# Chapter 5

# Summary and Conclusion

## 5.1    Introduction

Rural health is a complex and multifaceted phenomenon. Canadians living in rural communities face a unique set of problems, which have profound implications for their health. In order to improve rural health, one of the first steps is to understand and be able to describe rural health conditions. Our understanding of and ability to describe rural health conditions can be considerably enhanced by the use of health indicators which would allow us to compare rural and non-rural areas or areas differentially located on the urban-rural continuum in terms of various health conditions. Our review of selected studies and documents has found that rural health indicators have not been used extensively in Canada, probably because there are both conceptual and practical complexities in the development of rural health indicators.

The present study is limited in scope by necessity. It is not possible for us to construct a broad array of rural health indicators due to limited amount of time and resources, though a dozen or so indicators have been produced for illustrative purposes. All this notwithstanding, this study has laid a firm foundation for generating and studying rural health indicators by clarifying some conceptual issues and proposing some methodological approaches.

In the following sections, we summarize the major findings, raise a number of important issues that need further discussion, and suggest several tasks possibly as follow-up actions in a subsequent study.

## 5.2    Summary of Major Findings

In the first two chapters, we discussed health indicators in general and rural health indicators in particular. The term "rural health indicators" is used throughout this report to refer to quantitative or qualitative measures that can be employed to reflect the health conditions of rural communities or populations. While this definition seems relatively simple and straightforward, there is a lack of agreement on what "health" and "rural" mean.

For the purposes of this study, we adopted a broad definition of health that goes beyond the mere absence of disease or impairment. A broad definition of health suggests that a wide range of health indicators may be necessary. It is our view that health indicators are more than health status indicators. We proposed five broad categories of health indicators: health status indicators, health determinant indicators, health resources indicators, health services utilization indicators, and health behaviour indicators.

"Rural" is meaningful only in relation to "non-rural." Thus, how rural is understood is crucial because the definition helps determine how records in a dataset are to be partitioned into rural versus non-rural or into groupings of varying degrees of rurality. However, there is not a universally accepted definition of rural. For pragmatic and methodological reasons the definitions of rural used by Statistics Canada and by OECD were chosen because of their long history of usage and, as a result, familiarity to many researchers. As well, in most cases, they can be applied to national or provincial datasets on the basis of which many common health indicators are derived. There may be more conceptually sophisticated definitions of rural, but unless they can readily be applied to existing national or provincial datasets, they have little or no utility in terms of generating rural health indicators.

We also briefly examined the possibility of using postal codes to define rural. Although it is deemed unsatisfactory to identify as rural those areas with a "0" as the second digit of the postal code, postal codes are still important for rural health indicator development. If they are available in datasets, they can then be used as building blocks to generate rural and non-rural areas, using different definitions of rural (more detailed discussion to be found in the next section). Another approach to defining rural which uses major watersheds or ecozones was also cursorily mentioned. This approach may be particularly useful to those who are interested in environment-health relationships.

The second part of the study (Chapters 3 and 4) explored the practical and methodological problems of rural health indicator development. To this end, we created the Rural Health Indicators Inventory Database. This meta-database contains information on a wide range of the most commonly used health indicators in Canada and describes datasets that are used to derive them. By linking these two pieces of information, it is possible to see which dataset(s) has (have) been used to derive a specific health indicator. The main purpose of creating the database is to examine the extent to which it is possible to assign those health indicators to "communities" or "regions." We equate a community in geographical terms as being a Census Subdivision (CSD) or Census Consolidated Subdivision (CCS). Regions are defined as being identical to Census Divisions (CD). Both the Statistics Canada and the OECD definitions of rural can then be applied to these geographical units.

What we found in creating the Rural Health Indicators Inventory Database is that there are considerable overlaps in the four major sources of health indicators. As well, the bulk of these indicators are derived from a limited number of datasets (e.g., the Census, Vital Statistics, National Population Heath Survey, Hospital Morbidity Database, and datasets of the Laboratory Centre for Disease Control). With the exception of the Laboratory Centre for Disease Control datasets, which are only available at the provincial level,[1] it is possible to assign records contained in most of the datasets to either communities or regions. Although it is possible to assign records from the National Population Health Survey to communities or regions, the sample size is too small to permit subprovincial analysis.[2] Unfortunately, this is true of most of the survey-based datasets we have examined, that rural and non-rural comparisons must be made at the provincial level. For survey-based data, more emphasis should be placed on ways to allow sub-provincial comparisons. One way is to increase the sample size of the surveys. There appears to be a movement in this direction with

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[1] The data would have to be obtained from each province in order to conduct subprovincial analysis .
[2] Except in provinces that have augmented their provincial sample size.

the introduction by Statistics Canada of the Canadian Community Health Survey which will have a sample size of approximately 150,000 people. However, even with a much larger sample size, the estimates produced from this survey will most likely only be reliable at the region (or CD) level.

Although there has been a growing interest in the broader determinants of health, there are relatively few health determinant indicators. For example, there are no indicators of the physical environment (e.g., air and water) available at the national level. Another area where indicators seem to be lacking is in health care expenditure. Currently, health care expenditure data are available mostly at the provincial level, thus making it difficult to compare health spending in rural versus non-rural areas within a province. As well, there are datasets that do not appear to have been well exploited in relation to health indicator development (e.g., Quickstat Justice Database, Survey of Income and Labour Dynamics, Canadian Agricultural Injury Surveillance Program Database). Such datasets may be useful for generating health indicators, particularly health determinant indicators. However, the extent to which they can be used to develop rural health indicators requires further investigation.


## 5.3    Issues and Suggested Approaches

A number of issues are mentioned as follows, most of which are "lessons learned" in the process of conducting this study. They are raised in order to promote discussion and to indicate the need for further work in these areas. In presenting and discussing these issues, we also include a number of suggested approaches to developing rural health indicators.

### 5.3.1   A "Functional" Definition of Rural

In developing health indicators for rural Canada, the first step in evaluating health and health-related datasets for this purpose should be to determine whether the records can be assigned to communities (CCSs) or regions (CDs). People work, play, live in communities and it is in those environments that we will likely be most successful in testing hypotheses that derive from population health models. We will lose some of the discriminating spatial variations as we move to regions simply because of the smoothing effect of aggregation. However, information at the level of regions will still be useful, especially in provinces where a CD or a grouping of CDs coincides with health service delivery or planning authorities. Many authors are of the opinion that datasets that do not provide CD or finer geographic discrimination may still give useful general urban/rural information but fail to recognize the macro-diversity and micro-specialization of Canada's vast non-metropolitan hinterland (Bollman, 1992; Ehrensaft and Beeman, 1992). "Failing to recognize and appreciate the diversity within the rural sector may be the greatest impediment to designing and implementing effective public policies for dealing with rural health needs" (Cordes, 1985, p. 1373).

Given community- or region-level record assignment as outlined above, it is then possible to employ those datasets to describe and analyze health within the rural areas of Canada or between rural and non-rural areas. At a primary level of discrimination, the rural/non-rural designations or degrees of rurality provided for by the OECD and/or Statistics Canada classification schemes are more than adequate. They are simple to apply and provide complementary information as it has been shown that they can be related to each other (Appendix II). It is our suggestion that the

OECD scheme be applied first and then use the Statistics Canada urban/rural population distributions to provide more detailed community and/or regional characteristics.

The major drawback to this pragmatic approach will arise when undertaking time-series analyses. Boundaries of administrative units (CSDs and CCSs more frequently than CDs) change and people move, both resulting in changes to population densities, the initial criterion employed by both of these classification schemes. However, that should be looked upon only as a technical nuisance. With today's computer technology and software capability, such as GIS, comparable geographical units can be constructed with relative ease.

### 5.3.2    Beyond a Functional Definition of Rural

We have been reminded (personal communication with Dr. John Wynn-Jones, Director of the United Kingdom Institute of Rural Health, Wales) of the adage that "When you've seen one rural town.... you've seen one rural town!" Few of us working in the field of rural health really believe in that saying. However, the functional definitions of rural that have been employed in this study and advocated in Section 5.3.1 actually reinforce the view that there are some common elements in rural communities. For the most part, the common element is population density. Thus, we are forced, for example, to put into the same category the wealthy (healthy?) hobby farmers living just outside economically vibrant urban centres and the poor (less healthy?) residents living in remote, economically depressed hinterlands of Canada.

It is recommended that we now go beyond the relatively static urban/rural designations that have been provided. We must "populate" those geographical units, to put health into place (Kearns and Gesler, 1998). "Places, including homes, neighbourhoods and cities, are therefore analyzed, on the one hand, not as a set of supposedly objectively defined statistical areas but as congregations of the individual life-worlds of their inhabitants; on the other hand, places are conceptualized as the product of a layering of collective political struggles over the practices of everyday life" (Laws and Radford, 1998, p. 78).

Minimally, it is suggested that populating the density-defined communities of Canada be undertaken in a two-step process. First, undertake a general, multivariate analysis of the demographic and socioeconomic characteristics of the communities (CCSs) of Canada. The objective of this task would be to provide a basis for the classification of those communities featuring more than just the population density characteristics that are used by the OECD or Statistics Canada coding schemes, with a particular focus on rural communities. The primary dataset that might be used is the 1996 Census of Population. Selection of the variables from these data would be guided by the demographic and socioeconomic determinants of health that are included in the Rural Health Indicators Inventory Database.

Second, conduct a comparative analysis of six to ten rural communities across the country. Recently, two of us (Pitblado and Pong, 1999) have proposed that analyses of this sort be undertaken in relation to access to physician services in rural Canada. The study would not focus entirely on the number of physicians and where they are located. In addition to the analysis of the geographic distribution of physicians, it would examine what the physicians do and how they do it, their concerns and how they think medical care can be improved, how and to what extent

residents in the studied communities access services, the residents' assessment of their health care needs, their perception of the availability of physician services and their adequacy, etc. In addition, as health care delivery is not an isolated activity, the study would examine how the seeking and delivering of medical care are interrelated with other activities and how health care as an institution is meshed with other institutions. In other words, a considerable amount of "contextual" data would need to be collected. Such a comparative study should yield a wealth of information about rural health. This two-stage analysis has components that are common to the *New Rural Economy* project currently being conducted by the Canadian Rural Restructuring Foundation (see website <132.205.57.9/SocAnth/CRRF/nre.html>). It is our belief that such analyses would guide the further development of rural health indicators.

### 5.3.3  Inadequacies of the Geographical Approach

Geographical analyses of area-aggregated data often reveal great unevenness in various health measures. These appear as clusters or show significant spatial differences. When marked geographic variations occur, they provide for the generation and testing of hypotheses about spatial variations in disease occurrence, health care utilization, provision of health services, etc. At the very least, there is the need to question the origin of such variations.

However, such area-based studies are subject to the potential problem known as the "ecological fallacy". This results from the false assumption that inferences can be made about individual phenomena based on observations of groups. Unfortunately, the major datasets that are available for the generation of health indicators in Canada are not linked. For example, one cannot use birth records (from Vital Statistics) to determine if the mother giving birth is poorly educated (from Census of Population) or works in a hazardous environment. Given the current emphasis on population health, the ability to link datasets would be welcomed by researchers, subject to the protection of privacy and confidentiality.

The current inadequacies associated with linkages of datasets heighten the value of surveys, such as the National Population Health Survey and the proposed Canadian Community Health Survey, which provide information about individuals rather than aggregates. It is recommended that, at the very least, these surveys provide a clearly defined rural/urban flag for each record (i.e., individual) that is releasable to researchers. This is one way that would allow us to examine specific rural sub-populations, particularly more vulnerable groups of individuals in rural areas - the young, the aged, farmers (who may be exposed to potentially hazardous chemicals), etc. It is recognized that merely providing such a rural/urban flag will not solve all problems in identifying rural sub-populations. For example, if we consider mining as a rural occupation, there is no guarantee that there will not be a "conflict" between the rural/urban and occupational information (e.g., a large proportion of the miners living in Sudbury would be classified as urban dwellers). However, it would be an initial step and a step in the right direction with respect to the examination of the health of rural Canadians.

### 5.3.4   *Rural Health Indicators Inventory Database*

Although we were not contracted by Health Canada to do so, we have in effect created a meta-database as part of this study. More precisely, the Rural Health Indicators Inventory Database forms the kernel of what could be a valuable meta-database tool.

A meta-database provides information about other databases. They rarely include the raw data *per se*. As a tool, they often eliminate the often frustrating task of searching for "what's out there?" Datasets, expertise, reports, or current research activities can be efficiently located. Finding this information is frequently the most frustrating bottleneck in many studies, not the existence of the data themselves.

The Rural Health Indicators Inventory Database provides a valuable starting point for the creation of a meta-database that could facilitate rural health research in general and rural health indicator research in particular. If it were to be expanded, it would need to include more sophisticated search facilities. And there are some obvious gaps with respect to the datasets that are inventoried. For example, many people have identified transportation as a major problem in relation to accessing health care in rural areas. However, little information of this sort is currently contained in the Rural Health Indicators Inventory Database. Similarly, we have yet to include datasets that adequately provide information about the physical environment in spite of our knowledge of the health effects of air, water, or soil pollution, as well as the potential adverse consequences of such processes as the thinning of the ozone layer or global warming.

### 5.3.5   *Small Numbers and Releasability of Information*

We understand the reasons (issues of statistical reliability, privacy, confidentiality, etc.) for the suppression of data release for small areas by the gatherers and suppliers of data. However, it is our opinion that this practice puts rural Canadians at a disadvantage compared to their urban counterparts. Rural Canadians live in a large number of regions with small numbers of people and a larger number of communities with even smaller numbers of people. Sparse population is an inherent characteristic of rural Canada. Data suppression due to small numbers will inordinately and adversely affect the information that can be garnered for rural communities. Some means must be found for the release of these small numbers, especially those that are important for rural areas. Otherwise, we will continue to be forced to employ health indicators that are inevitably weighted (biased) towards urban populations.

### 5.3.6   *Other Considerations*

In order to keep the present study as uncomplicated as possible, we have not discussed many unresolved problems and evolving issues in relation to health indicators. Hansluwka (1985, 1987), among others, have identified some trends and divergent views concerning health indicators. For example, should health indicators be provider or consumer based? In other words, should measures be derived from the "objective" assessment by medical personnel or reflect the "subjective" perceptions of one's own health? While there is a recent shift toward the social health model in health indicator development, if social health has meaning only in a defined set of values and cultural norms, international (or even regional) comparisons may be a risky affair.

There is also an increased emphasis on the measurement of functional impact of ill health, i.e., indicators of disability or incapacity. How could this wider view of health, including social and behavioural consequences of illness be captured? Should the health of a population be depicted by a set of indicators or should a "flagship" health indicator be used as advocated by Cohen and MacWilliam (1995). These are just a few of the controversial issues that future studies need to address.

## 5.4    The Next Step

While many things need to be done to further the objective of developing rural health indicators, some of which have been alluded to in the previous section, we would like to focus on three things which, we believe, are of a high priority. They also represent the logical next step following the present study.

First, the present study has shown what is feasible in relation to rural health indicator development. The next step should be to construct as many rural health indicators as possible, based on national datasets that are publicly available and using the methodological approaches we have suggested. Some of the indicators may not be very satisfactory or useful because of the way rural can be operationalized in some datasets. However, this proposed project should be seen as another step in a long journey.

Second, on the basis of the above, it should be possible and extremely useful to construct a health profile of rural Canada. According to Hansluwka (1985), in health indicator research, there is a shift away from relying on individual indicators toward the "characteristic" approach by organizing the information into a health profile. We should be able to use a series of health indicators to depict the health conditions of rural areas in Canada, by comparing rural Canada with urban Canada or comparing areas or regions differentially located on the urban-rural continuum. There are many studies and reports that compare provinces, communities, or health planning regions within a jurisdiction. However, there are very few that focus on rural Canada. One can easily be *over*whelmed by the number of health indicators that abound today. At the same time, we have been *under*whelmed by the small number of health indicators that have been applied to or are appropriate for assessing the health of rural Canadians. As well, many of the rural health studies have been conducted in small (provincial or subprovincial) areas of Canada rather than at the national level. The proposed study should help fill the void.

Third, the development of rural health indicators will not progress very far unless health surveys, administrative databases, and other datasets begin to include appropriate geographic information that could be used to differentiate between rural and non-rural or regions of varying degrees of rurality. We strongly believe that the Office of Rural Health, Health Canada, has an important advocacy role to play in ensuring that the appropriate geographic information is part of as many health and health-related datasets as possible.

Earlier we have suggested that every record in a dataset should have a rural/urban flag. However, since there are no universally accepted definitions of rural, how rural is defined depends on one's perspective or purpose. A prepackaged rural/urban flag, while better than no information at all,

may be too constraining for some researchers. The availability of postal code information, on the other hand, would allow researchers to configure geographic units of analysis in whatever ways they want. Postal codes can be aggregated in many ways, making them useful building blocks for any definition of rural.