

# *Nebraska Health Data Reporter*

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## **Prostate and Breast Cancer Incidence and Mortality in Nebraska, 1995-1999**

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### **Executive Summary**

In Nebraska, prostate cancer is the most frequently diagnosed cancer in men and breast cancer is the most frequently diagnosed cancer in women. Of cancer-related deaths, prostate cancer is third for men and breast cancer is second among women.

This *Data Reporter* shows that prostate cancer incidence rates from 1995 to 1999 and mortality rates from 1995 to 1998 were lower for Nebraska men than for United States men as a whole. Central and western Nebraska counties had higher incidence rates for prostate cancer from 1995 to 1999. The Eastern health service area had the highest mortality rates due to prostate cancer from 1995 to 1998.

The incidence rates from 1995 to 1999 and the mortality rates from 1995 to 1998 for breast cancer in Nebraska women were comparable to United States women as a whole. Eastern and western Nebraska counties had the highest incidence rates for breast cancer from 1995 to 1999. From 1995 through 1998, mortality rates due to breast cancer in Nebraska women were highest in the Western and Southeast health service areas.

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## Part 1. Introduction

### Purpose and Data Relevance

Prostate cancer is the most frequently diagnosed cancer among Nebraska men and the third leading cause of cancer death in men in Nebraska<sup>(1)</sup>. It is estimated that in 2001, approximately 1,200 new cases and 200 prostate cancer-related deaths will occur in Nebraska<sup>(2)</sup>. Prostate cancer accounted for 31% of all male cancers and 12% of male cancer-related deaths between 1994 and 1998 in Nebraska.

Breast cancer is the most common cancer among Nebraska women and is second only to lung cancer as the leading cause of cancer-related death<sup>(1)</sup>. An estimated 1,200 new cases of breast cancer will be diagnosed among Nebraska women in the year 2001, and an estimated 200 women will die of this disease<sup>(2)</sup>. Between 1994 and 1998, breast cancer accounted for 31% of all female cancers and 17% of female cancer-related deaths in Nebraska.

This report describes Nebraska's statistics about prostate cancer and breast cancer from 1995-1999 in the context of incidence and mortality, according to county and health service areas in Nebraska.

### Part 2. Prostate Cancer in Nebraska, 1995-1999

**Figures 1 and 2** show that Nebraska's prostate cancer incidence and mortality rates are lower than the rates of the United States as a whole.

Figure 1. Male Prostate Cancer Incidence Rates, Nebraska (1995-1999) and United States (1995-1998)

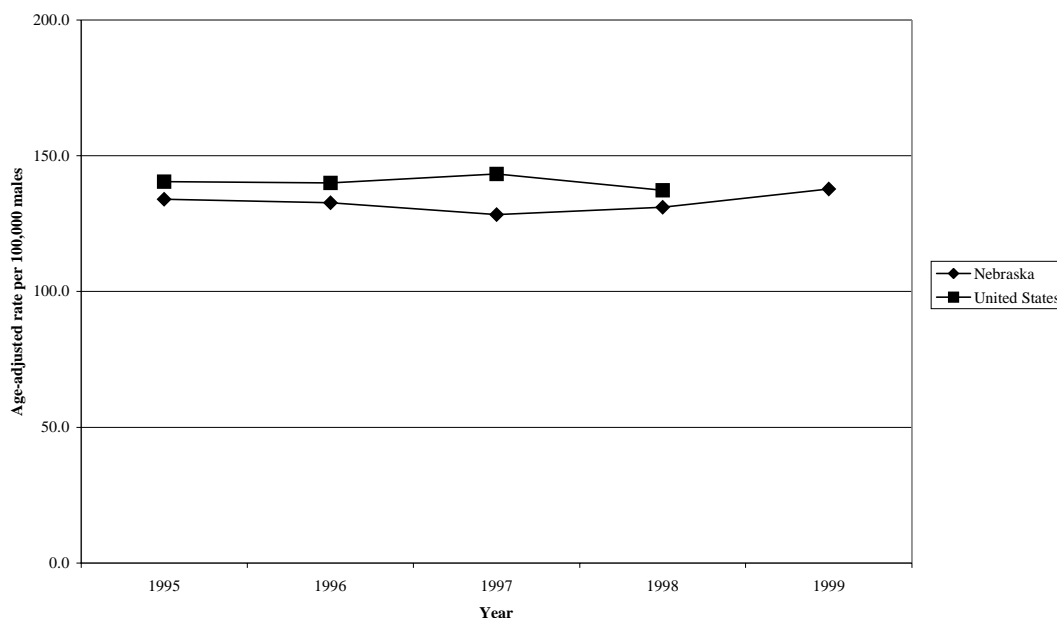




Figure 2. Male Prostate Cancer Mortality Rates, Nebraska and United States, 1994-1998

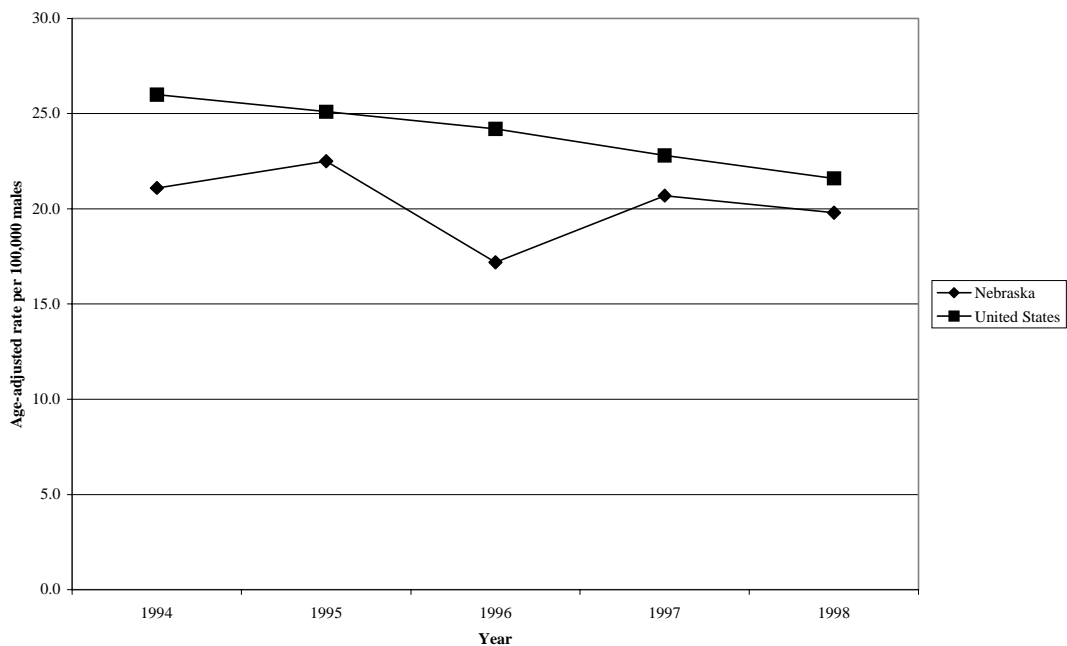
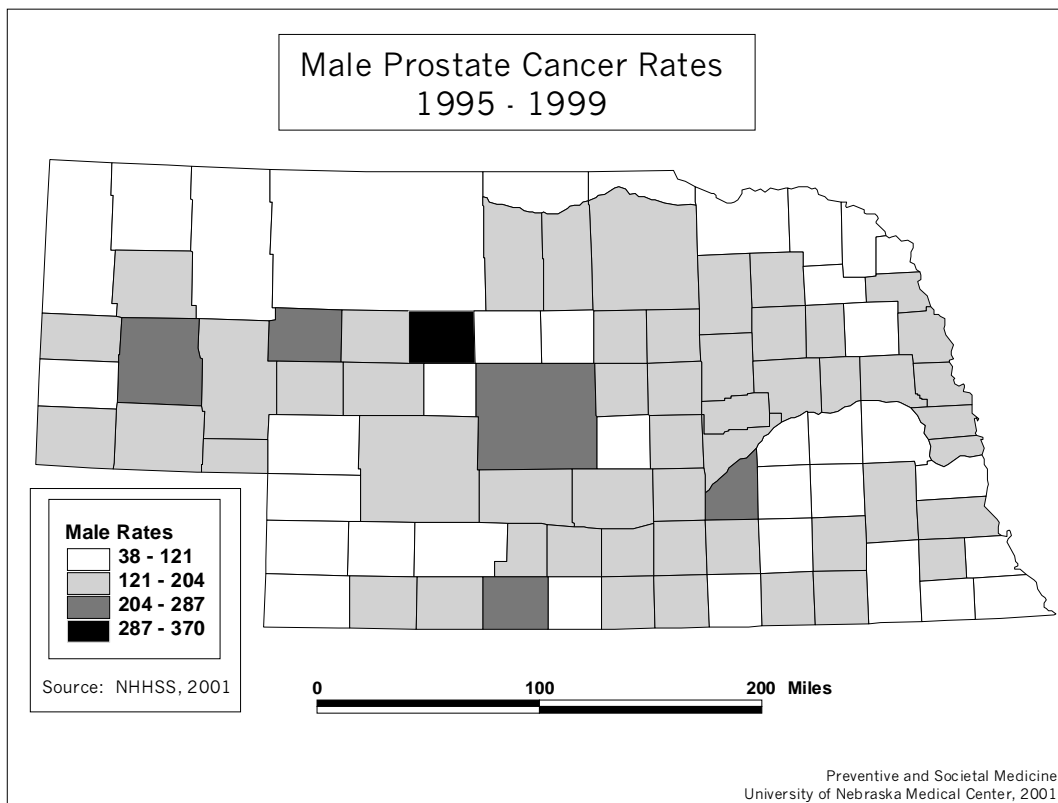


Figure 3 shows the age-adjusted incidence rates of prostate cancer for the years 1995-1999 by county in Nebraska. Counties in central and western Nebraska appear to have higher incidence rates of prostate cancer.

Figure 3. Age-adjusted incidence rates of prostate cancer by county, 1995-1999.



**Table 1** shows the age-adjusted incidence rates of prostate cancer in Nebraska according to health service areas. The Central health service area had incidence rates higher than the statewide average rates for the majority of the years from 1995 to 1999, whereas the Eastern health service area had incidence rates that were generally lower than the statewide rate during the same five-year period. The Southwest area had an unusually low incidence rate in 1998. Between 1995 and 1999, the age-adjusted incidence rate of prostate cancer in the Western area increased by 152%, from 110.3 to 168.0 per 100,000 men per year.

**Table 1. Age-adjusted Incidence Rates of Prostate Cancer in Nebraska by Health Service Area, 1995-1999**

	1995	1996	1997	1998	1999	95-99
Western	110.3	117.4	125.0	134.4	168.0	131.2
Southwest	136.5	140.0	136.0	102.4	140.4	131.1
Central	178.5	148.2	146.8	155.1	148.4	155.4
Northern	132.2	140.5	111.9	143.5	129.5	132.0
Southeast	121.3	138.9	127.6	118.6	147.9	131.1
Eastern	127.7	114.4	130.2	128.1	119.1	124.0
<b>Total</b>	<b>134.0</b>	<b>132.7</b>	<b>128.3</b>	<b>131.1</b>	<b>137.7</b>	<b>133.0</b>

Source: Nebraska Cancer Registry, 1995-1999.

The Eastern area had the lowest incidence rate of prostate cancer during 1995-99, but it had the highest mortality rates during 1995-98 (**See Table 2**). The mortality rates in the Central health service area, the area with the highest incidence rates of prostate cancer, were comparable to the statewide average rate. The Southwest area had the lowest mortality rates between 1995 and 1998, but this could be due to an unusually low mortality rate in 1997.

**Table 2. Age-adjusted Mortality Rates of Prostate Cancer in Nebraska by Health Service Area, 1995-1998**

	1995	1996	1997	1998	95-98
Western	22.5	16.4	19.2	16.6	18.7
Southwest	19.9	19.2	9.3	20.8	17.3
Central	21.9	17.0	20.4	15.9	18.8
Northern	17.6	15.2	20.5	19.5	18.2
Southeast	24.0	17.9	22.2	19.1	20.8
Eastern	27.1	17.3	24.1	21.3	22.4
<b>Total</b>	<b>22.5</b>	<b>17.2</b>	<b>20.7</b>	<b>19.8</b>	<b>19.7</b>

Source: Nebraska Health and Human Services System, 1995-1998.

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### Part 3. Breast Cancer in Nebraska, 1995-1999

Figures 4 and 5 show that Nebraska's female breast cancer incidence and mortality rates are similar to rates of the United States as a whole.

Figure 4. Female Breast Cancer Incidence Rates, Nebraska (1995-1999) and United States (1995-1998)

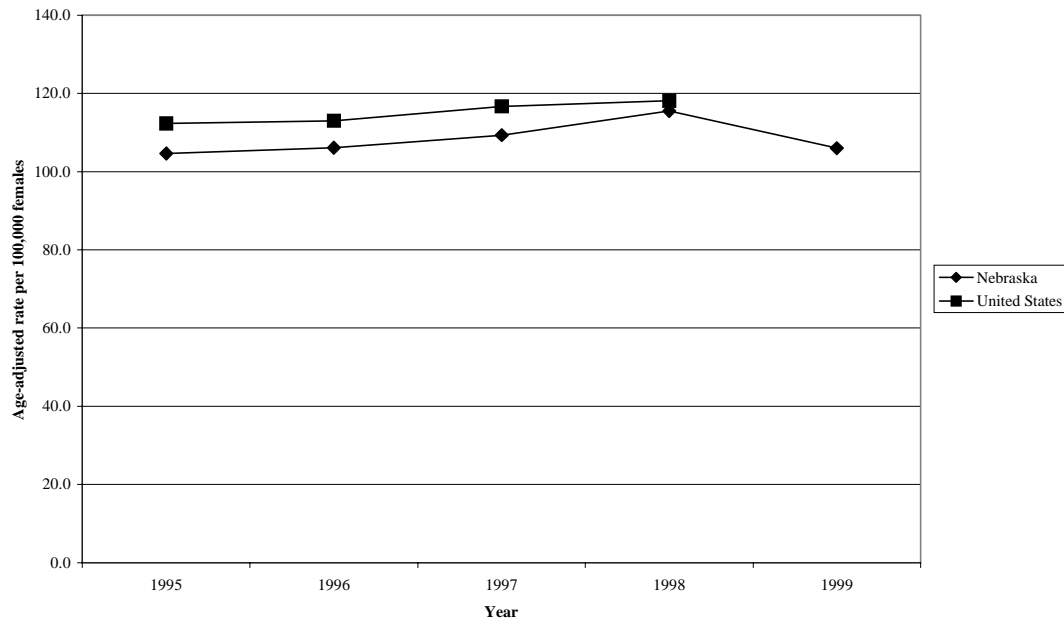
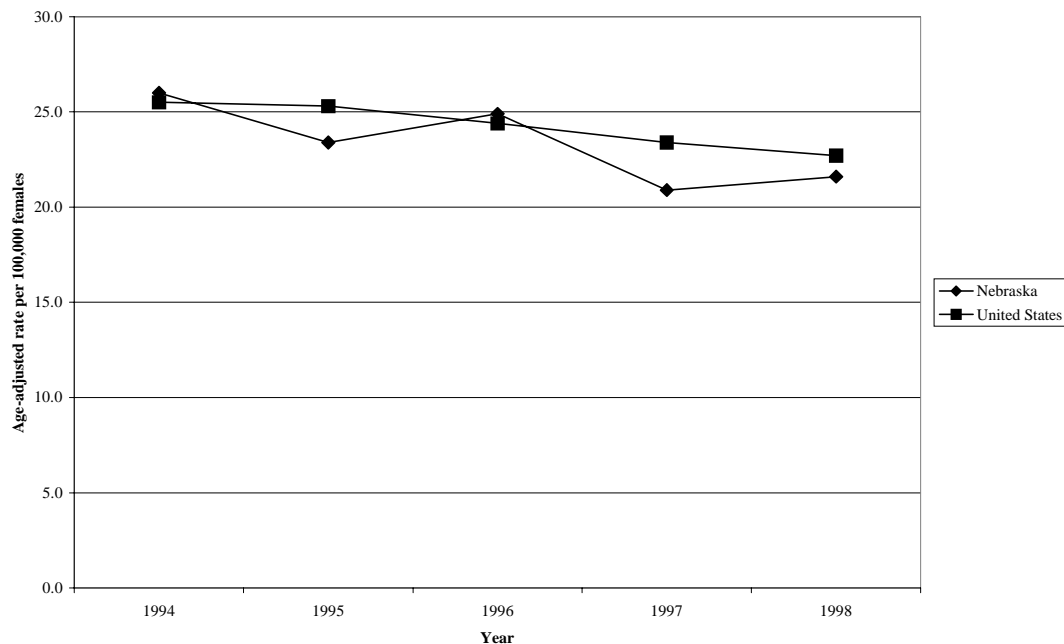
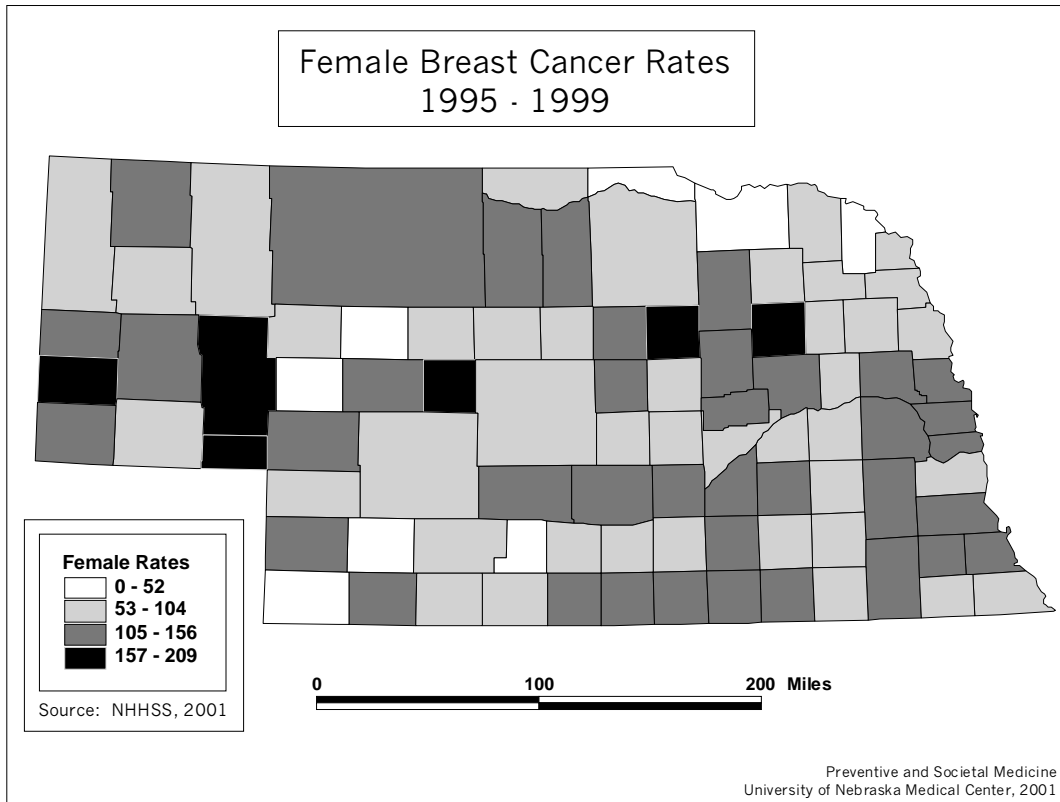


Figure 5. Female Breast Cancer Mortality Rates, Nebraska and United States, 1994-1998



**Figure 6** shows the age-adjusted incidence rates of breast cancer for years 1995-1999 by county in Nebraska. Counties in eastern and western Nebraska appear to have higher incidence rates of breast cancer.

**Figure 6. Age-adjusted incidence rates of breast cancer in Nebraska by county, 1995-1999**





**Table 3** shows the age-adjusted incidence rates of breast cancer in Nebraska according to health service areas. In 1995-1999, the incidence rates were consistently higher in the Eastern health service area than the statewide average rate, whereas the Northern health service area had incidence rates lower than the state for the majority of the years during the five-year period. The incidence rates in the Southwest area were lower than the statewide average between 1995 and 1999, but this could be due to the unusually low incidence rates reported in 1996.

**Table 3. Age-adjusted Incidence Rates of Breast Cancer in Nebraska by Health Service Area, 1995-1999**

	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>95-99</b>
Western	103.8	128.5	118.5	110.5	98.7	111.6
Southwest	100.4	72.0	94.0	100.7	108.3	95.3
Central	112.1	98.9	113.8	98.8	102.8	105.1
Northern	87.1	106.9	94.2	115.5	92.7	99.2
Southeast	103.4	107.8	105.9	115.4	109.9	108.7
Eastern	112.6	110.4	120.7	126.8	111.8	116.3
<b>Total</b>	<b>104.6</b>	<b>106.1</b>	<b>109.3</b>	<b>115.5</b>	<b>106.0</b>	<b>108.4</b>

Source: Nebraska Cancer Registry, 1995-1999.

The age-adjusted mortality rates of breast cancer in the Western area in 1995 and 1998 were the highest among the six regions, whereas the Central area was the highest in 1997, and the Northern area was the highest in 1996 (**See Table 4**). The Southeast and the Eastern health service areas had mortality rates higher than the state for the majority of the years from 1995 to 1998. But, overall, the mortality rates of breast cancer in the six health service areas were comparable to the statewide average rates during the time period of 1995-98.

**Table 4. Age-adjusted Mortality Rates of Breast Cancer in Nebraska by Health Service Area, 1995-1998**

	<b>1995</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>95-98</b>
Western	30.8	19.5	15.1	28.0	23.5
Southwest	18.4	25.8	12.1	19.7	19.0
Central	26.6	22.2	27.4	17.4	23.4
Northern	19.7	28.3	17.9	16.1	20.5
Southeast	23.7	27.5	19.9	22.9	23.5
Eastern	23.2	23.8	22.8	23.3	23.3
<b>Total</b>	<b>23.4</b>	<b>24.9</b>	<b>20.9</b>	<b>21.6</b>	<b>22.4</b>

Source: Nebraska Health and Human Services System, 1995-1998.

#### **Part 4. Summary**

1. Nebraska's prostate cancer incidence and mortality rates are lower than the rates of the United States as a whole, whereas the female breast cancer incidence and mortality rates are similar to rates of the United States as a whole.
2. The Central health service area had the highest age-adjusted incidence rate of prostate cancer during 1995-99, whereas the Eastern area had the lowest incidence rate.
3. The Eastern health service area had the highest mortality rate of prostate cancer during 1995-98.
4. The Eastern health service area had the highest incidence rate of female breast cancer between 1995 and 1999.
5. The aggregate mortality rates of breast cancer are comparable across the six different health service areas during 1995-98.



## Part 5. Implications

This *Data Reporter* uses data from the Nebraska Cancer Registry. With those data, we have identified trends during a five-year time period and compared Nebraska to the nation and to *Healthy People 2010* objectives. Doing so identifies potential areas for investment. That is, if the state is considerably short of meeting national and state objectives and/or lags behind the nation, strengthened programs are warranted. Conversely, if Nebraska is meeting objectives related to the conditions reported here, but well short of meeting objectives in other disease categories, any new resources should be targeted accordingly. Nebraska mortality rates for prostate and breast cancer are slightly lower than national rates, but breast cancer deaths are still higher than the *Healthy People 2010* objectives.

These data can also assist state health officials by identifying any particular sub-state areas in which these diseases are especially prevalent. This has special meaning in Nebraska, given the new resources devoted to local public health activities. Public health programs in the Western and Central areas could consider special projects related to prostate cancer, and programs in the Southeast and Eastern areas could do the same for breast cancer.

This *Reporter* identifies the incidence and mortality related to two health conditions. These are only partial measures of the consequences of the diseases, and further analysis should be done to understand the costs to society (for example, hospital-related expenses) and to individuals (measured in quality years of life). Where we identify variation in incidence and mortality (from objectives, across areas) further investigation is warranted to specify reasons for the variation and develop strategies to reduce incidence and mortality.

## References

1. Cancer Incidence and Mortality in Nebraska: 1998. Lincoln, Nebraska: Nebraska Health and Human Services System, 2000.
2. Greenlee, R. T., Hill-Harmon, M. B., Murray, T., and Thun, M. Cancer statistics, 2001. *CA Cancer J Clin*, 51: 15-36, 2001.

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## Data Notes

Data for this report are from the Nebraska Cancer Registry for the years 1995 through 1999. The Nebraska Cancer Registry is a population-based surveillance system for the collection, management, and analysis of data on incidence and survival for Nebraska residents who have been diagnosed and treated for invasive and in situ tumors. In situ tumors include tumors that fulfill all of the microscopic criteria for malignancy but do not invade or penetrate surrounding tissue. The Registry gathers this information from every hospital in the state of Nebraska and includes Nebraska residents diagnosed and/or treated at hospitals in the states of Colorado, Missouri, Wyoming, Iowa, and South Dakota. The Registry data from 1990 forward also include patients diagnosed with and treated for cancers as outpatients at pathology laboratories and physician's offices.

Nebraska cancer mortality data are obtained from death certificates on file with Nebraska Health and Human Services System. Mortality data are available for every deceased Nebraska resident who died from cancer, whether the death occurred in Nebraska or in another state. The cancer mortality data presented in this *Reporter* are limited to those deaths where cancer is listed as the underlying (i.e., primary) cause of death.

In order to assure quality and completeness, the Registry screened data extensively for accuracy and inconsistencies using a computerized editing process. In 1993, the North American Association of Central Cancer Registries conducted a reabstracting study for the Nebraska Cancer Registry, and the results indicated that the registry had collected 97% of the estimated number of cancer cases. Since 1995, the Nebraska Cancer Registry has achieved all of the criteria necessary to reach the Gold Standard of data quality developed by the North American Association of Central Cancer Registries.

## Definitions

**AGE-ADJUSTED RATE.** Direct age-standardization is done by taking the number of cancer events for each age group divided by the number of people for that age group (the crude rate or age-specific rate) and multiplying by the number of people in the standard population for that age group (the weight), then adding all of the weighted rates together and dividing that number by the total number of people in the standard population. Age-adjustment allows direct comparison of cancer incidence or mortality rates between two or more years in the same population or between two or more populations with different age structures. The number of people in each age and gender category for all counties was obtained from the US Census Bureau.

**INCIDENCE RATE.** The cancer incidence rate is the number of new cancers of a specific site/type occurring in a specific population during a defined time period such as a year, usually expressed as the number of cancers per 100,000 population at risk. For example, if 10 residents of a county with 20,000 resident are diagnosed with prostate cancer during a single year, then the incidence rate for that county for that year is .0005. This figure is then multiplied by 100,000 to yield the county's prostate cancer incidence rate of 50 per 100,000 per year. All incidence rates in this report are age-adjusted to the 1970 U.S. standard population in order to compare the Nebraska incidence rates to the national cancer rates. Also, incidence rates include invasive cases only; all in situ cases are excluded.

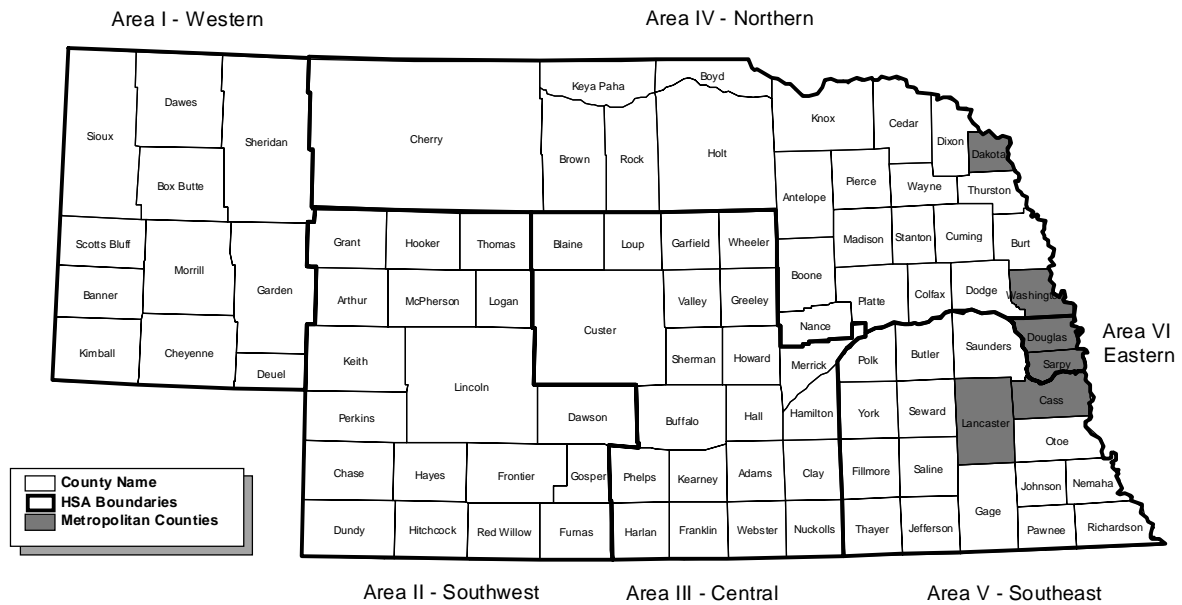
**MORTALITY RATE.** The cancer mortality rate is the number of deaths with cancer given as the underlying cause of death occurring in a specified population during a defined time period such as a year, usually expressed as the number of deaths due to cancer per 100,000 population. In this report, all mortality rates are age-adjusted to the 1970 U.S. standard population in order to compare the Nebraska mortality rates to the national rates.



## Geographic Concepts

**HEALTH SERVICE AREA.** Health service areas are county groupings defined by the Nebraska Department of Health and Human Services in 1999. The map below depicts the boundaries of these areas with respect to county boundaries in the state.

**METROPOLITAN COUNTIES.** Metropolitan area boundaries and names are those defined by the Federal Office of Management and Budget (OMB) on June 30, 1993. In Nebraska, metropolitan boundaries correspond with county boundaries. There are six metropolitan counties in Nebraska: Cass, Dakota, Douglas, Lancaster, Sarpy, and Washington. Non-metropolitan counties are defined as all other counties not otherwise defined as metropolitan. See below.



**About the Nebraska Health Information Project**

The Nebraska Health Information Project is a partnership project made possible with the financial support of the State of Nebraska and through additional personal and other resources provided by the University of Nebraska Medical Center. While initiated by Nebraska Unicameral, the ongoing success of the project results from cooperation and collaboration among a number of organizations and individuals, particularly those involved in delivering health care services, financing health care and analyzing health related data.

Other reports have been published by the Nebraska Health Information Project, including biennial databooks which present Nebraska health and demographic data at the county, area and state levels. To find out more about these reports and future reports visit our homepage at: <http://www.unmc.edu/nebraska>

**The Nebraska Center for Rural Health Research**

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