Centre for the Study of Living Standards

111 Sparks Street, Suite 500
Ottawa, Ontario K1P 5B5
613-233-8891, fax 613-233-8250
csls@csls.ca

A Survey of Indicators of Economic and Social Well-being

Second Draft

Andrew Sharpe
Executive Director
Centre for the Study of Living Standards

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Introduction

In recent years, interest in aggregate or composite indicators of economic and social well-being at the community, national and international levels has grown greatly. For example, the release each year of the United Nations' Human Development Index generates considerable media interest, particularly in Canada. Equally, the Genuine Progress Index produced by the think tank Redefining Progress has become very well known in a short period of time, and is referred to often in debates on the inadequacies of GDP as a welfare measure. Many communities in Canada and in the United States have attempted to develop social indicators to monitor trends in the welfare of their citizens.[1]

The objective of this paper is to provide a survey of the major indicators of economic and social well-being that have been developed at the national and international levels. The paper will be divided into three main parts. The first provides a short overview of the social indicators, looking at the history of the social indicators movement, types of social indicators, purposes of social indicators, and noting how the development of summary indexes, the focus of this paper, represents the latest phase in the history of social indicators.

The second part summarizes what the author believes are the best known and most important indexes of economic and social well-being that have been developed, including the Measure of Economic Welfare (MEW); the Genuine Progress Indicator (GPI); the Index of Economic Well-Being (IEWB); the Human Development Index (HDI); the Index of Social Health (ISH); the Quality of Life Index (QOL); and the Index of Social Progress (ISP). The indexes are divided into three main categories: 1) indexes that provide consistent historical estimates of trends in well-being for Canada; 2) indexes that provide cross-national estimates of the state of well-being for a particular year for many countries; and 3) indexes that provide estimates of trends in well-being for Canadian provinces and communities. In addition to the indexes surveyed, certain sets of social indicators are also surveyed given their importance for the debate on social indicators. This section also discusses the characteristics, variables covered and trends in the indexes for Canada.

The third section of the paper discusses a number of issues in the construction of indexes of economic and social well-being, including criteria for index evaluation and application to the indexes developed for Canada; single versus multiple indicator approaches; money versus composite indicators; weighting issues in composite indicators; national versus community indicators; bottom-up versus top-down index design; advocacy versus knowledge-driven indicators; ad hoc versus theoretically consistent indicators; and technical issues in index construction.

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[1] See the websites of the Canadian Council on Social Development (www.ccsd.ca) and the San Francisco-based think tank Redefining Progress (www.rprogress.org) for links to community indicators.

I An Overview of Social Indicators

A. History of Social Indicators[2]

Social indicators are statistical time series "… used to monitor the social system, helping to identify changes and to guide intervention to alter the course of social change." (Land, 1999) The term social indicators was born in the United States in the 1960s when the American Academy of Arts and Science, in a project funded by the National Aeronautics and Space Administration (NASA), attempted to "detect and anticipate the nature and magnitude of the second-order consequences of the space program for U.S. society" (Land, 1999:1). Frustrated by the lack of sufficient data to detect such effects and the absence of a systematic conceptual framework for analysis, an attempt was made to develop a system of social indicators to detect and anticipate social change as well as evaluate the impact of specific programs and policies, culminating in the publication in 1966 of the massive volume *Social Indicators*, edited by Raymond Bauer.

There were a number of other publications in the 1960s that attempted to establish a "system of social accounts" that would facilitate a cost-benefit analysis of more than the market-related aspects of society already covered by the National Income and Product Accounts. Many of these early indicator reports reflected an interest in promoting or evaluating President Johnson's social policy. For example, the Johnson administration published a document entitled *Toward a Social Report*, which was conceived as a counterpart to the annual economic reports of the President produced by the Council of Economic Advisors (CEA), to be produced by a Council of Social Advisors, comparable to CEA. Underlying this effort was the belief that the creation of the CEA had institutionalized the use of economic information and the power of economists. Creating a comparable institution to address social problems seemed like a logical next step.

Of course, important work had been done before the 1960s on social conditions. Probably the most influential was the work of the University of Chicago sociologist William Ogburn. He produced for the Hoover administration in 1933 the two-volume *Recent Social Trends*, which represented a path-breaking contribution to social reporting. Ogburn's students played a major role in the emergence of the social indicators movement in the 1960s.

In the 1970s, the social indicators movement bloomed. Developments included the establishment of the Social Science Research Council Center for Coordination of Research on Social Indicators; the publication by the U.S. federal government of comprehensive data on social indicators; initiation of survey research on social indicators; the founding of the journal *Social Indicators Research*; and the spreading of social indicators to international agencies such as the UN and the OECD (see Appendix 1 for the list of variables the OECD included in its work on social indicators).

[2] See Cobb and Rixford (1998) for a detailed history of social indicators.

In the 1980s, social indicator activities slowed considerably, as the governments in the United States and other countries as well as international agencies cut support. This development reflected several factors including tighter government finances; a more conservative ideology adopted by a number of governments; and a perceived lack of usefulness of social indicators in policy making. This latter factor in turn may have been due to the overly simplistic view of how knowledge influences policy that had been put forward by the social indicators movement. This simplistic view may have stemmed from the inability of the advocates of social indicators to offer causal explanations of social trends that would help formulate social policy.

B. Types of Social Indicators

According to a recent survey of social indicators by Ken Land, a sociologist at Duke University (Land, 1999), three types of social indicators can be identified: normative welfare indicators, life satisfaction and/or happiness indicators, and descriptive indicators.

normative welfare indicators

The first type of social indicators relate directly to social policy-making considerations, and have been termed criterion indicators, normative welfare indicators, and policy indicators. Mancur Olson, principle author of one of the key social indicator volumes of the 1960s, characterized a social indicator as a "… statistic of direct normative interest which facilitates concise, comprehensive and balanced judgements about the condition of major aspects of society." Such a measure is a direct measure of welfare and a change in the "right" direction means everything else being equal, people are better off. In the language of policy analysis, this type of social indicator is a target or outcome variable which public policy tries to influence. Land points out that use of social indicators in this sense requires that society agree about what needs to be improved, that agreement exist on what "getting better" means, and that it is meaningful to aggregate the indicators to the level of aggregation at which policy can be defined.

life satisfaction indicators

A second type of social indicators, called life satisfaction, subjective well-being, or happiness indicators, attempt to measure psychological satisfaction, happiness, and life fulfillment through survey research instruments that ascertain the subjective reality in which people live. The approach is based on the belief that direct monitoring of key social-psychological states is necessary for an understanding of social change and the quality of life. It is argued that the link between objective conditions and subjective well-being can be paradoxical and, therefore, subjective as well as objective states of well-being should be monitored.

descriptive social indicators

A third type of social indicator focuses on social measurement and analyses designed to improve our understanding of society. This type of social indicators may be related to public policy objectives, but is not restricted to this use. Descriptive social indicators come in many forms, and can vary greatly in the level of abstraction and aggegation, from a diverse set of statistical social indicators to an aggregated index of the state of society.

C. Purpose of Social Indicators

In his survey of social indicators, Land (1999) identifies three uses for social indicators: monitoring, social reporting for public enlightenment, and social forecasting. A key principle motivating the social indicators movement was the desire to monitor change over time in a broad range of social phenomena beyond traditional economic indicators. This desire came from a number of sources, including government, social activists, academics, and market researchers. A second principle was the belief that social indicators represented a form of social reporting that could lead to public enlightenment on social issues and in time action to deal with these issues. Finally, social indicators have been used to forecast trends in social conditions and turning points.

D. Current State of Social Indicators

The United States in the 1990s was no longer producing a comprehensive national social report under federal sponsorship, as was done in the 1960s. But the idea of monitoring, reporting, and forecasting of social indicators is alive and well in publications by federal agencies, think tanks, and academics. An excellent example is the volume *The State of Working America*, published every second year by the Washington-based think tank Economic Policy Institute (Mishel, Bernstein and Schmitt, 1999). It provides a detailed analysis of economic trends.

In contrast to the United States, government agencies in other countries publish comprehensive social indicator compendiums. For example, the Central Statistical Office in the United Kingdom publishes the annual *Social Trends*; the Social and Cultural Planning Office in the Netherlands produces the bi-annual *Social and Cultural Report;* the Statistisches Bundesamt in Germany produces the bi-annual *Datenreport;* and in Australia the Australian Bureau of Statistics produces the annual *Social Trends.*[3]

The federal government in Canada has never produced a comprehensive national social report. Government departments and agencies and private research and advocacy organizations (e.g., National Welfare Council, Canadian Council on Social Development, Vanier Institute, CPRN, etc.) do produce reports on particular aspects of social

[3] Other useful publications on social indicators from Australia include Weston, Millward, and Lazzarini (1995) and Travers and Richardson (1993).

conditions. These indicators are often very influential in public debate. An excellent example is the use of the child poverty rate as an indicator in the fight against child poverty used by Campaign 2000, a coalition of social groups. The House of Commons in 1989 unanimously passed a resolution to eliminate child poverty in Canada by 2000 and every year with the release of the poverty data, Canada's progress on this indicator is compared with the benchmark, garnering significant media interest.

International Organizations such as the United Nations and the World Bank publish information on social indicators in such publications as the UN's *Human Development Report* and the Bank's *Social Development Indicators*. Non-governmental international organizations such as the Luxembourg Income Study make available data to researchers for international comparisons of social indicators.

the development of summary social indicators

In the last decade the field of social indicators has entered a new era with the development of summary social indicators.[4] The purpose of such indicators is to summarize indicators (objective and/or subjective) from a number of domains into a single index. The motivation for this development is to answer one of the original questions of the social indicators movement, namely, how is a country progressing in terms of social conditions both over time and compared to other countries. The original pioneers of the social indicators movement backed away from this task to concentrate on database development. Now, with the greater availability of social data, a new generation of social indicators researchers has returned to the task of summary index construction. The rest of this paper surveys a number of these new summary indexes of social and economic well-being.

[4] The development of environmental indicators in the 1980s and 1990s was also inspired by the social indicators movement. In the United States, the Council on Environmental Quality and the Environmental Protection Agency both began to develop indicators to monitor and publicize environmental trends. Similar work was begun at the OECD. In addition, policy institutes such as WorldWatch and the World Resources Institute began producing annual books describing and analyzing environmental trends. With the notion of sustainable development as highlighted by the Brundtland report and later by the Rio conference, a new framework for indicators was developed in the early 1990s. Sustainability indicators attempt to describe the interrelations of economic, environmental, and social concerns. These frameworks or sets of sustainability indicators offer conceptual models that illustrate those interrelationships, but they do not necessarily offer an analytical understanding of them.

II A Survey of Selected Indexes on Economic and Social Well-being

A total of 11 indexes are surveyed in this section. The indexes are divided into three main categories: 1) indexes that provide consistent historical estimates of trends in well-being for Canada; 2) indexes that provide cross-national estimates of the state of well-being for a particular year for many countries; and 3) indexes that provide estimates of trends in well-being for Canadian provinces and communities. In addition to the indexes surveyed, certain sets of social indicators are also surveyed given their importance for the debate on social indicators. This section also discusses trends in the indexes for Canada and discusses the index within a set of evaluation criteria. The appendices overview a number of additional indexes considered not as important as those covered here.

The five indexes that provide historically consistent estimates of trends in well-being in Canada are:

- the Measure of Economic Welfare (MEW) developed by William Nordhaus and James Tobin and estimated for Canada by Statistics Canada;

- the Genuine Progress Indicator (GPI) developed by the Redefining Progress Institute and estimated for Canada by Statistics Canada;

- the Index of Economic Well-Being (IEWB) developed by the Centre for the Study of Living Standards;

- the Index of Social Health (ISH) developed at Fordham University and estimated for Canada by Human Resources Development Canada; and

- the Index of Living Standards (ILS) produced by the Fraser Institute.

The three cross-national indexes surveyed are:

- the Human Development Index (HDI) developed by the United Nations Development Program;

- the Quality of Life Index (QOL) developed by Ed Diener of the University of Illinois; and

- the Index of Social Progress (ISP) developed by Richard Estes of the University of Pennsylvania.

The three indexes that provide estimates of trends in well-being for Canadian provinces and communities are:

- the Quality of Life Index developed by the Ontario Social Development Council;

- the Ottawa-Carleton Quality of Life Index developed by the Social Planning Council of Ottawa-Carleton; and

- the BC Stats Index of Regional Indicators

The two sets of social indicators surveyed are:

- the Quality of Life Template developed by the Canadian Federation of Municipalities; and

- the Oregon Benchmarks developed by the Oregon Progress Board;

A. Time Series Indexes of Well-being for Canada

1) Measure of Economic Welfare (MEW)

The Measure of Economic Welfare was developed in the early 1970s by William Nordhaus and James Tobin, two Yale University economists. Like the GPI, the MEW uses personal consumption expenditures as a starting point. Various additions, subtractions, and imputations are made to derive a measure of total consumption deemed to generate economic welfare. All aggregation is done in terms of prices.

The authors started with a premise that GDP is not a satisfactory measure of economic welfare. The correlation of MEW to GDP and sustainable MEW to NNP were examined to determine whether the trend of per capita GDP could satisfactorily serve as an indicator of economic welfare. From the outset, the authors are clear that MEW is a measure of economic and not social welfare. Finally, their concept of sustainability is distinctive (MEW net investment).

<u>Actual MEW - Total Consumption</u>

MEW, like the GPI, uses personal spending on consumer goods and services as its starting point. Various additions, subtractions and imputations are then made in deriving a measure of total consumption deemed to generate economic welfare, as outlined below.

1) Personal Consumption Expenditures are as reported in the National Income and Product Accounts.

Minus

2) Private instrumental expenditures represent personal outlays for commuting to work, banking and legal services. These expenditures are deducted as they are regarded as “regrettable” contributing nothing to economic welfare.

3) Expenditures on consumer durable goods are replaced with an imputed value of services derived from the stock of consumer durable goods.

4) Private spending on health and education are deducted from the current measure of economic welfare, and are then included as part of investment expenditures.

Plus

5) Services of consumer capital is an imputed value of the services derived from the stock of consumer durable goods.

6) Value of leisure is an imputed value of leisure time that adds to economic welfare. Its value is based on the opportunity cost of work.

7) Value of non-market activities represents an imputed value of services derived from unpaid housework, parenting and volunteer work.

Minus

8) Disamenity correction is a deduction for estimated higher costs of urban dwelling. The differential between rural and urban wages is used as a proxy in the original U.S. measure. In the Canadian version we opted to use an aggregate of the urban disamenity elements that were estimated for the GPI, including cost of crime, auto accidents and pollution.

Plus

9) Government consumption represents those elements of public current spending that are deemed to generate economic welfare. These are small and represent recreation outlays and subsidies of the post office.

10) Services of government capital is an imputed value of services to persons from the stock of public capital that generates economic welfare.

Actual MEW = Total Consumption = 1-2-3-4+5+6+7-8+9+10

<u>Sustainable MEW</u>

The sustainability component of MEW is the difference between the change in the net MEW capital stock and the growth requirement, which is the annual change in capital stock necessary to keep pace with changes in the size of the labour force and then adjusted for changes in productivity.

MEW capital stock is a measure of net public and private wealth consisting of four components:

1) Net reproducible capital representing investment in structures, machinery and equipment and inventories.

2) Non-reproducible capital consisting of the value of land and net foreign assets.

3) Education capital ⇔ an estimated value of education spending invested in the labour force. An average cost per student is multiplied by the average years of educational attainment per individual in the labour force.

4) Health ⇔ cumulated public and private spending on health reduced by an annual exponential depreciation rate of 20 percent.

Major deductions from consumption are private instrumental expenditures (i.e., personal outlays for commuting, banking and legal services as regrettables) and private spending on health and education. Added to consumption are imputations for the value of leisure based on the opportunity cost of work, consumption, the value of non-market services such as unpaid housework, parenting, and volunteer work, and certain government consumption spending.

Nordaus and Tobin also developed a sustainable MEW where the sustainability component is the net change in the net capital stock and the growth requirement, which is the annual change in the capital stock necessary to keep pace with changes in the size of the labour force and productivity. The MEW capital stock consists of the physical capital stock, land, net foreign assets, education capital, and health capital (accumulated health spending).

Nordhaus and Tobin estimated the MEW for the United States for the 1929-65 period and concluded that there was sufficient positive correlation between changes in GDP and MEW to conclude that GDP was a reasonable barometer of changes in economic welfare. Messinger and Tarasofsky (1997) found for Canada for the 1971-94 period that both the actual and sustainable MEW advanced at a slower rate than GDP, due to the slower growth in the imputed value of unpaid work and leisure.

2) Genuine Progress Indicator (GPI)

The Genuine Progress Indicator (GPI), probably the best known of the alternative indicators of economic well-being, was developed by the San Francisco-based think tank Redefining Progress. It received massive public attention in an October 1995 article in the *Atlantic Monthly*, "If GDP Is up, Why Is America Down?"

The GPI bears much similarity to the MEW, as both start with a measure of consumption from the national accounts and then proceed to make a large number of adjustments. The GPI has been falling in the United States since the early 1970s, largely because of the negative effect of resource depletion. The GPI can be broadly split into two blocks: a measure of current economic welfare and a measure of sustainable

economic development. Elements of current economic welfare consist of consumer spending, government spending, non-market production and leisure, and external factors. Sustainable economic development includes depletion of natural resources (non-renewable energy and farmland); net investment in produced business fixed assets; net foreign lending/borrowing; long-term environmental damage ("greenhouse effect" and ozone depletion); and, long-term ecological damage resulting from the loss of wetlands and the harvesting of old growth forests.

Current Economic Welfare

Consumer Spending

The fundamental building block of the GPI is consumer expenditures on goods and services as recorded in the National Accounts. This represents approximately 60 percent of total GDP.

- Consumer spending is adjusted for changes in inequality in the distribution of personal income.

- Actual expenditures on consumer durable goods are replaced with an estimated value of services derived from the stock of consumer durable goods. This annual value of services is determined by the rate of depreciation of such goods and a rate of interest (the opportunity cost of income invested).

- Consumer spending is discounted for items that are deemed to be intermediate or defensive in nature, namely: cost of commuting – cost of traveling to and from work using either public transportation or private vehicle, as well as an estimate of time use while commuting; cost of crime and automobile accidents – costs associated with medical and legal expenses, and expenditures related to lost or damaged property. Spending on crime prevention (alarm systems, locks, etc.) are also deducted from consumer expenditures; cost of family breakdown – includes expenses for legal fees, counseling and the establishment of separate residences, as well as an estimated cost of damage to the well-being of children; cost of household pollution abatement – represents expenditures on air and water filters and devices to improve air and water quality in the home.

Government Spending

Government spending recorded in GDP is, with one small exception, all regarded as intermediate (defensive) expenditures that are required to maintain rather than enhance quality of life and hence excluded from the GPI. An estimated value of the services to persons generated by the stock of streets and highways is the only component of government current and capital spending that is contained in the Genuine Progress Indicator.

Non-market Production and Leisure

An estimated value of non-market production for unpaid housework, child care and volunteer work is added to the current economic welfare components of GDP. The value of leisure is included in the sense that current economic welfare is discounted for leisure lost due to increased participation in the labour market, or more time spent on unpaid housework, child care and volunteer work.

- Value of household work and parenting is determined by the number of unpaid hours spent on household tasks such as cooking, cleaning and child care multiplied by the average hourly earning of household domestic workers.

- Value of volunteer work represents the estimated unpaid hours multiplied by the average real wage rate.

- Loss of leisure time is the value of lost leisure in relation to the year of greatest leisure over the estimated time period (1950-94). Hours lost are valued by the average real wage rate.

External Factors

The current measure of economic welfare is reduced by costs associated with underemployment and pollution.

- Cost of underemployment represents the gap between full-time and involuntary part-time work, measured in hours and multiplied by the average real wage rate.

- Air pollution costs are based on damage to agricultural vegetation, materials damage, cleaning, acid rain damage (forests and aquatic), reduced urban property values, and aesthetics. Costs are adjusted annually by changes in indexes of air quality.

- Water pollution adversely affects recreation, aesthetic, ecological and property values as well as the quality of household and commercial water supplies. The estimated value of these affects are adjusted annually for changes in water quality and siltation.

- An estimated value of noise pollution was made by the World Health Organization. This value is adjusted annually by changes in noise pollution based on the rate of industrialization and motor vehicle and traffic.

Sustainable Economic Development

Depletion of Natural Resources

The cost of depletion of non-renewable natural resources is determined by substituting current production of non-renewable energy by a barrel equivalent of energy derived from ethanol produced from corn. The quantity of corn required to replace conventional production of non-renewable sources (mainly oil and gas) is multiplied by a price per

bushel to obtain a value. The estimated price of corn is substantially higher than present values reflecting increased demand and no agricultural subsidies. The price is then assumed to rise by 3 percent per annum due to increasing real production costs.

Loss of farmland in the GPI is regarded as a conversion from capital to current income thus negatively affecting sustainable development. The value of lost farmland represents the value of farm acreage lost to urbanization plus a discounting of existing farmland as a result of deterioration in the quality of soil.

Net Investment

Net capital investment (produced business fixed assets) is the difference between the change in the net stock of produced fixed capital (non-residential construction and machinery and equipment) and the amount of investment required to keep the net stock of capital per worker constant.

Net International Position

Net foreign lending/borrowing is the annual change in a country's net foreign investment position.

Long-term Environmental and Ecological Damage

The cost of global warming (carbon dioxide emissions, "greenhouse effect") is linked to the current consumption of fossil fuels and nuclear power. The long-term cost is estimated by multiplying a per barrel equivalent by an arbitrary price (a tax) on current production of non-renewable energy to compensate future generations for the economic damage of global warming.

The cost of ozone depletion is linked to world production of chlorofluorocarbons (CFCs) and other ozone-depleting chemicals. The long-term costs to health and ecological effects are determined by multiplying cumulative world production of CFCs by an arbitrary price per kilogram.

Loss of wetland represents ecological damage valued as a product of the cumulative number of acres drained and an estimated cost per acre.

Loss of forests represents ecological damage valued as a product of the cumulative number of acres of "old growth" forests cut and an estimated cost per acre.

3) Index of Economic Well-being (IEWB)

Lars Osberg from Dalhousie University and Andrew Sharpe of the Centre for the Study of Living Standards have developed an index of economic well-being for Canada where well-being depends on the level of average consumption flows, aggregate accumulation of productive stocks, inequality in the distribution of individual incomes

and insecurity in the anticipation of future incomes. The weights attached to each of these components of economic well-being will vary, depending on the values of different observers. They argue that public debate would be improved if there is explicit consideration of the aspects of economic well-being obscured by average income trends and if the weights attached to these aspects were explicitly open for discussion.

The four components or dimensions of economic well-being in the proposed index of economic well-being are:

- effective per capita consumption flows;
- net societal accumulation of stocks of productive resources;
- poverty and inequality; and
- economic security from job loss and unemployment, illness, family breakup, poverty in old age;

Consumption flows encompasses marketed personal consumption flows, adjusted for the underground economy, the value of increased longevity, changes in family size which affect the economies of scale in household consumption, and regrettables or intermediate consumption goods (cost of commuting, household pollution abatement, auto accidents, and crime); government services; and the value of unpaid work.

Stocks of wealth include the net capital physical stock, including housing stocks; the stock of research and development; value of natural resources stocks; the stock of human capital; the level of foreign indebtedness; and the net changes in the value of the environment due to CO_2 emissions.

The inequality component of the index consists of income inequality, defined as the Gini coefficient for after-tax household income and the intensity of poverty (incidence and depth), defined as the product of the poverty rate and the poverty gap, that is, the difference between the average income of those in poverty and poverty line divided by the poverty line. The poverty line is defined as one half median adjusted household income.

The insecurity component of the index is based on the change over time in the economic risks associated with unemployment, illness, “widowhood” (or single female parenthood) and old age. The risk of unemployment is determined by the employment/population ratio, the employment insurance coverage of the unemployed, and the benefits ratio. The risk of illness is modelled as the percentage of disposable income devoted to health costs. The risk of single parent poverty is determined by the divorce rate and poverty intensity of single parent families. The risk of poverty in old age is a function of the poverty intensity of the elderly population.

Trends in the index are determined by the choice of variables that are included in

the index, the trends in those variables and the weights given these variables. Since the four main dimensions of economic well-being are separately identified, it is easy to conduct sensitivity analyses of the impact on perceived overall trends of different weighting of these dimensions. For discussion purposes, consumption flows have been given a weight of 0.4, wealth stocks a weight of 0.1, and inequality and economic insecurity have each been given weights of 0.25.

The sub-components of the consumption flows and wealth stocks are expressed in constant dollars on a per capita basis. There consequently is no need for explicit weighting as these dollar values represent implicit weights. In terms of the inequality/poverty subcomponents, a Rawlsian perspective assigns greater importance to poverty than to overall inequality trends, and a weight of 0.1877 has therefore been given to poverty intensity and 0.0625 to the Gini coefficient. In other words, poverty is given three times the weight of inequality. The subcomponents of the economic security index are weighted by the relative importance of the specific population at risk in the total population.

The overall index of economic well-being for Canada showed no overall trend in the 1970s, rose in the 1980s to a peak on 1.1644 in 1989 (1971=1.00), and has fallen continually in the 1990s, reaching 1.0625 in 1997.

Some of the year-to-year movement in the index reflects the sensitivity to the business cycle by certain components of the index. For example, consumption flows depend on personal income, which is determined largely by demand-driven employment levels. Wealth stocks include the capital stock which is determined by cyclically sensitive investment, and the value of natural resources, which reflects cyclical commodity prices. The two inequality measures (poverty intensity and Gini coefficients) are influenced by the state of the economy. Finally, a number of the components of the economic security index are also very sensitive to the business cycle, such as the employment population ratio.

Trends in the index are, not surprisingly, very sensitive to the weighting given the four components. When consumption flows are given a weight of 0.7 and the other three components weights of 0.1, a different pattern emerges during certain periods. While the two indexes tracked each other in the early years of the 1970s, they diverged in mid-decade, with the index with the higher consumption weight stable and the index with the lower weight declining. From the late 1970s to the late 1980s, the indexes again tracked one another. Then in the 1990s, they diverged again, with the high-consumption-weighted index falling slightly and the high-equality and security-weighted index falling much more.

Over the 26-year period from 1971 to 1997 covered by the time series, the economic security component experienced the largest change of any of the four components of the index, down 49.8 percent. This change reflected the large increase in the risk of illness and of single-parenthood. There were improvements in all the other components of well-being, with consumption up 36.7 percent, wealth stocks up 34.3 percent and equality up 4.3 percent.

The absolute decline in the index in the 1990s reflects a fall in the indexes for consumption, equality, and security. The latter index fell 44.9 percent due to large increases in the risks associated with unemployment and illness.

The index of economic well-being tracked real GDP per capita in the first half of the 1970s, and then fell behind, with the gap growing greatly over time. By 1989, the GDP per capita index had reached 158.8, compared to 116.8 for the index of economic well-being, indicating growth of this conventional measure of economic welfare had been more than three times as fast as the index of economic well-being over the 1971-89 period (2.8 percent per year versus 0.9 percent). In the 1990s, GDP per capita fell, but by 1997 had regained its 1989 pre-recession level. The index of economic well-being has also fallen in the 1990s, but in contrast to GDP per capita has not rebounded and in 1997 was 8.6 percent below the 1989 peak. During the overall 1971-97 period, real per capita GDP was up 58.3 percent, nearly 10 times the rate of advance of the index of economic well-being (6.7 percent).

The divergence between growth in GDP per capita and the economic well-being index since 1971 is partly explained by slower growth in per capita consumption and stocks of wealth, but more importantly by the failure of economic equality to increase and the large fall in economic security.

Table 1

Weighting of the Index of Economic Well-being
(weights of total index in brackets)

Basic Component	Sub-components
Consumption Flows (0.40)	- real total consumption (dollars per capita) - 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 (0.10)	- 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 debt (dollars per capita) - real social cost of environmental degradation (CO_2 emissions) (dollars per capita)
Equality (0.25)	- LIM poverty intensity (0.1875) - After-tax income Gini coefficient (0.0625)
Security[5] (0.25)	- risk of unemployment (0.0694) - risk of illness (0.1040) - risk of single parent poverty (0.0540) - risk of poverty in old age (0.0226)

4) Index of Social Health (ISH)

Marc Miringoff of the Institute for Innovation in Social Policy of Fordham University has developed an index of social health that attempts to monitor the social well-being in the United States by examining the progress on a number of social problems cumulatively over time. The composite index is said to track the nation's social performance.

A set of socio-economic indicators covering 16 social issues dealing with health, mortality, inequality and access to services were selected to cover all stages of life, with separate indicators for each age group. It is argued this approach is useful because 1) age groups are universal, with everyone potentially passing through all age groups; 2) age groups are conceptually integrated across components, creating a holistic framework;

[5]The weights are for 1997. The actual weights used vary by year.

3) age groups highlight several important contemporary trends, such as deteriorating status of children and improved status of the elderly; and 4) age groups are readily understood by the public.

Five of the indicators applied to all age groups – homicides, alcohol-related fatalities, food-stamp coverage, access to affordable housing, and the gap between the rich and poor. Three of the indicators apply to children – infant mortality, child abuse, and child poverty; to youth – teen suicides, drug abuse, and high school dropouts; and to adults – unemployment, average weekly earnings, and health insurance coverage. Two indicators apply to the elderly – poverty of persons over 65 and out-of-pocket health costs for the elderly.

The Index employs the construct of a Model Year to provide a standard of performance, combining the best achievements in all 16 areas. Annual performance is measured against best past performance rather than an ideal standard. To standardize, each indicator is measured in comparison to its best and worst performance over the period, with the best performance scored at 10 and the worst at 0. All other observations are scored within the 0-10 scale.

The ISH in the United States peaked in 1973, then declined rapidly to 1982 and has since leveled off.

Zeesman and Brinks (1997) have estimated the ISH for Canada for the 1970-94 period, with minor changes to the index (the proportion of the population with no health insurance was dropped given universal health coverage in Canada and the food stamp indicator was replaced with the number of social assistance beneficiaries). It was found that the index increased in the 1970s, then fell sharply between 1980 and 1983, stabilized and fell again after 1989 for two years and then stabilized.

5) Fraser Institute Index of Living Standards (ILS)

Christopher Sarlo, an economist at Nipissing University in North Bay, Ontario, has developed for the Fraser Institute an exploratory index of living standards based on eight components (Sarlo, 1998). He has estimated it for the 1973-94 period for Canada. The eight components, each equally weighted, are real household consumption per capita; real household income per capita; index of household facilities, percentage of the population with a post-secondary degree or diploma; one minus the unemployment rate; life expectancy, indicator of household wealth (net worth per capita). Because of strong increases in the index for post-secondary education, household facilities, and to a lesser degree wealth, this index has outpaced both GDP per capita and the Index of Economic Well-being in the 1980s and 1990s.

6) Characteristics of Indexes of Well-being for Canada

All indexes use quantitative or objective data produced by Statistics Canada as opposed to qualitative or subjective survey data; all of the indexes are produced on an occasional basis; and none of the indexes make use of community or grass-roots inputs in the developmental phase. A number of additional characteristics of the five indexes of well-being are summarized in Table 2.

The first basic characteristic is the nature of the sponsorship or funding of the index. The MEW, the GPI, and ISH are U.S. indexes that were originally developed in the United States and then applied to Canada by governmental agencies; Statistics Canada for the first two indexes and Human Resources Development Canada for the third index. The IEWB was developed by the independent, private sector research organization Centre for the Study of Living Standards with financial support from Human Resources Development Canada. The ILS was developed by the Fraser Institute without government support.

The second characteristic is whether the primary focus of the index is on economic or social trends. All indexes except the ISH have an economic focus.

The third characteristic refers to the aggregation procedure for the components. The MEW and GPI aggregate variables by adding up their dollar values. The ISH and the ILS apply equal weight to all variables to construct their overall index. The IEWB uses both dollars and weights for aggregation purposes, with the weights not given equal value like the ISH and ILS.

The final characteristic, admittedly a difficult one to judge, is whether the index was originally designed primarily for knowledge advancement or advocacy purposes. Of course, the two objectives may not necessarily be inconsistent and advocacy serves an ever important function in our society. The MEW, IEWB, and ISH are primarily knowledge driven, the ILS is motivated by both knowledge advancement and advocacy, and the GPI is primarily advocacy driven.

Table 2

Characteristics of Indexes of Economic and Social Well-being for Canada

	MEW	GPI	IEWB	ISH	ILS
Sponsorship/ funding	gov.	gov.	pri./gov	gov.	pri.
Primary focus	economic	economic	economic	social	economic
Aggregation procedure	dollars	dollars	dollars/ weights	weights	weights
Primary purpose	knowledge	advocacy	knowledge	knowledge	mixed

Table 3

Variables Included in Indexes of Economic and Social Well-being for Canada

	GPI	MEW	IEBW	ISH	ILS
Income/wages	no	no	no	yes	yes
Personal consumption	yes	yes	yes	no	yes
Non-market activities	yes	yes	yes	no	no
Leisure	yes	yes	no	no	no
Government spending	no	no	yes	no	no
Household facilities	no	no	no	no	yes
Regrettables	yes	yes	yes	no	no
Capital stock	yes	yes	yes	no	no
Financial wealth	no	no	no	no	yes
R&D	no	no	yes	no	no
Natural resources	yes	yes	yes	no	no
Educational attainment	no	yes	yes	no	yes
Pollution	yes	yes	yes	no	no
Foreign debt	yes	yes	yes	no	no
Income distribution	yes	no	yes	yes	no
Poverty	no	no	yes	yes	no
Unemployment	no	no	yes	yes	yes
Social program coverage	no	no	yes	yes	no
Health spending	no	yes	yes	no	no
Crime	no	no	no	yes	no
Life expectancy	no	no	yes	no	yes
Social indicators	no	no	no	no	yes

A total of 22 variables that contribute to economic and social well-being are included in the fives indexes surveyed. The use of these variables for each index is given in Table 3. The index that encompasses the most variables is the IEBW, with 16, followed by the GPI and MEW with 9 and10, respectively, 8 for the ILS, and 6 for the ISH. The Human Development Index, which is not covered in this section has only 3 of the variables: life expectancy, income, and educational attainment.

A number of observations from Table 3 are given below.

- The ISH stands out from the other indexes with its emphasis on social variables.

- The ILS is the least developed on the economic indexes. Its inclusion of variables for household facilities and financial wealth is unique.

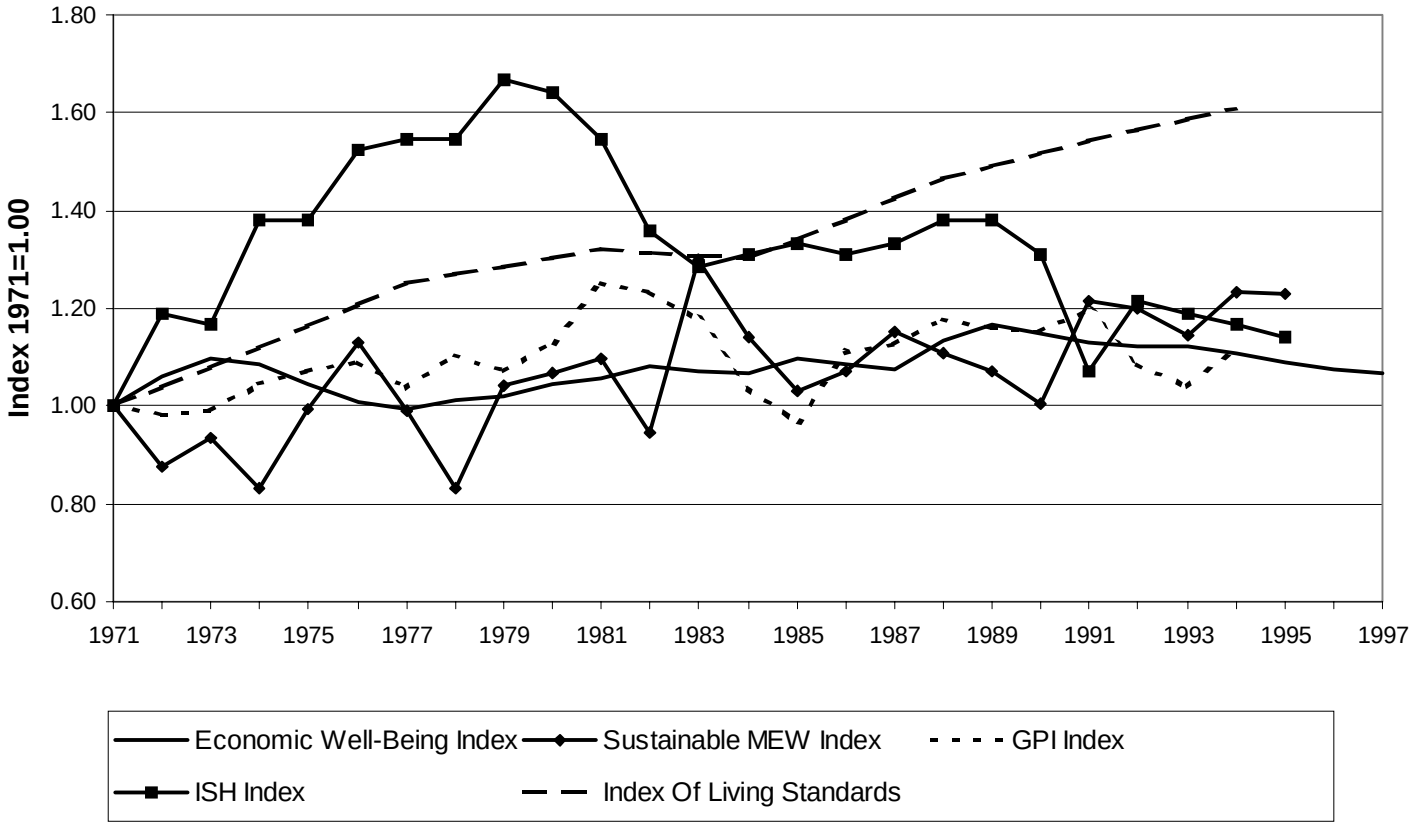
- The IEBW attempts the most comprehensive definition of economic well-being, but it does omit leisure, which is included in the Mew and GPI.

- Similar variables are included in the MEW and GPI. This is not surprising as the starting point for the GPI was the MEW.

Table 4
Trends in Indexes of Economic and Social Well-being for Canada

Year	Economic Well-being Index	Sustainable MEW Index	GPI Index	ISH Index	GDP per Capita Index	Index of Living Standards
1971	1.000	1.000	1.000	1.000	1.0000	1.0000
1972	1.061	0.877	0.985	1.190	1.0311	1.0382
1973	1.097	0.934	0.990	1.167	1.0921	1.0778
1974	1.084	0.833	1.045	1.381	1.1215	1.1189
1975	1.045	0.995	1.070	1.381	1.1300	1.1616
1976	1.009	1.131	1.091	1.524	1.1762	1.2059
1977	0.993	0.991	1.036	1.548	1.2024	1.2519
1978	1.012	0.833	1.104	1.548	1.2387	1.2690
1979	1.018	1.042	1.071	1.667	1.2782	1.2862
1980	1.045	1.067	1.130	1.643	1.2799	1.3037
1981	1.055	1.096	1.251	1.548	1.3021	1.3215
1982	1.083	0.947	1.233	1.357	1.2487	1.3149
1983	1.070	1.298	1.179	1.286	1.2700	1.3085
1984	1.069	1.141	1.037	1.310	1.3292	1.3020
1985	1.098	1.029	0.968	1.333	1.3880	1.3413
1986	1.087	1.072	1.109	1.310	1.4105	1.3818
1987	1.074	1.154	1.125	1.333	1.4500	1.4235
1988	1.136	1.108	1.179	1.381	1.5005	1.4664
1989	1.168	1.072	1.158	1.381	1.5125	1.4912
1990	1.150	1.006	1.151	1.310	1.4939	1.5165
1991	1.131	1.215	1.197	1.071	1.4475	1.5421
1992	1.122	1.200	1.085	1.214	1.4404	1.5645
1993	1.123	1.145	1.041	1.190	1.4573	1.5872
1994	1.109	1.233	1.117	1.167	1.4958	1.6102
1995	1.089	1.231		1.143	1.5098	
1996	1.077				1.5110	
1997	1.069				1.5501	

Chart 1
Trends in Economic Well-Being, Sustainable MEW, GPI, ISH Indexes and Index of Living Standards



7) Trends in the Indexes of Well-being in Canada

Table 4 and Chart 1 compare trends in Canada for the five indexes of well-being surveyed above. Between 1971 and 1994 (the most recent year for which data for all indexes are available), the ILS increased 61.0 percent, the sustainable MEW 23.1 percent, the ISH 16.7 percent, the GPI 11.7 percent, and the IEWB 10.9 percent. Real GDP per capita increased 49.6 percent over the period so all indexes except the ILS faired much worse than this conventional indicator of economic trends.

The trends in the indicators of course reflect the variables included in the indicators. The reason the ILS tracked GDP per capita is because of the inclusion of the variable for educational attainment and ownership of consumer durables, which have increased greatly in recent decades. Equally, the reason why the other indexes have risen much less is because many of the variables included, such as leisure for the MEW, environmental indicators for the GPI, economic security for the IEWB, and social variables for the ISH have not progressed.

These developments to a certain degree illustrate the arbitrariness of index construction. Name the trend you want shown and an index can probably be constructed to support it. Yet the fact that four of the five independently constructed indexes show much smaller increases in well-being than in GDP per capita, and show absolute declines in recent years, means that there must be something more than arbitrariness at work. Many variables that affect well-being are just not advancing as quickly as they used to, or may even be declining. This robustness of the finding of stagnation in well-being trends across four of the five indexes is thus important. The message is that while indexes are arbitrary constructs, when taken together, they do and can provide a fairly accurate picture of general trends in well-being. Subjective surveys that find Canadians perceive much smaller increases in well-being or declines support this conclusion.

B. Cross-national Indexes of Well-being[6]

1) Human Development Index (HDI)

Probably the best known composite index of social and economic well-being is the Human Development Index (HDI), developed by the United Nations Development Program (UNDP). The index was first published in 1990. This index is particularly well

[6] Two additional indexes of note are the American Demographics Index of Well-being and the International Living Index.
The magazine *American Demographics* (1997) has developed an Index of Well-Being based on five components: income and employment opportunities (personal income, employment); productivity and technology; leisure (non-work hours and recreation spending); consumer attitudes (consumer confidence); and social and physical environment (crime rate, divorce rate, number on endangered species).
Mark Peterson and colleagues (Peterson and Malhotra, 1997) at the University of Texas at Arlington have developed an index of societal quality of life for 186 countries. The index is a composite of seven indices: cost of living, health, economic development, infrastructure, freedom, culture (recreation and entertainment), and environment.

known in Canada, as the federal government has publicized its finding that Canada ranks number one for the last six years. The most recent release of the index in July of 1999, again ranking Canada number one, received much media attention. Because of frequent changes in methodology, the index is used more for cross-national comparisons than for tracking trends in human development over time within one country.

Most commentators, including representatives of the right and left, are critical of the index, and in particular the uses made of it in this country.[7] This critique may in part be motivated by the fear that the index's good news message may mitigate pressures for the adoption of the policies they are recommending (e.g., tax cuts, increased social spending, etc.).

The index is composed of three indicators: longevity as measured by life expectancy at birth; educational attainment, as measured by a combination of adult literacy (two-thirds weight) and the combined first-, second-, and third-level gross enrolment ratio (two-thirds weight); and the standard of living, as measured by real GDP per capita (purchasing power parity dollars). Technical details on the index are given in Appendix 2. In 1999, the UNDP published the HDI for 174 countries, with Canada at the top and Sierra Leone at the bottom.

The UNDP also has developed a gender-related development index (GDI). This difference with the HDI is that the GDI adjusts the average achievement of each country in life expectancy, educational attainment, and income in accordance with the disparity in achievement between men and women. A weighting formula is used that expresses a moderate aversion to inequality. Technical details are provided in the appendix. Again in 1998, Canada was number one of 163 countries.

The UNDP has also developed a gender empowerment measure (GEM) to measure the relative empowerment of women and men in political and economic spheres of activity. It is based on the gender shares in the areas of parliamentary representation, administrative and managerial positions, professional and technical positions, and earned income. Canada ranked seventh in 1998.

Finally, the UNDP has developed a Human Poverty Index (HPI). For developing countries, the HPI-1 concentrates on deprivations in three essential dimensions of human life already reflected in the HDI – longevity, knowledge and a decent standard of living. The first deprivation relates to survival – the vulnerability to death at a relatively early age. The second relates to knowledge – being excluded from the world of reading and communication. The third relates to a decent standard of living in terms of overall economic provisioning. The deprivation in longevity is represented by the proportion of the population not expected to survive to age 40. The deprivation of knowledge is represented by the proportion of the population who are illiterate. The deprivation of a decent standard of living is represented by three variables – the proportion of the

[7] See for example, Watson (1999) and Foster (1999). For a more positive assessment see Coyne (1999). For a critique of the HDI from a World Bank perspective see McGillivray (1991).

population without access to safe water, the proportion without access to health services, and the proportion of moderately and severely underweight children under five.

For industrial countries, the HPI-2 concentrates on deprivations in four dimensions of human life quite similar to those in the HDI – longevity, knowledge, a decent standard of living, and social exclusion. The deprivation in longevity is represented by the proportion of the population not expected to survive to age 60; the deprivation of knowledge by the proportion of the people who are functionally literate as defined by the OECD; the deprivation in a decent standard of living is represented by the proportion of the population living below the poverty line set at 50 percent of the median disposable personal income; and the deprivation of social exclusion is measured by the long-term (12 months or more) unemployment rate. In 1995, Canada ranked 12th out of 17 high human development countries on this measure (UNDP, 1998).

2) Quality of Life Index (QOL)

Ed Diener (1995), a psychologist at the University of Illinois at Urbana-Champaign, has developed an index of the quality of life (QOL) based on a universal set of values. He constructs two indexes, one called the Basic QOL Index, which is particularly relevant for developing countries, and the Advanced QOL Index for developed countries. He estimates both indexes for 77 countries and also calculates a combined index which brings together the basic and advanced indexes. The Basic QOL Index includes seven variables: purchasing power, homicide rate, fulfillment of basic needs, suicide rate, literacy rate, gross human rights violations, and deforestation. The Advanced QOL Index also includes seven variables: physicians per capita, savings rate, per capita income, subjective well-being, college enrollment rate, income inequality, and environmental treaties signed. According to Diener, combining the two indices produces a reliable measure of QOL that systematically covers diverse human values.

The universal set of values are based on research by Schwartz that identified 45 values across all cultures reflecting three universal requirements of human existence: meeting biological needs, coordinating social interaction, and the survival and welfare needs of groups. The 45 values are in turn organized into seven sets of similar values. The sets of values and the variables used to capture this value in the basic index for developing countries and the advanced index for developed countries are given in Table 5.

Table 5
Variable by Value Region for the Basic and Advanced QOL Index

Value Region	Basic Index	Advanced Index
Mastery	basic physical need fulfillment	physicians per capita
Affective autonomy	suicide rate	subjective well-being
Intellectual autonomy	literacy rate	university attendance
Egalitarian commitment	gross human rights violations	income inequality
Harmony	deforestation	environmental treaties
Conservatism	homicide rate	savings rate
Hierarchy	purchasing power parity	per capita income

3) Index of Social Progress (ISP)

Richard J. Estes (1997) from the University of Pennsylvania has developed an Index of Social Progress for the purpose of identifying significant changes in "adequacy of social provision" and to assess the progress in providing more adequately for the basic social and material needs of the world's population. The ISP consists of 46 social indicators that have been subdivided into 10 subindexes: education, health status, women status, defense effort, economic, demography, geography, political participation, cultural diversity, and welfare effort. All 46 indicators are known to be valid indicators of social development (Table 4).

The weights used to construct the index were derived through a two-stage varimax factor analysis in which each indicator and subindex was analyzed for its relative contribution toward explaining the variance associated with changes in social progress over time. Standardized subindex scores were then multiplied by the factor loadings to create weighted subindex scores and the Composite Weighted Index of Social Progress (WISP) scores were obtained through a summation of the weighted subindex scores.

Estes argues that the WISP is a more comprehensive, valid, reliable instrument for assessing changes in social development over time than other indices on national and international progress like GDP and the HDI. Estes (1995, 1996*a*, 1996*b*, and 1997) has provided estimates for 124 countries for 1970, 1980, and 1990.

Table 6

Index of Social Progress, Indicators by Subindex

I. EDUCATIONAL SUBINDEX (N=6)

Percent Age Group Enrolled, Primary Level (+)
Percent Grade 1 Enrollment Completing Primary School (+)
Percent Age Group Enrolled, Secondary Level (+)
Percent Age Group Enrolled, Tertiary Level (+)
Percent Adult Illiteracy (-)
Percent GNP in Education (+)

II. HEALTH STATUS SUBINDEX (N=7)

Life Expectation at 1 Year (+)
Rate Infant Mortality per 1,000 Liveborn (-)
Under 5 Years of Age Child Mortality Rate (-)
Population in Thousands per Physician (-)
Per Capita Daily Calorie Supply as % of Requirement (+)
Percent Children Fully Immunized at Age 1, DPT (+)
Percent Children Fully Immunized at Age 1, Measles (+)

III. WOMEN STATUS SUBINDEX (N=6)

Female Life Expectation at Birth (+)
Female Adult Literacy Rate (+)
Percent Married Women Using Contraception (+)
Maternal Mortality Rate per 10,000 Live Births (-)
Female Primary School Enrollment as Percent of Males (+)
Female Secondary School Enrollment as Percent of Males (+)

IV. DEFENSE EFFORT SUBINDEX (N=1)

Military Expenditures as Percent of GDP (-)

V. ECONOMIC SUBINDEX (N=6)

Per Capita Gross National Product in Dollars (+)
Real Gross Domestic Product per Head (+)
GNP per Capita Annual Growth Rate (+)
Average Annual Rate of Inflation (-)

Per Capita Food Production Index (+)
External Public Debt as Percent of GDP (-)

VI. DEMOGRAPHY SUBINDEX (N=6)

Total Population Millions (-)
Crude Birth Rate per 1,000 Population (-)
Rate of Population Increase (-)
Percent of Population under 15 Years (-)
Percent of Population over 60 Years (+)

VII. GEOGRAPHY SUBINDEX (N=3)

Percent Arable Land Mass (+)
Natural Disaster Vulnerability Index (-)
Average Annual Deaths from Natural Disasters per Million Population (-)

VIII. POLITICAL PARTICIPATION SUBINDEX (N=3)

Violations of Political Rights Index (-)
Violations of Civil Liberties Index (-)
Composite Human Suffering Index (-)

IX. CULTURAL DIVERSITY SUBINDEX (N=5)

Largest Percent Sharing Same Mother Tongue (+)
Largest Percent Sharing Same Basic Religious Beliefs (+)
Largest Percent Sharing Same or Similar Racial/Ethnic Origins (+)

X. WELFARE EFFORT SUBINDEX (N=5)

Years Since First Law – Old Age, Invalidity, Death (+)
Years Since First Law – Sickness and Maternity (+)
Years Since First Law – Work Injury (+)
Years Since First Law – Unemployment (+)
Years Since First Law – Family Allowances (+)

Source: Estes (1997)

C. Provincial and Community Indexes of Well-being in Canada[8]

1) Ontario Social Development Council Quality of Life Index

Malcolm Shookner (1998) of the Ontario Social Development Council has developed a community-based Quality of Life Index (QLI) for Ontario. Based on an extensive review of literature on quality of life, the paper found that:

- The overall level of health attained by Canadians is an important measure of the success of our society. Good health enables individuals to lead productive and fulfilling lives. For the country as a whole, a high level of health contributes to increased prosperity and overall social stability.

- Our overall high standard of health is not shared equally by all sectors in Canadian society. There are differences in health status by age, sex, level of income, education, and geographic area. The rich are healthier than the middle class, who are in turn healthier than the poor. The well-educated are healthier than the less educated, and the employed are healthier than the unemployed.

- Quality of life provides a conceptual framework, consistent with sustainable human development and determinants of health, for the interdependence of social, health, economic and environmental conditions in communities.

- A composite index including key indicators of social, health, economic and environmental conditions can contribute to progress toward improving our quality of life and becoming a more sustainable society.

- The QLI should have the capability to be future oriented and predict the direction of trends.

- Local development allows us to create the conditions that will enable citizens to gain more control over their quality of life.

- If the QLI is to have broad public credibility, it must be careful to include both positive and negative measures to provide a balanced perspective on quality of life.

- By creating a summary "quality of life" index, some type of standardization would emerge that would enable people to compare local outcomes across the country.

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[8] An interesting community indicator not covered in this section is the Virginia Quality of Life Index. The Centre for Survey Research at Virginia Polytechnic Institute and State University produces an annual index of quality of life in Virginia. The index is based on telephone surveys of 2,000 persons. The questions are organized around the following areas: overall quality of life; family life and child care; work and employment satisfaction; happiness and personal satisfaction; health and health care; education; law and crime; and protection of the environment. The appendix provides the questions asked in the survey over the 1992-98 period.

- A core set of indicators is needed for comparative reporting by municipalities.

- Criteria for selecting a final set of indicators must be clearly stated.

- Communities must be involved in the selection and analysis of indicators.

- A quality of life/sustainability report should evaluate whether the indicator results are showing progress towards or away from desirable goals. It should also suggest how or whether the indicators could be improved, and may contain recommendations about the kinds of policies or programs that are needed to make progress towards the community's goals.

- Assessment of indicator performance should be carried out periodically.

Using the findings from the literature review, the Ontario Social Development Council developed, with input from community groups, an index of Quality of Life for Ontario. The purpose of the QLI was to provide a tool for community development that could be used to monitor key indicators that encompass the social, health, environmental and economic dimensions of the quality of life. The QLI can be used to comment frequently on key issues that affect people and contribute to the public debate about how to improve the quality of life in our communities and province.

The following indicators were included in the Quality of Life Index:

SOCIAL: Children in care of Children's Aid Societies; social assistance recipients; 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.

ENVIRONMENTAL: Hours of poor air quality; environmental spills; tonnes diverted from landfill to blue boxes.

Shookner found that the quality of life has declined in Ontario since 1990. A closer look at the 12 indicators reveals progress in some areas and setbacks in others.

2) Ottawa-Carleton Quality of Life Index

On July 21 of this year, the Social Planning Council of Ottawa-Carleton released a new index of quality of life for the Ottawa-Carleton region (Social Planning Council of Ottawa-Carleton, 1999). The index covers four general areas of quality of life: health, economic, social, and environmental fields, and is composed of 12 equally weighted indicators, three in each area. The indicators are low birth weight babies, long-term care

weighting lists, new cancer cases; the unemployment rate, the employment rate, bankruptcies; social assistance recipients, children admitted to the Children's Aid Society, public housing waiting lists; and air quality, toxic spills, and blue-box cycling.

The overall index increased 2 percent between 1990 and 1999 because of a large increase in quality of life as expressed by the subindex for environmental indicators. All three other components of the index experienced falls over the 1990-99 period, with the subindex for social indicators down 50 percent, but the nearly doubling in the index for environmental indicators more than offset the declines in these three areas.

3) BC Stats Work on Regional Indicators

BC Stats is currently developing an index incorporating socio-economic indicators for 28 regions in the province. This study was commissioned by the B.C. Deputy Ministers' Committee on Social Policy. This study develops indicators for the Regional Districts of British Columbia, which range in size from 2 million down to 1,500.

Seven basic indicators have been developed, each with three or four variables. These indicators (with the weights given them in brackets) are economic hardship (0.25), impending change in economic hardship (0.05), crime (0.2), health (0.2), and education(0.2), children (0.05), and youth (0.05).

The economic hardship index is currently based on the proportion of the population 0-64 receiving social assistance for less than one year, the proportion of the population 0-64 receiving social assistance for over one year, and the proportion of the senior population receiving the Guaranteed Income Supplement. Additional hardship indicators that may be added include the proportion of the population that is the working poor, income inequality measures, the proportion of the population receiving Employment Insurance (EI), per capita income, and per capita net taxes paid.

- The impending change in economic hardship is based on the annual percentage change in the number of social assistance recipients, the annual percentage change in the number of EI beneficiaries, and income dependency on forestry, fishing and mining.

- The crime index is based on the change in the overall crime code rate, the property crime rate, and the violent crime rate. Data on spousal assaults, drug offences, and young offenders may be added.

- The health index is based on three indicators: the potential years of life lost due to natural causes, the potential years of life lost due to accidental causes, and the potential years of life lost due to suicide/homicide. Data on teen pregnancy, infant mortality, and incidence of smoking may be added.

- The education index is based on the proportion of the population 25-54 with completed post-secondary education, the high school completion rate, the pass rate for Grade 12 Math, the pass rate for Grade 12 English, and career preparation enrolment. Data on average test scores may be added.

- The children at risk index is based on the proportion of the population under 19 living in families on social assistance, infant mortality, and average test scores for reading. Data may be added on young offenders, teen pregnancies, test scores for math, the proportion of the youth population in care, and the proportion of the population reporting child abuse.

- The youth at risk index is based on the proportion of the population 19-24 on social assistance, and the high school completion rate. Data may be added on the incidence of youth who smoke, the youth motor vehicle death rate, the youth drug offence rate, youth net migration, and youth EI incidence rate.

All variables are given an index value between 0 and 100, with the best-off region given 0 and the worst-off 100. The weights are then used to compute a composite index or index of regional stress given the values for the seven indexes.

D) Sets of Social Indicators

1) Federation of Municipalities Quality of Life Reporting System

The Federation of Canadian Municipalities (FCM), in cooperation with 16 large urban governments, has recently developed a reporting system for monitoring the quality of life in major Canadian cities. While not a QOL index per se, the system provides much useful information on societal indicators. It develops QOL measures in eight areas: population resources, community affordability, quality of employment, quality of housing, community stress, community health, community safety, and community participation. The list of variables used to capture trends in each QOL measure is given below.

The FCM Quality of Life Reporting System was born out of a desire to bring a community-based perspective to the development of public policy and to monitor the consequences of changing demographics, as well as shifting responsibilities and fiscal arrangements.

The QOL monitoring system attempts to include both subjective/qualitative indicators and objective/quantitative indicators. The public consultations that guided the development of the indicators provided some qualitative information, but more extensive qualitative measurements will be done in the future. The first report largely focuses on establishing baseline quantitative measures.

The criteria for selection of variables for the monitoring system were the following: 1) meaningful at the community level; 2) annual availability at a national-consistent level; and 3) easily understood by the public.

Table 7

Illustration of the Quality of Life (QOL) Template for the Federation of Canadian Municipalities

Population Resources	**Community Affordability**	**Quality of Employment**	**Quality of Housing**	**Community Stress**	**Health of Community**	**Community Safety**	**Community Participation**
Population age groups	CAM1	Employment and unemployment rates	Median income compared with median house cost	% lone-parent families	Infant mortality	Young offender charges per 100,000 residents	Voter turnout
Population growth	CAM2	Permanent, temporary and self-employment as a % of population	Rental afford-ability: % renters paying 30% or more of income for rent	% of families that are low-income	Low birth weight babies	Violent crimes per 100,000 residents	Charitable donations
Multi-culturalism immigrant and visible minority populations	Patterns of change in family incomes	Families receiving Employment Insurance or Social Assistance as % of all taxfilers	Median rental as % of median income	Teen births per 1,000 teen women	Premature mortality	Property crimes per 100,000 residents	United Way contributions per resident
Migration: internal and external	Public transport: cost as % of minimum wage	Median hourly wages by gender and age	Substandard dwellings: % of houses needing major repair	Suicide rates per 100,000 residents	Hospital discharges	Fear to walk in neighbourhood*	Daily newspaper circulation
Labour force replacement ratios	Government transfer income by source	Long-term unemployment	Residential property tax revenues per resident	Homelessness;* children in care;* crisis calls*	Work hours lost due to illness or disability	Injuries and poisonings per 100,000 residents	Recycling, kg per resident, per year
Education levels		Employment income as % of all income	Real estate sales per resident	Personal and business bankruptcies			
Literacy							

* Note: Reliable data for these indicators are not yet available.

2) Oregon Benchmarks[9]

One of the best known community indicator projects is the Oregon Benchmarks, produced by the Oregon Progress Board. This organization is an independent state planning and oversight agency. Created by the Legislature in 1989 to keep Oregon focused on the future, the Board is responsible for implementing the state's 20-year strategic plan, Oregon Shines. The nine-member panel, chaired by the governor, is made up of citizen leaders and reflects the state's social, ethnic and political diversity.

The Progress Board focuses Oregon's institutions on outcomes that support the overall goals of Oregon Shines, namely quality jobs for all Oregonians; safe, caring and engaged communities; and healthy, sustainable surroundings. According to Beverly Stein, a member of the Oregon Progress Board, the key features of the benchmarks are accountability, long-term thinking, and impetus for collaboration (Stein, 1996:10).

The Progress Board tracks these outcomes through 92 indicators known as the Oregon Benchmarks. The Benchmarks are divided into seven categories – economy, education, civic engagement, social support, public safety, community development, and environment. Specific indicators include K-12 student achievement, per capita income, air quality, crime rates, employment, and infant health. Twenty-two "priority" Benchmarks are considered deserving of special attention. Appendix 3 provides a list of the indicators and their trends.

The Progress Board is a catalyst for change. It gathers and distributes data on the Benchmarks. It encourages state and local government agencies, businesses, and nonprofit and citizen groups to use the Benchmarks in their planning and reporting. And it assists its Oregon partners in developing their own benchmarks and creating programs that support meeting Benchmark targets. Both Oregon Shines and the Benchmarks were created with extensive citizen involvement.

Every other year since 1991, the Progress Board has issued an Oregon Benchmarks report, tracking Oregon's success in achieving the Benchmarks. In December 1996, the Progress Board issued a new Oregon's Benchmark Performance Report, followed in January 1997 by Oregon Shines II, a complete update of the original strategic plan.

The six-phase process used by the Oregon Progress Board for the development of benchmarks is outlined below:

[9] The Oregon Progress Board website (www.econ.state.or.us/OPB) provides detailed information on the Oregon benchmarks. See Appendix 3 for both historical data and performance targets for 2000 and 2010 and grades for how "on track" the state is in achieving the 2000 targets. Also see Popovich (1996) for an historical look at the development of the Oregon benchmark project and Stein (1996) for an overview of Oregon benchmarks.

1) Review the goal and make sure it is realistic (or sufficiently ambitious). Examine Oregon's current level and historic trends and comparisons with other states and nations.

2) If possible, identify the payoffs from achieving this goal in terms of, for example, reduced costs for future budgets; improved lives for Oregonians; and improved productivity.

3) Examine recent efforts to address this problem, including programs and budgets, both by the state and other entities; key players; successes and setbacks; and strategies already developed to achieve these goals.

4) Examine the best practices from other states, and especially, from around the world.

5) Propose a strategy to accomplish this goal, including programs, organizational change, incentives, and budgets.

6) Summarize what it will take to achieve the goal and what different levels of effort can be expected to achieve.

III Issues in the Development of Indexes of Economic and Social Well-being

This third section of the paper discusses a number of issues in the construction of indexes of economic and social well-being, including criteria for index evaluation; single versus multiple indicator approaches; money versus composite indicators; weighting issues in composite indicators; national versus community indicators; bottom-up versus top-down index design; advocacy versus knowledge-driven indicators; ad hoc versus theoretically consistent indicators; and technical issues in index construction.

A. Criteria for the Evaluation of Societal Indicators

The International Society for Quality of Life Studies (ISQOLS) has established an international committee to evaluate existing Quality of Life Indexes, with the objective of developing an ISQOLS-sponsored index that builds on the best properties of the current indexes. The committee is chaired by Michael Hagerty of the University of California at Davis. The author of this survey is a member of the committee.

The committee has developed a list of seven criteria for the evaluation of QOL indexes that are currently being applied by committee members to existing indexes. The criteria are:

1) The QOL index have a clear practical purpose, i.e., a public policy purpose;

2) The QOL index be grounded in well-established theory;

3) The QOL index be reported as a single number, but should be able to be broken down into components, similar to the index of leading economic indicators;

4) The QOL index be based on time series to allow the periodic monitoring and control;

5) The composite QOL index should be reliable, valid, and sensitive as should be the components making up the composite index;

6) The measure should help public policy makers develop and assess programs at the individual level (e.g., physicians and counselors helping individuals in need), the family or household level (e.g., social workers helping families in need), community level (e.g., town governments developing policies and programs that can enhance community QOL), state (or province) level (e.g., state bodies developing policies and programs that can assist residents of the entire state or province), the country level (e.g., national agencies developing policies and programs that can assist citizens of that country), and the international level (e.g., international agencies developing policies and programs that can assist the world citizen and the planet at large).

7) The domains covered should have the following properties:

(a) In total, the domains must encompass the totality of life experience.
(b) Each domain must encompass a substantial but discrete portion of the QOL construct.
(c) Each domain must be able to be measured in both objective and subjective dimensions.
(d) Each domain within a generic QOL instrument must have relevance for all people.
(e) If a specific domain is proposed for a non-generic instrument (e.g., independent living skills) it must be demonstrated to contribute unique variance to the QOL construct beyond the generic domains for the target group.
(f) Domains must be potentially neutral, positive or negative in their contribution to the QOL construct. Thus all aspects of disease states and functional status cannot be domains since, in their most positive state where they are absent or maximized, respectively, their contribution to the QOL construct cannot be more than neutral.
(g) Domains differ from the dimensions of personality (e.g., extraversion, self-esteem), cognitive processes (e.g., cognitive dissonance) and affect (e.g., joy) in that they cannot be measured objectively.
(h) The subjective dimension of each domain has both a cognitive and an affective component. They are measured by questions concerning "satisfaction."

The five indexes of well-being for Canada surveyed in the previous section have been evaluated in light of the first six criteria outlined above and the results are given in Table 8. (The seventh criterion was considered too complex to be included at this stage.) A ranking of 4 is given to an index if it fully meets the criterion, 3 if it mostly meets the criterion, 2 if it somewhat does, 1 if it only partially does, and 0 if it fails to meet the criterion at all. It should first be noted that the author of this paper may perhaps not be an appropriate person to evaluate the indexes given his involvement in the development of the Index of Economic Well-being (IEWB).

The first criterion of the index – having a clear practical purpose – is easy to fulfill, with all indexes given full marks. By definition, all the indexes have as an objective shedding light on trends in economic and/or social well-being.

The second criterion, that is, grounding in well-established theory, was harder to meet. The IEWB was considered well-grounded in economic theory and received top marks as the four components of the index (consumption flows, stocks of wealth, inequality, and security) are closely linked in the index to economic and social theory. The MEW was also considered fairly well rooted in theory. The other indexes were given poor marks on this criterion.

All indexes were given full marks on the third and fourth criteria. Since the indexes are built up from a number of components, it is by definition possible to break the indexes down into their components. Equally, consistent time series are available for all indexes.

None of the indexes fully met the criterion that the composite index and components be reliable, valid and sensitive. This is reflected in a number of factors,

including the reliability of the data used, methodological problems in index construction, and uncertainty regarding the validity of weighting procedures. The ISH was given the best ranking on this criterion and the GPI the worst ranking.

The criterion of usefulness to policy maker is a difficult one to evaluate given the many possible applications to policy. No index was judged to fully meet this criterion. The IEWB and the ISH were given the best rankings, and the MEW and ILS the lowest ranking. It should be noted that trends in the *components* of the index are of particular relevance to policy makers, not trends in the overall index, although it may be this trend that captures their attention.

In terms of average ranking, the IEWB emerges as the index that best meets the six criteria discussed, followed by the ISH, MEW, GPI, and ILS.

Table 8

Evaluation of Indexes of Economic and Social Well-being for Canada
(1-4 ranking where 4 fully meets and 0 does not at all meet criteria)

	MEW	**GPI**	**IEWB**	**ISH**	**ILS**
Public policy purpose	4	4	4	4	4
Grounded in well-established theory	3	1	4	1	0
Possibility of disaggregation	4	4	4	4	4
Availability of consistent time series	4	4	4	4	4
Composite index and components reliable and valid	2	1	2	3	2
Usefulness to policy makers	1	2	3	3	1
Average ranking	3.0	2.8	3.5	3.2	2.5

B. Single versus Multiple Indicator Approaches to Well-being

A major division in the literature on social indicators is between those who develop a series of indicators but do not attempt to combine the different series into one index and those who do attempt to aggregate. The first group are often quite critical of the second group. For example, van de Ven et al. (1999) argue that the single-indicator approach should be abandoned. They make the following criticisms of the single-indicator approach:

- well-being is a multi-dimensional phenomenon and many of the aspects of well-being can only be measured in different terms and an aggregation of these different aspects of well-being is not possible;

- it is not possible to put monetary values on aspects of well-being for which in reality no prices are paid, such as unpaid work and environmental pollution;[10]
- a single indicator of well-being is of little use for policy as such measure cannot identify the underperforming aspects of well-being;
- because weighting is needed and such a weighting can only be subjective and done by politicians as representatives of society at large, compilation of a single indicator places statisticians in the seat of politicians. Indeed, they argue (van de Ven et al., 1999:8) that "an objective aggregation of various societal objectives in not possible. It may even be dangerous, considering the fact that, by including subjective elements in the calculations, the objectivity and independence of statistics is at stake."

As an alternative to the single indicator approach, van de Ven et al. advocate the use of an information system that provides data on separate indicators but at the same time sets out the interrelationships between the components of well-being. They propose the System of Economic and Social Accounting including extensions (SESAME), which they have implemented for the Netherlands. The SESAME can be defined as a detailed and integrated statistical information system in matrix form from which a set of core (macro-) indicators for different aspects of economic well-being can be derived. Every indicator is computed from a single, consistent statistical information system and uses the most suitable measurement unit for the phenomenon it describes.

In contrast to the multi-indicator approach advocates, proponents of the single-indicators see their approach as complementary to and not a substitute for the multi-indicator approach. They dispute the criticisms leveled by van de Ven et al. First, while obviously agreeing that well-being is multi-dimensional, they argue that aggregation is not only possible but desirable, pointing out that aggregation is a necessary part of a scientific approach to understanding reality.

Second, while agreeing that from a theoretical basis a general-equilibrium approach in the most appropriate way to undertake non-market valuation, they argue that this is unrealistic from a pragmatic viewpoint given the difficulties is constructing worldwide or even national models that capture all interactions among variables. They feel partial equilibrium estimates of the market value of non-market activities and externalities can be useful and may in fact not be that different from those produced by general equilibrium models.

Third, the single-indicator proponents feel that the multi-indicators school shows a poor understanding of the purpose of single indicators. Obviously, policy makers cannot base policy on trends in the single indicator. But that is not the point of single

[10] According to van de Ven et al. (1999:7) "All agree that market prices do not correctly reflect relative scarcities, mainly because of lacking ownership rights for nature. However, if prices had been introduced for an (unsustainable) use of the environment, virtually all prices and volumes in the economy would have changed. Therefore, the composition and size of National Income itself would have changed drastically if the environment had been priced. Just subtracting (hypothetical) environmental costs from the actual National Income yield an incoherent and essentially meaningless figure." This is also the consensus view of the London group, the worldwide group of national accountants and environmental statisticians who meet annually to discuss the field.

indicators. Rather, declines in this index indicate that there may be a problem. As single indicators are based on trends in many variables and as these trends are transparent, it is easy to identify which particular trends are driving the summary index. Policy makers can then pinpoint where action may be needed.

Fourth, proponents of single-indicators agree with the multi-indicator school that there is a subjective element in the weighting scheme needed to develop a summary index, and that it is probably best if government organizations and in particular central statistical agencies do not produce single indicators of well-being given the political sensitivities associated with the weights. But this does mean that summary indexes should not be produced! There is an important role for non-governmental, private sector organizations to develop single indicators to foster debate on societal developments. The weights used by these organizations in the construction of their indexes may reflect their worldviews, but this is what debate in a democracy is all about.

The most important advantage of single-indicators measures of well-being over multiple indicators is their ability to put forward a bottom line, which is immensely valuable for engaging the public on societal trends. Summary indexes permit one to discern the forest from the trees, a claim that multi-indicators cannot make. Of course, the manner is which this bottom line is put together reflects the values of those who develop the index and these values should be made explicit.

C. Composite or Money Approaches to Single Indicators

Within the single-indicator approach, there are two alternative methods of aggregation. The first approach is to aggregate all variables into a common unit, namely prices. Imputed values for externalities are added or subtracted from a macro-economic aggregate like consumption. Examples of this approach include the World Bank's green national accounting, the GPI, and the MEW. The second approach is the development of a composite indicator where the different components are weighted and then aggregated. An example is the HDI. Indicators may combine the two approaches as does the Osberg-Sharpe IEWB, which uses prices to aggregate the sub-components of consumption and wealth and then uses weights to bring together these two components with the income inequality and economic insecurity components.

D. Choice of Weights for the Composite Approach to Single Indicators

An extremely important issue in the construction of a composite index is the choice of weights, as the values of the index can be very sensitive to these weights. Weights can come from several sources: the personal views of the person(s) who developed the index, as is the case in the IEWB; societal views gauged through public opinion polls, surveys, or focus groups, which is the preferred approach; and statistical techniques based on factor analysis which attempt to capture the importance of each variable for changes in the overall index, as used in the ISP. One common approach, used

in the HDI, is to weight each variable equally, which gives the illusion that explicit weights have not been chosen.

E. National versus Community Indicators

A distinction is often made between national indicators of well-being and regional or community indicators. But in fact, the geographical dimension has little effect for the construction of an index, the only factor of relevance being data availability. Certain series may be available only at the national or provincial level (e.g., national account categories), thus preventing their use at the sub-provincial or community levels. But if an index can be constructed at the national level, the same index can constructed at the community level if the data are available.

One difference between national and community indicators is the players involved. At the national level, indicators are generally constructed by academic and government researchers. At the community level indicators are generally developed by social agency researchers. Appendix 4 provides edited discussion from the Redefining Progress list serve on community indicators of some of the experiences of individuals involved in developing community indicators.

F. Bottom-up versus Top-down Index Design

A key issue that developers of an index must consider is whether the design will be down in a bottom-up manner, where input on index design, including what variables are included, is directly gathered from a wide variety of individuals and groups; or where the developers decide themselves, based on their knowledge, experience, and worldview, what will be in the index. All the indexes for Canada and cross-national indexes discussed in the second section are essentially top-down. On the other hand, community indexes of well-being often incorporate grassroots views into the design of the index by polling individuals on what variables they feel matter.

There are obviously advantages and disadvantages to both approaches. A great advantage of a top-down approach is consistency in the estimation of an index across space. A citizen's bottom-up index may be useful to track trends over time within a community, but if other communities have not adopted the same variables and methodology, comparisons will not be possible. Advantages of the bottom-up approach include the sense of ownership the community may take in the index if the community develops it itself and, of course, the grassroots understanding of the needs of the community that can be reflected in the index.

G. Advocacy-driven versus Knowledge-driven Indexes

Another important issue is to what degree the development of an index is driven by an advocacy objective or by a knowledge objective. For example, the developers of the GPI were motivated by the desire to show the shortcomings of GDP and to promote environment measures, while the developers of the MEW (James Tobin and William Nordaus) were motivated by an academic interest in seeing to what degree the MEW tracked GDP. The motivation of the developers of the other indexes probably falls between these two clear-cut advocacy and knowledge-driven motivations. One perception of the relative balance between the two motivations for the development of an index may affect one's views of the usefulness of the index and one's confidence in the numbers.

H. Ad hoc versus Theoretically Consistent Indexes

Many consider it important that an index be more that a throwing together of a number of disparate variables in an ad hoc manner. There should be a theoretical foundation that motivates the choice of variables for inclusion. Certainly, most developers of indexes attempt to develop a theoretically consistent story for their index. For example, Osberg and Sharpe argue that the index of economic well-being captures the four key elements in economic well-being – consumption flows, stocks of wealth, inequality, and economic security.

I. Technical Issues in Index Construction

<u>adjustment of direction of movement</u>

Increases in certain variables (e.g., income) are associated with improvements in well-being while increases in other variables (e.g., unemployment) are associated with declines. This presents a problem for the aggregation of variables. For consistency, increases in all variables must be associated with increases in well-being so variables going in the opposite direction must be adjusted. There are several ways in which this can be accomplished, but none are without problems. First, and probably the easiest solution is to take the reciprocal. A problem with this measure is that it results in a non-linear transformation of the data, which may affect the results. Second, the variable can be multiplied by minus 1. The advantage of this linear transformation is that increases (i.e., lower negative numbers) in the index now correspond to increases in well-being. A disadvantage is that calculation of rates of change for an index that ranges from -1 into positive numbers is not possible.

<u>scaling of variables</u>

The percentage change for certain variables (e.g., unemployment rate) may be relatively large, particularly when they start from a low base, while that for other variables (e.g., GDP) may be relatively small. This may result in the variable with the

large variation driving the series, even though it is not the most important variable. One approach to this issue is to scale the variables so that they all have the same percentage variation. The disadvantage of this approach is that it eliminates the natural differences in variability between variables which correspond to reality.

treatment of missing data points

Given the massive data requirements for the construction of many of the indexes discussed above, it is not surprising that there are often missing data points in certain series. There are a number of conventions for dealing with these gaps. For missing data points within a time series, linear interpolation is the most common approach. For data points before or after the run of the time series, the most common approach is to extrapolate forward or backward based on the trend. The functional form of the trend is another issue, with linear being the most popular choice. Another approach for years before the start of the series or after the last year of the series it to assume the value for the first year of the series applies for the years before the series and the value of the last year of the series to the years after the last observation.

development of baselines or comparators

A final technical issue is how to set the baseline or comparator for the index. The most common approach for time series indexes is to set the base year equal to unity, as is done in economic series such as the CPI. For cross-section comparisons, the comparator country index can be set at unity. Another approach for cross-section comparisons is to use the worst-off and best-off regions to anchor the scale at 0 and 100. An advantage of this approach is that there is more variation than would be the case under a comparator unity approach.

IV Conclusion

In recent years, there has been an explosion in interest in indexes of economic and social well-being in this country at all levels (national, provincial, regional, community) and this trend is continuing and even intensifying. This current interest in the development of indexes of economic and social well-being is a continuation of the social indicators movement that started in the 1960s. These indexes have been very successful in capturing the public's attention. While there are potential dangers in the index approach, this development is, overall, an extremely healthy one. While knowledge is not a sufficient condition for social progress, it is a necessary one, although the link between better understanding of economic and social trends and progress may be tenuous, as the following quotation from Cobb and Rixford (1998) illustrates:

"Those who have worked for years to develop better indicators have been frustrated by the lack of success at achieving social change or even institutionalizing social reporting. Much emphasis has been placed on the agenda-setting role of indicators and how descriptive indicators can be used effectively in the public debate. Our concern is that advocates, especially at the community level, then wonder what comes next: How can they actually effect change in what they are describing? There may be an important rhetorical or persuasive role to be played by descriptive indicators in raising awareness but one can not expect those same indicators to effect change in the conditions."

It is true that there is a certain degree of arbitrariness in index construction. Yet the fact that four of the five independently constructed indexes show much smaller increases in well-being than in GDP per capita in Canada since 1971, and show absolute declines in recent years, means that there must be something more than arbitrariness at work. Many variables that affect well-being are just not advancing as quickly as they used to, or may even be declining. This robustness of the finding of stagnation in well-being trends across four of the five indexes is thus important. The message is that while indexes are arbitrary constructs, when taken together, they do and can provide a fairly accurate picture of general trends in well-being. Subjective surveys that find Canadians perceive much smaller increases in well-being or declines support this conclusion.

Appendix 1
The OECD List of Social Indicators

Social Concern	Indicator
HEALTH	
Length of Life	- Life Expectancy
	- Perinatal Mortality Rate
Healthfulness of Life	- Short-term Disability
	- Long-term Disability
EDUCATION AND LEARNING	
Use of Educational Facilities	- Regular Education Experience
	- Adult Education
Learning	- Literacy Rate
EMPLOYMENT AND QUALITY OF WORKING LIFE	
Availability of Employment	- Unemployment Rate
	- Involuntary Part-time Work
	- Discouraged Workers
Quality of Working Life	- Average Working Hours
	- Travel Time to Work
	- Annual Leave
	- Atypical Work Schedule
	- Distribution of Earnings
	- Fatal Occupational injuries
	- Work Environment Nuisances
TIME AND LEISURE	
Use of Time	- Free Time
	- Free Time Activities
COMMAND OVER GOODS AND SERVICES	
Income	- Distribution of Income
	- Low Income
	- Material Deprivation
Wealth	- Distribution of Wealth

PHYSICAL ENVIRONMENT	
Housing Conditions	- Indoor Dwelling Space
	- Access to Outdoor Space
	- Basic Amenities
Accessibility to Services	- Proximity of Selected Services
Environmental Nuisances	- Exposure to Air Pollutants
	- Exposure to Noise
SOCIAL ENVIRONMENT	
Social Attachment	- Suicide Rate
PERSONAL SAFETY	
Exposure to Risk	- Fatal Injuries
	- Serious Injuries
Perceived Threat	- Fear for Personal Safety

Source: Organisation for Economic Co-operation and Development (1982), "The OECD List of Social Indicators," (Paris: OECD), p. 13.

Appendix 2
The Human Development Index (HDI)

The HDI is based on three indicators: longevity, as measured by life expectancy at birth; educational attainment, as measured by a combination of adult literacy (two-thirds weight) and the combined first-, second- and third-level gross enrolment ratio (one-third weight); and standard of living, as measured by real GDP per capita (PPP$).

For the construction of the index, fixed minimum and maximum values have been established for each of these indicators:

* Life expectancy at birth: 25 % years and 85 years
* Adult literacy: 0% and 100%
* Combined gross enrolment ratio: 0% and 100%
* Real GDP per capita (PPP$): $100 and $40,000 (PPP$).

For any component of the HDI, individual indices can be computed according to the general formula:

Index = [Actual x_i value – minimum x_i value] / [Maximum x_i value – minimum x_i value]

If, for example, the life expectancy at birth in a country is 65 years, then the index of life expectancy for this country would be:

Life expectancy index = [65-25] / [85-25] = 40/60 = 0.667

The construction of the income index is a little more complex. The world average income of $5,990 (PPP$) in 1995 is taken as the threshold level (y^*), and any income above this level is discounted using the following formulation based on Atkinson's formula for the utility of income:

$$W(y) = y^* \text{ for } 0 < y < y''$$
$$= y^* + [(y - y^*)^{1/2}] \text{ for } y^* < y < 2y^*$$
$$= y^* + 2(y^{*1/2}) + 3[(y - 2y^*)^{1/3}] \text{ for } 2y^* < y < 3y^*$$

To calculate the discounted value of the maximum income of $40,000 (PPP$), the following form of Atkinson's formula is used:

$$W(y) = y^* + 2(y^{*1/2}) + 3(y^{*1/3}) + 4(y^{*1/4}) + 5(y^{*1/5}) +$$
$$+ 6(y^{*1/6}) + 7[40{,}000 - 6y^*)^{1/7}]$$

This is because $40,000 (PPP$) is between $6y^*$ and $7y^*$. With the above formulation, the discounted value of the maximum income of $40,000 (PPP$) is $6,311 (PPP$).

The construction of the HDI is illustrated with two examples – Greece and Gabon, an industrial and a development country.

Country	Life Expectancy (Years)	Adult Literacy Rate (%)	Combined Gross Enrolment Ratio (%)	Real GDP per Capita (PPP$)
Greece	77.9	96.7	82	11,636
Gabon	54.5	63.2	60	3,766

Life expectancy index

Greece = [77.9 – 25] / [85-25]= 52.9/60=0.882
Gabon = [54.5 – 25] / [85-25]= 29.5/60=0.492

Adult literacy index

Greece = [96.7 – 0] / [100-0]= 96.7/100=0.967
Gabon = [63.2 – 0] / [100-0]= 63.2/100=0.632

Combined first-, second- and third-level gross enrolment ratio index

Greece = [82.0 – 0] / [100-0]= 0.820
Gabon = [60 – 0] / [100-0]= 0.600

Educational attainment index

Greece = [2(0.967) + 1(0.820)]/3 = 0.918
Gabon = [2(0.632) + 1(0.600)1/3 = 0.621

Adjusted real GDP per capita (PPP$) index

Greece's real GDP per capita (PPP$) at $11,636 is above the threshold level, but less than twice the threshold. Thus the adjusted real GDP per capita for Greece would be $6,140 (PPP$) because $6,140 = [5,990 + 2(11,636 – 5,990)^{1/2}]$. Gabon's real GDP per capita at $3,766 (PPP$) is less than the threshold level, so it needs no adjustment.

Thus the adjusted real GDP per capita (PPP$) indices for Greece and Gabon would be:

Greece = [6,140 – 100] / [6,311-100]= 6,040/6,211=0.972
Gabon = [3,766 – 100] / [6,311-100]= 3,666/6,211=0.590

Human development index

The HDI is a simple average of the life expectancy index, educational attainment index and adjusted real GDP per capita (PPP$) index, and so is derived by dividing the sum of these three indices by 3.

Country	Life expectancy index	Educational attainment index	Adjusted real GDP per capita (PPP$) index	Sum of indices	HDI
Greece	0.882	0.918	0.972	2.772	0.924
Gabon	0.492	0.621	0.590	1.703	0.568

Source: HDI (1998).

Appendix 3

Oregon Benchmarks

ECONOMY													
Business Vitality	**1980**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**2000**	**2010**	**GRADE**
1. Percentage of Oregonians employed outside the Willamette Valley and the Portland tri-county area	26.0%	25.8%	26.1%	26.1%	25.8%	25.5%	25.3%	25.1%	24.7%		26%	26%	F
2. Percentage of professional services exported (imported) relative to Oregon's industry demand		(16%)	(19%)	(17%)	(17%)	(14%)	(11%)	(11%)			(7%)	5%	B+
3. Oregon's national rank in new companies		12th	22nd	13th	7th	11th	4th	8th	7th	7th	5th-10th	5th-10th	A
4. Oregon's national rank in traded sector strength		33rd	36th	35th	38th	38th	36th	40th	36th	33rd	20th-25th	20th-25th	D
5. Oregon's national rank in business closings (1st = least business closings)		18th	16th	32nd	31st	39th	37th	28th	46th	13th	20th-25th	20-25th	A
6. Net job growth	-8,711	43,276	-2,116	23,552	40,842	58,529	54,637	54,439	55,927		50,000	50,000	A
7. Oregon's national rank in economic diversification (1st = most diversified)	13th			4th		11th		15th					N/A
Economic Capacity	**1980**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**2000**	**2010**	**GRADE**
8. Industry research and development expenditures as a percentage of gross state product			0.6%		0.7%		0.9%				2.1%	3.5%	C-
9. Oregon's national rank in venture capital investments		4th	25th	11th	4th	16th	12th	29th	14th	22nd	1st-5th	1st-5th	F
Business Costs	**1980**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**2000**	**2010**	**GRADE**
10. Oregon's rank among seven Western states in business taxes as a percentage of gross state product (1st = lowest business taxes)			4th			2nd		1st					N/A
11. Oregon's national rank in health care costs (1st = lowest costs)	26th	15th	10th	13th	15th						20th-25th	20th-25th	A
12. Oregon's national rank in workers' compensation costs (1st = lowest cost)		44th		30th		20th		18th		14th	15th-20th	15th-20th	A
13. Percentage of permits issued within the target time period or less													C
a. Air contaminant discharge			57%	57%	68%	66%	62%	73%	50%		67%	78%	F
b. Wastewater discharge				41%	32%	25%	36%	37%	60%		41%	49%	A
Income	**1980**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**2000**	**2010**	**GRADE**
14. Per capita personal income as a percentage of the U.S. per capita income	99%	91%	91%	91%	92%	93%	94%	95%	96%	95%	100%	110%	C+
15. Average annual payroll per covered worker (all industries, 1995 dollars)	26,304	24,695	24,847	25,279	25,240	25,368	25,837	27,021	27,341		26,304	27,266	A
16. Percentage of Oregonians in the middle income range	38%	38%	38%	38%	38%	38%	38%	38%			39%	40%	D
17. Percentage of covered Oregon workers with earnings of 150% or more of poverty at a rate for a family of four)		30%	30%	30%	31%	31%	31%	31%			32%	34%	B

18. Unemployment rate (civilian labor force, annual average)	8.3	5.5	6	7.5	7.3	5.5	4.8	5.9	5.8		5.0	5.5	F
International	**1980**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**2000**	**2010**	**GRADE**
19. Number of international cities of over 1 million population (outside Canada and Mexico) served by direct or non-stop flights to and from any Oregon commercial airport	1	4		5	5	5	3	3	3	4	5	6	D
20. Percentage of Oregonians who speak a language in addition to English				17%		16%		14%		14%	17%	20%	F

EDUCATION													
Kindergarten - 12	**1980**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**2000**	**2010**	**GRADE**
21. Percentage of children entering school ready-to-learn									58%		65%	80%	N/A
22. High school dropout rate		6.6	6.5	5.8	5.7	6.6	7.4	7.2	6.7[†]		5.0	4.0	F
23. Percentage of 8th graders who achieve established skill levels													B-
a. Reading			40%		35%		48%	53%	56%	55%	63%	100%	B-
b. Math			40%		48%		49%	49%	49%	51%	59%	100%	C+
24. Percentage of 3rd graders who achieve established skill levels													A-
a. Reading			52%		59%		61%	70%	79%	78%	82%	100%	A-
b. Math			35%		51%		50%	53%	63%	67%	73%	100%	A-
25. Percentage of high school students completing a structured work experience					9%	13%	21%	14%	15%		65%	100%	D
Post Secondary	**1980**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**2000**	**2010**	**GRADE**
26. Percentage of Oregon adults (25+) who have completed a college degree	18%	23%		25%		26%		29%		29%	33%	45%	B-
27. Percentage of Oregon adults (25+) completing high school or equivalent	76%	85%		82%		89%		91%		91%	94%	100%	B
28. Percentage of Oregon adults (25+) who have completed some college	39%	53%		53%		58%		60%		62%	68%	89%	B-
29. Percentage of Oregon adults (25+) completed associate degree						4%		4%		3%	6%	10%	F
Skill Development	**1980**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**2000**	**2010**	**GRADE**
30. Percentage of all adult Oregonians with intermediate literacy skills													N/A
a. Prose		41%									48%	55%	N/A
b. Document		36%									46%	55%	N/A
c. Quantitative		39%									47%	55%	N/A
31. Percentage of Oregonians who report they use a computer to create, edit documents/graphics, to analyze data						50%		58%		60%	61%	70%	A
32. Percentage of labor force receiving at least 20 hours of skills training in the past year						35%		30%		37%	79%	100%	C
[†] See Endnotes													

CIVIC ENGAGEMENT													
Participation	**1980**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**2000**	**2010**	**GRADE**
33. Percentage of Oregonians who volunteer at least 50 hours of their time per year to civic, community or, nonprofit activities				30%				33%		29%	35%	50%	D-
34. Percentage of eligible Oregonians who vote		55%		70%		56%		60%		50%	70%	84%	F
35. Percentage of Oregonians who feel they are a part of their community						36%		41%		36%	45%	60%	D
Taxes	**1980**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**2000**	**2010**	**GRADE**
36. Percentage of Oregonians who understand the Oregon tax system and where tax money is spent				11%	12%	18%	19%	21%	19%		25%	50%	B-
37. State and local taxes per capita (1995 dollars)	$1,801	$2,344	$2,348	$2,314	$2,323	$2,358	$2,322	$2,243	$2,454	$2,300			N/A
a. As a percentage of 1990	77%	100%	100%	98%	99%	101%	99%	96%	105%	98%			N/A
b. Oregon's rank	20th	19th	20th	22nd	24th	25th	27th						N/A
38. State and local taxes per $1,000 of personal income	$114	$120	$118	$119	$118	$117	$114	$105	$111	$102			N/A
a. As a percentage of 1990	95%	100%	98%	99%	98%	98%	95%	88%	93%	85%			N/A
b. Oregon's rank	23rd	13th	12th	12th	17th	18th	26th						N/A
Public Sector Performance	**1980**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**2000**	**2010**	**GRADE**
39. Public management quality										B-			B-
40. State general obligation bond rating (Standard and Poors)		AA-	AA-	AA-	AA-	AA-	AA-	AA	AA	AA	AA+	AAA	AA
Culture	**1980**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**2000**	**2010**	**GRADE**
41. Oregon's national rank in per capita state arts funding		41st	40th	39th	41st	44th	54th	54th	53th		39th	31st	F
42. Percentage of Oregonians served by a public library which meets minimum service criteria	73%	86%	83%	83%	86%	84%	85%	88%	89%		90%	99%	A-

SOCIAL SUPPORT													
Health	**1980**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**2000**	**2010**	**GRADE**
43. Pregnancy rate per 1,000 females age 10-17	24.7	19.7	19.3	17.9	18.2	18.9	19.2	18.8	18.0		15.0	10.0	C
44. Percentage of babies whose mothers received early prenatal care (beginning in the first trimester)	77%	76%	77%	79%	79%	79%	79%	80%	81%		90%	95%	C
45. Infant mortality rate per 1,000	12.1	8.3	7.2	7.1	7.1	7.1	6.1	5.6			6.0	5.6	A
46. Percentage of two-year-olds who are adequately immunized						67%	74%	72%	73%		90%	90%	C-
47. Annual percentage of new HIV cases with an early diagnosis (before symptoms occur)		72%		78%	80%	73%	78%	72%	76%		85%	98%	C
48. Percentage of adults who do not currently smoke tobacco		78%	*79%*	79%	78%	79%	78%	76%	79%		81%	90%	C
49. Premature Mortality: Years of potential life lost before age 70 (rate per 1,000)	76.4	64.3	60.0	59.2	61.7	61.9	61.4	59.6			57.4	49.3	A
50. Percentage of adults whose self-perceived health status is very good or excellent					63%	63%	62%	60%	59%		65%	72%	F
51. Percentage of families for whom child care is affordable				69%		67%		70%		67%	70%	75%	F
52. Number of child care slots available for every 100 children under age 13		14		15	15	16	16	19	20	21	21	25	A
Protection	**1980**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**2000**	**2010**	**GRADE**
53. Percentage of 8th grade students who report using:													D+
a. Alcohol in the previous month		23%		26%		30%		30%		26%	26%	21%	B-
b. Illicit drugs in the previous month		14%		11%		19%		22%		19%	15%	12%	F
c. Cigarettes in the previous month		12%		15%		19%		22%		20%	15%	12%	F
54. Number of children abused or neglected per 1,000 persons under 18		11	10	11	11	10	10	10	12		9	6	F
55. Reported elder abuse rate per 1,000							12	14	15		12	12	F
56. Percentage of infants whose mothers used:													A
a. Alcohol during pregnancy (self-reported by mother)		5%	5%	4%	3%	3%	3%	*2%*	*2%*		2%	2%	A
b. Tobacco during pregnancy (self-reported by mother)		22%	21%	20%	19%	18%	18%	18%	16%		15%	12%	A
Poverty	**1980**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**2000**	**2010**	**GRADE**
57. Percentage of Oregonians with incomes below 100% of the Federal poverty level	11%	11%		13%		15%		12%		12%	11%	9%	C
58. Percentage of Oregonians without health insurance		16%		18%		14%		11%		11%	9%	4%	B+
59. Number of Oregonians that are homeless on any given night				7,607	5,196	7,262	6,141	6,819	7,130	7,050	5,196	5,196	D+
60. Percentage of current court ordered child support paid to families	44%	50%	47%	50%	54%	60%	68%	68%	68%	68%	72%	80%	A
Independent Living	**1980**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**2000**	**2010**	**GRADE**
61. Percentage of seniors living independently			97%	97%	97%	97%	97%	98%	98%		98%	98%	A
62. Percentage of Oregonians with a disability able to live on their own with adequate support										91%			N/A
63. Percentage of Oregonians with a disability living in households with incomes below the federal poverty level						20%		20%		22%			N/A

PUBLIC SAFETY													
Crime	**1980**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**2000**	**2010**	**GRADE**
64. Overall reported crimes per 1,000 Oregonians	133.6	139	138.3	138.7	139.5	145.9	150.5	141.8	150.2		133.6	106.9	F
65. Total juvenile arrests per 1,000 juvenile Oregonians per year	48.3	46.5	48.8	52.1	53.8	57.3	58.6	62	59		46.5	37.2	F
66. Percentage of students who carry weapons			26%		32%		19%		19%		15%	9%	B
67. Percentage of paroled offenders convicted of a new felony within three years of initial release		38%	38%	34%	34%	33%	30%	31%	30%		28%	27%	A
68. Percentage of counties that have completed a strategic cooperative policing agreement								31%		72%	100%	100%	N/A
Emergency Preparedness	**1980**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**2000**	**2010**	**GRADE**
69. Percentage of Oregon counties with the capability to respond to an emergency, and to assist communities to recover fully from the effects		50%	44%	56%	64%	83%	86%	92%	97%		94%	100%	A

COMMUNITY DEVELOPMENT													
Growth Management	**1980**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**2000**	**2010**	**GRADE**
70. Percentage of miles of limited-access highways in urban areas that are congested during peak hours							48%	54%	53%		49%	49%	F
71. Percentage of Oregonians served by public drinking water systems that meet health-based standards						49%	50%	55%	88%		75%	95%	A
72. Percentage of Oregonians with sewage disposal that does not meet government standards			5%			3%	2%		1%		0%	0%	A
Infrastructure	**1980**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**2000**	**2010**	**GRADE**
73. Percentage of Oregonians who commute by means other than a single occupancy vehicle		*29%*		30%		30%		33%		29%	36%	38%	D-
74. Vehicle miles traveled per capita in Oregon metropolitan areas (per year)	5,782	7,733	7,809	7,696	7,776	7,854	7,982	8,105	8,175		8,156	7,938	F
75. Percentage of Oregon households with personal computers at home that send and receive data and information over telecommunications				10%		13%		24%		35%	40%	80%	A-
76. Percentage of roads in fair or better condition													
a. State	57%	70%		73%	83%	80%	78%	78%	77%	77%	77%	90%	A
b. County									75%				N/A
Housing	**1980**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**2000**	**2010**	**GRADE**
77. Percentage of households that are owner occupied	65%	67%		70%		62%		67%		68%	68%	69%	C
78. Percentage of low income households spending more than 30 percent of their household income on housing (including utilities)													B-
a. Renters		70%		75%		n/a		72%		69%	72%	72%	A
b. Owners		38%		n/a		38%		41%		39%	38%	38%	C-

ENVIRONMENT													
Air	**1980**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**2000**	**2010**	**GRADE**
79. Percentage of Oregonians living where the air meets government ambient air quality standards	30%	54%	51%	58%	100%	100%	100%	100%	100%		100%	100%	A
80. Carbon dioxide emissions as a percentage of 1990 emissions		100%	112%	125%	124%	132%	117%	119%			100%	100%	F
Water	**1980**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**2000**	**2010**	**GRADE**
81. Percentage of Oregon wetlands in 1990 still preserved as wetlands		100%	100%	100%	100%	100%	100%		100%	100%	100%	100%	A
82. Stream water quality index													
a. Percentage of monitored stream sites with significantly increasing trends in water quality		8%					21%	32%	52%		25%	25%	A
b. Percentage of monitored stream sites with significantly decreasing trends in water quality		20%					8%	2%	0%		5%	0%	A
83. Percentage of assessed groundwater that meets drinking water standards	87%	95%		95%		94%		94%		95%	94%	94%	A
84. Percentage of key rivers meeting instream water rights													A
a. 9 or more months of year	53%	39%	50%	56%	72%	61%	94%	94%			60%	65%	A
b. 12 months a year	47%	44%	39%	22%	22%	28%	35%	70%			35%	40%	A

Land	**1980**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**2000**	**2010**	**GRADE**
85. Percentage of Oregon agricultural land in 1970 still preserved for agricultural use		98%		98%		97%	97%	97%	97%		97%	97%	A
86. Percentage of Oregon forest land in 1970 still preserved for forest use		92%	90%	92%	92%	92%	91%	91%	92%		92%	92%	A
87. Pounds of Oregon municipal solid waste landfilled or incinerated per capita				1,519	1,501	1,516	1,511	1,570	1,640		1,506	1,495	F
88. Percentage of identified hazardous waste sites that are cleaned up or being cleaned up		67%	68%	71%	70%	67%	66%	69%	69%	68%	67%	56%	A
a. Tank sites		66%	67%	71%	69%	66%	65%	69%	69%	68%	67%	55%	A
b. Other hazardous substances		97%	75%	79%	76%	73%	70%	69%	71%	74%	70%	69%	A
Plants and Wildlife	**1980**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**2000**	**2010**	**GRADE**
89. Percentage of wild salmon and steelhead populations in key sub-basins that are at target levels		48%	39%	30%	20%	11%	2%	2%	2%		13%	35%	F
90. Percentage of native fish and wildlife species that are healthy			76%	76%	76%	76%	75%	75%	72%	72%	77%	80%	F
91. Percentage of native plant species that are healthy			83%	86%	88%	86%	88%	85%	85%	85%	90%	95%	C-
Outdoor Recreation	**1980**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**2000**	**2010**	**GRADE**
92. Acres of state-owned parks per 1,000 Oregonians	35	31	31	31	30	30	29	29	29		35	35	F

Appendix 4

Grassroot Experience in the Development of Community Indicators from the Redefining Progress Community Indicator List Serve

The following edited statements have been taken from the list server on community indicators run by the San Francisco think tank Redefining Progress. They serve to illustrate the state of the current debate on community indicators by those directly involved in the development of these indicators. Persons interested are referred to the Redefining Progress website (www.rprogres.org) for the complete archives of the list server. In addition, Redefining Progress maintains a directory of over 150 community indicators projects, largely in the United States.

Edmonton, Alberta

Having been involved in developing the Edmonton LIFE (quality of life) indicators for two years running, Alberta's performance measurement system development (Measuring Up), and recently the U.S. GPI (genuine progress indicator) project with Redefining Progress, I want to share with you what I consider a personal epiphany re: the future of community indicators.

With the Edmonton LIFE project we have arrived at an interesting cross roads. That is, most of our stakeholders who have participated in developing the report of 60 indicators of economic, social, environmental, and community quality of life are now commenting that the indicators (developed through a lengthy multi-stakeholder consensus building exercise) are actually of little utility to their constituency (e.g., to business people) since they are not detailed enough or are of little utility for decision making. Yet in a survey of stakeholders, these same folks said they desire social trends information to inform their constituency, whether business, environmentalist, social agencies. Also, they acknowledge the tremendous value of coming together and "walking in each other's shoes," thus becoming aware of others and their issues.

The other day at a meeting of Edmonton LIFE we were at the point of abandoning the entire project given that funding and interest was waning. Yet, amazingly we salvaged this important initiative by realizing that the benefit and sustained interest will come when each of the stakeholder groups begins to take ownership of their suite of indicators (not only the Edmonton LIFE indicators but their own indicators of relevance to quality) that best represent "quality of life" for business, environment, community, social issues, then coming together at one grand "civic townhall meeting" (Edmonton is a city of 780,000) would present their "annual state of Edmonton LIFE," explore the nature of the "social trends," expert witnesses to provide commentary on the trends, and at the end issue a press release and a "report" that constitutes the sum total of the various stakeholder report cards.

This remarkable outcome to our meeting is in my opinion a major breakthrough in community indicators work. We seem to have crossed an important threshold of having stakeholder buy-in, allowing autonomy over indicators with those stakeholders who are

most knowledgeable of their discipline/constituency, recognizing that quality of life is something that is "in the eye of each beholder" and that somehow all of these "indicators" collectively constitute the collective wisdom of what quality of life means for a city like Edmonton. It has freed us from the need for absolute consensus, provided us with what we desire (social trend indicators), allowed us to find a "space" to accept our respective views/values of quality of life, and more importantly allowed us to come together as a community to build relationships and have dialogue about values (mostly held in common) based on the best evidence (indicators) we have from our personal knowledge base. The beauty is that quality of life then truly represents the collection of opinions and values, as represented by the indicators presented. The notion of a definitive framework of indicators is abandoned and what is embraced is the beauty of the mosaic (chaotic as it may be). Furthermore, no one is precluded to the townhall meeting nor is "membership" or ownership over indicators controlled by any one group, bureaucracy, or accounting firm. What attracts the community is a genuine spirit and desire to understand the nature of the quality of life that defines our community. What results is dialogue and ultimately community building. "If you build it, they will come."

We are now contemplating planning the first grand "state of quality of life in Edmonton" townhall meeting where every citizen is invited to discuss the quality of life trends of Edmonton and thus to create an awareness that informs our dialogue about what future outcomes we desire for our community.

Some of these experiences have undoubtedly been experienced elsewhere, most notably Jacksonville, Florida. This epiphany has been for me a marvelous experience I wanted to share.

Mark Anielski
Executive Director
Centre for Performance Measurement & Management (CPMM)
3-20C, Faculty of Business
University of Alberta
Edmonton, Alberta, Canada, T6G 2R6
Tel: (780) 492-1371; Fax: (780) 492- 3325
Email: anielski@ualberta.ca

New Jersey

The New Jersey indicators project (the Sustainable State Project) is a joint initiative by New Jersey Future (a non-profit) and the current administration. We have worked extensively with State Agencies and the public and stake holders. The Governor has issued an Executive Order directing all State Agencies to achieve the goals and impact the indicators, and report annually on their progress. As a pilot, one Agency (Environmental Protection) has just completed a Department-wide review of each of their programs against each of Sustainable State Goals and is releasing a report outlining 30 or so program specific recommendations on ways they can be more sustainable and achieve the goals.

Many NJ counties and municipalities are responding to the State goals and indicators with their own versions that are "nested" with those of the State.

Despite all this positive motion, and despite the fact that the public-private nature of this project has served us well, we realize that ultimately a project that is intended to guide the entire State of New Jersey toward sustainable development should perhaps reside in the domain of something larger than one smallish non-profit. So, we are currently in discussions with various interested parties on ways to house the project in the future. Options include a new office in state government, a new center at the State University (Rutgers, or a consortium of academic institutions), a legislative or gubernatorial commission, or revamp our organization in some way to fill this role. If it goes with State Gov. we are subject to the capriciousness of different administrations. If it ends up with the academics, it has a more stable respected home, but then the exercise runs the risk of just becoming "academic." I think a hybrid of the 2 is the best option.

It's a perplexing, but critically important question.

Randy Solomon
New Jersey Future
204 West State Street
Trenton, NJ 08608
(609) 393-0008
FAX 393-1189
www.njfuture.org

Colorado

The Colorado Trust recently published Communities Tracking Their Quality of Life: an Overview of the Community Indicators Project of the Colorado Healthy Communities Initiative. This report presents the philosophy, approach and early results of the Colorado Community Indicators Project, in which 15 communities across the state were supported to develop locally relevant indicators of health and quality of life.

The orientation for this project is community development – using the indicator-selection process as a means of engaging local citizens in a discovery of the community's pressing issues and the underlying connections, and then producing reports that serve as a catalyst for action across multiple sectors. The goal is not simply to inform policy making on the part of government officials, but also to make it more clear to businesses, nonprofits and residents the impact of their everyday behavior and decisions.

The groups funded under CIP have begun to show some impressive outcomes related to public attention, changing the nature of policy deliberations, shifting the priorities of community foundations and eliciting more responsible wage scales on the part of employers.

Doug Easterling
Director of Research and Evaluation
The Colorado Trust
1600 Sherman Street
Denver, CO 80203
(303) 837-1200
doug@coltrust.org

Sacramento, California

The Community Services Planning Council in Sacramento, California has tracked 130 social indicators for a five-county Region since 1985. These indicators are in the area of population, economy, health, education, public assistance, substance abuse, and public safety. The data allows comparison among the counties, the region, the state and in some cases to the nation.

The Council has been in existence since 1939. The indicator data was developed, and continues, under the guidance of an Advisory Committee that over the past 15 years has included community members as well as representatives from non-profit organizations and governmental agencies.

The Council works with policymakers, foundations, community organizations and residents to identify needs, plan community programs, allocate resources, prepare proposals, and link with potential partners.

In addition to the Regional indicator data, the Council also compiles, and makes available, community indicator statistics for each of the 53 ZIP Codes in Sacramento County, as well as school-based data on enrollment, ethnicity, language and reduced and free meal programs.

For the past three years, the Council has had a special project providing training to residents in low-income communities to use social indicator and asset data for community planning and advocacy.

Last year, the Council began working with a number of our partners to create a network similar to what Mark (Edmonton LIFE) has described. Our network brings together those with expertise (and indicators) in the areas of environment, land use, transportation, health, social services, and economic development.

We call our collaborative network California Capital Communities. We are a group of public and private organizations, each with an interest in the field of neighborhood or regional planning, working together to improve the quality of life in our communities and in the region.

Goals:

* Link various indicator projects being implemented in the Region,
* Help create an summary indicator report for the Region,
* Facilitate data/information sharing in order to provide better information to the partners,
* Help partners work together on related community initiatives.

Partners in the collaborative are working together utilizing the Outcomes Toolkit, an internet-based software developed by The Health Forum. The Outcomes software enables community partners to link via internet technology to share information, set target objectives for healthier communities, and track progress toward those goals.

Katrina Middleton
Director of Information Systems
Community Services Planning Council
(www.communitycouncil.org)
909 -12th Street, Suite 200
Sacramento, CA 95814
Phone (916) 447-7063, ext. 306
FAX (916) 447-7052
email: data@communitycouncil.org

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