Case Comprehensive Cancer Center Catchment Area: Cancer Statistics, 2025

A Report from the Case Comprehensive Cancer Center Population Cancer Analytics Shared Resource

population cancer analytics
a shared resource of the Case Comprehensive Cancer Center

Executive Summary

*Here, we summarize the cancer burden of the Case Comprehensive Cancer Center catchment area, which covers a 15-county region of northeast Ohio. Using data from the Ohio Cancer Incidence Surveillance System and SEER*Stat for the years 2018-2022, we provide cancer statistics by cancer site, sex, race, ethnicity, and county. Throughout the report, we provide state and national comparators to place the catchment area's unique cancer burden into context. Broadly, cancer incidence and mortality in the catchment area exceed those of the nation. We highlight a number of instances in which the burden of specific cancer types in certain groups—within the catchment area as a whole or within single counties—is particularly high. These include a high incidence of lung cancer, especially in non-Hispanic Black women in the catchment area and among female residents of Ashtabula County; high mortality from lung cancer in Non-Hispanic Black women; and high incidence (females) and mortality (males) from colorectal cancer in Ashland County.*

Introduction

The Case Comprehensive Cancer Center (CCC) is one of 57 comprehensive cancer centers designated by the National Cancer Institute (NCI). Situated in the northeastern corner of Ohio, the Case CCC catchment area is comprised of 15 counties: Ashland, Ashtabula, Cuyahoga, Erie, Geauga, Huron, Lake, Lorain, Mahoning, Medina, Portage, Stark, Summit, Trumbull, and Wayne (See **Figure 1**). Based on the National Center for Health Statistics (NCHS) urban-rural classification scheme[1], the Case CCC 15-county catchment area centers on a large central metropolitan county (Cuyahoga), with four large fringe metropolitan, five median metropolitan, and five micropolitan (non-metropolitan) counties.

With a population of 3,975,944 residents, the Case CCC catchment area comprises about 33.5% of the total population of the state and records just over a third of the new cancer diagnoses in Ohio each year. **Table 1** summarizes the demographic characteristics of Case CCC catchment area residents. Relative to the U.S. generally, the catchment area has more residents identifying as White alone (75.8% vs. 63.4% natinoally), slightly more identifying as Black alone (14.4% vs. 12.4%), fewer identifying as Asian alone (2.1% vs. 5.8%), and far fewer identifying as Hispanic (5.0% vs. 19.0%). Residents of the catchment area are slightly older than those of the nation at large, with 20.9% (22.2% nationally) under 18 years of age and 19.7% (16.8% nationally) 64 years and older. There are areas of higher racial and ethnic diversity in urban centers like Cleveland (47% Black) and Akron (26% Black), and in counties like Lorain (11% Hispanic).[2]

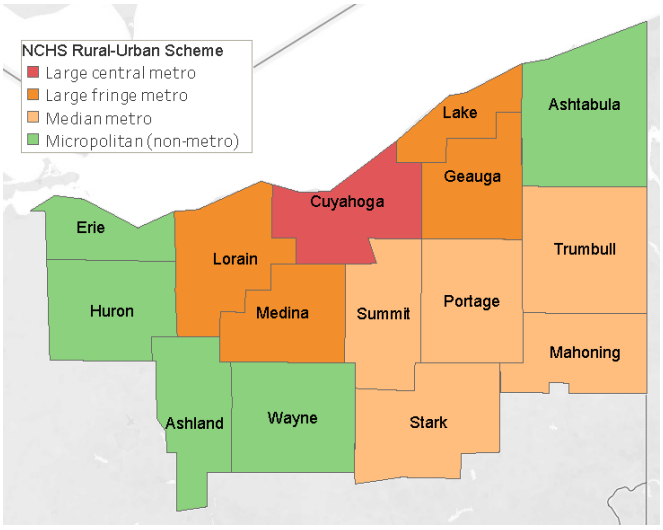


FIGURE 1 – Map of the 15-county Case Comprehensive Cancer Center (CCC) catchment area indicating metropolitan status based on National Center for Health Statistics designations.

The catchment area is characterized by considerable socioeconomic diversity, with poverty rates as low as 6.1% (Geauga county) and as high as 20.3% (Ashtabula county).[3] The city of Cleveland is reported to be the second poorest urban center in the country with a 31.2% poverty rate.[4]

Addressing unique catchment area needs is a vital function of NCI-designated cancer centers and of Case CCC. This can be accomplished through multiple approaches, including by tailoring research to address specific areas of disproportionate cancer burden or by targeting community outreach and engagement (COE) activities toward the subpopulations—defined geographically, demographically, or otherwise—with the greatest needs. To pursue these goals strategically requires granular data on catchment area cancer burden. The Case CCC Population Cancer Analytics Shared Resource (PCA-SR) has designed this report to serve the needs of:

- Case CCC scientists wishing to frame or focus their research based on the unique cancer epidemiology of the catchment area
- Case CCC scientists or others wishing to understand the size of specific subpopulations of cancer patients in the region
- COE professionals wishing to target educational or other interventions aimed at improving catchment area outcomes and reducing cancer disparities
- Community partners who may use the information provided to set priorities, inform the public, or advocate.

Total Catchment Area Population N = 3,975,944	Total	Percent
Racial/Ethnic Category		
White alone	3,015,277	75.8%
Black/African American alone	572,183	14.4%
Asian alone	84,242	2.1%
American Indian/Alaska Native alone	6,020	0.2%
Native Hawaiian/Other Pacific Islander alone	997	<0.1%
Two or more races	238,981	1.5%
Hispanic	200,592	5.0%
Sex		
Male	1,942,691	48.9%
Female	2,033,253	51.1%
Age Group		
Under 18	832,915	20.9%
18-64	2,359,859	59.4%
65 and older	783,170	19.7%
National Center for Health Statistics Rural-Urban Scheme		
Large central metro	1,249,418	31.4%
Large fringe metro	825,217	20.8%
Median metro	1,501,702	37.8%
Micropolitan (non-metro)	399,607	10.1%
Insurance Status in Non-institutionalized Population*		
Any health insurance coverage	3,693,562	94.1%
Private	2,626,274	66.9%
Public	1,587,796	40.4%
Uninsured	232,991	5.9%

TABLE 1 – Population Demographics of Case CCC.[2] Values are reported from the 2023 American Community Survey 5-Year Estimates. Race and Hispanic ethnicity categories are not mutually exclusive. Private and public insurance coverage categories are not mutually exclusive. *Non-institutionalized population N = 3,926,553

We have designed this report to align as closely as possible with national cancer statistics provided in the perennial publication by Siegel et al in *CA: Cancer Journal for Clinicians* (most recently, "Cancer Statistics, 2025"[5]) to facilitate comparison between our region's data and that of other areas of the country, or of the country as a whole.

Materials and Methods

We report cancer burden statistics at the county, catchment, state, and national levels. Cancer is the only non-infectious, mandatorily reportable disease in the U.S.[6] When an individual is diagnosed with invasive cancer in the U.S. (excluding basal and squamous cell carcinoma of the skin), a hospital-based cancer registrar records information about the individual, their cancer diagnosis, their initial treatment, and their survival. Information in hospital-based registries is reported in a standardized format to central, usually state-based, cancer registries. In Ohio, that central registry is called the Ohio Cancer Incidence Surveillance System (OCISS) and is administered by the Ohio Department of Health.[7] OCISS achieves >95% capture rate of invasive cancer cases[8], and therefore served as the source for cancer burden data for the county, catchment, and state levels for this report. In selected tables and figures, we provide state and national level statistics for comparison to county and catchment level figures. National cancer incidence statistics in the figures

and tables come from the Cancer in North America (CINA) Research public use database (2024 release)[9] produced by the North American Association of Central Cancer Registries (NAACCR). National cancer-specific mortality data was drawn from National Center for Health Statistics (NCHS) data curated by NCI's Surveillance, Epidemiology, and End Results (SEER) program and accessible via SEER*Stat software.

We calculated age-adjusted incidence and cancer-specific mortality rates for cancer diagnoses and deaths occurring in Ohio from January 1, 2018 through December 31, 2022. This is the most recent data available at the time of writing given that OCISS, like most cancer registries, reports finalized year-end data with a lag greater than two years. We calculated five-year cancer-specific survival using data for cases diagnosed January 1, 2013 through December 31, 2017, to allow a minimum of five years of follow-up for all cases. For trend analyses, we captured cases diagnosed from 1996 (the first year of operation for OCISS) through 2022.

Population denominator data for age adjustment was derived from the 1969-2023 SEER population data[10] available through SEER*Stat, which derives its population counts from the U.S. Census. Age-adjusted incidence and mortality were calculated using the direct method of age adjustment[11], with the 2000 U.S. standard population as the reference.[12]

For statistics reported by race, we used racial categories of Black, White, and "All other races". The last category combined the less populous categories of American Indian/Alaskan Native and Asian American/Pacific Islander to comply with our Ohio Department of Health Data Use Agreement, which prohibits sharing data based on cell counts smaller than 11 individuals. We used ethnicity categories of Hispanic/Latino and Not Hispanic/Latino.

As mentioned in the Introduction, a useful companion resource for comparison to national statistics is the "Cancer Statistics, 2025" article published in *CA: Cancer Journal for Clinicians* by Siegel et al.[13] These authors use 2017-2021 SEER and National Program of Cancer Registries (NCPR) data to calculate cross-sectional statistics for the nation. Within our table captions and figure legends, we provide links to analogous national tables and figures from Siegel et al.[13]

Selected Findings

Figure 2a depicts the ten most common cancers diagnosed among men and women in the Case CCC catchment area from 2018-2022. Case and death counts represent five-year totals. While overall, the relative rankings for incident cancer types are similar regionally and nationally, the largest difference is for thyroid cancer in women. Among women in northeast Ohio, thyroid cancer is ranked 6th (4.2% of cancers); while nationally, it is the 8th most common cancer (3.2%) diagnosed in women.

Leading causes of cancer death for catchment area men and women are depicted in **Figure 2b**. Lung cancer tops the list both locally and nationally. However, the relative mortality burden of lung cancer is higher in northeast Ohio. Among men in the Case CCC catchment area, lung cancer accounts for 24.9% of cancer deaths, but only 19.8% of cancer deaths nationally. For women, lung cancer constitutes 23.6% of cancer deaths regionally compared to 20.6% nationally.

Figure 3a traces the 27-year trends in cancer incidence and mortality for males and females in the Case CCC catchment area. The converging male and female incidence, driven primarily by a decline in male incidence beginning in the mid-2000's, is a pattern that is also seen at the national level. **Figure 3b** compares catchment area and state incidence and mortality for both sexes combined to those of the nation. Over the past 27 years for which Ohio data is available, U.S. cancer incidence has steadily declined. However, a substantial incidence gap opened up between the U.S. and (northeast) Ohio in the early part of the last decade; and it persists. Reassuringly, this gap was not accompanied by a corresponding mortality gap, as state and local cancer mortality continued to trend downward alongside that of the nation. Such a pattern could be explained by increased detection of highly survivable cancers such as early-stage melanomas, early-stage breast cancers, and thyroid cancers. Both Figures 3a and 3b report a precipitous decline in incidence in 2020 during the early COVID-19 pandemic. This is likely a result of delayed diagnosis and reporting.

Fig2a. Estimated New Cases in the Catchment Area, 2018-2022

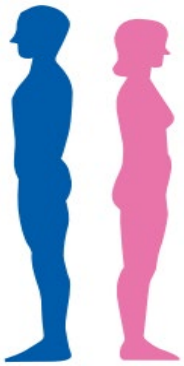
Males				Females		
Prostate	17,557	26.7%		Breast	18,186	29.0%
Lung & bronchus	8,868	13.5%		Lung & bronchus	8,777	14.0%
Colon & rectum	5,247	8.0%		Colon & rectum	4,743	7.6%
Urinary bladder	4,847	7.4%		Corpus and Uterus, NOS	4,455	7.1%
Melanoma of the skin	3,897	5.9%		Melanoma of the skin	2,983	4.8%
Non-Hodgkin lymphoma	2,852	4.3%		Thyroid	2,623	4.2%
Kidney & renal pelvis	2,809	4.3%		Non-Hodgkin lymphoma	2,298	3.7%
Oral cavity & pharynx	2,409	3.7%		Pancreas	1,972	3.1%
Pancreas	2,090	3.2%		Kidney & renal pelvis	1,654	2.6%
Leukemia	1,968	3.0%		Leukemia	1,364	2.2%
All Sites	**65,845**	**100%**		**All Sites**	**62,719**	**100%**

Fig2b. Estimated Deaths in the Catchment Area, 2018-2022

Males				Females		
Lung & bronchus	5,880	24.9%		Lung & bronchus	5,051	23.6%
Prostate	2,311	9.8%		Breast	3,090	14.4%
Colon & rectum	1,949	8.2%		Colon & rectum	1,800	8.4%
Pancreas	1,763	7.5%		Pancreas	1,739	8.1%
Liver & intrahepatic bile duct	1,225	5.2%		Corpus and Uterus, NOS	936	4.4%
Esophagus	1,079	4.6%		Ovary	930	4.3%
Urinary bladder	1,017	4.3%		Leukemia	754	3.5%
Leukemia	1,007	4.3%		Non-Hodgkin lymphoma	660	3.1%
Non-Hodgkin lymphoma	891	3.8%		Liver & intrahepatic bile duct	640	3.0%
Brain & other nervous system	695	2.9%		Brain & other nervous system	514	2.4%
All Sites	**23,656**	**100%**		**All Sites**	**21,433**	**100%**

FIGURE 2 – a) the 10 most commonly diagnosed cancers among men and women in the 15-county Case Comprehensive Cancer Center catchment area, b) the 10 most common causes of cancer death in the catchment area. Click here to view the analogous national figure

Figure 4 displays trends since 1996 in catchment area age-adjusted incidence for seven selected cancers among men and women. These trends qualitatively resemble the trends seen for the same cancers over the same time period at the national level.[13] This includes a declining incidence of prostate cancer beginning in the 2000s; a continued downward trend in male lung and bronchus cancer and male and female colorectal cancer (CRC); and gradual upward trends in thyroid cancer and melanoma among both sexes. As with any low-fatality cancer, increased detection must be considered as a possible explanation for rising incidence of thyroid cancer and melanoma. In the case of melanoma, for instance, the widespread adoption of dermoscopy, with its improved sensitivity relative to unaided visual skin inspection, appears to have played a role in rising melanoma incidence amid declining mortality.[14]

Cancer burden by race and ethnicity in the catchment area – **Table 2** displays the age-adjusted cancer incidence rates per 100,000 population for selected common cancers by race/ethnicity categories over the 2018-2022 period. Two of the most striking disparities concern the risk for lung cancer among Non-Hispanic Black (NHB) women and the risk for liver and intrahepatic bile duct cancer among NHB men. While nationally, NHB and Non-Hispanic White (NHW) women experienced 45.4 and 54.5 cases per year of lung cancer per 100,000, respectively, rates for NHB women in the catchment area were 63.7 [95% CI, 60.3 - 67.4] compared to 55.7 [95% CI, 54.4 - 57.1) for NHW women. Separately, NHB men nationwide suffer liver and intrahepatic bile duct cancer at a rate of 16.4 per 100,000 compared to a rate of 11.2 for their NHW counterparts. In the catchment area, the gap jumps to 19.1 [95% CI, 16.9 - 21.5] and 9.9 [95% CI, 9.3 - 10.5], respectively.

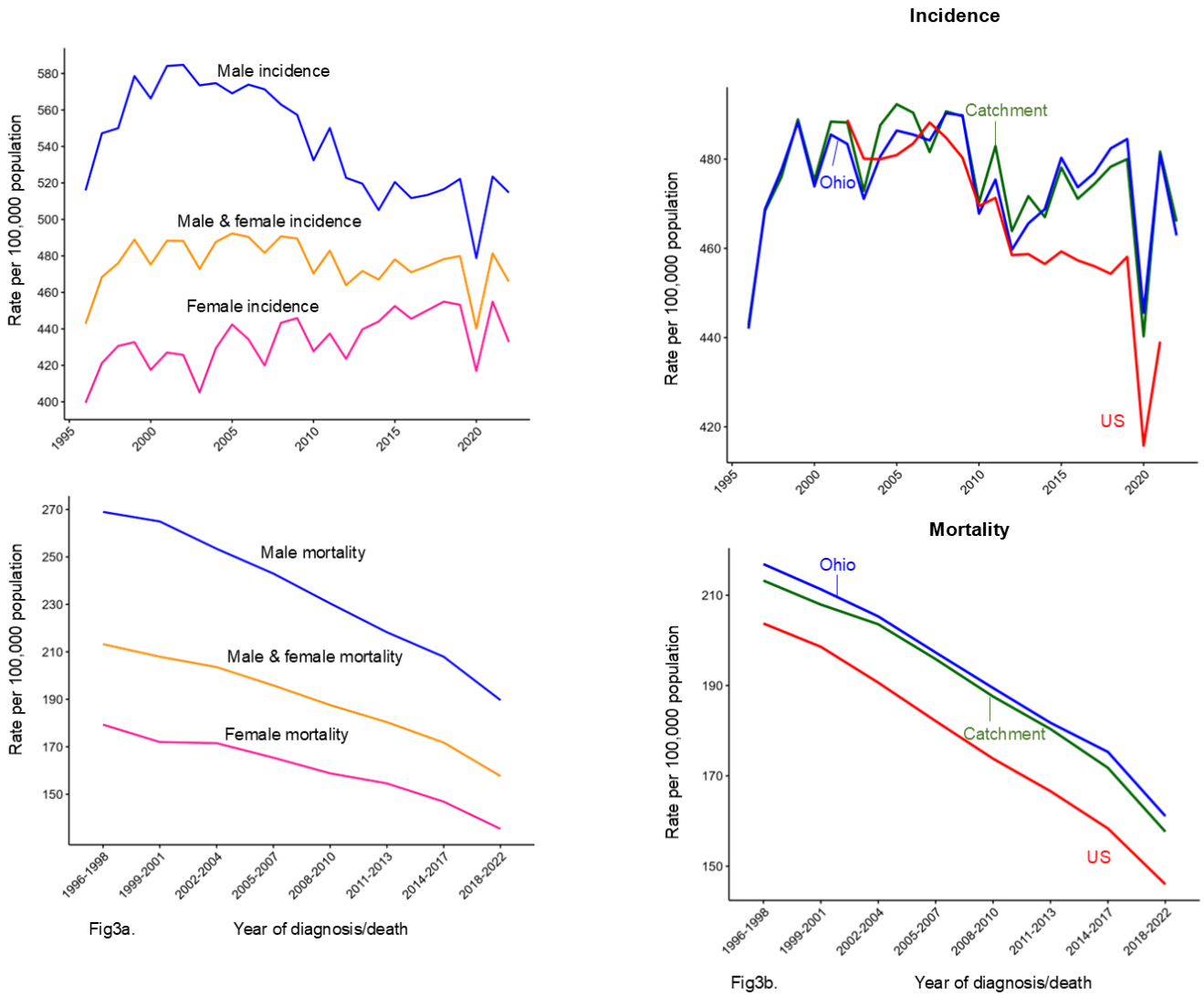


FIGURE 3 – a) 27-year trends in age-adjusted cancer incidence and mortality for men, women, and both sexes combined within the Case CCC catchment area. Click here to view the analogous national figure b) 27-year trends in age-adjusted cancer incidence and mortality (both sexes combined) in the catchment area, state of Ohio, and nation.

Table 3 provides corresponding age-adjusted mortality rates for selected common cancers by race/ethnicity categories for 2018-2022. The gap in cancer mortality relative to the nation is noteworthy, with 146.0 Americans per 100,000 dying of cancer annually compared to 157.6 [95% CI, 156.2 - 159.1] northeast Ohioans per 100,000. Concerningly, the racial disparity in cancer death in our region is more extreme than that of the U.S. as a whole. While an average 168.6 NHB and 151.3 NHW Americans per 100,000 died each year from cancer, 182.6 [95% CI, 177.9 - 187.3] NHB and 157.0 [95% CI, 155.4 – 158.7] NHW northeast Ohioans per 100,000 did so. Lung cancer is an important factor in the region's elevated cancer mortality, with a mortality rate across all races/ethnicities of 37.4 [95% CI, 36.7 - 38.1] versus a national rate of 32.4; and just as incidence of lung cancer in NHB women in the catchment area is elevated, we see elevated lung cancer mortality in this group as well. Compared to national lung cancer mortality rates of 25.9 for NHB women and 31.0 for NHW women, NHB and NHW women in Northeast Ohio die at rates of 35.1 [95% CI, 32.5 - 37.8] and 31.5 [95% CI, 30.6 - 32.5] per 100,000, respectively.

The death rate from prostate cancer is nearly twice as high for NHB men in the catchment area as for their local NHW counterparts (35.9 [95% CI, 32.5 - 39.5] versus 18.1 [95% CI, 17.2 - 18.9], respectively). While extreme, it should be noted that this disparity is comparable to that seen nationally (37.2 versus 18.1).

FIGURE 4 – Trends in Case CCC catchment area age-adjusted cancer incidence rates for selected cancers by sex. Click here to view the analogous national figure.

	All Races and Ethnicities	Non-Hispanic White	Non-Hispanic Black	Hispanic	Other
Incidence, 2018-2022					
All Sites	470.5	475.7	463.3	274.1	332.9
Male	512.3	512.2	536.4	285.9	342.5
Female	443.0	453.5	412.3	268.2	328.8
Breast (female)	131.9	135.5	124.9	83.9	105.5
Colon & Rectum	37.5	37.3	39.4	25.3	30.4
Male	43.1	42.3	48.4	27.7	39.5
Female	32.8	32.9	32.8	22.7	22.9
Kidney & renal pelvis	16.7	16.7	17.6	12.8	12.8
Male	22.4	22.3	24.1	18.2	15.5
Female	11.7	11.7	12.7	8.1	10.3
Liver & intrahepatic bile duct	7.8	7.0	11.4	12.1	11.4
Male	11.4	9.9	19.1	19.4	20.3
Female	4.8	4.6	5.9	5.6	4.0
Lung & bronchus	60.4	60.8	67.9	22.8	38.0
Male	67.2	67.7	74.2	28.0	44.8
Female	55.5	55.7	63.7	18.7	32.4
Prostate	124.7	116.4	186.3	80.1	70.6
Stomach	6.1	5.5	9.7	6.3	7.5
Male	8.5	7.9	12.2	7.2	9.5
Female	4.2	3.5	8.1	5.3	6.0
Uterine cervix	7.4	7.3	7.7	6.4	7.5
Uterine corpus	30.3	31.0	28.7	23.7	23.3

TABLE 2 – Age-adjusted incidence rates per 100,000 population in the Case CCC catchment area for selected cancers, stratified by sex where applicable. Click here to view the analogous national data.

	All Races and Ethnicities	Non-Hispanic White	Non-Hispanic Black	Hispanic	Other
Mortality, 2018-2022					
All Sites	157.6	157.0	182.6	92.7	84.6
Male	189.6	188.6	225.7	107.9	97.5
Female	135.4	134.8	156.3	80.6	73.8
Breast (female)	20.4	19.7	27.6	11.4	8.2
Colon & Rectum	13.3	13.0	16.7	9.2	8.3
Male	16.0	15.5	21.2	11.0	12.7
Female	11.2	11.1	13.5	7.3	4.9
Kidney & renal pelvis	3.4	3.5	3.3	--	--
Male	5.1	5.2	5.3	--	--
Female	2.0	2.1	2.0	--	--
Liver & intrahepatic bile duct	6.3	5.8	9.0	8.4	8.9
Male	9.1	8.1	14.8	12.4	13.3
Female	4.0	3.9	4.9	4.9	5.0
Lung & bronchus	37.4	37.5	43.1	15.3	21.3
Male	45.6	45.3	55.6	20.8	24.9
Female	31.3	31.5	35.1	10.8	18.7
Prostate	19.5	18.1	35.9	9.6	--
Stomach	2.6	2.1	5.2	2.9	3.2
Male	3.7	3.1	8.0	--	5.7
Female	1.7	1.4	3.4	3.0	--
Uterine cervix	2.2	2.0	3.6	3.1	--
Uterine corpus	5.8	5.3	9.3	4.4	4.5

TABLE 3 – Age-adjusted mortality rates for selected cancers in the Case CCC catchment area, stratified by sex where applicable. Click here to view the analogous national data. "--" indicates fields for which the underlying case count from 2018-2022 was <11. These numbers are suppressed to reduce the risk of identifying individual patients.

Figure 5 compares the stage distribution of selected cancers across NHB Black and NHW patients. In general, the prevalence of disease that is metastatic at diagnosis looks similar to national patterns. The proportion of lung cancer cases diagnosed with metastases is noteworthy, however. Against a backdrop of elevated lung cancer incidence and mortality, it is somewhat surprising that metastatic proportion for lung cancer locally is slightly lower than that of the nation: 40.7% [95% CI, 40.0 - 41.4] versus 43%. This effect is partially driven by substantially lower metastatic proportion among NHB patients: 40.8% [95% CI, 38.8 - 42.8] versus 47% nationally.[13]

Figure 6 shows catchment area five-year cancer-specific survival for four common cancers by stage in NHB patients, NHW patients, and all races combined. Substantial stage-specific survival disparities are apparent in female breast cancer. At every stage, NHB women with breast cancer in the catchment area fare significantly worse than their NHW counterparts. In particular, only 12.0% [95% CI, 10.5 - 13.5] of NHB women with distant stage breast cancer will survive five years, compared with 19.4% [95% CI, 18.7 - 20.1] of NHW women.

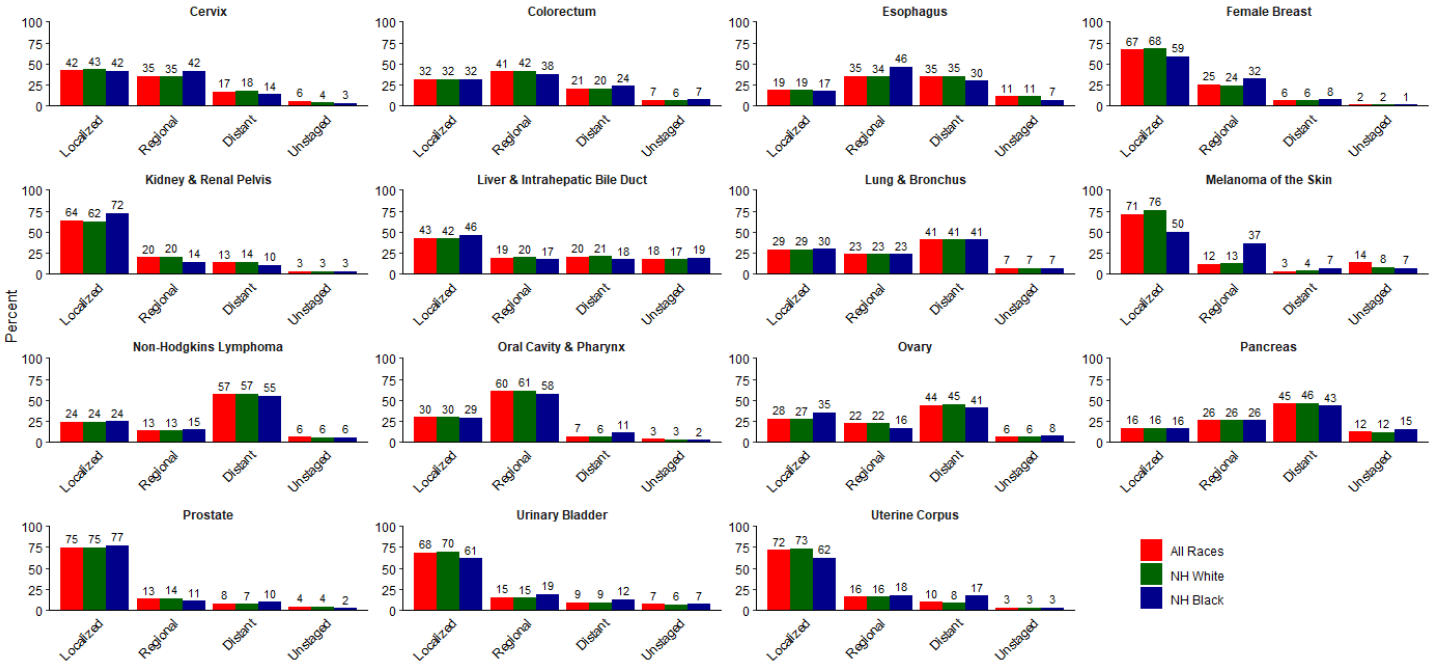


FIGURE 5 – Stage distribution for selected cancers by race, Catchment area, 2018 to 2022. White and Black race categories are exclusive of non-Hispanic ethnicity. Click here to view the analogous national figure.

Table 4 stratifies counts of deaths for the five most deadly cancers among catchment area males and females by age group for the years 2018-2022. Among catchment area residents aged 19 and younger, leukemia (13 boys and 12 girls) and brain and other nervous system cancers (11 boys and 13 girls) were the most common causes of cancer death. Among 20-39 year-old adults, leukemia (34 deaths) and breast cancer (72 deaths) were the most frequent causes of cancer death in men and women, respectively. In 40-49 year-olds, lung and bronchus (94 cases) and breast cancer (166 cases) accounted for the most deaths in men and women, respectively. In the 50-64, 65-79, and 80+ year-old age groups, lung and bronchus cancer accounted for, by far, the most deaths in men and women: 1470, 2953, and 1351 in these respective age groups among men, and 1202, 2407, and 1353 among women.

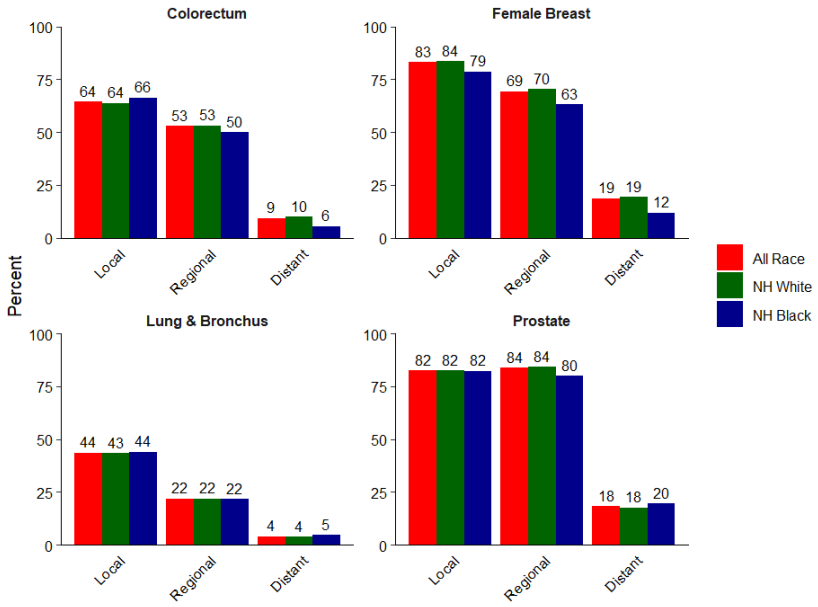


FIGURE 6 – Five-year cancer-specific survival for top 4 cancers by race and stage at diagnosis, Catchment area, 2018 to 2022. Click here to view national relative survival.

Ranking	All Ages	Birth to 19 years	Aged 20-39 years	Aged 40-49 years	Aged 50-64 years	Aged 65-79 years	Aged 80+ years
Male							
All Sites	23,656	53	228	565	5387	10601	6822
1	Lung & Bronchus	Leukemia	Leukemia	Lung & bronchus	Lung & bronchus	Lung & bronchus	Lung & bronchus
	5,880	13	34	94	1470	2953	1351
2	Prostate	Brain & ONS	Brain & ONS	Colon & rectum	Colon & rectum	Prostate	Prostate
	2311	11	31	87	520	946	1131
3	Colon & rectum	Soft tissue (including heart)	Colon & rectum	Pancreas	Pancreas	Pancreas	Colon & rectum
	1949	<11	29	47	465	857	552
4	Pancreas	Other Endocrine (including Thymus)	Soft tissue (including heart)	Brain & ONS	Liver	Colon & rectum	Urinary bladder
	1763	<11	15	46	349	760	516
5	Liver	Non-Hodgkin lymphoma	Lymphoma	Esophagus	Esophagus	Liver	Pancreas
	1225	<11	14	34	313	635	386
Female							
All Sites	21433	45	258	640	4579	8952	6959
1	Lung & bronchus	Brain & ONS	Breast	Breast	Lung & bronchus	Lung & bronchus	Lung & bronchus
	5051	13	72	166	1202	2407	1353
2	Breast	Leukemia	Uterine cervix	Lung & bronchus	Breast	Breast	Breast
	3090	12	27	83	765	1133	954
3	Colon & rectum	Other Endocrine (including Thymus)	Brain & ONS	Colon & rectum	Colon & rectum	Pancreas	Colon & rectum
	1800	<11	18	62	356	809	726
4	Pancreas	Kidney	Colon & rectum	Uterine Cervix	Pancreas	Colon & rectum	Pancreas
	1739	<11	17	42	312	638	584
5	Uterine Corpus	Soft tissue (including heart)	Leukemia	Ovary	Ovary	Uterine Corpus	Leukemia
	936	<11	14	30	225	460	354

TABLE 4 – Total deaths among the five leading causes of cancer mortality in the catchment by age and sex, 2018-2022. Click here to view the analogous national data.

Tables 5 and **6** list, by county, the age-adjusted cancer incidence and mortality rates per 100,000 population for all cancer sites combined and for six commonly incident and six commonly fatal cancers, respectively. The final rows of each table provide catchment area-wide, state-wide, and nationwide rates. While several counties exhibited elevated cancer incidence and/or mortality generally among one or both sex groups, site-specific rates within a few counties stand out. Women in Ashland County saw the highest female incidence of CRC: 47.0 [95% CI, 37.5 - 59.1] cases per

100,000 per year versus 32.8 [95% CI, 31.8 - 33.8] cases per 100,000 per year in the catchment area at large. Men in Huron County saw higher CRC incidence than their counterparts in other counties: 57.7 [95% CI, 46.3 - 71.5] per 100,000 per year compared to a catchment-wide rate of 43.1 [95% CI, 41.9 - 44.3]. While several of our counties exhibited elevated lung and bronchus cancer burden, the high incidence seen among Ashtabula County women is notable: 65.6 [95% CI, 57.5 – 74.9] cases per 100,000 women, compared to 55.5 [95% CI, 54.3 - 56.7] per 100,000 in the catchment area generally. In Ashland, male CRC mortality was elevated: 23.5 [95% CI, 16.4 - 32.7] deaths per 100,000 per year compared to 16.0 [95% CI, 15.3 - 16.7] in the catchment.

Discussion

Relative to the U.S., cancer incidence and mortality rates are considerably higher in the Case CCC catchment area. The overall gap in mortality between the catchment area and the nation is particularly concerning, with 146.0 Americans per 100,000 dying of cancer annually compared to 157.6 [95% CI, 156.1 - 159.1] Northeast Ohioans per 100,000. A contributing factor is the more extreme racial disparity in cancer death seen in our region compared to that of the U.S. at large. While 168.6 NHB and 151.3 NHW Americans per 100,000 died of cancer each year during the most recent available five-year period, 182.6 [95% CI, 177.9 - 187.3] NHB and 157.0 [95% CI, 155.4 - 158.7] NHW Northeast Ohioans did so.

	All Sites		Breast	Colon & Rectum		Lung & Bronchus		Non-Hodgkin Lymphoma		Prostate	Uterus
	Male	Female	Female	Male	Female	Male	Female	Male	Female	Male	Female
Ashland	504.1	469.2	117.3	50.0	47.0	63.0	54.6	19.9	18.9	121.7	36.1
Ashtabula	510.9	435.2	110.5	43.9	27.8	72.8	65.6	26.1	16.8	107.2	30.2
Cuyahoga	526.7	443.9	136.0	45.9	33.6	67.3	57.0	23.0	14.6	142.3	32.8
Erie	510.2	422.0	123.8	42.2	30.0	64.7	47.9	21.4	13.8	108.3	23.8
Geauga	495.4	461.8	147.3	35.2	29.6	46.9	45.0	27.9	17.8	123.4	28.4
Huron	541.0	445.8	127.1	57.7	43.2	71.0	49.5	31.1	17.3	111.9	27.1
Lake	517.9	473.9	135.9	41.2	31.7	63.3	59.9	23.8	19.6	118.1	30.8
Lorain	531.1	477.4	143.8	41.5	35.0	67.6	59.4	27.5	16.0	130.9	33.2
Mahoning	497.4	406.4	119.9	47.2	31.8	66.5	48.2	20.2	15.8	130.5	29.6
Medina	520.8	477.7	142.7	40.7	33.2	59.4	56.2	25.3	21.7	131.3	29.2
Portage	494.5	436.8	128.9	43.8	37.1	68.6	54.9	24.4	16.5	105.3	30.2
Stark	493.2	432.5	124.9	38.8	28.7	71.1	53.5	19.5	14.4	105.3	27.0
Summit	517.5	446.0	133.7	40.8	30.6	69.1	55.2	25.8	14.6	119.6	29.1
Trumbull	464.7	389.7	111.8	40.2	32.2	74.5	57.7	19.3	13.9	104.8	25.0
Wayne	487.2	419.1	122.7	42.8	38.0	67.8	48.5	22.6	15.0	108.7	30.5
Catchment	512.3	443.0	131.9	43.1	32.8	67.2	55.5	23.5	15.6	124.7	30.3
Ohio	513.0	444.8	133.0	43.7	33.4	71.5	57.3	22.9	15.5	120.7	30.4
US	485.0	424.9	131.4	41.5	32.4	58.2	48.1	22.3	15.4	116.5	27.9

TABLE 5 – Incidence rates for selected cancers by county, total catchment area, OH, US 2018-2022.

Lung cancer is an important driver in the region's elevated mortality, with a mortality rate across all races/ethnicities of 37.4 [95% CI, 36.7 - 38.1] locally versus 32.4 nationally. Part of this disparity stems from the disproportionate burden born by NHB women in our region. Whereas nationally, NHB women fare better than their NHW counterparts in terms of lung cancer mortality rates (25.9 and 31.0 annual deaths per 100,000, respectively), the local picture looks different.

Northeast Ohio NHB women die from the disease at a rate of 35.1 [95% CI, 32.5 - 37.8] per 100,000, compared to local NHW women who die at a rate of 31.5 [95% CI, 30.6 - 32.5] per 100,000. This is somewhat surprising given that the metastatic proportion for lung cancer among NHB women locally is only 40.8% [95% CI, 38.8 - 42.8], compared to 47% nationally.[5] These findings suggest that lung cancer prevention, primarily through efforts to reduce smoking, should be a regional cancer control priority. This is especially true for NHB residents, particularly those who are female. The findings also suggest the need to examine the quality of treatment received by patients with lung cancer in this population. Finally, despite a lower metastatic proportion in our catchment area for NHB lung cancer patients, lung cancer screening should also be a target; with lung cancer screening uptake below 12% in the state (compared to 5.8% nationally)[15], there is ample room to improve screening outcomes.

	All Sites		Breast	Colon & Rectum		Lung & Bronchus		Non-Hodgkin Lymphoma		Pancreas		Prostate
	Male	Female	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
Ashland	188.7	136.3	19.7	23.5	13.5	37.5	26.5	8.7	7.1	11.2	10.5	18.6
Ashtabula	208.4	148.6	19.8	19.0	10.8	52.1	37.0	7.9	4.3	15.0	12.2	17.9
Cuyahoga	191.6	138.6	21.9	17.3	11.1	44.4	31.1	7.3	4.0	14.0	11.6	23.3
Erie	177.9	136.0	20.3	15.4	13.1	41.1	31.4	4.9	--	15.0	10.5	15.3
Geauga	157.9	114.9	19.2	14.6	11.5	33.8	24.2	8.6	3.7	12.6	11.7	14.8
Huron	211.4	143.2	20.8	20.2	11.8	53.8	31.7	9.0	--	13.7	11.6	17.3
Lake	185.7	134.8	18.2	16.9	12.0	43.6	33.0	5.6	4.0	12.9	10.8	19.7
Lorain	189.3	136.6	22.0	14.5	8.8	40.9	32.1	9.4	4.6	14.7	9.6	16.3
Mahoning	187.4	121.3	16.6	17.1	13.0	48.6	27.9	7.0	4.0	11.4	8.0	18.4
Medina	167.2	120.6	14.3	12.7	8.4	39.0	28.4	7.5	4.3	10.4	9.0	16.7
Portage	198.5	148.0	20.7	16.4	13.5	48.9	33.2	9.4	4.8	14.2	11.4	16.7
Stark	197.8	137.6	21.5	13.5	11.0	50.4	31.0	6.6	3.8	13.8	10.7	19.1
Summit	193.6	138.0	19.9	15.2	11.5	45.2	32.9	8.5	3.7	12.9	10.9	20.6
Trumbull	189.0	130.6	19.5	15.1	12.0	56.1	35.9	6.8	4.1	15.8	8.7	13.6
Wayne	179.1	130.1	22.7	14.5	10.4	49.0	26.5	8.8	4.3	15.1	11.2	18.9
Catchment	189.6	135.4	20.4	16.0	11.2	45.6	31.3	7.6	4.0	13.6	10.7	19.5
Ohio	194.2	137.8	20.2	16.9	11.5	48.5	33.2	7.4	4.1	14.1	10.5	19.3
US	173.2	126.4	19.3	15.4	10.8	38.7	27.6	6.5	3.8	12.9	9.8	19.0

TABLE 6 – Mortality rates for selected cancers by county, total catchment area, OH, US 2018-2022. "--" indicates fields for which the underlying case count from 2018-2022 was <11. These numbers are suppressed to reduce the risk of identifying individual patients.

NHB women with breast cancer in the catchment area also fare significantly worse than their NHW counterparts at every stage of the disease. For example, only 12.0% [95% CI, 10.5 - 13.5] of NHB women with distant stage breast cancer will survive their disease through year 5, compared with 19.4% [95% CI, 18.7 - 20.1] of NHW women. To some extent, this finding may stem from the tendency of NHB women to more frequently suffer from more aggressive, triple-negative disease.[16] However, differences in the quality of breast cancer care received by NHB cannot be ruled out.

Some large geographic disparities in cancer burden are also observed *within* the catchment area. For example, women in Ashland County have the highest colorectal cancer incidence in the region, while Ashland men have the highest CRC mortality. Also, women in Ashtabula County are diagnosed with lung cancer more frequently than women in any other county of the catchment area. Not surprisingly, Ashtabula County has, by far, the highest smoking prevalence of

northeast Ohio counties, estimated at 26.8%, compared to a catchment area average of 19.5% and a national average of 18.1%.[17] Ashtabula county's disproportionate burden, however, likely has little overlap with the racial disparity we document in catchment area lung cancer burden given that less than 5% of Ashtabula County's population is identified as NHB.[2] These geographic disparities highlight the need to examine whether appropriate screening and treatment services are available in all parts of the catchment area, and to better understand the patterns of risk behaviors that might underlie these findings.

Limitations

The analyses herein have relied on cancer registry data for information on cancer burden. While the case capture rate is well above 95% nationally and in Ohio[8], some cases of cancer will inevitably be missed. This may be especially true for cancers for which treatment is normally delivered entirely in the outpatient setting. Also, the methods of ascertaining race, ethnicity, and sex of patients with cancer are not known and are likely not consistent across sites reporting to a central cancer registry in Ohio or elsewhere. Finally, the COVID-19 pandemic likely affected results for 2020 statistics through delayed diagnosis and reporting of new cancer diagnoses.[18]

Conclusions and Future Directions

In this report, we have provided detailed cancer statistics for the Case Comprehensive Cancer Center catchment area, which covers a 15-county region of northeast Ohio for the period of 2018-2022. We have highlighted a number of instances in which the burden of specific cancer types in certain groups, within the catchment area as a whole or within single counties, is worse than expected based on national figures. In particular, we highlight the high burden of lung cancer, especially in NHB women, and among Ashtabula County women; the poor breast cancer survival in NHB women, and the high burden of colorectal cancer in Ashland County. The following is a partial list of questions whose answers could help explain and start to address the disparities we have documented here:

- What evidence-based interventions to reduce tobacco use can be deployed among local groups suffering the highest burden of lung cancer?
- Are there extraordinary environmental risks for certain cancers that may be contributing to these disparities?
- Are there subpopulations in the catchment area, defined demographically or geographically, who are not receiving the best available lung cancer treatment? If so, what are the barriers preventing this?
- Are there subpopulations who are not receiving the best available breast cancer care?
- Are cancer screening services readily available for all subpopulations in the catchment area? If so, what is stopping some groups from utilizing them more? Is proper follow-up occurring when screens are positive?

It is our hope that this report will serve not only as a resource to which researchers and others can turn for answers to basic questions about cancer burden in the catchment area, but also that it will inform strategies to deploy evidence-based population health interventions and spark deeper scientific inquiry to benefit residents of northeast Ohio and beyond.

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