

Thyroid Cancer in Ohio 2023

July 2023

Key Findings

- An average of **1,817** cases of thyroid cancer were diagnosed each year in Ohio during 2016-2020.
- The thyroid cancer incidence rate in Ohio was 14.7 per 100,000 population, compared with 13.9 per 100,000 nationally in 2016-2020.
- Thyroid cancer occurs three times more often in females than in males.
- White Ohioans had a thyroid cancer incidence rate 1.5 times higher than Black Ohioans.
- Unlike many other adult cancers, most people who develop thyroid cancer are younger than 65.
- In Ohio, thyroid cancer incidence rates have tripled for females and doubled for males from 1996 to 2013. However, incidence rates have leveled off or decreased since 2014.
- The geographic pattern of thyroid cancer was relatively sporadic in Ohio in 2016-2020.
- In Ohio, 71.8% of thyroid cancers were diagnosed at an early (local stage).
- Five-year relative survival for Ohio patients with thyroid cancer is nearly 99% overall.
- Papillary tumors are the most common type of thyroid cancer. More than 89% of Ohioans with thyroid cancer have this type.

New Cases

Thyroid cancer forms in the thyroid gland, an organ at the base of the throat that makes hormones that help control heart rate, blood pressure, body temperature, and weight. Cancers of the thyroid made up 2.6% of newly diagnosed (incidence) cancer cases in Ohio reported to the Ohio Cancer Incidence Surveillance System (OCISS) from 2016 to 2020. An average of 1,817 cases of thyroid cancer were diagnosed annually in Ohio during this period (Table 1). The average annual age-adjusted thyroid cancer incidence rate in Ohio was 14.7 cases per 100,000 population, compared with the national (SEER) incidence rate of 13.9 per 100,000. In Ohio, the thyroid cancer incidence rate among females was about three times higher than the rate among males, and 1.5 times higher among White people than Black people. In the United States, Asian/Pacific Islanders had the highest thyroid cancer incidence rate. People less than 65 years old were more likely to be diagnosed with thyroid cancer than those 65 years old and older.

Deaths

An average of 68 deaths from thyroid cancer occurred each year in Ohio from 2016-2020 (Table 1). Ohio's average annual age-adjusted thyroid cancer mortality rate was 0.5 per 100,000, which was the same as the U.S. mortality rate. The mortality rate was similar for males and females in Ohio and the United States during this period.

Table 1. Average Annual Number of Invasive Thyroid Cancer Cases and Deaths and Age-Adjusted Incidence and Mortality Rates per 100,000 Population by Sex, Race, Ethnicity, and Age Group, Ohio and the United States, 2016-2020

		New Cases			Deaths		
		Ohio		U.S.	Ohio		U.S.
		Cases	Rate	Rate	Deaths	Rate	Rate
Total		1,817	14.7	13.9	68	0.5	0.5
Sex	Male	466	7.4	7.4	28	0.4	0.5
	Female	1,351	21.7	20.2	40	0.5	0.5
Race	White	1,594	15.2	14.4	60	0.4	0.5
	Black	153	10.1	8.1	8	0.5	0.5
	A/PI	37	11.7	14.7	1	*	0.6
Ethnicity	Hispanic	31	8.2	13.4	1	*	0.6
Age Group	<65	1,380	13.7	12.8	18	0.1	0.1
	65+	436	21.5	21.4	51	2.7	3.0

Sources: Ohio Cancer Incidence Surveillance System and the Bureau of Vital Statistics, Ohio Department of Health, 2023; Surveillance, Epidemiology, and End Results (SEER) Program, National Cancer Institute, 2023.

* Rate not presented when the count for 2016-2020 is less than five (i.e., the average annual count is less than one).

A/PI= Asian/Pacific Islander.

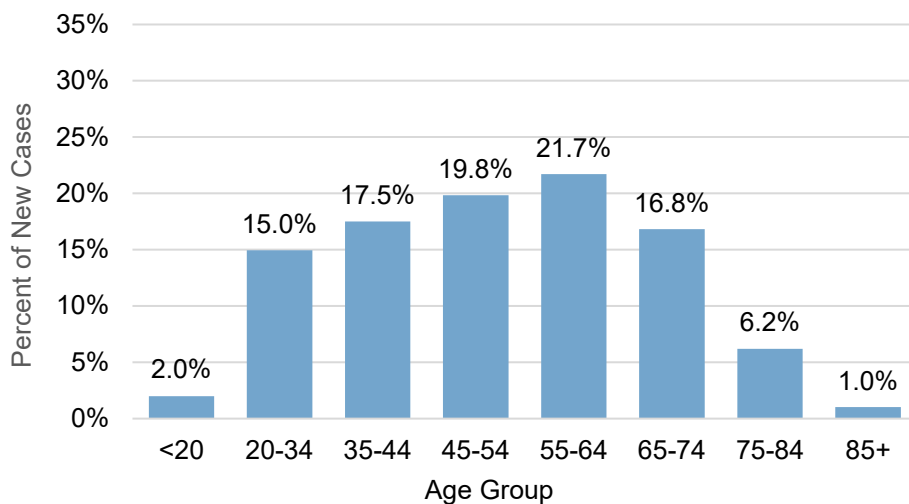


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Incidence by Age Group

Unlike many other adult cancers, most people who develop thyroid cancer are younger than 65 years old. Thyroid cancer was most frequently diagnosed among people in the 55-64 age group (Figure 1).

Figure 1. Percent of New Thyroid Cancer Cases by Age Group, Ohio, 2016-2020

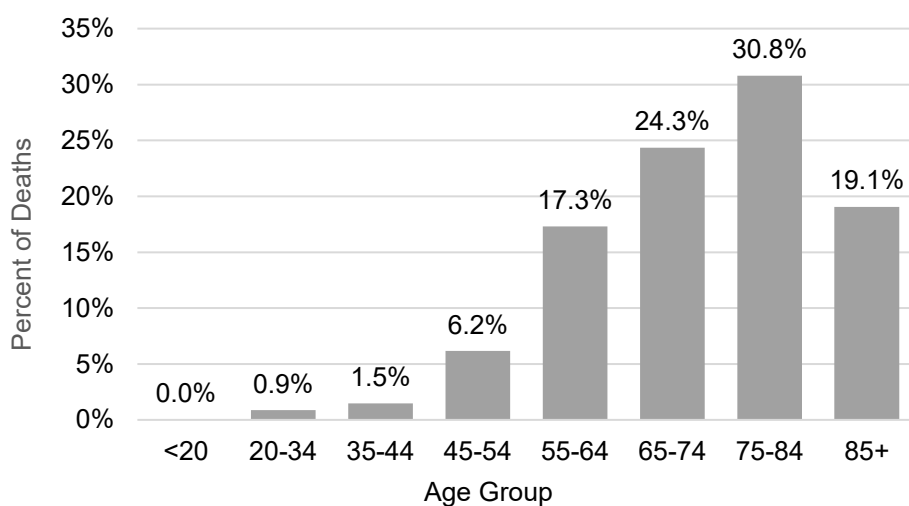


Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2023.

Mortality by Age Group

The percentage of thyroid cancer deaths in Ohio was highest among people in the 75-84 age group during 2016-2020 (Figure 2).

Figure 2. Percent of Thyroid Cancer Deaths by Age Group, Ohio, 2016-2020

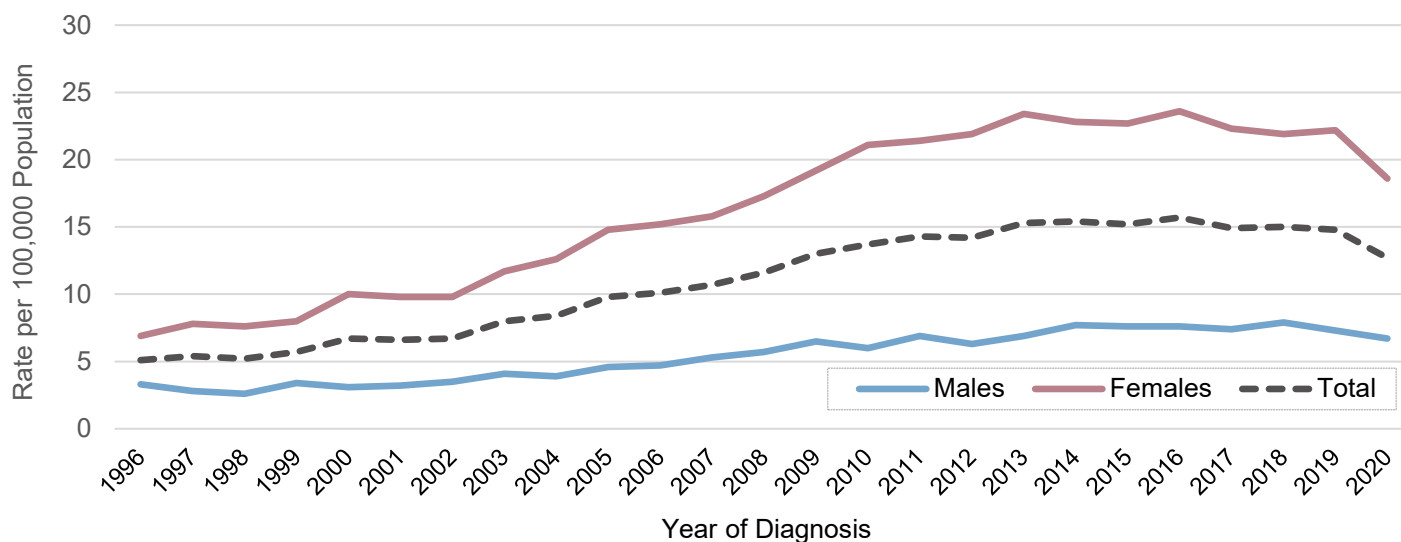


Source: Bureau of Vital Statistics, Ohio Department of Health, 2023.

Trends in Rates

Until recently, the incidence of thyroid cancer was increasing more rapidly than that of any other cancer in the United States, largely due to more sensitive test methods. Figure 3 shows incidence rates of thyroid cancer according to year of diagnosis (1996 through 2020) for males and females in Ohio. For each year, the incidence rate was higher among Ohio females, compared with males. Thyroid cancer incidence rates doubled for males and tripled for females in Ohio from 1996 to 2013. However, incidence rates have leveled off or decreased since 2014, due in part to the adoption of more stringent criteria for diagnosing thyroid cancer.

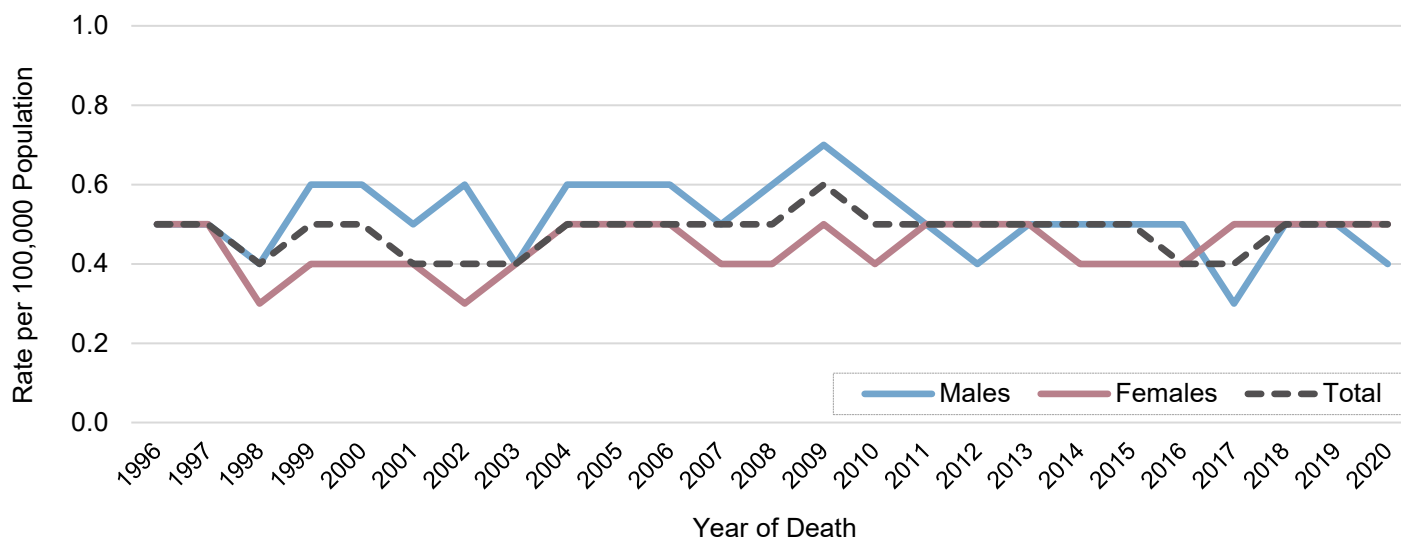
Figure 3. Trends in Age-Adjusted Incidence Rates of Thyroid Cancer per 100,000 Population by Sex, Ohio, 1996-2020



Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2023.

Figure 4 shows thyroid cancer mortality rates in Ohio according to year of death (1996 through 2020) for males and females. Mortality rates of thyroid cancer are low and do not show a consistent increase or decrease from 1996 to 2020. In contrast to incidence, thyroid cancer mortality rates among males were slightly higher than or similar to rates among females in Ohio during this period.

Figure 4. Trends in Age-Adjusted Mortality Rates of Thyroid Cancer per 100,000 Population by Sex, Ohio, 1996-2020

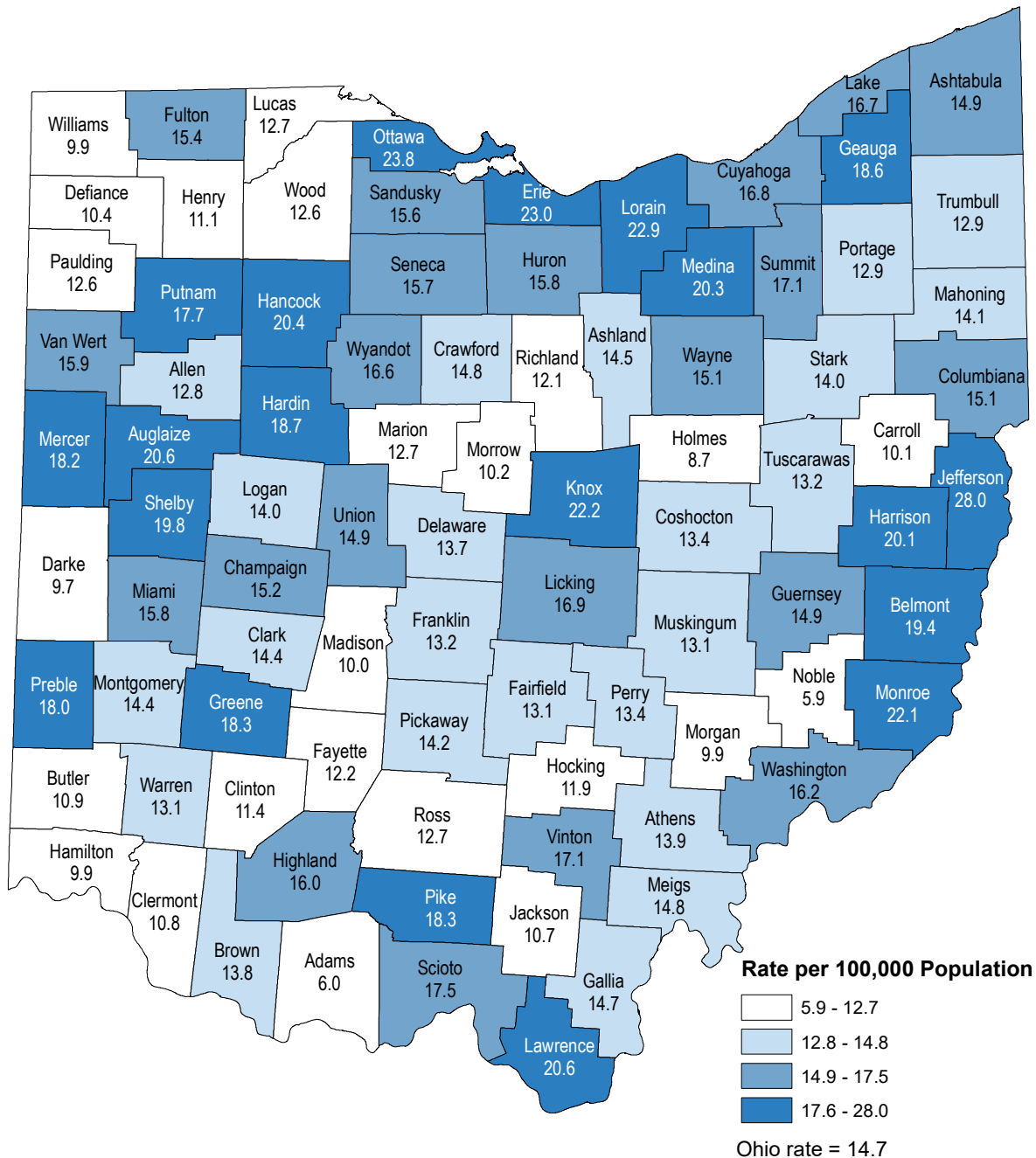


Source: Bureau of Vital Statistics, Ohio Department of Health, 2023.

Incidence by County

Figure 5 shows 2016-2020 average annual age-adjusted thyroid cancer incidence rates by county of residence. County thyroid cancer incidence rates in Ohio ranged from 5.9 to 28.0 per 100,000 population, compared with Ohio's rate of 14.7 per 100,000. The geographic pattern of thyroid cancer is relatively sporadic in Ohio. The following counties had the highest incidence rates, in decreasing order, for this period: Jefferson, Ottawa, Erie, Lorain, Knox, Monroe, Auglaize, Lawrence, Hancock, and Medina.

Figure 5. Average Annual Age-Adjusted Incidence Rates of Thyroid Cancer per 100,000 Population by County of Residence, Ohio, 2016-2020

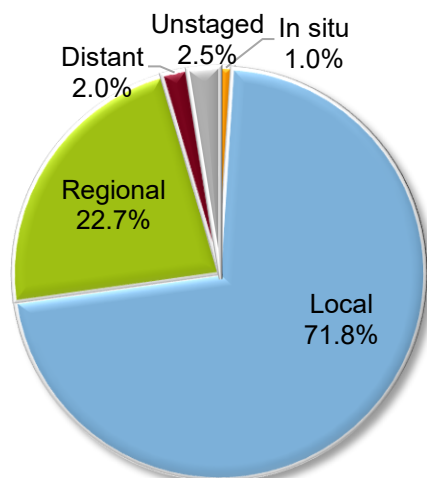


Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2023.
Each category represents approximately 25 percent of the 88 Ohio counties.

Stage at Diagnosis

Cancer stage at diagnosis, which refers to the extent or spread of a cancer in the body, is used to select appropriate treatment and is an important determinant of survival. Non-invasive cancers that have not penetrated surrounding tissue are *in situ* stage. If a malignant tumor is confined to the organ in which it originated, it is localized (local stage). In the regional stage, the tumor has spread to surrounding organs, tissues, or regional lymph nodes. In the distant stage, the malignancy has spread, or metastasized, to distant organs, tissues, or lymph nodes remote from the primary tumor.

Figure 6. Proportion of Thyroid Cancer Cases (%) by Stage at Diagnosis, Ohio, 2016-2020



In Ohio in 2016-2020:

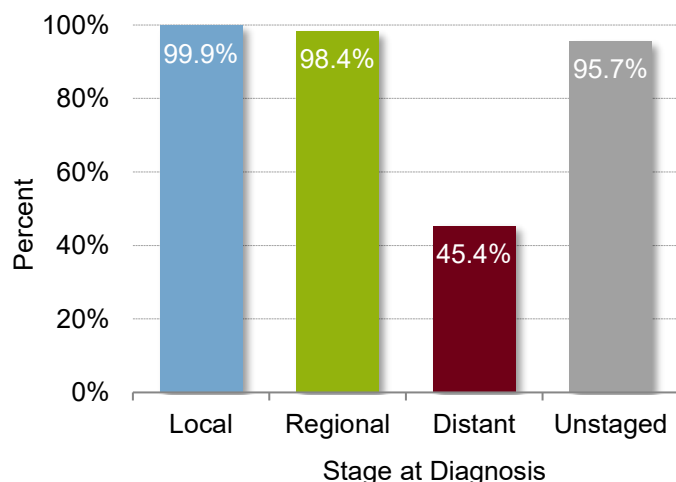
- 1.0% of thyroid cancers were *in situ*.
- 71.8% were diagnosed at the local stage.
- 22.7% were diagnosed at the regional stage.
- 2.0% were diagnosed at the distant (latest) stage.
- 2.5% were unstaged/unknown stage. (Figure 6).

Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2023.

Survival

In general, cancer survival is the estimated proportion of people alive at some point after cancer diagnosis, usually five years. Five-year relative survival 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.

Figure 7. Five-Year Relative Survival (%) by Stage at Diagnosis for Thyroid Cancer, Ohio, 2013-2019



In Ohio, the five-year relative survival for thyroid cancer cases diagnosed in 2013-2019 was:

- 98.9% for all stages combined (not shown).
- 99.9% among those diagnosed at the local stage.
- 98.4% at the regional stage.
- 45.4% when the cancer was diagnosed at the distant stage.
- 95.7% for unstaged/unknown stage cases. (Figure 7).

Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2023.

Types of Thyroid Cancer

The four main types of thyroid cancer are papillary, follicular, medullary, and anaplastic thyroid cancer. The four types are based on how the cancer cells look under a microscope.

- **Papillary** tumors are the most common type of thyroid cancer. Papillary carcinomas usually grow slowly and usually develop in only one lobe of the thyroid gland. Most people with papillary thyroid cancer can be cured if the cancer is diagnosed early. In Ohio in 2016-2020, more than 89% of people with thyroid cancer had this type.
- **Follicular** thyroid cancer is the second most common type. In Ohio in 2016-2020, nearly 6% of people with thyroid cancer had this type. This cancer usually grows slowly, and most people with follicular thyroid cancer can be treated successfully.
- **Medullary** thyroid cancer is not common. The medullary form of thyroid cancer develops from C cells that produce the hormone calcitonin to regulate calcium metabolism. The prognosis for medullary thyroid cancer is good if it is found and treated before it has spread to other parts of the body.
- **Anaplastic** thyroid cancer, also known as undifferentiated carcinoma, is the least common type. It is thought to sometimes develop from an existing papillary or follicular cancer. It tends to grow and spread quickly, making it difficult to control.

Did You Know?

- Thyroid cancer was the sixth most common cancer among females in the United States in 2016-2020, with three out of four cases occurring in women.
- New diagnoses of thyroid cancers have been on the rise in recent decades in the United States, due in part to improved detection methods. However, since 2014, the number of new thyroid cancer cases has been falling as stricter criteria for diagnosing thyroid cancer are being used.
- Decreases in incidence from 2019 to 2020 in the United States varied by cancer type and decreased most (16% decline) for thyroid cancer, which is often found incidentally during health care visits. This decline was likely due to disruptions in access to care in 2020 during the COVID-19 pandemic, leading to delays and reductions in cancer screening, diagnosis, and reporting.

Risk Factors and Populations at High Risk

A cancer risk factor is anything that increases a person's risk of developing cancer. However, having one or more risk factors does not mean that a person will develop cancer. Risk factors for thyroid cancer include the following:

- Being between 25 and 65 years old.
- Being female.
- Being exposed to radiation to the head and neck as an infant or child or being exposed to radioactive fallout. The cancer may occur as soon as five years after exposure.
- Having a history of goiter (enlarged thyroid).
- Having a family history of thyroid disease or thyroid cancer.
- Having certain genetic conditions such as familial medullary thyroid cancer (FMTTC), multiple endocrine neoplasia type 2A syndrome (MEN2A), or multiple endocrine neoplasia type 2B syndrome (MEN2B).

Signs and Symptoms

Thyroid cancer may not cause early signs or symptoms. It is sometimes found during a routine physical exam. Signs or symptoms may occur as the tumor gets larger and include the following:

- A palpable lump or nodule in the front of the neck, around the Adam's apple (primary sign of thyroid cancer).
- Trouble breathing.
- Trouble swallowing.
- Pain when swallowing.
- Hoarseness.

Other conditions may cause similar signs or symptoms. If you have any of these signs/symptoms, see your healthcare provider.

Early Detection

The U.S. Preventive Services Task Force (USPSTF) recommends against screening for thyroid cancer in asymptomatic adults. Tests that examine the thyroid, neck, and blood are used to diagnose thyroid cancer, including:

- Physical exam and health history.
 - Laryngoscopy.
 - Blood hormone studies.
 - Blood chemistry studies.
 - Ultrasound exam.
 - Computed tomography (CT) scan of the head and neck.
 - Fine-needle aspiration biopsy of the thyroid.
 - Surgical biopsy.
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Technical Notes

Age-Adjusted Rate: A summary rate that is a weighted average of age-specific rates, where the weights represent the age distribution of a standard population (direct adjustment). The incidence and mortality rates presented in this report were standardized to the age distribution of the 2000 U.S. Standard Population. Using the direct method, the population was first divided into 19 age groups, i.e., <1, 1-4, 5-9, 10-14, 15-19...85+, and the age-specific rate was calculated for each age group. Each age-specific rate was then multiplied by the standard population proportion for the respective age group.

Average Annual Number: The number of cases or deaths diagnosed per year, on average, for the time period of interest (e.g., 2016-2020). Average annual numbers are calculated by summing the number of cases or deaths for a given time period, dividing by the number of years that comprise the time period, and rounding to the nearest whole number.

Census Data: The 1996-2020 rates were calculated using population estimates from the U.S. Census Bureau and National Center for Health Statistics. Population data were compiled from bridged-race intercensal population estimates for July 1, 1990-July 1, 1999; revised bridged-race intercensal population estimates for July 1, 2000-July 1, 2004 (released 10/26/2012); revised bridged-race intercensal population estimates for July 1, 2005-July 1, 2009 (released 6/26/2014) and vintage 2020 bridged-race postcensal population estimates for July 1, 2010-July 1, 2020 (released 9/22/2021).

Incidence: The number of cases diagnosed during a specified time period (e.g., 2016-2020). Thyroid cancer cases were defined as follows: International Classification of Diseases for Oncology, Third Edition (ICD-O-3), code C73.9.

Invasive Cancer: A malignant tumor that has infiltrated the organ in which the tumor originated. Invasive cancers consist of those diagnosed at the local, regional, distant, and unstaged/unknown stages. Only invasive cancers were included in the calculation of incidence rates in this document.

Mortality: The number of deaths during a specified time period (e.g., 2016-2020). Thyroid cancer deaths were defined as follows: International Statistical Classification of Diseases and Related Health Problems, Ninth Edition (ICD-9), code 193 for 1996-1998 and International Statistical Classification of Diseases and Related Health Problems, Tenth Edition (ICD-10), code C73 for 1999-2020.

Rate: The number of cases or deaths per unit of population (e.g., per 100,000 population) during a specified time period (e.g., 2016-2020). Rates may be unstable and are not presented when the count is less than five.

Relative Survival: The percentage of people who are alive at a designated time period (usually five years) after a cancer diagnosis divided by the percentage expected to be alive in the absence of cancer based on normal life expectancy. Based on Ohio cancer cases diagnosed from 2013-2019 with follow-up through December 2020.

Stage at Diagnosis: The degree to which a tumor has spread from its site of origin at the time of diagnosis. A system of summary staging is often used to group cases 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.

Table 2. Average Annual Number of Invasive Thyroid Cancer Cases and Age-Adjusted Incidence Rates per 100,000 Population by County of Residence and Sex, Ohio, 2016-2020

	Male		Female		Total			Male		Female		Total	
	Cases	Rate	Cases	Rate	Cases	Rate		Cases	Rate	Cases	Rate	Cases	Rate
Ohio	466	7.4	1,351	21.7	1,817	14.7	Lawrence	3	9.9	9	30.9	12	20.6
U.S.		7.4		20.2		13.9	Licking	10	9.9	23	23.7	33	16.9
Adams	<1	*	2	9.9	2	6.0	Logan	1	7.1	5	20.7	7	14.0
Allen	4	6.7	11	19.1	15	12.8	Lorain	18	10.7	57	34.9	75	22.9
Ashland	1	2.8	7	26.2	8	14.5	Lucas	13	6.0	43	18.9	56	12.7
Ashtabula	4	6.8	12	23.4	16	14.9	Madison	1	5.4	4	16.5	5	10.0
Athens	2	7.6	6	21.1	8	13.9	Mahoning	8	6.1	27	22.2	35	14.1
Auglaize	2	5.7	8	35.4	10	20.6	Marion	3	7.5	6	19.6	9	12.7
Belmont	4	11.3	9	28.8	14	19.4	Medina	13	12.3	28	28.1	40	20.3
Brown	1	5.8	4	21.4	6	13.8	Meigs	1	10.7	2	19.0	3	14.8
Butler	11	5.8	33	15.9	44	10.9	Mercer	<1	*	7	34.5	8	18.2
Carroll	1	4.5	2	15.9	4	10.1	Miami	7	11.6	11	20.2	18	15.8
Champaign	<1	*	5	27.0	6	15.2	Monroe	1	8.9	3	35.6	4	22.1
Clark	8	10.0	13	18.5	21	14.4	Montgomery	19	7.1	59	21.3	78	14.4
Clermont	8	6.6	17	14.9	25	10.8	Morgan	<1	*	1	18.3	2	9.9
Clinton	2	9.2	3	13.6	5	11.4	Morrow	1	4.9	3	15.6	4	10.2
Columbiana	4	7.2	13	23.8	17	15.1	Muskingum	3	5.8	9	20.0	11	13.1
Coshocton	2	7.5	4	19.1	5	13.4	Noble	<1	*	<1	*	1	5.9
Crawford	2	6.5	5	22.8	7	14.8	Ottawa	2	6.2	9	41.7	10	23.8
Cuyahoga	57	8.7	170	24.1	227	16.8	Paulding	<1	*	2	23.5	2	12.6
Darke	2	6.0	5	13.1	6	9.7	Perry	<1	*	5	23.7	5	13.4
Defiance	<1	*	3	15.8	4	10.4	Pickaway	2	4.4	7	25.2	9	14.2
Delaware	9	7.7	22	19.7	30	13.7	Pike	1	9.4	4	27.5	5	18.3
Erie	5	8.8	15	36.7	20	23.0	Portage	5	5.5	18	20.1	23	12.9
Fairfield	5	6.1	16	19.9	21	13.1	Preble	2	8.2	6	27.7	8	18.0
Fayette	<1	*	3	19.9	4	12.2	Putnam	1	6.1	5	29.4	7	17.7
Franklin	45	7.1	128	19.1	173	13.2	Richland	4	6.0	12	19.0	17	12.1
Fulton	2	7.4	5	23.3	7	15.4	Ross	5	10.0	6	16.4	11	12.7
Gallia	1	5.5	3	23.4	4	14.7	Sandusky	3	9.8	7	21.5	10	15.6
Geauga	5	10.1	14	27.0	19	18.6	Scioto	3	7.9	11	27.2	14	17.5
Greene	9	10.6	22	25.9	31	18.3	Seneca	2	7.5	7	24.3	9	15.7
Guernsey	1	6.4	4	23.7	5	14.9	Shelby	3	10.1	7	29.7	10	19.8
Hamilton	20	4.9	63	14.5	83	9.9	Stark	13	6.2	41	21.4	54	14.0
Hancock	4	10.0	12	31.1	17	20.4	Summit	25	8.6	74	25.3	99	17.1
Hardin	2	9.8	4	27.1	6	18.7	Trumbull	7	6.9	21	18.8	28	12.9
Harrison	<1	*	3	34.1	4	20.1	Tuscarawas	3	6.3	10	20.2	13	13.2
Henry	<1	*	2	16.7	3	11.1	Union	3	9.9	6	19.8	9	14.9
Highland	3	9.7	5	22.6	7	16.0	Van Wert	2	9.6	3	22.3	5	15.9
Hocking	<1	*	3	21.0	4	11.9	Vinton	<1	*	2	31.6	2	17.1
Holmes	1	4.2	3	13.2	4	8.7	Warren	10	7.4	23	19.1	32	13.1
Huron	3	6.7	7	25.3	10	15.8	Washington	2	7.0	8	25.3	11	16.2
Jackson	1	7.6	2	14.2	3	10.7	Wayne	4	5.7	14	24.4	17	15.1
Jefferson	6	14.5	14	41.0	20	28.0	Williams	1	5.2	3	14.6	4	9.9
Knox	3	11.3	10	33.0	14	22.2	Wood	5	7.4	12	18.0	17	12.6
Lake	10	7.1	33	26.0	43	16.7	Wyandot	<1	*	3	31.5	4	16.6

Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2023; Surveillance, Epidemiology and End Results (SEER) Program, National Cancer Institute, 2023.

*Rate not presented when the count for 2016-2020 is less than five (i.e., the average annual count is less than one).

Sources of Data and Additional Information

Ohio Cancer Incidence Surveillance System:

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

National Cancer Institute:

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

American Cancer Society:

<https://www.cancer.org/cancer/types/thyroid-cancer.html>

Centers for Disease Control and Prevention:

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

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