GPI Atlantic

Final Report to Canadian Population Health Initiative

DEVELOPMENT AND APPLICATION OF COMMUNITY HEALTH INDICATORS

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Main Research and Policy Findings

- Extensive consultations were held with more than 40 community groups in rural Kings County and in Glace Bay in industrial Cape Breton, Nova Scotia, to select indicators of community health and wellbeing and to create an extensive, detailed 2.5 hour survey on health outcomes and determinants.
- Community members were trained to test and administer the survey to a random sample of 3,600 residents 15 and older. This large sample size allowed for two cross tabulations with a 95% confidence level and margin of error of +/- 3%. The survey response rate was 82% in Glace Bay and more than 70% in Kings County. Statistics Canada's Social Survey Methods Division provided detailed advice on survey design, testing, and administration.
- A database was designed by the Population Health Research Unit (PHRU) at Dalhousie University. The data were entered (by community members trained for the task), and then cleaned and processed by PHRU experts. The new database constitutes the most detailed set of community-level data on population health available in Canada. Data access guidelines were developed to provide a template for community-based population health research nationwide.
- A key recommendation of this study is that CPHI publicize the availability of this remarkable new database to population health researchers nationwide, as it is unique in providing detailed information *from the same respondents* on a wide variety of health determinants. As such, it represents an unparalleled opportunity to conduct sophisticated analyses at the community level to establish linkages among diverse health determinants and to assess and compare their relative effect on health outcomes.
- Research using the new database is revealing important relationships between health outcomes and determinants like voluntary work, time use, unemployment, income, crime, caregiving, and health behaviours. For example:
  - Findings confirm previously established relationships between unemployment and poor health, between low income and poor health, between low educational attainment and poor health, and between tobacco use and poor health.
  - *New* findings indicate that discouraged workers have poorer health even than the unemployed; that the gradient of income-related health inequality (IRHI) is steeper in Glace Bay and Kings than in Canada as a whole; and that (among educational levels) only a university-level education significantly affects IRHI. The tobacco research indicates that smoking rates are high at the community college level (suggesting the value of targeted interventions in that setting). Other research shows that caregivers generally have poorer physical and mental health outcomes than non-caregivers, and higher rates of medication use.
- Results have been reported to community stakeholders and policy planners in dedicated workshops, and in some cases have already been translated into local-level action. Two community-based societies have been established to sustain and continue the project. The involvement of community groups in every aspect of this CPHI research program indicates that community empowerment and capacity building may themselves be key ingredients in improving population health.

Executive Summary

The key outcomes of this CPHI research program are:

1. Extensive consultations were held with more than 40 community groups in two Nova Scotia communities – rural Kings County and Glace Bay in industrial Cape Breton – to select community-level indicators of population health and wellbeing. A detailed 2-3 hour survey on a wide range of population health determinants and health outcomes was created, tested, and administered to more than 3,600 respondents in both communities. Survey design and testing were in consultation with Statistics Canada's Social Survey Methods Division. The sample size allows for two cross tabulations (e.g. gender and age) with a 95% confidence level and a margin of error of +/- 3%. The response rate was 82% in Glace Bay and more than 70% in Kings County.

2. The data were entered, cleaned, and processed to create a remarkable new database that now constitutes the most detailed set of community-level data on population health available in Canada. That database is now available to researchers throughout Canada and allows correlations to be drawn between health status, health outcomes and a wide range of health determinants. New research on relationships between voluntary work and health, between time use and health, and on other issues is being conducted using this database.

3. In consultation with academics and community partners, data access guidelines have been put in place that can serve as a template for community-based population health research throughout Canada. The data access guidelines are available at http://discovery.uccb.ns.ca/glacebay_gpi/dataaccess.html and are reproduced as Appendices 21 and 22 of this report.

4. The data have been and are continuing to be analyzed, with results presented in written reports, PowerPoint presentations, community workshops, a newsletter recently distributed to all Glace Bay households, meetings with policy actors, and other formats. Research has been undertaken on employment and health, tobacco use, peace and security as a determinant of health and wellbeing, the health of caregivers, and other issues. A key focus is on policy implications of the results and on working with community leaders to use the data to improve community health and wellbeing.

5. Community groups are involved and participating in every aspect of this CPHI research program, including all the steps, processes, and outcomes listed above, to assess the hypothesis that community empowerment and community capacity building are key ingredients in improving population health. Two community-based societies have been established to sustain and continue the project.

6. This CPHI program has spawned several important new research projects and activities that are currently ongoing, as described in more detail in this report, including further work on the relationships between employment and health, and between voluntary work and health.

Key research results to date include the following. (Please see section 6 of this final report and the Appendices for more detail):

1. The research on employment and health confirms other studies indicating significant correlations between unemployment and poor health. Within each community, the unemployed generally had worse health status than the employed, and discouraged workers had poorer physical and mental health even than the unemployed. The survey results also point to a relationship between job insecurity (such as threat of layoff) and poor health. Glace Bay, with substantially higher unemployment rates than Kings County, also reported higher rates of activity limitation, disability, and some chronic diseases, but not poorer self-reported health or stress. It is hypothesized that stronger social supports and social networks in Glace Bay may ameliorate some of the potentially adverse health impacts that may result from lower socio-economic status.

2. Kings County respondents were much more likely to report high stress than their counterparts in Glace Bay. Interestingly, the highest and lowest income groups reported the highest stress levels, although for different reasons. High income earners were more likely to report stress due to overwork – too many demands and too long hours – while low-income earners were stressed by poverty and inadequate resources. The results point to the value of exploring European experiments in re-distribution of work hours. Unemployment and shift work were associated with lower levels of life satisfaction, though not with stress.

3. Income-related health inequality (IRHI) shows a steeper gradient in Kings County and Glace Bay than the Canadian average. Concentration indices and concentration curves based on the Kings and Glace Bay data found that income, a university education, employment, and the presence of disabilities and activity limitations were key factors in determining IRHI.

4. Glace Bay residents have much higher rates of smoking and nicotine addiction than those in Kings County. Confirming other studies, the unemployed in both locations registered far higher rates of smoking than those with jobs. With the exception of community college graduates, who registered very high rates of smoking, tobacco use was generally inversely related to educational attainment. However, smoking was highly correlated with stress. Confirming earlier National Population Health Survey results, there are appears to be a gradient, with higher rates of stress associated with greater propensity to smoke. A separate study of teenage smoking found teenage girls much more likely to smoke than teenage boys, and also to have started smoking at younger ages. Among daily smokers, however, young women smoked fewer cigarettes than young men.

5. Caregivers generally reported poorer physical and mental health than non-caregivers, registering lower levels of self-reported health, more activity limitations, higher stress rates, more time pressures, poorer mental health, elevated levels of feeling nervous, worthless, and unhappy, and higher rates of medication use including anti-depressants. However, they were generally not more likely to use health care services

than non-caregivers, except that they consulted mental health practitioners more often. It is hypothesized that time pressures and stresses, as well as responsibilities for those under their care, may discourage caregivers from visiting physicians even when they feel sick. The results point to an urgent need for both financial and social supports for unpaid caregivers.

6. Despite their higher socio-economic status, Kings County residents were nearly twice as likely to be victims of crime than their counterparts in Glace Bay, casting some doubt on the conventional wisdom that low income and high unemployment are more likely to produce crime and victimization. It is hypothesized that higher levels of social support and stronger social networks in Glace Bay may ameliorate some of the potentially negative health and justice consequences of adverse economic circumstances and conditions.

7. Interestingly, attitudes towards the justice system seemed more determined by gender and education than by income, employment, and economic circumstances. Higher levels of education were significantly associated with attitudes favouring tight gun control, legalisation of marijuana, and feeling that the justice system is not fair to all. Women were significantly more likely than men to favour tight gun control, to oppose the legalization of marijuana, and to think the justice system is fair to all. Significant correlations on these issues were far less likely to occur according to income, employment, and economic status.

8. Research was also conducted on the relationship between voluntary work and health, on the core values of respondents, and on their use of time as revealed by a two-day time diary included in the survey. Results of these analyses are summarized in this report, and explained in more detail in the Appendices. Analysis was also conducted on open-ended questions answered by respondents, indicating issues they considered important to their wellbeing, and on hypotheses generated by the respondents themselves in these open-ended questions. Issues emphasized by respondents as being of key importance in determining community wellbeing were (in order of frequency mentioned): decent jobs, good health care, clean water, aesthetic quality, meaningful activities for youth, and safety from crime.

These and other results were presented to community groups, stakeholders, and policy planners at workshops, and in some cases led to action and initiatives designed to improve community wellbeing. The research team requests CPHI to publicize the existence of this remarkable new database to population health researchers nationwide. The database represents an unparalleled opportunity for researchers to investigate the determinants of health at the community level, and is unique in providing detailed information on a wide variety of health determinants from the same respondents. The potential exists for these two communities to become models of the effective application of community level population health indicators, and for the experiment to be applied in other communities in light of lessons learned.

Final Report

1. Research Problem / Context

With the exception of the Census, Statistics Canada's survey sample sizes are not large enough to provide community-level data on population health and its determinants. Since 2000, the expanded sample size of the Canadian Community Health Survey (CCHS) for the first time provided data at the level of the health region – a vast improvement over earlier National Population Health Survey data based on smaller sample sizes. However, health outcomes and issues of job security, safety, air and water quality, social supports, and other key health determinants may vary widely between communities, and are often meaningful only at more local levels. Nationwide, communities like Glace Bay and Kings County, Nova Scotia, do not have information on such basic issues as rates of smoking, obesity, physical inactivity, low income, and job security, as these data are only available at the health region or economic region levels.

The current lack of community-level information prevents communities from assessing whether they are making progress and inhibits potential local action to improve community health and wellbeing. Frequently, local and municipal policy makers do not have the practical information they need to prevent the causes of preventable illness, and to make their communities healthier and more secure. Communities frequently seek ways to accurately assess their wellbeing, to measure their progress genuinely, and to implement community development strategies that address the issues that matter to them. It is also hypothesized that community empowerment and community capacity building are themselves key ingredients in improving population health at the local level. However, these community-level measures and strategies remain rare.

With funding from the Canadian Population Health Initiative, GPI Atlantic therefore undertook to develop practical indicators of health and wellbeing at the community level. Partners included academics from four Nova Scotia universities (Dalhousie University's Population Health Research Unit, Acadia University, Cape Breton University, and Saint Mary's University), the Nova Scotia Citizens for Community Development Society, and a wide range of community groups. After due consideration, Kings County and Glace Bay were selected as pilot programs, both because of the interest and enthusiasm expressed by community groups and government agencies in those areas, and because of the socio-economic-demographic contrast between the two communities.

The survey instrument, community consultation process, indicator selection, results, policy applications, and lessons learned were intended to provide useful information for communities throughout Canada that are interested in developing their own measures of health, wellbeing and progress. As well, the administration of a far-reaching survey on a wide range of health determinants was intended to stimulate important new comparative research that could yield sophisticated analyses at the community level to establish linkages among diverse health determinants and to assess and compare their relative effect on health outcomes.

2. Methodology

Community groups were involved in every aspect of this CPHI research program, both to assess the degree to which communities may be capable of developing indicators and acquiring the needed information to improve their wellbeing, largely by themselves with some expert guidance, and also to test the hypothesis that community empowerment and capacity building may be key ingredients in improving population health. Extensive consultations were therefore held with more than 40 community groups to identify and select community-level indicators of health and wellbeing that reflected key concerns and interests. Particular community concerns were balanced against the need to produce information that was comparable to existing provincial and national data sets.

The community consultations revolved around three basic questions:

- "What do you see as the key factors that determine the health and wellbeing of this community?"
- "What kind of community do you want to see 10, 15, 20 years from now?"
- "How can we measure our progress in achieving those goals?"

The research team asked community groups to define what a healthy community meant to them, and how they would know if they were achieving that goal. After working with researchers to select appropriate indicators, community groups then participated in the actual design of the survey and of the specific questions intended to elicit the data required to populate the selected indicators.

The questionnaire included many questions on health status, health behaviours, and health outcomes, and many others on the social and economic determinants of health and wellbeing, like employment and job characteristics, income, social supports, voluntary work and caregiving, education, time use, and other key issues.

Following the community consultation, indicator selection, and questionnaire construction process, Statistics Canada surveys were examined to ensure that questions were framed in such a way that results would be comparable to provincial and national data. As a result, the Kings County and Glace Bay surveys constructed and administered in this CPHI research program contain many questions that match those in Statistics Canada's National Population Health Surveys, General Social Surveys, Labour Force Surveys, national volunteer surveys, and other survey instruments, to allow valid comparison of community indicator results with national and provincial averages.

Statistics Canada's Social Survey Methods Division was extensively consulted on survey methods, design, sample size, and formatting, and provided expert assistance to ensure that results would be statistically valid. The surveys were carefully tested in both communities and revised in light of survey responses, with Statistics Canada assistance, to ensure that phrasing was unambiguous and that results would be meaningful.

In 2002, the Community GPI survey was administered to 1,900 residents of Kings County and 1,700 residents of Glace Bay. All respondents signed carefully developed consent forms approved as part of Dalhousie University's Ethics Review process. Considering that the survey covered a very wide range of wellbeing indicators, took an

average of two hours to complete, and was completely voluntary, there was a remarkably good response – more than 70% in Kings County and 82% in Glace Bay. The 3,600 completed surveys represent that response rate and provide a large enough sample size to allow two statistically valid cross-tabulations for all responses. Results can be broken down by sex, age, marital status, education level, income, employment status, and a wide range of other socio-economic and demographic variables. For up to two cross-tabulations, there is a 95% confidence level with a margin of error of plus or minus 3% – providing a very high level of statistical validity.

In 2002-2003, data were entered into a unique new database designed by Dalhousie University's Population Health Research Unit (PHRU) and Saint Mary's University's Time Use Research Program. Data were carefully cleaned and processed, and the database was redesigned as necessary to allow the results to be properly analyzed and for different elements of the survey to be correlated with each other. This was not an easy process and we encountered unexpected difficulties at this stage. In fact, at a certain point, PHRU decided that it was necessary to re-design the entire database, which necessitated re-entering all the results entered to that point. Despite these developmental challenges and difficulties, they were carefully dealt with and effectively overcome. We are very pleased with the quality of the final results and we believe the new database will be a remarkably valuable tool for population health researchers throughout the country.

In early 2003, after extensive on-site consultations with university researchers and community groups, a set of data access guidelines was developed to balance the complete confidentiality ensured to respondents and ready access to the data by researchers. We believe these data access guidelines can provide a useful template for CPHI in its future support of community-based research and for researchers across the country. By the middle of 2003, research teams had been developed at four universities – Acadia University in Kings County, UCCB in industrial Cape Breton, Dalhousie University, and Saint Mary's University. This entire process was coordinated and managed by GPI Atlantic, and GPI Atlantic researchers participated in all steps of the process.

One noteworthy aspect of the process was the active participation of community groups at every step. As noted above, community groups and individuals from the two communities helped select the indicators and design the questionnaire. More than 20 residents each from Glace Bay and Kings County were then trained to administer the survey, which they did very successfully. Counting their supervisors, 46 Glace Bay and Kings County residents were employed at the height of the survey administration process. We attribute the high response rate both to the quality of the survey staff, and to efforts made to educate the local populace about the purpose and utility of the survey and of the program as a whole.

Residents of Glace Bay, many of whom had never used a computer before, were then trained in data entry and data processing, and entered all the survey data. All entries were double-checked by community members under the careful supervision of trained staff. Three Glace Bay residents with real leadership potential (including two wives of

out-of-work coal miners), were trained to direct the survey administration and data entry, and these two women were sent on a week-long leadership training course. All three of these leaders are represented on the Executive Committee of the Glace Bay GPI Society which was formed as a direct result of this CPHI research program in order to continue the process into the future.

By mid-2003, Canada's most detailed community-level population health indicators were ready for analysis, with Glace Bay and Kings County, Nova Scotia, now having more information available about themselves than any comparable communities anywhere in the country. A key research hypothesis was that such detailed knowledge has the capacity to empower communities to understand themselves and the determinants of their health better, to analyze their strengths and weaknesses, and to take concrete and practical action to improve their health and wellbeing.

From a research perspective, it is significant that there have not previously been surveys at the community level, including by Statistics Canada, that examine such a broad range of health determinants and health outcomes *within the same survey administered to the same respondents.* This allows first-time correlations between different aspects of community health and wellbeing and their social determinants, so that integrated assessments can be made, and policies devised that take into account a more complete range of social and economic factors than is normally considered.

The next key steps in this CPHI research program were: (1) to analyze the results; and (2) to report those results effectively to the communities. This would allow community groups and local policy makers to begin identifying appropriate evidence-based actions and policy responses, and to designate the most important indicators they would use as annual benchmarks of progress. This is the stage at which the longer-term research program can be transformed from a largely technical data gathering, data entry, data cleaning, database design, and data analysis process guided by experts into a tool for community action and improvement used directly by citizens. This transition – presenting results to community groups in such a way that they can be used to improve community health and wellbeing – began in 2003 and continues at present.

The final stage of the CPHI research program was therefore designed to enhance community capacity building, which in the longer term, was hypothesized to contribute to community health and wellbeing. The CPHI research program itself cannot assess whether the community empowerment and capacity building process actually succeeds in producing better health outcomes, as that is a very long-term process. However, the research program was designed to be sustainable and to continue long after the CPHI-funded phase ended. Thus, one of the final stages of the program was the formation of two community-based groups – the Kings GPI Society and the Glace Bay GPI Society – consisting of Acadia and Cape Breton University academics and community representatives. These two new non-profit groups now legally own the community health indicators data (which are securely stored at Acadia and Cape Breton Universities),

administer the data access guidelines, and are committed to the long-term sustainability of the community health indicators projects in their respective communities.

The results produced by the CPHI research program are detailed baseline data. But, as noted above, indicators of progress are intended to be long-term tools designed to measure progress towards agreed community goals on a regular basis. The questionnaire content is consistent with understanding about the determinants of population health and wellbeing, and includes not only direct questions on health status, health behaviours, pain and disability, activity limitations, chronic conditions, medication use, and health service utilization, but also questions on livelihood security, employment, income, education, social support, volunteer work, time use, and other key determinants of health. Once community groups have digested the results of this survey in the coming two years, they intend to select key, headline indicators of progress on all these issues to track over time.

Since mid-2003, the most important developmental steps undertaken have been research analysis, the reporting of results to the Kings County and Glace Bay communities, and the creation of workshops that would assist community leaders and policy actors to understand and digest the results effectively and to turn those results into action. The next section contains a very brief summary of some of the key research results of the last two years. For further details on these research projects and for more research results, please see the research papers and presentations attached as appendices to this report, visit the Community GPI web page at www.gpiatlantic.org, and visit the Glace Bay GPI Web site at: http://discovery.uccb.ns.ca/glacebay_gpi/.

It is important to note that research methodologies differ for the different analytical research projects that have been undertaken on the basis of the new community health indicators database, depending on the subject of analysis and the research task. For example, a recent analysis of income-related health inequality (IRHI) in Kings County and Glace Bay used concentration indices and concentration curves to assess the key determinants of IRHI, whereas other statistical techniques were used in other analyses. The methodologies for each of the separate research projects based on the new database are described in the research papers appended to this report.

3. Research Findings

In-depth research to date, based on the community health survey results, has focussed on five major areas of inquiry – income-related health inequality; employment, job security and health; tobacco use; caregiving and health; and personal security. Results were also analyzed and presented in four additional areas: core community values; time use and health; the health of discouraged workers; and analysis of open-ended survey questions in which participants were asked to identify issues of key importance to their wellbeing. Papers and PowerPoint presentations on these results are appended to this report and summarized here. As well, a major additional research project on volunteerism and health is now under way based on the community health survey data. Preliminary results are attached to this report. This section summarizes key results from this research

to date, with the lead researchers and authors listed in parentheses after each topic area. The employment, income and health results are summarized in more detail, and results on tobacco use, caregiving, and security are summarized more briefly. References are not footnoted in this summary but are available in the full papers that are attached as appendices to this report.

3.1 Employment, Income, and Health *(Michael Pennock, Research Director, Population Health Research Unit, Dalhousie University; and Sean Rogers, Ph.D, assistant professor, Economics, Dalhousie University)*

The purpose of this paper was to examine the relationship between health and employment in two communities with very different employment profiles. Glace Bay in Cape Breton has a history of economic insecurity and population decline. Heavily invested in the mining industry, the area has suffered a major economic setback with the closing of area coal mining operations. Kings County is one of the more affluent rural areas in Nova Scotia with a strong agricultural base, as well as active logging, fishing, manufacturing and service industries. The unemployment rate in Glace Bay is generally twice as high as the corresponding rate in Kings County and average incomes are seventy to eighty percent lower. This paper utilized the results of this survey to explore three issues: (1) The relationship between health status and labour force activity; (2) The role of employment-related stress; and (3) The relationship between stress and income.

Somewhat unexpectedly, in light of an extensive literature review, analyses of the Glace Bay and Kings County survey results found that the traditional economic problems of Glace Bay, relative to Kings County, did not result in lower self-reported health status or higher stress levels. There was some indication of more frequent health problems in Glace Bay (activity limitations, disabilities and some chronic diseases) but these differences were not reflected in lower ratings of self-reported health status. Based on the outcomes of the peace and security results (see below), it is surmised here that higher levels of social supports in Glace Bay ameliorated some of the potentially adverse health impacts of poor employment conditions by comparison with Kings County, which has better employment conditions but apparently lower levels of social support and cohesion.

Nevertheless, our study confirmed the results of earlier studies concerning the relationship between poor health status and unemployment. The unemployed in both Glace Bay and Kings County were more likely to report poor or fair health than the employed. Important differences between the two communities did emerge, however, with respect to specific labour force activity groups. Most notably, there were significantly higher rates of poor or fair health among employed persons in Kings County than among employed persons in Glace Bay. Similarly, a substantially higher proportion of persons with poor/fair health were employed in Kings County. This difference did not appear to be due to problems of physical disability among persons of poor health. It appears, therefore, that the more favourable economic conditions and circumstances of Kings County create more employment opportunities for persons who rate their health as

poor or fair, and that worse health is therefore less of a barrier to employment in Kings County.

The relationship between work and stress emerged as more complex. Asked to rate the level of stress in their lives, Kings County respondents were significantly more likely to report that their lives as somewhat or very stressful than the Glace Bay group, despite the superior economic circumstances in Kings County. The elevated stress levels were apparent in both employed and unemployed respondents in Kings County. These results suggested that the higher rates of stress in Kings County were due to both higher levels of job stress and a higher level of stress associated with unemployment.

A series of subsequent analyses confirmed the tentative conclusions pertaining to job stresses. Employed Kings County respondents were significantly more likely to report stresses related to excess demands, excess hours, too little autonomy, interpersonal problems and other sources. Glace-Bay respondents were significantly more likely to report stresses related to the threat of layoffs and the potential for accidents/injuries on the job. Overall, Kings County residents reported more job-related stress than Glace-Bay respondents, and levels of job-stress were strongly related to reported levels of life-stress.

Unemployment or shift work was not strongly related to stress but both emerged as important predictors of lower levels of life-satisfaction, while the job-related stress factors were not related to satisfaction. These results strongly suggest that different employment-related factors affect life-stress and life-satisfaction. Whereas stress was predicted by job-related problems such as too many demands and too many hours, life-satisfaction was not. By contrast, working shifts or being unemployed did not appear to predict life-stress but arose as important predictors of life-satisfaction. Job stressors such as “too many demands” were not predictive of life-satisfaction. In fact, the results may indicate that people who like their jobs (and thus have higher levels of life satisfaction) also overwork and thus experience high stress. This hypothesis requires further study.

The analysis also identified a complex relationship between income and stress within these two communities. In both groups, the relationship was U-shaped, with the highest levels of reported stress occurring at the lowest and highest income groups and the lowest level of stress reported in the middle-income group. The higher levels of stress in Kings County were only apparent in the middle and higher income groups. There was no significant difference between Glace Bay and Kings County in the reported life-stress of persons with a household income of less than twenty thousand dollars.

To some extent, the income-stress distribution at the upper end of the income spectrum appeared to be attributable to job stresses. Significant differences arose between the income groups with respect to demands, hours and interpersonal relationships, with the middle and higher income groups reporting higher levels of stress. There were no significant differences in autonomy, risk, fear of lay-offs or “other.” In each of the significant stressors, the higher income group reported somewhat higher rates of stress than the middle group, but the most pronounced difference between the groups was in

"working too many hours," – with each increase in income related to a significant increase in stress due to apparent overwork.

These results might account for the upper half of the U-shaped relationship between stress and income. In other words, as income increases, the demands and pressures of work also increase. If this were the only factor at work, the relationship between stress and income would be linear in nature, with lower income persons experiencing the least stress. In reality, their reported levels of stress are as high as the upper income respondents but the sources of this stress do not appear to be related to work demands. Clearly, there are a variety of other poverty-related stresses which are operating at the lower end of the income spectrum.

In light of the serious demonstrated health consequences of stress, the results indicate a need to consider the trade-offs that occur when people work longer hours to earn more money. They also demonstrate the need to consider new policy options that have been successfully tried in Europe – like a redistribution of work hours that can reduce the hours of the over-worked while making more hours available to the unemployed and underemployed.

Further investigation, undertaken by Dr. Sean Rogers, Dalhousie University, examined income-related health inequality (IRHI) and found employment, a university education, and presence of disabilities and activity restrictions to be significant predictors of IRHI. Comparative analysis also found IRHI to be greater in the two Nova Scotia communities than in Canada as a whole, and significantly greater than in all European countries bar one.

3.2 Tobacco Use *(Mark Raymond, Ph.D, Economics Department, St. Mary's University; and Peter MacIntyre, Ph.D, Cape Breton University; plus report on Youth and Teenage Smoking by Dr. Glyn Bissix and Liesel Carlsson, Acadia University)*

Raymond and MacIntyre found significant differences in the incidence of cigarette smoking between respondents in Glace Bay and Kings County. The analysis also found that employment status is significantly correlated with cigarette smoking, and that higher levels of education are correlated with lower smoking rates. Results were presented to community groups, community health boards, public health officials, addictions counsellors, local doctors, school representatives, and others. These presentations and workshops led to tobacco reduction activities in both communities, particularly among teenagers, including approaches to local school principals to adopt the exemplary Smoke-Free for Life smoking prevention curriculum.

The study found far higher rates of tobacco use and nicotine addiction in Glace Bay than in Kings County. This was also the case for cigarette smoking in the home – a key indicator of exposure to second-hand smoke among children and spouses of smokers. Unemployed respondents in both communities were much more likely to be daily smokers than respondents who were employed, students, homemakers or retired, after controlling for location, gender, age, household earnings, and education. After controlling

for location, gender, age, household income, and employment status, the study found that the higher the education level, the less likely a respondent was to be a cigarette smoker. Respondents recording their lives as very stressful or somewhat stressful were significantly more likely to be daily or occasional cigarette smokers, after accounting for location, gender, age, household income, education level and employment status.

Bissix and Carlsson's profile of youth smoking in Kings County found that of the 21% of youth who currently smoke, two thirds are female. Fifteen to 17 year old females who smoke daily began to smoke at a mean age of 13, whereas males of the same age group began at 15. Even among the 20 to 24 year olds, women began to smoke one year earlier than men (16 vs. 17 years old). However, 20-24 year old males smoked significantly more cigarettes than their female counterparts ($P<0.005$) – an average of 19 cigarettes a day compared to 12 cigarettes for females. Forty-three per cent of youth lived with a smoker, and over half of those lived with a smoker who smoked *inside the house*. Significantly more ($P<0.001$) current youth smokers lived in a home with a regular smoker (83%) than in a non-smoking household (17%).

3.3 Caregiving and Health *(Deborah Kiceniuk, Ph.D, Population Health Research Unit, Dalhousie University)*

The gradual de-institutionalization of health care in Canada has shifted a considerable portion of long-term health care from hospitals to private homes and put an increasing burden on unpaid caregivers. Yet there has been little substantive research assessing the implications of this major shift for the health of caregivers. Kiceniuk study found that caregivers have significantly lower perceived health status than non-caregivers, as well as more activity limitations, higher chronic stress and time stress levels, elevated feelings of nervousness and worthlessness, and less happiness in their lives. Caregivers also used more anti-inflammatory medication, anti-depressants, sleeping pills, stomach remedies, and asthma medications, and visited mental health professionals more frequently.

3.4 Physical Security and Wellbeing *(Mark Raymond, Ph.D, Economics Department, St. Mary's University, and Peter MacIntyre, Ph.D, Psychology Department, Cape Breton University)*

CIHI and Statistics Canada now acknowledge physical safety and security as a key non-medical determinant of health, and Statistics Canada regularly reports crime rates among its Health Indicators. In this initial analysis Raymond and MacIntyre considered peace and security as a key component of community wellbeing. Further analysis is required to assess the correlation between these initial results and specific health outcomes. Abundant evidence in the literature indicates that both health and physical security may have similar social and economic determinants. Unemployment, for example, is associated both with poorer health and higher crime rates, and those in contact with the justice system have higher rates of smoking, and of alcohol and drug

abuse. Thus, job creation and addiction treatment can be seen both as health promotion and crime prevention strategies.

The most significant finding in this area was that respondents in Kings County were almost twice as likely as those in Glace Bay to have been victims of crime in the past five years. The victimization results sharply contradict established wisdom that victimization, like disease, is associated with lower incomes, higher unemployment rates, and lower educational attainment – all of which are more prevalent in Glace Bay than in Kings County. This leads us to hypothesize that stronger social supports and social networks in Glace Bay may ameliorate some of the expected adverse health and security consequences of more difficult economic circumstances. Further analyses were undertaken on attitudes towards the justice system and on respondents' perceptions of the most significant safety and security issues in their communities.

These and other results were presented to community groups, including representatives of victim services agencies, public health officials, community leaders, police services, and others, in both Kings County and Glace Bay in 2003-04. A representative of Justice Canada attended the Glace Bay meetings, and the results were also presented at a press conference and well reported on CBC-Radio, and in both *The Chronicle-Herald* and *Cape Breton Post.*

3.5 Health of Discouraged Workers *(Andrew Harvey, Ph.D, Director, Time Use Research Program, St. Mary's University)*

The discouraged unemployed are defined as those workers who have given up looking for work. It was hypothesized that the discouraged attitude will reinforce and may even exacerbate the already adverse effects of being unemployed, and will negatively affect physical and mental health to an even greater extent than among those who have lost jobs but are still actively looking for work. The detailed information on employment characteristics in the community health indicators survey allowed a workable classification of labour force attachment to be developed, consisting of those (1) in the labour force who are employed (2) in the labour force actively looking for work but still unemployed, (3) not in the labour force, (4) discouraged unemployed workers (5) Other.

Dr. Harvey's paper examined the relationship between labour force status and health – specifically self-perceived health, and health status suggested or implied from responses to questions dealing with smoking, exercise, and pain or discomfort. The unemployed, those not in the labour force, and discouraged workers all showed significantly poorer health than persons in the labour force. Discouraged workers showed significantly worse health than those not in the labour force. Both the unemployed and discouraged workers showed significantly worse health than the employed – as expected. However, it was interesting to find that discouraged workers also had significantly worse health than the unemployed. The Glace Bay and Kings County community health survey evidence therefore supports the hypothesis that, not only does the relationship between

unemployment and poor health exist as demonstrated by evidence in the literature, but also that this relationship is even stronger (worse) for the discouraged unemployed than for those who are officially unemployed and still actively looking for work.

Analysis of the survey data also showed an impressively strong relationship between being discouraged and significantly worse mental health. For mental health, no significant differences appeared between those in the labour force and those not in the labour force. However, significantly higher results appeared between discouraged workers and those in the labour force for six out of eight survey questions relating to mental health. Furthermore, discouraged workers also registered significantly higher stress levels than those not in the labour force for six out of eight stress-related questions.

The study found that being a discouraged worker in some situations had a more deleterious effect on both physical and mental health than simply being unemployed. It was also found that lack of social support further exacerbated these health problems among discouraged workers. In no case was it found that unemployed persons were worse off relative to discouraged workers in terms of their physical and mental health. The research suggests that greater attention needs to be paid to the special case of discouraged workers with respect to impacts on physical and mental health.

3.6 Time Use and Wellbeing *(Andrew Harvey, Ph.D, Director, Time Use Research Program, St. Mary's University)*

The community health survey administered in Kings County and Glace Bay included a two-page time diary, the results of which provide a basic picture of the ways community members use and balance their time, which in turn is recognised as an important determinant of health, wellbeing, and quality of life. The results indicate that considerable differences exist in how men and women use their time. In addition, significant differences between the two communities and among different age groups are also apparent. This paper analyses the results to shed light on some vital current policy issues, including the struggle to balance work and family responsibilities, the gender division of labour, the time spent caregiving within the household, and the quantity and quality of people's leisure time.

As expected, paid work time is much higher in Kings County than in Glace Bay, and men work considerably longer hours for pay than women. By contrast, in Glace Bay, paid work time is very low, and the gap between men and women in average daily hours of paid work is minor. This appears to reflect adaptation to the labour market by women in cases where job opportunities may be in short supply for men. Additionally, the data show a much heavier time allocation to domestic work in Glace Bay. This reflects the shortage of income due to lack of employment, the greater reliance on unpaid household work such as cooking and unpaid child care rather than market substitutes like eating out and paid child care, and the additional time that is available to look after children and undertake such unpaid household work.

Researchers and policy makers have recognised the importance of time in understanding a broad range of issues including but not limited to those discussed in the paper attached to this report. The time use data therefore, when combined with other information in the Glace Bay and Kings County community health surveys, can be used to address a wide array of issues facing these two communities. This initial analysis of basic time use patterns is seen as a precursor to further analysis of the relationship between differing time use patterns and health outcomes. The data collected in this survey compare well with the data collected for Nova Scotia in the 1998 GSS, indicating that community-based time use surveys can provide useful and valid data.

3.7 Core Values, Analysis of Open-Ended Questions, and Respondent-Generated Hypotheses *(Peter MacIntyre, Ph.D, Psychology Department, University of Cape Breton)*

Health and wellbeing are likely the outcomes of a wide range of non-material factors in addition to more accepted economic and social determinants like income, employment, and education. Three initial analyses of the Glace Bay community health survey data begin to explore some of these more elusive determinants of health and wellbeing. Dr. MacIntyre examined:

(1) core respondent values as reported in the community health survey;
(2) open-ended questions at the end of the survey in which respondents were invited to express their own views and describe issues of importance to them that may not have been covered in the survey; and
(3) respondent-generated hypotheses as revealed in these open-ended questions. Dr. MacIntyre analysed the responses to explore causes and correlations suggested by respondents as potential research questions for further exploration.

These short analyses and presentations are appended to this report, and posted on the Glace Bay GPI Web site at http://discovery.uccb.ns.ca/glacebay_gpi/.

The top issues raised by Glace Bay respondents in the open-ended questions at the end of the survey were the following:

Jobs - Over 300 people wrote about the importance of work in Glace Bay. Their concerns included work for youth and adults, better paying jobs, long term employment, and more development of the business sector in Glace Bay.

Healthcare - Almost 200 respondents wrote about wanting better health care, more doctors and nurses, and shorter waiting times. According to the respondents this would not only allow more patients to be helped but would also enable more services to be offered, such as drug counselling for youth.

Water - 150 people wrote about the poor quality of water in Glace Bay. They spoke of their health being in jeopardy, their clothes being ruined, and their frustration at paying a water bill for water they feel they can't use.

Cleaning up Glace Bay - Over 100 respondents wrote about the benefits of cleaning up Glace Bay and revitalizing the downtown sector. The aesthetics of Glace Bay

seem to be an important issue. Respondents seem to link beautifying Glace Bay with the potential to enhance the prosperity of the community by attracting an increased number of tourists, having more shoppers in Glace Bay, and feeling an overall sense of pride. These responses indicated to the researchers the importance of ongoing community consultations on indicator selection. Although the survey contained no questions on aesthetic issues, a significant number of residents spontaneously identified these as an important contribution to wellbeing when given the opportunity to comment on any aspect of wellbeing not covered in the survey.

Youth activities - Almost 100 respondents believed activities for youth to be a very important element of wellbeing, not only for youth but for the community as a whole. According to respondents youth activities alleviate boredom, decrease crime, help youth develop, and keep youth in the community. Many respondents called for development of a pool and/or youth center to keep youth occupied and to provide an alternative to hanging around in the streets. Also a large number of respondents wrote about the importance of keeping youth in Glace Bay as opposed to moving away to work.

Crime - 90 respondents said feeling safe from crime was an important aspect of Glace Bay life. Also, many mentioned feeling secure as vital to a happy life. The police were seen by many respondents as the key to maintaining peace and security, and many felt that the hiring of more police for foot patrols would greatly reduce crime.

3.8 Volunteerism and Health *(Peter MacIntyre, Ph.D, University of Cape Breton)*

This CPHI research program has leveraged funding for additional research using the new Kings County and Glace Bay community health database that is currently under way. This includes the work on income-related health inequality conducted by Dr. Sean Rogers of Dalhousie University mentioned above, which is funded by Health Canada's Health Policy Research Program. Another study, using both the Kings County and Glace Bay results, was undertaken by Dr. Peter MacIntyre for the Canadian Volunteer Initiative on the relationship between volunteerism and health. Preliminary results of that research were presented at a workshop in Sydney, Cape Breton, on May 20, 2004, and are attached as Appendix 19 of this report.

There is mounting empirical evidence that the type of community a person resides in can have a dramatic influence on a person's health status. Much of this research refers to the importance of "social capital" (Lomas, 1998). The community attributes that can facilitate the healthy development of its members has been defined as "…the features of social organization, such as civic participation, norms of reciprocity and trust in others, that facilitate cooperation for mutual benefit" (Kawachi, Kennedy, Lochner and Prothrow-Smith 1997, pg 223). In a number of studies of American states and communities, lower rates of mortality and higher self-reported health status have been associated with higher levels of participation in civic associations and social trust (Kawachi, Kennedy & Glass, 1999). Most of these studies have been ecological in nature in employing aggregate indicators for geographical areas. At an individual level, the

relationship between civic participation and health has not been well studied. The database that has been developed in this CPHI research program includes a variety of measures of health status, social trust, and volunteer participation at an individual level, which invite new types of analysis. A summary of key results from Dr. MacIntyre's initial analysis is provided here. Please refer to Appendix 19 for more details.

The Glace Bay and Kings County survey results indicate that there are significant health advantages to volunteering. On average, the self reports of volunteers suggest that they are in better health, are more satisfied with life in general, are happier, and engage in more physical activity than their non-volunteering counterparts. Although they tend to experience more stress and time pressure, volunteers are less psychologically distressed than non-volunteers. In sum, there appears to be a significant advantage to one's health and wellbeing when one volunteers.

The new community health data enabled Dr. MacIntyre to put together a profile of the typical Glace Bay and Kings County volunteer. The demographic categories with the highest rates of volunteerism are female, between the ages of 45-54, (35-44 in Kings County), married or living common law, employed, typically possessing a grade 9-12 education, and volunteering primarily for religious and sporting organizations.

The information on health outcomes and the profile of a typical volunteer have many implications for the local volunteering community. Equipped with this information, organizations that depend on volunteers can first look at whom they might target for volunteer recruitment and what methods may be more successful in recruiting (for example, the health benefits of volunteering). The information may also be useful in helping these agencies devise strategies to retain volunteers (such as reducing time stress and burnout). Briefings with community groups have focussed on the practical application of the results to voluntary sector initiatives, and on issues like the provision of adequate supports to volunteers to prevent and alleviate potential stress and burnout.

4. Infrastructure Development.

It is not an exaggeration to state that the new community health indicators database for both Kings County and Glace Bay affords unparalleled opportunities for analysis and understanding of health and wellbeing *at the community level* beyond anything that has existed in Canada to date. Here we have a detailed survey that links employment characteristics, income, social supports, voluntary activity, personal security, education, time use, and other important determinants of population health with key information on health behaviours, health status, health outcomes, and health service utilization. Because questions on all these and other factors are asked in the same questionnaire, correlations and linkages among these factors can now be undertaken in ways that have not hitherto been possible from disparate data sets.

With the exception of the Census, Statistics Canada surveys (including the Canadian Community Health Survey and earlier National Population Health Surveys, the General Social Survey, the Survey of Consumer Finances, and the Labour Force Survey)

do not have a sufficient sample size to penetrate to the level of community. The new data provide a remarkable opportunity for these two communities to learn about themselves – their strengths and weaknesses – in ways that were not previously possible, and thereby to understand what they need in order to build on their strengths and overcome their weaknesses in order to improve their health and wellbeing. The large sample size of the survey – 1,700 surveys in Glace Bay and 1,900 in Kings County – allows analysis of results by gender, age and other characteristics without compromising statistical integrity. Because the two communities in which GPI Atlantic undertook the surveys have such different socio-demographic characteristics, the results should also shed light, over time, on what makes some communities healthier and than others.

A further contribution to the population health research infrastructure in Canada lies in the translation of research into meaningful action. This CPHI research program has enabled us not only to make significant progress in examining important relationships between health determinants and health outcomes at the community level, but to experiment with methods of presenting the results in a meaningful way to community groups so that they can use them in practical ways to improve community health and wellbeing. Documentation of these methods, which include stakeholder and policy workshops, press briefings, a local news magazine, and website development, is provided in the Appendices.

One of the most significant contributions of this CPHI-funded research program to Canada's population health research infrastructure is the development of data access guidelines that can provide a template for community-based population health research throughout Canada. The guidelines, developed after extensive consultations with academics and community groups in both target communities, effectively balance confidentiality requirements (which are accentuated at the community level) with as open as possible access to the data. The guidelines, along with data access application forms, are available on the Glace Bay GPI and Kings GPI websites.

The greatest potential contribution of this research program to Canada's population health research infrastructure has not yet been realised, simply because the vast majority of population health researchers in the country do not yet know of the existence of the new database, and its use to date has therefore been restricted to a small number of researchers directly involved in the CPHI program. Therefore, our most important request to CPHI in submitting this final report is to make the existence of this database known to Canadian population health researchers to encourage their use of this unparalleled resource.

5. Implications for Future Research on Population Health in Canada

Three current research projects, all funded separately from this CPHI research program, are now using the Glace Bay and Kings County database to conduct further investigations into key social and economic determinants of population health. Two of

these have been noted above – Dr. Rogers' work on income-related health inequality, and Dr. MacIntyre's work on voluntary work and health. In addition, a detailed analysis of the Kings County income and employment results, funded by HRDC, is being undertaken by Acadia University professor, Dr. Glyn Bissix, to provide guidance and planning advice for job creation strategies in Kings County. Other research and activities based on the Kings County and Glace Bay community health databases are also continuing without specific funding. For example, an Acadia University environmental science professor is using the Kings County data on energy use, transportation, and food consumption, to calculate the Kings County Ecological Footprint. She is doing this work, using the new database, as a class project with her environmental studies class, and is delighted to be able to use local data to teach about global sustainability and human impacts on the environment.

In the longer term, as has been noted above, this CPHI research program has two significant implications for population health research in Canada. First, population health researchers now have available to them an important new database that links data on a wide variety of health determinants with health outcomes, based on a single survey delivered to the same respondents. This allows statistical analysis of the relative importance of different health determinants. In addition, the database contains new information on relationships between health outcomes and time use, unpaid and total work load, and other determinants that have not received sufficient attention in prior research on the social determinants of health.

Secondly, the CPHI research program points to the value of community-based research on population health, the utility of developing community level indicators of population health, and the potential for involving communities directly in all aspects of this process – from indicator selection to survey administration to using the results for positive action to improve community health and wellbeing. In the longer term, it will be possible to assess whether this process succeeds in empowering communities and building their capacity. It is hypothesised that this more direct involvement of communities in learning about their health and wellbeing and in acting to improve their wellbeing may itself contribute to enhanced health.

Finally, the research to date has suggested many specific new areas for future research on population health using the new database. A small sample of such research questions, based on the employment research to date, follows. Future research, using the new database, has also been suggested on the several other topics researched to date, so the following represents only a modest example based on one subject area of the potential of the new database, and of its implications for future research on population health in Canada. Future research on the nexus between employment issues and health has been suggested on:

- the relationship between job stress, life stress, life satisfaction and health outcomes;
- the health status of the *under*employed, particularly involuntary part-time workers;

- the relationship between actual hours of work (including paid and unpaid overtime), health outcomes, and health behaviours; and whether those who are currently overworked want to reduce their work hours in order to alleviate stress. (The community health survey contained a range of questions on this subject).
- the degree to which intervening variables, like strong social supports and social networks, may ameliorate potentially adverse health outcomes due to high unemployment, job insecurity, low income, and other adverse economic conditions and circumstances (this question was suggested by the research conducted to date in Glace Bay).
- the degree to which unpaid caregiving obligations and other forms of voluntary community commitments exacerbate life or work stress, and impact life satisfaction and health outcomes. (The initial analysis on unpaid caregiving and health is described in this report, but results have not yet been correlated with employment data to assess the impacts of respondents' total work burden).

6. Policy, including: (a) identification of policy implications arising from the research, (b) interaction with policy actors; and (c) identification of relevant decision-makers/audiences for the research results

To ensure the sustainability of the CPHI program and its policy penetration at the community level, local community groups and academics formed two new non-profit community-based societies – the Kings and Glace Bay GPI Societies - with the responsibility to maintain the community health indicators project, to use the results to improve community health and wellbeing, and to update the results in new surveys.

Initiatives for change have already been arising naturally as community groups meet to analyse and discuss the results. Three examples from Glace Bay are given here: A 2003 half-day workshop gathered researchers, public health officials, local physicians, community health board members, addictions counsellors, school board representatives, high school officials, parent groups, youth leaders, and community representatives to analyse the tobacco results from the GPI community health survey. The discussion produced an initiative to approach local Glace Bay school principals and school boards to initiate and strengthen school-based smoking prevention programs, including the adoption of the exemplary "Smoke-Free for Life" school-based curriculum that is available but was not being used. It should be noted that, while such action seems obvious, Canadian communities have never before had tobacco use data available at the local and community level. So the shock and immediacy of seeing local results, including high levels of teenage smoking, had an impact at the local level that national and provincial averages cannot possibly have.

The survey results also indicated remarkably high levels of smoking among community college students and graduates. Identifying this particular group prompted the Glace Bay community groups, physicians, and addictions counsellors to urge the public

health officials present at the presentation of results to initiate targeted advertising, literature, and publicity campaigns in the local community college campuses. Participants at this particular workshop noted that the survey results could result in highly *cost-effective* actions, since targeted programs in areas where particular needs had been identified would likely be more effective than blunt across-the-board programs that were not tailored to those needs. Public health officials themselves expressed appreciation for this new information base as an extraordinarily helpful tool in their own health promotion efforts, and they promised to discuss and use the results to initiate actions.

While tobacco reduction among teenagers has value in its own right in saving lives and preventing sickness and addiction, workshop participants remarked that it also plays a role in improving community wellbeing in the larger sense. Participants noted that the extra money youth need to buy cigarettes and feed their addiction frequently leads to petty crime, especially now that cigarette prices have climbed steeply and are not affordable to most teenagers. At a deeper level, the psychological profile of addiction, the poor self-esteem that it nurtures, and the increasing social ostracism associated with smoking all match the profile of delinquency, criminal activity, and other forms of social dysfunction and disengagement. One researcher at the workshop noted that evidence from the epidemiological literature indicates that criminals have higher rates of addictive behaviour. The tobacco reduction initiatives undertaken as a result of the community health indicators work in Kings County and Glace Bay, particularly among teenagers, were therefore seen locally as important activities not only in preventing avoidable premature death and illness and improving the physical health of many individuals, but also in preventing crime and improving community wellbeing in the larger sense.

Another concrete example of the practical (and perhaps unanticipated) translation of the community health indicator results into action and policy use happened when the Glace Bay peace and security results were presented to community groups in 2003. Present at this workshop were community leaders, public health officials, local victim services counsellors, a Justice Canada representative, and the local police chief. At this meeting, Chief Miles Burke, head of the Cape Breton Regional Police Services in Glace Bay, was particularly interested that Glace Bay respondents had identified vandalism as an issue of key concern and one of the major problems in their community. He noted that the police generally respond to assaults, thefts, break-ins, and other such crimes, but that vandalism is generally below or not on their radar screen. He was so interested in learning about this community concern that he promised to discuss it at the very next meeting of his staff and officers, and to begin to direct resources and attention to this problem, which the community had identified in the GPI survey. The same gathering also discussed in detail how to improve victim services offered to crime victims. This is an interesting example of the practical policy utility of community-level health indicators in dealing with the deeper social determinants of health and wellbeing.

Another Glace Bay workshop focussed on the implications of the community health indicators for the wellbeing of young people. As a direct result of this community

health indicators workshop, a new YMCA Youth Leadership Program was initiated. This 30-week program is designed to give eight unemployed youth an opportunity to build and practice their leadership abilities, increase their knowledge of youth health issues, and promote inclusiveness in other community organizations. This pilot program will provide the participants with enhanced employability skills, increased self-confidence, and positive interactions with various parts of the community. They will be working on an after-school tutoring service and delivering presentations to schools on injury prevention, tobacco reduction, and health promotion. The bulk of the program is a 25-week work placement. Host organizations are the Cape Breton District Health Authority, Family Services of Eastern Nova Scotia, and the YMCA of Cape Breton.

One important and unanticipated outcome of this CPHI-funded research program is that discussions on community indicators can be a powerful trigger for creative actions to improve community wellbeing. Aside from the particular survey results and research conducted, one of the most valuable outcomes is the simple fact that the presentation of the population health survey results brings together a wide variety of community groups and government actors in the same room – groups that may otherwise rarely communicate. The discussion sometimes leaves the particular topic area around which the workshop has been organized and addresses other areas of community concern. This is a testimony to the power of a health determinants approach. Since health is seen as a final outcome of a wide range of social and economic factors, this approach naturally opens the door to discussion of deeper, underlying community conditions and issues of importance. In other words, the presentation of the community health survey results creates an excellent forum for wide-ranging discussion and innovative action to improve community wellbeing beyond what any researcher can anticipate when he or she presents particular sets of results.

The health indicator work therefore penetrates policy in unexpected ways by bringing together diverse groups who can then work together to coordinate their actions on key issues of common concern. For example, two workshops (December, 2003, and March, 2004) on the employment and health results in Kings County and Glace Bay brought together employment counsellors, community leaders, and local health authorities who normally do not communicate and who often regard their spheres of action as entirely separate and distinct. Likewise, two workshops on the caregiving results brought together health officials, caregiving groups, and individual caregivers who had not previously communicated. Many caregivers spoke of their usually isolated circumstances and expressed gratitude for the chance to share their concerns and experiences, and to be heard. In fact, most of those present at the meetings on caregiving and health stated that they did not even know of the work of other organizations and were unaware of services and supports that existed. They left the meeting determined to share resources more effectively and to continue to communicate and provide mutual supports.

The community health indicators process therefore has a way of forging alliances and working partnerships that are key to effective, coordinated community action. In both

Kings County and Glace Bay, we have been delighted that the community health boards and public health officials have shown a strong commitment to the process, and that they have been eager to learn and listen to community groups and to use results to improve their own work. Nevertheless, it must be acknowledged that these successes in translating results into action and policy are still ad hoc occurrences rather than a systematic or coordinated process. The new Kings County and Glace Bay GPI Societies are now poised to act as lightning rods for such activity, to integrate important initiatives, and to tackle the long-term task of expanding and using the new community health indicators process to strengthen community initiated change to improve health and wellbeing. In addition to the policy process issues discussed here, each of the specific topic areas analysed to date has produced very specific policy recommendations, which are described in more detail in the addendum and appendices to this report. The new local GPI societies intend to bring those specific action items and policy recommendations identified in the workshops and reports onto their local policy agendas.

While policy actions often focus on needs and gaps, it is important to note that the community health survey results did not only point to problems that needed to be solved, but also to social assets sometimes hidden by the usual emphasis on standard economic growth statistics in assessing progress. Our experience in this research program leads us to believe that the most effective disease prevention initiatives may not be those focussed solely on "problems," but rather may be those aimed at recognizing and building on community strengths and assets. For example, despite its far more severe economic challenges and high unemployment rates, Glace Bay registered significantly lower rates of crime and victimisation than more prosperous Kings County. In this case, our community health survey results revealed a remarkably strong network of social and community ties and support mechanisms in Glace Bay that could be a vitally important asset in preventing crime and improving community health and wellbeing. Because the Glace Bay peace and security results were so positive in a community that has not fared well economically, we decided, with community support, to make the Glace Bay peace and security results the first to be released publicly to the media. In that way, positive numbers and a sense of community pride were the first public messages disseminated from the community health indicators process. The excellent media publicity received on this issue also generated additional community support for the process as a whole.

These issues are a very small sample of the highly interesting and provocative issues that arise when community health indicator results are presented to and discussed with community groups. This short list of examples is by no means comprehensive, but illustrative only. One of the key conclusions is that discussions and policy options based on the community health indicator results often venture into non-conventional and innovative areas that are generally hidden by the usual emphasis on standard economic indicators, and which emerge naturally when a broader range of health and wellbeing indicators are examined.

In general, therefore, this CPHI-funded research program found that a community health indicators process can impact policy by promoting dialogue and partnerships between residents, community leaders, researchers, service providers, and policy makers to identify community needs and priorities that affect health and wellbeing. It can empower residents to act and influence policy makers to improve health and wellbeing by anchoring their concerns in reliable information not previously available. As well, the survey itself provided a means for the community to be heard by key policy actors. We witnessed several cases in which survey results and community recommendations were immediately translated into practical action designed to improve community health and wellbeing. Unlike the more Byzantine policy processes at the provincial and federal levels, where connections between evidence and policy action are often difficult to discern, there appear to be fewer barriers to effective action and policy change at the local level, when strong local evidence is available.

While there is an inevitable tendency to focus on the relevance of the research results for policy formation, one of the most important lessons of this CPHI-funded research program is that policy translation occurred as much in the ***process*** of developing the community indicators as from the actual survey outcomes. For example, a meeting about the community indicators process with the CEO and top staff of the Western Valley District Health Authority in Kings County elicited a strong commitment to use the Kings County Community GPI results and data to strengthen the health authority's overall commitment to public health and to a determinants of health approach to improving population health in Kings County. As well, the indicator selection process itself was highly educational, produced valuable exchanges of information, and encouraged active citizen participation in charting community futures.

7. *Dissemination / Knowledge Transfer*

A key goal of this CPHI research program was to empower communities to act on their own behalf to improve their health and wellbeing through the knowledge and understanding provided by community health indicators. As noted earlier, local and community-level information on health determinants and health outcomes is not generally available through Statistics Canada data. Thus, knowledge transfer was as important an objective of this program as the research itself. This dissemination process was encouraged in several ways – by involving community groups in every aspect of the process, from indicator selection to survey administration to analysis of the results in workshops. Some of these methods have been described in the earlier sections of the report, so only a few additional notes on knowledge transfer are added here.

Dr. Peter MacIntyre of Cape Breton University and his researchers created an excellent Glace Bay GPI website (http://discovery.uccb.ns.ca/glacebay_gpi/) to provide community access to survey results, analysis, reports, and related activities. The Kings County GPI Society recently developed a parallel website for Kings County (http://www.gpikings.org/kings/), and GPI Atlantic also hosts a site providing public

access to all community health indicators reports, PowerPoint presentations, and links to the community GPI websites (http://www.gpiatlantic.org/community.shtml). It is anticipated that these three websites will become the main dissemination and communications tools for new results, and that they will become a major source for further community-based research. Data access guidelines and application forms, which provide a useful template for community-based population health research throughout Canada are available on the Glace Bay and Kings websites at http://discovery.uccb.ns.ca/glacebay_gpi/dataaccess.html and http://www.gpikings.org/kings/data/kingscountydataaccessguidelines.doc.

In 2003, we also experimented with the first releases of survey results to the media, and held our first press conference in Glace Bay. This was very well received, and the results were prominently reported in two daily newspapers and on the CBC province-wide news broadcasts, as well as on CBC call-in and interview programs. Newspaper clippings are attached as an appendix to this report. We have been sensitive to the fact that results should generally be reported to key community groups and stakeholders *before* being more widely disseminated. But the success of this first media effort has encouraged us to plan on continuing to use the media to spread the results more widely.

The main dissemination and knowledge transfer vehicle, however, has been community workshops for local public officials, stakeholders and community groups at which survey results are first presented by the university researchers and co-investigators, and then analysed and discussed with a view to identifying key policy actions. The workshops have been preceded by letters of invitation and telephone calls to key parties. The process has steadily raised the profile of the community health indicators, and gradually awakened local interest and energy in the power of community-based research as a tool to mobilize communities to and improve health and wellbeing.

As noted above, one quite extraordinary and unanticipated outcome of the community meetings at which survey results are presented is that they bring together in the same room groups that normally do not have the opportunity to communicate with each other or share information on issues of common concern. The community health survey results have the effect of initiating dialogue, discussion, and awareness, and of prompting the sharing of information. For example, at the community meetings on tobacco use, caregiving, peace and security, and employment and health, the discussions included a scan of relevant programs and initiatives currently in place, allowing community groups to learn from each other, sometimes for the first time, of services already available, and also to identify gaps and needs. In sum, the survey results themselves end up not being the only item on the agenda. Rather, they have the important effect of initiating and triggering a wider-ranging dialogue and exchange of information around the area of concern raised by the survey data.

Thus, at the first tobacco workshops in Kings County and Glace Bay, we began with a scan of all existing relevant services currently available in both communities, including addictions services, school-based smoking prevention programs, help lines for

smokers trying to quit, clinic-based smoking cessation programs; counselling services provided by physicians, nurses, and other health providers; work-based smoking prevention programs; and more. Some participants were surprised to learn of the extent to which valuable services already existed. Thus, in addition to providing information on the survey results, our workshops have also served the purpose of informing community groups of the availability of services with which they may have been unfamiliar. This scan of existing services also helps identify current gaps, and spurs discussion of actions needed to fill those gaps, to bolster services that may be in high demand, and to spread information about important services that are not adequately known or used.

The most ambitious dissemination work took place in the form of writing, editing, designing, and printing a newsletter with key survey results, which was distributed to every Glace Bay household in July, 2004. This action was taken in response to a concern frequently expressed by workshop participants that the results of the community health survey were being transmitted only to a small and rather elite group of community leaders and policy actors in both communities. Participants at various workshops agreed that the results are very important, provide vital new information about the community, can help empower the community at large, and are an important new instrument for effective evidence-based disease prevention and health promotion initiatives. But they recognized that this would not occur effectively or with a sufficiently wide reach while communication was confined to small workshops, and while the knowledge was not transferred to the community at large.

As a direct result of this strong feedback and recommendation to "spread the word," the CPHI research team in the spring and summer of 2004 put considerable energy and resources into the creation and distribution of a very attractive four-page, colour, tabloid newspaper. The newspaper summarizes key results and analysis to date in short, clear articles written in language that is easy to understand. Based on this experiment, we hope to repeat this wider dissemination work in Kings County as resources become available. We could think of no more effective way to report to the community at large than through this newspaper. Again, this level of dissemination was not anticipated in our original proposal to CPHI but emerged as a direct result of community recommendations at the workshops where survey results were presented. The newsletter can be accessed at: http://www.gpiatlantic.org/glacebaynewsletter.pdf.

To produce the newspaper, we hired a professional writer/journalist from Sydney, Norma Jean MacPhee, to work with three Glace Bay GPI Society members to compile the key results, write up short well-written articles, include photographs of Glace Bay, and suggest a potential layout. We then had the tabloid professionally laid out and designed, printed, and distributed to all Glace Bay households. As a mark of the maturity of this research program and the degree of community empowerment already achieved, all these tasks were undertaken entirely in Cape Breton and by Cape Bretoners, under the leadership of the new Glace Bay GPI Society. The distribution to all Glace Bay households in July has received very positive feedback from community members.

Another from of dissemination and knowledge transfer has occurred through presentations about this CPHI research program at national and provincial forums and conferences, including the annual PRI conference in Ottawa, the Federation of Canadian Municipalities' Sustainable Communities Conference in Ottawa, the Atlantic Canada Economics Association conference, and in a keynote address to the recent annual conference of the Atlantic Networks for Prevention Research (October, 2005) at which a CPHI representative was present. On 23 November, 2005, a meeting with the Atlantic Health Promotion Research Centre will design a student internship program specifically to conduct further research and analysis on the community health indicators results. This demonstrates how the CPHI-funded research program is continuing well beyond the CPHI-funded phase, with the initial CPHI funding leveraging considerable additional research activity and knowledge transfer.

The work has also been presented to meetings of government, academic, and community groups in all four Atlantic provinces, including a symposium sponsored by the University of Prince Edward Island's Institute of Island Studies, the Nova Scotia Government's inter-departmental committee on community economic development, two ACOA conferences, and a forum hosted by the Population and Public Health Branch (Atlantic region) of Health Canada. In short, there is a growing interest and demand for information about community-level indicators of health and wellbeing that has produced many opportunities to present, profile, and acknowledge this CPHI research program.

Another form of knowledge transfer has occurred in responding to requests for advice from other communities that are interested in community-based research and in creating indicators of community health and wellbeing. A team from the University of Saskatchewan visited here specifically to investigate the applicability of our work to communities in Saskatchewan, and this formed the basis of an application on their part to SSHRC's Community-University Research Alliance program. As well, the Halifax Inner City Initiative adapted our community health indicators survey and research tools for one of its own projects, and we assisted that group in shortening the survey for its own needs. This Central Halifax Survey, which takes about 45 minutes to administer (compared to an average of two hours for the original Glace Bay and Kings County surveys) provides a suitable and more manageable template for other communities, and is available at http://gpiatlantic.org/pdf/communitygpi/halifaxsurvey.pdf. The Glace Bay GPI program coordinators have come regularly to Halifax to consult and provide advice and training to the Central Halifax community indicators project. Although they had no prior experience in survey methods before their involvement with the Glace Bay health indicators work, these two women are now training others in community-based research methods.

In sum, the experience of this CPHI-funded research program has demonstrated quite convincingly that good local indicators can be a very powerful tool that has very practical policy relevance and utility in empowering communities to act to improve their health and wellbeing. The immediate, local knowledge that these indicators provide can help mobilize communities behind common goals and objectives and spur them to action.

Sufficient time has not yet elapsed to test what may, in the long-term, be the most important outcome and evidence produced by this CPHI research program – that direct community participation in identifying health issues, and in collecting and analysing data on indicators of community health, may itself be a key ingredient in improving population health at the community level. This hypothesis is well articulated in a review of effective health promotion strategies by the U.S.-based Institute of Medicine:

> *Community partnerships are likely to influence community priorities in the direction of health and foster social norms supportive of healthy outcomes. In addition, community-level participation and buy-in are likely to enhance the sustainability of interventions. Further, by providing an infrastructure that remains in a community after a research project ends, interventions may be more likely to be maintained beyond the funded period…. Efforts to develop the next generation of prevention interventions must focus on building relationships with communities, and develop interventions that derive from the communities' assessments of their needs and priorities. Models should be developed that encourage members of the community and researchers to work together to design, train for, and conduct such programs.*[1]

Despite the positive outcomes of the CPHI research program to date, the research partners feel strongly that the community health indicators hold considerably more potential to improve community health and wellbeing. In particular, we would like to see the new database widely used to conduct population health research, and to see further results on a wide range of health determinants reported to both communities and beyond. What we have accomplished so far can perhaps be described as a "demonstration" project. For this reason, our key recommendation and request to CPHI is to make the existence of the new database widely known to population health researchers throughout Canada.

[1] Institute of Medicine (2000). Promoting Health: Intervention Strategies from Social and Behavioral Research. Washington DC., page 23