

Pancreatic cancer is a type of cancer that forms in the tissues of the pancreas. The pancreas is a gland about six inches long that lies between the stomach and the spine. The pancreas makes pancreatic juices (enzymes) that break down food. The pancreas also produces hormones, such as insulin and glucagon, that help control blood sugar levels. Digestive juices are made by exocrine pancreas cells and hormones are made by endocrine pancreas cells. About 95% of pancreatic cancers begin in exocrine cells.

Key Findings

- An average of 2,168 new pancreatic cancer cases and 1,899 deaths occurred each year in Ohio in 2017-2021.
- The pancreatic cancer incidence (new case) rate in Ohio was 14.0 per 100,000 population, similar to the U.S. rate of 13.5 per 100,000 in 2017-2021.
- Pancreatic cancer occurs more often in males than females in Ohio and the United States.
- Black individuals have the highest pancreatic cancer incidence and mortality rates of the major racial groups in Ohio and the United States.
- Pancreatic cancer was most frequently diagnosed among older adults (ages 65-74) in Ohio.
- In Ohio, incidence rates of pancreatic cancer increased from 1996 to 2018 and then decreased through 2021.
- During 2017-2021, 45% of pancreatic cancers in Ohio were diagnosed at a distant (late) stage.
- Overall, only 11% of Ohioans diagnosed with pancreatic cancer survive five years after diagnosis.

New Cases

Pancreatic cancer made up 3.1% of all incident cancer cases reported to the Ohio Cancer Incidence Surveillance System (OCISS), Ohio's central cancer registry, from 2017 through 2021.¹

An average of **2,168** new cases of pancreatic cancer were diagnosed annually in Ohio in 2017-2021 (Table 1). The average annual age-adjusted incidence rate for pancreatic cancer in Ohio was 14.0 per 100,000 population, compared with the U.S. incidence rate of 13.5 per 100,000. In both Ohio and the United States, pancreatic cancer incidence rates were greater for males and Black individuals (Table 1).

Deaths

Pancreatic cancer is the third leading cause of death due to cancer in Ohio and the United States, accounting for 7.5% of all cancer-related deaths in Ohio in 2017-2021.

An average of **1,899** deaths from pancreatic cancer occurred each year in Ohio in 2017-2021 (Table 1). The Ohio pancreatic cancer mortality rate was 12.2 per 100,000 population, compared with the U.S. mortality rate of 11.2 per 100,000. In both Ohio and the United States, pancreatic cancer mortality rates were greater for males and Black individuals (Table 1).

¹Due 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 presented in this report is for cancer cases diagnosed through Dec. 31, 2021.

Table 1. Average Annual Number and Age-Adjusted Rates of Pancreatic Cancer Cases and Deaths per 100,000 Population by Sex and Race, Ohio and the United States, 2017-2021

		Incidence			Mortality		
		Ohio Cases	Ohio Rate	U.S. Rate	Ohio Deaths	Ohio Rate	U.S. Rate
Total		2,168	14.0	13.5	1,899	12.2	11.2
Sex	Male	1,156	16.4	15.3	991	14.3	12.9
	Female	1,012	12.0	11.9	908	10.5	9.8
Race	White	1,877	13.8	13.5	1,666	12.1	11.2
	Black	256	16.5	16.4	219	14.4	13.3
	A/PI	19	8.1	9.7	13	6.2	7.7

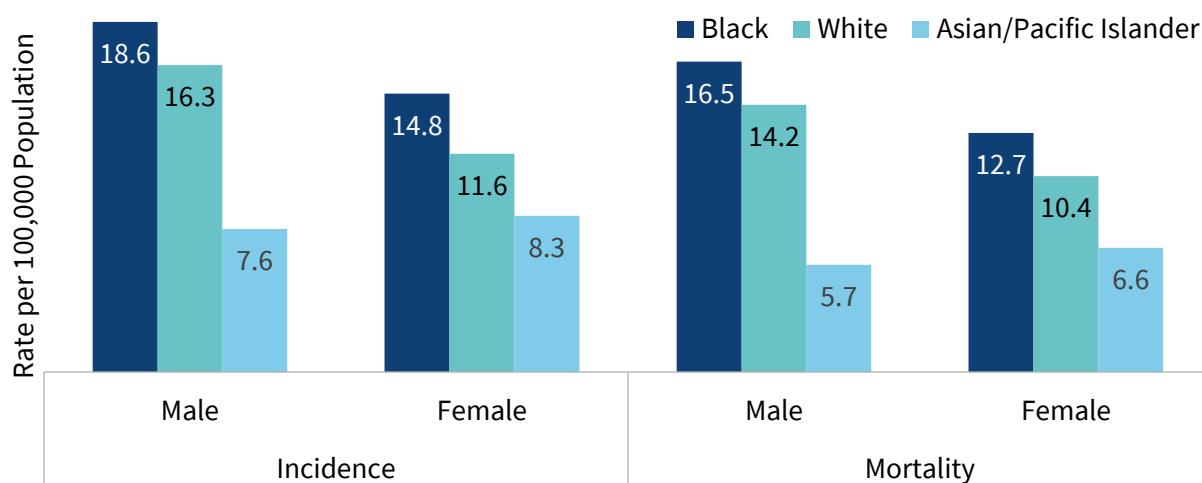
Sources: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2024; U.S. Cancer Statistics, Centers for Disease Control and Prevention and National Cancer Institute, June 2024; SEER*Stat Database - Mortality: All COD (Cause of Death), Aggregated With State, Total U.S. (1990-2022), National Cancer Institute, April 2024. Underlying mortality data provided by the National Center for Health Statistics.

A/PI = Asian/Pacific Islander.

Incidence and Mortality by Sex and Race

Black males had the highest pancreatic cancer incidence rate in Ohio (18.6 per 100,000 population), based on data from 2017 to 2021 (Figure 1). Black males were also more likely than White and Asian/Pacific Islander males to die from pancreatic cancer. Asians/Pacific Islanders had the lowest incidence and mortality rates for pancreatic cancer in Ohio in 2017-2021.

Figure 1. Average Annual Age-Adjusted Incidence and Mortality Rates of Pancreatic Cancer per 100,000 Population by Sex and Race, Ohio, 2017-2021

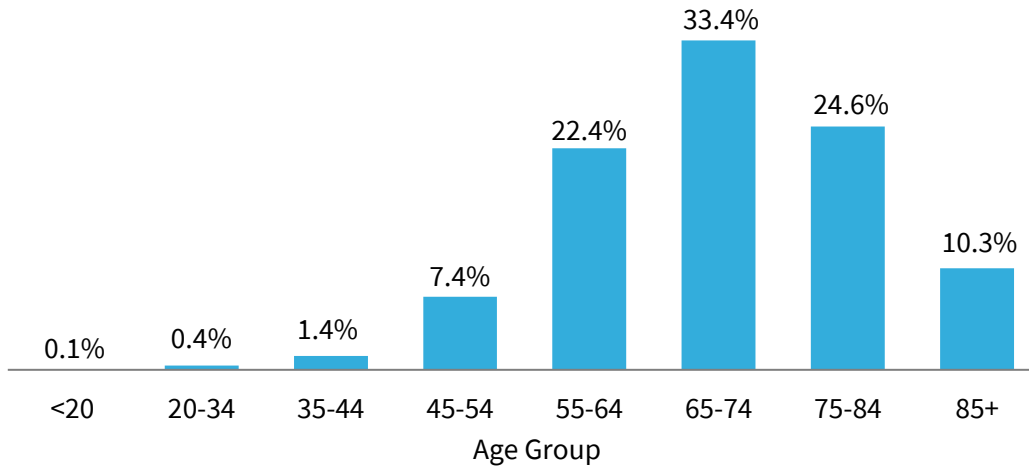


Sources: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2024; SEER*Stat Database: Mortality - All COD (Cause of Death), Aggregated With State, Total U.S. (1990-2022), National Cancer Institute, April 2024. Underlying mortality data provided by the National Center for Health Statistics.

Incidence by Age Group

As shown in Figure 2, pancreatic cancer in Ohio was most frequently diagnosed among people 65 to 74 years old. There were very few cases of pancreatic cancer among people younger than 45 years old in Ohio during 2017-2021.

Figure 2. Percent of New Cases of Pancreatic Cancer by Age Group, Ohio, 2017-2021

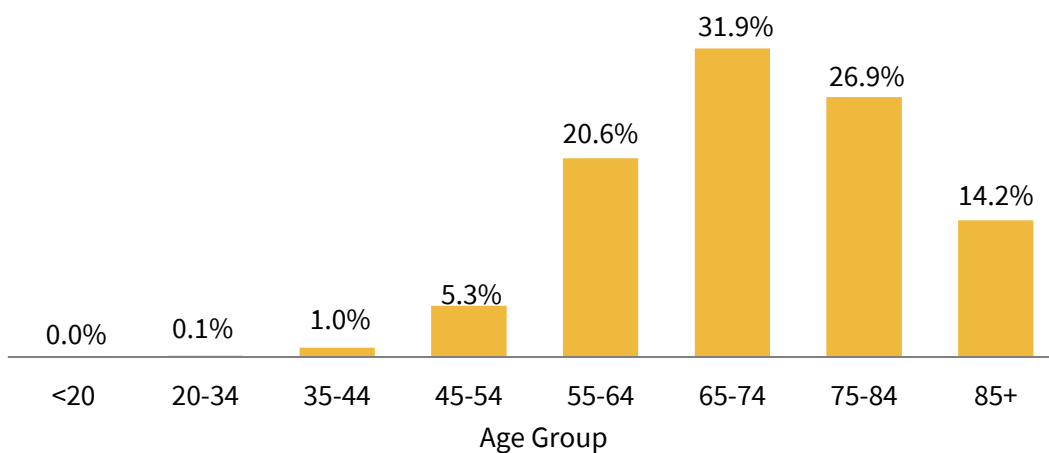


Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2024.

Mortality by Age Group

In Ohio, pancreatic cancer deaths occurred most frequently among people 65 to 74 years old. There were very few deaths due to pancreatic cancer among people younger than 45 years old in Ohio during 2017-2021 (Figure 3).

Figure 3. Percent of Pancreatic Cancer Deaths by Age Group, Ohio, 2017-2021

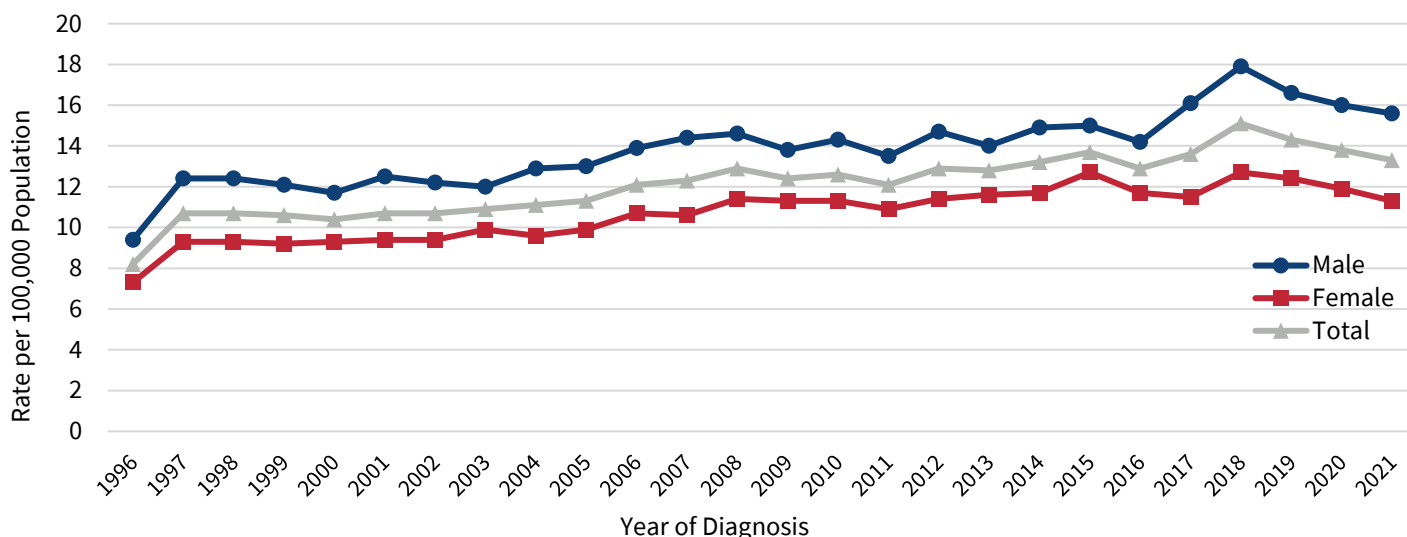


Source: Bureau of Vital Statistics, Ohio Department of Health, 2024; SEER*Stat Database: Mortality - All COD (Cause of Death), Aggregated With State, Total U.S. (1990-2022), National Cancer Institute, April 2024. Underlying mortality data provided by the National Center for Health Statistics.

Trends in Incidence

Pancreatic cancer incidence rates increased for both males and females from 1996 to 2018, then decreased through 2021 (Figure 4).

Figure 4. Trends in Age-Adjusted Pancreatic Cancer Incidence Rates per 100,000 Population by Sex, Ohio, 1996-2021

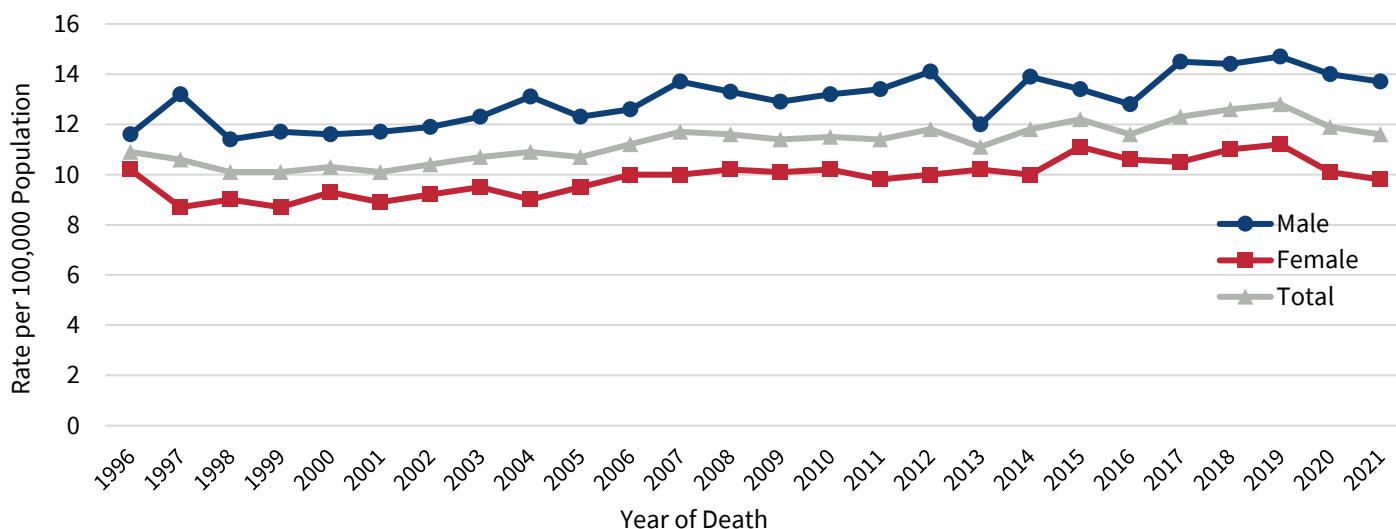


Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2024.

Trends in Mortality

From 1996 to 2021, pancreatic cancer mortality rates increased slightly for males and the total population. For each year, pancreatic cancer mortality rates were higher among males, compared with females in Ohio (Figure 5).

Figure 5. Trends in Age-Adjusted Pancreatic Cancer Mortality Rates per 100,000 Population by Sex, Ohio, 1996-2021

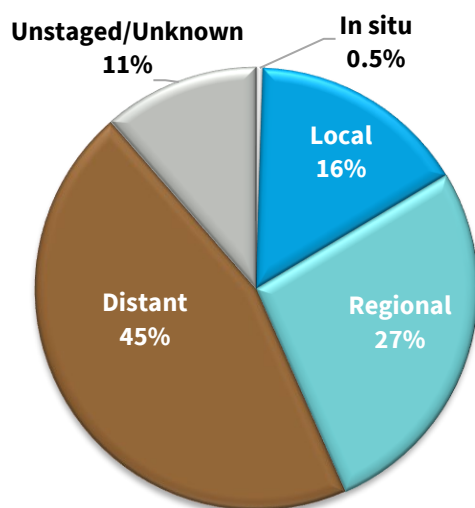


Source: SEER*Stat Database: Mortality - All COD (Cause of Death), Aggregated With State, Total U.S. (1990-2022), National Cancer Institute, April 2024. Underlying mortality data provided by the National Center for Health Statistics.

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. If cancer cells are present only in the layer of cells (tissue) where they developed and have not spread, the stage is *in situ*. If cancer cells have penetrated beyond the original layer of tissue, the cancer has become invasive and is categorized as local, regional, or distant based on the extent of spread.

Figure 6. Proportion of Pancreatic Cancer Cases (%) by Stage at Diagnosis, Ohio, 2017-2021



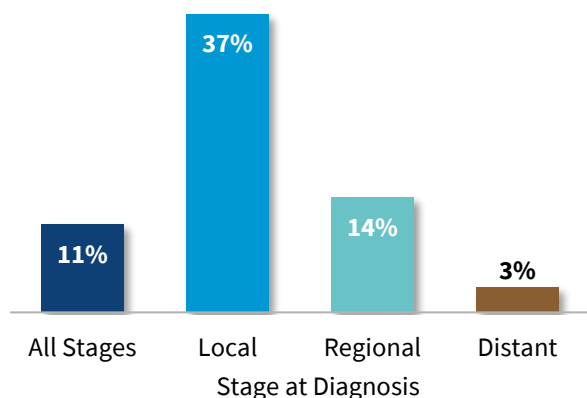
In Ohio in 2017-2021, 0.5% of pancreatic cancer cases were *in situ*, 16% were diagnosed at a local stage, 27% were regional stage, 45% were distant stage, and 11% were unstaged or of unknown stage (Figure 6).

Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2024.

Survival

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 here, 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 (%) for Pancreatic Cancer by Stage at Diagnosis, Ohio



For all stages combined, the five-year relative survival for pancreatic cancer in Ohio was 11%.

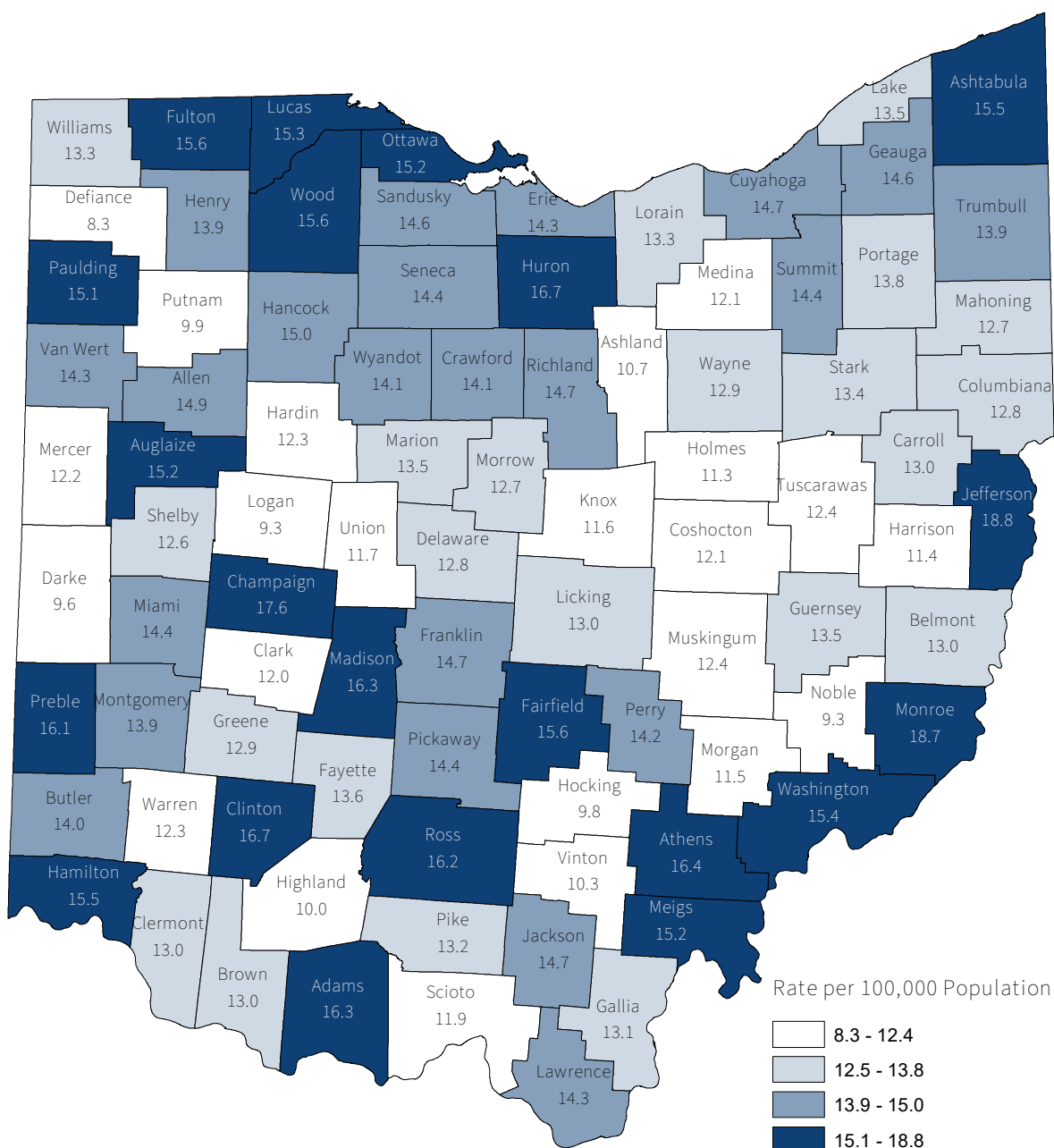
In Ohio, the five-year relative survival was 37% among those diagnosed at a local stage, 14% at the regional stage, and only 3% when the cancer was diagnosed at the latest (distant) stage (Figure 7).

Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2024.
Based on Ohio cases diagnosed in 2014-2020, followed through 2021.

Pancreatic Cancer Incidence by County

Figure 8 shows 2017-2021 average annual age-adjusted pancreatic cancer incidence rates in Ohio by county of residence. County-specific pancreatic cancer incidence rates in Ohio ranged from 8.3 to 18.8 per 100,000 population, compared with Ohio's rate of 14.0 per 100,000 during this time period. Pancreatic cancer incidence rates by county are relatively sporadic and display no apparent pattern.

Figure 8. Average Annual Age-Adjusted Incidence Rates of Pancreatic Cancer per 100,000 population by County of Residence, Ohio, 2017-2021

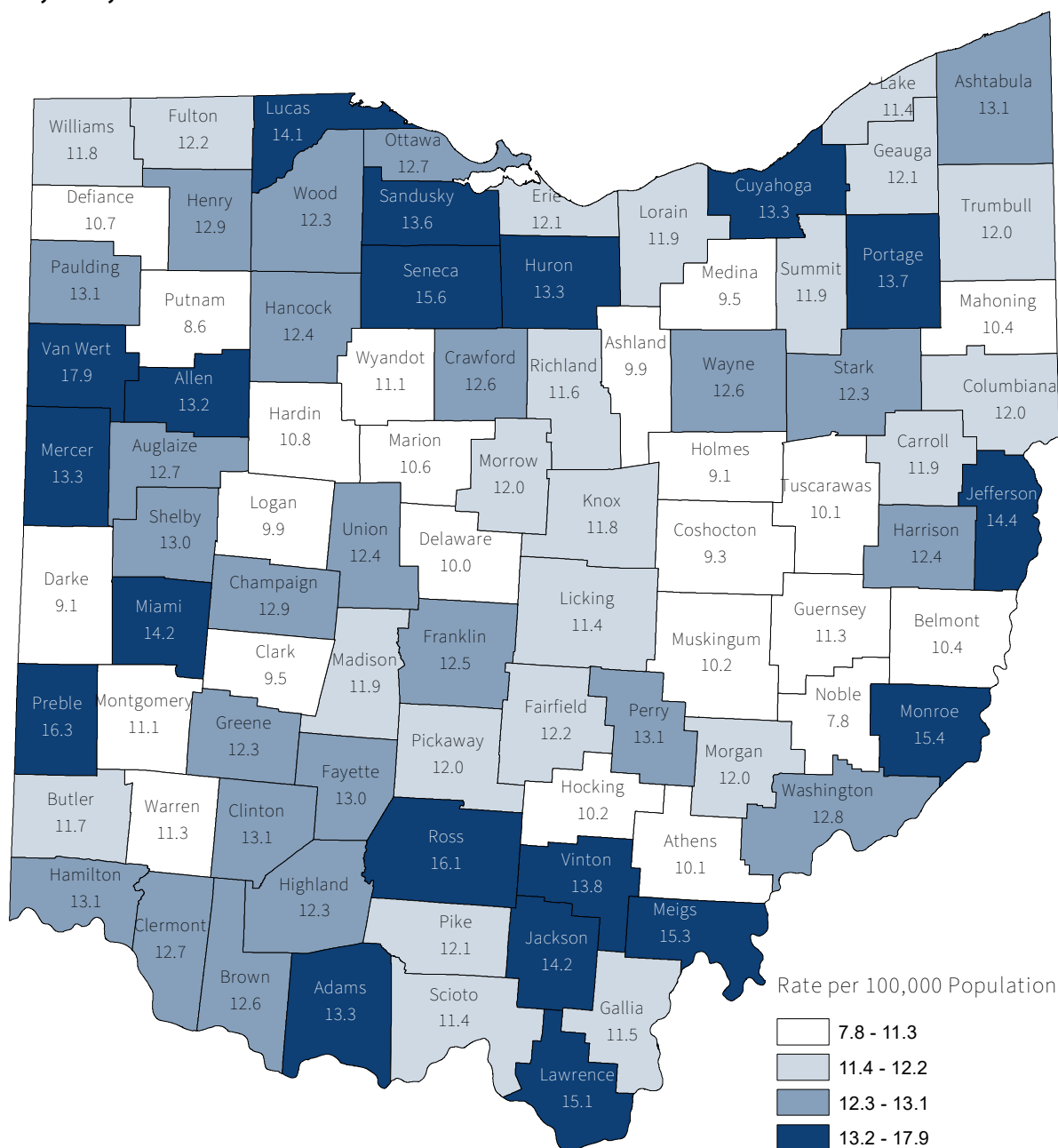


Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2024.

Pancreatic Cancer Mortality by County

Figure 9 shows 2017-2021 average annual age-adjusted pancreatic cancer mortality rates in Ohio by county of residence. County-specific pancreatic cancer mortality rates in Ohio ranged from 7.8 to 17.9 per 100,000 population, compared with Ohio's rate of 12.2 per 100,000 during this time period. Similar to incidence, the pattern of pancreatic cancer mortality rates by county are relatively sporadic and display no apparent pattern.

Figure 9. Average Annual Age-adjusted Mortality Rates of Pancreatic Cancer per 100,000 Population by County of Residence, Ohio, 2017-2021



Source: SEER*Stat Database: Mortality - All COD (Cause of Death), Aggregated With State, Total U.S. (1990-2022), National Cancer Institute, April 2024. Underlying mortality data provided by the National Center for Health Statistics.

Risk Factors

Anything that increases the chance of getting a disease is called a risk factor. Having one or more risk factors does not mean that a person will develop the disease. Below are some of the risk factors for pancreatic cancer.

Age: The risk of developing pancreatic cancer increases as people age. About two-thirds of people with pancreatic cancer are ages 65 and older.

Sex: Men are slightly more likely to develop pancreatic cancer than women.

Race: Black individuals are slightly more likely to develop pancreatic cancer than White individuals.

Tobacco: The risk of getting pancreatic cancer is about twice as high among smokers, compared with those who have never smoked. Use of smokeless tobacco products also increases risk.

Overweight and obesity: Being overweight is a risk factor for pancreatic cancer. People who are obese are about 20% more likely to develop pancreatic cancer.

Diabetes: Pancreatic cancer is more common in people with type 2 diabetes.

Family history: Pancreatic cancer seems to run in some families, possibly due to an inherited genetic syndrome (explained below).

Inherited genetic syndromes: Inherited gene changes can be passed from parent to child. Examples of genetic syndromes that can cause exocrine pancreatic cancer include: hereditary breast and ovarian cancer syndrome, familial atypical multiple mole melanoma (FAMM) syndrome, Lynch syndrome, Peutz-Jeghers syndrome, Von Hippel-Lindau syndrome, neurofibromatosis type 1, multiple endocrine neoplasia type 1 (MEN1), and BRCA1 and BRCA2 mutations.

Chronic pancreatitis: Chronic pancreatitis, a long-term inflammation of the pancreas, increases the risk of pancreatic cancer.

Pancreatic Cancer Signs and Symptoms

Pancreatic cancer may not cause early signs or symptoms. Symptoms of pancreatic cancer usually do not appear until the disease has progressed. Some symptoms include:

- Jaundice (yellowing of the skin and whites of the eyes).
- Light-colored stools.
- Dark urine.
- Pain in the upper or middle abdomen and back.
- Weight loss for no known reason.
- Loss of appetite.
- Feeling very tired.

It is possible that one or more of these signs and symptoms may be the result of other health problems. If you have any of these symptoms, you should consult with your healthcare provider.

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. Under 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., 2017-2021). 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.

Incidence: The number of cases diagnosed during a specified time period (e.g., 2017-2021). Pancreatic cancer cases were defined by the International Classification of Diseases for Oncology, Third Edition (ICD-O-3), and categorized by site codes C250-C259, excluding types 9050-9055, 9140, 9590-9992, in accordance with the SEER Program of the National Cancer Institute.

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., 2017-2021). Pancreatic cancer deaths were defined as follows: International Statistical Classification of Diseases and Related Health Problems, Tenth Edition (ICD-10), codes C250-C259 (1999+).

Rate: The number of cases or deaths per unit of population (e.g., per 100,000 population) during a specified time period (e.g., 2017-2021).

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. Relative survival does not distinguish between patients who have no evidence of cancer and those who have relapsed or are still in treatment.

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 and Age-Adjusted Rates of Pancreatic Cancer Cases and Deaths per 100,000 Population by County of Residence, Ohio and the United States, 2017-2021

	Incidence		Mortality			Incidence		Mortality	
	Cases	Rate	Deaths	Rate		Cases	Rate	Deaths	Rate
Ohio	2,168	14.0	1,899	12.2	Lawrence	12	14.3	12	15.1
U.S.		13.5		11.2	Licking	31	13.0	26	11.4
Adams	6	16.3	5	13.3	Logan	6	9.3	7	9.9
Allen	20	14.9	18	13.2	Lorain	59	13.3	52	11.9
Ashland	9	10.7	8	9.9	Lucas	83	15.3	76	14.1
Ashtabula	22	15.5	18	13.1	Madison	9	16.3	7	11.9
Athens	11	16.4	7	10.1	Mahoning	46	12.7	39	10.4
Auglaize	10	15.2	8	12.7	Marion	12	13.5	9	10.6
Belmont	13	13.0	11	10.4	Medina	31	12.1	24	9.5
Brown	8	13.0	8	12.6	Meigs	5	15.2	5	15.3
Butler	63	14.0	53	11.7	Mercer	7	12.2	8	13.3
Carroll	6	13.0	5	11.9	Miami	22	14.4	22	14.2
Champaign	10	17.6	7	12.9	Monroe	4	18.7	3	15.4
Clark	23	12.0	19	9.5	Montgomery	100	13.9	82	11.1
Clermont	35	13.0	34	12.7	Morgan	3	11.5	3	12.0
Clinton	9	16.7	8	13.1	Morrow	6	12.7	6	12.0
Columbiana	20	12.8	19	12.0	Muskingum	15	12.4	12	10.2
Coshocton	6	12.1	5	9.3	Noble	3	9.3	2	7.8
Crawford	9	14.1	8	12.6	Ottawa	11	15.2	9	12.7
Cuyahoga	255	14.7	235	13.3	Paulding	4	15.1	4	13.1
Darke	8	9.6	7	9.1	Perry	7	14.2	6	13.1
Defiance	5	8.3	6	10.7	Pickaway	11	14.4	9	12.0
Delaware	29	12.8	22	10.0	Pike	5	13.2	5	12.1
Erie	18	14.3	15	12.1	Portage	29	13.8	28	13.7
Fairfield	31	15.6	24	12.2	Preble	9	16.1	9	16.3
Fayette	5	13.6	5	13.0	Putnam	5	9.9	4	8.6
Franklin	188	14.7	158	12.5	Richland	26	14.7	21	11.6
Fulton	9	15.6	7	12.2	Ross	17	16.2	17	16.1
Gallia	6	13.1	5	11.5	Sandusky	13	14.6	12	13.6
Geauga	22	14.6	18	12.1	Scioto	12	11.9	12	11.4
Greene	28	12.9	26	12.3	Seneca	11	14.4	11	15.6
Guernsey	7	13.5	6	11.3	Shelby	8	12.6	8	13.0
Hamilton	156	15.5	132	13.1	Stark	74	13.4	69	12.3
Hancock	15	15.0	13	12.4	Summit	108	14.4	89	11.9
Hardin	5	12.3	4	10.8	Trumbull	43	13.9	38	12.0
Harrison	3	11.4	3	12.4	Tuscarawas	16	12.4	13	10.1
Henry	5	13.9	5	12.9	Union	8	11.7	8	12.4
Highland	6	10.0	7	12.3	Van Wert	6	14.3	8	17.9
Hocking	4	9.8	4	10.2	Vinton	2	10.3	2	13.8
Holmes	5	11.3	4	9.1	Warren	34	12.3	31	11.3
Huron	13	16.7	10	13.3	Washington	14	15.4	12	12.8
Jackson	6	14.7	6	14.2	Wayne	21	12.9	20	12.6
Jefferson	20	18.8	15	14.4	Williams	7	13.3	6	11.8
Knox	10	11.6	10	11.8	Wood	25	15.6	19	12.3
Lake	48	13.5	41	11.4	Wyandot	5	14.1	4	11.1

Sources: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2024; SEER*Stat Database: Mortality - All COD (Cause of Death), Aggregated With State, Total U.S. (1990-2022), National Cancer Institute, April 2024. Underlying mortality data provided by the National Center for Health Statistics.

Sources of Data and Additional Information

Ohio Cancer Incidence Surveillance System

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

National Cancer Institute

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

American Cancer Society

<https://www.cancer.org/cancer/pancreatic-cancer.html>

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