

Social Indicators in Coastal Alaska: Arctic Communities

Contract No. M11PC00032

North Slope Social Indicators Study Literature Review

Submitted to

Bureau of Ocean Energy Management (BOEM)
Alaska OCS Region
3801 Centerpoint Drive, Suite 500
Anchorage, Alaska 99503

Submitted by

Stephen R. Braund & Associates
P.O. Box 1480, Anchorage, Alaska 99510
907-276-8222 (Phone); 907-276-6117 (Fax)
srba@alaska.net

9 January 2012

Table of Contents

LIST OF TABLES.....	II
LIST OF FIGURES.....	II
LIST OF ACRONYMS AND ABBREVIATIONS.....	III
INTRODUCTION.....	1
EARLY SOCIAL INDICATORS RESEARCH IN ALASKA	1
NATIONAL SCIENCE FOUNDATION ‘MAN IN THE ARCTIC PROGRAM’	1
MINERALS MANAGEMENT SERVICE SOCIAL INDICATORS 1.....	2
MINERALS MANAGEMENT SERVICE SOCIAL INDICATORS 2.....	5
<i>Excerpts From TR116 Chapter Two: Contributions of the Worldwide Social Indicators Movement to Monitoring Life Quality in Alaskan Villages by Dr. Frank Andrews.....</i>	<i>5</i>
The Social Indicators Movement: Historical Development and Key Concepts	6
Implications of Prior Conceptual Development for Monitoring Life Quality in Alaskan Villages.....	11
Identifying Components of Life Quality.....	12
Applying Prior Work on Identifying Concern Areas to Monitoring Life Quality in Alaskan Villages	17
Measuring the Life Concerns.....	17
<i>Validation and Revision of Social Goals</i>	<i>18</i>
<i>Identification and Assessment of Social Indicators.....</i>	<i>21</i>
MINERALS MANAGEMENT SERVICE SOCIAL INDICATORS 3.....	31
SURVEY OF LIVING CONDITIONS IN THE ARCTIC (SLICA)	33
MOTIVATION FOR THE STUDY	33
STUDY DESIGN.....	34
ARCTIC SOCIAL INDICATORS (ASI).....	42
NORTH SLOPE SOCIAL IMPACT STUDY (NSSIS)	44
REPORT BY THE COMMISSION OF THE MEASUREMENT OF ECONOMIC PERFORMANCE AND SOCIAL PROGRESS.....	48
IMPLICATIONS OF REVIEWED LITERATURE FOR THE STUDY DESIGN	49
DOMAINS	49
REPORTING LEVEL	49
SOURCES OF DATA.....	49
RULES FOR SELECTING INDICATORS	49
<i>Utility</i>	<i>49</i>
<i>Validity.....</i>	<i>50</i>
<i>Reliability</i>	<i>50</i>
<i>Precision.....</i>	<i>50</i>
<i>Feasibility.....</i>	<i>50</i>
<i>Applicability</i>	<i>50</i>
REFERENCES.....	51

LIST OF TABLES

TABLE 1: COMPARABLE SOCIAL INDICATORS OF LIVING CONDITIONS ON THE NORTH SLOPE: 1977 AND 2003	2
TABLE 2: MMS SOCIAL INDICATORS 1 INDICATORS BY BOEM DOMAIN	4
TABLE 3: OECD LIST OF SOCIAL CONCERNS COMMON TO MOST OECD COUNTRIES WITH BOEM DOMAIN IN PARENTHESES	12
TABLE 4: TOPICS COVERED IN THE UNITED STATES GOVERNMENT PUBLICATION SOCIAL INDICATORS III ORGANIZED BY BOEM DOMAIN	14
TABLE 5: PREDICTING GLOBAL WELL-BEING BY VARIOUS COMBINATIONS OF CONCERN-LEVEL MEASURES ORGANIZED BY BOEM DOMAIN	16
TABLE 6: ALASKA OCS SOCIAL GOALS	19
TABLE 7: ASSESSMENT OF EXISTING SOCIAL INDICATOR DATA IN 1985	23
TABLE 8: MMS 2 SUBJECTIVE INDICATORS BY BOEM DOMAIN	26
TABLE 9: ALASKA OCS SOCIAL INDICATORS	26
TABLE 10: SLICA SUB-DOMAINS ORGANIZED BY BOEM DOMAINS	34
TABLE 11: SLICA SOCIAL INDICATORS BY BOEM DOMAIN	37
TABLE 12: PERCENTAGE OF ACTIVE HUNTERS CITING PERSONAL EXPERIENCE WITH SUBSISTENCE IMPACTS	46
TABLE 13: PERSONAL EXPERIENCES WITH DISPLACEMENT OF WILDLIFE BY COMMUNITY	46

LIST OF FIGURES

FIGURE 1: EXAMPLE OF MMS SOCIAL INDICATORS 3 USE OF SOCIAL INDICATORS	32
---	----

LIST OF ACRONYMS AND ABBREVIATIONS

AHDR	Arctic Human Development Report
AOSIS	Alaska OCS Social Indicators System
ASI	Arctic Social Indicator
BOEM	Bureau of Ocean Energy Management
BOEMRE	Bureau of Ocean Energy Management and Regulation and Enforcement (now BOEM)
EEC	European Economic Community
GDP	Gross Domestic Product
ICC	Inuit Circumpolar Conference
ISER	Institute of Social and Economic Research
ISQOLS	International Society for Quality of Life Studies
ISR	Institute for Social Research
MAP	Man in the Arctic Program
MCA	Multiple Classification Analysis
MMS	Minerals Management Service
NANA	Northwest Arctic Native Association
NASA	National Aeronautics and Space Administration
NSSIS	North Slope Social Impact Study
OCS	Outer Continental Shelf
OECD	Organization for Economic Cooperation and Development
OMB	Office of Management and Budget
SG	Statistics Greenland
SLICA	Survey of Living Conditions in the Arctic
SRB&A	Stephen R. Braund & Associates
UNESCO	United Nations Economic, Scientific, and Cultural Organization
UNHDI	UN's Human Development Index
UNRISD	United Nations Research Institute for Social Development
USDOI	U.S. Department of Interior
USGS	U.S. Geological Survey

INTRODUCTION

Stephen R. Braund & Associates (SRB&A) has been contracted by the Bureau of Ocean Energy Management (BOEM) to design and implement a social indicators system based on a household survey and existing data in six Arctic communities: Barrow, Nuiqsut, Wainwright, Point Hope, and Kaktovik. The scope of work for this study includes a literature search and review, the purpose of which is to assess the current state of knowledge about key social indicators and their relevance to the North Slope Social Indicators Study.

EARLY SOCIAL INDICATORS RESEARCH IN ALASKA

The history of social indicators work in Alaska spans over thirty years. Much of this work has informed the design of this study. This literature review begins with research funded by the National Science Foundation and continues with early initiatives by the Minerals Management Service (MMS, now the Bureau of Ocean Energy Management [BOEM]) to develop a social indicators monitoring program.

National Science Foundation ‘Man in the Arctic Program’

Following the discovery of oil at Prudhoe Bay in 1969, the National Science Foundation awarded the Institute of Social and Economic Research (ISER) a research grant in 1973 to assess the social and economic effects of petroleum development in Alaska. Called the “Man in the Arctic Program” (MAP), ISER researchers first focused on the economy and population of Alaska and its major regions (Kresge, Seiver, Goldsmith, and Scott 1984). In 1975 an advisory board to MAP recommended that ISER expand its focus to include the distributional effects of development. Spurred by this recommendation, ISER researchers designed and implemented a survey of residents in the Fairbanks North Star Borough in 1976 (*Kruse 1976, Kruse 1977¹*). The Fairbanks Community Survey was designed to yield social indicators of the well-being of Fairbanks residents. It was based on a long history of social indicators research at the Institute for Social Research (ISR) at the University of Michigan (Andrews and Withey 1976). The survey design did not, however, include the step of systematically identifying domains within which to construct indicators. Survey topics included population composition, housing, reasons for coming to and staying in Fairbanks, perceptions of community change, social conditions, economic conditions, and Alaska lifestyles.

In 1977, MAP researchers designed and, in collaboration with the North Slope Borough, conducted a survey of North Slope Borough residents living in Barrow, Wainwright, Point Hope, Nuiqsut, Kaktovik, and Anaktuvuk Pass. Social indicators measured in the survey were published in the report, “Energy Development and the North Slope Iñupiat: Quantitative Analysis of Social and Economic Change” (*Kruse, Kleinfeld, and Travis 1981*). The MAP North Slope Survey design was also based on ISR’s earlier work, although it differed in that it included a major section on subsistence. The North Slope Borough has included a significant subset of the MAP survey indicators in subsequent census surveys. In 1991, Kruse published a comparative analysis of indicators from 1977 and 1988: “Alaska Iñupiat Subsistence and Wage Employment Patterns: Understanding Individual Choice” (*Kruse 1991*). In 2010, Kruse published a second comparative analysis of indicators from 1977 and 2003 (*Kruse 2010*). The 2010 report was organized by the six social indicator domains adopted in the Arctic Social Indicator (ASI) report published in 2010 as well (*Larsen, Schweitzer, and Fondahl (Eds) 2010*). Thus MAP work initiated in the 1970s has a legacy of comparative indicators through 2003. Table 1 shows the social

¹ Note that electronic copies of cited publications in italics are included on a DVD accompanying this report.

indicators compared between 1977 and 2003 organized by the six indicator domains included in BOEM’s scope of work for this study (referred to as “BOEM domains”).

Table 1: Comparable Social Indicators of Living Conditions on the North Slope: 1977 and 2003

BOEM Domain	Social Indicator
Economic Well-being	Work for pay Number of Subsistence Activities Satisfaction with job opportunities Satisfaction with kinds of things you can buy in stores Satisfaction with cost of living Preference subsistence job both
Health and Safety	Satisfaction with health services Perception drinking, drugs, fighting, stealing
Cultural Continuity	Satisfaction with sharing and helping
Local Control	Voting behavior Satisfaction with influence over oil development
Education	Education - years completed Satisfaction with education services
Physical Environment	Proportion food from subsistence Satisfaction with amount of fish and game available locally Satisfaction with opportunities to hunt and fish
Overall Well-being	Satisfaction with village life

Minerals Management Service Social Indicators 1

In the early 1980s, MMS contracted with Louis Berger and Associates to initiate the design of a social indicators system to monitor impacts of outer continental shelf (OCS) development impacts (*Louis Berger and Associates 1983a, 1983b, 1983c; Jorgensen, McCleary and McNabb 1985*). The goal was “the creation of tangible scientific tools useful for gauging and monitoring” social, economic, and cultural changes that may result from OCS development (*Louis Berger and Associates 1983a:4*). Conceived as a sociocultural study that focused on existing data compilation, field observation, and key informant interviews, formal survey research procedures were precluded from the statement of work. Thus the study differed from the current study which has an Office of Management and Budget (OMB)-approved household survey as its core method of data collection.

Focusing on the Aleutian-Pribilof and Northwest Arctic Native Association (NANA) regions, the Berger research team began with a description of “generalized sociocultural trends” (*Louis Berger and Associates 1983a:ii*). They then compiled existing data at the regional and community levels in two domains: (1) mental health, mortality, and morbidity; and, (2) economic and social welfare. The authors point out that, aside from providing descriptions of the two regions, existing data “help reveal the inherent flaws and obstacles to

interpretation that make the search for reliable and accurate social indicators for rural Alaska a difficult one” (Louis Berger and Associates 1983a:82). The Berger team described their approach as follows:

The research on which this study is based includes classical anthropological observations of village life and focused discussions about community affairs and the meanings which people attached to those affairs. It also includes as is consonant with social indicators research, the collection and analysis of archival data in the form of time series, and analysis of events that may have affected those time series. So archival data on population, morbidity, mortality, births, transfer payments, health, crime, transportation, business activities and the like are studied in the course of this research. The goal is to fit the field observations to the time series observation and to derive a set of variables that will indicate community well-being (Louis Berger and Associates 1983a:118).

The field observations consisted of interviews with a key informant in each of eight villages on institutions related to economics, politics, education, helping services, religion, and clubs and associations. Five key informants on domestic life were interviewed in each village regarding worldviews and family and kinship. Both the institutional and domestic interviews used open-ended questions. The research team reviewed the narrative responses with the goal of constructing variables and variable values. Fifty-seven variables were defined. The narratives were then coded on these variables, creating a set of family cases and community cases. As the study team reported:

The methodology employed in this study demanded that we refrain from predetermining the explicit variables and their operational values prior to field data collection, and instead define more general data themes and topics for which to collect information; only after the data were collected were we in a position to define the ranges of variation along which a variable could be defined and its values bracketed and specified. Although many classic research traditions call for an explicit and formal predefinition of variables prior to any data collection, it is our judgment that we cannot pretend to know so much about the distributions and qualities of the data that these predeterminations can be made in good faith before we even reach the field site. Instead, our methods seek to specify general topics of data collection (specified in protocols) that are justified on the basis of our previous knowledge of the areas and general social science findings, for which data can be collected, and thereafter scored and ranked using variable definitions that are inherently empirical in nature but nonetheless informed by and grounded in prior general knowledge and tenets of social science (Louis Berger and Associates 1983a: 146:147).

The research team analyzed the institutional and domestic variables constructed from the narrative to identify dimensions of covariation (i.e., components of variation in variables which are shared) through the use of bivariate comparisons and a multivariate technique called smallest space analysis. The researchers explained their analysis approach:

Social indicators, as the term implies, are constructs that are supposed to represent, or indicate something. Unlike direct counts of a person’s age, or the number of residents in a household, an indicator is a construct, measured with bivariate and multivariate statistics in this research, which is intended to account for something or somethings which are not directly measured. (Louis Berger and Associates 1983a: 229).

It was our intention from the beginning to determine by formal means those central items in groups of related variables (determined statistically) which could serve as social indicators in future studies (Louis Berger and Associates 1983a: 230).

The first cluster of variables was interpreted by the research team to identify a dimension of household organization scaled from traditional subsistence to western practices. A second cluster was interpreted as being related to “perceptions and knowledge borne of experience of native persons about contemporary economic and political issues” (Louis Berger and Associates 1983a: 238). The third cluster of variables was interpreted as relating to income and increased skepticism (Louis Berger and Associates 1983a:240), while the fourth cluster of variables are practices shared by both traditional and more western households: income pooling, labor sharing, subsistence expenditures, traditional foods in the diet, and household size. The team concluded from this research that sixteen variables “appear to be potential indicators of community well-being from our research” (Louis Berger and Associates 1983a: 268). To these variables the researchers identified six village-level variables and one regional-level variable derived from existing data (Louis Berger and Associates 1983a: 289). Table 2 displays the combined set of 22 indicators by BOEM domain:

Table 2: MMS Social Indicators 1 Indicators by BOEM Domain

BOEM Domain	Indicator
Economic Well-being	Household income Percentage of total income earned Percentage of total income unearned Proportion of total earned income derived from government sources Proportion of total earned income derived from private sources Stability of earned income Stability of unearned income Income pooling, labor and resource sharing Investment of percentage of total income in subsistence harvest expenses Employment and wages Welfare payments Social welfare caseloads Employment by sector (regional-level)
Health and Safety Cultural Continuity	Household size Domestic functions and child rearing practices Household dynamics
Local Control	Residents perceptions of the locus of control over institutions Native participation in formal village institutions Sodality membership overlaps among institutional and village leaders Village size
Education	School enrollments
Physical Environment Overall well-being	Internal growth rate External growth rate

Minerals Management Service Social Indicators 2

In the mid-1980s, MMS awarded the next phase of social indicators development to a collaboration of SRB&A, ISER, and the ISR at the University of Michigan. Findings appeared as MMS Technical Report 116, “A Social Indicators System for OCS Impact Monitoring” (SRB&A, ISER, and ISR 1985).

Angus Campbell, Stephen Withey, Frank Andrews and others at ISR played leading roles in social indicators research, starting in 1946 with the founding of the Social Science Survey Project. Dr. Frank Andrews participated on behalf of ISR. According to a short biography published by ISR (2011), “Frank Andrews, a Research Scientist at the Institute for Social Research and Professor in the Department of Psychology and School of Public Health at the University of Michigan, conducted numerous landmark studies on social indicators of well-being, scientific creativity, social science research methods, and other topics. He was the author or editor of more than a dozen books and monographs, as well as many journal articles and book chapters. He received the University of Michigan's Distinguished Research Scientist Award in 1990.” The intent of inviting Dr. Andrews to participate in the MMS sponsored research was to bring the process of social indicator development in Alaska into the mainstream of social indicator research. With that intent in mind, this literature review includes the following major excerpts from Dr. Andrews’ chapter on social indicators development contained in MMS Technical Report Number 116 (SRB&A, ISER, and ISR 1985).

Excerpts From TR116 Chapter Two: Contributions of the Worldwide Social Indicators Movement to Monitoring Life Quality in Alaskan Villages by Dr. Frank Andrews

[Preface: All the text that follows until the next major section (Validation and Revision of Social Goals) is a direct quote of Dr. Andrews. We took this unusual step because SRB&A involved Dr. Andrews in this earlier study precisely because he is an international expert on social indicators and he was willing to apply his expertise to the specific task of developing an Alaska social indicator system. We have changed table and figure numbers from the original in TR116 to integrate them with the current report. We have also introduced BOEM domains in the tables and figures for comparison. Text added by the 2012 study team appears in brackets and is italicized.]

Over the past twenty years, there has been interest and increasing sophistication in using social indicators to monitor changes in the quality of life of the world's peoples. The interest of the Minerals Management Service in monitoring and projecting the effects of OCS activities falls squarely in the tradition of social indicators research. Lessons learned from prior work on social indicators can be useful for this purpose.

This chapter reviews past work on social indicators that promises to be useful for the present task of monitoring life quality in Alaskan villages. As such, this chapter describes the intellectual background and conceptual framework that guided the development of the present project and that is reflected throughout this report.

The next section of this chapter briefly sketches the historical development of the worldwide social indicators movement and describes its fundamental concepts. It is followed by a review of past work on identifying important components of life quality and assessing the comprehensiveness of their coverage. The chapter continues by describing how social indicators have been used to measure these life quality components. The next section of the chapter discusses some of the research on causes and consequences and the meaning of

changes in well-being. The final section of the chapter presents an extensive set of references and some advice on how they can be used to pursue in greater detail many of the topics discussed in this chapter.

This chapter is not intended to be a formal academic review of the history of the social indicators movement such treatises are available elsewhere (Glatzer, 1981; Rossi and Gilmartin, 1980)—but rather as a reasonably short, nontechnical culling of the concepts and procedures developed in the social indicators movement that are applicable to the goals and needs of measuring life quality in Alaskan villages.

The Social Indicators Movement: Historical Development and Key Concepts

Historical Development

Concerns about maintaining and enhancing the quality of life—the quality of one's own life as well as that of selected others—are surely very old. Classical scholars point to Greek interests in the nature of "happiness," and the "pursuit of happiness" is an "unalienable right" explicitly written in the United States Declaration of Independence. However, actually measuring the life quality of people in a society is a relatively recent phenomenon. The work of William Ogburn in the early 1930s on behalf of a Presidential Commission established by President Hoover to examine social trends and sources of social stress, and work by the United Nations during the 1950s assessing the extent basic human needs were met in various societies are precursors of the modern social indicators movement.

In the United States, one of the influences on the modern social indicators movement was, surprisingly, the Space Program. NASA [National Aeronautics and Space Administration] was interested in being able to show that investments made to send Americans to the moon had a wide range of beneficial "secondary" effects such as support for basic research and technical education, and the development of new industrial products and processes. Documenting these secondary effects required a broad range of new social measurements—social indicators.

A more important motivation for the modern social indicators movement, however, was the growing sense in the United States and elsewhere that the available statistics that had been designed (and were useful) for monitoring economic processes were insufficient for assessing broader changes in life quality. Too many "externalities" (e.g., the social and ecological value of a wilderness region) were untapped by traditional economic measures. The urban riots of the late 1960s in the United States, which took observers by surprise, was a clear indication that social monitoring systems needed expansion. In many countries, there was ready acceptance of the idea that enhancing the quality of life was an important—perhaps the most important—social goal, and that social monitoring systems should be developed that could measure the levels of life quality experienced by specific segments of a population at specific times.

Obviously, much work was required to make progress toward this goal. A coherent conceptual framework had to be developed, ways of measuring the concepts had to be tried and evaluated, basic descriptive data had to be assembled, and some understanding of how and why the measures changed as they did over time and varied as they did between social groups had to be attempted. This was the research agenda of the social indicators movement during the 1970s, and much progress was made.

Several international organizations instituted programs focused on these topics, including the Organization for Economic Cooperation and Development (OECD); the United Nations Economic, Scientific, and Cultural Organization (UNESCO); the United Nations Research Institute for Social Development (UNRISD); and the European Economic Community (EEC). Stimulated in part by the work of these international organizations and in part by their own internal interests, many countries published volumes presenting social indicators for their own societies. (The bibliography at the end of this chapter [of *TR 116*] lists national social indicator reports from 29 different countries. The most recent volume for the United States, the third in the series, was published by the U.S. Department of Commerce in December 1980, and is titled *Social Indicators III*). In addition, researchers in academic organizations in many of the more developed countries began to investigate people's own perceptions of their well-being. An international scientific journal published in the Netherlands, *Social Indicators Research*, was established in 1974 to report developments in the field and has published several hundred pages of high-quality research each year since then.

During the latter 1970s and into the 1980s, the research and monitoring work has continued, though at a somewhat reduced pace. The social indicators movement appears to have moved into a period of consolidation. Textbooks, literature reviews, handbooks, and bibliographies are now being published that summarize and make more easily accessible the basic and applied research results from the past 15-20 years. (Important recent contributions include Carley, 1981; Diener, 1984; Gilmartin et al., 1979; Land, 1983; Michalos, 1985; Rossi and Gilmartin, 1980; and Verwayen, 1984.) Also, in recent years, key methodological results have begun to be applied to assess the quality of life of specialized populations—people living in particular states, counties, or cities of the United States (e.g., Ross, Bluestone and Hines, 1979; Liu, 1974, 1975); particular demographic subgroups of the population—Blacks, Chicanos, youth, the aged (e.g., Bachman, Johnston, and O'Malley, 1985; George and Bearon, 1980; Herzog and Rodgers, 1985; Jackson, Chatters, and Neighbors, 1985; and Ortiz and Arce, 1985); and individuals with special life circumstances users of tranquilizers (Caplan et al., 1984), people who have undergone coronary bypass surgery for heart disease, or radiation therapy for cancer (Irwin, 1982).

In the light of the past twenty years of developments in the social indicators movement and the current trend of applying the results of that research to special population groups, the present project's undertaking to develop a system for monitoring the life quality of Alaskans living in coastal areas that might be affected by OCS development activities is a reasonable, timely, and natural extension of past work.

Key Concepts

Part of the work of the social indicators movement over the past twenty years has been to develop and refine a set of concepts that have proven useful in the work of assessing life quality. The notion of what is meant by "life quality," "well-being," and "social indicator" as well as, distinctions between "objective" versus "subjective," "global-level" versus "concern-level," "individual" versus "aggregate," and indicators of "levels" versus "distributions" are important for ongoing work.

Life quality and well-being. "Quality of life" is a primitive term that does not lend itself easily to precise definition. Among people active in the social indicators movement, however, there do not seem to be major disagreements about the general intent of what is meant. One of the most careful statements about the meaning of "quality of life" is provided by Solomon et al. (1980). Summarizing several years of deliberations by international scholars at UNESCO, they write:

'Quality of life' is an inclusive concept which covers all aspects of living as it is experienced by individuals. It therefore covers both the material satisfaction of vital needs and aspects of life such as personal development, self realization, and a balanced ecosystem.

Quality of life has objective conditions and subjective components.

While the quality of life is experienced by individuals, it is closely related to the quality of life of social groups, communities, and nations.

Quality of life research draws part of its data from the social sciences but also uses inputs from other sciences. . . .Quality of life research tries to analyze quality of life as an integral system of interacting variables Quality of life research is conscious of the plurality and relativity of value frameworks Quality of life research is, or at least should be, past, present, and future-oriented. (p. 224, 226)

While "quality of life" is, obviously, very broad in meaning, "well-being" is a somewhat narrower concept that is a component of life quality. As commonly used, well-being refers to how well-off an individual is, as evaluated by that individual and/or by another person expert in making such evaluations.

Social indicators. An appropriate definition for the term "social indicators" has also been widely debated over the past twenty years. The definition that the present writer prefers, which draws key elements from many sources is that a "social indicator" is one of a:

limited yet comprehensive set of coherent and significant indicators which can be monitored over time, and which can be disaggregated to the level of the relevant social unit.

The set of indicators should be "limited" so they can be understandable and not overly detailed, lengthy, or complex. The indicators should be "comprehensive" so that a substantial portion of the most salient or critical aspects of society is included. They should be "coherent" in that it would be helpful to our understanding if they hung together in some form that would eventually lead to a model or theory about how society operates. Any set of indicators would be "significant" if they fulfilled the foregoing demands, but there is a further implication that they should relate to aspects of society that interest or concern us. (Andrews and Withey, 1976, p. 4)

Social indicators are the measures of life quality (including well-being). Furthermore, in most cases they will be measures of outputs of a social system—because that is what we are ultimately concerned about—rather than inputs. For example, if one is interested in people's health, one should measure how healthy people are (the output of the health system) rather than the number of doctors or hospital beds in an area. These latter inputs to health care are (at best) only indirect measures of how healthy a population is, and can be quite misleading: An increase in doctors might indicate either improving health or worsening health—or a mixture of both.

Objective versus subjective (or perceptual). The social indicators movement has found it helpful to distinguish between phenomena that are objective and those that are subjective (or perceived), and also between measures that are objective versus those that are subjective (or based on perceptions). Examples will illustrate the distinctions.

In the area of housing, an objective phenomenon would be the size of the dwelling, whereas a subjective phenomenon would be an individual's satisfaction with the dwelling. Furthermore, each of these could be measured using either objective or subjective measures. An objective measure of the objective phenomenon would be a calculation of the number of square feet of floor area; another such measure would be a count of the number of rooms. A subjective measure of dwelling size would be a rating, by the homeowner or someone else, as to whether the dwelling was "large," "medium," or "small." In contrast, information about whether an individual moved to another dwelling in the same neighborhood would be an objective indicator of the subjective phenomenon of housing satisfaction, and a rating of level of satisfaction by the homeowner would represent a subjective measure of the subjective phenomenon.

One of the most important findings of early social indicators research, a finding that was surprising to many observers, is that objective and subjective phenomena provide quite different information about levels of well-being. Many people had expected the two types of phenomena would closely parallel each other, but this turns out not to be true. On the contrary, the statistical overlap between the two is often rather small, and they prove not to be redundant with one another. For example, people living in houses with substantial numbers of rooms will not generally feel their houses are large or spacious. Similarly, many people who live in only one or two rooms feel they have plenty of space. When concrete examples are presented, it is easy to imagine why variations in subjective feelings about spaciousness might not parallel actual physical space. However, it took experience with a wide range of indicators to demonstrate 'the truth of the general proposition that objective and subjective phenomena do not generally parallel each other. One needs information on both types of phenomena to understand well-being, and, accordingly, both should be measured in a comprehensive indicator system.

One should not confuse the phrase "subjective measure" with notions of weak or inferior measurement. While no measurement is perfect, there is much evidence that well-constructed subjective measures of life quality can show high levels of validity and reliability: They measure with considerable precision what they are intended to measure, and people can provide stable, replicable, dependable information about subjective phenomena. Nor should one assume that an "objective" measure is perfectly valid—practically none are, and examples of substantial errors in objective measures are not hard to find (e.g., it is acknowledged that published crime rates substantially underreport total crime).

An important perspective is that since life quality and well-being are ultimately subjective phenomena, it is the subjective measures that provide the most direct indicators.

Global-level versus concern level. Another distinction found useful by social indicators researchers is that between global phenomena and concern-level phenomena. Here "global" is used to refer to all-encompassing aspects—e.g., to "life as a whole"—whereas "concerns" refer to particular subparts of life (e.g., housing, health, job, family, etc.). From a policy-oriented perspective, the distinction is useful because a broad societal goal is to enhance overall well-being (the global concept), but to reach this goal it is necessary to focus on a set of more specific aspects of life (particular life concerns). From a research perspective, the distinction has been used for trying to understand how people come to evaluate their lives as they do and for exploring the relative importance of different life concerns to overall life quality.

In addition to this basic conceptual distinction, prior work on social indicators leads to four other observations about the global versus concern-level phenomena. These have to do with (a) the importance of having measures

of both types of phenomena, (b) the potential infinite regress in levels, (c) the possibility of subdividing concerns into domains and values, and (d) conceptual and practical difficulties in developing a global indicator based on objective data. These points are discussed in the following paragraphs:

- (a) Comprehensive social indicators systems have measures (i.e., "indicators") of both global and concern-level phenomena. For example, an indicator that showed how happy people were would be designated a global indicator, and an indicator measuring satisfaction with housing would be a concern-level indicator.
- (b) In principle, there is an infinite regress from global to concern to subconcern to sub-subconcern, etc. (e.g., from life-as-a-whole to housing to kitchen to stove, etc.) Thus, the logic of the system is hierarchical, and at any given level one can subdivide into a set of components. In practice, however, most social indicators research has focused primarily on just the global and concern-level phenomena (The major exception is research on quality of work life—itself a concern-level phenomenon—where considerable attention has been devoted to such subconcerns as pay, resources, supervision, environmental conditions, and coworkers.)
- (c) Researchers have found that there are two ways in which concern-level measures can be aggregated to, theoretically at least, yield a global measure of life quality. First, it is conceptually reasonable to aggregate aspects of life that have to do with physical or social settings. These aspects of life are commonly referred to as domains. Second, aspects of life that have to do with the criteria by which one evaluates life quality—e.g., health, beauty, sharing, honesty, virtue, safety—can be aggregated. These criteria are often called values. There is a complementarity between domains and values in that domains are evaluated with respect to values, and values are evaluated in the settings of the domains.
- (d) One of the significant problems encountered by social indicators researchers has been how to conceptualize and measure objective phenomena at the global level. This is not a problem for subjective phenomena because people have little trouble assessing their life as a whole. (In fact, family and friends frequently ask for this assessment: "How are you today?" "How are things going for you?") Furthermore, with measures of subjective phenomena, it is not hard to find ways to combine concern-level indicators that will provide an excellent statistical prediction of global-level indicators. Simple additive combinations, sometimes incorporating regression weights, have worked remarkably well. (This matter is discussed later in Section 3.) However, no one has yet identified a conceptually attractive notion of well-being that is both objective and at the global-level, nor has anyone found an uncontested way to combine measures of objective concern-level phenomena to predict objective well-being at the global level. (The Physical Quality of Life Index proposed by Morris, 1979, and the index of overall quality of life in American cities and states assembled by Liu (1974, 1975] are examples of investigators' attempts to construct an objective global indicator. While both works have been widely cited, there has been significant criticism of their attempts at global measurement.)

Individual versus aggregate characteristics. Another important distinction has been between indicators that measure aspects of individuals and others that assess characteristics of groups of individuals. These aggregates come at many levels: families, households, villages, clusters of villages, census enumeration districts, education districts, regions, states, etc. Of course, one can always combine information from many individuals in a group

to obtain some average value for the aggregate, and this is the basis for many social indicators. Examples include mean levels of satisfaction, infant mortality rates, literacy rates, crime rates, etc.

In addition, however, there are characteristics of collectivities themselves, some of which qualify as candidates for monitoring in a social indicators system, that are simply irrelevant at the individual level. Examples at the village level include the rate of growth or decline of a community, its resource base, and its degree of ethnic/racial homogeneity or diversity. These are characteristics of an aggregate of individuals (the village) that might well be regarded as important components of life quality, that can be reported upon by individuals, but that are not characteristics of the individuals themselves.

While the distinction between individual-level and aggregate-level indicators is recognized in the social indicators literature and there has been discussion regarding for what aggregates indicators should be presented, relatively little has been done with regard to systematic indicator development for collectivities per se.

Levels versus distributions. The final distinction to be noted here is a simple one, but is nevertheless important. Most social indicators assess the level of some characteristic, e.g., the mean level of satisfaction with housing, the average number of people per room, etc. Also of interest from life quality and policy perspectives are indicators that report the degree of diversity within some aggregation of individuals with regard to the phenomenon. A village in which nearly everyone is moderately satisfied with their housing has a quality of life very different from another village where the mean level of satisfaction is the same, but where many individuals feel very pleased about their housing but many others are extremely dissatisfied.

In reporting social indicators data for aggregates of individuals, it will often be desirable to report both mean levels and also information about the distribution of the indicator scores.

Implications of Prior Conceptual Development for Monitoring Life Quality in Alaskan Villages

As noted previously, the proposal to measure life quality in Alaskan villages and monitor its changes over time fits well with the historical trends of the development and use of social indicators.

Many of the key concepts found useful for social indicators work elsewhere are readily applicable in the Alaskan context. Well-being is surely a topic of concern, but so also may be some other—perhaps culturally oriented—aspects of life quality. Within the set of well-being phenomena, it will be helpful to consider both global and concern-level well-being, and it will probably be appropriate to consider both domain-type and value-type life concerns. It will probably also be desirable to consider both objective and subjective phenomena. For conceptual clarity and ease of presentation, a basic hierarchical organization of the phenomena of interest should be sought.

This project, like any other empirical piece of research, should distinguish clearly between the life quality phenomena that are of interest and the social indicators that are used to measure (i.e., to indicate) those phenomena.

The level to which individual data should be "aggregated up" needs careful attention; obvious candidates are: village, village cluster, and region, but there may be others as well. In addition, it will be desirable to consider

the relevance of phenomena that are not characteristics of individuals themselves but of the collectivities in which individuals live. This seems particularly promising for the present project because of the focus on sharing and collective action which is an important part of Alaska Native cultures.

Finally, in reporting social indicator results, it will be helpful to recall the distinction between information on levels and information on distributions and to consider the possibility of reporting both.

Identifying Components of Life Quality

One of the major tasks undertaken by social indicators researchers has been to identify components of life quality. By components we here refer to particular life concerns, domains, or values—health, housing, work, education, etc. The task has an obvious importance and forms the core of social indicator systems. The goal is simple to state but hard to achieve: Find a small number of key aspects of life which, taken together, account for a substantial portion of whatever is meant by the quality of life. One would like a set of concerns that are conceptually independent of one another and logically "parallel" (i.e., not hierarchically nested one within another).

Two broad approaches have been used. One is the expert/logical approach and the other is the empirical/statistical approach.

The Expert/Logical Approach for Deriving Life Concerns

The most sophisticated implementation of the expert/logical approach for deriving life concerns is probably represented by the work of the OECD. Over a period of several years during the early 1970s, the Social Indicators Development Program at OECD held a series of international meetings designed to develop a list of social concerns that could be agreed upon by all their members (about 30 countries, mainly from the developed West, but including Brazil, Greece, Japan, Turkey, Venezuela, and Yugoslavia). The participants in these working sessions tended to be middle-level government scientists employed in statistics ministries and census bureaus. Eventually, they reached enough consensus to publish a slim monograph cautiously titled "List of Social Concerns Common to Most OECD Countries" (OECD 1973). Included are eight main concerns, each carefully stated in output terms and elaborated by one or more subconcerns. This list is reproduced here as Table 3.

[The following table is reformatted from the original figure in TR116.]

Table 3: OECD List of Social Concerns Common to Most OECD Countries with BOEM Domain in Parentheses

A.	<u>HEALTH (HEALTH AND SAFETY PART 1)</u>
A-1	The probability of a healthy life through all stages of the life cycle.
A-2	The impact of health impairments on individuals.
B.	<u>INDIVIDUAL DEVELOPMENT THROUGH LEARNING (EDUCATION)</u>
B-1	The acquisition by children of the basic knowledge, skills and values necessary for their individual development and their successful functioning as citizens in their society.

- B-2 The availability of opportunities for continuing self -development and the propensity of individuals to use them.
- B-3 The maintenance and development by individuals of the knowledge, skills and flexibility required to fulfill their economic potential and to enable them to integrate themselves in the economic process if they wish to do so.
- B-4 The individuals satisfaction with the process of individual development through learning, while he is in the process.
- B-5 The maintenance and development of the cultural heritage relative to its positive contribution to the well-being of the members of various social groups..

C. EMPLOYMENT AND QUALITY OF WORKING LIFE (ECONOMIC WELL-BEING PART 1)

- C-1 The availability of gainful employment for those who desire it.
- C-2 The quality of working life.
- C-3 Individual satisfaction with the experience of working life.

D. TIME AND LEISURE

- D-1 The availability of effective choices for the use of time.

E. COMMAND OVER GOODS AND SERVICES (ECONOMIC WELL-BEING PART 2)

- E-1 The personal command over goods and services.
- E-2 The number of individuals experiencing material deprivation.
- E-3 The extent of equity in the distribution of command over goods and services.
- E-4 The quality, range of choice and accessibility of private and public goods and services.
- E-5 The protection of individuals and families against economic hazards.

F. PHYSICAL ENVIRONMENT (PHYSICAL ENVIRONMENT)

- F-1 Housing conditions.
- F-2 Population exposure to harmful and/or unpleasant pollutants.
- F-3 The benefit derived by the population from the use and management of the environment.

G. PERSONAL SAFETY AND THE ADMINISTRATION OF JUSTICE (HEALTH AND SAFETY PART 2)

- G-1 Violence victimization and harassment suffered by individuals.
- G-2 Fairness and humanity of the administration of justice.
- G-3 The extent of confidence in the administration of justice.

H. SOCIAL OPPORTUNITY AND PARTICIPATION (LOCAL CONTROL)

H-1	The degree of social inequality.
H-2	The extent of opportunity for participation in community life, institutions, and decision-making.

As noted in Section 2 of this chapter, many individual countries have issued their own social indicator reports, and of course each has faced the practical problem of how to organize such a document. These national reports also represent the results of applying an expert/logical approach to defining the components of life quality. Most countries have loosely followed the OECD list but have introduced modifications to reflect their own national sense of what was important. The list of concerns addressed by the United States' most recent social indicator report appears in [Table 4, organized by BOEM domain].

Table 4: Topics Covered in the United States Government Publication Social Indicators III Organized by BOEM Domain

BOEM Domain	Sub-Domain
Economic Well-being	Work Social Security and Welfare Income and Productivity
Health and Safety	Health and Nutrition Public Safety
Cultural Continuity	Culture, Leisure, and Use of Time
Local Control	Social Participation
Physical Environment	Housing and the Environment Transportation
Education	Education and Training
Overall Well-being	Population and the Family

Source: U.S. Department of Commerce, 1980

The Empirical/Statistical Approach for Deriving Life Concerns

Researchers working with subjective measures of life quality have used an empirical and statistical approach for deriving life concerns. Andrews and Withey (1976), whose work is the most extensive in this regard, began with an initial list of hundreds of possible concerns which were assembled from statements made by representative samples of individuals as to what about life concerned them, why their life was not better, why their life was as good as it was, and the like. Then, using self-evaluations from a different set of people, the statistical overlaps among questionnaire items tapping these concerns were determined, and the items were grouped into clusters. The clusters turned out to include items that addressed similar content areas which, in many cases, rather closely paralleled the concerns identified by the expert/logical approach. As a final step, the

comprehensiveness of the list of life concerns was assessed by seeing how well the concerns, taken together, accounted for differences between people in their overall (global) sense of well-being. As Table 5 demonstrates, it turned out that individuals' evaluations of only a modest number of life concerns (about a dozen) could statistically explain nearly all of the variation in sense of global well-being that was not attributable to measurement imprecision.

Using the concerns identified in the clustering analyses (e.g., family index), Table 5 shows how various combinations of concerns could account for variation in a global measure, evaluations of life-as-a-whole. In Table 5, each column represents a different combination of life concerns. Note that the "Selected 12 concerns" in Column D accounted for about the same amount of variation -- 50 percent -- as a much larger set of concerns in Column A, yet included a small but wide range of policy relevant topics. Note that it is unusual for a set of survey-based measures to account for as much as 50 percent of the observed variation (technically the variance) in a dependent variable, and further analysis has shown that in this case most of the variation that is not accounted for is attributable to imprecisions in the measurement (Details appear in Andrews and Withey, 1976, Chapter 6). The objectives of the form of analysis illustrated in Table 5 are to confirm that some combination of measured concerns in fact accounts for a large proportion of variation in an overall assessment of life quality and to identify the smallest set of concerns that can be used to explain most of the variation in overall life quality.

Column C in the table—showing results for six concerns—indicates that a weighted additive combination of respondents' assessments of their own efficacy, their family, their financial situation, the amount of fun they were having, their housing, and their family activities was able to statistically explain 49 percent of the observed variation in their overall assessments of life-as-a-whole. It is estimated, as also shown in Column C, that this would drop slightly—to 48 percent—on replication in another sampling from the same population. Columns A, B, and D show the explanatory power that was achieved using various larger combinations of concerns to predict feelings about life-as-a-whole and Multiple Classification Analysis (MCA) assumptions. Column E is similar to Column D, but instead of using MCA assumptions, it uses the more restrictive assumptions required for Multiple Regression. For these data, the more restrictive assumptions are not problematical, and Multiple Regression as a prediction/combination system proves to work as well as MCA.

Comparisons Between the Two Approaches for Deriving Life Concerns

The expert/logical and the empirical/statistical approaches for identifying life concern areas have provided roughly comparable lists of life quality domains. This can be seen by comparing the topics included in the preceding figures. One of the major differences, however, is that the former lists tend to omit people's concern with themselves as competent, efficacious individuals, and concerns having to do with relationships within families and between close associates—neighbors, friends, coworkers. That the expert/logical approach has tended to omit such concerns is not surprising because most of the government scientists who produced these lists believe that such matters are not proper factors for census bureaus to try to monitor. The empirical/statistical approach shows, however, that aspects of life that are close to self, family, and home are indeed important components of life quality, and for many people, the most important components.

[Table 5 was revised from the original figure in TR116 to include BOEM domains.]

Table 5: Predicting Global Well-being by Various Combinations of Concern-Level Measures Organized by BOEM Domain

BOEM Domain	A 30 concerns	B Top 16	C Top 6	D Selected 12	E Selected 12
Percent variance explained					
In present data	55%	54%	49%	52%	51%
Population estimate	50%	51%	48%	50%	51%
Concern measures					
Economic Well-being					
Money index	0.15	0.15	0.2	0.16	0.12
Consumer index	0.07	0.06	a	0.06	0.03
Housework	0.07	0.07	a	a	a
Cost index	0.06	a	a	a	a
Job index	0.03	a	a	0.02	0.05
Health and Safety					
Things do with family	0.11	0.09	0.1	0.08	0.05
Your health	0.06	0.06	a	0.06	0.07
Getting on with people	0.01	a	a	a	a
Cultural Continuity					
Family index	0.19	0.18	0.17	0.19	0.22
Amount of fun	0.15	0.16	0.21	0.15	0.17
Time to do things	0.09	0.09	a	0.07	0.02
Young people think	0.09	0.08	a	a	a
Spare-time activities	0.09	0.08	a	0.08	0.06
Recreation index	0.07	0.06	a	a	a
Media index	0.06	0.05	a	a	a
Close adult relatives	0.06	a	a	a	a
Comfortable people	0.05	a	a	a	a
People over 40 think	0.04	a	a	a	a
Friends index	0.03	a	a	a	a
Religious faith	0.03	a	a	a	a
Local Control					
Efficacy index	0.26	0.27	0.28	0.25	0.23
National govt. index	0.07	0.08	a	0.09	0.07
Local govt. index	0.07	0.06	a	a	a
Organizations belong to	0.04	a	a	a	a
Physical Environment					
House/apartment	0.12	0.12	0.13	0.11	0.1
Services in neighborhood.	0.06	a	a	a	a
Natural environment	0.05	a	a	a	a
Neighborhood index	0.04	a	a	a	a
Weather	0.04	a	a	a	a
Education					
Schools in area	0.06	a	a	a	a
a - predictor omitted					
Data Source: 1,297 respondents to May national survey					
Source: Andrews and Withey, 1976, p. 124					

Applying Prior Work on Identifying Concern Areas to Monitoring Life Quality in Alaskan Villages

Given the extensive prior work on identifying life quality concern areas, it is reasonable to use the resulting lists as starting points for assembling a list of concern areas to be monitored in Alaskan villages. However, because Alaska Native culture is different from any culture previously monitored for life quality, the sets of concern areas that have worked well in other cultures will need to be checked for relevance and coverage in the Alaskan setting. Initially, this check can proceed through the expert/logical approach, given that some of the present project's staff are knowledgeable about Native Alaskan cultures, but ultimately an empirical/statistical approach should be used to assess the comprehensiveness of the coverage of life concerns and the statistical efficiency (i.e., lack of redundancy) of the set. Of course, this latter approach requires having measures of the concerns, the topic that is discussed next.

Measuring the Life Concerns

Merely to identify a relevant set of life concerns is insufficient: an operational social indicators system requires measurements of these concerns. The social indicators movement provides numerous instructive examples of how this problem has been approached. In the broadest terms, the choice comes down to either using existing data (much of which will have been collected for other purposes, and hence represents "secondary data" from a social indicators perspective) or collecting new ("primary") data. If secondary data meet the necessary criteria for use as social indicators, they are usually used because this saves the expense of collecting new data. In practice, the selection of indicators to assess any particular concern area is usually a complex compromise through which one tries to maximize several, sometimes conflicting, criteria.

Criteria for Selecting Indicators

An ideal social indicator would meet all of the following criteria:

- Have construct validity: The indicator, should be tightly linked conceptually to the concern area one is attempting to measure. Included here is the notion that the indicator reflects the concern with a high degree of precision, i.e., that measurement errors are small.
- Be sensitive to relevant variations in the concern: The indicator should reflect variations (between people or other units and/or over time) in the concern that are felt to be substantially important. In many practical instances, this means that the indicator should show substantial variation (and not extreme skew) over the units that are being observed.
- Be available for the particular aggregations one wishes to examine. For example, in the present project one would want information to be available for Native Alaskans, perhaps subdivided into geographic regions or clusters of villages.
- Be available at the time intervals one is interested in. Aspects of life quality change at varying rates, particularly when driven by a strong external force (such as a large investment in energy resource development), and it is important to have social indicator data measured with sufficient frequency to reflect these changes.

- Be obtainable at reasonable cost. Most government-originated secondary data, if they meet other criteria, will usually involve only small costs to obtain. Obtaining primary data, however, may involve significant costs, and these costs can vary tremendously according to the design of the indicator system.
- Be available over an extended period of time, into the past and into the foreseeable future. A key perspective of social indicators work is the notion of monitoring changes over time. If a particular indicator is not available (or has had its measurement procedures changed) over the time span of interest, it will be difficult or impossible to assess changes in life quality.

Validation and Revision of Social Goals²

Following the recommendations of Dr. Andrews, the [1985] study team of SRB&A, ISER, and ISR started with the OECD universal list of social goals. As stated in TR116, “since these universal goals addressed basic needs and wants of people, regardless of cultural context, it was assumed that the goals would be valid for rural Alaskan communities as well. However, the previous studies did not offer much guidance related to defining regionally or culturally specific goals associated with coastal Alaska (*SRB&A, ISER, and ISR 1985:72*). First, the team defined the regions of interest to include the North Slope, NANA, Bering Straits, Bristol Bay, and Aleutian/Pribilof regions. The team then reviewed coastal zone management plan stated goals and objectives, regional newspapers, regional corporation annual reports, regional planning documents, and local testimony at public hearings to identify and assess the importance of stated social goals. Although the team expected social goals to vary regionally, on the contrary, high priority social goals were shared across regions. As a result, the team initially defined four “goal families” (the top level of a hierarchy of social goals), as well as goals and sub-goals within each goal family. The goal families initially defined were:

- (1) Continued existence of traditional culture
- (2) Individuals and families that are able to function well in society
- (3) Command over goods and services
- (4) Social opportunities and participation

The team then validated and revised the goal families, goals, and sub-goals in two ways: (1) fieldwork in all five regions; and, (2) comparison of major regional issues identified through secondary sources. Trained fieldworkers reviewed the hierarchy of social goals with 62 key informants in five regions and ten communities. As a result of the fieldwork, goal family one was redefined to include coastal populations in which the word “traditional” as applied to culture is problematic (*SRB&A, ISER, and ISR 1985:97, 103*). The team found that rewording goal family one to “Cultural Continuity” and rewording goals and sub-goals to avoid the word traditional made the goal hierarchy consistent with the views of both Native and non-Native residents of the five regions. Table 6 displays the goal families, goals, and subgoals as modified in the validation process. BOEM Domains are shown in parentheses.

² This section resumes the study team’s discussion of the literature review and is no longer a direct excerpt from TR 116 (*SRB&A, ISER, and ISR 1985*)

Table 6: Alaska OCS Social Goals

**GOAL FAMILY ONE
CULTURAL CONTINUITY (CULTURAL CONTINUITY)**

GOAL ONE: CONTINUED HARVEST OF RENEWABLE RESOURCES

- 111 HEALTHY WILDLIFE POPULATION
- 112 UNRESTRICTED ACCESS TO TRAD. HUNTING & FISHING AREAS
- 113 PRESENCE OF WILDLIFE POP. IN TRAD'L HUNTING & FISHING AREAS
- 114 INTEREST IN AND USE OF RENEWABLE RESOURCES

GOAL TWO: CONTINUED TRADITIONAL SOCIAL RELATIONSHIPS

- 121 CONTINUED COOPERATIVE ACTIVITIES
- 122 CONTINUED SHARING OF RENEWABLE RESOURCE PRODUCTS & EQUIP.
- 123 CONTINUED EXTENDED FAMILY RELATIONSHIPS
- 124 CONTINUED RESPECT FOR ELDERS
- 125 INTERVILLAGE SOCIAL RELATIONSHIPS.

GOAL THREE: CONTINUED CULTURAL SUPPORTS

- 131 CONTINUED USE OF NATIVE LANGUAGE
- 132 CONTINUED ORAL HISTORY TRADITION
- 133 CONTINUED PRODUCTION OF ARTS & CRAFTS

**GOAL FAMILY TWO
INDIVIDUALS & FAMILIES THAT ARE ABLE TO
FUNCTION WELL IN SOCIETY (HEALTH AND SAFETY)**

GOAL ONE: HEALTHY INDIVIDUALS

- 211 PHYSICALLY HEALTHY INDIVIDUALS
- 212 MENTALLY HEALTHY INDIVIDUALS

GOAL TWO: INDIVIDUALS WHO ARE SAFE FROM HARM

- 221 INDIVIDUALS WHO ARE SAFE FROM HARM BY OTHERS

222 INDIVIDUALS WHO ARE SAFE FROM HARM CAUSED BY THEIR OWN ACTIONS

GOAL THREE: AN EDUCATED & SKILLED POPULATION (EDUCATION)

231 INDIVIDUALS HAVE RECEIVED A BASIC EDUCATION

232 ADULTS HAVE THE EDUCATION AND SKILLS NECESSARY TO OB. EMPL

GOAL FOUR: FAMILIES THAT FUNCTION WELL IN SOCIETY (HEALTH AND SAFETY)

241 PREVALENCE OF FAMILIES AS THE PRIMARY SOCIAL UNIT

242 HEALTHY SOCIAL RELATIONSHIPS WITHIN FAMILIES

GOAL FIVE: ADEQUATE LEISURE OPPORTUNITIES (CULTURAL CONTINUITY)

251 ADEQUATE OPPORT. TO INTERACT INFORMALLY WI FRIENDS,FAMILY

252 ADEQUATE OPPORTUNITIES TO PARTICIPATE IN RECR. ACTIVITIES

**GOAL FAMILY THREE
COMMAND OVER GOODS AND SERVICES (ECONOMIC WELL-BEING)**

GOAL ONE: SUFFICIENT INCOME & EQUITABLE INCOME DISTRIBUTION

311 ALL HH RECEIVING MIN. INCOME REQUIRED TO MEET BASIC NEEDS

312 MOST HOUSEHOLDS EXPERIENCING REAL INCOME GROWTH

GOAL TWO: SUFFICIENT OPPORTUNITIES FOR EMPLOYMENT

321 SUFFICIENT NUMBER OF LOCAL JOBS

322 SUFFICIENT OPPORTUNITIES FOR PREFERRED JOBS

GOAL THREE: SUFFICIENT HOUSING (PHYSICAL ENVIRONMENT)

331 AFFORDABLE HOUSING OPPORTUNITIES

332 SATISFACTORY PHYSICAL LIVING SPACE

GOAL FOUR: SUFFICIENT FOOD

341 SUFFICIENT FOOD AVAILABLE

342 AFFORDABLE FOOD

GOAL FIVE: SUFFICIENT PERSONAL GOODS & SERVICES

351 SUFFICIENT AVAILABILITY OF GOODS AND SERVICES

352 AFFORDABLE PRICE FOR GOODS AND SERVICES

GOAL SIX: SATISFACTORY COMMUNITY ENVIRONMENT (PHYSICAL ENVIRONMENT)

361 SATISFACTORY PUBLIC SERVICES AND FACILITIES

362 SATISFACTORY PHYSICAL ENVIRONMENT

**GOAL FAMILY FOUR
SOCIAL OPPORTUNITIES AND PARTICIPATION (LOCAL CONTROL)**

GOAL ONE: ADEQUATE LOCAL CONTROL

411 SENSE OF LOCAL CONTROL

412 CONFIDENCE IN INSTITUTIONS AND LEADERS

GOAL TWO: ADEQUATE PARTICIPATION

421 PARTICIPATION IN ROUTINE PROCESSES OF GOVT

Identification and Assessment of Social Indicators

Informed by Dr. Andrews' review of the field of social indicators, the 1985 study team applied the following rules in the identification and assessment of potential social indicators:

- (1) There must be at least one social indicator for each subgoal. However, the number of indicators included under a single subgoal should be limited to that which is necessary to reliably measure the subgoal.
- (2) The meaning of each indicator should correspond to the meaning of one, and only one, subgoal.
- (3) The indicator must directly measure individual well-being.
- (4) The indicator must accurately reflect reality.
- (5) The indicator must be sensitive to actual change.
- (6) Indicators should be expressed both as averages and as distributions of well-being.
- (7) Where possible, each subgoal should be described by both objective and subjective measures.

Potential Indicators Based on Existing Data

The team first applied the above rules to social indicators based on existing data. Major sources of potential indicators included the U.S. Bureau of the Census, the Alaska Department of Labor, and the Alaska Division of Vital Statistics. The following rules on data availability were applied:

- (1) Be available on a subregional or place-by-place basis.
- (2) Should distinguish between levels of well-being of Natives and non-Natives.
- (3) Should be collected at least every five years.
- (4) Should meet the general rules for social indicators.

Table 7 summarizes the results of the assessment of existing 1985 data. The team found that only 18 of the 42 subgoals had potential indicators based on existing data, and only nine of the 45 potential indicators were judged to be fully acceptable by the above rules. The team concluded:

Not unexpectedly then, available data does not take us very far toward the construction of a comprehensive social indicator system for coastal areas of Alaska. While available data should certainly be included in AOSIS, it is clearly necessary to collect new information (SRB&A, ISER, ISR 1985:129).

Potential Indicators Based on Primary Data

The team considered key informants as sources of primary data. They concluded that key informant data rarely provides accurate measures of individual well-being that are sensitive to change over time at the individual resident level. Key informants are in the best position to report on prevalent states of well-being at the community level. The team then developed at least one indicator for each subgoal based on self-reports and one subjective indicator for each subgoal. The subjective indicators were directly based on the work of Andrews and Withey (1976) and focused on twelve domains, shown in Table 8 by BOEM Domain.

The team added subjective measures for the subgoals under cultural continuity.

The self-report measure of interest in and use of renewable resources was the percent of the population engaging in 50 percent or more of local subsistence activities. The team therefore had to develop lists of ten subsistence activities and up to six related special skills for each community in each of the five study regions. Selection of activities was guided by the following principles:

- (1) Represent a seasonal round and variety in diet.
- (2) Include activities done by males, females and those done by both.
- (3) Include both individual and cooperative activities.
- (4) Focus on activities that contribute to cultural continuity.
- (5) Include activities that provide adequate variance.

Revisions in the indicators based on pretesting resulted in the final selection of social indicators shown in Table 9 with BOEM domains in parentheses.

Table 7: Assessment of Existing Social Indicator Data in 1985

Table 7: Assessment of Existing Data								
Goal		Accept-	Region		Type	Sub-		
Type	Name	ability	Quality	Relevance	Measure	Regional	Race	Source
CULTURAL CONTINUITY								
111	size key wildlife pop as % max size in last 20 yrs	Yes	Unknown	Very Good	Output	Yes	NA	ADF&G
113	% recent historic max wildlife pop present in area	Yes	Unknown	Very Good	Output	Yes	NA	ADF&G
131	% speaking Native language at home	Marginal	Good	Very Good	Output	Yes	Yes	Census
INDIVIDUALS AND FAMILIES THAT FUNCTION WELL IN SOCIETY								
211	birth rates	Yes	Fair	Limited	Output	Yes	Yes	ADHSS
	infant survival rate	Yes	Fair	Very Good	Output	Yes	Yes	ADHSS
	death rate by cause	Yes	Fair	Very Good	Output	Yes	Yes	ADHSS
	% pop. treated for selected medical problems	Marginal	Fair	Limited	Int-Out	Yes	No	IHS
221	death by homicide rate	Yes	Fair	Very Good	Output	No	Yes	ADHSS
	f of arrests by type	No	Poor	Limited	Input	Yes	?	ADPS
222	death by suicide rate	Yes	Fair	Very Good	Output	No	Yes	ADHSS
	death rate by alcoholism	Yes	Fair	Very Good	Output	No	Yes	ADHSS
	death rate by accident rate	Yes	Fair	Very Good	Output	No	Yes	ADHSS
231	% completing eighth grade	Marginal	Good	Good	Int-Out	Yes	Yes	Census
232	% completing high school	Marginal	Good	Good	Int-Out	Yes	Yes	Census
241	% of total households which contain 2+ relatives	Marginal	Good	Good	Output	Yes	Yes	Census
	% adults married	Marginal	Fair	Good	Int-Out	Yes	Yes	Census
242	% adults ever married but never divorced	Marginal	Good	Good	Output	Yes	Yes	Census
	% households w/children having 2 adults present	Marginal	Good	Good	Output	Yes	Yes	Census

Table 7 (continued): Assessment of Existing Data

Goal		Accept-	Region		Type	Sub-		
Type	Name	ability	Quality	Relevance	Measure	Regional	Race	Source
COMMAND OVER GOODS AND SERVICES								
311	% households (families) below income threshold	Marginal	Good	Very Good	Output	Yes	Yes	Census
	% of households receiving public assistance	Marginal	Good	Limited	Flow	Yes	No	ADHSS
	total earnings by place of work	No	Good	Poor	Output	No	No	BEA
	total payroll for covered employment by industry	No	Good	Poor	Output	No	No	DOL
312	median per capita income	Marginal	Fair	Good	Output	No	No	BEA
321	% of labor force who are employed	Marginal	Good	Good	Int-Out	Yes	Yes	Census
	% full-time workers who worked 38 weeks or more	Marginal	Good	Good	Int-Out	Yes	Yes	Census
	nonagricultural employment (total)	No	Fair	Poor	Output	No	No	ADOL
	unearned proportion of income (54)	No	Poor	Limited	Int-Out	No	No	BEA
	number (or pounds) of salmon by species	No	Fair	Poor	Int-Out	No	NA	ADF&G
	commercial fishing licenses	No	Good	Good	Input	No	No	ADF&G
	chum salmon aerial survey escapement	No	Fair	Good	Input	No	NA	ADF&G
	commercial fishing periods (hours per week)	No	Good	Limited	Input	No	NA	ADF&G
	labor force status of persons 16+	Marginal	Good	Limited	Flow	Yes	Yes	Census
	hours worked per week by f of weeks worked	Marginal	Good	Good	Int-Out	Yes	Yes	Census
322	% men holding professional, technical, craft jobs	Marginal	Good	Good	Output	Yes	Yes	Census
322	% women holding professional, technical, managerial jobs	Marginal	Good	Good	Output	Yes	Yes	Census
	nonagricultural employment by industry	No	Good	Poor	Output	No	No	ADL
	average monthly wage by industry	No	Good	Poor	Output	No	No	ADL
331	gross rent as percentage of income	Marginal	Good	Good	Output	Yes	Yes	Census
	selected monthly owner costs as % of income	Marginal	Good	Good	Output	Yes	Yes	Census
332	persons per room	Marginal	Good	Good	Int-Out	Yes	Yes	Census
	% households with running water	Marginal	Good	Good	Output	Yes	Yes	Census

Table7 (continued): Assessment of Existing Data								
Goal		Accept-	Region		Type	Sub-		
Type	Name	ability	Quality	Relevance	Measure	Regional	Race	Source
SOCIAL OPPORTUNITIES AND PARTICIPATION								
411	% population residing in community for 5+ years	Marginal	Good	Good	Int-Out	Yes	Yes	Census
	existence of local jurisdiction w/ plan-zone powers	No	Good	Good	Input	Yes	NA	ADCRA
421	% adults voting in statewide elections	Marginal	Fair	Good	Output	Yes	No	ADE
	registered voters as % adult population	Marginal	Fair	Good	Output	Yes	No	ADE
Sources:								
ADCRA = Alaska Department of Community and Regional Affairs								
BEA = U.S. Department of Commerce, Bureau of Economic Analysis.								
Census = U.S. Department of Commerce, Bureau of the Census.								
IHS = U.S. Department of Health and Human Services, Indian Health Service								
ADE = Alaska Division of Elections								
ADF&G = Alaska Department of Fish and Game								
ADHSS = Alaska Department of Health and Social Services								
ADL Alaska Department of Labor								
ADPS Alaska Department of Public Safety								
NA not applicable.								

Table 8: MMS 2 Subjective Indicators by BOEM Domain

BOEM Domain	Sub-Domain
Economic Well-being	Money Job Material well-being
Health and Safety	Health
Cultural Continuity	Family Things do with family Time to do things Spare time activities Fun
Local Control	Efficacy Government
Physical Environment	House/apartment

Table 9: Alaska OCS Social Indicators

GOAL FAMILY ONE CULTURAL CONTINUITY (CULTURAL CONTINUITY)	
<u>SUBGOAL SOCIAL INDICATOR</u>	<u>SOURCE</u>
<u>GOAL ONE: CONTINUED HARVEST OF RENEWABLE RESOURCES</u>	
111 HEALTHY WILDLIFE POPULATION	
size key wildlife pop as % max size in last 20 yrs	SECONDARY
% satis w/ amt. of wildlife there is to harvest	SURVEY
% perceive amt. wildlife is same/more than 5 yrs. ago	SURVEY
% perceive amt. wildlife will be same/more 5 yrs. hence	SURVEY
112 UNRESTRICTED ACCESS TO TRAD. HUNTING & FISHING AREAS	
% tradll hunting areas accessible to local resid	KEY INF
113 PRESENCE OF WILDLIFE POP/ TRADIL HUNTING & FISHING AREAS	
% recent historic max wildlife pop present in area	SECONDARY
114 INTEREST IN AND USE OF RENEWABLE RESOURCES	
% engaging in 50%+ local hunting/fishing activities	SURVEY
months during which engaged in some activ.rel.to H&F	SURVEY
% eating 2+ meals of fish & game in last 2 days	SURVEY
% HH meat derived from harvested wildlife	SURVEY
% satis. w/ amount hunting/fishing do personally	SURVEY

GOAL TWO: CONTINUED TRADITIONAL SOCIAL RELATIONSHIPS

121 CONTINUED COOPERATIVE ACTIVITIES	
% engaging in activities cooperatively	SURVEY
% satis. w/ cooperative activ. do personally	SURVEY
122 CONTINUED SHARING/RENEWABLE RESOURCE PRODUCTS & EQUIP.	
% eating 1+ meal w/ shared food in last 2 days	SURVEY
% satis. with amount share with others	SURVEY
123 CONTINUED EXTENDED FAMILY RELATIONSHIPS	
% engaging in 1+ H/F act w/non-nuclear rel.	SURVEY
% pop eating 1+ meal w/non-nucl.rel.in last 2 days	SURVEY
% satis. with time spent w/non-nucl. relatives	SURVEY
124 CONTINUED RESPECT FOR ELDERS	
% pop seeking advice from elder in last month	SURVEY
% satis. w/ extent seek advice of elders personally	SURVEY
% perceive elders get same/more respect as 5 yrs ago	SURVEY
125 INTERVILLAGE SOCIAL RELATIONSHIPS	
% adults born in same region of residence	SURVEY
% satis. w/ social ties to other communities	SURVEY
no. times left community to visit relatives/friends	SURVEY

GOAL THREE: CONTINUED CULTURAL SUPPORTS

131 CONTINUED USE OF NATIVE LANGUAGE	
% speaking Native language at home	SECONDARY
% speaking Native language at home at least sometimes	SURVEY
% satis. with ability to speak Native language	SURVEY
132 CONTINUED ORAL HISTORY TRADITION	
% adults hearing tradl story from elder last week	SURVEY
% satis. amt. time spent listening to tradl. stories	SURVEY
133 CONTINUED PRODUCTION OF ARTS & CRAFTS	
% engaging in arts & crafts activities in last yr.	SURVEY
% satis.'w/ arts and crafts do personally	SURVEY

**GOAL FAMILY TWO
INDIVIDUALS & FAMILIES THAT ARE ABLE TO FUNCTION WELL IN SOCIETY
(HEALTH AND SAFETY)**

GOAL ONE: HEALTHY INDIVIDUALS

211 PHYSICALLY HEALTHY INDIVIDUALS	
infant survival rate	SECONDARY
death rate by cause	SECONDARY
% pop. treated for selected medical problems	SECONDARY
% perceive general health to be at least good	SURVEY
% perceive health as good as should be	SURVEY
% suffer longstand effects/illness-injury-disabltly	SURVEY

% can see faces clearly on other side of room	SURVEY
% can hear normal conversation w/at least 2 people	SURVEY
% can run 300 feet	SURVEY
% can carry object of 25 pounds 30 feet easily	SURVEY
% bite and chew on hard foods	SURVEY
% had daily activ.interrupted for illness in last wk.	SURVEY
% satis. with health and physical condition	SURVEY
212 MENTALLY HEALTHY INDIVIDUALS	
% pop. treated for selected mental health problems	SECONDARY
% satis. with way handle problems that come up in life	SURVEY
% satis. with what accomplishing in life	SURVEY
% satis. with amount respect get from others	SURVEY
% satis. with self	SURVEY
<u>GOAL TWO: INDIVIDUALS WHO ARE SAFE FROM HARM</u>	
221 INDIVIDUALS WHO ARE SAFE FROM HARM BY OTHERS	
death by homicide rate	SECONDARY
% pop. physically harmed by someone else in last yr.	SURVEY
% satis. how safe feel in community	SURVEY
222 INDIVIDUALS WHO ARE SAFE FROM HARM CAUSED BY THEIR OWN ACTIONS	
death by suicide rate	SECONDARY
death rate by alcoholism	SECONDARY
death by accident rate	SECONDARY
% consuming alcohol on 4+ days in last week	SURVEY
% who smoke 20+ cigarettes per day	SURVEY
<u>GOAL THREE: AN EDUCATED & SKILLED POPULATION (EDUCATION)</u>	
231 INDIVIDUALS HAVE RECEIVED A BASIC EDUCATION	
%completing eighth grade	SECONDARY
%completing eighth grade	SURVEY
%18-24 year olds who have not dropped out of school	SURVEY
%rating ability to read magazine easily	SURVEY
%rating ability to add 15 prices easily	SURVEY
%rating ability to solve 583/17 easily	SURVEY
%satis. w/ usefulness of educ. children getting	SURVEY
232 ADULTS HAVE THE EDUCATION AND SKILLS NECESSARY TO OB.EMPL	
% completing high school	SECONDARY
% completing high school	SURVEY
% satis. w/ usefulness of educ-. personally	SURVEY
<u>GOAL FOUR: FAMILIES THAT FUNCTION WELL IN SOCIETY (HEALTH AND SAFETY)</u>	
241 PREVALENCE OF FAMILIES AS THE PRIMARY SOCIAL UNIT	
% of total households which contain 2+ related indiv.	SECONDARY
% adults married	SECONDARY
% population in family households	SURVEY
% adults married	SURVEY
242 HEALTHY SOCIAL RELATIONSHIPS WITHIN FAMILIES	
% adults who have ever married but never divorced	SECONDARY

% households w/ children having two adults present	SECONDARY
% adults who have ever married but never div./sep.	SURVEY
% households w/ children having two adults present	SURVEY
% satis. with how well family gets a.long	SURVEY
<u>GOAL FIVE: ADEQUATE LEISURE OPPORTUNITIES (CULTURAL CONTINUITY)</u>	
251 ADEQUATE OPPORT. TO INTERACT INFORMALLY W/ FRIENDS,FAMILY	
no. days in last week went to visit friends/relatives	SURVEY
% satis. with amount of visiting do personally	SURVEY
252 ADEQUATE OPPORTUNITIES TO PARTICIPATE IN RECR. ACTIVITIES	
no. days/last week spent .5 hr. on recr. act.exc. TV	SURVEY
no. hrs/last wk. sat down to watch TV	SURVEY
% satis. w/ how much fun having these days	SURVEY
GOAL FAMILY THREE COMMAND OVER GOODS AND SERVICES (ECONOMIC WELL-BEING)	
<u>GOAL ONE: SUFFICIENT INCOME & EQUITABLE INCOME DISTRIBUTION</u>	
311 ALL HH RECEIVING MIN. INCOME REQ. TO MEET BASIC NEEDS	
% households (families) below income threshold	SECONDARY
% of households receiving public assist	SECONDARY
ratio of income percvd neces to actual income	SURVEY
% below 200% pov level adj for incr cost of living	SURVEY
% satis. with standard of living	SURVEY
312 MOST HOUSEHOLDS EXPERIENCING REAL INCOME GROWTH	
median per capita income	SECONDARY
median per capita income	SURVEY
real median household income	SURVEY
% perceive financial situation has impr.in last 3yrs	SURVEY
% expect financial situation to impr. in next 3yrs	SURVEY
% satis. w/ income	SURVEY
<u>GOAL TWO: SUFFICIENT OPPORTUNITIES FOR EMPLOYMENT</u>	
321 SUFFICIENT NUMBER OF LOCAL JOBS	
% employed who are in labor force	SECONDARY
% full time workers who worked 38 weeks or more	SECONDARY
% employed who are in labor force	SURVEY
ratio months worked to months unemployed	SURVEY
ratio mo. worked in comm. to mo. wkd. outside comm.	SURVEY
% satis. with local job opportunities	SURVEY
322 SUFFICIENT OPPORTUNITIES FOR PREFERRED JOBS	
% men holding professional, technical, crafts jobs	SECONDARY
% women holding professional, tech., managerial jobs	SECONDARY
% men holding job type perceived to be preferred	SURVEY
% women holding job type perceived to be preferred	SURVEY
mean mos.some time spnt H&F actvs among 9+mo.empl.	SURVEY
% reporting could do most or all H&F wanted to do	SURVEY
% satis. with job	SURVEY
% satis. with people work with	SURVEY

% satis. with work do on job	SURVEY
% satis. w/ time have to hunt, fish & pursue rel.act.	SURVEY
<u>SUBGOAL SOCIAL INDICATOR</u>	<u>SOURCE</u>
<u>GOAL THREE: SUFFICIENT HOUSING (PHYSICAL ENVIRONMENT)</u>	
331 AFFORDABLE HOUSING OPPORTUNITIES	
gross rent as % of income	SECONDARY
selctd mo owner costs as % of income	SECONDARY
housing costs as % of income	SURVEY
% satis. with opport. to get affordable housing	SURVEY
332 SATISFACTORY PHYSICAL LIVING SPACE	
persons per room	SECONDARY
% households with running water	SECONDRY
# of rooms	SURVEY
persons per room	SURVEY
% households w/no difficulty getting enough dr. water	SURVEY
% households with gray water piped away	SURVEY
% households with flush or chemical toilets that wk.	SURVEY
% households perceived warm on cold, windy days	SURVEY
% satis. with housing	SURVEY
% satis. with water have to drink	SURVEY
<u>GOAL FOUR: SUFFICIENT FOOD</u>	
341 SUFFICIENT FOOD AVAILABLE	
% satis. w/ food have to eat	SURVEY
342 AFFORDABLE FOOD	
price standard mkt bskt as propor. of median income	KEY INF
<u>GOAL FIVE: SUFFICIENT PERSONAL GOODS & SERVICES</u>	
351 SUFFICIENT AVAILABILITY OF GOODS AND SERVICES	
availability of plywood, dining table, stove in vill.	KEY INF
% satis. with goods & services can get in vill.	SURVEY
352 AFFORDABLE PRICE FOR GOODS AND SERVICES	
cost of 3 selected items as % of median income	KEY INF
<u>GOAL SIX: SATISFACTORY COMMUNITY ENVIRONMENT (PHYSICAL ENVIRONMENT)</u>	
361 SATISFACTORY PUBLIC SERVICES AND FACILITIES	
water treatment, main power facil. present & working	KEY INF
362 SATISFACTORY PHYSICAL ENVIRONMENT	
% satis. w/ land & buildings in village	SURVEY
% satis. w/ land & water near village	SURVEY
GOAL FAMILY FOUR SOCIAL OPPORTUNITIES AND PARTICIPATION (LOCAL CONTROL)	
GOAL ONE: ADEQUATE LOCAL CONTROL	

411 SENSE OF LOCAL CONTROL	
% population residing in community for 5+ yrs.	SECONDARY
% population residing in community for 3+ yrs.	SURVEY
% perceive opinion makes at least some difference	SURVEY
% satis. w/amt. influence over harvest of wildlife	SURVEY
% satis. w/amt. influence over local education	SURVEY
% satis. w/amt. influence over development	SURVEY
% satis. w/amt. personal infl. over local affairs	SURVEY
412 CONFIDENCE IN INSTITUTIONS AND LEADERS	
% perceive local govts. as very effective	SURVEY
% perceive regional govts. as very effective	SURVEY
<u>GOAL TWO: ADEQUATE PARTICIPATION</u>	
421 PARTICIPATION IN ROUTINE PROCESSES OF GOVT	
% adults voting in statewide elections	SECONDARY
% adults registered to vote	SECONDARY
% voting in last local election	SURVEY
% voting in last statewide election	SURVEY
% attending one or more public meetings in last mo.	SURVEY

The final step in the project was the preparation and submission of a final questionnaire, research design and justification to the federal OMB. Called the Alaska OCS Social Indicators System (AOSIS), the submission was approved by OMB in 1986.

Minerals Management Service Social Indicators 3

The third phase of MMS' social indicator program was a hybrid of the first two phases. The research team, headed by Joseph Jorgensen, selected to lead phase three also directed the first phase, although the lead organization changed from Louis Berger & Associates to Human Relations Area Files, Inc. In their reporting of the third phase of MMS social indicator program, they commented on the phase one work as follows:

The MMS provided us with a questionnaire with which to survey village residents. Questionnaires, because they are forced-choice instruments, are fraught with problems that threaten their validity (Human Relations Area Files, Inc. 1994:5).

We developed a protocol – an open-ended device to guide questions – with which to interview villagers, and we also developed a list of questions to ask persons who occupied key positions within the village. Casual observations and chance discussions, too, the stuff of participant-observations methods in ethnographic research, were parts of our multimethod, multidata-set research design. We use casual observations and chance discussion, in conjunction with the information gained from our focused discussions with key persons in villages, to provide ethnographic background and depth to our understanding of the responses from the protocol and questionnaire. We use the objectivity of questionnaire responses to account for the subjectivity of the protocol, and the subjectivity of the protocol to account for the potential triviality (and construct validity problems of the questionnaire (Human Relations Area Files, Inc. 1994:5).

The third phase research team chose not to focus on the averages and distributions of the individual social indicators contained in the AOSIS questionnaire. Instead, they used smallest space analysis to examine relationships among indicators, as shown in the following example:

Figure 1 solves the relations among 35 traditional AOSIS variables in three dimensions. A region comprising four areas appears in the center-right side of the box. Subsumed as TRADITIONAL EXTRACTORS are the two largest areas. Sea Mammal Extractors on the right and General Extractors on the left. Fitted toward the right front of the box, in front of the two areas designating extraction, are items measuring household size (B) and household type (C). Large household sizes and composite types fit with traditional customs. These variables are negatively correlated with the items in the HIGH PRIVATE INCOME region (Human Relations Area Files, Inc. 1994:45).

Figure 1: Example of MMS Social Indicators 3 Use of Social Indicators

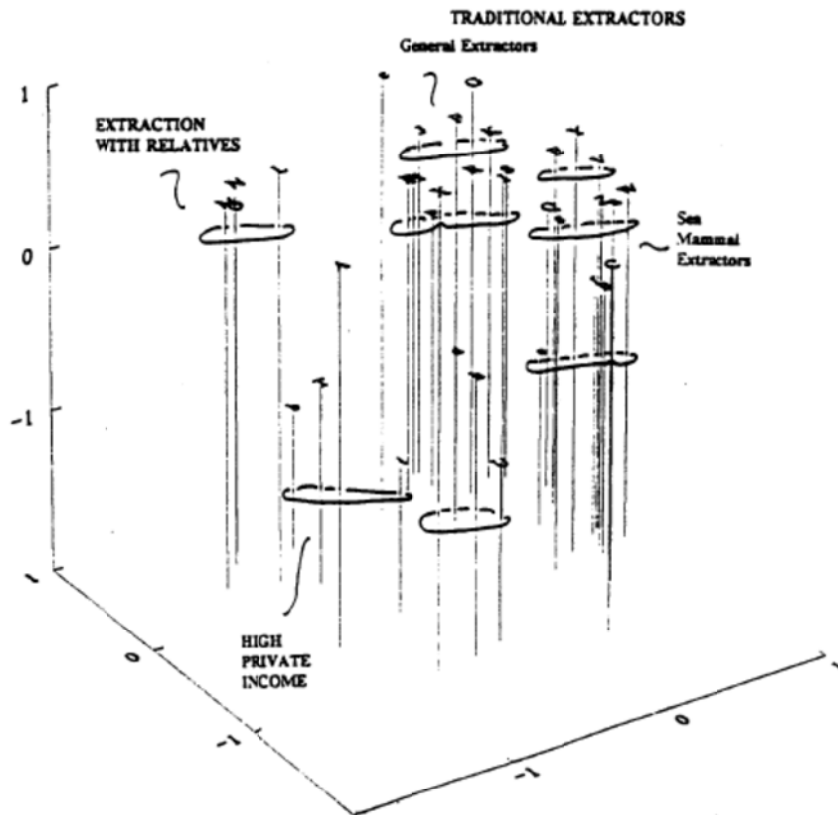


FIGURE 1. STRUCTURE OF AOSIS TRADITIONAL CUSTOMS, GUTTMAN-LINGOES' SSA CONFIGURATION (3-D), 35 VARIABLES, N = 856, TOTAL PRETEST-POSTTEST SAMPLES COMBINED, 1987-1990

Source: *Human Relations Area Files Inc. 1994:46*

As shown in Dr. Andrews' review of the field of social indicators, each social indicator is constructed to convey information about a particular social goal or concern. An indicator is intended to mean something on its own. The phase three approach described above departs from the mainstream of social indicators in two ways. First, the results are a blend of ethnographic and questionnaire observations. Second, the social

indicators are used as inputs to a multivariate-based interpretation rather than as outputs. It is beyond the scope of this review of social indicators to summarize the work of Jorgensen and his colleagues. The work is a significant contribution to the sociocultural studies of MMS and deserves to be read in that context.

SURVEY OF LIVING CONDITIONS IN THE ARCTIC (SLiCA)

The Survey of Living Conditions in the Arctic (SLiCA) is one of four components that serve as the foundation of the theoretical framework for the current BOEM sponsored study. The four foundation components are:

- (1) BOEM legal mandates
- (2) SLiCA
- (3) ASI initiative
- (4) North Slope Social Impact Study (NSSIS)

Both SLiCA and the following subject of our review, the ASI initiative, have drawn from the work reported in the previous section, Early Social Indicators Research in Alaska. The following is a review of SLiCA itself.

Motivation for the Study

The initiative for the SLiCA came from the Greenland Home Rule Government. In 1994, Statistics Greenland (SG) conducted a survey of living conditions in Greenland, partly based on what has been described as the Scandinavian model (Erikson and Uusitalo 1987). Analysis of the data caused researchers in Greenland to re-examine their theoretical assumptions. They decided that the dimensions and indicators of living conditions had to be context-specific so that the concept of well-being reflects the life of the respondents and their priorities (*Andersen and Poppel 2002*). Thus it was crucial to the research effort that representatives of the respondents, the indigenous peoples, were included as partners in the process. The preliminary discussions with representatives of the respondents indicated that the role of household production in Arctic regions, the strong ties of Arctic people to the environment, and the continuing role of extended informal social relationships were among the dimensions that had to be included in a future living conditions survey. They decided that a multidisciplinary team was needed to assess living conditions—and that it was more important to examine differences in living conditions among peoples with similar cultures and environmental circumstances than to compare living conditions of northern indigenous peoples and southern majority cultures.

By 1997, Birger Poppel (the then chief statistician, SG) and Thomas Andersen (international project coordinator, SG) had consulted with researchers, research institutions, indigenous organizations, and governments in Canada, Norway, Sweden, Finland, Russia, and the United States about the idea of an international comparative study of living conditions in the Arctic. In 1998 the Inuit Circumpolar Conference (ICC) passed Resolution 29 (Section I) in support of the study: "Rapid social change characterizes all indigenous peoples of the Arctic . . . There is a need to document and compare the present state of living conditions and development among the indigenous peoples of the Arctic." In October 2000, the Arctic Council (a ministerial level international body) formally named the project as a part of its Sustainable Development initiative.

Study Design

SLiCA's conceptual design is described in detail in Andersen and Poppel (2002). Briefly, the research approach was based on previous studies on living conditions, social indicator development and quality of life (Bauer 1966; Sheldon and Moore 1968; U.S. Department of Health, Education, and Welfare 1969; Campbell and Converse 1972; Campbell, Converse, and Rogers 1976; Andrews and Withey 1976; Allardt 1975; and Ringen 1985). For a recent review of the state of the art of this field, see Sirgy Michalos, Ferriss, Easterlin, Patrick, and Pavot (2006). Although previous research has shown that commonly applied economic indices such as income and unemployment explain most, but not all, of the variation in a broader array of quantitative statistics (Diener and Suh 1997), these indicators do not offer strong explanations of Arctic peoples' choice to continue living in their communities. As a first step in resolving this inconsistency, the SLiCA definition of living conditions, focusing in resources, was broadened to embrace the full scope of economic production in the North; that is, including the role of household production in Arctic regions and the mixed cash-local harvest economy (Usher, Duhaime, and Searles 2003). SLiCA's approach was further expanded to incorporate other dimensions of living conditions that have been previously identified as important in the Arctic. These include: family relationships and spirituality (McNabb 1991); social adjustment and social support (Larsen 1993); and ethnic identity (Spratt 1994). Table 10 shows the domains within which social indicators were developed for SLiCA, organized by BOEM domain.

Table 10: SLiCA Sub-Domains Organized by BOEM Domains

BOEM Domain	Sub-Domain
Economic Well-being	Household economy Employment Harvest Income and expenses
Health and Safety	Physical and mental health Safety and justice Family relationships Leisure
Cultural Continuity	Identity Spirituality Language
Local Control	Resource management Political resources
Education	Formal education Traditional education
Physical Environment	Housing Environmental health Technology Community viability
Overall well-being	Mobility Subjective well-being overall

Finally, Deiner and Suh's review on the relationship between economic indices, living condition measures, and subjective well-being concludes that these measures do not always agree: including both objective and subjective measures provides an opportunity for greater understanding of living conditions (1997:213). Therefore SLiCA's measurement of living conditions includes both subjective and objective measures.

Questionnaire development took place between 1998 and 2001 in eleven workshops and field pretests in each country. This work involved indigenous people and researchers from eight countries and five social science disciplines. Indigenous steering committees approved the final questionnaire design. The entire process of questionnaire development is documented on the project website (www.arcticlivingconditions.org).

In 2001 Birger Poppel convened a conference in Nuuk Greenland to review the SLiCA research design. Invited peer reviewers included five leaders of the professional organization, International Society for Quality of Life Studies (ISQOLS): Professor Valerie Möller, Chair of Quality of Life, Rhodes University, South Africa, and former president of ISQOLS; Dr. Heinz-Herbert Noll, Director of the Social Indicators Department of the Centre for Survey Research and Methodology (ZUMA), Mannheim, Germany; Professor Ruut Veenhoven, Emeritus Professor of Social Conditions of Human Happiness, Erasmus University, Rotterdam, Netherlands; Dr. Joachim Vogel, Statistics Sweden; and, Professor Emeritus Michael Hagerty, University of California Davis. These social indicator experts favorably reviewed the SLiCA research design and offered suggestions for improvements. A summary of their comments "What We Heard from You: Review by International Experts in Living Conditions Research" appears on the SLiCA website: www.arcticlivingconditions.org at "Project History/Nuuk, Greenland, April 2001/Nuuk Conference Review Summary".

In February 2003 members of the international team and indigenous management boards met in Murmansk Russia to adopt a shared set of fieldwork methods and to identify SLiCA's major analytic themes. Indigenous management board members Ed Ward (Kotzebue Alaska) and Charles Dorais (Kuujuaq, Quebec) took the lead in identifying analytic themes:

- (1) The importance of a mixed cash- and harvest/herding- based economy to living in the Arctic.
- (2) The importance of social relationships and the standard of living to settlement patterns
- (3) Relationships between social problems and other dimensions of living conditions
- (4) The influence of educators and missionaries
- (5) The influence of policies on living conditions

Implementation of SLiCA was affected by funding. SLiCA was fully implemented in Canada (Four Inuit settlement regions), the US (Alaska's three Inupiat settlement regions), Greenland, and Chukotka between 2001 and 2006. Non-probability samples of Sami in Norway, Sweden, and the Kola Peninsula were obtained after the first publication of SLiCA data and are still being processed. The first wave of SLiCA produced 7,250 interviews with response rates of 83 to 85 percent (Kruse J., Poppel, Abryutina, Duhaime, Martin, Poppel, Kruse M., Ward, Cochran, Hanna, 2008). Interviews with randomly selected adults on average took 90 minutes to complete. The SLiCA international core data set consists of 950 variables used to produce 398 analytic variables. Since these variables are all linked as individual records, it is

possible to examine relationships among variables, as for instance, the relationship of subsistence activity and measures of mental health and overall well-being.

Once the SLiCA team had constructed an international data set, they commenced the analysis phase by focusing on themes one, two, and three. Birger Poppel was invited to make a plenary presentation on SLiCA at the Seventh Conference of the International Society for Quality-of-Life Studies held in 2006 at Rhodes University, Grahamstown, South Africa. Members of the team presented seven papers at the conference:

- (1) Poppel, Birger. The Importance of a Mixed Cash and Harvesting/Herding-based Economy of Living in the Arctic.
- (2) Martin, Stephanie. The Importance of Social Relationships and Standard of Living to Settlement Patterns in the Arctic.
- (3) Kruse, Jack. Relationships Between Social Problems and Other Dimensions of Living Conditions: An International Arctic Analysis.
- (4) Poppel, Mariekathrine. Relationships Between Violence and Different Living Conditions – An Analysis Based on the Survey of Living Conditions in the Arctic, SLiCA.
- (5) Abrutina, Larissa. An International Comparison of Health Conditions Among Inuit and Indigenous Peoples of Chukotka.
- (6) Hanna, Virgene. Arctic Children: Resources for Well-being. A View from the Survey of Living Conditions in the Arctic.
- (7) Ward, Ed, Marg Kruse. Survey of Living Conditions in the Arctic among Inuit, Iñupiat, Sami, and the Indigenous Peoples of Chukotka: Lessons Learned for the Social Sciences.

The SLiCA team was invited to publish two papers in books resulting from the ISQOLS conference:

- (1) Kruse, J., Poppel, B., Abryutina, L., Duhaiame, G., Martin, S., Poppel, M., Kruse, M., Ward, E., Cochran, P., Hanna, V. (2008). *Survey of Living Conditions in the Arctic, SLiCA*. In: Møller, V., Huschka, D, and Michalos, A. C. (eds.). *Barometers of Quality of Life around the Globe*. Springer Social Indicators Research Series. Springer, Dordrecht.
- (2) Birger Poppel and Jack Kruse (2008). *The importance of a mixed cash- and harvest herding based economy to living in the Arctic – an analysis based on Survey of Living Conditions in the Arctic (SLiCA)*. In: Valerie Møller and Dennis Huscka (eds): *Quality of Life in the New Millennium: Advances in Quality-of-Life Studies, Theory and Research*. Social Indicators Research Series. Springer Verlag, Dordrecht.

Following a workshop of researchers and indigenous partners in March 2007, the SLiCA team made a comprehensive data release via the project web site. The data release was organized by the six ASI domains: Material Success, Health, Education, Cultural Continuity, Fate Control, and Ties with Nature. Social indicators within each domain were reported by country, region, place type (regional center versus village), and in many cases, by gender and age. A total of 581 tables were released involving 154 social indicators. Table 11 displays the SLiCA social indicators included in the data release, organized by BOEM domain.

Table 11: SLiCA Social Indicators by BOEM Domain

BOEM Domain	Sub-Domain	Social Indicator
Material Success	wage work	Respondent work summary
Material Success	wage work	Away from community for work
Material Success	consumption	Proportion meat and fish that is traditional food
Material Success	harvest	Proportion meat and fish that is harvested by household
Material Success	unemployment	Experience with 14 different reasons why can't work
Material Success	unemployment	perception of unemployment as problem for indigenous people in community
Material Success	domestic production	Household member participation in six different domestic production activities
Material Success	domestic production	Household member participation in four different domestic helping activities
Material Success	discrimination	Perception of being treated fairly on job
Material Success	mixed economy	Preference for way of making a living
Material Success	income	Total personal income
Material Success	income	Household income from sales of arts and crafts
Material Success	income	Household income from wages
Material Success	income	Household income from self-employment
Material Success	income	Household income from government and other organizations
Material Success	income	Household income from other sources
Material Success	income	Household income below 60 percent of median income
Material Success	income	Personal income above or below US poverty level
Material Success	well-being	Satisfaction with combination of activities to make a living
Material Success	well-being	Satisfaction with combination of activities to make a living
Material Success	well-being	Satisfaction with job
Material Success	well-being	Satisfaction with amount fish and game available locally
Material Success	well-being	Satisfaction with household income
Material Success	well-being	Satisfaction with standard of living
Material Success	well-being	Ease in making ends meet
Material Success	technological resources	Use of 11 different types of technology (eg cell phone)
Material Success	leisure	Away from community on vacation
Health	physical health	Self-reported health
Health	physical health	Experience with each of 12 different types of health symptoms
Health	physical health	Count of health symptoms experienced
Health	physical health	Diagnosis of each of 15 different types of health problems
Health	physical health	Count of diagnosed health conditions

Health	medical support	Availability of medical services in community
Health		Away from community due to illness
Health	family health	Experience of family members with each of eight different types of health problems
Health	disability	Hampered in daily activities due to chronic physical or mental health problem, illness, or disability
Health	disability	Difficulty hearing, seeing, communicating, walking, climbing stairs, bending, learning or similar
Health	health related behavior	Smoking behavior summary
Health	health related behavior	Drinking behavior summary
Health	health related behavior	Alcohol or drug problems in home as a child
Health	health related behavior	Use of each of six different types of drugs
Health	health related behavior	Drug use summary
Health	health related behavior	Experience as a victim of four different types of crimes
Health	health related behavior	Victimization summary
Health	health related behavior	Thoughts of suicide
Health	mental health	Experience with each of 8 different types of mental health symptoms
Health	mental health	Depression index
Health	social support	Availability of seven different types of informal social support
Health	social support	Social support index
Health	social support	Strength of ties with family not living with respondent
Health	social support	Frequency of phone and email contact with family
Health	social support	Sent traditional food to other places
Health	social support	Away from community for family reasons
Health	community safety	How safe feel walking around this area at night
Health	community safety	How satisfied with public safety provided in community
Health	community safety	Perception of six different types of potential community problems
Health	community safety	Count of perceived community problems
Health	environmental health	Perception of six different types of local environmental problems
Health	environmental health	How satisfied with the health of the environment in your area
Health	well being	How satisfied with quality of health services in your community
Health	well being	How satisfied with the quality of life in this community
Health	well being	satisfaction with life as a whole with life in this community
Cultural Continuity	cultural background	Cultural background of married respondent's spouse
Cultural Continuity	cultural background	Mom indigenous
Cultural Continuity	cultural background	Dad indigenous

Cultural Continuity	cultural background	Parents indigenous
Cultural Continuity	household structure	Female respondent is single mom
Cultural Continuity	household structure	Number of generations present in household
Cultural Continuity	cultural identity	Named considered indigenous name
Cultural Continuity	cultural identity	Name used by special friends and relatives
Cultural Continuity	cultural identity	Name used when do traditional activities
Cultural Continuity	connection with place	Born in community
Cultural Continuity	connection with place	Childhood spent in community
Cultural Continuity	connection with place	Lived somewhere else for a year or more
Cultural Continuity	connection with place	Considered moving from community
		Learned indigenous language as a child; parents spoke indigenous language at home; parents spoke indigenous language to child at home
Cultural Continuity	language	Ability to understand indigenous language
Cultural Continuity	language	Ability to understand and speak indigenous language
Cultural Continuity	language	Ability to read and write indigenous language
Cultural Continuity	language	Current use of indigenous language in household
Cultural Continuity	language	Summary of Indigenous language use
Cultural Continuity	indigenous involvement in education	Teachers or teacher's aides indigenous
Cultural Continuity	indigenous involvement in education	Taught indigenous language in elementary or high school
Cultural Continuity	indigenous involvement in education	Taught subjects in indigenous language in elementary of high school
Cultural Continuity	indigenous involvement in education	Information taught about indigenous people accurate
Cultural Continuity	indigenous stories	Household member tell indigenous stories to children
		Participation in each of four different cultural activities (eg tell indigenous stories)
Cultural Continuity	participation in indigenous event	When home regularly watch or listen to indigenous programming on radio or TV
Cultural Continuity	cultural identity	Hours regularly watch television
Cultural Continuity	global exposure	Importance of each of 15 different cultural actions (eg traditional food I eat)
Cultural Continuity	cultural identity	Satisfaction with each of 20 different community cultural actions (eg promoting use of indigenous language)
Cultural Continuity	cultural values	Index of satisfaction with promotion of 20 different community cultural actions
Cultural Continuity	cultural values	Apply traditional values in personal life
Cultural Continuity	cultural values	Consider yourself to be a Christian
Cultural Continuity	cultural beliefs	Indigenous spiritual beliefs part of your life
Cultural Continuity	cultural beliefs	Participation in four different leisure activities
Control of Destiny	community participation	Voting behavior in six different types of elections
Control of Destiny	civic participation	Count of types of votes made
Control of Destiny	civic participation	

Control of Destiny	civic participation	Membership in 10 different types of boards, councils, or committees
Control of Destiny	civic participation	Count of civic activities
Control of Destiny	civic empowerment	How knowledgeable about politics in general
Control of Destiny	civic empowerment	Agreement with Statement that so many people vote in nat'l elections it does not make difference if I vote or not
Control of Destiny	civic empowerment	How important to your life are political decisions made by government
Control of Destiny	civic empowerment	How interested are you in politics in general
Control of Destiny	civic empowerment	Index of political power
Control of Destiny	appropriateness of authority	Agreement that Public safety officers have the same priorities concerning public safety you do
Control of Destiny	well-being	How satisfied with public safety provided in your community
Control of Destiny	influence	How satisfied with influence indigenous people have on management of nat'l resources like fish and caribou
Control of Destiny	influence	How satisfied with influence indigenous people have on management of nat'l resources like oil, gas and minerals
Control of Destiny	influence	How satisfied with influence indigenous people have to reduce environmental problems in your area
Control of Destiny	government help	How satisfied with how well the national government is dealing with needs in your community
Control of Destiny	government help	How satisfied with how well the national government is dealing with needs in your community
Education	traditional education	Learned each of 25 different traditional skills (eg skin and butcher a caribou)
Education	traditional education	Count of traditional skills learned as a child
Education	traditional education	Learned or improved traditional skills since childhood
Education	traditional education	Learned or improved traditional skills with help of local mentor
Education	traditional education	Still use traditional skills today
Education	traditional education	Children learning traditional skills
Education	literacy	Ability to understand western language
Education	literacy	Ability to speak western language
Education	literacy	Ability to read western language
Education	formal education	Highest level of school completed
Education	formal education	Went to preschool or kindergarten
Education	formal education	Highest level of school mother completed
Education	formal education	Highest level of school father completed
Education	education experience	Attendance of elementary school outside community
Education	education experience	Elementary school stressful

Education	education experience	Away from community in last year for education
Education	well being	How satisfied with quality of education in your community
Physical Environment	Traditional Activities	Household member participation in six different domestic production activities (eg prepared or packed for hunting, fishing, or camping trip)
Physical Environment	Traditional Activities	Average number of household activities participated in per household member
Physical Environment	sharing	Household received traditional food
Physical Environment	mobility	Subsistence a reason for staying in community
Physical Environment	out in nature	Participation in each of four nature-related activities (eg snowmachining)
Physical Environment	out in nature	Away from community hunting, fishing, trapping, or gathering
Physical Environment	well being	How satisfied with opportunities to hunt and fish
Physical Environment	well being	How satisfied with amount of fish and game available locally
Physical Environment	Traditional Activities	Participation in each of 25 different subsistence activities (eg hunt walrus)
Physical Environment	Traditional Activities	Count of participation in subsistence activities
Physical Environment	equipment	Use of 18 different types of subsistence equipment
Physical Environment	equipment	Ownership of 18 different types of subsistence equipment
Physical Environment	equipment	Purchase in last 12 months of 18 different types of subsistence equipment
Physical Environment	housing	Type of house
Physical Environment	housing	Number of rooms
Physical Environment	housing	Size of home in square feet
Physical Environment	housing	Presence of 20 different house features (eg place to cut meat and fish)
Physical Environment	housing	House feature index
Physical Environment	housing	Presence of 12 different potential house problems (eg cold floors)
Physical Environment	housing	House problem index
Physical Environment	housing	Is your home in need of major repairs
Physical Environment	housing	Annual cost for housing as a percentage of income
Physical Environment	housing	How satisfied with quality of your housing
Physical Environment	housing	Waiting list for housing
Physical Environment	housing	Treated fairly in getting good housing

ARCTIC SOCIAL INDICATORS (ASI)

At the 2002 Arctic Council Ministerial Meeting held in Inari, Finland, Iceland was called upon to lead an effort to assess the state of human development in the Arctic. This effort culminated in a report in 2004, the Arctic Human Development Report (*AHDR 2004*). The AHDR community focused on the UN's Human Development Index (UNHDI), which is a composite of three measures: life expectancy at birth, a combination of adult literacy and school enrollments, and gross domestic product (GDP) per capita. They reported findings highly relevant to this project:

In our effort to understand human development in the Arctic, we took the UNHDI as a point of departure. This effort soon revealed an anomaly that was to become one of the central issues in the preparation of the AHDR. Many areas of the Arctic and especially the more remote areas with substantial indigenous populations would not achieve high scores on the UNHDI. The reasons for this are clear. Many Arctic communities do not rank high in terms of life expectancy, particularly among indigenous peoples where suicide rates and accidental-death rates are high as well as in the Russian North where the effects of the post-Soviet collapse are still substantial. Most Arctic residents today are literate. But school enrollments, especially at the secondary and tertiary levels, are comparatively low in the Far North. GDP per capita is often deceptive as a measure of well-being in the Arctic. If we include income derived from hydrocarbons and minerals extracted from northern locations, GDP per capita can seem impressive. But most of the income associated with these extractive industries flows out of the Arctic and into the income streams of large multinational corporations. GDP per capita at the community level is comparatively low in many parts of the Arctic, especially if we leave out transfer payments and do not have a workable method for integrating the informal or subsistence economy into the calculus.

*But here is the puzzle. While the Arctic's permanent residents do not rank high on a measure like the UNHDI, many individuals in this region exhibit a strong sense of well-being. What accounts for this anomaly? The effort to answer this question and, in the process, to identify Arctic success stories became a focal point in the preparation of the AHDR (*AHDR 2004:19*).*

The AHDR recommended that a set of indicators be developed to monitor human development in the Arctic over time (*AHDR 2004:11*). The report concluded that, "a number of key domains as determinants of well-being in the Arctic...have not been systematically considered:

- Fate control – guiding one's destiny
- Cultural integrity – belonging to a viable local culture; and
- Contact with nature – interacting closely with the natural world (*AHDR 2004:11*)

The starting point for ASI was to identify the domains of well-being to be explicitly considered in a suite of Arctic social indicators. Joan Nyman Larsen of the Stefansson Arctic Institute in Akureyri Iceland convened a workshop in Akureyri in 2006 along with her co-chair, Peter Schweitzer of the University of Alaska Fairbanks. Twenty-five members of a 50-member working group participated in this first workshop, representing eight Arctic countries and seven social science disciplines. This group concluded

that social indicators for six domains should be systematically considered, the three domains addressed by the UNHDI, and the three domains recommended in the AHDR:

- (1) Material Well-being
- (2) Health
- (3) Education
- (4) Cultural Integrity
- (5) Fate Control
- (6) Contact with Nature

ASI has focused on the challenge of weighing alternative approaches to measurement within these six domains. ASI's discussion itself is of immense value as it represents the thinking of many of the Arctic's leading social scientists. The original premise of ASI was that it is possible to identify a small set of indicators covering all six domains based on existing data. ASI domain-specific teams discovered that it is extremely difficult to meet all data quality criteria using indicators based on existing data. In the first ASI report, *Arctic Social Indicators (Larsen, Schweitzer, and Fondahl (eds), 2010)*, the following indicators were identified:

- (1) Infant Mortality (Health/Population domain)
- (2) Net-Migration (Health/Population and Material Well-being domains)
- (3) Consumption/Harvest of Local Foods (Closeness to Nature and Material Well-being domains)
- (4) Ratio of Students Successfully Completing Post-Secondary Education (Education domain)
- (5) Language Retention (Cultural Well-being domain)
- (6) Fate Control Index (Fate Control domain)

The ASI team concluded, however, that social indicators are largely unavailable (or not applicable) at a community level or are not collected at a frequency sufficient to detect change. ASI recommended the following objectives for further design and testing of a social indicator system:

- (1) Data are available at a regional level
- (2) Data are available separately for indigenous and non-indigenous populations
- (3) Data are available on at least a five-year reporting period.

The work of ASI is ongoing. One avenue of examination is to consider three tiers of data collection effort:

- Tier 1: based on existing published data
- Tier 2: data that would be produced by special tabulations from existing unpublished data
- Tier 3: would require primary data collection

Prior social indicator work in coastal Alaska (*Louis Berger & Associates 1983a; SRB&A, ISER, and ISR 1985*) concluded that existing data at the regional level meeting social indicator data standards are largely unavailable. ASI's experience has been similar. Collaboration with ASI on this project will contribute to ASI's ongoing work as well as to meeting BOEM's mandates.

NORTH SLOPE SOCIAL IMPACT STUDY (NSSIS)

This review of mainstream social indicators research pertinent to coastal communities in Alaska ends with the most current contributions, the work of ASI. BOEM’s legal mandates, however, insert a third foundation component to the theoretical framework for this study. This third foundation component in turn brings in a fourth contribution: the NSSIS (*SRB&A 2009*).

BOEM has national responsibility for “overseeing the safe and environmentally responsible development of energy and mineral resources on the Outer Continental Shelf” (U.S. Department of Interior, Bureau of Ocean Energy Management and Regulation and Enforcement [BOEMRE] 2011a . Under the mandates of the 1953 (amended 1978) Outer Continental Shelf Lands Act and the 1969 National Environmental Policy Act, BOEM anticipates, monitors, and mitigates adverse impacts of offshore resource exploration and development.

On June 23, 2011, the USGS released a study: *An Evaluation of the Science Needs to Inform Decisions on Outer Continental Shelf Energy Development in the Chukchi and Beaufort Seas* (USDOI, Bureau of Ocean Energy Management and Regulation and Enforcement [BOEMRE] 2011b). While the USGS study focused on the natural environment, it includes the following conclusions and recommendations directly relevant to the current study:

- “Although general usage patterns are known, village [subsistence] surveys have been conducted intermittently. In some cases, the data are old enough and may no longer be representative of actual harvests.” (Holland-Bartels and Pierce, 2011: 77)
- “Subsistence users may be among the first to notice changes in abundance and distribution of fish and wildlife species as it relates to climate change, development, and other stressors. Local traditional knowledge should be more formally incorporated and integrated into resource assessments.” (Holland-Bartels and Pierce, 2011: 77)
- Issues “that must be considered when addressing comprehensive cumulative impact assessments” (Holland-Bartels and Pierce, 2011: 207):
 - Socioeconomic change
 - Impact on subsistence activities
 - Aesthetic, cultural, spiritual impacts
 - Human health effects
- “There are no known studies that attempt to separate the effects of oil and gas activities from other causes of socioeconomic change in communities of the North Slope of Alaska” (Holland-Bartels and Pierce, 2011: 207).
- “Human Communities – there is important missing information on the effects (beneficial and harmful) to the North Slope Communities; a better mechanism is needed to increase Alaska Native input into the research process and a way to translate their observations into hypotheses that can be addressed by research” (Holland-Bartels and Pierce, 2011: 208).

The Holland-Bartels and Pierce USGS study highlights the BOEM socioeconomic studies plan, “showing the progression in understanding through time of the social systems in Arctic Alaska” (Holland-Bartels and Pierce, 2011: 208). Figure 7-1 in their report shows “New Social Indicators” beginning in 2011 as contributing to this process (Holland-Bartels and Pierce, 2011: 209).

The current BOEM study is thus an integral component of BOEM’s response to its mandate to oversee the safe and environmentally responsible exploration and development of energy and mineral resources

on the Outer Continental Shelf off of the North Slope of Alaska. To be responsive to BOEM's legal mandates, the study design needs to enable researchers to distinguish between changes in social indicators related to exploration and development of offshore petroleum resources and other forces for change. In particular, the effects on subsistence of multiple forces for change need to be examined.

In addition to offshore petroleum exploration and development potential forces for change in the Arctic include onshore petroleum exploration and development, climate, government spending, marine transportation, tourism, commercial fishing, and hard rock mining (*Berman 2011*). In his discussion of "Next Steps Toward an Arctic Human Dimensions Observing System," Berman introduces a prototype arctic social system model designed to take multiple forces for change into account in projecting changes in outcome indicators based on ASI recommendations (*Berman 2011:130-136*). Such a model requires inputs on each force for change. Recent assessments of available data for such inputs were developed from a project funded by the National Science Foundation, Arctic Observing Network Social Indicators Project (*Kruse, Lowe, Haley, Fay, Hamilton, and Berman 2011*). These assessments address the following forces for change: tourism (*Fay and Karlsdóttir 2011*); commercial fishing (*Lowe 2011*); mining (*Haley, Klick, Szymoniak, and Crow 2011*); and, subsistence (*Kruse 2011*). Compilation, much less collection of such data are beyond the scope of this project, but would be a necessary part of any systematic effort to distinguish among the effects of potential forces for change on social indicators.

It is possible, however, to anticipate an analysis of the effects of multiple forces for change on social indicators in the design of the social indicators system itself. Of particular importance on the North Slope is the certainty that any offshore exploration and development will occur in the context of continued onshore development. Gathering lines, roads, staging areas, helicopters and other infrastructure and equipment associated with offshore and onshore exploration and development are likely to be located near each other or even shared. Producers and contractors such as aircraft services are likely to overlap in onshore and offshore development activities.

A first step in differentiating between onshore and offshore forces for change is to design the social indicators system to produce separate reports by community. While ASI seeks to develop indicators at the regional level, meeting the BOEM mandates requires community-level indicators.

A second step to meeting the challenge of understanding the relative effects of onshore and offshore exploration and development is to incorporate in the research design measures of the most likely causes of impacts affecting social indicators. Results from the North Slope Social Impact Study (SRB&A 2009) are helpful in this regard. The North Slope Social Impact Study was funded through the North Slope Borough by a grant from the National Petroleum Reserve -Alaska (NPR-A) Impact Program administered by the State of Alaska Department of Community and Economic Development, Division of Community Advocacy. The study included a survey of 217 active hunters from Barrow, Nuiqsut, Atqasuk, and Wainwright.

Table 12 shows the relative frequency of personal experiences of active hunters with different types of impacts. Displacement of wildlife is the most prevalent experience (60 percent), followed by disruption of wildlife (56 percent). Table 12 also shows that the frequency of personal experiences often varies by

community. Nuiqsut active harvesters were more likely to cite personal experiences with nine of 18 different types of impacts, ranging from displacement of wildlife to decrease in habitat and ability to hunt.

Table 12: Percentage of Active Hunters Citing Personal Experience with Subsistence Impacts

	Nuiqsut	Barrow	Atqasuk	Wainwright	Total
Displacement of Wildlife	73%	60%	58%	52%	60%
Disruption of Wildlife	64%	60%	38%	52%	56%
Decline of Wildlife Populations	48%	40%	23%	40%	39%
Decrease in Habitat	55%	37%	23%	26%	35%
Reduced Health of Wildlife	27%	25%	35%	30%	28%
Contamination and Extraction of Materials	70%	54%	38%	48%	53%
Effects of Development on Wildlife	61%	42%	15%	42%	42%
Effects of Development on People	39%	14%	--	10%	15%
Ability to Hunt	55%	50%	35%	40%	47%
Difficulty Hunting	79%	75%	58%	52%	68%
Cultural Impacts	15%	16%	4%	10%	13%
Social Impacts	48%	46%	31%	24%	40%
Economic Impacts	24%	37%	4%	26%	28%
Lack of Influence	24%	27%	15%	18%	23%
EIS Deficiencies	18%	25%	4%	12%	18%
Cumulative Effects	9%	25%	--	18%	18%
Climate-Development Effects	27%	42%	19%	14%	31%
Relative Hazard	9%	12%	8%	6%	10%
Benefits	85%	84%	62%	48%	73%

Number of Active Hunters: 215

Source: SRB&A 2009:25

Table 13 shows more detailed results on experiences with the displacement of wildlife. The species most often associated with a personal experience in displacement of wildlife is caribou. Most frequently cited causes for displacement are small aircraft, helicopters, and pipelines elevated less than seven feet.

Table 13: Personal Experiences with Displacement of Wildlife by Community

	Nuiqsut	Barrow	Atqasuk	Wainwright	Total
Overarching Concern	28	60	8	26	122
Displacement of wildlife	13	26	6	12	57
Displacement of game from migration routes	9	12	1	9	31
Displacement of offshore wildlife, general mention	3	11	0	4	18
Displacement of onshore wildlife, general mention	3	11	0	1	15
Displacement of wildlife due to changes in distribution of prey species	0	0	1	0	1
Caribou	28	57	20	15	120
Displacement of caribou from migration routes	18	22	7	8	55

	Nuiqsut	Barrow	Atqasuk	Wainwright	Total
Small aircraft and helicopters disturbing caribou migration	1	22	8	4	35
Helicopters deliberately chasing/herding caribou	1	5	4	0	10
Large bull caribou travel disrupted by pipelines elevated less than seven feet	7	3	0	0	10
Caribou displaced from insect relief areas by development	1	5	1	3	10
Marine Mammals	14	51	0	10	75
Deflection of bowhead from normal migration path	5	20	0	4	29
Displacement of bowhead due to noise from seismic surveys	1	6	0	3	10
Displacement of bowhead due to noise from operations	3	6	0	0	9
Displacement of belugas and bowheads by non-local boat operations	2	1	0	3	6
Displacement of marine mammals from feeding areas due to contamination of prey	0	4	0	0	4
Displacement of bowhead due to noise from drillships	1	3	0	0	4
Displacement of marine mammals due to shorter season of solid ice	0	3	0	0	3
Displacement of bowhead due to noise from boat traffic	0	3	0	0	3
Displacement of seals due to seismic activities	1	2	0	0	3
Displacement of bowhead	0	2	0	0	2
Displacement of bowhead due to noise from construction	1	0	0	0	1
Displacement of bowhead from feeding areas due to contamination	0	1	0	0	1
Fish	3	2	0	0	5
Displacement of Arctic cisco within Colville River	3	2	0	0	5

Number of Respondents=215

Source: SRB&A 2009: 34

The NSSIS interview with active hunters included 10 SLiCA questions on subjective well-being. Responses to these questions made it possible to compare the well-being of active hunters interviewed in the NSSIS study in 2007 with the well-being of active hunters interviewed in the SLiCA study in 2003. The NSSIS analysis found:

Thirty-four percent of the impact experiences cited by active harvesters started after 2003. The 2003-2007 comparison of well-being shows a statistically significant decrease in satisfaction of over ten percentage points for the influence of Iñupiat over management of natural resources like fish and game, the influence of Iñupiat over reduction of environmental problems, and the amount of fish and game available locally (SRB&A 2009:3)

The combination of social indicator measures and key impact measures in the design of the questionnaire in this study coupled with a sampling design to produce place-level results will make it possible to test hypotheses about the association of offshore and onshore exploration and development experiences with well-being. The NSSIS provides the basis for identify key impact measures.

REPORT BY THE COMMISSION OF THE MEASUREMENT OF ECONOMIC PERFORMANCE AND SOCIAL PROGRESS

As mentioned earlier, the four major components of the theoretical foundation for the current study are: (1) BOEM legal mandates; (2) ASI initiative; (3) SLiCA; and, (4) NSSIS. It is useful, however, to take into account contributions to the field of social indicators made after the design of ASI and SLiCA. Most important among these more recent contributions is the Report by the Commission of the Measurement of Economic Performance and Social Progress (*Stiglitz, Sen, and Fitoussi 2009*). The Stiglitz Report is highly relevant here because one of its primary purposes was to, “consider what additional information [to GDP measures] might be required for the production of more relevant indicators of social progress” (*Stiglitz, Sen, and Fitoussi 2009*).

Recommendations and conclusions of the Stiglitz Report included the following points relevant to the design of this study:

- (1) When evaluating material well-being, look at income and consumption rather than production.
- (2) Emphasize the household perspective.
- (3) Consider income and consumption jointly with wealth.
- (4) Give more prominence to the distribution of income, consumption and wealth.
- (5) Broaden income measures to non-market activities.
- (6) To define what well-being means a multidimensional definition has to be used. Based on academic research and a number of concrete initiatives developed around the world, the Commission has identified the following key dimension that should be taken into account. At least in principle, these dimensions should be considered simultaneously:
 - a. Material living standards (income, consumption and wealth);
 - b. Health;
 - c. Education;
 - d. Personal activities including work
 - e. Political voice and governance;
 - f. Social connections and relationships;
 - g. Environment (present and future conditions);
 - h. Insecurity, of an economic as well as a physical nature.
- (7) Quality of life depends on people’s objective conditions and capabilities. Steps should be taken to improve measures of people’s health, education, personal activities and environmental conditions. In particular, substantial effort should be devoted to developing and implementing robust, reliable measures of social connections, political voice, and insecurity that can be shown to predict life satisfaction.
- (8) Surveys should be designed to assess the links between various quality-of-life domains for each person, and this information should be used when designing policies in various fields.
- (9) At a minimum, in order to measure sustainability, what we need are indicators that inform us about the change in the quantities of the different factors that matter for future well-being. Put differently, sustainability requires the simultaneous preservation or increase in several “stocks”: quantities and qualities of natural resources, and of human, social and physical capital.

IMPLICATIONS OF REVIEWED LITERATURE FOR THE STUDY DESIGN

Domains

The correspondence of domains across the reviewed literature is remarkable. The domains listed in the BOEM scope of work also match the literature well. We can therefore be confident that, by including indicators in each of the BOEM domains, we will be reasonably comprehensive. Thus we want to develop a small set of indicators within each of the following domains:

- (1) Economic well-being
- (2) Health and safety
- (3) Cultural continuity
- (4) Local control
- (5) Education
- (6) Physical environment

It is important to note that including overall measures of well-being in SLiCA, the NSSIS, and the 1977 North Slope Study has been important to understanding the relative contributions of each domain.

Reporting Level

While the focus of ASI has been on regional level indicators, the mandates of BOEM to monitor the effects of offshore exploration and development require reporting at the community level.

Sources of Data

Earlier studies on Alaska coastal community indicators concluded that few indicators can be feasibly based on existing data (*SRB&A, ISER, and ISR 1985; Louis Berger and Associates 1983a*). The Stiglitz Report concluded that links between various quality-of-life domains should be used when designing policies such as BOEM is required to do to document and mitigate impacts of exploration and development. While in some Arctic countries such as Sweden, Norway, and Greenland administrative data can be linked across domains at the personal level, such links are not possible in the United States. This fact coupled with the general lack of existing data sources at the community level underscore the need to focus the design on survey-based social indicators.

Rules for Selecting Indicators

As discussed above, Andrews suggested rules for selecting indicators, and Braund and his team applied these rules in the selection of indicators in the second MMS social indicators study. ASI applied a similar set of rules in selecting indicators. The Stiglitz Report's recommendations and conclusions included guidelines for indicator selection. These contributions are brought together below under the BOEM indicator assessment criteria as interpreted in the study team's research plan (*SRB&A 2011*).

Utility

- ***Limited yet comprehensive.*** Andrews, ASI, and BOEM call for a small number of indicators that together account for what is most important to well-being.

- ***Understandable as important to us.*** Andrews, ASI, and Stiglitz et al. call for indicators that are each meaningful to people as aspects of society that are of concern to us.
- ***Global-level and concern-level measures.*** Andrews points to the importance of including global-level as well as concern-level measures.
- ***Available for the past and reasonably foreseeable future.*** Andrews argues that indicators with an established time series are more valuable than new indicators providing that meet other criteria.

Validity

- ***Measures of outputs of social system.*** Andrews and Stiglitz et al. call for measures that are directly related to well-being at the household level.
- ***Meaningful at the household level.*** Andrews and Stiglitz et al. call for measures which can be disaggregated at the level of the most relevant social unit, the household.
- ***Include both objective and subjective measures.*** Andrews and Stiglitz et al. call for both types of measures to understand changes in well-being.

Reliability

- ***Sensitive to variations between people and over time.*** Andrews points out that there needs to be substantial variation between people for an indicator to reflect change over time.

Precision

- ***Reflects concern with a high degree of precision.*** Andrews points out that precision is important to detecting change over time.

Feasibility

- ***Available at a reasonable cost.*** While usually this criterion is a code phrase for basing indicators on existing data, in this case it is best applied as a test of response burden.

Applicability

- ***Available reporting for Alaska Natives.*** Andrews and ASI explicitly note the importance of being able to report indicators for Alaska Natives. Stiglitz et al. highlight the importance of understanding inequalities, for which purpose Native, non-Native comparisons may be critical.
- ***Available at the village level.*** Andrews notes that village-level data can be important to the use of the indicators, as shown by the North Slope Social Impact Study results.
- ***Linked data.*** Stiglitz et al. point to the importance of understanding relationships between domains of well-being. Linked data at the individual level is the only way to examine these relationships.
- ***Available at least every five years.*** ASI adopted this criterion and Andrews noted the importance of the time interval of data availability.
- ***Levels and distributions.*** Andrews and Stiglitz et al. point to the importance of understanding the distribution of well-being as well as its average.

REFERENCES

- Allardt, E. 1975. Att Ha, Att Älska, Att Vara. Om Välfärd i Norden, Lund.
- Andersen, T., and B. Poppel. 2002. Living Conditions in the Arctic, *Social Indicators Research*, 58:191-216.
- Andrews, F., and S. Withey. 1974. Developing Measures of Perceived Life Quality. *Social Indicators Research*, 1:1-26.
- Andrews, F., and S. Withey. 1976. *Social Indicators of Well-Being: Americans' Perceptions of Life Quality*. Plenum Press: New York.
- Arctic Human Development Report (AHDR). 2004. Akureyri: Stefansson Arctic Institute (p.16-17)
- Bachman, J., L. Johnston, and P. O'Malley. 1985. Recent Findings from "Monitoring the Future: A Continuing Study of the Lifestyles and Values of Youth." In F.M. Andrews (ed.) *Research on the Quality of Life*. Ann Arbor, Michigan, Institute for Social Research.
- Bauer, Raymond. 1966. *Social Indicators*. Cambridge, Mass: M.I.T. Press
- Berman, M. 2011. Next Steps Toward an Arctic Human Dimensions Observing System. *Polar Geography* 34(1-2):125-143.
- Braund, Stephen R. & Associates. 2011. *Social Indicators in Coastal Alaska: Arctic Communities, Research Plan*. Contract No. M11PC00032, Bureau of Ocean Energy Management (BOEM). September.
- Braund, Stephen R. & Associates (SRB&A). 2009. *Impacts and Benefits of Oil and Gas Development to Barrow, Nuiqsut, Wainwright, and Atqasuk Active Harvesters*. Prepared for the North Slope Borough.
- Braund, Stephen R & Associates (SRB&A), Institute of Social and Economic Research (ISER), and University of Michigan Institute for Social Research (ISR). 1985. *A Social Indicators System for OCS Impact Monitoring*. U.S. Department of the Interior, Minerals Management Service, Alaska OCS Region Social and Economic Studies Technical Report No. 116. (A11/PB 87-209227) (MMS 85-0079) (Contract No. 30179)
- Campbell, A. and P. Converse. 1972. *Human Meaning of Social Change*. Russell Sage Foundation.
- Campbell, A., P. Converse, and W. Rogers. 1976. *The Quality of American Life: Perceptions, Evaluations, and Satisfactions*. Russell Sage Foundation.

- Caplan, R., A. Abbey, D. Abramis, F. Andrews, T. Conway, and J. French, Jr. 1984. *Tranquilizer Use and Well-Being*. Ann Arbor, Michigan: Institute for Social Research.
- Carley, M. 1981. *Social Measurement and Social Indicators*. London, Allen and Unwin.
- Diener, E. 1984. Subjective Well-Being. *Psychological Bulletin*. 95:542-575.
- Diener, E., and E. Suh. 1997. Measuring Quality of Life: Economic, Social, and Subjective Indicators. *Social Indicators Research* 40:189-216.
- Eriksen, R. and H. Uusitalo. 1987. The Scandinavian approach to welfare research, In: Eriksen, Hansen, Ringen, and Uusitalo (eds), *The Scandinavian Model. Welfare States and Welfare Research*. New York, M.E. Sharpe.
- Fay, G., and A. Karlsdóttir. 2011. Social Indicators for Arctic Tourism: Observing Trends and Assessing Data. *Polar Geography*, 34(1-2):63-86.
- George, L., and L. Bearon. *Quality of Life in Older Persons*. 1980. New York, Human Sciences Press.
- Gilmartin, K., R. Rossi, L. Lutomski, and D. Reed. 1979. *Social Indicators: An Annotated Bibliography of Current Literature*. New York, Garland.
- Glatzer, W. 1981. An Overview of the International Development in Macro Social Indicators. *Accounting, Organizations, and Society*, 6:219-234.
- Haley, S., M. Klick, N. Szymoniak, and A. Crow. 2011. Observing Trends and Assessing Data for Arctic Mining. *Polar Geography*, 34(1-2):37-61.
- Herzog, A., and W. Rodgers. 1985. Satisfaction Among Older Adults. In F.M. Andrews (ed.) *Research on the Quality of Life*. Ann Arbor, Michigan: Institute for Social Research.
- Holland-Bartels, L., and Pierce, B., eds. 2011. *An Evaluation of the Science Needs to Inform Decisions on Outer Continental Shelf Energy Development in the Chukchi and Beaufort Seas, Alaska*: U.S. Geological Survey Circular 1370, 278 p.
- Human Relations Area Files, Inc. 1994. *Social Indicators Study of Alaskan Coastal Villages: III. Analysis*. Minerals Management Service Technical Report 154 (Contract No. 14-12-0001-3030).
- Institute for Social Research. 2011. Frank M. Andrews Summer Institute Fellowship. Online at: <http://si.isr.umich.edu/fellowship>.
- Irwin, P., and M. Gottlieb. 1982. Quality of Life after Radiation Therapy: A Study of 309 Cancer Patients. *Social Indicators Research*, 10, 189-210.

- Jackson, J., L. Chatters, and H. Neighbors. 1985. The Subjective Life Quality of Black Americans. In F.M. Andrews (ed.) *Research on the Quality of Life*. Ann Arbor, Michigan: Institute for Social Research.
- Jorgensen, J., R. McCleary, and S. McNabb. 1985. Social Indicators in Native Village Alaska. *Human Organization* 44(1):2-17
- Kresge, D., D. Seiver, O. Goldsmith, and M. Scott. 1984. *Regions and Resources: Strategies for Development*. The MIT Press: Cambridge, Massachusetts.
- Kruse, J. 1976. Urban Impacts of Oil Development – the Fairbanks Experience. *Alaska Review of Business and Economic Conditions*, University of Alaska, Institute of Social and Economic Research, 13(3).
- Kruse, J. 1977. *Man in the Arctic Program Working Paper: Fairbanks Community Survey*. Institute of Social and Economic Research, University of Alaska: Anchorage.
- Kruse, J. 1991. Alaska Iñupiat Subsistence and Wage Employment Patterns: Understanding Individual Choice. *Human Organization*, 50(4): 317-326.
- Kruse, J. 2010. Sustainability From a Local Point of View: Alaska's North Slope Oil Development. In: *The Political Economy of Northern Regional Development*, Vol.1, Gorm Winther (Ed). Nordic Council of Ministers: Copenhagen.
- Kruse, J. 2011. Developing an Arctic Subsistence Observation System. *Polar Geography*, 34 (1-2): 9-35.
- Kruse, J., J. Kleinfeld and R. Travis. 1981. Energy Development and the North Slope Iñupiat: Quantitative Analysis of Social and Economic Change. Institute of Social and Economic Research, University of Alaska: Anchorage.
- Kruse, J., M. Lowe, S. Haley, G. Fay, L. Hamilton, and M. Berman. 2011. Arctic Observing Network Social Indicators Project Overview. *Polar Geography*, 34(1-2):1-8.
- Kruse, J., Poppel, B., Abryutina, L., Duhaime, G., Martin, S., Poppel, M., Kruse, M., Ward, E., Cochran, P., Hanna, V. 2008. Survey of Living Conditions in the Arctic, SLiCA. In: Møller, V., Huschka, D, and Michalos, A. C. (eds.): *Barometers of Quality of Life around the Globe*. Springer Social Indicators Research Series. Springer Verlag, Dordrecht.
- Land, K. 1983. Social Indicators. *Annual Review of Sociology*, 9:1-26.
- Larsen, J. 1996. "The World Health Organization's Definition of Health: Social versus Spiritual Health." *Social Indicators Research*: 38(2):181-192.

- Larsen, J., P. Schweitzer, and G. Fondahl (eds). 2010. Arctic Social Indicators – A Follow-up to the Arctic Human Development Report. Nordic Council of Ministers, Copenhagen.
- Liu, C. 1974. Quality of Life Indicators: A Preliminary Investigation. *Social Indicators Research*, 1:187-208.
- Liu, C. 1975. Quality of Life in the U.S. Metropolitan Areas, 1970. Washington, D.C.: U.S. Environmental Protection Agency.
- Louis Berger & Associates, Inc. 1983a. Social Indicators for OCS Impact Monitoring. Minerals Management Service Technical Reports 77, Volume 1. Anchorage Alaska.
- Louis Berger & Associates, Inc. 1983b. Social Indicators for OCS Impact Monitoring: Technical Appendices. Minerals Management Service Technical Reports 77, Volume 2. Anchorage Alaska.
- Louis Berger & Associates, Inc. 1983c. Social Indicators for OCS Impact Monitoring: Baseline Ethnographic Descriptions of the NANA and Aleutian Pribilof Regions. Minerals Management Service Technical Reports 77, Volume 3. Anchorage Alaska.
- Lowe, M. 2011. Arctic Observing Network Social Indicators and Northern Commercial Fisheries. *Polar Geography*, 34(1-2):87-105.
- McNabb, S. 1991. "Elders, Iñupiat Iitqusiak, and Culture Goals in Northwest Alaska " *Arctic Anthropology*, 28(2): 63-76.
- Michalos, A. 1985. Job Satisfaction, Marital Satisfaction, and the Quality of Life: A Review and a Preview. In F.M. Andrews (ed.) *Research on the Quality of Life*. Ann Arbor, Michigan: Institute for Social Research.
- Morris, D. 1979. *Measuring the Condition of the World's Poor: The Physical Quality of Life Index*. Washington, D.C.: Overseas Development Council.
- Organization for Economic Cooperation and Development (OECD). 1973. *List of Social Concerns Common to Most OECD Countries*. Paris: OECD.
- Ortiz, V., and C. Arce. 1985. Quality of Life Among Persons of Mexican Descent. In F.M. Andrews (ed.) *Research on the Quality of Life*. Ann Arbor, Michigan: Institute for Social Research.
- Poppel, B. and J. Kruse (2008). The Importance of a Mixed Cash- and Harvest Herding Based Economy to Living in the Arctic – an Analysis Based on Survey of Living Conditions in the Arctic (SLiCA). In: Valerie Møller and Dennis Huscka (eds): *Quality of Life in the New Millennium: Advances in Quality-of-Life Studies, Theory and Research*. Social Indicators Research Series. Springer Verlag, Dordrecht.

- Ringen, S. 1995. "Well-being, Measurement, and Preferences" *Acta Sociologica* 38:3-15.
- Ross, P., H. Bluestone, and F. Hines. 1979. *Indicators of Social Well-Being for U.S. Counties*. Washington, D.C.: U.S. Department of Agriculture.
- Rossi, R., and K. Gilmartin. 1980. *The Handbook of Social Indicators*. New York: Garland.
- Sheldon, E. and W. Moore. 1968. *Indicators of Change: Concepts and Measurements*. Russell Sage Foundation.
- Sirgy, J., A. Michalos, A. Ferriss, R. Easterlin, D. Patrick, W. Pavot 2006. The Quality-of-Life (QOL) Research Movement: Past, Present, and Future. *Social Indicators Research* 76:343-466.
- Solomon, E., N. Bouchouchi, V. Denisov, E. Hankiss, C. Mallmann, and L. Milbrath. 1980. UNESCO's Policy-Relevant Quality of Life Research Program. In A. Szalai and F.M. Andrews (ed.) *The Quality of Life: Comparative Studies*. London: Sage.
- Sprott, J. 1994. "Symbolic Ethnicity and Alaska Natives of Mixed Ancestry Living in Anchorage : Enduring Group or a Sign of Impending Assimilation?" *Human Organization* 53(4) 311-322.
- Stiglitz, Joseph, Amartya Sen, Jean-Paul Fitoussi. 2009. Report by the Commission on the Measurement of Economic Performance and Social Progress. www.stiglitz-sen-fitoussi.fr
- U.S. Department of Commerce. 1980. *Social Indicators III*. Washington D.C.: U.S. Department of Commerce
- U.S. Department of Health, Education, and Welfare 1969. *Toward a Social Report*.
- USDOI Bureau of Ocean Energy Management, Regulation, and Enforcement. 2011a. <http://www.boemre.gov/aboutBOEMRE/>.
- USDOI Bureau of Ocean Energy Management, Regulation, and Enforcement. 2011b. <http://www.doi.gov/news/pressreleases/USGS-Arctic-Study-Evaluates-Science-and-Knowledge-Gaps-for-OCS-Energy-Development.cfm>
- Usher, P., G. Duhaime, and E. Searles. 2003. The Household as an Economic Unit in Arctic Aboriginal Communities, and its Measurement by Means of a Comprehensive Survey. *Social Indicators Research* 61: 175-202.
- Verwayen, H. 1984. *Social Indicators: Actual and Potential Uses*. *Social Indicators Research*, 14:1-28.