EvaluationGroup, LLC

Summary of Behavioral Risk Statistics: Kittson County

Phase 1 of the Minnesota Statewide Health Improvement Program (SHIP)

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Introduction

The Minnesota Department of Health (MDH) has launched the Statewide Health Improvement Program (SHIP) intended to help Minnesotans live longer, better and healthier lives by reducing the burden of chronic disease. To accomplish this mission, key interventions have been identified which focus primarily on reduction of obesity (through physical activity and healthy eating) and tobacco use and exposure. The SHIP program in northwest Minnesota involves the following counties: ***Kittson, Marshall, Mahnomen, Norman, Pennington, Polk, Red Lake, and Roseau***. Selection of appropriate interventions in each county will be based on indices of obesity (including physical activity and nutrition), tobacco use and exposure, existing smoking policies, and interviews with citizens of Kittson County.

This report is not meant to be a comprehensive assessment of all needs. Rather a reporting and review of relevant and available data as it pertains to the SHIP grant mission and activities.

Behavioral Risk Statistics

Indexes of Obesity and Tobacco Use: Adults

Minnesota Statewide Data

Datasets Used

The most recent data on cigarette smoking, leisure time exercise, Body Mass Index (BMI)[1] and general health of Minnesotans have been extracted from the 2008 Behavioral Risk Factor Surveillance Survey (BRFSS) database (see Appendix 1 for methodological details). Further data regarding weekly physical activity of Minnesotans and their daily consumption of fruits and vegetables have been drawn from the 2007 BRFSS data (last time those rotating core modules were used). Finally, data on secondhand smoke policy refers to the 2004 BRFSS administration when this optional module was last used in Minnesota. There is currently no recent BRFSS data available on smokeless tobacco use in Minnesota. Presented below is a summary of most relevant findings.

General Health and Obesity

- **14.2%** of Minnesotans reported fair or poor general health.
- **37.5%** were overweight and an additional 26.5% were classified obese (mean BMI of 27.5[2]).

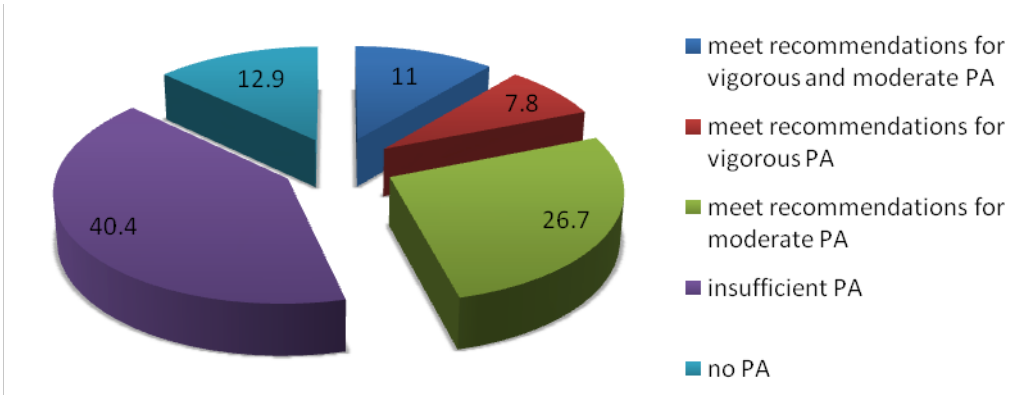
[1] Calculate BMI by dividing weight in pounds (lbs) by height in inches (in) squared and multiplying by a conversion factor of 703. Formula: weight (lb) / [height (in)]^2 x 703

[2] BMI between 25.00 and 29.99 corresponds to the category "overweight"; BMI of 30.00 and above corresponds to the category "obese".

Exercise and Physical Activity

- **80%** of the respondents indicated that they had participated in some form of leisure-time physical activity or exercise in the last 30 days (prior to the study).
- **45.5%** of Minnesotans met physical activity recommendations[3]
  - ✓ Average moderate physical activity duration was **42** minutes and vigorous physical activity lasted on average **19** minutes at a time.
  - ✓ **11%** met recommendations for both vigorous and moderate weekly physical activity (see Figure1 below)
- **40.4%** reported insufficient levels of physical activity
  - ✓ **12.9%** having no moderate or vigorous physical activity in a typical week.

Figure 1. 2007 Minnesota Physical Activity (PA) Categories (%).



Fruit and Vegetable Consumption

- **21.3%** of Minnesotans in 2007 reported consuming 5 or more servings of fruits and vegetables per day.
  - ✓ The average number of daily servings was **3.8**. [4]

Tobacco Use and Smoking Policy

- **15.7%** of Minnesotans in 2008 reported currently smoking at least on some days. **11.1%** percent were regular smokers (smoke every day).
  - ✓ **53%** of smokers reported trying to quit at least once in the past 12 months.

[3] Adults that have reported participating in either moderate physical activity defined as 30 or more minutes per day for 5 or more days per week, or vigorous activity for 20 or more minutes per day on 3 or more days or both.

[4] One serving of fruit, or vegetables, is 80 grams (2.8oz). The current federal Dietary Guidelines for Americans recommends five servings of fruits/vegetables per day.

- **85%** indicated working mostly indoors and **12.2%** of these individuals noted that smoking was allowed at least in some public areas at their work place.
  - ✓ **4.6%** of them also reported that smoking was allowed at least in some work areas at their place of employment.

Kittson County Data

Datasets Used

While the 2008 BRFSS database contained responses from 4,187 Minnesotans, only 57 participants reported being from one of the 8 SHIP counties (5 from Pennington County, 27 from Polk County and 25 from Roseau County) with the remaining 5 counties (Marshall, Red Lake, Norman, Kittson and Mahnomen) not represented in the database. Thus, while nationally available BRFSS data provide fairly accurate and representative information on the state as a whole, only estimates of behavioral risk factors (as shown in the 2008 Morbidity and Mortality MN County Tables published by the MDH) are available. These estimates were derived using a synthetic estimation method which operates by adjusting statewide BRFSS percentages according to the age and gender distributions of adults in the county for which estimates are being made.

General Health, Obesity and Smoking

For the available Behavioral Risk categories reported in Table 1, individual county data is compared to the aggregate data for the SHIP counties and the state of Minnesota.

Table 1: 2008 Behavioral Health Risks for Kittson County (Adults: 18+)

Health risk category	Kittson County (%)	SHIP Counties (%)[5]	MN State (%)
1. **Overweight (not obese)**	37.3	36.4	37.5
2. **Obese**	26.2	25.9	26.5
3. **Current smokers**	14.5	15.6	15.7
4. **No Exercise**	18.7	17.8	12.9
5. **Fair or Poor Overall Health**	14.0	12.5	14.2

The data in Table 1 suggest that lack of exercise for adult populations within Kittson County may be a significant issue as 18% of Kittson County residents do not participate in any form of exercise compared to the state average of less than 13%.

[5] Aggregate data for Kittson, Marshall, Mahnomen, Norman, Pennington, Polk, Red Lake & Roseau Counties.

Indexes of Obesity and Tobacco Use: High School Students (Grade 12)

Kittson County Data

Datasets Used

The description of behavioral health risks in youth and young adults for Kittson County is based on the 2007 Minnesota Student Survey. Kittson County had 67 12th graders enrolled in schools during the fall of 2007and 58 completed the survey (86.6% response rate, 72% response rate for SHIP region, for methodological details see Appendix 1). The summary below provides information only on students in grade 12 as they show by far the greatest prevalence of health risk behaviors compared to grades 6 and 9 (also surveyed as part of the questionnaire administration). Data on grade 12 students is deemed to be a relevant and succinct representation of county youth needs given the parameters of the SHIP intervention guidelines.

Overweight and Obesity

- **10.9%** of 12th-graders in Kittson County were classified 'at risk' for becoming overweight according to CDC growth charts. This figure appears to be somewhat lower than the corresponding rates for the SHIP counties (12.7%) and the state of Minnesota (12.4%).
- **12.7%** of 12th-graders in Kittson County were considered overweight based on the CDC-growth charts used to determine weight status according to participants' body mass index (BMI, see Table 2). This estimate was somewhat higher than the state average of **9.2%**.
- **40.4%** of the students thought they were overweight which was significantly higher than the CDC classification of overweight students in Kittson County (12.7%)(see Table2).
    - ✓ **20.7%** of students reported using cigarettes in the past 12 months to help them lose or control their weight. This figure was significantly larger than the corresponding estimates for both the SHIP counties (7.6%) and the State (6.6%).
    - ✓ **48.3%** of students reported using exercise and **53.4%** reported using healthier diet to help them lose or control their weight (see Figure 2 and Table 2).

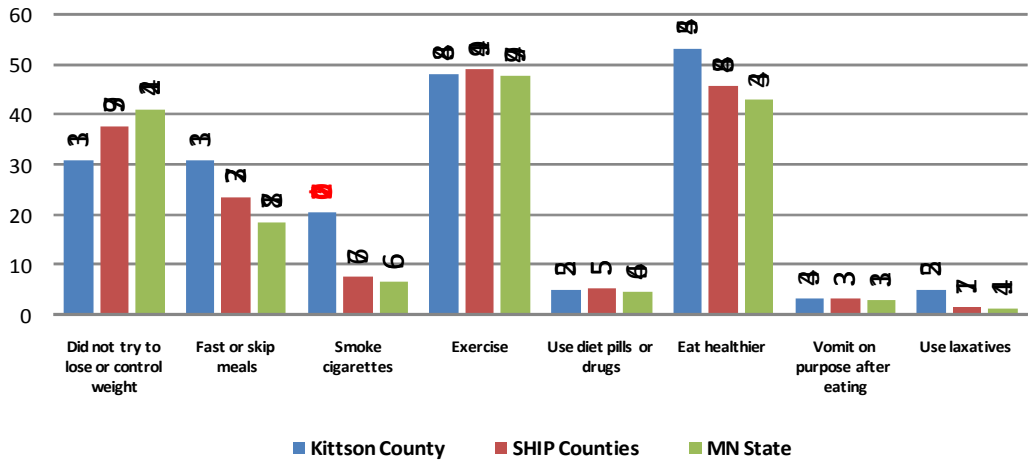
Exercise and Physical Activity

- **56.1%** of students met recommendations for regular weekly physical activity (see table 2 for PA definition) which was *significantly lower* than the corresponding percentage for the state of Minnesota (**68.7%**; see Table 2).

- Additionally, there was a higher percentage of students who reported insufficient physical activity **(29.8%)** than either in the SHIP counties (**19.3%**) or the state of Minnesota **(20.8%)**.

- Complete lack of physical activity was recorded for **14.0%** of the Kittson County students which was 4.0% higher than a corresponding estimate for Minnesota (**10.5%**). This difference may have reached statistical significance if there were more 12th-grade students in Kittson County. With only 58 students surveyed (out of 67 enrolled), the 95% confidence intervals (95% CI)[6] for this response category were fairly wide (7.0%-26.1%). At the same time a lower percent estimate for the SHIP counties (**13.3%**) was statistically significant as a lot more students were surveyed (n=908) resulting in narrower 95% CI range (11.2%-15.8%; see Table 2 for details).

Figure 2. Measures used to help lose or control weight in the past 12 months in Kittson County, SHIP Counties and the State (%).



Fruit and Vegetable Consumption

- Only **12.1%** of students in Kittson County reported adequate daily intake of fruits and vegetables while the overall corresponding percentage in Minnesota was 4.0% higher (**16.1%;** see Table 2).

Tobacco Use and Access

[6] The 95% confidence interval, denotes a 95% chance that the true population value will fall within this interval

* *-statistically significant difference compared to SHIP Counties and Minnesota*

- **49.1%** of the 12th-grade students in Kittson County reported using tobacco products in the 30 days preceding the survey which was significantly higher than the state average of **34.0%.**
  - ✓ **19.3%** reported frequent tobacco use on 20 or more days in the past month. This rate was somewhat higher than the corresponding rate for Minnesota overall **(14.8%**) and was commensurate with the proportion of frequent tobacco users in the SHIP Counties **(20.8%;** see Table 2).
  - ✓ **67.9%** of tobacco users purchased tobacco products at a gas station or a convenience store, **42.9%** obtained them from their friends and **28.6%** reported having had someone buy tobacco products for them. The latter estimate was *significantly higher* than the corresponding rate for the State (**16.4%**; see Table2).
- Cigarette smoking was the most frequent form of tobacco use reported by **38.6%** of students which was also *significantly higher* than the corresponding rate for the state of Minnesota **(25.6%;** see Table 2 and Figure 3).
  - ✓ **15.8%** smoked cigarettes on 20 or more days in the preceding month
  - ✓ Moreover, **30.0%** of smokers indicated smoking 10 or more cigarettes per day which was somewhat higher either in the SHIP counties (**27.9%**) or the state of Minnesota (**25.6%**; see Table 2).
  - ✓ **12.3%** reported smoking their first cigarette before age 13. This percentage was slightly lower than the corresponding estimates for the SHIP Counties (**16.9%**) and Minnesota (**13.9%**; See Table 2).
- Smokeless tobacco use was reported by **29.8%** of the 12th graders which was *significantly and strikingly higher* than the rate of smokeless tobacco use in the state of Minnesota (**10.4%;** see Table 2).
- **17.5%** reported smoking cigars, cigarillos or little cigars in the 30 days preceding the survey which was similar to the rates observed in the SHIP counties (**15.7%**) and Minnesota (**17.9%**).
- **3.5%** reported trying smokeless tobacco or smoking a cigar for the first time before age 13 (See Table 2).

Figure 3. Use of tobacco products by 12th graders in Kittson County, SHIP Counties and the State (%). *-difference is statistically significant compared to Minnesota

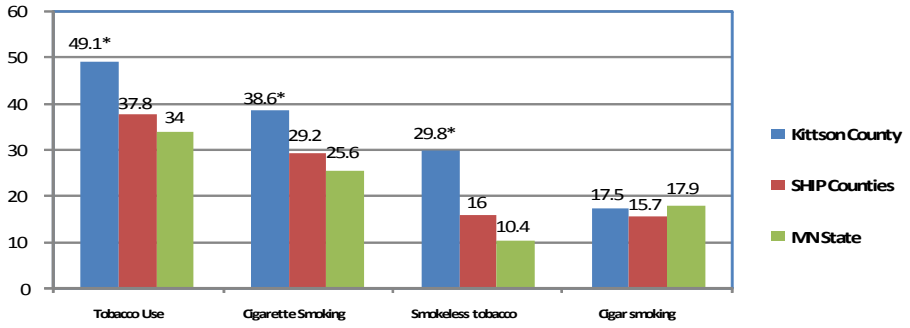


Table 2. 2007 Behavioral Health Risks for 12th –graders in Kittson County (n=58), SHIP Counties (n=908) and the State of Minnesota (n=33,226).

Health risk category	Kittson County % (95% CI)	SHIP Counties %[7] (95% CI)	MN State % (95% CI)
1. Weight Status[8]			
a. At risk for overweight[9]	10.9 (4.9-22.7)	12.7 (10.7-15.1)	12.4 (12.0-12.8)
b. Overweight[10]	12.7 (6.1-24.8)	11.9 (9.9-14.3)	9.2 (8.9-9.5)
a) Thinks overweight	40.4* (28.2-53.9)	28.7 (25.8-31.7)	25.2 (24.7-25.6)
b) Used cigarettes in past 12 mo. to lose /control weight	20.7* (11.9-33.4)	7.6 (6.0-9.5)	6.6 (6.3-6.8)
c) Used exercise in past 12 mo. to lose/control weight	48.3 (35.4-61.3)	49.1 (45.8-52.3)	47.9 (47.4-48.4)
d) Use healthy diet to lose/control weight	53.4 (40.3-66.1)	45.8 (42.5-49.0)	43.0 (42.5-43.5)
2. Meet guidelines for weekly PA[11]	56.1* (42.7-68.1)	67.4 (64.1-70.5)	68.7 (68.2-69.2)
a. Insufficient weekly PA	29.8 (19.1-43.3)	19.3 (16.7-22.1)	20.8 (20.4-21.2)
b. No weekly PA	14.0 (7.0-26.1)	13.3* (11.2-15.8)	10.5 (10.1-10.8)
3. Five or more servings of fruits and vegetables per day	12.1 (5.7-23.7)	12.0* (10.1-14.3)	16.1 (15.7 – 16.4)
4. Use of tobacco products in the past 30 days	49.1* (36.1-62.2)	37.8 (34.7-41.1)	34.0 (33.5-34.5)
a. Frequent use of tobacco products (20+ days) in the past 30 days	19.3 (10.8-32.0)	20.8* (18.3-23.6)	14.8 (14.4-15.1)
5. Cigarette use in the past 30 days	38.6* (26.6-52.1)	29.2* (26.3-32.3)	25.6 (25.1-26.0)
a. Frequent cigarette use (20+ days) in past 30 days	15.8 (8.3-28.1)	13.6 (11.5-16.1)	11.5 (11.2-11.9)
b. 10+ cigs / day in the past 30 days[12]	30.0 (13.8-53.5)	27.9 (22.5-34.0)	25.6 (24.6-26.5)
c. Had a cigarette before age 13	12.3 (5.8-24.0)	16.9 (14.5-19.5)	13.9 (13.6-14.3)

[7] SHIP counties include Kittson, Marshall, Norman, Mahnomen, Pennington, Polk, Red Lake, Roseau

[8] The CDC growth charts were used to determine weight status according to BMI for participants in the Minnesota Student Survey.

[9] 85th to less than 95th percentile on the CDC growth charts

[10] Equal to or greater than the 95th percentile on the CDC growth charts

[11] 12th graders who have reported participating in either vigorous physical activity for 20 or more minutes per day on 3 or more days in the past 7 days or moderate physical activity for 30 or more minutes per day on 5 or more days in the past 7 days.

[12] % of those who reported smoking cigarettes in the past 30 days

* - significant at alpha = 0.05

Health risk category	Kittson County % (95% CI)	SHIP Counties %[13] (95% CI)	MN State % (95% CI)
6. Used smokeless tobacco in past 30 days	29.8* (19.1-43.3)	16.0* (13.7-18.6)	10.4 (10.1-10.7)
7. Smoked cigars, cigarillos or little cigars in past 30 days	17.5 (9.5-30.1)	15.7 (13.4-18.2)	17.9 (17.5-18.3)
8. Used smokeless tobacco or had a cigar before Age 13	3.5 (0.8-13.5)	7.2 (5.7-9.1)	5.0 (4.8-5.2)
9. Tobacco access			
a. Bought at gas stations or convenience store	67.9 (48.2-82.7)	69.1 (64.0-73.9)	63.1 (62.3-64.0)
b. Got it from friends	42.9 (25.7-61.9)	41.8 (36.7-47.2)	45.6 (44.7-46.5)
c. Got it by having someone else buy it	28.6 (14.7-48.2)	16.9 (13.3-21.3)	14.6 (14.0-15.3)

Interviews with County Residents

Data Used

Eight interviews were conducted with residents of Kittson County who have unique perspectives on the health of county residents. Participants were interviewed because they possess an intimate involvement in differing sectors of healthcare, school systems, community settings and worksites. It is from these individuals' experiences that themes and issues surrounding tobacco use and physical activity/healthy nutrition were obtained for this report. Participants were asked a series of nine questions, including:

- What do you think are the most pressing health issues?
- To what extent is unhealthy eating and physical inactivity a problem?
- To what extent is tobacco use a problem?
- Are there any activities or policies within your organization or within the larger community that encourage physical fitness *(i.e., healthy diet, physical activity)* or tobacco cessation?
- What environmental structures encourage physical fitness or tobacco cessation?

An open coding approach to analyzing the qualitative interview data was conducted. Highlights from the analysis are presented in the following sections:

Most Pressing Health Issues

[13] SHIP counties include Kittson, Marshall, Norman, Mahnomen, Pennington, Polk, Red Lake, Roseau

Participants generally reported that alcohol use and obesity were primary and pressing healthcare issues facing their community followed closely by tobacco use both by adults and students. Additional concerns existed regarding H1N1 flu, health insurance coverage among others. Participants indicated that of all community members, those groups most at risk, included the mentally ill, working poor, students, and kids uninvolved in sports activities.

Extent of Problem: Unhealthy Eating/Physical Activity

Participants reported difficulty quantifying the extent of the problem, however most respondents reported a confluence of factors negatively impacting healthy eating and physical activity in Kittson County. These included:

- ✓ Food costs- cheap, fast, unhealthy food is what people want
- ✓ Culture of inactivity
- ✓ Food vendors offer poor choices
- ✓ Lack of supports for those seeking to become healthier
- ✓ Lack of parent time/interest in children's' weight and activity
- ✓ Childhood habits are developed young and last a lifetime.

Participants also noted that health affects more than just the individual. One person stated "Health affects everyone in terms of costs, health insurance premiums, lost work time, etc". Finally, participants perceived a lack of opportunities for physical activities in the adult population of their community, thus identifying ways to increase activities for adults was viewed as a potential area for SHIP to expand opportunities.

Extent of Problem: Tobacco

Much like lack of physical activity, tobacco use was viewed as a significant problem in Kittson County. Participants viewed the problem of tobacco use to some extent as related to low socioeconomic and educational status. Additionally, they viewed youth tobacco use stemming in part from parents acting as poor examples (i.e. smoking) and/or from a lack of parental involvement in deterring their children from tobacco use. A number of interviewees already were implementing tobacco use policies.

Discussion and Recommendations

Overweight and Physical Activity in Adults

Over 60% of surveyed adults in Kittson County as well as the state of Minnesota had BMI values that placed them at least in the overweight category. Nevertheless, although appalling in itself, this prevalence rate does not seem to reflect an upward trend in overweight and obesity at least on the state level. Specifically, when asked

about their bodyweight a year before Minnesotans on average lost 1.5 lb (mean weight in 2008 = 178.90 lb vs. mean weight of 180.40 lb in 2007), which was statistically significant[14]. This loss was fairly uniform among men (1.4 lb) and women (1.5 lb), and 41% of those who reported weight loss in the past year confirmed that this loss was intentional. Based on the overall state questionnaire it appears that further weight loss can be facilitated through greater level of participation in physical activity. Whereas 80% of Minnesotans in 2008 reported engaging in weekly exercise, only 45.5% actually met recommended levels of weekly physical activity for adults. Additionally, **18.7%** of adults in Kittson County reported no weekly physical activity, which was almost 6% higher than the estimate of sedentary individuals in the state of Minnesota (12.9%). Further mitigation of the overweight and obesity risk can be effected through increased daily consumption of fruits and vegetables as only 21.3% of Minnesotans (data was not available for Kittson County) reported eating 5 or more servings of fruits and vegetables per day.

RECOMMENDATION: *Findings suggest that lack of exercise for adult populations within Kittson County may be a significant issue. Potential interventions for SHIP to address this could include:*

COMMUNITY/WORKSITE SETTING

- Policies and practices that create active communities by increasing opportunities for non-motorized transportation (walking and biking) and access to community recreation facilities.
- Implement signage prompting use of stairs in community buildings.
- A comprehensive employee wellness initiative that provides health assessment with follow-up coaching, ongoing health education, and policy and environment support that promotes healthy weight and behaviors.

HEALTHCARE SETTING

- Develop relationships among health care providers and community leaders to facilitate active referral of patients to resources that increase access to nutritious foods, physical activity, and tobacco use cessation.

Overweight and Physical Activity in Youth

While the prevalence of overweight youth in Kittson County in 2007 was considerably lower than in the adult population (only 12.7% among the 12th-grade students) an additional 10.9% were classified at risk for overweight. According to the most recent CDC classification, however, the category "at risk for overweight" is now considered "overweight" and the category "overweight" is now considered "obese"[15]. Overweight and obese children and teens are at greater risk for many comorbid conditions both immediate and long-term. Specifically, their risk is

[14] Based on a paired sample t-test ($p<0.001$)

approximately 10 times greater than that of normal weight children for hypertension in young adulthood, three to eight times greater for high cholesterol, and twice as great for diabetes mellitus[16].

At the same time 40.4% of the surveyed youth in Kittson County perceived themselves as overweight, which (even after taking into consideration the new CDC classification) was 16.8.% higher than the actual prevalence of overweight (23.6%[17]). This finding suggests that a considerable percentage of healthy-weight students may inaccurately perceive their weight resulting in a distorted body image.

About 48% of the 12th graders used exercise to either control or lose weight. Additionally, 53.4% of the students reported using healthy diet in order to stay in shape. It could also be argued that these two healthy weight control strategies are practiced in combination by at least some of the students, as sufficient weekly physical activity was significantly and highly correlated with fruit and vegetable consumption both in Minnesota and the SHIP counties[18]. In Kittson County students were significantly less active than their Minnesota counterparts as only 56.1% of 12th –graders met recommended levels of weekly physical activity compared to 68.7% for the State. Furthermore, only 12% of students reported consuming the minimal recommended amount of daily fruits and vegetables which was also slightly lower than for the state of Minnesota in general (16.1%). It can thus be argued that Kittson County youth would derive significant benefits by increasing their level physical activity and consumption of fruits and vegetables.

RECOMMENDATION: *Findings suggest that unhealthy dietary practices and lack of physical activity for youth within Kittson County may be a significant issue. Potential interventions for SHIP in addressing this issue could include:*

SCHOOL SETTING

- Comprehensive nutrition policies including: breakfast promotion; healthy lunch and snacks; school gardens; and farm-to-school initiatives.
- Policies and practices that create more active schools by:
  - Supporting quality school-based physical activity
  - Increasing opportunities for non-motorized transportation
  - Increased access to school recreation facilities.

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[15] About BMI in Children and Teens at http://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/about_childrens_bmi.html , last accessed 10/17/09

[16] Serdula M. K., Ivery, D., Coates, R. J., Freedman, D. S., Williamson, D. F., & Byers, T. (2005). Children and teens told by doctors that they are overweight – United States, 1992-2002. *MMWR Weekly, 54 (34*), 848-849.

[17] Obtained by summing up the percentage of overweight and obese students, respectively.

[18] Based on a Spearman rank order correlation test ($p<0.001$) for the state of Minnesota and SHIP counties

COMMUNITY SETTING

- Policies, practices and environmental changes that improve access to nutritious foods (e.g. fruits, vegetables) such as:
  - Increased availability and affordability of nutritious foods in grocery stores, corner stores, concession facilities, and other food vendors.
  - License and facilitate the development of new farmer's markets and promote their use.

Tobacco Use and Access

Cigarette smoking among 12th-grade students in Kittson County was considerably higher than among adults (38.6% vs. 14.5%). Moreover, significantly greater proportions of Kittson County youth compared to the state of Minnesota were reported for tobacco use (49.1% vs. 34.0%), cigarette smoking (38.6% vs. 25.6%) and smokeless tobacco use (29.8% vs. 10.4%). The latter difference was particularly pronounced.

A perfunctory analysis reveals that at least part of the problem may be related to the fact that less than half (48.2%) have talked to their parents about dangers of tobacco, alcohol and other drug use. Furthermore, 15.8% thought that smoking a pack of cigarettes a day would pose no risk or only slight risk to their health suggesting that further educational efforts may be of value in reducing and preventing tobacco use in Kittson County. For example, a recent North Dakota-based study suggested that the use of certain TV and radio ads depicting graphic health harms from tobacco could be very effective in preventing and reducing tobacco use among rural and American Indian youth[19].

A more in-depth look at possible explanations of heavy tobacco use by 12th graders in Kittson County also highlights the importance of relatively easy illegal access to tobacco products by underage smokers. Specifically 6 out of 13 underage 12th graders (46.2%) reported buying tobacco products at a convenience store or a gas station, yet only 1 of them (7.6%) reported using a fake ID. This finding suggests that 5 out of 6 underage smokers in Kittson County are able to ask for tobacco products at gas stations and convenience stores without resorting to a fake ID! An immediate implication is strengthening of tobacco control at the point of sale.

Furthermore, **20.7%** of the students in Kittson County reported using cigarettes as a form of weight control! Tobacco use was significantly and highly correlated with overweight in Kittson County as well as across the SHIP Counties and the State. This

[19] Vogeltanz-Holm, N., Holm, J. E., White Plume, J., & Poltavski, D. V. (2009). Confirmed recall and perceived effectiveness of tobacco countermarketing media in rural youth. *Prevention Science* [in Press].

finding is not accidental. According to O'Loughlin et al. (1998)[20] being overweight increases the risk of adolescent smoking 3.5 times! It appears that a substantial proportion of at tobacco users may be smoking cigarettes to better control their weight. It is thus possible that reducing overweight and obesity among the youth through increased physical activity and healthy diet may also attenuate tobacco use.

RECOMMENDATION: *Findings suggest that the use of tobacco products, especially smokeless tobacco by youth within Kittson County may be a significant issue. Potential interventions for SHIP to address this could include:*

COMMUNITY SETTING

- Tobacco-free policies for parks, playgrounds, beaches, zoos, fairs, and other recreational settings.
- Policies that restrict youth access to tobacco such as sales laws directed at tobacco retailers to reduce illegal sales to minors.

HEALTH CARE SETTING

- Better connect people with existing effective cessation services (such as the 5 A's and fax referral).

Datasets

While the MN Student Survey data set proved to be valuable in identifying needs, there is a paucity of data on the health of the adult population within the 8 counties served by SHIP. Because of this lack of data, general estimates of community health were made by the Minnesota Department of Health Morbidity and Mortality tables. Their use of synthetic approximations of population health is not the same as actual measures of health based on statistical power estimates and response rates.

RECOMMENDATION

Conduct BRFSS locally within each of the eight counties to obtain a more accurate accounting of the adult population risk factors within northwest Minnesota.

[20] O'Loughlin, J., Paradis, G., Renaud, L., & Sanchez Gomez, L. (1998). One-year predictors of smoking initiation and of continued smoking among elementary schoolchildren in multiethnic, low income, inner-city neighbourhoods. *Tobacco Control, 7*, 268-275.

APPENDIX 1

BRFSS METHODOLOGY

The Behavioral Risk Factor Surveillance System (BRFSS) is a state-based system of health surveys that collects information on health risk behaviors, preventive health practices, and health care access primarily related to chronic disease and injury. The BRFSS questionnaire is designed by a working group of state coordinators and CDC staff and is administered annually through a random-digit-dialed telephone survey of the U.S. adult (18 and over) non-institutionalized population. The survey includes core questions that are asked by all participating states in a given year, optional modules that a state may use in their survey and state-specific questions. Furthermore core modules consist of fixed-core questions and a rotating core.

While fixed core BRFSS items include questions about *cigarette smoking*, *leisure time exercise i*n the past 30 days as well as height and weight information that allows calculation of indices of obesity such as *body mass index (BMI),* some rotating core modules are only used biannually and include specific questions about weekly levels of *moderate and vigorous physical activity,* as well as *daily consumption of fruits and vegetables*.

Optional BRFSS modules relevant to the present project include questions regarding smokeless tobacco use and smoking policy. Since 2001 the smokeless tobacco module has been expanded to include other tobacco products such as cigar and pipe use. Although in the publicly accessible CDC databases for the past 12 years this module was offered several times including the 2008 BRFSS questionnaire, the state of Minnesota did not use it in any of the years of its availability. However, the 2004 BRFSS administration in Minnesota did include another optional module on secondhand smoke policy.

YRBSS AND MINNESOTA STUDENT SURVEY METHODOLOGY

Priority health-risk behaviors including tobacco use, unhealthy dietary habits, physical inactivity and the prevalence of obesity among youth and young adults is monitored by the Youth Risk Behavior Surveillance System (YRBSS). The YRBSS includes a national school-based survey conducted by the Centers for Disease Control and Prevention (CDC) and state, territorial, tribal, and local surveys conducted by state, territorial, and local education and health agencies and tribal governments.

In 2007, the YRBSS included a national school-based survey conducted by CDC, 44 state surveys, five territory surveys, and 22 local surveys conducted among students in grades 9–12 during January 2007—February 2008. The nationally available YRBSS dataset 2007, however, does not include individual state and county codes.

For this reason, the description of behavioral health risk in youth and young adults for individual MN counties is based on the 2007 Minnesota Student Survey which was conducted by 91% of public operating school districts. Similar to the YRBSS, the Minnesota Student Survey encompasses a number of health risk behaviors including tobacco use, diet, physical activity and prevalence of obesity and is administered to public school students in Grades 6, 9, and 12. Only responses from 12th-grade students were used in this report (n=58 for Kittson County, 86.6% response rate). EvaluationGroup, LLC staff contacted the MN Student Survey administrators and obtained a copy of the raw dataset for further analysis which were used in this report. We are indebted to their generosity for permitting us use of this data in pursuit of the mission of improving health throughout Minnesota.