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Davidson County Mortality Report

Data for 2011



Metro Public Health Dept
Nashville/Davidson County
Promoting and Protecting Health

Suggested Citation

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What you will find in this report:

- ▶ Number of Deaths by Sex, Race/Ethnicity, and Age
- ▶ Crude Death Rates by Sex, Race/Ethnicity, and Age
- ▶ Infant Mortality
- ▶ Leading Causes of Death
- ▶ Years of Potential Life Lost
- ▶ Comparison to National Objectives
- ▶ Spotlight on Alzheimer's Disease

Executive Summary

- ▶ 4,826 Davidson County, TN residents died in 2011.
- ▶ 72.8% of deaths were among non-Hispanic whites and 0.8% were among Hispanics when racial/ethnic identity could be determined.
- ▶ 72 infants died in 2011 producing an infant mortality rate of 7.5 per 1,000 live births.
- ▶ The age-adjusted death rate from all causes was 829 per 100,000.
- ▶ The highest death rate was among non-Hispanic black men, who experienced an age-adjusted death rate of 1,212.2 per 100,000.
- ▶ Cancer (n=1,115) and heart disease (n=1,088) were the most common causes of death in 2011. These two causes accounted for 45.6% of all the deaths in Davidson County.
- ▶ The Healthy People 2020 objective for the leading causes of death in Davidson County was only met for diabetes.
- ▶ The top ten leading causes of death accounted for 32,952 years of potential life lost by Davidson County residents. Chronic Liver Disease & Cirrhosis and Influenza & Pneumonia tied for 10th place when ranked by frequency.
- ▶ The young age distribution of the local Hispanic population accounts for differing leading causes of death in this group, and is why Hispanics were not included in the special section focusing on Alzheimer's disease at the end of this report.
- ▶ An average of 157.8 Davidson County residents die from Alzheimer's disease annually over the past 10-year period.
- ▶ The age-adjusted mortality rate from Alzheimer's disease increased 16% from 2002 to 2011.
- ▶ In Davidson County, between 2002 and 2008, females experience a higher age-adjusted mortality rate for Alzheimer's disease than men. Since 2009, this has been reversed.
- ▶ The Alzheimer's age-adjusted mortality rates have increased since 2002 among all racial/ethnic and sex groups. This increase was most dramatic among non-Hispanic black males who experienced a 148.2% rate increase.

Number of Deaths by Sex, Race/Ethnicity, and Age

In 2011, 4,826 Davidson County residents died. Slightly fewer females died (n=2,399, 49.7%) than males (n=2,427, 50.3%). The gender distribution of 2011 deaths closely parallels the population estimates provided by the 2011 American Community Survey 1-Year Estimate. During 2011, the gender distribution of county residents was 48.4% male and 51.6% female.

By race/ethnicity, non-Hispanic whites accounted for 72.8% of the deaths, non-Hispanic blacks represented 25.3%, while Hispanics represented 0.8%. The remaining 1.1% of deaths represented other racial/ethnic minorities or did not have this information recorded. The population distribution by race/ethnicity was reported to be 57.3% non-Hispanic white, 27.6% non-Hispanic black, and 9.9% Hispanic. The number of deaths among non-Hispanic blacks is close to what would be expected while that among non-Hispanic whites is much higher and the corresponding number for Hispanics is considerably lower than might be anticipated. Deaths among people aged 65 and older (n=3,158) accounted for 65.4% of all resident deaths in 2011. There were 72 infant (less than 1 year old) deaths in 2011, accounting for 1.5% of all deaths.

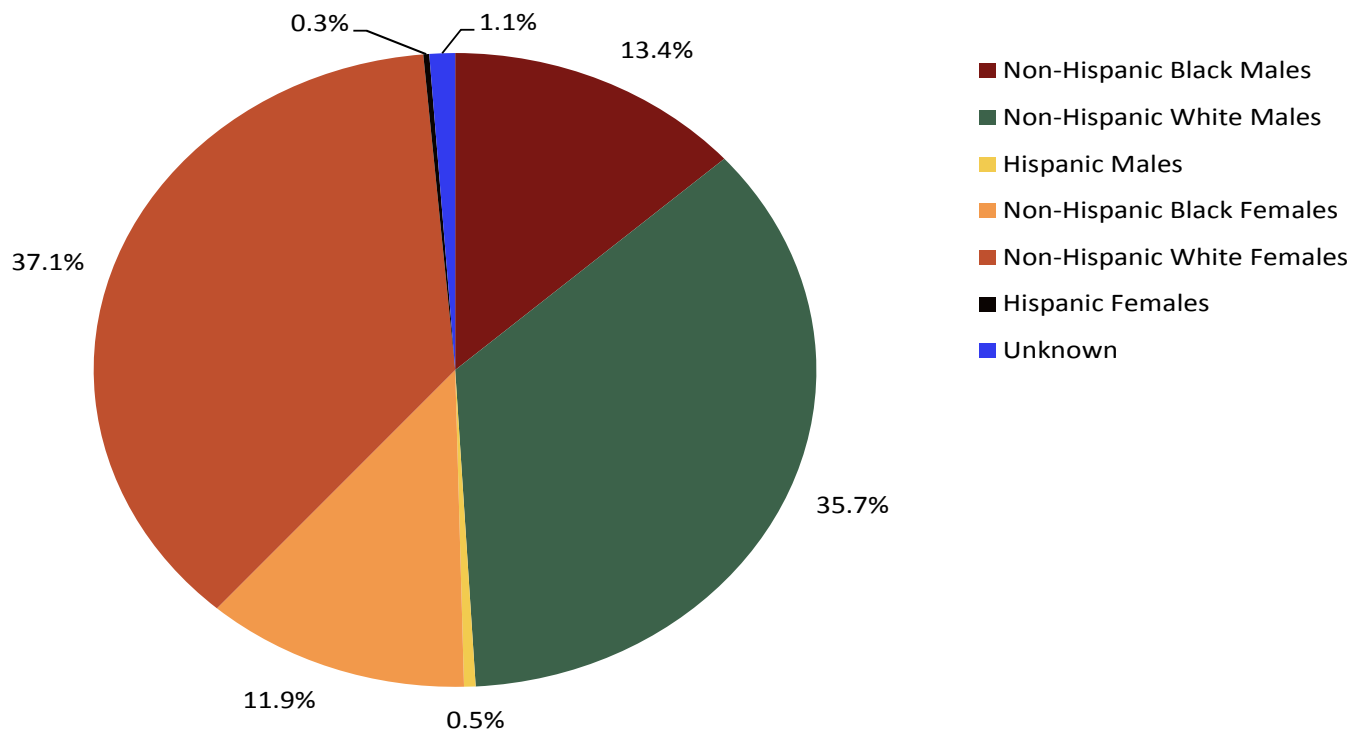


Figure 1. Percent of Deaths by Sex and Race/Ethnicity Davidson County, TN, 2011

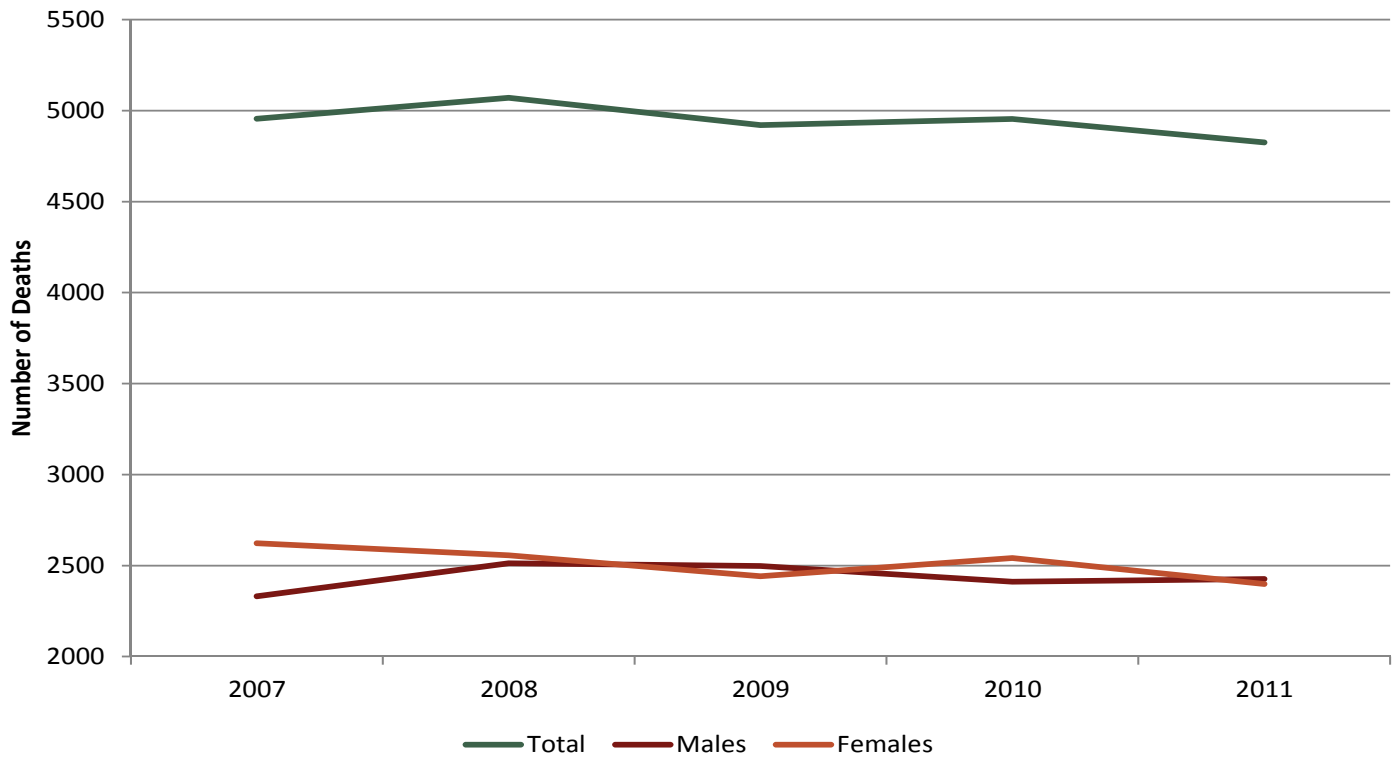


Figure 2. Number of Deaths by Sex, Davidson County, TN, 2007–2011

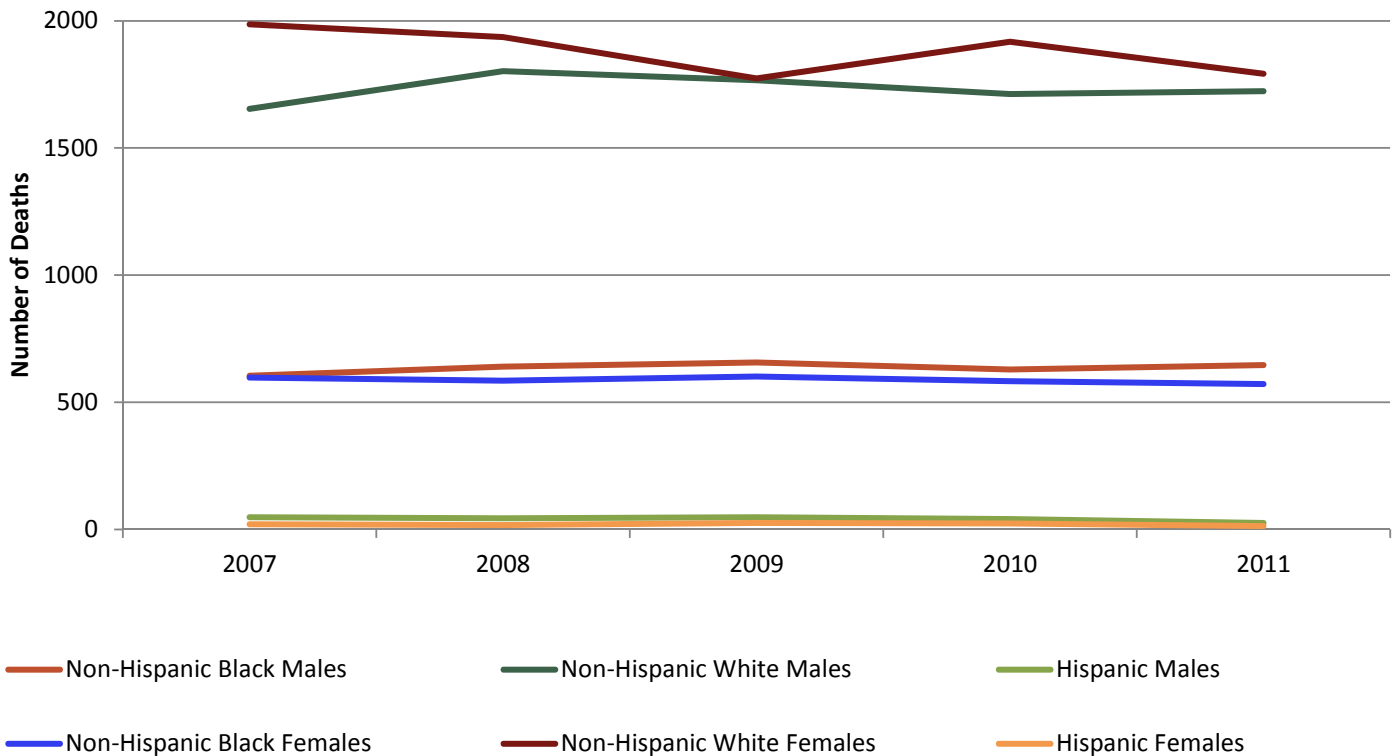


Figure 3. Number of Deaths by Race/Ethnicity and Sex, Davidson County, TN, 2007-2011

Crude Death Rates by Sex, Race/Ethnicity, and Age

Crude death rates are the mortality rates from all causes of death for a population. They are calculated as the number of deaths in a population in a given time period per 100,000 people. The overall crude death rate in Davidson County for 2011 was 759.4 per 100,000 population. The crude death rate for males (788.7 per 100,000) was higher than for females (732 per 100,000). The crude death rates for non-Hispanic whites, non-Hispanic blacks, and Hispanics were 966.1, 693.3, and 60.4 per 100,000 respectively.

The crude death rate by gender and race/ethnicity was highest among non-Hispanic white males at 980.2 per 100,000 followed by non-Hispanic white females at 952.8 per 100,000 and non-Hispanic black males at 792.7 per 100,000.

Seven racial/ethnic/sex/age groups experienced no deaths in 2011: Hispanic females ages 1–4, 5-14 and 15-24; Hispanic males ages 5-14 and 85+; non-Hispanic white females 1-4; and non-Hispanic white males ages 1-4.

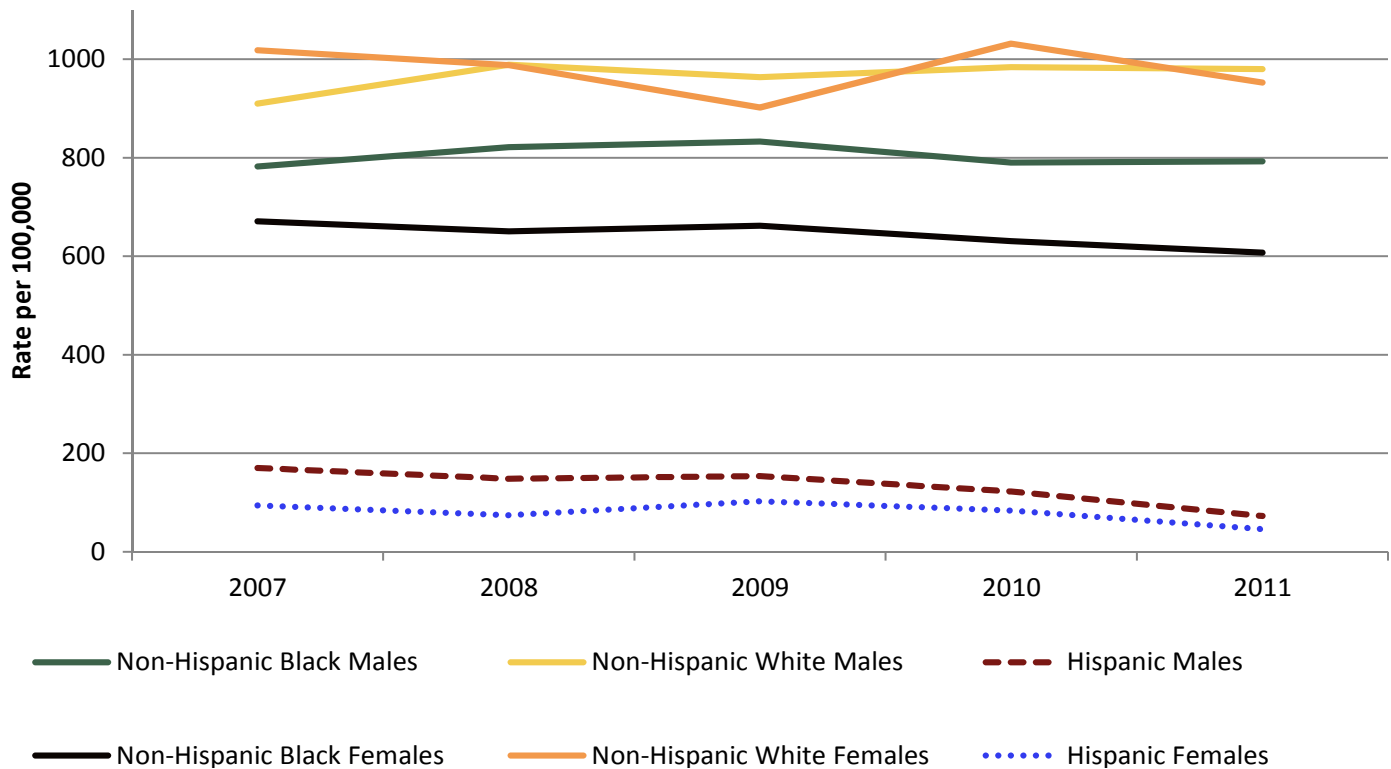


Figure 4. Crude Death Rates per 100,000 by Sex, Race/Ethnicity, Davidson County, TN, 2007–2011

Infant Mortality

In 2011, 72 infants died before reaching their first birthday. This produced an infant mortality rate of 7.5 per 1,000 live births. Over half of the infants who died (n=37, 51.4%) were non-Hispanic blacks, 36.1% (n=26) were non-Hispanic whites, and 6.9% (n=5) were Hispanic. Compared to 2008, when the infant mortality rate was 6.7 per 1,000 live births, the 2011 rate reflects an 11.9% increase even with the most recent downturn from 6.0 to 5.4 per 1,000 among non-Hispanic whites. This means that the still elevated rate among non-Hispanic blacks is driving the overall rate regardless of the minimal decreased experience each year among this group since 2009.

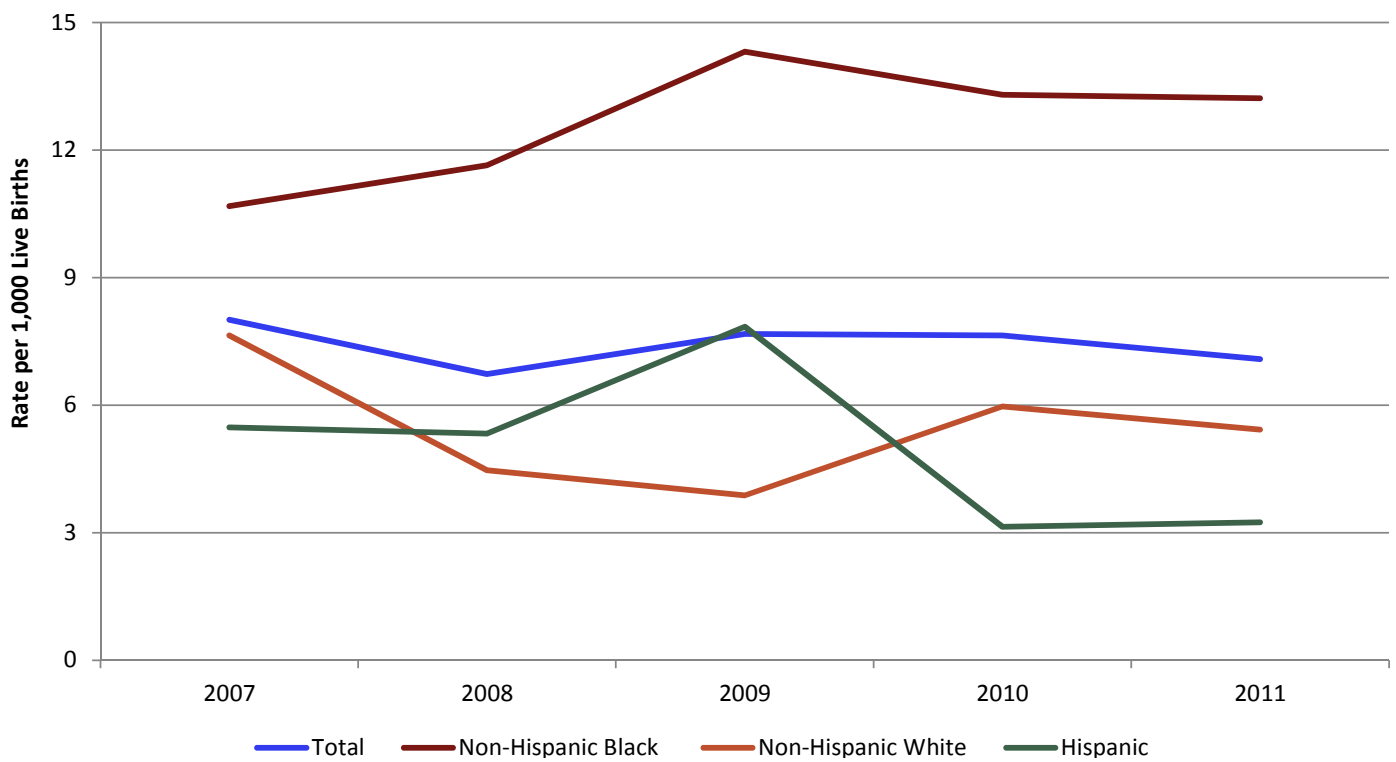


Figure 5. Infant Mortality Rate (per 1,000 Live Births) by Race/Ethnicity, Davidson County, TN, 2007–2011

Leading Causes of Death

Age-adjustment of mortality rates use a statistical computation that allows for comparison of groups of people with different age distributions, or between causes of death that vary in frequency by age. It does not represent the actual number of deaths in that group.

Years of Potential Life Lost (YPLL) are presented as the sum of the difference between each person's age at death and age 75. For example, if someone died of cancer at age 55, he/she would contribute 20 YPLL to the county total for that condition. Table 1 shows the ten leading causes of death in Davidson County in order of frequency. The rates presented are age-adjusted rates per 100,000 population. The ten leading causes of death accounted for 32,952 years of potential life lost. The most years of potential life lost were a result of cancer, followed by heart disease, accidents, and suicide.

Table 1. Leading Causes of Death Ranked by Frequency with the Corresponding Age-Adjusted Mortality Rates and Years of Potential Life Lost, Davidson County, TN 2011

Disease	Number	Rate	YPLL
Cancer	1115	190.8	9941.5
Heart Disease	1088	187.6	7385.0
Accidents	302	49.1	6864.0
Chronic Lower Respiratory Disease	301	54.2	1665.0
Stroke	213	38.2	1175.0
Diabetes	154	26.2	1622.5
Alzheimer's Disease	149	27.5	70.5
Suicide	74	11.4	2064.0
Nephritis, Nephrotic Syndrome & Nephrosis	72	12.5	581.5
Chronic Liver Disease and Cirrhosis	68	10.7	1205.5
Influenza and Pneumonia	68	12	377.5

Not surprisingly, the leading causes of death differ by age.

- ▶ Two causes of death account for nearly two-thirds of infant deaths: perinatal conditions (n=28) and birth defects (n=18).
- ▶ Only seven deaths occurred among children 1–4 years old with the causes evenly distributed among accidents, birth defects, and heart disease.
- ▶ Nine deaths occurred among those 5–14 years old with four being attributed to accidents and two to cancer.
- ▶ Among those 15-24 years old, the leading causes were homicide (n=20), accidents (n=16), and suicide (n=7).
- ▶ In the 25–44 year old age group, the leading causes of death were accidents (n=79), heart disease (n=40), cancer (n=32), suicide (n=26), and homicide (n=16). These five causes accounted for 68.7% of the deaths in this age group.

- ▶ Among residents 45–64 years old, three causes of death accounted for over half of the deaths for this group. The leading causes were cancers (n=331), heart disease (n=250), and accidents (n=90).
- ▶ In persons 65 years old and older, heart disease and cancers were the most common causes of death, followed by chronic lower respiratory disease and stroke.

Based on age-adjusted rates by race/ethnicity, heart disease, cancer, and diabetes were reported as the top three causes of death among non-Hispanic blacks. Cancer, heart disease, and chronic lower respiratory disease were the leading causes among non-Hispanic whites. Among Hispanics, cancer, stroke, and heart disease claimed the top spots as the leading causes of death. The leading causes of death among males in 2011 were heart disease, cancer, and accidents. Among females, the leading causes were cancer, heart disease, and chronic lower respiratory disease.

In the table below, one can see that heart disease or cancer claimed the top spot within five racial/ethnic and sex categories, with the one exception being Hispanic females, where cancer and stroke claimed the top spots based on age-adjusted rates. According to the 2011 American Community Survey 1-Year Estimates, the median age of all Davidson County residents was 37.3 years. By race and ethnicity, the same survey found the median age of non-Hispanic whites to be 40, non-Hispanic blacks to be 32.7, and the median age of Hispanic residents of Davidson County to be 27.5. The impact of the younger age distribution of the local Hispanic population is seen where rates were not available for diseases and conditions associated with older people such as Alzheimer's disease.

It is worth noting that in 2011, four deaths were attributed to nutritional deficiencies. These deaths are difficult to accept in a community where there is enough nutrient rich food to feed everyone adequately. Pairing these deaths with the nationwide rise in obesity, these events further illustrate the resource divide among various segments of the community.

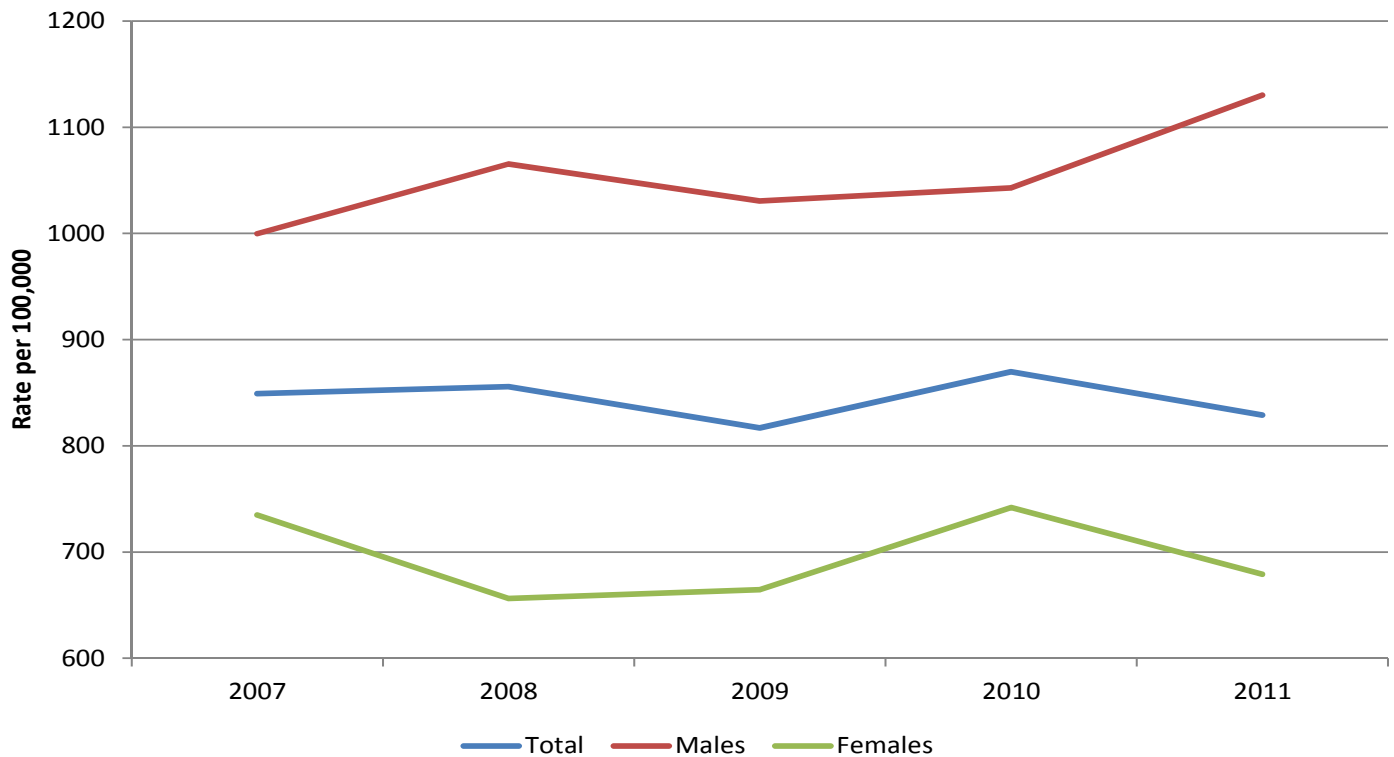


Figure 6. All Cause Age-Adjusted Mortality Rates per 100,000 by Sex, Davidson County, TN, 2007–2011

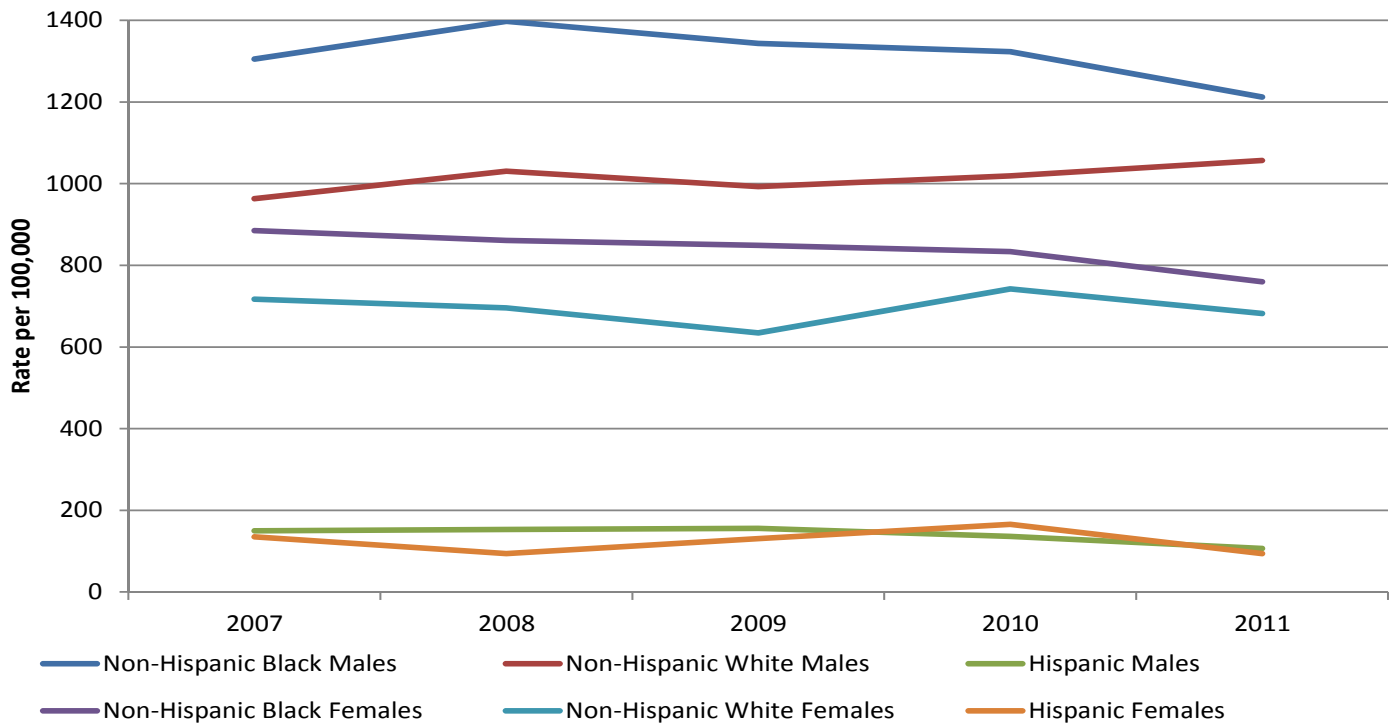


Figure 7. All Cause Age-Adjusted Mortality Rates per 100,000 by Race/Ethnicity and Sex, Davidson County, TN, 2007–2011

Table 2. Age-Adjusted Mortality Rates for 10 Overall Leading Causes of Death Ranked by Frequency for Racial/Ethnic and Sex Groups, Davidson County, TN 2011

Disease/Condition	Race/Ethnicity			Gender		
	NHW	NHB	Hispanic	Female	Males	
Cancer	182.6	238.8	69.1	154.3	257.6	
Heart Disease	177.3	256.2	29	147.8	272.7	
Accidents	54.7	42.3	11.1	37.3	66	
Chronic Lower Respiratory Disease	62	32	12	48.3	62.5	
Stroke	34.9	48.5	32	37.1	43.4	
Diabetes	20.7	52.8	2.8	20.6	35	
Alzheimer's Disease	27.5	31.5	--	27.9	31.1	
Suicide	16.4	3.6	--	5.9	18.3	
Nephritis, Nephrotic Syndrome & Nephrosis	9.3	25.4	--	8.5	22.6	
Chronic Liver Disease and Cirrhosis	12.7	7.3	--	7.2	14.8	
Influenza and Pneumonia	12.1	10.4	16.3	9.6	20.4	
	Race/Ethnicity and Gender					
Disease/Condition	NHWM	NHWF	NHBM	NHBF	HM	HF
Cancer	239.7	147.6	310.4	185.1	31.8	37.3
Heart Disease	243.9	142.1	306.9	194	25.3	3.7
Accidents	68.8	44.2	58.1	25.5	9.5	1.6
Chronic Lower Respiratory Disease	70.1	55.2	30	31.4	12	--
Stroke	36.2	35.1	57.8	41.2	--	32
Diabetes	29.4	15.2	51.7	47.2	2.8	--
Alzheimer's Disease	24.2	30.5	47.9	21.4	--	--
Suicide	26.2	8.1	4.5	3.1	--	--
Nephritis, Nephrotic Syndrome & Nephrosis	18.2	4.9	34.1	20.2	--	--
Chronic Liver Disease and Cirrhosis	17.4	8.3	10.7	4.7	--	--
Influenza and Pneumonia	18.5	10.2	14.4	7.6	--	16.3

Years of Potential Life Lost

Previously, it was stated that a total of 32,952 years of potential life were lost due to the 10 overall leading causes of death. For all causes of death, there were a total of 48,465.5 years of potential life lost. That is the equivalent of losing the lifelong contributions of over 646 people who would have lived 75 years each. The table below lists the top five contributors of YPLL for each racial/ethnic/sex group.

Table 3. Top Contributors to Years of Potential Life Lost by Racial/Ethnic and Sex Groups, Davidson County, TN 2011

Non-Hispanic Black	Non-Hispanic White	Hispanic
Cancer	Heart Disease	Cancer
Heart Disease	Cancer	Accidents
Accidents	Chronic Lower Respiratory Disease	Homicide
Diabetes	Accidents	Stroke
Stroke	Stroke	Heart Disease
Male	Female	
Cancer	Heart Disease	
Heart Disease	Cancer	
Accidents	Chronic Lower Respiratory Disease	
Chronic Lower Respiratory Disease	Stroke	
Diabetes	Accidents	
NHWM	NHWF	Due to small numbers, more detailed analysis cannot be performed for Hispanic residents at this time.
Cancer	Heart Disease	
Heart Disease	Cancer	
Chronic Lower Respiratory Disease	Chronic Lower Respiratory Disease	
Accidents	Accidents	
Stroke	Stroke	
NHBM	NHBF	
Cancer	Cancer	
Heart Disease	Heart Disease	
Accidents	Diabetes	
Homicide	Stroke	
Stroke	Chronic Lower Respiratory Disease	
HM	HF	
Accidents	Stroke	
Cancer	Cancer	
Homicide		
Heart Disease		

Comparison to National Objectives

Healthy People 2020 is a list of national health objectives that are used as targets that health jurisdictions seek to achieve. Six of the top ten leading causes of death in Davidson County had a corresponding objective. The table below presents the national objective, the Davidson County status in 2011, and the percent difference. Davidson County had only achieved the national objective for diabetes. The largest difference was seen in heart disease, which was 86.1% higher than the 2020 objective.

Table 4. Percent Difference in Age-Adjusted Mortality Rates for Leading Causes of Death and Infant Mortality in Davidson County, TN in 2011 Compared to the Health People 2020 Objectives

Disease/Condition	Healthy People 2020	Davidson County Rate	% Difference
Cancer	160.6	190.8	18.8
Heart Disease	100.8	187.6	86.1
Accidents	36	49.1	36.4
Chronic Lower Respiratory Disease		54.2	
Stroke	33.8	38.2	13
Diabetes	65.8	26.2	-60.2
Alzheimer's		37.5	
Suicide		11.4	
Nephritis, Nephrotic Syndrome & Nephrosis		12.5	
Chronic Liver Disease and Cirrhosis	8.2	10.7	30.5
Influenza and Pneumonia		12	
Infant Mortality	6	7.5	25

Spotlight on Alzheimer's Disease

Beginning with the previous edition of the annual mortality report for Davidson County, TN, we began highlighting a specific cause of death that impacts local residents. Last year the focus was on heart disease. This year, we have chosen to focus on a disease that, while far less common, has a far-reaching impact not only to its direct victims, but also to the families and caregivers that often must accompany patients on this journey for many difficult years. This year our focus is on Alzheimer's disease.

Currently, over 5 million people are living with Alzheimer's disease in the U.S. In 2010, 83,494 Americans died of Alzheimer's disease making it the sixth leading cause of death. It is estimated that in 2013 approximately \$203 billion were spent in the U.S. for Alzheimer's disease care (\$142 billion from Medicare and Medicaid). It is estimated that in 2012, 15.4 million non-professional caregivers provided 17.5 billion hours of care to patients that would be valued at approximately \$216.4 billion. While the number of deaths due to heart disease, stroke, HIV, prostate cancer, and breast cancer all declined from 2000 to 2010, the number of Alzheimer's deaths increased 68% during this period.¹

Tennessee had the 5th highest rate of death from Alzheimer's disease in the U.S. in 2010 when 2,440 residents died because of this disease. This represents a 138% increase in Alzheimer's deaths in Tennessee since 2000.² During the previous 10 years in Davidson County (2002-2011), an average of 157.8 cases of Alzheimer's deaths occurred each year.

In Davidson County, from 2002 until 2011, the age-adjusted mortality rate for Alzheimer's disease has increased 16% (2002: 23.7 and 2011: 27.5). While this time period has resulted in an overall increase, the annual rate of Alzheimer's deaths has fluctuated from a low of 23.7 in 2002 to a high of 34.6 in 2008. This general overall increasing trend reflects what has been observed and what is forecast nationally. Compared to 2000, it is anticipated that the number of Alzheimer's patients will increase 40% by 2025.² Along with this increase in cases will come increased demands for care and services and their associated costs, which are expected to reach \$1.2 trillion by mid-century.²

Within our community, Alzheimer's disease death rates have shifted from being higher among females in 2002-2008 to being higher in males from 2009 until 2011. However, over the 10 years covered by this report, both males and females have seen an increase in their rates by 40.1% and 13% respectively.

1. Alzheimer's Association (2013). 2013 Alzheimer's Disease Facts and Figures. Last accessed at http://www.alz.org/alzheimers_disease_facts_and_figures.asp on February 13, 2014.

2. Alzheimer's Association (2013). Tennessee Alzheimer's Statistics. Last accessed at http://www.alz.org/documents_custom/facts_2013/alz_f-fstatesheets-43.pdf?type=interior_map&facts=undefined&facts=facts on February 13, 2014.

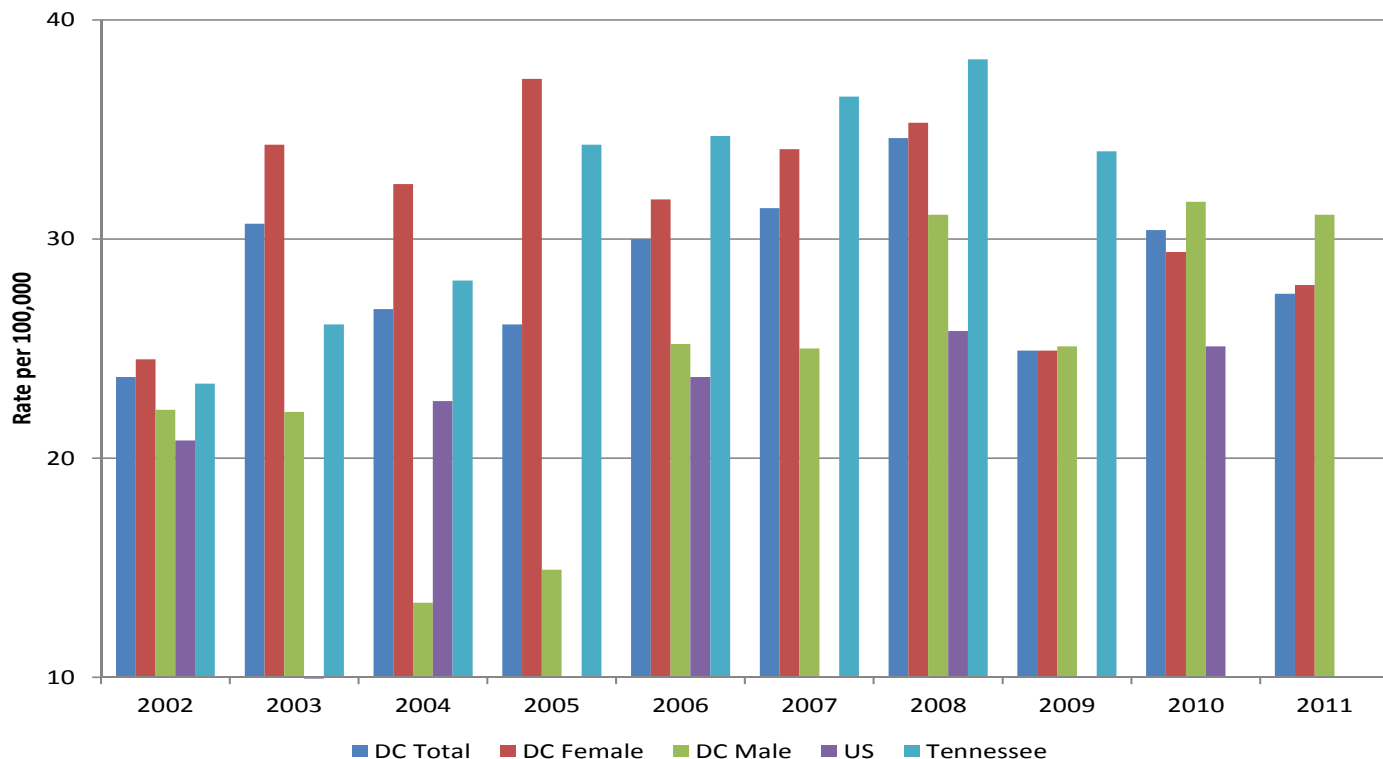


Figure 8. Alzheimer’s Disease Mortality Rates per 100,000 by Sex, Davidson County, TN, 2002–2011

Locally, our investigation into Alzheimer’s disease has been limited to non-Hispanic blacks and non-Hispanic whites as most often over the past 10 years, they have accounted for all the cases with only minor exceptions. During this period, it is difficult to say that Alzheimer’s has affected one racial group more than others as the racial group with the highest rate frequently changed from year to year. Non-Hispanic blacks experienced age-adjusted mortality rates due to Alzheimer’s disease between 16.9 and 45.2 per 100,000 compared to the non-Hispanic white population where rates ranged from 24.8 to 43.5 during the same period.

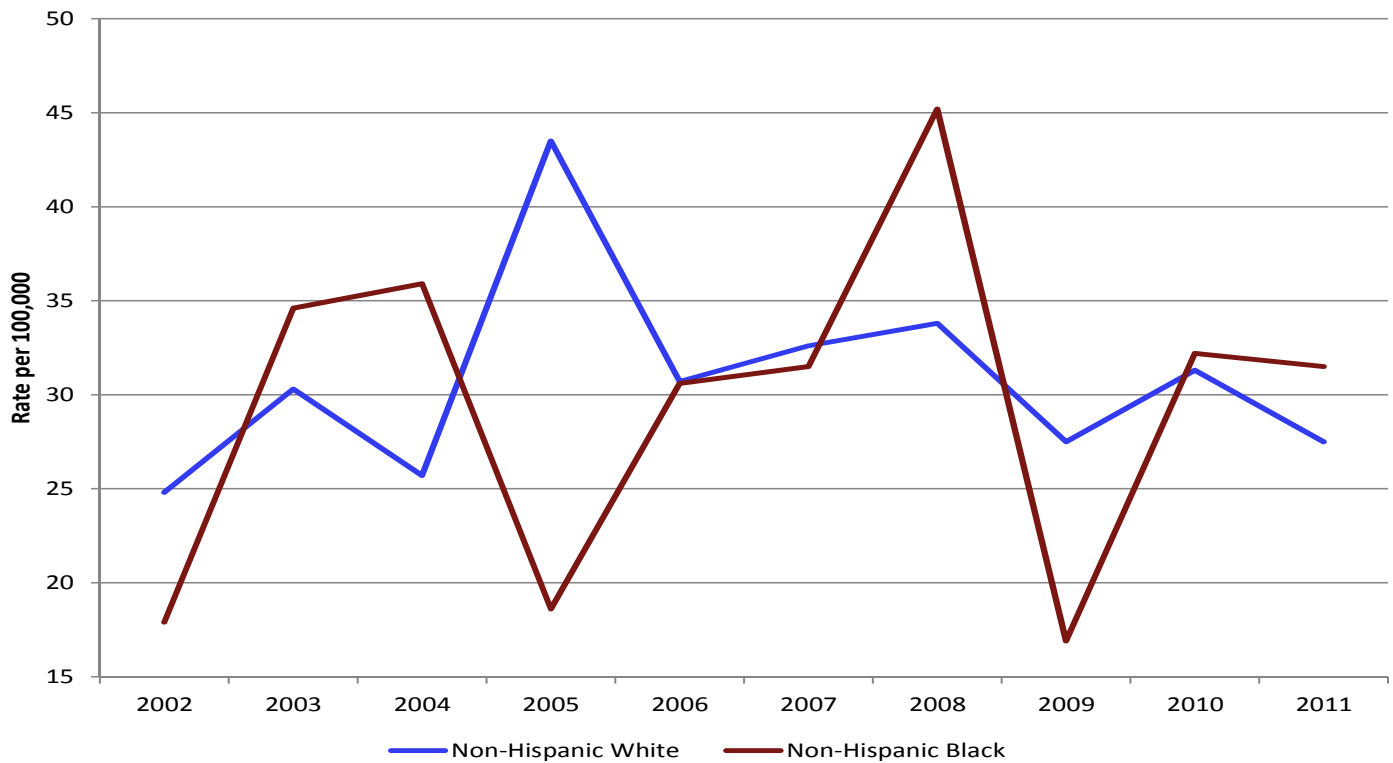


Figure 9. Alzheimer's Disease Mortality Rates per 100,000 by Race/Ethnicity, Davidson County, TN, 2000–2010

Finally, non-Hispanic white males most often have the lowest Alzheimer's disease age-adjusted mortality rate followed by non-Hispanic black females. The greatest increase from 2002 to 2011 was among non-Hispanic black males, from 19.3 per 100,000 to 47.9, an increase of 148.2%. Other sex/race/ethnicity groups also saw increases during this period: non-Hispanic white males 7.1%, non-Hispanic white females 18.2%, and non-Hispanic black females 22.3%.

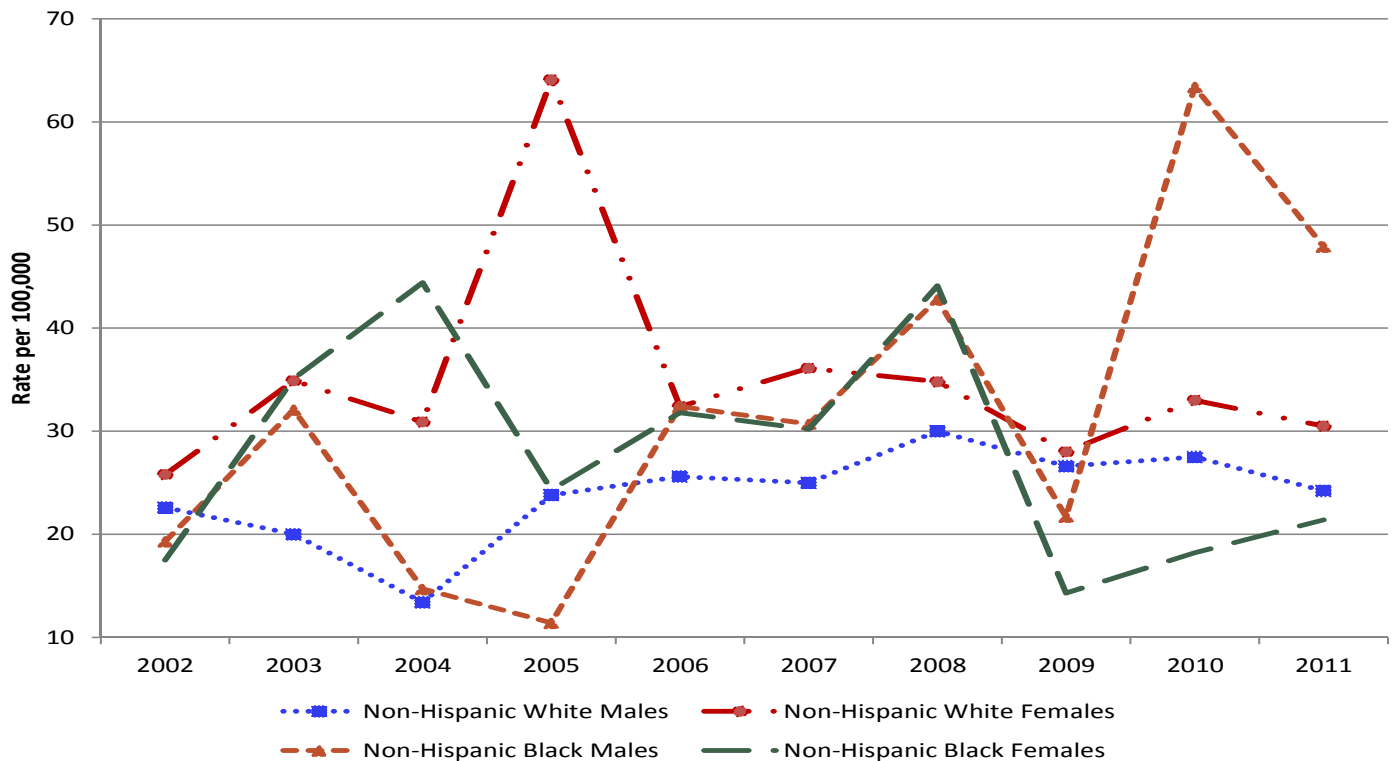


Figure 10. Alzheimer's Disease Mortality Rates per 100,000 by Race/Ethnicity, and Sex Davidson County, TN, 2000–2010

