

Stomach Cancer in Ohio, 2005-2009

This report contains a summary of incidence and mortality rates, stage at diagnosis, survival, histology, risk factors and signs and symptoms for stomach cancer in Ohio and the United States.

Stomach Cancer Incidence and Mortality

Stomach cancer made up 1.3 percent of the incident (newly diagnosed) cancers reported to the Ohio Cancer Incidence Surveillance System (OCISS) from 2005 through 2009. The average annual number (N) of cases of stomach cancer in Ohio during this time period was 764 and the average annual age-adjusted incidence rate was 6.0 cases per 100,000 persons, which is lower than the U.S. (SEER: Surveillance, Epidemiology and End Results) rate of 7.6 per 100,000 persons (Table 1). Estimated completeness of reporting for stomach cancer in Ohio was 86 percent in 2005-2009, which is 9 percent less than the national standard of 95 percent for complete case ascertainment. Therefore, the stomach cancer incidence rates presented in this report may underestimate the true stomach cancer burden in Ohio. The Ohio stomach cancer mortality rate of 3.3 deaths per 100,000 persons in 2005-2009 is slightly lower than the U.S. (NCHS: National Center for Health Statistics) mortality rate (3.6 per 100,000 persons) (Table 1). As shown in Table 1, in both Ohio and the United States, stomach cancer incidence and mortality rates were greater for males, blacks, Asian/Pacific Islanders and those 65 years and older.

Key Findings

- Ohio and U.S. stomach cancer incidence and mortality rates were greater for males, blacks and Asian/Pacific Islanders and those 65 years and older.
- For all race-gender groups, incidence rates were greater in the United States, compared to Ohio, possibly due to lower completeness of reporting in Ohio.
- Incidence and mortality rates were higher in the northeast area of Ohio.
- From 1996 to 2009, incidence rates were relatively stable, except for black males for whom the rate was highly variable and decreased.
- From 1996 to 2009, mortality rates decreased for all gender-race groups.
- Thirty-one percent of males and 27 percent of females were diagnosed at distant stage in Ohio.
- Only 26.9 percent of individuals diagnosed with stomach cancer survive five years after diagnosis.
- Smoking tobacco, over-consuming smoked, salted or pickled foods, lack of physical activity and obesity are modifiable risk factors for stomach cancer.

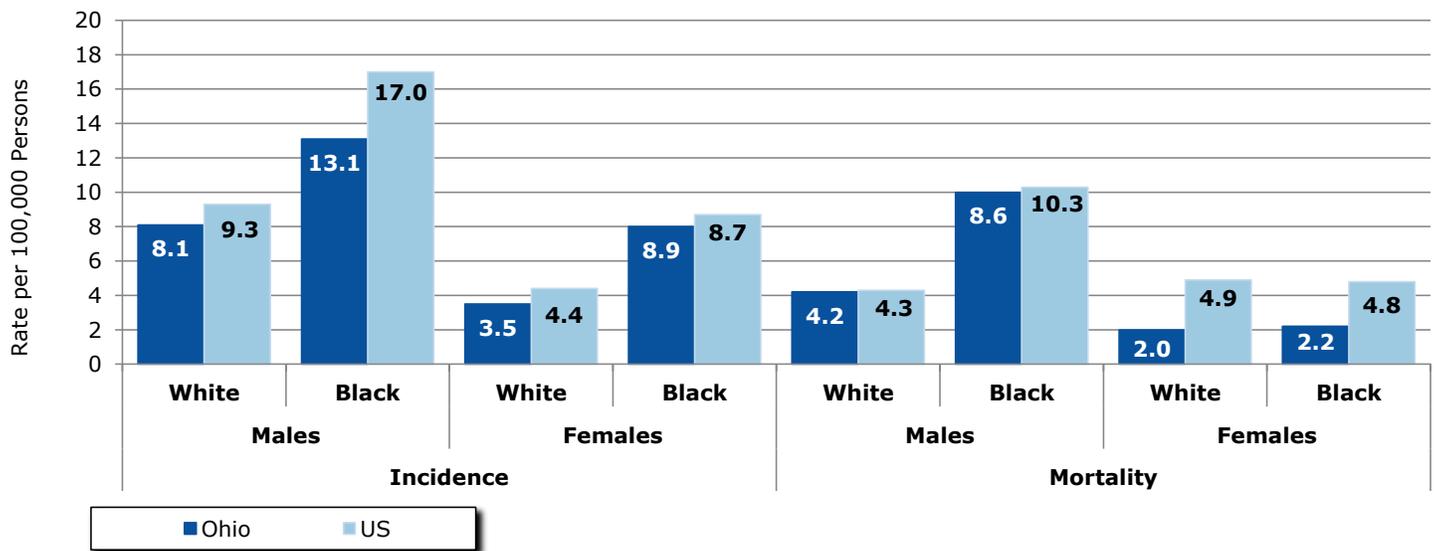
Table 1: Stomach Cancer: Average Annual Number (N) and Age-adjusted Rates of Invasive Cancer Cases and Cancer Deaths by Gender, Race and Age

	Incidence			Mortality		
	N	Ohio Rate	U.S. Rate	N	Ohio Rate	U.S. Rate
Total	764	6.0	7.6	419	3.3	3.6
Gender						
Males	469	8.7	10.5	248	4.7	5.0
Females	295	4.1	5.3	171	2.3	2.6
Race						
White	627	5.5	6.6	337	2.9	3.1
Black	114	10.0	11.9	76	6.9	6.9
Asian/Pacific Islander	11	12.0	12.6	5	4.8	6.8
Age						
<64	251	2.2	2.9	115	1.0	1.2
65+	513	32.7	39.7	304	19.1	20.0

Source: Ohio Cancer Incidence Surveillance System and the Office of Vital Statistics, Ohio Department of Health, 2012; SEER: Surveillance, Epidemiology and End Results Program, National Cancer Institute, 2012; NCHS: National Center for Health Statistics, 2012.

Stomach Cancer Incidence and Mortality Rates by Race and Gender in Ohio Compared to the United States

Figure 1: Stomach Cancer: Average Annual Age-adjusted Rates of Invasive Cancer Cases and Cancer Deaths by Race and Gender in Ohio and the U.S., 2005-2009



Source: Ohio Cancer Incidence Surveillance System and the Office of Vital Statistics, Ohio Department of Health, 2012; Surveillance, Epidemiology and End Results Program, National Cancer Institute, 2012; National Center for Health Statistics, 2012.

As shown in Figure 1, black males had the highest average annual age-adjusted stomach cancer incidence and mortality rates in Ohio and the United States in 2005-2009. White females had the lowest incidence rates in both Ohio and the United States and black and white females had the lowest mortality rates in Ohio. For each gender-race-specific group, incidence rates were greater in the United States, compared to those in Ohio. This is likely the result of low (86%) estimated completeness of reporting for stomach cancer in Ohio. However, mortality rates for each gender-race-specific group were also lower in Ohio, compared to those in the United States. For both white and black females, the U.S. mortality rates were more than two times the Ohio mortality rates. The reason(s) for this difference is unknown.

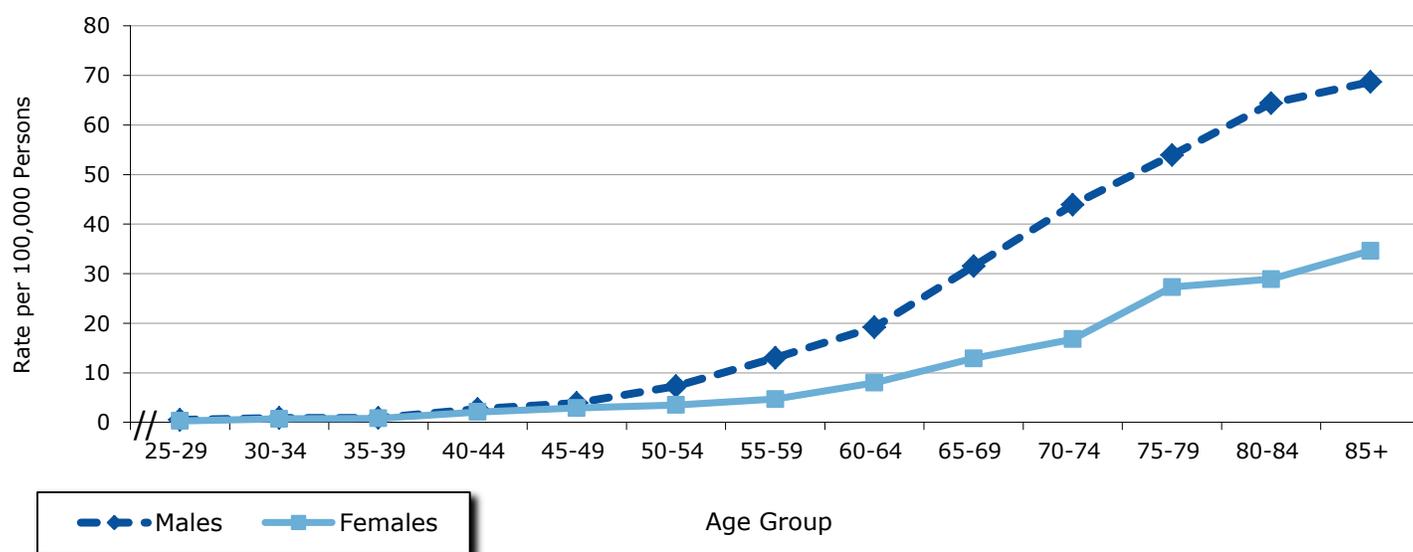
Did You Know?

Asian/Pacific Islanders have lower incidence rates than whites for most common cancers. However, they suffer more often from cancers that are related to infections. One risk factor for stomach cancer is infection with a bacterium called *Helicobacter pylori*, or *H. pylori*. Although additional study is needed, infection with *H. pylori* may explain, in part, why Asian/Pacific Islander populations have higher rates for this type of cancer.

Stomach Cancer Incidence by Age

As shown in Figure 2, for both males and females, stomach cancer incidence rates increased with advancing age. There were very few stomach cancers diagnosed among those younger than 40 years. Stomach cancer incidence rates were similar for males and females up to ages 45 to 49 years; whereas males had approximately double the rate of stomach cancer compared to females 50-54 years and older.

Figure 2: Stomach Cancer: Age-specific Incidence Rates per 100,000 Persons, by Gender in Ohio, 2005-2009

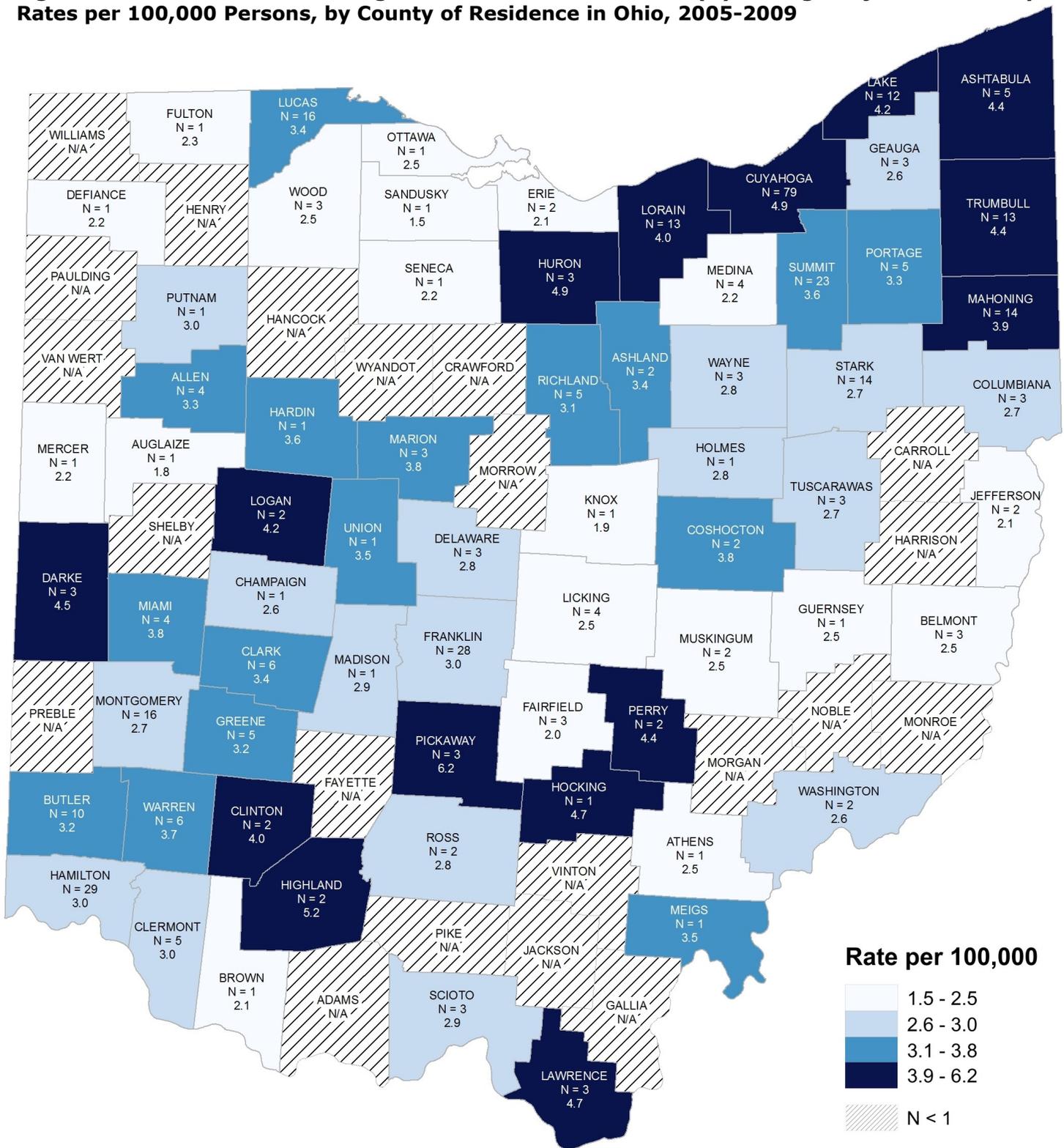


Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2012.

Stomach Cancer Incidence and Mortality by County of Residence

Figure 3 (page 4) and Figure 4 (page 5) present 2005-2009 average annual numbers (N) and age-adjusted stomach cancer incidence and mortality rates, respectively, by county of residence. County-specific incidence rates in Ohio ranged from 1.7 to 10.6 per 100,000 persons (Figure 3) and mortality rates ranged from 1.5 to 6.2 per 100,000 persons (Figure 4). Figures 3 and 4 are similar because the survival probability for stomach cancer is relatively low. Higher stomach cancer incidence and mortality rates tend to concentrate in the northeastern counties of Ohio. In contrast, northwestern Ohio appears to have a concentration of counties with lower incidence rates. Suppression of rates due to small numbers makes it difficult to discern a similar geographic pattern for mortality. Data used to generate these maps can be found in Tables 5 and 6, on pages 14 and 15 of this document, respectively.

Figure 4: Stomach Cancer: Average Annual Number of Deaths (N) and Age-adjusted Mortality Rates per 100,000 Persons, by County of Residence in Ohio, 2005-2009



Source: Ohio Cancer Incidence Surveillance System and the Office of Vital Statistics, Ohio Department of Health, 2012.

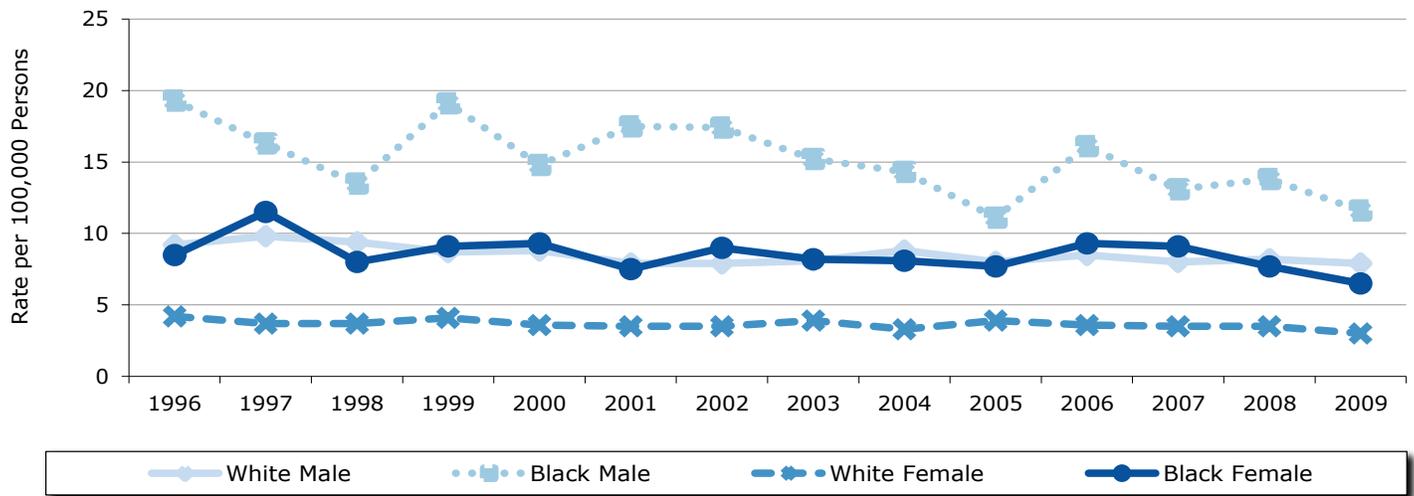
- N = Average number of deaths *per year* (= Total cases in 2005-2009 ÷ 5 years).
- Each category represents approximately 25% of the 88 Ohio counties.
- N/A: Rates may be unstable and are not presented when the case count for 2005-2009 is less than five (i.e., N<1).

Stomach Cancer Incidence and Mortality Trends

Figure 5 shows stomach cancer incidence rates according to year of diagnosis (1996 through 2009) by gender-race group. For each year, black males had the highest incidence rate, while white females had the lowest incidence rate. For each gender-race group, with the exception of black males, rates tended to be relatively constant from 1996 to 2009. The incidence rates for black males were more sporadic over this time period but tended to decrease over time.

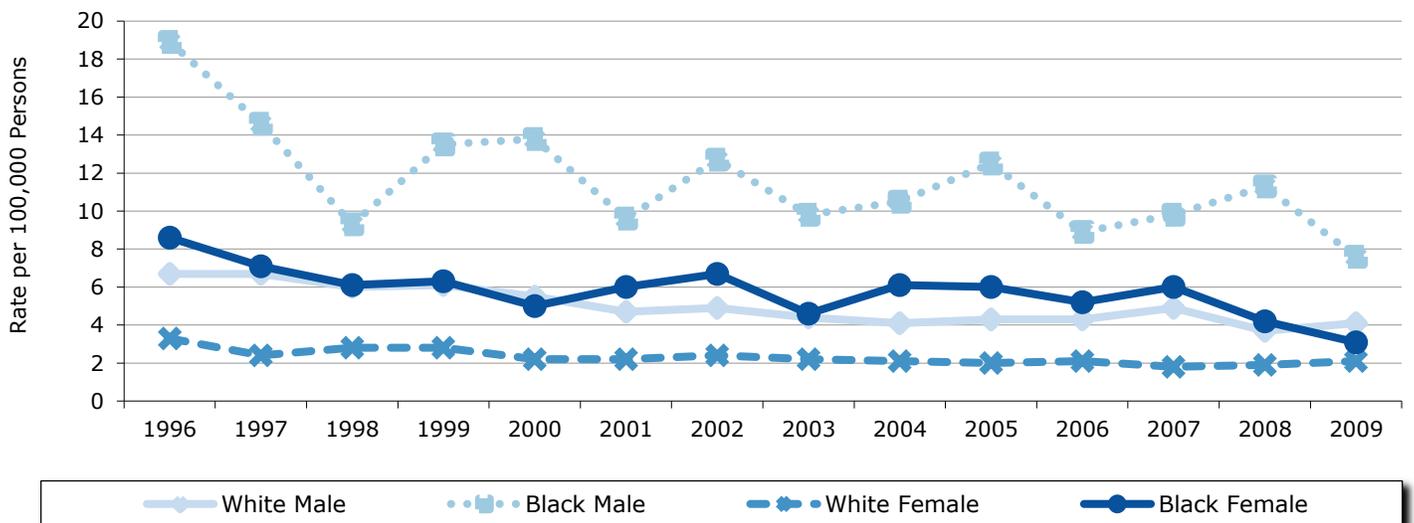
Figure 6 shows stomach cancer mortality rates according to year of death (1996 through 2009) by gender-race group. For each year, black males had the highest mortality rate, while white females had the lowest mortality rate. Mortality rates remained relatively stable for white females, but there was a decreasing trend for the remaining gender-race groups. The mortality rate for black males was very high in 1996 but stabilized somewhat from 1997 to 2009; the reason for this is unknown.

Figure 5: Stomach Cancer: Trends in Annual Age-adjusted Incidence Rates per 100,000 Persons, by Race and Gender in Ohio, 1996-2009



Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2012.

Figure 6: Stomach Cancer: Trends in Annual Age-adjusted Mortality Rates per 100,000 Persons, by Race and Gender in Ohio, 1996-2009

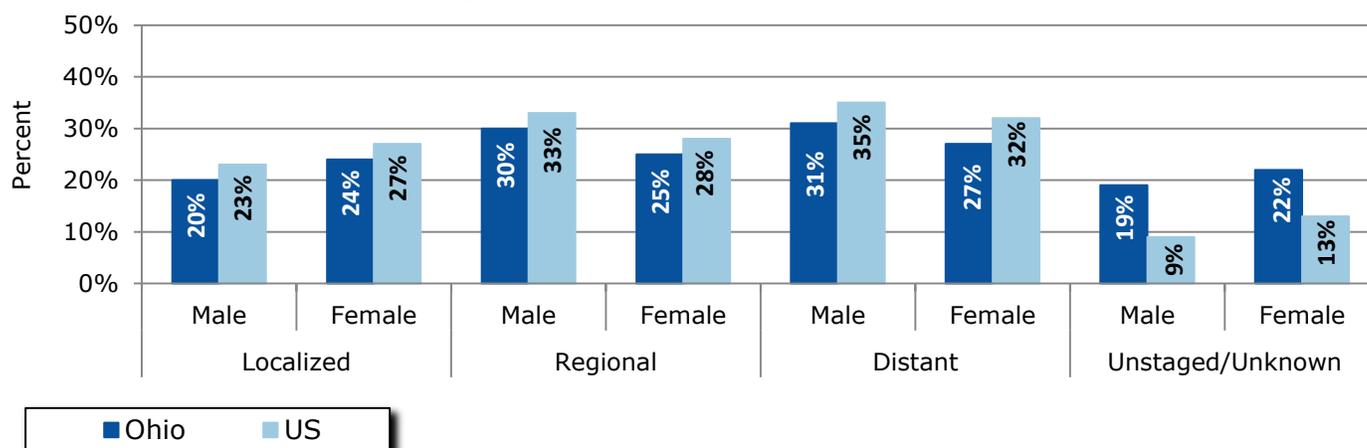


Source: Ohio Cancer Incidence Surveillance System and the Office of Vital Statistics, Ohio Department of Health, 2012.

Stomach Cancer by Stage at Diagnosis

Figure 7 shows the proportion of stomach cancers by stage at diagnosis and gender for Ohio in 2005-2009 and the United States in 2002-2008. Stage at diagnosis was relatively evenly distributed between localized, regional and distant stages in Ohio and the United States. Approximately one-third of all stomach cancer cases were diagnosed at distant stage. A slightly higher proportion of males in Ohio and the United States were diagnosed at the regional and distant stages, while a slightly higher proportion of females was diagnosed at the localized stage. There were higher proportions of unstaged/unknown stage among males and females in Ohio, as compared to the United States, and, as a result, there were lower proportions of localized, regional and distant stages among both males and females in Ohio, compared to the United States.

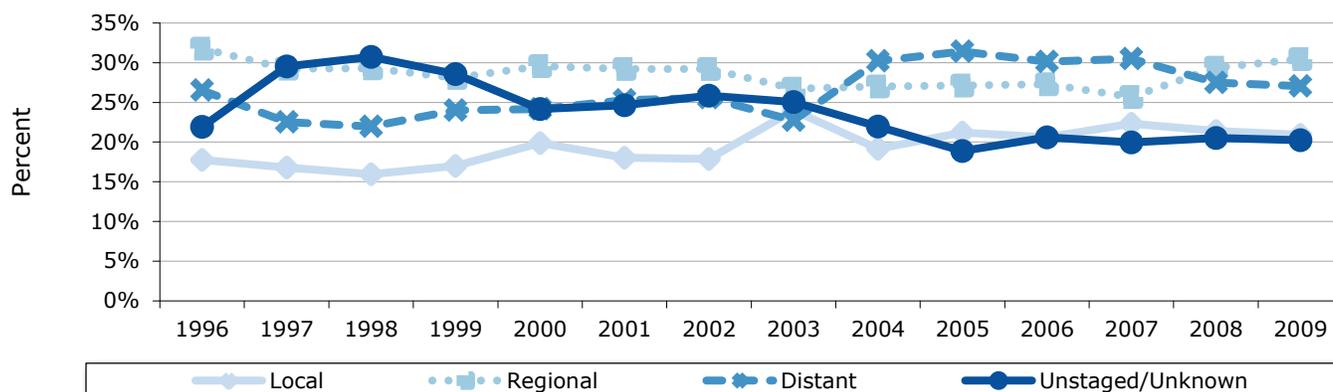
Figure 7: Stomach Cancer: Proportion of Cases (%) by Stage at Diagnosis and Gender in Ohio, 2005-2009, and the U.S. (SEER), 2002-2008



Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2012; SEER: Surveillance, Epidemiology and End Results Program, National Cancer Institute, 2012.

The proportions of stomach cancer cases diagnosed at each of the stages, from 1996 to 2009, is shown in Figure 8. Although there were increases and decreases over time for each stage, proportions in 1996 were relatively similar to those in 2009. There was a slight increase in the proportion of stomach cancers diagnosed at the localized stage and there were slight decreases in the proportions of cases diagnosed at the regional stage and unstaged/unknown stage. Years with higher proportions of stomach cancer cases diagnosed at the distant stage (2004-2009) conversely had lower proportions of cases reported with an unstaged/unknown stage.

Figure 8: Stomach Cancer: Trends in Proportion of Cases (%) by Stage at Diagnosis in Ohio, 1996-2009



Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2012.

Stomach Cancer Survival Probability

Table 2: Stomach Cancer: Five-year Survival Probability (%) by Stage at Diagnosis, Race and Gender in the U.S. (SEER), 2002-2008

Stage	Five-year Survival Probability (%)				
	Overall	White Male	White Female	Black Male	Black Female
All Stages	26.9%	23.6%	28.4%	22.9%	31.1%
Localized	62.3%	58.4%	64.0%	56.8%	62.6%
Regional	27.7%	25.5%	28.6%	23.1%	28.3%
Distant	3.7%	3.3%	3.2%	4.1%	7.3%
Unstaged/ Unknown Stage	17.9%	13.3%	19.1%	15.1%	24.0%

Source: SEER: Surveillance, Epidemiology and End Results Program, National Cancer Institute, 2012.

Table 2 shows that the U.S. (SEER) five-year stomach cancer survival probability in 2002-2008 for all stages combined was only 26.9 percent. Black males had the lowest five-year survival probability (22.9 percent) and black females had the highest (31.1 percent). Survival probability decreased with advancing stage for all race-gender groups. Survival probability also decreased with advancing age (not shown in Table 2). Over the past three decades, five-year survival probability for stomach cancer has nearly doubled, from 15.3 percent among those diagnosed in 1975-1977 to 27.6 percent among those diagnosed in 2002-2008 (not shown in Table 2.)

Stomach Cancer Treatment

The choice of treatment depends mainly on the size and location of the tumor, the stage of disease and general health status.

Treatment for stomach cancer may involve surgery, chemotherapy, or radiation therapy, often in combination. For example, chemotherapy may be given before or after surgery, often at the same time as radiation therapy.

Stomach Cancer by Histology

Table 3 shows average annual numbers and percents of stomach cancers in Ohio and the United States according to histology. The majority of stomach cancer cases diagnosed from 2005 to 2009 in both Ohio and the United States were carcinomas (90.6 and 94.1 percent, respectively). A higher percentage of stomach cancers in Ohio were diagnosed as "unspecified, carcinoma, NOS" or as "unspecified" (7.4 percent), compared to the United States (3.1 percent). That is, in Ohio, fewer stomach cancers were diagnosed with specific histologies.

Table 3: Stomach Cancer: Average Annual Number (N) and Percent Distribution by Histology in Ohio and the U.S. (SEER), 2005-2009 (Average Annual N= 764)

Histology ^a	Ohio		U.S.
	N	Percent	Percent
Carcinoma	693	90.6%	94.1%
Epidermoid carcinoma (8051-8131)^b	5	0.7%	0.8%
Squamous cell carcinoma (8070-8078, 8083-8084)	5	0.7%	0.7%
Adenocarcinoma (8050,8140-8147,8160-8162,8180-8221,8250-8507,8514,8520-8551,8560,8570-8574,8576,8940-8941)	620	81.2%	85.1%
Adenocarcinoma, NOS (8140)	424	55.5%	49.2%
Adenocarcinoma, intestinal type (8144)	34	4.4%	8.2%
Carcinoma, diffuse type (8145)	13	1.7%	3.1%
Linitus plastica (8142)	4	0.6%	0.8%
Mucinous adenocarcinoma (8470-8473, 8480, 8482)	12	1.6%	1.5%
Mucin-producing adenocarcinoma (8481)	4	0.5%	0.7%
Signet ring adenocarcinoma (8490)	112	14.7%	17.6%
Other adenocarcinoma ^c	16	2.1%	4.0%
Other specific carcinomas (8012-8015,8030-8046,8150-8155,8170-8175,8230-8249,8508,8510-8513,8561-8562,8575,8580-8671)	43	5.6%	5.6%
Unspecified, "Carcinoma, NOS" (8010-8011, 8020-8022)	24	3.2%	2.6%
Sarcoma and other soft tissue tumors (8680-8713,8800-8921, 8990-8991,9040-9044,9120-9136,9150-9252,9370-9373,9540-9582)	2	0.2%	0.2%
Other specific types (8720-8790,8930-8936,8950-8983,9000-9030,9060-9110,9260-9365,9380-9539)	38	4.9%	5.2%
Unspecified (8000-8005)	32	4.2%	0.5%

Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2012; SEER: Surveillance, Epidemiology and End Results Program, National Cancer Institute, 2012.

a Excludes Kaposi Sarcoma, mesothelioma, lymphomas, leukemias, myelomas, lymphoreticular, and immunoproliferative diseases.

b Epidermoid carcinoma includes squamous, basal and transitional cell carcinomas.

c Other adenocarcinomas includes histologies 8050, 8141, 8143, 8146-8147, 8160-8162, 8180-8221, 8250-8469, 8474-8479, 8483-8489,8491-8507, 8514, 8520-8551, 8560, 8570-8574, 8576, 8940-8941.

Stomach Cancer Risk Factors and Populations at High Risk

Having one or more risk factors does not mean that a person will develop stomach cancer. Most people who have risk factors never develop stomach cancer. According to the National Cancer Institute, the following have been identified in studies as stomach cancer risk factors or as populations with high risk of stomach cancer:

- **Age** — Risk increases with age, with most cases occurring after age 60.
- **Gender** — Males are about twice as likely to develop stomach cancer compared to females.
- **Race and Ethnicity** — Asian/Pacific Islanders, African Americans and Hispanics are more likely to develop stomach cancer compared to other races and non-Hispanics.
- ***Helicobacter pylori* infection** — *H. pylori* is a bacterium that commonly infects the inner lining (the mucosa) of the stomach. Infection with *H. pylori* can cause stomach inflammation and peptic ulcers. It also increases the risk of stomach cancer, but only a small number of infected people develop stomach cancer.
- **Long-term Inflammation of the Stomach** — People who have conditions associated with long-term stomach inflammation (such as the blood disease pernicious anemia) are at increased risk of stomach cancer. Also, people who have had part of their stomach removed may have long-term stomach inflammation and increased risk of stomach cancer many years after their surgery.
- **Tobacco Smoking** — Smokers are more likely than nonsmokers to develop stomach cancer. Heavy smokers are most at risk.
- **Family history** — Persons who have close relatives (parents, brothers, sisters, or children) with a history of stomach cancer are somewhat more likely to develop the disease themselves. If many close relatives have a history of stomach cancer, the risk is even greater.
- **Poor Diet, Lack of Physical Activity and Obesity** — Studies suggest that people who eat a diet high in foods that are smoked, salted, or pickled have an increased risk for stomach cancer. On the other hand, people who eat a diet high in fresh fruits and vegetables may have a lower risk of this disease. A lack of physical activity may increase the risk of stomach cancer. Also, people who are obese may have an increased risk of cancer developing in the upper part of the stomach.

Stomach Cancer Signs and Symptoms

Early stomach cancer often does not cause symptoms. As the cancer grows, the most common symptoms are:

- Discomfort or pain in the stomach area
- Difficulty swallowing
- Nausea and vomiting
- Weight loss
- Feeling full or bloated after a small meal
- Vomiting blood or having blood in the stool

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 health care 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 five-year age groups, i.e., <1, 1-4, 5-9, 10-14...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 and summed to give an overall age-adjusted rate. Rates are presented as the number of cases per 100,000 persons per year. Age-adjustment allows for the comparison of rates between populations with different age distributions.

Average Annual Number—The number of cases or deaths diagnosed per year, on average, for the time period of interest (e.g., 2005-2009). Average annual numbers are calculated by adding 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., 2005-2009). Stomach cancer cases were defined as follows: International Classification of Diseases for Oncology, Third Edition (ICD-O-3), C160-C169, excluding types 9590-9989.

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

Mortality—The number of deaths during a specified time period (e.g., 2005-2009). Stomach cancer deaths were defined as follows: International Statistical Classification of Diseases and Related Health Problems, Tenth Edition (ICD-10), codes C160-C169.

Rate—The number of cases or deaths per unit of population (e.g., per 100,000 persons) over a specified time period (e.g., 2005-2009). Rates may be unstable and are not presented when the case count for 2005-2009 is less than five. The 2005-2009 rates were calculated using vintage 2009 postcensal estimates for July 1, 2005-2009 (U.S. Census Bureau, 2011).

Stage at Diagnosis—The degree to which a tumor has spread from its site of origin at the time of diagnosis. Cancer stage is often related to survival and is used to select appropriate treatment. Patients with early stage disease often have better long-term survival, and detecting cancers at an early stage may lead to a reduction in mortality. The stages presented in this report, in the order of increasing spread, are *in situ*, localized, regional, and distant. *In situ* and localized tumors are referred to as early stage tumors, and regional and distant tumors are termed late stage. Cancers diagnosed at the localized, regional, distant and unstaged/unknown stages are categorized as invasive.

in situ—Noninvasive cancer that has not penetrated surrounding tissue.

Localized—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.

Survival Probability—The probability that an individual will survive five years after diagnosis. Five-year relative survival probabilities are from the SEER 18 areas for diagnosis years 2002-2008. Probabilities are based on follow-up of patients into 2009.

Clinical Trials Information

Clinical trials test many types of treatments including new drugs, surgical procedures, radiation therapy and combinations of these. The goal of conducting clinical trials is to find better ways to treat cancer. To obtain information concerning clinical trials for stomach cancer, please talk with your health care provider or visit one of the following web sites:

- **National Cancer Institute:**
<http://www.cancer.gov/clinicaltrials>
- **American Cancer Society:**
http://www.cancer.org/docroot/ETO/ETO_6.asp?sitearea=ETO
- **The Ohio State University Comprehensive Cancer Center—Arthur G. James Cancer Hospital and Richard J. Solove Research Institute:**
http://cancer.osu.edu/patientsandvisitors/cancerinfo/clinical_trials/Pages/index.aspx
- **The Cleveland Clinic:**
http://my.clevelandclinic.org/cancer/clinical_trials/default.aspx
- **Case Western Reserve University Comprehensive Cancer Center:**
<http://cancer.case.edu/sharedresources/clinicaltrials>
- **University of Cincinnati:**
<http://uccancer.com/PatientCare/ClinicalTrials/Overview.aspx>
- **Toledo Community Hospital Oncology Program:**
<http://tchop.com/clinical-trials/>
- **Dayton Clinical Oncology Program:**
<http://www.med.wright.edu/dcop/Clinical%20Trials.htm>
- **Columbus Community Clinical Oncology Program:**
<http://columbusccop.org/>

Sources of Data and Additional Information

- **Ohio Cancer Incidence Surveillance System:**
http://www.odh.ohio.gov/healthstats/ocisshs/ci_surv1.aspx
 - **National Cancer Institute:**
<http://www.cancer.gov/cancertopics/types/stomach>
 - **American Cancer Society:**
<http://www.cancer.org/cancer/stomachcancer/index>
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Table 4: Stomach Cancer: Average Annual Number of Invasive Cancer Cases and Age-adjusted Incidence Rates per 100,000 Persons, by County of Residence and Gender, Ohio, 2005-2009

	Male		Female		Total			Male		Female		Total	
	Cases	Rate	Cases	Rate	Cases	Rate		Cases	Rate	Cases	Rate	Cases	Rate
Ohio	469	8.7	295	4.1	764	6.0	Lawrence	2	6.5	3	6.6	5	6.8
SEER		10.5		5.3		7.6	Licking	5	6.9	3	3.4	8	4.8
Adams	1	7.6	<1	*	1	3.9	Logan	1	4.3	<1	*	2	3.4
Allen	3	5.9	3	3.7	6	4.7	Lorain	15	10.4	8	4.3	23	7.0
Ashland	3	11.9	1	3.2	5	7.2	Lucas	20	10.1	11	4.3	32	6.7
Ashtabula	7	12.7	5	6.9	11	9.6	Madison	1	7.1	<1	*	2	4.4
Athens	2	8.2	<1	*	2	4.3	Mahoning	14	10.3	10	5.3	24	7.4
Auglaize	2	6.4	<1	*	2	3.3	Marion	2	7.3	2	4.6	4	5.9
Belmont	4	10.8	2	3.5	6	6.8	Medina	7	10.1	4	4.6	12	7.0
Brown	2	7.5	1	3.9	3	5.6	Meigs	1	10.5	<1	*	2	5.4
Butler	13	9.5	7	3.9	20	6.1	Mercer	2	8.0	2	5.5	3	6.7
Carroll	2	9.8	<1	*	2	7.1	Miami	4	7.2	2	2.4	5	4.5
Champaign	2	12.4	<1	*	3	6.8	Monroe	<1	*	<1	*	1	5.8
Clark	8	11.2	3	3.3	12	6.8	Montgomery	18	6.9	15	4.2	33	5.3
Clermont	6	6.3	3	3.1	9	4.6	Morgan	<1	*	<1	*	<1	*
Clinton	2	9.8	1	4.0	3	6.6	Morrow	2	12.7	<1	*	3	7.6
Columbiana	7	11.0	2	2.5	8	6.2	Muskingum	3	7.7	3	5.2	6	6.3
Coshocton	2	10.7	<1	*	3	5.9	Noble	<1	*	<1	*	1	6.7
Crawford	2	7.3	<1	*	2	3.9	Ottawa	2	6.0	1	3.0	3	4.4
Cuyahoga	68	10.5	57	5.8	125	7.8	Paulding	<1	*	<1	*	<1	*
Darke	3	8.6	2	3.4	4	6.1	Perry	1	9.1	1	4.7	2	6.2
Defiance	<1	*	<1	*	1	3.0	Pickaway	3	10.2	1	4.8	4	7.4
Delaware	4	7.3	2	3.3	6	5.1	Pike	<1	*	1	8.4	2	6.7
Erie	4	8.8	2	3.8	6	5.9	Portage	5	7.4	2	2.8	7	4.8
Fairfield	4	6.7	2	2.8	6	4.5	Preble	<1	*	<1	*	1	2.8
Fayette	<1	*	<1	*	1	3.0	Putnam	1	6.7	<1	*	2	5.5
Franklin	33	8.4	21	3.8	55	5.6	Richland	5	7.0	4	5.0	9	6.0
Fulton	1	6.0	<1	*	2	4.2	Ross	2	5.7	<1	*	3	3.4
Gallia	<1	*	<1	*	<1	*	Sandusky	2	7.9	<1	*	3	4.4
Geauga	3	6.0	3	4.5	6	5.2	Scioto	2	4.5	3	6.0	5	5.4
Greene	5	7.2	3	2.8	7	4.6	Seneca	3	10.2	1	3.2	4	6.4
Guernsey	2	11.5	1	4.4	4	7.3	Shelby	1	4.7	1	5.4	2	4.7
Hamilton	37	9.6	20	3.8	58	6.1	Stark	14	7.0	9	3.4	23	4.9
Hancock	3	8.2	<1	*	4	4.7	Summit	16	6.3	15	4.2	32	5.1
Hardin	1	8.3	0	*	1	3.6	Trumbull	16	13.8	8	4.6	24	8.5
Harrison	<1	*	<1	*	1	4.1	Tuscarawas	4	9.1	3	4.2	7	6.2
Henry	<1	*	<1	*	1	3.4	Union	2	10.3	<1	*	2	5.6
Highland	2	10.2	1	5.8	4	7.7	Van Wert	<1	*	<1	*	1	3.1
Hocking	1	8.9	1	8.5	3	8.4	Vinton	1	15.5	<1	*	2	10.6
Holmes	1	8.3	<1	*	2	5.6	Warren	7	8.7	4	3.9	11	6.0
Huron	3	11.0	2	5.3	5	7.8	Washington	3	9.8	1	3.4	5	6.1
Jackson	1	7.3	1	5.0	2	6.1	Wayne	4	6.7	2	3.3	6	4.9
Jefferson	2	6.1	3	4.6	5	5.2	Williams	2	8.5	1	4.0	3	6.0
Knox	2	8.7	<1	*	3	4.6	Wood	3	6.9	2	2.8	5	4.4
Lake	13	10.8	6	3.7	19	6.9	Wyandot	<1	*	<1	*	1	4.4

Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2012; SEER: Surveillance, Epidemiology and End Results Program, National Cancer Institute, 2012.

*Rates may be unstable and are not presented when the case count for 2005-2009 is less than five (i.e. the average annual count is less than one).

Note: Low county numbers and rates may reflect underreporting for that county.

Table 5: Stomach Cancer: Average Annual Number of Cancer Deaths and Age-adjusted Mortality Rates per 100,000 Persons, by County of Residence and Gender, Ohio, 2005-2009

	Male		Female		Total			Male		Female		Total	
	Deaths	Rate	Deaths	Rate	Deaths	Rate		Deaths	Rate	Deaths	Rate	Deaths	Rate
Ohio	248	4.7	171	2.3	419	3.3	Lawrence	1	4.4	2	4.6	3	4.7
SEER		5.0		2.6		3.6	Licking	2	2.7	2	2.5	4	2.5
Adams	<1	*	0	*	<1	*	Logan	1	5.3	1	2.9	2	4.2
Allen	2	4.0	2	2.7	4	3.3	Lorain	8	6.0	5	2.6	13	4.0
Ashland	1	5.2	<1	*	2	3.4	Lucas	10	5.3	6	2.1	16	3.4
Ashtabula	4	7.1	2	2.0	5	4.4	Madison	<1	*	<1	*	1	2.9
Athens	<1	*	<1	*	1	2.5	Mahoning	8	5.8	6	2.7	14	3.9
Auglaize	1	4.0	0	*	1	1.8	Marion	1	4.6	1	2.8	3	3.8
Belmont	2	4.1	1	1.5	3	2.5	Medina	2	2.7	2	1.7	4	2.2
Brown	<1	*	<1	*	1	2.1	Meigs	<1	*	<1	*	1	3.5
Butler	7	5.3	3	1.8	10	3.2	Mercer	<1	*	<1	*	1	2.2
Carroll	<1	*	<1	*	<1	*	Miami	3	5.6	2	2.5	4	3.8
Champaign	<1	*	<1	*	1	2.6	Monroe	<1	*	0	*	<1	*
Clark	4	5.8	2	1.8	6	3.4	Montgomery	9	3.6	7	2.0	16	2.7
Clermont	3	3.3	3	2.6	5	3.0	Morgan	0	*	<1	*	<1	*
Clinton	<1	*	1	4.5	2	4.0	Morrow	<1	*	<1	*	<1	*
Columbiana	2	3.8	1	1.9	3	2.7	Muskingum	2	4.7	<1	*	2	2.5
Coshocton	<1	*	<1	*	2	3.8	Noble	<1	*	<1	*	<1	*
Crawford	<1	*	<1	*	<1	*	Ottawa	<1	*	<1	*	1	2.5
Cuyahoga	44	6.7	35	3.6	79	4.9	Paulding	<1	*	<1	*	<1	*
Darke	2	5.4	1	3.2	3	4.5	Perry	<1	*	1	4.9	2	4.4
Defiance	<1	*	<1	*	1	2.2	Pickaway	2	7.8	1	4.9	3	6.2
Delaware	2	3.6	1	2.1	3	2.8	Pike	0	*	<1	*	<1	*
Erie	1	2.2	1	2.2	2	2.1	Portage	3	4.9	2	2.2	5	3.3
Fairfield	1	2.5	1	1.7	3	2.0	Preble	<1	*	<1	*	<1	*
Fayette	<1	*	<1	*	<1	*	Putnam	<1	*	<1	*	1	3.0
Franklin	17	4.7	11	1.9	28	3.0	Richland	3	3.8	2	2.4	5	3.1
Fulton	<1	*	<1	*	1	2.3	Ross	2	4.5	<1	*	2	2.8
Gallia	<1	*	<1	*	<1	*	Sandusky	<1	*	<1	*	1	1.5
Geauga	1	2.5	1	2.6	3	2.6	Scioto	1	3.5	1	2.5	3	2.9
Greene	2	3.4	3	3.2	5	3.2	Seneca	<1	*	<1	*	1	2.2
Guernsey	<1	*	<1	*	1	2.5	Shelby	<1	*	<1	*	<1	*
Hamilton	19	5.0	10	1.7	29	3.0	Stark	9	4.3	5	1.6	14	2.7
Hancock	<1	*	0	*	<1	*	Summit	13	5.1	10	2.5	23	3.6
Hardin	<1	*	<1	*	1	3.6	Trumbull	9	7.7	4	2.2	13	4.4
Harrison	<1	*	0	*	<1	*	Tuscarawas	2	5.3	<1	*	3	2.7
Henry	<1	*	<1	*	<1	*	Union	1	7.1	<1	*	1	3.5
Highland	1	6.2	1	5.0	2	5.2	Van Wert	<1	*	<1	*	<1	*
Hocking	<1	*	1	6.5	1	4.7	Vinton	<1	*	0	*	<1	*
Holmes	<1	*	<1	*	1	2.8	Warren	4	5.3	2	2.4	6	3.7
Huron	2	6.5	1	3.7	3	4.9	Washington	2	4.5	<1	*	2	2.6
Jackson	<1	*	<1	*	<1	*	Wayne	2	4.1	1	1.5	3	2.8
Jefferson	1	2.9	1	1.6	2	2.1	Williams	<1	*	<1	*	<1	*
Knox	1	3.4	<1	*	1	1.9	Wood	2	4.0	1	1.4	3	2.5
Lake	7	5.6	5	3.1	12	4.2	Wyandot	<1	*	<1	*	<1	*

Source: Ohio Cancer Incidence Surveillance System and the Office of Vital Statistics, Ohio Department of Health, 2012; NCHS: National Center for Health Statistics, 2012.

*Rates may be unstable and are not presented when the case count for 2005-2009 is less than five (i.e. the average annual count is less than one).

Note: Low county numbers and rates may reflect underreporting for that county.

Table 6: Stomach Cancer: Percentage of New Cases by County of Residence and Stage at Diagnosis in Ohio, 2005-2009

	Early Stage %	Late Stage %	Unstaged/Unknown %	Average Annual Cases		Early Stage %	Late Stage %	Unstaged/Unknown %	Average Annual Cases
Ohio	23%	57%	20%	775	Lawrence	20%	56%	24%	5
SEER	24%	65%	11%		Licking	28%	53%	20%	8
Adams	33%	33%	33%	1	Logan	30%	60%	10%	2
Allen	14%	71%	14%	6	Lorain	28%	57%	16%	23
Ashland	13%	65%	22%	5	Lucas	21%	64%	16%	32
Ashtabula	29%	53%	19%	12	Madison	11%	78%	11%	2
Athens	42%	50%	8%	2	Mahoning	11%	62%	27%	25
Auglaize	0%	89%	11%	2	Marion	23%	55%	23%	4
Belmont	22%	56%	22%	6	Medina	17%	59%	24%	12
Brown	23%	54%	23%	3	Meigs	25%	63%	13%	2
Butler	26%	59%	15%	21	Mercer	31%	25%	44%	3
Carroll	33%	42%	25%	2	Miami	35%	58%	8%	5
Champaign	13%	67%	20%	3	Monroe	0%	60%	40%	1
Clark	10%	61%	29%	12	Montgomery	26%	53%	21%	34
Clermont	23%	64%	14%	9	Morgan	0%	100%	0%	0
Clinton	13%	53%	33%	3	Morrow	15%	62%	23%	3
Columbiana	24%	55%	21%	8	Muskingum	19%	58%	23%	6
Coshocton	14%	43%	43%	3	Noble	40%	20%	40%	1
Crawford	27%	64%	9%	2	Ottawa	31%	54%	15%	3
Cuyahoga	24%	58%	19%	126	Paulding	0%	100%	0%	0
Darke	14%	71%	14%	4	Perry	25%	33%	42%	2
Defiance	14%	71%	14%	1	Pickaway	0%	60%	40%	4
Delaware	20%	70%	10%	6	Pike	36%	36%	27%	2
Erie	33%	53%	13%	6	Portage	25%	58%	17%	7
Fairfield	35%	48%	16%	6	Preble	43%	43%	14%	1
Fayette	0%	60%	40%	1	Putnam	20%	40%	40%	2
Franklin	21%	58%	21%	55	Richland	36%	53%	11%	9
Fulton	20%	80%	0%	2	Ross	29%	57%	14%	3
Gallia	0%	75%	25%	1	Sandusky	31%	56%	13%	3
Geauga	29%	50%	21%	6	Scioto	30%	61%	9%	5
Greene	19%	59%	22%	7	Seneca	14%	67%	19%	4
Guernsey	42%	32%	26%	4	Shelby	25%	42%	33%	2
Hamilton	24%	54%	22%	59	Stark	24%	50%	26%	23
Hancock	32%	58%	11%	4	Summit	27%	54%	19%	33
Hardin	29%	29%	43%	1	Trumbull	24%	58%	19%	25
Harrison	0%	80%	20%	1	Tuscarawas	14%	54%	32%	7
Henry	17%	67%	17%	1	Union	33%	58%	8%	2
Highland	22%	61%	17%	4	Van Wert	0%	50%	50%	1
Hocking	8%	62%	31%	3	Vinton	25%	75%	0%	2
Holmes	10%	80%	10%	2	Warren	20%	65%	15%	11
Huron	17%	61%	22%	5	Washington	25%	58%	17%	5
Jackson	45%	36%	18%	2	Wayne	20%	67%	13%	6
Jefferson	20%	56%	24%	5	Williams	7%	86%	7%	3
Knox	13%	73%	13%	3	Wood	23%	62%	15%	5
Lake	16%	58%	26%	19	Wyandot	50%	17%	33%	1

Source: Ohio Cancer Incidence Surveillance System, Ohio Department of Health, 2012; SEER: Surveillance, Epidemiology and End Results Program, National Cancer Institute, 2012.

The total case counts in tables by stage at diagnosis include *in situ* cancers and thus differ from tables with counts and rates of invasive cancer cases only.

Early stage includes tumors diagnosed at *in situ* and localized stages, and late stage includes tumors diagnosed at regional and distant stages.

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