Cancer Incidence and Mortality in Nebraska: 2017

September 2020

The Nebraska Cancer Registry contains a wealth of information, not all of which is included in this report:

What types of data are available?

- Demographic: age at diagnosis, gender, race/ethnicity, county of residence
- Medical history: date of diagnosis, primary site, cell type, stage of disease at diagnosis
- Therapy: surgery, radiation therapy, chemotherapy, immunotherapy, hormone therapy
- Follow up: length of survival, cause of death

Who may request data from the Nebraska Cancer Registry?

- Medical Researchers
- Health Planners
- Market Researchers
- Health Care Facility Administrators
- Physicians
- Nurses
- Health Care Facility Cancer Committees
- Oncology Conference Planners and Speakers
- Patient Care Evaluators
- Pharmaceutical Companies
- Government Officials
- Concerned Citizens
- Students

How do I make a request?

Contact the Office of Health Statistics at the
Nebraska Department of Health and Human Services
Division of Public Health
P.O. Box 95026, Lincoln, NE 68509-5026
Phone 402-471-2180, Monday-Friday between 8 AM and 5 PM

Please note: To comply with confidentiality regulations, the Nebraska Department of Health and Human Services reserves the right to limit the amount and type of data that are released in response to a request.

NEBRASKA CANCER REGISTRY
2017 ANNUAL REPORT

Nebraska Department of Health and Human Services

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EXECUTIVE SUMMARY

The Cancer Incidence and Mortality in Nebraska annual report for 2017 provides a comprehensive overview of the impact of cancer in Nebraska. The purpose of the report is to present the most recent statistics that describe cancer incidence and mortality in Nebraska, for the entire state and by county and region; in-depth analyses of selected cancer sites; and comparisons of trends between Nebraska and the United States. Findings from the report include:

- ***Overall Cancer Incidence:*** In 2017, there were 10,490 diagnoses of cancer among Nebraska residents. This number is higher than the number of cancers that were diagnosed in 2016 (9,851).

- ***Cancer Incidence by Gender:*** In 2017, prostate, lung, and colorectal cancers were the most frequently diagnosed cases among Nebraska men, while breast, lung, and colorectal cancers were the most frequently diagnosed cases among Nebraska women. Taken together, these cancers accounted for about half of all cancer cases diagnosed among Nebraska residents in 2017.

- ***Cancer Incidence by Age:*** During the past five years (2013-2017), more than half (56%) of all cancers in Nebraska occurred among people 65 years of age and older. Less than 1% were diagnosed among children and adolescents. The average age at diagnosis was 65 years of age.

- ***Cancer Incidence by Site:*** During the past five years (2013-2017), cancers of the stomach, liver, in situ female breast, thyroid, and soft tissues were diagnosed significantly less often among Nebraska residents when compared to the US as a whole, while colorectal, melanoma of skin, prostate, kidney and renal pelvis, and small intestine cancers were diagnosed significantly more often. The number of melanomas diagnosed among Nebraska residents set a new single-year record in 2017, with 611 cases.

- ***Cancer Incidence by Race:*** During the past decade (2008-2017), African-Americans in Nebraska were significantly more likely to be diagnosed with colorectal, kidney, liver, lung, myeloma, pancreatic, stomach, and prostate cancers than were whites. Liver cancer diagnoses were also significantly more frequent among Native Americans, Asian-American/Pacific Islanders and Hispanics compared to whites.

- ***Overall Cancer Mortality:*** In 2017, 3,479 Nebraska residents died from cancer, which is a slight increase from the 2016 cancer death total of 3,454. Cancer was the second leading cause of death in Nebraska in 2017, surpassed by heart disease about 99 deaths.

- ***Cancer Mortality by Site:*** During the past five years (2013-2017), deaths from cancers of the stomach, liver, female breast, uterine cervix, uterine corpus, urinary bladder, and lung occurred significantly less often among Nebraska residents when compared to the US as a whole. Lung cancer was the leading cause of

cancer mortality in Nebraska in 2017, accounting for 23.3% of all cancer deaths, followed by colorectal cancer. During the past two decades, prostate and female breast cancer mortality rates in Nebraska have both declined by more than 50%, which is consistent with national trends.

- ***Cancer Incidence by County:*** Below are the Nebraska counties where cancer incidence during 2013-2017 was significantly different ($p<.05$) from the state. (NOTE: counties with fewer than 20 cases are not included.)

Significantly lower ▼		*Significantly higher ▲*	
County	*Primary Sites*	*County*	*Primary Sites*
Antelope	Lung & bronchus	Box Butte	Urinary bladder
Box Butte	Lung & bronchus Female breast	Cass	Lung & bronchus
		Cheyenne	Prostate
Buffalo	Lung & bronchus	Cuming	Prostate
Colfax	Female breast Prostate	Douglas	Lung & bronchus Female breast Melanoma of skin
Dawes	Female breast Prostate		
		Greeley	Prostate
Dawson	Prostate	Keith	Non-Hodgkin lymphoma
Hall	Female breast	Lincoln	Leukemia
Hamilton	Female breast	Madison	Prostate
Holt	Lung & bronchus	Nance	Colon & rectum
Lincoln	Female breast	Nemaha	Lung & bronchus
Madison	Urinary bladder Leukemia	Phelps	Female breast
		Platte	Colon & rectum
Phelps	Prostate	Richardson	Lung & bronchus
Red Willow	Female breast Prostate	Sarpy	Female breast
Sarpy	Prostate		
Scotts Bluff	Lung & bronchus Female breast		

- ***Annual Report Special Topic:*** The special topic for this report is brain tumors. Brain tumors refer to masses of abnormal cells in the brain that have grown out of control. Brain tumors can be categorized into benign and invasive brain tumors. For this report, brain tumors are defined as invasive brain tumors or brain cancers. During the past five years (2013-2017), brain cancers accounted for 721 new cases and 535 deaths among Nebraska residents. Both state and national trends of the past decade has shown slightly decreasing incidence of brain cancers.

INTRODUCTION

This publication represents the 30th annual statistical summary of the Nebraska Cancer Registry (NCR) since it began collecting data in 1987. The purpose of this report is to present the registry's most recent data to the citizens of the State of Nebraska. The majority of the data covers cancer diagnoses and cancer deaths that occurred between January 1, 2017 and December 31, 2017, as well as during the past five years (January 1, 2013-December 31, 2017).

The NCR was founded in 1986, when the Nebraska Unicameral authorized funding for a state cancer registry using a portion of funds generated by the state's cigarette tax. The establishment of the registry successfully combined the efforts of many Nebraska physicians, legislators, concerned citizens, and the Nebraska Medical Foundation, all of whom had worked for years toward this goal. The Nebraska Medical Foundation also helped establish the registry with financial assistance. Since 1994, the NCR has received additional funding from the Centers for Disease Control and Prevention (CDC).

The NCR is managed by the Nebraska Department of Health and Human Services (DHHS) in Lincoln. However, registry data is collected and edited by NCR staff in Omaha, under contract to the Methodist Hospital Association. Analysis of registry data and preparation of the annual statistical report are the responsibilities of DHHS.

The purpose of the registry is to gather data that describes how many Nebraska residents are diagnosed with cancer, what types of cancer they have, how far the disease has advanced at the time of diagnosis, what types of treatment they receive, and how long they survive after diagnosis. These data are put to a variety of uses both inside and outside of DHHS. Within DHHS, they are used to identify high-risk populations and long-term disease trends, to compare Nebraska's cancer experience with the rest of the nation, to investigate reports of possible cancer clusters, and to help plan and evaluate cancer control programs. Outside of DHHS, the registry provides data upon request for research studies and public information, and has provided data to the North American Association of Central Cancer Registries (NAACCR), the National Cancer Institute (NCI), the American Cancer Society (ACS), CDC, and the University of Nebraska Medical Center, among others. The NCR also contributes its data to several national cancer incidence databases (see page 5). In recognition of the accuracy and completeness of the data collected, NAACCR has awarded the NCR its gold standard certificate of data quality for 23 consecutive years, from 1995 to 2017.

All individual records in the cancer registry are kept in strict confidence as prescribed by both state and federal law. The NCR follows all of the privacy safeguards in the Health Insurance Portability and Accountability Act (HIPAA), although some of the procedural requirements do not apply to the registry.

DHHS welcomes inquiries about cancer from the public for aggregate statistics or general information from the registry. To obtain cancer data or information about the registry not included in this report, please refer to the instructions provided inside the front cover.

An electronic copy of this report is available on the DHHS website at http://dhhs.ne.gov/Pages/Cancer-Registry.aspx

METHODOLOGY

Data Collection and Management

The NCR gathers data on Nebraska residents diagnosed and treated for invasive and in situ tumors. The registry does not include benign tumors (except for benign brain and other nervous system tumors, which became reportable as of January 1, 2004), benign polyps, and basal cell and squamous cell carcinomas of the skin. Information gathered from each case includes the patient's name, address, birth date, race, gender, and Social Security number, date of diagnosis, primary site of the cancer (coded according to the International Classification of Diseases for Oncology, 3rd edition [ICD-O-3]), stage of disease at diagnosis, facility where the initial diagnosis was made, basis of staging, method of diagnostic confirmation, histological type (also classified according to the ICD-O-3), and initial treatment. The registry does not actively collect follow-up information on registered cases, but many facilities provide it, and it includes the date of last contact with the patient, status of disease, type of additional treatment, and quality of survival. The registry collects information from every hospital in the state where cancer patients are diagnosed and/or treated on an inpatient basis. The registry also includes Nebraska residents who are diagnosed with and/or treated for cancer out of state, as well as cases identified through pathology laboratories, outpatient treatment facilities, physician offices, and death certificates. Death of registered cases is ascertained using death certificates available from DHHS and from the National Death Index.

Nebraska cancer mortality data are obtained from death certificates on file with DHHS. Mortality data are available for every Nebraska resident who dies from cancer, whether death occurs in or outside of Nebraska. The mortality data presented in this report is limited to those deaths where cancer is listed as the underlying (i.e., primary) cause of death. Causes of death are coded according to the Tenth Edition of the International Classification of Disease (ICD-10).

The US cancer incidence data presented in this report were compiled by CDC's National Program of Cancer Registries (NPCR) and NCI's Surveillance, Epidemiology, and End Results (SEER) Program. NPCR provides support for cancer registries in 46 states (including Nebraska), the District of Columbia, and some US territories, and covers 97% of the total US population. The mortality data presented in this report were compiled by the National Center for Health Statistics (NCHS) and include all US resident cancer deaths. Incidence data from NPCR and mortality data from NCHS are available through 2016.

Confidentiality

All data obtained by the NCR from the medical records of individual patients is held in strict confidence by DHHS. As specified in state statute, researchers may obtain case-specific and/or patient-identifiable information from the registry by submitting a written application that describes how the data will be used for scientific study. In situations where contact with a patient or patient's family is proposed, the applicant must substantiate the need for any such contact and submit approval from an Institutional Review Board. In addition, before any individual's name can be given to a researcher, the registry must obtain permission from the individual that they are willing to be a research subject. Upon favorable review by DHHS, the applicant must also agree to maintain the confidentiality

and security of the data throughout the course of the study, to destroy or return the registry data at the end of the study and to present material to the registry prior to publication to ensure that no identifiable information is released.

Aggregate data (i.e., statistical information) from the registry are considered open to the public and are available upon request. Details on how to obtain such data are provided inside the front cover of this report.

Quality Assurance

The NCR and reporting facilities spend a great deal of time and energy to ensure that the information they gather is both accurate and complete, and these efforts have met with consistent success. For 23 consecutive years (1995-2017), the NCR has met all of the criteria necessary to earn the gold standard certificate of data quality awarded by NAACCR, which is the accrediting body for all US and Canadian central cancer registries. These criteria include:

1) Completeness of case ascertainment–-The registry must find at least 95% of the total number of cases that are estimated to have occurred.

2) Completeness of information–-The proportion of registry cases missing information on age at diagnosis, gender, and county of residence must be no more than 2%, and the proportion missing information on race must be no more than 3%.

3) Data accuracy–-Error rates based on edit checks of selected data items must be no greater than 1%.

4) Timeliness–-All data for a single calendar year must be submitted to NAACCR for review no more than 23 months after the year has ended.

Gold standard certification also requires that all cases pass strict edits and that the proportion of registry cases found solely through a review of death certificates must be no more than 3% and that the proportion of duplicate cases in the registry must be no more than one per 1,000.

Since the NCR has achieved the highest quality standards, its data are included in several national cancer incidence databases. These databases compile information from cancer registries throughout the United States and Canada that meet the same data quality standards as the NCR. These databases include:

1) *Cancer in North America* (http://www.naaccr.org)

2) *United States Cancer Statistics* (https://nccd.cdc.gov/uscs/)

3) *Cancer Facts & Statistics* (http://www.cancer.org/research/cancerfactsstatistics/index)

4) *Cancer Control PLANET* (http://cancercontrolplanet.cancer.gov/)

Definitions

Several technical terms are used in presenting the information in this report. The following definitions are provided here to assist the reader.

Incidence rate
Incidence rate is the number of new cases of a disease that occur within a specific population during a given time period, divided by the size of the population. For example, if 10 residents of a county with 20,000 residents are diagnosed with colorectal cancer during a single year, then the incidence rate of colorectal cancer for that county for that year is .0005. Since cancer incidence rates are usually expressed per 100,000 population, this figure is then multiplied by 100,000 to yield a rate of 50 per 100,000 per year.

Mortality rate
Mortality rate is the number of deaths that occur within a specific population during a given time period, divided by the size of the population. Like incidence rates, mortality rates are usually expressed as the number of deaths per 100,000 population per year.

Age-adjusted rate
Age-adjustment is a simple mathematical procedure that makes it possible to compare rates between populations that have different age distributions, and to compare rates within a single population over time. All of the incidence and mortality rates in this report are age-adjusted using the US population in 2000 as the standard. Statewide and national rates are age-adjusted using 19 age groups (<1, 1-4, 5-9, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85+ years), while county and regional rates are age-adjusted using 11 age groups (<1, 1-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75-84, 85+ years).

Stage of Disease at Diagnosis
In situ
Tumors diagnosed as in situ consist of invasive cells that are growing in place. In situ tumors are confined to the cell group of origin, and have not penetrated the supporting structure of the organ on which they arose.

Invasive
Tumors diagnosed as invasive have spread beyond the cell group of the organ where they began, and may have spread further. The organ where a malignancy began is also known as the primary site. Invasive tumors are subdivided into three categories:

> Localized--A localized invasive tumor has not spread beyond the organ where it started.
>
> Regional--A regional invasive tumor has spread beyond the organ where it began, by direct extension to immediately adjacent organs or tissues and/or by spread to regional lymph nodes.
>
> Distant--A distant invasive tumor has spread beyond the primary site to distant parts of the body.

Data Analysis

All of the rates presented in this report were calculated using Vintage 2017 bridged-race population estimates developed by the US Census Bureau and the National Center for Health Statistics. Incidence and mortality rates for multiple years (2013-2017) (see Tables 1, 2, 5, 6, 9-20) were calculated using population estimates for the years 2013-2017 combined, while rates for 2008-2017 (see Tables 3 and 7) were calculated using population estimates for the years 2008-2017 combined. Rates that are based on more than one year of data should be interpreted as an average annual rate.

All of the data presented in this report are current through December 31, 2019. However, because some cases diagnosed during or even before 2017 may not yet have been reported to the registry, the incidence data presented in this report should be considered subject to change. **In addition, the incidence data reported in previous editions of this report should be considered no longer complete.**

Internet users should also be aware that the cancer statistics for Nebraska that are published in this report and those that are posted on non-DHHS websites (see page 5) may differ. Some discrepancies may be the result of differences in the dates at which the data were compiled. As noted above, Nebraska incidence data published in this report include all cases reported to the registry through December 31, 2019; Nebraska data available on the CDC/NPCR website include cases that were reported through November 30, 2019.

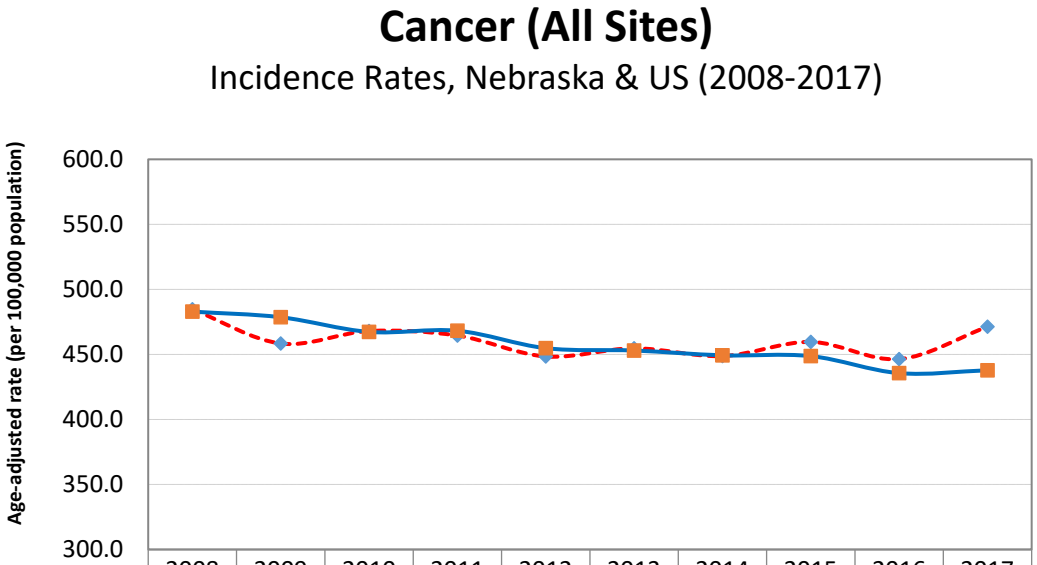
With the exception of bladder cancer, in situ female breast cancer, and benign brain tumors, all of the site-specific incidence rates in this report were calculated with invasive cases only, to maintain comparability with statistics from the NPCR and other cancer registries throughout the United States. For bladder cancer, incidence rates were calculated with invasive and in situ cases combined. All incidence and mortality rates in this report were calculated per 100,000 population, and were age-adjusted according to the age distribution of the population of the United States in 2000. Statewide rates were also calculated for males and females separately, and for both sexes combined. The number of cases for any county with fewer than three cases is not shown in order to reduce the possibility of identifying a specific person.

To evaluate the statistical significance of the differences between rates, confidence intervals for rates were calculated using the formula $CI = r \pm (RC \times SE)$, where CI = confidence interval, r = rate, RC = 1.96 (for 95% confidence intervals) or 2.58 (for 99% confidence intervals), and SE = standard error. The standard error for a rate was determined by dividing the rate by the square root of the number of events (cancer diagnoses or deaths). A statistically significant difference exists and is indicated in those instances where the confidence intervals of a pair of rates being compared to each other do not overlap.

CANCER INCIDENCE IN NEBRASKA

The Nebraska Cancer Registry recorded 10,490 diagnoses of cancer among Nebraska residents in 2017, an increase from the 9,851 diagnoses recorded in 2016. The 2017 number translates into an incidence rate of 471.3 cases per 100,000 population. By primary site, cancers of the prostate, female breast, lung, colon and rectum occurred most frequently, accounting for about half (48.9%) of all diagnoses. Recent registry experience suggests that as the registry continues to record cases, the final count for 2017 will likely increase by 100 to 300 cases.

Table 1 presents the number and rate of cancers diagnosed among Nebraska residents during 2017 and 2013-2017, for all sites combined and for cancers of specific sites. The most current estimates of US cancer incidence for the same time period are also included. Comparison of the most recent state and national incidence rates for the past five years shows significant differences ($p<.01$) for cancers of the stomach, liver, in situ female breast, soft tissue, and thyroid (Nebraska rates are lower than the US) and for cancers of the colon and rectum, melanoma of skin, prostate, kidney and renal pelvis, and small intestine (Nebraska rates are higher than the US). Table 2 presents the number of cancers diagnosed in Nebraska during 2013-2017 by age at diagnosis. Table 3 presents Nebraska incidence data by race and ethnicity for the years 2008-2017.



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Nebraska	484.7	458.4	468.0	464.5	448.4	454.7	448.7	459.6	446.4	471.3
US	482.9	478.6	467.3	468.2	454.8	453.0	449.3	448.7	435.6	437.8

TABLE 1: Cancer Incidence
Number of Cases and Rates, by Selected Primary Site and Gender
Nebraska (2017 and 2013-2017) & US (2012-2016)

Site	NEBRASKA 2017						NEBRASKA 2013-2017						US 2012-2016		
	Male		Female		Total		Male		Female		Total		Male	Female	Total
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	Rate	Rate	Rate
All Sites	5,465	514.6	5,025	441.1	10,490	471.3	25,606	503.1	24,328	434.6	49,934	462.0	488.8	420.9	448.0
Oral Cavity & Pharynx	222	20.6	87	7.2	309	13.6	977	18.8	388	6.8	1,365	12.5	17.7	6.4	11.7
Esophagus	86	8.0	24	1.8	110	4.6	418	8.1	103	1.7	521	4.7	7.9	1.8	4.5
Stomach	70	6.7	39	3.4	109	4.8	374	7.5	185	3.2	559	5.1	8.9	4.6	6.6
Small Intestine	30	3.0	22	1.9	52	2.4	150	3.1	122	2.2	272	2.6	2.8	2.1	2.4
Colon & Rectum	461	45.0	451	38.3	912	41.3	2,401	48.0	2,209	38.0	4,610	42.7	44.4	33.9	38.7
Liver & Intrahepatic Bile Ducts	99	8.4	43	3.3	142	5.8	466	8.7	180	2.9	646	5.6	12.7	4.4	8.3
Pancreas	155	14.9	124	10.4	279	12.5	747	15.1	675	11.3	1,422	13.1	14.5	11.2	12.8
Larynx	55	4.8	14	1.2	69	2.9	253	4.7	76	1.3	329	2.9	5.7	1.3	3.3
Lung & Bronchus	651	61.3	606	49.5	1,257	54.7	3,300	65.7	3,014	51.0	6,314	57.3	69.1	51.7	59.2
Soft Tissue	48	4.7	31	3.1	79	3.8	223	4.7	131	2.5	354	3.5	4.0	2.8	3.3
Melanoma of the Skin	332	33.5	279	26.9	611	29.5	1,443	29.2	1,262	24.8	2,705	26.4	27.9	17.2	21.8
Breast (invasive cases)	10	0.9	1,446	129.6	1,456	67.7	83	1.6	7,035	127.4	7,118	67.2	1.3	125.2	67.0
Uterine Cervix	---	---	85	9.5	---	---	---	---	362	7.8	---	---	---	7.6	---
Uterine Corpus & Unspecified	---	---	320	27.1	---	---	---	---	1,578	27.7	---	---	---	26.6	---

TABLE 1 (continued): Cancer Incidence

Site	NEBRASKA 2017						NEBRASKA 2013-2017						US 2012-2016		
	Male		Female		Total		Male		Female		Total		Male	Female	Total
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	Rate	Rate	Rate
Ovary	---	---	104	9.7	---	---	---	---	579	10.6	---	---	---	11.1	---
Prostate	1,503	132.4	---	---	---	---	6,329	116.9	---	---	---	---	104.1	---	---
Testis	59	6.3	---	---	---	---	319	7.1	---	---	---	---	5.6	---	---
Urinary Bladder	372	36.2	107	8.5	479	20.8	1,716	35.0	548	8.8	2,264	20.4	35.0	8.7	20.1
Kidney & Renal Pelvis	248	23.4	132	12.0	380	17.4	1,239	24.2	675	12.2	1,914	17.8	22.5	11.5	16.6
Brain & Central Nervous System (invasive cases only)	94	9.0	69	6.3	163	7.6	408	8.2	313	5.9	721	7.0	7.6	5.5	6.5
Thyroid Gland	79	7.9	230	24.5	309	16.2	361	7.4	1,052	22.3	1,413	14.8	7.4	21.4	14.5
Hodgkin Lymphoma	37	3.7	27	2.7	64	3.2	167	3.6	121	2.5	288	3.0	3.0	2.3	2.6
Non-Hodgkin Lymphoma	264	25.6	229	18.6	493	21.9	1,208	24.5	974	16.8	2,182	20.2	23.2	16.0	19.2
Myeloma	77	7.6	52	4.1	129	5.7	404	8.1	278	4.6	682	6.2	8.4	5.5	6.8
Leukemia	169	16.2	126	11.0	295	13.5	904	18.2	631	11.3	1,535	14.4	18.1	11.0	14.1
Brain & Central Nervous System (benign & uncertain cases only)	72	6.9	148	13.4	220	10.3	364	7.4	735	13.9	1,099	10.8	9.2	16.0	12.4
Breast (in situ cases only)	---	---	283	25.9	---	---	---	---	1,444	27.0	---	---	0.1	30.1	15.8

Total rates are per 100,000 population and are age-adjusted to the 2000 US population.
Gender-specific rates are per 100,000 male or female population and are age-adjusted to the 2000 US population.

TABLE 2: Cancer Incidence
Number of Cases and Percentage Distribution, by Selected Primary Site and Age at Diagnosis
Nebraska (2013-2017)

	0-17 Yrs.		18-44 Yrs.		45-64 Yrs.		65+ Yrs.		TOTAL	
	Number	%	Number	%	Number	%	Number	%	Number	%
All Sites	448	0.9	3,782	7.6	17,716	35.5	27,988	56.0	49,934	100.0
Oral Cavity & Pharynx	3	0.2	89	6.5	621	45.5	652	47.8	1,365	100.0
Esophagus	0	0.0	9	1.7	198	38.0	314	60.3	521	100.0
Stomach	1	0.2	36	6.4	181	32.4	341	61.0	559	100.0
Small Intestine	1	0.4	28	10.3	100	36.8	143	52.6	272	100.0
Colon & Rectum (Colorectal)	11	0.2	270	5.9	1,549	33.6	2,780	60.3	4,610	100.0
Liver & Intrahepatic Bile Ducts	5	0.8	16	2.5	299	46.3	326	50.5	646	100.0
Pancreas	1	0.1	49	3.4	405	28.5	967	68.0	1,422	100.0
Larynx	0	0.0	11	3.3	129	39.2	189	57.4	329	100.0
Lung & Bronchus	2	0.0	65	1.0	1,815	28.7	4,432	70.2	6,314	100.0
Soft Tissue	26	7.3	66	18.6	100	28.2	162	45.8	354	100.0
Melanoma of the Skin	7	0.3	497	18.4	1,013	37.4	1,188	43.9	2,705	100.0
Female Breast (invasive cases only)	0	0.0	600	8.5	3,095	44.0	3,340	47.5	7,035	100.0
Uterine Cervix	1	0.3	138	38.1	159	43.9	64	17.7	362	100.0
Uterine Corpus & Unspecified	0	0.0	106	6.7	773	49.0	699	44.3	1,578	100.0
Ovary	7	1.2	76	13.1	227	39.2	269	46.5	579	100.0
Prostate	0	0.0	18	0.3	2,489	39.3	3,822	60.4	6,329	100.0
Testis	2	0.6	260	81.5	47	14.7	10	3.1	319	100.0
Urinary Bladder	0	0.0	30	1.3	493	21.8	1,741	76.9	2,264	100.0
Kidney & Renal Pelvis	19	1.0	141	7.4	807	42.2	947	49.5	1,914	100.0
Brain & Central Nervous System (invasive cases only)	91	12.6	123	17.1	229	31.8	278	38.6	721	100.0
Thyroid Gland	13	0.9	525	37.2	580	41.0	295	20.9	1,413	100.0
Hodgkin Lymphoma	32	11.1	128	44.4	67	23.3	61	21.2	288	100.0
Non-Hodgkin Lymphoma	12	0.5	133	6.1	698	32.0	1,339	61.4	2,182	100.0
Myeloma	0	0.0	21	3.1	240	35.2	421	61.7	682	100.0
Leukemia	113	7.4	144	9.4	405	26.4	873	56.9	1,535	100.0
Brain & Central Nervous System (benign & uncertain	44	4.0	183	16.7	398	36.2	474	43.1	1,099	100.0
Female Breast (in situ cases only)	0	0.0	133	9.2	746	51.7	565	39.1	1,444	100.0

NOTE: Due to rounding, percentages may not sum to 100.0.

TABLE 3: Cancer Incidence
Number of Cases and Rates, All Sites and Top Ten Primary Sites, by Race and Ethnicity
Nebraska (2008-2017)

	White			African-American			Native American			Asian/Pacific Islander			Hispanic		
	Site	Number	Rate	Site	Number	Rate	Site	Number	Rate	Site	Number	Rate	Site	Number	Rate
	All Sites	90,921	460.1	All Sites	3,388	515.8	All Sites	532	400.5	All Sites	762	289.0	All Sites	2,229	278.4
Rank															
1	Female Breast	12,819	126.4	Prostate	627	201.1	Female Breast	80	98.6	Female Breast	112	65.6	Female Breast	310	74.1
2	Lung & Bronchus	11,710	58.0	Lung & Bronchus	473	78.1	Lung & Bronchus	70	66.3	Lung & Bronchus	85	38.5	Prostate	221	72.7
3	Prostate	11,689	120.8	Female Breast	424	119.9	Colon & Rectum	56	44.2	Colon & Rectum	79	33.7	Colon & Rectum	204	28.1
4	Colon & Rectum	8,831	44.2	Colon & Rectum	353	56.8	Prostate	41	80.7	Thyroid	59	15.2	Lung & Bronchus	149	25.7
5	Melanoma	4,275	22.8	Kidney & Renal Pelvis	183	27.5	Kidney & Renal Pelvis	36	21.1	Prostate	58	66.5	Thyroid	128	10.6
6	Urinary Bladder	4,264	21.0	Pancreas	110	18.7	Liver & Intrahepatic Bile Ducts	30	17.5	Liver & Intrahepatic Bile Ducts	52	21.5	Non-Hodgkin Lymphoma	121	16.1
7	Non-Hodgkin Lymphoma	4,093	20.7	Non-Hodgkin Lymphoma	108	15.8	Leukemia	25	14.3	Oral Cavity & Pharynx	34	10.8	Kidney & Renal Pelvis	118	14.4
8	Kidney & Renal Pelvis	3,398	17.2	Liver & Intrahepatic Bile Ducts	99	13.9	Non-Hodgkin Lymphoma	16	12.9	Non-Hodgkin Lymphoma	33	13.0	Leukemia	114	9.4
9	Uterine Corpus & Unspecified	2,868	27.5	Myeloma	98	15.7	Uterine Corpus & Unspecified	14	16.0	Leukemia	27	8.9	Uterine Corpus & Unspecified	68	14.9
10	Leukemia	2,807	14.4	Urinary Bladder	80	13.9	Thyroid	14	6.7	Stomach	22	8.4	Brain & Central Nervous System	67	5.6

Rates are per 100,000 population, excluding gender-specific sites (prostate, female breast, uterine corpus), which are per 100,000 male or female population. All rates are age-adjusted to the 2000 US population.

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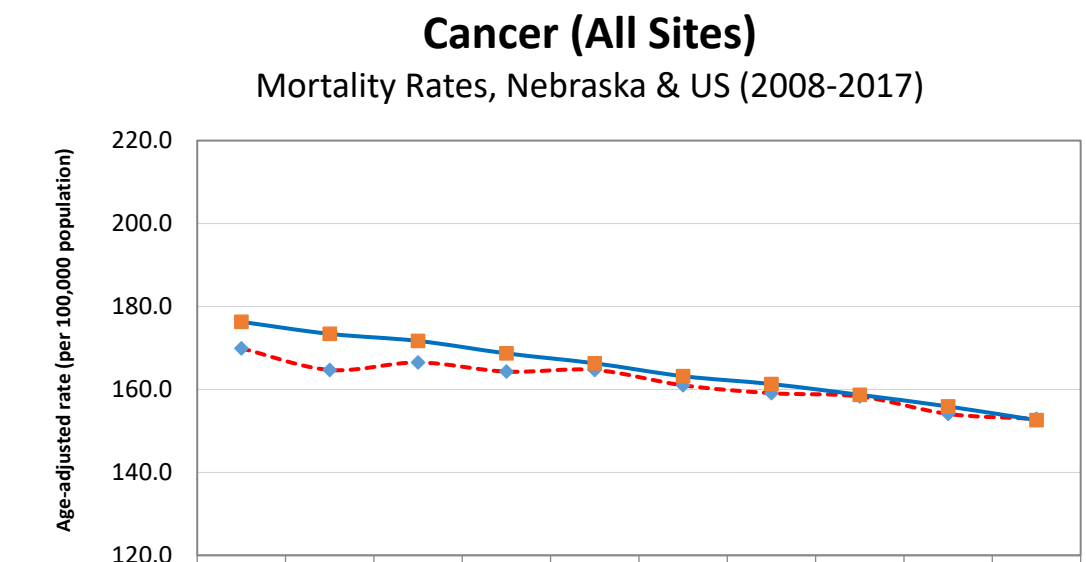
CANCER MORTALITY IN NEBRASKA

In 2017, 3,479 Nebraska residents died from cancer, a slight increase from the state's 2016 tally of 3,454 cancer deaths. The 2017 count translates into a rate of 151.9 cancer deaths per 100,000 population. Cancer was the second leading cause of mortality among Nebraska residents in 2017, surpassed by heart disease with 3,578 deaths. By primary site, cancers of the lung, colon and rectum, female breast, and pancreas accounted for just under half (47.1%) of Nebraska's cancer deaths in 2017.

Table 4 presents the number and rate of cancer deaths that occurred among Nebraska residents during 2017 and 2013-2017, for all sites combined and for specific sites. The most recent US cancer mortality rates, which cover the years 2012 through 2016, are also included. Comparison of the most recent state and national mortality rates for the past five years shows significant lower rates ($p<.01$) for cancers of the stomach, liver, lung, female breast, uterine cervix, uterine corpus, and urinary bladder in Nebraska than in the US. Table 5 presents the number of Nebraska cancer deaths during 2013-2017 by age at death. Table 6 presents Nebraska cancer mortality data by race and ethnicity for the years 2008-2017.



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Nebraska	169.9	164.7	166.5	164.3	164.7	161	159.1	158.3	154.1	152.9
US	176.3	173.4	171.7	168.7	166.3	163.2	161.3	158.7	155.9	152.6

TABLE 4: Cancer Mortality
Number of Deaths and Rates, by Selected Primary Site and Gender
Nebraska (2017 and 2013-2017) & US (2012-2016)

Site	NEBRASKA 2017						NEBRASKA 2013-2017						US 2012-2016		
	Male		Female		Total		Male		Female		Total		Male	Female	Total
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	Rate	Rate	Rate
All Sites	1,819	177.7	1,660	132.6	3,479	151.9	9,088	185.6	8,236	135.1	17,324	156.3	193.1	137.7	161.0
Oral Cavity & Pharynx	40	3.6	17	1.4	57	2.4	164	3.2	86	1.4	250	2.2	3.9	1.3	2.5
Esophagus	88	8.4	18	1.4	106	4.6	410	8.1	90	1.5	500	4.5	7.1	1.5	4.0
Stomach	34	3.4	21	1.8	55	2.5	145	3.0	74	1.3	219	2.0	4.2	2.3	3.1
Colon & Rectum (Colorectal)	155	15.2	152	11.7	307	13.3	831	17.0	780	12.5	1,611	14.6	16.9	11.9	14.2
Liver & Intrahepatic Bile Ducts	66	5.9	34	2.6	100	4.1	340	6.5	168	2.8	508	4.5	9.6	3.9	6.5
Pancreas	166	16.4	107	8.3	273	12.0	646	13.2	571	9.3	1,217	11.1	12.6	9.6	11.0
Larynx	19	1.7	8	0.7	27	1.2	98	1.9	29	0.5	127	1.1	1.8	0.4	1.0
Lung & Bronchus	433	42.0	379	30.7	812	35.7	2,366	48.1	1,997	33.1	4,363	39.6	51.6	34.4	41.9
Melanoma of the Skin	37	3.7	13	0.9	50	2.2	193	3.9	93	1.5	286	2.6	3.7	1.5	2.5
Breast	4	0.4	242	19.6	246	10.9	13	0.3	1,212	20.0	1,225	11.1	0.3	20.6	11.4
Uterine Cervix	---	---	26	2.1	---	---	---	---	118	2.1	---	---	---	2.3	---

TABLE 4 (continued): Cancer Mortality

Site	NEBRASKA 2017						NEBRASKA 2013-2017						US 2012-2016		
	Male		Female		Total		Male		Female		Total		Male	Female	Total
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate	Rate	Rate	Rate
Uterine Corpus & Unspecified	---	---	60	5.2	---	---	---	---	277	4.7	---	---	---	4.7	---
Ovary	---	---	87	7.2	---	---	---	---	415	6.9	---	---	---	7.0	---
Prostate	179	18.3	---	---	---	---	850	18.3	---	---	---	---	19.2	---	---
Kidney & Renal Pelvis	68	6.6	43	3.3	111	4.8	322	6.3	164	2.7	486	4.3	5.5	2.3	3.8
Urinary Bladder	65	6.7	23	1.6	88	3.7	314	6.6	125	1.9	439	3.8	7.6	2.1	4.4
Brain & Other Nervous System	62	5.8	45	3.8	107	4.8	303	6.0	232	4.1	535	5.0	5.4	3.6	4.4
Thyroid	8	0.8	1	0.1	9	0.4	27	0.5	23	0.3	50	0.4	0.5	0.5	0.5
Hodgkin Lymphoma	5	0.5	1	0.1	6	0.3	14	0.3	11	0.2	25	0.2	0.4	0.2	0.3
Non-Hodgkin Lymphoma	76	7.6	58	4.6	134	5.9	348	7.4	283	4.5	631	5.7	7.3	4.4	5.6
Leukemia	84	8.1	66	5.2	150	6.5	434	9.0	321	5.1	755	6.8	8.8	4.9	6.5
Myeloma	37	3.7	31	2.3	68	2.9	212	4.4	139	2.1	351	3.1	4.2	2.7	3.3

Total rates are per 100,000 population and are age-adjusted to the 2000 US population.
Gender-specific rates are per 100,000 male or female population and are age-adjusted to the 2000 US population.

TABLE 5: Cancer Mortality
Number of Deaths and Percentage Distribution, by Selected Primary Site and Age at Death
Nebraska (2013-2017)

	0-17 Yrs.		18-44 Yrs.		45-64 Yrs.		65+ Yrs		TOTAL	
	Number	%	Number	%	Number	%	Number	%	Number	%
All Sites	58	0.3	441	2.5	4,221	24.4	12,604	72.8	17,324	100.0
Oral Cavity & Pharynx	0	0.0	8	3.2	90	36.0	152	60.8	250	100.0
Esophagus	0	0.0	8	1.6	165	33.0	327	65.4	500	100.0
Stomach	1	0.5	14	6.4	53	24.2	151	68.9	219	100.0
Colon & Rectum (Colorectal)	0	0.0	55	3.4	357	22.2	1,199	74.4	1,611	100.0
Liver & Intrahepatic Bile Ducts	1	0.2	12	2.4	198	39.0	297	58.5	508	100.0
Pancreas	0	0.0	19	1.6	303	24.9	895	73.5	1,217	100.0
Lung & Bronchus	0	0.0	26	0.6	1,102	25.3	3,235	74.1	4,363	100.0
Melanoma of the Skin	0	0.0	11	3.8	88	30.8	187	65.4	286	100.0
Female Breast	0	0.0	60	5.0	347	28.6	805	66.4	1,212	100.0
Uterine Cervix	0	0.0	19	16.1	59	50.0	40	33.9	118	100.0
Uterine Corpus & Unspecified	0	0.0	4	1.4	78	28.2	195	70.4	277	100.0
Ovary	0	0.0	8	1.9	122	29.4	285	68.7	415	100.0
Prostate	0	0.0	0	0.0	74	8.7	776	91.3	850	100.0
Kidney & Renal Pelvis	1	0.2	6	1.2	146	30.0	333	68.5	486	100.0
Urinary Bladder	0	0.0	1	0.2	60	13.7	378	86.1	439	100.0
Brain & Central Nervous System	21	3.9	55	10.3	181	33.8	278	52.0	535	100.0
Thyroid	0	0.0	0	0.0	13	26.0	37	74.0	50	100.0
Hodgkin Lymphoma	0	0.0	2	8.0	10	40.0	13	52.0	25	100.0
Non-Hodgkin Lymphoma	2	0.3	18	2.9	107	17.0	504	79.9	631	100.0
Leukemia	11	1.5	27	3.6	114	15.1	603	79.9	755	100.0
Myeloma	0	0.0	2	0.6	64	18.2	285	81.2	351	100.0

NOTE: Due to rounding, percentages may not sum to 100.0.

TABLE 6: Cancer Mortality
Number of Deaths and Rates, All Sites and Top Ten Primary Sites, by Race and Ethnicity
Nebraska (2008-2017)

	White			African-American			Native American			Asian/Pacific Islander			Hispanic		
	Site	Number	Rate	Site	Number	Rate	Site	Number	Rate	Site	Number	Rate	Site	Number	Rate
	All Sites	32,651	159.6	All Sites	1,187	206.0	All Sites	162	139.9	All Sites	242	105.1	All Sites	596	96.6
Rank															
1	Lung & Bronchus	8,405	41.4	Lung & Bronchus	313	54.8	Lung & Bronchus	47	46.4	Lung & Bronchus	48	20.7	Lung & Bronchus	101	18.7
2	Colon & Rectum	3,195	15.5	Colon & Rectum	131	24.3	Colon & Rectum	22	16.7	Liver & Intrahepatic Bile Ducts	40	16.1	Colon & Rectum	47	8.0
3	Female Breast	2,212	19.7	Pancreas	90	16.0	Female Breast	13	20.7	Colon & Rectum	19	9.3	Liver & Intrahepatic Bile Ducts	42	6.5
4	Pancreas	2,193	10.7	Female Breast	86	26.3	Stomach	7	4.5	Pancreas	13	6.3	Female Breast	38	9.9
5	Prostate	1,693	19.7	Prostate	75	36.8	Leukemia	6	4.3	Female Breast	11	6.6	Leukemia	36	4.5
6	Leukemia	1,435	7.0	Liver & Intrahepatic Bile Ducts	66	9.2	Kidney & Renal Pelvis	6	4.2	Leukemia	11	4.1	Stomach	32	4.3
7	Non-Hodgkin Lymphoma	1,241	6.0	Myeloma	47	8.6	Liver & Intrahepatic Bile Ducts	6	3.9	Stomach	10	4.0	Non-Hodgkin Lymphoma	29	5.8
8	Brain & CNS	1,004	5.2	Esophagus	34	5.4	Pancreas	5	3.5	Oral Cavity & Pharynx	10	3.1	Pancreas	29	4.9
9	Esophagus	930	4.5	Stomach	28	5.0	Oral Cavity & Pharynx	4	7.0	Non-Hodgkin Lymphoma	9	3.8	Brain & CNS	29	3.6
10	Kidney & Renal Pelvis	905	4.4	Leukemia	28	4.6	Uterine Cervix	4	3.0	Ovary	7	5.3	Prostate	28	15.6

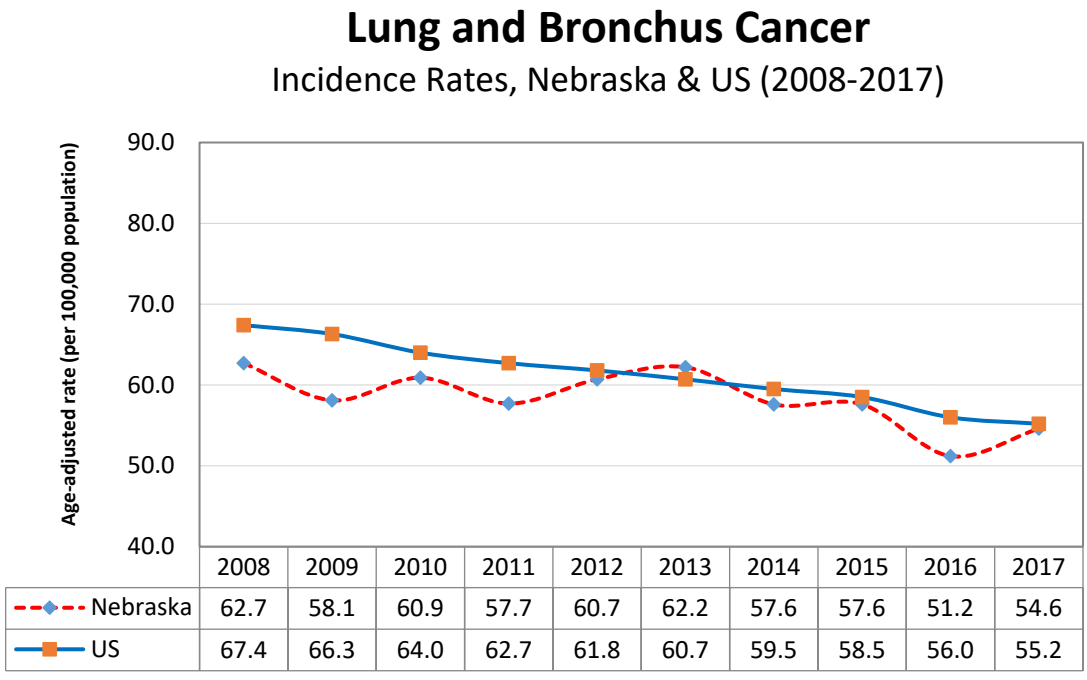
Rates are per 100,000 population, excluding gender-specific sites (prostate, female breast, ovary), which are per 100,000 male or female population. All rates are age-adjusted to the 2000 US population.
Abbreviation: CNS, central nervous system

INCIDENCE AND MORTALITY FOR SELECTED PRIMARY SITES

Lung and Bronchus

Although lung cancer was only the third most frequently diagnosed cancer among Nebraska residents in 2017, it was the year's leading cause of cancer mortality, accounting for 23% of the state's cancer deaths. During the past five years (2013-2017), lung cancer has averaged over 1,200 diagnoses and almost 900 deaths in Nebraska per year. Although lung cancer is more likely to strike men than women, the lung cancer death rate for Nebraska men has fallen by over 40% since 1990, while remaining almost unchanged for Nebraska women. Due to the small number of cases that are detected at an early stage of the disease, the 5-year relative survival rate for people diagnosed with lung cancer is about 21%.

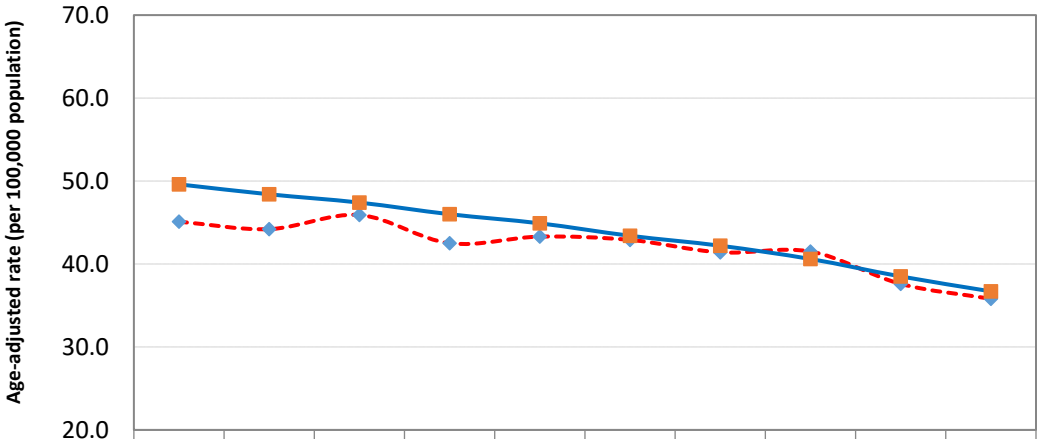
Cigarette smoking is the major risk factor for lung cancer and causes about 80% of lung cancer deaths. People who smoke cigarettes are 15 to 30 times more likely to die from lung cancer than non-smokers. Quitting smoking at any age reduces the risk of lung cancer, although the risk for smokers is higher than the risk for a lifelong non-smoker. The US Preventive Services Task Force (USPSTF) and ACS have both endorsed screening for lung cancer, using low-dose computed tomography (LDCT), but only for people 55-74 years of age (the USPSTF recommendation includes people 55-80) who currently smoke or who have quit within the past 15 years, are in good health, and have at least a 30 pack per year smoking history.



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Nebraska	62.7	58.1	60.9	57.7	60.7	62.2	57.6	57.6	51.2	54.6
US	67.4	66.3	64.0	62.7	61.8	60.7	59.5	58.5	56.0	55.2

Lung and Bronchus Cancer

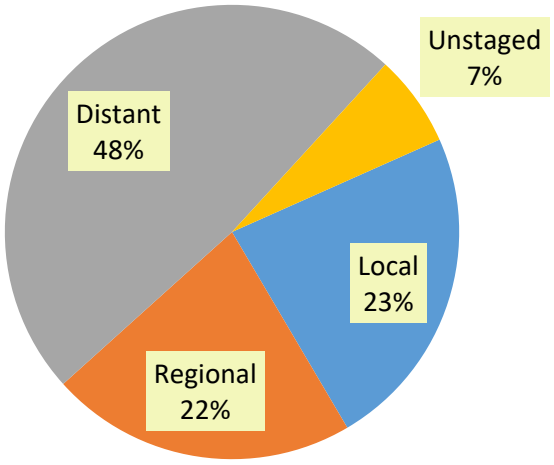
Mortality Rates, Nebraska & US (2008-2017)



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Nebraska	45.1	44.2	45.9	42.5	43.3	42.9	41.4	41.5	37.6	35.8
US	49.6	48.4	47.4	46	44.9	43.4	42.2	40.6	38.5	36.7

Lung and Bronchus Cancer

Percentage of Cases, by Stage of Disease at Diagnosis
Nebraska, 2013-2017

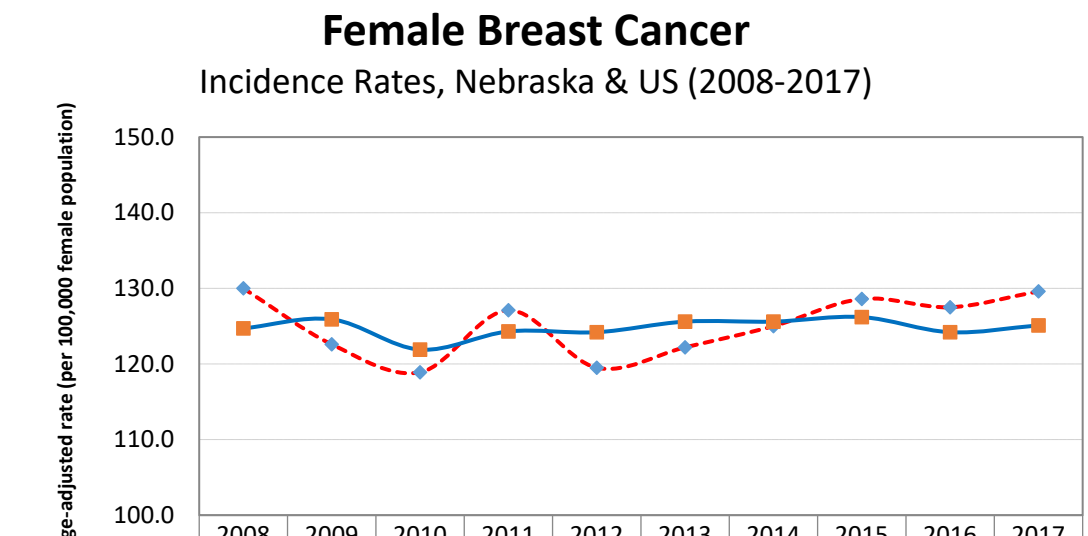


Breast (Female only)

Breast cancer is the most common type of cancer among women and the second most frequent cause of female cancer deaths. Between 2013 and 2017, 7,035 Nebraska women were diagnosed with invasive breast cancer (another 1,444 were diagnosed with in situ breast cancer) and 1,212 women died from breast cancer. Since 1990, the rate of breast cancer deaths in Nebraska and the US has declined significantly. Recent declines in the rate of breast cancer diagnoses have been attributed to the decreasing use of post-menopausal hormone replacement therapy, early detection through screening, and increased awareness. The 5-year relative survival rate for women diagnosed with female breast cancer is about 90%.

Age is an important risk factor for breast cancer, with more than 80% of all cases occurring among women age 50 and older. Other risk factors include genetic mutations, a personal or family history of breast cancer, some forms of benign breast disease, early menstruation, late menopause, never having children or having a first child after age 30, and for post-menopausal women, obesity and long-term hormone replacement therapy.

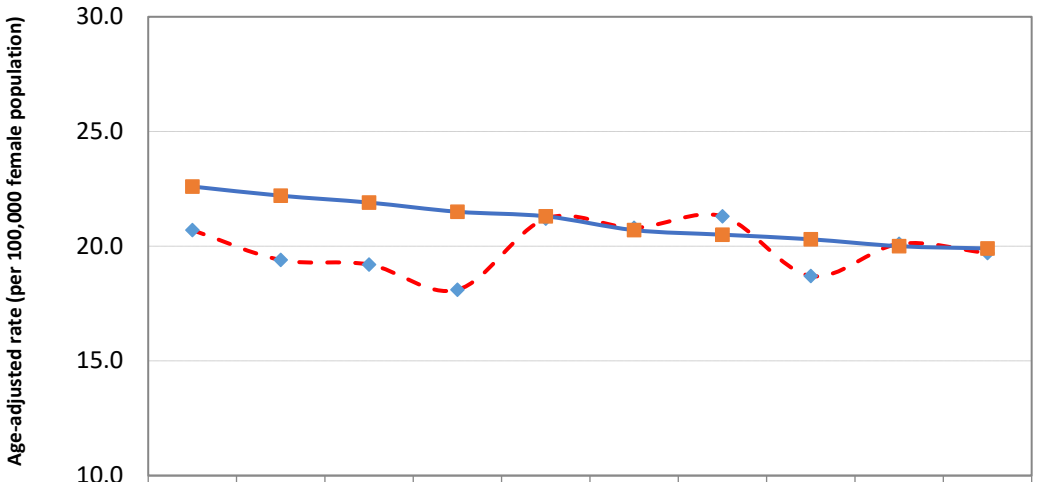
Screening for breast cancer is known to save lives, although opinion varies on how and when to screen. USPSTF guidelines recommend mammography for women 50-74 on an every-other-year schedule. However, ACS guidelines recommend that women 40-44 have the choice for annual mammography; women 45-54 have annual mammography; and women 55 and older have the choice to continue annual mammography or to have it on an every-other-year schedule, continuing as long as their overall health is good and life expectancy is 10 or more years. For some women who have an increased risk of breast cancer, the ACS recommends annual magnetic resonance imaging (MRI) in addition to mammography, usually starting at age 30.



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Nebraska	130.0	122.6	118.9	127.1	119.5	122.2	125.0	128.6	127.5	129.6
US	124.7	125.9	121.9	124.3	124.2	125.6	125.6	126.2	124.2	125.1

Female Breast Cancer

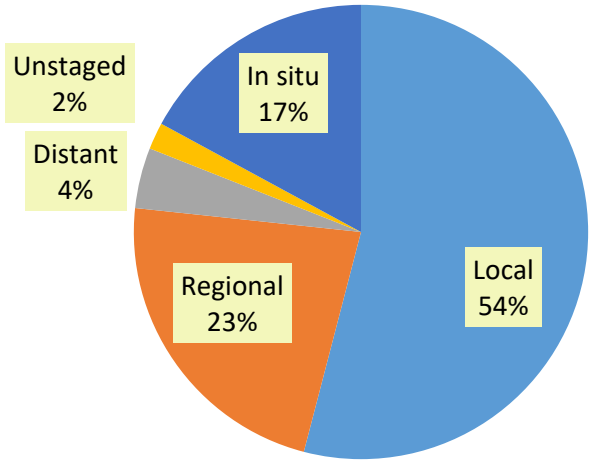
Mortality Rates, Nebraska & US (2008-2017)



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Nebraska	20.7	19.4	19.2	18.1	21.2	20.8	21.3	18.7	20.1	19.7
US	22.6	22.2	21.9	21.5	21.3	20.7	20.5	20.3	20.0	19.9

Female Breast Cancer

Percentage of Cases, by Stage of Disease at Diagnosis
Nebraska, 2013-2017

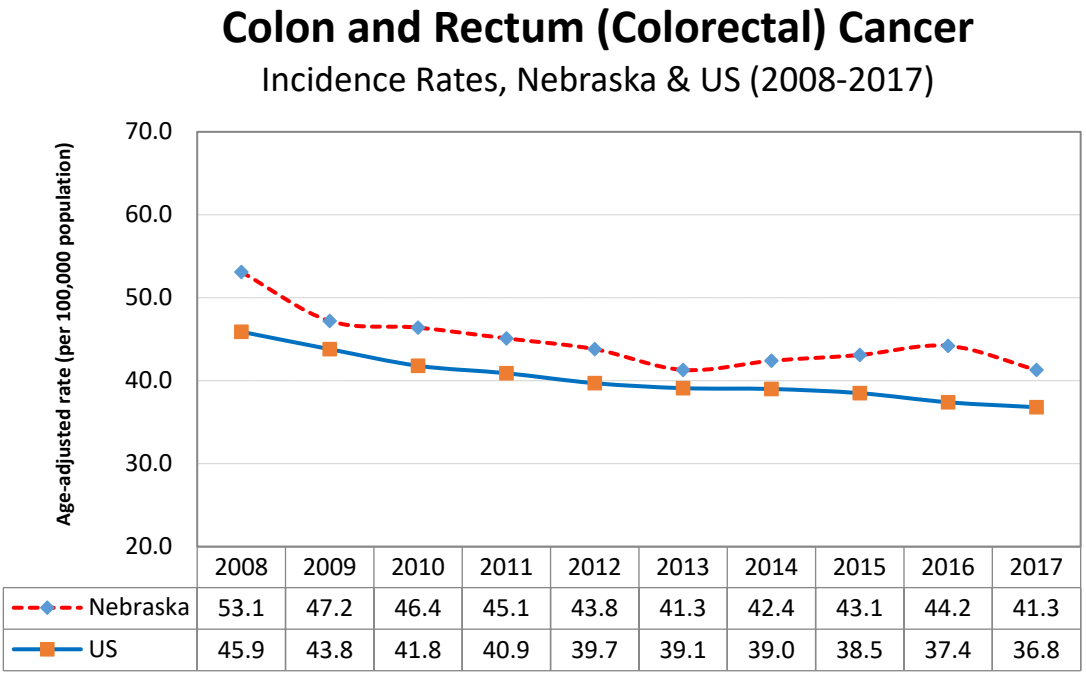


Colon and Rectum (Colorectal)

In 2017, colorectal cancer was the fourth most frequently diagnosed cancer among Nebraska residents, accounting for 912 new cases. It was also the second leading cause of cancer mortality in the state, accounting for 307 deaths.

The risk of developing colorectal cancer increases with age. More than half (60.3%) of all colorectal cancer cases that occurred in Nebraska during 2013-2017 were 65 or older at diagnosis. Other risk factors include a personal or family history of colorectal cancer or polyps, a personal history of chronic inflammatory bowel disease, and certain hereditary colorectal cancer syndromes. Modifiable risk factors include physical inactivity, obesity, smoking, a high-fat diet (especially fat from animal sources), and heavy alcohol use. The 5-year relative survival rate for people diagnosed with colorectal cancer is about 65%.

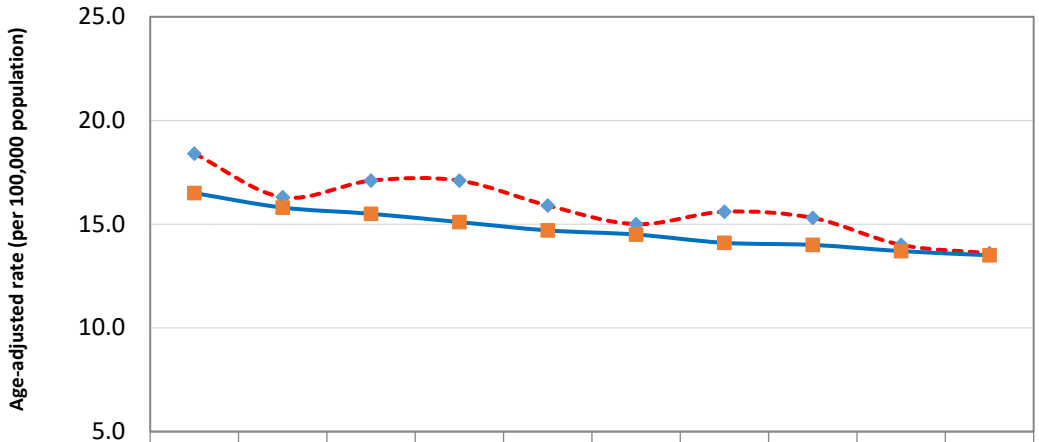
Screening for asymptomatic polyps and tumors is known to prevent colorectal cancer cases and deaths, and there are a number of recommended test options. Among them include several types of stool tests, flexible sigmoidoscopy, colonoscopy, CT colonography (virtual colonoscopy), and double-contrast barium enema. Recommended frequency varies by type of test. For people of average risk without symptoms, the USPSTF recommends screening for those 50-75 years of age, while the ACS recommends screening for anyone 45 and older. However, the ACS also recommends that people at increased risk (i.e., a personal or family history of colorectal cancer or polyps, a personal history of chronic inflammatory bowel disease, or a family history of hereditary colorectal cancer syndromes) may be advised to begin screening before age 45 and/or be screened more often.



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Nebraska	53.1	47.2	46.4	45.1	43.8	41.3	42.4	43.1	44.2	41.3
US	45.9	43.8	41.8	40.9	39.7	39.1	39.0	38.5	37.4	36.8

Colon and Rectum (Colorectal) Cancer

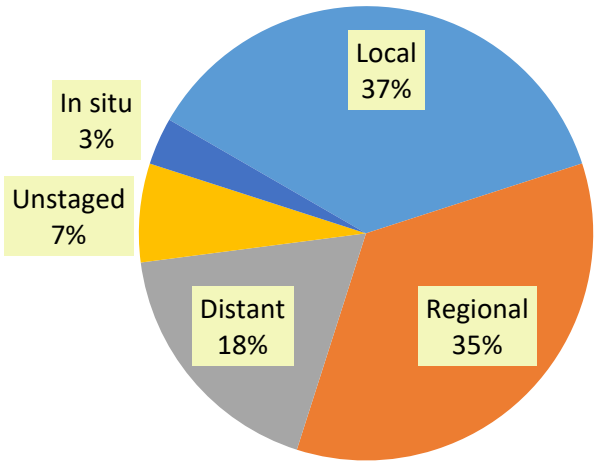
Mortality Rates, Nebraska & US (2008-2017)



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Nebraska	18.4	16.3	17.1	17.1	15.9	15.0	15.6	15.3	14.0	13.6
US	16.5	15.8	15.5	15.1	14.7	14.5	14.1	14.0	13.7	13.5

Colon and Rectum (Colorectal) Cancer

Percentage of Cases, by Stage of Disease at Diagnosis
Nebraska, 2013-2017

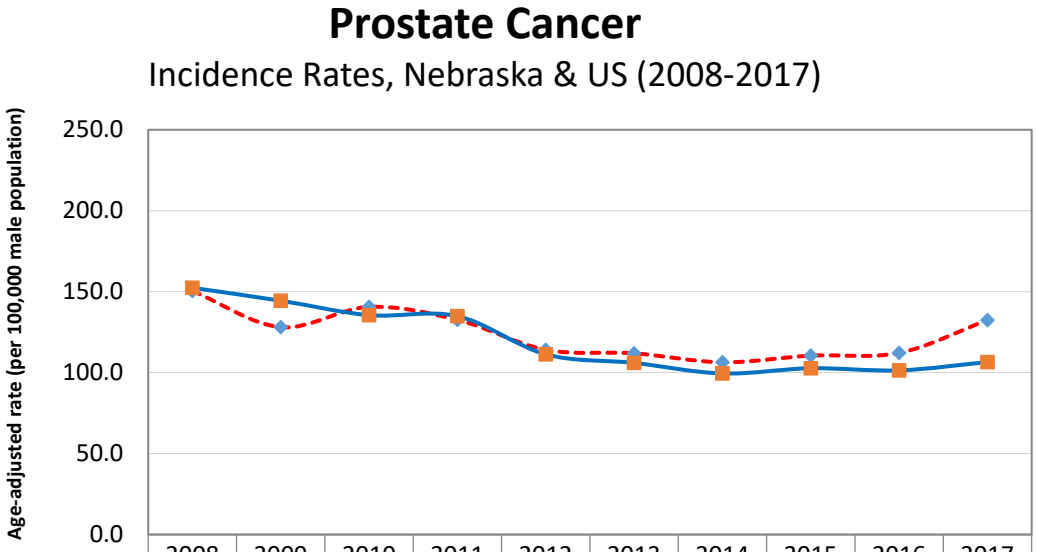


Prostate

With 1,503 diagnoses in 2017, prostate cancer was the most common cancer among Nebraska men, accounting for over 28% of all new cancers. During the past five years (2013-2017), it has also been the second leading cause of cancer deaths among Nebraska men, accounting for 850 deaths. Since the mid-1990s, prostate cancer death rates have declined substantially, both in Nebraska and throughout the United States.

Little is known about what causes prostate cancer. Risk increases with age (about 60% of Nebraska men diagnosed with prostate cancer during 2013-2017 were 65 or older) and is significantly greater among African-Americans. During the past decade (2008-2017), the incidence rate of prostate cancer among African-American men in Nebraska has been 66% higher than among whites. Men with a close relative (father, brother, or son) who has had prostate cancer, especially at a young age, are also at increased risk. The 5-year relative survival rate for people diagnosed with prostate cancer is about 98%.

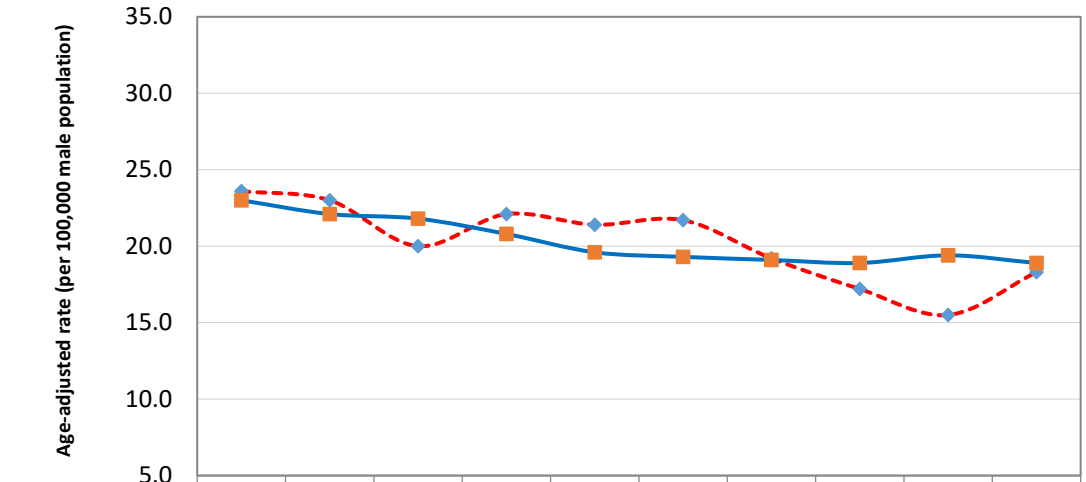
Current ACS guidelines recommend that men make an informed decision with their health care provider about whether to be screened for prostate cancer. This discussion should begin at age 50 for men who are at average risk of prostate cancer and have a life expectancy of at least 10 years. This discussion should begin at age 45 for men at high risk (African-Americans and men with a father, brother, or son diagnosed with prostate cancer before age 65) and at age 40 for men of even higher risk (men with several first-degree relatives diagnosed before age 65). For men who choose to be screened, the ACS recommends the prostate-specific antigen (PSA) blood test with or without a digital rectal exam. By contrast, the USPSTF recommend screening for prostate cancer for men aged 55 to 69 should be an individual decision and need discussion with the health providers about the potential benefits and risks.



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Nebraska	150.4	128.1	140.6	132.6	114.1	111.9	106.4	110.5	112.2	132.4
US	152.4	144.4	135.5	134.9	111.3	106.0	99.5	102.7	101.4	106.5

Prostate Cancer

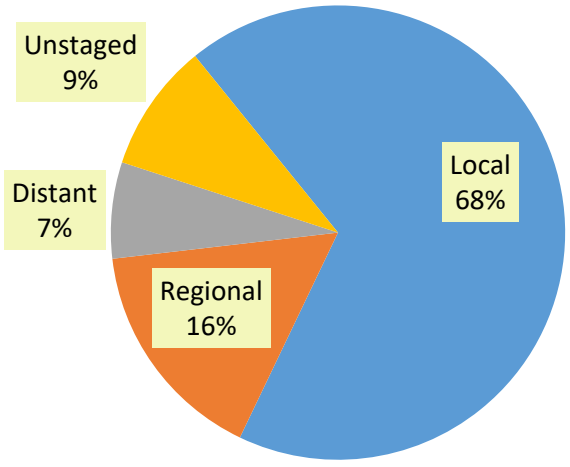
Mortality Rates, Nebraska & US (2008-2017)



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Nebraska	23.6	23.0	20.0	22.1	21.4	21.7	19.2	17.2	15.5	18.3
US	23.0	22.1	21.8	20.8	19.6	19.3	19.1	18.9	19.4	18.9

Prostate Cancer

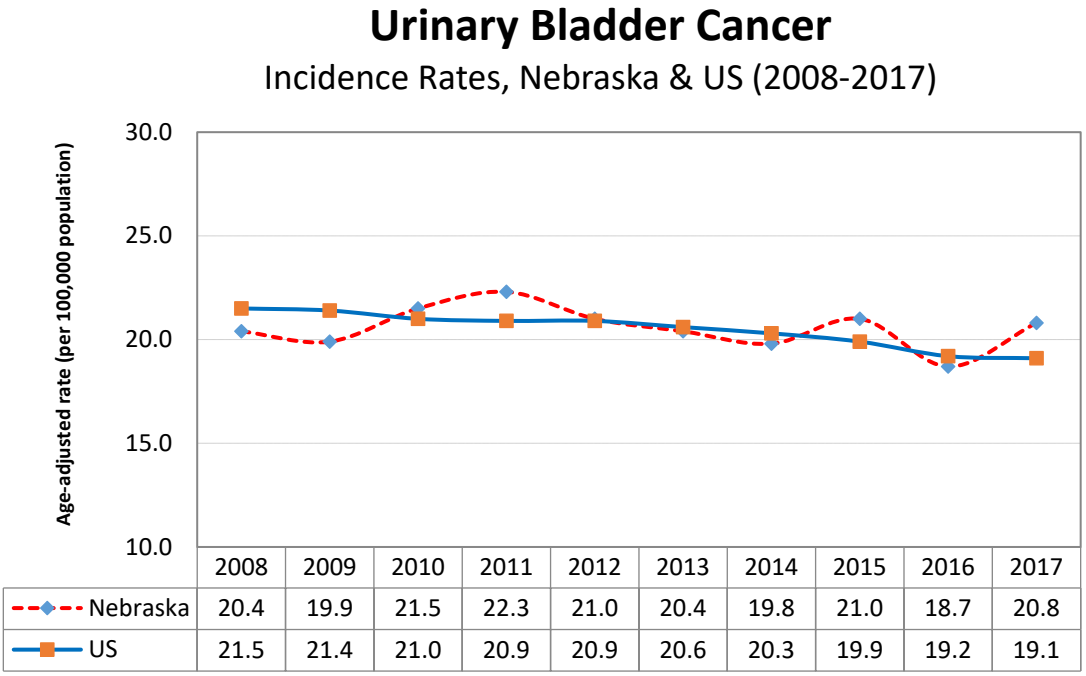
Percentage of Cases, by Stage of Disease at Diagnosis
Nebraska, 2013-2017



Urinary Bladder

Between 2013 and 2017, 2,264 Nebraska residents were diagnosed with bladder cancer. Bladder cancer occurs much more frequently among men than women (by about a 3-to-1 ratio), and it now ranks as the fourth most common site of cancer diagnoses among Nebraska men. However, deaths from bladder cancer occur far less often (439 Nebraska residents died from it during 2013-2017), which is the result of a high percentage of early-stage diagnoses and the existence of effective treatments. Survival prospects have improved considerably in recent decades, to the point where the most current national data show that the five-year relative survival rate for all bladder cancer patients is about 77%.

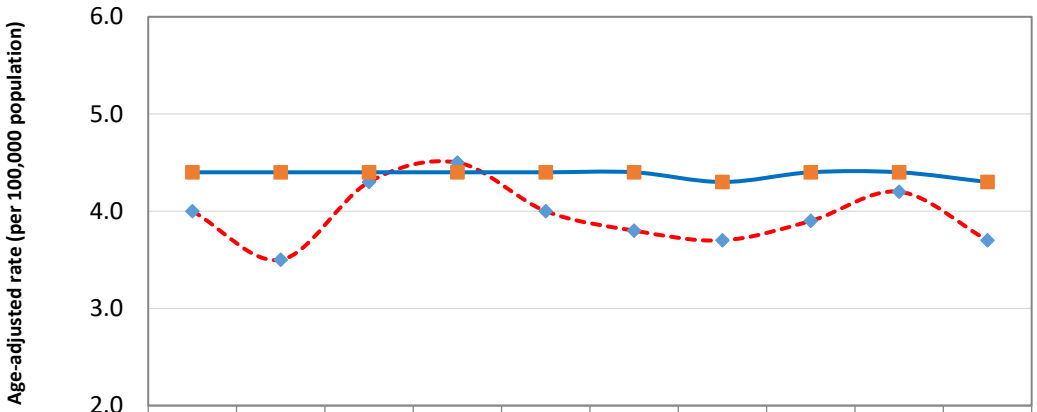
Cigarette smoking is the most important known risk factor for bladder cancer. Smokers develop bladder cancer three times more often than non-smokers, and about half of all cases are attributable to smoking. Risk factors also include occupational exposures to certain chemicals used to make dyes (benzidine and beta-naphthylamine), as well as working in the manufacture of rubber and leather. Like most cancers, the risk of bladder cancer increases with age: 86% of the cases that occurred in Nebraska during 2013-2017 were at least 65 years old when diagnosed.



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Nebraska	20.4	19.9	21.5	22.3	21.0	20.4	19.8	21.0	18.7	20.8
US	21.5	21.4	21.0	20.9	20.9	20.6	20.3	19.9	19.2	19.1

Urinary Bladder Cancer

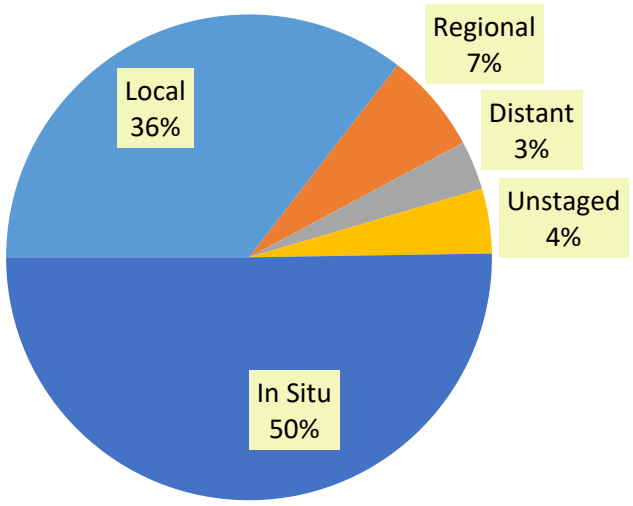
Mortality Rates, Nebraska & US (2008-2017)



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Nebraska	4.0	3.5	4.3	4.5	4.0	3.8	3.7	3.9	4.2	3.7
US	4.4	4.4	4.4	4.4	4.4	4.4	4.3	4.4	4.4	4.3

Urinary Bladder Cancer

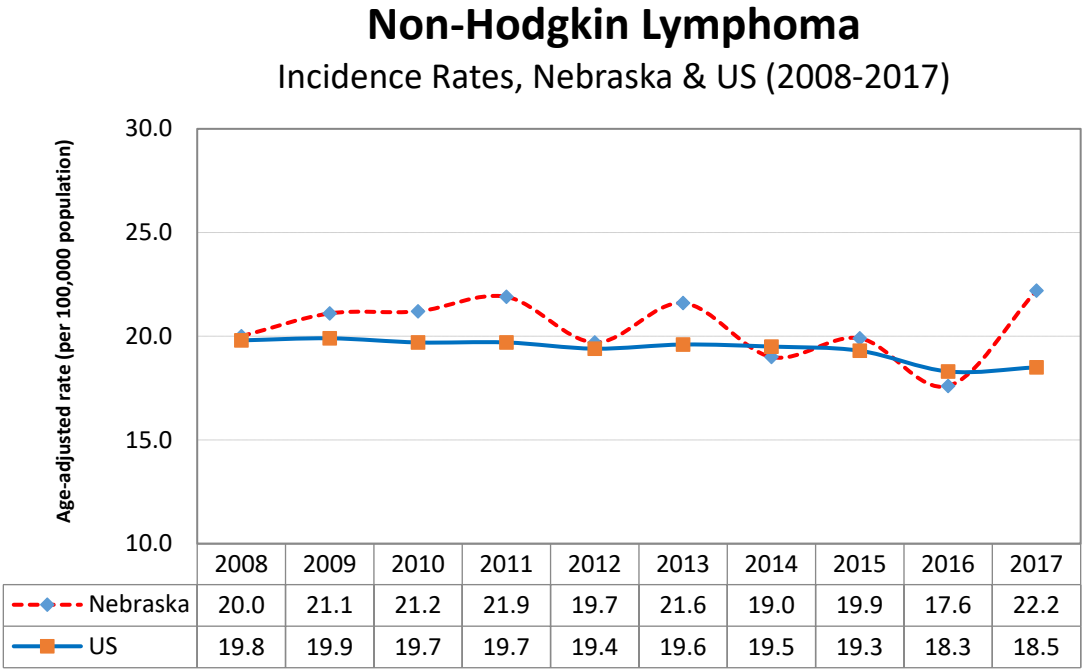
Percentage of Cases, by Stage of Disease at Diagnosis
Nebraska, 2013-2017



Non-Hodgkin Lymphoma

Lymphomas are cancers that affect the white blood cells of the immune system, and are usually classified as either Hodgkin or non-Hodgkin lymphoma. Non-Hodgkin lymphoma is by far the more common disorder of the two, accounting for 2,182 diagnoses and 631 deaths among Nebraska residents between 2013 and 2017 (for Hodgkin lymphoma, the comparable figures are 288 diagnoses and 25 deaths). National statistics indicate that the incidence rate for non-Hodgkin lymphoma has increased by about 80% since the mid-1970s, and some of this increase is related to the appearance of AIDS. However, both state and national data show that non-Hodgkin lymphoma deaths have been increasing since at least 1950, which indicates that factors other than AIDS are also responsible. The current trends from 2008 to 2017 have shown that both incidence as well as mortality rate of non-Hodgkin lymphoma have steadily declined at the state and national level.

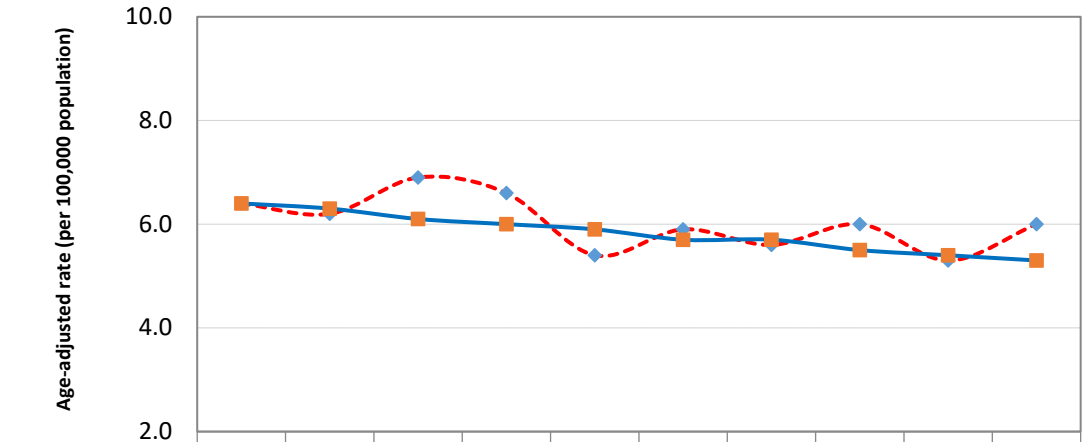
The causes of non-Hodgkin lymphoma are unknown, although there is evidence that viral exposures and reduced immune function are associated with the disease. People whose immune systems have been suppressed by drugs, particularly those who have received an organ transplant, are at high risk of Non-Hodgkin lymphoma, and it also occurs more frequently among people with congenital and acquired immunologic disorders, including AIDS. The increased incidence of the disease among people with congenital disorders of the immune system suggests that hereditary factors may increase risk. Some studies have found that occupational exposure to certain herbicides is a risk factor as well.



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Nebraska	20.0	21.1	21.2	21.9	19.7	21.6	19.0	19.9	17.6	22.2
US	19.8	19.9	19.7	19.7	19.4	19.6	19.5	19.3	18.3	18.5

Non-Hodgkin Lymphoma

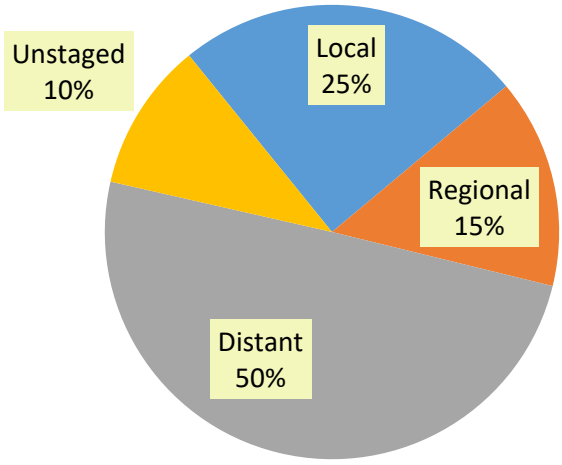
Mortality Rates, Nebraska & US (2008-2017)



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Nebraska	6.4	6.2	6.9	6.6	5.4	5.9	5.6	6.0	5.3	6.0
US	6.4	6.3	6.1	6.0	5.9	5.7	5.7	5.5	5.4	5.3

Non-Hodgkin Lymphoma

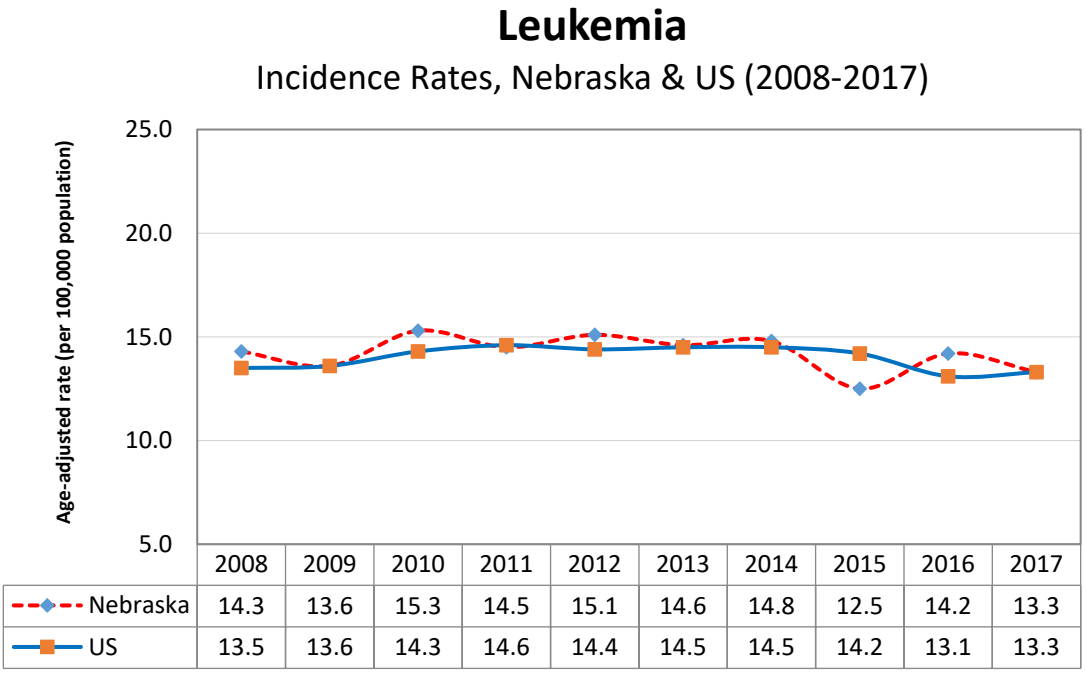
Percentage of Cases, by Stage of Disease at Diagnosis
Nebraska, 2013-2017



Leukemia

Between 2013 and 2017, leukemia accounted for 1,535 diagnoses and 755 deaths among Nebraska residents. Although leukemia is one of the most common types of cancer diagnosed among children and adolescents, over half (57%) of the leukemia cases that occurred in Nebraska between 2013 and 2017 were 65 years of age or older at diagnosis. There are many different types of leukemia: acute lymphocytic leukemia is the most frequently diagnosed among children and teens, while acute myeloid and chronic lymphocytic are the most common types among adults. Survival times vary widely by type: overall, the relative five-year survival rate for all leukemia patients in the United States is over 64%.

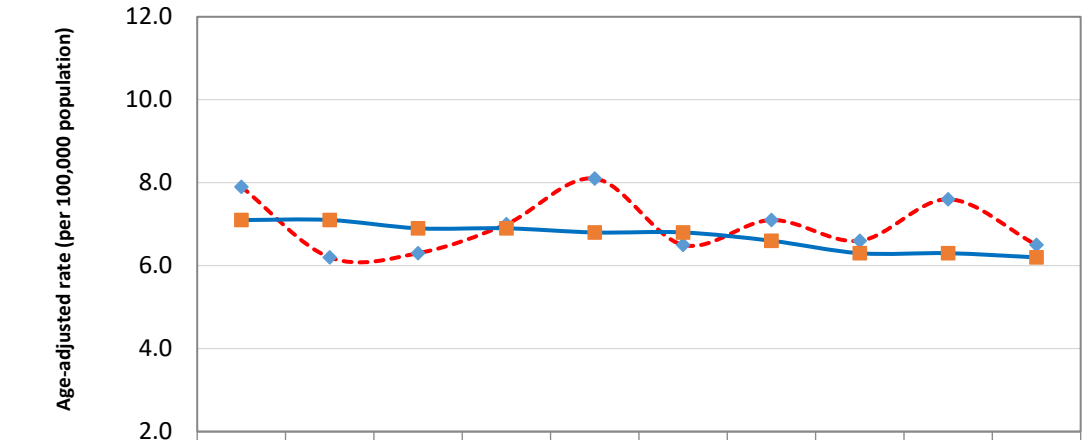
The major causes of most types of leukemia are unknown. Nevertheless, several risk factors have been identified, and include genetic abnormalities (such as Down syndrome), exposure to ionizing radiation, and workplace exposure to benzene and other related solvents. Adult T-cell acute lymphocytic leukemia is strongly associated with infection by a retrovirus, the human T-cell lymphoma/leukemia virus, type I (HTLV-I). Cigarette smoking is a risk factor for acute myeloid leukemia, while people who have a family history of chronic lymphocytic leukemia carry an increased risk of the disease themselves.



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Nebraska	14.3	13.6	15.3	14.5	15.1	14.6	14.8	12.5	14.2	13.3
US	13.5	13.6	14.3	14.6	14.4	14.5	14.5	14.2	13.1	13.3

Leukemia

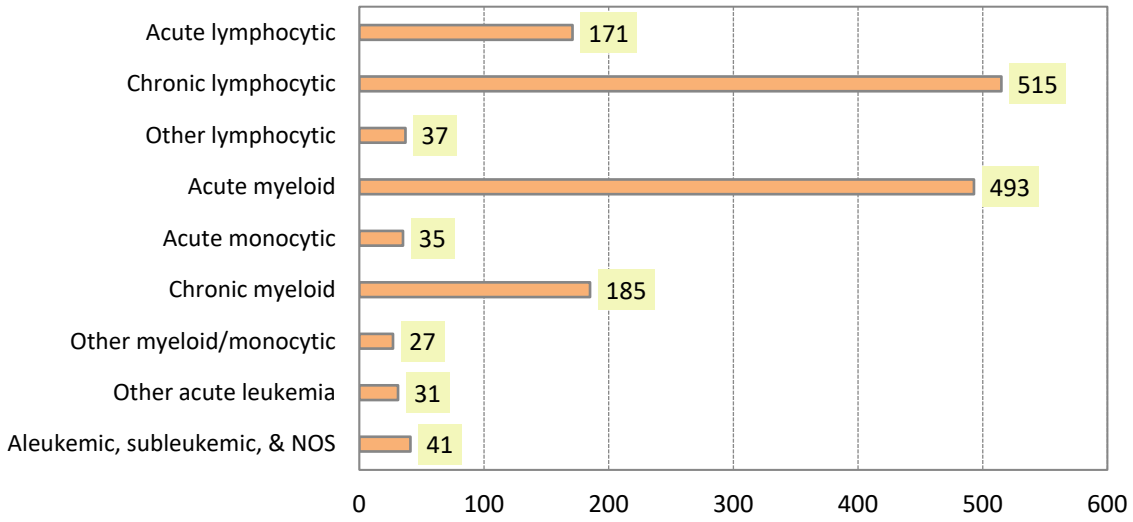
Mortality Rates, Nebraska & US (2008-2017)



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Nebraska	7.9	6.2	6.3	7.0	8.1	6.5	7.1	6.6	7.6	6.5
US	7.1	7.1	6.9	6.9	6.8	6.8	6.6	6.3	6.3	6.2

Leukemia

Number of Cases by Histologic Type, Nebraska, 2013-2017

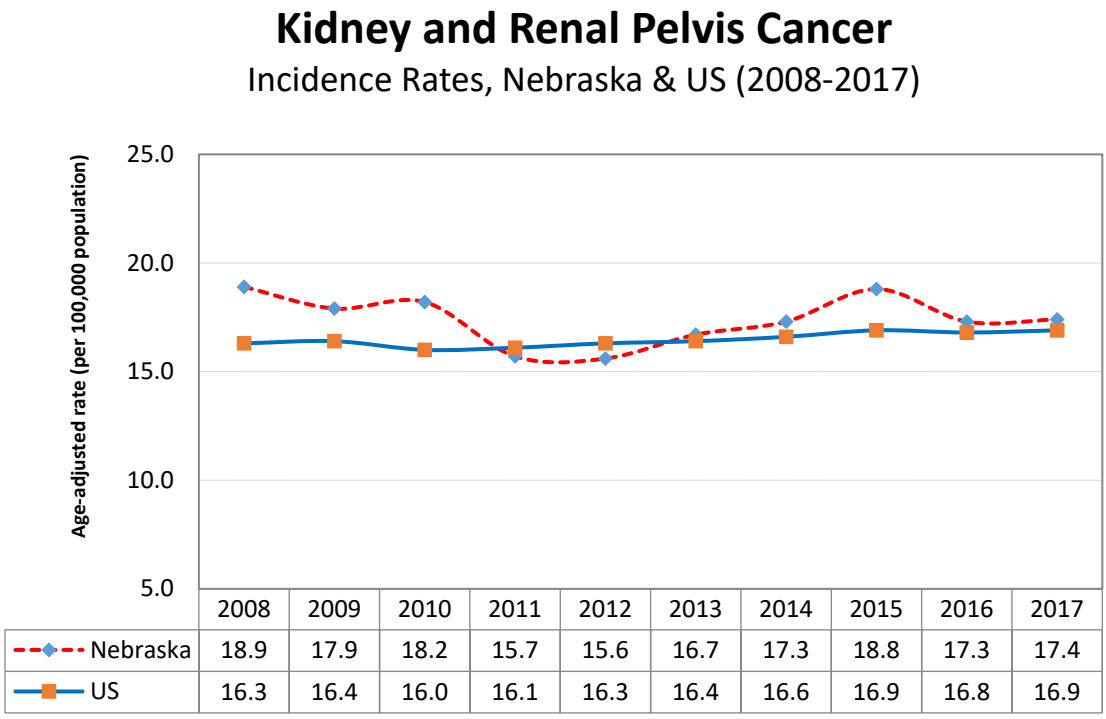


Abbreviation: NOS, not otherwise specified

Kidney and Renal Pelvis

Cancers of the kidney and renal pelvis accounted for 1,914 diagnoses in Nebraska between 2013 and 2017, and also accounted for 486 deaths in Nebraska during the same years. State and national trends since 1990 show a significant increase in the rate of diagnosis of these cancers, but little change in the mortality rate. The chances of survival for people with kidney cancer are relatively high, with the most current national statistics showing that the five-year relative survival rate for cancers of the kidney and renal pelvis is now over 75%.

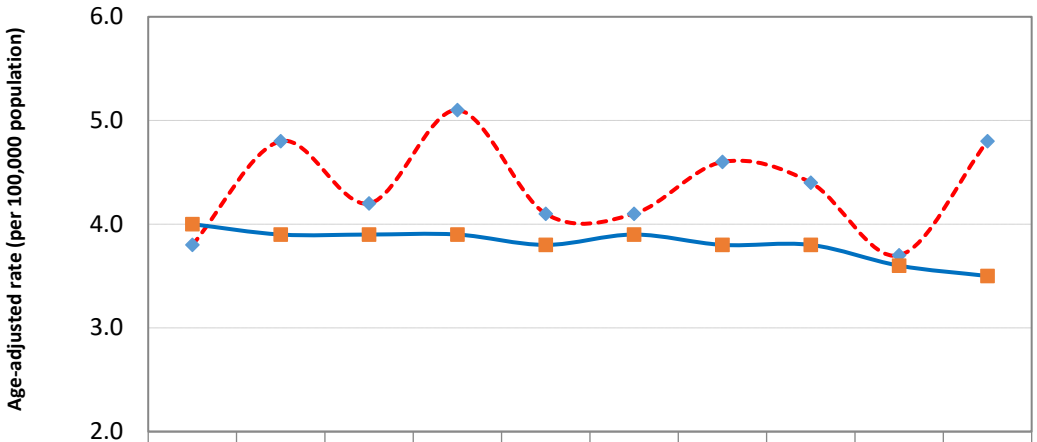
Preventable risk factors for cancer of the kidney include cigarette smoking and obesity. Current estimates indicate that cigarette smoking is responsible for about 20 percent of all kidney cancer deaths. Kidney cancer is more likely to strike at younger ages than most other types; in Nebraska, more than half (51.5%) of all cases that were diagnosed during 2013-2017 were under the age of 65. Other non-preventable risk factors for cancer of the kidney include a family history of kidney cancer and high blood pressure. However, since people with high blood pressure are often treated with drugs, it is unclear whether their increased risk is related to their high blood pressure or the drugs. Nevertheless, people who need drugs to lower their blood pressure should take them.



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Nebraska	18.9	17.9	18.2	15.7	15.6	16.7	17.3	18.8	17.3	17.4
US	16.3	16.4	16.0	16.1	16.3	16.4	16.6	16.9	16.8	16.9

Kidney and Renal Pelvis Cancer

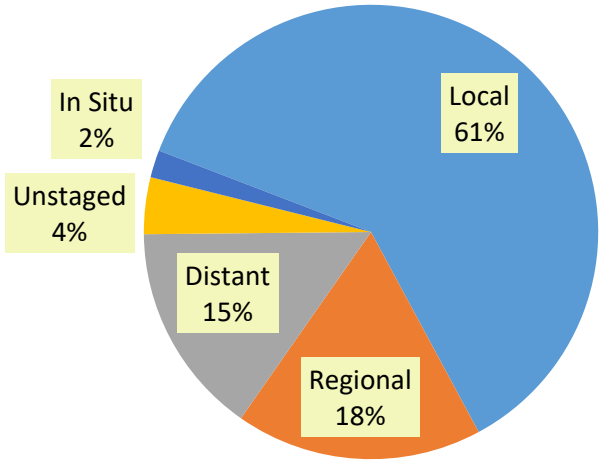
Mortality Rates, Nebraska & US (2008-2017)



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Nebraska	3.8	4.8	4.2	5.1	4.1	4.1	4.6	4.4	3.7	4.8
US	4.0	3.9	3.9	3.9	3.8	3.9	3.8	3.8	3.6	3.5

Kidney and Renal Pelvis Cancer

Percentage of Cases, by Stage of Disease at Diagnosis
Nebraska, 2013-2017

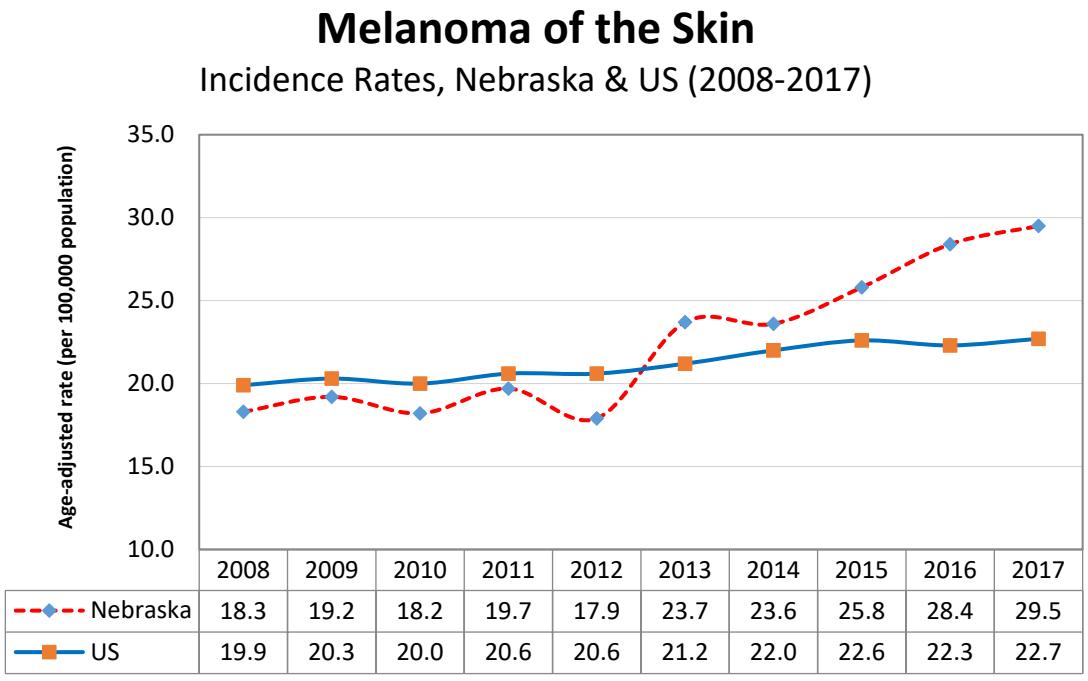


Melanoma of the Skin

There are several different types of skin cancer, but melanomas are the most serious. Nationally, melanomas comprise about 1% of all skin cancer diagnoses but the vast majority of all skin cancer deaths. In Nebraska, melanomas of the skin accounted for 2,705 diagnoses and 302 deaths between 2013 and 2017. The incidence of melanoma continues to increase significantly in Nebraska and throughout the United States. Because most melanomas are discovered early in their development and can be surgically removed, the relative five-year survival rate is now over 93%.

Melanoma is related to exposure to ultraviolet radiation (most of which comes from the sun), particularly exposures during childhood that resulted in severe sunburns. The risk of developing melanoma is particularly high among people with light skin. Sun exposure is not the only risk factor. Family history of melanoma and the presence of numerous dysplastic nevi (large moles with irregular coloration and shape) also increase a person's risk of the disease.

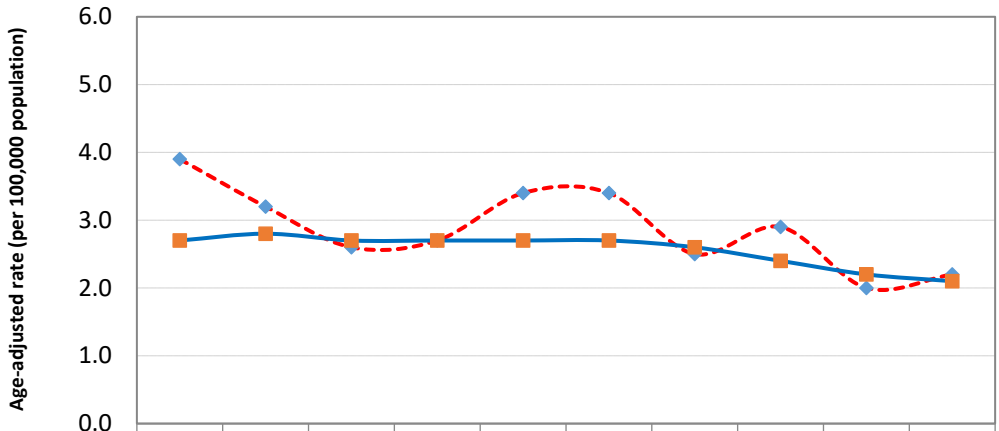
Skin melanomas are among the most preventable and treatable of all cancers. Wearing protective clothing and using sunscreen are the best methods for preventing the disease, and children in particular should have such protection. In addition, early detection can greatly reduce the risk of melanoma mortality. Recognition of changes in skin growths or the appearance of new growths is the best way to find melanomas early in their development. The ACS suggests that adults practice skin self-examination on a monthly basis, and that suspicious lesions should be evaluated promptly by a physician.



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Nebraska	18.3	19.2	18.2	19.7	17.9	23.7	23.6	25.8	28.4	29.5
US	19.9	20.3	20.0	20.6	20.6	21.2	22.0	22.6	22.3	22.7

Melanoma of the Skin

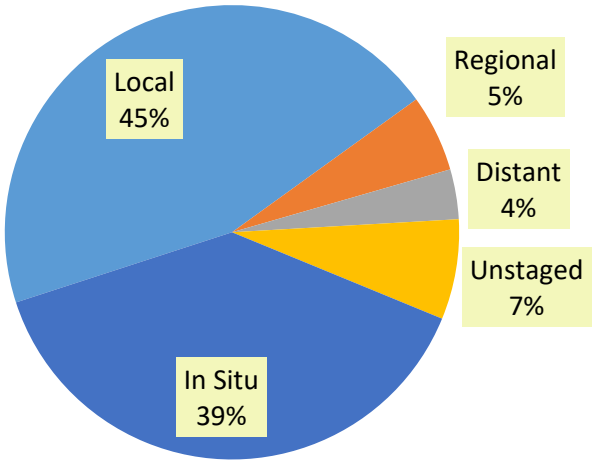
Mortality Rates, Nebraska & US (2008-2017)



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Nebraska	3.9	3.2	2.6	2.7	3.4	3.4	2.5	2.9	2.0	2.2
US	2.7	2.8	2.7	2.7	2.7	2.7	2.6	2.4	2.2	2.1

Melanoma of the Skin

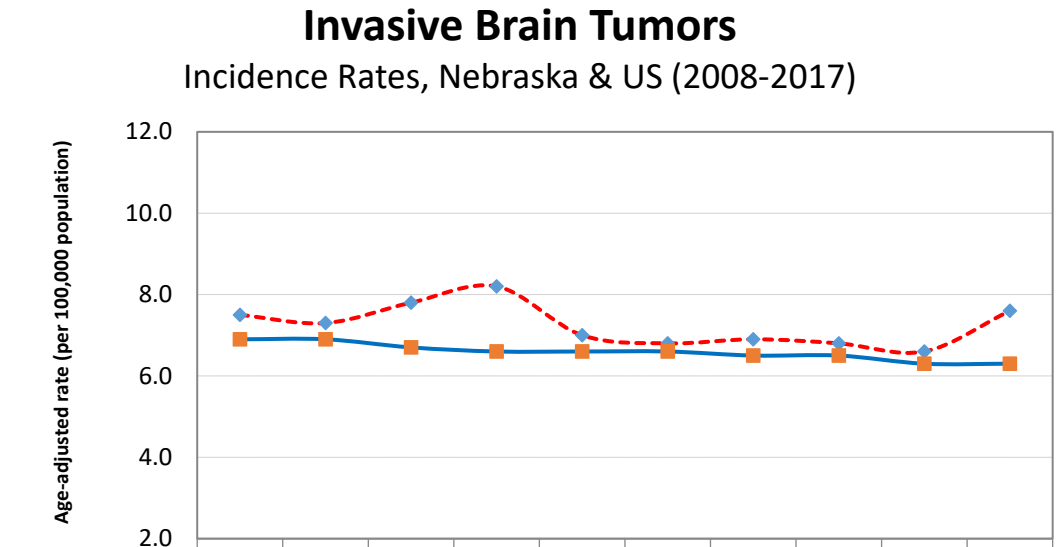
Percentage of Cases, by Stage of Disease at Diagnosis
Nebraska, 2013-2017



Brain Tumors

Brain tumors can be categorized into benign and malignant (or invasive) tumors (cancers). Benign brain tumors do not grow into nearby tissues or spread to the other parts of the body. However, as the tumor grows, it might press and destroy normal brain tissue and lead to disability or even fatality. Between 2013 and 2017, invasive brain tumors accounted for 721 diagnoses and 535 deaths among Nebraska residents. Although invasive brain tumors were more likely diagnosed among people younger than 65 years old (about 61.4%), the deaths caused by invasive brain tumors are higher for people 65 years or older (about 52%). Invasive brain tumors are also one of the most common types of cancer diagnosed among children and adolescents at the state and national level. Metastatic brain tumors are far more common than primary brain tumors. In Nebraska from 2013 to 2017, a total of 888 cases of brain tumors were metastasized from other organs. The most common types of cancer that can spread to brain are cancers of lung and bronchus, skin melanoma, kidney, female breast, and colon and rectum. The 5-year relative survival rate for people diagnosed with invasive brain tumors is about 33%.

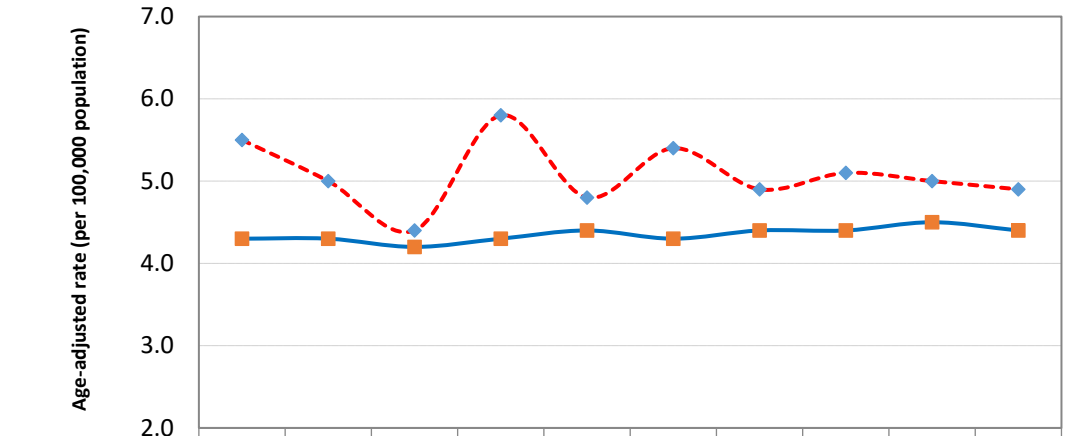
Most brain tumors are not linked with any known risk factors. Several factors that might increase the risk of brain tumors include radiation exposure, a family history of the disease, and a weakened immune system. Most brain tumors are diagnosed when a person visits the doctor for signs or symptoms they are having such as headache, nausea, vomiting, blurred vision, balanced problems, personality changes, seizures, and drowsiness or even coma. There are no widely recommended screening tests for brain tumors.



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Nebraska	7.5	7.3	7.8	8.2	7.0	6.8	6.9	6.8	6.6	7.6
US	6.9	6.9	6.7	6.6	6.6	6.6	6.5	6.5	6.3	6.3

Invasive Brain Tumors

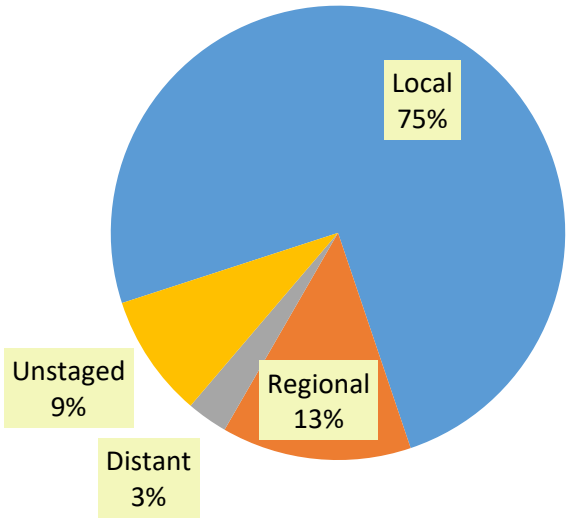
Mortality Rates, Nebraska & US (2008-2017)



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Nebraska	5.5	5.0	4.4	5.8	4.8	5.4	4.9	5.1	5.0	4.9
US	4.3	4.3	4.2	4.3	4.4	4.3	4.4	4.4	4.5	4.4

Invasive Brain Cancer

Percentage of Cases, by Stage of Disease at Diagnosis
Nebraska, 2013-2017



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REPORTING FACILITIES

Ainsworth--Brown County Hospital
Albion--Boone County Health Center
Alliance--Box Butte General Hospital
Alma--Harlan County Health System
Atkinson--West Holt Memorial Hospital, Inc.
Auburn--Nemaha County Hospital
Aurora--Memorial Hospital
Bassett--Rock County Hospital
Beatrice--Beatrice Community Hospital & Health Center, Inc.
Benkelman--Dundy County Hospital
Blair--Memorial Community Hospital
Bridgeport--Morrill County Community Hospital
Broken Bow--Jennie Melham Memorial Medical Ctr.
Callaway--Callaway District Hospital
Cambridge--Tri Valley Health System
Central City--Litzenberg Memorial County Hospital
Chadron--Chadron Community Hospital & Health Services
Columbus--Columbus Community Hospital, Inc.
Cozad--Cozad Community Hospital
Creighton--Creighton Area Health Services
Crete--Crete Area Medical Center
David City--Butler County Health Care Center
Fairbury--Jefferson Community Health Center, Inc.
Falls City--Community Medical Center, Inc.
Franklin--Franklin County Memorial Hospital
Fremont--Fremont Area Medical Center
Friend--Warren Memorial Hospital
Geneva--Fillmore County Hospital
Genoa--Genoa Community Hospital/LTC
Gordon--Gordon Memorial Hospital District
Gothenburg--Gothenburg Memorial Hospital
Grand Island--CHI Health St. Francis
Grant--Perkins County Health Services
Hastings--Mary Lanning Memorial Hospital
Hebron--Thayer County Health Services
Henderson--Henderson Health Care Services
Holdrege--Phelps Memorial Health Center
Imperial--Chase County Community Hospital
Kearney--CHI Health Good Samaritan
Kearney--CHI Health Good Samaritan Pathology
Kimball--Kimball Health Services & Hospital
Lexington--Tri-County Area Hospital District
Lincoln--Bryan-LGH Medical Center East & West
Lincoln--CHI Health Saint Elizabeth
Lincoln--Pathology Medical Services
Lincoln--Williamsburg Radiation Center
Lincoln--CHI Health Nebraska Heart
Lincoln--UNMC College of Dentistry
Lynch--Niobrara Valley Hospital Corp.
McCook--Community Hospital
Minden--Kearney County Health Services
Nebraska City--CHI Health St. Mary's
Neligh--Antelope Memorial Hospital
Norfolk--Faith Regional Health Services East & West
North Platte--Great Plains Regional Medical Center
North Platte--Pathology Services
Oakland--Oakland Memorial Hospital
Ogallala--Ogallala Community Hospital
Omaha--CHI Health Bergan Mercy
Omaha--CHI Health Immanuel
Omaha--Children's Hospital
Omaha--VA Nebraska-Western Iowa Health Care System
Omaha--Methodist Hospital Pathology Center
Omaha--Nebraska Medical Center
Omaha--Nebraska Methodist Hospital
Omaha--CHI Health Creighton University Med. Ctr.
Omaha--Boys Town National Research Hospital
Omaha--CHI Health Lakeside
Omaha--CHI Health Bergan Mercy Pathology
Omaha--Bishop Clarkson Hospital Pathology
Omaha--Creighton Pathology Associates
Omaha--Physicians Lab
O'Neill--Avera St. Anthony's Hospital
Ord--Valley County Hospital
Osceola--Annie Jeffrey Memorial County Health Ctr.
Oshkosh--Garden County Health Services
Osmond--Osmond General Hospital
Papillion--CHI Health Midlands
Pawnee City--Pawnee County Memorial Hospital
Pender--Pender Community Hospital
Plainview--CHI Health Plainview
Red Cloud--Webster County Community Hospital
Schuyler--CHI Health Schuyler
Scottsbluff--Regional West Medical Center
Scottsbluff--Western Pathology Consultants
Seward--Memorial Hospital
Sidney--Memorial Health Center
St. Paul--Howard County Community Hospital
Superior--Brodstone Memorial Hospital
Syracuse--Community Memorial Hospital
Tecumseh--Johnson County Hospital
Tilden--Tilden Community Hospital
Valentine--Cherry County Hospital
Wahoo--Saunders County Health Services
Wayne--Providence Medical Center
West Point--St. Francis Memorial Hospital
Winnebago--USPHS Indian Hospital
York--York General Hospital

Other States:
Sioux City, IA--Mercy Medical Center

State cancer registries participating in the National Interstate Data Exchange Agreement, and the state cancer registries of Illinois, Kansas, Minnesota, Missouri, and South Dakota.

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