



2024
CHOCTAW NATION
OF OKLAHOMA
COMPREHENSIVE CANCER REPORT

2016 - 2020



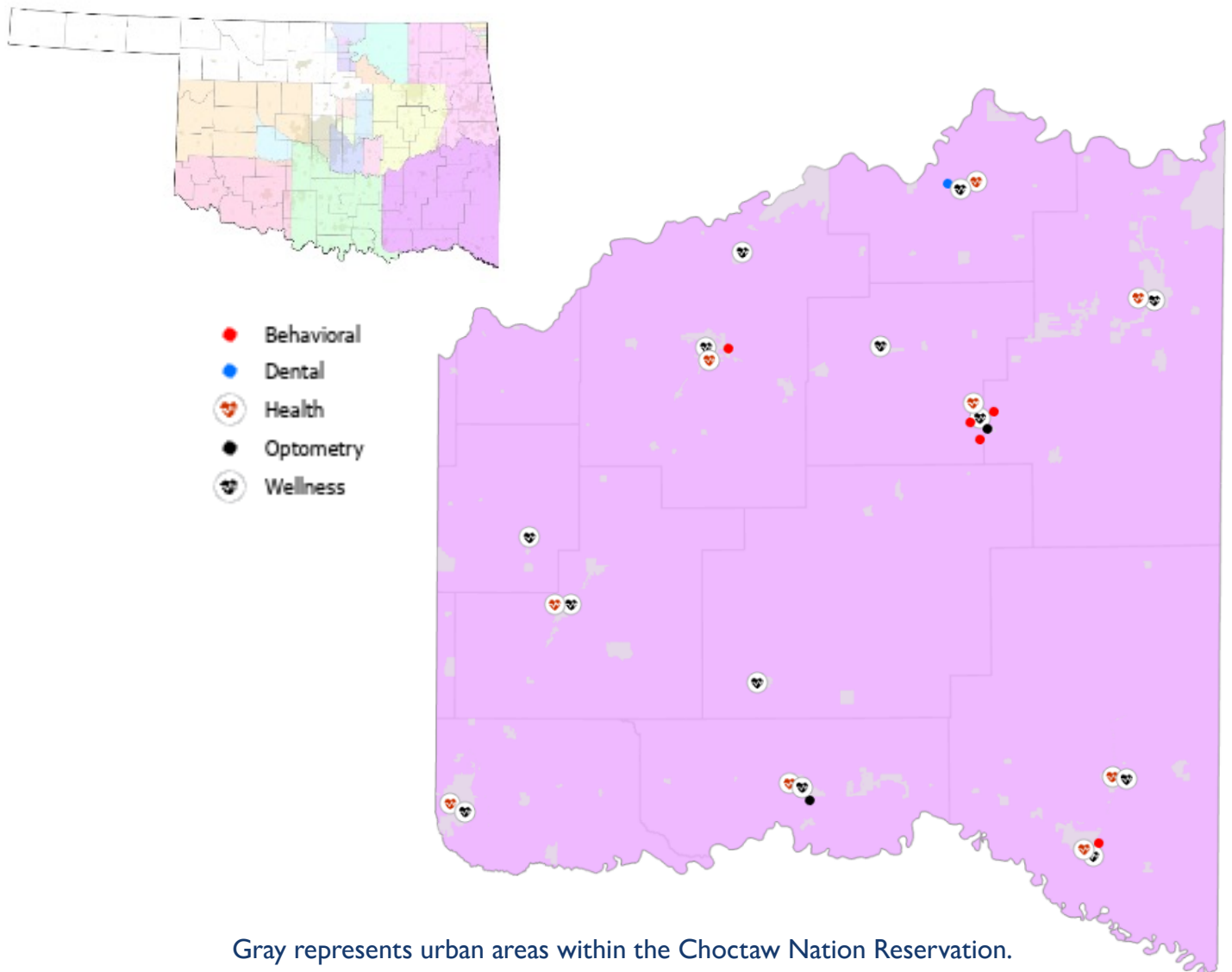
Choctaw Nation Public Health

ABOUT CHOCTAW NATION

The Choctaw Nation is the third-largest Indian nation in the United States, with over 225,000 and 12,000-plus associates. The first tribe over the Trail of Tears, historic boundaries are in the southeast corner of Oklahoma. The Choctaw Nation's vision, "Living out the Chahta Spirit of faith, family and culture," is evident as it continues to focus on providing opportunities for growth and prosperity.



The Choctaw Nation Health Services Authority (CNHSA) is the hub of our health system and is responsible for delivering a wide array of services to a population of over 38,000 people. In 1999, the Choctaw Nation was the first tribe to build its own hospital. This state-of-the-art facility in Talihina includes inpatient care, surgery, family practice and pediatrics, radiology, physical therapy, optometry, dental, 24/7 emergency services, and more. In addition, CNHSA operates eight outlying clinics located in Atoka, Broken Bow, Durant, Hugo, Idabel, McAlester, Poteau, and Stigler (Figure 2). CNHSA also operates other services throughout southeastern Oklahoma, including a Diabetes Wellness Center, behavioral health and substance abuse programs, residential treatment facilities, and fitness centers.



OVERVIEW

Cancer continues to be a leading cause of morbidity and mortality within both the Choctaw Nation and the State of Oklahoma. In 2021, cancer was the second leading cause of death within the State of Oklahoma, preceded by heart disease. Likewise, cancer was the second leading cause of death within the Choctaw Nation Reservation between 2016 – 2020, with higher age-adjusted mortality rates compared to the State of Oklahoma and the United States. The Choctaw Nation of Oklahoma is committed to reducing cancer and chronic disease rates by improving screening accessibility, access to healthcare and fitness centers, and improving social determinants of health across the CNO Reservation. This report provides an overview and comparison of current cancer rates within the Choctaw Nation of Oklahoma, the State of Oklahoma, and the United States. This report includes publicly available cancer data between 2016 and 2020. For the purposes of this report, “Choctaw Nation” includes data reported on the following counties: Atoka, Bryan, Choctaw, Coal, Haskell, Hughes, Latimer, LeFlore, McCurtain, Pittsburg, and Pushmataha (commonly referred to as the “Choctaw Nation Reservation”).

DEFINITIONS

- ◆ Age-adjusted rate: A rate statistically modified to eliminate the effect of different age distributions in different populations.
- ◆ Age-specific rate: A rate limited to a particular age group.
- ◆ Age adjustment: A method used to make comparisons between groups over a period of time. This method is utilized to calculate the weighted average of the rates within each age group and uses the standardized population to calculate rates. This method is employed to reduce the confounding effects of age when comparing incidence rates across various populations.
- ◆ Cancer incidence: The number of new cancer cases occurring in a population during a specified period, expressed as a rate per 100,000 population.
- ◆ Cancer mortality: The number of cancer deaths occurring in a population during a specified period, expressed as a rate per 100,000 population.
- ◆ Cause of death: The resultant cause of death as reported by the ICD code(s) on state-issued death certificates.
- ◆ IHS-linked race classification: OSDH databases communicate with Indian Health Services (IHS) medical records to improve the racial classification of American Indians/Alaskan Natives. Individuals with personal information matching IHS medical records are classified as American Indian/Alaskan Native.
- ◆ In situ: Carcinoma in situ, also called in situ cancers, refers to a group of abnormal cells that have not spread from where they first formed. This is often considered the earliest form of cancer and is considered stage 0.
- ◆ Mortality rate (death rate): A calculation of $100,000 \times (\text{number of resident deaths}) / (\text{resident population})$.
- ◆ Rate: The number of diseases and/or deaths within a specified period.
- ◆ Stage of diagnosis: the proportion of cases diagnosed at a specific stage compared with all cases diagnosed during a specified period.

DATA SOURCES AND INTERPRETING THE RESULTS

Interpreting the Results:

For example, the overall age-adjusted cancer incidence rate between 2016 and 2020 within Choctaw Nation is 465.6 per 100,000 and 443.4 per 100,000 within the State of Oklahoma. These figures are interpreted as out of 100,000 people in the Choctaw Nation, approximately 465 of them have been diagnosed with cancer. Likewise, out of 100,000 people within the State of Oklahoma, 443 were diagnosed with cancer between 2016 and 2020. These standardized figures also allow for comparisons between the two regions. For example, the overall age-adjusted cancer incidence rate within Choctaw Nation was higher than that of Oklahoma between 2016 and 2020 (465.6 and 443.4, respectively), meaning the incidence rate of new cancer diagnoses within Choctaw Nation was greater during that period.

Data Sources:

State and county data were obtained from the Oklahoma State Department of Health (OSDH) Central Cancer Registry via the OK2SHARE platform. Data related to national-level rates were obtained from the National Cancer Institute (NCI) State Cancer Profiles.

OVERALL AGE-ADJUSTED CANCER INCIDENCE RATES IN CHOCTAW NATION (2016-2020)



CNO CANCER INCIDENCE RATE

465.6

OK CANCER INCIDENCE RATE

443.4

U.S. CANCER INCIDENCE RATE

442.3

Between 2016 and 2020, Choctaw nation's overall cancer incidence rate was higher than the State of Oklahoma and the United States. During the same time frame, the top five cancers diagnosed within the Choctaw Nation include lung and bronchus cancer, female breast cancer (excluding in situ), male prostate cancer, colon and rectum cancer, and melanomas of the skin.

- ◆ Lung and bronchus cancer rates within the Choctaw Nation are higher than Oklahoma and National rates.
- ◆ Female breast cancer rates in Choctaw Nation are lower than those of Oklahoma and the United States.
- ◆ Male prostate cancer rates in Choctaw Nation are lower than those of Oklahoma and the United States.
- ◆ Colon and rectum cancer rates in Choctaw Nation are higher than those in Oklahoma and the United States.
- ◆ Skin cancer rates within Choctaw Nation are lower than Oklahoma's but slightly higher than national rates.

TOP 5 CANCERS DIAGNOSED WITHIN THE CHOCTAW NATION OF OKLAHOMA (2016-2020)

CANCER TYPE	CHOCTAW NATION AGE-ADJUSTED INCIDENCE RATE	STATE OF OKLAHOMA AGE-ADJUSTED INCIDENCE RATE	UNITED STATES AGE-ADJUSTED INCIDENCE RATE
LUNG & BRONCHUS	75.7	63.3	54.0
BREAST (FEMALE) (EXCLUDING IN SITU)	107.1	122.6	127.0
PROSTATE (MALE)	80.5	100.6	110.5
COLON & RECTUM	44.4	40.5	36.5
MELANOMAS OF THE SKIN	26.9	39.1	22.5

References:

Oklahoma State Department of Health (OSDH)
OK2SHARE. Accessed January 2024.
National Cancer Institute (NCI)
State Cancer Profiles, Oklahoma. Accessed March 2024.

CANCER INCIDENCE

Cancer Case Count and Age-Adjusted Incidence Rates by Race/Ethnicity (2016-2020)

Race/Ethnicity	CHOCTAW NATION OF OKLAHOMA		STATE OF OKLAHOMA	
	Number of Cases	Age-Adjusted Incidence Rate	Number of Cases	Age-Adjusted Incidence Rate
WHITE	6,316	444.1	91,767	467.5
BLACK/AFRICAN AMERICAN	227	433.8	6,697	453.5
AMERICAN INDIAN	1,166	543.7	11,046	631.5
ASIAN	43	498.8	1,402	331.4

Cancer incidence among American Indians is higher within the Choctaw Nation compared to all other races. However, American Indian cancer incidence is lower in the Choctaw Nation when compared to the entire State of Oklahoma.

FEMALE BREAST CANCER

Female breast cancer is the leading form of cancer in the Choctaw Nation. Age-adjusted incidence rates of female breast cancers (excluding in-situ) are lower in the Choctaw Nation compared to the rates of Oklahoma and the United States (107.1, 122.6, and 127.0, respectively).

Risks for breast cancer increase with age and can also be impacted by genetic factors, family history, physical activity levels, and many other factors. Between 2016 and 2020, the incidence of breast cancer was greatest among ages 70 - 79 years old in both the Choctaw Nation and the State of Oklahoma.

Routine mammograms are recommended to identify breast cancer early on. Mammogram services are available at various Choctaw Nation Healthcare facilities at no cost to patients.

The majority (53.6%) of breast cancers within Choctaw Nation are diagnosed in the localized stage, followed by in-situ (11.4%), unknown (8.0%), and distant (5.1%). Comparisons of breast cancer stages at diagnosis between the Choctaw Nation and the State of Oklahoma are located on the following page.

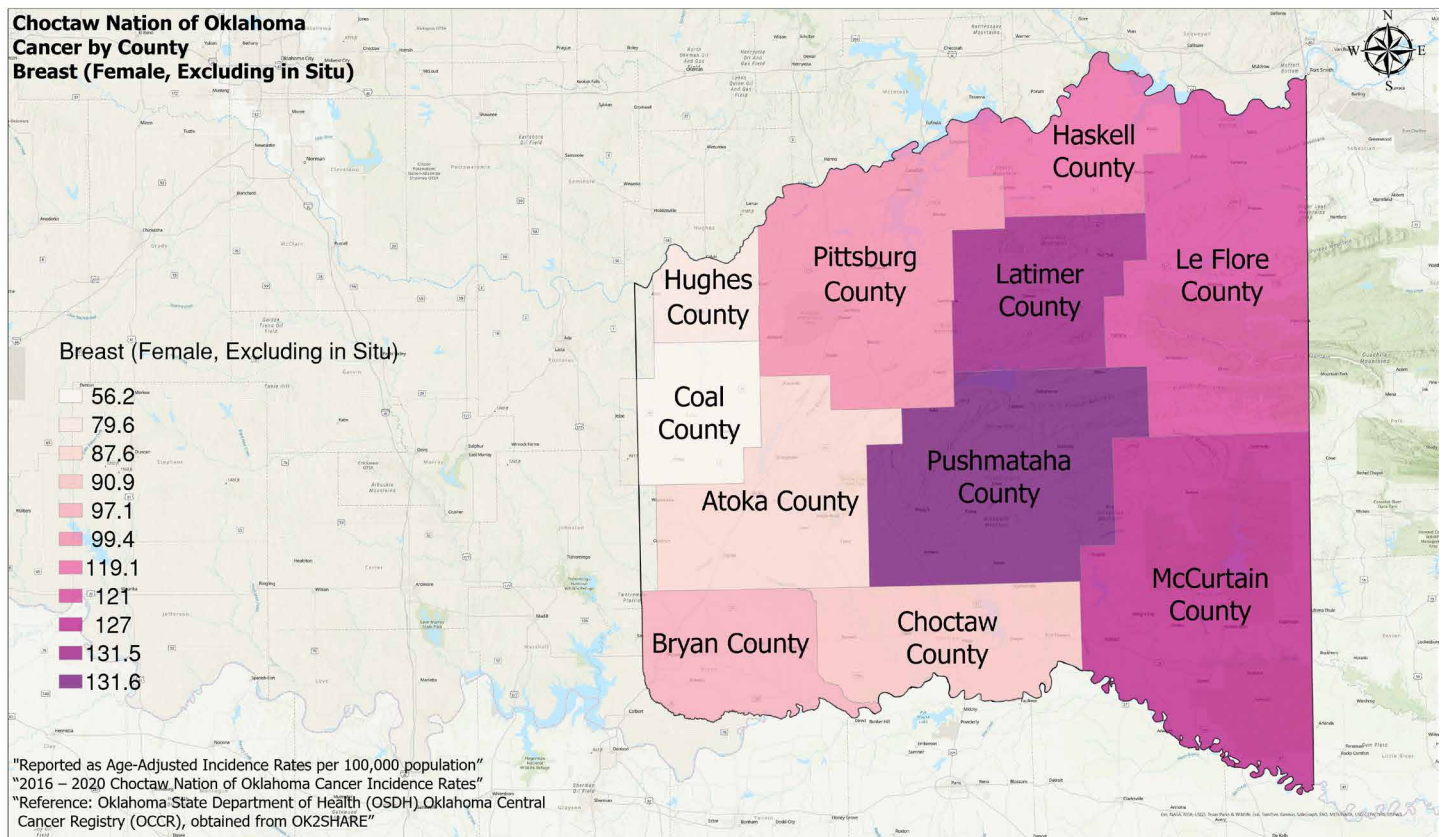
FEMALE BREAST CANCER (EXCLUDING IN SITU) INCIDENCE BY AGE GROUP (2016-2020)

Age	CHOCTAW NATION OF OKLAHOMA		STATE OF OKLAHOMA	
	Number of Cases	Incidence Rate	Number of Cases	Incidence Rate
10 – 19 YEARS OLD	0	0	*	*
20 – 29 YEARS OLD	2	2.65	80	5.9
30 – 39 YEARS OLD	38	51.5	556	42.7
40 – 49 YEARS OLD	88	124.0	1,731	150.0
50 – 59 YEARS OLD	186	226.0	2,993	242.6
60 – 69 YEARS OLD	267	328.1	4,304	374.0
70 – 79 YEARS OLD	229	387.5	3,337	453.1
80+ YEARS OLD	88	255.7	1,608	358.5

* Indicates that the data has been suppressed by OSDH due to small numbers.

FEMALE BREAST CANCER STAGE AT DIAGNOSIS PERCENTAGE (2016-2020)

STAGE	CHOCTAW NATION OF OKLAHOMA	STATE OF OKLAHOMA
IN SITU	11.4%	13.7%
LOCALIZED	53.6%	53.0%
REGIONAL	21.9%	22.8%
DISTANT	5.1%	5.8%
UNKNOWN	8.0%	4.7%



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LUNG & BRONCHUS CANCER

Lung and bronchus cancer incidence rates are higher in the Choctaw Nation compared to the rates of Oklahoma and the United States. It is one of the leading forms of cancer in both the United States and the State of Oklahoma, and more people die from lung cancer than any other cancer type in the U.S.

Cigarette smoking is the leading cause of lung cancer, followed by inhalation of other substances such as asbestos, radon, and secondhand smoke. As the rate of commercial tobacco use declines across the United States, rates of lung cancer continue to decline as well.

Between 2016 and 2020, lung and bronchus cancer incidence in Choctaw Nation increased among age groups, with the highest incidence rate being among ages 70 -79 years old, followed by the 80+ age category.

The majority (42.2%) of lung and bronchus cancers within the Choctaw Nation are diagnosed in the distant stage, followed by regional (20.7%), localized (20.0%), and unknown (17.1%).

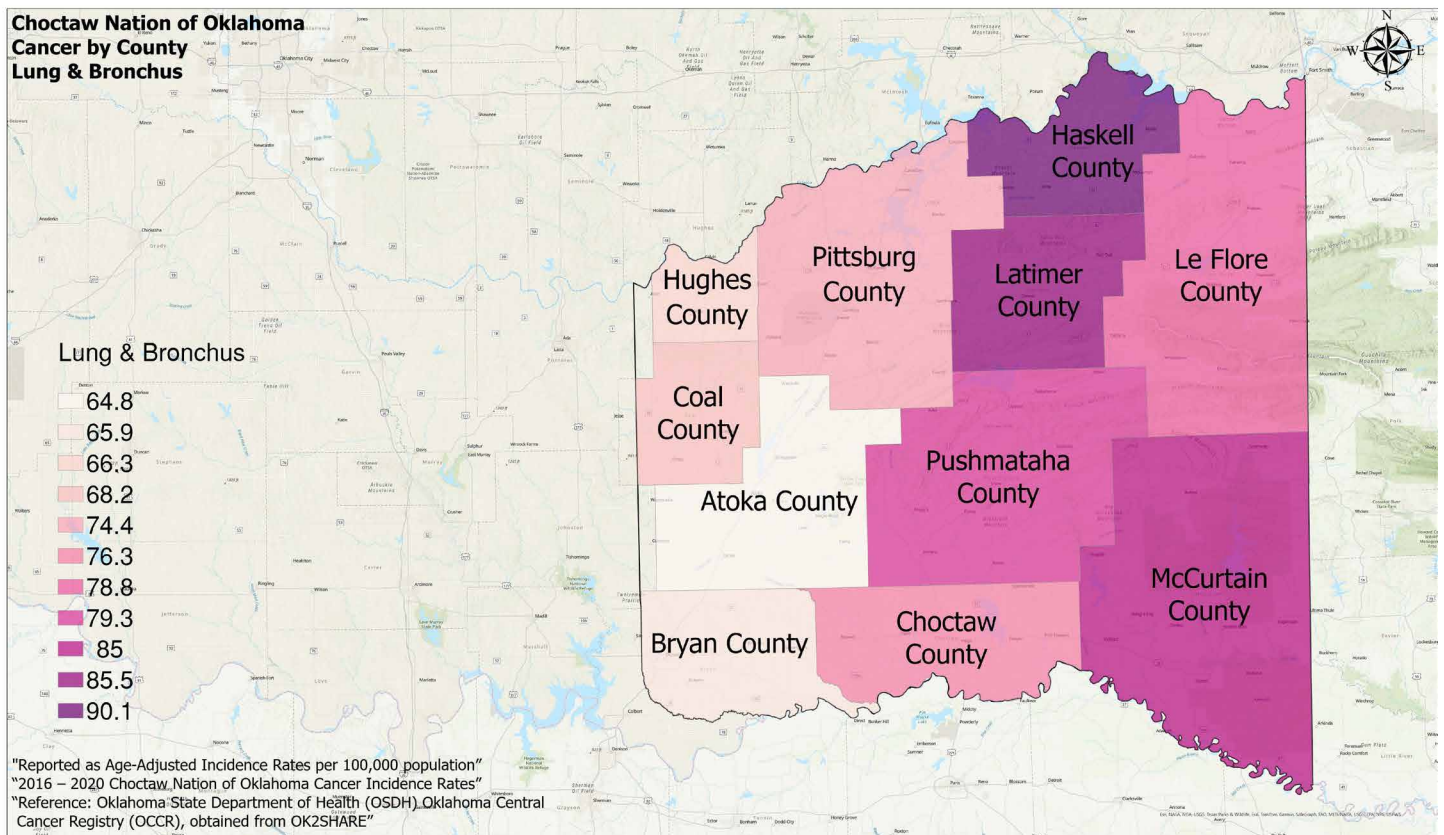
LUNG & BRONCHUS CANCER INCIDENCE BY AGE GROUP (2016-2020)

Age	CHOCTAW NATION OF OKLAHOMA		STATE OF OKLAHOMA	
	Number of Cases	Incidence Rate	Number of Cases	Incidence Rate
10 – 19 YEARS OLD	0	0	*	*
20 – 29 YEARS OLD	*	*	22	0.8
30 – 39 YEARS OLD	*	*	62	2.4
40 – 49 YEARS OLD	28	19.2	306	13.2
50 – 59 YEARS OLD	200	123.0	2,169	89.4
60 – 69 YEARS OLD	460	296.0	4,885	222.4
70 – 79 YEARS OLD	499	451.0	5,394	398.7
80+ YEARS OLD	203	347.0	2,555	345.5

* Indicates that the data has been suppressed by OSDH due to small numbers.

LUNG & BRONCHUS CANCER STAGE AT DIAGNOSIS PERCENTAGE (2016-2020)

STAGE	CHOCTAW NATION OF OKLAHOMA	STATE OF OKLAHOMA
IN SITU	0	0.1%
LOCALIZED	20%	22.5%
REGIONAL	20.7%	20.7%
DISTANT	42.2%	43.1%
UNKNOWN	17.1%	13.6%



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PROSTATE CANCERS

Age-adjusted incidence rates of male prostate cancers are lower in the Choctaw Nation compared to rates of the State of Oklahoma and the United States. All men are at risk of developing prostate cancer, but the risk generally increases with age. Individuals with a family history of prostate cancer and of African American descent are often considered to have a higher risk of developing prostate cancer at some point in life. Specific tests can be performed to screen for prostate cancer, including a prostate-specific antigen (PSA) blood test. The United States Preventative Task Force (USPSTF) recommends men who are 55 – 69 years of age speak with their doctor about a prostate cancer screening.

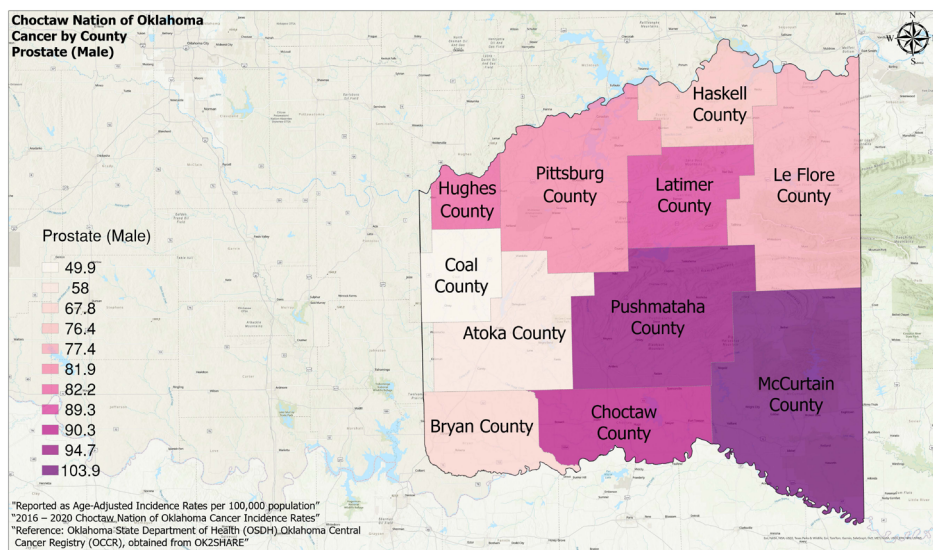
STAGE	CHOCTAW NATION OF OKLAHOMA	STATE OF OKLAHOMA
IN SITU	0	*
LOCALIZED	61.5%	66.8%
REGIONAL	13.0%	11.1%
DISTANT	8.6%	7.7%
UNKNOWN	16.9%	14.3%

AGE-ADJUSTED MALE PROSTATE CANCER INCIDENCE RATES PER 100,000 BY COUNTY 2016-2020	
ATOKA	58.0
BRYAN	67.8
CHOCTAW	90.3
COAL	49.9
HASKELL	76.4
HUGHES	82.2
LATIMER	89.3
LEFLORE	77.4
MCCURTAIN	103.9
PITTSBURG	81.9
PUSHMATAHA	94.7

MALE PROSTATE CANCER INCIDENCE BY AGE GROUP (2016-2020)

Age	CHOCTAW NATION OF OKLAHOMA		STATE OF OKLAHOMA	
	Number of Cases	Incidence Rate	Number of Cases	Incidence Rate
10 – 19 YEARS OLD	0	0	0	0
20 – 29 YEARS OLD	0	0	*	*
30 – 39 YEARS OLD	0	0	*	*
40 – 49 YEARS OLD	10*	13.3*	187	16.1
50 – 59 YEARS OLD	107	133.3	1,901	159.6
60 – 69 YEARS OLD	282	380.1	4,851	464.0
70 – 79 YEARS OLD	230	445.3	3,599	583.8
80+ YEARS OLD	81	336.3	1,170	402.0

* Indicates that the data has been suppressed by OSDH due to small numbers.



Scale: Choctaw, 2016-3-31
Credit: Choctaw Nation GIS Department
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URL: geographicinformation.choctawnation.com/geographicinformation.aspx | 2024
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COLON AND RECTUM CANCERS

Age-adjusted incidence rates of colon and rectum (colorectal) cancers within the Choctaw Nation are higher than those of the State of Oklahoma and the United States. Colorectal cancers are cancers of cells in the colon and/or rectum that grow out of control. The colon is the large intestine and/or large bowel. Abnormal growths, called polyps, can sometimes turn cancerous. Screening tests are key to identifying and removing polyps before they become cancerous. Screenings can also identify colorectal cancers early, improving treatment success and overall outcomes. Risks of colorectal cancers increase with age. Individuals with conditions such as inflammatory bowel disease, certain genetic syndromes, and a family history of colorectal cancer are considered at higher risk of developing colorectal cancers at some point in life. Lifestyle factors can also contribute to colorectal cancer, including lack of physical activity, unbalanced diet of fruits and vegetables, low-fiber and high-fat consumption, alcohol consumption, and tobacco use. It is recommended that individuals begin routine colorectal cancer screenings at age 45. Symptoms of colorectal cancers can include changes in bowel habits, blood in stool, diarrhea or constipation, abdominal pain or cramps that do not improve, and abnormal or unexpected weight loss.

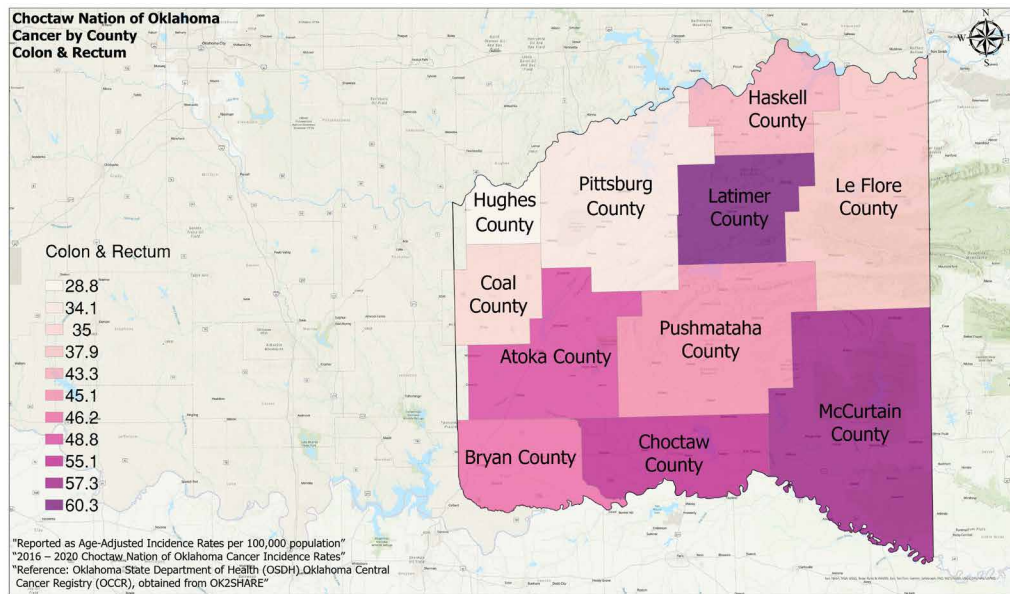
STAGE	CHOCTAW NATION OF OKLAHOMA	STATE OF OKLAHOMA
IN SITU	1.8%	2.1%
LOCALIZED	25.7%	30.4%
REGIONAL	36.6%	33.5%
DISTANT	21.7%	21.7%
UNKNOWN	14.2%	12.3%

AGE-ADJUSTED COLORECTAL CANCER INCIDENCE RATES PER 100,000 BY COUNTY (2016-2020)	
ATOKA	48.8
BRYAN	46.2
CHOCTAW	55.1
COAL	35.0
HASKELL	43.3
HUGHES	28.8
LATIMER	60.3
LEFLORE	37.9
MCCURTAIN	57.3
PITTSBURG	34.1
PUSHMATAHA	45.1

COLON & RECTUM CANCER INCIDENCE BY AGE GROUP (2016-2020)

Age	CHOCTAW NATION OF OKLAHOMA		STATE OF OKLAHOMA	
	Number of Cases	Incidence Rate	Number of Cases	Incidence Rate
10 – 19 YEARS OLD	0	0	22	0.8
20 – 29 YEARS OLD	*	*	70	2.5
30 – 39 YEARS OLD	16	10.4	266	10.1
40 – 49 YEARS OLD	63	43.2	741	32.0
50 – 59 YEARS OLD	161	99.0	1,798	74.1
60 – 69 YEARS OLD	216	138.8	2,567	116.9
70 – 79 YEARS OLD	162	146.3	2,313	171.0
80+ YEARS OLD	112	191.5	1,517	205.1

* Indicates that the data has been suppressed by OSDH due to small numbers.



MELANOMAS OF THE SKIN

Age-adjusted incidence rates of melanoma (a type of skin cancer) are lower in the Choctaw Nation, compared to the State of Oklahoma, but higher than the national average. Skin cancer is one of the most common cancers in the United States. Melanomas are cancers associated with the cells that make melanin, the pigment that gives skin color. When exposed to the sun or other types of UV radiation, the skin produces more melanin, resulting in darker skin color. Melanoma is the most deadly form of skin cancer because of its tendency to spread to other parts of the body. Most causes of skin cancer are associated with overexposure to ultraviolet (UV) rays from the sun or tanning beds. Anyone is at risk of developing skin cancer. Still, individuals with a lighter natural skin tone, skin that burns or freckles easily, blue or green eyes, and blonde or red hair are often considered at higher risk.

Additionally, individuals with a family history of skin cancer, those with certain types of moles that develop on the skin, and older individuals are also considered at higher risk. Symptoms of melanoma are known as the “A-B-C-D-E’s”: individuals should look for (A)symmetrical moles or spots in the skin: (B)order – is the border irregular or jagged: (C)olor – is the color uneven: (D)iameter – is the mole or spot larger than the size of a pea: (E)volving – has the mole or spot changed in the past few weeks or months? Individuals who notice the above symptoms or skin changes should consult their healthcare provider. Individuals can reduce their risk of melanoma by practicing sun safety. Always wearing broad-spectrum sunscreen while outdoors, staying in the shade, wearing clothing or hats that cover large portions of your body, and wearing sunglasses can reduce the risk. Individuals should also avoid indoor tanning, as it significantly increases the risk of skin cancer.

MELANOMAS OF THE SKIN INCIDENCE BY AGE GROUP (2016-2020)

Age	CHOCTAW NATION OF OKLAHOMA		STATE OF OKLAHOMA	
	Number of Cases	Incidence Rate	Number of Cases	Incidence Rate
0 – 9 YEARS OLD	*	*	*	*
10 – 19 YEARS OLD	*	*	16	0.6
20 – 29 YEARS OLD	*	*	112	4.0
30 – 39 YEARS OLD	19	12.3	403	15.3
40 – 49 YEARS OLD	26	17.8	659	28.5
50 – 59 YEARS OLD	73	44.9	1,318	54.3
60 – 69 YEARS OLD	99	63.6	2,337	106.4
70 – 79 YEARS OLD	125	112.9	2,451	181.2
80+ Years Old	91	155.6	1,618	218.8

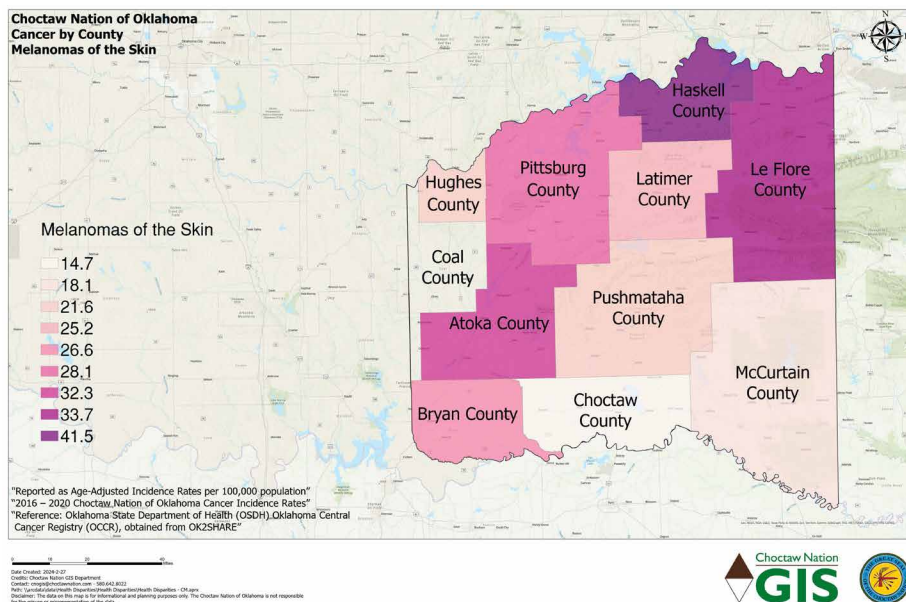
* Indicates that the data has been suppressed by OSDH due to small numbers.

STAGE	CHOCTAW NATION OF OKLAHOMA	STATE OF OKLAHOMA
IN SITU	35.9%	47.5%
LOCALIZED	27.3%	21.4%
REGIONAL	4.7%	4.7%
DISTANT	7.7%	3.9%
UNKNOWN	24.4%	22.6%

AGE-ADJUSTED MELANOMA CANCER INCIDENCE RATES PER 100,000 BY COUNTY (2016-2020)

ATOKA	32.3
BRYAN	26.6
CHOCTAW	14.7
COAL	*
HASKELL	41.5
HUGHES	21.6
LATIMER	25.2
LEFLORE	33.7
MCCURTAIN	18.1
PITTSBURG	28.1
PUSHMATAHA	21.6

* Indicates that the data has been suppressed by OSDH due to small numbers.



TOP 10 CAUSES OF DEATH WITHIN CHOCTAW NATION (2016-2021)

CAUSE OF DEATH	CHOCTAW NATION AGE-ADJUSTED MORTALITY RATE	STATE OF OKLAHOMA AGE-ADJUSTED MORTALITY RATE	UNITED STATES AGE-ADJUSTED MORTALITY RATE
HEART DISEASE	285	238.8	164.8
CANCER	191.3	175.3	149.4
NON-RANKABLE CAUSES	114.4	120.4	*
CHRONIC LOWER RESPIRATORY DISEASES	76.1	62.2	39.1
ACCIDENTS (UNINTENTIONAL INJURIES)	75.4	63.9	50.4
COVID-19	52.5	43.8	17.7
ALZHEIMER'S DISEASE	42.1	37.5	30.8
CEREBROVASCULAR DISEASE	42.0	41.1	37.6
DIABETES MELLITUS	36.1	31	22.1
SUICIDE	26.6	20.8	13.8

* Indicates that the data has been suppressed by OSDH due to small numbers.

References:
Oklahoma State Department of Health (OSDH)
OK2SHARE
Accessed January 2024.

***Note:** Age-Adjusted Mortality Rates for the United States includes 2016-2020 data obtained from CDC Wonder. Non-rankable causes of death in the United States were not available on CDC Wonder.

87.2% of reported deaths within the Choctaw Nation are the result of the above conditions.



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