

# **Social Indicators in Coastal Alaska: Arctic Communities**

**Contract No. M11PC00032**

## **North Slope Social Indicators Study Assessment of Social Indicators**

Submitted to

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# Table of Contents

<b>LIST OF ACRONYMS AND ABBREVIATIONS.....</b>	<b>ii</b>
<b>INTRODUCTION .....</b>	<b>1</b>
<b>IMPLICATIONS OF REVIEWED LITERATURE FOR THE STUDY DESIGN .....</b>	<b>1</b>
DOMAINS .....	1
REPORTING LEVEL .....	2
SOURCES OF DATA.....	2
RULES FOR SELECTING INDICATORS .....	2
<i>Utility</i> .....	2
<i>Validity</i> .....	2
<i>Reliability</i> .....	2
<i>Precision</i> .....	3
<i>Feasibility</i> .....	3
<i>Applicability</i> .....	3
<b>SOCIAL INDICATORS TO BE ASSESSED .....</b>	<b>3</b>
<b>APPLICATION OF RULES FOR ASSESSING INDICATORS .....</b>	<b>4</b>
<b>SOCIAL INDICATOR ASSESSMENT.....</b>	<b>6</b>
<b>RECOMMENDED SOCIAL INDICATORS.....</b>	<b>22</b>
<i>Cultural Continuity</i> .....	22
<i>Economic Well-Being</i> .....	22
<i>Education</i> .....	23
<i>Local Control</i> .....	23
<i>Health</i> .....	23
<i>Physical Environment</i> .....	23
<i>Global Indicators</i> .....	23
<i>Explanatory Variables</i> .....	24
<b>SOCIAL INDICATOR RESULTS FROM SLICA.....</b>	<b>24</b>
<b>INITIAL DRAFT OF QUESTIONNAIRE .....</b>	<b>24</b>
<b>REFERENCES.....</b>	<b>25</b>

## **LIST OF ACRONYMS AND ABBREVIATIONS**

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ASI	Arctic Social Indicator
BOEM	Bureau of Ocean Energy Management
ISER	Institute of Social and Economic Research
ISQOLS	International Society for Quality of Life Studies
ISR	Institute for Social Research
MMS	Minerals Management Service
NSSIS	North Slope Social Impact Study
OMB	Office of Management and Budget
SLICA	Survey of Living Conditions in the Arctic
SRB&A	Stephen R. Braund & Associates

# INTRODUCTION

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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 an assessment of potential social indicators, concluded by a set of indicators recommended by the North Slope Management Board overseeing the study.

Two earlier work products inform the assessment of social indicators: (1) the Research Plan (SRB&A 2011); and, (2) the Literature Review (SRB&A 2012). The Research Plan introduced the idea of a North Slope Management Board (NSMB). The NSMB is modeled on the Alaska Native Management Board (ANMB) formed in the Survey of Living Conditions in the Arctic (SLiCA: see Kruse et al 2008). Prior to starting SLiCA in Alaska, the research team invited representatives of the three Iñupiat settlement regions to form an oversight board, the ANMB. Over the course of the study, the ANMB reviewed and gave final approval for research design and questionnaire protocols, reviewed preliminary tabulations, and reviewed pre-publication drafts of articles. The arrangement explicitly transferred decision making authorities from the researchers to the ANMB (applied to this project, Board decisions would be prior to decisions made by BOEM and OMB). There were explicit guidelines to handle cases of disagreement between the researchers and the ANMB on the content of publications. Members of the ANMB became active participants in the research design in SLiCA and worked with the research team on difficult decisions on how to balance concerns about the sensitivity of certain questions with study objectives. The ANMB was an integral part of the study team. In keeping with the idea of the ANMB, the purpose of this assessment of social indicators is to bring to the NSMB a set of recommended social indicators along with a description of the process used to arrive at the recommendations.

The Literature Review also informs the assessment of social indicators. The following section repeats the conclusions of the review.

## IMPLICATIONS OF REVIEWED LITERATURE FOR THE STUDY DESIGN

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### 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 and will be critical to understanding the combined effects of impacts and benefits of offshore oil and gas exploration and development.

## Reporting Level

While the focus of the Arctic Social Indicators (ASI) initiative 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 since impacts are likely to vary by community.

## 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 in order 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 of survey-based social indicators.

## Rules for Selecting Indicators

A leading international expert on social indicators, Dr. Frank Andrews (now deceased), worked with SRB&A in an earlier Alaska social indicators study. He suggested rules for selecting indicators. Braund and his team applied these rules in the selection of indicators. The ASI project, an Arctic Council initiative, applied a similar set of rules in selecting indicators. A 2009 blue ribbon panel report on social indicators (Stiglitz, Sen, Fitoussi, 2009) 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 they 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.
- **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 among 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.

## **SOCIAL INDICATORS TO BE ASSESSED**

As described in the Literature Review, a large international team of researchers and indigenous partners identified the survey-based social indicators used in SLiCA. The design was favorably reviewed by international experts in social indicators research (SLiCA 2001). These indicators were applied in over 7,000 interviews, yielding comparable results for the three Inupiat settlement regions of Alaska (North Slope, Northwest Arctic, Bering Straits), four Inuit settlement regions of Canada (Inuvialuit, Nunavik, Nunavut, Labrador Inuit), Greenland, and the Chukotka region of Russia. The same set of social indicators has since been applied in the Sami settlement regions of Norway, Sweden, and the Kola Peninsula region of Russia. The SLiCA social indicators offer the best starting point for this study: (1) they have been approved by oversight boards in the US (the ANMB), Canada, Greenland, Russia, Norway, and Sweden; (2) they have been approved by international experts in social indicators research (notably the leadership of the International Society for Quality of Life Research, or ISQOLS); (3) they have been tested across the Arctic in both rural and urban settings among men and women aged 16 and over; and (4) they provide comparable data that can be used to help understand changes in well-being on the North Slope over time. There are 129 SLiCA social indicators, many of which are based on multiple questions. These indicators form the core set of potential indicators being assessed in this study.

The Literature Review identified another social indicator study warranting inclusion as a source of potential social indicators: the 1977 North Slope Survey. This study was a collaboration of the North Slope Borough and the University of Alaska. The timing of the 1977 study is important to the goals of the current study. It took place at the construction stage of the first wave of onshore oil and gas development on the North Slope, before most of the village developments made possible by taxation of oil and gas facilities. The 1977 North Slope Survey is close to being a baseline study for all oil and gas development. Forty-nine questions included in the 1977 North Slope Survey were repeated or closely approximated in SLiCA as well as in North Slope Borough census surveys conducted between 1977 and 2003.

A third source of potential social indicators is derived from the work of the Arctic Social Indicators (ASI) project as described in the Literature Review. ASI is a project of the Arctic Council. The intent of ASI is to develop regional-level indicators for all regions in the Arctic. The BOEM contract mandates close coordination with ASI. One of the two persons leading ASI, Joan Larsen of the Stefansson Arctic Institute in Akureyri Iceland is part of the North Slope Social Indicator project team. Dr. Larsen has identified 49 ASI indicators to include in the assessment.

The final source of potential measures for the North Slope Social Indicators project is the North Slope Social Impact Study (NSSIS). Commissioned by the North Slope Borough, the NSSIS documented the experiences of 217 active harvesters in Barrow, Nuiqsut, Atkasuk, and Wainwright with the impacts and benefits of oil and gas development. Measures developed in this study are relevant to the mandate of BOEM to identify the impacts of offshore oil and gas exploration and development. There are multiple sources of impacts: onshore oil and gas exploration and development, offshore oil and gas exploration and development, climate change, changes in government spending, and increasing tourism. Questions developed for the NSSIS will help differentiate among these potential impact sources.

## **APPLICATION OF RULES FOR ASSESSING INDICATORS**

As described above, the Literature Review yielded a set of rules of assessing indicators. To apply these rules, the research team developed the following methods of rating each criterion.

<b>Methods for Rating Individual Criteria</b>			
<b>Criterion</b>	<b>Values</b>	<b>Value Label</b>	<b>Value Rule</b>
Understandable as Important	5	Highest	Among most important Inupiat values
	4	High	Among important universal human values
	3	Medium	Probably an indirect measure of important value
	1	Low	Not understandable as important
Available for Past and Reasonably Foreseeable Future	5	Highest	Available from 1977 NSB Survey
	4	High	Available from SLiCA or Harvest Surveys
	3	Medium	Available from Census
	1	Low	Not available for past nor from reasonably foreseeable future
Measure of Output of Social System	5	High	Clearly a social outcome important to individuals
	3	Medium	Probably an indirect measure of individual well-being
	1	Low	Cannot be assumed to indicate well-being at the individual level
Meaningful at the Household Level	5	High	Meaningful at the individual level as well as household level
	3	Medium	Meaningful at the community level
	1	Low	Not meaningful below the regional level
Sensitive to Variations Between People and Over Time	5	Highest	Demonstrated variability between people and over time
	3	Medium	Based on pretests likely to be sensitive to variations between people and over time
	1	Low	Unlikely to be sensitive to variations between people and/or over time
Reflects Concern with a High Degree of Precision	5	Highest	Based on multiple solid count measures of respondent's own experience
	4	High	Based on solid count measure of respondent's own experience
	3	Medium	Based on ordinal measure of respondent's own experience
	2	Low	Based on respondent's perception of other household member experience
	1	Lowest	Based on respondent's perception of community-level condition



Available at a Reasonable Cost (reasonable response burden)	5	Highest	Based on single, easy to answer item
	4	High	Based on simple set of questions answerable in less than 5 minutes
	3	Medium	Based on extended set of questions answerable in 5 - 10 minutes
	1	Low	Based on extensive set of questions answerable in more than 10 minutes
Available Reporting for Alaska Natives	5	Highest	Yes, including prior data
	3	Medium	Yes, no prior data
	1	Low	No
Available at the Village Level	5	Highest	Yes, and considered an accurate representation of community resident well-being
	3	Medium	Yes, but of questionable accuracy
	1	Low	Not available at the village level
Available at Least Every Five Years	5	Highest	Available at intervals of five years or less
	3	Medium	Available as often as survey conducted
	1	Low	Not available at intervals of five years or less
Levels and Distributions	5	Highest	Available as percentage distributions and means
	3	Medium	Available as distributions
	1	Low	Available as means only
Linked Data	5	Highest	Linked survey data with comparable prior linked data
	4	High	Linked survey data
	1	Low	Unlinked data
Overall Assessment	5	Recommend	High or highest on most values including output measure and availability of levels and distributions; no values below medium; or ASI indicator
	4	Recommend with reservations	Doesn't meet recommend criteria but 1977 comparable data

## **SOCIAL INDICATOR ASSESSMENT**

The following pages apply the above criteria to the potential social indicators drawn from SLiCA, the 1977 North Slope Survey, ASI, and the North Slope Social Impact Study.

Source	Domain & Potential Indicator	Utility		Validity		Reliability	Precision	Feasibility	Applicability					Recommendation
		Understandable as Important	Available for Past and Reasonably Foreseeable Future	Measure of Output of Social System	Meaningful at the Household Level	Sensitive to Variations Between People and Over Time	Reflects Concern with a High Degree of Precision	Available at a Reasonable Cost (reasonable response burden)	Available Reporting for Alaska Natives	Available at the Village Level	Available at Least Every Five Years	Levels and Distributions	Linked Data	
	<b>Cultural Continuity</b>													
SLiCA	count of comparable subsistence activities	5	5	5	5	5	5	4	5	5	3	5	5	5
SLiCA	count of traditional skills learned as a child	5	4	5	5	5	5	4	5	5	3	5	5	5
SLiCA	number of generations present in household	3	4	1	5	1	4	4	5	5	3	5	5	
SLiCA	born in community	3	4	3	5	1	4	5	5	5	3	4	5	
SLiCA	father born in community	3	4	3	5	1	4	5	5	5	3	4	5	
SLiCA	mother born in community	3	4	3	5	1	4	5	5	5	3	4	5	
SLiCA, NS1977	childhood spent in community	3	5	3	5	1	4	5	5	5	3	4	5	
SLiCA	lived somewhere else for a year or more	3	4	3	5	1	4	5	5	5	3	4	5	
SLiCA	learned indigenous language as a child	5	4	5	5	1	4	5	5	5	3	4	5	
SLiCA	parents spoke indigenous language at home when a child	5	4	3	5	1	4	5	5	5	3	4	5	
SLiCA	parents spoke indigenous language to respondent as a child	5	4	3	5	1	4	5	5	5	3	4	5	
SLiCA	indigenous language ability index	5	4	5	5	5	5	4	5	5	3	5	5	5
SLiCA	use of indigenous language at home,work,school, elsewhere	5	4	5	5	5	4	5	5	5	3	4	5	
SLiCA	teachers or teacher's aides indigenous	5	4	3	5	5	4	5	5	5	3	4	5	
SLiCA	taught indigenous language in elementary or high school	5	4	3	5	5	4	5	5	5	3	4	5	
SLiCA	taught subjects in indigenous language in elementary of high school	5	4	3	5	5	4	5	5	5	3	4	5	
SLiCA	taught indigenous culture and history in elementary of high school	5	4	3	5	5	4	5	5	5	3	4	5	

Source	Domain & Potential Indicator	Utility		Validity		Reliability	Precision	Feasibility	Applicability					Recommendation
		Understandable as Important	Available for Past and Reasonably Foreseeable Future	Measure of Output of Social System	Meaningful at the Household Level	Sensitive to Variations Between People and Over Time	Reflects Concern with a High Degree of Precision	Available at a Reasonable Cost (reasonable response burden)	Available Reporting for Alaska Natives	Available at the Village Level	Available at Least Every Five Years	Levels and Distributions	Linked Data	
New	Number of months spent 5 or more days on subsistence	5	3	5	5	5	5	5	5	5	3	5	5	5
SLiCA	information taught about indigenous people accurate	5	4	3	5	5	4	5	5	5	3	4	5	
SLiCA	teach children indigenous stories	5	4	3	5	5	4	5	5	5	3	4	5	
SLiCA	Past 12 months listen to or tell a Native story	5	4	3	5	5	4	5	5	5	3	4	5	
SLiCA	How satisfied with job community doing promoting use of Inupiaq language	5	4	5	5	5	3	5	5	5	3	5	5	
SLiCA	How satisfied with job community doing promotion of sharing	5	5	5	5	5	3	5	5	5	3	5	5	
SLiCA	How satisfied with job community doing promoting respect for elders	5	4	5	5	5	3	5	5	5	3	5	5	
SLiCA	name consider native name	3	4	1	5	1	4	5	5	5	3	4	5	
SLiCA	household member participation in subsistence activities	5	5	5	5	5	2	3	5	5	3	5	5	
SLiCA	household member participation in work and domestic activities	3	5	1	5	5	4	3	5	5	3	5	5	
SLiCA	cultural background of parents	3	4	3	5	1	4	4	5	5	3	4	5	
SLiCA	child named after someone	3	4	3	5	1	4	5	5	5	3	4	5	
SLiCA	share traditional food	5	5	5	5	5	4	5	5	5	3	3	5	
SLiCA	regularly watch or hear indigenous programming on radio or television	3	4	3	3	5	4	5	5	5	3	4	5	

Source	Domain & Potential Indicator	Utility		Validity		Reliability	Precision	Feasibility	Applicability					Recommendation
		Understandable as Important	Available for Past and Reasonably Foreseeable Future	Measure of Output of Social System	Meaningful at the Household Level	Sensitive to Variations Between People and Over Time	Reflects Concern with a High Degree of Precision	Available at a Reasonable Cost (reasonable response burden)	Available Reporting for Alaska Natives	Available at the Village Level	Available at Least Every Five Years	Levels and Distributions	Linked Data	
SLiCA	index of importance of 16 cultural values	5	4	5	5	3	5	3	5	5	3	5	5	5
SLiCA	taught traditional values	5	4	5	5	1	3	5	5	5	3	4	5	
SLiCA	Index of satisfaction with promotion of 16 cultural values	5	4	5	5	5	5	3	5	3	3	5	5	5
SLiCA	apply any of these traditional values in your personal life	5	4	5	5	1	3	5	5	5	3	4	5	
SLiCA	are indigenous spiritual beliefs part of your life	5	4	5	5	1	3	5	5	5	3	4	5	
SLiCA	preference for subsistence, job, or both	3	5	3	5	5	4	5	5	5	3	4	5	4
ASI	Do laws and policies exist that recognize institutions that advocate for the cultural autonomy of national minority populations?	4	5	3	1	1	3	4	5	5	5	5	5	4
ASI	What is the proportion of such institutions to minority peoples, e.g. Are all peoples represented through such organizations?	5	5	3	1	1	3	4	5	5	5	5	5	4
ASI	Are resources available to such institutions?	5	5	3	1	1	3	4	5	5	5	5	5	4
ASI	Are funding policies in place and how well-resourced are they?	5	5	3	1	1	3	4	5	5	5	5	5	4
ASI	Do institutions representing national minority cultures exist?	5	5	3	1	1	3	4	5	5	5	5	5	4

Source	Domain & Potential Indicator	Utility		Validity		Reliability	Precision	Feasibility	Applicability					Recommendation
		Understandable as Important	Available for Past and Reasonably Foreseeable Future	Measure of Output of Social System	Meaningful at the Household Level	Sensitive to Variations Between People and Over Time	Reflects Concern with a High Degree of Precision	Available at a Reasonable Cost (reasonable response burden)	Available Reporting for Alaska Natives	Available at the Village Level	Available at Least Every Five Years	Levels and Distributions	Linked Data	
ASI	What percentage of people are engaged in recreational or subsistence activities on the land?	5	5	5	5	1	3	5	5	5	5	5	5	5
ASI	What is the relative size of the informal sector in the economy?	5	5	5	5	1	3	5	5	5	5	5	5	5
ASI	What % of a population speaks its ancestral language compared with the population as a whole?	5	5	5	5	5	5	5	5	5	5	5	5	5
	<b>Economic Well-Being</b>													
SLiCA, NS1977	count of comparable subsistence activities	5	5	5	5	5	5	4	5	5	3	5	5	5
SLiCA, NS1977	proportion meat and fish traditional food	5	5	5	5	4	3	5	5	5	3	4	5	4
SLiCA, NS1977	proportion meat and fish harvested traditional food	5	5	5	5	4	3	5	5	5	3	4	5	4
SLiCA, NS1977	proportion meat and fish received traditional food	5	5	5	5	4	4	5	5	5	3	4	5	4
SLiCA, NS1977, ASI	Pounds of traditional food harvested - all species	5	5	5	5	5	5	1	5	5	3	5	5	
SLiCA, NS1977, ASI	Pounds of traditional food harvested - top ten species harvested by community	5	5	5	5	5	5	4	5	5	3	5	5	5

Source	Domain & Potential Indicator	Utility		Validity		Reliability	Precision	Feasibility	Applicability					Recommendation
		Understandable as Important	Available for Past and Reasonably Foreseeable Future	Measure of Output of Social System	Meaningful at the Household Level	Sensitive to Variations Between People and Over Time	Reflects Concern with a High Degree of Precision	Available at a Reasonable Cost (reasonable response burden)	Available Reporting for Alaska Natives	Available at the Village Level	Available at Least Every Five Years	Levels and Distributions	Linked Data	
SLiCA, NS1977	Number of jobs held in last year	5	5	5	5	5	4	5	5	5	3	5	5	5
NS1977	Total weeks worked in last 12 months	5	5	5	5	5	4	5	5	5	3	5	5	5
NS1977	Weeks worked in oil and gas industry-related jobs held in last year	5	5	5	5	5	4	5	5	5	3	5	5	5
New	Weeks worked in offshore petroleum-related jobs held in last year	5	3	5	5	5	4	5	5	5	3	5	5	5
SLiCA, NS1977	Weeks worked on job held the longest in last year	5	5	5	5	5	4	5	5	5	3	5	5	5
SLiCA, NS1977	Industry of longest held job	5	5	5	5	5	4	5	5	5	3	4	5	5
SLiCA, NS1977	Occupation of longest held job	3	5	3	3	5	4	4	5	5	3	4	5	5
New	Number of months did not have a wage job and wanted one	5	4	5	5	5	4	5	5	5	3	5	5	5
SLiCA	total personal income	5	4	5	5	5	4	5	5	5	3	5	5	5
SLiCA, NS1977, ASI	household income from wage employment	5	5	5	5	5	4	5	5	5	3	5	5	5
SLiCA	satisfaction with combination of activities to make a living	4	4	5	5	5	3	5	5	5	3	5	5	
SLiCA	satisfaction with longest held job	5	4	5	5	5	3	5	5	5	3	5	5	5
SLiCA	satisfaction with quality of your housing	5	4	5	5	5	3	5	5	5	3	5	5	5

Source	Domain & Potential Indicator	Utility		Validity		Reliability	Precision	Feasibility	Applicability					Recommendation
		Understandable as Important	Available for Past and Reasonably Foreseeable Future	Measure of Output of Social System	Meaningful at the Household Level	Sensitive to Variations Between People and Over Time	Reflects Concern with a High Degree of Precision	Available at a Reasonable Cost (reasonable response burden)	Available Reporting for Alaska Natives	Available at the Village Level	Available at Least Every Five Years	Levels and Distributions	Linked Data	
SLiCA	satisfaction with household income	5	4	5	5	5	3	5	5	5	3	5	5	5
SLiCA	satisfaction with standard of living	5	4	5	5	5	3	5	5	5	3	5	5	5
SLiCA, NS1977	satisfaction with job opportunities	5	5	5	5	5	3	5	5	5	3	5	5	5
SLiCA, NS1977	satisfaction with cost of living in your community	5	5	5	5	5	3	5	5	5	3	5	5	5
SLiCA, NS1977	satisfaction with availability of goods in local stores	5	5	5	5	5	3	5	5	5	3	5	5	5
SLiCA	economic well-being satisfaction index (c4,c13,e9,e23,e24,h13d,h13j,h13k)	5	4	5	5	5	5	4	5	5	3	5	5	5
SLiCA	Square feet per person living in household	5	4	5	5	5	5	4	5	5	3	5	5	5
SLiCA	House feature index	5	4	5	5	5	5	4	5	5	3	5	5	4
SLiCA	House problem index	5	4	5	5	5	5	4	5	5	3	5	5	4
SLiCA	house in need of major repairs	5	4	5	5	5	4	5	5	5	3	4	5	
SLiCA	on waiting list for housing	3	4	3	5	5	4	5	5	5	3	4	5	
SLiCA	treated fairly in getting housing	3	4	3	5	5	3	5	5	5	3	4	5	
SLiCA	subsistence equipment	3	4	3	5	5	5	3	5	5	3	5	5	
SLiCA, NS1977	household earnings from carvings, skin clothing, furs, crafts, ivory, or similar	5	5	5	5	5	4	5	5	5	3	5	5	5
SLiCA	household income from self-employment	5	4	5	5	5	4	5	5	5	3	5	5	5

Source	Domain & Potential Indicator	Utility		Validity		Reliability	Precision	Feasibility	Applicability					Recommendation
		Understandable as Important	Available for Past and Reasonably Foreseeable Future	Measure of Output of Social System	Meaningful at the Household Level	Sensitive to Variations Between People and Over Time	Reflects Concern with a High Degree of Precision	Available at a Reasonable Cost (reasonable response burden)	Available Reporting for Alaska Natives	Available at the Village Level	Available at Least Every Five Years	Levels and Distributions	Linked Data	
SLiCA, NS1977	household income from government and other organizations	5	5	5	5	5	4	5	5	5	3	5	5	5
SLiCA, NS1977	household income from other sources	5	5	5	5	5	4	5	5	5	3	5	5	5
SLiCA, NS1977	household income by major source	5	5	5	5	5	5	4	5	5	3	5	5	5
SLiCA	ability of household to make ends meet	5	4	5	5	5	4	5	5	5	3	5	5	5
SLiCA	use of technology	3	4	3	5	5	5	3	5	5	3	5	5	
ASI	Per capita Gross Domestic Product	3	3	1	1	1	1	1	1	1	3	1	5	4
ASI	Unemployment rate	3	3	3	3	1	1	5	5	5	5	1	5	4
ASI	Poverty rate	3	3	3	3	1	1	5	5	5	5	1	5	4
ASI	Net-migration rate	3	3	3	3	1	5	5	5	5	5	1	5	4
ASI	Composite index: subsistence harvest, household income, transfers	3	3	3	3	1	5	1	3	3	3	3	5	4
	<b>Education</b>													
SLiCA	count of traditional skills learned as a child	5	4	5	5	5	5	4	5	5	3	5	5	5
SLiCA, NS1977, ASI	highest level of school completed	5	5	5	5	5	4	5	5	5	3	5	5	5
SLiCA, NS1977	highest level of school mother completed	3	5	3	5	5	4	5	5	5	3	5	5	
SLiCA, NS1977	highest level of school father completed	3	5	3	5	5	4	5	5	5	3	5	5	
SLiCA, NS1977	Satisfaction with Education Services	5	5	5	5	5	3	5	5	5	3	5	5	5
SLiCA	satisfaction with education and training received	5	4	5	5	5	3	5	5	5	3	5	5	5



Source	Domain & Potential Indicator	Utility		Validity		Reliability	Precision	Feasibility	Applicability					Recommendation
		Understandable as Important	Available for Past and Reasonably Foreseeable Future	Measure of Output of Social System	Meaningful at the Household Level	Sensitive to Variations Between People and Over Time	Reflects Concern with a High Degree of Precision	Available at a Reasonable Cost (reasonable response burden)	Available Reporting for Alaska Natives	Available at the Village Level	Available at Least Every Five Years	Levels and Distributions	Linked Data	
ASI	The proportion of students pursuing post-secondary education opportunities.	3	5	3	3	1	4	5	5	5	5	5	5	4
SLiCA, NS1977, ASI	The ratio of students successfully completing post-secondary education	3	5	3	3	1	5	5	5	5	5	5	5	5
ASI	The proportion of students who are still in the community 10 years later	3	5	3	3	1	4	5	5	5	5	5	5	4
	<b>Local Control</b>													
SLiCA, NS1977, ASI	Count of voting in three types of elections - local, regional, state or national	5	5	3	5	5	5	4	5	5	3	5	5	5
NS1977	Count of six types of institutions meeting needs	5	5	5	5	5	5	5	5	5	3	5	5	5
SLiCA	Count of three community civic activities	3	4	3	5	5	5	4	5	5	3	5	5	
SLiCA	How satisfied with courts in community	5	4	5	1	5	3	5	5	5	3	5	5	
SLiCA	How satisfied with influence Inupiat have on management of nat'l resources like fish and caribou	5	4	5	5	5	3	5	5	5	3	5	5	5
SLiCA, NS1977	How satisfied with influence Inupiat have on management of nat'l resources like oil, gas and minerals	5	5	5	5	5	3	5	5	5	3	5	5	5

Source	Domain & Potential Indicator	Utility		Validity		Reliability	Precision	Feasibility	Applicability					Recommendation
		Understandable as Important	Available for Past and Reasonably Foreseeable Future	Measure of Output of Social System	Meaningful at the Household Level	Sensitive to Variations Between People and Over Time	Reflects Concern with a High Degree of Precision	Available at a Reasonable Cost (reasonable response burden)	Available Reporting for Alaska Natives	Available at the Village Level	Available at Least Every Five Years	Levels and Distributions	Linked Data	
SLiCA	How satisfied with influence Inupiat have to reduce environmental problems in your area	5	4	5	5	5	3	5	5	5	3	5	5	5
SLiCA	local influence index (h7, h9, h13a)	5	4	5	5	5	5	4	5	5	3	5	5	5
SLiCA	participation in boards, councils, committees	3	5	3	5	5	5	4	5	5	3	5	5	
SLiCA	political motivation index	5	4	5	5	5	5	4	5	5	3	5	5	4
SLiCA	do public safety officers have the same priorities concerning public safety and general order that you do	5	4	5	5	5	4	5	5	5	3	4	5	
SLiCA	do you think courts have the same priorities concerning public safety and general order that you do	5	4	5	5	5	4	5	5	5	3	4	5	
SLiCA	do you think that fish and wildlife officers have the same idea of what is right and wrong that you do	5	4	5	5	5	4	5	5	5	3	4	5	
ASI	The percentage of indigenous members in governing bodies relative to the percentage of indigenous people in the total population	3	3	1	3	5	4	3	3	5	3	5	5	5
ASI	The percentage of surface lands legally controlled by the inhabitants through public governments, Native corporations	3	3	1	3	3	4	3	3	5	3	5	5	5

Source	Domain & Potential Indicator	Utility		Validity		Reliability	Precision	Feasibility	Applicability					Recommendation
		Understandable as Important	Available for Past and Reasonably Foreseeable Future	Measure of Output of Social System	Meaningful at the Household Level	Sensitive to Variations Between People and Over Time	Reflects Concern with a High Degree of Precision	Available at a Reasonable Cost (reasonable response burden)	Available Reporting for Alaska Natives	Available at the Village Level	Available at Least Every Five Years	Levels and Distributions	Linked Data	
ASI	The percentage of public expenses within the region (regional government, municipal taxes, community sales tax) raised locally.	3	3	1	3	5	4	3	3	5	3	5	5	5
ASI	The percentage of individuals who speak a mother tongue (whether Native or not) in relation to the percentage of individuals reporting corresponding ethnicity.	5	4	3	3	5	4	4	5	5	3	5	5	5
ASI	% of indigenous members in governing bodies relative to % of indigenous people in total population	3	3	3	3	5	4	3	3	5	3	5	5	5
ASI	% of surface lands legally controlled by local inhabitants	3	3	3	3	3	4	3	5	5	3	5	5	5
ASI	% of public expenses within region raised in that jurisdiction	3	3	3	3		4	3	3	5	3	5	5	5
ASI	% individuals who speak mother tongue in relation to % of individuals reporting corresponding ethnicity	5	4	3	3		4	4	5	5	3	5	5	5

Source	Domain & Potential Indicator	Utility		Validity		Reliability	Precision	Feasibility	Applicability					Recommendation
		Understandable as Important	Available for Past and Reasonably Foreseeable Future	Measure of Output of Social System	Meaningful at the Household Level	Sensitive to Variations Between People and Over Time	Reflects Concern with a High Degree of Precision	Available at a Reasonable Cost (reasonable response burden)	Available Reporting for Alaska Natives	Available at the Village Level	Available at Least Every Five Years	Levels and Distributions	Linked Data	
	<b>Health &amp; Safety</b>													
SLiCA, ASI	self-reported health	5	4	5	5	5	4	5	5	5	3	5	5	5
SLiCA	satisfaction with your health	5	4	5	5	5	3	5	5	5	3	5	5	5
SLiCA	count of health symptoms	5	4	5	5	5	5	4	5	5	3	5	5	
	Satisfaction with Health Services	5	5	5	5	5	3	5	5	5	3	5	5	5
SLiCA	Count of diagnosed health conditions	5	4	5	5	5	5	3	5	5	3	5	5	
SLiCA, ASI	smoking summary	4	4	3	5	5	5	4	5	5	3	4	5	
SLiCA	drinking summary	4	4	3	5	5	5	4	5	5	3	4	5	
SLiCA	problems related to alcohol or drugs in your home today (self-admin)	4	4	5	5	5	3	5	5	5	3	4	5	4
SLiCA	Drug use summary	4	4	3	5	5	5	4	5	5	3	4	5	
SLiCA	Victimization summary (self-admin)	4	4	5	5	5	5	4	5	5	3	4	5	5
SLiCA	Depression index (self-admin)	4	4	5	5	5	5	4	5	5	3	5	5	5
SLiCA	Social support index (self-admin)	4	4	5	5	5	5	4	5	5	3	5	5	5
SLiCA	Family contact index	4	4	5	5	5	5	4	5	5	3	5	5	
SLiCA	strength of links with family members not living with you	4	4	5	5	5	4	5	5	5	3	4	5	
SLiCA	How safe feel walking around this area at night	4	4	5	5	5	4	5	5	5	3	4	5	

Source	Domain & Potential Indicator	Utility		Validity		Reliability	Precision	Feasibility	Applicability					Recommendation
		Understandable as Important	Available for Past and Reasonably Foreseeable Future	Measure of Output of Social System	Meaningful at the Household Level	Sensitive to Variations Between People and Over Time	Reflects Concern with a High Degree of Precision	Available at a Reasonable Cost (reasonable response burden)	Available Reporting for Alaska Natives	Available at the Village Level	Available at Least Every Five Years	Levels and Distributions	Linked Data	
SLiCA	place to see doctor or other medical professional in your community	3	4	5	3	1	4	5	5	5	3	4	5	
SLiCA	able to get medicine you need	4	4	5	5	5	4	5	5	5	3	4	5	
SLiCA	untreated medical problem	4	4	5	5	5	4	5	5	5	3	4	5	
SLiCA	waiting to visit specialty clinic	4	4	5	5	5	4	5	5	5	3	4	5	
SLiCA	traditional healer or wellness practices available in your community	3	4	3	3	1	4	5	5	5	3	4	5	
SLiCA	seen a traditional healer	4	4	3	5	5	4	5	5	5	3	4	5	
SLiCA	family members affected by different medical conditions	3	4	5	3	5	4	5	5	5	3	4	5	
SLiCA	hampered in daily activities by chronic physical health problem or disability	5	4	5	5	5	4	5	5	5	3	4	5	
SLiCA	difficulty hearing, seeing, communicating, walking, climbing stairs, bending, learning or doing any similar activities	5	4	5	5	5	4	5	5	5	3	4	5	
SLiCA	perceived problems among indigenous in community	3	4	5	3	5	1	5	5	5	3	5	5	
SLiCA	suicidal thoughts	5	4	5	5	5	4	5	5	5	3	4	5	
SLiCA	satisfaction with public safety services provided in your community	4	4	5	5	5	4	5	5	5	3	5	5	5
ASI	Infant mortality	5	3	3	3	1	5	5	5	1	5	5	5	5

Source	Domain & Potential Indicator	Utility		Validity		Reliability	Precision	Feasibility	Applicability					Recommendation
		Understandable as Important	Available for Past and Reasonably Foreseeable Future	Measure of Output of Social System	Meaningful at the Household Level	Sensitive to Variations Between People and Over Time	Reflects Concern with a High Degree of Precision	Available at a Reasonable Cost (reasonable response burden)	Available Reporting for Alaska Natives	Available at the Village Level	Available at Least Every Five Years	Levels and Distributions	Linked Data	
ASI	Child mortality	5	3	3	3	1	5	5	5	1	5	5	5	4
ASI	Access to health care	5	3	5	5	1	5	5	5	3	5	5	5	4
ASI	Suicide rate	5	3	3	3	1	5	5	5	3	5	5	5	4
ASI	Obesity rate	5	3	3	3	1	5	5	5	3	5	5	5	4
ASI	Total population	1	3	1	1	1	5	5	5	3	5	5	5	4
ASI	Number of births	1	3	1	1	1	5	5	5	3	5	5	5	4
ASI	Number of deaths	1	3	1	1	1	5	5	5	3	5	5	5	4
ASI	Net migration	3	3	3	3	1	5	5	5	3	5	5	5	5
	<b>Physical Environment</b>													
SLiCA, NS1977	count of comparable subsistence activities	5	5	5	5	5	5	4	5	5	3	5	5	5
SLiCA, ASI	participation in outdoor activities	5	4	5	5	5	5	4	5	5	3	5	5	5
SLiCA, NS1977	How satisfied with opportunities to hunt and fish	5	5	5	5	5	3	5	5	5	3	5	5	5
SLiCA, NS1977	How satisfied with amount of fish and game available locally	5	5	5	5	5	3	5	5	5	3	5	5	5
SLiCA	Local environmental problem index	5	4	5	3	5	5	4	5	5	3	5	5	5
SLiCA	How satisfied with the health of the environment in your area	5	4	5	5	5	3	5	5	5	3	5	5	5
SLiCA, ASI	Consumption of traditional food	5	4	4	5	5	4	4	5	5	3	5	5	5
SLiCA, ASI	Harvest of traditional food	5	4	5	5	5	5	4	5	5	3	5	5	5

Source	Domain & Potential Indicator	Utility		Validity		Reliability	Precision	Feasibility	Applicability					Recommendation
		Understandable as Important	Available for Past and Reasonably Foreseeable Future	Measure of Output of Social System	Meaningful at the Household Level	Sensitive to Variations Between People and Over Time	Reflects Concern with a High Degree of Precision	Available at a Reasonable Cost (reasonable response burden)	Available Reporting for Alaska Natives	Available at the Village Level	Available at Least Every Five Years	Levels and Distributions	Linked Data	
SLiCA, ASI	Number of people or households engaged in the traditional economy	5	4	4	5	5	4	4	4	5	3	5	5	5
SLiCA, ASI	Time on the land	5	4	4	5	5	5	4	4	5	3	5	5	5
SLiCA, ASI	Participation in traditional/outdoor activities	5	4	5	5	5	4	5	4	5	3	5	5	5
	<b>Global</b>													
SLiCA, NS1977	Satisfaction with Village Life	5	5	5	5	5	3	5	5	5	3	5	5	5
SLiCA	Satisfaction with Life as a Whole	5	4	5	5	5	3	5	5	5	3	5	5	5
SLiCA	considered moving from community	3	4	3	5	5	4	5	5	5	3	4	5	4
SLiCA	reasons for moving from or staying in community	5	4	3	5	5	3	4	5	5	3	4	5	4
SLiCA, NS1977	Gender ratio	3	5	3	5	5	4	5	5	5	3	5	5	
SLiCA, NS1977	proportion of community population 60 and over	3	5	3	5	5	4	5	5	5	3	5	5	
	<b>Explanatory Variables</b>													
SLiCA, NS1977	reasons away from community in last year a month or more	3	5	3	5	5	4	4	5	5	3	4	5	
SLiCA, NS1977	reasons lived away from community a year or more	3	5	3	5	5	4	4	5	5	3	4	5	

Source	Domain & Potential Indicator	Utility		Validity		Reliability	Precision	Feasibility	Applicability					Recommendation
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SLiCA, NS1977	reasons for not starting a job in last week	3	5	3	5	5	4	4	5	5	3	4	5	
SLiCA, NS1977	reasons for stopping work on job	3	5	3	5	5	4	4	5	5	3	4	5	
SLiCA, NS1977	subsistence activities affected by oil and gas industry activities	3	5	3	5	5	5	4	5	5	3	4	5	5
SLiCA, NS1977	descriptors of impact on subsistence activity	3	5	3	5	5	5	3	5	5	3	4	5	5



## **REVIEW OF TEAM-RECOMMENDED INDICATORS BY THE NSMB**

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On April fourth and fifth 2012 the North Slope Management Board met in Barrow to review the set of social indicators recommended by the study team. As a result of the review, the NSMB decided to drop one indicator, change two indicators, and add two indicators. The team revised the assessment matrix to reflect the NSMB's conclusions. The team also revised the questionnaire accordingly.

## **RECOMMENDED SOCIAL INDICATORS**

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Based on the preceding analysis and review, the NSMB and the research team recommend the following indicators.

### **Cultural Continuity**

1. Number of subsistence activities pursued in past 12 months
2. Number of months spent five days or more on subsistence activities
3. Number of traditional skills learned as a child
4. Ability to understand, speak, read, and write Iñupiaq
5. Proportion of meat and fish consumed that is traditional food
6. Proportion of meat and fish consumed that is harvested by household
7. Proportion of meat and fish consumed that was received traditional food
8. Index of importance of cultural values
9. Index of satisfaction with community promotion of cultural values
10. Preference for type of work: subsistence, job, or both

### **Economic Well-Being**

1. Number of subsistence activities pursued in past 12 months (see above)
2. Pounds of traditional food harvested for top ten species harvested by community
3. Shares of bowhead whale received for household participation in whaling
4. Weeks worked in past 12 months (total, longest job, related to oil and gas, related to offshore petroleum)
5. Occupation and industry of longest job
6. Months in last year did not have a wage job and wanted one
7. Total personal income in past 12 months
8. Household income by major source (wages, self-employment, arts & crafts, transfers)
9. Index of satisfaction with economic well-being items
10. Ability of household to make ends meet
11. Proportion of meat and fish consumed that is traditional food (see above)
12. Proportion of meat and fish consumed that is harvested by household (see above)
13. Proportion of meat and fish consumed that was received traditional food (see above)
14. House problem index
15. House feature index

## **Education**

1. Number of traditional skills learned as a child (see above)
2. Highest level of school completed
3. Satisfaction with education and training received
4. Satisfaction with education services

## **Local Control**

1. Count of votes placed in local, regional, state, and national elections
2. Count of six institutions meeting needs or not
3. Satisfaction with influence Iñupiat have on management of natural resources like oil, gas, and minerals
4. Satisfaction with influence Iñupiat have on management of natural resources like fish and caribou
5. Satisfaction with influence Iñupiat have to reduce environmental problems in your area
6. Index of political motivation

## **Health**

1. Self-reported health
2. Satisfaction with your health
3. Satisfaction with health services
4. Satisfaction with public safety services
5. Victimization summary
6. Depression index
7. Social support index
8. Problems related to alcohol or drugs in your home today

## **Physical Environment**

1. Number of subsistence activities pursued in the past 12 months (see above)
2. Number of outdoor activities pursued in the past 12 months
3. Satisfaction with amount of fish and game available locally
4. Local environmental problem index
5. Satisfaction with the health of the environment in your area
6. Satisfaction with recreational facilities in community
7. Pounds of traditional food harvested for top ten species harvested by community (see above)
8. Proportion of meat and fish consumed that is traditional food (see above)
9. Proportion of meat and fish consumed that is harvested by household (see above)

## **Global Indicators**

1. Satisfaction with life in this community
2. Satisfaction with life as a whole
3. Considered moving from community and reasons for staying or moving

In addition to the above social indicators, the research team recommends the following variables to help explain changes in well-being.

### **Explanatory Variables**

1. Identification of any subsistence activities affected by oil industry activities in the last year
2. Description of each activity affected
3. Description of location of activity affected
4. Description of associated industry activity
5. Identification of actions that could have avoided or reduced impact

## **SOCIAL INDICATOR RESULTS FROM SLICA**

Accompanying this document as Appendix A are SLiCA results for the three Iñupiat settlement regions of Alaska (North Slope, Northwest Arctic, Bering Straits), the combined Inuit settlement regions of Canada, Greenland, and Chukotka, Russia for each social indicator.

## **QUESTIONNAIRE**

Many of the social indicators identified in the previous section are composed of multiple measures. Previous social indicators research has shown that multiple measures of a single concept are more likely to accurately measure the concept than a single measure. There is also clearly a tradeoff between the accuracy of social indicators based on multiple measures and response burden. The questionnaire takes 30 minutes to administer. It is therefore within the target response burden stated in the Research Plan.

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