



Social Indicators Literature Review

DEVELOPING THE COLUMBIA BASIN RURAL DEVELOPMENT INSTITUTE'S SOCIAL RESEARCH PILLAR

Part of a series of research papers on indicator development for the State of the Basin project in the Columbia Basin Boundary Region

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The Columbia Basin Rural Development Institute, at Selkirk College, is a regional center of excellence in applied research and information provision focused on strengthening rural communities in the Columbia Basin Boundary Region. Visit www.cbrdi.ca for more information.

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THE STATE OF THE BASIN INITIATIVE

The State of the Basin is an indicator and monitoring program originally developed by Columbia Basin Trust (CBT). Now a project of the Columbia Basin Rural Development Institute (RDI), the State of the Basin initiative involves collecting, analyzing and reporting on indicators in order to build an up-to-date and dynamic picture of the vitality of communities in the Basin Boundary region.

OBJECTIVES

When originally envisioning the State of the Basin, CBT developed the following four goals. These goals collectively define the purpose of the initiative:

- **inform** citizens and organizations about the people, natural environment, communities, and economy of the Basin by providing access to accurate, credible, and timely information,
- **encourage** understanding of complex issues and trends over time, including into the future when possible,
- **signal** whether conditions are similar or different within the Basin, and in comparison to other areas to highlight and celebrate areas of achievement, and to identify significant issues, ideally before they become critical, and
- **motivate** discussion, information sharing, strategic evidence-based decisions and collective action.

HISTORY

In 2006, CBT responded to long-standing requests for information on social, economic, environmental and other trends in the Basin by launching the State of the Basin initiative. Resulting from the work of project consultants, a volunteer working group, CBT staff and more than 50 expert advisors, the first State of the Basin report was released in 2008. This report was accompanied by a website that provided access to updated trend analyses and raw data. In order to support the application of available information, the State of the Basin initiative also provided support to individuals and communities interested in understanding and using the data. The purpose of the 2008 State of the Basin Initiative was to test the concept of indicator reporting in the region by presenting a sample of credible, locally relevant information.

Response to the 2008 project indicated that the State of the Basin initiative addressed an important need for information in the region, and that future iterations would be of benefit to local communities and organizations. Acknowledging the links between the objectives of the State of the Basin project and the mandate of the RDI, CBT transferred responsibility for the project to the RDI in 2011. Because the RDI's service area includes the entire Basin Boundary region of BC, the geographic scope of the State of the Basin has expanded beyond the area defined by CBT as "the Basin" to include a portion of the Regional District of Kootenay Boundary referred to as "the Boundary region" (figure 1).



Figure 1: The Basin Boundary Region

In 2012, the RDI developed an updated State of the Basin report using the same, or similar, indicators that were used in the 2008 version. However, the 2013 State of the Basin project will incorporate a significant revision to the suite of indicators monitored through the initiative. The future focus of the State of the Basin will be on researching and reporting on information that is of the highest value to Basin Boundary communities. In order to ensure the State of the Basin achieves maximum relevance and utility, consultation with key stakeholders and user groups will be an important component of the indicator development and reporting process.

INDICATOR MODEL

The State of the Basin uses an indicator model to report on the status of well-being in the Basin Boundary region. Indicator reporting is a growing trend among organizations that operate at various geographic scales (from global to neighbourhood-specific) and with varying scopes of interest (from those as broad as well-being to those as specific as financial performance). By distilling complex information into easily understandable measures, indicators help diverse audiences, with widely ranging backgrounds, to understand important trends.

As part of the 2013 State of the Basin update, the RDI completed research on best practices in indicator reporting and on lessons learned from the 2008 report development process. This literature review adds context-specific discussion to that research.

RESEARCH FRAMEWORK

The RDI has developed a new State of the Basin research framework which, similar to the 2008 framework, is centred on the concepts of well-being and sustainable development. The new framework organizes research efforts into four “pillars” – society, culture, the environment, and the economy—each of which have several defined sub-themes (figure 2).



Figure 2: Revised State of the Basin research framework

Many indicator projects adopt a similar approach to research, understanding that “well-being” or “sustainability” are difficult concepts to measure in themselves. Instead, progress toward achieving those goals can be measured through an assessment of conditions in more narrowly-defined realms of influence.

In the literature on indicator reporting, a strong case is made for linking environmental, economic, social, and cultural indicators through a common lens such as well-being or sustainability. By adopting this approach, the State of the Basin initiative explicitly acknowledges that community vitality is dependent on the strength of all four pillars and that the environment, the economy, culture and social systems are very much interconnected. A change in conditions in one pillar or sub-theme not only affects the overall measure of well-being, but it can also affect the status of other pillars or sub-themes. Exploring these inter-pillar relationships will be a priority for State of the Basin research.

INFORMATION PRODUCTS, TOOLS, AND SUPPORT

State of the Basin research will be made available to Basin Boundary communities in a variety of formats:

1. A snapshot report will provide an overview of the project and quick, interesting research findings in a format that will be accessible to a wide audience.
2. A full report will provide in-depth discussion of each indicator, including its relevance, current status and an analysis of regional trends.
3. The “Digital Basin” will provide web-based data tools, including:

- a. an interactive and customizable map displaying spatial features of all relevant indicators, as well as environmental, economic, social and cultural assets in the region,
- b. a customizable data viewer that allows for analysis and comparison of indicator data over time and space, and
- c. a resource library that will allow users to download supporting documents (plans, reports by other organizations, etc.) for independent analysis.

In addition, the RDI will support development and use of State of the Basin research in Basin Boundary communities by:

- liaising with key economic, social, cultural and environmental stakeholders to better understand their information needs and research capacity (such as the ability to collect and use related information),
- identifying opportunities for local data collection by key stakeholder groups,
- providing direct research support, standardized data templates, training and support materials focused on the collection and use of indicator data,
- promoting and facilitating the sharing of information and best practices across key stakeholder groups, and
- exploring opportunities to link the State of the Basin initiative with K-12 and post-secondary student learning.

DEVELOPING SOCIAL INDICATORS

This paper, produced as part of a series on indicator reporting in the Basin Boundary Region of BC, has been prepared to help inform the Columbia Basin Rural Development Institute and Basin Boundary communities about best practices in social indicator selection for State of the Basin research and information products/tools. Academic literature and non-academic social indicator reports from Canada and other countries were analyzed to inform this document. This review includes an explanation of indicators followed by a brief history of the social indicators movement. The next section provides an analysis of indicator research and summarizes the most common indicators being used to measure social issues in Canada.

WHY SOCIAL INDICATORS?

In the world of indicator reporting, social indicators are specifically chosen and examined for their value in providing information about social conditions. In her paper on rural Saskatchewan social indicators, Reed (2003) quotes authors Force and Machlis (1998) who define social indicators as “an integrated set of social, economic and ecological measures collected over time and primarily derived from available data sources, grounded in theory and useful to ... management and decision making” (Force and Machlis, 1998, p. 371). According to Cobb and Rixford (1998), the purpose of social indicator research is “to alert the public and policy makers about the existence and cause of problems so that they might be solved” (p. 29). The feedback derived from social indicators can assist communities and policy makers in assessing the value of existing social strategies and inform effective planning and action for the future. They can also help to uncover

strengths and weaknesses in social infrastructure and inform the revision of existing initiatives and programs. Social indicators are valuable for identifying and anticipating trends and setting organizational, agency and program targets for excellence (Edmonton LIFE, 2002).

Simply put, indicators are quantities that reveal qualities (Meadows, 1988). It is difficult to measure qualities directly so there is a need to devise a measure from which a quality can be inferred. “We can't steer accurately, if we don't know where we are” (Meadows, 1988, p. 3). The literature identifies two types of social indicators: objective and subjective. Objective social indicators measure quantifiable facts and are independent of personal opinion, experience or attitude. Examples include the poverty rate, average working hours per week, and prenatal mortality rate. Objective indicators are primarily expressed as numbers and are verifiable by others. Subjective social indicators are based on individuals’ perceptions, opinions, and attitudes about the quality of social conditions (Gahin and Paterson, 2001). Examples include life satisfaction, happiness, or job satisfaction. One indicator is not necessarily more accurate than another, but a combination may offer a more comprehensive approach to understanding a situation. As such, recent research efforts advocate using both subjective and objective approaches to understanding and taking policy actions to improve quality of life (Reed, 2003).

A BRIEF HISTORY OF SOCIAL INDICATORS

Social indicators have had an interesting and tumultuous history. At times, they have captured research and policy attention while at other times they have languished behind the much stronger and more developed field of economic indicators. The following section offers a brief history of social indicator development, from their earliest beginnings to the well-recognized and critical informants of human well-being that we know today.

FIRST APPEARANCE IN THE 1830s

Social indicators arrived on the scene as early as the 1830s when they were applied to social and health reform issues in Belgium, France, England and the United States. Forced into action by the scourge of urban disease epidemics, physicians and statisticians began examining the social components of Census data. Their work eventually led to the formulation of models linking disease with poverty and other social conditions (Cobb, Rixford, 1998). The Temperance movement of the early 1800s used crude statistics to demonstrate the relationship between alcohol consumption, criminal and immoral behavior, and poverty. In the late 1800s, there was growing conflict amongst the American working class over wages and unemployment. This social unrest fostered the creation of the Massachusetts Bureau of Statistics of Labor in 1869, followed by the US Bureau of Labour in 1884. These organizations provided some of the first “officially” gathered social statistics (Cobb & Rixford, 1998).

GROWING INTEREST AT THE TURN OF THE CENTURY

Following a study of the industrial conditions in Pittsburgh in 1914 by the Russell Sage Foundation, interest grew across the US in the reporting of education, recreation, public health, crime and general social conditions. Though these early indicator reports aroused community conscience,

they did little to strengthen social reforms. In 1933, President Hoover's Administration released the controversial 1600 page *Recent Social Trends*. This enormous document listed data for hundreds of social indicators and trends, but again offered little in the way of interpretation or policy recommendations (Cobb & Rixford, 1998).

THE SOCIAL INDICATORS MOVEMENT OF THE 1960s

In the 1960s, there was growing public concern in the US over domestic issues such as poverty, race, unemployment, and housing. There was recognition that the technical and economic "progress" of the 1950s and the 1960s had come at a high social cost (Crothers, 2011). This spurred interest in measuring and solving domestic and social problems. The successful use of economic indicators in the 1960s, notably by the Kennedy administration, lent credibility to the use of indicators in policy formation and further fueled the use of social indicators (Cobb & Rixford, 1998). The social indicators movement, which advocated an expanded set of measures of human well-being beyond the traditional economic indicators, was born in Europe, the US and Canada (Cobb & Rixford, 1998).

Interest in social indicator reporting grew rapidly in the 1970s. International agencies such as the Organization for Economic Co-operation and Development (OECD) established a social indicators program and social indicator reports¹ became very popular, appearing in Great Britain in 1970, France in 1973, Holland and Spain in 1974, Denmark in 1976 and Austria in 1977. New Zealand established the Social Development Council in 1971 alongside its department of Social Welfare (Crothers, 2011). Several influential American reports were published in the late 1960s and 1970s each calling for the increased collection of social statistics and the annual publication of social reports (Gahin & Paterson, 2001). The *Social Indicators Research* journal was launched in 1974, and continues to this day.

DECLINING USE IN THE LATE 1970s

Most Western countries experienced a worsening of economic conditions in the 1970s and 1980s. Though social reports were produced several times in the US during the late 1970s, there was very little political will to interpret the data. What followed was a decline in interest in social indicators in the US, and to a lesser extent in Canada and other countries until the late 1990s (Crothers, 2011). Several theories help to explain why this happened.

Compared to the robust nature of economic indicators, it was felt that social indicators lacked a sound theoretical framework. Due to the complexity of social issues, a common system of measurement did not exist (Crothers, 2011). There was a lack of agreement as to what constituted good and bad indicators, and social scientists were perceived as being unable to demonstrate indicators' rationale and usefulness (Gahin & Paterson, 2001).

¹ Reports that compiled information about selected indicators and analysis of trends.

Despite the slowing of support in the US, and to a lesser extent in Canada, publication of social reports continued in Great Britain, France, Germany and Holland as well as in the Nordic countries. The United Nations developed the *Human Development Index*, consisting of an examination of three variables (life expectancy at birth, adult literacy, and purchasing power) to explore the relationship between economic and human development. The World Bank developed the *World Development Indicator* with similar variables except with the addition of consumption per capita rather than purchasing power (Harris & Burns, 2004). The *Quality of Life Index*, developed by American psychologist Ed Diener at the University of Illinois, was based on three universal requirements for human existence: meeting biological needs, coordinating social interaction, and the survival and welfare of groups (Harris & Burns, 2004). Despite this movement towards the monitoring of social progress, concern still remained about the general over-representation of economic indicators, and the laborious monitoring that was associated with large numbers of social indicators in some reports. There are still questions remaining amongst social researchers about whether social indicators should be used to monitor and describe conditions, or be used to intentionally guide next steps (DeLugan, Hernandez, Sylvester, and Weffer, 2011).

Cognizant of these criticisms, social researchers began a more comprehensive testing of social indicators. Efforts were made to study and compare quality of life between cities and localities across the US. Academics and research organizations experimented with economic and social indicators at local levels, producing community profiles, “report cards”, citizen surveys and socioeconomic data. As well, with the rising costs of health care challenging national economies, social scientists had an opportunity to prove the impact of social conditions on health (Gahin & Paterson, 2001).

THE MATURING OF THE SOCIAL INDICATORS MOVEMENT IN THE LATE 1980s

Several factors contributed to the resurgence in the use of social indicators in the late 1980s. The late 1980s brought forth demands from some national governments for “evidence based policy” and enhanced monitoring of social outcomes. As well there was a growing public demand for greater accountability and a shift toward outcome-oriented measurement. There was a growing desire for local information and local decision-making. In the US and Canada, grassroots efforts to engage citizens were initiated by business leaders, elected officials, non-profits, educators, churches and concerned citizens.

There was also widespread recognition that broadening the base of participation in indicator creation and accountability yielded benefits (Kulkarni, 2012). According to Hancock et al. (1999), indicator selection activities brought people together from multiple sectors, fostered new relationships, and created shared understanding of community problems and goals. Further, success of policy adoption is raised if stakeholders are actively involved in indicator development and selection (Hancock, 1999). The OECD international conference on Indicators for Urban Policies in 1995 provided the first opportunity since its 1978 report for social researchers to come together with a focus on social indicators.

THE SHIFT TOWARDS SUSTAINABILITY INDICATORS

As early as the 1970s, awareness was growing about the inter-relationship between economics, social conditions and the natural environment. Much of this work was led by pioneering American environmental scientist, researcher and writer Donella Meadows (www.donellameadows.org). This awareness spawned the growth of sustainability indicators, which emphasized the implications of current trends on the future as well as providing models that illustrate the inter-relationships among social, environmental and economic concerns (Meadows, 1988). For the first time, communities and policy makers were tasked with providing a set of indicators that integrated economic, social, and environmental components into measures of societal well-being (Gahin and Patterson, 2001). Aided by technological advances in the internet and computer aided mapping software, these efforts matured into neighbourhood indicator programs, quality of life assessments, healthy cities and communities movements, and a growing awareness of the environment.

BEST PRACTICES IN SOCIAL INDICATOR DEVELOPMENT

The following section offers general recommendations on developing sound social indicators. In addition, and relevant for the Basin Boundary region of BC, strategies that foster indicator development within a rural and cultural context are examined.

MAKE INDICATORS MEANINGFUL

According to Donella Meadows, “misleading indicators will cause over- or under-reactions, changes that are too weak or too strong to bring the system exactly to the desired state” (Meadows, 1988, p. 3). A review of the literature offers the following suggestions to help ensure that the indicators chosen for an initiative will be the most meaningful:

- **Purpose:** Clarify the purpose of the indicators and who the audience is (i.e. public education, background for policy makers, evaluating success of an initiative) (Kulkarni, 2012).
- **Validity:** Indicators must measure what they claim to measure (Smart Toolkit, 2010).
- **Utility:** Users of the information must understand the true meaning of the data collected by the indicator. If an indicator result is high or low for example, then researchers need to be clear on what this means, and what the implications are (Pencheon, 2006).
- **Responsiveness:** Will the chosen indicators be sensitive to changes in conditions (Pencheon, 2006)?
- **Simplicity:** Collecting and analyzing the indicator data should be straightforward (Smart Toolkit, 2010).
- **Availability:** Researchers must be certain that they can track the indicator with data that is reliable and available. Indicators need to be updated regularly using high quality data collection methods (Pencheon, 2006).
- **Sensitivity:** In the case of some social or health indicators, it is important to be able to speak to communities about the indicators in ways that they will understand (Meadows,

1988). Indicators have values attached. The process of deciding what to count and not to count involves making value judgments. Researchers are encouraged to exercise sensitivity.

ENGAGE COMMUNITIES

According to DeLugan et al. (2011), “the ability of social indicators to monitor change and/or affect change by improving understanding of social problems faced by communities, such as safety and security in neighborhoods, as well as changes in communities such as social mobility, point toward a more active role for social indicator research that extends beyond purely academic interests” (p. 263-264). The Genuine Progress Index (GPI) for Atlantic Canada followed an emerging, alternative approach to social indicators that was based on a philosophy that the *process* of formulating indicators was as important as the benchmarks it provided (GPI Atlantic, 2011). This initiative involved over 40 community organizations meeting for more than a year to develop a questionnaire to gather data needed for the Genuine Progress Index. In summarizing the outcomes of this initiative, Reed (2003) commented about the commitment to learning expressed by all those involved, the facilitation of an enjoyable and educational process, the development of support for communities to discuss situations, plus citizens’ training in community development and project management (Reed, 2003). Likewise, the Sustainable Calgary Society noted positive outcomes emerging from their development of social indicators, notably the valuing of a participatory and inclusive public engagement process (Keough, 2004).

Multiple stakeholders can be involved in the process of selecting indicators, from top-down interests of governments and other stakeholders, to grassroots community involvement (DeLugan et al., 2011). According to Meadows (1998), the indicator selection process works best with a mix of expert and grassroots participation, but this must be done with care. While a participatory approach to indicator development can result in cooperation and commitment by community residents, the need for quantifiable and objectively verifiable indicators can require input beyond that of community members: “therefore, a tension may exist between academic standards for indicator selection and measurement, and a community’s interests likely guided less by academic standards” (DeLugan et al., 2011, p. 267). According to Kulkarni (2012), “involving everyone can produce disproportionate representation of some stakeholders, too little technical knowledge, too much focus on immediate interests, risk of incomplete mapping of the area of interest, and no holistic understanding” (p. 12). Though highly supportive of the GPI process in Nova Scotia, Reed commented “an approach such as that undertaken by GPI Atlantic is a process, requiring large commitments of time, money and effort to be successful” (Reed, 2003, p. 15). The literature suggests that social indicator research about rural places must involve strategies to empower communities by providing local and relevant data in ways that engage local people directly in the research process (Reed, 2003). The following section outlines several considerations when undertaking social indicator projects in rural communities.

THE RURAL AND FIRST NATIONS CONTEXTS

Small rural communities have specific issues that may not be addressed by urban social indicator projects. Examples include transportation challenges within geographies, access to educational

opportunities, resource based employment opportunities and challenges, and changing demographics. Rural communities can also experience challenges when undertaking social indicators research. For example, rural communities often do not fit into census categories, and the census data available at higher geographic scales may describe a situation that is quite different from that community's reality. Due to small populations in rural areas, trend analyses for various measures can be distorted, especially over a short research period. Research in rural areas is more likely to be led by groups of volunteers and there may be limited capacity to undertake the research or analyze the findings (Reed, 2003).

The indicators chosen to describe aboriginal populations may vary from those for other populations. A series of comprehensive community-based projects out of the Saskatchewan Population Health and Evaluation Research Unit has focused on the development of tools to monitor the health of First Nations. In their model of "Community Health and Wellness" (2010), the domain of "Identity and Culture" monitors such indicators as community identity, numbers and types of cultural activities, spiritual activities, and community events, community morale, Elder/youth activities, social gathering places for Elders, Elders' input into community decisions, traditional practices such as healing circles, language, community knowledge and sharing (Jeffery et al., 2006). In addition, relevant data sources may differ. For example, the National Aboriginal Health Organization recognizes that data sources can consist of local knowledge, non-profit statistics, schools' information, and shared stories of hunters and elders (National Aboriginal Health Organization, 2007).

REVIEW OF SOCIAL INDICATORS

The factors that affect society and social well-being are many and varied. However, to help systematize State of the Basin research activities and use of findings by Basin Boundary communities, four social sub-themes have been defined. The first of these themes, demographics, is somewhat discreet from the remaining three: civic engagement and safety, education and learning, and health, wellness and affordability. These last three themes can be broadly classified as measures of wellness. Below, we explore the use of demographic and wellness indicators by other research organizations in Canada and abroad.

DEMOGRAPHIC INDICATORS

Demographic statistics build essential knowledge of the characteristics of a population. Demography encompasses the study of population size, structure and distribution, aiding in the understanding of:

- a population's makeup at any one moment in time,
- the factors that affect change in that makeup, and
- the relationships between population dynamics and the economic, cultural and environmental conditions in which they exist (Pressat, 1985).

Most community indicator projects incorporate at least some discussion of population demographics. Most commonly, indicators tracked include:

- population size,
- population growth rate,
- population density,
- sex ratio (women/men), and
- population by age class

(list compiled from: Edmonton LIFE, 2002; HSRDC, 2013; Sustainable Seattle, 1998; Fraser Basin Council, 2010; United Nations, 2012; Vancouver Foundation, 2010; Calgary Foundation, 2012).

Other common demographic indicators include measures of immigration (such as the percentage of the population born outside of the country or province and the percentage of the population whose first language is not English) and family status.

In the study of demography, population characteristics are often illustrated using a “population pyramid”, a chart showing the size of each age class, segregated by gender, within a population. This approach allows for easy comparisons between populations, as the shape of the pyramid can shift significantly over time or across regions with different settlement and growth patterns.

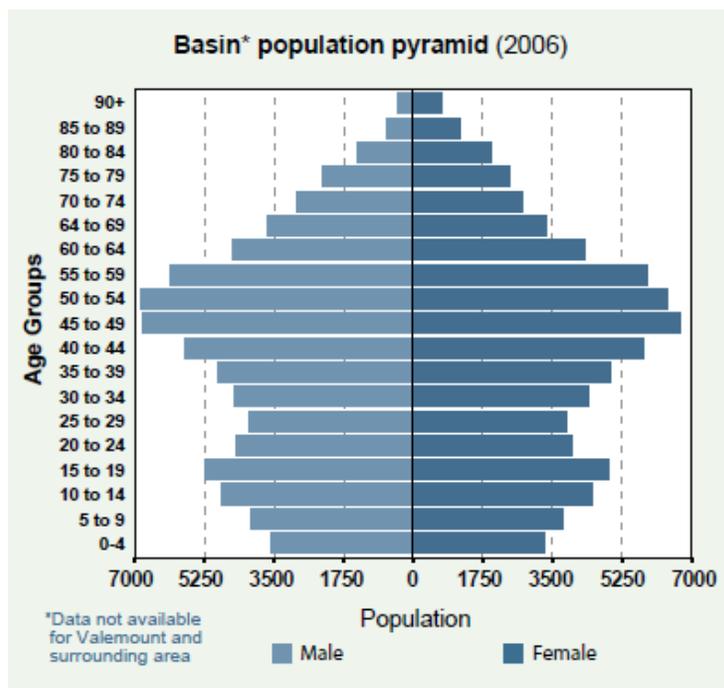


Figure 3: 2006 population pyramid for the Basin region (CBT, 2008).

WELLNESS INDICATORS

The document *A New Perspective on the Health of Canadians* was foundational in changing the discourse on health in Canada. It challenged the traditional view that the suite of Canadian health care services and providers were solely responsible for the health of the population (Lalonde,

1974). Rather, it proposed that changes in lifestyles or social and physical environments would likely lead to more improvements in health than would be achieved by spending more money on existing health care delivery (Public Health Agency of Canada, 2013). Due in part to documents like these, the world's view of health has evolved from merely the absence of disease to include a more positive perspective, focusing on all of the attributes that contribute to individual and community well-being (Foster, Keller, McKee, and Ostry, 2011).

An important step in creating policies that support community well-being is to define what wellness is so that those factors can be supported by communities and aid society as a whole (Foster et al., 2011). According to the New Brunswick government's *Live Well, Be Well* strategy, wellness is captured within a framework of seven dimensions that contribute to a person's overall sense of well-being:

- emotional,
- mental / intellectual,
- physical,
- social,
- spiritual,
- occupational, and
- environmental (Province of New Brunswick, 2009).

Even though there is no specific formula for measuring wellness, there are numerous attempts to do so, with hundreds of indicators involved. The famous Bhutanese measure of *Gross National Happiness* is one such attempt (Centre for Bhutan Studies, 2013). Many indicator projects that are similar in nature to the State of the Basin report on wellness indicators as one component of a community's overall vitality. In order to inform the future development of social indicators for the State of the Basin initiative, over 15 indicator reports were closely examined for the types of indicators used to measure wellness. The review included community-based reports representing urban centres (Edmonton, Calgary, Hamilton, and Vancouver) and rural communities in Saskatchewan and Manitoba, provincial reports from BC, Saskatchewan, Manitoba, and Nova Scotia and several reports that examined indicators at a national level. In some cases, Canadian reports were situated within the global context of social indicator research through an examination of reports from other countries or international organizations.

Collectively, these reports revealed that the primary wellness indicators tracked in Canada run parallel to the social determinants of health. According to the Public Health Agency of Canada (2013), these determinants (key factors that influence population health) include:

- income and social status,
- social support networks,
- education,
- employment / working conditions,
- social environments,
- physical environments,

- personal health practices and coping skills,
- healthy child development,
- biology and genetic endowment,
- health services,
- gender, and
- culture.

Therefore in Canada, capturing information about these issues is considered valuable in measuring wellness.

An analysis of all of the social indicators examined in the reports mentioned above revealed that income was the most prominent wellness indicator used. Other common categories of indicators included employment, housing, health services and health status, civic engagement and belonging, education and learning (both student and adult), and public safety. The following section offers a more detailed discussion of these broader indicator categories and includes specific examples of the most common indicators used within each category.

INCOME INDICATORS

There is a very strong case within the population health research for making the study of income a key indicator when assessing the social well-being of Canadians:

Income is perhaps the most important social determinant of health. Level of income shapes overall living conditions, affects psychological functioning, and influences health-related behaviours such as quality of diet, extent of physical activity, tobacco use, and excessive alcohol use. (Mikkonen & Raphael, 2010, p. 12).

The level of after-tax income of family members determines whether families have sufficient resources to purchase the goods and services needed for well-being (HSRDC, 2013). In general, the lower one stands on the income ladder, the poorer one's health will be across a number of measures. Having a decent and secure income allows a family to purchase nutritious foods, obtain adequate housing, and engage in healthy activities, among other things that affect the health of the members of that family. Income also affects health at a neighbourhood level to the extent that fewer resources and services, and more crime, are found in those places where poverty is concentrated (Public Health Agency of Canada, 2013).

Many income indicators are status indicators meaning they provide information about the income position of an individual or family in relation to others. The following income indicators appear to be the most commonly used in Canada:

- average (after tax) household income,
- income disparity / income inequality amongst the population of a region,
- number of individuals (or % of population) receiving social assistance or employment insurance,
- income levels for those who are disabled, elderly, young, or working-age,
- inter-generational income mobility,

- gender income gap,
- real average hourly wage, low income cut-offs, standard of living, duration of poverty,
- Market Basket Measure², and
- proxy indicators like food bank demand.

Though less prevalent in the literature, child poverty rates and income levels of single vs. two-parent households are worthy of consideration for inclusion in the State of the Basin initiative.

EMPLOYMENT INDICATORS

Working conditions are an important social determinant of health because of the great amount of time we spend in our workplaces. People who are already most vulnerable to poor health outcomes due to their lower income and education are also the ones most likely to experience adverse working conditions (Mikkonen & Raphael, 2010). Researchers have identified a host of work dimensions that shape health outcomes. These include such factors as:

- employment security,
- physical environment of the workplace,
- work pace and stress,
- working hours,
- imbalances between workplace demands and rewards (salary, respect),
- gender inequality,
- opportunities for self-expression, and
- individual development at work.

Income indicators themselves are indicators of employment. There is overlap within the indicators field related to income and employment. That said, the literature revealed the following status indicators are used in Canada to assess employment:

- employment rate and unemployment rate,
- weekly earnings,
- weekly hours worked,
- bankruptcies,
- youth unemployment, and
- duration of unemployment.

In addition to these, the federal government uses indicators that represent life events, including strikes and lockouts, and work-related injuries (HSRDC, 2013). Lister and Lutz (2013) recommend the use of a gender lens to monitor employment in Canada. Indicators to consider would be the

² The Market Basket Measure is based on the cost of a specific basket of goods and services representing a modest, basic standard of living. It includes the costs of food, clothing, footwear, transportation, shelter and other expenses for a reference family of two adults aged 25 to 49 and two children (aged 9 and 13) (<http://www.statcan.gc.ca/pub/75f0002m/2010005/mbm-mpc-eng.htm>).

gender wage gap and the demographic dependency ratio³. Of interest is the fact that indicators of childcare availability, affordability and accessibility do not appear in social wellness reports in Canada. As access to quality childcare is a key factor in a family's ability to maintain employment, this indicator should be considered for inclusion in the State of the Basin report.

HOUSING INDICATORS AS A MEASURE OF AFFORDABILITY:

Many studies show that poor quality housing and homelessness are clear threats to the health of Canadians. Living in unsafe, unaffordable or insecure housing increases the risk of many health problems. Living in poor housing creates stress and unhealthy means of coping such as substance abuse. Lack of economic resources is the primary reason many Canadians experience housing problems (Public Health Agency of Canada, 2013); therefore, certain housing indicators can act as a measure of affordability. High housing costs reduce the resources available to support the acquisition of other social determinants of health (Mikkonen & Raphael, 2010). The literature reveals the following housing indicators are commonly used in Canadian social wellness reports:

- number of households awaiting social housing,
- core housing need⁴,
- household size,
- home sales,
- cost of living,
- homeless population,
- rental housing affordability /median rent,
- vacancy rate,
- average new housing price,
- rental and condo housing starts,
- average house resale price, and
- age and quality of rural housing stock (Lister and Lutz, 2013).

Given the established State of the Basin research framework, housing affordability measures may best be addressed under the 'housing' component of the economic research pillar.

³ The demographic dependency ratio measures the size of the "dependent" population in relation to the "working age" population who in theory provide social and economic support.

⁴ A household is said to be in core housing need if its housing falls below at least one of the adequacy, affordability or suitability, standards and it would have to spend 30% or more of its total before-tax income to pay the median rent of alternative local housing that is acceptable. For more information, see: http://cmhc.beyond2020.com/HiCOCDefinitions_EN.html#_Core_Housing_Need_Status

HEALTH SERVICES AND HEALTH STATUS INDICATORS

Health indicators are important in monitoring the health of individuals and populations over time, the factors that influence health, and the effectiveness of health services. By providing information on current health concerns, health indicators are important tools for evaluating, planning, priority setting and identifying (or validating) health needs. They assist health planners and administrators to make decisions about what types of health services are needed the most, and where funding should be directed. Indicators commonly used in Canada to examine health services include:

- access to medical services,
- number of hospital beds,
- age standardized days rates,
- inpatient referral patterns,
- total and per capita health expenditures,
- access to a regular physician,
- availability / use of screening programs,
- aboriginal representation in health professions,
- difficulties accessing First Nations health benefits, and
- health expenditures.

Indicators commonly used in Canada to examine health status include:

- injuries,
- dental conditions,
- activity limitations,
- health conditions,
- chronic diseases,
- children's health, and
- population health status, including:
 - mortality rate,
 - morbidity rate,
 - standardized mortality ratio,
 - life expectancy in years, and
 - low birth-weight.

Mortality rate measures the number of deaths (in general, or due to a specific cause) in a population within a specific unit of time. Morbidity rate refers to the number of individuals in poor health during a given time period (the prevalence rate) or the number of newly appearing cases of the disease per unit of time (incidence rate). The standardized mortality ratio is the ratio of the number of deaths occurring among residents of a geographic area to the expected number of deaths in that area based on provincial age-specific mortality rates (Interior Health, 2012).

In addition to these indicators, Interior Health also maps health behaviors in the areas of physical activity, body mass index, fruit and vegetable consumption, smoking rates, alcohol consumption and access to a regular medical doctor. They also report on residents' perceptions of their own health and mental health through self-rating (Doberstein, 2012).

Mental Health Indicators:

There is a growing inclusion of mental health indicators in social indicator reports produced both nationally and across the globe. According to the Public Health Agency of Canada, 20 percent of Canadians will personally experience a mental illness during their lifetime (Public Health Agency of Canada, 2013). A review of Canadian wellness reports revealed that the following mental health indicators are used most commonly:

- consumption and use of addictive substances,
- suicide rate,
- pro-social behaviors,
- oppositional behaviors,
- susceptibility to tobacco,
- connection to school,
- exposure to tobacco smoke,
- tobacco use and prevalence,
- life satisfaction,
- crisis support calls, and
- self-rated mental health.

Age-Friendly Indicators:

With the aging of the population, attention is being paid to the physical and emotional well-being of a growing senior population. As well, with the rising cost of health care, supporting seniors to age independently at home has significant cost savings. The World Health Organization offers a series of indicators in their Age-Friendly Cities Guide (2007). These indicators represent how well cities are meeting the needs of aging adults in several categories, including:

- outdoor spaces,
- transportation,
- housing,
- social participation,
- respect,
- social inclusion,
- civic participation,
- employment,
- communication / information,
- community services, and
- health services (World Health Organization, 2007).

In Canada, the Federal/Provincial/Territorial Ministers Responsible for Seniors published *Age-Friendly Rural and Remote Communities: A Guide* in 2008. This document helps to guide rural communities with fewer than 5,000 residents to improve their age-friendliness in the categories of outdoor spaces / buildings, transportation, housing, respect and social inclusion, social participation, communication and information, civic participation and employment opportunities, and community support and health services (Public Health Agency of Canada, 2008).

CIVIC ENGAGEMENT & BELONGING

Civic engagement indicators measure the strength and prevalence of networks linking community members or groups. Social relationships support individuals in their pursuit of healthy lifestyles, and in coping with change or adversity (Public Health Agency of Canada, 2013). Decades of research have shown that social exclusion impacts health and is aggravated by health status (World Health Organization, 2005).

Other community indicator projects have chosen to track a mix of subjective and objective measures of civic engagement. Voter turnout, charitable giving, and volunteerism are some of the most common objective indicators. Sense of acceptance and sense of belonging are common subjective measures of civic engagement.

EDUCATION & LEARNING INDICATORS:

There are various pathways by which education leads to better health. First, level of education is highly correlated with other social determinants of health such as level of income, employment security, and working conditions. Education helps people to move up the socioeconomic ladder and provides them with better access to other societal and economic resources (Mikkonen & Raphael, 2010). Second, better-educated citizens have more ability to benefit from new training opportunities if their employment situation suddenly changes. Education facilitates citizens' possibilities for civic activities and understanding of the world, which in turn enable them to see, and influence societal factors that affect their health. Finally, education increases overall literacy and understanding of how one can promote one's own health through individual action. With higher education, people achieve greater ability and more resources to allow attainment of healthier lifestyles. The following section outlines the education and learning indicators used in Canadian wellness reports.

Canadian Perspective:

The selection of education indicators varies significantly according to the mandate of the research organization. For example, researchers involved with the Community, Workforce and Quality of Life Indicators Project (Enterprise Saskatchewan, 2010) considered education indicators under the workforce-related component of their work, tracking indicators such as public school graduation rates, operating expenditures per student, adult literacy rates, etc.

Human Resources and Skills Development Canada (2013) monitors "Indicators of Well-being" and uses several indicators in the "Learning" category. These include educational attainment, job-

related training, adult and student numeracy and literacy, college and trade participation, and university participation (HSRDC, 2013). With a distinctly more economic focus, the Conference Board of Canada, in its 2010 Report Card examined education indicators through the lens of national economic drivers. For example, they selected college completion, university completion, Ph.D. graduates, science, math, computer science and engineering graduates, students with low-level reading, science and problem solving skills, students with high level reading, science and problem solving skills and adult literacy rates (Conference Board of Canada, 2013).

British Columbia Perspective:

In their 2010 report, *Sustainability Snapshot*, the Fraser Basin Council examined several educational indicators including educational attainment in the Fraser Basin by Region, six year high school completion rates by school district, and Composite Learning Index⁵ scores by region (Canadian Council on Learning, 2010). The BC Atlas of Wellness is a geographical mapping of traditional social determinants of health type indicators along with smoking, nutrition, physical exercise, weight, and pregnancies (Foster et al., 2011). The authors used the following “intellectual” indicators in both editions of this comprehensive Atlas: a survey of students in grades 4, 7 and 10 about learning how to stay healthy at school, Strong Start programs per 1,000 at-risk children⁶, the readiness to learn of five-year olds using the Early Development Instrument⁷, Foundation Skills Assessments⁸ in grades 4 and 7, adult education completion, Composite Learning Index and the availability of adult and child library programs (Foster et al., 2011). The BC Government examined the following indicators for the Interior Health region in one of its Infoline reports: Grade 10 and Grade 12 provincial exam non-completion rates, percent of 18 year olds who did not graduate, average rate of high school graduation, and percent of population 25-54 without post-secondary credentials (Kashaninia, 2012).

PUBLIC SAFETY

An individual’s perceived level of safety is an important determinant of subjective wellness (Eriksson, Hochwalder, and Sellstrom, 2000). Further, according to Numella et al. (2009), high and

⁵ The Composite Learning Index (CLI) is Canada’s annual measure of progress in lifelong learning. It is based on a combination of statistical indicators that reflect the many ways Canadians learn, whether in school, in the home, at work or within the community

⁶ **StrongStart BC** is a program where qualified early childhood educators lead young children and their parents through learning activities to help children get ready for success in kindergarten. http://www.bced.gov.bc.ca/early_learning/strongstart_bc/

⁷ **The Early Development Instrument (EDI)** is a population-level research tool that measures developmental change or trends in populations of kindergarten-aged children. <http://earlylearning.ubc.ca/edi/community-resources/>

⁸ **The Foundation Skills Assessment** is an annual province-wide assessment of British Columbia students’ academic skills, and provides a snapshot of how well BC students are learning foundation skills in reading comprehension, writing, and numeracy. <http://www.bced.gov.bc.ca/assessment/fsa/>

sustained levels of trust in others indicate better self-rated health. Of importance to the Basin Boundary region, research suggests that residents of rural areas report higher levels of trust and perceived safety than those in urban areas (Onyx and Bullen, 2000). State of the Basin research could confirm whether this finding rings true in this region.

Among similar indicator projects, common objective measures of public safety include crime rates (including violent crime, juvenile crime, and property crime), police presence (usually expressed as the number of police officers/1000 residents) and emergency response incidents. Subjective measures used by other indicator initiatives include self-rated trust in others, perception of safety at home or in public, and perception of the scale of problems related to gang violence.

CONCLUSION

Indicators are factors that we measure in order to better understand the nature of something. The history of social indicators is interesting and demonstrates the broadening of humans' understanding of the factors that truly contribute to our well-being, both individually and as groups.

For the purpose of informing future State of the Basin research, several points are worth highlighting. Indicator development should consider best practices in this field of social science. Any social indicator being considered for inclusion in the State of the Basin initiative should be evaluated using a standardized test of its validity, utility and responsiveness, among other factors. Though broad citizen engagement in the development of social indicators has community development benefits, additional targeted and technical input may be helpful to ensure the delivery of quantifiable and objectively verifiable indicators. Indicator selection should consider the unique rural nature of the Basin Boundary region and acknowledge that First Nations people may choose a different approach to indicator selection, which should be supported with an inclusive approach and cultural sensitivity.

This review examined common social indicators used in Canadian reports on society and wellness. These indicators were classified under two broad categories: demographics and wellness. The demographics category includes indicators related to population size, structure and distribution. The wellness category includes indicators for income, employment, housing, health services and health status, civic engagement and belonging, education and learning, and public safety. There was alignment between the sorts of indicators appearing in Canadian wellness reports and the social determinants of health.

Under the State of the Basin research framework, there are many overlaps and interconnections between the research pillars and their sub-themes. The nurturing of the concepts of sustainability and well-being can serve as a way to link the complexities of social, economic, cultural, and environmental indicators, and the issues they measure.

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