

Cancer Survival in Ohio

July 2025



Department of
Health

More people than ever are surviving cancer. There are an estimated 18.1 million cancer survivors in the United States as of Jan. 1, 2022, according to the National Cancer Institute (NCI). This represents approximately 5.4% of the U.S. population. The number of cancer survivors is projected to grow to 26.0 million by 2040. Overall, 69.9% of people in the United States survive five years or more after being diagnosed with cancer, based on the latest available data from the NCI's Surveillance, Epidemiology, and End Results (SEER) Program. Improvements in cancer survival are due in part to earlier detection and advances in treatments for some cancers. An individual's chances of surviving cancer depend on many factors in addition to treatment, including cancer site/type, age at diagnosis, stage at diagnosis, sex, race, ethnicity, socioeconomic status, and place of residence.

In general, cancer survival is estimated as the proportion of people alive at some point after cancer diagnosis, usually five years. Five-year relative survival, the estimate used in this document, compares the survival of people diagnosed with cancer with the survival of people in the general population who are the same age, race, and sex, and who have not been diagnosed with cancer. For example, if the five-year relative survival for a specific cancer is 90%, it means that people who have that cancer are, on average, about 90% as likely as people who do not have that cancer to live at least five years after their diagnosis. Because survival statistics are based on large groups of people, they cannot be used to predict exactly what will happen to an individual person.

This report provides a summary of cancer survival in Ohio using data from the Ohio Cancer Incidence Surveillance System (OCISS), the central cancer registry for the state of Ohio.

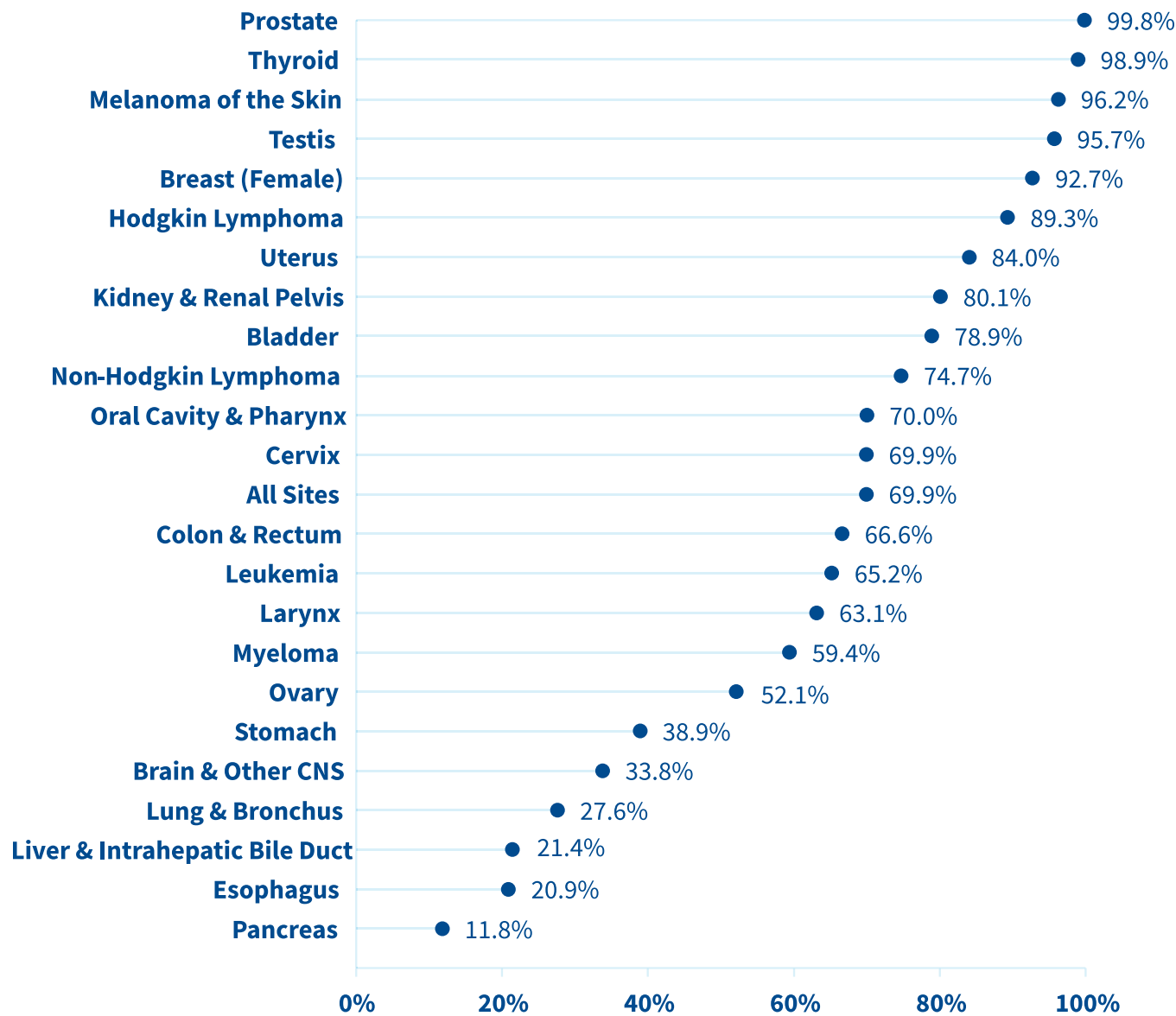
Key Findings

- Five-year relative survival in Ohio was highest for prostate cancer, thyroid cancer, melanoma of the skin, testicular cancer, and female breast cancer, and lowest for cancers of the pancreas, esophagus, liver and intrahepatic bile duct, lung and bronchus, and brain and other central nervous system (CNS).
- The counties with the lowest five-year relative survival were located mostly in southern Ohio.
- Females had higher five-year relative survival than males for all cancer sites/types combined.
- Five-year relative survival for Black Ohioans was lower than White Ohioans for all cancer sites/types combined and three of the four most common cancers – colon and rectum, female breast, and prostate.
- Overall, five-year relative survival was 92.2% when cancers were diagnosed at an early (local) stage but only 31.2% when diagnosed at the distant (latest) stage.
- Cancer patients in Ohio with private insurance at the time of diagnosis had better survival outcomes than those who were uninsured or had other types of health insurance.
- Cancer survival in Ohio has been improving since 1996 for most cancer sites/types and for all cancer sites/types combined among both males and females.

Cancer Survival by Site/Type

Ohio’s five-year relative survival for all cancer sites/types combined (69.9%) was the same as the survival percentage in the United States for cancer cases diagnosed from 2015 to 2021 and followed through December 2022.* The five leading cancer sites/types with the highest five-year relative survival included prostate, thyroid, melanoma of the skin, testis, and female breast, while those with the lowest five-year relative survival included pancreas, esophagus, liver and intrahepatic bile duct, lung and bronchus, and brain and other CNS (Figure 1).

Figure 1. Five-Year Relative Survival (Percent) by Cancer Site/Type, Ohio, 2015-2021



Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2025.

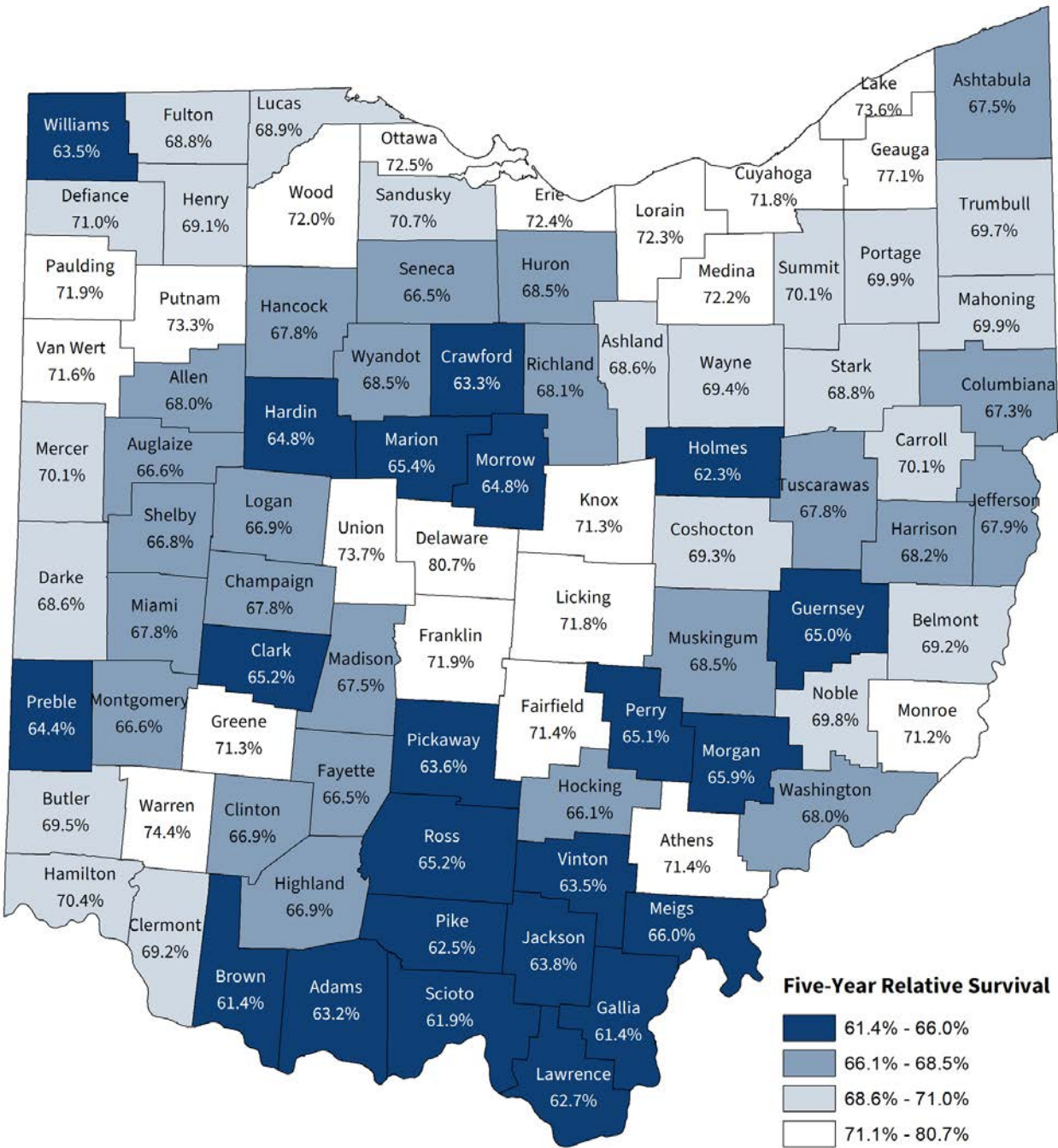
CNS = Central Nervous System.

*Due to the complexity of the cancer data collection and quality control process, there is typically a 24-month delay between the time a new cancer is diagnosed and the time the data is ready for analysis. Therefore, the most recent incidence data is for cancer cases diagnosed through Dec. 31, 2022. Relative survival analysis includes invasive cancer cases diagnosed from 2015 through 2021. Cases diagnosed in 2022 do not have adequate follow-up time to be included in the analysis.

Cancer Survival by County

County-specific five-year relative survival in Ohio ranged from 61.4% to 80.7%, compared with 69.9% in Ohio for cases diagnosed from 2015 through 2021. The counties with the lowest overall five-year relative survival are presented in the darkest blue color – many of which are located in the southern portion of Ohio (Figure 2).

Figure 2. Five-Year Relative Survival for All Cancer Sites/Types Combined by County of Residence, Ohio, 2015-2021



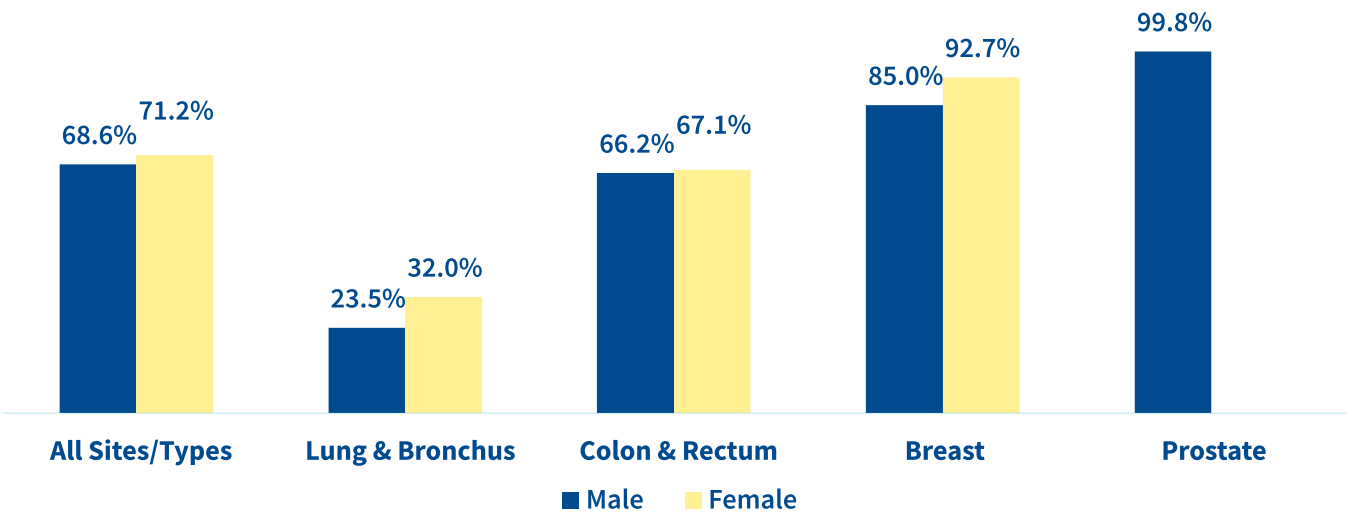
Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2025.

Each category represents approximately 25% of the 88 Ohio counties.

Cancer Survival by Sex

As shown in Figure 3, females in Ohio had higher five-year relative survival for all cancer sites/types combined, lung and bronchus cancer, colon and rectum cancer, and breast cancer, compared with males. The five-year relative survival for prostate cancer is nearly 100%.

Figure 3. Five-Year Relative Survival by Sex for All Cancer Sites/Types Combined and the Most Common Cancers, Ohio, 2015-2021

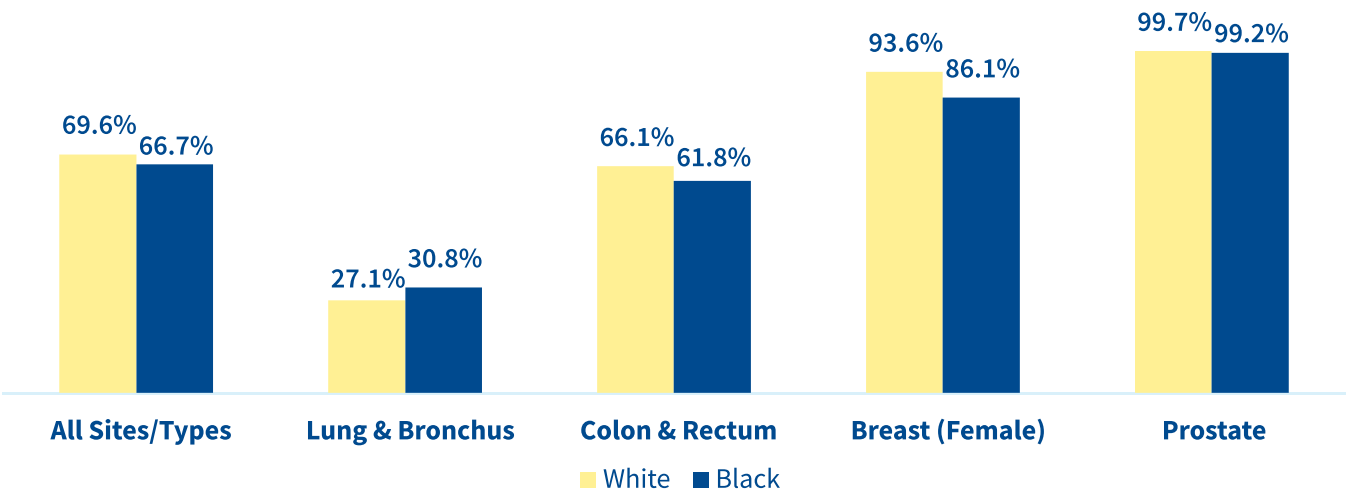


Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2025.

Cancer Survival by Race

Five-year relative survival for Black Ohioans was lower than White Ohioans for all cancer sites/types combined and three of the four most common cancers – colon and rectum, female breast, and prostate (Figure 4).

Figure 4. Five-Year Relative Survival by Race for All Cancer Sites/Types Combined and the Most Common Cancers, Ohio, 2015-2021

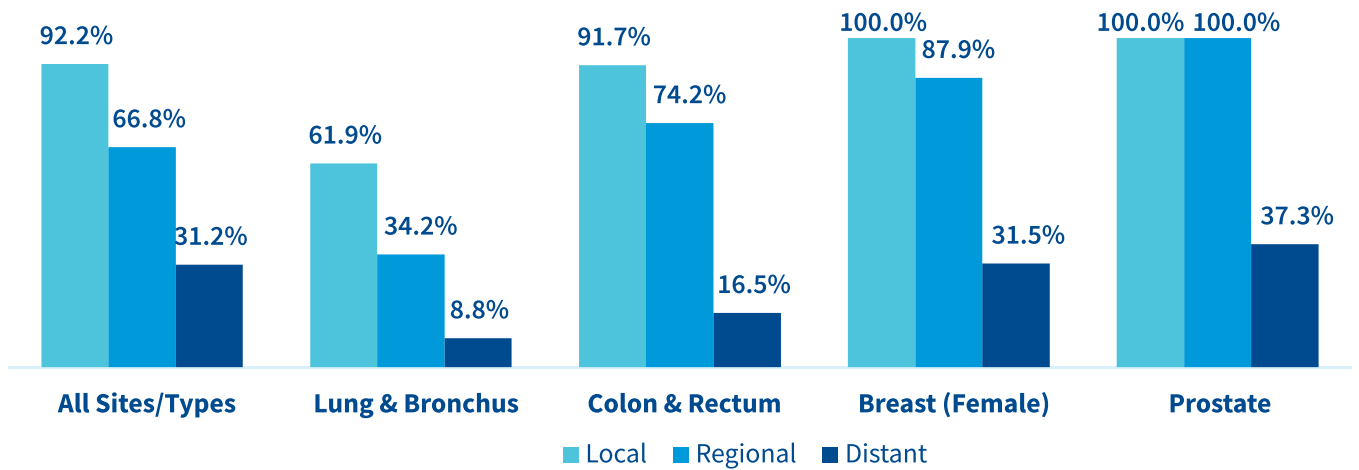


Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2025.

Cancer Survival by Stage at Diagnosis

Cancer stage at diagnosis refers to the extent or spread of a cancer in the body and is an important determinant of survival. The stages of invasive cancer, in order of increasing spread, are local, regional, and distant. In Ohio, five-year relative survival for all cancer sites/types combined was 92.2% when diagnosed at the local stage and only 31.2% when diagnosed at the distant stage. Of the most common cancers, lung and bronchus cancer had the lowest five-year relative survival at each stage (Figure 5).

Figure 5. Five-Year Relative Survival by Stage at Diagnosis for All Cancer Sites/Types Combined and the Most Common Cancers, Ohio, 2015-2021

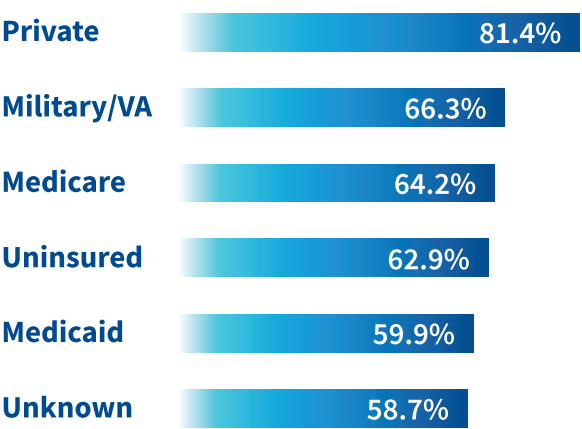


Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2025.

Cancer Survival by Primary Payer at Diagnosis

Primary payer at diagnosis (health insurance status) plays a role in cancer survival. In this document, primary payer was categorized as Uninsured, Private, Medicaid, Medicare, Military/Veterans Affairs (VA), and Unknown (see technical notes on page 10). Most cancer patients diagnosed from 2015 through 2021 had a primary payer of Medicare (50%) or private insurance (32%) at the time of diagnosis. Other primary payers included Medicaid (9%), Unknown (6%), Military/VA (2%), and Uninsured (1%) (data not shown).

Figure 6. Five-Year Relative Survival by Primary Payer for All Cancer Sites/Types Combined, Ohio, 2015-2021



Ohio cancer patients with private insurance had a higher five-year relative survival (81.4%), compared with those with any other type of health insurance coverage at the time of their cancer diagnosis (Figure 6).

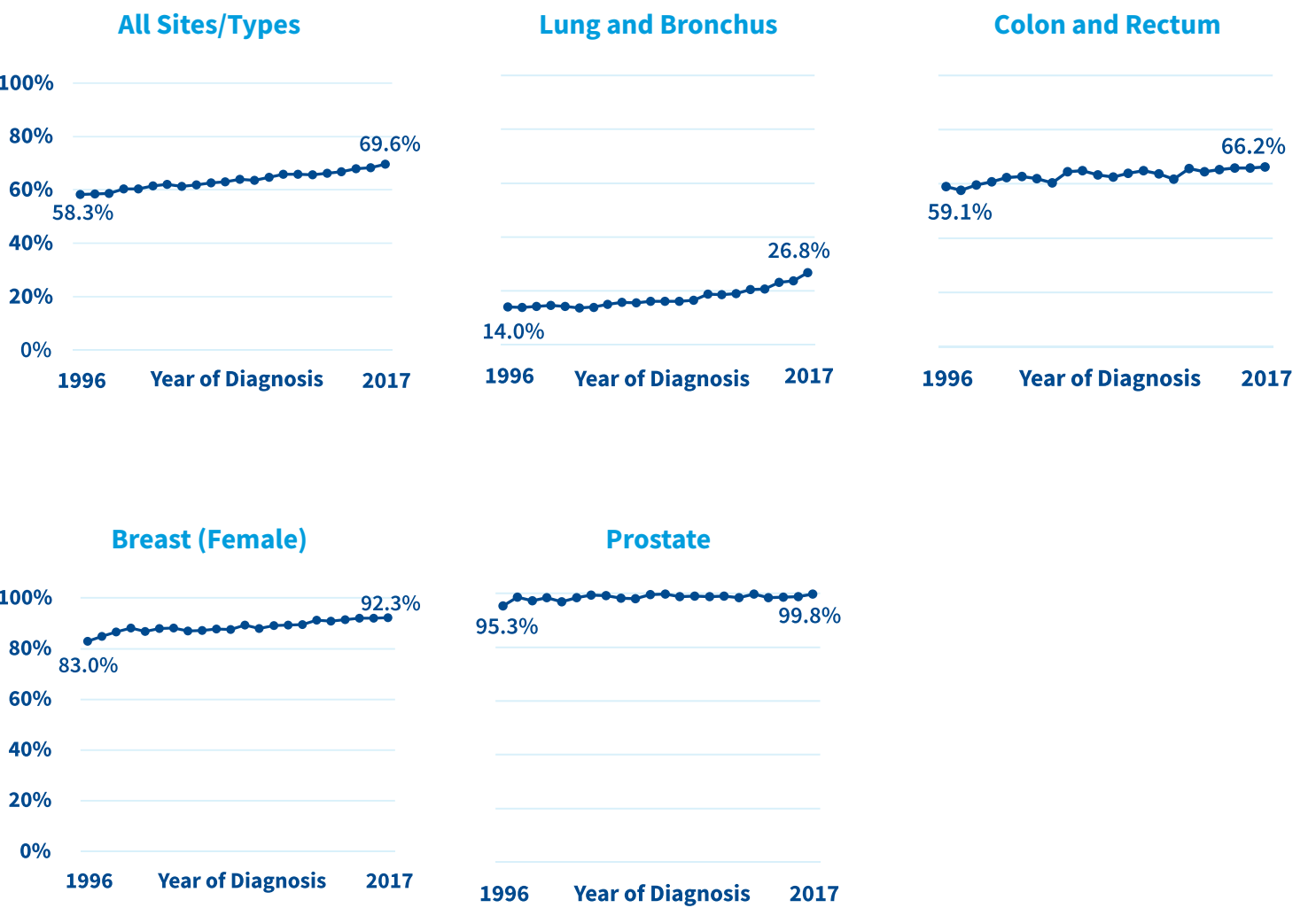
Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2025.

VA = Veterans Affairs.

Cancer Survival Trends

Cancer survival in Ohio has been improving since 1996 for most cancer sites/types. Overall, five-year relative survival for all cancer sites/types combined increased from 58.3% in 1996 to 69.6% in 2017. The five-year relative survival for lung and bronchus cancer improved from 14.0% to 26.8% during this time period. Colon and rectum cancer survival increased from 59.1% in 1996 to 66.2% in 2017. Female breast cancer five-year relative survival increased from 83.0% in 1996 to 92.3% in 2017, while prostate cancer survival increased from 95.3% in 1996 to 99.8% in 2017 (Figure 7).

Figure 7. Trends in Five-Year Relative Survival for All Cancer Sites/Types Combined and the Most Common Cancers, Ohio, 1996-2017



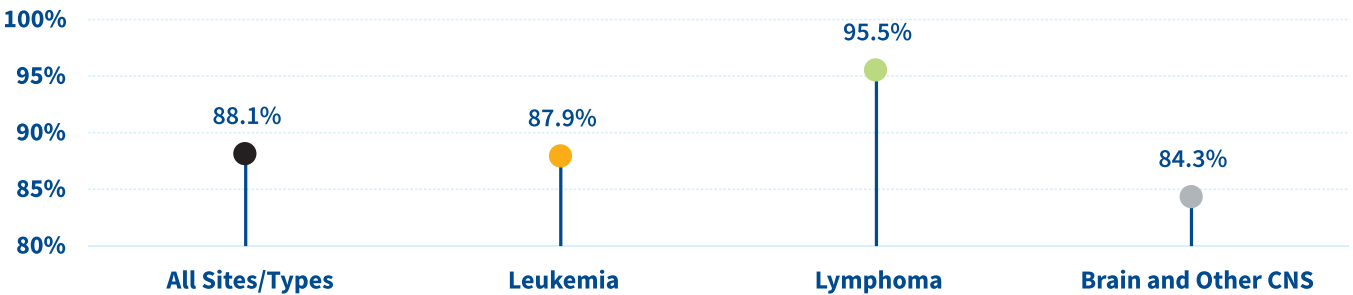
Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2025.

A 2024 report on cancer trends in Ohio, [Trends in Cancer Incidence, Mortality, and Survival in Ohio](#), found that there were significant increases in five-year relative survival for most cancer sites/types and for all cancer sites/types combined among both males and females. The greatest increases in five-year relative survival were observed for the following cancers: esophagus (only among males), leukemia, liver and intrahepatic bile duct, lung and bronchus, multiple myeloma, pancreas, and stomach. The only significant decrease in five-year relative survival occurred for testicular cancer in recent years.

Cancer Survival Among Children and Adolescents

In Ohio, five-year relative survival among children and adolescents was 88.1% for all cancers combined, based on Ohio cases diagnosed from 2015 through 2021. Five-year relative survival was 87.9% for leukemias, 95.5% for lymphomas, and 84.3% for brain and other CNS cancer, which are the most common cancers among children and adolescents (Figure 8). Five-year relative survival was slightly lower among boys, 87.7% (86.0%-89.2%), than girls, 88.5% (86.8%-90.0%), however, the difference was not statistically significant (data not shown). Five-year relative survival was significantly lower in Ohio among Black children and adolescents, 83.4% (79.4%-86.7%), compared with White children and adolescents, 89.0% (87.7%-90.1) (data not shown).

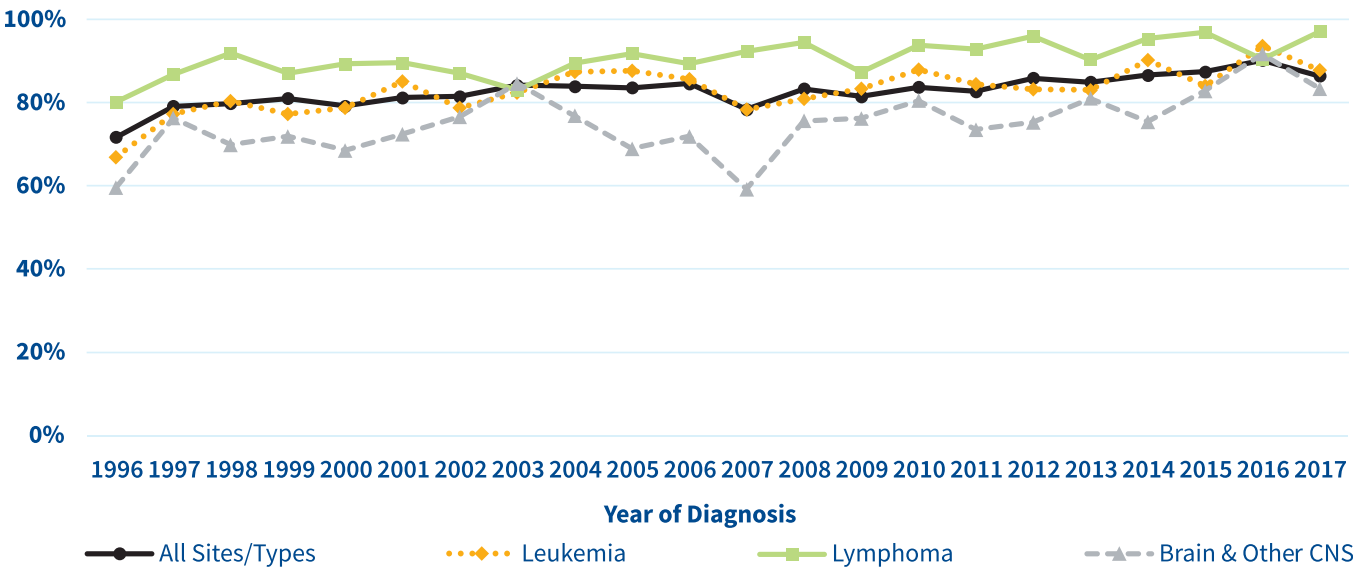
Figure 8. Five-Year Relative Survival for All Cancer Sites/Types Combined and the Most Common Cancers Among Children and Adolescents (Ages 0-19), Ohio, 2015-2021



Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2025.
CNS = Central Nervous System.

In Ohio, the overall five-year relative survival among children and adolescents improved from 71.7% in 1996 to 86.4% in 2017. There was an increase in five-year relative survival for leukemia from 1996 (66.8%) to 2017 (87.8%) and lymphoma (80.1% to 97.1%), while five-year relative survival for brain and other CNS cancer was variable during this time period (Figure 9).

Figure 9. Trends in Five-Year Relative Survival for All Cancer Sites/Types Combined and the Most Common Cancers Among Children and Adolescents (Ages 0-19), Ohio, 1996-2017



Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2025.
CNS = Central Nervous System.

Late Effects of Cancer Treatment

Many cancer survivors experience late effects, which are health problems that occur months or years after cancer is diagnosed or after treatment has ended. Late effects are related to many factors, including the cancer site/type, treatment received (including dose and location), and characteristics of the survivor (including sex, age at diagnosis, genetics, family history, and health-related behaviors). Late effects* include:

Bone loss and joint changes: Some chemotherapy drugs, steroid medicines, hormonal therapy, and radiation therapy may cause thinning or loss of the bones. These problems can lead to loss of motion in some joints.

Brain changes and learning and memory problems: Some chemotherapy drugs and radiation therapy to the brain can cause memory loss, problems concentrating and processing information, personality changes, and movement problems. Children who received radiation therapy to the brain or high doses of certain drugs may be more likely to have these problems.

Emotional/psychological difficulties: These may include anxiety, depression, and fear of recurrence.

Endocrine/hormone problems: Parts of the endocrine system that may be damaged by cancer treatment include the thyroid, ovaries, and testes. Radiation to the head and neck may damage the thyroid. Radiation to the pelvis may damage the ovaries in women or the testes in men. Problems caused by these changes can develop many years after treatment and may include early menopause, infertility, underactive thyroid, overactive thyroid, and weight gain.

Dental problems: Radiation therapy to the mouth, head, or neck may cause dry mouth, gum disease, and cavities. Chemotherapy, especially when given to a child whose adult teeth have not formed, may affect tooth development.

Digestive system problems: Abdominal or pelvic surgery and radiation therapy to the neck, chest, abdomen, or pelvis can result in gastrointestinal problems.

Eye problems: Chemotherapy, hormone therapy, immunotherapy, and steroid medicines may increase the risk of cataracts, a clouding of the lens in the eye that affects vision. Some chemotherapy drugs and bone marrow/stem cell transplants increase the risk for dry eyes. Radioiodine treatment for thyroid cancer may cause the overproduction of tears.

Hearing problems: Treatment with certain chemotherapy drugs and high doses of radiation to the brain can cause hearing loss. Younger children have a higher risk.

Heart problems: Certain chemotherapy drugs and radiation therapy to the chest may cause heart problems, including abnormal heart rhythms, leaky heart valves, congestive heart failure, and coronary artery disease.

Lung and breathing problems: Chemotherapy and radiation therapy to the chest may damage the lungs. Children who received cancer treatment at a younger age have a greater risk of lung and breathing problems.

Lymphedema: Lymphedema, a problem in which the lymph fluid does not drain properly, builds up in tissues, and causes swelling, can result from surgery to remove lymph nodes or by radiation therapy to areas with large numbers of lymph nodes.

Peripheral neuropathy: Some chemotherapy drugs can cause nerve damage, resulting in weakness, numbness, tingling, or pain, especially in the hands or feet.

Secondary cancers: Cancer treatment can sometimes cause a new cancer many years after treatment is complete. Radiation therapy and some types of chemotherapy have the strongest links to secondary cancers.

*Material was adapted from [Late Effects of Cancer Treatment](#) published by the National Cancer Institute.

Cancer Survivorship Care Plans

Survivorship care plans generally include a medical history and summary of cancer treatment, information about cancer screening guidelines and prevention, risks from treatment, and resources for healthcare and support services. Survivorship care plans help the patient advocate for their care and provide a roadmap for their healthcare providers after cancer treatment. Several groups have developed survivorship care plan templates including:

- American Society of Clinical Oncology (ASCO): Cancer Treatment and Survivorship Care Plans.
<https://www.asco.org/practice-patients/patient-resources/asco-resources-patients-providers>
- National Coalition for Cancer Survivorship, UCLA's Cancer Survivorship Center, Wellpoint, Inc., Genetech: "Journey Forward."
<https://www.journeyforward.org/>
- OncoLife Survivorship Care Plan.
<https://oncolife.oncolink.org/>
- Children's Oncology Group: "Long-Term Follow-Up Guidelines for Survivors of Childhood, Adolescent, and Young Adult Cancers."
<http://www.survivorshipguidelines.org/>

Since 2021, the American College of Surgeons Commission on Cancer (CoC) accreditation standards require providing a survivorship program for patients with adult-onset cancer treated with curative intent. More than 70% of all patients with cancer in the United States are treated at CoC-accredited facilities.

Resources and Support for Persons Affected by Cancer

In 2023, the Ohio Partners for Cancer Control (OPCC) developed a list of cancer survivorship resources at the organization level that are relevant and useful for OPCC members, partners, and all Ohioans. The list of resources is available at: <https://ohiocancerpartners.org/survivorship-resources/>. This list is intended as a starting point for Ohioans affected by cancer to find the resources they need, wherever they are on their cancer journey. The categories of resources and support include education (information about cancer prevention, detection, treatment, and navigating life with cancer); advocacy; financial support; lodging and transportation assistance; emotional support and wellbeing; and caregiver and family support. This effort is part of implementing the [Ohio Comprehensive Control Plan 2021-2030](#) and fulfilling the mission of the Ohio Department of Health's Comprehensive Cancer Control Program.

Technical Notes

Invasive Cancer: A malignant tumor that has spread beyond the layer of tissue in which it developed and is growing into surrounding, healthy tissues. Survival statistics in this report include all invasive cancer cases with the addition of *in situ* bladder cancer cases.

Primary Payer at Diagnosis: A cancer patient's insurance status at the time of diagnosis and/or treatment at the reporting facility. Using codes from the North American Association of Central Cancer Registries (NAACCR), primary payer was recoded into the following groups:

- **Uninsured:** Not insured; Not insured, self-pay.
- **Private:** Insurance, NOS (not otherwise specified); Private insurance (managed care, health maintenance organization, preferred provider organization); Private insurance, fee-for-service.
- **Medicaid:** Medicaid; Medicaid, administered through a managed care plan.
- **Medicare:** Medicare/Medicare, NOS; Medicare with supplement, NOS; Medicare, administered through a managed care plan; Medicare with private supplement; Medicare with Medicaid eligibility.
- **Military/VA:** TRICARE; Military; Veterans Affairs (VA).
- **Unknown:** Insurance status unknown.

Relative Survival: The percentage of people alive at a designated time point after a cancer diagnosis (usually five years) divided by the percentage expected to be alive in the absence of cancer based on normal life expectancy. Relative survival is also called the relative survival probability or the relative survival rate. The OCISS database was used in the analysis with the following criteria: (1) All Ohio invasive cancers, as well as *in situ* bladder cancers diagnosed in 2015-2021 with a follow-up cutoff of December 2022; (2) first primary cancer diagnosis only (sequence number 0 or 1); and (3) all ages at diagnosis included. The survival duration in months was calculated with all patients presumed alive if not known to be deceased. Expected survival was estimated using the Ederer II method. Relative survival statistics were calculated using life tables based on county-level socioeconomic status, geography, and race. Survival calculations were conducted using the actuarial method on monthly intervals. Relative survival data in this report were calculated using SEER*Stat software version 8.4.5. Where the relative cumulative survival was more than 100 percent or increased from a prior interval, it was adjusted by SEER*Stat. For more information on survival analysis using SEER*Stat, see: <https://seer.cancer.gov/seerstat/tutorials/survival1>.

Stage at Diagnosis: The extent or spread of the disease from the site of origin, often classified into the following stages:

- ***in situ*:** Noninvasive cancer that has not penetrated surrounding tissue.
- **Local:** A malignant tumor confined entirely to the organ of origin.
- **Regional:** A malignant tumor that has extended beyond the organ of origin directly into surrounding organs or tissues or into regional lymph nodes.
- **Distant:** A malignant tumor that has spread to parts of the body (distant organs, tissues, and/or lymph nodes) remote from the primary tumor.
- **Unstaged/Unknown:** Insufficient information is available to determine the stage or extent of the disease at diagnosis.

Sources of Data and Additional Information

Ohio Cancer Incidence Surveillance System:

<https://odh.ohio.gov/wps/portal/gov/odh/know-our-programs/ohio-cancer-incidence-surveillance-system/welcome-to>

National Cancer Institute:

<https://www.cancer.gov/>

American Cancer Society:

<https://www.cancer.org/>

United States Cancer Statistics (USCS):

<https://www.cdc.gov/united-states-cancer-statistics/>

To address comments and information requests:

Ohio Cancer Incidence Surveillance System (OCISS)

Ohio Department of Health

246 North High Street
Columbus, OH 43215

Phone: (614) 752-2689

E-mail: ociss@odh.ohio.gov

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Ohio Department of Health

Holly L. Sobotka, MS

John Kollman, MS

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