

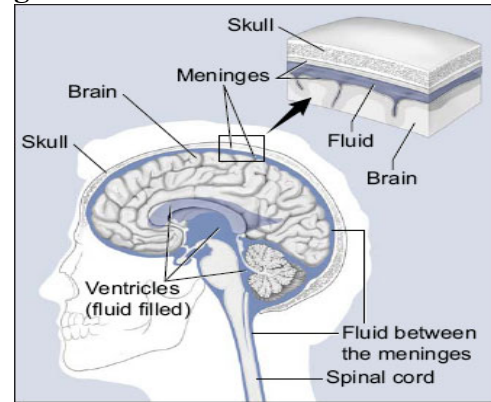
Brain and Central Nervous System Cancer

Definition: Brain cancers are masses of abnormal cells, or tumors.¹ Brain tumors can start in any of the different tissue or cell layers within the brain.¹ Most brain cancers spread to other parts of the brain, regardless of whether the tumor is benign or malignant.¹ Tumors can grow and compress or destroy normal brain tissue, causing damage that is often disabling or fatal.¹

Background: From 2002 to 2006, there was a yearly average of approximately **813** newly diagnosed cases of brain cancer in Ohio.² During this same time period, Ohio experienced approximately **542** deaths each year due to brain cancer.²

There are currently no obvious risk factors or causes linked to brain cancer.¹ Tumors are generally found after symptoms present themselves.¹ If a tumor is suspected, imaging tests such as an MRI (Magnetic Resonance Imaging) scan, a CT (Computed Tomography) scan, or a PET (Positron Emission Tomography) scan are generally performed to view abnormalities in the brain or central nervous system.¹

Figure 3



Cuyahoga County Data:

- The average annual number of newly diagnosed brain cancer cases from 2002-2006 was **87**, with an age-adjusted incidence rate of **5.8** per 100,000 people.
- This is **lower** than the **6.8** incidence rate for Ohio and **lower** than the **6.4** incidence rate for the Nation.
- The average annual number of brain cancer deaths from 2002-2006 was **63**, with an age-adjusted mortality rate of **4.1** per 100,000 people.
- This is **lower** than the **4.5** mortality rate for Ohio and **lower** than the **4.3** mortality rate for the Nation.

Table 3a Brain Cancer

Average Annual Number of Cancer Cases and Age-Adjusted Incidence Rates* for 2002-2006

Incidence	Male		Female		Total	
	Cases	Rate	Cases	Rate	Cases	Rate
Cuyahoga County	45	6.9	42	5.1	87	5.8
Ohio	439	8.0	374	5.8	813	6.8
National SEER		7.6		5.4		6.4

* Rate is calculated per 100,000 people.

Table 3b Brain Cancer

Average Annual Number of Cancer Deaths and Age-Adjusted Mortality Rates* for 2002-2006

Mortality	Male		Female		Total	
	Cases	Rate	Cases	Rate	Cases	Rate
Cuyahoga County	36	5.47	27	3.05	63	4.1
Ohio	298	5.4	244	3.6	542	4.5
National SEER		5.3		3.5		4.3

* Rate is calculated per 100,000 people.

Figure 3a

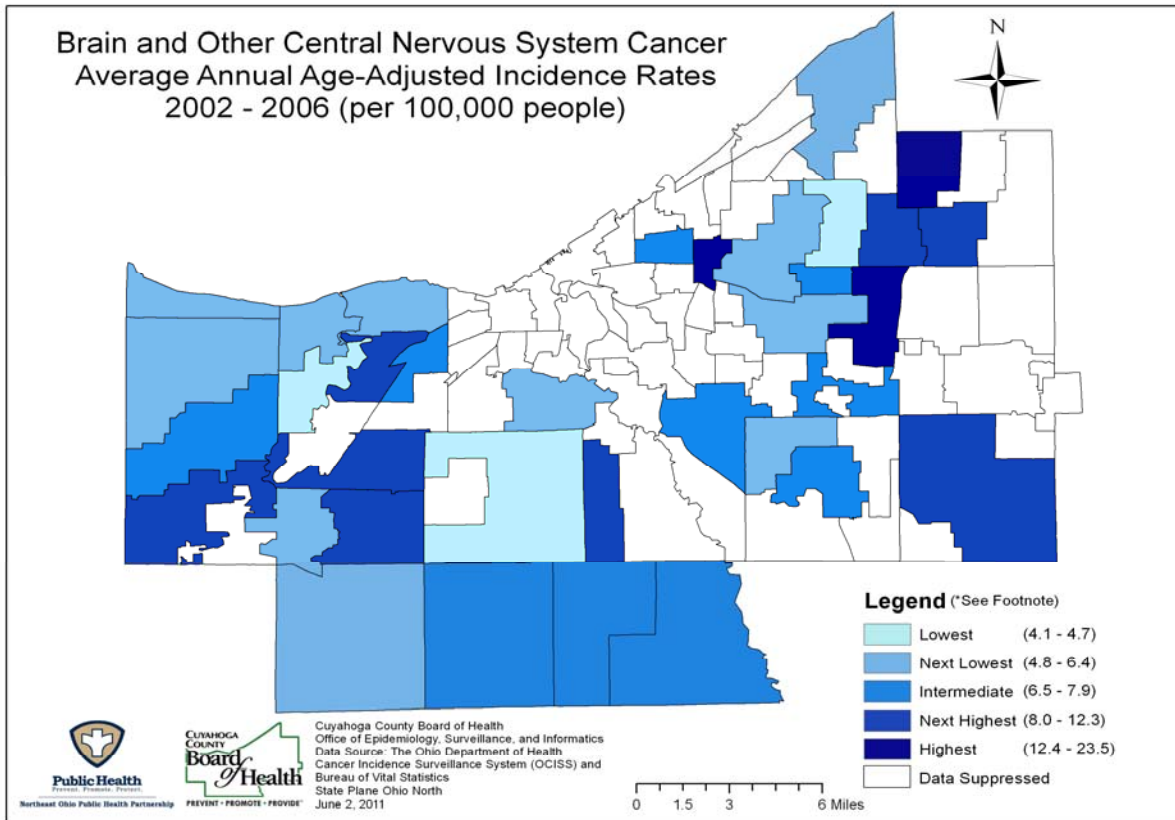
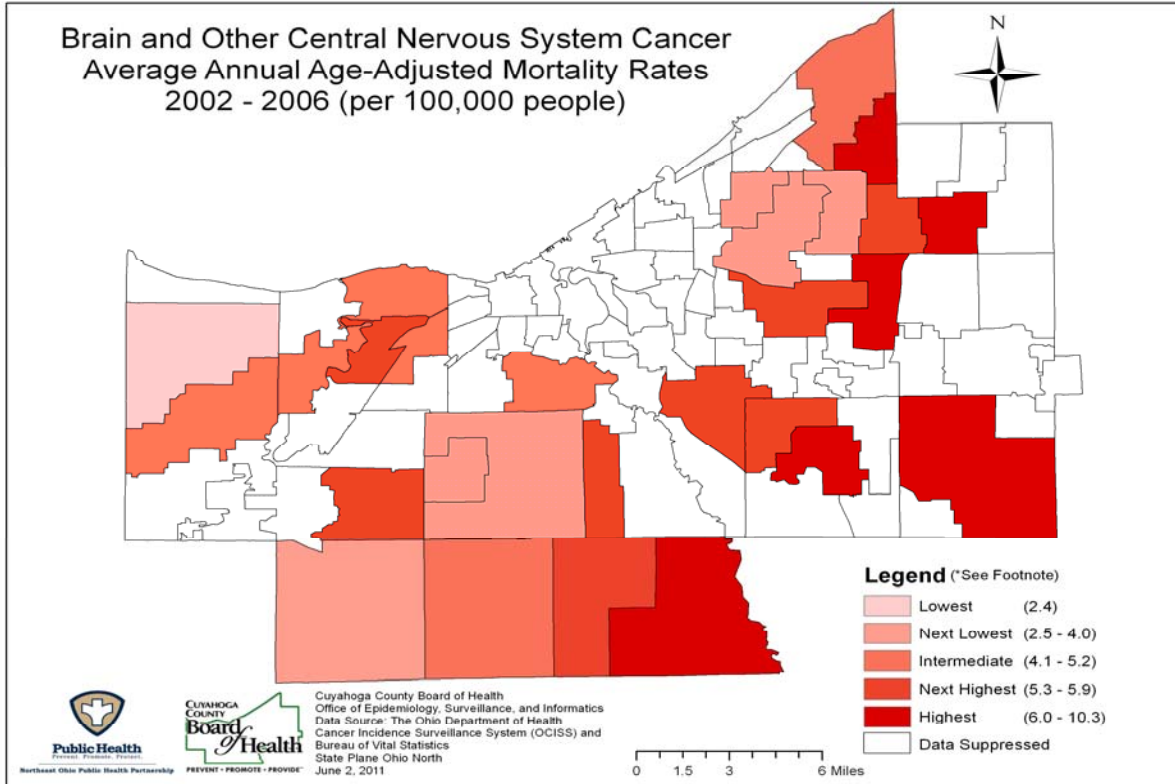


Figure 3b



*Data were suppressed to help maintain confidentiality and /or due to concerns over unstable numbers. See methods/limitations section for additional details.

Chart 3a

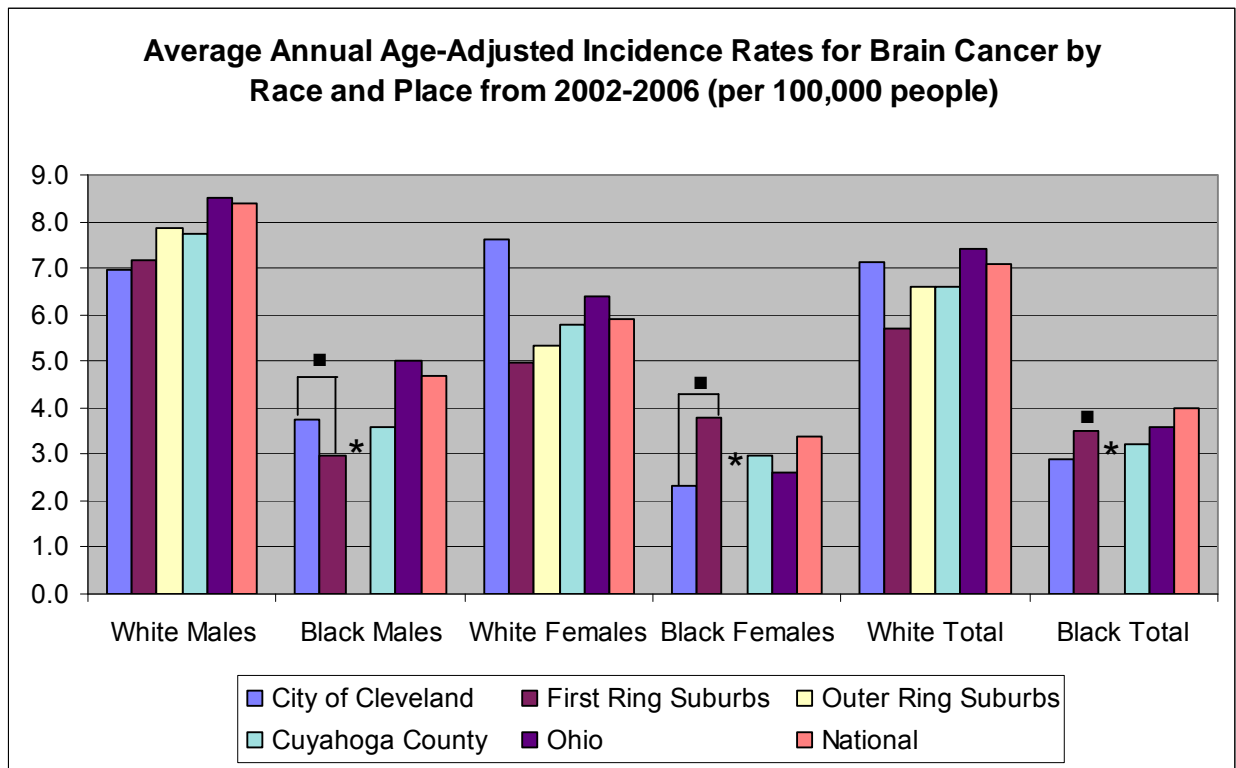
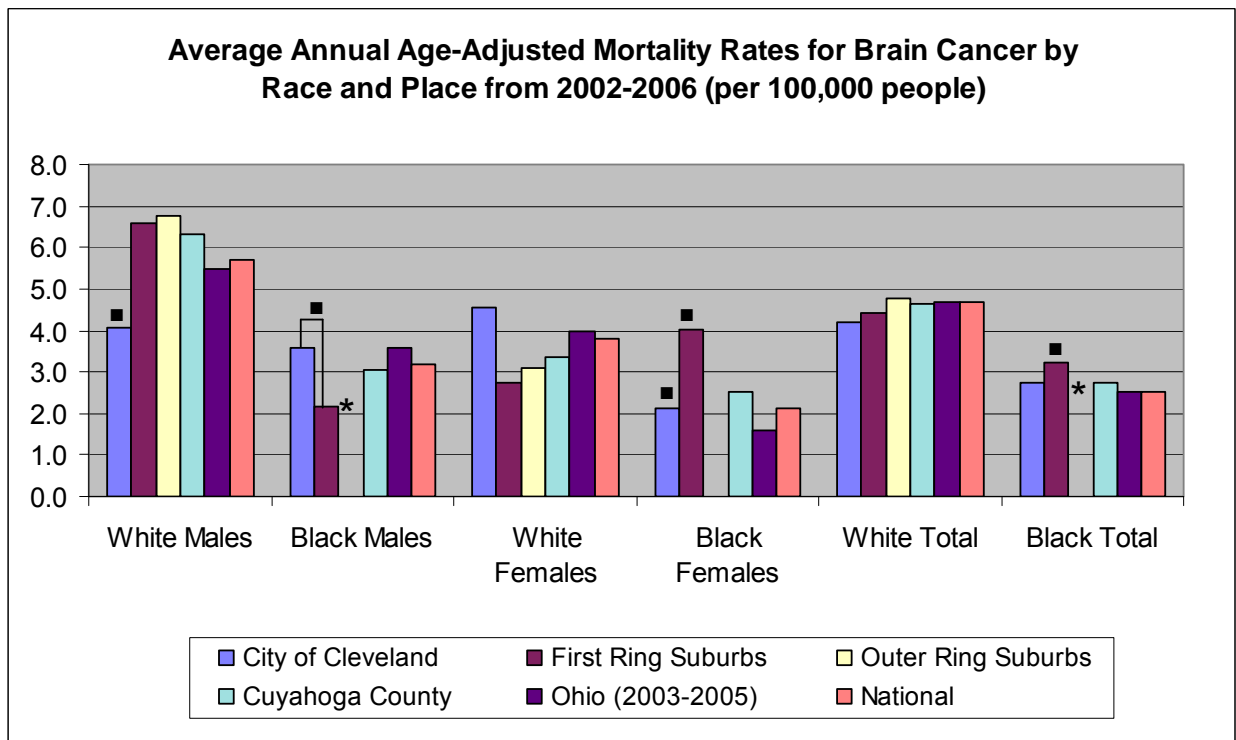


Chart 3b



▲ Rates are statistically significantly higher when compared to Cuyahoga County.

▼ Rates are statistically significantly lower when compared to Cuyahoga County.

■ Rates are not compared to Cuyahoga County when there are <20 cases total for 2002-2006 due to instability.

*Data were suppressed to help maintain confidentiality and /or due to concerns over unstable numbers. See methods/limitations section for additional details.

Risk Factors

Males: In the United States, 1 in 147 males will develop brain cancer and 1 in 208 males will die from brain cancer.³

Females: In the United States, 1 in 185 females will develop brain cancer and 1 in 263 females will die from brain cancer.³

Most brain tumors do not have any known risk factors or obvious cause; however, a few factors may increase the risk of brain cancer. They include:¹

- **Radiation exposure**
- **Family history of brain cancer**
- **Immune system disorders**

Symptoms¹

- Headache
- Nausea
- Vomiting
- Blurred vision
- Balance problems
- Personality changes
- Drowsiness

Screening, Prevention and Early Detection¹

Screening:

There are no recommended blood tests or screening tests available to detect brain tumors before they cause symptoms. Tumors are generally found after signs and symptoms present themselves. A patient's survival often is determined by age, type of tumor, and location, rather than how early it is detected.

Prevention:

Because most central nervous system tumors have not been linked to any well-documented risk factors, tumors of this kind cannot currently be prevented.

Staging

Stage at Diagnosis describes the severity of a person's cancer and the extent to which it has or has not spread throughout the body.⁴ Cancer staging is important in helping physicians plan appropriate treatment, as well as to estimate a patient's prognosis.⁴ Cancer diagnosed in the *in situ* and localized stages are generally referred to as early-stage tumors, whereas regional and distant tumors are referred to as late-stage tumors.² Detecting cancers at an early stage may increase long-term survival and can lead to a reduction in mortality.²

The National Cancer Institute groups staging into five main categories:⁴

- **In situ:** Abnormal cells are present only in the layer of cells in which they developed. In this report, *in situ* cases are only included for bladder cancer.
- **Localized:** Cancer is limited to the organ in which it began, without evidence of spread.
- **Regional:** Cancer has spread beyond the primary site to nearby lymph nodes or organs and tissues.
- **Distant:** Cancer has spread from the primary site to distant organs or distant lymph nodes.
- **Unstaged/Unknown:** There is not enough information to determine the stage.

Chart 3c

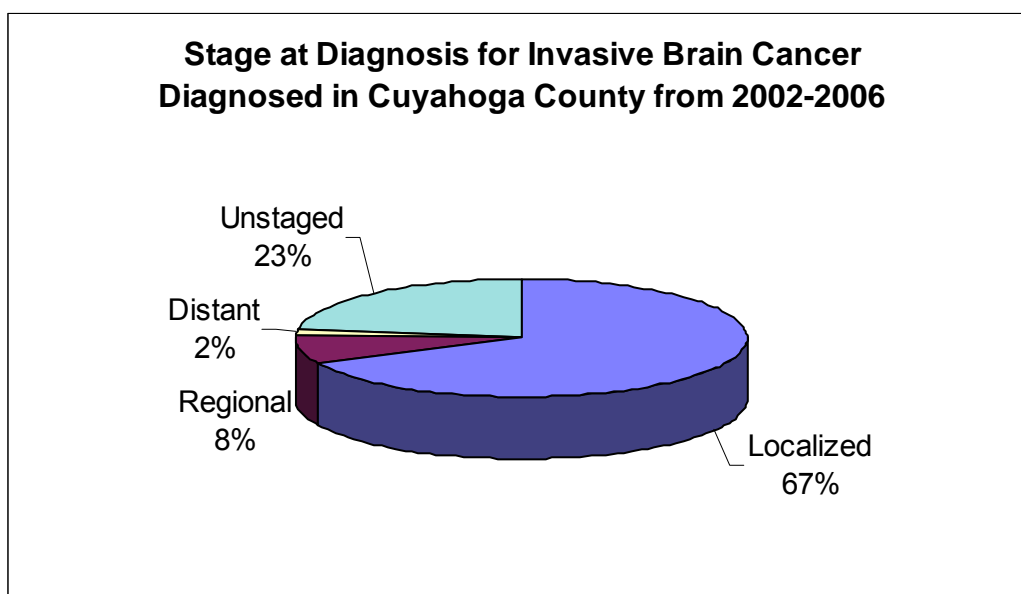


Table 3c

5-year Relative Survival* by Stage at Diagnosis for Brain Cancer in the United States for 1999-2006, All Races, Both Sexes ⁵	
Stage at Diagnosis	5-year Relative Survival (%)
Localized (confined to primary site)	37.6
Regional (spread to regional lymph nodes)	23.5
Distant (cancer has metastasized)	38.6
Unknown/Unstaged	34.3

*Relative survival compares observed survival for those with cancer to the expected survival for those without cancer.

More Information

National Cancer Institute <http://www.cancer.gov/>

American Cancer Society <http://www.cancer.org>

Ohio Department of Health <http://www.odh.ohio.gov/>

Resources

1. The American Cancer Society. Brain Cancer Detailed Guide. <http://www.cancer.org/cancer/braincstumorsinadults/index>. (Accessed December 8, 2010).
2. *Cancer Incidence and Mortality among Ohio Residents, 2002-2006*. Ohio Cancer Incidence Surveillance System, Ohio Department of Health and The Ohio State University, Columbus, Ohio, December 2009. http://www.odh.ohio.gov/ASSETS/79F9E92E210F477D885F8EAC864E2F27/0206Monograph_Final.pdf.
3. The American Cancer Society. Lifetime Risk of Developing or Dying From Cancer. <http://www.cancer.org/Cancer/CancerBasics/lifetime-probability-of-developing-or-dying-from-cancer>. (Accessed January 10, 2011).
4. National Cancer Institute. Cancer Staging. <http://www.cancer.gov/cancertopics/factsheet/Detection/staging>. (Accessed December 23, 2010).
5. Surveillance Epidemiology and End Results. SEER Stat Fact Sheets: Brain. <http://seer.cancer.gov/statfacts/html/brain.html>. (Accessed December 8, 2010).
6. National Cancer Institute. What you need to know about brain tumors. Brain image from <http://www.cancer.gov/cancertopics/wyntk/brain/page2>. (Accessed December 8, 2010).