

2002

Hamilton County
**Mortality Public
Health Report**



**HAMILTON COUNTY
GENERAL HEALTH DISTRICT**

January 2006

Hamilton County Mortality Public Health Report 2002

Hamilton County General Health District
Department of Community Health Services

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Glossary of Terms

Group Definitions

Age Groups – For general analysis, decedents' ages are organized into the following age groups: 0-4, 5-19, 20-64, and 65 and over.

Gender – Sex of decedent.

Jurisdiction – The city, village or township of the decedent at the time of death as assigned by the Cincinnati Area Geographical Information System.

Malignant Cancers – When reporting cancer deaths, the majority of cancer deaths are due to breast, colorectal, lung and prostate. Each of these cancers are analyzed separately, as individual causes.

Other Malignant Cancers – Non-Hodgkin's Lymphoma, leukemia and cancer of the pancreas, esophagus, brain and bladder are analyzed together under the heading of "Other malignant cancers."

Race – The race of the decedent as specified by the informant. Classified as 'Black,' 'White,' 'Other.' There were too few deaths among 'Other' ethnic groups in Hamilton County to analyze and report separate mortality rates.

Premature Death – Death before age 65.

Causes of Death – A cause of death is a specific diagnosis of a major disease category. Major disease categories provide a broader look at death rates, while specific causes of death provide a more detailed diagnosis. For example, heart disease and stroke are specific causes of death of a major disease category – Cardiovascular disease. Leading causes of death are the top specific causes death. Causes of death in this report are based on the Tenth Revision of the International Classification of Disease (ICD-10). These causes of death were coded by the Ohio Department of Health. See Appendix B for a complete list of ICD-10 codes.

Rates

Age-Specific Rates – Death rates for specific age groups are determined by dividing the number of deaths in a given age group by the population of that age group and then multiplying by 100,000.

$$\text{Age-Specific Rate} = (\text{Number of deaths in an age group} / \text{Population of that age group}) \times 100,000$$

Age-Adjusted Rates – Age-adjusted rates use the 2000 U.S. standard million population for the proportion in the noted age groups. The formula for this calculation can be found in Appendix A.

Crude Death Rate – The death rate for a population is determined by dividing the number of deaths by the population amount and then multiplying by 100,000.

$$\text{Crude Death Rate} = (\text{Number of Deaths/Population}) \times 100,000$$

Infant Mortality Rate – The rate of death for infants (persons less than 1 year old) is determined by dividing the number of deaths in persons under 1 year old by the number of live births and then multiplying by 1,000.

$$\text{Infant Mortality Rate} = (\text{Number of deaths in persons less than one year of age/Number of live births}) \times 1,000$$

For more information regarding rate calculations, see Appendix A.

Definitions according to:

Information Warehouse Technical Notes

Ohio Death Date: Leading Causes

<http://dwhouse.odh.ohio.gov/datawarehousev2.htm>

Accessed 10/25/05

Introduction

Mortality (death) records have been used to monitor the well-being of communities since the turn of the 20th century. Standardization in the reporting of mortality data allows for tracking of trends over time for comparisons of local, state and national data. This is the fifth annual report describing mortality in Hamilton County residents.

In 1999, cause of death reporting changed with the implementation of the *Tenth Revision of the International Classification of Disease (ICD-10)*. This classification system replaced the Ninth Revision (*ICD-9*) which was used from 1979 through 1998.¹ This change resulted in new cause of death codes and restructuring of leading causes of death.¹ Due to this change from *ICD-9* to *ICD-10*, causes of death from 1999 to 2002 are directly comparable, but not to prior years.

Therefore, in this report, trends in mortality will be examined from 1999-2002.

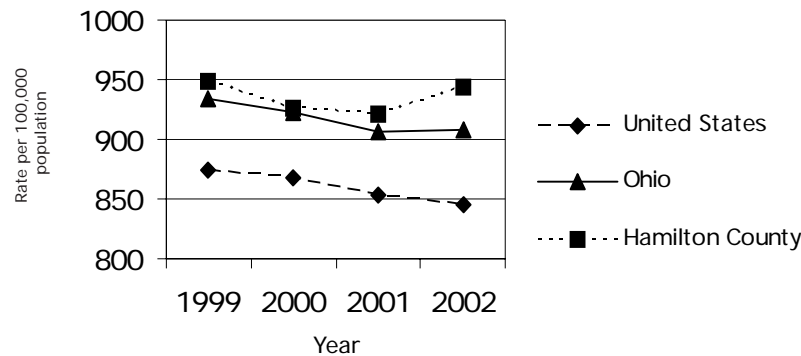
The 2002 Hamilton County Mortality Report focuses on the major causes of death to Hamilton County, Ohio residents during the year 2002. It examines in greater detail the leading causes of death for three disease categories — cardiovascular, cancer and respiratory. These conditions accounted for 68 percent of all mortality in 2002. This report provides the who, what, where and why of death in Hamilton County. This report also includes tips for disease prevention and awareness.

Most of the data presented in this report were provided by the Ohio Department of Health (ODH). Data include residents of Hamilton County who were outside the county at the time of death. Mortality rates are used to identify communities, age groups, ethnic groups, or genders that are at high risk for specific causes of death. For a thorough explanation of data and comparisons used in this report, see Appendix A.

Mortality Overview *(ICD-10 Codes A00-Z99)*

A total of 8,461 Hamilton County residents died in 2002. Overall in the United States in 2002, the death rate decreased to a record low and life expectancy at birth rose to a record high of 77.3 years.² Hamilton County age-adjusted death rates increased from 2001 (Figure 1). Table 1 shows Hamilton County crude and age-adjusted rates compared with the United States and Ohio.³

Figure 1. Age-Adjusted Mortality Rates for all Causes, by Year 1999-2002, for United States, Ohio and Hamilton County



Data Source: US DHHS (CDC)³

Table 1. Crude and Age-Adjusted Mortality Rates per 100,000 Population, for United States, Ohio and Hamilton County, 2002³

Community	Crude Rate	Age-Adjusted Rate*
United States	847	845
Ohio	962	908
Hamilton County	1,024	943

*Rates obtained from CDC Wonder³

Who

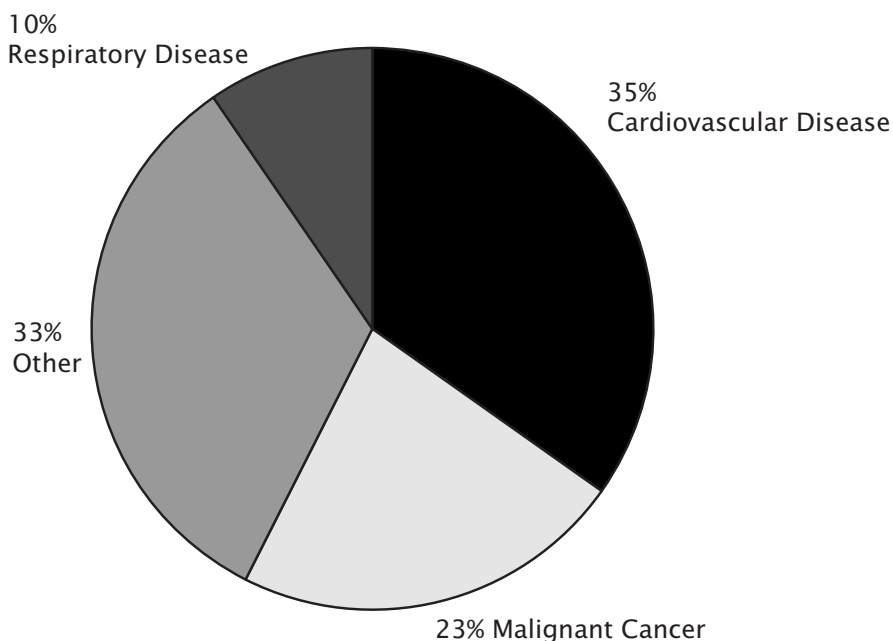
Death is commonly considered a condition of age, therefore, the majority of deaths (76 percent) were in persons over the age of 65. Additionally:

- 53 percent of deaths occurred in females
- 78 percent of deaths occurred in Whites

Figure 2. Deaths by Major Category (n=8,461) - Hamilton County, Ohio, 2002*

What

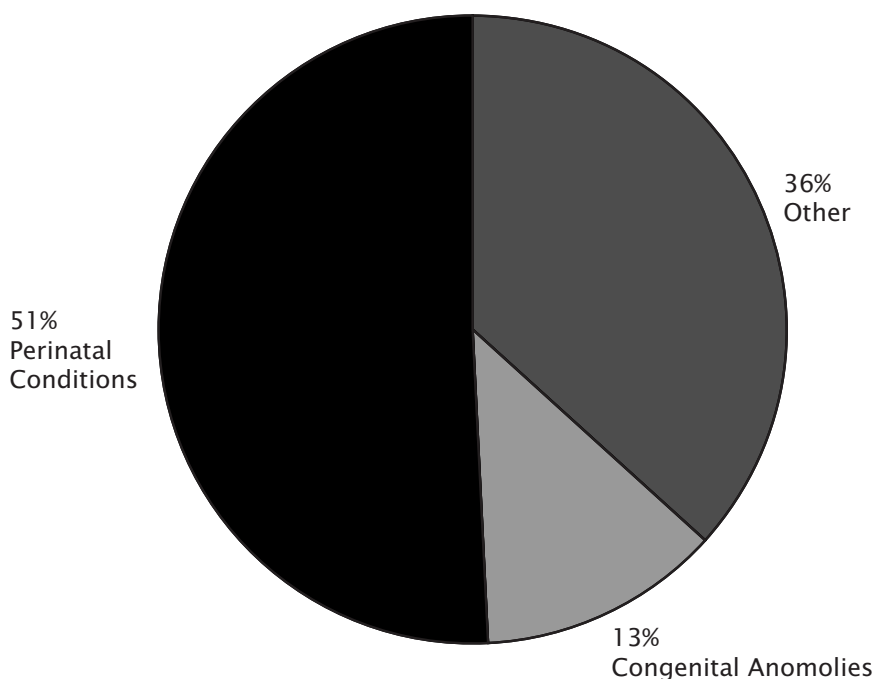
The major categories of death in Hamilton County in 2002 were cardiovascular disease, malignant cancer and respiratory disease (Figure 2) — accounting for 68 percent of deaths. Figures 3a-3e show specific causes of death for separate age groups.



*Figures do not add up to 100 percent due to rounding

Specific Causes of Death – by Age

Figure 3a. Deaths, by Cause, by Age Group (0-4, n=128) - Hamilton County, Ohio, 2002



0-4 Years

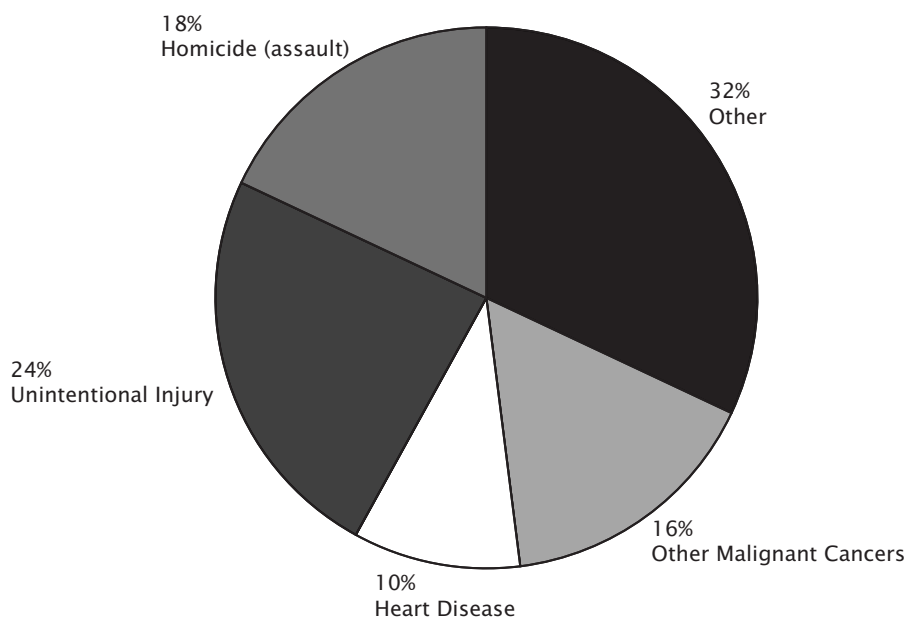
In children 0-4 years of age, there were 128 deaths – all but 14 were in children less than 1 year old (infants).[^] Perinatal conditions, such as low birth weight, accounted for more than half of all deaths in this age group.

[^]Infant mortality is presented in more detail later in this report.

5-19 Years

There were 50 deaths in this age group in 2002. Unintentional injury (24 percent), homicide (18 percent) and other malignant cancers (16 percent) were the leading causes of death.^{^^}

Figure 3b. Deaths, by Cause, by Age Group (5-19, n=50) - Hamilton County, Ohio, 2002



Other causes in this age group included:

- suicide (8 percent)
- infectious disease (4 percent)
- congenital anomalies (4 percent)

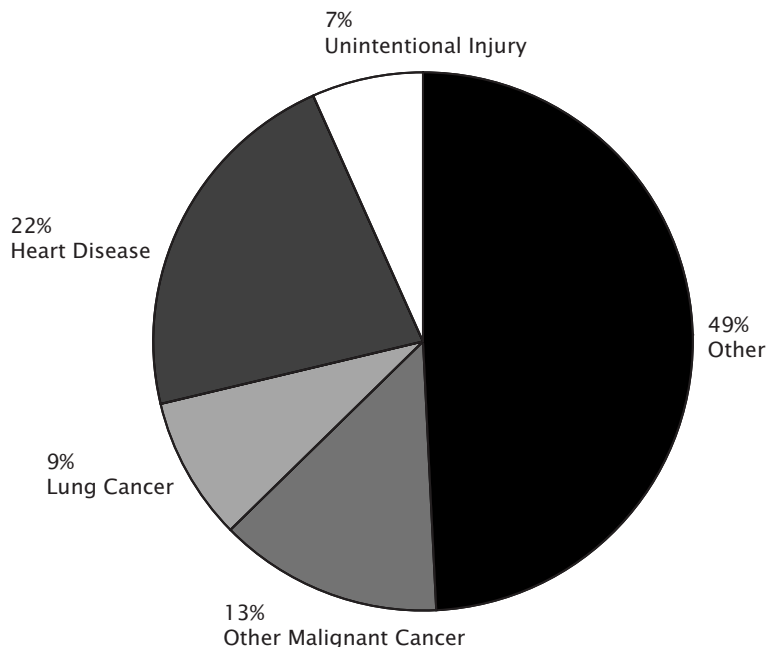
20-64 Years

There were 1,845 deaths in this age group with the leading causes of death including heart disease (22 percent), other malignant cancers (13 percent), lung cancer (9 percent) and unintentional injury (7 percent).

Figure 3c. Deaths, by Cause, by Age Group (20-64, n=1,845) - Hamilton County, Ohio, 2002

Other causes in this age group included:

- diabetes (4 percent)
- infectious disease (4 percent)
- breast cancer (4 percent)
- stroke (4 percent)
- suicide (4 percent)
- homicide (3 percent)
- chronic lower respiratory disease (3 percent)



^{^^}Injury rates and deaths are presented in detail in a separate annual report.⁴

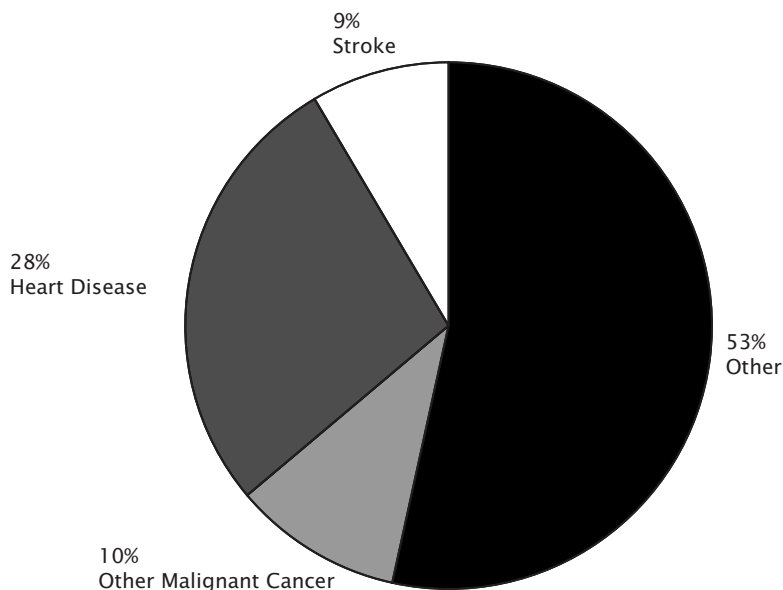
65 and older

There were 6,438 deaths in this age group, with the primary causes of death being heart disease (28 percent), other malignant cancers (10 percent) and stroke (9 percent).

Figure 3d. Deaths, by Cause, by Age Group (65 and older, n=6,438) - Hamilton County, Ohio, 2002

Other causes included:

- lung cancer (7 percent)
- chronic lower respiratory disease (7 percent)
- nervous system disorders (5 percent)
- mental disorders (5 percent)
- diabetes (4 percent)

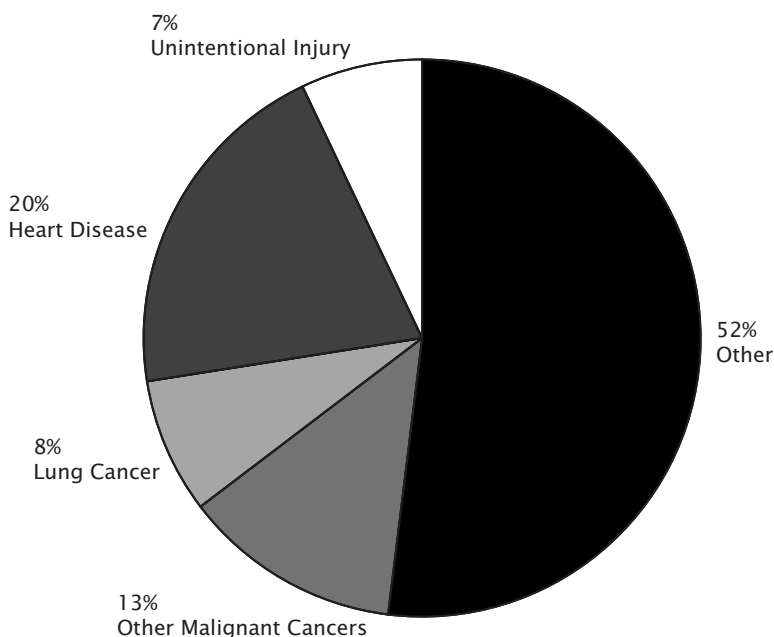


Another way to examine deaths by age is to compare causes of death in persons who died prematurely and those who did not. As described in the Glossary of Terms, premature death is defined as dying before 65 years of age. Figure 3e shows the leading causes of premature death for Hamilton County residents age 0-64 in 2002.

Figure 3e. Deaths, by Cause, by Age Group (0-64, n=2,023) - Hamilton County, Ohio, 2002

Additional causes of premature deaths included:

- diabetes (4 percent)
- infectious disease (4 percent)
- suicide (3 percent)
- breast cancer (3 percent)
- stroke (3 percent)
- homicide (3 percent)
- chronic lower respiratory disease (3 percent)



Leading Causes of Death in Hamilton County, Ohio, by Gender and Race

Similar to the United States,⁵ leading causes of death among Hamilton County residents differ by gender and race. This information is contrasted in Tables 2 and 3. Appendix B lists the *ICD-10* codes that correspond to these diseases. Overall, these 10 conditions accounted for 74 percent of all deaths among Hamilton County residents in 2002.

Table 2 shows the difference in cause of death rankings by gender. Heart disease and other malignant cancer ranked as the top two causes of death for men and women, accounting for more than one third of all deaths. Other causes of death not shown due to overall rankings were:

- breast cancer – ranked ninth for females (4 percent)
- pneumonia and flu – ranked 10th for females (3 percent)

Table 2. Number of Deaths and Percent of Total Deaths for the Leading Causes of Death by Gender - Hamilton County, Ohio, 2002

Overall Rank	Cause of Death	Males			Females		
		Rank	Number	Percent	Rank	Number	Percent
	All causes	-	3,942	100	-	4,519	100
1	Heart disease	1	1,068	27.1	1	1,125	24.9
2	Other malignant cancers*	2	467	11.8	2	461	10.2
3	Stroke	4	220	5.6	3	394	8.7
4	Lung cancer	3	319	8.1	4	275	6.1
5	Chronic lower respiratory disease	5	208	5.3	5	269	6.0
6	Nervous system disorders	8	123	3.1	6	232	5.1
7	Mental disorders	9	114	2.9	7	229	5.1
8	Diabetes	6	146	3.7	8	179	4.0
9	Unintentional injury	7	139	3.5	11	113	2.5
10	Infectious diseases	10	108	2.7	12	104	2.3

*Other malignant cancers not including breast, colorectal, lung or prostate cancer

Table 3 shows the differences in cause of death rankings by race. Heart disease, malignant cancers, stroke and lung cancer ranked as the top four causes of death for both races, accounting for over half of all deaths. Leading causes of death not shown in this table due to overall rankings included:

- assault (homicide) – ranked 10th for Blacks (3 percent)
- pneumonia and flu – ranked 10th for Whites (3 percent)

Table 3. Number of Deaths and Percent of Total Deaths for the Leading Causes of Death by Race - Hamilton County, Ohio, 2002**

Overall Rank	Cause of Death	Whites			Blacks		
		Rank	Number	Percent	Rank	Number	Percent
	All causes	-	6,573	100	-	1,852	100
1	Heart disease	1	1,708	26.0	1	479	25.9
2	Other malignant cancers*	2	732	11.1	2	191	10.3
3	Stroke	3	497	7.6	3	116	6.3
4	Lung cancer	4	482	7.3	4	112	6.0
5	Chronic lower respiratory disease	5	407	6.2	7	68	3.7
6	Nervous system disorders	6	326	5.0	17	29	1.6
7	Mental disorders	7	288	4.4	9	55	3.0
8	Diabetes	8	212	3.2	5	112	6.0
9	Unintentional injury	9	192	2.9	8	59	3.2
10	Infectious diseases	11	142	2.2	6	70	3.8

*Other malignant cancers not including breast, colorectal, lung or prostate cancer

**Numbers of Whites and Blacks don't add up to 8,461 due to race "Other"

Where

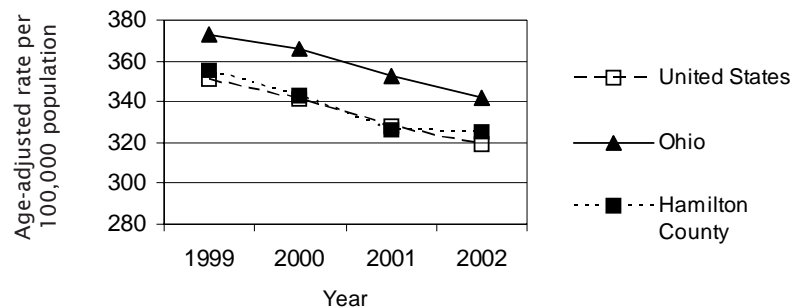
Appendix C details the crude mortality rates by the political jurisdiction in which the person resided when he/she died. Data were geocoded according to the Cincinnati Area Geographical Information System. This technique assigned a jurisdictional residence that might be different than the state assigned city of residence. Therefore, the numbers and rates reported by the state of Ohio will differ from those presented in this report. As death is a natural process of aging, mortality rates increase exponentially in persons 65 years and older. Therefore, crude mortality rate differences between political jurisdictions may reflect populations with differing ages.

Political jurisdictions with less than 10 deaths may demonstrate unreliable rates due to low numbers. Excluding those jurisdictions with less than 10 deaths, North Bend had the highest crude mortality rate with 1,824 per 100,000. As in 2001, Symmes Township had the lowest rate with 271 per 100,000.

Major Disease Category - Cardiovascular Disease (ICD 10 Codes I00-I99)

Cardiovascular disease (CVD) – primarily heart disease and stroke – was the most common cause of death for persons 20 years of age and older. Of the 2,944 persons who died of CVD in 2002, the majority (83 percent) were 65 years or older. Figure 4 shows that CVD deaths have been on the decline in the United States, Ohio and Hamilton County since 1999.

Figure 4. Age-Adjusted Cardiovascular Death Rates, by Year 1999-2002, for United States, Ohio and Hamilton County



Data Source: US DHHS (CDC)³

Table 4. Death Numbers and Rates per 100,000 Population due to Cardiovascular Disease by Gender and Race - Hamilton County, Ohio, 2002

Population Group	No. of Deaths ^{**}	Age-Adjusted Rate [*]	Crude Rate [*]
Male	1,359	408	346
Female	1,585	268	369
White	2,301	307	382
Black	636	422	315

^{*}Rates obtained from CDC Wonder³

^{**}Numbers of Whites and Blacks don't add up to 2,944 due to race "Other"

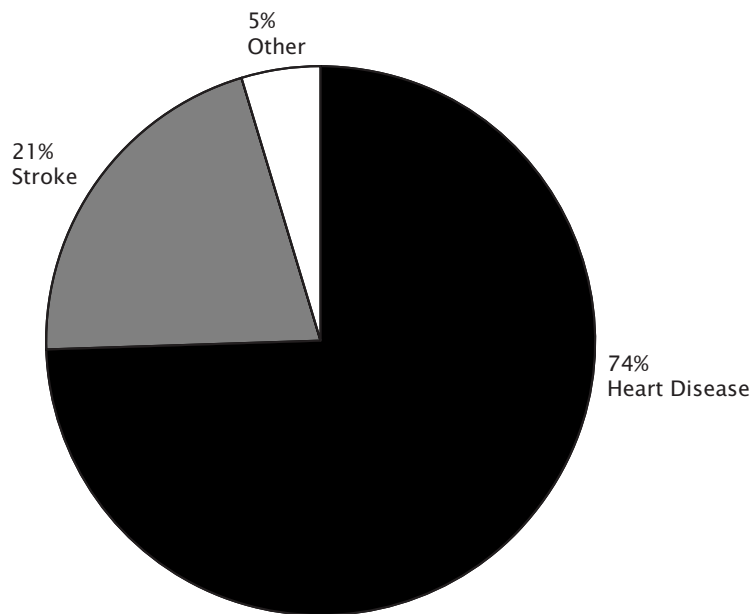
For Hamilton County residents in 2002:

- CVD accounted for 35 percent of all deaths, killing 2,944 persons.
- The average age at death was 81 years for women and 73 years for men.
- The average age at death was 79 years for Whites and 73 years for Blacks.
- Similar to 2001, the age-adjusted rate was higher in males compared to females in 2002 (Table 4).
- Similar to 2001, the age-adjusted rate was higher in Blacks compared to Whites in 2002 (Table 4).
- For jurisdictions with more than 10 CVD deaths, CVD crude mortality rates were highest in Lincoln Heights and lowest in Symmes Township – 608 and 108 per 100,000, respectively (Appendix C).

Specific Causes of Death – Heart Disease and Stroke

Figure 5 shows the specific causes of CVD deaths among county residents in 2002. Heart disease, which results from a reduced blood supply to the heart, accounted for 74 percent of cardiovascular deaths, killing 2,193 persons. Heart disease also includes acute myocardial infarctions (heart attacks), which caused 456 of those deaths. Stroke accounted for 21 percent of all CVD deaths, killing 614 persons.

Figure 5. Cardiovascular Disease Deaths, by Cause (n=2,944) - Hamilton County, Ohio, 2002



Prevention

Heart disease does not differentiate by gender or race — it is the leading cause of death in men and women of all races. Heart disease and stroke can be prevented by living a healthy lifestyle including eating healthy food, exercising, decreasing stress and lowering cholesterol.⁶

In Ohio, heart disease and stroke were the first and third leading causes of deaths in 2002, respectively. Additionally, an estimated 84 percent of Ohio adults have one or more heart disease risk factors.⁷ Risk factors for heart disease and stroke include:⁶

- high blood pressure
- high blood cholesterol
- diabetes
- smoking
- obesity

Early medical treatment during a stroke or heart attack can prevent or limit damage and increase chances of survival.⁸ Be aware of the warning signs of heart attack and stroke and call 911 immediately if you or someone you know begins experiencing the symptoms listed on the next page.

Heart Attack Warning Signs:⁹

While some heart attacks happen quickly and are very painful, most start slowly, with mild pain or discomfort. Often people affected aren't quite sure what's wrong and wait too long before getting help. Warning signs of a heart attack include:

- **Chest discomfort.** This discomfort in the center of the chest may last more than a few minutes and may go away and come back. It can feel like uncomfortable pressure, squeezing, fullness or pain.
- **Discomfort in other areas of the upper body.** Symptoms can include pain or discomfort in both arms, the back, neck, jaw or stomach.
- **Shortness of breath.** May occur with or without chest discomfort.

Chest pain or discomfort is the most common symptom of a heart attack in both men and women. However, women are somewhat more likely to experience other symptoms including cold sweats, nausea and lightheadedness.¹⁰

Stroke Warning Signs:⁹

A stroke is caused by a blood clot or bleeding in the brain. According to the American Stroke Association, warning signs of stroke include sudden:

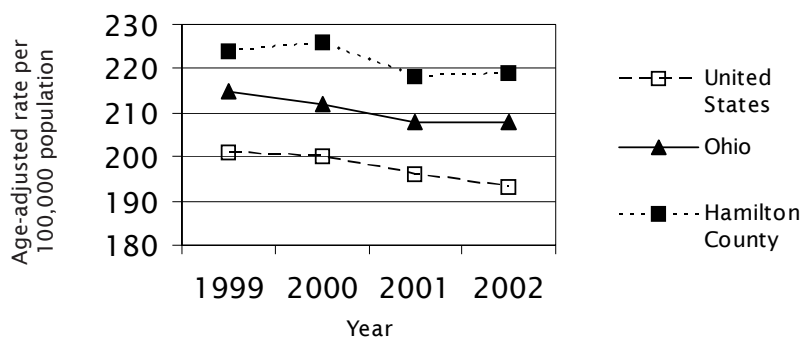
- numbness or weakness of the face, arm or leg – especially on one side of the body
- confusion, trouble speaking or understanding
- trouble seeing in one or both eyes
- trouble walking, dizziness, loss of balance or coordination
- severe headache with no known cause

For more information regarding prevention and awareness of cardiovascular disease, go to the American Heart Association Web site, www.americanheart.org, or the National Heart, Lung, and Blood Institute (NHLBI), National Institutes of Health (NIH) *Heart Attack* Web site, www.nhlbi.nih.gov/actintime/aha/aha.htm.

Major Disease Category - Malignant Cancers (ICD 10 Codes C00-C97)

In 2002, cancer was the second leading cause of death among Hamilton County residents, accounting for 23 percent (1,917) of all deaths. Cancer is a group of many related diseases. A majority of cancer deaths are due to cancers of the breast, colon, lung and prostate. Non-Hodgkin's Lymphoma, leukemia and cancer of the pancreas, esophagus, brain and bladder are analyzed together under the heading of "Other malignant cancers." All forms of cancer begin because of out-of-control growth of abnormal cells. These cells accumulate and form tumors (lumps) that may compress, invade and destroy normal tissue.¹¹

Figure 6. Age-Adjusted Cancer Death Rates, by Year 1999-2002, for United States, Ohio and Hamilton County



Data Source: US DHHS (CDC)³

For Hamilton County residents in 2002:

- Overall, malignant cancer death rates have decreased since 1999, similar to Ohio and the United States.
- Twenty-seven percent of cancer deaths occurred in persons age 20-64.
- Seventy-two percent of cancer deaths occurred in persons 65 and older.
- The average age at death was 71 years for women and 70 years for men.
- The average age at death was 72 years for Whites and 68 years for Blacks.
- Similar to 2001, the age-adjusted rate was higher in males compared to females in 2002 (Table 5).
- Similar to 2001, the age-adjusted rate was higher in Blacks compared to Whites (Table 5).
- For communities with more than 10 malignant cancer deaths, crude mortality rates were highest in Mariemont and lowest in Symmes Township – 381 and 74 per 100,000 respectively.

Table 5. Death Numbers and Rates per 100,000 Population due to Cancer by Gender and Race - Hamilton County, Ohio, 2002

Population Group	No. of Deaths**	Age-Adjusted Rate*	Crude Rate*
Male	945	272	240
Female	972	186	225
White	1,507	211	249
Black	401	259	199

*Rates obtained from CDC Wonder³

**Numbers of Whites and Blacks don't add up to 1,917 due to race "Other"

Specific Causes of Death

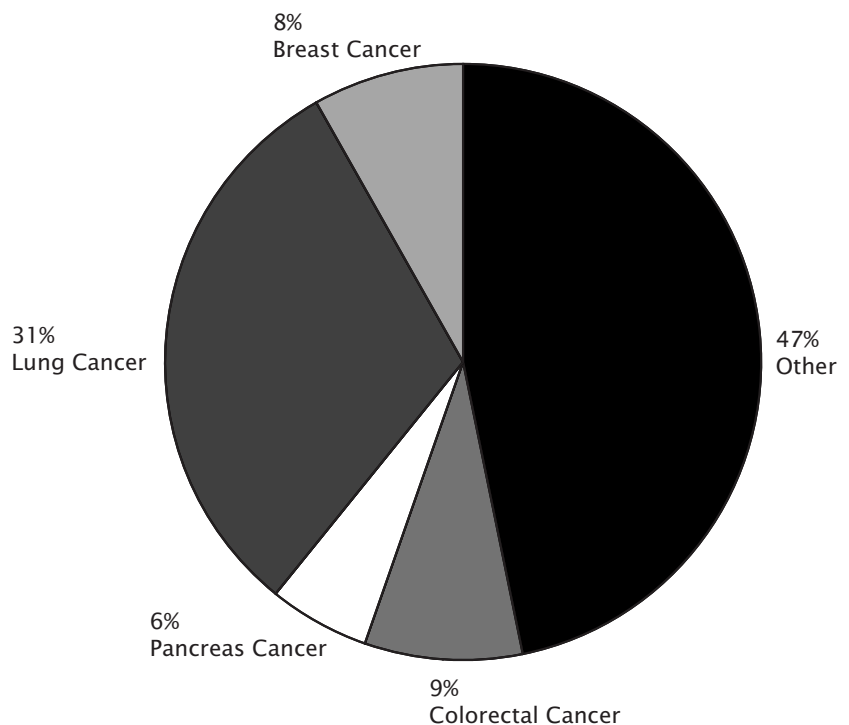
As shown in Figure 7, the leading causes of cancer deaths were breast, colorectal, lung and pancreas cancer, accounting for 54 percent of all cancer deaths. "Other malignant cancers" accounted 47 percent of cancer deaths.

For Hamilton County women in 2002, the leading causes of cancer death were lung (28 percent), breast (16 percent) and colorectal (8 percent). In men, the three leading causes were lung (34 percent), colorectal (9 percent) and prostate (8 percent).

Prevention

Lung and colorectal cancer – the two major cancers causing death among Hamilton County residents – are for the most part preventable.¹² Tobacco use, physical inactivity, obesity, and poor nutrition are the major preventable causes of cancer.¹² Colorectal cancer is detectable and treatable through regular screening programs.¹² Information regarding these modifiable risk factors and screening programs is available from the American Cancer Society by calling 1-800-ACS-2345 or online at www.cancer.org.¹²

Figure 7. Malignant Cancer Deaths, by Cause (n=1,917) - Hamilton County, Ohio, 2002*

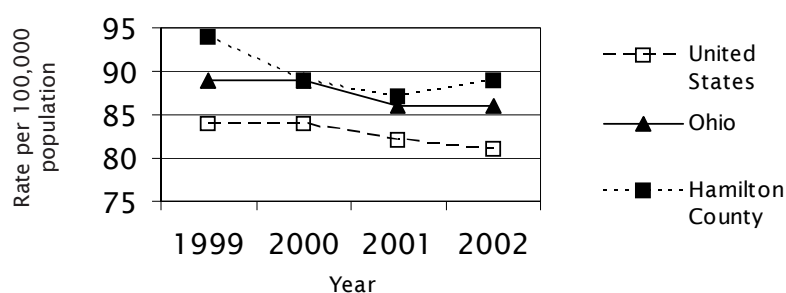


*Figures do not add up to 100 percent due to rounding

Major Disease Category - Respiratory Diseases (ICD 10 Codes J00-J99)

In 2002, respiratory diseases were the third leading cause of death for Hamilton County residents, killing 811 people. Death rates due to respiratory diseases were slightly higher in Ohio and Hamilton County compared to the United States (Figure 8). Respiratory diseases are ailments that affect the lungs, hindering a person's ability to breathe. Oxygen has trouble reaching the lungs, causing the body's cells to malfunction. Two major factors contribute to the likelihood of contracting a life threatening lung disease - smoking and micro-organisms (bacteria and viruses).

Figure 8. Age-Adjusted Respiratory Disease Death Rates, by Year 1999-2002, for United States, Ohio and Hamilton County



Data Source: US DHHS (CDC)³

For Hamilton County, Ohio residents in 2002:

- Respiratory diseases accounted for 10 percent of all deaths.
- The average age at death was 79 years for women and 75 years for men.
- The average age at death was 79 years for Whites and 72 years for Blacks.
- Similar to 2001, the age-adjusted rate was higher in males compared to females in 2002 (Table 6).
- Similar to 2001, the age-adjusted rate was higher in Whites compared to Blacks in 2002 (Table 6).
- For communities with more than 10 respiratory disease deaths, crude mortality rates were highest in Sycamore Township and lowest in Forest Park - 213 and 57 per 100,000, respectively.

Table 6. Death Numbers and Rates per 100,000 Population due to Respiratory Disease by Gender and Race - Hamilton County, Ohio, 2002

Population Group	No. of Deaths ^{**}	Age-Adjusted Rate [*]	Crude Rate [*]
Male	349	106	89
Female	462	80	107
White	686	91	113
Black	122	81	61

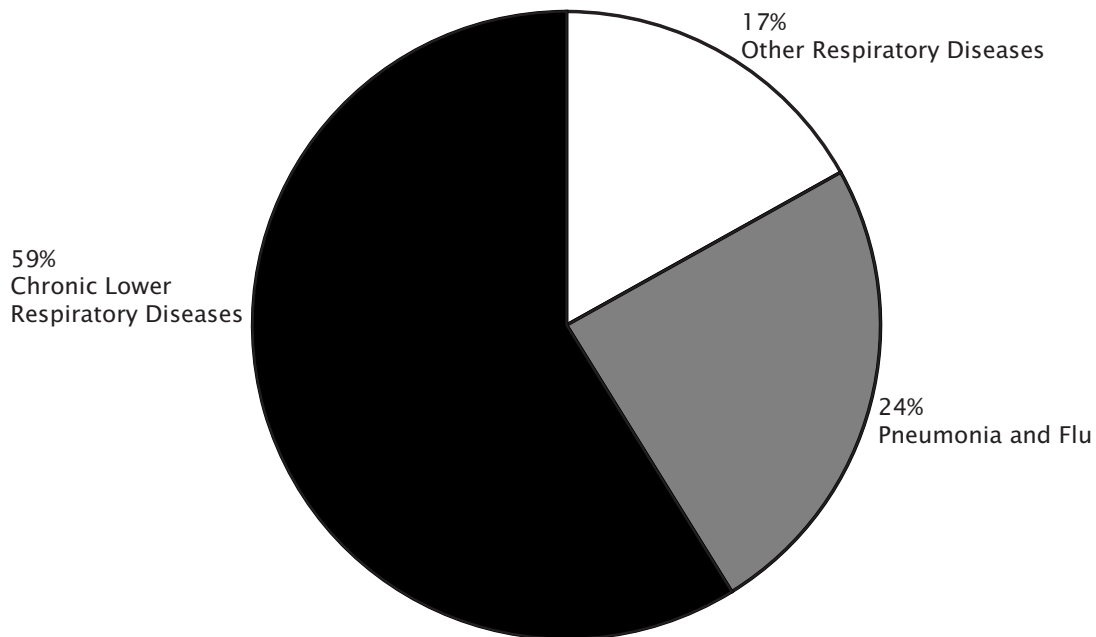
^{*}Rates obtained from CDC Wonder³

^{**}Numbers of Whites and Blacks don't add up to 811 due to race "Other"

Specific Causes of Death

As shown in Figure 9, the leading causes of respiratory deaths were chronic lower respiratory infections (59 percent) and pneumonia and flu (24 percent). Other respiratory diseases accounted for 17 percent of deaths.

Figure 9. Respiratory Disease Deaths, by Cause (n=811) - Hamilton County, Ohio, 2002



Prevention

Premature death due to respiratory diseases can be minimized through smoking cessation and preventive vaccinations.¹³

Pneumonia is a serious infection or inflammation of the lungs. The major types of pneumonia as described by the American Lung Association include:¹³

- **Viral (about 50 percent).** There are no effective treatments for most types of viral pneumonia.
- **Bacterial (30 percent).** Pneumococcal pneumonia accounts for 25 to 30 percent of all community-acquired pneumonia and an estimated 40,000 deaths yearly in the United States. The pneumococcal vaccine protects against 23 types of pneumococcal bacteria and is effective in approximately 80 percent of healthy adults. Early treatment with antibiotics can also cure bacterial pneumonia.
- **Mycoplasma pneumonia (20 percent).** Early treatment with antibiotics can speed recovery from mycoplasma pneumonia.

Persons considered at high risk for pneumonia include:¹³

- the elderly and the very young
- persons with underlying health problems, such as chronic obstructive pulmonary disease (COPD), diabetes mellitus, congestive heart failure and sickle cell anemia
- persons with diseases that impair the immune system, such as AIDS
- persons undergoing cancer therapy or organ transplantation

The American Lung Association recommends the following preventive steps for high-risk persons:¹³

- Pneumococcal vaccination – generally given once, but revaccination may be necessary every 3-5 years for high-risk individuals (vaccine not recommended for pregnant women or children under age 2)
- Influenza vaccination – recommended since pneumonia often occurs as a complication of the flu
- Be aware of any symptoms of respiratory trouble that linger more than a few days
- Good health habits, such as proper diet and hygiene, rest, and regular exercise can increase resistance to all respiratory illnesses and help promote fast recovery when illness does occur

For more information about these conditions visit the American Lung Association Web site: <http://www.lungusa.org> or call 1-800 LUNG-USA.

Infant Mortality

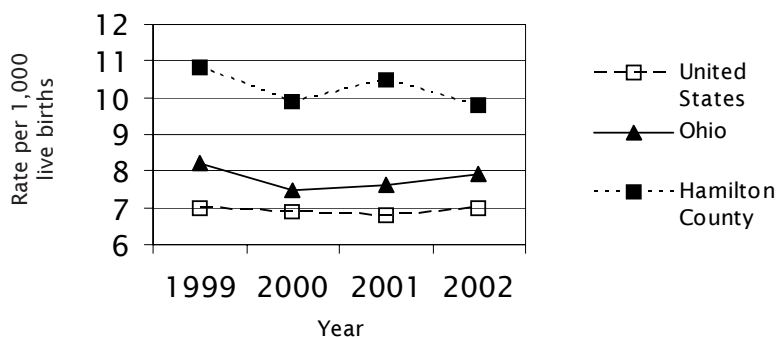
Infants are children less than 1 year old. Infant mortality rates are calculated as the number of deaths in the first year of life divided by the number of live births, multiplied by 1,000.

Overall in the United States from 1990 to 2001, infant mortality rates decreased 26 percent from 9.2 to 6.8 per 1,000.¹⁴ In 2002, the U.S. infant mortality rate increased for the first time since 1958, rising from 6.8 in 2001 to 7.0 in 2002.¹⁵ This increased rate was mostly due to an increase in infants born weighing less than 750 grams (1 lb., 10.5 oz). A majority of infants born weighing less than 750 grams die within the first year of life.¹⁵ This increase was not concentrated in any particular age or race/ethnicity group.¹⁵

For Hamilton County residents in 2002:

- The infant mortality rate was 9.8, higher than the state and nation (Figure 10).^{15,16}
- There were 114 infant deaths, 10 less than in 2001.
- Of the 114 deaths, 43 were White, 67 were Black and 4 were “Other” race (Table 7).

Figure 10. Infant Mortality Rates, by Year 1999-2002, for United States, Ohio and Hamilton County



Data Source for United States: MacDorman MF 2005 Table A ¹⁵
 Data Source for Ohio and Hamilton County: Ohio Data Warehouse ¹⁶

Table 7. Infant Mortality Rates per 1,000 Live Births, by Race for United States, Ohio and Hamilton County, 2002

Community	White	Black
United States	5.8	13.8
Ohio	6.2	17.6
Hamilton County	5.7	18.1

Data Source for United States: MacDorman MF 2005 Table A ¹⁵
 Data Source for Ohio and Hamilton County: Ohio Data Warehouse ¹⁶

Leading Causes of Infant Death

The CDC has guidelines for ranking the leading causes of infant mortality.⁵ Using these guidelines, Table 8 shows the leading causes of death among infants, accounting for 80 percent of infant deaths. The leading cause of infant deaths in 2002 in Hamilton County was disorders related to prematurity and low birth weight. Whereas, in the nation as a whole, the leading cause was congenital anomalies followed by disorders related to prematurity and low birth weight.¹⁴

Table 8. Number of Deaths and Percent of Deaths for the Leading Causes of Infant Mortality - Hamilton County, Ohio, 2002

Causes of Death (ICD 10 Code)	Deaths	Percent of Deaths
All causes	114	100.00
Prematurity / low birth weight (P07)	20	17.5
Congenital anomalies (Q00-Q99)	15	13.2
Sudden infant death syndrome (SIDS) (R95)	11	9.6
Complications of placenta, cord and membranes (P02)	10	8.8
Maternal complications of pregnancy (P01)	9	7.9
Intrauterine hypoxia and birth asphyxia (P20-21)	7	6.1
Unintentional injury (V01-X59)	6	5.3
Necrotizing enterocolitis of newborn (P77)	4	3.5
Gastritis, duodenitis, and non-infective enteritis and colitis (K29,K50-K55)	3	2.6
Birth trauma (P10-P15)	3	2.6
Bacterial Sepsis (P36)	3	2.6

Infant deaths can be classified into neonatal (0-27 days) and postneonatal (28-364 days) periods. In Hamilton County in 2002:

- 75 (66 percent) infant deaths occurred during the neonatal period
- 39 (34 percent) deaths occurred during the postneonatal period

Figures 11a and 11b use the same CDC guidelines above⁵ to show leading causes of death for neonatal and postneonatal deaths in Hamilton County.

Figure 11a. Leading Causes of Neonatal Deaths (n=75) - Hamilton County, Ohio, 2002

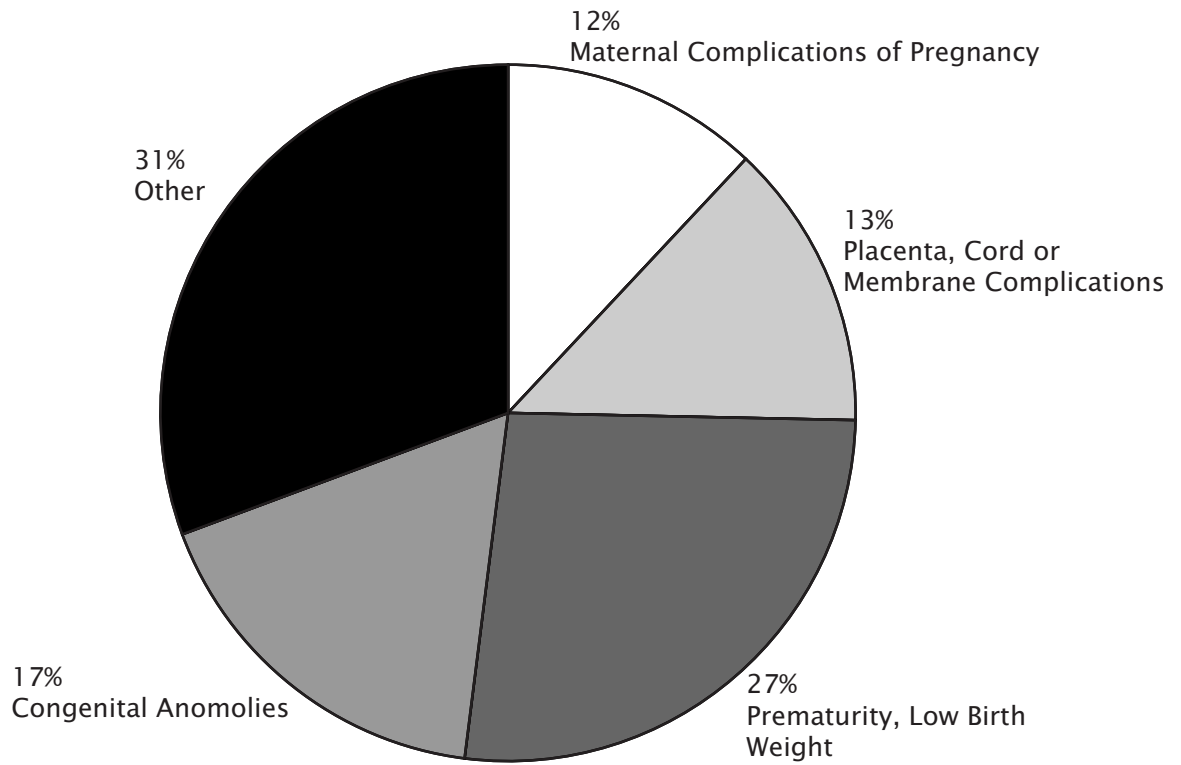
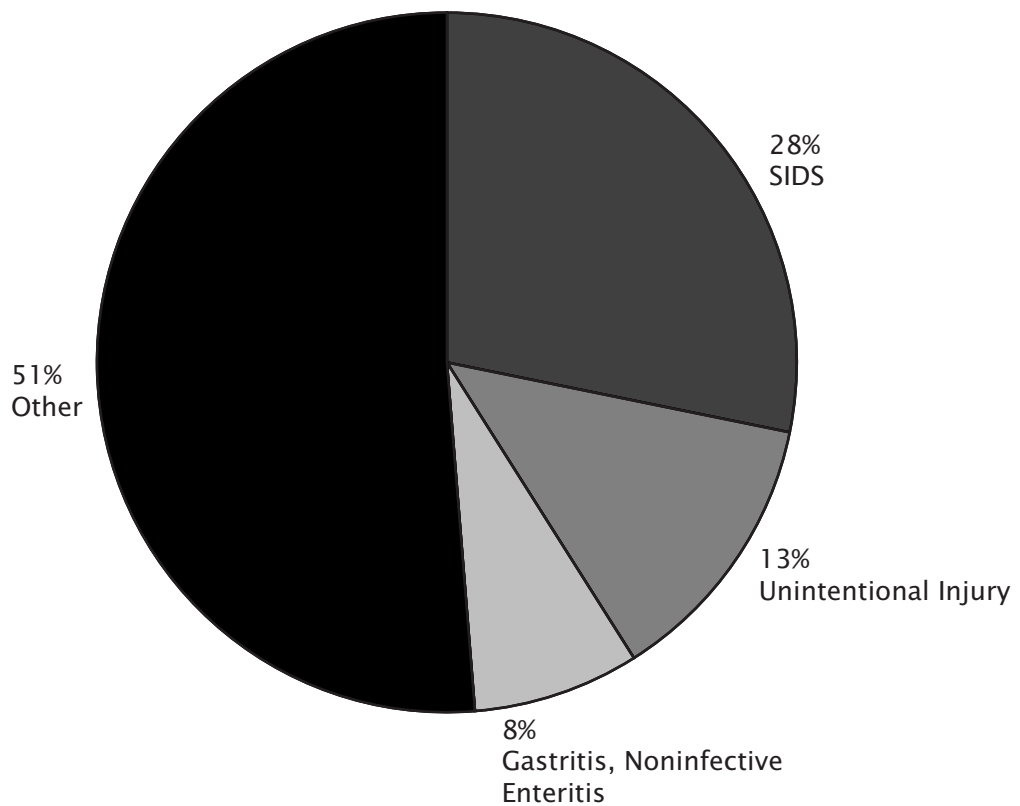


Figure 11b. Leading Causes of Postneonatal Deaths (n=39) - Hamilton County, Ohio, 2002



Prevention

As indicated in Table 8, the leading cause of infant mortality in Hamilton County is prematurity and low birth weight, accounting for 18 percent of all infant deaths. The March of Dimes has identified three groups of women who are at greatest risk for premature births including women who:¹⁷

- have had a previous preterm birth
- are pregnant with twins, triplets or more
- have certain uterine or cervical abnormalities

Additionally, certain medical conditions during pregnancy may increase the likelihood that a woman will have preterm labor. These conditions include:¹⁷

- urinary tract, vaginal and sexually transmitted infections
- diabetes
- high blood pressure
- clotting disorders (thrombophilia)
- bleeding from the vagina
- certain birth defects in the baby
- being pregnant with a single fetus after in vitro fertilization (IVF)
- being under- or over-weight before pregnancy
- short time period between pregnancies (less than 6-9 months between birth and the beginning of the next pregnancy)

Regularly scheduled prenatal care and well baby visits play a vital role in decreasing infant mortality rates. Prenatal care is especially important for women with medical conditions that may affect pregnancy, such as diabetes, high blood pressure and epilepsy.¹⁸ Studies also show that taking a daily multivitamin containing 400 micrograms of the B-vitamin folic acid prior to and during the early weeks of pregnancy can reduce the risk of having a baby with certain birth defects of the brain and spine, including spina bifida.¹⁸

Additional factors that can reduce infant mortality prior to birth include:¹⁹

- Stop using all forms of alcohol, tobacco and drugs, including herbal remedies that are not prescribed by your doctor
- Maintain a low stress level
- If you're in an abusive relationship, talk to someone. Abuse often gets worse during pregnancy. Do what you need to do to protect yourself and your baby
- Know the signs of preterm labor and what to do if you experience them. Visit the March of Dimes Web site for more information:
http://www.marchofdimes.com/prematurity/13454_5809.asp

For more information regarding healthy pregnancies and infant care, visit the March of Dimes Web site, www.marchofdimes.com.

Summary and Conclusions

- The overall age-adjusted mortality rate for Hamilton County residents was 943 per 100,000 - higher than the state of Ohio and the United States.
- Thirty-five percent of all deaths among Hamilton County residents were due to cardiovascular disease.
- Malignant cancers caused 23 percent of all deaths among Hamilton County residents.
- The infant mortality rate in Hamilton County was 9.8 per 1,000 live births in 2002 - higher than the state of Ohio and the United States.

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Appendix A

Methodology and Calculation of Rates

Data Sources

This report presents descriptions of information reported on death certificates. Death certificates are completed by funeral directors, attending physicians, medical examiners and coroners. Causes of death are processed in accordance with the *International Classification of Diseases Tenth Revision (ICD-10)*. Data for this report regarding 2002 deaths for residents of Hamilton County were received from the Ohio Department of Health.

Data used to compare mortality trends between the United States, Ohio and Hamilton County (Figures 1, 4, 6, 8) were obtained by Centers for Disease Control and Prevention (CDC) Web site.³

Crude Death Rates:

Crude rates are calculated using the following formula:

$$(\text{Number of deaths/Population}) \times 100,000$$

Crude death rates are typically expressed per 100,000 people and are not adjusted for age or race. As a result, crude death rates can be significantly influenced by the changing composition of the population over time.

Age-Specific Rates:

Age-specific rates are calculated using the following formula:

$$(\text{Number of deaths in an age group/Population of that age group}) \times 100,000$$

Age-Adjusted Rates:

Age is the most important characteristic governing mortality. Before the mortality experience of two or more populations can be compared, the difference in the age distributions of the population must be removed. This is accomplished through the use of an age-adjusted rate. Direct standardization weighs the age-specific rates for a given sex, race/ethnicity or geographic area by the age distribution of the standard population. The 2000 U.S. standard million population was used as the standard for all age-adjusted mortality rate calculations in this report.³

The formula to calculate age-adjusted mortality rates is:

$$\text{Age-Adjusted Rate} = \frac{\sum_{a=1}^n i_a P_a}{\sum_{a=1}^n P_a} \times 100,000$$

where i_a = the age-specific mortality rate for age group a
 P_a = the standard U.S. population in each age group a
 n^a = the number of age groups (16 five year age groups)

Infant mortality rate:

Infant mortality rates are calculated using the following formula:

$$(\text{Number of deaths in persons less than 1 year of age/Number of live births}) \times 1,000$$

Appendix B

ICD-10 Code Matrix for Mortality Data

Matrix of ICD-10 code groups by major disease category and specific codes for certain diseases

Major Disease Category	ICD-10	Cause of Death
Infectious	A00-B99	Infectious and parasitic disease
Cancer	C00-C97	Malignant neoplasms, including neoplasms of lymphatic and hematopoietic tissue
	C18-C21	Colorectal cancer
	C33-C34	Lung cancer
	C50	(Female) Breast cancer
	C61	Prostate cancer
	D00-D48	Benign neoplasms, carcinoma in situ, and neoplasms of uncertain behavior and of unspecified nature
Blood	D50-D89	Diseases of the blood and blood-forming organs
Endocrine	E00-E99	Endocrine, nutritional and metabolic diseases and immunity disorders
	E10-E14	Diabetes
	E40-E64	Nutritional deficiencies
Mental Disorders	F00-F99	Mental disorders
Nervous System	G00-G99	Diseases of the nervous system and sense organs
	G30	Alzheimers
Diseases of the Eye	H00-H59	Diseases of the eye
Diseases of the Ear	H60-H95	Diseases of the ear
Cardiovascular	I00-I99	Diseases of the circulatory system
	I00-I09, I11, I13 I20-I51	Diseases of the heart (Coronary Heart Disease)
	I11, I13	Hypertension with or without renal disease
	I60-I69	Cerebrovascular disease (Stroke)
	I70	Atherosclerosis
Respiratory	J00-J99	Diseases of the respiratory system
	J20-J21	Acute bronchitis and bronchiolitis
	J10-J18	Pneumonia and influenza
	J10-J11	Flu
	J12-J18	Pneumonia

Major Disease Category	ICD-10	Cause of Death
	J40-J47 J40-J42 J43	Chronic lower respiratory diseases Bronchitis, chronic Emphysema
	J45-J46	Asthma
Digestive	K00-K93	Diseases of the digestive system
	K70, K73-K74	Chronic liver disease and cirrhosis
Skin	L00-L99	Diseases of the skin and subcutaneous tissue
Musculoskeletal	M00-M99	Diseases of the musculoskeletal system and connective tissue
Genitourinary	N00-N99	Diseases of the genitourinary system
Pregnancy	O00-O99	Complications of pregnancy and childbirth
Perinatal	P00-P96	Certain conditions originating in the prenatal period
Congenital	Q00-Q99	Congenital anomalies
Ill Defined	R00-R99	Symptoms, signs, and ill-defined conditions
Injury	V01-X59	Injury and poisoning
		Unintentional
		Motor vehicle crashes
		Other land transport crashes
		Water, air and space and other unspecified transport
		Falls
		Unintentional discharge of firearms
		Unintentional drowning
		Unintentional exposure to smoke, fire and flames
		Unintentional poisoning
		Other unspecified non transport
		Intentional
		Suicide by discharge of firearm
		Suicide by other and unspecified means
		Assault by discharge of firearm
		Assault by other and unspecified means
		Legal intervention
		Discharge of firearms, undetermined intent
		Other and unspecified events of undetermined intent
		Operations of war and their sequelae
		Complications of surgical and medical procedures

Appendix C

Crude Mortality Rates by Jurisdiction

Crude mortality rates per 100,000 population for: all causes, cardiovascular disease (CVD), malignant cancers (cancer), respiratory diseases, by residence at time of death – Hamilton County, Ohio, 2002

Jurisdiction	Mortality Rates per 100,000			
	All causes	CVD	Cancer	Respiratory
Addyston	1089	*	*	*
Amberley Village	876	292	*	*
Anderson Twp.	839	303	157	87
Arlington Heights	*	*	*	*
Blue Ash	783	208	208	*
Cheviot	1021	277	277	122
Cincinnati	1017	364	207	94
Cleves	753	*	*	*
Colerain Twp.	816	289	241	81
Columbia Twp.	1104	520	260	*
Crosby Twp.	655	*	*	*
Deer Park	1622	451	318	*
Delhi Twp.	990	352	233	96
Elmwood Place	1268	597	*	*
Evendale	647	*	*	*
Fairfax	826	*	*	*
Forest Park	730	241	175	57
Glendale	1005	*	*	*
Golf Manor	975	*	325	*
Green Twp.	985	347	250	95
Greenhills	1219	366	341	*
Harrison	721	214	187	*
Harrison Twp.	763	241	341	*
Indian Hill	626	*	203	*
Lincoln Heights	1337	608	*	*
Lockland	944	459	*	*
Loveland	1015	397	188	*

Jurisdiction	Mortality Rates per 100,000			
	All causes	CVD	Cancer	Respiratory
Madeira	1222	448	291	*
Mariemont	1320	499	381	*
Miami Twp.	792	220	143	121
Milford	*	*	*	*
Montgomery	964	354	285	*
Mount Healthy	1161	350	294	168
Newtown	413	*	*	*
North Bend	1824	*	*	*
North College Hill	1329	417	317	159
Norwood	973	351	217	106
Reading	1151	390	283	*
Saint Bernard	955	345	284	*
Sharonville	1028	415	233	112
Silverton	1313	348	309	*
Springdale	1174	407	265	123
Springfield Twp.	1104	335	290	106
Sycamore Twp.	1337	457	264	213
Symmes Twp.	271	108	74	*
Terrace Park	924	*	*	*
Whitewater Twp.	953	252	198	180
Woodlawn	604	*	*	*
Wyoming	460	145	*	*
Percent of deaths uncoded to jurisdiction	2%	2%	2%	2%

*Rates from jurisdictions with less than 10 deaths are not stable and therefore are not presented.