

# Health Indicators

## Health

Internet site: <http://www.state.sd.us/doh>

Data Source: South Dakota Department of Health, Office of Data, Statistics, and Vital Records.

Data Indicator and Definition:

Infant mortality (rate): The number of deaths for infants under one year of age per 1,000 live births.

Child death (rate): The number of deaths for children ages 1-14 per 100,000, from all causes.

Low birth weight babies (percent): Low birth weight babies are those born weighing less than 2,500 grams (about five and one half pounds).

Teen violent death (rate): The number of deaths from homicides, suicides, and accidents to teens ages 15-19 years per 100,000 teens.

Births to single teens (percent): The percent of all live births to single females under the age of 20.

Women receiving prenatal care (percent): The number of live single births to women receiving prenatal care during the first trimester (first three months) of pregnancy, by county of residence.

## How to Interpret Health Data

### Information and limitations of the health data:

Mortality and death rates are calculated by taking the number of deaths in any given category, dividing it by the total number of individuals in that category, and multiplying by 1,000 or 100,000 (whatever number is chosen).

$$\frac{\text{Total death}}{\text{Population Base}} \times 1,000$$

A percentage is calculated by the same formula only multiplied by 100.

As the population base becomes smaller, as it does in many counties in South Dakota, statistical variation becomes more prominent and more prone to anomalies. For example, let's say a county has 2 infants die out of 85 live births. If we divide 2 by 85 and multiply by 1,000 we get an infant mortality rate of 24 per 1,000. If the next year only 1 infant dies out of 85 live births, the infant mortality rate would be 12. This so-called large decrease is a result of statistical variation and the magnitude of the drop is exaggerated because of the use of a base of 1,000.

In an attempt to minimize chance variations five-year averages are used to minimize chance variations. Despite these precautions, in the most sparsely populated counties using 5 year averages will still not reduce chance variation significantly for some of the indicators due to the small number of events. **A rate or percent is not calculated for those counties where the event number is below 3.**

The standard error (SE) of a rate is used in health statistics when studying or comparing rates. The SE defines a rate's variability and can be used to calculate a confidence interval (CI) to determine the actual variance of a rate 95% of the time. Rates for two different populations are considered to be **significantly different** when their **confidence intervals do not overlap**.

The standard error and confidence intervals are calculated in the following manner. The Brown County percent of births to single teens was 6.9% for 2003-07. This was based on 161 single teen births out of 2,395 total live births in the county during the time period 2003-07. The square root of 161 is 12.68. By dividing 6.9% by 12.68, the estimated standard error [SE] of 0.54 is obtained. The estimated SE can then be used to compute a 95% confidence interval [CI] for the rate. The standard formula for determining the 95% CI of a rate is:

$$\text{Rate} \pm (1.96 \times \text{SE})$$

Following this formula, we produce an equation of  $6.9 \pm (1.96 \times 0.54)$ . The result is  $6.9 \pm 1.06$ . From this we can calculate the estimated 95% CI to be from 5.9% to 8.0%. It can then be stated, with 95% certainty, that the actual 2003-07 percent of births to single teens for Brown County is between 5.9% and 8.0%.

Brown County's percent of births to single teens **is significantly better** from the South Dakota rate. This is because the confidence intervals for Brown County (5.9% to 8.0%) **do not overlap and are better (lower percent) than** the state (8.4% to 8.8%). Brown County's rate is **better** than the state's average.

The percent of births to single teens for Ziebach County (based on 26 single teen births for 2003-07 out of 200 total live births) **is not significantly different** from South Dakota because the percent of births to single teens for the county (8% to 18%) **overlap** the state (8.4% to 8.8%).

The percent of single teen births for Lyman County (based on 50 single teen births for 2003-07 out of 340 total live births) **is significantly different** from South Dakota because the percent of births to single teens for Lyman county (10.6% to 18.8%) **do not overlap and are worse (higher percent) than** the state (8.4% to 8.8%). Lyman County's rate is **worse** than the state's average.

# Infant Mortality

The infant mortality rate reflects the number of infants who die before their first birthday, per 1,000 live births. Since the first year of life is more fragile than later years of childhood, negative social conditions such as poverty have a greater impact on this vulnerable group. Although infant mortality rates for the United States have been declining over the past several decades, the nation ranks poorly on an international level. Infant mortality has two components: neonatal mortality, deaths of infants younger than 28 days, and post neonatal mortality, or deaths between 28 days and one year old.

The five-year average infant mortality rate for 2004-08 in South Dakota was 7.4 per 1,000 live births; or for every 1,000 live births there were about 7 infant deaths. For the five-year period 2004-08 there was a total of 436 infant deaths. The graph on the right shows the infant mortality rate for the time periods 2000-04 through 2004-08. Infant mortality increased slightly from the previous time period.

Infant mortality rates vary by race. Of all Caucasian babies born in the 2004-08 time period, in South Dakota, there were 278 deaths for a rate of 6.0 per 1,000 live births.

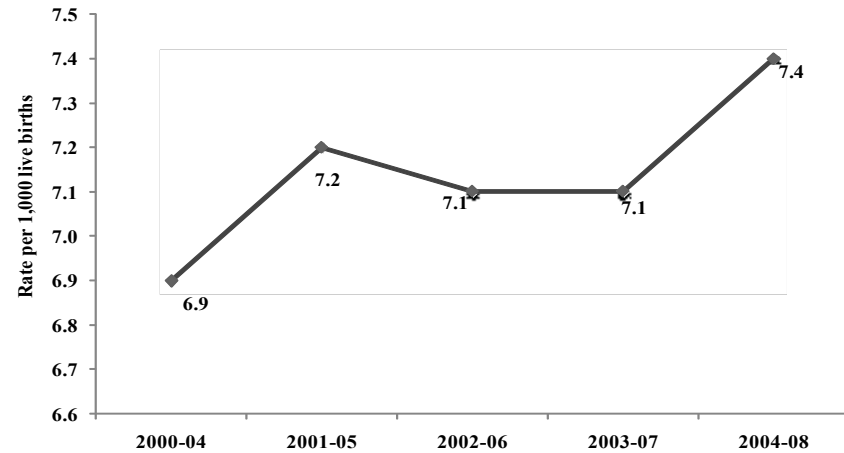
Of all American Indian babies born in the 2004-08 time period, in South Dakota, there were 138 deaths for a rate of 12.6 per 1,000 live births.

Of all babies of other race born in the 2004-08 time period, in South Dakota, there were 20 deaths for a rate of 11.2 per 1,000 live births.

The infant mortality rate for the American Indian in South Dakota is significantly higher than for Caucasians in South Dakota.

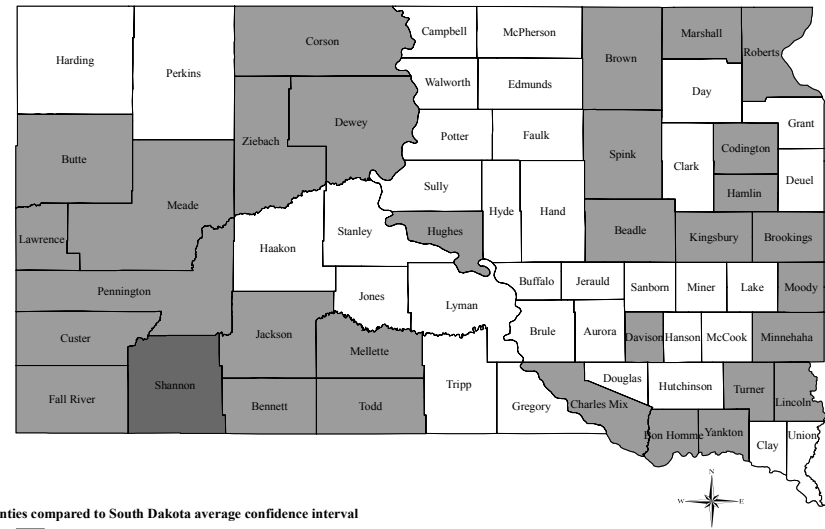
The map on the right shows the counties compared to the state confidence interval for infant mortality for the time period 2004-08. The standard error (SE) of a rate is used in health statistics when studying or comparing rates. The SE defines a rate's variability and can be used to calculate a confidence interval (CI) to determine the actual variance of a rate 95% of the time. Rates for two different populations are considered to be significantly different when their confidence intervals do not overlap. In other words, the number of events falls within the state's confidence interval. In this case, there are 31 counties with confidence intervals that overlap the state. There are 35 counties with a low number of events (LNE), which is anything less than 3 events, for which rates are not calculated. One county had an infant mortality rate below or worse than the state average.

Rates for infant mortality for five-year intervals  
2000-04 through 2004-08



Source: South Dakota Department of Health.

Infant Mortality- County comparisons to the State (2004-08)  
South Dakota rate = 7.4 per 1,000 live births



Counties compared to South Dakota average confidence interval

- Low Number of Events (LNE)
- Rate not significantly different than South Dakota average
- Rate significantly worse than South Dakota average

Map by: South Dakota KIDS COUNT  
Beacom School of Business  
The University of South Dakota  
Data are from the South Dakota Department of Health

## Low Birth Weight Babies

*Low birth weight is the percentage of infants born weighing less than 2,500 grams (about 5.5 pounds). A baby's birth weight is a key indicator of newborn health. It is directly related to infant survival and healthy development.*

The percent of all live births that were low birth weight was 6.8% for the 2004-08 time period. This means that for every 100 live births, almost 7 babies were considered low birth weight. Out of the 59,015 live births from 2004-08, there were 4,019 born low birth weight. The graph at the right indicates the number of low birth weight babies for 2000-04 through 2004-08.

Of all Caucasian babies born in the 2004-08 time period in South Dakota, 6.8% (3,046 of 46,262) were low birth weight.

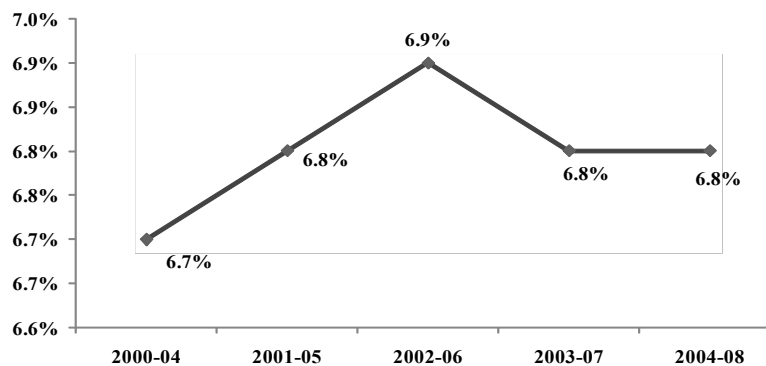
Of all American Indian babies born in the 2004-08 time period in South Dakota, 7.4% (804 of 10,907) were low birth weight.

Of all babies of other race born in the 2004-08 time period in South Dakota, 9.1% (162 of 1,780) were low birth weight.

American Indian low birth weight for 2004-08 is significantly higher than Caucasians.

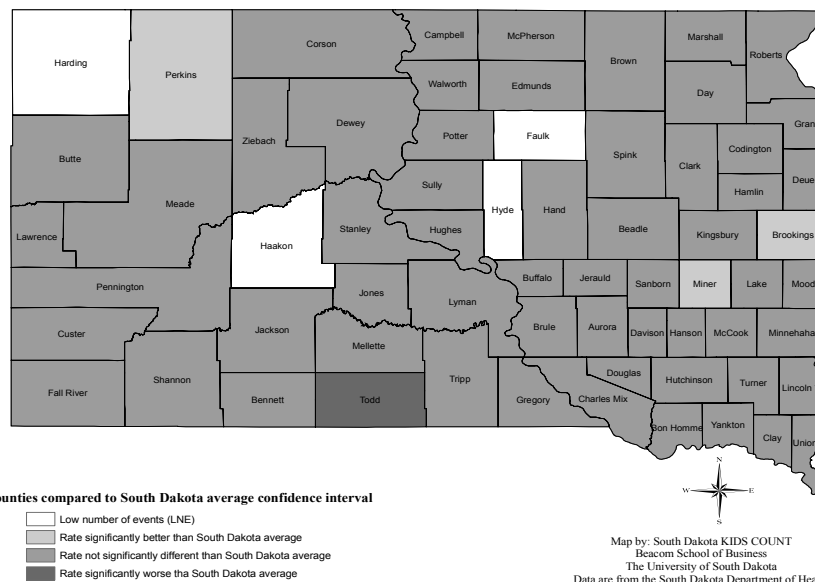
The map on the right shows the counties compared to the state confidence interval for the percent of low birth weight babies for the time period 2004-2008. The standard error (SE) of a rate is used in health statistics when studying or comparing rates. The SE defines a rate's variability and can be used to calculate a confidence interval (CI) to determine the actual variance of a rate 95% of the time. Rates for two different populations are considered to be significantly different when their confidence intervals do not overlap. In other words, the number of events falls within the state's confidence interval. In this case, there are 58 counties with confidence intervals that overlap the state. There are 4 counties (Faulk, Haakon, Harding, and Hyde) with a low number of events (LNE), which is anything less than 3 events, for which rates are not calculated. Three counties (Brookings, Miner, and Perkins) had rates that were above or better than the state average meaning they had a lower percentage of low birth weight babies during the 2004-08 time period. One county had a rate below or worse than the state average.

Percentage of low birthweight babies for five-year intervals 2000-04 through 2004-08



Source: South Dakota Department of Health.

Low Birthweight- County comparisons to the State (2004-08)  
South Dakota rate = 6.8% of all live births



# Child Deaths

Once a child survives the first year of life, mortality drops sharply. Child deaths are the number of deaths from all causes per 100,000 children ages 1-14 years. The rate is a reflection of the physical, mental and emotional health of children. Motor vehicle crashes are a significant cause of child deaths in South Dakota.

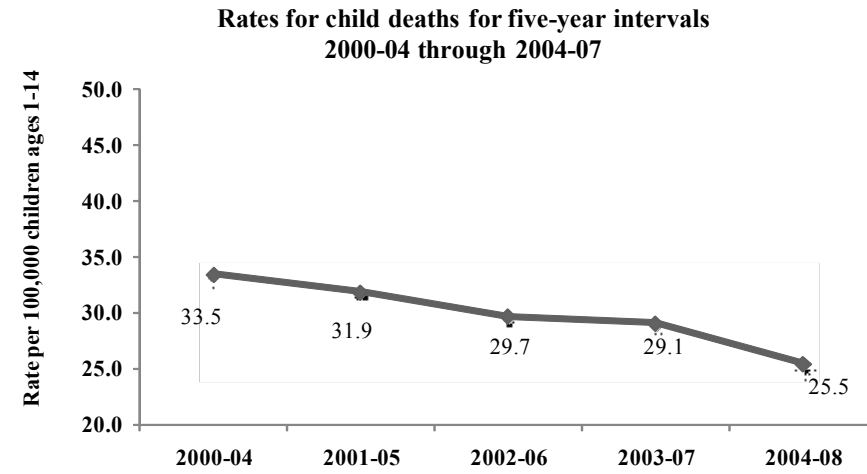
The rate of 25.5 per 100,000 children ages 1-14 is about 197 child deaths for the 2004-08 time period. The child death rate hovers between 40-50 deaths per year. The graph at the right shows the trend in the number of child deaths for 2000-04 through 2004-08. There has been a decrease in the rate of child deaths.

Of all Caucasian children ages 1-14 in the 2004-08 time period in South Dakota, there were 129 child deaths for a rate of 20.6 per 100,000 children ages 1-14.

Of all American Indian children ages 1-14 in the 2004-08 time period in South Dakota, there were 63 child deaths for a rate of 52.3 per 100,000 children ages 1-14.

Of all children of other races ages 1-14 in the 2004-08 time period in South Dakota, there were 5 deaths for a rate of 28.8 deaths per 100,000 children ages 1-14.

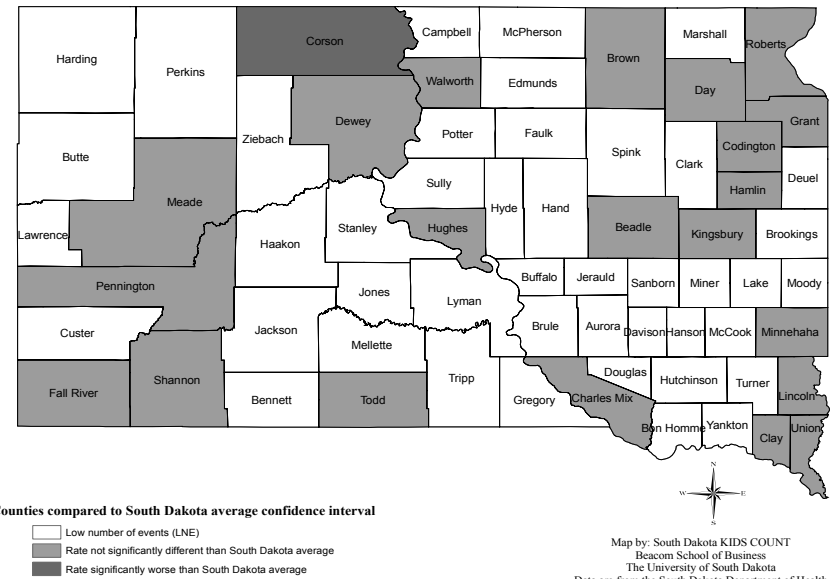
The child death rate for the American Indian in South Dakota is significantly higher than for Caucasians in South Dakota.



Source: South Dakota Department of Health.

The map on the right shows the counties compared to the state confidence interval for the child death rate for the time period 2004-08. The standard error (SE) of a rate is used in health statistics when studying or comparing rates. The SE defines a rate's variability and can be used to calculate a confidence interval (CI) to determine the actual variance of a rate 95% of the time. Rates for two different populations are considered to be significantly different when their confidence intervals do not overlap. In other words, the number of events falls within the state's confidence interval. In this case, there are 21 counties that fall within the state confidence interval average and thus are not significantly different. There are 44 counties with zero child deaths or they have a low number of events (LNE), which is anything less than three events, for which rates are not calculated. One county had rates below or worse than the state average meaning those counties had a higher rate of child deaths compared to the state as a whole for the time period 2004-08. There were no counties that had a rate better than the state average.

Child Deaths - County comparisons to the State (2004-08)  
South Dakota rate = 25.5 per 100,000 children ages 1-14



# Teen Violent Deaths

*This indicator is deaths caused by accidents, homicides, and suicides per 100,000 teens ages 15-19. As with child deaths, motor vehicle crashes make up the highest percentage of teen violent deaths.*

The teen violent death rate for 2004-08 was 66.9 per 100,000 youth 15 through 19 years of age. For every 100,000 youth in that age group, about 209 died from accidents, suicides, or homicides for the 2004-08 time period. The graph at the right indicates the number of teen violent deaths for 2000-04 through 2004-08.

Of all Caucasian teens ages 15-19 in the 2004-08 time period in South Dakota, there were 129 teen violent deaths for a rate of 48.5 per 100,000 teens ages 15-19.

Of all American Indian teens ages 15-19 in the 2004-08 time period in South Dakota, there were 79 teen violent deaths for a rate of 204.4 per 100,000 teens ages 15-19.

The teen violent death rate for the American Indian in South Dakota is significantly higher than for Caucasians in South Dakota.

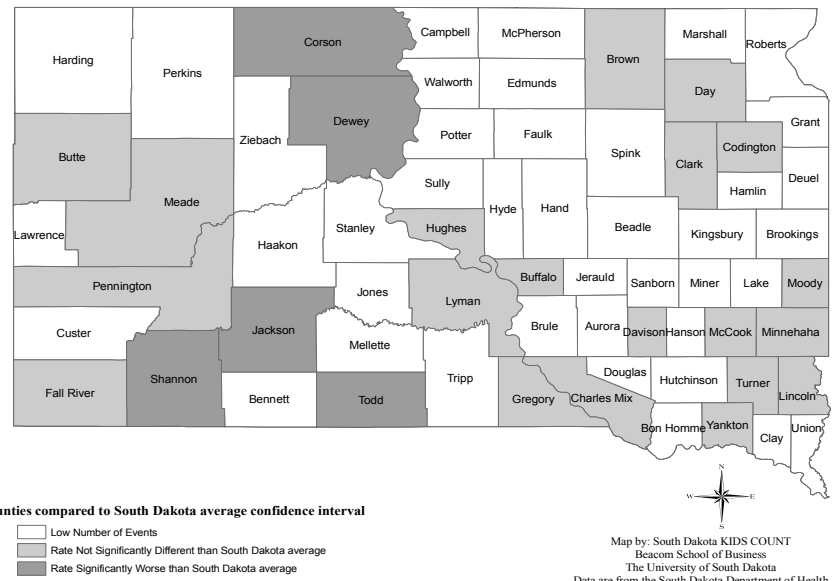
The map on the right shows the counties compared to the state confidence interval for the teen violent death rate for the time period 2004-08. The standard error (SE) of a rate is used in health statistics when studying or comparing rates. The SE defines a rate's variability and can be used to calculate a confidence interval (CI) to determine the actual variance of a rate 95% of the time. Rates for two different populations are considered to be significantly different when their confidence intervals do not overlap. In other words, the number of events falls within the state's confidence interval. In this case, 20 counties fall within the state confidence interval average and thus are not significantly different. A majority of the counties (41) have zero teen violent deaths or they have a low number of events (LNE), which is anything less than three events, for which rates are not calculated. Five counties, Corson, Dewey, Jackson, Shannon, and Todd have a rate below or worse than the state average, meaning they had a higher rate of teen violent deaths as compared to the state as a whole for the time period 2004-08. No county had a rate better than the state average.

**Rates for teen violent deaths for five-year intervals  
2000-04 through 2004-08**



Source: South Dakota Department of Health.

**Teen Violent Deaths - County comparisons to the State (2004-08)  
South Dakota rate = 66.9 per 100,000 teens ages 15 - 19**





# Prenatal Care

*Prenatal care (first trimester) helps to promote healthier births. Prenatal care for the mother addresses such issues as inadequate nutrition, smoking, anemia, and diabetes. For babies, prenatal care (first trimester) is associated with lower likelihood of being born low birth weight, stillborn, or dying within the first year of life.*

The graph at the left indicates that 73.3% [42,041] of women received prenatal care in their first trimester of pregnancy for the time period 2004-08. Note that this prenatal care figures are not comparable prior to 2006 and is not comparable with national data.

In the 2004-08 time period in South Dakota, 78.5% (35,304 of 44,956) of Caucasian women received prenatal care during their first trimester of pregnancy.

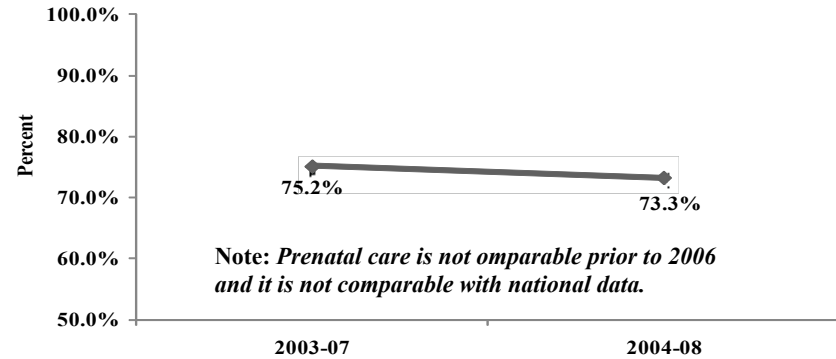
In the 2004-08 time period in South Dakota, 53.6% (5,693 of 10,612) of American Indian women received prenatal care during their first trimester of pregnancy.

In the 2004-08 time period in South Dakota, 58.8% (1,010 of 1,719) of women of other races received prenatal care during their first trimester of pregnancy.

The rate of prenatal care for Caucasian women in South Dakota is significantly higher than for the American Indian women in South Dakota.

The map on the right shows the counties compared to the state confidence interval for the percent of women receiving prenatal care (first trimester) for the time period 2004-08. The standard error (SE) of a rate is used in health statistics when studying or comparing rates. The SE defines a rate's variability and can be used to calculate a confidence interval (CI) to determine the actual variance of a rate 95% of the time. Rates for two different populations are considered to be significantly different when their confidence intervals do not overlap. In other words, the number of events falls within the state's confidence interval. In this case, a majority of counties (43) have confidence intervals that overlap the state and are not significantly different. Nine counties had confidence intervals above or better than the state as a whole; 14 counties have confidence intervals below or worse than the state average, meaning they had a lower percentage of women receiving prenatal care as compared to the state as a whole for the time period 2004-08.

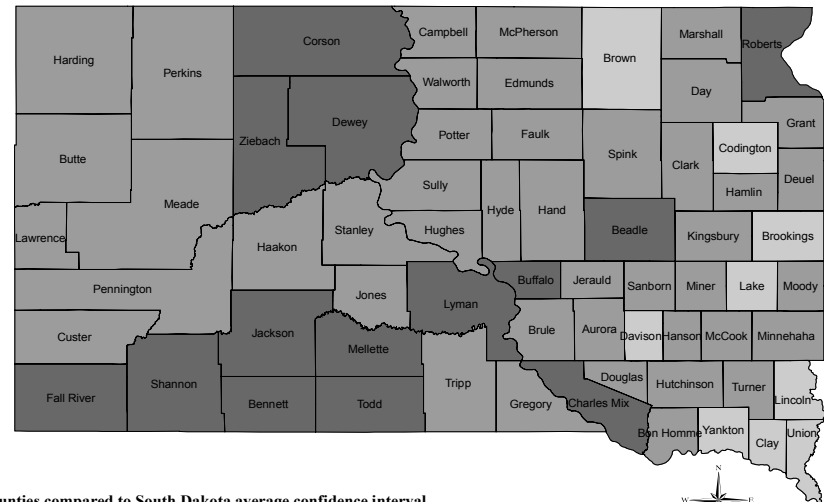
**Percentage for first trimester prenatal care for five-year interval 2003-07 to 2004-08**



**Note: Prenatal care is not comparable prior to 2006 and it is not comparable with national data.**

Source: South Dakota Department of Health.

**Prenatal Care- County comparisons to the State (2004-08)**  
South Dakota rate = 73.3% received care during first trimester



**Counties compared to South Dakota average confidence interval**

- ☐ Rate significantly better than South Dakota average
- ☐ Rate not significantly different than South Dakota average
- ☐ Rate significantly worse than South Dakota average

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