Cancer Incidence and Mortality in Nebraska: Disparities by Race and Ethnicity

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DEPT. OF HEALTH AND HUMAN SERVICES

April, 2017

Cancer Incidence and Mortality in Nebraska: Disparities by Race and Ethnicity

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This publication was supported by Cooperative Agreement Grant Number 5U58DP003928 from the Centers for Disease Control and Prevention (CDC). Its contents are solely the responsibility of the authors and do not necessarily represent the official view of CDC

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EXECUTIVE SUMMARY

The purpose of this report, “Cancer Incidence and Mortality in Nebraska: Disparities by Race and Ethnicity”, is to present the most recent statistics that describe cancer incidence and mortality as they affect Nebraska’s minority race and Hispanic ethnic populations. Some key findings from the report include:

- For all cancers combined, African-Americans recorded the highest cancer incidence rate, while Asian/Pacific Islanders recorded the lowest; African-Americans also recorded the highest cancer mortality rate, while Hispanics recorded the lowest.

- African-Americans are the only one of Nebraska’s minority populations in which overall cancer incidence and mortality were both significantly higher in comparison with the state’s majority white population.

- As in the white population, female breast, prostate, lung and bronchus, and colorectal cancers were the four most frequently diagnosed primary sites in every minority race/ethnic population (though not necessarily in the same order), except among American Indians, among whom cancers of the kidney and renal pelvis ranked #4 and prostate cancer ranked #5.

- In comparison with whites, both incidence and mortality rates were significantly higher among African-Americans for cancers of the colon and rectum, liver and intrahepatic bile ducts, lung and bronchus, pancreas, stomach, and myeloma.

- The incidence of prostate cancer was also significantly higher among African-American men compared to whites; however, the prostate cancer mortality rate among African-American men in Nebraska was significantly lower than the rate for African-American men nationwide.

- As in the white population, cancers of the lung and bronchus were the #1 cause of cancer deaths in every minority race/ethic group.

- Cancers of the liver and intrahepatic bile ducts appeared among the top 10 sites for new cases and deaths within all minority populations, but not in the white population.

- Other primary sites that were prominent in minority populations but not among whites include thyroid, which appeared among the top 10 sites for new cases among Asian/Pacific Islanders and Hispanics, and oral cavity and pharynx, which appeared among the top 10 sites for new cases among American Indians and Asian/Pacific Islanders.

INTRODUCTION

This report presents an in-depth look at cancer incidence and mortality within Nebraska's minority race populations (African-American, American Indian, and Asian/Pacific Islander) and its Hispanic ethnic population, using data collected by the state cancer registry and death certificates. Both of these data sources are maintained by the Nebraska Department of Health and Human Services (DHHS). The existence of racial and ethnic disparities across a wide spectrum of health status measures is well-documented both in Nebraska and throughout the United States, and since cancer has been Nebraska's leading cause of death since 2009[1], the need for continued surveillance of disparities specific to cancer is self-evident. In addition, a detailed analysis by DHHS of the cancer burden within these particular populations in Nebraska was last completed in 2009, using incidence and mortality data ending in 2005; the availability of nearly a decade's worth of more recent statistical information certainly presents another compelling reason to revisit this issue.

METHODOLOGY

The cancer incidence statistics for Nebraska residents presented in this report come from the Nebraska Cancer Registry (NCR). NCR gathers data on Nebraska residents diagnosed and treated for invasive and in situ tumors, and has been in operation since 1987. 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, Hispanic ethnicity, gender, and Social Security number; date of diagnosis; primary site of the cancer (since 2001, 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. Through data exchanges with other state cancer registries, the NCR includes Nebraska residents who are diagnosed with and/or treated for cancer out of state, and it also identifies cases through pathology laboratories, outpatient treatment facilities, physician offices, and death certificates. Death of registered cases is ascertained using death certificates on file at DHHS and from the National Death Index.

The cancer mortality statistics for Nebraska residents presented in this report were obtained from death certificates on file with DHHS. Mortality data is 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. Since 1999, causes of death have been coded according to the Tenth Edition of the International Classification of Diseases (ICD); from 1979 to 1998, causes of death were coded according to the Ninth Edition of the ICD.

The US cancer incidence and mortality statistics presented in this report were compiled by the National Program of Cancer Registries (NPCR), which is administered by the federal Centers for Disease Control and Prevention (CDC). These data were obtained from CDC's WONDER on-line database.[2,3] NPCR provides support for cancer registries in 45 states (including Nebraska), the District of Columbia, Puerto Rico, and US Pacific Island territories, and covers 96% of the total US population. At the time when this report was in preparation, incidence and mortality data from NPCR were available only through 2013.

Data Analysis

All of the rates presented in this report were calculated and are expressed as the average annual number of new cases (incidence) or deaths (mortality) per 100,000 population, and were age-adjusted to the 2000 US standard population. Rates for gender-specific cancers (female breast, cervix uteri, corpus uteri, ovary, prostate) are expressed as the average annual number of new cases or deaths per 100,000 male or female population. Estimates for each race and ethnic population used in the rate calculations are vintage 2014 bridged-race population estimates developed by the US Census Bureau and the National Center for Health Statistics, and were obtained from CDC-WONDER.[4]

With the exception of bladder cancer, all of the incidence rates in this report were calculated with invasive (i.e., malignant) cases only, to maintain comparability with statistics from NPCR and other cancer registries in the US and Canada. For bladder cancer, incidence rates were calculated with invasive and in situ cases combined. Rates were calculated for the following race and ethnic populations: white, African-American, American Indian (also known as Native American), Asian and Pacific Islander, and Hispanic; people of Hispanic ethnicity may be of any race. Maps are included in the Results section of this report which show county-specific population estimates for each minority race/ethnic population in Nebraska as of 2010. This report does not include data for every primary site; only the most frequently-diagnosed sites were selected.

Internet users should be aware that the Nebraska-specific statistics published in this report and those that are posted on non-DHHS websites may differ. These discrepancies are the result of differences in the dates when the data were compiled. The Nebraska incidence data published in this report include all cases reported to the registry through December 31, 2015; however, Nebraska data currently available on the CDC-WONDER website include cases that were reported through November 30, 2015.

The analyses that comprise the bulk of this report are grouped into four categories: 1) rank-ordering the frequency of new cancer cases and cancer deaths within each minority population in Nebraska during 2004-2013 by primary site; 2) comparison of incidence and mortality rates for each minority population in Nebraska during 2004-2013 with the rate for Nebraska's white population for the same years; 3) comparison of incidence and mortality rates for each minority population in Nebraska during 2004-2013 with the rate for the same population for the entire US for the same years, and; 4) comparison of incidence and mortality rates for each minority population in Nebraska during 2004-2013 with the rates for the same population in Nebraska for the years 1994-2003. For African-Americans and Hispanics, the graphs that present the results of these analyses include only those primary sites where at least 20 new cases and 20 deaths were recorded during 2004-2013; due to small numbers, this threshold was lowered to 20 new cases and 10 deaths for the American Indian and Asian/Pacific Islander populations. To evaluate the statistical significance of the differences between rates, confidence intervals were calculated using the formula $CI = r \pm (RC \times SE)$, where CI = confidence interval, r = rate, RC = 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 is said to exist in those instances where the confidence intervals of a pair of rates being compared to each other do not overlap.

RESULTS

Population

Table 1 presents estimates of Nebraska's resident white, African-American, American Indian, Asian/Pacific Islander, and Hispanic populations. These figures are the means of the vintage 2014 bridged-race annual estimates for these populations for the years 1994-2003 and 2004-2013. These

estimates were used to calculate the incidence and mortality rates presented in this report (excluding the rates for gender-specific cancers, which were calculated using gender-specific population estimates). Estimates of Nebraska's total minority population (defined as anyone of African-American, American Indian, and Asian/Pacific Islander race and/or Hispanic ethnicity) are also included.

Table 1. Population estimates, by race/ethnicity, Nebraska, 1994-2003 and 2004-2013

	1994-2003[1]		2004-2013[2]		
Race/ethnicity	**Number**	**%**	**Number**	**%**	**% change[3]**
White	1,585,443	93.5	1,653,228	91.5	+4.3%
African-American	71,615	4.2	92,844	5.1	+29.6%
American Indian	15,875	0.9	24,464	1.4	+54.1%
Asian/Pacific Islander	22,804	1.3	36,726	2.0	+61.1%
Hispanic*	83,878	4.9	156,483	8.7	+86.6%
All Minority§	189,428	11.1	295,358	16.3	+55.9%

*persons of Hispanic origin may be of any race

[1]Mean estimated population, based on Census/NCHS vintage 2014 bridged-race annual population estimates for the years 1994-2003

[2]Mean estimated population, based on Census/NCHS vintage 2014 bridged-race annual population estimates for the years 2004-2013

[3]Percentage increase in the estimated population from 1994-2003 to 2004-2013

§includes persons of African-American, American Indian, and Asian/Pacific Islander race and/or Hispanic ethnicity

These data show that, while Nebraska's minority populations remain small in absolute terms, their proportion of the state's total population has increased substantially in recent years. Nebraska's Hispanic population has seen the largest growth, nearly doubling in size within the span of a decade. Taken together, Nebraska's estimated minority population is approaching 300,000 in number, or about one in six people.

Figures 1-4 present county-specific population estimates for each minority group. These figures are the vintage 2014 bridged-race estimates for these populations for the year 2010. These maps show that Nebraska's African-American and Asian/Pacific Islander populations are almost exclusively urban, residing mostly within the state's three most populous counties, Douglas (which includes the city of Omaha), Lancaster (which includes the city of Lincoln), and Sarpy (which includes Omaha's southern suburbs). The Native American population is less concentrated in the state's most urban areas, with a substantial proportion residing in Thurston County, the site of Nebraska's two most populous Indian reservations (Omaha and Winnebago). Nebraska's Hispanic population is the most widely dispersed throughout the state; Douglas and Lancaster Counties have the greatest numbers, but many of Nebraska's smaller cities, such as Grand Island (located in Hall County), South Sioux City (located in Dakota County), and Lexington (located in Dawson County), have attracted large numbers as well.

Figure 1. African-American Population in Nebraska
Estimated Number of Residents by County, 2010

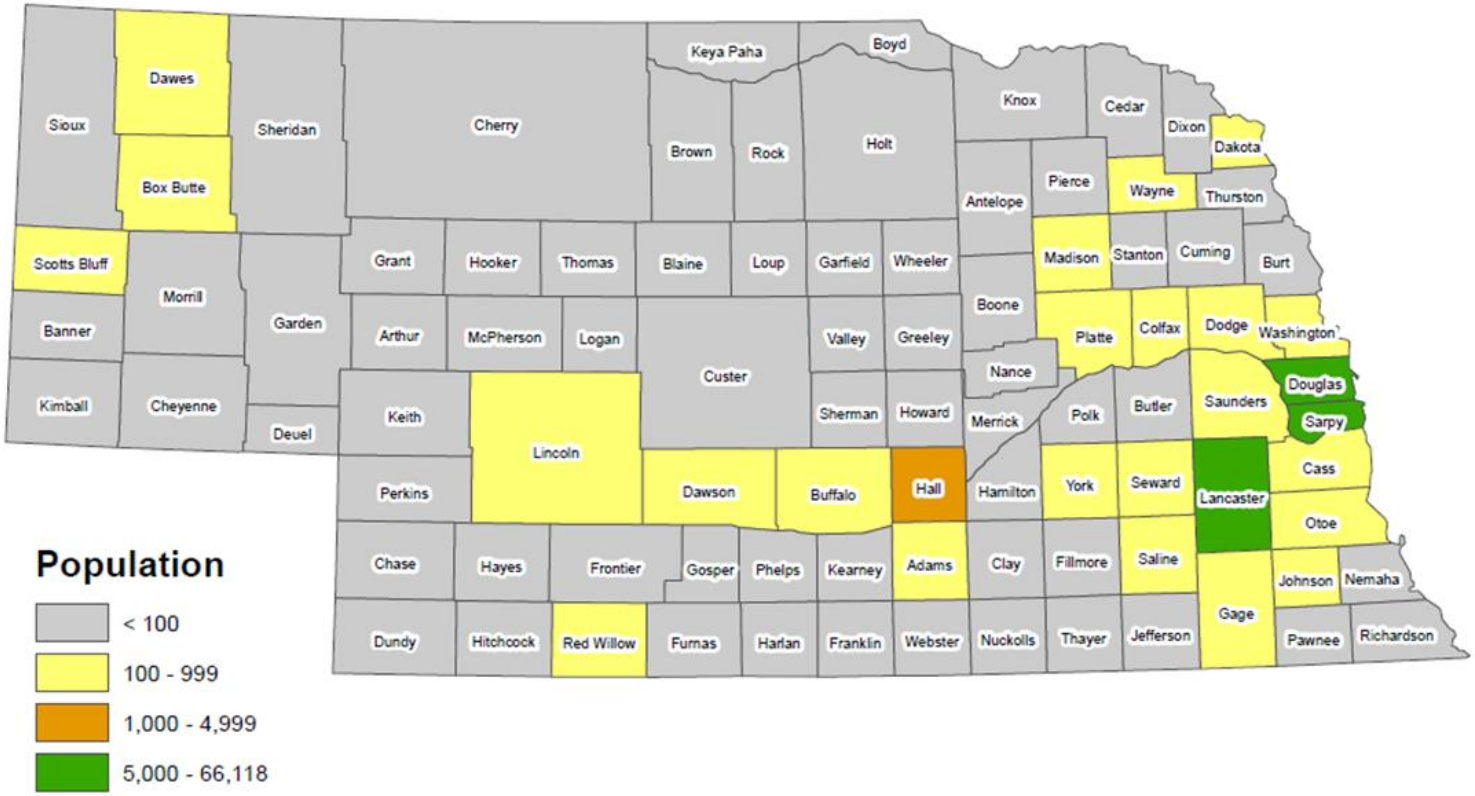


Figure 2. American Indian Population in Nebraska
Estimated Number of Residents by County, 2010

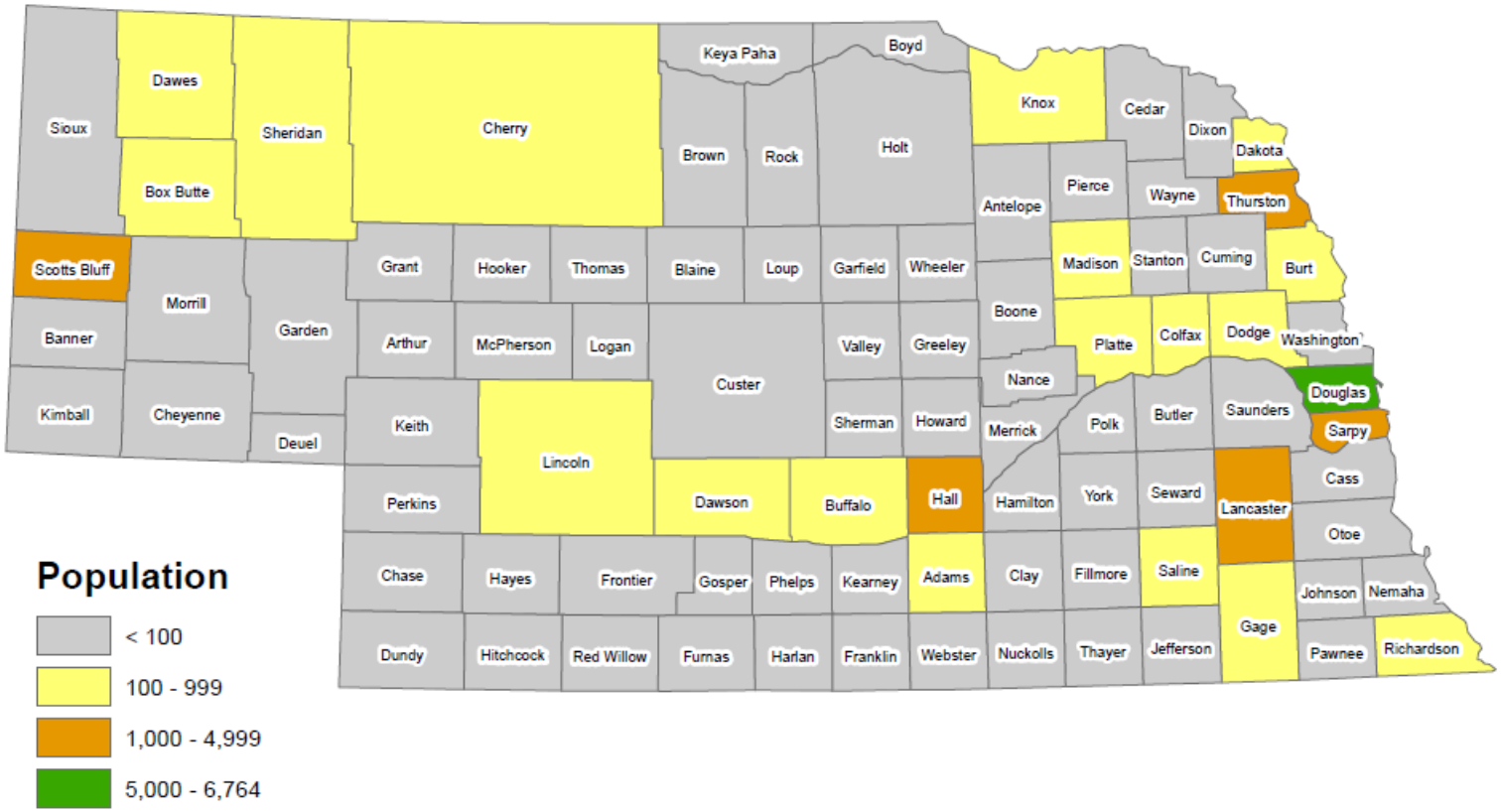


Figure 3. Asian & Pacific Islander Population in Nebraska
Estimated Number of Residents by County, 2010

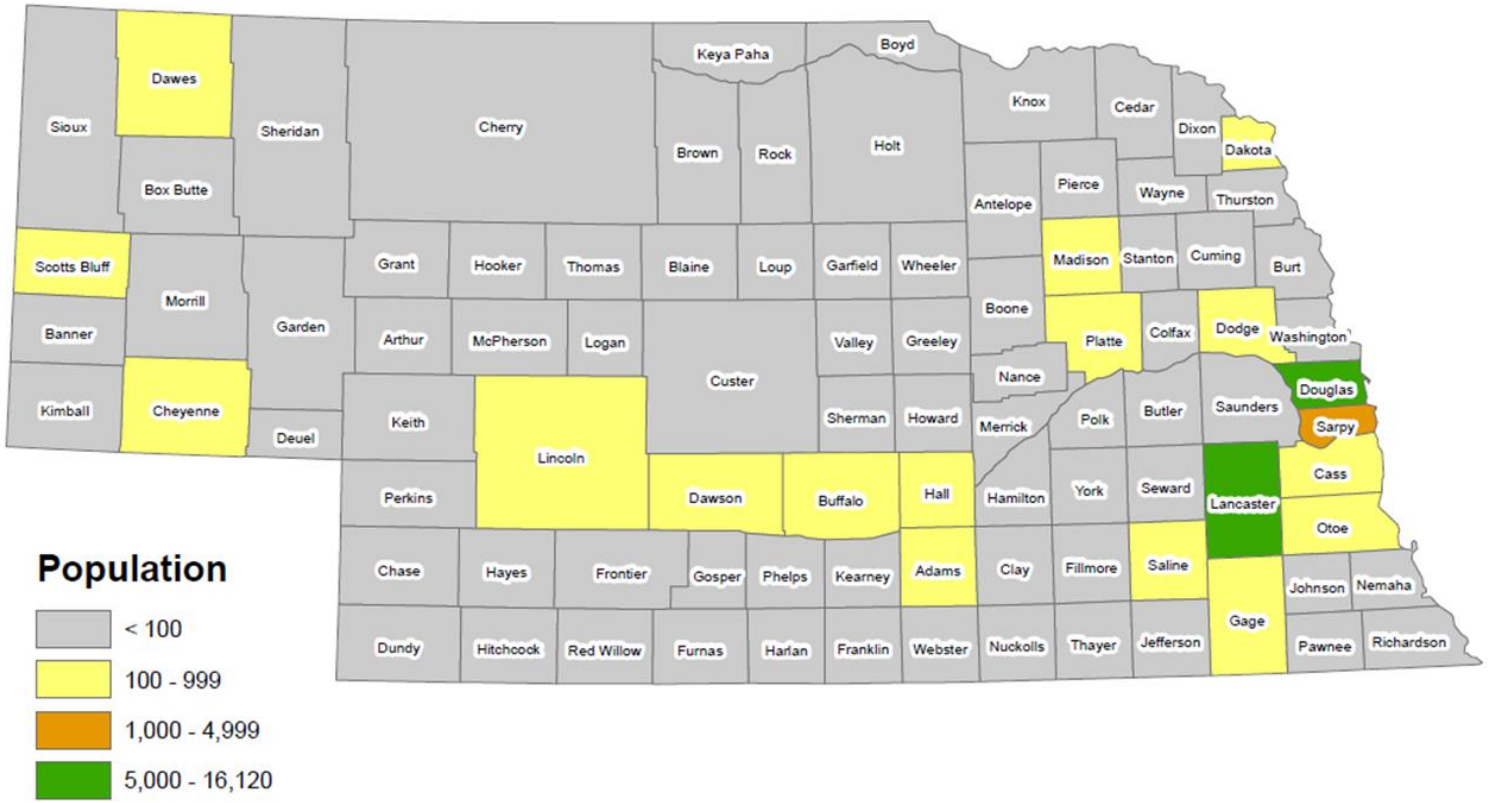
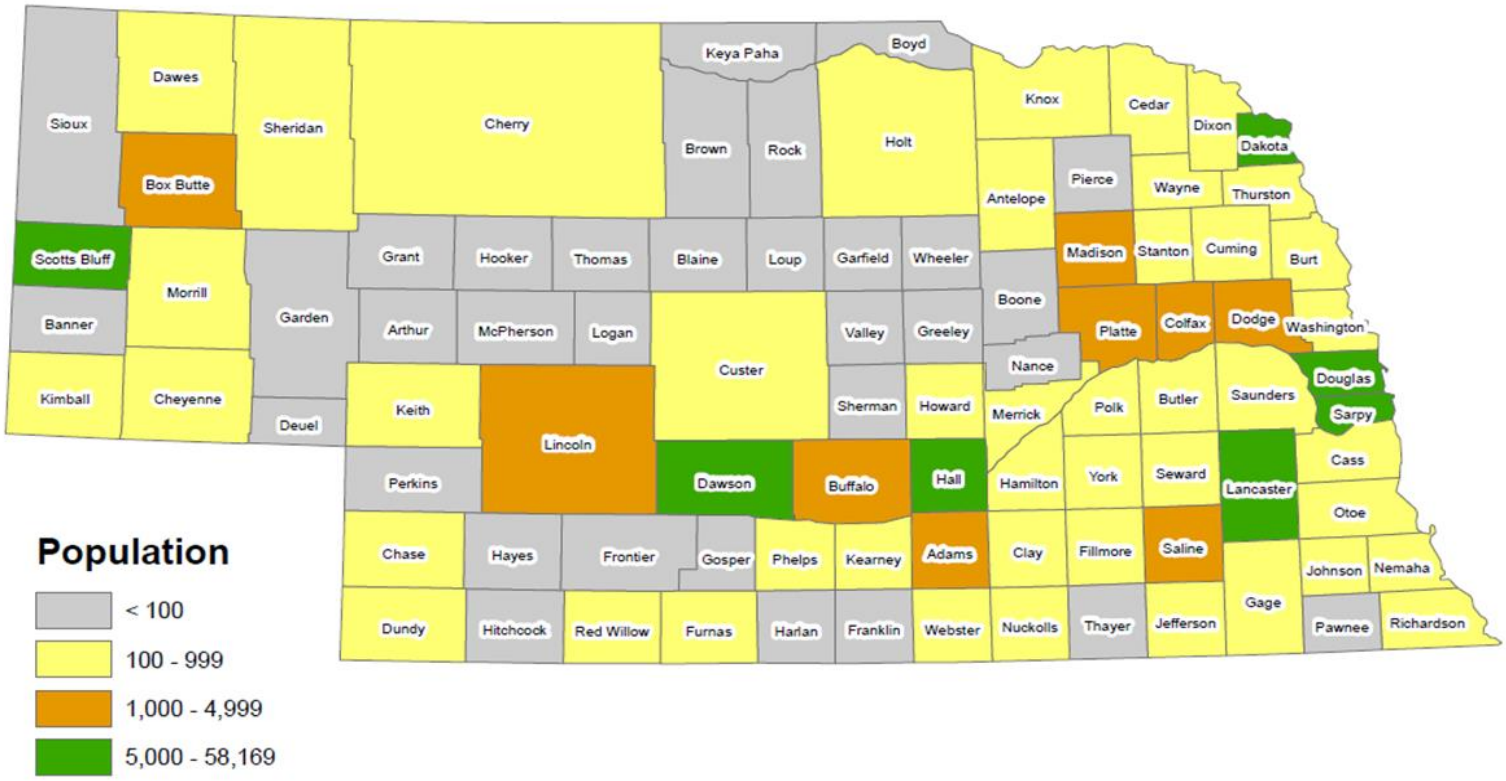


Figure 4. Hispanic Population in Nebraska
Estimated Number of Residents by County, 2010



Incidence and Mortality

Tables 2 and 3 present cancer incidence and mortality data (number of cases/deaths and rates) for each race/ethnic population in Nebraska for the years 2004-2013, for all cancers combined and for the top 10 primary sites, rank-ordered by the number of cases/deaths. For all cancers combined, African-Americans recorded the highest incidence rate (519.2), while Asian/Pacific Islanders recorded the lowest (283.8); African-Americans also recorded the highest mortality rate (222.7), while Hispanics recorded the lowest (102.6). By primary site, female breast, prostate, lung and bronchus, and colorectal cancers were the four most frequently diagnosed types in every race/ethnic population (though not necessarily in the same order), except among American Indians, among whom the incidence of cancers of the kidney and renal pelvis was #4 and prostate #5. Cancers of the lung and bronchus were the #1 cause of cancer deaths in every race/ethic group. Cancers of the liver and intrahepatic bile ducts appeared among the top 10 sites for new cases and deaths within all minority populations, but not in the white population. The same pattern also occurred for deaths due to stomach cancer. Other sites that were prominent in minority populations but not among whites include thyroid, which appeared among the top 10 sites for new cases among Asian/Pacific Islanders and Hispanics, and oral cavity and pharynx, which appeared among the top 10 sites for new cases among American Indians and Asian/Pacific Islanders. By contrast, melanoma ranked seventh among whites for new cases, but was not among the top 10 sites in any minority population.

Table 2. Number of cases and incidence rates, all sites and top 10 primary sites (rank-ordered by number of cases), by race/ethnicity, Nebraska, 2004-2013

Rank	White			African-American			American Indian			Asian/Pacific Islander			Hispanic*		
	Primary Site	Number	Rate	Primary Site	Number	Rate	Primary Site	Number	Rate	Primary Site	Number	Rate	Primary Site	Number	Rate
--	All sites	87,030	464.7	All sites	2,964	519.2	All sites	391	352.2	All sites	581	283.8	All sites	2,316	374.1
1	Breast (female only)	12,030	123.6	Prostate	521	201.0	Breast (female only)	56	80.6	Breast (female only)	83	63.7	Breast (female only)	333	100.7
2	Prostate	11,986	136.8	Lung & bronchus	441	83.2	Lung & bronchus	47	56.6	Colorectal	75	39.6	Prostate	250	107.0
3	Lung & bronchus	11,668	61.7	Breast (female only)	398	126.1	Colorectal	47	44.7	Lung & bronchus	72	40.2	Colorectal	180	33.0
4	Colorectal	9,377	49.1	Colorectal	334	64.9	Kidney & renal pelvis	33	25.2	Prostate	45	64.6	Lung & bronchus	169	37.3
5	Urinary bladder	4,077	21.3	Kidney & renal pelvis	125	22.1	Prostate	26	63.9	Liver & intrahepatic bile ducts	37	17.5	Thyroid	133	14.6
6	NHL	3,892	20.8	NHL	92	15.3	NHL	20	15.4	Thyroid	35	10.8	Kidney & renal pelvis	126	19.2
7	Melanoma	3,237	18.1	Pancreas	91	17.5	Liver & intrahepatic bile ducts	17	13.2	Oral cavity & pharynx	26	11.9	NHL	122	20.5
8	Kidney & renal pelvis	3,032	16.2	Liver & intrahepatic bile ducts	84	12.8	Oral cavity & pharynx	13	11.6	Leukemia	20	8.4	Leukemia	95	10.2
9	Leukemia	2,685	14.4	Myeloma	79	14.2	Leukemia	12	5.6	Kidney & renal pelvis	17	8.4	Corpus uteri	82	25.6
10	Corpus uteri	2,680	26.9	Urinary bladder	72	13.8	Urinary bladder	10	13.8	NHL	16	12.8	Liver & intrahepatic bile ducts	64	12.1

*persons of Hispanic origin may be of any race

§rates are the average annual number of cases per 100,000 population, excluding gender-specific sites (cervix uteri, corpus uteri, female breast, ovary, prostate), which are per 100,000 male or female population, and all rates are age-adjusted to the 2000 US population

ABBREVIATION: NHL, Non-Hodgkin lymphoma

Table 3. Number of deaths and mortality rates, all sites and top 10 primary sites (rank-ordered by number of deaths), by race/ethnicity, Nebraska, 2004-2013

Rank	White			African-American			American Indian			Asian/Pacific Islander			Hispanic*		
	Primary Site	Deaths	Rate	Primary Site	Deaths	Rate	Primary Site	Deaths	Rate	Primary Site	Deaths	Rate	Primary Site	Deaths	Rate
--	All sites	32,435	167.3	All sites	1,129	222.7	All sites	157	168.1	All sites	192	110.6	All sites	499	102.6
1	Lung & bronchus	8,569	44.9	Lung & bronchus	316	63.6	Lung & bronchus	47	58.2	Lung & bronchus	42	24.7	Lung & bronchus	79	19.0
2	Colorectal	3,392	17.2	Colorectal	128	28.2	Colorectal	19	16.4	Liver & intrahepatic bile ducts	32	14.6	Breast (female only)	39	13.3
3	Breast (female only)	2,206	20.6	Breast (female only)	83	27.4	Breast (female only)	11	16.4	Colorectal	19	11.9	Liver & intrahepatic bile ducts	38	8.1
4	Pancreas	2,003	10.3	Pancreas	80	16.3	Kidney & renal pelvis	7	8.3	Pancreas	13	8.0	Colorectal	38	8.0
5	Prostate	1,817	22.8	Prostate	61	34.7	Liver & intrahepatic bile ducts	7	5.5	NHL	12	8.5	Prostate	28	20.6
6	Leukemia	1,370	7.1	Liver & intrahepatic bile ducts	51	8.0	Pancreas	7	4.7	Breast (female only)	11	9.3	Stomach	25	3.9
7	NHL	1,318	6.7	Myeloma	40	8.3	Ovary	6	10.9	Leukemia	7	3.4	Leukemia	24	3.9
8	Brain & central nervous system	947	5.2	Esophagus	35	6.3	Stomach	6	5.9	Stomach	7	2.8	NHL	23	5.2
9	Kidney & renal pelvis	864	4.5	Stomach	28	5.1	Three sites tied	5	--	Brain & central nervous system	6	2.7	Kidney & renal pelvis	22	3.7
10	Esophagus	846	4.4	Leukemia	28	4.9				Two sites tied	4	--	Brain & central nervous system	21	2.3

*persons of Hispanic origin may be of any race

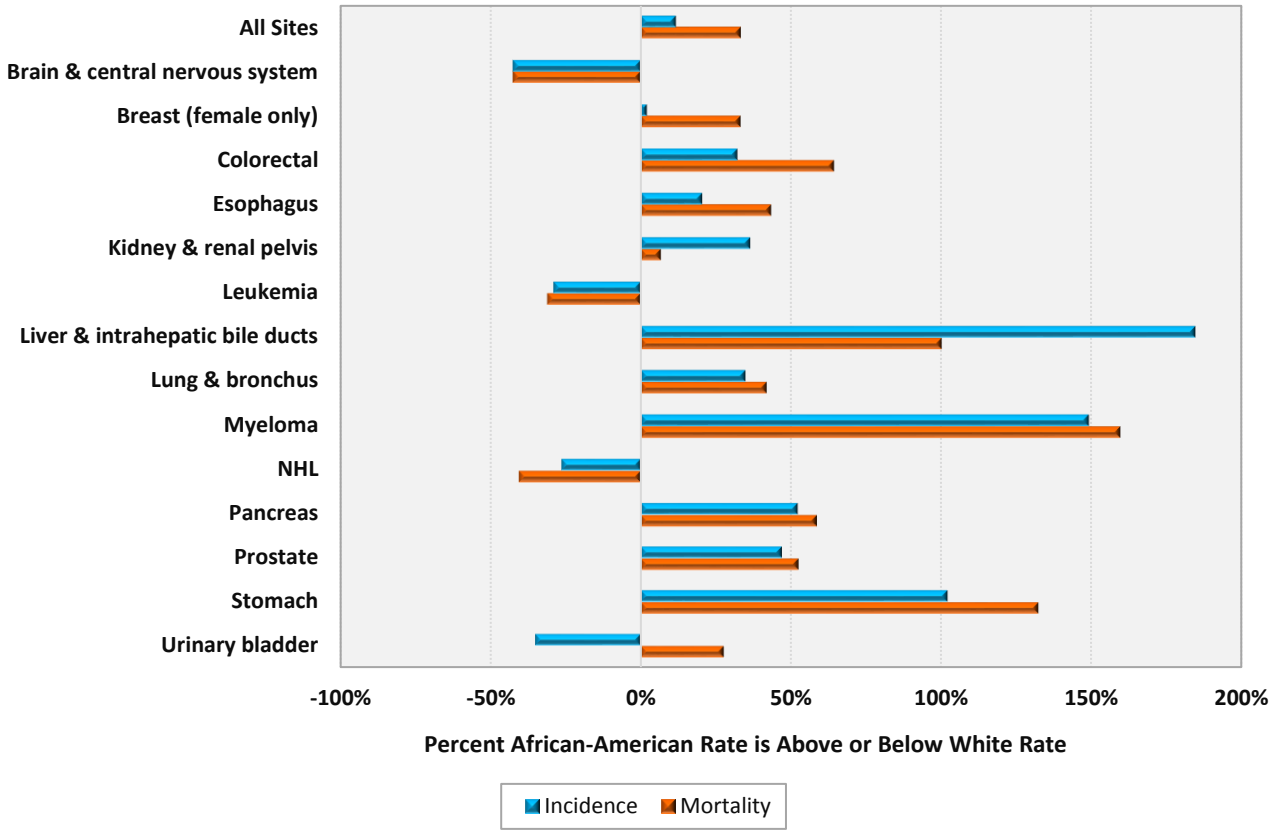
§rates are the average annual number of deaths per 100,000 population, excluding gender-specific sites (cervix uteri, corpus uteri, female breast, ovary, prostate), which are per 100,000 male or female population, and all rates are age-adjusted to the 2000 US population

ABBREVIATION: NHL, Non-Hodgkin lymphoma

Figures 5-8 present a series of comparisons between the incidence and mortality rates for each minority population in Nebraska during 2004-2013 with the comparable incidence and mortality rates for the white population. Comparison of the minority and the white rates is expressed as the percentage by which the minority rate is above or below the white rate. Statistics for all primary sites included in the analysis (not just those presented in Figures 5-8) are presented in Appendix I.

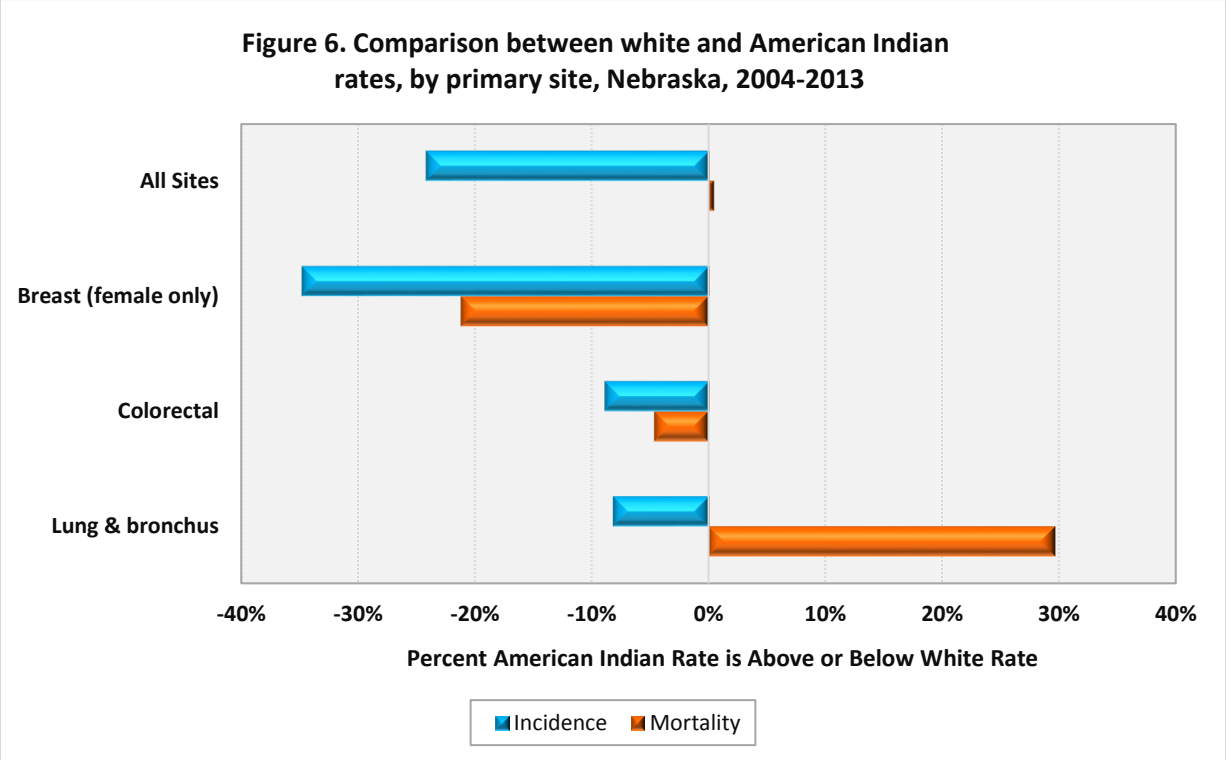
Figure 5 presents the results of the incidence and mortality rate comparisons between the African-American and white populations in Nebraska. For all sites combined, incidence and mortality rates for African-Americans were significantly higher than the rates for whites. By primary site, both incidence and mortality rates were significantly higher for cancers of the colon and rectum, liver and intrahepatic bile ducts, lung and bronchus, pancreas, stomach, and myeloma; incidence (but not mortality) was also significantly higher for cancers of the prostate and kidney and renal pelvis. Sites where the rates were significantly lower for African-Americans compared to whites included brain and central nervous system (incidence and mortality), leukemia (incidence only), Non-Hodgkin lymphoma (incidence only), and urinary bladder (incidence only).

Figure 5. Comparison between white and African-American rates, by primary site, Nebraska, 2004-2013



Due to the relatively small size of the American Indian and Asian/Pacific Islander populations in Nebraska, the numbers of cancer cases and deaths that can be attributed to any particular primary site are also relatively small, and most sites did not record even 20 cases and 10 deaths between 2004 and 2013. Figures 6 and 7 present the results of the incidence and mortality rate comparisons between these two populations and the white population in Nebraska. Among American Indians, the incidence rate for all cancers combined was significantly lower than the white rate, but the cancer mortality rates were not significantly different. Among Asian/Pacific Islanders, both the incidence and mortality rates

for all cancers combined, female breast cancer, and cancers of the lung and bronchus were significantly lower than the rates for whites, while the incidence and mortality rates for cancers of the liver and intrahepatic bile ducts were both significantly higher.



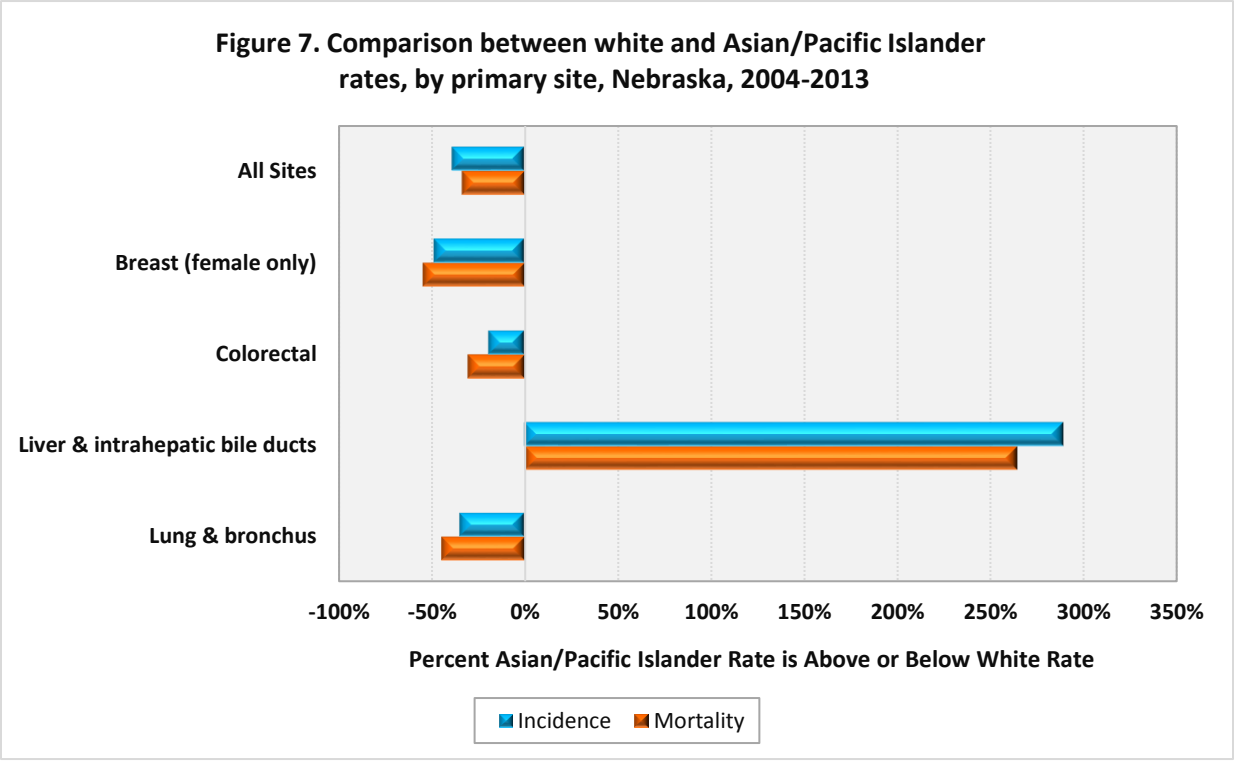
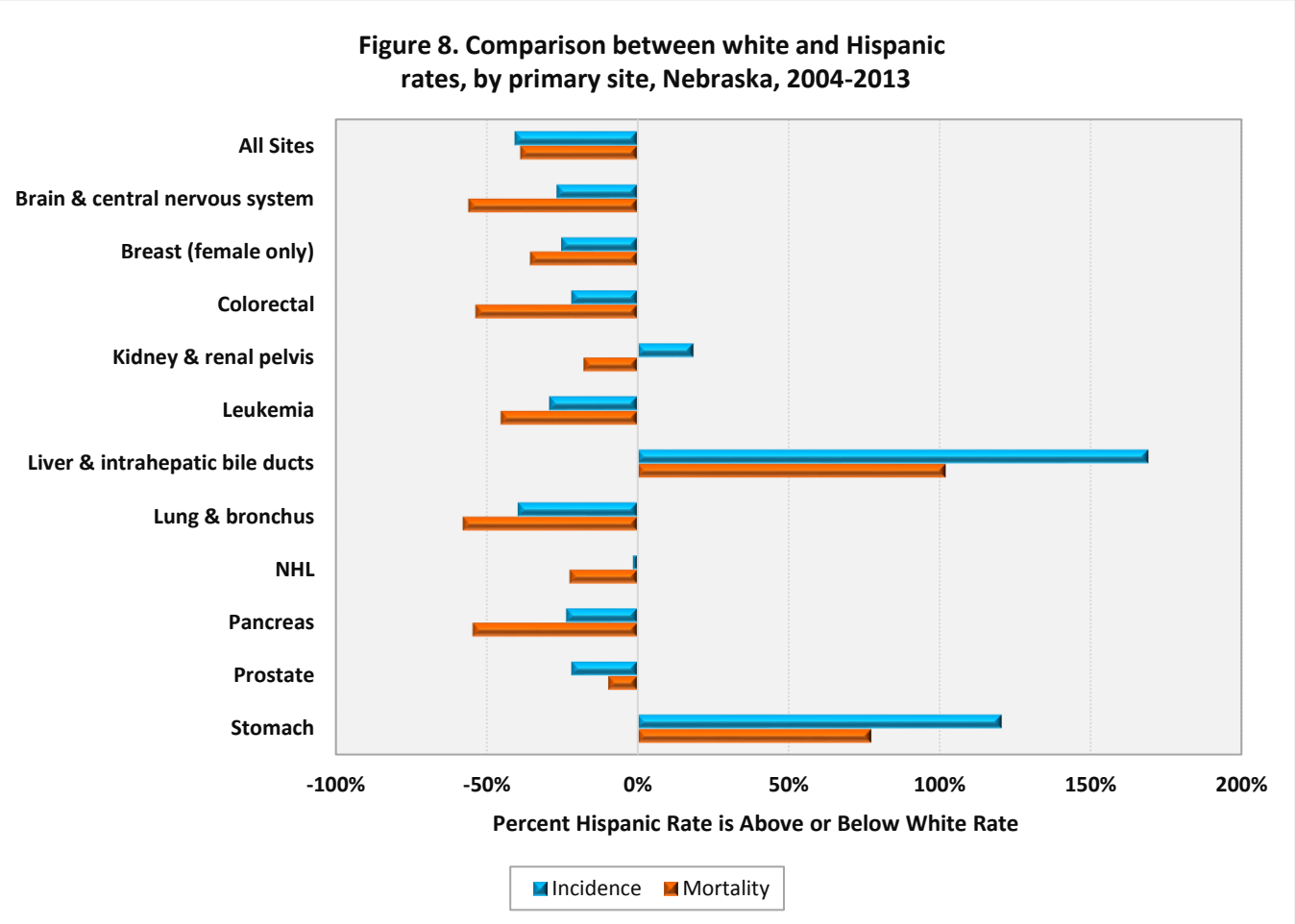


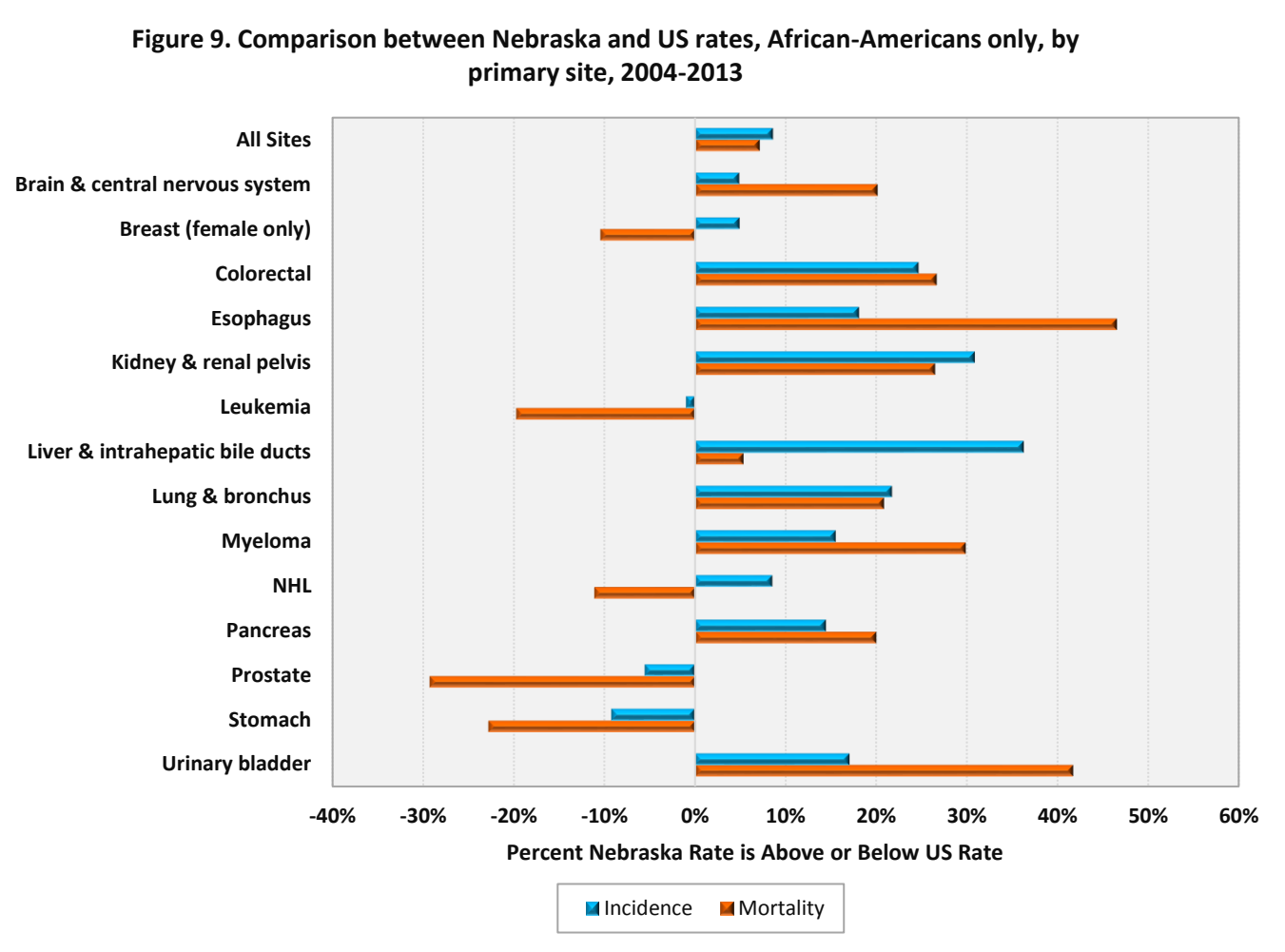
Figure 8 presents the results of the incidence and mortality rate comparisons between the Hispanic and white populations in Nebraska. Although most Hispanic cases are also classified as being of white race, the proportion of Hispanics within the white population is relatively small (<2.5%), so their inclusion in the incidence and mortality rates for whites has little effect. For all sites combined and certain primary sites (female breast, colorectal, leukemia, and lung), both the incidence and mortality rates for Hispanics were significantly lower than the rates for whites. The incidence of prostate cancer was also significantly lower among Hispanic men, while the mortality rate for cancers of the brain and other nervous system was significantly lower among Hispanics in comparison with whites. By contrast, incidence and mortality rates for cancers of the liver and intrahepatic bile ducts were significantly higher among Hispanics in comparison with whites, and the incidence of stomach cancer was also significantly higher among Hispanics.



Figures 9-12 present a series of comparisons between the incidence and mortality rates for each minority population in Nebraska during 2004-2013 with the comparable national incidence and mortality rates for the same population. Comparison of Nebraska and US rates is expressed as the percentage by which the Nebraska rate is above or below the US rate. Statistics for all primary sites included in the analysis (not just those presented in Figures 9-12) are presented in Appendix II.

Figure 9 presents the results of the incidence and mortality rate comparisons between the African-American populations in Nebraska and the US. For all sites combined and colorectal cancer, incidence rates for African-Americans in Nebraska were significantly higher than the US African-American rates; both incidence and mortality rates for cancers of the lung and bronchus were significantly higher among African-Americans in Nebraska compared to the nation as a whole. By contrast, prostate cancer

mortality was significantly lower among African-American men in Nebraska compared to African-American men nationally.



Figures 10-12 present the results of the incidence and mortality rate comparisons for the remaining minority populations in Nebraska and the US. For American Indians (Figure 10), overall cancer incidence and mortality were significantly higher in Nebraska compared to the entire US, but no primary sites showed significant differences. For Asian/Pacific Islanders (Figure 11), the only significant difference involved the female breast cancer incidence rate, which was lower in Nebraska compared to the US. None of the incidence rates for Hispanics showed significant differences between Nebraska and the US, although the mortality rates for all cancers, colorectal cancer and cancer of the pancreas were all significantly lower in Nebraska compared to the US (Figure 12).

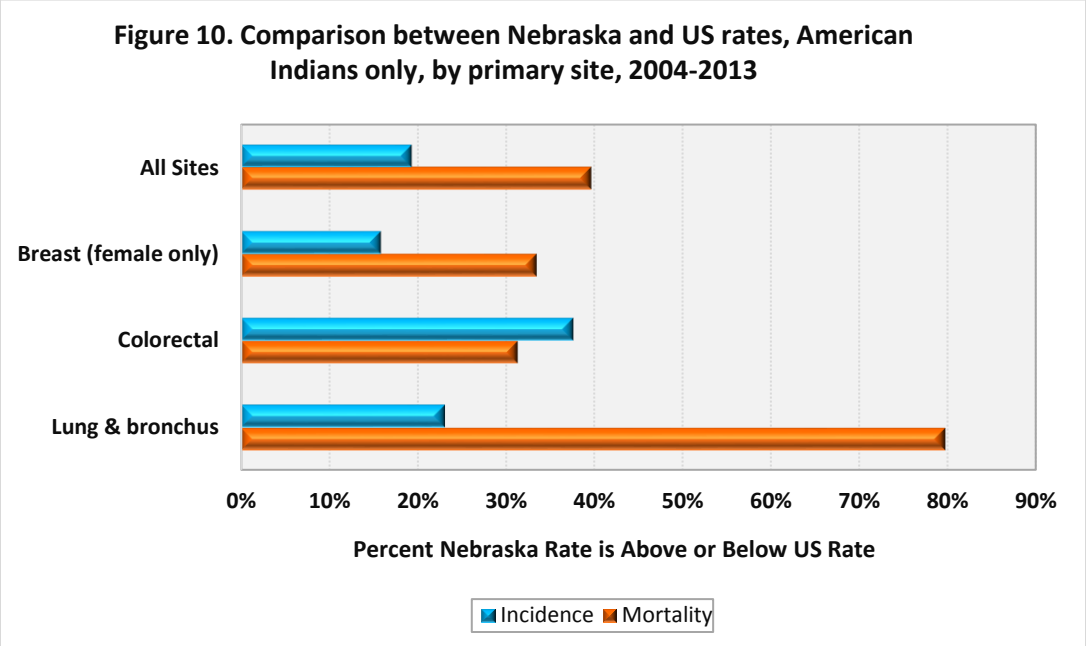


Figure 10. Comparison between Nebraska and US rates, American Indians only, by primary site, 2004-2013
All Sites
Breast (female only)
Colorectal
Lung & bronchus
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
Percent Nebraska Rate is Above or Below US Rate
Incidence
Mortality

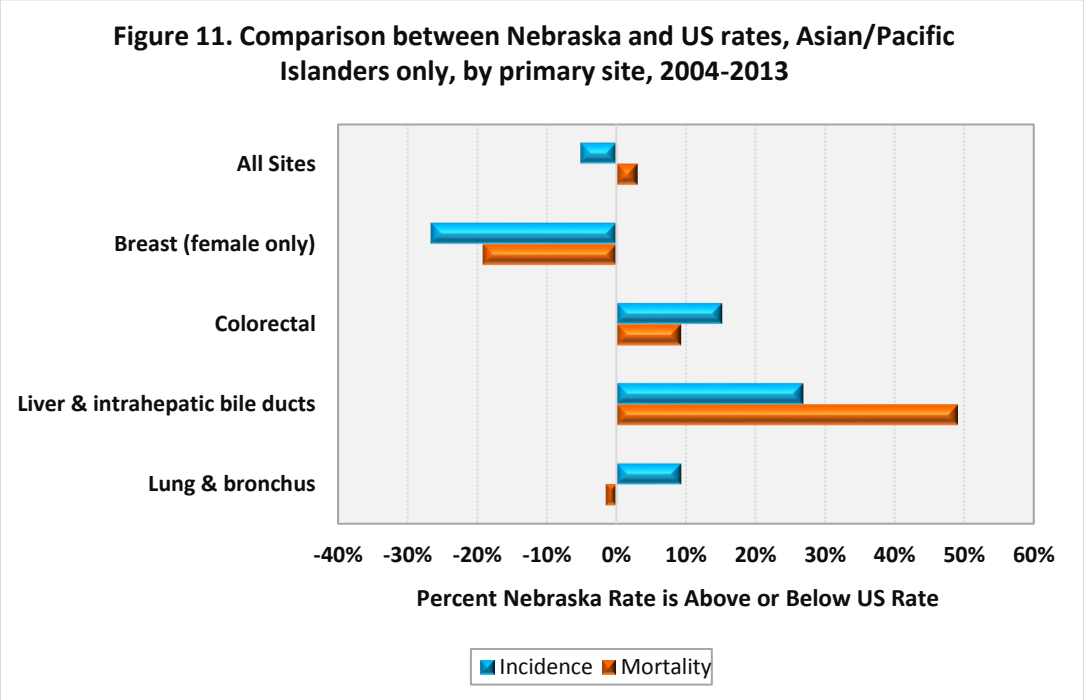
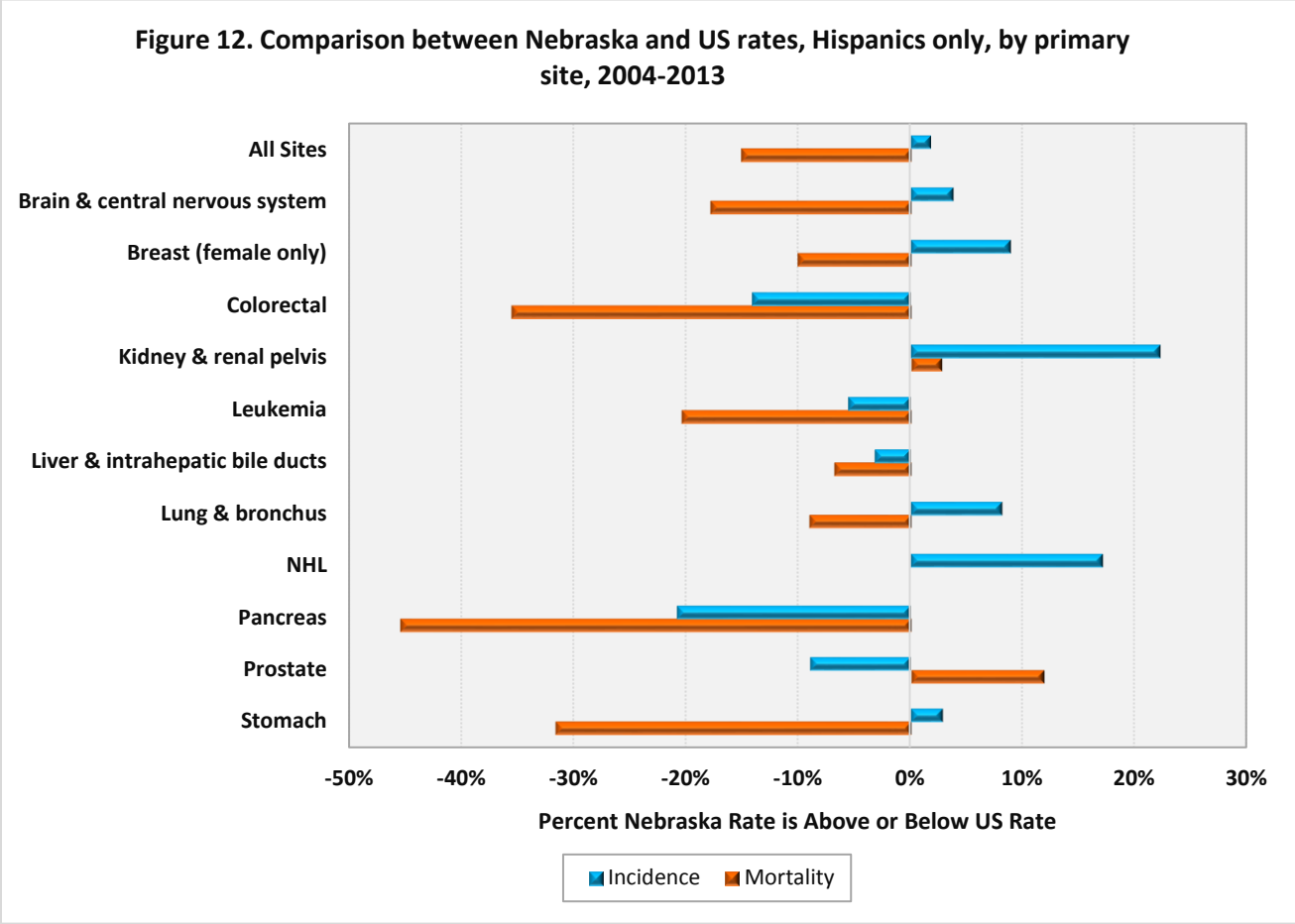


Figure 11. Comparison between Nebraska and US rates, Asian/Pacific Islanders only, by primary site, 2004-2013
All Sites
Breast (female only)
Colorectal
Liver & intrahepatic bile ducts
Lung & bronchus
-40%
-30%
-20%
-10%
0%
10%
20%
30%
40%
50%
60%
Percent Nebraska Rate is Above or Below US Rate
Incidence
Mortality



Figures 13-16 present a series of comparisons between the incidence and mortality rates for each minority population in Nebraska during 2004-2013 with the comparable statewide incidence and mortality rates for the previous decade (1994-2003). Comparison of 2004-2013 and 1994-2003 rates is expressed as the percentage by which the 2004-2013 rate is above or below the 1994-2003 rate. Statistics for all primary sites included in the analysis (not just those presented in Figures 13-16) are presented in Appendix III.

Relatively few of the differences shown in Figures 13-16 were statistically significant. Among African-Americans (Figure 13) and American Indians (Figure 14), overall cancer mortality was significantly lower in 2004-2013 compared to 1994-2003. There were no significant differences in either incidence or mortality among Asian/Pacific Islanders (Figure 15). Both incidence and mortality for colorectal cancer declined significantly from 1994-2003 to 2004-2013 among Hispanics in Nebraska (Figure 16).

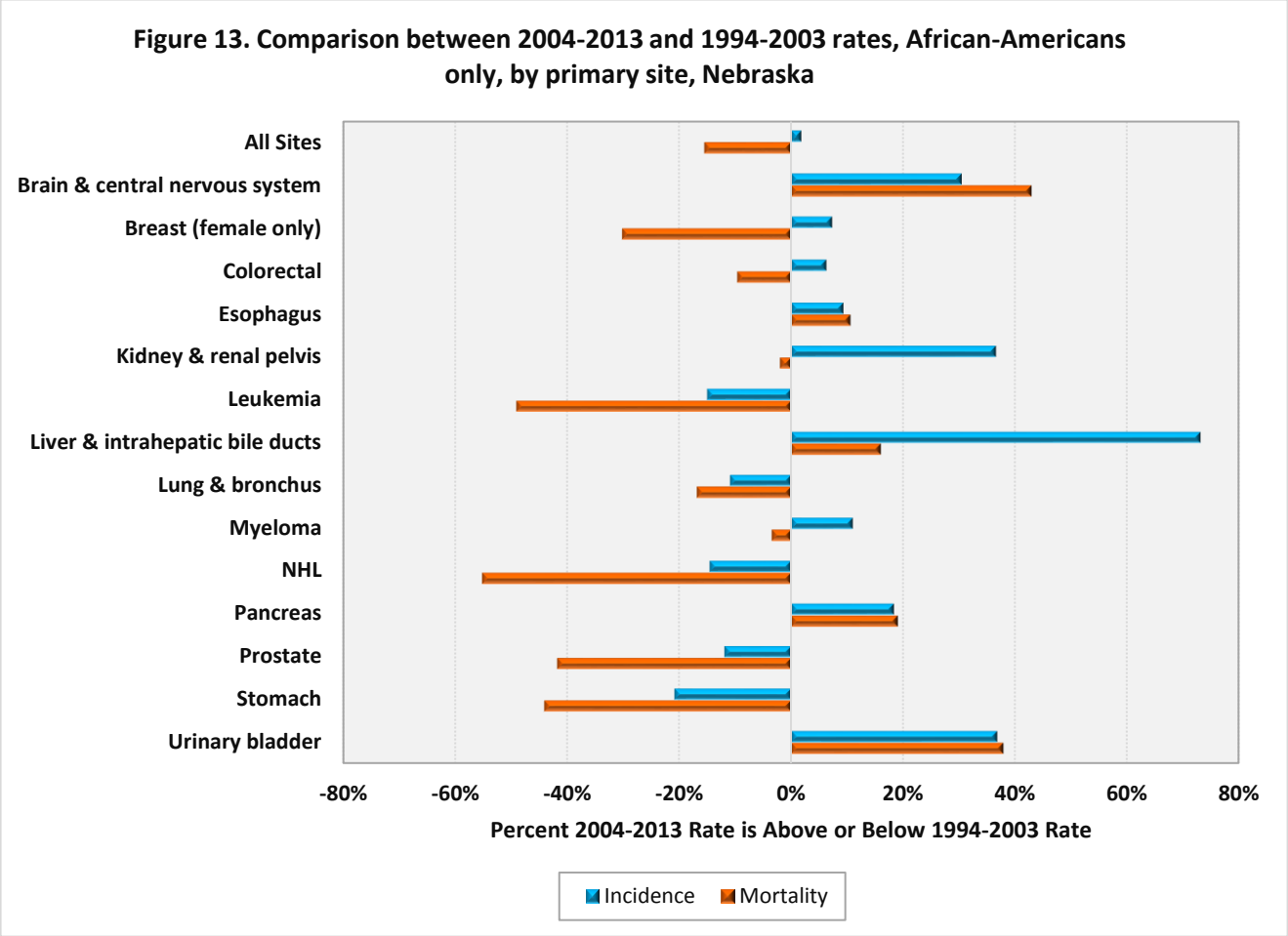


Figure 13. Comparison between 2004-2013 and 1994-2003 rates, African-Americans only, by primary site, Nebraska
All Sites
Brain & central nervous system
Breast (female only)
Colorectal
Esophagus
Kidney & renal pelvis
Leukemia
Liver & intrahepatic bile ducts
Lung & bronchus
Myeloma
NHL
Pancreas
Prostate
Stomach
Urinary bladder
-80%
-60%
-40%
-20%
0%
20%
40%
60%
80%
Percent 2004-2013 Rate is Above or Below 1994-2003 Rate
Incidence
Mortality

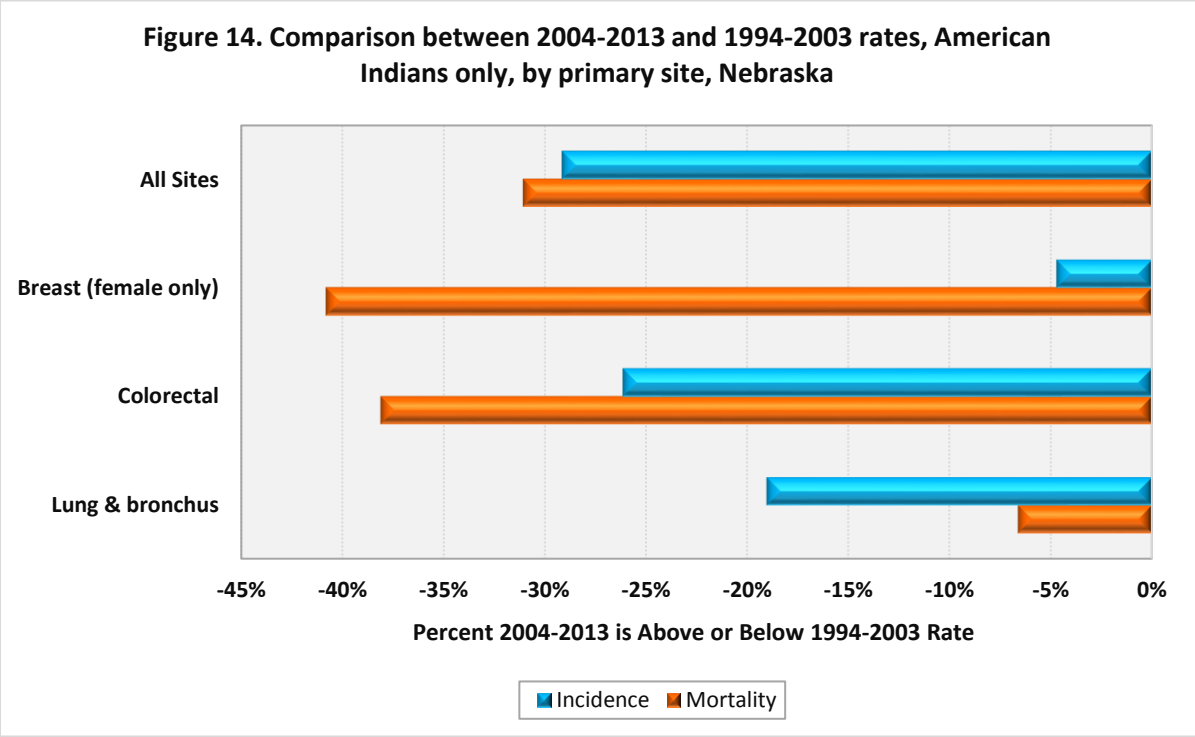


Figure 14. Comparison between 2004-2013 and 1994-2003 rates, American Indians only, by primary site, Nebraska
All Sites
Breast (female only)
Colorectal
Lung & bronchus
-45%
-40%
-35%
-30%
-25%
-20%
-15%
-10%
-5%
0%
Percent 2004-2013 is Above or Below 1994-2003 Rate
Incidence
Mortality

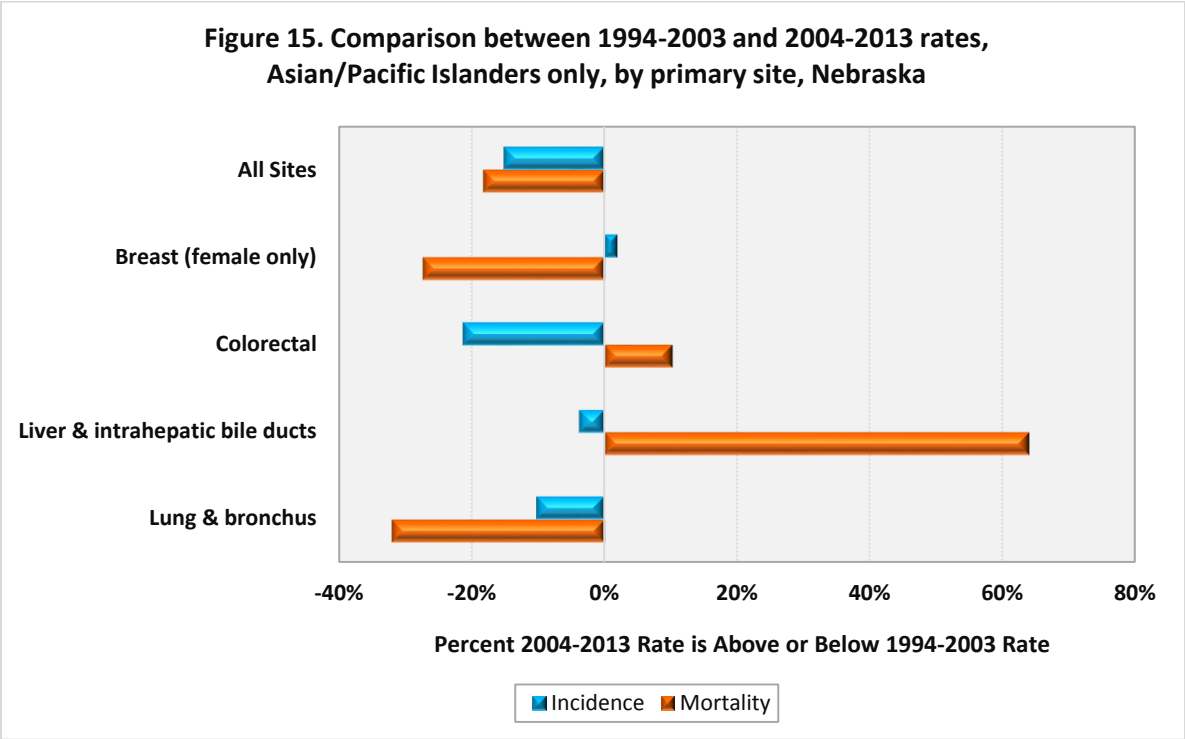


Figure 15. Comparison between 1994-2003 and 2004-2013 rates, Asian/Pacific Islanders only, by primary site, Nebraska
All Sites
Breast (female only)
Colorectal
Liver & intrahepatic bile ducts
Lung & bronchus
-40%
-20%
0%
20%
40%
60%
80%
Percent 2004-2013 Rate is Above or Below 1994-2003 Rate
Incidence
Mortality

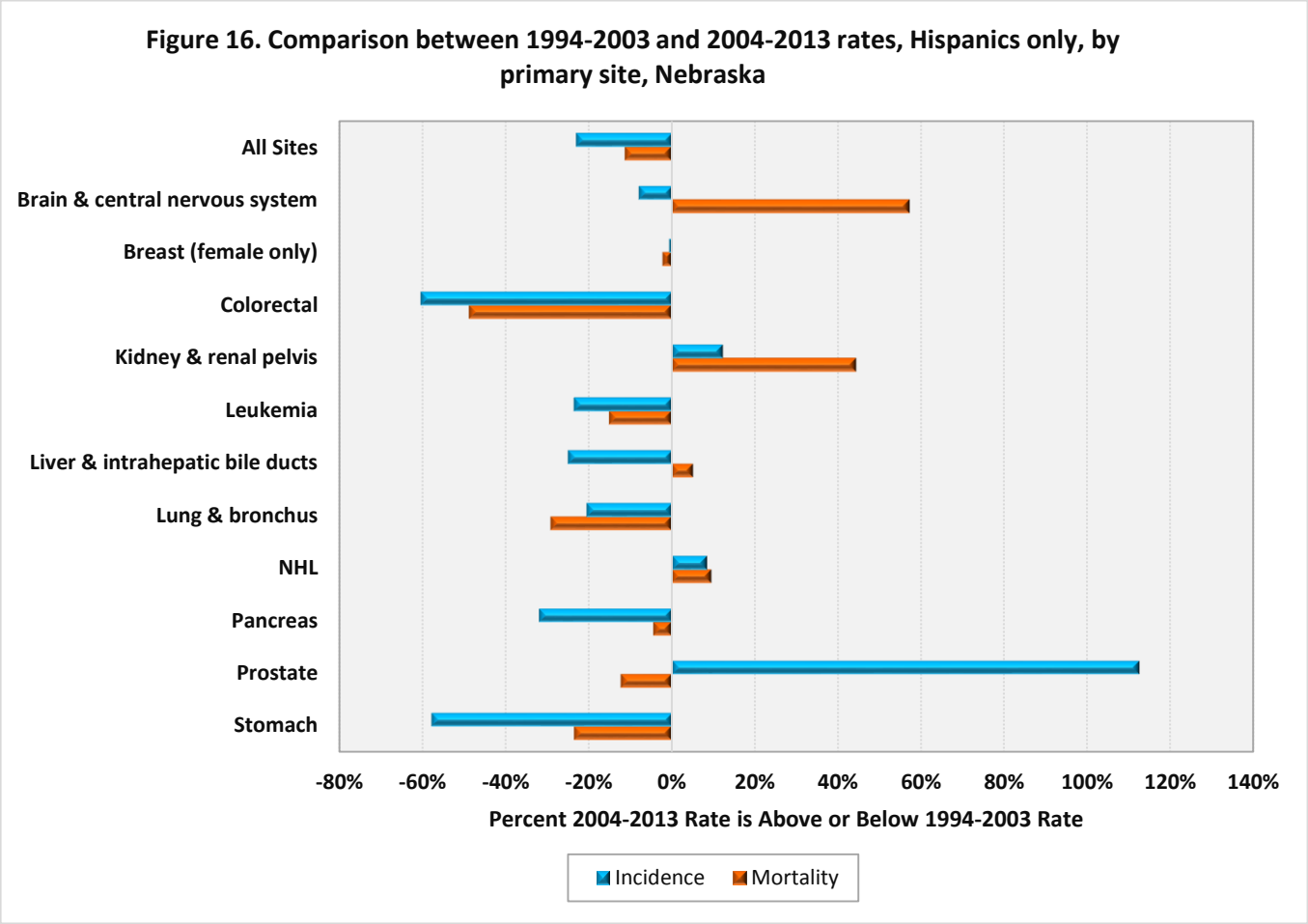


Figure 16. Comparison between 1994-2003 and 2004-2013 rates, Hispanics only, by primary site, Nebraska
All Sites
Brain & central nervous system
Breast (female only)
Colorectal
Kidney & renal pelvis
Leukemia
Liver & intrahepatic bile ducts
Lung & bronchus
NHL
Pancreas
Prostate
Stomach
-80%
-60%
-40%
-20%
0%
20%
40%
60%
80%
100%
120%
140%
Percent 2004-2013 Rate is Above or Below 1994-2003 Rate
Incidence
Mortality

DISCUSSION

This analysis examined the burden of cancer within Nebraska's minority race and Hispanic populations in four different dimensions. The first part of the analysis looked at incidence and mortality within each population in terms of the ten most frequently-occurring primary sites, to see which types of cancer are most common within each population. The second part of the analysis compared incidence and mortality within each minority population to the white population, to see how each minority population in Nebraska fares relative to the state's majority population. The third part of the analysis compared incidence and mortality within each minority population in Nebraska to national data for the same population, to see how minority residents of Nebraska fare relative to their counterparts at the national level. The fourth part of the analysis compared incidence and mortality within each population for the most current decade (2004-2013) with the previous decade (1994-2003), to see how the cancer burden has changed over time within each of Nebraska's minority populations.

Of the four minority populations included in this analysis, African-Americans clearly bear the highest cancer burden and suffer the most significant cancer-related disparities. They are the only one of Nebraska's minority populations in this analysis in which overall cancer incidence and mortality were both significantly higher in comparison with the state's majority white population; by primary site, both incidence and mortality rates were significantly higher for cancers of the colon and rectum, liver and intrahepatic bile ducts, lung and bronchus, pancreas, stomach, and myeloma. All of these sites have been identified at the national level as being a significant source of disparities between African-Americans and whites, along with prostate cancer, which recorded a significantly higher incidence rate among African-Americans in Nebraska (and would have recorded a significantly higher mortality rate as well, had the statistical significance level been set to 95% instead of 99%).[5] Similarly, the pattern shown at the national level for female breast cancer (incidence about the same as whites, mortality significantly higher) also appeared in the Nebraska data, although the mortality rate, while higher than the rate for whites, did not achieve statistical significance.[5] These disparities are compounded by the findings that African-Americans in Nebraska also suffer a significantly higher cancer burden in comparison with African-Americans nationally, significantly so for overall cancer incidence and lung cancer incidence and mortality. One encouraging finding from this analysis is that prostate cancer deaths occurred significantly less often among African-American males in Nebraska in comparison with their counterparts at the national level. Another, though somewhat less so, is that cancer incidence and mortality among African-Americans in Nebraska during the most recent decade of this analysis (2004-2013) were no worse than they were during the previous decade (1994-2003).

Another notable finding of this analysis is the prominence of cancers of the liver and intrahepatic bile ducts within each of Nebraska's minority populations, ranking among the top ten primary sites for both incidence and mortality, and at rates significantly in excess of the state's majority white population. The most important risk factors for this type of cancer are chronic infection with the hepatitis B virus (HBV) and/or the hepatitis C virus (HCV); heavy alcohol consumption, obesity, diabetes, smoking, and certain rare genetic disorders, such as hemochromatosis, also increase risk.[6] A vaccine that protects against HBV has been available since 1982; there is no vaccine available to protect against HCV, but effective treatment of infections is available and can reduce the risk of developing liver cancer.[6] National statistics have also demonstrated that the rates of new cases and deaths attributed to cancers of the liver and intrahepatic bile ducts are far higher among minority populations than among whites.[5] The specific factors that increase the risk of this cancer within each minority population are not understood, but may include differences in the prevalence and treatment of chronic hepatitis and immigration to the US from countries with a high prevalence of HBV infection.[7,8]

There are two major limitations to this analysis that need to be considered when reviewing the findings presented in this report. The first concerns the small number of new cases and deaths that have been recorded in some minority populations, particularly the American Indian and Asian/Pacific Islander populations. Both of these populations in Nebraska are numerically small in size, and thus do not generate large numbers of new cancer cases or cancer deaths, even with ten years of data combined, as was the case in this analysis. Incidence and mortality rates based on these numbers are characterized by extremely wide confidence intervals, which makes interpretation difficult and significant differences almost impossible to detect.

Another limitation of this analysis concerns the underreporting of race and Hispanic ethnicity on cancer registry case reports and death certificates. Both are based on information collected second-hand: in the case of cancer registry case reports, information on race and ethnicity is abstracted from available medical records, while for death certificates, this information is gathered by the funeral director as provided by an informant, or in the absence of an informant, by observation alone. The net effect of the misclassification of race and Hispanic ethnicity appears to be greatest for American Indians, smaller for Asian/Pacific Islanders and Hispanics, and minimal for African-Americans and whites.[9] As a result, the incidence and mortality rates for the American Indian, Asian/Pacific Islander, and Hispanic populations presented in this report (and in any report or article has used data from a cancer registry or death certificates) may be artificially low, thus underestimating the burden of cancer within these populations and invalidating comparisons with other populations.

In summary, the findings of this analysis support the results of similar analyses conducted elsewhere in the US and at the national level that have examined the cancer experience of minority racial and ethnic populations. The findings presented here have the most serious implications for African-Americans, who have the highest incidence and mortality rates of any racial and ethnic group in Nebraska for most cancers. The causes of these inequalities are complex and are believed to reflect social and economic disparities rather than biological differences associated with race.[5] Socioeconomic disparities include inequalities in work, wealth, income, education, housing, and overall standard of living, as well as barriers to high-quality cancer detection, early detection, and treatment services.[5] As such, cancer prevention and control strategies for African-Americans will almost certainly require a multi-pronged approach, including the adoption of healthier lifestyles and better access to and utilization of health care services, and will need to be implemented in a way that respects the unique cultural characteristics of the African-American community. By contrast, the other finding of note from this analysis, concerning the burden of liver and intrahepatic bile duct cancers within every minority population in Nebraska, suggests the need for specific actions designed to prevent and control viral hepatitis, including increased screening with care referral for people chronically infected with HBV or HCV, full implementation of vaccine-based strategies to eliminate hepatitis B, and improved public health surveillance.[7]

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APPENDIX I.

Appendix I-a. Incidence rates§, by primary site and race/ethnicity, Nebraska, 2004-2013

Primary Site	White		African-American		American Indian		Asian/Pacific Islander		Hispanic*	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
All	87,030	464.7	2,964	519.2	391	352.2	581	283.8	2,316	374.1
Brain & central nervous system	1,317	7.5	37	4.3	4	2.4	10	3.3	62	5.5
Breast (female only)	12,030	123.6	398	126.1	56	80.6	83	63.7	333	100.7
Cervix uteri	571	7.0	24	6.7	7	6.5	12	9.1	51	10.2
Colorectal	9,377	49.1	334	64.9	47	44.7	75	39.6	180	33.0
Corpus uteri	2,680	26.9	59	19.0	7	8.3	13	9.1	82	25.6
Esophagus	939	4.9	34	5.9	6	6.3	3	1.0	14	2.9
Kidney & renal pelvis	3,032	16.2	125	22.1	33	25.2	17	8.4	126	19.2
Larynx	653	3.4	37	6.5	5	6.8	2	1.0	13	1.9
Leukemia	2,685	14.4	69	10.2	12	5.6	20	8.4	95	10.2
Liver & intrahepatic bile ducts	861	4.5	84	12.8	17	13.2	37	17.5	64	12.1
Lung & bronchus	11,668	61.7	441	83.2	47	56.6	72	40.2	169	37.3
Melanoma	3,237	18.1	5	0.4	5	4.1	3	1.0	34	5.3
Myeloma	1,098	5.7	79	14.2	5	2.8	6	2.3	41	7.9
NHL	3,892	20.8	92	15.3	20	15.4	16	12.8	122	20.5
Oral cavity & pharynx	2,088	11.0	63	9.8	13	11.6	26	11.9	53	7.4
Ovary	1,138	11.5	19	5.8	8	13.7	7	5.1	36	8.9
Pancreas	2,205	11.5	91	17.5	8	8.0	12	7.0	40	8.8
Prostate	11,986	136.8	521	201.0	26	63.9	45	64.6	250	107.0
Stomach	935	4.9	54	9.9	9	8.1	14	7.8	61	10.8
Thyroid	2,232	13.2	55	7.8	7	4.2	35	10.8	133	14.6
Urinary bladder	4,077	21.3	72	13.8	10	13.8	10	7.9	52	10.5

*persons of Hispanic origin may be of any race

§rates are the average annual number of cases per 100,000 population, excluding gender-specific sites (cervix uteri, corpus uteri, female breast, ovary, prostate), which are per 100,000 male or female population, and all rates are age-adjusted to the 2000 US population

ABBREVIATION: NHL, Non-Hodgkin lymphoma

Appendix I-b. Mortality rates§, by primary site and race/ethnicity, Nebraska, 2004-2013

Primary Site	White		African-American		American Indian		Asian/Pacific Islander		Hispanic*	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
All	32,435	167.3	1,129	222.7	157	168.1	192	110.6	499	102.6
Brain & central nervous system	947	5.2	25	3.0	0	0.0	6	2.7	21	2.3
Breast (female only)	2,206	20.6	83	27.4	11	16.4	11	9.3	39	13.3
Cervix uteri	174	1.9	7	2.1	3	3.2	1	0.6	9	2.5
Colorectal	3,392	17.2	128	28.2	19	16.4	19	11.9	38	8.0
Corpus uteri	507	4.7	18	6.8	1	0.9	3	2.9	8	3.5
Esophagus	846	4.4	35	6.3	3	3.2	3	1.6	7	1.2
Kidney & renal pelvis	864	4.5	21	4.8	7	8.3	4	2.3	22	3.7
Larynx	177	0.9	7	1.3	1	1.3	1	0.4	2	0.6
Leukemia	1,370	7.1	28	4.9	2	1.8	7	3.4	24	3.9
Liver & intrahepatic bile ducts	768	4.0	51	8.0	7	5.5	32	14.6	38	8.1
Lung & bronchus	8,569	44.9	316	63.6	47	58.2	42	24.7	79	19.0
Melanoma	589	5.8	2	0.7	1	1.0	1	1.2	4	1.5
Myeloma	621	3.2	40	8.3	5	3.0	3	1.0	19	4.4
NHL	1,318	6.7	20	4.0	2	3.8	12	8.5	23	5.2
Oral cavity & pharynx	404	2.1	16	3.0	5	8.3	4	2.0	4	0.7
Ovary	794	9.5	18	7.3	6	10.9	3	4.4	13	4.5
Pancreas	2,003	10.3	80	16.3	7	4.7	13	8.0	20	4.7
Prostate	1,817	22.8	61	34.7	5	10.0	2	5.6	28	20.6
Stomach	423	2.2	28	5.1	6	5.9	7	2.8	25	3.9
Thyroid	94	0.5	3	0.6	0	0.0	1	0.5	2	0.3
Urinary bladder	800	4.0	23	5.1	0	0.0	1	0.7	7	1.5

*persons of Hispanic origin may be of any race

§rates are the average annual number of deaths per 100,000 population, excluding gender-specific sites (cervix uteri, corpus uteri, female breast, ovary, prostate), which are per 100,000 male or female population, and all rates are age-adjusted to the 2000 US population

ABBREVIATION: NHL, Non-Hodgkin lymphoma

APPENDIX II.

Appendix II-a. Incidence rates§, by primary site and race/ethnicity, Nebraska and US, 2004-2013

Primary Site	White			African-American			American Indian			Asian/Pacific Islander			Hispanic*		
	Nebraska		US	Nebraska		US	Nebraska		US	Nebraska		US	Nebraska		US
	Number	Rate	Rate	Number	Rate	Rate	Number	Rate	Rate	Number	Rate	Rate	Number	Rate	Rate
All	87,030	464.7	469.0	2,964	519.2	478.2	391	352.2	295.3	581	283.8	299.4	2,316	374.1	367.5
Brain & central nervous system	1,317	7.5	7.2	37	4.3	4.1	4	2.4	3.4	10	3.3	3.6	62	5.5	5.3
Breast (female only)	12,030	123.6	124.1	398	126.1	120.2	56	80.6	69.6	83	63.7	86.8	333	100.7	92.5
Cervix uteri	571	7.0	7.6	24	6.7	10.0	7	6.5	6.8	12	9.1	6.7	51	10.2	10.8
Colorectal	9,377	49.1	43.3	334	64.9	52.1	47	44.7	32.5	75	39.6	34.4	180	33.0	38.4
Corpus uteri	2,680	26.9	25.4	59	19.0	23.4	7	8.3	16.0	13	9.1	17.1	82	25.6	20.9
Esophagus	939	4.9	4.9	34	5.9	5.0	6	6.3	3.2	3	1.0	2.3	14	2.9	3.0
Kidney & renal pelvis	3,032	16.2	15.9	125	22.1	16.9	33	25.2	15.7	17	8.4	7.4	126	19.2	15.7
Larynx	653	3.4	3.7	37	6.5	5.1	5	6.8	2.4	2	1.0	1.2	13	1.9	2.8
Leukemia	2,685	14.4	13.9	69	10.2	10.3	12	5.6	7.8	20	8.4	7.5	95	10.2	10.8
Liver & intrahepatic bile ducts	861	4.5	6.3	84	12.8	9.4	17	13.2	8.9	37	17.5	13.8	64	12.1	12.5
Lung & bronchus	11,668	61.7	66.1	441	83.2	68.4	47	56.6	46	72	40.2	36.8	169	37.3	34.5
Melanoma	3,237	18.1	22.4	5	0.4	1.1	5	4.1	4.8	3	1.0	1.4	34	5.3	4.6
Myeloma	1,098	5.7	5.6	79	14.2	12.3	5	2.8	4.3	6	2.3	3.6	41	7.9	6.2
NHL	3,892	20.8	20.0	92	15.3	14.1	20	15.4	11.3	16	12.8	12.7	122	20.5	17.5
Oral cavity & pharynx	2,088	11.0	11.4	63	9.8	9.6	13	11.6	7.0	26	11.9	7.6	53	7.4	7.2
Ovary	1,138	11.5	12.7	19	5.8	9.5	8	13.7	8.6	7	5.1	9.1	36	8.9	10.9
Pancreas	2,205	11.5	11.9	91	17.5	15.3	8	8.0	7.9	12	7.0	9.1	40	8.8	11.1
Prostate	11,986	136.8	129.0	521	201.0	212.7	26	63.9	75.6	45	64.6	71.8	250	107.0	117.5
Stomach	935	4.9	6.0	54	9.9	10.9	9	8.1	6.6	14	7.8	11.7	61	10.8	10.5
Thyroid	2,232	13.2	13.1	55	7.8	7.9	7	4.2	6.3	35	10.8	12.9	133	14.6	11.5
Urinary bladder	4,077	21.3	22.5	72	13.8	11.8	10	13.8	8.8	10	7.9	8.8	52	10.5	11.9

*persons of Hispanic origin may be of any race

§rates are the average annual number of cases per 100,000 population, excluding gender-specific sites (cervix uteri, corpus uteri, female breast, ovary, prostate), which are per 100,000 male or female population, and all rates are age-adjusted to the 2000 US population

ABBREVIATION: NHL, Non-Hodgkin lymphoma

Appendix II-b. Mortality rates§, by primary site and race/ethnicity, Nebraska and US, 2004-2013

Primary Site	White			African-American			American Indian			Asian/Pacific Islander			Hispanic*		
	Nebraska		US	Nebraska		US	Nebraska		US	Nebraska		US	Nebraska		US
	Number	Rate	Rate	Number	Rate	Rate	Number	Rate	Rate	Number	Rate	Rate	Number	Rate	Rate
All	32,435	167.3	174.3	1,129	222.7	208.0	157	168.1	120.5	192	110.6	107.4	499	102.6	120.9
Brain & central nervous system	947	5.2	4.7	25	3.0	2.5	0	0.0	1.9	6	2.7	2.0	21	2.3	2.8
Breast (female only)	2,229	20.6	21.9	83	27.4	30.6	11	16.4	12.3	11	9.3	11.5	39	13.3	14.8
Cervix uteri	174	1.9	2.2	7	2.1	4.1	0	0.0	2.2	1	0.6	1.9	9	2.5	2.8
Colorectal	3,392	17.2	15.7	128	28.2	22.3	19	16.4	12.5	19	11.9	10.9	38	8.0	12.4
Corpus uteri	507	4.7	4.0	18	6.8	7.6	1	1.0	2.5	3	4.4	2.7	8	3.8	3.4
Esophagus	846	4.4	4.3	35	6.3	4.3	3	3.2	2.7	3	1.6	1.8	7	1.2	2.3
Kidney & renal pelvis	864	4.5	4.1	21	4.8	3.8	7	8.3	3.6	4	2.3	3.9	22	3.7	3.6
Larynx	177	0.9	1.1	7	1.3	1.9	1	1.3	0.8	1	0.4	0.4	2	0.6	0.8
Leukemia	1,370	7.1	7.3	28	4.9	6.1	2	1.8	3.6	7	3.4	3.9	24	3.9	4.9
Liver & intrahepatic bile ducts	768	4.0	5.3	51	8.0	7.6	7	5.5	7.0	32	14.6	9.8	38	8.1	8.7
Lung & bronchus	8,569	44.9	49.3	316	63.6	52.7	47	58.2	32.4	42	24.7	25.1	79	19.0	20.9
Melanoma	589	5.8	3.1	2	0.7	0.4	1	1.0	0.8	1	1.2	0.4	4	1.5	0.8
Myeloma	621	3.2	3.2	40	8.3	6.4	5	3.0	2.3	3	1.0	1.7	19	4.4	2.8
NHL	1,318	6.7	6.6	20	4.0	4.5	2	3.8	3.5	12	8.5	4.1	23	5.2	5.2
Oral cavity & pharynx	404	2.1	2.4	16	3.0	3.1	5	8.3	1.7	4	2.0	2.0	4	0.7	1.5
Ovary	794	9.5	8.3	18	7.3	6.7	6	10.9	5.1	3	1.8	4.7	13	2.2	5.7
Pancreas	2,003	10.3	10.7	80	16.3	13.6	7	4.7	6.8	13	8.0	7.7	20	4.7	8.6
Prostate	1,817	22.8	20.8	61	34.7	49.0	5	10.0	16.7	2	5.6	9.9	28	20.6	18.4
Stomach	423	2.2	3.1	28	5.1	6.6	6	5.9	3.8	7	2.8	6.3	25	3.9	5.7
Thyroid	94	0.5	0.5	3	0.6	0.5	0	0.0	0.4	1	0.5	0.7	2	0.3	0.6
Urinary bladder	800	4.0	4.6	23	5.1	3.6	0	0.0	1.9	1	0.7	1.7	7	1.5	2.4

*persons of Hispanic origin may be of any race

§rates are the average annual number of cases per 100,000 population, excluding gender-specific sites (cervix uteri, corpus uteri, female breast, ovary, prostate), which are per 100,000 male or female population, and all rates are age-adjusted to the 2000 US population

ABBREVIATION: NHL, Non-Hodgkin lymphoma

APPENDIX III.

Appendix III-a. Incidence rates§, by primary site and race/ethnicity, Nebraska, 2004-2013 and 1994-2003

Primary Site	White				African-American				American Indian				Asian/Pacific Islander				Hispanic*			
	2004-2013		1994-2003		2004-2013		1994-2003		2004-2013		1994-2003		2004-2013		1994-2003		2004-2013		1994-2003	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
All	87,030	464.7	79,108	467.1	2,964	519.2	2,120	510.2	391	352.2	342	497.0	581	283.8	335	334.3	2,316	374.1	1,232	421.3
Brain & central nervous system	1,317	7.5	1,158	7.1	37	4.3	22	3.3	4	2.4	3	2.7	10	3.3	7	3.1	62	5.5	18	3.5
Breast (female only)	12,030	123.6	11,840	131.7	398	126.1	291	117.6	56	80.6	40	84.6	83	63.7	42	62.5	333	100.7	158	102.9
Cervix uteri	571	7.0	677	8.4	24	6.7	25	8.5	7	6.5	8	16.1	12	9.1	20	22.0	51	10.2	48	21.0
Colorectal	9,377	49.1	10,146	58.3	334	64.9	235	61.1	47	44.7	40	60.5	75	39.6	35	50.3	180	33.0	149	64.3
Corpus uteri	2,680	26.9	2,502	27.8	59	19.0	39	16.4	7	8.3	9	20.8	13	9.1	7	9.4	82	25.6	41	27.1
Esophagus	939	4.9	745	4.4	34	5.9	22	5.4	6	6.3	2	2.8	3	1.0	6	9.2	14	2.9	11	5.2
Kidney & renal pelvis	3,032	16.2	2,147	12.8	125	22.1	71	16.2	33	25.2	30	37.9	17	8.4	8	7.8	126	19.2	42	13.3
Larynx	653	3.4	641	3.9	37	6.5	26	6.2	5	6.8	2	3.9	2	1.02	2	1.4	13	1.9	7	2.4
Leukemia	2,685	14.4	2,304	13.5	69	10.2	53	12.0	12	5.6	9	13.7	20	8.4	17	8.5	95	10.2	64	12.0
Liver & intrahepatic bile ducts	861	4.5	528	3.1	84	12.8	33	7.4	17	13.2	11	17.4	37	17.5	18	18.2	64	12.1	28	11.5
Lung & bronchus	11,668	61.7	10,561	62.1	441	83.2	377	93.4	47	56.6	42	69.9	72	40.2	39	44.8	169	37.3	128	52.6
Melanoma	3,237	18.1	2,242	13.7	5	0.4	2	0.6	5	4.1	7	8.6	3	1.0	3	4.2	34	5.3	14	3.7
Myeloma	1,098	5.7	897	5.2	79	14.2	48	12.8	5	2.8	4	7.1	6	2.3	4	5.8	41	7.9	23	8.3
NHL	3,892	20.8	3,345	19.7	92	15.3	76	17.9	20	15.4	10	17.4	16	12.8	15	12.0	122	20.5	55	18.7
Oral cavity & pharynx	2,088	11.0	1,778	10.6	63	9.8	42	8.9	13	11.6	15	20.3	26	11.9	12	8.4	53	7.4	21	6.1
Ovary	1,138	11.5	1,398	15.7	19	5.8	21	8.2	8	13.7	6	16.4	7	5.1	4	4.4	36	8.9	19	10.4
Pancreas	2,205	11.5	1,650	9.5	91	17.5	56	14.8	8	8.0	9	18.1	12	7.0	10	9.6	40	8.8	23	9.2
Prostate	11,986	136.8	12,144	163.8	521	201.0	372	228.2	26	63.9	44	188.8	45	64.6	24	94.8	250	107	127	121.8
Stomach	935	4.9	954	5.5	54	9.9	51	12.5	9	8.1	5	6.2	14	7.8	8	6.4	61	10.8	31	14.1
Thyroid	2,232	13.2	1,131	7.2	55	7.8	15	2.8	7	4.2	4	3.4	35	10.8	15	9.0	133	14.6	40	6.6
Urinary bladder	4,077	21.3	3,588	20.7	72	13.8	38	10.1	10	13.8	3	3.5	10	7.9	6	6.6	52	10.5	35	12.7

*persons of Hispanic origin may be of any race

§rates are the average annual number of cases per 100,000 population, excluding gender-specific sites (cervix uteri, corpus uteri, female breast, ovary, prostate), which are per 100,000 male or female population, and all rates are age-adjusted to the 2000 US population

ABBREVIATION: NHL, Non-Hodgkin lymphoma

Appendix III-b. Mortality rates§, by primary site and race/ethnicity, Nebraska, 2004-2013 and 1994-2003

Primary Site	White				African-American				American Indian				Asian/Pacific Islander				Hispanic*			
	2004-2013		1994-2003		2004-2013		1994-2003		2004-2013		1994-2003		2004-2013		1994-2003		2004-2013		1994-2003	
	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
All	32,435	167.3	32,133	183.8	1,129	222.7	1,016	263.5	157	168.1	142	244.0	192	110.6	109	135.3	499	102.6	313	133.3
Brain & central nervous system	947	5.2	886	5.3	25	3.0	10	2.1	0	0.0	0	0.0	6	2.7	3	1.8	21	2.3	7	2.5
Breast (female only)	2,229	20.6	2,487	25.7	83	27.4	91	39.2	11	16.4	10	27.7	11	9.3	6	12.8	39	13.3	18	13.4
Cervix uteri	174	1.9	209	2.4	7	2.1	8	2.9	3	3.2	3	4.9	1	0.6	3	3.4	9	2.5	11	7.3
Colorectal	3,392	17.2	3,879	21.7	128	28.2	115	31.2	19	16.4	13	26.5	19	11.9	9	10.8	38	8.0	44	20.1
Corpus uteri	507	4.7	439	4.3	18	6.8	7	3.5	1	0.9	4	11.4	3	2.9	0	0.0	8	3.5	4	4.1
Esophagus	846	4.4	715	4.2	35	6.3	22	5.7	3	3.2	3	5.7	3	1.6	2	5.1	7	1.2	8	3.8
Kidney & renal pelvis	864	4.5	783	4.5	21	4.8	19	4.9	7	8.3	8	10.5	4	2.3	1	1.5	22	3.7	9	3.3
Larynx	177	0.9	142	0.8	7	1.3	8	1.8	1	1.3	3	3.3	1	0.4	0	0.0	2	0.6	0	0
Leukemia	1,370	7.1	1,389	7.8	28	4.9	38	9.6	2	1.8	3	6.7	7	3.4	3	1.0	24	3.9	16	5.1
Liver & intrahepatic bile ducts	768	4.0	524	3.0	51	8.0	31	6.9	7	5.5	5	8.4	32	14.6	10	8.9	38	8.1	22	10.8
Lung & bronchus	8,569	44.9	8,463	49.2	316	63.6	302	76.5	47	58.2	37	62.4	42	24.7	28	36.3	79	19.0	54	23.9
Melanoma	589	5.8	469	2.8	2	0.7	1	0.3	1	1.0	0	0.0	1	1.2	1	2.5	4	1.5	4	1.3
Myeloma	621	3.2	618	3.5	40	8.3	31	8.6	5	3.0	1	1.2	3	1.0	4	8.8	19	4.4	4	1.7
NHL	1,318	6.7	1,450	8.2	20	4.0	33	8.9	2	3.8	6	8.5	12	8.5	3	4.4	23	5.2	12	4.8
Oral cavity & pharynx	404	2.1	361	2.1	16	3.0	14	3.5	5	8.3	2	3.9	4	2.0	1	1.9	4	0.7	3	1.1
Ovary	794	9.5	854	8.7	18	7.3	9	3.8	6	10.9	3	7.6	3	4.4	2	3.3	13	4.5	7	5.8
Pancreas	2,003	10.3	1,671	9.5	80	16.3	50	13.7	7	4.7	8	17.1	13	8.0	11	12.8	20	4.7	14	6.9
Prostate	1,817	22.8	1,912	27.9	61	34.7	65	59.5	5	10.0	4	23.9	2	5.6	2	14.4	28	20.6	7	9.7
Stomach	423	2.2	545	3.1	28	5.1	36	9.1	6	5.9	3	5.9	7	2.8	7	6.8	25	3.9	20	9.2
Thyroid	94	0.5	72	0.2	3	0.6	2	0.3	0	0.0	0	0.0	1	0.5	0	0.0	2	0.3	0	0
Urinary bladder	800	4.0	674	3.7	23	5.1	12	3.7	0	0.0	0	0.0	1	0.7	1	1.1	7	1.5	4	1.6

*persons of Hispanic origin may be of any race

§rates are the average annual number of cases per 100,000 population, excluding gender-specific sites (cervix uteri, corpus uteri, female breast, ovary, prostate), which are per 100,000 male or female population, and all rates are age-adjusted to the 2000 US population

ABBREVIATION: NHL, Non-Hodgkin lymphoma

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