



CRCAIH Methodology Core: Tracking Health over Time and Geography

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INTRODUCTION

The goal of this analysis is to show us the potential impact that CRCAIH has had on our region with regard to health and health disparities. To do this, we looked at health outcome data from counties in North Dakota, South Dakota, and Minnesota. Much of the impact of CRCAIH might be expected several years from now, but we started this process by measuring different aspects of health and tracking these over time.

HEALTH INDICATORS

While we did not divide the data by race or ethnicity groups, we split the data into different areas (or “domains”) that we felt had an impact on health and health disparities. The first two domains, health outcomes and health behaviors, were measured by health conditions or behaviors linked to health conditions. Indicators in the third domain, social economic factors, are known to affect health. All these indicators are county level data and measured by rate (per county population).

Domain 1: Health Outcomes

Indicators: Chronic Disease, Mortality, Infectious Disease

Domain 2: Health Behaviors

Indicators: Adult smoking, Binge Drinking, Physical Inactivity

Domain 3: Social Economic Factors

Indicators: Poverty, Unemployment, Median Household Income, Principal Care Physician Availability, Health Insurance

METHODOLOGY

A health index is constructed as a weighted summation of all health indicators. It is used to show changes in health status across counties and that over the years in one county. Several statistical techniques are applied in data manipulation and model building. We are glad to describe the methods used to analyze the data upon further request.

There are a couple of things to keep in mind. Since we are using county data, what is presented below will include data from people that do not live on the reservation but live in the county (for example, Fond du Lac is in St. Louis County, as is the city of Duluth). Also, please keep in mind that being in Group 1 doesn’t mean the “best health,” just as being in Group 6 doesn’t mean the “worst health.”



RESULTS

We categorized the counties into six groups based on the estimated health index. To get a better idea of what membership in each group means, we provide example values of all indicators in year 2012 for each group (Table 1). Figure 1 and 2 illustrate the grouping results for year 2008 and 2012 respectively, where areas with a yellow border are reservation lands and areas with a red border are reservation lands for CRCAIH tribal partners.

Table 1: Median values of indicators in each group

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
Obesity (%)	24.2	29.4	31.3	35.1	39.4	44.0
Mortality*	5,656.0	6,726.0	7,276.0	9,859.0	11,115.0	13,878.0
Inactivity (%)	16.8	23.4	25.7	28.2	30.5	24.9
Diabetes (%)	6.7	7.4	8.0	10.8	15.1	19.4
PCP Availability*	113.0	65.8	62.8	73.8	43.8	43.0
Poverty (%)	5.5	10.6	13.6	32.5	39.2	47.4
Unemployment (%)	5.0	4.6	4.7	7.0	9.7	14.2
Smoking (%)	16.6	21.5	23.3	29.4	33.7	36.0
No Insurance (%)	7.0	11.0	15.0	21.0	21.0	17.0
Median Income*	\$78,360.0	\$50,480.0	\$43,502.0	\$36,435.0	\$31,312.0	\$28,406.0
Binge Drinking (%)*	23.0	24.9	25.2	22.9	23.4	22.8

Notes for *:

- Mortality-Years of potential life lost before age 75 per 100,000 population (age-adjusted). Years of potential life lost is derived by summing years of life lost over all age groups. For example, the death of a person 15-24 years of age counts as 55.5 years of life lost ($75-19.5=55.5$ where 19.5 is the mid-point);
- PCP – Defined as $(\text{Number of PCP/population}) \times 100,000$; PCP stands for Primary Care Physician;
- Income - Median household income;
- Binge Drinking - Defined as the prevalence of binge drinking which means the consumption of more than four drinks for women or five drinks for men on a single occasion at least once in the past 30 days.

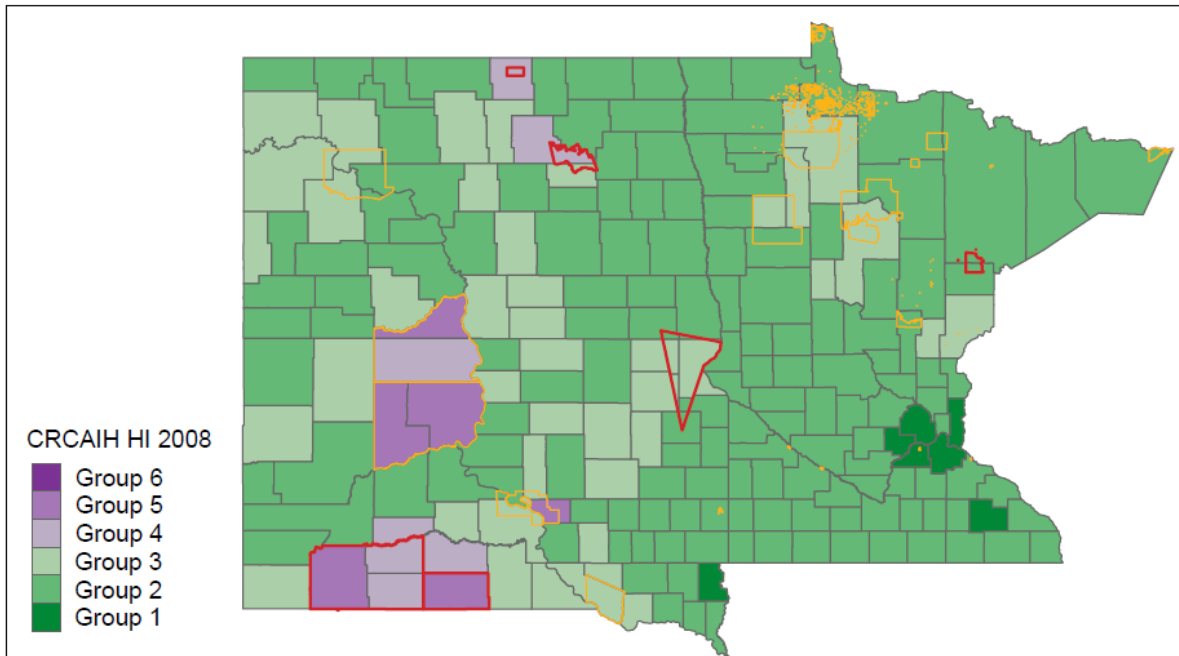


Figure 1: 2008 Health Index map across SD, ND, MN

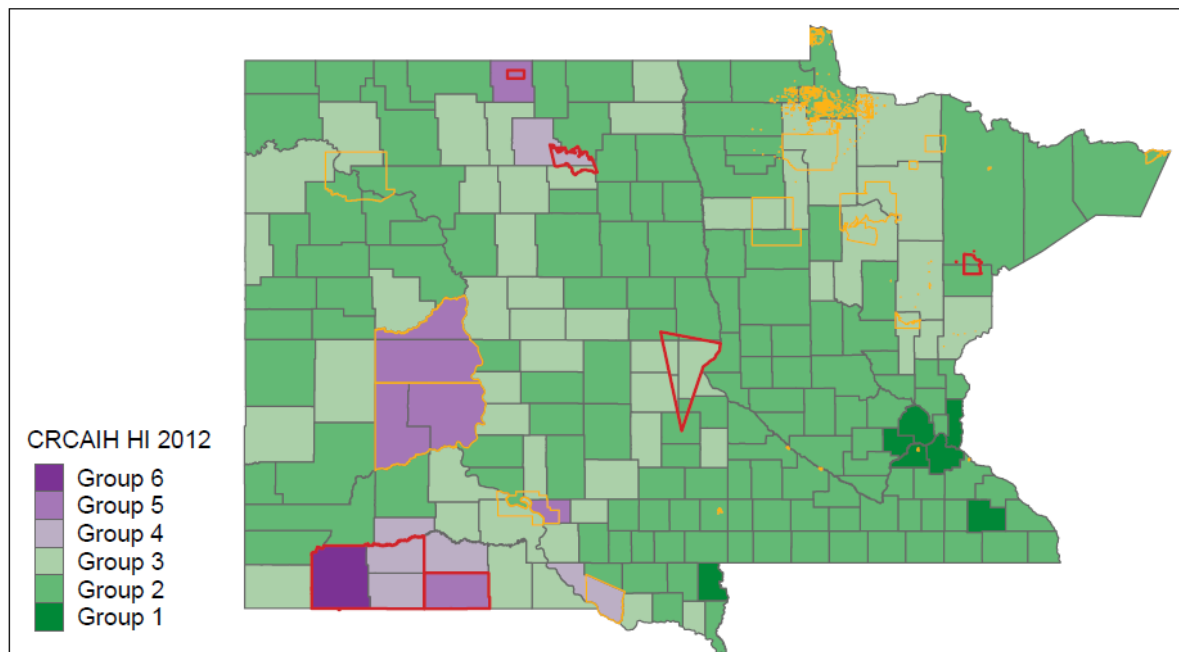


Figure 2: 2012 Health Index map across SD, ND, MN



Suggested citation: Zhao J, Nelson ME, Hanson JD, & Puumala SE. (2016). *Tracking Health over Time and Geography*. Collaborative Research Center for American Indian Health.

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