The Development of a Quality of Life Index for Alberta

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TABLE OF CONTENTS

INTRODUCTION

Quality of life can be defined as "the product of the interplay among social, health, economic and environmental conditions which affect human and social development" (Skookner (1998):12)

The recent Conference on the State of Living Standards and the Quality of Life (Ottawa, October 30-31, 1998) is indicative of a growing interest in the research and development of indicators of societal well-being or quality of life in the 1990s. Many theories, frameworks and empirical analyses of quality of life (QOL) have emerged. These include theories based on sustainability, which recommends a holistic, environmental, and future-oriented perspective towards QOL, as well as normative theories or value-based, that suggest QOL indicators reflect community values.

Development of QOL indicators and sustainability indicators have emerged largely at the community level in Canada and the U.S. with considerable diversity in the framework and individual indicators of QOL. No common set of indicators or QOL accounting standards have emerged. Some might lament this fact, however, others would argue that each community, province, state or nation will define their quality of life differently and that such diversity of indicators and perspectives is both healthy and necessary.

The most recent attempts at accounting for QOL or societal well-being include:

- the Quality of Life Index developed by Pierce County, Washington at the county level;
- the United Nation's Human Development Index (HDI) at a national level,
- the U.S. Genuine Progress Indicator (GPI) (Cobb et.al. at Redefining Progress, 1995);
- the U.S. Index for Social Health (ISH) (Miringoff, 1995);
- the Index of Social Health for Canada and the provinces (Brink and Zeesman, 1997), and;
- the Index for Economic Well-Being for Canada (Osberg/Sharpe, 1998)

At the provincial or state level, Alberta, Oregon, Minnesota, Florida and Texas have developed performance measures or indicators focused on the "state of the union" or on the

outcomes of public/government policy. In the case of Alberta, the development of government performance measures for the broad categories of "people, prosperity and preservation" was part of a broader accountability framework that included business plans. While not titled "quality of life" indicators the 240 odd performance measures developed by the Alberta Government could be considered such a comprehensive "state of the union" or quality of life account.

There are practical, intuitive and political reasons for why government's have tended to avoid aggregated quality of life accounting or indexes. One of the reasons is that the choice of indicators that would constitute a quality of life account and index is value based and will differ across communities. Moreover, the question to aggregate or not to aggregate is one of the key issues of debate. Indeed, many would argue that the aggregation of a wide range of indicators or measures into an index may oversimplify and mask important details.

While aggregation of indicators into a single index has not been common practice, there is often a genuine desire amongst certain decision makers and indeed the media for a single indicator to compete with other enormously powerful indicators such as GDP.[1] Indeed, in the case of the U.S. GPI the desirability and utility of a more aggregated and simplified presentation scheme becomes apparent in that such aggregate indexes can convey a sense of the "big picture", the overall trend, or a barometric reading of the overall well-being of society.

It is in this context that the development of an Alberta Quality of Life (QOL) Index is proposed. Such an index has appeal in providing a snap shot or big picture perspective of the overall trends in a composite of indicators that collectively might represent quality of life in Alberta. The Index and the accounting framework which is proposed is robust and transparent in that each of the parameters making up the composite Index are easily accessible to the users, depending on their need or perspective. The strength of the proposed Alberta Quality of Life Index is that it provides a means of comparing otherwise incomparable data by creating a common denominator through the use of indexing each

[1] This does not suggest that GDP itself does not require rethinking or revisions to be more encompassing of changes in social and environmental capital, as the U.S. GPI attempts to do, albeit rhetorically. Many would argue that a wholesale revision of national income accounting (GDP) that incorporates the value of social and environmental changes is required as part of creating a more comprehensive accounting of societal well-being, beyond simply measuring the transactions and flow of money in an economy which GDP measures.

parameter to a base year. This facilitates the development of a barometric reading of the overall changes in quality of life in Alberta.

The Development of a Quality of Life Index for Alberta provides options for creating an accounting framework or model that would empower decision makers to monitor the "development" or state of overall quality of life in Alberta — where quality of life is defined by a set and the interplay of indicators of social, health, economic and environmental conditions. Moreover, the performance accounting framework, using an indexing approach, facilitates the analysis of this interplay between otherwise incomparable measures. In a sense, it is like establishing "dollar values" for otherwise intangible issues. A methodological approach to the development of a Qualify of Life (QOL) Index at a provincial and regional level is explored. The purpose of a QOL Index is to provide policy makers with a broad picture of changes or trends in key social, economic, environmental and health indicators. Empowered with such information and knowledge, decision makers can make more evidence-based and informed public policy decisions. After all, what gets measured gets attention and action.

PROJECT BACKGROUND & OBJECTIVES

The Development of a Quality of Life Index for Alberta stems from the 1997 Quality of Life Project of the Ontario Social Development Council and the 1997 Edmonton LIFE Project. The project was made possible through funding from Health Canada and the collaborative support of The Edmonton Social Planning Council. *The Development of a Quality of Life Index for Alberta* explores options for creating both a provincial aggregate index and regional indexes, based on existing regional administrative boundaries (these administrative regions include Regional Health Authorities (RHAs), Alberta Family and Social Service regional districts, economic regions, and RCMP "K" divisions.

Project goal: The goal of the project was to develop a framework for a Quality of Life Index that can be used provincially and nationally to monitor and report on local community health and well-being.

Objectives: To achieve the goal, certain objectives had to be met:

1. a review of current literature and existing indices in Canada and other locations;

2. selection of specific indicators from those often cited in the literature as possible measures for this project;
3. identification of sources to ensure future monitoring and reporting for these indices; and
4. promotion of community support through discussions on the use and development of the index.

THE PERFORMANCE MEASUREMENT LANDSCAPE

The development of performance measurement systems and indicators is sweeping virtually every organization, whether government, industry or not-for profit organizations. There is also a trend in the application of performance indicators in measuring public policy outcomes and quality of life, in general. This movement is focused on the use of objective data based on observed activity in a society, economy or environment which forms the basis for assessing, retrospectively, the "performance" of the past upon which to develop a more meaningful plan of action for the future.

The desire for indicators of government performance has arisen, in part, as a result of governments faced with fiscal constraints and increasing public expectations for accountability for tax dollars expended. This has led many governments, at all levels, to examine new accountability frameworks, including strategic plans, business plans, and performance indicators. This includes attempts to articulate desired public policy goals and expected outcomes as well as attempts to tie program expenditures to these policy outcomes. Traditional measures of performance in both government and business have focused on financial and economic measures. National income accounts from which Gross Domestic Product (GDP) is derived is the prime example of the focus of national and provincial accounting systems. While GDP was never meant to represent a measure of overall societal well-being, it has unfortunately been used as such a proxy, in the absence of another accounting framework. The focus on monetary transactions in the economy as the basis for measuring economic well-being has its roots in the aftermath of the Depression and post-World War II when the focus was on economic rebuilding and employment generation. At that time, natural resources were relatively plentiful and there was little concern about issues of environmental quality or societal well-being, in general.

Cobb and Rixford (1998) suggest that our current obsession with measuring quality of life and societal well-being has old roots dating back to the historicism movement of

Bismarck's 19th century Germany. Historicism focuses attempts to find solutions or answers to current societal issues by reflecting on historical data as evidence of trends or changes that might provide clues for our present quality of life.

As societies have matured in a post-industrial era, the focus of households, governments and even industry is on expanding the measurement scope to include measuring the sustainable development of natural resources and overall societal well-being or quality of life. Most certainly, measuring quality of life is a complex affair without a well-developed set of generally acceptable accounting principles to guide the measurement effort. In the absence of such principles for measurement to guide measuring quality of life or societal well-being (as the system of national income accounts has guided national GDP accounting) a plethora of indicator studies, research, and development has emerged in virtually all industrialized nations.

What this means is that no one organization, government or international body has license on the truth or the perfect indicators framework for measuring quality of life. Indeed, the notion of "quality" is really in the eyes of each beholding community that holds different value sets important when considering well-being or quality of life. For example, the need for open space may have different meaning to a Torontonian or New Yorker than it does to someone from Saskatoon or Edmonton. This then necessitates accounting systems that accommodate different quality of life indicators and frameworks within which to assess changes in individual parameters of quality of life or in the composite whole, where such composite quality of life indexes are being attempted (Pearce County, Washington). Bottom line is there is no single formula or accounting solution to measure quality of life across the spectrum of diverse communities.

Thus, it would be presumptuous to define a common quality of life performance system or structure suitable for all communities. Nevertheless, there is a desire to determine what common set of values and indicators of quality of life diverse communities hold in common which may form the basis for future comprehensive sets of quality of life accounts for all nations. The U.N.'s Human Development Index is one such attempt though the HDI also presupposes that the few parameters it chose to determine the HDI are appropriate for measuring human development in all cases of diverse communities that may have differing value sets.

Defining a QOL Index for Alberta, and by extension to Canada, must ensure that the accounting structure is both flexible and transparent enough to accommodate different value sets that define quality of life in different communities, whether in Alberta or Newfoundland. Notwithstanding, what we have observed is that common indicators seem to be emerging that suggests there are many values held in common that transcend cultural and value differences. However, part of this convergence on a common indicator set may be due to the availability of a common and traditional objective data set from conventional sources such as Statistics Canada. One could argue that measuring quality of life is ultimately constrained by the limitations of objective statistics when in fact a more robust accounting may require a combination of objective and subjective (e.g. attitudinal) information regarding quality of life issues. Much of the objective information upon which most indicators are now developed may not be of relevance to how a community or society would define or measure quality of life.

ALBERTA'S POLITICAL AND INDICATORS LANDSCAPE

Alberta has undergone significant structural change since 1993 when the Conservative Klein government began fundamental restructuring of public policy, programs, and the role of government. Driven mainly by fiscal ideology to eliminate the deficit, significant reductions in government spending and program delivery were made in social, health, education, environmental, economic and fiscal policy. An accountability framework, including business plans, performance measures (policy outcome measures), and performance reports, were legislated. Goals, strategies and performance indicators were established for the government as a whole and for each ministry. Desired public policy performance outcomes would be monitored by assessing the results of each year's actual performance.

In total, roughly 240 performance measures had been established for all government ministries, including roughly 27 macro government measures reported by Alberta Treasury in *Measuring Up*. One could argue that the sum total of all 240 performance indicators constitutes a full account of the "state of life in Alberta" covering every aspect of societal well-being. There has been no effort by the Alberta Government to construct composite indexes using these performance measures even though collectively they might constitute a "barometric" reading of Alberta's quality of life. Indeed, for whatever reason, other state and provincial governments have tended to avoid developing composite indexes using

performance indicators. Moreover, most have avoided the subjective nature of defining quality of life using a suite of performance indicators.

To date, there has been no formal analysis of the "interplay" of Alberta's performance measures and what such interplay may reveal about the integrated condition or state of economic, human, social, and environmental "development" in Alberta. Indeed the measures under the three themes "people, prosperity, and preservation" in *Measuring Up* stand in isolation of each other even though there is an intuitive interrelationship between the three themes and between performance measures. While the potential to develop a provincial QOL Index could be explored for each of the three themes and possibly a composite of all three, no such attempt has been made.

Alberta's performance measures are characterized by objective statistics. Complimentary subjective indicators might provide a more robust account of Alberta's overall quality of life, combining "hard numbers" with attitudinal/opinion statistics where Albertans reveal their "feelings" about the issues of importance to their quality of life.

LITERATURE REVIEW

Foundations of QOL: Theory and Definitions

The Ontario "Quality of Life Indicators" defines quality of life as "the product of the interplay among social, health, economic and environmental conditions which affect human and social development" (Schookner 19988: 12). The Jacksonville, Florida study of QOL (1994) expands this definition suggesting the importance of people's satisfaction with these conditions. The Pierce County[2] Quality of Life Benchmarks (1998) defines quality of life in the form of a composite QOL index made up of 80 indicators that are combined into nine theme indexes and a composite "quality of life" measure that serves as an early warning system or set of gauges that tracks general trends in factors which affect quality of life.

In recent years, the connection of life quality to people's satisfaction and to a lesser extent happiness is increasingly apparent in research on social indicators (Veenhoven, 1996; Hagedorn 1996; see Campbell 1976 for a discussion of satisfaction versus happiness in

[2] Pierce County is in Washington State and includes Seattle.

QOL). A social indicator is "a measure of observable traits" reflecting an unobserved, complex concept, i.e. quality of life.

The relationship between social indicators and the concept of quality of life requires a theory. Indeed Cobb and Rixford (1998) have observed that what is lacking in the current indicators work is what they term a positivist approach where an a priori hypothesis or theory is posed and then tested using indicators as evidence. They observe that the current indicators movement is one which is rooted in the 19th Century historicism whereby solutions to our current perceived problems are sought by looking at indicators of past performance yet often provide no answers to the current situation nor meaningful guidance to future policy options or solutions.

Research on social indicators from the 1970s and 90s has been sharply criticized as atheoretical (Bates et.al. 1976; Palys 1973; Peat Marwick Consulting 1988; Smith 1973). Indicators were chosen based on availability of data rather than reflecting a person's or community's perceptions, attitudes, opinions or actual "quality of life. Indeed, most indicator or performance measurement work has been of an historicism nature (Cobb and Rixford, 1998) using a multitude of descriptive indicators using available data to describe the current state of affairs often with the expectation that these indicators serve as predictors and even answers to our public policy questions. Cobb and Rixford (1998) argue that what is missing is a positivist approach which sets goals, predicts future outcomes and uses historical data as the basis for testing these hypotheses.

Most of the current indicators work has adopted the historicism approach (explained by Cobb and Rixford, 1998), for various reasons including the availability of historic, objective, longitudinal data sets. Examples include Alberta's *Measuring Up* (various issues), and the *Edmonton Social Health Index* (Edmonton Social Planning Council & Anielski, 1998) that use an arbitrarily chosen set of indicators chosen partly because of the availability of historical data. To date there have been few attempts to compare or reconcile objective indicators of QOL with attitudinal or opinion data that reveal held values. For example, while objective statistics for crime rates might show a decrease overall, people may be feeling more vulnerable. A "chicken or egg" question then arises: did reported objective statistics through the media and other forums lead to the feeling regarding personal safety or was the opinion rating based on direct or second-hand experience?

In the 1990s, attempts to fill the objective-subjective gap has resulted in QOL theories based on community or personal values (normative theory), needs, subsistence, comparison (comparative theory), and consumption (Diener and Suh 1997; Hodge 1997; Schyns 1998; also early attempts by Campbell 1976 and Carley 1981). These theories are evident in indicators projects, such as the Canmore QOL project which engaged in a series of meetings to define "community values" before beginning their project (Caston 1998), reflecting an adherence to normative theory. The Winnipeg index project (1997) on poverty reflects a theory of QOL based on consumption. Some kind of theory is necessary to explain how chosen indicators reflect quality of life. Indeed, Cobb and Rixford (1998) would argue that a clearly articulated vision or objective function for quality of life is a necessary first condition that then leads to defining the indicators necessary to monitor progress towards that objective (the positivist approach).

New Trends

The definition of QOL suggests that the relationship between different dimensions or domains of QOL should be considered, i.e. the social world's affect on health and the environment's affect on the social world and health. This trend could be attributed to increasing popularity of an ecological perspective in quality of life indices, i.e. sustainability theory (Hodge 1997). Indeed, in the future, we may see "quality of life" indices replaced by sustainability theories and its indicators , which measure the environmental impacts of humans and focuses on the long-term quality and sustainability of the ecosystem, considering the QOL of future generations. For example, the development of the Ecological Footprint by Dr. Bill Rees and Mathis Wackernagel provide a basis for defining the demands and impact that communities have on the biophysical capacity of the environment to sustain their resource needs.

This environmental perspective is also part of the **Genuine Progress Indicator (GPI)** developed by Cobb et.al. (1995) by the think-tank Redefining Progress, where the value of the depreciation of environmental quality and natural resource depletion are factored into adjustments to U.S. GDP accounts along with adjustments for human and social capital depreciation. Other examples include the Sustainable Calgary project (1998) and Gariepy's (1990) work for Canada's Roundtable on Environment and Economy. The importance of the environment in QOL was suggested in the 1970s, but serious consideration, accounting or measurement of environmental health tends to be a late 1980s and 1990s trend. The high concern for the environment reflects a realization that "even if there were more food;

more democratic political systems; slower population growth; cleaner water, land and air; and more peace in the world, humans would not continue to thrive if they failed to preserve the Earth" (Farlinger 1996). The environment is a fundamental determinant of quality of life and should thus be evident in any quality of life and social indicators research.

According to sustainability theory (the basis of Sustainable Calgary project), economic and environmental issues are "not fundamentally in conflict...indeed, they are often the same, namely the improvement of human quality of life for present and future generations" (Sustainable Calgary 1998; Hodge 1997). In theory, these concepts do reflect quality of life and can be interpreted as not in conflict. In practice, however, the goals of industry and indeed capitalism are often in conflict with the notion that the environment cannot be developed exponentially without compromising the carrying capacity of the entire ecosystem to provide for environmental services and natural resources for human well being.

Recent efforts have been made to develop alternative measures to GDP (Gross Domestic Product) that more accurately reflect sustainable or genuine development of an economy and society. Examples include, the U.S. **Genuine Progress Indicator -GPI** (Cobb et.al. 1995), the **Index for Societal Health** for Canada (Brink and Zeesman, 1997), the **Atlantic (Canada) GPI** (Colman 1998), and the **Index for Economic Well-Being for Canada** (Sharpe and Osberg, 1998). The work of Cobb et.al (1995), Colman (1998) and Sharpe and Osberg (1998) represent accounting for the monetary value of the depreciation of social, human and environmental capital which GDP accounting currently ignores. GPI accounting, however, lends itself more to national (and possibly provincial or state) quality of life or societal well-being accounting given the reliance on macro statistics. GPI accounting has not been attempted at the regional, provincial, or state level. The most recent iteration on the GPI-theme, namely the Index for Economic Well-Being for Canada is an important methodological advancement in that weightings of parameters are introduced in the accounting exercise. The issue of whether or not to weight parameters within an index presents other challenges and complications, particularly since weighting is largely a subjective or value-based exercise that ultimately requires the broader consensus of a community upon which the measurement exercise is focused

The work of Brink and Zeesman (1997) and Miringoff et al. (1996) in developing a social health index and a non-monetary account of changes in societal well-being uses a suite of 15 indicators as proxies of societal well-being. This social health index, and its

parameters, may lend themselves more to regional or local quality of life or societal health index accounting. Their approach, that converts raw data to normalized indexes for summation and comparison, is intuitively attractive for the purposes of constructing a QOL Index. Each parameter converts raw data to a normalized index through a formula that establishes a point system for best and worst performance over a time period, then sums these points across a suite of parameters.

The Pierce County Quality of Life Benchmarks model is another important methodological advancement in constructing practical and intuitive tools for measuring the complexities of quality of life. This model is similar to the Miringoff et al. (1996) model converting raw data to a normalized index for each of the parameters that collectively constitute quality of life for the County. However, unlike the Miringoff et al. model, the Pierce County model uses a benchmark year as the basis for establishing indexes, comparing all future performance to that benchmark year. All parameters can then be summed to create several themes and a composite QOL index. Each parameter is given equal weight.

Finally, there is another trend exemplified by the Alberta Government's performance measurement model that establishes performance targets against which actual annual performance is compared. This goal-based approach to performance measurement involved the selection of indicators of performance that are considered by the government as the most suitable measures of policy or program goals. This approach has its shortcomings in that the government sets its own goals and thereby constrains the potential list of indicators of societal well-being (quality of life) by choosing those indicators that the government deems best fits their public policy agenda (Anielski, 1998). This may actually preclude the use of some indicators that may be more relevant to some Albertans in measuring their quality of life. The decision to drop the societal indicators from the original *Measuring Up* reports of 1994 and 1995 reports was partly as a result of discomfort over perceptions of government accountability for indicators they felt they had little control over. Other jurisdictions, such as Oregon (Oregon Benchmarks, 1996) and Multnomah County (Portland Multnomah Progress Board, 1998) adopted a more broad-based stake-holder input process to develop an expansive list of indicators that would likely lead to a more robust inventory of quality of life compared to what *Measuring Up*, in the case of Alberta, would suggest.

Existing research clearly illustrates the need for local indicators of quality of life to:

- empower citizens (OSDC 1997);
- identify problematic trends early so that they can be addressed sooner (Brenke, 1991);
- reflect community values (OSDC 1997); and
- consider regional differences in the importance of specific indicators in reflecting quality of life (Findlay 1988).

Yet, there is a great demand for more universal and aggregate indicators of quality of life that can be used for cross-cultural and international comparison (eg. HDI - Human Development Index of the United Nations). In Canada, various attempts to construct a "one size fits all" (Bates et al. 1996: 28) set of indicators to measure quality of life have had tremendous difficulty. The difficulty might have been expected, since the underlying assumptions behind all social indicators work is that complex realities can somehow be summarized in a few measures or in some cases, with a single index (i.e. Ontario's QLI 1997).

Certainly the most difficult challenge is establishing a common denominator for comparing indicators which may have different accounting basis such as a "dollar value" for issues as diverse as, for example, teen pregnancy, life expectancy and income distribution. Attempts at overcoming these challenges include the **Pierce County QOL Index** (1998) and the Index of Social Health (Miringoff et al. 1996 and Brink and Zeesman 1997) whereby individual indicators of QOL are normalized by indexing individual indicators and setting a benchmark "year" as the basis for comparing trends in various indicators. This approach allows for the aggregation of once incomparable indicators into a comprehensive index of several indicators spanning a family of indicators for health, environment, community, economic and social themes. The Genuine Progress Indicator (GPI) developed by Cobb et al. (1995) and the Index for Economic Well-Being (Osberg and Sharpe, 1998) represents indexes that use monetary values of changes in social, environmental, and economic dimensions using "dollars" as the basis for comparison of various indicators of well being or quality of life.

A review of the literature was conducted and provided the foundation for the creation of a database of indicators. Indicators were selected based on their frequency of use in the literature and their availability within various communities.

There are very few examples of creating QOL indicators at the regional level of disaggregation whereby a number of regions as part of a province or state can be

compared. Many current community indicator programs emerge out of a local interest in measuring QOL at the community level as opposed to developing a common accounting approach and indicators for a network of communities. Redefining Progress in San Francisco has attempted to coordinate a North Americans community indicator initiative by providing an Internet/chat group for comparing work and experiences. To date, there has been no attempt to develop a common set of community QOL indicators.

Part of the reason for the lack of a common set of QOL indicators emerging for a specific geographic area, such as at the provincial or state level, may have to do with both the subjective nature of measuring quality of life and the lack of comparable statistics or information on the various themes that constitute quality of life. As will be noted, our attempts to develop an Alberta QOL Index was hampered by differences in regional administrative boundaries for various government agencies and different accounting practices (e.g. different statistical years) that precluded the development of a common set of indicators across common administrative boundaries. This experience may explain why regional QOL indicators have not emerged.

Dimensions of QOL Indicators

The debate over the use of objective measures of QOL versus subjective measures is a continuing debate in social indicators research. This debate began in the 1970s when objective indicators, which "describe social conditions" (Murdie et al. 1992) were challenged for not "incorporating attitudinal data about the perception and evaluation of the domains of life experience, their relationship to one another and their respective contributions to overall quality of life." The consensus developing is that ideally both objective and subjective indicators should be included (Lyon 1987; Murdie 1992). In practice, the tendency has been to favour objective indicators because of their availability; inexpensive collection; their perceived reliability; unobtrusiveness; and greater capacity for comparison across communities (Beesley 1989; Lyon 1987; Murdie et al. 1992). This has been the case in virtually all indicators research and development.

The strengths of subjective indicators are that they are more "direct" measures of QOL; more comprehensive measures; and reflect the complexity of the concept of QOL (Beesley 1989; Deiner and Suh 1997; Know 1976). If the question of QOL is posed to individuals each will form a different opinion depending on the different factors that individuals consider important to their quality of life at a given point in time. Indeed, one could, in

principle, simply ask one simple question "how would you rate your quality of life today" as the basis for assessing the overall QOL rating of a collection of individuals and households in a community. This could be followed by questions of "what are the most important factors that shape your quality of life?" Lyon (1987) writes "if everyone in the community is afraid to walk the streets at night because of the perceived danger of crime, it may make little difference what the actual crime rate is. It is the perception that determines whether we venture out at night" (Bates et al. 1996: 20). Research has thus far failed to illustrate the strong relationship between subjective and objective indicators, making the need for both types of indicators stronger (Deiner and Suh 1997; Kuz 1978; Murdie et al. 1992).

Various studies of QOL have chosen to summarize their findings in a value on the QOL index, as seen in the Ontario QLI (Quality of Life Index) (1997) project. This value simplifies the findings, but provides little insight into the measures used to calculate this value or on the various areas of improvement/failures (Deiner and Suh 1997). Calculating indices raises problems with weighting individual indicators (what is more important to QOL - employment or income distribution; water quality or life expectancy?) as well as adding the values of the variable (how do we add the annual income measured in dollars and a 75% graduation rate into one value on the index?) (Murdie et al. 1992; Dickinson 1972; Bates et al. 1996; OSDC 1997).

Common QOL Indicators

What is remarkable about comparing QOL indicator initiatives is the diversity of indicators which are considered to constitute quality of life. No two communities choose the same set of indicators. The Appendix provides an inventory of the QOL indicators we have reviewed to illustrate this diversity. Nevertheless, common indicators do seem to emerge. This may be due to the fact that the indicators and their supporting data that are chosen (mainly objective in nature) are already commonly used. In many cases, indicators that may be desirable simply lack the data set to develop the measure.

Our analysis of QOL indicators reveals the following set of common indicators that emerge:

Common Social Indicators

* high school graduation rates
* student-teacher ratios
* scores on achievement tests
* literacy rates
* violent and property crime rates
* perceptions about safety
* volunteer work
* voter turnout

Common Health Indicators

* life expectancy
* infant mortality rate
* low birth weight babies
* suicide rates
* childhood immunization rates
* prenatal care
* disease rates (cancer, heart, AIDS)

Common Economic Indicators

* unemployment rate
* job growth
* average annual income
* GDP
* income distribution
* # of people in poverty (poverty defined in different ways)

Common Environmental Indicators

* air quality (# of good days)
* population density
* water quality
* depletion of natural resources
* amount of green space
* amount of waste generated per capital

THE ALBERTA QOL MODEL

The Alberta QOL Model was constructed in consideration of other QOL indicator models. The QOL represents an attempt to construct regional QOL indexes for Alberta using various data sources from various agencies who unfortunately use different administrative boundaries. It is the latter issue of irreconcilable administrative boundaries that make the development of a composite QOL index at the regional level problematic if not impossible at this point in time.

The choice of indicators and indicator "themes" or clusters was made, in part, upon consideration of the common QOL indicators that seem to be emerging in the literature and application of QOL metrics and on the basis of the practical issues of data availability at the regional level of aggregation. Thus we have adopted a normative approach to indicator development, consistent with many other indicator initiatives that tend to default to indicators where time series data is readily available.

Four indicator themes or clusters were chosen: health, social, economic and environment. This choice was made for practical reasons given that our sources of information were agencies that reported on these themes.

Challenges of Data and Incompatible Regional Boundaries

Availability of data was established through telephone contact with various organizations including Alberta Health, Alberta Family and Social Services, Alberta Environmental Protection, Statistics Canada etc.; library searches; and meetings with government officials and academic personal. These contacts revealed that there had been earlier attempts to develop a *Social Problem Index* (Yan Jin & Gus Thomspon, 1996) and an *Index of Social Health for Canada* (Satya Brink & Allen Zeesman,1997)

Information retrieval on a municipal level proved to be problematic. Often, data was available only in major centres or on a regional basis depending on the indicator. It was decided that due to lack of available data for Economic and Environmental indicators, the project would concentrate on Health and Social indicators. This would ensure that consistent and reliable information would be accessible for comparison and the identification of patterns or trends.

Regional administrative boundaries of the various government departments, namely Alberta Health, Alberta Family and Social Services and Alberta Environmental Protection, made it difficult to develop a common set of regional boundaries in order to develop a composite Alberta QOL Index. For example, Alberta Health uses 17 Regional Health Authority (RHA) administrative units; Alberta Family and Social Services currently uses 6 regional district boundaries (though AFSS did indicate a plan to move to the RHA administrative boundary); Alberta Environmental Protection uses various administrative boundaries and point sampling; economic indicators are reported on the basis of 8 economic regions, and; the RCMP report crime rates on the basis of their own administrative "K" division. Without consistent administrative boundaries, any attempt to construct regional QOL indexes will be problematic. We made initial attempts at "fitting" disparate administrative boundaries only to illustrate the possibilities for regional QOL indexes. However, while intuitively attractive to attempt such a "fit", we recognize that forcing a "fit" is inherently problematic from a methodological and statistical standpoint and is ultimately indefensible.

In future, common administrative boundaries might emerge. Only through common administrative boundaries will the development of an aggregate QOL index (that aggregates health, social, economic and environmental parameters) at the regional level be possible. Alberta Family and Social Services have indicated a desire to move to the regional boundaries of the Regional Health Authorities of Alberta Health. However, it is unlikely that administrative boundaries for environmental, economic and crime statistics will conform to the RHA regional boundaries in the near or distant future. If a composite Alberta QOL index at the regional level remains a desirable objective, attempts at reconciling these different administrative boundaries will be required.

While we abandoned the prospects of a composite regional Alberta QOL for all four indicator themes, it is possible to construct separate indexes for each of the four indicator themes: health, social, economic and environmental. This would allow for comparison of performance across all regions by indicator theme. It is also possible to create regional QOL indexes for respective indicator themes. This approach is described later in the report.

Other General Challenges

Measuring the quality of life of a community can be problematic in that various communities define quality of life according to different value sets — what is considered important in one community may be considered less important in another. While comparability of quality of life indicators across communities might be desirable, it is not a necessary condition for success. Indeed, the diversity of value sets by community is a healthy recognition that communities will differ in what they consider important to their overall quality of life. Nevertheless, it is desirable to compare trends in common indicators across communities which have the same statistical accounting basis. We have observed that a common set of community quality of life indicators is emerging driven both by common values, issues and indeed similar data sources.

Health Indicators

The provincial government requires each region to report on selected measures. The information is compiled and published annually in the *Information to Support the Health Authority Business Plans and Annual Report.* However, for the purpose of this project, information from this report is limited to selected years because of boundary changes. In

order to achieve a more comprehensive trend analysis, additional information such as working documents, reports, and research findings were reviewed to supplement the model.

At this moment, mental health indicators focus on hospital admittance/discharge rates for selected mental illness. There is little current information that measures mental illness among the population at large. The Provincial Mental Health Advisory Board has implemented an *Action Plan for 1997-2002* which proposes a review of selected performance measures but does not indicate which measures it will be reviewing. Future research for the project may warrant revisiting these indicators.

The Health indicators that were chosen include:

- low birth weight babies
- incidence of sexually transmitted diseases (STDs)
- infant mortality
- suicide rates
- heart disease rates
- teen birth rate
- sexual assaults
- physical assaults

Social Indicators

Child Welfare data is collected according to six regions: North West, North East, Edmonton, Central, Calgary and South. In the future, these indicators will be reported according to boundaries that are co-terminus with those of the Regional Health Authorities, that will make the reporting of selected indicators less difficult and more consistent with each other. Certain indicators are not presently available and would require manual reviews of case files which are both labour intensive and costly.

Crime rate is reported on a provincial basis. Statistics Canada could conduct a special run in which data would be broken down by major centres, but not by Regional Health Authority. Crime rate can be reported by contacting each subdivision and detachment of the Royal Canadian Mounted Police and each municipal police service, but the reporting measures

may differ from one jurisdiction to another making comparisons unreliable. A crime rate was then adapted from the Royal Canadian Mounted Police K Division, on-line *Annual Report.*

Public Shelter housing is associated with issues of *employment, quality, affordability and accessibility.* (Sherwood, 1996). The Canadian Mortgage and Housing Corporation is developing a *Community Oriented Model of the Lived Environment* which looks at quality of life indicators but the model has not yet been published. However, a trial run was conducted on three communities and that data is available for review. (Sherwood, 1996) The model does not focus on comparisons between the three communities; rather it reviews indicators that are similar in all of the three communities. Research also indicates where information gaps occur.

The Development of a Quality of Life Index for Alberta addresses the issue of accessibility of shelters for family violence. A provincial aggregate exists that could be broken down by individual shelters by contacting each for their statistics. Again, reporting methods may vary from shelter to shelter.

The Social indicators used in the Alberta QOL model include:

- child protection cases
- allegations of abuse and neglect
- child protection investigations completed
- Supports for Independence (SFI) caseloads
- crime rates
- post-secondary education enrollment rates

Economic Indicators

Statistics Canada bases their data on eight Economic Regions which do not coincide with the Regional Health Authority (RHA) boundaries. Economic indicators cannot be broken down according to the RHA because sample size would be too small for reliable data. Economic indicators, however, can be traced using the 1996 Census, but updated information would be available every five years.

The Economic indicators include:

- labour force participation rate
- unemployment rate
- employment rate
- consumer bankruptcy rate
- business bankruptcy rate

Environment Indicators

Air quality indicators are dependent on the location of 11 continuous stations, 8 intermittent stations, 31 static networks and 12 precipitation quality stations. These specific monitoring sites are limited because of financial costs associated with the construction and maintenance of these monitoring stations. As a result, measurements are available only on a provincial level or for the area where sites are located.

Surface water quality measures are based on samples taken from 6 rivers and 12 sites across the province. Groundwater quality statistics are not readily available at the regional level.

In the case of Waste Management, information can be broken down by tonnes per person with a special data run. The cost of the run is dependent upon the extent of the breakdown. Figures would not be exclusive to household waste but would incorporate demolition and construction figures.

The Environmental indicators include:

- air quality
- water quality (surface)
- solid waste disposal per capita

Confidentiality

Part of the constraint in developing aQOL indexes at the regional level is confidentiality of data, particularly related to social indicators. Data collection for these indicators ensures that confidentiality between reporter and interviewer is maintained thus precluding us from

"fitting" some of the social indicators data with other sectoral data sets or sectoral boundaries. For Health indicators, numbers may be limited to place of treatment and not the place of residence. In these cases, urban centres may be over-represented because of greater accessibility to treatments in these areas. For Economic indicators, data was grouped together because sample size was too small and confidentiality could have been compromised.

Creating the QOL Indexes

The creation of regional QOL indexes considered the methodologies developed by Pierce County (1998), Brink and Zeesman (1997), and Miringoff et al. (1996) whereby normative, objective data sets arestandardized, normalized or converted into an index. Each uses a slightly different approach for normalizing the data set. The Alberta QOL data set lends itself to the establishment of indexes by region and by theme (health, social, economic and environment) but not by a composite or aggregate index of all themes across all regions of the province.

Benchmark Year Method (Pierce County)

The construction of theme indexes, adopted by Pierce County, Washington model (1998), employs a model or benchmark year against which annual future performance is compared. This method is called standardization of normalization. The changes or trends in annual performance, are assessed against a base year. Similar to the Consumer Price Index, the data point for the base year is set equal to 100 basis points. Other annual data points are compared to this benchmark year, whereby a value greater than 100 points is considered positive progress while a value less than 100 points represents declining performance. Using a benchmark year has both practical and intuitive appeal.

Model Year Benchmark Method (Miringoff)

A second option is the methodology adopted by Miringoff et al. (1996) and Brink and Zeesman (1997) in the case of their Index of Social Health. This model assesses annual

performance against the best and worst performance period.[3] Yearly performance, both improved and declining, is assessed against the best performance benchmark rather than a benchmark year or ideal standard. To standardize the indicator, each indicator is measured in comparison to both its own best and worst performance over the time period. The best performance period is given a score of ten and the worst performance is given a score of zero. All other annual data points are scored on a scale from 0 to 10 based on the relative performance of the year (Brink and Zeesman, 1997). Scores derived for the indicators are then averaged and expressed as a percentage to derive the aggregate index that if maximized will equal 100 points. Thus, the index provides a picture of the changes in performance for the year relative to past performance. Each indicator, viewed individually or aggregated into groups, will thus show changes in the condition of an indicator or composite of indicators. This then provides a means of assessing the "big picture" of overall societal well-being or quality of life across otherwise incomparable indicators. If all the indicators are equal to the best score (10) in a given year, then the composite QOL index would be a maximum of 100. If several indicators have declined relative to the best performance, the index will fall. This approach does have intuitive appeal, particularly in normalizing data sets relative to the best performance amongst regions and across time. However, the method of scoring both best and worst performance seems cumbersome if not unnecessary. What is required of any index is that it can show relative trends or changes over time and relative ranking of performance by region and at a provincial aggregate scale.

Performance Target Benchmark Method

A third option is to assess performance against a target, goal or ideal standard. Comparing performance relative to a performance benchmark or target also has pragmatic appeal in cases where performance targets have been established. The performance benchmark (raw data target) would be given a score of 100 points against which actual annual performance would be normalized and compared. This approach could be applied in the case of Alberta's *Measuring Up* and overall business planning and government performance measurement model where performance targets are established for most of the 240 odd government performance measures in place. No attempt has been made to adopt such an approach for Alberta.

[3] This model or approach is worthy of experimental application in the case of the Alberta QOL model, however, was not pursued in this study.

PROPOSED ALBERTA QOL INDEX MODEL

We propose a method for the Alberta QOL Index that combines the best of both the benchmark year (Pierce County) and the model year benchmark method (Miringoff 1996; Brink and Zeesman 1997). Our proposed approach has a multidimensional accounting convention that produces a result for different accounting purposes.

Ideally, our model should be robust enough to provide the following objectives:

1. Compare regional performance by any QOL indicator theme or by any given QOL indicator across regions and across time (years). This enables the comparison of the performance of all regions by QOL indicator, theme and potentially a composite QOL Index.
2. Assess trends in each QOL indicator/parameter or theme of indicators by region or provincially across time.

There are three possible products that would result from the model:
1) Regional QOL Theme Indexes by Year comparing regional performance;
2) Regional QOL Indexes for any given indicator and regional QOL Theme Indexes showing trends over time of the aggregate indicators within a theme, and;
3) Provincial QOL Theme Index showing trends over time. The following methodological steps are required:

1. Regional QOL Theme Indexes to Compare Regional Performance

1.1 Create a time series data base using the raw data for each administrative region, by parameter/indicator, and by year for each of the QOL indicator themes. For example:

Health Indicators

	Region 1	Region 2 .....etc.
Indicator 1		
Year 1990	xx.x	xx.x
Year 1991	xx.x	xx.x
Year 1992 etc.	xx.x	xx.x
Indicator 2	x.x	x,x
Year 1990 etc.		

1.2. Standardize or normalize the data set by setting the best performance of any given indicator/parameter, in any given year, in any given region equal to 100 maximum points.

All other raw data points are indexed in relation to the best performance point (100) as a ratio of that data point to the best performance data point. In cases where a higher rate constitutes worse performance, the inverse of the ratio is taken; thus yielding a value less than 100 points . All raw data figures should on a per capita basis. A logic model constructed within a spreadsheet or using SASS or other statistical packages would pick the "best" performance point from the matrix of data points by region and by year and index all other data points relative to "best".

For example:

$$\text{Teen Birth Rate Index} = \frac{\text{"Best" (Lowest) Teen Birth Rate (Year xxxx, Region x)}}{\text{"Best" (Lowest) Teen Birth Rate (Year xxxx, Region x)}}$$

$$= 100.0$$

Teen Birth Rate Normalized Indicator Value (example)

$$= \frac{\frac{1}{\text{Teen Birth Rate (Year 1995, Region B)}}}{\text{"Best" (Lowest) Teen Birth Rate (Year 1990, Region A)}}$$

(note: the inverse of the ratio of teen birth rate (region B) to "best" (lowest) teen birth rate yields a value less than 100, the maximum score for "best")

1.3. Create a matrix of normalized values for each indicator across regions and time for each of the QOL themes. Each cell in the matrix contains the score for the particular region by indicator and by year. These scores are comparable with the "best" score of a particular indicator from a specific region in a specific year.

For example, using the rate of Sexually Transmitted Diseases (STDs) from the Health Indicators:

	Regional Health Authority				
2. Rate of STDs Occurring in Male & Females per 100,000 population (raw data)	1	2	3	4	5
1990					
1991					
1992					
1993					
1994	252.2	264.3	361.6	303.4	153.0
1995	245.2	232.6	316.8	287.2	108.6
1996	210.7	234.7	232.1	285.1	83.8
1997	181.6	229.4	287.6	264.2	145.4

2. Rate of STDs Occurring in Male & Females per 100,000 population (Index Best=100)					
1990					
1991					
1992					
1993					
1994	33.2	31.7	23.2	27.6	54.8
1995	34.2	36.0	26.5	29.2	77.2
1996	39.8	35.7	36.1	29.4	100.0
1997	46.1	36.5	29.1	31.7	57.6

1.4. Each indicator in the group or theme of indicators is normalized in the same fashion.

1.5. All normalized values for the sum total of all indicators within a theme (e.g. health indicators) can be summed to yield a composite Health Index for each region by year. A composite Index is computed by summing the normalized "scores" for each indicator by region and by year then dividing the total by the number of indicators used in determining the Index. Each indicator is given equal weighting although weighting scenarios can be used, if desired. (Note: in actual applications incomplete time series may necessitate the creation of an indexes that does not contain a full suite of indicators in any given year; this was the case with our case study using Alberta Health Indicators as noted below in the example. Ideally the Index should be comprised of the same number of indicators across time and regions). The result is a comparison of regional performance by region and year for all indicators that comprise a QOL Theme Index. In future, an Alberta composite QOL Index could be constructed across indicator themes or groups given consistent regional or statistical boundaries and a common time series of data.

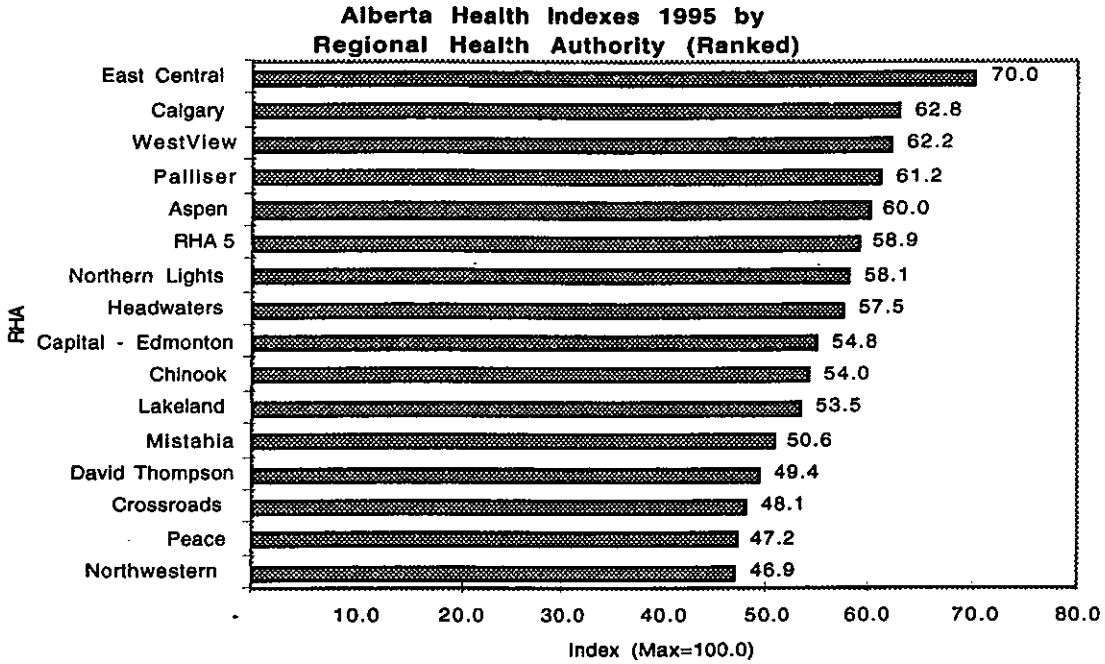
For example, using the 8 Health Indicators that were used in the Alberta case study yields the following matrix of results:

ALBERTA HEALTH INDEXES BY REGIONAL HEALTH AUTHORITY

	1	2	3	4	5	6	7	8
1990	57.3	52.3	57.2	71.0	69.5	51.7	61.5	53.0
1991	66.5	69.4	59.1	72.9	69.7	61.5	70.3	66.5
1992	49.7	48.0	46.8	53.8	57.9	45.6	51.6	45.6
1993	56.3	69.0	56.5	72.8	57.0	55.7	75.2	57.0
1994	52.8	60.2	55.2	62.1	54.8	50.2	61.7	58.5
1995	54.0	61.2	57.5	62.8	58.9	49.4	70.0	62.2
1996	59.3	64.3	65.2	60.5	76.6	52.6	68.9	72.6

Notes:
1990 Health Index includes only 2 of 8 indicators: suicide rates and heart disease rates
1991 Health Index includes 4 of 8 indicators: low birth weight babies; infant mortality, suicide, and heart disease rates
1992 Health Index includes 4 of 8 indicators: low birth weight babies; infant mortality, suicide, and heart disease rates
1993 Health Index includes 7 of 8 indicators: low birth weight babies; infant mortality, suicide, heart disease rates, sexual assault, physical assault, and teen births
1994 Health Index includes 6 of 8 indicators: low birth weight babies, rate of STDs, infant mortality, suicide, heart disease rates, and teen births
1996 Health Index includes 6 of 8 indicators: low birth weight babies, rate of STDs, infant mortality, suicide, heart disease rates, and teen births
1996 Health Index includes 3 of 8 indicators: low birth weight babies, rate of STDs, and infant mortality.

The results can be shown graphically. For example, the 1995 Health Indexes for each region would show the following ranking by Regional Health Authority:



2. Regional QOL Indexes by Indicator Theme or Individual Indicator and Regional QOL Theme Index Showing Trends Over Time of the Aggregate Indicators Within a Theme.

The model also facilitates the development of regional QOL indexes (or a provincial QOL index) for either a specific indicator or a group or theme of indicators. This provides a means of assessing performance over time of any given region . The reworking of the raw data set is necessary to facilitate such indexes.

2.1 The raw data set for any given indicator for a given region (or at the provincial level) is converted to a normalized data set by setting the "best" year of performance to 100 basis points. (Another option is to establish a common benchmark year for all indicators against which future or past performance can be compared, as in the case of the Edmonton Social Health Index, 1998)

2.2 All other data points are compared to the "best" data point for the given indicator across time by taking the inverse of the ratio of the raw data for indicator 'X' in year 'xx' to the "best" raw data point. Thus a normalized value less than 100 is determined for every indicator for each region.

2.3 The normalized values can then be used to show trends over time for any given indicator for any given region as well as at the provincial level. In addition, a composite QOL theme index can be constructed for individual regions or at the provincial level showing the trend over time in the composite index.

For example, using the Capital Health Region (Edmonton) raw data and normalized values for the period 1991 to 1996 yields the following results:

Regional Quality of Life Index (Example, Capital RHA 10, Edmonton)

Raw Data

	1991	1992	1993	1994	1995	1996
1. Low Birth Weight Babies	5.9	5.9	5.9	6.1	6.1	6.1
2. Rate of STDs				357.9	323.6	344.1
3. Infant Mortality	7.0	7.0	7.0	7.0	7.0	7.0
4. Suicide Rate	17.5	17.5	17.5	16.5	16.5	16.5
5. Heart Disease Rate	57.5	57.5	57.0	57.0	57.0	
6. Physical Assault Rate			12.09			
7. Sexual Assault Rate			2.16			
8. Teen Birth Rate			20.6	16	14.7	

Normalized Data

	1991	1992	1993	1994	1995	1996
1. Low Birth Weight Babies	100.0	100.0	100.0	96.7	96.7	96.7
2. Rate of STDs				90.4	100.0	94.0
3. Infant Mortality	100.0	100.0	100.0	100.0	100.0	100.0
4. Suicide Rate	94.3	94.3	94.3	100.0	100.0	100.0
5. Heart Disease Rate	99.2	99.2	100.0	100.0	100.0	
6. Physical Assault Rate			100.0			
7. Sexual Assault Rate			100.0			
8. Teen Birth Rate			71.4	91.9	100.0	

Composite RHA 10 Health Index

1991	1992	1993	1994	1995	1996
98.4	98.4	95.1	96.5	99.5	97.7

This example illustrates the inherent difficulties of composing indexes given inconsistent time series for different indicators. One could argue that the construction of a Health Index as we illustrate is meaningless unless there is a consistent time series for all indicators that comprise the composite. Indeed, many heroic assumptions are necessary in composing a composite "Health Index", including the very choice of indicators that comprise the Index (e.g. physical and sexual assault rates while reported at the RHA level may be more suitable in a "Social Index"). We also ignored the problem of missing indicator data points assuming that all normalized values could be summed in any given year across the suite of indicators and their annual data points that were available. Clearly, forcing such an index is inappropriate methodologically. We "force" the Indexes simply to illustrate the possibilities

for using these methods in future QOL indexes construction where time series are consistent across parameters of indicators within a QOL indicator theme.

3. Provincial QOL Theme and Indicator Indexes

The model facilitates the construction of provincial QOL indexes at the indicator, indicator theme, and composite theme indicator level of aggregation. Indeed, the construction of a provincial QOL set of indexes is more practical given a more robust set of indicators and time series at the provincial level. We do not illustrate this application simply to argue that the methods adopted in the aforementioned index development at the regional level can be applied at the provincial level.

The construction of provincial QOL indexes (indicator specific, theme indexes, or a composite multi-theme index) is both possible and indeed practical given that many of the indicator themes we examined were at the provincial level of aggregation.

As noted earlier, it would also be possible to create a composite Alberta QOL Index for individual indicators and a composite of indicators that would constitute a full account of "quality of life" using existing information sources, including the Alberta Government's own performance measures contained in *Measuring Up* and in each ministry's three-year business plans and annual reports.

CONCLUSION

The Development of a Quality of Life Index for Alberta recognizes the importance of quality of life indicators to empower citizens and decision makers with evidence upon which to develop healthy, viable and resilient communities across the province. The model presented provides several options and tools for constructing QOL indexes for Alberta at both a regional and provincial scale. The utility of the model is that it would provide decision makers with a "barometer" for quality of life at various orders of magnitude, whether assessing trends in individual QOL indicators or indicator themes by region or at the provincial level and assessing the relative performance of regions by indicator or themes of indicators. This would empower decision makers with a "picture" of their quality of life within a region, in relation with other regions, or in relation to the provincial averages.

The Development of a Quality of Life Index for Alberta points to the many challenges in constructing indexes where there are regional boundary discrepancies and inconsistent data sets across time. These challenges present an opportunity to develop common boundaries for comparison of various QOL indicators over time. Our proposed model is meant to illustrate the possibilities for creating such QOL indexes for Alberta and other provinces at the regional and provincial scale. Needless to say, we are far from a perfect application of the proposed model until we can achieve consistent statistical/administrative boundaries and complete data sets. Nevertheless, this should not thwart us from attempting a "best fit" with the data that is available in order to provide a preliminary "sketch" of overall quality of life in Alberta in the hope of a more complete "painting" of the quality of life landscape.

The creation of QOL Indexes at the regional level is highly complex and to our knowledge has never been attempted. While we failed to produce a composite QOL index across all indicator themes at the regional level, it is possible to create theme indexes across common administrative boundaries for health, social, economic and environmental indicators. We propose an indexing approach that adopts the intuitively attractive aspects of both the Pierce County, Washington (1998) model and the Miringoff/Brink/Zeesman model (1996, 1997) model whereby raw data for respective indicators are normalized/standardized allowing for the comparison of "performance" across indicators, themes of indicators, and regions. This normalization of data involves either the establishment of a benchmark model year (the "best" performance amongst regions over time) or a benchmark year against which past and future performance can be compared. This facilitates the comparison of otherwise incomparable indicator raw data sets as well as facilitating the development of composite indexes using a common metric. Regional performance can be compared by indicator or indicator themes or in future by a composite QOL indicator account. Because the administrative boundaries in the case of health, social, economic and environmental indicators differ, we were unable to construct composite QOL indexes at the regional level. A provincial QOL index, however, could be constructed using our model and regional data or by adopting existing Alberta Government performance measures.

Perhaps the most important observation to be made in this study is that the utility of the QOL Index model to Alberta or other jurisdictions depends on the indicators that are chosen and the practical realities of data and administrative boundaries. Many indicators while intuitively desirable for rating such a complex issue as quality of life may simply be impractical given data limitations. Different administrative boundaries for indicator themes

may ultimately preclude the development of composite QOL indexes at the regional level unless some method is found for "fitting" boundaries together. This was clearly the case in attempting to develop an Alberta QOL Index. Moreover, like others QOL initatives, we use normative objective statistics simply because of the availability of data from source agencies. Indeed, some might argue that the indicators we used in our illustrative model provide a poor account by which many of us would intuitively and subjectively measure quality of life.

In the end, it may be impossible to objectively measure quality of life. At best we can pursue the development of an objective data set that best matches our intuitive and subjective sense of what constitutes quality of life in our respective communities. Using such objective evidence may empower us to calibrate our quality of life now and in future, but such indicators, in themselves, will not provide a definitive answer to the question: what is our quality of life in Alberta? Future research should attempt to reconcile subjective, attitudinal or opinion information about quality of life with our existing objective, normative, historical, and traditional indicators to determine gaps between perceptions and objective reality and to facilitate the choice of objective indicators that match our intuitive sense of what constitutes quality of life.

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- Todd Chorney- Alberta Treasury
- Vivian Ceilin, Headwaters Health Authority
- Wayne McMullian, Industry Canada
- WIN House
- Xinjie Cui- Health Surveillance
- Yan Jin, Alberta Health

Appendix A

The following are Quality of Life Models reviewed in the development of the Alberta Quality of Life Index.

Quality of Life in Ontario 1997

Social

Children admitted to care of Children's Aids Societies
Social Assistance beneficiaries
Public Housing waiting lists

Health

Low birth weight babies
Elderly waiting for placement in long term care facilities
Suicide rates

Economic

Number of people unemployed
Number of people working
Bankruptcies (individual & business)

Environment

Hours of moderate/ poor air quality
Environmental spills
Tonnes diverted from landfill to blue boxes

Life in Jacksonville: Quality Indicators for Progress

Education

Public high school graduation rates
Average mean achievement-test percentile scores in public schools
Public-school teacher salary
Percentage of public-school students attending desegregated schools
Percentage of higher faculty holding terminal degrees
Higher education degrees awarded
Total student participation in credit/ noncredit higher education programs

Economic

Net job growth
Percentage gap between total and black unemployment
Effective buying income per capita
Retail sales per capita
Total taxable value of real estate
New housing starts
Affordibility of single-family home
Percentage of public-school students participating in the free or reduced-cost lunch program
Tourism as measured by Bed-Tax revenues
Cost of 1,000 kilowatt hours of electricity

Public Safety

Percentage of persons surveyed who report feeling safe walking alone at night in their neighbourhood
Index crime rates per 100,000 population
Percentage of persons surveyed who report having been victims of a crime within the last year (telephone poll)
Average rescue call response time
Average fire call response time
Average Priority- One police call response time
Resident deaths from accidents or poisoning per 100,000 population
Motor vehicle per 1,000 population

Natural Environment

Number of days air quality index is in good range
Frequency of compliance in ST. Johns River and tributary streams with water standards for dissolved oxygen
Water level in Floridan- Aquifer wells monitored by the city
New septic -tanks permits issued
Sign permits issued
Per-capita tons of solid waste deposited in city landfills

Health

Infant deaths per 1,000 live births
Age-adjusted residents deaths per 100,000 population
Resident deaths due to heart disease per 100,000 population
Resident deaths due to lung cancer per 100,000 population
Packs of cigarettes sold per capita
Total newly diagnosed cases of Aids per 1000,000 population
Percentage of public -high school students scoring at the 50th percentile or higher on the president's Challenge Physical Fitness Test
Alcohol use reported by youth
Percentage of persons surveyed who rate the health and medical care system "good" or "excellent" (telephone poll)
Percentage of persons surveyed who report having no health insurance (telephone poll)

Social health

Percentage of people who report that they believe racism to be a local problem
Substance-exposed newborns per 1,000 live births
Substantiated reports of child abuse and neglect per 1,000 children under 18
Resident live births to females under 18 per 1,000 live births
Employment-discrimination complaints filed with Jacksonville equal Opportunity Commission
Percentage of person surveyed who report having volunteered time in the community during the past year (telephone poll)
City human service expenditures
Contributions per capita to the United Way and its member agencies

Governments/Politics

Percentage of persons surveyed who rate the quality of local government leadership "good" or "excellent" (telephone poll)
Percentage of population 18 and over registered to vote
Percentage of registered voters who vote in scheduled general elections

Percentage of elected officials who are nonwhite
Percentage of elected officials who are female
Percentage of persons surveyed who can name two current City council member (telephone poll)
Percentage of persons surveyed who report keeping up with local government news "frequently" (telephone poll)
Percentage of persons surveyed who feel that local public services are effectively provided "frequently" (telephone poll)

Culture/Recreation

City finanical support per capita of arts organization
City parks and recreation operating expenditures per capita
Public parks acreage per 1,000 population
Public library materials per capita
Public library book circulation per capita
Total event/days of bookings at major City facilities
Museum of Science and History attendance per 1,000 population
Symphony attendance per 1,000 population
Zoo attendance per 1,000 population

Mobility

Percentage of working persons surveyed who report commuting times of 25 minutes or less (telephone poll)
Total weekday commerical flights in and out of the Jacksonville International Airport
Destinations served by direct flights to and from the Jacksonville International Airport
Average weekday ridership per 1,000 population on Jacksonville Transportation Authority buses
Average weekday miles of Jacksonville Transportation Authoruty bus service
Percentage of JTA bus headways within 30 minutes during peak hours and 60 minutes during nonpeak hours

An Index of Economic Well-being for Canada

Consumption Flows

real total consumption real current government spending on goods and services excluding debt service(dollars per capita)
real value of unpaid labour (dollars per capita)

Stocks of Wealth

real capital stock (including housing)
(dollars per capita)
real R&D stock (dollars per capita)
real stock of natural resources (dollars per capita)
real human capital stock(dollars per capita)
real net foreign debty (dollars per capita
real social cost of environmental degradation
(CO2 emissions) (dollars per capita)

Equality

LIM poverty intensity
After tax income Gini coefficient

Security
- risk of unemployment
- risk of illness
- risk of single parenthood
- risk of old age

Measuring Up

People
- Life expectancy at birth
- Health Status
- Births to mothers under age 18
- Educational Attainment
- Literacy and Numeracy
- Family Income Distribution
- Ibertans Needing Help

Prosperity
- Gross domestic Product
- Job Creation
- Resource wealth
- Skill development
- Adoption of new technologies
- Cost of government
- Infrasture Capacity (new)
- Taxation load
- Provincial Credit Rating
- Net debt
- Workplace Climate
- Export Trade

Preservation
- Crime rate
- Serious Youth Crime
- Resource sustainability
- Air quality
- Water quality
- Land quality
- Heritage appreciation (new)
- Intergovernmental relations (new)

Measuring Social Well being

Children
- Infant mortality
- Child Abuse
- Child Poverty

Youth
- Teen suicide

Drug Abuse
High School Dropout rate

Adult

Unemployment rate
Average work earnings

Elderly

Poverty 65+
Out of pocket health costs

All

Homicides
Alcohol Related Fatalities
CAP Beneficiaries
Access to affordable Housing
Gap between Rich & Poor

Quality of Life Indicators: A Pilot Test of the Community Oriented Model of the Lived Environment

Sectoral Policies/Programmes

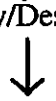
Housing
Land Use
Transportation
Natural Environment
Employment/Commerce
Public Services
(health,education,recreation, police, fire protection,public works and social welfare)

Components of Liveability

Economic Vitality
Social well-being
Environmental Integrity

Indicators of Liveability

Employment
Affordability
Suitability
Adequacy
Accessibility
Homelessness
Advocacy
Density/Design



Specific Measures

Housing units per annum
Value of building permits
% tenants who spend 30% or more of households income on gross rent
% Owner occupants who spend 30% or more of household income on principal, interest, taxes and utilities
Average price of serviced residential lots ($ and as a % \of average price of house)
Average number of persons per bedroom, or below the more refined National Occupancy Standard
% dwellings in need of major repair
Waiting time for those in need:access to subsidized housing (requires caution when interpreting)
% of total stock made up of social housing units
Vacancy rates, especially if available by price range of stock
Supply of serviced residential land coming on stream to meet future demand
Any available estimates of homeless persons (taking into account weaknesses in data)
Changes in occupancy rates of shelter beds, using a moving 12 month average for example
% households participating in residents or ratepayers associations
population density
gradient density
average lot size

Sustainable Calgary: State of Our City Report

Economy Indicators

Employment Concentration
Housing Affordability
Hours Required to meet basic Needs at Minimum wage
Number of people dependant on Food Banks
Unemployment rate

Resources Use Inidcators

Energy Use
Food Grown Locally
Transit Usage for Work Trips
Domestic Waste
Water Use

Natural Environment Indicators

Air Quality
Christmas Bird Species Count
Pesticide Use
Surface Water Quality

Community Indicators

Leisure Time
Crime Rate & Rate of Victimization
Sense of Community
Valuing Cultural Diversity
Volunteerism

Sense of Community
Valuing Cultural Diversity
Volunteerism

Health and Education Indicators
Childhood Asthma Hospitalization Rates
Grade Three Achievement Scores
Healthy Birth Weight Babies
Level Three Adult Literacy
Self -Rated Health

1997 Edmonton Life : Local Indicators for Excellence

Healthy Economy
Net Business Creation
Development Activity
Municipal Expenditure on Debt
Emerging Industry Research and Development Patent
Labour Force Participation
Adult Job-related Education and training
Level of Education
Households below the LICO
Air Traffic
Corporate Revenue spent on training
People with income to meet Basic Needs

Healthy People
Disparity in family annual income
Nutritious Food Basket Index
Low Birth weight babies
Student Academic Achievement
Life-long Learning
Physical Activity
Food Bank demand
Premature deaths
Crisis Support Calls
Consumption and use of Addictive substances
Pre-school Children with developmentally -appropriate behaviour and skills

Healthy Environment
Private Vehicle Usage
Energy Consumption Per Capita
Air Quality
River water quality
Solid waste per capita
Urban green space
Environmental in service training for teachers
Environmental Content in the classroom
Community Design
Total air emissions
Public Environmental Awareness and satisfaction

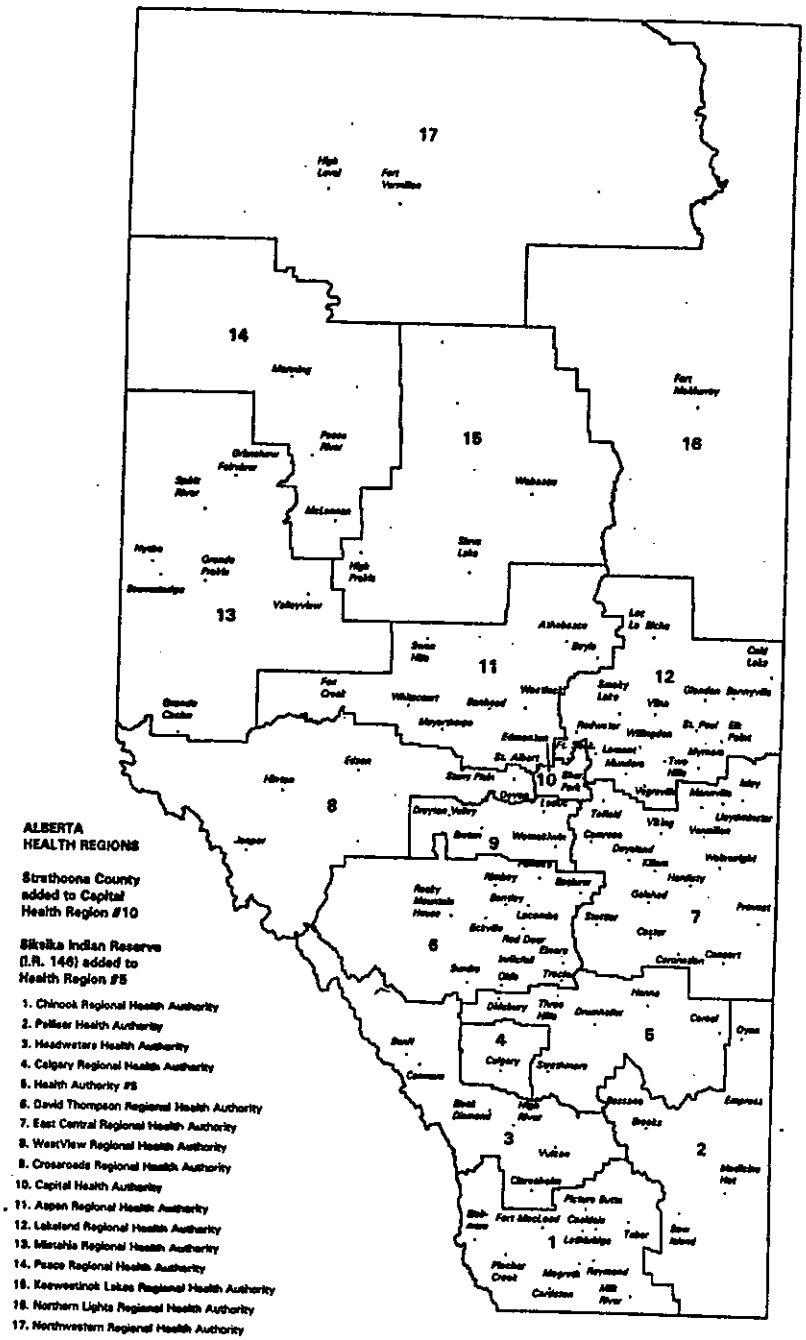
Healthy Community

Enrollment in post secondary institutions
Charitable Donations per capita
Voter turnout
Public safety and security
Physical Urban Infrastructure
Suicide rates
Access to medical services
Number of hospital beds
Volunteer time
Leisure activities
Early Intervention to assist children

Measuring Social well-being: An Index of Social Health for Canada

Infant Mortality
Child Abuse
Child Poverty
Teen Suicide
Drug Abuse
High school drop-out
Unemployment
Average weekly earnings
Poverty among those 65 and over
Out of pocket Health Expenditures for persons 65 and over
Highway Deaths related to alcohol
Homicides
Persons receiving social assistance
Gap between rich and poor
Access to affordable housing

Appendix B- Regional Health Authories Boundaries



Appendix C- Alberta Family and Social Services Map