The preliminary assessment of the Social Transition in the North dataset: A comparison of STN survey and enumeration data for selected Northwest Alaskan communities

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ABSTRACT
Objective. This study compared the results from STN survey data with a mailback health study of the same communities to assess the reliability of the STN data.
Study Design. Sample characteristics and respondents to health questions were compared through secondary data analysis. Data from the STN sample was compared to an enumeration study for the same or similar questions, including demographic characteristics and health status indicators, were compared.
Methods. The STN study used the sample of 715 households in 18 Alaskan and Russian Far East communities to obtain data on the demographic transition, epidemiological transition and domestic transition of residents in northern communities. A study of the health and human service needs was conducted in Northwest Alaska using a mailback health questionnaire within a few years of the STN study.
Results. Both data sets appear to be taken from similar populations. Responses to health questions show marked similarities.
Conclusion. The comparison strongly suggests that the STN data is representative of northern Alaska communities surveyed and can be a valuable source of reliable data on the health and welfare of northern communities. The data on the self-reported prevalence of health conditions may not be useful at the community level.

Keywords: health surveys, health status, Alaska and Russian Indigenous communities.

INTRODUCTION
The Social Transition in the North (STN) Study examined social transitions within four communities of Alaska’s Northwest Arctic. The STN respondents were randomly selected within each community. A larger proportion of respondents came from smaller communities to assure an adequate number of observations for the purposes of the STN analysis (1). In 1996, the Maniilaq Association commissioned an enumeration survey to examine the health needs and perceptions of health risks among selected communities of the Northwest Arctic using mailback questionnaires (2). A comparison of these two studies can provide valuable information on the representativeness of the sample and the reliability reported health information.

METHODS
The STN Study used the sample of 715 households in 18 Alaskan and Russian Far East communities to obtain data on the demographic transition, (epidemiological) transition and domestic transition of residents in northern communities. Data was collected between 1993 and 1995. In a joint project with Maniilaq, Inc. and the Alaska Center for Rural Health, a comprehensive community health assessment was completed for the communities in the Northwest Arctic Native Association region in
Using standard survey methods tailored through input from the involved communities, nearly 1300 household surveys were collected and analyzed. Principle interests were to determine community health problems and needs, and identify strategies for initiating improvements of the well being of these communities.

Record layouts for both the STN survey data and the Maniilaq health questionnaire were reviewed. Similar variables were identified. In some instances, variable values were identical, allowing for a direct comparison between the two data sets. In other instances, there were some differences between the variables asked or responses were coded. Variables selected for this analysis were either identical or close enough to assure face validity.

Sample Characteristics of the two studies were compared. Table I compares the STN and the Maniilaq Community Health Survey protocols. The differences between the two surveys are substantial. Their purpose was clearly different although they both ask same or similar health questions and collected the same information on the demographic characteristics of the population. The STN sample was randomized within each village, but smaller communities were over represented (see Table II).

Differences in the instrumentation for the two studies were evaluated. The STN used a long survey instrument containing 665 questions. The Maniilaq Community Health Survey included 292, or less than half of the number of variables. While the STN was administered directly, using a face to face interview technique, the Maniilaq Community Health Survey was a mailback questionnaire. Although the return rate was fairly high, there is the potential for a self-selection bias. The STN Survey was far more precise about the selection of the respondent, selecting the person who had the most recent birthday as the first respondent of the survey. The Maniilaq Community Health Survey, on the other hand, asked the household to select the respondent who would complete the questionnaire.

| Table I. Characteristics of STN and Maniilaq Studies |
|------------------------------------------------------|
| **Characteristic**       | **Social Transitions of the North** | **Maniilaq Community Health** |
| Purpose:                | To collect data for examining factors which affect the social welfare of matched Russian and Alaskan Communities | To assess the health needs and perceptions of health risks of NANA communities |
| Sample                  | Random within each village (not proportional sampling) | Enumeration mail out resulting in proportional sampling |
| Instrument Size         | 665 variable elements | 292 variable elements |
| Method                  | Face-to-face | Mail back (69% return rate) |
| Unit of Analysis        | Individual and Household | Household |
| Respondent              | Person who had a recent birthday | Adult selected by the household |
| Interviewer             | Local trained interviewer | Mail-in |

| Table II. Residence of Survey Respondents |
|-------------------------------------------|
| **Village** | **Social Transitions of the North** | **Maniilaq Community Health Survey** |
|            | Number | Percent | Number | Percent |
| Buckland   | 49     | 25.9    | 69     | 9.9     |
| Deering    | 28     | 14.8    | 44     | 6.3     |
| Kivalina   | 50     | 26.5    | 68     | 9.8     |
| Kotzebue   | 62     | 32.8    | 514    | 74      |
| Total      | 189    | 100     | 695    | 100     |
RESULTS
Both surveys are remarkably consistent in the gender, age, and ethnic distribution of the population surveyed. Table III shows the proportion of the females in the two surveys. Of the 189 completed observations of the STN survey, 111 or 58.7% of the respondents were females. The Maniilaq Community Health Survey totaled 60.7% females. There are some variations by community however, Kivalina had a smaller proportion of females than the Maniilaq Community Health Survey, and a far larger proportion of females in the community of Kotzebue.

Table IV shows the characteristics of the age of the respondent. There appears to be no significant difference between the smaller communities in both surveys, however, the larger community of Kotzebue shows a significant difference between the ages of the respondents with the STN showing a younger average respondent age than that of the Maniilaq Community Health Survey.

Table V shows the ethnicity of the respondents. Both communities have approximately 90% of their populations as Alaskan Natives, with a slightly higher proportion of community members in the STN data being Alaskan Natives than the Maniilaq Community Health Survey. This could be attributable to the desire of the STN to focus on Alaska Native households, and the possible reluctance of some non-native people to respond to the Maniilaq Community Health Survey.

The survey responses to the prevalence of selected health conditions were compared. Table VI shows the questions that were asked in both the STN and the Maniilaq Community Health Survey. In four instances, the questions were identical. In the remaining five, questions were similar, but not identical. In all of the questions, there was sufficient focus on the same clinical condition to allow a comparison between the respondent’s answers to the prevalence of certain health conditions. Respondents were asked if they had the health conditions mentioned.

Table III. Gender of Study Respondents (# and % female)

| Village | Social Transitions of the North | Maniilaq Community Health Survey |
|---------|--------------------------------|---------------------------------|
|         | Number | Percent | Number | Percent |
| Buckland| 31      | 63.3     | 43     | 64.2    |
| Deering | 19      | 67.9     | 27     | 62.8    |
| Kivalina| 27      | 54       | 30     | 44.1    |
| Kotzebue| 34      | 54.8     | 322    | 63.8    |
| Total   | 111     | 58.7     | 422    | 60.7    |

Table IV. Age of Study Respondents

| Village | Social Transitions of the North | Maniilaq Community Health Survey |
|---------|--------------------------------|---------------------------------|
|         | Low CI | Mean | High CI | SE  | Low CI | Mean | High CI | SE  |
| Buckland| 36.78  | 41.8 | 46.68   | 2.49 | 37.87  | 41.95 | 46.03   | 2.04 |
| Deering | 40.22  | 47.29| 54.35   | 3.44 | 40.08  | 45.1  | 50.11   | 2.48 |
| Kivalina| 35.7   | 39.88| 44.06   | 2.08 | 40.32  | 44.17 | 48.03   | 1.93 |
| Kotzebue| 31.81  | 35.48| 39.15   | 1.83 | 40.96  | 42.14 | 43.31   | 0.6  |

Table V. Ethnicity of Study Respondents (# and %Native)

| Village  | Social Transitions of the North | Maniilaq Community Health Survey |
|----------|--------------------------------|---------------------------------|
|          | Number | Percent | Number | Percent |
| Buckland | 47     | 95.9     | 64     | 92.8    |
| Deering  | 27     | 96.4     | 41     | 93.2    |
| Kivalina | 49     | 98       | 67     | 98.5    |
| Kotzebue | 48     | 81.4     | 436    | 85.2    |
| Total    | 171    | 91.9     | 608    | 87.7    |
Table VII presents the proportion of the respondents in each of the communities who did not have the health condition. Their responses are based on their knowledge of both the condition and their own health status. None of these self-reported responses were confirmed by clinical data. The least frequent health conditions were lung problems, emphysema, diabetes and cancer. The most common problems were eye problems, and back problems.

Differences in reported prevalence of health conditions within each of the communities were examined. Table VIII summarizes the data by showing the direction of the difference between STN and the Maniilaq community Health Survey data for each of the communities surveyed. A positive number shows that a higher proportion of respondents in Maniilaq survey said they did not have the condition than the respondents in the STN data. If the proportion of respondents to the two survey reporting that they had a condition was within plus or minus 1%, the surveys were considered identical.

In the community of Buckland, individuals tended to report fewer health problems in the Maniilaq Community Health Survey than they did in the STN survey. The community of Deering showed that respondents to the Maniilaq Community Health Survey reported higher prevalence to certain conditions in two instances, a lower prevalence in three instances, and were identical (plus or minus 1%) in four instances. In Kivalina, the respondents reported fewer conditions in the STN survey. The respondents reported not having conditions at a higher level in six of the medical areas. People from Kivalina reported having more conditions in two medical areas. One was equal. In Kotzebue, the same pattern emerged; STN reporting exceeded Maniilaq Community Health Survey in three instances, was less than Maniilaq community Health Survey in three instances, and was identical in three instances. The last column in Table VIII shows the average proportional difference between the two surveys, with the largest difference being in the reporting of skin problems where far more individuals reporting not having skin problems in the Maniilaq Community Health survey than in the STN survey.

Table VI. Health Conditions of Respondents (STN asked about respondents, Maniilaq asked about households)

| Health Condition    | Question Similarity |
|---------------------|---------------------|
| High Blood Pressure | Same question       |
| Cancer              | Same question       |
| Diabetes            | Same question       |
| Arthritis           | Same question       |
| Back Problems       | Different Question  |
| Skin Problems       | Different Question  |
| Healing Problems    | Different Question  |
| Eye Problems        | Different Question  |
| Emphysema           | Different Question  |

Table VII. Percent of Respondents Reporting NOT having the Health Condition

| Health Condition | Buckland STN | Deering Maniilaq | Kivalina STN | Maniilaq | Kotzebue STN | Maniilaq | Total |
|------------------|--------------|-----------------|--------------|----------|--------------|----------|-------|
| High Blood Pressure | 70.8         | 84.1            | 78.6         | 86.4     | 90.0         | 79.4     | 87.1  | 77.2 | 82.4 | 78.7 |
| Cancer           | 91.7         | 97.1            | 96.4         | 95.5     | 100.0        | 95.6     | 95.2  | 96.9 | 95.7 | 96.7 |
| Diabetes         | 93.8         | 100.0           | 84.3         | 95.5     | 98.0         | 97.1     | 100.0 | 96.9 | 96.3 | 95.7 |
| Arthritis        | 75.0         | 75.4            | 82.1         | 70.5     | 86.0         | 77.9     | 93.5  | 80.4 | 85.2 | 79.0 |
| Back Problems    | 61.2         | 76.8            | 75.0         | 75.0     | 60.0         | 67.6     | 66.1  | 62.3 | 64.6 | 65.0 |
| Skin Problems    | 61.2         | 84.1            | 89.3         | 86.4     | 76.0         | 86.8     | 64.5  | 78.8 | 70.4 | 80.6 |
| Hearing Problems | 75.5         | 81.2            | 85.7         | 81.8     | 80.0         | 72.1     | 87.1  | 87.4 | 82.0 | 84.9 |
| Eye Problems     | 36.7         | 56.5            | 67.9         | 68.2     | 60.0         | 50.0     | 72.6  | 67.5 | 59.3 | 64.7 |
| Lung Problems/   | 91.7         | 94.2            | 100.0        | 100.0    | 98.0         | 92.6     | 98.4  | 88.9 | 96.8 | 90.5 |
Table VIII. Comparison of Responses on Selected Health Conditions: STN Less Maniilaq

| Health Condition         | Buckland | Deering | Kivalina | Kotzebue | Total | STN-Maliilaq |
|--------------------------|----------|---------|----------|----------|-------|--------------|
| High Blood Pressure      | +        | +       | -        | -        | -     | 3.7          |
| Cancer                   | +        | /       | -        | +        | /     | -1           |
| Diabetes                 | +        | +       | /        | +        | /     | 0.6          |
| Arthritis                | /        | -       | -        | -        | -     | 6.7          |
| Back Problems            | +        | /       | +        | -        | /     | -0.4         |
| Skin Problems            | +        | -       | +        | -        | +     | -10.4        |
| Hearing Problems         | +        | -       | -        | /        | +     | -2.9         |
| Eye Problems             | +        | /       | -        | -        | +     | -5.4         |
| Lung Problems/ Emphysema | +        | /       | -        | -        | -     | 6.3          |

DISCUSSION

The STN and Maniilaq surveys both examined the health status of communities. Both surveys were administered within three years of one another. While they were conducted at different times and used different data collection instruments, both surveys yielded similar information about the health and welfare of the populations living in participating Alaskan Arctic communities. Differences in self-reporting of the prevalence of health problems at the community level may limit the utility of this data for community-based health planning. However, it appears to be useful at the regional level.

The Social Transitions in the North and the Maniilaq Community Health Survey data appear to be taken from the same population. Sampling methods may contribute to some differences in health status measures. Differences were found in diabetes, arthritis, skin problems, eye problems, and emphysema. The proportion of male respondents in some communities may have affected the reporting of health status and conditions of household members. The reported prevalence of certain health conditions among household members may be attributable to differences in sampling techniques.

CONCLUSION

The data from the two surveys appear to very similar. The characteristics of the respondents and the reported prevalence of selected health problems show essentially the same patterns. Similarities between the data sets exceed the differences between them. The utility of the STN data for community-level planning may be limited. Instances where there are differences between the two data sets may be attributable to differences in survey administration.

Acknowledgements
This work was supported by the National Science Foundation and the National Center for Research Resources funding to the Center for Alaska Native Health Research (Grant No. RR 16430).

REFERENCES

1. Mason R. Overview of the Social Transition in the North project 1995 - 1998. Int J Circumpolar Health 2004; 63 suppl 1: 7-14.
2. Booker J, DeGross D, Garrett C. Maniilaq Community Health Survey Technical Report, Alaska Center for Rural Health, University of Alaska Anchorage 1997.

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