

Introduction, Methods and Technical Notes

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Introduction

IN 1.1. Project Background and Funding

The communities of the North Slope Borough (NSB) have experienced profound social, economic, and environmental changes over the last century and particularly since the discovery of large oil reserves on the north slope of Alaska in the late 1960's. An evolution in health status has accompanied these changes. Recognizing that a healthy population is vital to a robust economy, a vibrant culture, and a promising future for the next generation, the NSB Health Department has commissioned this baseline community health analysis to better understand and work with North Slope communities to address the health issues they face.

This project was funded by a grant through the National Petroleum Reserve-Alaska (NPR-A) impact program, which provides funding for public facilities and services in communities most directly impacted by oil and gas development in the NPR-A region. This grant provided funds to the NSB Health Department for pioneering the use of Health Impact Assessment (HIA), a policy tool that ensures that the planning, evaluation, and permitting of large projects consider health and include mitigation measures to protect health. A solid understanding of the health problems and trends currently affecting a community is an important early step in the HIA process. This report is intended to provide the baseline community health information needed to fully evaluate potential impacts to human health from natural resource development and other major planning decisions in the NSB.

IN 1.2. How Can This Report Best Be Used by NSB Communities?

In addition to providing baseline health information for Health Impact Assessment in the NSB, this report is intended to serve as an ongoing resource for public health planners, community leaders, governmental departments, and others working to improve community well-being in the NSB. Below are some examples of how information from this report can be utilized. We hope that this project will prompt the discussion, collaboration, and commitment necessary to make the NSB the healthiest community possible.

Community Health Promotion and Strategic Planning: The findings of this baseline community health analysis can be used to guide the NSB Health Department and other community partners in setting goals, prioritizing health issues, envisioning change, and working together to develop programs and policies to achieve community goals. The process of strategic community health planning is dynamic. Community input and participation is necessary at every step and involves exchanging ideas and stories, listening to concerns and different perspectives, and mobilizing for change. This collaborative process can, in itself, be constructive and an important step toward improving community health. The NSB Health Department has already begun developing a framework for addressing disparities in child and family health and is actively seeking partnerships and community involvement.

Grant-writing and securing funding: Baseline data from this report are available to NSB Health Department and other Borough departments for use in grant applications and other projects. A complete bibliography and comprehensive description of data sources provide additional sources of information on health and health-related topics in the NSB.

Monitoring health trends: Many of the health measures included in this report have the potential to be updated regularly and used to monitor trends in aspects of community health and for evaluating the effectiveness of specific health promotion efforts.

Guiding future research and data collection: This report identifies a number of areas where reliable data are lacking and/or further study could benefit the health of NSB communities.

Training and orientation: This report may be useful in orienting new health providers, counselors, public health nurses, students, interns, and others to some of the major community health issues as well as factors influencing community health in North Slope communities.

Methods and Technical Notes

MTN 1. Conceptual Framework

Every culture, community, and individual has a slightly different definition of health. For many cultures, particularly indigenous cultures, health of the individual is closely linked with that of the community and is based on an individual's ability to fulfill his or her role in society and relate to others. This report utilizes a broad definition of health, put forth in the constitution of the World Health Organization in 1948: *"Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."*

Our understanding of what it takes to be healthy is constantly evolving. Research has shown us that health is shaped by many factors—genetics and personal behavior, as well as external factors such as economic conditions, culture and social connections, the physical environment, and access to health care. Our analysis also examines these factors, sometimes called "health determinants," and how they may be impacting health in the NSB.

In planning, researching, and writing this report, the Inupiat Values that developed over countless generations and still form the foundation of health and well-being in North Slope communities were always kept in mind:

Love and Respect for Elders, One Another, and Nature
 Family Kinship Roles
 Sharing
 Knowledge of Inupiat Language
 Humor
 Hunting Traditions
 Compassion
 Humility
 Avoidance of Conflict
 Spirituality

—*"Inupiat Values" Native Village of Barrow*

MTN 2. Definition of the North Slope Borough Population

For this report, the North Slope Borough (NSB) refers to the region including the villages of Anaktuvuk Pass, Atkasuk, Barrow, Kaktovik, Nuiqsut, Point Hope, Point Lay, and Wainwright. Unless otherwise specified, the NSB does not refer to the Borough governmental body but rather to the region and its people. The referenced NSB population includes both Alaska Native—primarily Inupiat—and non-Native residents, but it does not include non-resident workers stationed at sites on the North Slope. Wherever possible, this report includes data for all residents of the NSB; however, some valuable data sources include only Alaska Native residents, and some sources do not include the NSB villages (Point Hope and Anaktuvuk Pass) that obtain most of their health care in other service areas. When data include only a subset of the NSB population, this will be noted in the text. In general, race and/or ethnic group and geographic region definitions and terminology are kept as they are in the source material; therefore, some terminology (for example Caucasian vs. white, or North Slope vs. Arctic Slope) may vary within this report.

MTN 3. Data Sources and Health Indicators (also see Appendix B)

In developing this project, interviews were conducted with local community and tribal leaders, health aides, and medical and public health personnel to establish a context for discussion of community health issues in the NSB and to ensure that every attempt is made to address topics of community concern in the report. High school students were also surveyed about their perceptions of health problems in their communities.

A variety of data sources are used in this analysis in an attempt to develop a comprehensive picture of evolving health in North Slope communities. Health indicators, data sources, and health topics were identified and selected by reviewing models and examples of community health assessments and community health profiles prepared by a variety of organizations. Data sources were also identified through online data searches, review of peer-reviewed published literature, reports and bulletins, personal

communication with public health experts, and review of draft statewide guidelines for Health Impact Assessment baseline health data sources provided by the Alaska Native Tribal Health Consortium.

A large portion of the data included in this report is drawn from existing sources such as state and national surveys, disease registries, governmental and health system databases, and published reports. A great deal of the data is publically available, often accessible online. Additional data were obtained through specific requests to the agency or department holding the data. Peer-reviewed journal articles were also a source of some NSB-specific data, but those sources primarily provided background information on the topics examined in the report.

This report also includes a new body of information for the NSB: for the first time, a series of health questions were included in the locally-conducted North Slope Borough, 2010 Economic Profile and Census Report, conducted by the North Slope Borough Department of Planning and Community Services, referred to in this report as the NSB Census. In an effort to create an accurate and complete picture of North Slope communities, the NSB has done its own household census every 5–7 years over the last 20 years. This census has included questions about housing, employment, education, income, subsistence, Inupiat language ability, and general attitudes. The new health questions were developed in an attempt to fill gaps in the available health data as well as to understand the health of each individual NSB community in more detail. A major strength of the health data collected in the 2010 NSB Census is the high proportion of households that participated in each community and the relatively large number of survey participants overall. While some data were collected by proxy—meaning that one household member answered questions about other household members to the best of his or her ability—the high level of participation slope-wide was felt to provide a very representative picture of the NSB population. Health data from the 2010 NSB Census were analyzed using SPSS Stats 18 software and are incorporated into this report in relevant sections and included in entirety in Appendix A. The full 2010 NSB Census report will be available separately. Additional information on the 2010 NSB Census methodology is provided in Appendix B.

Commonly-used data source acronyms:

ABVS: Alaska Bureau of Vital Statistics
(Alaska) BRFSS: (Alaska) Behavioral Risk Factor Surveillance System
(Alaska) PRAMS: (Alaska) Pregnancy Risk Assessment Monitoring System
(Alaska) YRBS: (Alaska) Youth Risk Behavior Survey
CDC: Centers for Disease Control and Prevention

Reference endnotes are included for each report chapter, and a full bibliography and detailed descriptions of major data sources appear in Appendix B.

MTN 4. Data Limitations and Interpretation of Data

All data have limitations, and where identified, caveats are noted in the text or in the accompanying figures and tables later in this report. Detailed descriptions of data sources, limitations, and caveats in interpreting data are included in Appendix B as well. Often, multiple sources of data are used to examine a single topic, especially when one source of data has significant limitations. Generally, all available years of reliable data are included, up to the most recent year available at the time of writing.

Evaluating health data in NSB communities poses some specific challenges, primarily related to the relatively small population of the region. When calculating the prevalence of a disease or the rate of an event in small communities, small numbers of cases can result in unreliable estimates that fluctuate greatly from year to year or from community to community. Surveys that attempt to achieve a representative statewide sample—for example, the Behavioral Risk Factor Surveillance System (BRFSS) and the Pregnancy Risk Assessment Monitoring System (PRAMS)—typically include a fairly small number of participants from the NSB in a given year and, therefore, are not very reliable annual estimates for the NSB population.

Often in this report, multiple years of data are combined to achieve more stable rates or larger sample sizes. For example, for BRFSS survey data, 3 years of data were combined to calculate rolling 3-year averages. Data are presented only for questions for which at least 50 survey responses per time period are available for the NSB census area. Additional information about BRFSS data is located in Appendix B. Alaska Bureau of Vital Statistics (ABVS) data were also combined into 3- to 5-year periods and presented as rolling average rates. It is noted when rates are based on fewer than 20 events or cases per time period, as these are less reliable and must be interpreted with particular caution. When confidentiality of

personal health information is at risk due to small numbers of events (generally fewer than six in a given location and time period), the data are not reported.

The terms “statistically significant,” or “significant” are used in this report to describe associations or differences between two variables or population groups that are statistically unlikely to have occurred by chance alone. The threshold used throughout this report is a p-value of <0.05, indicating that there is less than a 5% chance that an observed difference or association occurred by chance alone. Other statistical terms used in this report are discussed below under Terminology.

Finally, great caution should be used whenever making health comparisons between two groups. There are many factors, often unmeasured, that can affect the prevalence of disease in a population.

MTN 5. Health Disparities, Comparison Populations, and Benchmarks

For decades, the public health field has recognized that some groups within our society suffer higher rates of many diseases than others. Often, members of ethnic or other minority groups, those with lower education or income levels, and those living in rural communities have shorter life expectancies and suffer a greater burden of health problems than the general population. These differences are referred to as “health disparities.” Identifying health disparities can be an important step in a community’s efforts to improve community health. Where available, this report includes comparisons of health measures in the NSB to those of Alaska and the U.S. overall to identify areas where the NSB is affected disproportionately by certain health problems compared to the larger population. Depending on availability, data for other circumpolar regions, other Alaskan communities or regions, or specifically for the Alaska Native population, may be provided for reference as well. Based on data collected in the 2010 NSB Census, the author also attempts to identify significant health disparities within the NSB. Benchmarks of many of the targets presented in the Alaska Department of Health and Social Services publication, *Healthy Alaskans 2010: Targets and Strategies for Improved Health* have also been included. Created by a statewide council, the Healthy Alaskans Partnership Council, this document put forth a set of health objectives for the year 2010 that, if achieved, would reflect significant improvements in health status for the state of Alaska.

MTN 6. Terminology

This report is intended for readers both with and without a background in public health. Definitions of technical terms that are used throughout the report are provided below:

95% Confidence Interval: A statistical term used in a number of different settings, the 95% confidence interval around an estimated rate is the range in which one can be 95% confident that the true population rate or proportion lies. Estimated rates in small populations or based on small sample sizes tend to have wider confidence intervals. If two groups have estimates with 95% confidence intervals that do not overlap, then one can be fairly sure that the death or event rate, or prevalence of disease or health characteristic, is truly different in these two populations.

Adequate Prenatal Care: In this report, we utilized a measurement call the Adequate Prenatal Care Utilization (APNCU) index. This index assesses the adequacy of prenatal care based on the following information obtained from birth certificates: trimester of entry into prenatal care, number of prenatal visits, and gestational age of infant at birth. For this report, the term “adequate prenatal care” combines the categories of “adequate” and “adequate plus,” according to the index categories used by the Alaska Bureau of Vital Statistics.

Age-Adjusted Rate: An age-adjusted rate is a mathematically-weighted average of the age-specific actual (crude) rates of a disease or condition. The “weight” of each age group is determined by the proportion of persons in that age group in a standard population (commonly the 2000 U.S. standard population). Disease rates are typically age-adjusted to allow comparisons between populations with different age distributions. For example, if one population has a higher proportion of older people, that population is likely to have a higher death rate from heart disease, while a younger population may have relatively higher death rate from motor vehicle accidents. To compare death rates in these two populations, the rates can be adjusted to control for the effect of age.

Body Mass Index (BMI): BMI refers to a person’s weight in kilograms, divided by their height in meters squared. The categories of healthy weight, overweight, and obese are based on BMI. For most people,

BMI correlates with their amount of body fat and is an inexpensive and simple method for estimating obesity rates in a population. For children, these categories also take into account age and gender due to normal differences in body fat between boys and girls and at various ages. Therefore, for children, BMI age- and sex-specific percentiles are used. The categories below are based on Centers for Disease Control and Prevention guidelines.

Weight Category	Adults	Children and Teens
Underweight	BMI less than 18.5 kg/m ²	Less than 5th BMI percentile
Healthy weight	BMI 18.5–24.9 kg/m ²	5th percentile to less than the 85th BMI percentile
Overweight	BMI 25.0–29.9 kg/m ²	85th to less than the 95th BMI percentile
Obese	BMI 30 or greater kg/m ²	Equal to or greater than the 95th BMI percentile

Crude Rate: A crude rate is calculated by dividing the actual number of observed events or cases in a population by the total population, generally multiplied by a factor of 100–100,000 (depending on how common or rare the disease is).

Health Disparity: An important concept in population health, health disparities are substantial differences in measures of health, life expectancy, and quality of life that occur among populations differing by race or ethnicity, gender, education or income, disability, living in rural localities, or sexual orientation.

Incidence: Incidence refers to the total number of new cases of a specific disease during a year, divided by the total population, generally multiplied by a factor of 100–100,000 (depending on how common or rare the disease is). This is sometimes called annual cumulative incidence.

Infant Mortality Rate (IMR): IMR refers to the number of deaths in infants less than 1 year of age during a year, divided by the total number of live births during that year, generally multiplied by a factor of 1000.

Low Birth Weight (LBW): LBW refers to infants born weighing less than 2500 grams (5.5 pounds).

Mortality Rate: The mortality rate, sometimes also called a death rate, is the total number of deaths in a population (from a specific cause or all causes combined) during a year, divided by the total population, generally multiplied by a factor of 100,000.

Neonatal Mortality Rate: The neonatal mortality rate is a subclassification of infant mortality rate, referring to the number of deaths in infants less than 28 days of age during a year, divided by the total number of live births during the year, generally multiplied by a factor of 1000.

Post-Neonatal Mortality Rate: The post-neonatal mortality rate refers to the number of deaths in infants between 28 days and 1 year of age during a year, divided by the total number of live births during that year, generally multiplied by a factor of 1000.

Prevalence: A common descriptive statistic, prevalence refers to the total number of cases, new or old, of a disease, condition, or characteristic existing at a point in time divided by the total population at the point in time, generally multiplied by a factor of 100–100,000 (depending on how common or rare the disease is). The prevalence of a disease in a population depends on the number of people who get the disease as well as how long they live with the disease.

Preterm Birth: Preterm refers to infants born before 37 weeks' gestation.

Rate: A rate is defined as the number of events or cases occurring in a specified time period, divided by the number of people in the population during that period.

Statistical Significance: An observed difference between two populations or relationship between two variables (for example, age and general health status) is termed statistically significant when it is unlikely to have occurred by chance. Generally, the level of statistical significance is set at 5%, where there is only a 5% chance that the observed difference or relationship occurred by chance alone. Statistically significant differences are difficult to detect when one or more groups being compared are very small, unless the differences between the two groups are very large or the relationships between two variables are very strong.

Sudden Infant Death Syndrome (SIDS): SIDS refers to the sudden, unexplained death of an infant from an unknown cause.