Developing a Healthy Communities Index

A Collection of Papers

Canadian Population Health Initiative

Canadian Institute for Health Information
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Developing a Healthy Communities Index: A Collection of Papers

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The views expressed in this report do not necessarily represent the views of the Canadian Population Health Initiative or the Canadian Institute for Health Information.

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About the Canadian Population Health Initiative

The Canadian Population Health Initiative (CPHI), a part of the Canadian Institute for Health Information (CIHI), was created in 1999. The mission of CPHI is twofold: to foster a better understanding of factors that affect the health of individuals and communities, and to contribute to the development of policies that reduce inequities and improve the health and well-being of Canadians.

As a key actor in population health, CPHI:

- provides analysis of Canadian and international population health evidence to inform policies that improve the health of Canadians;
- commissions research and builds research partnerships to enhance understanding of research findings and to promote analysis of strategies that improve population health;
- synthesizes evidence about policy experiences, analyzes evidence on the effectiveness of policy initiatives and develops policy options; and
- works to improve public knowledge and understanding of the determinants that affect individual and community health and well-being.

Preface

This collection of papers was written by a variety of authors: Robert Pampalon, Daniel Friedman, Chris Lalonde, Elizabeth Beader, William Boyce, Ronald Colman, Clyde Hertzman and John Burrett. These papers were commissioned by the Canadian Population Health Initiative (CPHI), part of the Canadian Institute for Health Information (CIHI).

It should be noted that the analyses and conclusions in this collection do not necessarily reflect the authors' affiliated organizations, CPHI or CIHI.

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Introduction

Patterns of health and disease are largely a consequence of how we learn, live and work.[1] In turn, how we learn, live and work are influenced by the community in which we live. While there is growing awareness that communities can have either a beneficial or a detrimental effect on health, the mechanisms effecting these changes have not yet been fully defined[2] and many questions remain about why certain communities are healthier than others.

Certain key economic indicators, such as household income, employment rates and other measures of socio-economic status, have traditionally been used to measure the health or well-being of a community. While mortality rates and the prevalence of certain diseases have been shown to vary with these measures,[3] they do not paint a full picture of a community's health and vitality. Social capital, community cohesion, trust, security, the built environment and the services and institutions available, for example, may also be important factors that can help promote health and offer protection against illness at the community level. Conceptualizing, measuring and analysing these components from an ecological perspective, however, can be challenging.

As part of a focus on Place and Health, CPHI has commissioned eight prominent experts to share their visions of what makes a community healthy and how this might be conceptualized and measured. The resulting papers on building a healthy communities index are original opinion-oriented think-pieces that were written to help broaden the use of health-related indicators beyond health services, individual health status and economic markers. Several of the concepts proposed draw from, or propose an extension to, existing Canadian projects such as the Quality of Life Reporting System by the Federation of Canadian Municipalities[4] and the Genuine Progress Index—Atlantic.[5*]

For the purpose of this collection, each writer was asked "What would an index of healthy communities include?". Depending on their area of expertise, some of the authors were also asked to provide a special focus to their paper. Thus, the following collection of papers traces the various stages in the development of a healthy communities index (e.g. sharing past experiences, planning a healthy communities index, creating a list of possible indicators and situating the need for such an index in the current socio-political context) and provides special consideration for populations such as children, youth and Aboriginal communities.

Overview

The series begins with a paper by Robert Pampalon and another by Daniel Friedman that outline factors that should be considered before creating a healthy communities index, including ideas on some of the conceptual requirements that should be met before

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[*] Please refer to *Reality Check, The Canadian Review of Wellbeing* (Volume 1, Number 1, 2001) for a list of the pan-Canadian and provincial/territorial projects that offer indicators of the well-being of Canadians beyond traditional economic indicators. Several of these projects offer individual-level as well as community-level indicators that could be used in the creation of a healthy communities index.

building a prototype index. Chris Lalonde then describes the development of a health index that is specific to Aboriginal communities and stresses the importance of involving members of Aboriginal communities in defining the meaning of a healthy community. The next paper, by Elizabeth Beader, lists concrete markers that could be used to measure the health of a community. This is followed by a paper by William Boyce outlining ideas on how to measure community social resources and social outcomes that contribute to a healthy community for youth. Ronald Colman then shares his experience in developing community health indicators in collaboration with two Nova Scotia communities, followed by Clyde Hertzman who describes how the Early Development Indicator (EDI) could be used as a healthy communities index for a specific population, namely children. Finally, John Burrett situates the need for measures of healthy communities within the current policy context.

Despite the various foci and different approaches taken by the authors, there is consensus that before an index of healthy communities can be created, a framework must first be developed that clearly identifies the purpose of the index, specifies how it should be used and defines exactly what makes a community healthy. The authors also agree that if community-level characteristics of health promoting communities are being considered (e.g. green space), and not aggregation of individual level measures (e.g. self-reported health status), the importance of social determinants of health within the index should also be emphasized.

Fostering a better understanding of factors that affect the health of individuals and communities is a fundamental part of CPHI's mandate and is essential to its knowledge generation and synthesis functions. It is our hope that the results from this project will provoke genuine discussion and effort on the part of those involved in sectors that can effect positive change. We encourage your feedback on this collection of papers. Please send us your thoughts and comments at cphi@cihi.ca.

Thank you to the authors for their contribution to this project.

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A Health Index for Communities

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In this paper, I would like to offer some thoughts on the proposal to develop a health index for communities. These comments are related to work I am conducting at the Institut national de santé publique du Québec (INSPQ) on territorial health disparities, deprivation and health, summary measures of health[1–3] and to work conducted by a Laval University research group in which my job is to study the community characteristics of three local areas within the Québec City region.[4]

Which Communities?

Many types of communities exist[5, 6] but those of interest here are defined by geographic proximity, by the fact of living within the same area. Work conducted in the wake of the WHO Healthy Cities and Villages movement[7, 8] and the current debate on the role of contextual factors in health[9–12] are shifting the focus to the local level as a setting for both research and intervention. "Local" in this context refers to a small area, a city, village, neighbourhood or ward, for example, that may be defined by either administrative criteria or perceptual criteria, reflecting the point of view of residents or key informants. It is at this local level that the production of a health index is likely to prove most relevant.

Special attention must be paid to rural communities or small communities located outside major urban centres. These environments have special characteristics that the usual statistics do not always capture, such as geographic isolation, population dispersion and other characteristics not unrelated to health.[13, 14] Research and efforts to produce indicators in Canada have also tended to pay less attention to these environments.[15, 16]

Which Health?

Health is a multi-dimensional concept that includes people's characteristics as well as their physical and social environment, which may be seen from a holistic perspective, extending from their immediate living environment and social network (family, work, school, local environment) to society as a whole (norms, values, ideology).[17] Work on the subject of local environment has demonstrated that this factor affects health, although the impact is modest and the mechanisms involved remain to be identified.[9–12] One of the conclusions to emerge is that, to move forward, there is a need to more accurately document the characteristics of the physical and social environment, paying special attention to characteristics that cannot be derived from individual measures (as census-related characteristics are). These so-called global or integral characteristics are instead

related to a territory or community in its entirety, and they differ from each member's characteristics. Bicycle paths, public transport, self-help groups, and accessible and high-quality public services within a local environment are examples of such characteristics.

It would be inappropriate here to list these characteristics. Many researchers have conducted such an exercise,[18–20] with the latest one[21] proposing as many as 12 fields and more than 200 indicators. It should be remembered that these proposals are only useful to the extent that they can be implemented, through information collection that is systematic and efficient at the local level. With this in mind, the Laval University research group undertook to document the characteristics of three areas in the Québec City region, namely two Québec City neighbourhoods (one downtown, the other in a suburb) and a rural environment. The researchers based their efforts on work by a team of Scottish researchers[11] who grouped relevant characteristics of local environments in two general categories, one referring to infrastructure and material resources, the other referring to a community's practices and social functioning. In the first case, we inventoried some of the physical characteristics of the environments (road network, bicycle paths, parks, public buildings, etc.) and a large number of public services (medical services, early childhood education centres, schools, public transit, etc.) and private services (dental clinics, pharmacies, businesses, grocery stores, etc.). In the second case, we first inventoried all community groups, volunteer associations and social clubs in order to describe the associative vitality of the areas under study. We also used a tool (a questionnaire) developed by the Scottish team to query residents on their feeling of belonging, their perceptions of social cohesion and the existence of social and environmental problems. With the exception of this last exercise, all information was collected via administrative records that did, however, have to be validated by field visits.

Which Index?

Is it realistic to hope to develop an index that captures the aspects of the physical and social environment that promote health? Yes, in theory, but we are still far from the mark in practice because the exercise that we undertook in the Québec City region required a significant investment of time and various resources. However, this exercise showed us that a volume of unused data on a local environment may be obtained from various sources, whether at the municipal level or in the educational or health and social services sectors.

In a practical sense, before focusing on an index, it would be possible to work on a few indicators with a recognized link to health and for which a data collection exercise could be systematized Canada-wide or at least in some provinces and regions of Canada. Work could be conducted simultaneously on a physical environment indicator and a social environment indicator. One indicator very relevant to the urban environment and another very relevant to the rural environment could be chosen.

However, before embarking upon such an exercise, would it not be essential to specify the purposes to which such indicators, and an eventual health index, will be put? Who wants such an index to be produced? Who will choose the indicators? Who will produce the information sought? And who will be able to use it?

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What Would a Healthy Communities Index Include and How Would It Be Constructed?

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Purpose

The purpose of this brief paper is: first, to specify requirements for constructing a Healthy Communities Index (HCI) and second, to offer a preliminary agenda for building a prototype HCI.

Necessary Requirements for Building a Prototype HCI

A prototype HCI must be built upon the following requirements:[1, 2]

1. Specification of purpose(s) of the HCI, including planned uses and users.

2. Explicit population health conceptual framework,[3] which:
   - Specifies the functions of each included indicator and how each indicator represents community health or represents an influence on community health;
   - Focuses on community health as a population-level variable; and
   - Includes indicators at multiple conceptual levels of analysis[4] and clearly differentiates derived variables (summarizing the characteristics of individuals in the community) from integral variables (describing characteristics of the community that are not derived from its members).[5]

3. Clear definitions of key terms, including:
   - **Community**: For the purposes of building a prototype HCI, a community should be defined as a geographically bounded area. The geographic bounds should be stable across time and could be based upon civil governance, service patterns or other attributes such as "natural neighbourhood" boundaries.[6] The choice of the nature of the geographic boundaries may vary with the specific purpose of the particular HCI as well as with the particular national or sub-national area.[7–9] The community must include an identifiable human population, yielding a known denominator with known characteristics; the community includes all persons living within its geographic bounds. This definition is in contrast to definitions of communities stressing various types of social networks without geographical bounds.[10] Communities can include numerous geographically bounded sub-communities.‡

† I would like to acknowledge the helpful review and comments on an earlier draft provided by Professor Barbara Starfield.

‡ Varying explicit and implicit definitions of community, neighbourhood and area mark studies dealing with community, neighbourhood and area health.[11]

- **Community health** is defined as the level and distribution of disease, functional status and well-being in the community.[12] Community health should be understood as inherently a characteristic of a population: it partially reflects the aggregate of the health of individuals in the community population, but also has characteristics distinct from the aggregated health of individuals.[13] Survey research indicates that respondents can differentiate between individual health and community health,[14, 15] providing additional face validity to defining community health as distinct from individual health.
- **Influences on community health** can be defined as those factors that affect community health. These include both integral and derived variables.[5] Influences are typically categorized into such domains as community attributes (biological characteristics, social attributes, built environment, health services, economic resources, population-based programs, collective lifestyles and health practices) and context attributes (natural environment, cultural context, political context) and sub-domains for each domain.[12] Numerous conceptual schema exist for categorizing possible influences on community and population health.[16]
- **Indicator of community health**: For the purposes of this paper, an indicator of community health is defined as an operationalized, quantitative representation of community health. While some indicators of community health may be derived from data initially obtained from the individual person level (such as mortality), indicators of community health represent the population level rather than the individual person level. As such, indicators of community health should represent the distributional, aggregated and dynamic aspects of community health.
- **Indicators of influences on community health** can be defined as operationalized quantitative representations of a particular influence on community health. In constructing a HCI, it is important to differentiate indicators of community health from indicators of the influences on community health. Similarly, it is also important to differentiate those indicators that represent empirically demonstrated influences on community health, based upon convincing research evidence, from those indicators that represent only hypothesized influences on community health, lacking clear research evidence.
- **Indicators of the influences on community health** should include both integral and derived variables.[5] It is important to recognize that a variety of differing definitions exist relating to integral and derived variables.[17–20] Regardless of particular definitions chosen to refer to integral and derived variables and their variants, it is necessary ". . . to view places as more than the sum of the current human populations living and dying within them."[21]
- **Community health indicator set** can be defined as a theoretically- or conceptually-based group of indicators intended to represent community health and/or related indicators of influences on community health (for a good discussion of the differences between indicators, indicator sets and indices, see the National Center for Health Statistics[22]).

- **Community health index** can be defined as a rating scale summarizing and representing community health, derived from a set of indicators. Ideally, the HCI should focus on community health itself. In the absence of valid, reliable and comprehensive data for indicators of community health, the HCI could be expanded to include indicators of empirically demonstrated influences on community health. (For an excellent discussion of population health indices using only derived variables, see a forthcoming article by Stoto.[23])[§]

4. Empirically demonstrated relationships among indicators of influences on community health, between indicators of influences on community health and indicators of community health itself, and among indicators of community health, as well as the flexibility to re-calibrate and amend indicators as additional evidence emerges.

5. Availability of valid and reliable data for each indicator.

6. Each indicator supports a specified purpose of the HCI.[2]

7. Replicable valid and reliable methodology for construction of the HCI and for operationalizing included indicators.

8. Methodology for testing utility of HCI for users.

Preliminary Agenda for Building a Prototype HCI

Multiple related and partially overlapping indicators, indicator sets and indices relating directly or indirectly to community health currently exist under such rubrics as Healthy Cities, healthy communities, healthy neighbourhoods, quality of life, sustainable development, world cities and others.[**] Such indicators have a long history[26–28] and literature already exists that focuses on lessons learned from the development and application of Healthy City and related community health indicators.[29–31] Before adding to this measurement maze, it is essential to carefully take stock of what can be learned from existing literature and experience, in terms of methodologies, data, practical utility for users, research findings and needed next steps. Rather than plunging forward into the creation of a new HCI, some version of the following steps should be taken prior to building a prototype HCI (for a good discussion of needs for further research on the development of community health indicators, see Frankish, Kwan and Flores[30]):[††]

1. Develop a research synthesis of current indicators, indicator sets and indices relating to community health in order to specify:
   - Explicit purposes;

[§] For definitional discussions of population health measures, see McDowell, Spasoff and Kristjansson[24] and Field and Gold.[25]

[**] Too numerous to cite here.

[††] For an excellent model of such a review with a different but related focus, see Pickett and Pearl.[32]

- Theoretical and conceptual frameworks and underpinnings;
- Key definitions and operationalizations of major indicators relating to community, community health and influences on community health;
- Data gaps and problems;
- Methodological issues; and
- Empirical bases in prior research.

2. Construct comparative community databases for building a prototype HCI, generally similar to such comparative databases as the United Kingdom's regional quality of life counts,[33] World Health Organization's (WHO) core health indicators,[34] WHO's global burden of disease database,[35] the Pan American Health Organization's (PAHO) core health data system,[36, 37] the World Bank Institute's KLM database[38] and CIHI's comparable health and health system performance indicators for Canada, the provinces and territories.[39] Numerous authors focusing on development of urban indicators have pointed to the dearth of comparative city and community data.[2, 38, 40–45] Such a comparative community health database would:
   - Focus on the community as the unit of analysis and provide capacity to "drill down" to various geographic definitions of communities and "roll up" to larger geographic entities;[46]
   - Provide flexibility for comparison of communities sub-nationally, nationally and internationally;
   - Provide static and over-time data; and
   - Include integral and derived data.

3. Test current hypotheses and assumptions about influences on community health, based upon clear conceptual frameworks and hypotheses and utilizing comparative community databases. Is it in fact true that "the challenge we face in cities is no longer how to understand the links between health, environment and the economy, nor to understand threats to sustainability[,] the challenge is to put into practice what we already know;"[47] (for a similar point, see also Kickbusch[48])? Do we really understand what factors affect community health as opposed to individual health?; how those factors differ from nation to nation, region to region, and at different times?‡‡; the relative contribution of those factors?; how those factors interact with each other?; how those factors differ at different community and sub-community levels?; what are the mechanisms through which those factors operate?[50] In order to build valid and reliable HCIs, such questions must be empirically answered through multivariate, multi-level research utilizing integral and derived variables.

‡‡ For example, neighbourhood effects on individual health may be less in Canada than in the United States or the United Kingdom.[6, 49]

4. Select candidate indicators for inclusion in a prototype HCI, based upon results of cross-community analyses. It is important to realize that no single HCI may be appropriate for all types of communities.[51] As with the development of the Human Development Index by the United Nations Development Programme, a suite of indices may be necessary.[52] Such a suite of indicators would contain a common core of indicators, with systematic variation among other indicator modules depending upon community type.

5. Combine selected indicators into prototype HCIs, ideally with the weighting of individual indicators of influences on community health reflecting their empirically demonstrated contributions to community health, using accepted index construction techniques.

6. Subject prototype HCIs to systematic validation[30] through:

   - Split sample analyses;
   - Analyses and replication with samples of differing types of communities; and
   - Utility surveys with likely users, with selection of likely users dependent upon specific purposes of the particular indices.[53]

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Creating an Index of Healthy Aboriginal Communities

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In creating this brief "think piece" on healthy Aboriginal communities, I considered the following questions:

- "What would an index of healthy communities include and how would it be constructed?"
- "What are the factors to be considered when thinking about healthy communities?"
- "How might these be measured?"

The goal of this initiative, as I understand it, is to "help to move the issue of broadening indicators beyond health services indicators; we are looking at community level characteristics of health promoting communities, not aggregation of individual level measures."

In what follows, I outline an approach to creating an index of healthy Aboriginal communities that is informed by recent research (including my own) in the field of Aboriginal health. The approach is premised on the notion that any attempt to create an index of healthy Aboriginal communities must begin with serious efforts to engage Aboriginal people in defining the meaning of "healthy." This is critical not only because Aboriginal communities are different from non-Native communities, and so are likely to arrive at a different definition of "healthy", but also because research projects that focus upon Aboriginal people must involve Aboriginal people in meaningful ways from the outset. This obligation to move beyond the usual consultation of select community leaders in the implementation of a research project is consistent with recent trends in research ethics and with the political and cultural desires of Aboriginal people (see Schnarch[1] for a recent review). In this particular case, it is also the most appropriate way to construct the desired measurement tools.

The necessary first step in this process, then, would be to somehow ask members of Aboriginal communities to reflect on three basic questions: 1) What is a "healthy" community? 2) How healthy is our community? 3) How can we measure that? Of course, there is a prior question that would have to be answered well before the research actually begins: "Why would we want to participate in this process?" Given that Aboriginal communities are invested in their own health, I have no doubt that convincing answers could be offered. But securing consent to participate is not enough. Aboriginal groups are increasingly—and I think rightly—suspicious of research enterprises that involve the extraction of data from Aboriginal communities without any clear benefit accruing to the community. Any project that has the potential to result in a rank ordering of Aboriginal communities from most to least healthy will surely raise concerns among Aboriginal people.

One way to not only allay these concerns but to enhance the value and utility of the measures produced would be to commit to carry out the project in ways that respect the principles of ownership, control, access and possession (OCAP) outlined by the Steering Committee of the First Nations Regional Longitudinal Health Survey.[1] These principles refer to the Ownership (collective ownership of group information), Control (First Nations control over research and information), Access (First Nations' management of access to their data) and Possession (physical possession) of research data. Much more could be said in favour of this approach, but I would urge any creator of a healthy Aboriginal communities index to carefully weigh the added costs and consequences of engaging in this more collaborative and still evolving form of research against the clear and costly pitfalls of perpetuating a tradition that views Aboriginal communities as "research subjects".

Given that the goal of the project is to develop a methodology that can apply to whole communities, and against the backdrop of the astonishing diversity that exists within Canada's Aboriginal groups, some means of finding commonality across all this difference needs to be put in place. If step one is to engage communities in the definition of "healthy", step two would be to bring communities together to work on the problem of coming to some Aboriginal consensus on the meaning of "healthy Aboriginal community." As we have argued elsewhere,[2] traditional forms of "knowledge transfer" and the "exchange of best practices" will not do. Such practices—at least as currently engaged in—constitute something of a one-way street that champions a "downward" flow of information from universities and governments to Aboriginal communities. Serious explorations of the possibility that Aboriginal communities themselves should form the sources of "exchange" and "transfer" or that "best practices" are to be found within rather than outside Aboriginal communities have yet to be undertaken. This project could—and should—do just that by providing a vehicle for moving relevant knowledge and practices "laterally" from community to community, rather than only from Ottawa or some provincial capital or the ivory tower "down" to the level of aboriginal communities.

With all that said, and in recognition of the fact that you want to know about my thoughts on the possible shape of an index of healthy Aboriginal communities rather than my opinions about the process of carrying out the work, I am now forced to awkwardly step down from one soapbox (the one that promotes legitimating Aboriginal voices) and onto another (the one that gives pride of place to the researcher). The brevity of this report precludes any discussion of the theoretical underpinnings or detailed findings of the empirical work that I will point toward in support of the list of suggestions that are to follow, but I trust that some familiarity with that research resulted in my inclusion in this project.

In short, I would militate for the inclusion of three interrelated forms of measures. The first of these would assess the efforts that Aboriginal communities have made toward self-government (measures of community control). The second would evaluate efforts to engage people in various aspects of community life (community engagement).

The third set of measures would focus more directly on Aboriginal culture and on efforts to preserve and promote a sense of cultural belonging within the community (cultural continuity). Evidence in support of the utility of each of these forms of measurement can be found in our earlier research on suicide with the Aboriginal population of British Columbia (BC).[3]

Measures of Community Control

In our own work in BC, we have demonstrated that the degree of control that First Nations communities are able to exercise over various aspects of civic life is strongly associated with rates of suicide. Suicide is perhaps the most stark of health indicators, but we are now exploring the strength of the association between community control and other broad indicators of community health—from injury rates to school drop-out rates and more traditional measures of socio-economic health. Four especially promising measures of community control concern the provision of: 1) Education, 2) Health services, 3) Child and Family services and 4) Police and Fire services. The principle advantage of this group of measures is that, in each and every case, the data required for calculation are comparable across communities. That is, there are agreed upon mechanisms to quantify the extent to which a community exerts control over these aspects of civic life.

Measures of Community Engagement

The literature on community health and health promotion is filled with reports of the benefits of engaging individuals in the life of the community. Feeling "connected to" and "valued within" one's community is associated with all manner of positive health outcomes across the lifespan. Within Aboriginal communities, there are good reasons to believe that two dimensions of community engagement would be associated with a "healthy" community. The first concerns inter- and intra-community programs. That is, the balance between efforts to promote citizen involvement within the community (e.g. recreation or employment programs within the community) and inter-community initiatives that work to strengthen bonds across Aboriginal groups (e.g. participation in tribal council games or gatherings or national and international Aboriginal initiatives).

The second is more age-focused and would seek to quantify the relation between the old and the young. Any attempt to measure the health of Aboriginal communities would need to compensate for the effects of the "disconnection" that is the legacy of residential schooling and other forces of assimilation. For that reason, special attention would need to be paid to contemporary efforts to provide opportunities for interchange across generations. Any true healthy community index would, in addition to separately calculating available opportunities for youth (e.g. education and employment programs) and for elders (e.g. native language reclamation projects, attempts to document traditional medicines and practices), include some measure of the interaction between these generations. Some means of assessing the availability and variety of these

opportunities would need to be developed such that the measure could be applied across the wide range of differing sorts of activities engaged in within different communities. The involvement of youth and elders in community decision-making (e.g. youth councils, community forums) and in service provision (e.g. elders in schools) could also be assessed.

Measures of Cultural Continuity

The association we demonstrated between suicide rates and the presence of cultural facilities within the community would suggest that efforts to preserve and promote Native culture be included in a healthy communities index. More direct measures of the cultural health of a community could also be employed. Some of these measures can be applied across different communities with relative ease. For example, I am currently examining the relation between the use of traditional languages within different communities and the suicide and school completion rates. Preliminary analyses suggest that communities with relatively high levels of knowledge and use of traditional Aboriginal languages are also marked by lower suicide rates and lower school drop-out rates. Other measures of cultural continuity (e.g. participation in traditional forms of spirituality or ritual) would be more difficult to compare across communities, but it would be important to include these activities in any index. Similarly, it is important to examine the traditional use of lands and resources and the "fit" between traditional and contemporary forms of economic activities within communities, in the manner best exemplified by Stephen Cornell and the Harvard Project.[4]

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Index of Healthy Community

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In developing an index for a "Healthy Community" I am compelled to review the World Health Organization's (WHO) definition of health as a "state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."[1] In order to be healthy, according to the WHO definition: "An individual or group must be able to identify and to realize aspirations, to satisfy needs and to change or cope with the environment. Health is a positive concept emphasizing social and personal resources, as well as physical capacities. Therefore, health promotion is not just the responsibility of the health sector, but goes beyond healthy lifestyles to well being."[2]

Along with disease and illness tracking, the broad determinants of health provide a context for a Healthy Community Index (HCI).

Illness and disease are obvious markers on the health of a community. The degree to which a community experiences illness, disease and death indicates the degree to which community is or is not healthy.

The amount of income an individual has affects their health. The ability to pay for housing, food, clothing and other items affects an individual's health. As well, the differences in income distribution between the richest and poorest members of society impacts people at the lower end of the level by decreasing control and providing fewer choices in their lives.

Social networks affect health status. Individuals need relationships with family and/or friends for support and comfort. By having others to rely on in times of difficulties and by having relationships through which celebrations and achievements can be shared, individuals are healthier and happier.

Education improves health status. Knowledge and skills gained through education provides access to information one may need to make healthy choices and access to job opportunities.

Employment status also determines health. Individuals who are working earn an income, have built-in relationships and they feel they are contributing to society.

The environment also determines health. Clean air and water, and city/town infrastructure that enable safe houses, communities, workplaces and roads, all contribute to good health.[3]

These determinants of health are not intended to be all encompassing; rather, they are illustrative of the many inputs that make up the health of an individual.

Measurements

Given that the characteristics of a healthy community are far-reaching, so too will be the measurements of these attributes. Data sources could include:

- Statistics Canada census and health information;
- Local departments of social and public health;
- Local police department statistics;
- Local municipality statistics;
- Social Planning and Research Council studies;
- Ministry of Health and Long Term Care statistics;
- Ministry of Education statistics; and
- Ministry of Children, Family and Community Services statistics.

Illness and Disease. Statistics Canada indicates that in 1997 the two leading causes of death were cancer and heart disease.[4] By focusing on the prevention and/or cure of cancer and heart disease, close to 54% of deaths could be avoided or reduced to a lesser percentage. In developing measurements around cancer and heart disease, outcome measurements regarding surgery, medication, support groups (e.g. smoking cessation) and education could be included. The top 5 to 10 causes of death could be examined, and opportunities for research, medical intervention or education could result from this analysis. Other measurements could include number of physicians, number of individuals without a physician, life expectancy and infant mortality.

Income. Included in the measurements could be average household income versus income of the city/town versus average income of the province/territory, percentage of income used for rent, percentage of single parent families, percentage of families with English (or French in Quebec) as a second language, number of persons per household and percentage of the population receiving subsidy. Benchmarking would be useful in better understanding these measurements. That is, in relation to other communities deemed to be "healthy," what are their percentages of the above categories and how does another community compare. This would also serve to develop targets and work plans for improvement.

Social Networks. Measurements relating to the social networks are difficult to define. Measures such as average number of volunteer hours, average amount of charitable donating, substantiated reports of child, elder and wife abuse, usage rates of public recreation facilities, public library use and yearly percentage of sports activity involvement could be included.

Education. Measurement of this health determinant could include public high-school graduation rate, average school test scores, number of higher-education degrees awarded, number of vocational-training certificates awarded and literacy levels.

Employment. Included in the measurements could be unemployment rate, homelessness rate, percentage of part-time employment versus full-time employment, total number of jobs, net job growth and percentage of individuals receiving public assistance. Again, benchmarking across one province or several provinces would be useful for comparison purposes.

Environment. Included in the measurement for environmental indicators of health could be air quality, water quality, pedestrian friendly streets, acreage of public community and neighbourhood parks, number of miles of public trails, motor vehicle accidents and work-related injuries.

Conclusion

By developing a shared vision for what it means to be a healthy community, a framework for action could evolve. At a policy level, the indicator system could shape funders' budget allocations and decision-makers' goals and activities. An annual report card could be developed, illustrating the progress of long-term health goals.

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Community-Level Social Indicators of Youth-Healthy Communities

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Developing a Healthy Communities Index requires some conceptualization and measurement prior to the development of community-level indices that can be applied to communities to determine: a) the indicators of community-level resources contributing to community health, broadly understood; and b) the indicators of community-level outcomes achieved, in part, through these resources.

This task is best addressed by advisors focusing on specific populations, recognizing that there will be much in common, both in necessary resources and desired outcomes, across these populations. Another organizing principle is for advisors to focus on specific environments in communities—physical, learning/work and social environments. One can achieve this latter focus by using a "resource capital" approach encompassing physical, human and social-cultural realms. Physical capital resources include the geographic, climatic and air/water/earth environment, built physical facilities and financial assets in communities. Human capital/learning resources include the educational and career opportunities in communities. Social-cultural capital resources include social and cultural resources of various types and social capital.[1]

This paper addresses community-level social indicators of communities that make them healthy for youth. Initially, I provide a conceptualization of social capital that can be used to provide a framework for understanding community-level social indicators of resources and outcomes. Next, I consider some of the measurement issues in assessing community-level social indicators focusing on the need to collect both secondary level data from records and reports and observational data, as well as data that can only come from individuals or groups themselves. Finally, I suggest some possible community social resource indicators and community social outcome indicators for youth-healthy communities that fit the social capital approach.

Social Capital as a Framework for Community Social Indicators

The concept of social capital has been put forward by some authors as a potential factor in explanations of how community level factors may influence health.[2, 3] A number of authors have also hypothesized social capital as a key link between socio-economic inequality and health. In particular:

- Wilkinson argues that socio-economic inequality affects health because it erodes social capital (social capital as mediator).[4]
- Campbell suggests that social capital can act as a buffer against social-economic disadvantage by reducing the effects of the lack of economic resources (social capital as moderator).[5]

- Cooper et al. have demonstrated a modest independent effect of some indicators of social capital on health after controlling for a range of socio-economic variables (social capital and socio-economic status as independent, related variables).[6]

Most of the empirical research that has been carried out to explore the concept of social capital is in reference to adult populations and little research has explored its relation to young people.

The interest in social capital is typically traced to the work of Pierre Bordieu,[1] James Coleman[7] and Robert Putnam.[8, 9] Each of these authors has defined social capital in different ways. Coleman emphasises the idea that social capital is a resource of social relations *between* families and communities. Putnam defines social capital as a key characteristic of communities which extends beyond being a resource to include people's sense of belonging to their community, community co-operation, reciprocity and trust, and positive attitudes to community institutions that include participation in community activities or civic engagement. Social capital is the "glue between people in communities." Bordieu defines social capital in terms of social networks and connections, both within groups and across groups. He suggests that an individual's contacts within networks result in an accumulation of exchanges and obligations and shared identities that in turn provide potential support and access to resources.

Thus, social capital is an expansive concept; one that includes concepts such as sociability, social networks, social connectedness, trust, reciprocity and community and civic engagement. As Morrow states, the basic idea appears to be that the extent to which people are embedded within their family relationships, social networks, and communities and have a sense of belonging and civic identity constitutes their social capital.[10] This stock of social capital in turn impacts on health and well-being, perhaps in the same way as economic capital. However, Gillies highlights that in policy terms it is important to note that social capital should not be seen as a relatively inexpensive means of offsetting the most abrasive effects of inequalities experienced from poverty, relative poverty, homelessness and unemployment.[2]

Studies designed to specifically measure the links between social capital and health are sparse and most have been conducted in the United States. Consideration of social capital and its relationship to youth health and well-being is even more sparse.[11] The few studies that exist on social capital and children have investigated the links between social capital and school academic performance, intellectual development and juvenile delinquency, but not health.

There is still much work to be done to explore the applicability of the concept of social capital as it relates to young people, in particular on how to define and best measure it. In conceptualising the components of social capital for young people, I have drawn on the work of Morrow,[12] Mullan et al.[13] and the Search Institute[14] to describe its four dimensions, using health goals and research questions, as follows:

- **Social networks and social support**:[§§] Young people need to experience support, care and love from their families, neighbours and many others. They need organizations and institutions that provide positive, supportive environments. *Research questions address: What is the composition, durability, ease of access to and frequency of use of young people's social networks? How are these networks defined, what do these networks provide and how does this differ according to age and gender? What does friendship mean to this age group? How do organizations and institutions strengthen these networks?*
- **Empowerment through engagement**: Young people need to be valued by their community and have opportunities to contribute to others. For this to occur, they must be safe and feel secure and trusting. *Research questions address: To what extent do young people engage in local community activities? To what extent do they feel they have a say in community and institutional decision-making? Do they feel safe in neighbourhoods? Do they have a sense of trust in others?*
- **Norms and identity**: Young people need to know what is expected of them and whether activities and behaviours are "in bounds." *Research questions address: Who provides important role models for youth? Do young people have a sense of belonging and identity with their neighbourhoods, communities and schools?*
- **Growth opportunities**: Young people need constructive, enriching opportunities for growth through creative activities and youth programs. *Research questions address: What are youths' feelings about the facilities and resources in the local area? What physical spaces, such as parks, streets, leisure centers and clubs used for social interactions, are available for use and actually used by young people?*

Measurement of Social Capital at the Community Level

Measures of community-level indicators (in Healthy Communities, for example) should ideally be applied at the neighborhood, or community, level. Using a "resource capital" approach, one would ideally locate information about: various physical capital resources (via observation, records or even key informants if necessary); various human capital resources (via observation, reports or key informants); and various social capital resources (in the same way). Some, however, consider community-level indicators to be only those things that the researcher can see and experience "directly", that is without the researcher talking with individual people. However, it is important not to conflate the phenomenon being studied (community characteristics) with the measurement method. Clearly, as long as the community-level phenomenon being assessed concerns the social grouping of a community, and not characteristics of individuals, it does not matter how the information is collected. Also, clearly, some phenomenon can be observed easily (especially in the physical realm) and others *must be inquired about*. Data collection from individuals, as well as from other sources, is essential for assessing many phenomena in the human capital and social capital realms.[15]

[§§] Social support is one positive exchange that may arise from involvement in social networks and it has often been treated as a separate and conceptually different concept from social capital.

One example of an indicator in the social realm of communities might be the degree of community support for youth activities and engagement. This could be measured by asking youth and adults: "Is this community youth-friendly? Yes or No?" and calculating a suitable proportion, which would be the indicator. Thus one can conceptualize at the community level, yet measure and aggregate at the individual level. The key caution is to ensure that respondents are being asked to report on the community and not on their own characteristics.

Community-Level Social Resource Indicators (from a social capital perspective)

Community social resource indicators have a number of general characteristics:

- They are sponsored by schools, congregations, community youth organizations (e.g. YM/YWCA; Boys & Girls clubs; street youth agencies; parks and recreation), business/industry, health and social services, media, local government/police and philanthropic foundations;
- They are volunteer-based or volunteer-assisted; and
- They are sustainable in human and financial resources.

Utilizing a social capital framework, some sample community social resource indicators and potential measurement methods might include the following:

Social Resource Indicator	Social Networks and Social Support	Empowerment Through Engagement	Norms and Identity	Growth Opportunities	Possible Measurement Method
youth-friendly policies		X			survey
sponsorships of youth activities				X	records
youth-volunteer training program		X		X	records
after-school, evening drop-in programs		X	X	X	records
Big Brother/Big Sister program	X				records
youth-tutor program		X	X	X	records
community event calendar				X	records
youth-coach training program		X	X	X	records
media spots/columns		X	X		records
universal (open to all, not just to risk groups) programs		X	X		records
local foundation funds				X	records
youth-parent programs	X				records
whole community "vision teams"		X	X		records
youth survey/study of needs and resources		X	X		records
"success" celebrations	X		X		survey
alternative justice/sentencing program			X		records

Community-level Social Outcome Indicators (from a social capital perspective)

Community social outcome indicators have a number of general characteristics:

- They demonstrate the building of "natural" relationships, not just relationships inside a program;
- They demonstrate the building of assets and capacities in youth;
- They show the responsibility of the whole community; and
- They demonstrate lasting relationships.

Utilizing a social capital framework, some sample community social outcome indicators and potential measurement methods might include the following:

Social Outcome Indicator	Social Networks and Social Support	Empowerment Through Engagement	Norms and Identity	Growth Opportunities	Possible Measurement Method
common "positive" vision and commitment		X	X		key informants
working together		X			records
built capacity in youth				X	key informants
joint responsibility		X	X		records
inter-generational contacts	X				survey
inter-social group contacts***	X				survey
consistent messages about boundaries/values			X		records
adult to youth support (e.g. neighbours) outside the nuclear family	X				survey
parent to child support/contact inside the family	X				survey
parent-to-parent support	X				survey
youth-to-youth support	X				survey
neighborhood events				X	records
volunteerism		X			records
youth crime rate reduction			X		records
youth school completion rate increase			X		records
youth risk behaviour reduction			X		survey
inter-community linkages	X				key informants
local donation levels to youth activities				X	records
reputation as youth-friendly community (for all sub-groups)		X		X	survey
reduced access to harmful substances		X	X		survey
safe areas		X			survey
involvement in school extra-curricular activities		X		X	records
involvement in community activities		X		X	records

*** e.g. schools, congregations, ethnic associations, bisexual, lesbian, gay and transgendered (BLGT) associations, private or recreational clubs, and seniors, professional or business associations.

Conclusion

The conceptualization of social indicators for Healthy Communities threatens to be an overwhelming task without a conceptual framework. The social capital concept that is currently in vogue appears to have some utility for this purpose if it can be harnessed. Little work has been done in this area, especially in relation to specific populations such as youth.[†††] Beyond the conceptualization, however, the challenge will be to assemble specific, measurable community-level indicators that can be rapidly assessed on an ongoing, monitoring basis in communities.

[†††] The Canadian Adolescent At-Risk Research Network at Queen's University is currently conducting a social capital and adolescent health study utilizing the Health Behaviour in School-Aged Children 2001/2002 database. For more information, please visit: <http://educ.queensu.ca/~caarrn/>.

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Indicators for a Healthy Community

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This paper considers three key questions:

- What are the factors to be considered when thinking about healthy communities?
- How might these be measured?
- What would an index of healthy communities include?

These questions are considered in turn here, as they match precisely the order in which we approached our CPHI-funded research program on community population health indicators.[1]

What are the Factors to be Considered When Thinking About Healthy Communities?

A literature review by the U.S.-based Institute of Medicine concluded that:

> *"Partnership with the community [in health promotion] implies that the community has a voice in problem definition, data collection and the interpretation of results, and the application of the results to address community concerns."*[2]

To answer the first question according to this criterion, therefore, extensive community consultation is needed in order to identify indicators of community health and well-being. Indicators, by definition, imply directionality and the capacity to construct trend-lines over time. Therefore, in our CPHI-funded research program on community-level population health indicators, we began by posing very broad questions to representatives of more than 40 community groups in Kings County, Nova Scotia: "What kind of Kings County do you want to see 10 and 20 years from now?" and "What kind of Kings County do you want to leave your children?" In this way, we built directionality into our framing of the discussion, and thereby the potential for measuring progress towards the vision and goals defined by these community groups. Within that discussion, we asked participants what they would define as constituting a "healthy" Kings County and we used the terms "health" and "well-being" interchangeably.

Through extensive and ongoing community consultations over the course of a year, there was remarkable consistency in the factors identified by community groups as being of key importance in determining the health and well-being of their community. These were:

- Decent jobs (both quantity *and* quality) and livelihood security;
- Safety and freedom from crime;

- Environmental quality (including good air and water and healthy natural resources); and
- High levels of population health (physical and mental) and educational attainment.

Other factors mentioned with some frequency included:

- Balance in people's lives between their work, family and personal responsibilities;
- Strong community "values" like caring, generosity and volunteer participation;
- Activities for youth (including adequate recreational facilities) and capacity to retain youth; and
- Aesthetic quality (including the appearance of downtown cores and adequate parks and green spaces).

In our Glace Bay community GPI survey, we were surprised by the number of respondents who identified shortcomings in these last two factors as diminishing the quality of life in their town.

How Might These Factors be Measured?

Having identified these key factors in our consultations with community groups, we then engaged these groups in discussions on how we might measure progress towards the goals they had identified. This turned into 1) a community-based process for specific indicator selection that required prioritizing areas of concern and 2) the actual construction of the survey instrument through which concrete data would be collected. Community groups played a key role in both these processes, although the survey questions they identified were then phrased more precisely to ensure that results would be comparable to provincial and national averages in Statistics Canada databases.

One key outcome of this process was that *both* objective *and* subjective factors were considered important in measuring progress towards community health and well-being. For example, actual rates of criminal victimization were considered an important indicator of community safety and security. But the community was equally concerned to assess whether residents felt safe in their neighbourhoods, what they identified as the key security problems in their own community and whether they thought their police were doing a good job. In sum, to answer the second question posed in this paper: "How might these factors be measured," we decided to include survey questions that assessed both objective conditions and subjective feelings of well-being. Thus, our health section for example, included questions about life satisfaction, happiness, stress and depression along with measures of smoking, obesity, chronic conditions and medication use.

Fortunately, Statistics Canada has already devised excellent measures for all these questions assessing both objective conditions and subjective feelings of well-being, so we had little practical difficulty in matching community concerns and interests with specific questions already contained in Statistics Canada's General Social Surveys (GSS), National Population Health Surveys and Canadian Community Health Survey, Survey of Work

Arrangements, the national volunteer surveys and several other established survey tools. In short, we were delighted that, with some exceptions, most of the factors identified in these extensive year-long consultations with community groups were measurable according to well-established protocols.

The three subject areas with which we had the greatest difficulty in devising good questions and measures were 1) environmental quality, 2) adequacy of activities for youth and capacity to retain youth and 3) aesthetic quality. In the end we did not include specific, quantifiable measures on the last two issues because we could not find appropriate and comparable national and provincial data and questions in established Statistics Canada survey instruments. Instead we allowed respondents to comment on these issues in their own words and we then analyzed their comments to identify common themes. For environmental quality, we did include questions in our survey on transportation and energy use, recycling and composting and subjective assessments of water quality. For other issues including air quality and natural resource health, we relied on existing Environment Canada, Agriculture and Agri-Food Canada, Statistics Canada and provincial natural resource and agricultural databases for our data rather than on our own survey questions. For all the other subject areas, we collected our own data through a carefully designed survey administered to 3,600 respondents in both communities.

What Would an Index of Healthy Communities Include?

I can best answer this question by describing what we did in fact decide to include in our initial suite of community health indicators here in Nova Scotia. I should add that we by no means regard this list as exhaustive, particularly as many issues were excluded not because they are unimportant but due to measurement difficulties and due to the size and length of our survey which required prioritizing issues and focusing on the areas of highest priority to the community groups with which we consulted. It should be noted that, with very few exceptions such as selected Census data, existing data sources do not provide adequate data at the local and community level on key determinants of health. Therefore the construction of any community-level index of population health and well-being will depend on capacity to collect the necessary data. It is not enough to conceptualize what should ideally be included in such an index, since that exercise will necessarily be limited by data availability and the necessity to administer a survey.

I would therefore suggest that this third question be approached as a consideration of what issues and questions *can feasibly* be included as *priority* items at this developmental stage in our history, leaving open the possibility of expanding the suite of indicators at a later stage. The following list is therefore certainly not complete, but is suggested here, based on our experience and on extensive community consultations, as likely reflecting areas of key importance to Canadian communities. This assumes, of course, that what matters to the citizens of Kings County and Glace Bay, Nova Scotia, can be generalized to the rest of the country. This assumption is based on the fact that these two communities

are very different in composition and in their historical, demographic and socio-economic conditions and circumstances. Despite these differences, the issues outlined below were of key concern to both communities.

Nevertheless, it must be acknowledged that particular communities will have particular concerns, so certain indicators of community health and well-being that are important to one community may be less relevant to another. Rural Kings County residents were very concerned about the future viability of agriculture in their region as a key component of community health and well-being. This was clearly not of concern in industrial Cape Breton, where Glace Bay is located. Thus, our Kings County indicators included several indicators on agriculture, while our Glace Bay ones did not. A racially and ethnically mixed community may require indicators of tolerance and diversity that a more homogenous community may not consider. For the purposes of this paper, however, we exclude such indicators that may have relevance to particular communities and focus on those indicators that seem most generalizable to other Canadian communities.

The following are some of the key indicators of community health and well-being that were included:‡‡‡

Livelihood security. Employment and income have long been recognized as key social determinants of health. We combined these two key issues into the concept of livelihood security and included questions on:

- Employment status (including full or part-time);
- Incidence, duration and reasons for unemployment;
- Job characteristics (e.g. permanent or temporary including seasonal, contract, casual and on-call work; fringe benefits);
- Work schedule (including hours of work, overtime with or without pay, and shift work);
- Income and sources of income (including entitlement to employment insurance if unemployed);
- Food security (including food bank use);
- Fear of layoff;
- Underemployment (including involuntary part-time work and whether respondents felt overqualified for their jobs);
- Work stress; and
- Interest in reducing work hours.

‡‡‡ The following thumb-nail summary of priority community health indicators is necessarily brief. For the full survey instrument that we used in Kings County and Glace Bay, see <http://www.gpiatlantic.org/publications/communitypubs.shtml> and scroll to the bottom of that page.

Safety and freedom from crime. This is now recognized by the Canadian Institute for Health Information (CIHI) as a key determinant of population health and is included among Statistics Canada's core non-medical population health indicators.[3] As noted above, we included:

- Objective questions on victimization (mostly taken from Statistics Canada's GSS victimization surveys) including type of crime, losses incurred and domestic violence; and
- Subjective questions on perceptions of safety, fear of crime, perceptions and opinions of the justice system, and identification of major problems in the community.

Environmental quality. The physical environment is acknowledged by Health Canada as a key determinant of population health.[4] We included questions on transportation, energy and water use to assess human impact on the environment and we also used existing data sources for indicators like air and water quality.

Educational attainment. Here we included standard questions on level of education completed and current student status, although we recognized these as inadequate to assess educational quality and outcomes and acknowledged that more work was needed to develop better indicators of educational attainment.

Risk behaviours and prevention are a standard indicator of population health, and so our survey included questions on:

- Smoking status, cigarette consumption and exposure to second-hand smoke;
- Height and weight (to assess Body Mass Index) and physical activity;
- Coffee consumption; and
- Screening (mammogram, Pap smear and blood pressure testing).

We also included a separate food consumption diary to assess nutritional status.

Social supports are also recognized as a key determinant of population health and so we included questions on:

- Whether respondents had someone to make them feel loved or rely on for advice or in times of crisis;
- Spiritual and religious practices;
- Core values;
- Interactions with neighbours and relatives; and
- Volunteer work (formal and informal, type of voluntary work, hours contributed and burn-out). We added a special section on care-giving, recognizing that home care is increasingly important in our health care system and that care-givers may have unique stresses and health challenges.

Time use and balance. We included a time use survey to assess the balance between paid and unpaid work responsibilities and free time (a key ingredient in well-being). This survey also assessed time spent with children and time spent commuting and traveling.

Open-ended questions. To guard against the possibility that our survey questions would determine the definition of community health and well-being, we also invited respondents to tell us of any issues that mattered to them that were not covered in the survey, which issues that we did ask about were most important to them and what they would recommend to improve the quality of life in their communities. We then assessed these qualitative, written answers for common themes. Here we found evidence that ample activities for youth and capacity to retain youth and aesthetic quality of the physical environment are widely regarded as key determinants of community health and well-being by many respondents. Thus availability of recreational facilities and green spaces are key issues to many Canadians and we recommend that standard survey questions be constructed and data sources identified to include these factors.

Health outcomes and status. Finally, it is important for analytical purposes to correlate the determinants of health described above with health status and health outcomes. Therefore our survey included questions on:

- Self-rated health;
- Pain, disability and activity limitations;
- Mental health including stress, depression, competence, control and life satisfaction;
- Medication use;
- Chronic conditions;
- Health service utilization; and
- Health of children.

Clearly the determinants of health are wide-ranging and assessments of community health are limited by data availability. Therefore the major challenge facing researchers in constructing indicators for a healthy community is the need to collect the requisite data at the community level. Based on our experience in the CPHI-funded research program on community health indicators, the above factors are identified by communities themselves as key ingredients of a healthy community. The list is by no means comprehensive, and we did not include important indicators like housing, arts and culture and other factors that clearly contribute to community well-being. However, our experience to date indicates that the factors listed above should be included as priority indicators in assessments of population health at the community level.

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What Would an Index of Healthy Communities Include, from the Perspective of Children 0–6 and How Would it Be Constructed?

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The good news is that Canada already has an excellent healthy communities index from the perspective of young children: the Early Development Indicator (EDI).[1] The EDI is a measure of school readiness at kindergarten age. Measuring children's readiness for school is important because it reflects children's early development and influences school success, health and well-being later in life. The EDI measures a child's development in five areas: 1) physical health and well-being, 2) social competence, 3) emotional maturity, 4) language and cognitive development and 5) communication skills and general knowledge. Together, these areas cover the three principal domains of child development: language/cognitive, social/emotional and physical. It does not emphasize health services interventions, but instead reflects the nurturant quality of the totality of children's early environments from a developmental standpoint.

The Early Development Instrument is a checklist that kindergarten teachers complete for each child in their class after they have known them for several months. As such, it is inexpensive to implement. In British Columbia (BC), the EDI cost approximately $1 million to cover all children in the public school system and a large fraction of those in private and "on reserve" kindergarten (approx 45,000 children in all). Moreover, the EDI has been found to be valid for use with children from different cultures, including Aboriginal children.

Results from the EDI can be interpreted at school or neighbourhood level, making it a wonderful tool for community assessment purposes. In BC, we analyze the EDI according to residential neighbourhoods and also by school districts across the province. We "map" each scale showing the average scale score by neighbourhood and also the proportion of children who fall below a "vulnerability" threshold. Next, we overlay the five scales of the EDI to show the proportion of children who are vulnerable on one or more scales. This information steers policy-makers to consider all dimensions of development equally when considering where to place effort and resources.

EDI information and EDI maps can be used to think in two directions: backwards in time and forwards in time. Thinking backwards in time means using the EDI as an "outcome indicator" for the period from birth to kindergarten age. In other words, the proportion of children in a given neighbourhood or school who are vulnerable on one or more dimensions of the EDI is taken as an indicator of the "quality" of their early nurturant experiences, cumulating across family, neighbourhood and care environments. Differences in the proportion of vulnerable children from neighbourhood to

neighbourhood, and from school to school, reflect systematic differences in the quality of early nurturant experiences at the level of the group. Thus, the "backwards in time" analysis of the EDI leads to an unambiguous long-term strategic goal: bringing down the total proportion of vulnerable children and reducing inequalities in the proportion vulnerable among neighbourhood and/or school sub-populations by kindergarten age.

The second direction of analysis of the EDI is "forwards in time". In this case, the school is the key unit of analysis. Here, the EDI becomes a predictor of how children's trajectories of academic learning, social-emotional development and physical development will unfold over time. In BC, we have found that schools with a high proportion of children vulnerable on the EDI in kindergarten tend to have high proportions of children "failing to meet expectations" on standardized arithmetic and reading tests in grade four and grade seven. In other words, without consideration of children's "readiness for school" using the EDI or a tool very much like it, it is very difficult to estimate how much benefit children are receiving during their years in the classroom.

By using the EDI as a baseline measure and combining it on a child-specific basis with data on school progress, it is possible to estimate academic (or social-emotional or physical) growth trajectories school by school. In BC, we have compared "serial cross-sections" of EDI and standardized Grade 4 test data by school. The results radically change the impression given of school quality. When Grade 4 test results are simply compared school by school, they follow the contours of socio-economic status of the school catchment areas, with the highest doing best, and the lowest doing worst. Using the EDI to assess change from kindergarten to Grade 4, however, reveals that many schools in low socio-economic neighbourhoods are doing relatively well given the state of school readiness of their kindergarten population. This information has much more credibility with teachers and school authorities than "raw" school achievement data, since "everyone knows" that if you teach in an affluent school you will always look good and if you teach in a poor school you will always look bad, regardless of your teaching skills and the efforts your school makes to create a strong and supportive mini-community. Using the EDI in the way we have has managed to convince school districts that school-based performance data can be used in non-perverse ways. As a result, they have become interested in the endeavour of improving the developmental trajectories of their children; not just academically but across the other domains of development, too.

The EDI, in conjunction with neighbourhood mapping, has turned out to be a wonderful tool for promoting inter-sectoral collaboration for early child development. To date, more than 140 initiatives have been taken by schools, health departments and inter-sectoral coalitions as a result of our EDI mapping activities. Some have been interventions in the 0–5 period to improve children's readiness for school. Some have been school-age programs to improve children's chances of success over time. This is momentous, given that EDI results have only been available for the past 1–3 years.

Issues and Objections

Why not assess development earlier in life? Based upon what we know about early child development, health and well-being across the life course, it would make sense to have information flows about child development long before kindergarten. This has not happened because of problems of feasibility: cost, time and access to the total population. There are no validated instruments earlier than kindergarten that can be administered in "report card" form. All would require a quasi-clinical assessment, whereas the EDI can be filled out by kindergarten teachers in approximately 15 minutes per child. Moreover, there are few "universal access points" to children before kindergarten entry in Canada, making the finding of the whole population of children difficult. In lieu of this, the EDI can be supplemented with surrogate indicators of earlier development, such as low birth weight, small for gestational age, post-neonatal mortality and/or early childhood hospitalization for injury.

The EDI is a roll up of individuals, not a property of the community as a whole. This is true. Whether we use average scores or proportions vulnerable by school or neighbourhood, we are basically aggregating across individual children, not assessing a characteristic of the community, like air pollution, that is solely a property of the whole. I believe that this objection is more academic than real. Once EDI scores have been calculated by neighbourhood or school they can (and are) used to characterize inequalities within communities and between school districts. The "level of inequality" is inherently a property of the group, even though it begins with individual-level data. Moreover, many of the variables that are characteristics of the community: income distribution, per capita access to quality child care, levels of social trust, access to parks and recreation, circulation rates of library books for young children, etc. can be used to explore the origins of neighbourhood or school level inequalities in child development.

The proposed strategy here is to use a valid *outcome indicator* of early child development and *predictor* of future life chances, like the EDI, in conjunction with routinely collected data that characterize the community context. Together, these flows of information can help to characterize which communities are healthy places for children to spend their early years and, to a useful degree, why this is so. In BC, we have demonstrated that this is not just an idealized vision, but rather one that can be made practicable across a large, complex population.

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An Applied Policy Context for Indicators of Healthy Communities

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Writing this short think-piece on indicators of healthy communities has been challenging. There are many important issues to cover, and this paper covers those that I think are most critical. I will first attempt to situate the need for and design of measures of healthy communities within the current policy context. Following that I will draw on my experience with the Federation of Canadian Municipalities (FMC) Quality of Life Reporting System[1] to suggest key considerations and a range of possible indicators.

Communities at the Forefront of Health

There is a growing realization that the fundamentals of our communities need attention and support in order to preserve our quality of life. Along with the federal and provincial/territorial responsibilities for the environment and for economic and social development, responsibilities for clean water and sanitation, housing, transportation, parks and recreation and responses to drug abuse and trafficking make municipalities, communities and community-level actions the starting point for public health.

In this context, the current discussions on a "new deal for communities" become perhaps the most promising path toward ensuring healthier lives for Canadians. It is widely agreed, if perhaps not yet reflected in the ongoing rounds of First Ministers meetings, that an effective "upstream" approach to health, emphasizing healthy living and sickness prevention, is a key to resolving the apparently bottomless pit for society's resources "downstream" at the clinical intervention stage. Indicators of healthy communities and their determining factors promise therefore to become an important policy tool.

Healthy Communities

Health living is a lot easier to do in healthy communities. But what do we mean by "healthy communities"? Do we view this question from a "medical demands and resources" lens, a "public health and disease prevention" lens, or something wider, that considers the fundamental livability of communities and whether or not they are conducive to mental, physical and spiritual health? I suggest, for tractability, a version of the public health lens, with clear connections to the community.

Even with a restricted viewpoint, we have a great many candidates for inclusion as indicators of healthy communities.

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§§§ The preceding are the views of the author, and do not necessarily reflect the position of the Federation of Canadian Municipalities.

Indicators of Healthy Communities

The ultimate outcomes, given this restricted view, could still be expressed in public health terms, such as trends in disease. These outcomes need to be connected to their determinants.

Because many others are better qualified to discuss the determinants of health, I will not attempt to do so here. The following, however, is suggested as a fundamental set of indicators, aside from demographics, that should be measured as to their presence, absence and distributional equity implications:

- Healthy, adequate and safe housing;
- Adequate incomes and reasonable distributional equity;
- Clean water and air;
- Availability and quality of health care and social services;
- Opportunities for recreation, exercise and healthy lifestyles; and
- Public safety.

These fundamentals should be measured at the community level, meaning that the results can be understood as related to a municipality or economic region to which a resident could reasonably identify. Understanding the results in terms of a "community," often defined by the municipality, or even neighbourhood, as opposed to a theoretical statistical boundary, is important for providing policy-relevant information. Larger aggregations obscure important local information.

Behind these fundamentals is a set of outputs and conditions that are required for their realization, such as:

- The quality and affordability of the housing stock;
- The quality and availability of employment or income support;
- Education resources;
- Recreation facilities and programming;
- Green spaces;
- Pedestrian-friendly community design;
- Safe neighbourhood designs;
- Urban planning to minimize congestion and commuting;
- Transportation systems;
- Water and waste systems;
- Police, fire and emergency planning/management capacity;
- Public health facilities and programming;

- Drug harm reduction and enforcement;
- Social services;
- Services to foster social inclusion; and
- Cultural facilities and programming.

An indicator system focusing on public health might only choose a subset of these, depending on its scope and emphasis. It is, however, important to measure tangible assets and services, because these, or the lack thereof, are behind the determinants of health. As importantly, these elements are also the ones that are understandable in policy and programming terms: they are something we can actually manipulate.

Many of these factors, however, will have to be understood using a set of sub-measures. For example, a full measure of housing calls for understanding of the affordability of rental and ownership housing, availability, condition of the stock and concentration of low-income units and housing. A full measure of recreation facilities and programming relevant to public health could include affordability, availability and degree of use. Hence, a system to measure the relative health of communities could easily contain many separate pieces of data.

While a large collection of measures may be a daunting prospect, it is preferable to "paint a picture" using a set of indicators rather than to try to construct an index. Indices obscure the wealth of information that underlie them and are sensitive to the weighting given individual elements. Moreover, indices lend themselves to unhelpful comparisons between communities. The nuance lent by a wider set of measures provides more insight to policy-makers.

It will also be important to show the trends in determinants of health and their underlying factors as well as the current picture. The state of our communities should be understood in the context of changing conditions, in order to say something about the success of past policies and to point to potential solutions to issues. For example, it would not be possible to diagnose a systematic under-provision of low cost housing by the private market, as FCM and others have done, without viewing the situation over time. A snapshot of current conditions alone might have only indicated a short-term phenomenon.

The FCM Quality of Life Reporting System has faced all of these issues in its design and development. What has resulted is a set of over seventy indicators, arranged in ten "domains," or sets of related indicators, that we believe relate directly to the quality of life in our communities and can be consistently measured over time. The domains include:

- Demographics;
- Personal financial security;
- Personal and community health;
- Personal safety;

- Affordable, appropriate housing;
- Local economic conditions;
- Natural environment;
- Education;
- Employment;
- Civic engagement; and
- Community and social infrastructure.

Each domain contains multiple indicators, and selection of indicators has involved tradeoffs between completeness of information and system manageability and cost.

Moreover, serious data availability problems are encountered, as Statistics Canada and other agencies do not measure everything you might wish to include. Measurement of many indicators under the FCM system has required collection of data directly from municipalities. Much of the relevant information is also collected only every four years, during the Census of Canada. Design of an indicator system must take account of these considerations.

In the end, with this many factors to balance, it will be critical to understand how the results are to be used and, if it is as a policy tool, what information will most likely contribute to actionable conclusions by policy-makers.

Conclusion

The growing realization of the importance of public health as a part of the health system and similarly growing emphasis on community-based policy should put development of healthy community indicators in the spotlight for policy-makers. Designing tractable and policy-relevant sets of indicators, however, involves many conceptual and practical considerations. In choosing indicators, it will therefore be most important to understand the planned application of the system's results. Because the breadth and complexity of the potential set of indicators escalates as your view of the concept of healthy communities broadens, and as I have argued for the importance of good policy on public health, I suggest a set of indicators corresponding to a public health perspective, rather than a broad community livability and quality of life view. The set of indicators discussed above provide candidates for such a system. One potential means to broaden the perspective of a healthy communities indicator system would be to work collaboratively with established community-based indicator projects like the FCM Quality of Life Reporting System.

Reference

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