NCH HEALTHCARE SYSTEM
COMMUNITY NEEDS ASSESSMENT
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September 25, 2019

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OVERVIEW OF THE NCH HEALTHCARE SYSTEM

The NCH Healthcare System is a not-for profit 501(c) (3) community health care system with multiple facilities throughout Collier County and the surrounding areas. NCH has evolved over the last 63 years becoming one of the most progressive healthcare systems in the country embracing new technology and evidence-based medicine. NCH offers advanced comprehensive care while adopting new effective ideas in medicine and healing.

Founded by local residents, NCH opened March 7, 1956 with 50 beds and now offers a wide range of services and physicians in multiple locations throughout Southwest Florida.

The NCH Healthcare System is an alliance of 775 physicians and medical facilities in dozens of locations throughout southwest Florida. The NCH Baker Downtown Hospital has 391 beds and the NCH North Naples Hospital provides 322 beds. NCH inpatient services include: medical, surgical, cardiac, stroke, orthopedic, obstetric, pediatric, rehabilitative, psychiatric, oncology, emergency treatment, and diagnostics. Outpatient services include: freestanding emergency departments, rehabilitation, home care, urgent care, wound healing, wellness, nutrition, and more. The NCH Physician Group is the largest physician group in Collier County with 800,000 total patient visits. NCH is a member of the Mayo Clinic Care Network and sponsors the Blue Zone Project for Southwest Florida. NCH's mission is to help everyone live a longer, happier, and healthier life.

Home to the first and only Open Heart Surgery Program in Collier County, NCH has been a pioneer in the cardiac arena for almost two decades. Today, the NCH Heart Institute, with a team of 16 dedicated physicians and additional staff members, specializes in the expert management of cardiovascular and peripheral vascular disease in three centralized convenient locations on the Baker Hospital Downtown campus in Southwest Florida.

NCH has come a long way since its beginnings. It has been nationally recognized for quality and is an important player in a competitive healthcare market. Relationships with quality healthcare organizations outside of NCH also serve to strengthen our capabilities. NCH is the first hospital in Florida and the first in the Southeastern US to become a member of the Mayo Clinic Care Network.

As a result of this new membership, which began in 2012, our patients now have the added advantage of access to Mayo's highly regarded expertise.

Here is a snapshot of today's NCH Healthcare System:

- We treat more than 40,570 patients every year.
- One in eight patients comes from outside our immediate area – attracted by our reputation for quality.
- We deliver more than 3,505 babies each year.
- We do 12,120 surgeries a year including 440 open-heart cases.
- We have 123,100 emergency room visits every year.
- Our medical staff encompasses more than 775 physicians; each equipped with the most advanced state-of-the-art medical technology and committed to providing the most competent care for our patients.
- NCH is the largest non-governmental entity in Collier County.

Behind these statistics is a caring cadre of 5,000 staff members, a 16-member Board of Trustees of local leaders, and 1,100 motivated community volunteers, all dedicated to improving the quality of life for our patients, their families and friends.

OUR COMMUNITY

The NCH Healthcare System's primary service area is Collier County and secondary service area includes Estero and Bonita Springs located in southern Lee County. Approximately 12% of our discharges historically are from outside the primary and secondary service areas due to the huge influx of part time residents and tourists from January through April. The permanent population of Collier County is currently estimated at 369,688. Additionally, the permanent population of Bonita and Estero is estimated at 85,692. Collier County enjoys a reputation as one of the most desirable places to visit and live in the United States. Collier County's population nearly doubles from January through April due to the influx of seasonal residents and tourists. The population of Collier County has grown 48% from 2000 through 2018. The table below breaks down the population of Collier County by age for the years 2000 and 2018.

AGE	***2000***	***%***	***2018***	***%***
0 –17	54,794	21.9 %	71,853	19.3%
18 - 24	11,717	4.8 %	17,938	4.9%
25 - 34	28,279	11.3%	36,041	9.7%
35 - 44	34,168	13.7%	36,473	9.9%
45 – 54	29,239	11.7%	44,052	11.9%
55 – 64	31,504	12.6%	49,413	13.4%
65 – 74	34,279	13.7%	58,981	16.0%
75 +	25,824	10.3%	54,938	14.9%

We also are the dominant healthcare provider in both our primary and secondary service areas. As of December 31, 2018 NCH had 72% market share in our primary service area and 53% in our secondary service area. The map below illustrates the percentage breakdown of discharges by zip code for fiscal year ended December 18, 2018 in our primary service area.

Collier County is very diverse with over a 44.7% minority rate in the permanent population. The table below illustrates the most recent breakdown of Collier County by race.

RACE	***POPULATION***	***PERCENT***
White	204,499	55.3%
Hispanic	100,290	27.1%
Black	26,465	7.2%
Asian	5,190	1.4%
Other	33,244	9.0%

Collier County is one of the most affluent counties in the country populated, which also has several low-income areas. With the average household income at $84,483, over 44% of the population reports an average household income below $50,000. The table below illustrates average household income estimates as of December 31, 2018.

HOUSEHOLD	***HOUSEHOLDS***	***PERCENT***
$0 - $14,000	12,127	7.9%
$15,000 - $24,999	13,788	9.0%
$25,000 - $34,999	15,307	9.9%
$35,000 - $49,999	19,980	13.0%
$50,000 - $99,999	48,625	31.5%
Over $100,000	44,189	28.7%

APPROACH/METHODOLOGY

Historical Community Needs Assessment

Our leadership team is actively involved and participates in many community related organizations and groups that are continually assessing unmet needs within Collier County. We have historically worked with our Board of Trustees, Collier County Children's Alliance, United Way, Collier County Public Schools, the Immokalee Foundation, Children's Medical Services, and other agencies throughout our community in assessing and collaborating in efforts to improve the health of our community. NCH provides many health-enhancing educational programs and

resources in promoting health to the community. The current programs and resources provided to the community for 2018 include the following:

Health Seminars

- Free health seminars were provided to the public at the NCH Telford Education Center, von Arx Diabetes Center and at various community outreach facilities. Value = $58,575

Community Health Fairs and Testing

- Complimentary or reduced-price testing along with educational booths at community health fairs are provided by a number of NCH services lines. Complimentary or reduced price screening tests such as cholesterol testing given at many community events. At the Marco Island Healthcare Center alone, thousands of complimentary blood pressure checks were performed. Value = $216,611

RNs

- NCH nurses get involved in educating future patients and easing their mind about their upcoming care. Preoperative seminars are held for those interested in learning more about elective orthopedic procedures. Many of RN leadership participate in community boards such as the Naples Alliance for Children and Drug Free Collier. Value = $38,344

Support of the Neighborhood Health Clinic

- The vision of a retiring NCH medical staff member and his wife came to fruition in our community several years ago. Together, they helped rally the community to establish a clinic to provide care to the "working poor" of Collier County. NCH helped the Neighborhood Health Clinic get on its feet by first providing clinic space and laboratory services at no charge, and then providing expertise in the areas of information technology, biomedical technology, pharmacy and many other areas. When the Neighborhood Health Clinic has a patient with clinical needs beyond what they can offer, NCH has provided services to these patients. Value = $913,557

St. Matthew's House

- NCH has partnered with physicians in this community initiative to provide inpatient and outpatient services at no cost to patients who reside at St. Matthew's House.
  Value = $1,541,081

P.L.A.N. – Physician Led Access Network of Collier County

- NCH has partnered with physicians in this community initiative to provide medical services to the poor by providing both inpatient and outpatient care. Value = $1,491,118

Heart Programs

- A healthy heart is a focus for NCH. The annual Heart Walk is an exciting event in which teams and individuals are sponsored to walk through Old Naples to support the cause of fighting heart disease. NCH has been a major supporter of the American Heart Association for many years. Value = $67,035

Cancer Survival

- Another important initiative for NCH is assisting patients in their cancer survival. NCH is a proud sponsor of Garden of Hope. Value = $44,569

Support of Patient Families

- A medical event can affect the entire family. For families of brain injury and stroke patients, our team provides monthly guidance through support groups free of charge. We support the March of Dimes and assist patients who cannot afford expenses such as transportation, personal items and home care. Value = $305,297

Dr. John Briggs Wellness Center

- A number of fitness services are provided through the Dr. John Briggs Wellness Center at a discount or free of charge. When a financial need exists, community members are provided complimentary memberships. Value = $55,181

Sharing of Space

- When space is available, NCH provides space at no cost to needy, not-for-profit organizations. The **Telford Education Center** is available to not-for-profit healthcare related groups such as "Mended Hearts" and those that provide support for stroke and kidney patients. Residents of Marco benefited with the use of our facility for community education and the Hospice support group. Value = $16,040

Clinical Schools

- The clinical nursing schools of FGCU and Florida Southwestern State College are provided here at NCH. NCH works with universities on providing pharmacy and laboratory preceptorships to students. NCH also provides on-site classrooms for clinical education.

Nursing and radiology scholarships are generously funded at both Florida Southwestern State College, FGCU and other Florida universities. Value = $211,119

Sharing Our Experience

- Members of NCH management serve on community boards in various capacities. We also provide expertise to other community issues such as workforce housing and workforce development. Value = $152,850

Caring for the Spirit

- NCH has always provided exemplary pastoral care services. A formally accredited program is now in place to educate members of the ministry in the spiritual treatment of the sick in our Clinical Pastoral Education (CPE) program. Value = $20,000

Our Employees Give

- The spirit of caring goes beyond our doors. Not only do many NCH employees give to our needy coworker program "Partners in Caring", but NCH employees hold a Christmas toy drive in which hundreds of toys are distributed to needy children. In late summer, a school supply drive is conducted to assist children in starting the school year off right. NCH employees are also pacesetters for the United Way in their annual giving program. Value = Unknown

Blue Zone Project

The NCH Healthcare System's mission and focus on population health provides an excellent foundation for the introduction of the Blue Zone Project of Southwest Florida. NCH is sponsoring this eight year project initiative with ShareCare which supports the vision to make our community an even healthier, happier and more vibrant place to live.

The NCH Healthcare System and ShareCare have a commitment to improve the well-being of Southwest Florida, thereby lowering healthcare costs, increasing productivity and improving the economy and quality of life for all residents.

The current efforts have been underway for over five years with policy leaders, schools, worksites, healthcare, and civic organizations and, combined with the commitments of early adopters,

demonstrate a community primed for transformation and improved well-being. Community stakeholders from Southwest Florida demonstrate tremendous support and collaborative spirit in support of the Blue Zone Project.

The Blue Zone Initiative is focusing efforts on becoming a catalyst for change including:

- Improving well-being as measured by the Gallop-Well-Being Index beyond best comparable results in Florida and the region
- Generating significant medical cost savings and productivity improvement over the project term
- Lowering the obesity rate
- Lowering smoking rates
- Increasing vegetable consumption
- Boosting economic vitality
- Increasing daily physical activity levels
- Positioning Southwest Florida as a nationwide innovator and leader in preventative health

The benefits include lower healthcare cost, improved productivity and a higher quality of life.
Value = $XXXXXX

Assessing Community Health Needs

NCH in collaboration with the Florida Department of Health met with 49 public health leaders (Appendix A) in the community to conduct the Collier County Local Public Health Assessment. In addition, community input was received through survey and several focus group meetings held throughout Collier County. Along with other data collection and analysis (Appendix C), NCH developed their third Community Health Needs Assessment (CHNA).

The CHNA identified problem areas that needed to be addressed. These included sufficient job employment, economic opportunities, access to affordable housing, drug and alcohol abuse, safe roadways for bicyclist and pedestrians, primary care resources, access to affordable healthy food, access to long term care needs, communicable disease, obesity, chronic disease, mental health, dental health, access to care, disabilities and unintentional injuries.

Upon review of the findings of the CHNA, the NCH Leadership Team, with the approval of its Board of Trustees came up with five key areas to focus on which included mental health, chronic disease (oncology), maternal and infant health, health of the older population and health behaviors and outcomes. Below is a summary of activities and initiatives that NCH achieved in the past three years in these specific key areas.

Mental Health

In an effort to expand access of outpatient behavioral health service NCH co-located physician practices and NCH has been participating in the Collier County Commissioners Ad Hoc Task Force on Mental Health and Addiction Needs in Collier County. The Committee sponsored a one-cent sales tax, which was approved for $25 million for improving mental health in Collier. In response to managing high-risk psychiatric patients, NCH has placed case managers in NCH emergency departments to work with frequent users of ED and Inpatient Services. In order to target severe depression NCH will soon be implementing an Electro Convulsive Therapy Program (ECT) and a Trans Magnetic Simulation Program (TMS), as well as IV Ketamine and intra nasal Ketamine programs when approved by the FDA.

Chronic Disease (Oncology)

In 2017, the in-patient 24 Bed Oncology Unit was completely renovated. Also in 2017, NCH hired a breast surgeon and implemented a Comprehensive Breast Program with focus on diagnostic screening and intervention. An additional breast surgeon will start in October 2019. NCH hired cardio thoracic surgeons who developed a comprehensive lung cancer program focusing on screening, navigation, survivorship and surgical intervention. NCH expanded its nurse navigation program with focus on following oncology patients throughout the continuum of care with special emphasis on breast and lung patients as well as screening activities. NCH also completed a Comprehensive Multidisciplinary Strategic Plan and has added multidisciplinary site specific Tumor Boards for breast and lung since 2017 and anticipates GI and GU Tumor Boards in early 2020. NCH is currently discussing possible partnerships in oncology with other healthcare providers in the area.

Maternal and Infant Health

NCH has maintained Baby Friendly designation by increasing breastfeeding rates to 80%. NCH has decreased early elective deliveries by implementing aggressive baby monitoring and evaluation programs. NCH monitors and reviews 100% of patient charts that meet hypertension criteria. NCH started a Maternal Fetal Medicine service line, which provides mothers/babies specialized care here in Collier County.

Health of the Older Population

NCH has expanded geriatric medicine to multiple NCH physician practices. Two NCH physicians are Medical Directors of two Skilled Nursing Facilities in Collier County. NCH also conducts the Powerful Tools for Caregivers Program in Collier County by providing Age Well Tools Kits to all seniors that attend health fairs and other community events.

Other Available Data

NCH reviews nationally publicized data that assesses specific unmet needs related to minorities, seniors, women, and children based on income, education, and culture. NCH also reviews Press Gainey Patient Satisfaction Reports and utilizes input from our discharge planning and case management on community needs. In addition, our Foundation works closely with other community not for profit foundations assessing unmet needs for under privileged groups and individuals in our community. Attachment C contains the various chapters develop by the Collier County Health Department which NCH was involved in data gathering and review of this information which is contained in Attachment B of this report.

FINDINGS

A major component of NCH's assessment of the CHNA is based on the Collier County Community Health Assessment completed July 2019. The executive summary is as follows:

Chronic Disease and Mortality

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

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

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

1) Tobacco use and exposure to second hand smoke
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% of adults in Collier County have one chronic condition or disease.

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

Chronic diseases are the leading cause 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 disease as a whole still accounts 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 classical infectious and communicable diseases during the last century due to the introduction of antibiotics and other infection control related treatments and therapy.

Infectious Disease

Infectious or communicable diseases are illnesses caused by pathogenic organisms such as viruses, bacteria, parasites, and fungi. Some infectious diseases present as mild diseases, but others can be fatal. Infectious diseases can be acquired by consuming contaminated food or water,

by being bitten by insects or animals, or by having contact with an infected person. Many communicable diseases 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 by 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 conditions in the community.

In 2017, a total of 1,878 disease cases (or about 524 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 cases count). Between 2008 and 2017, reportable disease incidence in Collier County increased by 19.9%. A similar pattern was seen for the State of Florida. The reasonable public health explanation for the uptick in Collier County is the economic recession and its related impact on the community. Collier County continues to have the highest reportable disease case rate throughout Southwest Florida.

In Collier County, five diseases and conditions account for 82.3% of all investigations carried out by the different programs in the Florida Department of Health in Collier County. The five leading communicable diseases and health conditions reported in Collier County in 2017 include: chlamydia, salmonella, gonorrhea, animal bites (post exposure prophylaxis recommended) and campylobacter.

The Epidemiology and Health Assessment Program investigated a total of 538 reportable diseases and conditions, about 29% of all reportable diseases and conditions. Between 2008 and 2017, the incidence rate of these reportable communicable diseases in Collier County increased by 29.4%. If

population growth is not taken into account, the number of diseases increased by 46.6% over this same interval.

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 others factors such 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.

From 2008 to 2017, the infant mortality rate for Collier County decreased by 6%. During this ten-year period, the highest rate occurred in 2009 with 7.4 per 1,000 live births. The infant mortality rate for the State of Florida experienced a similar decline of 15%.

From 2008 to 2017, the white infant mortality rate in Collier County decreased by 6% while the black infant mortality rate slightly increased by 2%. In Florida, the corresponding declines were 20% and 16%, respectively. In Collier County, a challenge does appear to be surfacing for the black population as the infant mortality rate has actually been increasing since the year 2000.

In 2017 in Collier County, the non-Hispanic infant mortality rate was lower than that of the Hispanic and Haitian population. In both Florida and Collier County, Haitians consistently had higher infant mortality rates than the other two ethnic groups. The infant mortality rate for Haitians ranged from a high of 22 to a low of 3.3 per 1,000 live births, while this rate ranged from

a high of 7 to a low of 2.8 per 1,000 live births in Hispanics and a high of 7.6 and a low of 2.8 in non-Hispanics.

Injuries

Injuries affect the entire population regardless of age, sex, 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 about 7% of all deaths annually.

The risk of mortality due to an injury will vary by sex, age and the external cause. Males have significantly higher death rates from injuries than females at any age group. For adults 20 to 64 years of age, poisoning is a leading cause of injury mortality, while the foremost cause of injury deaths in the older population is falls. The risk of death from any external cause rises exponentially beginning around 70 years of age.

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. Motor vehicle traffic mortality rates, on the other hand, have been declining over the past three decades. While many other causes of injury mortality have been declining 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 with the increased levels of life expectancy.

All 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. The injuries analyzed were motor vehicle deaths, unintentional poisoning, drownings, falls, and homicides.

Access to Healthcare

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. For the population of a community to

gain access to health services, it needs to obtain entry into the healthcare system, locate and access a location where the needed healthcare services are provided, and access a health care provider with whom the patient can communicate with confidence.

The overall level of physical, social and mental health status is impacted by the degree of access to health services. Access to health care influences 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) 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 health services.

In 2010, 23.2% of the total resident population in Collier County was uninsured. By 2016, this number declined significantly by 7 percentage points to 16.2%. By age group, the largest decrease in the uninsured rate in Collier County was for those 18 to 64 years of age from 35.9% in 2010 to 26.5% in 2016- a decline of 9.4 points. The population under 18 years of age experienced a decrease of 6.7 percentage points, from 18.5% to 2010 to 11.8% uninsured in 2016. The uninsured population 65 years and older was the only age group to experience an increase from 0.8% in 2010 to 1.6% in 2016. The percentage distribution of the uninsured in Collier County by sex for 2010 and 2017, for both males and females experienced a 6% or greater point reduction on their uninsured rates.

Between 2008 and 2017, the rate of total hospital beds in Collier County increased by 2.4% while in Florida the rate decreased by 2.4%. During the same period, the rate for acute care beds in Collier County decreased by 6.5% while in Florida the rate decreased by 4.6%. In both Collier County and Florida, rates for specialty beds increased between 2008 and 2017, by 53.7% and 8.7% respectively.

The total number of licensed physicians per 100,000 population increased by 41% in Collier County between 2008 and 2017. In Florida, the rate of licensed physicians grew by 7.2% during the same period. The exponential increase in population size and demographic dynamics of the

older population within Collier County is having a powerful influence on the increments of healthcare resources within the community.

Health Behaviors and Health Status

One of the correlations of higher levels of life expectancy 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. Health 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 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 risker habits than an unmarried person.

It is estimated in the United States that the two most prevalent unhealthy behaviors of lifestyle related habits, tobacco use and overweight and obesity, account for more than one third of all preventable and premature deaths annually. This holds true for Collier County and Florida as well.

In 2016, 21.3% of Collier County adults indicated they were obese. This was almost six percentage points lower than the proportion in Florida. Both the county and the state have seen their percentage of obese adults increase since 2002. This trend mirrors the national situation in most cases.

When analyzed by sex, males are much more likely to be obese than females – both in Collier County and throughout the state. In Collier County, 22.4% of males were obese in 2016. This was 5.9 percentage points lower than the male obesity rate for Florida. Approximately 20% of women in Collier County were obese, compared to more than 25% in Florida.

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-term delays between the first onset of symptoms and when the person seeks treatment.

In the United States, approximately 50% of Americans will be diagnosed with a mental illness or disorder in their lifetime. Approximately 4% of adults have a serious mental illness (SMI) which seriously affects their ability to function properly in society. Mental illnesses are also not uncommon among young adults under age 18. Approximately 20% of children have had a seriously debilitating mental illness.

In 2016, 91% of Collier County residents reported having good mental health, a slight decrease from 2013. About 7.3% of Collier County residents in 2013 reported poor mental health on 14 or more of the past 30 days. In Collier County, this increased to 9% in 2016, while in Florida the percentage decreased from 12.7% in 2013 to 11.4% in 2016.

Collier County has four facilities that provide psychiatric/substance abuse services to local residents. These four facilities offer a combined total of 204 treatment beds to local residents. All facilities except Naples Community Hospital (NCH) offer both inpatient and outpatient treatment services. NCH only offers inpatient 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 2007 and 2018, the number of dentists increased by 10.3%, from 65.2 dentists per 100,000 population to 71.9 dentists per 100,000 population. For Florida, during the same period the number of dentists decreased by 6.8%.

Dentists in private practice provide most of the dental care in Collier County. 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 or 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 2017, 894 Collier County residents age 5 and over visited hospital emergency rooms for dental conditions considered avoidable with proper preventable dental care. Between 2008 and 2017, dental emergency room visits in Collier County decreased by 22% while dental emergency room visits in Florida increased 23.2%.

In Collier County, between 2008 and 2017, there was 68.8% increase in hospitalizations from preventable dental conditions for people under 65 years of age, from 5.4 per 100,000 population to 8.9 per 100,000 population. For Florida, during the same time, the rate increased by 31.9% from 9.1 per 100,000 to 12 per 100,000.

The Health of the Older Population

The older population of Collier County (persons 65 years and above) numbered 111,012 in 2017. This represents 31% of the total county population or almost one in every three residents. The number of older Collier County residents increased by 29% since 2010, whereas the number of the under 65 years of age population increased by only 5%.

The sex ratio distribution of the population 65 years and over in 2017 was 111 females to every 100 males. The ration increases with age due to the greater margin of life expectancy that the females have over the male population.

Since 2000 the percentage of residents in Collier County ages 65 and over has increased by 78%, from 62,257 to 11,012 in 2017. 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 2017, the 65 to 74 age group in Collier County numbered 57,431, which is 1.6 times larger than it was in 2000. Concurrently, the 75 to 84 age group is 1.8 times larger and the 85 years and over age group is 2.8 times greater than it was in 2000.

During the period 2000 to 2017, mortality rates continued to decline for the population 65 to 84 years of age. For men, the decrease was 21% for ages 65 to 74 and 28% for ages 75 to 84. For females, the decrease was 24% for ages 65 to 74 and 33% for ages 75 to 84.

Life expectancy at birth has increased by 3.6 years for males and by 3.1 years for females since 2000. In 2016 persons in Collier County who reached age 65 had an average additional life expectancy of 25.4 years. The number of older persons has increased as a result of the Baby Boomer cohort turning 65 years of age in the 2010s. This will cause a significant exponential growth in the older age group through the year 2030.

CONCLUSION

Community health is a complex equation with multiple variables that are interrelated and involve agencies and organizations from nearly every sector. The community health priorities described in the Community Health Assessment (CHA) are an example of such complexity. Mental health issues relate to drug and alcohol use. Drug and alcohol use increases individuals' risk factors for chronic diseases. Having access to quality health care services might result in treatment for mental illness or reveal the early symptoms of a chronic illness and motivate a behavior change that prevents it. All these issues affect older adults in similar ways because young adults become older adults. Preparing for the health services needs of older adults is especially poignant at this time because that sector of the population is expected to grow exponentially over the next decade.

RESPONSE TO FINDINGS

Upon review of the findings of the (CHNA) and based on the mission, vision and core values of the NCH Healthcare System has determine to focus on four key areas which include:

- Mental Health
- Access To Care
- Chronic Disease
- Health of Older Adults

Unaddressed Identified Needs

Although several community needs were identified, NCH must focus our existing clinical strengths and infrastructure where we can maximize our resources to benefit the greatest number of people in the community. NCH will continue to re-evaluate the unaddressed identified needs and pursue action when and where resources allow.

COMMUNITY BENEFIT PLAN

NCH is committed to promoting existing and potential new programs to the community in response to the (CHNA). This report in additional this report the Community Benefit Implementation Plan (Attachment B) and attachments (Attachment C) will be presented for approval at the September 25, 2019 NCH Board of Trustees Meeting.

ATTACHMENT A

LEADRSHIP FOCUS GROUP ATTENDEES

American Red Cross
Avow Foundation
Big Brothers Big Sisters of the Suncoast
Blue Zones Project/Healthways
Cancer Alliance Naples
Collier County CAT (Collier Area Transit)
Collier County Library
Collier County Medical Society
Collier County Parks and Recreation
Collier County Public Services
Collier County Sheriff
Collier Mosquito Control District
David Lawrence Center
Drug Free Collier
Florida Gulf Coast University
Health Planning Council Southwest Florida
Healthcare Network of Southwest Florida
Healthy Start Coalition of Southwest Florida
Hodges University
League of Women Voters
Lions Club
Naples City Council
Neighborhood Health Clinic
North Collier Fire & Rescue
Panira Clinic
PLAN

Safe & Healthy Children's Coalition

Schulze Family Foundation

Senior Friendship Center

UF/IFAS Family Nutrition Program

UF/IFAS Sustainable Foods Agent

ATTACHMENT B

Community Benefit Category	Name of Program	Description of Program	Method of Evaluation
MENTAL HEALTH	Research collaborative relationships with other community mental health providers	To more effectively treat the increasing mental health needs in our community select partners to align to NCH values that are communited to improve the mental health of our community	Service volumes
	Implement a Moods Disorders Program which will include clinical assessments and treatment to treat severe depression	Treatment modalities include cognitive behavioral therapy, medication management, Trans Magnetic Simulation Program (TMS and Electro Convulsive Therapy Program (ECT)	Service volumes
	Develop Behavioral Health Navigation Model	Program to specialize in improving the access to the appropriate resources for behavioral health and addictions care for within our community	Service volumes
ACCESS TO CARE	Expand primary care physicians in gorwth areas within our service area	Recruit and establish primary care practices in the southeast and northern sections of Collier County and south Lee County	Service volumes
	Expand oncology services to better serve patients in our community	Research partnership opportunities with other providers in our service area that provide oncology services	Service volumes
	Further develop virtual care strategy to include telemedicine services	In addition to telemedicine develop virtual care network for engagement of high risk patients and other under served needs of the population	Service volumes
CHRONIC DISEASE	Further develop NCH Heart institute programs and services to combat cardiovascular disease	Continue to bring to the community best practice therapies and emerging technologies to insure patients are able to receive cardiovascular care close to home	Implement Program
	Expand existing Blue Zone Project into a Comprehensive Population health and management program throughout	Continue partner efforts of community awareness of health lifestyle with NCH population health efforts leading to prevention and and disease awareness and management health choice the easy choice	Implement Program
	Further develop neuroscience programs and services within our service area	Develop and implement Nero Spine Center as well as obtaining thrombectomy ready capable center	Implement Program
HEALTH OF OLDER ADULTS	Further develop access to Fellowship Trained Geriatric Physicians within the community.	Partner with other organizations that could benefit from working with NCH Geriatric physicians improve quality of life and aging in place of individuals in our community	Service volumes
	Expand Nurses Improving Care for Health system Elders (NICHE) Committee	NICHE helps health systems focus on improving the needs of patients over 65 years of age by increasing awareness of geriatric issues, improving staff competence in nursing care of the elderly and supporting the implementation of hospital geriatric protocols.	Service volumes

ATTACHMENT C

COLLIER COUNTY

August 2019

LOCAL PUBLIC HEALTH SYSTEM ASSESSMENT

Prepared By:

Florida Department of Health in Collier County

In Partnership With:

NCH Healthcare System

Program Partner Organizations

American Public Health Association
www.apha.org

Association of State and Territorial Health Officials
www.astho.org

Centers for Disease Control and Prevention
www.cdc.gov

National Association of County and City Health Officials
www.naccho.org

National Association of Local Boards of Health
www.nalboh.org

National Network of Public Health Institutes
www.nnphi.org

Public Health Foundation
www.phf.org

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Acknowledgements
The Florida Department of Health in Collier County, in collaboration with NCH Healthcare System, met with public health leaders in the community to conduct the Collier County Local Public Health System Assessment (LPHS). Leaders and experts who participated through the assessment meeting and/or online survey included the American Red Cross, Avow Foundation, Big Brothers Big Sisters of the Suncoast, Blue Zones Project/Healthways, Cancer Alliance Naples, Collier County CAT, Collier County Library, Collier County Medical Society, County Parks and Recreation, Collier County Public Services, Collier County Sheriff, Collier Mosquito Control District, David Lawrence Center, Drug Free Collier, Florida Gulf Coast University, Health Planning Council SWFL, Healthcare Network of SWFL,Healthy Start Coalition SWFL, Hodges University, League of Women Voters, Lions Club, Naples City Council, Neighborhood Health Clinic, North Collier Fire & Rescue, Panira Clinic, PLAN, Safe & Healthy Children's Coalition, Schulze Family Foundation , Senior Friendship Center, UF/IFAS Family Nutrition Program, and UF/IFAS Sustainable Foods Agent. We thank these organizations for their time and expertise in support of the Local Public Health System Assessment.

Background

In September 2018, the Florida Department of Health in Collier County, in collaboration with NCH, met with 49 public health leaders in the community to conduct the Collier County Local Public Health System Assessment. Within this meeting, five out of the ten Essential Public Health Service (EPHS) surveys were administered, EPHS 3: Inform, Educate and Empower the People, EPHS 4: Mobilize Communities to Address Health Problems, EPHS 7: Link People to Needed Health Services, EPHS 8: Assure a competent Workforce, and EPHS 9: Evaluate Health Services. Local partners in attendance began as a large group to receive an overview of the LPHS Assessment, the health status of Collier County, and a presentation by Dr. Wiess the CEO of NCH on Sustaining the Happiest, Healthiest and Longest Life. The participants then broke out into small focus groups for a facilitated discussion on their assigned EPHS. Every participant spent an hour at two different EPHS tables, and during that time the facilitators reviewed past LPHS survey results, local contributions to the EPHS, a discussion on strengths, areas for improvement, short and long term improvements, and an opportunity to answer the LPHS Assessment questions.

The following five assessments were completed through either an online survey or a separate focus group;
EPHS 1: Monitor Health Status, EPHS 2: Diagnose and Investigate Health Problems,
EPHS 5: Develop Policies and Plans, EPHS 6: Enforce Laws and Regulations, and
EPHS 10: Conduct Research for New Innovations.

The survey data from the community partner meeting, focus group, and online surveys were averaged and analyzed to accurately reflect the ideas and opinions of the participants. The information obtained from the assessment will be used to improve and better coordinate public health activities. Through this assessment, the Local Public Health System in Collier County discussed the activities of public health system partners, thus addressing the activities of public, private and voluntary entities that contribute to public health within the community. The NPHPS assessments are intended to help users answer questions such as "What are the components, activities, competencies, and capacities of our public health system?" and "How well are the ten Essential Public Health Services being provided in our system?"

Introduction

The NPHPS Local Public Health System Assessment Report is designed to help health departments and public health system partners create a snapshot of where they are relative to the National Public Health Performance Standards and to progressively move toward refining and improving outcomes for performance across the public health system.

The NPHPS state, local, and governance instruments also offer opportunity and robust data to link to health departments, public health system partners and/or community-wide strategic planning processes, as well as to Public Health Accreditation Board (PHAB) standards. For example, assessment of the environment external to the public health organization is a key component of all strategic planning, and the NPHPS assessment readily provides a structured process and an evidence-base upon which key organizational decisions may be made and priorities established. The assessment may also be used as a component of community health improvement planning processes, such as Mobilizing for Action through Planning and Partnerships (MAPP) or other community-wide strategic planning efforts, including state health improvement planning and community health improvement planning. The NPHPS process also drives assessment and improvement activities that may be used to support a Health Department in meeting PHAB standards. Regardless of whether using MAPP or another health improvement process, partners should use the NPHPS results to support quality improvement.

The self-assessment is structured around the Model Standards for each of the ten Essential Public Health Services, (EPHS), hereafter referred to as the Essential Services, which were developed through a comprehensive, collaborative process involving input from national, state and local experts in public health. Altogether, for the local assessment, 30 Model Standards serve as quality indicators that are organized into the ten essential public health service areas in the instrument and address the three core functions of public health. Figure 1 below shows how the ten Essential Services align with the three Core Functions of Public Health.

Figure 1. The ten Essential Public Health Services and how they relate to the three Core Functions of Public Health.

Purpose

The primary purpose of the NPHPS Local Public Health System Assessment Report is to promote continuous improvement that will result in positive outcomes for system performance. Local health departments and their public health system partners can use the Assessment Report as a working tool to:

- Better understand current system functioning and performance;
- Identify and prioritize areas of strengths, weaknesses, and opportunities for improvement;
- Articulate the value that quality improvement initiatives will bring to the public health system;
- Develop an initial work plan with specific quality improvement strategies to achieve goals;
- Begin taking action for achieving performance and quality improvement in one or more targeted areas; and
- Re-assess the progress of improvement efforts at regular intervals.

This report is designed to facilitate communication and sharing among and within programs, partners, and organizations, based on a common understanding of how a high performing and effective public health system can operate. This shared frame of reference will help build commitment and focus for setting priorities and improving public health system performance. Outcomes for performance include delivery of all ten essential public health services at optimal levels.

About the Report

Calculating the Scores

The NPHPS assessment instruments are constructed using the ten Essential Services as a framework. Within the Local Instrument, each Essential Service includes between 2-4 Model Standards that describe the key aspects of an optimally performing public health system. Each Model Standard is followed by assessment questions that serve as measures of performance. Responses to these questions indicate how well the Model Standard - which portrays the highest level of performance or "gold standard" - is being met.

Table 1 below characterizes levels of activity for Essential Services and Model Standards. Using the responses to all of the assessment questions, a scoring process generates score for each Model Standard, Essential Service, and one overall assessment score.

Table 1. Summary of Assessment Response Options

Optimal Activity (76-100%)	Greater than 75% of the activity described within the question is met.
Significant Activity (51-75%)	Greater than 50%, but no more than 75% of the activity described within the question is met.
Moderate Activity (26-50%)	Greater than 25%, but no more than 50% of the activity described within the question is met.
Minimal Activity (1-25%)	Greater than zero, but no more than 25% of the activity described within the question is met.
No Activity (0%)	0% or absolutely no activity.

Understanding Data Limitations

There are a number of limitations to the NPHPS assessment data due to self-report, wide variations in the breadth and knowledge of participants, the variety of assessment methods used, and differences in interpretation of assessment questions. Data and resultant information should not be interpreted to reflect the capacity or performance of any single agency or organization within the public health system or used for comparisons between jurisdictions or organizations. Use of NPHPS generated data and associated recommendations are limited to guiding an overall public health infrastructure and performance improvement process for the public health system as determined by organizations involved in the assessment.

All performance scores are an average; Model Standard scores are an average of the question scores within that Model Standard, Essential Service scores are an average of the Model Standard scores within that Essential Service and the overall assessment score is the average of the Essential Service scores. The responses to the questions within the assessment are based upon processes that utilize input from diverse system participants with different experiences and perspectives. The gathering of these inputs and the development of a response for each question incorporates an element of subjectivity, which may be minimized through the use of particular assessment methods. Additionally, while certain assessment methods are recommended, processes differ among sites. The assessment methods are not fully standardized and these differences in administration of the self-assessment may introduce an element of measurement error. In addition, there are differences in knowledge about the public health system among assessment participants. This may lead to some interpretation differences and issues for some questions, potentially introducing a degree of random non-sampling error.

Presentation of results

The NPHPS has attempted to present results - through a variety of figures and tables - in a user-friendly and clear manner. For ease of use, many figures and tables use short titles to refer to Essential Services, Model Standards, and questions. If you are in doubt of these definitions, please refer to the full text in the assessment instruments.

Results

Now that your assessment is completed, one of the most exciting, yet challenging opportunities is to begin to review and analyze the findings. As you recall from your assessment, the data you created now establishes the foundation upon which you may set priorities for performance improvement and identify specific quality improvement (QI) projects to support your priorities.

Based upon the responses you provided during your assessment, an average was calculated for each of the ten Essential Services. Each Essential Service score can be interpreted as the overall degree to which your public health system meets the performance standards (quality indicators) for each Essential Service. Scores can range from a minimum value of 0% (no activity is performed pursuant to the standards) to a maximum value of 100% (all activities associated with the standards are performed at optimal levels).

Figure 2, displays the average score for each Essential Service, along with an overall average assessment score across all ten Essential Services. Figure 2a, ranks each Essential Service from lowest to highest scoring. Take a look at the overall performance scores for each Essential Service. Examination of these scores can immediately give a sense of the local public health system's greatest strengths and weaknesses. Note the black bars that identify the range of reported performance score responses within each Essential Service.

Overall Scores for Each Essential Public Health Service

Figure 2. Summary of Average Essential Public Health Service Performance Scores

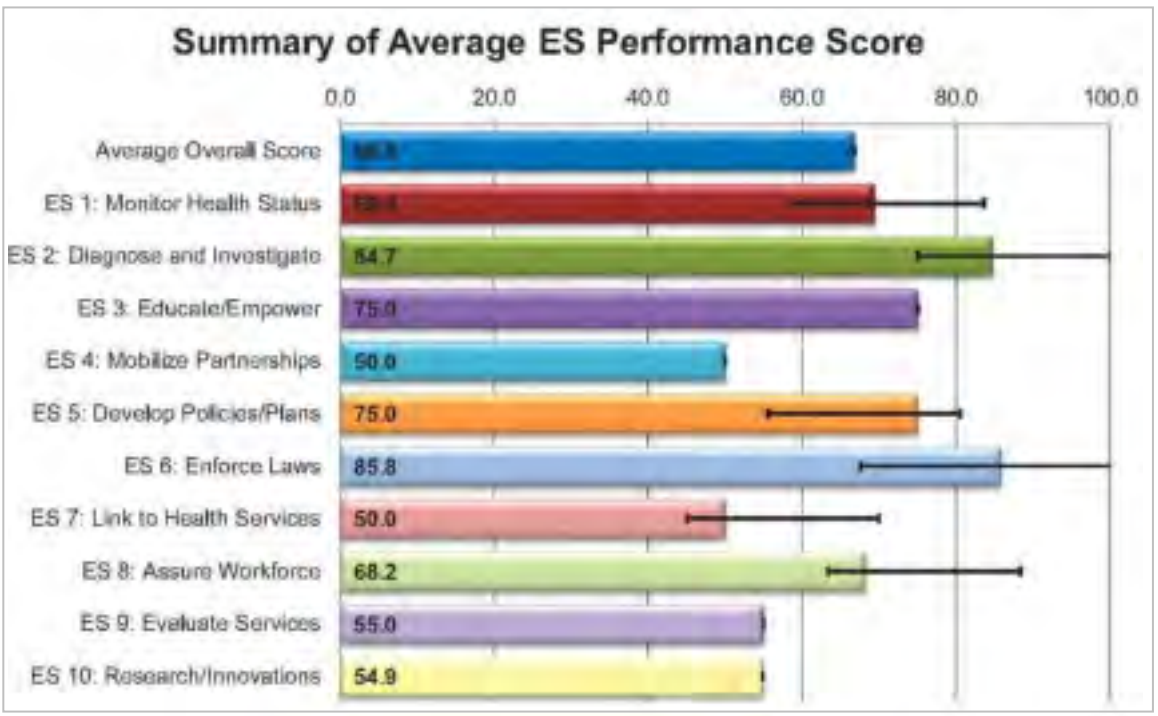
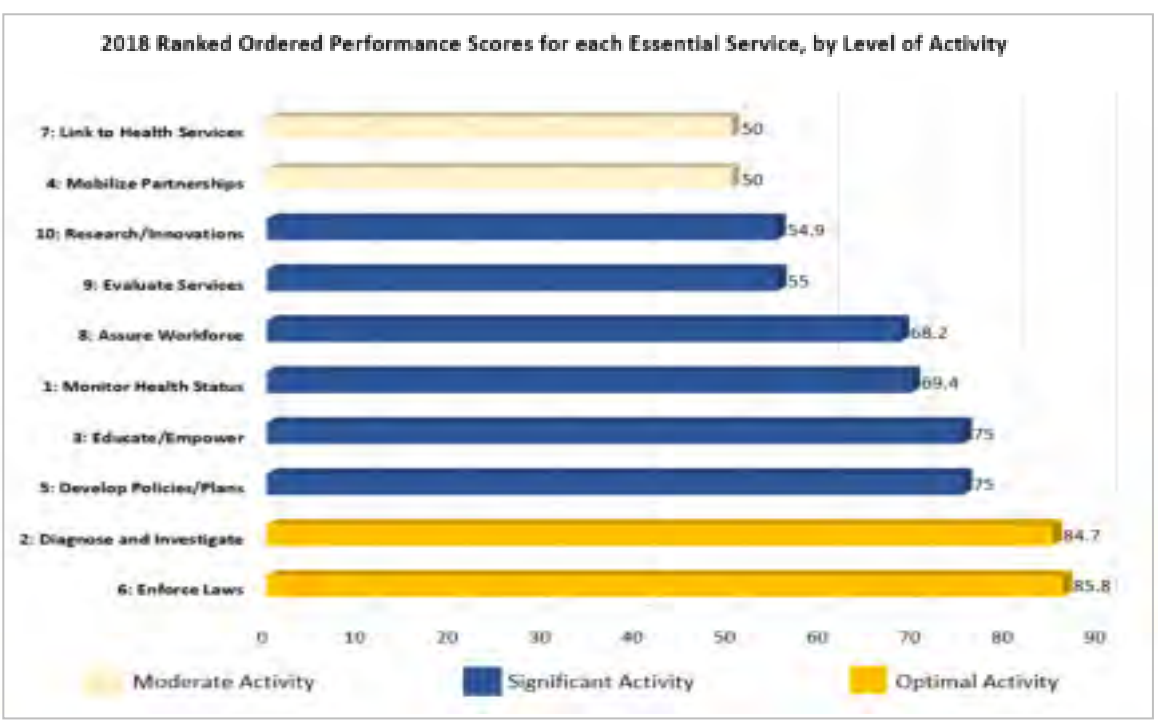
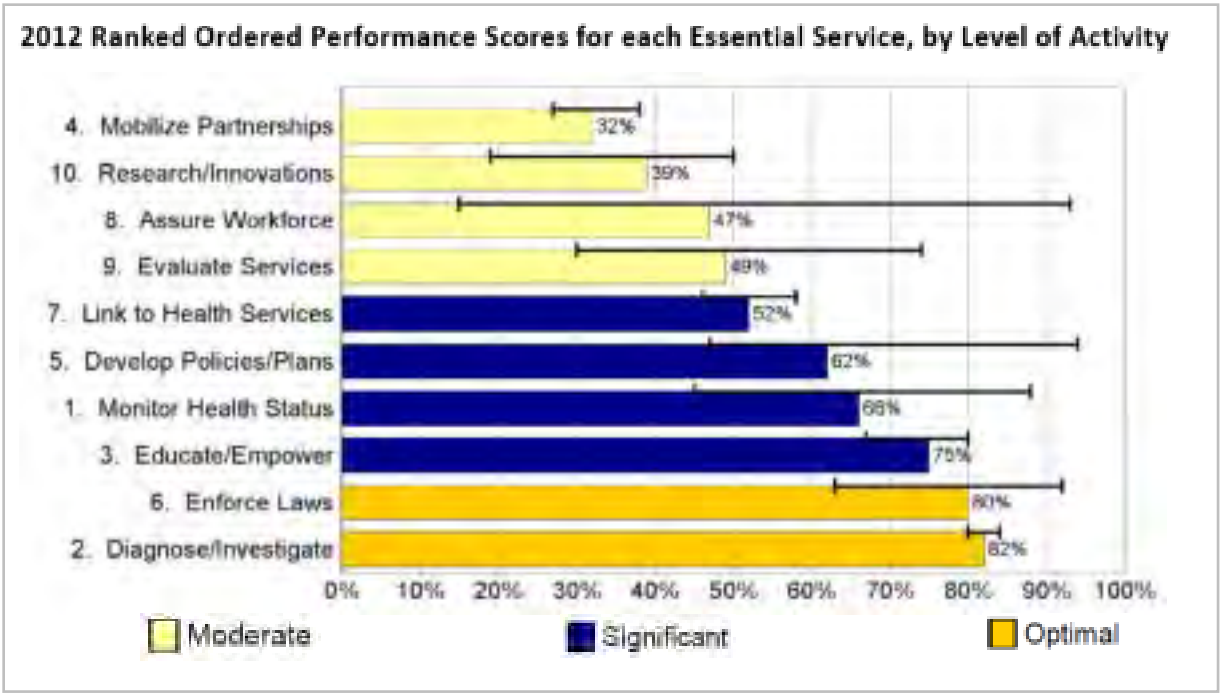


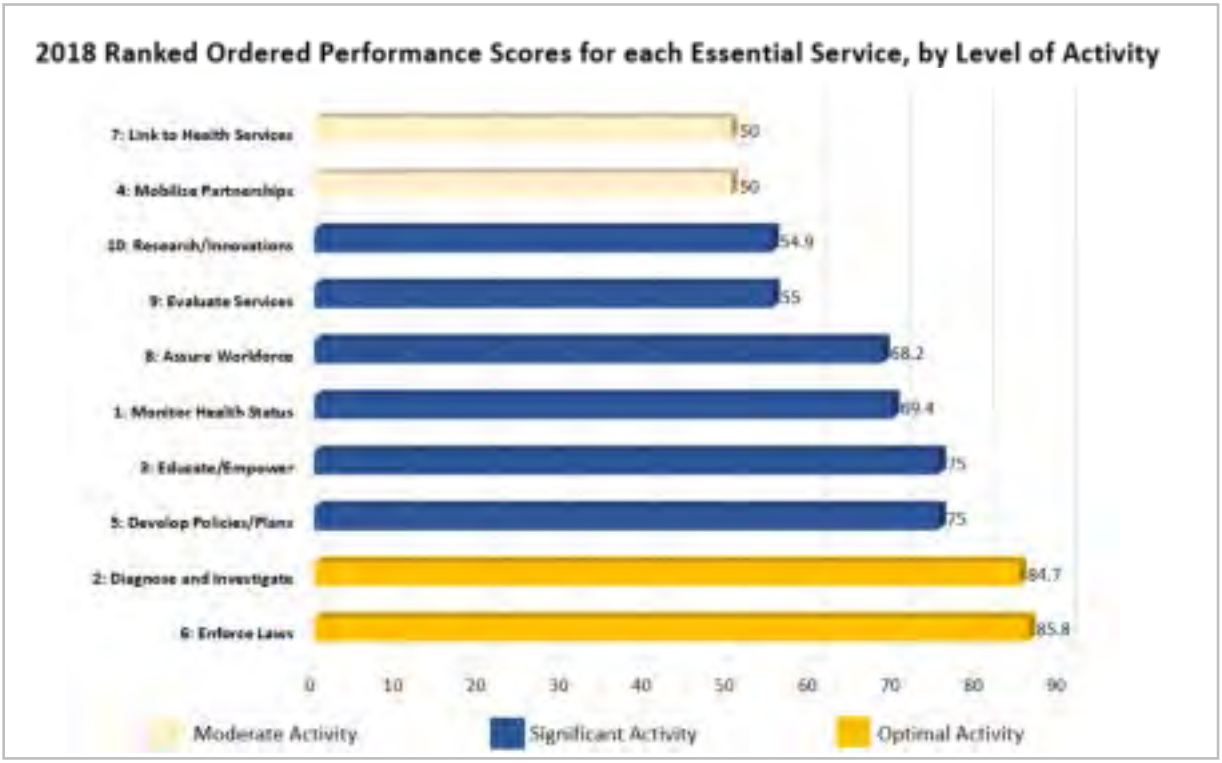
Figure 2a. Ranking of Average Essential Public Health Service Performance Scores



Performance Scores by Essential Public Health Service for Each Model Standard Figure 3 and Table 2 on the following pages display the average performance score for each of the Model Standards within each Essential Service. This level of analysis enables you to identify specific activities that contributed to high or low performance within each Essential Service.

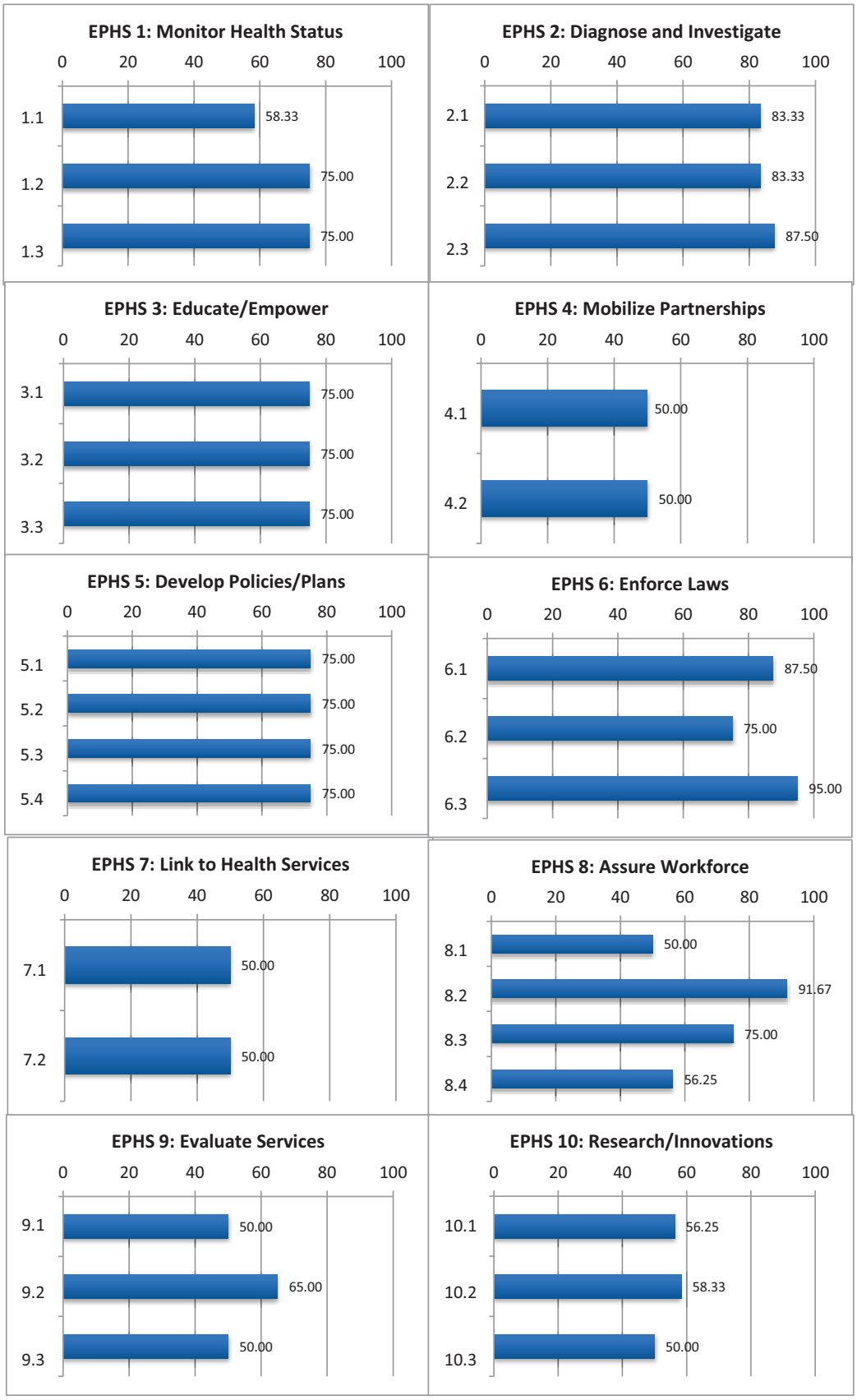
Comparison of Scores for the Essential Public Health Services





The performance scores of each Essential Public Health Service (EPHS) are ranked lowest to highest, with the lowest performing essential public health services being EPHS 7: Link to Health Services, and EPHS 4: Mobilizing Partnerships. Both EPHS's are continuing priorities of the LPHS to grow more opportunities to collaborate and link the public to healthcare services.

Figure 3. Performance Scores by Essential Public Health Service for Each Model Standard



In Table 2 below, each score at the Essential Service level is a calculated average of the respective Model Standard scores within that Essential Service.

Model Standards by Essential Services	Performance Scores
ES 1: Monitor Health Status	**69.4**
1.1 Community Health Assessment	58.3
1.2 Current Technology	75.0
1.3 Registries	75.0
ES 2: Diagnose and Investigate	**84.7**
2.1 Identification/Surveillance	83.3
2.2 Emergency Response	83.3
2.3 Laboratories	87.5
ES 3: Educate/Empower	**75.0**
3.1 Health Education/Promotion	75.0
3.2 Health Communication	75.0
3.3 Risk Communication	75.0
ES 4: Mobilize Partnerships	**50.0**
4.1 Constituency Development	50.0
4.2 Community Partnerships	50.0
ES 5: Develop Policies/Plans	**75.0**
5.1 Governmental Presence	75.0
5.2 Policy Development	75.0
5.3 CHIP/Strategic Planning	75.0
5.4 Emergency Plan	75.0
ES 6: Enforce Laws	**85.8**
6.1 Review Laws	87.5
6.2 Improve Laws	75.0
6.3 Enforce Laws	95.0
ES 7: Link to Health Services	**50.0**
7.1 Personal Health Service Needs	50.0
7.2 Assure Linkage	50.0
ES 8: Assure Workforce	**68.2**
8.1 Workforce Assessment	50.0
8.2 Workforce Standards	91.7
8.3 Continuing Education	75.0
8.4 Leadership Development	56.3
ES 9: Evaluate Services	**55.0**
9.1 Evaluation of Population Health	50.0
9.2 Evaluation of Personal Health	65.0
9.3 Evaluation of LPHS	50.0
ES 10: Research/Innovations	**54.9**
10.1 Foster Innovation	56.3
10.2 Academic Linkages	58.3
10.3 Research Capacity	50.0
Average Overall Score	**66.8**
Median Score	**68.8**

Performance Relative to Optimal Activity

Figures 4 and 5 display the proportion of performance measures that met specified thresholds of achievement for performance standards. The five threshold levels of achievement used in scoring these measures are shown in the legend below. For example, measures receiving a composite score of 76-100% were classified as meeting performance standards at the optimal level.

Figure 4. Percentage of the system's Essential Services scores that fall within the five activity categories. This chart provides a high level snapshot of the information found in Figure 2, summarizing the composite performance measures for all 10 Essential Services.

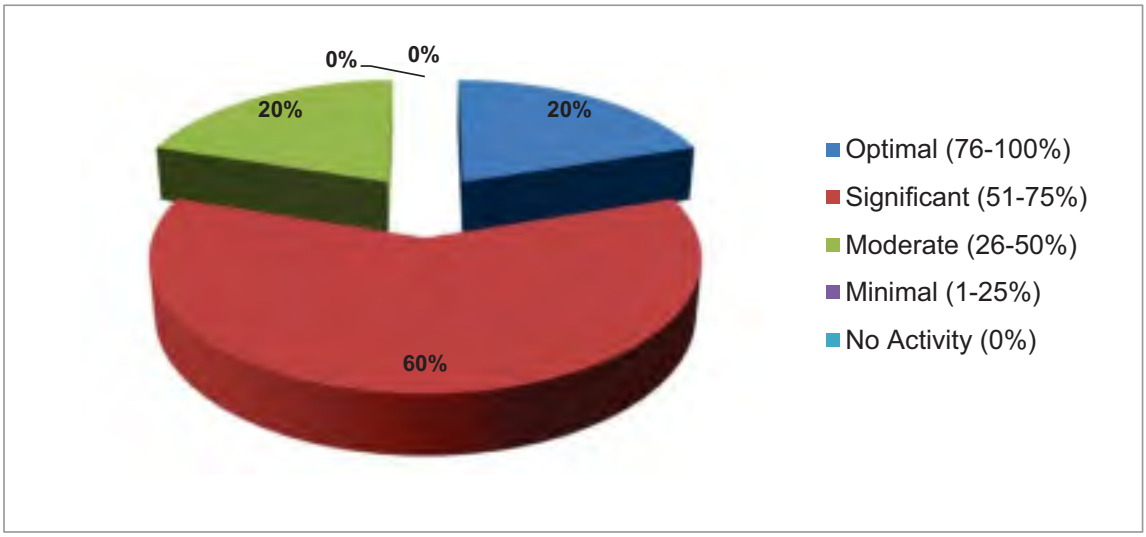
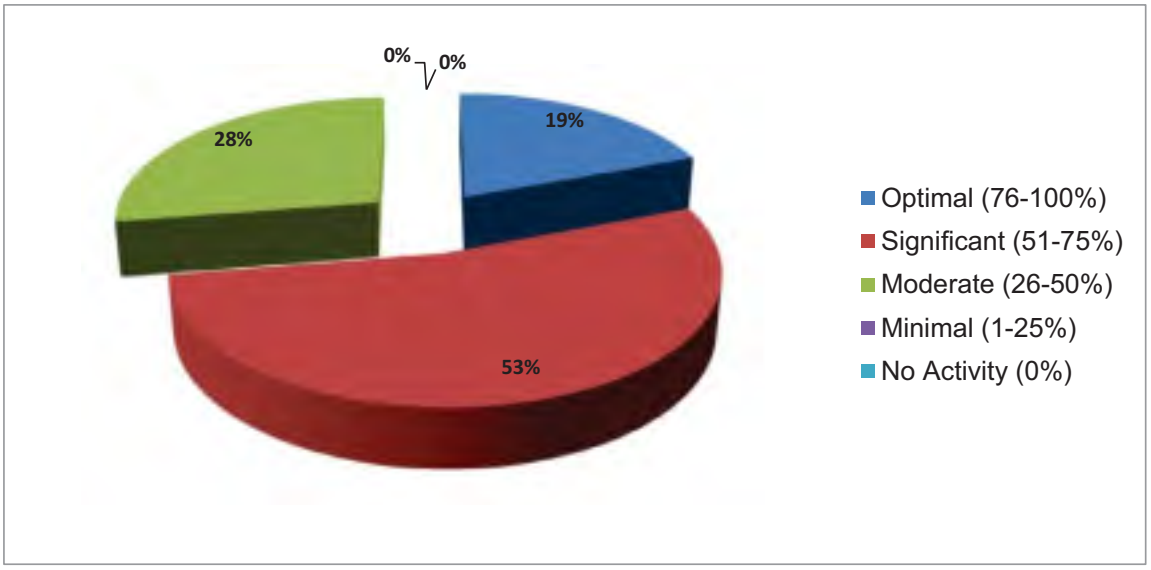


Figure 5. Percentage of the system's Model Standard scores that fall within the five activity categories. This chart provides a high level snapshot of the information found in Figure 3, summarizing the composite measures for all 30 Model Standards.



Analysis and Discussion Questions

Having a standard way in which to analyze the data in this report is important. This process does not have to be difficult; however, drawing some initial conclusions from your data will prove invaluable as you move forward with your improvement efforts. It is crucial that participants fully discuss the performance assessment results. The bar graphs, charts, and summary information in the Results section of this report should be helpful in identifying high and low performing areas. Please refer to Appendix H of the Local Assessment Implementation Guide. This referenced set of discussion questions will to help guide you as you analyze the data found in the previous sections of this report.

Using the results in this report will help you to generate priorities for improvement, as well as possible improvement projects. Your data analysis should be an interactive process, enabling everyone to participate. Do not be overwhelmed by the potential of many possibilities for QI projects – the point is not that you have to address them all now. Consider this step as identifying possible opportunities to enhance your system performance. Keep in mind both your quantitative data (Appendix A) and the qualitative data that you collected during the assessment (Appendix B).

Next Steps

Congratulations on your participation in the local assessment process. A primary goal of the NPHPS is that data is used proactively to monitor, assess, and improve the quality of essential public health services. This report is an initial step to identifying immediate actions and activities to improve local initiatives. The results in this report may also be used to identify longer-term priorities for improvement, as well as possible improvement projects.

As noted in the Introduction of this report, NPHPS data may be used to inform a variety of organization and/or systems planning and improvement processes. Plan to use both quantitative data (Appendix A) and qualitative data (Appendix B) from the assessment to identify improvement opportunities. While there may be many potential quality improvement projects, do not be overwhelmed – the point is not that you have to address them all now. Rather, consider this step as a way to identify possible opportunities to enhance your system performance and plan to use the guidance provided in this section, along with the resources offered in Appendix C, to develop specific goals for improvement within your public health system and move from assessment and analysis toward action.

Note: Communities implementing Mobilizing for Action through Planning and Partnerships (MAPP) may refer to the MAPP guidance for considering NPHPS data along with other assessment data in the Identifying Strategic Issues phase of MAPP.

Action Planning

In any systems improvement and planning process, it is important to involve all public health system partners in determining ways to improve the quality of essential public health services provided by the system. Participation in the improvement and planning activities included in your action plan is the responsibility of all partners within the public health system.

Consider the following points as you build an Action Plan to address the priorities you have identified
• Each public health partner should be considered when approaching quality improvement for your system
• The success of your improvement activities are dependent upon the active participation and contribution of each and every member of the system
• An integral part of performance improvement is working consistently to have long-term effects
• A multi-disciplinary approach that employs measurement and analysis is key to accomplishing and sustaining improvements

You may find that using the simple acronym, 'FOCUS' is a way to help you to move from assessment and analysis to action.

F **Find** an opportunity for improvement using your results.

O **Organize** a team of public health system partners to work on the improvement. Someone in the group should be identified as the team leader. Team members should represent the appropriate organizations that can make an impact.

C **Consider** the current process, where simple improvements can be made and who should make the improvements.

U **Understand** the problem further if necessary, how and why it is occurring, and the factors that contribute to it. Once you have identified priorities, finding solutions entails delving into possible reasons, or "root causes," of the weakness or problem. Only when participants determine why performance problems (or successes!) have occurred will they be able to identify workable solutions that improve future performance. Most performance issues may be traced to well-defined system causes, such as policies, leadership, funding, incentives, information, personnel or coordination. Many QI tools are applicable. You may consider using a variety of basic QI tools such as brainstorming, 5-whys, prioritization, or cause and effect diagrams to better understand the problem (refer to Appendix C for resources).

S **Select** the improvement strategies to be made. Consider using a table or chart to summarize your Action Plan. Many resources are available to assist you in putting your plan on paper, but in general you'll want to include the priority selected, the goal, the improvement activities to be conducted, who will carry them out, and the timeline for completing the improvement activities. When complete, your Action Plan should contain documentation on the indicators to be used, baseline performance levels and targets to be achieved, responsibilities for carrying out improvement activities and the collection and analysis of data to monitor progress. (Additional resources may be found in Appendix C.)

Monitoring and Evaluation: Keys to Success

Monitoring your action plan is a highly proactive and continuous process that is far more than simply taking an occasional "snap-shot" that produces additional data. Evaluation, in contrast to monitoring, provides ongoing structured information that focuses on why results are or are not being met, what unintended consequences may be, or on issues of efficiency, effectiveness, and/or sustainability.

After your Action Plan is implemented, monitoring and evaluation continues to determine whether quality improvement occurred and whether the activities were effective. If the Essential Service performance does not improve within the expected time, additional evaluation must be conducted (an additional QI cycle) to determine why and how you can update your Action Plan to be more effective. The Action Plan can be adjusted as you continue to monitor and evaluate your efforts.

APPENDIX A: Individual Questions and Responses

Performance Scores

ESSENTIAL SERVICE 1: Monitor Health Status to Identify Community Health Problems		
1.1	**Model Standard: Population-Based Community Health Assessment (CHA)** *At what level does the local public health system:*	
1.1.1	Conduct regular community health assessments?	75
1.1.2	Continuously update the community health assessment with current information?	50
1.1.3	Promote the use of the community health assessment among community members and partners?	50
1.2	**Model Standard: Current Technology to Manage and Communicate Population Health Data** *At what level does the local public health system:*	
1.2.1	Use the best available technology and methods to display data on the public's health?	75
1.2.2	Analyze health data, including geographic information, to see where health problems exist?	75
1.2.3	Use computer software to create charts, graphs, and maps to display complex public health data (trends over time, sub-population analyses, etc.)?	75
1.3	**Model Standard: Maintenance of Population Health Registries** *At what level does the local public health system:*	
1.3.1	Collect data on specific health concerns to provide the data to population health registries in a timely manner, consistent with current standards?	75
1.3.2	Use information from population health registries in community health assessments or other analyses?	75

ESSENTIAL SERVICE 2: Diagnose and Investigate Health Problems and Health Hazards		
2.1	**Model Standard: Identification and Surveillance of Health Threats** *At what level does the local public health system:*	
2.1.1	Participate in a comprehensive surveillance system with national, state and local partners to identify, monitor, share information, and understand emerging health problems and threats?	75
2.1.2	Provide and collect timely and complete information on reportable diseases and potential disasters, emergencies and emerging threats (natural and manmade)?	100
2.1.3	Assure that the best available resources are used to support surveillance systems and activities, including information technology, communication systems, and professional expertise?	75
2.2	**Model Standard: Investigation and Response to Public Health Threats and Emergencies** *At what level does the local public health system:*	

2.2.1	Maintain written instructions on how to handle communicable disease outbreaks and toxic exposure incidents, including details about case finding, contact tracing, and source identification and containment?	75
2.2.2	Develop written rules to follow in the immediate investigation of public health threats and emergencies, including natural and intentional disasters?	75
2.2.3	Designate a jurisdictional Emergency Response Coordinator?	100
2.2.4	Prepare to rapidly respond to public health emergencies according to emergency operations coordination guidelines?	100
2.2.5	Identify personnel with the technical expertise to rapidly respond to possible biological, chemical, or and nuclear public health emergencies?	75
2.2.6	Evaluate incidents for effectiveness and opportunities for improvement?	75
2.3	**Model Standard: Laboratory Support for Investigation of Health Threats** *At what level does the local public health system:*	
2.3.1	Have ready access to laboratories that can meet routine public health needs for finding out what health problems are occurring?	75
2.3.2	Maintain constant (24/7) access to laboratories that can meet public health needs during emergencies, threats, and other hazards?	75
2.3.3	Use only licensed or credentialed laboratories?	100
2.3.4	Maintain a written list of rules related to laboratories, for handling samples (collecting, labeling, storing, transporting, and delivering), for determining who is in charge of the samples at what point, and for reporting the results?	100

ESSENTIAL SERVICE 3: Inform, Educate, and Empower People about Health Issues		
3.1	**Model Standard: Health Education and Promotion** *At what level does the local public health system:*	
3.1.1	Provide policymakers, stakeholders, and the public with ongoing analyses of community health status and related recommendations for health promotion policies?	75
3.1.2	Coordinate health promotion and health education activities to reach individual, interpersonal, community, and societal levels?	75
3.1.3	Engage the community throughout the process of setting priorities, developing plans and implementing health education and health promotion activities?	75
3.2	**Model Standard: Health Communication** *At what level does the local public health system:*	
3.2.1	Develop health communication plans for relating to media and the public and for sharing information among LPHS organizations?	75
3.2.2	Use relationships with different media providers (e.g. print, radio, television, and the internet) to share health information, matching the message with the target audience?	75

3.2.3	Identify and train spokespersons on public health issues?	75
3.3	**Model Standard: Risk Communication** *At what level does the local public health system:*	
3.3.1	Develop an emergency communications plan for each stage of an emergency to allow for the effective dissemination of information?	75
3.3.2	Make sure resources are available for a rapid emergency communication response?	75
3.3.3	Provide risk communication training for employees and volunteers?	75

ESSENTIAL SERVICE 4: Mobilize Community Partnerships to Identify and Solve Health Problems		
4.1	**Model Standard: Constituency Development** *At what level does the local public health system:*	
4.1.1	Maintain a complete and current directory of community organizations?	50
4.1.2	Follow an established process for identifying key constituents related to overall public health interests and particular health concerns?	50
4.1.3	Encourage constituents to participate in activities to improve community health?	50
4.1.4	Create forums for communication of public health issues?	50
4.2	**Model Standard: Community Partnerships** *At what level does the local public health system:*	
4.2.1	Establish community partnerships and strategic alliances to provide a comprehensive approach to improving health in the community?	50
4.2.2	Establish a broad-based community health improvement committee?	50
4.2.3	Assess how well community partnerships and strategic alliances are working to improve community health?	50

ESSENTIAL SERVICE 5: Develop Policies and Plans that Support Individual and Community Health Efforts		
5.1	**Model Standard: Governmental Presence at the Local Level** *At what level does the local public health system:*	
5.1.1	Support the work of a local health department dedicated to the public health to make sure the essential public health services are provided?	75
5.1.2	See that the local health department is accredited through the national voluntary accreditation program?	75
5.1.3	Assure that the local health department has enough resources to do its part in providing essential public health services?	75
5.2	**Model Standard: Public Health Policy Development** *At what level does the local public health system:*	
5.2.1	Contribute to public health policies by engaging in activities that inform the policy development process?	75

5.2.2	Alert policymakers and the community of the possible public health impacts (both intended and unintended) from current and/or proposed policies?	75
5.2.3	Review existing policies at least every three to five years?	75
5.3	**Model Standard: Community Health Improvement Process and Strategic Planning** *At what level does the local public health system:*	
5.3.1	Establish a community health improvement process, with broad- based diverse participation, that uses information from both the community health assessment and the perceptions of community members?	75
5.3.2	Develop strategies to achieve community health improvement objectives, including a description of organizations accountable for specific steps?	75
5.3.3	Connect organizational strategic plans with the Community Health Improvement Plan?	75
5.4	**Model Standard: Plan for Public Health Emergencies** *At what level does the local public health system:*	
5.4.1	Support a workgroup to develop and maintain preparedness and response plans?	75
5.4.2	Develop a plan that defines when it would be used, who would do what tasks, what standard operating procedures would be put in place, and what alert and evacuation protocols would be followed?	75
5.4.3	Test the plan through regular drills and revise the plan as needed, at least every two years?	75

ESSENTIAL SERVICE 6: Enforce Laws and Regulations that Protect Health and Ensure Safety		
6.1	**Model Standard: Review and Evaluation of Laws, Regulations, and Ordinances** *At what level does the local public health system:*	
6.1.1	Identify public health issues that can be addressed through laws, regulations, or ordinances?	100
6.1.2	Stay up-to-date with current laws, regulations, and ordinances that prevent, promote, or protect public health on the federal, state, and local levels?	75
6.1.3	Review existing public health laws, regulations, and ordinances at least once every five years?	75
6.1.4	Have access to legal counsel for technical assistance when reviewing laws, regulations, or ordinances?	100
6.2	**Model Standard: Involvement in the Improvement of Laws, Regulations, and Ordinances** *At what level does the local public health system:*	
6.2.1	Identify local public health issues that are inadequately addressed in existing laws, regulations, and ordinances?	75

6.2.2	Participate in changing existing laws, regulations, and ordinances, and/or creating new laws, regulations, and ordinances to protect and promote the public health?	75
6.2.3	Provide technical assistance in drafting the language for proposed changes or new laws, regulations, and ordinances?	75
6.3	**Model Standard: Enforcement of Laws, Regulations, and Ordinances** *At what level does the local public health system:*	
6.3.1	Identify organizations that have the authority to enforce public health laws, regulations, and ordinances?	100
6.3.2	Assure that a local health department (or other governmental public health entity) has the authority to act in public health emergencies?	100
6.3.3	Assure that all enforcement activities related to public health codes are done within the law?	100
6.3.4	Educate individuals and organizations about relevant laws, regulations, and ordinances?	100
6.3.5	Evaluate how well local organizations comply with public health laws?	75

ESSENTIAL SERVICE 7: Link People to Needed Personal Health Services and Assure the Provision of Health Care when Otherwise Unavailable		
7.1	**Model Standard: Identification of Personal Health Service Needs of Populations** *At what level does the local public health system:*	
7.1.1	Identify groups of people in the community who have trouble accessing or connecting to personal health services?	50
7.1.2	Identify all personal health service needs and unmet needs throughout the community?	50
7.1.3	Defines partner roles and responsibilities to respond to the unmet needs of the community?	50
7.1.4	Understand the reasons that people do not get the care they need?	50
7.2	**Model Standard: Assuring the Linkage of People to Personal Health Services** *At what level does the local public health system:*	
7.2.1	Connect (or link) people to organizations that can provide the personal health services they may need?	50
7.2.2	Help people access personal health services, in a way that takes into account the unique needs of different populations?	50
7.2.3	Help people sign up for public benefits that are available to them (e.g., Medicaid or medical and prescription assistance programs)?	50
7.2.4	Coordinate the delivery of personal health and social services so that everyone has access to the care they need?	50

ESSENTIAL SERVICE 8: Assure a Competent Public and Personal Health Care Workforce

8.1	**Model Standard: Workforce Assessment, Planning, and Development** *At what level does the local public health system:*	
8.1.1	Set up a process and a schedule to track the numbers and types of LPHS jobs and the knowledge, skills, and abilities that they require whether those jobs are in the public or private sector?	50
8.1.2	Review the information from the workforce assessment and use it to find and address gaps in the local public health workforce?	50
8.1.3	Provide information from the workforce assessment to other community organizations and groups, including governing bodies and public and private agencies, for use in their organizational planning?	50
8.2	**Model Standard: Public Health Workforce Standards** *At what level does the local public health system:*	
8.2.1	Make sure that all members of the public health workforce have the required certificates, licenses, and education needed to fulfill their job duties and meet the law?	100
8.2.2	Develop and maintain job standards and position descriptions based in the core knowledge, skills, and abilities needed to provide the essential public health services?	100
8.2.3	Base the hiring and performance review of members of the public health workforce in public health competencies?	75
8.3	**Model Standard: Life-Long Learning through Continuing Education, Training, and Mentoring** *At what level does the local public health system:*	
8.3.1	Identify education and training needs and encourage the workforce to participate in available education and training?	75
8.3.2	Provide ways for workers to develop core skills related to essential public health services?	75
8.3.3	Develop incentives for workforce training, such as tuition reimbursement, time off for class, and pay increases?	75
8.3.4	Create and support collaborations between organizations within the public health system for training and education?	75
8.3.5	Continually train the public health workforce to deliver services in a cultural competent manner and understand social determinants of health?	75
8.4	**Model Standard: Public Health Leadership Development** *At what level does the local public health system:*	
8.4.1	Provide access to formal and informal leadership development opportunities for employees at all organizational levels?	75
8.4.2	Create a shared vision of community health and the public health system, welcoming all leaders and community members to work together?	50
8.4.3	Ensure that organizations and individuals have opportunities to provide leadership in areas where they have knowledge, skills, or access to resources?	50

8.4.4	Provide opportunities for the development of leaders representative of the diversity within the community?	50

ESSENTIAL SERVICE 9: Evaluate Effectiveness, Accessibility, and Quality of Personal and Population-Based Health Services		
9.1	**Model Standard: Evaluation of Population-Based Health Services** *At what level does the local public health system:*	
9.1.1	Evaluate how well population-based health services are working, including whether the goals that were set for programs were achieved?	50
9.1.2	Assess whether community members, including those with a higher risk of having a health problem, are satisfied with the approaches to preventing disease, illness, and injury?	50
9.1.3	Identify gaps in the provision of population-based health services?	50
9.1.4	Use evaluation findings to improve plans and services?	50
9.2	**Model Standard: Evaluation of Personal Health Services** *At what level does the local public health system:*	
9.2.1	Evaluate the accessibility, quality, and effectiveness of personal health services?	75
9.2.2	Compare the quality of personal health services to established guidelines?	75
9.2.3	Measure satisfaction with personal health services?	50
9.2.4	Use technology, like the internet or electronic health records, to improve quality of care?	75
9.2.5	Use evaluation findings to improve services and program delivery?	50
9.3	**Model Standard: Evaluation of the Local Public Health System** *At what level does the local public health system:*	
9.3.1	Identify all public, private, and voluntary organizations that provide essential public health services?	50
9.3.2	Evaluate how well LPHS activities meet the needs of the community at least every five years, using guidelines that describe a model LPHS and involving all entities contributing to essential public health services?	50
9.3.3	Assess how well the organizations in the LPHS are communicating, connecting, and coordinating services?	50
9.3.4	Use results from the evaluation process to improve the LPHS?	50

ESSENTIAL SERVICE 10: Research for New Insights and Innovative Solutions to Health Problems	
10.1	**Model Standard: Fostering Innovation** *At what level does the local public health system:*

10.1.1	Provide staff with the time and resources to pilot test or conduct studies to test new solutions to public health problems and see how well they actually work?	50
10.1.2	Suggest ideas about what currently needs to be studied in public health to organizations that do research?	50
10.1.3	Keep up with information from other agencies and organizations at the local, state, and national levels about current best practices in public health?	75
10.1.4	Encourage community participation in research, including deciding what will be studied, conducting research, and in sharing results?	50
10.2	**Model Standard: Linkage with Institutions of Higher Learning and/or Research** *At what level does the local public health system:*	
10.2.1	Develop relationships with colleges, universities, or other research organizations, with a free flow of information, to create formal and informal arrangements to work together?	75
10.2.2	Partner with colleges, universities, or other research organizations to do public health research, including community-based participatory research?	50
10.2.3	Encourage colleges, universities, and other research organizations to work together with LPHS organizations to develop projects, including field training and continuing education?	50
10.3	**Model Standard: Capacity to Initiate or Participate in Research** *At what level does the local public health system:*	
10.3.1	Collaborate with researchers who offer the knowledge and skills to design and conduct health-related studies?	50
10.3.2	Support research with the necessary infrastructure and resources, including facilities, equipment, databases, information technology, funding, and other resources?	50
10.3.3	Share findings with public health colleagues and the community broadly, through journals, websites, community meetings, etc?	50
10.3.4	Evaluate public health systems research efforts throughout all stages of work from planning to impact on local public health practice?	50

APPENDIX B: Qualitative Assessment Data

Summary Notes

ESSENTIAL SERVICE 1: Monitor Health Status to Identify Community Health Problems			
STRENGTHS	WEAKNESSES	OPPORTUNITIES FOR IMMEDIATE IMPROVEMENT / PARTNERSHIPS	PRIORITIES OR LONGER TERM IMPROVEMENT OPPORTUNITIES
1.1	Model Standard: Population-Based Community Health Assessment (CHA)		
	*Public awareness needs. P.R. strategy needed to educate the community on information and data that is available. *There are many resources available but the specifics are not well advertised/promoted.	*Consider more promotion of CHA and CHIP data throughout and mid-cycle.	
1.2	Model Standard: Current Technology to Manage and Communicate Population Health Data		
*Using data to show strengths & gaps Long term improvement opportunities.		*DOH knows all/most data sources. Some of the public health related partners may not use as robustly. *Opportunity for education of partners.	
1.3	Model Standard: Maintenance of Population Health Registries		
	*Need a local database/ registry that consolidates information from other sources.		

ESSENTIAL SERVICE 2: Diagnose and Investigate Health Problems and Health Hazards			
STRENGTHS	WEAKNESSES	OPPORTUNITIES FOR IMMEDIATE IMPROVEMENT / PARTNERSHIPS	PRIORITIES OR LONGER TERM IMPROVEMENT OPPORTUNITIES
2.1	Model Standard: Identification and Surveillance of Health Threats		
*We have established Capabilities. *We have identified our main threats. *We have educated and prepared the community for natural disaster, or real world events.			*Work to educate the community about vaccine preventable diseases and decrease the amount of Religious exemptions in our community.
2.2	Model Standard: Investigation and Response to Public Health Threats and Emergencies		
*Our ability to collaborate with internal and external partners during times of need is one of our biggest strengths.		*Write up after action reports and lessons learned.	*One long-term improvement opportunity may be to develop and/or maintain written procedures/instructions for various scenarios emergency/non- emergency scenarios of public health importance (e.g., toxic exposure incidents).
2.3	Model Standard: Laboratory Support for Investigation of Health Threats		

ESSENTIAL SERVICE 3: Inform, Educate, and Empower People about Health Issues			
STRENGTHS	WEAKNESSES	OPPORTUNITIES FOR IMMEDIATE IMPROVEMENT / PARTNERSHIPS	PRIORITIES OR LONGER TERM IMPROVEMENT OPPORTUNITIES
3.1	Model Standard: Health Education and Promotion		
*Well-funded budgets/affluent county *Wealth of knowledge and materials *Disease specific information to customers in clinics, diversity in health-related promotions.		*Promotion of resources (211 and other collier resources). *Funding for public health initiatives. *A guide that includes health locations *Continued advertising/promotion of 211 or Collier Rescue, continued outreach/community outreach.	*Targeting all the demographic landscape. Completely without omitting any specific area. *Educational opportunities in mental health and available resources. *Measure our current programs and use research to find optimal programs, if ours aren't working. *Make plans for long term community involvement and support
3.2	Model Standard: Health Communication		
*Quick response to health issues with task forces and coalitions. *Good partnerships	*Reaching specific populations (seniors, undocumented, Haitians). Need more social media activity.	*Generate a "common" message on very crucial issues for the public. *Communication with organized medical community of programs that can then be presented to patients. *Communicate all current materials available to community and agencies. *Survey how different groups get their information.	*More social media presence, and consistency in messaging. *Improve social media and consistency in messaging- culturally sensitivity in messaging with the right type of media. *The use of Facebook live. *General cultural sensitivity in messaging with the type of media. *Educational opportunities in mental health and available resources. *Device a better networking method so all organizations can share their own best practices on reaching the public. *Measure success of programs. *Use research to find optimal programs. *Educate financially advantaged about community needs. *Plans for long-term community involvement and support.
3.3	Model Standard: Risk Communication		
*Great Community collaboration and partnerships. *Excellent emergency response/hurricane preparedness. *Good communication among organizations. *Active community members.	*No emergency plans or risk management protocols in some organizations/facilities. *Need to generate a "common" message on very crucial issues.	*Disaster recovery of special needs- communicating with diverse groups during times of emergency *Doing community wide drills on how to navigate emergency situations. *Figuring out how to deal with communication to diverse groups during times of emergency, where both are afraid of being deported, because they are illegally in the community. *Back up communication strategies.	*Figure out what we need to do in emergency situations to reach ALL when information needs to get out

ESSENTIAL SERVICE 4: Mobilize Community Partnerships to Identify and Solve Health Problems			
STRENGTHS	WEAKNESSES	OPPORTUNITIES FOR IMMEDIATE IMPROVEMENT / PARTNERSHIPS	PRIORITIES OR LONGER TERM IMPROVEMENT OPPORTUNITIES
4.1	Model Standard: Constituency Development		
*Partner agencies collaborating and encouraging community partnerships. *Strong partners and diverse funding sources.	*Relationships that are created by different agencies are not kept track of. *Once someone from an agency leaves that had contacts with other agencies, that relationship is broken and nobody will ever know.	*DOH-Collier & EMS need to be ready with a plan for giving mass immunizations in case of an emergency. *Bring more attention to the great work many organizations/partners are doing. *Establish a broad-based coalition to ensure that messaging and services are unified, but not duplicated.	*Building a network of key partners that communicate effectively to partner of improving community health. *Develop a county wide committee that allows for different coalitions to share programs.
4.2	Model Standard: Community Partnerships		
*Wide range of local nonprofits working in this area to improve health outcomes. *Willingness for our community partners to engage and help.	*There is lack of a general comprehensive list of all resources available in Collier County	*211 needs to be advertised better in order for community members to utilize it. *Develop a directory of community organizations to share and update annually or biannually. *Develop one stop location for county data beyond basics (many grant writers could use plus contribute).	* Establish ways to measure growth and impact of plans & collaboration. *Need more PR and Social Media on what the organization does.

ESSENTIAL SERVICE 5: Develop Policies and Plans that Support Individual and Community Health Efforts			
STRENGTHS	WEAKNESSES	OPPORTUNITIES FOR IMMEDIATE IMPROVEMENT / PARTNERSHIPS	PRIORITIES OR LONGER TERM IMPROVEMENT OPPORTUNITIES
5.1	Model Standard: Governmental Presence at the Local Level		
*Collier County government provides great financial and logistical support and other resources to the health department.		*It would be good to have a health policy review group that included the health department, hospitals, county commissioners, city council members, healthcare providers, and other community groups. This group could review new and existing local government policies and advise on their health implications.	
5.2	Model Standard: Public Health Policy Development		
*County is "Health" focused. *DOH is Nationally accredited through PHAB.			*The system is in place, but we need to work together for safe and affordable housing, more public transportation, access to essential care.
5.3	Model Standard: Community Health Improvement Process and Strategic Planning		
*Strong community involvement *Members of LPHS regularly participate on boards and coalitions which support CHIP and COOP objectives. *LPHS values a broad concept of health, and promotes physical, mental, social and spiritual health at high levels of leadership within community.	* We need more collaborative work among LPHS medical providers *We need a way to better publicize the strategic planning efforts happening in the LPHS.	* Better communication between partners, communicating the weakness each organization faces and communicating how to move towards solving long standing complicated issues that lead to a SUSTAINABLE community.	*Build in redundancies and systems that create a sustainable long lasting community. Focus on year round residents and creating sustainable systems and environments for them.
5.4	Model Standard: Plan for Public Health Emergencies		
*We have a strong emergency preparedness group that works well together and has created good emergency plans and procedures.		*Reorganization of SpNS, staff needs more training, and drills to know what to expect and handle specific situations. Need CNA or multiple to take care of patient medical, restroom, feeding needs. *Ensure that the local health department has enough resources to do its part in providing essential public health services.	

ESSENTIAL SERVICE 6: Enforce Laws and Regulations that Protect Health and Ensure Safety			
STRENGTHS	WEAKNESSES	OPPORTUNITIES FOR IMMEDIATE IMPROVEMENT / PARTNERSHIPS	PRIORITIES OR LONGER TERM IMPROVEMENT OPPORTUNITIES
6.1	Model Standard: Review and Evaluation of Laws, Regulations, and Ordinances		
		*Need to be more proactive in working with county regarding short term problems (nuisance investigations, water quality).	
6.2	Model Standard: Involvement in the Improvement of Laws, Regulations, and Ordinances		
*Always looking for ways to improve, self-critical.			*Need to be more active in working with county and state government to rewrite, draft, implement new regulations as situations arise.
6.3	Model Standard: Enforcement of Laws, Regulations, and Ordinances		
*Educating Environmental Health staff regarding laws and rules within own program areas; staff is good at explaining rules and regulations to citizens. * The public identifies the LPHS as a reliable source of information.	*We do not do a good enough job at holding businesses and organizations accountable to our standards and vision as an organization (DOH-Collier.		

ESSENTIAL SERVICE 7: Link People to Needed Personal Health Services and Assure the Provision of Health Care when Otherwise Unavailable			
STRENGTHS	WEAKNESSES	OPPORTUNITIES FOR IMMEDIATE IMPROVEMENT / PARTNERSHIPS	PRIORITIES OR LONGER TERM IMPROVEMENT OPPORTUNITIES
7.1	Model Standard: Identification of Personal Health Service Needs of Populations		
*There are many organizations within the community who are available to provide services. *We have a great health services network. *We are doing a great job identifying the needs of our population. *Blue Zones and other organizations have systems set in place that allow them to determine where their resources are needed the most.			*More collaboration between community agencies. *Secure greater funding for overall healthcare at the local and state level.

7.2	Model Standard: Assuring the Linkage of People to Personal Health Services		
	*Many people do not know of the services/resources available to the community.	*Provide more information to the community on the resources available. Find ways to get information to communities in need. *Instead of duplicating services/organizations we should start to link individuals to these services. *Participation in 2-1-1 services.	*Target and educate farm communities such as Immokalee and Golden Gate Estates. *Work with community agencies to provide a system of care to the economically deprived. *Create a single resources/website where information from all organizations can be provided (directory). *Continue to identify cross promotion of services among agencies/partnerships.

ESSENTIAL SERVICE 8: Assure a Competent Public and Personal Health Care Workforce			
STRENGTHS	WEAKNESSES	OPPORTUNITIES FOR IMMEDIATE IMPROVEMENT / PARTNERSHIPS	PRIORITIES OR LONGER TERM IMPROVEMENT OPPORTUNITIES
8.1	Model Standard: Workforce Assessment, Planning, and Development		
*The Naples Community Hospital (NCH) has established a residency program to cover the needs for physicians. *VITAS uses a staffing formula during season to ensure adequate workforce. *A back ground check is implemented as part of the hiring process for most organizations and for Independent physicians as well. *Most organizations have set requirements for licensing and certifications.	*Difficulty for hospitals and agencies to maintain a workforce. *Transportation has been noted as an issue in Collier County. Moorings Park has made extensive research on transportation issues. Moorings Park also mentioned experiencing a caregiver shortage		

8.2	Model Standard: Public Health Workforce Standards		
*Donors have provided $50,000/year for nursing to travel and give back to the community. A palliative care company has received this funding to support more RNs and staff that are competent in palliative care. *The clinic has also limited the number of patients each nurse should supervise, maintained monthly meetings to discuss patient care and standard of care.			

8.3	Model Standard: Life-Long Learning through Continuing Education, Training, and Mentoring		
*Workforce standards and importance of workforce competency. *Training *Hodges University has established a new BSN program, and high schools are offering vocational training. *Federally Qualified Health Centers hold leadership trainings for existing employees, and also hold partnerships with local universities, such as FSU, Nova			

8.4	Model Standard: Public Health Leadership Development		
*Growth & Development Opportunities	*Companies are competing over the best workers. Many employers are looking outside their organizations to hire a successor after a leader has moved or retired. *Lack of leaderships succession inside the organizations.		

ESSENTIAL SERVICE 9: Evaluate Effectiveness, Accessibility, and Quality of Personal and Population-Based Health Services			
STRENGTHS	WEAKNESSES	OPPORTUNITIES FOR IMMEDIATE IMPROVEMENT / PARTNERSHIPS	PRIORITIES OR LONGER TERM IMPROVEMENT OPPORTUNITIES
9.1	Model Standard: Evaluation of Population-Based Health Services		
*Emergency services for seniors that are suffering from dementia or are confused are being addressed in the right direction. *The Lions Club has completed 20, 000 Vision Screening for Preschool age children (21 spots) and plans to have every child screen.	*Follow up is needed after Senior citizens are discharged to make sure that the proper after care is being followed. *Mental Health has been underestimated. The real issue is not sophisticating the services, but understanding mental health to be more effective. *Seniors uninsured or under insured is another aspect that needs improvement, they should be assisted or compensated for the services not covered.	*Educating the population to take responsibility before and after receiving health services.	*Guide community to preventive services at a micro and macro level. *Staffing the required workforce
9.2	Model Standard: Evaluation of Personal Health Services		
*Good survey response from clients	*Overlapping evaluations, assessments and surveys between organizations.		*Implementing pilot programs after identifying areas for improvement.
9.3	Model Standard: Evaluation of the Local Public Health System		
*Organizations have the right technology available to communicate with people.	*Assisted Living Establishments, The School District, Veterans Organizations and Health and Human Services Department were not included in this meeting. *All organizations should have the same evaluating system to avoid duplicating efforts. *Organizations need to work more on making people aware of the technology available for them like social media, and should be directed according to the age group/demographics.	*Include Health Organizations not included this time for next LPHS meeting. *Create the same evaluation system for all organizations. *Create awareness of the technology available according to the age group/demographics.	*More funding for prevention was recommended by evaluations.

ESSENTIAL SERVICE 10: Research for New Insights and Innovative Solutions to Health Problems			
STRENGTHS	WEAKNESSES	OPPORTUNITIES FOR IMMEDIATE IMPROVEMENT / PARTNERSHIPS	PRIORITIES OR LONGER TERM IMPROVEMENT OPPORTUNITIES
10.1	Model Standard: Fostering Innovation		
*Hodges University hosts students from a variety of educational institutions (including new residency programs for medical and there will soon be dental residency programs for general dentistry where the latest research will be shared and implemented.			
10.2	Model Standard: Linkage with Institutions of Higher Learning and/or Research		
*Valued relationships with programmatic state health office staff and experts in their field that live in Collier County to work together to improve types of equipment for screenings in schools to improve the effectiveness of those screenings.	* We need more collaborations with universities and colleges.	*Add Hodges University to work with local Colleges and Universities. We meet in coalitions revolving around many different public health issues (e.g. opioid use, domestic violence, smoking, obesity, behavioral health, immunizations) we share among organizations current practices and latest research for potential solutions.	*We can improve by sharing our results on a regular basis throughout the county/community and by opening venues or making it possible for statewide access to our sharing sessions (and potentially national access).
10.3	Model Standard: Capacity to Initiate or Participate in Research		
*Our Hodges community sponsors statewide symposiums to share research and program outcomes for public health issues such as trauma.			*With a better relationship among higher learning and research institutions, there will be the opportunity to conduct long term public health improvement studies.

APPENDIX C: Additional Resources

General

Association of State and Territorial Health Officers (ASTHO)
http://www.astho.org/

CDC/Office of State, Tribal, Local, and Territorial Support (OSTLTS)
http://www.cdc.gov/ostlts/programs/index.html

Guide to Clinical Preventive Services
http://www.ahrq.gov/clinic/pocketgd.htm

Guide to Community Preventive Services
www.thecommunityguide.org

National Association of City and County Health Officers (NACCHO)
http://www.naccho.org/topics/infrastructure/

National Association of Local Boards of Health (NALBOH)
http://www.nalboh.org

Being an Effective Local Board of Health Member: Your Role in the Local Public Health System
http://www.nalboh.org/pdffiles/LBOH%20Guide%20-%20Booklet%20Format%202008.pdf

Public Health 101 Curriculum for governing entities
http://www.nalboh.org/pdffiles/Bd%20Gov%20pdfs/NALBOH_Public_Health101Curriculum.pdf

Accreditation

ASTHO's Accreditation and Performance Improvement resources
http://astho.org/Programs/Accreditation-and-Performance/

NACCHO Accreditation Preparation and Quality Improvement
http://www.naccho.org/topics/infrastructure/accreditation/index.cfm

Public Health Accreditation Board
www.phaboard.org

Health Assessment and Planning (CHIP/ SHIP)

Healthy People 2010 Toolkit:
- Communicating Health Goals and Objectives
  http://www.healthypeople.gov/2010/state/toolkit/12Marketing2002.pdf
- Setting Health Priorities and Establishing Health Objectives
  http://www.healthypeople.gov/2010/state/toolkit/09Priorities2002.pdf

Healthy People 2020:
www.healthypeople.gov
- MAP-IT: A Guide To Using Healthy People 2020 in Your Community
  http://www.healthypeople.gov/2020/implementing/default.aspx

Mobilizing for Action through Planning and Partnership:
http://www.naccho.org/topics/infrastructure/mapp/
- MAPP Clearinghouse
  http://www.naccho.org/topics/infrastructure/mapp/framework/clearinghouse/
- MAPP Framework
  http://www.naccho.org/topics/infrastructure/mapp/framework/index.cfm

National Public Health Performance Standards Program
http://www.cdc.gov/nphpsp/index.html

Performance Management /Quality Improvement

American Society for Quality; Evaluation and Decision Making Tools: Multi-voting
http://asq.org/learn-about-quality/decision-making-tools/overview/overview.html

Improving Health in the Community: A Role for Performance Monitoring
http://www.nap.edu/catalog/5298.html

National Network of Public Health Institutes Public Health Performance Improvement Toolkit
http://nnphi.org/tools/public-health-performance-improvement-toolkit-2

Public Health Foundation – Performance Management and Quality Improvement
http://www.phf.org/focusareas/Pages/default.aspx

Turning Point
http://www.turningpointprogram.org/toolkit/content/silostosystems.htm

US Department of Health and Human Services Public Health System, Finance, and Quality Program
http://www.hhs.gov/ash/initiatives/quality/finance/forum.html

Evaluation

CDC Framework for Program Evaluation in Public Health
http://www.cdc.gov/mmwr/preview/mmwrhtml/rr4811a1.htm

Guide to Developing an Outcome Logic Model and Measurement Plan (United Way)
http://www.yourunitedway.org/media/Guide_for_Logic_Models_and_Measurements.pdf

National Resource for Evidence Based Programs and Practices
www.nrepp.samhsa.gov

W.K. Kellogg Foundation Evaluation Handbook
http://www.wkkf.org/knowledge-center/resources/2010/W-K-Kellogg-Foundation-Evaluation-Handbook.aspx

W.K. Kellogg Foundation Logic Model Development Guide
http://www.wkkf.org/knowledge-center/resources/2006/02/WK-Kellogg-Foundation-Logic-Model-Development-Guide.aspx

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Collier County

Forces of Change Assessment

Florida HEALTH Collier County

NCH Healthcare System

Collier County Forces of Change April 2019

About the Forces of Change Assessment

Our health is determined by much more than traditional medical care. Many factors including economic, environmental, politics, social, ethical, medical, and technological all play a role in determining our health. The Forces of Change Assessment focuses on identifying forces and other impending changes that affect the context in which the community and its public health system operate.

The Forces of Change Assessment assessed trends in these areas seeking to answer the following two questions:

1. What is occurring, or might occur, that affects the health of our community or the local public health system?
2. What specific threats or opportunities are generated by these forces?

On April 4, 2019, the Florida Department of Health in Collier County (DOH-Collier) hosted a Greater Leaders Focus Group to discuss the results of the Community Themes and Strengths Assessment and the survey's implications for the community. In addition, community leaders brainstormed in small workgroups to develop a comprehensive list of trends, events, and factors that affect the health of the community and local public health system. The results of the Forces of Change are documented below:

Disclaimer: Text in **teal** are new comments made, text in **black** was either repeated, or is still prevalent from the 2016 Forces of Change Assessment

FORCE	THREATS POSED	OPPORTUNITIES CREATED
Social		
Large Undocumented population	• Cultural barriers • Fear of arrest/deportation • Lack of trust	• Develop new partnerships to address healthcare needs
Growing older adult population	• Lack of skilled nursing facilities • Increased need for memory care facilities • Car dependent community designs may limit future access and mobility • Increasing use of medical and emergency resources/capacity • Retirees on a fixed limited income • Expensive medications • Isolation, loneliness, limited social connection, and companionship • Increasing life expectancy • Poor eating habits	• Have more preventative care • Need separate care and resources for mental health for the older adult population
Disproportionate number of retirees	• Strain on services-Medicare providers • Long term care facility shortage • Lack of locally available Medicaid beds • Older adults living longer-some did not save enough for retirement • Cannot afford healthcare	• Community partnerships • Collaboration with neighboring counties/communities • Educate children about money management so they know how to save for the future (ex. Finance classes in schools)

FORCE	THREATS POSED	OPPORTUNITIES CREATED
Influx of young families	• Services not available where needed and at right capacity • Lack of community involvement	• Workers to support economic expansion • Opportunity to engage via coalitions, community partnerships • Instill healthy habits at young age
Changing values/breakdown of nuclear family structure	• Less physical activity • Less parental supervision	• Use of technology to provide education and encourage participation in community events
Family unit separated	• Family members are isolated, live far apart, can be an issue for older adults living away from younger family members	• "Adopt a Grandma Program" • Promoting/ creating community organizations • Leverage faith based organizations • Create intergenerational events for different age groups to interact
Extreme variance in income levels (very poor to extremely wealthy)	• Market caters to very wealthy and poor but sometimes neglects middle class • Middle income residents do not qualify for health services, childcare, scholarships • Those who need help are intimidated to seek help, do not know where to start	• Charitable giving
Elitism	• Needs of poor/underserved are ignored	• Community outreach/education
Blue Zones Project	• Resistance from a vocal minority	• Community Partnerships • Improved health outcomes • Decreased medical expenditures • Improved longevity & quality of life
Homeless population	• Lack of sober housing • Most suffer with mental health/substance abuse	
Affordable childcare	• Not enough childcare options • Cost vs work income make affordability difficult	
Alcohol and drug use accepted/encouraged	• Increased mental health issues > not enough mental health beds • Associated expenses medical/insurance • Easy access for teenagers • Self-medication • Vacation/retirement destination • The public needs to be more aware that this is an issue for the community • Adult children with addiction > using older parents for medications/benefits	• Provide alternative choices, healthier activities

FORCE	THREATS POSED	OPPORTUNITIES CREATED
Economic		
Improving economy	• Increased automobile pollution • Roads become less safe for drivers, bicyclists, and pedestrians	• Increasing pay and employment opportunities • Healthcare coverage as employee benefit • Increased tax revenue
Construction boom	• Catering to wealthy clientele • Lack of space for new/ affordable homes for working families • Strain on infrastructure, healthcare and park capacity, especially during season • Not enough roadway • Heavy traffic	• Increased employment in construction, real estate, and associated jobs as population increases • Implementation of smart traffic lights (syncs with Bluetooth in cars)
Large seasonal/tourist influx	• Unsafe roads with drivers from out of state/country unfamiliar with local laws • Seasonal jobs vs. full time positions	• Economic driver for local businesses
Increasing housing costs/lack of affordable housing	• Increased commute times for working class • Many job vacancies-potential employees cannot find housing in their budget (ex. firefighters, police officers, teachers) • Affordable housing repeatedly gets bumped out of plans; wealthy homes being in high demand • Not enough HUD housing available • Income restriction bars middle income residents from cheaper living	• Community redevelopment opportunities to provide affordable housing and eliminate/prevent blight • Build affordable housing close to business, neighborhoods for specific salary ranges, not just low income • Tax credits for employers/businesses for housing employees (incentivize private businesses to try employee housing first) • Room rental/home sharing for singles/small families
Insurance premium increases	• Increase in uninsured • Use of ER as primary care	• Healthcare exchanges
Reduced funding for Medicare/Medicaid	• 84% of 65+ population are Medicare clients • Financial impact on service providers • Medicaid provider shortage • Medicaid only for 100-200% below poverty the “have not’s”. The “have littles” are limited because they cannot qualify for Medicaid	
22% of children living in poverty	• Improper nutrition/obesity • Neglected dental care • High prices for healthy foods	• Increase healthy food options with SNAP

FORCE	THREATS POSED	OPPORTUNITIES CREATED
Political/Legal		
Marijuana legalization/vaping	• Leads to social acceptance of drug use • Easier access for kids • Increased accidents due to impairment • Increased crime • Gateway to worse drugs • A signal to kids that its ok to use • Vaping is becoming more popular, now seen as a "safer" alternative to cigarettes)- disrupting years of drug use prevention/education • Many marijuana products appeal to kids-fun flavors, gummy bears, etc. • Workplace impairment and rules • Limits marijuana administration in schools, and special needs shelters	• Treatment for medicinal purposes • Economic benefits if legalized (tax revenue) • Educate children on the risks of marijuana/vaping use
Government Healthcare	• Uncertain future • Rapidly increasing premiums/inadequate coverage • Federal role in local healthcare decisions • Reduced ability to customize local healthcare solutions	• Access regardless of pre-existing conditions • Innovation opportunities regarding access to care • Expand Medicaid/insurance coverage for behavioral health
Increasing legislative requirements/complexity for Medicare	• Shift to concierge medicine • Reduced acceptance of Medicare patients • Increasing administrative expense	
Certificate of Need Law for new hospitals	• Law regulations limit future facilities and expansion of services	• Use best practices from other states • Focus on preventative services so demand for hospitals goes down
Civic involvement/inclusion		• Expanded public/private community partnerships • Community design improvements
Immigration	• Reduced integration/assimilation • Community isolation • Additional cost of increased immigration rates • Health status: no family history, new illnesses • Under educated • Increased number of lower income residents • Schools may have more crowded classrooms • Not enough affordable healthcare	• Focused community engagement opportunities to address issues of undocumented community

FORCE	THREATS POSED	OPPORTUNITIES CREATED
Technological/Scientific		
Electronic Health information exchange	• Not interconnected • Fragmented care	• Improve efficiency/reduce errors
Telemedicine	• Quality/level of care concerns • Reimbursement challenges for telemedicine	• Increased access, affordability, and availability
Advancement of technology	• Online applications, portals, use of smartphones • Taking away human experience of healthcare • HIPPA • Issues with hacking/malware	• More integrated healthcare system • Innovative follow up options
STEM jobs	• Local candidate shortage	• Education focus • Internship opportunities
Environmental		
Red tide	• Threat to tourist industry • Environmental concerns • Many jobs were affected	
Habitat preservation	• Impact on wildlife, water quality, tourism industry	• Expanded preservation efforts
Water and air quality concerns/aging infrastructure	• Lead and bacterial contamination of water supply • Inadequate testing of wells • Increase in chronic disease and developmental issues • Water management behind • Lost funding after market crash	• Modernize infrastructure • Expanded well testing program • Employment opportunities • Expanded use of electric/hybrid vehicles
Warming environment/climate change	• Emerging infections/diseases • Increase in volatile weather • Rising tides	
Pesticide exposure to agricultural workers	• Increase in chronic disease and developmental issues • Exposure testing concerns	• Education regarding proper application, exposure mitigation and testing
Mosquito Control/infectious disease	• Increase in Zika and other diseases	
Medical		
Lack of sufficient county-wide medical transportation services	• Senior and mobility challenged population cannot access healthcare	• New transportation partnerships • Expand neighborhood clinics
Increase in concierge medicine	• Shortage of accessible/affordable care	• Establish local residency program

FORCE	THREATS POSED	OPPORTUNITIES CREATED
Provider shortage	• Shortage of accessible/affordable care • Healthcare providers retiring • In season and out of season appointment availability differences • Growth in population • Many seeking mental health care are forced to find care across county borders • More dental services needed	• Establish local residency program • Import physicians from other locations/market SWFL • Use of volunteers/ students
Funding/reimbursement challenges	• Shift to concierge services • Refusal to accept Medicare patients	
Access to care	• Untreated illness and chronic disease • Increase in future medical outlays • Strain on emergency services • Location related economic disadvantage • Lack of awareness/advertising of services • Lack of transportation/limited bus services • Language Barrier • High prices for medication	• Composing a webpage or central database with information about the services available • More bilingual providers • Expand Paratransit • More prevention by linking behaviors to disease/health promotion programs • Target population groups for care/making access walkable or in close proximity
Opioid epidemic	• 3-4 calls a week-overdoses • More access to drugs • Overdoses in non-residential location (ex. public restrooms) • Opioid are harder to get prescribed-people resort to heroin	• Medicaid expansion-reduce opioid rate by giving access to care • Place Narcan in all law enforcement units
Improper handling/disposal of medication	• Overmedication • Older adults having issues with memory and taking meds • Small print makes reading meds difficult	• Law enforcement can have a secure medication box in patrol car-can pick up drugs when in the area • Need to educate medical providers on proper disposal • Pharmacies have proper disposal methods
Ethical		
End of life advocacy for older adults	• Abuse/neglect of elderly • Family stress • Adverse financial outcomes • Lack of representation/guidance for older adults>they are being exploited: issues of DNR orders or estate beneficiaries	• Establish a statute for health advocate/navigators (ethical advocacy) • Educate younger population about importance of giving
Genetic screening/testing	• Discrimination • Selective reproduction • Tracing family history then increasing insurance cost/inability to obtain coverage • Employment discrimination	• Reduce/prevent genetic disorders in newborns • Treatment innovations

FORCE	THREATS POSED	OPPORTUNITIES CREATED
Access for poor and underserved communities	• Reduced integration/assimilation • Community isolation • Negative health outcomes	• Community education regarding existing support programs • Expanded private/public partnerships • Community Outreach
Undocumented population is often left out, discarded	• Reduced integration/assimilation • Community isolation • Negative health outcomes • Poor access to care for undocumented/immigrant population	• Focused community engagement opportunities to address issues of undocumented community
Economic inequity	• Inefficient service mix • Service provider gaps • Community impact	
Vaccines	• Growing anti-vaccine groups • Increase in religious exemptions • Re-emergence of diseases	• Need stronger regulations on vaccinations • Centralized vaccination records

Conclusion

Several themes arose during the discussion of threats to and opportunities for the local public health system in Collier County. Access to care, the opioid epidemic, and a growing population has major implications for health which was reflected by the number of times participants noted its impact. However, opportunities to seek more partnerships, and best practices were met with enthusiasm by many participants who acknowledged the potential in these areas for improving health in Collier County. As Collier County moves forward with its Community Health Improvement Planning process, these findings will be revisited regularly to ensure that changes in these forces are incorporated into the planning and monitoring processes.

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Florida
HEALTH
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Healthcare
System

August 2019

Collier County

Community Themes and Strengths Assessment

Prepared By:

Florida Department of Health in Collier County

In Partnership With:

NCH Healthcare System

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Introduction

During the months of January through April 2019, the Florida Department of Health in Collier County (DOH-Collier), in partnership with NCH Healthcare System, obtained community input regarding health and quality of life issues for those residing in Collier County via completion of a community health survey and fifteen focus group sessions. By utilizing the same survey that was developed in 2012 and 2016, comparisons can be drawn to identify performance over time and to assess if improvement efforts had a measurable effect that would be demonstrated in the 2019 results.

The Community Themes and Strengths Assessment is one of the four Mobilizing for Action through Planning and Partnerships (MAPP) assessments, (**Figure 1**) conducted as part of creating and implementing a Community Health Improvement Plan (CHIP). The MAPP model was developed by the National Association of City County Health Officials (NACCHO) for a planned approach to improve health and quality of life.

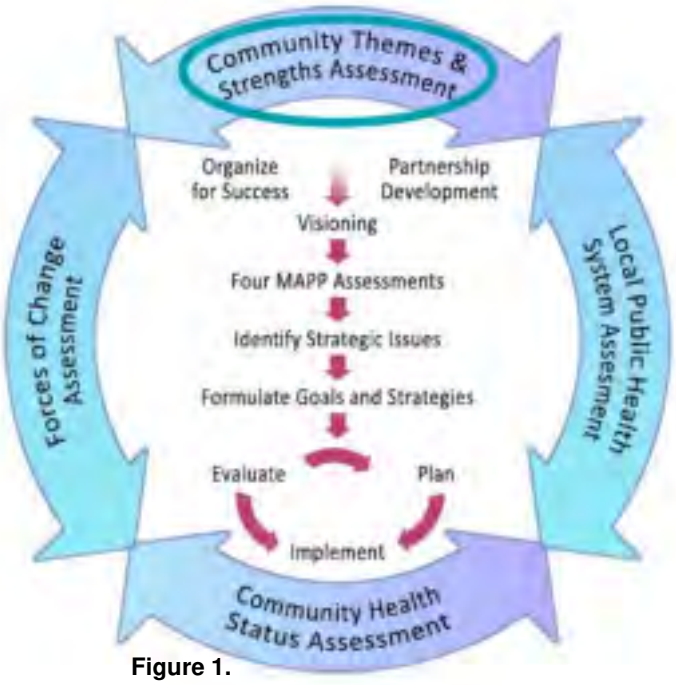


Figure 1.

Residents in Collier County were asked to respond to geographic, demographic, and health related questions. They were also asked to respond to questions regarding the environment and the overall quality of life. The surveys were available in the three main languages spoken in Collier County: English, Spanish, and Creole. The surveys used a Likert scale ranging from 1 to 5, where a statement that scored a 5 meant the respondent strongly agreed with that statement. A score of 1 meant the respondent strongly disagreed with that statement. The final survey question asked respondents to rank ten health related factors in priority order to develop “Priority Health Rankings”. The Priority Health Rankings were used to assist in identifying topics of concern requiring additional discussion and community input.

Preliminary Data

Preliminary Results

Between January 3, 2019 and January 23, 2019, preliminary data was obtained via an initial electronic survey request of community leaders and health care partners. The identified problem areas are displayed below (**Figure 2**) by showing the lowest scoring survey responses by lowest level of agreement. Lastly, the participants ranked ten priority health issues, where a ranking of one meant that it was a high priority to address, and a ranking of ten meant that it was the lowest priority.

Preliminary Results Summary (Electronic Survey Results)

Figure 2.	Agree
There is a problem with drug and alcohol abuse in Collier County **(Disagree)**	1.5%
Residents of Collier County have access to affordable housing	3.0%
Collier roadways are safe for bicyclists and pedestrians	11.8%
Collier provides sufficient opportunities for job employment and economic advancement	23.1%
There are enough choices/available beds in the community for long term care	26.1%
There are enough dental services available for children	31.9%
Residents have access to affordable, healthy foods in their neighborhoods	32.3%
There are enough dental services available for adults	40.9%

Preliminary Results Top Five Priority Health Rankings

1. Mental Health
2. Access to Care
3. Alcohol and Drug Use
4. Chronic Disease (heart disease, diabetes, cancer)
5. Health of Older Adults

Final Data

Final Results

Between February 1, 2019 and April 11, 2019, data was obtained via in-person and electronic surveys of community members in the county. Displayed below (**Figure 3**), are the identified priority areas for 2019. The 2016 results are included to compare the shift in priorities in the county over the past three years.

Priority Health Rankings 2016-2019 Comparisons											
Public Health Leadership	2019	Mental Health 1	Access to Care 2	Alcohol & Drug Use 3	Chronic Diseases 4	Health of Older Adults 5	Obesity 6	Dental Health 7	Communicable Diseases 8	Disabilities 9	Unintentional Injuries 10
	2016	Chronic Diseases 1	Mental Health 2	Alcohol & Drug Use 3	Access to Care 4	Obesity 5	Health of Older Adults 6	Disabilities 7	Communicable Diseases 8	Dental Health 9	Unintentional Injuries 10
DOH-Collier & Community Partners	2019	Mental Health 1	Alcohol & Drug Use 2	Chronic Diseases 3	Access to Care 4	Obesity 5	Health of Older Adults 6	Communicable Diseases 7	Dental Health 8	Disabilities 9	Unintentional Injuries 10
	2016	Mental Health 1	Access to Care 2	Chronic Diseases 3	Alcohol & Drug Use 4	Obesity 5	Communicable Diseases 6	Health of Older Adults 7	Dental Health 8	Disabilities 9	Unintentional Injuries 10
Community	2019	Chronic Diseases 1	Mental Health 2	Alcohol & Drug Use 3	Access to Care 4	Health of Older Adults 5	Obesity 6	Communicable Diseases 7	Dental Health 8	Disabilities 9	Unintentional Injuries 10
	2016	Chronic Diseases 1	Access to Care 2	Mental Health 3	Health of Older Adults 4	Alcohol & Drug Use 5	Obesity 6	Communicable Diseases 7	Disabilities 8	Dental Health 9	Unintentional Injuries 10
All	2019	Mental Health 1	Chronic Diseases 2	Access to Care 3	Alcohol & Drug Use 4	Health of Older Adults 5	Obesity 6	Communicable Diseases 7	Dental Health 8	Disabilities 9	Unintentional Injuries 10
	2016	Chronic Diseases 1	Mental Health 2	Access to Care 3	Alcohol & Drug Use 4	Obesity 5	Health of Older Adults 6	Communicable Diseases 7	Disabilities 8	Dental Health 9	Unintentional Injuries 10

2019 Results Top Five Priority Health Rankings

1. Mental Health
2. Chronic Disease (heart disease, diabetes, cancer)
3. Access to Care
4. Alcohol and Drug Use
5. Health of Older Adults

2016 Results Top Five Priority Health Rankings

1. Chronic Disease (heart disease, diabetes, cancer)
2. Mental Health
3. Access to Care
4. Alcohol and Drug Use
5. Obesity

Collier County Community Health Assessment Survey Responses

The chart below (**Figure 4**), displays the 2019 community and leadership survey results sorted in order of most to least favorable.

% of Respondents that Agree

Figure 4. Survey Questions	2019 Leadership	2019 Community	2016 Leadership	2016 Community
This community is a safe place to live	96.00%	85.10%	76.40%	76.50%
Collier provides timely police, fire, and rescue services	94.00%	90.30%	78.60%	82.40%
I am satisfied with the quality of life in our community	92.00%	94.10%	75.70%	70.60%
This community is a good place to raise children	91.00%	97.10%	69.30%	64.70%
People in Collier County are well educated	91.00%	100%	62.90%	58.80%
Levels of mutual trust/respect are increasing	87.10%	94.10%	55.70%	45.60%
Collier County has sufficient recreational facilities	81.30%	97.00%	64.30%	67.60%
There are adequate resources for the health of mothers and babies	81.25%	96.40%	48.60%	47.10%
I am satisfied with the healthcare system in the community	76.00%	84.50%	55.70%	57.40%
Residents have access to affordable, healthy foods	71.40%	81.00%	36.40%	47.10%
This community is a good place to grow old	69.00%	85.30%	72.10%	67.60%
There are networks of support (including mental health)	69.00%	97.0%	39.30%	51.50%
All individuals and groups have opportunity to contribute	66.00%	83.00%	50.70%	60.30%
There are adequate resources for **primary** care in the county	55.00%	86.00%	55.00%	67.60%
There are adequate resources for **specialty** medical care	50.00%	82.1%	53.60%	64.70%
There are adequate healthcare resources in the county	34.00%	87.50%	53.60%	69.10%
There are enough dental services available for adults	34.00%	45.90%	45.70%	51.50%
Collier roadways are safe for drivers	30.00%	51.90%	50.00%	47.10%
There are enough dental services available for children	26.00%	45.00%	44.30%	32.40%
There are sufficient job employment and economic opportunities	21.90%	62.90%	30.00%	45.60%
There are enough choices/available long term beds in the community	16.30%	68.50%	35.00%	44.10%
Roadways are safe for bicyclists and pedestrians	12.00%	51.00%	26.40%	26.50%
Residents of Collier have access to affordable housing	6.40%	50.00%	12.90%	5.90%
There is a problem with drug and alcohol abuse in the county ***(Disagree)***	4.20%	29%	10.00%	16.20%

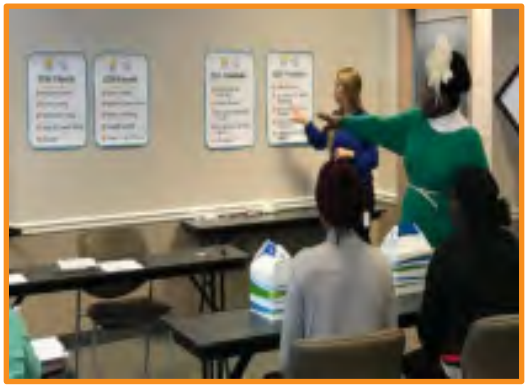
The most common and highest scored community strengths chosen by leadership and the community were timely police, fire, and rescue services, the quality and level of safety in the community, quality of education, and that Collier County is a great place to raise children. The most common and lowest scoring areas that Collier County has room for improvement in were drug and alcohol abuse, affordable housing, roadway safety for bicyclists and pedestrians, and the need for more long term beds in the community.

Focus Groups

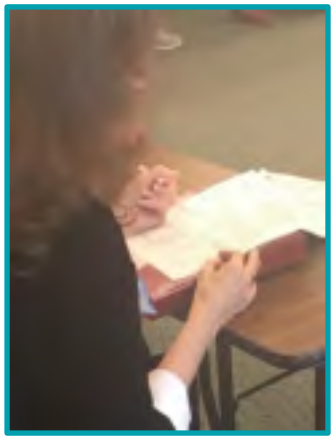
Focus Group Organizational Process

The preliminary results gathered from community leaders and health care partners who took the electronic survey were analyzed to identify areas requiring further discussion and to establish a framework of topics that were addressed and validated during a series of subsequent focus group sessions that included health care and public health professionals, community members, and Collier County community leaders.

Between January and April 2019, fifteen focus group sessions and four survey only groups were held. Focus group locations were chosen to ensure the broadest coverage of the entire county and included diverse demographic and socioeconomic characteristics. Individual participants were acquired through social media, word of mouth, and invitational flyers in the three primary languages spoken in Collier County. Communities throughout Collier County were represented and included East Naples, Everglades City, Golden Gate City, Immokalee, the City of Naples, Marco Island, and North Naples. Many focus groups were scheduled during existing community partner committee meetings. These partnerships included the Leadership Coalition on Aging, Collier County Parks and Recreation, Drug Free Collier, Keep Collier Beautiful, and the Blue Zones Project. Other focus groups were done during educational sessions that DOH-Collier provides, such as the Collier County Community Nook Project, and Haitian Prenatal Classes. Residents were also surveyed at community events such as the Immokalee Big Bus Event and Collier County Public Schools Nutrition Education sessions. A Greater Leaders focus group was held at NCH Healthcare System on April 4, 2019 where a total of 24 key community and public health leaders were in attendance.



Focus Group Organizational Process Cont.



For each focus group, participants were given a brief description of the Community Themes and Strengths Assessment by DOH-Collier staff. Following the introduction, they were prompted to fill out the Community Health Survey, which included demographic information to track the populations surveyed. Focus group participants were also asked to prioritize ten different healthcare related areas (**Figure 5**). The ten public health categories were ranked by their order of importance for Collier County as perceived by the attendees. Subsequently, the summation of totals for the ten categories were obtained by summing up the priority cumulative ranking for all participants. A rank of one means that the issue is most important and a rank of ten means the issue is of least importance to the participant. This method allows for comparisons of the results between focus groups. The 2019 survey results were compiled and compared to those obtained in 2016.

Upon collection of the survey, a facilitator from DOH-Collier would discuss the top priorities for 2016 and compare the results to the 2019 preliminary priorities. This process would lead into a further discussion on the shifts in priorities over the years, insight regarding health and quality of life priorities for the community, current public health issues Collier County is facing, and areas for improvement. The open discussion gave participants the opportunity to voice their opinions, concerns, and ideas. A recorder from DOH-Collier was also present to accurately log all comments made. Spanish and Creole translators were provided during the meetings if needed. Participants discussed many topics and focused on identifying root causes to problems where possible.

Figure 5.

A rank of 1 means that the issue is most important and a rank of 10 means the issue is of least importance.
Please place a letter in the appropriate rank box.

Rank the most important	1		A. Communicable Diseases
	2		B. Chronic Disease (heart disease, diabetes, cancer)
	3		C. Obesity
	4		D. Mental Health
	5		E. Alcohol and Drug Use
	6		F. Dental Health
	7		G. Health of the Elderly
	8		H. Access to Care
	9		I. Disabilities (physical, sensory, intellectual)
Rank the least important	10		J. Unintentional Injuries

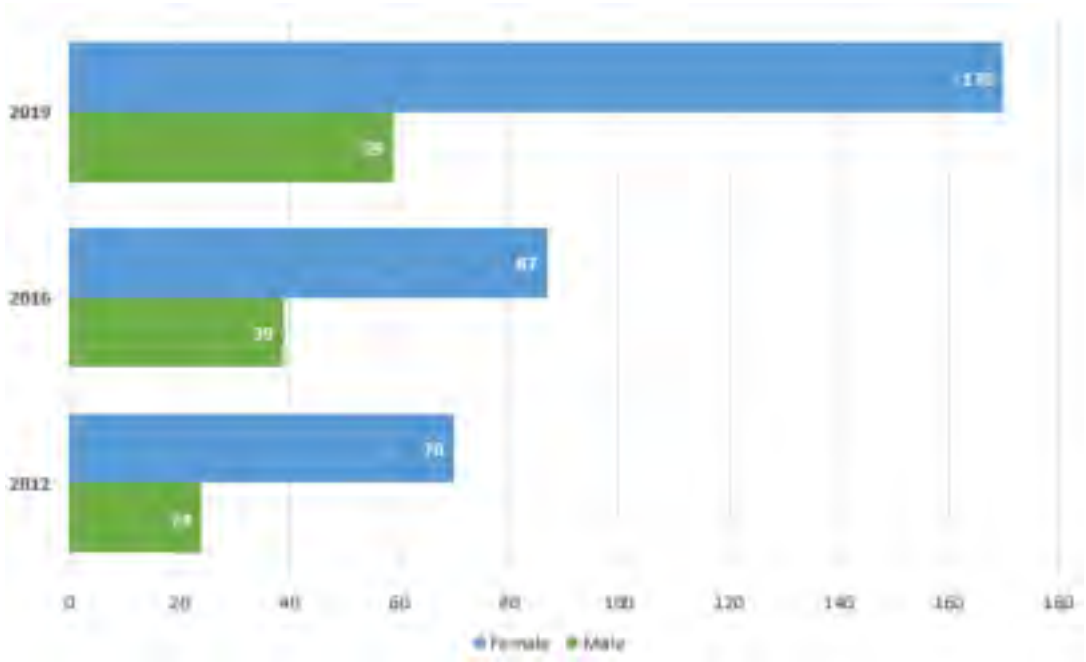
Focus Group Participation Overview

In 2019, focus group participation increased by approximately 88% from 2016. Participation from women continues to outnumber men, although the male participation rate did increase by approximately 51% in 2019. To better reflect the composition of the county, deliberate efforts were made to solicit input from older adults including focus groups in communities catering to retired residents in East and North Naples, as well as hosting a focus group discussion at the Golden Gate Senior Center. Thus, focus group participation for those over age 60 increased 58% in 2019.

The following charts are shown to display the participation for the focus groups by number of attendees (**Figure 6**), and age (**Figure 7**). Participation for survey only groups that did not participate in a facilitated discussion are displayed in (**Figure 8**) and (**Figure 9**).

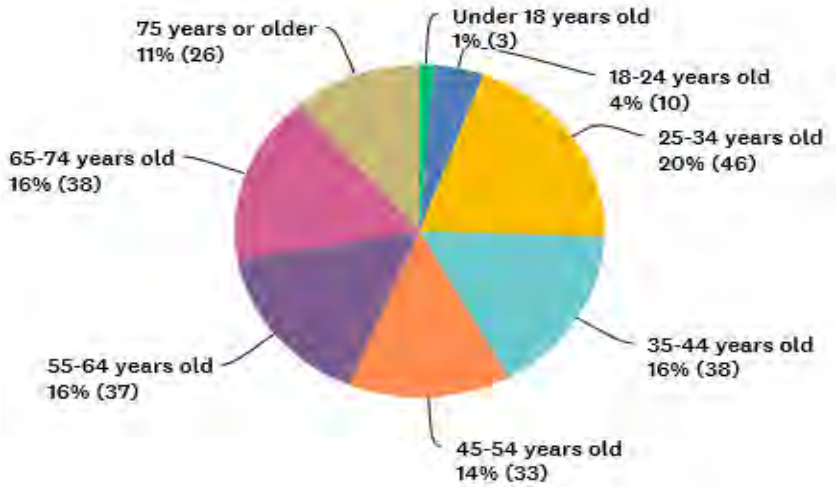
Community Themes & Strengths Focus Group Participation

Figure 6. Answered: 229 Skipped: 8



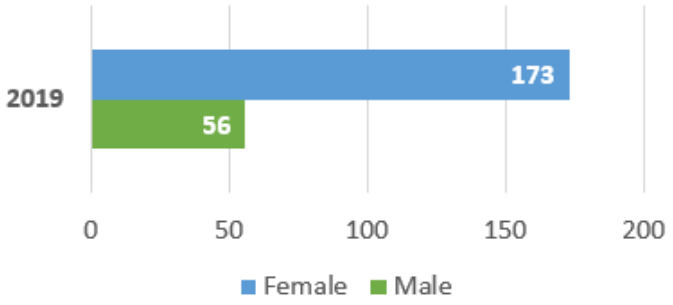
Community Themes & Strengths Focus Group Participation by Age

Figure 7. Answered: 231 Skipped: 6



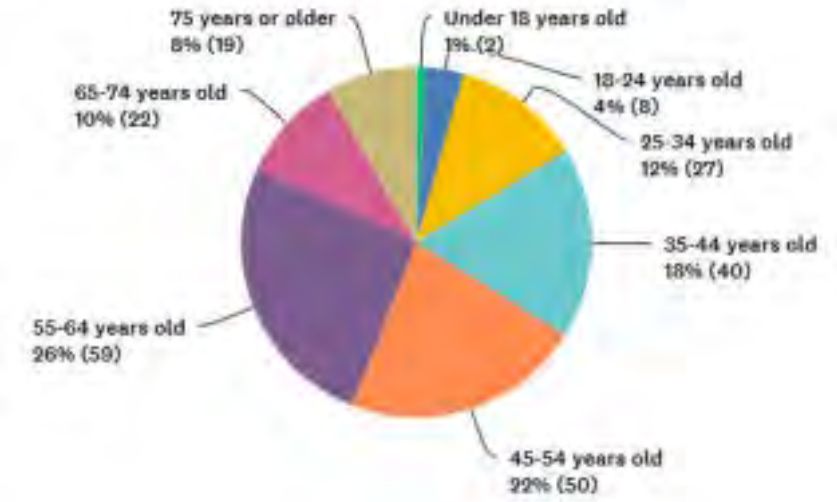
Community Themes & Strengths Survey Only Participation

Figure 8. Answered: 229 Skipped: 17



Community Themes & Strengths Survey Only Participation by Age

Figure 9. Answered: 227 Skipped: 19



Focus Group Results

There were many thoughts and impressions provided about the healthcare system and contributing factors in Collier County. Several unifying themes, both positive and negative, emerged from the focus group discussions and have been documented in detail.

Improvement Opportunities

The five lowest scoring survey responses for each group are displayed below in red (**Figure 10**):

% of Respondents Who Agree

Figure 10. Survey Questions	Collier Public Health Leadership n=83	DOH-Collier and Community Partners n=212	Community n=188	All Groups n=483
There is a problem with drug and alcohol abuse in Collier county. **(Disagree)**	4.2%	12.4%	29.0%	17.0%
Residents of Collier have access to affordable housing.	6.4%	9.5%	50.0%	13.0%
Collier roadways are safe for bicyclists and pedestrians.	12.0%	20.5%	51.0%	31.0%
There are enough choices and available beds in the community to address long term care needs.	16.3%	34.9%	45.8%	36.0%
Collier provides sufficient opportunities for job employment and economic advancement.	21.9%	35.0%	62.9%	33.9%
Collier roadways are safe for drivers.	30.0%	28.6%	51.9%	38.7%
There are enough dental services available for children.	26.0%	42.0%	45.0%	40.3%
There are enough dental services available for adults.	34.0%	44.0%	45.9%	42.0%

*The most common and lowest scoring areas across all groups were drug and alcohol abuse, affordable housing, roadway safety for bicyclists and pedestrians, and the need for more long term beds in the community.

Specific challenging areas that arose during multiple focus group discussions are depicted in the following charts (**Figures 11-14**). Participants felt that the following issues are barriers to each of the priority areas.

Figure 11. Mental Health		
Mental health issues may lead to self-medication, because there is a lack of access to care>need more providers to provide better access	Not enough beds for people with mental health issues>Patients are being sent out of the county	David Lawrence Center (DLC) reports over capacity weekly for the number of children occupying their mental health beds-DLC has a goal to increase capacity
We need to better educate the community about mental health	There is a lack of education, early prevention and counseling services	Many with mental health issues have a lost sense of purpose
Need for separate care and resources for mental health in the population > 70 years old. Currently there is limited care, therapy, etc. for this age group and many only have the option for private pay	Mental health and Substance abuse share a relationship where both equally contribute and play a role in affecting the other	Unmanaged stress and depression lead to mental health issues
Mental health patients end up in jail, and jail has become the largest mental health care provider in the county>only time some people are getting treatment	Medicine is not being handled correctly (self-medication, lack of control, prescriptions not appropriate, too high of doses, overdoses etc.)	A family history of alcohol and drug abuse or mental health might also play a role, for example Adverse Childhood Experiences
Limited assisted living facilities with psychological support	Lack of insurance to pay for services	Sense of stigma attached to mental health
Cultural factors and where you live can affect your mental health	Lack of outreach, people do not know what's available	Drugs and alcohol prohibit getting the mental health care they need
Many mass shootings are because of mental health issues and not seeking help	People would rather spend money on drugs and alcohol, than on mental health services	Lack of multidisciplinary approach to mental health (medication first)

Figure 12. Alcohol and Drug Use		
Alcohol abuse fuels depression/mental health issues (vice versa)	Opioid Crisis-Many people do not know or understand why they are taking these medications	Lost sense of purpose leads to alcohol and drug abuse
Vacation/Alcohol culture- story about how participant doesn't drink, so people assume he's a recovering alcoholic	A family history of alcohol and drug use or mental health may also play a role, ex. Adverse Childhood Experiences (ACE's)	Many kids and young adults do not stick with the jobs they can get, they quit shortly after, then get involved with drugs
Additional rehab facilities needed	Alcohol & drug use > lower societal functioning (vice versa)	Easy access to drugs and alcohol for teenagers
Cultural factors	Stress	Depression
Where you live	Drug use has increased worldwide, is more normalized in society today, more accepting	Drug and alcohol abuse is a coping mechanism
Money/life problems causes stress/depression and then people start using drugs	More young kids are using drugs due to depression	Adult children with addiction issues are using older parents for their medications/benefits
Child removal from homes → rates are largely due to alcohol and drug use	Immigration status causing reluctance to seek help	Homeless displacement due to construction/growth
Access to drugs and alcohol prohibit getting the mental care they need	There's a large drug issue in communities of low socioeconomic status	Top 3 priorities in our 2019 preliminary data are all interconnected (mental health, chronic disease, access to care)

Figure 13. Access to Care		
Many residents cannot afford health insurance/healthcare	If you have money, you have great access to care	Some of the public is not well informed or are unaware of where and how to access care, need to provide information to the community about healthcare services offered in the area
To improve access to care we should have a webpage or central database with information about the services available, (like Collier 211)	Long waitlist for facilities-6 months for specialists	It's difficult to get primary care appointments, and when you do, you have a Physician Assistant
Concierge medicine increase	Greater number of retirees on fixed income, how can they schedule and pay? Unable to afford personal vehicle, limited public transit	More people are moving to Collier County, bringing more diseases/illnesses for healthcare to handle
The average literacy level in Collier was 4th grade, but most education materials are written for college level	Doctors in Collier do not always accept all insurance	Lack of medical care in areas such as Immokalee and Everglades City. How do you attract healthcare providers to these areas?
Shift of cost of care burden from employers to employees	Lack of health literacy	Transportation issues
A health clinic in the Everglades area would take care of most access to care, even having a nurse practitioner/ Physician's assistant in the area would help	In the Everglades, having to go through 911 to receive care makes it difficult	Government should provide more benefits for older adults
Seasonal population – providers are over-capacity in season and under capacity out of season	Many providers do not accept new patients during season	More beds needed for crisis patients - facilities are over capacity/being displaced to hospitals
Increased need for high skilled facilities	Missing Immigration documents/ Immigration status not confirmed	Long commute for healthcare from isolated areas causes residents to miss more hours of work than necessary-They don't have sick leave or vacation time
Language barrier	Limited services like PT/OT (specialty/outpatient)	Hospitals are overwhelmed with patients
Not close to clinics/hospitals (Immokalee, Everglades)	Many have physical access to care, but immigrants are reluctant to seek medical attention/don't have insurance/don't have a job that enables them to pay	Many farm workers with no transportation or insurance
More clinics needed for all income levels (sliding scale clinics)	Lengthy wait times for buses	Difficulty in accessing services such as follow-up care/specialists
Costs of medication/ insurance coverage decrease/ co-pay increases - providers offering limited support in paperwork, or discount programs	Inform people of walk in clinics, that way they don't go straight to the ER	Lack of education and early prevention
Teach mindfulness	Connectivity among similar services	Older adults can't afford long-term care

Figure 14.	Health of Older Adults	
Lack of education on general health, wellness and nutrition	Insufficient food in rehab facilities	Family unit is nonexistent, adult children and family live far apart
Discontinuation yellow pages-lack of technology literacy a barrier to finding resources-low health literacy	Older adult abuse in nursing homes	Connectivity among similar services
More retirees on fixed income, how can they schedule and pay? Haves and have nots – income gap	Disease progression and decreased resilience, suffering from multiple health issues-comorbidity over time	Increased medications, instead of holistic options, combined with poor access
Isolation, loneliness, limited social connection and companionship programs	As the older adult population ages, it often leads to chronic disease	Increasing life expectancy
Generational differences	Growth of aging population	Obesity
Need to have more preventative care	Collier is known as a retirement destination > greater older population > more people to treat	People don't know how to navigate the system – they need advocates to help them so they can remain in care long-term
Not enough affordable housing, retirement communities for all income levels	Nutrition is a struggle in the community. A change in mind set in the older adult population is needed	Many older adults do not have a stove, they do not want to cook
In the Everglades, no local specialized care, if they needed something such as an x-ray it's an hour away	The residents are losing hope-they say nothing is being done	Difficult to navigate health insurance system
Many qualify for assistance for some services, but system is too complicated to navigate	Lack of dental providers to serve older adults-poor	Lack of shared EMR/Lack of continuity of care/Poly-Pharmacy
Can't afford long-term care	Case management is only crisis based	Lack of managed care/geriatric care managers
Lack of knowledge of available resources-Need to provide information to the community about healthcare services offered in the area	Need to have a closer partnership between Parks & Rec and DOH	Physical access, not as independent as they once were, can't drive like previously, can't go to appointments/places they need, lack of transportation
More requirements are needed to receive helps and benefits, no money for assistive devices or other care services	Not enough/no local care available (Immokalee, Everglades), lack of in-home providers	No insurance, because of low-income, providers are too expensive
Limited services for assisted living	Hard to manage multiple health conditions	Older adults are not as active
In Immokalee/Everglades not many older adults have family near	Many homeless people in Immokalee with no insurance or family	Transit issues - need for increase funding in public transportation, buses are not accessible to all (wheelchairs, walkers, etc.)
Education needed for aging/safety for older adults - caring for themselves, decreasing mobility	Some residents have a lack of community awareness of issues because they are only part-time residents, some remain confined within neighborhoods	Baby boomers will be present at unprecedented numbers, as compared and seen in other generations (exponential growth of older adult population)
Faith-based leaders lacking knowledge of awareness of resources	The elderly is put in adult living facilities which are extremely expensive	We need to better educate youth, introduce better eating habits-they can grow older with better habits, leading healthier lives

*To become a more age-friendly community, the language is being changed to describe the population aged 65 years and older from elderly, to older adults.

Community Strengths

The five best scoring survey responses for each group are displayed below in green (**Figure 15**):

% of Respondents Who Agree

Figure 15. Survey Questions	Collier Public Health Leadership n=83	DOH-Collier and Community Partners n=212	Community n=188	All Groups n=483
I am satisfied with the quality of life in our community.	92.%	96.0%	94.0%	94.2%
This community is a good place to raise children.	91.0%	94.0%	97.1%	95.0%
This community is a good place to grow old.	69.0%	92.0%	85.3%	82.0%
Residents in your community are healthy overall.	73.3%	90.4%	100%	90.1%
Collier provides timely police, fire and rescue services in throughout the County.	94.0%	95.1%	90.3%	95.0
Levels of mutual trust and respect are increasing among community partners.	87.1%	97.0%	94.1%	93.0

*As evidenced by the survey results above and during the community focus group discussion, Collier County possesses a great deal of positive attributes. Focus group participants expressed high levels of satisfaction with emergency services and overall quality of life. They feel that our community is a good place to raise children and a good place to grow old. Residents express that Collier County has numerous services to offer, and the next step will be additional promotion and education of those services. The community partners have seen an increase in stronger relationships and connections among each other.

Conclusion

As more in-depth evaluation continues, potential solutions will be identified and incorporated into strategic planning efforts going forward. The Community Themes and Strengths Assessment, the Local Public Health System Assessment, the Community Health Status Assessment, and the Forces of Change Assessment, are the building blocks of Collier County's Community Health Assessment (CHA), which is the primary driver of the Community Health Improvement Plan (CHIP). The four MAPP Assessments, and CHA will be available on the DOH-Collier website under the Public Health Information section. The focus group and survey process continues to be a valuable process for establishing and reinforcing communication and various linkages within the community. With a heightened focus on becoming a more age-friendly community, continuing to excel in our other strengths, while also focusing on our areas for improvement, Collier County will continue the pursuit of its shared vision to be the healthiest county in the nation to live, learn, work, and play.

The following pages provide supporting documents including promotional flyers, and the survey that was distributed to residents in Collier County.

Assessment Promotion

(**Figure 16**) is a flyer that was distributed around the county to local partners, and the community to prompt individuals to take the community health survey. On the flyer, was a working QR code, and link to the online survey. The flyer was also on the DOH-Collier website, and placed around DOH-Collier's Naples location. **Figures 17-20** on the following page are flyers that were used to promote upcoming focus groups that were being held around the county.

Figure 16.

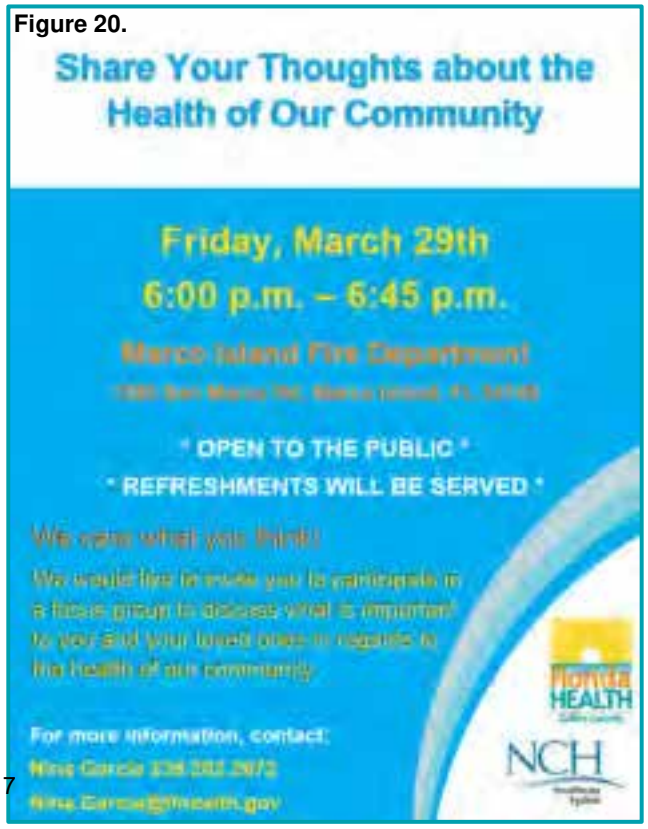
Community Focus Group Flyers

Figure 17.

Figure 18.

Figure 19.

Figure 20.



Community Health Surveys

(**Figures 21-23**) are the community health surveys used to gather the community and local partner's insight on what the residents of Collier County feel is important.

English

Figure 21.

Collier County Community Health Survey

Home Zip code _____ Gender _____ Age _____

Race/Ethnicity:

- ☐ White/Caucasian
- ☐ Black/African American
- ☐ Hispanic
- ☐ Asian/Pacific
- ☐ Native American
- Other (Please Specify)

Education: Please select the highest level completed: (Check one selection)

- ☐ Elementary/Middle School
- ☐ High school diploma or GED
- ☐ Some college
- ☐ Technical/Community College
- ☐ 4 Year College/Bachelors' s degree
- ☐ Graduate School
- ☐ Post-Graduate Studies

Employment Status: (Check the most appropriate selection)

- ☐ Employed Full-Time
- ☐ Employed Part-Time
- ☐ Unemployed
- ☐ Retired
- ☐ Homemaker
- ☐ Student

Household Income: (Check one selection)

- ☐ Less than $10,000
- ☐ $10,000 - $19,999
- ☐ $20,000 - $29,999
- ☐ $30,000 - $49,999
- ☐ $50,000 - $74,999
- ☐ $75,000 - $99,999
- ☐ $100,000 +

	Additional Focus Group Questions	Likert Scale Responses (1 to 5, with 5 being most positive)
1	I am satisfied with the quality of life in our community. (Consider your sense of safety, well-being, participation in community life and associations, etc.)	☐5 ☐4 ☐3 ☐2 ☐1
2	I am satisfied with the healthcare system in the community. (Consider access, cost, availability, quality, options in health care, etc.)	☐5 ☐4 ☐3 ☐2 ☐1
3	There are adequate health care resources in the county	☐5 ☐4 ☐3 ☐2 ☐1
4	There are adequate resources for primary care in the county	☐5 ☐4 ☐3 ☐2 ☐1
5	There are adequate resources for specialty medical care	☐5 ☐4 ☐3 ☐2 ☐1
6	There are adequate resources for the health of mothers and babies	☐5 ☐4 ☐3 ☐2 ☐1
7	This community is a good place to raise children. (Consider school quality, day care, after school programs, recreation, etc.)	☐5 ☐4 ☐3 ☐2 ☐1
8	There are enough dental services available for children. (Consider affordability as well as access.)	☐5 ☐4 ☐3 ☐2 ☐1
9	There are enough dental services available for adults. (Consider affordability as well as access.)	☐5 ☐4 ☐3 ☐2 ☐1
10	There is a problem with drug and alcohol abuse in Collier County	☐5 ☐4 ☐3 ☐2 ☐1
11	There are networks of support for individuals and families during times of stress and need. (Support groups, faith community outreach, mental health and social services agencies, and organizations)	☐5 ☐4 ☐3 ☐2 ☐1
12	This community is a good place to grow old. (Consider elder-friendly housing, transportation to medical services, churches, shopping, elder day care, social support for the elderly living alone, respite care already, volunteering activities, etc.)	☐5 ☐4 ☐3 ☐2 ☐1
13	There are enough choices and available beds in the community to address long term care needs. (e.g. cost accessibility in nursing homes, specific type of nursing home care (Alzheimer, Hospice, Assisted Living, Respite services etc.)	☐5 ☐4 ☐3 ☐2 ☐1
14	This community is a safe place to live. (Consider residents' perceptions of safety in the home, the workplace, schools, playgrounds, parks, and multi-Neighbors know and watch one another, and look out for one another)	☐5 ☐4 ☐3 ☐2 ☐1
15	People in Collier County are well educated	☐5 ☐4 ☐3 ☐2 ☐1
16	Collier County has sufficient recreational facilities	☐5 ☐4 ☐3 ☐2 ☐1
17	Collier provides sufficient opportunities for job employment and economic advancement	☐5 ☐4 ☐3 ☐2 ☐1
18	Residents of Collier have access to affordable housing	☐5 ☐4 ☐3 ☐2 ☐1
19	Residents have access to affordable, healthy foods in their neighborhoods	☐5 ☐4 ☐3 ☐2 ☐1
20	Residents in your community are healthy overall	☐5 ☐4 ☐3 ☐2 ☐1

Collier County Community Health Survey

	Additional Focus Group Questions	Likert Scale Responses (1 to 5, with 5 being most positive)
21	Collier provides timely police, fire and rescue services throughout the County	☐5 ☐4 ☐3 ☐2 ☐1
22	Collier roadways are safe for drivers	☐5 ☐4 ☐3 ☐2 ☐1
23	Collier roadways are safe for bicyclists and pedestrians	☐5 ☐4 ☐3 ☐2 ☐1
24	Levels of medical treatment and respect are increasing among community partners as they participate in collaborative activities to achieve shared community goals	☐5 ☐4 ☐3 ☐2 ☐1
25	All individuals and groups have the opportunity to contribute to and participate in the community's quality of life	☐5 ☐4 ☐3 ☐2 ☐1

Please rank the following in order of importance for Collier County

26. A rank of 1 means that the issue is most important and a rank of 10 means the issue is of least importance. Please place a letter in the appropriate rank line.

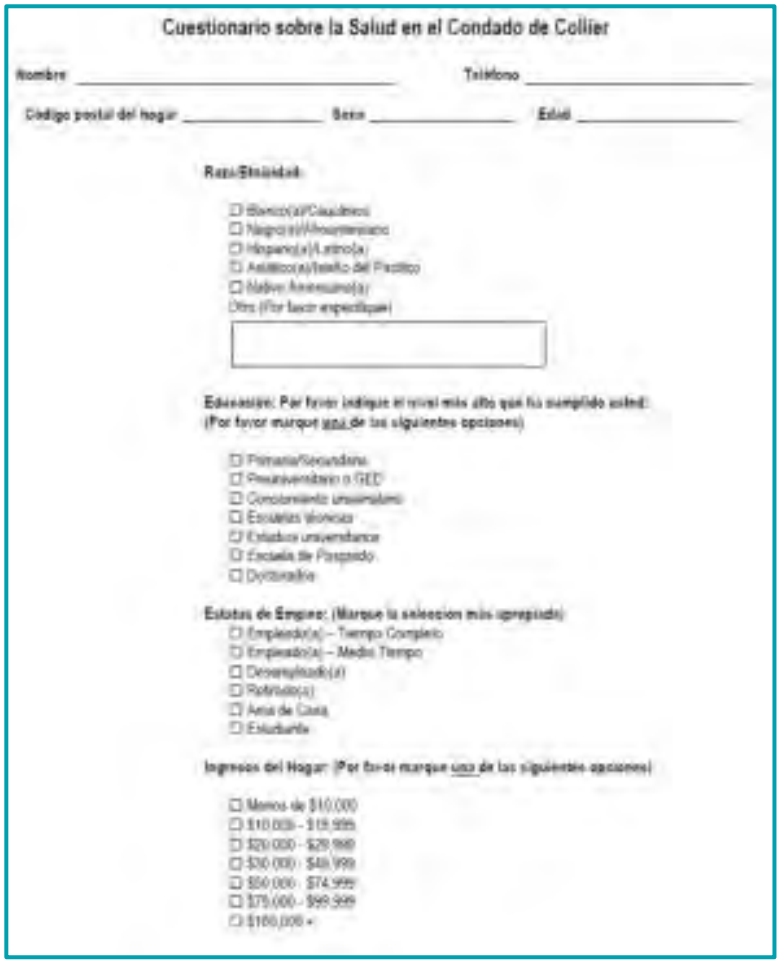
Rank the most important	1 ☐	A. Communicable Diseases
	2 ☐	B. Chronic Disease (heart disease, diabetes, cancer)
	3 ☐	C. Obesity
	4 ☐	D. Mental Health
	5 ☐	E. Alcohol and Drug Use
	6 ☐	F. Dental Health
	7 ☐	G. Health of the Elderly
	8 ☐	H. Access to Care
	9 ☐	I. Disabilities (physical, sensory, intellectual)
Rank the least important	10 ☐	J. Unintentional Injuries

Is there another health issue that you would rank high in importance? ☐ Yes ☐ No

If yes, what is the issue? _____

Spanish

Figure 22.



Cuestionario sobre la Salud en el Condado de Collier

Nombre _____ Teléfono _____

Código postal del hogar _____ Sexo _____ Edad _____

Raza/Etnicidad:

- ☐ Blanco(a)/Caucásico
- ☐ Negro(a)/Afroamericano
- ☐ Hispano(a)/Latino(a)
- ☐ Asiático(a)/Isleño del Pacífico
- ☐ Nativo Americano(a)
- Otro (Por favor especifique)

Educación: Por favor indique el nivel más alto que ha cumplido usted: (Por favor marque una de las siguientes opciones)

- ☐ Primaria/Secundaria
- ☐ Preuniversitario o GED
- ☐ Conocimiento universitario
- ☐ Escuelas técnicas
- ☐ Estudios universitarios
- ☐ Escuela de Posgrado
- ☐ Doctorado

Estatus de Empleo: (Marque la selección más apropiada)

- ☐ Empleado(a) – Tiempo Completo
- ☐ Empleado(a) – Medio Tiempo
- ☐ Desempleado(a)
- ☐ Retirado(a)
- ☐ Ama de Casa
- ☐ Estudiante

Ingresos del Hogar: (Por favor marque una de las siguientes opciones)

- ☐ Menos de $10,000
- ☐ $10,000 - $19,999
- ☐ $20,000 - $29,999
- ☐ $30,000 - $49,999
- ☐ $50,000 - $74,999
- ☐ $75,000 - $99,999
- ☐ $100,000 +

	Additional Focus Group Questions	Tocaio	Bien	Regular	Mal	Terrible
1	[illegible]	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
2	[illegible]	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
3	[illegible]	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
4	[illegible]	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
5	[illegible]	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
6	[illegible]	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
7	[illegible]	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
8	[illegible]	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
9	[illegible]	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
10	[illegible]	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
11	[illegible]	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
12	[illegible]	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
13	[illegible]	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
14	[illegible]	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
15	[illegible]	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
16	[illegible]	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
17	[illegible]	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
18	[illegible]	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
19	[illegible]	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
20	[illegible]	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1

21	[illegible]	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
22	[illegible]	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
23	[illegible]	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
24	[illegible]	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
25	[illegible]	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1

[illegible]

26 [illegible]

[illegible]

A. Enfermedades Comunicables (STD, VIH, HEP B)

B. [illegible]

C. Obesidad

D. Salud Mental

E. Uso de Alcohol y drogas

F. Salud Dental

G. Salud para las personas mayores - Ancianos

H. Acceso al Cuidado

I. [illegible]

J. [illegible]

¿Hay otro problema de salud que usted considera de alto riesgo de importancia? ☐ Sí ☐ No

Si sí, qué es ese tema? _____

Creole

Figure 23.

Ankèt sou Lasante nan Collier County

Kòd Postal _____ Laj _____

Seks _____

Ras/Etnisite:

- ☐ Blan
- ☐ Nèg/Afriken Amerikèn
- ☐ Panyòl
- ☐ Azyatik/Pasifik
- ☐ Amerikèn Nèt/ Natal
- Lòt (Tanpri Prezize)

Edikasyon: Tanpri chwazi pi gwo nivo ou konplete ya: (Tyeke yon seleksyon)

- ☐ Lekòl Primè/Mwayèn
- ☐ Diplòm lekòl Segonde oswa GED
- ☐ kèk Klas nan kolèj
- ☐ Kolèj Teknik/Komunòt
- ☐ 4 ane Kolèj/Bakalòreya degre
- ☐ Lekòl pou Metriz ak Doktòra
- ☐ Ebd Seperyè

Estati Travay: (Tyeke sèlwa ki pi apropriye ya)

- ☐ Anplòyè a plen tan
- ☐ Anplòyè a tan pasyèl
- ☐ Pap Travay
- ☐ Retrete
- ☐ Mèsiyè/ Travayè nan kay
- ☐ Etidyan

Revèni Kay ta: (Tyeke yon seleksyon)

- ☐ Mwens ke $10,000
- ☐ $10,000 - $19,999
- ☐ $20,000 - $29,999
- ☐ $30,000 - $49,999
- ☐ $50,000 - $74,999
- ☐ $75,000 - $99,999
- ☐ $100,000

	Lòt Reksyon Adisyonèl pou Fokis Group la	Reponse selon Likert Scale
1	[illegible]	☐5 ☐4 ☐3 ☐2 ☐1
2	[illegible]	☐5 ☐4 ☐3 ☐2 ☐1
3	[illegible]	☐5 ☐4 ☐3 ☐2 ☐1
4	[illegible]	☐5 ☐4 ☐3 ☐2 ☐1
5	[illegible]	☐5 ☐4 ☐3 ☐2 ☐1
6	[illegible]	☐5 ☐4 ☐3 ☐2 ☐1
7	[illegible]	☐5 ☐4 ☐3 ☐2 ☐1
8	[illegible]	☐5 ☐4 ☐3 ☐2 ☐1
9	[illegible]	☐5 ☐4 ☐3 ☐2 ☐1
10	[illegible]	☐5 ☐4 ☐3 ☐2 ☐1
11	[illegible]	☐5 ☐4 ☐3 ☐2 ☐1
12	[illegible]	☐5 ☐4 ☐3 ☐2 ☐1
13	[illegible]	☐5 ☐4 ☐3 ☐2 ☐1
14	[illegible]	☐5 ☐4 ☐3 ☐2 ☐1
15	[illegible]	☐5 ☐4 ☐3 ☐2 ☐1
16	[illegible]	☐5 ☐4 ☐3 ☐2 ☐1
17	[illegible]	☐5 ☐4 ☐3 ☐2 ☐1
18	[illegible]	☐5 ☐4 ☐3 ☐2 ☐1
19	[illegible]	☐5 ☐4 ☐3 ☐2 ☐1

Anket sou Lasante nan Collier County

	Lòt Reksyon Adisyonèl pou Fokis Group la	Reponse selon Likert Scale
20	[illegible]	☐5 ☐4 ☐3 ☐2 ☐1
21	[illegible]	☐5 ☐4 ☐3 ☐2 ☐1
22	[illegible]	☐5 ☐4 ☐3 ☐2 ☐1
23	[illegible]	☐5 ☐4 ☐3 ☐2 ☐1
24	[illegible]	☐5 ☐4 ☐3 ☐2 ☐1
25	[illegible]	☐5 ☐4 ☐3 ☐2 ☐1

[illegible]

26. [illegible]

[illegible]

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Florida
HEALTH
Collier County


NCH
Healthcare
System

Collier County

COMMUNITY *Health* STATUS

August 2019

COMPREHENSIVE REPORT

Prepared by

Florida Department of Health – Collier County

on behalf of Collier County Residents and Health Care Providers

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Introduction

The Florida Department of Health in Collier County's 2019 Community Health Status Assessment collected and analyzed quantitative information on health status, quality of life, and risk factors of the population in the county. Twelve categories of data were identified; each category included select indicators significant to the community.

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.

Sources of health status data include Florida Bureau of Vital Statistics, Behavioral Risk Factor Surveillance System, and U.S. Census Bureau, among others. Data was collected for the most recent year available, and trends were assessed for a minimum of ten years. The results of the Community Health Status Assessment may be reflected below.

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.

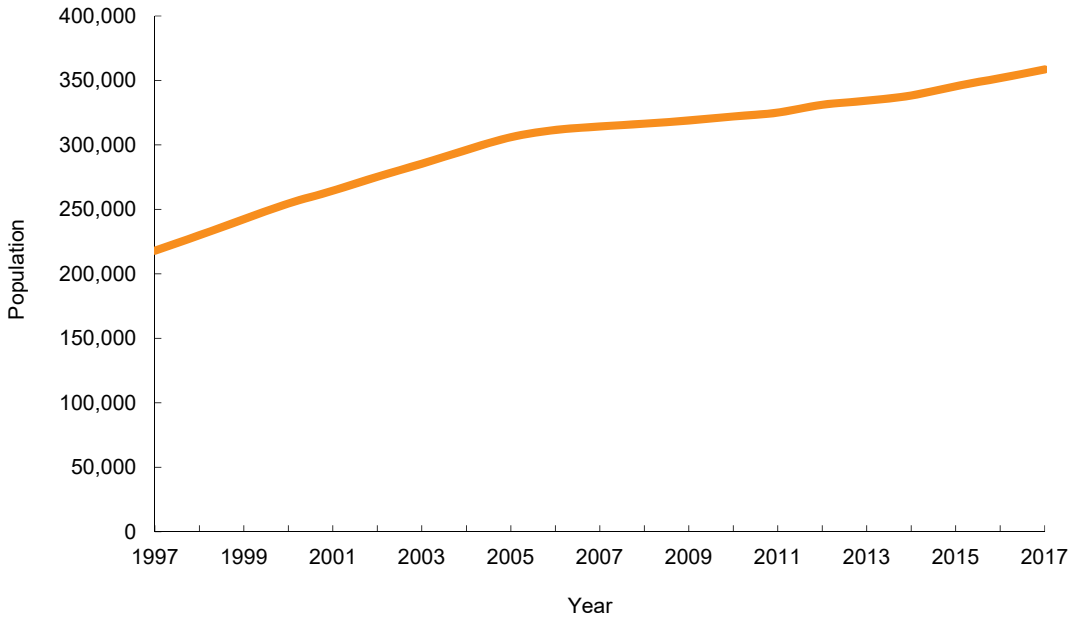
Population trends allow health care professionals and analysts to strategically plan for levels of utilizations of health services within communities and other geographical areas. These trends also enable the assessment of current unmet and future health needs in specific subgroups and vulnerable populations.

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 1997 and 2017, the resident population of Collier County grew at a swift pace of 2.5 percent per year, which compares to Florida at 1.6 percent and the United States at 1.0 percent during the same period. In terms of actual numbers, Collier County's population increased by 140,592, from 217,914 in 1997 to a total of 358,506 by 2017 (Figure 1).

Figure 1. Resident Population in Collier County, 1997–2017



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

The annual average growth rate was the greatest between 1990 and 2000 with 5.2 percent. From 2000 to 2017, the annual average growth rate significantly decreased, from 2.5 percent in 2000 to 2010 to 1.6 in 2010 to 2017 (Table 1).

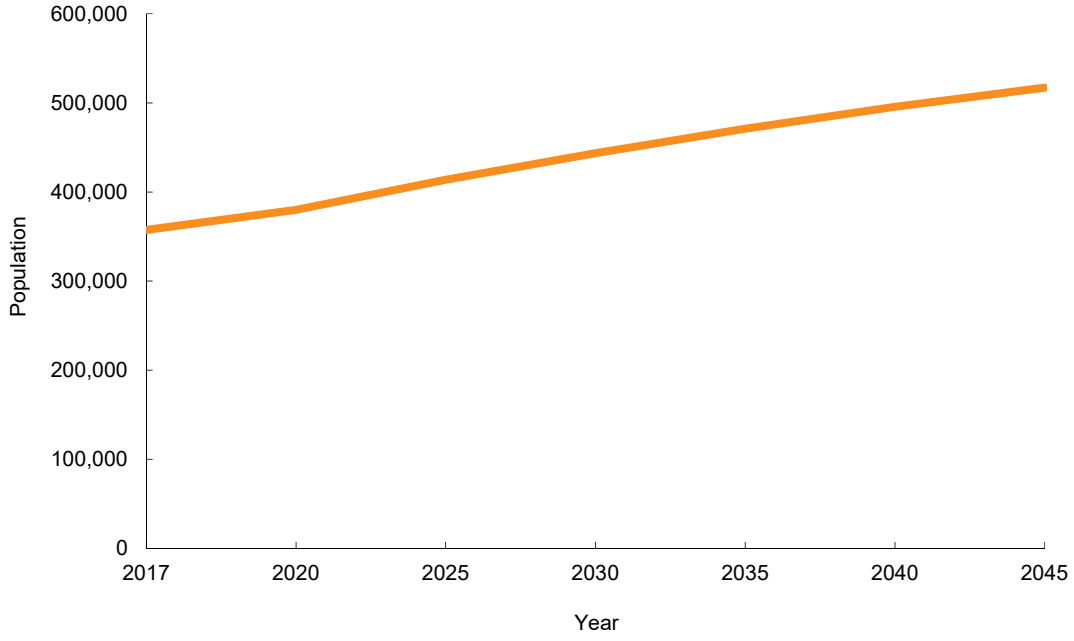
Table 1. Population Rate of Growth, Collier County, 1990, 2000, 2010, and 2017

	1990 – 2000	2000 – 2010	2010 – 2017
Annual Rate of Population Growth	5.2	2.5	1.6
Percentage Change	65.3%	27.9%	11.5%
Population	2000 Census - 251,377	2010 Census - 321,520	2017 Mid-Year - 358,506

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 159,656 from 2017 to 2045, resulting in a rate of growth of 1.3 percent per year for the period 2017 to 2045 (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 2045.

Figure 2. Total Population Projections, Collier County, 2017–2045

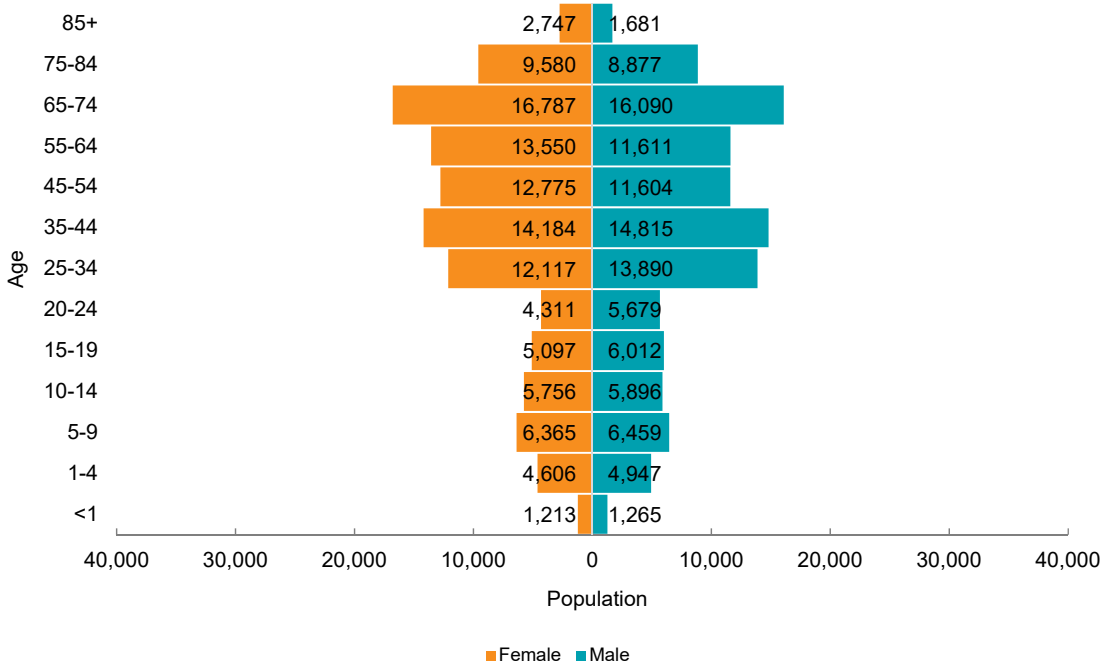


Data source: Florida Demographic Estimating Conference, and the University of Florida, Bureau of Economic and Business Research

By gender, the distribution of the population increased from a ratio of 101 females to every 100 males in 2007 to 104 females to every 100 males by 2017. In Collier County, 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 1997, 2007, and 2017 for Collier County.

Figure 3. Population by Age Distribution and Gender, Collier County, 1997



Data Source: Florida Legislature, Office of Economic and Demographic Research

Figure 4. Population by Age Distribution and Gender, Collier County, 2007

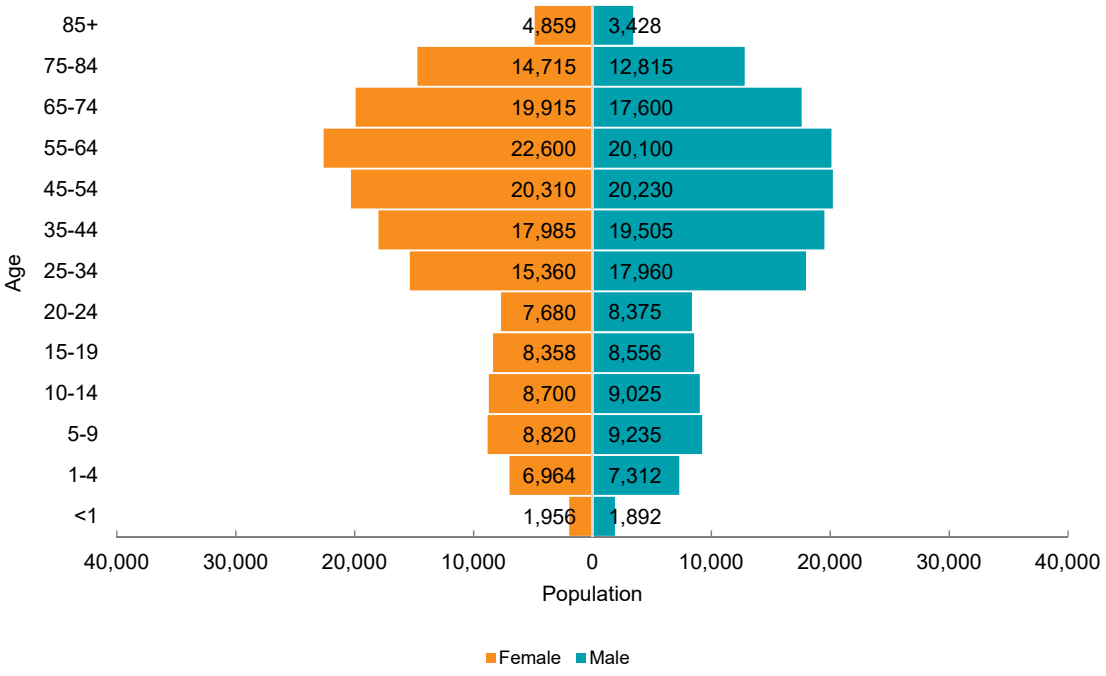
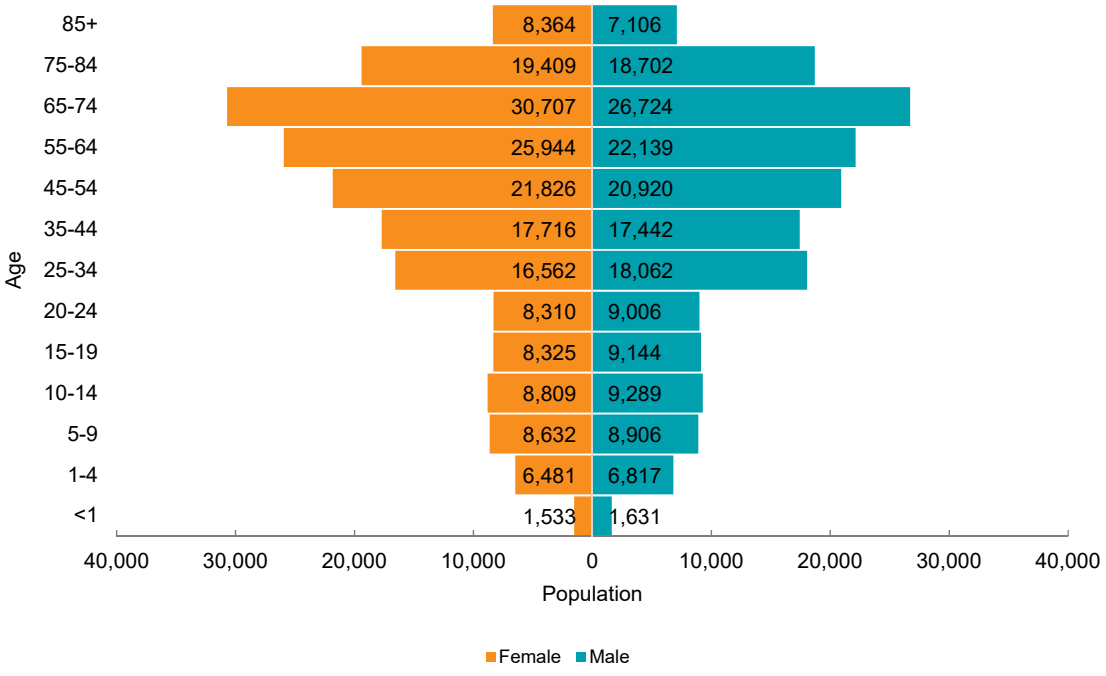


Figure 5. Population by Age Distribution and Gender, Collier County, 2017



Data Source: Florida Legislature, Office of Economic and Demographic Research

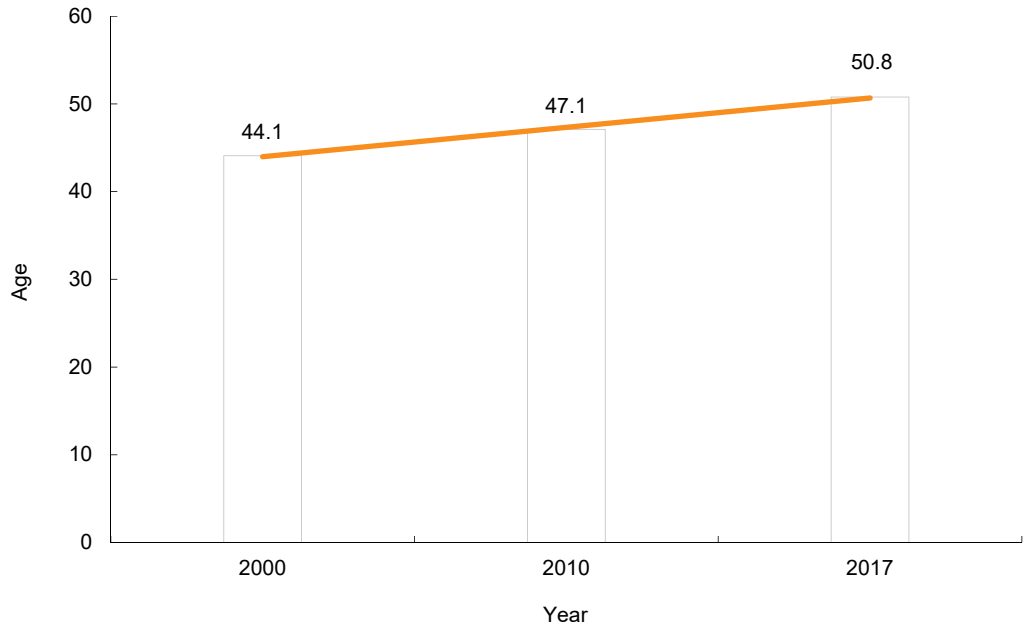
As can be visualized in these graphical presentations of the age and gender distribution, the total population of Collier County increased by 65 percent between 1997 and 2017. These dramatic shifts in the age distribution reflect the demographic transition that occurred in the State of Florida and the 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 1997 and 2017, the population 45 to 54 years of age in Collier County increased by 75 percent, while those aged 75 to 84 years experienced an increase of 106 percent. The most dramatic increase occurred in those 85 years of age and older with a 249 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 10.1 years between 1990 and 2017 (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, 2000, 2010 and 2017

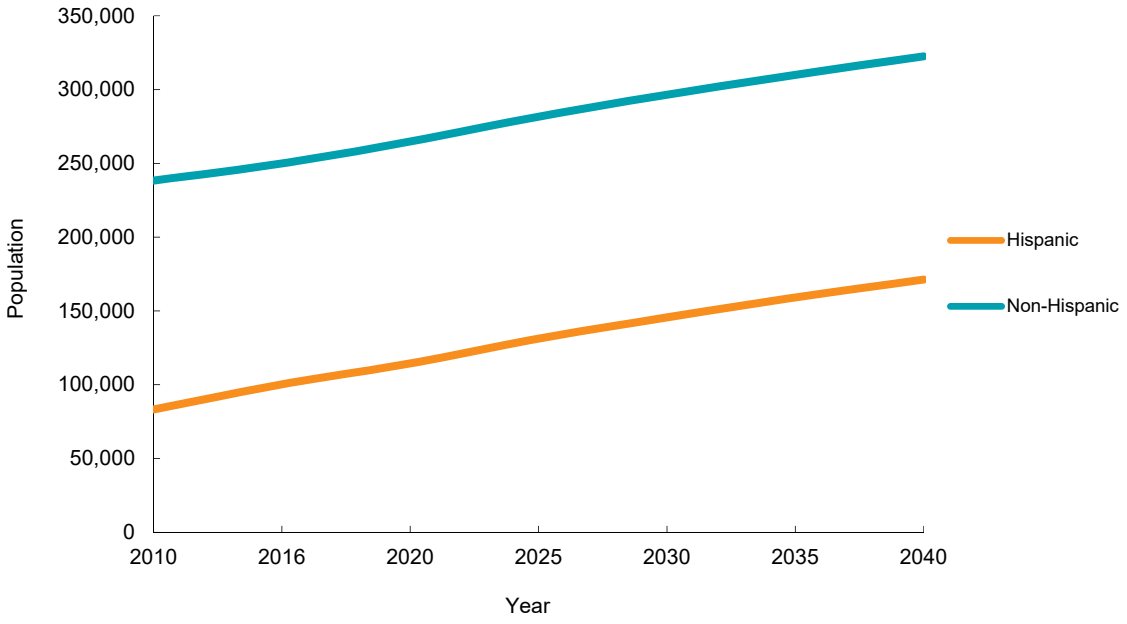


Data source: U.S. Census Bureau, American Community Survey

Ethnicity

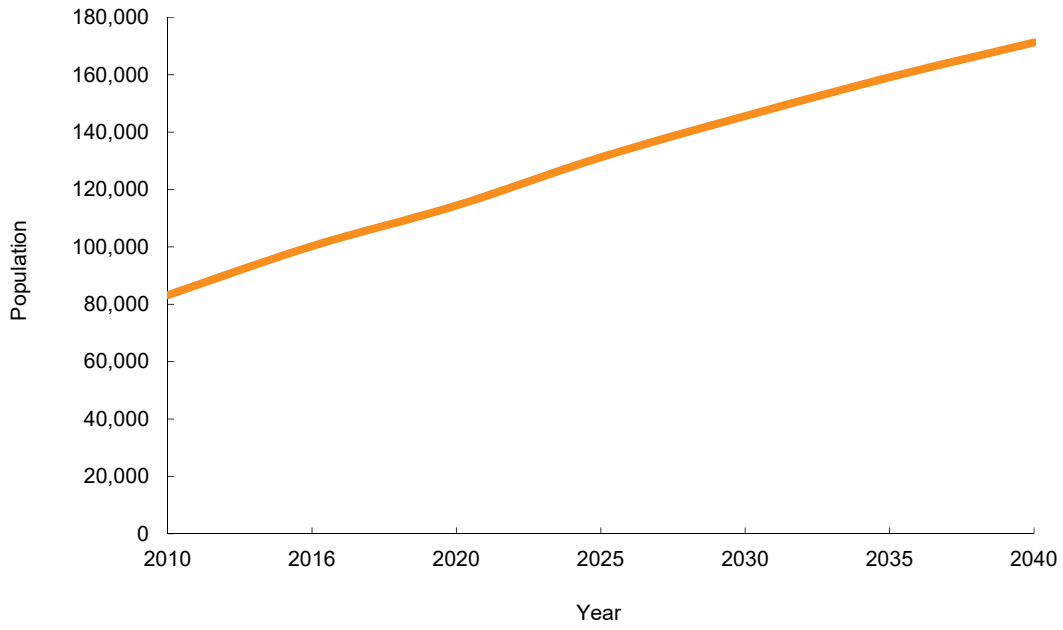
Between 2000 and 2016, the Hispanic population in Collier grew by 88 percent. While Hispanics constituted less than 20 percent of the population in Collier in 2000, by 2016 the proportion increased to 27 percent. This population is expected to increase at an annual rate of 2.4 percent to 171,249 between 2010 and 2040 (Figures 7, 8 and 9).

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



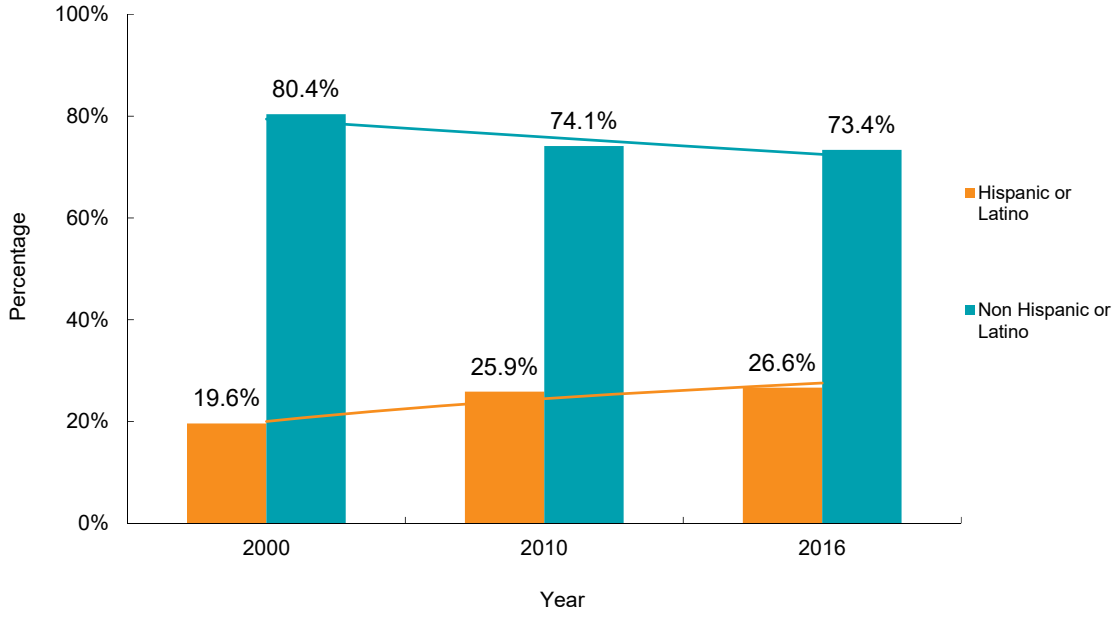
Data source: Florida Demographic Estimating Conference, and the University of Florida, Bureau of Economic and Business Research.

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



Data source: Florida Demographic Estimating Conference, and the University of Florida, Bureau of Economic and Business Research

Figure 9. Population Distribution by Ethnicity, Collier County, 2000, 2010, and 2016



Data source: US Census Bureau, American Community Survey

Race

During the period 1997 and 2017, the black population increased by 131 percent from 11,391 to 26,284 (propelled mostly by Haitian immigration), while the white population increased by just 57 percent. Table 2 shows the population distribution over the twenty-year period by race.

Table 2. Population by Race, Collier County, 1997, 2007 and 2017

	1997	%	2007	%	2017	%
Black	11,391	5	20,285	7	26,284	7
White	204,285	94	285,225	91	320,744	89
Other	2,238	1	8,163	3	11,478	3

Data source: Florida Legislature, Office of Economic and Demographic Research

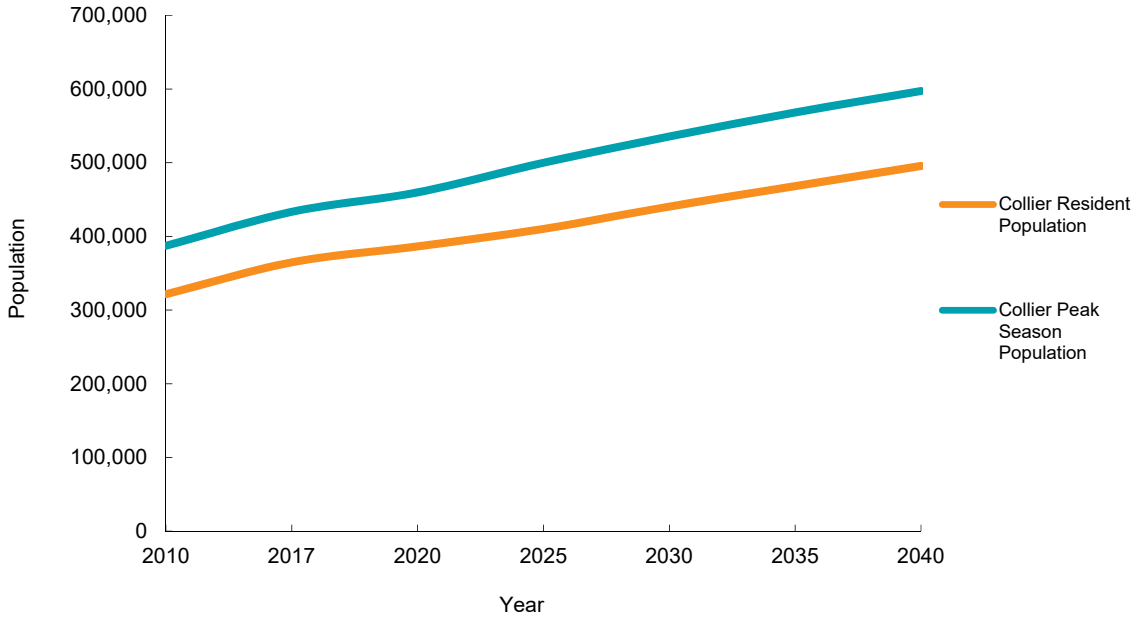
Seasonal Population

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 2016, the number of tourists visiting Collier County was 1,793,700, a decrease of 2 percent from 2015.

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 2040. On average, the peak season population is projected to be approximately 20 percent larger than the Collier County resident population. Between 2010 and 2040, the annual rates of growth for the resident and peak season populations are estimated to both be 1.5 percent respectively.

Figure 10. Resident and Peak Season Population, Estimates and Projections, Collier County, 2010–2040



Data source: Collier County Comprehensive Planning Section, 2018

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.

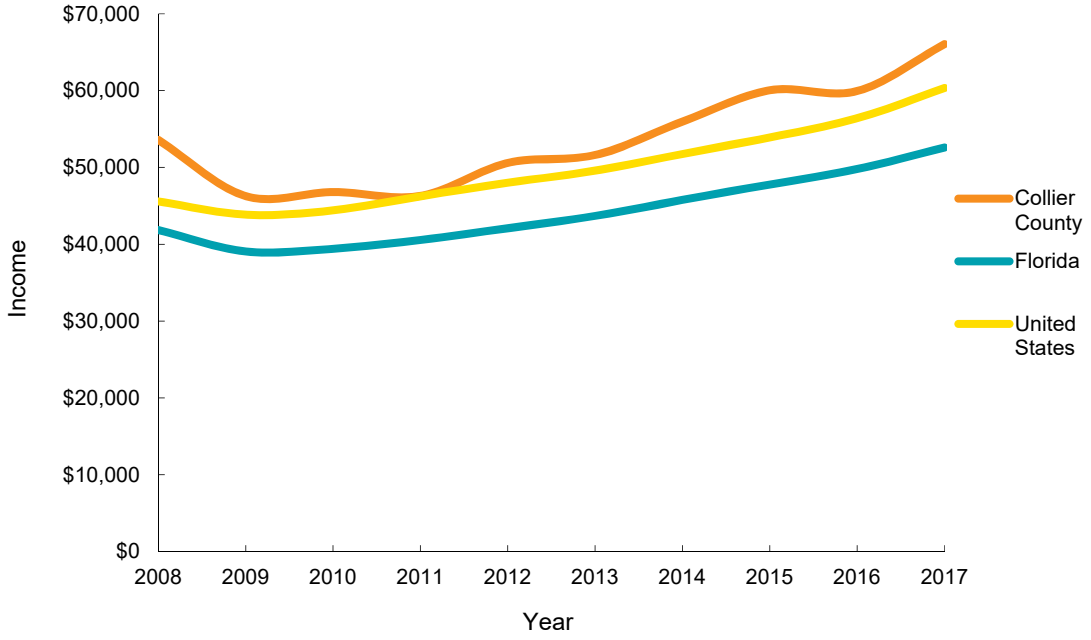
Table 1 and Figure 1 provides the median household income for Collier County and Florida in comparison with the national United States data for the period 2008 to 2017.

Table 1. Median Household Income (Adjusted in 2017 Dollars), Collier County and Florida, 2008–2017

Year	Collier County	Florida	United States
2008	$53,574	$41,849	$45,572
2009	$46,265	$39,060	$43,849
2010	$46,800	$39,415	$44,418
2011	$46,292	$40,556	$46,235
2012	$50,588	$42,096	$48,013
2013	$51,618	$43,677	$49,572
2014	$55,969	$45,780	$51,754
2015	$60,044	$47,769	$53,906
2016	$59,939	$49,789	$56,404
2017	$66,048	$52,594	$60,336

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

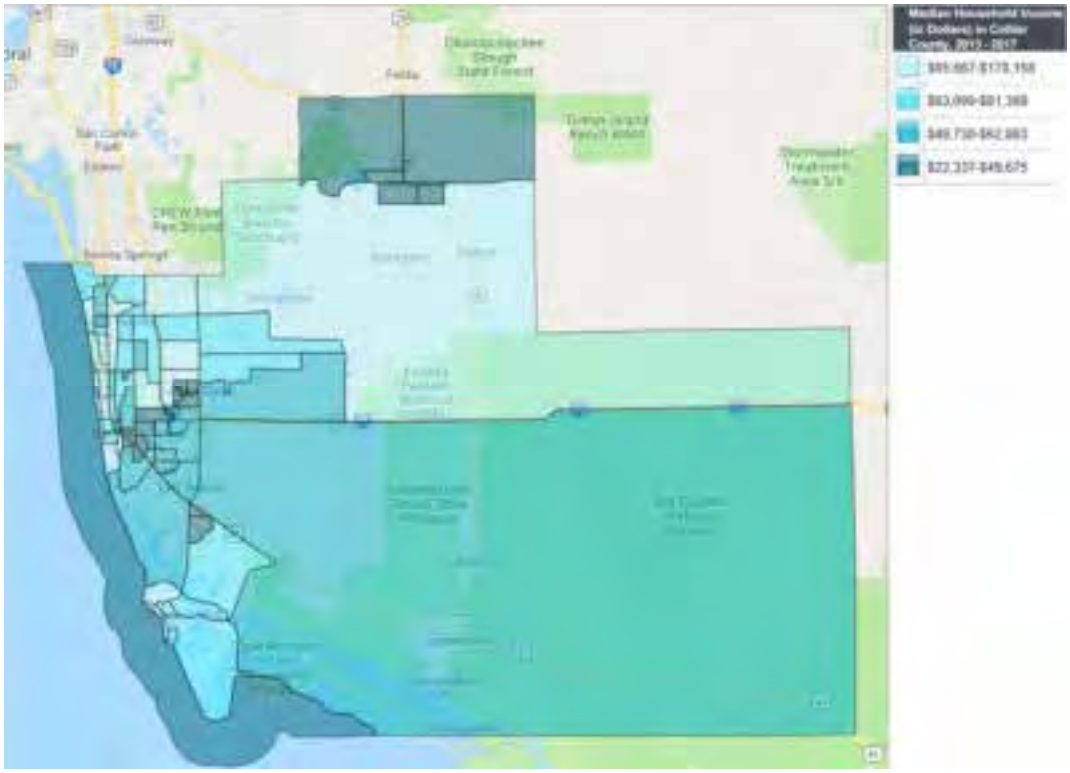
Figure 1. Median Household Income, Collier County, Florida, and the United States, 2008–2017



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

This table and graph allow for a relative comparison of the income levels of the three geographical entities during the period 2008 to 2017. Between 2008 and 2017, median household income in Collier County increased by 23.3 percent, from $53,574 to $66,048. Median household income in Florida increased by 25.7 percent, from $41,849 to $52,594. During this time interval, the median household income in the US increased by 32.4 percent.

Below is the geographical distribution of household incomes in the county.

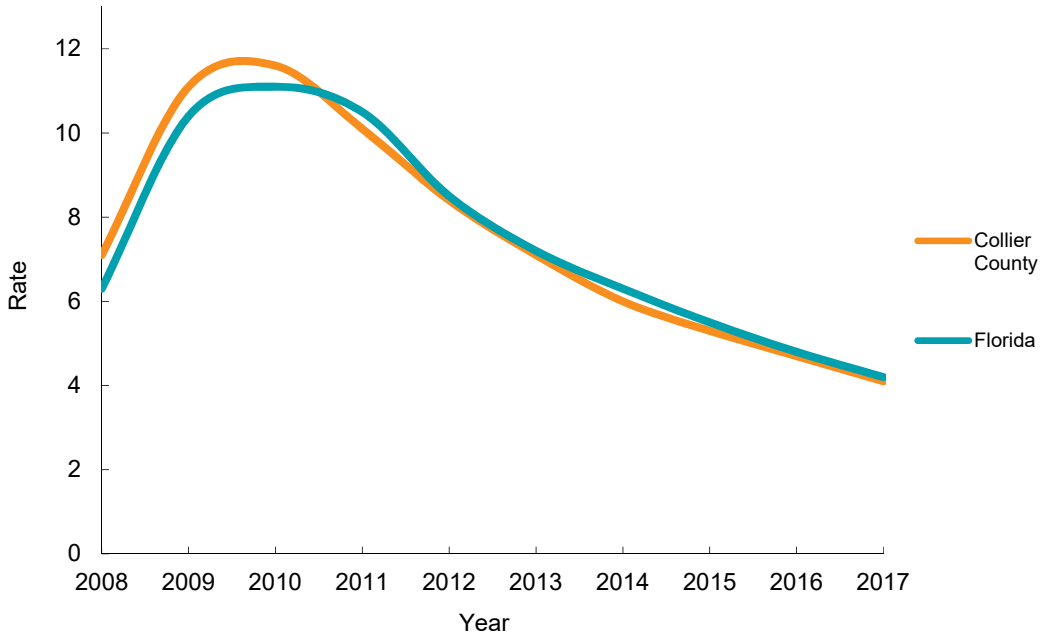


Data Source: FLHealthCHARTS Community Map data is provided by the Florida Department of Health Bureau of Vital Statistics and the 2015 American Community Survey 5-year estimates

Employment

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. Figure 2 shows the mid-year unemployment rates for Collier County and the State of Florida for the period 2008 to 2017. 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 2017, the rate for Collier County had declined to 4.1 and Florida to 4.2. These unemployment rates have declined by 64.7 percent in Collier and by 62.2 percent in Florida since the peak year 2010.

Figure 2. Unemployment Rates in Collier County and Florida, 2008–2017



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

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, 2008 to 2017, 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 about 6 percent from 2008 to 2017. This was the sector with the greatest job loses of the past 15 years, due to the housing bubble of 2006 with the Great Recession immediately following in pursuit in 2007. However, in recent years, construction in Collier County is once again gaining momentum, with an increase of 14 percent in the percentage of persons employed in the industry from 2014 to 2017. Other work force sectors declining trends in Collier County have been natural resources and mining, a decline of 41.8 percent, and information, a decline of 31.1 percent. The largest increases in employment have been in manufacturing with a 14.7 percent increase and educational and health services sector with a 14.3 percent increase (Table 2).

Table 2. Distribution of the Collier County Labor Force, by sector, 2008 and 2017

Sector	2008	2017	Percent Change
Natural Resource and Mining	4.5%	2.6%	-41.8%
Construction	11.2%	10.6%	-5.7%
Manufacturing	2.3%	2.7%	14.7%
Trade, Transportation and Utilities	18.1%	18.9%	4.2%
Information	1.4%	1.0%	-31.1%
Financial Activities	5.6%	5.6%	-0.6%
Professional and Business Services	11.3%	10.8%	-5.0%
Education and Health Services	12.9%	14.7%	14.3%
Leisure and Hospitality	18.0%	19.5%	8.6%
Other Services	4.1%	4.4%	6.8%
Government	10.5%	9.3%	-12.1%

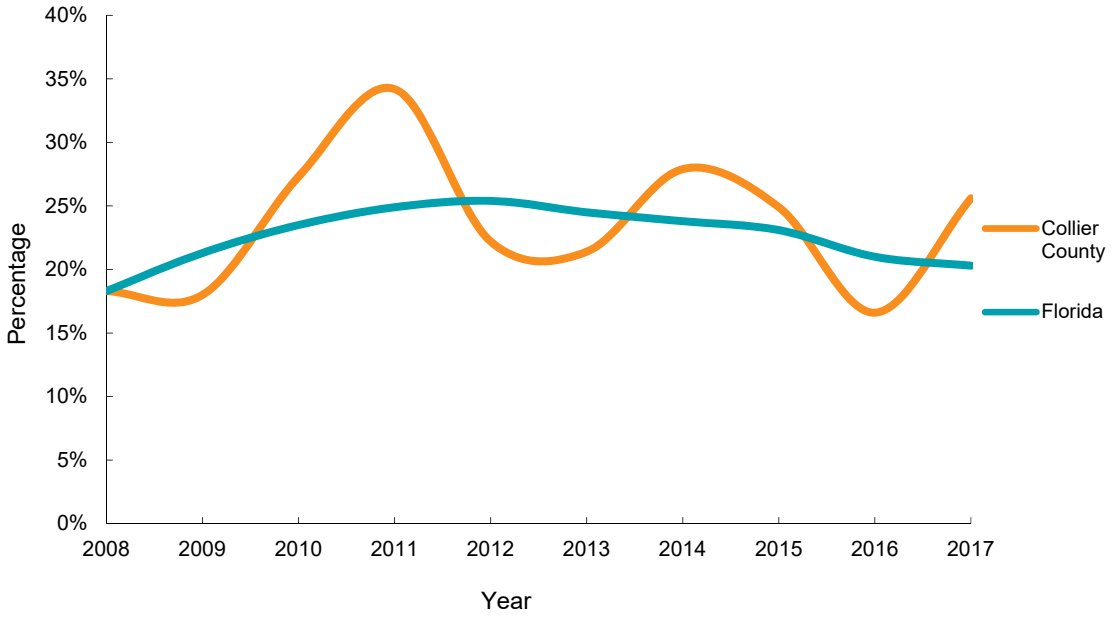
Data source: Florida Department of Economic Opportunity, Labor Market Statistical Center, Quarterly Census of Employment and Wages Program.

Poverty

The number of children under 18 years of age living below the Federal Poverty Level in Collier County increased by over 40 percent during the period 2008 to 2017, while in Florida overall the increase was 11 percent (Figure 3 and Table 3). The childhood poverty rate in Collier County peaked in 2011 and 2014. 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 2017, Collier County's childhood poverty rate was 25.6 percent compared to 20.3 percent in Florida. At the present time, approximately 1 out of every 4 children in Collier County are considered to be living below the Federal Poverty Level. However, about 65 percent of children attending public schools in Collier are considered economically needy and qualify for free and reduced-priced school meals. Children in household earning between 135 percent and 185 percent of the Federal Poverty Level qualify for reduced-priced and free school meals, respectively.

Figure 3. Percent of Children Under Age 18 Living in Poverty,
Collier County and Florida, 2008–2017



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, 2008–2017

	Collier County		Florida	
Year	Number	Percent	Number	Percent
2008	11,551	18.30%	721,284	18.30%
2009	11,520	18.00%	851,803	21.30%
2010	16,919	27.30%	923,963	23.50%
2011	21,154	34.20%	980,002	24.90%
2012	13,775	22.20%	1,000,736	25.40%
2013	13,437	21.40%	968,765	24.50%
2014	17,690	27.90%	948,465	23.80%
2015	15,344	24.90%	931,601	23.10%
2016	10,554	16.60%	858,711	21.00%
2017	16,192	25.60%	840,179	20.30%

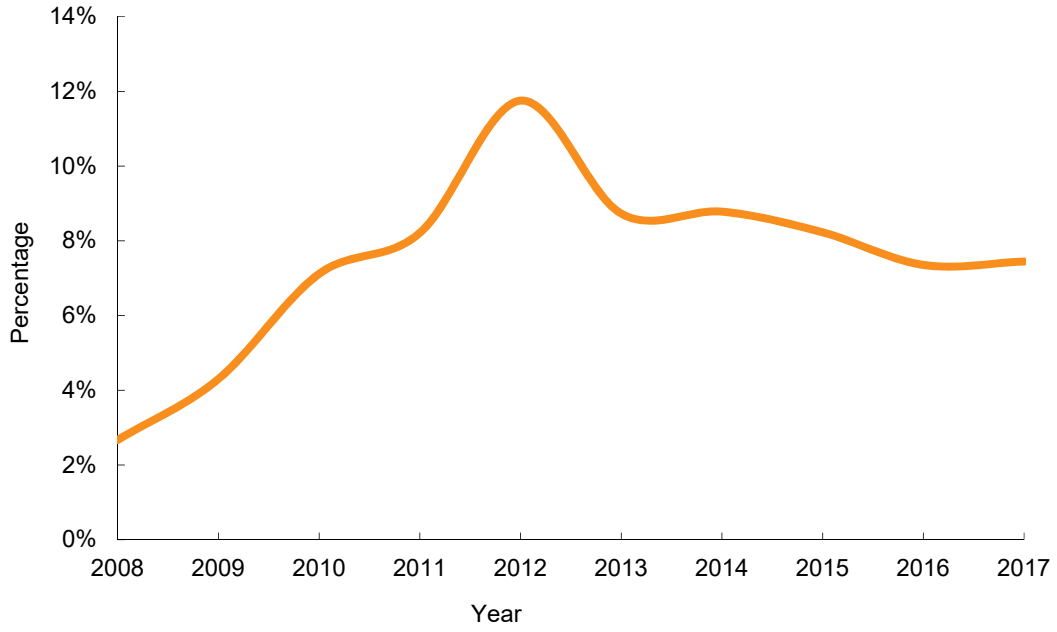
Data source: U.S. Census Bureau/American Community Survey

In 2016, about 9 percent of households were living below the Federal Poverty Level. However, even more households living above the poverty level in Collier County are not financially stable. ALICE, an acronym for Asset Limited, Income Constrained, Employed, is a term coined by United Way. It represents those households that have incomes above the Federal Poverty Level but do not earn enough to afford basic necessities. Of the 139,522 households in Collier in 2016, 36 percent ALICE and poverty-level households. In other words, approximately 2 in 5 households struggle financially and are not capable of affording the basic cost of living in this county.

Public 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 Level. Figure 4 shows the total number of households receiving food assistance in Collier County between 2008 and 2017. The percentage of household receiving food assistance peaked in 2012 with about 12 percent of households.

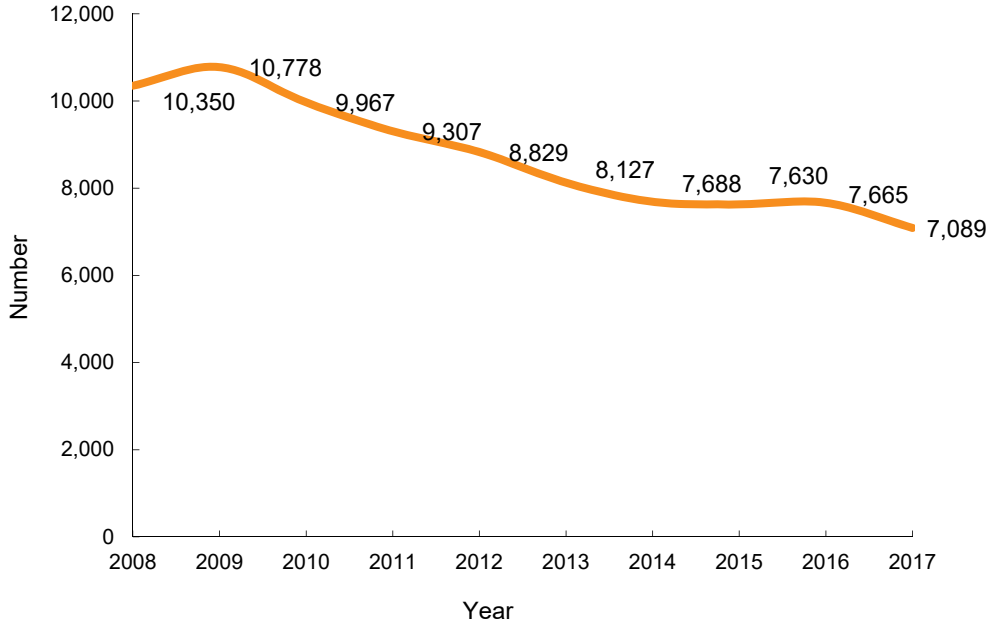
Figure 4. Percentage of Households Receiving Food Stamps/SNAP (Supplemental Nutrition Assistance Program), Collier County, 2008–2017



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

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 2008 and 2017, the number of WIC participants in Collier County declined from 10,350 to 7,089 (about 31.5 percent). Enrollment in WIC peaked in 2009 with 10,778 participants, which is directly associated with the effect of the Great Recession (Figure 5).

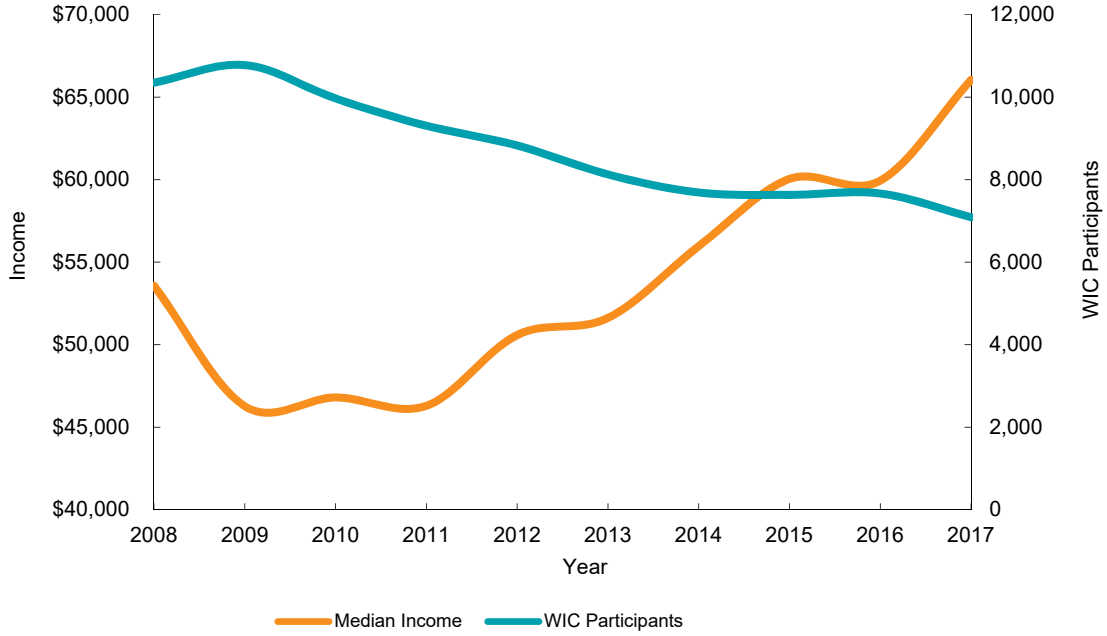
Figure 5. Women, Infants, and Children Program Participation, Collier County, 2008–2017



Data source: Collier County WIC Program

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 6 shows the correlation between WIC participation and income. As the median household income in Collier County increased between 2011 and 2017, the number of WIC participants decreased gradually.

Figure 6. Number of Participants in the Women, Infants and Children Program and Median Household Income in 2017 Dollars, Collier County, 2008–2017

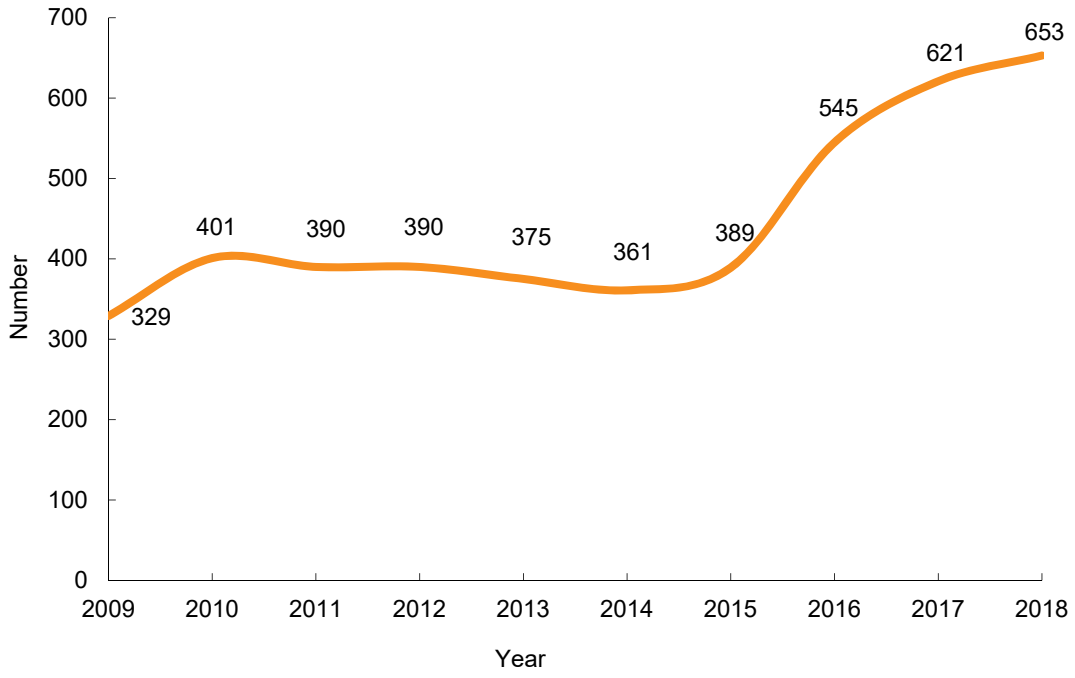


Data source: U.S. Census Bureau/American Community Survey and Collier County WIC Program

Homelessness

The Hunger & Homeless Coalition of Collier County, the lead agency for homelessness in Collier County, conducts annual point-in-time counts of the homeless population in the county. Figures 7 shows the number of homeless residents in Collier County for the period 2009 to 2018 as provided by Hunger & Homelessness Coalition. The counts represent the number of persons in Collier County who were sleeping in emergency shelters, living in transitional shelters, or in a place not meant for human habitation. Between 2009 and 2018 the homeless population increased by over 98.5 percent, from 329 in 2009 to 653 in 2018.

Figure 7. Number of Homeless People (Point-In-Time Count), Collier County, 2009–2018



Data source: Hunger & Homeless Coalition of Collier County

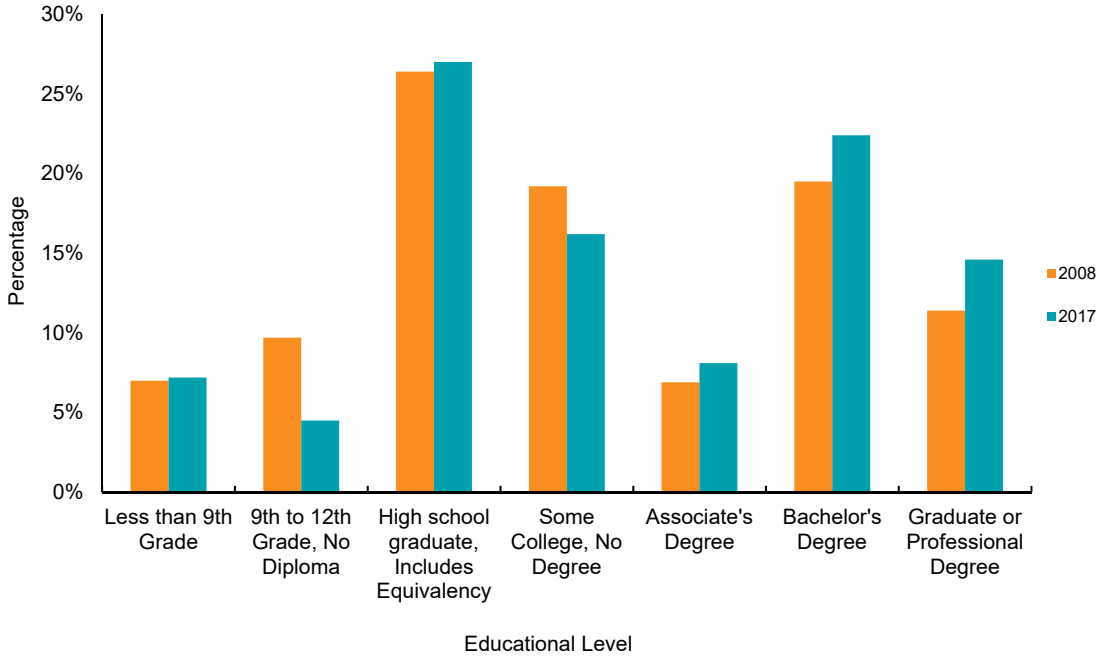
Education

The relationship between health outcomes and educational attainment is well known in the United States. 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. 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 2008 and 2017. The percentage of the population 25 years and older with college degrees increased from 37.8 percent in 2008 to 45.1 percent in 2017. During the same 10-year

period, the percentage of the population without a high school diploma or equivalency decreased from 16.7 to 11.7 percent (a decrease of 30 percent).

Figure 8. Educational Attainment in Population 25 years and Over, Collier County, 2008 and 2017



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

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 these deaths annually. Approximately six out of every ten adults in the United States has at least one chronic disease, and four in ten have two or more.

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 and exposure to secondhand smoke

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 the United States with at least one in every three adults being obese, and one out of every five children and adolescents categorized as obese.

Note: The data in this chapter was obtained from the Florida Department of Health, Bureau of Vital Statistics.

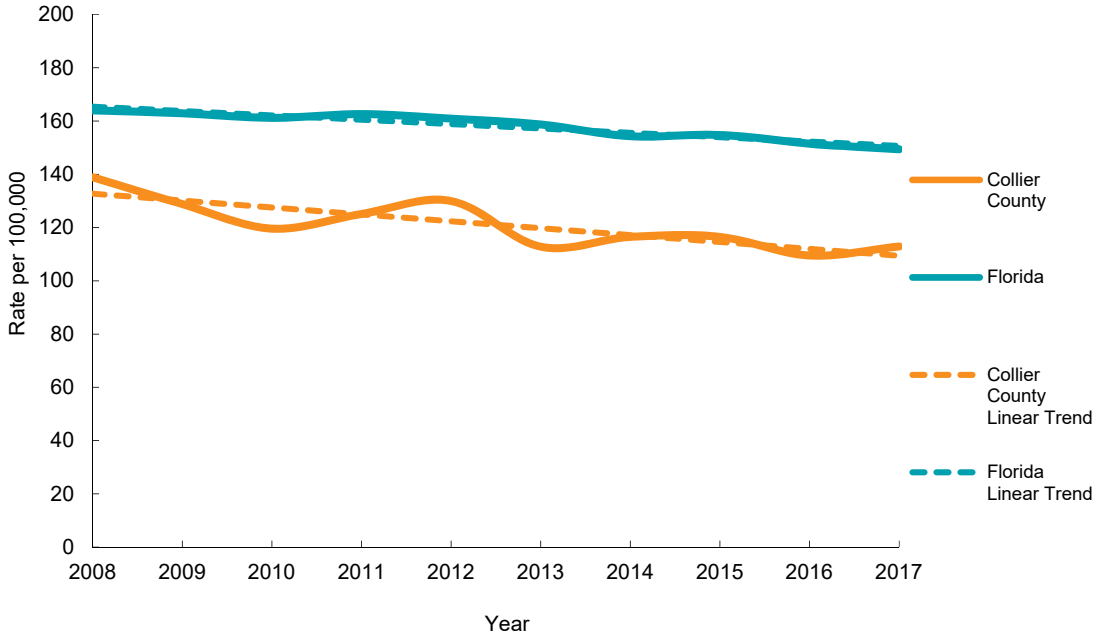
Chronic Disease Mortality

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.

Cancer

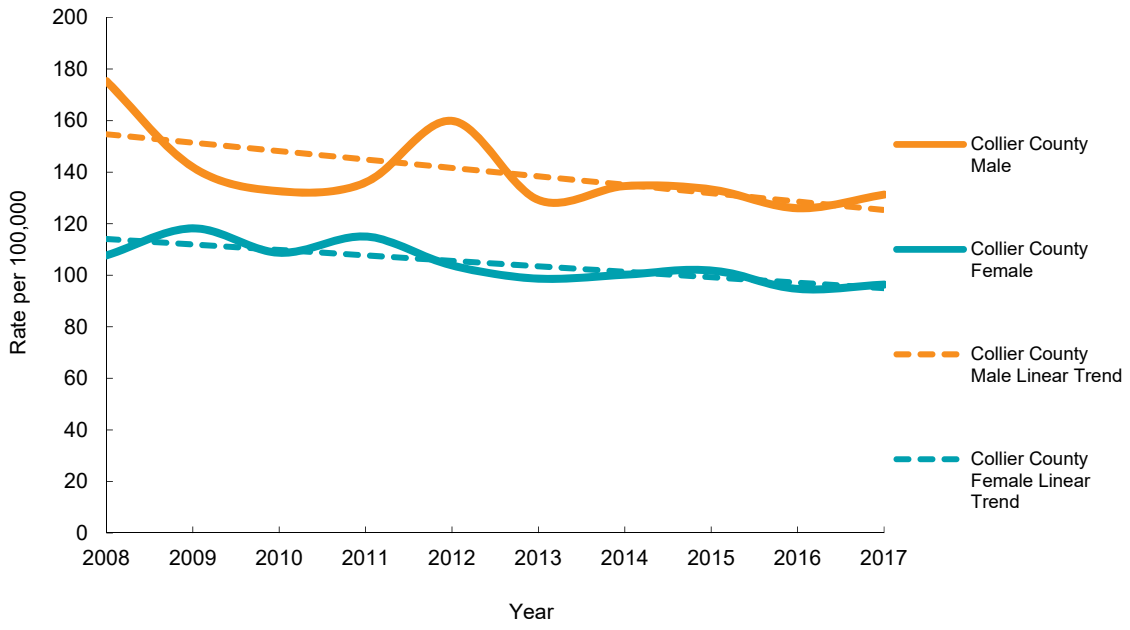
When analyzing chronic disease mortality, specifically selected cancers by site, some rates may fluctuate widely due to random variation. Figure 1 shows the cancer mortality rates for Collier County and Florida for the period 2008 to 2017. During the decade 2008 to 2017, the death rate from all cancers declined by 23 percent in Collier County and by 9.8 percent in Florida.

Figure 1. Cancer Mortality Rate,
Collier County and Florida, 2008–2017



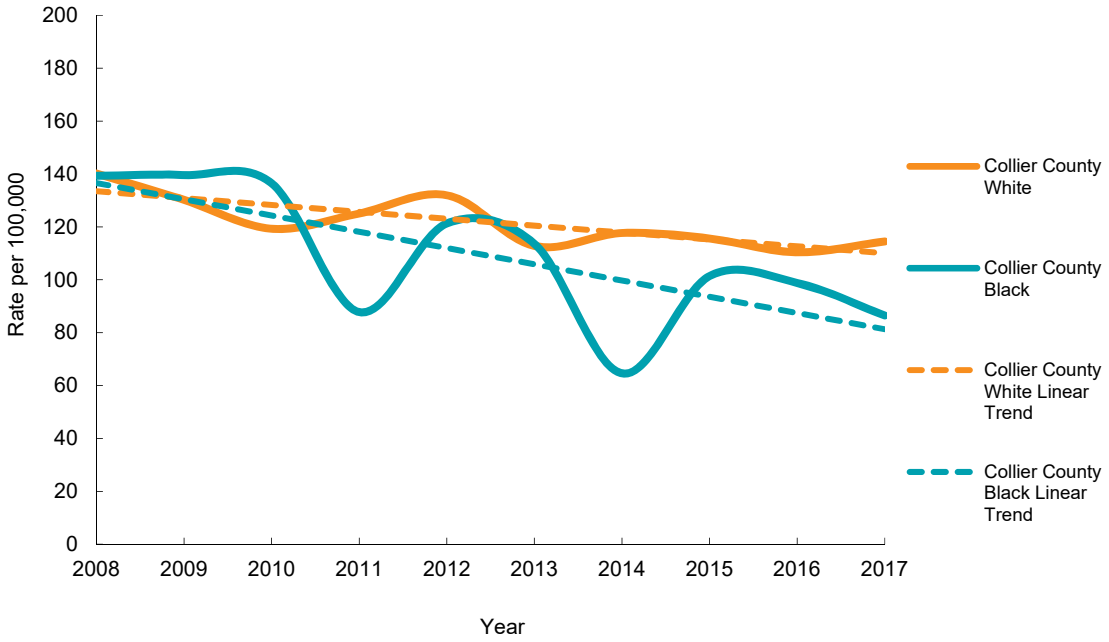
By sex, males in Collier had a decrease of 25.1 percent in the death rate compared to a decrease of almost 10.5 percent for females (Figure 2). This decline in overall cancer mortality for males in Collier County may be due in part to a decrease in the prostate cancer death rate.

Figure 2. Cancer Mortality Rate, by Sex,
Collier County, 2008–2017



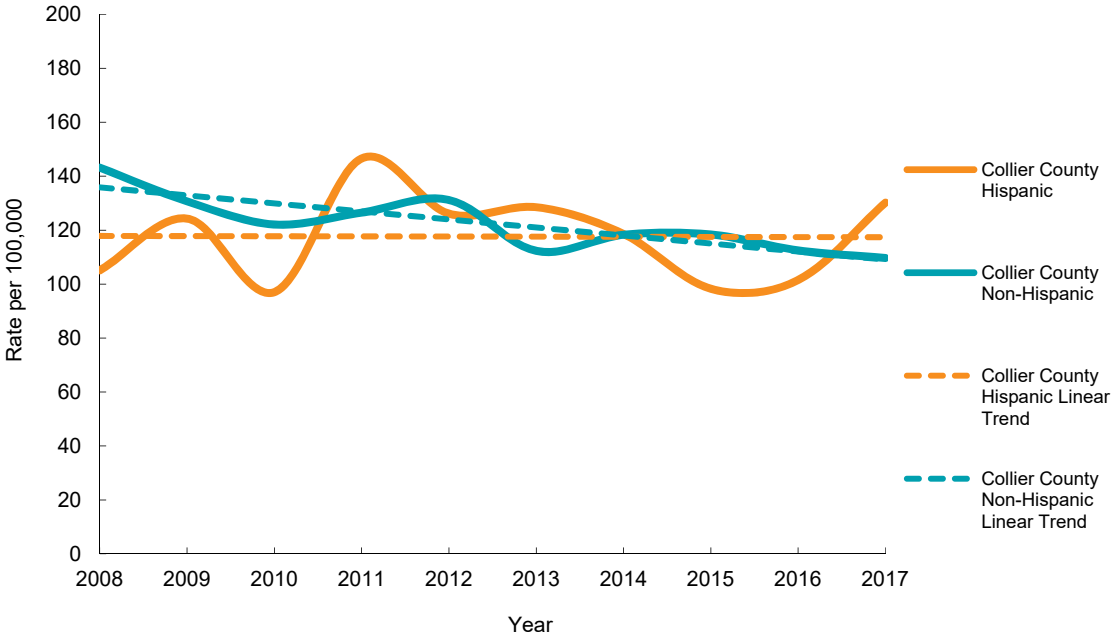
Cancer mortality by race is shown in Figure 3. Both the white and black population of Collier County are experiencing steady declines in cancer mortality rates, with blacks showing a much steeper decrease. This steep decline is due to the relatively small numbers of blacks residing in Collier County coupled with the accompanying variation particularly in 2011 and 2014.

Figure 3. Cancer Mortality Rate, by Race,
Collier County, 2008–2017



Cancer mortality by ethnicity is shown in Figure 4. Between 2008 and 2017 Non-Hispanics experienced a decrease in death rates from cancer whereas Hispanics' rates stabilized.

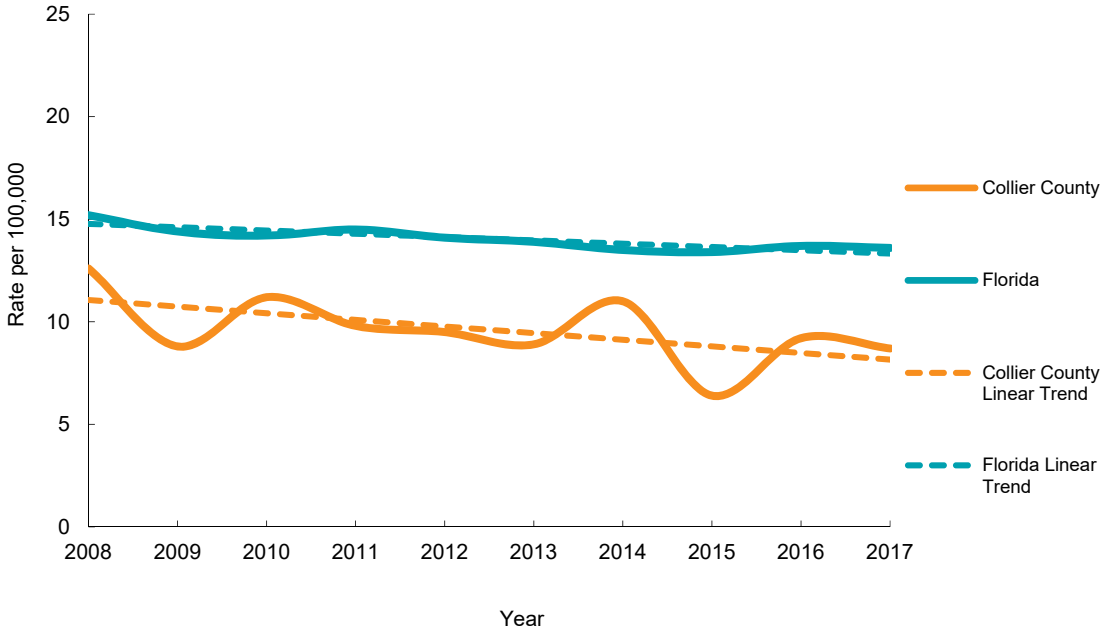
Figure 4. Cancer Mortality Rate, by Ethnicity,
Collier County, 2008–2017



Colorectal Cancer

Between 2008 and 2017 the colorectal cancer mortality rate for Florida remained constant with a slight downward slope over the 10-year period, while the decline for Collier County was similar but from a lower baseline level beginning in 2008 (Figure 5).

Figure 5. Colorectal Cancer Mortality Rate,
Collier County and Florida, 2008–2017



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 2017 (Figure 6).

Figure 6. Colorectal Cancer Mortality Rate, by Sex,
Collier County, 2008–2017

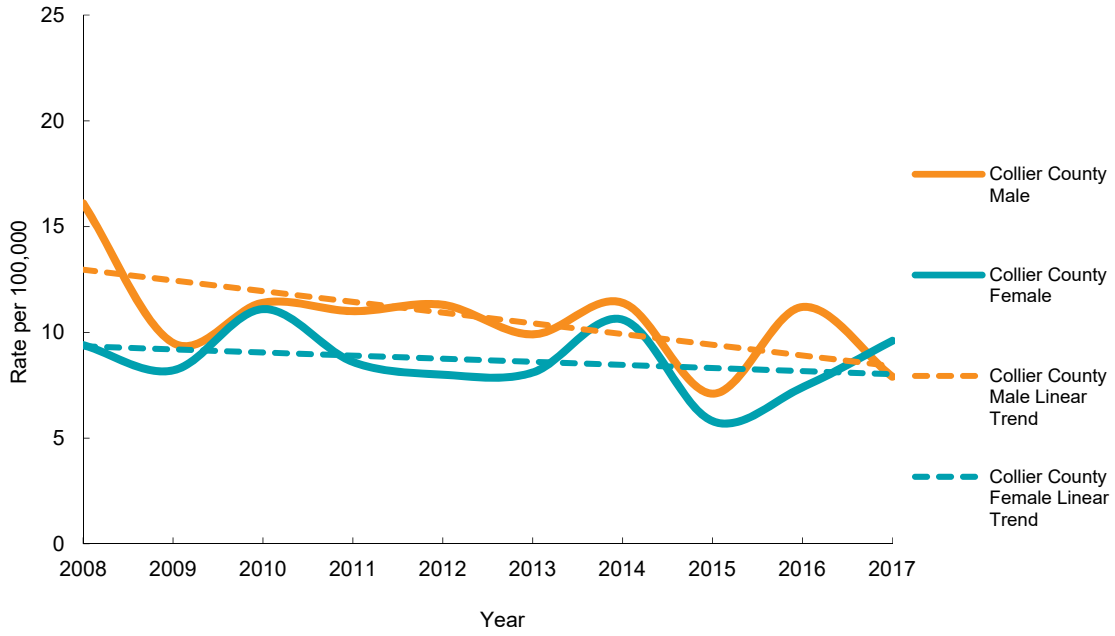
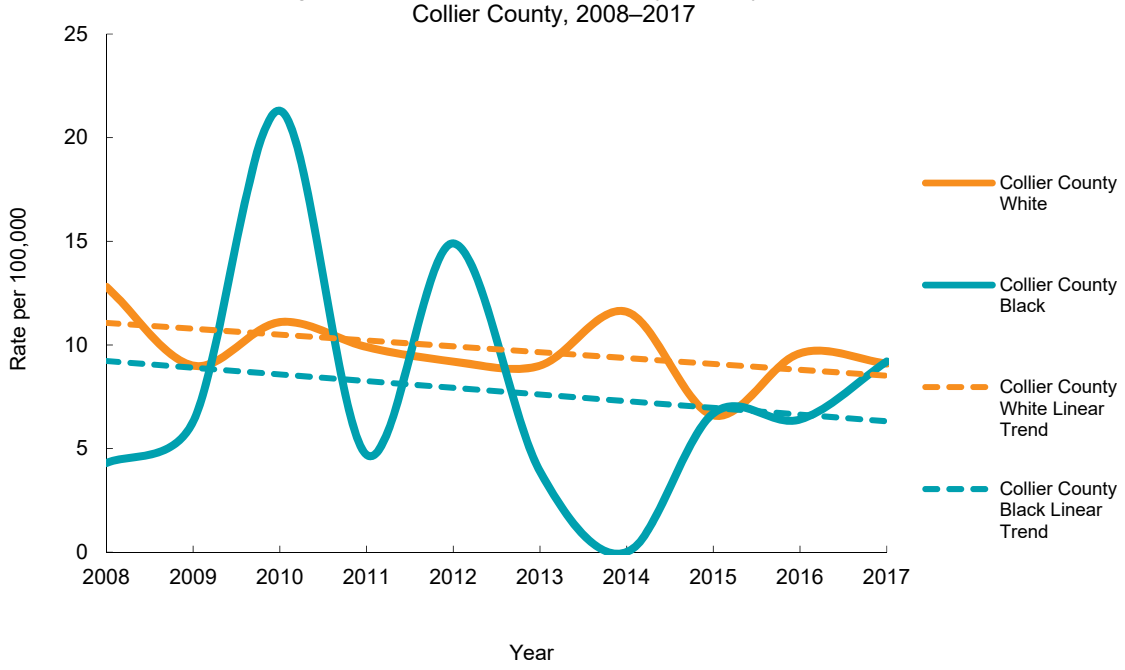


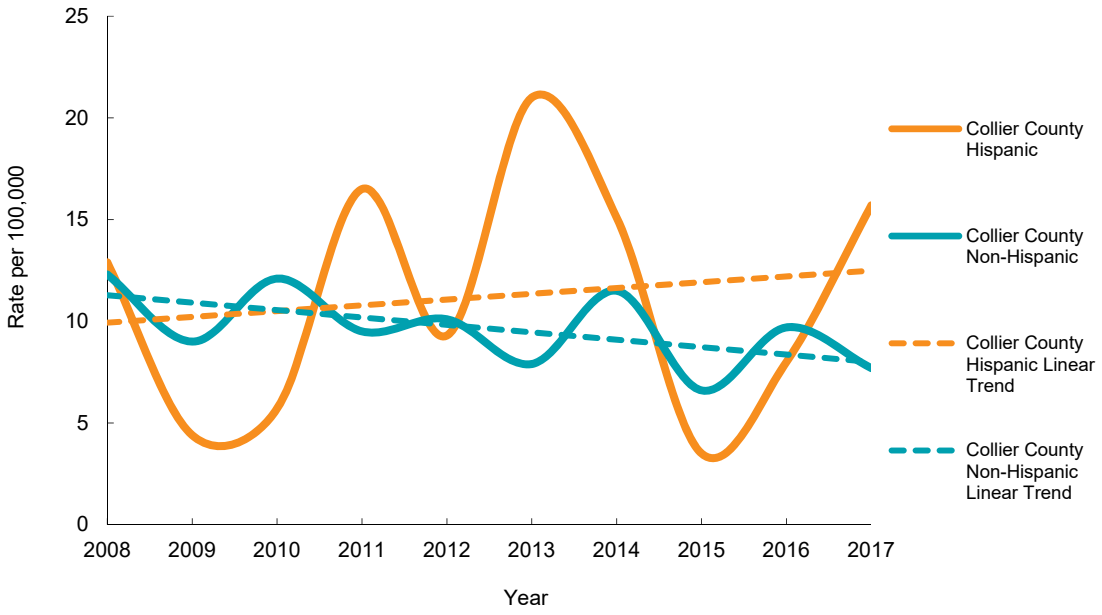
Figure 7 shows the colorectal mortality rates by race in Collier County. Both the black and white population of the county has been experiencing decreases in the mortality rate; however, the number of deaths among blacks for this cause is too small on an annual basis to make a valid statistical comparison.

Figure 7. Colorectal Cancer Mortality Rate, by Race,
Collier County, 2008–2017



By ethnicity, the Hispanic population of Collier County is experiencing a surge in colorectal cancer mortality rates; however, in 2015 the rate was the lowest in the 10-year period. The rate for non-Hispanics within the county has been trending down between 2008 and 2017 (Figure 8).

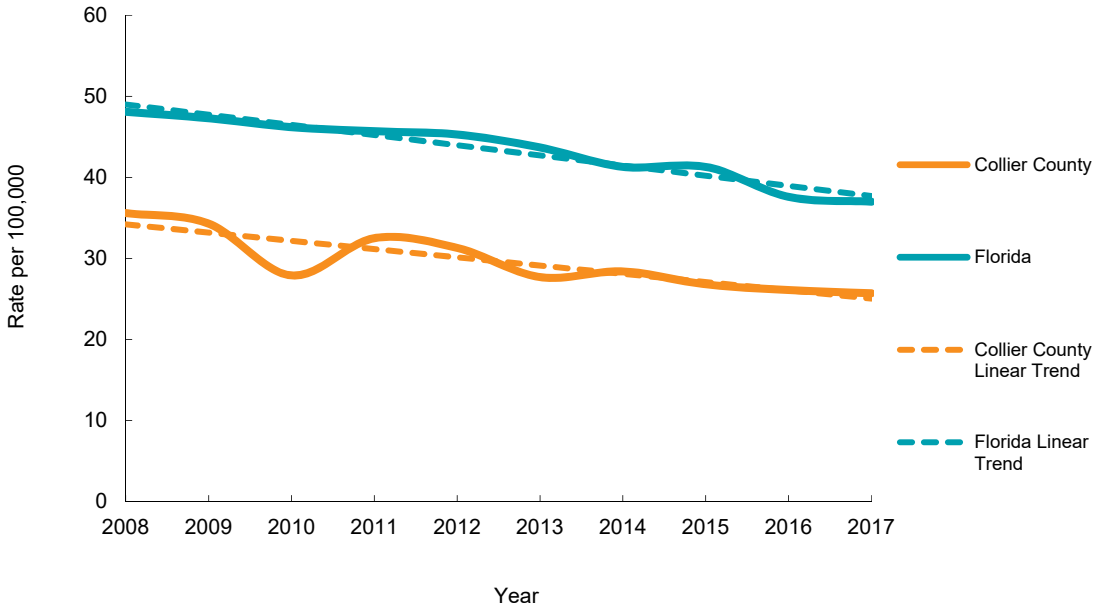
Figure 8. Colorectal Cancer Mortality Rate, by Ethnicity, Collier County, 2008–2017



Lung Cancer

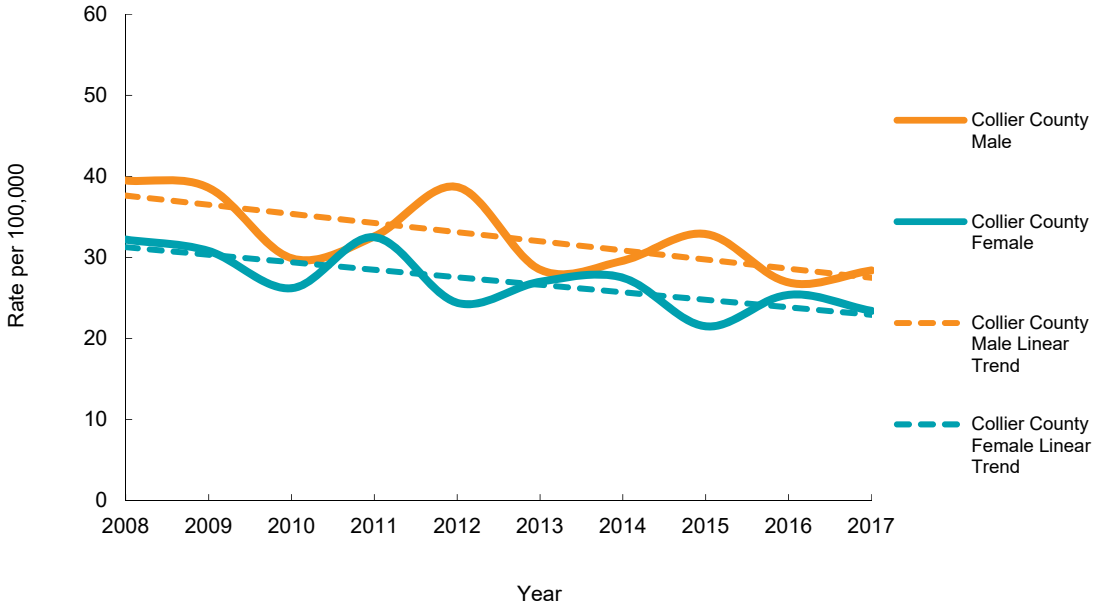
Figure 9 shows the lung cancer mortality rates for Collier County and Florida for the years 2008 to 2017. Both the Collier County and the state of Florida rates are decreasing on a parallel trend.

Figure 9. Lung Cancer Mortality Rate,
Collier County and Florida, 2008–2017



By sex, lung cancer mortality rates in Collier County are lower for females; however, the number of deaths due to lung cancer for males and females are declining at about the same rate (Figure 10).

Figure 10. Lung Cancer Mortality Rate, by Sex,
Collier County, 2008–2017



By race, both white and blacks in Collier County have been experiencing declining slopes 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 11. Lung Cancer Mortality Rate, by Race,
Collier County, 2008–2017

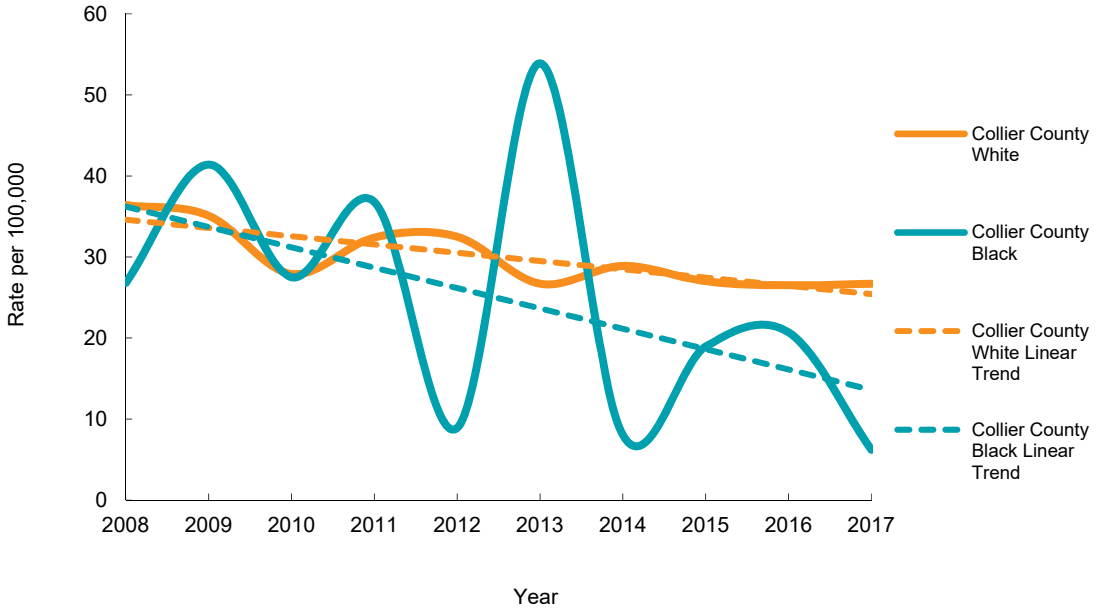


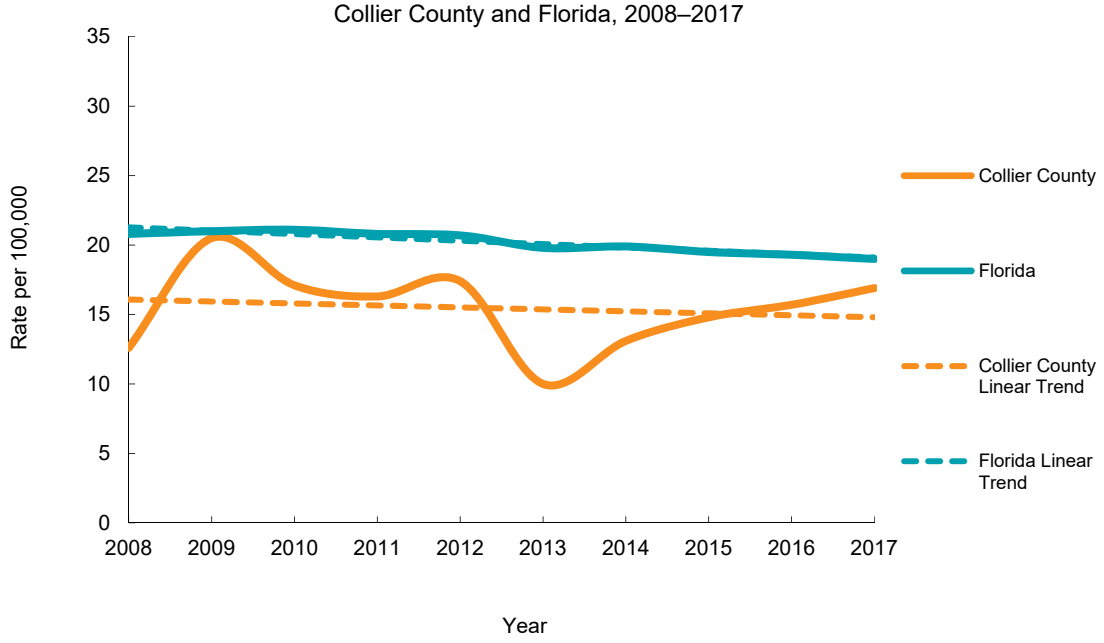
Figure 12 displays lung cancer mortality rates by ethnicity for Collier County for 2008 to 2017. The non-Hispanic rate for lung cancer mortality has declined by 27.8 percent in the 10-year period. The Hispanic lung cancer mortality declined drastically in 2010 and 2013, but the trend in the 10-year period stabilized.

Figure 12. Lung Cancer Mortality Rate, by Ethnicity, Collier County, 2008–2017

Breast Cancer

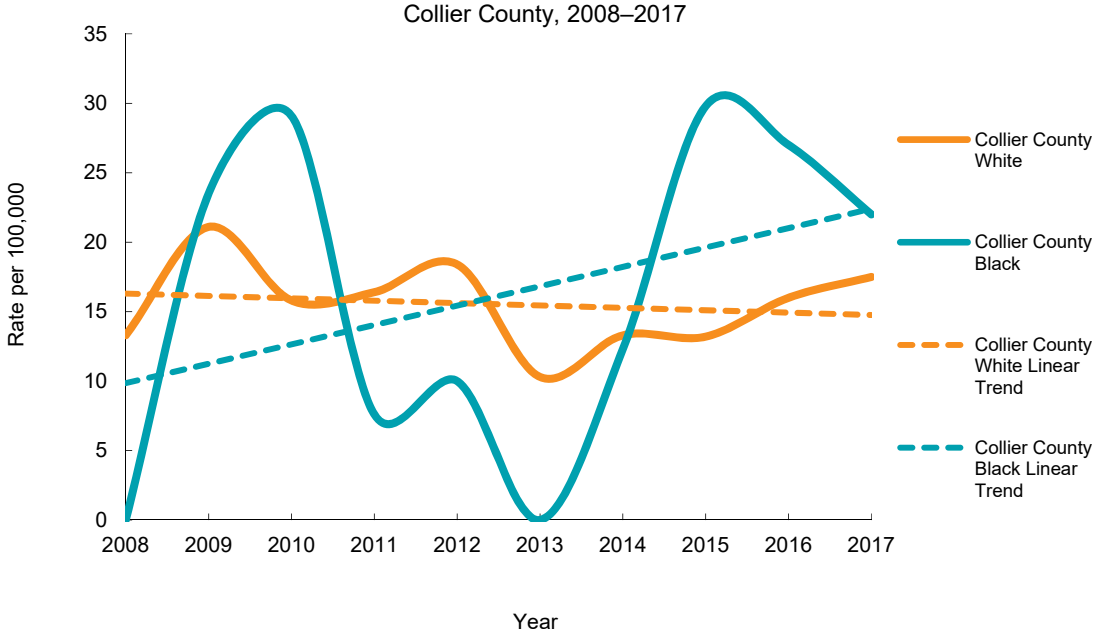
Breast cancer mortality rates in Collier County and Florida have been slightly declining over the 10-year period 2008 to 2017. Throughout this period, Collier rates have been lower than Florida rates (Figure 13).

Figure 13. Breast Cancer Mortality Rate, Collier County and Florida, 2008–2017



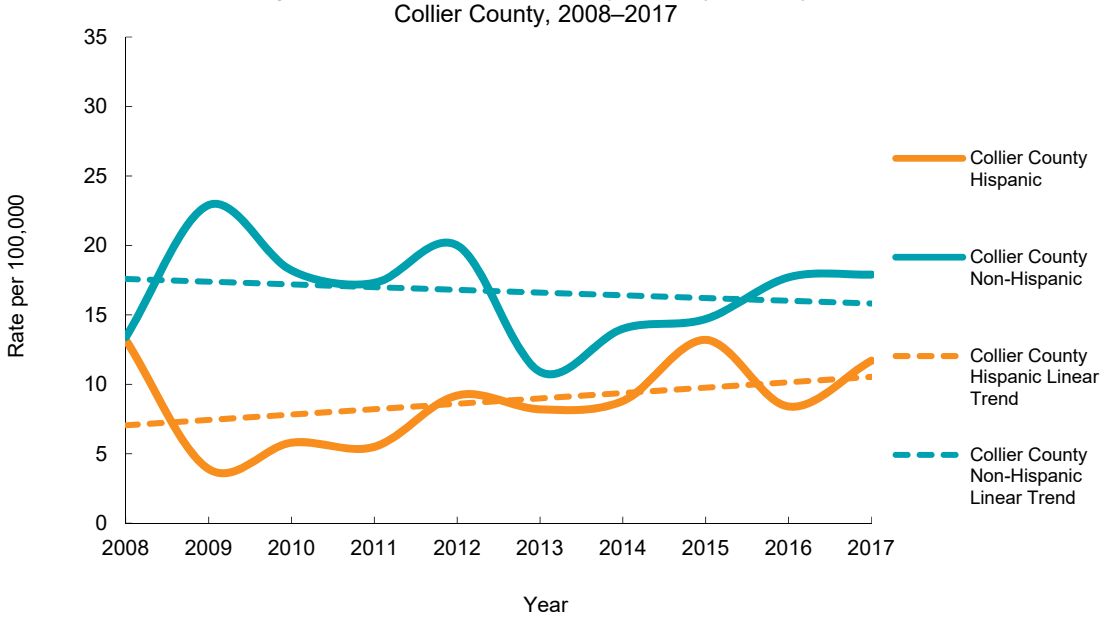
By race, whites in Collier County are experiencing the same rate of lower breast cancer mortality as the total county, while the data for the black population is not comparable due to effect of very small numbers as mentioned earlier for other specific cancer sites (Figure 14).

Figure 14. Breast Cancer Mortality Rate, by Race, Collier County, 2008–2017



By ethnicity, Hispanics in Collier County experienced lower baseline levels of breast cancer mortality than non-Hispanics (Figure 15). In every year between 2008 and 2017, although Hispanics experienced an increasing trend in death rates due to breast cancer, Hispanics had lower rates than non-Hispanics in Collier County.

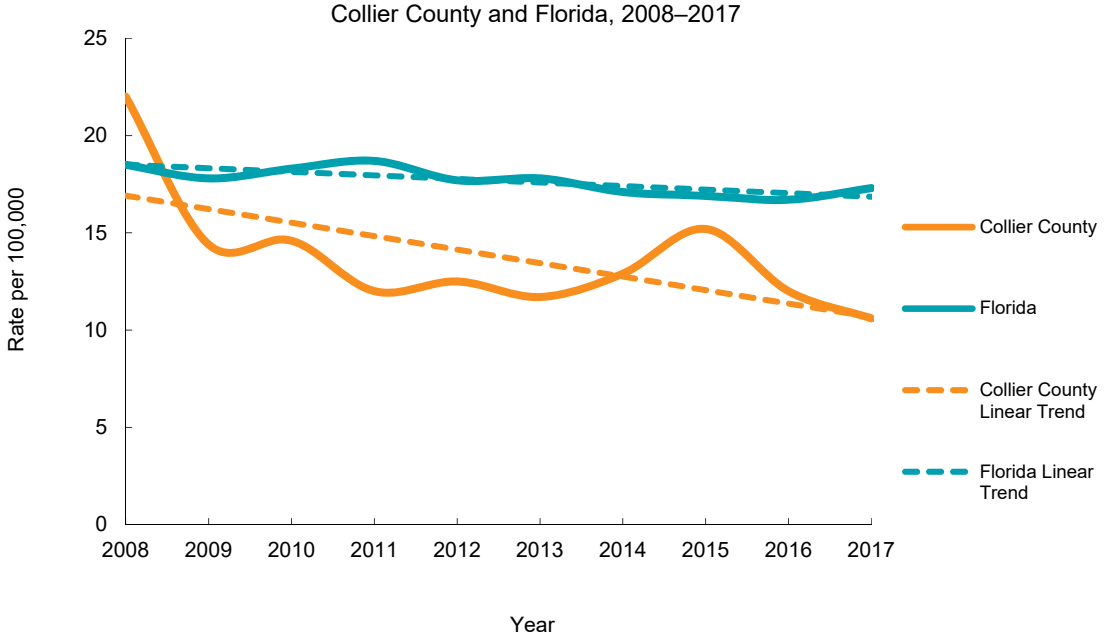
Figure 15. Breast Cancer Mortality Rate, by Ethnicity, Collier County, 2008–2017



Prostate Cancer

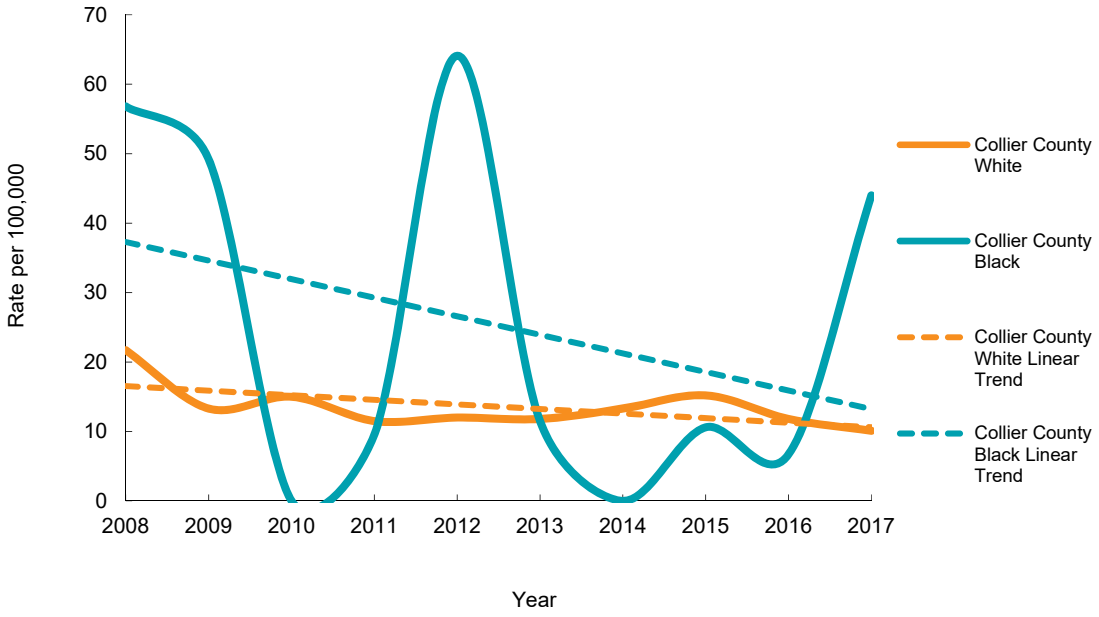
The rate of prostate cancer mortality for Collier County had decreased by 51.8 percent and for Florida it decreased by 6.5 percent (Figure 16).

Figure 16. Prostate Cancer Mortality Rate, Collier County and Florida, 2008–2017



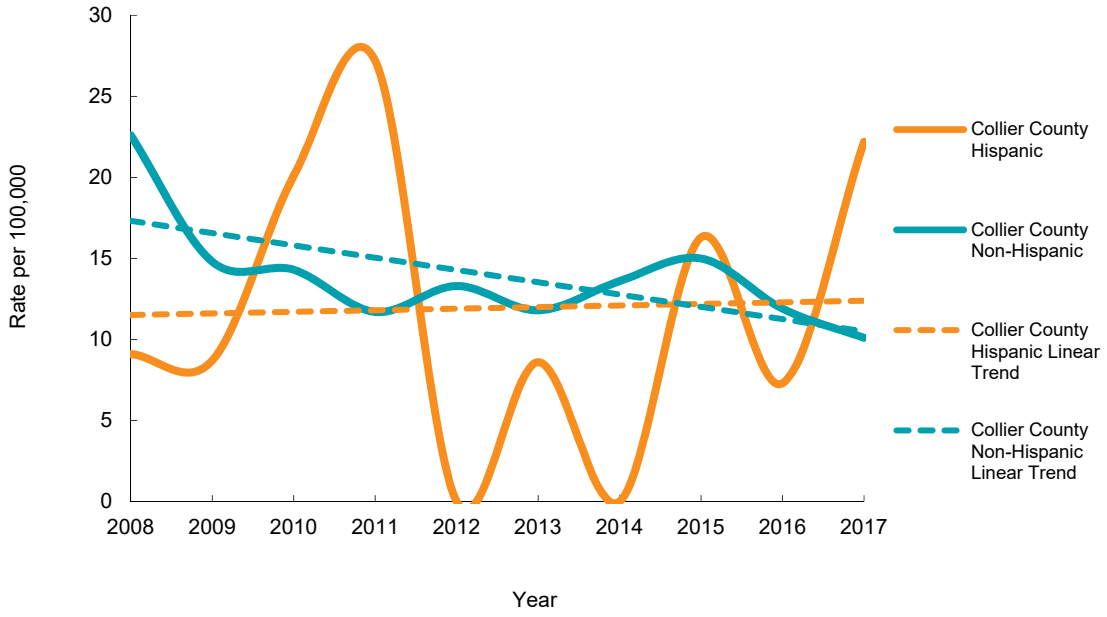
Prostate cancer mortality trends among the white population in Collier County is a mirror image of that of the total male population as just described in Figure 16. The annual rates and the rate of decrease between 2008 to 2017 are almost the same (Figure 17).

Figure 17. Prostate Cancer Mortality Rate, by Race,
Collier County, 2008–2017



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 increasing slope mainly due to zero prostate cancer deaths in 2012 and 2014 among this population group.

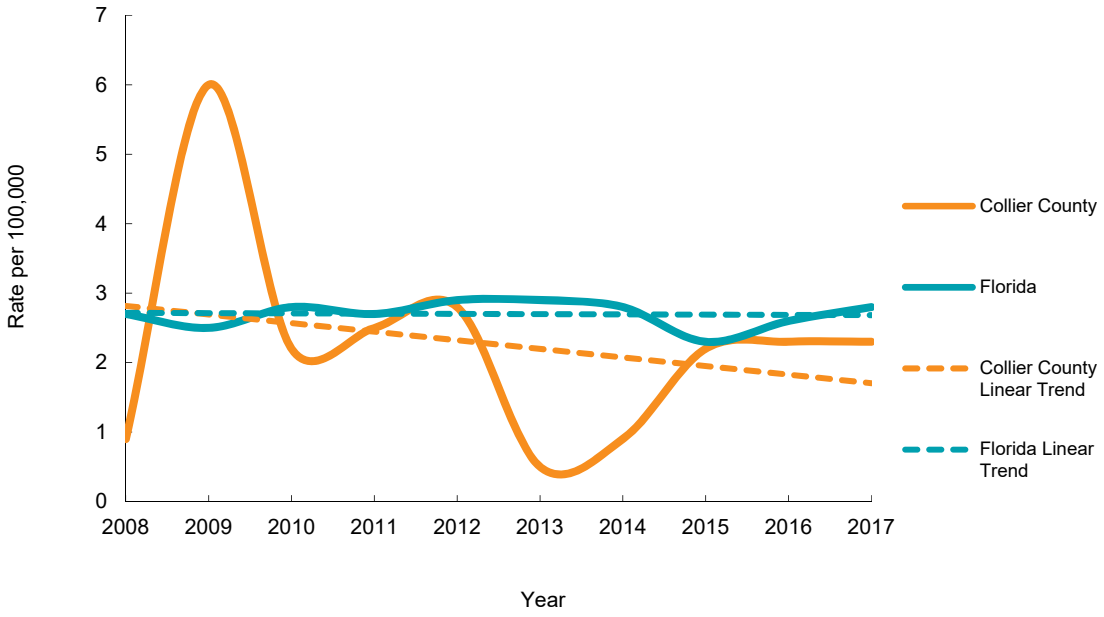
Figure 18. Prostate Cancer Mortality Rate, by Ethnicity, Collier County, 2008–2017



Cervical Cancer

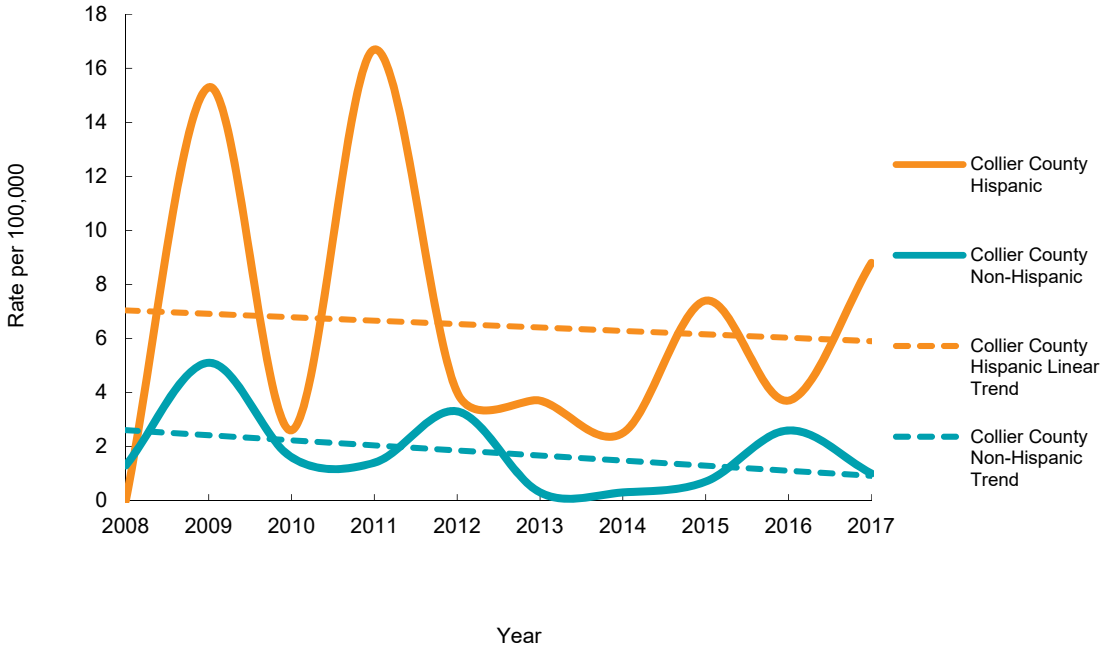
Figure 19 shows the cervical cancer mortality rates in Collier County and Florida between 2008 and 2017. While the mortality rate from cervical cancer in Collier County has been declining slowly depending upon the year, the death rate per 100,000 population for this cause throughout the state has remained constant.

Figure 19. Cervical Cancer Mortality Rate,
Collier County and Florida, 2008–2017



By ethnicity, the cervical cancer mortality rate among Hispanics and non-Hispanic in Collier County has been decreasing steadily over the 10-year period (Figure 20).

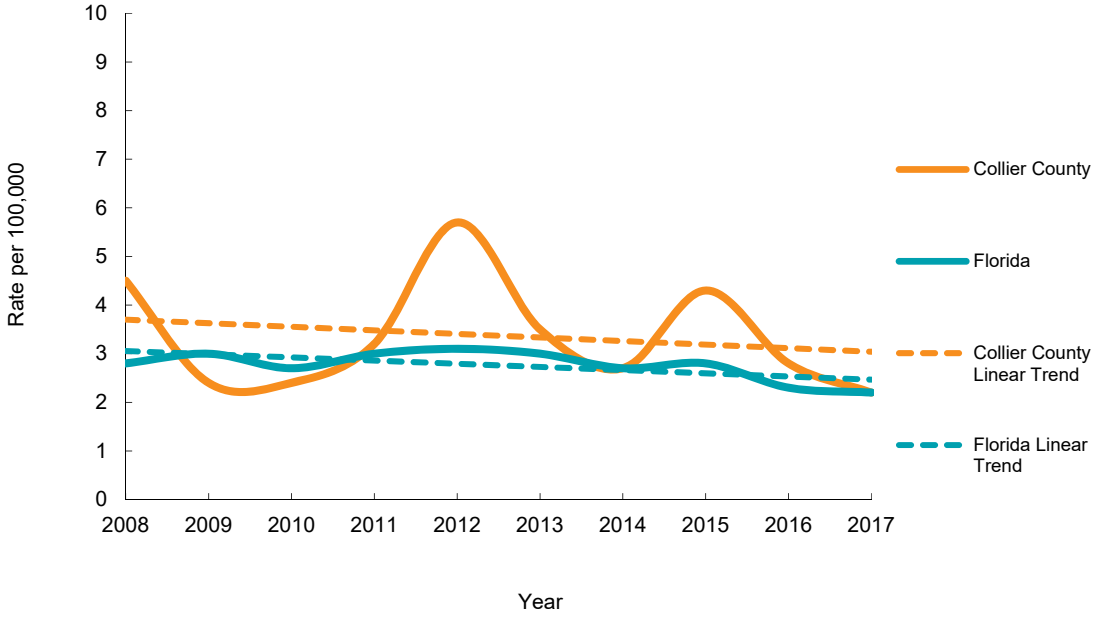
Figure 20. Cervical Cancer Mortality Rate, by Ethnicity,
Collier County, 2008–2017



Melanoma

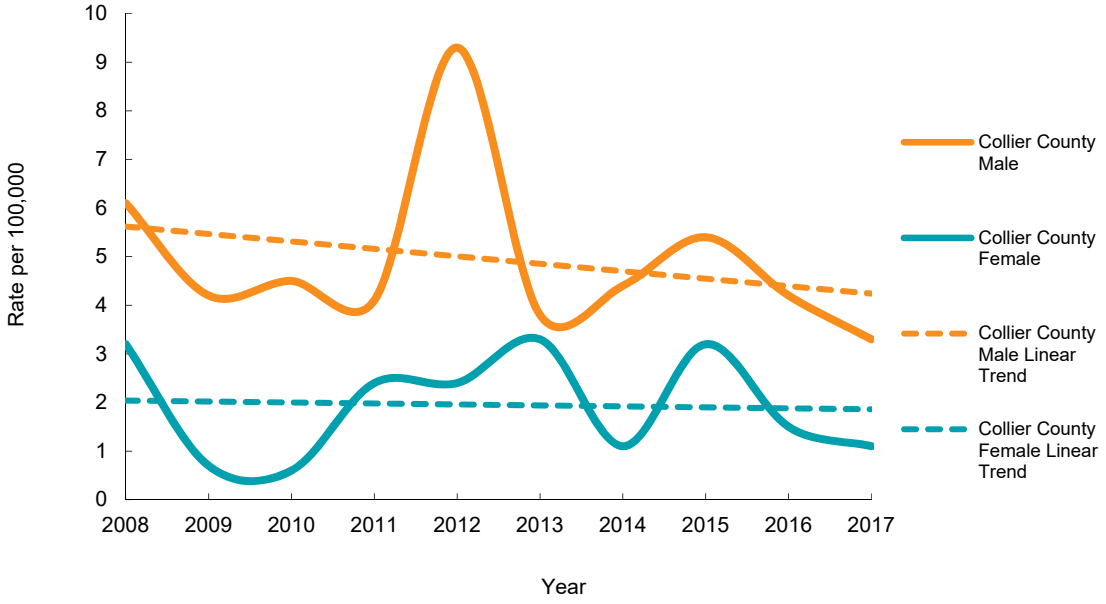
Figure 21 shows the melanoma mortality rates for Collier County and Florida, 2008 to 2017. Over this 10 year period the rates for Collier County and Florida are on slightly decreasing trends. The melanoma rate for Collier County decreased by 51.1 percent, while the rate for Florida decreased by 21.4 percent.

Figure 21. Melanoma Mortality Rate,
Collier County and Florida, 2008–2017



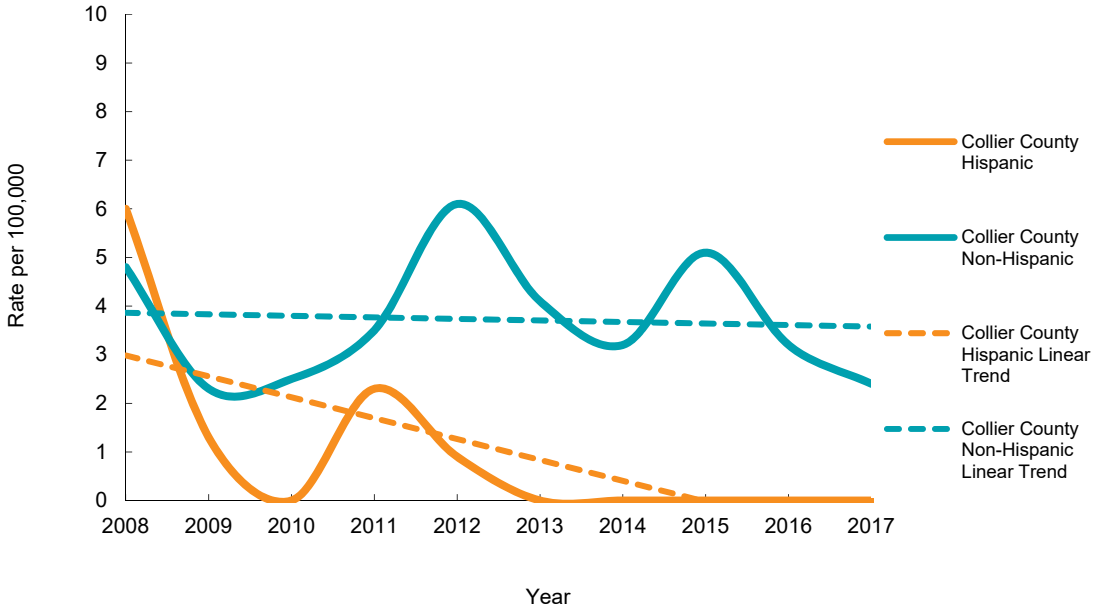
Males in Collier County experienced significantly higher mortality rates from melanoma than females (Figure 22).

Figure 22. Melanoma Mortality Rate, by Sex,
Collier County, 2008–2017



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

Figure 13. Melanoma Mortality Rate, by Ethnicity,
Collier County, 2008–2017



Cerebrovascular Disease

Cerebrovascular disease, more commonly referred to as stroke, is one of the leading causes of death in the United States and Collier County. In 2017, stroke accounted for 312 deaths in Collier County or 8.9 percent of all deaths. Among males, stroke was the fourth leading cause of death, and among females it was also the third leading cause.

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.

Figure 24 shows the mortality rates from stroke for Collier County and the state of Florida for 2008 to 2017. Within the 10-year period both Collier County and Florida saw increases in their stroke mortality with a 38.3 percent increase for Collier County and a 24.1 percent increase for Florida.

Figure 24. Cerebrovascular Disease Mortality Rate,
Collier County and Florida, 2008–2017

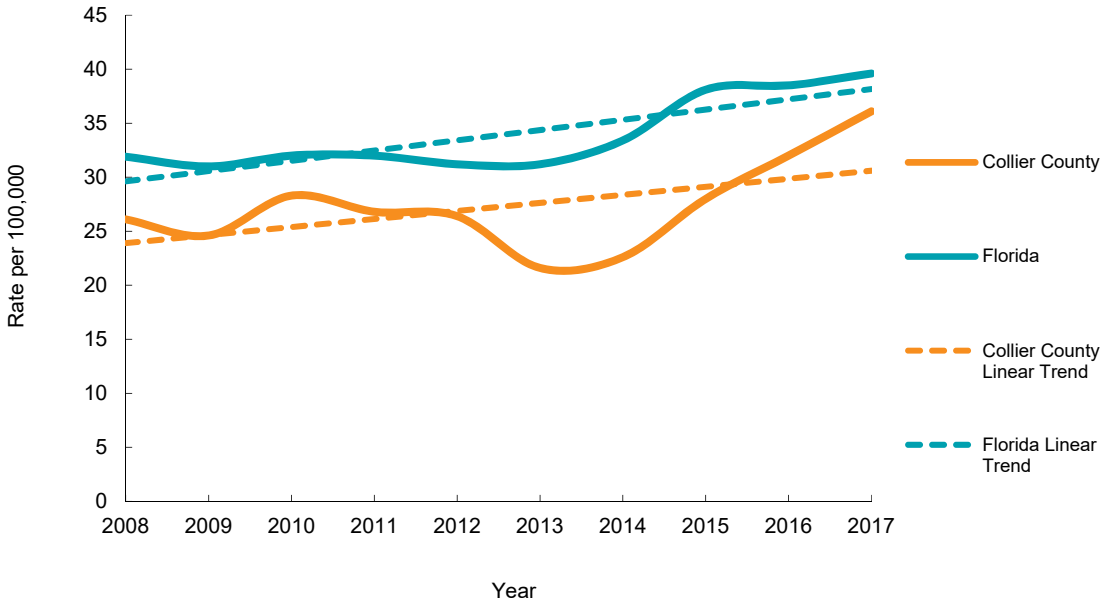
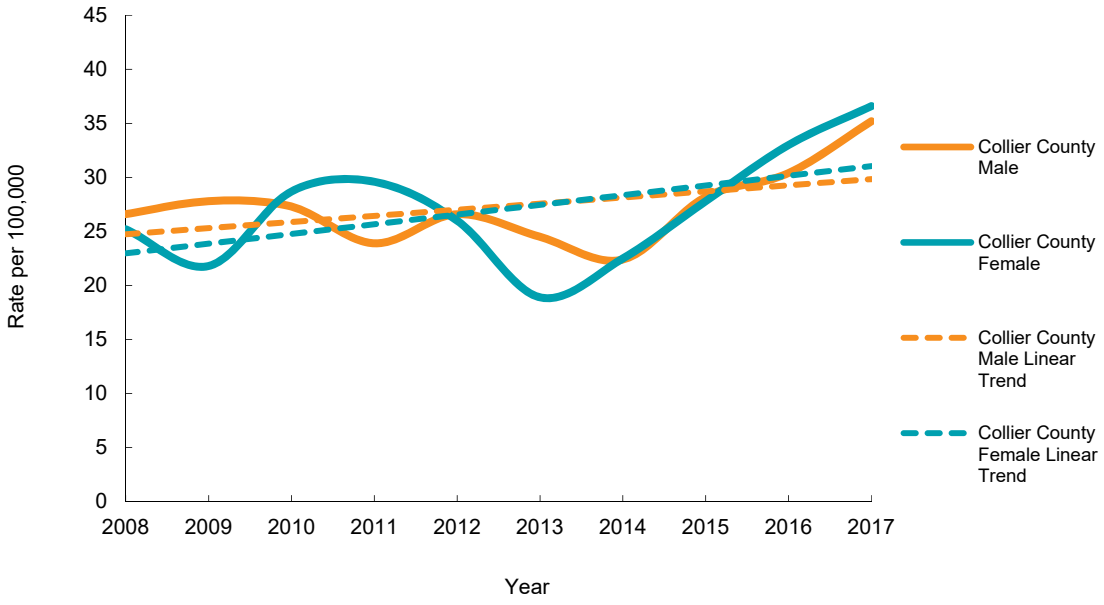


Figure 25 shows the mortality rates for Collier County by gender. As can be seen, both males and females have been experiencing a gradual increase in mortality rates for the period 2008 through 2017, 32.3 percent and 45.2 percent, respectively.

Figure 25. Cerebrovascular Disease Mortality Rate, by Sex, Collier County, 2008–2017



The mortality rates for stroke by race are given in Figure 26. Historically mortality due to stroke has been higher among the black population in the United States than among the white population. While whites are showing a slight increasing trend over the 10-year interval, the rate for the black population stabilized with much variation between 2011 to 2015.

Figure 26. Cerebrovascular Disease Mortality Rate, by Race, Collier County, 2008–2017

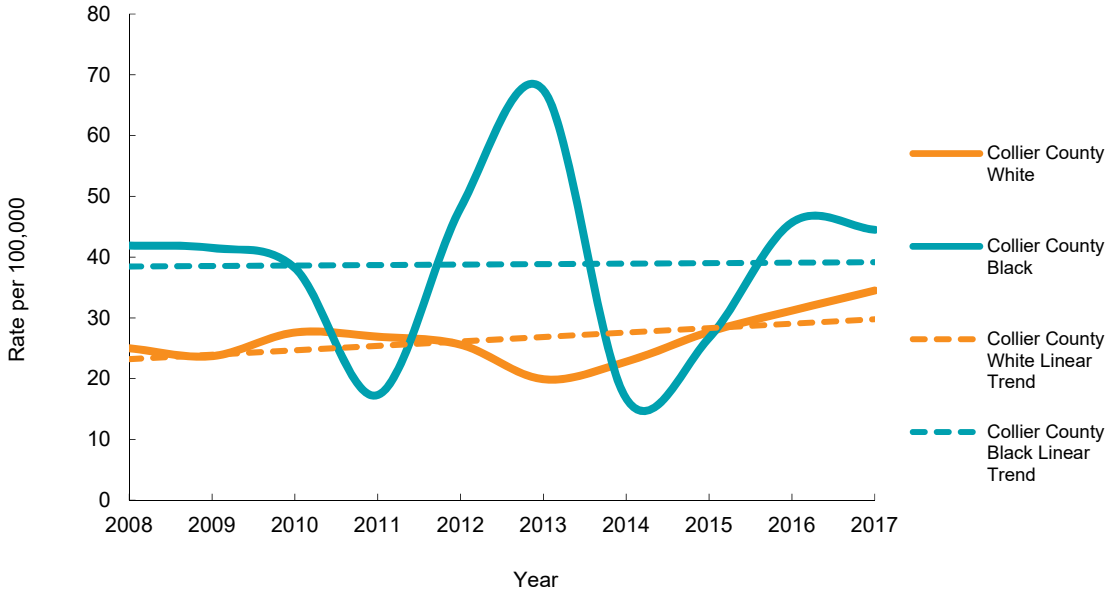
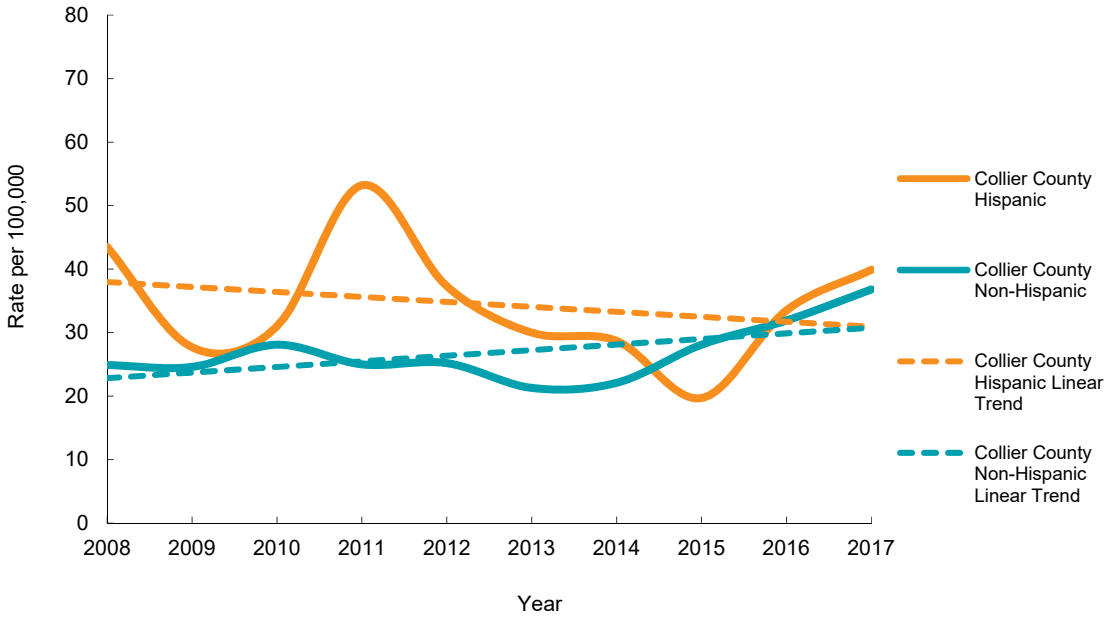


Figure 27 contains stroke mortality rates for Collier County by ethnicity for 2008 through 2017. The Hispanic deaths from stroke are slowly declining, while in this 10-year period the rate for non-Hispanics is steadily increasing.

Figure 27. Cerebrovascular Disease Mortality Rate, by Ethnicity, Collier County, 2008–2017



Heart Disease

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. It remains the leading cause of death as well among blacks and whites while the second leading cause of death for Hispanics in the U.S. Approximately, 23 percent of all deaths in blacks and whites are due to this cause, followed by Hispanics with about 20 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.

During the previous decade cancer replaced heart disease in Collier County and Florida as the leading cause of death. This ranking shift in cause of death has been attributed to decades of health education targeting heart disease prevention with emphasis on cigarette smoking cessation, physical activity, and exercise promotion, as well as the strategic introduction of healthy food choices education and the overall importance of healthy lifestyles. While 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 from 2008 to 2017. These data display a fairly consistent reduction in deaths over the ten-year period from this cause, 16 percent in Collier County and 6 percent in Florida.

Figure 28. Heart Disease Mortality Rate,
Collier County and Florida, 2008–2017

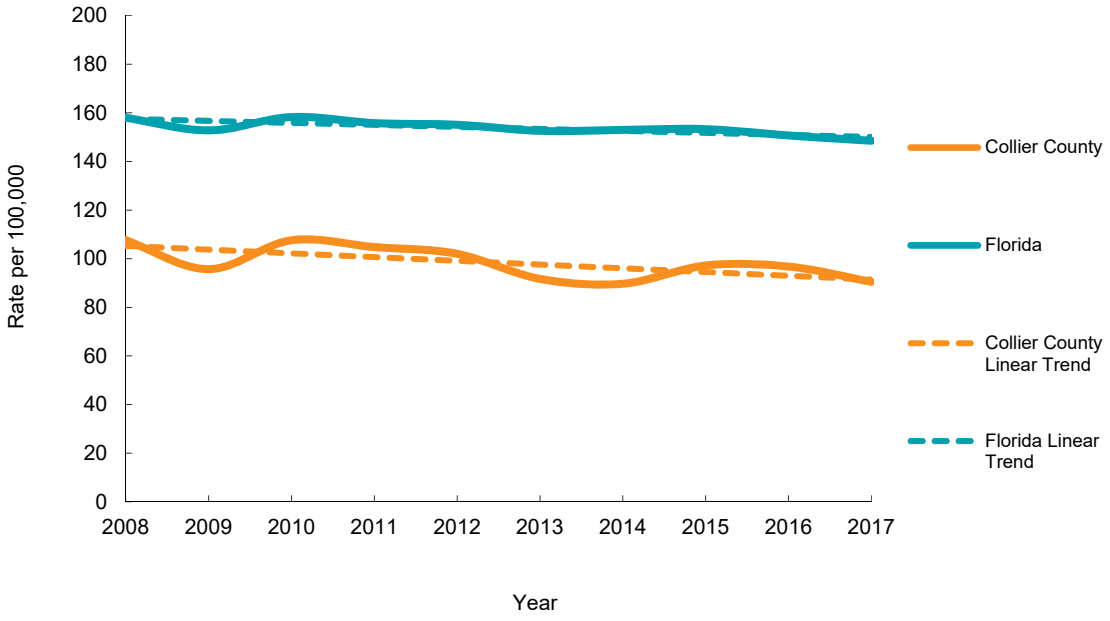
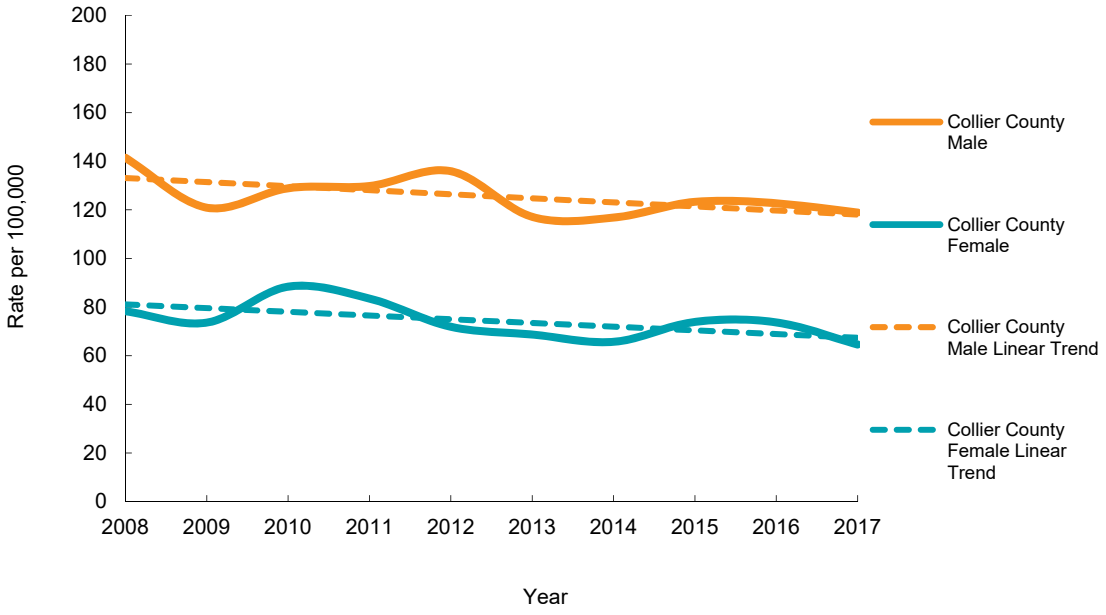


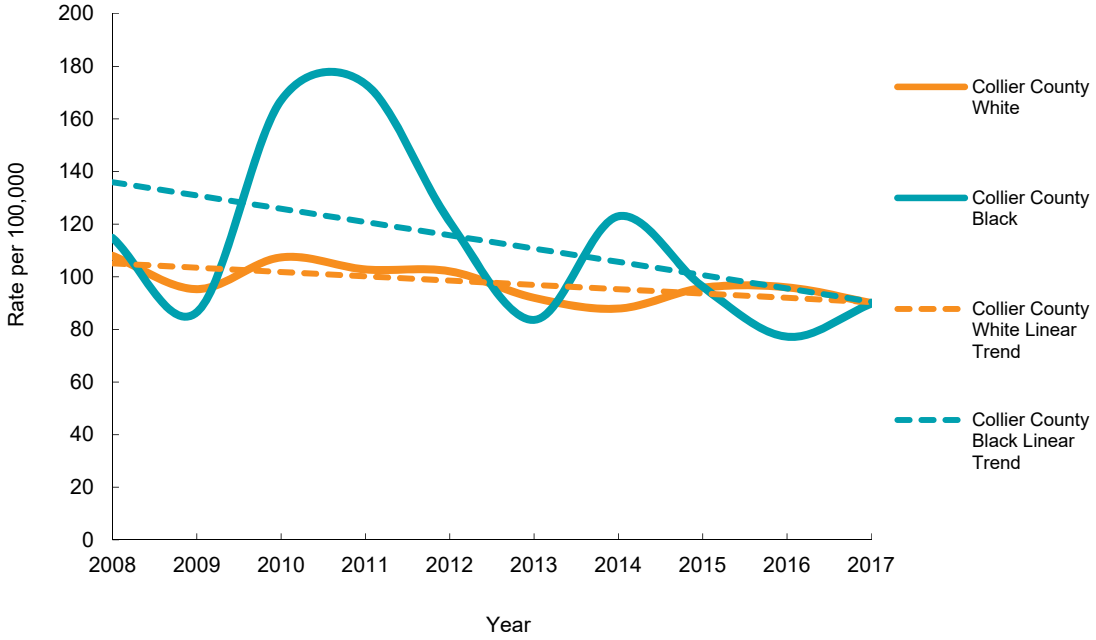
Figure 29 describes the mortality rate from heart disease in Collier County for this period by sex. Both males and females experienced an improvement in heart disease deaths for the 10-year interval, -16 percent and -17 percent, respectively.

Figure 29. Heart Disease Mortality Rate, by Sex,
Collier County, 2008–2017



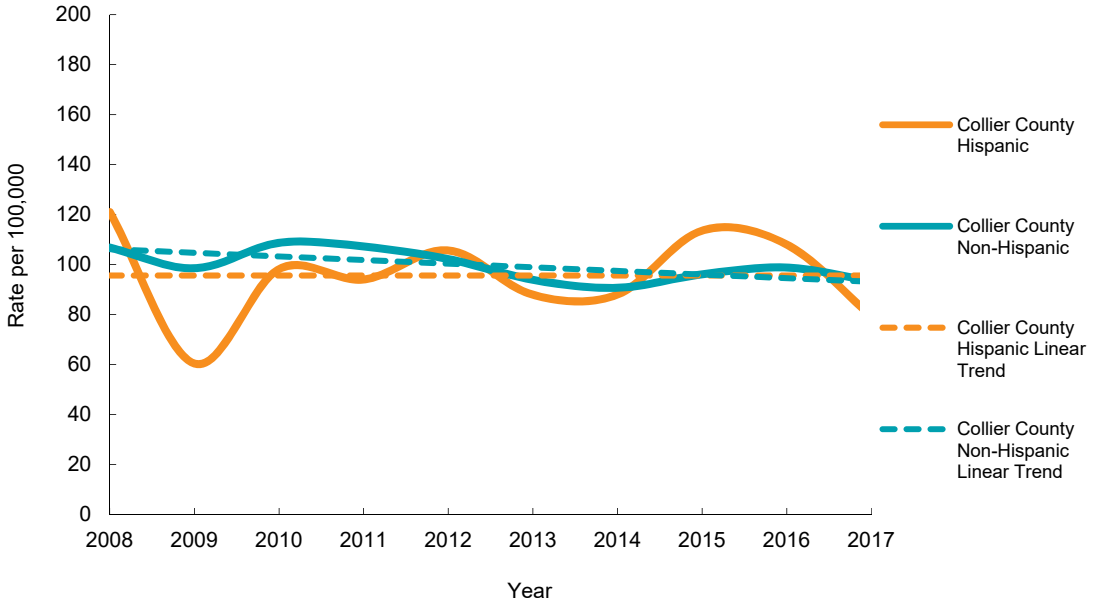
Heart disease mortality rates by race for Collier County are provided in Figure 30. The death rate decreased for both whites and blacks over the 10-year period. Rates for blacks compared to previous assessments are decreasing – only spiking in 2010 and 2011.

Figure 30. Heart Disease Mortality Rate, by Race,
Collier Count, 2008–2017



By ethnicity in Figure 31, both the Hispanic and non-Hispanic population of Collier County show an improving trend, −34.4 percent and −12.5 percent, respectively.

Figure 31. Heart Disease Mortality Rate, by Ethnicity, Collier County, 2008–2017



Diabetes

Diabetes is the seventh leading cause of death in the United States and Collier County. Based on extensive analysis, the CDC estimates that over 84 million American adults presently have pre-diabetes, 90 percent of whom don't know they have it. 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.

In examining Figure 32, it is very evident that for both Collier County and Florida while the rates have remained constant over the decade, diabetes remains a very important contributing cause of death to premature mortality for both geographical areas.

Figure 32. Diabetes Mellitus Mortality Rate,
Collier County and Florida, 2008–2017

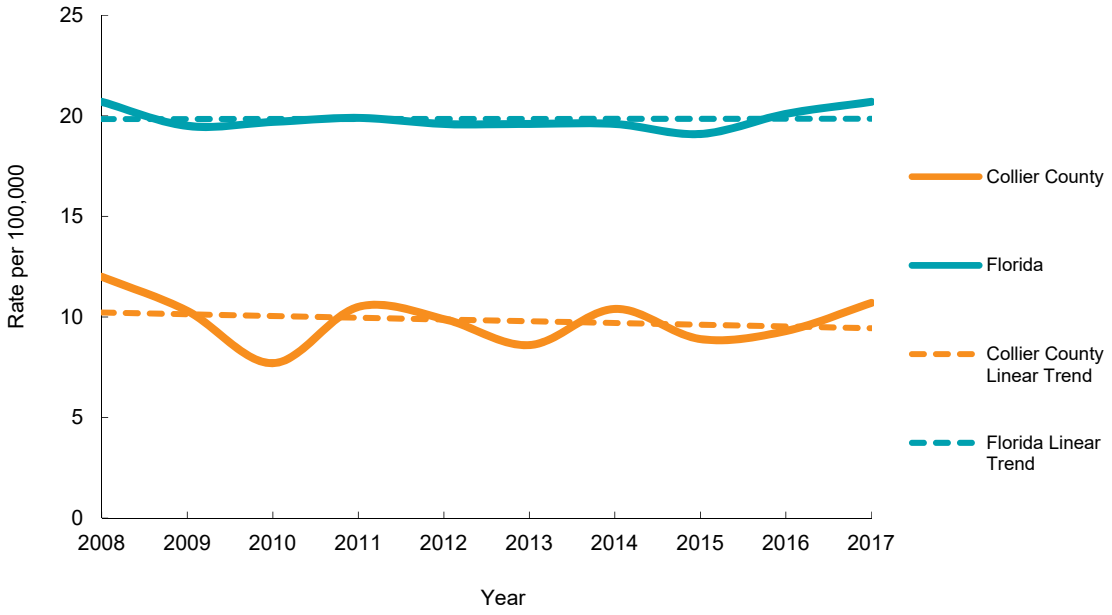
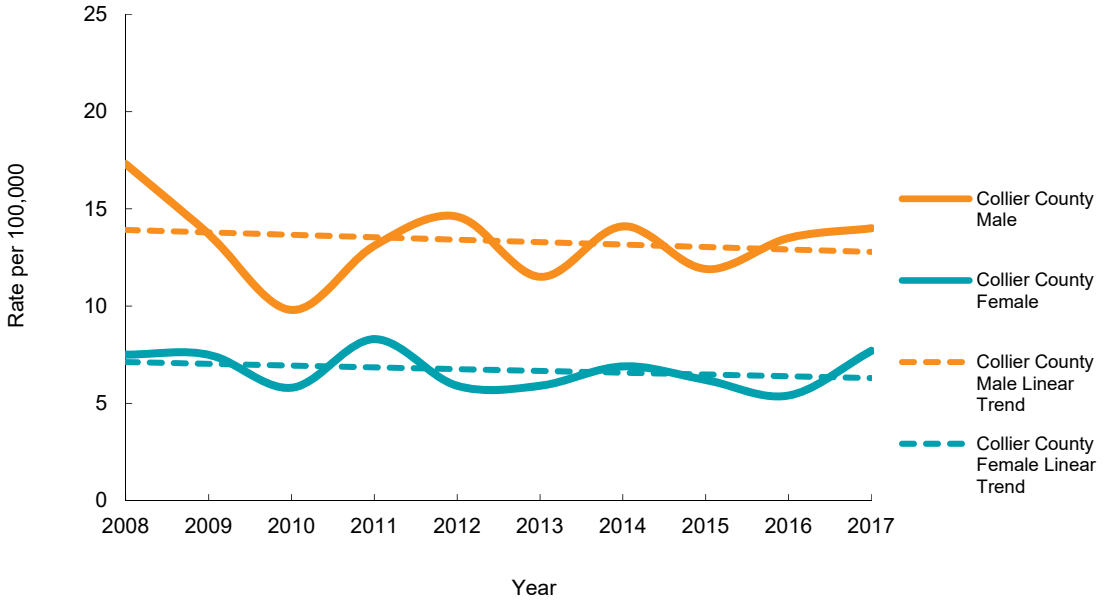


Figure 33 shows the diabetes mortality rate by sex over the 10-year period from 2008 to 2017. Both males and females have been trending slowly downward long term. On average, the mortality rates for males from diabetes in Collier County is approximately twice that of females.

Figure 33. Diabetes Mellitus Mortality Rate, by Sex,
Collier County, 2008–2017



The black population in Collier County has been experiencing a reduction in diabetes mortality. The white population's rate has been essentially flat with no discernible change (Figure 34).

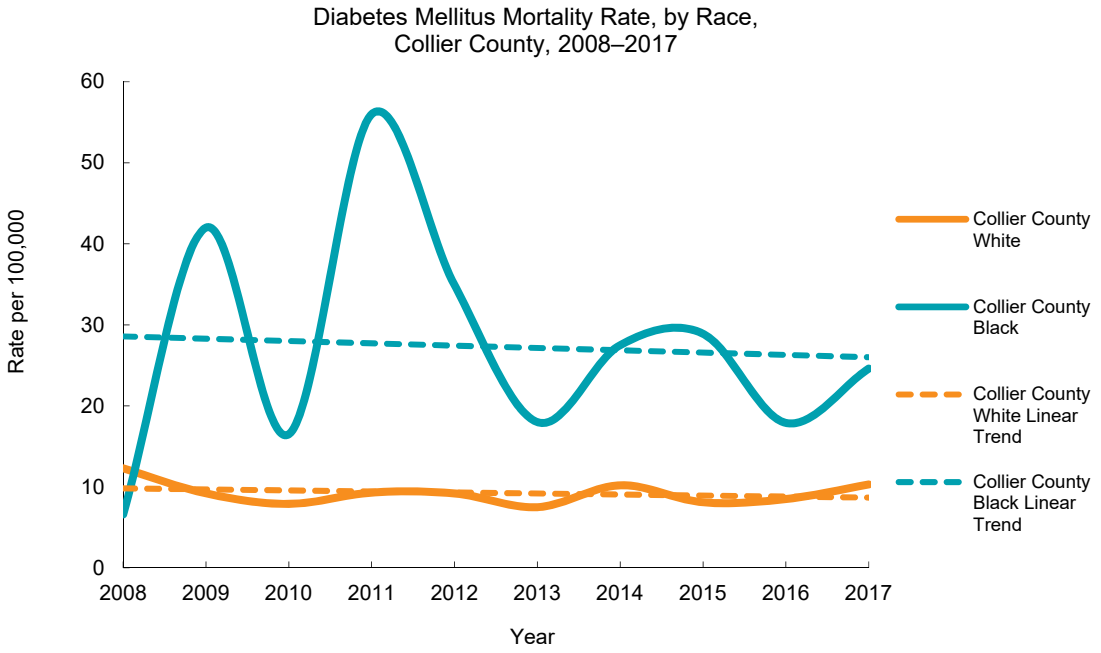
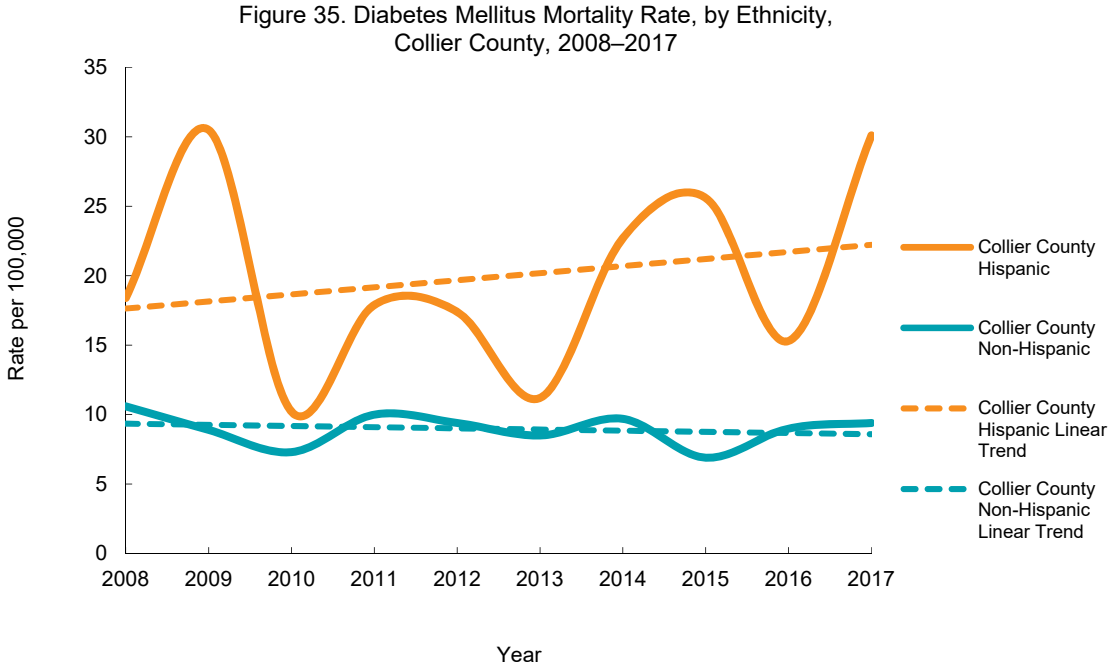


Figure 35 shows the diabetes mortality rates by ethnicity. There is a visible contrast between the increasing trend among Hispanics and the flat line trend among non-Hispanics in Collier County.



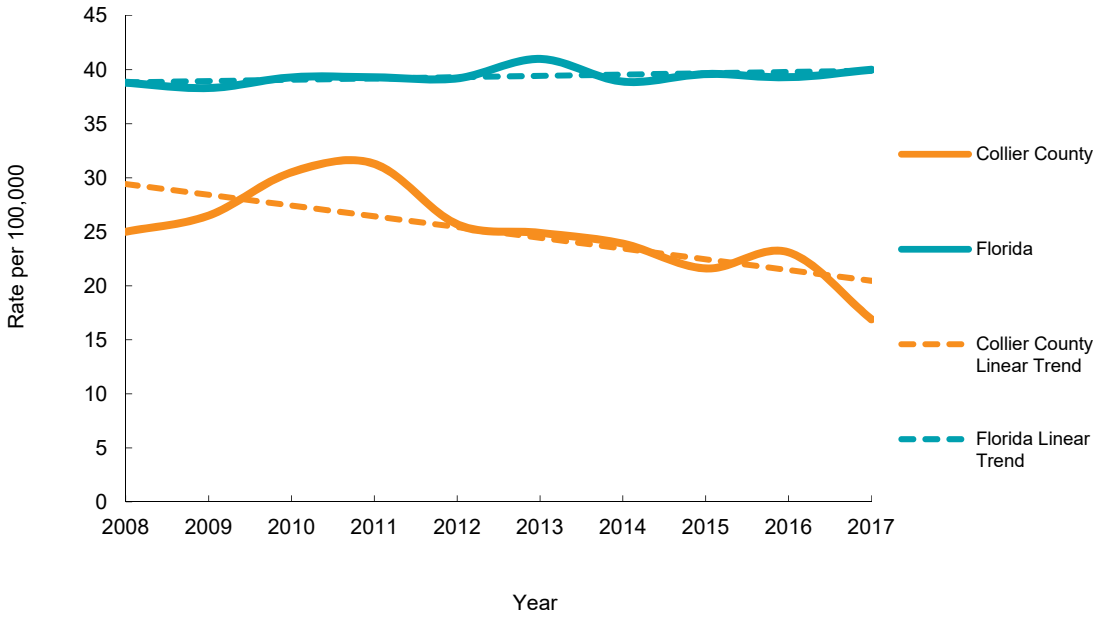
Chronic Lower Respiratory Disease (CLRD)

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 2017, CLRD was the sixth leading cause of death in Collier County and the fourth leading cause in the state of Florida. Figure 36 shows the mortality rates from CLRD in Collier County and the state of Florida for 2008 through 2017. The death rate for Collier is decreasing, while the rate in Florida shows an increasing trend.

Figure 36. Chronic Lower Respiratory Disease Mortality Rate, Collier County and Florida, 2008–2017



Both males and females in Collier County show increasing trends in mortality rates from CLRD over the 2008 to 2014 period (Figure 37).

Figure 37. Chronic Lower Respiratory Disease Mortality Rate, by Sex, Collier County, 2008–2017

Figure 38 shows the death rates for CLRD by race. Over the 10-year period, the white population has been on a decreasing trend, while deaths among blacks have been increasing. It should be noted that this increase in mortality may be due to small number variation.

Chronic Lower Respiratory Disease Mortality Rate, by Race, Collier County, 2008–2017

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

Figure 39. Chronic Lower Respiratory Disease Mortality Rate, by Ethnicity, Collier County, 2008–2017

Infectious Diseases

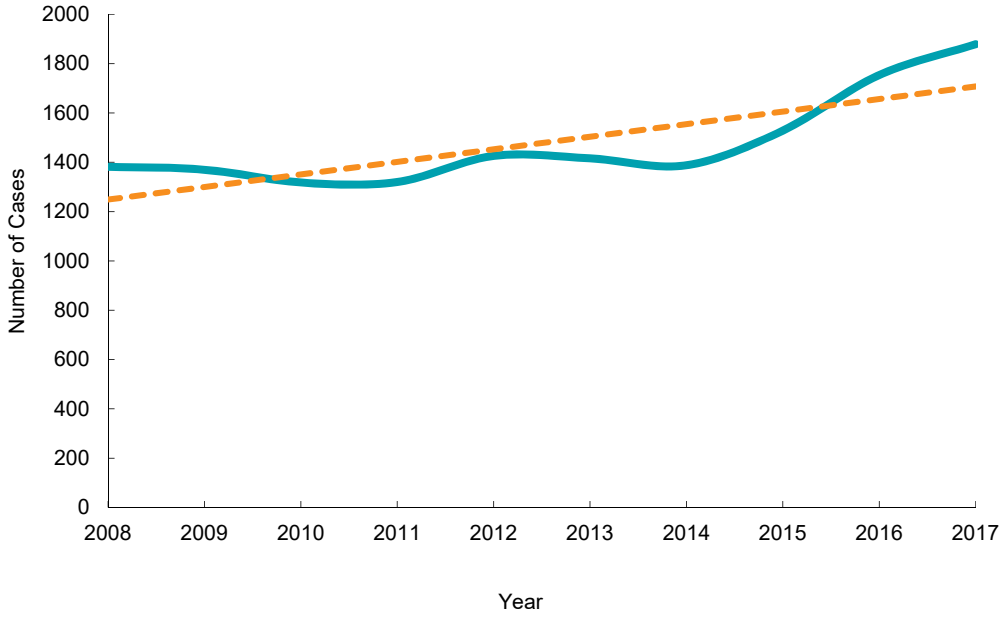
Infectious or communicable diseases are illnesses that are caused by pathogenic organisms such as viruses, bacteria, parasites, and fungi. Some infectious diseases present as mild illnesses, but others can be fatal. Infectious diseases can be acquired by consuming contaminated food or water, by being bitten by insects or animals, or by having contact with an infected person. Many communicable diseases 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 2017, a total of 1,878 disease cases (or about 524 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 2008 and 2017, reportable disease incidence in Collier County increased by 19.9 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, 2008–2017



Data source: Florida Department of Health

In Collier County, five diseases and conditions account for 82.3 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, 2017

Rank Order	Disease or Condition	Number of Cases	Percentage of ALL Reportables
1	Chlamydia	1084	57.7
2	Salmonella	147	7.8
3	Gonorrhea	141	7.5
4	Animal Bites (Post Exposure Prophylaxis Recommended)	89	4.7
5	Campylobacter	86	4.6
	Total	1,547	82.3

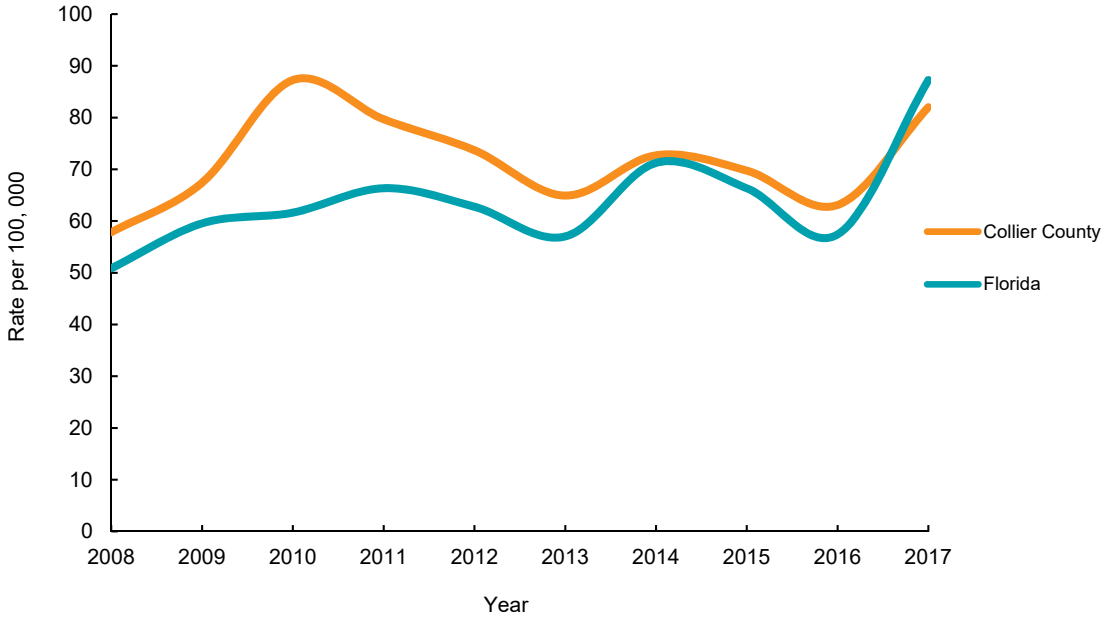
Data source: Florida Department of Health in Collier County, Epidemiology and Health Assessment Program

The Epidemiology and Health Assessment Program investigated a total of 538 reportable diseases and conditions, about 29 percent of all reportable diseases and conditions. Between 2008 and 2017, the incidence rate of these reportable communicable diseases in Collier County increased by 29.4 percent. If population growth is not taken into account, the number of diseases increased by 46.6 percent over this same interval.

Enteric Diseases

Historically, enteric disease incidence in Collier County has been consistently greater than the Florida State average. Between 2008 and 2017, the enteric diseases for Collier and Florida followed a similar pattern until 2017 (Figure 2). During this ten-year period, the enteric disease rate increased by 42 percent, while in Florida the rate increased by 71 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 almost all years.

Fgure 2. Number of Enteric Disease Cases per 100,000 Population, Collier County and Florida, 2008–2017



Data source: Florida Department of Health

Two of the five leading reportable diseases in Collier County are enteric or gastrointestinal diseases. Salmonellosis and campylobacteriosis accounted for 233 or about 12.4 percent of all reportable conditions (Table 1). The remaining reportable enteric diseases, which include cryptosporidiosis, cyclosporiasis, shiga toxin-producing *Escherichia coli*, giardiasis, hepatitis A, shigellosis, and typhoid fever, account for 16 percent of all reported diseases and conditions in Collier County and were about 55 percent of all cases investigated by the Epidemiology and Health Assessment Program in 2017.

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 358,506 in 2017, is only 1.7 percent that of Florida's 20,555,728. 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 17 years. Between 2008 and 2017, the rate increased by 56 percent in Collier County and 34 percent in Florida. (Figure 3).

Figure 3. Number of Reported Cases of Salmonella,
Collier County and Florida, 2008–2017

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, however, the majority of cases go undiagnosed and unreported. Symptoms of campylobacter include diarrhea, cramping, abdominal pain and fever.

Between 2008 and 2017, the rates for Collier County increased by 29 percent, while the rate of Florida increased by about 360 percent (Figure 4). Although, historically, the overall campylobacter incidence in Collier County has been on average 3 to 4 times higher than that for Florida, the difference has been decreasing in recent years. In 2017, the rate in Florida finally surpassed the rate in Collier County.

Figure 4. Number of Reported Cases of Campylobacteriosis, Collier County and Florida, 2008–2017

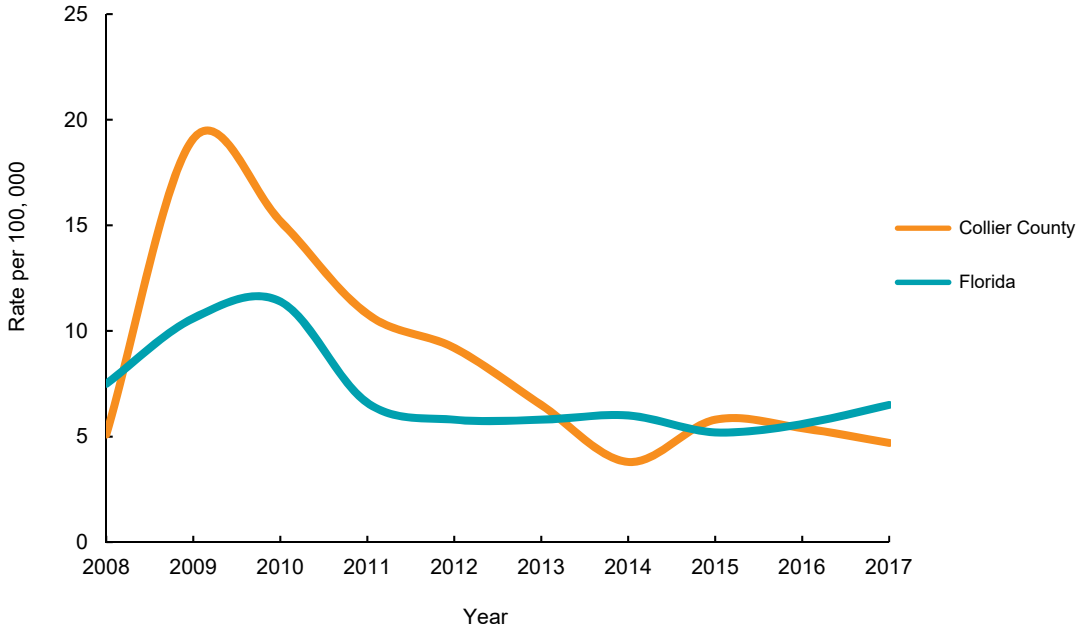
Data source: Florida Department of Health

Giardiasis

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 2008 and 2017, the rate for giardiasis in Collier County declined by 8 percent. The rate peaked in 2009 with 19.1 per 100,000 population and decreased by 75 percent from 2009 to 2017 (Figure 6). One of the major correlates of the decline of giardiasis incidence in Collier County from 2011 to 2017 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, clinical criteria were included in the case definition, thus increasing the specificity of the reporting system and reducing the reported rate of this disease.

Figure 6. Number of Reported Cases of Giardiasis,
Collier County and Florida, 2008–2017



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 2008 and 2017, the rate of reported cases of shigellosis in Collier County increased by 27 percent, from 2.2 to 2.8 per 100,000 population. The rates peaked in 2015 with a rate of 8.1 per 100,000 population. The rate for Florida increased by 98 percent over the same period (Figure 7).

Figure 7. Number of Reported Cases of Shigellosis, Collier County and Florida, 2008–2017

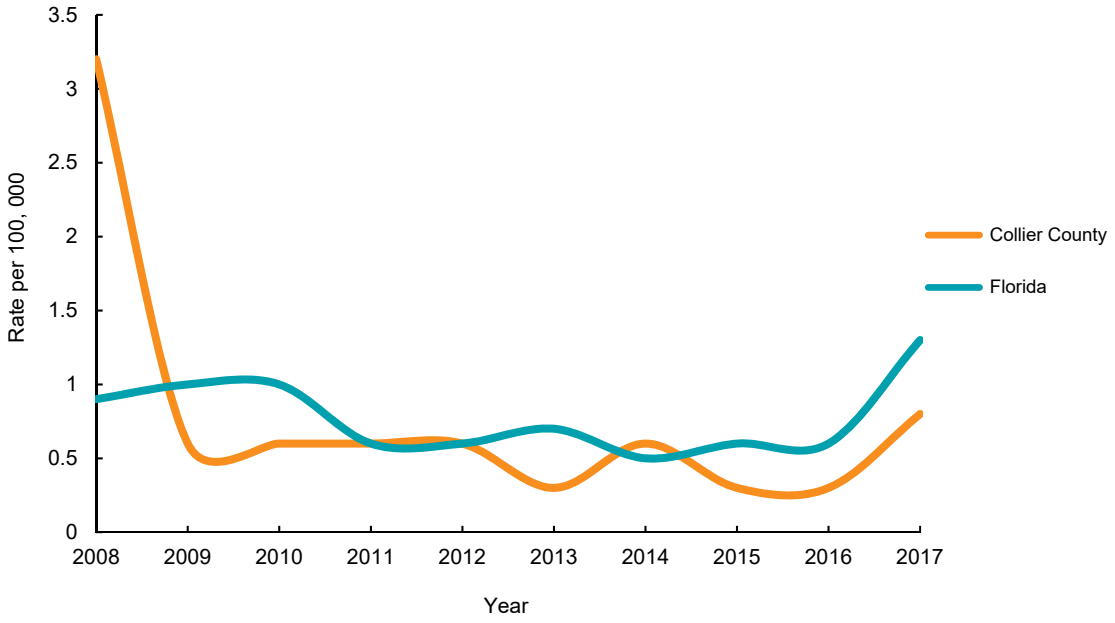
Data source: Florida Department of Health

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 2008 and 2017, the rate of reported cases of hepatitis A decreased by 75 percent in Collier County but increased by 44 percent in Florida (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,
Collier County and Florida, 2008–2017

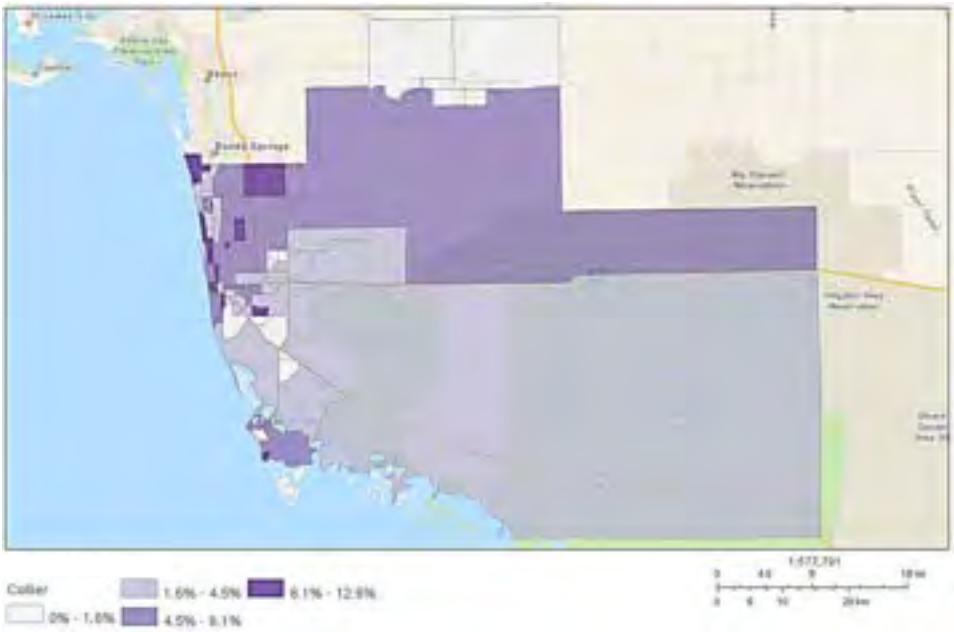


Data source: Florida Department of Health

Vaccine-Preventable Diseases

Vaccine-preventable diseases, as the name implies, are infections that can be prevented; however, every year several vaccine-preventable diseases are reported in Collier County. In fact, they can 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 in any given year. 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. As vaccination rates decrease, so does herd immunity also decreases; consequently, the rate of vaccine-preventable diseases will continue to increase. Below is the geographical distribution of religious exemptions for vaccination in the county.

Percent Distribution of Religious Exemptions in Children 4 to 18, Collier County, 2019



Pertussis

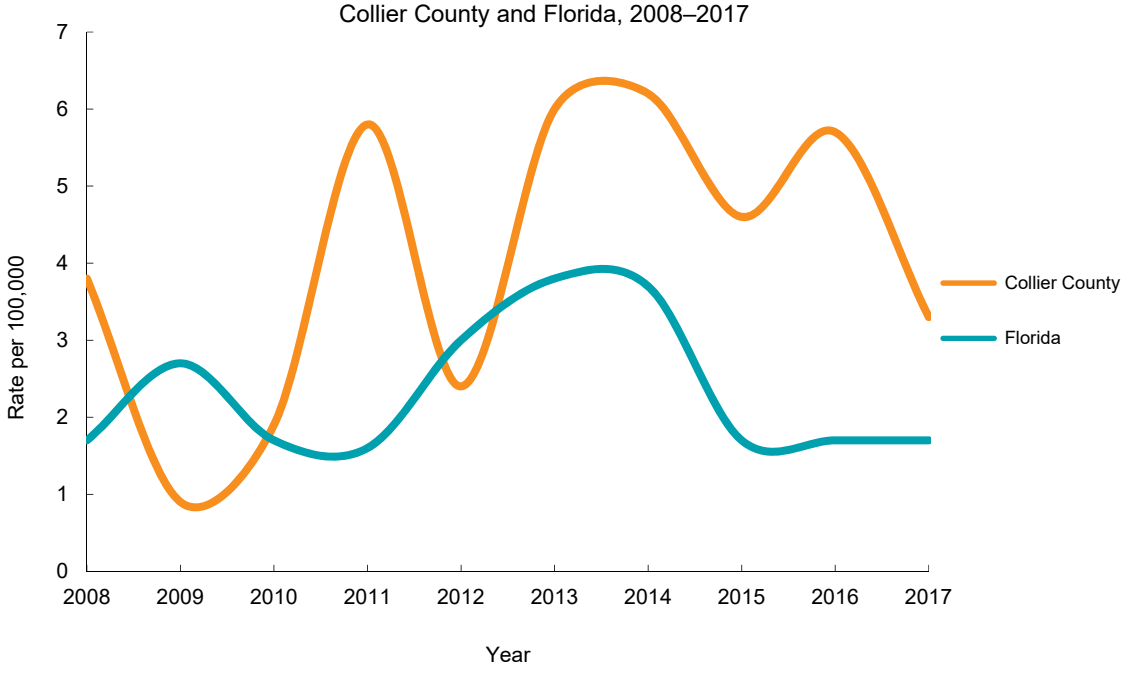
Pertussis, or whooping cough, is an acute bacterial infectious disease caused by *Bordetella pertussis.* During the 20th century, pertussis was one of the most common childhood diseases and a major contributor to childhood mortality in the United States. Beginning with the widespread use of vaccine, 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 incidence can be significantly reduced through health education on the science of vaccine protection.

Between 2008 and 2017, the number of reported cases of pertussis in Collier County adjusted for population has decreased from 3.8 to 3.3 per 100,000, which amounts to a 13 percent decrease. The rates of pertussis peaked in 2014 with a rate of 6.2 per 100,000 population. (Figure 9). Three fourths of the pertussis cases reported since the year 2008 have occurred from 2011 to 2016. Contrasting with the total state's reported cases, Collier County has had on average higher incidence.

Figure 9. Number of Pertussis Cases,
Collier County and Florida, 2008–2017



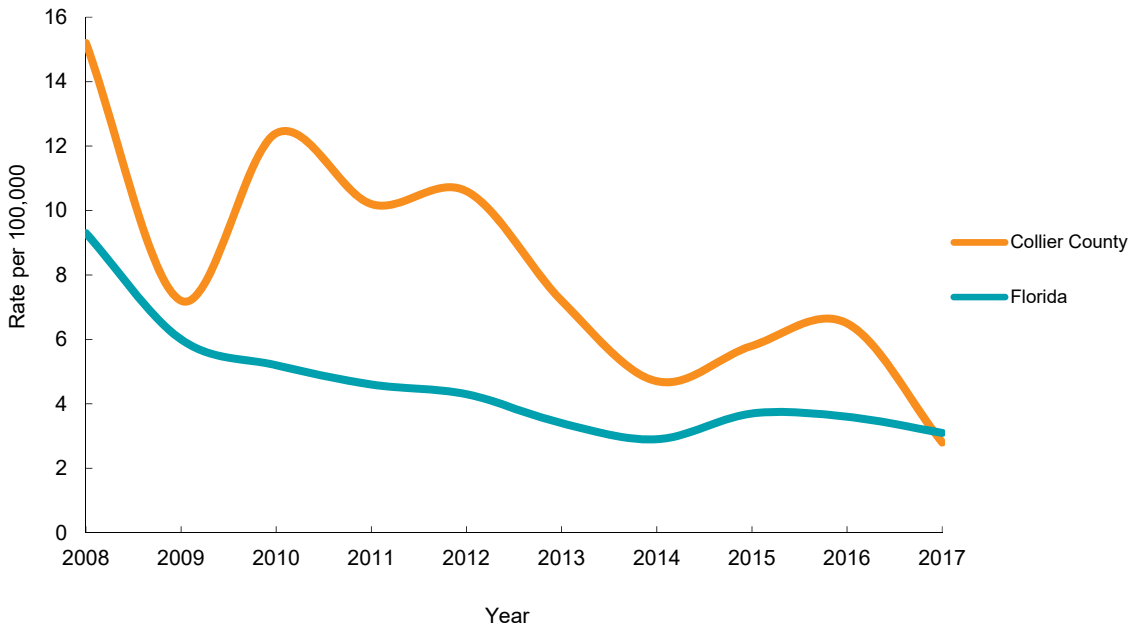
Data source: Florida Department of Health

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 already had the disease.

Varicella became a reportable disease in Florida in late 2006. Between 2008 and 2017, cases in Collier County declined by 82 percent, in Florida cases decreased by 67 percent over the same period (Figure 10).

Figure 10. Number of Varicella Cases per 100,000 Population, Collier County and Florida, 2008–2017



Data source: Florida Department of Health

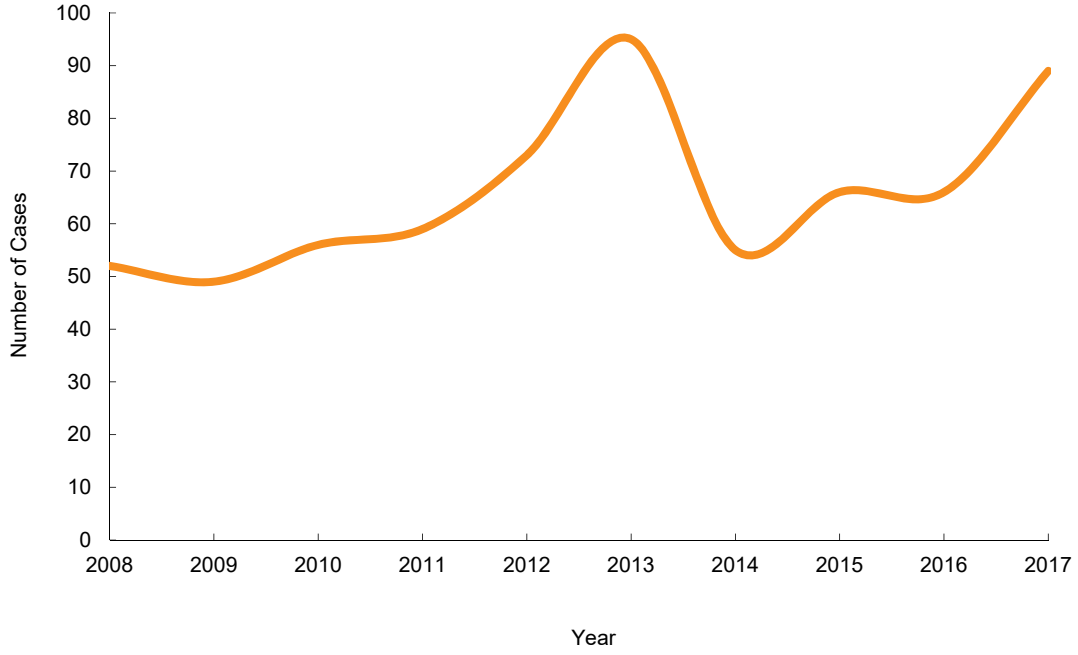
Animal Bites and Potential Exposures

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 administrated in a timely manner, rabies PEP can prevent persons exposed to animal rabies from subsequently developing the disease.

Between 2008 and 2017, potential rabies exposures in Collier County increased by 14 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 Cases of Rabies, Possible Exposure,
Collier County, 2008–2017

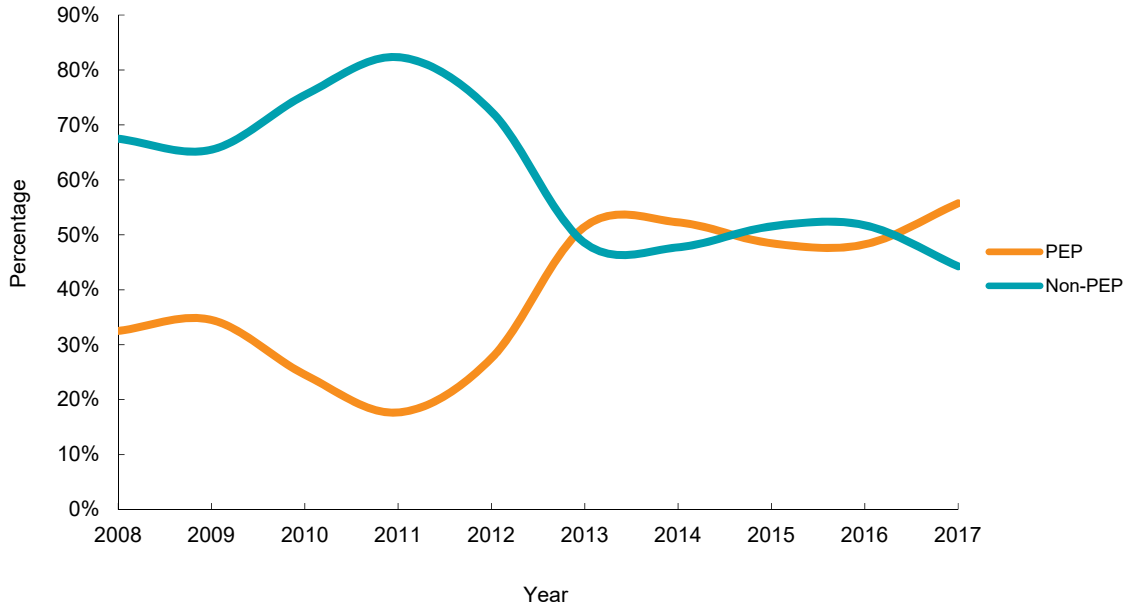


Data source: Florida Department of Health in Collier County, Epidemiology and Health Assessment Program

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

Of the 1,901 animal bites and exposure cases reported in Collier County during this period, about 36 percent of cases were recommended PEP. The percentage of cases where PEP was recommended declined significantly between 2009 and 2011 (Figure 12). However, from 2012 to 2017, the percentage of PEP recommended cases increased significantly by 2013. In 2017, 56% percent of cases were recommended PEP.

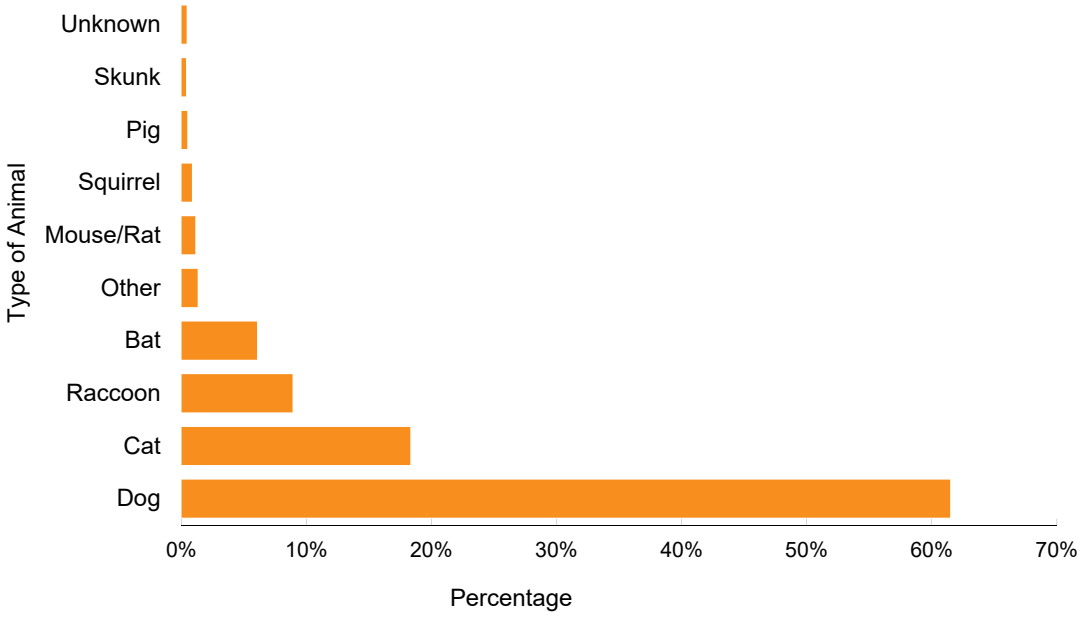
Figure 12. PEP vs Non-PEP Recommended
Collier County, 2008–2017



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

Of the animal bites and exposures reported in Collier County, PEP and non-PEP recommended cases during this period, dogs accounted for almost 62 percent of all reported incidents, followed by cats with over 18.3 percent, raccoons with 9 percent, and bats with 6 percent. Rodents and squirrels 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.

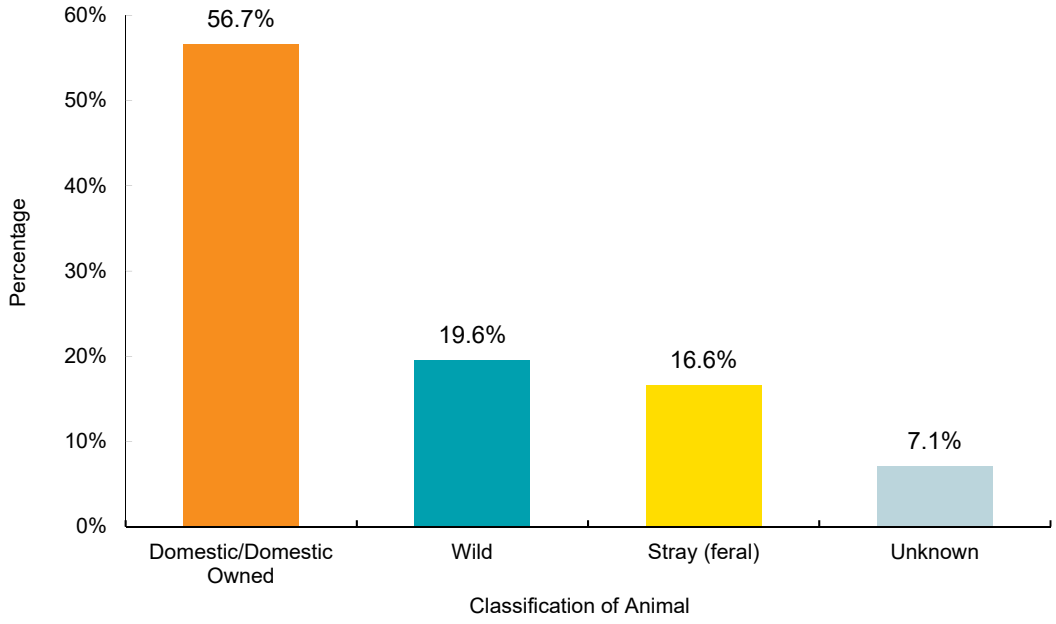
Figure 13. Type of Animal involved in Bites and Potential Exposures, Collier County, 2008–2017



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 56 percent of all cases involved domestic or domestic owned animals, predominantly dogs. Approximately 17 percent involved feral or stray animals, while almost 20 percent involved wild animals (Figure 14).

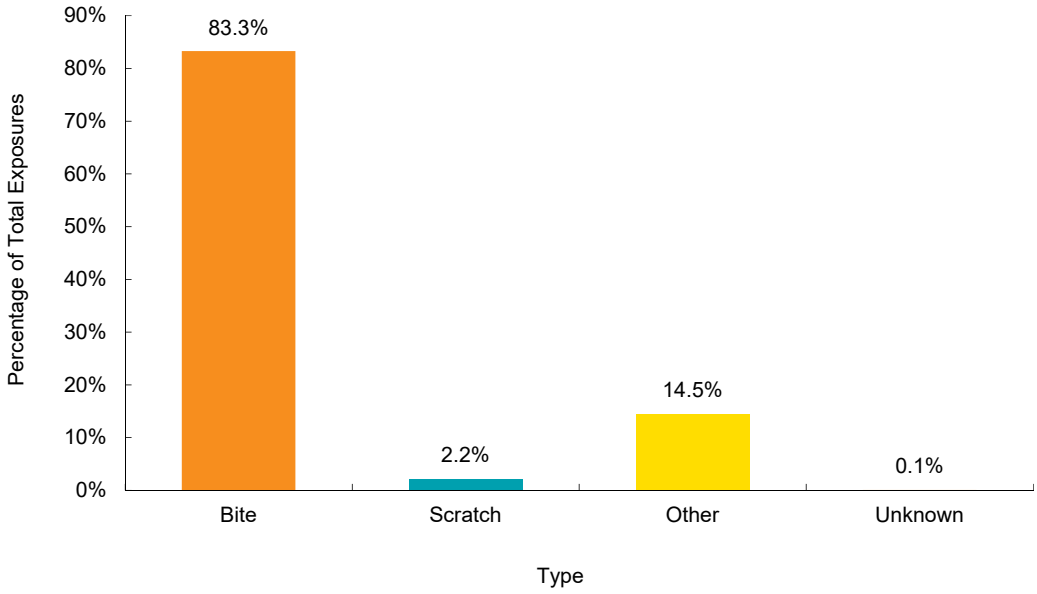
Figure 14. Classification of Animals Involved in Animal Bites and Potential Exposures,
Collier County, 2008–2017



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 2008 and 2017. Approximately 83 percent of all reported cases occurred as animal bites, while only 2.2 percent were reported as scratch exposures. About 15 percent of all exposures were classified in the “other” category and 0.1% were “unknown”.

Figure 15. Classification of Potential Exposures
Collier County, 2008–2017



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 seven major mosquito-borne viruses that are considered 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 can be high in comparison to other infectious diseases found in Southwest Florida. Because these seven diseases are viral, antibiotics do not assist the treatment and antiviral agents have not been shown to be effective.

Table 2 lists the seven major mosquito-borne diseases of interest in Southwest Florida with the number of cases reported in Collier County for the period 2008 to 2017.

Table 2. Mosquito-Borne Diseases, Collier County, 2008–2017

Disease	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
EEE [a)]	_	_	4	_	_	_	_	_	_	_
WNV	_	_	2	_	_	_	_	_	_	_
SLE [b)]	_	_	_	_	_	_	_	_	_	_
Malaria [c)]	1	_	4	2	_	_	_	_	_	1
Dengue [c)]	_	_	2	_	1	1	2	1	_	_
Chikungunya [c)]	_	_	_	_	_	_	2	2	_	_
Zika [c)]	_	_	_	_	_	_	_	_	17	16

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 2008 to 2017.

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 locally-acquired cases of WNV were reported in Collier County in 2010.

Malaria was once endemic in Florida but was 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 2008 to 2017, 8 imported cases of Malaria were reported in the county.

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 7 reported imported dengue cases between 2008 and 2017.

Chikungunya fever became a reportable disease in Florida in 2014. 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 introduction of the virus into 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. Only four imported cases were reported in the state in 2017. Two imported cases were reported in Collier County in 2014 and 2015. There were no cases of Chikungunya fever reported in 2017.

Zika virus disease is spread to people primarily through the bite of an infected *Aedes* species mosquito, just like Dengue and Chikungunya. The virus can also be spread through sexual contact with an infected person or from a pregnant woman to her fetus. Most people who are infected with Zika are asymptomatic. The most common symptoms that symptomatic individuals experience are fever, rash, arthralgia, and conjunctivitis. Zika virus was first discovered in a monkey in the Zika forest of Uganda in 1947. Before 2015, Zika outbreaks were limited to Africa, Southeast Asia, and the Pacific Islands. In May 2015, the Centers for Disease Control and Prevention (CDC) noticed an alarming increase in reports of Zika. By June of that same year, the first travel notice for Zika in Brazil was issued. The CDC activated its Emergency Operations Center (EOC) on January 22, 2016 to respond to outbreaks of Zika occurring in the Americas and the increased reports of birth defects and Guillain-Barré syndrome. Ten days later, the World Health Organization (WHO) declared a Public Health Emergency of International Concern (PHEIC) because of clusters of microcephaly and other neurological disorders in some areas affected by Zika. In 2016, the epidemiology program began surveillance and reporting of Zika fever in Collier County. During this year, there were 1,474 total statewide cases of which 1,122 were travel-associated and 300 were locally-acquired. Collier County reported 28 of these travel-associated cases. In 2017, a total of 155 possible Zika virus investigations were initiated and 12 cases of imported Zika fever were reported to CDC. To date, there have been no locally-acquired cases of Zika fever reported in Collier County.

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 reportable in the State of Florida. In fact, the most common types of outbreaks in Collier County are associated with diseases that are not reportable.

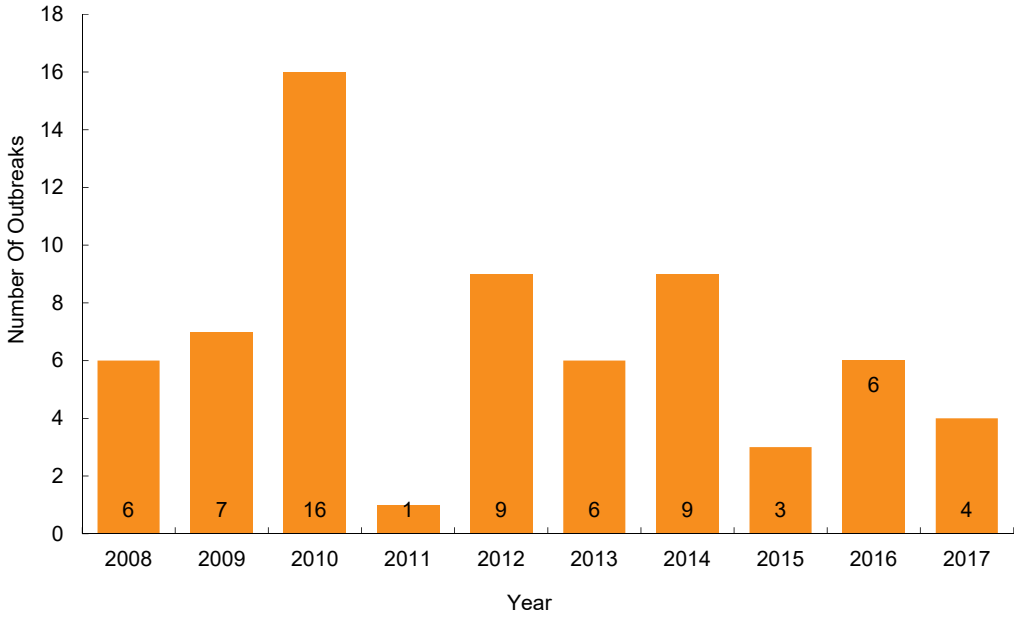
In 2017, 33 outbreaks were reported in Collier County. Approximately 20 outbreaks or 61 percent of outbreaks that year were associated with gastrointestinal illness (or norovirus) and Influenza-like illness (ILI). Norovirus in particular has greatly affected the county from 2008 to 2017.

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 2008 to 2017. There were 67 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 Norovirus Outbreaks, Collier County, 2008–2017



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.

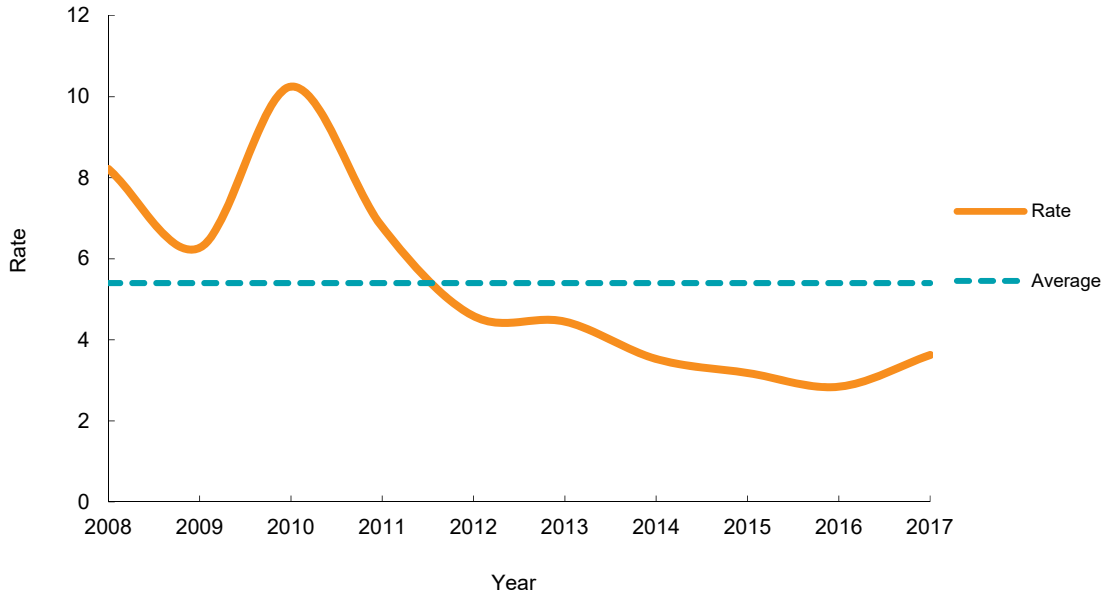
Industrialized countries such as the United States showed downward trends of mortality and morbidity of TB for many decades. As population from developing countries migrate to the United States, the risk of potential disease transmission increases. In Florida, medically underserved low-income populations, many of which are high-risk racial and ethnic minorities, have a high rate of tuberculosis exposure and infection. These population groups disproportionally 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 177 tuberculosis cases were reported in Collier County from 2008–2017, resulting in an overall incidence rate of 5.4 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 56 percent from 2008 to 2017. Variation in incidence rates range from 10.2 per 100,000 population in 2010 to 2.8 per 100,000 population in 2016. Despite the decline in the recent ten years, Collier County has generally had higher incidence rates than the State of Florida from 2005 to 2017.

Figure 17. Number of Tuberculosis Cases per 100,000 Population, Collier County, 2008–2017



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

Age, Gender, Race and Ethnicity

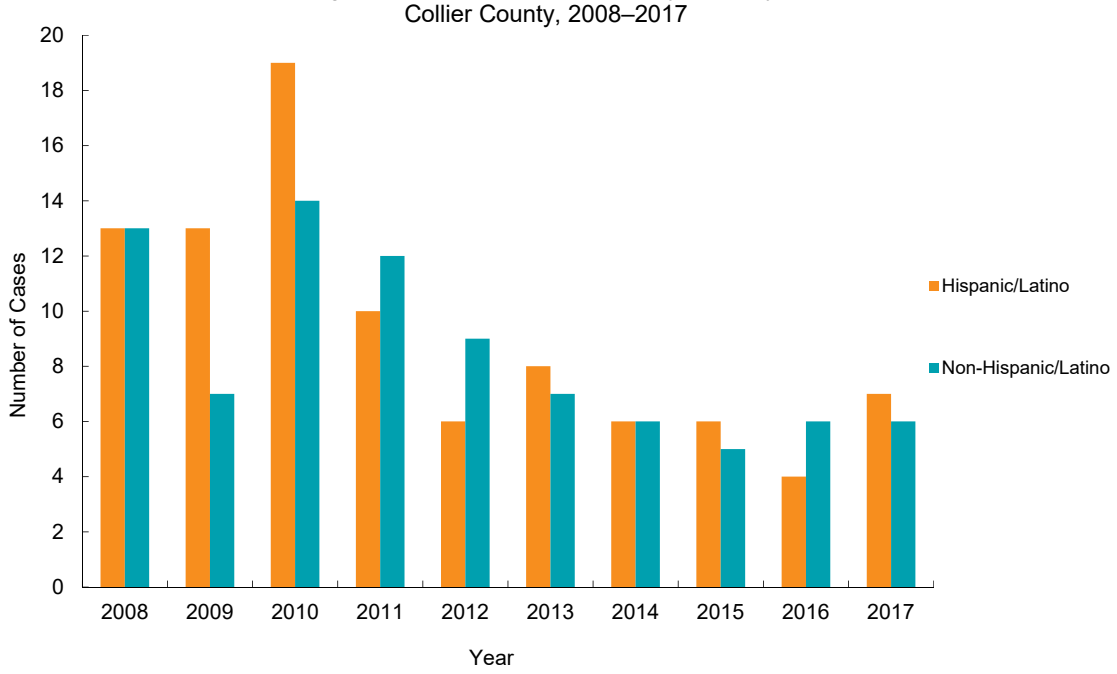
From 2008 to 2017, those between 45 and 54 years of age had the highest number of TB cases in Collier County with 19.8 percent of all cases, followed by those between 35 and 44 years of age with 18.1 percent of all cases. As for TB distribution by gender, as is expected, males accounted for the majority 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 2008–2017, Hispanics accounted for 52 percent of all reported cases of TB, whereas Non-Hispanics accounted for 48 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 might be due to the 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, 2008–2017

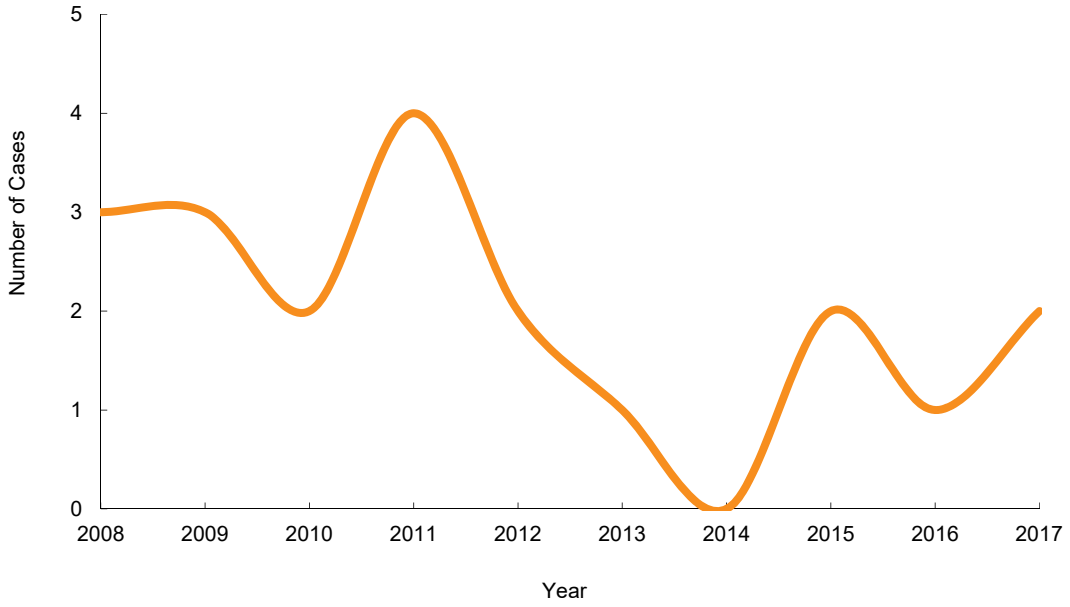


Data source: Florida Department of Health in Collier County, Tuberculosis Program

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 2008 to 2017, a total of 20 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, 2008–2017



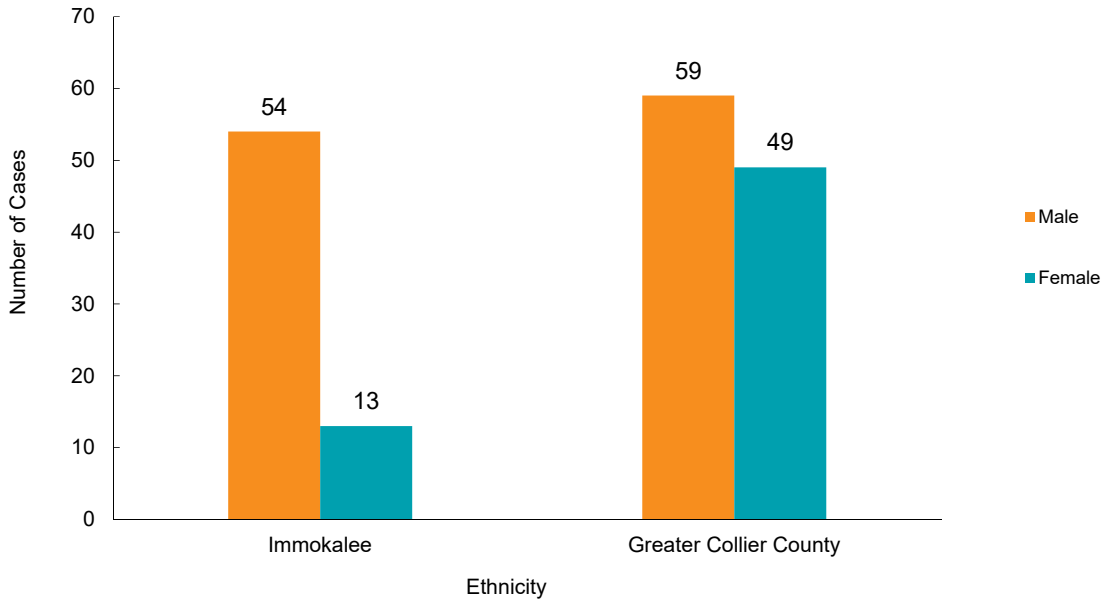
Data source: Florida Department of Health in Collier County, Tuberculosis Program

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 2008 and 2017. 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, 2008–2017



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.

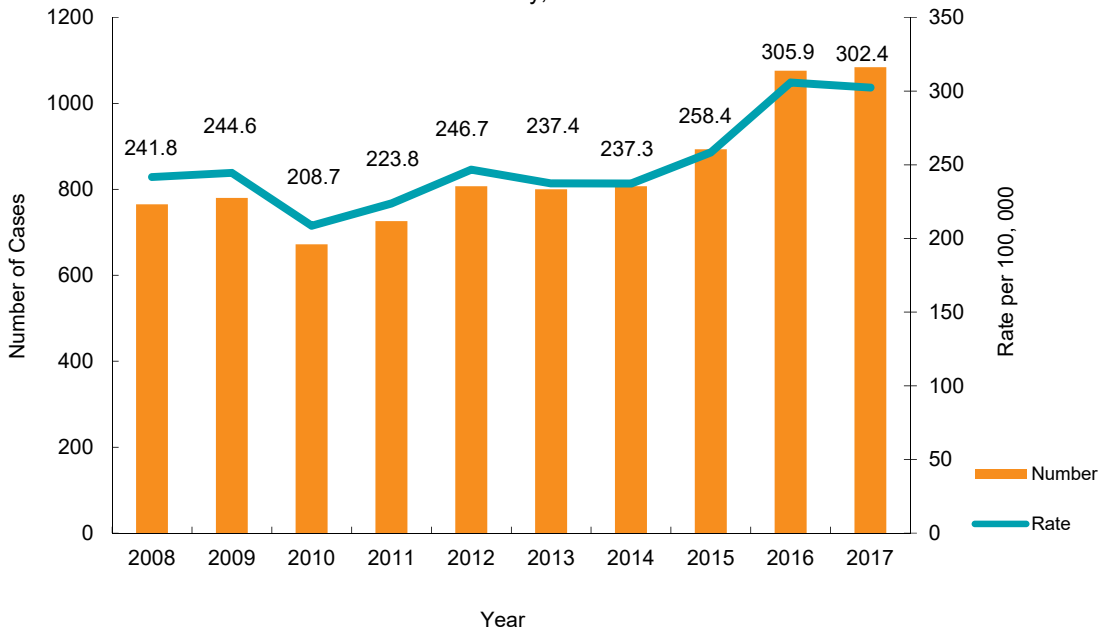
Sexually Transmitted Diseases (STDs)

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 2008 and 2017, the total number of reported chlamydia cases increased from 765 to 1084, an increase of almost 42 percent. Adjusted per 100,000 population, the rate increased by 25 percent from 241.8 to 302.4. 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).

Figure 21. Number of Reported Chlamydia Cases and Rates by Year, Collier County, 2008–2017

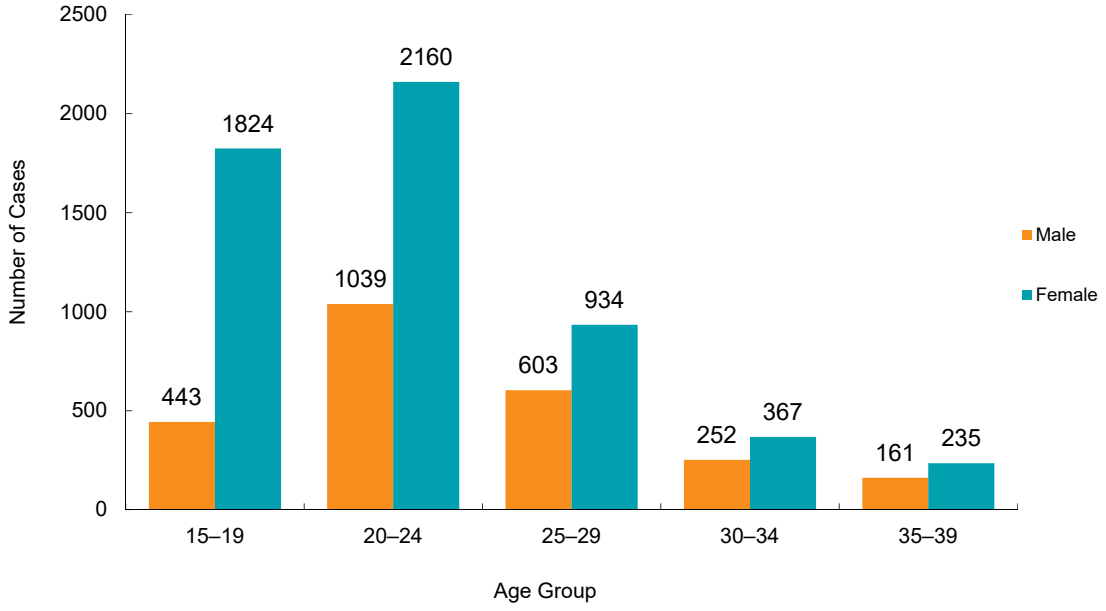


Data source: Florida Department of Health in Collier County, STD Program

Age and Gender. During the period of 2008 to 2017, the ratio of female to male cases of chlamydia in Collier County ranged from 2.8 in 2008 to 2.1 in 2017. 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 2.2 between 2005 and 2014. This implies that more than 2 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 2008 to 2017, 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 2.1. The second highest age-specific groups in Collier County were among females 15 to 19 years of age and males 25 to 29 years of age. In the 15 to 19 years age group, females were reported as having chlamydia at 4.1 times the frequency of males. The 25 to 29 years age group made up the second highest age-specific rates of reported chlamydia in males yet chlamydia was still reported in females in this age group at 1.5 times the frequency of males (Figure 22).

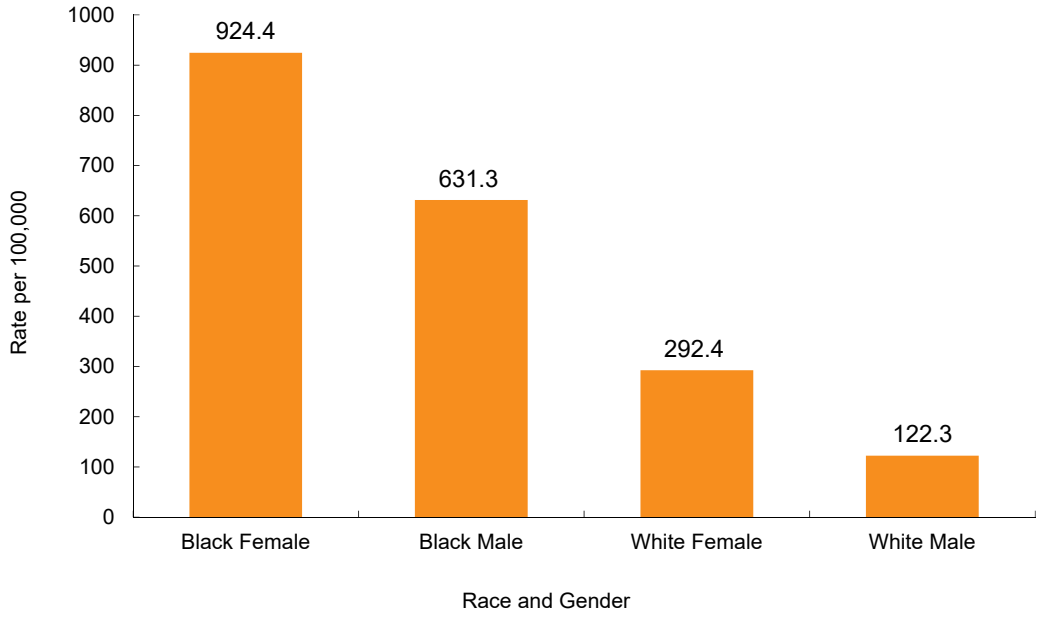
Figure 22. Reported Chlamydia Cases by Select Age Groups and Gender, Collier County, 2008–2017



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 4,467 cases, followed by white males with 1,813 cases, black females with 1,088 cases and black males with 736 cases. However, when accounting for population, black females had the highest number of cases per 100,000 with a rate of 924.4.

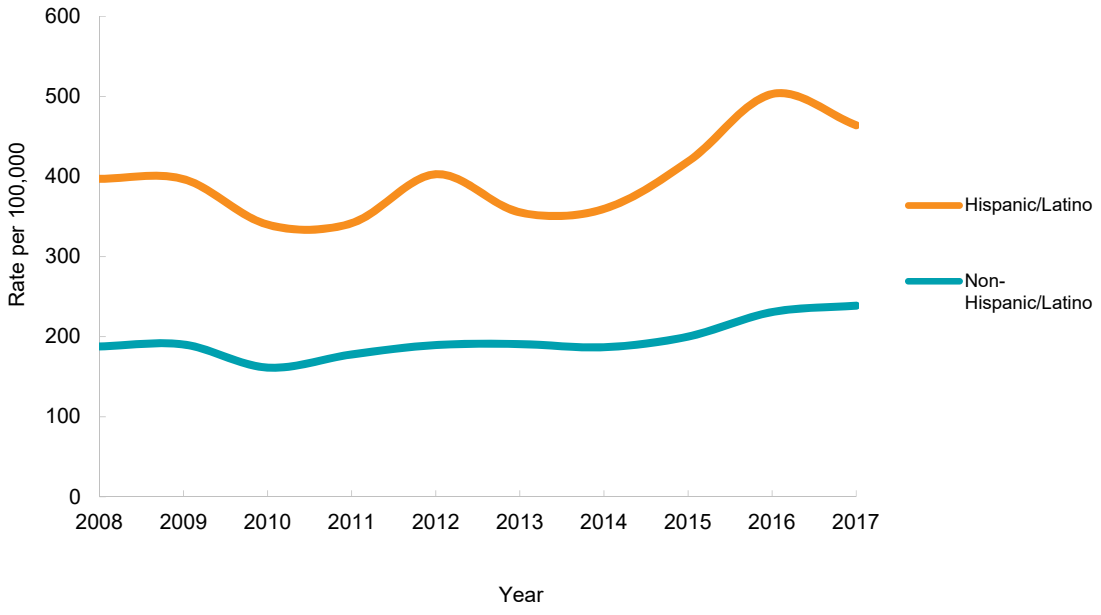
Figure 23. Number of Reported Chlamydia Cases per 100,000 Population, by Gender and Race, Collier County, 2008–2017



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

While the Hispanic population of Collier County accounted for approximately 37 percent of the total resident population in 2017, the number of Hispanic chlamydia cases were a disproportionate 42 percent of all cases between 2008 and 2017. When rates per 100,000 population were analyzed, the Hispanic chlamydia rate increased by almost 17 percent during this period, from 397.2 in 2008 to 464.1 for 2017. Although the chlamydia rate for the non-Hispanic population increased by approximately 27 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 by Ethnicity, Collier County, 2008–2017



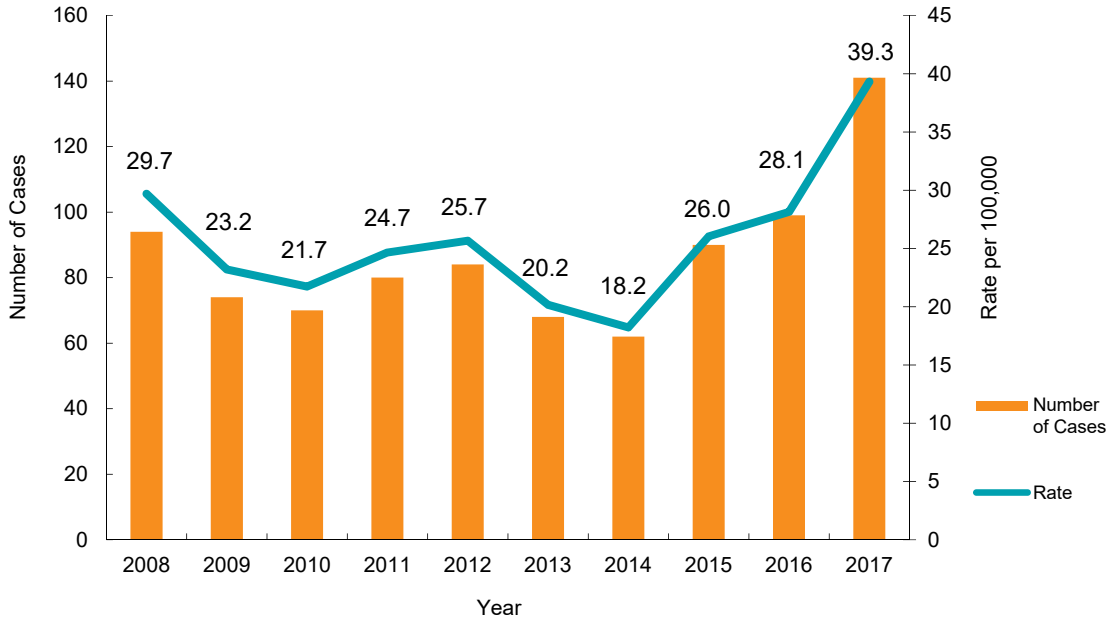
Data source: Florida Department of Health in Collier County, STD Program

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 2008 and 2017, 1,239 cases of gonorrhea were reported in Collier County. The annual number has declined steadily from 94 cases in 2008 to 62 cases in 2014, a decrease of 34 percent. In 2015, the number of gonorrhea reported case began to climb. From 2015 to 2017, there was a 57 percent increase in reporting. When adjusted for population, the overall gonorrhea reported case rate increased by 32 percent between 2008 and 2017, from 29.7 to 39.3 per 100,000 population (Figure 25).

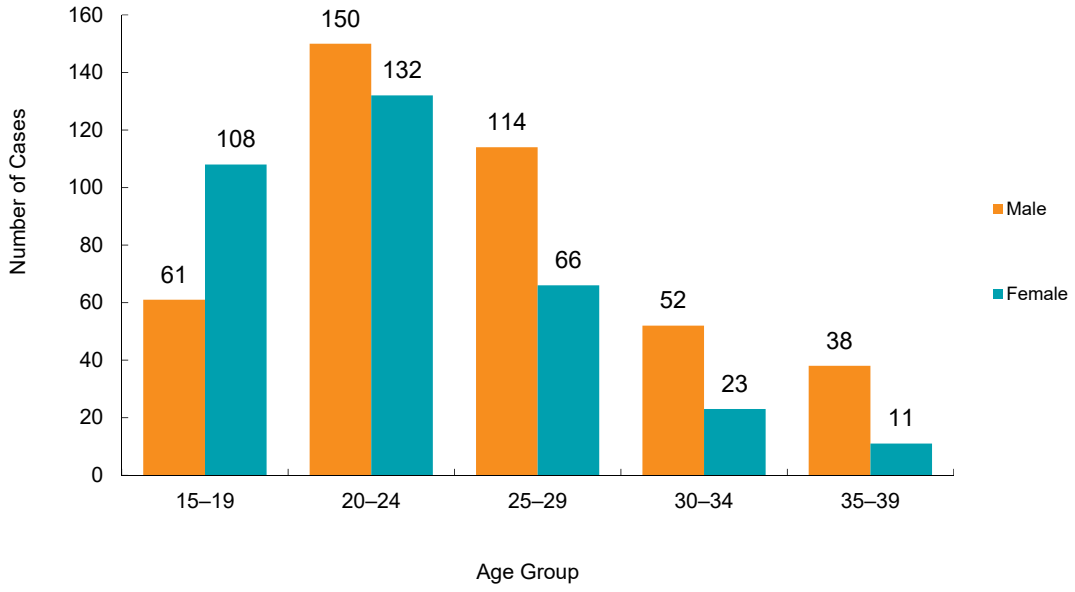
Figure 25. Gonorrhea Reported Cases and Rates by Year, Collier County, 2008–2017



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 higher for males. 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 37 percent of all reported cases for 2008 to 2017, followed by the 25 to 29 age group and 15 to 19 years of age (Figure 26).

Figure 26. Reported Gonorrhea Cases by Select Age Groups and Gender, Collier County, 2008–2017



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

Race and Ethnicity. White females had the highest number of gonorrhea cases in the county with 237 cases, followed by white males, black males, and black females with 217 cases, 171 cases, and 50 cases, respectively. However, when accounting for population, black males had by far the highest number of cases per 100,000 with a rate of 146.7 (Figure 27). Between 2008 and 2017, the Hispanic gonorrhea rate increased by almost 6 percent, while the rate for the non-Hispanic population decreased by over 9 percent (Figure 28).

Figure 27. Number of Reported Gonorrhea Cases by Gender and Race per 100,000, Collier County, 2008–2017

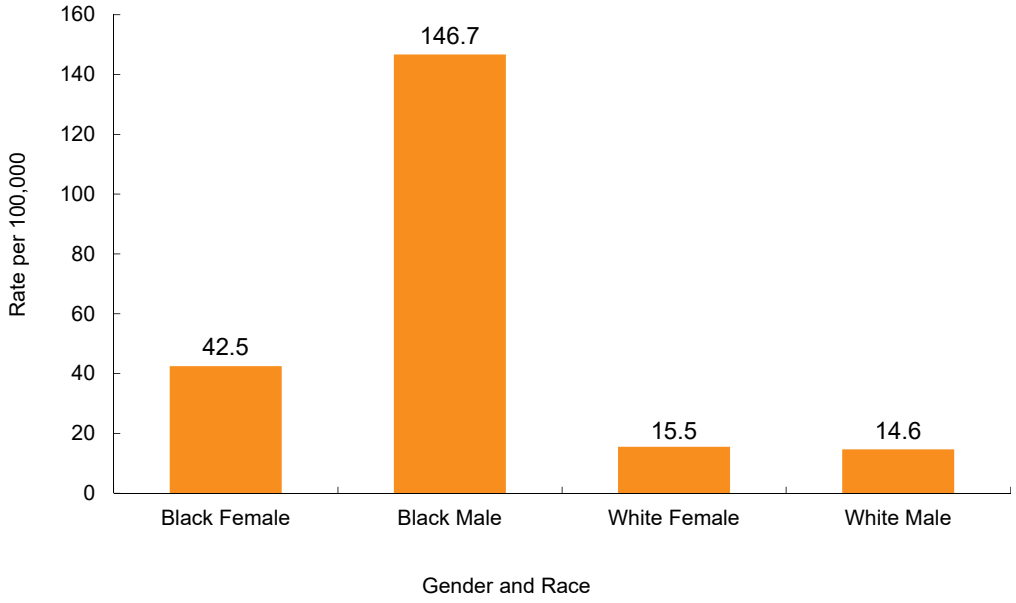
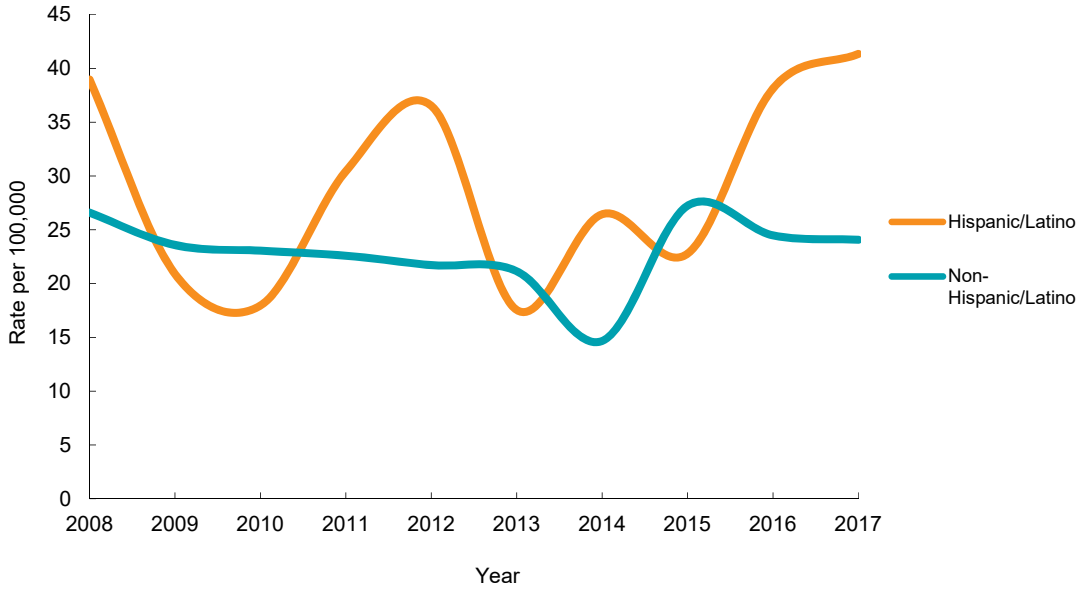


Figure 28. Reported Gonorrhea Cases by Ethnicity, Collier County, 2008–2017



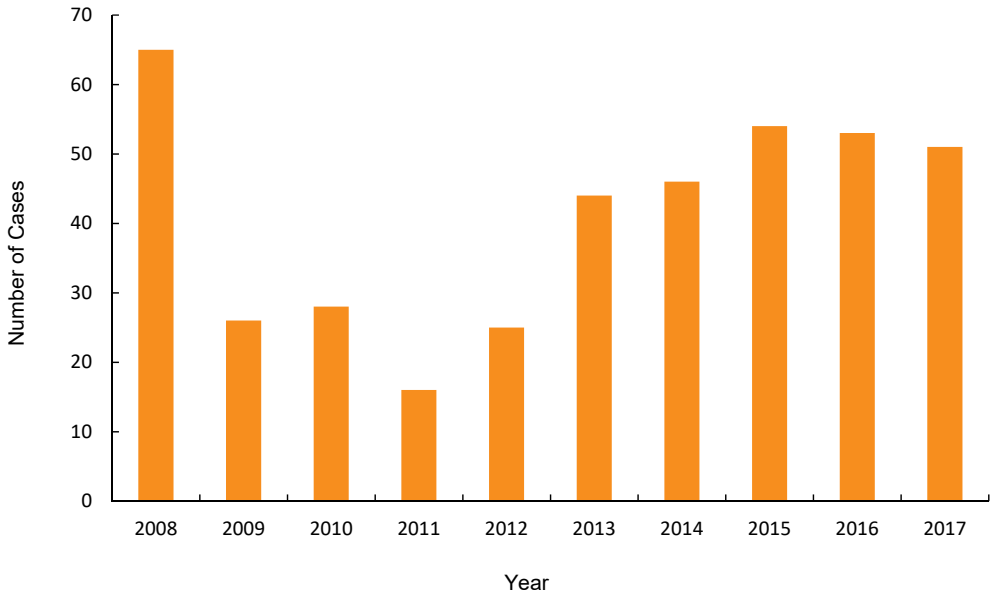
Data source: Florida Department of Health in Collier County, STD Program

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 2008 to 2017, the total number of reported syphilis cases in Collier County ranged from a low of 16 in 2011 to a high of 65 in 2008. The overall syphilis case rate for this time period was 12 per 100,000, with the rates ranging from 4.9 in 2011 to 20.5 per 100,000 population in 2006 (Figure 29). Trend analysis at the county level appears to indicate that overall syphilis is increasing on average over time. It is important to note that 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.

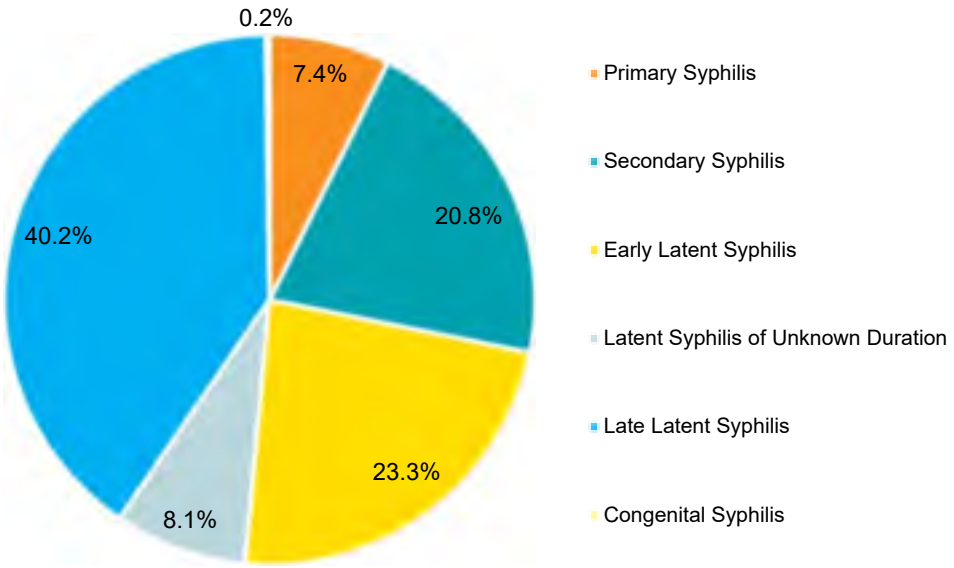
Figure 29. Number of Reported Syphilis Cases, Collier County, 2008–2017



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

For the period of 2008 to 2017, 8.1 percent of the syphilis cases were latent syphilis of unknown duration, 40.2 percent were late latent syphilis, 23.3 percent were early latent syphilis, 20.8 percent were secondary syphilis and 7.4 percent were classified as primary syphilis. Less than 1 percent of the cases were classified as congenital syphilis (Figure 30).

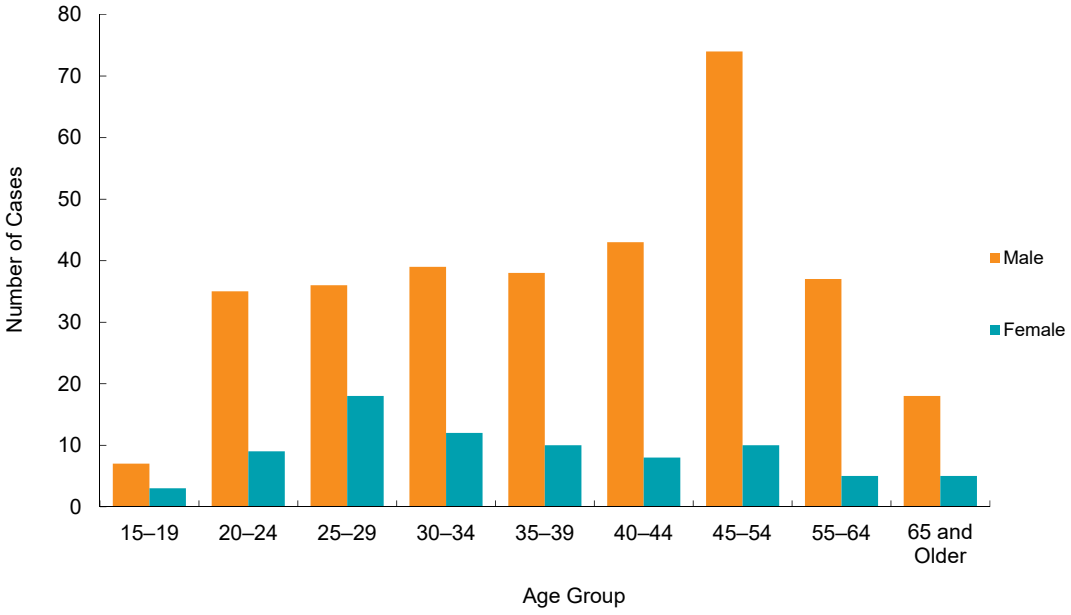
Figure 30. Reported Syphilis Cases by Type, Collier County, 2008–2017



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 2008 to 2017. 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, 80 percent males compared to 20 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 25 and 29 years of age.

Figure 31. Reported Syphilis Cases by Age Group and Gender, Collier County, 2008–2017



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 acquired immune deficiency syndrome (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.

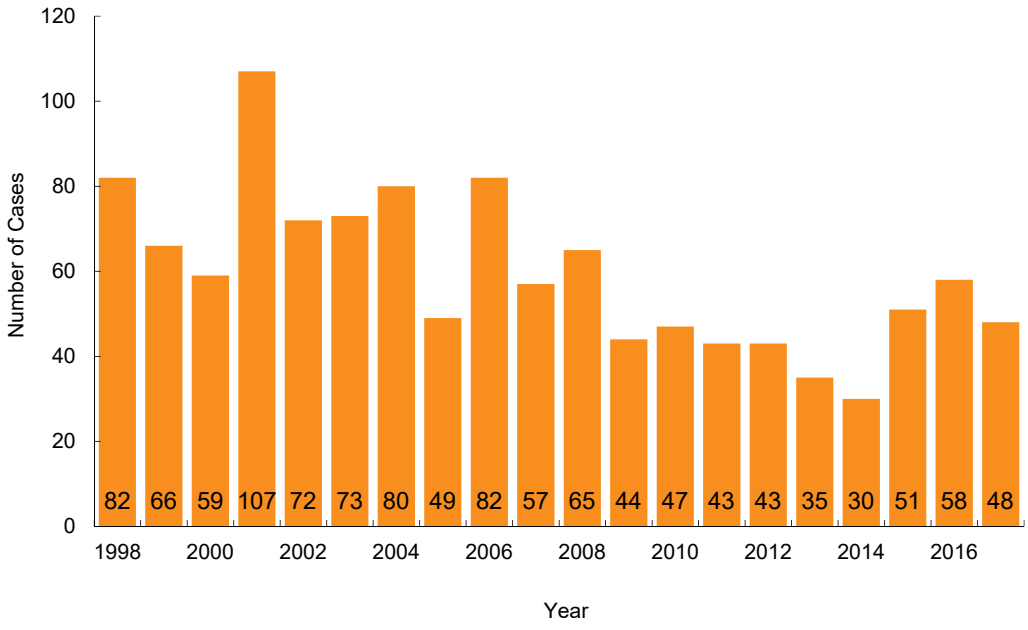
Incidence and Prevalence

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, 2017, Collier County has reported 1,767 cases of HIV infection among its residents. Of those infected with the virus and reported, 726 (41.1 percent) individuals are

known to have died, while 1,041 (58.9 percent) 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 1998 to 2017. In recent years, the number of reported new cases of HIV infection has remained below 60 cases per year. In fact, the number of reported HIV infection has decreased by approximately 26 percent from 2008 to 2017. From 2008 to 2017, 214 (46 percent) individuals met the AIDS case definition, with 252 (54 percent) 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.

Figure 32. Number of Reported Cases of HIV Infection (Regardless of Disease Stage), Collier County, 1998–2017



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

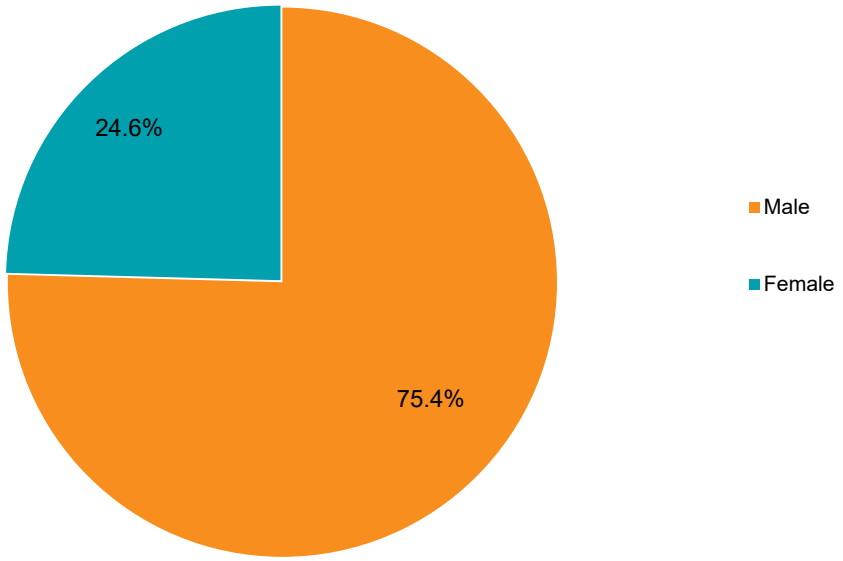
Age and Gender

Persons diagnosed at age 50 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 2008 to 2017 reporting period, 27 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.

Between 2008 and 2017, 466 cases of HIV infection were reported in Collier County. Of those cases, males account for 75.4 percent of the new cases, and females for 24.6 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, 2008–2017

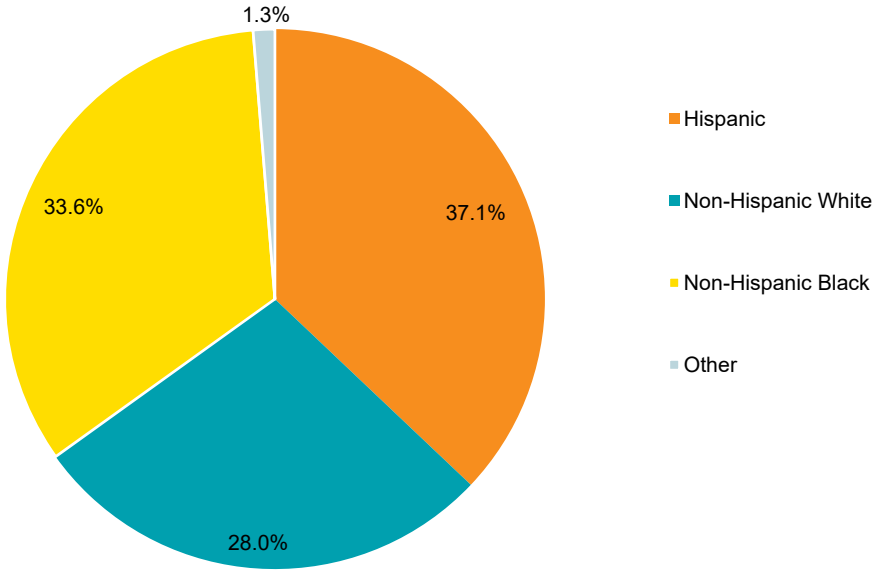


Data source: Florida Department of Health in Collier County, HIV Program

Race and Ethnicity

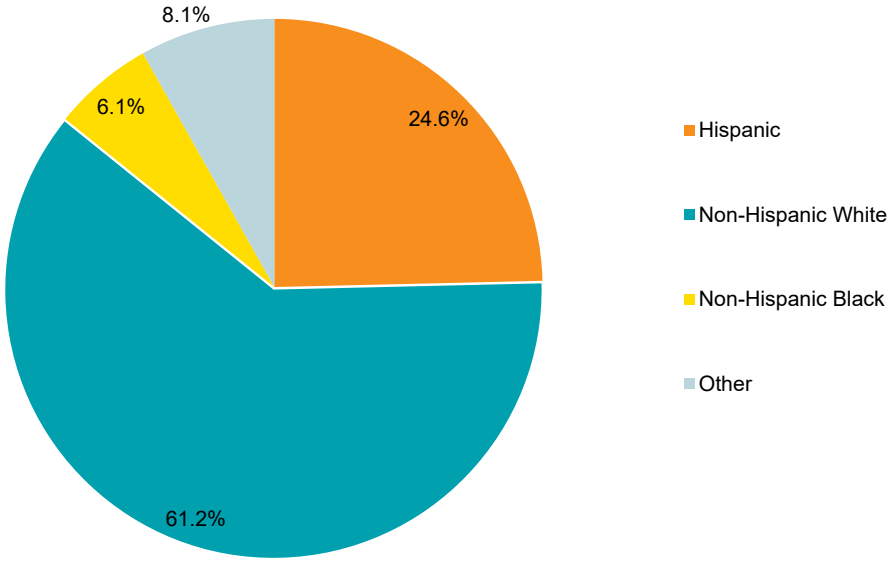
The distribution of HIV disease has been disproportionate among races and ethnicities, affecting the minority populations in greater numbers. Factors that contribute to this include the increased likelihood of poverty and lack of access to health care as well as cultural stigmas associated with HIV risk behaviors. Figure 34 shows the distribution of the reported HIV infections by race and ethnicity in Collier County for the years of 2008 to 2017. Blacks represented only 6.1 percent of the overall population (Figure 35). However, they accounted for 33.6 percent of the reported HIV cases in the county for that time period. Likewise, Hispanics represented 24.6 percent of the population but accounted for 37.1 percent of the cases of HIV infection.

Figure 34. Number of Reported Cases of HIV infections, by Ethnicity/Race, Collier County, 2008–2017



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

Figure 35. Population Breakdown by Race, Collier County, 2008–2017



Data source: U.S. Census Bureaul

Geographical Distribution

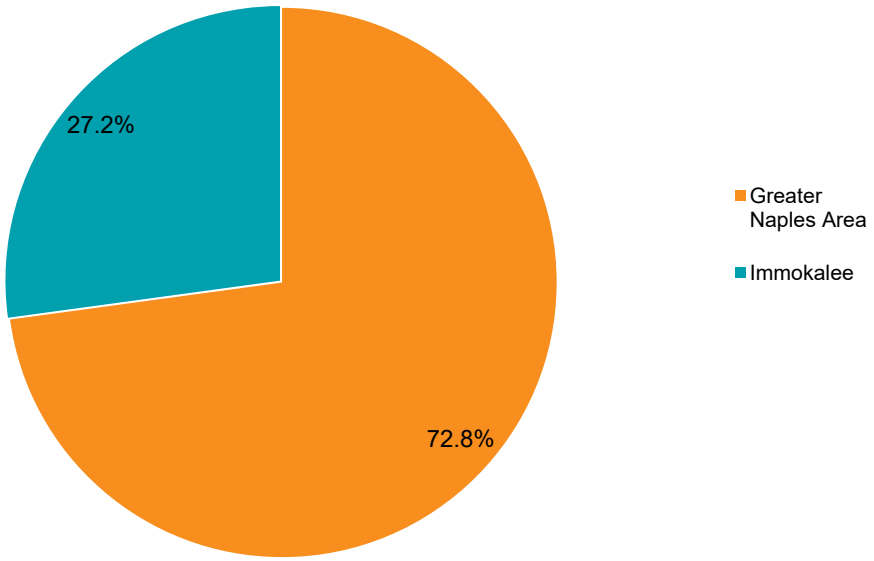
Collier County has the largest surface area of any county east of the Mississippi River. The vast majority of the population is concentrated along the Gulf Coast corridor. A sizeable population also resides further inland to the east of the City of Naples. For the purposes of this report, this entire area will be collectively referred to as the “Greater Naples Area”. From 2008 to 2017, 72.8 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 27.2 percent of all cases of HIV infection reported in Collier County from 2008 to 2017 (Figure 36). Based upon population, Collier County is the 16th largest county in Florida. In 2017, among the 67 Florida counties, Collier County was ranked 19th in the number of HIV+ cases and 16th in the number of AIDS cases reported statewide.

Figure 36. Percentage Distribution of Reported Cases of HIV Infections, by Geographical Area, Collier County, 2008–2017



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.

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. It is frequently used for state and county comparisons by various public health agencies and health-oriented academic and service institutions. As of 2017, the infant mortality rate of the United States was 5.7, which is a historically low rate for the nation yet still higher than several 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. Generally, 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 2017 (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 2017 were 3,182, which is 1.4 percent of the total number of live births for Florida for the same year, 223,579. In 2017, Collier County experienced a total of 19 infant deaths, the number in the state of Florida for the same year was 1,355. Collier County's infant deaths accounted for 1.4 percent of the total number of infant deaths in Florida.

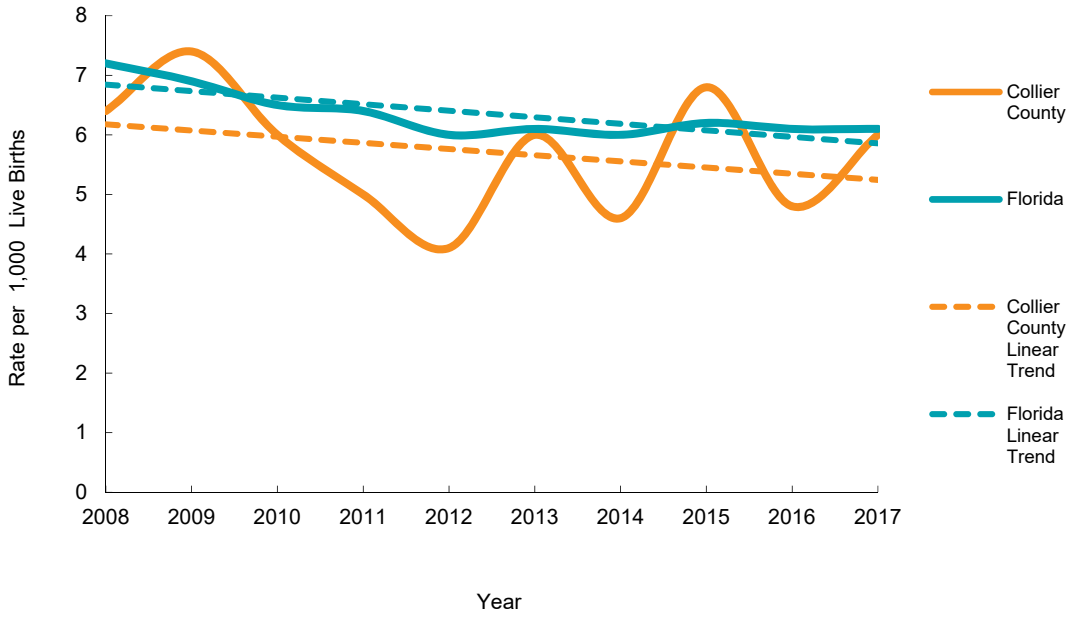
When two geographical areas are compared in a given year (such as Collier County and Florida) and one of the area's rates is based on a relatively small number of live births (and consequently a very small number of infant deaths), it is not unexpected to find the area with the small number of events (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 in Collier County

Between the period 2008 to 2017, the infant mortality rate for Collier County decreased by 6 percent. During this ten-year period, the highest rate occurred in 2009 with 7.4 per 1,000 live births. The infant mortality rate for the State of Florida experienced a similar decline of 15 percent.

Figure 1 graphs the infant mortality rate for both Collier County and Florida for the period 2008 to 2017. 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.

Figure 1. Infant Deaths per 1,000 Live Births, Single Year Rates, Collier County and Florida, 2008–2017



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 the ten year interval. During this period, the white infant mortality rate in Collier County decreased by 6 percent while the black infant mortality rate slightly increased by 2 percent. In Florida, the corresponding declines were 20 percent and 16 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. Infant Deaths per 1,000 Live Births, Single Year Rates by Race, Collier County, 2008–2017

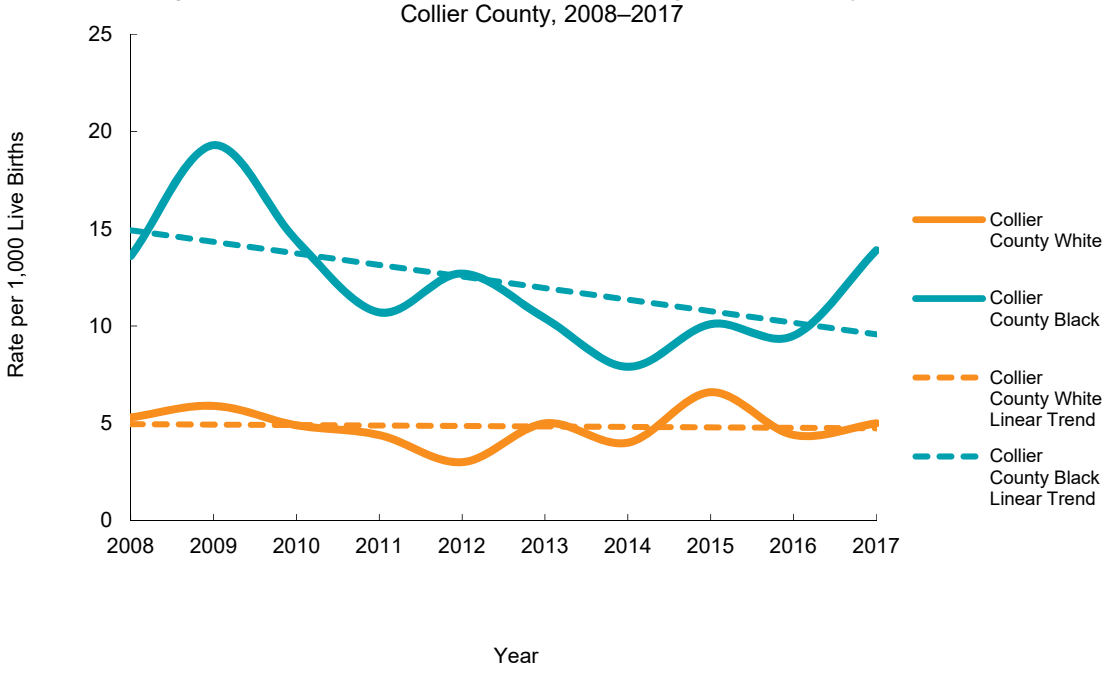
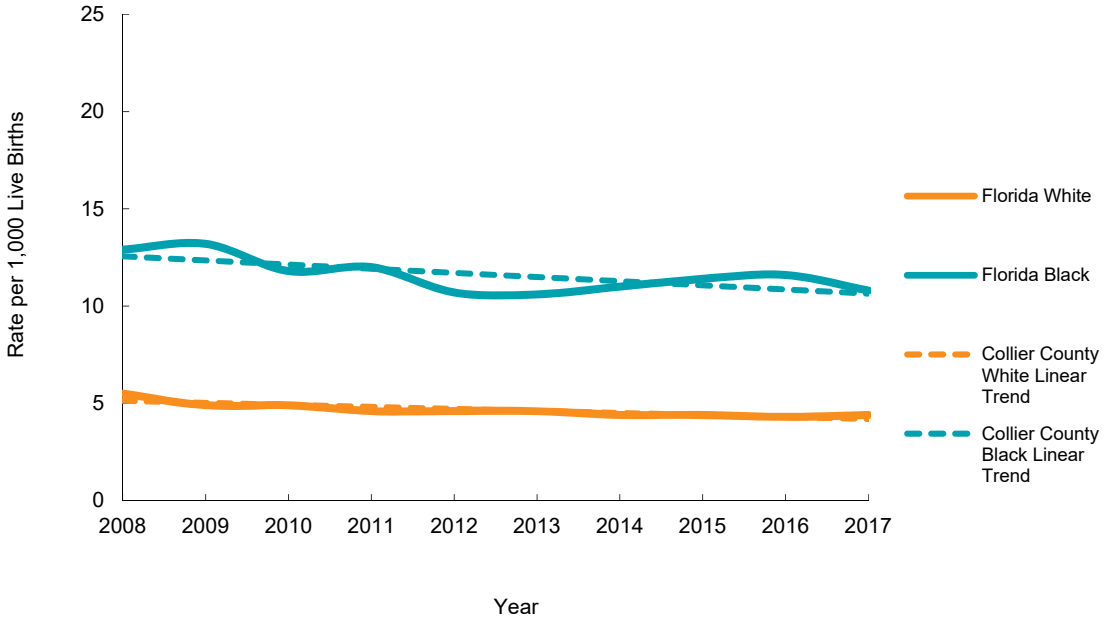


Figure 3. Infant Deaths per 1,000 Live Births, Single Year Rates by Race, Florida, 2008–2017



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

In 2017 in Collier County, the non-Hispanic infant mortality rate was lower than that of the Hispanic and Haitian populations. In both Florida and Collier County, Haitians consistently had higher infant mortality rates than the other two ethnic groups. The infant mortality rate for Haitians ranged from a high of 22 to a low of 3.3 per 1,000 live births, while this rate ranged from a high of 7 to a low of 2.8 per 1,000 live births in Hispanics and a high of 7.6 and a low of 2.8 in non-Hispanics (Figures 4 and 5).

Figure 4. Infant Deaths per 1,000 Live Births Single Year Rates by Ethnicity, Collier County, 2008–2017

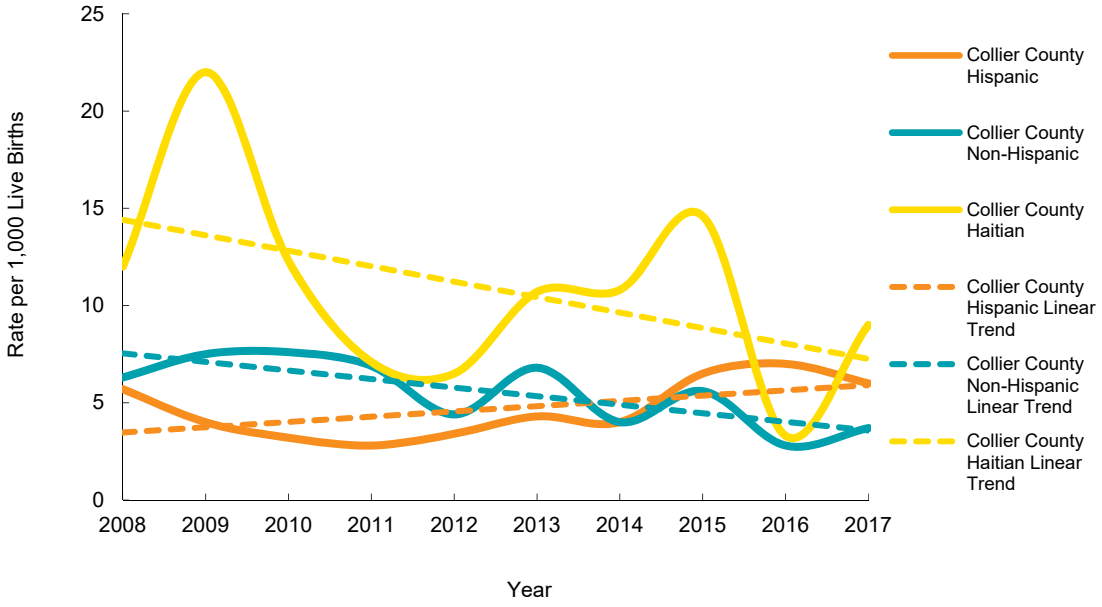
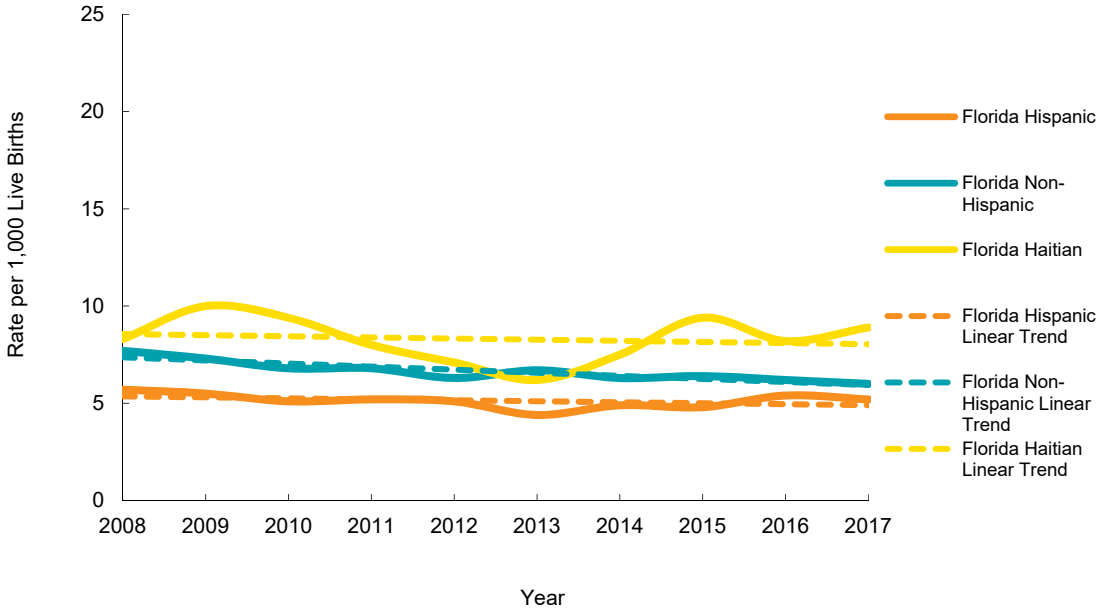


Figure 5. Infant Deaths per 1,000 Live Births Single Year Rates by Ethnicity, Florida, 2008–2017



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

Prenatal Health and Lifestyle Behaviors

Access to prenatal care beginning with the 1st 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.

In Collier County between the years of 2006[a)] and 2017[b)], births to underweight mothers decreased by 35 percent while births to overweight mothers increased by just 2 percent and births to obese mothers increased by over 28 percent. During this same time period, the percentage of births to mothers ages 15 to 19 years declined by 62 percent to 19.4. Births to mothers older than 35 years of age also decreased to 4.3 percent of all live births during 2015 to 2017. Births to unwed mothers ages 15 to 19 years increased during the four year period by 7 percent, while births to unwed mothers ages 20 to 54 years decreased by 5 percent. In Collier County, pregnant women continued to improve their health behaviors by decreasing their reliance on alcohol and tobacco use. Only 2.4 percent of mothers who gave birth during 2015 to 2017 reported smoking during pregnancy, a decline of 44 percent from 2006 to 2008.

Cesarean section births increased by just 4 percent in Collier County in 2017 compared with 2008, while multiple births remained constant at 2.7 percent of all live births during the 2006 to 2008 and 2015 to 2017 periods.

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

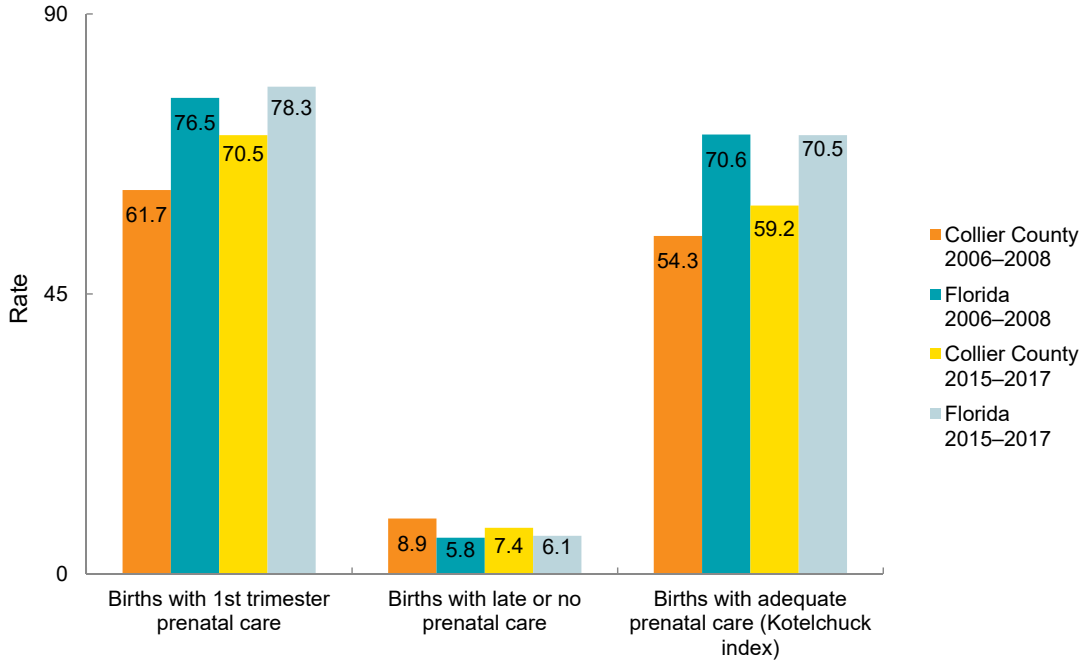
When analyzed by 1st and 2nd trimester entry into prenatal care, Hispanics achieved 82.3 percent, Haitians achieved 78.1 percent, and non-Hispanic, non-Haitians achieved 79.9 percent. Haitians had the lowest percentage (53 percent) among the ethnic groups of live births where prenatal care began in the 1st trimester. By contrast, Hispanics were at 63 percent, while non-Hispanic non-Haitians were at 66 percent. Of the ethnic groups, Haitians had the highest percentage of live births where prenatal care began in the 2nd and 3rd trimesters, at 26 percent and 13 percent, respectively (Figure 7).

[a)] Indicators are for 2006–2008, [b)] Indicators are for 2015–2017

Table 1. Reported Prenatal Health and Behavioral Indicators, Collier County and Florida, 2006–2008 and 2015–2017

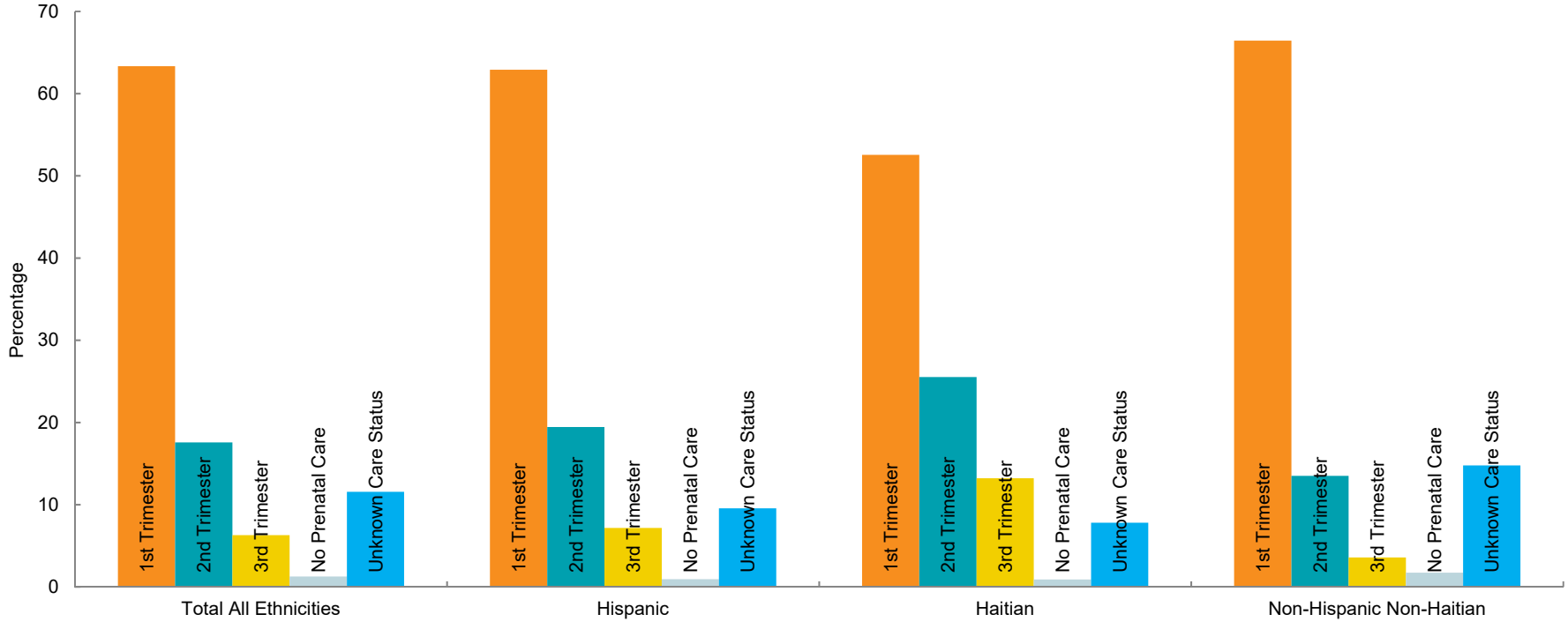
	2006–2008		2015–2017	
	Collier County	Florida	Collier County	Florida
	Rate	Rate	Rate	Rate
Births to underweight mothers at time pregnancy occurred, percent	4.6	4.8	3	3.8
Births to overweight mothers at time pregnancy occurred, percent	25.9	22.8	26.4	24.7
Births to obese mothers at time pregnancy occurred, percent	17	18.5	21.8	22.6
Births with inter-pregnancy interval < 18 months, percent	35.5	38.4	30.3	34.7
Births to mothers ages 15–19 years of age, per 1,000 population	50.9	42.6	19.4	19.7
Repeat births to mothers ages 15–19 years of age, percent	22	18.5	15.6	15.7
Births to mothers > 35 years of age, per 1,000 population	4.9	4.9	4.3	4.9
Births among unwed mothers ages 15–19 years of age, percent	83.4	88	89	91.6
Births among unwed mothers ages 20–54 years of age, percent	44.3	40.7	42.1	44.8
Births to mothers who report smoking during pregnancy, percent	4.3	7.1	2.4	5.2
C-section births, percent	38.1	36.9	39.6	37.3
Multiple births (twins, triplets or more), percent	2.7	3.2	2.7	3.3

Figure 6. Rates in Access to Prenatal Care, Collier County and Florida, 2006–2008 and 2015–2017



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

Figure 7. Percentage Distribution of Live Births by Trimester Prenatal Care Began, by Ethnicity, Collier County, 2017



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.

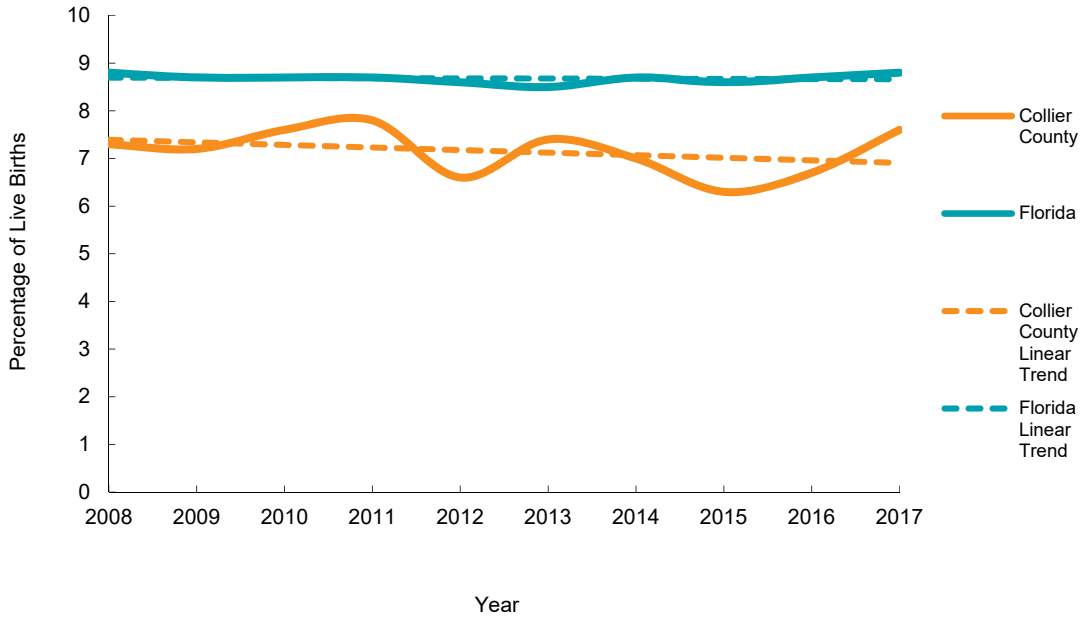
Teenage pregnancy is correlated with low levels of prenatal care and pre-term delivery. Pregnant teenagers have a higher likelihood of receiving no prenatal care or limited care as well as achieving poor maternal weight levels. Births to teenage mothers are much more likely to result in low birthweight 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 2008 and 2017, the percentage of live births considered low birthweight increased by 4 percent in Collier County and remained constant in Florida (Figure 8).

Figure 8. Percentage of Live Births Under 2500 Grams (Low Birthweight), Collier County and Florida, 2008–2017



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

When comparing low birthweight incidence by race, Collier County experienced a 17 percent decrease in black low birthweight births during this ten-year interval, while the trend for Florida held constant (Figures 9 and 10).

Figure 9. Percentage of Live Births Under 2500 Grams (Low Birthweight) by Race, Collier County, 2008–2017

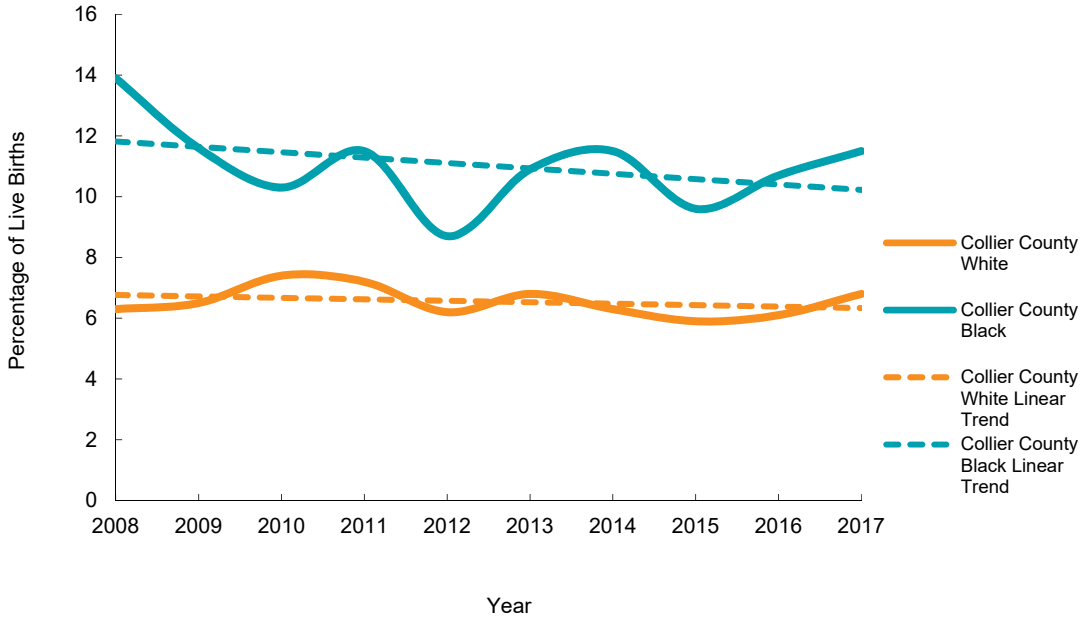
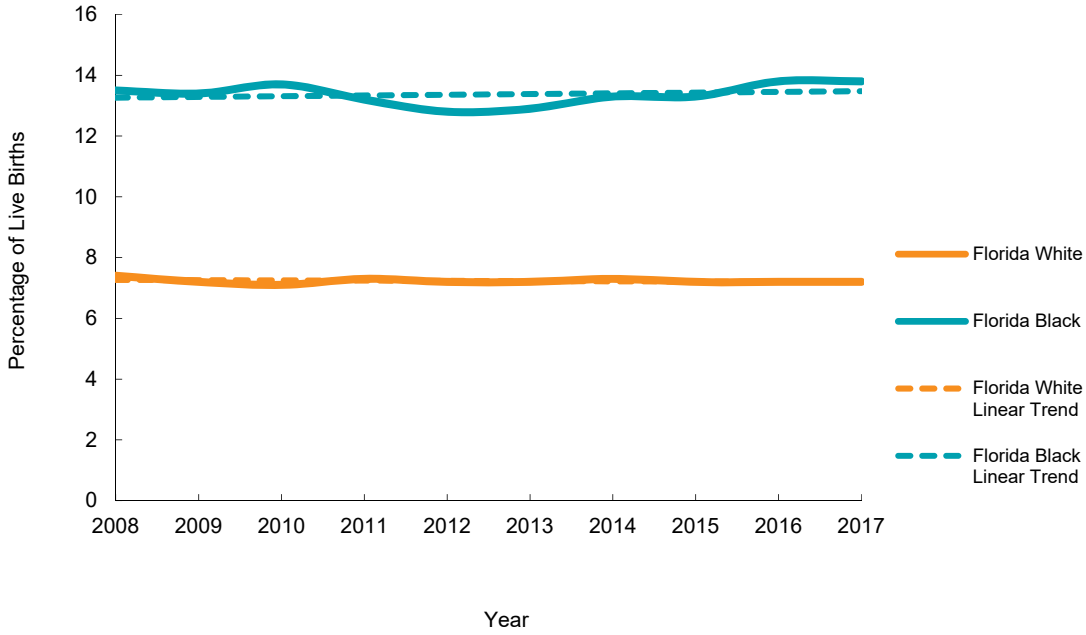


Figure 10. Percentage of Live Births Under 2500 Grams (Low Birthweight) by Race, Florida, 2008–2017



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

In Collier County and Florida, Haitians had consistently higher incidences of low birthweight births than Hispanics and non-Hispanics from 2008 to 2017 (Figures 11 and 12).

Figure 11. Percentage of Live Births Under 2500 Grams (Low Birth Weight) by Ethnicity, Collier County, 2008–2017

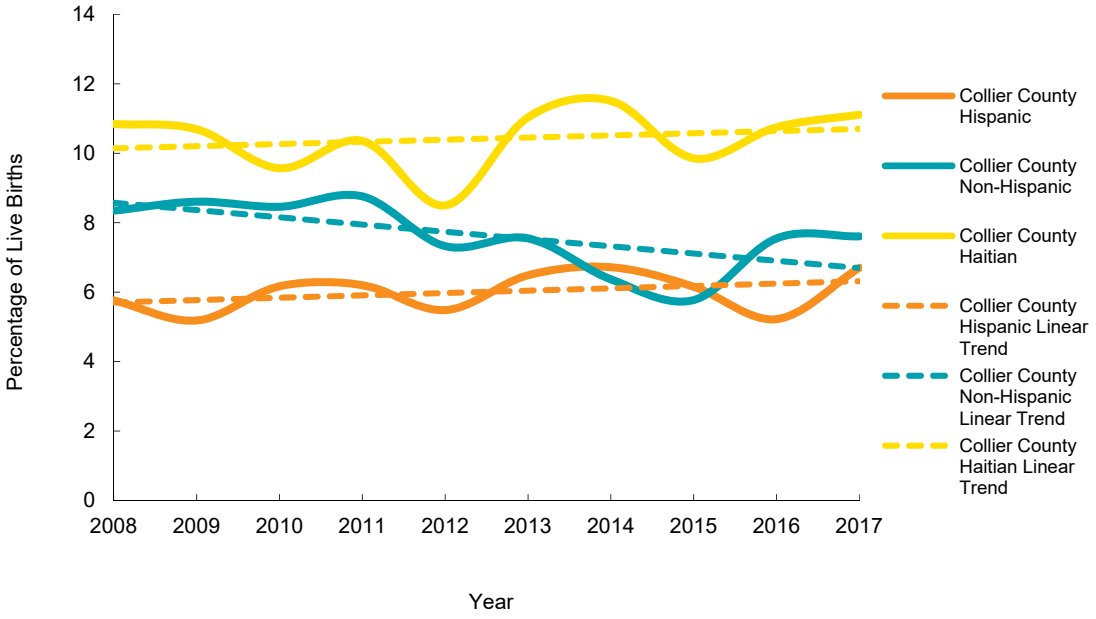
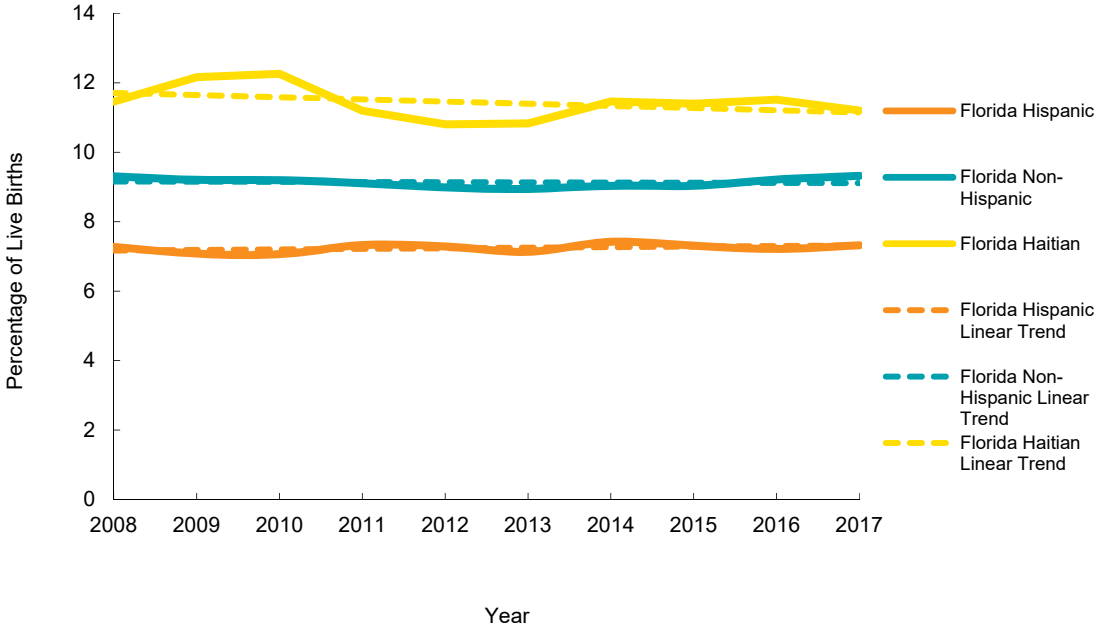


Figure 12. Percentage of Live Births Under 2500 Grams (Low Birth Weight) by Ethnicity, Florida, 2008–2017



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

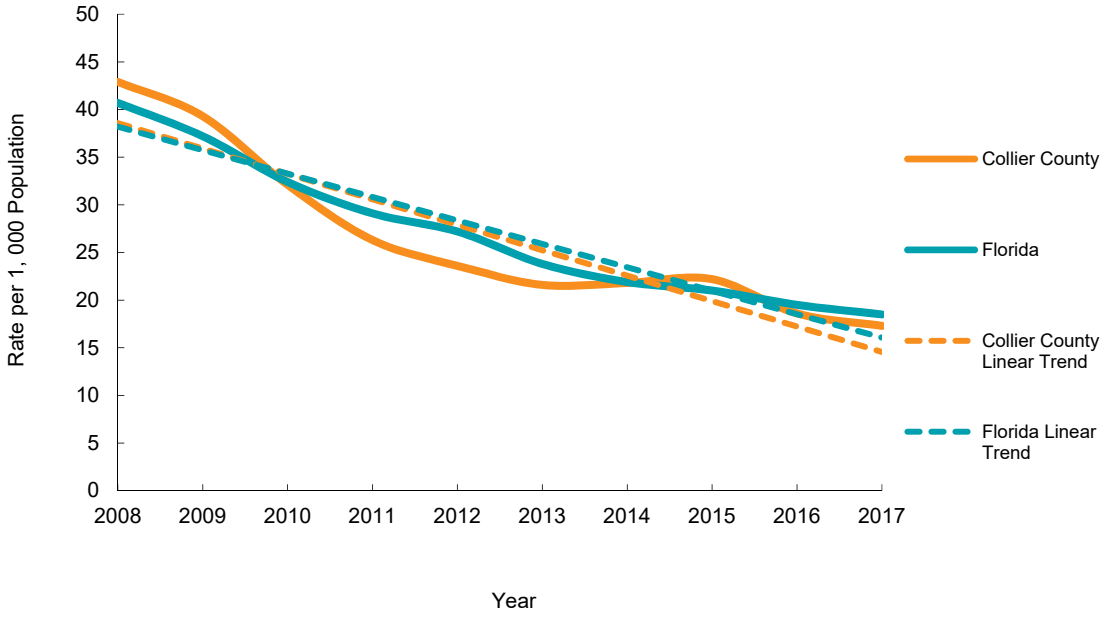
Teenage Births

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 declining in the United States since the 1960s, 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, in the 21st century, the racial disparity gap is not as evident as in the infant mortality rate and the low birthweight rate.

Between 2008 and 2017, the teenage birth rate for mothers 15–19 years of age declined by 60 percent in Collier County and by 55 percent in Florida (Figure 13).

Figure 13. Births to Teenage Mothers Ages 15–19, with Rates per 1,000 Female Population, Collier County and Florida, 2008–2017



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

Black teenagers in Collier County and Florida experienced a steeper decline than white teenagers, 77 percent and 57 percent, respectively (Figures 14 and 15).

Figure 14. Births to Teenage Mothers Ages 15–19, by Race, with Rates per 1,000 Female Population, Collier County, 2008–2017

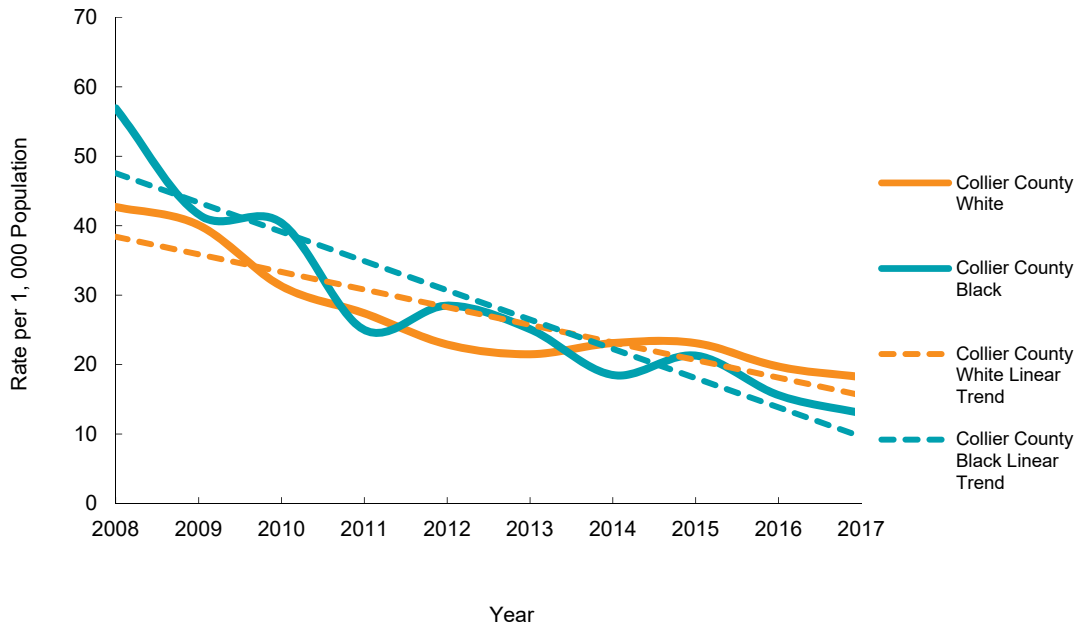
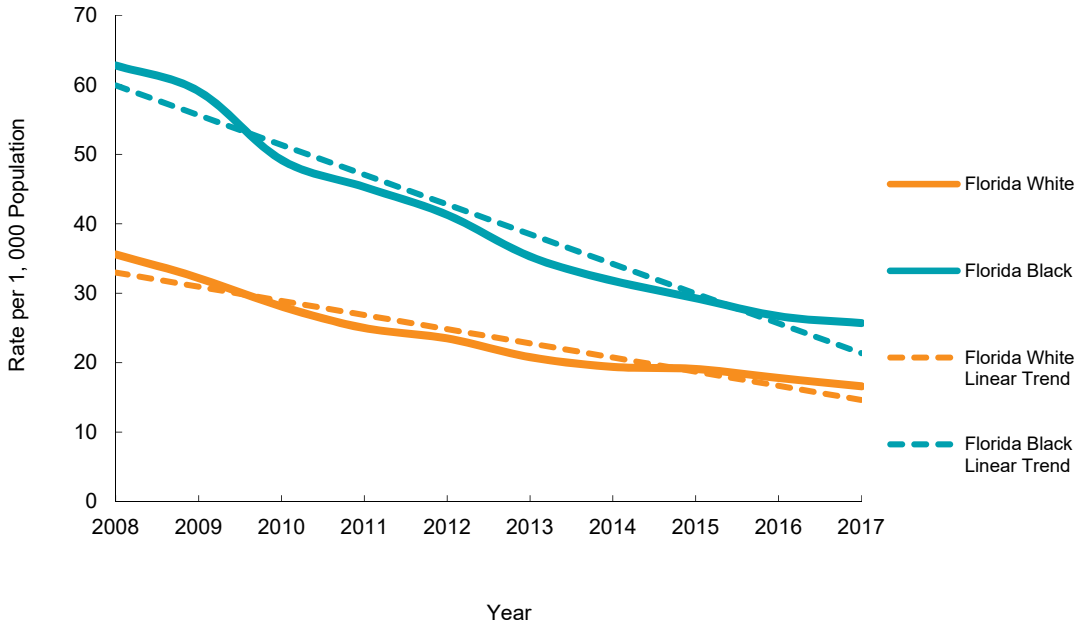


Figure 15. Births to Teenage Mothers Ages 15–19, by Race, with Rates per 1,000 Female Population, Florida, 2008–2017



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

In Collier County, both Hispanic and non-Hispanic teenagers experienced a significant decrease in rates, 58 percent and 67 percent, respectively (Figure 16). This pattern was also evident in Florida with Hispanics teenagers experiencing a 57 percent decrease and non-Hispanic teenagers experiencing a 54 percent decrease (Figure 17).

Figure 16. Births to Teenage Mothers Ages 15-19, by Ethnicity, with Rates per 1,000 Female Population, Collier County, 2008–2017

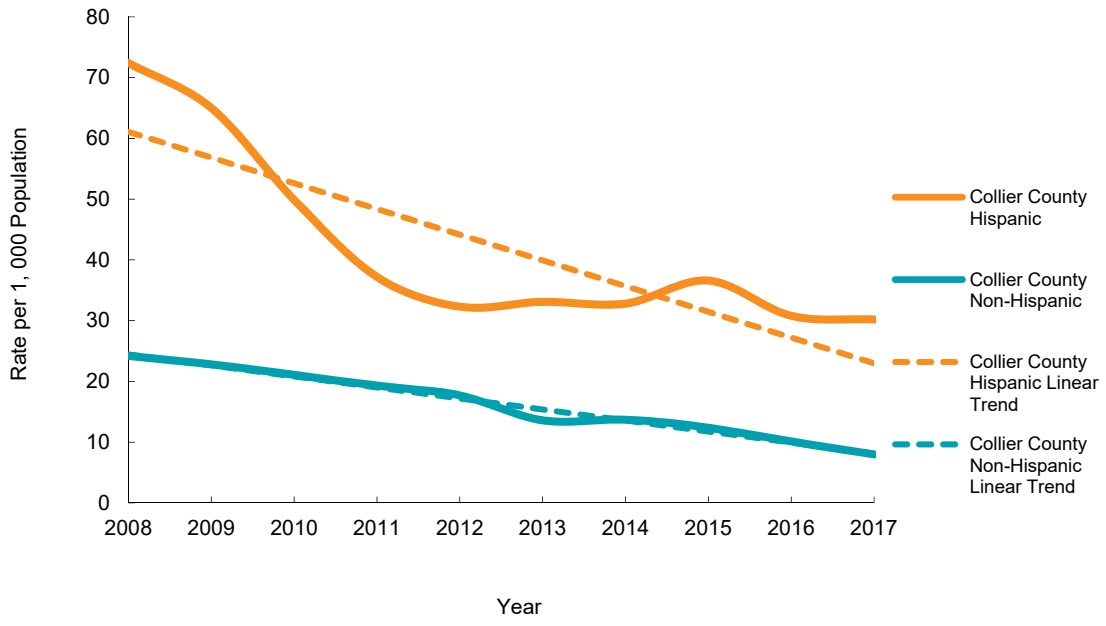
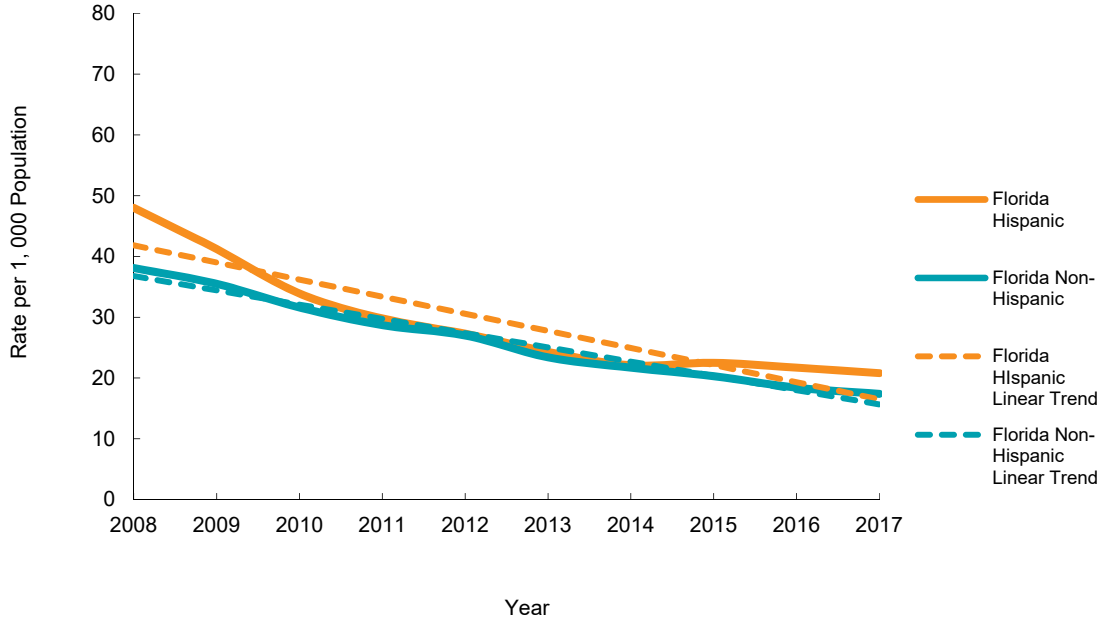


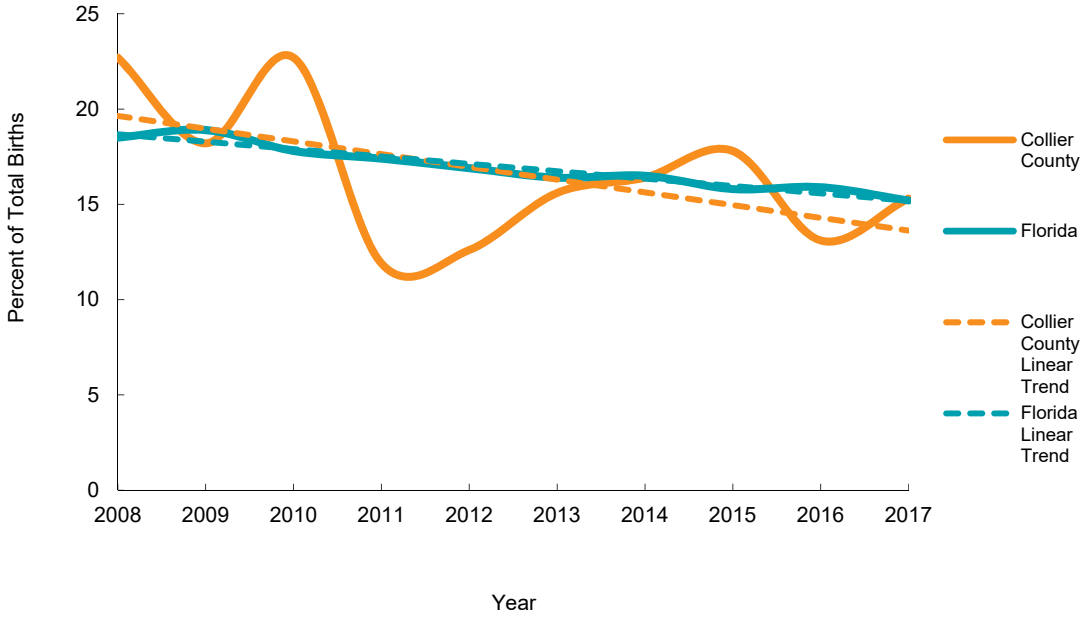
Figure 17. Births to Teenage Mothers Ages 15–19, by Ethnicity, with Rates per 1,000 Female Population, Florida, 2008–2017



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

Repeat births to teenage mothers 15–19 years declined in Collier County and Florida between 2008 and 2017 by 33 percent and 18 percent, respectively (Figure 18).

Figure 18. Repeat Births to Teenage Mothers Ages 15–19, with Rates per 1,000 Female Population, Collier County and Florida, 2008–2017



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

By race, repeat births to teenage mothers dropped dramatically in Collier County among whites and blacks, 21 percent and 100 percent, respectively, from 21.2 to 16.7 for whites and from 32.6 to 0 for blacks. In Florida, the repeat birth rate to white teenage mothers declined slightly from 16.9 in 2008 to 14.8 in 2017, while the rate for blacks decreased by 27 percent from 21.6 to 15.8 (Figures 19 and 20). In Collier County, Hispanic and non-Hispanic repeat teenage births decreased by 30 percent and 47 percent, respectively. In Florida, Hispanic repeat teenage births declined by 22 percent while non-Hispanic repeat teenage births declined by 15 percent (Figures 21 and 22).

Figure 19. Repeat Births to Teenage Mothers Ages 15–19, by Race, with Rates per 1,000 Female Population, Collier County, 2008–2017

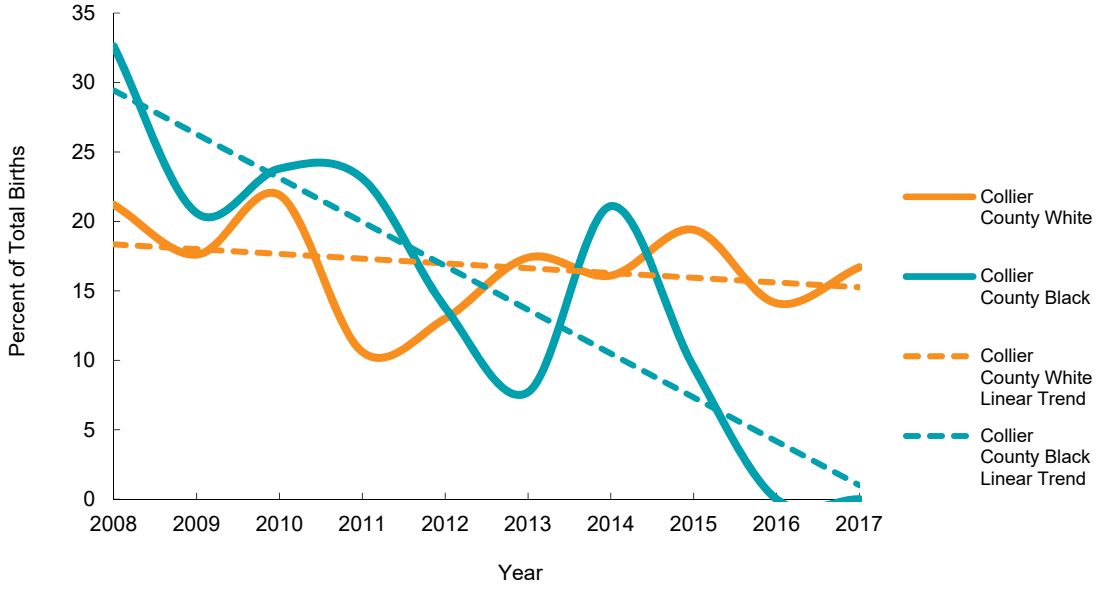
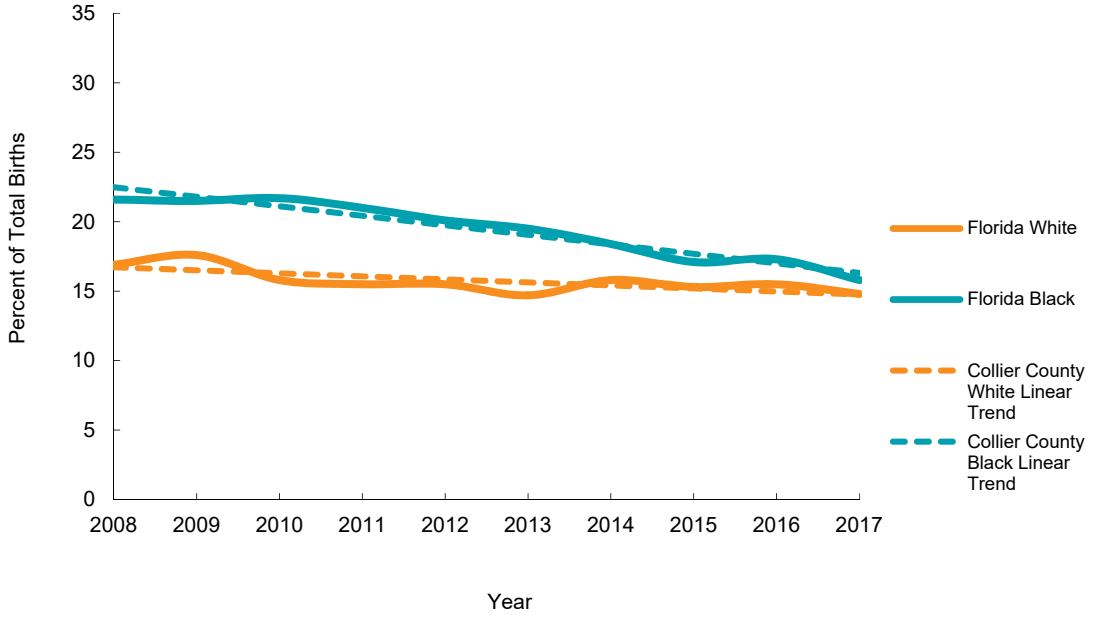


Figure 20. Repeat Births to Teenage Mothers Ages 15–19, by Race, with Rates per 1,000 Female Population, Florida, 2008–2017



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

Figure 21. Repeat Births to Teenage Mothers Ages 15–19, by Ethnicity, with Rates per 1,000 Female Population, Collier County, 2008–2017

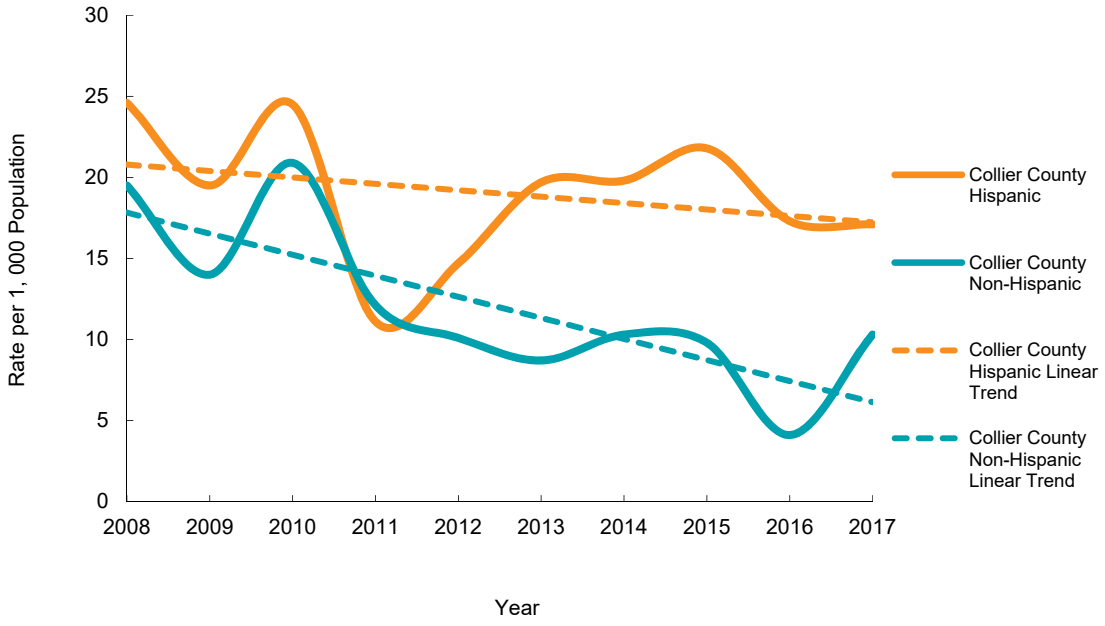
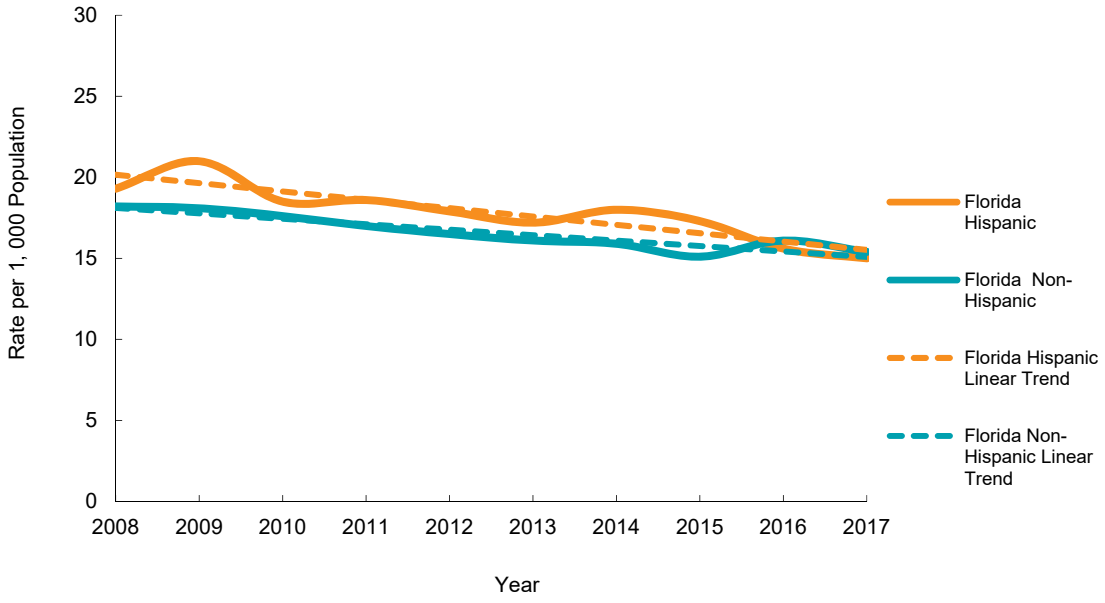


Figure 22. Repeat Births to Teenage Mothers Ages 15–19, by Ethnicity, with Rates per 1,000 Female Population, Florida, 2008–2017



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 700 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.

During 2010, 2015, and 2016, Collier County did not experience any maternal deaths. During 2008, 2009, 2011, 2012, 2013, 2014, and 2017, between 1 and 3 maternal deaths occurred annually. Consequently, rates skyrocketed for those years 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, 2008–2017

	Collier	**Florida**
Years	Rate	Rate
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
2015	0	21.4
2016	0	16.9
2017	31.4	16.5

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

Injuries

Injuries affect the entire population regardless of age, sex, 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 about 7 percent of all deaths annually.

The risk of mortality due to an injury will vary by sex, age, and the external cause. Males have significantly higher death rates from injuries than females at any age group. For adults 20 to 64 years of age, poisoning is a leading cause of injury mortality, while the foremost cause of injury deaths in the older population is falls. The risk of death from any external cause rises exponentially beginning around 70 years of age.

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. Motor vehicle traffic mortality rates, on the other hand, 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

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 2015 to 2017. At first glance, it is apparent that an increase in death rates for falls begins at ages 75 to 84 years, as the rate rises exponentially to over 450 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:

1) show the dramatically sharp increase in the mortality rate from falls for the 75 to 84 age group, and
2) 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 among those aged 85 years and older and those between 15 to 34 years of age. This has been the case historically in the latter age group, particularly among males. Deaths from unintentional poisonings have relatively high mortality rates between the ages of 20 to 64 years of age. Many of these deaths can be attributed to illicit drug use. In Collier County, death rates from drowning predominantly occur in the vulnerable 1–4 years age group. Homicide by firearm mortality rates in the county appear to be clustered in the 15 to 44 years age groups.

Figure 1. Death Rates for Leading Causes of Injuries per 100,000 Population, by Age, Collier County, 2015–2017

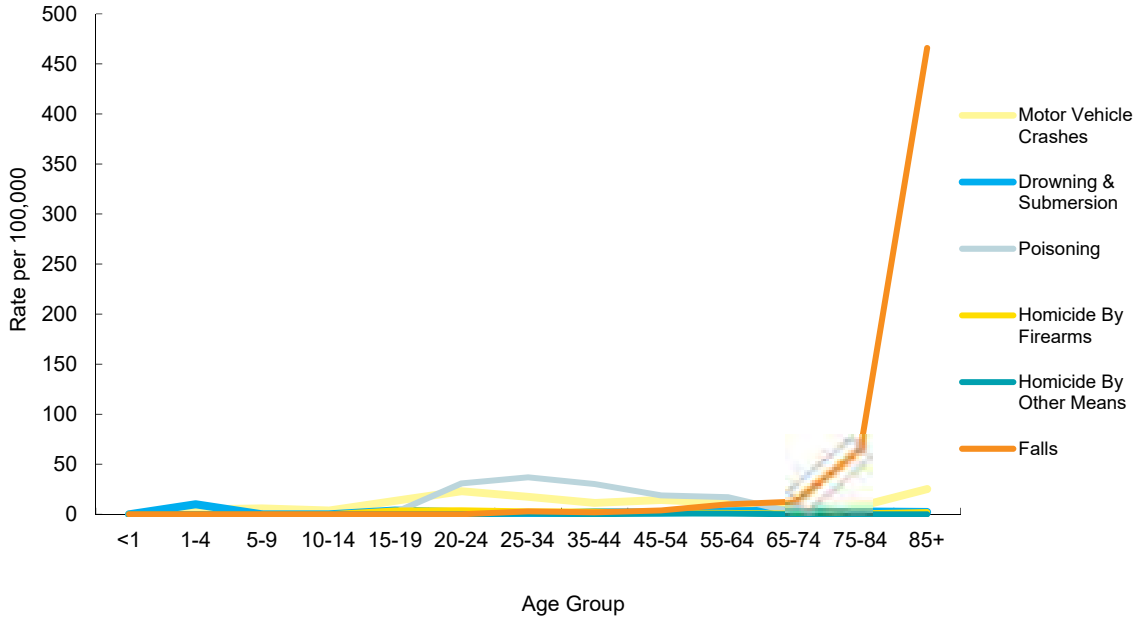
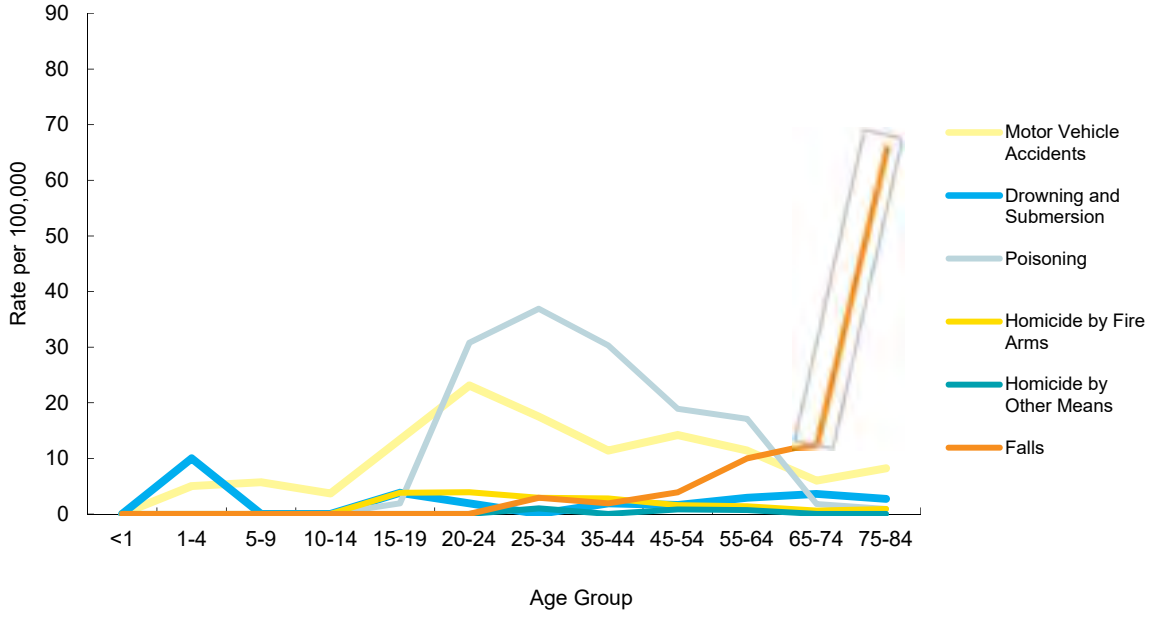


Figure 2. Death Rates for Leading Causes of Injuries per 100,000 Population, 0-84 Years of Age, Collier County, 2015–2017



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

From 2008 to 2017, the mortality rate in Collier County increased by approximately 8.5 percent, while Florida's mortality rate increased by almost 17 percent (Figure 3). Figure 4 shows the mortality rates for all injuries in Collier County for 2000, 2010, and 2017. In 2010 and 2017, 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.

Over the last decade, the age-adjusted death rate from all injuries has increased by 9.6 percent for Collier County males and 12.2 percent for Collier County females (Figure 5). Similarly, the age-adjusted death rate from all injuries for Florida has also increased in both sexes. From 2008 to 2017, there was a 15.7 percent increase in this rate for male Floridians and a 20.5 percent increase for female Floridians.

The age-adjusted death rates from all injuries by race for Collier County between 2008 and 2017 can be observed in Figure 6. Notice that there has been significant variability in the black age-adjusted death rates from all injuries over this time period. In 2017, however, the black age-adjusted death rate from all injuries plummeted to a ten-year low, at 21.2 percent. By contrast, the white age-adjusted death rate from all injuries was 73.4 percent in 2017. During this year, the age-adjusted death rate from all injuries in Florida was also higher in whites than in blacks.

Figure 7 displays the age-adjusted death rates from all injuries in Collier County residents by ethnicity. The rate for Collier County Hispanics only slightly increased (1.9 percent) from 2008 to 2017. On the other hand, the rate for non-Hispanics increased by 11 percent during this period. Florida has also seen a noteworthy increase in the age-adjusted death rates from all injuries for non-Hispanics. From 2008 to 2017, there was a 20.5 percent increase in the age-adjusted death rates from all injuries for non-Hispanic Floridians.

Figure 3. Deaths from All Injuries per 100,000 Population, Collier County and Florida, 2008–2017

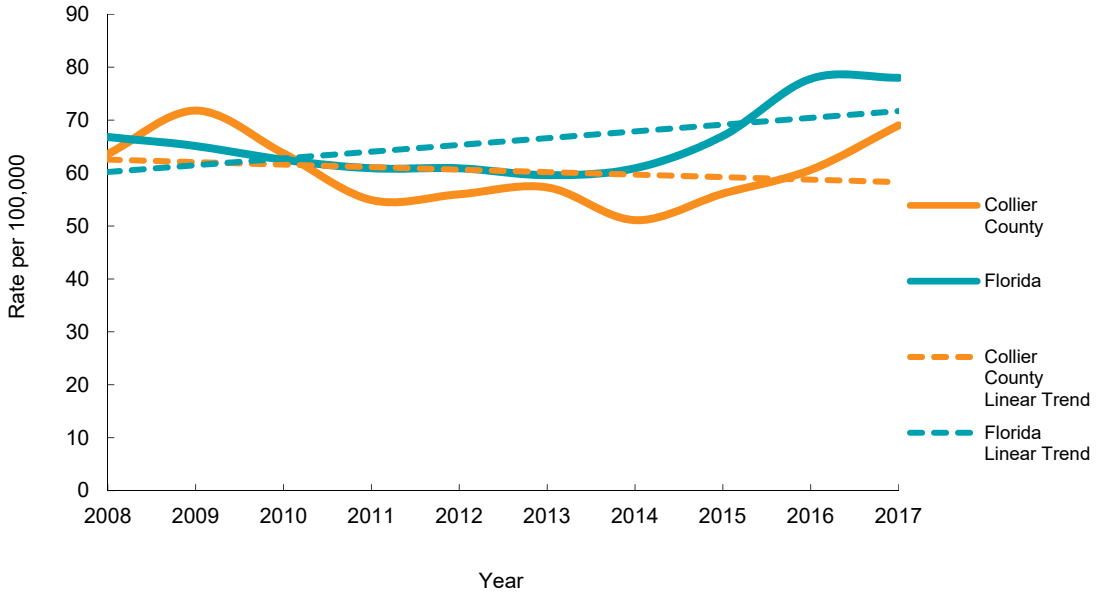
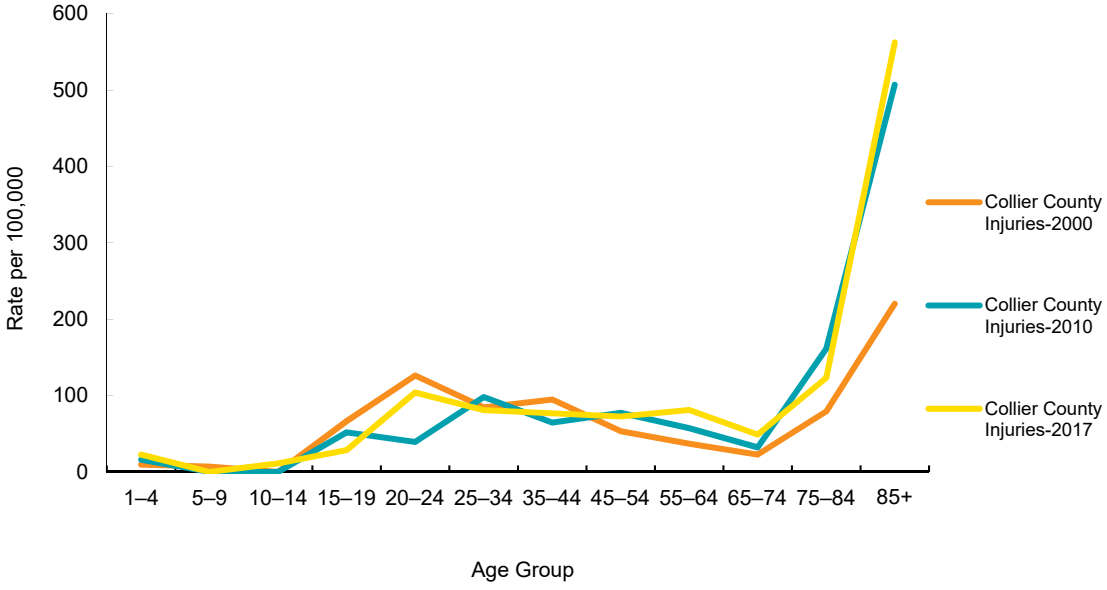


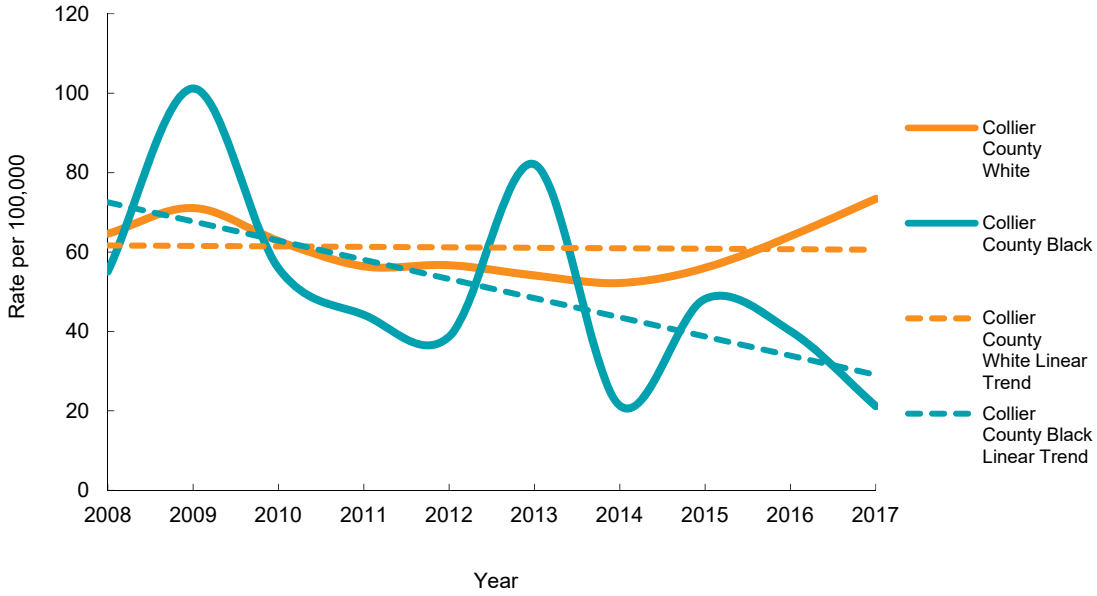
Figure 4. Deaths from All Injuries per 100,000 Population, by Age, Collier County, 2000, 2010, and 2017



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

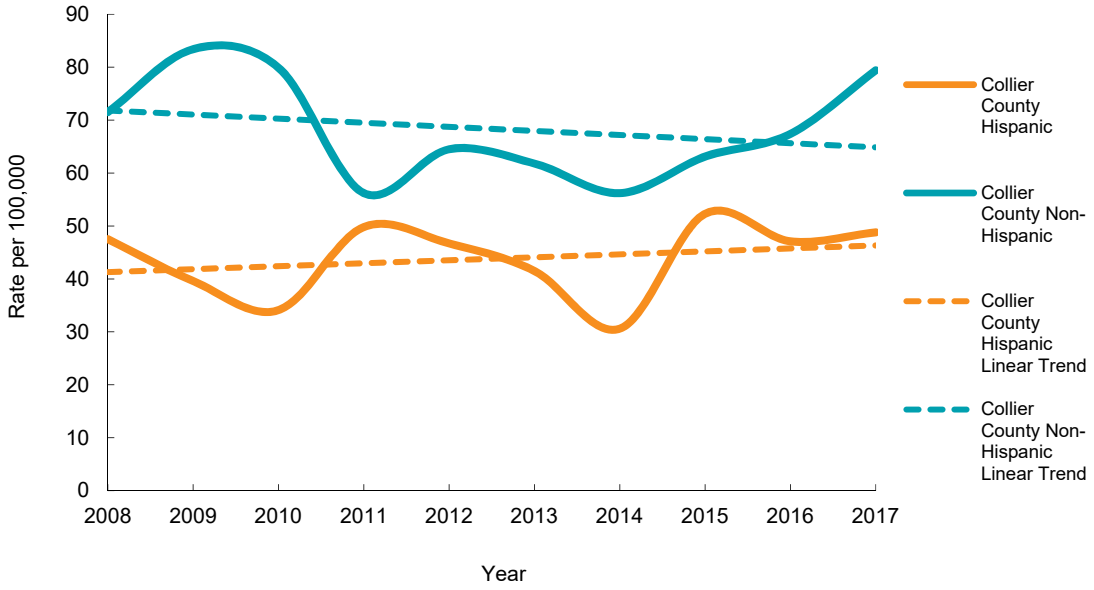
Figure 5. Deaths from All Injuries per 100,000 Population, by Sex, Collier County, 2008–2017

Figure 6. Deaths from All Injuries per 100,000 Population, by Race, Collier County, 2008–2017



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

Figure 7. Deaths from All Injuries per 100,000 Population by Ethnicity, Collier County, 2008–2017



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 2008 to 2017. During this ten-year period, the death rate in Collier County increased by about 3 percent, while in Florida the rate declined by about 7.5 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 behaviors 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. Notice that there are fluctuations in the rates over the years for both sexes. Nonetheless, from 2008 to 2017, the mortality rate for males declined by just over 3 percent, whereas for females the rate increased by approximately 23 percent.

From 2008 to 2017, the mortality rate from motor vehicle crashes of the white population in Collier County increased by almost 15 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 from motor vehicle crashes for whites during the ten-year period decreased by almost 12 percent, while the rates for blacks declined by 11 percent.

The mortality rate from motor vehicle crashes among Hispanics in Collier County declined almost 20 percent from 2008 and 2017, while this rate in non-Hispanics declined about 11.5 percent (Figure 11). The mortality rate from motor vehicle crashes of Hispanics and non-Hispanics throughout the state has declined by 18 percent and 5 percent, respectively. A comparison among years 2000, 2010, and 2017 of the death rate from motor vehicle crashes in Collier County by age groups can be observed in Figure 12. During 2017, the highest mortality rates occurred at ages 15 to 19, 20 to 24, and 85+.

Figure 8. Deaths from Motor Vehicle Crashes per 100,000 Population, Collier County and Florida, 2008–2017

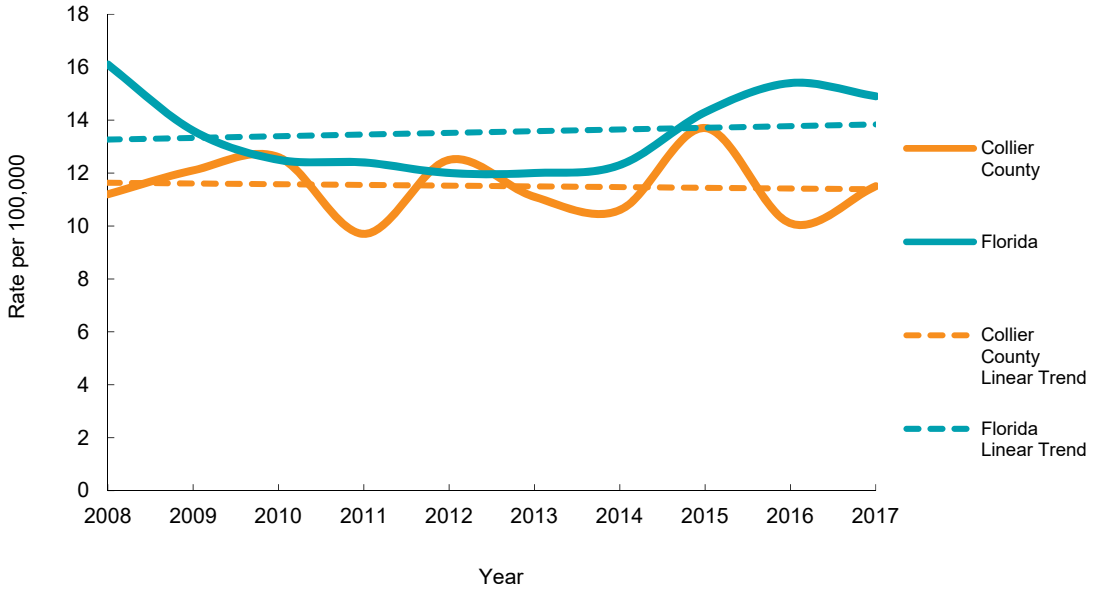
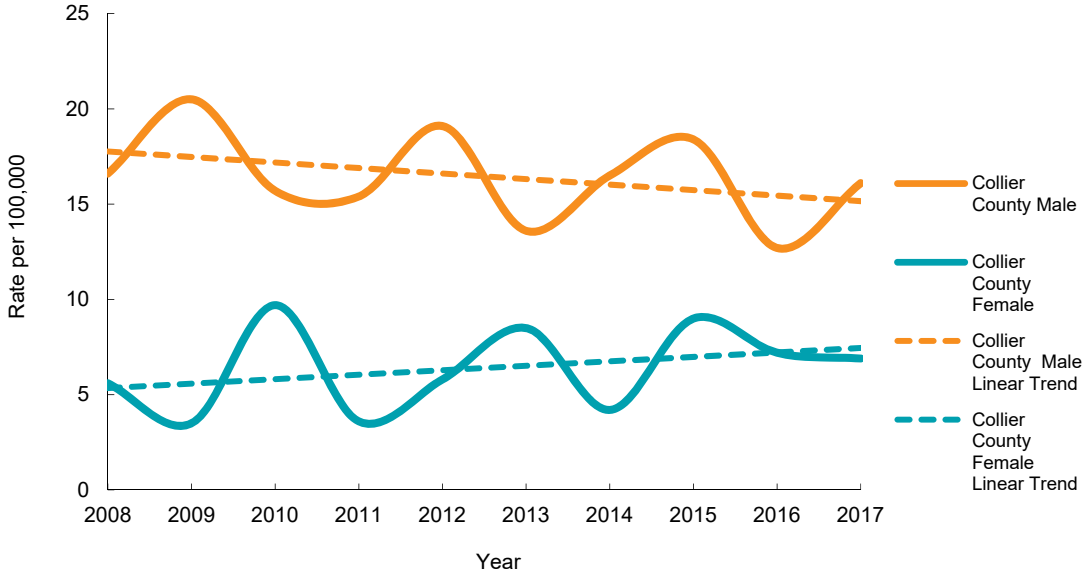


Figure 9. Deaths from Motor Vehicle Crashes per 100,000 Population, by Sex, Collier County, 2008–2017



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

Figure 10. Deaths from Motor Vehicle Crashes per 100,000 Population, by Race, Collier County, 2008–2017

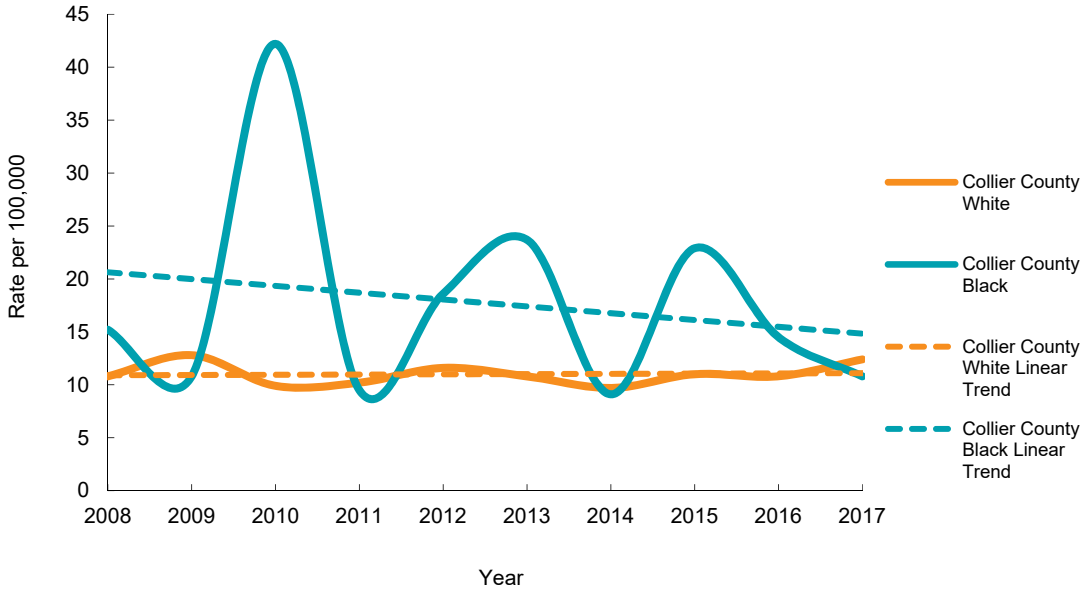
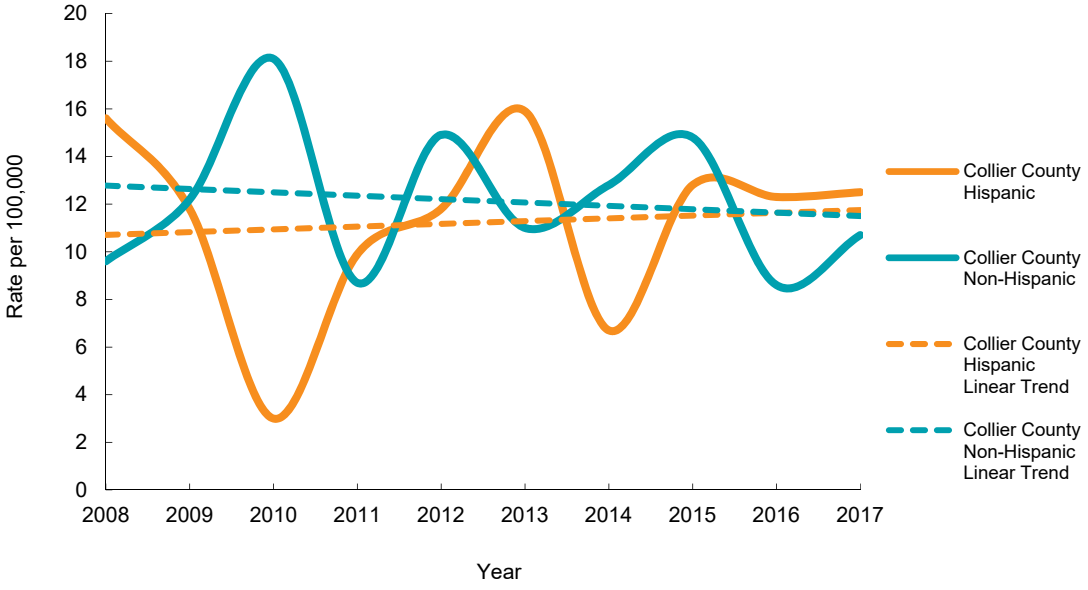
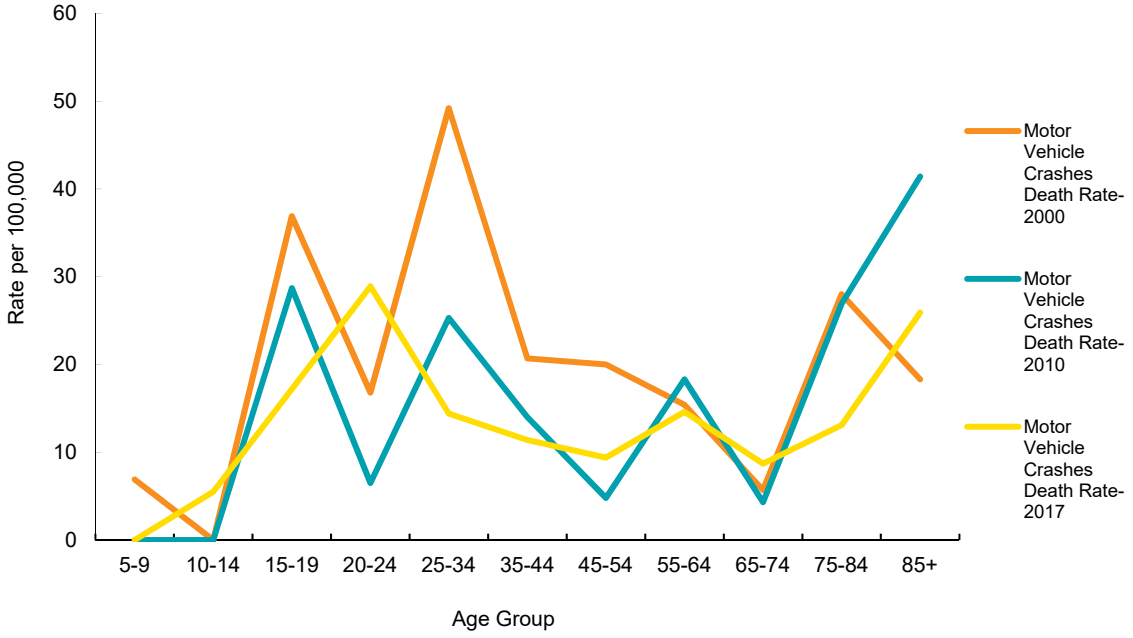


Figure 11. Deaths from Motor Vehicle Crashes per 100,000 Population, by Ethnicity, Collier County, 2008–2017



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

Figuer 12. Deaths from Motor Vehicle Crashes per 100,000 Population, by Age, Collier County, 2000, 2010, and 2017



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 2008 and 2017, a 6.5 percent decrease in the death rate from unintentional poisoning was observed in Collier County, while a 64 percent increase in the rate was observed in Florida (Figure 13). However, beginning in 2015, there was a sharp increase in the age-adjusted death rate from unintentional poisoning at both the state and county levels. From 2014 to 2017, there was a 100 percent increase in this rate for Collier County and a 106 percent increase in this rate for the State as a whole. The continual increase in these rates over these years may be the consequences of the opioid crisis in Florida, for which the Governor declared a statewide public health emergency on May 3, 2017.

From 2008 to 2017, the age-adjusted death rate from unintentional poisoning in Collier County for males decreased by 12 percent, while the rate for females increased by 21 percent (Figure 14). Florida males experienced a 67 percent increase in the mortality rate; whereas Florida females experienced an increase of 61 percent.

Whites in Collier County experienced age-adjusted death rate decreases of almost 8 percent over the ten-year period of 2008 to 2017, while blacks experienced decreases of approximately 9 percent (Figure 15). Throughout the state, whites had age-adjusted death rates twice as high as the blacks.

In Collier County, the age-adjusted death rate from unintentional poisonings for Hispanics increased by 30 percent, while the rate for non-Hispanics decreased by 7 percent. However, non-Hispanics had a much higher baseline than Hispanics (Figure 16). In Florida, both non-Hispanic and Hispanic mortality rates increased, with non-Hispanics more than doubling the Hispanic mortality rate for the period of 2008 to 2017.

Of particular interest is the substantial increase in mortality in Collier County during 2017 due to this cause when compared with years 2000 and 2010 (Figure 17). Of major concern are the death rates in those 20 to 44 years of age and 55 to 64 years of age. These age groups have mortality rates that are beyond historical limits.

Table 1 displays the substances associated with deaths from unintentional poisoning in Collier in 2017. Synthetic narcotics, cocaine, heroin, and other opioids were associated to the highest percentages of deaths from unintentional poisonings.

Figure 13. Deaths from Unintentional Poisoning per 100,000 Population, Collier County and Florida, 2008–2017

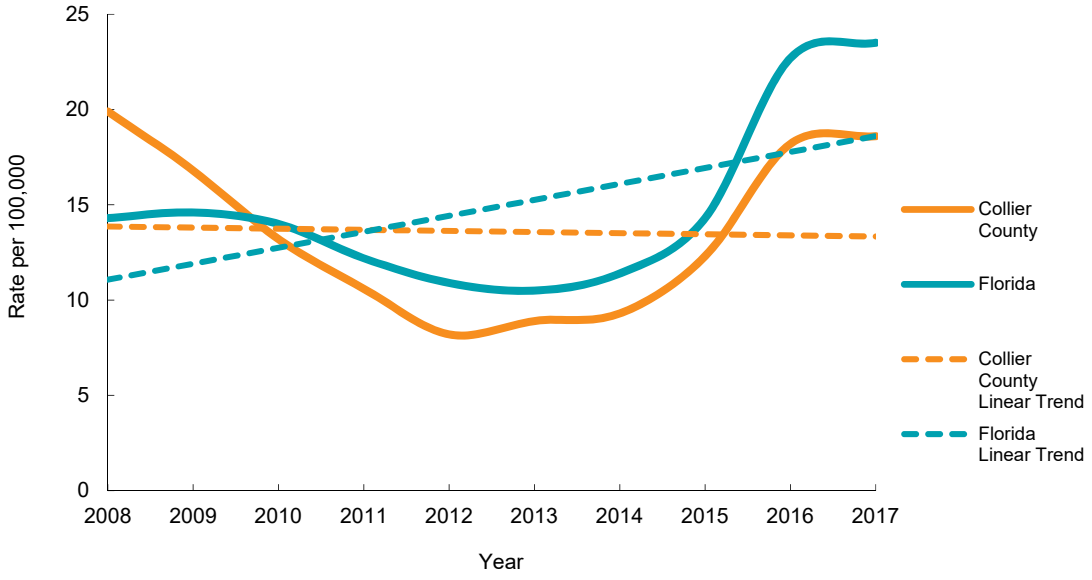
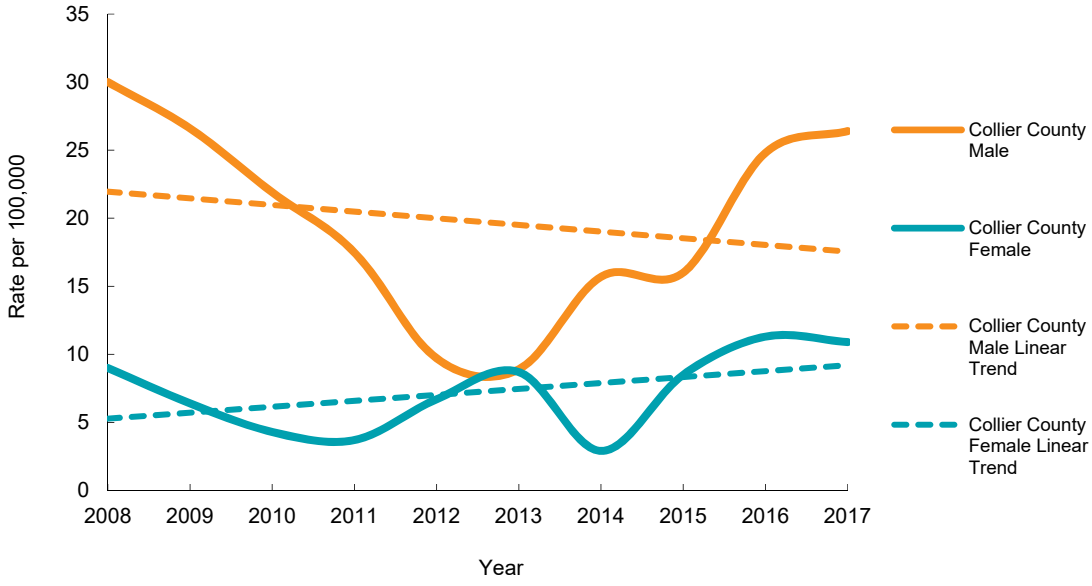


Figure 14. Deaths from Unintentional Poisoning per 100,000 Population, by Sex, Collier County, 2008–2017



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

Figure 15. Deaths from Unintentional Poisoning per 100,000 Population, by Race, Collier County, 2008–2017

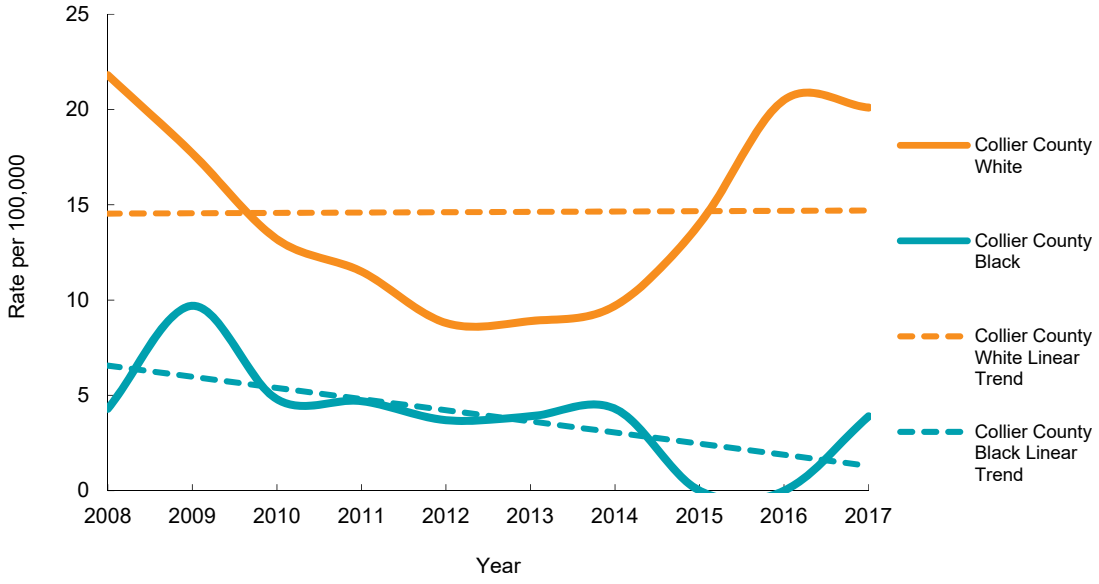
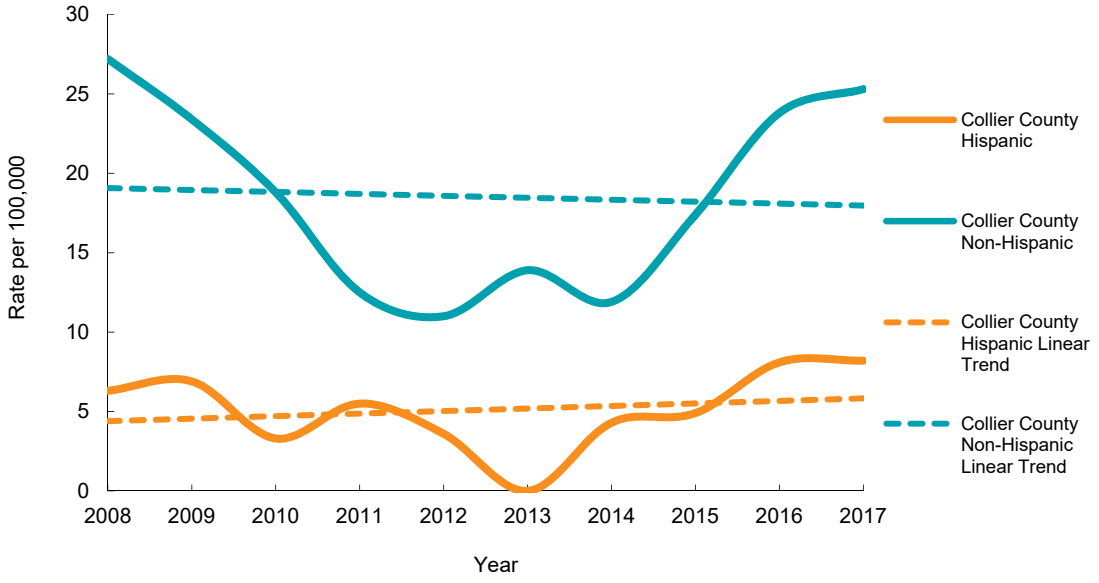
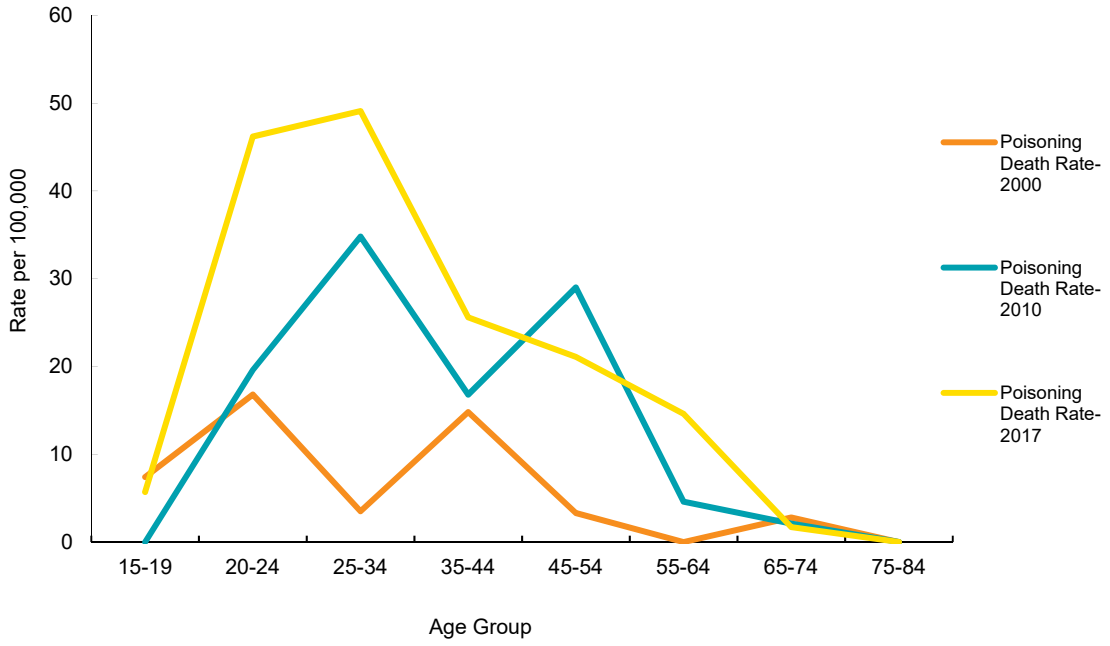


Figure 16. Deaths from Unintentional Poisoning per 100,000 Population, by Ethnicity, Collier County, 2008–2017



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

Figure 17. Deaths from Unintentional Poisoning per 100,000 Population, by Age, Collier County, 1990, 2000, and 2017



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

Table 1. Percentage Distribution of Substances Associated with Deaths from Unintentional Poisoning, Collier County, 2017

Substance	Percent
Heroin	31.1%
Other Opioids	27.9%
Methadone	6.6%
Other Synthetic Narcotics	49.2%
Cocaine	41.0%
Unspecified Narcotics	1.6%
Benzodiazepines	16.4%
Other Antiepileptic and Sedative-Hypnotic Drugs	6.6%
Unspecified Antidepressants	1.6%
Unspecified Antipsychotics and Neuroleptics	1.6%
Psychostimulants with Abuse Potential	6.6%
Antiallergic and Antiemetic Drugs	1.6%
Alcohol	11.5%
Carbon Monoxide	1.6%

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

Drownings

In Collier County, the age-adjusted death rates from unintentional drownings have fluctuated significantly from 2008 to 2017. By contrast, the statewide age-adjusted death rate from this cause has remained relatively constant over the past decade (Figure 18).

The range of mortality rates in Collier County was a high of 3.4 in 2011 and a low of 0.8 per 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 2.1 in 2015 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 2000, 2010, and 2017. This data demonstrates a decrease in the drowning death rates since 2000 for ages 45 to 54 years. Increases in this mortality rate since 2000 are visible for ages 1 to 4, 65 to 74, and 75 to 84.

Random variation has caused dramatic fluctuations in the death rates from drownings for both males and females in Collier County over the past 10 years, as seen in Figure 20. Because of this, meaningful conclusions cannot be made on the trend over this time period. However, Florida exhibited a constant trend in the death rates from drownings for both sexes during this time.

Figure 21 reveals the deaths from drownings for both whites and blacks in Collier County from 2008 to 2017. An analysis of the rates for these years would not be pertinent due to low counts and random variation, especially since the rates for the black population were zero from 2008 to 2014 and in 2016. In Florida, however, the rate for the white and black populations has been constant over the time interval.

As can be seen in the Figure 22, highly variable fluctuations occurred for both the Hispanic and the non-Hispanic population in the county. 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 Hispanics and non-Hispanics showed stable and constant trends.

Figure 18. Deaths from Drownings per 100,000 Population, Collier County and Florida, 2008–2017

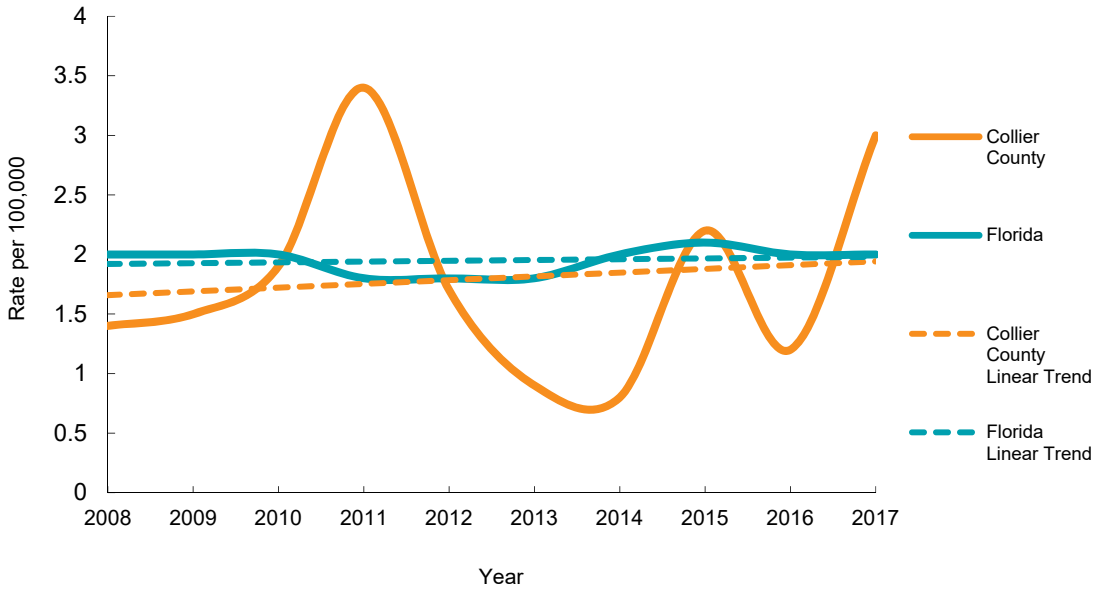
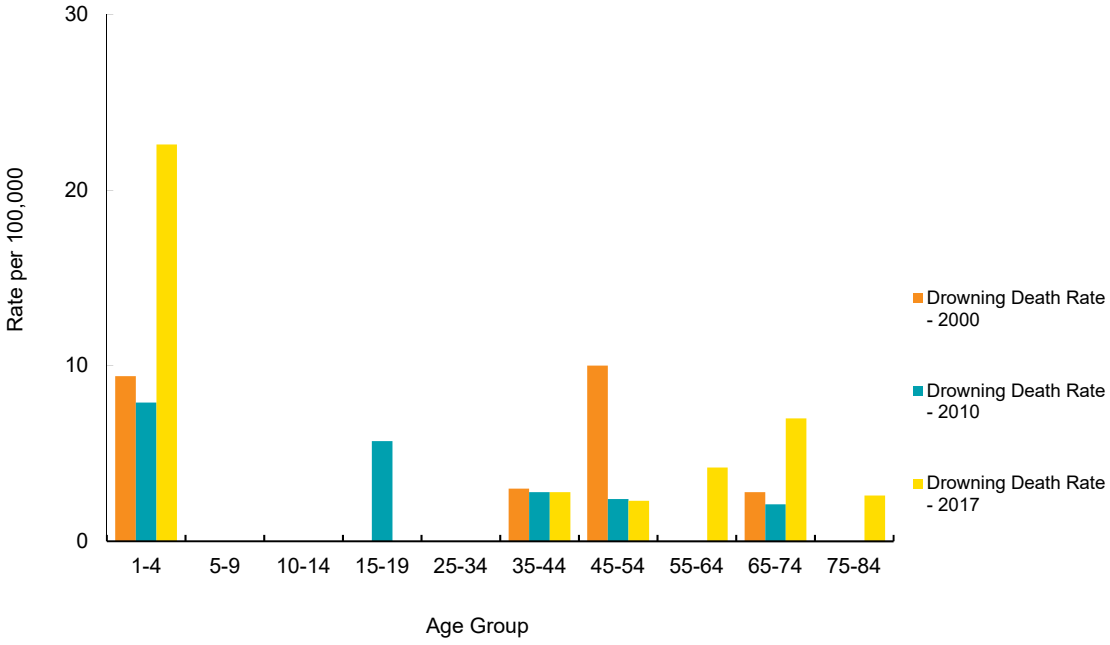


Figure 19. Deaths from Drownings per 100,000 Population, by Age, Collier County, 2000, 2010, and 2017



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

Figure 20. Deaths from Drownings per 100,000 Population, by Sex
Collier County, 2008–2017

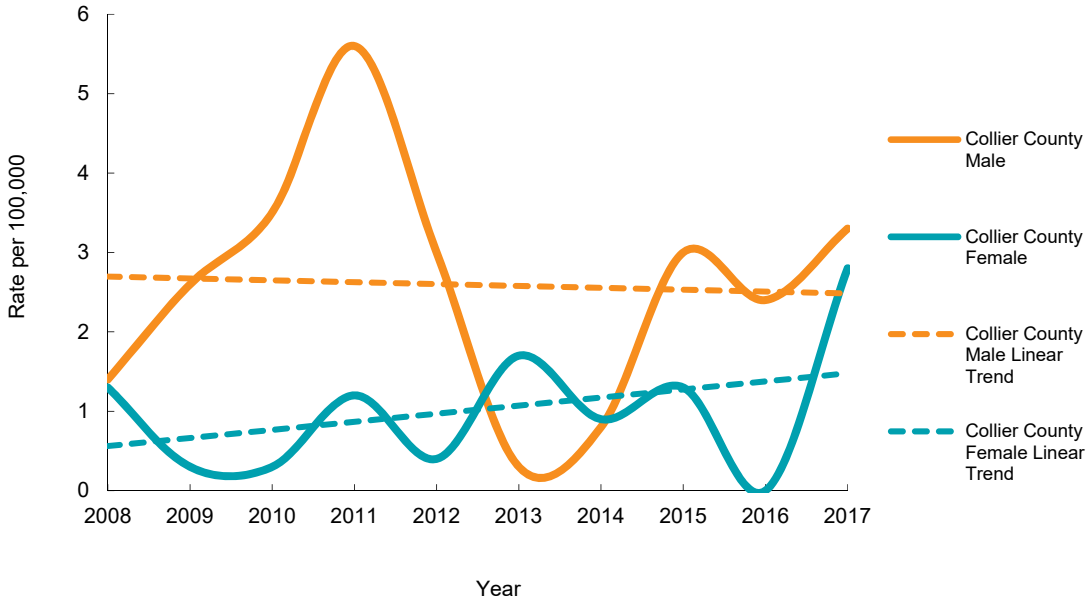
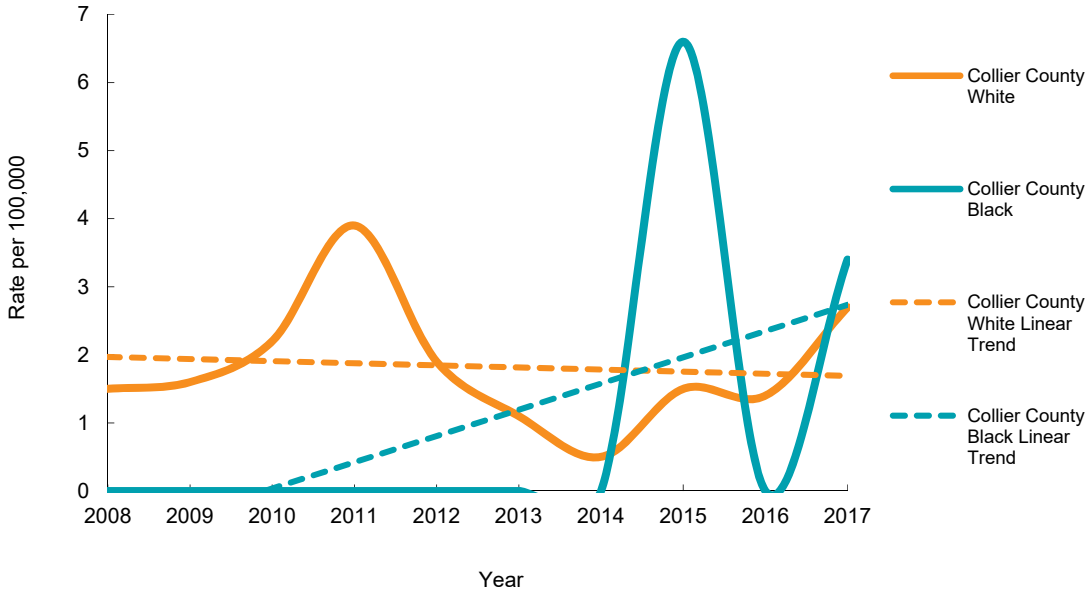
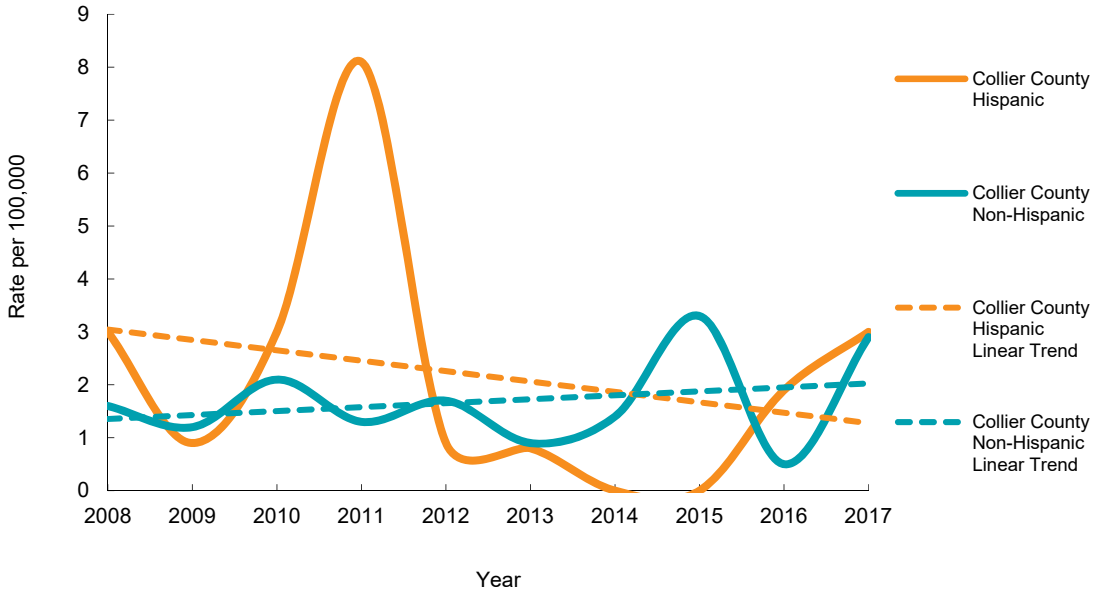


Figure 21. Deaths from Drownings per 100,000 Population, by Race,
Collier County, 2008–2017



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

Figure 22. Deaths from Drownings per 100,000 Population, by Ethnicity, Collier County, 2008–2017



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

Falls

From 2008 to 2017, the mortality rate due to falls increased in Collier County by 27 percent and in Florida by 53 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 2000, 2010 and 2017. 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 2017.

The mortality rates from falls in the county has fluctuated over the years for both males and females. In Collier County males, there was an increase of 66 percent from 2008 to 2017 (Figure 25). In Florida, the death rates from falls are also increasing at a steady parallel pace for both males (an increase of 48 percent) and females (an increase of 57 percent).

Among races in Collier County, the white mortality rate for falls has increased by 28 percent between 2008 and 2017, probably 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 54 percent, while the black mortality rate for falls exhibited a stable trend.

In Collier County, the Hispanic mortality rate from falls has experienced dramatic fluctuations over the years, with rates being as low as 2.9 in 2009 and as high as 19.7 in 2012. The non-Hispanic mortality rate from falls has been more stable relative to the Hispanic rate. There has been a 27 percent increase in the non-Hispanic mortality rate from falls from 2008 to 2017 (Figure 27). In Florida, the Hispanic mortality rate for falls has been fairly constant since 2008, while the non-Hispanic rate has been increasing steadily over the ten-year period.

Figure 23. Deaths from Falls per 100,000 Population, Collier County and Florida, 2008–2017

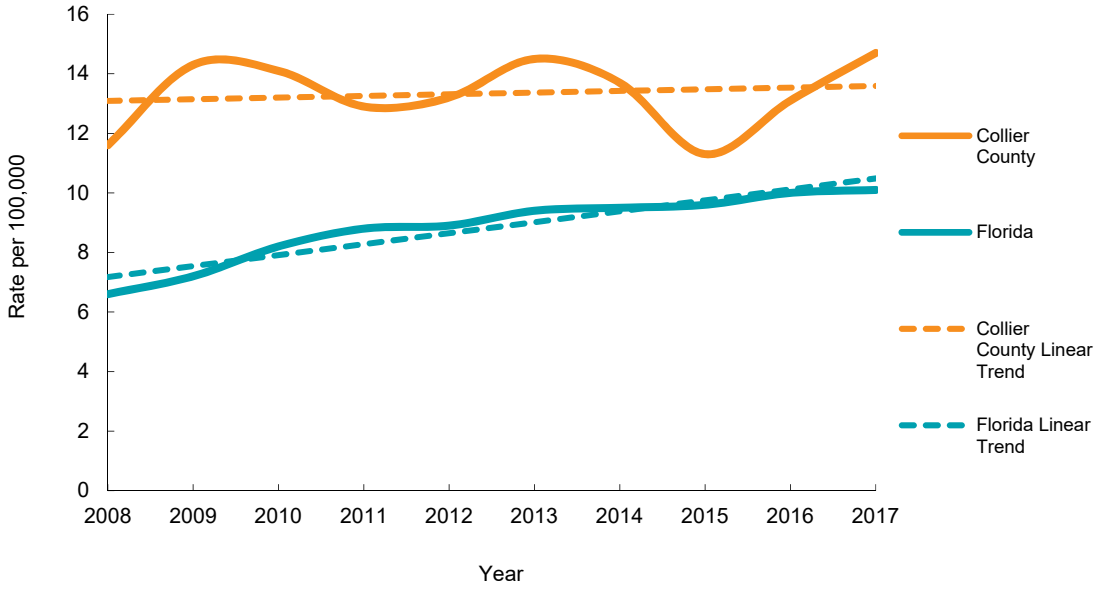
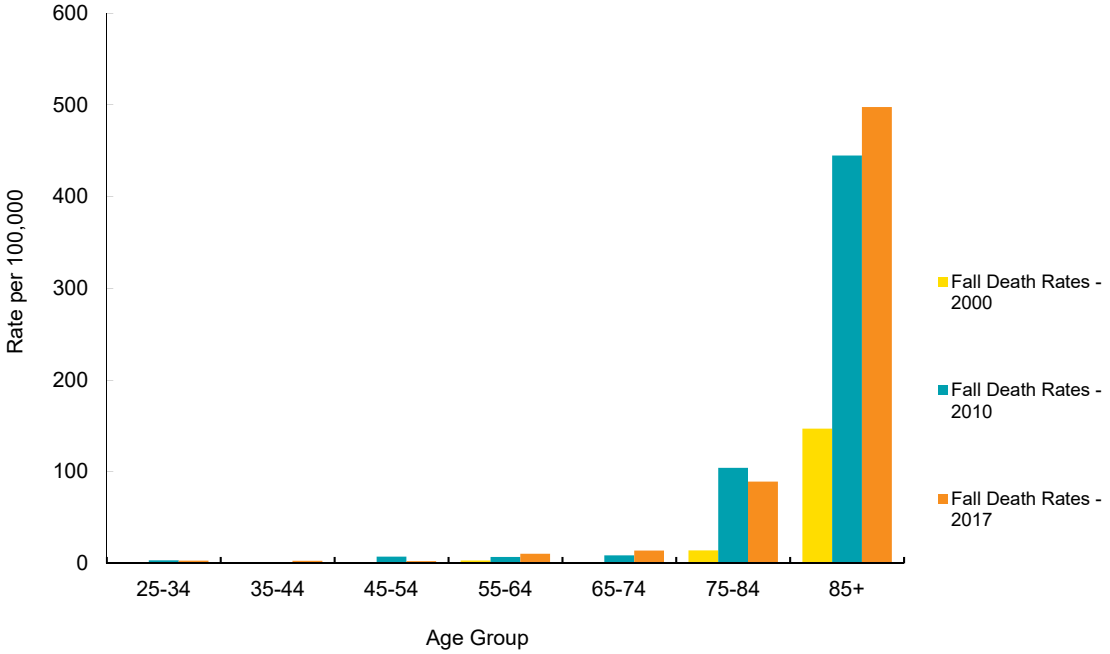


Figure 24. Deaths from Falls per 100,000 Population, by Age, Collier County,1990, 2000, and 2017



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

Figure 25. Deaths from Falls per 100,000 Population, by Sex, Collier County, 2008–2017

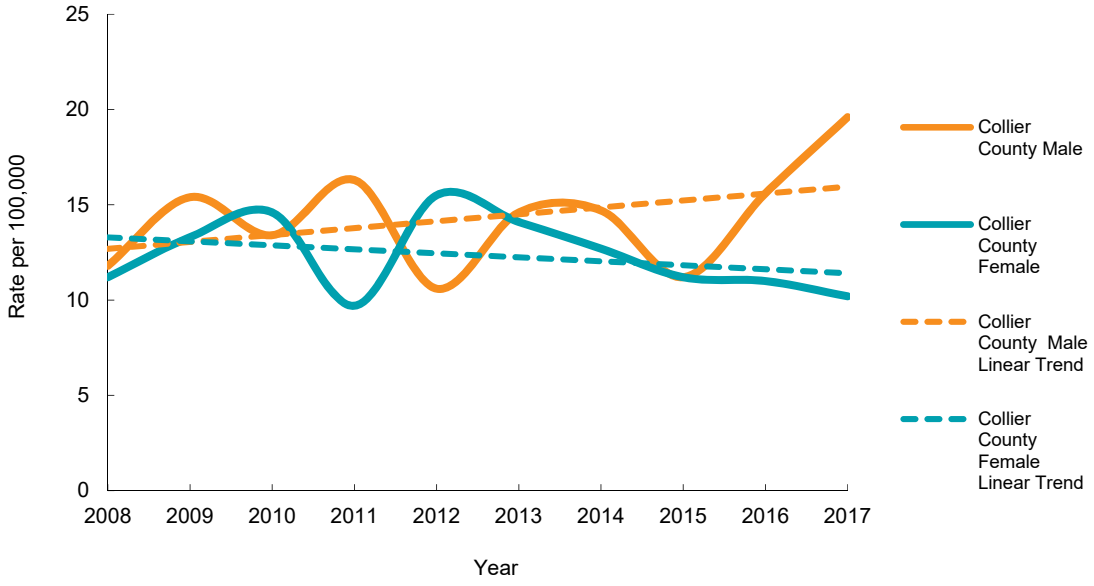
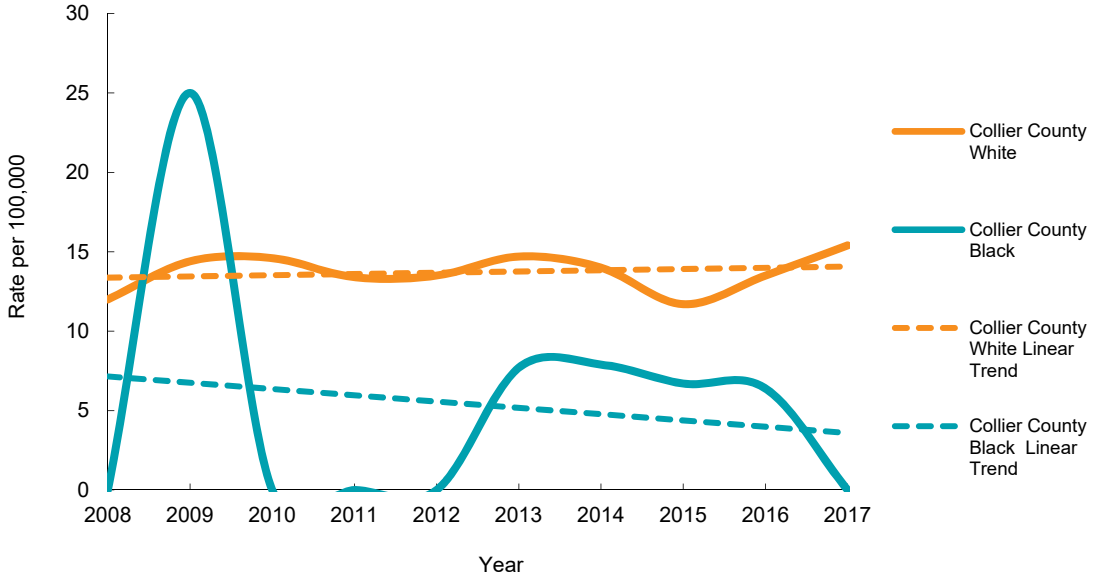
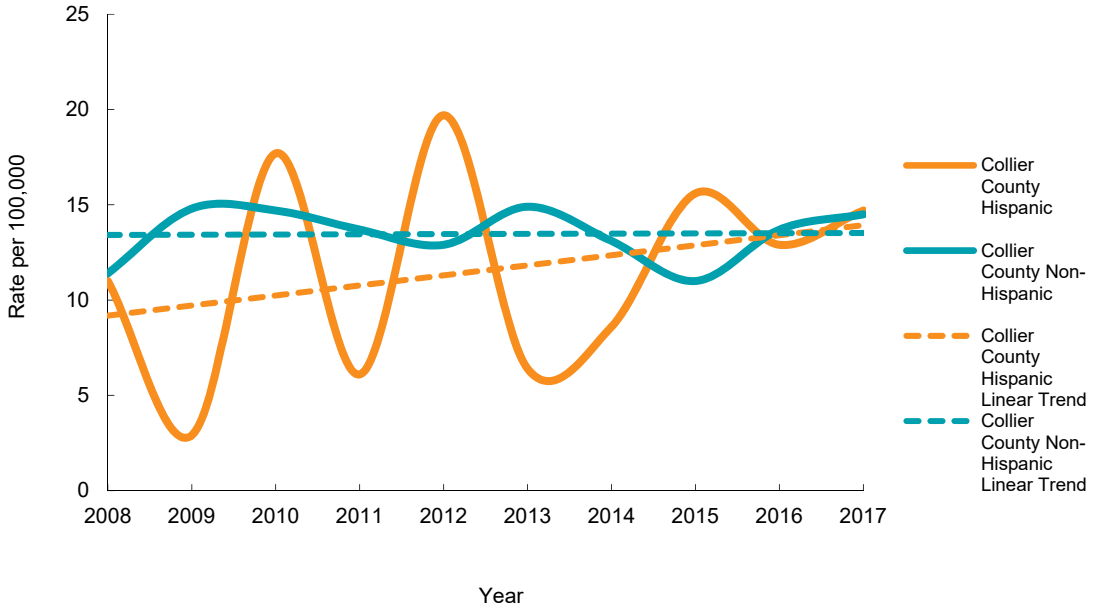


Figure 26. Deaths from Falls per 100,000 Population, by Race, Collier County, 2008–2017



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

Figure 27. Deaths from Falls per 100,000 Population, by Ethnicity, Collier County, 2008–2017



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 2008 to 2017. Mortality rates from homicide in Collier County fluctuated throughout the ten-year period, while the mortality rates from homicides in Florida exhibited a stable trend during this period.

In Collier County, both sexes displayed random variation due to small numbers of deaths due to homicide in select years. The male mortality rate from homicide decreased by 42 percent over the ten-year interval, whereas the female rate declined by just 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 2008 to 2017 is displayed in Figure 30. In Collier County, the black homicide mortality rate has fluctuated dramatically, ranging from zero to 35.8. The white homicide mortality rate has been comparatively more stable during this period, ranging from one to 5.1. 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 ten-year period.

The mortality rates due to homicide among Hispanics and non-Hispanics in Collier County have fluctuated significantly from 2008 to 2017. In the county, the Hispanic homicide mortality rate has ranged from a low of one in 2017 to a high of 9.2 in 2011, while the non-Hispanic homicide mortality rate has ranged from a low of 1.2 in 2015 to a high of 8.9 in 2011 (Figure 31). Throughout the state, non-Hispanic homicide mortality rates exceeded the Hispanic homicide mortality rates between 2008 and 2017.

Figure 32 gives the age-specific mortality rates from homicide in Collier County for the years 2000, 2010, and 2017. It is evident from the graph that between the age groups of 15 to 44 years there has been a downward trend in mortality between 2000 and 2017. The age groups of primary concern in Collier County as of 2017 were 20 to 24 and 35 to 44.

Figure 28. Deaths from Homicide per 100,000 Population, Collier County and Florida, 2008–2017

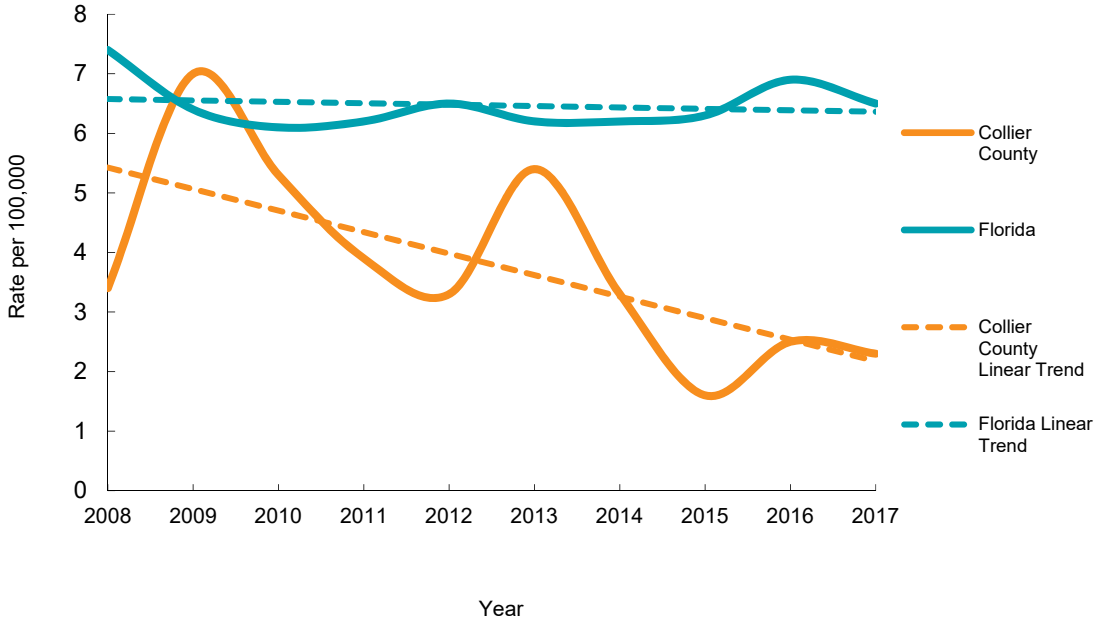
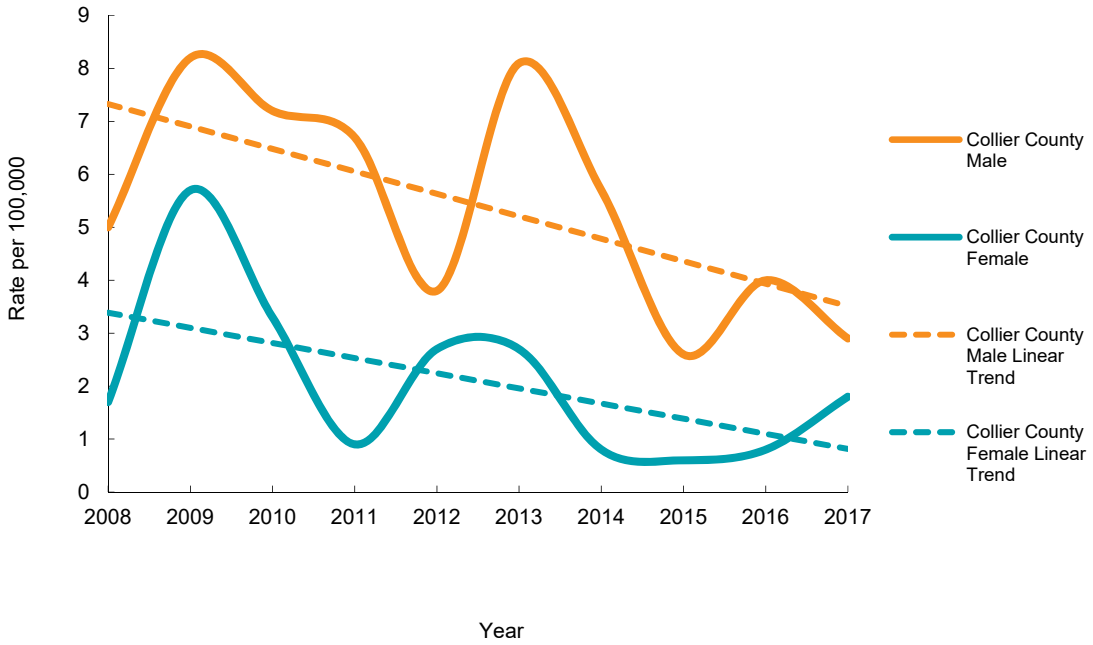


Figure 29. Deaths from Homicide per 100,000 Population, by Sex, Collier County, 2008–2017



Data

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

Figure 30. Deaths from Homicide per 100,000 Population, by Race, Collier County, 2008–2017

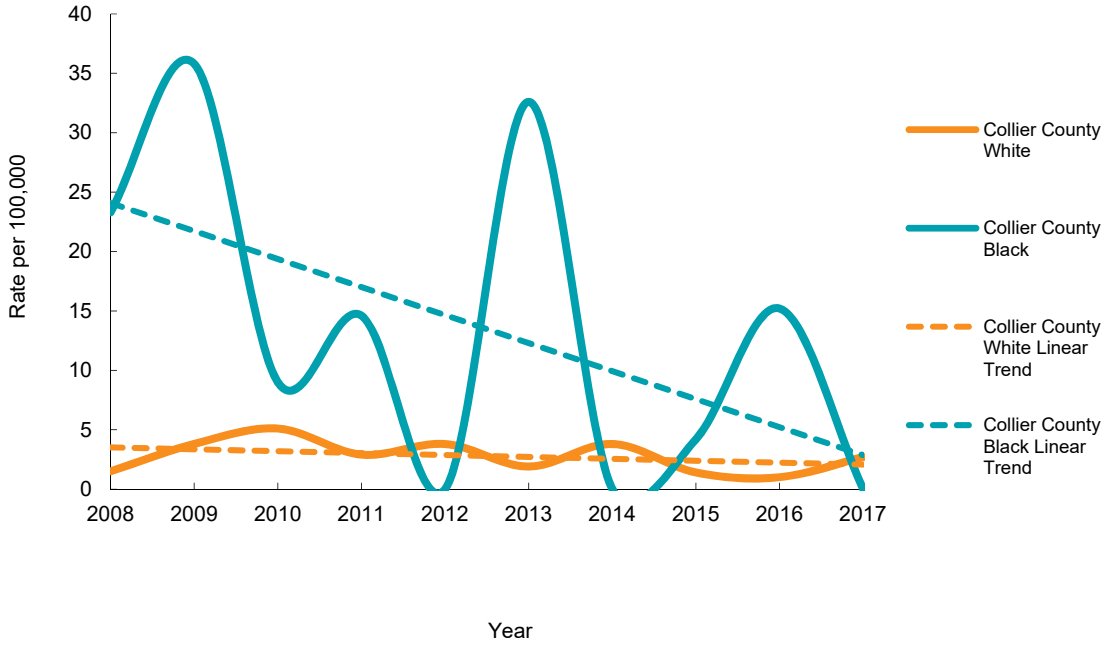
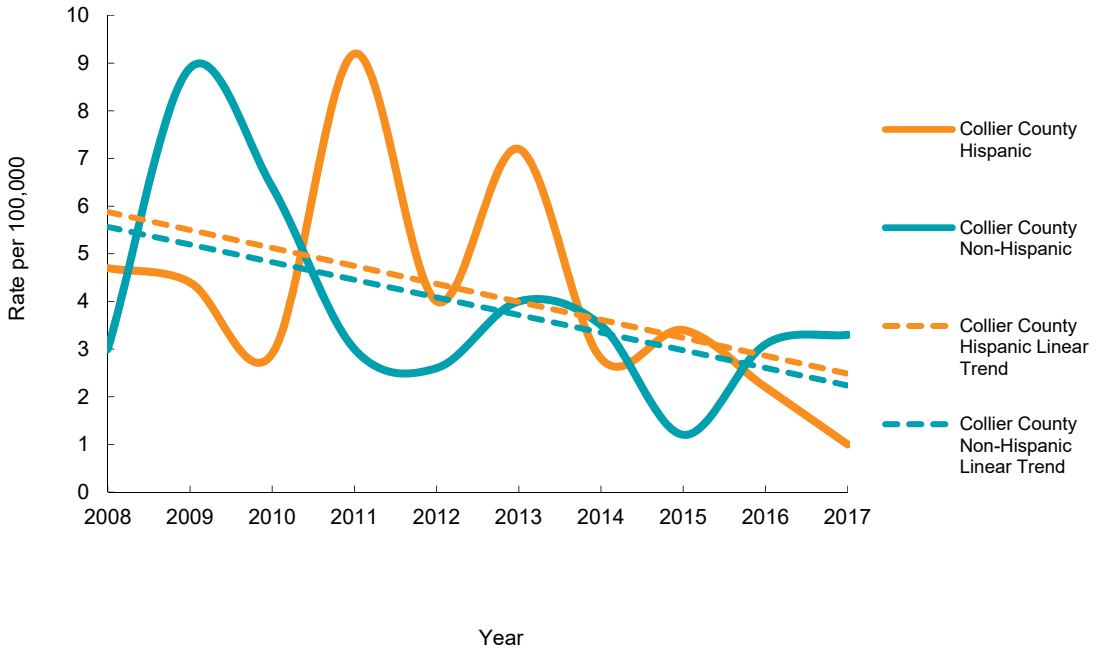
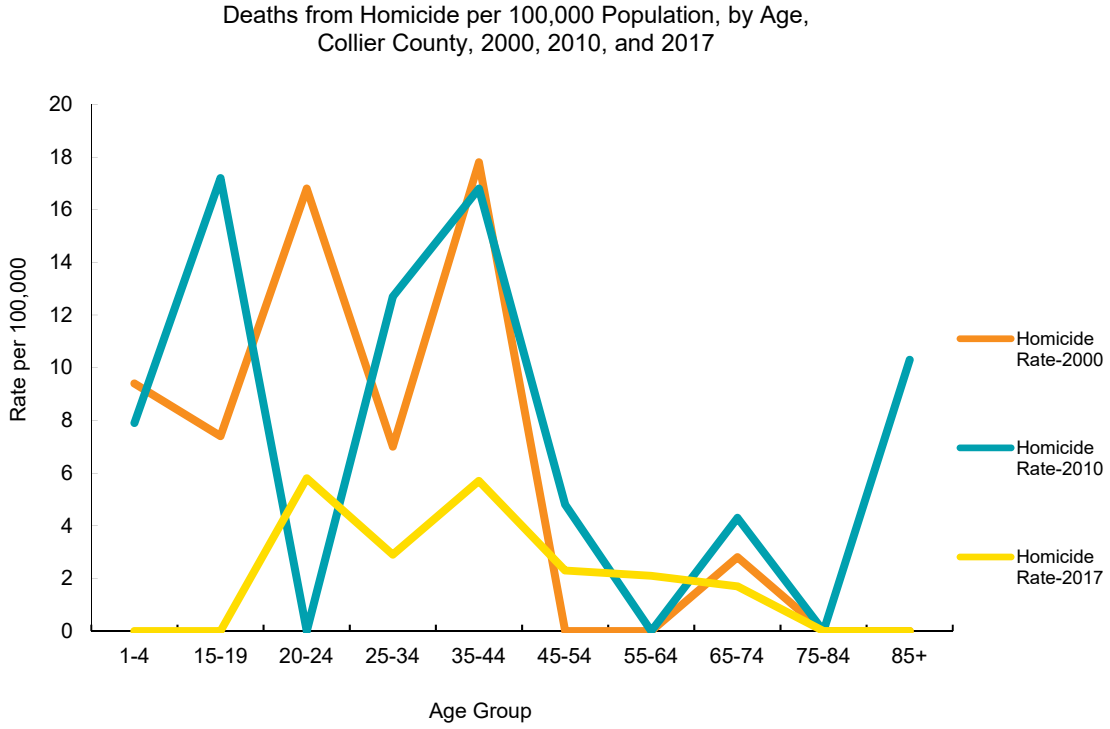


Figure 31. Deaths from Homicide per 100,000 Population, by Ethnicity, Collier County, 2008–2017



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



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. For the population of a community to gain access to health services, it needs to obtain entry into the healthcare system, locate and access a location where the needed healthcare services are provided, and access a health care provider with whom the patient can communicate with confidence.

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 health services.

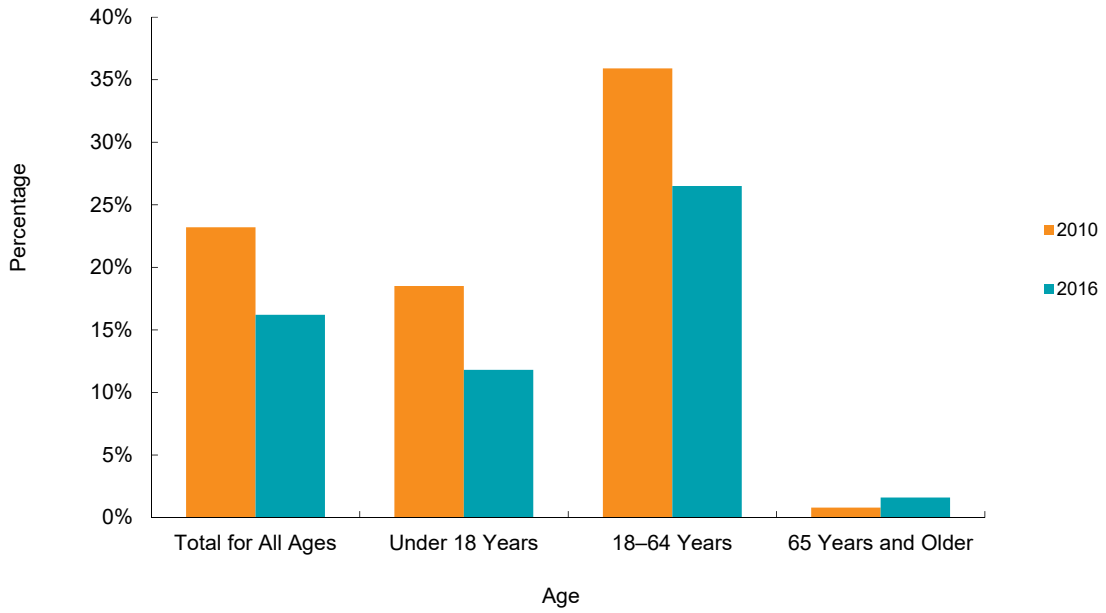
Health Insurance Coverage

Table 1 and Figure 1 show the percentage of the population in Collier County uninsured for 2010 and 2016. In 2010, 23.2 percent of the total resident population of Collier County was uninsured, by 2016 this number declined significantly by 7 percentage points to 16.2 percent. By age group, the largest decrease in the uninsured rate in Collier County was for those 18 to 64 years of age from 35.9 percent in 2010 to 26.5 percent in 2016–a decline of 9.4 points. The population under 18 years of age experienced a decrease of 6.7 percentage points, from 18.5 percent in 2010 to 11.8 percent uninsured in 2016. The uninsured population 65 years and older was the only age group to experience an increase, from 0.8 percent in 2010 to 1.6 percent in 2016.

Table 1. Percentage of the Population Uninsured by Age, Collier County, 2010 and 2016

	2010	2016
Total All Ages	23.2%	16.2%
Under 18 Years of Age	18.5%	11.8%
18 - 64 Years of Age	35.9%	26.5%
65 Years and Older	0.8%	1.6%

Figure 1. Percentage of the Population Uninsured by Age, Collier County, 2010 and 2016



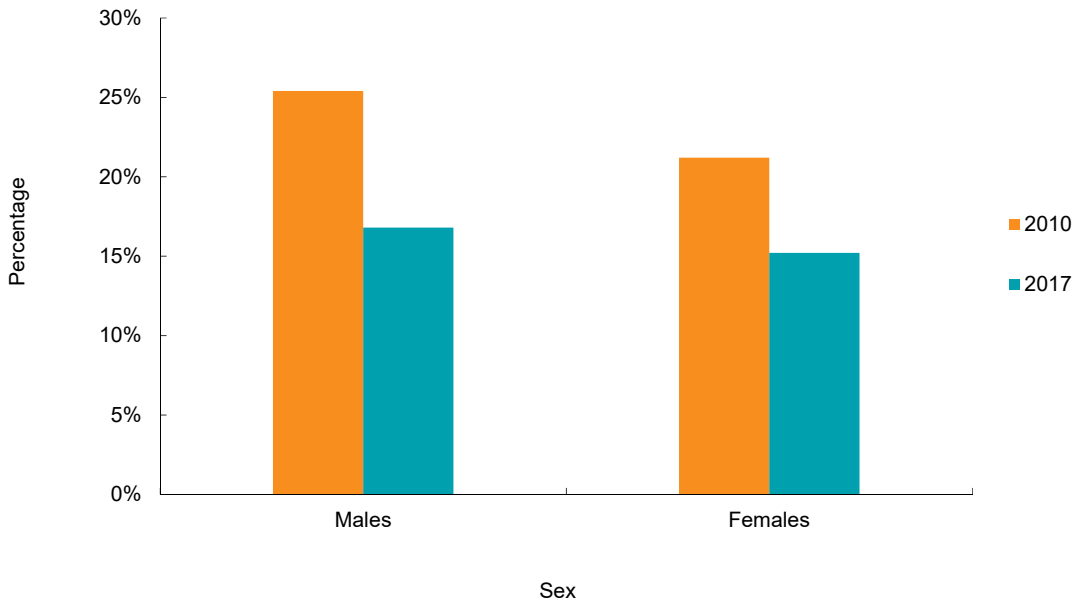
Data Source: U.S. Census Bureau, 2016 American Community Survey 1-Year Estimates

Table 2 and Figure 2 show the percentage distribution of the uninsured population in Collier County by sex for 2010 and 2017. Both males and females experienced a 6 or greater percentage point reduction on their uninsured rates.

Table 2. Percentage of the Population Uninsured by Sex, Collier County, 2010 and 2017

	2010	2017
Males	25.4%	16.8%
Females	21.2%	15.2%

Figure 2. Percentage of the Population Uninsured by Sex, Collier County, 2010 and 2017



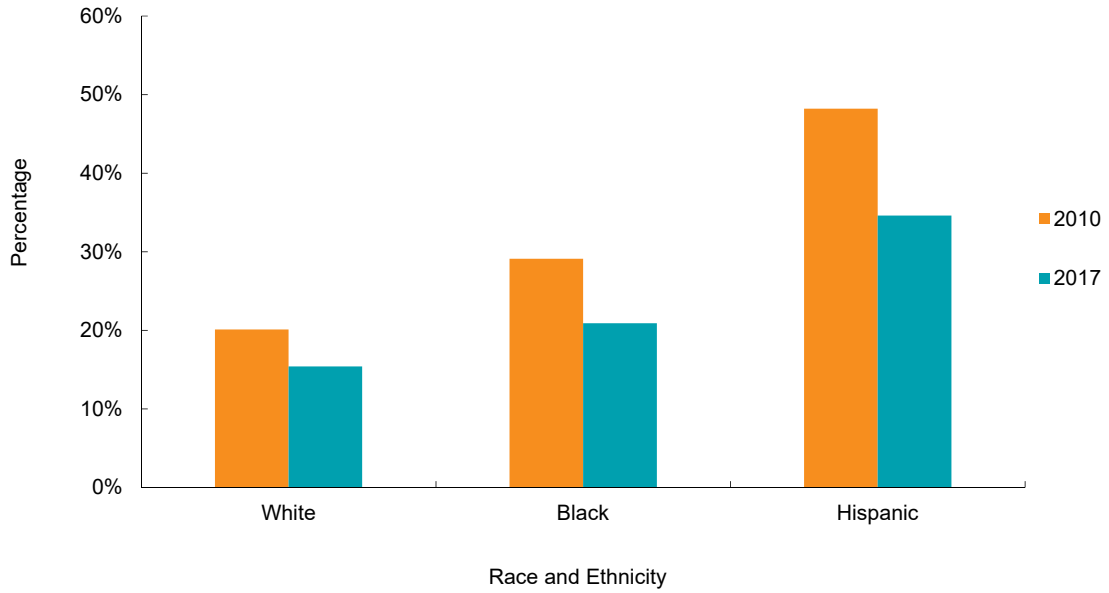
Data Source: U.S. Census Bureau, 2017 American Community Survey 1-Year Estimates

Table 3 and Figure 3 describe the percentage distribution of the uninsured population of Collier County by race and ethnicity. Between 2010 and 2017 the percentage of the uninsured white population declined by 4.7 percentage points, from 20.1 percent to 15.4 percent, respectively. During the same time interval, the uninsured percentage of the black population in Collier County decreased by 8.2 percentage points. During the period 2010 to 2017, the percentage of the uninsured Hispanic population in Collier County declined by 13.6 percentage points, from 48.2 percent in 2010 to 34.6 percent in 2017.

Table 3. Percentage of the Population Uninsured by Race and Ethnicity, Collier County, 2010 and 2017

Race and Ethnicity	2010	2017
White	20.1%	15.4%
Black	29.1%	20.9%
Hispanic	48.2%	34.6%

Figure 3. Percentage of the Population Uninsured by Race and Ethnicity, Collier County, 2010 and 2017



Data Source: U.S. Census Bureau, 2017 American Community Survey 1-Year Estimates

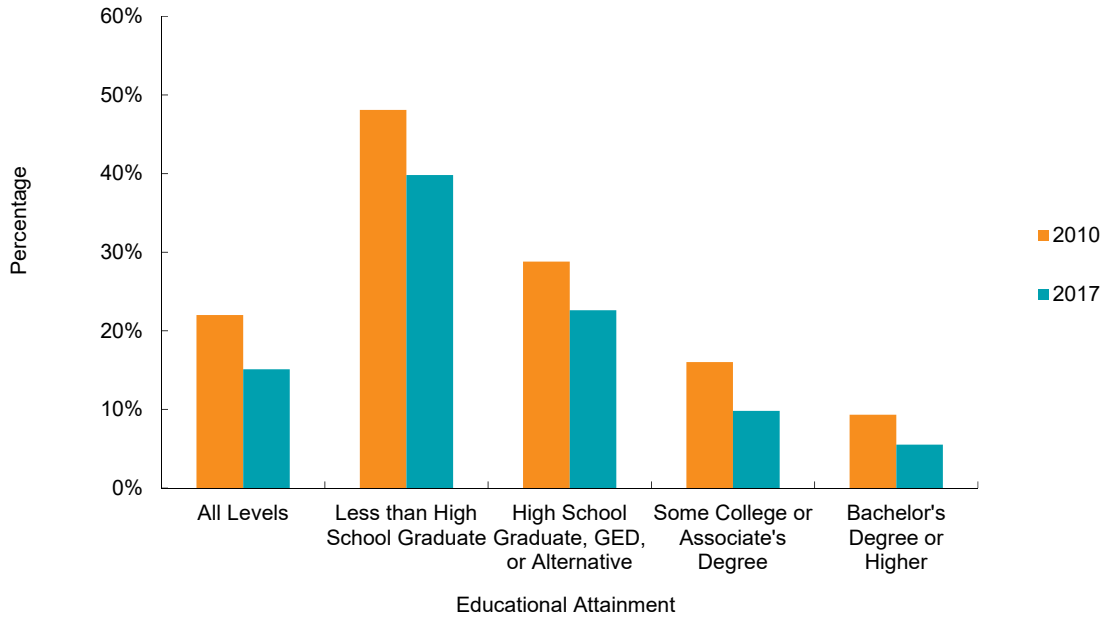
Table 4 and Figure 4 show the percentage of the population uninsured by educational attainment level in Collier County for 2010 and 2017. A consistent pattern exists between the level of educational achievement and the rate of uninsured. The higher the educational attainment the more likely one can afford health insurance. Between 2010 and 2017, 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 9.8 percent in 2017, an overall decline of 6.2 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 5.5 percent in 2017.

Table 4. Percentage of the Population Uninsured by Education, Collier County, 2010 and 2017

	2010	2017
All Levels	22.0%	15.1%
Less than High School	48.1%	39.8%
High School Graduate, GED, or Alternative	28.8%	22.6%
Some College or Associates Degree	16.0%	9.8%
Bachelor's Degree or Higher	9.3%	5.5%

Figure 4. Percentage of the Population Uninsured by Educational Attainment, Collier County, 2010 and 2017



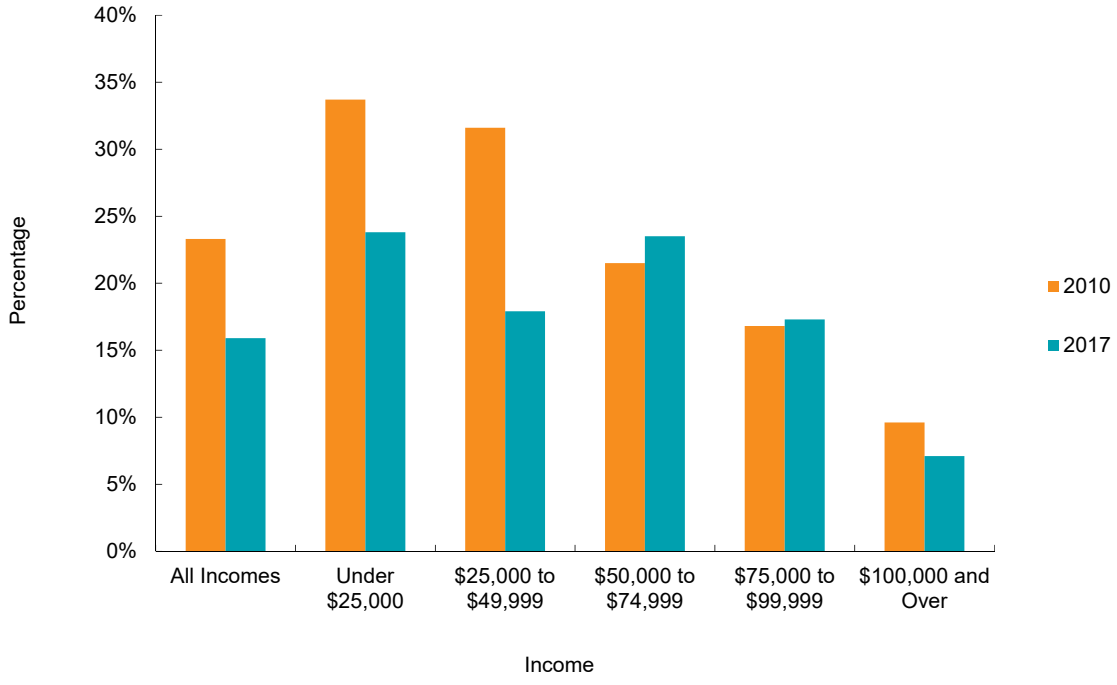
Data Source: U.S. Census Bureau, 2017 American Community Survey 1-Year Estimates

Table 5 along with Figure 5 illustrates the relationship between income level and the proportion of the population uninsured in Collier County for 2010 and 2017. While the percentage of the uninsured decreased for the majority of income levels between 2010 and 2017, the percentage of the uninsured grew for those earning $50,000 to $99,999. The most significant changes in the rate occurred among those earning under $25,000 and those earning $25,000 to $49,999, with reductions of 9.9 and 13.7 percentage points, respectively.

Table 5. Percentage of the Population Uninsured by Income, Collier County, 2010 and 2017

	2010	2017
All Incomes	23.3%	15.9%
Under $25,000	33.7%	23.8%
25,000 to 49,999	31.6%	17.9%
50,000 to 74,999	21.5%	23.5%
75,000-99,999	16.8%	17.3%
100,000 and Over	9.6%	7.1%

Figure 5. Percentage of the Population Uninsured by Income, Collier County, 2010 and 2017



Data Source: U.S. Census Bureau, 2017 American Community Survey 1-Year Estimates

Tables 6, 7, and 8 gives the number and rates of hospital beds available in Collier County and Florida in 2008 and 2017. Between 2008 and 2017, the rate of total hospital beds in Collier County increased by 2.4 percent while in Florida the rate decreased by 2.4 percent. During the same period, the rate for acute care beds in Collier County decreased by 6.5 percent while in Florida the rate decreased by 4.6 percent. In both Collier County and Florida, the rates for specialty beds increased between 2008 and 2017, by 53.7 percent and 8.7 percent, respectively.

Table 6. Total Hospital Beds with Rates per 100,000, Collier County and Florida, 2008 and 2017

	2008		2017	
	Count	Rate	Count	Rate
Collier County	906	286.3	1051	293.2
Florida	59,614	319.9	64,197	312.3

Data Source: Agency for Health Care Administration

Table 7. Total Acute Care Beds with Rates per 100,000, Collier County and Florida, 2008 and 2017

	2008		2017	
	Count	Rate	Count	Rate
Collier County	772	244	818	228.2
Florida	49,530	265.8	52,102	253.5

Data Source: Agency for Health Care Administration

Table 8. Total Specialty Beds with Rates per 100,000, Collier County and Florida, 2008 and 2017

	2008		2017	
	Count	Rate	Count	Rate
Collier County	134	42.3	233	65
Florida	10,084	54.1	12,095	58.8

Data Source: Agency for Health Care Administration

The total number of licensed physicians per 100.000 population increased by 41 percent in Collier County between 2008 and 2017 (Table 9). In Florida, the rate of licensed physicians grew by 7.2 percent during the same period. The exponential increase in population size 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 9. Total Licensed Physicians with Rates per 100,000, Collier County and Florida, 2008 and 2017

	2008		2017	
	Count	Rate	Count	Rate
Collier County	744	235.1	1188	331.4
Florida	42,307	227	63,849	310.6

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

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 been 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 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

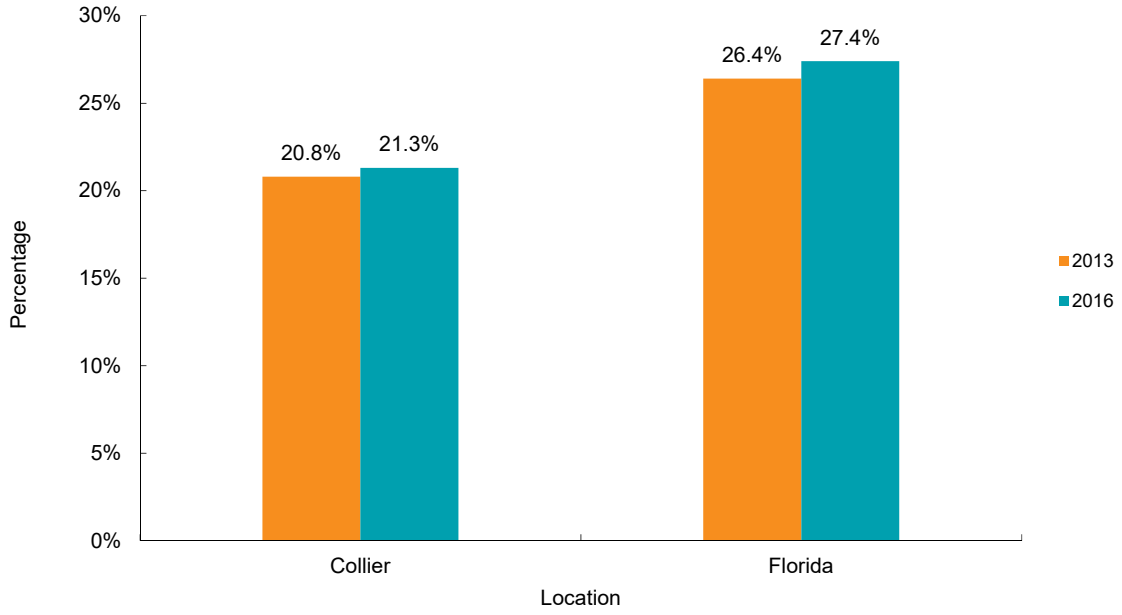
In 2013, Florida county level BRFSS began to utilize a new survey methodology from the Centers for Disease Control and Prevention called raking, which allows for the inclusion of additional sociodemographic variables as well as the incorporation of the type of telephone source (landline or cellular telephone) into the statistical weighting process. Because of the change in methodology, the comparison of county level survey data collected in and after 2013 to the previous county-level BRFSS surveys (2002–10) is not recommended. The year 2013 serves as the beginning for a new data base series for trends in health behaviors and health status for Collier County. For this reason, this 2019 Community Health Assessment Health Behaviors and Health Status chapter will only include data from 2013 and 2016.

Obesity and Overweight

In 2016, 21.3 percent of Collier County adults indicated they were obese. This was almost six 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 analyzed by sex, males are much more likely to be obese than females – both in Collier County and throughout the state. In Collier County, 22.4 percent of males were obese in 2016. This was 5.9 percentage points lower than the male obesity rate for Florida. Approximately 20 percent of women in Collier County were obese, compared to more than 25 percent in Florida (Figures 2 and 3).

Figure 1. Percent of Adults Who Are Obese,
Collier County and Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

Figure 2. Percent of Adults Who Are Obese, by Sex, Collier County, 2013 and 2016

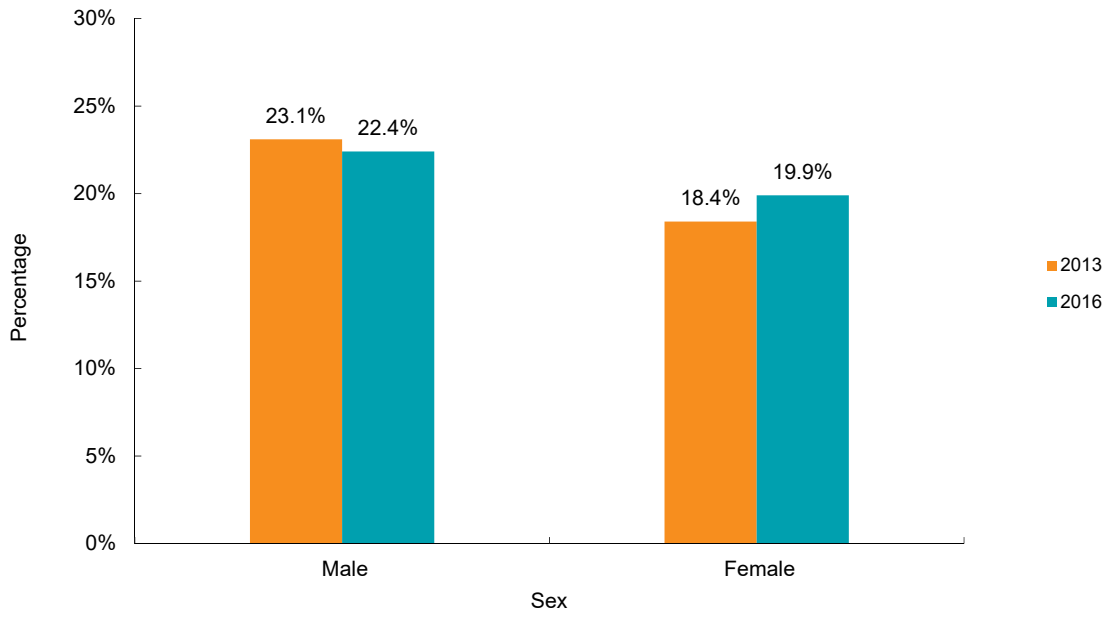
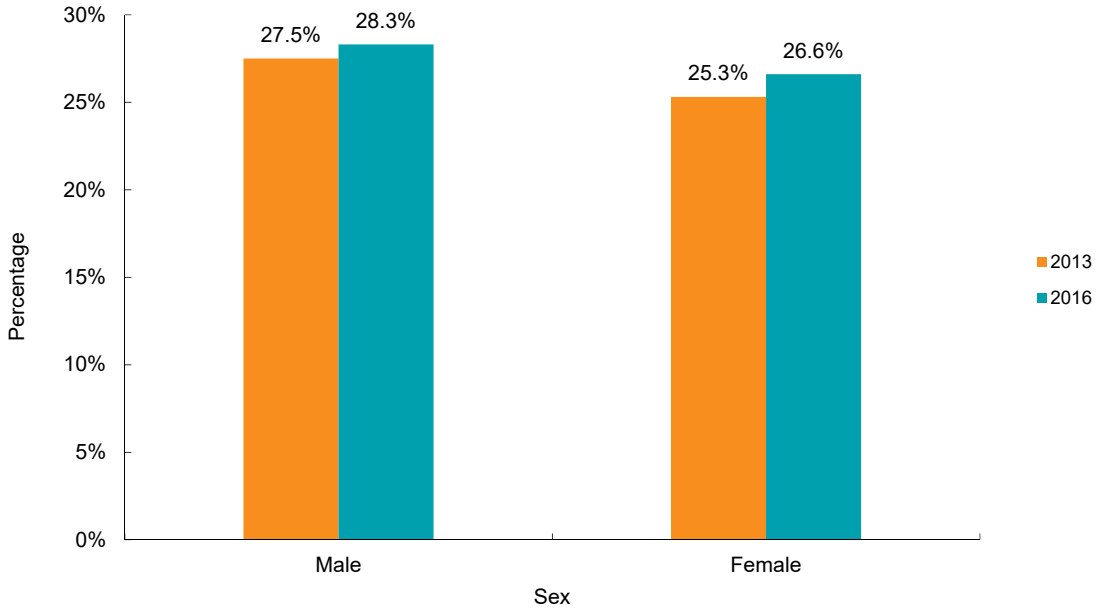


Figure 3. Percent of Adults Who Are Obese, by Sex, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

Hispanics and Non-Hispanic Blacks were more likely to be obese than Non-Hispanic Whites in Collier County at 26.9 percent and 26.8 percent compared with 18.2 percent, respectively (Figure 4). In Florida, there was less of a difference in obesity among Hispanics and Non-Hispanic Whites. At the state level, Non-Hispanic Blacks were most likely to be obese when compared with Hispanics or Non-Hispanic Whites (Figure 5).

Figure 4. Percent of Adults Who Are Obese, by Race/Ethnincity, Collier County, 2013 and 2016

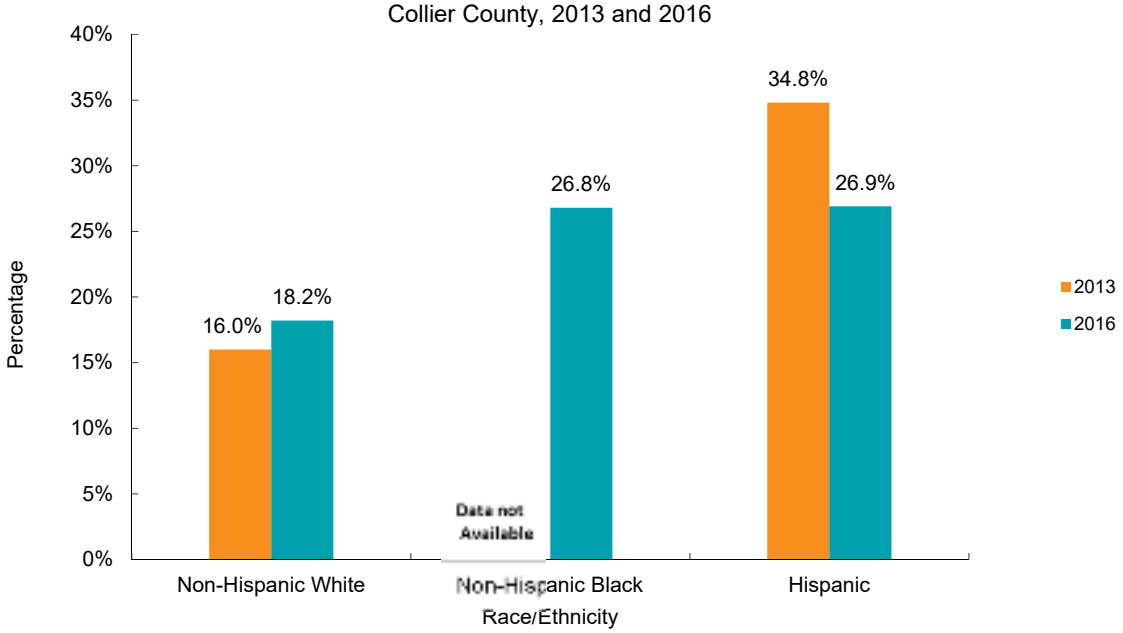
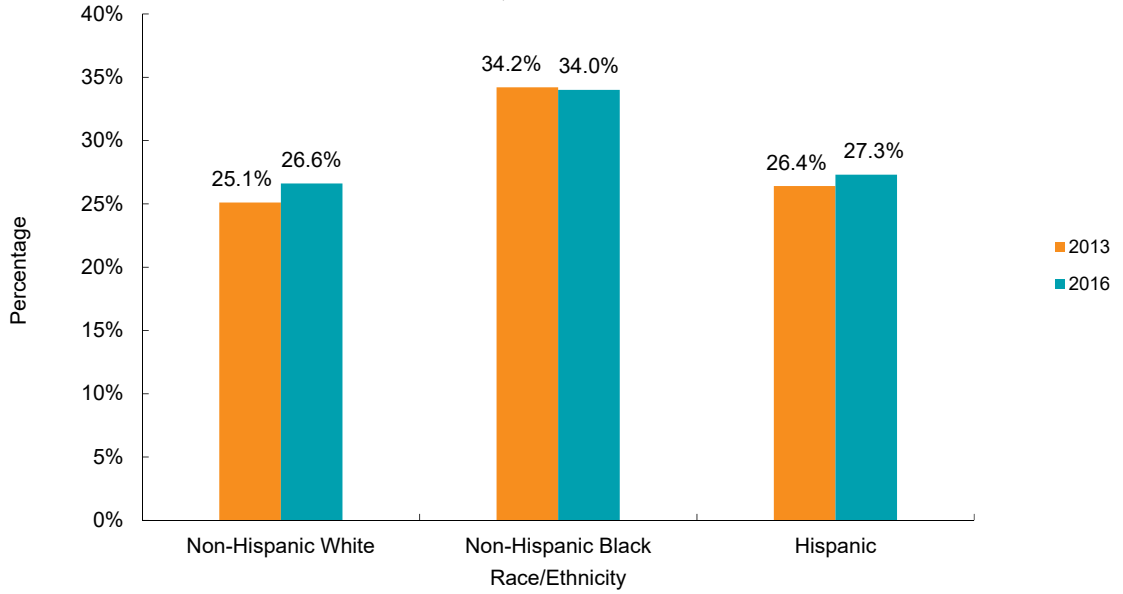


Figure 5. Percent of Adults Who Are Obese, by Race/Ethnincity, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

Adults in both Collier County and Florida were less likely to be obese if they had more than a high school education, compared to those who had education levels at or below high school (Figures 6 and 7).

Figure 6. Percent of Adults Who Are Obese, by Educational Level, Collier County, 2013 and 2016

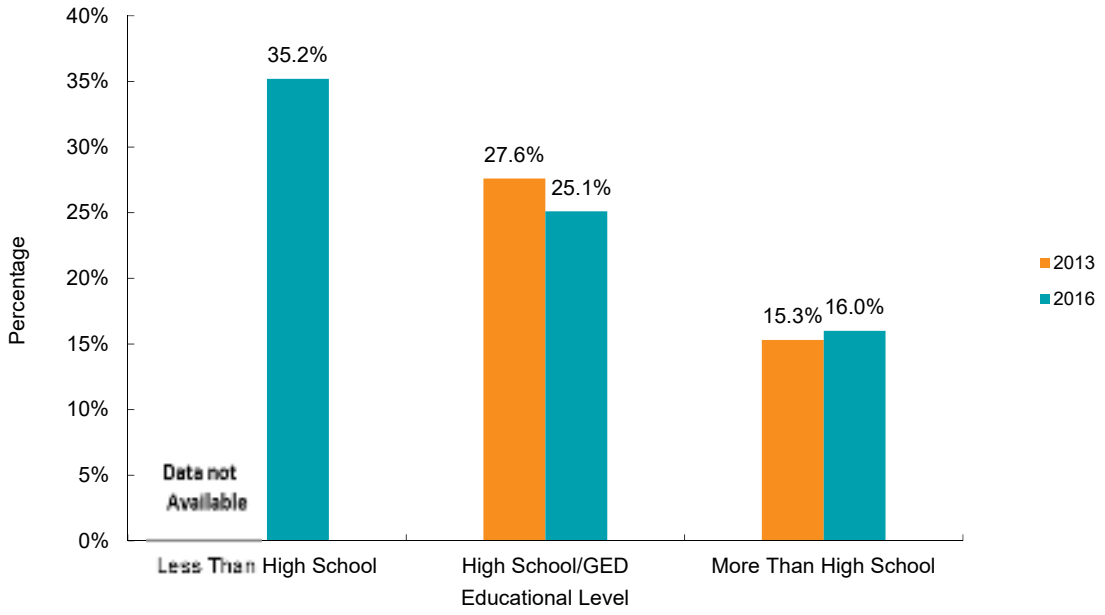
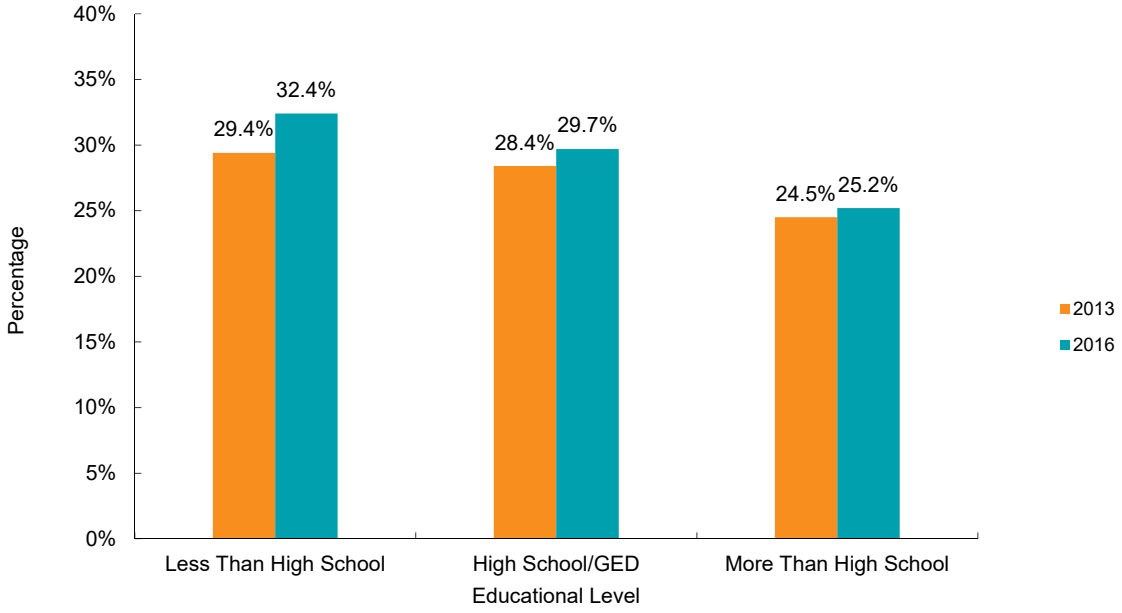


Figure 7. Percent of Adults Who Are Obese, by Educational Level, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

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 2015-2016 indicate that approximately 39.8 percent of U.S. adults were obese. For the youth ages 2 to 19 years the obesity rate was 18.5 percent.

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 and 2016. As a rule, the pattern is consistent: the lower the income, the higher the percentage of adult population who are obese. An exception to this was noted in 2013 in Collier County for persons with an annual income of $25,000 to $49,999, where that income category was 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 County, 2013 and 2016

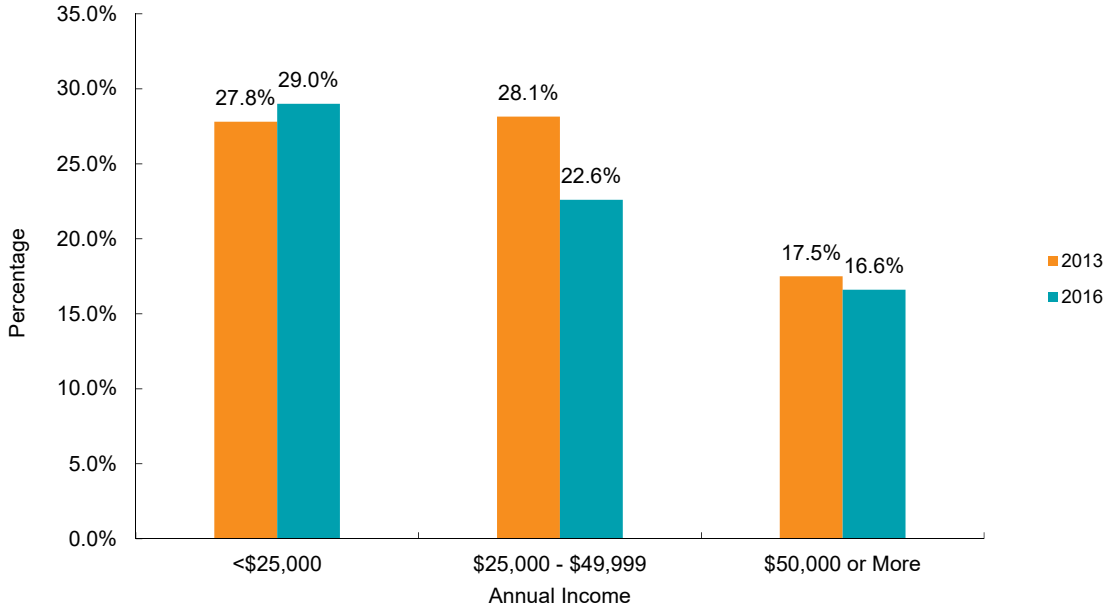
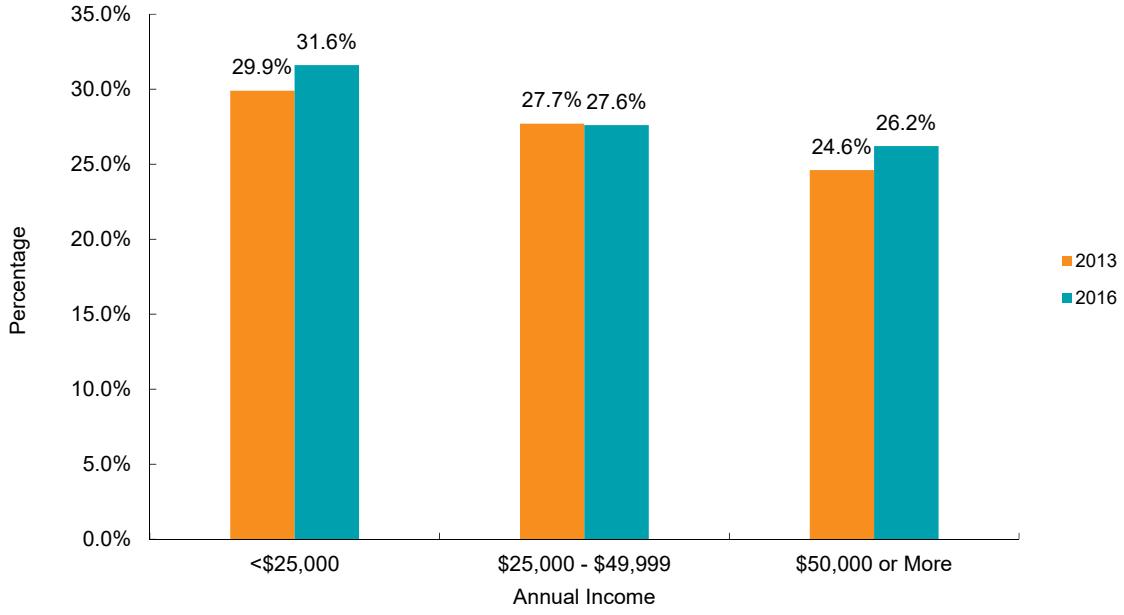


Figure 9. Percent of Adults Who Are Obese, by Annual Income, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016

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 County, 2013 and 2016

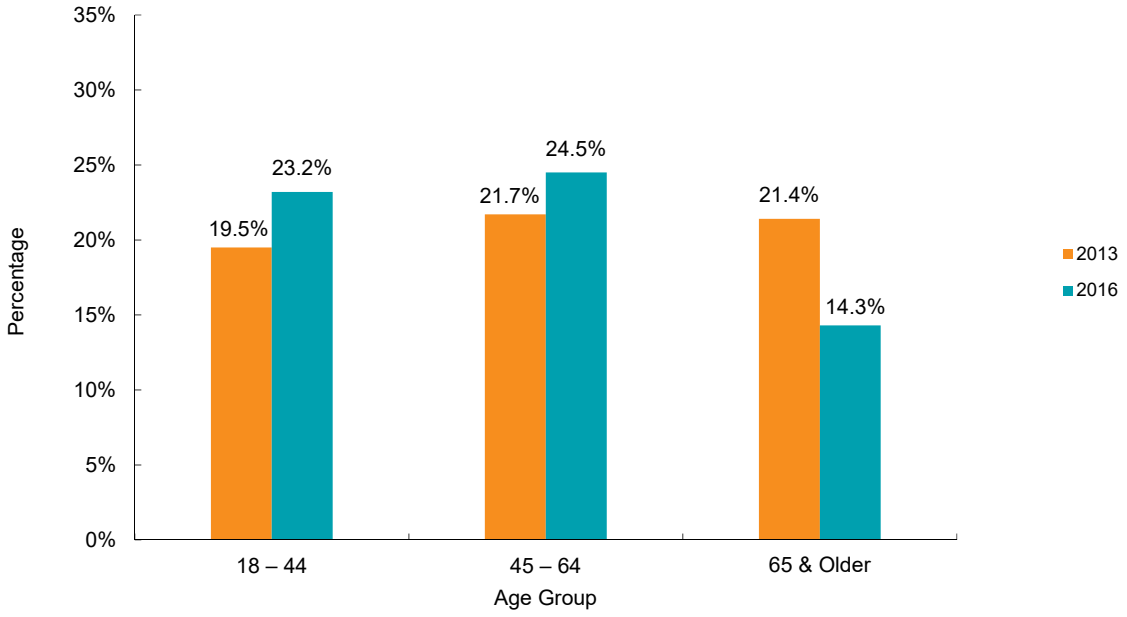
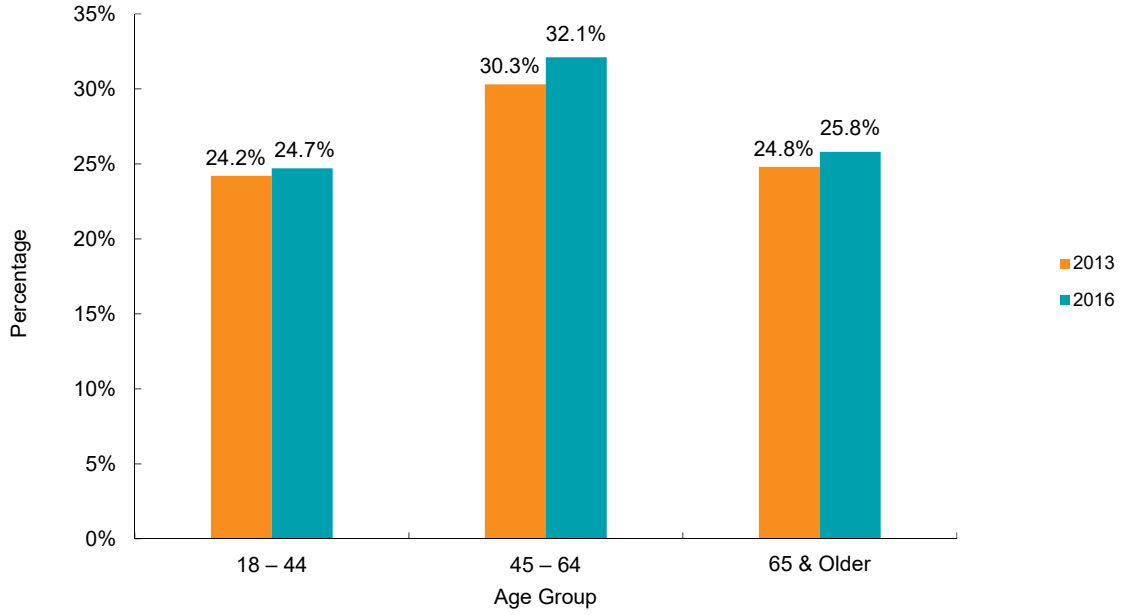


Figure 11. Percent of Adults Who Are Obese, by Age Group, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

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 and 2016

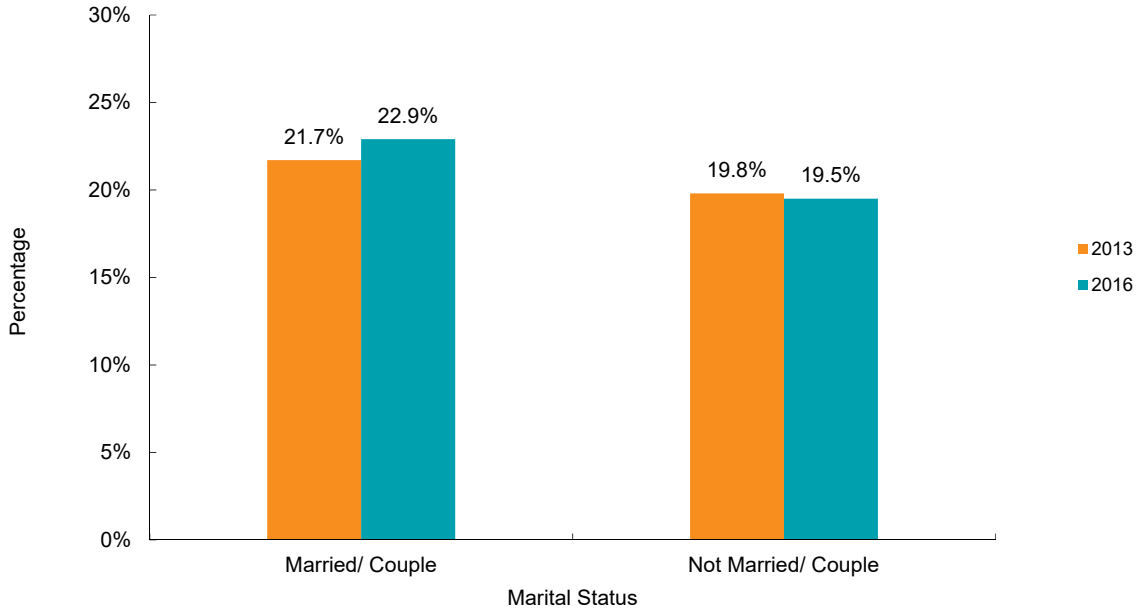
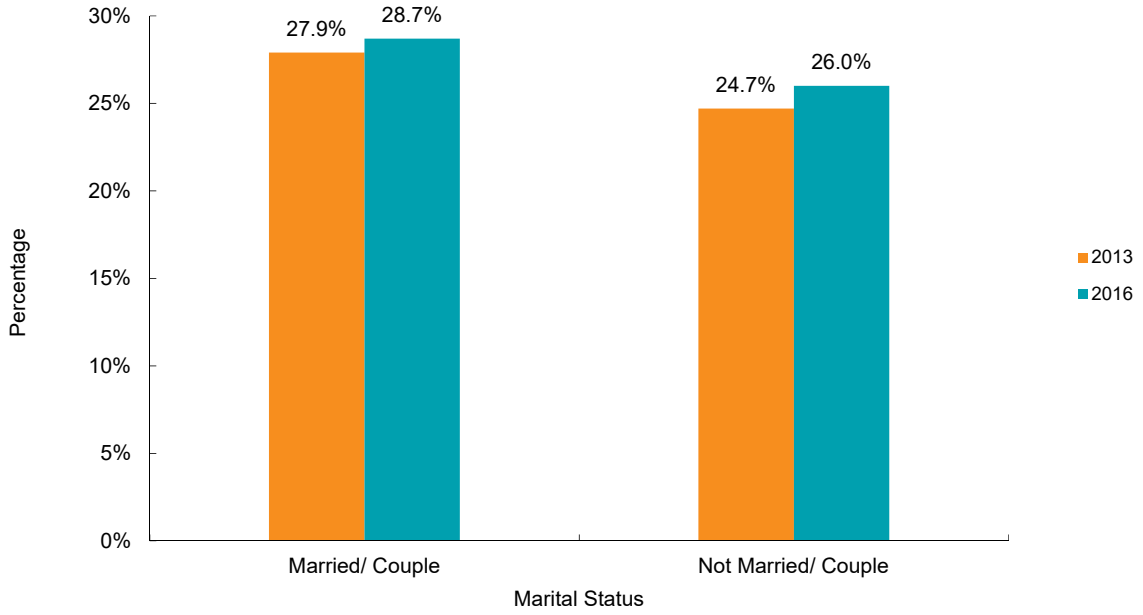


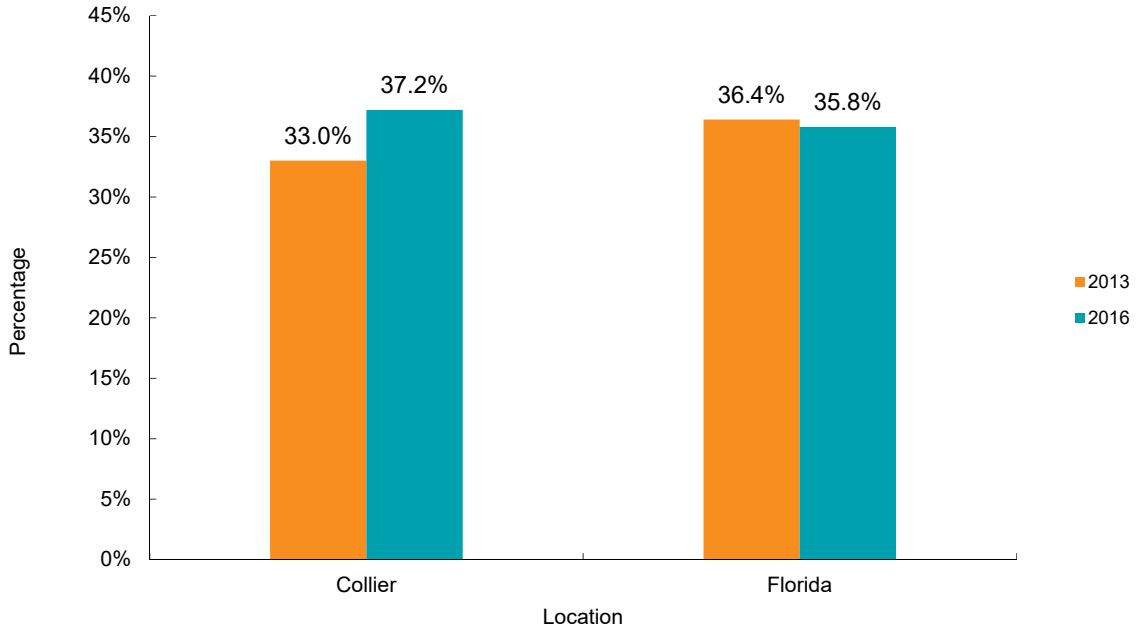
Figure 13. Percent of Adults Who Are Obese, by Marital Status, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

Overall, Collier County residents were less likely to be overweight than their Florida counterparts in 2013. In 2016, the opposite was true. (Figure 14).

Figure 14. Percent of Adults Who Are Overweight, Collier County and Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

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 and 2016

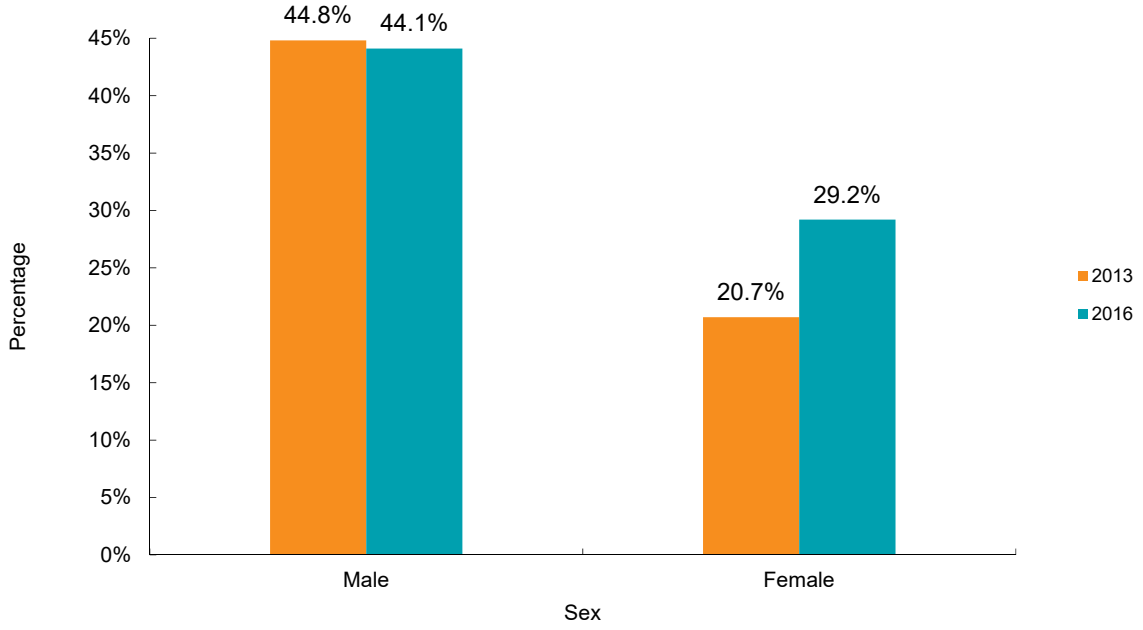
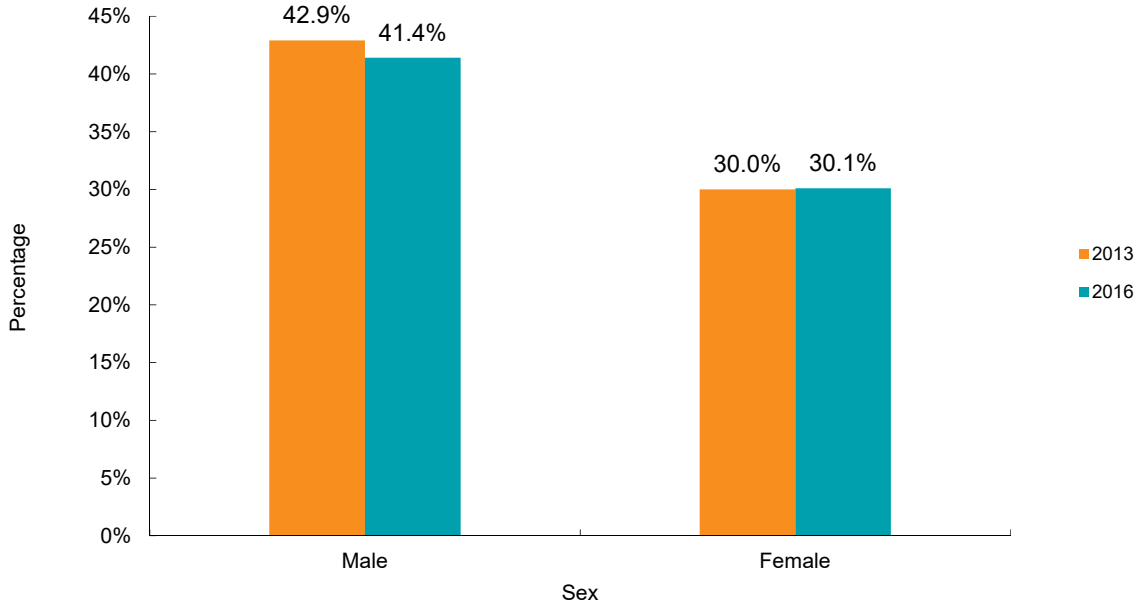


Figure 16. Percent of Adults Who Are Overweight, by Sex, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

In Collier County, Non-Hispanic Blacks were more likely to be overweight than other ethnicity groups. At the state level, Hispanics were more likely to be overweight. (Figures 17 and 18).

Figure 17. Percent of Adults Who Are Overweight, by Race/Ethnicity, Collier County, 2013 and 2016

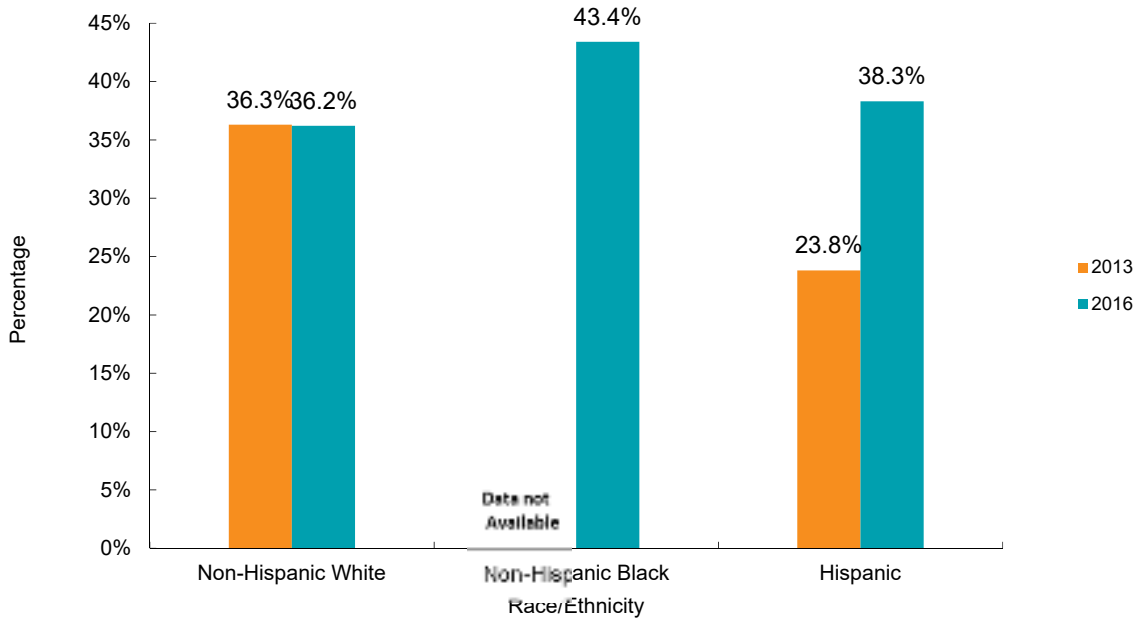
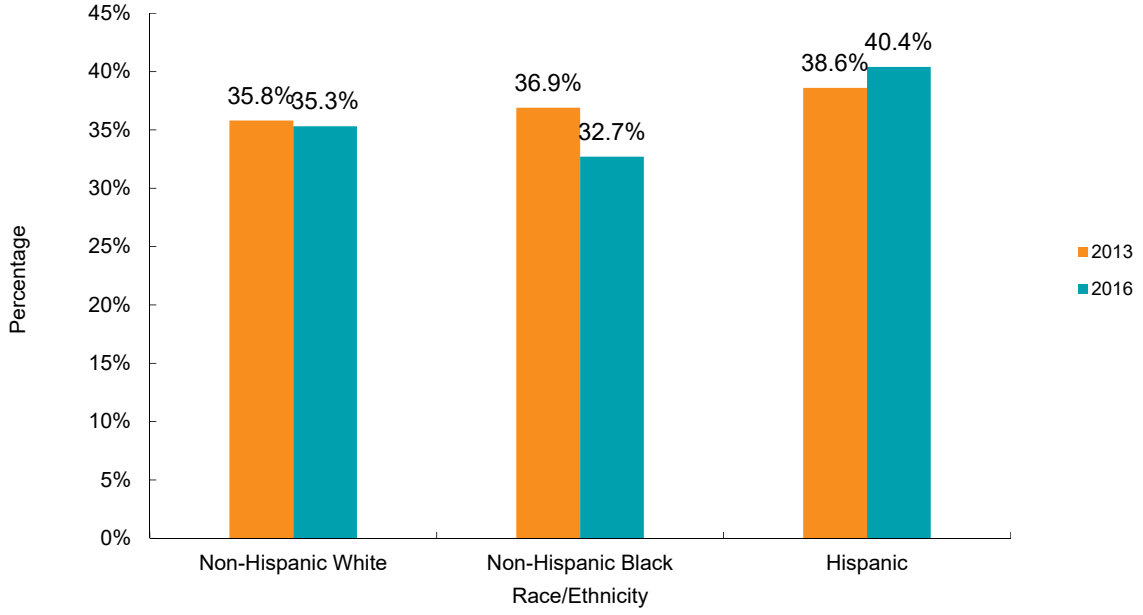


Figure 18. Percent of Adults Who Are Overweight, by Race/Ethnicity, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

At both the state and local levels, persons who had more than a high school education were more likely to be overweight than those with just a high school/GED education or less in 2016 (Figure 19 and 20).

Figure 19. Percent of Adults Who Are Overweight, by Educational Level, Collier County, 2013 and 2016

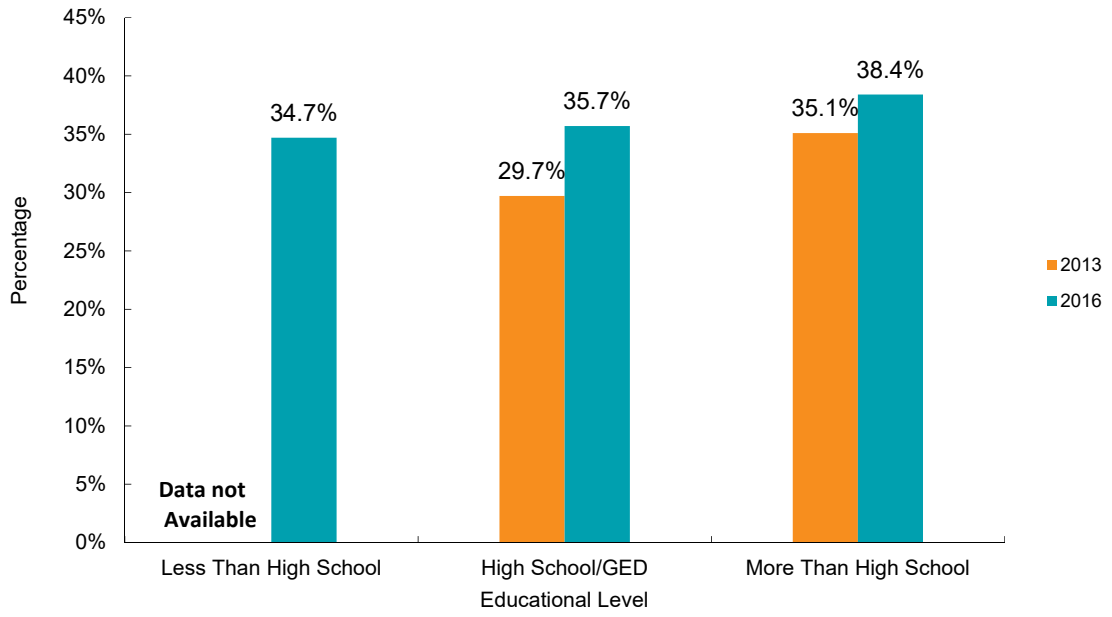
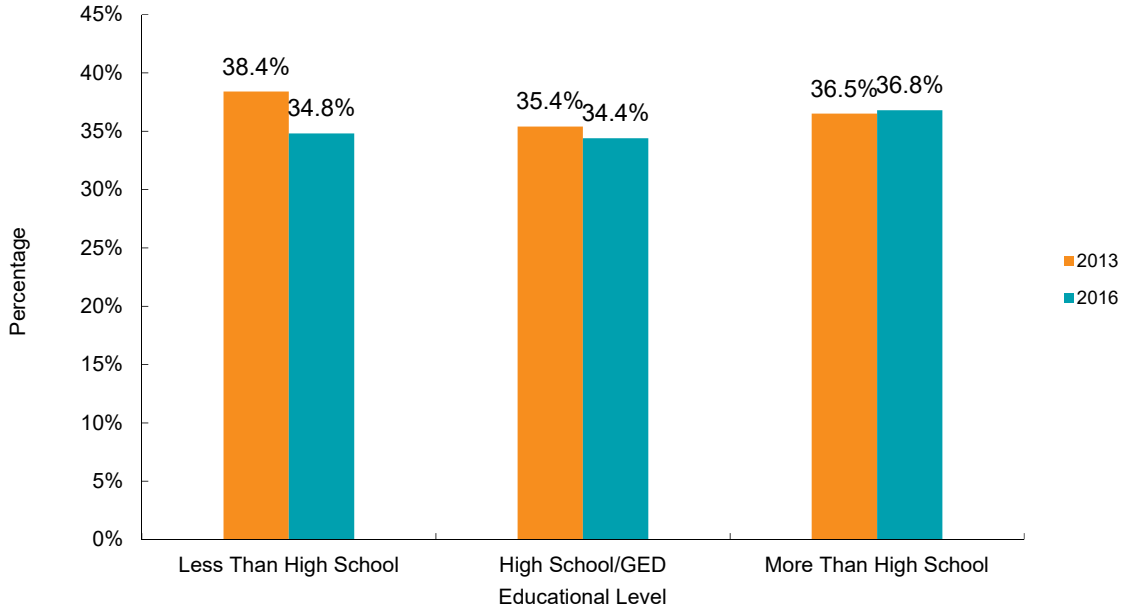


Figure 20. Percent of Adults Who Are Overweight, by Educational Level, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

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 at 41.1 percent (Figures 21 and 22).

Figure 21. Percent of Adults Who Are Overweight, by Annual Income, Collier County, 2013 and 2016

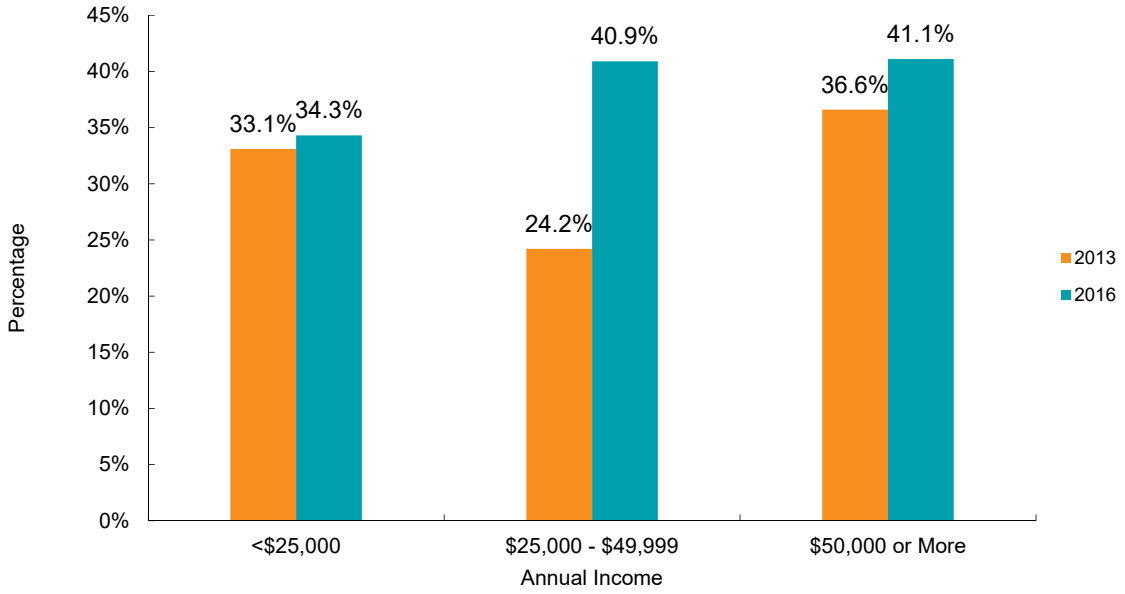
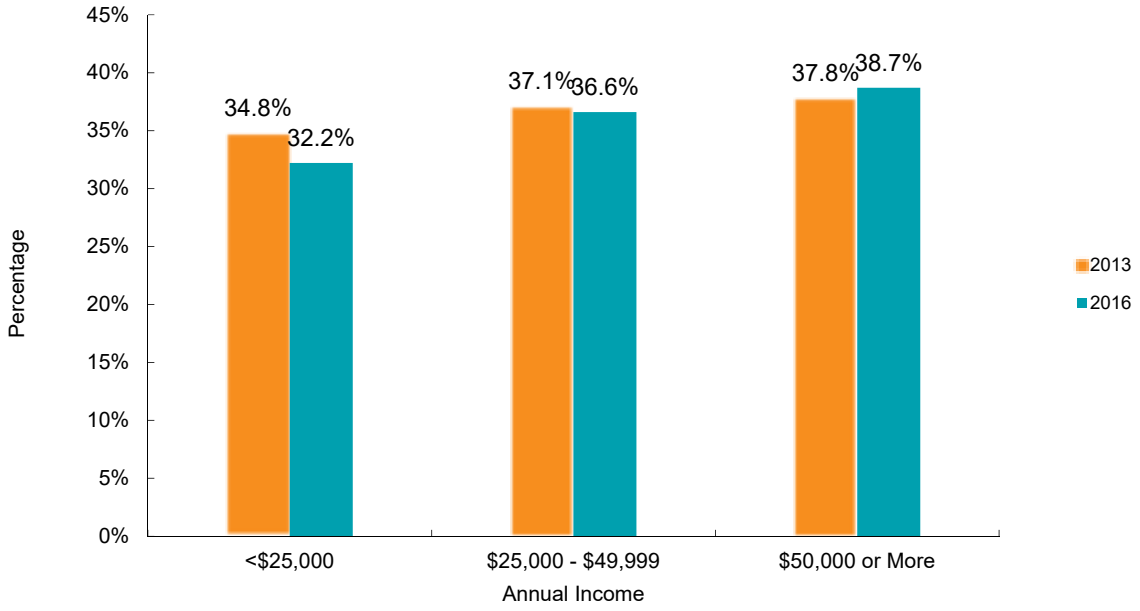


Figure 22. Percent of Adults Who Are Overweight, by Annual Income, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

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

Figure 23. Percent of Adults Who Are Overweight, by Age Group, Collier County, 2013 and 2016

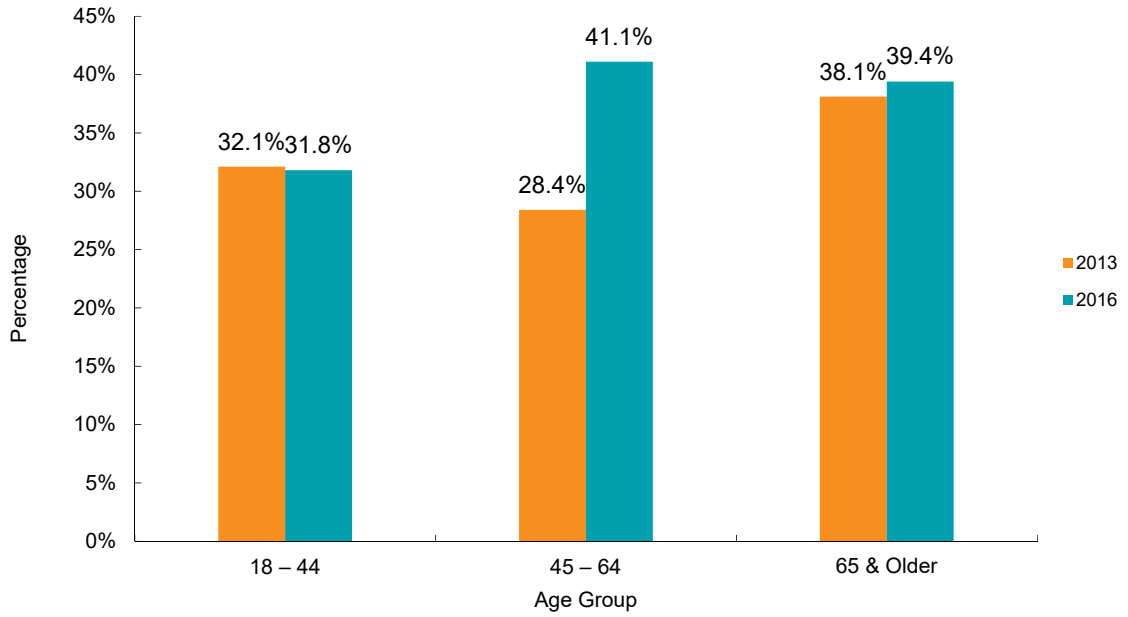
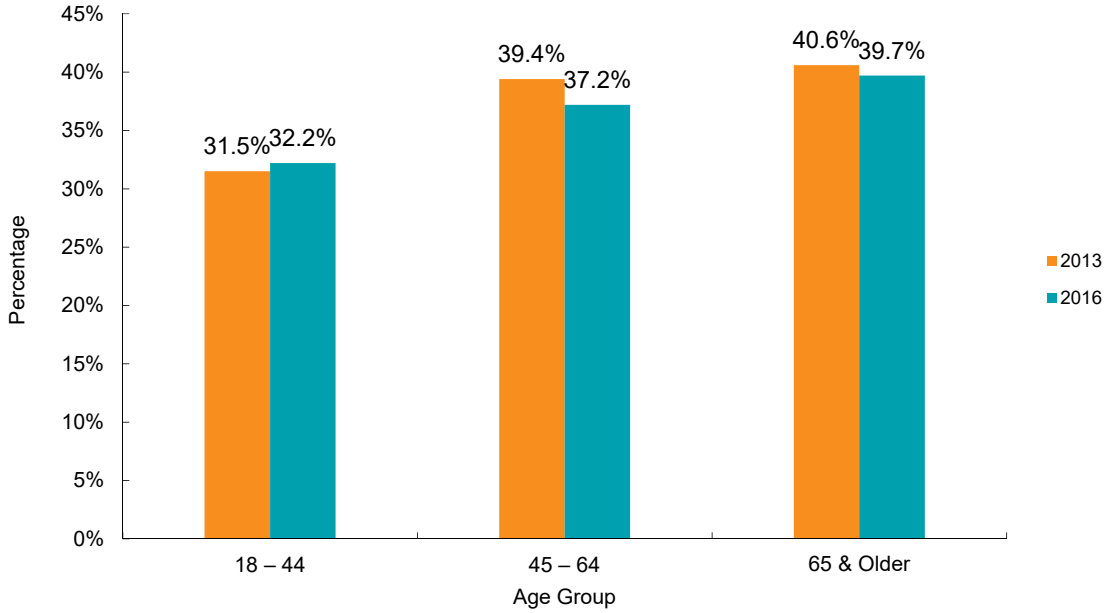


Figure 24. Percent of Adults Who Are Overweight, by Age Group, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

In 2013, married individuals were more likely to be overweight than those not married both at the state and local levels. In 2016, there was a 13.8 percent increase in the overweight rate of individuals who were not married, making this the group with the highest overweight prevalence in Collier County. (Figures 25 and 26).

Figure 25. Percent of Adults Who Are Overweight, by Marital Status, Collier County, 2013 and 2016

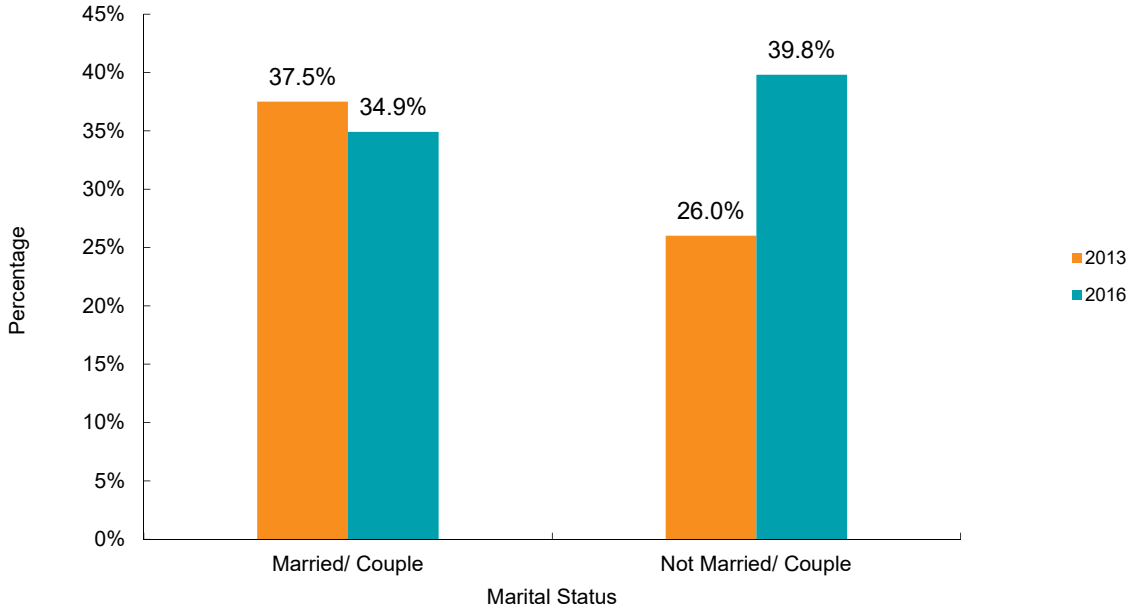
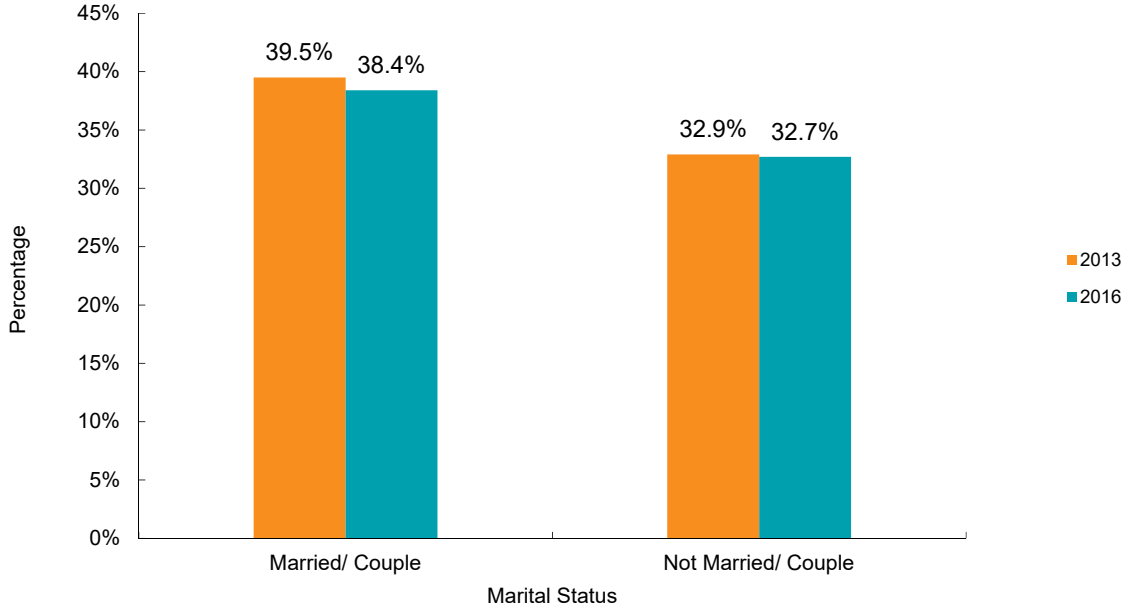


Figure 26. Percent of Adults Who Are Overweight, by Marital Status, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

Tobacco Use

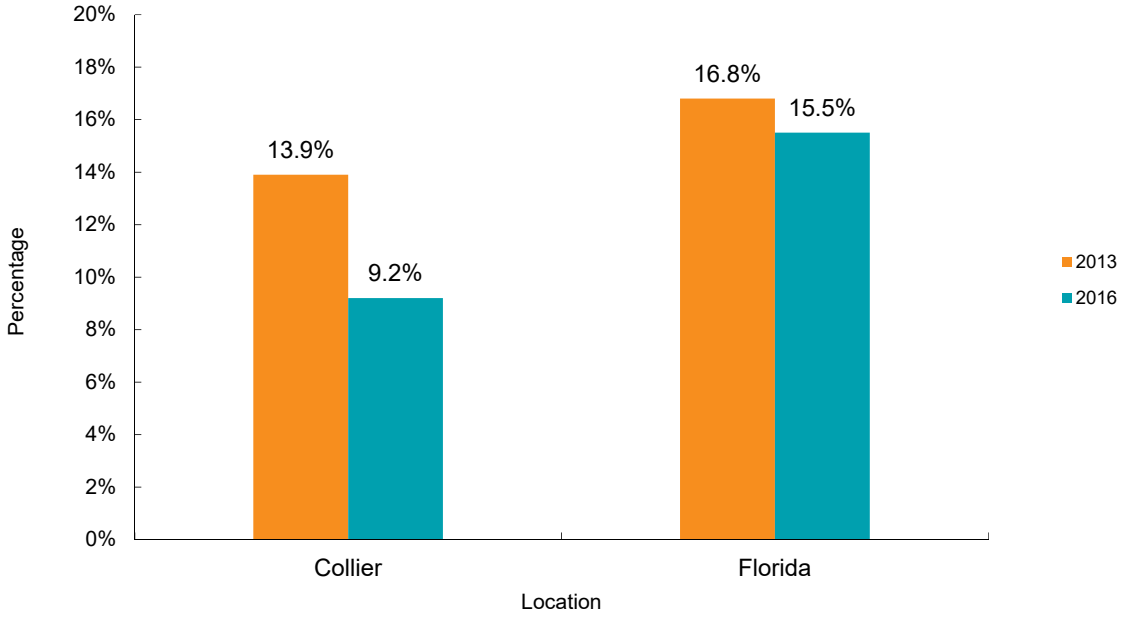
The percentage of the adult population who are current smokers in a community measures the extent of the health risk within that population related to tobacco use and its detrimental effects.

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 2016, the percent of adults who were currently smoking in Collier County was significantly lower than the proportion throughout the state of Florida, 9.2 percent compared with 15.5 percent, respectively (Figure 27).

Figure 27. Percent of Adults Who are Currently Smokers, Collier County and Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

In 2016, the percentage of adult females currently smoking in Florida was 7.2 percent greater than in Collier County, while the percentage of male smokers was 5.6 percent greater in Florida (Figures 28 and 29).

Figure 28. Percent of Adults Who are Currently Smokers, by Sex, Collier County, 2013 and 2016

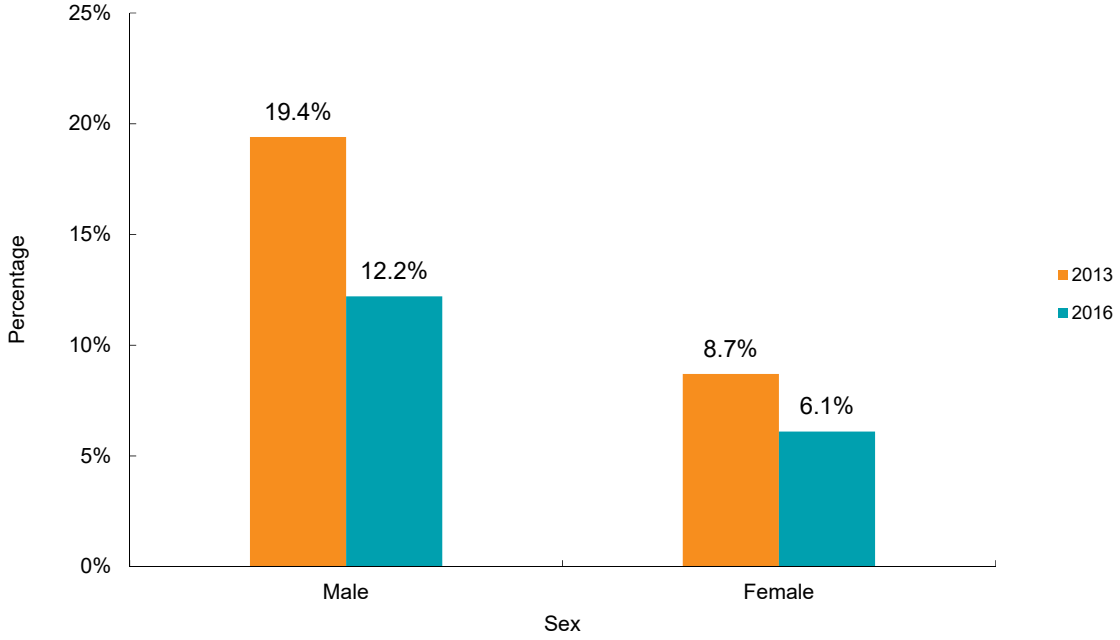
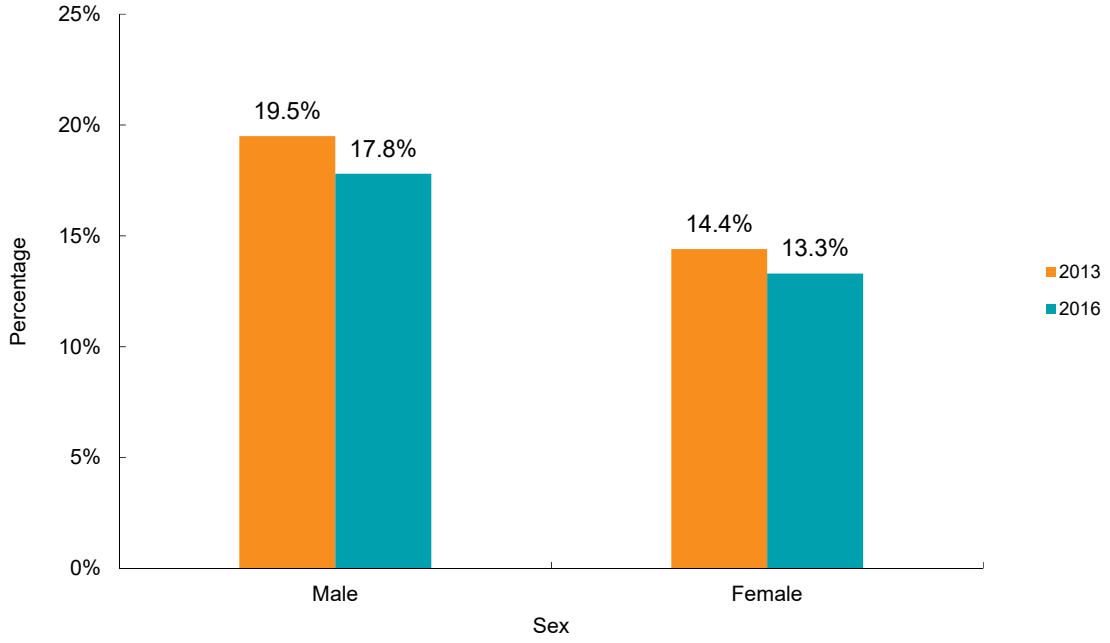


Figure 29. Percent of Adults Who are Currently Smokers, by Sex, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

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). Income level and educational attainment may 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 and 2016

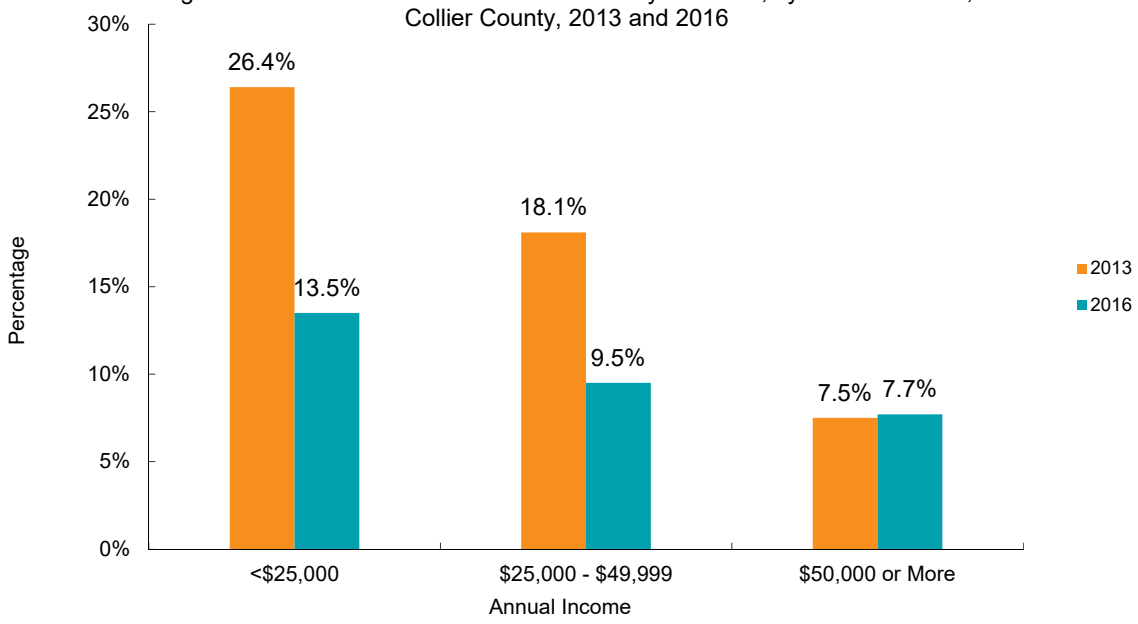


Figure 31. Percent of Adults Who are Currently Smokers, by Annual Income, Florida, 2013 and 2016

Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

Figure 32. Percent of Adults Who are Currently Smokers, by Educational Level, Collier County, 2013 and 2016

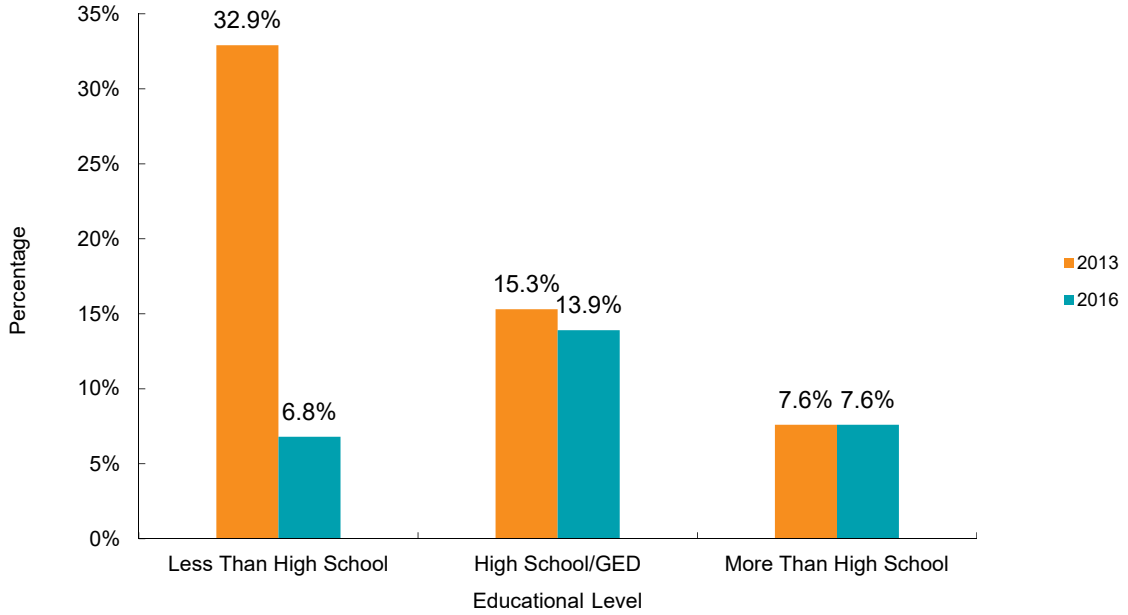
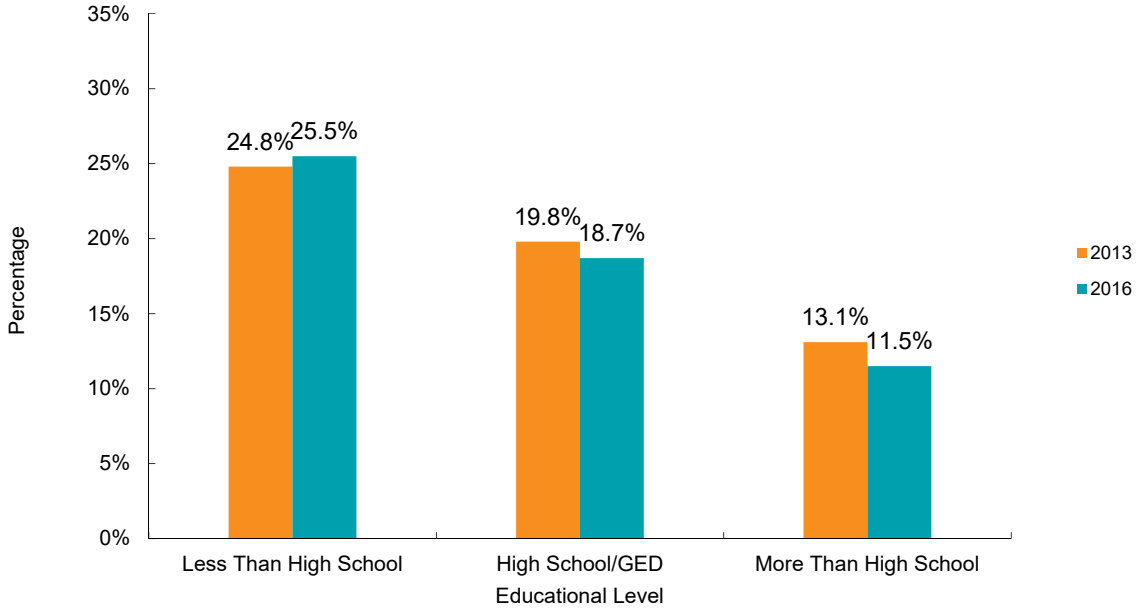


Figure 33. Percent of Adults Who are Currently Smokers, by Educational Level, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

At both the state and local levels, Non-Hispanic Whites were more likely to be current smokers compared with Non-Hispanic Blacks and Hispanics in 2016. By contrast, in 2013, Hispanics in Collier County were almost twice as likely to be current smokers when compared to Non-Hispanics Whites (Figures 34 and 35).

Figure 34. Percent of Adults Who are Currently Smokers, by Race/Ethnicity, Collier County, 2013 and 2016

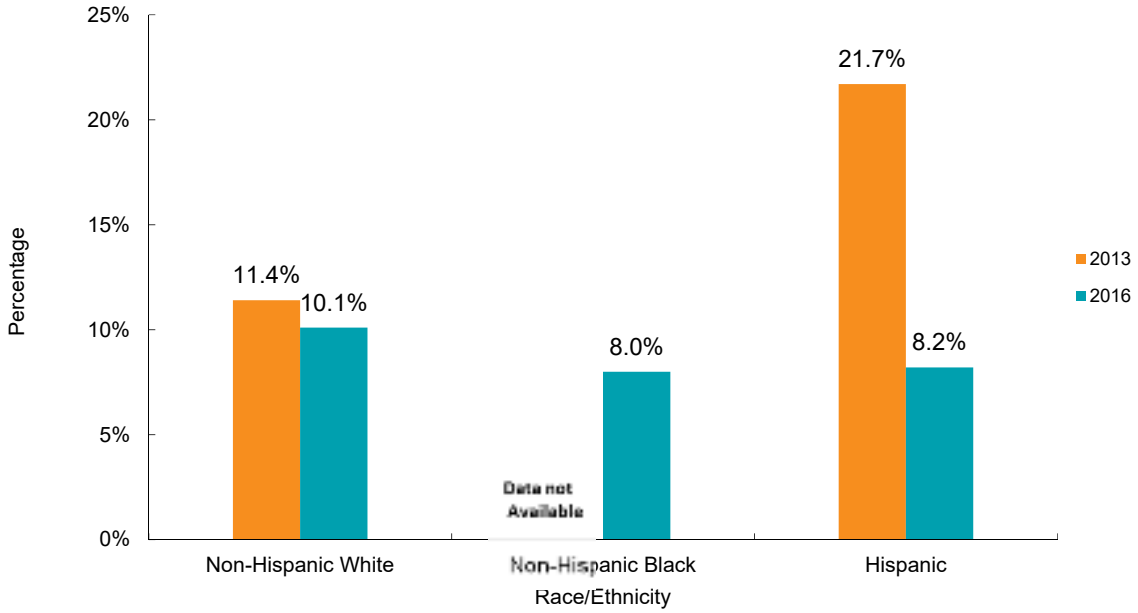
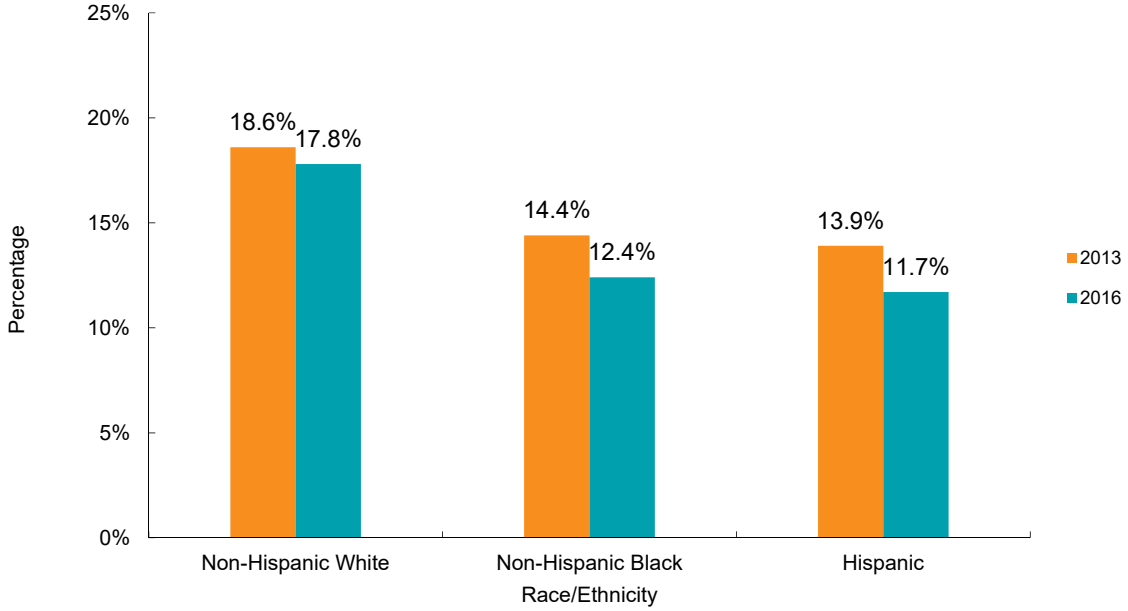


Figure 35. Percent of Adults Who are Currently Smokers, by Race/Ethnicity, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

Married couples have a lower smoking rate than non-married couples in both Collier County and the state. In 2013, there was a difference of 16.7 percent and 7.2 percent between the two groups in Collier County and Florida, respectively. In 2016, there was less of a difference in Collier County at only 2.6 percent, while the gap widened in Florida by 8.3 percentage points (Figures 36 and 37).

Figure 36. Percent of Adults Who are Currently Smokers, by Marital Status, Collier County, 2013 and 2016

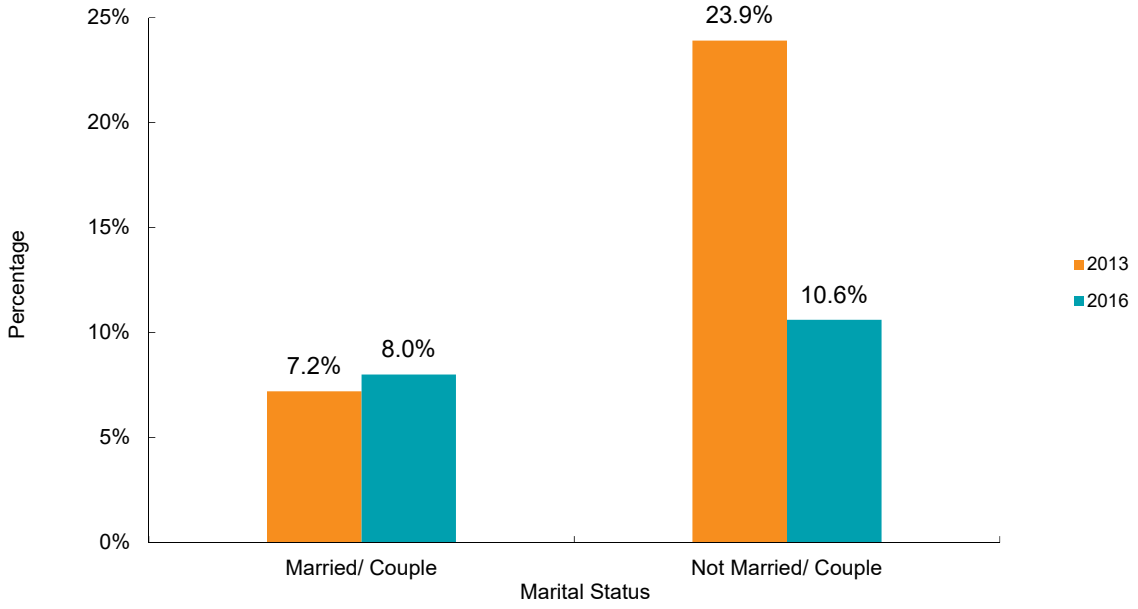
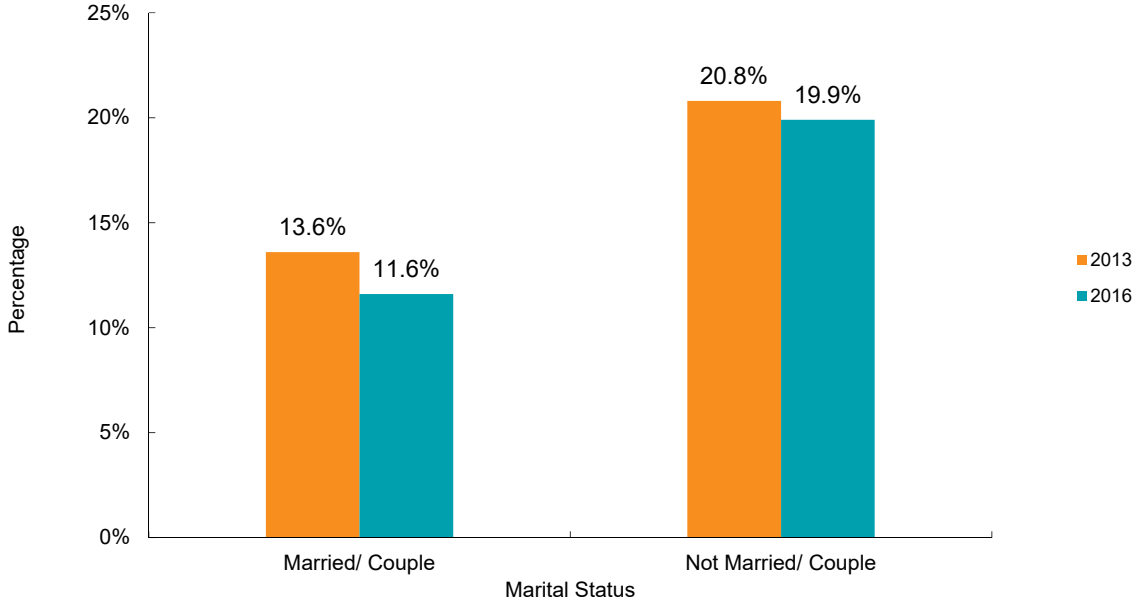


Figure 37. Percent of Adults Who are Currently Smokers, by Marital Status, Florida, 2013 and 2016

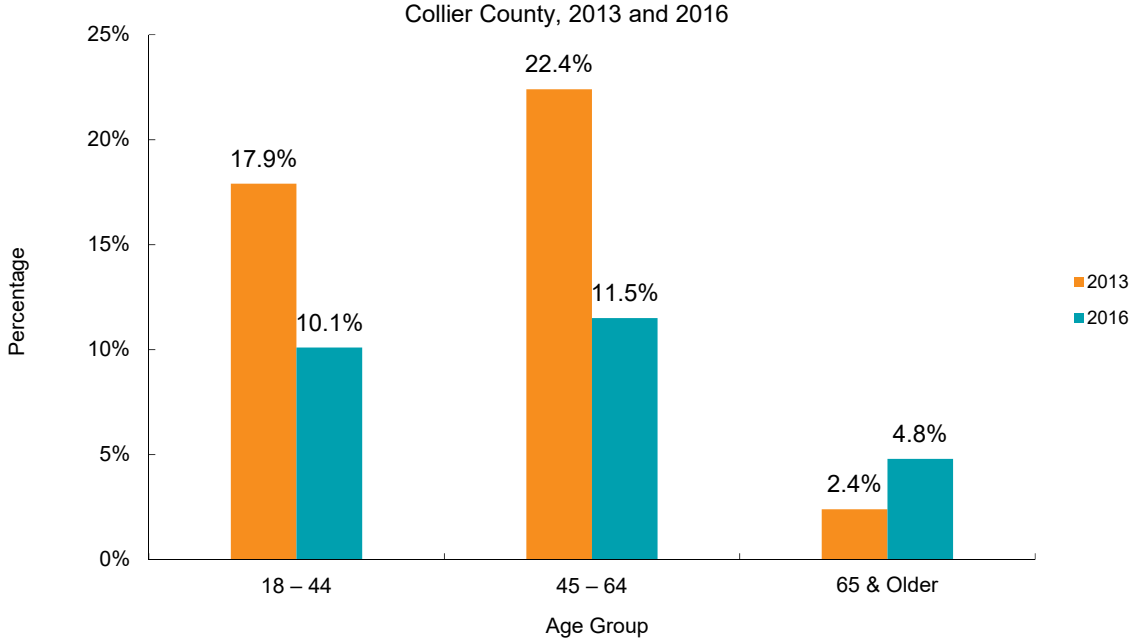


Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

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 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 2016 in Collier County, almost 29 percent of males and 22.1 percent of females were former smokers while in Florida the corresponding ratios were 30.9 percent and 22.4 percent, respectively (Figures 41 and 42).

Figure 38. Percent of Adults Who are Currently Smokers, by Age Group, Collier County, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

Figure 39. Percent of Adults Who are Currently Smokers, by Age Group, Florida, 2013 and 2016

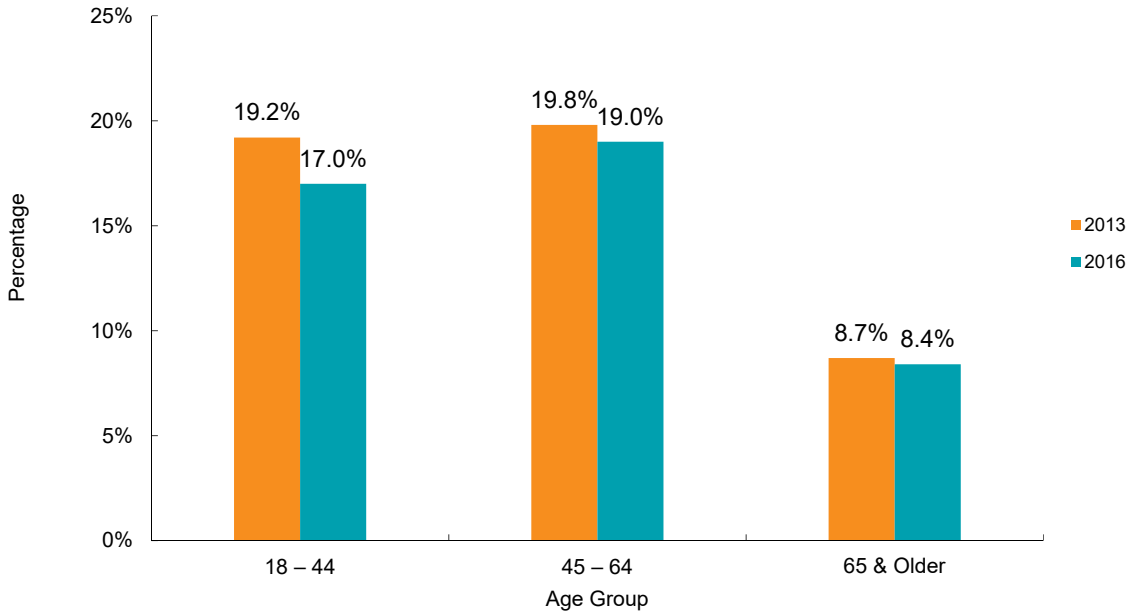
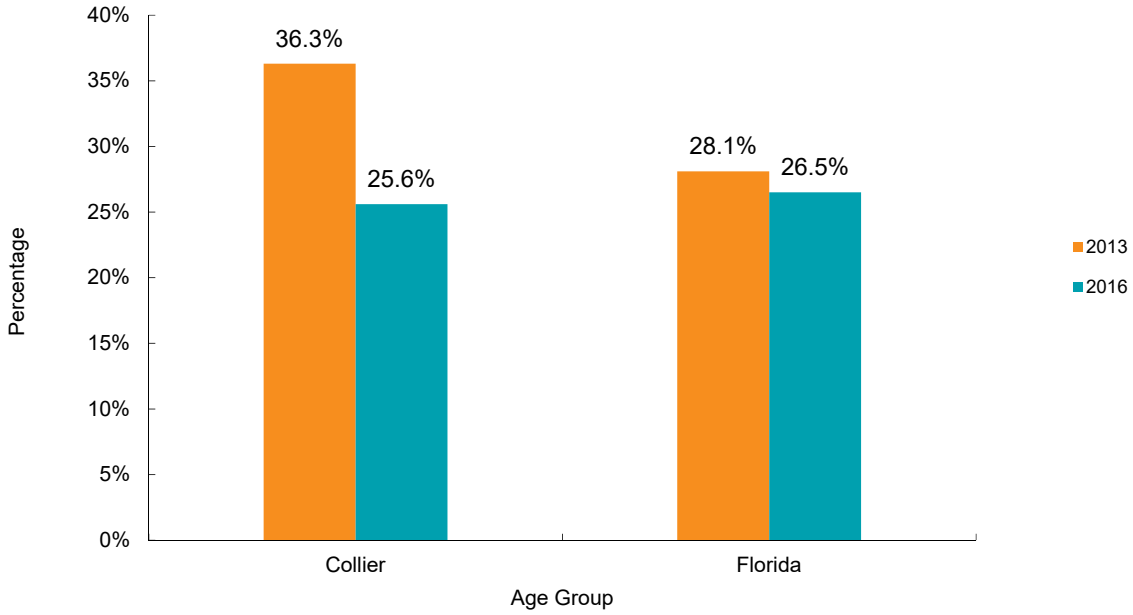


Figure 40. Percent of Adults Who are Former Smokers, Collier County and Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

Figure 41. Percent of Adults Who are Former Smokers, by Sex, Collier County, 2013 and 2016

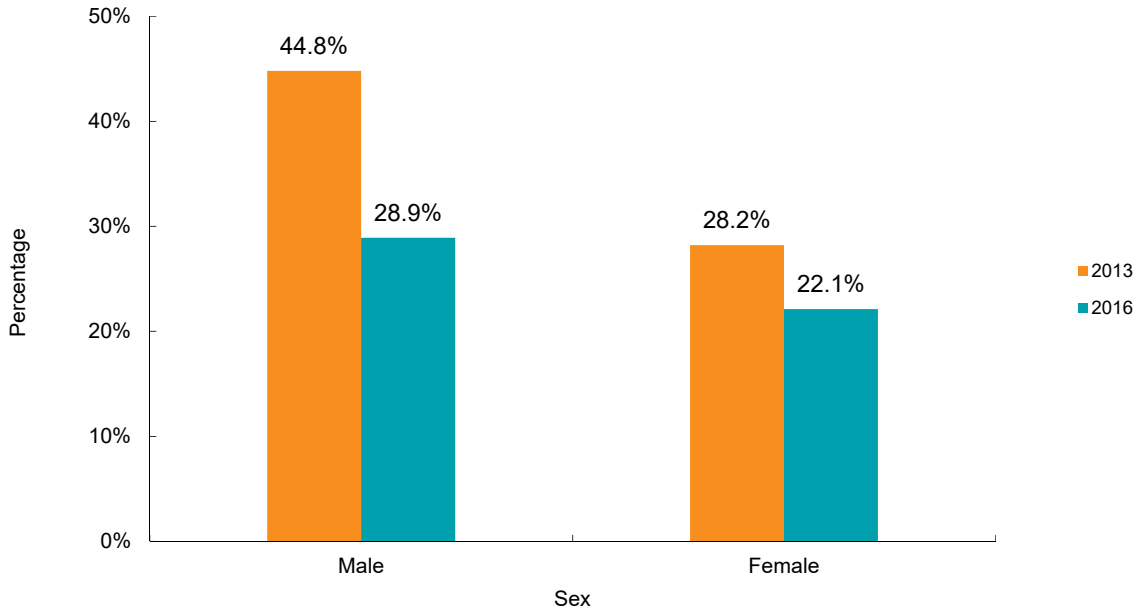
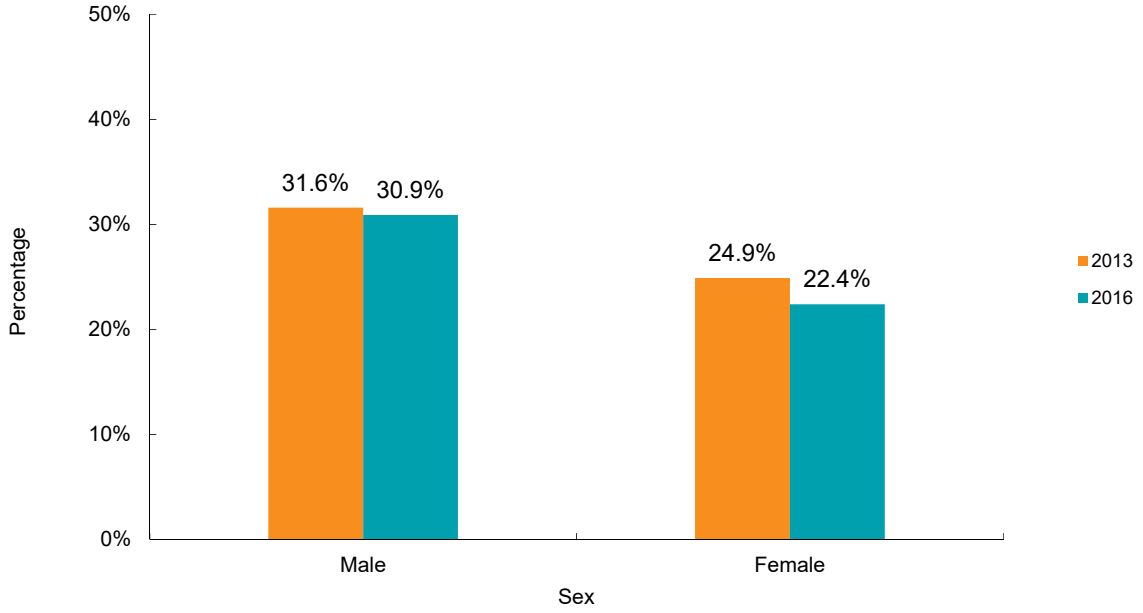


Figure 42. Percent of Adults Who are Former Smokers, by Sex, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

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). A deviation from this association was noted in Florida in 2013 when there was 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 and 2016

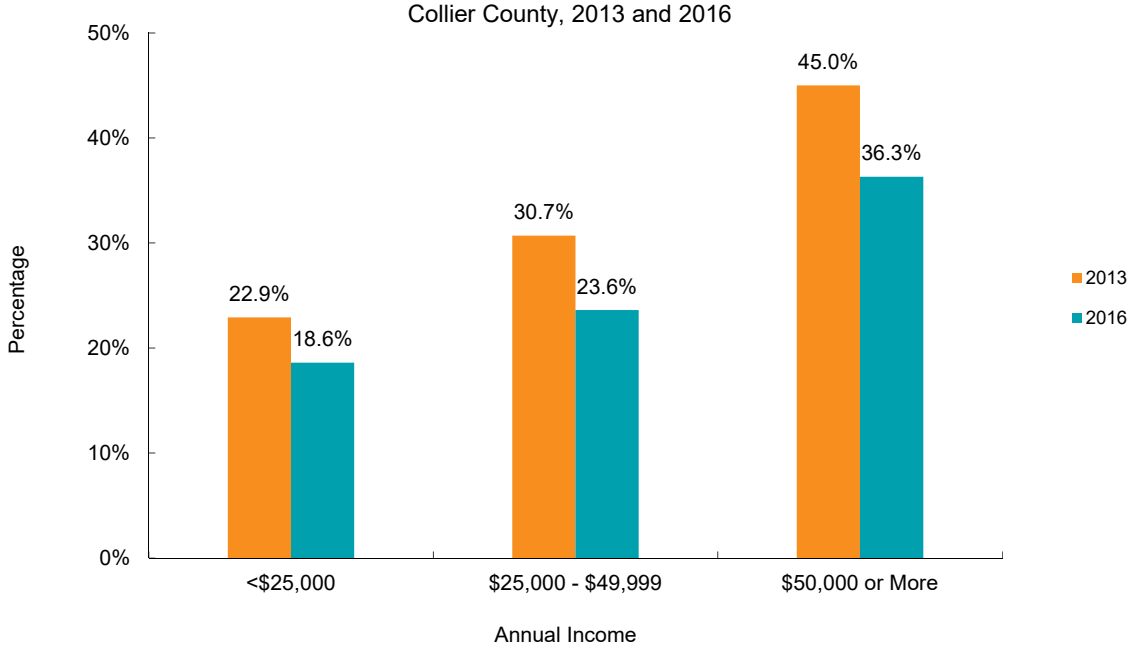
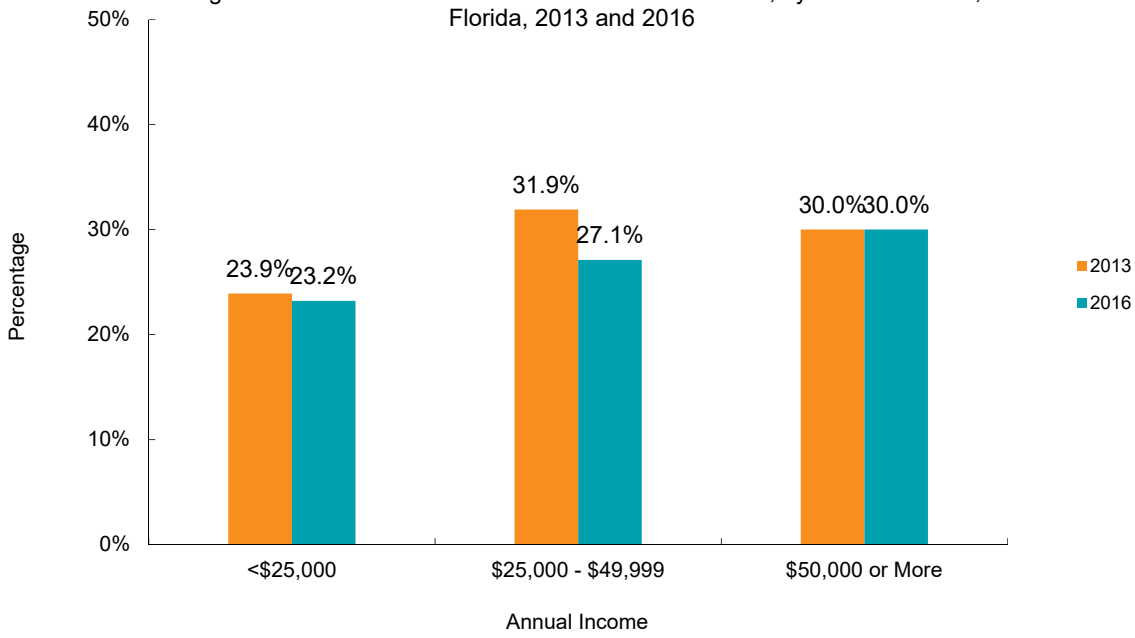


Figure 44. Percent of Adults Who are Former Smokers, by Annual Income, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

Figure 45. Percent of Adults Who are Former Smokers, by Educational Level, Collier County, 2013 and 2016

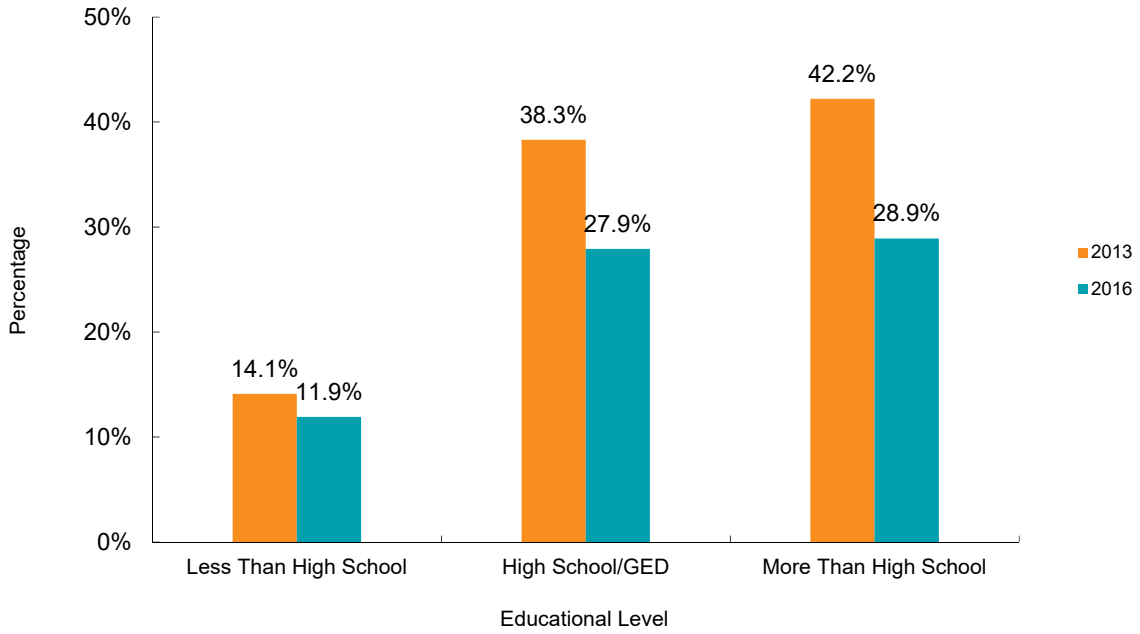
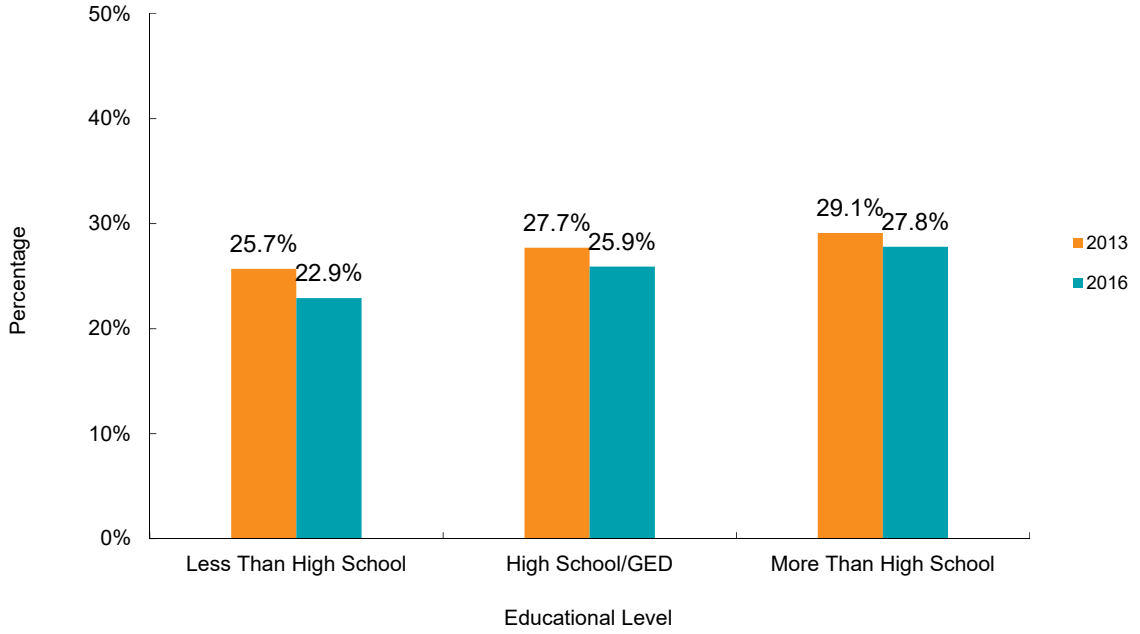


Figure 46. Percent of Adults Who are Former Smokers, by Educational Level, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

At both the state and local levels, Non-Hispanic Whites were consistently more likely to be former smokers when compared to Non-Hispanic Blacks and Hispanics (Figures 47 and 48).

Figure 47. Percent of Adults Who are Former Smokers, by Race/Ethnicity, Collier County, 2013 and 2016

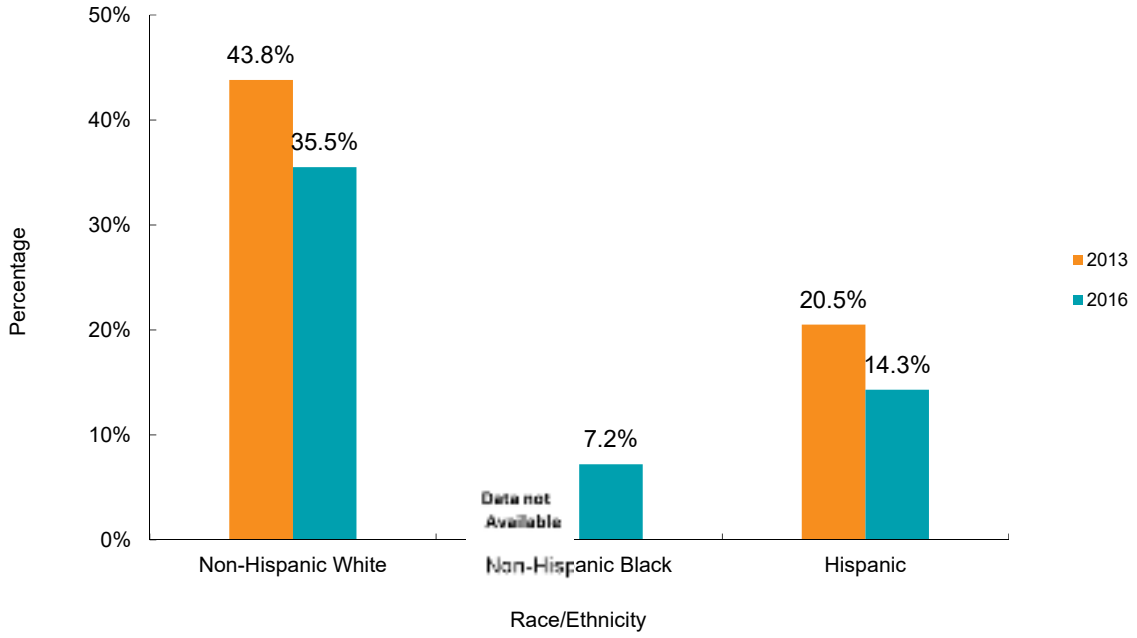
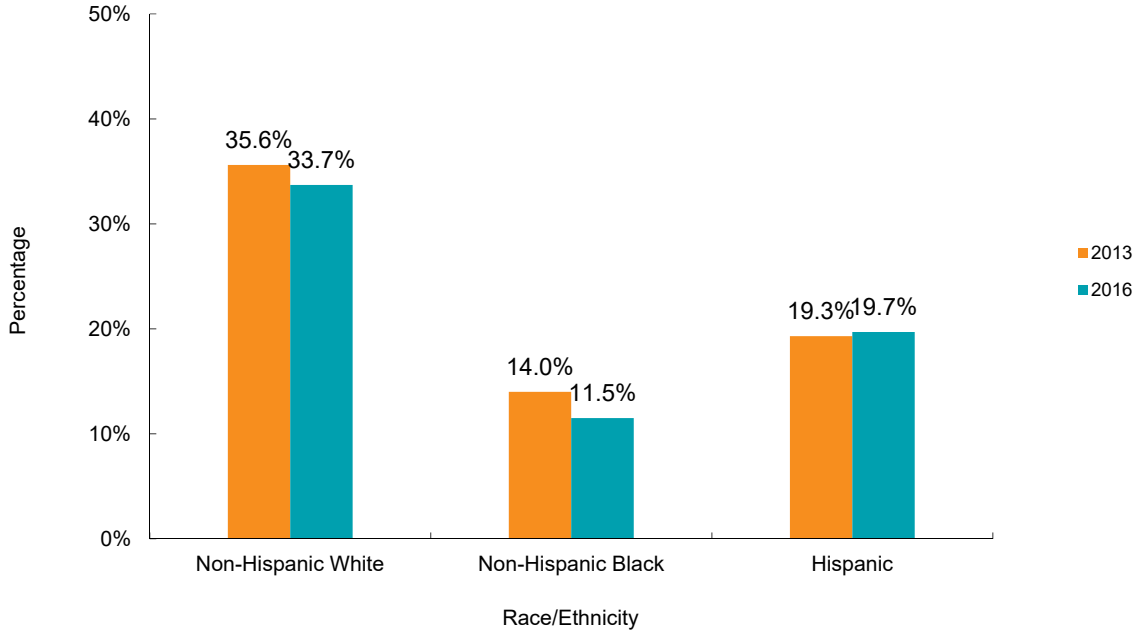


Figure 48. Percent of Adults Who are Former Smokers, by Race/Ethnicity, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

Consistent with data on 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 was approximately twice that in Collier County than throughout the state in 2013. In 2016, this gap was reduced to a 6 percent difference in Collier County and 9 percent difference in Florida (Figures 49 and 50).

Figure 49. Percent of Adults Who are Former Smokers, by Marital Status, Collier County, 2013 and 2016

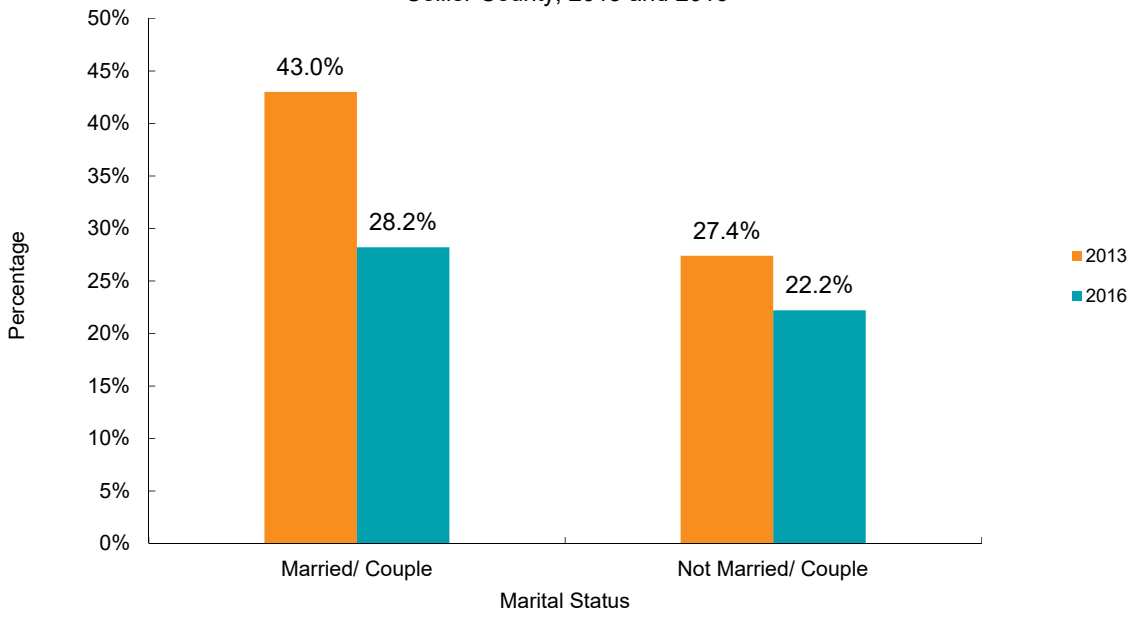
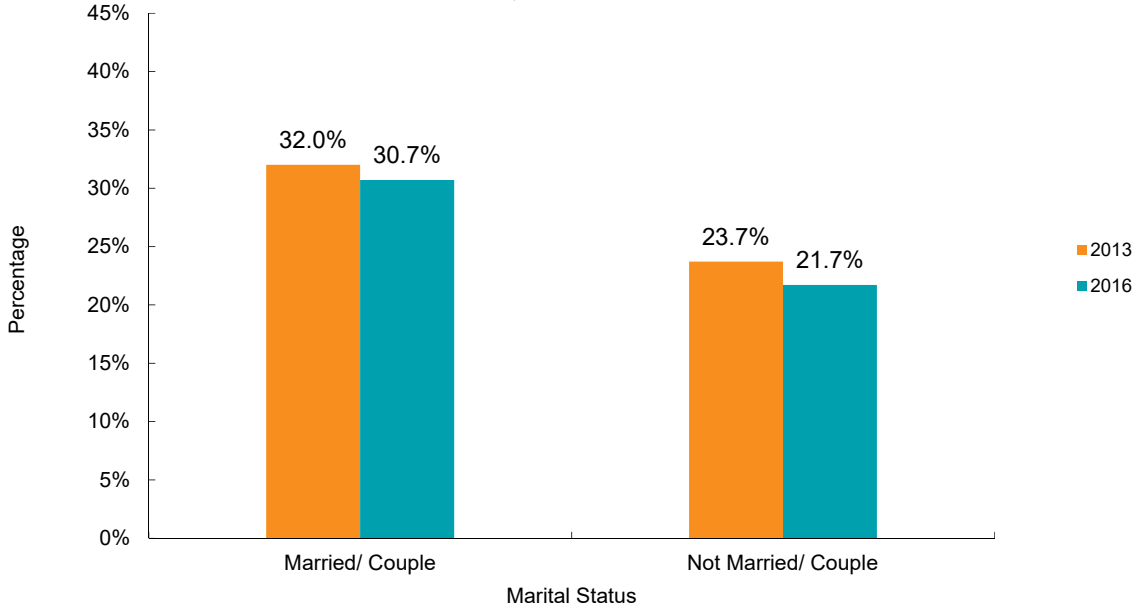


Figure 50. Percent of Adults Who are Former Smokers, by Marital Status, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

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 51 and 52).

Figure 51. Percent of Adults Who are Former Smokers, by Age Group, Collier County, 2013 and 2016

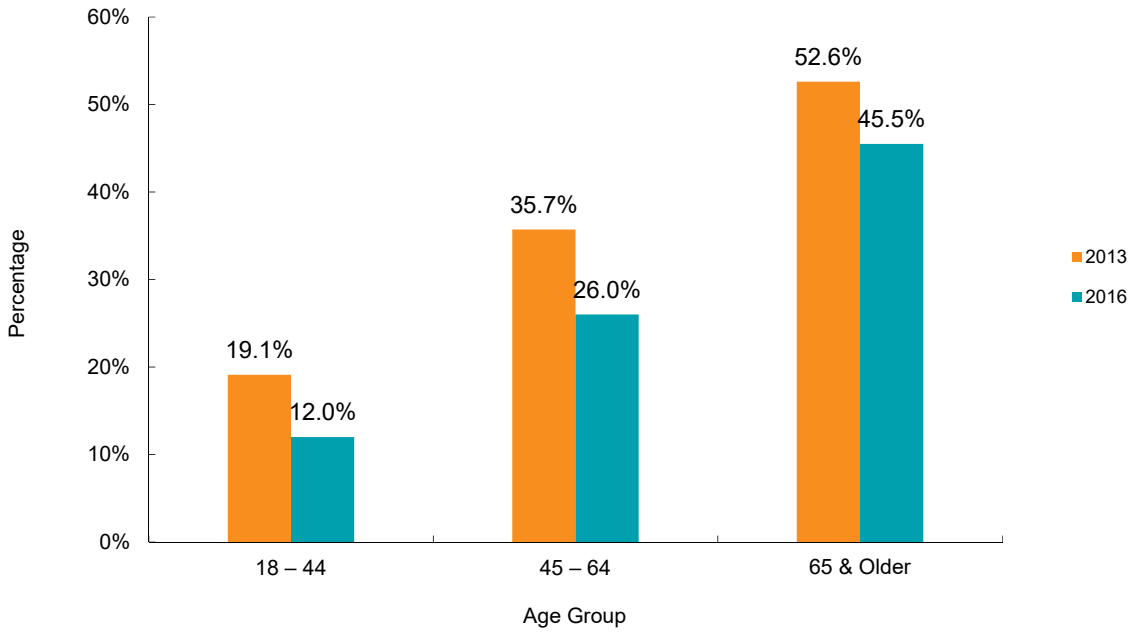
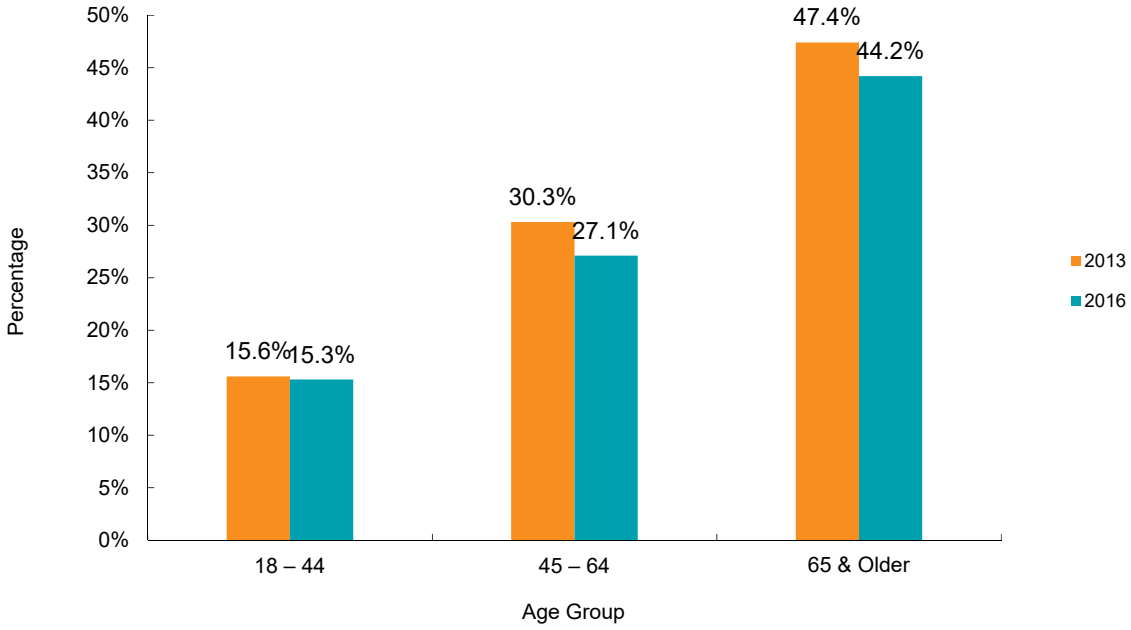


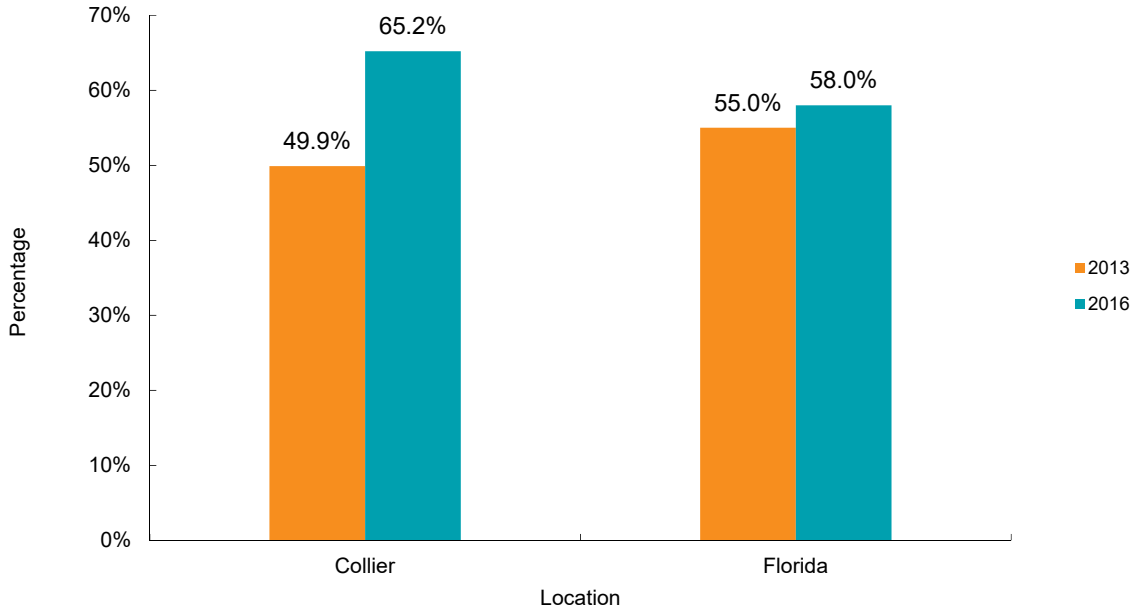
Figure 52. Percent of Adults Who are Former Smokers, by Age Group, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

Figure 53 reveals the percentage of adults who self-reported as having never smoked in 2013 and 2016 for Collier County and Florida. In 2016, 65.2 percent of Collier adult resident reported having never smoked, a 15.3 percent-point increase from 2013.

Figure 53. Percent of Adults Who Have Never Smoked,
Collier County and Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

Females in Collier County are much more likely to have never smoked (71.8 percent) than males (58.9) percent. This same pattern exists for the state of Florida between males (51.3 percent) and females (64.3 percent) (Figures 54 and 55).

Figure 54. Percent of Adults Who Have Never Smoked, by Sex, Collier County, 2013 and 2016

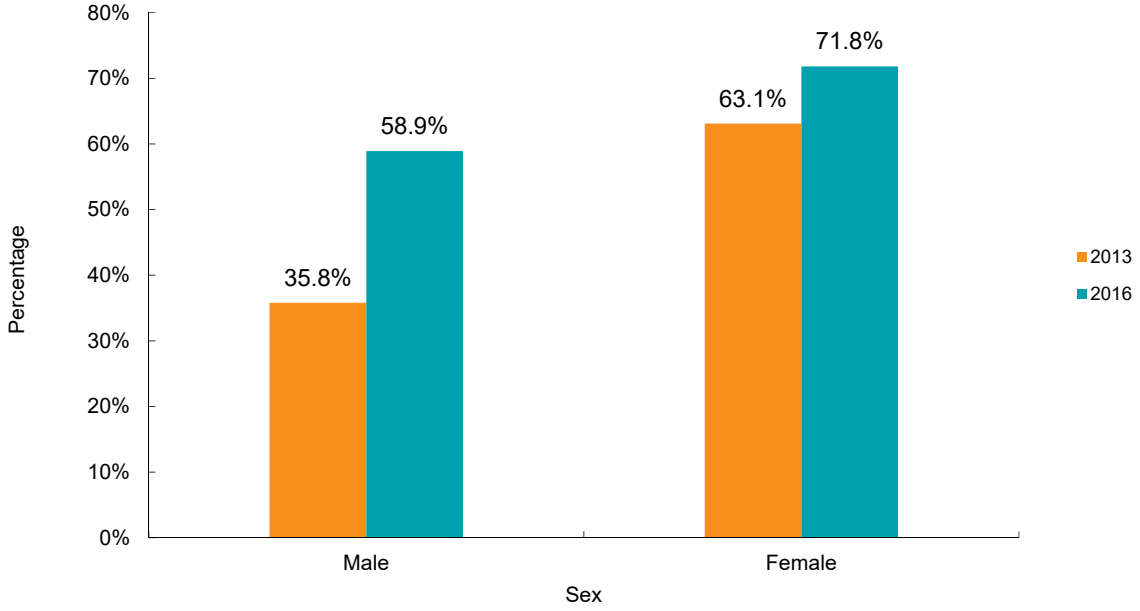
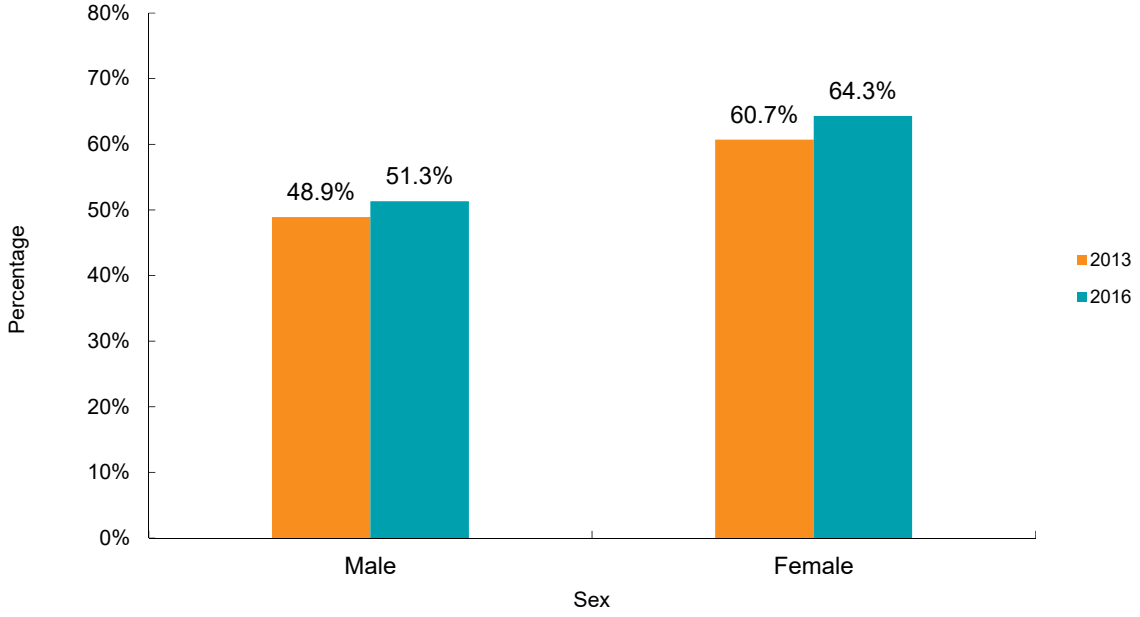


Figure 55. Percent of Adults Who Have Never Smoked, by Sex, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

Non-Hispanic Blacks were more likely to have never smoked compared to Non-Hispanic Whites and Hispanics in both Collier County and Florida (Figures 56 and 57).

Figure 56. Percent of Adults Who Have Never Smoked, by Ethnicity, Collier County, 2013 and 2016

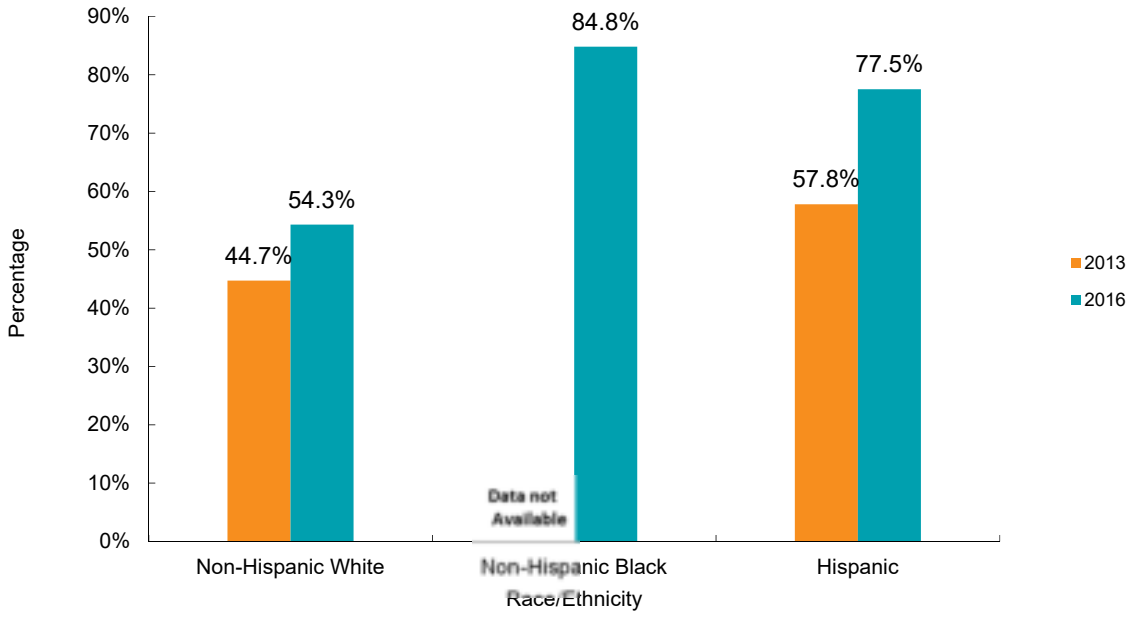
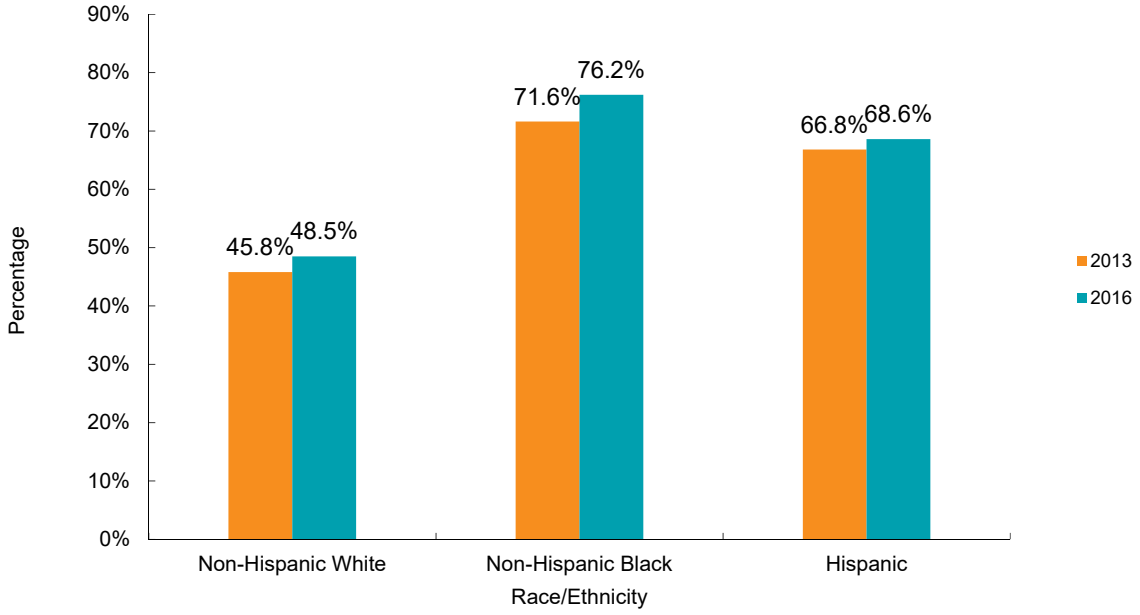


Figure 57. Percent of Adults Who Have Never Smoked, by Ethnicity, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

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 58 and 59).

Figure 58. Percent of Adults Who Have Never Smoked, by Educational Level, Collier County, 2013 and 2016

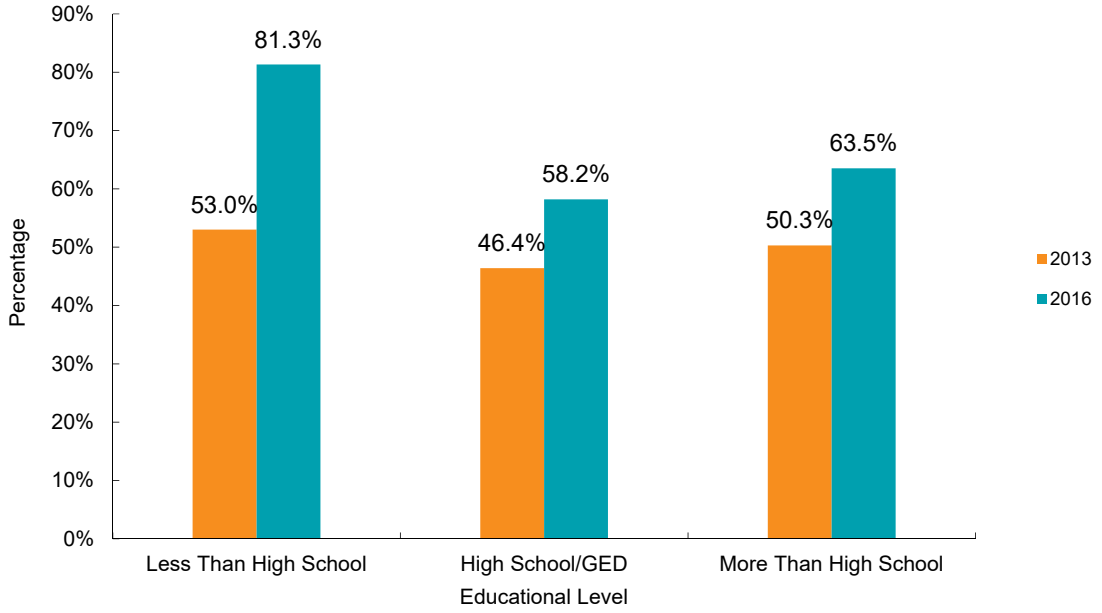
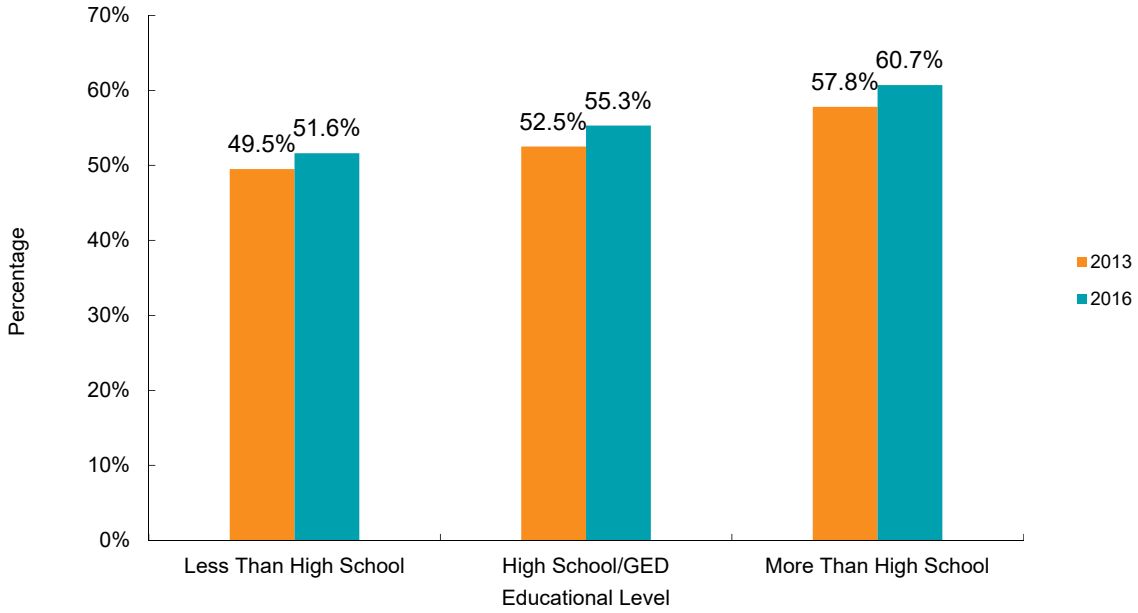


Figure 59. Percent of Adults Who Have Never Smoked, by Educational Level, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

In Collier County, the lower the annual income the more likely an individual was to have never smoked, while in Florida the opposite is true (Figures 60 and 61).

Figure 60. Percent of Adults Who Have Never Smoked, by Annual Income, Collier County, 2013 and 2016

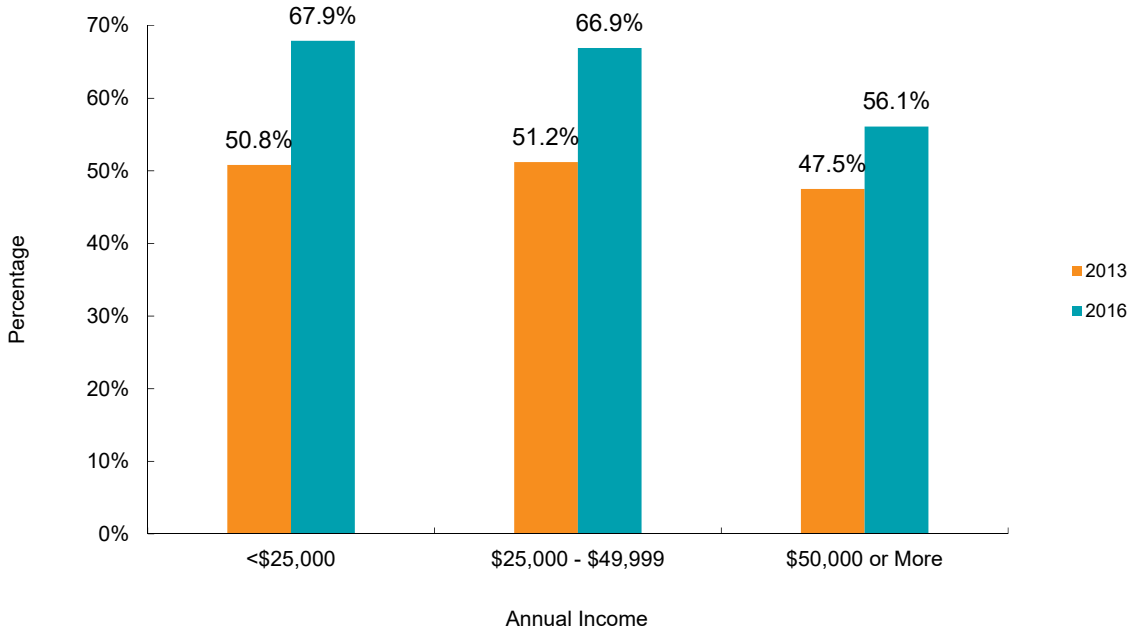
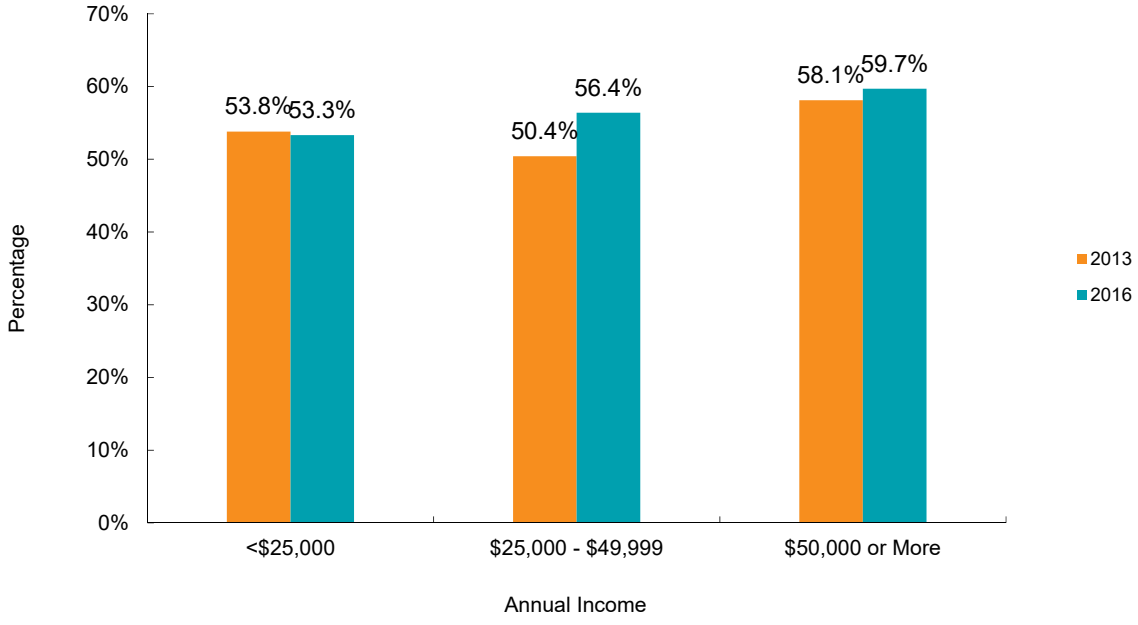


Figure 61. Percent of Adults Who Have Never Smoked, by Annual Income, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

In both Collier County and Florida, more than 65 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 62 and 63).

Figure 62. Percent of Adults Who Have Never Smoked, by Age Group, Collier County, 2013 and 2016

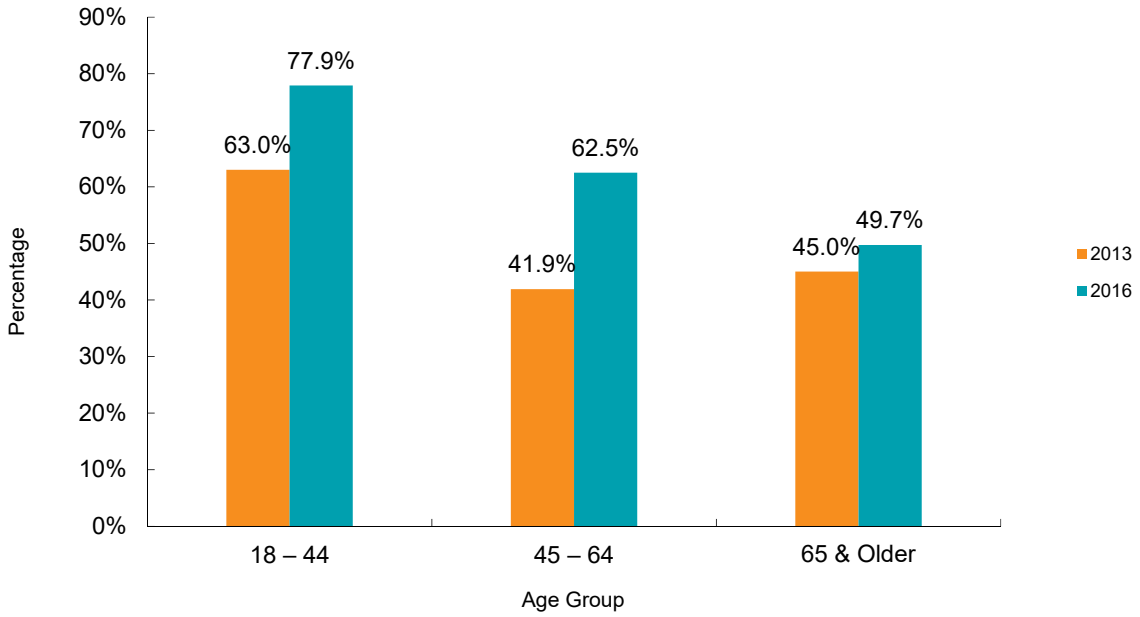
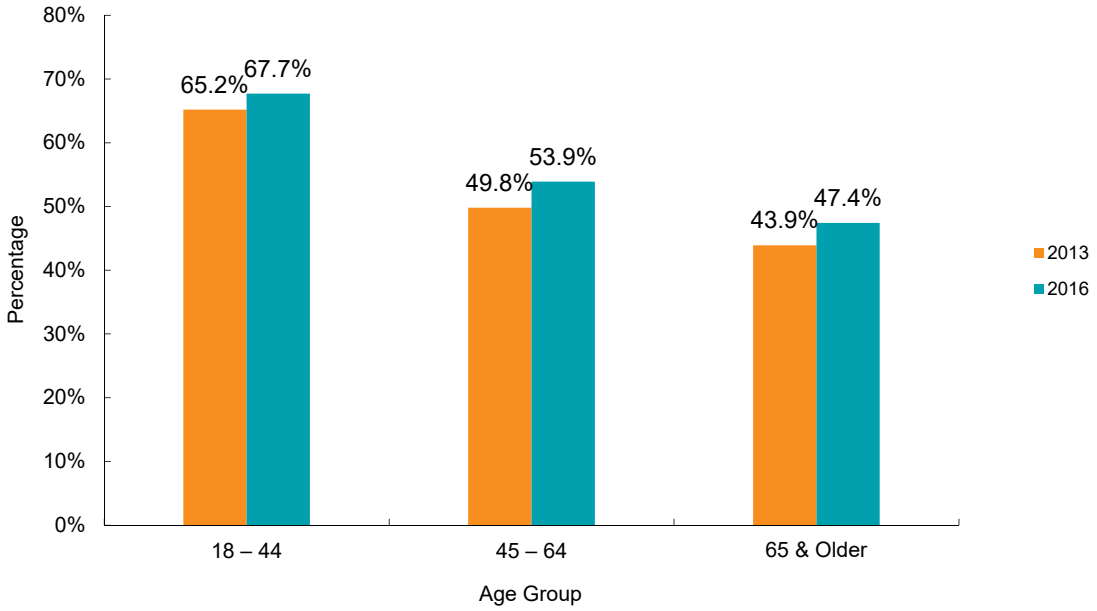


Figure 63. Percent of Adults Who Have Never Smoked, by Age Group, Florida, 2013 and 2016



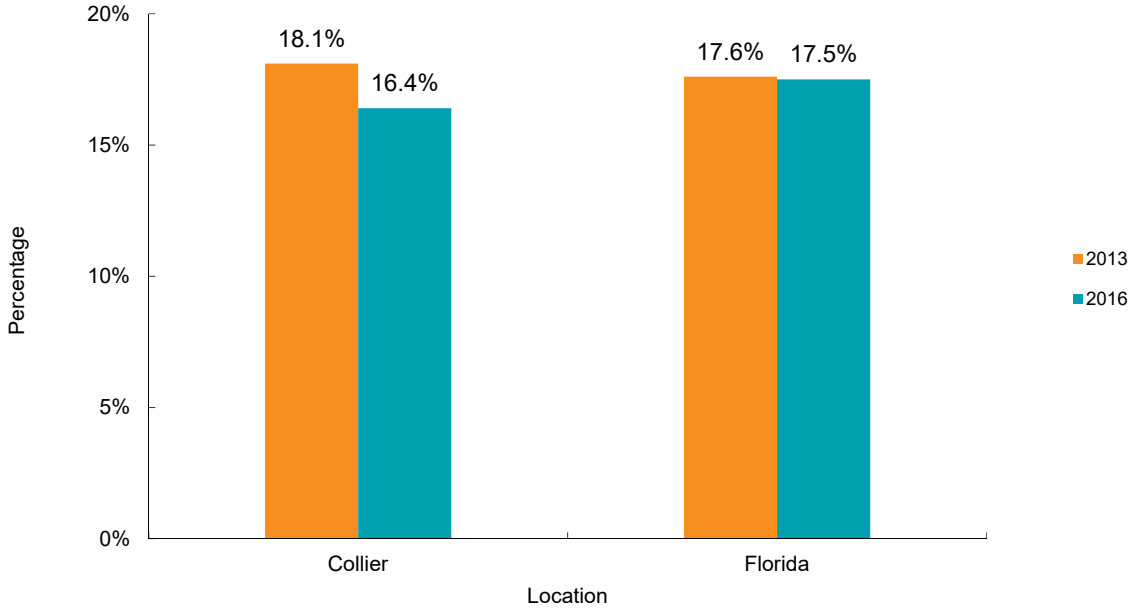
Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

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.

Figure 64 illustrates the percentage of adults who engaged in heavy or binge drinking in Collier County and Florida in 2013 and 2016. The data indicate no significant differences at the state and local levels.

Figure 64. Percent of Adults Who Engage in Heavy or Binge Drinking, Collier County and Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

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By sex, males engaged in heavy or binge drinking at a significantly higher rate than females in both Collier County and Florida (Figures 65 and 66).

Figure 65. Percent of Adults Who Engage in Heavy or Binge Drinking, by Sex, Collier County, 2013 and 2016

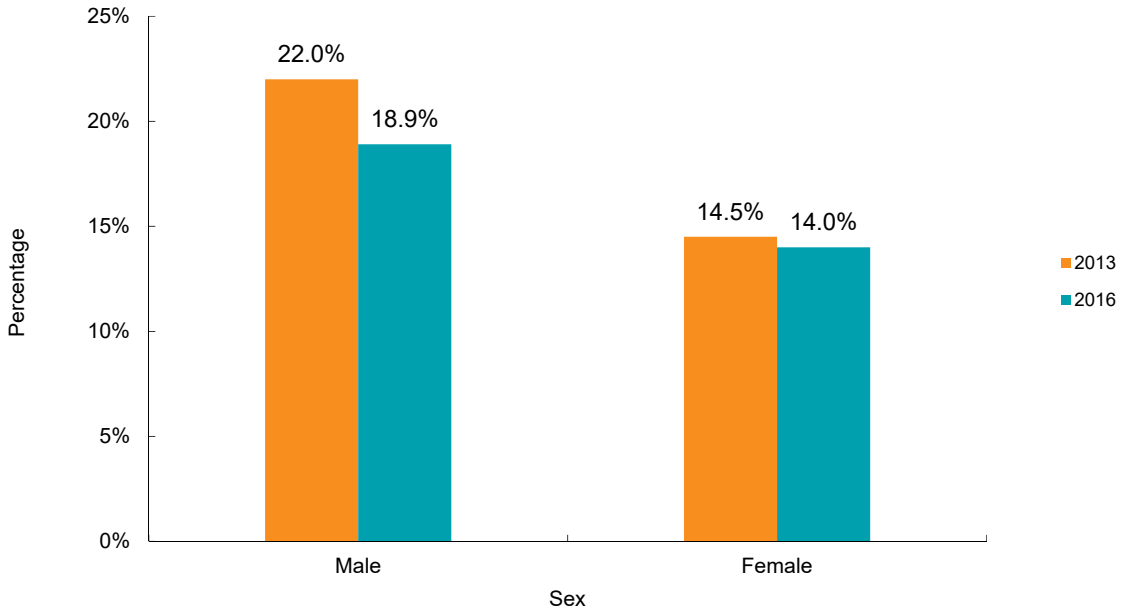
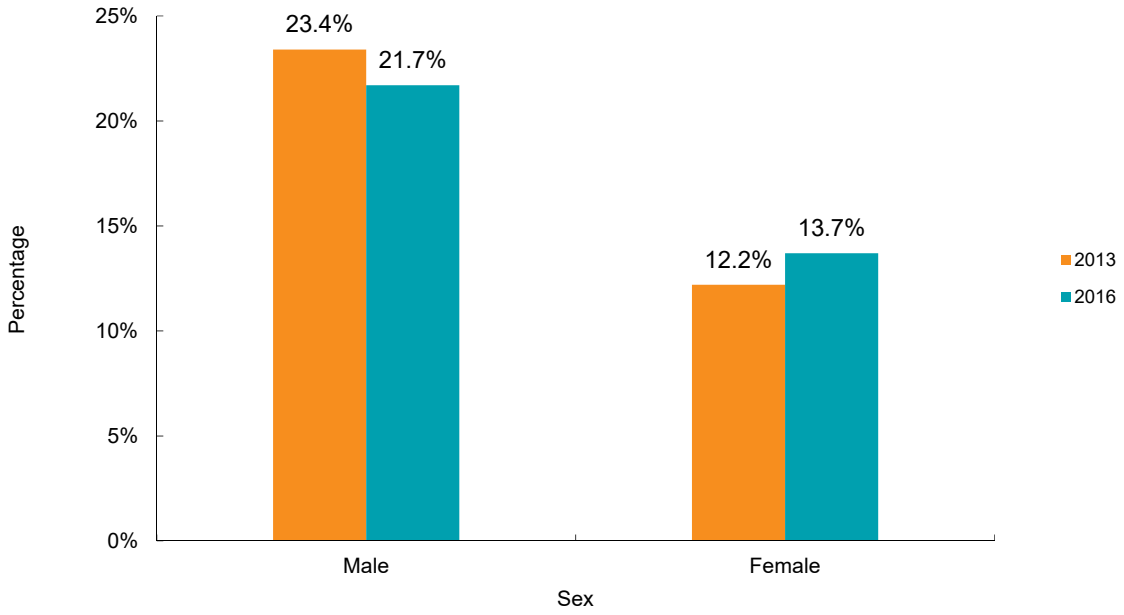


Figure 66. Percent of Adults Who Engage in Heavy or Binge Drinking, by Sex, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

When analyzed by ethnicity, in Collier County in 2016, Non-Hispanic Whites were 1.7 and 5.4 times more likely to engage in heavy or binge drinking than Hispanics or Non-Hispanic Blacks, respectively. The ratio was lower in the state of Florida, but followed a similar trend (Figures 67 and 68).

Figure 67. Percent of Adults Who Engage in Heavy or Binge Drinking, by Race/Ethnicity, Collier County, 2013 and 2016

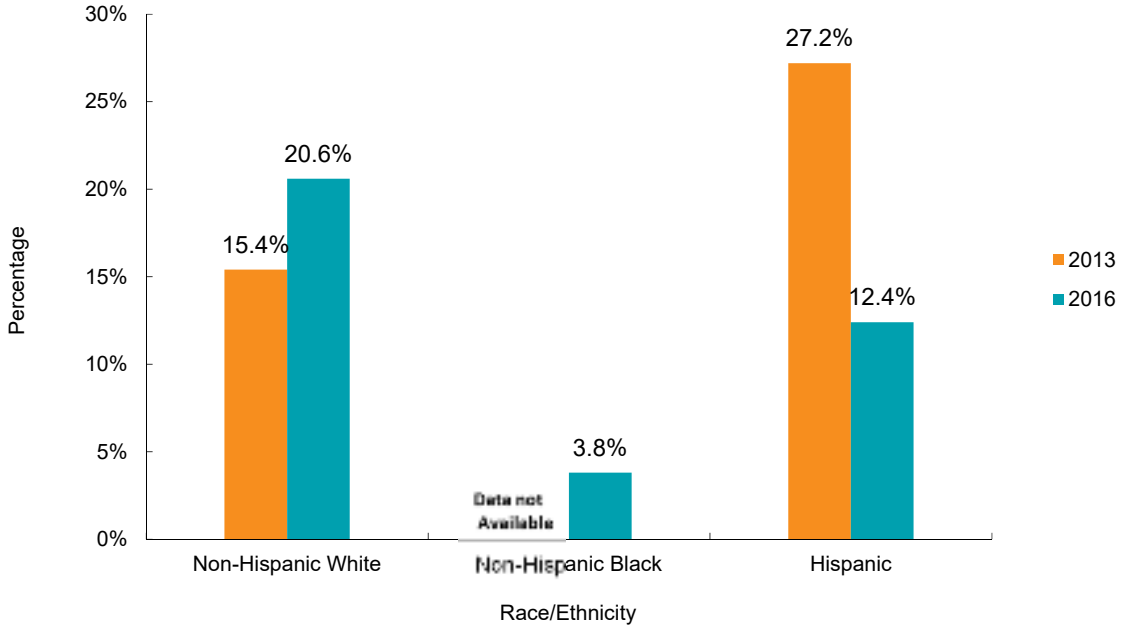
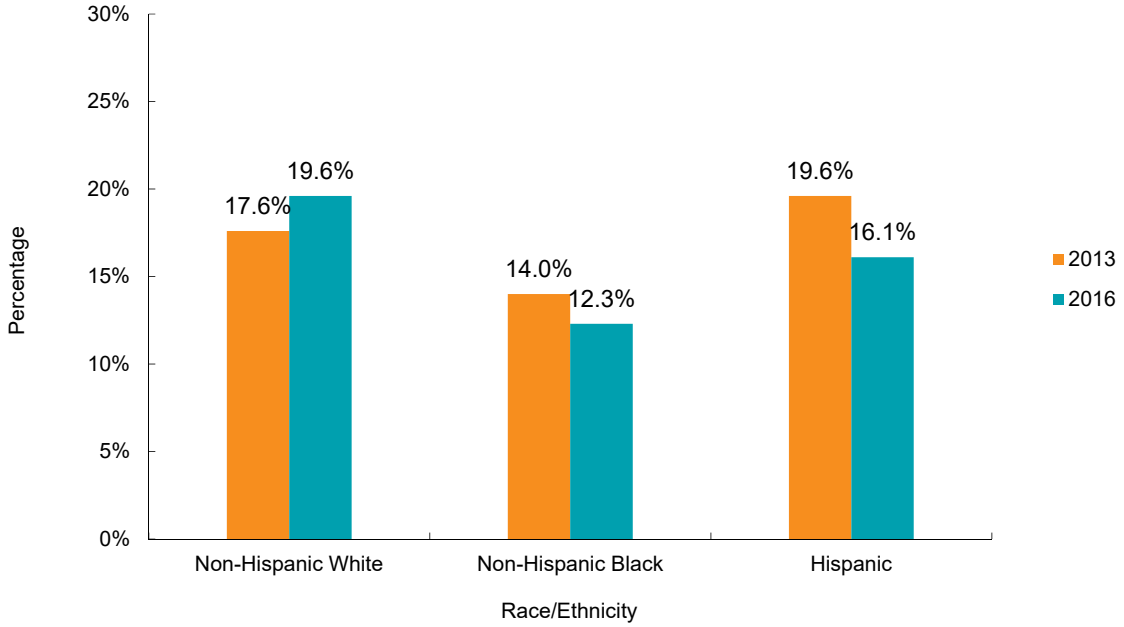


Figure 68. Percent of Adults Who Engage in Heavy or Binge Drinking, by Race/Ethnicity, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

In the state of Florida and Collier County, 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. A deviation from this trend was found in Collier County in 2013, where the highest prevalence of heavy alcohol use was seen in the population earning less than $25,000 per year (Figures 69 and 70).

Figure 69. Percent of Adults Who Engage in Heavy or Binge Drinking, by Annual Income, Collier County, 2013 and 2016

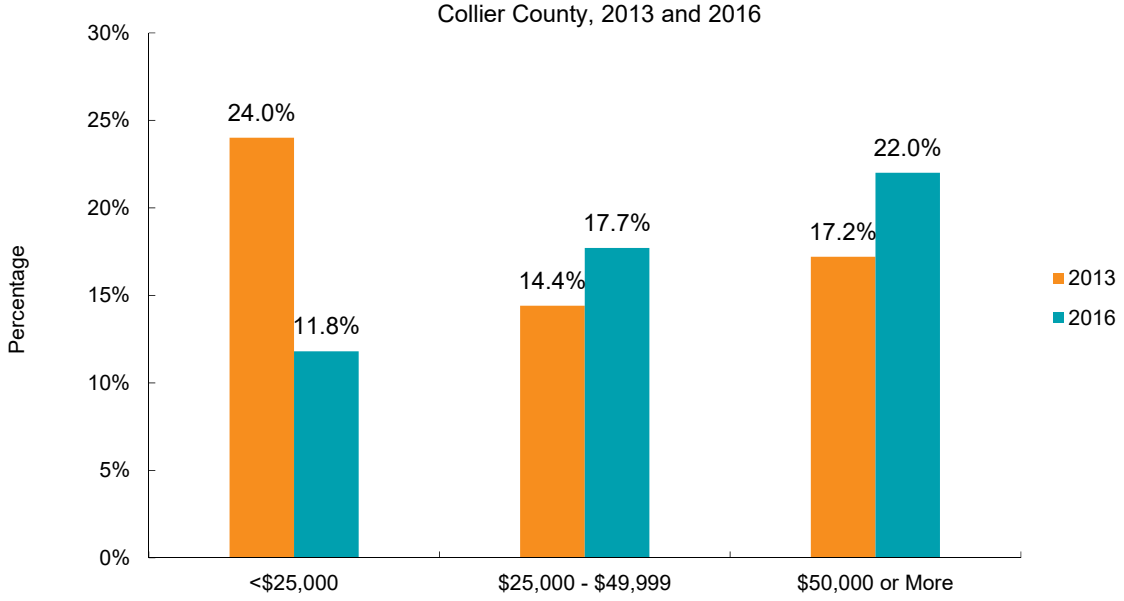
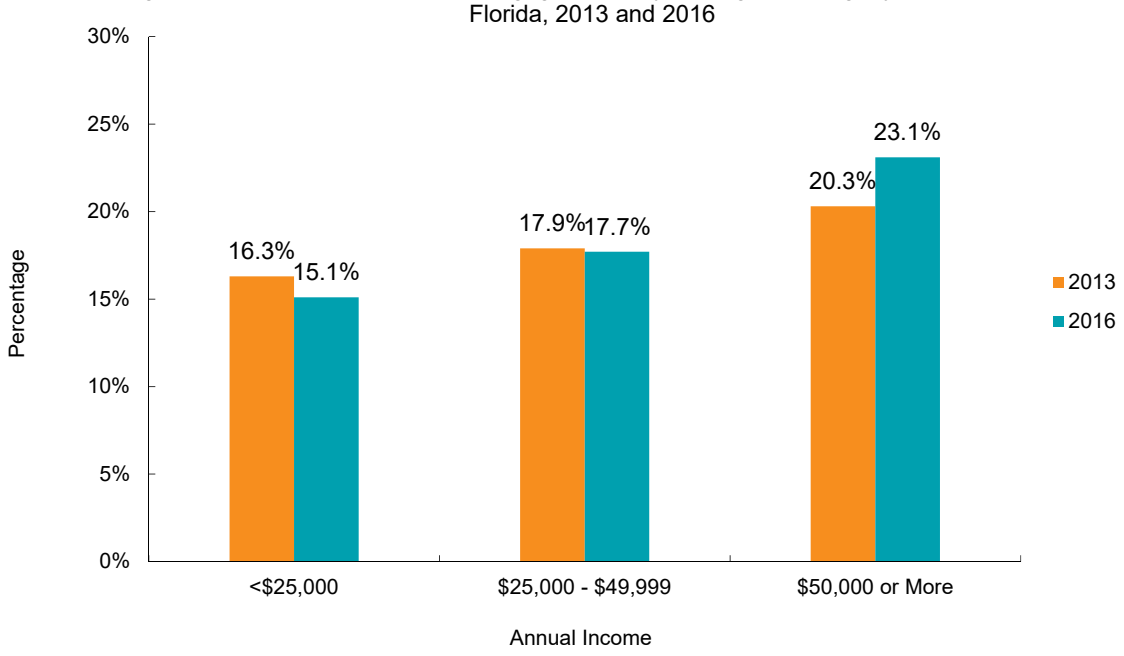


Figure 70. Percent of Adults Who Engage in Heavy or Binge Drinking, by Annual Income, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

By marital status, in Florida and Collier County in 2013, married couples had a significantly lower prevalence of heavy or binge drinking than non-married couples. This remained true in 2016 for Florida, however, in Collier County married couples had a slightly higher prevalence of heavy or binge drinking than non-married couples (Figures 71 and 72).

Figure 71. Percent of Adults Who Engage in Heavy or Binge Drinking, by Marital Status, Collier County, 2013 and 2016

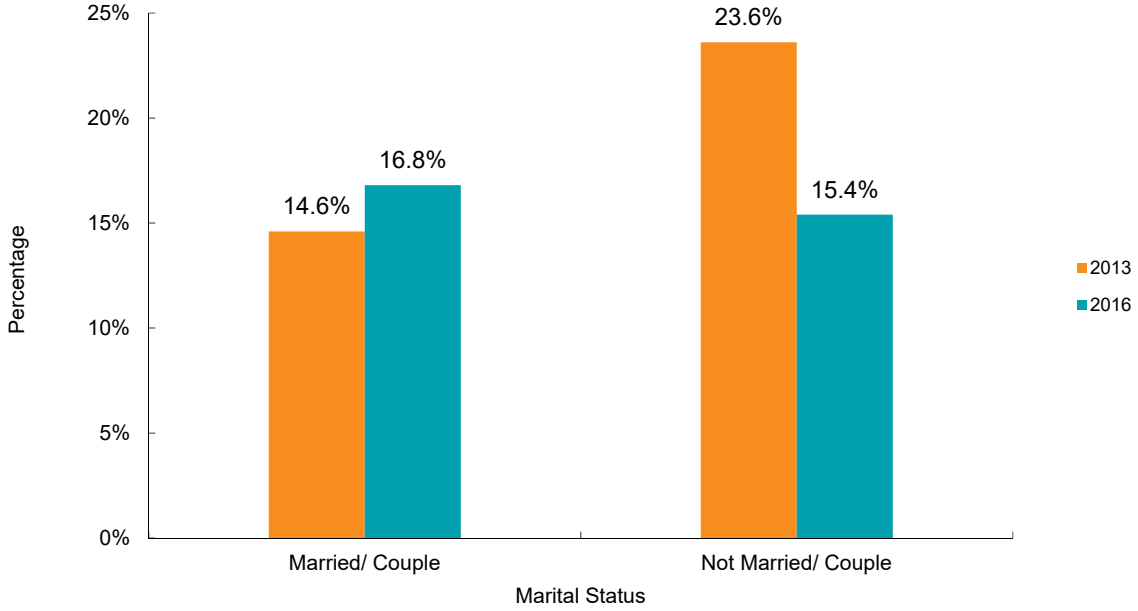
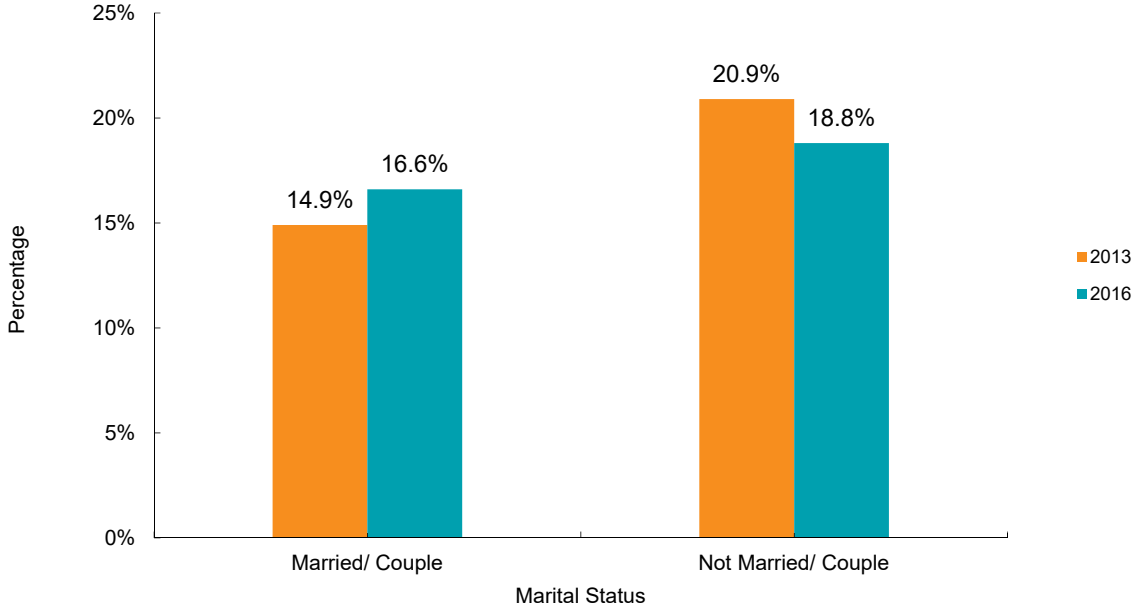


Figure 72. Percent of Adults Who Engage in Heavy or Binge Drinking, by Marital Status, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016

By age groups, for both Collier County and Florida, the younger the age, the higher the prevalence of heavy or binge drinking. During 2016, a deviation from this trend was noted where Collier County residents who were in the 45–64 age group had the highest percentage of engagement in heavy or binge drinking (Figures 73 and 74).

Figure 73. Percent of Adults Who Engage in Heavy or Binge Drinking, by Age Group, Collier County, 2013 and 2016

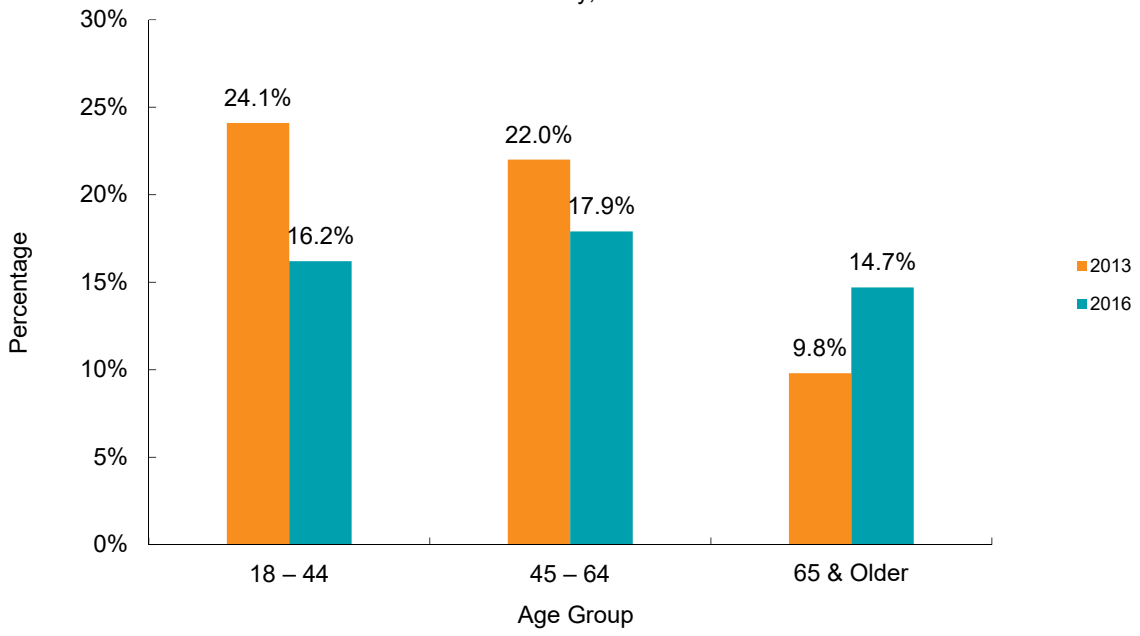
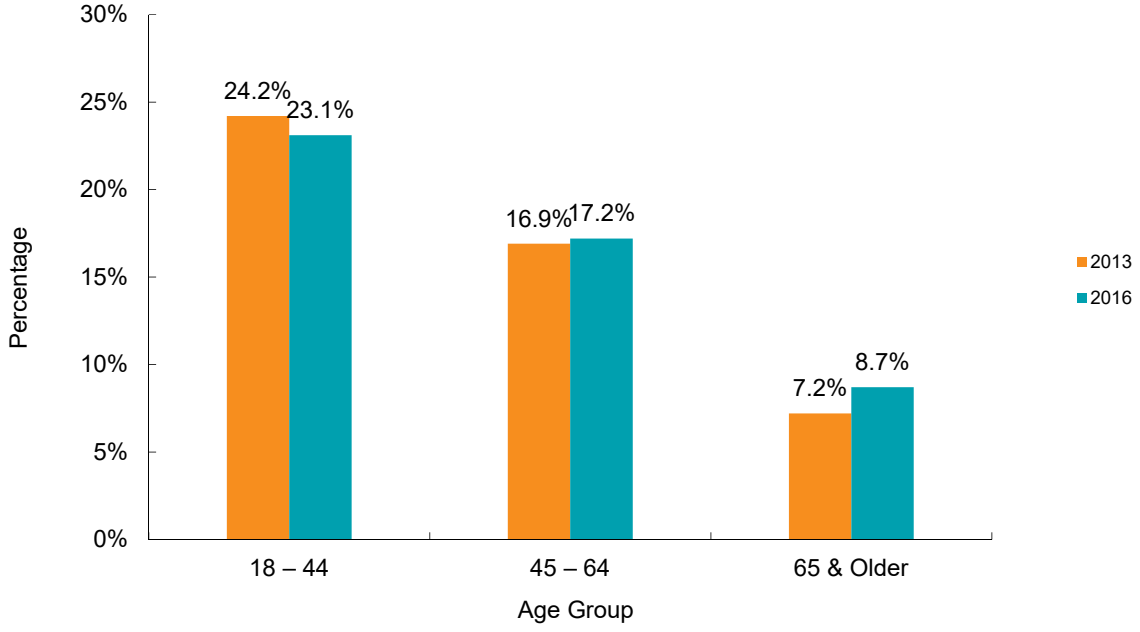


Figure 74. Percent of Adults Who Engage in Heavy or Binge Drinking, by Age Group, Florida, 2013 and 2016



Data Source: Behavioral Risk Factor Surveillance System, 2013 and 2016.

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.

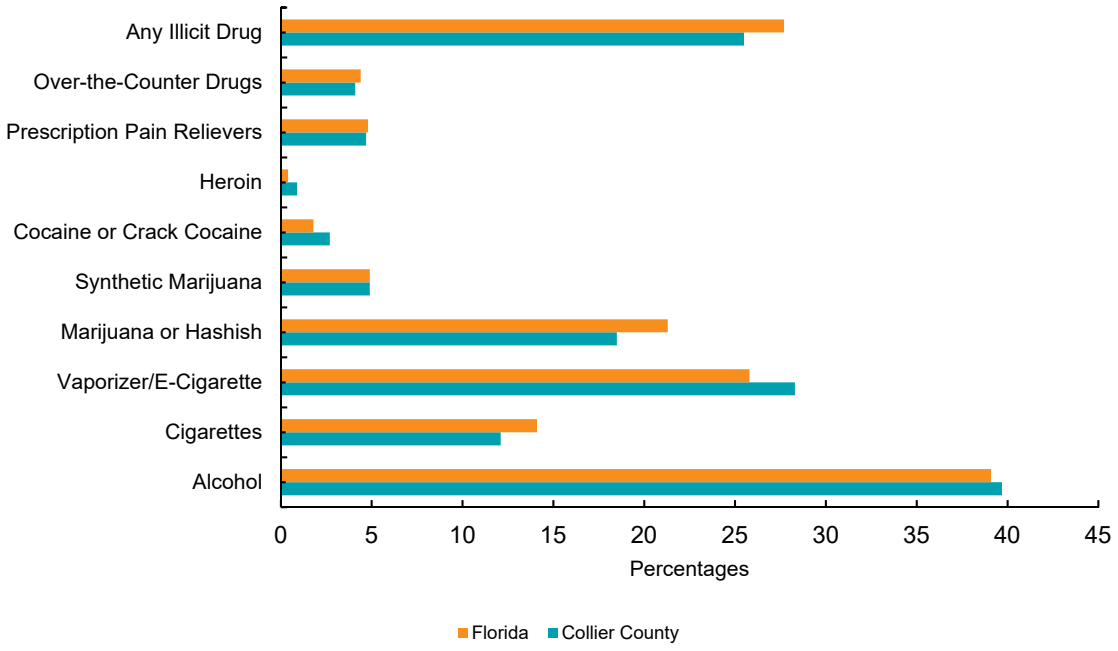
The following analyses uses the results from the 2016 Florida Youth Substance Abuse Survey for Collier County, the most recent data available as of May 2018.

Table 1 and Figure 75 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 2016.

Table 1. Percentage of Adolescents 10–17 Years of Age Who Reported Having Used Various Drugs in Their Lifetime, Collier County and Florida, 2016

	Collier County	Florida
Alcohol	39.7	39.1
Cigarettes	12.1	14.1
Vaporizer/E-Cigarette	28.3	25.8
Marijuana or Hashish	18.5	21.3
Synthetic Marijuana	4.9	4.9
Cocaine or Crack Cocaine	2.7	1.8
Heroin	0.9	0.4
Prescription Pain Relievers	4.7	4.8
Over-the-Counter Drugs	4.1	4.4
Any Illicit Drug	25.5	27.7

Figure 75. Percentage of Adolescents 10–17 Years of Age Who Reported Having Used Various Drugs in Their Lifetime, Collier County and Florida, 2016



The state of Florida has a higher rate of substance use than Collier County for five 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 four percent less in difference.

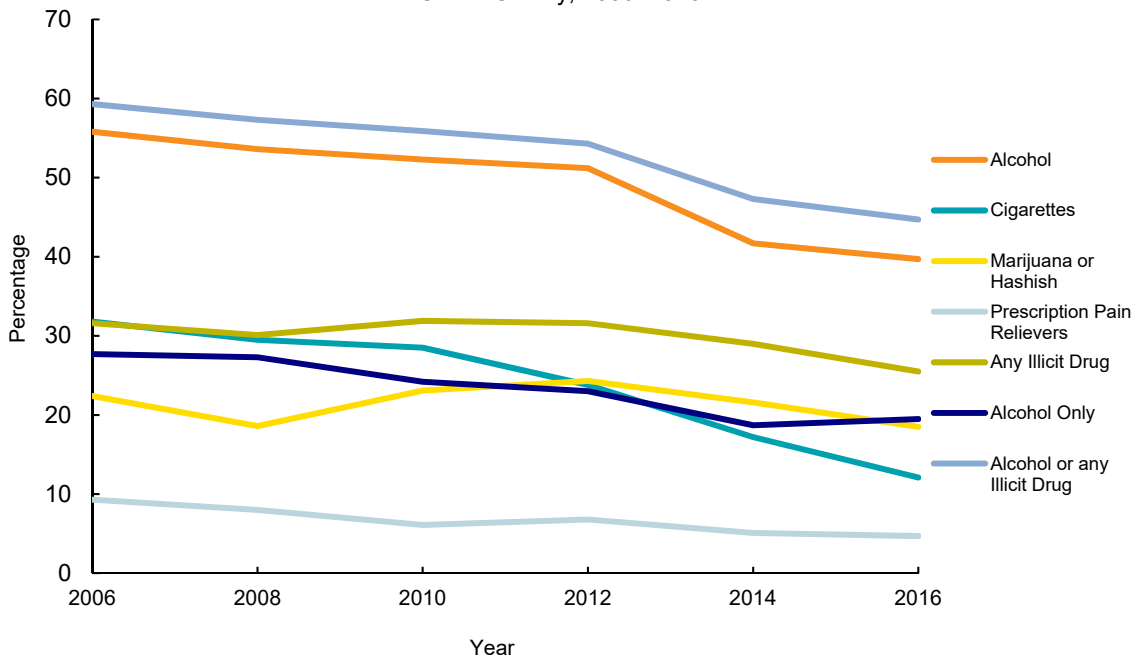
In Collier County, 2.7 of adolescents reported having used cocaine or crack cocaine compared with 1.8 for the state of Florida, while 0.9 percent admitted to having used heroin in Collier County compared with 0.4 percent in the state of Florida. This deviation in the trend for Collier County compared 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 2006 to 2016 can be seen in Table 2 and Figure 76. Substance use for all seven categories declined in Collier County among adolescents during the ten-year period. The most significant decrease was with tobacco −62 percent, followed by prescription pain relievers −49 percent, and alcohol only −30 percent. In Figure 76, the sharp sloping decline is quite visible for cigarettes 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, 2004–2016

	2006	2008	2010	2012	2014	2016	Percentage change 2006–2016
Alcohol	55.8	53.6	52.3	51.2	41.7	39.7	-29
Cigarettes	31.8	29.5	28.5	23.8	17.2	12.1	-62
Marijuana or Hashish	22.4	18.6	23.1	24.3	21.6	18.5	-17
Prescription Pain Relievers	9.3	8	6.1	6.8	5.1	4.7	-49
Any Illicit Drug	31.6	30.1	31.9	31.6	29	25.5	-19
Alcohol Only	27.7	27.3	24.2	23	18.7	19.5	-30
Alcohol or any Illicit Drug	59.3	57.3	55.9	54.3	47.3	44.7	-25

Figure 76. Lifetime Trend in Alcohol, Tobacco and Other Drug Use, Collier County, 2006–2016



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. In both Collier County and the State of Florida, females are more likely than males to have used prescription pain relievers. In Collier County, 4.9 percent of females reported having used prescription pain relievers compared with 4.7 percent among males. In Florida, there was a +1.2 percent difference in prescription pain reliever use in females when compared to males. At the state and local levels, males were more likely than females to have used cigarettes in their lifetime. In Collier County, 14.3 percent of males reported having used cigarettes compared with 10.2 percent of females (a difference of 4.1 percent). Vaporizers and e-cigarettes have become very popular in the United States in recent years, especially among adolescents. In Collier County, 32 percent of males reported having used vaporizers/E-cigarettes compared with 24.8 percent of females. Male adolescents in the county have higher percentages of having used vaporizers/e-cigarettes compared to the rest of the state.

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, 2016

	Collier		Florida	
	Female	Male	Female	Male
Alcohol	39.7	39.9	41.3	37.1
Cigarettes	10.2	14.3	14	14.1
Vaporizer/E-Cigarette	24.8	32.0	24.4	27.1
Marijuana or Hashish	16.2	20.7	21.4	21.3
Synthetic Marijuana	5.6	4.3	4.8	5
Cocaine or Crack Cocaine	2.6	2.8	1.6	1.9
Heroin	1.1	0.7	0.4	0.4
Prescription Pain Relievers	4.9	4.7	5.3	4.1
Over-the-Counter Drugs	3	5.2	4.7	4.2
Any Illicit Drug	24	26.8	29	26.4

Table 4 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.

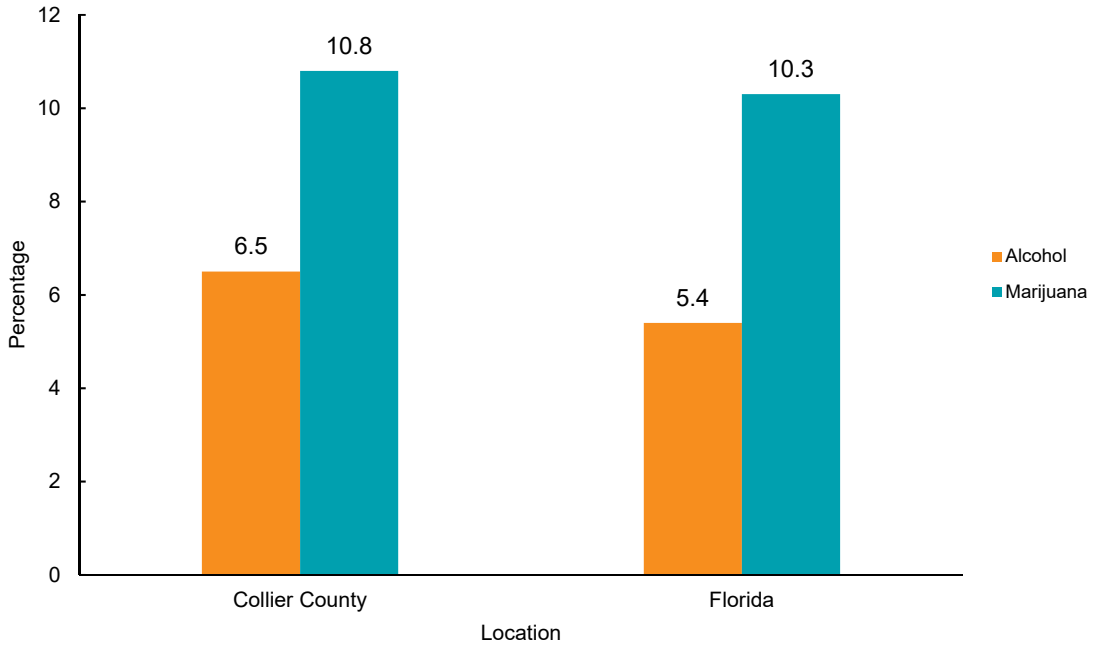
Table 4. Percentage of Adolescents 10–17 Years of Age Who Reported Having Used Various Drugs in Their Lifetime, by Age, Collier County and Florida, 2016

	Collier		Florida	
	Ages 10–14	Ages 15–17	Ages 10–14	Ages 15–17
Alcohol	22.8	53.4	23.6	51.5
Cigarettes	5.7	17.9	8.2	18.5
Vaporizer/E-Cigarette	15.2	42.0	15.7	34.5
Marijuana or Hashish	5.1	29.2	8.1	31.8
Synthetic Marijuana	…	4.6	…	4.8
Cocaine or Crack Cocaine	0.6	3.6	0.8	2.3
Heroin	0.4	0.8	0.4	0.4
Prescription Pain Relievers	3.2	5.6	3.5	5.7
Over-the-Counter Drugs	3.5	4.5	3.4	5.4
Any Illicit Drug	14.1	35.4	16.6	36.6

… Data not available

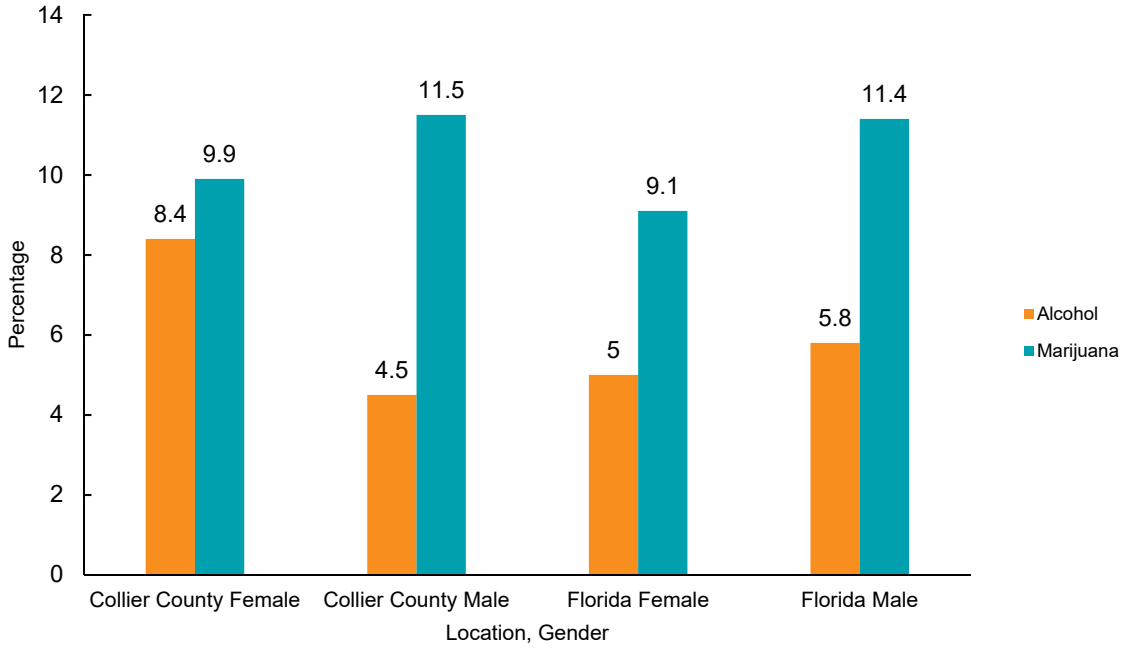
The correlation between alcohol or other substance use and the risk of a detrimental outcome when driving a vehicle is universally accepted. Figure 77 compares the percentages of adolescents in Collier County and Florida who reported driving a vehicle in the past 30 days after drinking alcohol or using marijuana. In both the county and the state, adolescent drivers were more likely to have used marijuana than alcohol.

Figure 77. Driving a Vehicle Within the Past 30 Days After Drinking Alcohol or Using Marijuana, Collier County and Florida, 2016



In Figure 78, these percentages are also calculated by gender. In both Collier County and Florida, a larger proportion of male adolescents were more likely to have driven a vehicle after using marijuana than females. Collier County female adolescents were 1.9 times more likely than male adolescents to have driven a vehicle after using alcohol. At the state level, male adolescents were slightly more likely than female adolescents to have driven a vehicle after using alcohol.

Figure 78. Driving a Vehicle Within the Past 30 Days After Drinking Alcohol or Using Marijuana, Collier County and Florida, 2016



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 50 percent of the Americans will be diagnosed with a mental illness or disorder in their lifetime. 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 20 percent of children have had a seriously debilitating mental illness.

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 and 2016 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 and 2016 BRFSS data.

In 2016, 91 percent of Collier County residents reported having good mental health, a slight decrease from 2013 (Figure 1). About 7.3 percent of Collier County residents in 2013 reported having poor mental health on 14 or more of the past 30 days. In Collier County, this increased to 9 percent in 2016, while in Florida the percentage decreased from 12.7 in 2013 to 11.4 in 2016 (Figure 2).

Figure 1. Adults with Good Mental Health,
Collier County and Florida, 2013 and 2016

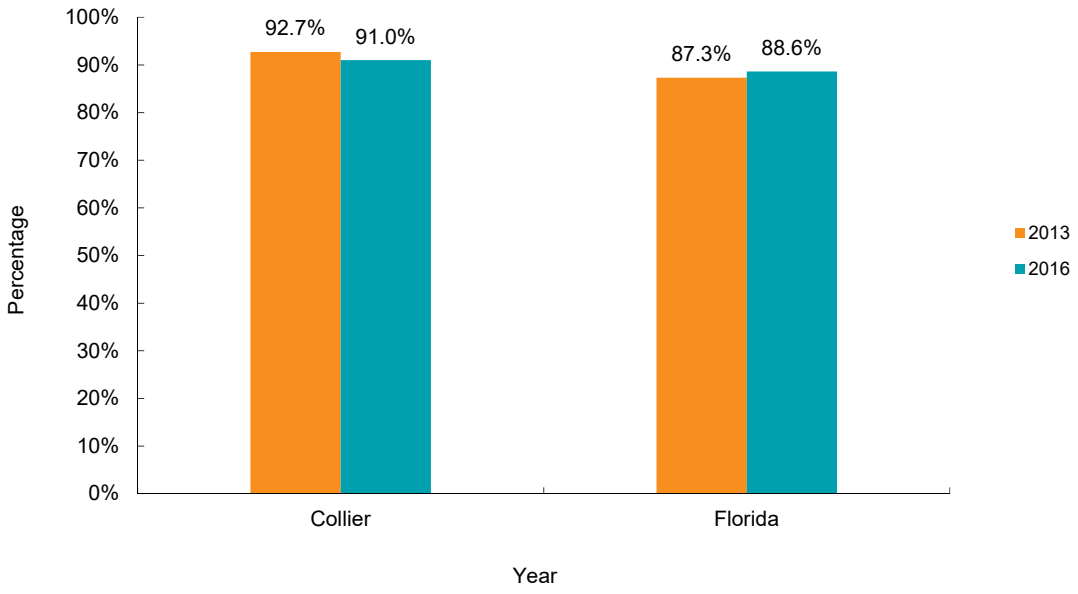
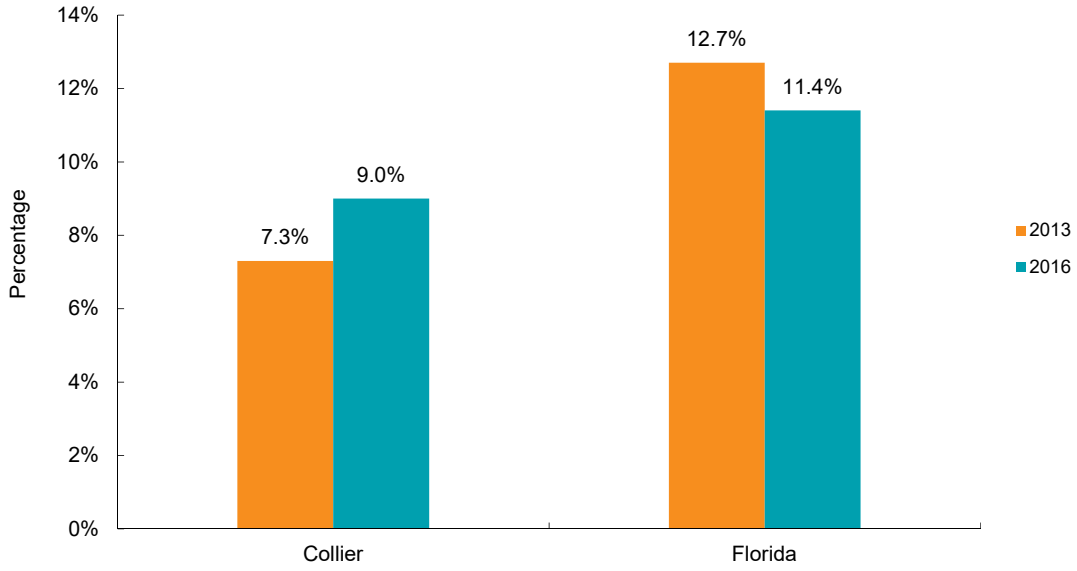


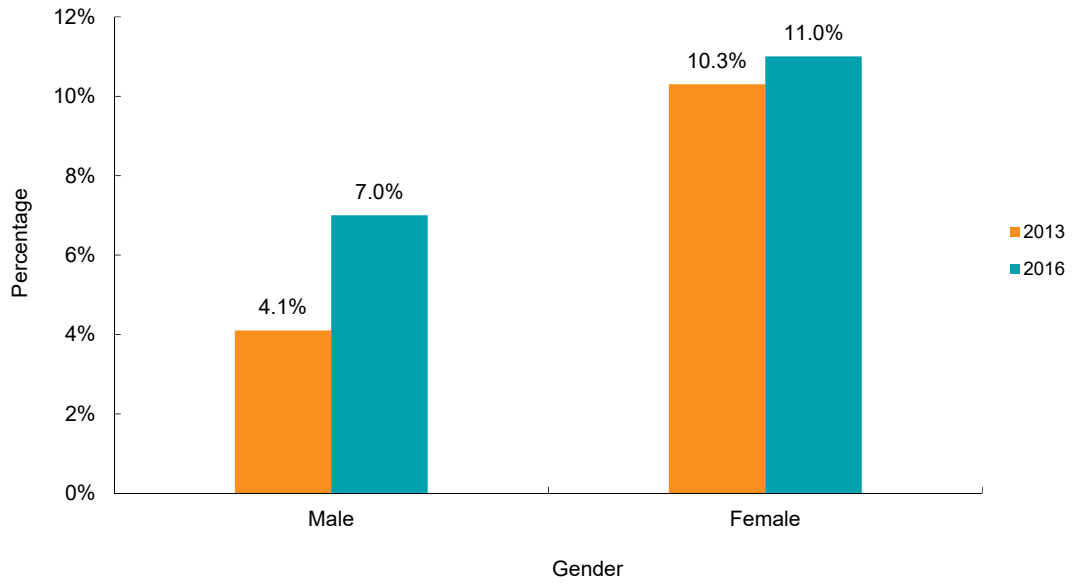
Figure 2. Adults Who Had Poor Mental Health on 14 or More of the Past 30 Days,
Collier County and Florida, 2013 and 2016



Data Source: Florida Behavioral Risk Factor Surveillance System

When analyzing the data by gender, females are consistently more likely to have poor mental health than males in Collier County and throughout the state (Figure 3).

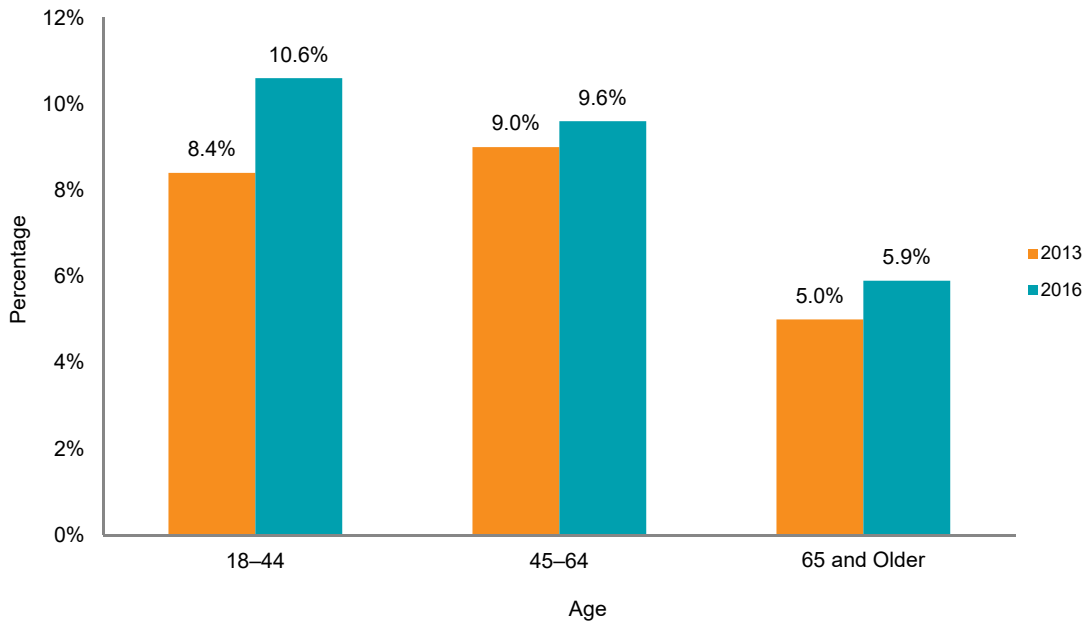
Figure 3. Adults Who Had Poor Mental Health on 14 or More of the Past 30 Days, by Gender, Collier County, 2013 and 2016



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; however, this percentage increased to 10.6 in 2016 surpassing adults in the 45 to 65 age group. The lowest percentages were in the older population with 5.9 percent in 2016 (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 and 2016

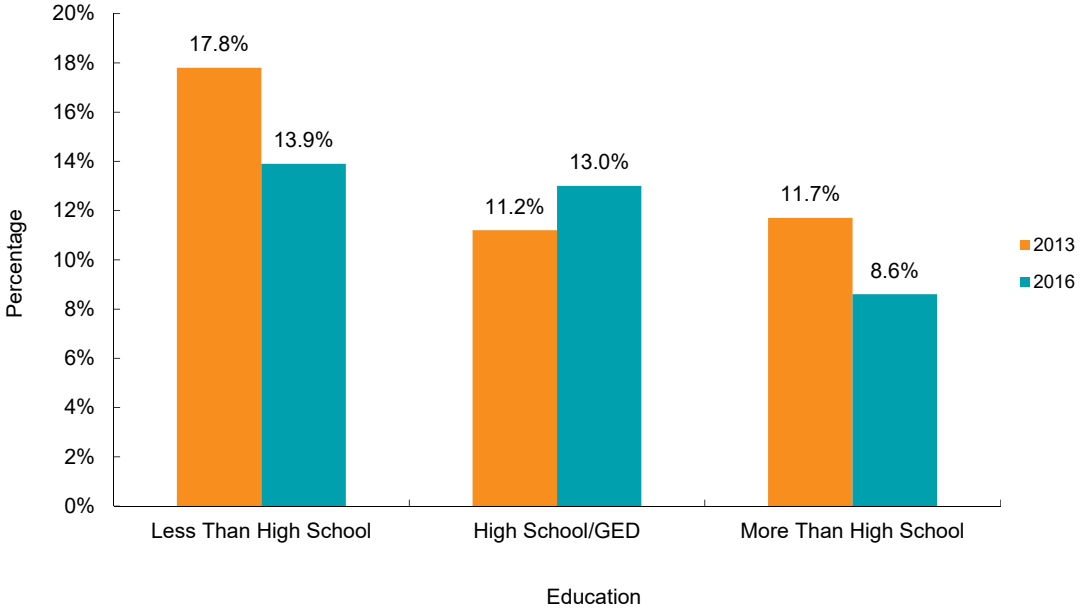


Data Source: Florida Behavioral Risk Factor Surveillance System

Further analysis of data also displays variation by income. The highest percentage of people reporting poor mental health days in 2016 was $25,000 to $49,999 income group with 12.1 percent, and the lowest percentage was in the $50,000 or more income group with 6.2 percent (Figure 5). When analyzing by education, the percentage of people reporting poor mental health days was higher for those with less than a high school diploma 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 and 2016

Figure 6. Adults Who Had Poor Mental Health on 14 or More of the Past 30 Days, by Education, Collier County, 2013 and 2016



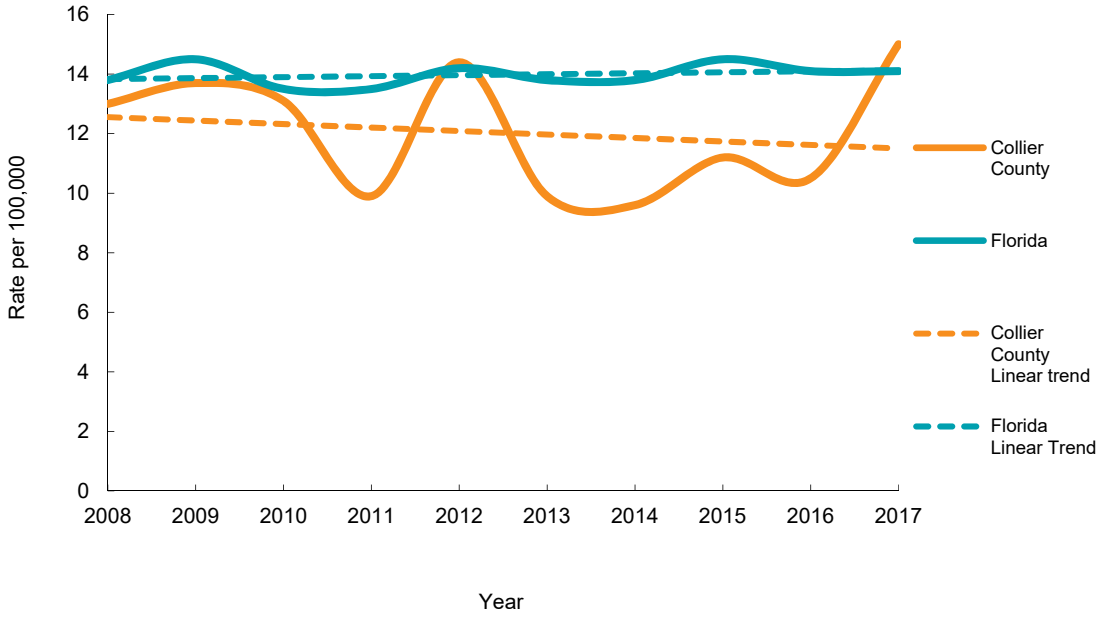
Data Source: Florida Behavioral Risk Factor Surveillance System

Suicide

Suicide is a significant preventable public health problem in the United States. It is 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 ninth leading cause of death in 2017. 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 2008 and 2017, there was a slight increase in suicide deaths, from 13 deaths per 100,000 population to 15 deaths per 100,000 population. For Florida, during the same time period, suicide deaths increased by 2.2 percent, from 13.8 deaths per 100,000 to 14.1 deaths per 100,000 population (Figure 7).

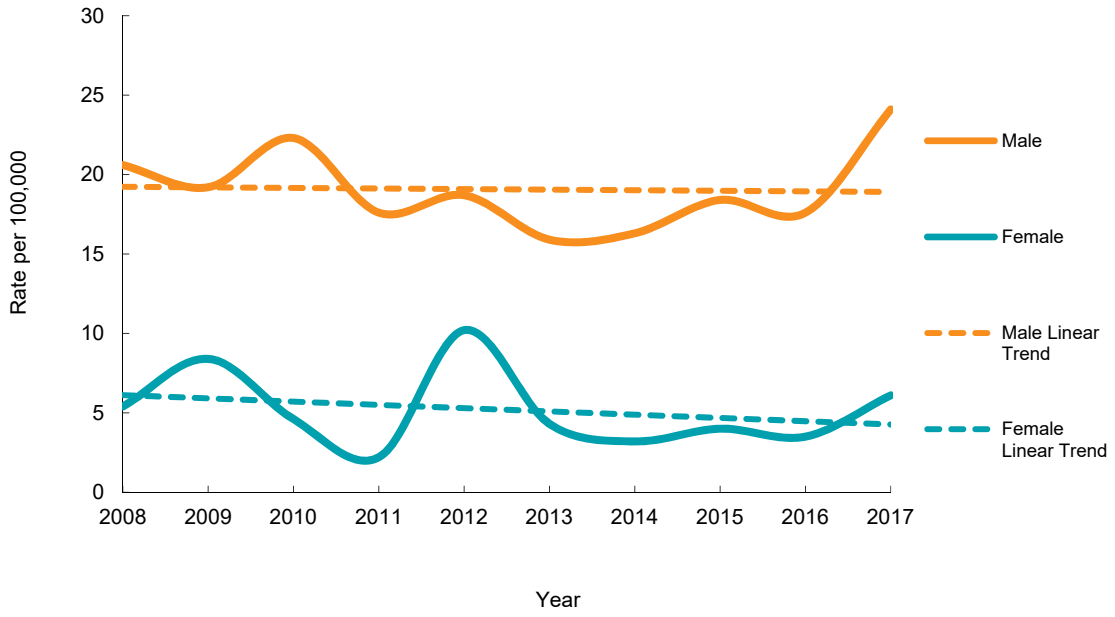
Figure 7. Number of Deaths due to Suicide per 100,000 Population, Collier County and Florida, 2008–2017



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 2008 and 2017, there was a 17 percent increase in suicide deaths among males, from 20.6 deaths per 100,000 population to 24.1 deaths per 100,000 population. For females during the same period, suicide deaths experienced an increase as well, from 5.4 deaths per 100,000 population to 6.1 deaths per 100,000 population. In Collier County, death rate from suicide for males was 4 times higher than females in 2017 (Figure 8).

Figure 8. Number of Deaths due to Suicide per 100,000 Population, by Gender, Collier County, 2008–2017



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

In Collier County between 2008 and 2017, suicide deaths for whites slightly increased, from 13.7 deaths per 100,000 population to 16 deaths per 100,000 population. Despite the increase, the trend for suicide deaths among whites is actually decreasing slightly (Figures 9). The death rates from suicide for both non-Hispanics and Hispanics have been slightly increasing throughout the ten-year period. The death rate from suicide for non-Hispanics in Collier County was 2.6 times the rate of Hispanics in 2017 (Figure 10).

Figure 9. Number of Deaths due to Suicide per 100,000 Population, by Race, Collier County, 2008–2017

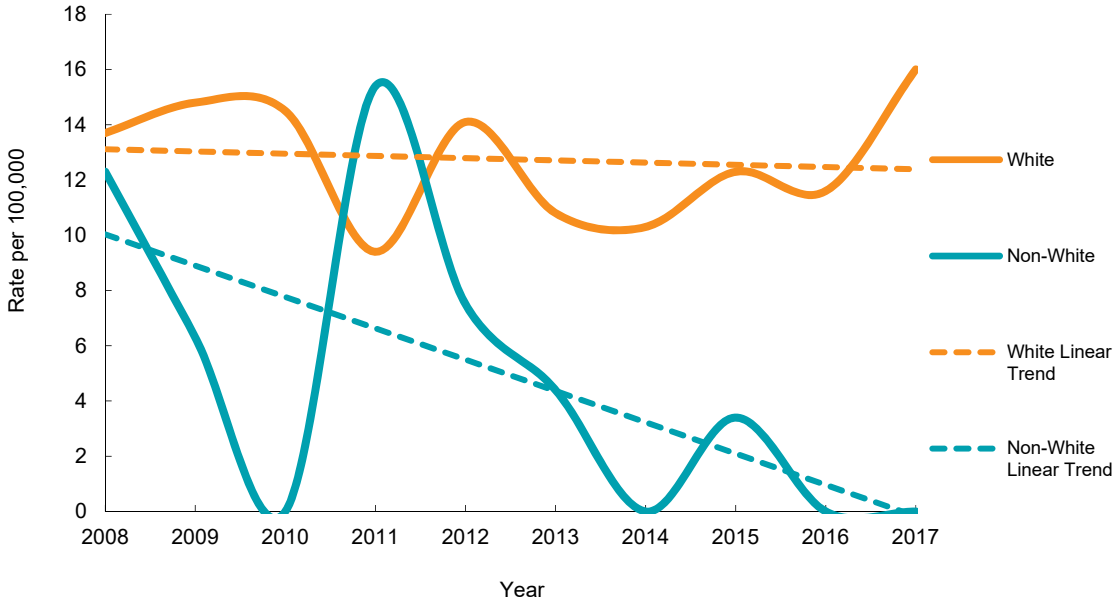
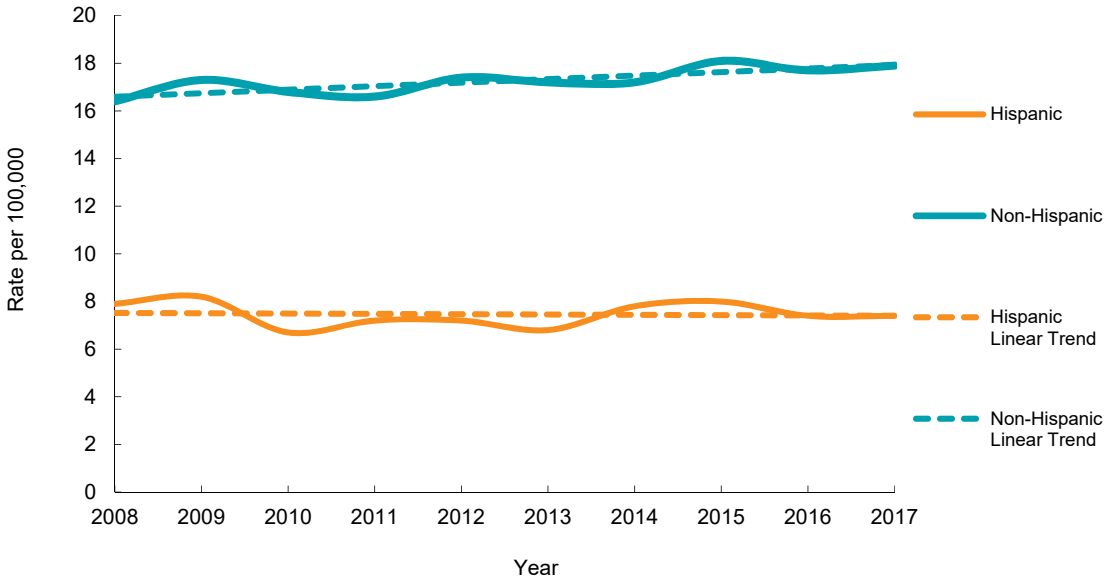


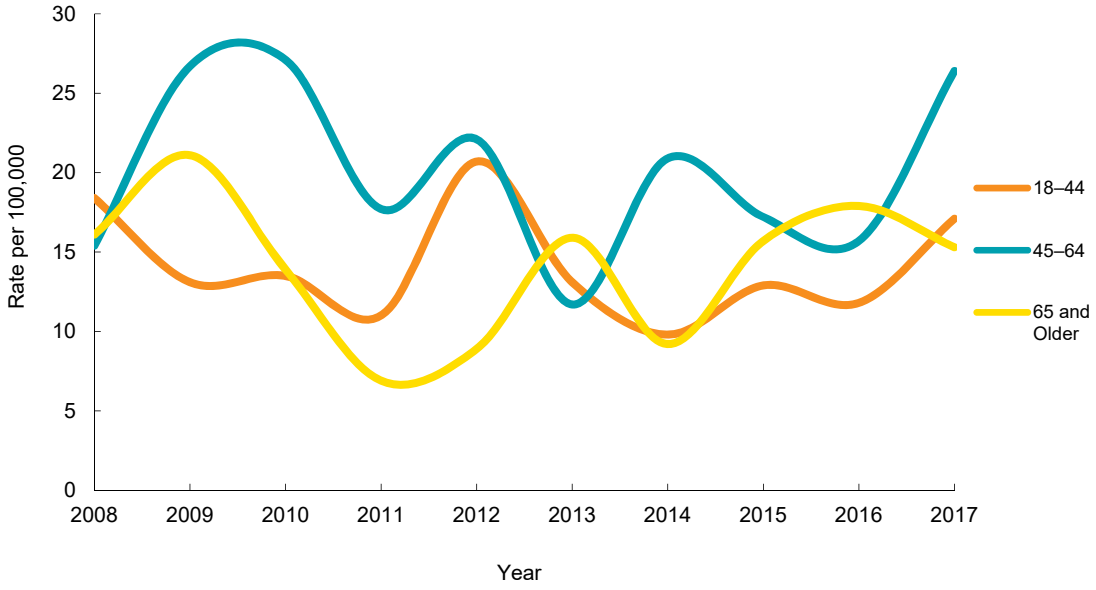
Figure 10. Number of Deaths due to Suicide per 100,000 Population, by Ethnicity, Collier County, 2008–2017



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

Between 2008 and 2017, death rate from suicide for the 18 to 44 age group declined by 7 percent, from 18.4 deaths per 100,000 population to 17.1 deaths per 100,000 population. The rate for the 45 to 64 age group increased by 71.4 percent, from 15.4 deaths per 100,000 population to 26.4 deaths per 100,000 population. The death rate from suicide for the 65 and older age group decreased by 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, 2008–2017



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

Mental Health Resources

Collier County has four facilities which provide psychiatric/substance abuse services to local residents. These four facilities offer a combined total of 204 treatment beds for these services (Table 1).

Table 1. Number of Substance Abuse/Psychiatric Beds by Facility, Collier County, 2018

Facility	Substance Abuse Beds	Psychiatric Beds	Dual Use Beds	Total Beds
Hazelden	46	--	--	46
The Willough of Naples	5	82	--	87
David Lawrence Center	30	28	--	58
Naples Community Hospital	--	--	13	13

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

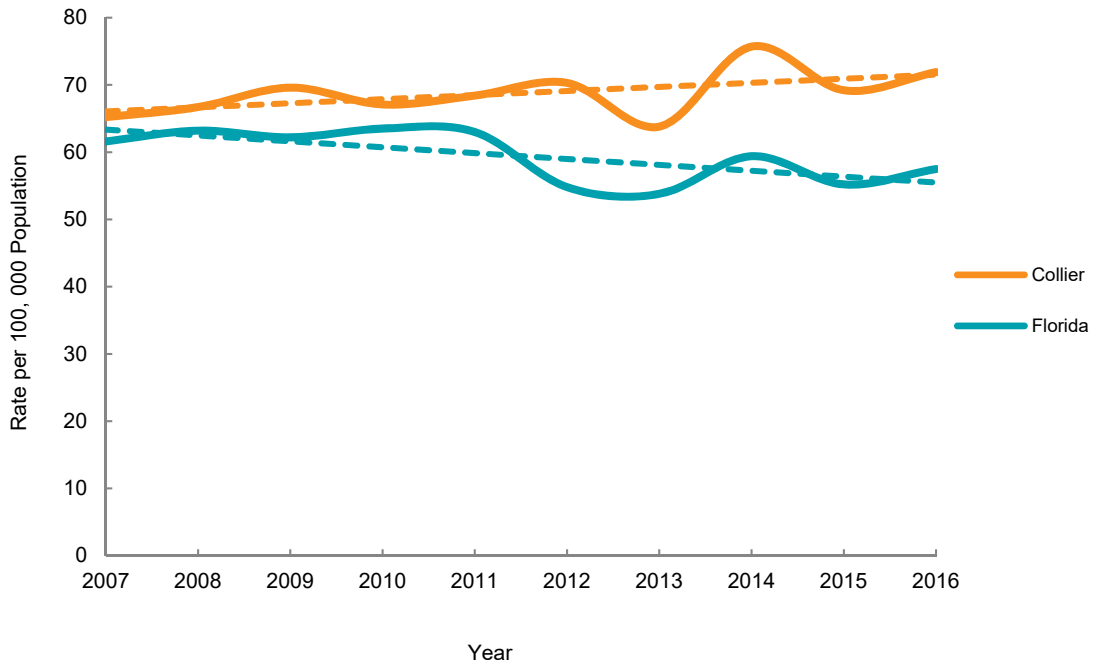
All facilities except Naples Community Hospital (NCH) offer both inpatient and outpatient treatment services. NCH only offers inpatient treatment services.

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 2007 and 2016, the number of dentists increased by 10.3 percent, from 65.2 dentists per 100,000 population to 71.9 dentists per 100,000 population. For Florida, during the same period, the number of dentists decreased by 6.7 percent (Figure 1).

Figure 1. Total Licensed Dentists, Collier County and Florida, 2007–2016

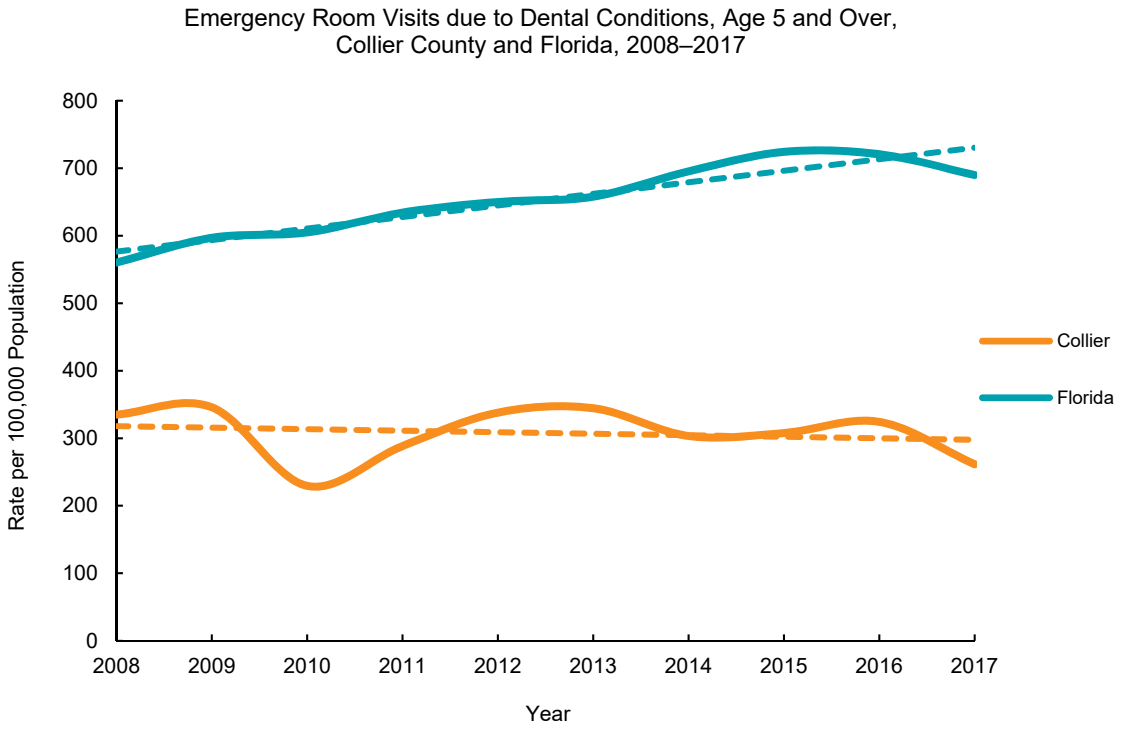


Data Source: Florida Department of Health, Division of Medical Quality Assurance.

Most of the 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 or Medicare. 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 2017, there were only eight dental centers in Collier County who accepted Medicaid.

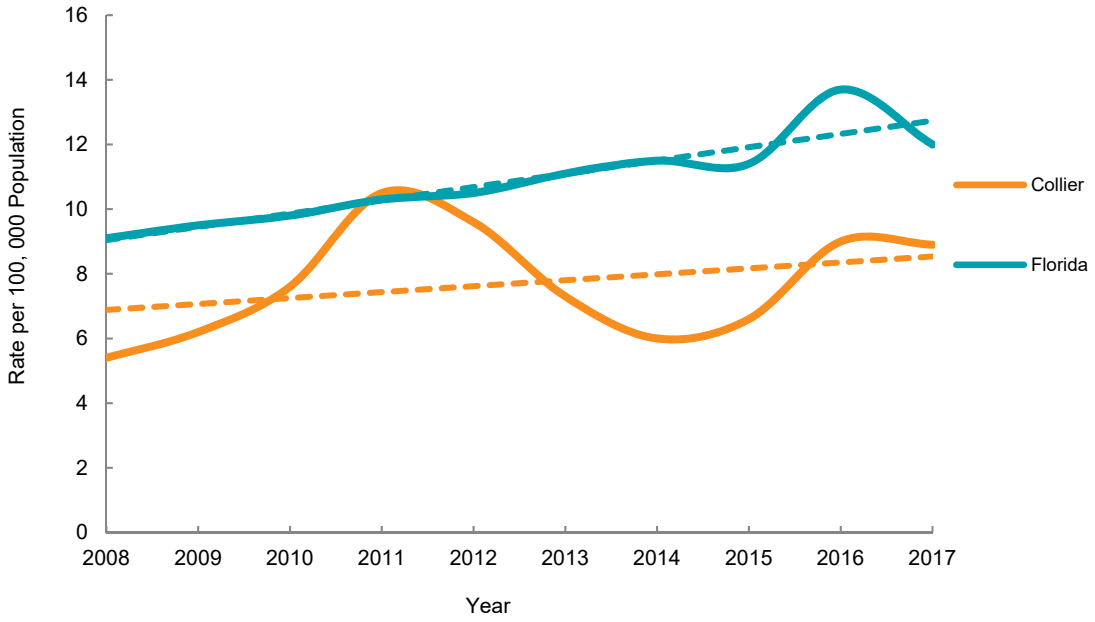
The only dental care option for many low-income people who lack access to preventative dental services is hospital emergency rooms. In 2017, 894 Collier County residents age 5 and over visited hospital emergency rooms for dental conditions considered avoidable with proper preventative dental care. Between 2008 and 2017, dental emergency room visits in Collier County decreased by 22 percent while the dental emergency room visits in Florida increased by 23.2 percent (Figure 2).



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

In Collier County, between 2008 and 2017, there was 64.8 percent increase in hospitalizations from preventable dental conditions for people under 65 years of age, from 5.4 per 100,000 population to 8.9 per 100,000 population. For Florida, during the same time, the rate increased by 31.9 percent from 9.1 per 100,000 population to 12 per 100,000 population (Figure 3).

Figure 3. Preventable Hospitalizations Under 65 from Dental Conditions, Collier County and Florida, 2008–2017

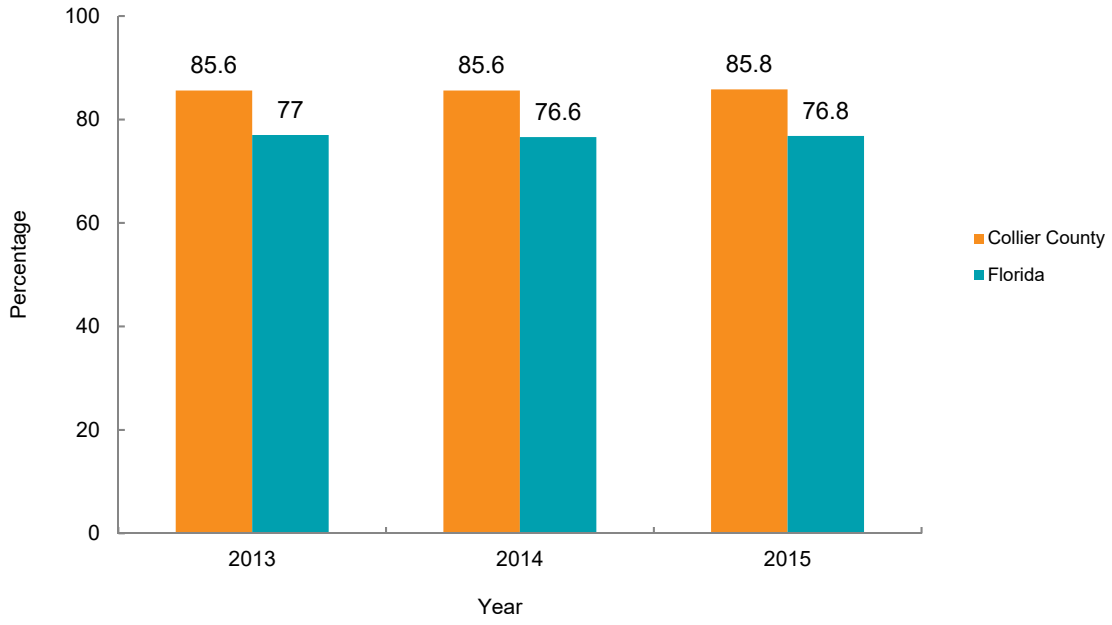


Data Source: Florida Agency for Health Care Administration

Community Water Fluoridation

The Centers for Disease Control and Prevention (CDC) recognized community water fluoridation as one of 10 great public health achievements of 20th 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 2014, 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 2015, 85.8 percent of Collier County residents received optimally fluoridated water compared to 76.8 percent for all Florida residents (Figure 4).

Figure 4. Population Receiving Optimally Fluoridated Water, Collier County and Florida, 2013–2015



Data Source: Florida Department of Health, Public Health Dental Program (PHDP).

Dental Care Resources

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 15 staff including four dentists, one hygienist, seven dental assistants and three clerks. The department also has a health educator in the tooth fairy program who provides oral health education to Collier County children. Although the clinic primarily serves children, the clinic also provides emergency services for low income adults age 18 to 49 without insurance. In 2017, the clinic served a total of 3,732 dental patients.

Healthcare Network of Southwest Florida

The Healthcare Network of Southwest Florida provides primary dental care services to children and adults at its locations in Immokalee, East Naples, Central, and its mobile office, the Health & Smiles Mobile.

The Healthcare Network of Southwest Florida also partners with other organizations to provide dental care to low income children and families at different locations.

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 and partially funded by the Naples Children and Education Foundation. 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 and faculty members.

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 daily but has limited appointment availability for preventative and restorative work. Healthcare Network of Southwest Florida provides primary dental care for adults in most locations. The Senior Friendship Center and the Neighborhood Health Clinic provide dental care for qualified adults.

The Health of the Older Population

The older population of Collier County (persons 65 years and above) numbered 111,012 in 2017. This represents 31 percent of the total county population or almost one in every three residents. The number of older Collier County residents increased by 29 percent since 2010, whereas the number of the under 65 years of age population increased by only 5 percent.

The sex ratio distribution of the population 65 years and over in 2017 was 111 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.

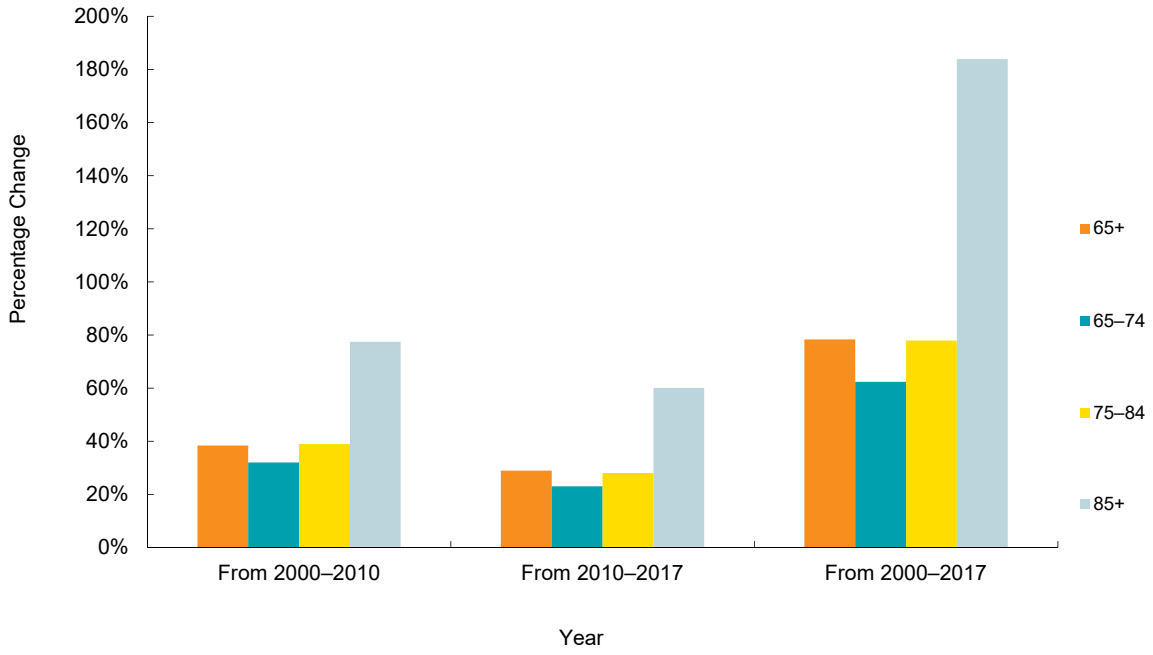
Since 2000, the percentage of residents in Collier County ages 65 and over has increased by 78 percent, from 62,257 to 111,012 in 2017. The median age of the population is getting older while the population cohort 65 years of age and over has been experiencing rapid growth. In 2017, the 65 to 74 age group in Collier County numbered 57,431 which is 1.6 times larger than it was in 2000. Concurrently, the 75 to 84 age group is 1.8 times larger and the 85 years and over age group is 2.8 times greater than it was in 2000.

During the period 2000 to 2017, mortality rates continued to decline for the population 65 to 84 years of age. For men, the decrease was 21 percent for ages 65 to 74 and 28 percent for ages 75 to 84. For females, the decrease was 24 percent for ages 65 to 74 and 33 percent for ages 75 to 84.

Life expectancy at birth has increased by 3.6 years for males and by 3.1 years for females since 2000. In 2016, persons in Collier County who reached age 65 had an average additional life expectancy of 25.4 years. 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 increased 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 through 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, 2010–2017

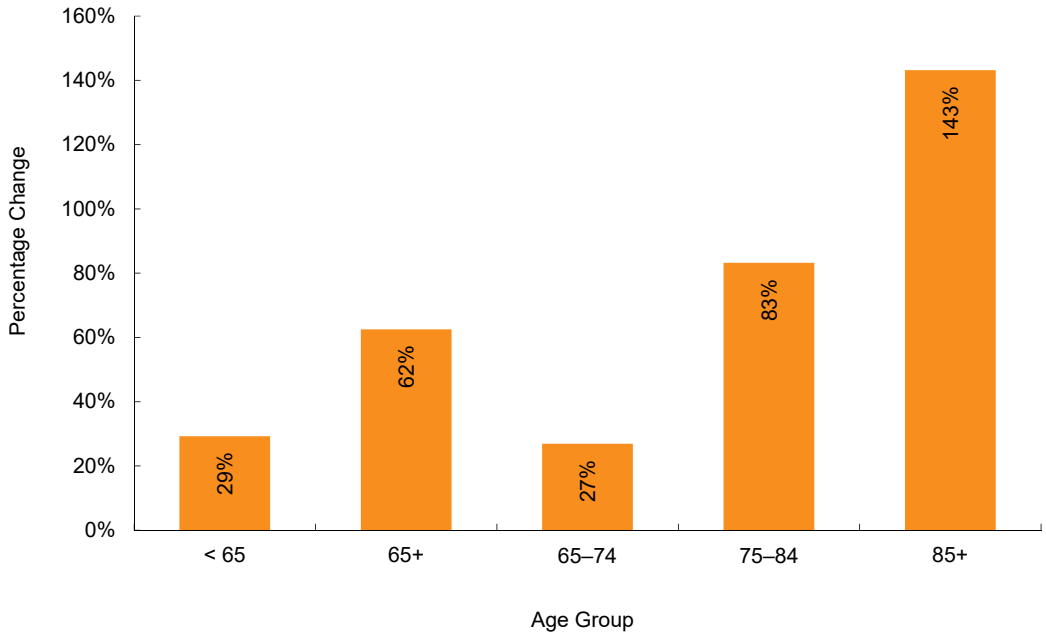


Data Source: U.S. Census Bureau

In 2040, the population of Collier County residents aged 65 years and above is projected to be 1.6 times as large as it was in the year 2017, growing to an estimated 164,042 residents in this age group in 2040. In 2040, it is estimated that the population of 65 years and above will consist of approximately 33 percent of the total county population in that year.

All age groups among the 65 years and above population are projected to increase at varying levels through 2040, with the 85 years and above age group potentially experiencing the largest increase (Figure 2).

Figure 2. Percentage Change in the Population by Select Age Groups, 2017–2040, Collier County



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

Leading Causes of Death

Heart disease is now the leading cause of death in Collier County and Florida among the older population, with cancer as a close second leading cause of death. In 2017, heart disease accounted for 23.6 percent of all deaths 65 years and over in Collier County and almost 24.9 percent in Florida. In the county, among males 65 years and over heart disease accounted for approximately 25.7 percent of all deaths, while among females it caused over 21.2 percent of all deaths.

Tables 1 to 12 show the 10 leading causes of death among the older population by age groups and gender in Collier County.

Table 1. The 10 Leading Causes of Death, 65 Years and Over, Collier County, 2017

Ten Leading Causes of Death	Number of Deaths	Percentage Distribution	Age-Specific Death Rate
Heart Diseases	687	23.6%	618.9
Cancer	684	23.5%	616.0
Cerebrovascular Diseases	290	10.0%	261.2
Alzheimer's Disease	196	6.7%	176.6
Unintentional Injury	143	4.9%	128.8
Chronic Lower Respiratory Disease	138	4.7%	124.3
Diabetes Mellitus	60	2.1%	54.0
Parkinson's Disease	48	1.7%	43.2
Essen Hypertension & Hypertensive Renal Disease	36	1.2%	32.4
Influenza & Pneumonia	34	1.2%	30.6

Table 2. The 10 Leading Causes of Death, 65–74 Years, Collier County, 2017

Ten Leading Causes of Death	Number of Deaths	Percentage Distribution	Age-Specific Death Rate
Cancer	203	37.1%	353.5
Heart Diseases	87	15.9%	151.5
Chronic Lower Respiratory Disease	34	6.2%	59.2
Cerebrovascular Diseases	31	5.7%	54.0
Diabetes Mellitus	21	3.8%	36.6
Unintentional Injury	18	3.3%	31.1
Chronic Liver Disease & Cirrhosis	18	3.3%	31.1
Suicide	8	1.5%	13.9
Alzheimer's Disease	7	1.3%	12.2
Essen Hypertension & Hypertensive Renal Disease	7	1.3%	12.2

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

Table 3. The 10 Leading Causes of Death, 75–84 Years, Collier County, 2017

Ten Leading Causes of Death	Number of Deaths	Percentage Distribution	Age-Specific Death Rate
Cancer	286	29.5%	750.4
Heart Diseases	204	21.1%	535.3
Cerebrovascular Diseases	79	8.2%	207.3
Alzheimer's Disease	60	6.2%	157.4
Chronic Lower Respiratory Disease	50	5.2%	131.2
Unintentional Injury	41	4.2%	107.6
Parkinson's Disease	26	2.7%	68.2
Diabetes Mellitus	22	2.3%	57.7
Septicemia	11	1.1%	28.9
Chronic Liver Disease & Cirrhosis	8	0.8%	21.0

Table 4. The 10 Leading Causes of Death, 85 Years and Over, Collier County, 2017

Ten Leading Causes of Death	Number of Deaths	Percentage Distribution	Age-Specific Death Rate
Heart Diseases	396	28.4%	2,559.8
Cancer	195	14.0%	1,260.5
Cerebrovascular Diseases	180	12.9%	1163.5
Alzheimer's Disease	129	9.3%	833.9
Unintentional Injury	84	6.0%	543.0
Chronic Lower Respiratory Disease	54	3.9%	349.1
Influenza & Pneumonia	22	1.6%	142.2
Essen Hypertension & Hypertensive Renal Disease	22	1.6%	142.2
Diabetes Mellitus	17	1.2%	109.9
Parkinson's Disease	16	1.2%	103.4

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

Table 5. The 10 Leading Causes of Death, 65 Years and Over, Males, Collier County, 2017

Ten Leading Causes of Death	Number of Deaths	Percentage Distribution	Age-Specific Death Rate
Heart Diseases	398	25.7%	757.6
Cancer	383	24.8%	729.1
Cerebrovascular Diseases	127	8.2%	241.8
Unintentional Injury	82	5.3%	156.1
Chronic Lower Respiratory Disease	72	4.7%	137.1
Alzheimer's Disease	66	4.3%	125.6
Parkinson's Disease	39	2.5%	74.2
Diabetes Mellitus	39	2.5%	74.2
Chronic Liver Disease & Cirrhosis	18	1.2%	34.3
Nephritis, Nephrotic Syndrome, Nephrosis	17	1.1%	32.4

Table 6. The 10 Leading Causes of Death, 65 Years and Over, Females, Collier County, 2017

Ten Leading Causes of Death	Number of Deaths	Percentage Distribution	Age-Specific Death Rate
Cancer	301	22.1%	514.7
Heart Diseases	289	21.2%	494.2
Cerebrovascular Diseases	163	12.0%	278.7
Alzheimer's Disease	130	9.5%	222.3
Chronic Lower Respiratory Disease	66	4.8%	112.9
Unintentional Injury	61	4.5%	104.3
Diabetes Mellitus	21	1.5%	35.9
Essen Hypertension & Hypertensive Renal Disease	21	1.5%	35.9
Influenza & Pneumonia	19	1.4%	32.5
Chronic Liver Disease & Cirrhosis	10	0.7%	17.1

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

Table 7. The 10 Leading Causes of Death, 65–74 Years, Males, Collier County, 2017

Ten Leading Causes of Death	Number of Deaths	Percentage Distribution	Age-Specific Death Rate
Cancer	113	34.7%	422.8
Heart Diseases	60	18.4%	224.5
Chronic Lower Respiratory Disease	20	6.1%	74.8
Cerebrovascular Diseases	16	4.9%	59.9
Diabetes Mellitus	12	3.7%	44.9
Unintentional Injury	11	3.4%	41.2
Chronic Liver Disease & Cirrhosis	10	3.8%	37.4
Suicide	6	1.8%	22.5
Parkinson’s Disease	5	1.5%	18.7
Alzheimer's Disease	4	1.2%	15.0

Table 8. The 10 Leading Causes of Death, 65–74 Years, Females, Collier County, 2017

Ten Leading Causes of Death	Number of Deaths	Percentage Distribution	Age-Specific Death Rate
Cancer	90	40.7%	293.1
Heart Diseases	27	12.2%	87.9
Cerebrovascular Diseases	15	6.8%	48.8
Chronic Lower Respiratory Disease	14	6.3%	45.6
Diabetes Mellitus	9	4.1%	29.3
Chronic Liver Disease & Cirrhosis	8	3.6%	26.1
Unintentional Injury	7	3.2%	22.8
Alzheimer's Disease	3	1.4%	9.8
Essen Hypertension & Hypertensive Renal Disease	3	1.4%	9.8
Septicemia	2	0.9%	6.5

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

Table 9. The 10 Leading Causes of Death, 75–84 Years, Males, Collier County, 2017

Ten Leading Causes of Death	Number of Deaths	Percentage Distribution	Age-Specific Death Rate
Cancer	169	29.8%	903.6
Heart Diseases	137	24.2%	732.5
Cerebrovascular Diseases	42	7.4%	224.6
Unintentional Injury	27	4.8%	144.4
Chronic Lower Respiratory Disease	25	4.4%	133.7
Alzheimer's Disease	21	3.7%	112.3
Parkinson's Disease	20	3.5%	106.9
Diabetes Mellitus	16	2.8%	85.6
Septicemia	7	1.2%	37.4
Chronic Liver Disease & Cirrhosis	7	1.2%	37.4

Table 10. The 10 Leading Causes of Death, 75–84 Years, Females, Collier County, 2017

Ten Leading Causes of Death	Number of Deaths	Percentage Distribution	Age-Specific Death Rate
Cancer	117	29.1%	602.8
Heart Diseases	67	16.7%	345.2
Alzheimer's Disease	39	9.7%	200.9
Cerebrovascular Diseases	37	9.2%	190.6
Chronic Lower Respiratory Disease	25	6.22%	128.8
Unintentional Injury	14	3.5%	72.1
Parkinson's Disease	6	1.5%	30.9
Diabetes Mellitus	6	1.5%	30.9
Essen Hypertension & Hypertensive Renal Disease	4	1.0%	20.6
Influenza & Pneumonia	4	1.0%	20.6

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

Table 11. The 10 Leading Causes of Death, 85 Years and Over, Males, Collier County, 2017

Ten Leading Causes of Death	Number of Deaths	Percentage Distribution	Age-Specific Death Rate
Heart Diseases	201	30.8%	2,828.6
Cancer	101	15.5%	1,421.3
Cerebrovascular Diseases	69	10.6%	971.0
Unintentional Injury	44	6.7%	619.2
Alzheimer's Disease	41	6.3%	577.0
Chronic Lower Respiratory Disease	27	4.1%	380.0
Parkinson's Disease	14	2.1%	197.0
Diabetes Mellitus	11	1.7%	154.8
Nephritis, Nephrotic Syndrome, Nephrosis	9	1.4%	126.7
Essen Hypertension & Hypertensive Renal Disease	8	1.2%	112.6

Table 12. The 10 Leading Causes of Death, 85 Years and Over, Females, Collier County, 2017

Ten Leading Causes of Death	Number of Deaths	Percentage Distribution	Age Specific Death Rate
Heart Diseases	195	26.4%	2331.4
Cerebrovascular Diseases	111	15.0%	1327.1
Cancer	94	12.7%	1123.9
Alzheimer's Disease	88	11.9%	1052.1
Unintentional Injury	40	5.4%	478.2
Chronic Lower Respiratory Disease	27	3.7%	322.8
Essen Hypertension & Hypertensive Renal Disease	14	1.9%	167.4
Influenza & Pneumonia	14	1.9%	167.4
Diabetes Mellitus	6	0.8%	71.7
Nephritis, Nephrotic Syndrome, Nephrosis	6	0.8%	71.7

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

Alzheimer's Disease

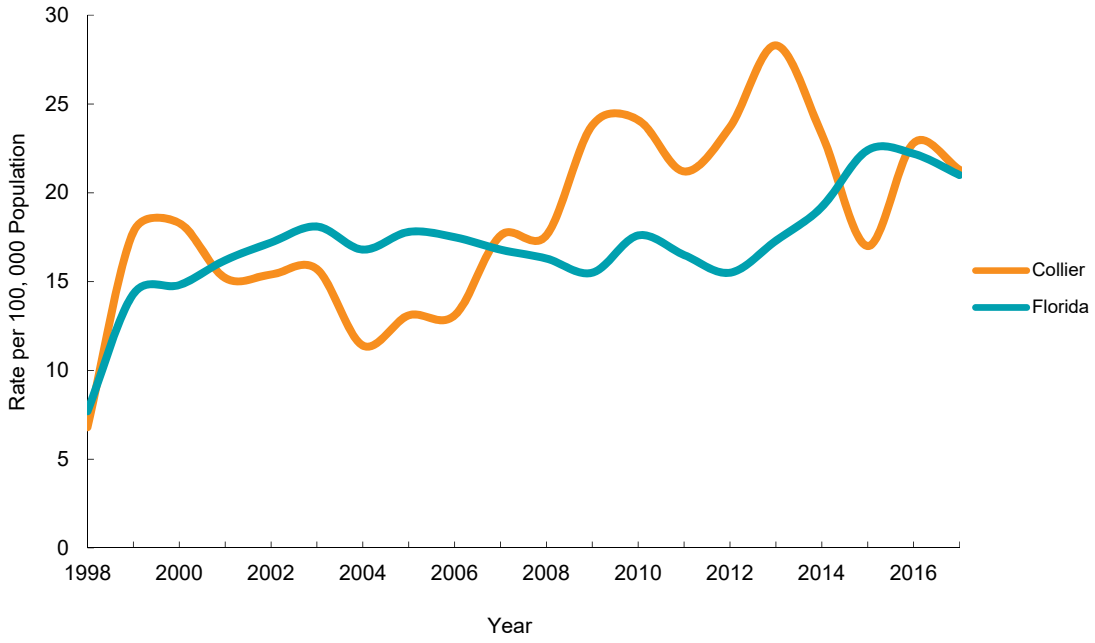
Alzheimer's disease is the most common cause of dementia and can account for up to 80 percent of all cases of the condition. The definitive cause of Alzheimer's is unknown at this time; however, as in other chronic diseases, it is widely accepted that multiple factors are involved in the development of the disease.

Advanced 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.

Alzheimer's disease is the fourth leading cause of death in the population 65 years of age and older. In 2017, this cause of mortality accounted for 6.7 percent of all deaths 65 years of age and over in Collier County and just over 4.5 percent of deaths in the older population in Florida. Among the population 85 years and older, Alzheimer's disease accounted for 9.3 percent of all causes of death in the county. Death from Alzheimer's accounted for more deaths than 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 20th and into the 21st 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 213 percent between 1998 and 2017. The death rate for Florida during the same time period increased by 173 percent.

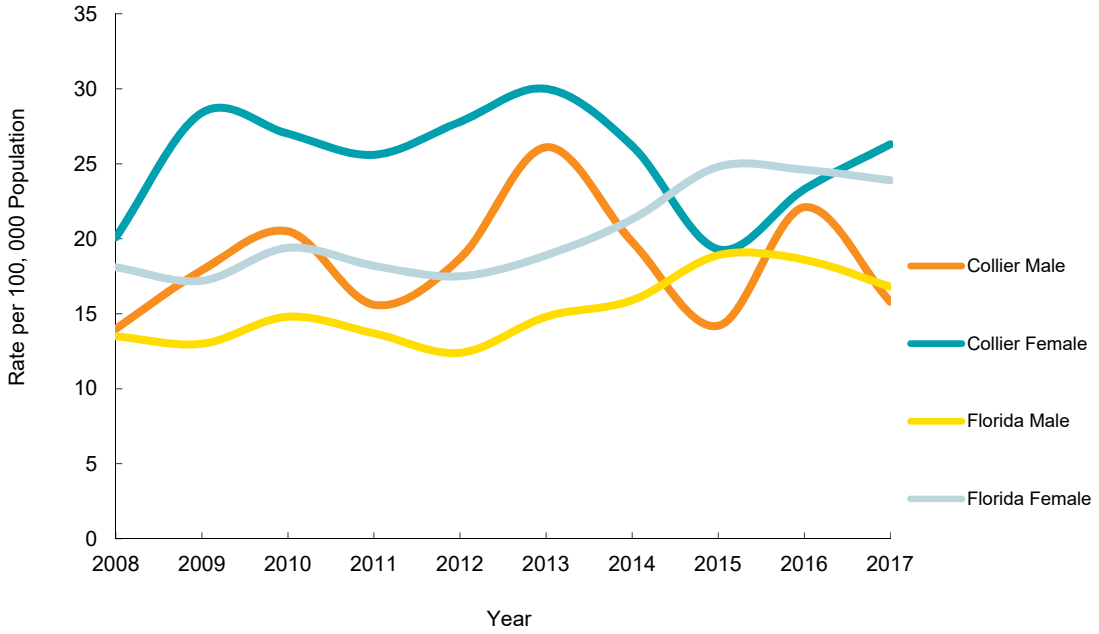
Figure 3. Number of Deaths due to Alzheimer's Disease Adjusted for Age per 100,000 Population, Collier County and Florida, 1998–2017



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 2008 and 2017, the age-adjusted mortality rate for Alzheimer's disease increased by 12.9 percent for males and by 30.8 percent for females. During the same time period, male and female deaths from Alzheimer's disease for the State of Florida experienced increases. The prevalence and incidence of Alzheimer's disease is being driven by increased life expectancy over the past 60 years, particularly among women.

Figure 4. Number of Deaths due to Alzheimer's Disease per 100,000 Population Adjusted by Age, by Gender, Collier County and Florida, 2008–2017



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

In 2018, nursing homes and assisted living facilities in Collier County had a total bed capacity of 3,330 beds. This results in a ratio of 30 beds per 1,000 population 65 years and older in the county (Table 13). By type of facility, 71.2 percent of beds were found in assisted living facilities while 28.8 percent existed within skilled nursing facilities.

Table 13. Number of Nursing Homes and Assisted Living Facilities, Collier County, 2018

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	32	2,371	21.4
Nursing Homes (Skilled Nursing)	11	959	8.6
Total All Facilities	43	3,330	30.0

Data Source: AHCA and our Collier County Long-Term Care Facilities

There is a total of 545 Alzheimer's/dementia beds in Collier County. This amounts to 16.4 percent of the total number of long-term care beds or about 1 in every 6 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 4.9 or about 1 bed for every 200 persons 65 years and over (Table 14).

Table 14. Number of Memory Care/Alzheimer's/Dementia Type Beds Available within Facilities, Collier County, 2017

Number of Beds	Percentage of All Long-Term Care Beds Available	Memory Care/Alzheimer's/Dementia Beds per 1,000 Population 65 Years and Older
545	16.4%	4.9

Data Source: AHCA and our Collier County Long-Term Care Facilities

Mortality Indicators

Throughout the 20th century and through the present, developed 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. By the end of the century, life expectancy 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.

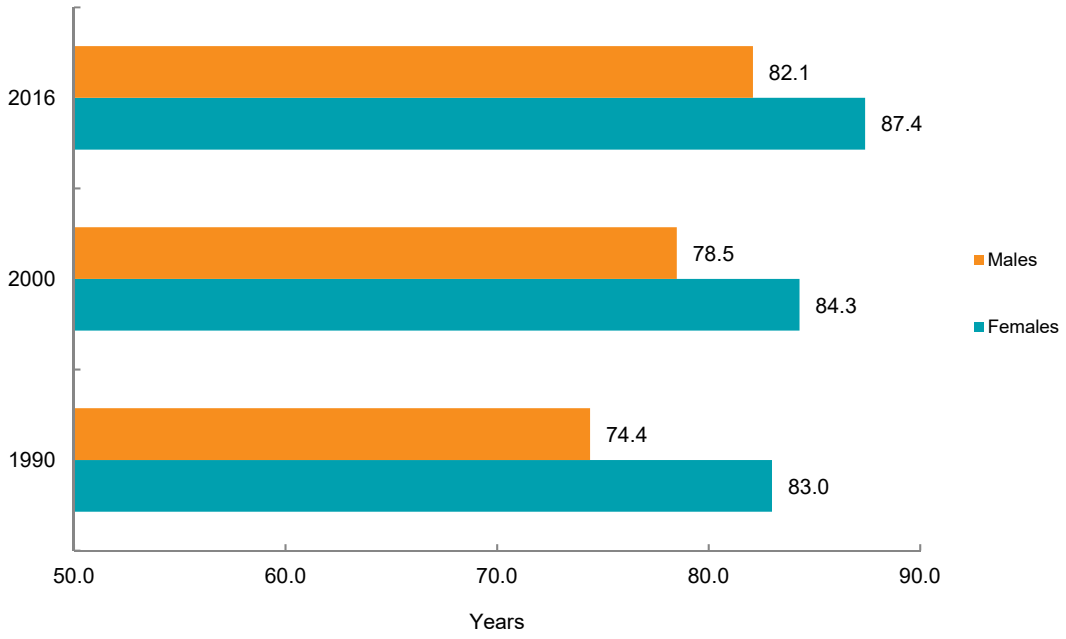
Collier County has the distinction of having one of the highest life expectancies at birth among all counties in the country. Between 1990 and 2016, life expectancy in Collier County increased by 6.6 years, exceeding the national average significantly by 6.2 years in 2016 (Table 1).

Table 1. Life Expectancy at Birth, Collier County, 1990, 2000 and 2016

	1990	2000	Percentage Change, 1990 – 2000	2016	Percentage change, 2000 – 2016
Life Expectancy at Birth in Years	78.4	81.3	3.7	85.0	4.6

Males in Collier County experienced a greater rate of life expectancy increase than females during the 26-year period; however, females continued to maintain a significantly higher level of life expectancy at birth than males, 87.4 years compared to 82.1 years in 2016 (Figure 1). This dominance in longevity levels by females has been a biological reality historically throughout the world since life expectancy calculations were first developed in the 1600s.

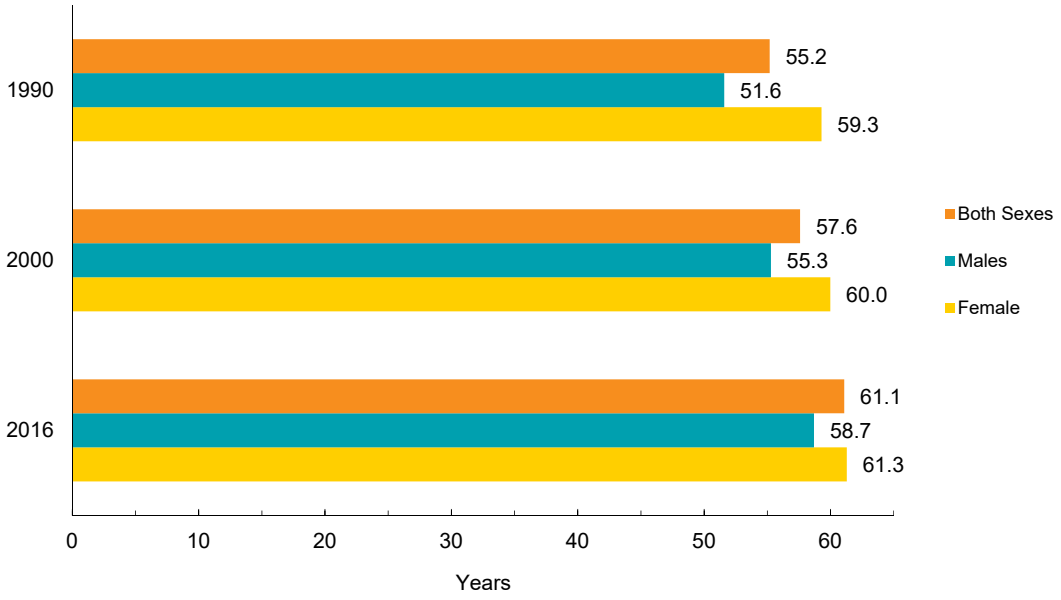
Figure 1. Life Expectancy at Birth, by Sex, Collier County, 1990, 2000, and 2016



Data Source: U.S. Census Bureau, Bureau of Vital Statistics. Calculations performed by FDOH – Collier County, Epidemiology Program

In Collier County, a 25-year-old woman can expect to live 61.3 years longer, while the remaining life expectancy for men at the same age is 58.7 years, a difference of 2.6 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 2).

Figure 2. Life Expectancy at Age 25, by Sex, Collier County, 1990, 2000, and 2016



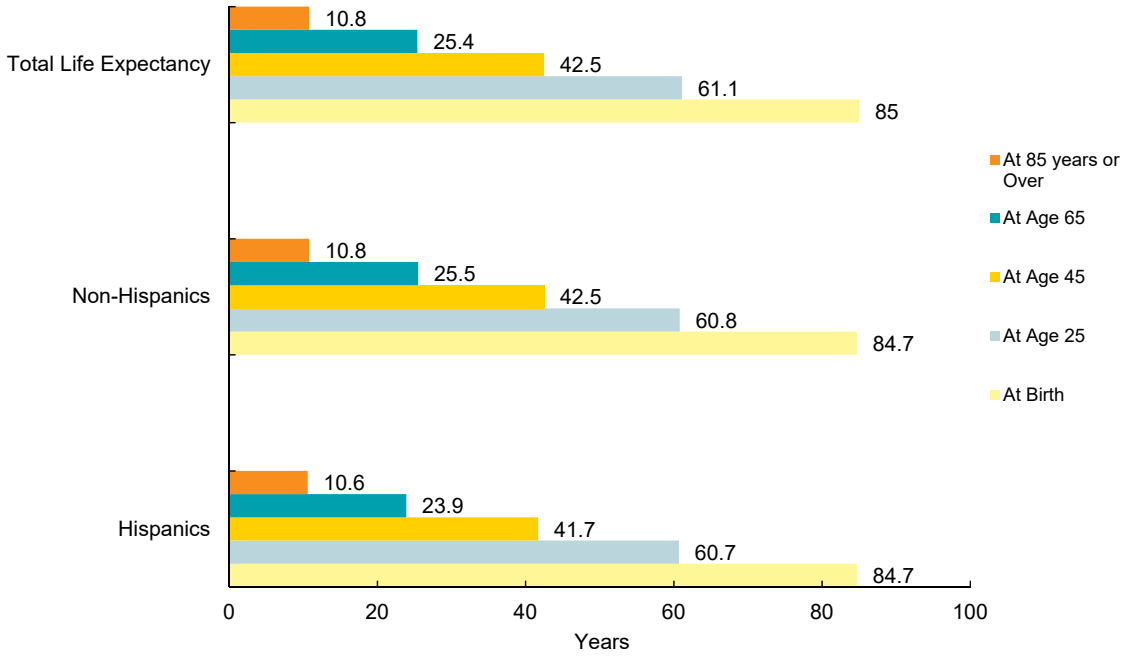
Data Source: U.S. Census Bureau, Bureau of Vital Statistics. Calculations performed by FDOH – Collier County, Epidemiology Program

The variation in life expectancy at various ages in Collier County by ethnicity is shown in Table 2 and Figure 3. On average, in 2016, Hispanic residents of Collier County lived as many years as 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 most recent health statistics for the US indicate that the Hispanic population has a life expectancy advantage over the non-Hispanic white population. This trend is not evident in Collier County in 2016, as the difference life expectancy for non-Hispanics and Hispanics is negligible.

Table 2. Life Expectancy at Select Ages, by Ethnicity, Collier County, 2016

Life Expectancy by Age	Hispanics	Non- Hispanics	Total Life Expectancy by Age
At Birth	84.7	84.7	85
At Age 25–29	60.7	60.8	61.1
At Age 45–49	41.7	42.5	42.5
At Age 65–69	23.9	25.5	25.4
At 85 years or Over	10.6	10.8	10.8

Figure 3. Life Expectancy at Select Ages, by Ethnicity, Collier County, 2016



Data Source: U.S. Census Bureau, Bureau of Vital Statistics. Calculations performed by FDOH – Collier County, Epidemiology Program

Leading Causes of Death

The rank order of causes of death is based on the most frequently occurring causes of mortality in terms of frequency of counts. The percentage distribution of these deaths reflects the 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 is 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. 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.

Years of Potential Life Lost (YPLL) is the average number of years that a person would have lived had he or she not died prematurely. This measure is used to assess the burden of premature death and will be explained in more detail later in the chapter.

Tables 3 and 4 show the leading causes of death in Collier County for two periods, 2000 and 2017, respectively.

Table 3. 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

Table 4. Leading Causes of Death, All Ages, both Sexes, Collier County, 2017

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	3,508	100	978.5	481.4	5,904.9
Cancer	837	23.9	233.5	112.9	1,264.9
Heart Disease	760	21.7	212	90.5	601
Cerebrovascular Disease	312	8.9	87	36.1	191.2
Unintentional Injury	248	7.1	69.2	51.3	1285.2
Alzheimer's Disease	199	5.7	55.5	21.3	23.6
Chronic Lower Respiratory Disease	146	4.2	40.7	16.9	91.8
Diabetes Mellitus	78	2.2	21.8	10.7	150.2
Suicide	57	1.6	15.9	14.9	395.2
Chronic Liver Disease & Cirrhosis	56	1.6	15.6	11	233.8
Parkinson’s Disease	48	1.4	13.4	5.4	4.3

Data Source: U.S. Census Bureau, Bureau of Vital Statistics. Calculations performed by FDOH–Collier County, Epidemiology Program

In 2017, the 10 causes accounted for approximately 78.1 percent of all deaths occurring in the county. Overall in Collier County, between 2000 and 2017, mortality ranking decreased for four leading causes, increased for four, and remained constant for two.

During the period between 2000 and 2017, mortality from heart disease declined significantly accounting for 21.7 percent of all deaths in 2017, down from over 29 percent of the total number of deaths in Collier County in 2000. This decrease places cancer as the leading cause of death in Collier County while heart disease has shifted to the second leading cause. Chronic liver disease and cirrhosis and chronic lower respiratory disease also decreased in ranking and in age-adjusted mortality rates between 2000 and 2017.

Cancer is the first leading cause of death in Collier County in 2017; however, cancer’s age-adjusted death rate decreased from 144.4 in 2000 to 112.9 in 2017. Alzheimer’s disease, which was the sixth leading cause of death in 2000, now ranks as the fifth leading cause, accounting

for just 5.7 percent of all deaths. In 2000, there were 71 deaths from the disease, by 2017 the number had increased by 180 percent to 199. Cerebrovascular disease and diabetes remained the third and seventh leading cause of death, respectively, in the county during 2000 and 2017.

By gender, the leading causes of death for males in Collier County varied greatly in rank order between 2000 and 2017, with the exception of unintentional injuries, Alzheimer's disease, and diabetes which remain in the same rank as in 2000. Cancer, as is the case countywide, is now the leading cause of death among males. Cerebrovascular disease or strokes increase by 121 percent from 58 deaths in 2000 to 140 in 2017. Another important change is the increase in deaths due to suicide among males, which more than doubled from 21 deaths in 2000 to 43 deaths in 2017.

The leading causes of death for females varied considerably by rank order between 2000 and 2017, except for cerebrovascular disease, the third leading cause for both years, diabetes, the seventh leading cause, and chronic liver disease and cirrhosis, the ninth leading cause. The remaining seven causes were all in different orders with a number of select causes of death unique to only 2000 or 2017.

Tables 5 to 8 display the leading causes of death for all ages by sex in Collier County in 2000 and 2017.

Table 5. 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 & 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

Table 6. Leading Causes of Death, All Ages, Males, Collier County, 2017

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	1,928	100.0	1,096.2	575.5	7,608.9
Cancer	467	24.2	265.5	131.3	1,382.6
Heart Disease	454	23.5	258.1	118.9	937.8
Unintentional Injury	157	8.1	89.3	70.5	1,815.0
Cerebrovascular Disease	139	7.2	79.0	35.2	223.9
Chronic Lower Respiratory Disease	76	3.9	43.2	18.4	94.6
Alzheimer's Disease	68	3.5	38.7	15.8	30.7
Diabetes Mellitus	49	2.5	27.9	14.0	181.2
Suicide	43	2.2	24.4	24.0	647.7
Parkinson's Disease	39	2.0	22.2	9.1	4.7
Chronic Liver Disease & Cirrhosis	36	1.9	20.5	14.1	295.2

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 & Cirrhosis	12	1.1	9.4	6.8	117.1
Atherosclerosis	11	1.0	8.6	4.7	1.8

Table 8. Leading Causes of Death, All Ages, Females, Collier County, 2017

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	1,580	100.0	865.2	393.5	4,253.3
Cancer	370	23.4	202.6	96.4	1,150.8
Heart Disease	306	19.4	167.6	64.6	274.5
Cerebrovascular Disease	173	10.9	94.7	36.6	159.5
Alzheimer's Disease	131	8.3	71.7	26.3	16.8
Unintentional Injury	91	5.8	49.8	32.4	771.7
Chronic Lower Respiratory Disease	70	4.4	38.3	15.7	89.1
Diabetes Mellitus	29	1.8	15.9	7.7	120.1
Hypertensive Renal Disease	23	1.5	12.6	4.8	28.4
Chronic Liver Disease & Cirrhosis	20	1.3	11.0	8.4	174.4
Influenza & Pneumonia	19	1.2	10.4	3.7	6.5

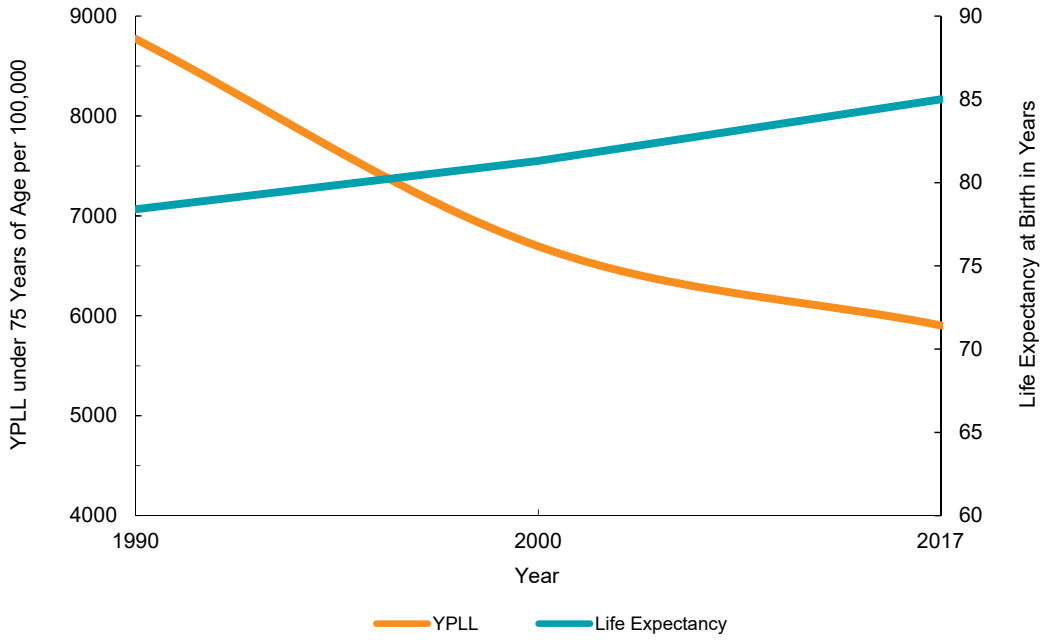
Data Source: U.S. Census Bureau, Bureau of Vital Statistics. Calculations performed by FDOH – Collier County, Epidemiology Program

Years of Potential Life Lost (YPLL)

The indicator Years of Potential Life Lost (YPLL) is a measure of the relative impact of multiple diseases and conditions in a county, state, or country. It illustrates the losses in years suffered because of the death of a person usually prior to age 75. Compared to mortality rates, YPLL places an emphasis on premature mortality in a geographical area. YPLL in public health may be interpreted as a measure of preventable mortality for causes particularly those that are associated with lifestyle 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 YPLL 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 2017



Data Source: U.S. Census Bureau, Bureau of Vital Statistics. Calculations performed by FDOH – Collier County, Epidemiology Program

Steep declines in YPLL between 1990 and 2017 are visible for both sexes for several chronic diseases – cancer, heart disease, and cerebrovascular disease. While YPLL from unintentional injuries decreased by 37.3 percent for males, this cause remains the major cause of death generating the most YPLL for males in Collier County—placing it ahead of cancer. For females, death from injuries generates less YPLL than cancer and has increased by 10.7 percent from 1990 to 2017.

Diseases or conditions showing an increase in YPLL between 1990 and 2017 include: chronic liver disease and cirrhosis—an increase of 65 percent for females and an increase of 57.2 percent for males; and diabetes mellitus—an increase of 136.9 percent for females.

Tables 9 and 10 show the YPLL per 100,000 population for females and males respectively, for 1990, 2000, and 2017.

Table 9. Years of Potential Life Lost Under 75 Years of Age per 100,000 Population, Females, Collier County, 1990, 2000, and 2017

Disease or Condition	2017	2000	1990
Cancer	1150.8	1763.3	1962.6
Unintentional Injuries	771.7	567.9	697.4
Perinatal Period Conditions	336.8	132.2	524.8
Heart Disease	274.5	514.3	553.7
Chronic Liver Disease and Cirrhosis	174.4	117.1	105.7
Cerebrovascular Disease	159.5	62.1	211.3
Suicide	150.5	210.3	187.4
Diabetes Mellitus	120.1	59.5	50.7
Congenital Malformations	114	132.2	209.9
Chronic Lower Respiratory Disease	89.1	199.7	91.6
Homicide	57.5	117.1	94.4
Pregnancy, Childbirth and the Puerperium	53.6	0	0

Data Source: U.S. Census Bureau, Bureau of Vital Statistics. Calculations performed by FDOH – Collier County, Epidemiology Program

Table 10. Years of Potential Life Lost Under 75 Years of Age per 100,000 Population, Males, Collier County, 1990, 2000 and 2017

Disease or Condition	2017	2000	1990
Unintentional Injuries	1815	2107.7	2895.2
Cancer	1382.6	1600.8	2208.9
Heart Disease	937.8	1416.4	1658.1
Suicide	647.7	496.5	744.3
Chronic Liver Disease & Cirrhosis	295.2	308.7	187.8
Perinatal Period Conditions	248.2	323.9	526.1
Cerebrovascular Disease	223.9	124.3	262.7
Diabetes Mellitus	181.2	122.6	187.8
Congenital Malformations	114.6	214.3	312.1
Chronic Lower Respiratory Disease	94.6	174.8	137.0
Homicide	82.0	304.3	700.5
Septicemia	76.3	67.0	5.6

Data Source: U.S. Census Bureau, Bureau of Vital Statistics. Calculations performed by FDOH – Collier County, Epidemiology Program

For all causes of death in Collier County in 2017, males lost 87.3 percent of expected years of life from birth through age 75 more than females due predominantly to premature deaths from: 1) unintentional injuries, 2) heart disease, 3) suicide, 4) chronic liver disease and cirrhosis and 5) HIV infections. 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. Thus, unintentional injuries and suicide create a heavy burden on public health, particularly among males in the local community, compared to other causes such as chronic lower respiratory disease, diabetes, and cerebrovascular disease.

Table 11 shows the ratio of Male to Female YPLL per 100,000 population by leading causes of death. 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.

Table 11. Ratio of Male to Female Years of Potential Life Lost per 100,000 Population, by Leading Causes of Death, Collier County, 2017

Cause	YPLL for Males	YPLL for Females	Ratio of YPLL for Males to Females
All Causes	6,826.3	3,645.1	1.9
Unintentional Injury	1815.0	771.7	2.4
Cancer	1382.6	1150.8	1.2
Heart Diseases	937.8	274.5	3.4
Suicide	647.7	150.5	4.3
Perinatal Period Conditions	248.2	336.8	0.7
Chronic Liver Disease & Cirrhosis	295.2	174.4	1.7
Cerebrovascular Diseases	223.9	159.5	1.4
Diabetes Mellitus	181.2	120.1	1.5
Congenital Malformations	114.6	114.0	1.0
Chronic Lower Respiratory Disease	94.6	89.1	1.1
Homicide	82.0	57.5	1.4
Septicemia	76.3	47.8	1.6
HIV Infection	70.6	14.9	4.7
Hypertension & Hypertensive Renal Disease	43.3	28.4	1.5
Anemias	34.0	28.4	1.2

*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

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.

Table 12 shows the leading causes of death in Collier County in 2017 contrasted with the actual preventable causes of death for comparison. 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 12. Leading Causes of Death in Collier County in 2017 contrasted with the Actual Preventable Causes of Death for Comparison

Ten Leading Causes of Death	Number of Deaths	Percentage Distribution
Cancer	837	23.9
Heart Disease	760	21.7
Cerebrovascular Disease	312	8.9
Unintentional Injury	248	7.1
Alzheimer's Disease	199	5.7
Chronic Lower Respiratory Disease	146	4.2
Diabetes	78	2.2
Suicide	57	1.6
Chronic Liver Disease & Cirrhosis	56	1.6
Parkinson's Disease	48	1.4
Total, Ten Leading Causes of Death	2,741	78.1
All other Causes	767	21.9
Total	3,508	100

Actual Preventable Causes of Death	Estimated Number	Percentage Distribution
Tobacco	635	18.1
Poor Diet and Physical Inactivity	582	16.6
Alcohol Consumption	123	3.5
Infectious Diseases	109	3.1
Toxic and Chemical Agents	81	2.3
Motor Vehicle Crashes	63	1.8
Firearms	46	1.3
Sexual Behavior	28	0.8
Illicit Drug Use	25	0.7
Actual Total Preventable Causes of Death	1,691	48.2

Data Source: Bureau of Vital Statistics. Calculations performed by FDOH – Collier County, Epidemiology Program

Tobacco use accounts for approximately one of every five deaths in Collier County each year and was responsible for at least 635 deaths in 2017. 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. This is because tobacco use has declined over the latter part of the 20th through the 21st century, while the prevalence of overweight and obesity in the population is continuing to increase at a consistent pace.

As the prevalence of overweight and obesity has increased in the United States, so has the risk of death from cardiovascular disease, diabetes, and kidney disease due to their medical correlation. In Collier County in 2017, overweight and obesity were associated with at least 582 deaths. Overweight, poor diet, and physical inactivity in Collier County account for about another one in six deaths annually. These lifestyle behaviors also heavily contribute to YPLL, 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 2017, at least 123 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. These accounted for approximately 10 percent of all deaths in Collier County, or about one in every ten deaths.