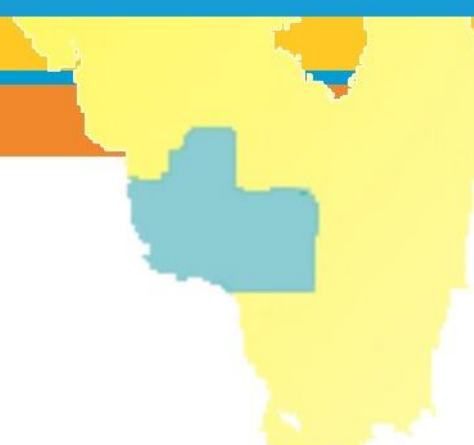




Collier County

# COMMUNITY *Health* STATUS

2016



## COMPREHENSIVE REPORT

Prepared by

**Florida Department of Health – Collier County**

on behalf of Collier County Residents and Health Care Providers

# Executive Summary

## Overview

In the past two decades, Collier County has experienced tremendous growth and change in terms of population dynamics and demographics, socio-economic transitions and in patterns of the health of the community. Various characteristics of the population of Collier County correlate with select health status factors and outcomes which drive the quality of life throughout the county.

Between 1995 and 2015, the resident population of Collier County grew at a swift pace of 2.8 percent per year compared with Florida at 1.6 percent and the United States at 1.0 percent during the same period. This tremendous rate of population increase generated unprecedented economic growth and development throughout the county particularly between 1995 and 2007. Real median household income grew until 2007 after which the great recession was accompanied by rising unemployment and limited investment which placed a significant burden on the social safety net of the county. Ethnic and socioeconomic transition has created a shift in a number of public health indicators at the county level. The latest census bureau data available indicate that in 2014, 53 percent of Collier County residents spoke a language other than English in the home. This is directly correlated with the growth of the Hispanic population. The number of children living in poverty in Collier County increased by 27.3 percent over the past decade.

The demographic dynamics of Collier County are being driven by the aging of the “Baby Boomer” cohort which began to turn 65 years of age during 2011. As this older population increases to an estimated 145,000 by the year 2040, other concurrent factors will affect the health and well-being of this cohort. Increased levels of life expectancy will translate into an increment in the necessity for increased geriatric health care service resources and availability. An increase in the demand for Assisted Living and Skilled Nursing beds is projected in the immediate future due to both increases in longevity and the projected number of Alzheimer’s disease cases.

## Communicable and Infectious Diseases

Between the years 2005 and 2014, the incidence of all communicable diseases increased by 5.5 percent in the county. Chlamydia is the leading communicable disease in Collier County accounting for 58.1 percent of all reported infectious diseases in the county in 2014. Two of the five leading communicable diseases in Collier County are enteric or gastrointestinal related. During 2014, salmonella and campylobacter accounted for 13.3 percent of all reported infectious diseases in the county.

Animal bites from potentially rabid animals have been increasing exponentially in Collier County during the past ten years. Between 2005 and 2014, potential rabies exposures increased by over 97 percent. The prevention of human rabies in Collier County has always been a public health priority due to the high risk wild life species encountered naturally in the environment and the rapid land growth and development over the past two decades.

Tuberculosis, once considered to have been virtually eliminated from the United States, continues to be present in Collier County at a greater than average rate. In Florida and Collier County, medically underserved low income populations tend to have a high rate of tuberculosis exposure and infection. These vulnerable population groups disproportionately represent the majority of tuberculosis cases in the county. The risk of mosquito-borne encephalitis, including West Nile virus, dengue and malaria, remain an ever present underlying risk in Collier County due to the unique climate and weather conditions particularly during the rainy season. Once confined in this hemisphere to the Caribbean and Central and South America, dengue has emerged in recent years in the Keys of Monroe County, only a few hours away via highway and is an emerging threat to Collier County.

# Executive Summary

## Health Behaviors and Outcomes

The two most prevalent unhealthy behaviors or lifestyle related habits in Collier County are tobacco use and overweight and obesity. These two behaviors account for approximately 35 percent of all premature and preventable deaths in the county. While Collier County is healthier than the state of Florida with regard to overweight and obesity levels, these conditions account for 17 percent of all deaths annually in the county or about 1 out of every 6 deaths.

In 2013, 20.8 percent of Collier County adults indicated they were obese; this was almost 6 percentage points less than the proportion in Florida. Educational attainment is a protective factor against obesity in Collier County, with only 15.3 percent of adults with a four year college degree or beyond classified as obese compared with 27.6 percent with only a high school degree.

Cigarette smoking is the leading cause of preventable mortality in Collier County, followed by obesity. Approximately 1 out of every 5 deaths in the county can be attributed to smoking. Cigarette smoking has been scientifically associated as a cause in a myriad of diseases including numerous types of cancer, heart diseases and stroke, respiratory diseases and unfavorable maternal outcomes. In Collier County, 13.9 percent of the adult population identified themselves as current smokers.

A strong statistical association exists between alcohol consumption and alcohol impaired driving. Alcohol related motor vehicle collisions and fatalities constitute a significant proportion of alcohol related deaths. On average, in Collier County 54 residents are killed annually in motor vehicle crashes with approximately 25 percent attributed to alcohol use.

The proportion of Collier County adult residents who engaged in heavy or binge drinking was 18.1 percent in 2013. Males in the county engaged in heavy or binge drinking at a much greater rate than females, 22 percent and 14.5 percent, respectively. Overall, Collier County residents are more likely than Florida residents to engage in heavy or binge drinking, 18.1 percent compared with 17.6 percent. Collier County does have a greater proportion of the population 65 years and older engaged in heavy or binge drinking than Florida, 9.8 percent compared to 7.2 percent, respectively. It is important to note that the community recognizes the high percentage of drinking and auto accidents associated with the older population in the county.

Although substance abuse rates have declined among adolescents in Collier County, it is a burden on public health with severe consequences such as increased health care expenditures, accidents and crime. The community has identified substance abuse as an issue that needs a comprehensive plan. While treatment facilities for substance abuse exist, there is a shortage of affordable long-term rehab centers which can fully treat the problem.

# Executive Summary

## Chronic Disease and Mortality

The leading cause of deaths in Collier County is cancer, which accounted for 25.5 percent of all mortality in 2014. Collier County has seen a substantial decline in this mortality rate since 2005. Diabetes is the 7th leading cause of death in Collier County. The most significant risk factor for the development of diabetes is obesity and overweight. Diabetes is also a significant cause of heart disease and stroke and the leading cause of kidney failure. Obesity, as it relates to chronic diseases, has been identified by community health care leaders and the general public as a key focus area for improvement within the county. Additionally, although during the local public health system assessment, education and empowerment related to prevention strategies was identified as a strength of the system, it was also noted that more substantial partnerships need to be created in order to address issues such as chronic diseases and particularly to address obesity. Community members emphasized the prevalence of unhealthy food options and limited healthy choices at restaurants as well as the need to provide proper nutritional education.

In 2014, the 10 leading causes of death in Collier County by rank order were: cancer, heart disease, Alzheimer's disease, unintentional injuries, chronic lower respiratory disease, cerebrovascular disease, diabetes mellitus, chronic liver disease and cirrhosis, Parkinson's disease and suicide. These 10 leading causes accounted for 77 percent of all deaths occurring in the county. It should be emphasized the 10 leading causes of death do not all necessarily coincide with the causes of major public health importance. Premature and preventable causes of death within a community tend to become public health priorities since these causes or conditions affect the health status of the total population, and a reduction in morbidity and mortality levels increases life expectancy and the quality of life at the county level.

## Preventable Mortality

The actual causes of death are major external and modifiable influences and factors that contribute to specific causes of death in our communities and its populations. These lifestyle and behavioral factors are correlated and associated with a plurality, if not a majority, of all deaths. Almost one half of all deaths in Collier County are potentially preventable, based on the premise that major actual cause of mortality can be modified through education and access to care.

Tobacco use is the leading cause of preventable mortality followed by overweight and obesity resulting from physical inactivity and poor dietary habits. Together, these two actual causes were responsible for 72 percent of all preventable causes of death in Collier County in 2014. Health education initiatives and other public health targeted programs are focused to assist in reducing the influence of these actual preventable causes of death.

# Executive Summary

## Injuries

Injuries remain a leading cause of death for residents of all ages in Collier County. Males experienced significantly higher mortality rates from injuries than females in any age group. From 2005 to 2014, the major cause of injury deaths have varied by age in Collier County: motor vehicle fatalities between 15 to 34 years of age and 85 years of age and older, falls among the older population 75 years of age and older, unintentional poisonings between the ages of 25 to 54 years and drowning particularly in the 1 to 4 year childhood ages.

## Maternal and Infant Health

Maternal and infant health is the foundation for a vibrant and prosperous society. The infant mortality rate for Collier County declined to a new low of 4.6 infant deaths per 1,000 live births in 2014. The Hispanic infant mortality rate in the county (4.0 per 1,000 live births) was 20 percent lower than the non-Hispanic rate (5.0 per 1,000 live births). Pregnant women in Collier County continue to improve upon their health behaviors by decreasing their reliance on alcohol and tobacco use. Collier County lags behind the state of Florida for all three indicators related to adequate prenatal care: births with first trimester prenatal care, birth with late or no prenatal care and births with adequate prenatal care. Community focus groups have pointed the need for a good support system for receiving obstetrical care.

## Health of the Older Population

During 2015, within Collier County over 12,000 residents 65 years of age and older had Alzheimer's disease; by 2030 using conservative population estimates, over 18,600 residents will be diagnosed with the disease. Not surprisingly, community members identified the need for more nursing home beds within the county and specifically indicated facilities that accept lower income residents were needed. The increased need for expanding memory care facilities was identified as the population 65 years of age and over continues to grow at historically high rates. The community perceived that the current market is catering to higher end assisted living facilities despite the increasing need for affordable long-term care and skilled nursing facilities.

## Oral Health

Oral health is central to a person's overall health, well-being and quality of life. Between 2002 and 2013, the number of licensed dentists increased by 59.5 percent in Collier County. The majority of the dental care in the county is provided by dentists in private practice. Persons without private insurance receive care at the Florida Department of Health in Collier County, federally qualified health centers and the Naples Children and Education Foundation Dental Center, along with limited services at the Senior Friendship Center and the Neighborhood Clinic. The only dental care option for many low income people, particularly adults, who lack access to preventative dental services is the hospital emergency room. Collier County residents with higher income and higher education are more likely to visit a dentist or dental clinic than persons with lower income and education. The availability of dental health services for children was identified by the community as a concern.

# Executive Summary

## Access to Health Care

Private health insurance coverage is an integral mainstay for access to healthcare services for the core working population 18-64 years of age and vital to the personal well-being and health of individuals. In Collier County as throughout the country, rates of health insurance coverage have been declining over the past two decades. This downward movement in health insurance coverage beginning in 2006 was exacerbated by the recession, which pushed the uninsured population to historical heights as unemployment spiraled upwards. With the recent changes involving the enactment of the new national healthcare law, the uninsured rate in Collier County and in Florida appear to have been reversed. In 2014, 18.7 percent of the total resident population of Collier County was uninsured compared with 23.2 percent in 2010. Of the core working population 18 to 64 years of age in Collier County, 30.7 percent were without health insurance compared with 35.9 percent in 2010, a difference of 5.2 percent. When accounting for race and ethnicity, Hispanics in Collier County are more likely to be uninsured than non-Hispanic whites and blacks. Health insurance coverage rates in Collier County and Florida are highly correlated with the education attainment and income level. As the education level and income level increases, the percentage of the uninsured population decreases—a classic inverse correlation. The association being that within the core working population 18-64 years of age, on average, persons with higher education status are more likely to be employed at an income level that provides for or facilitates health insurance coverage as benefits to the employee. Focus group participants felt that there is a shortage of available health care professionals, particularly those that service Medicare and Medicaid patients and the indigent.

## Mental Health

Collier County residents experienced remarkably lower percentages of individuals who reported poor mental health with a 7.3 percent in 2013 compared to Florida with a 12.7 percent, a difference of 5.4 percentage points. Females were much more likely to have experienced poor mental health than males. Those in the age group 45 to 64 years of age had the highest incidence of poor mental health, while those 65 years and older had the lowest. Both income level and educational attainment correlate with mental health status in Collier County. The higher the income and the more education both translated into improved mental health status. Still, the community has been highly verbal about the need for more mental health services, as currently a void exists for various levels of mental healthcare. Public awareness exists on the issue and clearly feels the professional resources are lacking.

## Conclusion

Health status analysis combined with the local public health system assessment results and information from community focus groups and community surveys were used to identify key strategic focus areas for Collier County. The strategic issues identified are: Chronic Diseases, Mental Health, Access to Care, Alcohol and Drug Abuse and Obesity. The results of the Community Health Assessment, specific assessment tools utilized and their results may be reviewed as follows.



## Population Characteristics

Population characteristics are utilized in all aspects of public health measurements including crude numbers, rates, ratios, proportions, life expectancy and incidence and prevalence levels. These characteristics, which include population size, distribution, structure, growth and age composition, are analyzed and monitored since they are associated with mortality and health indicators. Demographic analyses are an essential epidemiological tool that aid in the assessment of health status of a community.

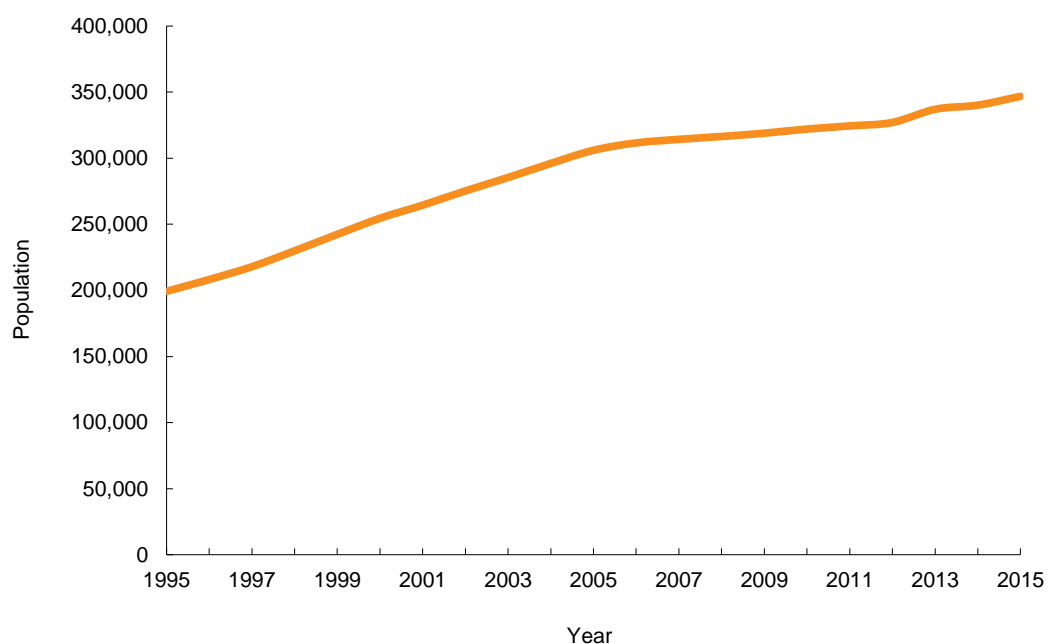
Population trends allow health care professionals and analysts to strategically plan for levels of utilizations of health services within communities and other geographical areas. These trends also enable the assessment of current unmet and future health needs in specific subgroups and vulnerable populations.

Analyses of population characteristics can result in statistically predictable health status outcomes within a particular community. Following these data and analyses can help uncover familiar and emerging trends at the local level. Since public health is population-based, the coupling of demography with epidemiology results in a community health status assessment will assist us to improve the health of Collier County.

## Population Growth, Gender and Age Distribution

Between 1995 and 2015, the resident population of Collier County grew at a swift pace of 2.8 percent per year, which compares to Florida at 1.6 percent and the United States at 1.0 percent during the same time period (Figure 1). In terms of actual numbers, Collier County's population increased by 147,533, from 199,272 in 1995 to a total of 346,805 by 2015.

Figure 1. Resident Population, Collier County, 1995–2015



Data source: U.S. Census Bureau

The annual average growth rate was the greatest between 1990 and 2000 with 5.2 percent. From 2000 to 2015, the annual average growth rate significantly decreased, from 2.5 percent in 2000 to 2010 to 0.8 in 2010 to 2015 (Table 1).



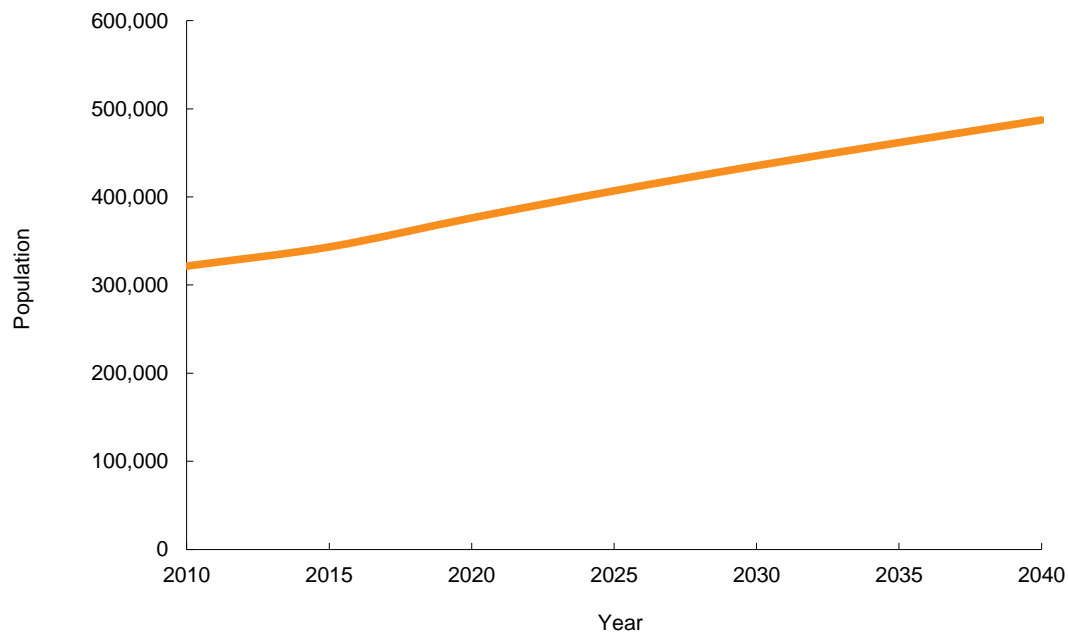
Table 1. Population Rate of Growth, Collier County, 1990, 2000 and 2010

	1990 - 2000	2000 - 2010	2010 - 2015
Annual Rate of Population Growth	5.2	2.5	0.8
Percentage Change	65.3%	27.9%	7.9%
Population	2000 Census - 251,377	2010 Census - 321,520	2015 Mid-Year - 346,805

Data source: U.S. Census Bureau. Annual Rates of Population Growth calculated by Epidemiology Program.

The resident population of Collier County is projected to increase by 144,023 from 2015 to 2040, resulting in a rate of growth of 1.4 percent per year for the period 2015 to 2040 (Figure 2). After two decades (from 1990 to 2010) of accelerated population increases, Collier County's growth rate appears to follow the pace of the state of Florida through the year 2040.

Figure 2. Total Population Projections, Collier County, 2010–2040



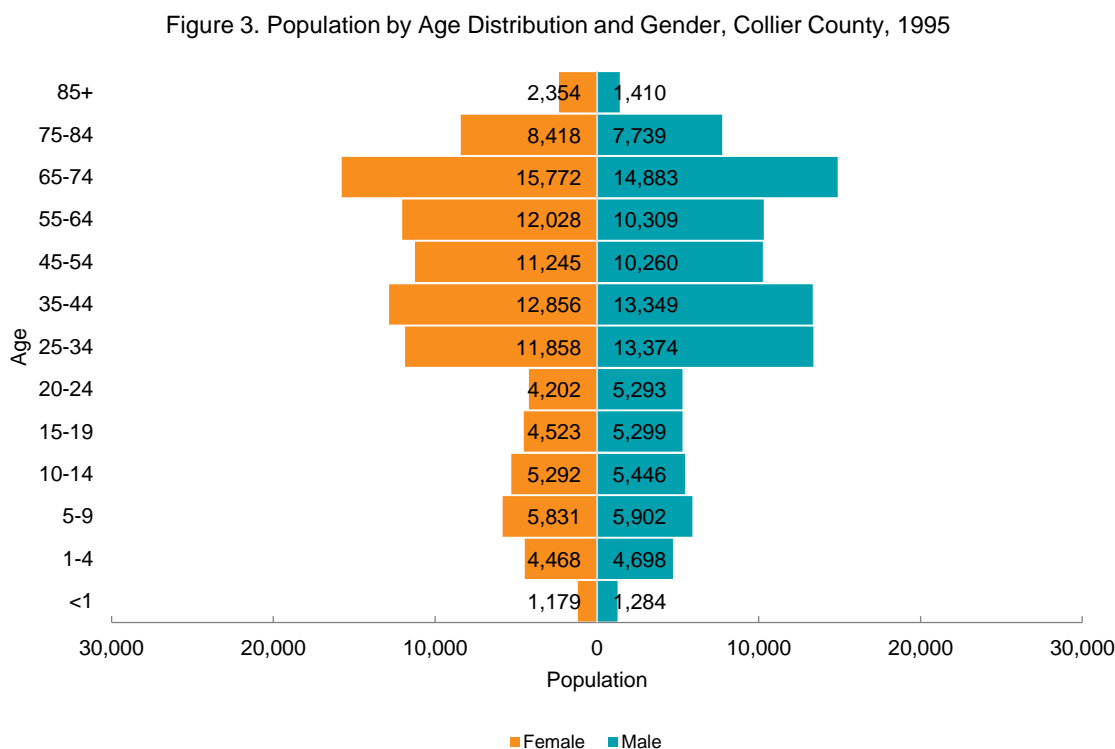
Data source: Bureau of Economic and Business Research, Florida Population Studies, Bulletin 163

By gender, the distribution of the population increased from a ratio of 101 females to every 100 males in 1995 and 2005 to 104 females to every 100 males by 2015.

As a biological and epidemiological rule, more males are born alive than females. The average live birth ratio in the United States is approximately 106 males for every 100 females born alive.

In Collier County, as in all counties in the United States, mortality rates are higher for males than for females at all ages. This variance in death rates results in life expectancy at birth being on average 5 years greater for females than for males. This ultimately results in a greater female population beginning around 45–54 years of age and increasing over males for every age group thereafter.

Figures 3, 4 and 5 display the population pyramids for 1995, 2005 and 2015 for Collier County.



Data source: U.S. Census Bureau

Figure 4. Population by Age Distribution and Gender, Collier County, 2005

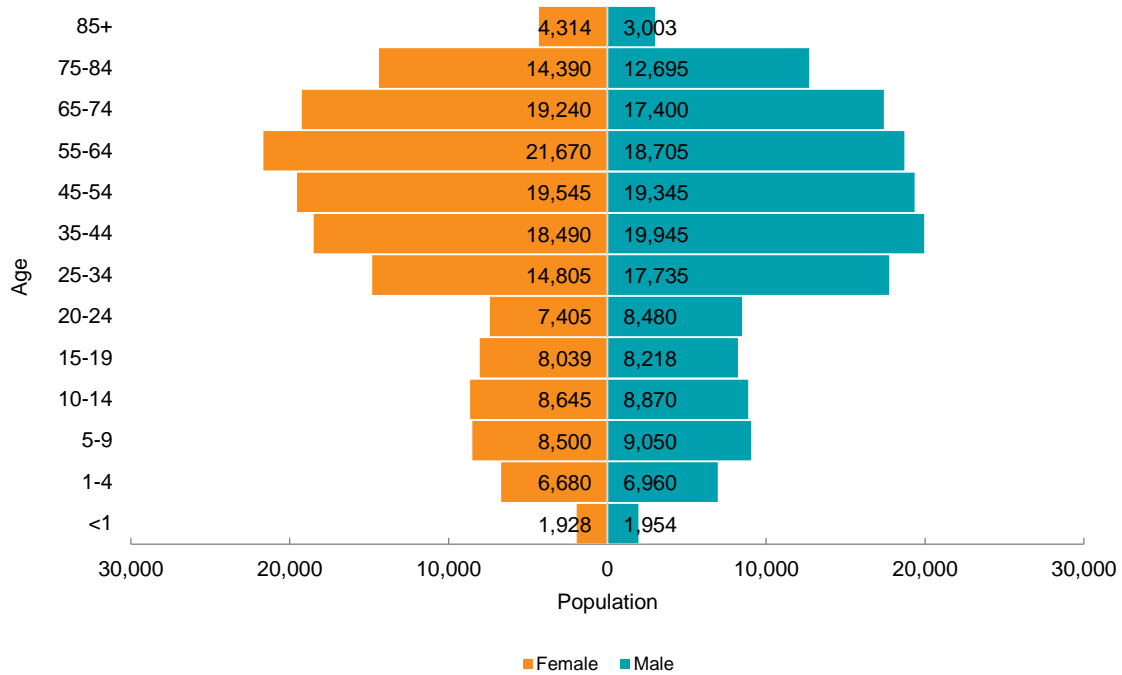
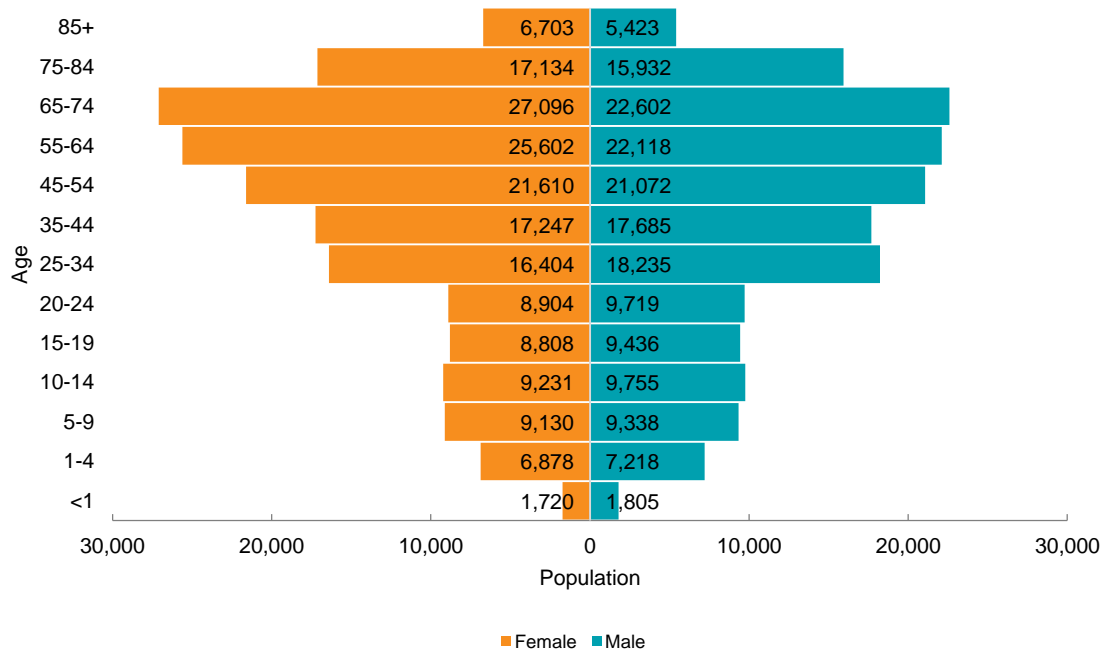


Figure 5. Population by Age Distribution and Gender, Collier County, 2015



Data source: U.S. Census Bureau

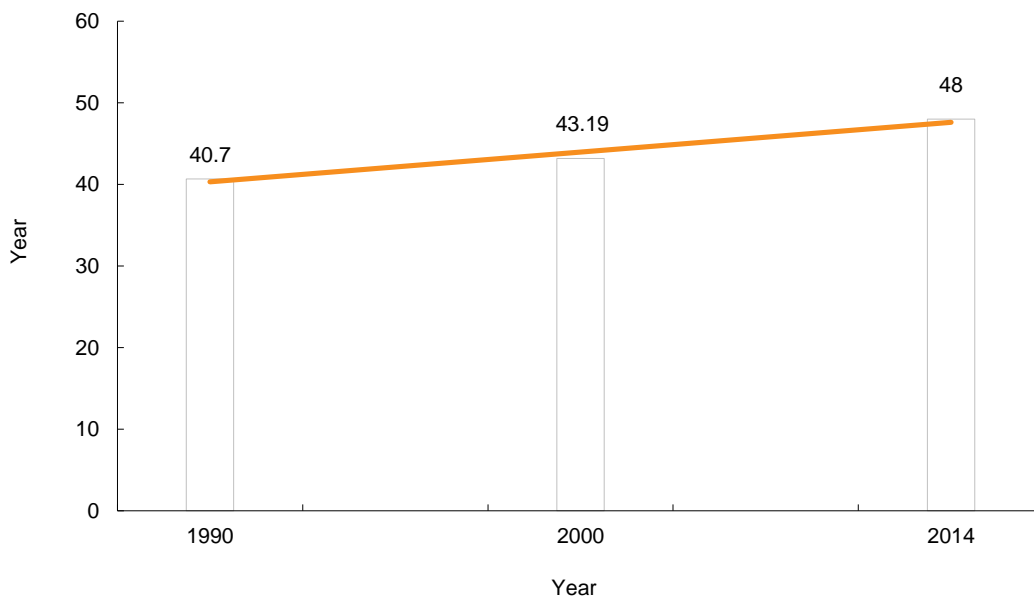
As can be visualized in these graphical presentations of the age and gender distribution, the total population of Collier County increased by 74 percent between 1995 and 2015. These dramatic shifts in the age distribution reflect the demographic transition that occurred in the State of Florida and the United States.

This demographic change produced by the “baby boomer” cohort, which refers to those born between the years 1946 and 1964, is a consequence of this generation entering and spanning middle age to their retirement years. This highly visible demographic shift will have a significant impact on healthcare access and socio-economic dynamics for Collier County and Florida during the 21st century.

Between 1995 and 2015, the population 45 to 54 years of age in Collier County increased by 98 percent, while those aged 75 to 84 years experienced an increase of 104 percent. The most dramatic increase occurred in those 85 years of age and older with a 222 percent increase.

Median age is defined as the age at which one half of the population is older and one half of the population is younger. The median age in Collier County increased by 7.3 years between 1990 and 2014 (Figure 6). This is a direct consequence of the aging population in Collier as visually described by the three population pyramids (Figure 3, 4 and 5).

Figure 6. Median Age, Collier County, 1990, 2000 and 2014

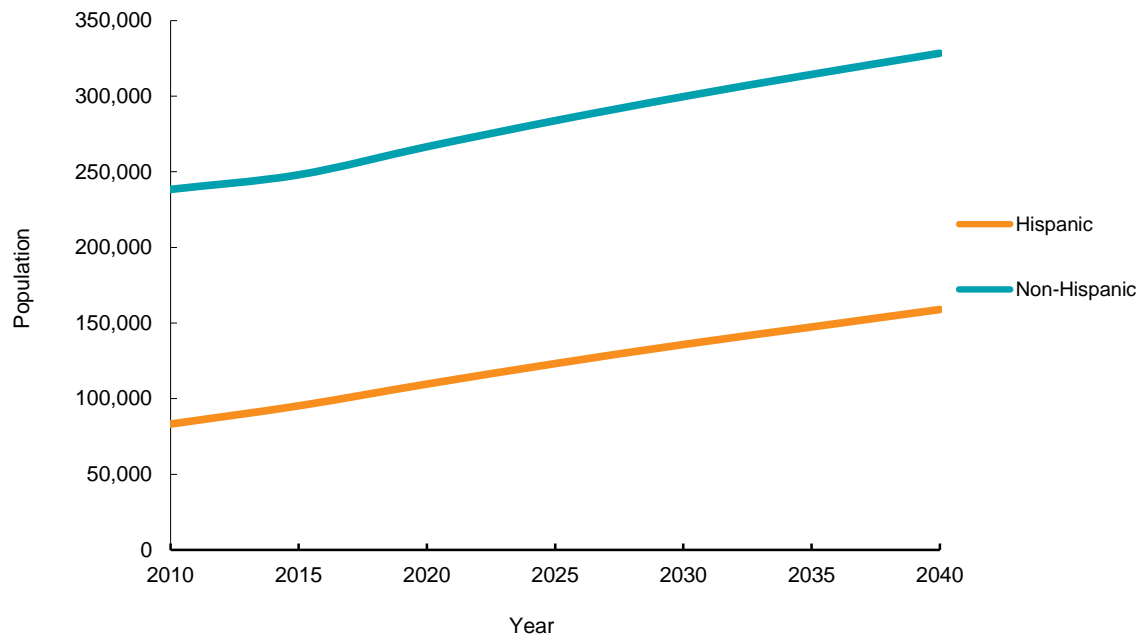


Data source: U.S. Census Bureau

## Ethnicity

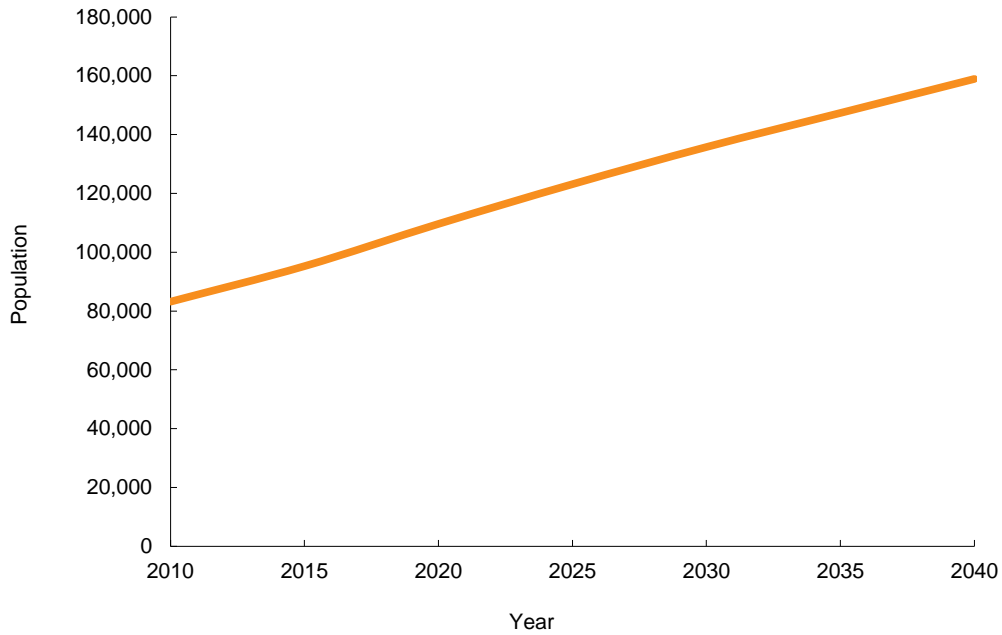
Between 1990 and 2014, the Hispanic population in Collier grew by 350 percent. While Hispanics constituted less than 14 percent of the population in Collier in 1990, by 2014 the proportion increased by more than 26 percent. This trend is expected to increase at an annual rate of approximately 2.2 percent between 2010 and 2040, when the Hispanic population in Collier County is projected to approximate a minimum of 160,000 (Figures 7, 8 and 9).

Figure 7. Population Projection by Ethnicity, Collier County, 2010–2040



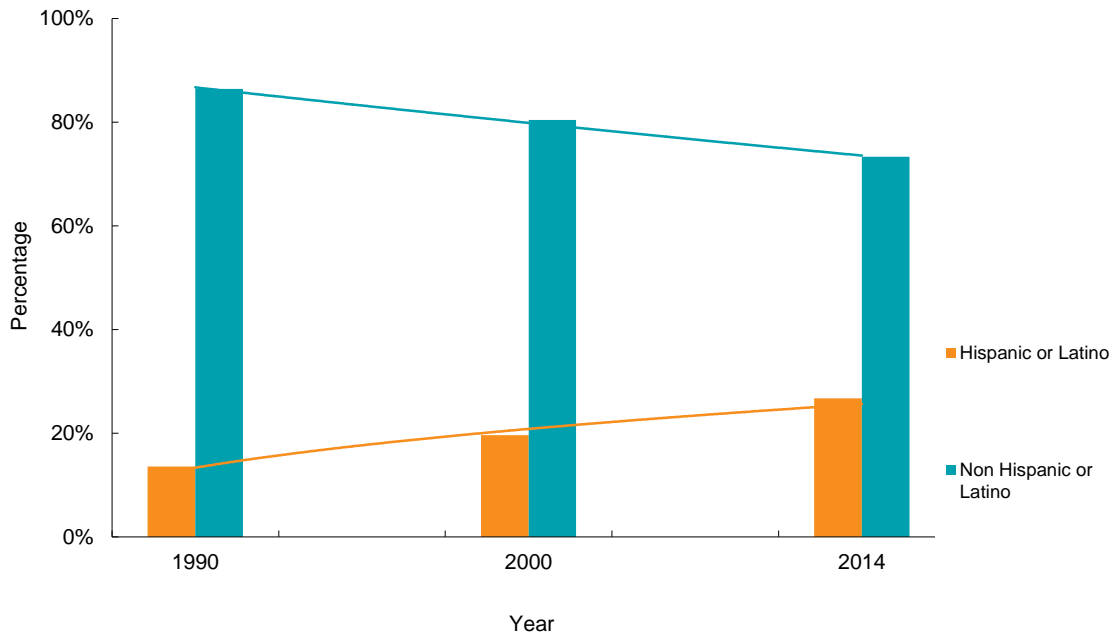
Data source: Bureau of Economic and Business Research, Florida Population Studies, Bulletin 172, June 2015.

Figure 8. Hispanic Population Projection, Collier County, 2010–2040



Data source: Bureau of Economic and Business Research, Florida Population Studies, Bulletin 172, June 2015.

Figure 9. Percentage of Population by Ethnicity, Collier County, 1990, 2000 and 2014



Data source: US Census Bureau

## Race

During the period 1994 and 2014, the black population increased by 152 percent from 9,525 to 24,033 (propelled mostly by Haitian immigration), while the white population decreased to account for 90.0 percent of the population. Table 2 shows the population distribution over the 20 year period by race.

Table 2. Population by Race, Collier County, 1994, 2004 and 2014

	1994	%	2004	%	2014	%
Black	9,525	5.0	18,191	6.1	24,033	7.1
White	179,286	94.1	271,285	91.6	305,925	90.0
Other	1,739	1.0	6,597	2.2	10,188	3.0

Data source: U.S. Census Bureau



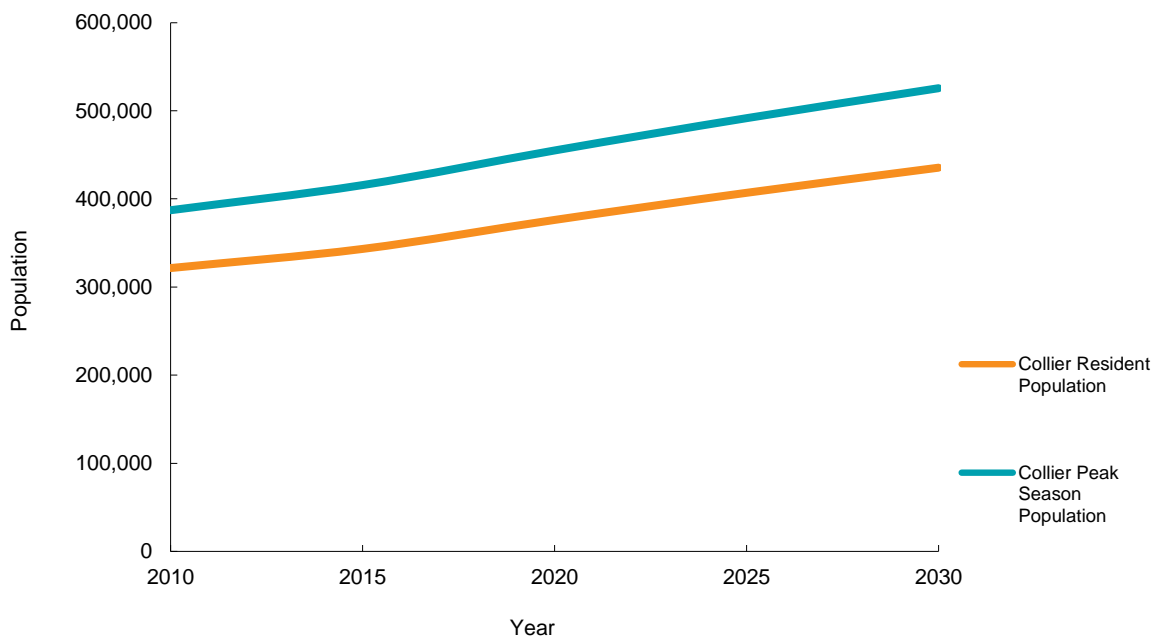
## Seasonal Population in Collier County

Collier County, like many Florida counties, draws a relatively large number of seasonal residents and visitors during peak season as well as year-round. The largest proportion of seasonal residents tend to be 65 years and older. The average age of visitors is just over 48 years of age; this is primarily due to the beaches of Collier County being a family tourist attraction. In 2014, the number of tourists visiting Collier County was 1,773,900, an increase of 6.3 percent from 2013.

## Peak Season Population

As evident in Figure 10, the peak season and the resident population in Collier County have been growing and are projected to continue to increase at a constant and parallel rate between 2010 and 2030. On average, the peak season population is projected to be approximately 21 percent larger than the Collier County resident population. Between 2010 and 2030, the annual rate of growth for the resident and peak season population is estimated to both be 1.7 percent respectively.

Figure 10. Resident and Peak Season Population, Estimates and Projections, Collier County, 2010–2030



Data source: Collier County Comprehensive Planning Section, 2015

## Socioeconomic Indicators

### Income

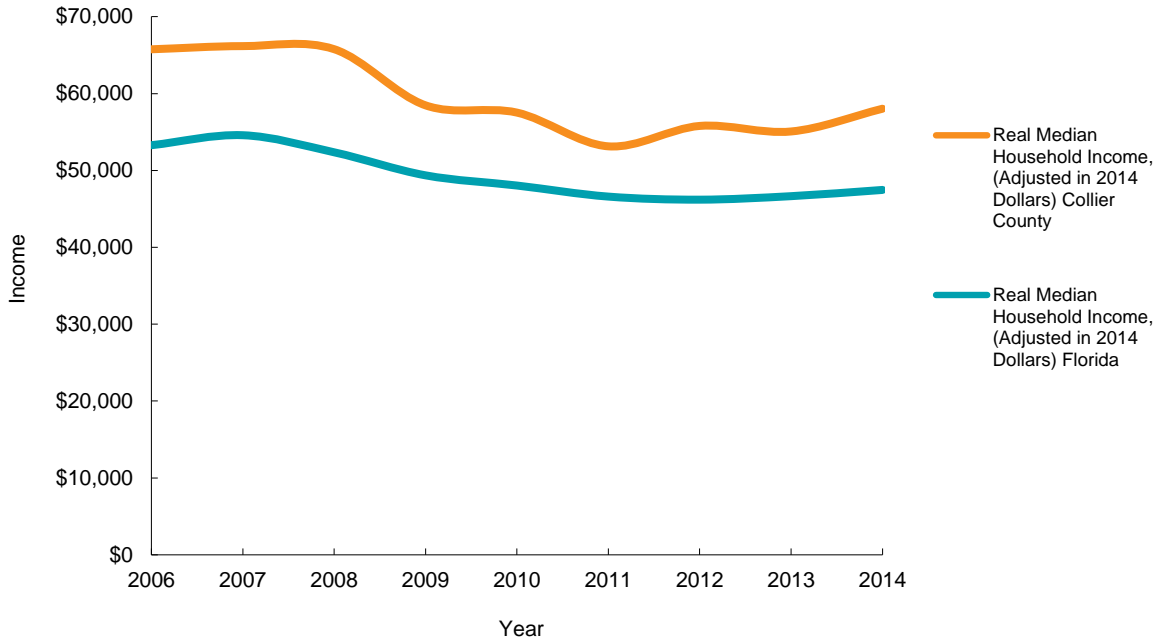
Income and monetary resources are correlated with levels of health and well-being as a means for individuals and families to obtain healthy foods, adequate housing and basic necessities such as clothing and transportation. In the United States, these financial resources are also a means for obtaining access to health care and health insurance. This statistical association maintains validity with the multitudes of levels of family and individual income and is strongly correlated with life expectancy.

Table 1 and Figure 1 provides the median household income for Collier County and Florida for the period 2006 to 2014.

Table 1. Real Median Household Income (Adjusted in 2014 Dollars), Collier County and Florida, 2006–2014

Year	Collier County	Florida
2006	\$65,758	\$53,283
2007	\$66,171	\$54,581
2008	\$65,774	\$52,360
2009	\$58,468	\$49,363
2010	\$57,525	\$48,035
2011	\$53,135	\$46,597
2012	\$55,790	\$46,199
2013	\$55,067	\$46,653
2014	\$58,026	\$47,463

Figure 1. Real Median Household Income (Adjusted in 2014 Dollars), Collier County and Florida, 2006–2014



Data source: U.S. Census Bureau/American Community Survey

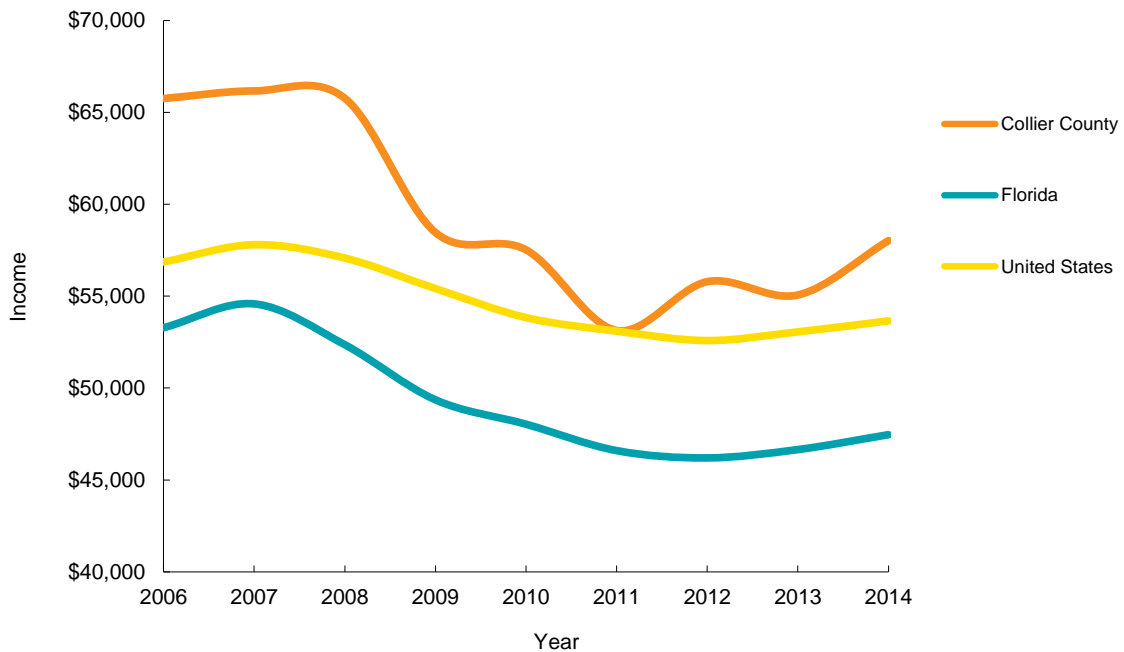
Between 2006 and 2014, median household income in Collier County declined by 12 percent, from \$65,758 to \$58,026. During the same period median household income in Florida decreased by 11 percent, from \$53,283 to \$47,463. Between 2013 and 2014, median household income increased in Collier County by 5 percent and by 2 percent in Florida.

Table 2 and Figure 2 shows the same median household income levels for Collier County and Florida in comparison with the national United States data. This table and graph allow for a relative comparison of the income levels of the three geographical entities during the period 2006 to 2014. During this time interval the median household income in the US declined by only 6 percent, about 50 percent less of a decline compared to that of Collier County and the state of Florida. In Figure 2, it is evident that Collier County, due to its economic sensitivity to the construction sector and the tourism industry, experienced the greatest decreasing volatility compared with both Florida and the United States. The relatively small population of Collier County (less than 350,000) coupled with its over-dependence on the housing market and tourism contributed heavily to the effects from the Great Recession. This can be seen visually in Table 2 beginning in 2008, when median household income for all three geographical areas began to decline markedly. It has yet to recover to the level seen prior to 2006.

Table 2. Median Household Income in Collier County, Florida and the United States, 2006–2014 (Adjusted in 2014 Dollars)

	2006	2007	2008	2009	2010	2011	2012	2013	2014
Collier County	\$65,758	\$66,171	\$65,774	\$58,468	\$57,525	\$53,135	\$55,790	\$55,067	\$58,026
Florida	\$53,283	\$54,581	\$52,360	\$49,363	\$48,035	\$46,597	\$46,199	\$46,653	\$47,463
United States	\$56,860	\$57,802	\$57,076	\$55,415	\$53,836	\$53,098	\$52,586	\$53,059	\$53,657

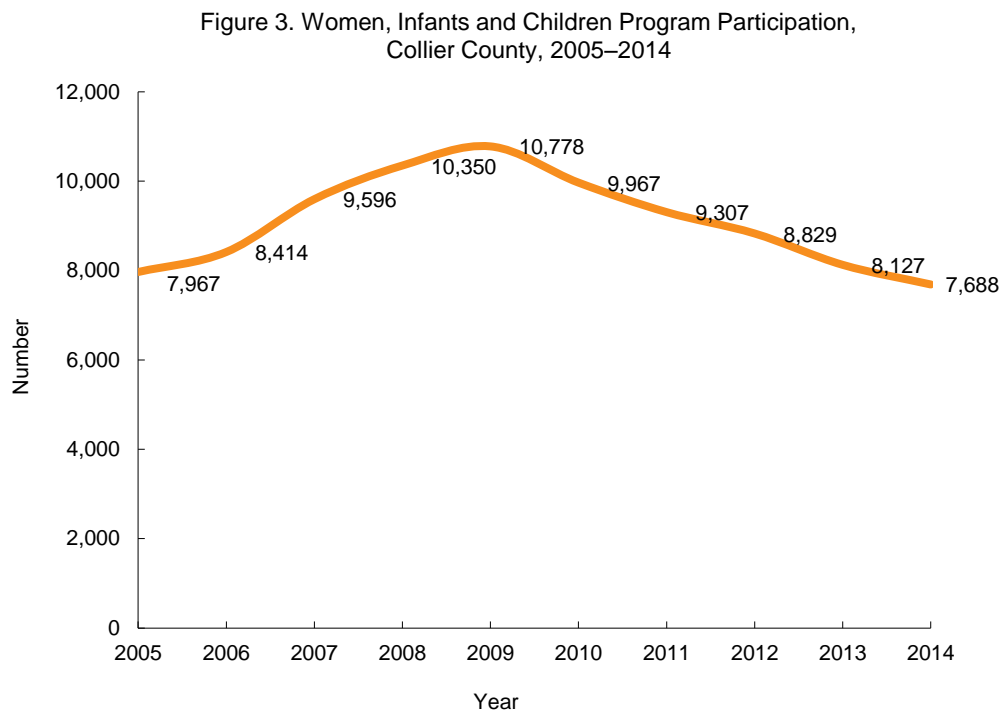
Figure 2. Median Household Income in Collier County, Florida and the United States, 2006–2014 (Adjusted in 2014 Dollars)



Data source: U.S. Census Bureau/American Community Survey

The Women, Infants and Children Nutrition Program (WIC) of the US Department of Agriculture provides food and nutritional assistance to pregnant and new mothers and children under five years of age. Between 2005 and 2014, the number of WIC participants in Collier County slightly

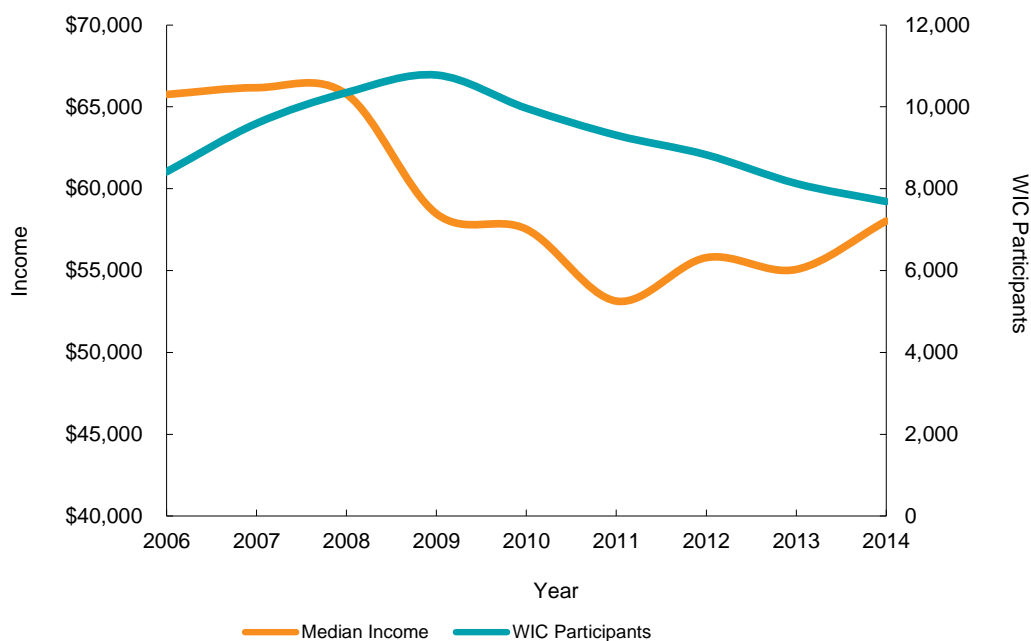
declined from 7,967 to 7,688 (about 3.5 percent). However, caution should be exercised in interpreting these data, as between 2005 and 2009 the number of participants increased by over 35 percent, to 10,778—directly associated with the Great Recession (Figure 3). The number of WIC enrollees in 2014 is still 111 percent higher than in 1990 and 50 percent higher than in 2000. While population growth in Collier County, which has significantly slowed during the last decade, may have accounted for some of the increase in WIC enrollment beginning in the 1990s, a myriad of socioeconomic factors and variables when began in the past decade, have generated stable higher enrollment levels in the county.



Data source: Collier County WIC Program

As the real median household income in Collier County declined between 2006 and 2014 and bottomed out at \$53,135 in 2011, the number of WIC participants increased to a peak of 10,778 in 2009 (Figure 4). The correlation between family income levels and health related outcomes and the necessity for public assistance has been well documented for the past century by economists and public health experts. Since the Great Recession of 2007, these economic and health statistical relationships have become more visible and evident as they emerge within numerous socioeconomic indicators.

Figure 4. Number of Participants in the Women, Infants and Children Program and Median Household Income (in 2014 Dollars), Collier County, 2005–2014



Data source: U.S. Census Bureau/American Community Survey and Collier County WIC Program

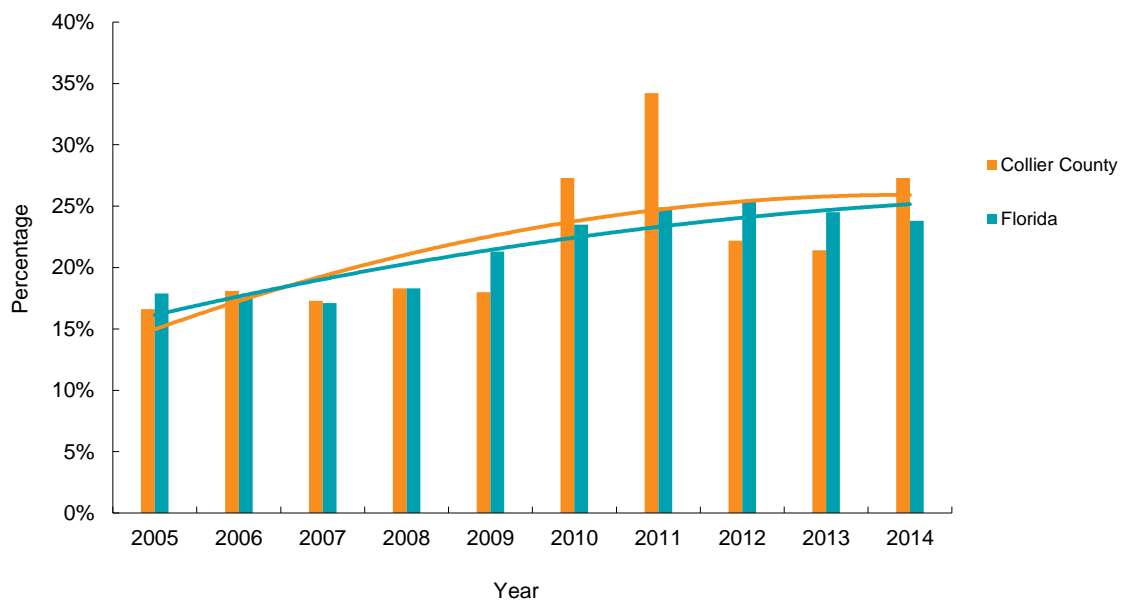
The number of children under 18 years of age living in poverty in Collier County increased by over 72 percent during the period 2005 to 2014, while in Florida overall the increase was 33 percent.

Florida's lower growth rate in poverty during this period can be attributed to a higher baseline of persons being in poverty at the beginning of the analysis. The childhood poverty rate in Collier County grew at a significantly greater rate between 2009 to 2014 than the state of Florida

(Figure 5 and Table 3). In 2011, the childhood poverty rate in Collier County was 34.2 percent with 21,154 children in poverty compared with 24.9 percent in Florida.

By 2014, Collier County's childhood poverty rate was 27.3 percent compared to 23.8 percent in Florida. At the present time, approximately 3 out of every 10 children in Collier County are considered to be living in poverty. In Florida, it is about 2 out of every 10 children.

Figure 5. Percent of Children Under Age 18 Living in Poverty, Collier County and Florida, 2005–2014



Data source: U.S. Census Bureau/American Community Survey



Table 3. Number and Percentage of Children under the Age of 18 Living in Poverty, Collier County and Florida, 2005–2014

Year	Collier County		Florida	
	Number	Percent	Number	Percent
2005	10,284	16.6%	713,162	17.9%
2006	11,363	18.1%	689,315	17.5%
2007	11,157	17.3%	678,038	17.1%
2008	11,551	18.3%	721,284	18.3%
2009	11,520	18.0%	851,803	21.3%
2010	16,919	27.3%	923,963	23.5%
2011	21,154	34.2%	980,002	24.9%
2012	13,775	22.2%	1,000,736	25.4%
2013	13,437	21.4%	968,765	24.5%
2014	17,690	27.9%	948,465	23.8%

Data source: U.S. Census Bureau/American Community Survey

## Homelessness in Collier County

Figures 6 and 7 show the number of homeless residents in Collier County for the period 2007 to 2011 as provided by admissions to St. Matthew's House in Naples, Florida.

Figure 6. Homeless Admissions, Collier County, 2007–2014

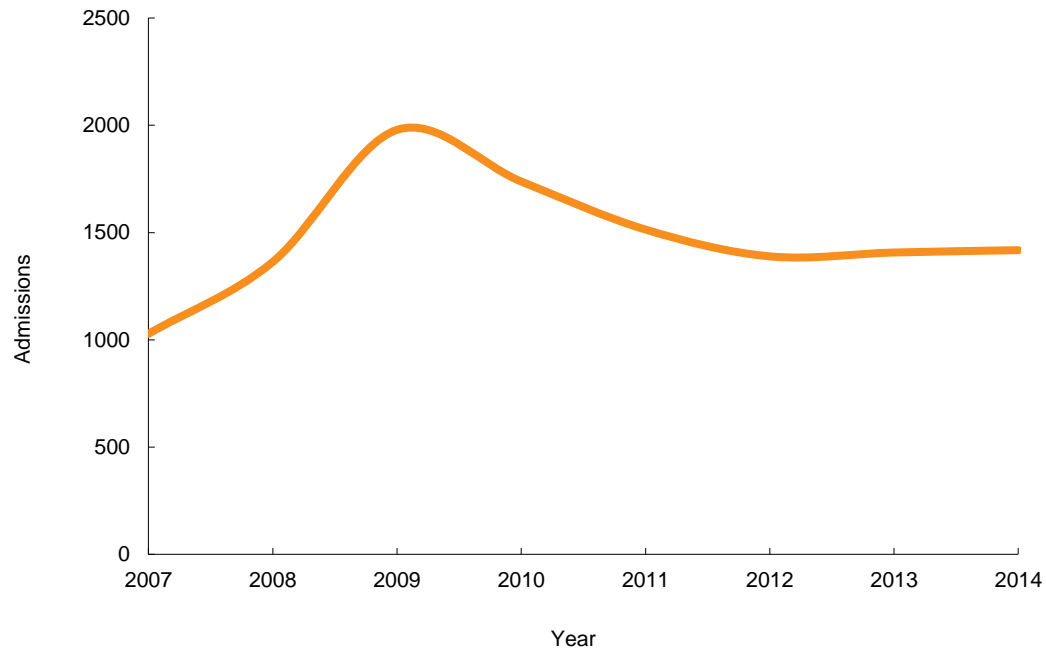
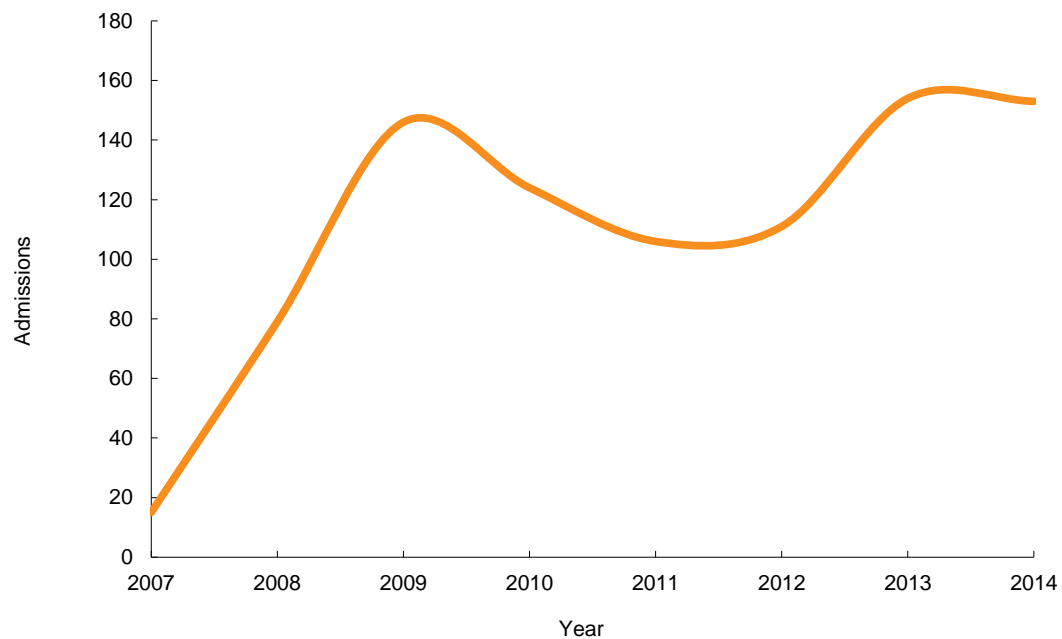


Figure 7. Number of Homeless Children Admissions, Collier County, 2007–2014



Data source: St. Matthew's House

Between 2007 and 2009 admissions increased by over 92 percent, from 1,028 in 1979 to 1,979 in 2009. By 2014, the number had declined to 1,418, which is 40 percent greater than the number in 2007. The number of homeless children admissions increased by 920 percent from 2007 to 2014. For the two most recent years with data available, the number of homeless children remains at a historic peak high of 154 in 2013 and 153 in 2014.

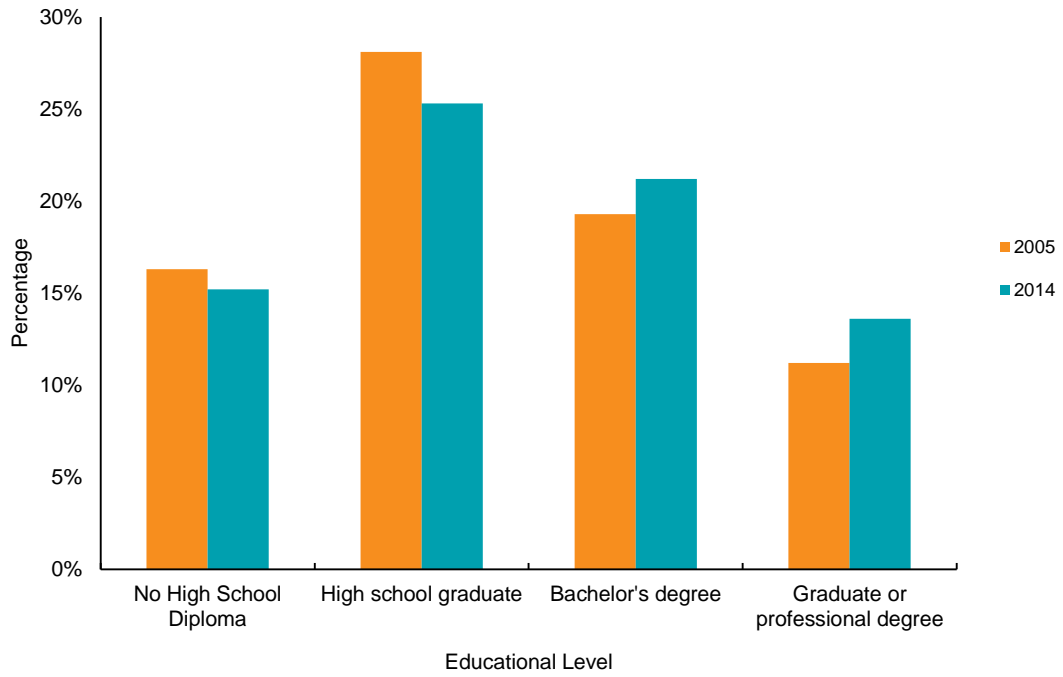
## Education

The relationship between health outcomes and educational attainment is well known in the United States and globally. The reasons for this are multi-faceted, including that a higher level of education usually results in a higher income. Educational level is also linked to access to healthcare as health insurance is usually provided in jobs requiring a specific level of educational attainment. Unemployment rates in the US are higher for individuals without a high school diploma compared to those who are college graduates. Recent statistics show that the college graduate unemployment rate averages to be 3 to 3½ times less that of those who did not graduate high school. Those with lower educational attainment are more likely to be affected by variations in unemployment and by consequence are more likely to be uninsured.

Statistically, those categorized as unemployed over time are more likely to experience lower levels of health status and a higher incidence of chronic health conditions than the continuously employed population.

Figure 8 shows the educational attainment in the population 25 years of age and over for Collier County for 2005 and 2014. Between 2005 and 2014, the percent of the population in Collier County only graduating from high school declined from 28.1 percent to 25.3 percent (a decrease of 10 percent). During the same 10 year period, the percentage of the population with a bachelor's degree increased from 19.3 to 21.2 percent (an increase of 10 percent). The percentage of the population obtaining a graduate or professional degree increased from 11.2 percent to 13.6 percent. This large percentage increment of approximately 21 percent is related to the proliferation of graduate degree programs widely available online.

Figure 8. Educational Attainment in Population 25 years and Over,  
Collier County, 2005 and 2014

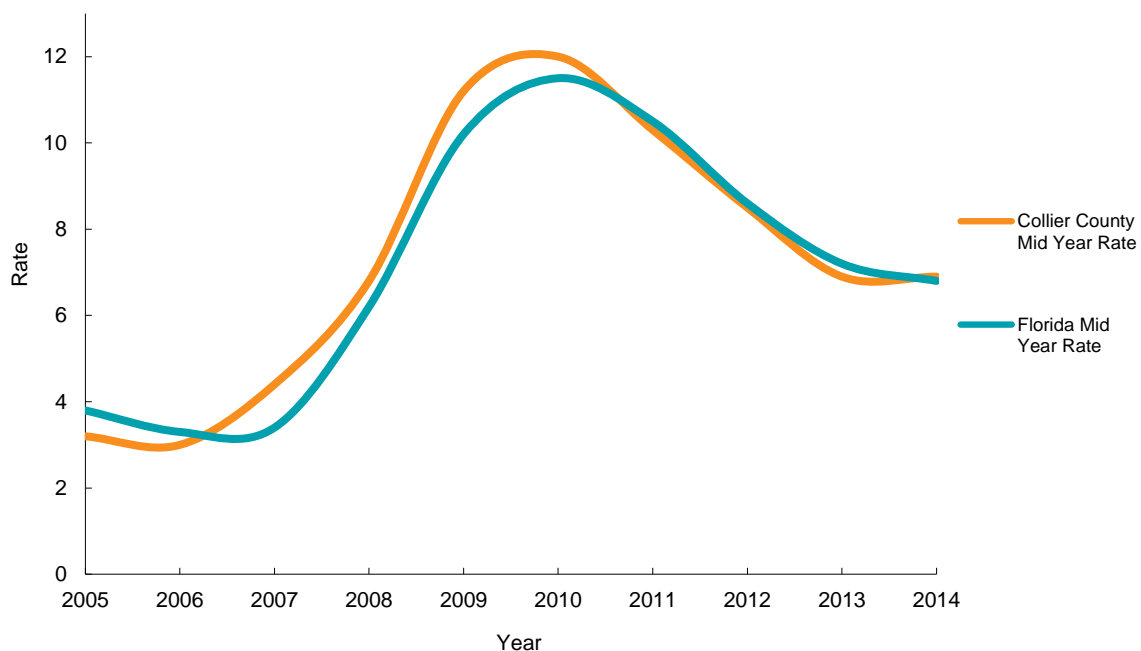


Data source: U.S. Census Bureau/American Community Survey

## Unemployment

Figure 9 shows the mid-year unemployment rates for Collier County and the State of Florida for the period 2005-2014. In Collier County, the unemployment rate ranges from a low of 3 percent in July 2006 to a high of 11.2 in 2009. During this same period the state rate ranged from a low of 3.3 in 2006 to a high of 11.5 in July 2010. As can be seen in the graph, the unemployment rates of the county run in tandem with those of the State of Florida over the ten year period. Beginning in 2007, the rates for Collier and the state spiraled upward, hovering around 12 percent and 11 percent in 2010, respectively. As of July 2014, the rate for Collier County had declined to 6.9 and Florida to 6.8. These unemployment rates have declined by 43 percent in Collier and by 41 percent in Florida since the peak year 2010.

Figure 9. Unemployment Rates,  
Collier County and Florida, 2005–2014



Data source: data from US Department of Labor, Bureau of Labor Statistics

A causal relationship between unemployment and health status has long been established in public health research. Unemployment is associated with a decline in health status and a decrease in the quality of life. Lack of employment is statistically detrimentally related to various physical health outcomes including morbidity, mortality and suicide. Unemployment is correlated

with numerous unhealthy behaviors including tobacco and alcohol consumption, poor diet and lack of exercise. All of these behaviors are risk factors for the development of disease and potential early mortality resulting in a reduction in average life expectancy.

The labor market's distribution by sector also contributes to health outcomes. Employment in sectors or professions requiring specialized or higher education brings higher income and work related benefits, which ultimately leads to healthier lifestyles and increased longevity.

During the 10 year period, 2005 to 2014, the distribution of the labor force by industrial sectors experienced several dramatic shifts in Collier County. The percentage of persons employed in the construction industry declined by over 39 percent from 2005 to 2014. This was the sector with the greatest job losses of the decade, due to the housing bubble of 2006 with the Great Recession immediately following in pursuit in 2007, affecting new home construction since the former date. Other work force sectors negatively impacted by the economic crisis of 2006–2007 in Collier County have been natural resources and mining, a decline of 31.5 percent, and information technology, a decline of 22 percent. The largest increases in employment have been in the educational and health services sector, with a 32 percent increase, and in leisure and hospitality, with an 18.5 percent increase (Table 4).

Table 4. Distribution of the Collier County Labor Force, by sector, 2005 and 2014

Sector	2005	2014	Percent Change
Natural Resource and Mining	4.9%	3.4%	-31.5%
Construction	15.3%	9.3%	-39.6%
Manufacturing	2.5%	2.6%	2.6%
Trade, Transportation and Utilities	18.2%	19.3%	6.1%
Information	1.4%	1.1%	-21.7%
Financial Activities	5.8%	5.6%	-3.9%
Professional and Business Services	11.2%	10.5%	-5.7%
Education and Health Services	10.8%	14.4%	32.2%
Leisure and Hospitality	16.6%	19.7%	18.5%
Other Services	3.8%	4.5%	18.7%
Government	9.6%	9.7%	0.9%

Data source: Florida Department of Economic Opportunity, Labor Market Statistical Center, Quarterly Census of Employment and Wages Program.

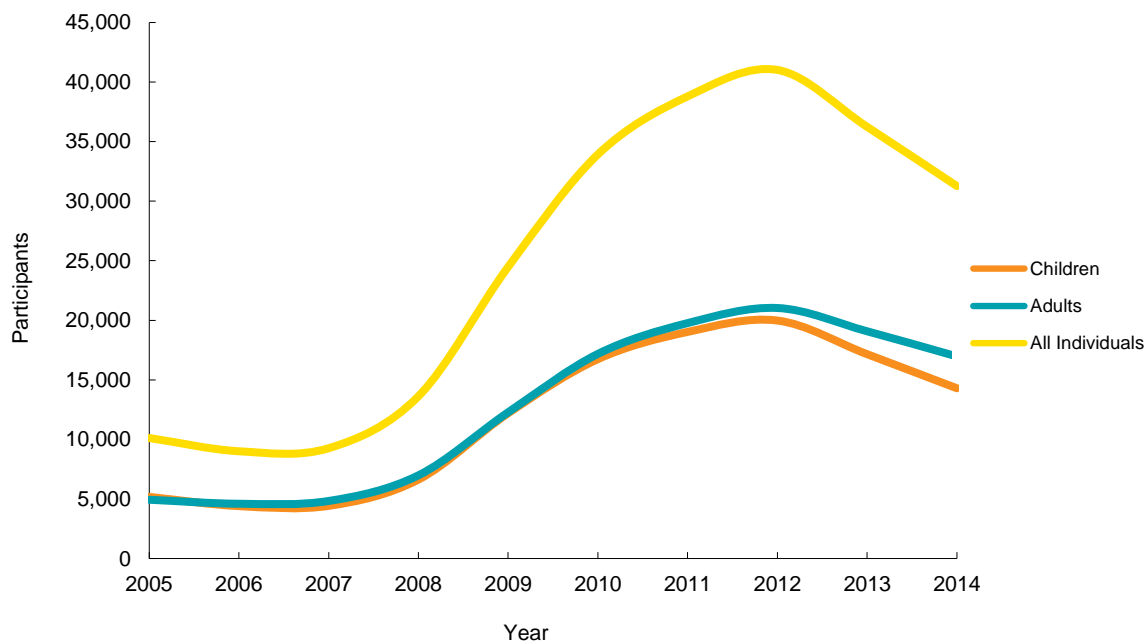


## Poverty and Food Assistance

The Supplemental Nutrition Assistance Program of the US Department of Agriculture provides benefits that are used to purchase food at grocery stores, convenience stores and some farmer's markets and co-op food programs. Current requirements for eligibility includes a household monthly net income of less than 100 percent of the federal poverty guideline.

Figure 10 shows the total number of individuals, adults and children receiving food assistance in Collier County between 2005 and 2014. While the exponential population growth in Collier County beginning in the 1990s had accounted for a constant increase in the number of individuals receiving food assistance, between 2007 and 2012, the number of children receiving food stamps increased by 351 percent while the number of adults increased by 335 percent.

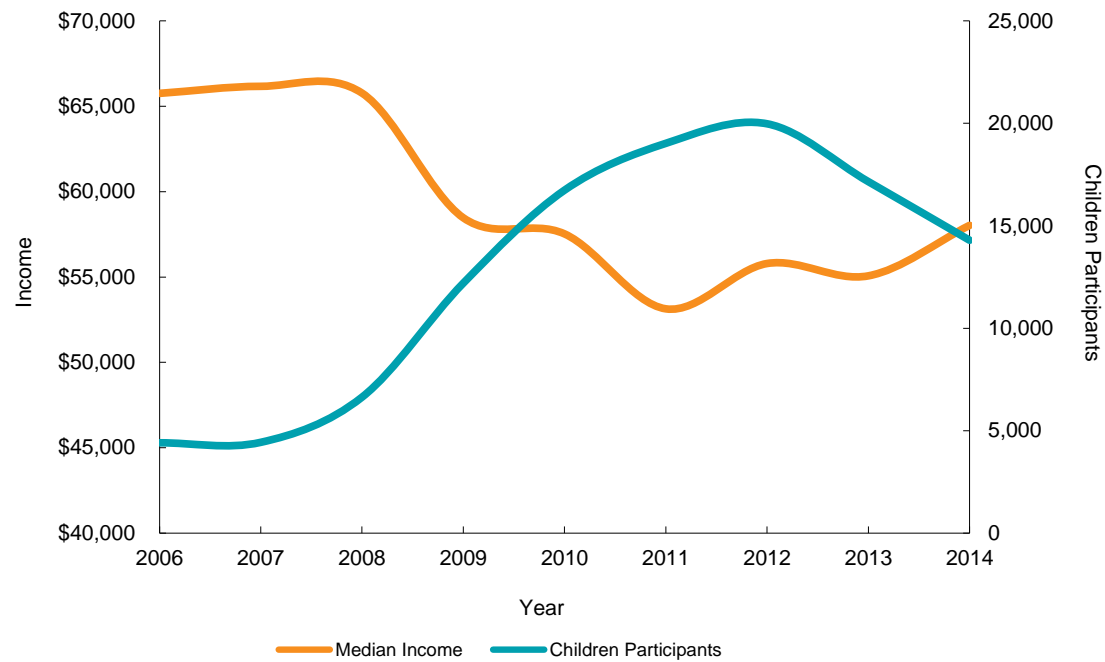
Figure 10. Number of Children and Adults Participating in the Supplemental Nutrition Assistance Program, Collier County and Florida, 2005–2014



Data source: Supplemental Nutrition Program and Department of Children and Families, Tallahassee, Florida

Figure 11 shows the correlation between median household income and children necessitating nutritional assistance. The strong inverse statistical correlation between the 2 variables is clearly visible. Between 2012 and 2014, the number of children receiving food stamps declined by 28 percent while the number of adult participants decreased by 19 percent. This decrease in enrollment during this period of time is correlated with the decline of the unemployment rate.

Figure 11. Number of Children Participating in the Supplemental Nutrition Program and Median Household Income (in 2014 Dollars), Collier County, 2006–2014



Data source: U.S. Census Bureau/American Community Survey and Supplemental Nutrition Program and Department of Children and Families, Tallahassee, Florida

## Chronic Disease

Chronic diseases are those illnesses of long duration and generally slow progression. These diseases are the leading causes of death and disability in all states and counties in the United States.

Approximately 70 percent of all deaths among Collier County residents every year are due to chronic diseases, with heart disease, cancer and stroke accounting for over 50 percent of all of these deaths annually. Approximately one out of every two adults in the United States has at least one chronic disease or condition.

Most major chronic diseases are caused either directly or indirectly linked to four contributory life style factors which are modifiable health risk behaviors:

- 1) Tobacco use
- 2) Lack of physical activity resulting in overweight or obesity.
- 3) Poor nutrition
- 4) Excessive alcohol consumption

These unhealthy behaviors are responsible for a majority of the diseases causing premature mortality due to chronic diseases in Collier County and the United States. Approximately 50 percent of all adults in Collier County have at least one chronic condition or disease.

Overweight and obesity has become the major public health concern and actual cause of death in Florida and the United States with at least one in every three adults being obese, and one out of every five adolescents and teenagers categorized as obese.

## **Chronic Disease Mortality in Collier County**

Chronic diseases are the leading causes of death and disabilities in the United States. Although much improvement has been seen nationally, in Florida and in Collier County over the past two decades, chronic diseases as a whole still account for over 70 percent of all deaths on an annual basis. One reason for the prominence of chronic diseases in the world has been the tremendous reduction in the incidence of the classical infectious and communicable diseases during the last century due to the introduction of antibiotics and other infection control related treatments and therapy.

When analyzing chronic disease mortality, specifically selected cancers by site, some rates may fluctuate widely due to random variation. Figure 1 shows the cancer mortality rates for Collier County and Florida for the period 2005 to 2014. During the decade 2005 to 2014, the death rate from all cancers declined by 19 percent in Collier County and by 11 percent in Florida. By sex, males in Collier had a decrease of 18.3 percent in the death rate compared to a decrease of almost 21 percent for females (Figure 2). This decline in overall cancer mortality for males in Collier County may be due in part to a decrease in the prostate cancer death rate. Females in Collier County may be benefiting from decline in breast and cervical cancer mortality rates. Cancer mortality by race is shown in Figure 3. Both the white and black population of Collier County are experiencing steady declines in cancer mortality rates, with blacks showing a much steeper decrease. This steep decline is due to the relatively small numbers of blacks residing in Collier County coupled with the accompanying variation particularly in 2011 and 2014.

Figure 1. Cancer Mortality Rates,  
Collier County and Florida, 2005–2014

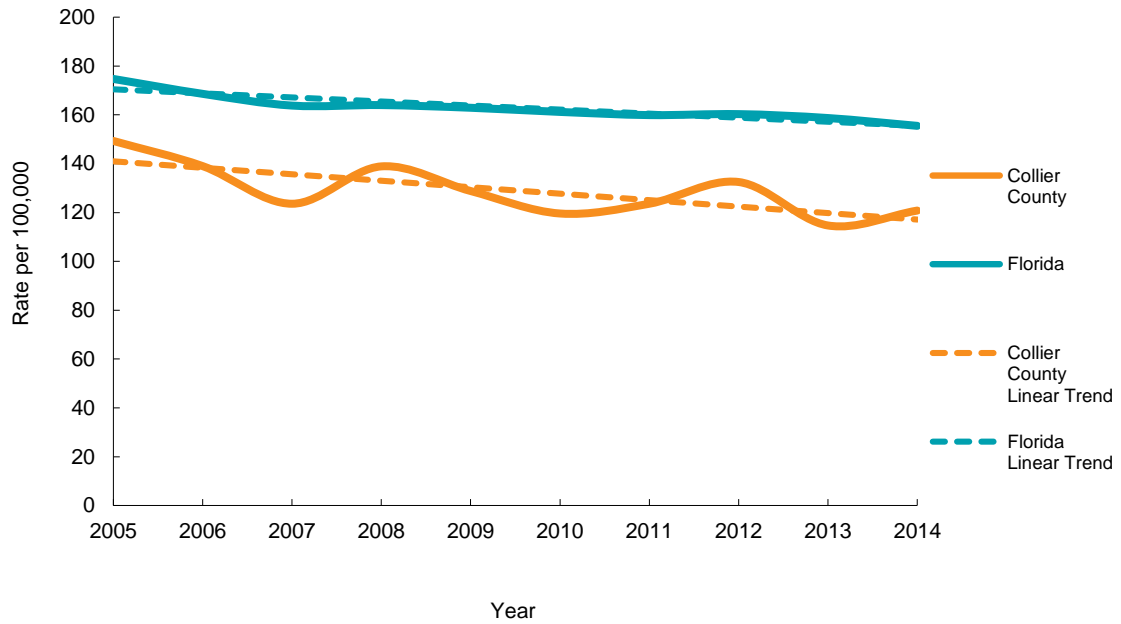
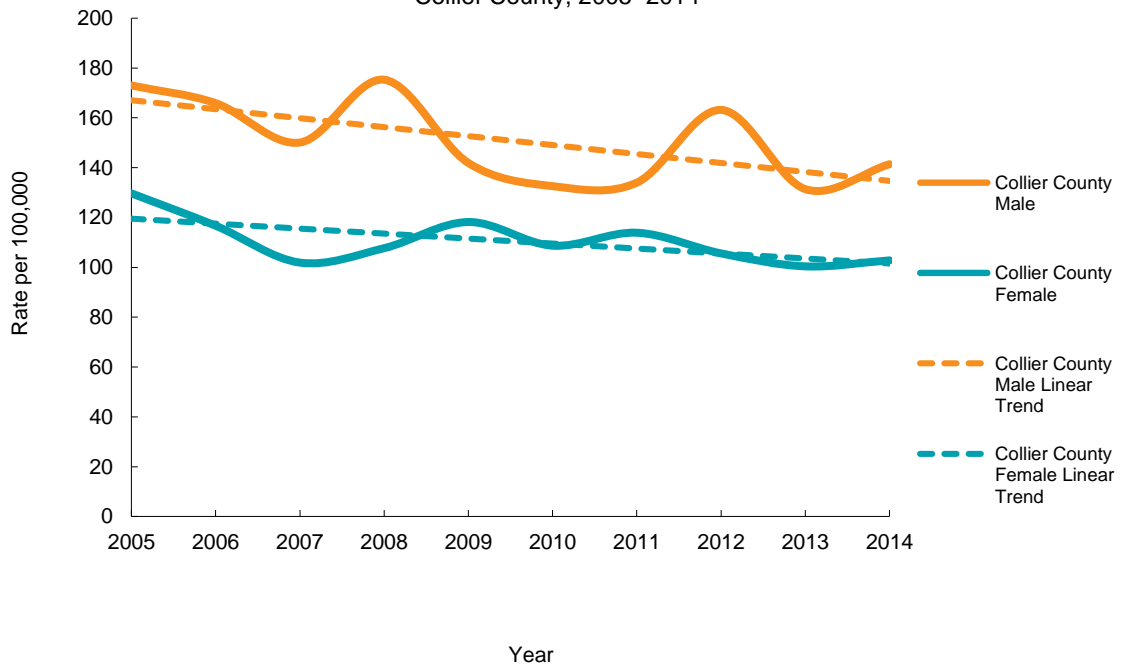
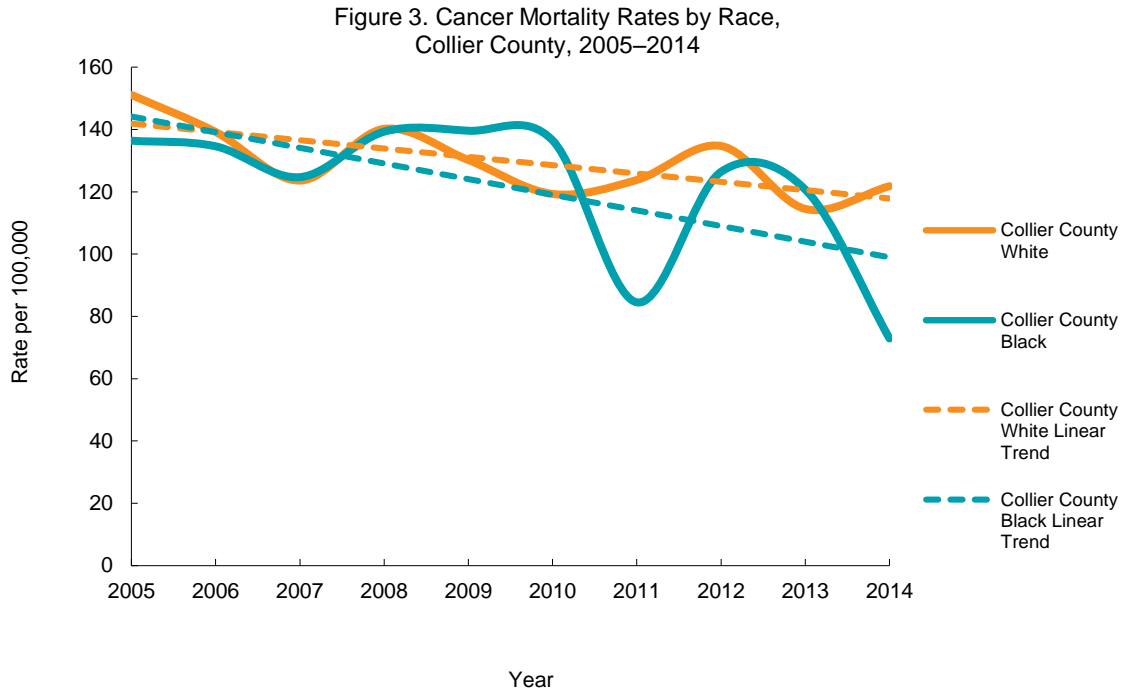
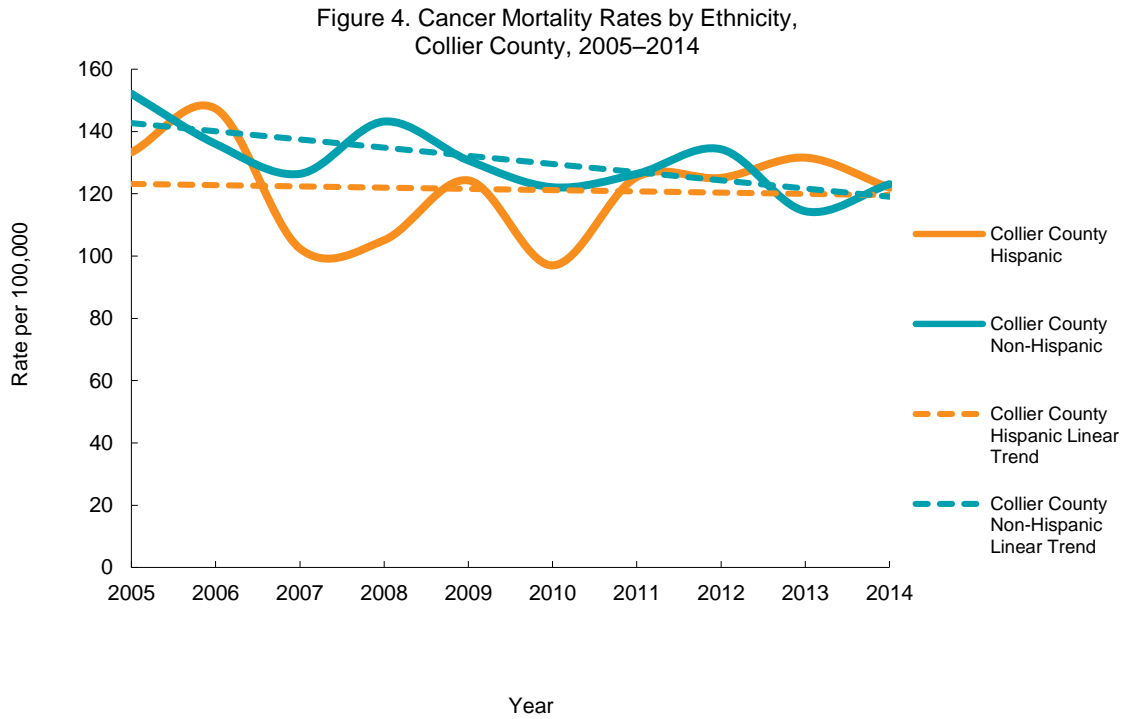


Figure 2. Cancer Mortality Rates by Sex,  
Collier County, 2005–2014

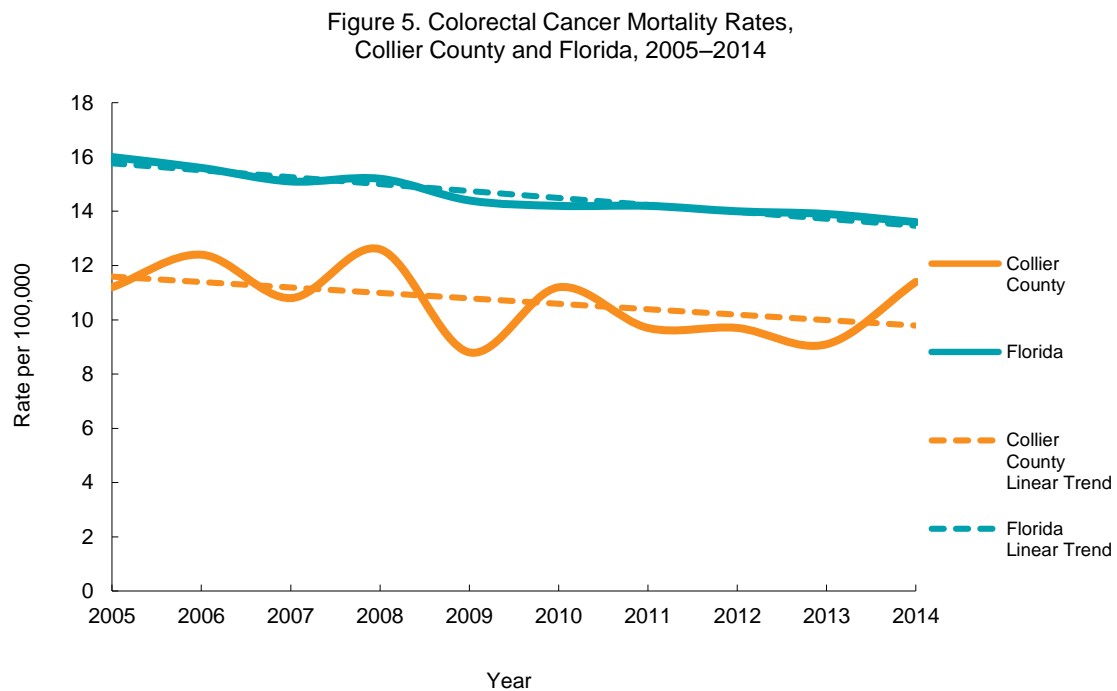




Cancer mortality by ethnicity is shown in Figure 4. Between 2005 and 2014 both Hispanics and non-Hispanics experienced a decrease in death rates from cancer.



Between 2005 and 2014 the colorectal cancer mortality rate for Collier County remained fairly constant with a slight downward slope over the 10 year period, while the decline for Florida was similar but from a higher baseline level beginning in 2005 (Figure 5).



By sex, Collier County experienced similar declines from this cause of death, although the rate for males declined faster and is presently approaching that for females as of 2014 (Figure 6).



Figure 6. Colorectal Cancer Mortality Rates by Sex,  
Collier County, 2005–2014

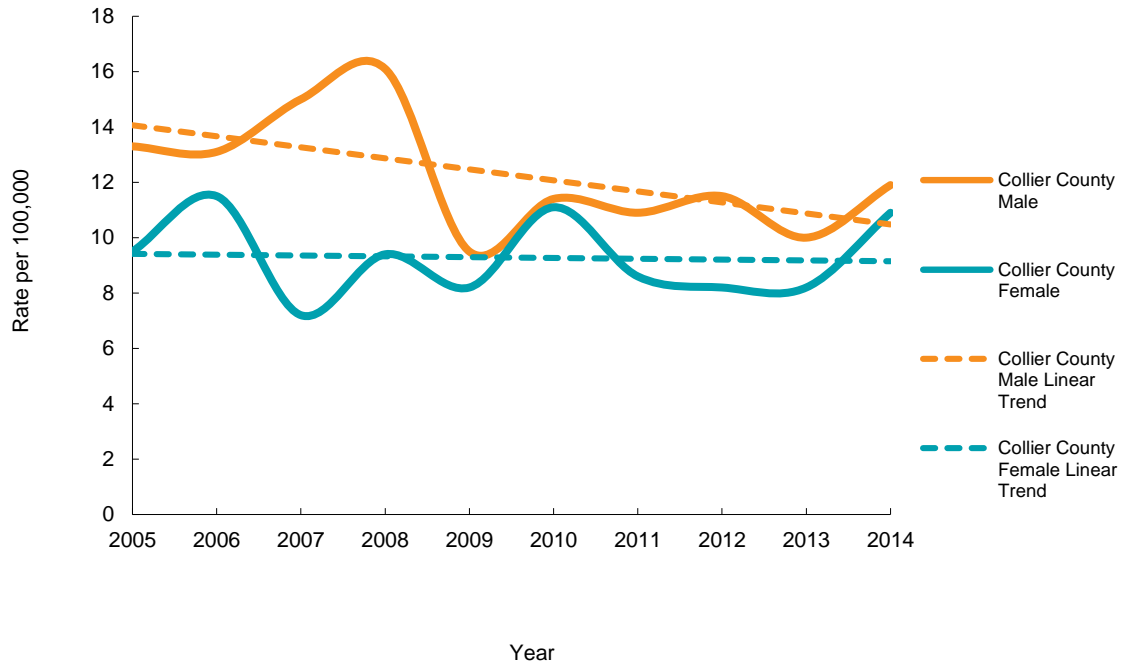
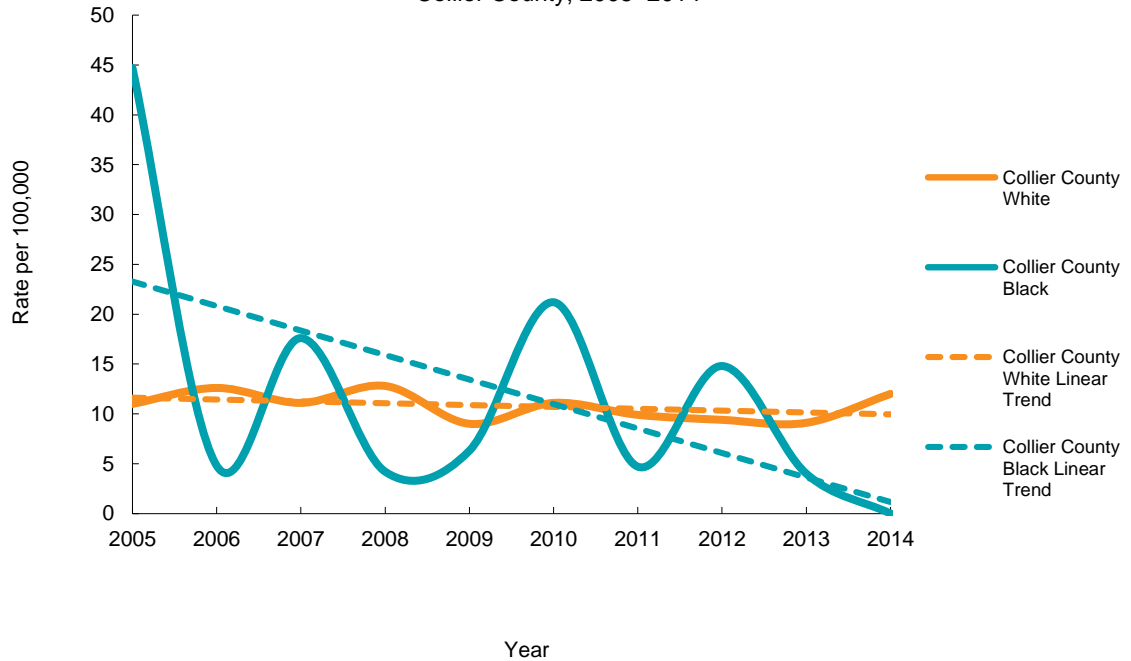


Figure 7 shows the colorectal mortality rates by race in Collier County. Although the black population of the county has been experiencing dramatic decreases in the mortality rate, the number of deaths among blacks for this cause is too small on an annual basis to make a valid statistical comparison.

Figure 7. Colorectal Cancer Mortality Rates by Race,  
Collier County, 2005–2014



By ethnicity, the Hispanic population of Collier County is experiencing a surge in colorectal cancer mortality rates while the rate for Non-Hispanics within the county has been trending down between 2005 and 2014. Further investigation would be required to explain the epidemiologic reasons for this dramatic increase by this cause (Figure 8).

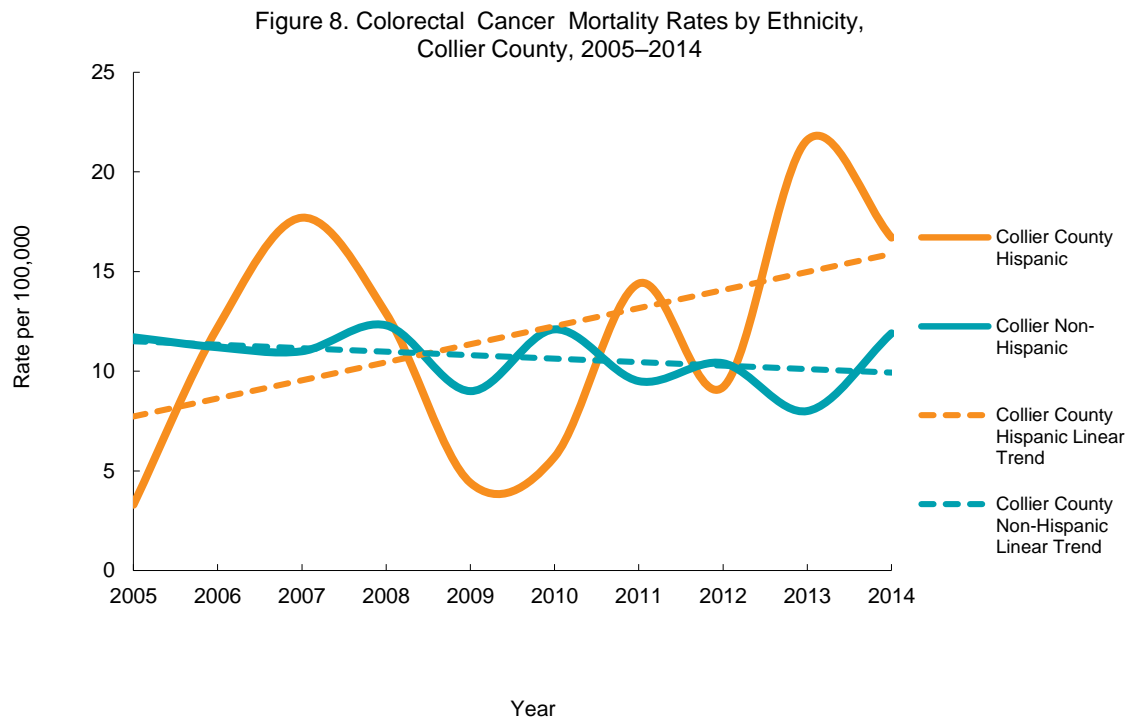
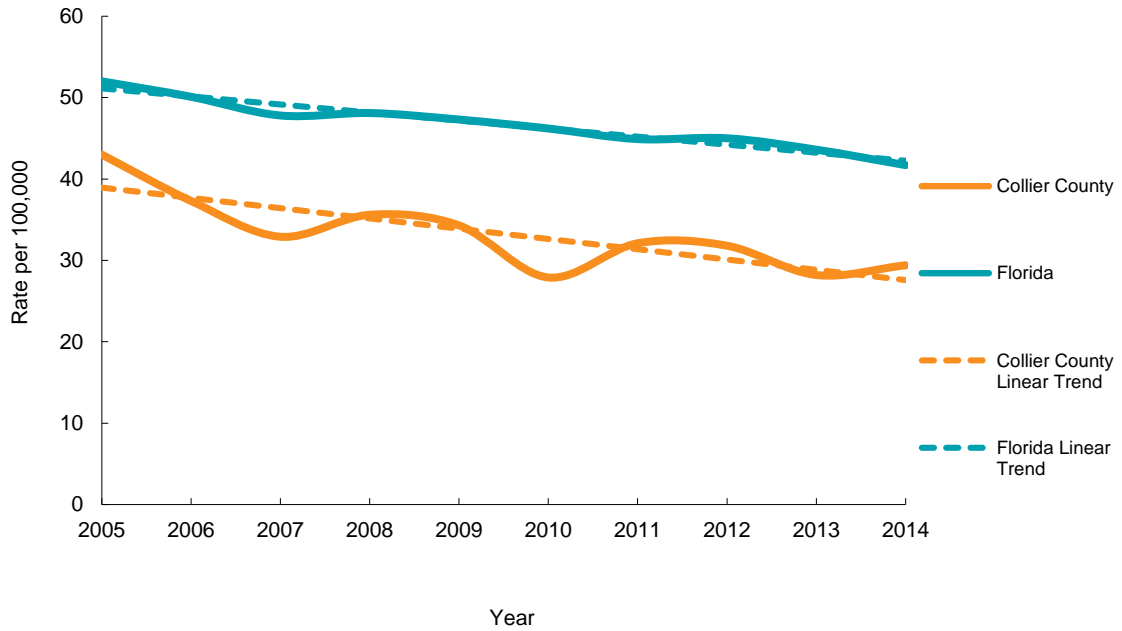


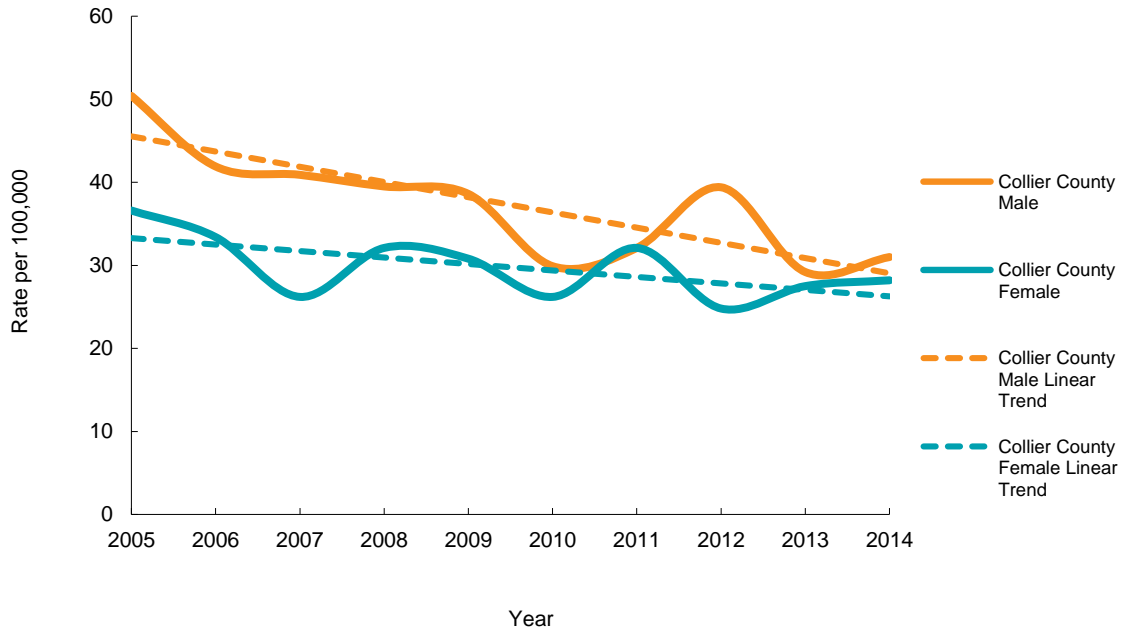
Figure 9 shows the lung cancer mortality rates for Collier County and Florida for the years 2005 to 2014. Both the Collier County and the state of Florida rates are decreasing on a parallel trend, although the rate for Collier County is declining slightly faster.

Figure 9. Lung Cancer Mortality Rates, Collier County and Florida, 2005–2014



By sex, lung cancer mortality rates in Collier County are lower for females but declining more rapidly among males (Figure 10).

Figure 10. Lung Cancer Mortality Rates by Sex, Collier County, 2005–2014



By race, both white and blacks in Collier County have been experiencing an almost equal declining slope in the lung cancer rate, as with other cancer site-specific mortality rates among blacks, on an annual basis there is much variation due to the relatively small numbers of deaths due to this cause in Collier County (Figure 11).

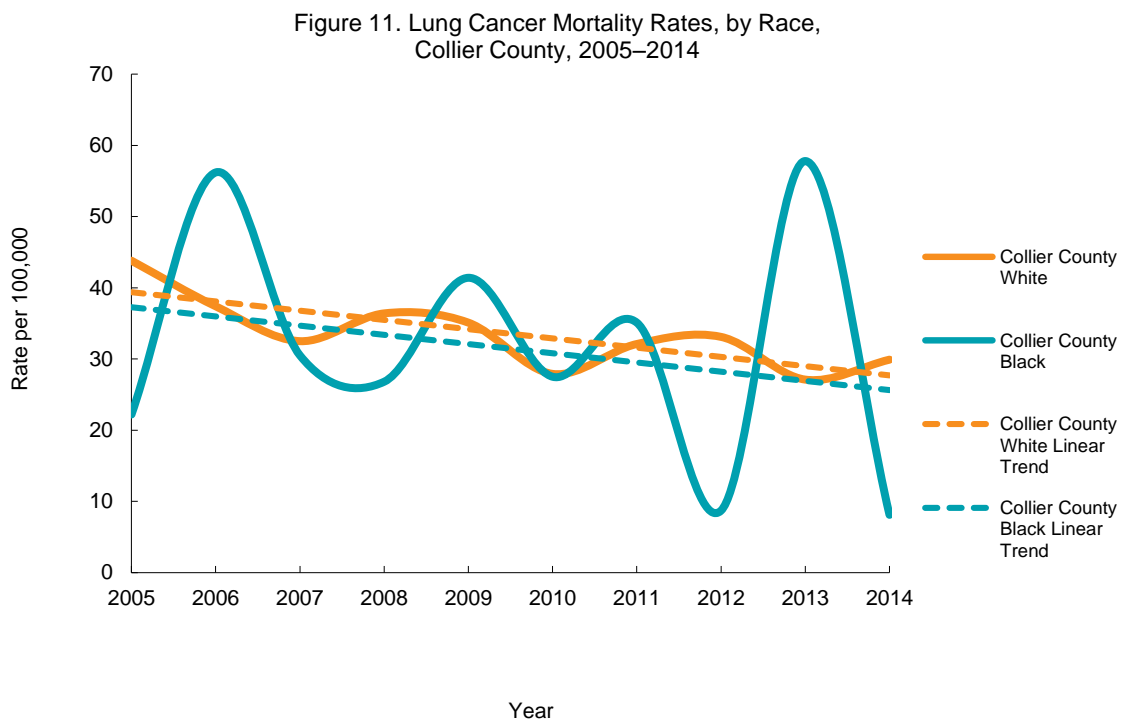
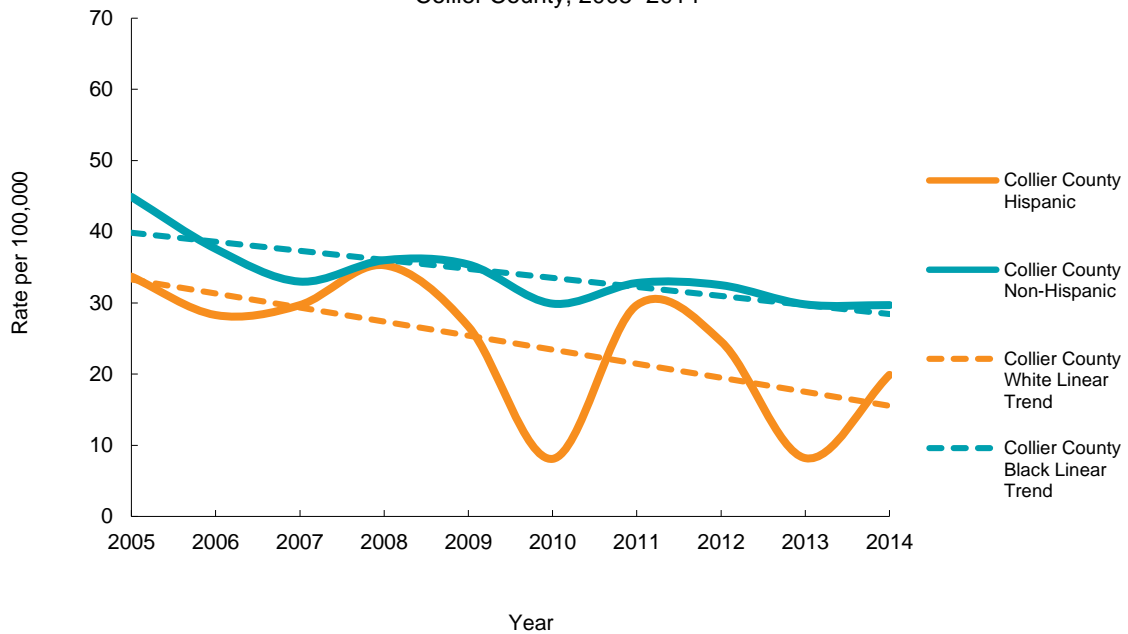


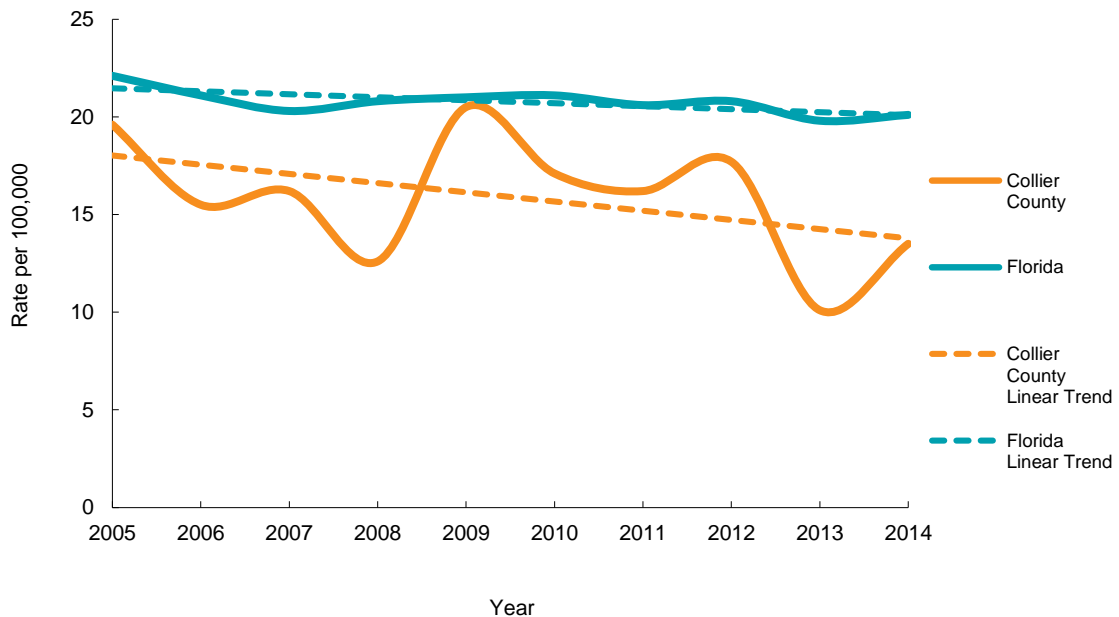
Figure 12 displays lung cancer mortality rates by ethnicity for Collier County for 2005 to 2014. It is evident that the decline is at a steeper slope for Hispanics than that of non-Hispanics. Between 2005 and 2014 Hispanic lung cancer mortality declined by 41 percent while mortality among non-Hispanics declined by 34 percent during the same period of time.

Figure 12. Lung Cancer Mortality Rates, by Ethnicity,  
Collier County, 2005–2014

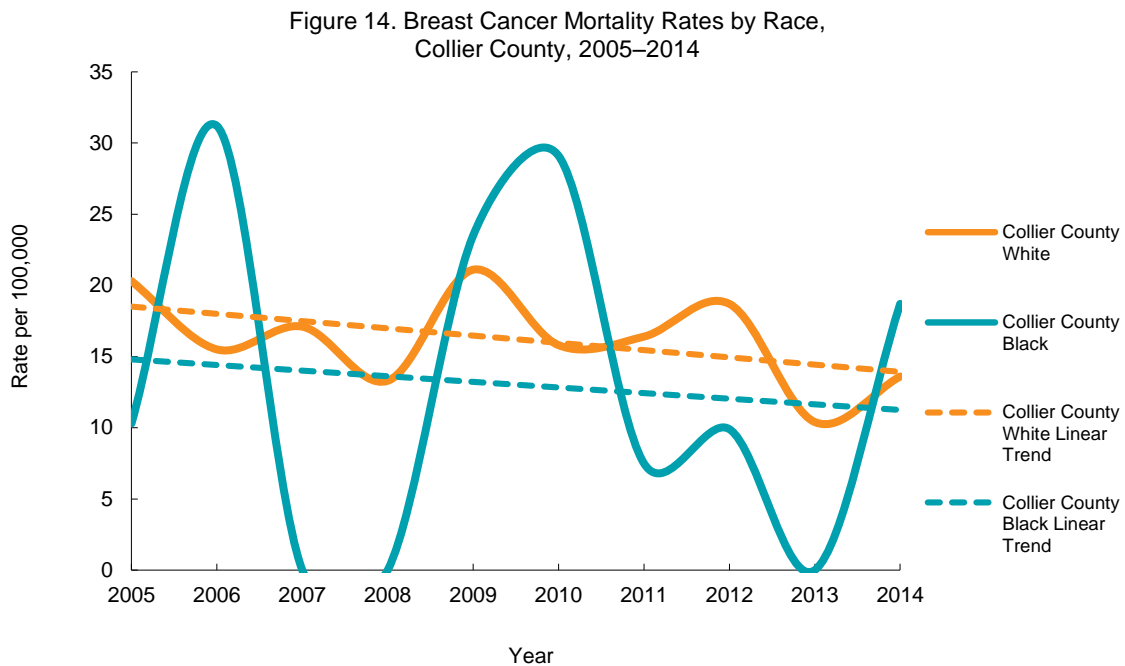


Breast cancer mortality rates in Collier County have been declining dramatically over the ten year period 2005 to 2014, from 19.6 to 13.5 per 100,000 population, respectively. The rate of decrease in Collier County is more than 3 times that of Florida (Figure 13).

Figure 13. Breast Cancer Mortality Rates,  
Collier County and Florida, 2005–2014

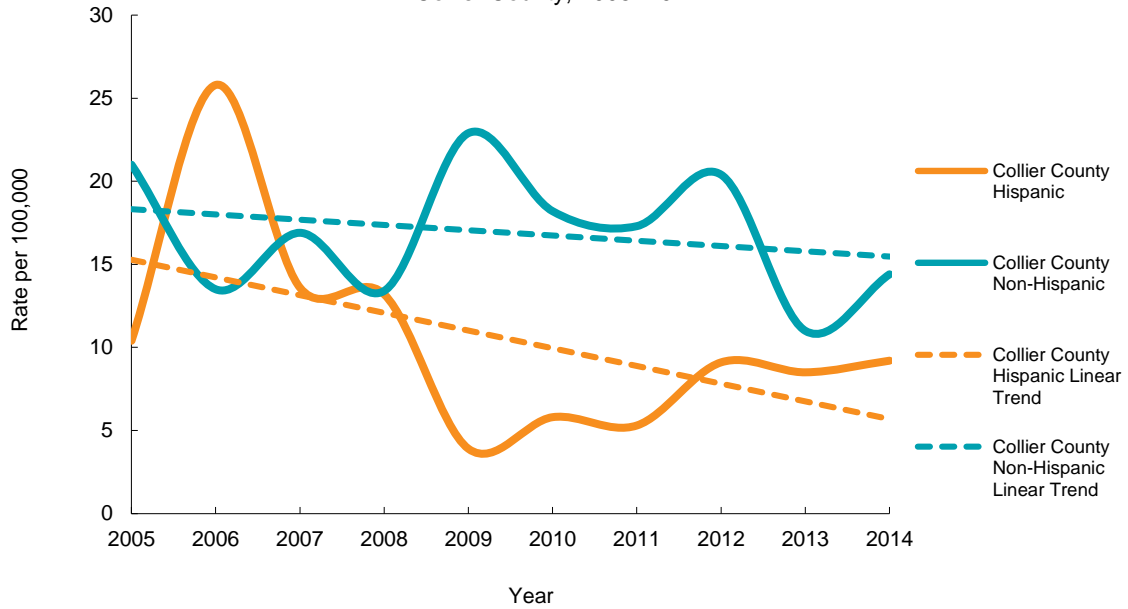


By race (Figure 14), whites in Collier County are experiencing the same rate of lower breast cancer mortality as the total county, while the data for the black population is not comparable due to effect of very small numbers as mentioned earlier for other specific cancer sites.



By ethnicity (Figure 15), Hispanics in Collier County experienced lower baseline levels of breast cancer mortality than non-Hispanics. In every year between 2005 and 2014, Hispanics had lower death rates (excluding 2006) due to breast cancer than non-Hispanics in Collier County. While both ethnicities have been declining in their mortality rate trend, the rate for non-Hispanics was 14.4 per 100,000 population in 2014, for Hispanics it was 9.2.

Figure 15. Breast Cancer Mortality Rates by Ethnicity, Collier County, 2005–2014

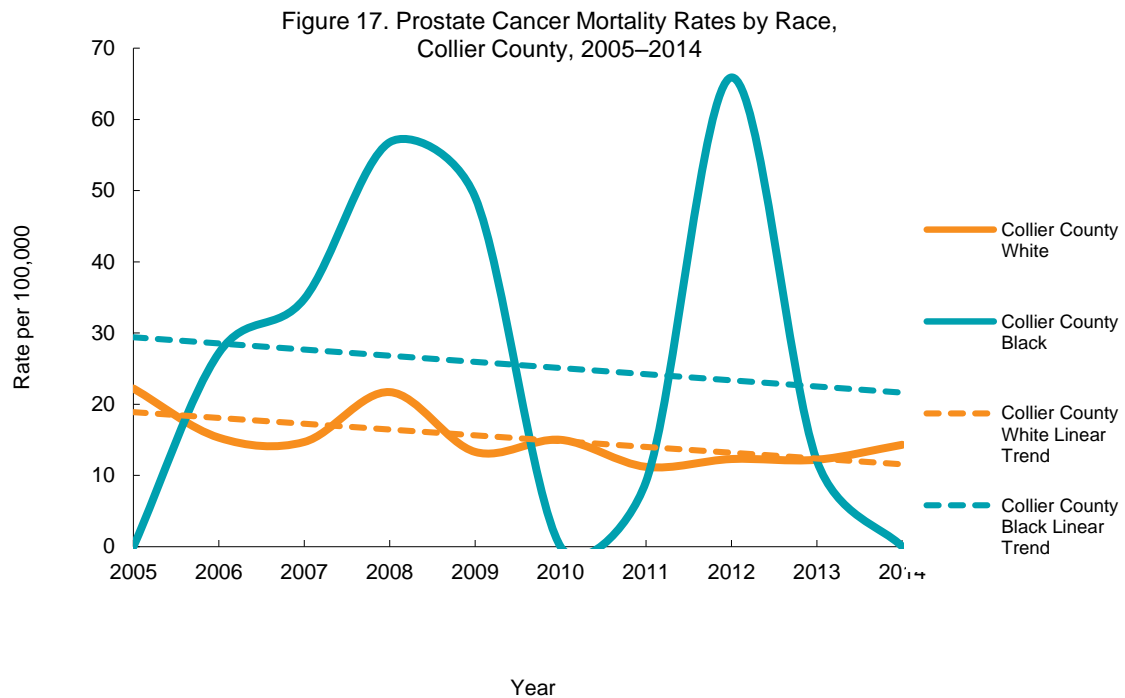


While prostate cancer mortality rates in 2005 were very similar for both Collier County and the state of Florida, by 2014 the rate for Collier County had decreased by 37 percent to 14.0 per 100,000 population and for Florida it decreased by 19 percent to 17.3 (Figure 16).

Figure 16. Prostate Cancer Mortality Rates, Collier County and Florida, 2005–2014



Prostate cancer mortality trends among the white population in Collier County is a mirror image of that of the total male population as just described in Figure 16. The annual rates and the rate of decrease between 2005 to 2014 are almost the same (Figure 17).



While the non-Hispanic prostate cancer mortality rates in Figure 18 emulate those rates of white and total male population for Collier County, the rates for the Hispanic population are highly variable with a declining slope mainly due to zero prostate cancer deaths in 2012 and 2014 among this population group.



Figure 18. Prostate Cancer Mortality Rates by Ethnicity, Collier County, 2005–2014

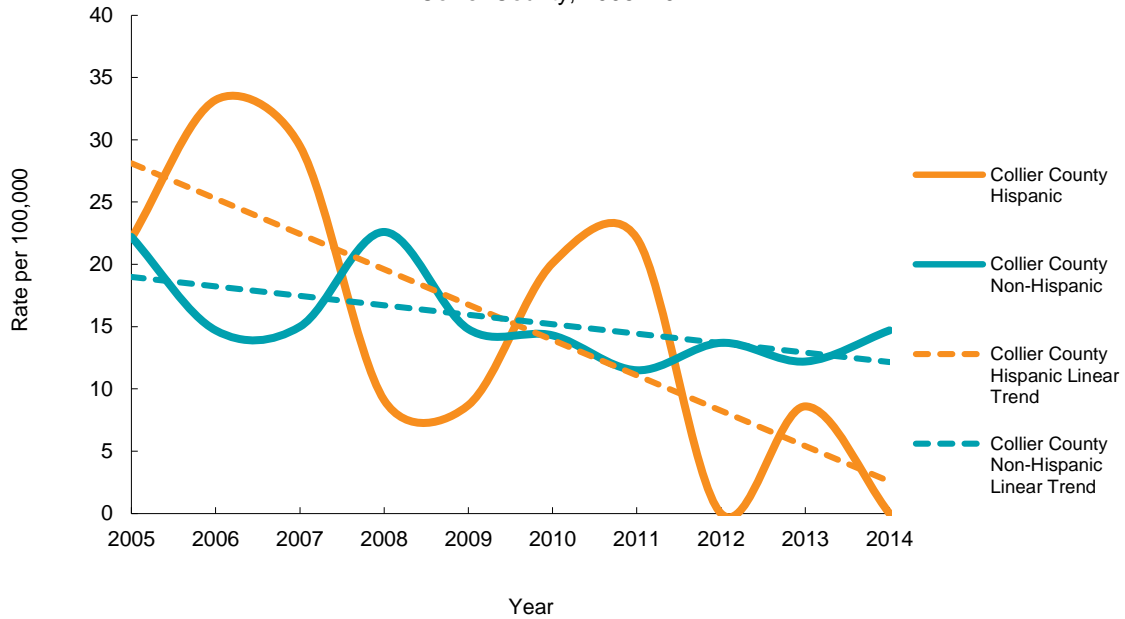
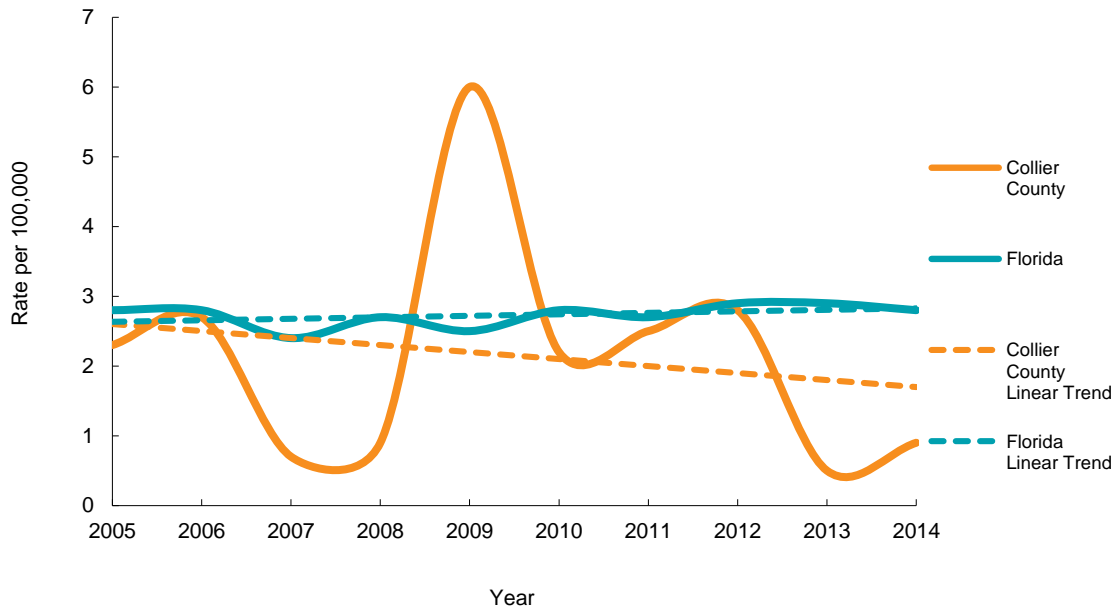


Figure 19 shows the cervical cancer mortality rates in Collier County and Florida between 2005 and 2014. While the mortality rate from cervical cancer in Collier County has been declining slowly depending upon the year, the death rate per 100,000 population for this cause throughout the state has remained constant.

Figure 19. Cervical Cancer Mortality Rates, Collier County and Florida, 2005–2014



By ethnicity, the cervical cancer mortality rate among Hispanics in Collier County has been increasing steadily over the 10 year period, while the opposite is true for the non-Hispanic population (Figure 20).

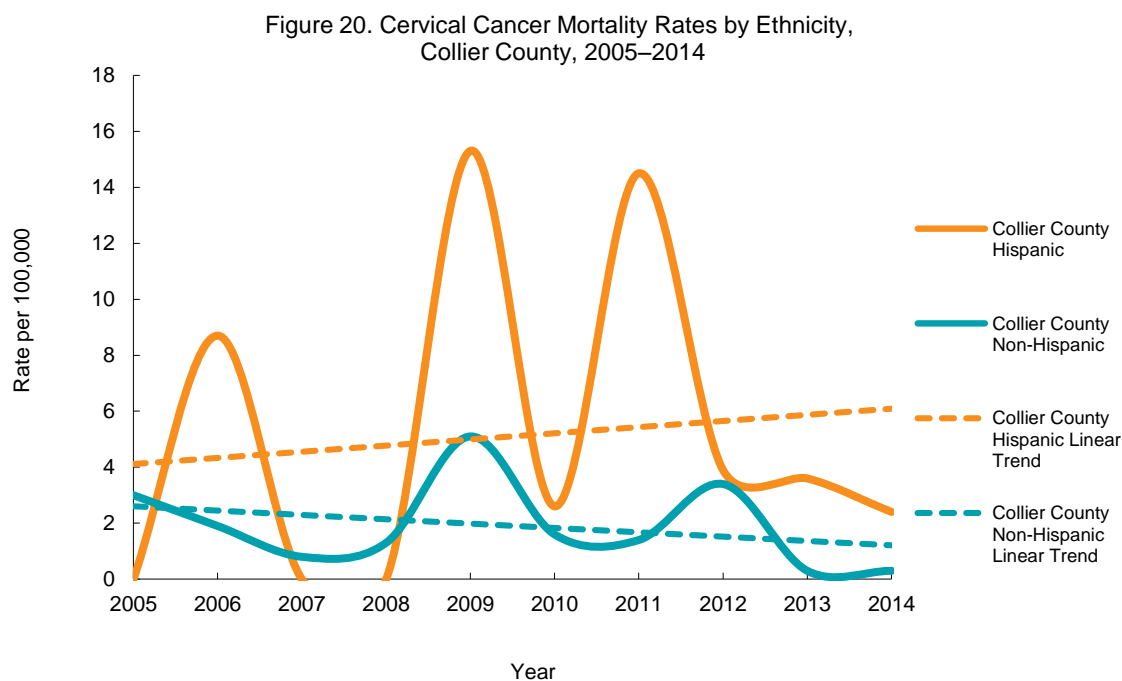


Figure 21 shows the melanoma mortality rates for Collier County and Florida, 2005 to 2014. Over this ten year period the rate for Collier County is on a slightly increasing upward trend with 5 of the 10 years having higher rates than the 2.5 per 100,000 population in 2004. The melanoma rate for Florida was flat over this period, 2.8 in 2005 and 2.8 in 2014, respectively.

Figure 21. Melanoma Mortality Rates,  
Collier County and Florida, 2005–2014

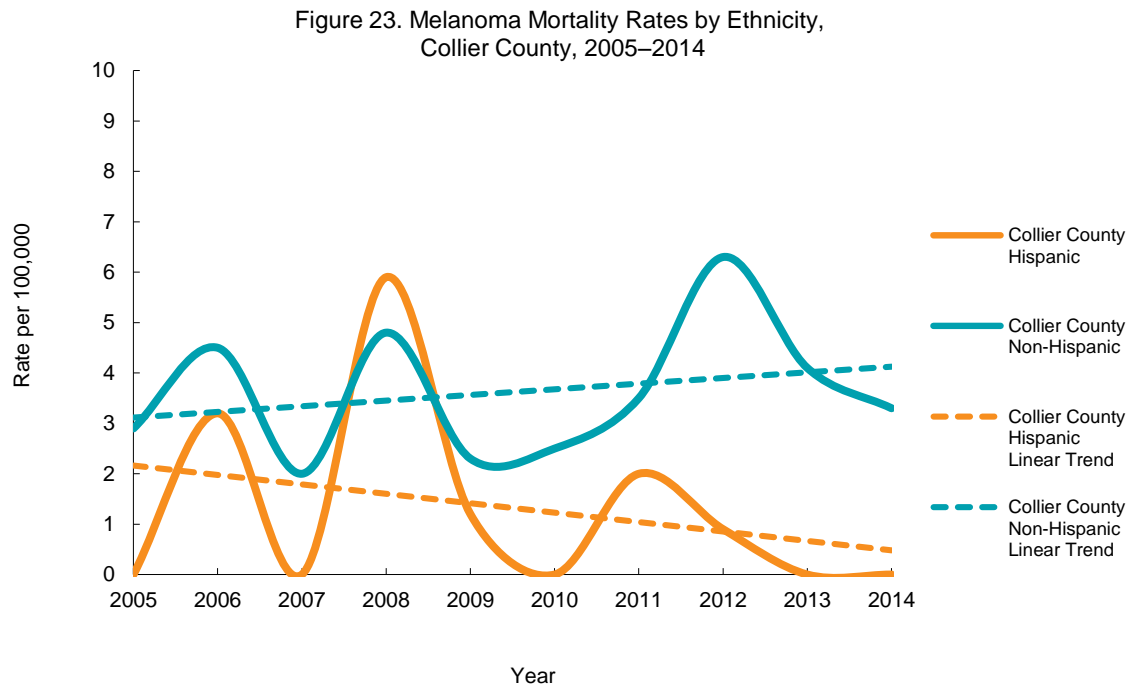


Males in Collier County experienced significantly higher mortality rates from melanoma than females (Figure 22).

Figure 22. Melanoma Mortality Rates by Sex,  
Collier County, 2005–2014



Hispanics experienced significantly lower mortality rates from melanoma than non-Hispanics (Figure 23).

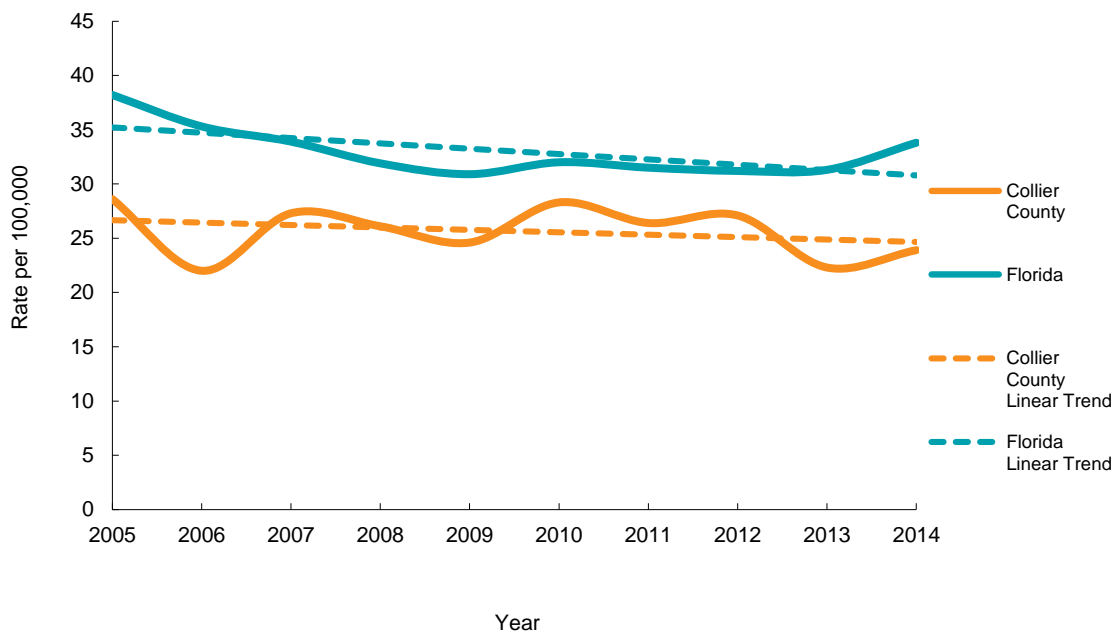


Cerebrovascular disease, more commonly referred to as stroke, is the leading cause of death in the United States and Collier County. In 2014, stroke accounted for 167 deaths in Collier County or 5.5 percent of all deaths. Among males stroke was the fifth leading cause of death. Among females it was also the fifth leading cause accounting for 23 percent more deaths than in males in Collier County in 2014.

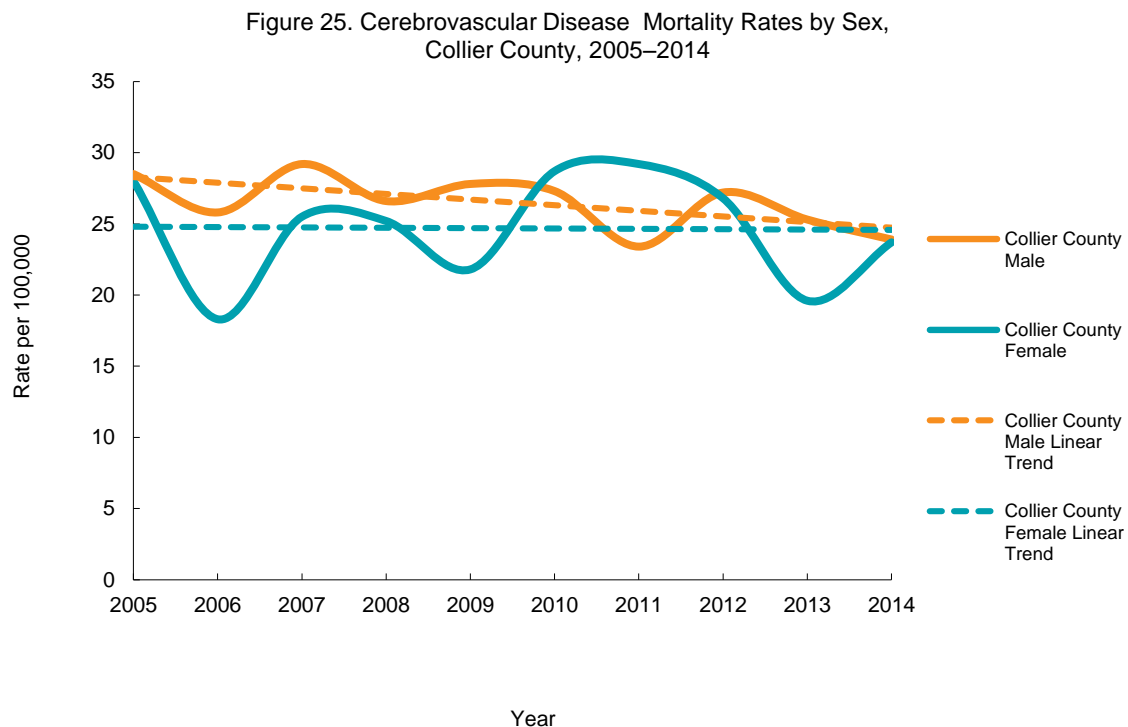
The risk of having a stroke is variable depending upon race and ethnicity. Black's risk of having a stroke is almost twice that of whites. Blacks also have a higher probability of dying following a stroke than whites. Major risk factors for stroke include: high blood pressure, high LDL cholesterol and smoking. Other health conditions and lifestyle behaviors which increase the risk of stroke are diabetes, overweight and obesity, poor diet, lack of exercise and excessive alcohol use.

Approximately two percent of both males and females 40 to 59 years of age have had a stroke and on average six percent of men and seven percent of women 60 to 79 years of age have had a stroke. Figure 24 shows the mortality rates from stroke for Collier County and the state of Florida for 2005 to 2014.

Figure 24. Cerebrovascular Disease Mortality Rates, Collier County and Florida, 2005–2014



Within the 10 year period both Collier County and Florida saw improvements in their stroke mortality with a 16 percent decline for Collier County and a 12 percent decline for Florida. Figure 25 shows the mortality rates for Collier County by gender. As can be seen, both males and females have been experiencing a gradual decline in mortality rates for the period 2005 through 2014, 16 percent and 15 percent, respectively.



The mortality rates for stroke by race are given in Figure 26. While whites are showing a steady downward trend over the 10 year interval, blacks are experiencing an increasing trend in deaths from stroke due to the much relatively higher mortality rates in 6 out of the 10 years. Historically mortality due to stroke has been higher among the black population in the United States than among the white population.

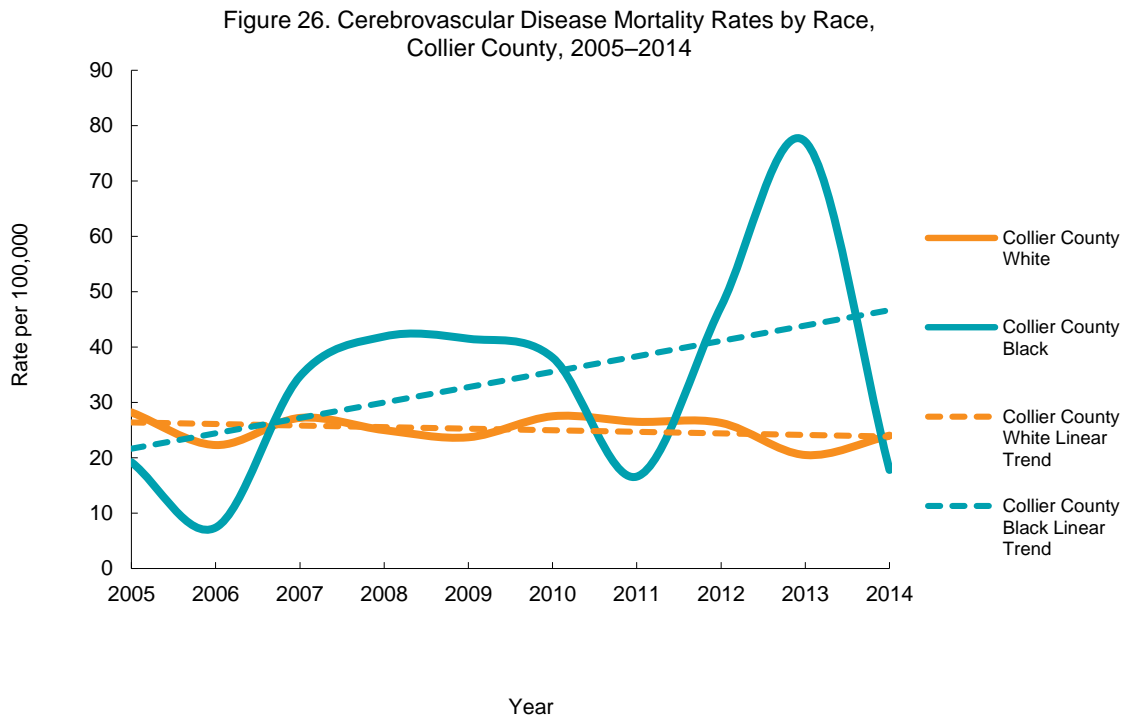
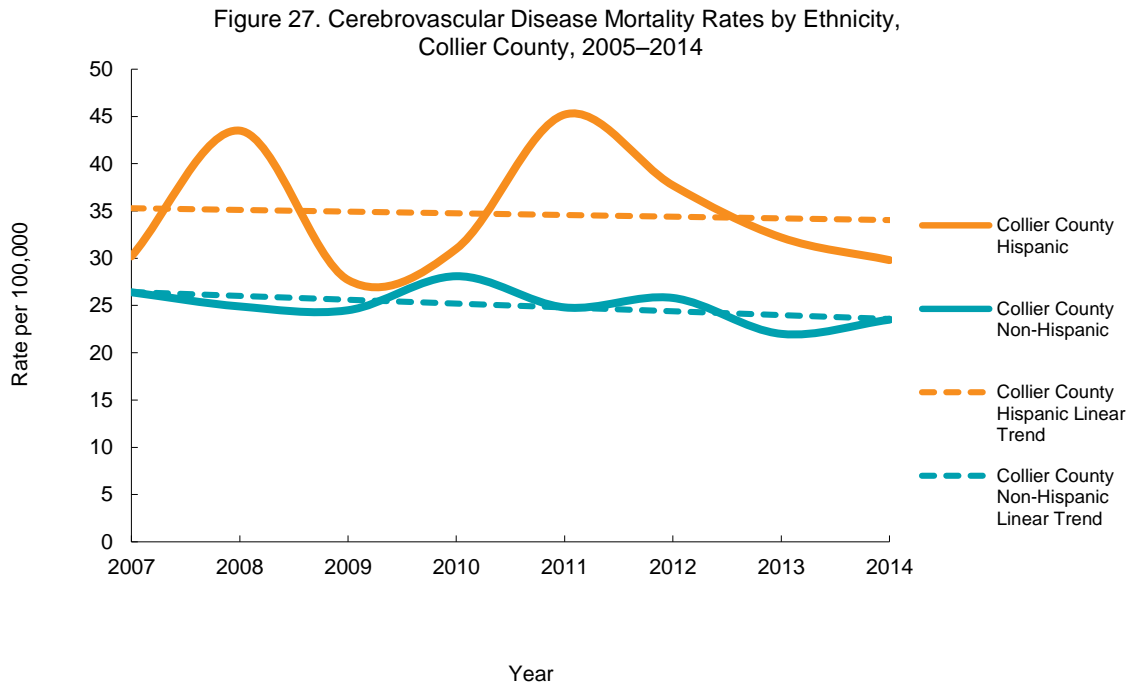


Figure 27 contains stroke mortality rates for Collier County by ethnicity for 2005 through 2014. Both the Hispanic and the non-Hispanic population’s deaths from stroke are slowly declining at an almost parallel slope, although the rates for Hispanics are at a slightly higher baseline level.



Heart disease is the leading cause of death in the United States for both men and women. Annually, over 600,000 Americans die from forms of heart disease, or approximately one out of every four deaths per year. While more than 50 percent of all deaths caused by heart diseases are presently in males, it is still the leading national cause of death in females as well. Although mortality rates from heart disease vary by ethnicity, it remains the leading cause of death as well among Hispanics, blacks and whites in the U.S. Approximately, 25 percent of all deaths in blacks as well as whites are due to this cause, followed by Hispanics with about 21 percent of all deaths.

Risk factors for heart disease include blood cholesterol levels, high blood pressure, diabetes mellitus, tobacco use, diet, physical inactivity, obesity and excessive alcohol use. Genetic factors most likely contribute in some role with regard to high blood pressure and specific forms of diseases of the heart and vascular conditions.

The risks for diseases of the heart are highly correlated with unhealthy lifestyle choices and habits such as cigarette smoking, failure to consume a healthy diet and obesity. In the United States the prevalence of reported heart disease varies by age and sex. While the percentage of adults ages 18 to 64 years with heart disease is similar for both males and females, for adults 65 years of age and over disease prevalence was significantly higher for males in 2014 in Collier County. The age-adjusted rate for males for heart disease was 36 percent greater than the mortality rate for females. There was a total of 436 heart disease deaths in males in Collier County in 2014 compared with 369 deaths in females, a difference of 18 percent.

During the previous decade cancer replaced heart disease in Collier County and Florida as the leading cause of death. This cause of death shift in ranking has been attributed to decades of health education targeting heart disease prevention with particular emphasis on cigarette smoking cessation, physical activity and exercise promotion and the strategic introduction of healthy food choices education and the overall importance of healthy lifestyles. At the same time that progress has been made with this reduction in the mortality rate for heart disease, the major dominant competing cause of death, cancer, has become the number one cause of mortality due to its high incidence and prevalence in the older population groups, in particular those 45 years of age and over.

Figure 28 shows the mortality rates from heart disease for Collier County and Florida for the 2005 to 2014 time period. These data display a fairly consistent reduction in deaths over the ten year period from this cause, 23 percent in Collier County and 18 percent in Florida.



Figure 28. Heart Disease Mortality Rates,  
Collier County and Florida, 2005–2014

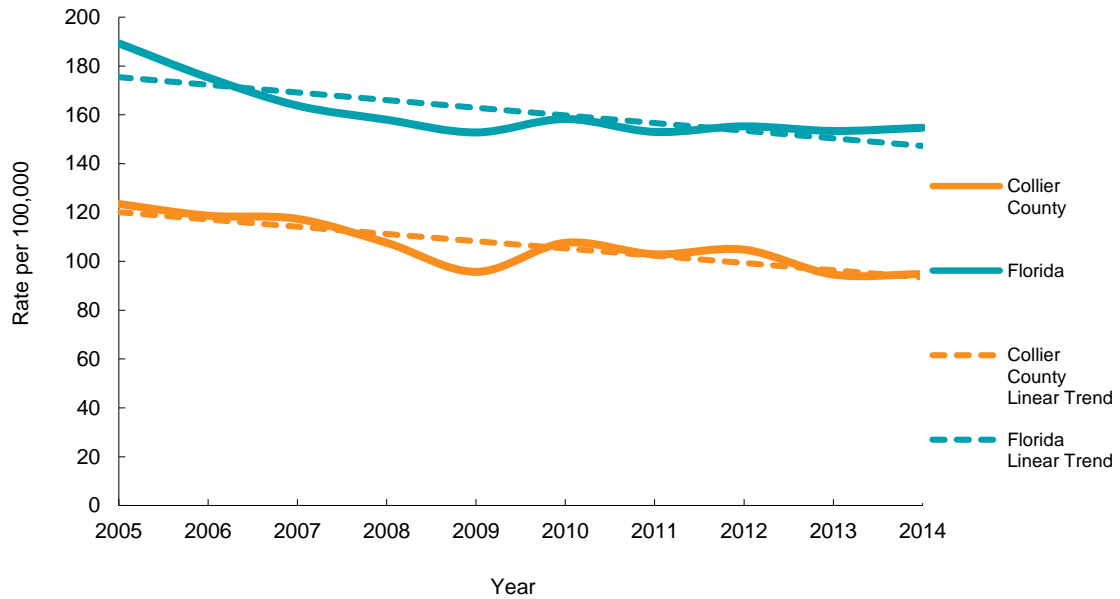
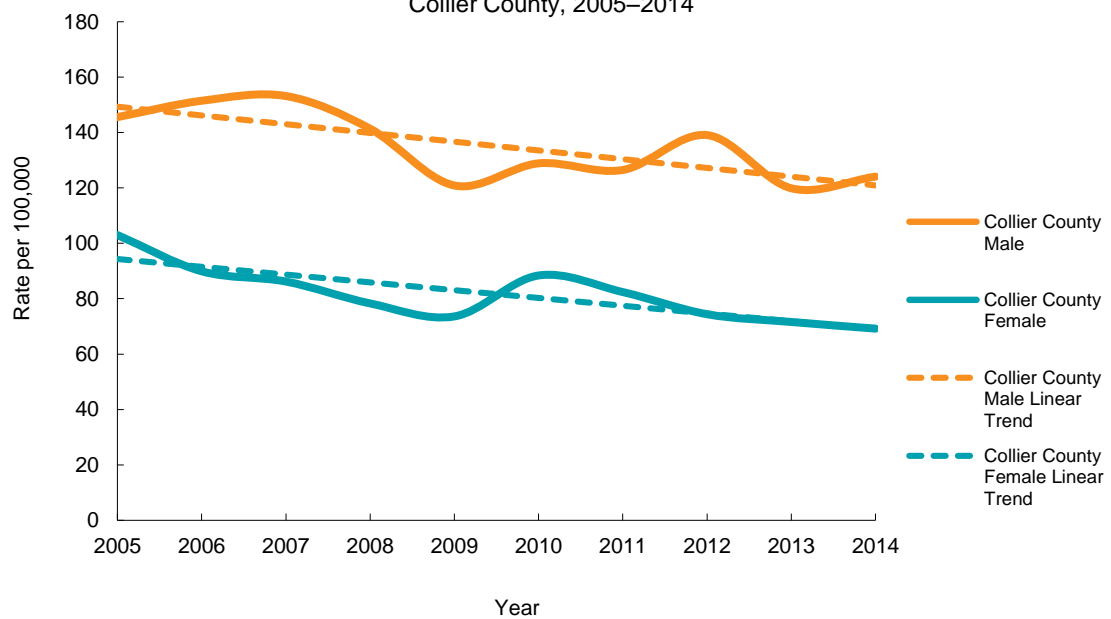
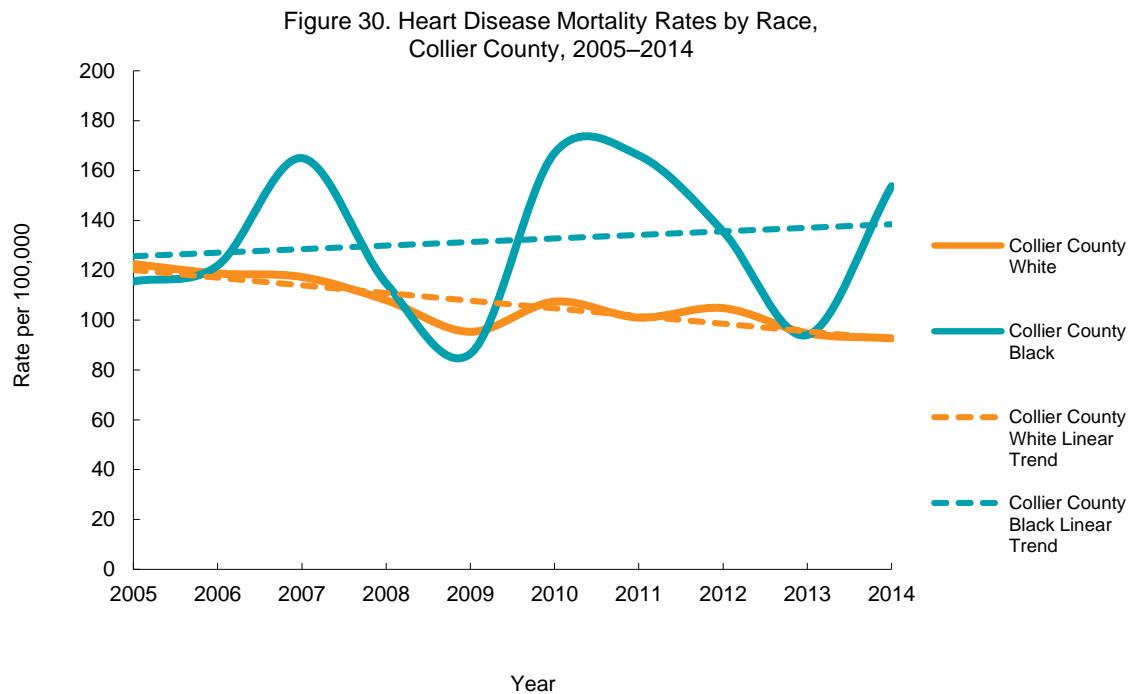


Figure 29 describes the mortality rate from heart disease in Collier County for this period by sex. Both males and females experienced an impressive improvement in heart disease deaths for the ten year interval, -15 percent and -33 percent, respectively.

Figure 29. Heart Disease Mortality Rates by Sex,  
Collier County, 2005–2014



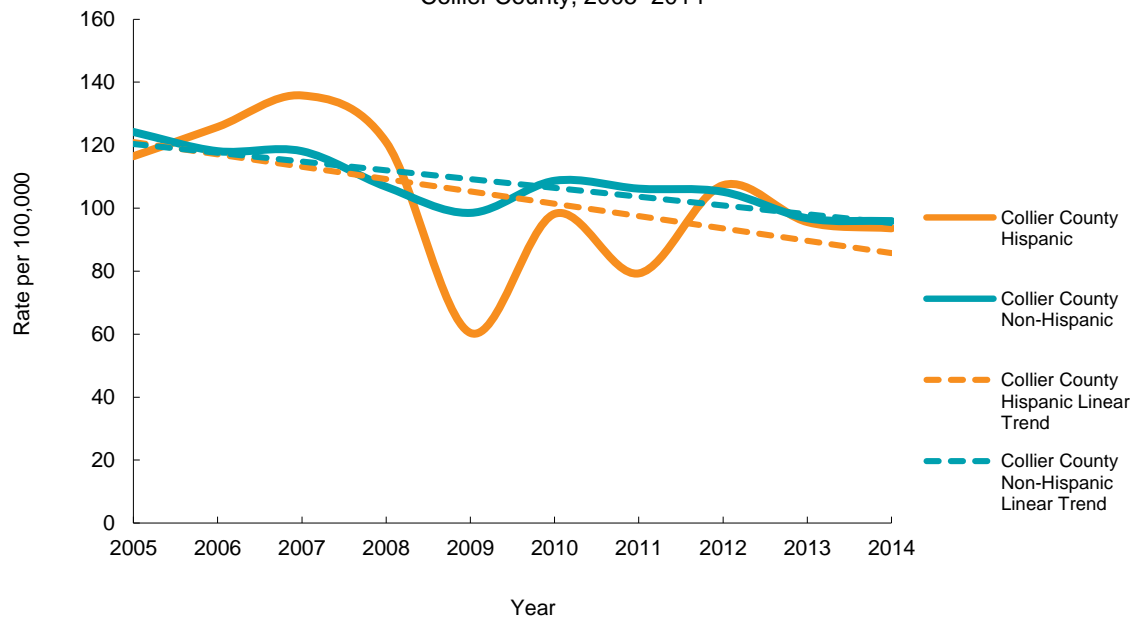
Heart disease mortality rates by race for Collier County are provided in Figure 30.



A disparity exists in the direction of the trend of heart disease mortality rates when comparing whites with blacks. While the death rate decreased by 24 percent for whites over the 10 year period, it increased significantly for the black population. In fact in 6 of the 10 years between 2005 and 2014, the heart disease mortality rate was higher for blacks than it was in 2005.

By ethnicity in Figure 31, both the Hispanic and non-Hispanic population of Collier County show an improving trend, -20 percent and -23 percent, respectively.

Figure 31. Heart Disease Mortality Rates by Ethnicity,  
Collier County, 2005–2014



Diabetes is the seventh leading cause of death in the United States and Collier County. It is estimated that at the present time 27 percent of the population 65 years and older in the county have the disease while a total of 22 million of the total U.S. population have the condition. Based on extensive analysis the CDC estimates that over 79 million American adults 20 years of age and older presently have pre-diabetes. The disease is a significant cause of heart disease and stroke and the leading cause of kidney failure, lower-limbs amputations and new cases of blindness among the adult population throughout the United States.

Both males and females are equally affected by the disease. Hispanics and blacks have a higher prevalence of diabetes than non-Hispanics. The most significant risk factor for the development of diabetes is obesity and overweight. Current prevalence levels of these lifestyle behavioral conditions are reflected heavily with the correlations in the increase in diagnosed as well as undiagnosed diabetes cases.

The obesity epidemic in Florida and the United States is directly related to levels of years of potential life lost and the decrease in life expectancy with related population groups since the risk of death among persons with diabetes is two times that of persons the same age without diabetes. In examining Figure 32, it is very evident that for both Collier County and Florida while the trend has been very slowly declining over the decade, diabetes remains a very important contributing cause of death to premature mortality for both geographical areas.

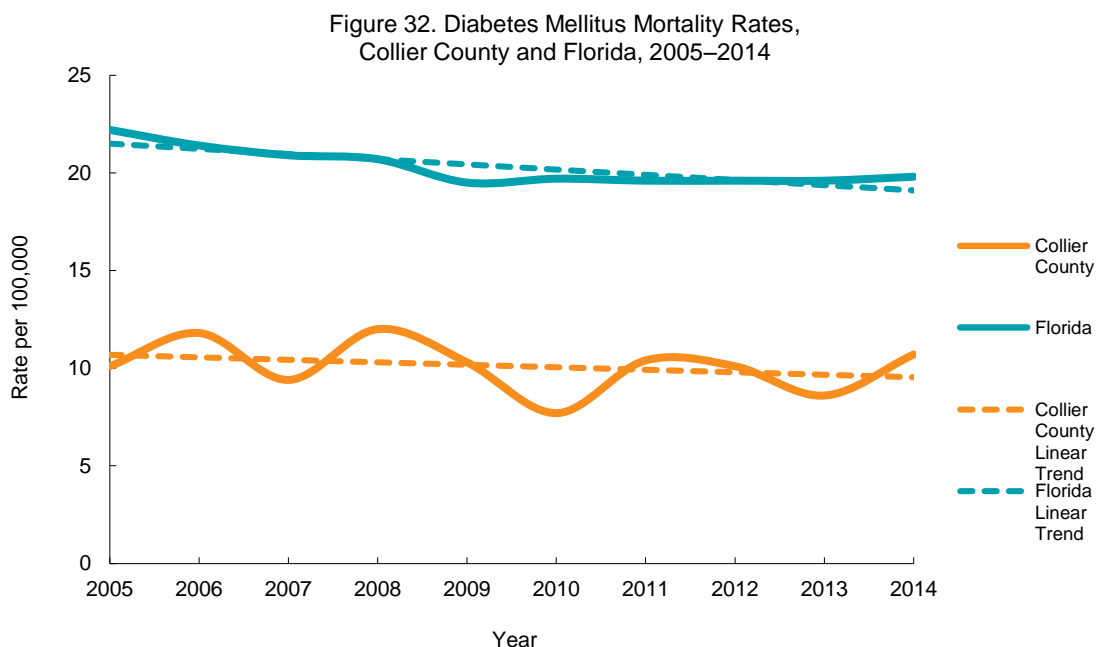
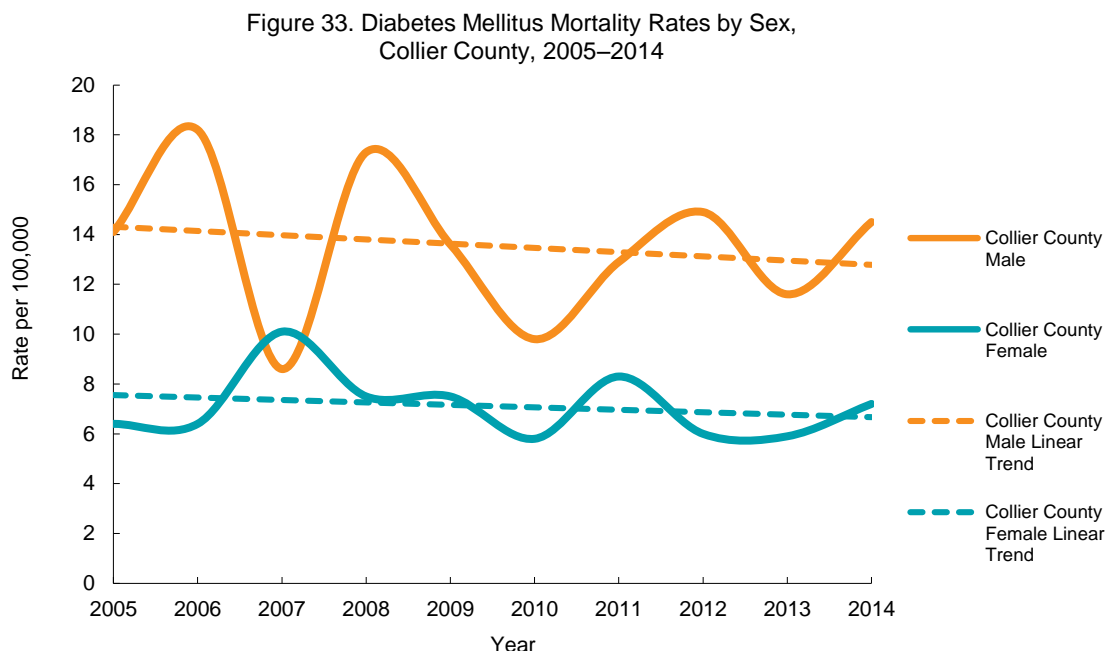


Figure 33 shows the diabetes mortality rate by sex over the 10 year period, 2005 to 2014. Both males and females have been trending slowly downward long term. On average, the mortality rates for males from diabetes in Collier County is approximately twice that of females.



The black population in Collier County has been experiencing a steadily increasing mortality trend over the 10 year period while the white population's rate has been essentially flat with no discernible change (Figure 34).

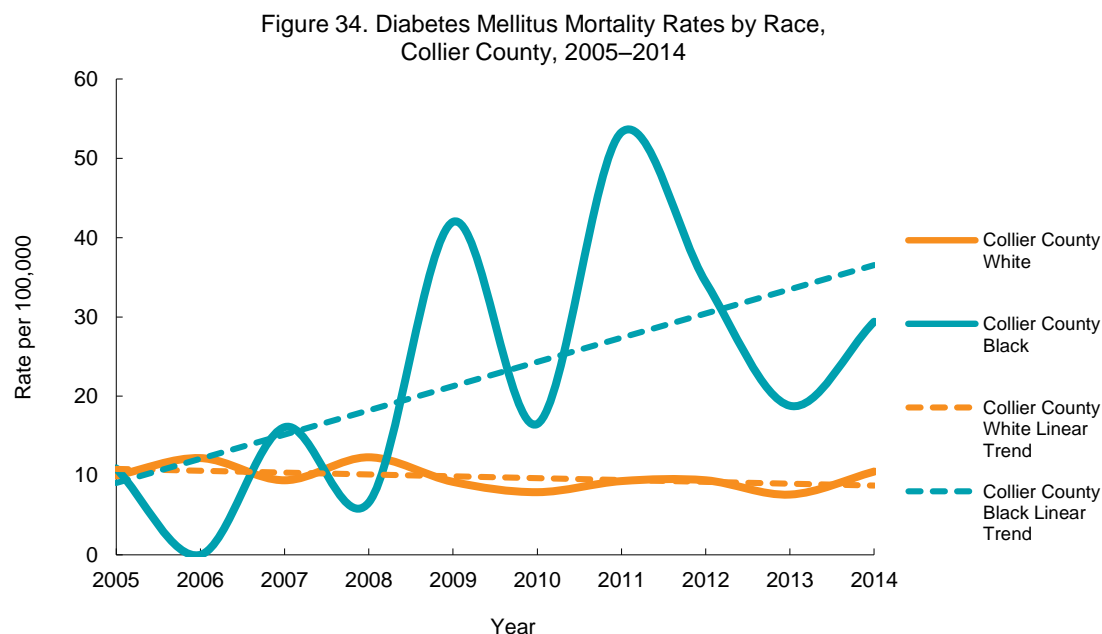
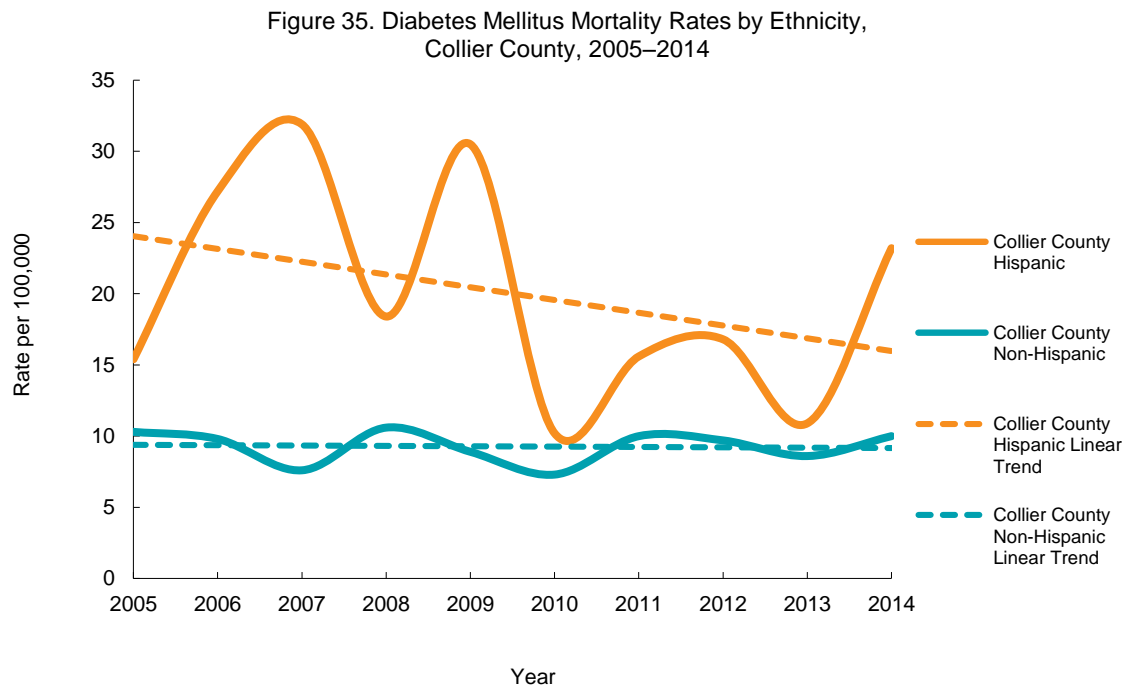


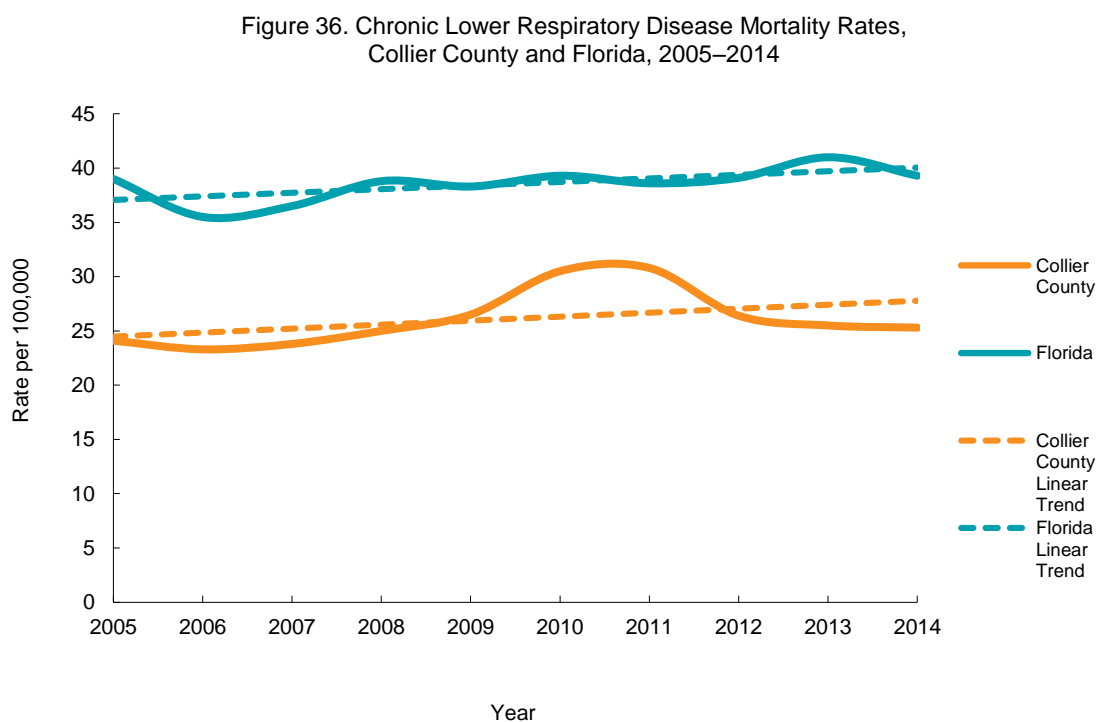
Figure 35 shows the diabetes mortality rates by ethnicity. There is a visible contrast between the downward sloping trend among Hispanics and the flat line trend among non-Hispanics in Collier County.



Chronic lower respiratory disease (CLRD) comprises three major diseases: chronic bronchitis, emphysema and asthma. It is medically accepted that cigarette smoking is a causal factor in the development and progression of emphysema and chronic bronchitis.

Mortality rates for CLRD have been declining in the United States for males since the late 1990s, while the death rate from this cause of death has not changed significantly over the past two decades.

In 2014, CLRD was the fifth leading cause of death in Collier County and the third leading cause in the state of Florida. By sex, in Collier County, it was the fourth leading cause of death for males and for females. Figure 36 shows the mortality rates from CLRD in Collier County and the state of Florida for 2005 through 2014.



Both males and females in Collier County show increasing trends in mortality rates from CLRD over the 2005 to 2014 period (Figure 37).

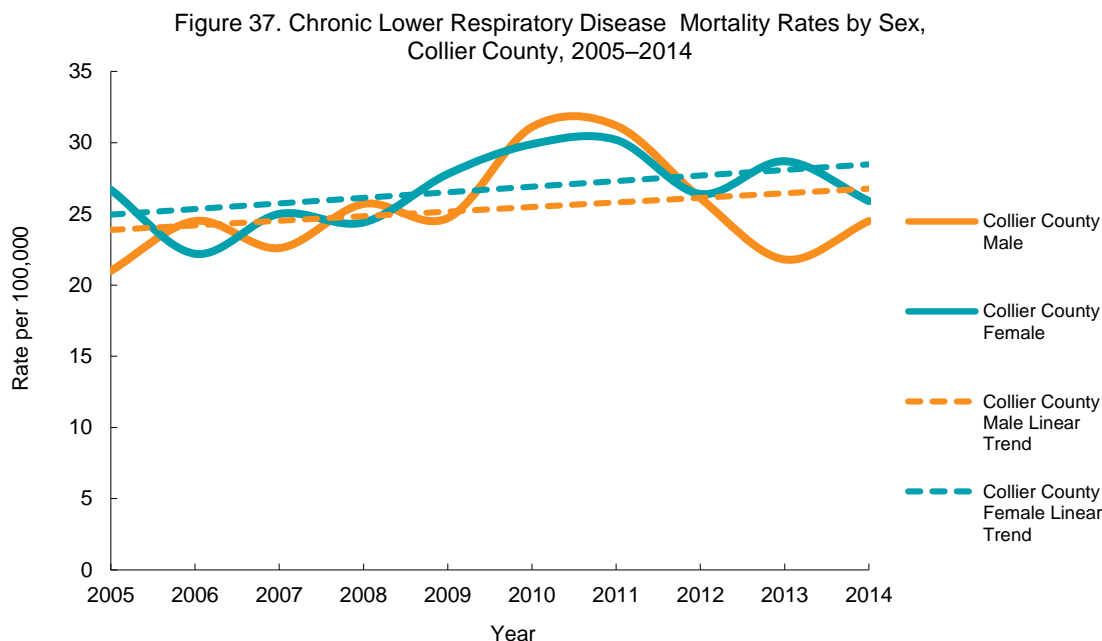
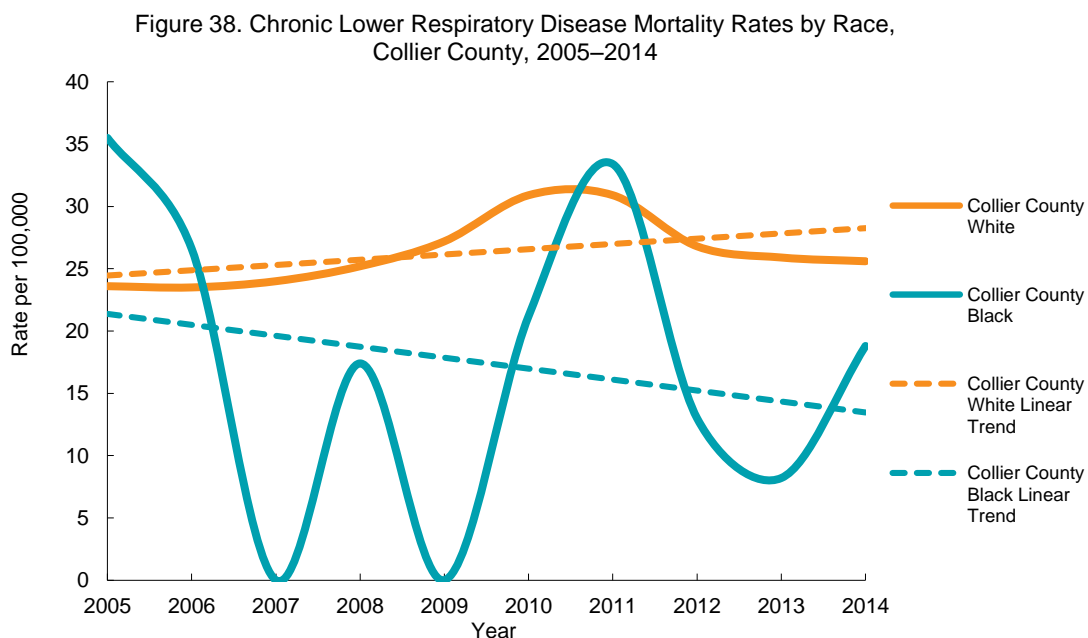
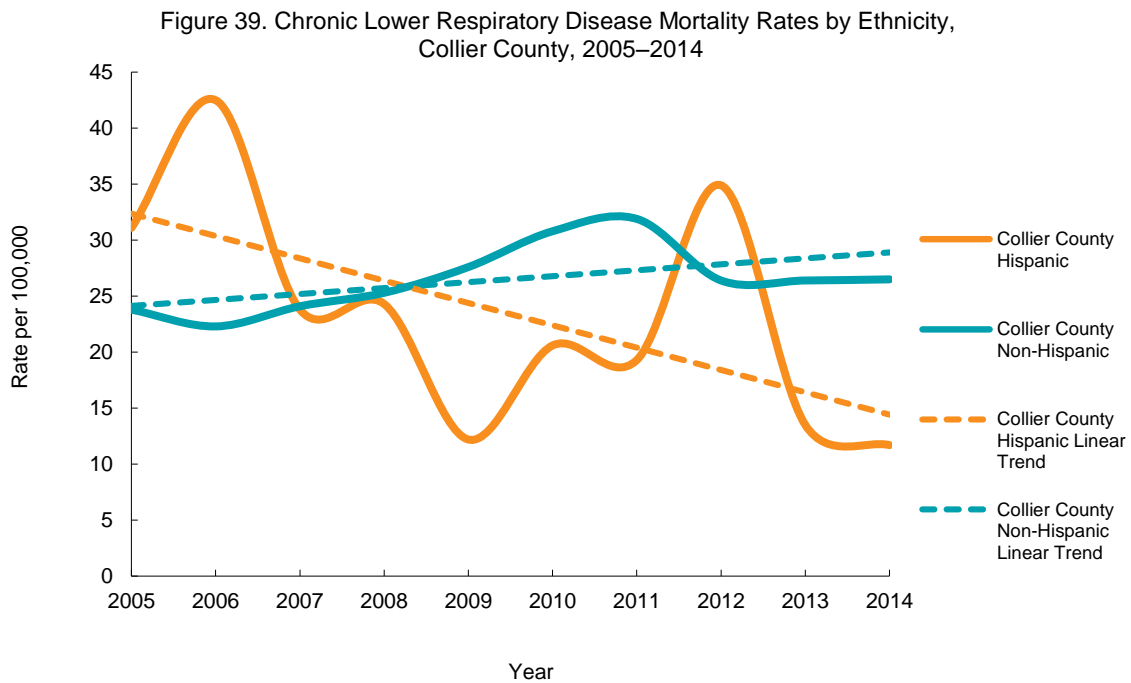


Figure 38 shows the death rates for CLRD by race. Over the ten year period, the white population have been on an increasing trend while deaths among blacks have been declining. It should be noted that this decline in mortality may be due to small number variation and the fact that the mortality rate for blacks in 2005 was at a substantial higher level than the rate that year among whites.





It is clear in Figure 39 that with the exception of the years 2005, 2006 and 2012, that non-Hispanics experienced significantly higher death rates from CLRD than Hispanics. The 10 year rate trends by ethnicity have been moving in opposite directions.



## Infectious Diseases

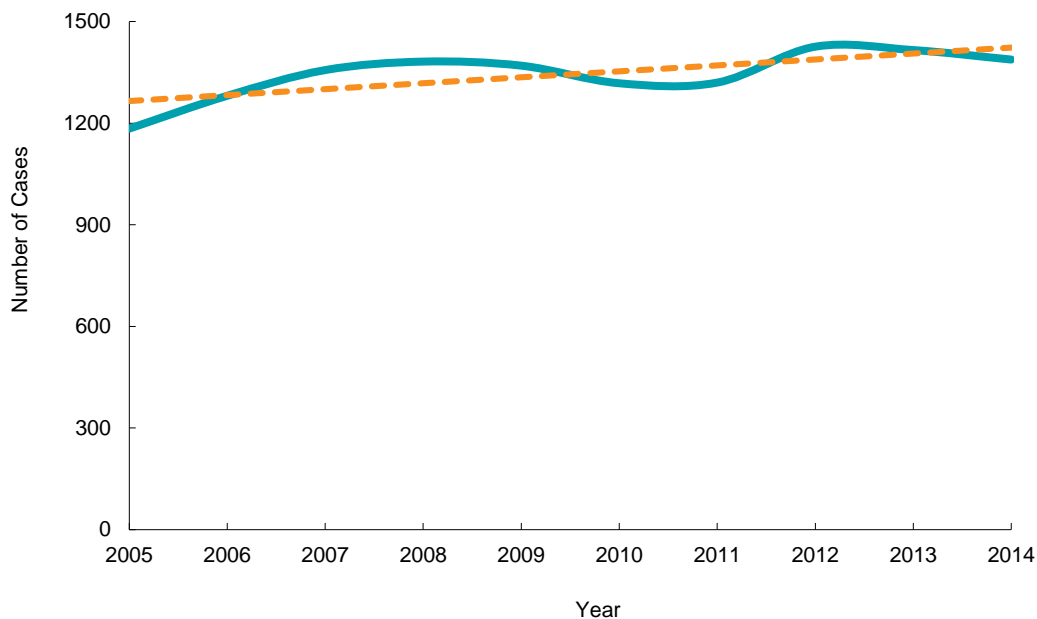
Infectious or communicable disease are illnesses that are caused by pathogenic organisms such as viruses, bacteria, parasites and fungi. Some infectious diseases present as mild illnesses, but others can be fatal. Infectious disease can be acquired by consuming contaminated food or water, by being bitten by insects or animals and by having contact with an infected person. Many communicable disease are preventable; prevention generally depends on the particular illness and its modes of transmission.

The Florida statutes require that a number of communicable diseases be reported by physicians, hospitals, urgent care centers and labs to the local health departments. Within the Florida Department of Health in Collier County and the Communicable Disease Control and Prevention Division, there are four programs that are responsible for reporting these diseases: Tuberculosis Program, HIV Program, STD Program and the Epidemiology Program. The Epidemiology Program investigates and reports all infectious diseases apart from Tuberculosis, STDs and HIV. It is a priority of the Florida Department of Health in Collier County to prevent infectious diseases and other threatening public health conditions in the community.

## Total Reportable Disease Cases

In 2014, a total of 1,388 disease cases (or about 408 per 100,000 population) were reported in Collier County, excluding chronic hepatitis B and C (cases of chronic hepatitis B and C are reported but not investigated and, therefore, are not included in the overall disease case count). Between 2005 and 2014, reportable disease incidence in Collier County increased by 5.5 percent (Figure 1). A similar pattern was seen for the State of Florida. The reasonable public health explanation for this uptick in Collier is the economic recession and its related impact on the community. Collier County continues to have among the highest reportable disease case rate throughout Southwest Florida.

Figure 1. Number of Total Reportable Disease Cases per 100,000 Population, Collier County, 2005–2014



Data source: Florida Department of Health

In Collier County, five diseases and conditions account for 80 percent of all investigations carried out by the different programs in the Florida Department of Health in Collier County (Table 1).

Table 1. Five Leading Communicable Diseases and Health Conditions Reported, Collier County, 2014

Rank Order	Disease or Condition	Number of Cases	Percentage of ALL Reportables
1	Chlamydia	807	58.1
2	Salmonella	120	8.6
3	Campylobacter	65	4.7
4	Gonorrhea	62	4.5
5	Animal Bites (Post Exposure Prophylaxis Recommended)	52	3.7
	Total	1,106	80.0

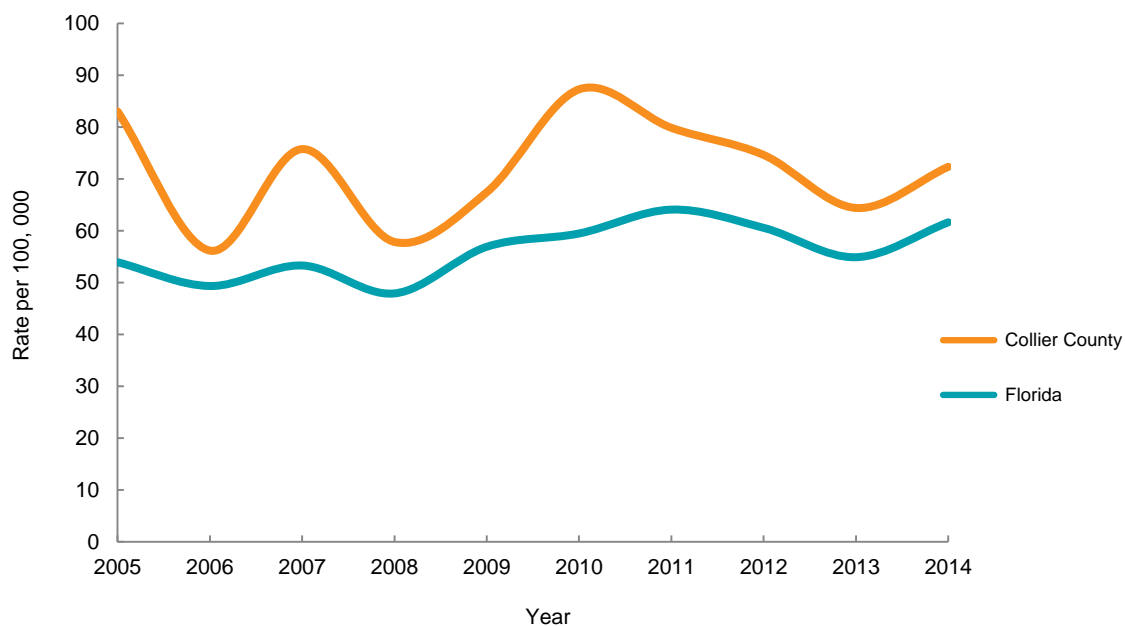
Data source: Florida Department of Health in Collier County, Epidemiology and Health Assessment Program

The Epidemiology and Health Assessment Program investigated a total of 412 reportable diseases and conditions, about 30 percent of all reportable diseases and conditions. Between 2005 and 2014, the incidence rate of these reportable communicable diseases in Collier County increased by 2.6 percent. If population growth is not taken into account, the number of diseases increased by 14.1 percent over this same interval.

## Enteric Diseases

Historically, enteric disease incidence in Collier County has been consistently greater than the Florida State average. Between 2005 and 2014, the enteric diseases for Collier and Florida followed a similar pattern (Figure 2). During this ten year period, the enteric disease rate decreased by 13 percent, while in Florida the rate increased by 14.3 percent. Collier County is considered to have fairly complete disease reporting levels when compared to the state as a whole. This is reflected in the higher reported disease incidence in all years.

Figure 2. Number of Enteric Disease Cases per 100,000 Population, Collier County and Florida, 2005–2014



Data source: Florida Department of Health

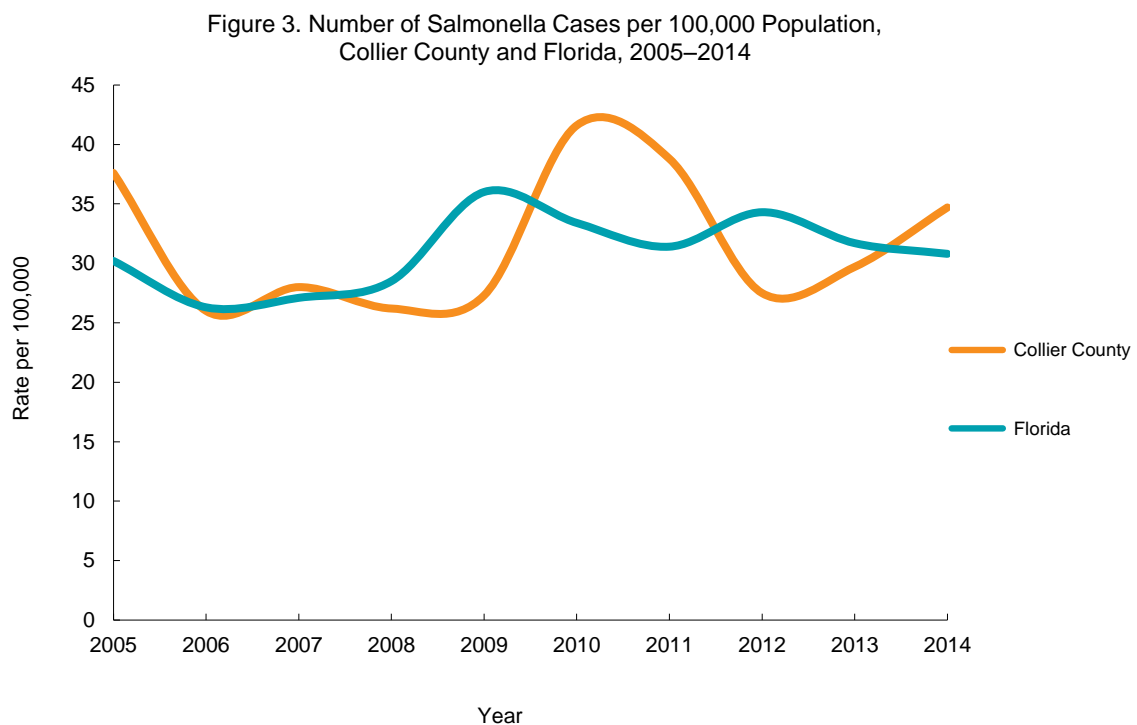
Two of the five leading reportable diseases in Collier County are enteric or gastrointestinal disease. Salmonellosis and campylobacteriosis accounted for 185 or about 17 percent of all reportable conditions (Table 1). All reportable enteric diseases; which also includes cryptosporidiosis, cyclosporiasis, shiga toxin-producing *Escherichia coli*, giardiasis, hepatitis A, shigellosis, and typhoid fever; account for 22 percent of all reported diseases and conditions in Collier County and were about 60 percent of all cases investigated by the Epidemiology and Health Assessment Program in 2014.

It should be noted that the reason for the variability or wide fluctuations in Collier County's rate in any of these disease specific graphs is due to the concept of random variation. Collier County with a relatively small resident population of 340,146 in 2014 is only 1.7 percent that of Florida's 19,548,031. Due to this difference in population size, Florida's denominator will be much more stable than Collier County's and is not subject to variable fluctuation due to relative changes in the numerator.

## Salmonella

Salmonella is a bacterial infection usually causing diarrhea, fever and abdominal cramps. In some cases, the diarrhea may be so severe that the patient needs to be hospitalized.

Salmonella infections are the second most reported condition in Collier County. The incidence in Florida and in Collier County has had increasing trends over the last 15 years. Although the rate slightly decreased by 8 percent in Collier County between 2005 and 2014, there is an upward trend in salmonella infections for this time period (Figure 3).



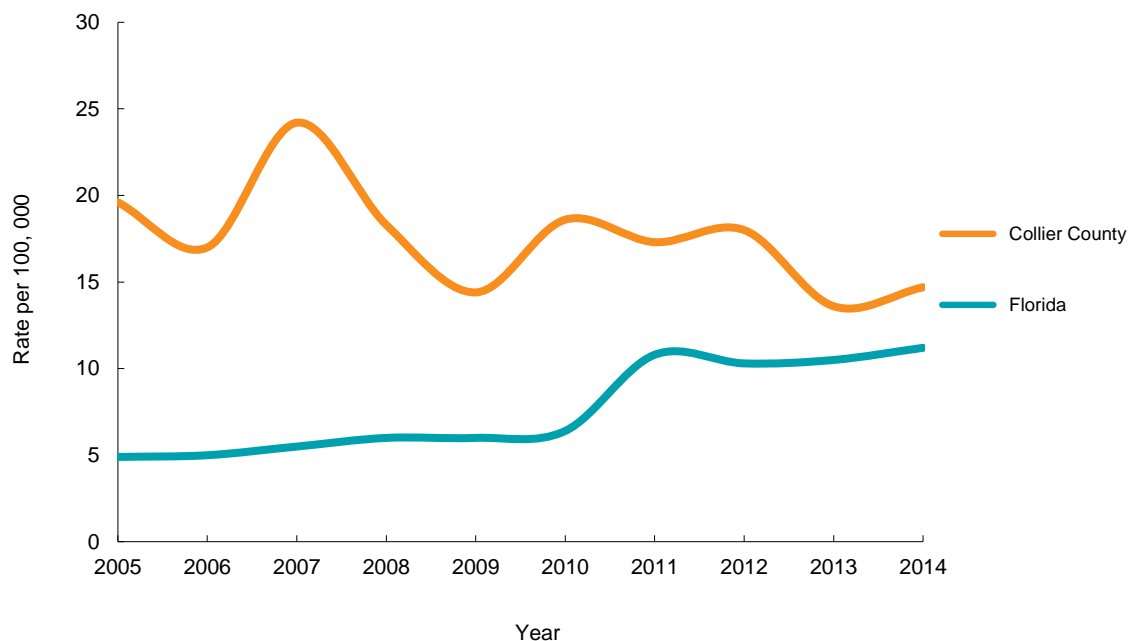
Data source: Florida Department of Health

## Campylobacter

Campylobacter is one of the most common bacterial causes of diarrheal illness in the United States. It is estimated that over 1.3 million persons in the U.S. every year are affected by this disease; therefore, a majority of cases go undiagnosed and unreported. Symptoms of campylobacter include diarrhea, cramping, abdominal pain and fever.

Between 2005 and 2014, the rates for Collier County decreased by 25 percent, while the rate of Florida increased by about 130 percent (Figure 4). Although, historically, the overall campylobacter incidence in Collier has been on average 3 to 4 times higher than that for Florida, the difference has been decreasing in the past few years.

Figure 4. Number of Campylobacteriosis Cases per 100,000 Population, Collier County and Florida, 2005–2014

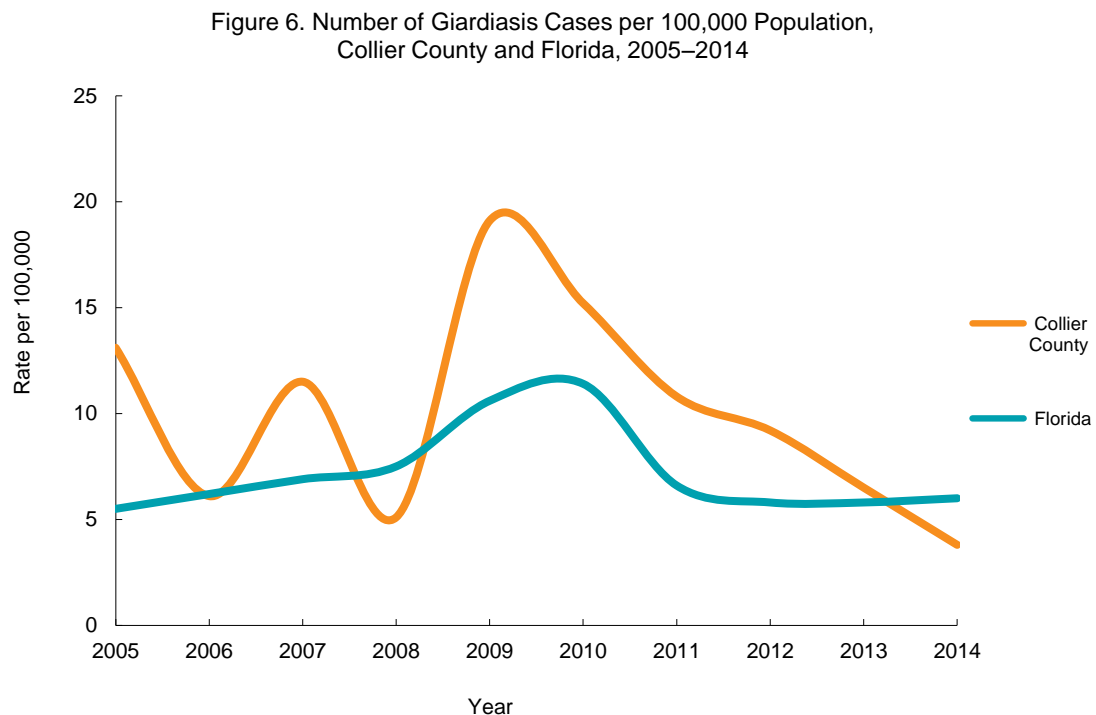


Data source: Florida Department of Health

## Giardia

Giardiasis is a diarrheal disease caused by a microscopic parasite. This parasite is found in soil, food or water that has been contaminated with feces of infected humans or animals. Although giardiasis occurs worldwide, prevalence appears to be higher in the Caribbean and other Latin American countries than in Florida and the United States. In the United States, it is more commonly found in lakes, rivers, springs, ponds and streams.

Between 2005 and 2014, the rate for giardiasis in Collier County declined by 71 percent (from 13.1 to 3.8). The rate peaked in 2009 with 19.1 per 100,000 population and decreased by 80 percent from 2009 to 2014 (Figure 6). One of the major correlates of the decline of giardiasis incidence in Collier County from 2011 to 2014 has been the case definition changes in 2011. Prior to 2011, all cases that met the laboratory criteria regardless of clinical presentation were reported. In 2011, a clinical criteria was included in the case definition, thus increasing the specificity of the reporting system and reducing the rate of this disease.



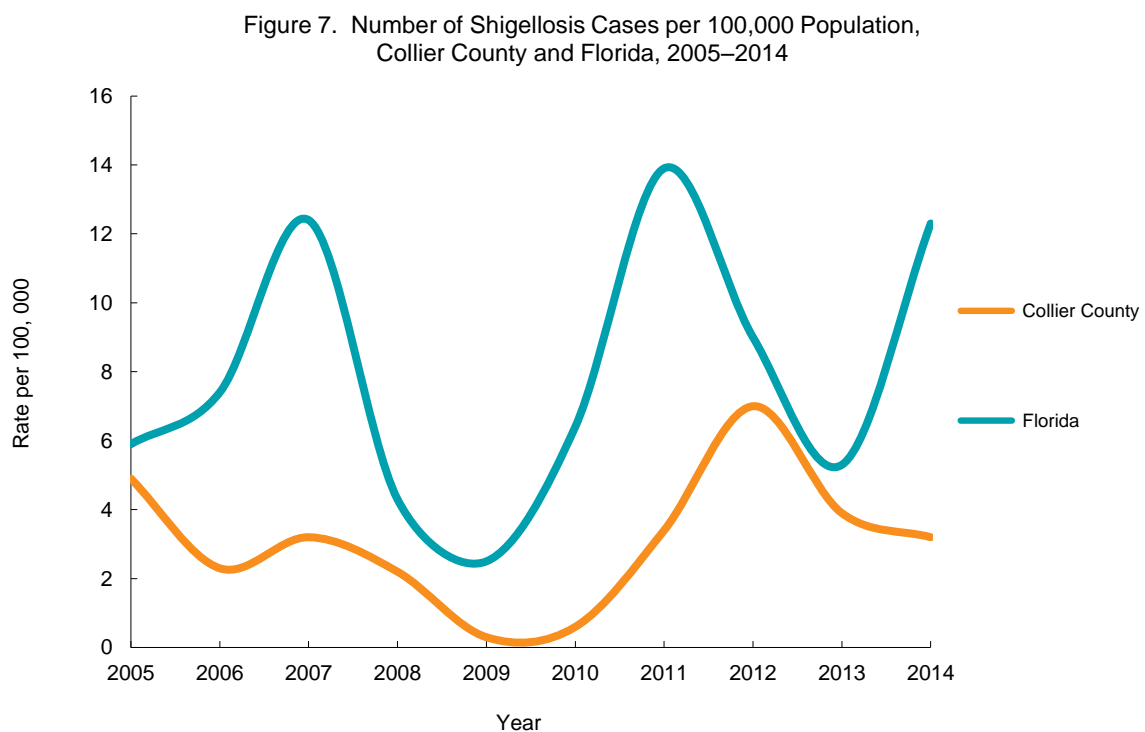
Data source: Florida Department of Health



## Shigellosis

Shigellosis is an acute bacterial disease involving the small intestine and colon. Most cases are acquired as a result of the bacterium passing from the stool or soiled hands from one person to the mouth of another. As with most infective diseases frequent hand washing with soap significantly reduces the risk of acquiring the disease. Shigellosis is more prevalent and may be recurrent in environment where low hygiene standards exist. It is more common in warm weather. The majority of cases in the United States occur in children 2 to 4 years of age particularly in child care settings; therefore, the most common associated shigellosis risk factor in Collier County is being a toddler or an employee in a child care facility.

Between 2005 and 2014, the rate of reported cases of shigellosis declined by 34.7 percent, from 4.9 to 3.2 per 100,000 population. However, there is an increasing trend of shigellosis in the county. Collier's rates peaked in 2012 with a rate of 7 per 100,000 population. The rate for Florida increased by 108.5 percent over the same period (Figure 7).



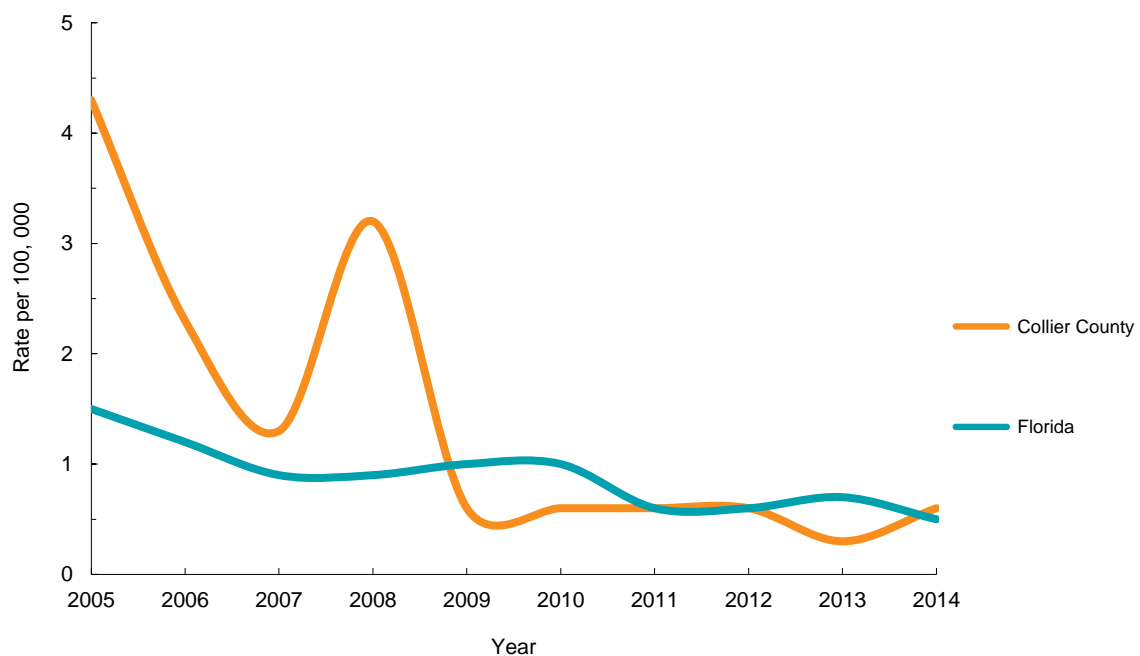
Data source: Florida Department of Health

## Hepatitis A

Hepatitis A is a contagious disease of the liver caused by infection with the hepatitis A virus. Transmission can occur from ingesting food or drinks contaminated by the feces of an infected person and from having close contact with an infected person. Hepatitis A is more prevalent in countries and areas where poor sanitary conditions and low levels of personal hygiene exist. While incidence of hepatitis A is low in the United States and other developed countries, the endemicity in Central and South America can be very high with case rate reaching 150 per 100,000 population annually.

Between 2005 and 2014, the rate of reported cases of hepatitis A decreased significantly to 0.6 and 0.5 per 100,000 population for Collier County and Florida, respectively. The hepatitis A rate decreased by 86 percent in the county. In Florida, the decrease amounted to 66.7 percent (Figure 8). While annual fluctuations in reported cases have occurred, these low rates are directly attributed to the introduction of the hepatitis A vaccine in 1995.

Figure 8. Number of Hepatitis A Cases per 100,000 Population, Collier County and Florida, 2005–2014



Data source: Florida Department of Health

## Vaccine-Preventable Diseases

Vaccine-preventable diseases, as the name implies, are infections that can be prevented; however, every year several vaccine-preventable disease are reported in Collier County. In fact, they account for approximately 10 percent of all cases investigated by the Epidemiology and Health Assessment Program at the Florida Department of Health in Collier County. These diseases include diphtheria, measles, meningococcal disease, mumps, pertussis, poliomyelitis, rubella, tetanus and varicella. The two most reported vaccine-preventable diseases in the county are pertussis and varicella.

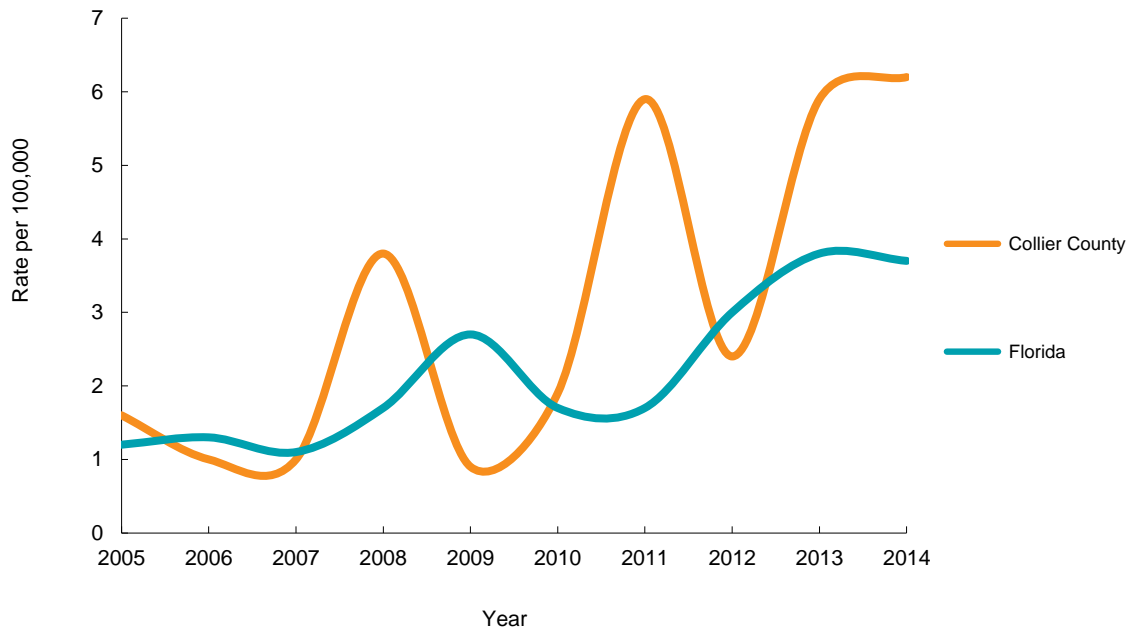
### Pertussis

Pertussis or whooping cough is an acute bacterial infectious disease caused by *Bordetella pertussis*. During the 20<sup>th</sup> century, pertussis was one of the most common childhood diseases and a major contributor to childhood mortality in the United States. Beginning with the widespread use of vaccine, pertussis incidence declined more than 80 percent compared with the pre-vaccine years. However, in recent years, the United States has experienced a reemergence, predominately due to unvaccinated children.

Nationally, pertussis cases and outbreaks are increasing. Among children, infants have the highest incidence due to their lack of immunity, followed by children ages 7 to 10 years of age. Children who are unvaccinated have more than an eightfold greater risk for pertussis than children who are fully vaccinated with DTaP. Pertussis is a vaccine preventable disease whose incidence can be significantly reduced through health education on the science of vaccine protection.

Between 2005 and 2014, the number of reported cases of pertussis in Collier County adjusted for population has increased from 1.6 to 6.2 per 100,000. This amounts to a 288 percent increase in 10 years (Figure 9). Three fourths or 74 percent of the pertussis cases reported since the year 2005 have occurred from 2010 to 2014. Contrasting with the total state's reported cases, Collier County has had on average higher incidence.

Figure 9. Number of Pertussis Cases per 100,000 Population, Collier County and Florida, 2005–2014



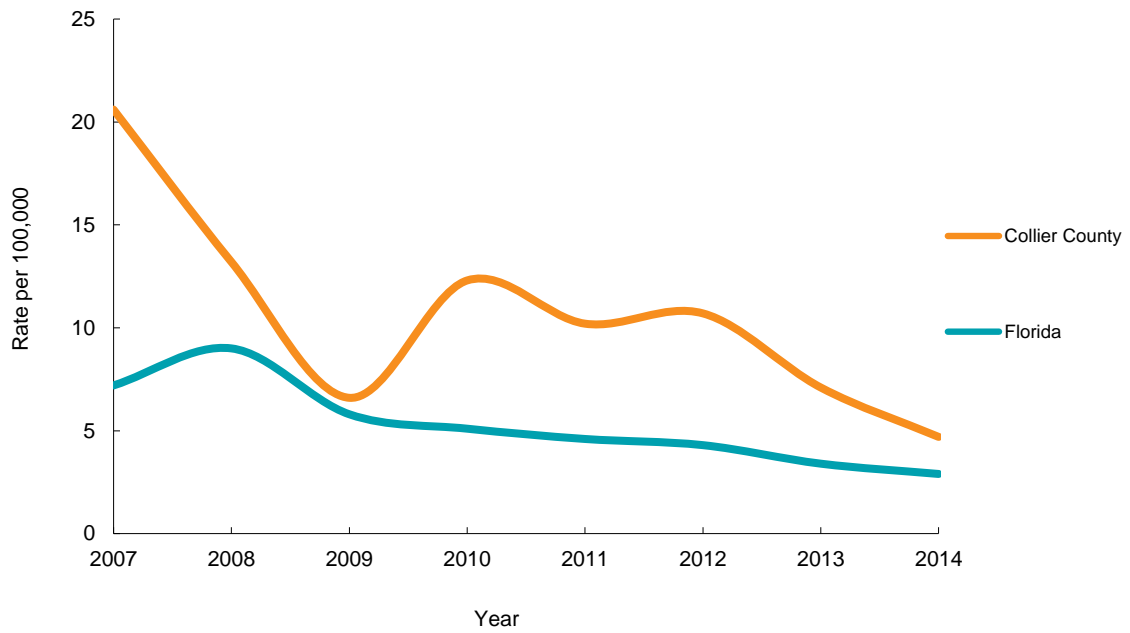
Data source: Florida Department of Health

## Varicella

Varicella or chickenpox is an acute infectious disease caused by *Varicella zoster virus* (VZV). Varicella occurs worldwide. In the pre-vaccine era, varicella was endemic in the United States, and virtually all persons acquired the disease by adulthood. The mode of transmission is by direct contact, person-to-person, droplet or airborne spread of vesicle fluid, or secretions of the respiratory tract. In Florida, immunization against varicella is recommended for children following their first birthday unless they have had the disease.

Varicella became a reportable disease in Florida in late 2006. Between 2007 and 2014, cases in Collier County declined by 77 percent, in Florida cases decreased by 60 percent over the same period (Figure 10).

Figure 10. Number of Varicella Cases per 100,000 Population, Collier County and Florida, 2007–2014



Data source: Florida Department of Health

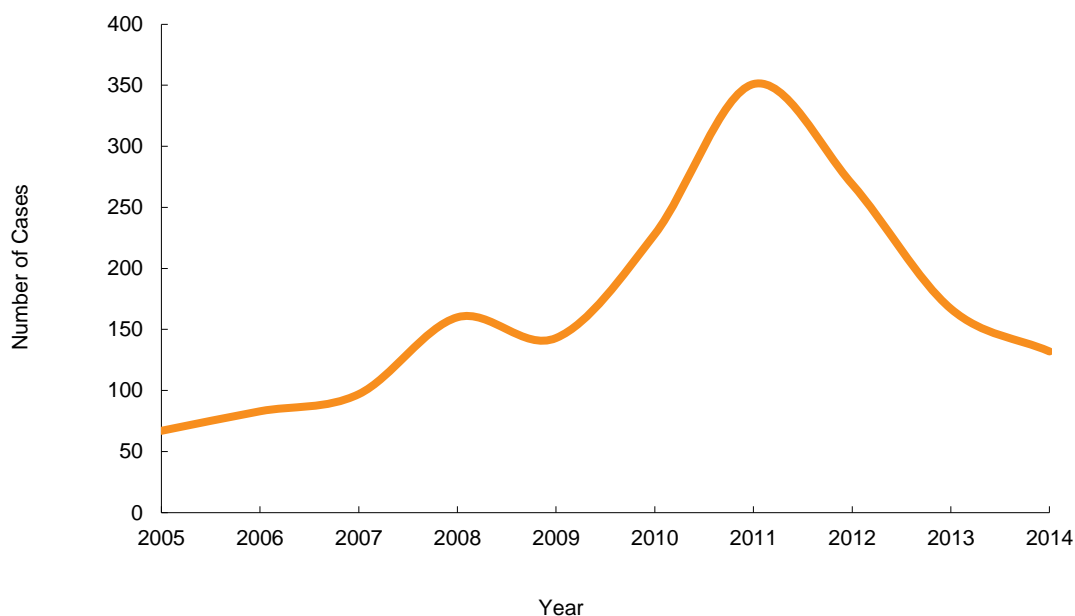
## Animal Bites and Potential Exposures

Rabies is a preventable viral disease of mammals. It is transmitted when the virus is introduced into a bite wound, an open cut in the skin or mucous membranes such as the mouth or eyes after contact with a rabid animal. The most prevalent wild reservoirs of rabies in the United States are raccoons, skunks, bats, foxes and coyotes. Domesticated mammals are also at risk of acquiring rabies. Cats, cattle and dogs are the most frequently reported rabid domestic animals within the United States. It should be emphasized that a rabid dog is a very rare event in Florida and the United States.

Historically, few humans have survived animal rabies; statistically the disease is invariably fatal. After a bite or exposure from a potentially rabid animal, the Florida Department of Health provides intervention in the form of facilitating the administration of rabies post-exposure prophylaxis (PEP). When administered in a timely manner, rabies PEP can prevent persons exposed to animal rabies from subsequently developing the disease.

Between 2005 and 2014, potential rabies exposures in Collier County increased by over 97 percent. The number of cases was highest from 2010 to 2012, peaking in 2011 with 351 animal bites and potential exposures (Figure 11).

Figure 11. Number of Animal Bites and Potential Exposures Cases, Collier County, 2005–2014

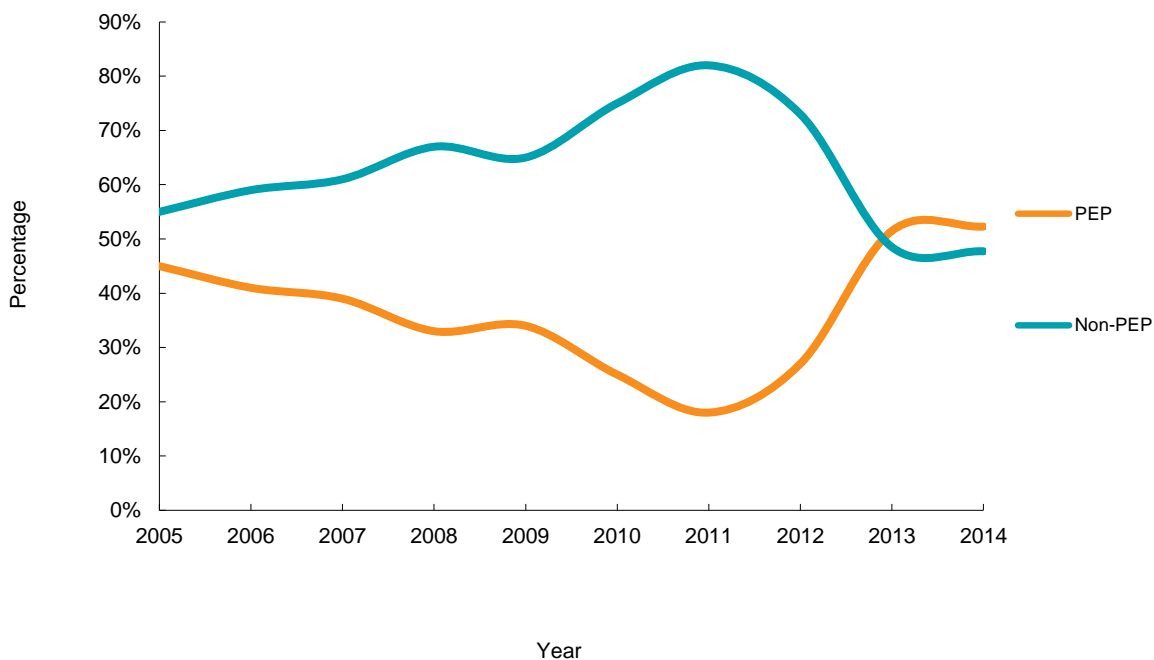


Data source: Florida Department of Health in Collier County, Epidemiology and Health Assessment Program

While heightened public health epidemiologic surveillance and vigorous investigations may account for a portion of the realized increase in incidence, the rapid and extensive development of land in Collier County has increased human to wild and stray animal contact.

Of the 1,698 animal bites and exposure cases reported in Collier County during this period, about 32 percent of cases were recommended PEP. The percentage of cases where PEP was recommended declined significantly between 2005 and 2011 (Figure 12). However, from 2012 to 2014, the percentage of PEP recommended cases increased significantly and was over 50 percent of all cases by 2014.

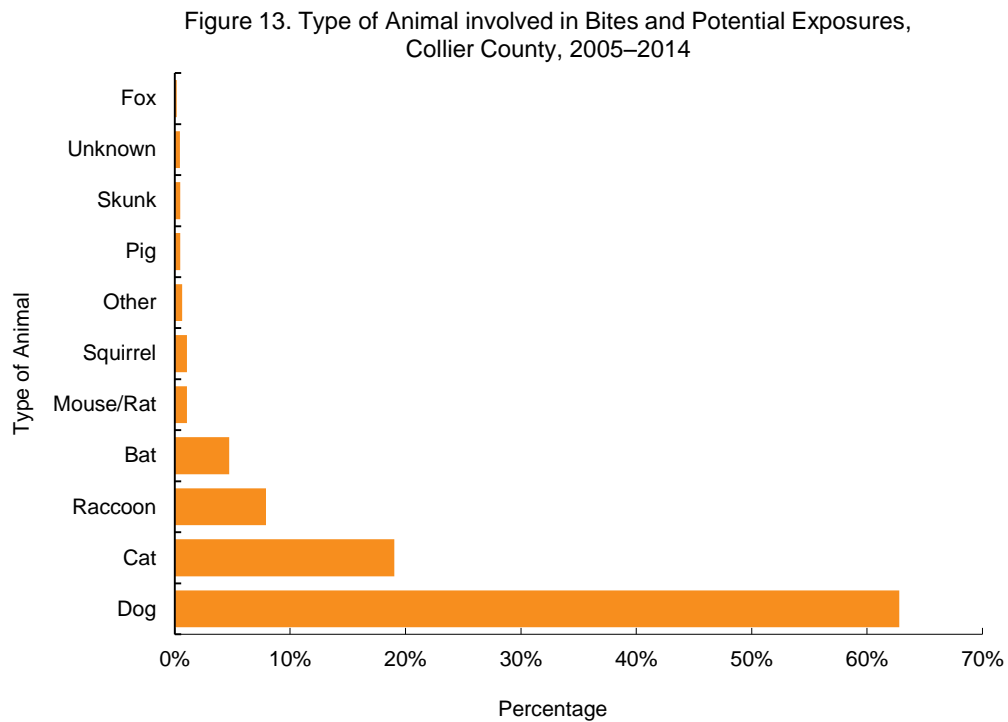
Figure 12. PEP vs Non-PEP Recommended, Collier County, 2005–2014



Data source: Florida Department of Health in Collier County, Epidemiology and Health Assessment Program

Of the all animal bites and exposures reported in Collier County, PEP and non-PEP recommended cases during this period, dogs accounted for almost 63 percent of all reported incidents, followed by cats with 19 percent, raccoons with 7.9 percent and bats with 4.7 percent. Rodents, squirrels, foxes and skunks accounted for approximately 1 percent each (Figure 13).

These distributions of bites and potential exposures by animals in Collier County are similar for the state of Florida when ranked by frequency.

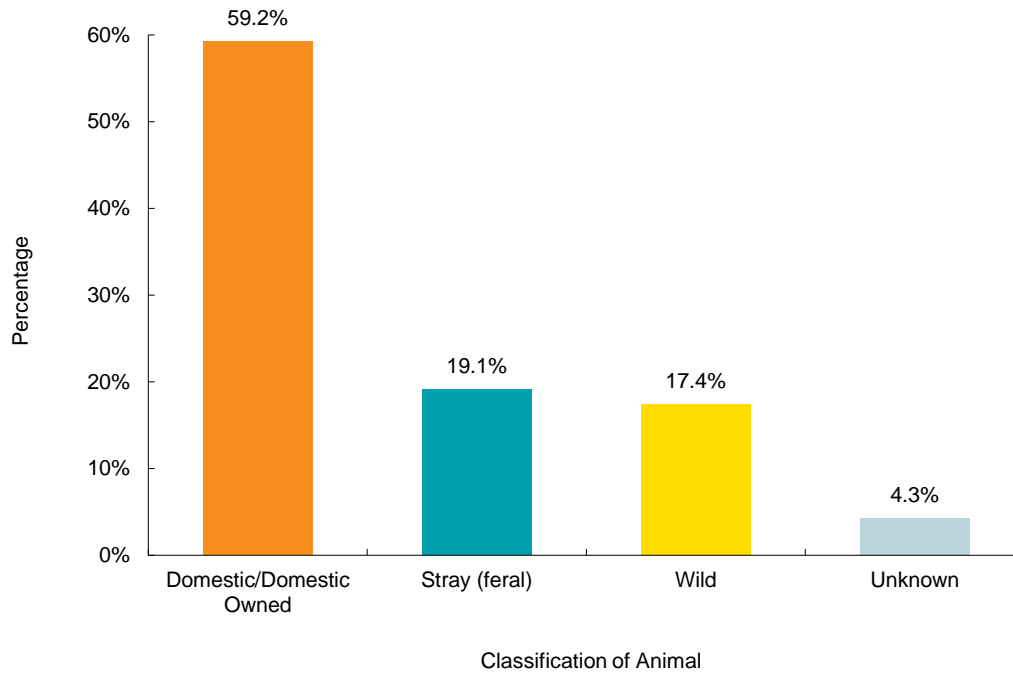


Data source: Florida Department of Health in Collier County, Epidemiology and Health Assessment Program

Over 95 percent of all reported animal bites and potential exposures identified the classification of the animal involved in the incident. Over 59 percent of all cases involved domestic or domestic owned animals, predominantly dogs. Approximately 19 percent involved feral or stray animals, while 17 percent involved wild animals (Figure 14).



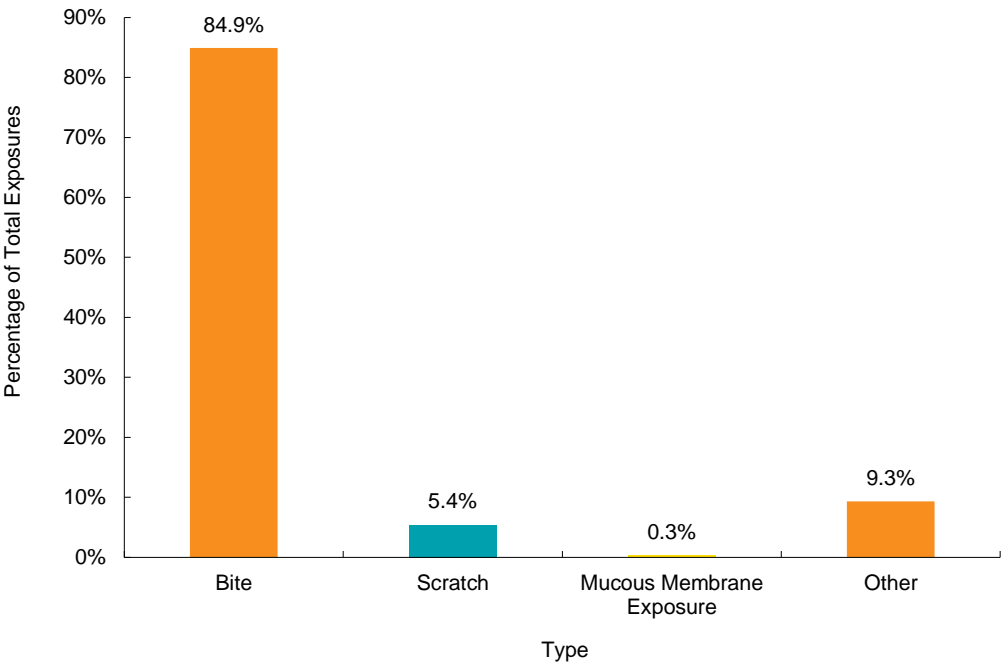
Figure 14. Classification of Animals involved in Animal Bites and Potential Exposures, Collier County, 2005–2014



Data source: Florida Department of Health in Collier County, Epidemiology and Health Assessment Program

Figure 15 displays the type of potential animal exposure in Collier County between 2011 and 2014. Approximately 85 percent of all reported cases occurred as animal bites, while only 5.4 percent were reported as scratch exposures, and 0.3 percent were mucous membrane exposures. About 9 percent of all exposures were classified in the “other” category, which includes animal non-bite/non-scratch related exposures.

Figure 15. Classification of Potential Exposures,  
Collier County, Florida, 2011–2014



Data source: Florida Department of Health in Collier County, Epidemiology and Health Assessment Program

## Mosquito-Borne Diseases

Mosquito-Borne Diseases are an indigenous risk in Southwest Florida due to the geographical location and climate. Collier County's wet and warm season and conditions favor significant breeding and propagation of the mosquito population.

There are five major mosquito-borne viruses which may be considered endemic to Florida and, therefore, a potential public health concern in Collier County. While the actual annual risk of a human contracting any mosquito-borne disease in Collier County is low, case fatality rates for these diseases are high in comparison to most other infectious diseases found in Southwest Florida. Because these five diseases are viral, antibiotics do not assist the treatment and antiviral agents have not been shown to be effective.

Table 2 lists the five major mosquito-borne diseases of interest in Southwest Florida with the number of cases reported in Collier County for the period 2005 to 2014.

Table 2. Mosquito-Borne Diseases, Collier County, 2005–2014

Disease	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005
EEE <sup>a)</sup>	—	—	—	—	4	—	—	—	—	—
WNV <sup>c)</sup>	—	—	—	—	2	—	—	—	—	—
SLE <sup>b)</sup>	—	—	—	—	—	—	—	—	—	—
Malaria <sup>c)</sup>	—	—	—	2	4	—	—	2	3	2
Dengue <sup>c)</sup>	2	1	1	—	2	—	—	2	—	—
Chikungunya <sup>c)</sup>	2	—	—	—	—	—	—	—	—	—

a) Equine cases

b) Last reported case of SLE in Collier County was in 1993 with a total of 3 cases

c) Imported cases

Data source: Florida Department of Health in Collier County, Epidemiology and Health Assessment Program

Eastern Equine Encephalitis (EEE) is a very uncommon disease in humans; however, it is one of the most severe mosquito-borne disease. While only approximately one in every 23 persons bitten by an infected mosquito may develop severe symptoms, about 33 to 45 percent of all

patients with clinical EEE symptoms will die from the disease. Most survivors will suffer from significant brain damage. In Florida, only 85 sporadic cases in humans have been reported between 1957 and 2013 for an average of 1.5 cases per year. Collier County has not reported a human EEE case in public health history. Four equine cases of EEE were reported in Collier County in 2010.

St. Louis Encephalitis (SLE) was the most common mosquito-borne human pathogen in the U.S. before the introduction of West Nile Virus (WNV). In Collier County, SLE outbreaks last occurred in 1990, 1993 and 1997. Less than one percent of SLE infected individuals are symptomatic and the majority of infections remain unreported and undiagnosed. The case fatality rate in Florida for SLE has ranged from four to 30 percent. Collier County did not report any cases of SLE from 2005 to 2014.

West Nile Virus (WNV) was first detected in Florida in 2001; since then WNV activity has been reported in every county in Florida. The first WNV case in Collier County was reported in 2002. Of those infected, about 80 percent are asymptomatic infections, 20 percent have mild symptoms, and less than one percent have a neuroinvasive infection. Two imported cases of WNV were reported in Collier County in 2010.

Malaria was once endemic in Florida but eradicated in the late 1940s. Sporadic cases of Malaria are still being reported in Florida; all associated to travelers returning from areas where Malaria is endemic. From 2005 to 2014, 13 imported cases of Malaria were reported in the county, the most of any other mosquito-borne disease.

Dengue fever is an important mosquito-borne disease globally that has begun to emerge in parts of Florida. This disease is also known as “break-bone fever”, as symptoms are very painful and debilitating. However, death due to dengue is uncommon. The infection is acquired through the bite of specific species of mosquitoes: *Aedes aegypti* and *Aedes albopictus*. These two species of mosquitoes are found in Florida and Collier County. In Collier County, there have been a total of 8 reported imported dengue cases between 2005 and 2014.

In 2014, Chikungunya fever became a reportable disease in Florida. The first local transmission of Chikungunya virus in the Americas was identified in the Caribbean in late 2013. Soon after, it became a public health concern in Florida, as the introduction of the virus in the state was imminent. The Chikungunya virus is transmitted by the same two species of mosquitos that transmit dengue. Chikungunya fever is characterized by the sudden onset of high fever and

severe joint pain, and relapse of joint pain is common one to three months after initial symptoms resolve. In 2014, approximately 426 imported cases and 12 locally-acquired cases of Chikungunya fever were reported in Florida. Two imported cases were reported in Collier County that year.

The Collier County Health Department continues to maintain active epidemiological surveillance and vigilance while partnering with mosquito control to ensure that the probability of mosquito-borne disease transmission remains low in the community.

## Outbreaks

Any outbreak of a disease or condition found in the community or a setting that is of public health significance is reportable by Florida administrative code. Outbreaks are investigated in order to control them, to prevent transmission of the disease to others and to learn how to manage and prevent similar outbreaks in the future. While all outbreaks are reportable, not all diseases or conditions associated with outbreaks are diseases in themselves in the State of Florida. In fact, the most common types of outbreaks in Collier County are associated with diseases that are not reportable.

In 2014, 38 outbreaks were reported in Collier County. Approximately 19 outbreaks or 50 percent of outbreaks that year were associated with gastrointestinal illness (or norovirus) and Influenza-like illness (ILI). Norovirus in particular has greatly affected the county during the 2005 to 2014 time period.

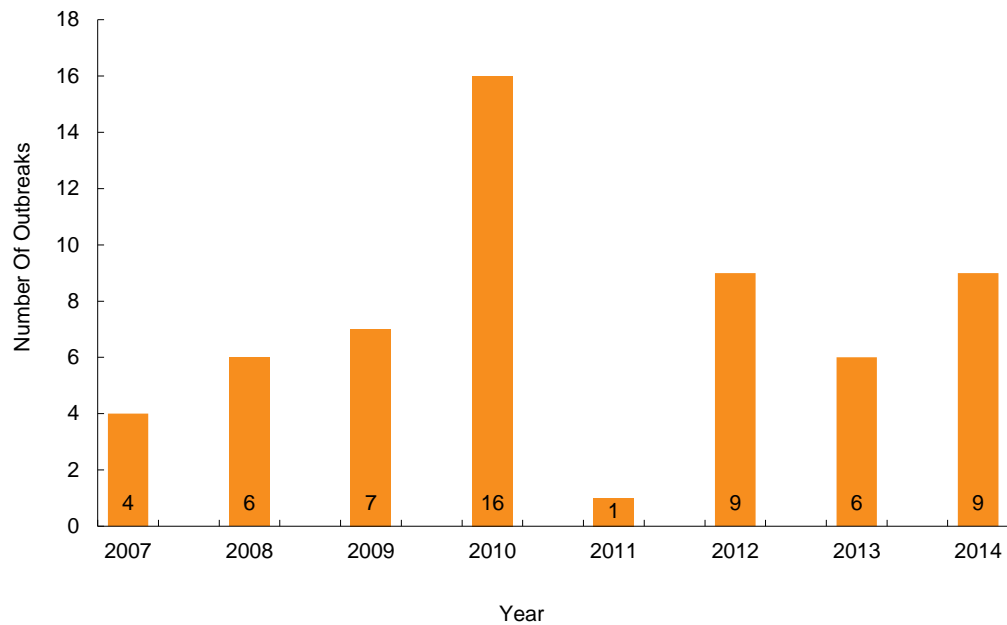
## Norovirus

Noroviruses are a group of “Norwalk-like” viruses and the most frequent cause of acute gastroenteritis illness in all age groups in the United States. Norovirus causes 19 to 21 million cases of acute gastroenteritis in the U.S. annually. It is a highly contagious virus. The virus can be transmitted from an infected person, contaminated food or water or by coming into contact with contaminated surfaces. Norovirus spreads very quickly within closed places such as daycare centers, nursing homes, schools and cruise ships. The majority of norovirus outbreaks occur between November and April in the United States and Florida. The incubation period for norovirus ranges from approximately 12 to 48 hours, and the average duration of illness is between 24 and 72 hours. The disease is self-limiting for most people. While there is no specific treatment available for norovirus, ill individuals should drink plenty of liquid to prevent dehydration.

Figure 16 shows the number of suspected and confirmed norovirus outbreaks in Collier County for the period 2007 to 2014. There were 58 norovirus outbreaks reported in Collier County during this time period. Between January and April 2010, the community experienced a tremendous surge in the number of norovirus outbreaks and related cases, resulting in the highest incidence of the virus recorded locally in public health history. During this 4 month

interval, 16 outbreaks were reported from 12 different long term health care facilities in the county.

Figure 16. Number of Confirmed and Suspected Reported Norovirus Outbreaks, Collier County, 2007–2014



Data source: Florida Department of Health in Collier County, Epidemiology and Health Assessment Program

## Tuberculosis

Tuberculosis (TB) is a mycobacterial disease that is a major cause of disability and mortality in most of the world, especially developing and emerging countries. Initial infections usually go unnoticed. Approximately 10 percent of the population infected will eventually develop active disease; half of them during the first 2 years following infection. Ninety percent of untreated individuals will never develop active tuberculosis. Tuberculosis mortality and morbidity rates increase with age, and in older persons, the incidence rates are higher in males than in females.

Industrialized countries such as the United States showed downward trends of mortality and morbidity of TB for many decades. As population from developing countries migrate to the United States, the risk of potential disease transmission increases. In Florida, medically underserved low-income populations, many of which are high-risk racial and ethnic minorities, have a high rate of tuberculosis exposure and infection. These population groups disproportionately represent the majority of TB cases in Collier County and the state.

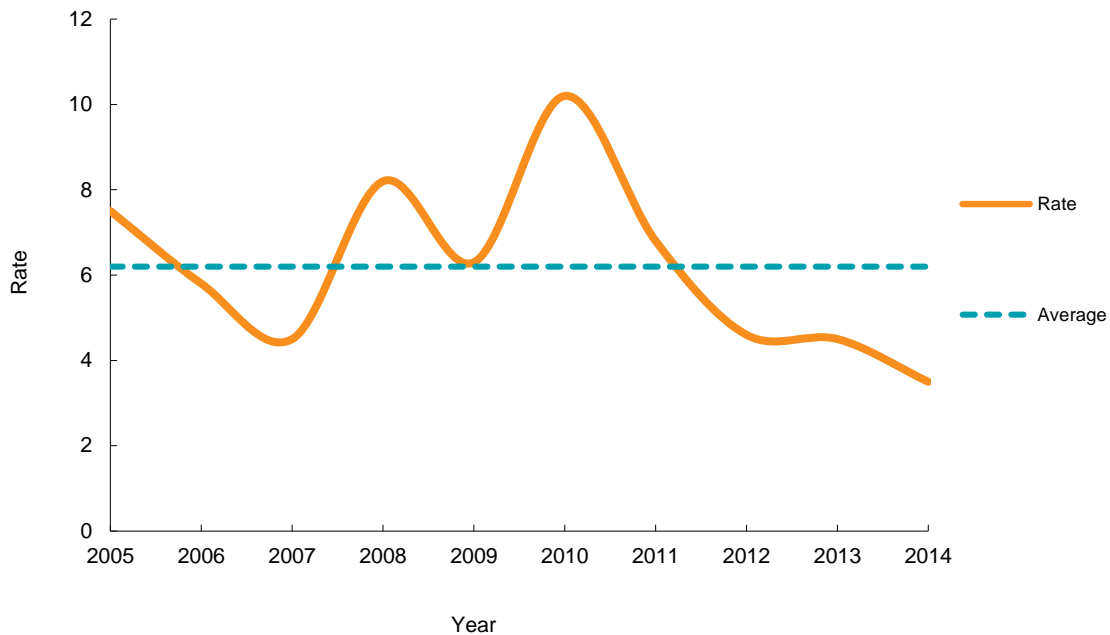
Historically, the incidence of tuberculosis in Collier County has been higher than that of the state of Florida. Only during select recent years have tuberculosis case rates in Collier been lower than those of the state; however, this trend has not been consistent and reversed in 2010. This was due to the various socioeconomic and epidemiological risk factors that surfaced during the downturn in the local and national economies.

Although Collier County has had a number of successes over the past 20 years in decreasing TB morbidity in select time periods, it still faces formidable challenges in preventing and controlling tuberculosis in the community.

A total of 198 tuberculosis cases were reported in Collier County from 2005 to 2014, resulting in an overall incidence rate of 6.2 per 100,000 population for the ten-year period. Figure 17 shows the variation in the annual rate by year. The incidence rate of TB in Collier County has experienced a significant decline of approximately 53 percent from 2005 to 2014, from the 7.5 per 100,000 population in 2010 to 3.5 per 100,000 population in 2014. Despite the decline in the recent ten years, Collier County has had higher incidence rates than the State of Florida from 2005 to 2014.



Figure 17. Number of Tuberculosis Cases per 100,000 Population, Collier County, 2005–2014



Data source: Florida Department of Health in Collier County, Tuberculosis Program

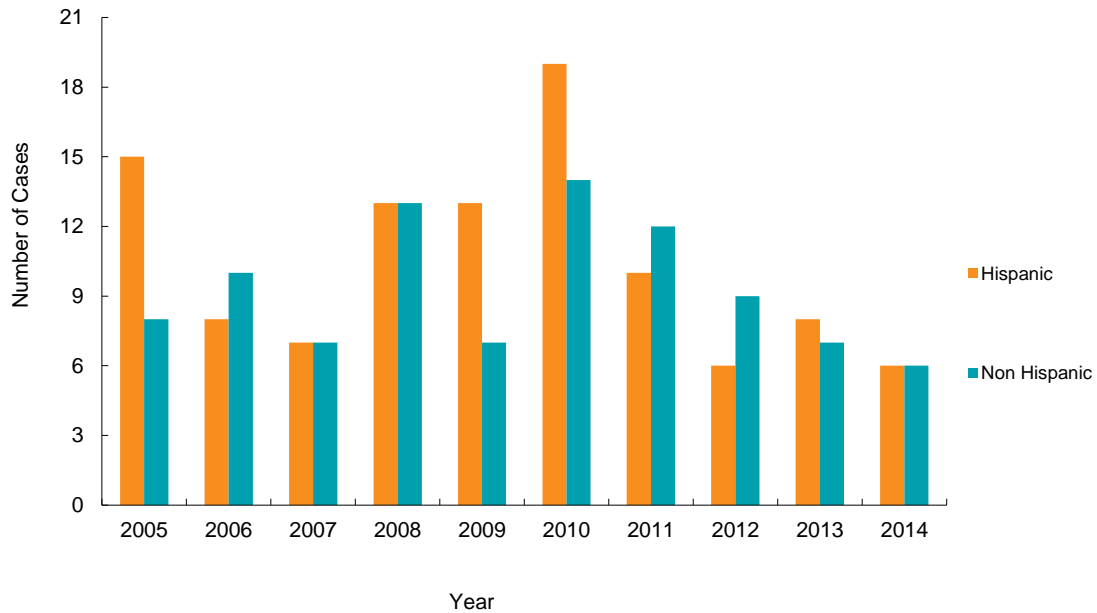
### Age, Gender, Race and Ethnicity

Among age groups, those between 25 to 34 years of age had the highest number of TB cases in Collier County with 21.7 percent of all cases, followed by those between 35 and 44 years of age with 20.2 percent of all cases. As for TB distribution by gender, as is expected, males accounted for the majority of cases with 64.6 percent of all cases compared to females with 35.4 percent.

By race, 67 percent of the cases were among whites, 30 percent were black, while 4 percent were categorized as “other races”. The distribution of TB among ethnicities is shown in Figure 18. Hispanics comprised the majority of cases in Collier County during the ten-year period. From 2005 to 2014, Hispanics accounted for 53 percent of all reported cases of TB, whereas Non-Hispanics accounted for 47 percent of all cases of TB. This distribution of TB among ethnicities varies from the state of Florida and the national data; Hispanics accounted for less

than 30 percent of all TB cases in both Florida and the United States. This discrepancy is due to ethnic distribution in Collier County, in which the Hispanic population is proportionally larger than in the state of Florida and the United States.

Figure 18. Number of TB Cases by Ethnicity, Collier County, 2005–2014

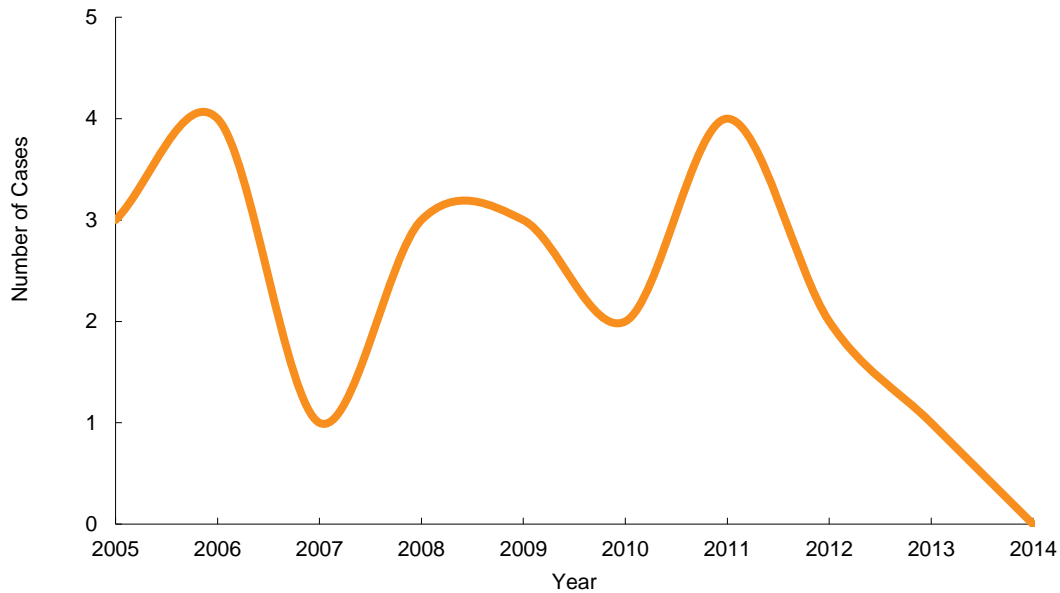


Data source: Florida Department of Health in Collier County, Tuberculosis Program

## HIV Co-Infection

Worldwide, tuberculosis is the leading cause of death for persons with HIV infection. A co-infection with HIV complicates the treatment plan of TB. Both drug interactions and malabsorption are challenges that must be overcome in the case management of co-infected individuals. During the period 2005 to 2014, a total of 23 cases or 12 percent of cases in Collier County were co-infected with HIV (Figure 19). During the same period, 15 percent or 1,258 TB cases in Florida were co-infected with HIV.

Figure 19. Number of HIV Coinfected TB Cases, Collier County, 2005–2014



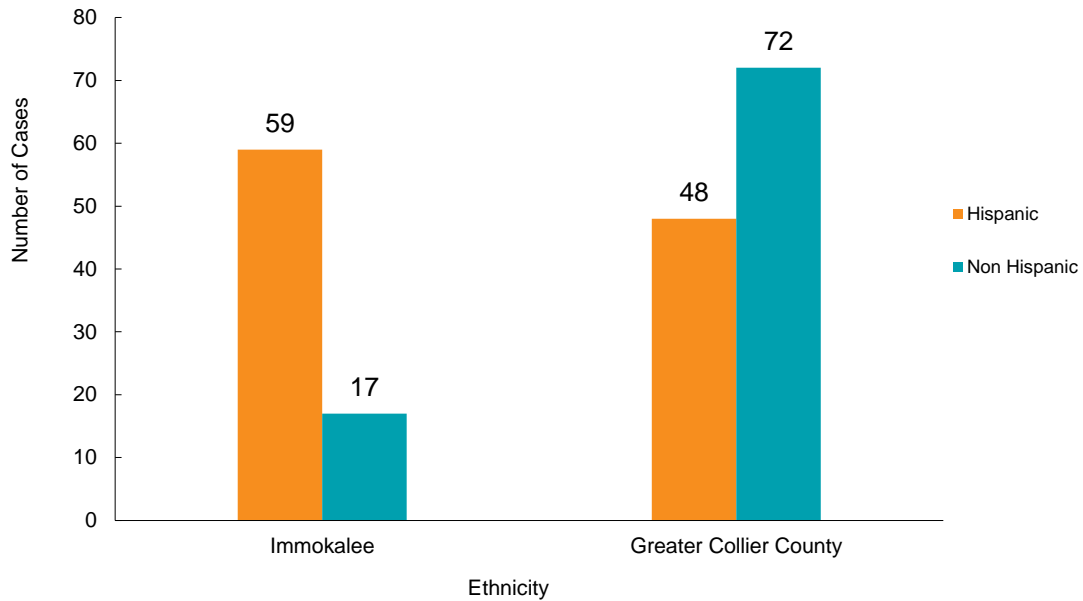
Data source: Florida Department of Health in Collier County, Tuberculosis Program

### Geographical Distribution

The distribution of a number of health conditions including tuberculosis and those related to socioeconomic status, education, employment and income levels continues to be disproportionate among different communities of the county.

Immokalee is a small agrarian community approximately 45 miles northeast of the city of Naples; it is a major supplier of tomatoes and other produce to the United States. This type of labor and life-style is historically and presently associated with poverty, public health risk and vulnerable populations. While Immokalee accounts for anywhere between 6 and 8 percent of the total county resident population at a given point in time, it accounted for almost 40 percent of all tuberculosis cases between 2005 and 2014. The graph in Figure 20 displays the disproportionate ethnic burden of tuberculosis in Immokalee.

Figure 20. Number of TB Cases by Ethnicity, Immokalee and Greater Collier County, 2005–2014



Data source: Florida Department of Health in Collier County, Tuberculosis Program

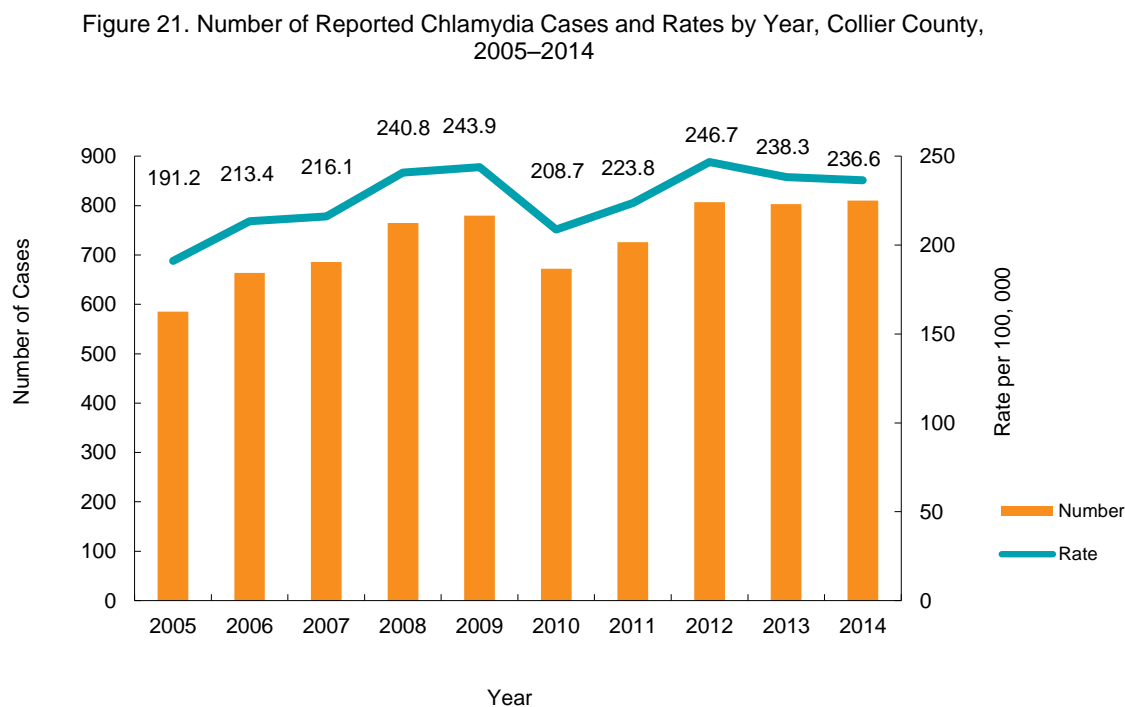
Collier County has had a number of successes over the past 20 years in decreasing TB morbidity in select time periods. However, there remains a disproportionate burden of TB among ethnic minorities as in the United States, and Collier County still faces formidable challenges in preventing and controlling TB in the community.

## Sexually Transmitted Diseases (STDs)

### Chlamydia

Chlamydia trachomatis infection is the most frequently reported notifiable disease in the United States, Florida and Collier County. Chlamydia infections in women are usually asymptomatic and can result in pelvic inflammatory disease (PID) which is a major cause of infertility, ectopic pregnancy and chronic pelvic pain. As is the case with other inflammatory STDs, chlamydia infections can facilitate the transmission of human immunodeficiency virus (HIV). Pregnant women infected with chlamydia can also pass the infection to their infants during delivery, potentially resulting in neonatal ophthalmic and pneumonia. Due to the burden of disease and the risks associated with infections, CDC recommends that all sexually active women younger than 25 years of age receive an annual chlamydia screening.

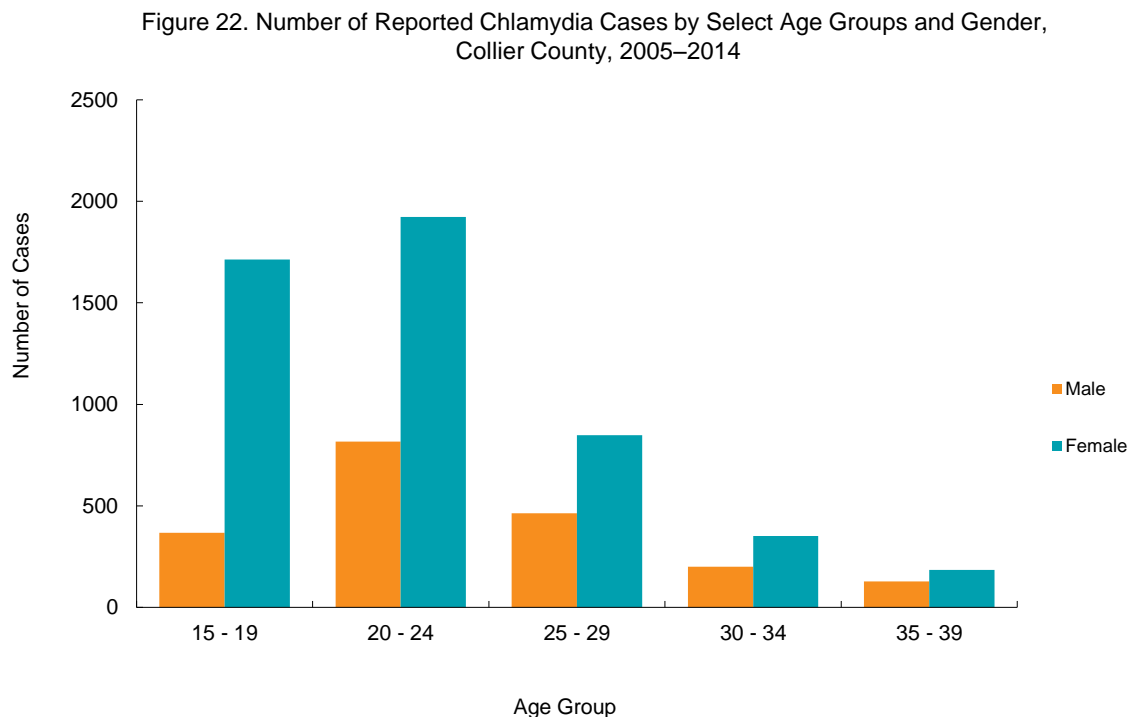
Between 2005 and 2014, the total number of reported chlamydia cases increased from 585 to 810, an increase of over 38.5 percent. Adjusted per 100,000 population, the rate increased by 23.7 percent from 191.2 to 236.6. Based on monitoring of case counts and the annualized rates per 100,000 population, the morbidity trend is clearly on an upward slope (Figure 21).



Data source: Florida Department of Health in Collier County, STD Program

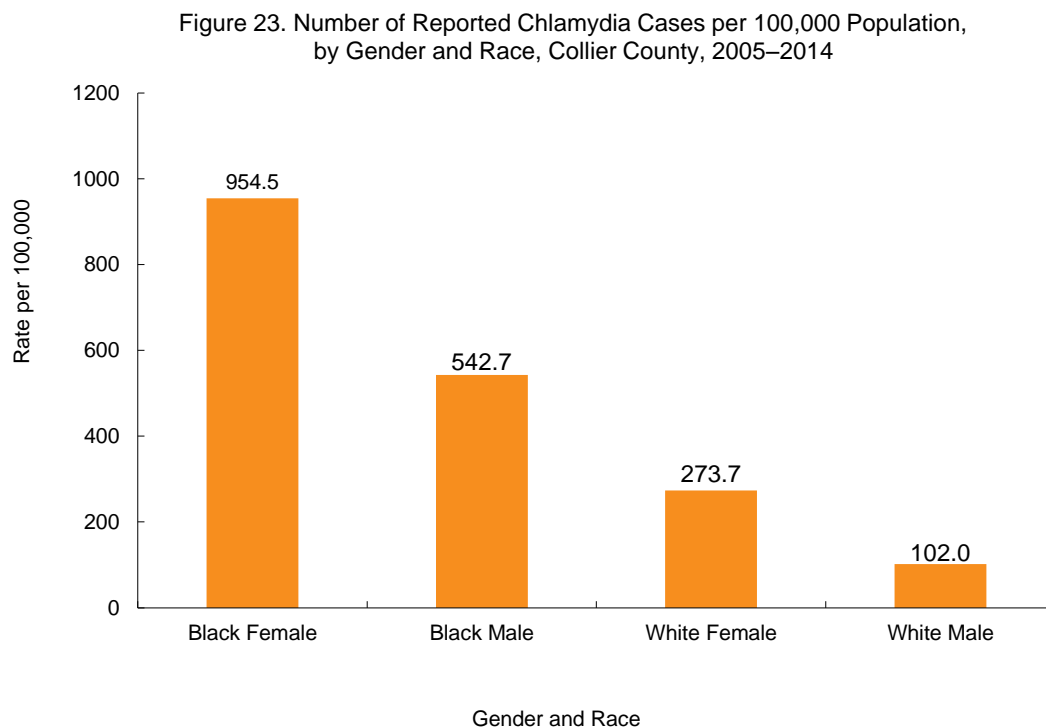
**Age and Gender.** During the period of 2005 to 2014, the ratio of female to male cases of chlamydia in Collier County ranged from 4.1 in 2005 to 2.1 in 2014. This variation in incidence by sex is in keeping with national trends and its distribution. On average, the ratio of female to male of reported chlamydia cases was 2.5 between 2005 and 2014. This implies that almost 3 times as many cases of chlamydia were reported in females compared to males in Collier County. Sexually active females are at much greater risk of acquiring chlamydia than males.

From 2005 to 2014, the highest age-specific rates of reported chlamydia are in 20 to 24 years age group for both females and males. The ratio of the female case rate to the male case rate for this age group was 2.3. The second highest age-specific groups in Collier County were among those 15 to 19 years of age, with females having almost 4.7 times the frequency as males (Figure 22). Although not shown in the graph, the number of reported cases among those 55 years and older has increased sevenfold.



Data source: Florida Department of Health in Collier County, STD Program

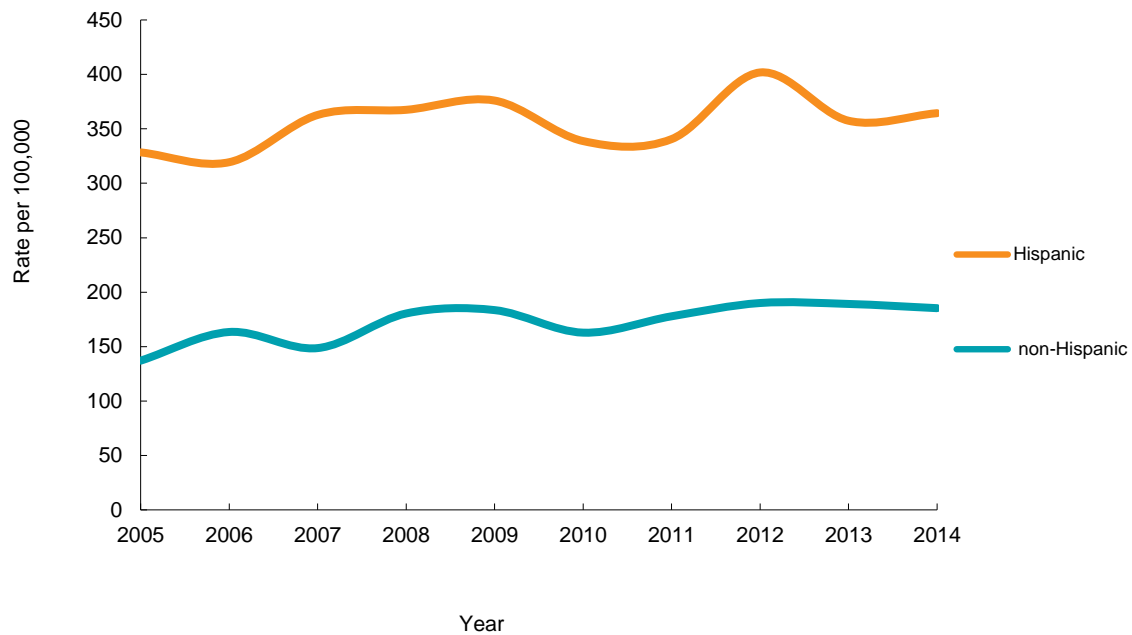
**Race and Ethnicity.** Figure 23 displays the distribution of reported chlamydia cases per 100,000 population in Collier County by gender and race. White females had the highest number of chlamydia cases in the county with 4,030 cases, followed by white males with 1,468 cases, black females with 1,042 cases and black males with 587 cases. However, when accounting for population, black females had the highest number of cases per 100,000 with a rate of 954.6.



Data source: Florida Department of Health in Collier County, STD Program

While the Hispanic population of Collier County accounted for approximately 30 percent of the total resident population in 2014, the number of Hispanic chlamydia cases were a disproportionate 42 percent of all cases between 2005 and 2014. When rates per 100,000 population are analyzed, the Hispanic chlamydia rate increased by 4.1 percent during this period, from 345.6 in 2005 to 359.7 per 100,000 for 2014. Although the chlamydia rate for the non-Hispanic population increased by approximately 30 percent, the actual baseline rates for non-Hispanics is about one-half the rate for Hispanics (Figure 24).

Figure 24. Number of Reported Chlamydia Cases per 100,000 Population, by Ethnicity, Collier County, 2005–2014



Data source: Florida Department of Health in Collier County, STD Program

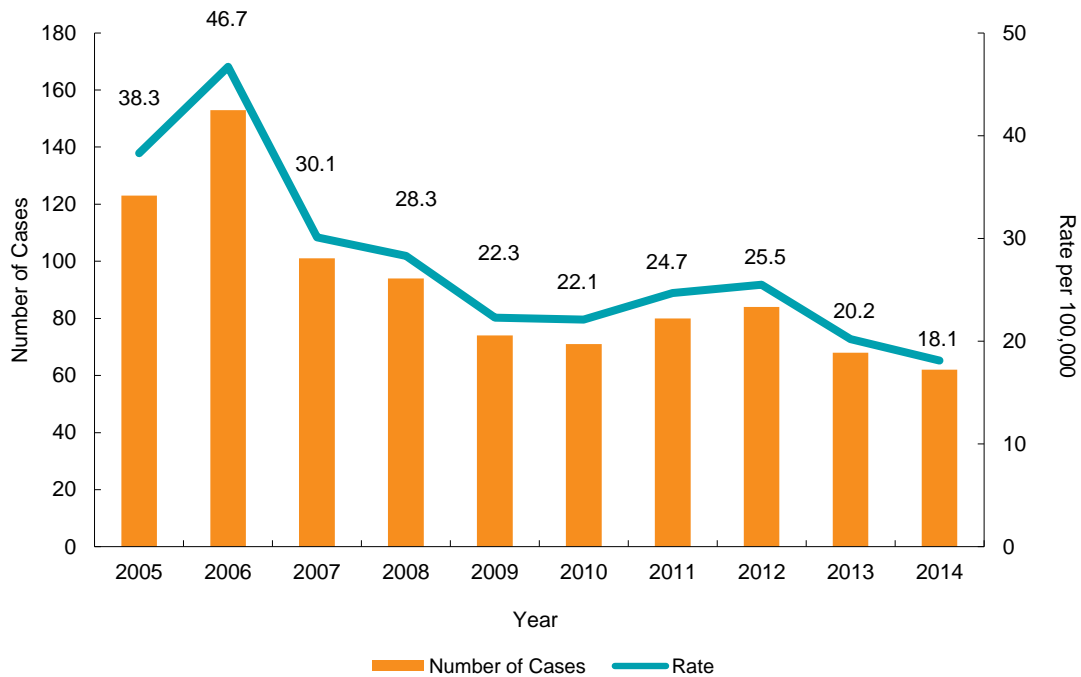
## Gonorrhea

Gonorrhea is caused by *Neisseria gonorrhea*, a bacterium that can grow and multiply easily in warm, moist areas of the reproductive tract in both males and females. Gonorrhea can also grow in the mouth, throat, eyes and anus. Gonorrhea is a very common communicable disease. CDC estimates that more than 820,000 individuals get new gonorrheal infections each year. However, due to under-reporting, less than 50% of these cases are reported annually throughout the United States.

Between 2005 and 2014, 909 cases of gonorrhea were reported in Collier County. The annual number has declined steadily from 123 in 2005 to 62 cases in 2014 with a decrease of 49.6 percent. The only variation that was observed in this pattern was an increase in reported cases during 2006 and a slight increment in 2011 and 2012. Adjusted for population, the overall gonorrhea reported case rate decreased by 52.7 percent between 2005 and 2014, from 38.3 to 18.1 per 100,000 population (Figure 25).



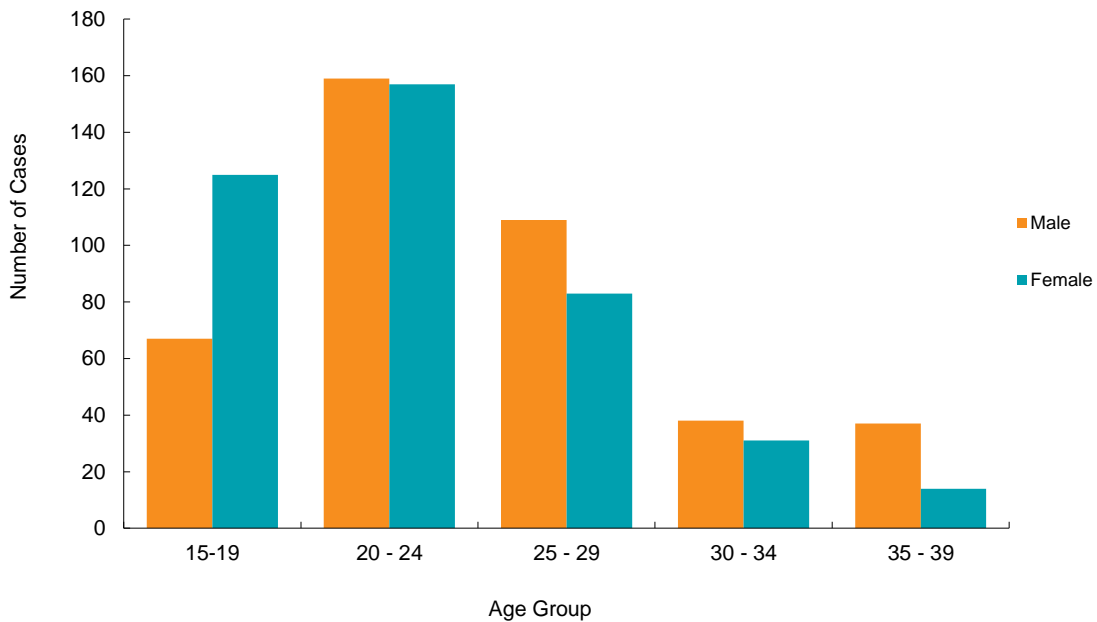
Figure 25. Number of Reported Gonorrhea Cases and Rates by Year, Collier County, 2005–2014



Data source: Florida Department of Health in Collier County, STD Program

**Age and Gender.** Unlike chlamydia where the risk of disease is much greater for females than males, the risk of acquiring gonorrhea in Collier County appears to be equivalent on average for both males and females. However, the age distribution pattern of gonorrhea cases in Collier County is very similar to that of chlamydia, with the 20 to 24 years age group accounting for 35 percent of all reported cases for 2005 to 2014, followed by the 25 to 29 age group and 15 to 19 years of age (Figure 26).

Figure 26. Number of Reported Gonorrhea Cases by Select Age Groups and Gender, Collier County, 2005–2014



Data source: Florida Department of Health in Collier County, STD Program

**Race and Ethnicity.** White males had the highest number of gonorrhea cases in the county with 357 cases, followed by white females and black males both with 199 cases and black females with 126 cases. However, when accounting for population, black males had the highest number of cases per 100,000 with a rate of 184 (Figure 27). Between 2005 and 2014, the Hispanic gonorrhea rate decreased by 9.3 percent, while the rate for the non-Hispanic population decreased by over 65.6 percent (Figure 28).

Figure 27. Number of Reported Gonorrhea Cases per 100,000 Population, by Gender and Race, Collier County, 2005–2014

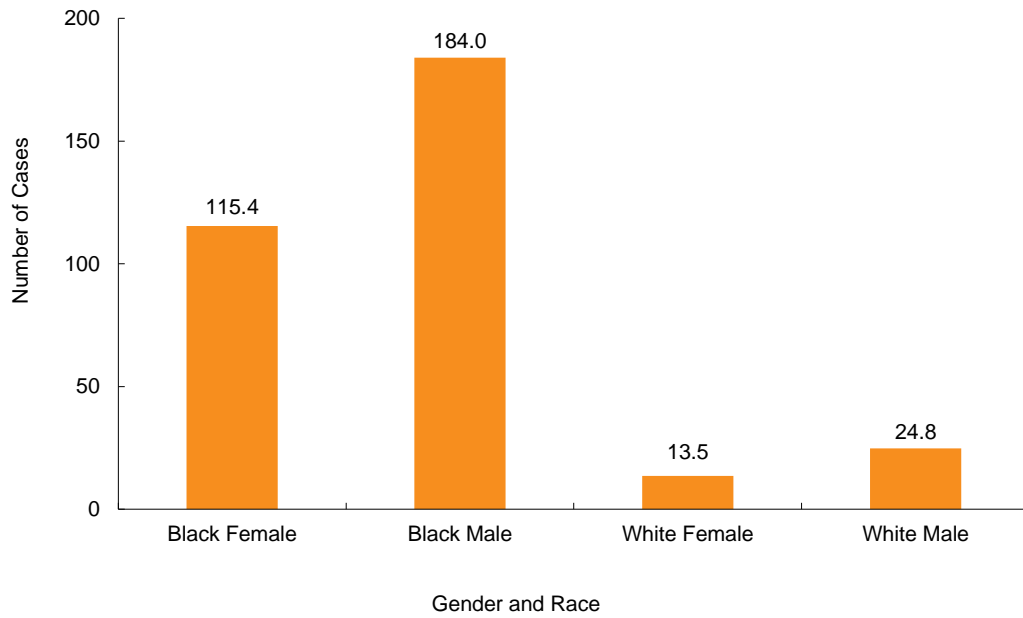
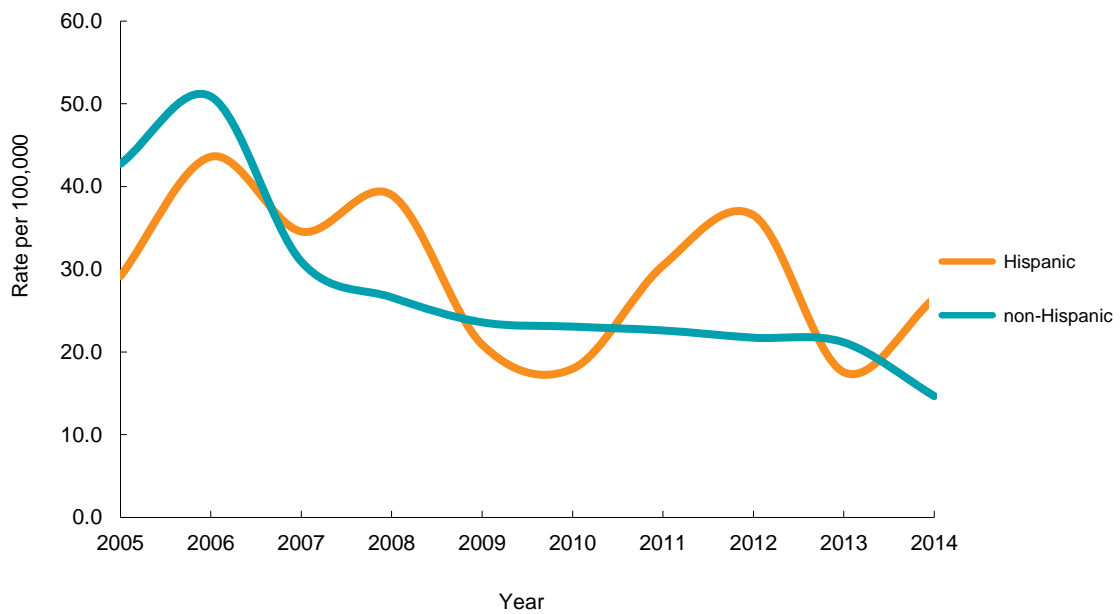


Figure 28. Number of Reported Gonorrhea Cases by Ethnicity, Collier County, 2005-2014



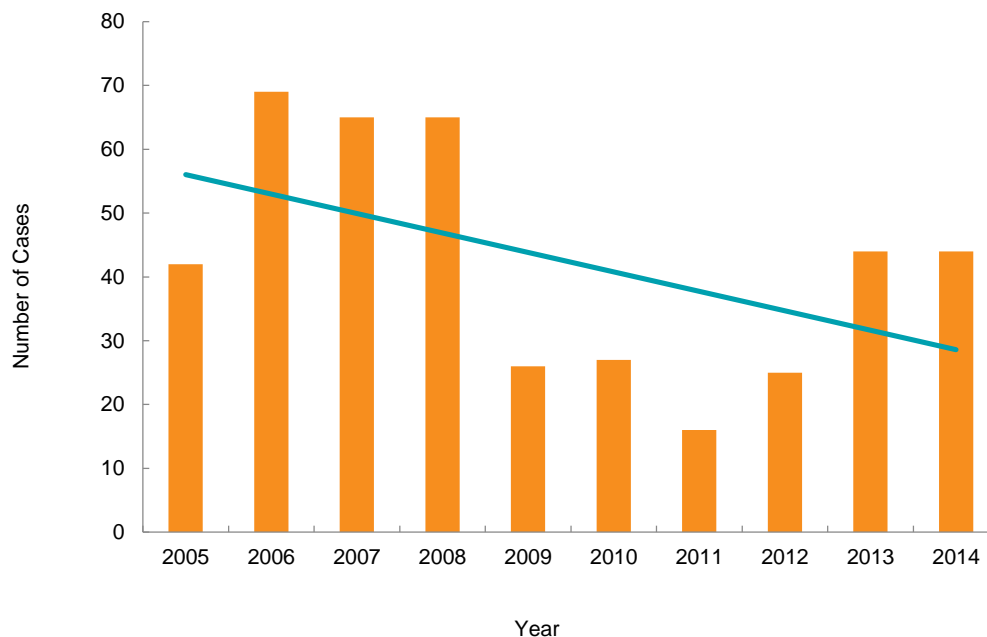
Data source: Florida Department of Health in Collier County, STD Program

## Syphilis

Syphilis is a genital ulcerative disease that causes significant complications if left untreated and facilitates the transmission of HIV infection. Untreated early syphilis in pregnant women results in perinatal mortality in as much as 40 percent of cases, and pregnancy may lead to infection of the fetus in 80 percent of cases. Syphilis is passed from person to person through direct contact with a syphilis sore. Sores occur on the external genitalia, vagina and anus or in the rectum. These sores can also occur on the lips and in the mouth.

For the ten-year period of 2005 to 2014, the total number of reported syphilis cases in Collier County ranged from a low of 16 in 2011 up to 69 in 2006. The overall syphilis case rate for this time period was 13.2, and the rates ranged from 4.9 in 2011 to 22.7 per 100,000 population in 2006 (Figure 29). Trend analysis at the county level appears to indicate that overall syphilis is declining on average over time; however, caution must be exercised in any statement of conclusiveness as syphilis and the other STDs are known to be underreported in all communities and jurisdictions in the US and Florida.

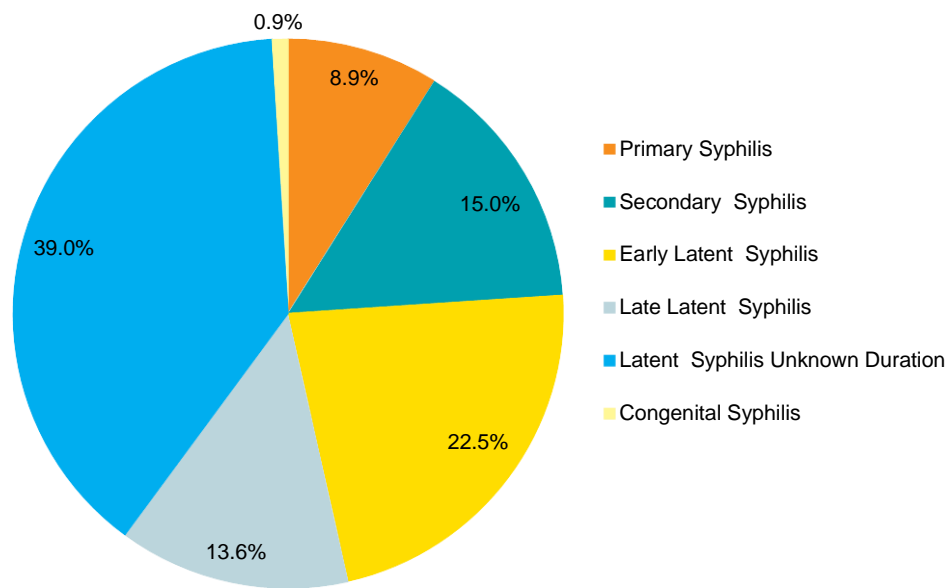
Figure 29. Number of Reported Syphilis Cases, Collier County, 2005–2014



Data source: Florida Department of Health in Collier County, STD Program

For the period of 2005 to 2014, 39 percent of the syphilis cases were latent syphilis of unknown duration, 13.6 percent were late latent syphilis, 22.5 percent were early latent syphilis, 15 percent were secondary syphilis and 8.9 percent were classified as primary syphilis. Less than 1 percent of the cases were classified as congenital syphilis (Figure 30).

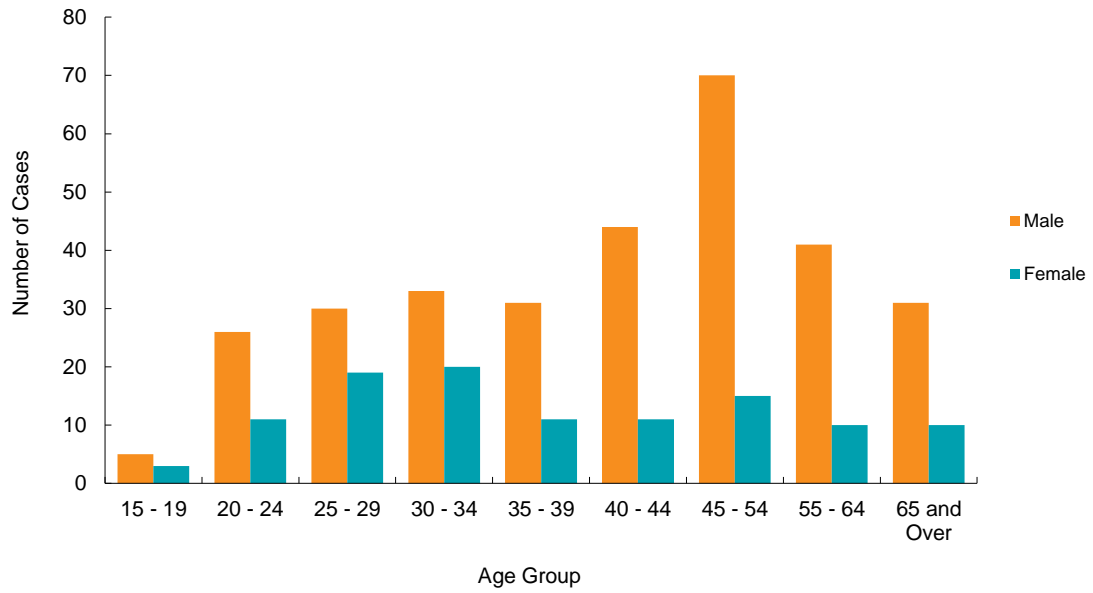
Figure 30. Reported Syphilis Cases by Type, Collier County, 2005–2014



Data source: Florida Department of Health in Collier County, STD Program

Figure 31 shows the age and sex distribution of syphilis cases reported in Collier County over the ten year period of 2005 to 2014. The differences in incidence by sex and age are clearly evident in the graph. The distribution of syphilis cases in Collier County by sex is heavily weighted towards males, 74 percent males compared to 26 percent for females. The peak for male cases of syphilis occurred between 45 and 54 years of age, while the peak incidence among females occurred between 30 and 34 years of age.

Figure 31. Reported Syphilis Cases by Age Group and Gender, Collier County, 2005–2014



Data source: Florida Department of Health in Collier County, STD Program

## HIV Infection

### Historical Summary

In June 5, 1981, the Centers for Disease Control (CDC) published its first report of cases of *Pneumocystis carinii* pneumonia (PCP) being diagnosed among previously healthy, young, gay men in Los Angeles. This is the syndrome that would later become known as AIDS. The first surveillance case definition for AIDS was published by the CDC in September of 1982. Soon after this disease was recognized as a distinct syndrome, Florida began to collect voluntary AIDS surveillance reports.

In 1983, the State of Florida Health Officer designated AIDS as a reportable disease, and a formal AIDS surveillance program was instituted in the state. Mandatory reporting of AIDS was incorporated into the Florida Statutes (s.384, F.S.) in 1986, and the Florida Administrative Code (64D, F.A.C.) directed that all AIDS cases, as defined by the CDC, be reported to the local county health department by physicians who diagnose or treat AIDS.

In 1993, the Centers for Disease Control published its first major revision of the AIDS case definition. This change added three new AIDS-indicator diseases and allowed for HIV positive individuals with severely depressed immune systems (those with an absolute CD4 count <200, or <14%) to meet the AIDS case definition. This case definition revision went into effect retroactively, and resulted in a substantial increase in the number of reported AIDS cases in Florida.

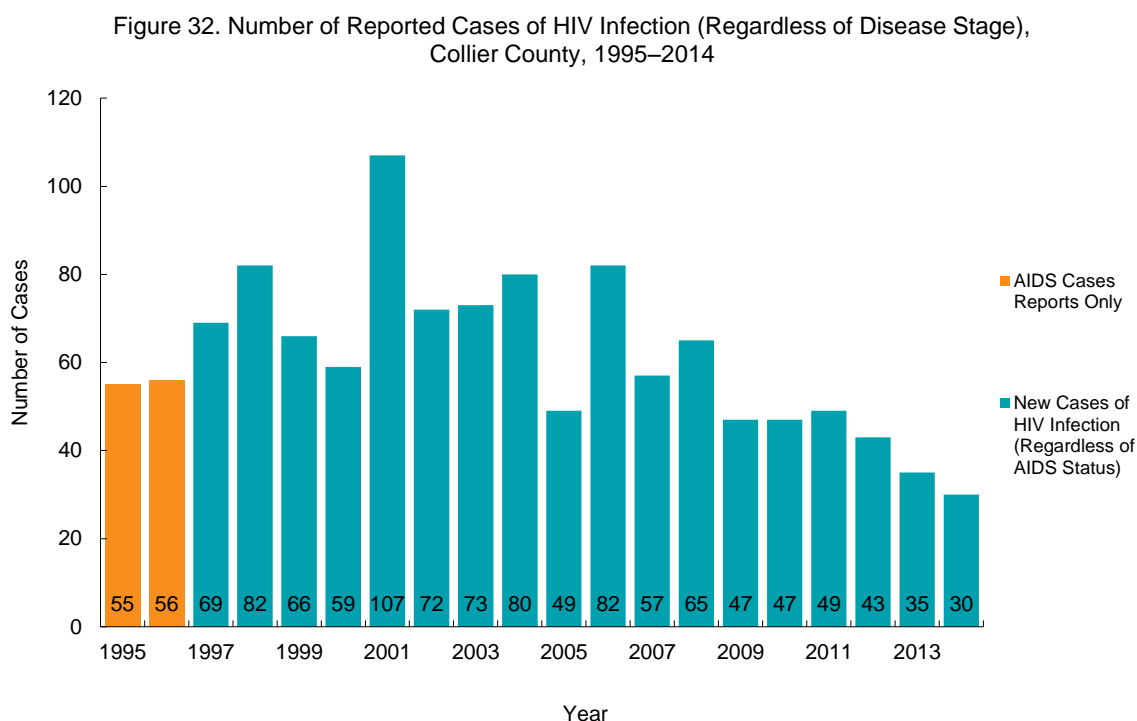
The State of Florida passed legislation that became effective July 1, 1997. It authorized the reporting of newly diagnosed cases of HIV infection by name (i.e. individuals who tested HIV+, but did not meet the AIDS case definition). This legislation, however, did not allow for the retroactive reporting of previously diagnosed HIV+ individuals.

### Incidence and Prevalence

The first case of AIDS in Collier County was reported in 1982. Interestingly enough, the first case of AIDS diagnosed in the county was not a gay male but rather a black female. As of December 31, 2014, Collier County has reported 1,622 cases of HIV infection among its residents. Of those infected with the virus and reported, 613 (37.8%) individuals are known to

have died, while 1009 (62.2%) are presumed still living. Treatment for HIV disease is both widely available and effective. Most people with HIV survive long after their diagnosis.

Figure 32 displays the number of reported cases of HIV infection regardless of disease stage in Collier County for the period of 1995 to 2014. In recent years, the number of reported new cases of HIV infection has remained below 50 cases per year. In fact, the number of reported HIV infection has decreased by approximately 40 percent from 2005 to 2014. From 2005 to 2014, 274 (55%) individuals met the AIDS case definition, with 221 (45%) still considered to be HIV-positive only (individuals who have not yet progressed to AIDS). Due to advances in medicine, people who were diagnosed with HIV/AIDS at an early age are now living longer.



Data source: Florida Department of Health in Collier County, HIV Program

## Age and Gender

Persons diagnosed at age of fifty and over continue to constitute a significant proportion of local cases. During the first 15 years of the HIV/AIDS epidemic, individuals age 50 and over accounted for only 14 percent of reported cases in Collier County. In the 2005 to 2014 reporting period, 26 percent of the reported cases were found in individuals 50 years old and over at their

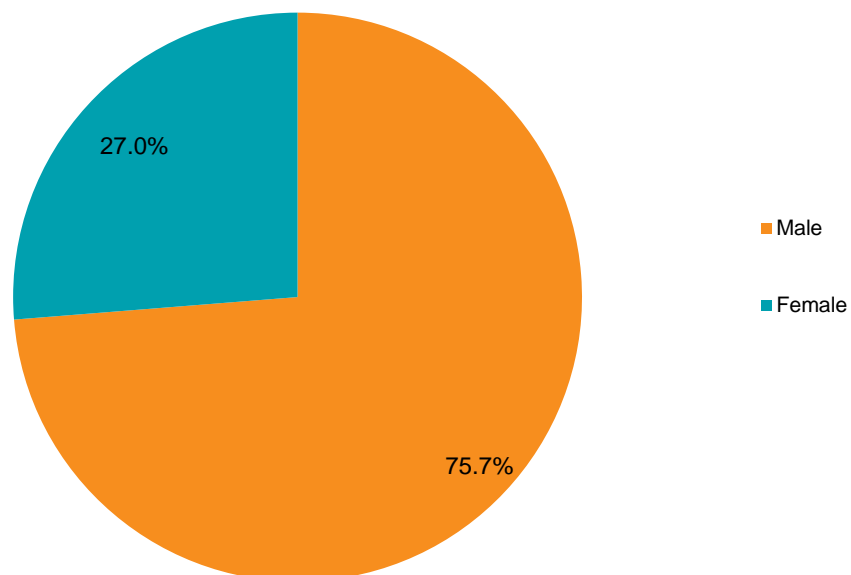


time of their initial diagnosis. Often, persons in this age group do not consider themselves at risk due to the persistence of stereotypes that HIV-infection is a young person's disease.

Of those presumably living with HIV in the county, currently, 531 individuals or 53 percent are over 50 years old. This presents its own set of challenges, both societal and medical, as this population of individuals with HIV infection continues to age.

Between 2005 and 2014, 504 cases of HIV infection were reported in Collier County. Of those cases, males account for 74 percent of the new cases, and females for 26 percent (Figure 33). Women tended to be diagnosed at a slightly earlier age than men. Local data is somewhat influenced by the tendency for women to present more often for care through the public health system (family planning services, prenatal care, etc.) than men, and they have greater opportunities to be tested for HIV infection.

Figure 33. Number of Reported Cases of HIV Infections, by Gender, Collier County, 2005–2014

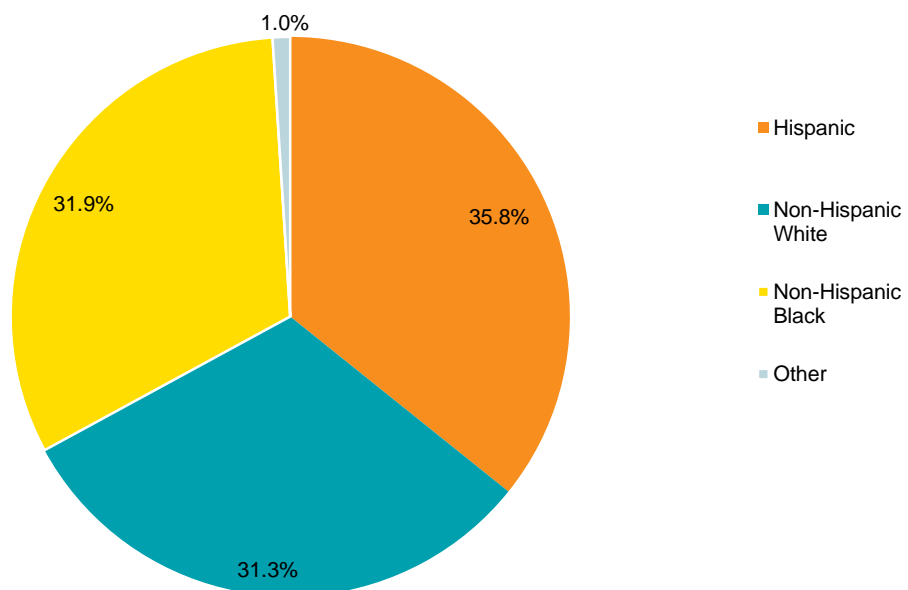


Data source: Florida Department of Health in Collier County, HIV Program

## Race and Ethnicity

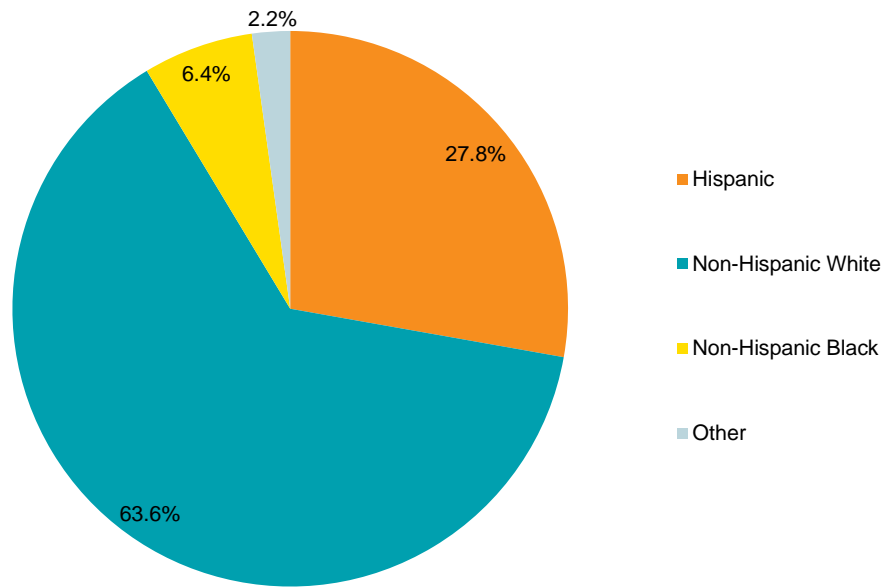
The distribution of HIV disease has been disproportionate among races and ethnicities, affecting the minority populations in greater numbers. Factors that contribute to this include the increased likelihood of poverty and lack of access to health care as well as cultural stigmas associated with HIV risk behaviors. Figure 34 shows the distribution of the reported HIV infections by race and ethnicity in Collier County for the years of 2005 to 2014. Blacks represented only 6.4 percent of the overall population (Figure 35). However, they accounted for 31.9 percent of the reported HIV cases in the county for that time period. Likewise, Hispanics represented 27.8 percent of the population but accounted for 35.8 percent of the cases of HIV infection.

Figure 34. Number of Reported Cases of HIV infections, by Race and Ethnicity, Collier County, 2005–2014



Data source: Florida Department of Health in Collier County, HIV Program

Figure 35. Population Breakdown by Race and Ethnicity, Collier County, 2015–2014



Data source: Florida Department of Health in Collier County, HIV Program

### Geographical Distribution

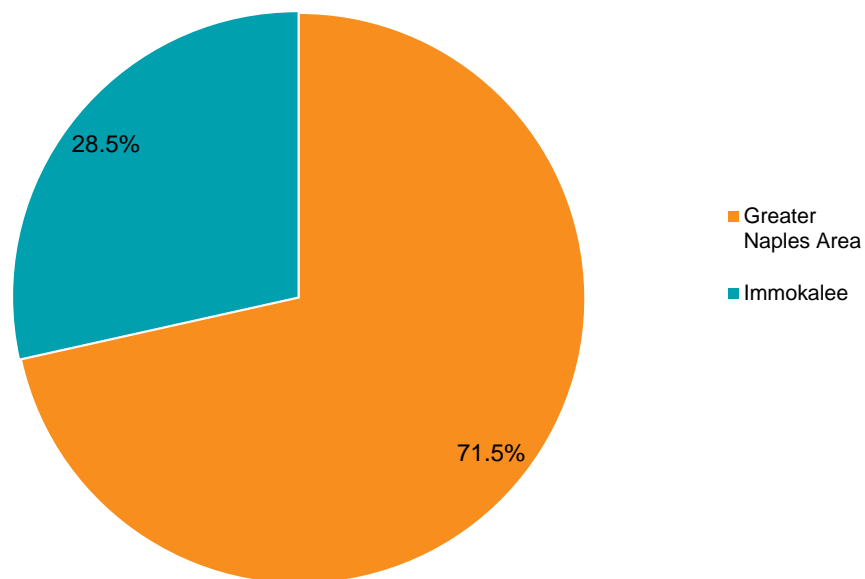
Collier County has the largest surface area of any county east of the Mississippi River. The vast majority of the population is concentrated along the Gulf Coast corridor. A sizeable population also resides further inland to the east of the City of Naples. For the purposes of this report, this entire area will be collectively referred to as the “Greater Naples Area”. From 2005 to 2014, 71.5 percent of all reported cases of HIV infection in Collier County have been reported from among residents of this extensive area.

A second, smaller area of population density lies approximately 45 miles northeast of the City of Naples; this is the community named Immokalee. This region is a major supplier of agricultural produce, and the local economy is largely agriculture-based. Therefore, besides the permanent resident population of Immokalee, there is also seasonal migration of agricultural workers in and out of this community following employment opportunities.

The Greater Naples and Immokalee areas of Collier County are often considered separately because they reflect vastly divergent communities. Overall, there are significant disparities with regard to racial composition, language, educational background, age and income between the two population centers. Immokalee, both historically and currently, is home to a number of vulnerable populations, which are subject to the effects of poverty, social pressures and other public health issues.

Immokalee accounts for only approximately 7 percent of the total resident population of Collier County. However, the Immokalee area accounts for 28.5 percent of all cases of HIV infection reported in Collier County from 2005 to 2014 (Figure 36). Based upon population, Collier County is the 16<sup>th</sup> largest county in Florida. At the close of 2014, among the 67 Florida counties, Collier County was ranked 22<sup>nd</sup> in the number of HIV+ cases and 22<sup>nd</sup> in the number of AIDS cases reported statewide.

Figure 36. Percentage Distribution of Reported Cases of HIV Infections, by Geographical Area, Collier County, 2005–2014



Data source: Florida Department of Health in Collier County, HIV Program

## Maternal and Infant Health

Maternal health is the foundation for a vibrant and prosperous society. A healthy pregnancy and the resulting birth of a healthy baby in a positive environment leads to an increase in the quality of life for the mother, the child and the community.

Maternal related health outcomes are influenced by the health status and health behaviors of the woman bearing the child as well as numerous other factors such as ethnicity, race, age, education and income. The healthier the pregnancy the lower the probability of delivering an infant with disorders or complications potentially resulting in unfavorable maternal outcomes or infant mortality.

Infant mortality refers to deaths that occur during the first year of life-from a live birth through age one. The rate is measured as the number of infant deaths per 1,000 live births within the same specified calendar year.

## The Infant Mortality Rate

The infant mortality rate, the number of deaths occurring in the first year of life out of every 1,000 live births, has been used for over a century as a gauge of the overall health status of the nation, state and county and is frequently used for state to state and county comparisons by various public health agencies and medical and health oriented academic and service institutions. As of 2014, the infant mortality rate of the United States was 5.7, historically a low rate for the nation yet still higher than 27 other European and Asian developed and industrialized countries.

The infant mortality rate varies geographically by state and is associated and affected by a myriad of factors which include: the education, income and age of the mother, the mother's health status during pregnancy and her access to healthcare. Southern states have the highest infant mortality rates while states in New England and the Pacific Northwest have the lowest. Research has determined that the higher rates in the southern states are likely to be explained by the higher incidence of low birthweight outcomes and short gestational age births in these states. The ethnic and racial composition of the population within a state or county directly affects the level of the overall infant mortality rate due to the fact that certain racial and ethnic groups are associated with higher levels of infant deaths. The level of infant mortality rate is influenced by and correlated with the mother's health and lifestyle behaviors, such as smoking, drinking, diet, substance abuse, physical activity and access to and use of prenatal care.

As discussed in the section covering mortality, life expectancy at birth is heavily weighted by infant mortality. Assuming actuarial methods used in the calculation of life expectancy, the lower the infant mortality rate, the higher the average number of years a person can expect to live when born.

Nationally, the infant mortality rate has remained the same or decreased every successive year from 1990 through 2014 (the only exception being 2004).

## **Random Variation**

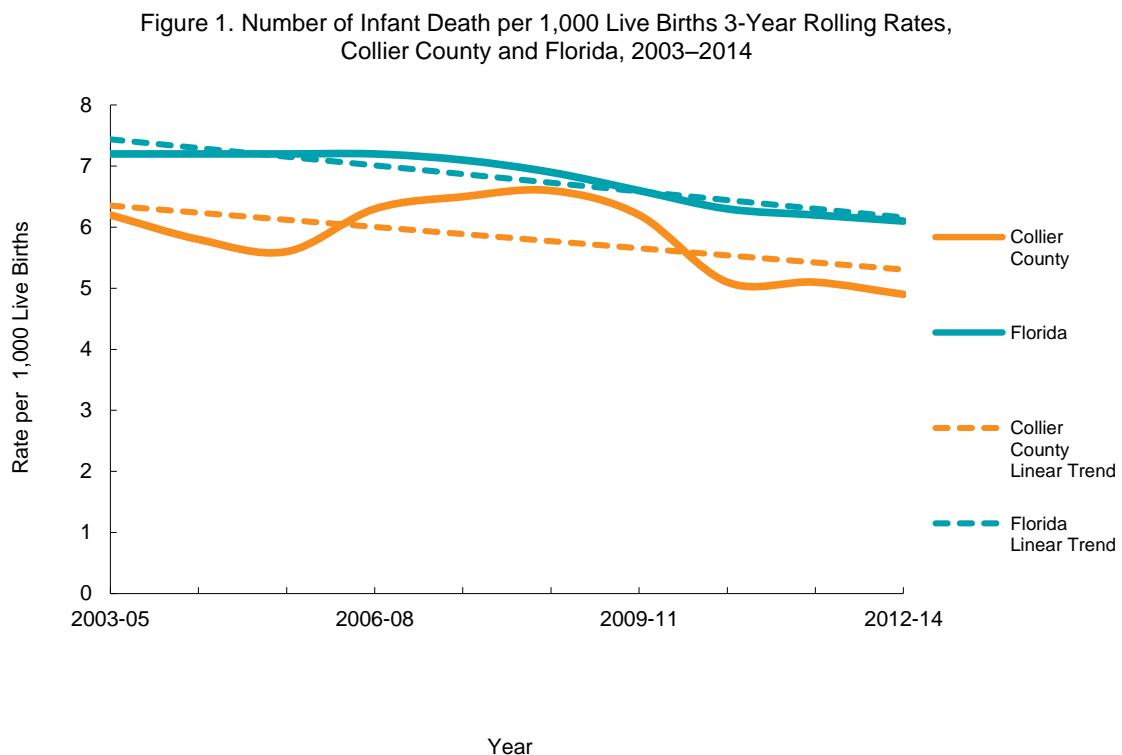
As is the case with any statistical measure, the infant mortality rate is subject to chance or random variation. If a county is relatively small in terms of the annualized number of live births, and subsequently the annual number of infant death counts, then the annual observed infant mortality rate will not be as stable as that same rate for a larger geographical area such as the state. In the case of Collier County, the number of live births in 2014 were 3,288 which is 1.5 percent of the total number of live births for Florida for the same year, 219,905. In 2014, Collier County experienced a total of 15 infant deaths, the number in the state of Florida for the same year was 1,327. Collier County's infant deaths accounted for 1.1 percent of the total number of infant deaths in Florida.

When two geographical areas are compared in a given year (such as Collier County and Florida) and one of the area's rates is based on a relatively small number of live births (and consequently a very small number of infant deaths), it is not unexpected to find the area with the small number of events (infant deaths) to have its infant mortality rates vary in magnitude and direction year to year, sometimes by as much as 100 percent. This statistical concept is commonly referred to as random variation. For this reason, these types of comparisons should not be made on a yearly basis alone. Time series trend analysis, preferably over at least a 10 to 20 year interval should be employed in order to monitor for "true" health outcome trends. Rolling rates or averages will benefit in unmasking the actual direction and level of the rate and superimposing a trend line is beneficial to interpreting the relative change of the health outcome as well as the slope of the rates. Of all of the widely used public health statistics and indicators monitored and analyzed within relatively smaller geographical or lesser populated areas, the infant mortality rate is likely the most susceptible statistic to be influenced by small number variability.

## Infant Mortality

Between the period 2003 to 2005 and 2012 to 2014, the infant mortality rate for Collier County declined by 21 percent to an average new low of 4.9 deaths per 1,000 live births. During this 10 year period, the highest rate occurred during 2008 to 2010, 6.6 per 1,000 live births. The infant mortality rate for the State of Florida experienced a similar decline of 15 percent to a new low of 6.1 per 1,000 live births.

Figure 1 graphs the infant mortality rate for both Collier County and Florida for the period 2003 to 2005 and 2012 to 2014. Of particular note is the high degree of variability visible for Collier County which is due to random variation as discussed on page two of this section. By inserting a linear trend for Florida and Collier County in this graph as well as in other graphs that follow, one is able to ascertain the progress accomplished over time or view when challenges are present or emerging.



Data Source: Florida Department of Health, Bureau of Vital Statistics

Figures 2 and 3 show the infant mortality rates for Collier County and Florida by race for this ten year interval. During this period the white infant mortality rate in Collier County decreased by 31 percent while the black infant mortality rate slightly increased by 15 percent. In Florida, the corresponding declines were 18 percent and 20 percent, respectively. In Collier County a



challenge does appear to be surfacing for the black population as their infant mortality rate has actually been increasing since the year 2000.

Figure 2. Number of Infant Deaths per 1,000 Live Births 3-Year Rolling Rates by Race, Collier County, 2003–2014

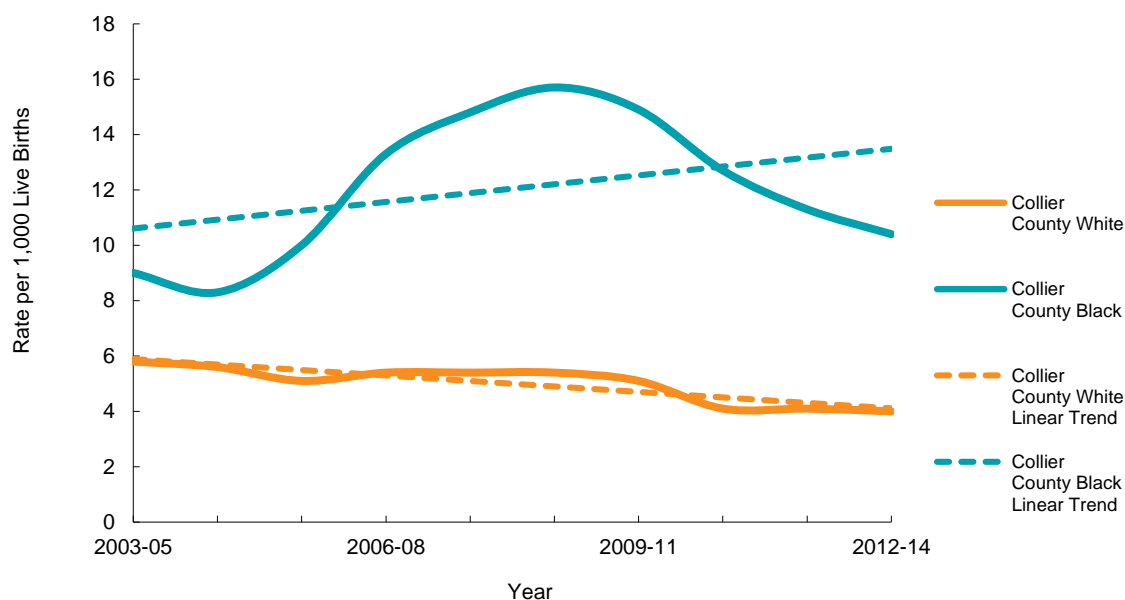
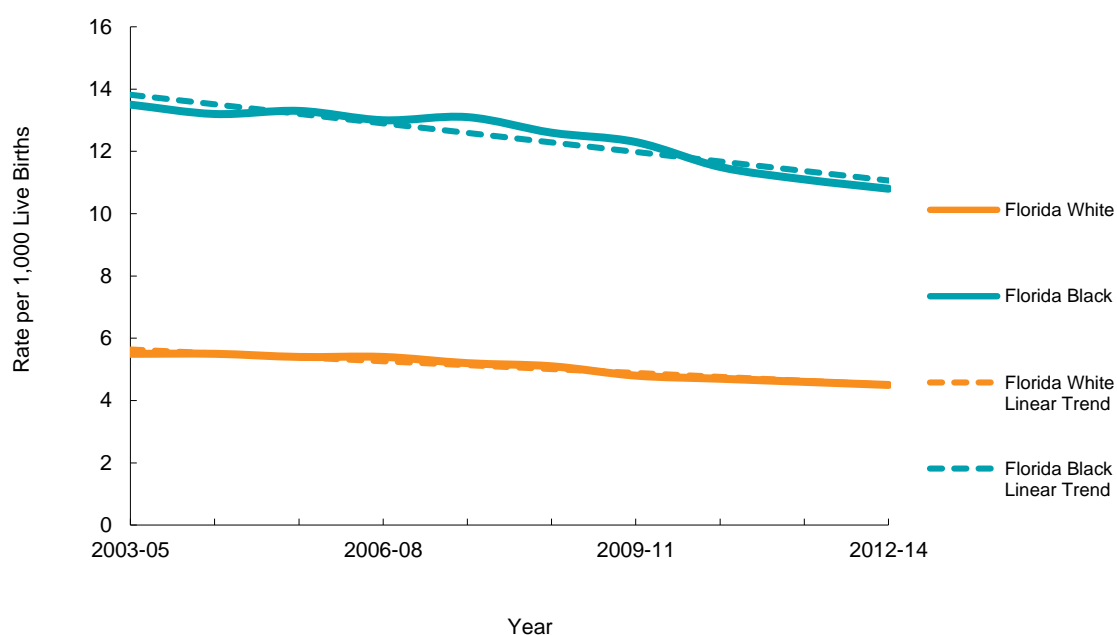


Figure 3. Number of Infant Deaths per 1,000 Live Births 3-Year Rolling Rates by Race, Florida, 2003–2014



Data Source: Florida Department of Health, Bureau of Vital Statistics

In Collier County and the state of Florida, the Hispanic infant mortality rate is lower than that of the non-Hispanic population. For 2012 to 2014, the Hispanic infant mortality rate in Collier County was almost 32 percent lower than the non-Hispanic rate, 3.9 compared to 5.7 per 1,000 live births, respectively. Between the period, 2003 to 2005 and 2012 to 2014, the Hispanic infant mortality rate decreased by 13 percent (Figures 4 and 5). These very low infant mortality rates among the Hispanic population in Collier County are a reflection of healthy lifestyles and behaviors on average among Hispanic females. These lower infant mortality rates also drive the higher level of live expectancy at birth within the overall Hispanic population.

Figure 4. Number of Infant Deaths per 1,000 Live Births 3-Year Rolling Rates by Ethnicity, Collier County, 2003–2014

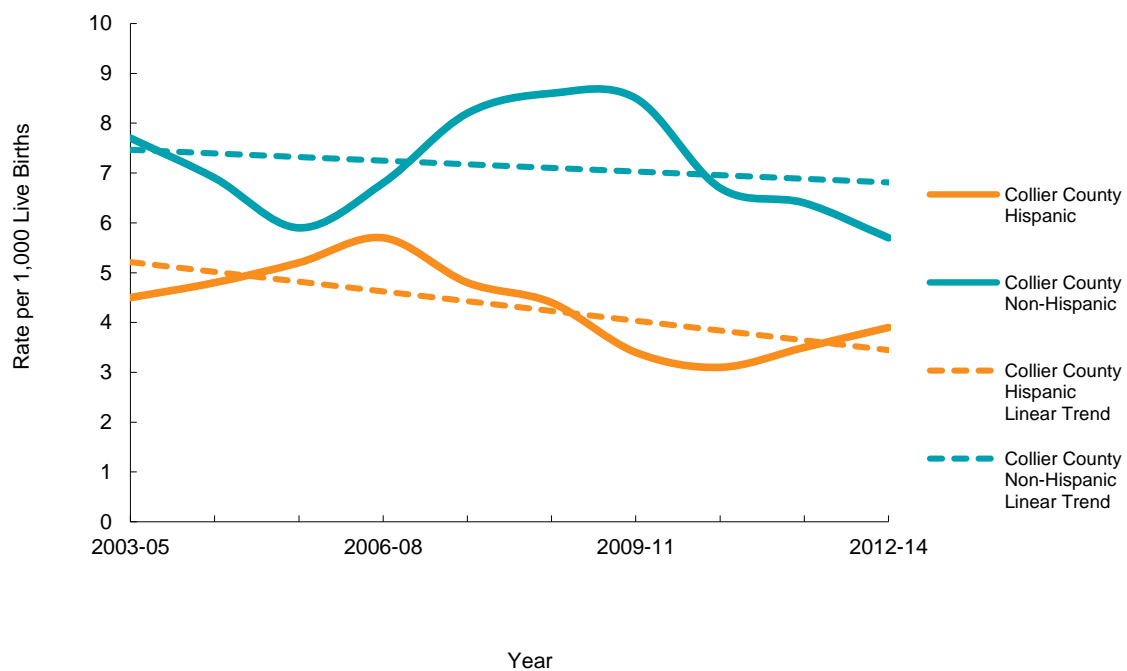
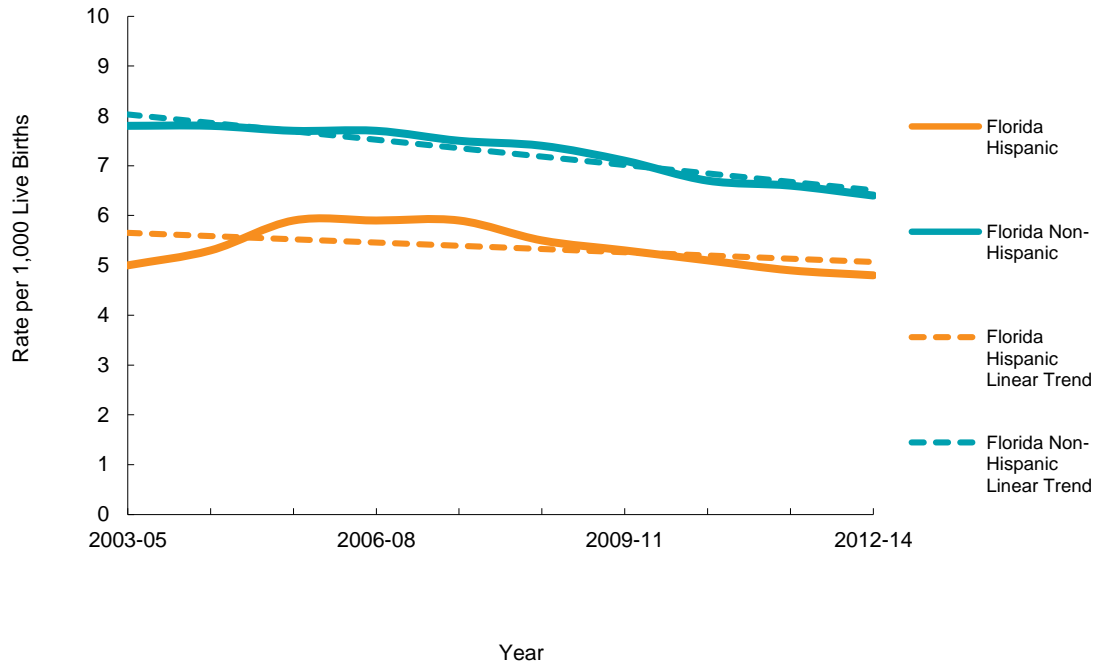


Figure 5. Number of Infant Deaths per 1,000 Live Births 3-Year Rolling Rates by Ethnicity, Florida, 2003–2014



Data Source: Florida Department of Health, Bureau of Vital Statistics

## **Prenatal Health and Lifestyle Behaviors**

Access to prenatal care beginning with the 1<sup>st</sup> trimester and continuing throughout the pregnancy is an essential component for a healthy baby and a successful maternal experience. A pregnant women's nutritional status and lifestyle behaviors such as tobacco and alcohol use are all highly correlated with being able to give birth to a healthy and adequate weight infant. Table 1 provides indicators on access to prenatal care and prenatal health and behaviors.

Between 2006<sup>a)</sup> and 2013<sup>b)</sup> the number of women 15–34 years with sexually transmitted diseases per 100,000 population increased by less than 1 percent in Collier County while in the state of Florida the rate increased by over 23 percent.

In Collier County, births to overweight mothers increased slightly by 12 percent while over 46 percent of mothers giving birth were either overweight or obese. During this same time period the percentage of births born to mothers ages 15 to 19 years declined by 60 percent to 22.3. Births to mothers older than 35 years of age also decreased to 4.2 percent of all live births during 2009–2011. Births to unwed mothers ages 15 to 19 years increased during the four years period by over 10 percent, while unwed mothers ages 20 to 54 years also gave birth more frequently by 1 percent. In Collier County, pregnant women continued to improve their health behaviors by decreasing their reliance on alcohol and tobacco use. Only 3 percent of mothers who gave birth during 2012–2014 reported smoking during pregnancy, a decline of 30 percent from 7 years prior.

Both multiple births and cesarean section births increased in incidence in Collier County in 2013 compared with 2006. C-section births increased by almost 10 percent while multiple births increased by 31 percent.

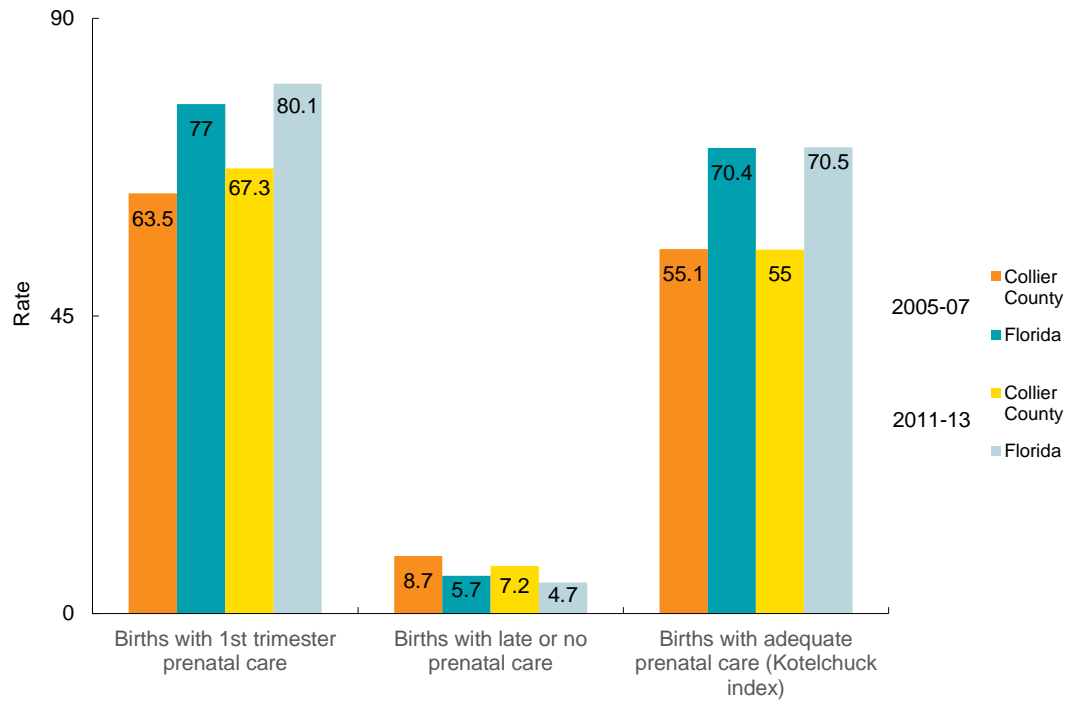
Collier County lags behind Florida for all 3 indicators related to adequate prenatal care: births with 1<sup>st</sup> trimester prenatal care, births with late or no prenatal care and births with adequate prenatal care (Figure 6).

<sup>a)</sup> Indicators are for 2005–2007, <sup>b)</sup> Indicators are for 2012–2014

Table 1. Reported Prenatal Health and Behavioral Indicators, Collier County and Florida, 2005–2007 and 2010–2014

	2005–2007		2012–2014	
	Collier County	Florida	Collier County	Florida
	Rate	Rate	Rate	Rate
Women 15–34 with sexually transmitted diseases, Per 100,000	1677.8	2105.6	1678.9	2599.9
Births to overweight mothers at time pregnancy occurred, percent	24.3	22.3	27.1	24
Births to obese mothers at time pregnancy occurred, percent	16.4	18	19.3	21.1
Births with inter-pregnancy interval < 18 months, percent	34.5	38	34.2	34.7
Births to mothers ages 15–19 years of age, per 1,000 population	55.1	43.1	22.3	24.3
Repeat births to mothers ages 15–19 years of age, percent	21.6	18.4	14.8	16.6
Births to mothers > 35 years of age, per 1,000 population	4.9	4.9	4.2	4.6
Births among unwed mothers ages 15–19 years of age, percent	81.8	86.9	90.1	91.2
Births among unwed mothers ages 20–54 years of age, percent	42.4	39.3	42.9	44.8
Births to mothers who report smoking during pregnancy, percent	4.3	7.5	3	6.5
C-section births, percent	36.6	36	40.2	37.7
Multiple births (twins, triplets or more), percent	2.6	3.2	3.4	3.3

Figure 6. Rates in Access to Prenatal Care, Collier County and Florida, 2005–2007 and 2011–2013



Data Source: Florida Department of Health, Bureau of Vital Statistics

## **Birth Outcomes**

In public health within the United States as well as globally, birthweight of a newborn is considered a vital indicator in the monitoring and evaluation of the state of the health situation of a community, county and state. For public health assessment purposes birthweight is dichotomized into: 1) Low birthweight (less than 2,500 grams or 5 pounds, 8 ounces and 2) Very low birthweight (less than 1,500 grams or 3 pounds, 4 ounces).

Considered as a community predictor indicator of levels of infant morbidity and premature mortality, low birthweight is more widely used in geographical health analyses since it is a more common event and therefore lends itself to population based assessments.

Infants born with very low birthweight have a 24 percent chance of dying during their first year of life. Mortality among low birthweight babies between 1,500 and 2,499 grams or 3 pounds, 4 ounces to 5 pounds, 8 ounces is significantly lower, at approximately one percent, which is still a much higher rate than infants born above 2,500 grams, about 0.25 percent.

Risk factors among pregnant women for low birth weight outcomes include, maternal smoking, low maternal weight gain or low pre-pregnancy weight, multiple births and violence and abuse during pregnancy.

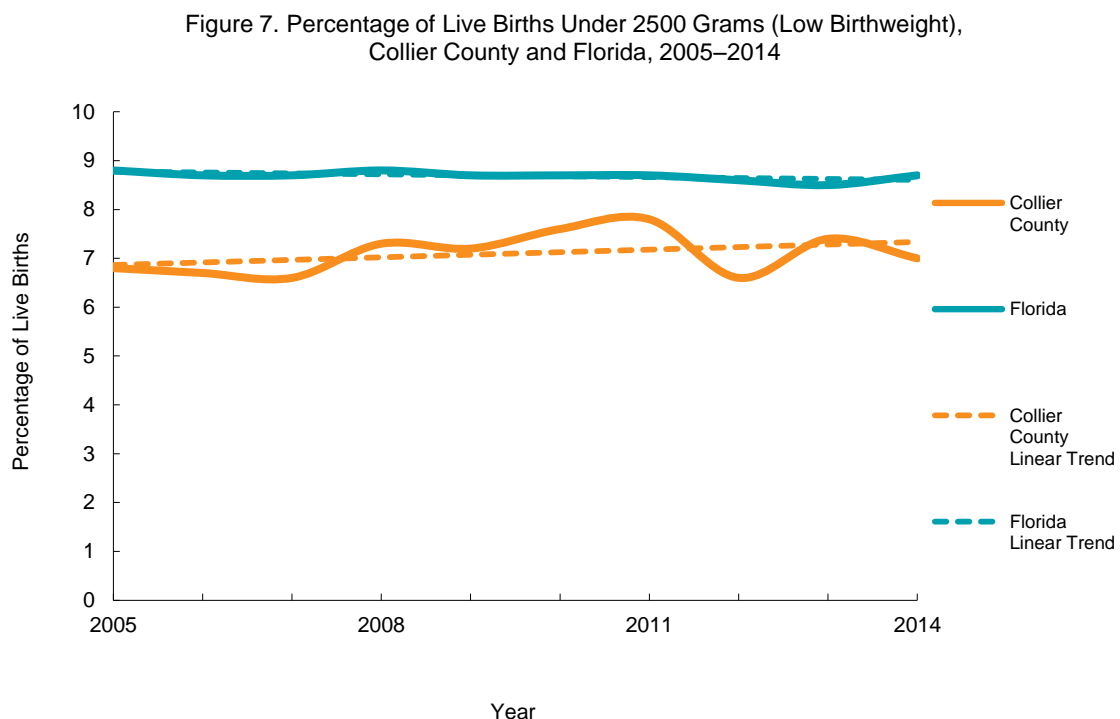
Lower birthweight increases the newborn's likelihood of having a school-age learning disability and impaired development. Infants born weighing less than 2,500 grams are more likely than heavier infants to experience delayed motor skills.

Teenage pregnancy is correlated with low levels of prenatal care and pre-term delivery. Pregnant teenagers have a higher likelihood of receiving no prenatal care or limited care as well as achieving poor maternal weight levels. Births to teenage mothers are much more likely to result in low birthweight deliveries when compared to older mothers in population based assessments.

## Low Birthweight

Low birthweight (less than 2,500 grams or 5 pounds, 8 ounces) and very low birthweight (less than 1,500 grams or 3 pounds, 4 ounces) are statistical predictor variables of premature mortality and of morbidity over a life span. Children born with a low birthweight status have a higher incidence of growth and developmental problems and at a higher risk of cardiovascular disease and respiratory syndromes throughout their lifetime.

Between 2005 and 2014, the percentage of live births with low weight increased by 2.9 percent in Collier County and remained constant in Florida (Figure 7).



Data Source: Florida Department of Health, Bureau of Vital Statistics

One of the major root causes of this increase in low birthweight incidence over the 2005 to 2014 period has been the increase in the frequency of multiple births which in itself is associated with a higher level of low birthweight. When comparing low birthweight incidence by race, Collier County experienced a slight increasing trend in black low birthweight births during this 10 year interval, while the trend for Florida held constant (Figures 8 and 9).



Figure 8. Percentage of Live Births Under 2500 Grams (Low Birthweight) by Race, Collier County, 2005–2014

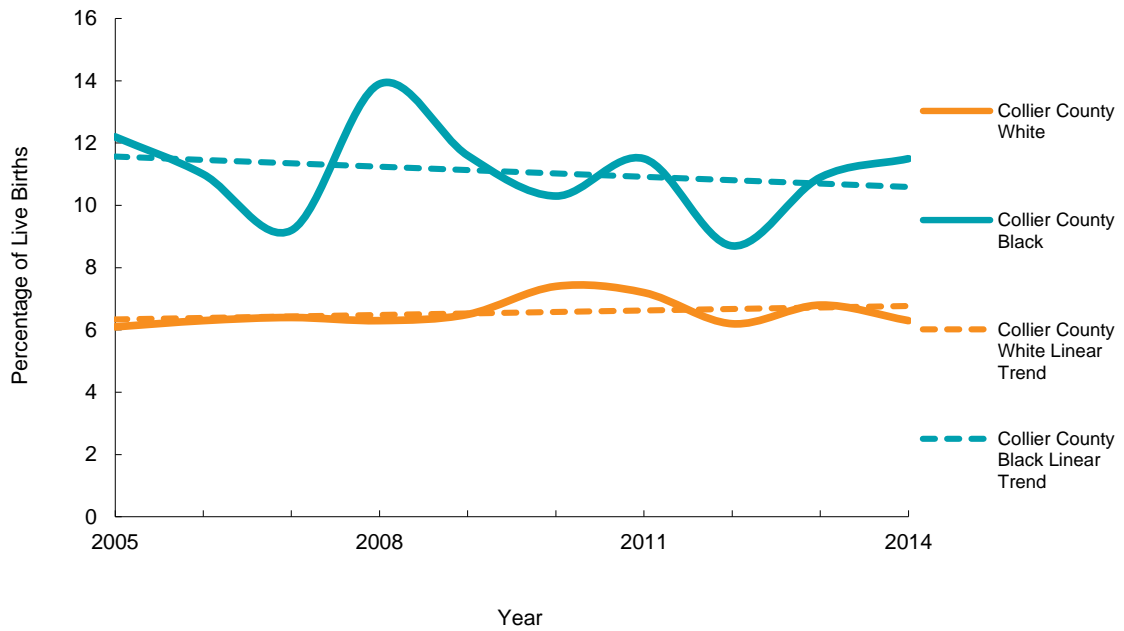
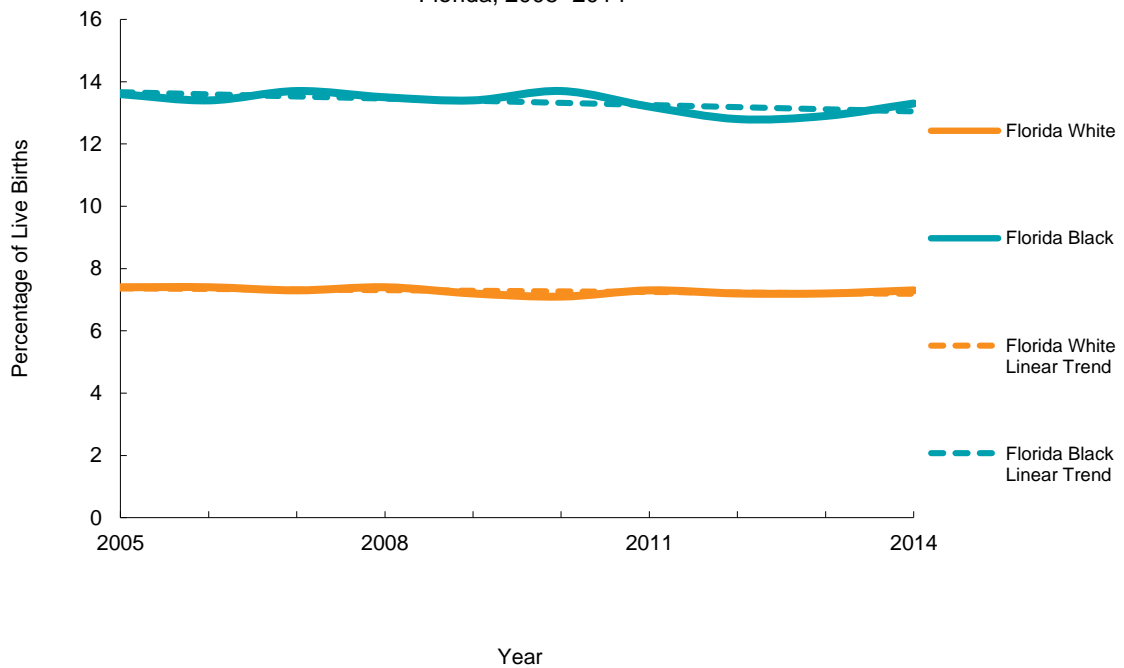


Figure 9. Percentage of Live Births Under 2500 Grams (Low Birthweight) by Race, Florida, 2005–2014



Data Source: Florida Department of Health, Bureau of Vital Statistics

By ethnicity, Hispanic low birthweight births in Collier County and in Florida increased between 2005 and 2014 (Figures 10 and 11).

Figure 10. Percentage of Live Births Under 2500 Grams (Low Birthweight) by Ethnicity, Collier County, 2005–2014

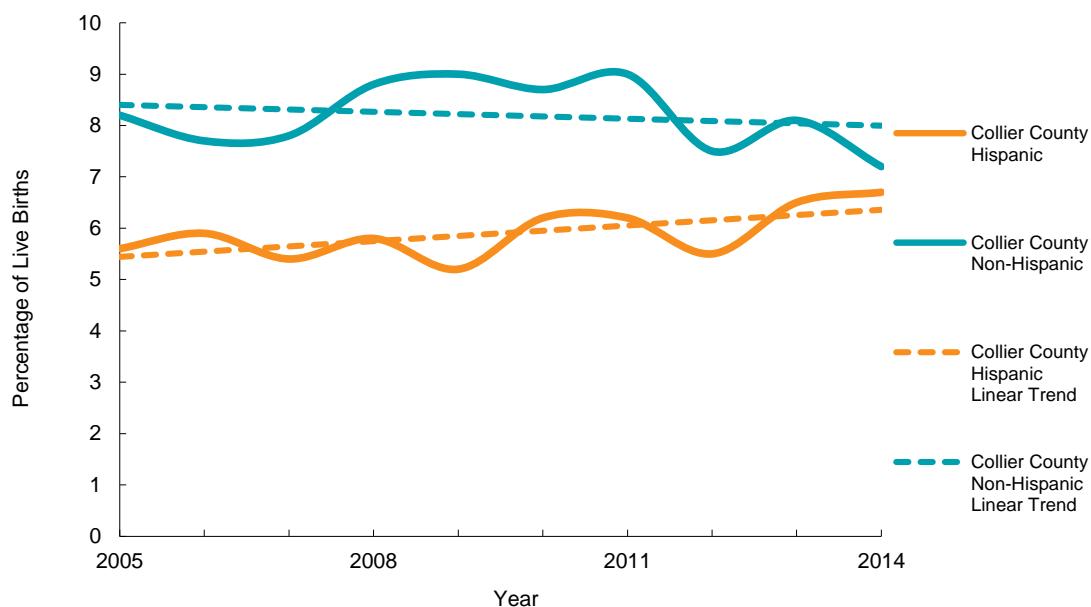
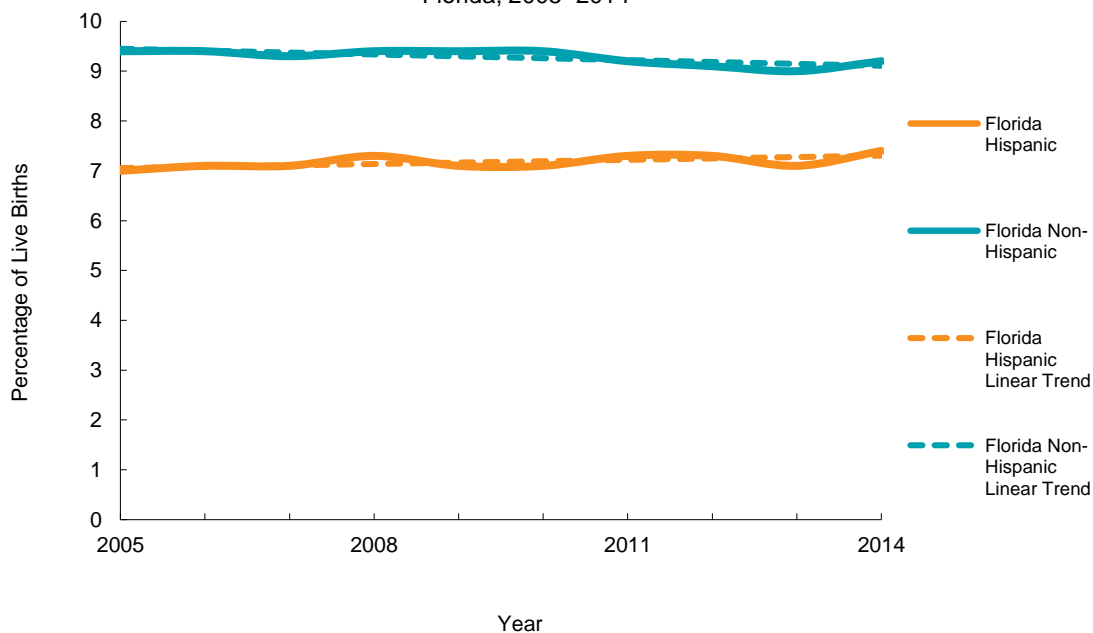


Figure 11. Percentage of Live Births Under 2500 Grams (Low Birthweight) by Ethnicity, Florida, 2005–2014



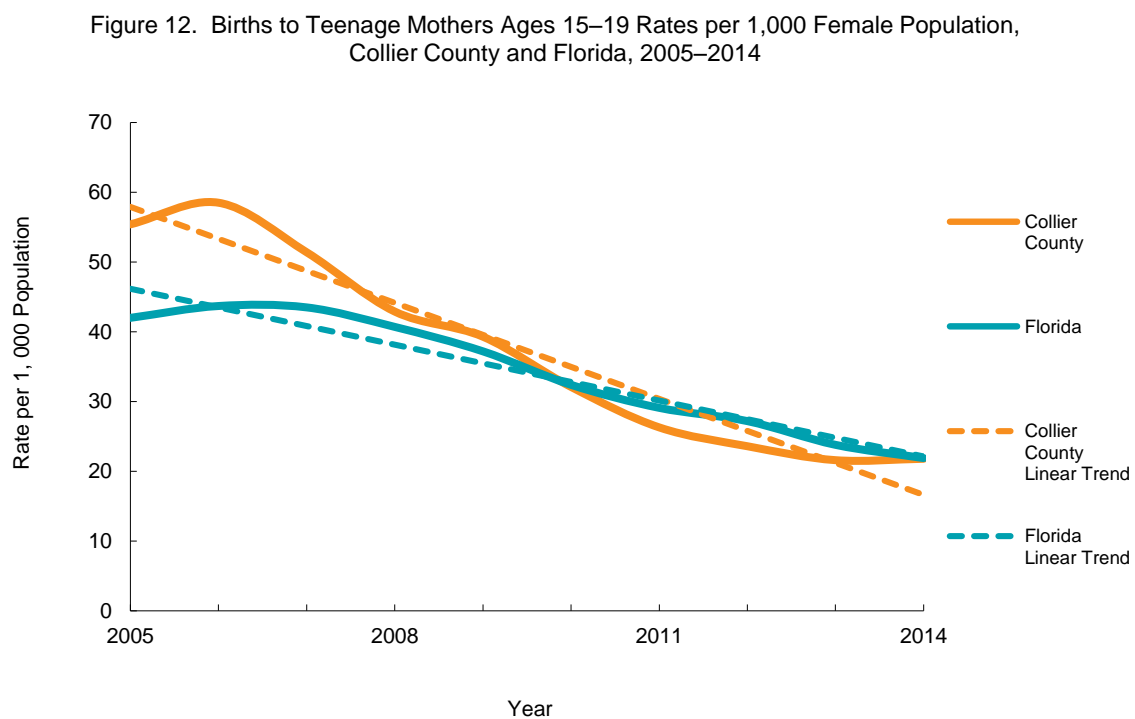
Data Source: Florida Department of Health, Bureau of Vital Statistics

## Teenage Births

Teenage pregnancy has been a priority area within public health for many decades. A birth to a teenager is at higher risk of a low birthweight baby, preterm birth and infant death compared with babies born to older mothers.

While teenage birth rates have been in a long term decline in the United States since the 1960's, the U.S. teen birth rate remains one of the highest among all industrialized countries. Teenage pregnancy is one of the few areas within the public health realm where currently in the 21<sup>st</sup> century the racial disparity gap is not as evident as in the infant mortality rate and the low birthweight rate.

Between 2005 and 2014, the teenage birth rate for mothers 15–19 years of age declined by 61 percent in Collier County and by 48 percent in Florida (Figure 12).



Data Source: Florida Department of Health, Bureau of Vital Statistics

Black teenagers in Collier County and Florida experienced a steeper decline than white teenagers, 73 percent and 58 percent, respectively (Figures 13 and 14).

Figure 13. Births to Teenage Mothers Ages 15–19 Rates per 1,000 Female Population, by Race, Collier County, 2005–2014

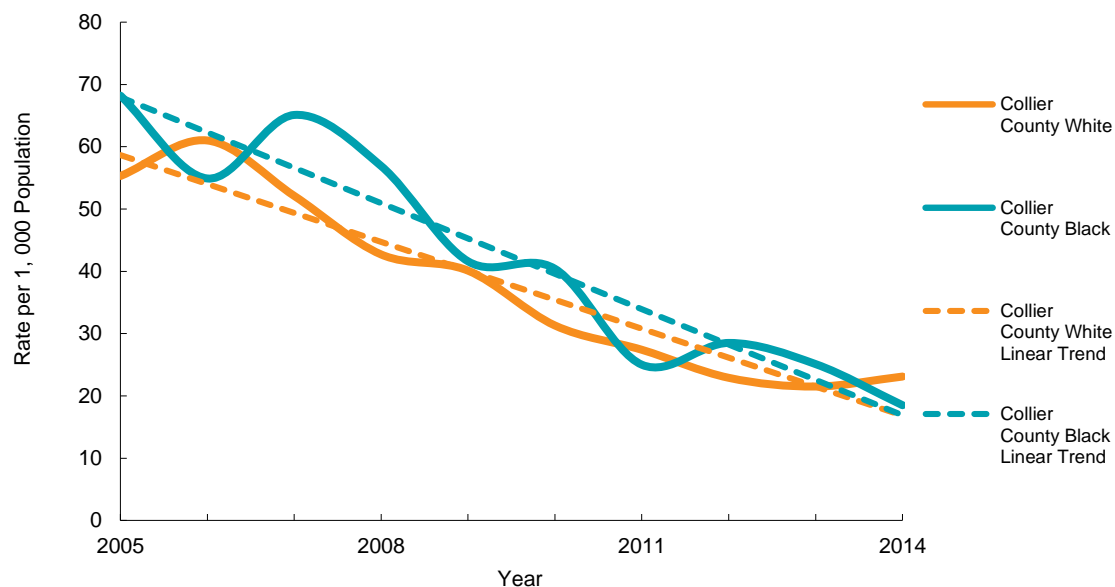
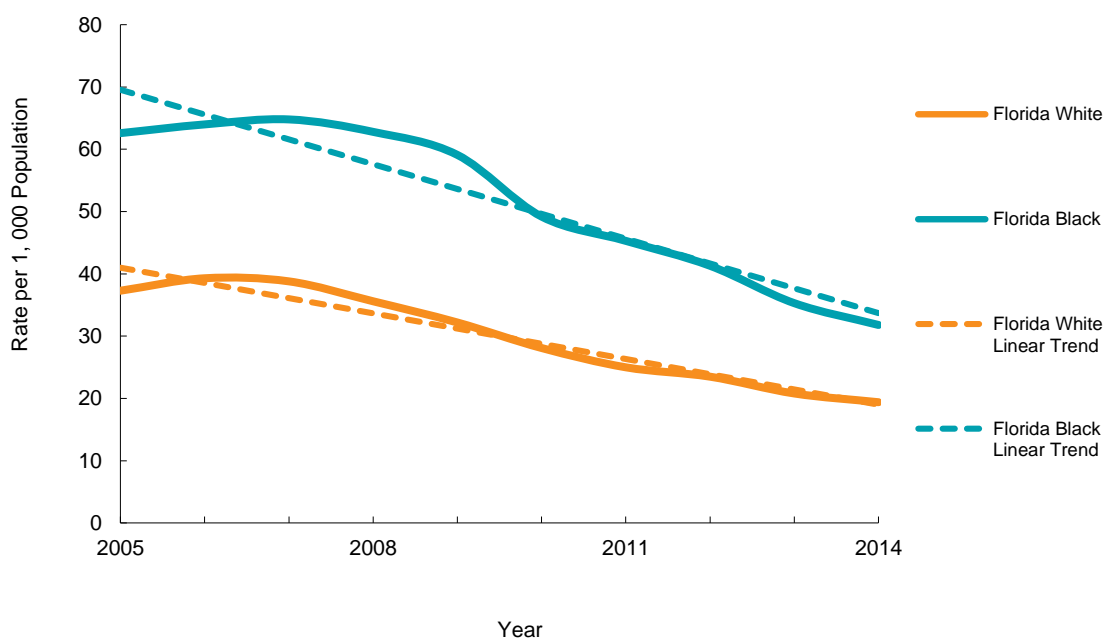


Figure 14. Births to Teenage Mothers Ages 15–19 Rates per 1,000 Female Population, by Race, Florida, 2005–2014



Data Source: Florida Department of Health, Bureau of Vital Statistics

Hispanic teenagers 15–19 years of age also experienced a more significant decrease in rates, 61 percent in Collier County and 43 percent in Florida (Figure 15 and 16).

Figure 15. Births to Teenage Mothers Ages 15–19 Rates per 1,000 Female Population, by Ethnicity, Collier County, 2005–2014

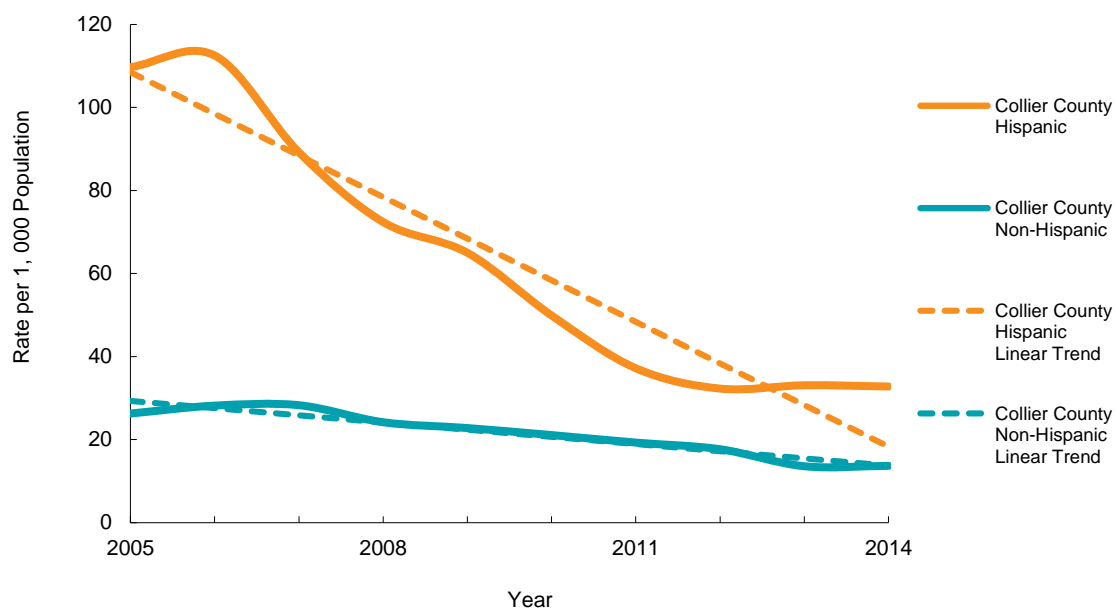
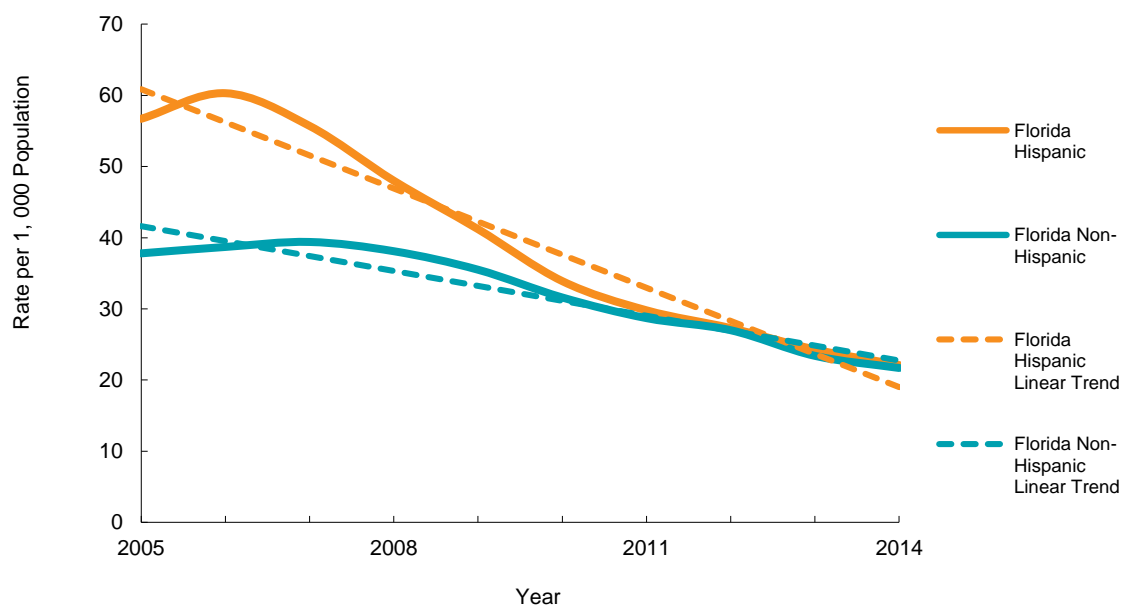


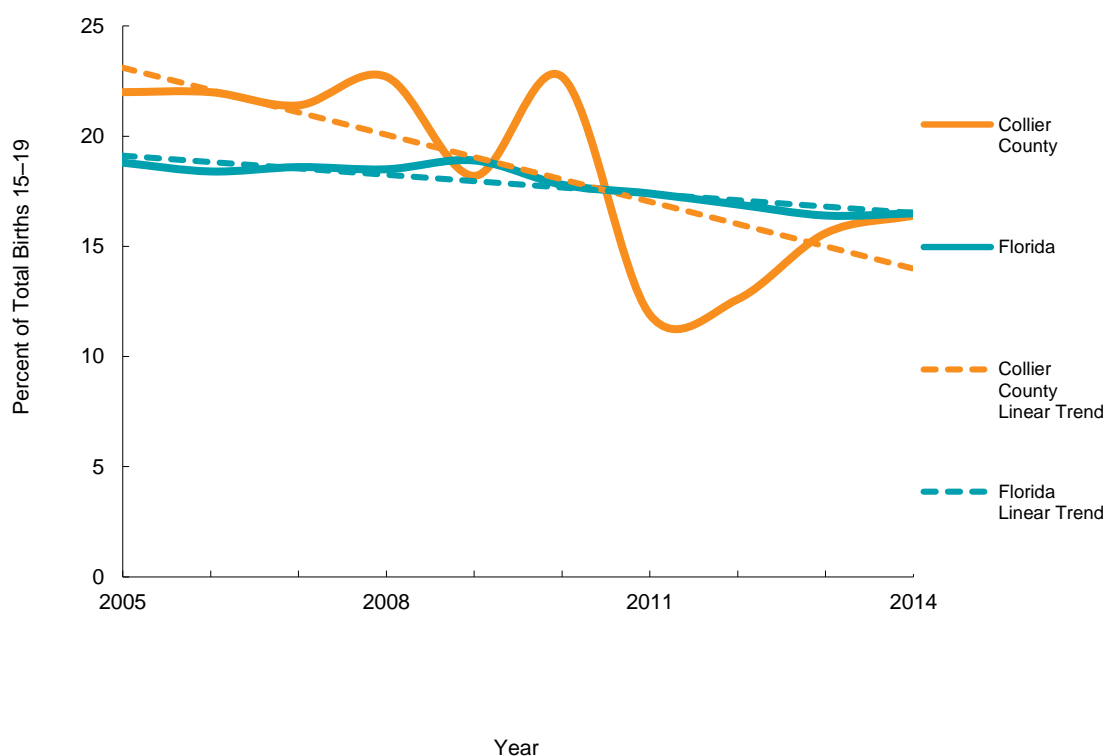
Figure 16. Births to Teenage Mothers Ages 15–19 Rates per 1,000 Female Population, by Ethnicity, Florida, 2005–2014



Data Source: Florida Department of Health, Bureau of Vital Statistics

Repeat births to teenage mothers 15–19 years decreased in Collier County and Florida between 2005 and 2014 by 26 and 12 percent, respectively (Figure 17).

Figure 17. Repeat Births to Teenage Mothers Ages 15–19 Rates per 1,000 Female Population, Collier County and Florida, 2005–2014



Data Source: Florida Department of Health, Bureau of Vital Statistics

By race, repeat births to teenage mothers dropped dramatically in Collier County among blacks and whites, –25 percent and –17 percent, respectively, from 21.4 to 16.1 for whites and from 25.5 to 21.1 for blacks. In Florida, the repeat birth rate to white teenage mothers declined slightly from 17.6 in 2005 to 15.8 in 2014, while the rate for blacks decreased by 15 percent from 21.6 to 18.4 (Figures 18 and 19). In Collier County, the trend for Hispanic and non-Hispanic repeat teenage births was an almost parallel decline of 16 percent and 45 percent, respectively. In Florida, Hispanic repeat teenage births declined by 27 percent while non-Hispanic repeat teenage births declined by 36 percent (Figures 20 and 21).

Figure 18. Repeat Births to Teenage Mothers Ages 15–19 Rates per 1,000 Female Population, by Race, Collier County, 2005–2014

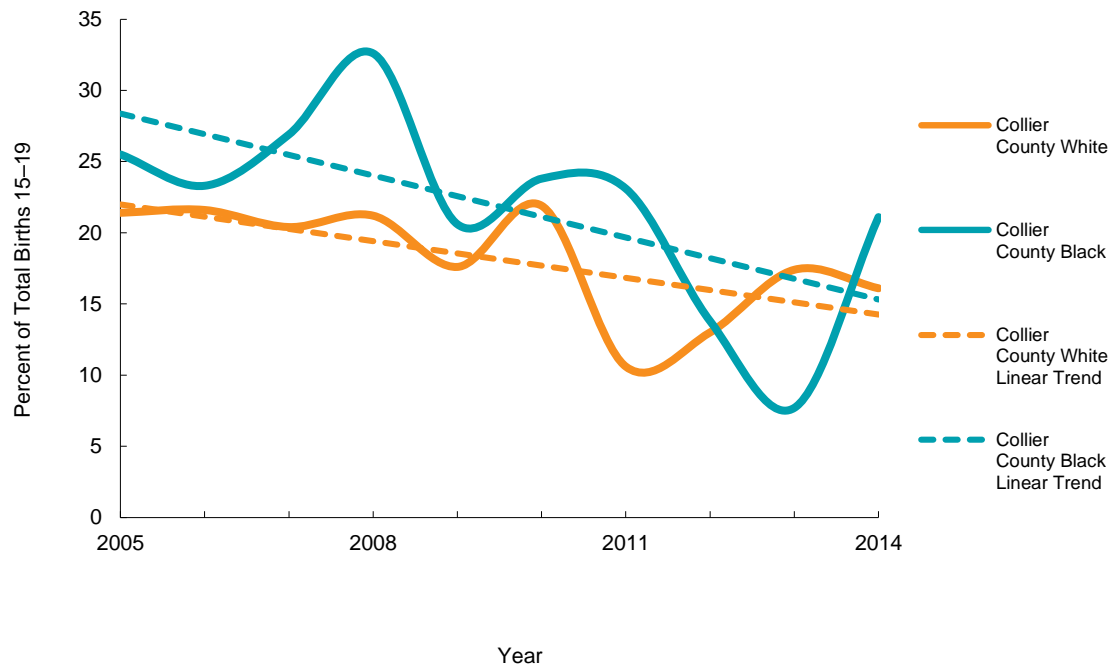
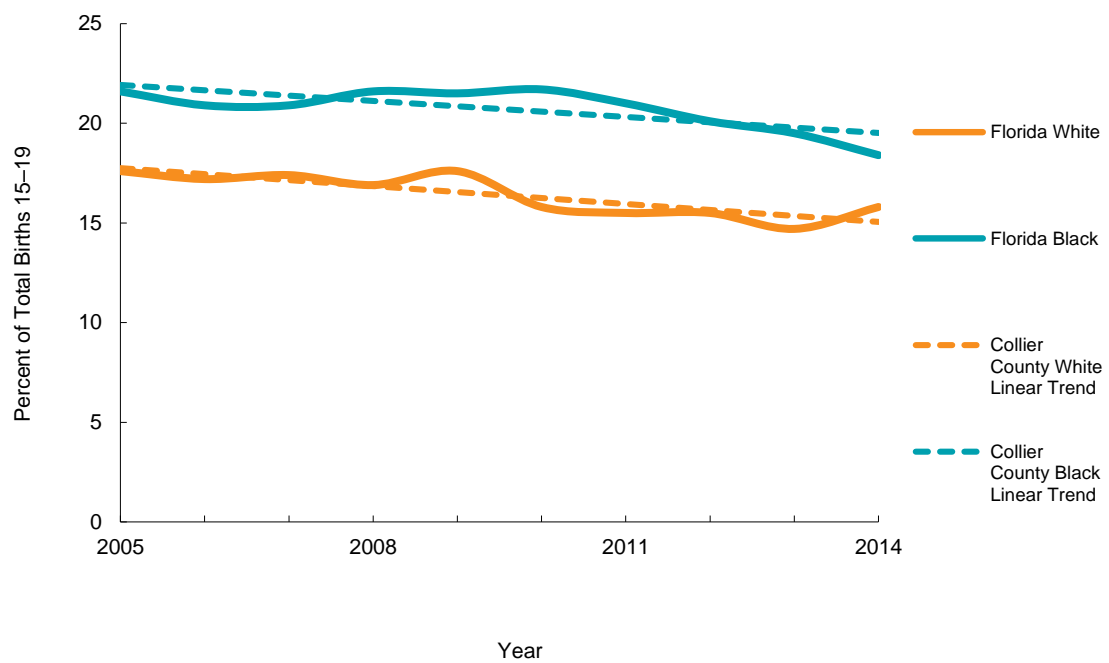


Figure 19. Repeat Births to Teenage Mothers Ages 15–19 Rates per 1,000 Female Population, by Race, Florida, 2005–2014



Data Source: Florida Department of Health, Bureau of Vital Statistics

Figure 20. Repeat Births to Teenage Mothers Ages 15–19 Rates per 1,000 Female Population, by Ethnicity, Collier County, 2005–2014

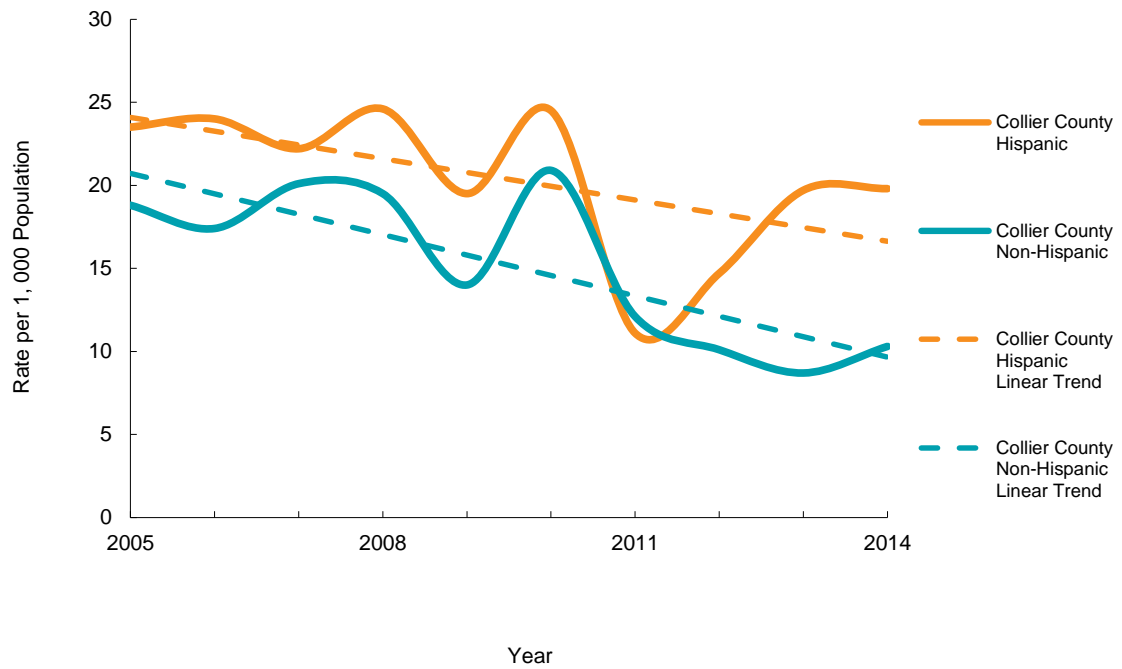
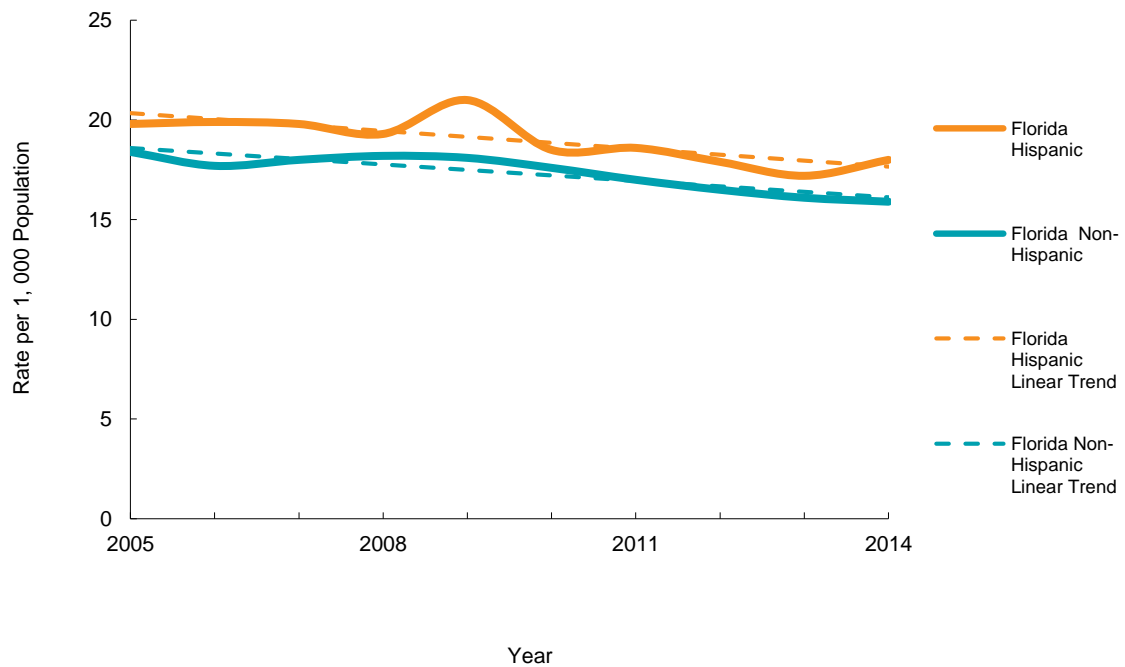


Figure 21. Repeat Births to Teenage Mothers Ages 15–19 Rates per 1,000 Female Population, by Ethnicity, Florida, 2005–2014



Data Source: Florida Department of Health, Bureau of Vital Statistics



## **Maternal Mortality**

Maternal death is a relatively rare event in the United States with approximately 650 women dying each year as a result of their pregnancy or complications during delivery. While numerous factors influence the health outcome of a pregnancy, it is very crucial that women of reproductive age adopt and maintain healthy life styles before and during their pregnancy as well as receive routine prenatal care and attention throughout gestation.

Between 2005 and 2007, Collier County did not experience any maternal deaths. During 2008, 2009, 2011, 2012, 2013 and 2014 between 1 and 3 maternal deaths occurred annually thereby increasing the rates for those years to very high levels due to the concept of small number random variation discussed earlier in this section (Table 2).

One maternal death is a sentinel event which triggers a comprehensive investigation regarding its root cause at the county level.

Table 2. Number of Maternal Deaths per 100,000 Live Births, Single Year Rates, Collier County and Florida, 2005–2014

	<b>Collier</b>	<b>Florida</b>
Years	Rate	Rate
2005	0.0	23.0
2006	0.0	14.8
2007	0.0	20.1
2008	53.5	13.8
2009	28.3	26.2
2010	0.0	20.5
2011	31.3	22.0
2012	95.3	20.2
2013	31.7	29.7
2014	30.4	21.4

Data Source: Florida Department of Health, Bureau of Vital Statistics

## **Analysis of Infant Mortality, Low Birth Weight and entry Into Prenatal Care in Collier County, 2005–2014**

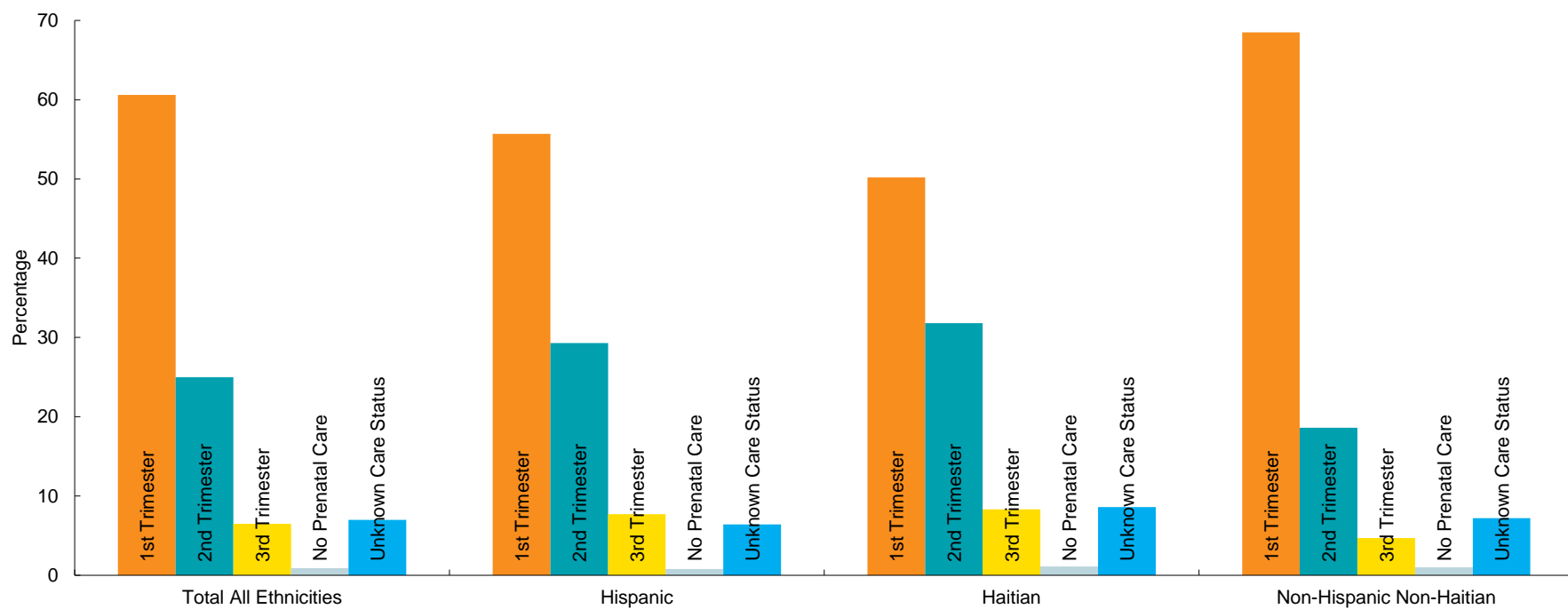
This analysis covers the 10-year time period between 2005 and 2014, which allows for a time series or trend analysis which draws a precise picture of the present situation and the recent past. Analyses of one year, or of a time period of less than ten years, usually do not accurately depict the situation due to the random variation of small numerators and/or denominators as well as socioeconomic and social trends affecting health outcome indicators and statistics. The following reflects the situation as of December 31, 2014, and it is hoped that this analysis will become a foundation for further investigation in order to improve prenatal and maternal care in Collier County.

With very few exceptions, all population based maternal and infant health outcomes and indicators are associated with the level of education of the mother which inevitably is highly correlated with median income and other socioeconomic status indicators.

With higher median income levels, on average, the result is healthier lifestyles and a greater awareness of the socioeconomic factors leading to a healthier family and community. In other words, on average and in population based aggregates, the higher the education, the lower the infant mortality rate and the higher life expectancy and the quality of life. Exceptions to this do occur; however in public health, we deal with the total population of a state, county or community and outliers do not affect the overall population based health outcome indicators given a valid sample size. We should always remember that infant mortality affects life expectancy as it occurs during the first year of life which results on average in over 70 years of potential life lost per infant death. Maternal health and the trimester of entry into prenatal care is directly related to the education level and the awareness of the pregnant mother regarding healthy behaviors and choices.

When analyzed by 1st and 2nd trimester entry into prenatal care, non-Hispanics and non-Haitians achieved 87.1 percent, Hispanics 85 percent and Haitians 82 percent, respectively. For entry by the 1st trimester, Hispanics are at almost 56 percent and Haitians at 50.2 percent, while non-Hispanics and non-Haitians are at 68.5 percent. There are more pregnant women with unknown trimester of entry into care than those entering in the 3rd trimester for Haitians and non-Hispanics, non-Haitians (Figure 22).

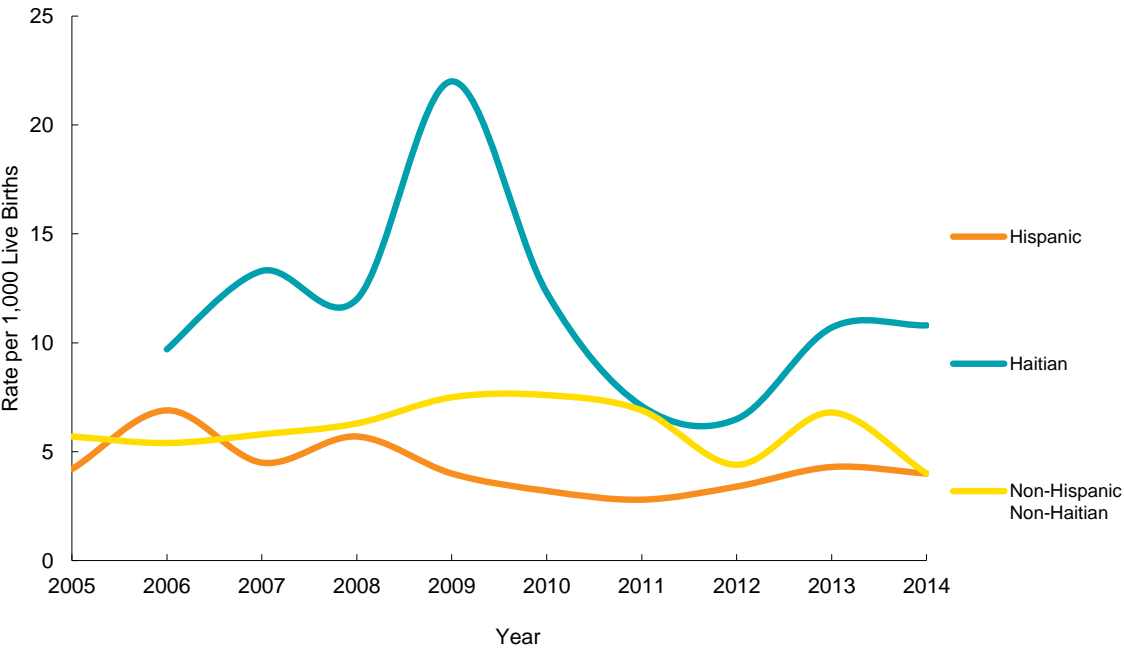
Figure 22. Percentage Distribution of Live Births by Trimester Prenatal Care Began, by Ethnicity, Collier County, 2005–2014



Comparing all ethnic groups, it is clear that the average Haitian infant mortality rate (IMR) is significantly higher compared with Hispanics and non-Hispanics, non-Haitians as well as highly variable.

This is a good example of statistical random variation of small numerators and denominators that will inevitably result in a volatile rates in some years and unstable trends over time (Figure 23).

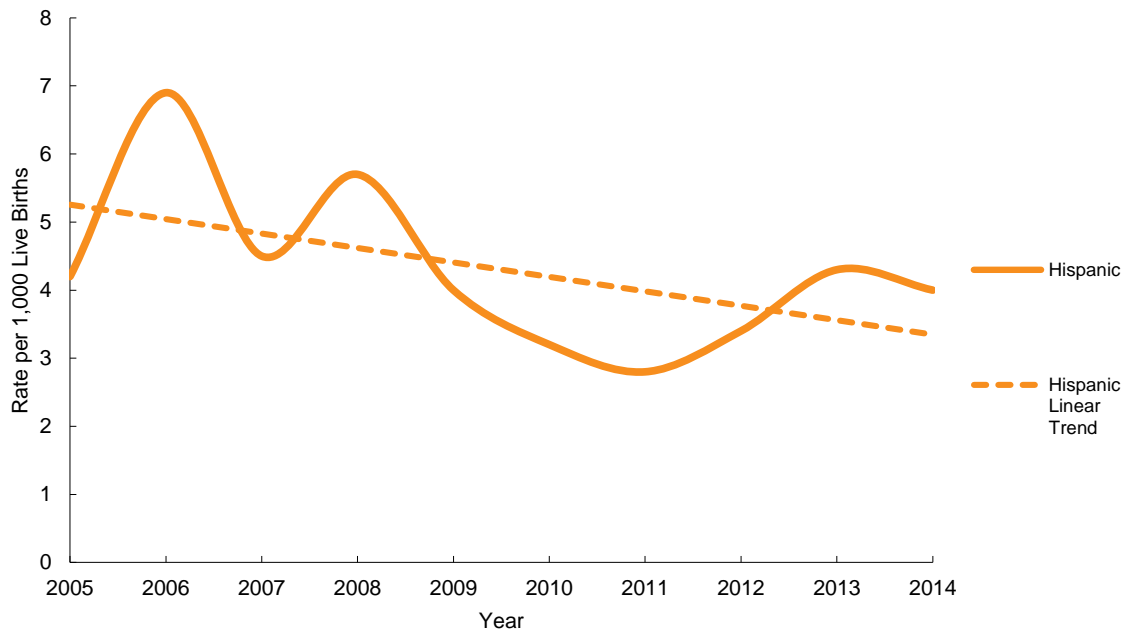
Figure 23. Number of Infant Deaths per 1,000 Live Births, by Ethnicity, Collier County, 2005–2014



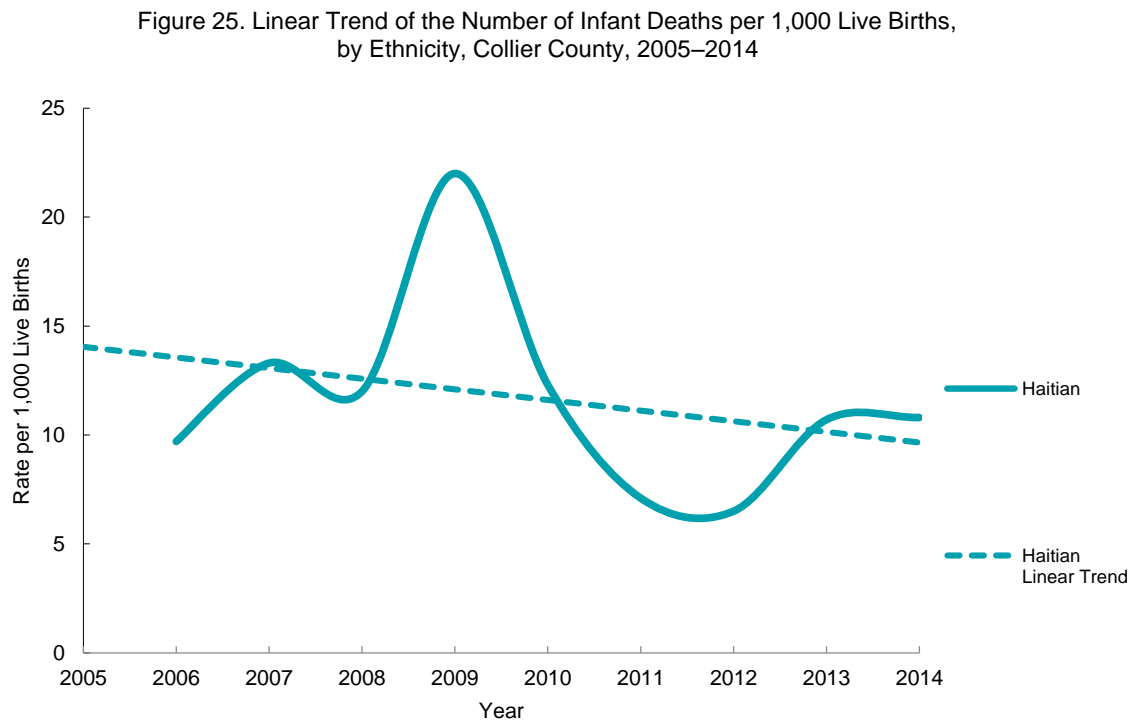
The Hispanic IMR is in a declining trend and also exhibits some random variation (in 2006 the IMR was 6.9, in 2008, 5.7).

This is an excellent example as to the reason why we analyze at least 10 years' worth of data, the IMR was 4.2 in 2005 and declined to 4.0 in 2014—a slight 4.8 percent decrease yet in four of these ten years the Hispanic IMR was lower than the beginning point of 4.2 in 2005 (Figure 24).

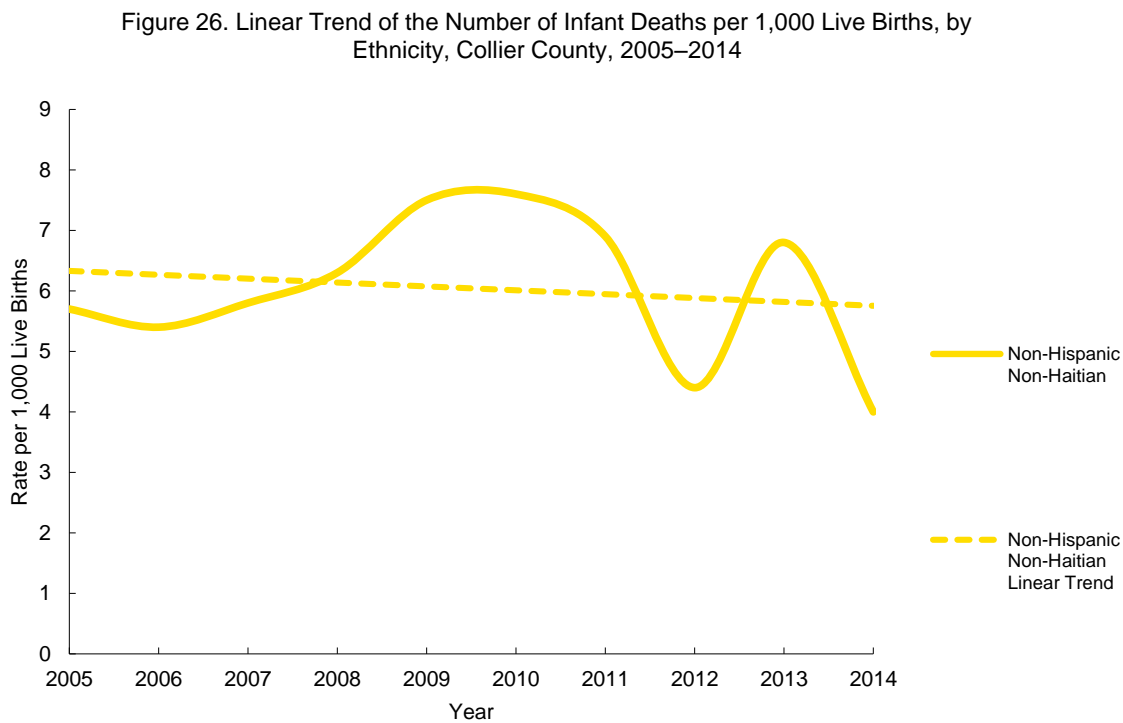
Figure 24. Linear Trend of the Number of Infant Deaths per 1,000 Live Births, by Ethnicity, Collier County, 2005–2014



The trend for the IMR among Haitians is on a declining slope (improving) although it is still at a much higher level than the other ethnic groups. However, if it were not for the extremely high IMR in 2009 (22.0) the trend would be more or less constant (IMR was 9.7 in 2006 and 10.8 in 2014) (Figure 25).



The IMR among the non-Hispanic, non-Haitians is also in a downward slope of improvement, from 5.7 in 2005 to 4.0 in 2014 (Figure 26).



When analyzing data on low birth weight by ethnicity it is clear that the Haitian live births have a significantly higher percentage of being born under 2500 grams than the other ethnic entities. Figure 27 will visually depict these differences.

Figure 27. Distribution of Live Births, by Ethnicity and Low Birthweight, Collier County, 2005–2014

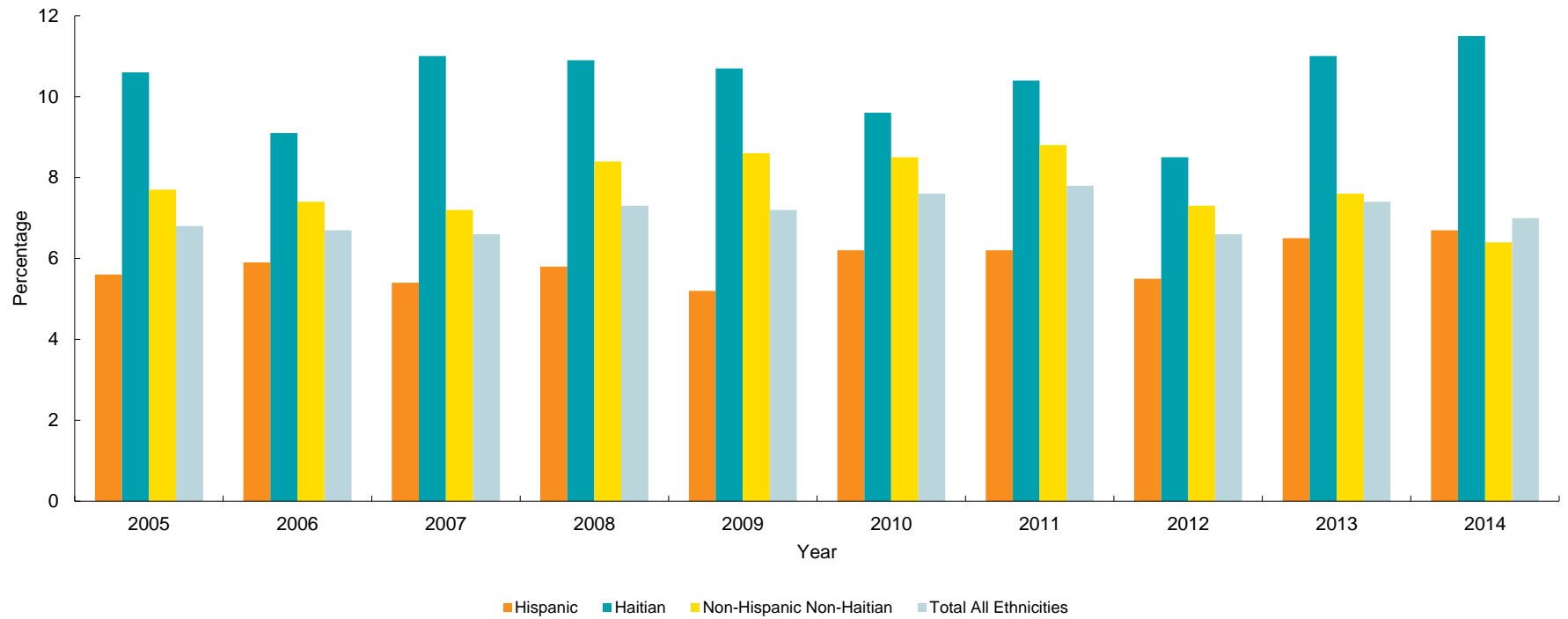
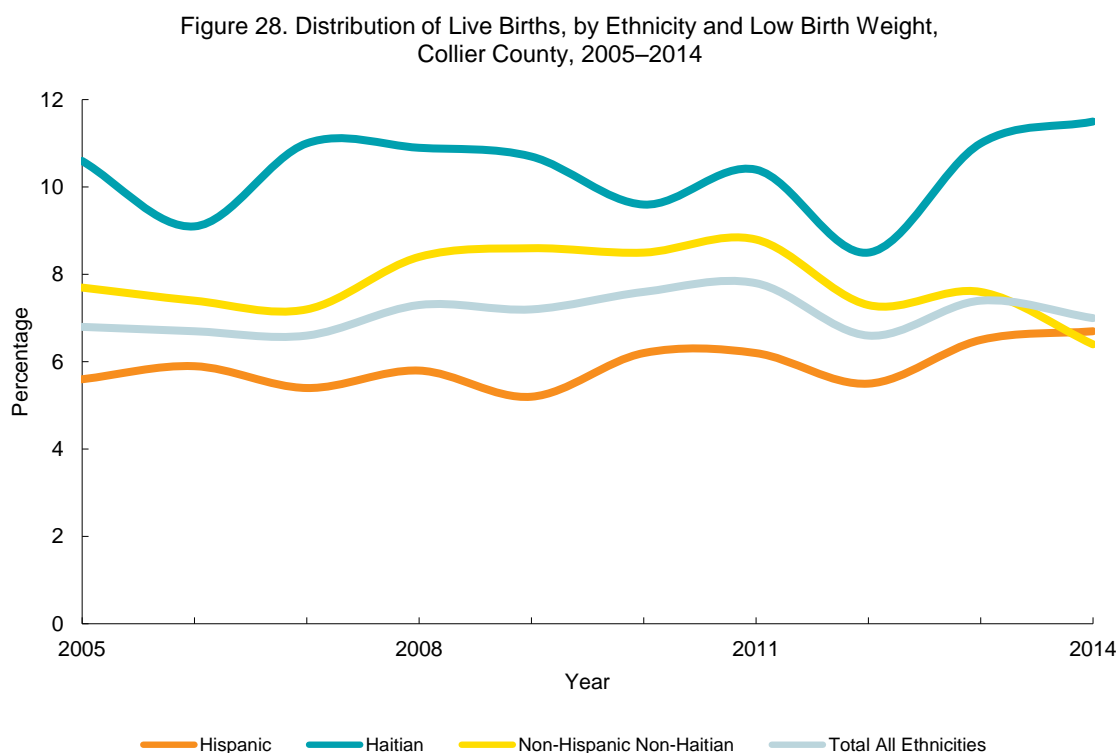




Figure 28 clearly indicates that Hispanics consistently (with the exception of 2014) experience lower low birth weight levels than all of the three groups being analyzed.

On average, Haitians have just under twice the percentage of low birth weight live births as Hispanics. It is also important to view these data within the context of the total live birth population of Collier County.

In 2014 there were a total of 3,288 resident live births recorded in Collier County (provisional data) of which 278 or 8.5 percent were of Haitian ethnicity, 1,503 or 45.7 percent were of Hispanic ethnicity and 1,507 or 45.8 percent were of non-Hispanic, non-Haitian origin. Approximately one out of every twelve live births in Collier County is of Haitian ethnicity while one out of every two is of Hispanic ethnicity as well as those of non-Hispanic, non-Haitian origin.



It is clear that the trend line for low birth weight births among Hispanics in Collier County has been increasing at a slight slope from 2005 to 2014 (Figure 29).

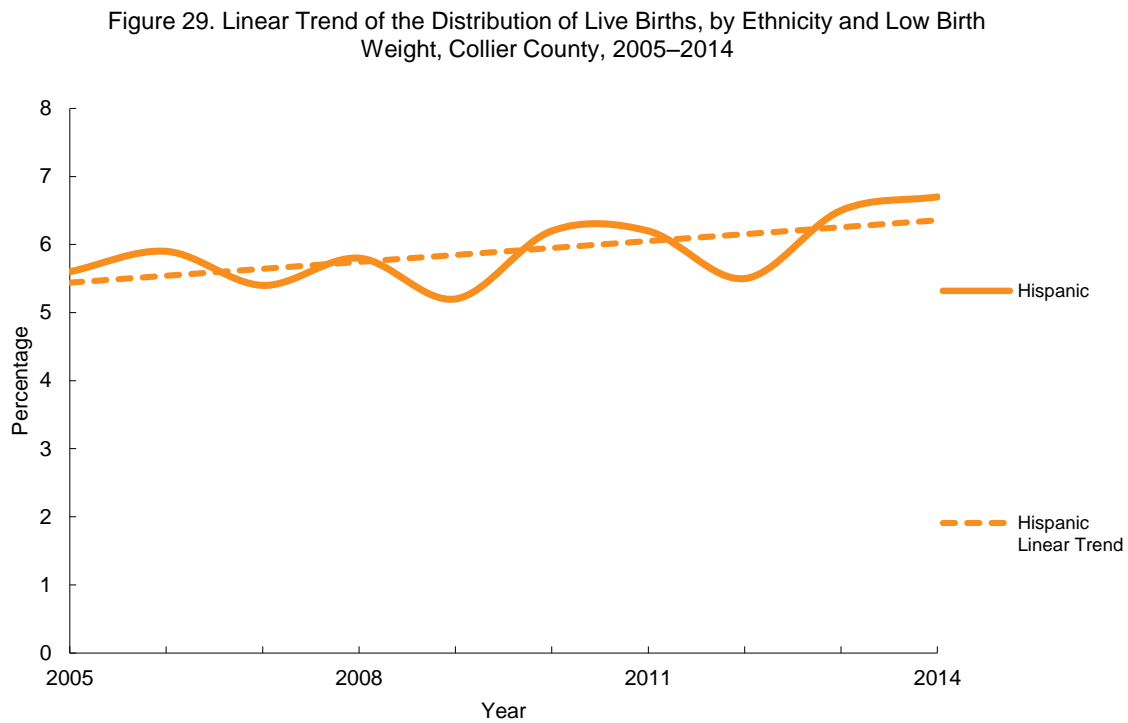
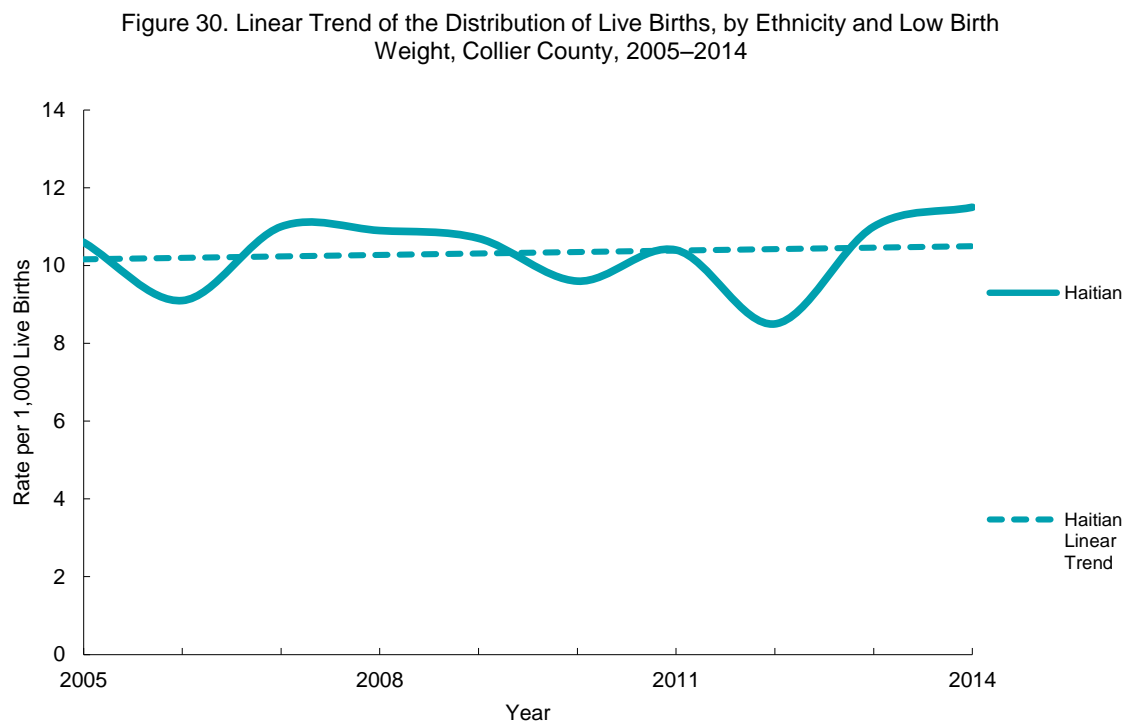
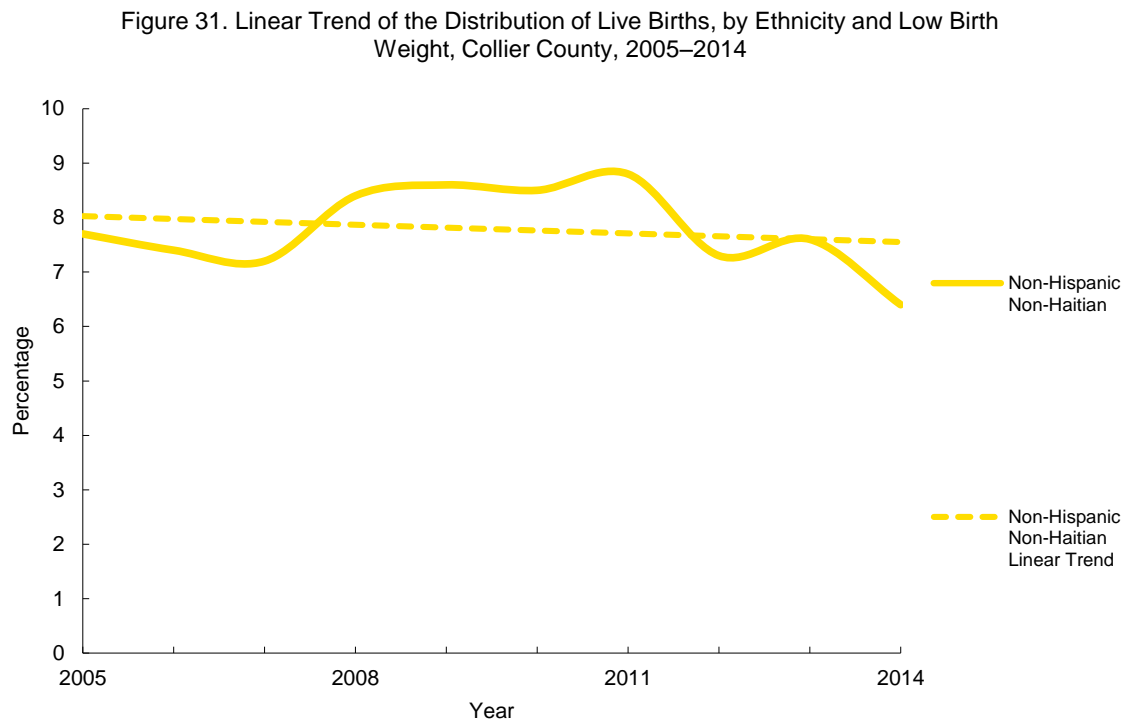


Figure 30 indicates that the trend for low birth weight live births among the Haitian population in Collier County has been fairly constant with a faint trend upward between 2005 and 2014.



Between 2005 and 2014 the trend for low birth weight live births among non-Hispanics and non-Haitians decreased slightly by approximately 5 percent (Figure 31).



## Injuries

Injuries affect the entire population regardless of age, gender, ethnicity, race or socioeconomic status. The majority of all injury deaths at every age are unintentional. Unintentional injury is now the fourth leading cause of death in Collier County, accounting for almost 6 percent of all deaths annually.

The risk of mortality due to an injury will vary by age, gender and the external cause. Males have significantly higher death rates from injuries than females at any age group, while people 65 years and older have a much greater injury fatality rates than those 64 years and younger. The risk of death from any external cause rises exponentially beginning around 70 years of age.

The external causes of injury deaths vary distinctly by age. For adults 35 to 44 years of age, poisoning is the leading cause of injury mortality. The leading cause of injury deaths in the older population is falls, while motor vehicle crash deaths are the leading cause of injury mortality for all other age aggregates combined.

Mortality trends from injuries vary depending on the external causes of the injury. Some select causes have declined over time and maintained a constant level, while other causes are still rising annually. A concerning trend over the last 30 years had been the dramatic growth in poisoning deaths; however, over the last decade, poisoning deaths have declined annually. Motor vehicle traffic mortality rates have been declining over the past three decades. While many other causes of injury mortality have been decreasing over the past decades, death rates from falls have started to accelerate over the past 10 years. An important component of this tremendous surge in mortality from falls is the rapidly growing baby-boomer cohort coupled with the increased levels of life expectancy.

All of these causes of injuries are theoretically preventable, therefore granting the opportunity and challenge to reduce Years of Potential Life Lost (YPLL) and increase life expectancy at various ages.

## Injury Mortality in Collier County

Unintentional injuries comprise a leading cause of death for all ages in Collier County and Florida; however, the leading cause of unintentional injuries deaths within select age groups varies with the actual external cause of injury.

Figure 1 shows the age-specific death rates per 100,000 population for the leading causes of injuries in Collier County for 2012 to 2014. At first glance, it is apparent that falls begin at ages 75 to 84 years, as the rate rises exponentially to over 500 per 100,000 population at ages 85 years and over. Because of the vertical scale in Figure 1, the effect of other causes of injury deaths, which have rates below 50 per 100,000 population, is difficult to analyze.

In Figure 2, the vertical scale has been adjusted to only extend to 90 per 100,000 population. This was done in order to:

show the dramatically sharp increase in the mortality rate from falls for the 75 to 84 age group, and

allow for motor vehicle injuries deaths, unintentional poisoning deaths and drowning deaths to be visually and measurably depicted in the graph.

It is now clear that the increase in the mortality rate from falls in the 75 to 84 years age group is highly significant as is the mortality rate in the 85 years of age and older age group.

Deaths from motor vehicle injuries are highest between the ages of 15 to 34 years of age. Historically, this has been the case particularly among males. Deaths from unintentional poisonings have relatively high mortality rates between the ages of 15 to 64 years of age. Most of these deaths are related to illegal drug and prescription drug abuse. Death rates from drowning predominantly occur in Collier County in the vulnerable 1–4 years and the 85 years and over age groups.

Neither deaths from homicide by firearms or homicide by other means have mortality rates that stand out. Homicide by firearm mortality rates in Collier County appear to currently be clustered in age groups 15 to 44 years of age.

Figure 1. Number of Deaths for Leading Causes of Injuries per 100,000 Population, by Age, Collier County, 2012–2014

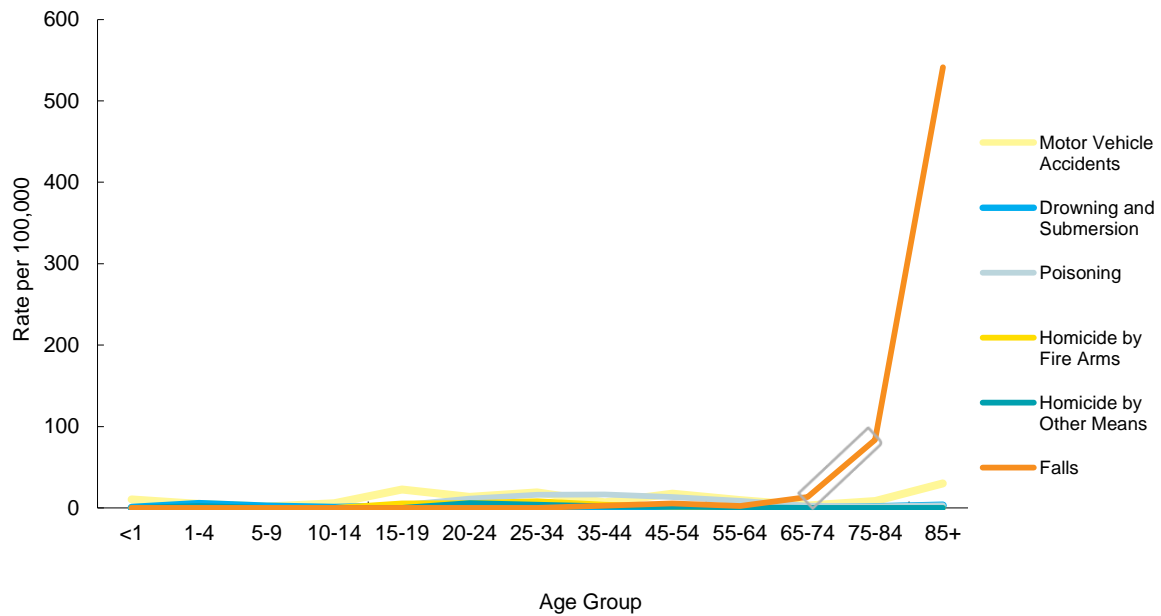
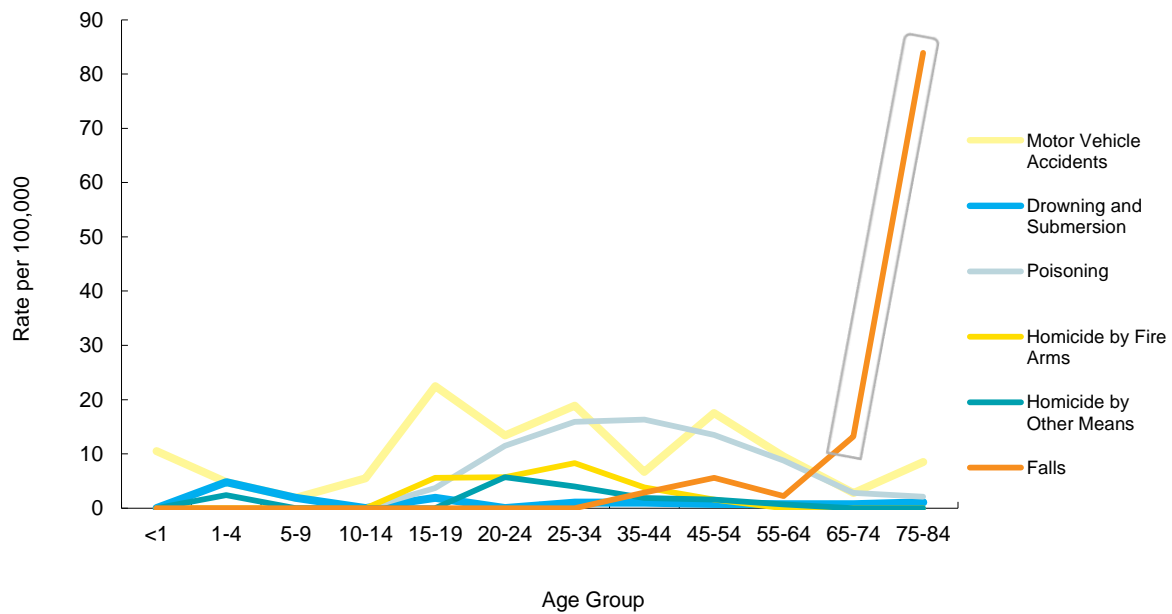


Figure 2. Number of Deaths for Leading Causes of Injuries per 100,000 Population, 0-84 Years of Age, Collier County, 2012–2014



Data Source: Bureau of Vital Statistics, Florida Department of Health, U.S. Census Bureau

During the period of 2005 to 2014, the mortality rate in Collier County decreased by approximately 22 percent with a downward trend line (Figure 3). This trend can be attributed mainly to the decline in fatal motor vehicle collisions. Florida's mortality rate declined by just under 6 percent from 2005 to 2014.

Figure 4 shows the mortality rates for all injuries in Collier County for 1990, 2000 and 2014. All of the three points in time have similar age-specific distributions from age 1 to 74. In 2014, the mortality rate due to all injuries increased exponentially beginning with the 75 to 84 age group. This will be analyzed further when deaths from falls are examined.

In Collier County, the mortality trend for injuries for males and females has been slowly moving down over the 10 year period; however, the trend for males is decreasing at a slightly faster pace than females (Figure 5). The trend for the death rate for all injuries in Florida has remained constant for both males and females over the 2005 to 2014 period.

The mortality rates from all injuries by race for Collier County between 2005 and 2014 can be observed in Figure 6. While there is variability in the black injuries mortality rates, the trend is upward, surpassing the white injuries mortality rate in 2014. The white injuries mortality rate showed a downward trend for this time period with a 24 percent decrease. In the state of Florida, the black and white injuries mortality rates have parallel downward linear trends over the past 10 years with mortality rates being higher among whites.

Both the Hispanic and the non-Hispanic mortality rates in Collier County have been trending downward since 2005 at parallel slopes, with non-Hispanics having the higher rates (Figure 7). In Florida, the trend for the Hispanic and the non-Hispanic populations have remained fairly constant.



Figure 3. Number of Deaths from all Injuries per 100,000 Population, Collier County and Florida, 2005–2014

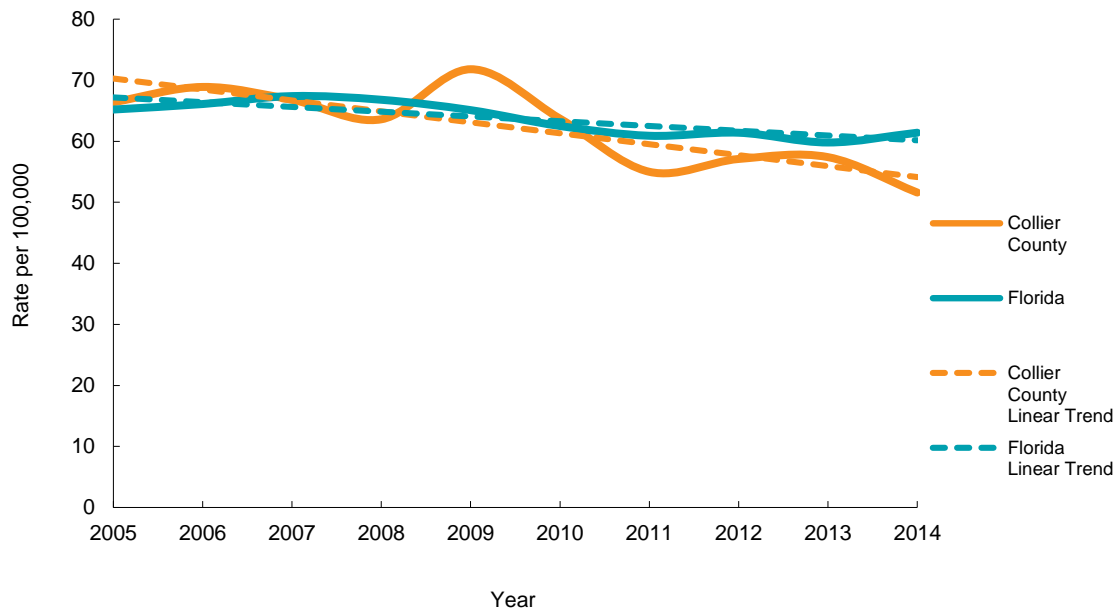
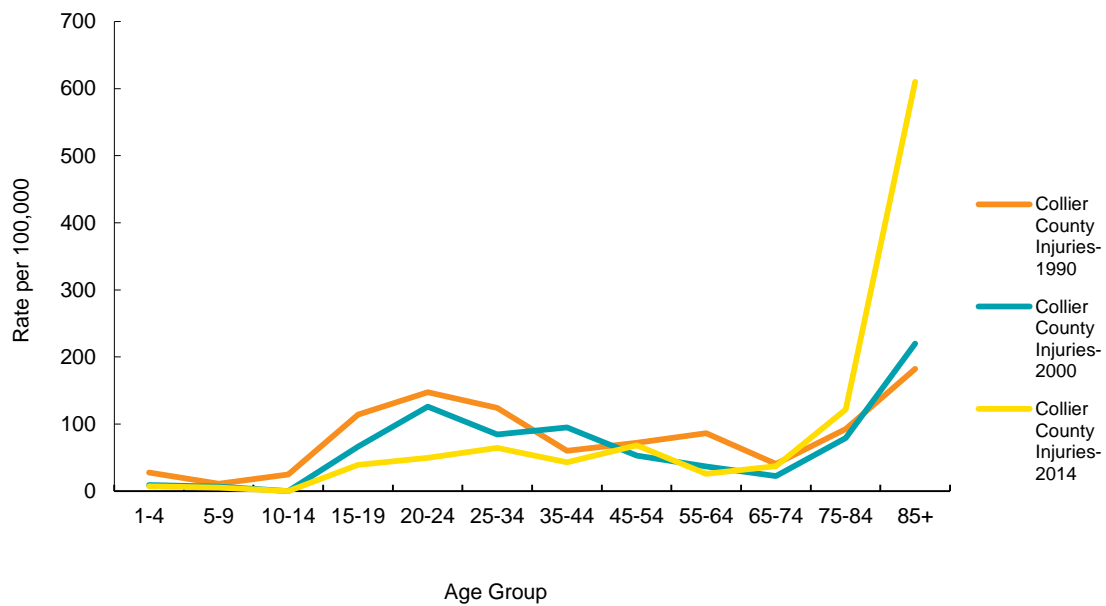


Figure 4. Number of Deaths from all Injuries per 100,000 Population, by Age, Collier County, 1990, 2000 and 2014



Data Source: Bureau of Vital Statistics, Florida Department of Health, U.S. Census Bureau

Figure 5. Number of Deaths from All Injuries per 100,000 Population, by Sex, Collier County, 2005–2014

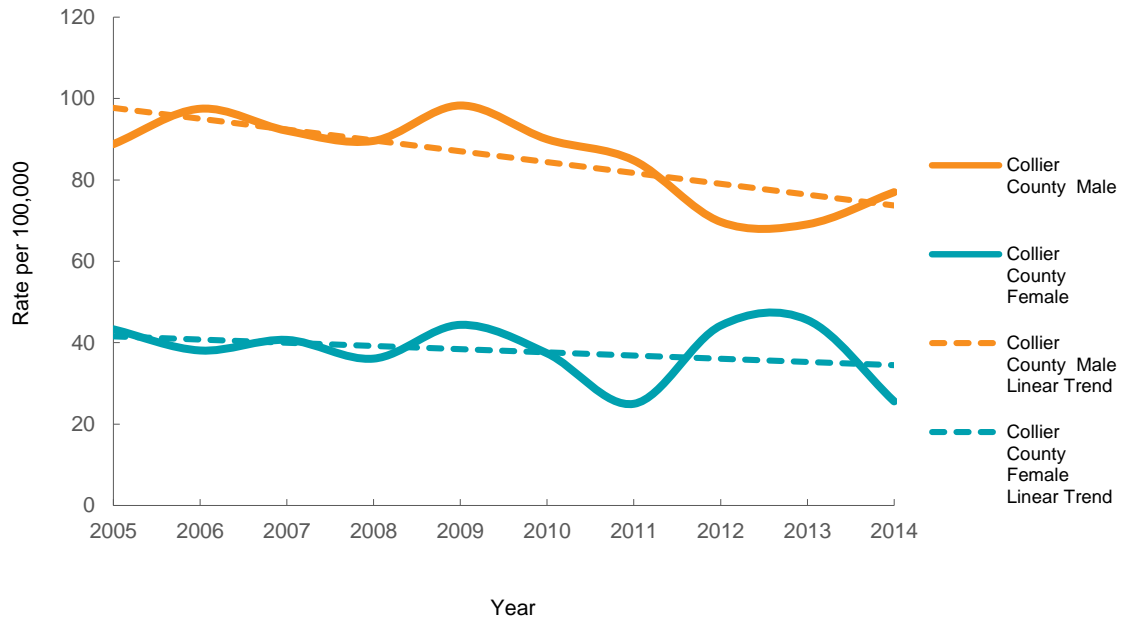
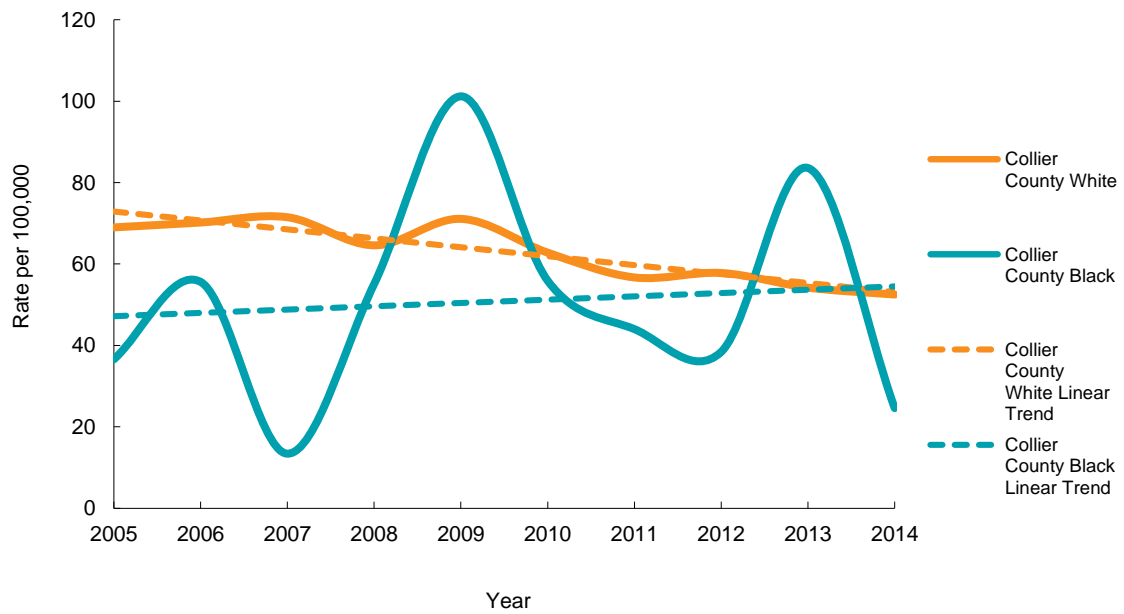
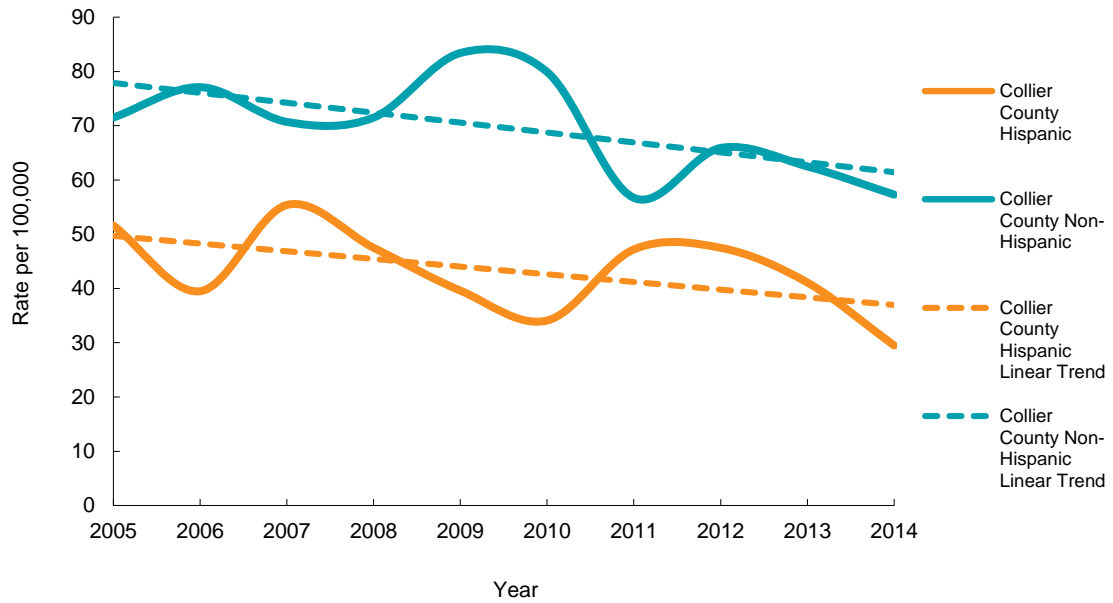


Figure 6. Number of Deaths from All Injuries per 100,000 Population, by Race, Collier County, 2005–2014



Data Source: Bureau of Vital Statistics, Florida Department of Health, U.S. Census Bureau

Figure 7. Number of Deaths from All Injuries per 100,000 Population by Ethnicity  
Collier County, 2005–2014



Data Source: Bureau of Vital Statistics, Florida Department of Health, U.S. Census Bureau

## **Motor Vehicle Crashes**

Figure 8 displays the number of deaths from motor vehicle crashes per 100,000 population for Collier County and Florida for the period 2005 to 2014. During this 10 year period, the death rate in Collier County declined significantly by over 42 percent, and in Florida the rate declined by about 37 percent.

In all counties of Florida and the United States, male mortality from motor vehicle crashes has historically been, and remains, significantly higher than that of females. The dominating root causes of higher male mortality are risky driving behavior and the lack of both seat belt and motorcycle helmet use. Figure 9 shows the motor vehicle crash mortality rates by sex for Collier County. Even though death rate for males at baseline was much greater than that of females, the rate for males is exhibiting a much steeper decline. The mortality rate for males declined by over 61 percent, whereas for females the rate declined by about 36 percent.

From 2005 to 2014, the mortality rate of the white population in Collier County declined by over 49 percent, while the rates for the black population in Collier County displayed too much excessive variability to provide meaningful analyses (Figure 10). Florida's mortality rates for whites during the 10 year period decreased by 37 percent, while the rates for blacks declined by 33.7 percent.

The mortality rate from motor vehicle crashes among Hispanics in Collier County declined sharply between 2005 and 2014, while this rate in non-Hispanics has remained constant (Figure 11). The mortality rate of both whites and blacks throughout the state has declined over the 10 year period.

A comparison among years 1990, 2000 and 2014 of deaths from motor vehicle crashes in Collier County by age groups can be observed in Figure 12. During 2014, the highest mortality rates occurred at ages 15 to 19, 25 to 34, 45 to 54, and 85+. The rates among most age groups are lowest for 2014 compared to 1990 and 2000. These data confirm that various auto and transport oriented interventions, such as speed enforcement and DUI programs are having a positive result of reducing deaths on the streets and highways of Collier County.

Figure 8. Number of Deaths from Motor Vehicle Crashes per 100,000 Population, Collier County and Florida, 2005–2014

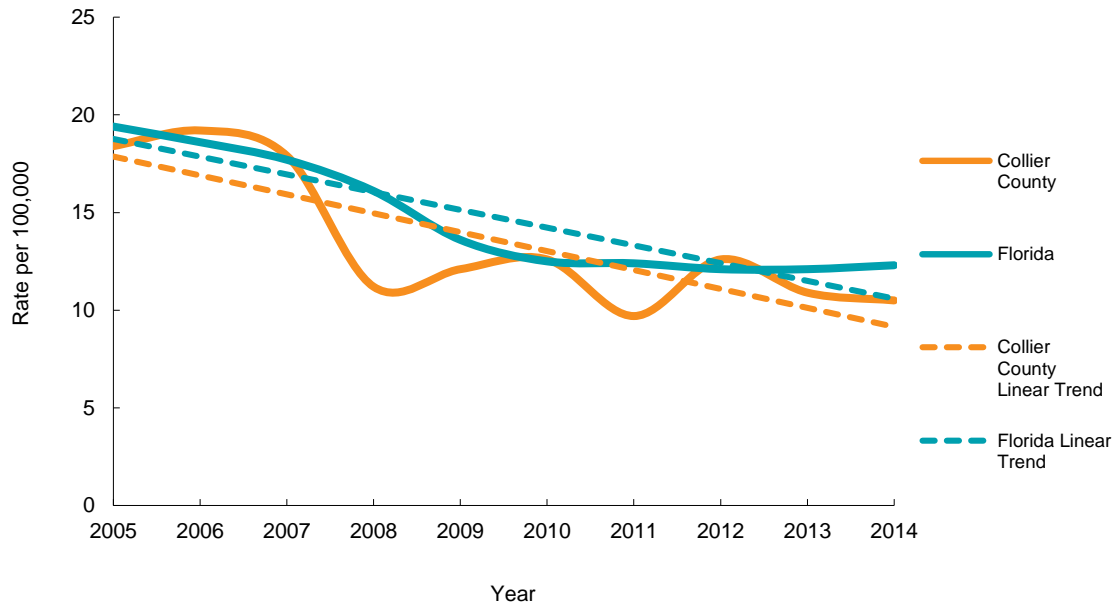
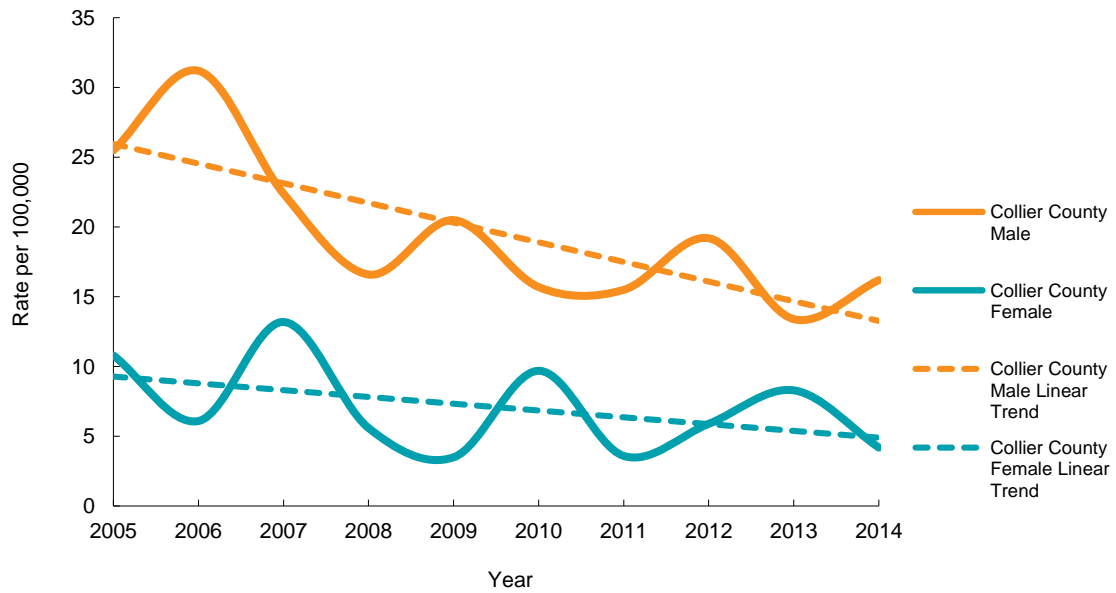


Figure 9. Number of Deaths from Motor Vehicle Crashes per 100,000 Population, by Sex, Collier County, 2005–2014



Data Source: Bureau of Vital Statistics, Florida Department of Health, U.S. Census Bureau

Figure 10. Number of Deaths from Motor Vehicle Crashes per 100,000 Population, by Race  
Collier County, 2005–2014

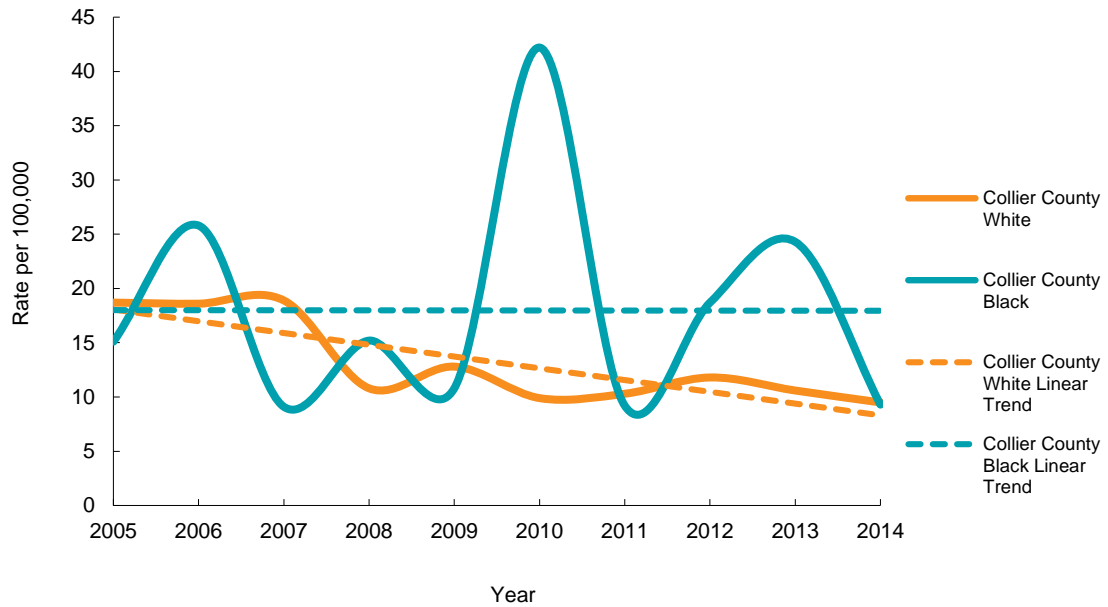
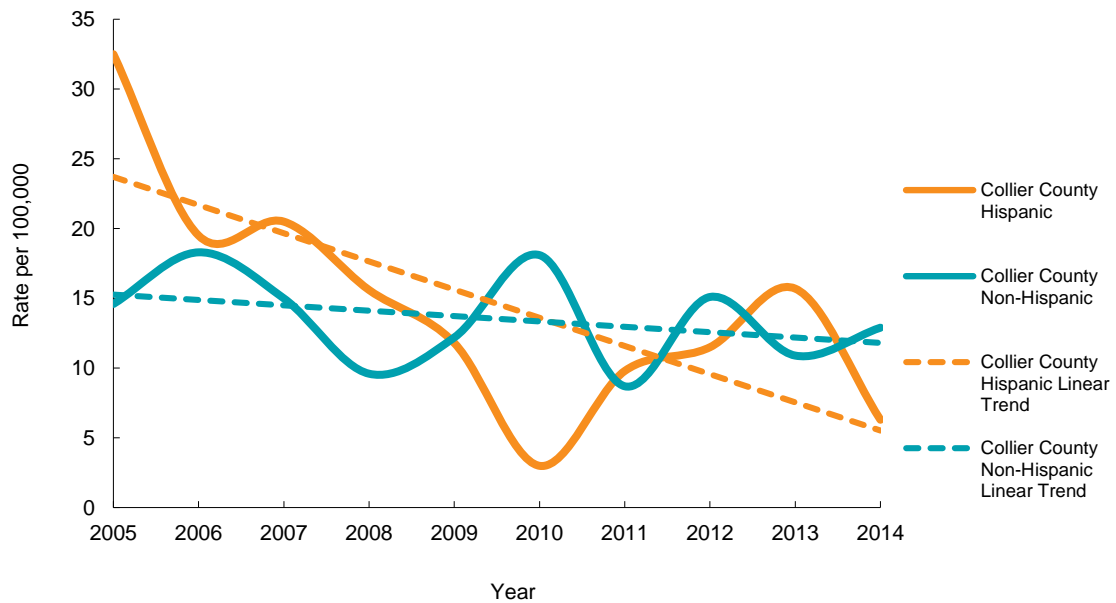
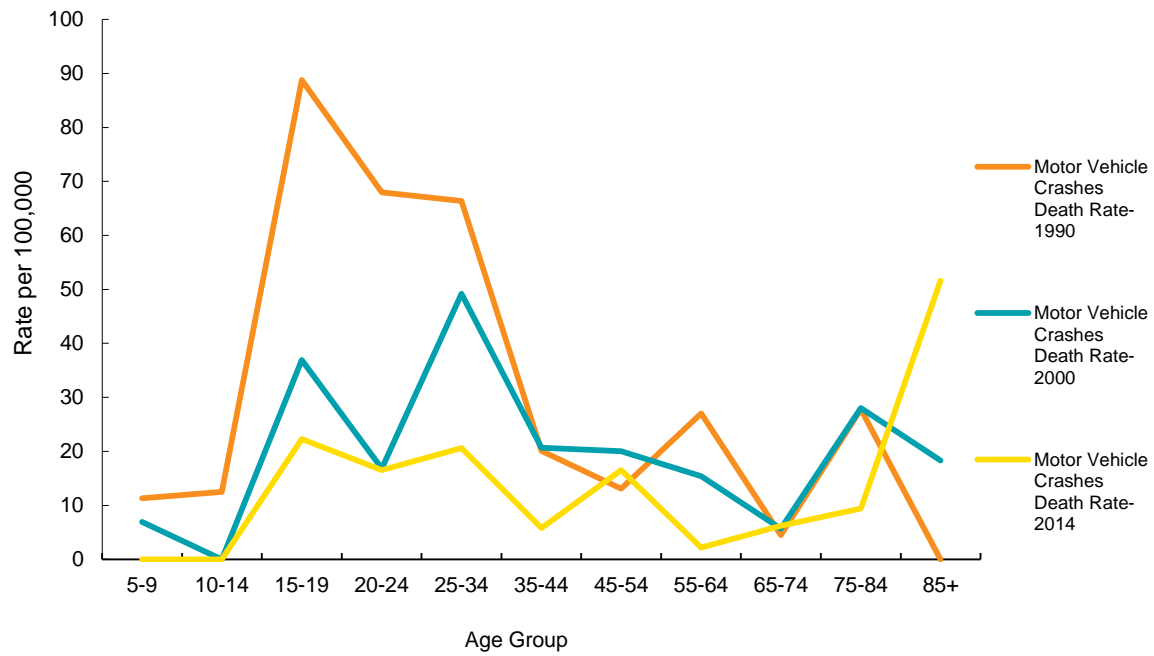


Figure 11. Number of Deaths from Motor Vehicle Crashes per 100,000 Population, by Ethnicity  
Collier County, 2005–2014



Data Source: Bureau of Vital Statistics, Florida Department of Health, U.S. Census Bureau

Figure 12. Number of Deaths from Motor Vehicle Crashes per 100,000 Population, by Age, Collier County, 1990, 2000 and 2014



Data Source: Bureau of Vital Statistics, Florida Department of Health, U.S. Census Bureau

## **Unintentional Poisoning**

Prior to 2005, there had been dramatic growth in unintentional poisoning deaths for 30 years in Collier County and Florida. Between 2005 and 2014, an evident decrease (42.9 percent decrease) of the death rates from unintentional poisoning was observed in Collier County, whereas the rate in Florida stabilized (Figure 13).

From 2005 to 2014, the death rate in Collier County for males decreased by 28.6 percent, and the death rate for females also declined significantly with a 72.6 percent decrease (Figure 14). Florida males experienced a slight decrease of 5.7 percent in mortality rate; whereas Florida females experienced an increase of 21.7 percent.

Whites in Collier County experienced mortality-rate decreases of 47.8 percent over the 10 year period of 2005 to 2014. There were not enough frequency counts for blacks in Collier County to ascertain the percent change; however, the trend for the population has been upward for the time interval analyzed (Figure 15). Throughout the state, the mortality rate of whites and blacks remained constant for the 10-year period; however, whites had rates twice as high as the blacks.

In Collier County, Hispanic deaths from poisonings remained constant between 2005 and 2014, while non-Hispanic deaths from this cause decreased by 51.8 percent. However, non-Hispanics had a much higher baseline than Hispanics (Figure 16). In Florida, both non-Hispanic and Hispanic mortality rates remained constant, with non-Hispanics more than doubling the Hispanic mortality rate for the period of 2005 to 2014.

Of particular interest is the significant increase in mortality in Collier County during 2014 due to this cause when compared with years 1990 and 2000 (Figure 17). Of major concern are the death rates in those 25 to 54 years of age and 75 years and older. These age groups have mortality rates that are beyond historical limits.



Figure 13. Number of Deaths from Unintentional Poisoning per 100,000 Population, Collier County and Florida, 2005–2014

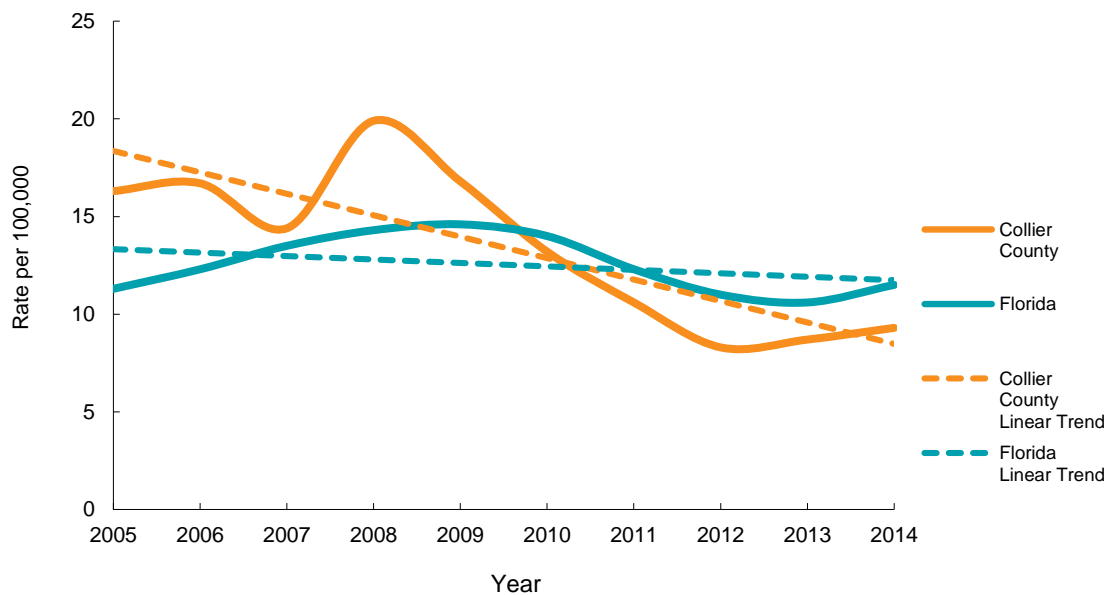
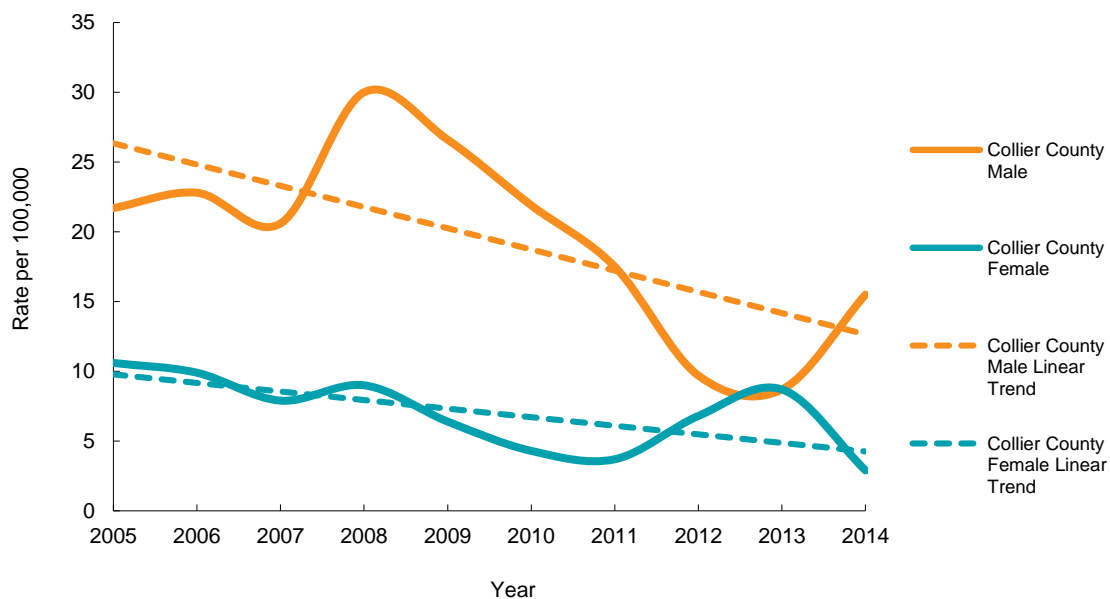


Figure 14. Number of Deaths from Unintentional Poisoning per 100,000 Population, by Sex, Collier County, 2005–2014



Data Source: Bureau of Vital Statistics, Florida Department of Health, U.S. Census Bureau

Figure 15. Number of Deaths from Unintentional Poisoning per 100,000 Population, by Race, Collier County, 2005–2014

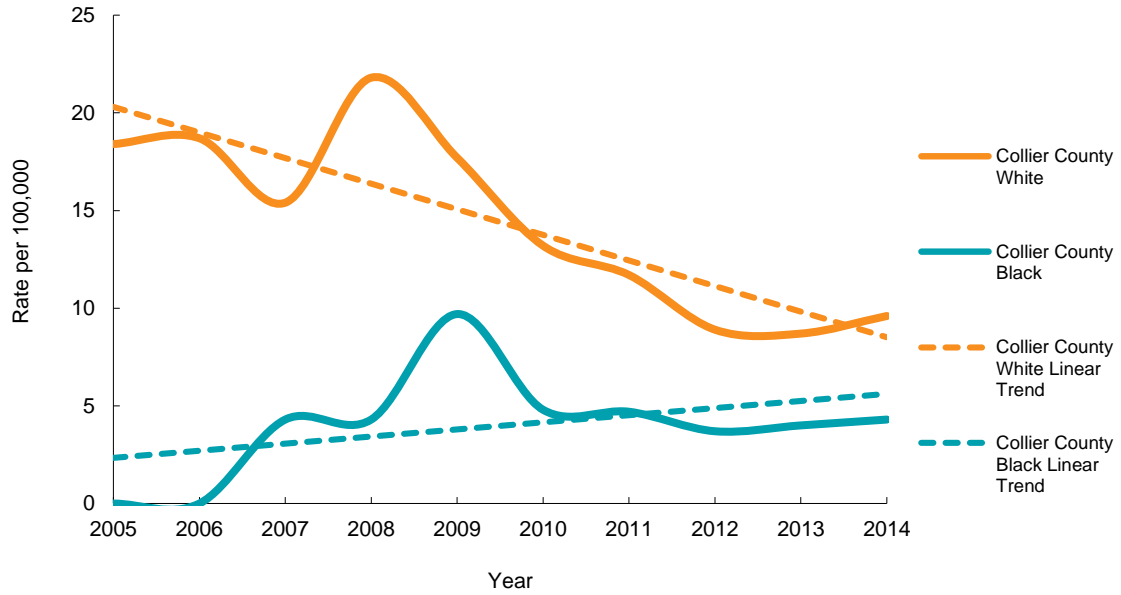
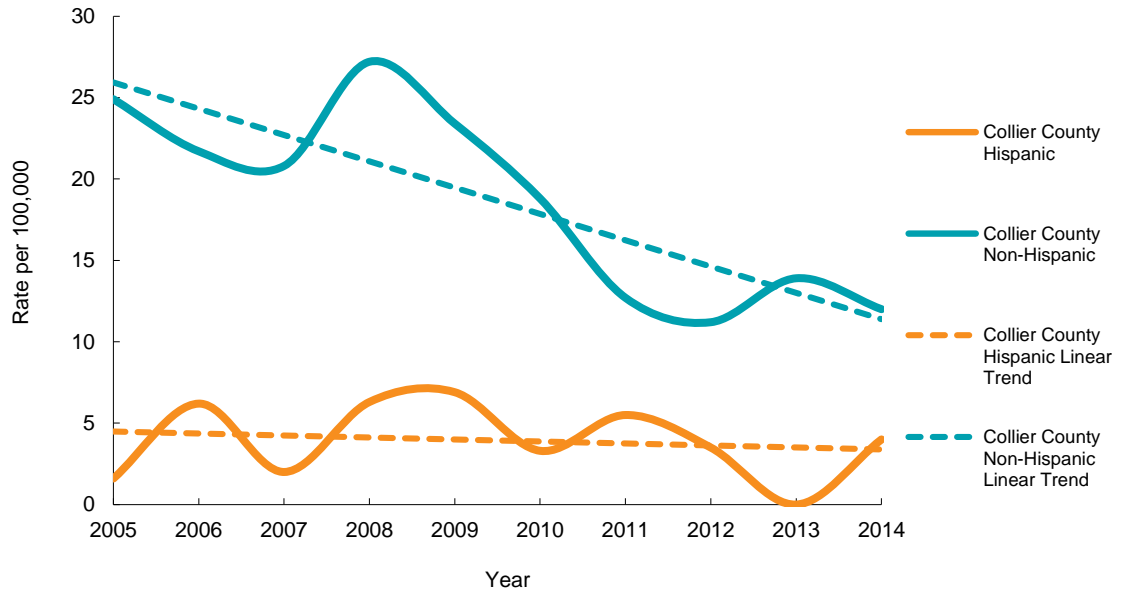
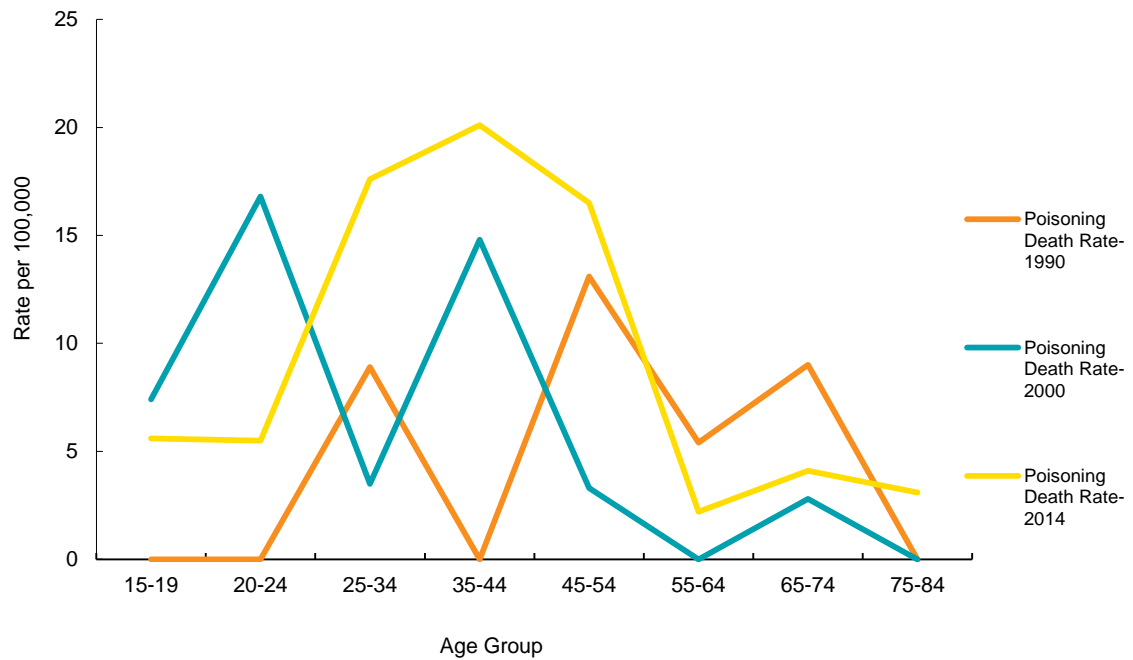


Figure 16. Number of Deaths from Unintentional Poisoning per 100,000 Population, by Ethnicity, Collier County, 2005–2014



Data Source: Bureau of Vital Statistics, Florida Department of Health, U.S. Census Bureau

Figure 17. Number of Deaths from Unintentional Poisoning per 100,000 Population by Age, Collier County, 1990, 2000 and 2014



Data Source: Bureau of Vital Statistics, Florida Department of Health, U.S. Census Bureau

## Drownings

For both the county and the state, the mortality rate from drowning has been slowly trending downward since 2005 (Figure 18). The range of mortality rates in Collier County was a high of 4.8 in 2007 and a low of 0.8 100,000 population in 2014. It should be kept in mind that drownings in Collier County are fortunately rare events; the counts or total numbers of deaths due to this external cause of death are low compared to many other fatal injuries. In Florida, the mortality rate ranged from a high of 2.2 in 2006 to a low of 1.8 per 100,000 population in 2011 to 2013.

Figure 19 shows the age-specific death rates for drowning deaths in Collier County for the years 1990, 2000 and 2014. These data describe a decrease in the drowning death rates since 1990 for ages 1–4, 35–44, 55–64 and 65–74 years of age. Increases in this mortality rate are visible for the 10–19 age groups as well as the 75–84 age groups.

Although random variation caused dramatic fluctuations in the rates from year to year, the death rate from drownings for males in Collier County has been trending downwards over the last 10 years. This trend has been fairly constant over the 2005 to 2014 period (Figure 20). Florida exhibited a slight downward trend among males, while females displayed a constant trend.

Although downward trends can be observed in Figure 21 for both whites and blacks in Collier County, an analysis of the rates for these years would not be pertinent due to low counts and random variation. In Florida, the rate for the black population has been constant over the time interval, whereas the rate of the white population has slightly decreased.

As can be seen in the Figure 22, highly variable fluctuations occurred for both the Hispanic and the non-Hispanic population in the county resulting in downward trends for the non-Hispanic drowning mortality rate. As with all drowning data for Collier County, small numbers of events can result in dramatic differences year to year. Florida's drownings mortality rate among non-Hispanics showed stable and constant trends; however, the rate among Hispanics experienced a 10.5 percent decline.

Figure 18. Number of Deaths from Drownings per 100,000 Population, Collier County and Florida, 2005–2014

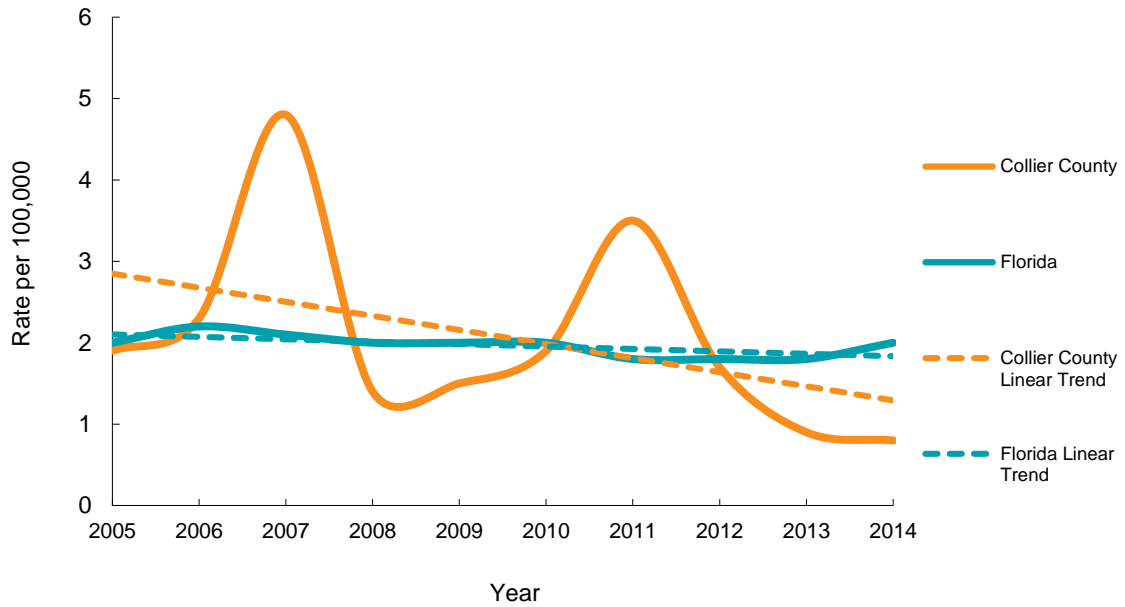
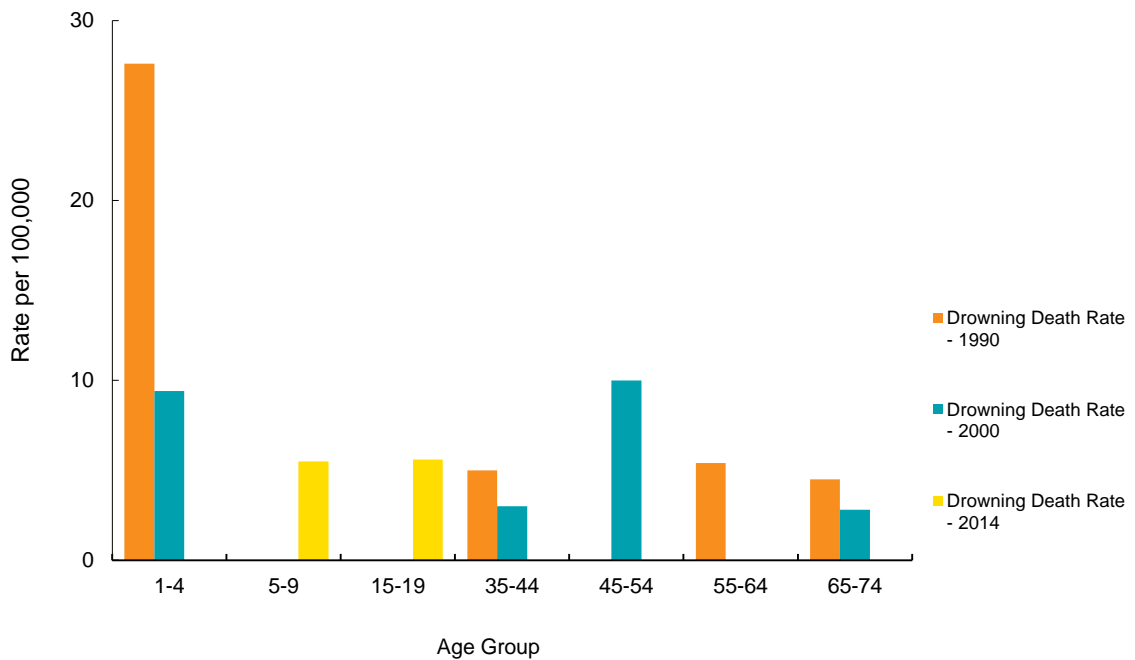


Figure 19. Deaths from Drownings per 100,000 Population, by Age, Collier County, 1990, 2000 and 2014



Data Source: Bureau of Vital Statistics, Florida Department of Health, U.S. Census Bureau

Figure 20. Number of Deaths from Drownings per 100,000 Population, by Sex  
Collier County, 2005 - 2014

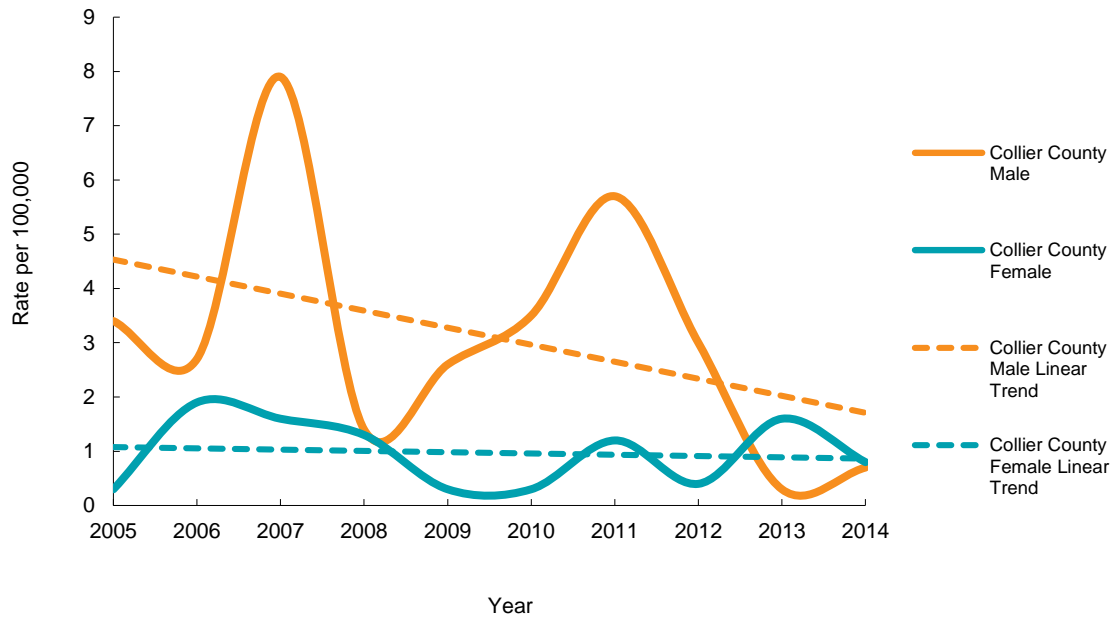
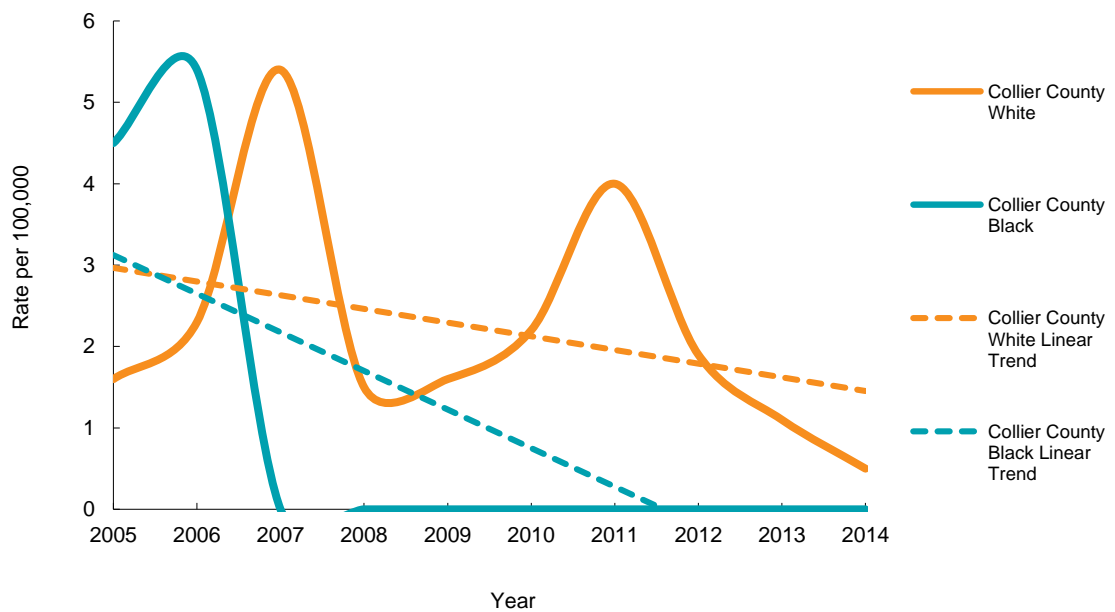
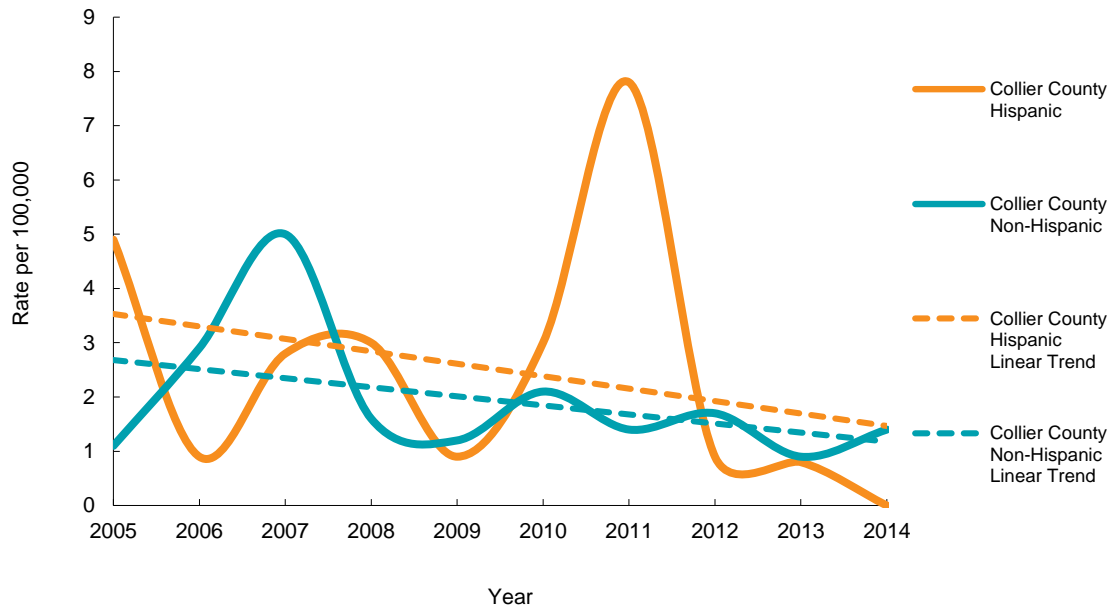


Figure 21. Number of Deaths from Drownings per 100,000 Population, by Race,  
Collier County, 2005-2014



Data Source: Bureau of Vital Statistics, Florida Department of Health, U.S. Census Bureau

Figure 22. Number of Deaths from Drownings per 100,000 Population, by Ethnicity  
Collier County, 2005–2014



Data Source: Bureau of Vital Statistics, Florida Department of Health, U.S. Census Bureau

## Falls

From 2005 to 2014, the mortality rate due to falls increased in Collier County by 49 percent and in Florida by 38.6 percent (Figure 23). As discussed the section on injury mortality, the mortality rate from falls increased exponentially in the 75 years of age and over group. At the same time, this at-risk cohort is growing faster than the younger population due to the aging of the baby boomer generation. This can pose a number of challenges for Collier County.

Figure 24 gives the number of deaths for select age groups from falls per 100,000 population in Collier County for 1990, 2000 and 2014. The mortality rate from falls was relatively low or non-existent in age groups prior to 64 years of age; however, it experienced an exponential increase beginning at ages 75 and over, most evidently in 2014.

The mortality rates from falls in the county are increasing steadily and in parallel for both males (an increase of 49.5 percent) and females (an increase of 51.7 percent) for the period of 2005 to 2014 (Figure 25). In Florida, the death rates from falls are also increasing at a steady parallel pace for both males (an increase of 30 percent) and females (an increase of 48.1 percent). As with all of the select causes of mortality from injuries analyzed in this assessment, males inevitably experience higher death rates than females.

Among races in Collier County, the white mortality rate for falls has increased by 48 percent between 2005 and 2014, mainly due to the exponential increase in the number of deaths 75 years and older (Figure 26). Insufficient data exist in Collier County to analyze the black mortality rate. In Florida, the white mortality increased by 39.7 percent, while the black mortality rate for falls exhibited a stable trend.

In Collier County, the Hispanic mortality rate from falls has been steadily increasing since 2005 at a pace parallel to the non-Hispanic mortality rate (Figure 27). The Hispanic mortality rate from falls experienced dramatic fluctuations over the period of 2005 to 2014. In Florida, the Hispanic mortality rate for falls has been constant since 2005, while the non-Hispanic rate has been increasing steadily over the 10-year period.



Figure 23. Number of Deaths from Falls per 100,000 Population, Collier County and Florida, 2005–2014

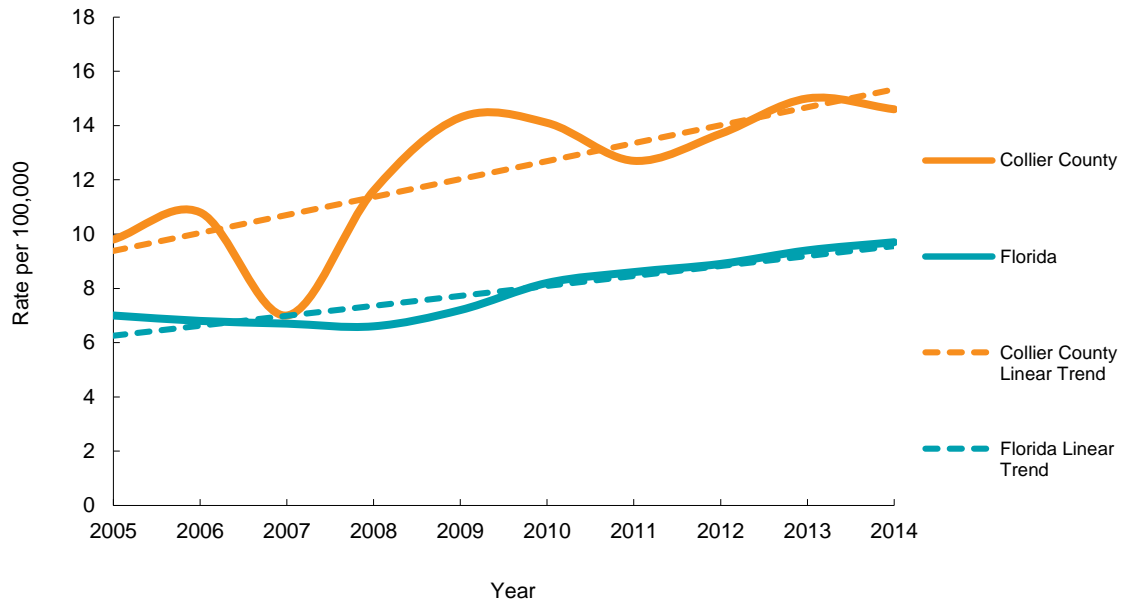
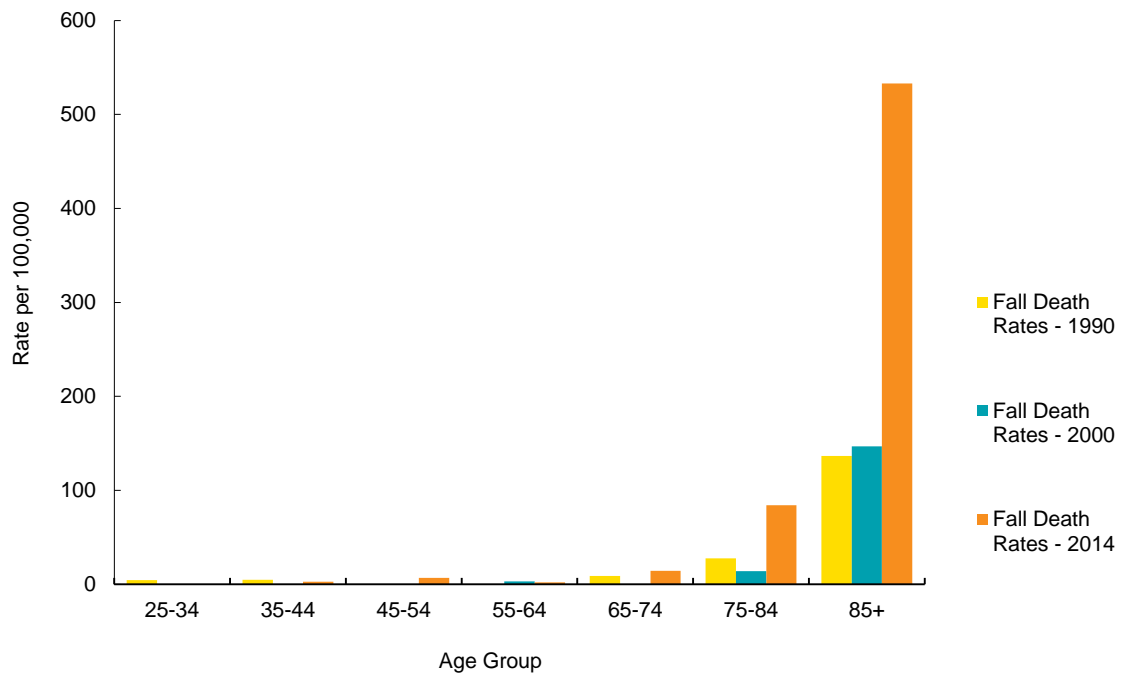


Figure 24. Number of Deaths from Falls per 100,000 Population, by Age, Collier County, 1990, 2000 and 2014



Data Source: Bureau of Vital Statistics, Florida Department of Health, U.S. Census Bureau

Figure 25. Number of Deaths from Falls per 100,000 Population, by Sex, Collier County, 2005–2014

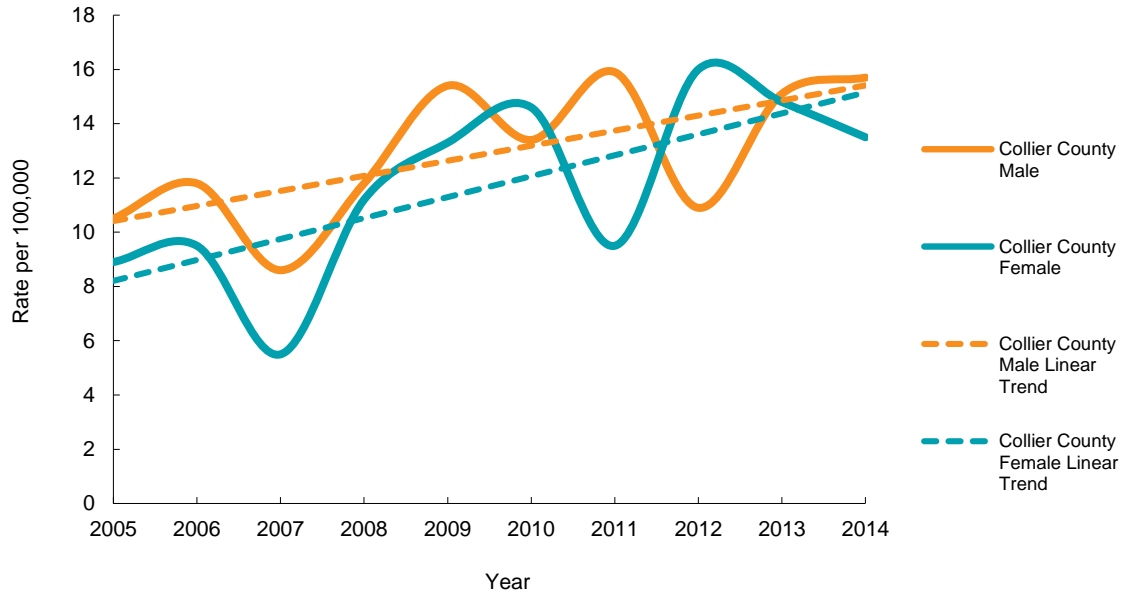
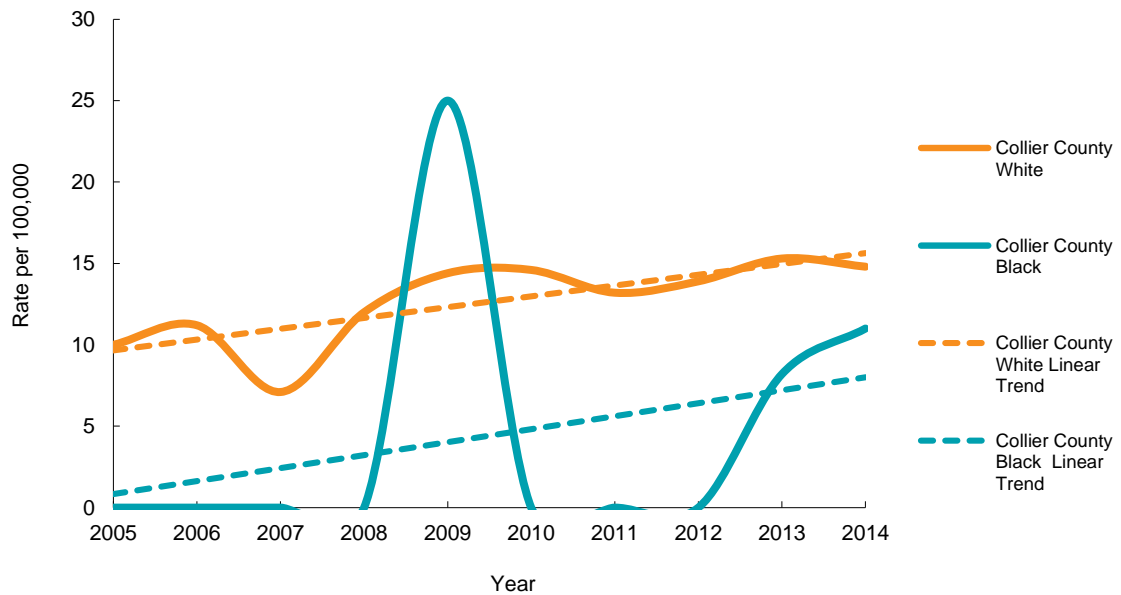
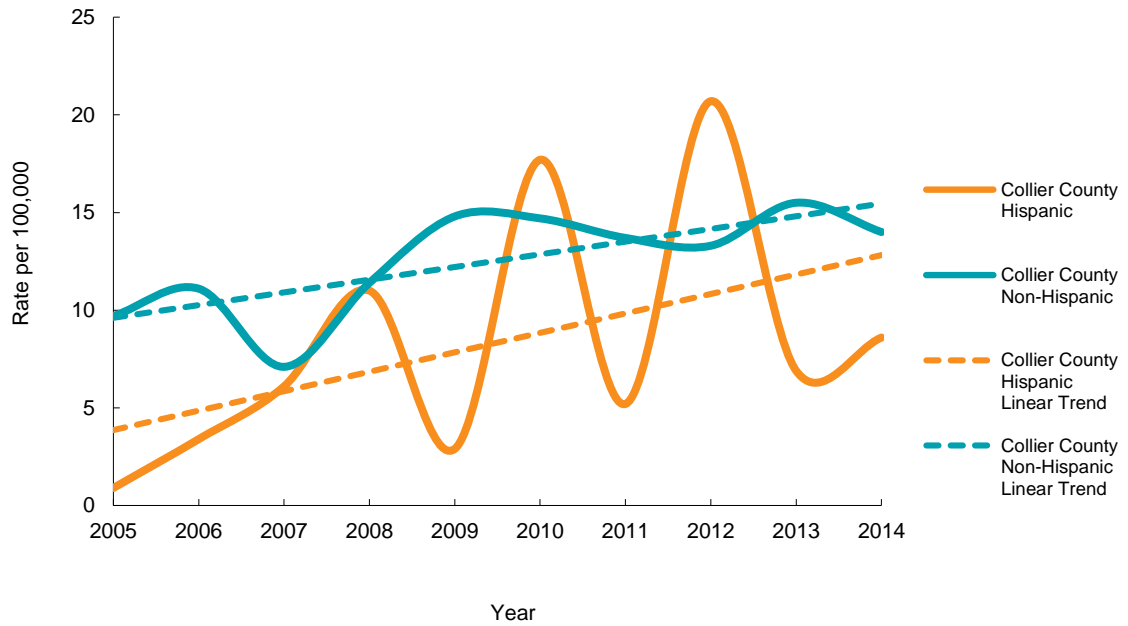


Figure 26. Number of Deaths from Falls per 100,000 Population, by Race Collier County, 2005–2014



Data Source: Bureau of Vital Statistics, Florida Department of Health, U.S. Census Bureau

Figure 27. Number of Deaths from Falls per 100,000 Population, by Ethnicity, Collier County, 2005–2014



Data Source: Bureau of Vital Statistics, Florida Department of Health, U.S. Census Bureau

## Homicides

Figure 28 shows deaths from homicide per 100,000 population for Collier County and Florida for the period 2005 to 2014. Mortality rates from homicide in Collier County fluctuated significantly throughout the 10-year period, but the trend remained constant. In Florida, the mortality rates from homicides exhibited a stable trend from 2005 to 2014.

In Collier County, both genders displayed random variation due to small numbers of deaths due to homicide in select years. The male mortality rate from homicide increased by 34.1 percent over the 20 year interval, whereas the female rate declined by 55.6 percent (Figure 29). In the state of Florida, the mortality rate for homicides for both males and females showed stable and constant trends with males having significantly higher rates than females.

The mortality rates from homicide for Collier County per 100,000 population by race from 2005 to 2014 is displayed in figure 30. In Collier County, the black homicide mortality rate has been trending upwards, while the white homicide mortality rate has remained constant. Both the white and black homicide rates in Florida have been stable; however, black mortality rates were significantly higher than white mortality rates over the 10 year period.

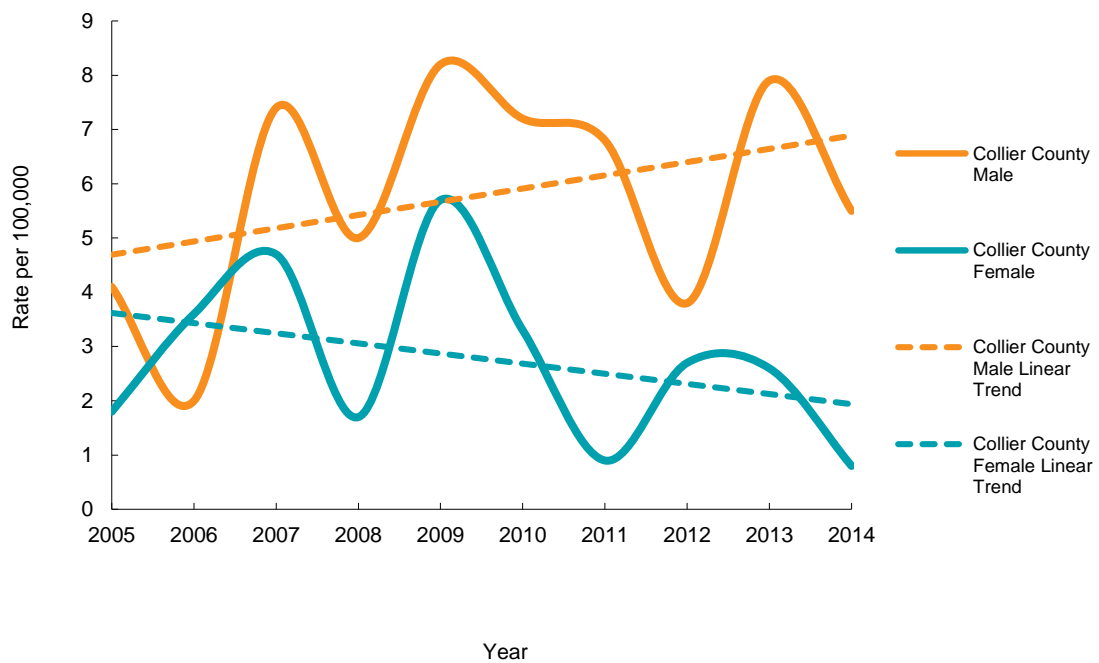
By ethnicity, the mortality rates due to homicide among non-Hispanic in Collier County have been trending upward since 2005, while Hispanic mortality rates have been trending downward (Figure 31). Throughout the state, non-Hispanic homicide mortality rates exceeded the Hispanic homicide mortality rates between 2005 and 2014. The Hispanic homicide mortality rates in Florida are decreased by 10 percent, while non-Hispanic homicide rates showed a constant trend.

Figure 32 gives the age-specific mortality rates from homicide in Collier County for the years 1990, 2000 and 2014. It is evident from the graph that between the age groups of 15 to 84 years there has been a downward trend in mortality between 1990 and 2014. The age groups of primary concern in Collier County as of 2014 were 25 to 54 years of age.

Figure 28. Number of Deaths from Homicide per 100,000 Population, Collier County and Florida, 2005–2014



Figure 29. Number of Deaths from Homicide per 100,000 Population, by Sex, Collier County, 2005–2014



Data Source: Bureau of Vital Statistics, Florida Department of Health, U.S. Census Bureau

Figure 30. Number of Deaths from Homicide per 100,000 Population, by Race  
Collier County, 2005–2014

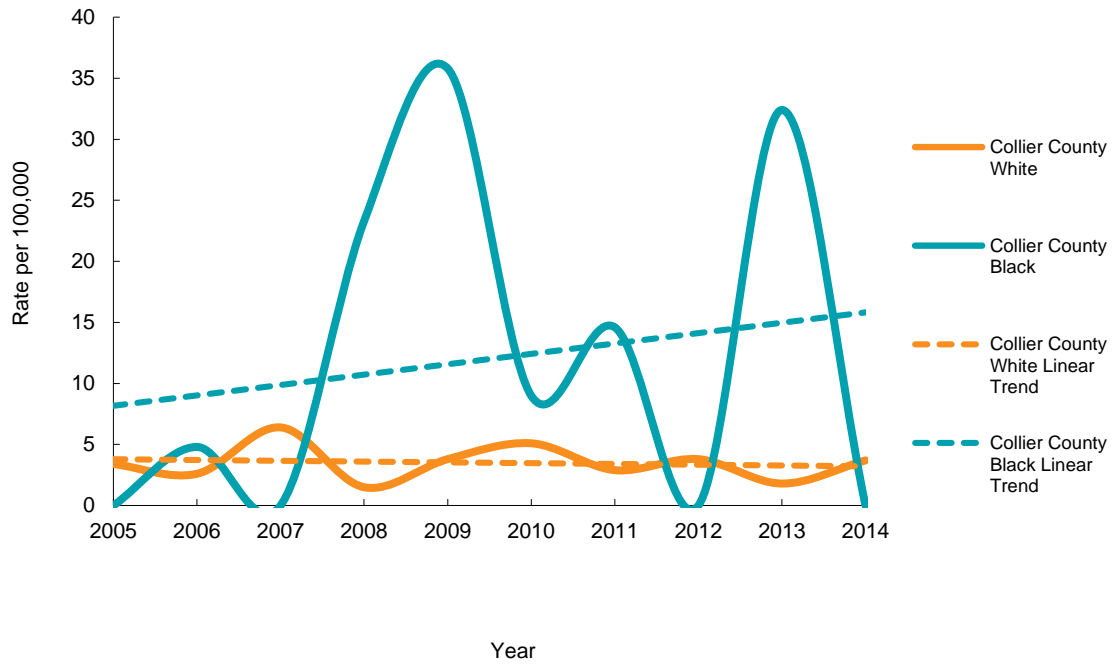
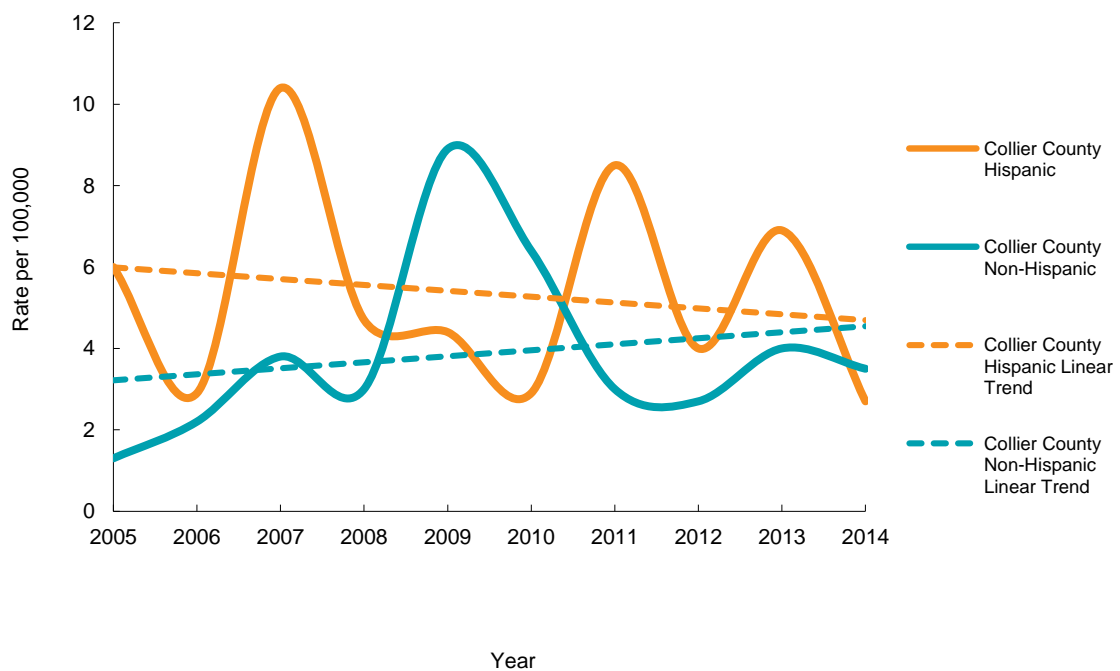
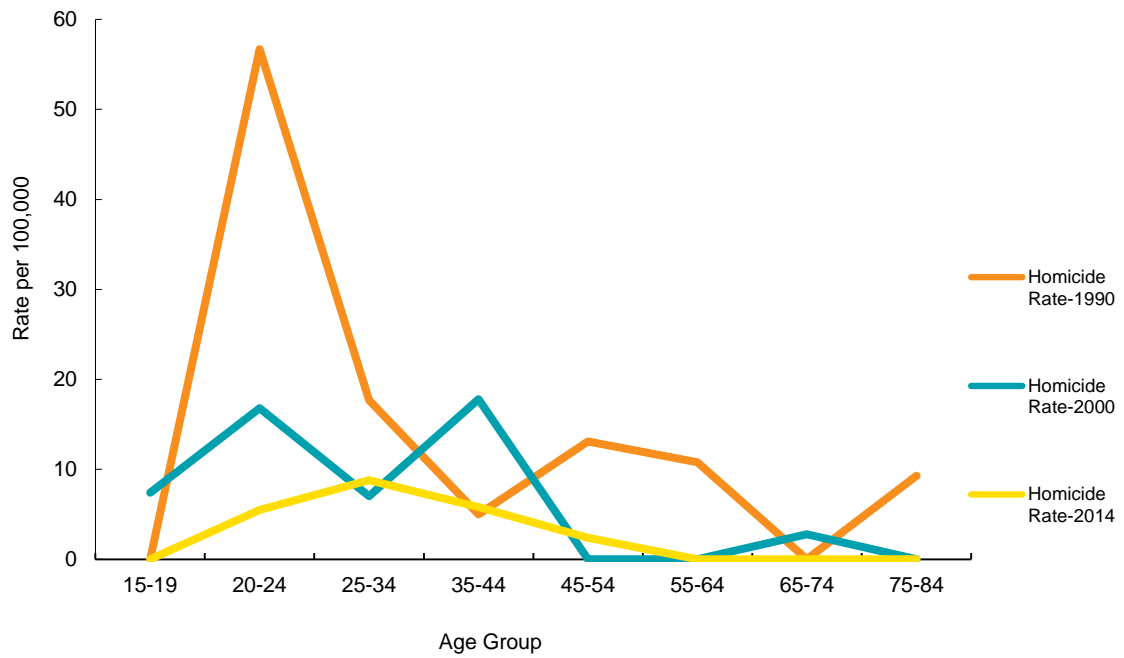


Figure 31. Number of Deaths from Homicide per 100,000 Population, by Ethnicity  
Collier County, 2005–2014



Data Source: Bureau of Vital Statistics, Florida Department of Health, U.S. Census Bureau

Figure 32. Number of Deaths from Homicide per 100,000 Population, by Age, Collier County, 1990, 2000 and 2014



Data Source: Bureau of Vital Statistics, Florida Department of Health, U.S. Census Bureau

## Access to Health Services

Access to health care and health services implies the timely availability and use of personal health services in order to achieve the best health status outcomes. In order for the population of a community to gain access to health services the following are requisites:

Obtain entry into the healthcare system.

Locate and access a location where the needed healthcare services are provided.

Access a health care provider with whom the patient can communicate with confidence.

Lack of access to health care or failure to access health care and health care services has a direct impact and effect on the health status of a community, county and state.

The overall level of physical, social and mental health status is impacted by the degree of access to health services. Access to healthcare impacts disease prevention through early detection and treatment of health conditions. Access to health services also increases the quality of life by reducing preventable mortality (Years of Potential Life Lost) while simultaneously increasing the number of years one can expect to live beginning at birth (life expectancy).

Health insurance coverage assists patients in gaining access to the healthcare system. Lack of health insurance is very highly correlated with failure to receive medical care, with early and premature death and with overall poor health status. As the United States does not have a universal healthcare model, private health insurance coverage is an integral mainstay for access to healthcare for the core working population 18–64 years of age and vital to the personal well-being and health of individuals in Collier County and Florida.

In-depth research has shown that when children are covered by health insurance they receive more timely diagnoses of severe health conditions and experience fewer preventable hospitalizations than children without health insurance. Further research has uncovered that among adults, harmful health effects are correlated with being uninsured, particularly related to chronic diseases and serious injury or trauma.



Table 1 shows the detrimental effects of the lack of insurance for adults with select chronic disease and acute conditions and chronic diseases. It is evident for certain conditions such as stroke, congestive heart failure, heart attack and motor vehicle crashes that the risk of a fatal outcome increases notably for those without health insurance coverage.

The trend in the U.S. over the past two decades had been a decline in health insurance coverage while healthcare costs and health insurance premiums have risen continuously.

A new analysis of the Affordable Care Act's health insurance marketplace costs finds that nationwide, marketplace premiums did not increase at all from 2014 to 2015, although some states experienced substantial increases in average premium while in others the premiums declined.

This average zero percent change in average premiums is unprecedented when compared with historic trends. Prior to the implementation of the Affordable Care Act, from 2008 to 2010, health insurance premiums grew an average of 10 percent or more per year in state insurance markets. This is a significantly higher rate of increase than the average increase in worker earnings during the same time period.

Uninsured persons frequently delay or cancel visits to providers, defer obtaining prescription medications and other treatments, even with serious disease and life-threatening conditions. Uninsured children are 20 to 30 percent more likely to lack their immunizations, prescription medications, asthma care and basic dental care. Uninsured adults with chronic conditions are two to four times more likely than insured adults to have not received medical attention in the prior year. Uninsured adults are also more likely to be diagnosed with later-stage cancer compared to the insured as a consequence of the lack of insurance resulting in the unavailability of cancer screening. Uninsured adults are 25 percent more likely to die prematurely than insured adults from all causes, and with conditions such as heart disease, diabetes or cancer, their risk of premature mortality can be 40 to 50 percent higher than the insured population thereby increasing years of potential life lost and lowering life expectancy for this growing segment of the population.

Table 1: Detrimental Effects of Lack of Health Insurance for Adults with Select Chronic Conditions and Disease

Condition	Effects
Heart Attack	The uninsured are more likely than the insured to have a fatal outcome.
Stroke	The uninsured are more likely than the insured to result in extremely poor outcomes, including neurological impairment, intracerebral hemorrhage and death.
Cancer	The uninsured are more likely than the insured to be diagnosed at an advanced stage of cancer, especially for those sites with available effective treatments and available early screening detection (breast or colorectal cancer) or by clinical assessment of symptoms (melanoma, bladder cancer).
Diabetes	The uninsured adults have significantly worse glycemic control than the insured
Congestive Heart Failure	The uninsured are at greater risk of death than the insured.
Hypertension	The uninsured are less likely than the insured to be aware of hypertension and, if hypertensive, more likely to have inadequate blood pressure control.
Hospital Inpatients with Serious Acute Conditions	The uninsured are at greater risk than the insured of higher mortality in hospitals and for at least 2 years after following admission.
Serious Injury or Trauma	After an unintentional injury, the uninsured are less likely than the insured to fully recover and are more likely to report subsequent declines in health status, the uninsured in severe automobile accidents have a substantially higher mortality rate than those insured.

### Health Insurance Coverage in Collier County

In Collier County, as throughout the State of Florida and the United States, rates of health insurance coverage had been declining during the past two decades. This movement downward in insurance coverage was exasperated by the recession beginning in 2007 which pushed the uninsured population to historical heights as unemployment spiraled upwards. Recent changes

beginning during 2013 involving the enactment of the new national healthcare law appears to have redirected and reversed the direction of inertia that had been trending over several decades. The year 2013 serves as the benchmark year for uninsured rates that existed prior to the law's enactment. Collectively throughout the country, 47 of the 50 states experienced a decline in their uninsured rates since the legislation became law. Florida's uninsured rate declined from 21.3 percent in 2010 to 16.6 percent in 2014.

Table 2 and Figure 1 show the percentage of the population in Collier County uninsured for 2010 and 2014. In 2010, 23.2 percent of the total resident population of Collier County was uninsured, by 2014 this number declined significantly by 4.5 percentage points to 18.7 percent. By age group, the largest decrease in the uninsured rate in Collier County was for those under 18 years of age-from 18.5 percent in 2010 to 12 percent in 2014.-a decline of 6.5 points. The population 18 to 64 years of age experienced a decrease of 5.2 percentage points, from 35.9 percent in 2010 to 30.7 percent uninsured in 2014. The uninsured population 65 years and older was the only age group to experience an increase, from 0.8 percent in 2010 to 1.4 percent in 2014.

Table 2: Percentage of the Population Uninsured by Age, Collier County, 2010 and 2014

	2010	2014
Total All Ages	23.2%	18.7%
Under 18 Years of Age	18.5%	12.0%
18 - 64 Years of Age	35.9%	30.7%
65 Years and Older	0.8%	1.4%

Data Source: American Community Survey/US Census Bureau

Figure 1. Percentage of the Population Uninsured by Age, Collier County, 2010 and 2014

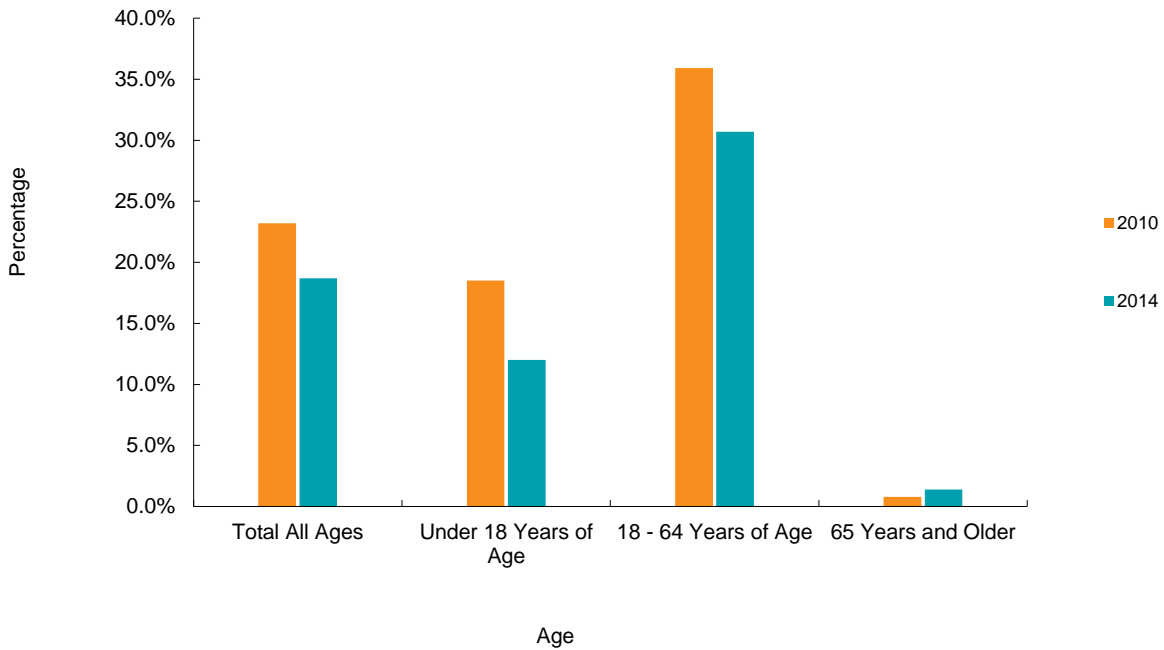


Table 3 and Figure 2 show the percentage distribution of the uninsured population in Collier County by sex for 2010 and 2014. Both males and females experienced a greater than 4 percentage point reduction on their uninsured rates. Table 4 and Figure 3 describe the percentage distribution of the uninsured population of Collier County by race and ethnicity. Between 2010 and 2014 the percentage of the uninsured white population declined by 5.2 percentage points, from 20.1 percent to 14.9 percent, respectively. (This is a 26 percent relative decline in the uninsured rate for the 2010-2014 time period). During the same time interval, the uninsured percentage of the black population in Collier County increased by four tenths of a percentage point - +0.4 percent. While the root cause of this minute change is unknown at this time, it may be due to the random variation of small numbers which can occur just due to chance. (In 2014, the resident black population of Collier County accounted for approximately 7 percent of the total county population, or about 24,000).

Table 3: Percentage of the Population Uninsured by Sex, Collier County, 2010 and 2014

	2010	2014
Males	25.4%	20.5%
Females	21.2%	17.1%

Data Source: American Community Survey/US Census Bureau

Figure 2. Percentage of the Population Uninsured by Sex, Collier County, 2010 and 2014

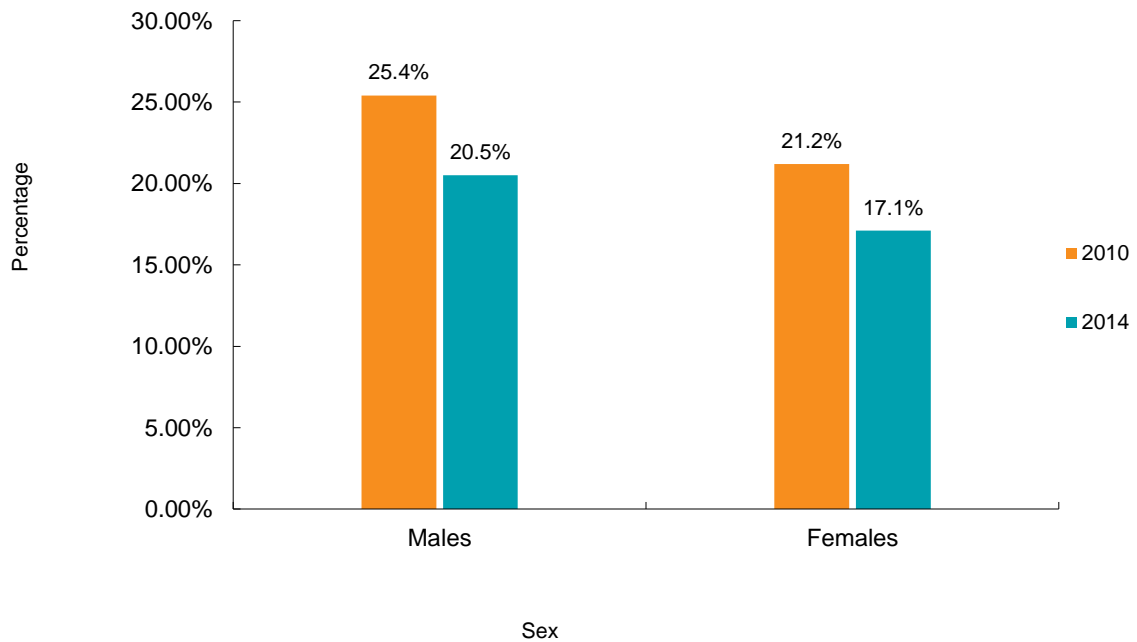
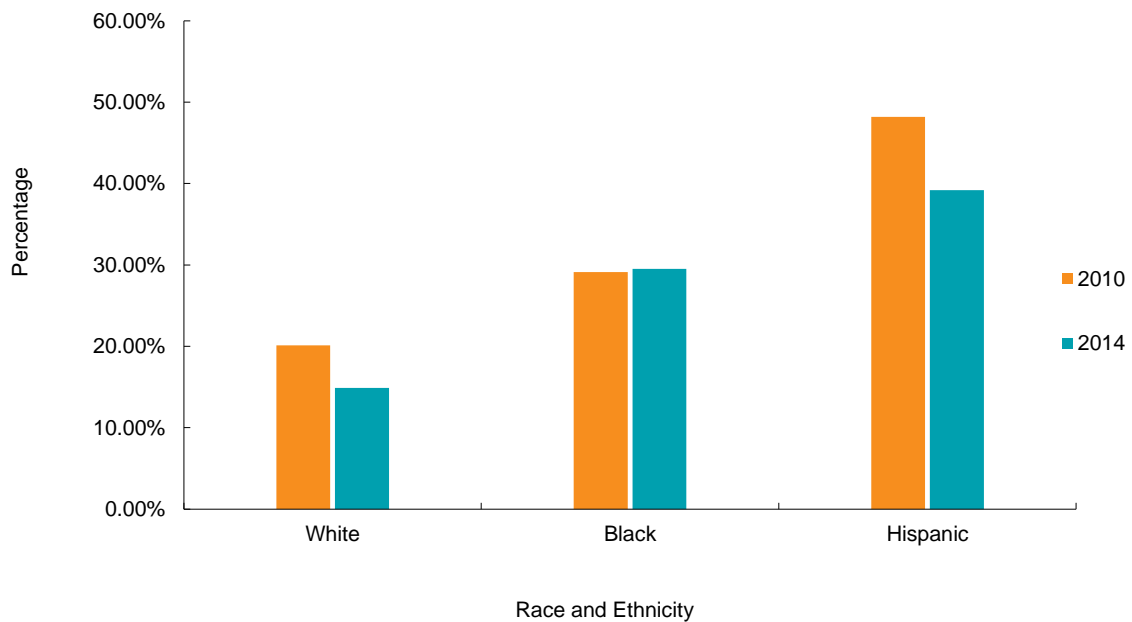


Table 4. Percentage of the Population Uninsured by Race and Ethnicity, Collier County, 2010 and 2014

Race and Ethnicity	2010	2014
White	20.1%	14.9%
Black	29.1%	29.5%
Hispanic	48.2%	39.2%

Data Source: American Community Survey/US Census Bureau

Figure 3. Percentage of the Population Uninsured by Race and Ethnicity, Collier County, 2010 and 2014



At the time of this writing, Hispanics comprised approximately 1 out of every 3 Collier County residents. During the period 2010 to 2014 the percentage of the uninsured Hispanic population in Collier County declined by 9 percentage points, from 48.2 percent in 2010 to 39.2 percent in 2014.

Table 5 and Figure 4 show the percentage of the population uninsured by educational attainment level in Collier County for 2010 and 2014. A consistent pattern exists between the level of educational achievement and the rate of uninsured. The higher the educational attainment the more likely one can afford health insurance. Between 2010 and 2014 the percentage of uninsured high school graduates in Collier County declined by 6.2 percentage points, from 28.8 percent to 22.6 percent, respectively.

The percentage of uninsured with some college or an associate's degree decreased from 16.0 percent in 2010 to 11.7 percent in 2014, an overall decline of 4.3 percentage points. Those individuals with a bachelor's degree or higher had the largest relative percentage decrease among the uninsured, from 9.3 percent in 2010 to 6.0 percent in 2014. This translates into a relative decline of 36 percent in the uninsured rate. Figure 4 graphically depicts this direct consistent correlation between educational attainment and health insurance coverage in a very normalized distribution.

Table 6 along with Figure 5 illustrates the relationship between income level and the proportion of the population uninsured in Collier County for 2010 and 2014. The association of the reduction of the percentage of the uninsured in every income level between 2010 and 2014 is very evident. Figure 5 is a textbook graphic correlation between income categories and access to or the ability to acquire health insurance. While the percentage of the uninsured decreased for every income level between 2010 and 2014, the most significant changes in the rate occurred among those earning \$25,000 to \$49,999 and those earning \$75,000 to \$99,999, with reductions of 7.0 and 6.1 percentage points, respectively.

Table 5. Percentage of the Population Uninsured by Education, Collier County, 2010 and 2014

	2010	2014
All Levels	22.0%	18.7%
Less than High School	48.1%	52.6%
High School Graduate	28.8%	22.6%
Some College or Associates Degree	16.0%	11.7%
Bachelor's Degree or Higher	9.3%	6.0%

Data Source: American Community Survey/US Census Bureau

Figure 4. Percentage of the Population Uninsured by Education, Collier County, 2010 and 2014

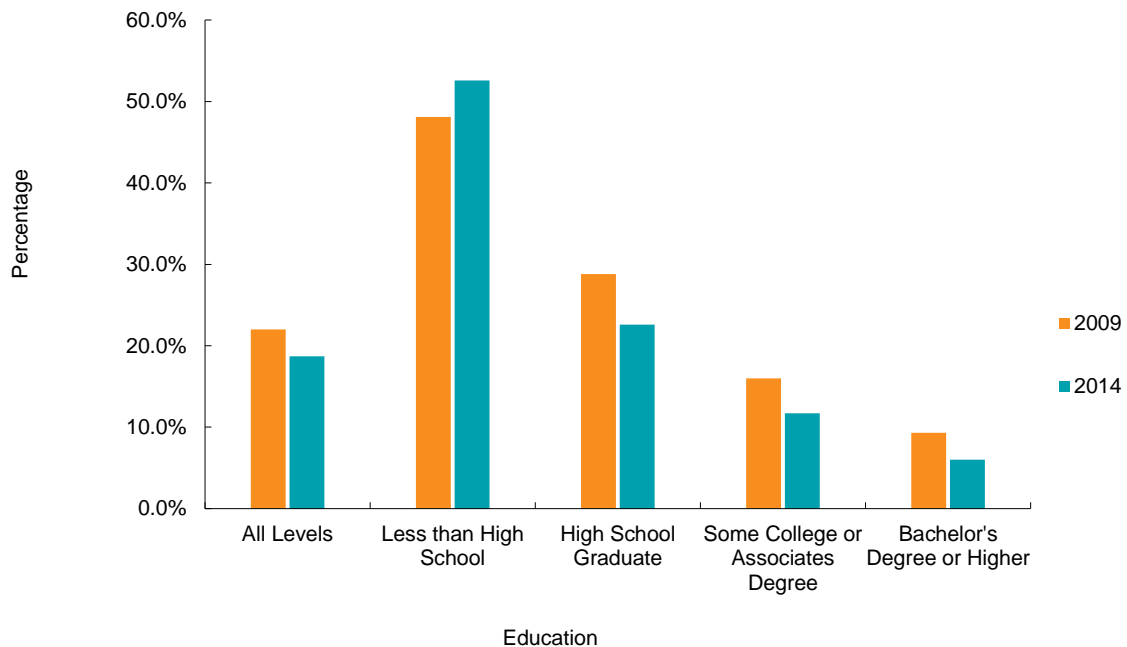
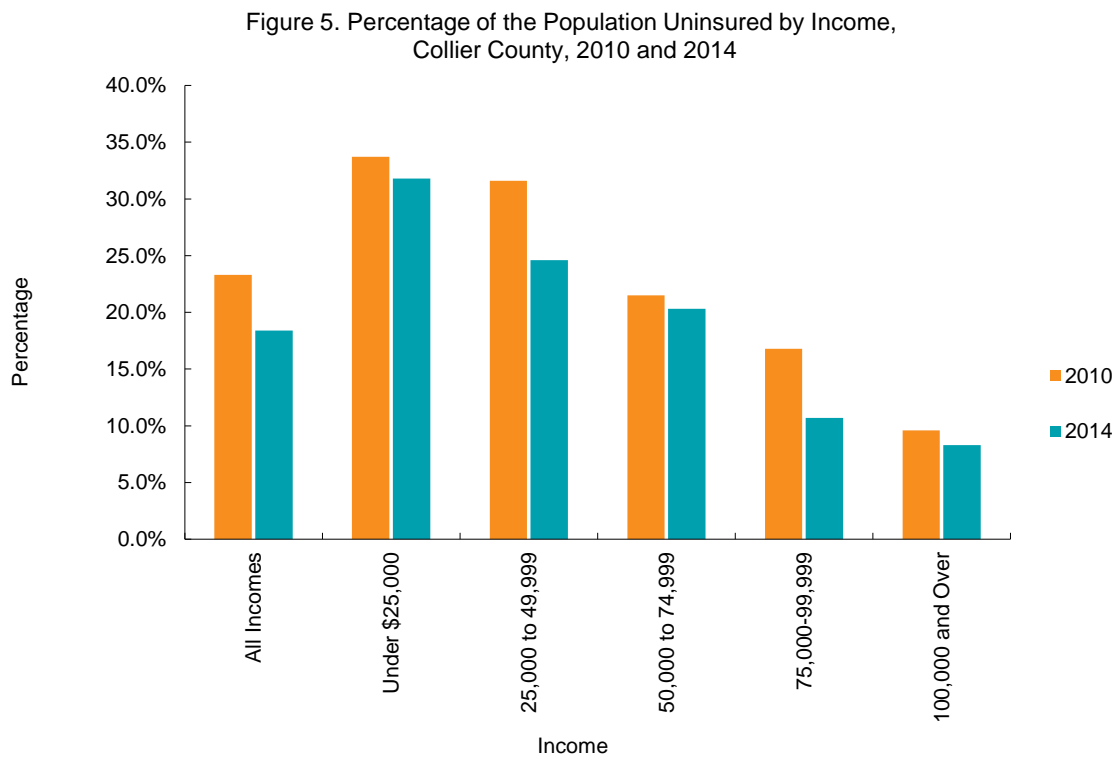




Table 6. Percentage of the Population Uninsured by Income, Collier County, 2010 and 2014

	2010	2014
All Incomes	23.3%	18.4%
Under \$25,000	33.7%	31.8%
25,000 to 49,999	31.6%	24.6%
50,000 to 74,999	21.5%	20.3%
75,000-99,999	16.8%	10.7%
100,000 and Over	9.6%	8.3%

Data Source: US Census Bureau. SAHIE



Tables 7, 8 and 9 gives the number of hospital beds available in Collier County and Florida in 2005 and 2014, with rates per 100,000 population. Between 2005 and 2014, the rate of total hospital beds in Collier County increased by 31 percent while in Florida the rate remained flat. During the same period the rate for acute-case beds in Collier County increased by 37 percent while in Florida the rate decreased by 3 percent. These differences in rates of growth in bed availability in Collier County and Florida is comparable to the trend observed in past analyses between 2003 and 2011. In both Collier County and Florida the rates for specialty beds increased between 2005 and 2014, by seven percent and five percent, respectively.

Table 7. Total Hospital Beds with Rates per 100,000, Collier County and Florida, 2005 - 2014

	2005		2014	
	Count	Rate	Count	Rate
Collier County	673	219.90	977	287.2
Florida	57,724	319.1	62,021	317.3

Data Source: Agency for Health Care Administration

Table 8. Total Acute Care Beds with Rates per 100,000, Collier County and Florida, 2005 - 2014

	2005		2014	
	Count	Rate	Count	Rate
Collier County	539	176.14	818	240.5
Florida	48,021	268.6	50,887	260.3

Data Source: Agency for Health Care Administration

Table 9. Total Specialty Beds with Rates per 100,000, Collier County and Florida, 2005 - 2014

	2005		2014	
	Count	Rate	Count	Rate
Collier County	134	43.8	159	46.7
Florida	9,703	54.3	11,134	57.0

Data Source: Agency for Health Care Administration

The total number of licensed physicians per 100,000 population increased by 33 percent in Collier County between 2005 and 2014 (Table 10). In Florida, the rate of licensed physicians grew by 29 percent during the same period.

While total population growth in Collier County has been slowing dramatically in recent years-0.9 percent annually between 2013 and 2014 compared with 3.7 percent annual growth between 2003 and 2004, the baby boomer cohort has been accelerating in growth as their generation continues to age. Between 1995 and 2014, the population 75 years of age and over in Collier County grew by 119 percent. During the same time period the county's population 65 years of age and over grew by 82 percent. These exponential increases and the demographic dynamics of the older population within Collier County is having a powerful influence on the increments of healthcare resources within the community.

Table 10. Total Licensed Physicians with Rates per 100,000, Collier County and Florida, 2005–2014

	2005		2014	
	Count	Rate	Count	Rate
Collier County	605	204.3	915	271.2
Florida	37,267	213.2	53,529	275.7.0

Data Source: Florida CHARTS

## Health Behaviors and Health Status

One of the correlates of higher levels of life expectancy and quality of life has historically been the level of educational attainment due to its direct overall statistical association with income level. These statistical correlations have held up scientifically since public health epidemiology and economic data have been analyzed nationally, regionally and locally. As can be seen in this chapter on healthy behaviors and health status, healthy habits, whether diet related or tobacco or alcohol use oriented, are highly associated with the level of education and level of income. Gender also plays a significant role. Females are more likely to choose a healthier lifestyle and its concomitant habits than males. This fact is one of the primary influences on the higher life expectancy of females compared to that of males. A married individual of either sex is less likely to engage in unhealthy and riskier habits than an unmarried person.

It is estimated in the United States that the two most prevalent unhealthy behaviors or lifestyle related habits—tobacco use and overweight and obesity—account for almost 35 percent (more than one third) of all preventable and premature deaths annually. This holds true for Collier County and Florida as well and is explored more in depth in the mortality chapter.

Although data for Collier County on these health behaviors in this section are available only from the Florida Department of Health's Behavioral Risk Factor Surveillance System (BRFSS) randomly selected scientific sample survey, these results are statistically valid and are representative of the community and population of Collier County. These are the indicators that guide the County Health Department's assessment of progress towards healthy behaviors within the community.

### **Important Technical Note**

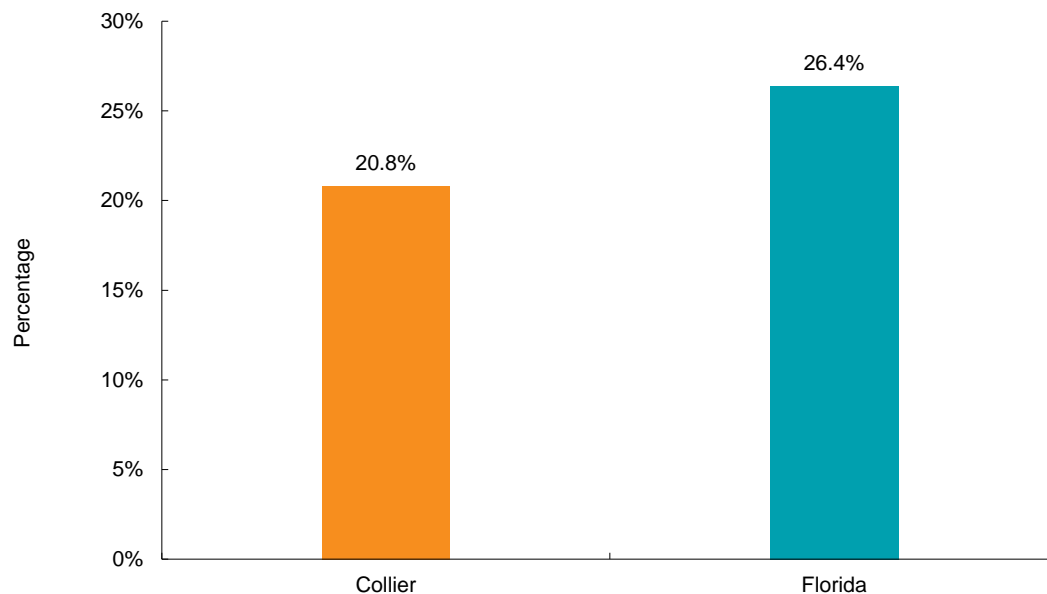
Since the 2013 Florida county level BRFSS utilizes the new Center for Disease Control survey methodology called raking, which allows for the inclusion of additional sociodemographic variables as well as the incorporation of the type of telephone source (landline or cellular telephone) into the statistical weighting process. The comparison of these latest 2013 county level survey data to any of the previous county-level BRFSS surveys (2002–2010) is not recommended. For this reason this 2016 Community Health Assessment Health Behaviors and Health Status chapter is limited to data for the year 2013. The year 2013 will serve as the beginning for a new data base series for trends in health behaviors and health status for Collier County. Future trends and analyses over time will begin with this year.

## Obesity and Overweight

In 2013, 20.8 percent of Collier County adults indicated they were obese. This was almost 6 percentage points lower than the proportion in Florida (Figure 1). Both the county and the state have seen their percentage of obese adults increase since 2002. This trend mirrors the national situation in most states.

When obesity is analyzed by gender, males are much more likely to be obese than females—both in Collier County and throughout the state. In Collier County 23.1 percent of males were obese in 2013. This was 4.4 percent points lower than the male obesity rate for Florida. Less than 1 in 5 women in Collier County were obese, while in Florida the ratio was more than one in four (Figures 2 and 3).

Figure 1. Percent of Adults Who Are Obese, Collier County and Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

Figure 2. Percent of Adults Who Are Obese, by Sex, Collier County, 2013

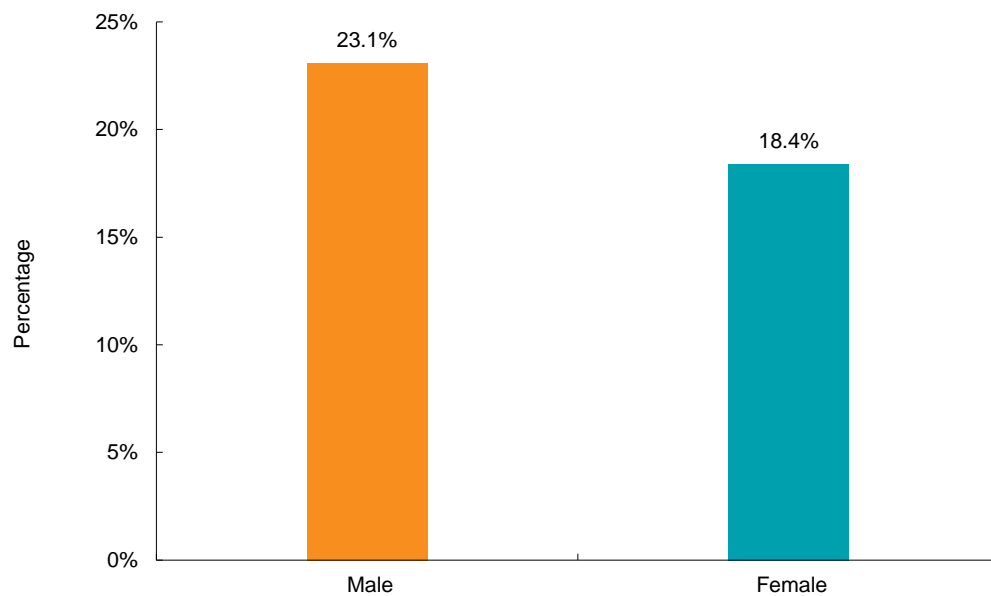
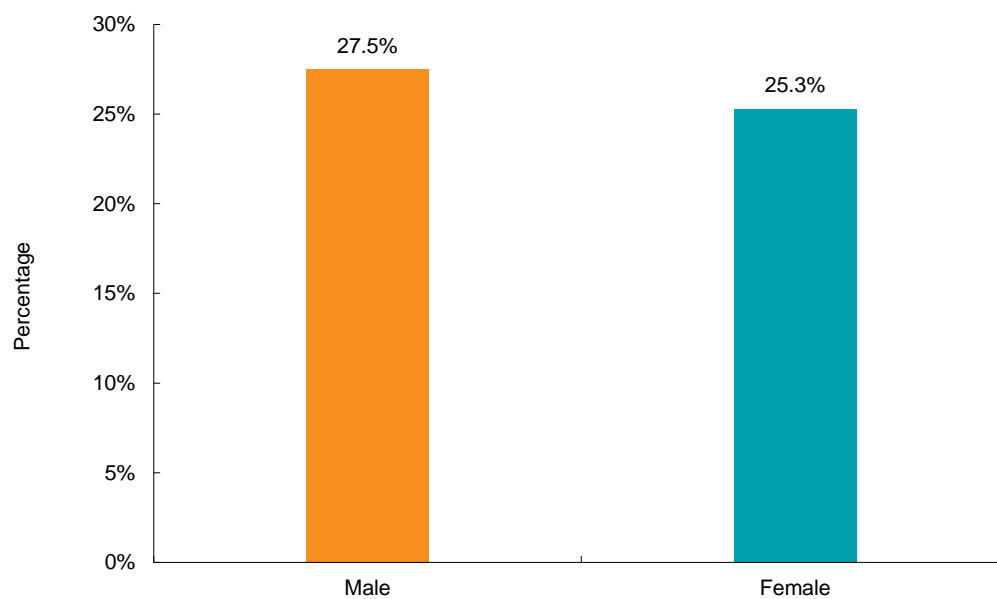


Figure 3. Percent of Adults Who Are Obese, by Sex, Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

Hispanics in Collier County were more than twice as likely to be obese than non-Hispanics, 34.8 percent compared with 16.0 percent, respectively (Figure 4). In Florida, the opposite prevailed, 29.7 percent of non-Hispanics were obese compared with 26.4 percent of Hispanics (Figure 5).

Figure 4. Percent of Adults Who Are Obese, by Ethnicity, Collier County, 2013

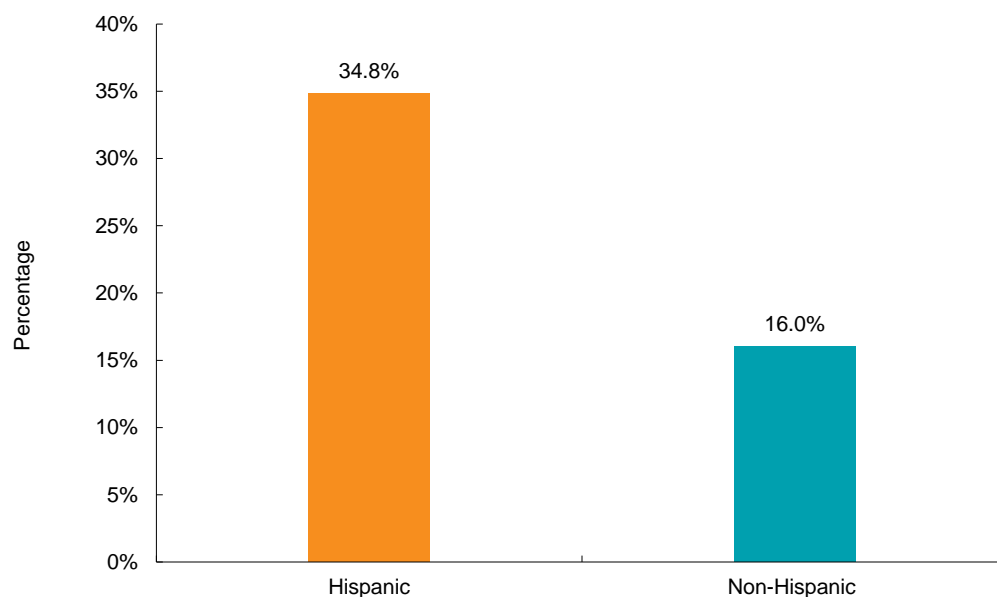
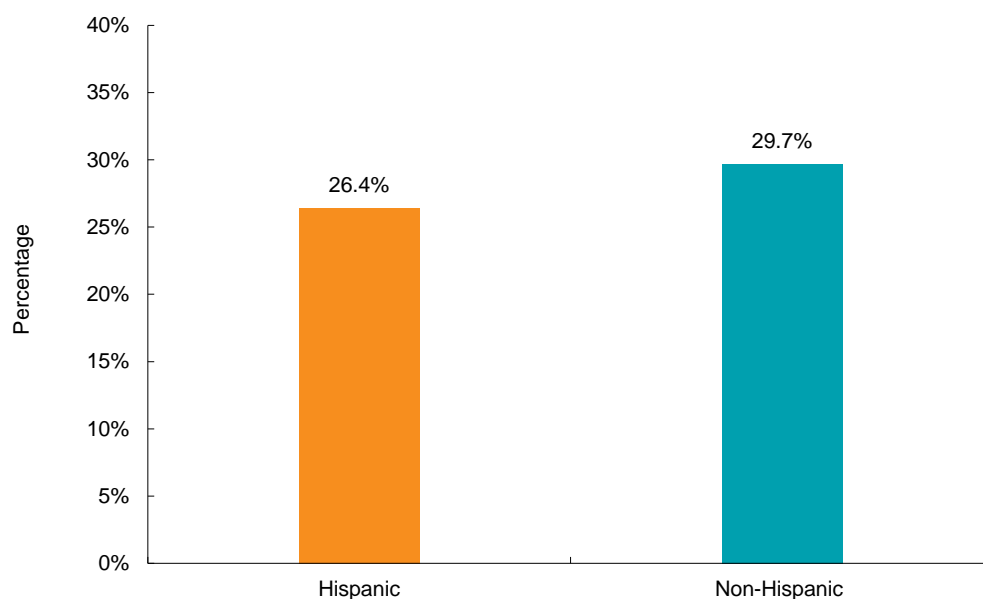


Figure 5. Percent of Adults Who Are Obese, by Ethnicity, Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.



Adults in Collier County and Florida are less likely to be obese if they have a four year college degree or beyond, 15.3 percent and 24.5 percent, respectively compared with only a high school degree or some college, 27.6 percent and 28.4 percent, respectively (Figures 6 and 7).

Figure 6. Percent of Adults Who Are Obese, by Educational Level, Collier County, 2013

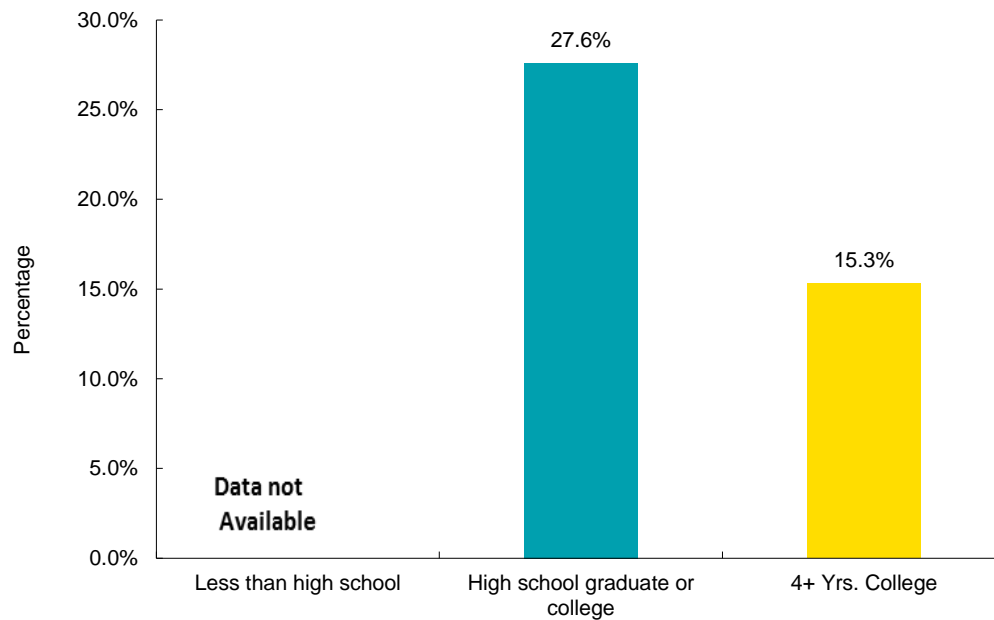
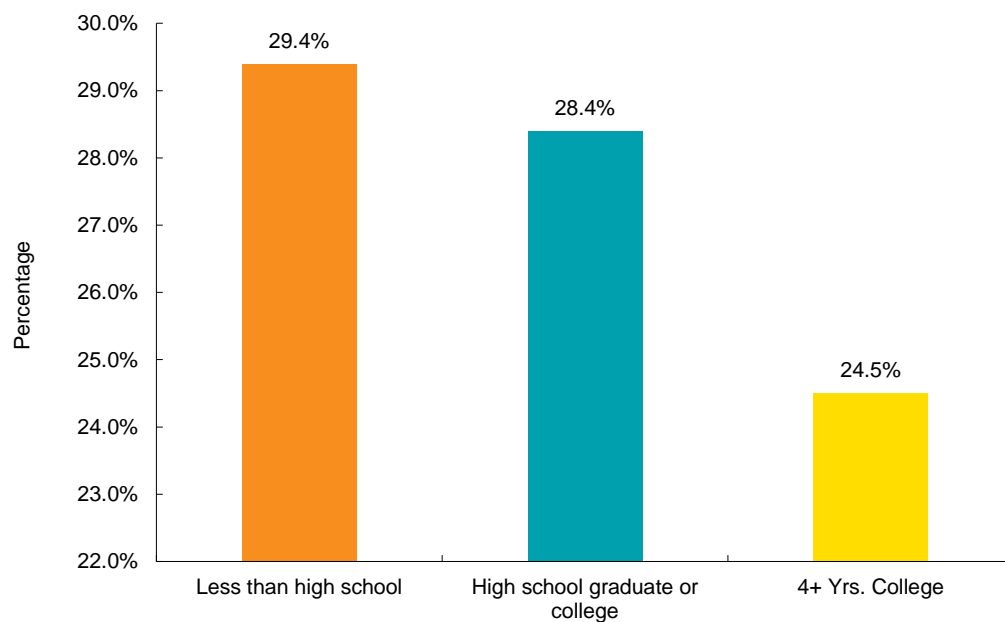


Figure 7. Percent of Adults Who Are Obese, by Educational Level, Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

The level of obesity and overweight levels in a population is predominately a result of consuming too many calories while participating in too little physical activity. An increase in the prevalence of obesity and overweight is associated with a higher incidence of numerous chronic diseases including stroke, hypertension, cancer, cardiovascular disease and diabetes. This same type of statistical correlation exists between the level of physical activity and the prevalence of chronic health conditions. Premature mortality as measured by years of potential life lost is also strongly statistically correlated with decreased physical activity, obesity and overweight prevalence.

It is estimated that obesity and overweight in the general population accounts for approximately 17 percent of all actual causes of death. This amounts to about 1 out of every 6 deaths annually in Collier County. The most recent prevalence data from CDC for 2011-2012 indicate that approximately 35 percent of U.S. adults were obese. For the youth ages 2 to 19 years the obesity rate was 17 percent. These data also imply that adults aged sixty years and older were more likely to be obese than comparable younger age groups.

As is the case with numerous health conditions and behaviors, the income level of a population is statistically correlated with the prevalence of obesity. Figures 8 and 9 show the prevalence of obesity by annual income category for both Collier County and Florida in 2013. As a rule, the pattern is consistent: the lower the income, the higher the percentage of adult population who are obese. The only exception to this was in Collier County for persons with an annual income of \$25,000 to \$49,999, where that income category is a fraction higher in the obesity rate than those with the lowest income.

Figure 8. Percent of Adults Who Are Obese, by Annual Income, Collier, 2013

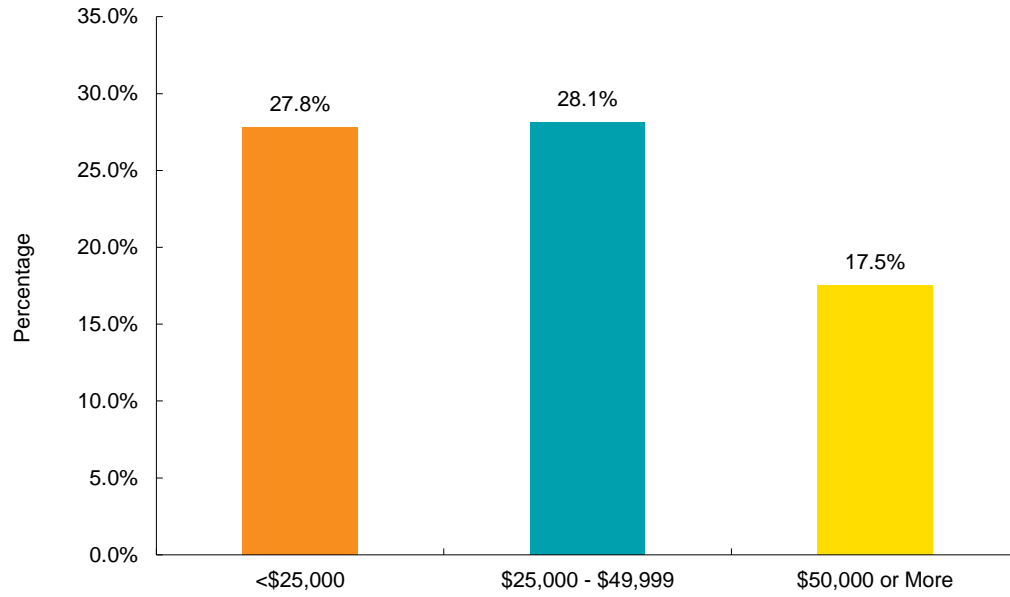
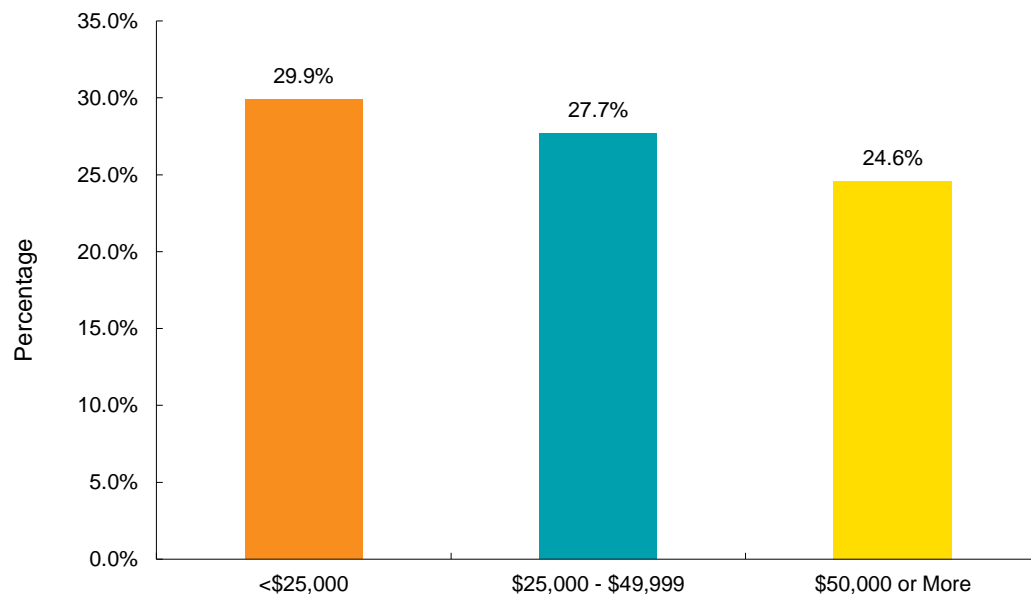


Figure 9. Percent of Adults Who Are Obese, by Annual Income, Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

In both Collier County and Florida the prevalence rate of obesity is greatest in the 45–64 years age group (Figures 10 and 11).

Figure 10. Percent of Adults Who Are Obese, by Age Group, Collier, 2013

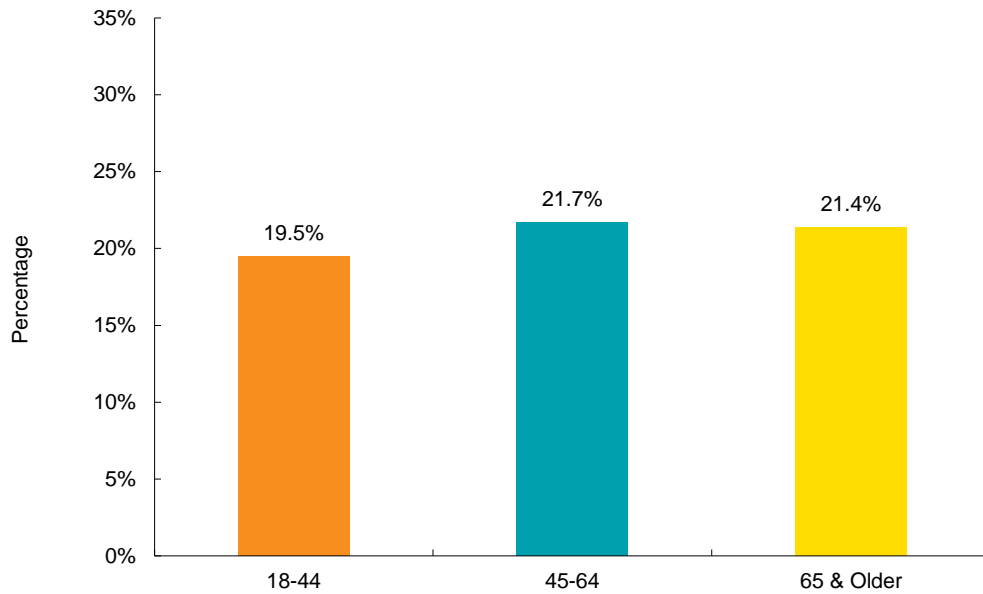
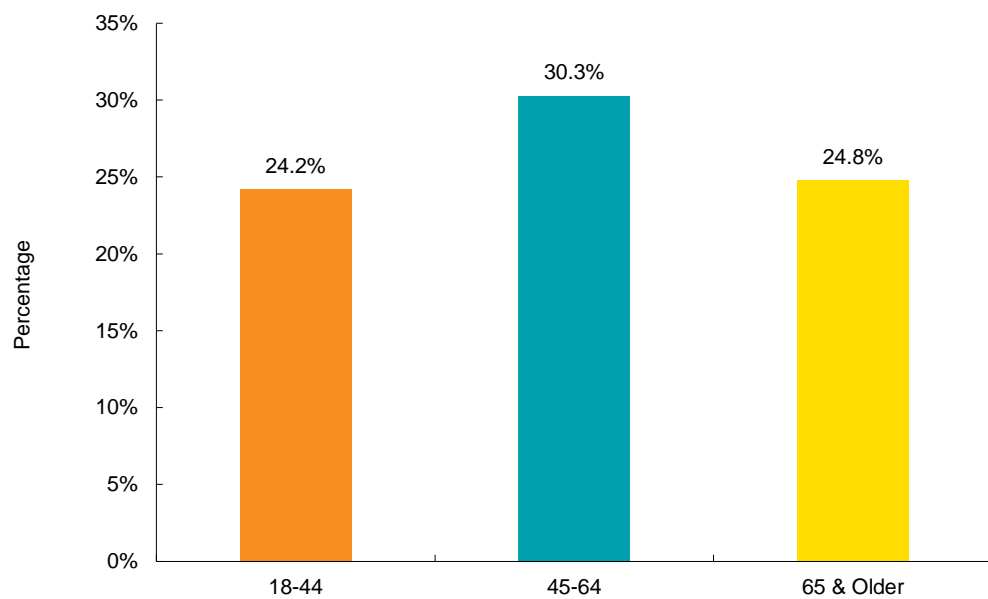


Figure 11. Percent of Adults Who Are Obese, by Age Group, Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

Being married appears to increase the probability of being obese in Collier County as well as in Florida (Figures 12 and 13).

Figure 12. Percent of Adults Who Are Obese, by Marital Status, Collier County, 2013

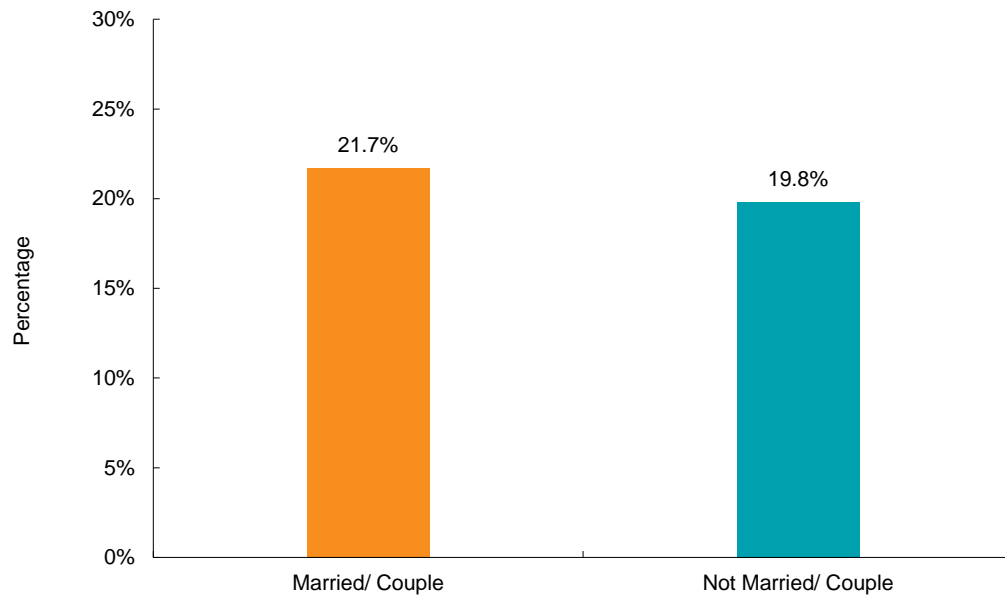
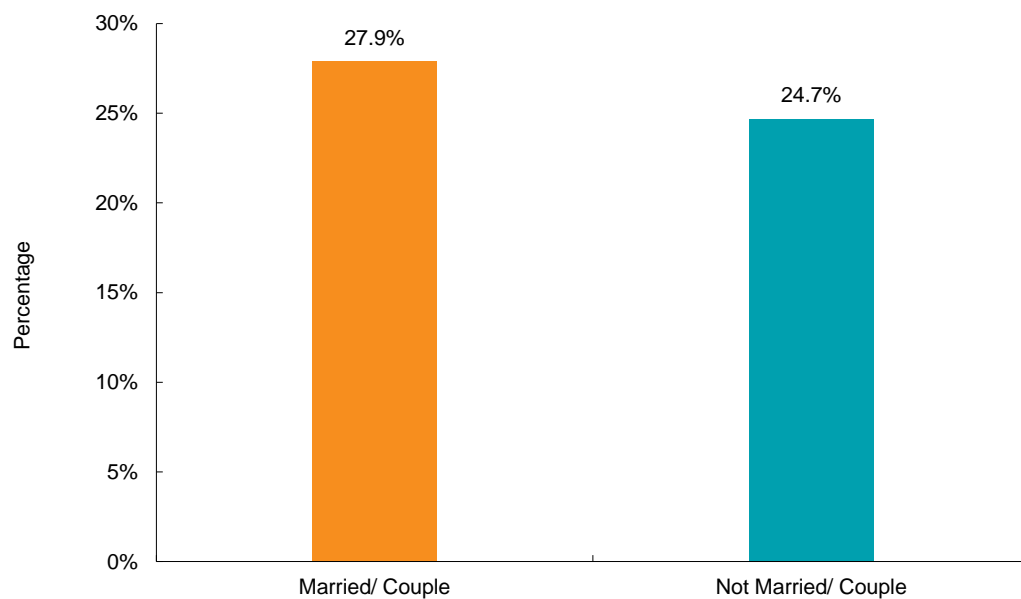


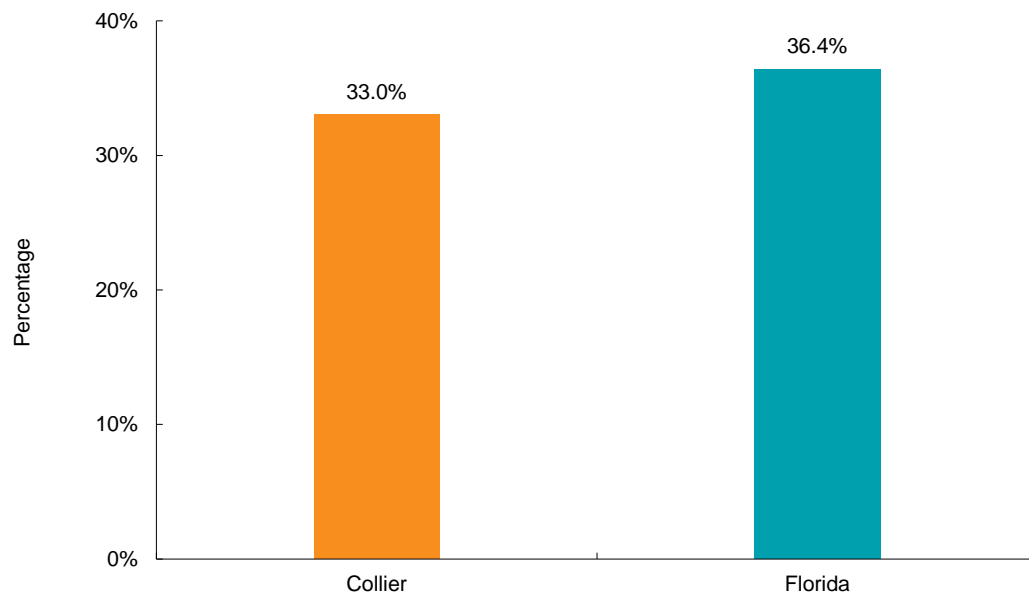
Figure 13. Percent of Adults Who Are Obese, by Marital Status, Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

Overall Collier County residents are less likely to be overweight than their Florida counterparts (Figure 14).

Figure 14. Percent of Adults Who Are Overweight, Collier County and Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

Males are consistently more likely to be overweight than females in Collier County and throughout the state (Figures 15 and 16).

Figure 15. Percent of Adults Who Are Overweight, by Sex, Collier County, 2013

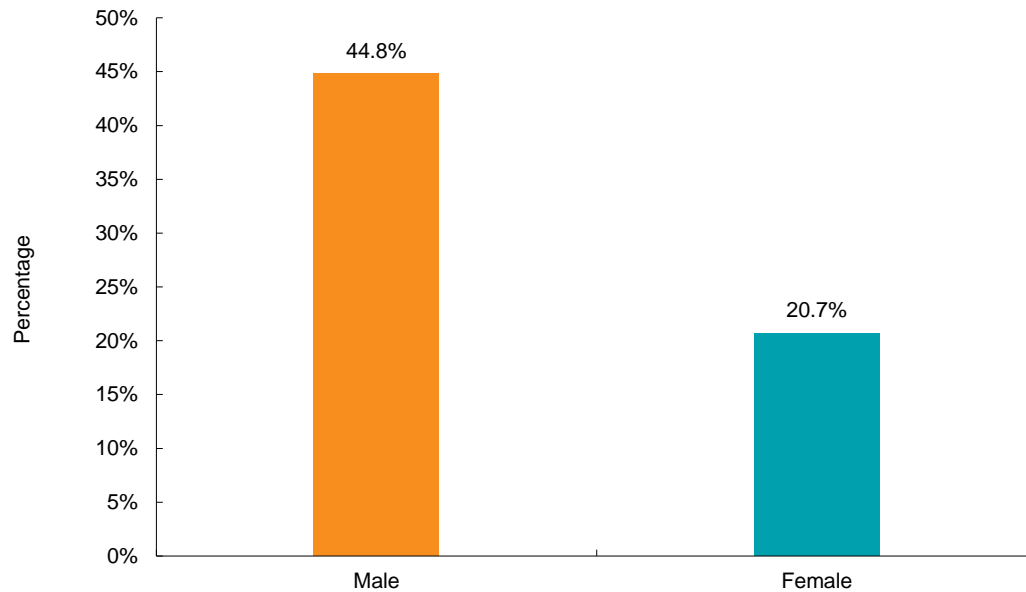
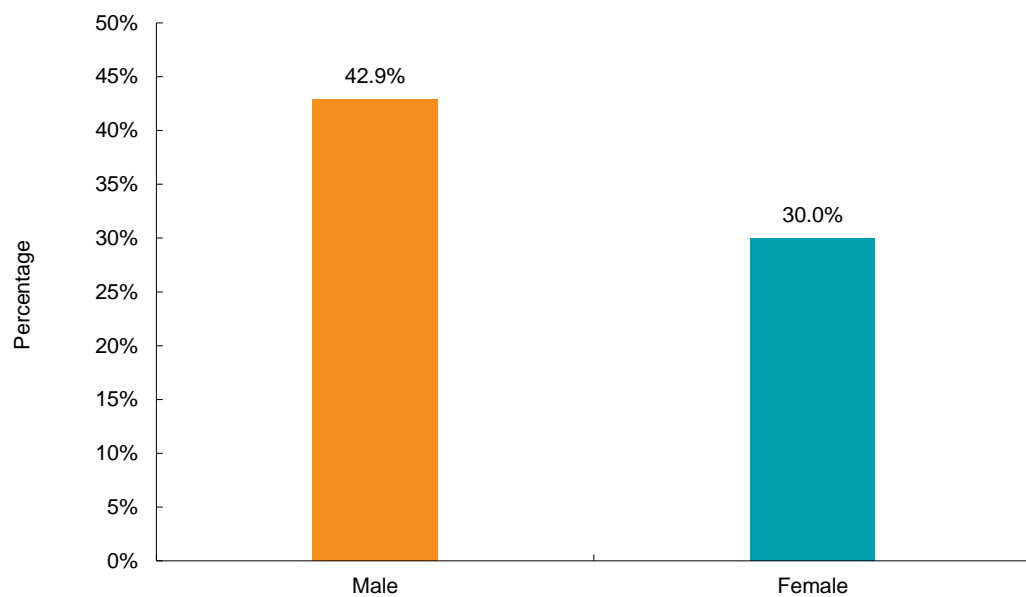


Figure 16. Percent of Adults Who Are Overweight, by Sex, Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

In Collier County, Hispanics are less likely to be overweight than Non-Hispanics while in the state of Florida the opposite is true (Figures 17 and 18).

Figure 17. Percent of Adults Who Are Overweight, by Ethnicity, Collier County, 2013

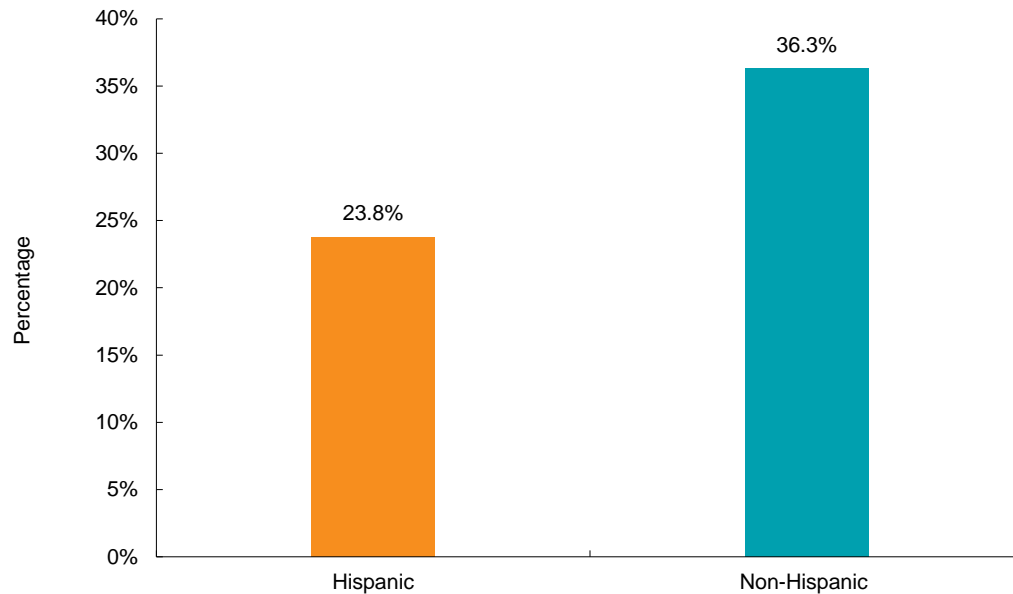
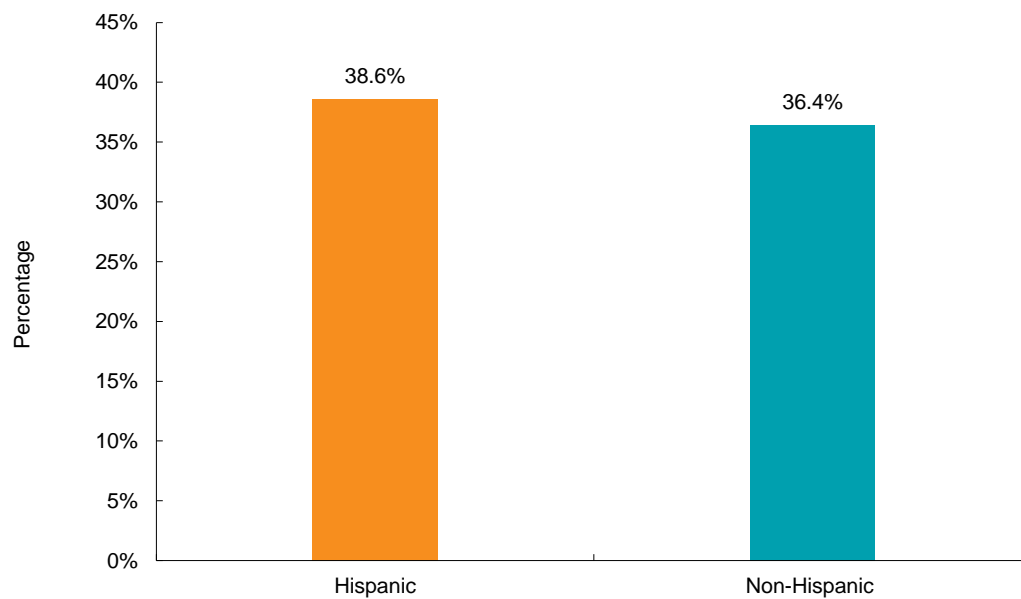


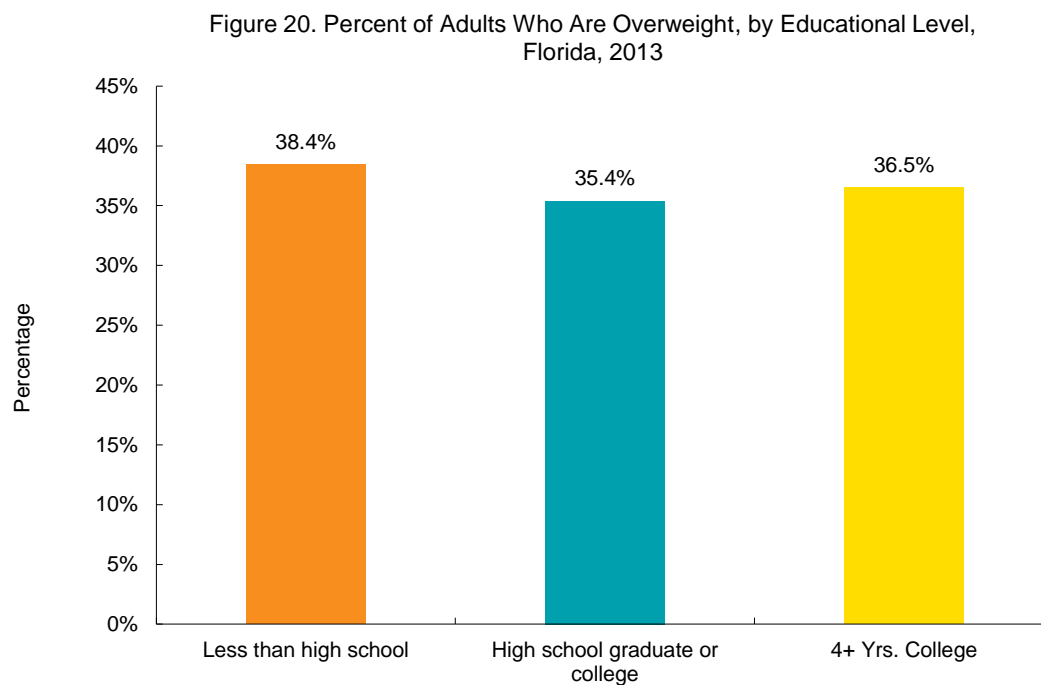
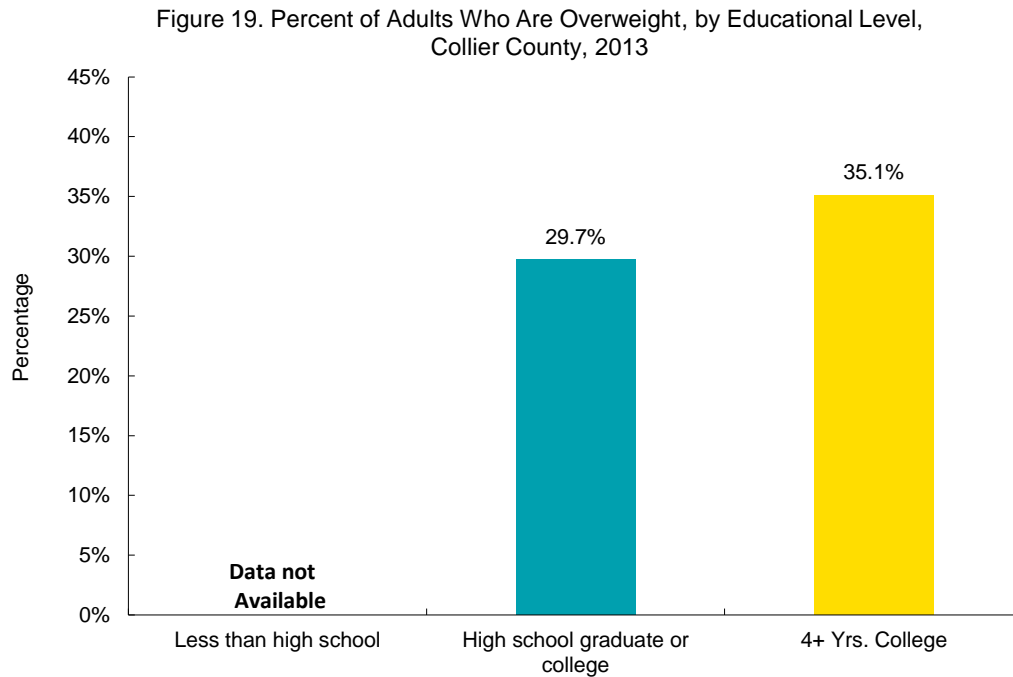
Figure 18. Percent of Adults Who Are Overweight, by Ethnicity, Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.



The correlation between educational attainment and overweight prevalence appears to persist at the county and state level although not as strong an association as that found with obesity prevalence (Figure 19 and 20).



Data Source: Behavioral Risk Factor Surveillance System, 2013.

When income is analyzed in relation to overweight prevalence, interesting trends are uncovered. While in Florida the higher the income level the slightly greater the percentage of the adult population overweight, in Collier County no definitive pattern exists although adults making \$50,000 or more annually have the highest overweight rate 36.6 percent (Figures 21 and 22).

Figure 21. Percent of Adults Who Are Overweight, by Annual Income, Collier, 2013

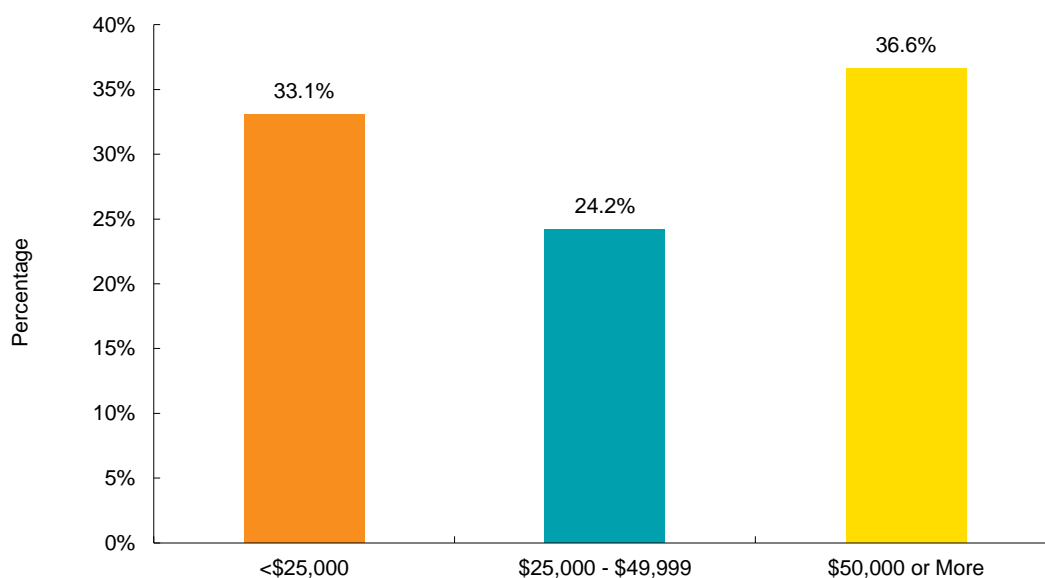
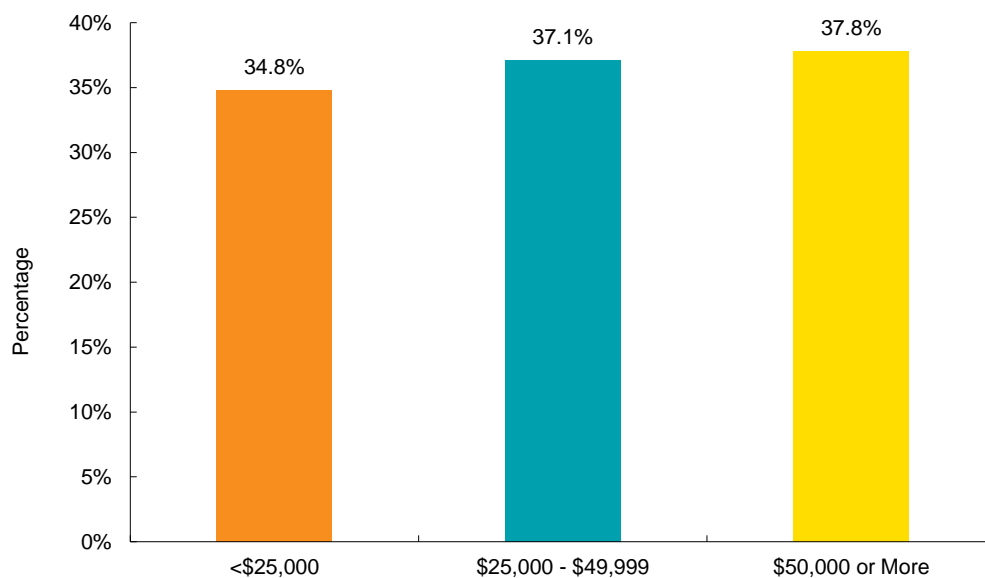


Figure 22. Percent of Adults Who Are Overweight, by Annual Income, Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

By age, older Collier County and Florida residents tend to have a higher overweight prevalence compared to younger aged residents. In Collier County, adults with the lowest overweight prevalence are found in the 45–64 year age group (Figures 23 and 24).

Figure 23. Percent of Adults Who Are Overweight, by Age Group, Collier, 2013

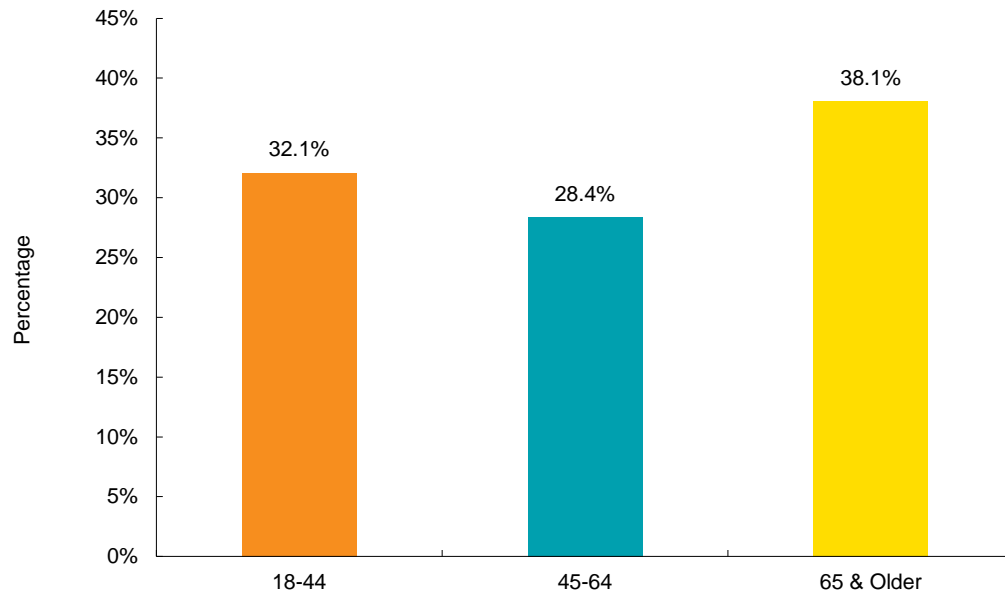
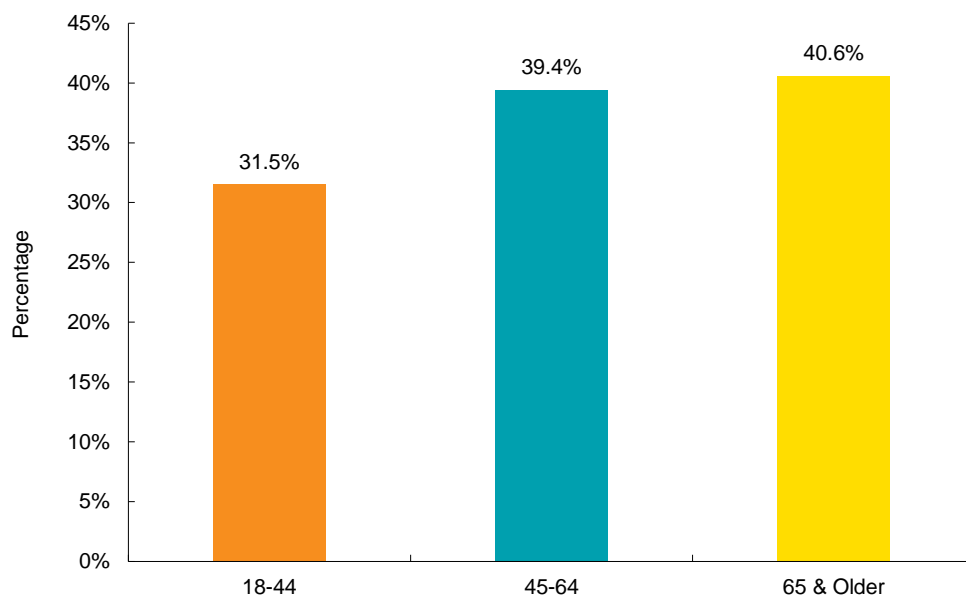


Figure 24. Percent of Adults Who Are Overweight, by Age Group, Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

In both Collier County and the state of Florida, married individuals are more likely to be overweight than those not married (Figures 25 and 26).

Figure 25. Percent of Adults Who Are Overweight, by Marital Status, Collier County, 2013

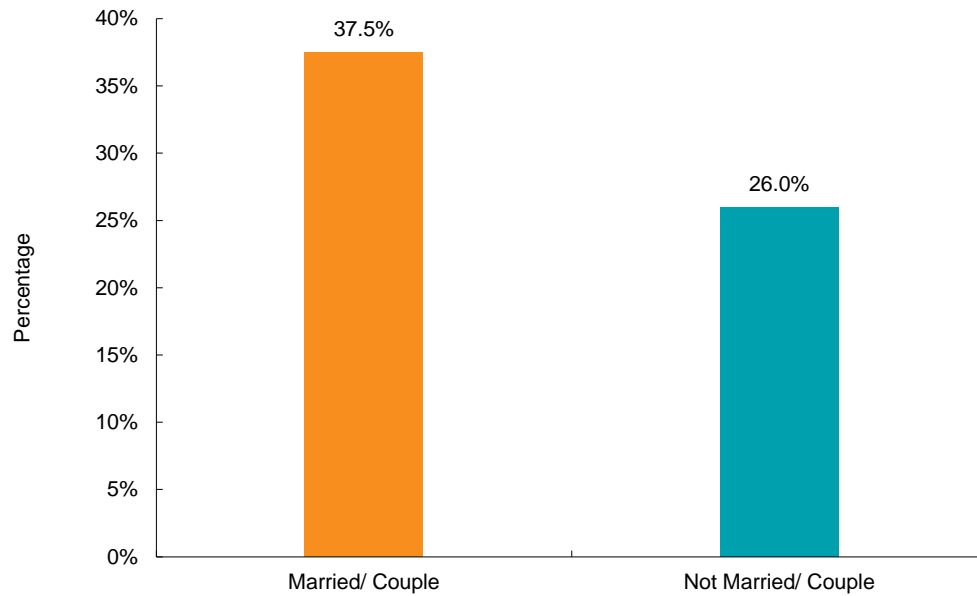
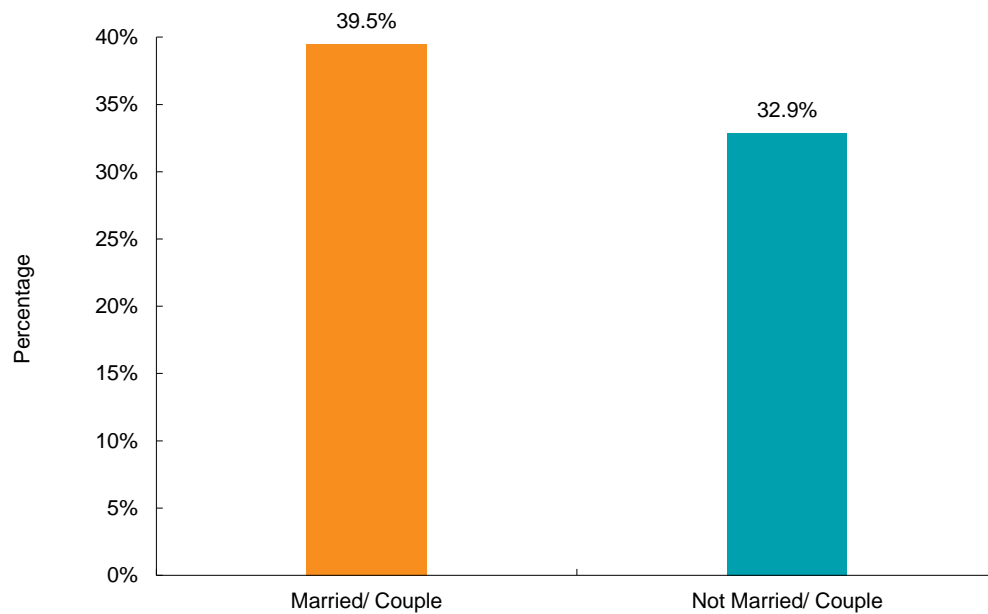


Figure 26. Percent of Adults Who Are Overweight, by Marital Status, Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

## Tobacco Use

The percentage of the adult population who are current smokers in a community measures the extent of the health risk within that population related to tobacco use and its detrimental effects.

The relationship between the use of tobacco and unfavorable health outcomes and conditions is well documented and scientifically well proven. Cigarette smoking is the leading cause of preventable mortality in the United States and Florida. In Collier County, alone, annually at least, 18 percent of all deaths are associated with cigarette smoking. This amounts to almost one out of every five deaths in Collier County. Smoking has been scientifically associated as a direct cause of a myriad of illnesses including numerous cancers, heart diseases, strokes, respiratory diseases and unfavorable maternal outcomes.

Smoking cessation initiatives and programs are cost-effective public health strategies since discontinuing tobacco use leads to improved and measurable health benefits at any age and ultimately results in an increase in life expectancy.

In 2013, the percent of adults who were currently smoking in Collier County was significantly lower than the proportion throughout the state of Florida, 13.9 percent compared with 16.8 percent, respectively (Figure 27). By gender, the percentage of adult females currently smoking in Florida was 5.7 percentage points greater than in Collier County, while the percentage of male smokers was almost identical in Collier County and Florida, 19.4 percent and 19.5 percent, respectively (Figures 28 and 29).

Figure 27. Percent of Adults Who are Currently Smokers, Collier County and Florida, 2013

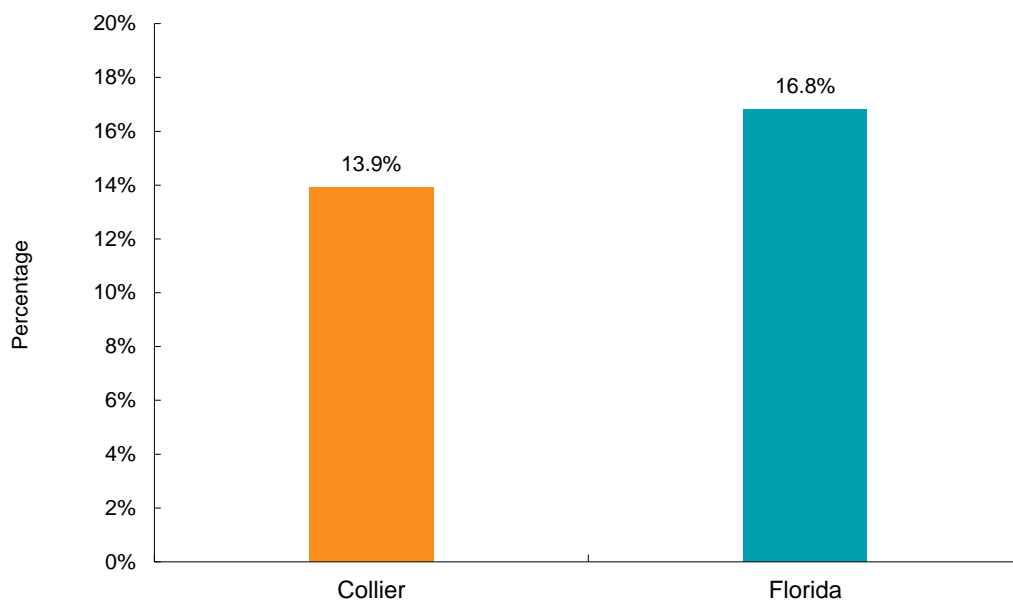
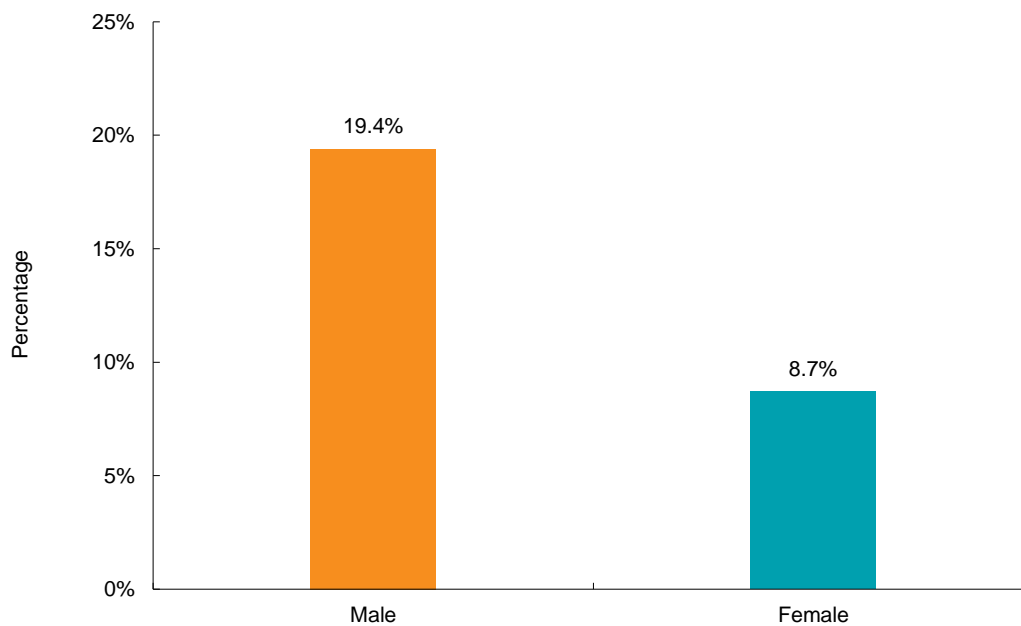
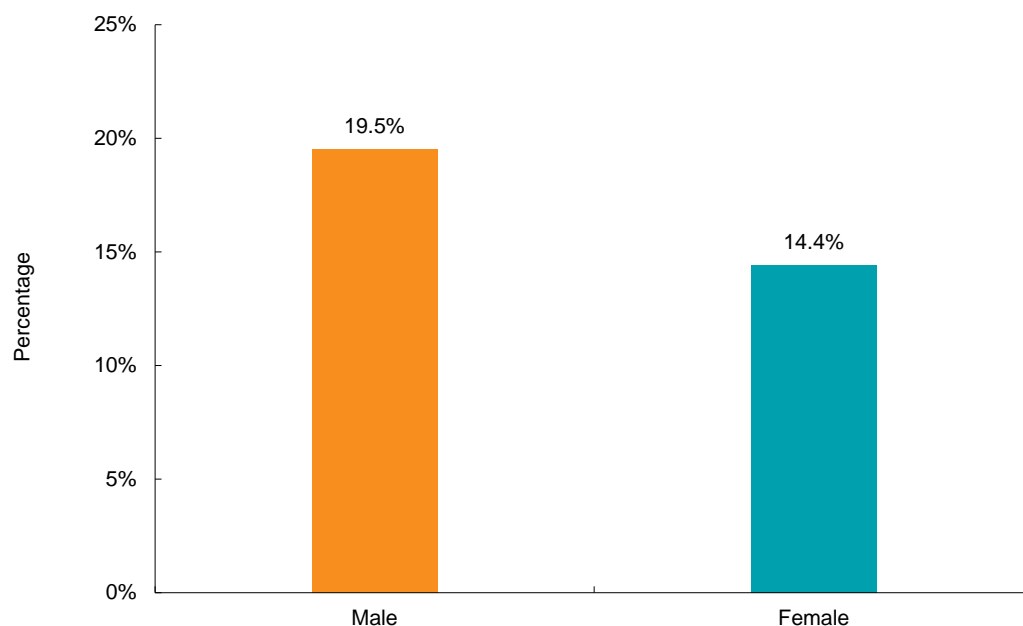


Figure 28. Percent of Adults Who are Currently Smokers, by Sex, Collier County, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

Figure 29. Percent of Adults Who are Currently Smokers, by Sex, Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

In both Collier County and Florida an inverse association exists between smoking prevalence and income level, lower income levels are correlated with higher smoking rates (Figures 30 and 31). This same relationship can be seen between educational attainment level and the percent of adult smokers (Figures 32 and 33). Both income levels and educational attainment predict cigarette smoking prevalence levels within a population or a community.

Figure 30. Percent of Adults Who are Currently Smokers, by Annual Income, Collier County, 2013

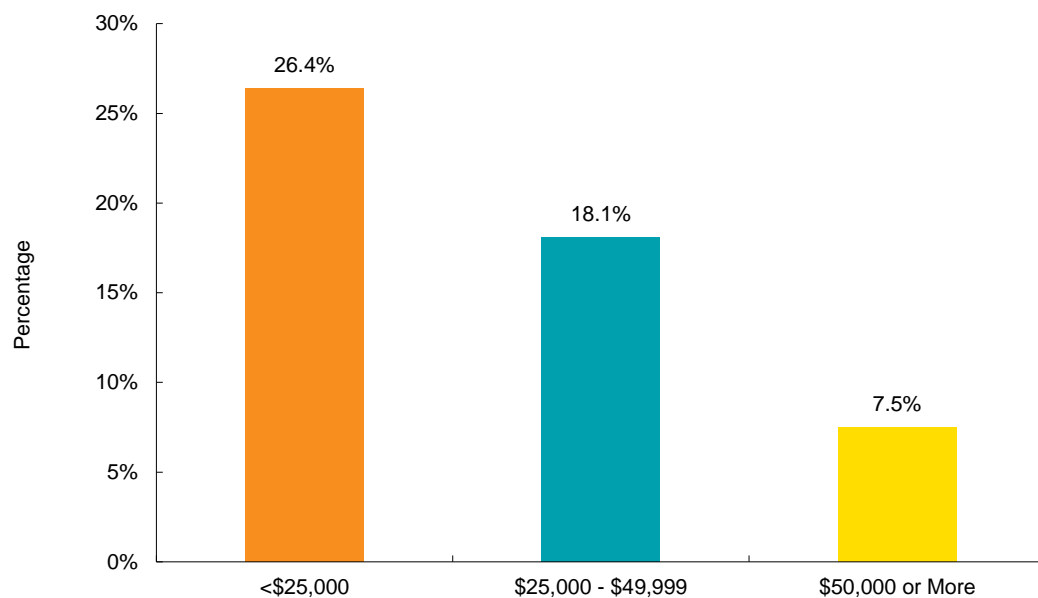
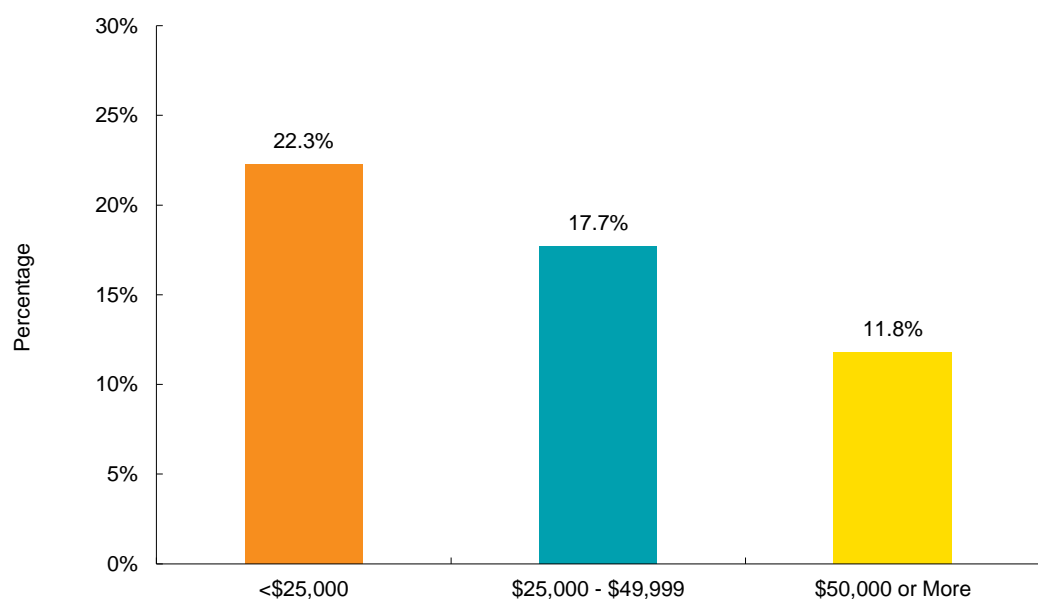


Figure 31. Percent of Adults Who are Currently Smokers, by Annual Income, Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.



Figure 32. Percent of Adults Who are Currently Smokers, by Educational Level, Collier County, 2013

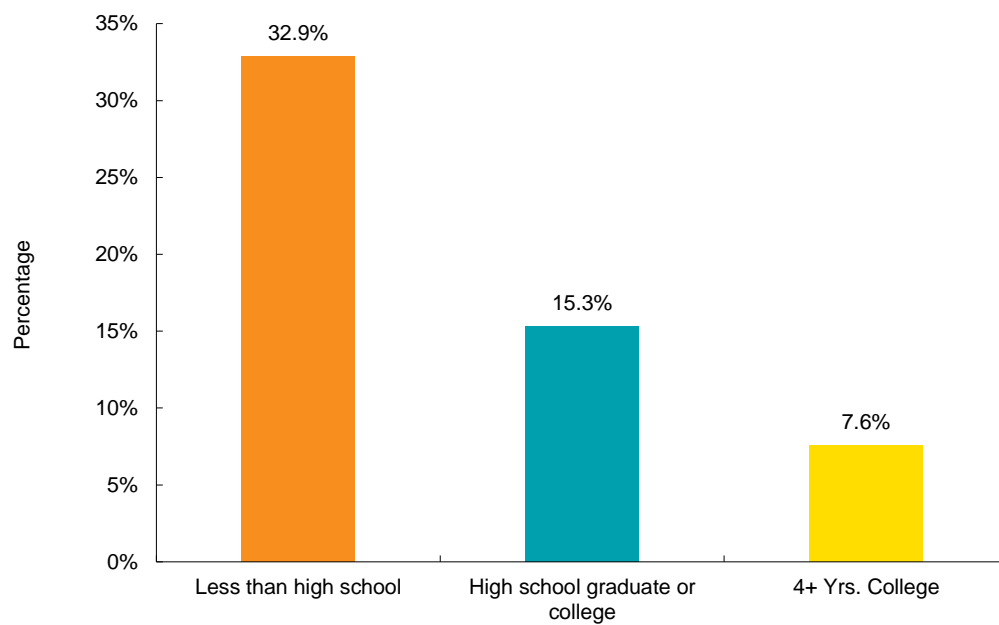
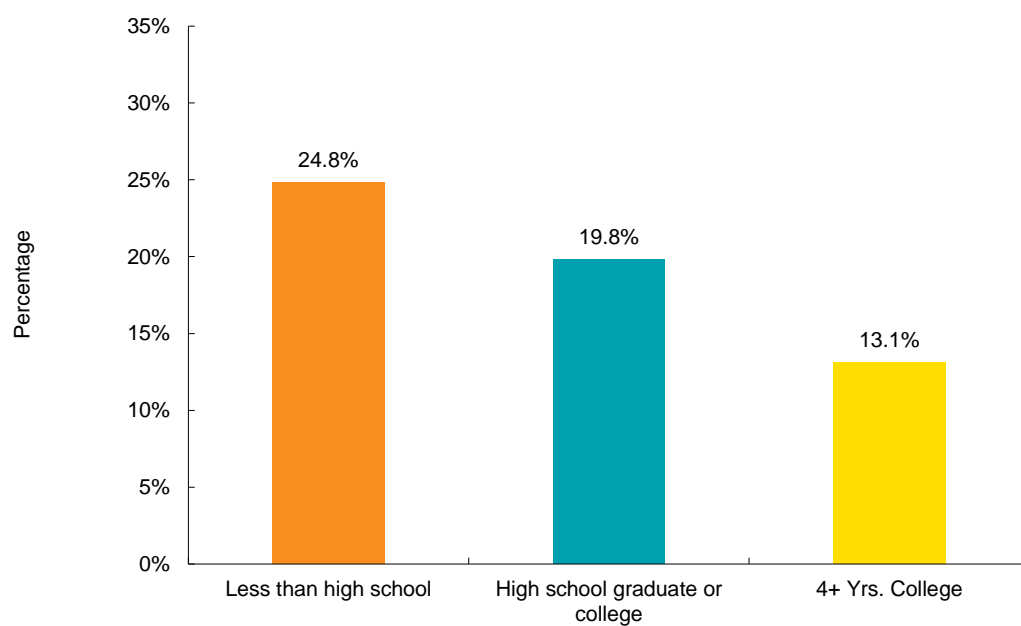


Figure 33. Percent of Adults Who are Currently Smokers, by Educational Level, Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

By ethnicity, in Collier County, Hispanics are almost twice as likely to be current smokers compared with non-Hispanics. In the state of Florida the reverse association is found (Figures 34 and 35).

Figure 34. Percent of Adults Who are Currently Smokers, by Ethnicity, Collier County, 2013

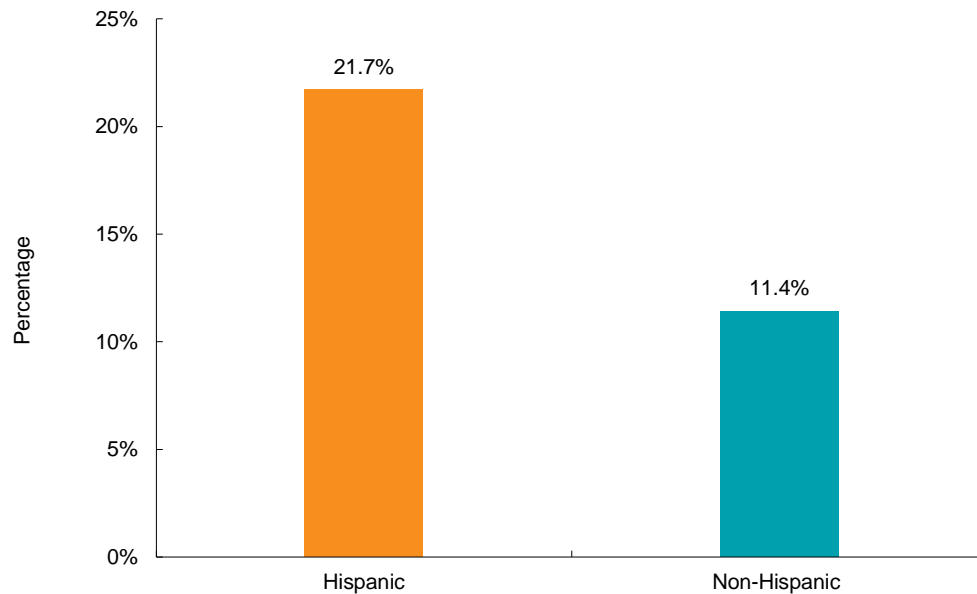
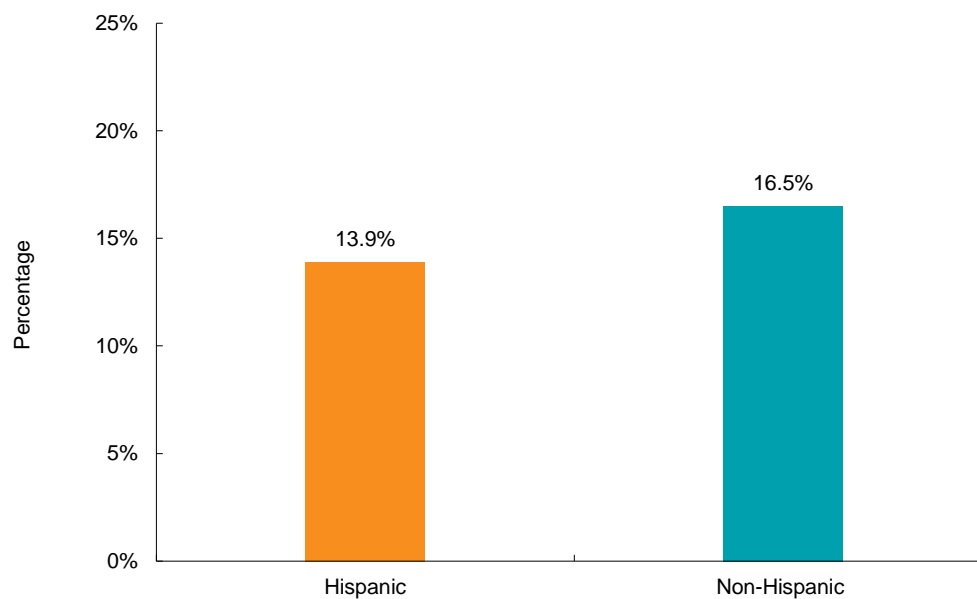


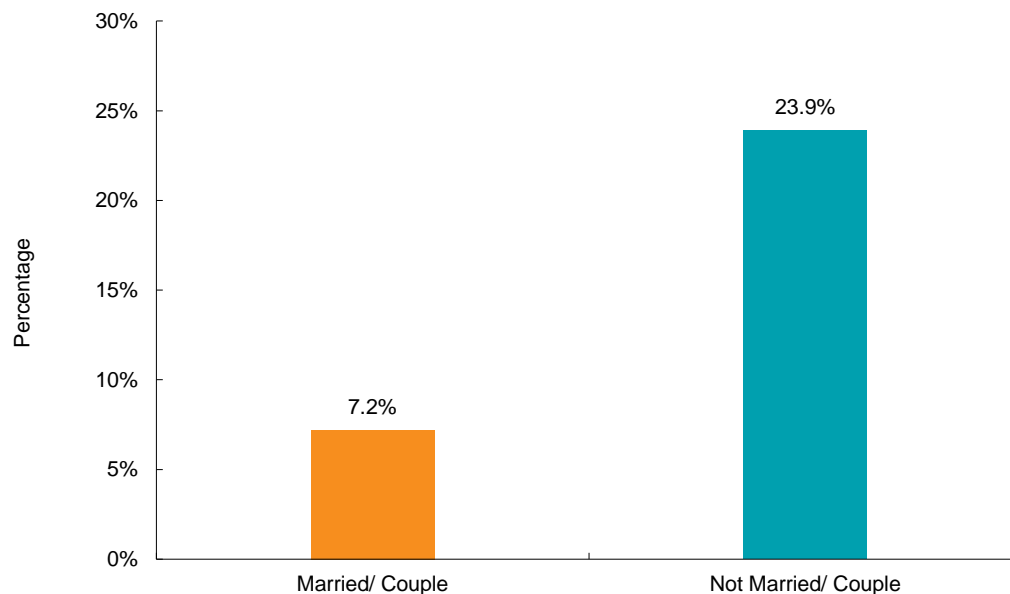
Figure 35. Percent of Adults Who are Currently Smokers, by Ethnicity, Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

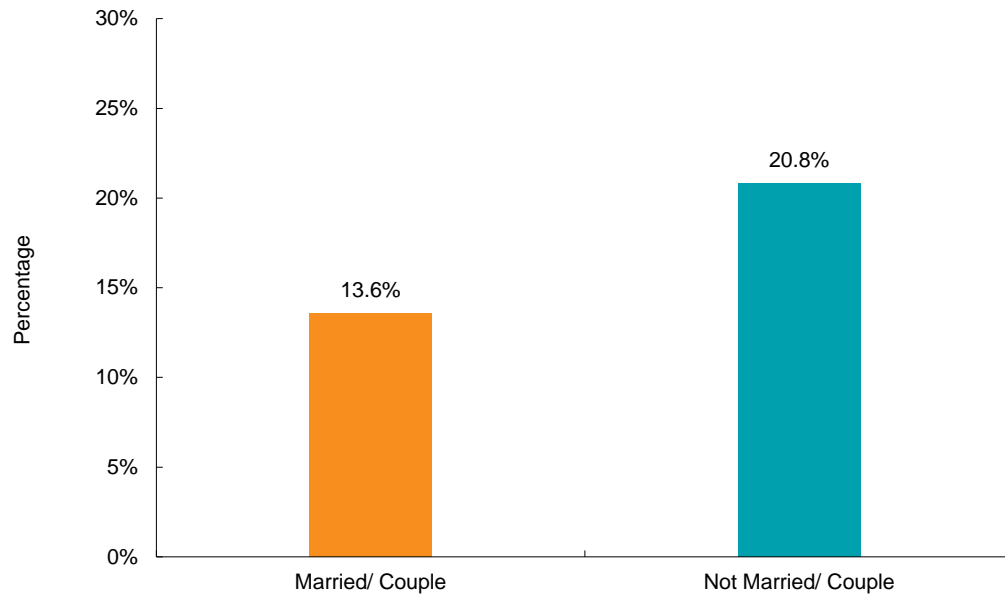
Married couples have a significantly lower smoking rate than non-married couples in both Collier County and the state. In 2013, only 7.2 percent of married couples in Collier County were current smokers compared with a 23.9 percent prevalence among non-married couples, a difference of 16.7 percentage points. In Florida, 13.6 percent of married couples were current smokers compared with 20.8 among non-married couples (Figures 36 and 37). This protective health status effect of married individuals has been studied by epidemiologists for several decades.

Figure 36. Percent of Adults Who are Currently Smokers, by Marital Status, Collier County, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

Figure 37. Percent of Adults Who are Currently Smokers, by Marital Status, Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

Younger ages 18–44 years, and mid-life ages 45–64 years have a significantly higher smoking prevalence than those 65 years of age and older (Figures 38 and 39). The percentage of the population that are former smokers is consistently gradually increasing over time as the cohorts of the 18–44 and the 45–64 year age groups cease the habit cumulatively (Figure 40).

In Collier County almost 45 percent of males and 28 percent of females are former smokers while in Florida the corresponding ratios are 31.6 percent and 24.9 percent, respectively (Figures 41 and 42).

Figure 38. Percent of Adults Who are Currently Smokers, by Age Group, Collier County, 2013

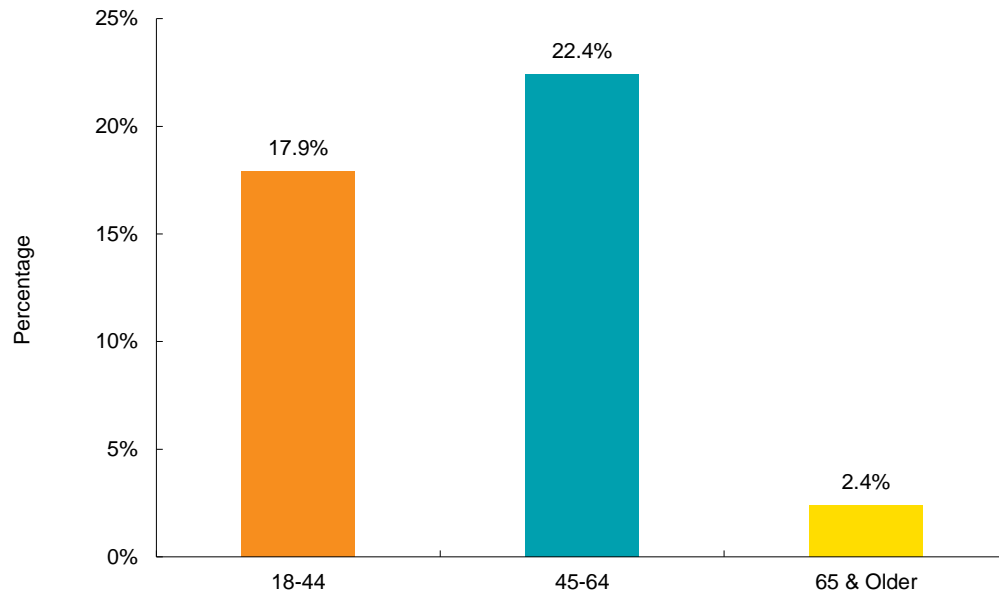
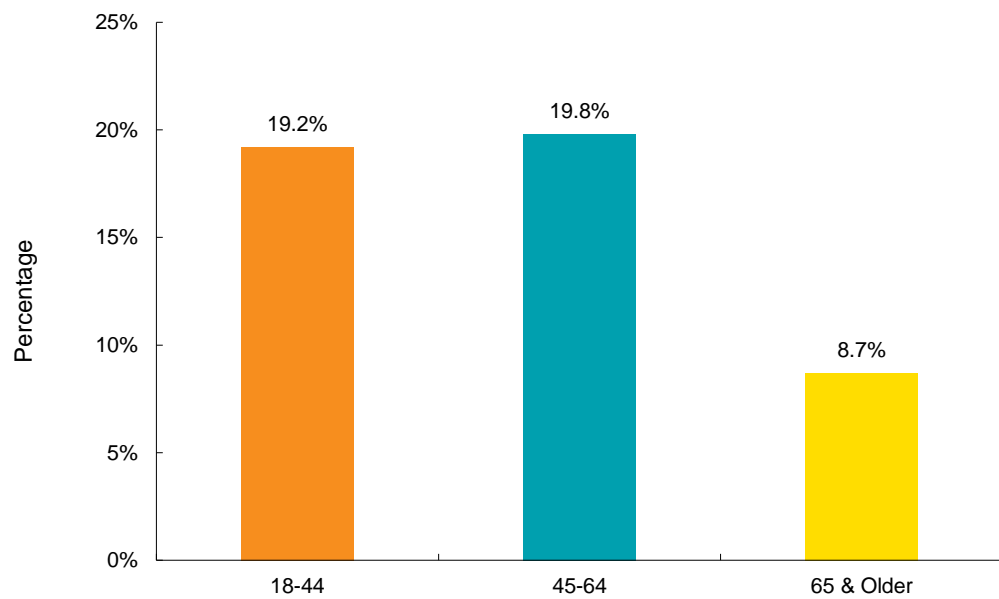


Figure 39. Percent of Adults Who are Currently Smokers, by Age Group, Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

Figure 40. Percent of Adults Who are Former Smokers, Collier County and Florida, 2013

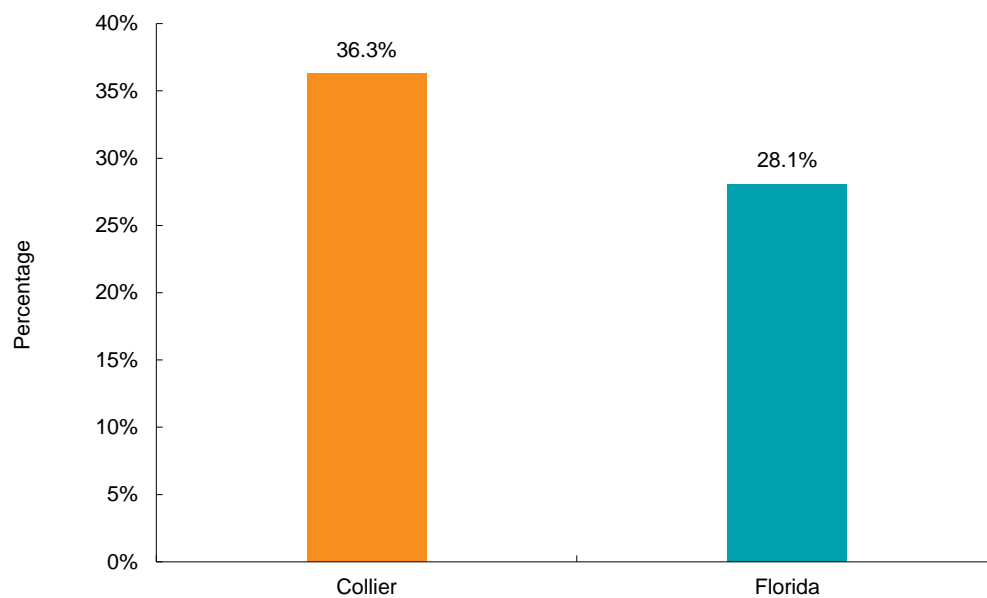
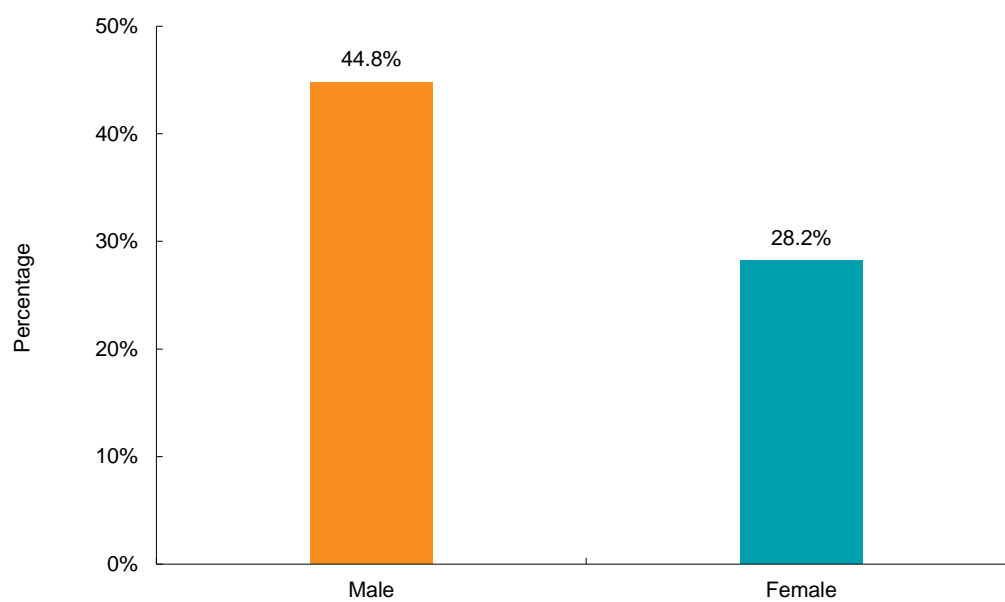
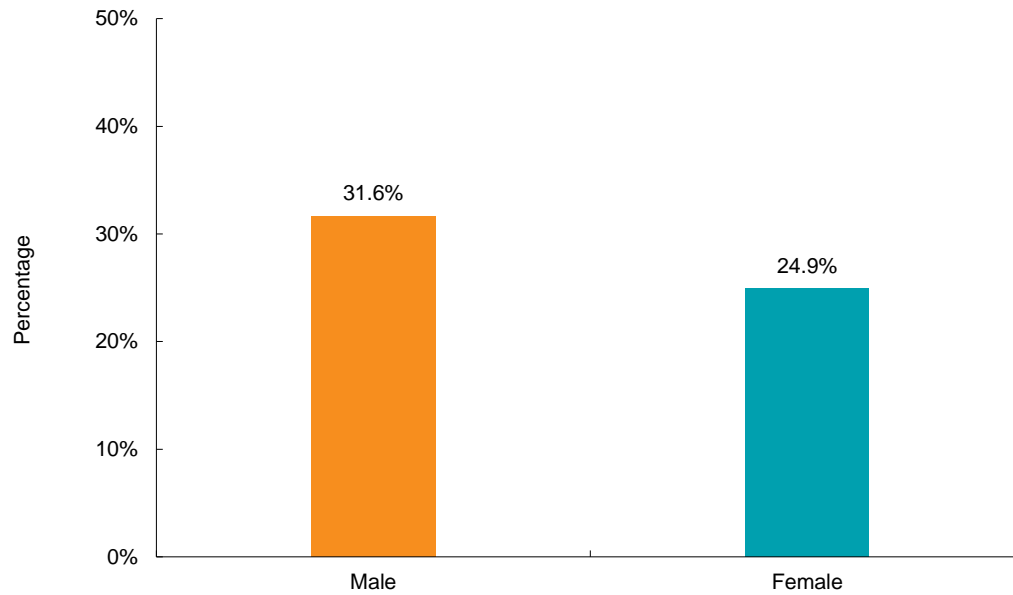


Figure 41. Percent of Adults Who are Former Smokers, by Sex, Collier County, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

Figure 42. Percent of Adults Who are Former Smokers, by Sex, Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

The percentage of former smokers in Collier County and in the United States is strongly correlated with income level and educational attainment, the greater the income and the higher the level of education, the more likely the individual is to become a former smoker (Figures 43, 44, 45 and 46). The only deviation from this association is seen in Florida in 2013 where there are a slightly larger proportion of former smokers (31.9 percent) earning \$25,000 to \$49,999 than those earning \$50,000 or more (30.0 percent).

Figure 43. Percent of Adults Who are Former Smokers, by Annual Income, Collier County, 2013

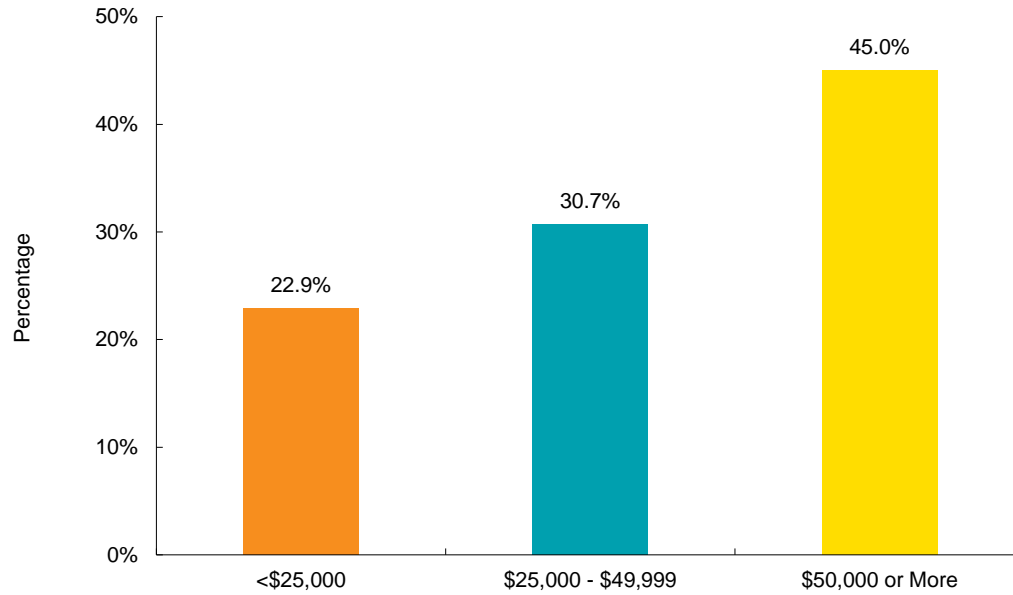
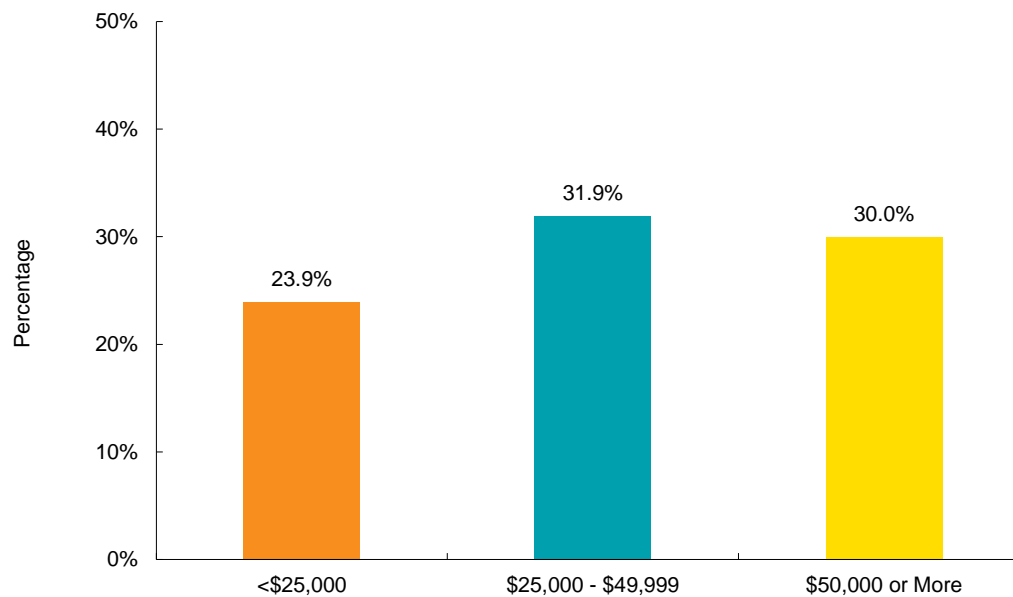


Figure 44. Percent of Adults Who are Former Smokers, by Annual Income, Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.



Figure 45. Percent of Adults Who are Former Smokers, by Educational Level, Collier County, 2013

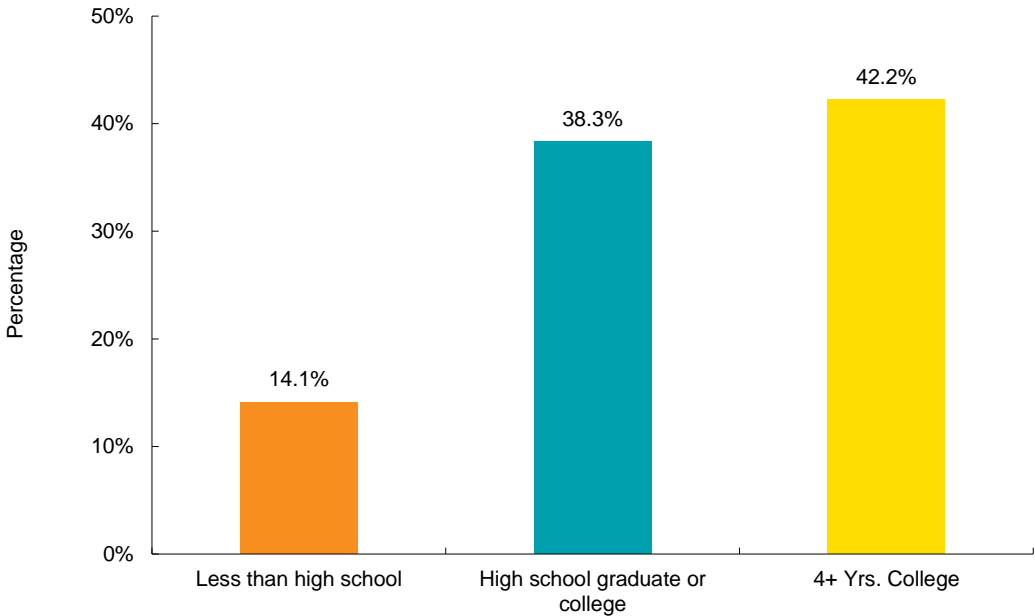
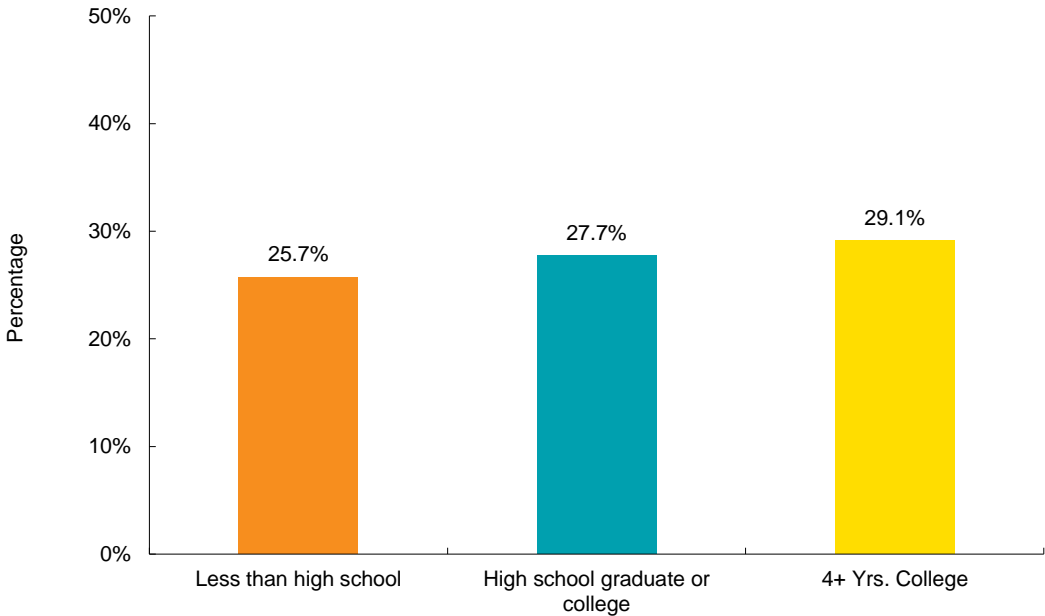


Figure 46. Percent of Adults Who are Former Smokers, by Educational Level, Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

Consistent with the data covering current smokers, married individuals in Collier County and in Florida are more likely to be former smokers. This difference in this health behavior gap between married and not married individuals is approximately twice that in Collier County than throughout the state (Figures 47 and 48).

Figure 47. Percent of Adults Who are Former Smokers, by Marital Status, Collier County, 2013

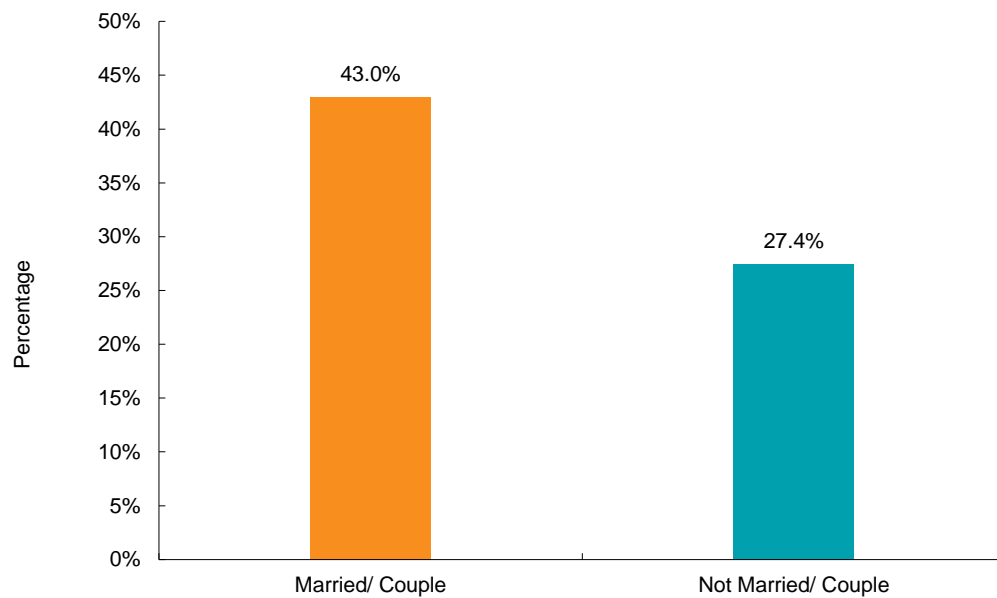
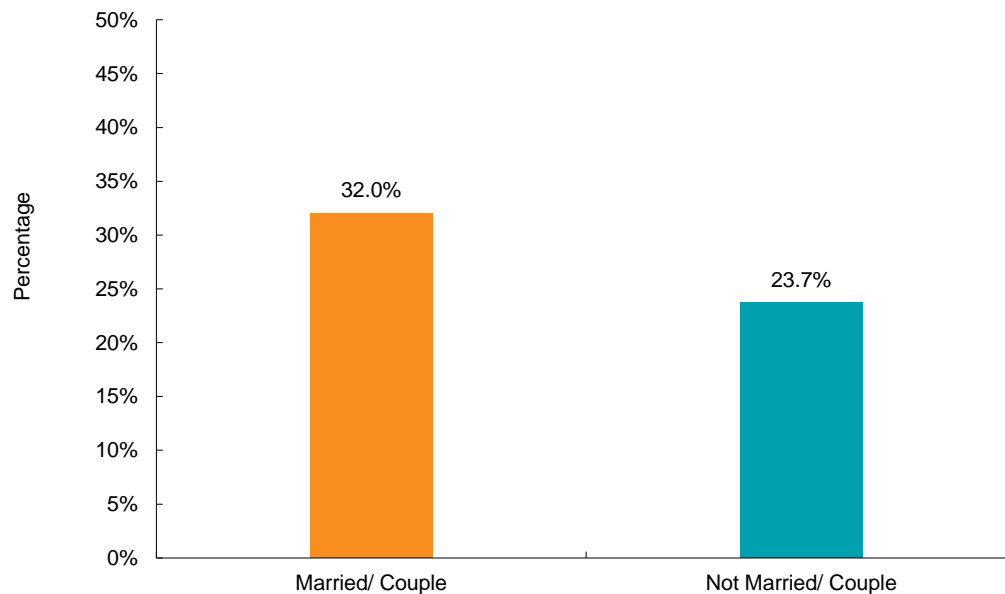


Figure 48. Percent of Adults Who are Former Smokers, by Marital Status, Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

In Collier County the percent of former smokers in all three age groups is substantially greater than that of the state of Florida. This is likely due to the greater level of affluence and education per capita within the community, which results in a higher awareness of the benefits of healthier lifestyles (Figures 49 and 50).

Figure 49. Percent of Adults Who are Former Smokers, by Age Group, Collier County, 2013

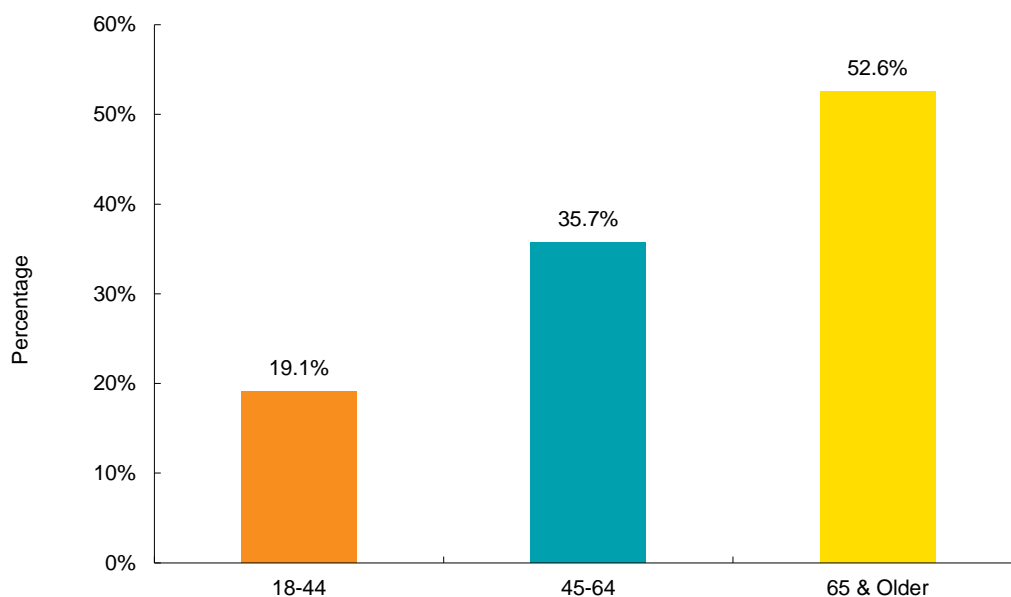
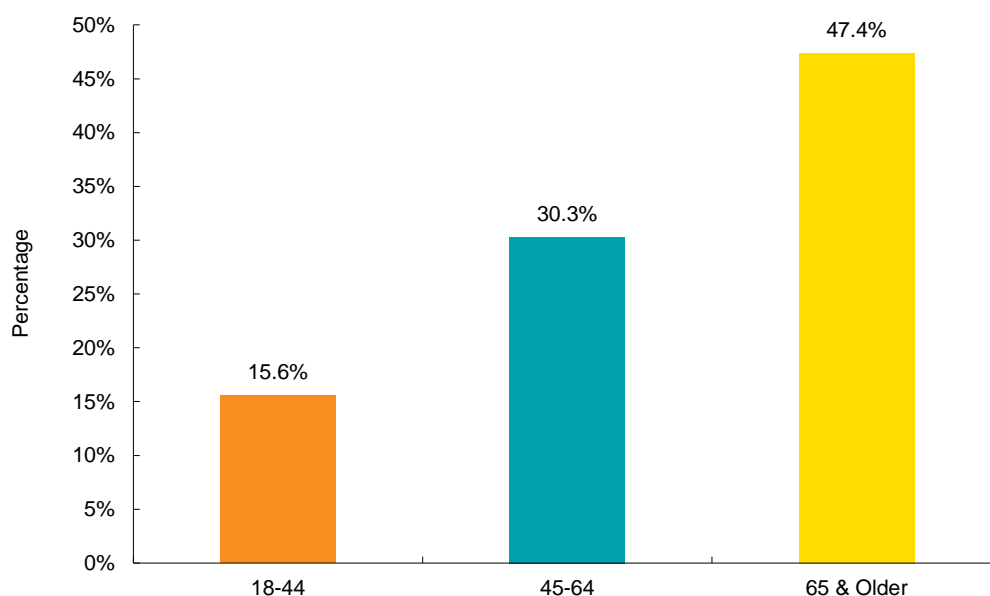


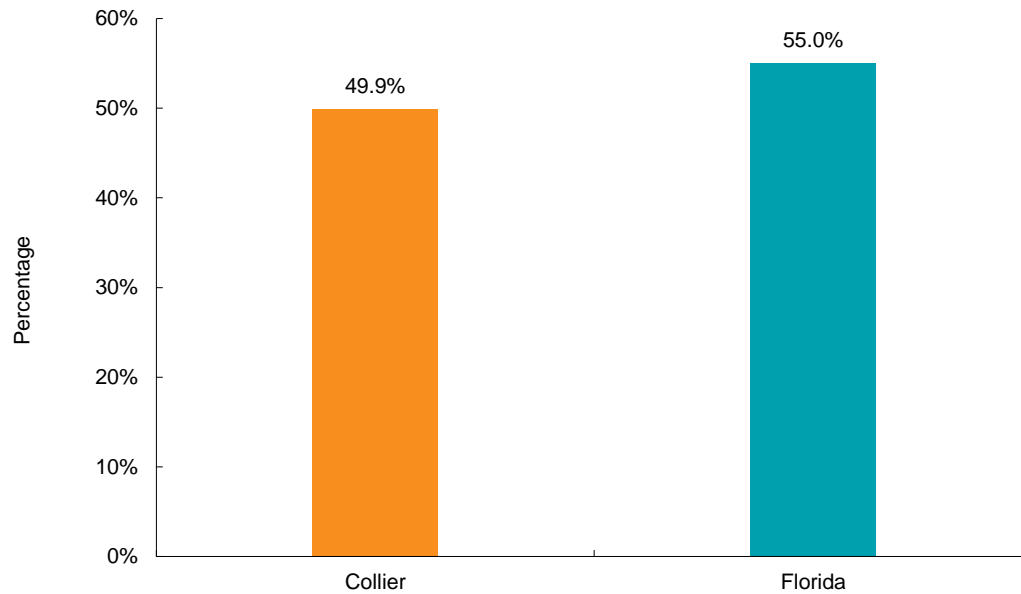
Figure 50. Percent of Adults Who are Former Smokers, by Age Group, Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

Figure 51 shows the percent of adults who have never smoked in Collier County and Florida. Collier County residents are less likely to have never smoked than the average Floridian.

Figure 51. Percent of Adults Who Have Never Smoked, Collier County and Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

Females in Collier County are much more likely to have never smoked (63.1 percent) than males (35.8) percent. This same pattern exists for the state of Florida although the variation is narrower between males (48.9 percent) and females (60.7 percent (Figures 52 and 53).

Figure 52. Percent of Adults Who Have Never Smoked, by Sex, Collier County, 2013

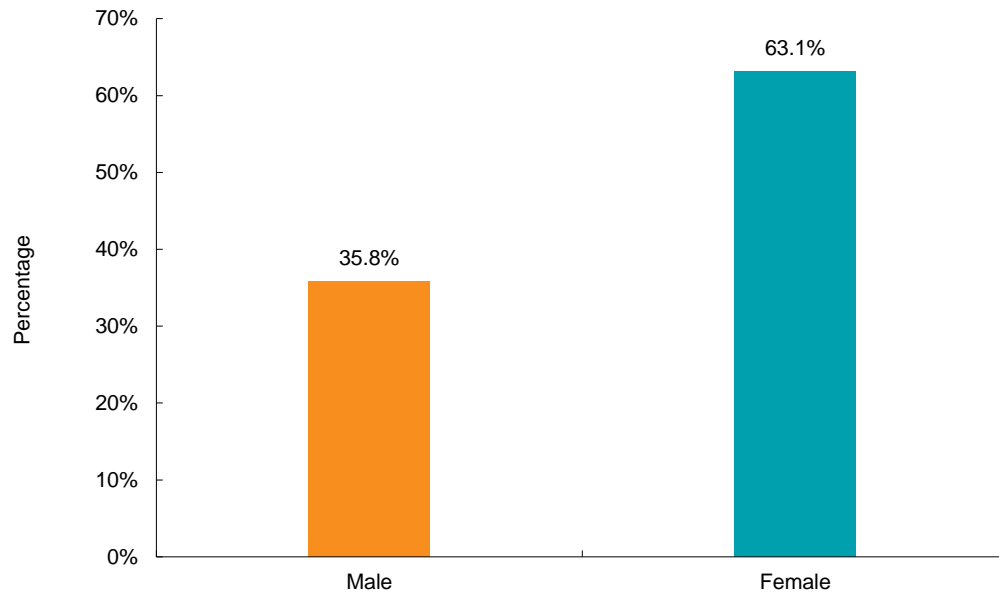
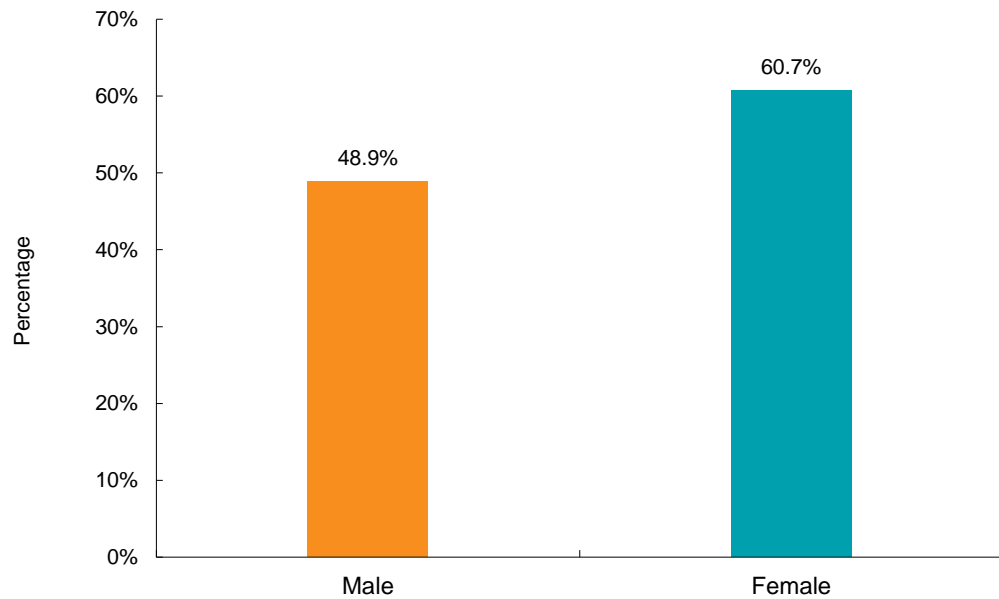


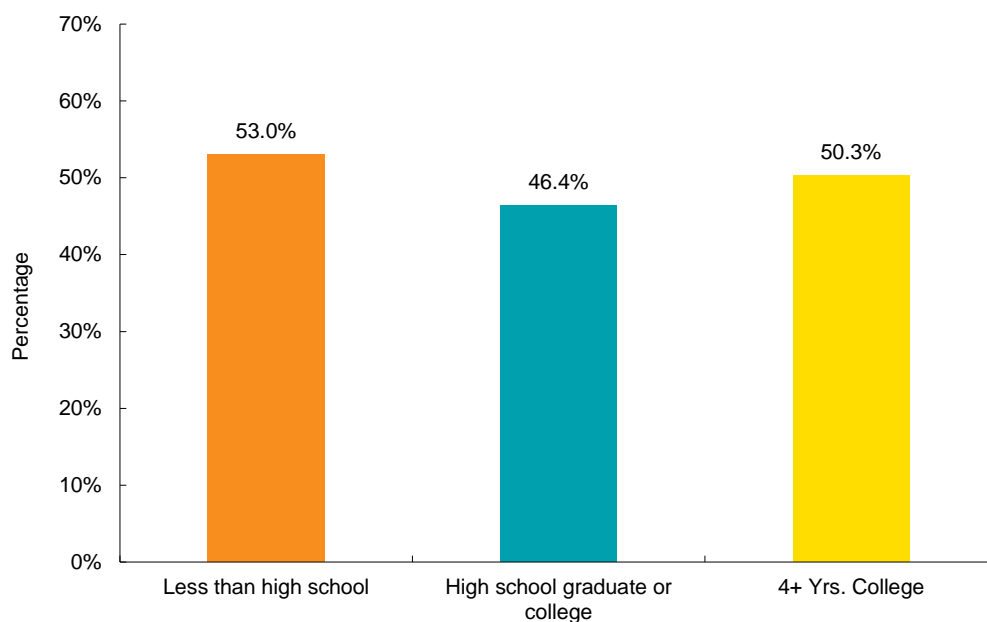
Figure 53. Percent of Adults Who Have Never Smoked, by Sex, Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

In Florida, the higher the educational attainment of an individual, the more likely they were to have never smoked tobacco, while in Collier County this relationship does not strictly hold (Figures 54 and 55). Also reversing the trend in Collier County, the lower the annual income the more likely an individual was to have never smoked, while in Florida those with an annual income of \$50,000 or more had the highest proportion of adults who have never smoked (Figures 56 and 57).

Figure 54. Percent of Adults Who Have Never Smoked, by Educational Level, Collier County, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

Figure 55. Percent of Adults Who Have Never Smoked, by Educational Level, Florida, 2013

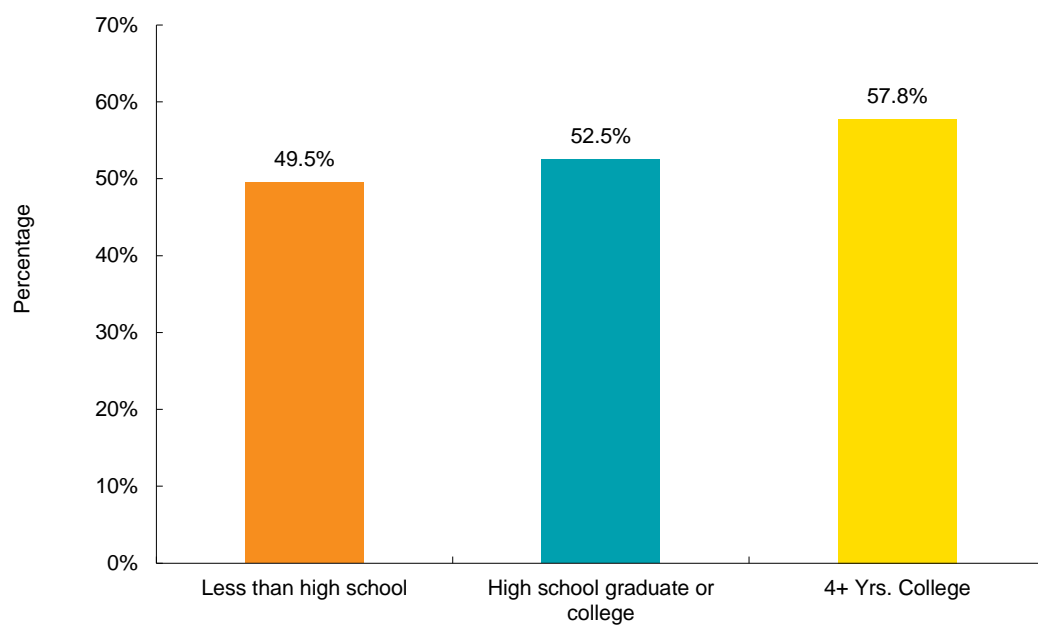
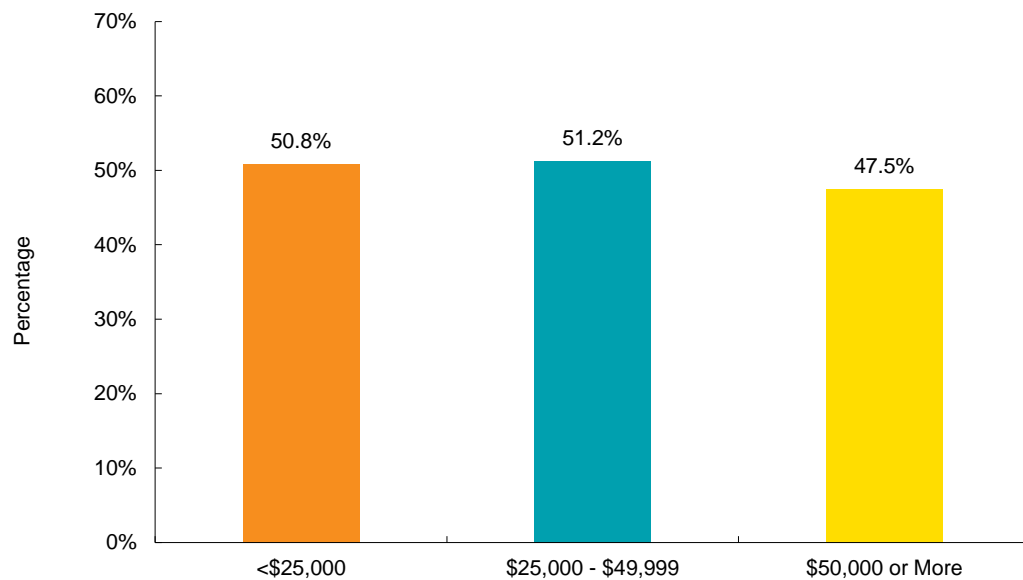
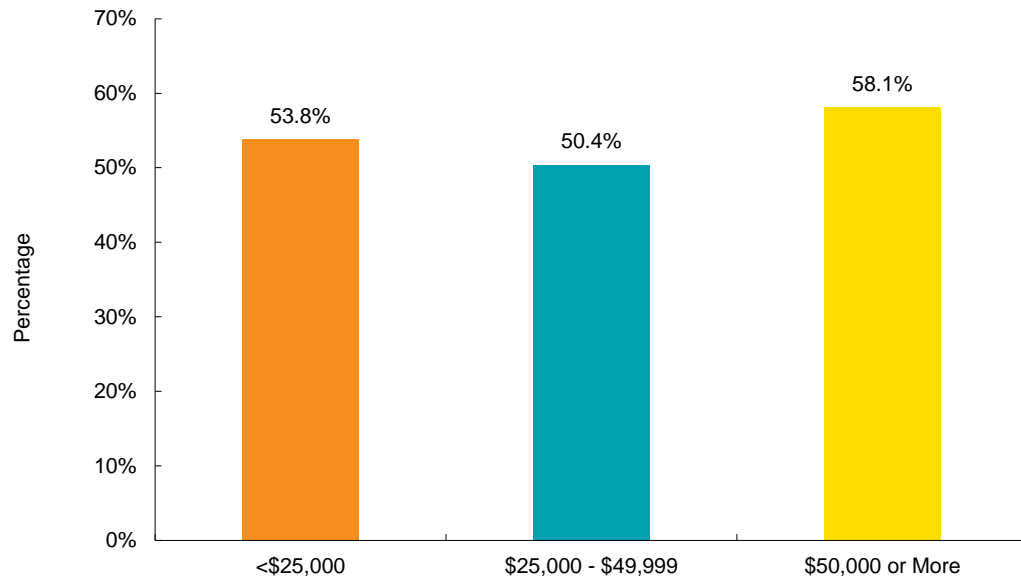


Figure 56. Percent of Adults Who Have Never Smoked, by Annual Income, Collier County, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

Figure 57. Percent of Adults Who Have Never Smoked, by Annual Income, Florida, 2013



In both Collier County and Florida more than 60 percent of those 18 to 44 years of age have never smoked. Based on historical trends these percentages are at all time high levels (Figures 58 and 59).

Figure 58. Percent of Adults Who Have Never Smoked, by Age Group, Collier County, 2013

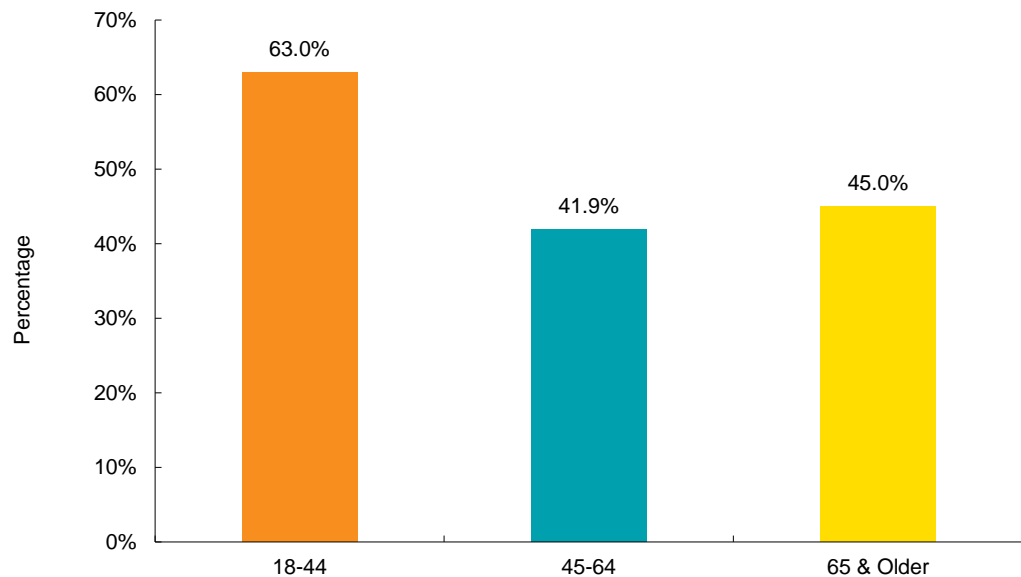
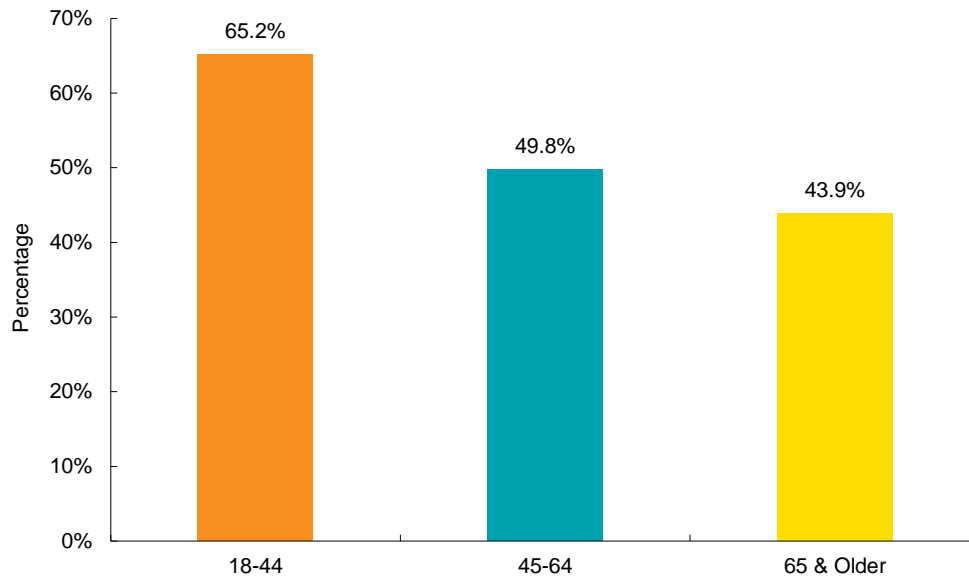




Figure 59. Percent of Adults Who Have Never Smoked, by Age Group, Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

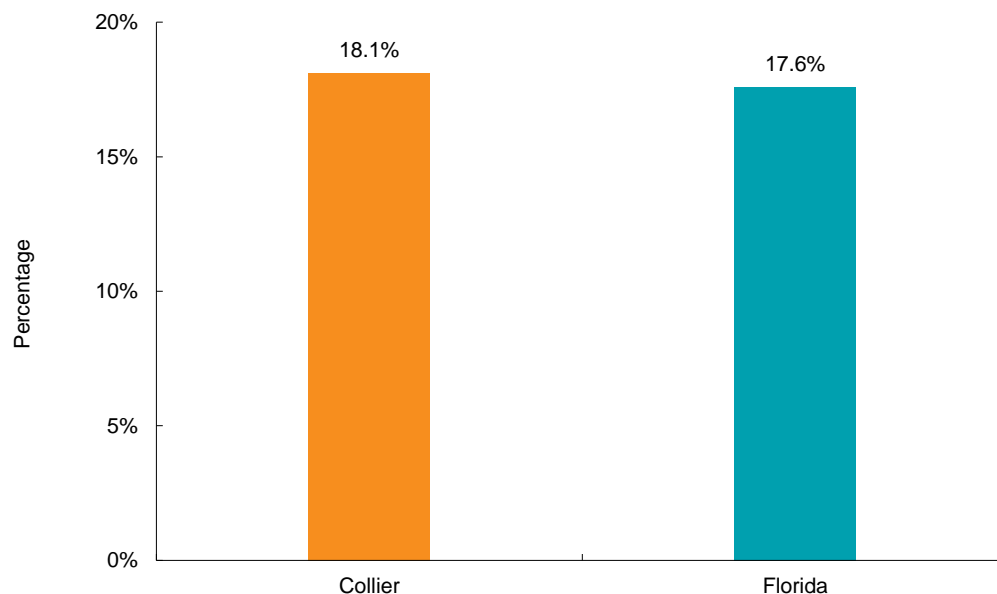
## Alcohol Use

Excessive alcohol consumption is a risk factor for numerous adverse health conditions and outcomes. Consumption of alcohol in excessive quantities can lead to alcohol poisoning, hypertension, heart disease, fetal alcohol syndrome, violence and its associated sequelae and sexually transmitted diseases.

A strong association exists between alcohol consumption and alcohol impaired driving. Data indicate that binge and heavy drinkers consistently account for most instances of alcohol - impaired driving. Alcohol related motor vehicle collisions constitute a significant, if not a majority of alcohol related deaths, depending upon the age-group. In Collier County, on average, approximately 54 residents are killed annually in motor vehicle crashes (about 1 every week) with an average of about 25 percent attributed to alcohol use.

Figure 60 shows the percent of adults who engaged in heavy or binge drinking in Collier County and Florida in 2013. The data indicate no significant differences with Collier County at 18.1 percent and the state of Florida at 17.6 percent.

Figure 60. Percent of Adults Who Engage in Heavy or Binge Drinking, Collier County and Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

By sex, males engaged in heavy or binge drinking at a significantly higher rate than females in both Collier County and Florida (Figures 61 and 62). In fact, in Florida in 2013, the ratio of the proportion of males to females engaging in this behavior was 92 percent higher, while for Collier County it was 52 percent greater.

Figure 61. Percent of Adults Who Engage in Heavy or Binge Drinking, by Sex, Collier County, 2013

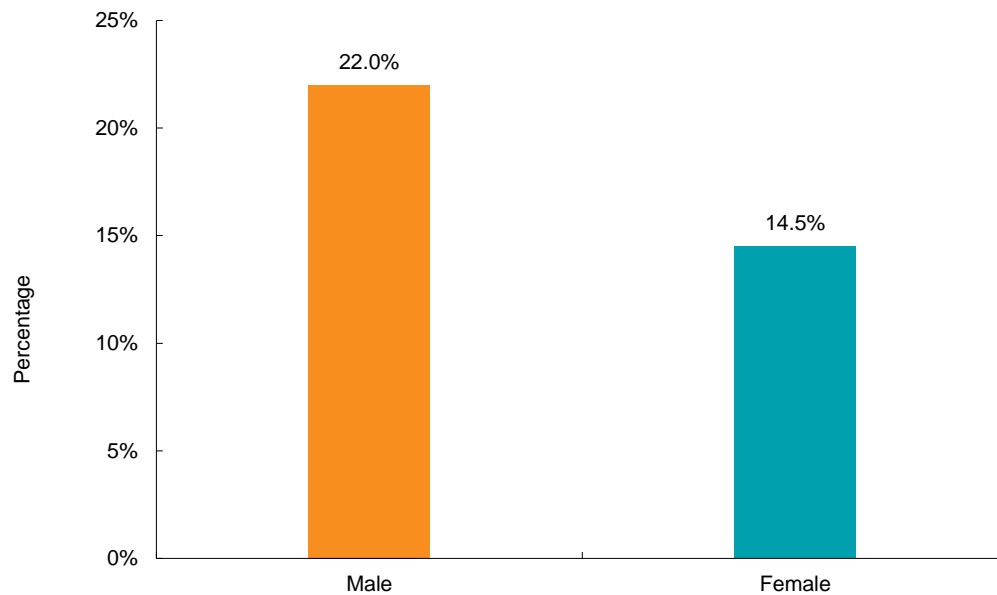
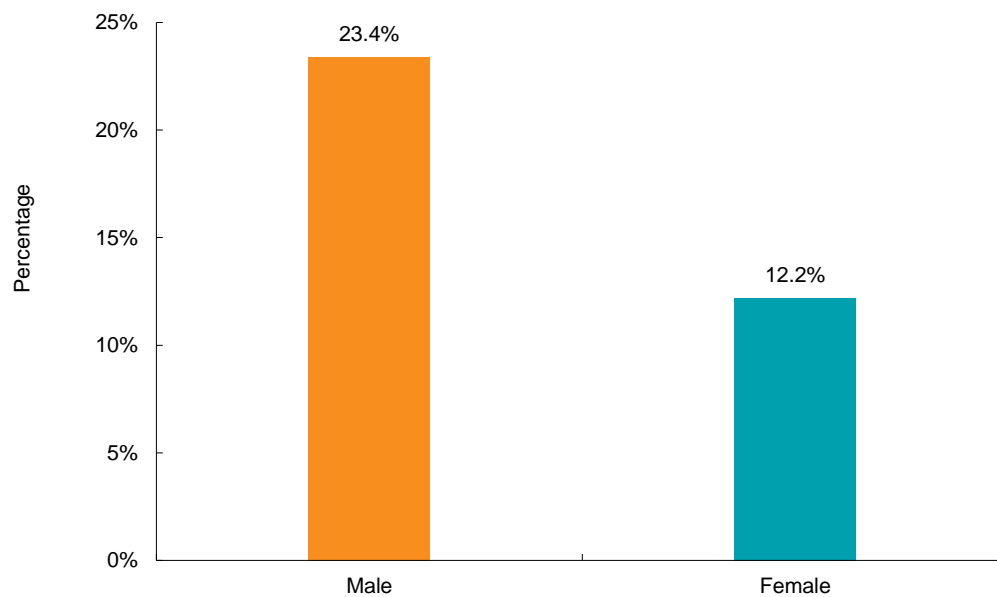


Figure 62. Percent of Adults Who Engage in Heavy or Binge Drinking, by Sex, Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

By ethnicity, Hispanics were 1.8 times more likely to engage in heavy or binge drinking in Collier County than Non-Hispanics. This ratio was lower for the state of Florida at 1.2 (Figures 63 and 64).

Figure 63. Percent of Adults Who Engage in Heavy or Binge Drinking, by Ethnicity, Collier County, 2013

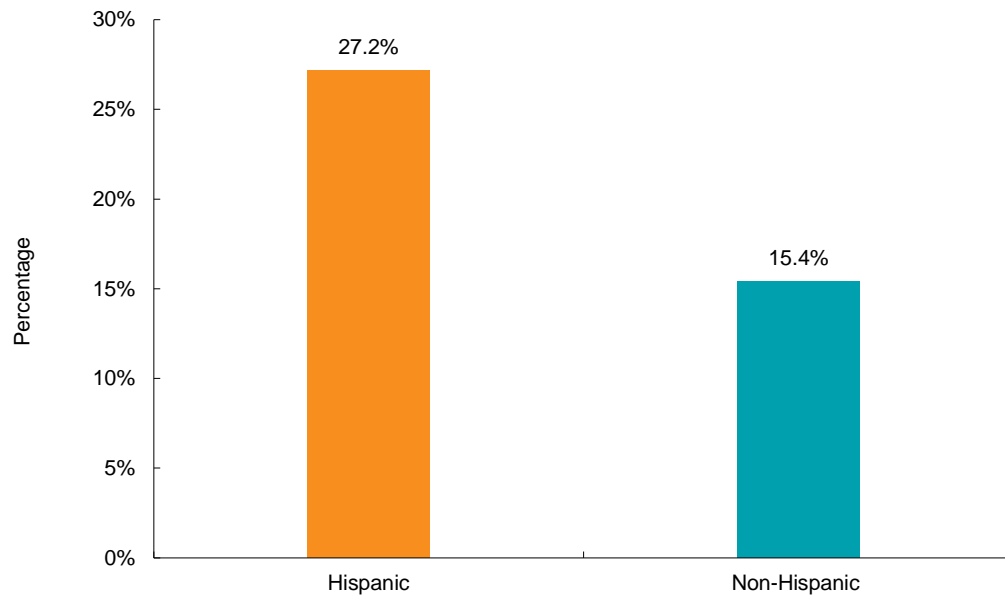
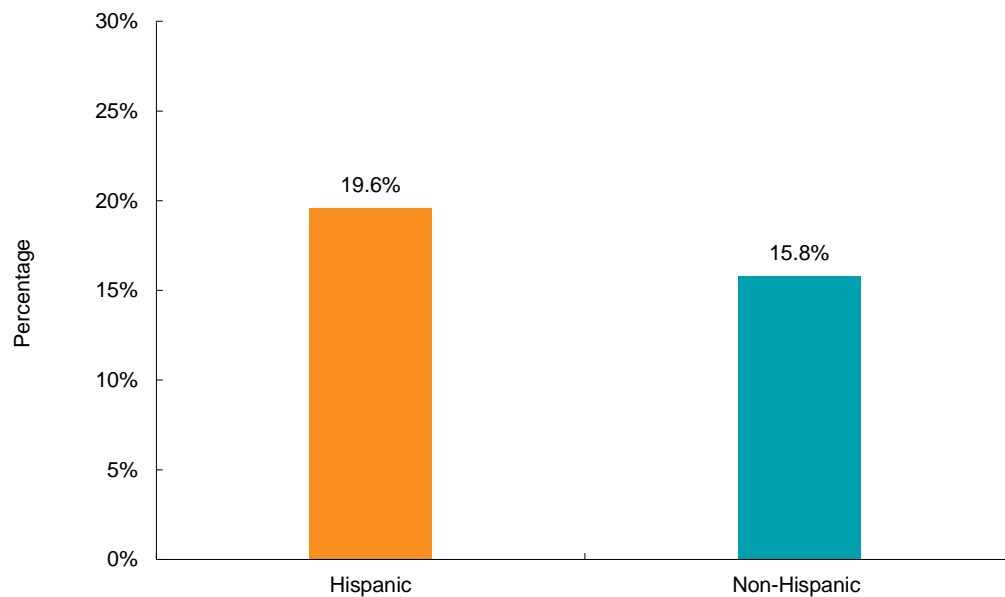
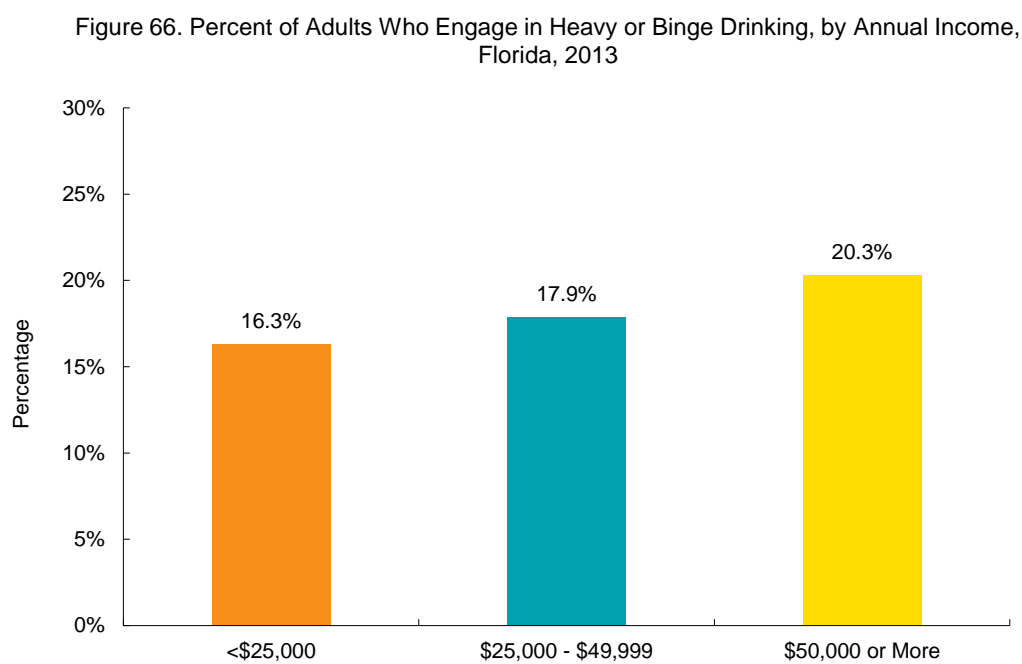
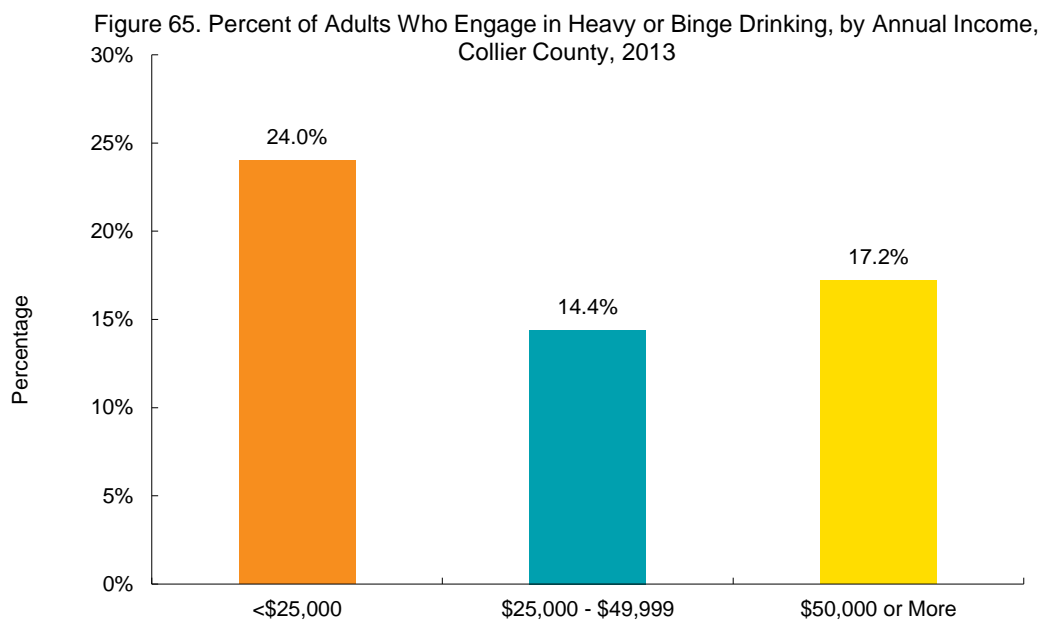


Figure 64. Percent of Adults Who Engage in Heavy or Binge Drinking, by Ethnicity, Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

In the state of Florida, a consistent correlation exists between income levels and the percentage of the population engaged in heavy or binge drinking. The greater the income category, the more likely a person over-consumes alcohol. In Collier County the highest prevalence of heavy alcohol use is seen in the population earning less than \$25,000 per year, while in Florida the highest rate is found among those earning \$50,000 or more (Figures 65 and 66).



Data Source: Behavioral Risk Factor Surveillance System, 2013.

By age groups, for both Collier County and Florida, the younger the age (18 to 44 years of age) the higher the prevalence of heavy or binge drinking. During 2013, Collier County had a higher proportion of the older population (65 years of age and older) than Florida engaging in heavy or binge drinking. This may be possibly related to the relative affluence found in the county (Figures 67 and 68).

Figure 67. Percent of Adults Who Engage in Heavy or Binge Drinking, by Age Group, Collier County, 2013

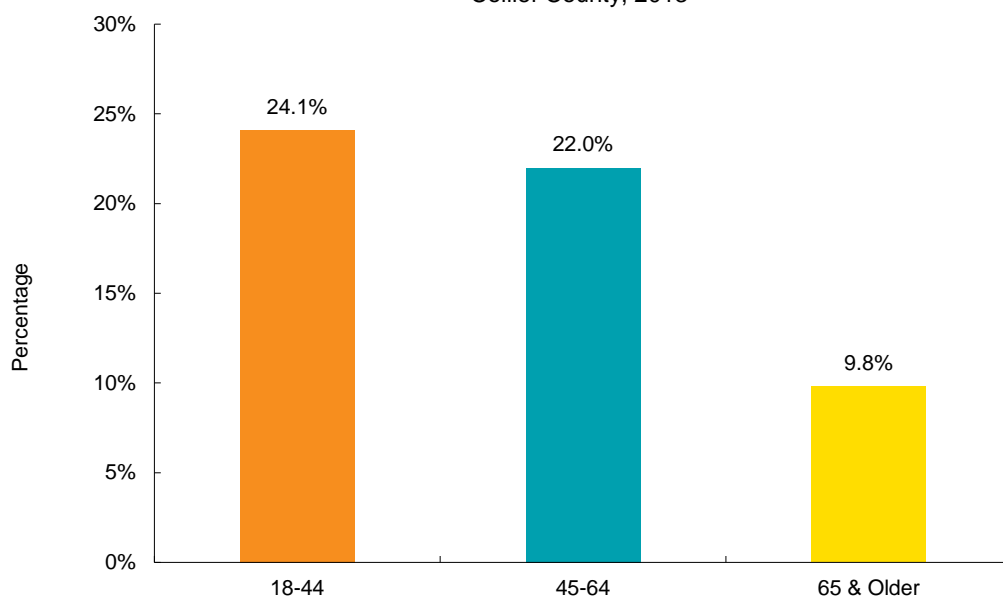
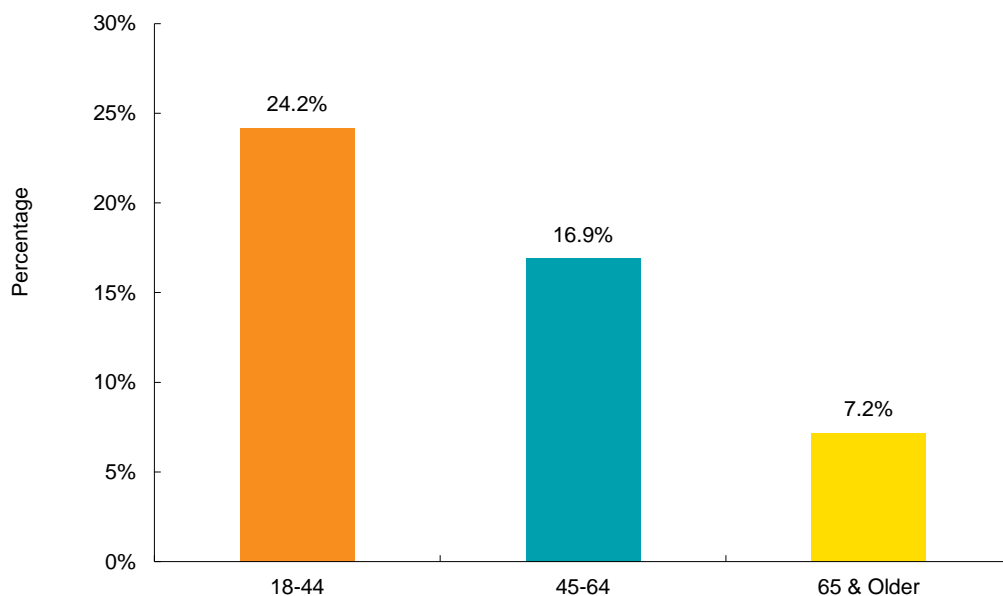
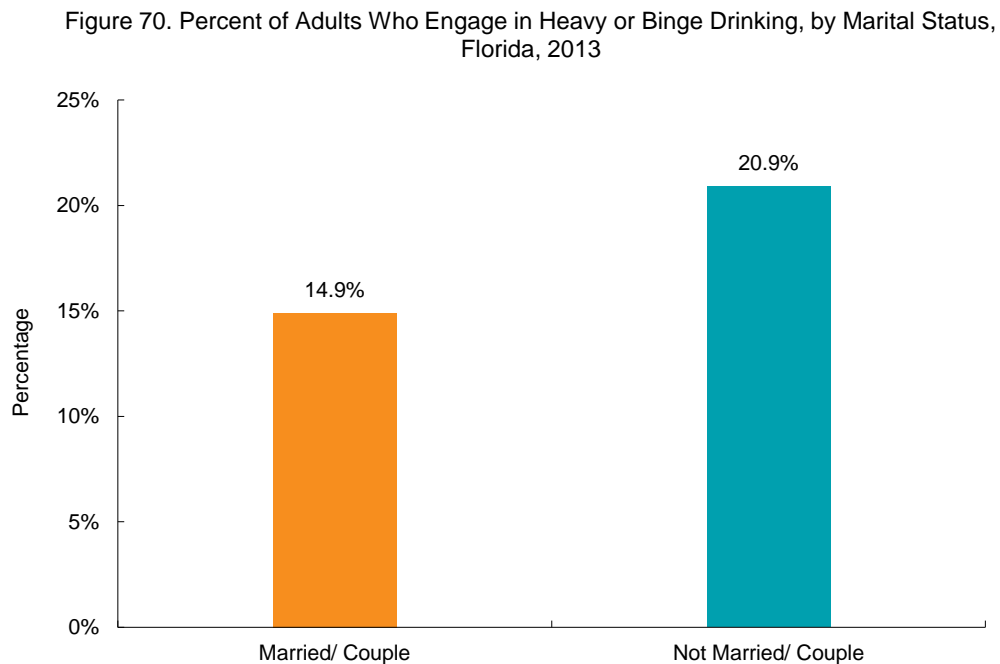
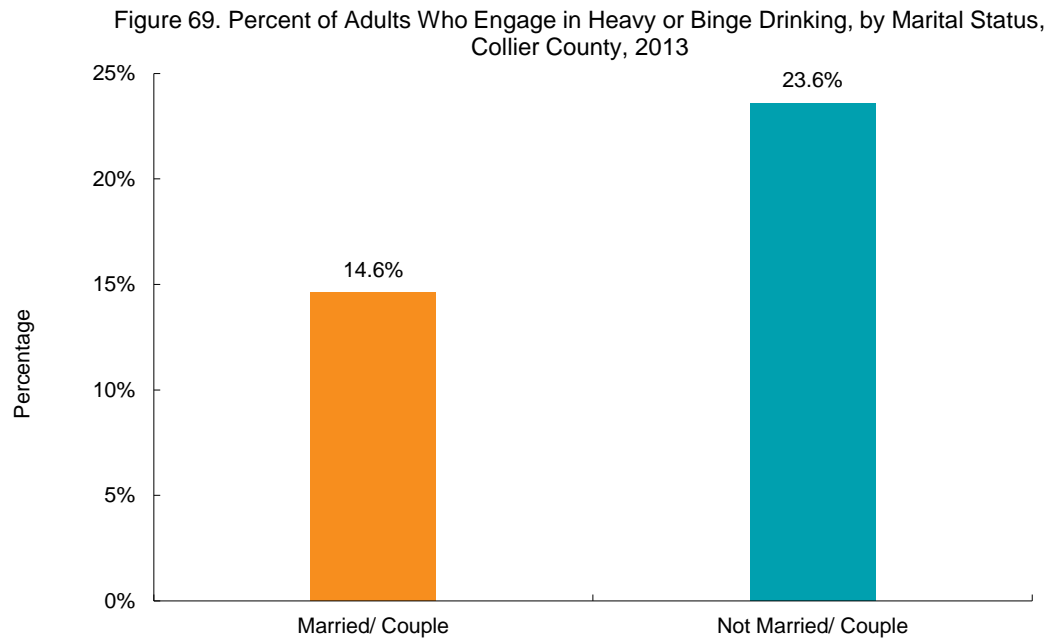


Figure 68. Percent of Adults Who Engage in Heavy or Binge Drinking, by Age Group, Florida, 2013



Data Source: Behavioral Risk Factor Surveillance System, 2013.

By marital status, in Florida and Collier County, married couples had a significant lower prevalence of heavy or binge drinking than non-married couples. This is a similar protective factor that is seen among married couples when analyzing other select health related lifestyle behaviors in the community health assessment (Figures 69 and 70).



Data Source: Behavioral Risk Factor Surveillance System, 2013.

## Adolescent Substance Abuse

The age of adolescence is a critical period of social, physical and mental growth. Attitudes and behaviors are in the process of development which will have an impact on their immediate and long term social and interpersonal relationships within the adult environment and society.

The use and abuse of substances at these crucial ages often results in important and vital adverse health outcomes. Alcohol and other illicit substance abuse and use impedes the adolescent's progress towards a successful and productive future by limiting a strong sense of school belonging and a positive adult lifestyle and family environment.

The following analyses uses the results from the 2014 Florida Youth Substance Abuse Survey for Collier County, the most recent data available as of June 2016.

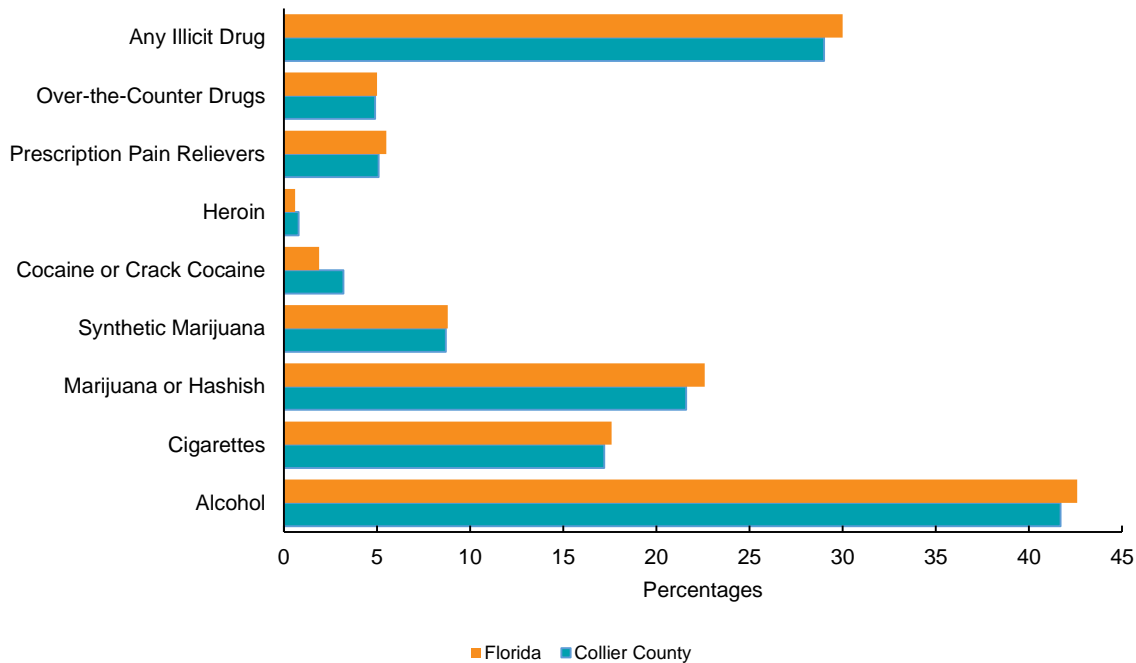
Table 1 and Figure 71 shows the percentages of adolescents 10 to 17 years of age that report having used various drugs during their lifetime in Collier County and Florida for 2014.

Table 1. Percentage of Adolescents 10–17 years of age who Reported Having Used Various Drugs in their Lifetime, Collier County and Florida, 2014

	Collier County	Florida
Alcohol	41.7	42.6
Cigarettes	17.2	17.6
Marijuana or Hashish	21.6	22.6
Synthetic Marijuana	8.7	8.8
Cocaine or Crack Cocaine	3.2	1.9
Heroin	0.8	0.6
Prescription Pain Relievers	5.1	5.5
Over-the-Counter Drugs	4.9	5
Any Illicit Drug	29	30



Figure 71. Percentage of Adolescents 10–17 years of age who Reported Having Used Various Drugs in their Lifetime, Collier County and Florida, 2014



The state of Florida has a higher rate of substance use than Collier County for seven out of the nine types of drugs. While the use of the various types of substances in Collier County was lower for these drugs than for Florida, the largest variance was only about one percent less in difference.

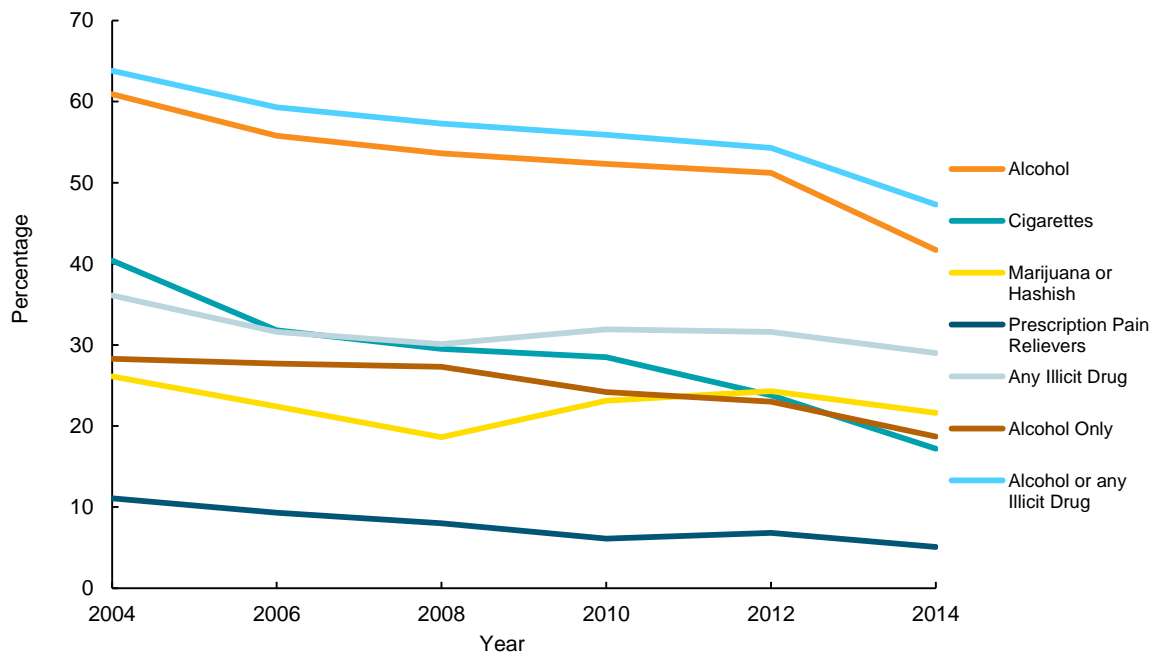
In Collier County, 3.2 percent of adolescents reported having used cocaine or crack cocaine compared with 1.9 percent for the state of Florida, while 0.8 percent admitted to having used heroin in Collier County compared with 0.6 percent in the state of Florida. This deviation in the trend for Collier County compared with the lower use of the other seven types of drugs may be attributed to the higher level of economic affluence within the community.

The trends in alcohol, tobacco and other drug use over the period of 2004 to 2014 can be seen in Table 2 and Figure 72. Substance use for all seven categories declined in Collier County among adolescents during the ten year period. The most significant decrease was with tobacco –57 percent, followed by prescription pain relievers –54 percent, and alcohol only –34 percent. In Figure 2, the sharp sloping decline is quite visible for cigarettes, alcohol and alcohol or any illicit drug.

Table 2. Percentage of Adolescents 10–17 years of age who reported Alcohol, Tobacco and other Drug Use, Collier County, 2004–2014

	2004	2006	2008	2010	2012	2014	Percentage change 2004–2014
Alcohol	60.9	55.8	53.6	52.3	51.2	41.7	-32
Cigarettes	40.4	31.8	29.5	28.5	23.8	17.2	-57
Marijuana or Hashish	26.1	22.4	18.6	23.1	24.3	21.6	-17
Prescription Pain Relievers	11.1	9.3	8	6.1	6.8	5.1	-54
Any Illicit Drug	36.1	31.6	30.1	31.9	31.6	29	-20
Alcohol Only	28.3	27.7	27.3	24.2	23	18.7	-34
Alcohol or any Illicit Drug	63.8	59.3	57.3	55.9	54.3	47.3	-26

Figure 72. Percentage of Adolescents 10–17 years of age who reported Alcohol, Tobacco and other Drug Use, Collier County, 2004–2014



The percentages of adolescents 10 to 17 years of age who reported having used various drugs in their lifetime by gender is presented in Table 3 and Figure 73. An interesting trend is visible for both Collier County and the state of Florida in that females are more likely than males to have used alcohol, prescription pain relievers and over-the-counter drugs in both geographical domains. In fact in Collier County, 43.9 percent of adolescent females have used alcohol compared with 39.6 percent of males (a difference of +4.3 percent). Also in Collier County 6.7 percent of females reported having used prescription pain relievers compared with 3.9 percent among males (a difference of +3.1 percent). 22.9 percent of males in Collier County reported having used marijuana or hashish; for females the percentage was 20.5 (a difference of –2.4 percent). In Collier County and in Florida, males were twice as likely to have used heroin than females although the actual percentages were very low.

Table 3. Percentage of Adolescents 10–17 years of age who reported Having Used Various Drugs in their Lifetime, by Gender, Collier County and Florida, 2014

	Collier		Florida	
	Female	Male	Female	Male
Alcohol	43.9	39.6	44.3	40.9
Cigarettes	17.1	17.6	17.2	18
Marijuana or Hashish	20.5	22.9	22.1	23
Synthetic Marijuana	7.7	10.1	7.7	10
Cocaine or Crack Cocaine	3	3.5	1.6	2.1
Heroin	0.6	1.2	0.4	0.8
Prescription Pain Relievers	6.7	3.6	5.9	5.1
Over-the-Counter Drugs	6	3.9	5.1	4.8
Any Illicit Drug	28.9	29.2	30.7	29.4

Figure 73. Percentage of Adolescents 10–17 years of age who reported Having Used Various Drugs in their Lifetime, by Gender, Collier County and Florida, 2014

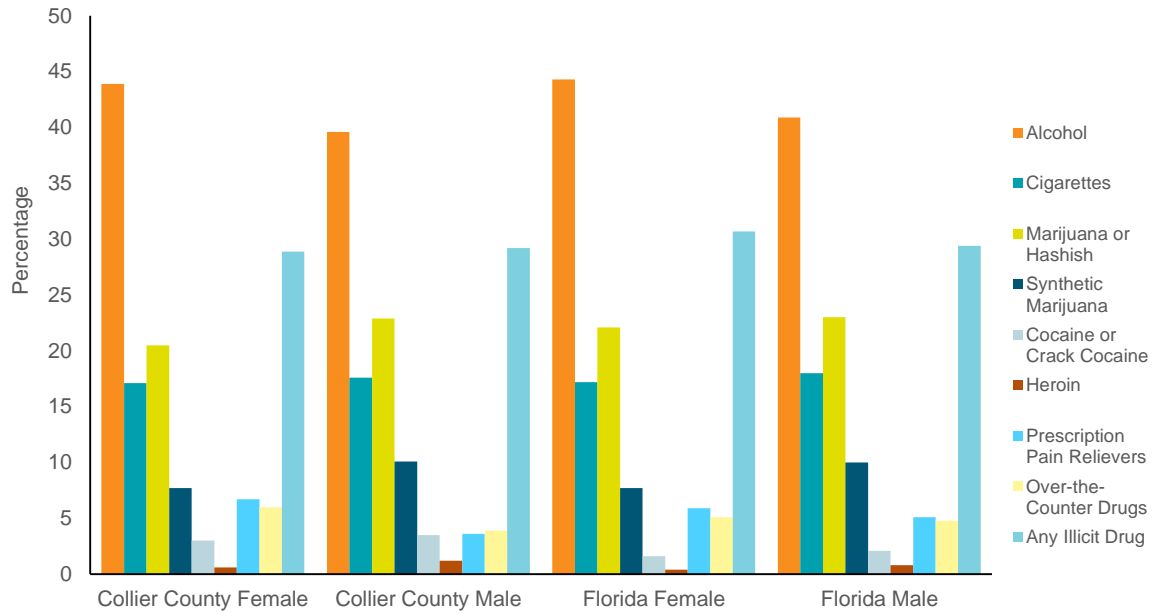


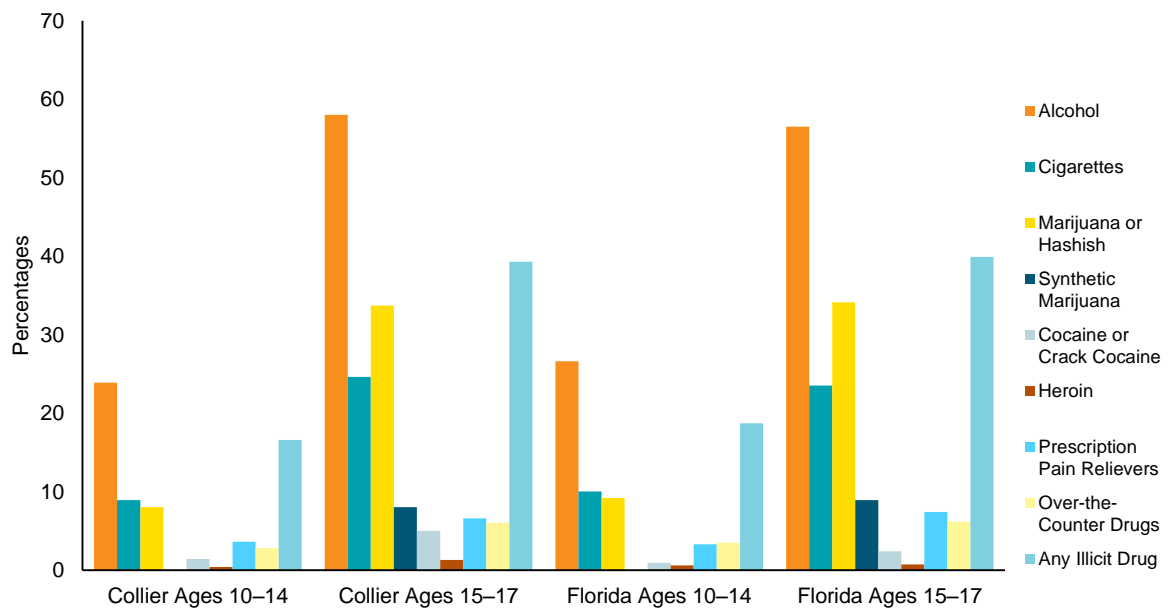
Table 4 and Figure 74 shows the percentages of adolescents by age reporting having used various drugs in their lifetime. As would be expected, those ages 15 to 17 years had higher percentages of specific drug use history for all categories in both Collier County and Florida.

Table 4. Percentage of Adolescents 10–17 years of age who reported Having Used Various Drugs in their Lifetime, by Ages, Collier County and Florida, 2014

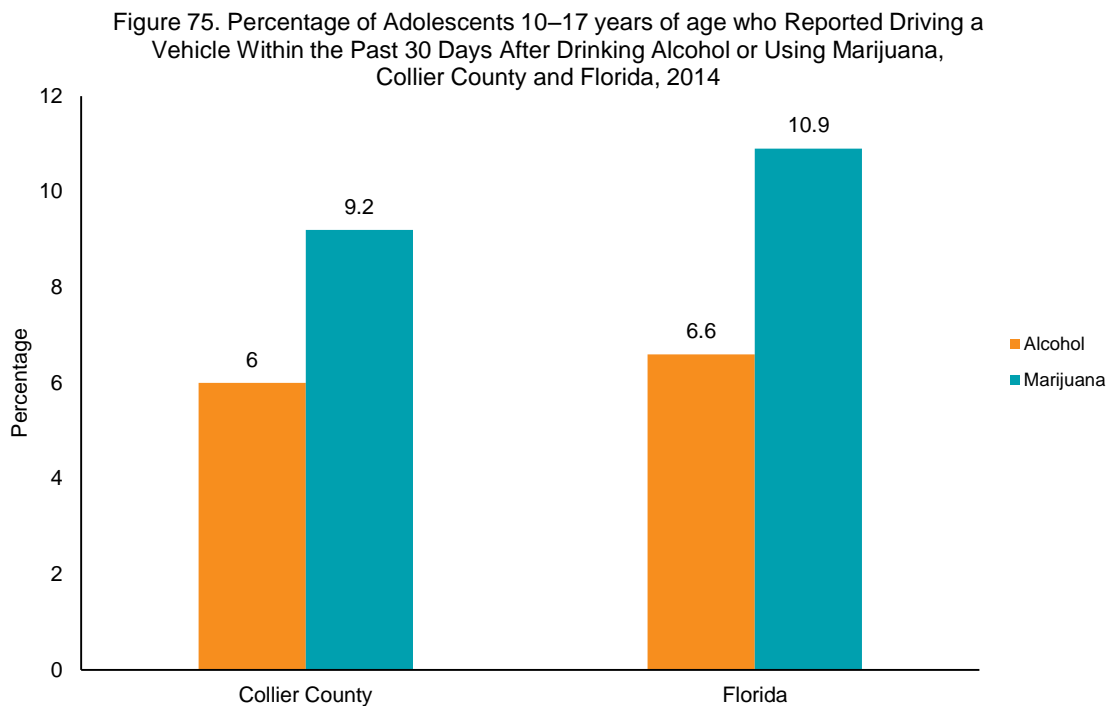
	Collier		Florida	
	Ages 10–14	Ages 15–17	Ages 10–14	Ages 15–17
Alcohol	23.9	58	26.6	56.5
Cigarettes	8.9	24.6	10	23.5
Marijuana or Hashish	8	33.7	9.2	34.1
Synthetic Marijuana	...	8	...	8.9
Cocaine or Crack Cocaine	1.4	5	0.9	2.4
Heroin	0.4	1.3	0.6	0.7
Prescription Pain Relievers	3.6	6.6	3.3	7.4
Over-the-Counter Drugs	2.8	6	3.5	6.2
Any Illicit Drug	16.6	39.3	18.7	39.9

... Data not available

Figure 74. Percentage of Adolescents 10–17 years of age who reported Having Used Various Drugs in their Lifetime, by Ages, Collier County and Florida, 2014

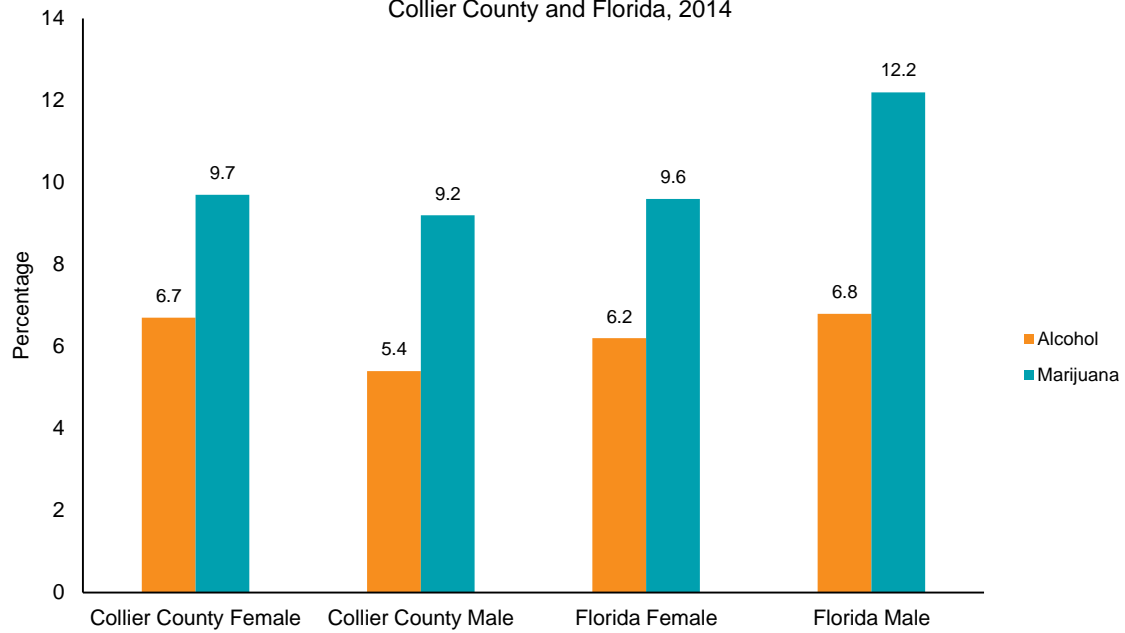


The correlation between alcohol or other substance use and the risk of a detrimental outcome when driving a vehicle is universally accepted. Figure 75 compares the percentages of adolescents in Collier County and Florida who reported driving a vehicle in the past 30 days after drinking alcohol or using marijuana. In both the county and the state adolescents drivers were more likely to have used marijuana than alcohol.



In Figure 76, these percentages are also calculated by gender. In Collier County, a larger proportion of female adolescents were more likely to have driven a vehicle after using alcohol or marijuana than males. The reverse is the case for Florida, where males were much more likely to drive after having used marijuana than females, and a tad more likely to have driven after drinking alcohol.

Figure 76. Percentage of Adolescents 10–17 years of age who Reported Driving a Vehicle Within the Past 30 Days After Drinking Alcohol or Using Marijuana, by Gender, Collier County and Florida, 2014



## Mental Health

Mental illnesses are defined as those health conditions that change a person's behavior, feelings or thinking and cause the person distress and difficulty in performing daily life functions. Mental health is important at every stage of life and includes social, emotional and psychological well-being. Like other diseases, mental illness can range from mild to severe. People with mild mental illness may not display any visible signs. Despite effective treatments, there can be long delays between the first onset of symptoms and when the person seeks treatment.

In the United States, approximately 20 percent of the people over the age of 18 suffer from a diagnosable mental illness in a given year. Approximately 4 percent of adults have a serious mental illness (SMI) which seriously impact their ability to function properly in society. Mental illnesses are also not uncommon among young adults under the age of 18. Approximately half of all children and adolescents with mental health problems do not receive proper care.

Collier County residents are surveyed about their mental health status in the Behavioral Risk Factor Surveillance System (BRFSS) Survey. As stated in the technical note in the Health Behaviors and Health Status chapter, the comparison of the latest 2013 county-level survey data to any of the previous county-level BRFSS surveys (2002–2010) is not recommended. For this reason this chapter on mental health will only use 2013 BRFSS data.

In 2013, 92.7 percent of Collier County residents reported having good mental health, about 5 percentage points higher than the proportion in Florida (Figure 1). About 7.3 percent of Collier County residents reported having poor mental health on 14 or more of the past 30 days. For Florida the percentage is 12.7 (Figure 2).



Figure 1. Adults with Good Mental Health,  
Collier County, 2013

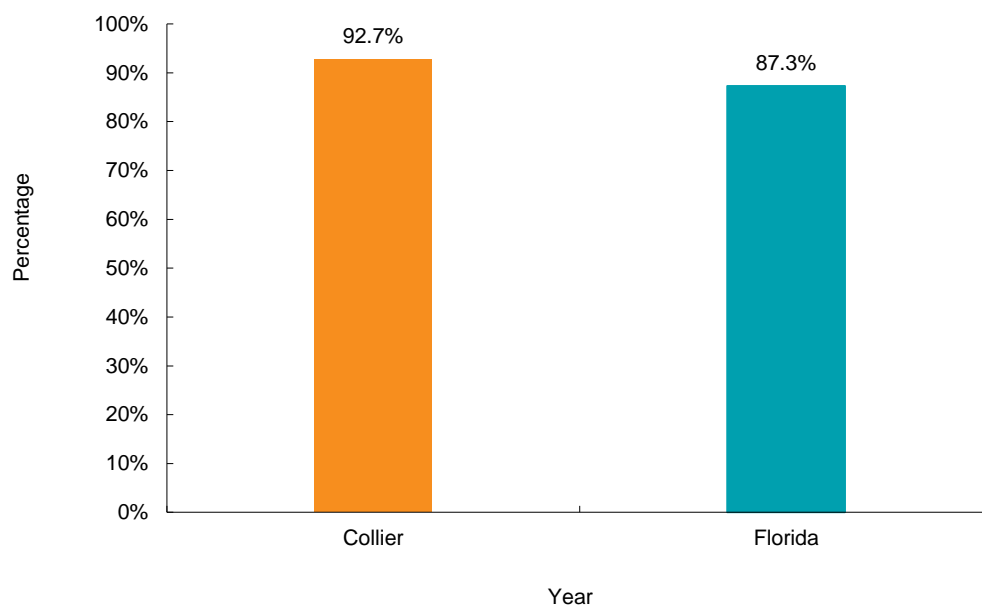
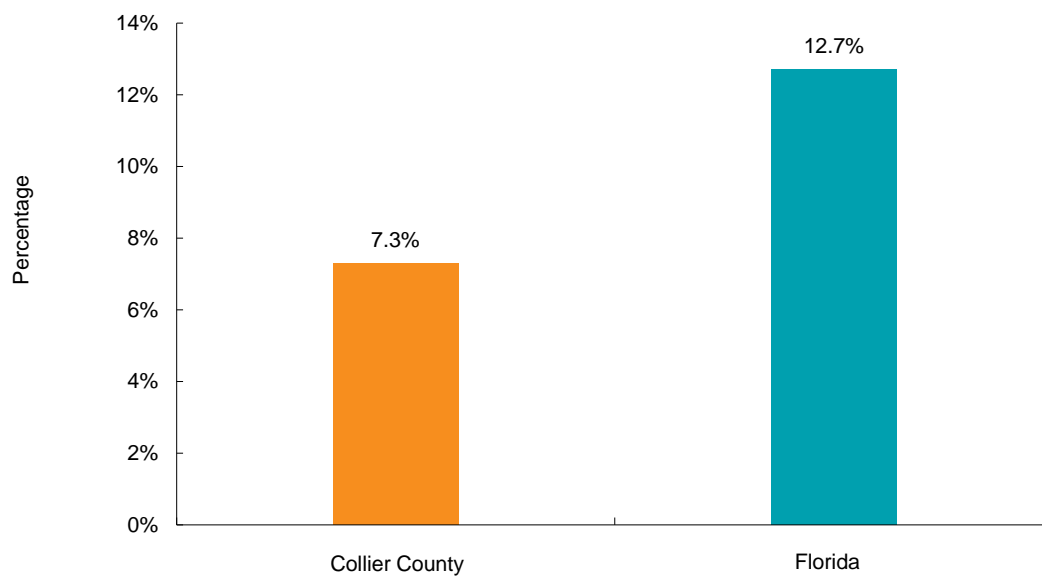


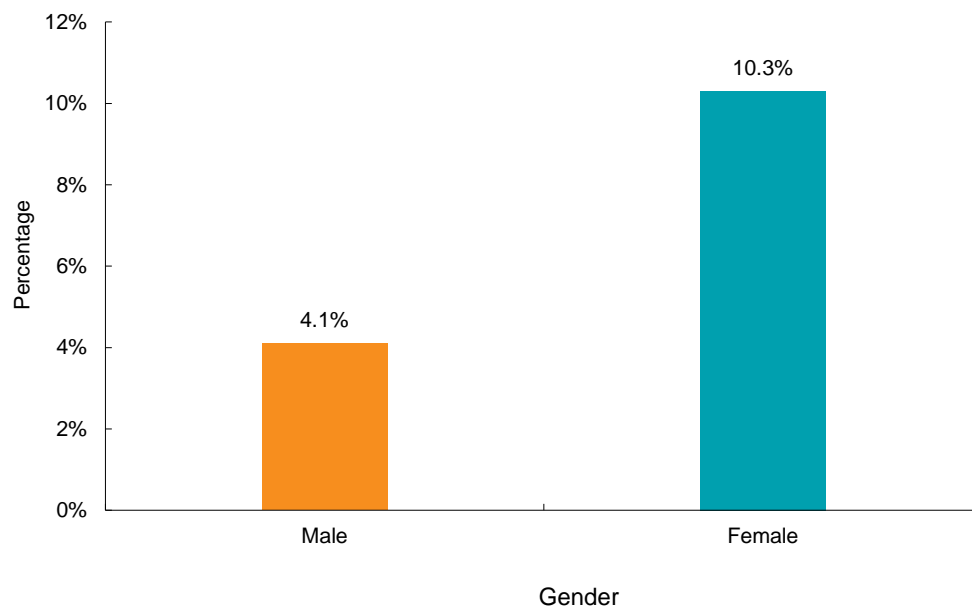
Figure 2. Adults who Had Poor Mental Health on 14 or More of the Past 30 Days,  
Collier County and Florida, 2013



Data Source: Florida Behavioral Risk Factor Surveillance System

When analyzing the data by gender, the percentage of males reporting poor mental health days was 4.1 in 2013, whereas 10.3 percent of females reported poor mental health days (Figure 2). In Florida, 10.9 percent of males and 14.4 percent of females reported having had poor mental health days.

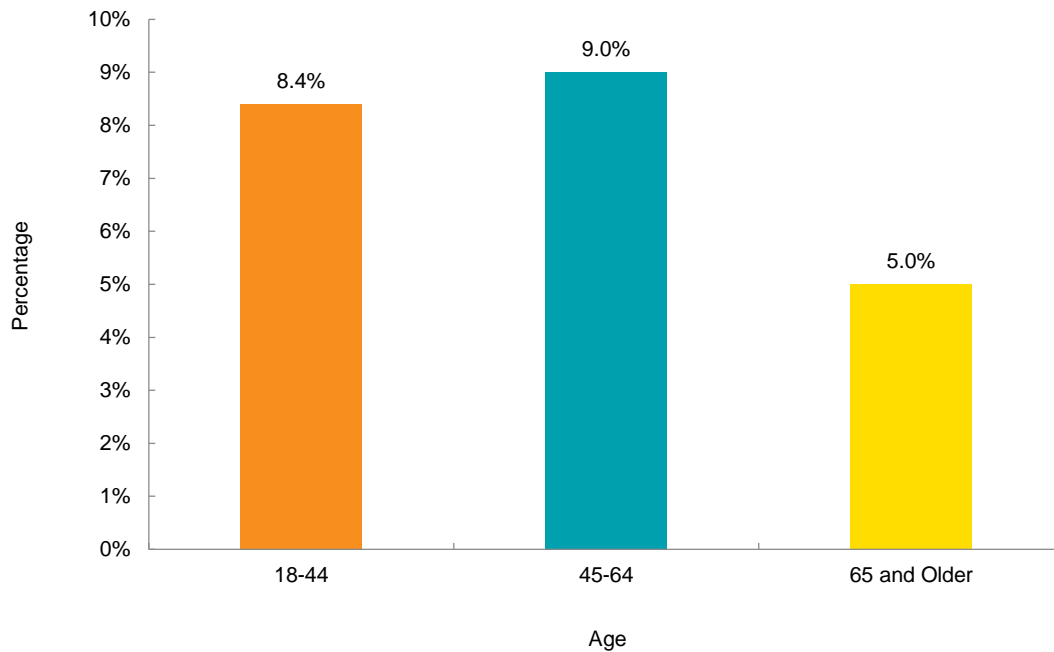
Figure 3. Adults Who Had Poor Mental Health on 14 or More of the Past 30 Days, by Gender  
Collier County, 2013



Data Source: Florida Behavioral Risk Factor Surveillance System

Although the comparison with previous years is not recommended, it is worth mentioning that between 2007 and 2010 the mental health status of the population in the 18 to 64 years age group deteriorated mainly due to the effects of the economic recession of 2007. In 2013, the percentage of people reporting poor mental health days in the 18 to 44 age group was 8.4 percent, a much lower percentage than in previous year. Adults in the 45 to 65 age group had the highest percentages of those who reporting poor mental health days, whereas the lowest percentages were in the older population with 5 percent (Figure 4).

Figure 4. Adults Who Had Poor Mental Health on 14 or More of the Past 30 Days,  
By Age Group, Collier County, 2013



Data Source: Florida Behavioral Risk Factor Surveillance System

Further analysis of data also displays variation by income. The highest percentage of people reporting poor mental health days was in the less than \$25,000 income group with 11.4 percent, and the lowest percentage was in the \$50,000 or more income group with 4.7 percent (Figure 5). When analyzing by education, the percentage of people reporting poor mental health days was higher for those with a high school diploma or GED than for those with more than a high school diploma (Figure 6).

Figure 5. Adults Who Had Poor Mental Health on 14 or More of the Past 30 Days, by Income, Collier County, 2013

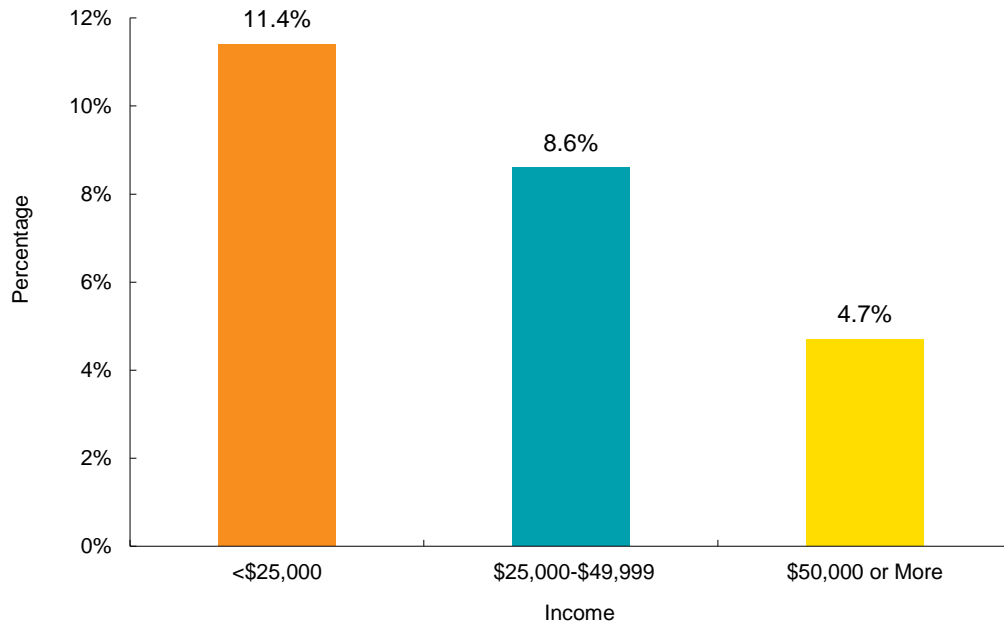
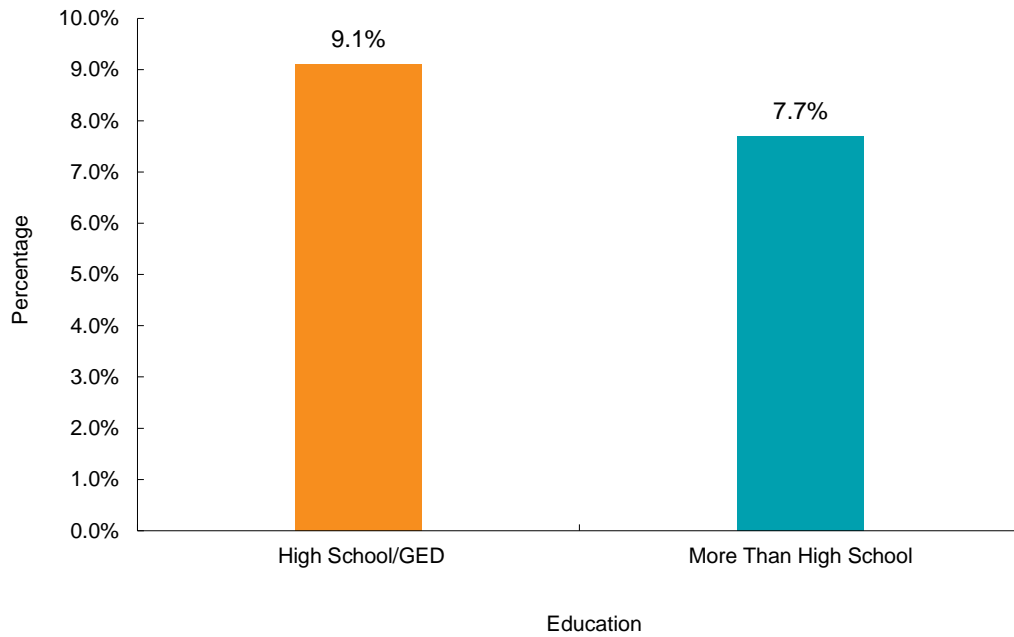


Figure 6. Adults Who Had Poor Mental Health on 14 or More of the Past 30 Days, by Education, Collier County, 2013

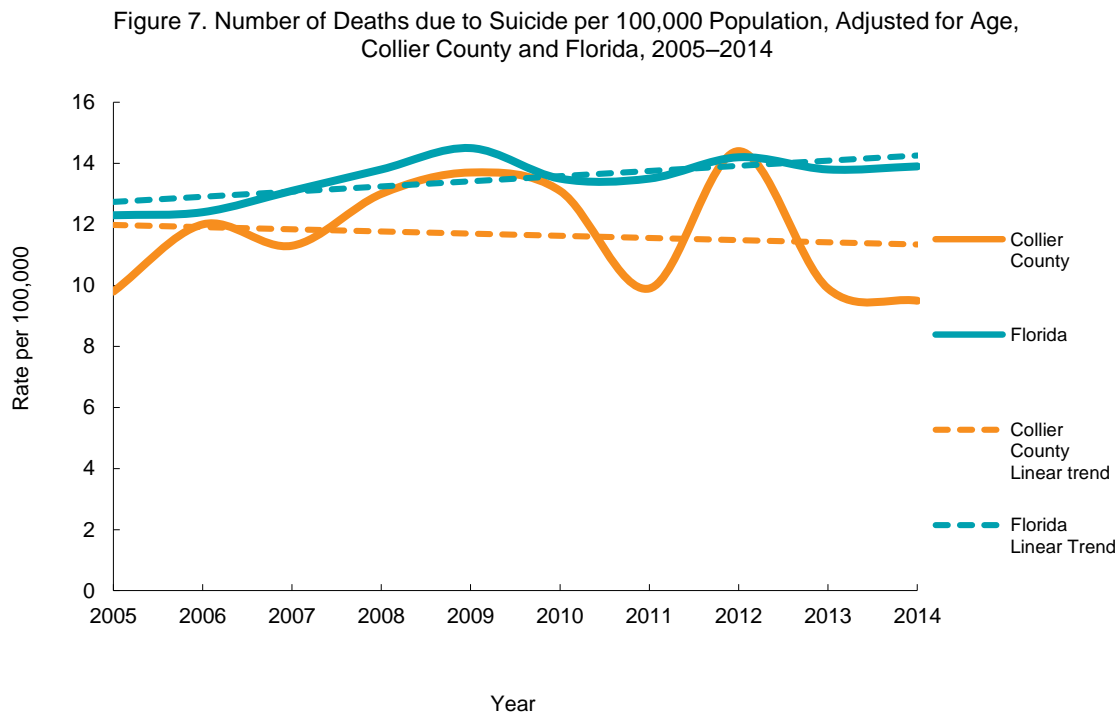


Data Source: Florida Behavioral Risk Factor Surveillance System

## Suicide

Suicide is a significant preventable public health problem in the United States. It is now the second leading cause of death among persons aged 10 to 34 years, and the fourth leading cause of death among person aged 35 to 54 years. In Collier County, suicide was ranked as the 10<sup>th</sup> leading cause of death in 2014. Several risk factors including history of depression or other mental illnesses, family history of suicide and previous suicide attempts can increase the likelihood of someone attempting or dying from suicide.

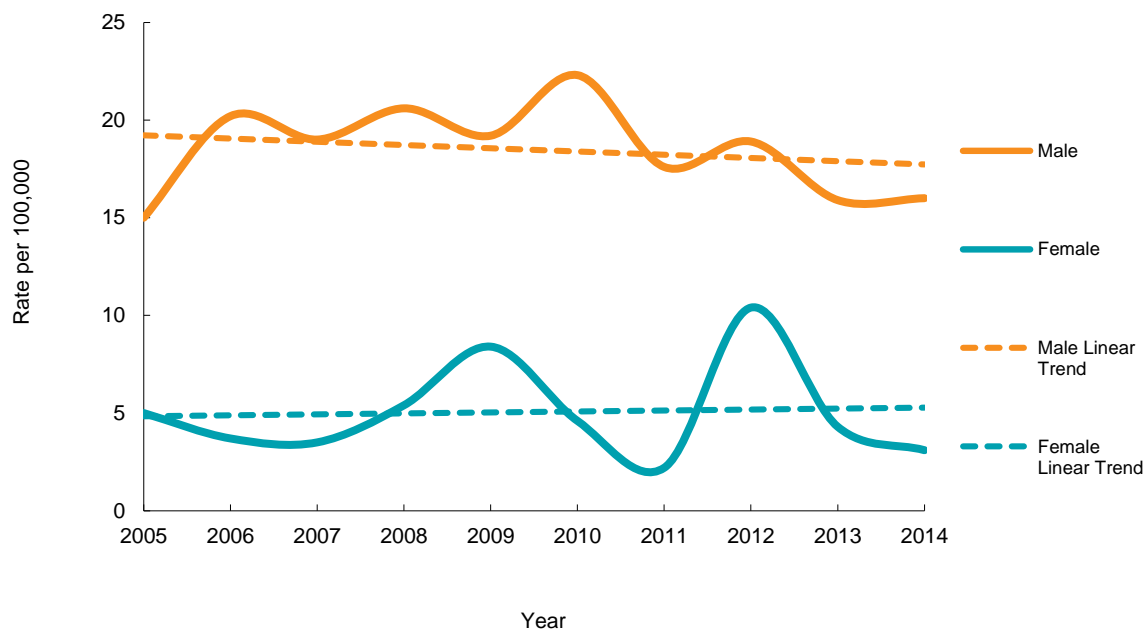
In Collier County, between 2005 and 2014, there was a slight decrease in suicide deaths, from 9.8 deaths per 100,000 population to 9.3 deaths per 100,000 population. For Florida, during the same time period, suicide deaths increased by 13 percent, from 12.3 deaths per 100,000 to 13.9 deaths per 100,000 population (Figure 7).



Data Source: Bureau of Vital Statistics, Florida Department of Health, Tallahassee, FL

Further analysis of data shows major differences in suicide deaths for males and females. In Collier County between 2005 and 2014, there was a 6.7 percent increase in suicide deaths among males, from 15 deaths per 100,000 population to 16 deaths per 100,000 population. For females during the same period, suicide deaths declined by 38 percent, from 5 deaths per 100,000 population to 3.1 deaths per 100,000 population. In Collier County, death rate from suicide for males was 5 times higher than females in 2014. The death rate from suicide for females in Collier County (6.3 death per 100,000 population) was less than three times the overall rate for males in Florida (22 deaths per 100,000 population) in 2014 (Figure 8).

Figure 8. Number of Deaths due to Suicide per 100,000 Population, Adjusted for Age, by Gender  
Collier County, 2005–2014



Data Source: Bureau of Vital Statistics, Florida Department of Health, Tallahassee, FL

In Collier County between 2005 and 2014, suicide deaths for whites slightly decreased, from 10.3 deaths per 100,000 population to 10.1 deaths per 100,000 population. For Florida, suicide deaths for whites increased by 14 percent during the same time period, from 13.9 deaths per 100,000 population to 15.8 deaths per 100,000 population (Figures 9).

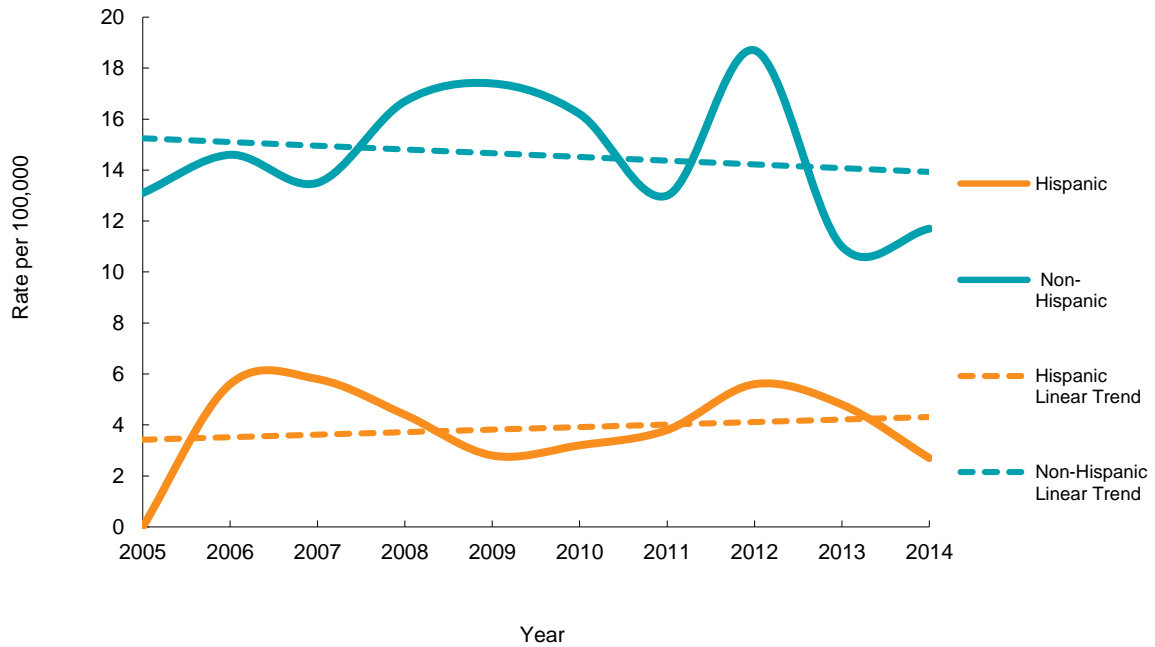
Figure 9. Number of Deaths due to Suicide per 100,000 Population, Adjusted for Age, by Race  
Collier County, 2005–2014



Data Source: Bureau of Vital Statistics, Florida Department of Health, Tallahassee, FL

The death rate from suicide for non-Hispanics decreased by 10.7 percent in Collier County, from 13.1 deaths per 100,000 population in 2005 to 11.7 deaths per 100,000 population in 2014. During the same time period, the death rate from suicide for Hispanics increased from 0 deaths per 100,000 in 2005 to 2.7 deaths per 100,000 in 2014 (Figure 10). The death rate from suicide for non-Hispanics in Collier County was 4.3 times the rate of Hispanics in 2014. The death rate from suicide for Hispanics in Florida was twice the rate for Hispanics in Collier County in 2014.

Figure 10. Number of Deaths due to Suicide per 100,000 Population, Adjusted for Age, by Ethnicity, Collier County, 2005–2014

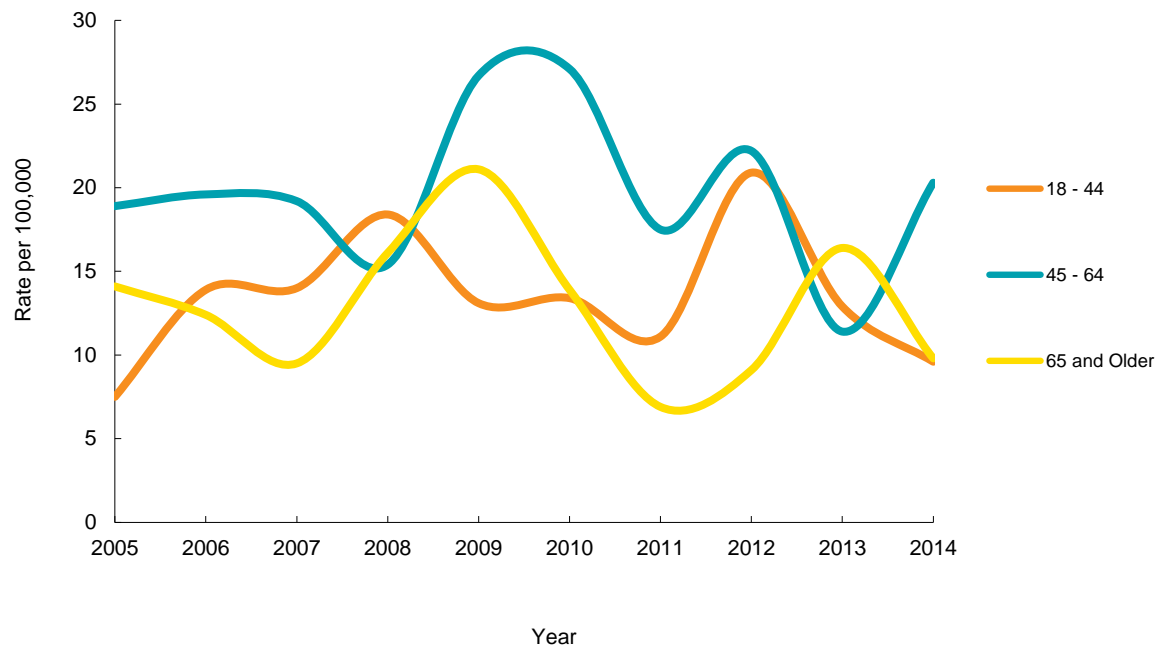


Data Source: Bureau of Vital Statistics, Florida Department of Health, Tallahassee, FL

Between 2005 and 2014, death rate from suicide for the 18 to 44 age group declined by 28 percent, from 7.5 deaths per 100,000 population to 9.6 deaths per 100,000 population. The rate for the 45 to 64 age group increased by 7.4 percent, from 18.9 deaths per 100,000 population to 20.3 deaths per 100,000 population. The death rate from suicide for the 65 and older age group decreased by 30.5 percent during the same time period (Figure 11).



Figure 11. Number of Deaths due to Suicide per 100,000 Population, by Age  
Collier County, 2005–2014



Data Source: Bureau of Vital Statistics, Florida Department of Health, Tallahassee, FL

## Mental Health Resources in Collier County

Collier County has four facilities which provide psychiatric/substance abuse services to local residents. These four facilities offer a combined total of 201 treatment beds for these services (Table 1).

Table 1. Number of Substance Abuse/Psychiatric Beds by Facility, Collier County, 2014

Facility	Substance Abuse Beds	Psychiatric Beds	Dual Use Beds	Total Beds
Hazelden	47	--	--	47
The Willough of Naples	5	82	--	87
David Lawrence Center	30	24	--	54
Naples Community Hospital	--	--	13	13

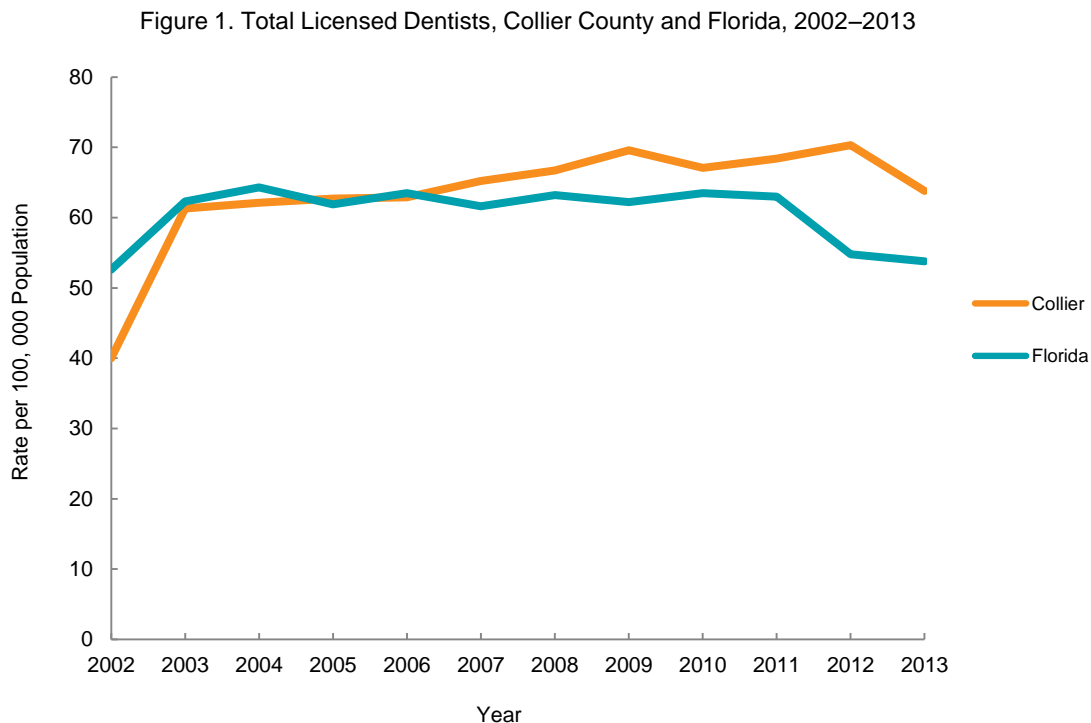
Data Source: Florida Department of Health in Collier County, Epidemiology Program.

All facilities except Naples Community Hospital (NCH) offer both inpatient and outpatient treatment services. NCH only offers inpatient treatment services.

## Oral Health

Oral health is essential to a person's overall health, well-being and quality of life. Significant improvements in oral health in the United States over the past 50 years have been primarily due to effective treatment and prevention efforts, which includes community water fluoridation. However, despite major improvements, accessibility to oral health care in those with lower levels of income and education is a challenge.

In Collier County, between 2002 and 2013, the number of dentists increased by 59.5 percent, from 40 dentists per 100,000 population to 63.8 dentists per 100,000 population. For Florida, during the same time period, the number of dentists increased by 2.3 percent (Figure 1).



Data Source: Florida Department of Health, Division of Medical Quality Assurance.

The majority of dental care in Collier County is provided by dentists in private practice. Individuals with private insurance or those who can afford to pay out of pocket choose providers in private practice to get dental care. Low reimbursement rates discourage the vast majority of private practice dental providers from accepting Medicaid. People without private insurance and who cannot afford out-of-pocket expenses receive care at the County Health Department or

federally qualified health centers. In 2015, there were only 6 dental centers in Collier County who accepted Medicaid.

The only dental care option for many low income people who lack access to preventative dental services is hospital emergency rooms. In 2014, 628 Collier County residents visited hospital emergency rooms for dental conditions considered avoidable with proper preventative dental care (Table 1). The total cost of all these visits was \$833,256. Between 2012 and 2014, dental emergency room visits in Collier County decreased by 7.5 percent while the associated cost per dental ER visit increased by 40 percent.

Table 1. Emergency Room Dental Visits and Associated Hospital Charges, Collier County, 2012 and 2014.

	2012	2014
Number of ER Dental Visits	679	628
Total Associated Charges	\$642,537	\$833,256
Cost per ER Dental Visit	\$946	\$1,327

Data Source: Agency for Health Care Administration

Figures 2 and 3 display the number of emergency department (ED) dental visits by age groups for 2011 and 2012. The highest number of ED dental visits were among those 20 to 34 years old with more than 500 visits each year. Among ages 0 to 4, one- and two-year-olds accounted for about two out of three ED dental visits.

Figure 2. Number of Emergency Department Dental Visits by Age Group, Collier County, 2011 and 2012

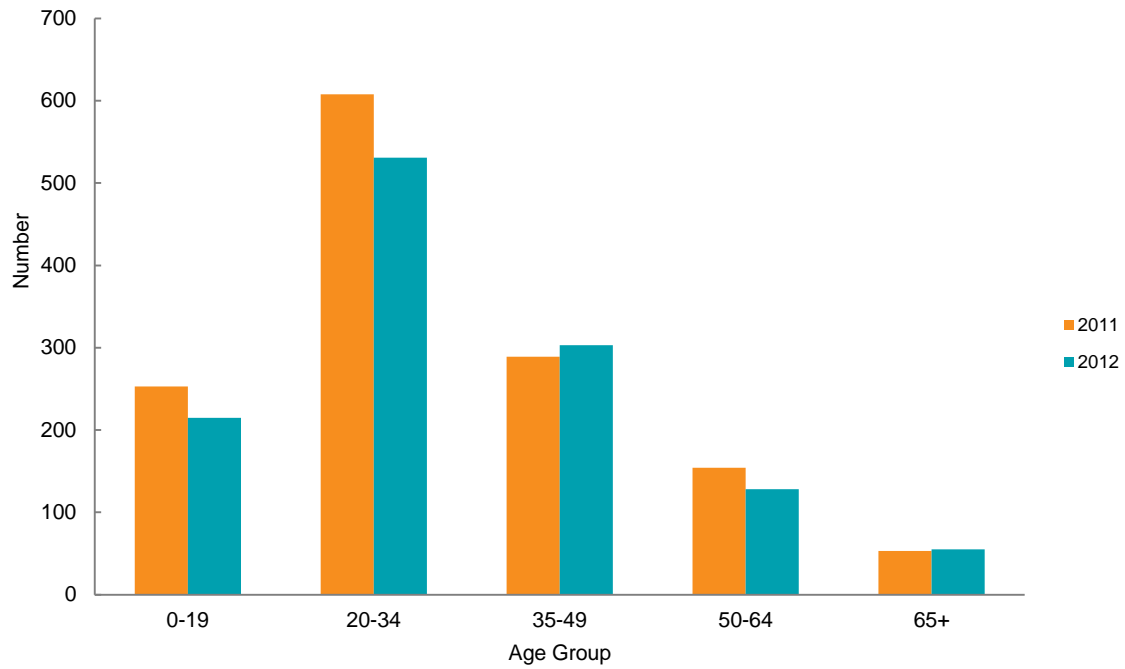
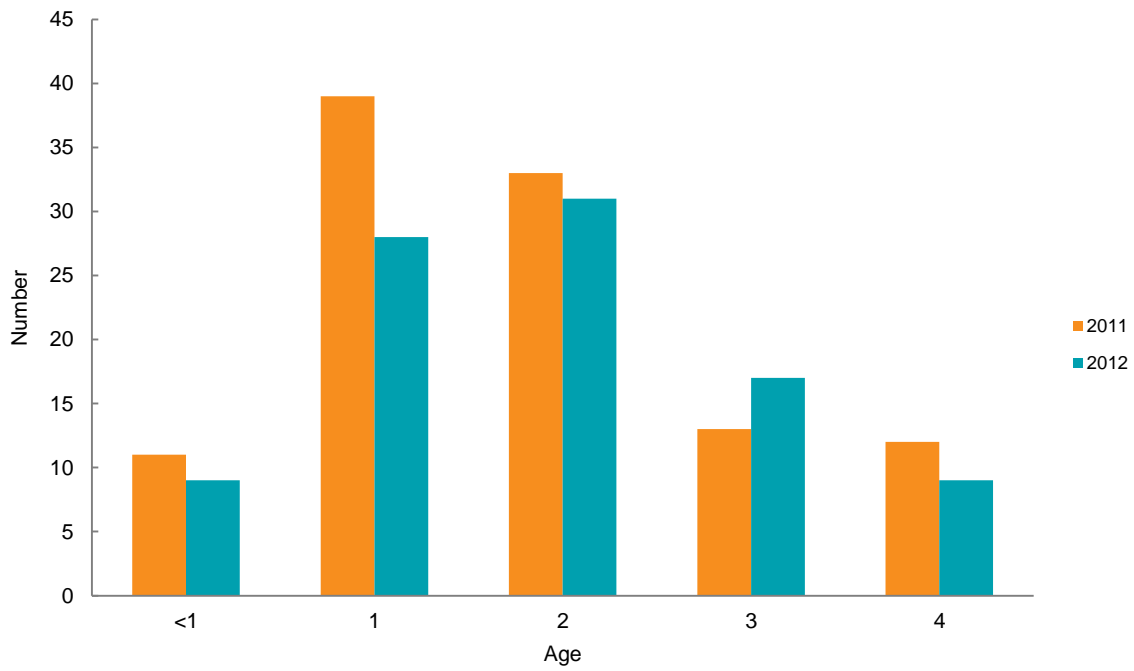


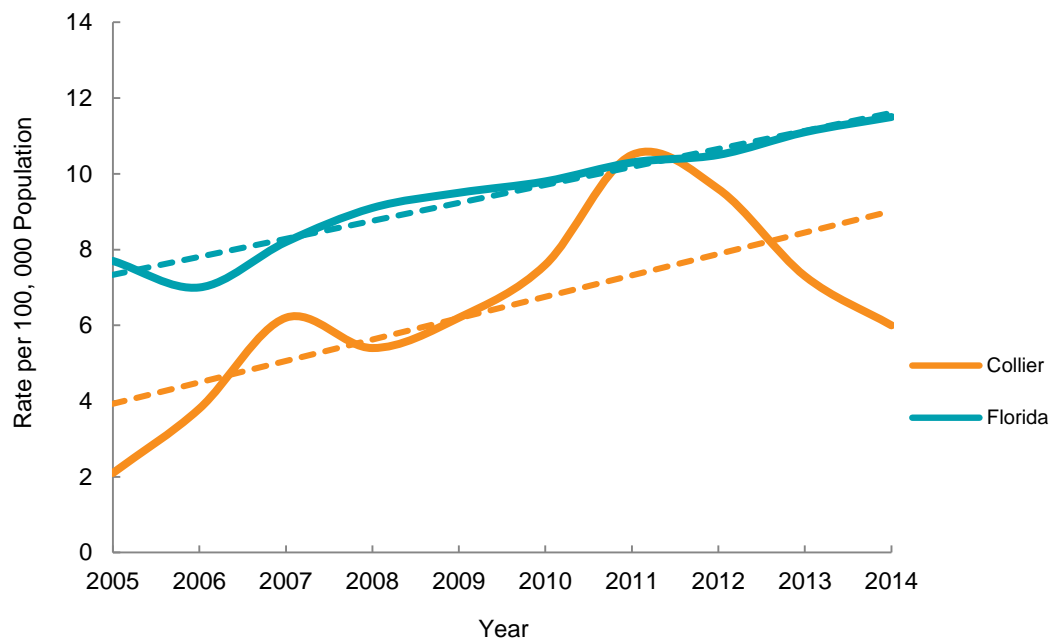
Figure 3. Number of Emergency Department Visits by Young Children for Preventable Conditions, by Ages <1 - 4, Collier County, 2011 and 2012



Data Source: Florida Public Health Institute

In Collier County, between 2005 and 2014, there was 185.7 percent increase in hospitalizations from preventable dental conditions for people under 65 years of age, from 2.1 per 100,000 population to 6 per 100,000 population. For Florida, during the same time period, the rate increased by 49.3 percent from 7.7 per 100,000 population to 11.5 per 100,000 population (Figure 4).

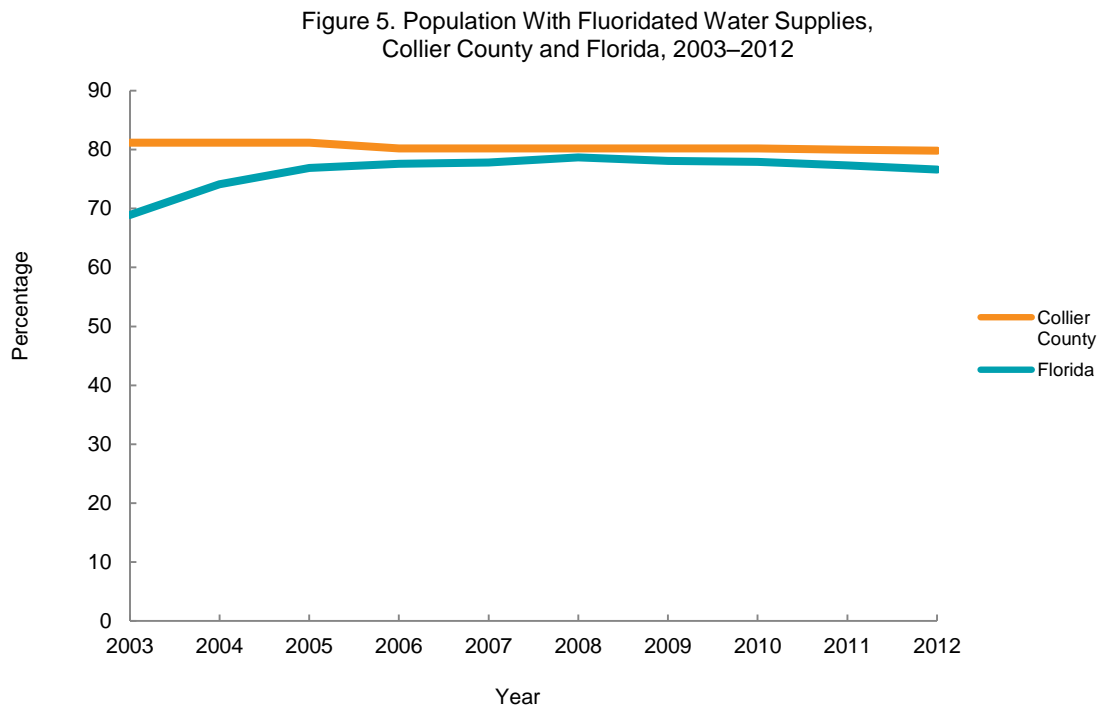
Figure 4. Preventable Hospitalizations Under 65 Years of Age from Dental Conditions Per 100,000, Single Year Rates, Collier County and Florida, 2005–2014



Data Source: Florida Agency for Health Care Administration

## Community Water Fluoridation

The Centers for Disease Control and Prevention (CDC) recognized community water fluoridation as one of 10 great public health achievements of 20<sup>th</sup> century. Community water fluoridation is the adjustment of existing fluoride level in the drinking water to a level (0.7-1.2 parts per million) recommended by the U.S. Public Health Service. In 2012, it served nearly 75 percent of people in the United States who use the public water supplies. The American Dental Association endorses community water fluoridation as a safe and effective way of preventing tooth decay. In 2012, 79.8% of Collier County residents received optimally fluoridated water compared to 76.6% for all Florida residents (Figure 5).



Data Source: Florida Department of Health, Bureau of Environmental Health, Tallahassee, FL.

## **Dental Care Resources in Collier County**

The majority of dental providers in Collier County work in private practice settings; however, there are number of other dental care resources which mainly serve the needs of low income residents of Collier County.

### **Florida Department of Health in Collier County Dental Clinic**

The Florida Department of Health in Collier County (FDOH-Collier) Dental Clinic opened its dental clinic in January 2001. Initially the clinic had one full time dentist, two dental assistants and three chairs for treatment as it only provided services to children under the age of 21. At the end of 2002, the clinic began providing services to adults. The clinic has grown over the years and currently has 13 full-time staff including three dentists, one hygienists, seven dental assistants and two clerks. The clinic also has a part-time dental hygienist in the tooth fairy program which provides oral health education to Collier County children.

In 2015, the clinic served a total of 2,954 dental patients. Figure 6 through 9 show the distribution of FDOH-Collier Dental Clinic users by age groups, gender, race and ethnicity.



Figure 6. Percentage Distribution of FDOH-Collier Dental Clinic Users by Age Group, Collier County, 2005 and 2014

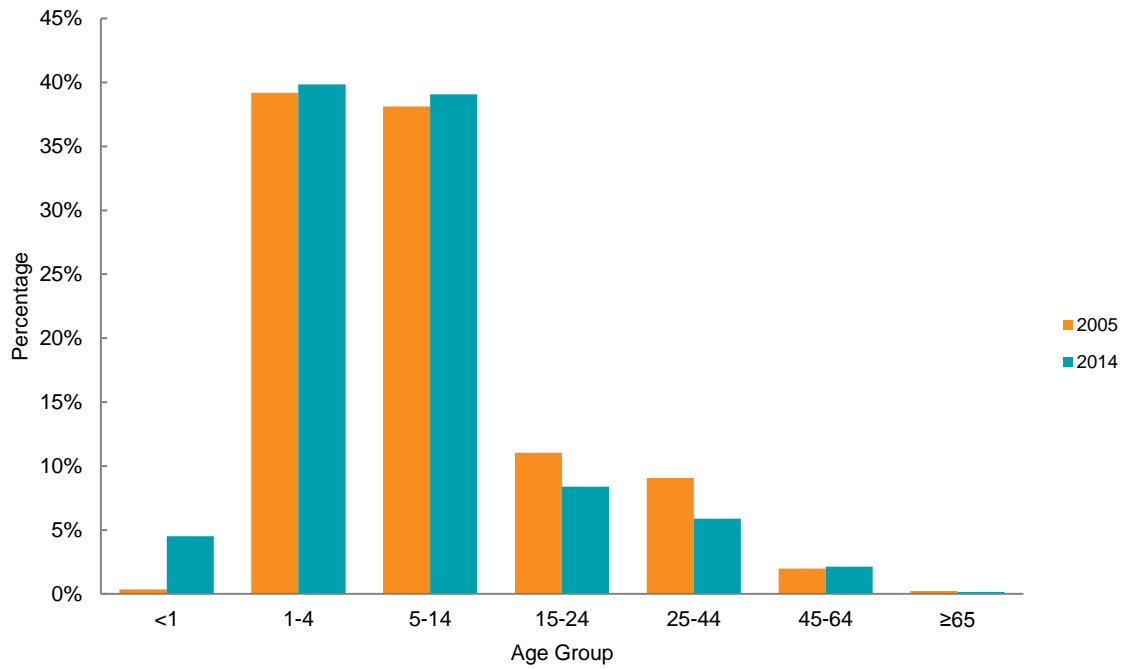


Figure 7. Percentage Distribution of FDOH-Collier Dental Clinic Users, by Gender, Collier County, 2005–2014



Data Source: Florida Department of Health in Collier County Dental Clinic

Figure 8. Percentage Distribution of FDOH-Collier Dental Clinic Users by Race, Collier County, 2005 and 2014

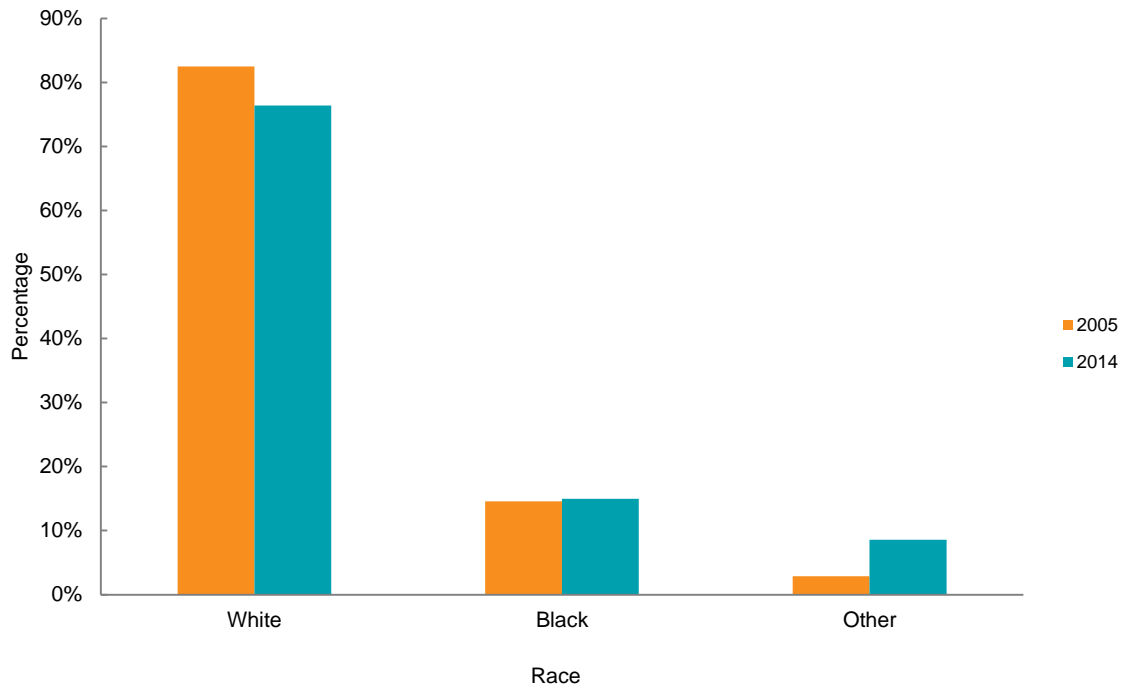
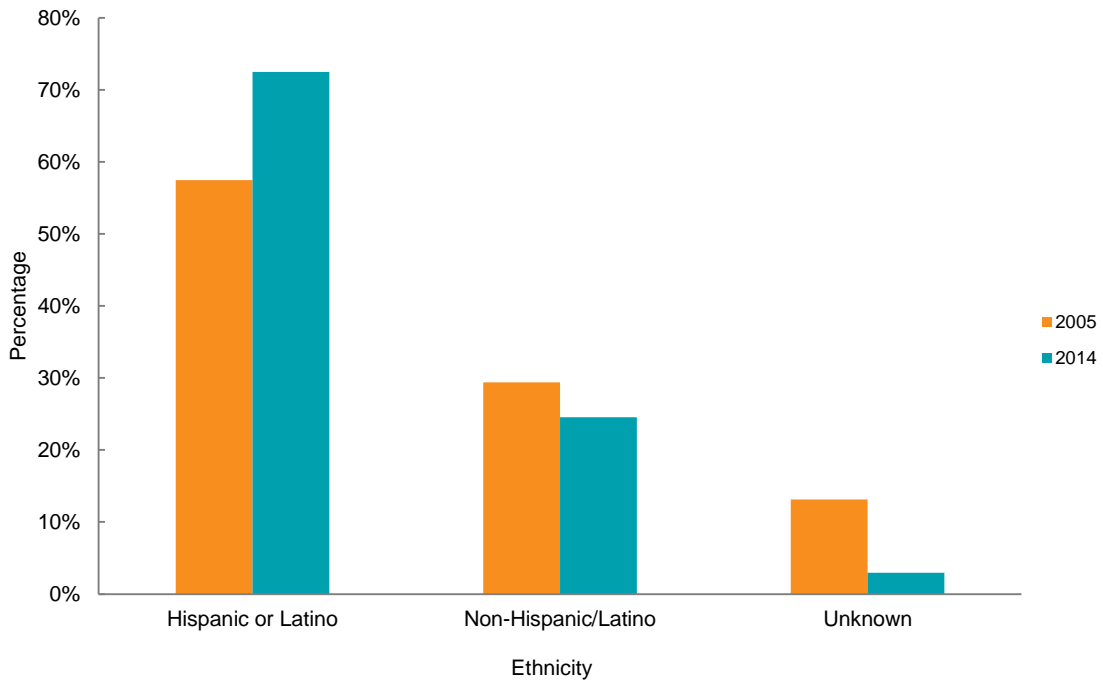


Figure 9. Percentage Distribution of FDOH-Collier Dental Clinic Users by Ethnicity, Collier County, 2005 and 2014



Data Source: Florida Department of Health in Collier County Dental Clinic

### Healthcare Network of Southwest Florida

The Healthcare Network of Southwest Florida provides dental care services to low income children and families at its locations in Immokalee and East Naples and its mobile office, the Health & Smiles Mobile. A new location is set to open April 2016.

### Ronald McDonald Care Mobile

The Ronald McDonald Care Mobile began providing services in November, 2004. It is a partnership between the Healthcare Network of Southwest Florida and Ronald McDonald House Charities of Southwest Florida. It visits locations throughout Collier County and provides medical and dental care to low income children.

### Naples Children and Education Foundation Pediatric Dental Center

The center is the collaboration between the Naples Children and Education Foundation, Healthcare Network of Southwest Florida, Florida Southwestern State College (Collier Campus) and the University Of Florida College Of Dentistry. The center provides specialized dental care to children and is staffed by the University of Florida Pediatric Dentistry residency trainees.

### Services for Adults

Several options also exist for adults; however, the options are limited by the number of available appointments and/or hours and days of operation. The DOH–Collier County provides emergency services to adults on a daily basis but has limited appointment availability for preventative and restorative work. The Senior Friendship Center and the Neighborhood Health Clinic provide dental care for adults but have limited hours and days of operation.

## The Health of the Older Population

The older population of Collier County (persons 65 years and above) numbered 92,125 in 2014. This represents 27.1 percent of the total county population or over one in every four residents. The number of older Collier County residents increased by 48 percent since 2000, compared to an increase of 29 percent for the under 65 population. It is worth noting that the number of residents 45 to 64 years of age who will reach 65 to 84 over the next 10 years increased by 42 percent during this period.

The sex ratio distribution of the population 65 years and over in 2014 was 115 females to every 100 males. This ratio increases with age due to the greater margin of life expectancy that the females have over the male population.

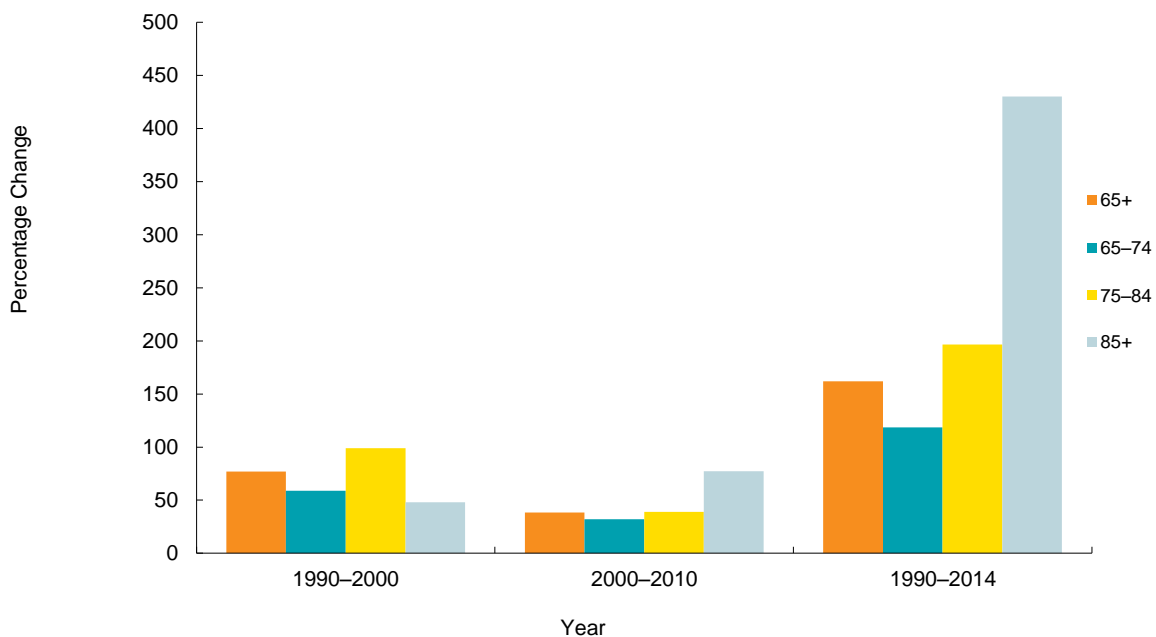
Since 1990, the percentage of residents in Collier County ages 65 and over has increased by 162 percent, from 35,182 to 92,125 in 2014. The median age of the population is getting older while the population cohort 65 years of age and over has been experiencing rapid growth. In 2014, the 65–74 age group in Collier County numbered 48,479 which is 2.2 times larger than it was in 1990. Concurrently, the 75-84 age group is 3 times larger and the 85 years and over age group is 5.3 greater than it was in 1990. In 2013, persons in Collier County who reached age 65 had an average additional life expectancy of 24.2 years; 25.4 years for females and 23.0 years for males.

During the period 1990 to 2014, mortality rates continued to decline for the population 65 to 84 years of age, for men the decrease was 38 percent at ages 65 to 74 and 44 percent for ages 75 to 84. For females, at ages 65–74 the decrease was 35 percent and 44 percent for ages 75 to 84.

Life expectancy at age 65 has increased by 2.2 years for males and by 2.3 years for females since 2000. However, recent findings mentioned earlier in the life expectancy section raise concerns regarding future potential gains in life expectancy at birth and other ages primarily due to prior smoking history and the long term prevalence levels of obesity, particularly for women ages 50 and above in lower socioeconomic sub-groups of the population.

As mentioned earlier in the section describing population dynamics and demographics, the number of older persons has started to increase as a result of the Baby Boomer cohort turning 65 years of age in the 2010s. This will cause a significant exponential growth in this older age group thru the year 2030. These dramatic rates of growth in population among the 65 years and older ages are visible in Figure 1.

Figure 1. Percentage Change in the Population 65 Years of Age and Older by Select Older Age Groups, Collier County, 1990–2014



Data Source: U.S. Census Bureau

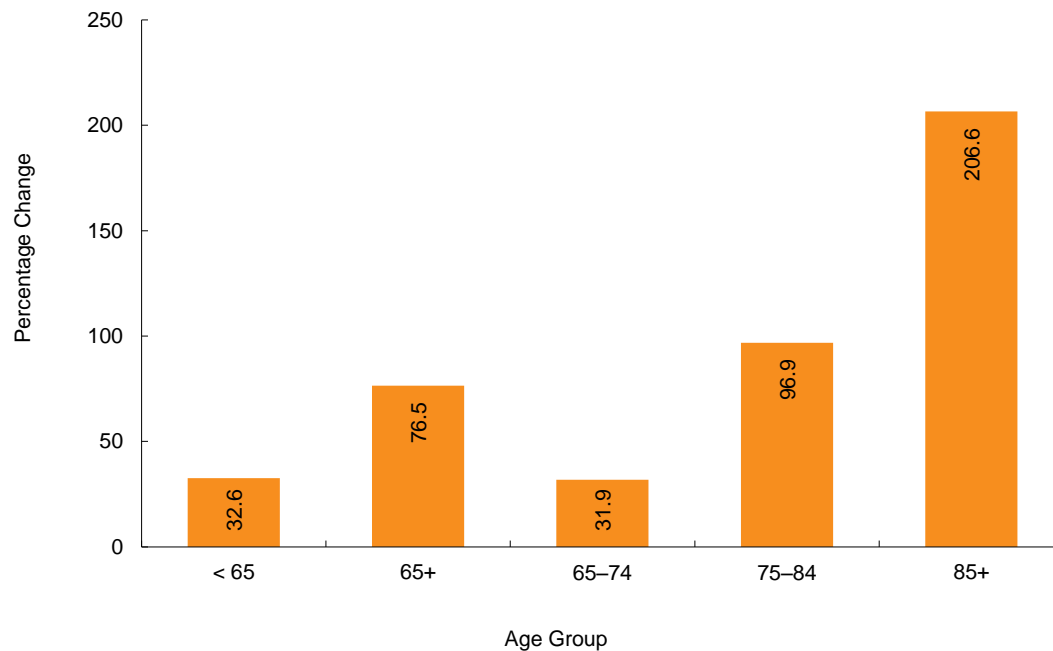
The population of Collier County 65 years and above in 2040 is projected to be 1.6 times as large as it was in the year 2014, growing from 92,752 in 2014 to 145,893 in 2040. In 2040, the population of 65 years and above will consist of approximately 30 percent of the total county population in that year (Table 1).

All of the age groups among the 65 years and above population are projected to increase at levels through 2040 (Figure 2).

Table 1. Population by Age Distribution, Collier County, 2014, 2020, 2030 and 2040

Age Group	2014	2020	2030	2040
< 65	244,031	247,738	262,999	289,531
65+	92,752	95,498	113,143	145,893
65–74	48,510	49,515	54,897	68,051
75–84	32,754	33,900	42,618	52,347
85+	11,488	12,083	15,628	25,495

Figure 2. Percentage Change in the Population by Select Age Groups, Collier County, 2014–2040



Data Source: Bureau of Economic and Business Research, Florida Population Studies, Bulletin 163

### Leading Causes of Death

Cancer remains the leading cause of death in Collier County and Florida, with heart disease and Alzheimer's disease as close second and third leading causes of death, respectively. In 2014, cancer accounted for 25.2 percent of all deaths 65 years and over in Collier County and almost 22 percent in Florida. In the county, among males 65 years and over cancer accounted for approximately 27.5 percent of all deaths, while among females it caused over 22.7 percent of all deaths.

Tables 2 to 13 show the 10 leading causes of death among the older population by age groups and gender in Collier County.

Table 2. The 10 Leading Causes of Death, 65 Years and Over, Collier County, 2014

Ten Leading Causes of Death	Number of Deaths	Percentage Distribution	Age Specific Death Rate
Cancer	647	25.19%	702.3
Heart Diseases	594	23.13%	644.8
Alzheimer's Disease	185	7.20%	200.8
Chronic Lower Respiratory Disease	164	6.39%	178.0
Cerebrovascular Diseases	156	6.07%	169.3
Unintentional Injury	118	4.60%	128.1
Diabetes Mellitus	49	1.91%	53.2
Parkinson's Disease	45	1.75%	48.8
Essen Hypertension & Hypertensive Renal Disease	28	1.09%	30.4
Influenza & Pneumonia	25	0.97%	27.1

Table 3. The 10 Leading Causes of Death, 65–74 Years, Collier County, 2014

Ten Leading Causes of Death	Number of Deaths	Percentage Distribution	Age Specific Death Rate
Cancer	190	38.93%	391.9
Heart Diseases	84	17.21%	173.3
Chronic Lower Respiratory Disease	43	8.81%	88.7
Cerebrovascular Diseases	22	4.51%	45.4
Diabetes Mellitus	18	3.69%	37.1
Unintentional Injury	13	2.66%	26.8
Chronic Liver Disease & Cirrhosis	12	2.46%	24.8
Alzheimer's Disease	11	2.25%	22.7
Essen Hypertension & Hypertensive Renal Disease	6	1.23%	12.4
Suicide	5	1.02%	10.3

Data Source: U.S. Census Bureau, Bureau of Vital Statistics



Table 4. The 10 Leading Causes of Death, 75–84 Years, Collier County, 2014

Ten Leading Causes of Death	Number of Deaths	Percentage Distribution	Age Specific Death Rate
Cancer	265	32.76%	827.8
Heart Diseases	159	19.65%	496.7
Cerebrovascular Diseases	50	6.18%	156.2
Chronic Lower Respiratory Disease	47	5.81%	146.8
Unintentional Injury	34	4.20%	106.2
Alzheimer's Disease	33	4.08%	103.1
Parkinson's Disease	20	2.47%	62.5
Diabetes Mellitus	13	1.61%	40.6
In Situ, Benign, Uncertain and Unknown Behavior Neoplasms	11	1.36%	34.4
Chronic Liver Disease & Cirrhosis	8	0.99%	25.0

Table 5. The 10 Leading Causes of Death, 85 Years and Over, Collier County, 2014

Ten Leading Causes of Death	Number of Deaths	Percentage Distribution	Age Specific Death Rate
Heart Diseases	351	27.62%	3,016.76
Cancer	192	15.11%	1,650.19
Alzheimer's Disease	141	11.09%	1,211.86
Cerebrovascular Diseases	84	6.61%	721.96
Chronic Lower Respiratory Disease	74	5.82%	636.01
Unintentional Injury	71	5.59%	610.23
Parkinson's Disease	22	1.73%	189.08
Influenza & Pneumonia	19	1.49%	163.30
Diabetes Mellitus	18	1.42%	154.71
Essen Hypertension & Hypertensive Renal Disease	16	1.26%	137.52

Data Source: U.S. Census Bureau, Bureau of Vital Statistics

Table 6. The 10 Leading Causes of Death, 65 Years and Over Males, Collier County, 2014

Ten Leading Causes of Death	Number of Deaths	Percentage Distribution	Age Specific Death Rate
Cancer	366	27.48%	853.5
Heart Diseases	341	25.60%	795.2
Alzheimer's Disease	73	5.48%	170.2
Chronic Lower Respiratory Disease	73	5.48%	170.2
Cerebrovascular Diseases	68	5.11%	158.6
Unintentional Injury	57	4.28%	132.9
Parkinson's Disease	30	2.25%	70.0
Diabetes Mellitus	26	1.95%	60.6
Influenza & Pneumonia	17	1.28%	39.6
Chronic Liver Disease & Cirrhosis	12	0.90%	28.0

Table 7. The 10 Leading Causes of Death, 65 Years and Over Females, Collier County, 2014

Ten Leading Causes of Death	Number of Deaths	Percentage Distribution	Age Specific Death Rate
Cancer	281	22.73%	570.7
Heart Diseases	253	20.47%	513.8
Alzheimer's Disease	112	9.06%	227.5
Chronic Lower Respiratory Disease	91	7.36%	184.8
Cerebrovascular Diseases	88	7.12%	178.7
Unintentional Injury	61	4.94%	123.9
Diabetes Mellitus	23	1.86%	46.7
Essen Hypertension & Hypertensive Renal Disease	16	1.29%	32.5
Parkinson's Disease	15	1.21%	30.5
In Situ, Benign, Uncertain and Unknown Behavior Neoplasms	11	0.89%	22.3

Data Source: U.S. Census Bureau, Bureau of Vital Statistics

Table 8. The 10 Leading Causes of Death, 65–74 Years Males, Collier County, 2014

Ten Leading Causes of Death	Number of Deaths	Percentage Distribution	Age Specific Death Rate
Cancer	111	39.36%	500.4
Heart Diseases	56	19.86%	252.5
Chronic Lower Respiratory Disease	21	7.45%	94.7
Cerebrovascular Diseases	11	3.90%	49.6
Unintentional Injury	10	3.55%	45.1
Diabetes Mellitus	9	3.19%	40.6
Chronic Liver Disease & Cirrhosis	8	2.84%	36.1
Alzheimer's Disease	6	2.13%	27.0
Suicide	3	1.06%	13.5
Essen Hypertension & Hypertensive Renal Disease	2	0.71%	9.0

Table 9. The 10 Leading Causes of Death, 65–74 Years Females, Collier County, 2014

Ten Leading Causes of Death	Number of Deaths	Percentage Distribution	Age Specific Death Rate
Cancer	79	38.35%	300.4
Heart Diseases	28	13.59%	106.5
Chronic Lower Respiratory Disease	22	10.68%	83.7
Cerebrovascular Diseases	11	5.34%	41.8
Diabetes Mellitus	9	4.37%	34.2
Alzheimer's Disease	5	2.43%	19.0
Chronic Liver Disease & Cirrhosis	4	1.94%	15.2
Essen Hypertension & Hypertensive Renal Disease	4	1.94%	15.2
Unintentional Injury	3	1.46%	11.4
In Situ, Benign, Uncertain and Unknown Behavior Neoplasms	2	0.97%	7.6

Data Source: U.S. Census Bureau, Bureau of Vital Statistics

Table 10. The 10 Leading Causes of Death, 75–84 Years Males, Collier County, 2014

Ten Leading Causes of Death	Number of Deaths	Percentage Distribution	Age Specific Death Rate
Cancer	148	32.46%	954.1
Heart Diseases	99	21.71%	638.2
Cerebrovascular Diseases	27	5.92%	174.1
Chronic Lower Respiratory Disease	22	4.82%	141.8
Unintentional Injury	17	3.73%	109.6
Alzheimer's Disease	15	3.29%	96.7
Parkinson's Disease	13	2.85%	83.8
Diabetes Mellitus	8	1.75%	51.6
In Situ, Benign, Uncertain and Unknown Behavior Neoplasms	5	1.10%	32.2
Chronic Liver Disease & Cirrhosis	4	0.88%	25.8
Cancer	148	32.46%	954.1

Table 11. The 10 Leading Causes of Death, 75–84 Years Females, Collier County, 2014

Ten Leading Causes of Death	Number of Deaths	Percentage Distribution	Age Specific Death Rate
Cancer	117	33.14%	709.1
Heart Diseases	60	17.00%	363.7
Chronic Lower Respiratory Disease	25	7.08%	151.5
Cerebrovascular Diseases	23	6.52%	139.4
Alzheimer's Disease	18	5.10%	109.1
Unintentional Injury	17	4.82%	103.0
Parkinson's Disease	7	1.98%	42.4
In Situ, Benign, Uncertain and Unknown Behavior Neoplasms	6	1.70%	36.4
Aortic Aneurysm & Dissection	5	1.42%	30.3
Diabetes Mellitus	5	1.42%	30.3

Data Source: U.S. Census Bureau, Bureau of Vital Statistics

Table 12. The 10 Leading Causes of Death, 85 and Over Males, Collier County, 2014

Ten Leading Causes of Death	Number of Deaths	Percentage Distribution	Age Specific Death Rate
Heart Diseases	186	31.31%	3,583.82
Cancer	107	18.01%	2,061.66
Alzheimer's Disease	52	8.75%	1,001.93
Cerebrovascular Diseases	30	5.05%	578.03
Chronic Lower Respiratory Disease	30	5.05%	578.03
Unintentional Injury	30	5.05%	578.03
Parkinson's Disease	15	2.53%	289.02
Influenza & Pneumonia	13	2.19%	250.48
Diabetes Mellitus	9	1.52%	173.41
Essen Hypertension & Hypertensive Renal Disease	7	1.18%	134.87

Table 13. The 10 Leading Causes of Death, 85 and Over Females, Collier County, 2014

Ten Leading Causes of Death	Number of Deaths	Percentage Distribution	Age Specific Death Rate
Heart Diseases	165	24.37%	2560.1
Alzheimer's Disease	89	13.15%	1380.9
Cancer	85	12.56%	1318.9
Cerebrovascular Diseases	54	7.98%	837.9
Chronic Lower Respiratory Disease	44	6.50%	682.7
Unintentional Injury	41	6.06%	636.2
Diabetes Mellitus	9	1.33%	139.6
Essen Hypertension & Hypertensive Renal Disease	9	1.33%	139.6
Nephritis, Nephrotic Syndrome, Nephrosis	7	1.03%	108.6
Parkinson's Disease	7	1.03%	108.6

Data Source: U.S. Census Bureau, Bureau of Vital Statistics

## Alzheimer's Disease

Alzheimer's disease is the most common cause of dementia and can account for up to 80 percent of all cases of the condition. The definitive cause of Alzheimer's is unknown at this time; however, as in other chronic diseases, it is widely accepted that multiple factors are involved in the development of the disease.

Advance age is the predominant risk factor and correlate for the development of Alzheimer's. The majority of persons with Alzheimer's disease are diagnosed at age 65 and above. The prevalence of the disease increases exponentially as age increases beyond 65 years. The number of residents of Collier County diagnosed with Alzheimer's as well as other dementias will increase every year, as the percentage of the population 65 years and over continues to grow. This number will intensify greatly through 2030 and 2040, as the "Baby Boomer" cohort matures.

According to national estimates, almost half of the population ages 85 and older or about 5,400 residents are presently living with Alzheimer's disease. Between the ages 65 to 84 years, the prevalence rate is 8.2 percent, which translates into about 6,804 of this age group with the disease. By 2030, using conservative population estimates and assuming current rates of growth, almost 18,700 Collier County residents 65 years and over will be diagnosed with Alzheimer's disease (Table 14). Approximately 47 percent of these cases are 65 to 84 years of age, and 53 percent or almost 10,000 residents are 85 years and older.

Table 14. Projections of the Number of Residents with Alzheimer's Disease by Age, Collier County, 2015–2030

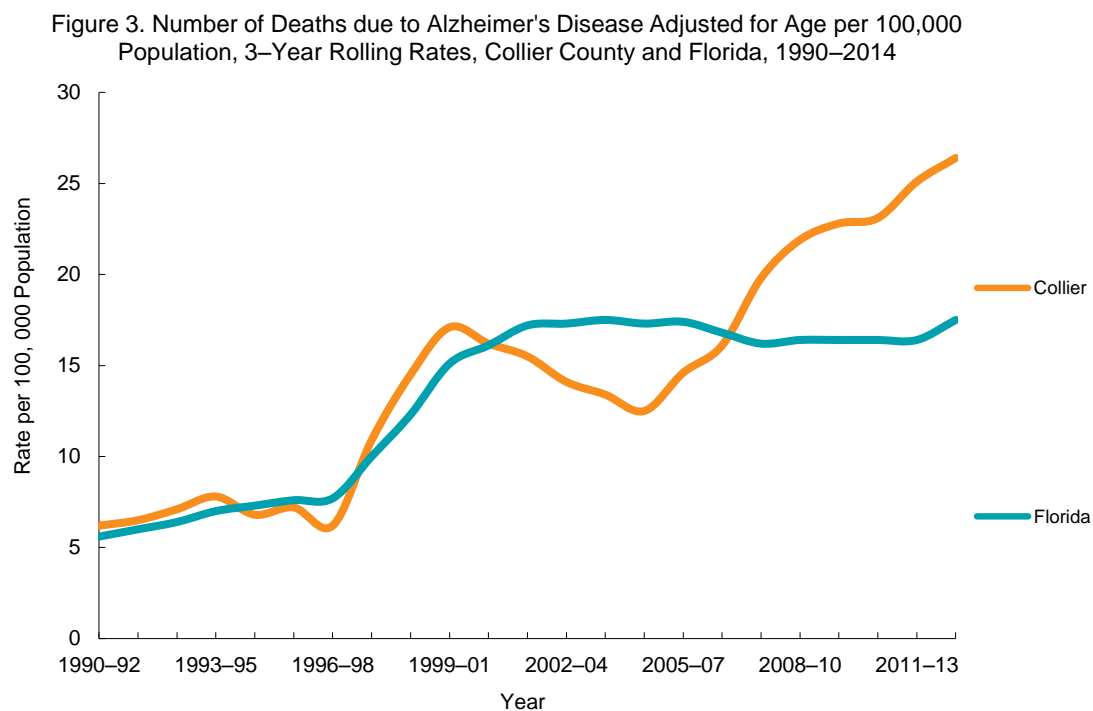
Age Group	65 and Over	65–84	85+
2015	12,204	6,804	5,400
2020	14,428	7,818	6,610
2025	16,096	7,479	8,617
2030	18,672	8,712	9,960

Data Source: U.S. Department of Health and Human Services, Florida Legislative Office of Economic and Demographic Research.

Note: Prevalence rates were calculated by applying the current United States accepted standard prevalence of Alzheimer's disease by age 65 years and over, applied to the projected Collier County population data from the Florida Legislative Office of Economic and Demographic Research.

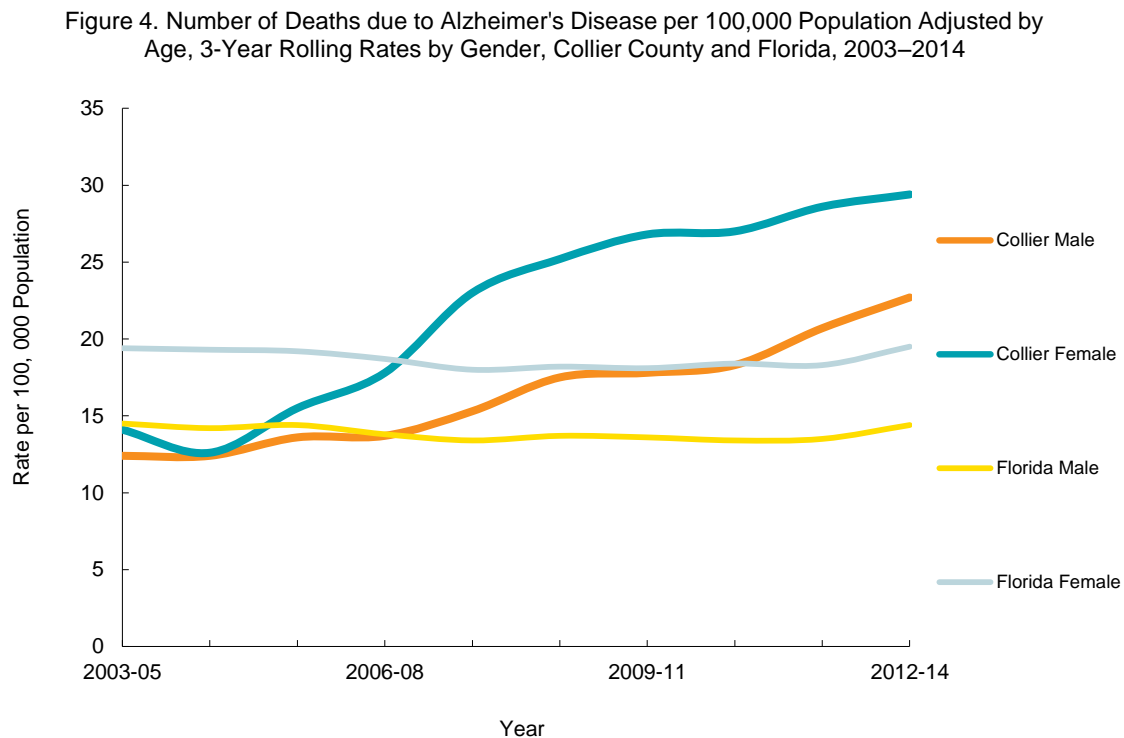
Alzheimer's disease is the third leading cause of death in the population 65 years of age and older. In 2014, this cause of mortality accounted for 7.2 percent of all deaths 65 years of age and over in Collier County and just over 4.1 percent of deaths in the older population in Florida. Among the population 85 years and older, Alzheimer's disease accounted for 11.1 percent of all causes of death in the county. Death from Alzheimer's accounted for more deaths than stroke, chronic lower respiratory disease, unintentional injuries, diabetes and influenza and pneumonia for the same time period.

As the prevalence of Alzheimer's disease has increased over the last half of the 20<sup>th</sup> and into the 21<sup>st</sup> century, concurrent mortality from this illness has risen dramatically (Figure 3). The age-adjusted death rate for Alzheimer's disease in Collier County increased by 146 percent between 1995 and 2014. The death rate for Florida during the same time period increased by 167 percent.



Data Source: U.S. Census Bureau, Bureau of Vital Statistics

Females are more likely to be diagnosed with Alzheimer's disease and other dementias than males. Approximately 2 out of every 3 Americans with Alzheimer's disease are females at the present time. The Alzheimer's disease mortality rates are consistently higher in females than in males for both the county and the state (Figure 4). In Collier County, between 2004 and 2013 the age adjusted mortality rate for Alzheimer's disease increased by 82 percent for males and by 109 percent for females. During the same time period, male and female deaths from Alzheimer's disease for the State of Florida remained constant. The prevalence and incidence of Alzheimer's disease is being driven by increased life expectancy over the past 60 years particularly among women.



Data Source: U.S. Census Bureau, Bureau of Vital Statistics



In 2015, nursing homes and assisted living facilities in Collier County had a total bed capacity of 3,035 beds. This results in a ratio of 32 beds per 1,000 population 65 years and older in the county (Table 15). By type of facility, 71.8 percent of beds were found in assisted living facilities while 28.2 percent existed within skilled nursing facilities.

Table 15. Number of Nursing Homes and Assisted Living Facilities, Collier County, 2015

Type of Facility	Number of Facilities	Total Number of Beds	Total Number of Beds per 1,000 Population 65 Years and Older
Assisted Living Facility	28	2,083	22.0
Nursing Homes (Skilled Nursing)	11	952	10.0
Total All Facilities	39	3,035	32.0

There is a total of 793 Alzheimer's/dementia beds in Collier County. This amounts to 26.1 percent of the total number of long-term care beds or about 1 in every 4 of these beds in Collier County. The ratio of Alzheimer's and dementia beds per 1,000 population 65 years and older in Collier County was 8.4 or about 1 bed for every 100 persons 65 years and over (Table 16). There is clearly a current deficit of needed beds considering an existing Alzheimer's prevalence rate of 13 percent.

Table 16. Number of Memory Care/ Alzheimer's/ Dementia Type Beds Available within Facilities, Collier County, 2015

Number of Beds	Percentage of All Long Term Care Beds Available	Alzheimer's/Dementia Beds per 1,000 Population 65 Yr. and Older
793	26.1%	8.4

Data Source: AHCA and our Collier County Long-Term Care Facilities

## Mortality Indicators

Throughout the 20<sup>th</sup> century and through the present, the United States, Canada, Europe, Australia, New Zealand and select Asian countries have experienced a period of unprecedented gains in longevity and health status. At the beginning of the 1900s, life expectancy in these developed areas was typically 45 to 50 years at birth, similar to Africa today. By the end of the century, life expectancy at birth had increased significantly in most industrialized countries, including the US.

Females experience a life expectancy on the order of approximately five percent longer than males. While we have seen an increase in life expectancy on the order of more than 50 percent over the past century, gains have been different among varying population groups. Epidemiologically, there has been an emergence of inequalities in the average number of years lived after birth, notably between men and women and between the higher educated and the poorest and the more vulnerable groups.

### Life Expectancy

Life expectancy of a population at birth is the average number of years that a newborn is expected to live given the existing mortality rates at the time of birth. The methodology of life expectancy can also be applied to the average expected number of years of life remaining at a specific age. The level of life expectancy at birth and at other ages is an overall measure of health status and wellbeing influenced directly by education and its socioeconomic correlates such as income level, occupation and access to healthcare. Life expectancy is a health and demographic indicator that can be compared by age, sex, ethnicity, race and socioeconomic status as well as between geographical, county, state and national areas.

In Collier County, we have the distinction at the time of this writing of having the second highest female life expectancy at birth among all of the 3,143 counties in the country. Men in Collier County also have a very high level of life expectancy when compared nationally, only surpassed by ten other counties in the United States.

Between 1990 and 2014, life expectancy in Collier County increased by 6 years, exceeding the national average significantly by 7 percent. Males in Collier County experienced a greater rate

of life expectancy increase than females during the 24 year period; however, females continued to maintain a significantly higher level of life expectancy at birth than males, 86.9 years compared to 81.9 years, respectively. (Tables 1 and 2). This dominance in longevity levels by females has been a biological reality historically throughout the world since life expectancy calculations were first developed during the 1600s.

Table 1. Life Expectancy at Birth, Collier County, 1990, 2000 and 2014

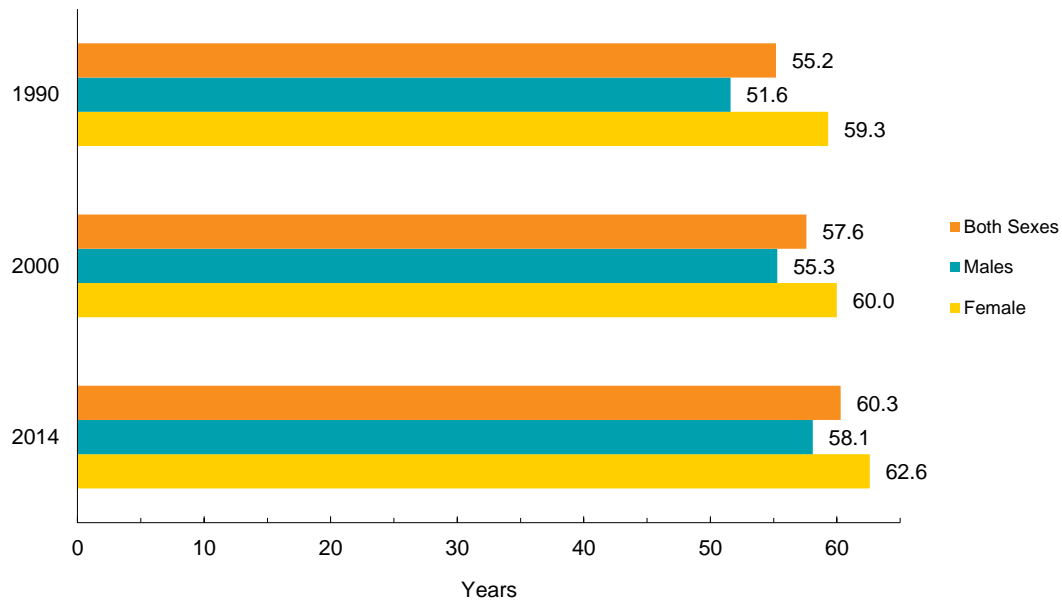
	1990	2000	Percentage change, 1990 - 2000	2014	Percentage change, 2000 - 2014
Life Expectancy at Birth in Years	78.4	81.3	3.7	84.4	3.8

Table 2. Life Expectancy at Birth, by Sex, Collier County, 1990, 2000 and 2014

	1990		2000		2014	
	Males	Females	Males	Females	Males	Females
Life Expectancy at Birth in Years	74.4	83.0	78.5	84.3	81.9	86.9

In Collier County, a 25 year old woman can expect to live 62.6 years longer, while the remaining life expectancy for men at the same age is 58.1 years, a difference of 4½ years. Years of life expectancy anticipated after age 25 in the US is strongly associated statistically with the number of years of educational attainment combined with this variable's many intercorrelated factors (Figure 1).

Figure 1. Life Expectancy at Age 25, by Sex, Collier County, 1990, 2000 and 2014



Data Source: U.S. Census Bureau, Bureau of Vital Statistics. Calculations performed by FDOH – Collier County, Epidemiology Program

While Collier County's life expectancy levels are among the best in the United States, over the past 25 years, regional disparities in the longevity in women have resulted in declines in life expectancy in various geographical areas of the country. For the first time in the history of the country, life expectancy has actually declined over the past two decades for women in 313 US counties, about 10 percent of the counties in the country. This decrease in female life expectancy is occurring mostly in select counties in the Southeast, the Southern Midwest and Appalachia.

Further analysis indicates that in the United States, since 1990 white woman who are non-Hispanic without a high school degree lost 5 years of life expectancy at birth, while white non-Hispanic men with less than a high school education lost three years of longevity during the 1990 to 2008 period. These declines in these levels of life expectancy within these population sub-groups are directly associated with the level of educational attainment, which statistically predicts income level and its correlated improvements in health behaviors and life style. These

dramatic fluid change in levels of life expectancy imply that children born today in many parts of the US among some socioeconomic subgroups of the population can expect to live shorter lives than their parents. This is the first time in recorded public health history that life expectancy within a significant component of the population has declined in the nation.

The variation in life expectancy at various ages in Collier County by ethnicity is shown in Figure 2 and Table 3. On average, in 2014, Hispanic residents of Collier County lived almost 1.5 years longer than non-Hispanics over the course of a life time. This difference in the life expectancy at birth value will change year to year as it is dependent upon the annual age-specific mortality rates. The significantly lower infant mortality among Hispanics in the county contributed heavily to the higher level of overall life expectancy.

Figure 2. Life Expectancy at Select Ages, by Ethnicity, Collier County, 2014

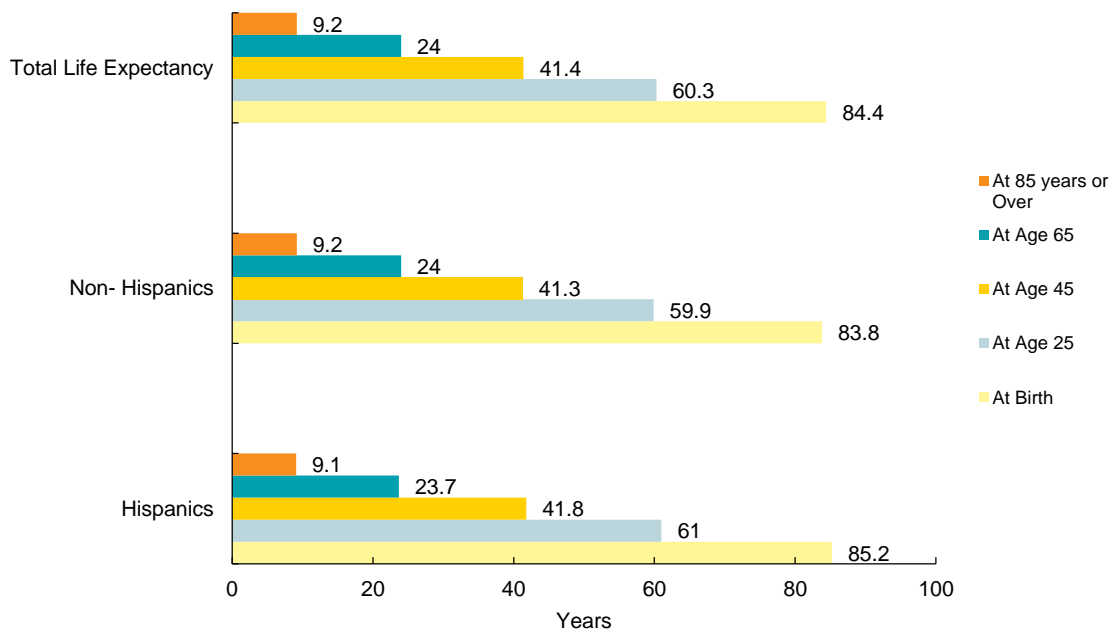


Table 3. Life Expectancy in Collier County at Select Ages, by Ethnicity, 2014

Life Expectancy by Age	Hispanics	Non- Hispanics	Total Life Expectancy by Age
At Birth	85.2	83.8	84.4
At Age 25–29	61.0	59.9	60.3
At Age 45–49	41.8	41.3	41.4
At Age 65–69	23.7	24.0	24.0
At 85 years or Over	9.1	9.2	9.2

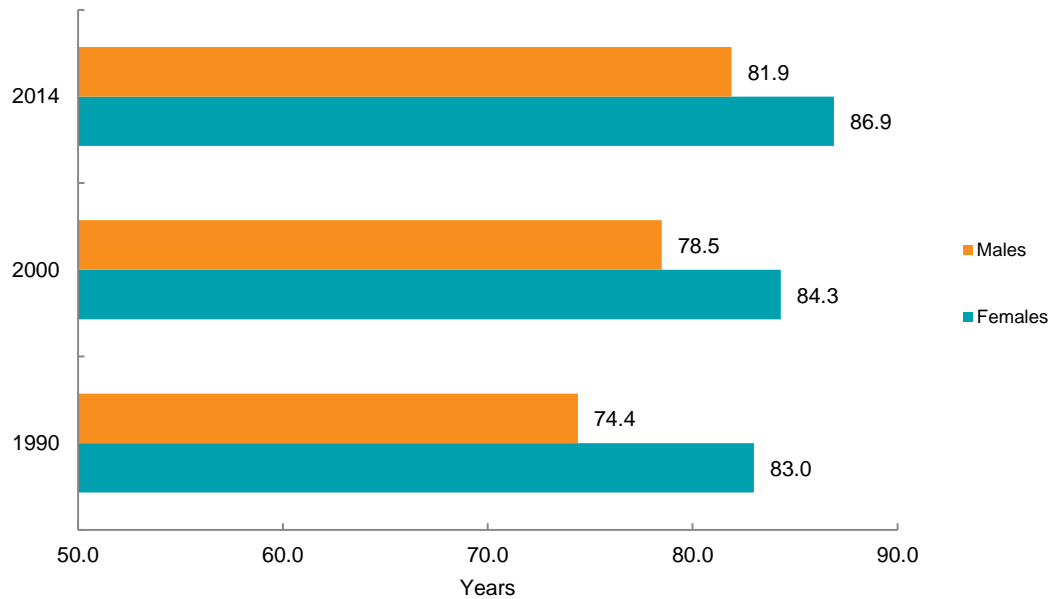
Data Source: U.S. Census Bureau, Bureau of Vital Statistics. Calculations performed by FDOH – Collier County, Epidemiology Program

This trend of higher life expectancy levels among the Hispanic population is supported by national US data from the National Centers for Health Statistics of the Centers for Disease Control. The most recent health statistics for the US indicate that the Hispanic population has a life expectancy advantage at birth of 2.7 years over the non-Hispanic white population.

This Hispanic survival advantage in longevity increases with age to the effect that by age 65, 91.5 percent of the Hispanic resident population in Collier County have survived competing causes of mortality compared with 87.8 percent of the non-Hispanic population, a differential of 3.7 percent in 2014. Between 1990 and 2014, life expectancy increased markedly in Collier County, giving the county the distinction of having the second highest female life expectancy among all counties in the US and the 11<sup>th</sup> highest longevity at birth among males.

Figure 3 emphasizes the variation in life expectancy at birth between males and females over the 24 year period, 1990 to 2014.

Figure 3. Life Expectancy at Birth by Sex, Collier County, 1990, 2000 and 2014



This variation in life expectancy levels between females and males is clearly visible over the 24 year period, 1990–2014.

### Leading Causes of Death

The ranking of causes of death is a standard method of presenting and analyzing mortality statistics within a county, state and nation. Leading cause of death statistics have been tabulated by the U.S. government and the states since the 1950's and their ranking is a very useful tool in assessing the burden and distribution of mortality by cause, age and sex.

The rank order of causes of death is based on the most frequently occurring causes of mortality in terms of relative frequency of counts. The percentage distribution of these deaths are the proportion of total deaths attributed to a specific cause and reflect the relative importance and

weight of each cause within a particular age and/or gender category. Cause-specific mortality risk or the absolute burden of a specific disease or condition are measured by the crude and age-adjusted death rates and are not necessarily the total number or frequency of a particular cause.

The crude mortality rate <sup>a)</sup> as well as the age adjusted death rate <sup>b)</sup> will be observed as decreasing or increasing over this period analyzed in Collier County depending on the specific cause.

It should be emphasized that the exact ranking of causes of death do not necessarily coincide with the causes of death of major public health importance. For example, deaths from motor vehicle collisions and death from drownings are very important to our public health and the community at large, yet they are subsumed in the broader category—unintentional injuries.

The current structure presented in this document of leading causes of death is the accepted standard rankable list of causes that may be compared over time for analysis and evaluation purposes within Collier County as well as with the state and the nation.

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<sup>a)</sup> The number of persons dying during a calendar year within a defined geographical area divided by the number of persons at risk of dying during the same time period residing within the same geographical area.

<sup>b)</sup> When mortality and other rates are analyzed across different populations or for the same population over time periods, crude rates are only appropriate if influencing variables such as age remain constant. If the age distribution of a population or populations are changing or dissimilar, age-adjusted rates should be computed for comparison purposes. Age-adjusted rates are calculated by “adjusting” the age distributions of populations to an arbitrarily used standard population.



Tables 4 and 5 show the leading causes of death in Collier County for two periods, 2000 and 2014, respectively.

Table 4. Leading Causes of Death, All Ages, both Sexes, Collier County, 2000

Causes of Death	Deaths	Percent of Total Deaths	Crude Rate Per 100,000	Age-Adjusted Death Rate Per 100,000	*YPLL < 75 Per 100,000 Under 75
All Causes	2,319	100	910.9	607.8	6,695.60
Heart Disease	677	29.2	265.9	168.8	969.9
Cancer	586	25.3	230.2	144.4	1,681.20
Cerebrovascular Disease	150	6.5	58.9	36.3	93.5
Chronic Lower Respiratory Disease	131	5.6	51.5	30.3	187.1
Unintentional Injuries	101	4.4	39.7	41.5	1,345.70
Alzheimer's Disease	71	3.1	27.9	18.3	0.4
Diabetes Mellitus	49	2.1	19.2	11.8	91.3
Chronic Liver Disease and Cirrhosis	40	1.7	15.7	11.1	213.9
Suicide	34	1.5	13.4	12.7	354.9
Influenza and Pneumonia	33	1.4	13	8.2	51.6

\*Years of Potential Life Lost

Table 5. Leading Causes of Death, All Ages, both Sexes, Collier County, 2014

Causes of Death	Deaths	Percent of Total Deaths	Crude Rate Per 100,000	Age-Adjusted Death Rate Per 100,000	*YPLL< 75 Per 100,000 Under 75
All Causes	3,062	100	900.2	487.2	5,133.4
Cancer	782	25.5	229.9	120.8	1,209.4
Heart Disease	654	21.4	192.3	94.8	539
Alzheimer's Disease	186	6.1	54.7	25.1	19.2
Unintentional Injury	179	5.8	52.6	38.8	803.7
Chronic Lower Respiratory Disease	177	5.8	52	25.3	139.6
Cerebrovascular Disease	167	5.5	49.1	23.9	113.3
Diabetes Mellitus	66	2.2	19.4	10.7	141.7
Chronic Liver Disease & Cirrhosis	57	1.9	16.8	12.1	277.2
Parkinson's Disease	45	1.5	13.2	6.1	1.7
Suicide	36	1.2	10.6	9.5	287.7

\*Years of Potential Life Lost

Data Source: U.S. Census Bureau, Bureau of Vital Statistics. Calculations performed by FDOH–Collier County, Epidemiology Program

In 2014, the 10 leading causes of death in Collier County were cancer, heart disease, Alzheimer's disease, unintentional injuries, chronic lower respiratory disease, cerebrovascular disease, diabetes mellitus, chronic liver disease and cirrhosis, Parkinson's disease and suicide. These 10 causes accounted for approximately 77 percent of all deaths occurring in the county.

Comparing the patterns of mortality to the year 2000, the following shifts have occurred.

During the period between 2000 and 2014 mortality from heart disease declined significantly accounting for 21 percent of all deaths in 2014. Down from over 29 percent of the total number of deaths in Collier County in 2000. This decrease has placed cancer as the leading cause of death in Collier County while heart disease has shifted to the second leading cause. The number of deaths due to Alzheimer's disease between 2000 and 2014 increased by a

staggering 162 percent, while the number of total deaths from all causes had an increment of 32 percent over the same period.

Alzheimer's disease, which was the 6<sup>th</sup> leading cause of death in 2000, now ranks as the third leading cause, accounting for just over 6 percent of all deaths. This is a significant transition in mortality due to Alzheimer's disease which now accounts for over 6 percent of all deaths annually in Collier County compared to just 3 percent in the year 2000. In 1990, Alzheimer's disease was not a leading cause of death. In 2000, there were 71 deaths from the disease, by 2014 the number had increased by 62 percent to 186. As the baby boomers cohort continues to age and diagnosis and reporting of Alzheimer's disease becomes more prevalent, this cause of death will continue to play a leading role in the mortality pattern in Collier County, Florida and the US. Overall in Collier County, between 2000 and 2014, mortality decreased for seven leading causes and increased for two.

Diabetes remained the stationary seventh leading cause of death in the county during 2000 and 2014. While cerebrovascular disease was the third leading cause of death in 2000, in 2014, it fell to 6<sup>th</sup> place. Unintentional injuries was the 5<sup>th</sup> leading cause in 2000, in 2014 it became the 4<sup>th</sup> leading cause of death.

Chronic liver disease and cirrhosis remained the 8<sup>th</sup> leading cause of death in 2014, just as in 2000. Of all of the comparable leading causes of death during both years only Alzheimer's disease and chronic liver disease and cirrhosis experienced increases in the age-adjusted death rates.

By gender, the leading causes of death for males in Collier County remained almost identical in ranking order between 2000 and 2014, with the exception of the reversal of heart disease and cancer in first and second place, and the reversal of suicide and Parkinson's disease in 9<sup>th</sup> and 10<sup>th</sup> placed respectively. The leading causes of death for females varied considerably by rank order between 2000 and 2014. With the exception of chronic lower respiratory disease, the 4<sup>th</sup> leading cause for both years, unintentional injuries, the 6<sup>th</sup> leading cause for both years and diabetes, the 7<sup>th</sup> leading cause for both years. The remaining seven causes were all in different orders with a number of select causes of death unique to only 2000 or 2014. (Influenza and pneumonia and in 2000 and hypertensive renal disease and Parkinson's disease in 2014). (Tables 6 to 9).

Table 6. Leading Causes of Death, All Ages, Males, Collier County, 2000

Causes of Death	Deaths	Percent of Total Deaths	Crude Rate Per 100,000	Age-Adjusted Death Rate Per 100,000	*YPLL < 75 Per 100,000 Under 75
All Causes	1,265	100	992.9	723.7	8,805.9
Heart Disease	368	29.1	288.9	203.1	1,416.40
Cancer	321	25.4	252	165.5	1,600.80
Unintentional Injuries	70	5.5	54.9	59.6	2,107.70
Chronic Lower Respiratory Disease	63	5.0	49.5	34.3	124.3
Cerebrovascular Diseases	58	4.6	45.5	28.4	174.8
Alzheimer's Disease	30	2.4	23.5	15	122.6
Diabetes Mellitus	28	2.2	22	15.6	308.7
Chronic Liver Disease and Cirrhosis	25	2.0	19.6	18.3	496.5
Suicide	21	1.7	16.5	10.9	0.9
Parkinson's Disease	19	1.5	14.9	9.9	5.2

\*Years of Potential Life Lost

Table 7. Leading Causes of Death, All Ages, Females, Collier County, 2000

Causes of Death	Deaths	Percent of Total Deaths	Crude Rate Per 100,000	Age-Adjusted Death Rate Per 100,000	*YPLL < 75 Per 100,000 Under 75
All Causes	1,054	100	828.8	499.7	4,541.7
Heart Disease	309	29.3	243	137.4	514.3
Cancer	265	25.1	208.4	128.3	1,763.30
Cerebrovascular Diseases	87	8.3	68.4	37.6	62.1
Chronic Lower Respiratory Disease	73	6.9	57.4	31.9	199.7
Alzheimer's Disease	50	4.7	39.3	22.7	0
Unintentional Injuries	31	2.9	24.4	22.2	567.9
Diabetes Mellitus	19	1.8	14.9	8.7	59.5
Influenza & Pneumonia	14	1.3	11	6.9	98.9
Chronic Liver Disease and Cirrhosis	12	1.1	9.4	6.8	117.1
Atherosclerosis	11	1.0	8.6	4.7	1.8

\*Years of Potential Life Lost

Table 8. Leading Causes of Death, All Ages, Males, Collier County, 2014

Causes of Death	Deaths	Percent of Total Deaths	Crude Rate Per 100,000	Age-Adjusted Death Rate Per 100,000	*YPLL < 75 Per 100,000 Under 75
All Causes	1,649	100	987	580.1	6,714.6
Cancer	431	26.1	258	141.4	1,277.5
Heart Disease	387	13.5	231.6	124.1	795.9
Unintentional Injury	108	6.5	64.6	55.3	1384.8
Chronic Lower Respiratory Disease	79	4.8	47.3	24.5	131.2
Cerebrovascular Disease	75	4.5	44.9	23.9	133.2
Alzheimer's Disease	73	4.4	43.7	21.7	19.1
Diabetes Mellitus	39	2.4	23.3	14.5	215.9
Chronic Liver Disease & Cirrhosis	38	2.3	22.7	16.9	381.2
Parkinson's Disease	30	1.8	18	8.8	2.7
Suicide	30	1.8	18	16	474.1

\*Years of Potential Life Lost

Table 9. Leading Causes of Death, All Ages, Females, Collier County, 2014

Causes of Death	Deaths	Percent of Total Deaths	Crude Rate Per 100,000	Age-Adjusted Death Rate Per 100,000	*YPLL < 75 Per 100,000 Under 75
All Causes	1,413	100	816.4	400.8	3,591.7
Cancer	351	24.9	202.8	102.8	1,143.1
Heart Disease	267	18.9	154.3	69.2	288.4
Alzheimer's Disease	113	8.0	65.3	27.9	19.3
Chronic Lower Respiratory Disease	98	6.9	56.6	25.9	147.9
Cerebrovascular Disease	92	6.5	53.2	23.7	93.9
Unintentional Injury	71	5.0	41	21.7	237.1
Diabetes Mellitus	27	1.9	15.6	7.2	69.3
Chronic Liver Disease & Cirrhosis	19	1.3	11	7.9	175.9
Hypertensive Renal Disease	17	1.2	9.8	4.6	26
Parkinson's Disease	15	1.1	8.7	3.8	0.7

\*Years of Potential Life Lost

Data Source: U.S. Census Bureau, Bureau of Vital Statistics. Calculations performed by FDOH – Collier County, Epidemiology Program

A public health success is quite evident for influenza and pneumonia as a leading cause of mortality. In 1990, it was the 6<sup>th</sup> leading cause of death and by 2000 it had fallen to the 10<sup>th</sup> leading cause. In Collier County in 2014, influenza and pneumonia was the 12<sup>th</sup> leading cause of mortality, by sex it was the 15<sup>th</sup> leading cause for females and the 11<sup>th</sup> leading cause for males. This dramatic decrease in mortality can be attributed to an increase in the number of those 65 years and over receiving the influenza and the pneumonia vaccinations. Public health campaigns have been consistent during the past two decades over the importance of immunizations to persons of all ages. The emergence of the 2009 N1H1 influenza pandemic was instrumental in increasing community awareness of the risk of influenza and one of its most severe complications, pneumonia.

### Years of Potential Life Lost (YPLL)

The indicator Years of Potential Life Lost (YPLL) may be defined as the average number of years that a person would have lived had he or she not died prematurely. It is a measure of the relative impact of multiple diseases and conditions in a county, state or country, which illustrates the losses suffered as a consequence of the death of a person, usually prior to age 75.

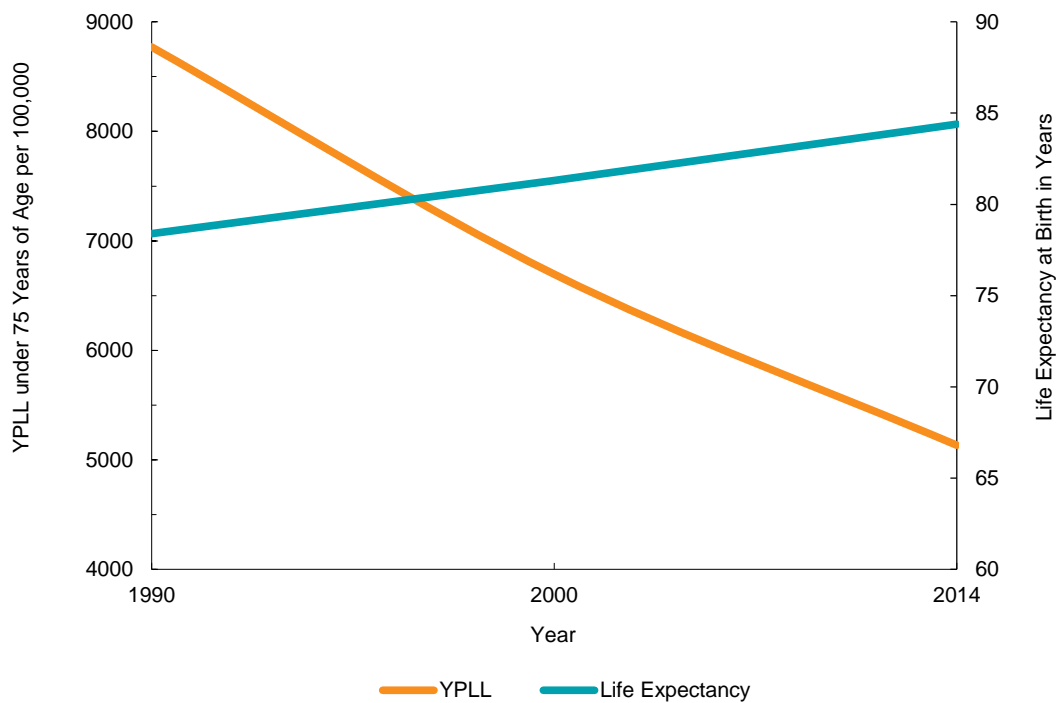
Compared to mortality rates, Years of Potential Life Lost places an emphasis on the processes or catalysts underlying premature mortality in a geographical area. YPLL supplements the mortality rate of a population by placing priority on and quantifying deaths in a county and state which are considered preventable. YPLL by definition in public health may be interpreted as a measure of preventable mortality for causes particularly those that are associated with life style choices and behavioral risks.

The level of YPLL within a geographical area is correlated with the educational and income level of the population as well as the public health prevention and planning strategies and priorities of a community.

YPLL may be thought of as an inverse measure of life expectancy. As YPLL decreases over time life expectancy at birth and at other ages increases on a relative basis. Figure 4 clearly displays the relationship between levels of life expectancy and Years of Potential Life Lost for Collier County.



Figure 4. Years of Potential Life Lost Under 75 Years of Age per 100,000 Population and Life Expectancy at Birth, Collier County, 1990, 2000 and 2013



Data Source: U.S. Census Bureau, Bureau of Vital Statistics. Calculations performed by FDOH – Collier County, Epidemiology Program

This relationship between YPLL and life expectancy can be described as a textbook inverse statistical correlation. As YPLL decreases, life expectancy at birth increases.

Tables 10 and 11 show the Years of Potential Life Lost (YPLL) per 100,000 population for females and males respectively, for 1990, 2000 and 2014. Steep declines in YPLL between 1990 and 2014 are visible for both sexes for several chronic diseases – cancer, heart disease, and cerebrovascular disease. YPLL from influenza and pneumonia decreased significantly for males and females by 55 percent each most likely related to increased levels of influenza vaccination in the general population and pneumococcal pneumonia immunization in select older age groups during this time period. While YPLL from unintentional injuries decreased by 66 percent for females and 52 percent for males, this cause remains the major cause of death generating the most Years of Potential Life Lost for males in Collier County—placing it ahead of cancer. For females, death from injuries generates less Years of Potential Life Lost than both cancer and heart disease.

Table 10. Years of Potential Life Lost Under 75 Years of Age per 100,000 Population, Females, Collier County, 1990, 2000, and 2014

Disease or Condition	2014	2000	1990
Cancer	1143.1	1763.3	1962.6
Heart Disease	288.4	514.3	553.7
Unintentional Injuries	237.1	567.9	697.4
Chronic Liver Disease and Cirrhosis	175.9	117.1	105.7
Chronic Lower Respiratory Disease	147.9	199.7	91.6
Suicide	105.9	210.3	187.4
Cerebrovascular Disease	93.9	62.1	211.3
Diabetes Mellitus	69.3	59.5	50.7
Influenza & Pneumonia	38	98.9	84.5
Aortic Aneurysm & Dissection	34	21.3	0
Viral Hepatitis	32.6	31.1	4.2
Homicide	30.6	117.1	94.4

Data Source: U.S. Census Bureau, Bureau of Vital Statistics. Calculations performed by FDOH – Collier County, Epidemiology Program

Table 11. Years of Potential Life Lost Under 75 Years of Age per 100,000 Population, Males, Collier County, 1990, 2000 and 2014

Disease or Condition	2014	2000	1990
Unintentional Injuries	1384.8	2107.7	2895.0
Cancer	1277.5	1600.8	2209.0
Heart Disease	795.9	1416.4	1658.0
Suicide	474.1	496.5	744.3
Chronic Liver Disease and Cirrhosis	381.2	308.7	187.8
Homicide	216.6	304.3	700.5
Diabetes Mellitus	215.9	122.6	187.8
Cerebrovascular Disease	133.2	124.3	262.7
Chronic Lower Respiratory Disease	131.2	174.8	137.0
Septicemia	119.2	67.0	5.6
HIV Infection	43.7	303.5	572.0
Influenza and Pneumonia	41	5.2	91.8

Data Source: U.S. Census Bureau, Bureau of Vital Statistics. Calculations performed by FDOH – Collier County, Epidemiology Program

Diseases or conditions showing an increase in Years of Potential Life Lost between 1990 and 2014 include: chronic liver disease and cirrhosis—an increase of 66 percent for females and an increase of 103 percent for males; chronic lower respiratory disease—an increase of 61 percent in females and an increase of 69 percent for males; and diabetes mellitus—an increase of 150 percent for males and 37 percent for females.

YPLL from HIV infection declined dramatically over this period for both sexes; a decrease of 100 percent for females and 92 percent for males between 1990 and 2014. In 2014 there were no female deaths attributed to HIV. These highly visible changes and mortality levels are resultant of the introduction of antiretroviral therapy during the 1990's that increased life expectancy significantly for infected individuals.

Table 12 shows the ratio of Male to Female Years of Potential Life Lost per 100,000 population by leading causes of death.

Table 12. Ratio of Male to Female Years of Potential Life Lost per 100,000 Population, by Leading Causes of Death, Collier County, 2014

Cause	YPLL for Males	YPLL for Females	Ratio of YPLL for Males to Females
All Causes	6,714.6	3,591.7	1.87
Cancer	1277.5	1143.1	1.12
Unintentional Injury	1,384.8	237.1	5.84
Heart Disease	795.9	288.4	2.76
Suicide	474.1	105.9	4.48
Chronic Liver Disease & Cirrhosis	381.2	175.9	2.17
Diabetes Mellitus	215.9	69.3	3.12
Chronic Lower Respiratory Disease	131.2	147.9	0.89
Homicide	216.6	30.6	7.08
Cerebrovascular Diseases	133.2	93.9	1.42
Septicemia	119.2	16.7	7.14
Influenza & Pneumonia	41	38	1.08
Viral Hepatitis	21.9	32.6	0.67
HIV Infection	43.7	0	...*
Essen Hypertension & Hypertensive Renal Disease	13	26	0.50
Alzheimer's Disease	19.1	19.3	0.99

\*Unable to calculate ratio due to the fact that there were no female death related to HIV infection in 2014.

Data Source: U.S. Census Bureau, Bureau of Vital Statistics. Calculations performed by FDOH–Collier County, Epidemiology Program

A ratio of 1.00 indicates parity or no additional risk of males in Collier County losing years of life expectancy prior to age 75 compared with females for the same particular cause.

A ratio of 4.00 would imply that males on average in Collier County lose years of potential life at a four-fold higher rate than females prior to age 75 from a specific cause. An antithesis could be a ratio of 0.50 which would imply that males on average will lose 50 percent less years of potential life prior to age 75 compared to females in Collier County from the same cause of death.

For all causes of death in Collier County in 2014, males lost 87 percent of expected years of life from birth through age 75 more than females due predominantly to premature deaths from: 1) unintentional injuries (accidents), 2) heart disease, 3) suicide, 4) chronic liver disease and cirrhosis and 5) homicide. While suicide and homicide are not among the leading causes of death, these two causes create a heavy burden on public health, particularly among males in the local community, than other causes such as chronic lower respiratory disease, diabetes and cerebrovascular disease. This is due to the fact that certain chronic and infectious diseases contribute to mortality as expected at ages 75 and over. At the same time select violent causes of death tend to occur at younger otherwise healthier ages thus subtracting years from an otherwise expected average life expectancy.

## Actual Causes of Death

Since the early 1990s the public health and medical community of the United States has been placing emphasis and public importance on the major external and modifiable influences and factors that contribute overwhelmingly to mortality in our communities. These lifestyle and behavioral factors may not contribute to every single death; however, they are associated and correlated with a plurality, if not a majority, of all deaths in every county and state in the United States annually.

Due to the interval in time since the last analysis by the CDC, these actual causes of death values may be lower or higher at the present time. For example, the number of deaths caused by tobacco may have decreased, while the number of deaths due to overweight and obesity may have increased since the last calculations.

Table 13 shows the leading causes of death in Collier County in 2014 contrasted with the actual preventable causes of death for comparison.

Table 13. Leading Causes of Death in Collier County in 2014 contrasted with the  
Actual Preventable Causes of Death for Comparison

Ten Leading Causes of Death	Number of Deaths	Percentage Distribution
Cancer	782	25.5
Heart Disease	654	21.4
Alzheimer's Disease	186	6.1
Unintentional Injuries	179	5.8
Chronic Lower Respiratory Disease	177	5.8
Cerebrovascular Disease	167	5.5
Diabetes Mellitus	66	2.2
Chronic Liver Disease and Cirrhosis	57	1.9
Parkinson Disease	45	1.5
Suicide	36	1.2
Total, Ten Leading Causes of Death	2,349	76.7
All other Causes	713	23.3
Total	3,062	100.0

Actual Preventable Causes of Death	Estimated Number	Percentage Distribution
Tobacco	554	18.1
Poor Diet and Physical Inactivity	508	16.6
Alcohol Consumption	107	3.5
Infectious Diseases	95	3.1
Toxic and Chemical Agents	70	2.3
Motor Vehicle Crashes	55	1.8
Firearms	40	1.3
Sexual Behavior	25	0.8
Illicit Drug Use	22	0.7
Actual Total Preventable Causes of Death	1,476	48.2

Data Source: Bureau of Vital Statistics. Calculations performed by FDOH – Collier County, Epidemiology Program

By inference, over 48 percent of all deaths, or almost one half on an annual basis, are potentially preventable. In Collier County, mortality from all cancers and heart disease accounts for 46.9 percent of all deaths annually. Cerebrovascular disease combined with unintentional injuries (which includes fatal motor vehicle crashes) account for over 1 in 10 deaths in Collier County every year. In 2014, one out of every 16 deaths was due to Alzheimer's disease.

While tobacco has remained the leading cause of preventable mortality, overweight and obesity resulting from poor diet and physical inactivity may overtake smoking in the near future as the leading actual cause, as tobacco use has declined over the latter part of the 20<sup>th</sup> through the 21<sup>st</sup> century while the prevalence of overweight and obesity in the population is continuing to increase at a consistent pace.

Tobacco use accounts for approximately one of every five deaths in Collier County each year. It is the leading preventable cause of death in Collier County. In 2014, tobacco was responsible for at least 554 deaths in Collier County.

As the prevalence of overweight and obesity has increased in the United States, the risk of death from cardiovascular disease, diabetes and kidney disease increases due to their medical correlation. In Collier County in 2014, overweight and obesity were associated with at least 508 deaths.

Overweight, poor diet and physical inactivity in Collier County account for about another one in six deaths annually. These life style behaviors also heavily contribute to Years of Potential Life Lost, which in effect results in a reduction of life expectancy.

The abuse and misuse of alcohol accounts for about 3.5 percent of all deaths in the United States. Alcohol related deaths include alcohol-related motor vehicle crashes, numerous site specific cancers, cerebrovascular disease, hypertensive heart disease and chronic liver disease and cirrhosis.

During 2014, at least 107 deaths were estimated to be alcohol attributable in Collier County. The collective remaining lifestyle and behavioral actual causes of death include infectious diseases, toxic chemical agents, motor vehicle crashes, firearms, sexual behavior and illicit drug use, which accounted for approximately 10 percent of all deaths in Collier County or about one in every ten deaths.



The recent decline in life expectancy statistics for select demographic population groups throughout the United States support the urgent need to continue to provide preventive education and strategies within the public health system related to exercise and physical activities as well as dietary choice and habits.