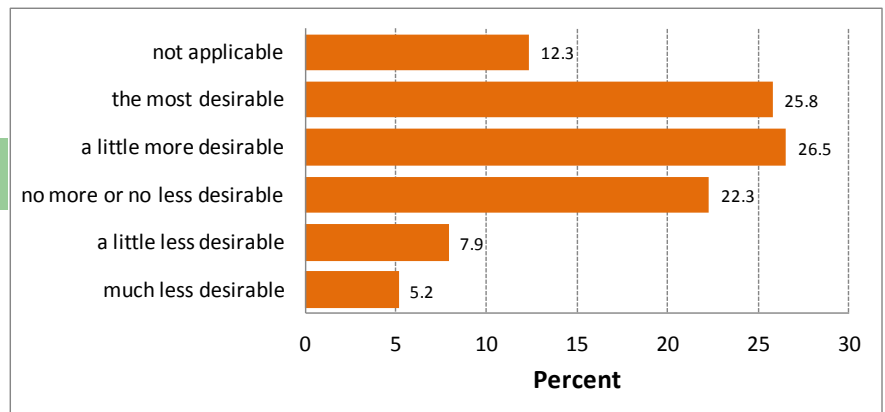


Figure 7. Community Desirability, n=543

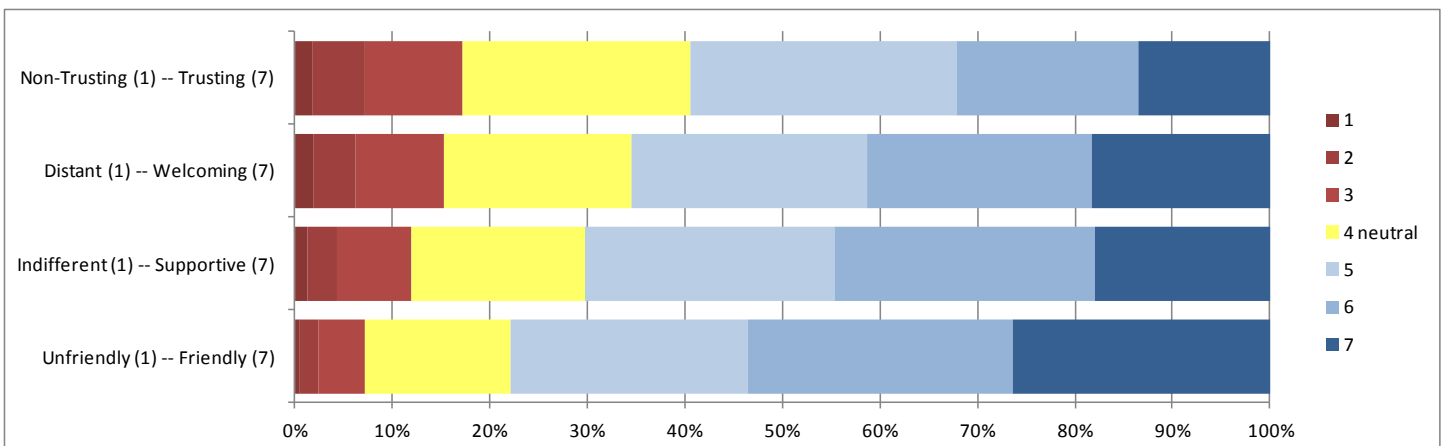


Figure 8. Respondents Perceptions of Social Relations, n=543



### COMMUNITY FACILITY USE

The respondents were also asked to identify how often they used local community facilities. For the following facilities, the largest response was “never:” daycare (82%, n= 426), church (49%, n=260) and library (41%, n=220). They typically accessed the medical clinic, pharmacy and recreation facility less than once a month (64%, n=349; 46%, n=248; 27%, n=146 respectively), and the convenience store, gas station and restaurants five or more times a month (34%, n=181; 30%, n=162; 23%, n=121 respectively; Figure 9).

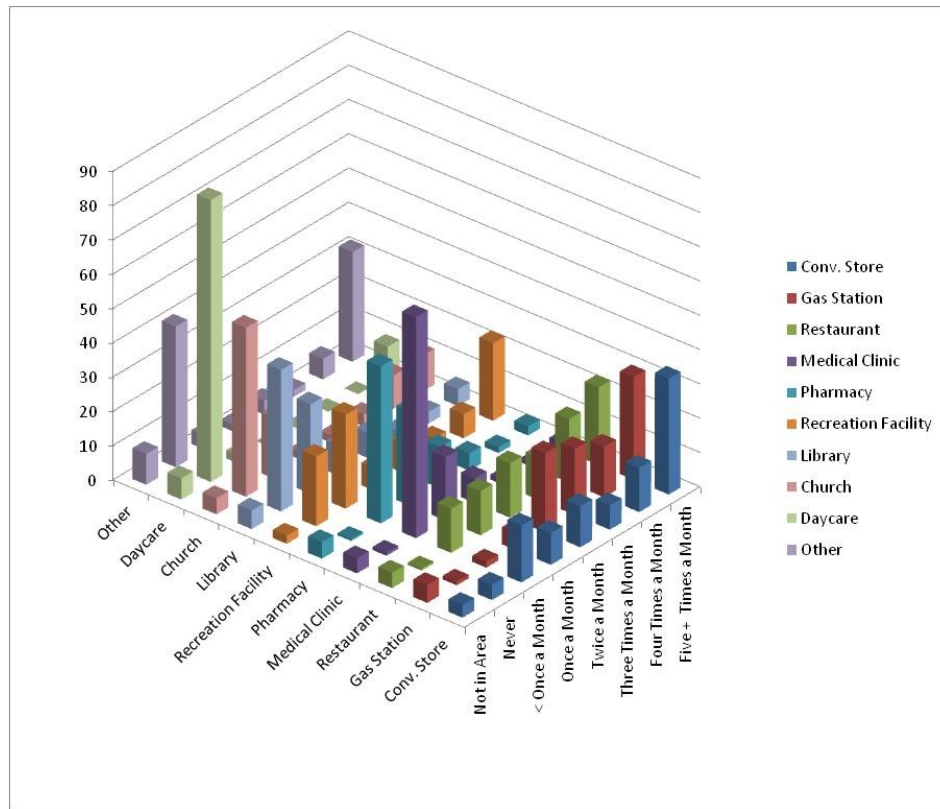


Figure 9. Local Facility Use, n=545

### HEALTH AND WELL-BEING

All of the respondents were asked to rate their health. Thirty-nine percent (n=213) rated it as very good, and an additional 16% (n=85) rated it as excellent. The remainder rated it as good (33%, n=180), fair (11%, n=60) and poor (1%, n=7) (Figure 10). They were also asked to compare their health at the time of the survey compared to before the wildfire. For this question, 70% (n=378) or the majority of respondents rated it as “about the same” and 20% (n=110) rated it as “somewhat worse.” The remainder rated it as “somewhat better” (5%, n=28), “much better” (2%, n=11) and “much worse now” (3%, n=16). Finally they were also asked to rate their level of stress; 39% (n=213) rated it as moderate, 31% (n=168) as high, 15% (n=84) as very high, 13% (n=70) as low and 2% (n=9) as very low (Figure 11).

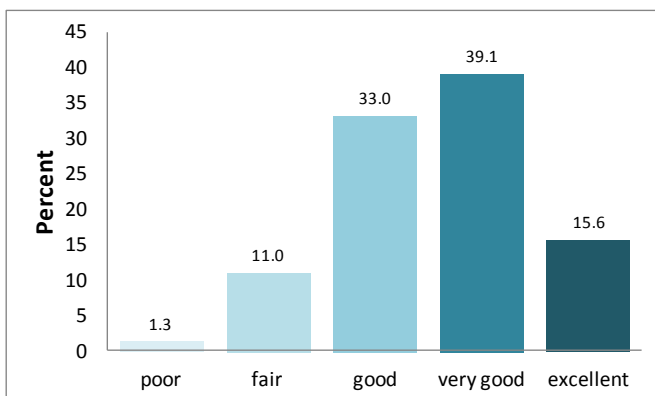


Figure 10. Self-reported health n=545

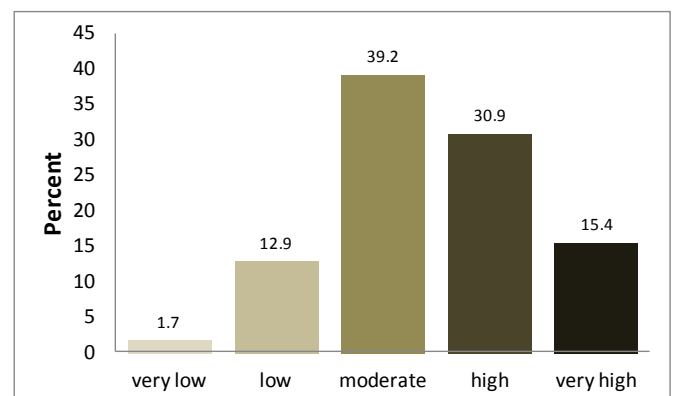


Figure 11. Self Reported Stress, n=545

## COMMUNITY RESILIENCE AND COHESION

Impacts from natural disasters such as wildfires also include changes in the community as a collective whole. Examining for these changes within the Slave Lake area after their wildfires provides an opportunity to understand how community processes are potentially impacted. This information is useful for developing and implementing programs and policies that can help the community recover post-disaster. In addition, the information is also useful for disaster preparation and mitigation within other similar communities.

There are two specific aspects of community processes that we examined in our research—community cohesion and community resiliency. Previous research has shown that community cohesion (i.e., psychological sense of community, attraction to living in the community and behavioural interactions within the community) is an important correlate of community resiliency (i.e., the ability to move forward and reach a higher level of functioning). Community resiliency is a common framework for disaster preparation, mitigation and recovery. Hence, collecting information about this variable has the potential to inform decision makers who are working in the disaster field. One of the limitations in collecting the information is the lack of available baseline information about the community's cohesion and resiliency before the disaster. However, given that we have data collected from other communities that experienced wildfires, we are able to compare and contrast communities that experienced a similar disaster allowing us to arrive at a more comprehensive understanding of cohesion and resiliency in relation to impacts from disasters.

The household survey included 18 items to measure Buckner's Index of Cohesion<sup>6</sup>, an instrument specifically designed to generate information about this variable. The 18 items allow for the measure of an overall Cohesion Index (an average of all 18 items), as well as three subscales of cohesion—namely Psychological Sense of Community (PSOC), Neighborhood Attraction, and Neighbouring. The household survey also included questions from which to measure an Index of Perceived Community Resilience (IPCR), which we have developed from previous work on wildfire communities. The details of this 11-item index are provided elsewhere<sup>5</sup>; this index allows for a measure of community resilience based upon individual scoring. All 11 items are used to compute an overall IPCR score, although previous studies using these 11 items have shown that the IPCR measures three separate structures or subscales of resiliency—namely, Leadership and Empowerment, Community Engagement; and Non-Adverse Geography. The data from this survey indicates the same structures of resilience although detailed discussion of these is beyond the scope of this report.

All items used to computer Buckner's cohesion measures are scored on a Likert scale from 1 to 5. The overall Cohesion score is computed as the average of 18 items, the PSOC subscale as an average of 9 items, the Neighboring subscale an average of 5 items, and the Attachment subscale as an average of 3 items. Therefore the overall cohesion index and each of the subscales range in value from a minimum of 1 to a maximum of 5. Data from the household survey showed that the community cohesion scores (n=485) were normally distributed with a mean of 3.6 and a standard deviation of 0.8. The mean PSOC score was 3.7, the mean Neighboring score was 3.4, and the mean Neighbourhood Attraction score was 3.5. These values are reasonably consistent with our findings in other communities; although the overall cohesion scores are significantly ( $p < 0.05$ ) lower than findings in other communities (e.g., Barriere<sup>2</sup> and LaRonge<sup>3</sup>).

When examining the IPCR scores, which can range from a minimum of 11 to a maximum of 55, the results show a normal distribution with a mean of 37.3 and a standard deviation of 6.5. These are also fairly consistent with findings from Barriere<sup>2</sup> and LaRonge<sup>3</sup> which had mean IPCR scores of 40.7 and 38.1 respectively, although the Slave Lake average is significantly ( $p < 0.05$ ) lower than Barriere, but not LaRonge. As in other studies of this kind, the Slave Lake household survey data showed a strong correlation (Figure 12) between overall levels of resilience (i.e., IPCR score) and overall measures of social cohesion ( $r = 0.67$ ,  $p < 0.05$ ). Similarly, all of the subscales of cohesion had significant correlations with IPCR, including PSOC ( $r = 0.64$ ,  $p < 0.05$ ), Neighbourhood Attraction ( $r = 0.54$ ,  $p < 0.05$ ), and Neighbouring ( $r = 0.55$ ,  $p < 0.05$ ). These findings reinforce the key linkage between cohesion and resilience, and underscore the important social basis for perceived community resilience. They also suggest that programs and policies aimed at fostering greater levels of community cohesion, or specific features of cohesion such as PSOC, Neighbouring, or Attachment, will result in higher levels of resilience among people.

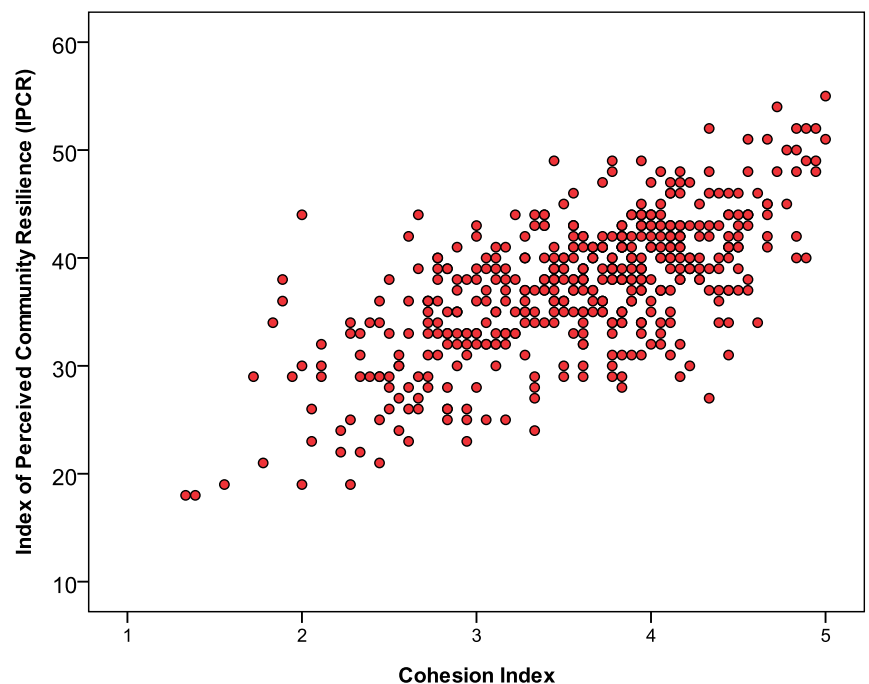


Figure 12 . Relationship Between Cohesion and IPCR, n= 545

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