



Forestry and Health: An Exploratory Study of Health Status and Social Well-Being Changes in Northwestern Ontario Communities

**Prepared for the
North West Local Health Integration Network**

**Research Team:
Mary Ellen Hill, Irene Pugliese,
Jungwee Park, Bruce Minore, Tara Gauld
Centre for Rural and Northern Health Research
Lakehead University**

For further information, please contact:

Dr. Mary Ellen Hill

The Centre for Rural and Northern Health Research

Lakehead University, 955 Oliver Road

Thunder Bay, Ontario, Canada P7B 5E1

Telephone: (807) 766-7278

Email: maryellen.hill@lakeheadu.ca

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Table of Contents

ACKNOWLEDGMENTS	vii
MAIN MESSAGES.....	ix
EXECUTIVE SUMMARY	xi
Health Issues.....	xii
Health Services	xii
What Providers Think	xiii
Demands on Health and Social Services	xiii
Community Well-Being	xiv
THIS STUDY.....	1
Framework.....	2
Objectives	3
Methods	4
Ethics Review, Consent and Confidentiality	5
Analysis and Deliverables	6
STATISTICAL ANALYSIS.....	7
Community Classification	8
Identifying Challenged Communities	12
Analysis	15
Economic Challenges.....	15
Health Effects.....	17
NW Ontario Health Effects.....	18
Chronic Conditions.....	19
Self-perceived Health	21

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Health Behaviours	22
Regular Medical Doctor	23
Health Care Utilization	24
Multivariate Analysis	25
Chronic Conditions and Unmet Health Needs	25
Health Behaviours	27
Summary and Limitations	29
QUALITATIVE ANALYSIS	31
Employment as a Determinant of Health.....	32
Involuntary Job Loss.....	32
Downsizing.....	33
Survivor Sickness	34
Anticipatory Unemployment.....	35
Loss of Workplace Support	35
De-Industrialization.....	36
Precarious Employment.....	37
Physical Health and Unemployment.....	38
Mortality	38
Self-Reported Health Status	39
Cardiovascular Disease.....	40
Obesity.....	40
Interview Data on Physical Health.....	41
Common Illnesses and Complications	41
Hypertension	42
Injuries	42
Obesity.....	43
Physical Inactivity	43
Mental Health and Unemployment	44
Depression and Anxiety.....	45
Alcohol Consumption	47

Drug Use	48
Smoking.....	49
Suicide.....	50
Interview Data on Mental Health.....	51
Stress, Depression and Anxiety	52
Retraining and Identity Crises	53
Exacerbation of Existing Mental Health Problems	53
Worry About Future Industry Restructuring	54
Substance Abuse	56
Social Isolation.....	57
Suicide.....	58
Family Health and Unemployment	59
Spousal Stress	59
Woman Abuse	60
Child Health.....	61
Child Abuse and Neglect.....	62
Child Suicide.....	62
Loss of Supports.....	63
Interview Data on Family Health	64
Spousal Stress	65
Child Stress	65
Concerns About Suicide.....	67
Senior Stress and Loss of Support	67
Marriage Breakdowns and Involuntary Separations.....	69
Financial Stress	70
Family Violence.....	70
Healthcare Utilization and Unemployment.....	71
Physicians and Hospital Emergency Departments.....	72
Mental Health Services.....	72
Loss of Benefits.....	74
Interview Data on Healthcare Utilization	75
Walk-In Clinics and Ambulatory Care	75

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Waiting Lists	76
Preventive Service Delays.....	76
Mental Health Services.....	77
Changing Client Base	77
Resistance to Accessing Services	78
Transportation Difficulties	79
Loss of Benefits.....	80
Community Well-Being and Policy Implications.....	82
Boom and Bust Cycles	82
Boom Towns	82
What Happens When the Boom Is Over	84
Community Resilience	85
Characteristics of Resilient Communities.....	87
Interview Data on Community Well-Being and Policy Implications	89
Demand for Health Services.....	89
Demand for Social Services	90
Healthy Migrant Effects	91
Community Decline.....	92
Loss of Community Supports	92
Health Human Resource Challenges	93
Need for Further Study	94
Last Words	96
CONCLUSIONS AND IMPLICATIONS.....	97
REFERENCES.....	99
APPENDICES.....	113
Endnotes.....	121

List of Tables

Table 1.	<i>NW Ontario – Forestry Closures and Job Loss Estimates by Community (2000-2007)</i>	9
Table 2.	<i>NW Ontario - Forestry Reliance and Estimated Forestry Jobs Lost (2000-2007)</i>	11
Table 3.	<i>Study Communities: Identifying NW LHIN Forestry Communities with Economic Challenges</i>	13
Table 4.	<i>Prevalence of Chronic Conditions (%)</i>	20
Table 5.	<i>Prevalence of Self-Perceived Health and Well-being Indicators (%)</i>	21
Table 6.	<i>Prevalence of Selected Health Behaviours (%)</i>	22
Table 7.	<i>Prevalence of Not Having Regular Medical Doctor and Reasons (%)</i>	23
Table 8.	<i>Health Care Utilization for the Past 12 Months (%)</i>	16
Table 9.	<i>Adjusted Odds Ratios for Selected Health Indicators by Socio-demographic Characteristics</i>	26
Table 10.	<i>Adjusted Odds Ratios for Selected Health Indicators by Health Behaviour Characteristics</i>	28

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As well, we wish to acknowledge the financial support provided by the NW Local Health Integration Network. The interpretations and conclusions expressed in this study, however are the authors' alone; no official endorsement by the NW LHIN is intended or should be inferred.

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MAIN MESSAGES

- Negative health effects of forestry layoffs and plant closures are already being observed in the challenged communities. Health survey results show that residents of NW LHIN communities facing economic challenges were more likely to consider their overall health to be fair or poor. They also had significantly higher prevalence of stroke and heart diseases. No differences were found for self-perceived mental health, stress or work stress.
- Both administrators and front-line providers have noted an increase in physical and mental health issues: high blood pressure, worsening of chronic conditions, along with increased stress, depression and anxiety, and substance abuse. They are also seeing increased numbers of clients presenting at clinics, mental health centres and emergency rooms.
- Downsizing in the forestry industry and resulting lay-offs are affecting everyone – those laid off, their families, and the community as a whole. Increased stress among spouses and children of the unemployed, anxiety for those who are still working but anticipate being laid off, and concern among seniors over loss of supports were common.
- Those interviewed felt that they were just seeing “the tip of the iceberg” and anticipate many more health impacts, both direct and indirect, from forestry industry closures over the next few years. They also believed that the quality of life in communities will deteriorate. With less revenue, municipalities will have a difficult time retaining health and social services and challenged communities will face even more problems recruiting and retaining needed physicians, nurses, or other professionals than they have now.

EXECUTIVE SUMMARY

- This study responds to the North West LHIN's interest in determining health status and social well-being changes in Northwestern Ontario communities related to recent lay-offs and closures in the forestry sector. Our research presents a focussed examination of health status and social well-being changes in Northwestern Ontario communities during the period 2000-2007, when most communities experienced temporary or permanent closures of forestry operations.
- We explored population changes in the communities; immediate and delayed changes in health status and health human resources; and factors which contribute to variability in the communities. The goal of our project was to determine whether, and to what extent, recent restructuring in the forestry industry has affected the health of people living in communities within the North West LHIN region.
- The study focussed on health data for a group of 16 of 36 non-reserve communities which were identified as being impacted by forestry closures: Dorion, Dryden, Greenstone, Ignace, Kenora, Machin, Manitouwadge, Marathon, Nipigon, Oliver Paipoonge, Red Rock, Schreiber, Terrace Bay, settlements in Kenora Unorganized and Rainy River Unorganized, and Thunder Bay, which was treated as a separate case because of its large population and diversity. All of these areas had experienced forestry downsizing in the past five years or had experienced more than a 10% decrease in their labour force, both of which were evidence of economic downturns.
- To help us understand the effects of forestry industry closures on health services, we talked to health care administrators and front-line providers who work with clients from the challenged communities. They shared their observations about the health and social issues which are being experienced by unemployed workers, their families and the larger community.

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Health Issues

- Our analysis of information from the Canadian Community Health Survey (2005) showed Northwestern Ontario areas experiencing economic challenges were already experiencing health issues. Rates of stroke and heart disease were significantly higher than provincial rates; high blood pressure also exceeded the Ontario rates.
- Compared to the Ontario population and economically stable communities, people in impacted communities were more likely to report their overall health was fair or poor. People in Thunder Bay reported similar levels of negative health.
- Residents of NW LHIN communities that had experienced recent forest industry downsizing were more likely to involve themselves with unhealthy lifestyles. About one in five reported daily smoking and heavy drinking. One-quarter were obese and almost two-thirds had insufficient fruits and vegetables in their diet.
- People in food insecure households were more likely to have poor health and unmet health needs. Our findings suggest that the health effects on residents of impacted communities might be countered by maintaining strong networks of community support, promoting healthy lifestyles, and keeping food security intact.

Health Services

- More than one in four of the people in the challenged communities did not have a regular medical doctor to visit. This rate was almost three times higher than the provincial average and twice as high as Thunder Bay. More than one-half reported that they did not have a regular doctor because there were no doctors available in the area or no doctors were taking new patients.
- People in communities impacted by forestry downsizing were less likely to use specialist or dental care compared to average Ontarians and citizens of Thunder Bay. Not surprisingly, people who do not have a regular medical doctor were more likely than others to experience unmet health needs.

What Providers Think

- Health care providers were already observing physical health changes in the clients they served. They were seeing more clients with high blood pressure, heart conditions, sleep disturbances, as well as more injuries, more weight gain and poor control of diabetes.
- They were particularly concerned about mental health issues in their communities. Stress, depression, and anxiety issues have all increased in the communities and in some locations, there were concerns about suicide among people who were unemployed. Stress was even affecting workers who were retraining and those still employed, because they were worried about job loss in the future.
- As well, many health professionals felt that stress related to job loss was causing people to behave in ways they normally may not, such as increasing alcohol consumption, other types of substance abuse and smoking. There were also concerns around family violence.
- Health care providers noted that downsizing was affecting everyone in the communities, not just workers who were unemployed. They saw equally negative effects on the spouses, children and extended family members, including seniors, who were trying to cope with the changes in their own lives and their communities.
- Finances were a great concern; in many families, the person employed in the forestry sector was the sole income earner. The trend of partners “heading west” for employment, moreover, was a source of financial stress and anxiety for those who stayed behind.

Demands on Health and Social Services

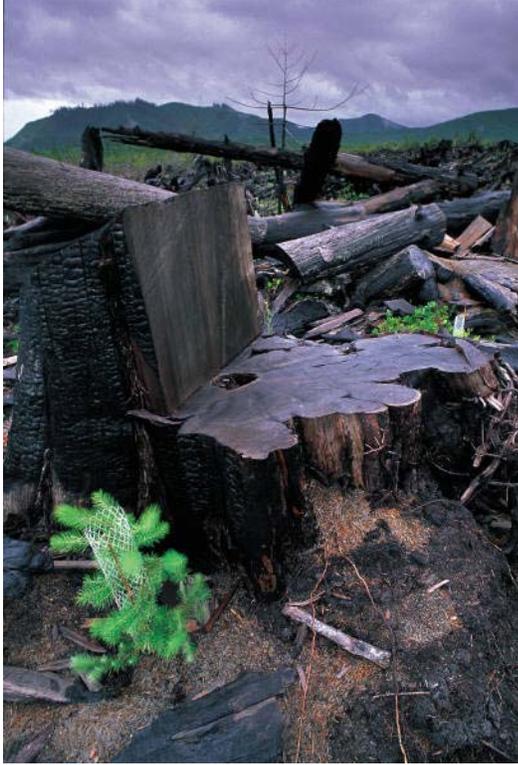
- Health care administrators reported increased use of community health clinics, mental health services and emergency rooms that was directly linked to the stresses and strains of recent forestry lay-offs and closures. As well, social services, including local food banks, were experiencing increasing demands.

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- At the same time, care professionals noted that some people were having problems accessing care. The unemployed often couldn't pay for transportation to medical appointments within their own community; they had even more difficulty affording transportation to access out-of-town services, such as specialist care.
- Loss of workplace health benefits, such as coverage for prescription medicine, was having negative effects on health. The unemployed were having difficulty paying for medicine and, in some cases, had stopped taking medicine because they couldn't afford it. As a result, providers saw increasing numbers of clients whose health problems, such as blood pressure or cholesterol, were poorly controlled.
- Loss of supplementary benefits covering in-home care, extended care, or referrals to dietitians, had equally negative effects. People with chronic conditions and families with special needs were most seriously affected.

Community Well-Being

- On the subject of community well-being, health care professionals felt that they were just seeing "the tip of the iceberg" and anticipate many more negative health and social impacts, both direct and indirect, from forestry industry closures over the next few years.
- They felt that, without intervention, the quality of life in the communities which had experienced forestry industry closures will continue to decline. With less revenue, municipalities will face even more problems maintaining services and public facilities. Recruitment and retention of physicians, nurses, or other professionals, always difficult in rural and remote areas, will become even more difficult than it is now.
- With these challenges in mind, health care administrators and front-line providers emphasized the need for further study of health and social changes that were occurring in the communities. They thought that revisiting the issues, a year or two in the future, would help people understand the full impacts of forestry decline and provide a basis for effective policy and program interventions.



THIS STUDY

This study responds to the North West LHIN's interest in determining health status and social well-being changes in Northwestern Ontario communities related to recent lay-offs and closures in the forestry sector. Previous studies confirm that employment is a significant determinant of health and people who lose their employment or experience ongoing instability in employment are at increased risk of mental health conditions, suicide, substance abuse and various chronic health conditions such as heart disease and high blood pressure.^{1 2 3}

As evidenced by increased primary care utilization, health status generally declines in communities that experience an increase in unemployment.⁴ Not only unemployed individuals, but their spouses and children, experience negative effects from job loss. Some studies, for example, indicate increased levels of stress and mental health conditions in spouses of unemployed individuals.⁵ Rates of family violence also rise in families which face long-term unemployment.⁶

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The outmigration which accompanies significant loss of employment also negatively impacts the health of seniors, who experience loss of both informal and formal supports when extended family and friends, as well as young professionals, leave the community.^{7 8} Given the large number of people losing employment as a result of the decline in the forestry sector, it is important to understand and anticipate the potential impacts on health services and the changes in health status of individuals in Northwestern Ontario.

Framework

In developing this research, we referred to the Murray Report (2005) that examines how resource dependent communities fare with respect to community well-being when the economic base is threatened. This study tracked health trends in Newfoundland and Labrador pre and post cod moratorium in the province overall and in high fishing dependent communities and was illustrative of the changes that occur when an entire economic sector - in this case, fisheries - is closed.⁹ The findings from this study and similar investigations, although not directly applicable to Northwestern Ontario, informed the framework developed for this study.

Our report presents a focused examination of health status and social well-being changes in Northwestern Ontario communities, related to the closure of forestry operations during the period 2000-2007. Using quantitative and qualitative methods, the study explored: (a) demographic changes in forestry-dependent and non-forestry-dependent communities in the region; (b) immediate and delayed effects of closures in

the forestry industry, with an emphasis on changes in health status and health human resources; and (c) possible mediating mechanisms that explain variability in the communities, with a focus on factors which contribute to community resilience.

Objectives

With a focus on Northwestern Ontario during the period from 2001 through 2006, the study objectives were to:

1. Classify communities in terms of forestry dependence and data on job losses or lay-offs in the forestry sector, using descriptive census and labour force data, to identify high/low forestry dependent and non-forestry-dependent communities.
2. Analyze socioeconomic, demographic and health status changes in the three types of communities using available statistical databases.
3. Review literature on socioeconomic change, demographic shifts, and health to identify factors which may contribute to community resiliency or lack thereof.
4. Conduct key informant interviews to provide further insights into the relationship between community changes and health.
5. Summarize the evidence regarding the relationship between forestry industry closures, socioeconomic changes, demographic shifts and health in NW Ontario.

Methods

Community Classification: After discussions with representatives from the Ontario Ministry of Natural Resources and Natural Resources Canada, forestry reliant communities in Northwestern Ontario were identified using information from the Atlas of Canada website. Estimated forestry jobs lost were calculated from information received from representatives at Canadian Forest Services, Natural Resources Canada and the Ontario Ministry of Natural Resources. Statistics on closures from these sources were crosschecked and supplemented with additional information from the Forestry Coalition Website (www.forestrycoalition.com/closures.html) and local press coverage. Variations in the estimates of the numbers of workers affected by temporary shut-downs and permanent closures were noted.

Statistical Analysis: A secondary analysis of data from the 2001 and 2006 Statistics Canada Census was conducted to document population change in forestry-dependent communities. The analysis examined overall population changes, a shift in the age structure of communities, or socio-economic changes in the labour force composition, including whether out-migration had occurred as a result of a decline in the forestry sector. As well, aggregated data from the Canadian Community Health Survey Cycle 3.1 (2005) was analyzed to explore health differences across three Northwestern Ontario community clusters: smaller forestry-dependent communities which had experienced a significant loss in employment recently; Thunder Bay, which also has had forestry employment losses; and those forestry-dependent communities which had remained economically stable.

Literature Review: The review identified published literature, both health sector and non-health sector, national and international using the following electronic database search engines: PubMed, CINAHL, PsycINFO, Sociofile, Teoma, Google, and INFOMINE. Websites of key government and non-governmental organizations were examined to help identify the so-called grey literature – reports, policy and position papers, and non-scientific articles. A narrative synthesis of information from all written sources was done for inclusion in the final project report.

Northwestern Ontario Key Informant Interviews: Open-ended interviews, approximately 20 to 30 minutes in length, were conducted over the telephone with administrators and front-line personnel providing health and mental health services to Northwestern Ontario communities. Potential respondents for the interviews were identified by the NWLHIN staff, with additional respondents located through a snowball method of sampling. With permission, interviews were audiotaped and transcribed verbatim to facilitate analysis. A total of 15 individuals, representing 10 communities and including 7 health administrators and 8 front-line personnel, were available to be interviewed during the timeframe allocated for the study. These numbers achieve the recommended minimum of 8-12 interviews which are advised as being necessary to achieve information saturation.^{10 11}

Ethics Review, Consent and Confidentiality

All research procedures and instrumentation received ethical approval from Lakehead University Research Ethics Board. Confidentiality was maintained during both the quantitative and qualitative portions of the study. The quantitative statistical

data was anonymized and aggregated at a level that protects individual confidentiality. For the qualitative portion, individuals identified as potential interviewees for the study by the LHIN, including staff of community health centres, hospitals and mental health agencies, were contacted by a CRaHNR research team member via phone, e-mail or fax. All interested individuals were sent a copy of the interview questions, a covering letter summarizing the goals, objectives and procedures used in the study, and a consent form (Appendices A, B and C) and gave written consent to participate in the study.

The interview questions (Appendix A) were designed to explore the economic changes in Northwestern Ontario communities and document key informants' perceptions of changes in health status, service utilization and other community effects. With permission, all interviews were audio-taped and transcribed, with the understanding that all answers were confidential. Interviewees were informed that, through the LHIN, results would be shared with participants and key stakeholders.

Analysis and Deliverables

Interview data was transcribed into machine-readable formats and analyzed using a computer program to assist in the management of qualitative data (NVivo). Members of the team analyzed the data independently, then compared and consensually validated findings, to identify and confirm the health effects of changes in forestry sector employment. This information, together with the statistical analysis and the literature review, are synthesized in this final report, which discusses findings, conclusions, and gaps in knowledge, as well as policy implications.



STATISTICAL ANALYSIS

This study examines associations between economic conditions and health status, health and illness behaviour in Northwestern Ontario. Specifically, we investigated the communities where the forestry sector is by far the most important source of employment. Previous research shows that forestry communities with unstable employment¹² experience a range of negative economic outcomes including higher rates of poverty and lower income.^{13 14}

To many individuals in the NW LHIN communities which we studied, the forestry industry crisis means the loss of family supporting jobs. Under negative economic changes, people are often forced to take much lower-wage jobs or even to leave their communities to look for a better opportunity. It is expected that such changes would cause a tremendous amount of stress to people in forestry-dependent towns and eventually have important effects on their health. The goal of our project was to determine whether, and to what extent, recent economic downturns due to downsizing or closures of the forestry industry has affected the health of people living in communities in the NW LHIN region. Conditions of impacted communities are compared with those of the province of Ontario as a whole.

Community Classification

To identify communities impacted by the forestry industry crisis of recent years, we used a two stage classification process. First, based on multiple sources of industry information, supplied by the Natural Resources Canada¹⁵ and the Ontario Ministry of Natural Resources,¹⁶ with supplementary information from the Forestry Coalition website,¹⁷ as well as provincial and local press coverage, forestry-based communities that experienced downsizing or closures in the past 5 years were identified. Information on lay-offs, permanent closures and reactivations was cross-checked (*Table 1*) to produce estimates of total jobs lost between 2000 and 2007 (*Table 2*).

Second, to identify the most recent sociodemographic and health impacts of forestry industry decline, we looked at two primary data sources: Statistics Canada 2001 and 2006 Census and the 2005 Canadian Community Health Survey (CCHS) Cycle 3.1. Census data were used to analyze socio-demographic changes in Northwestern Ontario including impacts on population, core labour force, unemployment and labour force in resource related sectors. The Canadian Community Health Survey (CCHS) was used to measure health-related conditions and health behaviours.* For this study, we used information from Cycle 3.1, which began in January 2005 and was conducted over the following 12 months. Its response rate was 79%.

* The CCHS is a sample survey with a cross-sectional design, which covers 98% of the Canadian population aged 12 and older who are living in private dwellings. People who live on Indian Reserves or Crown lands, residents of institutions, full-time members of the Canadian Forces, civilian and military residents of Canadian Forces bases, and residents of certain remote regions, are excluded from the survey.

Table 1. *NW Ontario – Forestry Closures and Job Loss Estimates by Community (2000-2007)*
(Source: Natural Resources Canada, Ontario Ministry of Natural Resources)

Community	Date of Closure (mm/dd/yyyy)	Estimated Jobs Lost	Notes
Dorion	03/10/2006	70	Sturgeon Timber -- permanent full mill closure
Dryden	10/11/2003	110	Weyerhaeuser, Dryden sawmill - full mill closure
	10/11/2003	220	Weyerhaeuser, Dryden Pulp and Paper - permanent shift reduction at mill
	06/01/2005	80	Weyerhaeuser - idling of #1 paper machine
	11/15/2005	35	Weyerhaeuser - permanent shut down of round wood processing plant
	03/31/2006	35	Weyerhaeuser - permanent shift reduction of wood room operation
	04/01/2006	80	Weyerhaeuser - permanent closure of paper machine #1
	08/12/2007	200	Domtar acquires Weyerhaeuser Dryden - indefinite closure fine paper mill
	12/22/2007	125	Domtar - Dryden - permanent closure paper machine #2, paper machine #1 restarted 01/2008.
Ignace	06/01/2005	49	Bowater - indefinite closure of sawmill
Kenora	04/01/2005	30	Devlin Timber - permanent closure
	12/14/2005	390	Abitibi Consolidated - permanent lay offs
	01/09/2007	41	Weyerhaeuser - indefinite full mill closure
Longlac	2006	230	Longlac Wood Industries - indefinite lay offs
	08/20/2007	120	Longlac Wood Industries - indefinite lay offs
	10/01/2007	350	Longlac Wood Industries - permanent closure
Marathon	06/01/2005	20	Marathon Pulp and Paper - wood room closed
Nakina	07/05/2005	unknown	Temporary lay offs (2 weeks)
Nipigon	02/06/2007	130	Multiply - mill fire - permanent full closure
Paipoonge	05/09/2007	150	Buchanan- Indefinite full mill closure
Red Rock	01/06/2005	175	Norampac - temporary closure of #1 machine
	2005	150	Norampac - permanent lay offs
	09/22/2005	175	Norampac - permanent closure of machine #1
	01/09/2006	175	Norampac - second paper machine closed
	11/30/2006	300	Norampac - permanent full mill closure

Community	Date of Closure (mm/dd/yyyy)	Estimated Jobs Lost	Notes
Terrace Bay	03/31/2005	150	Neenah Papers Inc. - closure of pulp mill
	03/31/2005	250	Buchanan - woodlands workers terminated
	09/2007		Buchanan - purchases and reactivates Neenah Paper - estimated 340 mill and woodlands workers re-employed
Thunder Bay	2002 - 2007	55	Thunder Bay Sawmill - permanent reduction full-time jobs
	07/01/2003	110	Bowater - indefinite closure of paper machine #3 and groundwood pulp mill
	10/01/2003	100	Smurfit-Stone -- permanent full mill closure
	06/01/2005	150	Cascades - permanent job loss
	04/07/2005	115	Great West Timber - temporary shut down (until 06/13/2005)
	04/07/2005	200	Northern Sawmills - temporary lay offs (until 05/30/2005)
	01/21/2006	375	Cascades - full mill closure - Thunder Bay Fine Papers purchases 01/07/2008 - will employ 180 workers initially, eventually 340 full operation
	01/03/2006	100	Great West Timber - permanent closure of 16ft line
	05/01/2006	280	Bowater - closure of Kraft A mill
	07/17/2006	50	Buchanan - indefinite closure of birch sawmill
	09/15/2006	225	Buchanan - job loss due to closure
	09/15/2006	157	Bowater - indefinite closure of paper machine #4
	12/31/2006	16	Bowater - permanent shift reduction
	2007	140	Buchanan - indefinite lay offs
	02/24/2007	157	Bowater - permanent shift reduction
	02/25/2007	265	Abitibi - indefinite closure of Fort William plant
	05/11/2007	160	Great West Timber - full mill closure
unknown	90	Abitibi - lay off of woodland workers	

Table 2. *NW Ontario - Forestry Reliance and Estimated Forestry Jobs Lost (2000-2007)*

Community	Forestry Reliance Index (%) ¹⁸	Estimated # forestry jobs lost due to permanent/indefinite mill closures
Alberton	71	none found
Aroland 83	69	none found
Atikokan	65	none found
Chapple	50	none found
Conmee	69	none found
Dorion	79	70
Dryden	82	850 (estimated 730 re-hired after mill restructures)
Ear Falls	73	none found
Emo	39	none found
English River 21	30	none found
Fort Frances	59	none found
Ignace	61	49
Kenora	35	420
Kenora Unorg [±]	82	none found
LaValle	57	none found
Lac Seul 28	34	none found
Longlac	76	350
Machin	56	none found
Marathon	--	20
Nakina	76	
Neebing	36	none found
Nipigon	84	130
O'Connor	57	none found
Paipoonge	32	none found
Rainy River Unorg [±]	56	none found
Red Rock	87	300
Schreiber	49	none found
Terrace Bay	97	400 (estimated 240 rehired after mill reopens)
Thunder Bay	32	1708 (estimated 180 rehired after mill reopens)
Thunder Bay Unorg [±]	52	none found

[±] Unorganized census districts include small unincorporated communities or settlements that do not meet the criteria established by Statistics Canada to be subdivisions.

Identifying Challenged Communities

The communities which were most challenged by economic declines in the forestry industry were determined by comparing aggregated information on the forestry closures and lay-offs with demographic information from the 2001 and 2006 censuses. As well, the analysis included not only communities where forestry operations were located, but adjacent areas, because a mill closure would affect people in communities nearby. For many people, a forestry company in a close-by community would be the main source of jobs, and for others in the service sector, forestry workers in a neighbouring community could be primary customers. Such overarching effects of industry downturn were measured by core population changes.

For this research, therefore, if a community has experienced forestry industry closure or downsizing in the past five years or experienced more than 10% decrease in core labour force population between the last two census years, it is considered as having experienced economic downturns and being impacted by the forestry industry crisis.

Based on this operationalized definition, sixteen areas out of 36 non-reserve communities in the Northwest LHIN were identified as impacted (*Table 3*): Dorion, Dryden, Greenstone, Ignace, Kenora, Machin, Manitouwadge, Marathon, Nipigon, Oliver Paipoonge, Red Rock, Schreiber, Terrace Bay, unorganized settlements in Kenora and Rainy River Districts and the city of Thunder Bay. Thunder Bay was treated as a separate category for two reasons: first, the city has a large population and a diversified economy, so may not be affected as much as smaller communities; second, the aggregated statistics of impacted communities would be skewed if Thunder Bay were categorized in the same group with other impacted communities.

Table 3. *Study Communities: Identifying NW LHIN Forestry Communities with Economic Challenges – Demographic and Closure/layoff Information (Source: 2001 Census, 2006 Census)*

Community	Overall Population Change 2001-2006 (%)	Core Labour Force Population Change 2001-2006 (%)	Unemployment Rate 2006	Changes in Labour Force in Resource-Related Sectors (%)	Closure or Layoff After 2003	Community With Economic Challenges
<i>Ontario</i>	6.6	3.1	6.4	-2.4	---	---
<i>Canada</i>	5.4	2.1	6.6	-1.6	---	---
Chapple	-5.9	-8.7	2.4	-7.7		
Conmee	-1.1	-7.8	4.2	-17.6		
Dawson*	1.8	-8.9	16.4	-2.7		
Dorion	-14.3	-18.6	28.0	-15.4	Yes	Yes
Dryden	0.0	-7.0	5.9	-9.1	Yes	Yes
Ear Falls	0.3	0.0	2.8	-8.1		
Emo	-2.0	-2.9	4.7	-3.6		
Fort Frances	-2.5	-7.0	7.3	-2.6		
Greenstone†	-13.3	-17.6	11.3	-0.3	Yes	Yes
Ignace	-16.3	-14.0	10.6	-5.4	Yes	Yes
Kenora	-4.2	-7.3	7.2	-1.3	Yes	Yes
Kenora Unorg‡	-7.7	-13.5	7.3	-4.7		Yes
La Vallee	-0.6	1.1	3.2	10.3		
Lake of the Woods§	-2.1	-4.0	16.2	-3.1		
Machin	-14.4	-20.2	3.8	-3.1		Yes
Manitouwadge	-22.0	-29.1	6.5	-8.5		Yes
Marathon	-12.5	-16.2	6.4	-3.9	Yes	Yes
Morley	-6.5	8.6	5.2	-4.9		

* Includes Blue, McGinnis Creek, Pinewood and Sleeman.

† Includes Nakina, Geraldton, Longlac, Beardmore, Caramat, Jellicoe, MacDiarmid and Orient Bay.

‡ Includes Reddit, Minaki and Wabigoon.

§ Includes Morson and Bergland

Community	Overall Population Change 2001-2006 (%)	Core Labour Force Population Change 2001-2006 (%)	Unemployment Rate 2006	Changes in Labour Force in Resource-Related Sectors (%)	Closure or Layoff After 2003	Community With Economic Challenges
<i>Ontario</i>	6.6	3.1	6.4	-2.4	---	---
<i>Canada</i>	5.4	2.1	6.6	-1.6	---	---
Neebing	6.6	-0.5	7.3	-11.4		
Nipigon	-10.8	-17.6	8.5	-10.1	Yes	Yes
O'Connor	-0.6	-2.8	3.9	-5.9		
Oliver Paipoonge	-1.8	-5.7	7.0	-2.6	Yes	Yes
Pickle Lake	20.1	2.6	0.0	4.6		
Rainy River	-7.3	-7.5	15.2	-4.5		
Rainy River Unorg*	-6.2	-17.9	4.7	-4.8		Yes
Red Lake	6.9	6.0	5.1	3.8		
Red Rock	-13.8	-17.3	12.6	0.7	Yes	Yes
Schreiber	-37.8	-37.9	19.0	-0.8		Yes
Shuniah	18.1		10.4	1.5		
Sioux Lookout	-2.9	-2.6	4.2	0.0		
Sioux Narrows†	16.5	6.1	9.5	-3.6		
Terrace Bay	-16.7	-25.0	23.3	-7.8	Yes	Yes
Thunder Bay	0.1	-4.0	7.2	-3.2	Yes	Yes
Thunder Bay Unorg‡	5.8	-3.3	9.2	-8.7		

* Includes part of Nestor Falls.

† Includes part of Nestor Falls.

‡ Includes RosSPORT, Kaministiquia, Lappe, Hurkett and Armstrong.

Analysis

Cross-tabulation analyses were conducted to comparatively examine prevalence rates of various health related conditions and behaviours. Variables examined included chronic conditions, self-perceived overall and mental health, health behaviours, health care access and utilization. Multivariate logistic regression identified factors associated with health and well-being conditions of residents in NW Ontario communities impacted by downsizing of the forestry industry. To account for survey design effects of the Canadian Community Health Survey, coefficients of variation and p-values were estimated, and significance tests were performed using the bootstrap technique.

Economic Challenges

We expected that the NW LHIN communities studied would have undergone the same economic challenges which have been documented previously in the Canadian literature on industrial restructuring, including sustained high unemployment, unprecedented outmigration, and aging of the population.¹⁹ In general, many of the communities impacted by the forestry industry crisis showed similar effects: high unemployment rates, frequently accompanied by an overall loss of population, and significant loss of the workforce. (*Table 4*). For instance, in 2006, the unemployment rate of Dorion was 28 percent and that of Terrace Bay, 23 percent.

Unemployment, however, may not fully reflect the economic conditions of forestry-based communities in NW LHIN region. Facing an economic downturn and losing jobs in a single industry town, people tend to leave the community too fast to be

counted as the unemployed. Economic decline tends to be statistically described as depopulation rather than as the rise in unemployment, even though the former is the result of the latter. In addition, official unemployment rates may be an understatement, as they miss those who are not seeking employment because they perceive no work is available. As Park and Nelson observed, when a single industry markedly decreases its level of production, mothballs its operation, or dismantles the processing facilities, and thus the community has no economic replacement prospects in the foreseeable future, community people well understand the futility of seeking jobs.²⁰

Not surprisingly, the communities impacted by the forestry industry decline tended to experience marked decreases in labour force in resource related sectors as indicated in rate changes²¹ between the past two censuses. Overall, those communities experienced a 4 percent decline compared to 2 percent for the Ontario total. However, in small towns, more steep decreases were observed. In Nipigon, for example, the percentage of workers in resource based industries and manufacturing or construction industries decreased from 44% to 34% of the total experienced labour force aged 15 or older. That change suggests that many workers in resource-based sectors may have left the community entirely, or changed to another type of work to stay in the community.

Although not captured in the current data, forestry employment in some communities will recover somewhat due to industry restructuring that occurred towards the end of the study period. By late 2007, pulp and paper mills in Terrace Bay, Dryden and Thunder Bay that had been idled for significant periods of time had changed ownership and been restructured, with plans in place to restart production and reemploy significant numbers of forestry workers. Other facilities remain inactive.

Health Effects

In our analysis, we expected to see evidence of some of the adverse conditions documented in the Murray Report and previous Canadian studies on industrial restructuring and community health.²² The Murray report found changes in health status between pre- and post- moratorium, with the most adverse changes occurring in the communities that had been most dependent on fisheries. High fishing dependent communities showed: higher rates of hospitalization, an increase in the percent of overweight or obese population with the highest percent found in high fishing dependent communities, a steady increase in the death rate for injury and poisoning, and a sharp initial increase in the death rate for circulatory disease followed by a smaller decline.

Dolan and colleagues found similar effects in their two case studies of restructuring on Canada's east and west coasts - one of Prince Rupert, B.C. which is dependent on natural resources (fishing and forestry) and another from the fishing dependent coastal communities of Newfoundland and Labrador.²³ Increased psychosocial stress leading to higher rates of self-damaging behaviours such as smoking and alcohol abuse, have been noted as a consequence of economic restructuring. There is also evidence of increased rates of circulatory diseases, diseases of the digestive system, and injuries and poisonings over an 8 year period between 1991 and 1999.

NW Ontario Health Effects

Assuming that the health impacts of economic changes that occurred between the two censuses (2001 and 2006), we analyzed the 2005 Canadian Community Health Survey. The terms of reference of most variables measured by the survey are the 12 months preceding the administration of the survey, which took place between January 2005 and December 2005.

Specifically, health and well-being variables (community belonging, chronic conditions, self-perceived health, self-perceived mental health, self-perceived stress, self-perceived work stress, suicidal thoughts, having a regular medical doctor, unmet health care needs and, household food security) and health behaviour variables (daily smoking, heavy drinking, obesity, physical activity and, insufficient fruits and vegetables intake) were examined. (See Appendix E for a detailed definition of variables.)

Although we had initially hoped to do direct comparisons of health status between NW Ontario communities experiencing economic challenges and those without, there were too few cases reported from communities without challenges to permit statistical comparison. The small sample size also meant that detailed economic factors such as the level of economic diversity, and the scale, severity, and suddenness of the downsizing, which could make substantial differences in health effects, could not be considered.

The following analysis, therefore, presents aggregated data comparing challenged communities with the province of Ontario as the primary reference group.

Chronic Conditions

Chronic conditions were more prevalent in the NW LHIN region than in the province of Ontario overall (*Table 4*). Three quarters of residents in forestry-based communities with economic downturn reported at least one chronic condition, and 8% of the residents had 5 or more conditions in 2005 compared with 6% for Ontario.

Communities with recent economic challenges showed a particularly high prevalence of cardiovascular diseases: rates of stroke (3%) and heart disease (7%) were significantly higher than the rates reported for the province (1.1% and 4.8% respectively); high blood pressure (18%) also was in excess of the provincial rate (15.2%).

These findings are consistent with previous research suggesting that individuals under stress of job loss or employment insecurity are especially susceptible to cardiovascular disease. Workers who experience involuntary job losses, for example, are more likely to have high blood pressure and heart disease.²⁴ Compared to the general population, they also may experience up to a twofold increase in the risk of heart attacks and stroke.²⁵

Higher prevalence of digestive disorders and thyroid conditions were found among those living in Thunder Bay. Due to the small sample size, significant inter-group differences in specific conditions were not found, and even some differences found should be interpreted with caution.

Table 4. Prevalence of Chronic Conditions (%) (Source: 2005 CCHS)

Condition	Forestry communities with economic challenges in NW LHIN	Thunder Bay	Other communities in NW LHIN	Ontario [~]
Asthma	9.5 (E)	7.0	10.3 (E)	8.0
Arthritis	17.8	20.9 **	27.8 **	17.1
Back problems	17.6	25.3 **	30.1 **	19.4
Migraine	7.9 **	12.8	11.3 (E)	11.3
Respiratory disease	12.0	9.9	13.9 (E)	10.3
Diabetes	6.9 (E)	5.8	5.2 (E)	4.8
Cardiovascular disorders	22.1 *	22.2 **	19.1	18.0
	High blood pressure	18.2	19.0 *	17.5
	Heart diseases	7.2(E)*	6.6 **	4.6 (E)
	Stroke	2.5**	1.4	F
Cancer	F	2.0	F	1.5
Digestive disorders	5.3(E)	8.9 **	7.5 (E)	6.6
Thyroid	5.1(E)	6.8 *	4.7 (E)	5.2
Mental disorders	9.2(E)	8.0	8.3 (E)	8.6
Other chronic conditions	19.2	21.0	21.8	19.3
Have chronic condition	74.1	74.1 **	76.0 *	69.8
5 or more chronic conditions	8.1	7.7	11.1 (E)	6.4

[~] Reference Category

** Significantly different from reference group ($p < 0.05$); * ($p < 0.10$)

E Coefficient of variation between 16.6% and 33.3%

F Coefficient of variation greater than 33.3%

Self-perceived Health

Self-perceived health has been found to be a reliable and valid measure of health status and a sensitive predictor of morbidity and mortality.^{26 27 28} Compared to the total Ontario population (11%) and economically stable communities (14%), higher rates (16%) of people in communities impacted by recent economic downturns reported that their overall health was fair or poor as opposed to good, very good, or excellent (*Table 5*). People in Thunder Bay reported similar levels of negative perceived health (16%). No differences were found for self-perceived mental health, stress or work stress.

Table 5. *Prevalence of Self-Perceived Health and Well-being Indicators (%) (Source: 2005 CCHS)*

Indicator	Forestry communities with economic challenges in NW LHIN	Thunder Bay	Other communities in NW LHIN	Ontario~
Negative self-perceived overall health	16.4 **	15.9 **	13.6 (E)	11.0 *
Negative self-perceived mental health	6.3(E)	6.4	5.0 (E)	5.0
Self-perceived stress	66.5	65.9	63.4	66.0
Self-perceived work stress for full-time workers	70.2	79.7	81.7	76.3
Self-perceived work stress for part-time workers	52.5	55.9	53.4 (E)	52.3

~ Reference Category

** Significantly different from reference group ($p < 0.05$); * ($p < 0.10$)

E Coefficient of variation between 16.6% and 33.3%

Health Behaviours

People in NW LHIN communities with recent forestry industry downsizing were more likely to have risky health behaviours than the total provincial population and residents living in other communities in Northwestern Ontario that were less impacted by the economic decline. More than one in five residents aged 12 or older in those communities smoked daily compared to the provincial rate of 17 percent (*Table 6*). About one-quarter of residents were obese based on self-reported height and weight, whereas only 14% of the provincial population were obese. Communities impacted showed higher rates of heavy drinking and insufficient fruits and vegetables intake as well. A higher percentage of people in the NW LHIN region, however, were active in leisure activities like walking, running, swimming, gardening, etc. The high prevalence of health risk behaviours may be associated with social adjustments people have to make to deal with negative economic changes.

Table 6. *Prevalence of Selected Health Behaviours (%)*(Source: 2005 CCHS)

Health Behaviour	Forestry communities with economic challenges in NW LHIN	Thunder Bay	Other communities in NW LHIN	Ontario [~]
Physical inactivity	41.6 *	41.7 *	40.7	47.3
Heavy drinking	17.3 **	16.5 *	15.0 (E)	11.5
Daily smoking	21.7 **	19.3 *	16.3	15.8
Obesity	24.7 **	19.4 *	20.6 *	14.3
Less than 5 servings of fruit/vegetables a day	64.7 **	60.6 *	62.7	56.5

[~] Reference Category

** Significantly different from reference group ($p < 0.05$); * ($p < 0.10$)

E Coefficient of variation between 16.6% and 33.3%

Regular Medical Doctor

Having a regular doctor to visit is a meaningful indicator of access to health care. More than a quarter of people in Northwestern Ontario communities impacted by the forestry industry crisis reported that they did not have a regular medical doctor to visit. The rate was almost three times higher than the provincial average (9%) and twice as high as that of Thunder Bay (*Table 7*). Reasons seem quite varied as well. In communities with economic downturn in Northwestern Ontario, the most important reasons were related to the unavailability of doctors (more than half reported “no doctors available in area” or “doctors not taking new patients”) whereas individuals’ not having tried to contact a regular doctor was the main reason in communities not experiencing a serious economic decline or in the province overall.

Table 7. *Prevalence of Not Having Regular Medical Doctor and Reasons (%) (Source: 2005 CCHS)*

	Forestry communities with economic challenges in NW LHIN	Thunder Bay	Other communities in NW LHIN	Ontario [~]
Not having a medical doctor	25.7 **	10.8	20.4 **	8.7
Reason:				
No one available in area	32.2 (E) *	23.4 (E)	F	19.6
None taking new patients	19.1 (E)	39.1 (E) **	F	19.7
Not tried to contact one	F	13.0 (E) **	36.1 (E)	29.8
Left or retired	20.9 (E)	32.0 (E)	F	21.6
Other	16.4 (E) **	16.6 (E) **	F	26.0

[~] Reference Category

** Significantly different from reference group ($p < 0.05$); * ($p < 0.10$)

E Coefficient of variation between 16.6% and 33.3%

F Coefficient of variation greater than 33.3%

Health Care Utilization

No significant differences among communities were found in the utilization of family doctors for 12 months prior to the survey. However, people in communities impacted by the downsizing of the forestry industry were less likely to use specialist care or dental care compared to the average Ontarian and citizens of Thunder Bay. This low utilization may be associated with lack of access. Considering that dental insurance coverage is usually provided through employment, fewer dental visits may be related to increased job loss (*Table 8*). Previous research suggests that loss of employment medical benefits, such as prescription, dental or vision care, does affect utilization.²⁹

Table 8. *Health Care Utilization for the Past 12 Months (%) (Source: 2005 CCHS)*

Health Behaviour	Forestry communities with economic challenges in NW LHIN	Thunder Bay	Other communities in NW LHIN	Ontario [~]
To contact family doctor more than 10 times	6.6 (E)	7.1	5.8 (E)	7.7
To contact eye doctor	37.2	44.6 *	38.1	41.1
To contact a specialist	21.9 **	28.8	22.4	26.3
To contact a dentist	61.6 **	67.6	67.4	69.9

[~] Reference Category

** Significantly different from reference group ($p < 0.05$); * ($p < 0.10$)

E Coefficient of variation between 16.6% and 33.3%

Multivariate Analysis

Multivariate analysis would help to understand which factors were associated with health in communities in the NW LHIN regions impacted by forestry industry decline. As shown below, both community factors and behavioural variables accounted for some of the health effects observed in challenged communities.

Chronic Conditions and Unmet Health Needs

While controlling for socio-demographic factors like age, sex, household income, employment status, marital status and aboriginal origin, lack of community belonging seemed to have a significant association with having 5 or more chronic conditions and perceiving unmet health care needs (*Table 9*).

For instance, in those communities which were experiencing significant economic downturns, individuals with lack of community belonging were more than twice as likely as others to have 5 or more chronic conditions. Conversely, community belonging as a source of social support may play a role in buffering the effects of negative economic changes on health.

Maybe because of the social support function of marriage, marital status was significantly associated with suicidal thought. Compared to married individuals, never married people were almost six times more likely to have seriously considered suicide in the past 12 months.

Table 9. *Adjusted Odds Ratios for Selected Health Indicators by Socio-demographic Characteristics (population 12 or older, NW LHIN communities with economic downturn) (Source 2005 CCHS)*

	Negative self-perceived health	Negative self-perceived mental health	5 or more chronic conditions	Suicidal thoughts	Unmet health care needs
	adjusted OR	adjusted OR	adjusted OR	adjusted OR	adjusted OR
<i>Socio-demographic Indicators</i>					
<i>Age</i>					
12-24	0.16 **	0.06 **	0.21 *	0.41	0.49
25-44	1.13	0.10 **	0.54	0.85	1.91
45-54~	1.00	1.00	1.00	1.00	1.00
65 or older	1.13 *	0.59	1.62	0.05 *	0.63
<i>Sex</i>					
Male~	1.00	1.00	1.00	1.00	1.00
Female	0.61	1.46	0.98	3.59	1.72
<i>Household income (Quintile)</i>					
First (lowest)	1.86	2.05	2.10	9.16	1.98
Second	1.06	0.90	3.33	13.58	1.87
Third	0.63	0.59	1.39	1.09	2.29
Fourth	0.68	0.90	1.38	0.00	2.37 *
Fifth (highest)~	1.00	1.00	1.00	1.00	1.00
<i>Unemployed</i>	4.06 **	0.91	1.95	3.35	0.61
<i>Marital status</i>					
Married~	1.00	1.00	1.00	1.00	1.00
Divorced/ separated/ widowed	2.04	1.68	1.90	0.28	1.53
Never married	0.95	2.20	1.04	5.73 **	0.82
<i>Aboriginal origin</i>	1.93	3.29	0.68	0.40	0.36 *
<i>Lack of community belonging</i>	1.67	0.83	2.34 **	0.41	1.84 *

** Significantly different from reference group (p <0.05); * (p<0.10)

E Coefficient of variation between 16.6% and 33.3%

Health Behaviours

Health behaviours, especially smoking, were significantly associated with ill health. (*Table 10*) Daily smokers were about five times more likely than others to perceive their health to be poor or fair as opposed to good, very good, or excellent. Smoking was also related to self-perceived mental health, chronic conditions and suicidal thought.

Physical inactivity was associated with negative self-perceived mental health and chronic conditions. Heavy drinking was associated with suicidal thought. Those who had more than 5 drinks on one occasion at least once a month in the past 12 months were almost 6 times more likely than non heavy drinkers to seriously consider committing suicide.

Household food security status was highly associated with health conditions after controlling for other confounding factors. People in food insecure households were more likely than others to have negative self-perceived mental health and 5 or more chronic conditions (odds ratios 5.1, and 4.1, respectively). As well, they were 2.2 times more likely than people in food secure households to report that they did not receive needed health care.

Not surprisingly, people who do not have a regular medical doctor were more likely than others to experience unmet health care needs.

Table 10. *Adjusted Odds Ratios for Selected Health Indicators by Health Behaviour Characteristics (population 12 or older, NW LHIN communities with economic downturn) (Source 2005 CCHS)*

	Negative self-perceived health	Negative self-perceived mental health	5 or more chronic conditions	Suicidal thoughts	Unmet health care needs
	adjusted OR	adjusted OR	adjusted OR	adjusted OR	adjusted OR
<i>Health behaviour</i>					
Daily smoking	4.73 **	2.19 *	3.73 **	11.47 **	1.80
Physical inactivity	1.70	1.92 *	2.08 *	1.86	1.02
Heavy drinking	0.40	2.74	0.32	5.51 **	0.98
Obesity	1.98	1.28	0.86	1.44	0.81
Insufficient fruit/vegetable intake	0.76	1.48	0.67	0.67	1.04
Food insecurity	1.76	5.14 **	4.13 **	0.84	2.17 *
Having a regular medical doctor	1.10	1.15	1.77	0.54	0.43 **

** Significantly different from reference group ($p < 0.05$); * ($p < 0.10$)

E Coefficient of variation between 16.6% and 33.3%

Summary and Limitations

Health effects of the recent forestry industry crisis in NW LHIN communities were found: people in those communities showed a high prevalence of negative self-perceived health and certain chronic conditions like cardiovascular diseases. People living in those forestry-based communities tended to involve themselves more often with unhealthy lifestyles when compared to the average Ontarian. The findings suggest that negative health effects of the forestry industry decline in Northwestern Ontario might be countered by maintaining strong networks of community social support, promoting healthy lifestyles, and keeping food security intact.

Though it is assumed that health conditions measured by the CCHS in 2005 reflect economic conditions that occurred between the two census years, communities experienced economic downturns at different times. Moreover, for some other communities that experienced economic impacts of closure or layoff earlier on (for example, in 2002), the survey two or three years later could not get the relevant information as many people affected had already moved out of the region.

As well, lagging time between economic changes and their health effects may vary depending on individual as well as contextual differences. Thus, some effects were captured in the CCHS, but others may be yet to come (to be captured in the next cycle of the CCHS).



QUALITATIVE ANALYSIS

This section of the report synthesizes information from a qualitative analysis of the literature and interviews with health administrators and front-line providers in NW LHIN communities. The analysis explores six themes: (a) employment as a determinant of health, with emphasis on involuntary job loss, downsizing, survivor sickness, loss of workplace supports, deindustrialization and precarious employment; (b) physical health and unemployment, as measured by mortality, self-reported health status, cardiovascular disease, obesity and other health problems; (c) mental health effects of unemployment, as evidenced by depression and anxiety, alcohol consumption, drug use, smoking and suicide; (d) family health and unemployment, including stress and abuse of spouses and children, as well as loss of elder supports; (e) effects on health care utilization; and (f) community well-being and policy implications.

Employment as a Determinant of Health

Research demonstrates that employment is a significant determinant of health. Literature reviews from Australia³⁰, the United Kingdom³¹, and Canada³² all show that being non-employed is associated with poor health, and that those who are employed show the lowest prevalence of ill health and less limiting long-term illness.³³ For example, using cross-sectional correlation, Ross & Mirowsky found that full-time employment predicts slower declines in perceived health and physical functioning for both men and women;³⁴ Wadsworth et al studied the effects of unemployment of men in a British national birth cohort and found that prolonged unemployment early in the working life lead to low “health capital” scores.³⁵ In this study, health capital was assessed by giving a score of 1 to each variable: body mass in the desirable range, vigorous exercise once a week or more, eating fresh fruit and vegetables more than once a week, and not smoking.

Involuntary Job Loss

Another body of literature, which is particularly relevant to the current study, documents the negative health impacts of involuntary job loss due to de-industrialization, lay-offs, and factory closures. Most of the studies focus on either the physical or mental health effects of job loss on workers; a few examples look at effects on spouses, children, and other family members.

Downsizing

A series of studies from Finland examine work-related determinants of health among full time municipal employees between 1991 and 2000 during which time Finland faced a severe economic decline and corresponding increase in unemployment. The authors found that there was an increase in psychotropic drugs prescribed to employees who lost their job during downsizing as well as employees who maintained their employment through downsizing when compared to employees who experienced no downsizing.³⁶ Employees who survived major downsizing were at 1.81 times higher risk of disability retirement before 55 years of age compared to those who did not experience downsizing.³⁷ Those who experienced major downsizing and kept their jobs were two times more likely to die from cardiovascular disease than those who did not experience downsizing.³⁸

The authors further found that employees who stayed in the organization after lay-offs suffered from increased health problems (based on self-rated health status, mental distress, musculoskeletal symptoms, severe musculoskeletal pain, all cause medically certified sickness absence and, musculoskeletal sickness absence) when compared to those who left the organization and become re-employed.³⁹ Downsizing was also found to be a risk factor for musculoskeletal problems among those who remained employed and, that association was stronger for those in low income positions and females - in this study, much of this was attributed to increasing work demands.⁴⁰ Major downsizing was also associated with an increased prevalence of regular smoking among those who remained employed and with a two-fold increase in

sickness absence among those who experienced major downsizing compared to minor downsizing.⁴¹

Finally, when comparing absenteeism among those who maintained their jobs before downsizing, during major downsizing and after major downsizing, the authors found a linear increase in the risk of long-term sick leave after downsizing -- absenteeism irrespective of cause and because of musculoskeletal disorders and trauma were also related to the degree of downsizing, with the risk of long-term absence 1.9-6.9 times greater after major than after minor downsizing.⁴²

Survivor Sickness

The research demonstrates that when lay-offs occur the health of all workers, even those that maintain their employment, is impacted. This effect is defined as, “survivor sickness” which “refers to the findings that pressures and uncertainties related to the restructuring activity (e.g. job insecurity) continues as a stressor for the employees remaining in the organization after the given change activity” (p. 542).⁴³ A literature review from the United Kingdom shows that all studies on job insecurity document consistent adverse effects on psychological morbidity such as self-esteem, depression, anxiety and stress.⁴⁴

A cross-sectional study from Switzerland, for example, measured the prevalence rates of 10 self-reported health indicators according to three levels of perceived job insecurity (low, middle and high) and found that the stress induced in the general employed population by fear of unemployment has a negative impact on individual health. Specifically, employees in the high insecurity group, compared to those in the

low insecurity group had significantly higher odds ratios for: not being in good health, reporting a high level of subjective stress, low self-esteem, daily or weekly consumption of tranquilizers, regular back pain, regular smoking, and avoiding medical consultation or caring for themselves for fear of missing work.⁴⁵

Anticipatory Unemployment

Research shows that there are negative health impacts not only on employees who have already lost their jobs, but also on employees who perceive that they are at risk of losing employment. For example, a longitudinal cohort study of white collar civil servants facing job loss or change due to privatization compared employees in one department facing early privatization to those in other departments; it found that self-reported health status deteriorated among employees anticipating privatization compared to the rest of the cohort.⁴⁶ In a follow-up study, the authors measured health and health service outcomes of sub groups of employees before, and 18 months after privatization (at this time employees were classified as ‘securely re-employed’, ‘insecurely re-employed’, ‘unemployed’, or ‘permanently out of paid employment’) in one department of the civil service. Employees completed questionnaires at baseline and after privatization. Results showed that insecure re-employment and unemployment were both associated with minor psychiatric morbidity and an increase in consultations with a general practitioner.⁴⁷

Loss of Workplace Support

Grunberg et al conducted a study in a large manufacturing division of a company that was undergoing downsizing. The authors examined indexes of well-

being and health as a function of the type of contact which survivors of the lay-offs had with those who had been laid off – thus employees were classified into four groups: those that had close friends in the company laid off, those who had coworkers laid off, those who had themselves received a warning notice of possible lay off and those who had been laid off and then re-hired. Employees who did not report experiencing any of the above were classified as having ‘no contact with lay-offs’. Results showed that when compared to the ‘no contact’ group, all other employees reported increased depression, increased symptoms of poor health, more eating changes and some degree of increased alcohol consumption. As well, those employees who were laid off and then rehired reported a significantly greater number of work related injuries and illness and more work days missed as a result than did employees in the other groups.⁴⁸

De-Industrialization

Several Canadian studies examine the impact of de-industrialization in the British Columbia sawmill industry. These studies are based on a sample of 3000 sawmill workers employed in 1979 (a year before de-industrialization began) and interviewed in 1998. The authors found that those workers who remained employed in the sawmill reported lower health status than workers who were downsized and re-employed elsewhere.⁴⁹ When compared to those who were re-employed outside the sawmill, survivors of de-industrialization were at higher risk for exposure to unemployment and adverse physical and psychosocial work conditions.⁵⁰

Precarious Employment

Precarious or temporary employment has also been shown to have negative health effects. A review by Virtanen and colleagues concludes that temporary workers experience fewer absences from work, but higher risks of workplace injuries and mental health problems.⁵¹ The more unstable the employment and the shorter the duration of workplace contracts, moreover, the higher the morbidity and mortality. Other studies suggest that “poor quality jobs” may in fact be more stressful and carry more health risks than being unemployed.⁵²

A Canadian study of workers who were in precarious employment situations confirmed that instability of employment was associated with poor health and stress.⁵³ Workers who experience uncertain employment, particularly if the work is not sustainable, offers few supports, and does not carry with it the promise of full-time work also experienced ongoing job strain and work stress, at higher levels than would be expected among colleagues with more stable employment.

Those who do not have other sources of household income become increasingly isolated and are subject to more negative physical and mental health effects. Younger workers, especially if they have higher education, become more discouraged than older workers in these situations; younger individuals are especially disadvantaged because they more often lack family or social supports which might ameliorate employment stresses.

Physical Health and Unemployment

Mortality

Many studies examine the link between unemployment and mortality, finding that the unemployed are at higher risk of mortality. A cohort study of young Australian males found a significantly elevated odds ratio associated with not being in the workforce and not being a student for all cause mortality.⁵⁴ Gerdtham & Johannesson used an individual data set of 30,000 individuals in Sweden aged 20-64 followed up for 10-17 years and found that unemployment significantly increased the risk of being dead at the end of the follow-up by 50%.⁵⁵

A Finnish study followed 87,317 individuals over 8 years and found that unemployment was associated with a 2.38-fold increase in mortality during a period of low unemployment and a 1.25-fold increase during a period of high unemployment.⁵⁶ Morris et al found that stably employed middle-aged men who lost their jobs were twice as likely to die as continuously employed men in a 5.5 year follow-up.⁵⁷ The authors indicated that even men who lost employment for reasons unrelated to health were at raised risk for dying after adjustment for confounders such as smoking, drinking and social class. Sullivan & von Wachter used a longitudinal administrative data set matched to information on individual mortality to estimate the long-term effect of job loss during a mass lay off on mortality and found that job loss leads to a 15-20% increase in the probability of dying in the 20 years following.⁵⁸ The authors found that the estimates of the impact of displacement on mortality varied across different age

groups of workers with those who are displaced in their 30s having the largest increase in their mortality.

Self-Reported Health Status

A Swedish study examining the association between economic stress and self-rated health found that being unemployed increased the odds of a participant rating their health as poor.⁵⁹ This result has been confirmed by an American analysis of longitudinal data on involuntary job losses which found that workers who experience involuntary unemployment experience poorer self-rated health and an increase in depressive symptoms, even when social background and previous health are taken into account.⁶⁰ Return to work, however, moderated the negative effects as workers who became re-employed displayed better health status than individuals who remained unemployed. Gallo et al reported similar results from the Health and Retirement Survey in the United States, which showed increased morbidity among older workers who experienced involuntary job losses – physical functioning outcomes included prevalence of obesity; high blood pressure/hypertension, heart disease, or cancer; heavy smoking and; heavy drinking.⁶¹

Ahs and Westerling found that differences in self-rated health between employed and unemployed people are larger when unemployment levels are high.⁶² Turner compared ‘currently unemployed’, ‘previously unemployed’ and ‘stably employed’ workers on measures of depression and subjective physical health and found that, for individuals without a college education, unemployment experienced during economically stressful times has more profound health effects.⁶³ Conversely, a

Canadian study found that the association between individual-level unemployment and perceived health status is less in high unemployment contexts; however this finding was not statistically significant.⁶⁴

Cardiovascular Disease

A longitudinal study of Swedish shipyard workers during a period of economic instability found that, compared to a control group of workers who were not threatened by unemployment, the shipyard workers showed elevated serum cholesterol which is associated with other risk factors for cardiovascular disease, especially among those workers who reported sleep disturbance.⁶⁵ Another longitudinal study examining the impact of involuntary job loss of those 50 years and older in the United States found that, over the ten year study period, displaced workers had a twofold increase in the risk of myocardial infarction and stroke.⁶⁶

Obesity

Two Finnish studies found a relationship between long-term unemployment and obesity. A longitudinal cohort study of 9,754 subjects from Northern Finland found that a long history of unemployment was associated with an increased risk of obesity among women but not men.⁶⁷ A prospective cohort study which focussed on employees at 11 construction companies in southern Finland found that workers who were unemployed long term reported increased body mass index compared to the rest of the cohort.⁶⁸ A British cohort study found that loss of employment was associated with an increased likelihood of gaining weight among men aged 40-59.⁶⁹

Interview Data on Physical Health

Those interviewed said that they were observing differences in physical health status amongst the clients they serve. Some of these physical health concerns include high blood pressure, heart conditions, sleep disturbances, increased stress levels, higher numbers of patients with strep throat and pneumonia, more back injuries and strains, and weight gain and poor control of diabetes. As well, many unemployed individuals have lost their workplace medical benefits and cannot afford to purchase the medications they require; thus exacerbating pre-existing chronic health conditions. Finally, in some communities, younger and healthier families have left the community to seek employment opportunities elsewhere, leaving behind those who are older and less healthy.

Common Illnesses and Complications

A number of respondents said that their communities had seen an increase in the number of people with colds, influenza and pneumonia. In one community that has experienced permanent mill closures, a front line mental health worker noted that, "...this year there has been an increase of pneumonia and strep throat...and if that's just because people are stressed out and not taking care of themselves or whatever...I think there is an increase of diseases we haven't seen for a long time, so really healthy people are getting pneumonia and strep throat..."

Hypertension

Blood pressure rates have increased in one community that has experienced a number of mill closures and temporary lay-offs, as reported by a health director from a community which had been involved in the Heart and Stroke Foundation blood pressure initiative, "...we've detected a large number of people with increased blood pressure now, it's difficult to say whether that relates to the lay-offs but generally when people are having physical or mental problems, there'll be physical symptoms and vice versa..." The director of a family health team in another community notes that she is also seeing more people with hypertension and younger people with hypertension - "one particular patient I'm thinking about, he was 31 years old, very, very young [the lay-off] certainly increased or made it worse for him." Another respondent sees similar changes in her agency's hypertension program, "it just seems younger people are coming in with high blood pressure and we can attribute a lot of that to what's going on in the community, what's going on in their lives."

Injuries

A front line mental health worker from a community with a significant reliance on the forestry industry offered her perceptions on the increasing numbers of injuries she has observed with her clients. "...if they're not necessarily focusing on the job and they're concerned around production quotas and getting stuff done and not falling behind, sometimes people will take short cuts that they previously would not have..." As well, some people are accepting risky jobs in order to support their families. "...some of the employees who've gone on to try other jobs have sort of openly put

themselves in jobs perhaps that maybe aren't safe...and have done that simply because they need to provide for their families..."

Obesity

Many of those interviewed reported that their clients who had experienced job loss were gaining weight because they are not eating a healthy diet. A counsellor in a community that has experienced a series of mill shutdowns over a number of years said that his clients are resorting to unhealthy diets due to finances, "...I think they can't afford to go out and spend lots of money on groceries and that they tend to cut back and use less healthy, more sort of quick foods..." A nurse working with diabetic clients was particularly concerned about unhealthy diets, "some of them with diabetes and it went out of control, some of them can't afford to eat properly..." Another respondent addresses the issue of the availability of food, "food security is a real issue, a carton of milk is not the same in every community, fresh fruits and vegetables are not always readily available in every community, so that impacts their health." Lack of healthy food consumption leads to weight gain which in turn exacerbates depression and other mental health problems, observes a health professional, "there have been a lot of issues with weight gain, which goes hand in hand with depression."

Physical Inactivity

Healthy lifestyle choices are also declining in many communities, a nurse practitioner from a community with a strong dependence on the forestry sector said: "...they're not leading healthy lifestyles so the nutrition isn't there, the exercise isn't there..." She shares her concerns that unhealthy lifestyles are "going to increase the

chronic diseases – if you're not exercising, you're not eating properly, you may be smoking for stress . . . obesity increases, that's all going to increase the chronic disease as people age." A health clinic manager from a community that has experienced indefinite lay-offs, stated that many people in her small town have had to make financial cutbacks which have resulted in cancelling fitness centre memberships or other recreational activities: "...they can't afford to participate in extra curricular activities, for example, there's a local fitness centre and it used to be very well used...now their membership is down to 50 and they are having a hard time keeping open."

Mental Health and Unemployment

In his seminal work, *Mental Illness and the Economy*, Brenner attempted to identify the impact of unemployment on mental health; he reviewed 117 years of economic history of the United States to determine the relationship between economic situation and mental health (rates of admission to state and private mental institutes). His analysis reported a strong inverse association of psychiatric hospital admissions with manufacturing employment. That is, psychiatric hospitalization increases during economic downturns and decreases during upturns.⁷⁰ Supporting this data, there is a large amount of additional evidence that unemployment impacts mental health. Unemployment has been associated with poor psychological well-being,⁷¹ and depression.^{72 73} And this association has been shown to be causal, by recovery in mental health for those who are re-employed and worsening for those that remain unemployed.⁷⁴

Once again, the most relevant literature deals with mental health impacts of involuntary job loss as a result of closures or downsizing. The majority of studies which look at the mental health impacts of involuntary job loss come from the United States and the United Kingdom with some others from Japan, Australia and New Zealand and, Canada.

Depression and Anxiety

Hamilton et al compared Michigan auto workers from a closing plant to those from a non-closing plant and classified workers into three categories: 'comparison' workers from a non-closing plant, 'anticipating layoff' and 'laid off'. Laid-off workers showed significantly more frequent symptoms of poor mental health for somatic complaints and especially for depression and anxiety.⁷⁵ A prospective study of Florida men assessed every six months for five years found that men who became unemployed over the course of the study had more symptoms of somatisation, depression and anxiety than those who continued to work.⁷⁶ This study also found that visits to a physician were five times more frequent in the unemployed men and that the unemployed men took twice as many medications as those who remained employed. Gallo et al analyzed data from four waves of the Health and Retirement Survey and found that, among individuals with below median net worth, involuntary job loss was associated with a significant increase in depressive symptoms.⁷⁷

A Japanese study followed a group of workers who were laid off from a shoe factory. The authors surveyed laid off workers every 6 months for two years and compared those who remained unemployed with those who were employed part time

and those who secured full time employment. They observed that depressive symptoms gradually worsened after one year of unemployment, especially as unemployment benefits ran out.⁷⁸

An eight-year follow up study of meat packers in two New Zealand factories (one that closed and one that did not) found that involuntary job loss more than doubled the risk of mental distress leading to serious self-harm and increased the relative risk of being admitted to hospital with a mental health diagnosis over the eight years.⁷⁹ Using National Health Survey Data, Flatau et al found that unemployed people reported increased feelings of nervousness and depression when compared to employed individuals and that mental health and well-being scores are lowest in the 13-26 week duration of unemployment category.⁸⁰ The authors conclude that, “rather than follow a neat linear deterioration or improvement in mental health and well-being outcomes over the duration of unemployment, the unemployed (on the basis of the SF-36 mental health scale) appear to swing in an oscillatory fashion between poor and poorer outcomes” (p. 177).

Using data from Britain, Montgomery et al found that unemployment is a risk factor for depressive symptoms even in men with no previous psychological vulnerability.⁸¹ Another study from the United Kingdom compared the health of unemployed miners to the general population after a closure programme which led to 22,500 miners being laid off. Based on survey responses, men were categorized into one of 5 occupational groups: ‘current miners’, ‘unemployed miners’, ‘working former miners’, ‘employed non-miners’ and ‘unemployed non-miners’. Results showed that current miners, unemployed miners and working former miners were all more likely to

score 3 or more on the General Health Questionnaire signifying that they were suffering from some form of psychological disorder, when compared to working non-miners.⁸²

Another study which compared health of employed and unemployed workers in twenty-three fishery dependent communities in Eastern Canada found that the unemployed suffered from poorer mental health. Almost 59% of the unemployed said that life was more stressful after the cod moratorium and when asked about their mental health, the unemployed were more distressed.⁸³ The author found that the unemployed “were less able to keep themselves busy and occupied, were less satisfied with the way they have carried out their tasks, less capable with making decisions and less able to enjoy their normal day-to-day activities.” (p. 123)

Alcohol Consumption

Several studies examine the association between unemployment and alcohol consumption. Catalano et al surveyed 10,534 adults in 3 different U.S. cities at one-year intervals and found that people who were employed and did not abuse alcohol at the first interview were more likely to report an alcohol disorder if they were laid off at the time of the second interview. The authors also found that an unexpected level of unemployment in the community was positively related to the risk of an alcohol disorder among the unemployed in those communities.⁸⁴

Ettner looked at alcohol consumption and dependence symptoms in a sample of U.S. citizens who completed the National Health Interview Survey and found ambiguous results - she found that whether a respondent is employed or not is not significantly associated with alcohol outcomes in the overall sample and is actually

negatively correlated with consumption and dependence in married respondents. However, involuntary unemployment, although effects are small, is positively and significantly correlated with alcohol consumption and dependence symptoms.⁸⁵ A five year follow up of a sample of unemployed people in southern Norway revealed that 23% of those still unemployed and 12% of those re-employed displayed symptoms of alcohol dependence.⁸⁶ Claussen concluded that “the high prevalence of harmful drinking among Norwegian unemployed is explained mainly by unemployment causing alcohol abuse rather than vice versa” (p. 133).

A British survey of miners threatened by unemployment found that the threat of unemployment increased alcohol consumption – 54% of men at the threatened colliery vs. 37.3% of those at the unthreatened colliery reported alcohol consumption of greater than 21 units and the number of men reporting an increase in their recent consumption was also significant (34.5% vs. 16.7%).⁸⁷

Drug Use

Peck and Plant examined the association between unemployment and illegal drug use in the United Kingdom. The authors found a weak but significant correlation between duration of unemployment and illicit drug use, they conclude by saying, “there is a clear link between illegal drug use and unemployment. Many possible explanations for this exist, but the most parsimonious conclusion is that high unemployment serves to foster drug use. This conclusion is consistent with a whole body of evidence from many studies conducted in different communities with different sampling techniques, data sources, and methodologies.” (p. 931)⁸⁸

Survey data on substance abuse confirms higher rates among the unemployed. For example, the American Monitoring the Future study surveyed substance abuse among a representative sample of high-school seniors, with follow up every two years until participants reached the age of 30 and then a final survey at age 35. The authors found that those with a recent history of unemployment were more likely to smoke, and to use marijuana, cocaine and misuse prescription medication than those who were continuously employed.⁸⁹ Morrell et al report on a Norwegian study which showed higher rates of marijuana use among unemployed than employed youth.⁹⁰ An Australian study found that 14.1% of unemployed women and 22.9% of unemployed men suffered from one or more substance use disorders compared to 5.7% of full-time employed women and 11.1% full-time employed men.⁹¹

Smoking

Research shows that the unemployed are more likely to smoke than the employed and that they are less likely to quit smoking.⁹² Weden et al. used a discrete-time hazards model to assess the relationship between employment and smoking cessation among American adults. The authors found that the unemployed are less likely to quit smoking than the employed.⁹³ A Swedish study examined the association between neighbourhood unemployment rates and daily smoking.⁹⁴ The authors confirmed that as neighbourhood unemployment increased so did the risk of daily smoking. They also demonstrated that the unemployed have a higher prevalence of daily smoking and that manual workers smoke more than white collar workers. Another study suggests that smokers may also increase their consumption of cigarettes after job loss. Matoba et al found that, over a two year follow-up period, the

consumption rate of cigarettes among men unemployed after a factory closure increased by 60%.⁹⁵

Suicide

There is much evidence that suicide rates are consistently higher among the unemployed.^{96 97} Further, this relationship between unemployment and suicide remains even when controlled for demographic and social variables and health status.⁹⁸

Two studies based on the Swedish twin registry found that unemployment was associated with an increased risk of early death from suicide and undetermined causes,⁹⁹ and that both unemployment and lengthy working hours (more than 5 hours of overtime per week) were associated with an increased rate of mortality for men and women.¹⁰⁰ Ahs & Westerling used structured interviews from the Swedish Survey of Living Conditions to compare those classified as: 'unemployed', 'retired or on temporary disability', 'economically inactive for another reason' and 'employed', and found that the risk of death due to external causes was excessive among the unemployed and among those retired or on temporary disability, resulting for the most part from suicide.¹⁰¹

Longitudinal analyses reveal that suicide and suicide attempts increase during periods of high unemployment.^{102 103 104} An examination of the long-term trends in suicide attempts in Edinburgh found the highest rates of parasuicide among the long term unemployed.¹⁰⁵ Another study from the United Kingdom found that the long-term unemployed are about twice as likely to have a repeat episode of attempted suicide.^{106 107} A project from Norway monitored suicidal ideation in a five-year follow

up of long-term unemployed people and found that after 5 years, suicidal ideation was observed in 6% of those who had been re-employed compared to in 22% of those who remained unemployed – the author concluded that re-employment is the best means of suicide prevention among the unemployed.¹⁰⁸

Lewis and Sloggett investigated the association between suicide and socioeconomic status, unemployment, and chronic illness in England and Wales and found that those who were unemployed in both 1971 and 1981 had the highest rate of suicide, while those who had become sick or unemployed in 1981 had lower rates but these were still higher than those who were employed in both 1971 and 1981.¹⁰⁹ An American analysis of data from the National Longitudinal Mortality Study found that unemployed men were more than twice as likely to commit suicide as employed men after three years of follow up and that the lower the socio-economic status as measured by education and household income, the higher the suicide risk. Among women, those unemployed were over three times as likely to commit suicide after 9 years of follow-up.¹¹⁰

Interview Data on Mental Health

The individuals interviewed were particularly concerned about mental health issues in their communities. Stress, depression, suicide and anxiety issues have all increased in the communities studied. Respondents emphasized the links between mental health and physical health and shared their views on how stress was exacerbating pre-existing conditions, or potentially influencing the development of conditions in the future. Some interviewees also saw a link between job-related stress

and the development of secondary conditions, such as sleep disorders and depression, that are usually associated with serious stress. As well, many people felt that stress related to job loss was causing people to behave in ways they normally may not, such as, increased alcohol consumption and substance use. In turn, increased substance abuse leads to risk taking behaviours or diminished control related to anger management issues. Finally, many people have increased their levels of smoking or resumed smoking after a significant period of abstinence.

Stress, Depression and Anxiety

All of those interviewed said that stress is high amongst their clients and that depression and anxiety are extremely common. A social worker in a community with a moderate dependence on the forestry sector has seen an increase in the stress levels amongst her clients, "I've definitely seen more folks come in with...acute stress issues that are playing out as physiological symptoms, people are coming in with more physical complaints that are often associated with higher stress levels, also seeing more folks come in with a diagnosis of depression, more folks with symptoms of anxiety..."

Stress levels are affecting people physically and people are seeking out medications they did not require before. A health director from a community with temporary but long-term lay-offs shared her observations. "...they're coming in to see the physician for medication for sleeping, for depression." A nurse from a community with permanent employment losses said that stress is leading to other mental health problems such as anxiety and depression.

Retraining and Identity Crises

Another stressor which was identified by a mental health worker stems from the pressure to retrain after being laid off from forestry employment – “lots of the forestry people have been offered re-education so they can ... go on to something else but that has actually caused more strain and pressure because they are having to go back to school and it’s something that they may not be prepared to do or able to do and that often results in them having to think about moving, which causes stress . . .”

The need to retrain also caused identity crises. Many people are grappling with feelings of depression reported a nurse from a community with the highest level of forestry sector dependence in the study: “...they just feel useless...a lot of them they’re older, they’re in their 40’s and 50’s, and they’ve done this all their life so they have no education they just go by what their work experience is but now with new employers, they won’t hire without a grade twelve...so these guys are stuck in a rut so they’re severely depressed...” A counsellor from another community had also seen this as an issue for many of her clients, “they are coming in with identity crisis issues, so people who have spent their whole adult working life working in the forestry industry being totally ambivalent about whether or not they should go to school and retrain . . .”

Exacerbation of Existing Mental Health Problems

There is particular concern for those with pre-existing mental health issues as a nurse in one forestry sector dependant community says, “...the ones that have the underlying mental health problems, those are the ones that I would be concerned about because they do have a problem already and ... the situational crisis sometimes

exacerbates those or they get stuck in a rut...” A program coordinator from a community with temporary but long-term industry shutdowns also reported that there has been a re-emergence for some people around mental health issues. “...we’re seeing people that have not had a depressive episode for some time and what we know is that when you have a really significant situational stressor that can be a possible trigger for yet another depressive episode...I’ve seen people regress with regards to depression and anxiety symptoms as well...” A mental health counsellor talks about his practice with those who have lost their jobs as a result of forestry downsizing - “people with chronic anxiety ... their anxiety levels have definitely increased, ... people with chronic depression, their depression has deepened.”

Worry About Future Industry Restructuring

Key informants felt that the stress and anxiety was not only an issue for those who had already been laid off but also for those who were worried about job loss in the future. A mental health counsellor said that he sees anxiety not only among those who have already lost their jobs but also among those who are still working and worried about the future, “people are worried about the future and I hear it everyday in my job, you know, the insecurity is definitely affecting them, they just don’t know how secure it is and just most recently there has been more lay-offs in the forestry industry, all the mills in this area are now down to one shift, with layoffs pending if it’s not happened already . . .” A nurse from another community also sees the impact that job losses have had on those who remain employed, “they are anxious too, they don’t know when they’ll be next to go.”

An administrator from a health centre with moderate levels of unemployment in her community expressed her concerns about the stress of living in a community where lay-offs have occurred: "...morale is low; it's hard for these individuals who have to continue to work in the same environment so the stress levels for sure, the anxiety, the panic that we're seeing, and the stress levels that are associated with those as well." A mental health counsellor says that she is seeing people who have been laid off and people who are worried about being laid off in the future who are experiencing physical symptoms, for example, "people having chest pains and often it ended up being symptoms of anxiety."

Stress also leads to sleep issues, noted several respondents, people are unable to sleep due to "constant worrying." One interviewee said that she sees many "people who cannot sleep and are very anxious" due to lay-offs in the forestry sector. A nurse from another community spoke about a recent client, "just earlier this week someone mentioned to me that her husband had just been notified that he was being laid off and she said that they had a sleepless night and they're worried about what they are going to do."

There is also a sense of hopelessness in some communities which is causing chronic stress amongst community members. A director for a health clinic in an isolated community that has been impacted by the forestry sector decline stressed the significance of the hopelessness her community is feeling. "...the helplessness in this community is real...my immediate concern is that there is no end in sight, that this is going to be an on-going, high level stressor in the community for these families and that their quality of life will continue to be eroded..."

Substance Abuse

Large numbers of clients are struggling to stay committed to their smoking cessation programs and many people are smoking more than before commented a health clinic director: “a good majority of them, have withdrawn from the program, and by word of mouth, more people are saying they are smoking more...” A nurse practitioner from a different community said that many people have resumed smoking after being a non-smoker for many years. “Yes, we have seen an increase in smoking. Some people who have quit for five years or more are smoking again.” Another respondent from a community with workers still on strike felt that they were smoking more than usual because “they’ve got nothing else to do and they’re still going out to the strike situation and they strike for four hours a day ... so they are smoking when they get together.”

As with smoking, some people have struggled to maintain sobriety. A manager from a health clinic in a community greatly affected by the forestry sector decline conveyed her thoughts. “...we’re seeing regression in substance use, so those that have made positive steps to address their substance use and were abstaining are losing control again.” Referrals to treatment centres have increased and the substance use is impacting families a mental health counsellor reported. “...I’ve had to send quite a few down to treatment centres because of increased substance abuse, alcohol and drugs, ... I’ve seen one family that’s broken up because of it...” He goes on to say that some people who may have been “social drinkers in the past” are using alcohol “as a cushion against their worries and their stress and this has increased problems.”

People who are involved in substance abuse are also behaving in ways that are out of the norm for them. A program coordinator from a community severely impacted by the decline in the forestry sector is seeing an increase in "...risk taking behaviours for sure, we're seeing people who are speeding, maybe lashing out anger wise, you know high risk taking behaviours as far as excitement goes, as well as the drinking, gambling, increased substance abuse..."

As well, increased levels of substance abuse strain the limited resources which are available. One community which has experienced mill shut downs and long-term closures of forestry operations has found themselves in the position of trying to provide services related to increased levels of substance use when they do not have these services available, "...we've seen an increase in the use of our stabilization unit and we now feel very pressured to provide detoxification beds in our community which we currently don't have..." The same community has seen an increase in drug use, "There's high alcohol consumption, always has been and we would say that it's probably increased, certainly the drug use has..." and the community recently opened a methadone clinic. She added: "I think the numbers are fairly significant, for a small town to be able to support a methadone clinic is pretty significant."

Social Isolation

Counsellors also were concerned that unemployed workers and their families were so overwhelmed by what was happening to them, economically and emotionally, that they were at serious risk of becoming socially isolated, which added to their stress. One mental health counsellor reported "...they're just not dealing with what's going on,

they're not dealing with the depression, they're not trying to address that, they're just trying to deal day by day so that's just building and building." One respondent spoke about the difficulty of working with people who are suffering from depression as a result of job loss and associated financial and family hardships: "now I'm seeing people that are depressed but they have lost their home, have lost their family because of what's happened and are basically alone . . ."

Suicide

A nurse from a community that has had a mill closure in the past year reported that she has seen an increase in the number of men in their late forties and fifties accessing their health clinic. Some of these older clients have expressed suicidal thoughts which is challenging since this target group tends to be harder to serve. "...it's the older late forties, early fifties men and they are difficult clients to treat because they don't like to come into the clinic and it can be hard to get them to follow through and get them to counselling and things like that."

Suicide is a great concern for many of the people interviewed and although most communities have not experienced suicide directly related to job loss, many clients have expressed suicidal thoughts. A social worker from a community that has been impacted by forestry sector restructuring described, "...we've certainly had it voiced more often by our clients." This was reiterated by a mental health counsellor who is seeing people express suicidal thoughts that would not normally. "I'm seeing some correlation with folks that in the past may not have had any sort of suicidal thoughts and are having those thoughts now."

Family Health and Unemployment

Involuntary job loss does not only affect those laid off or exposed to lay-offs but also their families. Dew et al reviewed the effect of unemployment on family health.¹¹¹ Research shows that the spouses of the unemployed suffer increased depression and anxiety and also increased stress levels. The children of the unemployed are more likely to develop anxiety and behaviour problems; they also are more likely to commit suicide. Finally, job loss often leads to marital strain, relationship breakdown and family violence. The authors conclude that unemployment is associated with poorer mental health, not just of the unemployed themselves but of their children and spouses as well.

Spousal Stress

As Park and Nelson observe, job loss in resource-dependent communities means a shift in family roles, because gender distinction of the male as primary "bread earner" prevails in resource dependent communities. If the female spouse has a job, it is likely in a service industry that pays much lower wages. Hence, job loss forces the family to make two kinds of immediate adjustments: changes in gender roles and significant reduction in household income.¹¹²

The mental health literature confirms that when male primary wage earners lose their jobs, wives report sustained stress levels, which are most serious in families that are already at risk because of previous financial problems, mental health difficulties, or lack of support from extended families.¹¹³ Spouses of older workers are especially

subject to these strains, if family finances were satisfactory prior to job loss.¹¹⁴ Additional role strains emerge when women's household routines are disrupted by the presence of an unemployed spouse.¹¹⁵ Depression among spouses can be very persistent, lasting years after the initial job loss has occurred.¹¹⁶ Although it was assumed that the increasing prevalence of dual-earner families might moderate the adverse health effects of job insecurity or unemployment on spousal relationships Moen and Chermack suggest that the stress remains, largely because cultural expectations around male and female employment roles have not changed.¹¹⁷

Woman Abuse

The literature on marital role strain supports a direct association between male unemployment and woman abuse.¹¹⁸ Data from the U.S Census and the National Survey of Families and Households showed that women whose male partners experienced two or more periods of unemployment over the 5-year study period were three times more likely to be victims of intimate partner violence compared to women whose partners had stable employment.¹¹⁹ Couples who reported extensive financial strain had a rate of violence more than three times that of couples with low levels of strain.

The report found an association between community or neighbourhood unemployment rates and spousal violence. Levels of violence among couples experiencing economic distress were much higher in disadvantaged neighbourhoods than in advantaged locations; the highest levels of violence were reported by women

who live in disadvantaged neighbourhoods with men who have high levels of job instability.

Another study using 1990 U.S. Census data and the National Survey for Families and Households revealed no effect of either partner's employment status (currently employed vs. currently unemployed) on woman abuse. Additional analysis using indicators of financial adequacy however, found that the risk of violence was significantly greater if the household income-to-needs ratio was lower, number of debts higher and the male partner earns a smaller share of the couple's earnings. As well, a subjective measure of a woman's sense of financial well-being (based on degree of satisfaction with current finances and frequency of worry about meeting expenses) reduced her risk of violence by 36%.¹²⁰

Child Health

Most of the literature on child health effects is focussed on long-term unemployment. With respect to health, Sleskova et al examined self-rated health, long-standing illness and health complaints as a function of mother's and father's employment status (employed, unemployed for less than a year and unemployed for more than a year) and found that father's employment status was a significant predictor of self-rated health among adolescents. Youth whose father had been unemployed for more than one year had worse health in comparison to those whose father was employed.¹²¹

Child Abuse and Neglect

Data from a Danish birth cohort study found that children exposed to parental unemployment experience longer periods of hospitalization, care placement, lower high school or vocational school completion rates and many are then exposed to unemployment themselves and; parental unemployment (especially maternal unemployment for more than 21 weeks) seemed to increase the risk of abuse of their children.¹²² A Scottish study using archival data of registered cases of child abuse and neglect found that male unemployment rates accounted for two-thirds of the variance in total child abuse and neglect rates.¹²³ On the other hand, a U.K study compared two cohorts of children - those seen during an economically stable period (1974-79) and those seen during 1980-85, when there was a large increase in unemployment due to a collapse of steelmaking and a decline in heavy industry. This research found no evidence that parental job loss in otherwise stable families leads to an increase in child abuse.¹²⁴

Child Suicide

A study of sawmill workers in British Columbia examined the impact of parental working conditions on suicide among their children. It considered the unemployment history, and the physical and psychosocial work conditions of a cohort of male sawmill workers in rural forestry-dependent communities and the hospital records of their children. Results showed that for males, father's employment in an unskilled sawmill job increased the odds for a child's attempted suicide and that lower duration of employment at a sawmill was also associated with increased odds for attempted

suicide. For females, father's low duration of employment, low control and high physical demand were associated with elevated odds for attempted suicide.¹²⁵

Loss of Supports

Unemployment and resulting outmigration in communities lessens the social support available to those who are left behind, which means that negative health effects of restructuring extend to families, as well. Women who were interviewed as part of a qualitative study examining their health and well-being in Nova Scotia fishing communities after the cod moratorium, for example, reported increasing stress as a result of hard financial times and unemployment, along with problems like family violence or substance abuse. At the same time, they had access to fewer services.¹²⁶

Leipert et al's examination of elderly care in rural Canada shows that the outmigration of youth from rural areas due to limited employment and educational opportunities has a significant impact on both the formal and informal social supports available to seniors. Formal social supports are impacted because fewer youth will be available to deliver services as professionals or volunteers, leaving small isolated communities with a high proportion of seniors with greater health needs and not enough services to meet those needs.¹²⁷ The impact on informal supports is obvious – as families move away no one is left behind to care for aging relatives.¹²⁸ Loss of support is especially significant in rural communities,^{129 130} where it is estimated that family and friends are providing 80-90% of care for the elderly.¹³¹

Interview Data on Family Health

The decline in the forestry sector not only affects those who have lost employment but also spouses, children and extended family members. Stress levels are high for everyone in the family which is affecting physical health and health service utilization. Finances are of great concern; in many families the person employed in the forestry sector was the sole income earner for the family unit. Some families are struggling with separation due to men leaving their communities for employment in other provinces with the spouse and children remaining behind. As well, some families have dissolved due to pressures that resulted from the decline of the forestry sector. Finally, some elderly family members have remained in their communities while their adult children who were providing care for them have left to seek employment elsewhere.

The stress associated with economic challenges appears to affect everyone in the communities. Looking around her town, a health professional said, “people are genuinely scared for their families, you really do see that, the stress on the children, .. on the moms, ... on the dads, kids don’t know what is going on, they’re having to leave their schools, they’re moving into different communities.” A nurse explains:

It’s just we really have seen an impact on family health because of forestry sector decline and it’s not just one age group, it affects that whole family. So many people are having financial problems as well as health problems, there’s a lot of instability, broken up families. The ones that are left here are really scared and they don’t want to leave because they know they will never sell their homes so they are stuck. There isn’t a lot of other opportunity for people here, employment for men anyways.

Spousal Stress

Spouses are under increasing stress. A nurse in a community which is highly dependant on the forestry sector reported that women in her community are now working outside the home while maintaining their other duties which is putting increasing pressure on them. "...the wives didn't have employment, now they're out trying to get employment to kind of accommodate their income and they're stressed out because they're not used to working and taking care of a home and children..." Others may be taking on extra shifts or extra part time jobs in order to try to fill gaps left when their spouse was laid off - one respondent explains, "some of our nurses whose husbands have been laid off ... they're picking up extra shifts, they're working in two places, they're looking at 'how can I make extra money outside my full time position?' because their husbands are laid off and they are trying to support their mortgage. . ."

Overall, those respondents who spoke about the trend of partners "heading west" while families remained behind, noted that this increased the stress on spouses who now had the role of a 'single parent' - "certainly a few spouses are quite upset you know, and they get quite depressed about it." A nurse from one community noted that she had seen an increase in women who had started or resumed smoking as a result of the stress they felt when their partners had to go and work outside the community.

Child Stress

Interviewees reported that children are feeling stress and anxiety related to a parent who may be working in another community, less disposable income for recreational activities, the threat of moving to another community, both parents may

now be working and generally, children often feel the stress their parents are feeling. For example, the director of a mental health program said that she was “surprised by the number of children that presented and they were worried about like, ‘should they be taking an allowance?’ -- they were worried about financial stuff of adults.”

A manager working for a mental health organization described the stress children are dealing with. “...their kids are then responding to the pressures of having to move...money being, which wasn’t traditionally an issue, now is...” With respect to anxiety children will typically present with “headaches, stomach aches, that sort of thing” she elaborates. She goes on to say that her agency has “noticed in the last 6 or 8 months, an increase in youth with depression and anxiety.” Another mental health worker in a community that has been hit hard by the decline of the forestry sector said “we’ve had more referrals for parents that have attempted suicide so their children are having issues responding to it, increased stress levels for sure, anxiety, we’ve had an increase of that as well.”

An administrator from a community which had recently lost about one-quarter of its forestry workforce noted that she has seen an increase in the number of young people abusing substances – “what we’re seeing too is some of our younger people, like 12 year olds and up, that are drinking and abusing substances and we think those numbers are a little high.” She goes on to say that the stress of having a parent working outside the community and away from the family for long periods of time can also lead to discipline problems – “when you’re used to having mom and dad together and now dad is gone for two weeks at a time . . .”

Concerns About Suicide

Concerns about suicide are impacting families as well. A mental health worker from a community which has been significantly impacted by forestry closures says: “in the last 6 to 8 months we’ve had more suicide attempts and threats of suicide.” As a result, her agency, which deals primarily with children, is receiving more referrals for children whose parents have attempted suicide. A mental health worker from another community said that families worry about suicide, especially when a community does experience a suicide – “if there is a suicide with a person who was involved in the industry that tends to lead to a chain of, obviously discussion, but also of fear within the family members just thinking, ‘... that person’s husband did that, what’s going to happen to mine, he seems to be struggling?’”

Senior Stress and Loss of Support

Having extended families leaving the community is having negative effects on elderly family members, who are increasingly subject to loss of support and accompanying stresses. A nurse practitioner from a community that has experienced permanent mill closures shared her observations. “...we have some family members actually whose partners have had to leave the community and have headed out to Alberta and that is a significant strain on the family particularly the senior folks in the family, in not having as many care givers around for them...”

A nurse from another community expresses her concern about the loss of informal care giving supports – “as people do leave to secure employment and take their families, elderly people who perhaps outright own their homes choose to stay,

they can retire comfortably here but purchasing a new home isn't an option at their age so they stay and then lose their family supports." Some women have returned to the work force which has also impacted on the care they are able to provide to elderly family members. A nurse from another community that has experienced a number of employment transitions shared that "the wives are out getting work, the men are away and they're just not coping so they're not able to help their elderly parents as much." This results in some elderly "feeling quite isolated" reports the director of a health centre.

Older family members are also stressed because they must take on extra roles to help their children and their families. A mental health counsellor explains, "...there's a lot of stress on these baby boomer grandparents who are feeling the need now to help support, if not financially at least be there as a support for their kids..." The director of a health team has also noted increased stress among older residents:

I've also heard the stress in the older people because now they're trying to support the people left behind [when one spouse leaves the community for work], so they're taking up additional roles in the family, parental roles . . . the older people, they're starting to talk about how they're having to support families, they're having to do more than they had to before so that certainly is affecting their stress and affecting their health as well.

Some elderly family members are dealing with depression related to their children leaving the community reported a mental health counsellor. In the words of her clients: "...I'm so sad about my children being in Alberta and my grandchildren' . . . suddenly they're just gone, so there was that sense of loss..." Some seniors are

planning to leave their communities in order to access services, confirmed a nurse working for a health clinic in an isolated community. They are “going to literally move out of this community in the next couple of years because they don’t see that the services for seniors are being increased here, so that they can’t maintain themselves here...”

Marriage Breakdowns and Involuntary Separations

A mental health counsellor working in a community that has experienced many permanent and temporary closures reported that marital conflicts are common and marriage breakdowns have occurred following unemployment. She observes, “...one of the other impacts of this has been marital breakups, that has been a huge issue...the amount of referrals that I’ve been making to marriage and family therapists over the last couple of years has probably tripled...”

Marriages were also threatened by involuntary separations, which occur when one partner leaves the community to find employment. Both the partner who stays behind and the one who leaves find it difficult to maintain any semblance of normal family life. A nurse explained this phenomenon. “...basically mothers and children are alone in the community, fathers have gone to look for work in other provinces where there are jobs and the mother feels very overwhelmed and overburdened...” Many people are leaving their community to find employment elsewhere while their families stay behind and the partner who remains has “the added stress of becoming a single parent” explains a director of a mental health agency. Another respondent expresses similar concerns:

A single parent family unit, where maybe it's dad or maybe its mom that has to leave the community and travel up to 1400 km, they're travelling in and out of the community, so the stressors around 'well now I'm a single parent' and the coming and going, dad is home and he's not home.

Financial Stress

Financial stress is an ongoing issue for many families explains a nurse practitioner. "For our community a lot of the people that were employed by the forestry sector were the sole provider for the family so that itself has greater impact." As a result some people are leaving their homes behind, explains a health director from a community that has had numerous forestry shutdowns: "...some people are actually abandoning their houses, their houses are simply left empty and the taxes are not being paid, it's quite dire." Others who are unable to sell their home, leave the community to find work elsewhere while their families remain behind and this also causes financial stress, "now they're paying another rent, another hydro bill, another phone bill and it creates quite a financial burden as well."

Family Violence

When stress levels are high it can be difficult for some people to control their emotions which results in abusive behaviour towards family members. A mental health counsellor has seen an increase in abuse amongst her clients. "...the verbal abuse piece, because I've seen lots of really angry people and people who are lashing out verbally at each other that in the past may not have or may in the past have had issues with anger management that have been sort of under control..." A director from a community

strongly impacted by the forestry sector decline has observed higher levels of family violence, “our sexual assault/domestic violence program is increasing in numbers, in the numbers of abused women, and probably some of it is fall out from that [the lay-offs].”

Several respondents, who had not noticed an increase in family violence, said that they were anticipating an increase in the near future. The manager of a mental health program who had worked in the field for more than 20 years said, “my concern is always that the stress leads to increased use of substances and increased family violence, I anticipate that we will see that.” A front line worker from another community also had concerns about increasing family violence as a result of financial strain, she elaborates, “when you get financial issues happening . . . parents are stressed and strained and then typically how they would react may not be how they react.”

Healthcare Utilization and Unemployment

Most of the literature shows that the unemployed tend to use more health care services and that there appears to be an association between economic downturn and an increase in utilization of physician or emergency room services. Loss of employment medical benefits, causing individuals to cut back on prescription drugs, medical devices, special diets, or other medical supplies, also may contribute to increased physician or emergency room utilization.

Physicians and Hospital Emergency Departments

A longitudinal study from the U.S followed workers who were laid off when a meat packing plant closed. The authors found increases in consultation rates and in the number of visits to hospital outpatient departments among those laid off when compared to a control group of workers who did not lose their jobs. In the four years following plant closure, those who remained unemployed, or were unstably employed throughout, consulted their general practitioners more often and were referred to the hospital more often than those who remained securely employed.¹³² A study from Austria surveyed workers of a furniture factory one year after closure and compared those who remained unemployed with those who were re-employed. The authors found that health services were over-utilized by the unemployed – the authors conclude that “given the increasing proportion of long term unemployment in many Western countries this health service utilization will impose a substantial burden on public health expenditures unless other means of psychological and social support are provided.” (p. 86)¹³³

Mental Health Services

In general, research shows that the unemployed use mental health services more than the employed and that, during periods of high unemployment, there is an increase in demand for these services. Banziger and Foos interviewed 115 clients from a community mental health centre in rural Appalachia and found that those classified as homemakers and unemployed had a higher utilization rate than those in other job categories.¹³⁴ In a related study the authors examined economic factors (welfare cases,

banking activity, unemployment, retail sales and motor vehicle sales) and mental health service utilization (hotline calls, intake at community mental health centres and admissions to state hospital) over a 78-month period and found that economic factors account for a large portion of the variance in mental health service utilization – for example, economic factors account for 60% of the variance in hotline calls.¹³⁵

Kiernan et al used time-series analysis to examine the relationship between economic indicators and mental health service utilization and found that 6 months after an economic downturn there appears to be an increase in first admissions to state hospitals and that, 3 months after an economic downturn, there was an increase in the number of case openings in outpatient facilities.¹³⁶ A study by Barling & Handal also found an increase in inpatient admissions to public mental health facilities for the unemployed during periods of economic downturn in Missouri.¹³⁷

Conversely, a Swedish study which assessed self-reported health and service utilization with respect to employment status found that while the unemployed were more likely to report symptoms of ill-health (24% of the unemployed said their health was worse than their peers vs. 10.5% of the employed) and more likely to perceive a need to contact a physician for self-identified mental health issues such as feeling depressed, stressed or nervous than the employed, they were less likely to see a doctor – the rate of reporting that one had not consulted a doctor despite a perceived need for care was 42% among unemployed, 37% among those on long-term sick leave or disability and, 22% among the employed.¹³⁸ The authors suggest that this may be a result of people's feelings of fear or shame about experiencing mental health issues or of their concerns with respect to the stigma of being unemployed.

Loss of Benefits

The limited literature which looks at health effects of loss of benefits as a result of lay-offs and unemployment is primarily from the United States and focuses on the significant costs of job loss with respect to loss of health insurance. As Simon concludes: “Estimates of the cost of job loss that ignore benefit losses are likely to understate the true effect (p. 267).”¹³⁹ Bowman found that 40-42% of blue collar workers had no health care coverage after job loss, in addition, those displaced workers with a family income of less than \$20,000 are less likely to have health care coverage than those in higher income brackets and both male and female workers who are re-employed are 19% less likely to have health insurance with their new jobs.¹⁴⁰ A study based on the Displaced Worker Survey finds a strong link between employment and health care coverage, concluding that, “loss of a job often means loss of health care benefits.” (p. 4)¹⁴¹

The only Canadian study which discusses the health effects of benefits loss is Leadbetter’s study of the impacts of mass lay-offs in the mining industry in Elliott Lake.¹⁴² This analysis confirmed that workers who were laid off in the mining industry suffered due to a loss or reduction of pensions and fringe benefits. The author noted that those who were laid off had substantially fewer benefits than those who remained employed in the mining industry even if they managed to find work elsewhere. Of those who found work outside of the mining industry, only 53% had extended medical coverage. In addition, those who were re-employed outside the mining industry had one-third to one-half the coverage that they had formerly received.

Interview Data on Healthcare Utilization

With the exception of one respondent who reported she has seen a decrease in the number of people using health care services because many people are moving out of the community to look for work, the health administrators and front-line providers interviewed for this study reported an increase in health care service utilization across the caregiving spectrum, in primary care clinics, mental health services, and emergency rooms of local hospitals. They attributed the increased demand for services to the stresses and strains of forestry lay-offs and closures.

Walk-In Clinics and Ambulatory Care

Although only the larger communities in the NW LHIN have walk-in clinics for primary care or mental health, those which do have these services have seen an increase in utilization. A mental health worker reported, "...in the last year we've probably had more walk-ins which are crisis...people who come in saying, I can't deal with things, I need to talk to somebody..."

In smaller communities that do not have walk-in clinics, people are using the emergency rooms in local hospitals to access care. A nurse employed by a community health organization in a forestry sector dependant community shared her concerns. "...there's no walk-in clinics so they're using the emergency room...as a walk in clinic." She felt that the care provided was often inadequate, especially for people in crisis: "they go to the hospital, but I'm sure they're not being addressed properly because the

waiting room is full, full, full ... if somebody's not assertive and demanding that they really need to be seen then they get lost in the shuffle."

Waiting Lists

Waiting lists are growing in many communities that already have a lack of services. As a counsellor observes, "...we've seen an increase in the numbers accessing services which has created a longer waiting list for services..." Longer waiting lists, moreover, result in people being in poorer health when they do present for care. A nurse from a highly forestry-dependent community observes:

We don't have a lot of regular doctors here and that has been a problem because people are often putting up with illnesses and things at home and not bothering to go to the doctor because they know that they can't get in for maybe six weeks anyway and they don't want to go to the emergency room, to the walk-in clinic at the emergency room and wait there for six hours . . . they're putting the things off and they're only going now when it is truly an emergency.

Preventive Service Delays

As a result of the lack of primary care services and increased pressure on available services, preventative services are lagging. Some infants are not receiving basic well baby care which can have serious health impacts in the future shared a nurse in a community with a high level of reliance on the forestry sector. "I've got babies that are way behind on their immunizations because they weren't able to get appointments, you know at two months and four months and six months like they're suppose to because they just can't get in [to see a doctor] because they are short of doctors." She

went on to describe a client who had to go to the emergency room and wait there for 5 or 6 hours in order to get a vaccination. Recounting her client's words - "I had to go to the emergency room today to get this shot, I went to the walk-in clinic there, I sat there for 5 or 6 hours waiting to get this vaccine and I had to take a day off work because I didn't know how long I'd be at the hospital and because I was held up for 6 hours it was basically my full day of work."

Mental Health Services

More people are using mental health services - "we've had more calls, people looking for a counsellor to talk to or mental health, we've had more calls than usual looking for that kind of thing." The director of a health clinic noted that people are using the mental health social worker more often -- "there's more frequent visits to counselling, the counsellors here . . . they're here later in the night, when I leave they're still here, it's just amazing." The director of a mental health program noted, "there were small blips like in [community] when the mill closed down, about three months after it closed down there was a slight increase for a short period of time on families and children coming in, usually the adult woman left behind and the children who were finishing up the school year."

Changing Client Base

One interviewee, a mental health counsellor in a community that has experienced numerous forestry lay-offs, both of short and long duration, said that they are seeing clients who, in the past, did not normally use their services very often, "...more men and older men which are typically not the ones we see, they typically

only come in when there's a problem so we have seen more of that clientele coming in." In another community, a counsellor working in mental health has seen an increase in the number of young men accessing services. "it's younger men and they're presenting with stress, anxiety...which speaks loudly to us because it takes a fair amount for one thing for the male population to admit that they need some help with something and for the younger population for sure."

Crisis services are also being utilized more often since the decline of the forestry sector. A health director reported she has seen "...an increase in the use of our mobile workers with our crisis response service. There are more calls into our dispatch for crisis response with people who've been frustrated, who are angry, who call the crisis line..."

Resistance to Accessing Services

A few respondents noted that people who are experiencing physical or mental health problems after unemployment often do not seek out services. In some instances, this may be due to the perception, often accurate, that they will face a long waiting list to get services. A nurse states very bluntly, "we don't have enough doctors." She goes on to say that as a result some people just give up - "maybe they don't seek help because they know that there aren't any doctors, then when they do show up on your doorstep they are in really bad shape."

Reluctance to access care, especially for mental health problems, may reflect the stigma of accessing care in a small town. A nurse in a community that has experienced a series of mill closures and lay-offs said that "...people don't always come in if they

have problems...small community, value privacy, hesitant to come in for help ... so we are not always aware of issues.” Resistance to accessing services for both physical and mental health problems is more common among men. Another respondent remarks, “...employees in these industries, you know are male dominated, these individuals tend to seek help less often than females.”

Transportation Difficulties

Some respondents identified transportation difficulties as a barrier to accessing care. The manager of a health clinic in an impacted community said that many people cannot afford to pay for transportation to medical appointments within their own community – “there are clients who cannot afford to pay for the taxi fare here – it’s \$7.00 regardless where you’re going, going one way, so a lot of people are not getting places for groceries, or to go to the food bank or for medical appointments.” A mental health worker from another impacted community also expressed concern about people’s ability to afford transportation, especially when they need to travel outside the community to see specialists:

A lot of them are unable to attend specialist appointments because of the travel involved – we don’t have a psychiatrist here in our community so if there is a referral to a psychiatrist or any other specialist for physical or mental health concerns there is travel involved so then the stressor becomes they can’t afford to attend that appointment and often what we are seeing is . . . chronic conditions are all exacerbated.

Loss of Benefits

Loss of benefits, including prescription assistance, is also impacting unemployed worker's access to medication and extended health care services. Many of those interviewed said that they had noted people who were laid off were having difficulty paying for prescription medication. A nurse from one community said: "we do get calls from time to time of people saying I have these prescriptions to pay for and I can't afford them and my husband is no longer working . . ." As a medical clinic administrator explains, providers try to help wherever they can, by dispensing samples or generics: "we try to supply samples where we can or generic brands where we can, where it's going to be less expensive for them" she added: "sometimes you hear them struggling to come up with the finances for that." Another provider noted, "...we have small amounts of samples that we have been giving out to people because even a month might get them through."

Several interviewees reported that clients have stopped taking their medications due to financial constraints. A nurse felt that this has led to an increase in cardiovascular problems "specifically related to not taking their medication as they're supposed to." A nurse practitioner from another community stated "...a lot of problems like high blood pressure," were poorly controlled because "some people have stopped taking their medications because of cost." Another interviewee said: "cholesterol is also out of control because those drugs are the ones that are pretty pricy so people are trying to cut back ..." Clients who are not taking their medications are requiring more health care services, placing a greater burden on health services already often stretched thin due to lack of staff in small rural and remote communities. A nurse shared her

concerns related to this issue. “Those who were managed and didn’t have frequent visits aren’t controlled anymore so they need to come in sooner for more regular visits...” Healthcare staff see a direct link between people not taking their medication and worsening of chronic conditions. Another professional said: “it’s getting worse and it’s uncontrolled whereas previously it was under control.”

Loss of benefits impacts other kinds of extended health care benefits such as in-home care, extended care, or referrals to dieticians: “in home care is one example, prescription coverage, special, extended care.” As a manager said; “that’s a pretty important part of managing a chronic condition and not being able to attend that now unless they pay privately.” Another interviewee said that she sees many pregnant women whose prenatal health is poor because they cannot afford nutritional supplements.

Losing supplementary health benefits coverage is a major concern for family members with special needs, who require in-home care, assistive devices, or special diets. In one community where the mill has been sold to another company a counsellor explains the impact loss of benefits can have on family members. “...individuals who have family members with special needs, who in the past could not have provided for their family member at home if they didn’t have benefits in place...so those individuals with special needs now, they may have to look at alternative forms of care.” Similar problems were seen in retirees, who lost supplementary medical coverage when their former forestry operation was sold to another company: “...they discontinued the medication benefits for the pensioners, that’s been a source of economic dismay...”

Community Well-Being and Policy Implications

Although some of the forestry-dependent communities in Northwestern Ontario have, until recently, enjoyed long-periods of relatively stable employment, many have experienced the “boom and bust” cycles that are characteristic of resource-dependent communities in general. Most of the literature with respect to boom and bust communities comes from research done in the 1970’s and 80’s, although several studies were published in the past decade. The most recent studies look at what happens to communities after they experience periods of rapid economic expansion or decline, with a focus on community resiliency.

Boom and Bust Cycles

Boom-bust cycles in resource-based regions have been closely observed and discussed.^{143 144 145 146 147 148 149 150 151} Much of the literature examines the consequences of rapid socio-economic changes on community satisfaction, mental and physical well-being and quality of life.^{152 153 154 155 156} Recent research suggests that more emphasis needs to be put on multi-dimensional analysis of resource dependent communities in order to avoid the more simplistic “either-or” type of findings where both the economic changes and accompanying impacts are viewed as either negative or positive.^{157 158 159}

Boom Towns

Boom town studies explore the assumption that rapid development brings disruptions in communities’ social interactions and residents’ psychosocial well-being.^{160 161 162 163} The pioneering work by Cortese and Jones demonstrates how rapid

growth can lead to an increased reliance on bureaucratization and a lessening of community reliance on informal mechanisms.¹⁶⁴ Social dynamics also change in a boom community,^{165 166} with residents being less likely to interact with their neighbours and less likely to become acquainted.¹⁶⁷ Under boom conditions, there is less control over deviant behaviour, socialization of the young, and care for the community's weaker members. While the higher degree of "watchfulness" is reported in stable communities, the higher degree of anonymity is reported in boom communities.¹⁶⁸

Other research examined the negative effects on community services and facilities, such as housing, during upward economic growth.^{169 170} According to Stafford and Nelson's study of Northwestern Ontario communities, housing shortages in rapid-growth resource communities occurs not only because of population increase but because of industry purchasing most available houses and lots.¹⁷¹ Overcrowding also occurs.¹⁷² Housing shortage and overcrowding, in turn, discourages the potential establishment of other alternative industries and makes the town more dependent on the resource industry and more vulnerable when it faces a cycle of decline.

Rapid population growth in boom towns also produces a host of negative effects on the individuals and families who live there. More familial disruptions,¹⁷³ youth confusion and alienation,^{174 175} life style and value conflicts between old-time residents and newcomers are common.^{176 177 178} Newcomers, especially immigrants and minority populations, are especially vulnerable to stress¹⁷⁹ and rising income disparity.¹⁸⁰

Boom towns are also subject to stress on the infrastructure. Gilmore reported that as little as 15 percent growth in the population of isolated rural communities leads to institutional breakdowns in the labour market, the housing market, and public

facilities.¹⁸¹ Isolated rural communities are especially disadvantaged, because they are unable to furnish the services and facilities required.¹⁸² Unequal distribution of decision-making power within rapidly growing communities also can have negative effects on integration.^{183 184 185} Paradoxically, labour unrest, economic development projects, or natural disasters^{186 187} may have positive effects, as these events can bring community residents, new and old, together and create greater cohesion in the community.

There are clear indications that the residents of economically growing communities, though disrupted initially, soon adapt to change.^{188 189 190} Greider and Krannich reported that minimal differences in personal stress indicators between boom town and stable community subpopulations, suggesting that boom town residents appear to cope fairly well, and consequently tend not to experience atypical levels of stress.¹⁹¹ This may be due, in part, to improved employment opportunities and stabilized or increased income that generally follow initial period of disruption that occur.

What Happens When the Boom Is Over

As might be expected, an economic downturn and accompanying job loss and financial insecurity can escalate a variety of community problems.^{192 193 194} In small and isolated resource dependent communities, as Park and Nelson observe,¹⁹⁵ residents are especially vulnerable to the effects of long-term lay-offs or plant closures because there are few opportunities to obtain alternative employment and, if available, the wage levels do not usually match the high levels of compensation which resource industries

provide. Furthermore, the job loss which occurs in resource-dependent towns creates a cascade of negative effects, on individuals, families and community.

Losing a job in a small and isolated communities also means losing more than a steady source of income. Work not only provides economic resources but also physical activity, temporal structure, social contacts and a status and identity within society's institutions and networks.¹⁹⁶ When you lose your work, you lose your leisure status too, as recreational activities in small towns are frequently tied to place of work. Not surprisingly, Park and Nelson found that people living in "bust communities" have much higher stress scores and were twice as likely to seek professional help due to psychological problems.¹⁹⁷

Community Resilience

Although most of the "boom and bust" studies of the 1970s and 1980s focussed on the effects of rapid growth and decline in resource dependent communities, the current literature uses longitudinal data to explore what happens to community after the initial experience of boom and bust is over. These studies focus on community resilience, that is, on the ability of towns to adapt and adjust to ongoing change. As Brown and colleagues noted in their study of economic loss and recovery in Utah mining communities: "Enough time has now passed ... that we need to adjust our theories and vocabularies to account for a "boom-bust-recovery cycle" in place of the traditional notions of a "boom-bust" cycle." (p. 47)¹⁹⁸ Three more recent studies provide examples of the changes which occur in resource-dependent communities.

Smith et al looked at four communities in Utah and Wyoming over a thirteen-year period.¹⁹⁹ The authors had a random sample of community residents from each community complete a survey measuring several dimensions of community well-being (perceived social integration in the local community, relationship with neighbours, trust in others, fear of crime, and overall community satisfaction) at three different times during the boom period (1982, 1984, 1986) and a follow up survey in the post-boom period (1995). Results showed that, although disruptions occur during the boom period, their effects aren't permanent. For most of the indicators of social well-being, the authors note, the boom period is associated with a significant decline in well-being, however, the effects "associated with the boom growth apparently dissipate in the years after the boom phase has ended." (p 446) The authors argue that this "rebound" may be due to the fact that boom-era investments in facilities and infrastructure produce enduring changes in the community which in turn facilitates post-boom adaptation.

Another project uses 24 years of longitudinal data from Delta, Utah to examine what the authors term the "boom-bust-recovery cycle."²⁰⁰ It collected data on four subjective measures of community satisfaction and social integration at six points in time - a baseline measure in 1975 (before the boom), 1982 (beginning of the boom), 1984 (peak of the boom), 1986 (bust) and, 1995 and 1999 (post-bust). Results showed that response values for all four variables (satisfaction with community, friends in the community, plans to move and, borrowing from neighbours) significantly declined between the baseline and the boom years, with a return to pre-boom levels in 1995 and 1999. The authors also noted that being older and being a long-term resident of the community buffered residents against declining community satisfaction across all data collection years.

Characteristics of Resilient Communities

The most recent literature on community resiliency in resource dependent communities includes case studies of specific communities as well as analyses of the characteristics of resilient communities and what is necessary for resilience. The Vancouver Working Group for the World Urban Forum produced a research report examining the impact of industry closure in small rural resource dependent communities across Canada.²⁰¹

The authors use case studies of sixteen communities across Canada that experienced industry closure: ten mining communities, two fishing, two forestry, one railway centre and an agricultural settlement, and focussed on what local stakeholders did in order to save their towns from dying.

The report identifies four common themes found in resilient communities: anticipation and planning for industry closure as a normal event in the lifecycle of an industry-dependent town; collaborative efforts between stakeholders at all levels (federal, provincial and municipal governments, the outgoing industry and community members); implementation of a wide range of actions (i.e. planning for economic diversification, providing industry incentives, maintaining public services and high quality infrastructure during a period of stabilization, maintain community morale, etc.); and government provision of an appropriate level of time-limited financial support.

The Community Resilience Project Team offers a “Community Resilience Manual” which guides stakeholders through a three-step approach for strengthening

community resilience.²⁰² This manual provides data collection tools and formats to help residents develop priorities for local action. The authors identify twenty-three characteristics of resilient communities organized under four main headings – ‘people’, ‘organizations’, ‘resources’ and, ‘community process’. They conclude that resources are an essential element, because they “provide communities with a means to systematically strengthen their capacity to steer towards the future which they choose.” (p. 14)

Among the communities studied, Elliot Lake is often cited as an example of a resource dependent community that managed to survive the closure of its uranium mines. When the mines shut down in 1989, the population dropped significantly but then recovered as the town re-invented itself as a retirement community.

In their report on Elliot Lake, Bishop and Robinson argue that this recovery was a result of two factors: a slower outmigration than expected due to the fact that many of the workers laid off were close to retirement, owned their own homes and as a result of employment insurance and severance packages, they were able to remain in the community and the community’s commitment to maintain its infrastructure and service levels and attract new residents by successfully marketing itself as a retirement community.²⁰³ The authors argue that the success of Elliot Lake was a result of several factors: government subsidies, strong municipal leadership, considerable financial reserves and the maintenance of quality infrastructure.

Interview Data on Community Well-Being and Policy Implications

Confirming the social and health effects reported in the literature, health care providers who were interviewed for this study believed that recent economic downturns in the forestry industry had serious effects on the well-being of community residents. Many of those interviewed, however, felt that they had just started to see “the tip of the iceberg” in NW LHIN communities with respect to health impacts of downsizing in the forestry industry. They also anticipated seriously negative effects on the quality of life in their communities, with increasing demands for health and social services occurring at the same time as their communities were facing serious financial and human resource constraints. Their comments underline the need for strategic policy and planning initiatives, to ameliorate the effects which have occurred and will occur in future, should forestry decline continue.

Demand for Health Services

Several respondents emphasized that demand for services was sure to increase over time. A front-line provider observes, “it appears that people are falling back on their resources that they previously had prior to this [mill closures] taking place, you know, financial resources and family and as that sort of dwindled away then they get nearer the time that they appear to be sort of struggling then I’ve seen an increase in people attending for counselling.” This respondent goes on to say that many workers are on strike and receiving strike pay which allows them to get by, he is concerned about what will happen when the strike is over – “. . . if they were unemployed then you would see an increase in more families moving out of the area, more families

frustrated, more depression, anxiety, . . . I would expect there'd be a greater increase once the strike is over and all the pickets come down."

A nurse from a community that has not been greatly impacted to date, also expressed concern with respect to the health impacts of stress due to job uncertainty -- "we're not hit the same way as some of the other communities have been ... but I think with the increased stress, over time the health impacts will increase . . . chronic disease, cancer, depression things of that sort, I think that will happen." She added, if people cannot leave this stressful environment "it just increases their stress and where that is going to take them eventually is certainly a concern, so I think over time we're going to see more health impacts." A health director echoed this opinion when speaking about her concerns with respect to suicide, risk taking behaviour and substance abuse:

I do believe that we will start to see that, because this has only been in the last couple of years where the mill closed and the mines closed so people are still trying to make it work whatever way they can find, but I do believe that that will start to be a problem if things don't start to turn around.

Demand for Social Services

Another respondent, the director of a health team who had worked in a number of communities that had experienced forestry industry lay-offs, also expressed concern about how lay-offs were going to impact the demand not only for health and mental health services, but for other social services as well:

I think it's going to increase the use of other social services - like the food bank and things like that, I know that when I worked in [other community

impacted by forestry closures] when there was a layoff you could see the increase in the social services and the food banks so that is an immediate concern then, how is the community going to respond to that and ensure that they have the support structures in place?

A clinic manager from another community also spoke about the increased demand for the food bank run by the agency, “we provide a food bank for the community once a month but if we had it available twice a month it would definitely be used.” There was concern that increased demand for both health and social services also would place “more pressure ... on the publicly funded system ... that’s going to displace funding dollars and that will cause a crunch on the system.

Healthy Migrant Effects

There is also the perception among those interviewed that those who remain in the community are less healthy than those who leave. A nurse explains, “lots of young people are moving off and away and you’ve got a core group of people who have health problems, not all of them but a lot of them will have diabetes, heart disease and they’re sort of remaining in the community and that is sort of a sad state of affairs.”

In a community with a very high reliance on the forestry sector, a mental health director shared her observations. “...the ones that are staying, they possibly could have increased chronic diseases and they don’t have the opportunities, they’re not well to begin with...” One of the respondents expressed concern about what this trend will do to health care costs – “ I think the concern is that we’re driving the cost of our medical care in these communities up because who is left behind? Aging people who use more

medical services . . . and we're left with cities, whole communities filled with pensioners."

Community Decline

Many of those interviewed expressed concern about the overall health of their communities as a whole and spoke about the negative "spin-off effect" of forestry downsizing. An administrator expresses her concern: "They say for every job lost in the [forestry] company, three jobs will be lost in the community, so that's the frightening part if we can't keep bringing in other economic development, so that we can continue to employ people in some fashion that's what we're worried about."

Several examples were given of businesses in forestry dependant communities closing or laying off staff due to decreased revenue as a result of the decline in the forestry sector. A mental health worker said, "...places are shutting down before the layoff even happens or just as they're announcing a layoff..." Another respondent talks about the "trickle down of an industry closing down or scaling down like we've seen in our community because it's not only the forestry industry jobs but it trickles down in the community ... like waitresses losing their jobs because there isn't enough demand for the business to keep that open."

Loss of Community Supports

Many communities, built around the forestry sector, are experiencing significant loss of community supports due to the economic downturn. Tax bases are shrinking as people leave communities; therefore, keeping public facilities open will be a challenge,

explains a nurse from a community that has experienced serious job losses: "...our recreational facility, we're not facing closure but they're talking about how we can think about maintaining these as we lose population..." Another health professional notes the difficulty that local residents have experienced adapting to loss of community services that formerly were supported by local industry: "...in some of these towns everything was built by the companies...so getting around the issues of taking care of one self instead of being taken care of is a new concept to introduce to people especially if they're 50..."

Health Human Resource Challenges

Recruitment and retention of health care staff, which is already difficult in rural and remote areas, is becoming even more challenging in communities affected by the forestry sector decline. An administrator for a health clinic in a community greatly affected by employment losses shared her struggles related to recruitment and retention: "it's hard to recruit to a community if there are economic issues...why would a doctor want to come here possibly bring his spouse who might be a school teacher or another professional but she can't get a job because the numbers in the schools are declining?"

Difficulties attracting full-time and part-time staff were widespread. An administrator recounted how her town cannot fill vacancies in their community health centre "we can't attract full time physicians . . . all we've been able to get is locums." She added: " . . . three RN's carry a huge burden of the health care of the community."

A manager from another location reports, “they’re saying that it’s even difficult to get locums to come in for walk-in clinics and after hours services.”

Continuing recruitment and retention challenges, reported across the region, represented a very real threat to the viability of local health and social services. One respondent reported that the health team in a nearby community is “about to shut their doors” because they are unable to attract a full time physician, which is a requirement for continued funding. Other locations were having problems recruiting nurse practitioners and allied health professionals. The director of a health team expressed her concerns: “we certainly are losing physicians just in general in Northwestern Ontario, it’s a concern, not just physicians though, it’s hard to recruit a nurse practitioner, dieticians, pharmacists.” Some of those interviewed expressed concern about retaining all types of professionals as communities lose services as a result of downsizing. A nurse says:

Once we lose people, we lose a lot of professionals as a result -- whether it be teachers or other services -- and then we have physicians who have families and if they can’t get schooling here they won’t stay . . . if we start to lose things like indoor pools and ski hills there certainly is a reason to say ‘well, do I want to remain in this community?’

Need for Further Study

Several respondents emphasized the need for further study of these issues, because many communities were only experiencing the initial effects of the forestry layoffs and closures. For example, the director of a mental health agency in an impacted community commented, “we had a big lay off two years ago and then the last big lay

off just occurred ... what we're anticipating is that it's going to increase over the next year or two as well because a lot of people will be in that situation where their unemployment insurance runs out." She goes on to say, "I think it would be interesting if we had this conversation another year from now because, we had the first wave [of lay-offs] which got absorbed pretty well in the community, but ... there are a lot of people affected by this last wave and this is the one that is really going to tell the tale." A director from a mental health agency in another impacted community concurred that the economic impacts would soon be felt: " people are running out of their severance pay, they're going to run out of any kind of unemployment benefits that they might have had."

The consensus was that the full story of the economic and health impacts of forestry closures would not be understood unless there was a follow-up study in a year or two. One of the respondents from a highly forestry-dependent community that has experienced many lay-offs emphasizes that the recent shutdowns were only the latest in a series of economic shocks which have affected the community. She was concerned that the quantitative statistics in our study, which span only five years, would not show an increase in health impacts because job instability in her community has been an on-going issue for many years - "I think you'd have to go back and compare to maybe 20 years ago when the forest industry was booming rather than this year or even five to ten years ago . . . it's been an on-going issue for the last several years so I think that you'd be hard pressed to find really conclusive stats that show increases if you're comparing within the last few years."

Last Words

Health care administrators and front-line providers emphasized it was also important to understand the full impacts of the forestry downturn, as a basis for designing effective policy and program interventions. Expressing her opinion on the long-term community effects of industry decline, an interviewee emphasized that the negative health and social effects that were being seen now in Northwest Ontario's challenged forestry communities, without remedial action, would eventually spread to the entire region. Summing up her thoughts, which were similar to those expressed by many of her colleagues, she said:

In the long run, unless something else comes back into the communities, we're going to see the increased depression, anxiety, an overall drop in the health of all members of the community -- because they are all linked. And if you've got people relocating you're going to have a community that is dwindling in numbers, the tax base diminishes, there are going to be less jobs and at the end of the day you're going to have a community that is very depressed both economically and in health and that affects everybody . . . And it's not just this community but *all* communities in the Northwest . . . There is no future, in the sense that young kids coming out of school and college, there is not going to be any regeneration for the population in these communities and in the long run, it's sad to say, but you can see a slowly dying off of the community . . . Something has to be done because communities are just going to disappear slowly and it's not a healthy act.



CONCLUSIONS AND IMPLICATIONS

1. Communities with recent economic challenges showed a particularly high prevalence of cardiovascular diseases: prevalence of high blood pressure, heart disease and stroke were higher than provincial rates. Residents of these communities more often report poor health and are more likely to engage in risky health behaviours, such as smoking or drinking. They are also more likely to be obese and less likely to eat a healthy diet.
2. Interviewees confirmed that they are seeing more clients with health issues, such as hypertension, injuries and obesity. They are also seeing more young people with these problems than would be expected. Mental health problems, such as

stress, anxiety and depression, are affecting not only the unemployed, but their spouses, children, and elderly family members. Clients struggle with smoking, sobriety and substance abuse issues. Marriage breakdowns, financial stress and family violence occur.

3. Economic decline has been accompanied by an increasing demand for services across the care spectrum, as evidenced by increasing client numbers in health centres, mental health clinics, and hospital emergency rooms. Waiting lists are growing and preventive care is lagging, because health resources are already stretched thin. At the same time, some clients are reluctant to access care, particularly for mental health concerns. Others have problems with accessing care because of transportation issues and loss of supplementary health benefits.
4. There is concern that health problems will worsen as outmigration leaves behind those who are less healthy and elderly. There is also fear that continued economic decline and dwindling local tax bases will further restrict abilities to provide needed health and social services. Recruitment and retention difficulties are pervasive and there is worry that it will become increasingly difficult to attract professionals to towns with a depressed economy.
5. Given that NW LHIN communities are just starting to see economic effects of recent lay-offs and closures, there was consensus that the health problems documented in this report only represent “the tip of the iceberg.” Respondents suggested that both the statistics and the situation should be revisited in a year or two in order to understand and document the full impact of forestry downsizing in communities and provide a basis for effective intervention.

REFERENCES

- Ahs, A. & Westerling, R. Self-rated health in relation to employment status during periods of high and of low levels of unemployment. *European Journal of Public Health*. 2005; 16(3): 294-304.
- Ahs, A.M.H. & Westerling, R. Health care utilization among persons who are unemployed or outside the labour force. *Health Policy*. 2006; 78: 178-193.
- Ahs, A.M.H. & Westerling, R. Mortality in relation to employment status during different levels of unemployment. *Scandinavian Journal of Public Health*. 2006; 34: 159-167.
- Albrecht, S.L. Commentary. *Pacific Sociological Review*. 1982; 25(3): 297-306.
- Albrecht, S.L. Socio-cultural factors and energy resource development in rural areas in the west. *Journal of Environmental Management*. 1978; 7:78-90.
- Avery, A.J., Betts, D.S., Whittington, A., Heron, T.B., Wilson, S.H. & Reeves, J.P. The mental and physical health of miners following the 1992 national pit closure programme: A cross sectional survey using general health questionnaire GHQ-12 and short form SF-36. *Public Health*. 1992; 112: 169-173.
- Baillis, D., Segall, A. & Chipperfield, J.G. Two views of self-rated general health status. *Social Science and Medicine*. 2003; 56: 203-217.
- Ballard, C. & Copp, J. 1981. "Social Change in an Oil Boom Community." Paper presented at the Annual Meetings of the Southwestern Sociological Association, Dallas, Texas.
- Banziger, G. & Foos, D. The relationship of personal financial status to the utilization of community mental health centres in rural Appalachia. *American Journal of Community Psychology*. 1983; 11(5): 543-552.
- Banziger, G., Smith, R.K. & Foos, D. Economic indicators of mental health service utilization in rural Appalachia. *American Journal of Community Psychology*. 1982; 10(6): 669-686.
- Barling, P.W. & Handal, P.J. Incidence of utilization of public mental health facilities as a function of short-term economic decline. *American Journal of Community Psychology*. 1980; 8(1): 31-39.
- Beale, N. & Nethercott, S. The health of industrial employees four years after compulsory redundancy. *Journal of the Royal College of General Practitioners*. 1987; 37: 390-394.

- Beckley, T.M. Pluralism by default: Community power in a paper mill town. *Forest Science*. 1993; 42(1):35-45.
- Beland, F., Birch, S. & Stoddart, G. Unemployment and health: contextual-level influences on the production of health in populations. *Social Science & Medicine*. 2002; 55: 2033-2052.
- Bickel, G., Nord, M., Price, Hamilton, C.W. & Cook, J. 2000. *Measuring food security in the United States: Guide to measuring household food security*. Washington: United States Department of Agriculture.
- Bishop, M. & Robinson, D. 1997. Layoffs and municipal finance: The case of Elliot Lake. Found at: <http://inord.laurentian.ca/pdf/1a5.PDF>. Accessed May 21, 2008.
- Blakely, T.A., Collings, S.C.D., Atkinson, J. Unemployment and suicide. Evidence for a causal association? *Journal of Epidemiology and Community Health*. 2003; 57: 594-600.
- Bowman, J.L.B. Mid-life and older workers: job displacement and health care coverage. *Journal of Consumer Studies and Home Economics*. 1994; 18: 169-182.
- Brabant, S. 1991. "The Impact of a Boom/Bust Economy on Poverty." in S. Laska (ed.), *Impact of Offshore Oil Exploration and Production on the Social Institutions of Coastal Louisiana*. New Orleans, LA: U.S. Department of Interior.
- Brenner, H.M. 1973. *Mental Illness and the Economy*. Cambridge: Harvard University Press.
- Broom, D.H., D'Souza, R.M., Stazdins, L., Butterworth, P., Parslow, R. & Rodgers, B. The lesser evil: Bad jobs or unemployment? A survey of mid-aged Australians. *Social Science and Medicine*. 2006; 63: 575-586,
- Brown, D.W., Balluz, L.S., Ford, E.S., Giles, W.H., Strine, T.W., Moriarty, D.G., Croft, J.B. & Mokdad, A.H. Associations between short- and long-term unemployment and frequent mental distress among a national sample of men and women. *Journal of Occupational and Environmental Medicine*. 2003; 45(11): 1159-1166.
- Brown, R.B., Dorius, S.F. & Krannich, R.S. The boom-bust-recovery cycle: Dynamics of change in community satisfaction and social integration in Delta, Utah. *Rural Sociology*. 2005; 70(1): 28-49.
- Brown, R.B., Geersten, H.R., & Krannich, R.S. Community satisfaction and social integration in a boomtown: A longitudinal analysis. *Rural Sociology*. 1989; 54(4):568-586.
- Burgard, S.A., Brand, J.E. & House, J.S. Toward a better estimation of the effect of job loss on health. *Journal of Health and Social Behavior*. 2007; 48: 360-384.

- Canadian Public Health Association. 1996 Discussion paper on: *The health impact of unemployment*. Found at: http://www.cpha.ca/uploads/resolutions/1996-1dp_e.pdf. Accessed May 13, 2008.
- Cano, A. & Vivian, D. Life stressors and husband-to-wife violence. *Aggression and Violent Behaviour*. 2001; 6: 459-480.
- Catalano, R., Dooley, D., Wilson, G. & Hough, R. Job loss and alcohol abuse: A test using data from the epidemiologic catchment area project. *Journal of Health and Social Behaviour*. 1993; 34: 215-225.
- Christoffersen, M.N. Growing up with unemployment: A study of parental unemployment and children's risk of abuse and neglect based on national longitudinal 1973 birth cohorts in Denmark. *Childhood*. 2000; 7(4): 421-438.
- Clark, K.J. & Leipert, B. Strengthening and sustaining social supports for rural elders. *Online Journal of Rural Nursing and Health Care*. 2007; 7(1): 13-26.
- Clarke, M., Lewchuck, W., de Wolff, A. & King, A. "This just isn't sustainable": Precarious employment, stress and workers' health. *International Journal of Law and Psychiatry*. 2007; 20: 311-326.
- Claussen, B. Alcohol disorders and re-employment in a 5-year follow-up of long-term unemployment. *Addiction*. 1999; 94(1): 133-138.
- Claussen, B. Health and re-employment in a five year follow-up of long-term unemployment. *Scandinavian Journal of Public Health*. 1999; 27(2): 94-100.
- Claussen, B. Suicidal ideation among the long-term unemployed: A 5-year follow-up. *Acta Psychiatrica Scandinavica*. 1998; 98: 480-486.
- Cole, T.J., Bellizzi, M.C., Flegal, K.M. & Dietz, W.H. Establishing a standard definition for child overweight and obesity worldwide : International survey. *British Medical Journal*. 2000; 320: 1-6.
- Colfer, C.J. & Colfer, A.M. Inside Bushler Bay: Lifeways in counterpoint. *Rural Sociology*. 1978; 43(2):204-220.
- Community Resilience Project Team. *The community resilience manual*. Found at: <http://www.cedworks.com/files/pdf/free/MW100410.pdf>. Accessed May 22, 2008.
- Cook, D.G. A critical view of the unemployment and health debate. *The Statistician*. 1985; 34: 73-82.
- Cortese, C. F. & Jones, B. The sociological analysis of boomtowns. *Western Sociological Review*. 1977; 8(i): 76-90.

- Cortese, C. F. 1982. "The Impacts of Rapid Growth on Local Organizations and Community Services." pp. 115-135 in B.A. Weber & R.E. Howell (eds.), *Coping with Rapid Growth in Rural Communities*. Boulder, CO: Westview Press.
- Crosato, K.E. & Leipert, B. Rural women caregivers in Canada. *Rural and Remote Health*. 2006; 6: 520.
- Crosato, K.E., Ward-Griffin, C. & Leipert, B. Aboriginal women caregivers of the elderly in geographically isolated communities. *Rural and Remote Health*. 2007; 7: 796.
- D'Arcy, C. & Siddique, C.M. 1987. "Health and Unemployment: Findings from a National Survey." in D. Coburn et al. (eds.) *Health and Canadian Society: Sociological Perspectives*. (2nd Ed.) Richmond Hill: Fitzhenry & Whiteside.
- Davenport, J.A. & Davenport, J. (eds.) 1979. *Boom Towns and Human Services*. Laramie: University of Wyoming.
- Dew, M.A., Penkower, L. & Bromet, E.J. Effects of unemployment on mental health in the contemporary family. *Behavior Modification*. 1991; 15(4): 501-544.
- Dolan, A.H., Taylor, M., Neis, B., Ommer, R., Eyles, J., Schneider, D. & Montevecchi, B. Restructuring and health in Canadian coastal communities. *Ecohealth*. 2005; 2: 195-208.
- Domenighetti, G., D'Avanzo, B. & Bisig, B. Health effects of job insecurity among employees in Swiss general population. *International Journal of Health Services*. 2000; 30 (3): 477-490.
- Dooley, D. & Catalano, R. Recent research on the psychological effects of unemployment. *Journal of Social Issues*. 1988; 44(4): 1-12.
- Ettner, S.L. Measuring the human cost of a weak economy: Does unemployment lead to alcohol abuse? *Social Science and Medicine*. 1997; 44(2): 251-260.
- Fagan, P., Shavers, V., Lawrence, D., Gibson, J.T. & Ponder, P. Cigarette smoking and quitting behaviours among unemployed adults in the United States. *Nicotine and Tobacco Research*. 2007; 9(2): 241-248.
- Ferrie, J.E. Is job insecurity harmful to health? *Journal of the Royal Society of Medicine*. 2001; 94: 71-76.
- Ferrie, J.E. Labour market status, insecurity and health. *Journal of Health Psychology*. 1997; 2(3): 373-397.
- Ferrie, J.E., Martikainen, P., Shipley, M.J., Marmot, M.G., Stansfeld, S.A. & Smith, G.D. Employment status and health after privatization in white collar civil servants: Prospective cohort study. *BMJ*. 2001; 332: 1-7.

- Ferrie, J.E., Shipley, M.J., Marmot, M.G., Stansfeld, S. & Smith, G.D. Health effects of anticipation of job change and non-employment: Longitudinal data from the Whitehall II study. *BMJ*. 1995; 11: 1264-1269.
- Flatau, P., Galea, J. & Petridis, R. Mental health and well-being and unemployment. *The Australian Economic Review*. 2000; 33(2): 161-181.
- Force, J.E, Machlis, G.E., Zhang, L. & Kearney, A. The relationship between timber production, local historical events, and community social change: A quantitative case study. *Forest Science*. 1993; 39(4):722-742.
- Fox, G.L., Benson, M.L., DeMaris, A.A. & VanWyk, J. Economic distress and intimate violence: Testing family stress and resources theory. *Journal of Marriage and Family*. 2002; 64: 793-807.
- Freidemann, M.L. & Webb, A.A. Family health and mental health six years after economic stress and unemployment. *Issues in Mental Health Nursing*. 1995; 16(1): 51-66.
- Freudenberg, W.R. & Jones, R.E. Criminal behavior and rapid community growth: Examining the evidence. *Rural Sociology*. 1991; 56(4):619-645.
- Freudenberg, W.R. 1982. "The Impacts of Rapid Growth on Social and Personal Well-Being of Local Community Residents." pp. 137-170 in B.A. Weber and R.E. Howell (eds.), *Coping with Rapid Growth in Rural Communities*. Boulder, CO: Westview Press.
- Freudenberg, W.R. Boomtown's Youth: The Differential Impacts of Rapid Community Growth on Adolescents and Adults. *American Sociological Review*. 1984; 49(5): 697-705.
- Freudenberg, W.R. Social impact assessment. *Annual Review Sociology*. 1986; 12: 451-78.
- Freudenberg, W.R. The density of acquaintanceship: An overlooked variable in community research? *American Journal of Sociology*. 1986; 92(1):27-63.
- Fronstin, P. (2002). *Workers displaced from employment 1997-1999: Implications for employee benefits and income security*. Employee Benefit Research Institute. Washington, D.C.
- Fryer, D. & Fagan, R. Toward a critical community psychological perspective on unemployment and mental health research. *American Journal of Community Psychology*. 2003; 32(1-2): 89-96.
- Gallo, W.T., Bradley, E.H., Dublin, J.A., Falba, T.A., Teng, H.-M., Kasl, S.V. & Jones, R.N. The persistence of depressive symptoms in older workers who experience involuntary job loss: Results from the health and retirement study. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*. 2006; 61(4): S221-S228.

- Gallo, W.T., Bradley, E.H., Siegel, M. & Kasl, S.V. Health effects of involuntary job loss among older workers: Findings from the health and retirement survey. *Journal of Gerontology*. 2000; 55B (3): S131-S140.
- Gallo, W.T., Teng, H M, Falba, T A., Kasl, S V., Krumholz H M., & Bradley, E H. The impact of late career job loss on myocardial infarction and stroke: a 10 year follow up using the health and retirement survey. *Occupational Environmental Medicine*. 2006; 63: 683-687.
- Gerdtham, U. & Johannesson, M. A note on the effect of unemployment on mortality. *Journal of Health Economics*. 2003; 22: 505-518.
- Gien, L.T. Land and sea connection: The east coast fishery closure, unemployment and health. *Canadian Journal of Public Health*. 2000; 91(2): 121-124.
- Gillham, B., Tanner, G., Cheyne, B., Freeman, I., Rooney, M. & Lambie, A. Unemployment rates, single parent density and indices of child poverty: Their relationship to different categories of child abuse and neglect. *Child Abuse and Neglect*. 1998; 22(2): 79-90.
- Gilmore, J.S. Boom towns may hinder energy resource development. *Science*. 1976; 191:535-540.
- Greider, T. & Krannich, R.S. 1983. "Perceived Well-Being and Personal Stress in an Energy Boom Town: Contrasts and Similarities across Divergent Groups. Paper presented at the Rural Sociological Society conference.
- Grungerg, L., Moore, S.Y. & Greenberg, E. Differences in psychological and physical health among layoff survivors: The effect of layoff contact. *Journal of Occupational Health Psychology*. 2001; 6(1): 15-25.
- Guest, B., Bunce, A. & Johnson, L. How many interviews are enough? An experiment with data saturation and variability. *Field Methods*. 2006; 18(1): 59-82.
- Gunnell, D., Lopatzidis, A., Dorling, D., Wehner, H., Southall, H. & Frankel, S. Suicide and unemployment in young people: Analysis of trends in England and Wales, 1921-1995. *British Journal of Psychiatry*. 1999; 175: 263-270.
- Hamalainen, J., Poikolainen, K., Isometsa, E., Kaprio, J., Heikkinen, M., Lindeman, S. & Aro, H. Major depressive episode related to long unemployment and frequent alcohol intoxication. *Nordic Journal of Psychiatry*. 2005; 59(6): 486-491.
- Hamilton, V.L., Broman, C.L., Hoffman, W.S. & Renner, D.S. Hard times and vulnerable people: initial effects of plant closing on autoworkers' mental health. *Journal of Health and Social Behaviour*. 1990; 31: 123-140.
- Jackson, W. (2003). *Methods: Doing Social Research*. (3rd Ed.) Prentice Hall, Pearson Education Inc., Toronto, Ontario.

- Jin, R.L., Shah, C.P. & Svoboda, T.J. The impact of unemployment on health: A review of the evidence. *Canadian Medical Association Journal*. 1995; 153(5): 529-540.
- Johansson, S.E. & Sundquist, J. Unemployment is an important risk factor for suicide in contemporary Sweden: An 11-year follow-up study of a cross-sectional sample of 37 789 people. *Public Health*. 1997; 111: 41-45.
- Johnston, M. & Lorch, B. Community distinctiveness and company closure in a northern Ontario mining town. *The Great Lakes Geographer*. 1996; 3(1):39-52.
- Kasl, S.V. & Cobb, S. 1982. "Variability of Stress Effects among Men Experiencing Job Loss." in L. Goldberger and S. Breznitz (eds.), *Handbook of Stress*. New York: Free Press.
- Kasl, S.V. 1979. "Changes in Mental Health Status Associated with Job Loss and Retirement." in J.E. Barrett et al. (eds.) *Stress and Mental Disorder*. New York: Raven Press.
- Keefe, V., Reid, P., Ormsby, C., Robson, B., Purdie, G., Baxter, J. & Ngati Kahungunu Iwi Incorporated. Serious health events following involuntary job loss in New Zealand meat processing workers. *International Journal of Epidemiology*. 2002; 31: 1155-1161.
- Kessler, R.C., Turner, J.B. & House, J.S. Effects of unemployment on health in a community survey: Main, modifying, and mediating Effects. *Journal of Social Issues*. 1988; 44(4): 69-85.
- Kiernan, M., Toro, P.A., Rappaport, J. & Seidman, E. Economic predictors of mental health service utilization: A time-series analysis. *American Journal of Community Psychology*. 1989; 17(6): 801-820.
- Kivimaki, M., Honkonen, T., Wahlbeck, K., Elovainio, M., Pentti, J., Klaukka, T., Virtanen, M. & Vahtera, J. Organisational downsizing and increased use of psychotropic drugs among employees who remain in employment. *Journal of Epidemiology and Community Health*. 2007; 61: 154-158.
- Kivimaki, M., Vahtera, J., Elovainio, M., Pentti, J. & Virtanen, M. Human costs of organizational downsizing: Comparing health trends between leavers and stayers. *American Journal of Community Psychology*. 2003; 32(1/2): 57-67.
- Kivimaki, M., Vahtera, J., Ferrie, J.E., Hemingway, H. & Pentti, J. Organisational downsizing and musculoskeletal problems in employees: A prospective study. *Occupational and Environmental Medicine*. 2001; 58: 811-817.
- Kivimaki, M., Vahtera, J., Pentti, J. & Ferrie, J.E. Factors underlying the effect of organisational downsizing on health of employees: Longitudinal cohort study. *BMJ*. 2000; 320: 971-975.

- Kposawa, A. Unemployment and suicide: a cohort analysis of social factors predicting suicide in the US National Longitudinal Mortality Study. *Psychological Medicine*. 2001; 31: 127-138.
- Krannich, R.S., & Greider, T. Personal well-being in rapid growth and stable communities: Multiple indicators and contrasting results. *Rural Sociology*. 1984; 49(4):541-52.
- Krannich, R.S., Greider, T. & Little, R.L. Rapid growth and fear of crime: A four-community comparison. *Rural Sociology*. 1985; 50(2):193-209.
- Laitinen, J., Power, C., Ek, E., Sovio, U. & Jarvelin, M.R. Unemployment and obesity among young adults in a northern Finland 1966 birth cohort. *International Journal of Obesity*. 2002; 26: 1329-1338.
- Leadbeater, D. (1998). *Training, Mass Layoffs, and Single-Industry Communities: Lessons of Elliot Lake*. Department of Economics, Laurentian University. Sudbury, ON.
- Leino-Arjas, P., Liira, J., Mutanen, P., Malmivaara, A. & Matikainen, E. Predictors and consequences of unemployment among construction workers: prospective cohort study. *BMJ*. 1999; 319: 600-605.
- Lewis, G. & Sloggett, A. Suicide, deprivation, and unemployment: record linkage study. *BMJ*. 1998; 317: 1283-1286.
- Liem, R. & Liem, J.H. Psychological effects of unemployment on workers and their families. *Journal of Social Issues*. 1988; 44: 87-105.
- Liem, R. Unemployment and mental health: Implication for human service policy. *Policy Studies Journal*. 1981; 10: 350-364.
- Linn, M.W., Sandifer, R. & Stein, S. Effects of unemployment on Mental and Physical Health. *American Journal of Public Health*. 1985; 75(5): 502-506.
- Machlis, G.E. & Force, J.E. Community stability and timber-dependent communities. *Rural Sociology*. 1988; 53(2):221-34.
- Machlis, G.E., Force, J.E., & Balice, R. Timber, minerals, and social change: An exploratory test of two resource-dependent communities. *Rural Sociology*. 1990; 55(3):411-424.
- Martikainen, P., Aromaa, A., Heliovaara, M., Klaukka, T., Knekt, P., Maatela, J. & Lahelma, E.. Reliability of perceived health by sex and age. *Social Science and Medicine*. 1999; 48: 1117-1122.

- Martikainen, P., Maki, N. & Jantti, M. The effects of unemployment on mortality following workplace downsizing and workplace closure: A register-based follow-up study of Finnish men and women during economic boom and recession. *American Journal of Epidemiology*. 2007; 165(9): 1070-1075.
- Mathers, C.D. & Schofield, D.J. The health consequences of unemployment: The evidence. *The Medical Journal of Australia*. 1998; 168: 178-182.
- Matoba, T., Ishitake, T. & Noguchi, R. A 2-year follow-up study of health and life style in Japanese unemployed persons. *International Archives of occupational and environmental health*. 2003; 76: 302-308.
- Mattiasson, I., Lindgarde, F., Nilsson, J. A. & Theorell, T. Threat of unemployment and cardiovascular risk factors: Longitudinal study of quality of sleep and serum cholesterol concentrations in men threatened with redundancy. *BMJ*. 1990; 301: 461-466.
- Merline, A.C., O'Malley, P.M., Schulenberg, J.E., Bachman, J.G. & Johnston, L.D. Substance use among adults 35 years of age: Prevalence, adulthood predictors, and impact of adolescent substance use. *American Journal of Public Health*. 2004; 94(1): 96-102.
- Ministry of Community and Social Services. 1982. *Boom/Bust Communities: Implications for Social Service Planning*. Ministry of Community and Social Services.
- Moen, P. & Chermack, P. Gender disparities in health: strategic selection, careers, and cycles of control. *Journal of Gerontology*. 2005; 60B: 99-108.
- Moffic, H.S, Adams, G.L., Rosenberg, S., Blattstein, A, & Chacko, R.C. Boom Areas: Implications for Mental Health Care Systems. *Community Mental Health Journal*. 1983; 19(4): 243-252.
- Montgomery, S.M., Cook, D.G., Bartley, M.J. & Wadsworth, M. EJ. Unemployment pre-dates symptoms of depression and anxiety resulting in medical consultation in young men. *International Journal of Epidemiology*. 1999; 28: 95-100.
- Morgan, D.G., Semchuk, K.M., Stewart, N.J. & D'Arcy, C. Rural families caring for a relative with dementia: Barriers to use of formal services. *Social Science & Medicine*. 2002; 55: 1129-1142.
- Morrell, S., Taylor, R., Quine, S., Kerr, C. & Western, J. A case-control study of employment status and mortality in a cohort of Australian youth. *Social Science & Medicine*. 1999; 49: 383-392.
- Morrell, S.L., Taylor, R.J. & Kerr, C.B. Unemployment and young people's health. *Medical Journal of Australia*. 1998; 168: 236-240.

- Morris, J.K., Cook, D.G. & Shaper, A.G. Loss of employment and mortality. *BMJ*. 1994; 308: 1135-1139.
- Morris, J.K., Cook, D.G. & Shaper, A.G. Non-employment and changes in smoking, drinking, and body weight. *BMJ*. 1992; 304: 536-541.
- Morton, M.J. Prediction of repetition of parasuicide: With special reference to unemployment. *The International Journal of Social Psychiatry*. 1993; 39(2): 87-99.
- Murdock, S.H. & Leistrit, L.F. 1979. *Energy Development in the Western United States.* New York: Praeger.
- Murray, M. (2005). *A decade of change: An investigation into the health and social wellness of Newfoundland and Labrador communities pre and post moratorium.* Health Canada.
- Nellis, L. What does energy development mean for Wyoming? *Human Organization*. 1974; 33(3): 229-238.
- Neufeldt, A., Doherty, G., & Finkelstein, J. Myths and realities: A comparative examination of the impact of "Boom" and "Bust" conditions on the quality of community life. *Canadian Journal of Mental Health*. 1983; 2(September): 81-91.
- Nylen, L., Voss, M. & Floderus, B. Mortality among women and men relative to unemployment, part time work, overtime work, and extra work: A study base on data from the Swedish twin registry. *Occupational and Environmental Medicine*. 2001; 58: 52-57.
- Ohlander, E., Vikstrom, M., Lindstrom, M. & Sundquist, K. Neighbourhood non-employment and daily smoking: A population-based study of women and men in Sweden. *European Journal of Public Health*. 2006; 16(1): 78-84.
- Olivius, G, Ostergren, P., Hanson, B.S. & Lyttkens, C.H. Parental economic stress: Evidence of an overlooked public health risk among Swedish families. *European Journal of Public Health*. 2004; 14: 354-360.
- Ostry, A., Barroetavena, M., Hershler, R., Kelly, S., Demers, P.A., Teschke, K. & Hertzman, D. Effect of de-industrialisation on working conditions and self-reported health in a sample of manufacturing workers. *Journal of Epidemiology and Community Health*. 2002; 56: 506-509.
- Ostry, A., Hershler, R., Kelly, S., Demers, P., Teschke, K. & Hertzman, C. Effects of de-industrialization on unemployment, re-employment, and work conditions in a manufacturing workforce. *Public Health*. 2001; 1: 15.

- Ostry, A., Maggi, S., Tansey, J., Dunn, J., Hershler, R., Chen, L., Louie, A. & Hertzman, C. The impact of fathers' physical and psychosocial work conditions on attempted and completed suicide among their children. *Public Health*. 2006; 6: 77.
- Pahlke, A., Lord, S. & Christiansen-Ruffman, L. 2001. *Women's Health and Wellbeing in Six Nova Scotia Fishing Communities*. Nova Scotia; Canadian Research Institute for the Advancement of Women.
- Park, J. & Nelson, C.H. The investigation of stress in resource-dependent communities: The effect of rapid socioeconomic changes on mental health service use. *International Journal of Circumpolar Health*. 1998; 57S(1):432-8.
- Patriquin, M.N., Parkins, J.R. & Stedman, C. Socio-economic status of boreal communities in Canada. *Forestry*. 2007; 80(3): 279-291.
- Peck, D. F. & Plant, M.A. Unemployment and illegal drug use: concordant evidence from a prospective study and national trends. *British Medical Journal*. 1986; 293: 929-932.
- Platt, S. & Kreitman, N. Long term trends in parasuicide and unemployment in Edinburgh, 1968-87. *Social Psychiatry and Psychiatric Epidemiology*. 1990; 25: 56-61.
- Preti, A. Suicide and unemployment in Italy, 1982-1994. *Journal of Epidemiology and Public Health*. 1999; 53: 694-701.
- Reed, M.G. 1994. "Local Politics in the Provincial North: Struggles in Resource Management and Economic Development." pp. 224-255 in M.E. Johnston (ed.) *Geographic Perspectives on the Provincial North*. Thunder Bay, Ontario: Lakehead University.
- Reese, M.H., & Cummings, J.C. 1979. "Energy Impacted Housing." in J. Davenport and J. Davenport (eds.) *Boom Towns and Human Services*. Laramie: University of Wyoming.
- Roos, E., Lahelma, E., Saastamoinen, P. & Elstad, J.I. The association of employment status and family status with health among women and men in four Nordic countries. *Scandinavian Journal of Public Health*. 2005; 33: 250-260.
- Ross, C.E. & Mirowsky, J. Does employment affect health? *Journal of Health and Social Behaviour*. 1995; 36: 230-243.
- Rowlands, P. & Huws, R. Psychological effects of colliery closures. *International Journal of Social Psychiatry*. 1995; 41(1): 21-25.
- Shields, M. & Shooshtari, S. Determinants of self-perceived health. *Health Reports (Statistics Canada, 82-003)*. 2001; 13(1): 35-52.
- Siegel, M., Bradley, E., Gallo, W. & Kasl, S. Impact of husbands' involuntary job loss on wives' mental health, among older adults. *Journal of Gerontology*. 2003; 58B: S30-S37.

- Simon, K.I. Displaced workers and employer-provided health insurance: Evidence of a wage/fringe benefit tradeoff? *International Journal of Health Care Finance and Economics*. 2001; 1: 249-271.
- Sleskova, M., Salonna, F., Geckova, A.M., Nagyova, I., Stewart, R.E., van Dijk, J.P. & Groothoff, J.W. Does parental unemployment affect adolescents' health? *Journal of Adolescent Health*. 2006; 38: 527-535.
- Smith, M.D., Krannich, R.S. & Hunter, L.M. Growth, decline, stability, and disruption: A longitudinal analysis of social well-being in four Western rural communities. *Rural Sociology*. 2001; 66(3): 425-450.
- Stafford, J. & Nelson, C. 1991. "An Analysis of Hemlo Housing." in T. Dunk (ed.), *Social Relations in Resource Hinterlands*. Thunder Bay: Lakehead University.
- Standish-Barry, H.M.S., Clayden, A. & Sims, A.C.P. Age, unemployment and parasuicide in Leeds. *The International Journal of Social Psychiatry*. 1989; 35(4): 303-312.
- Stankunas, M., Kalediene, R., Starkuviene, S. & Kapustinskiene, V. Duration of unemployment and depression: a cross-sectional survey in Lithuania. *BMC Public Health*. 2006; 6: 174.
- Statistics Canada. Appendix F: Derived variables. *National Population Health Survey: 1994-95 Public Use Microdata File (82F0001XCB)* Ottawa: Minister of Industry 1995; 17-20.
- Stedman, R.C., Parkins, J.R. & Beckley, T.M. Forest dependence and community well-being in rural Canada: Variation by forest sector and region. *Canadian Journal of Forestry Research*. 2005; 35: 215-220.
- Stedman, R.C., Parkins, J.R. & Beckley, T.M. Resource dependence and community well-being in rural Canada. *Rural Sociology*. 2004; 69(2): 213-234.
- Stephens, T., Craig, C.L. & Ferris, B.F. Adult physical activity in Canada: Findings from the Canada Fitness Survey. *Canadian Journal of Public Health*. 1986; 77(4): 285-290.
- Storseth, F. Changes at work and employee reactions: Organizational elements, job insecurity, and short-term stress as predictors for employee health and safety. *Scandinavian Journal of Psychology*. 2006; 47: 541-550.
- Studnicka, M., Studnicka-Benke, A., Wogerbauer, G., Rastetter, D., Gathmann, P., & Ringel, E. Psychological health, self-reported health physical health and health service use: Risk differential observed after one year of unemployment. *Social Psychiatry and Psychiatric Epidemiology*. 1991; 26: 86-91

- Sullivan, D. & von Wachter, T. *Mortality, mass-layoffs, and career outcomes: An analysis using administrative data*. National Bureau of Economic Research. 2007. Found at: http://www.bu.edu/econ/seminars/microeconomics/pdf/fall06/sullivan_vonwachter2.pdf. Accessed April 7, 2008.
- Summers, G.F. Rural community development. *Annual Review Sociology*. 1986; 12: 347-71.
- Taitz, L.S., King, J.M., Nicholson, J. & Kessel, M. Unemployment and child abuse. *British Medical Journal*. 1987; 294: 1074-1076.
- Toby, I. 1979. "Delinquency in Cross-Cultural Perspective." pp. 105-49. in L. T. Emmpey (ed.), *Juvenile Justice: The Progressive Legacy and Current Reforms*. Charlottesville: University of Virginia Press.
- Turner, J.B. Economic context and the health effects of unemployment. *Journal of Health and Social Behavior*. 1995; 36: 213-229.
- U.S. Department of Justice – Office of Justice Programs. (2004). *When Violence Hits Home: How Economics and Neighborhood Play a Role*. Washington, DC; National Institute of Justice.
- Vahtera, J., Kivimaki, M. & Pentti, J. Effect of organisational downsizing on health of employees. *The Lancet*. 1997; 350: 1124-1128.
- Vahtera, J., Kivimaki, M., Forma, P., Wikstrom, J., Halmeenmaki, T. & Linna, A. Organisational downsizing as a predictor of disability pension: The 10-town prospective cohort study. *Journal of Epidemiology and Community Health*. 2005; 59: 238-242.
- Vahtera, J., Kivimaki, M., Pentti, J., Linna, A., Virtanen, M. & Ferrie, J.E. Organisational downsizing, sickness, absence, and mortality: 10-town prospective cohort study. *BMJ*. 2004; 328 (7439): 555.
- Van der Geest, S., Mul, A. & Vermeulen, H. Linkages between migration and the care of frail older people: Observations from Greece, Ghana, and the Netherlands. *Ageing & Society*. 2004; 24: 431-450.
- Virtanen, M., Kivimaki, M., Joensuu, M., Vitonen, P. & Eloviano, M. Temporary employment and health: a review. *International Journal of Epidemiology*. 2005; 34(6): 610-622.
- Voss, M. Nylen, L., Floderus, B., Diderichsen, F. & Terry, P. Unemployment and early cause-specific mortality: A study based on the Swedish twin registry. *American Journal of Public Health*. 2004; 94(12): 2155-2161.
- Wadsworth, M.E.J., Montgomery, S.M. & Bartley, M.J. The persisting effect of unemployment on health and social well-being in men early in working life. *Social Science and Medicine*. 1999; 48: 1491-1499.

- Walisser, B., Mueller, B. & McLean C. *The world urban forum 2006, Vancouver working group discussion paper : The resilient city*. Found at:
<http://www.wd.gc.ca/images/content/DOCUMENT-Vancouver Working Group on Urban Issues-Resilient.pdf>. Accessed May 22, 2008.
- Weden, M.M., Astone, N.M. & Bishai, D. Racial, ethnic, and gender differences in smoking cessation associated with employment and joblessness through young adulthood in the U.S. *Social Science & Medicine*. 2006; 62: 303-316.
- Wilkinson, K.P., Reynolds, R.R., Thompson, J.G. & Ostresh, L.M. Violent crime in the western energy-development regions. *Sociological Perspectives*. 1984; 27(2):241-256.
- Wilkinson, K.P., Thompson, J.G., Reynolds, R.R., Jr., & Ostresh, L.M. Local social disruption and western energy development: A critical review. *Pacific Sociological Review*. 1982; 25(3): 275-296.

APPENDICES

Appendix A - Interview Questions – Key Informants

The purpose of this research commissioned by the North West Local Health Integration Network (LHIN) is to determine if there are any health related impacts for Northwestern Ontario due to the decline of the forestry sector. Research indicates that an individual's health status is negatively affected by unemployment. Additionally, health service utilization tends to increase in communities when large numbers of people become unemployed. As a professional working in the health sector we are interested in hearing your opinions about people that may have been affected by the decline in the forestry industry.

1. Thinking about people in your community that have either lost their employment or experienced job instability due to lay-offs in the forestry sector; have you seen any change in the numbers of people using local health services?
 - More people using services
 - Same number of people, more frequent use of services
 - No change in demands for service
 - Fewer people using services
 - Other

2. What types of health problems have you encountered among individuals affected by forestry lay-offs?
 - Physical health concerns
 - Increased blood pressure
 - Increased cholesterol levels
 - Sleep disturbances
 - Cardiovascular problems
 - Depression
 - Substance abuse
 - Suicide attempts/threats
 - Anxiety Disorders
 - Panic Disorders
 - Somitization Disorders
 - Increased stress levels

3. Have you observed any negative health impacts on the families (spouses, children, dependent elders) of those laid off or with unstable employment? If yes, have you seen:
 - Increased stress in children
 - Increased stress in spouses
 - Increased stress in elders
 - Increased family violence
 - Physical health concerns
 - Other examples?

4. Do you have any immediate concerns for any of these displaced workers and their families' health? If so what are your concerns?
 - Suicidal tendencies
 - Risk taking behaviours
 - Increased substance use
 - Family violence

5. For people with a pre-existing chronic or mental health condition who have remained in the community, has their unemployment or job instability exacerbated their condition? Please explain.
 - Has depression worsened?
 - Has substance use increased?
 - Have stress levels increased?
 - Have blood pressure levels increased?
 - Have heart conditions worsened?
 - Are these people generally in poorer health than those who have relocated?

6. Do any of your client families who have experienced lay-offs have concerns around paying for medical prescriptions, supplies or special diets? If so, is this due to a loss of benefits that would have covered these costs in the past?
 - Are they unable to pay for prescriptions?
 - Do they request a generic version of the medicine?
 - Are they unable to pay for special medical supplies to manage conditions such as diabetes? Other concerns?
 - Are they having difficulty paying for special diets, nutritional supplements, or infant formula?

7. Have you seen a change in lifestyle factors that lead to chronic diseases among people who have experienced job lay-offs or losses?
 - Smoking
 - Alcohol consumption
 - Drug Use
 - Weight gain
 - Risk-taking behaviours

8. Do you think there will be any other long-term health effects on other community residents due to the decline of the forestry sector? If any long-term effects, what are your concerns for the health status of the community?
 - Increase in chronic diseases such as heart disease, stroke or diabetes?
 - Increase in cancer related to lifestyle factors?
 - Long-term depression that may lead to suicide?
 - Lack of services to meet needs (e.g. health professionals and paraprofessional relocating)?
 - Loss of informal care giving supports (e.g. for elderly family members)
 - Has there been any change in where people are accessing care (e.g., physicians' offices, community health centres, walk-in clinics, hospital emergency rooms, counselling organizations, pharmacies, other locations)

9. Is there anything else you would like to add regarding health impacts related to the decline of the forestry sector?

10. To improve our understanding of the relationship between instability in the forestry industry and health, we would like to talk to other individuals who have experience delivering primary health care or mental health services in your community. Could you suggest the name of a colleague who might have insights into these issues?

Appendix B – Letter of Information

Dear Colleague:

The purpose of the study, commissioned by the North West Local Health Integration Network (LHIN), is to determine if there are any health related impacts for Northwestern Ontario due to the decline of the forestry sector. Research indicates that individuals' health status is negatively affected by unemployment. Additionally, health service utilization tends to increase in communities when large numbers of people become unemployed. As a professional working in the health sector, we are interested in exploring your experiences caring for clients affected by the decline in forestry.

As you have been identified by the LHIN staff as a knowledgeable key informant, we are interested in hearing your opinions. Your involvement would be that of a participant in an open-ended telephone interview, *which would last approximately 20-30 minutes*. The interview would be scheduled at a time that is convenient for you. Participation in this study is voluntary and you may answer the questions any way that you choose, decline to answer any question, or elect to withdraw your participation at any stage. There are no apparent risks associated with the study and participation will not affect employment or organization's access to services or supports.

With your permission (consent form attached), we will audiotape the interview to ensure that information is accurately recorded. All data will be secured in locked cabinets in the CRaHNR office at Lakehead University, for a period of seven years after completion of the study, at this time it will be destroyed. Data will be kept confidential and you will not be identified in any written reports or subsequent presentations. Results of the study will be available through the LHIN after the end of the project.

For further information about the study, please contact us at CRaHNR. Dr. Mary Ellen Hill, Senior Researcher, may be reached by telephone (collect) (807) 766-7278 or email maryellen.hill@lakeheadu.ca. For further information about procedures for maintaining consent and confidentiality, you may contact the Research Ethics Board at (807) 343-8283. I hope that you will agree that such an evaluation is important and will be prepared to help us carry it out.

Sincerely,

Bruce Minore, PhD

*Forestry and Health
Centre for Rural and Northern Health Research
Lakehead University*

Appendix C - Consent to Participate

- If you agree to participate in the interview, please read, sign and date the following consent form and return it by fax to (807) 343-2104. Please also mail the original signed and dated consent form, via mail to: the Centre for Rural and Northern Health Research, Lakehead University, 955 Oliver Road, Thunder Bay, ON P7B 5E1.
- The purpose of the study, commissioned by the North West Local Health Integration Network (LHIN), is to determine if there are any health related impacts for Northwestern Ontario due to the decline of the forestry sector. Research indicates that an individual's health status is negatively affected by unemployment. Additionally, health service utilization tends to increase in communities when large numbers of people become unemployed. Results obtained from this study will be synthesized into a report summarizing the findings, which will be forwarded to the LHIN.
- Researchers ask that you assist in this study by taking part in a telephone interview. Because we do not wish to cause discomfort to anyone, your participation is voluntary, you are free to answer the questions in any way that you choose, decline any questions you do not wish to answer, and to withdraw from the interview at any time. To ensure that information is gathered accurately, we also ask that you give consent to audio taping of the interview. This will be done with the understanding that all field notes and tapes will be secured in locked cabinets in the CRaHNR office, for a period of seven years after the completion of the study, after which time it will be destroyed. All data will be kept confidential and you will not be identified in any written reports or subsequent presentation of the results.
- I, _____ agree to be interviewed as part of the Centre for Rural and Northern Health Research study entitled *Forestry Employment and Health in Northwestern Ontario*. In addition please check one of the following:
 - _____ I give permission to the researchers to audiotape the interview.
 - _____ I do not give permission to the researchers to audiotape the interview.

Signature

Date

*Forestry and Health
Centre for Rural and Northern Health Research
Lakehead University*

Appendix D

Definition of Health and Well-Being Variables – CCHS 3.1

Variable	Definition
<i>Health and Well-Being Variables</i>	
<i>Lack of community belonging</i>	Community belonging is measured by asking respondents “How would you describe your sense of belonging to your local community? Would you say it is: very strong, somewhat strong, somewhat weak or very weak.” Respondents were considered to have <i>lack of community belonging</i> if they answered somewhat weak or very weak.
<i>Chronic conditions</i>	Respondents were asked about long-term conditions that had lasted or were expected to last six months or longer and that had been diagnosed by a health care professional. An Interviewer read a list of specific conditions to known chronic conditions a respondent currently has. Based on this questioning, the type and number of chronic conditions of each individual were identified. <i>Chronic conditions</i> included for analysis were asthma, arthritis, back problems, migraine, respiratory diseases, diabetes, cardiovascular disorders (high blood pressure, heart diseases, stroke), cancer, digestive disorders, thyroid, mental disorders, and others.
<i>Negative self-perceived health</i>	The following question was used to determine the respondent’s state of self-perceived health: “In general, would you say your health is: excellent? very good? good? fair? poor?” In this study, if respondents answered fair or poor, they were considered to have <i>negative self-perceived health</i> .
<i>Negative self-perceived mental health</i>	The following question was used to determine the respondent’s state of self-perceived mental health: “In general, would you say your mental health is: excellent? very good? good? fair? poor?” In this study, if respondents answered fair or poor, they were considered to have <i>negative self-perceived mental health</i> .
<i>Self-perceived stress</i>	<i>Self-perceived stress</i> was measured by asking: “Thinking about the amount of stress in your life, would you say that most days are: not at all stressful? not very stressful?, a bit stressful? quite a bit stressful? or extremely stressful?” Respondents who answered “a bit,” “quite a bit” or “extremely” stressful were classified as having <i>high self-perceived stress</i> .
<i>Self-perceived work stress</i>	<i>Self-perceived work stress</i> at the main job or business in the past 12 months was measured by asking: “Would you say that most days at work were: not at all stressful? not very stressful? a bit stressful? quite a bit stressful? extremely stressful?” Respondents who answered “a bit,” “quite a bit” or “extremely” stressful were classified as having <i>high self-perceived work stress</i> . For this study, full-time workers and part-time workers were separately analyzed.
<i>Suicidal thought</i>	<i>Suicidal thought</i> was measured by asking whether a respondent had seriously considered suicide in the past 12 months. Those who answered affirmatively were considered as having a suicidal thought.

Variable	Definition
<i>Having a regular medical doctor</i>	<i>Having a regular medical doctor</i> was measured by asking if a respondent currently has a regular medical doctor. For those who answered negatively, specific reasons for not having a regular medical doctor were asked.
<i>Unmet health care needs</i>	<i>Unmet health care needs</i> was measured by asking: "During the past 12 months, was there ever a time when you felt that you needed health care but you didn't receive it?" Those who affirmatively answered this question were considered as experiencing self-perceived unmet health care needs.
<i>Household food insecurity</i>	<p><i>Household food insecurity</i> was measured by a continuous linear scale based on the 18-item Food Security Module (FSM). The scale ranges from 0 to 18 for households with children and 0 to 10 for households without children. In this study, individuals' scores of the scale were categorized into 4 levels of food security status:²⁰⁴</p> <ol style="list-style-type: none"> 1. <i>Food secure</i> - Household shows no, or minimal evidence of food insecurity (sum of coded responses for 18 questions, 0-2). 2. <i>Food insecure without hunger</i> - Food insecurity is evident in household members' concerns about adequacy of the household food supply and in adjustments to household food management, including reduced quality of food and increased unusual coping patterns. Little or no reduction in members' food intake is reported (sum of coded responses, 3 to 7 for households with the children; 3 to 5 for households without the children). 3. <i>Food insecure with hunger (moderate)</i> - Food intake for adults in the household has been reduced to an extent that implies that adults have repeatedly experienced the physical sensation of hunger. In most (but not all) food insecure households with children, such reductions are not observed at this stage for children (sum of coded responses, 8 to 12 for households with the children; 6 to 8 for households without the children). 4. <i>Food insecure with hunger (severe)</i> - All households with children have reduced children's food intake to an extent indicating that the children have experienced hunger. For some other households with children, this already has occurred at an earlier stage of severity. Adults in households with and without children have repeatedly experienced more extensive reductions in food intake (sum of coded responses, 13 to 18 for households with the children; 9 to 10 for households without the children). <p>In this study, individuals in <i>all food insecure households</i> (without, and with moderate or severe hunger) were classified as <i>with household food insecurity</i>.</p>

Variable	Definition
<i>Health Behaviour Variables</i>	
<i>Daily smoking</i>	Daily smoking was defined as smoking cigarettes every day.
<i>Heavy drinking</i>	If the respondent reported he or she had more than 5 drinks on one occasion at least once a month, he or she had a behaviour of heavy drinking.
<i>Obesity</i>	Based on body mass index (BMI) calculated by dividing weight in kilograms by height in metres squared, obesity (BMI 30 or more) for people aged 18 or older was identified. The age and sex specific cut-offs defined by Cole and colleagues were used to classify the BMI's of people under age 19. ²⁰⁵
<i>Physical activity</i>	<i>Physical activity</i> was based on total accumulated energy expenditure (EE) during leisure time. EE was calculated from the reported frequency and duration of all of a respondent's leisure-time physical activities in the three months before the interview and the metabolic energy demand (MET value) of each activity, which was independently established. ^{206 207} $EE = \sum(N_i * D_i * MET_i / 365 \text{ days})$, where N_i = number of occasions of activity i in a year, D_i = average duration in hours of activity i , and MET_i = a constant value for metabolic energy cost of activity i . For each respondent, daily EE was the sum of energy expenditures of all leisure-time activities, expressed as total kilocalories expended per kilogram of body weight per day (K/K/D). An EE of 3 or more K/K/D was defined as high; 1.5 to 2.9, moderate; and less than 1.5, low. ²⁰⁸ Respondents with high or moderate EE were considered <i>physically active</i> ; those with low EE, <i>inactive</i> .
<i>Insufficient fruits and vegetables intake</i>	<i>Insufficient fruits and vegetables intake</i> was measured by asking daily consumption of fruits and vegetables. Less than 5 times/servings a day was considered as insufficient intake.

Endnotes

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- ¹ Catalano, R., Dooley, D., Wilson, G., & Hough, R. Job loss and alcohol abuse: a test using data from the Epidemiological Catchment Area Project. *Journal of Health and Social Behaviour*. 1993; 34: 215-225.
 - ² Kposawa, A. Unemployment and suicide: a cohort analysis of social factors predicting suicide in the US National Longitudinal Mortality Study. *Psychological Medicine*. 2001; 31: 127-138.
 - ³ Gallo, W.T., Teng, H M, Falba, T A., Kasl, S V., Krumholz H M., & Bradley, E H. The impact of late career job loss on myocardial infarction and stroke: a 10 year follow up using the health and retirement survey. *Occupational Environmental Medicine*. 2006; 63: 683-687.
 - ⁴ Studnicka, M., Studnicka-Benke, A., Wogerbauer, G., Rastetter, D., Gathmann, P., & Ringel, E. Psychological health, self-reported health physical health and health service use: Risk differential observed after one year of unemployment. *Social Psychiatry and Psychiatric Epidemiology*. 1991; 26: 86-91
 - ⁵ Cano, A. & Vivian, D. Life stressors and husband-to-wife violence. *Aggression and Violent Behaviour*. 2001; 6: 459-480.
 - ⁶ Siegel, M., Bradley, E., Gallo, W., & Kasl, S. Impact of husbands' involuntary job loss on wives' mental health among older adults. *Journal of Gerontology*. 2003; 58B (1): 30-37.
 - ⁷ Clark, K.J. & Leipert, B. Strengthening and sustaining social supports for rural elders. *Online Journal of Rural Nursing and Health Care*. 2007; 7(1): 13-26.
 - ⁸ Crosato, K.E. & Leipert, B. Rural women caregivers in Canada. *Rural and Remote Health*. 2006; 6: 520.
 - ⁹ Murray, M. (2005). *A decade of change: An investigation into the health and social wellness of Newfoundland and Labrador communities pre and post moratorium*. Health Canada.
 - ¹⁰ Jackson (2003) notes that 30 is the optimal number of interviews to achieve information saturation and permit in-depth analysis of the phenomena under analysis in qualitative studies, although smaller numbers may yield satisfactory results. See: Jackson, W. (2003). *Methods: Doing Social Research* (3rd Ed.). Prentice Hall, Pearson Education Inc., Toronto, Ontario.
 - ¹¹ Guest, B., Bunce, A. & Johnson, L. How many interviews are enough? An experiment with data saturation and variability. *Field Methods*. 2006; 18(1): 59-82
 - ¹² Patriquin, M.N., Parkins, J.R. & Stedman, C. Socio-economic status of boreal communities in Canada. *Forestry*. 2007; 80(3): 279-291.
 - ¹³ Stedman, R.C., Parkins, J.R. & Beckley, T.M. Resource dependence and community well-being in rural Canada. *Rural Sociology*. 2004; 69(2): 213-234.

-
- ¹⁴ Stedman, R.C., Parkins, J.R. & Beckley, T.M. Forest dependence and community well-being in rural Canada: Variation by forest sector and region. *Canadian Journal of Forestry Research*. 2005; 35: 215-220.
- ¹⁵ Personal communication with P. Way, National Resources Canada, Canadian Forest Service, Ottawa, Ontario.
- ¹⁶ Personal communication with N. Buconjic, Ontario Ministry of Natural Resources, Industry Relations Branch, Sault Ste. Marie, Ontario.
- ¹⁷ Forestry Coalition Website (www.forestrycoalition.com).
- ¹⁸ *Forestry Reliance Index* (2000). Natural Resources Canada, Canadian Forest Service. Ottawa, Ontario.
- ¹⁹ Dolan, A.H., Taylor, M., Neis, B., Ommer, R., Eyles, J., Schneider, D. & Montevecchi, B. Restructuring and health in Canadian coastal communities. *Ecohealth*. 2005; 2: 195-208.
- ²⁰ Park, J. & Nelson, C.H. The investigation of stress in resource-dependent communities: The effect of rapid socioeconomic changes on mental health service use. *International Journal of Circumpolar Health*. 1998; 57S(1):432-8.
- ²¹ This represented percentage changes in labour force in agriculture/resource based industries and manufacturing/construction industries.
- ²² Murray, M. (2005). *A decade of change: An investigation into the health and social wellness of Newfoundland and Labrador communities pre and post moratorium*. Health Canada.
- ²³ Dolan, A.H., Taylor, M., Neis, B., Ommer, R., Eyles, J., Schneider, D. & Montevecchi, B. Restructuring and health in Canadian coastal communities. *Ecohealth*. 2005; 2: 195-208.
- ²⁴ Gallo, W.T., Bradley, E.H., Siegel, M., & Kasl, S.V. Health effects of involuntary job loss among older workers: Findings from the health and retirement survey. *Journal of Gerontology*. 2000; 55B (3): S131-S140.
- ²⁵ Gallo, W.T., Teng, H.M., Falba, T.A., Kasl, S.V., Krumholz, H.M. & Bradley, E.H. The impact of late career job loss on myocardial infraction and stroke: A ten year follow up using the health and retirement survey. *Occupational and Environmental Medicine*. 2006; 63: 683-687.
- ²⁶ Baillis, D., Segall, A. & Chipperfield, J.G. Two views of self-rated general health status. *Social Science and Medicine*. 2003; 56: 203-217.
- ²⁷ Martikainen, P., Aromaa, A., Heliovaara, M., Klaukka, T., Knekt, P., Maatela, J. & Lahelma, E.. Reliability of perceived health by sex and age. *Social Science and Medicine*. 1999; 48: 1117-1122.
- ²⁸ Shields, M. & Shooshtari, S. Determinants of self-perceived health. *Health Reports* (Statistics Canada, 82-003). 2001; 13(1): 35-52.
- ²⁹ Leadbeater, D. (1998). *Training, Mass Layoffs, and Single-Industry Communities: Lessons of Elliot Lake*. Department of Economics, Laurentian University. Sudbury, ON.

-
- ³⁰ Mathers, C.D. & Schofield, D.J. The health consequences of unemployment: The evidence. *The Medical Journal of Australia*. 1998; 168: 178-182.
- ³¹ Ferrie, J.E. Labour market status, insecurity and health. *Journal of Health Psychology*. 1997; 2(3): 373-397.
- ³² Jin, R.L., Shah, C.P. & Svoboda, T.J. The impact of unemployment on health: A review of the evidence. *Canadian Medical Association Journal*. 1995; 153(5): 529-540.
- ³³ Roos, E., Lahelma, E., Saastamoinen, P. & Elstad, J.I. The association of employment status and family status with health among women and men in four Nordic countries. *Scandinavian Journal of Public Health*. 2005; 33: 250-260.
- ³⁴ Ross, C.E. & Mirowsky, J. Does employment affect health? *Journal of Health and Social Behaviour*. 1995; 36: 230-243.
- ³⁵ Wadsworth, M.E.J., Montgomery, S.M. & Bartley, M.J. The persisting effect of unemployment on health and social well-being in men early in working life. *Social Science and Medicine*. 1999; 48: 1491-1499.
- ³⁶ Kivimaki, M., Honkonen, T., Wahlbeck, K., Elovainio, M., Pentti, J., Klaukka, T., Virtanen, M. & Vahtera, J. Organisational downsizing and increased use of psychotropic drugs among employees who remain in employment. *Journal of Epidemiology and Community Health*. 2007; 61: 154-158.
- ³⁷ Vahtera, J., Kivimaki, M., Forma, P., Wikstrom, J., Halmeenmaki, T. & Linna, A. Organisational downsizing as a predictor of disability pension: The 10-town prospective cohort study. *Journal of Epidemiology and Community Health*. 2005; 59: 238-242.
- ³⁸ Vahtera, J., Kivimaki, M., Pentti, J., Linna, A., Virtanen, M. & Ferrie, J.E. Organisational downsizing, sickness, absence, and mortality: 10-town prospective cohort study. *BMJ*. 2004; 328 (7439): 555.
- ³⁹ Kivimaki, M., Vahtera, J., Elovainio, M., Pentti, J. & Virtanen, M. Human costs of organizational downsizing: Comparing health trends between leavers and stayers. *American Journal of Community Psychology*. 2003; 32(1/2): 57-67.
- ⁴⁰ Kivimaki, M., Vahtera, J., Ferrie, J.E., Hemingway, H. & Pentti, J. Organisational downsizing and musculoskeletal problems in employees: A prospective study. *Occupational and Environmental Medicine*. 2001; 58: 811-817.
- ⁴¹ Kivimaki, M., Vahtera, J., Pentti, J. & Ferrie, J.E. Factors underlying the effect of organisational downsizing on health of employees: Longitudinal cohort study. *BMJ*. 2000; 320: 971-975.
- ⁴² Vahtera, J., Kivimaki, M. & Pentti, J. Effect of organisational downsizing on health of employees. *The Lancet*. 1997; 350: 1124-1128.
- ⁴³ Storseth, F. Changes at work and employee reactions: Organizational elements, job insecurity, and short-term stress as predictors for employee health and safety. *Scandinavian Journal of Psychology*. 2006; 47: 541-550.

-
- ⁴⁴ Ferrie, J.E. Is job insecurity harmful to health? *Journal of the Royal Society of Medicine*. 2001; 94: 71-76.
- ⁴⁵ Domenighetti, G., D'Avanzo, B. & Bisig, B. Health effects of job insecurity among employees in Swiss general population. *International Journal of Health Services*. 2000; 30 (3): 477-490.
- ⁴⁶ Ferrie, J.E., Shipley, M.J., Marmot, M.G., Stansfeld, S. & Smith, G.D. Health effects of anticipation of job change and non-employment: Longitudinal data from the Whitehall II study. *BMJ*. 1995; 11: 1264-1269.
- ⁴⁷ Ferrie, J.E., Martikainen, P., Shipley, M.J., Marmot, M.G., Stansfeld, S.A. & Smith, G.D. Employment status and health after privatization in white collar civil servants: Prospective cohort study. *BMJ*. 2001; 332: 1-7.
- ⁴⁸ Grunberg, L., Moore, S.Y. & Greenberg, E. Differences in psychological and physical health among layoff survivors: The effect of layoff contact. *Journal of Occupational Health Psychology*. 2001; 6(1): 15-25.
- ⁴⁹ Ostry, A., Barroetavena, M., Hershler, R., Kelly, S., Demers, P.A., Teschke, K. & Hertzman, D. Effect of de-industrialisation on working conditions and self-reported health in a sample of manufacturing workers. *Journal of Epidemiology and Community Health*. 2002; 56: 506-509.
- ⁵⁰ Ostry, A.S., Hershler, R., Kelly, S., Demers, P., Teschke, K. & Hertzman, C. Effects of de-industrialization on unemployment, re-employment, and work conditions in a manufacturing workforce. *Public Health*. 2001; 1: 15.
- ⁵¹ Virtanen, M., Kivimaki, M., Joensuu, M., Vitonen, P. & Eloviano, M. Temporary employment and health: a review. *International Journal of Epidemiology*. 2005; 34(6): 610-622.
- ⁵² Broom, D.H., D'Souza, R.M., Stazdins, L., Butterworth, P., Parslow, R. & Rodgers, B. The lesser evil: Bad jobs or unemployment? A survey of mid-aged Australians. *Social Science and Medicine*. 2006; 63: 575-586,
- ⁵³ Clarke, M., Lewchuck, W., de Wolff, A. & King, A. "This just isn't sustainable": Precarious employment, stress and workers' health. *International Journal of Law and Psychiatry*. 2007; 20: 311-326.
- ⁵⁴ Morrell, S., Taylor, R., Quine, S., Kerr, C. & Western, J. A case-control study of employment status and mortality in a cohort of Australian youth. *Social Science & Medicine*. 1999; 49: 383-392.
- ⁵⁵ Gerdtham, U. & Johannesson, M. A note on the effect of unemployment on mortality. *Journal of Health Economics*. 2003; 22: 505-518.
- ⁵⁶ Martikainen, P., Maki, N. & Jantti, M. The effects of unemployment on mortality following workplace downsizing and workplace closure: A register-based follow-up study of Finnish men and women during economic boom and recession. *American Journal of Epidemiology*. 2007; 165(9): 1070-1075.

-
- ⁵⁷ Morris, J.K., Cook, D.G. & Shaper, A.G. Loss of employment and mortality. *BMJ*. 1994; 308: 1135-1139.
- ⁵⁸ Sullivan, D. & von Wachter, T. *Mortality, mass-layoffs, and career outcomes: An analysis using administrative data*. National Bureau of Economic Research. 2007. Found at: http://www.bu.edu/econ/seminars/microeconomics/pdf/fall06/sullivan_vonwachter2.pdf. Accessed April 7, 2008.
- ⁵⁹ Olivius, G, Ostergren, P., Hanson, B.S. & Lyttkens, C.H. Parental economic stress: Evidence of an overlooked public health risk among Swedish families. *European Journal of Public Health*. 2004; 14: 354-360.
- ⁶⁰ Burgard, S.A., Brand, J.E. & House, J.S. Toward a better estimation of the effect of job loss on health. *Journal of Health and Social Behavior*. 2007; 48: 360-384.
- ⁶¹ Gallo, W.T., Bradley, E.H., Siegel, M., & Kasl, S.V. Health effects of involuntary job loss among older workers: Findings from the health and retirement survey. *Journal of Gerontology*. 2000; 55B (3): S131-S140.
- ⁶² Ahs, A. & Westerling, R. Self-rated health in relation to employment status during periods of high and of low levels of unemployment. *European Journal of Public Health*. 2005; 16(3): 294-304.
- ⁶³ Turner, J.B. Economic context and the health effects of unemployment. *Journal of Health and Social Behavior*. 1995; 36: 213-229.
- ⁶⁴ Beland, F., Birch, S. & Stoddart, G. Unemployment and health: contextual-level influences on the production of health in populations. *Social Science & Medicine*. 2002; 55: 2033-2052.
- ⁶⁵ Mattiasson, I., Lindgarde, F., Nilsson, J. A. & Theorell, T. Threat of unemployment and cardiovascular risk factors: Longitudinal study of quality of sleep and serum cholesterol concentrations in men threatened with redundancy. *BMJ*. 1990; 301: 461-466.
- ⁶⁶ Gallo, W.T., Teng, H.M., Falba, T.A., Kasl, S.V., Krumholz, H.M. & Bradley, E.H. The impact of late career job loss on myocardial infarction and stroke: A ten year follow up using the health and retirement survey. *Occupational and Environmental Medicine*. 2006; 63: 683-687.
- ⁶⁷ Laitinen, J., Power, C., Ek, E., Sovio, U. & Jarvelin, M.R. Unemployment and obesity among young adults in a northern Finland 1966 birth cohort. *International Journal of Obesity*. 2002; 26: 1329-1338.
- ⁶⁸ Leino-Arjas, P., Liira, J., Mutanen, P., Malmivaara, A. & Matikainen, E. Predictors and consequences of unemployment among construction workers: prospective cohort study. *BMJ*. 1999; 319: 600-605.
- ⁶⁹ Morris, J.K., Cook, D.G. & Shaper, A.G. Non-employment and changes in smoking, drinking, and body weight. *BMJ*. 1992; 304: 536-541.
- ⁷⁰ Brenner, H.M. 1973. *Mental Illness and the Economy*. Cambridge: Harvard University Press.

-
- ⁷¹ Brown, D.W., Balluz, L.S., Ford, E.S., Giles, W.H., Strine, T.W., Moriarty, D.G., Croft, J.B. & Mokdad, A.H. Associations between short- and long-term unemployment and frequent mental distress among a national sample of men and women. *Journal of Occupational and Environmental Medicine*. 2003; 45(11): 1159-1166.
- ⁷² Stankunas, M., Kalediene, R., Starkuviene, S. & Kapustinskiene, V. Duration of unemployment and depression: a cross-sectional survey in Lithuania. *BMC Public Health*. 2006; 6: 174.
- ⁷³ Hamalainen, J., Poikolainen, K., Isometsa, E., Kaprio, J., Heikkinen, M., Lindeman, S. & Aro, H. Major depressive episode related to long unemployment and frequent alcohol intoxication. *Nordic Journal of Psychiatry*. 2005; 59(6): 486-491.
- ⁷⁴ Claussen, B. Health and re-employment in a five year follow-up of long-term unemployment. *Scandinavian Journal of Public Health*. 1999; 27(2): 94-100.
- ⁷⁵ Hamilton, V.L., Broman, C.L., Hoffman, W.S. & Renner, D.S. Hard times and vulnerable people: initial effects of plant closing on autoworkers' mental health. *Journal of Health and Social Behaviour*. 1990; 31: 123-140.
- ⁷⁶ Linn, M.W., Sandifer, R. & Stein, S. Effects of unemployment on Mental and Physical Health. *American Journal of Public Health*. 1985; 75(5): 502-506.
- ⁷⁷ Gallo, W.T., Bradley, E.H., Dublin, J.A., Falba, T.A., Teng, H.-M., Kasl, S.V. & Jones, R.N. The persistence of depressive symptoms in older workers who experience involuntary job loss: Results from the health and retirement study. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*. 2006; 61(4): S221-S228.
- ⁷⁸ Matoba, T., Ishitake, T. & Noguchi, R. A 2-year follow-up study of health and life style in Japanese unemployed persons. *International Archives of occupational and environmental health*. 2003; 76: 302-308.
- ⁷⁹ Keefe, V., Reid, P., Ormsby, C., Robson, B., Purdie, G., Baxter, J. & Ngati Kahungunnu Iwi Incorporated. Serious health events following involuntary job loss in New Zealand meat processing workers. *International Journal of Epidemiology*. 2002; 31: 1155-1161.
- ⁸⁰ Flatau, P., Galea, J. & Petridis, R. Mental health and well-being and unemployment. *The Australian Economic Review*. 2000; 33(2): 161-181.
- ⁸¹ Montgomery, S.M., Cook, D.G., Bartley, M.J. & Wadsworth, M. EJ. Unemployment pre-dates symptoms of depression and anxiety resulting in medical consultation in young men. *International Journal of Epidemiology*. 1999; 28: 95-100.
- ⁸² Avery, A.J., Betts, D.S., Whittington, A., Heron, T.B., Wilson, S.H. & Reeves, J.P. The mental and physical health of miners following the 1992 national pit closure programme: A cross sectional survey using general health questionnaire GHQ-12 and short form SF-36. *Public Health*. 1992; 112: 169-173.
- ⁸³ Gien, L.T. Land and sea connection: The east coast fishery closure, unemployment and health. *Canadian Journal of Public Health*. 2000; 91(2): 121-124.

-
- ⁸⁴ Catalano, R., Dooley, D., Wilson, G. & Hough, R. Job loss and alcohol abuse: A test using data from the epidemiologic catchment area project. *Journal of Health and Social Behaviour*. 1993; 34: 215-225.
- ⁸⁵ Ettner, S.L. Measuring the human cost of a weak economy: Does unemployment lead to alcohol abuse? *Social Science and Medicine*. 1997; 44(2): 251-260.
- ⁸⁶ Claussen, B. Alcohol disorders and re-employment in a 5-year follow-up of long-term unemployment. *Addiction*. 1999; 94(1): 133-138.
- ⁸⁷ Rowlands, P. & Huws, R. Psychological effects of colliery closures. *International Journal of Social Psychiatry*. 1995; 41(1): 21-25.
- ⁸⁸ Peck, D. F. & Plant, M.A. Unemployment and illegal drug use: concordant evidence from a prospective study and national trends. *British Medical Journal*. 1986; 293: 929-932.
- ⁸⁹ Merline, A.C., O'Malley, P.M., Schulenberg, J.E., Bachman, J.G. & Johnston, L.D. Substance use among adults 35 years of age: Prevalence, adulthood predictors, and impact of adolescent substance use. *American Journal of Public Health*. 2004; 94(1): 96-102.
- ⁹⁰ Morrell, S.L., Taylor, R.J. & Kerr, C.B. Unemployment and young people's health. *Medical Journal of Australia*. 1998; 168: 236-240.
- ⁹¹ Flatau, P., Galea, J. & Petridis, R. Mental health and well-being and unemployment. *The Australian Economic Review*. 2000; 33(2): 161-181.
- ⁹² Fagan, P., Shavers, V., Lawrence, D., Gibson, J.T. & Ponder, P. Cigarette smoking and quitting behaviours among unemployed adults in the United States. *Nicotine and Tobacco Research*. 2007; 9(2): 241-248.
- ⁹³ Weden, M.M., Astone, N.M. & Bishai, D. Racial, ethnic, and gender differences in smoking cessation associated with employment and joblessness through young adulthood in the U.S. *Social Science & Medicine*. 2006; 62: 303-316.
- ⁹⁴ Ohlander, E., Vikstrom, M., Lindstrom, M. & Sundquist, K. Neighbourhood non-employment and daily smoking: A population-based study of women and men in Sweden. *European Journal of Public Health*. 2006; 16(1): 78-84.
- ⁹⁵ Matoba, T., Ishitake, T. & Noguchi, R. A 2-year follow-up study of health and life style in Japanese unemployed persons. *International Archives of occupational and environmental health*. 2003; 76: 302-308.
- ⁹⁶ Preti, A. Suicide and unemployment in Italy, 1982-1994. *Journal of Epidemiology and Public Health*. 1999; 53: 694-701.
- ⁹⁷ Blakely, T.A., Collings, S.C.D., Atkinson, J. Unemployment and suicide. Evidence for a causal association? *Journal of Epidemiology and Community Health*. 2003; 57: 594-600.
- ⁹⁸ Johansson, S.E. & Sundquist, J. Unemployment is an important risk factor for suicide in contemporary Sweden: An 11-year follow-up study of a cross-sectional sample of 37 789 people. *Public Health*. 1997; 111: 41-45.

-
- ⁹⁹ Voss, M. Nylén, L., Floderus, B., Diderichsen, F. & Terry, P. Unemployment and early cause-specific mortality: A study based on the Swedish twin registry. *American Journal of Public Health*. 2004; 94(12): 2155-2161.
- ¹⁰⁰ Nylén, L., Voss, M. & Floderus, B. Mortality among women and men relative to unemployment, part time work, overtime work, and extra work: A study based on data from the Swedish twin registry. *Occupational and Environmental Medicine*. 2001; 58: 52-57.
- ¹⁰¹ Ahs, A.M.H. & Westerling, R. Mortality in relation to employment status during different levels of unemployment. *Scandinavian Journal of Public Health*. 2006; 34: 159-167.
- ¹⁰² Cook, D.G. A critical view of the unemployment and health debate. *The Statistician*. 1985; 34: 73-82.
- ¹⁰³ Gunnell, D., Lopatzidis, A., Dorling, D., Wehner, H., Southall, H. & Frankel, S. Suicide and unemployment in young people: Analysis of trends in England and Wales, 1921-1995. *British Journal of Psychiatry*. 1999; 175: 263-270.
- ¹⁰⁴ Standish-Barry, H.M.S., Clayden, A. & Sims, A.C.P. Age, unemployment and parasuicide in Leeds. *The International Journal of Social Psychiatry*. 1989; 35(4): 303-312.
- ¹⁰⁵ Platt, S. & Kreitman, N. Long term trends in parasuicide and unemployment in Edinburgh, 1968-87. *Social Psychiatry and Psychiatric Epidemiology*. 1990; 25: 56-61.
- ¹⁰⁶ Morton, M.J. Prediction of repetition of parasuicide: With special reference to unemployment. *The International Journal of Social Psychiatry*. 1993; 39(2): 87-99.
- ¹⁰⁷ Platt, S. & Kreitman, N. Trends in parasuicide and unemployment among men in Edinburgh, 1968-82. *British Medical Journal*. 1984; 289: 1029-1032.
- ¹⁰⁸ Claussen, B. Suicidal ideation among the long-term unemployed: A 5-year follow-up. *Acta Psychiatrica Scandinavica*. 1998; 98: 480-486.
- ¹⁰⁹ Lewis, G. & Sloggett, A. Suicide, deprivation, and unemployment: record linkage study. *BMJ*. 1998; 317: 1283-1286.
- ¹¹⁰ Kposowa, A.J. Unemployment and suicide: A cohort analysis of social factors predicting suicide in the US national longitudinal mortality study. *Psychological Medicine*. 2001; 31: 127-138.
- ¹¹¹ Dew, M.A., Penkower, L. & Bromet, E.J. Effects of unemployment on mental health in the contemporary family. *Behavior Modification*. 1991; 15(4): 501-544.
- ¹¹² Park, J. & Nelson, C.H. The investigation of stress in resource-dependent communities: The effect of rapid socioeconomic changes on mental health service use. *International Journal of Circumpolar Health*. 1998; 57S(1):432-8.
- ¹¹³ Dew, M.A., Penkower, L. & Bromet, E.J. Effects of unemployment on mental health in the contemporary family. *Behavior Modification*. 1991; 15(4): 501-544.
- ¹¹⁴ Siegel, M., Bradley, E., Gallo, W. & Kasl, S. Impact of husbands' involuntary job loss on wives' mental health, among older adults. *Journal of Gerontology*. 2003; 58B: S30-S37.

-
- ¹¹⁵ Fryer, D. & Fagan, R. Toward a critical community psychological perspective on unemployment and mental health research. *American Journal of Community Psychology*. 2003; 32(1-2): 89-96.
- ¹¹⁶ Freidemann, M.L. & Webb, A.A. Family health and mental health six years after economic stress and unemployment. *Issues in Mental Health Nursing*. 1995; 16(1): 51-66.
- ¹¹⁷ Moen, P. & Chermack, P. Gender disparities in health: strategic selection, careers, and cycles of control. *Journal of Gerontology*. 2005; 60B: 99-108.
- ¹¹⁸ Cano, A. & Vivian, D. Life stressors and husband-to-wife violence. *Aggression and Violent Behaviour*. 2001; 6: 459-480.
- ¹¹⁹ U.S. Department of Justice - Office of Justice Programs. (2004). *When Violence Hits Home: How Economics and Neighborhood Play a Role*. Washington, DC; National Institute of Justice.
- ¹²⁰ Fox, G.L., Benson, M.L., DeMaris, A.A. & VanWyk, J. Economic distress and intimate violence: Testing family stress and resources theory. *Journal of Marriage and Family*. 2002; 64: 793-807.
- ¹²¹ Sleskova, M., Salonna, F., Geckova, A.M., Nagyova, I., Stewart, R.E., van Dijk, J.P. & Groothoff, J.W. Does parental unemployment affect adolescents' health? *Journal of Adolescent Health*. 2006; 38: 527-535.
- ¹²² Christoffersen, M.N. Growing up with unemployment: A study of parental unemployment and children's risk of abuse and neglect based on national longitudinal 1973 birth cohorts in Denmark. *Childhood*. 2000; 7(4): 421-438.
- ¹²³ Gillham, B., Tanner, G., Cheyne, B., Freeman, I., Rooney, M. & Lambie, A. Unemployment rates, single parent density and indices of child poverty: Their relationship to different categories of child abuse and neglect. *Child Abuse and Neglect*. 1998; 22(2): 79-90.
- ¹²⁴ Taitz, L.S., King, J.M., Nicholson, J. & Kessel, M. Unemployment and child abuse. *British Medical Journal*. 1987; 294: 1074-1076.
- ¹²⁵ Ostry, A., Maggi, S., Tansey, J., Dunn, J., Hershler, R., Chen, L., Louie, A. & Hertzman, C. The impact of fathers' physical and psychosocial work conditions on attempted and completed suicide among their children. *Public Health*. 2006; 6: 77.
- ¹²⁶ Pahlke, A., Lord, S. & Christiansen-Ruffman, L. 2001. *Women's Health and Wellbeing in Six Nova Scotia Fishing Communities*. Nova Scotia; Canadian Research Institute for the Advancement of Women.
- ¹²⁷ Clark, K.J. & Leipert, B.D. Strengthening and sustaining social supports for rural elders. *Online Journal of Rural Nursing and Health Care*. 2007; 7(1): 13-26.
- ¹²⁸ Van der Geest, S., Mul, A. & Vermeulen, H. Linkages between migration and the care of frail older people: Observations from Greece, Ghana, and the Netherlands. *Ageing & Society*. 2004; 24: 431-450.

-
- ¹²⁹ Morgan, D.G., Semchuk, K.M., Stewart, N.J. & D'Arcy, C. Rural families caring for a relative with dementia: Barriers to use of formal services. *Social Science & Medicine*. 2002; 55: 1129-1142.
- ¹³⁰ Crosato, K.E. & Leipter, B. Rural women caregivers in Canada. *Rural and Remote Health*. 2006; 6: 520.
- ¹³¹ Crosato, K.E., Ward-Griffin, C. & Leipter, B. Aboriginal women caregivers of the elderly in geographically isolated communities. *Rural and Remote Health*. 2007; 7: 796.
- ¹³² Beale, N. & Nethercott, S. The health of industrial employees four years after compulsory redundancy. *Journal of the Royal College of General Practitioners*. 1987; 37: 390-394.
- ¹³³ Studnicka, M., Studnicka-Benke, A., Wogerbauer, G., Rastetter, D., Wenda, R., Gathmann, P. & Ringel, E. Psychological health, self-reported physical health and health service use: Risk differential observed after one year of unemployment. *Social Psychiatry and Psychiatric Epidemiology*. 1991; 26: 86-91.
- ¹³⁴ Banziger, G. & Foos, D. The relationship of personal financial status to the utilization of community mental health centres in rural Appalachia. *American Journal of Community Psychology*. 1983; 11(5): 543-552.
- ¹³⁵ Banziger, G., Smith, R.K. & Foos, D. Economic indicators of mental health service utilization in rural Appalachia. *American Journal of Community Psychology*. 1982; 10(6): 669-686.
- ¹³⁶ Kiernan, M., Toro, P.A., Rappaport, J. & Seidman, E. Economic predictors of mental health service utilization: A time-series analysis. *American Journal of Community Psychology*. 1989; 17(6): 801-820.
- ¹³⁷ Barling, P.W. & Handal, P.J. Incidence of utilization of public mental health facilities as a function of short-term economic decline. *American Journal of Community Psychology*. 1980; 8(1): 31-39.
- ¹³⁸ Ahs, A.M.H. & Westerling, R. Health care utilization among persons who are unemployed or outside the labour force. *Health Policy*. 2006; 78: 178-193.
- ¹³⁹ Simon, K.I. Displaced workers and employer-provided health insurance: Evidence of a wage/fringe benefit tradeoff? *International Journal of Health Care Finance and Economics*. 2001; 1: 249-271.
- ¹⁴⁰ Bowman, J.L.B. Mid-life and older workers: job displacement and health care coverage. *Journal of Consumer Studies and Home Economics*. 1994; 18: 169-182.
- ¹⁴¹ Fronstin, P. (2002). *Workers displaced from employment 1997-1999: Implications for employee benefits and income security*. Employee Benefit Research Institute. Washington, D.C.
- ¹⁴² Leadbeater, D. (1998). *Training, Mass Layoffs, and Single-Industry Communities: Lessons of Elliot Lake*. Department of Economics, Laurentian University. Sudbury, ON.
- ¹⁴³ Brabant, S. 1991. "The Impact of a Boom/Bust Economy on Poverty." in S. Laska (ed.), *Impact of Offshore Oil Exploration and Production on the Social Institutions of Coastal Louisiana*. New Orleans, LA: U.S. Department of Interior.

-
- ¹⁴⁴ Brown, R.B., Geersten, H.R., & Krannich, R.S.. Community satisfaction and social integration in a boomtown: A longitudinal analysis. *Rural Sociology*. 1989; 54(4):568-586.
- ¹⁴⁵ D'Arcy, Carl & C.M. Siddique. 1987. "Health and Unemployment: Findings from a National Survey." in D. Coburn et al. (eds.) *Health and Canadian Society: Sociological Perspectives*. (2nd Ed.) Richmond Hill: Fitzhenry & Whiteside.
- ¹⁴⁶ Krannich, R.S. & Greider, T. Personal well-being in rapid growth and stable communities: Multiple indicators and contrasting results. *Rural Sociology*. 1984; 49(4):54152
- ¹⁴⁷ Ministry of Community and Social Services. 1982. *Boom/Bust Communities: Implications for Social Service Planning*. Ministry of Community and Social Services.
- ¹⁴⁸ Neufeldt, A., Doherty, G., & Finkelstein, J. Myths and realities: A comparative examination of the impact of "Boom" and "Bust" conditions on the quality of community life. *Canadian Journal of Mental Health*. 1983; 2(September): 81-91.
- ¹⁴⁹ Machlis, G.E., Force, J.E., & Balice, R. Timber, minerals, and social change: An exploratory test of two resource-dependent communities. *Rural Sociology*. 1990; 55(3):411-424.
- ¹⁵⁰ Brown, R.B., Geersten, H.R., & Krannich, R.S. Community satisfaction and social integration in a boomtown: A longitudinal analysis. *Rural Sociology*. 1989; 54(4):568-586.
- ¹⁵¹ Cortese, C. F. 1982. "The Impacts of Rapid Growth on Local Organizations and Community Services." pp. 115-135 in B.A. Weber & R.E. Howell (eds.), *Coping with Rapid Growth in Rural Communities*. Boulder, CO: Westview Press.
- ¹⁵² Freudenberg, W.R. 1982. "The Impacts of Rapid Growth on Social and Personal Well-Being of Local Community Residents." pp. 137-170 in B.A. Weber and R.E. Howell (eds.), *Coping with Rapid Growth in Rural Communities*. Boulder, CO: Westview Press.
- ¹⁵³ Krannich, R.S., Greider, T. & Little, R.L. Rapid growth and fear of crime: A four-community comparison. *Rural Sociology*. 1985; 50(2):193-209.
- ¹⁵⁴ Murdock, S.H. & Leistritz, F.L. 1979. *Energy Development in the Western United States*. New York: Praeger.
- ¹⁵⁵ Wilkinson, K.P., Thompson, J.G., Reynolds, R.R., Jr., & Ostresh, L.M. Local social disruption and western energy development: A critical review. *Pacific Sociological Review*. 1982; 25(3): 275-296.
- ¹⁵⁶ Wilkinson, K.P., Reynolds, R.R., Thompson, J.G. & Ostresh, L.M. Violent crime in the western energy-development regions. *Sociological Perspectives*. 1984; 27(2):241-256
- ¹⁵⁷ Freudenberg, W.R. & Jones, R.E. Criminal behavior and rapid community growth: Examining the evidence. *Rural Sociology* Krannich, R.S., & Greider, T. Personal well-being in rapid growth and stable communities: Multiple indicators and contrasting results. *Rural Sociology*. 1984; 49(4):54152.. 1991; 56(4):619-645.
- ¹⁵⁸ Krannich, R.S., & Greider, T. Personal well-being in rapid growth and stable communities: Multiple indicators and contrasting results. *Rural Sociology*. 1984; 49(4):54152.

-
- ¹⁵⁹ Machlis, G.E. & Force, J.E. Community stability and timber-dependent communities. *Rural Sociology*. 1988; 53(2):221-34.
- ¹⁶⁰ Cortese, C.F. 1982. "The Impacts of Rapid Growth on Local Organizations and Community Services." pp. 115-135 in B.A. Weber & R.E. Howell (eds.), *Coping with Rapid Growth in Rural Communities*. Boulder, CO: Westview Press.
- ¹⁶¹ Cortese, C. F. & Jones, B. The sociological analysis of boomtowns. *Western Sociological Review*. 1977; 8(i): 76-90.
- ¹⁶² Murdock, S.H. & Leistriz, F.L. 1979. *Energy Development in the Western United States*. New York: Praeger.
- ¹⁶³ Wilkinson, K.P., Thompson, J.G., Reynolds, R.R., & Ostresh, L.M. Local social disruption and western energy development: A critical review. *Pacific Sociological Review*. 1982; 25(3): 275-296.
- ¹⁶⁴ Cortese, C.F. & Jones, B. The sociological analysis of boomtowns. *Western Sociological Review*. 1977; 8(i): 76-90.
- ¹⁶⁵ Freudenberg, W.R. The density of acquaintanceship: An overlooked variable in community research? *American Journal of Sociology*. 1986; 92(1):27-63.
- ¹⁶⁶Freudenberg, W.R. & Jones, R.E. Criminal behavior and rapid community growth: Examining the evidence. *Rural Sociology*. 1991; 56(4):619-645.
- ¹⁶⁷ Freudenberg, W.R. The density of acquaintanceship: An overlooked variable in community research? *American Journal of Sociology*. 1986; 92(1):27-63.
- ¹⁶⁸ Freudenberg, W.R. Social impact assessment. *Annual Review Sociology*. 1986; 12: 451-78.
- ¹⁶⁹ Albrecht, S.L. Commentary. *Pacific Sociological Review*. 1982; 25(3): 297-306.
- ¹⁷⁰ Reese, M.H., & Cummings, J.C. 1979. "Energy Impacted Housing." in J. Davenport and J. Davenport (eds.) *Boom Towns and Human Services*. Laramie: University of Wyoming.
- ¹⁷¹ Stafford, J. & Nelson, C. 1991. "An Analysis of Hemlo Housing." in T. Dunk (ed.), *Social Relations in Resource Hinterlands*. Thunder Bay: Lakehead University.
- ¹⁷² Moffic, H.S, Adams, G.L., Rosenberg, S., Blattstein, A, & Chacko, R.C. Boom Areas: Implications for Mental Health Care Systems. *Community Mental Health Journal*. 1983; 19(4): 243-252
- ¹⁷³ Toby, I. 1979. "Delinquency in Cross-Cultural Perspective. " pp. 105-49. in L. T, Emmpey (ed.), *Juvenile Justice: The Progressive Legacy and Current Reforms*. Charlottesville: University of Virginia Press.
- ¹⁷⁴ Freudenberg, W.R. Boomtown's Youth: The Differential Impacts of Rapid Community Growth on Adolescents and Adults. *American Sociological Review*. 1984; 49(5): 697-705.
- ¹⁷⁵ Freudenberg, W.R. The density of acquaintanceship: An overlooked variable in community research? *American Journal of Sociology*. 1986; 92(1):27-63.
- ¹⁷⁶ Colfer, C.J, & Colfer, A.M. Inside Bushler Bay: Lifeways in counterpoint. *Rural Sociology*. 1978; 43(2):204-220.

-
- ¹⁷⁷ Murdock, S.H. & Leistritz, L.F. 1979. *Energy Development in the Western United States.* New York: Praeger.
- ¹⁷⁸ Nellis, L. What does energy development mean for Wyoming? *Human Organization.* 1974; 33(3): 229-238.
- ¹⁷⁹ Moffic, H.S, Adams, G.L., Rosenberg, S., Blattstein, A, & Chacko, R.C. Boom Areas: Implications for Mental Health Care Systems. *Community Mental Health Journal.* 1983; 19(4): 243-252.
- ¹⁸⁰ Brabant, S. 1991. "The Impact of a Boom/Bust Economy on Poverty." in S. Laska (ed.), *Impact of Offshore Oil Exploration and Production on the Social Institutions of Coastal Louisiana.* New Orleans, LA: U.S. Department of Interior.
- ¹⁸¹ Gilmore, J.S. Boom towns may hinder energy resource development. *Science.* 1976; 191:535-540.
- ¹⁸² Davenport, J.A. & Davenport, J. (eds.) 1979. *Boom Towns and Human Services.* Laramie: University of Wyoming.
- ¹⁸³ Beckley, T.M. Pluralism by default: Community power in a paper mill town. *Forest Science.* 1993; 42(1):35-45.
- ¹⁸⁴ Reed, M.G. 1994. "Local Politics in the Provincial North: Struggles in Resource Management and Economic Development." pp. 224-255 in M.E. Johnston (ed.) *Geographic Perspectives on the Provincial North.* Thunder Bay, Ontario: Lakehead University.
- ¹⁸⁵ Summers, G.F. Rural community development. *Annual Review Sociology.* 1986; 12: 347-71.
- ¹⁸⁶ Force, J.E, Machlis, G.E., Zhang, L. & Kearney, A. The relationship between timber production, local historical events, and community social change: A quantitative case study. *Forest Science.* 1993; 39(4):722-742.
- ¹⁸⁷ Johnston, M. & Lorch, B. Community distinctiveness and company closure in a northern Ontario mining town. *The Great Lakes Geographer.* 1996; 3(1):39-52.
- ¹⁸⁸ Albrecht, S.L. Socio-cultural factors and energy resource development in rural areas in the west. *Journal of Environmental Management.* 1978; 7:78-90.
- ¹⁸⁹ Albrecht, S. Commentary. *Pacific Sociological Review.* 1982; 25(3): 297-306.
- ¹⁹⁰ Murdock, S.H. & Leistritz, F.L.. 1979. *Energy Development in the Western United States.* New York: Praeger.
- ¹⁹¹ Greider, T. & Krannich, R.S. 1983. "Perceived Well-Being and Personal Stress in an Energy Boom Town: Contrasts and Similarities across Divergent Groups. Paper presented at the Rural Sociological Society conference.
- ¹⁹² Dooley, D. & Catalano, R. Recent research on the psychological effects of unemployment. *Journal of Social Issues.* 1988; 44(4): 1-12.
- ¹⁹³ Kasl, S.V. & Cobb, S. 1982. "Variability of Stress Effects among Men Experiencing Job Loss." in L. Goldberger and S. Breznitz (eds.), *Handbook of Stress.* New York: Free Press.

-
- ¹⁹⁴ Liem, R. Unemployment and mental health: Implication for human service policy. *Policy Studies Journal*. 1981; 10: 350-364.
- ¹⁹⁵ Park, J. & Nelson, C.H. The investigation of stress in resource-dependent communities: The effect of rapid socioeconomic changes on mental health service use. *International Journal of Circumpolar Health*. 1998; 57S(1):432-8.
- ¹⁹⁶ D'Arcy, C, & Siddique, C.M. 1987. "Health and Unemployment: Findings from a National Survey." in D. Coburn et al. (eds.) *Health and Canadian Society: Sociological Perspectives*. (2nd Ed.) Richmond Hill: Fitzhenry & Whiteside.
- ¹⁹⁷ Park, J. & Nelson, C.H. The investigation of stress in resource-dependent communities: The effect of rapid socioeconomic changes on mental health service use. *International Journal of Circumpolar Health*. 1998; 57S(1):432-8.
- ¹⁹⁸ Brown, R.B., Dorius, S.F. & Krannich, R.S. The boom-bust-recovery cycle: Dynamics of change in community satisfaction and social integration in Delta, Utah. *Rural Sociology*. 2005; 70(1): 28-49.
- ¹⁹⁹ Smith, M.D., Krannich, R.S. & Hunter, L.M. Growth, decline, stability, and disruption: A longitudinal analysis of social well-being in four Western rural communities. *Rural Sociology*. 2001; 66(3): 425-450.
- ²⁰⁰ Brown, R.B., Dorius, S.F. & Krannich, R.S. The boom-bust-recovery cycle: Dynamics of change in community satisfaction and social integration in Delta, Utah. *Rural Sociology*. 2005; 70(1): 28-49.
- ²⁰¹ Walisser, B., Mueller, B. & McLean C. *The world urban forum 2006, Vancouver working group discussion paper : The resilient city*. Found at: <http://www.wd.gc.ca/images/content/DOCUMENT-Vancouver Working Group on Urban Issues-Resilient.pdf>. Accessed May 22, 2008.
- ²⁰² Community Resilience Project Team. *The community resilience manual*. Found at: <http://www.cedworks.com/files/pdf/free/MW100410.pdf>. Accessed May 22, 2008.
- ²⁰³ Bishop, M. & Robinson, D. 1997. Layoffs and municipal finance: The case of Elliot Lake. Found at: <http://inord.laurentian.ca/pdf/1a5.PDF>. Accessed May 21, 2008.
- ²⁰⁴ Bickel, G., Nord, M., Price, Hamilton, C.W. & Cook, J. 2000. *Measuring food security in the United States: Guide to measuring household food security*. Washington: United States Department of Agriculture.
- ²⁰⁵ Cole, T.J., Bellizzi, M.C., Flegal, K.M. & Dietz, W.H. Establishing a standard definition for child overweight and obesity worldwide : International survey. *British Medical Journal*. 2000; 320: 1-6.
- ²⁰⁶ Statistics Canada. Appendix F: Derived variables. *National Population Health Survey: 1994-95 Public Use Microdata File (82F0001XCB)* Ottawa: Minister of Industry 1995; 17-20.
- ²⁰⁷ Stephens, T., Craig, C.L. & Ferris, B.F. Adult physical activity in Canada: Findings from the Canada Fitness Survey. *Canadian Journal of Public Health*. 1986; 77(4): 285-290.

²⁰⁸ Statistics Canada. Appendix F: Derived variables. *National Population Health Survey: 1994-95 Public Use Microdata File* (Catalogue 82F0001XCB) Ottawa: Minister of Industry 1995; 17-20.