


# Part I: Summary and Recommendations



<b>SR 1. Evolving Health in the NSB</b> .....	18
SR 1.1. NSB Community Health in Historical Context .....	18
SR 1.2. Health Disparities in the NSB .....	20
SR 1.3. Notable Health Trends in the NSB. ....	30
SR 1.4. Leading Health Burdens in the NSB .....	37
<b>SR 2. Determinants of Health in the NSB</b> .....	39
SR 2.1. The Health Determinants Framework .....	39
SR 2.2. Drivers of Health in the Alaskan Arctic .....	40
SR 2.3. Drivers of Health in the NSB .....	40
<b>SR 3. Working Together To Improve Health in the NSB:</b>	
<b>Focus on Prevention</b> .....	46
SR 3.1. Community-Based Health Promotion and Disease Prevention .....	46
SR 3.2. Focused Health Promotion Recommendations .....	48
SR 3.3. Enhancing Overall Community Health .....	52
SR 3.4. Setting Targets and Monitoring Community Health .....	52
SR 3.5. Data Gaps and Research Needs .....	58
<b>Endnotes</b> .....	59

*Part I is intended for public health professionals and other local leaders involved in strategic planning and program development that is aimed at supporting and improving community health. This section synthesizes data and observations from the full report that follows to provide a picture of health on the North Slope in context. Leading health problems, health disparities, and major trends are discussed, as are local factors that are likely driving health status in the North Slope Borough.*

*This section also highlights resources and assets in NSB communities that build health, such as strong family and social ties, access to healthy subsistence foods, traditional knowledge and cultural values, engaged youth and respected elders, a history of successful self-determination, expanding educational opportunities, and leadership that is committed to improving community health. These and many other strengths can be harnessed as NSB communities work together to improve the health of their people.*

*Specific recommendations are included about how the health department and other sectors of the community can utilize the information contained in this report to address major community health issues. Specific “high impact” areas for health promotion are proposed, as well as broader community-based efforts with the potential to enhance overall community health and well-being.*

*Finally, a number of data gaps and areas where further research may benefit the health of North Slope communities are identified. Suggestions for ongoing monitoring and follow-up of community health indicators in the NSB are also discussed.*

## **SR 1. Evolving Health in the NSB**

### **SR 1.1. NSB Community Health in Historical Context**

#### **SR 1.1.1. A Brief History of Health in Rural Alaska**

Few reliable health data exist for the NSB before the mid 1970s, but to interpret the more recent NSB-specific health indicators reviewed in this report, some historical context is useful. The early history of health and disease in rural Alaska is based primarily on observations made by European explorers and traders at the time of contact and on limited archeological evidence. These sources paint a picture of Alaska Native populations whose health and survival were closely linked to the harsh physical environment in which they lived.<sup>1</sup> Contact with non-Native traders and settlers radically changed life for the people of rural Alaska, bringing epidemic infectious diseases such as measles, influenza, and tuberculosis.<sup>1</sup> Alaska Natives, who were without immunity to such diseases, were devastated by these infections in the 19th and 20th centuries.<sup>2</sup> Contact with non-Natives also introduced these communities to alcohol and tobacco, both of which have had undeniable health impacts in rural Alaska. Much of the last century also saw institutionalized discrimination, damaging social policies, and contamination of the natural environment upon which many rural communities rely for food, spiritual health, and cultural survival. Unethical medical experimentation on Alaska Natives also left residents angry and confused and eroded the trust in health care and research institutions.<sup>3</sup> The epidemics and policies imposed on Alaska Native people disrupted cultural traditions and social relationships, leaving many communities traumatized and exacerbating problems with alcohol, drugs, and interpersonal violence. In 1950, the life expectancy of Alaska Natives was nearly 20 years shorter than that of their white counterparts, and infant mortality was more than one in ten, five times that in whites.<sup>2</sup>

During the latter half of the 20th century, rural Alaska also saw a number of important public health successes as well as a resurgence of cultural heritage as a source of pride and a foundation for improving community well-being. In the 1950s, efforts to address the tuberculosis epidemic in rural Alaskan communities formed the foundation of today’s community health aide program and rural health care systems. Since then, improved water, sanitation, housing, and public safety, as well as immunization programs and the provision of essential health and emergency services in rural areas, have contributed to a 20-year gain in life expectancy and a 10-fold decrease in infant mortality among Alaska Natives.<sup>2</sup> While infectious disease in Alaska is still a significant public health concern and an area of health disparity, it is now responsible for only a small fraction of deaths in rural Alaska.<sup>2</sup> Many regions, including the North Slope,

have also founded cultural heritage centers, educational programs in traditional language and culture, talking circles, and other initiatives that support subsistence and traditional cultural values as avenues to improved community health and well-being. The more recent models of community-based participatory research have helped to rebuild partnerships and trust between communities and researchers and have started to answer questions that communities have about their own health and the health of the subsistence resources on which they rely.

Despite these successes, significant inequalities persist between the health of rural and urban populations in Alaska, and between that of different racial and socioeconomic groups. Moreover, new inequalities have emerged. During the decade 1999–2008, the life expectancy for Alaska Natives (70.1 years) still lagged behind that of Alaskans overall (75.6 years) and that of the general U.S. population (77.8 years).<sup>4</sup> While substantial improvements in the area of maternal and child health have been achieved, this also remains an area of significant health inequality in northern and southwest rural Alaska, compared with the state and nation as a whole. Chronic diseases such as cancer, heart disease and chronic lung disease have emerged as leading causes of illness and death among Alaska Natives. Lung and colon cancer, in particular, have increased among Alaska Natives, resulting in cancer mortality rates that are significantly higher than rates among U.S. whites.<sup>5</sup> Injuries remain a major area of health disparity and a leading cause of death and disability in rural Alaska, especially among youth, and the related problems of alcoholism, family violence, and sexual assault continue to plague many communities. During the latter decades of the twentieth century, a pattern emerged in Alaska, characterized by epidemic levels of suicide among young Alaska Native men, particularly in northern regions of the state.<sup>6</sup> This pattern has also been observed in other circumpolar arctic indigenous populations such as those in northern Canada and Greenland. Though the reasons are complex and not completely understood, many researchers and Alaska Native people believe that this pattern is linked to the historic trauma and cultural changes that have taken place during this time period.<sup>7</sup>

## SR 1.1.2. Overview of Community Health Status and Achievements in the NSB

Since the formation of the NSB in the early 1970s, many aspects of health have improved for the population of the North Slope. Today, a large majority of adults in the NSB rate their health as good to excellent.<sup>8</sup> The good health enjoyed by most residents speaks to the resilience of the people and an ability to adapt not only to a harsh and changing physical environment but to the social, cultural, and economic transformation they have experienced.

Reported general health status among NSB Iñupiat people appears to be quite similar to that of Alaska Natives statewide.<sup>8,9</sup> The national County Health Ranking program placed the NSB 15th out of 23 Alaskan census areas in overall health outcomes, based on a combination of health indicators such as infant mortality and premature death. While this ranking places the NSB in the 3rd quartile in the state, it also suggests that the population of the North Slope may experience better overall health status than that of neighboring northern, southwestern, and interior rural Alaskan regions that share many geographic and demographic characteristics.<sup>10</sup>

The NSB has seen a number of significant public health achievements in the past several decades. The number of vaccine-preventable infections and diarrheal illness have both declined in the last 20 years.<sup>11</sup> The last thirty years in the NSB have also seen a decline in unintentional injury and a decrease in reported prenatal alcohol use.<sup>4</sup> Today, chronic respiratory illness among children does not appear to be as prevalent as in some other rural areas of the state.<sup>8,12</sup> Despite persistently high suicide rates in the region, the number of days with poor mental health reported by adult NSB residents is below average for the state.<sup>9</sup> Looking at all the Alaskan boroughs and census tracts in 2002–2008, adults in the NSB reported, on average, the second lowest number of mentally unhealthy days in the state.<sup>10</sup>

The overall good health that NSB residents experience today and the improvements seen in the last 30 years likely reflect, in part, the substantial investments that have been made in health and social services, education and employment opportunities, community infrastructure, such as housing, water, and sanitation, and public safety, as well as local legislation restricting access to alcohol.

Subsistence, however, remains at the core of community health in North Slope communities, providing not only an important source of nutritious food but social interaction, cultural pride, and physical activity.

As is discussed in detail later in this report, the subsistence foods used by majority of NSB households confer many health benefits and may be protective against chronic diseases such as diabetes, which is on the rise in the NSB but remains far less prevalent than among most Lower 48 Native American populations and even most other Alaska Native regions. Local leadership has also prioritized supporting and strengthening traditional cultural values, culturally affirming educational programs, and maintaining a strong voice in decisions that impact North Slope communities, all of which can benefit community health.

The following sections will review the available data on the major health disparities in the NSB, notable trends and emerging health problems, and the leading burdens of disease and disability on the North Slope. For further discussion on each of these health topics, as well as the various individual and community factors influencing them, the reader is referred to the corresponding chapters in Part II: Full Report.

## SR 1.2. Health Disparities in the NSB

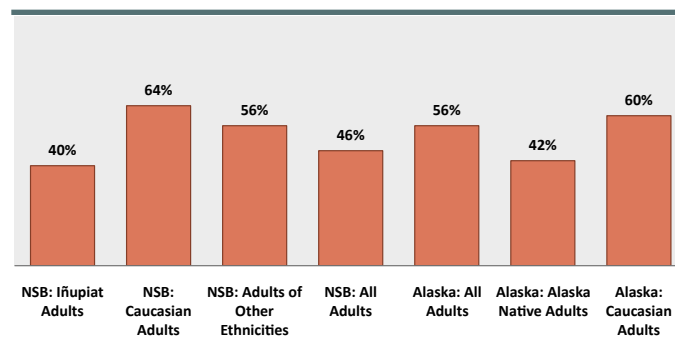
Despite the many community health improvements seen in the NSB in recent years, some health problems are more common or more severe in the NSB than in most other parts of Alaska or the rest of the U.S. Within the NSB, some groups also suffer disproportionately from poor health. These observed differences are often called “health disparities,” referring to 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. The reduction of health disparities has been identified as a top state and national public health priority, and recognizing health disparities can be an important step toward improving health at the community level.

### SR 1.2.1. General Health Status

An analysis of self-reported health status data reveals a number of important health disparities between the NSB and the state as a whole as well as within the NSB. General health status is discussed in detail in Part II, Chapter 1: Overall Health.

The 2010 NSB Census asked residents about their general health and that of household members. While self-reported general health status varied widely across the North Slope communities, adults of all age groups in the NSB were less likely to report “very good” or “excellent” general health than were adults statewide. Moreover, reported health status among Iñupiat residents, both adults and children, was significantly worse than that of Caucasians or other ethnic groups in the North Slope.<sup>8</sup> This inequality between Iñupiat and non-Iñupiat residents of the NSB is similar to that seen statewide between Alaska Natives and non-Natives.<sup>9</sup>

**Figure SR.1: General Health Status Among Adults:**  
*Percent with reported very good to excellent general health*

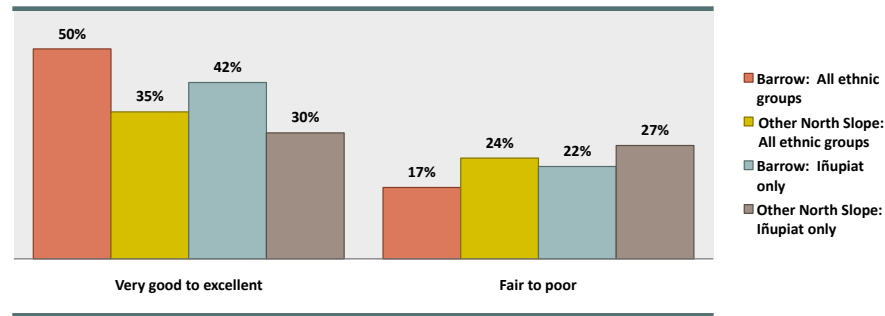


NSB data source: 2010 NSB Census.  
Alaska data source: 2008 Alaska BRFSS.

Barrow is different from the other North Slope villages in a number of ways. It is the largest community by far, and has a more ethnically diverse population. Barrow serves as a regional hub for most commercial,

health, education, and social services, and also has employment opportunities not available in other villages. According to the 2010 NSB Census, reported general health was better in Barrow than in the other villages as a whole, both among Iñupiat residents and among residents of all ethnic groups combined.<sup>8</sup>

**Figure SR.2: Reported General Health Status of Adults:**  
*Barrow vs. other North Slope villages*



2010 NSB Census

## SR 1.2.2. Maternal and Child Health

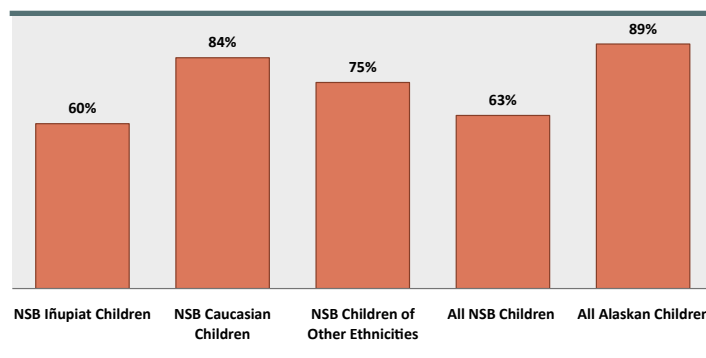
Maternal and child health is a major area of health disparity in the NSB, as compared to the state as a whole. The prenatal period, infancy, childhood, and adolescence are times of profound developmental changes, and conditions during these critical periods can have lifelong impacts on individuals and multigenerational impacts on families and communities. Negative experiences in childhood, such as neglect and physical, emotional, and sexual abuse, have long-lasting effects on both mental and physical health. The topic of maternal and child health is discussed in detail in Part II, Chapter 6.

Although some important measures of maternal and child health have improved in the NSB, many indicators in this area suggest persistent disparities compared with the state as a whole. Many of these health disparities are seen in other parts of rural Alaska as well.

### SR 1.2.2.1. General Health Status of Children

Children in the NSB were considerably less likely than Alaskan children overall to be reported having very good or excellent general health (63% vs. 89%, respectively).<sup>8,13</sup> Caucasian children in the NSB were most likely to be reported to have very good or excellent health, and Iñupiat children were the least likely.<sup>8</sup> This disparity of more than 20 percentage points was statistically significant.

**Figure SR.3: General Health Status of Children, by Ethnic Group:**  
*Percent of children (<18 years) reported to have very good to excellent general health*



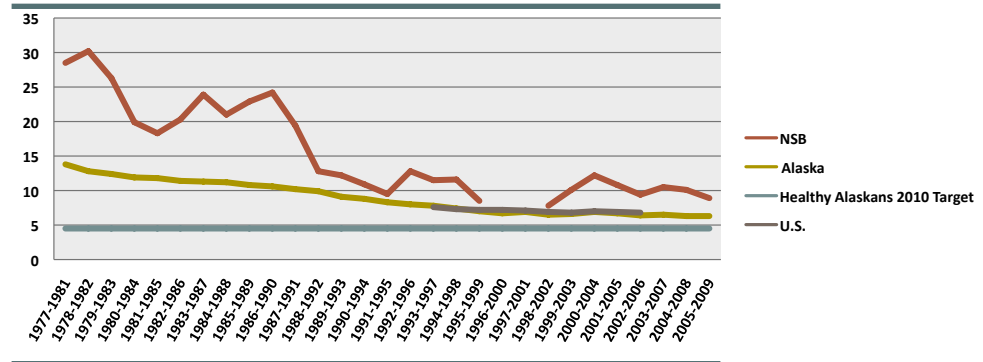
NSB data source: 2010 NSB Census, Economic, and Health Profile.  
Alaska data source: National Survey of Children's Health 2007.

As was observed among adults, reported general health status among North Slope children (among both Iñupiat only and in all ethnic groups combined) was also significantly better in Barrow than in the other North Slope villages as a whole.<sup>8</sup>

### SR 1.2.2.2. Infant Mortality

An important indicator of the health status of women and children in a community, infant mortality has declined considerably in the NSB since the 1970s but has essentially leveled off since the middle 1990s and remains higher than statewide rates.<sup>4</sup>

**Figure SR.4: Infant Mortality Rate: Average annual number of infant deaths (under one year) per 1000 live births, 1977–2009**

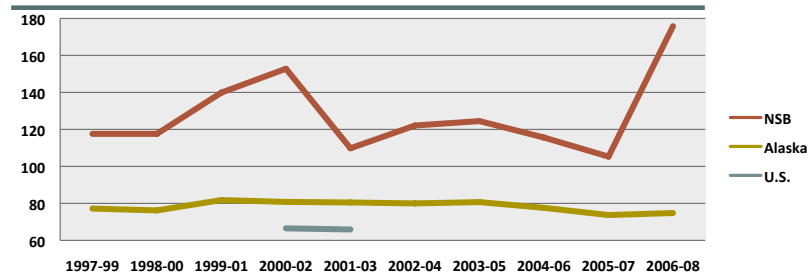


NSB and Alaska data source: Alaska Bureau of Vital Statistics.  
 U.S. data source: Health, *United States, 2007 with Chartbook on Trends in the Health of Americans*.  
 Rates for NSB include rates based on fewer than 20 events and must be interpreted with caution.  
 Missing data points represent time periods with fewer than 6 infant deaths.

### SR 1.2.2.3. Child Mortality

Child and adolescent mortality rates in the NSB remain considerably higher than statewide rates.<sup>4</sup> The high child mortality rate in Alaska is a significant public health concern statewide, where it also represents an area of significant racial health disparity.

**Figure SR.5: Child Mortality Rate (Ages 0–19 Years): Average annual number of deaths per 100,000 population, 1997–2008**



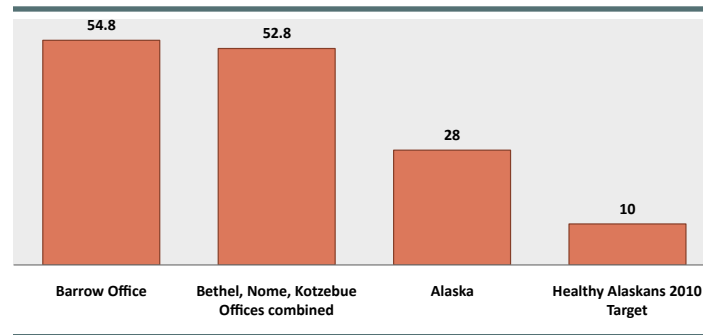
\*NSB rates are based on fewer than 20 occurrences per time period and must be interpreted with caution.  
 NSB and Alaska data source: Alaska Bureau of Vital Statistics.  
 U.S. Statistics were available for 2002, 2003, 2005 for ages 0–19 years. Data source: National Center for Health Statistics, accessed through the National MCH Center for Child Death Review. Child mortality statistics for the U.S. are typically calculated for age groups excluding infants less than 1 year and are, therefore, not directly comparable to Alaska census area data, where population estimates for children less than 1 year of age are not readily available.

### SR 1.2.2.4. Child Maltreatment

Child maltreatment is a complex phenomenon, encompassing varying degrees of neglect and mental injury, as well as physical and sexual abuse. Childhood trauma and maltreatment contribute to an adverse early child environment that can have devastating consequences throughout the lifespan and for future generations.

Rates of substantiated reports of child maltreatment are roughly twice statewide averages but similar to some neighboring rural comparison regions.<sup>14</sup> In the northern rural region of the state, which includes the NSB, neglect is the most common form of child maltreatment reported.<sup>14</sup>

**Figure SR.6: Substantiated Allegations of Child Maltreatment\*:**  
Average annual number of substantiated reports per 1000 children ages 0–17, 2006–2009

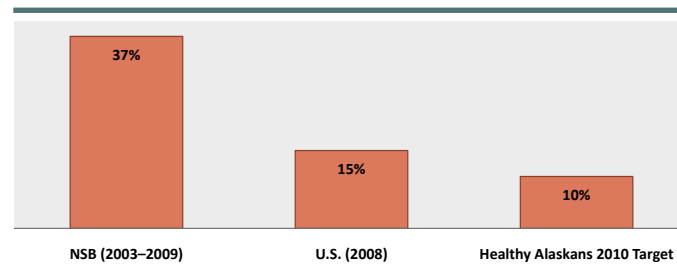


\*Combined Neglect, Physical abuse, Sexual Abuse, and Mental Injury.  
Data source: Office of Children’s Services, Alaska DHSS.  
Rates calculated by author, based on U.S. Census 2000 population estimates for communities covered by respective area offices.

### SR 1.2.2.5. Child Obesity

Obesity in childhood has been identified as a national epidemic with potentially devastating health impacts for the current generation of children. NSB children are far from immune to this problem. In fact, estimated rates of obesity among young children enrolled in WIC in the NSB are more than twice national estimates.<sup>15,16</sup> Obesity rate estimates among school-aged children are roughly 50% higher than statewide estimates (although comparable data are not available for exactly the same years).<sup>17,18</sup>

**Figure SR.7: Early Childhood Obesity Among Children Enrolled in WIC:** Percent of children ages 2–5 who meet BMI criteria for obesity\*



\*BMI ≥ 95th percentile for age and gender  
NSB data source: NSB WIC database.  
U.S. data source: Pediatric Nutrition Surveillance Report 2008 (Alaska did not participate in this program. Thus, state-level data were not available for Alaska).

### SR 1.2.2.6. Prenatal Risk Factors

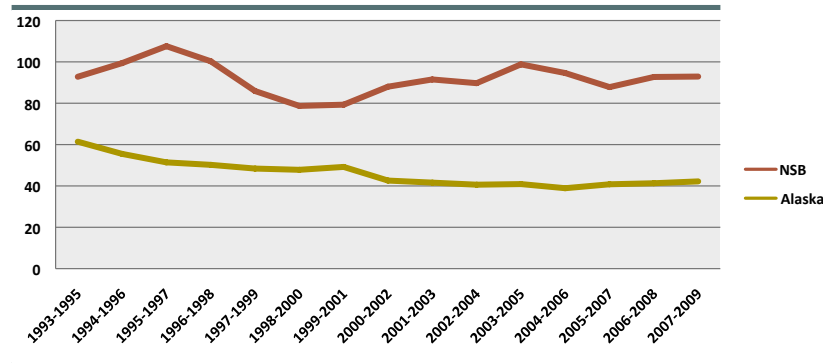
As in true in much of rural Alaska, the prevalence of prenatal risk factors is considerably higher in the NSB than in the state as a whole. These include such factors as

- Prenatal smoking and alcohol use<sup>4</sup>
- Late or inadequate prenatal care<sup>4</sup>
- Unmarried status<sup>4</sup>
- Pre-pregnancy obesity,<sup>19</sup> and
- Abuse by an intimate partner during pregnancy<sup>19</sup>

### SR 1.2.2.7. Teen Birth

While acceptance of and support available to teenage mothers varies widely in different cultures, birth to a teenage mother is associated with a number of poor health outcomes. Teen birth rates in the NSB are roughly twice the statewide average.<sup>4</sup>

**Figure SR.8: Teen Birth Rate (Ages 15–19 Years): Average annual number of births per 1000 females, 1993–2009**



Data source: Alaska Bureau of Vital Statistics, Birth Profiles.

### SR 1.2.2.8. Birth Defects

Rates of major congenital anomalies (birth defects) are considerably higher in the NSB than in Alaska as a whole.<sup>20-22</sup> Risk factors for birth defects include many of the same risk factors as for other adverse pregnancy outcomes.

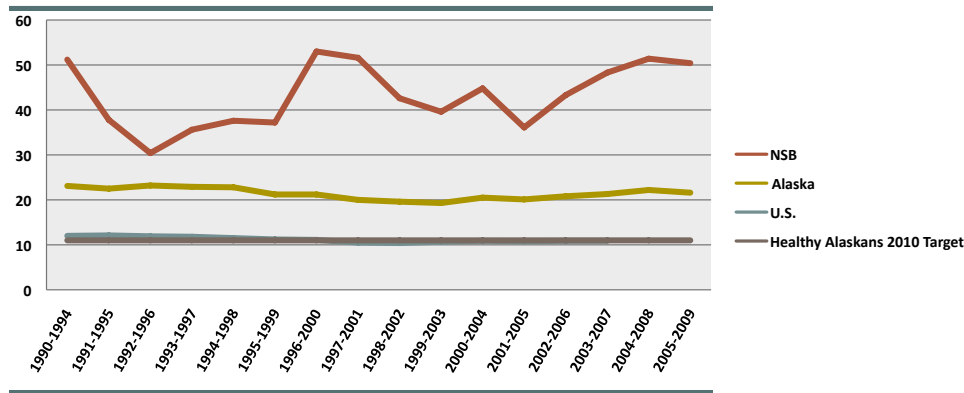
### SR 1.2.3. Injury—Suicide, Unintentional Injury, and Interpersonal Violence

Like many other circumpolar and rural Alaskan regions, the communities of the NSB bear a disproportionately high burden of suicide, unintentional injury (accidents), and domestic and sexual violence. While suicide and interpersonal violence are not always categorized as injuries, all of these problems are grouped together in this report in part because they share many of the same risk factors, including alcohol and drug abuse, multi-generational trauma, and a host of other complex socioeconomic and cultural factors that create conditions in which these events are more likely to occur. All of these areas are discussed in further detail in Part II, Chapter 3: Injury.

#### SR 1.2.3.1. Suicide

Suicide has devastating impacts on families and communities, and the high suicide rate in the NSB has been a major focus of community concern and prevention efforts. After a period of increasing rates through the 1980s, suicide rates in the NSB remain roughly twice the statewide average and four times the national average.<sup>4,23,24</sup> Between 1999 and 2008, the the suicide hospitalization rate for NSB residents overall was also higher than the Alaska rate (17 vs. 10 per 10,000, respectively), but among AI/AN residents, the NSB rate was lower than of AI/AN residents statewide (22 vs. 27 per 10,000, respectively).<sup>26</sup>

**Figure SR.9: Suicide Mortality Rates: Average annual number of deaths per 100,000 population, 1990–2009**



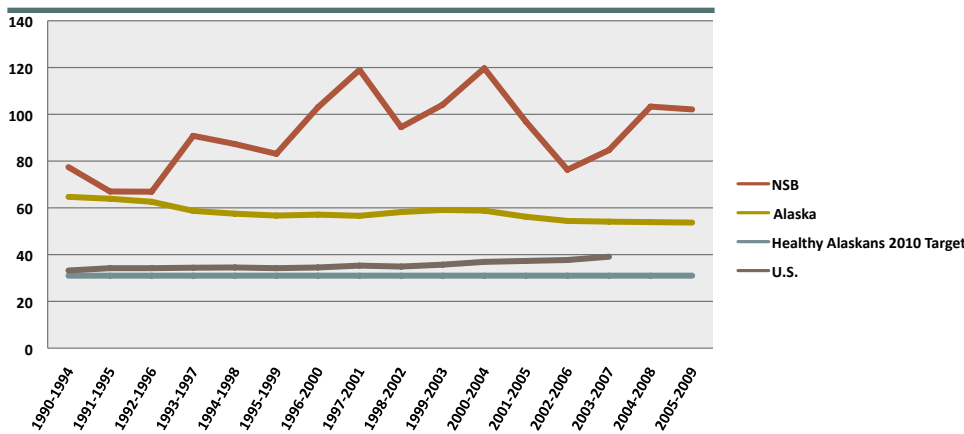
\*NSB rates are based on fewer than 20 occurrences per time period and must be interpreted with caution. All rates are age-adjusted to the 2000 U.S. standard population. U.S. rates are for the single, midpoint year of the five-year period noted. NSB and Alaska data source: Alaska Bureau of Vital Statistics. U.S. data source: National Center for Health Statistics: *Health, United States 2007, with Chartbook on Trends in the Health of Americans* and *Health, United States 2008*.

In 2005, 15% of NSB high school students (not including alternative high schools) reported attempting suicide one or more times in the past 12 months, almost twice the 8% estimated among U.S. high school students. The percentages of students who reported symptoms of depression or who *seriously considered* suicide were similar among the two groups, however.<sup>25</sup>

### SR 1.2.3.2. Unintentional Injury

Although they have declined considerably since the 1970s, unintentional injury (previously called “accidents”) mortality rates in the NSB remain considerably higher than statewide and national rates.<sup>4,23,24</sup>

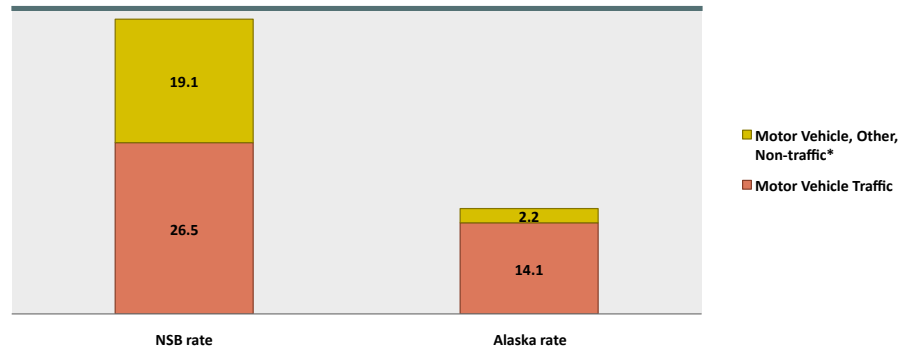
**Figure SR.10: Unintentional Injury Mortality Rates: Average annual number of deaths per 100,000 population, 1990–2009**



NSB and Alaska data source: Alaska Bureau of Vital Statistics. U.S. data source: National Center for Health Statistics, *Health, United States 2008*, and *Health, United States, 2007, with Chartbook on Trends in the Health of Americans*. All rates are age-adjusted to 2000 U.S. standard population. U.S. rates are for the single, midpoint of the five-year period noted.

The largest single cause of unintentional injury death in the NSB is motor vehicle accidents (both on- and off-road), and the mortality rate from motor vehicle accidents is more than twice the statewide rate. The NSB death rate for off-road vehicle accidents is more than eight times the statewide rate.<sup>4</sup>

**Figure SR.11: Motor Vehicle Injury Death Rates: Average annual number of deaths per 100,000 population, 1999–2008**



\*Motor Vehicle, Other, non-traffic are accidents occurring away from the highway and include snowmachines and ATVs (4-wheelers). A minority of snowmachine- and ATV-related deaths are also categorized as "Motor Vehicle Traffic" if they occurred on the highway.

Data source: Alaska Bureau of Vital Statistics.

Rates are age-adjusted to 2000 U.S. standard population.

NSB rates are based on fewer than 20 occurrences and should be interpreted with caution.

Injury hospitalization rates for snowmachines and ATV accidents among NSB Alaska Native residents were also more than twice the average rates for Alaska Native residents of all Alaska Native Health Service units.<sup>26</sup>

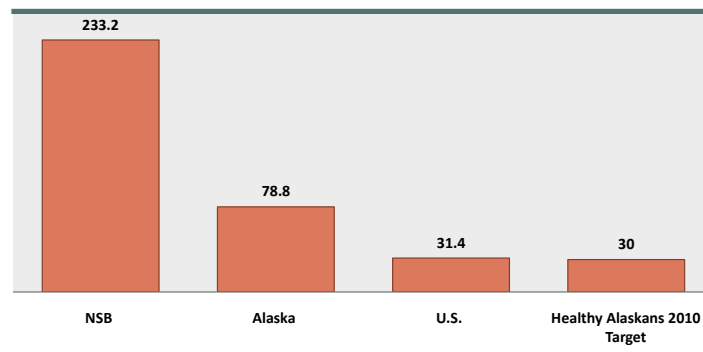
### SR 1.2.3.3. Interpersonal Violence: Sexual Assault and Domestic Violence

Comparisons of crime statistics—particularly in the areas of domestic and sexual violence—must be made with caution due to the many factors that affect crime rates and crime reporting in communities. Moreover, Alaska does not currently collect standardized data on domestic violence incidents reported to local law enforcement agencies. Nonetheless, the limited data available strongly suggest that sexual assault and domestic violence are areas of significant health disparity in the NSB compared to Alaska and the U.S. overall.

#### Sexual Assault

For the years 2000–2009, the average annual rate of forcible rape in the NSB was more than twice the statewide rate and more than seven times the national rate.<sup>27,28</sup> The definition of forcible rape used for these statistics is narrow and does not reflect the full impact of sexual violence. Data from the NSB Police Department suggest that in some reporting years, the number of sexual assaults reported in the NSB may be higher than the number of forcible rapes included in FBI Uniform Crime Reporting statistics by a factor of three or more.<sup>29</sup>

**Figure SR.12: Forcible Rape: 10-year average rate per 100,000 inhabitants, 2000–2009**



Uniform Crime Reporting Program, U.S. Department of Justice and Federal Bureau of Investigation and Public Safety Statewide Services, *Crime Reported in Alaska, Annual Reports*.

Forcible rape includes rape by force and attempted rape by force.

Rates are not age-adjusted.

The 2000–2009 average rate for the NSB was calculated using the Alaska Department of Labor and Workforce Development total population estimates for the NSB.

## Domestic Violence

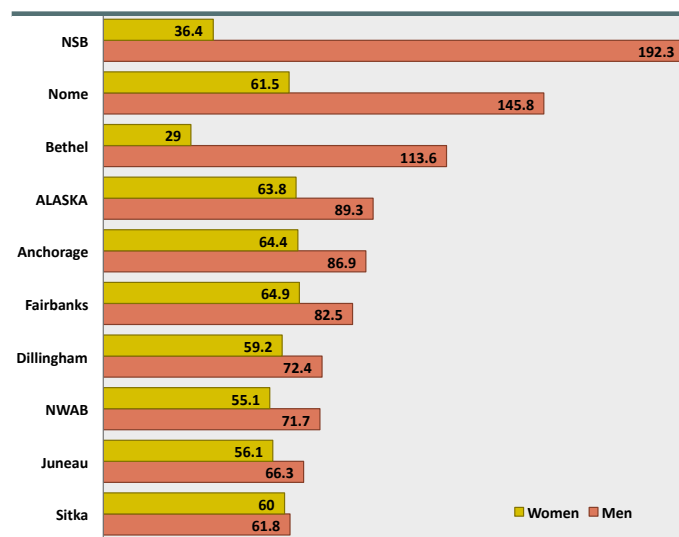
In an in-depth 2003 report of domestic violence in the NSB, rates of reports of domestic violence to Barrow police were more than six times the rate of reports made to Alaska State Troopers statewide.<sup>30</sup> In 2005, 13% of NSB high school students reported being hit, slapped, or physically hurt on purpose by their boyfriend or girlfriend in the past 12 months, compared with 9% nationwide.<sup>25</sup> Domestic violence is also an area of health disparity, with Alaska Natives experiencing higher rates of lifetime intimate partner violence than white Alaskans.<sup>31</sup>

### SR 1.2.4. Cancer: Lung and Colon Cancer Among Males

Not only is cancer the leading cause of death in the NSB, but it also encompasses several significant health disparities in the NSB. Cancer is also one of the most frequently cited health concerns among community members in the NSB.<sup>33</sup> Local concerns about air pollution from nearby oil development activities, contamination of subsistence foods,<sup>34</sup> and the unfortunate history of unethical medical experimentation using radioactive substances on some residents<sup>3</sup> have fueled fears and anger about the possible causes of these health disparities. Research has not, to date, completely answered all of these questions about cancer in the NSB. The available data regarding these issues, as well as other major risk factors such as the high rate of tobacco smoking, are examined in Part II, Chapter 2: Cancer.

Over the most recent 10 year period in the NSB, lung cancer accounted for four times more cancer deaths than either of the next most common types of cancer (stomach and colon).<sup>32</sup> The incidence of lung cancer among NSB males is the highest in the state and is significantly higher than the statewide incidence rate. Males in the NSB are more than five times as likely to develop lung cancer as females.<sup>32</sup> Looking at Alaska Natives specifically, Alaska Native males in the Barrow service unit had a significantly higher incidence of lung cancer than the average incidence among Alaska Native males from all other service units combined during 1989–2003.<sup>35</sup>

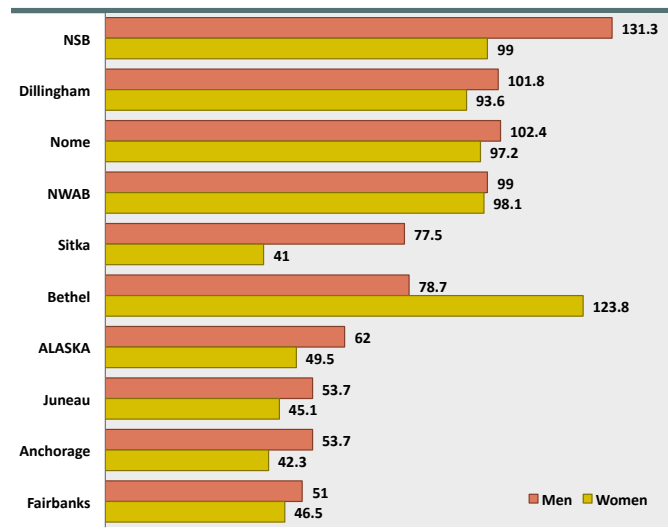
**Figure SR.13: Lung Cancer Incidence Rates, by Borough and/or Census Area and Gender, 1996–2009**



Rates are per 100,000 population, age-adjusted to 2000 U.S. standard population.  
Data source: Alaska Cancer Registry Data and Statistics: Cancer Incidence Data and Statistics 1996–2009.  
NWAB=Northwest Arctic Borough

The second most common cancer in the NSB, colorectal cancer also shows a male predominance, but this gender difference is not statistically significant. The colon cancer incidence rate among NSB males is over twice the overall statewide rate among males and is significantly higher than the overall statewide incidence for males or females. Colon cancer incidence is higher in the rural, predominantly Alaska Native regions, than in the urban centers of Anchorage, Fairbanks, and Juneau.<sup>32</sup>

**Figure SR.14: Colorectal Cancer Incidence Rates, by Borough and/or Census Area and Gender, 1996–2009**

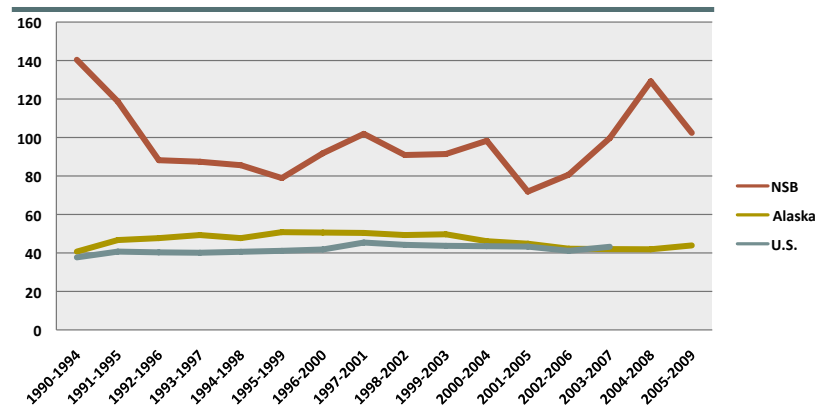


Rates are per 100,000 population, age-adjusted to 2000 U.S. standard population.  
 Data source: Alaska Cancer Registry Data and Statistics: Cancer Incidence Data and Statistics 1996–2007.  
 NWAB=Northwest Arctic Borough.

### SR 1.2.5. Chronic Lower Respiratory Disease

Chronic lower respiratory disease (CLRD) is consistently among the leading causes of death in the NSB in recent years.<sup>4</sup> The mortality rate in the NSB from chronic lower respiratory diseases, such as emphysema and other forms of chronic obstructive pulmonary disease (COPD), is more than twice the statewide rate.<sup>4</sup> CLRD also is an area of racial health disparity at the state level, with significantly higher mortality rates among Alaska Natives than among whites.<sup>36</sup> Chronic respiratory disease is discussed in detail in Part II, Chapter 5: Respiratory Disease.

**Figure SR.15: Chronic Lower Respiratory Disease Mortality Rates:**  
 Average annual number of deaths per 100,000 population, 1990–2009



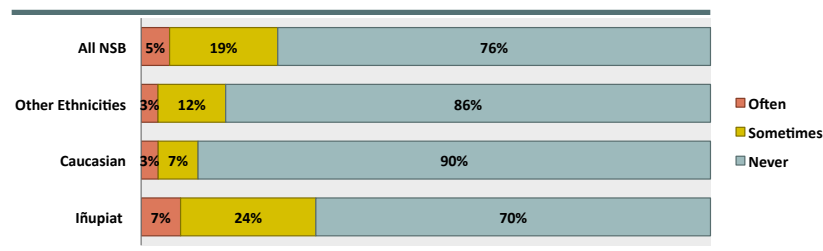
NSB rates are based on fewer than 20 events and must be interpreted with caution.  
 NSB and Alaska data source: Alaska Bureau of Vital Statistics.  
 U.S. data source: National Center for Health Statistics, *Health, United States 2008* and *Health, United States 2007, with Chartbook on Trends in Health of Americans*.  
 Age-adjusted to 2000 U.S. standard population.

## SR 1.2.6. Impacts of Alcohol and Drugs

The impact of drugs and alcohol on families and communities has been identified by North Slope communities as a major community health concern<sup>33</sup> and is discussed in detail in Part II, Chapter 7: Mental and Behavioral Health. The rate of reported binge drinking behavior among both adults and teens in the NSB is quite similar to state and national estimates;<sup>9,25</sup> however, many of the negative impacts of alcohol and drug abuse—for example suicide, motor vehicle accidents, domestic and sexual violence, and school failure—affect the NSB at higher rates compared with the state overall, as described previously and in the full report.

In the 2010 NSB Census, Iñupiat household heads in the NSB were three times as likely as Caucasian household heads to believe that a household member had been hurt by the effects of alcohol or drugs in the last 12 months.<sup>8</sup> The impact of drugs and alcohol on families and communities is discussed in detail in Part II, Chapter 7: Mental and Behavioral Health.

**Figure SR.16: Household Impact of Drugs and Alcohol in the NSB, by Ethnic Group:** Percent of NSB household heads reporting that, in the past 12 months, a member of the household has been hurt by drugs or alcohol



Data source: 2010 NSB Census.

As a whole, compared with their counterparts living in Barrow, where it is legal to import limited amounts of alcohol, Iñupiat household heads in other villages were, as a whole, significantly less likely to believe that a household member had been hurt by alcohol or drugs in the past year (35% vs. 25%, respectively).<sup>8</sup>

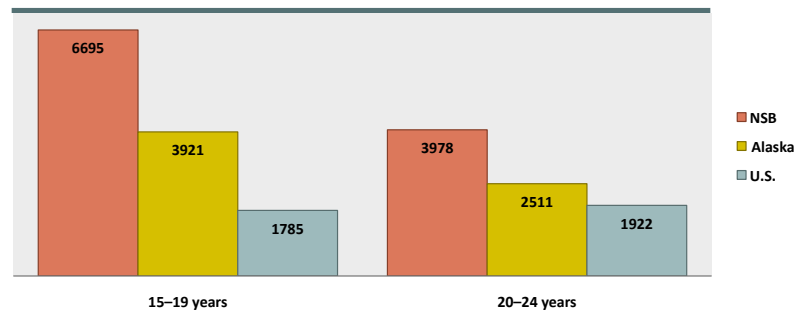
Unlike in the case of self-reported alcohol use, NSB high school students were significantly more likely to report marijuana and cocaine use than were students statewide or nationally.<sup>25</sup> Marijuana use among NSB Iñupiat adults surveyed in the 2004 SLiCA survey was also higher than in other circumpolar regions.<sup>34</sup> Use of other drugs among NSB high school students was similar to state and national estimates in this study, with the exception of inhalant abuse (“huffing” gas or other solvents), which NSB students were less likely to report in the 2005 survey than their counterparts statewide and nationally.<sup>25</sup>

## SR 1.2.7. Sexually-Transmitted Infections: Chlamydia and Gonorrhea

Chlamydia and gonorrhea are both reportable sexually transmitted infections (STIs) with potentially serious complications, including pelvic inflammatory disease, infertility, ectopic pregnancy, preterm labor, and neonatal infections. These STIs represent an area of health disparity for the NSB and are discussed in detail in Part II, Chapter 8: Infectious Disease.

NSB chlamydia rates are considerably higher than statewide and national rates for comparable age groups.<sup>37</sup> The Arctic Slope service region had the 4th highest age-adjusted chlamydia rate of twelve Alaska Native Tribal Health Corporation service regions in 2010.<sup>37</sup> STIs are an area of racial and geographic health disparity in the NSB and at the state and national level. Within the NSB and in Alaska as a whole, chlamydia and gonorrhea rates are considerably higher among Alaska Natives than among non-Natives.<sup>37</sup> In Alaska, the southwest and northern rural regions experience the highest rates of these two infections.<sup>37</sup>

**Figure SR.17: Chlamydia Rates in High-Risk Age Groups: Number of cases per 100,000 persons, 2006–2008**



NSB and Alaska data source: Alaska Department of Health and Social Services, Division of Public Health, Section of Epidemiology, STD Program.  
 U.S. data source: Centers for Disease Control and Prevention, STD Data and Statistics, Interactive STD Data 1996–2008.

### SR 1.2.8. Tooth Decay and Periodontal Disease

Almost two-thirds of adults in the NSB (64%) have had at least one permanent tooth removed (excluding tooth loss due to trauma), a significantly higher percentage than in Alaska (43%) or the U.S. overall (44%). Approximately one fourth of NSB adults report having had six or more permanent teeth removed.<sup>9</sup>

Tooth decay and periodontal disease can lead to loss of permanent teeth and result in difficulty chewing and eating a healthy diet. Periodontal disease can also worsen diabetes and may be a causal factor in a number of other health problems, including preterm delivery and cardiovascular disease. Poor diet, high consumption of sugary beverages, and inadequate dental hygiene are all risk factors for tooth decay and periodontal disease.

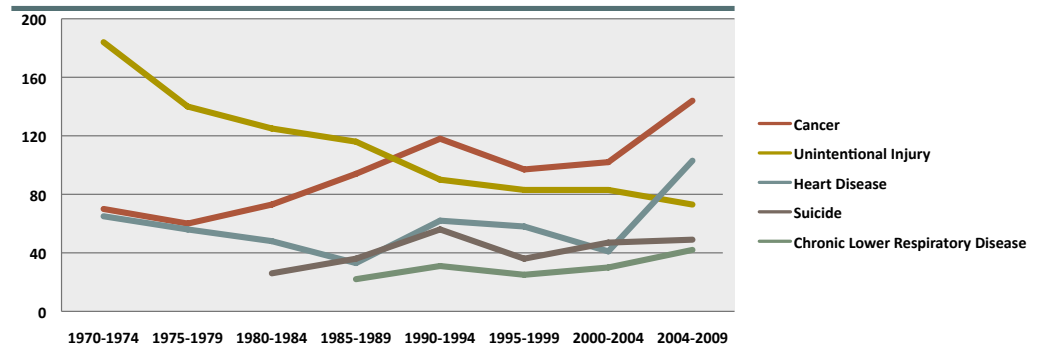
## SR 1.3. Notable Health Trends in the NSB

For those topics on which sufficient years of data are available, a number of health trends are evident in the NSB. Some of the trends are encouraging and speak to the positive power of community change and public health interventions. Others trends raise concern about emerging health problems that threaten the well-being of current and future generations. Looking at the successes, however, can motivate and inform efforts to reverse negative health trends through community-wide action and advocacy.

### SR 1.3.1. Trends in the Leading Causes of Death in the NSB

Looking at the leading causes of death in the NSB since the 1970s, some trends become apparent. By the early 1990s, cancer overtook unintentional injury (accidents) as the leading cause of death in the NSB. This is both because the rate of accidental deaths declined, and because the incidence of diagnosed cancer increased. Between 1970 and 2000, the rate of unintentional injury deaths declined rapidly, but since then, the rate has stopped declining and remains well above the statewide average. In the 1980s, suicide, motor vehicle accidents, and chronic lower respiratory infections emerged as leading causes of death.<sup>4</sup>

**Figure SR18: Trends in Leading Causes of Death in the NSB:**  
Average annual number of deaths per 100,000 population



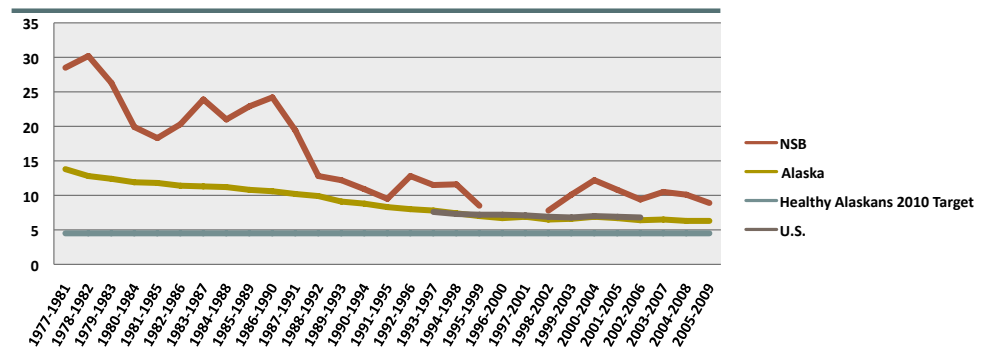
Represent "crude" rates, not adjusted for the effect of age. Thus, changes in the age structure of the population over time may affect the death rates from different causes.  
Rates based on fewer than six occurrences are not reported.  
Data source: Alaska Bureau of Vital Statistics. Historical rates were provided by ABVS for 1970–2004 in 5-year intervals. The 2004–2009 rate was calculated from the 3-year moving average rates provided on the ABVS Data and Statistics website.

## SR 1.3.2. Positive Community Health Trends and Achievements

### SR 1.3.2.1. Infant Mortality

An important marker of the overall health and well-being of a community, the infant mortality rate (IMR) is a widely used indicator of the health status of women and children. The IMR reflects such factors as living conditions, education and income level of parents, as well as access to health care and efforts to prevent common causes of infant death such as Sudden Infant Death Syndrome (SIDS). Although rates fluctuate yearly because of the relatively small number of events, average infant mortality rates have declined considerably in the NSB since the late 1970s.<sup>4</sup>

**Figure SR.19: Infant Mortality Rate: Average annual number of infant deaths (under one year) per 1000 live births, 1977–2009**

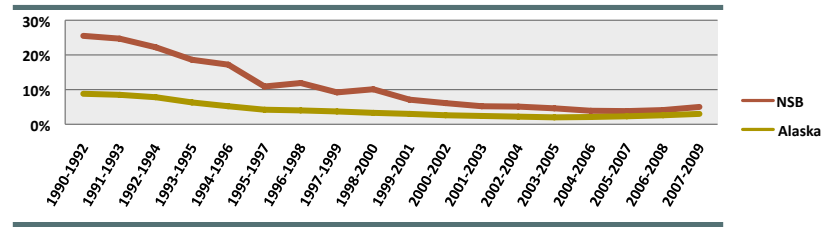


NSB and Alaska data source: Alaska Bureau of Vital Statistics.  
U.S. data source: Health, *United States, 2007 with Chartbook on Trends in the Health of Americans*.  
Rates for NSB include rates based on fewer than 20 events and must be interpreted with caution.  
Missing data points represent time periods with fewer than 6 infant deaths.

### SR 1.3.2.2. Prenatal Alcohol Use

In the past two decades, the proportion of mothers who report drinking alcohol during pregnancy has decreased from more than one in four mothers to less than one in twenty mothers giving birth.<sup>4</sup> This trend coincides with a number of state- and community-wide efforts to address the negative impacts of alcohol, including local option laws, community education campaigns about fetal alcohol syndrome, and aggressive prenatal outreach programs run by the Public Health Nursing program.<sup>38</sup>

**Figure SR.20: Self-Reported Prenatal Alcohol Use: Percent of mothers (giving birth to live infants) who reported drinking alcohol during pregnancy, 1990–2009**

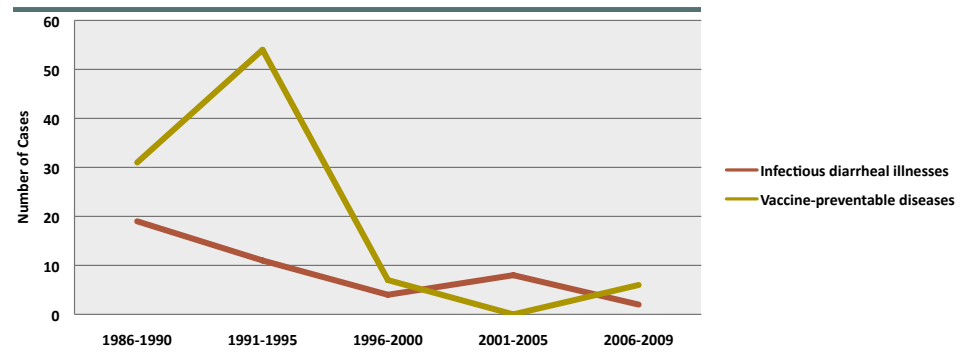


Data source: Alaska Bureau of Vital Statistics, Birth Profiles.

### SR 1.3.2.3. Vaccine-Related Illness and Gastrointestinal Illness

Rates of a number of reportable vaccine-preventable illness have declined substantially in the NSB since the early 1990s<sup>39</sup> following the establishment of routine vaccination of children against such diseases as hepatitis A and B, *Haemophilus influenzae type b* (Hib), and *Streptococcus pneumoniae*. The NSB Health Department’s Public Health Nursing program is responsible for administering and tracking immunizations in the NSB.

**Figure SR.21: Improving Trends in Infectious Disease in the NSB**



Infectious diarrheal illnesses include *Campylobacter*, *Salmonella*, *Shigella*, *E. Coli* O157:H7, *Giardia*  
 Data source: Alaska Department of Health and Social Services, Division of Public Health, Section of Epidemiology

### SR 1.3.2.4. Unintentional Injury

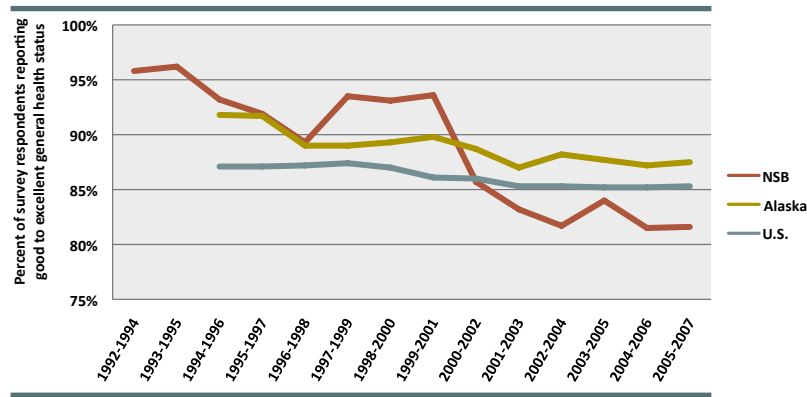
As noted previously in section SR 1.3.1., the crude rate of unintentional injury deaths in the NSB has declined since the 1970s. The NSB’s rate remains higher than that of Alaska overall, however.<sup>4</sup>

## SR 1.3.3. Negative Health Trends and Emerging Community Health Challenges

### SR 1.3.3.1. Self-Reported General Health Status

Over the past two decades, self-reported overall health among adults in the Borough has been declining and a significantly larger percentage of NSB residents report fair to poor health in recent years than in the early 1990s.<sup>9</sup> This decline in self-reported health, similar to that seen at the state and national levels, corresponds to a time of rising prevalence of chronic health problems such as obesity and diabetes. This decline in self-reported health may also reflect an evolution in the way people perceive their own health and increasing awareness of certain conditions, socio-cultural changes that impact health, and changes in health care delivery that have been seen across the country.

**Figure SR.22: Trends in Good to Excellent Self-Reported Health Among Adults: Data from the Alaska BRFSS survey**

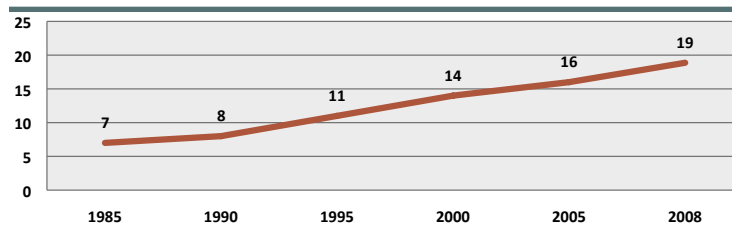


U.S. and Alaska data source: Centers for Disease Control and Prevention (CDC) Behavioral Risk Factor Surveillance System (BRFSS).  
 NSB data source: Sub-regional analysis of Alaska BRFSS data provided by Alaska Department of Health and Social Services, Chronic Disease Prevention and Health Promotion, Division of Public Health.  
 NSB results are weighted according to the Alaska BRFSS "rural" region and not post-stratified to the NSB. Results are not age-adjusted.  
 Alaska and U.S. data are for midpoint year of time period shown.

### SR 1.3.3.2. Type 2 Diabetes

Type 2 diabetes is increasing rapidly across the nation and has been referred to as a national epidemic. Diabetes rates are also increasing rapidly in the North Slope, more than doubling between 1985 and 2008 among Alaska Natives, according to the Alaska Native Diabetes Program's registry data.<sup>40</sup>

**Figure SR.23: Trends in Diabetes Prevalence\* Among NSB Alaska Natives: Number of cases per 1000 IHS estimated population**

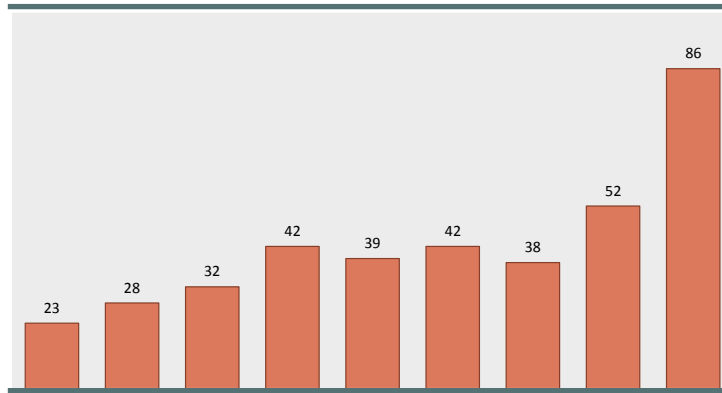


\*Crude Prevalence: Not age-adjusted. Includes Alaska Native patients who have had a visit within the service area in the past three years (active cases).  
 Data source: Alaska Native Diabetes Program Registry.  
 Includes Alaska Native patients living in the following villages: Anaktuvuk Pass, Atkasuk, Barrow, Kaktovik, Nuiqsut, Point Hope, Point Lay, and Wainwright.  
 IHS=Indian Health Service.

The overall estimated diabetes prevalence for adults in the NSB is now similar to the estimated statewide rate for adults.<sup>8,9</sup> Within the NSB, a significantly lower proportion of Inupiat and Caucasian adults reported or were reported to have diabetes than those in other ethnic groups.<sup>8</sup>

Despite the high prevalence of obesity, Alaska Natives in the Barrow service area still have one of the lowest rates of diagnosed diabetes of all the IHS service areas, and rates are considerably lower than in many Lower 48 Native American populations.<sup>40</sup> These differences may, in part, be related to variations in diabetes screening practices and other factors, but they may be also be related to the relatively heavy reliance on healthful arctic subsistence foods and active participation in subsistence activities in North Slope communities.

**Figure SR.24: 2006 Age-Adjusted Diabetes Prevalence Among Alaska Natives, by IHS Service Unit: Number of cases per 1000 user population\***



\*Active cases per 1000 estimated user population, age-adjusted to 2000 U.S. standard population. Active cases are those who have had a visit within the service unit in the past three years.

The Barrow IHS service unit generally covers the following villages: Atkasuk, Barrow, Kaktovik, Nuiqsut, Point Lay, and Wainwright. Residents of Anaktuvuk Pass and Point Hope are generally seen in Maniilaq and Tanana Chiefs services units, respectively.

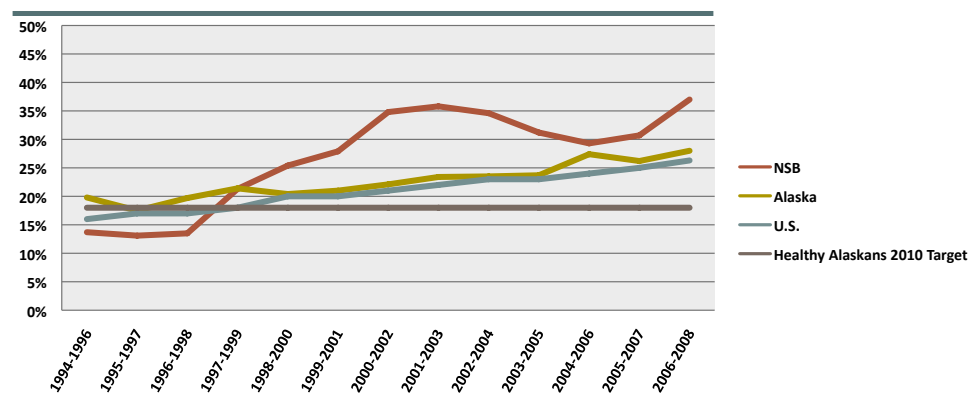
Data source: Alaska Native Diabetes Program.

IHS=Indian Health Service

### SR 1.3.3.3. Obesity

Obesity and being overweight are among the most common chronic health problems in the country, together affecting roughly two-thirds of Americans. Obesity rates in Alaska and the U.S. have increased dramatically in the past quarter century.<sup>9</sup> The estimated proportion of NSB adults who are obese now is almost three times the proportion who were obese in the mid-1990s.<sup>9</sup>

**Figure SR.25: Adult Obesity Trend Data from the BRFSS Survey: Percent of adults who are obese (BMI ≥ 30), 1994–2008**



\*BMI=body mass index.

U.S. and Alaska data source: Centers for Disease Control and Prevention (CDC) Behavioral Risk Factor Surveillance System (BRFSS).

NSB data source: Sub-regional analysis of Alaska BRFSS data for 1994–2007 provided by Alaska Department of Health and Social Services, Chronic Disease Prevention and Health Promotion, Division of Public Health. 2006–2008 estimates are from the County Health Rankings website.

NSB results are weighted according to the BRFSS rural region and not post-stratified to the NSB. Results are not age-adjusted.

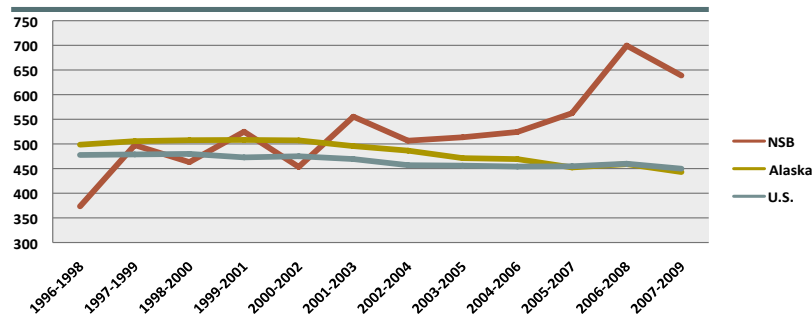
Alaska and U.S. data are for the single, midpoint year of time period shown.

Being overweight or obese may impact health differently in different racial and ethnic groups. Across racial and ethnic groups, however, obesity and being overweight are associated with a number of chronic health problems, including high blood pressure, heart disease, diabetes, arthritis, certain cancers, and some types of respiratory problems.<sup>41</sup> Although obesity rates are higher among some racial minorities (including Alaska Natives) than among whites in Alaska and the U.S.,<sup>9</sup> obesity rates in NSB household heads are similar among all ethnic groups.<sup>8</sup>

### SR 1.3.3.4. Cancer Incidence

Nationwide and in Alaska, overall incidence of invasive cancer has declined slightly,<sup>42,43</sup> although in the NSB it appears to be continuing the upward trend<sup>42</sup> documented among Alaska Natives statewide<sup>44</sup> and among Inuit populations across the circumpolar regions.<sup>45</sup> A study done for the NSB in 1998 also documented the increasing cancer incidence among Alaska Natives in the NSB in an earlier time period, from 1971 to 1994.<sup>46</sup>

**Figure SR.26: Cancer Incidence Trends, All Types: Average annual rate per 100,000 population**



NSB and Alaska data source: Alaska Cancer Registry Data and Statistics: Cancer Incidence Data and Statistics 1996-2009.

U.S. data source: SEER (SEER 13 data series).

All rates are age-adjusted to 2000 U.S. standard population.

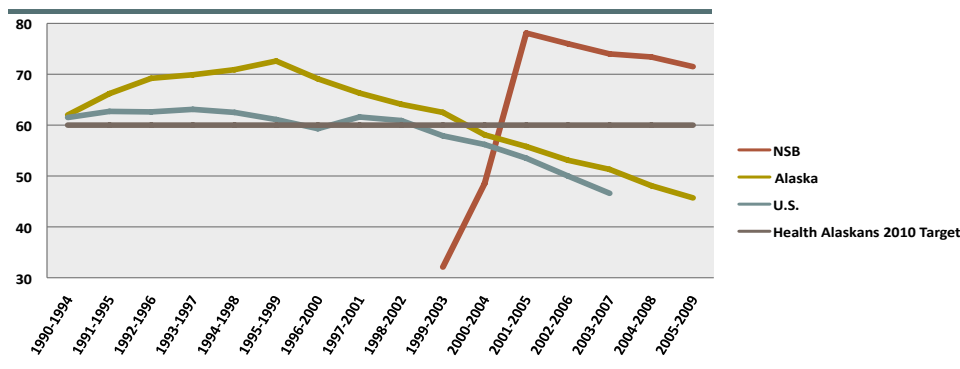
U.S. rates are for the single, midpoint year of the time period noted.

The increase in cancer rates in the NSB and among Alaska Natives and other circumpolar indigenous populations over the past four decades has been primarily caused by increasing rates of lung and other cancers, such as colon cancer, for which tobacco and other lifestyle factors contribute the greatest risk.<sup>42,44-46</sup> Nonetheless, community concerns persist regarding possible environmental causes of cancer. Questions about environmental contributions to cancer risk in the NSB, the arctic, and elsewhere have not been completely answered by the research to date. This topic is discussed further in Part II, Chapter 2: Cancer.

### SR 1.3.3.5. Stroke Mortality

Trends in stroke mortality in the NSB must be interpreted with caution because of the low number of events; however, the rapid increase in stroke mortality in the NSB raises concern about the possible increasing burden of disability and death caused by stroke in the NSB. The death rate from strokes is decreasing for Alaskan whites and in the U.S. overall but not among Alaska Natives.<sup>36</sup> Stroke shares a number of risk factors with other types of cardiovascular disease, including smoking, age, high blood pressure, high cholesterol, and diabetes.

**Figure SR.27: Stroke Mortality Rates: Average annual number of deaths per 100,000 population, 1990-2009**



Rates based on fewer than six occurrences are not reported.

NSB rates are based on fewer than 20 occurrences per time period and must be interpreted with caution.

All rates are age-adjusted to the 2000 U.S. standard population.

U.S. rates are for the single, midpoint year of the five-year period noted.

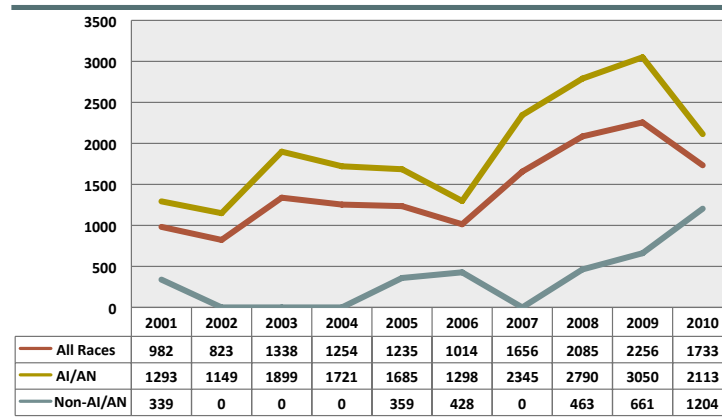
Data source: Alaska Bureau of Vital Statistics, Healthy Alaskans 2010.

U.S. data source: *Health, United States 2007, with Chartbook on Trends in the Health of Americans*.

### SR 1.3.3.6. Chlamydia and Gonorrhea

Paralleling trends observed across the state, the number of reported cases of the sexually-transmitted infection chlamydia has increased in the NSB since mandatory reporting of the infection began in 1996, almost doubling between 2001 and 2010. The region did see a modest decline in the chlamydia rate among Alaska Native residents in 2010. The rate among non-Natives in the NSB did not decline, however, and was the highest rate among non-Natives in the state in 2010.<sup>37</sup>

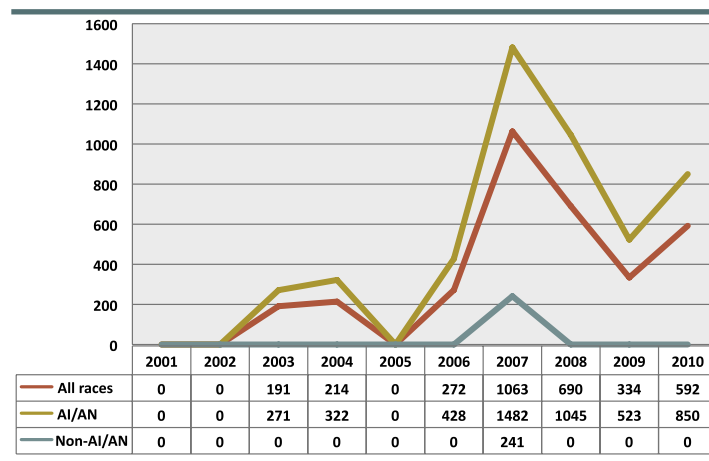
**Figure SR.28: Trends in Chlamydia Rates in the NSB, by Race:**  
Number of cases reported per 100,000 population, 2001–2010



All rates are age-adjusted to the 2000 U.S. census standard population. AI/AN=American Indian/Alaska Native  
Rates based on fewer than five cases appear as "0" in graph and table.  
Data source: Alaska Department of Health and Social Services, Division of Public Health, Section of Epidemiology, STD Program: Chlamydia and Gonorrhea Rates, by Alaska Native Health Corporation Service Region—Alaska, 2001–2010 website

The NSB experienced a spike in gonorrhea cases in 2007. The rate has subsequently declined, but not to previous levels.<sup>37</sup> In 2009, the state of Alaska experienced a large increase in the number of gonorrhea cases statewide, largely driven by increases in rural regions and among Alaska Natives.<sup>37</sup>

**Figure SR.29: Gonorrhea Rates in the NSB: Number of cases reported per 100,000 population, 2001–2010**



All rates are age-adjusted to the 2000 U.S. standard population.  
Rates based on fewer than five cases appear as "0" in graph and table.  
Data source: Alaska Department of Health and Social Services, Division of Public Health, Section of Epidemiology, STD Program: Chlamydia and Gonorrhea Rates, by Alaska Native Health Corporation Service Region—Alaska, 2001–2010 website  
AI/AN=American Indian/Alaska Native.

Trends in chlamydia and gonorrhea rates may also reflect, in part, changes in screening practices, the availability of new diagnostic tests, the consistency with which cases are reported, and partner identification and testing efforts.

## SR 1.4. Leading Health Burdens in the NSB

A number of measures can be used to examine the leading burdens of disease, disability, and death in a community. In this section, the leading causes of death, the leading self-reported health conditions, and the leading reasons for utilization of the health care system in the NSB are reviewed.

### SR 1.4.1. Leading Causes of Death

Since the early 1990s, the leading causes of death in the NSB have been fairly constant, with only minor changes in rank. The leading causes of death in 2006–2008 are shown in Table SR.1.<sup>4</sup>

**Table SR.1: 2006–2008 Leading Causes of Death**

Cause of Death	NSB Rank	Number of Deaths	NSB Rate (Number of deaths per 100,000 population)	Alaska Rank	Alaska Rate (Number of deaths per 100,000 population)
Cancer	1	29	272.9	1	181.3
Heart Disease	2	26	274.8	2	154.8
Unintentional Injury	3	17	125.2*	3	54.8
Chronic Lower Respiratory Diseases	4	10	144.3*	5	42.5
Suicide	4	10	53.3*	6	22.7
Total Deaths		136	1267.0		772.5

\*Rates are based on fewer than 20 occurrences and should be interpreted with caution.  
Data source: Alaska Bureau of Vital Statistics.  
All rates are age-adjusted to U.S. 2000 standard population.

Although most deaths in a community occur in older people, some of the most tragic and often most preventable deaths occur to younger members of the community. Looking at the total potential years of life lost from the community, unintentional injury and suicide are the leading causes of premature death in the NSB.<sup>4</sup>

### SR 1.4.2. Leading Self-Reported Chronic Health Conditions

Of the common health conditions included in the 2010 NSB Census questionnaire, the most commonly reported chronic health problem was pain, due to arthritis or other causes, that limits activity or requires prescription pain medicine. Other than ear infections, all of the problems noted in Table SR.2 disproportionately affect older age groups. Among children, ear infections and chronic respiratory problems were the most prevalent problems.<sup>8</sup> Again, this list reflects only the common chronic health problems asked about in the 2010 NSB Census and does not include many other important health problems in the NSB; for example cancer, mental illness and substance abuse, tooth decay, infectious diseases, and injury.

**Table SR.2: Reported Prevalence of Chronic Health Problems Among NSB Residents**

	Adults (ages 18+ years)	Children (ages 0–17 years)
Arthritis/Chronic Pain	21%	<1%
High Blood Pressure	20%	<1%
High Cholesterol	13%	<1%
Chronic Respiratory Problems	8%	5%
Diabetes	6%	<1%
Heart Disease	5%	<1%
Chronic Ear Infections	4%	19%
Thyroid Problems	4%	<1%

Data source: 2010 NSB Census

## SR 1.4.3. Leading Health Conditions Resulting in Utilization of the Healthcare System

### SR 1.4.3.1. Leading Inpatient Diagnoses

In 2008–2009, the leading admitting diagnoses to Samuel Simmonds Memorial Hospital (excluding child-birth and newborn care) included lower respiratory infection and exacerbations of chronic lung and heart conditions (see Table SR.3).<sup>47</sup>

**Table SR.3: Leading Inpatient Diagnoses at SSMH, 2008–2009**

Rank	Hospital Admitting Diagnosis
1	Pneumonia
2	Exacerbation of Chronic Obstructive Pulmonary Disease
3	Congestive Heart Failure

Admitting diagnoses for referral hospitals or other hospitals outside the NSB are not available.  
Data source: NPIRS.

### SR 1.4.3.2. Leading Outpatient Visit Diagnoses

In 2008–2009, the leading outpatient visit diagnosis codes at Samuel Simmonds Memorial Hospital were primarily related to the management of chronic health conditions such as high blood pressure, diabetes, and arthritis, and to the treatment of acute respiratory infections (see Table SR.4).<sup>47</sup>

**Table SR.4: Leading Outpatient Diagnoses at SSMH, 2008–2009**

Rank	Outpatient Visit Diagnosis*
1	Hypertension (High Blood Pressure)
2	Acute Upper Respiratory Infection (Colds/Flu)
3	Otitis Media (Ear Infection)
4	Type 2 Diabetes
5	Hyperlipidemia (Elevated Cholesterol)
6	Tobacco Abuse
7	Acute Pharyngitis (Sore Throat/Strep Throat)
8	Rheumatoid Arthritis

\*Does not include visits for preventive services such as immunizations or well-woman care. Reasons for visiting providers outside the NSB are not available.  
Data source: NPIRS

### SR 1.4.3.3. Leading Community Health Aide Assessments

The leading clinical assessments made by community health aides in NSB villages in 2005–2006 are seen in Table SR.5. Acute and chronic respiratory and/or ear-nose-throat (ENT) problems accounted for roughly one in three visits, followed by digestive and/or abdominal problems, and injuries. Diagnoses that differ from the statewide pattern are indicated in bold—visits for digestive and/or abdominal problems occurred at slightly higher rates, and skin problems occurred at slightly lower rates than in village clinics in other parts of rural Alaska.<sup>48</sup>

**Table SR.5: Clinical Assessments Made by NSB and Alaska CHA/P, 2005–2006**

Major Assessment Categories	Rank NSB*	% of Total Visits NSB	% Total Visits Alaska
Respiratory/ENT	1	33–37%	31–41%
Nose/Throat/Sinus		11–17%	16–18%
Lung Problems		11–12%	8–13%
Ear Problems		9%	7–10%

Table SR.5, continued

Major Assessment Categories	Rank NSB*	% of Total Visits NSB	% Total Visits Alaska
Injuries	2	6–9%	5–9%
Preventive Care	3	5–8%	5–12%
Digestive/Abdominal	4	8–11%	5–6%
Circulatory Problems	5	5–8%	6–9%
Musculoskeletal Problems	6	5–8%	4–6%
Skin Problems	7	3–4%	6%
Mental Health Problems	8	2–4%	2%
Fever, Other Problems	9	3%	3–4%
Eye Problems	10	3–4%	2–3%
Urinary System	11	2–3%	2–3%
Genital Problems	12	3%	2–3%
Pregnancy	13	3–4%	2–3%
Dental Problems	14	1–2%	2–3%
Nervous System	15	2–4%	2%

\*% total visits range includes estimates based on National Patient Information Reporting System (NPIRS) 2005–2006 data and sampled Daily Medical Log (DML) 2006 data

Rank based on Daily Medical Log (DML) data, as this may reflect a better, unbiased capture of diagnosis data

Data source: Golnick C, Alaska Community Health Aide/Practitioner Clinical Practice Description, Dec 1, 2009. NSB data from Appendix A, property of NSB-DHSS.

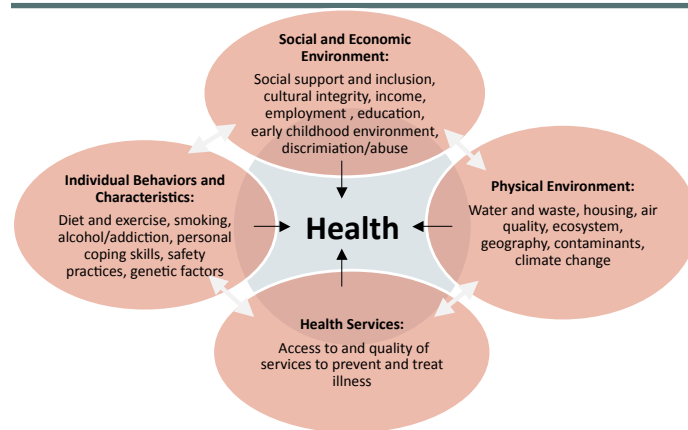
Villages include: Anaktuvuk Pass, Atkasuk, Kaktovik, Nuiqsut, Point Lay, and Wainwright.

## SR 2. Determinants of Health in the NSB

### SR 2.1. The Health Determinants Framework

Health is influenced by many socioeconomic, cultural and environmental factors, as well as personal characteristics and behaviors. Access to health care is also an important determinant of health, although direct health services are thought to be a relatively minor contributor to overall health status, compared to these other factors. Health care services are nonetheless potentially life-saving and necessary for the treatment of acute and chronic health problems, the alleviation of suffering, and the provision of individually tailored health education and preventive care. The factors influencing health have been a focus of much research in recent decades, as the public health field and policymakers search for effective approaches to community health promotion. Figure SR.30 depicts the factors research has shown to be linked to health.

Figure SR.30: Determinants of Overall Health



Modified from World Health Organization: Determinants of Health<sup>12</sup>

## SR 2.2. Drivers of Health in the Alaskan Arctic

Relatively little research has looked specifically at the factors influencing health in Alaskan arctic communities. The Institute for Circumpolar Health Studies in Anchorage examined the available literature on the determinants of circumpolar health as they relate to the leading causes of death in Alaska.<sup>50</sup> Some factors with strong evidence of association with these health problems included

- Addiction,
- Social isolation,
- Environmental exposures,
- Diet and/or nutrition,
- Global climate change,
- Access to clean water, and
- Access to quality healthcare

## SR 2.3. Drivers of Health in the NSB

Drawing on what is known about the determinants of health in arctic and other populations factors that may be impacting health in the NSB can be outlined. The full report (Part II) also discusses the factors that drive overall health as well as health outcomes in particular areas of health including cancer, injury, chronic disease, respiratory disease, maternal and child health, mental health, and infectious disease.

### SR 2.3.1. Factors Likely Impacting NSB Health in a POSITIVE way

Table SR.6 indicates factors that likely affect health in NSB communities in a positive way and contribute to the major community health achievements of recent decades.

**Table SR.6: Factors Likely Impacting NSB Health in a POSITIVE Way**

<p><b>Subsistence participation and subsistence diet</b></p> <p><i>Research in the NSB and in other arctic and sub-arctic regions has shown that eating a more traditional diet and actively engaging in subsistence activities have many health benefits. These health benefits may be imparted through the high nutrient value of the foods, the physical activity involved, and through the vital social and cultural aspects of subsistence. (see Part II, Chapter 1, section 1.2.3.2.1.3)</i></p>	<p>2 of 3 of Iñupiat households still rely on subsistence foods for at least half of their household diet, and the vast majority of Iñupiat households share and/or receive subsistence food from other households, as is traditional in the region. A high percentage of Iñupiat residents actively participate in the traditional subsistence way of life, engaging in such activities as whaling, hunting, and preparing food from subsistence sources.<sup>8</sup></p> <p>The NSB has one of the highest levels of subsistence food harvests in Alaska,<sup>51</sup> and there is no compelling evidence that use of subsistence foods in the NSB has declined in recent decades.</p> <p>While local concerns about contamination of subsistence food sources persist, there is growing evidence that subsistence foods in the NSB are safe to eat and do not contain contaminants at levels likely to affect human health. There is general agreement in the scientific community that, the health benefits of eating subsistence foods in Alaska outweigh any potential health risks from contamination from pollutants or radioactivity. (see Part II, Chapter 1, section 1.2.2.3.3.)</p>
<p><b>Support and promotion of Iñupiaq culture and language and investment in culturally-affirming and integrated education programs</b></p> <p><i>Strong cultural values may help impart resiliency and enhanced health to communities experiencing dramatic social and economic changes.<sup>52</sup> Education, particularly when it is culturally affirming,<sup>52</sup> is also strongly predictive of health outcomes.<sup>53</sup></i></p>	<p>One of the NSB’s stated goals has been to increase Iñupiaq language ability among residents and to promote Iñupiaq values. The Mayor’s Office, tribal organizations, NSB School District, Ilisagvik College, and many other community groups have devoted substantial resources toward this effort.</p> <p>The NSB has invested heavily in education, and educational attainment levels have increased considerably since 1980.<sup>54</sup></p> <p>The NSB School District has a growing Iñupiaq Education Department and program that uses the Iñupiaq values, culture, history, language, and philosophy as a foundation from which to provide instruction in all areas of the curriculum. Iñupiaq language immersion pre-kindergarten programs are available to children in Barrow, and the school district uses a variety of computer-based language-based learning programs throughout the school curriculum.</p> <p>Indigenous language ability in the NSB appears to be higher than in the neighboring regions of Bering Straits and the Northwest Arctic Borough;<sup>34</sup> however, younger residents do not have the fluency that older residents do with the Iñupiaq language.<sup>8</sup></p>
<p><b>Availability of health, social, emergency, and public safety services</b></p> <p><i>Access to adequate health care and community services are vital to protecting and maintaining the health of communities.</i></p>	<p>97% of North Slope household heads have some form of health insurance, including eligibility for IHS-funded services,<sup>8</sup> compared to 82% statewide.<sup>9</sup></p> <p>Both ASNA and the NSB maintain vital community health services despite significant challenges. These services include such programs as the Community Health Aide Program that provides care in village clinics; inpatient and outpatient medical care and ancillary services; integrated behavioral health services; breast, cervical, and colon cancer screening; child and adult immunizations; primary, and prenatal health care; health education in schools; nutritional counseling and support services, STD testing and treatment; specialized programs for elders and youth; first-responder and emergency services, and Barrow and village-based police officers.</p>
<p><b>Improvements in water and sanitation infrastructure</b></p> <p><i>Water and sewer services are essential components of community health promotion, especially in preventing the spread of infectious diseases.</i></p>	<p>An estimated 92% of NSB households have modern water and sewer service, compared with an average of 76% for Tribal Health Regions statewide as of 2008.<sup>8,55</sup></p> <p>The cost and complexity of maintaining and repairing expensive water and sewer systems in the NSB and other parts of rural Alaska are ongoing challenges, however.</p>

Table SR.6, continued

<p><b>Self-determination: civic participation and advocacy</b></p> <p><i>A sense of control of one's own destiny has been associated with better health.<sup>53,56</sup></i></p>	<p>Through the establishment of the North Slope Borough, the Iñupiat Communities of the Arctic Slope (ICAS), the Arctic Slope Native Association (ASNA), and the Arctic Slope Regional Corporation (ASRC), as well as through participation in numerous national and international advocacy organizations, advisory committees, and decision-making bodies, the residents of the NSB have worked to maintain an active and powerful voice in decisions that affect their communities as well as the health of the local, as well as global, communities and ecosystems.</p>
<p><b>Restrictive alcohol policies</b></p> <p><i>Ongoing controversy exists in rural Alaska regarding alcohol policy, but from a public health perspective, more restrictive alcohol policies in rural Alaskan communities, including Barrow, have been associated with lower alcohol-related injury rates and other health problems.<sup>57-61</sup></i></p>	<p>NSB has faced difficult decisions around local option laws, but Barrow has remained "damp," maintaining laws banning local sale of alcohol since 1997, and all the other NSB villages remain "dry," banning sale, import, and possession of alcohol.</p>
<p><b>Tobacco taxes and indoor air quality laws</b></p> <p><i>Policies that raise prices and limit exposure to tobacco smoke are important measures in reducing smoking and the health effects of tobacco exposure.<sup>62,63</sup></i></p>	<p>Barrow instituted an indoor air ordinance in 2003. In 2007, it passed a \$1 local tobacco tax to be added to the \$2 state tobacco tax.</p> <p>Although overall smoking rates have not changed, in 2010, adult smokers in Barrow were less likely than they were in 2003 to report smoking one pack per day or more.<sup>8</sup></p> <p>The persistently high and essentially unchanged smoking rates in the NSB demonstrate, however, that further steps are needed to curb smoking in the region.</p>

## SR 2.3.2. Factors Likely Impacting NSB Health in a NEGATIVE Way

Table SR.7 lists factors that likely affect NSB community health in a negative way and contribute to the major health disparities, emerging health concerns, and leading health burdens.

Table SR.7: Factors Likely Impacting NSB Health in a NEGATIVE Way

<p><b>High rates of tobacco smoking</b></p> <p><i>Tobacco is a causal factor in many of the leading causes of death and health disparities in the NSB, including lung and other types of cancer, chronic lower respiratory disease, and high blood pressure, heart disease, diabetes, infant mortality, and even chronic pain.</i></p>	<p>Smoking rates in the NSB are among the highest in the state and show no indication of declining.<sup>8,9,10</sup></p> <p>The high tobacco smoking rates in the NSB include not only adults but adolescents and pregnant women. Smoking rates among high school students and pregnant women in the NSB are more than twice state-wide rates.<sup>4,25</sup></p>
<p><b>High levels of food insecurity and difficulty accessing foods for healthy meals</b></p> <p><i>The term "food security" refers to the ability to procure enough food, at all times, for an active healthy life for all household members. Food insecurity is a major public health concern in rural Alaska and is associated with a number of serious health problems in both adults and children.<sup>64</sup></i></p>	<p>Of household heads in the NSB, 35% reported difficulty getting the food needed to eat healthy meals last year, and they reported an inability to get enough of both subsistence foods and store foods.<sup>8</sup></p> <p>Of Iñupiat household heads in the NSB, 26% reported that, at times last year, household members did not have enough to eat,<sup>8</sup> an estimate considerably higher than statewide estimates.<sup>64</sup></p>

Table SR.7, continued

<p><b>Difficulty accessing health services</b></p> <p><i>Access to quality health care is an important component of community health, both for the prevention and treatment of illness and injury. The remote location and severe climate present many challenges to the delivery of health care services in the NSB.</i></p>	<p>The NSB is categorized as a medically underserved area and a health professional shortage area by the U.S. Health Resources and Services Administration.<sup>65</sup> Like many other remote rural Alaskan regions, the NSB suffers from chronic health care workforce shortages and high turnover of personnel, both of which affect the ability to deliver necessary health services. Some services, such as home health care and respite care services, are often not available because of lack of staffing, funding, or both.</p> <p>Residents must often travel long distances at considerable expense, inconvenience, and sometimes risk to access both primary and specialty health services.</p> <p>With the responsibility for health care shared by multiple agencies, fragmentation of health services is a frequently-cited barrier and frustration for patients.</p> <p>One marker of access to care, early prenatal care rates, declined considerably in the NSB between the mid-1990s and 2009.<sup>4</sup></p>
<p><b>Historical and multi-generational trauma</b></p> <p><i>Discrimination, loss, and lack of control of one's own destiny can have profound influences on both mental and physical health.<sup>53,66</sup></i></p>	<p>The people of the North Slope have experienced devastating epidemics of infectious disease and suicide, institutionalized discrimination and forced removal of children to boarding schools, and cycles of alcohol- and drug-related familial violence and abuse.</p> <p>The contamination of hunting lands near Point Hope with nuclear waste in the early 1960s (known as the Project Chariot site), and unethical medical experimentation carried out on Alaska Native volunteers in the last century—most notably the now infamous 1957 radioactive Iodine-131 thyroid experiment<sup>3</sup>—left unresolved questions about physical health consequences and compounded the multi-generational victimization and grief already affecting the region.</p>
<p><b>Addiction: Alcohol and drug abuse</b></p> <p><i>Alcohol is involved in an estimated 40% of snowmachine-related injury hospitalizations, 70% of assault injuries, 57% of suicide attempts, 45% of motor- vehicle-related injury hospitalization,<sup>24</sup> and 59% of domestic violence incidents reported to troopers statewide (among Alaska Natives).<sup>67</sup></i></p>	<p>Of Iñupiat and Caucasian household heads in the NSB, 30% and 10%, respectively, report that a household member has been hurt by alcohol or drugs in the past year, and a large majority of NSB household heads believe that the health of their community has been hurt by alcohol or drugs in the past year.</p>
<p><b>Child neglect and abuse</b></p> <p><i>Conditions during early childhood have life-long physical, emotional, and cognitive effects, and the early childhood environment is a predictor of both mental and physical health.<sup>53</sup> Child neglect and abuse have powerful negative impacts on health throughout the lifespan.</i></p>	<p>Similar to other remote rural regions, the NSB experiences high rates of child maltreatment compared with statewide rates.<sup>14</sup></p>
<p><b>Rising school drop-out rates and below-average graduation rates</b></p> <p><i>A higher educational level is associated with longer life and better health throughout the lifespan. Education can help mitigate the health effects of poverty and other adverse circumstances.<sup>53</sup></i></p>	<p>Despite substantial investments in education, the overall average graduation rate in the NSB school district remains below state and national averages. Graduation rates vary widely among North Slope village schools, however, with rates in some villages exceeding statewide rates.</p> <p>Grade 7–12 drop-out rates have increased since the early 1990s and typically exceed statewide drop-out rates.</p>

Table SR.7, continued

<p><b>Environmental problems such as climate change and contaminants</b></p> <p><i>Rural arctic communities are particularly vulnerable to the health effects of climate change.<sup>68</sup> The arctic region is warming twice as fast as the rest of the planet, and the arctic is expected to experience the greatest rates of warming compared with other world regions, according to the International Panel on Climate Change.</i></p>	<p>Changing weather and ice patterns in the North Slope region affect subsistence food availability and may increase risks associated with subsistence activities.<sup>68</sup></p> <p>Some concerns voiced by local North Slope residents and leaders include the impact of ocean temperatures and increased marine traffic on bowhead whale migration patterns, disappearing nesting grounds for migrating bird species and spoilage of subsistence meats that are stored in permafrost cellars.<sup>69</sup></p> <p>As permafrost temperatures rise and frozen ground thaws, there is potential for destabilization of infrastructure in many arctic communities. Barrow has been identified as “ground zero” for climate change.<sup>69</sup></p> <p>Arctic climate change and other environmental problems also affect water, sanitation, housing, and transportation infrastructure, cultural continuity and community stress levels.<sup>68</sup></p> <p>Although the available data regarding the health effects of environmental contaminants have generally been reassuring, anxiety and anger about the safety and availability of subsistence foods, local and global sources of pollution, and the possibility of local environmental catastrophes related to oil development, may have profound effects on community health and well-being that are difficult to measure.</p>
<p><b>High consumption of sodas and other sugar-sweetened beverages</b></p> <p><i>High consumption of soda or other sugar-sweetened drinks and other high-calorie, low nutrient value processed foods has been linked to important health problems such as obesity, diabetes, tooth decay,<sup>70</sup> and even certain cancers.<sup>71</sup></i></p>	<p>Household heads in the NSB are significantly more likely than adults statewide to report drinking at least two of these beverages per day.<sup>8,9</sup></p> <p>In the NSB, Iñupiat household heads are significantly more likely than those of other ethnic groups to drink more than three sodas or other sugar-sweetened beverages per day.<sup>8</sup></p>
<p><b>Insufficient levels of physical activity among many residents</b></p> <p><i>Regular physical activity is essential to mental and physical health and can decrease the risk of many diseases, including diabetes, depression, high blood pressure and heart disease, and even some types of chronic pain.</i></p>	<p>Fewer than half of NSB household heads (44%) report getting the recommended amount of moderate physical activity,<sup>8</sup> similar to statewide estimates (47%).<sup>9</sup></p> <p>Almost one-third of NSB adults reported no leisure-time exercise, higher than statewide estimates.<sup>8,9</sup></p> <p>In 2005, the percentage of NSB high school students attending physical education classes daily was significantly lower than among high school students nationwide, but more NSB students did participate in after-school sports teams.<sup>23</sup></p>
<p><b>Low utilization of safety practices such as helmet and seatbelt use</b></p> <p><i>Helmets and seatbelts reduce the likelihood of serious injury and death caused by motor vehicle accidents</i></p>	<p>In the NSB, only 18% of household heads reported using helmets when riding a snowmachine or four-wheeler, and this estimate was even lower among Iñupiat household heads and those living in North Slope villages other than Barrow.<sup>8</sup> By comparison, in a statewide observational study, an estimated 57% of people used snowmachine helmets, 47% in rural areas.<sup>72</sup></p> <p>In 2005, 63% of NSB high school students reported never or seldom using a seatbelt.<sup>23</sup></p>

### SR 2.3.3. Factors Likely Impacting NSB Health in MIXED Ways

Table SR.8 lists some factors that are likely influencing NSB community health in mixed, complicated ways.

**Table SR.8: Factors Likely Influencing NSB Health in Mixed, Complicated Ways**

<p><b>Oil and gas development</b></p> <p><i>The health impacts of oil and gas development in the NSB are complex, as it has touched many aspects of community life in the region.</i></p>	<p>The development of oil and gas resources has forever changed the North Slope. Following the formation of the North Slope Borough, oil and gas revenues have created employment opportunities, provided money for essential services and infrastructure, and raised the average household income. An influx of outside interests and money can also create conflict, alter social structure, and divide communities, affecting community well-being. Real and potential impacts to the environment and subsistence are also ongoing sources of tension and concern. Natural resource development and fossil fuel extraction worldwide has also contributed to the climate change that is disproportionately affecting arctic communities.</p> <p>The field of Health Impact Assessment (HIA) was developed to assess both the positive and negative potential human health effects of development projects. This policy tool can be used to make recommendations that will maximize the health benefits and minimize health damage to a community from development projects. Widely used internationally, the use of HIA is growing in the U.S. and in Alaska. The NSB has been a leader in integrating HIA into the Environmental Impact Assessment process for natural resource development in Alaska.</p>
<p><b>Employment opportunities</b></p> <p><i>Across widely varying socioeconomic and geographic populations, employment and income level have been found to be associated with health, both mental and physical.<sup>53</sup></i></p>	<p>Oil development on the North Slope has created a variety of employment opportunities for local residents, and the unemployment rate in the NSB has generally been lower than in other rural Alaskan regions.<sup>73</sup></p> <p>The official unemployment rate in the NSB has fluctuated widely over the last 20 years, however, and inadequate local job opportunities have been cited as a leading community concern.<sup>32</sup></p> <p>In the 2010 NSB Census, 28% of NSB residents aged 16–64 report currently being unemployed. Of these, roughly one-third state that this is because they could not find a job. Iñupiat residents were significantly more likely to be unemployed than Caucasian residents.<sup>8</sup></p> <p>A large majority of jobs created by oil and gas development have gone to non-resident Alaskan and out-of state workers.<sup>74</sup> A mismatch between skills and workforce needs can contribute to chronic unemployment and underemployment among local residents. Drug and alcohol problems also present additional barriers to securing and maintaining employment for some NSB residents.<sup>75</sup></p>
<p><b>Income level and distribution</b></p> <p><i>Research in a wide variety of cultures has demonstrated that income level is positively associated with a number of health indicators,<sup>9,53</sup> although limited research in arctic indigenous communities has not clearly demonstrated income clearly to causally related to health.<sup>50</sup></i></p> <p><i>Research also suggests a relationship between income distribution and health such that more equitable distribution of income within a community or country is associated with better health outcomes.<sup>76</sup></i></p> <p><i>Poverty has a devastating impact on health. The chronic stress, poor nutrition, increased exposure to crime and victimization, fewer opportunities and problems with access to health care associated with poverty all play a role in influencing health behaviors and outcomes.<sup>53</sup></i></p>	<p>The NSB has above-average median household income, compared to Alaska overall and to other remote rural areas.<sup>73</sup></p> <p>According to one standard measure, the NSB has among the lowest estimated levels of household income inequality in the state.<sup>10</sup> This means that, compared to other regions in Alaska, income in the NSB is more equally distributed among households. Income inequality levels in the NSB, Alaska, and the U.S. are, however, all still above the level beyond which negative health effects begin to occur.<sup>76</sup></p> <p>Estimated poverty rates in the NSB have fluctuated considerably over the past two decades. Poverty levels in the NSB rose through the 1990s and early 2000s to peak at almost 14% in 2007 before dropping back down slightly below statewide estimates.<sup>77</sup> They have generally remained below nationwide estimates; however, poverty rates do not take into account differences in local cost of living, which is high in the NSB.</p> <p>The percent of children eligible for free and reduced lunch gives a reasonable estimate of the number of children living in families with household incomes less than 185% of the poverty level. In 2011, 44% of students enrolled in the NSB School District were eligible for the Free or Reduced Lunch program. Roughly one-third of Alaska school districts had lower percentages and two-thirds had higher percentages of students eligible for the program.<sup>78</sup></p>

## SR 3. Working Together To Improve Health in the NSB: Focus on Prevention

Traditionally, local health planning has focused on the provision of medical services and essential public health programs such as immunizations and infectious disease control. Like in other parts of rural Alaska, chronic staffing shortages and high turnover of personnel continue to make provision of necessary services challenging in the NSB. The sharing of responsibility for key health and social services in the region between multiple organizations and across many miles of frozen tundra adds to the complexity of this task. Some of these challenges may be met through improved communication and coordination of services, utilizing modern telecommunications technology, expanding efforts to recruit and retain health care personnel, and building local capacity through mentorships, internships, scholarship programs, local training, and distance learning opportunities.

Across the state and the country, communities are also starting to look at health more broadly and focus on prevention at the community level. Communities are examining their health challenges and achievements, taking ownership of problems, and attempting to address them through the development of community partnerships and through collaborative planning and action. In rural Alaska, innovative programs have combined traditional knowledge and healing practices with modern evidence-based models.<sup>79</sup> Whereas local health departments are taking the lead in community health promotion efforts across the country, leadership and collaboration in multiple organizations within and outside the community are necessary for achieving community health goals.

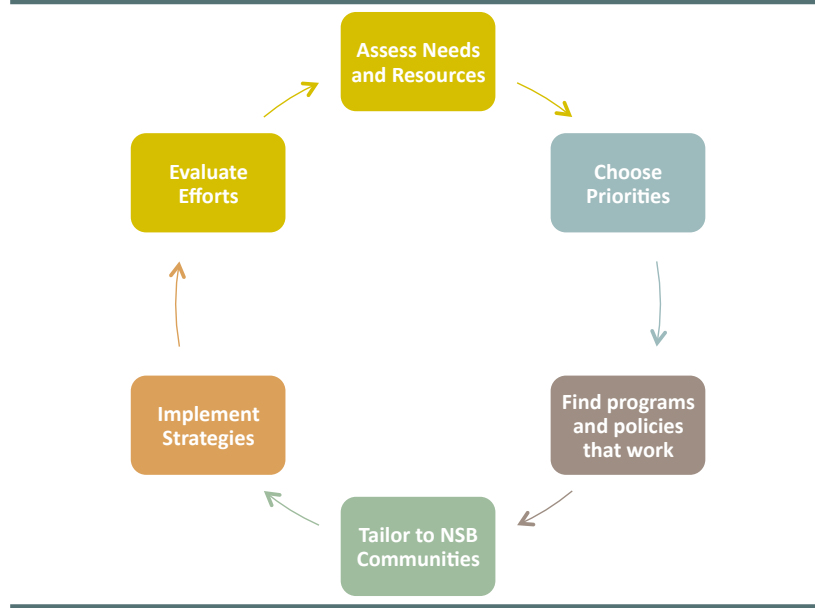
### SR 3.1. Community-Based Health Promotion and Disease Prevention

#### SR 3.1.1. The Process of Community Health Promotion

Multiple models and guidelines have been developed for community-level health improvement efforts.<sup>10,79-83</sup> Most recognize, however, that this process is not linear, but rather a cycle, with phases that overlap and reflect back on themselves as the community moves forward together. Each step in the cycle requires leadership, collaboration, and commitment from multiple sectors of the community. Many national public health agencies and foundations are increasingly focusing their grant funding on this type of community-based collaborative model of health promotion. Initiating and sustaining the effort can be a significant challenge when local budgets are tight and participants have many competing duties and limited time. These challenges can be overcome, however. At least one staff member, and ideally a collaborative leadership team, should have a substantial portion of their paid time dedicated to leading the development and implementation of a community health promotion initiative. Realistic goals, both short- and long-term, should be set early in the process, and a plan for ongoing evaluation and modification of efforts must be established (see figure SR.31).

Successful planning requires a solid understanding of the nature and magnitude of the problems as well as the factors that drive community health. This report is intended to provide much of the information necessary to assess community health needs and resources, as well as to serve as a resource for community leaders in all phases of the health promotion process.

Figure SR.31: Working Together and Taking Action to Improve Community Health

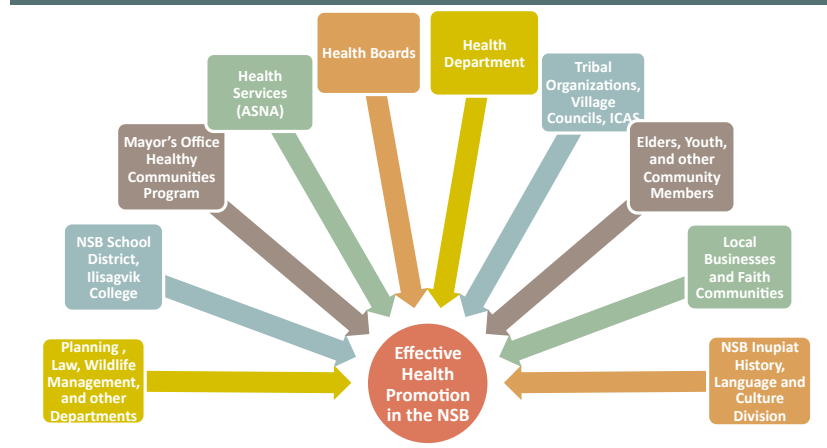


Modified from County Health Rankings "Action Steps"

### SR 3.1.2. Community Health Partnerships in the NSB

Developing community partnerships is one of the cornerstones of successful community health promotion efforts. Within the NSB, many agencies and groups have an interest and a role in community health. Below are just some of the potential local partners that have contributed and can continue to contribute to efforts to address the health issues facing North Slope communities.

Figure SR.32: Effective Health Promotion in the NSB



### SR 3.1.3. Community Health Promotion Resources Outside the NSB

#### SR 3.1.3.1. Community Health Promotion in Rural Alaska Native Communities

Looking to other Alaskan communities and learning from their various experiences with community health promotion can be valuable. A number of common themes have emerged from Alaskan communities' efforts at health improvement and healing, compiled in the report *Healthy Alaskans 2010 Volume 2*:

*Talking Circles*, which consists of 14 stories of community-based efforts for public health improvement in rural Alaska.<sup>79</sup> Table SR.9 lists some of these themes.

**Table SR.9: Community Health Promotion Themes from Rural Alaskan Communities**

Community
Elders
Traditional knowledge
New knowledge
Collaboration
Leadership
Local ownership of both the problems and solutions

The Alaska Native Tribal Health Consortium’s Health Promotion and Disease Prevention Program has developed the “Creating Community Circles for Change” program to provide support and tools for communities trying to improve their people’s health at the local level. They also provide training and support for “digital storytelling,” which enables community members to develop their own health messages through powerful personal narratives through the use of digital storytelling technology.<sup>84</sup>

### SR 3.1.3.2. **Other Resources**

Appendix C contains a list of some of the many resources available both within Alaska and at the national level to help local communities develop health promotion programs. Some organizations focus on specific aspects of community health such as injury prevention, child maltreatment, or tobacco. Others are available to help communities organize and develop their own overall community health promotion strategies. Some of these organizations also provide funding to communities engaging in efforts to improve health at the population level.

## SR 3.2. **Focused Health Promotion Recommendations**

Communities must develop their own health promotion priorities; however, based on the findings of this baseline community health analysis, there appear to be several specific areas in which health promotion efforts have the greatest potential to address major health disparities as well as leading and emerging health problems in the NSB.

### SR 3.2.1. **Focus on Children and Families: The NSB Healthy Kids Initiative**

The findings of this report suggest that maternal and child health represents an area of significant health disparity in the NSB. Supporting the health of infants, children and adolescents is one of the best investments a community can make in its future, and this can only happen through supporting healthy families. The NSB Health Department is responsible for many aspects of maternal and child health through programs such as public health nursing and WIC, and adequate support for these programs is crucial to improving child and family health in the NSB. ASNA currently has primary responsibility for prenatal and obstetrical care in the region. Maintaining adequate staffing to provide these services has been an ongoing challenge. Improved intra-agency coordination of existing health and social services can maximize the benefits to pregnant women and families.

In the North Slope, supporting the health of children means focusing not just on mothers and their infants, but also working with fathers and extended families, schools, and the entire community to keep children healthy and safe. Communities, schools, families, and health care workers can promote child and family health by creating supportive, positive environments for children and helping them develop the skills that

will enable them to make healthy choices throughout their lives and navigate the many challenges they will face during adolescence and adulthood.

The NSB Health Department has already engaged in early efforts in this area, building relationships with community partners such as the NSB School District and ASNA to develop a framework for addressing child and family health challenges in the NSB. Some themes and ideas that have emerged so far from this working group include:

### Draft Mission Statement

*“To develop community-wide partnerships that encourage and facilitate healthy choices and create an environment that supports optimal health and development for all NSB infants, children, and adolescents.”*

### Overall Themes

- Children’s health is about *family health*, and entire families need to be included.
- Community involvement is essential at every stage of the process.
- Incorporating traditional Iñupiaq values and activities into all aspects of initiative.
- Giving community members information about their own health can inspire involvement and action.
- Community members want concrete, specific information about health risks.

### Maternal-Infant and Young Family Health

- Focus on parenting: Provide Iñupiaq values-based parenting guide, education and support for new parents involving Iñupiat elders and experienced parents as mentors and role models.
- Reduce family stress and reduce the likelihood of child maltreatment with in-home nursing support, respite care services, and other circles of community support for families with young children.
- Build relationships with ASNA to improve coordination of prenatal/newborn/post-partum/well-child health services—addressing low rates of early and/or adequate prenatal care, fragmented newborn follow-up, low breastfeeding continuation rates, and high prenatal smoking rates.
- Bring together people from around the North Slope and outside to work toward improving MCH services in the region with local Maternal Child Health (MCH) mini-conferences.

### Child Obesity and Chronic Disease Prevention

- Get traditional foods into schools—look at YKHC model for guidance, work with the NSB School District’s Iñupiaq Education Program.
- Work with the NSB School District on updating and implementing school wellness policies
- Plan family-oriented physical activities such as family Eskimo dancing nights, volleyball, and multi-cultural food and music nights
- Increase opportunities for participation in Native Youth Olympics-type activities
- Mobilize the community around reducing soda pop and other sugar-sweetened beverages, exploring effective promotion of tap water as the primary beverage for children and adults
- Educate community members about the importance of adequate sleep in preventing obesity and chronic disease
- Advocate for and participate in the development of a local food policy committee
- Address high obesity rates in toddler to preschool aged children: promote and support breastfeeding continuation and healthy nutrition, discouraging sugared beverage use in this age group

### Youth Risk Behavior Reduction

- The problem of youth tobacco/alcohol/drug use belongs to the whole community and requires engagement from the whole community. Drug use is a big community concern and is frequently brought up as a priority at conferences and meetings. Tobacco and other addictive substances are linked and need to be addressed together
- Community members must start talking more openly about the pain that drives these behaviors.
- *Early* intervention is crucial: work with very young children and young families to prevent neglect, abuse, educate about the body and nutrition, and develop self-esteem and strong coping and decision-making skills
- NSB youth cite tobacco and alcohol use as the top health problems in their community (see Appendix D)
- Many groups are working on these issues—how can we all best work together to use the community resources we have and not replicate efforts?

Innovative approaches are needed to address all of these complex issues. Approaches that involve elders, young people, and other community members at all stages and those that incorporate traditional Iñupiaq values, activities and ways of healing are likely to be the most effective.

### SR 3.2.2. Tobacco Prevention and Control

A large majority of adult smokers in the NSB are interested in quitting,<sup>8</sup> and students surveyed in two different North Slope villages identified tobacco smoking as a top health concern. A community-wide tobacco prevention and control program has the potential to significantly reduce the burden of suffering and death from the leading cause of death in the NSB—cancer, and in particular, lung cancer. Reducing smoking rates also has the potential to reduce the significant health disparities in chronic lower respiratory disease, infant mortality, and other prevalent health problems in the NSB. Barrow has already taken several important policy steps to reduce smoking and second-hand smoke exposure—a local tobacco tax and indoor air ordinance—but very high smoking rates persist. No single local organization or agency can solve this problem alone, but leadership and commitment from multiple sectors of the community working together can undoubtedly have an impact on this major public health issue. In addition, many outside resources exist to aid communities in local tobacco prevention and control efforts. Some of these resources are identified in Appendix C.

Some areas on which to focus efforts include:

- Preventing tobacco initiation among children and adolescents through policies and enforcement that limits access to tobacco, counter-advertising and other hard-hitting media campaigns, early education programs, and helping youth engage and form peer connections around interests and activities that reduce their likelihood of smoking;
- Ensuring access to effective tobacco cessation services, with programs catering to those groups who may be most highly motivated to quit; for example, pregnant women and those in younger age groups in general
- Encouraging community members to make traditional subsistence gatherings such as whaling and hunting expeditions, feasts, and skin-sewing groups “tobacco-free” and emphasizing that tobacco is not part of the traditional Iñupiat culture or a traditional rite of passage for adolescents.

### SR 3.2.3. Coordinated Injury and Violence Prevention Program

Injury is a leading cause of death and the number one cause of premature death in the North Slope communities. It is also a major area of health disparity for the NSB. Across Alaska, community leaders, health departments, public safety officials, and tribal health organizations are working collaboratively to address the related problems of unintentional injury, suicide, and interpersonal violence. The ANTHC Injury Prevention Program has worked with many communities in rural Alaska to develop local, coordinated injury prevention programs with dedicated local staffing. These programs are tailored to the particular needs of local communities. Appendix C contains information about a number of injury and violence prevention resources.

- A number of organizations in the NSB—Arctic Women in Crisis, the NSB police and fire departments, the NSB Integrated Behavioral Health Division, and others—are already doing important work toward reducing unintentional injury, suicide, and domestic and sexual violence. Ongoing support, expansion, coordination, and evaluation of these efforts are warranted.
- Talking circles, community spirit gatherings,<sup>79</sup> and other supportive community forums can help address the historical and personal trauma, unresolved anger, and grief that can drive destructive behaviors. As a high proportion of injuries, both intentional and unintentional, are related to alcohol and drugs, both retaining local option laws that restrict access to alcohol and maximizing the availability of alcohol and drug prevention and treatment services are likely to reduce the burden of both intentional and unintentional injury in the NSB.
- Programs to encourage, facilitate, and enforce helmet use and motor vehicle safety practices, particularly on off-road vehicles, can help address this leading cause of premature death and disability. Other Alaskan communities have begun exploring gun and medication lockers as ways to reduce suicide attempts and accidental injuries, particularly among children and adolescents.<sup>85</sup>
- National groups working on reducing injury and violence are increasingly turning their focus to younger children, finding ways to help parents, schools, and communities build the emotional skills in

young children that will enable them to cope effectively with challenges and hardships that can sometimes lead to impulsive behavior, substance abuse, violence, and injury. Nurse-family partnerships are one example of such an early intervention program.<sup>86</sup>

### SR 3.2.4. Preventing Chronic Disease Through Healthy Diet and Physical Activity

Community-wide nutrition and physical activity interventions incorporating traditional foods and activities have the potential to slow or reverse the concerning trends in obesity and diabetes in the NSB. Such programs can have wide-reaching benefits on other common health problems as well, including cancer, arthritis and chronic pain, high blood pressure, oral health, and mental health. Initial work in this area has already begun in the NSB with the Move-It campaign, the Mayor's Office Healthy Communities Initiative, youth sports camps, school wellness policies, and other programs. Resources on community health promotion around nutrition and physical activity are included in Appendix C.

While education about diet and exercise can give people the information they need to make changes for themselves and their children, often things like food cost and availability, lack of time and family support, and inadequate opportunities for recreation make these changes more difficult for individuals. Population-based approaches, such as policy, system, and environmental changes, are essential components of any community-based strategy. Five evidence-based components of this population-based approach include:<sup>88</sup>

- **Media:** for example, promoting healthy food/drink choices and non-motorized transit and physical activity through schools, community events, healthy fairs, youth-produced videos, local media such as radio, and social media sites
- **Access:** for example, providing incentives to store owners to stock and promote healthier food options, assisting communities with subsistence food sharing and storage, and expanding local physical recreational opportunities
- **Point of decision information:** for example, signs or labels indicating for healthy vs. less healthy foods on store shelves, product placement and attractiveness
- **Price:** for example, making healthy foods less expensive through bulk purchase/procurement and building community support for a local tax on sodas and other sugared drinks that could decrease consumption and fund subsistence support programs or other community priorities
- **Social support services:** for example, breastfeeding peer counselors and workplace policies that support breastfeeding; subsistence support programs; and physical activity groups and events such as Eskimo dancing nights, walking groups, and family sports nights

Many states (including Alaska) and an increasing number of local communities have developed food policy councils or committees to address the central role that food systems play in the health of populations. Some potential topics of focus for a local food policy council or local nutrition initiative in the NSB might include:

- A strategic plan to address the high reported levels of food insecurity (both market and subsistence) throughout the North Slope, particularly among Iñupiat households in outlying villages.
- Ways to facilitate the increased consumption of traditional subsistence foods and other healthy foods among children in school, community, and home environments.
- Policies and planning decisions that protect subsistence resources, support subsistence hunting and fishing, enhance food-sharing networks, and address the impacts of climate change and resource development on traditional subsistence activities and food storage.
- A strategic plan to reduce the high consumption of soda and other sugar-sweetened beverages in North Slope communities, particularly among young people. Efforts could include policy approaches that address the current bypass mail system and other issues of food distribution and cost in the NSB, community-wide and point-of-sale education, counter-advertising, promotion of alternatives, and assessing community support for a tax on sugar-sweetened beverages.

## SR 3.3. Enhancing Overall Community Health

Health is influenced by virtually every aspect of a person's life. Many of these factors exist outside of the traditional realm of public health or health care. Therefore, health needs to be considered in virtually every major policy and planning decision affecting North Slope communities. Health Impact Assessment (HIA) is one policy tool that can be used to ensure the consideration of human health in resource development and other planning decisions, and the NSB has already become a leader in the use of HIA within the Environmental Impact Assessment process. Understanding the current health issues facing a community as well as the factors underlying health can help delineate the pathways through which these decisions can affect community health.

Below are some examples of local, community-based activities outside the traditional scope of public health services that have the potential to enhance community health. Many of these efforts are already occurring in the NSB and warrant ongoing or increased support:

- Continuing or expanding programs that encourage the incorporation of traditional Iñupiaq values, skills, activities, and language into community life, education, and employment.
- Expanding job training and employment opportunities that create stable, equitable, and safe working environments.
- Providing consistent and ongoing opportunities for strengthening supportive social ties—for example Talking Circles, Healing Circles, or community Spirit Gatherings—for residents of all ages.
- Advocating for policies and decisions that protect the local and global environment.
- Facilitating civic engagement and meaningful participation among residents in decision-making processes affecting local communities.

## SR 3.4. Setting Targets and Monitoring Community Health

Monitoring community health status over time can be a valuable tool in tailoring programs to meet the needs of the communities served. Communities must determine which health-related indicators are of greatest value and interest, taking into consideration availability and ease of use of the various data sources. The Health Department and other organizations might also be interested in monitoring health indicators related to a particular health promotion campaign or program. North Slope communities facing policy, planning, or resource development decisions might be interested in monitoring aspects of community health affected by those decisions; and this type of monitoring is part of the Health Impact Assessment process. References and data sources are provided at the end of each chapter in this report, and Appendix B provides descriptions of data sources and how data were obtained for this report. Data tables have been provided to the NSB Health Department for all figures and graphs based on numerical data that were too numerous to display within the report.

### SR 3.4.1. Choosing Community Health Indicators

The Healthy Alaskans Partnership Council developed a set of leading health indicators and targets for the state of Alaska that reflect major public health concerns in the state (See Table SR.10). These indicators are meant to be good measures of progress toward Alaskans living longer, healthier lives in healthy communities. The list of leading indicators was modified from the national *Healthy People 2010* leading indicators list to better reflect and allow tracking of public health issues of particular importance in Alaska.<sup>89</sup> Local data for the NSB are available for many of these leading health indicators and are included in Table SR.10. Targets set by the Healthy Alaskans Partnership Council were based on baseline estimates for the state of Alaska. Local targets for the NSB could also be set, using the baseline estimates for the NSB and the statewide targets as guides.

**Table SR.10: Healthy Alaskans 2010 Leading Health Indicators**

	Healthy Alaskans 2010 Target	Baseline NSB Estimate	NSB Data Source	NSB 2020 Target?
<b>Physical Activity</b>				
Increase the proportion of adolescents who engage in vigorous physical activity (percent of high school students grades 9–12 who exercise or participate in sports activities for at least 20 minutes that cause sweating and heavy breathing on 3 or more of the past 7 days)	85%	58%	YRBS (2005)	?
Increase the proportion of adults who engage in regular, preferable daily, moderate physical activity (percent of people age 18 years and older who engage in physical activity five or more sessions per week for 30 or more minutes per session, regardless of intensity)	40%	44%	NSB Census (2010)	?
<b>Overweight and obesity</b>				
Reduce the proportion of adolescents who are overweight (percent of high school students grades 9–12 with body mass index greater than or equal to the 95th percentile, based on age-sex specific NHANES)	5%	22%	YRBS (2005)	?
Reduce the proportion of adults who are obese (percent of persons aged 18 years and older with body mass index greater than or equal to 30kg/m <sup>2</sup> )	18%	37%/31%	NSB Census (2010)/BRFSS (2005–2007)	?
<b>Tobacco Use</b>				
Reduce cigarette smoking by adolescents (percent of high school students grade 9–12 who have smoked cigarettes on one or more of the past 30 days)	17%	40%	YRBS (2005)	?
Reduce cigarette smoking by adults (percent of adults aged 18 years and older who smoked more than 100 cigarettes in their lifetime and smoked on some or all days in the past month)	14%	49%/46%	NSB Census (2010)/BRFSS (2005–2007)	?
<b>Substance Abuse</b>				
Increase the proportion of adolescents not using alcohol or illicit drugs during the past 30 days (percent of high school students grades 9–12 who have not used alcohol, marijuana, or cocaine in past 30 days)	60%	Comparable estimate not available	YRBS (2005)	?
Reduce binge drinking among adults (percent of persons aged 18 years or older who consumed five or more drinks on one occasion within the past 30 day period)	14%	17%	BRFSS (2005–2007)	?
<b>Mental Health</b>				
Reduce the suicide rate (deaths per 100,000 population)	10.6	50.4	ABVS (2005–2009)	?
<b>Injury Prevention</b>				
Reduce deaths caused by unintentional injury (deaths per 100,000 population)	31.4	102.1	ABVS (2005–2009)	?
Reduce deaths cause by motor vehicle crashes (deaths per 100,000 population)	7	45.6	ABVS (1999–2008)	?
<b>Violence Prevention</b>				
Reduce deaths from homicides (deaths per 100,000)	4	*	ABVS	?
Reduce child maltreatment (rate of substantiated reports of child maltreatment per 1,000)	10	54.8	OCS	?

Table SR.10, continued

	Healthy Alaskans 2010 Target	Baseline NSB Estimate	NSB Data Source	NSB 2020 Target?
<b>Immunization</b>				
Increase the proportion of young children who have received all vaccines recommended for universal administration (percent of children aged 19–35 months who have received recommended doses of DTaP, polio, MMR, HiB, and Hep B vaccines, the 4:3:1:3:3 series)	90%	75% (AI/AN only)	ANTHC Immunization program (12/31/2010)	?
Increase the proportion of elderly adults immunized against influenza and pneumococcal disease (percent of adults aged 65 years and older who have received an influenza vaccine in the past year; percent of adults aged 65 and older who have ever received a pneumococcal vaccine)	90%; 90%	41%; 84% (AI/AN only)	ANTHC Immunization program (June, 2010)	?
<b>Environmental Quality</b>				
Increase number of households with access to safe water and proper sewage disposal	98%	92%	NSB Census (2010)	?
Reduce the proportion of adult non-smokers exposed to second hand smoke in either their home, a car, or at work in the previous 30-day period	Developmental			?
<b>Access to Health Care</b>				
Decrease the percent of Alaskans without health insurance coverage throughout the year	5%	3%	NSB Census (2010)	?
Increase the proportion of adults aged 18 or older with a usual place to go for care if sick or needing advice about health	100%	Not available		?
<b>Maternal and Child Health</b>				
Increase the proportion of pregnant women receiving adequate prenatal care (percent of live births with APNCU Index greater than or equal to 80)	90%	22.0%	ABVS (2009)	?
Reduce post-neonatal death rate (deaths between 28 days and 1 year per 1,000 live births)		*	ABVS (2005–2009)	?
<b>Responsible Sexual Behavior</b>				
Increase the proportion of adolescents who abstain from sexual intercourse (percent of high school students grades 9–12 who have never had sexual intercourse)	65%	50%	YRBS (2005)	?
Increase the proportion of sexually active adolescents who use condoms (percent of high school students grade 9–12 who had intercourse in past 30 days who used condom at last intercourse)	75%	64%	YRBS (2005)	?
Increase the proportion of sexually active persons who reported condom use at last intercourse (percent of sexually active unmarried women (divorced, widowed, separated, never married, or member of an unmarried couple) aged 18–44 years who reported condom use at last intercourse). The comparable proportion for Alaska males was 45 percent.	50%	Not available	BRFSS	?

\*Fewer than 6 occurrences

Adapted from *Healthy Alaskans 2010: Targets and Strategies for Improved Health*

This list of leading health indicators could serve as a starting point for North Slope communities in creating a set of leading community health indicators and targets for the NSB. Some health indicators might be removed from the Healthy Alaskans 2010 list and others modified or added to create a set of local leading health indicators that can be tracked over time. A number of factors should be considered in choosing community health indicators:

- Community priorities and vision for a healthy future—incorporating issues of greatest interest and importance to the community;
- Leading health burdens, health disparities, and emerging health problems in the NSB, as outlined in Part I of this report;
- Availability and reliability of data at the borough level—is the data already being collected (for example, ABVS data) or will collection of new data be needed (for example, NSB Census, local YRBS data)? Is the number of events, cases, or survey participants large enough at the borough level to calculate reliable rates at the local level?
- Health measures that would be affected by existing or anticipated community health promotion activities, policies, or programs in the NSB;
- Health measures that might be particularly affected by new laws, funding decisions, environmental factors, or resource development activities.

Sometimes, an indicator that is used at the state level may not be appropriate for short-term monitoring at the local level in a region such as the NSB with a relatively small population. These indicators include rates based on small numbers of events from a statistical standpoint, such as motor vehicle death rates, suicide rates, or post-neonatal infant mortality rates. Other, more sensitive, indicators might be substituted or added, such as reported helmet use, reported suicide attempts among high school students, first-trimester prenatal care rates, and prenatal smoking rates. Disease and mortality rates can, however, be useful to examine in smaller communities when combining multiple years of data or when looking at trends over many years.

Some potential health indicators that might be included in an ongoing community health monitoring program in the NSB include (but are not limited to) those listed below in Table SR.11. These indicators add to the picture of overall community health and also reflect many of the areas of health disparity, major burdens of disease, and emerging health problems in the NSB outlined in this report. The indicators also represent data that are either already being collected on an ongoing basis, or could be collected through a repeat survey, for example, as part of the next NSB Census or through another YRBS survey in NSB high schools. Again, targets can be set through a community collaborative process and may also take into account baseline differences among age groups, ethnic groups or villages within the NSB. Statewide and national estimates are provided for general reference, and comparisons should be made with caution.

**Table SR.11: Possible Additional Community Health Indicators for the NSB**

Indicator	NSB Baseline	Alaska Baseline	NSB Data Sources	Alaska Data Sources
General health status among adults: Percent of adults reporting or reported to have “very good” or “excellent” general health.	46% (All) 40% (Iñupiat)	56% (All adults) 42% (Alaska Natives)	NSB Census (2010)	BRFSS (2008)
Food security: Percent of household heads who report that, at times last year, household members did not have enough to eat	19% (All) 26% (Iñupiat)	(4–11%)*	NSB Census (2010)	Food Insecurity in Alaska DHSS report (2006 BRFSS data)
Consumption of soda and other sugar-sweetened beverages: Percent of household heads who report drinking 2 or more sugar-sweetened beverages per day, on average in the past week	45% (All) 57% (Iñupiat)	30% (Alaska adults)	NSB Census (2010)	Obesity Facts DHSS report (2009 BRFSS data)
Subsistence food use: Percent of Iñupiat households who report that half or more of their diet comes from subsistence food sources	67% (Iñupiat)	N/A	NSB Census (2010)	N/A
General health status among children: Percent of children reported to have “very good” or “excellent” general health	63% (All) 60% (Iñupiat)	89% (Alaskan children)	NSB Census (2010)	National Survey of Children’s Health (2007)

Table SR.11, continued

Indicator	NSB Baseline	Alaska Baseline	NSB Data Sources	Alaska Data Sources
<p>Child obesity:</p> <p>a. Percent of NSB children aged 3–18 years with measured BMI above the 95th percentile for age and gender.</p> <p>b. Percent of children aged 2–5 enrolled in WIC with BMI above the 95th percentile for age and gender</p>	<p>a. 31%</p> <p>b. 37%</p>	<p>a. 20% (Alaskan children ages 3–19)</p> <p>b. 15% (U.S. 2008)</p>	<p>a. PHN database (2008–09)</p> <p>b. WIC database (2003–09)</p>	<p>a. Childhood Obesity in Alaska DHSS report, 2000–2005 data</p> <p>b. Pediatric Nutrition Surveillance 2008 Report (U.S.)</p>
<p>First trimester prenatal care: Percent of women delivering a live birth who accessed prenatal care during the first trimester of pregnancy</p>	64.7%	80.4%	ABVS (2005–09)	ABVS (2005–09)
<p>Breastfeeding initiation and duration: Percent of mothers using WIC who report</p> <p>a. Initiating breastfeeding</p> <p>b. Continuing for at least 8 weeks</p> <p>c. Continuing for at least 6 months</p>	<p>a. 71%</p> <p>b. 33%</p> <p>c. 26%</p>	<p>a. 62%</p> <p>b. N/A</p> <p>c. 27% (U.S. WIC data 2008)</p>	WIC database (2007–10)	Pediatric Nutrition Surveillance 2008 Report (U.S.)
<p>Prenatal smoking: Percent of women delivering a live infant who report smoking tobacco during pregnancy</p>	47%	16%	ABVS (2007–09)	ABVS (2007–09)
<p>Teen birth rate: Number of births per 1000 women aged 15–19 years</p>	92.9	42.2	ABVS (2007–09)	ABVS (2007–09)
<p>Domestic violence during pregnancy: Percent of women who recently delivered an infant who report physical abuse by a husband or partner during the pregnancy</p>	10.7%	3.9%	PRAMS (2001–2005)	PRAMS (2001–2005)
<p>Forcible rape rate: Number of reported cases of rape by force and attempted rape by force, per 100,000 population</p>	138.3	72.6 (Alaska) 30.1 (U.S.)	FBI Uniform Crime Reporting System (2006–09)	FBI Uniform Crime Reporting System (2006–09)
<p>Health impact of alcohol and drugs: Percent of household heads who believe a household member has been hurt by drugs or alcohol in the last year (often or sometimes)</p>	24% (All NSB) 31% (Iñupiat only)	N/A	NSB Census (2010)	N/A
<p>Helmet use: The percent of household heads who report using a helmet when riding a snowmachine or four-wheeler</p>	18% (All NSB) 11% (Iñupiat only)	57% (All) 21% (Alaska Natives from selected regions)	NSB Census (2010)	Snow Machine Rider Helmet Observation Study 2006 DHSS report AND Redwood et al., 2009

Table SR.11, continued

Indicator	NSB Baseline	Alaska Baseline	NSB Data Sources	Alaska Data Sources
Social and emotional support: a. Percent of adults who report "always" or "usually" getting the social and emotional support they need b. Percent of household heads who feel that the social support they receive has increased in the past 5 years c. Percent of high school students who responded that about every day one of their parents talked with them about what they were doing in school	a. 53% b. 25% c. 31%	a. 80% b. N/A c. 52%	a. County Health Rankings (BRFSS 2005–09 data) b. NSB Census (2010) c. YRBS (2005)	a. County Health Rankings (BRFSS 2005–09 data) b. N/A c. YRBS (2007)
Youth suicide: Percent of high school students who actually attempted suicide one or more times during the past 12 months	14.5%	10.7%	YRBS (2005)	YRBS (2007)
Chlamydia incidence rate: Number of cases reported per year per 100,000 population	1733**	862	Alaska DHSS, Department of STD/HIV (2010)	Centers for Disease Control and Prevention, 2010

Unless otherwise specified, estimates are for all races/ethnicities combined

\*Estimates are not directly comparable: for reference, 10.6% of Alaskans were found to be food insecure, meaning that at times members of the household were uncertain of having, or unable to acquire, enough food for all household members. Approximately 4% of households were found to have "very low food security," with disrupted eating patterns or reduced food intake. Estimates are significantly higher in rural areas.<sup>90</sup>

\*\* Age-adjusted to 2000 U.S. standard population.

## SR 3.4.2. Sources of Data for Ongoing Monitoring of Community Health Indicators

**State of Alaska data sources:** A great deal of health-related data for the NSB is already being collected on an ongoing basis by a variety of government agencies—for example Alaska Bureau of Vital Statistics data (including birth and mortality data as well as data on maternal risk factors), reportable infectious diseases, cancer incidence rates, trauma hospitalizations, child maltreatment reports, sexual assault statistics, and school drop-out and graduation rates. Much of this information is publically available on-line, and additional local data can be obtained upon request. In addition, ongoing surveys such as the Behavioral Risk Factor Surveillance System (BRFSS), the Pregnancy Risk Assessment Monitoring System (PRAMS), and its more recent follow-up survey, the Alaska Childhood Understanding Behaviors Survey (CUBS), include participants from the NSB. The small number of participants from individual census areas such as the NSB generally necessitates combining multiple years of data to achieve any statistical reliability, however.

**Alaska Native Tribal Health Consortium data sources:** The Alaska Native Tribal Health Consortium's Epidemiology Center serves as a resource for tribal and other organizations interested in learning more about and improving the health and well-being of Alaska Natives. This agency regularly publishes reports that contain regional as well as state level health data for Alaska Natives. ANTHC's immunization program also collects immunization data from all the Alaska Native service areas in order to track child and adult immunization rates. The Alaska Native Diabetes Program has also been very helpful in providing local statistics from their registry on diabetes among Alaska Natives in the Barrow service area. These are updated annually.

**Local NSB data sources:** Some data can be extracted and updated from locally-kept databases such as those used by WIC—for example, breastfeeding rates among WIC clients—and Public Health Nursing—for example, BMI's for NSB children and current immunization rates. The RPMS electronic health records system used at Samuel Simmonds can be queried by trained personnel to track a variety of health indicators in the segment of the NSB population accessing the health care system.

Follow-up health-related data can be collected in future NSB Census surveys as a follow-up to the baseline data collected in the 2010 NSB Census. The NSB School District may also be able to collect valuable follow-up data on youth risk behaviors and mental health by partnering with the Alaska Department of Health and Social Services to re-survey NSB high school students using the Youth Risk Behavior Surveillance (YRBS) questionnaire. Including students in the alternative high school in Barrow would be of particular interest, as alternative schools were also included in the statewide YRBS survey for the first time in 2009.

Local observations and traditional ways of knowing: Finally, the importance of local observations the value of traditional knowledge are increasingly being recognized by the scientific community. Focus groups and semi-structured interviews with elders, community leaders, health and social services workers, and students can provide valuable additional insight about on-the-ground community health issues and underlying causes. The observations can alert public health leaders to emerging community health issues and aid in the interpretation of observed data trends.

## SR 3.5. Data Gaps and Research Needs

In this report, the existing data on a variety of health topics relevant to community health in the NSB are reviewed. There are undoubtedly data sources and information, both local and from outside the NSB, that were not uncovered in the preparation of this report. Based on the resources identified and utilized in this report, however, there appear to be a number of areas where health-related data are particularly lacking for NSB communities. Some areas where additional research or surveillance may be beneficial to community health in the NSB, particularly if initiated and carried out with the support and active participation of community leaders and residents, are listed.

1. **Effective community-level interventions:** Although a growing body of evidence exists to guide population-based health promotion, very limited research is available to guide the development of specific community-level and culturally tailored interventions in rural Alaska. Collaboration with tribal, university, and state health department researchers in the evaluation of health promotion activities could benefit not only residents of the NSB but Alaska Native communities across the state. Some key areas include tobacco and substance abuse; improving maternal and child health indicators; obesity and chronic disease prevention; the prevention of teen pregnancy and sexually-transmitted infections; and injury, including suicide, unintentional injury, child maltreatment, and domestic and sexual violence prevention.
2. **Dietary composition and/or biomarkers:** Very few data exist regarding dietary composition in North Slope communities. Survey tools<sup>87</sup> and biomarkers are available that would enable researchers to examine the contribution of various subsistence and market foods to diets in NSB communities in order to assess the risk of contaminants, guide health promotion efforts, and have a baseline when assessing impacts of resource development, climate change, and socio-economic shifts.
3. **Children's health:** The available data suggest many challenges to the health of infants and children in the NSB, including reported general health status that is substantially lower than statewide estimates. Many children's health indicators are not available at the borough or village level, however. Now that several years of data from the Alaska Childhood Understanding Behaviors Survey (CUBS) have been collected statewide, it may become possible to analyze some measures at the local NSB level. Future NSB Census surveys may also be a vehicle to focus further on children's health issues in NSB communities.
4. **Health disparities within the NSB:** To best address community health challenges, NSB communities may benefit from further work to identify the factors contributing to differences in health across ethnic groups and villages within the NSB. The NSB Census datasets contain a large amount of information on various potential drivers of health and health disparities within the NSB. Further analysis of these datasets help could illuminate some of these health disparities, particularly if local elders and other community leaders participate in the generation of hypotheses and interpretation of findings.
5. **Cancer patterns:** The striking male predominance of lung cancer incidence in the NSB is likely due, at least in part, to higher lifetime levels of tobacco exposure. It is not entirely clear, however, that different levels of tobacco exposure explain the dramatic gender differences in lung cancer rates in the NSB. Other factors—environmental, genetic, etc—may be contributing to this pattern of cancer incidence in the NSB, as well as to the increasing incidence of cancer overall. Community-based participatory research may help communities answer the questions they have about cancer in their people to improve the effectiveness of cancer prevention efforts.

6. **Mental and behavioral health:** Few data exist that describe patterns and trends in mental illness in North Slope communities. Given the concerning level of such problems as suicide, child maltreatment, and domestic violence, a deeper understanding of underlying mental health issues and their determinants could help guide efforts to improve community well-being. Having good baseline mental health prevalence data may also be useful in evaluating the effect of mental health promotion efforts as well as the influence of other major changes that may occur in the community.
7. **Community-generated research questions:** Ultimately, some of the most relevant research questions around community health are generated by communities themselves. The data in this report may stimulate discussion and collaboration to address questions and concerns that North Slope communities have about their own health and well-being.

## Part I Endnotes

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