

ALLEGHENY COUNTY HEALTH DEPARTMENT



# 2020 MORTALITY REPORT



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# Introduction

This report summarizes the analysis of 2020 death data provided by the Pennsylvania State Department of Health. The Allegheny County Health Department (ACHD) uses death data to describe health outcomes among residents, determine trends in mortality over time, and identify racial and ethnic health disparities. Exploring 2020 death data also allows the ACHD to highlight the increase in mortality observed throughout the COVID-19 pandemic.

This report describes all-cause mortality among Allegheny County residents, disparities in the leading causes of death, infant mortality, and prevention and risk factors for the top three leading causes of death. This data helps to inform program development and interventions to prevent and reduce both infectious diseases and chronic conditions in the community. Specifically, through this data, the ACHD can:

- Identify groups or places that experience higher-than-average rates of mortality
- Explore the local burden of underlying chronic disease rates
- Raise awareness of risk factors associated with the leading causes of death
- Promote disease prevention and treatment to at-risk groups

The previous Allegheny County Mortality Report (2018) established the top three leading causes of death as 1) heart disease, 2) cancer and 3) unintentional injuries. Due to the onset of the COVID-19 pandemic in 2020, COVID-19 replaced unintentional injuries as the third leading cause of death in Allegheny County, Pennsylvania and the United States. The United States age-adjusted mortality rate increased by 16.8 percent from 2019 to 2020. This rate increase reduced life expectancy among US residents from 78.8 years in 2019 to 77 years in 2020 (1.8 year reduction).<sup>1</sup> Analyzing mortality throughout the pandemic can help the ACHD understand how COVID-19 has affected the Allegheny County community, as well as other factors that may have affected mortality.

The Pennsylvania Vital Statistics Law of 1953 requires that deaths that occur in Pennsylvania be reported to the Department of Health within four days of the date of death. Funeral homes, medical professionals, coroners and medical examiners report these deaths through an Electronic Death Registration System (EDRS). Death records are then shared with the ACHD through a cooperative agreement that requires the following disclaimer: “These data were provided by the Pennsylvania Department of Health. The Department specifically disclaims responsibility for any analyses, interpretations, or conclusions.”

# Terms & Definitions

**Age-adjusted rate:** a standard method used to compare death rates between populations that may have different age distributions. Age-adjusted rates are calculated using the 2000 U.S. Census Standard Population.

**All-cause mortality:** a measure of the total number of deaths from any cause.

**Cause of death:** defined by the World Health Organization (WHO) as the disease or injury that began the sequence of events leading directly to death, or the circumstances of the accident or violence that resulted in the fatal injury. Underlying cause of death is what is used to classify or categorize cause of death.

**Disparity rate ratio:** provides a level of disparity between two groups for a specific health indicator. Disparity rate ratios for mortality are calculated by dividing the mortality rate for a specific population by the mortality rate for another population.

**ICD-10:** codes used to identify specific conditions or diseases in medical records. ICD-10-CM refers to the tenth revision of clinical modifications to the International Classification of Disease codes provided by the World Health Organization.

**Infant mortality:** the death of a child within the first year of life.

**Leading cause of death:** cause of death categories are defined using the Centers for Disease Control and Prevention National Center for Health Statistics Instruction Manual Part 9, "ICD-10-Cause of Death Lists for Tabulating Mortality Statistics", Table B. Leading causes of death typically account for large numbers of deaths within a population and timeframe.

**Median age at death:** the age that falls directly in the middle of the data, where half of the age at death values are higher and half of the age at death values are lower than the median. Median age gives a better representation of what an age distribution looks like compared to average age, since averages are easily affected by more extreme values.

**Neonatal mortality:** the death of a child within the first 28 days of life.

**Post-neonatal mortality:** the death of a child within 28 and 364 days of life.

# Key Findings



There were **1,600** more deaths in 2020 compared to 2019



The top three leading causes of death in 2020 were **heart disease, cancer and COVID-19**



The median age at death was **8 years younger among male residents** compared to female residents



The 2020 all-cause mortality rate among Black residents was **1.5 times higher** and the median age at death **11 years younger** compared to White residents

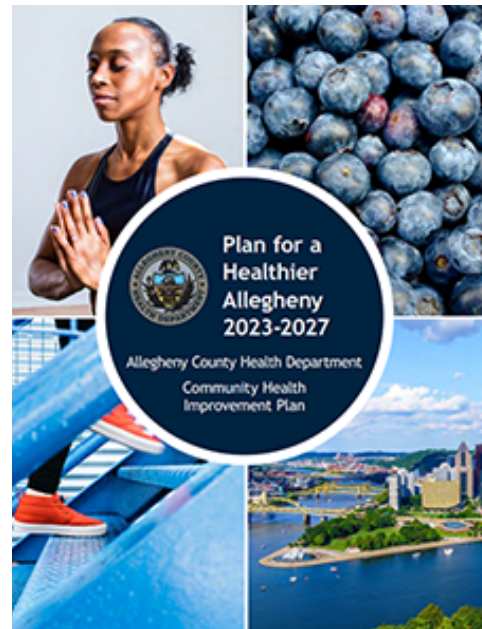


The **infant mortality rate decreased** from 6.5 in 2019 to 6.1 in 2020 per 1,000 live births

# Plan for a Healthier Allegheny

The Plan for a Healthier Allegheny (PHA) is a community health improvement plan that is equity-driven, data-supported, community-engaged and policy-oriented. Developed with community input and data from the [2022 Community Health Assessment](#), the plan identifies goals and objectives for improving health outcomes from 2023-2027 among residents.

Multiple data sources are used to measure and evaluate progress with PHA goals, including mortality data. Seven PHA metrics are updated below with 2020 data. For each metric, a horizontal dotted line indicates the 2027 goal. These updates only compare two years of data and should be interpreted cautiously.



[Plan for a Healthier Allegheny](#)

## Mortality PHA Goals: 2020 Updates

**3.1.1** Reduce the infant mortality rate among Black children.

**3.1.2** Reduce the number of sleep-related infant deaths.

**3.2.1** Reduce the heart disease mortality rate.

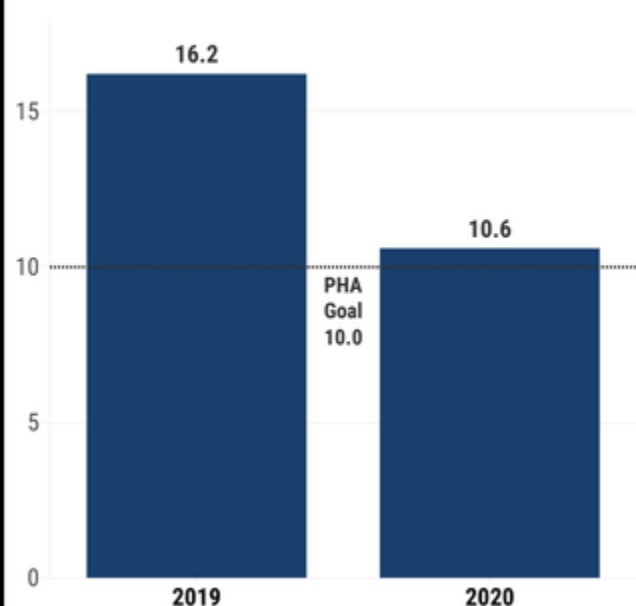
**3.2.2** Reduce the heart disease mortality rate for Black residents.

**3.2.3** Reduce the diabetes mortality rate.

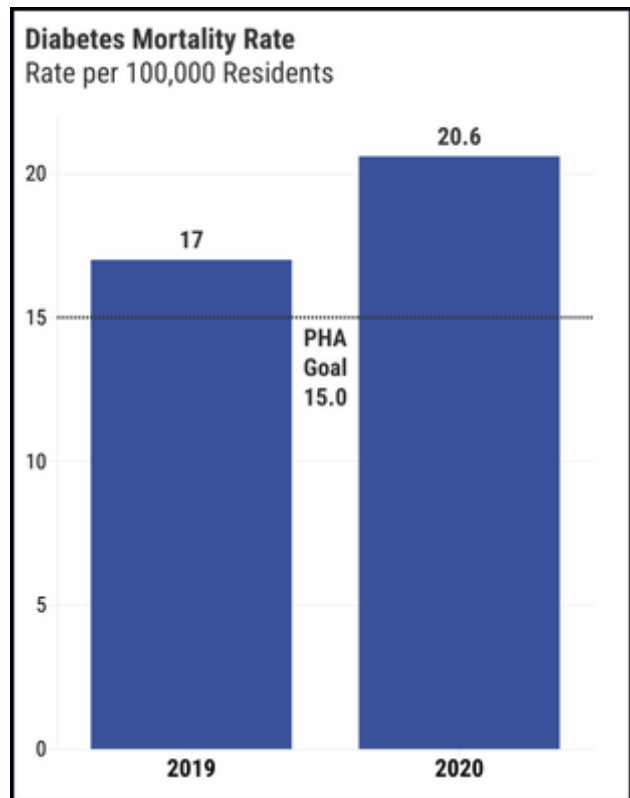
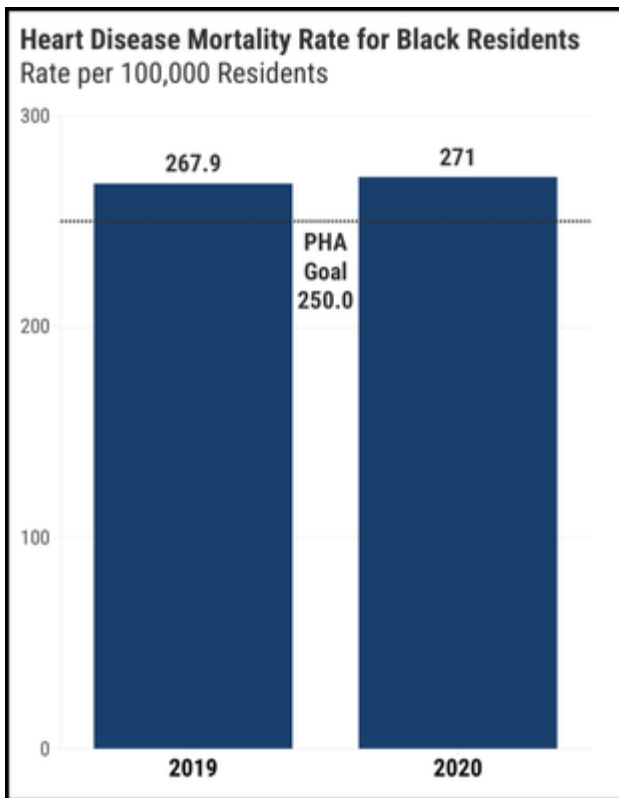
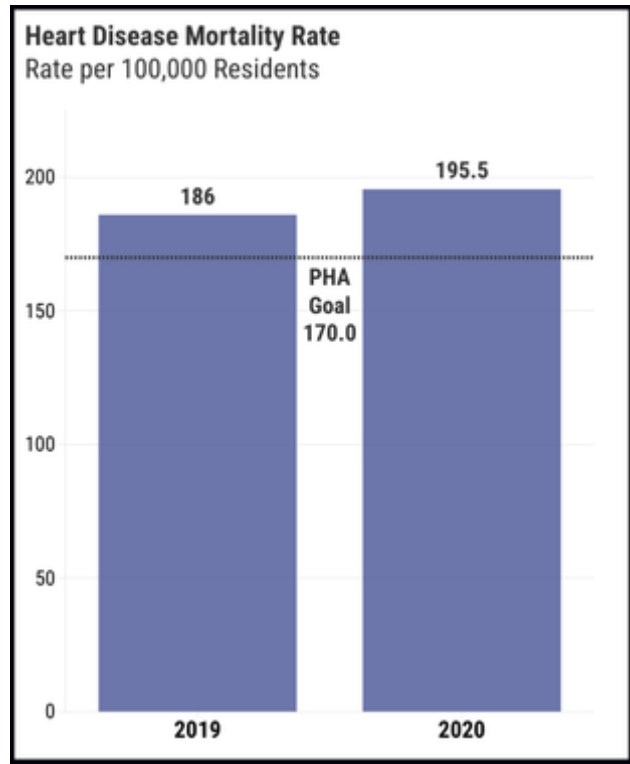
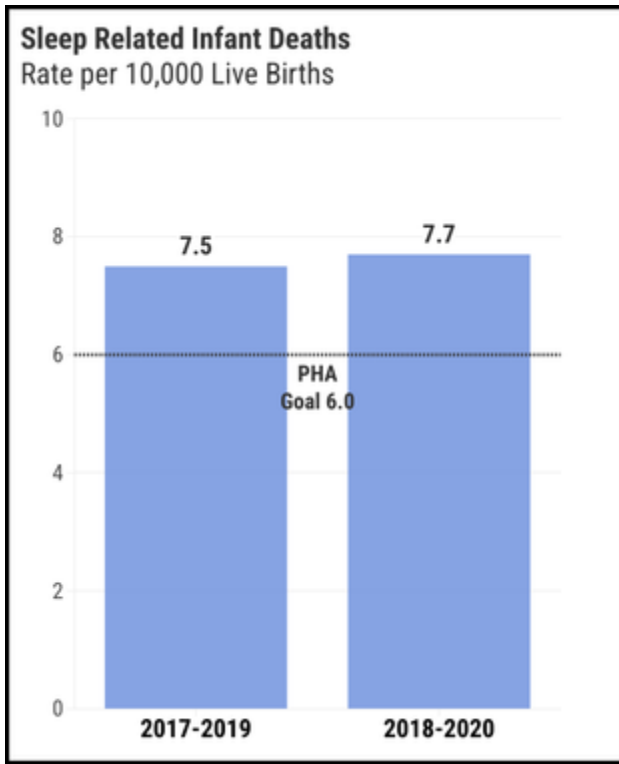
**3.2.4** Reduce the diabetes mortality rate for Black residents.

**4.5.1** Reduce the suicide mortality rate.

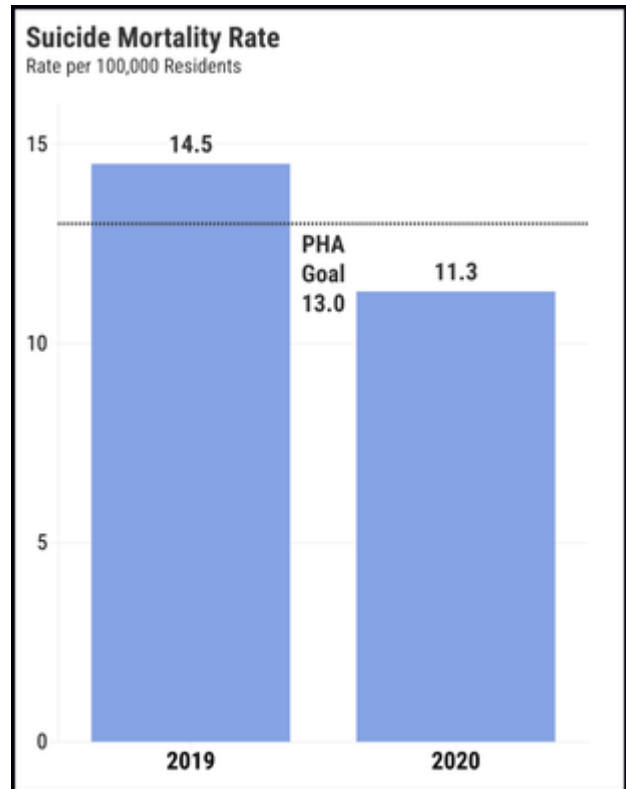
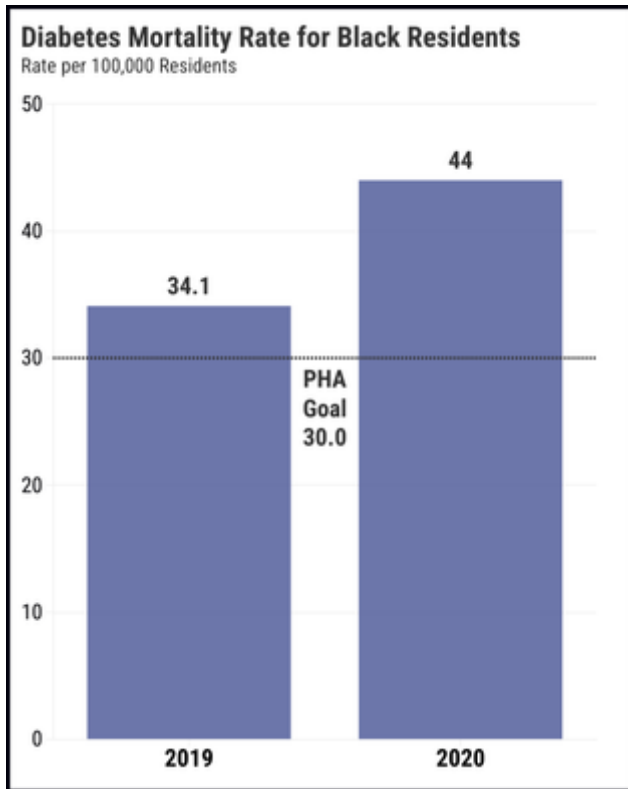
**Infant Mortality Rate for Black Children**  
Rate per 1,000 Live Births



# Plan for a Healthier Allegheny



# Plan for a Healthier Allegheny





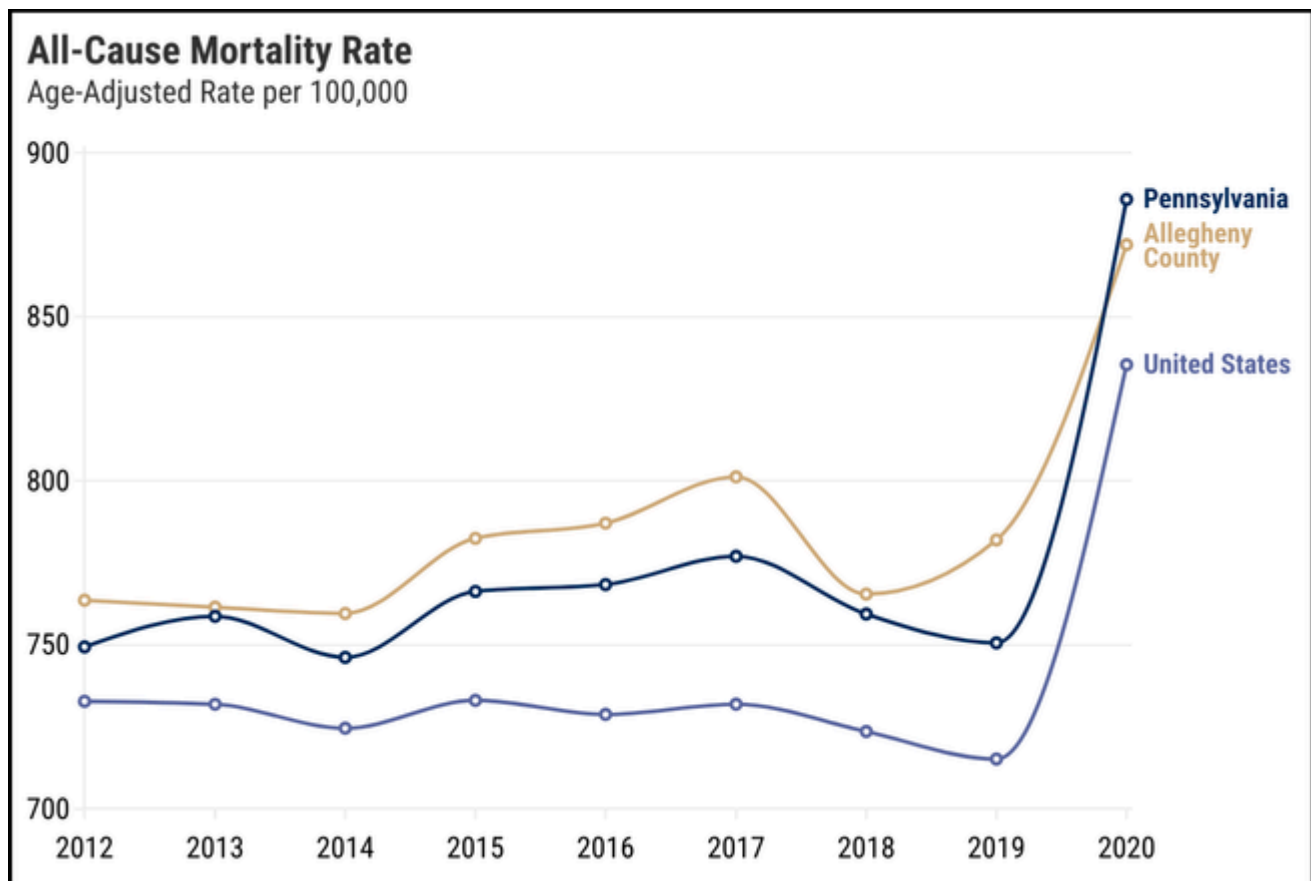
# All-Cause Mortality

All-cause mortality refers to all deaths from any cause and gives an overall picture of mortality within a population. In 2020, there were 15,219 deaths among Allegheny County residents.

From 2019 to 2020:

- There were an additional 1,600 deaths
- There was a 11.5 percent increase in age-adjusted mortality (782 per 100,000 and 872 per 100,000, respectively)
- The median age at death decreased by one year, from 80 to 79 years

**Figure 1. Age-Adjusted Rates for All-Cause Mortality per 100,000 Residents by Geography, 2012-2020**

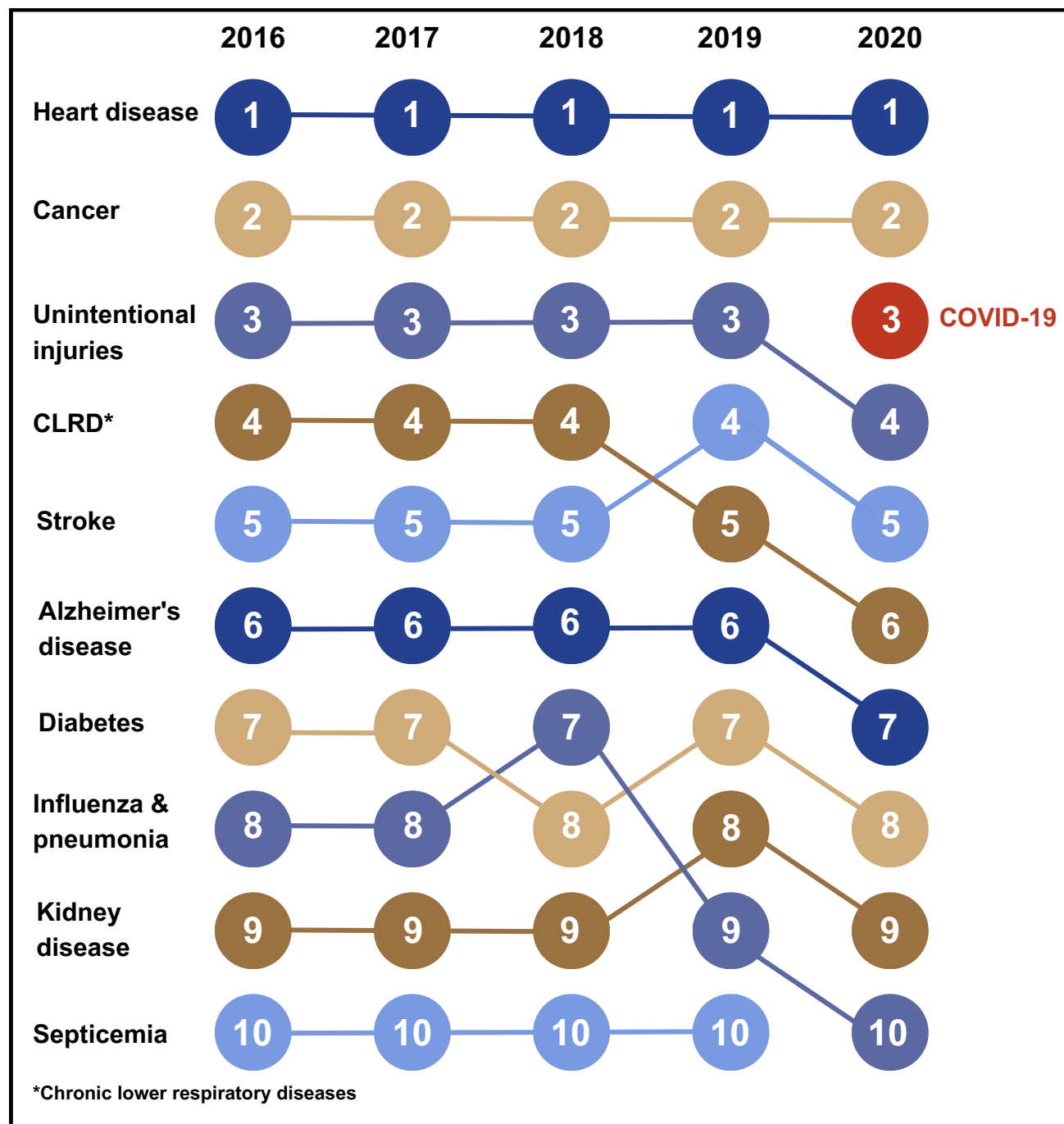


From 2012 to 2020, the age-adjusted mortality rate increased in Allegheny County. The United States and Pennsylvania age-adjusted mortality rates have been consistently lower than Allegheny County, however, the 18.6 percent increase in PA mortality from 2019 to 2020 exceeded the Allegheny County mortality rate.

# Leading Causes of Death

The leading causes of death are ranked based on the number of deaths for each cause in a given year. The top three leading causes of death in Allegheny County have consistently been heart disease, cancer, and unintentional injuries (accidents). Heart disease and cancer remained the top two leading causes of death in 2020, however, COVID-19 became the third leading cause of death after the onset of the pandemic.

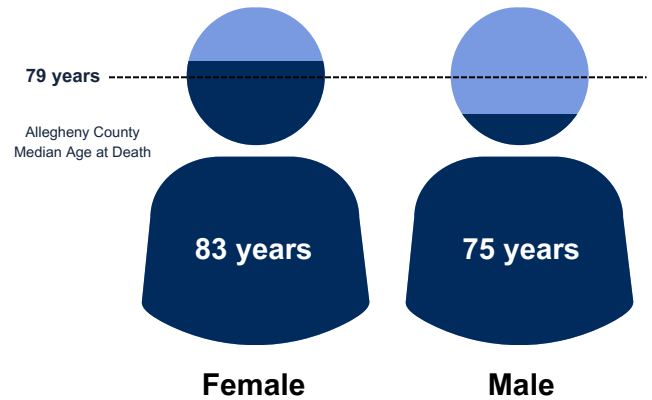
Figure 2. Top 10 Leading Causes of Death, Allegheny County, 2016-2020.



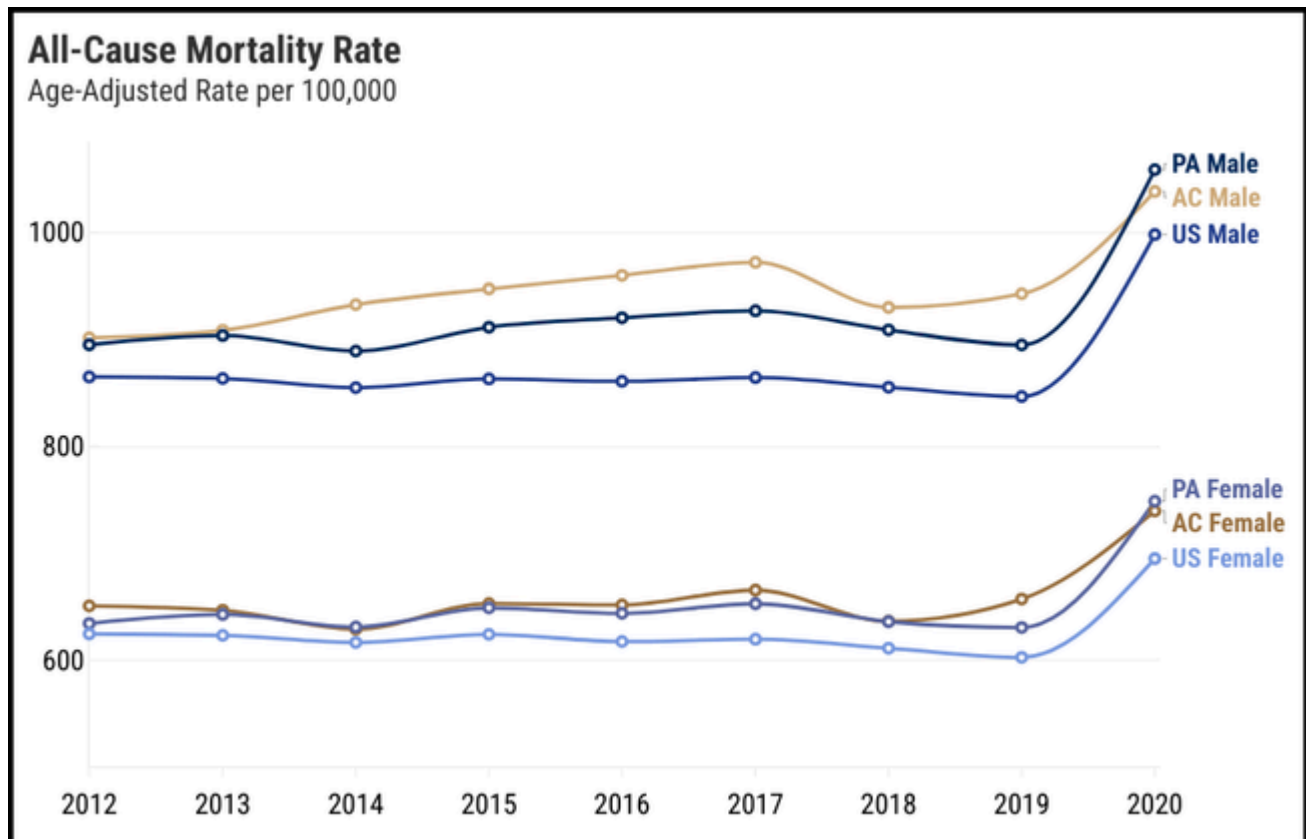
# Sex Disparities in Mortality

Mortality rates for both female and male residents in have generally decreased since 1970.<sup>2</sup> Mortality rates for male residents are consistently higher and the median age at death is consistently lower compared to female residents; this disparity is consistent with mortality trends at the state and national level. Several factors may influence higher mortality and lower life expectancy among males, including high-risk behaviors, higher rates of chronic disease and other lifestyle factors.<sup>3</sup> After a slight decrease in age-adjusted mortality from 2017 to 2018, mortality rates for both sexes increased in 2019 and 2020. In 2020, the age-adjusted mortality rate among male residents was 1,039 per 100,000 and 740 per 100,000 for female residents, and the median age of death was eight years younger among male residents.

**Figure 3. Median Age at Death by Sex, 2020.**



**Figure 4. All-Cause Mortality Rate by Sex and Geography, 2012-2020.**



# Sex Disparities in Mortality

Table 1. Mortality Rates by Sex and Leading Cause of Death, 2020.

Leading Causes of Death by Sex					
Age-Adjusted Rate per 100,000					
Cause of Death	Male	Rank	Female	Rank	Disparity Rate Ratio
Heart disease	248.8	1	155.8	1	1.6
Cancer	184.9	2	132.4	2	1.4
Unintentional injuries (accidents)	103.6	3	48.2	6	2.1
COVID-19	67.7	4	55.2	3	1.2
CLRD	38.1	5	33.7	5	1.1
Stroke	37.4	6	32.8	4	1.1
Diabetes	25.9	7	16.8	8	1.5
Alzheimer's disease	23.0	8	27.1	7	0.8
Kidney diseases	20.8	9	14.2	9	1.5
Chronic liver disease	16.7	10	8.1	13	2.1
Suicide	17.5	11	5.3	17	3.3
Influenza & pneumonia	16.7	12	11.7	10	1.4

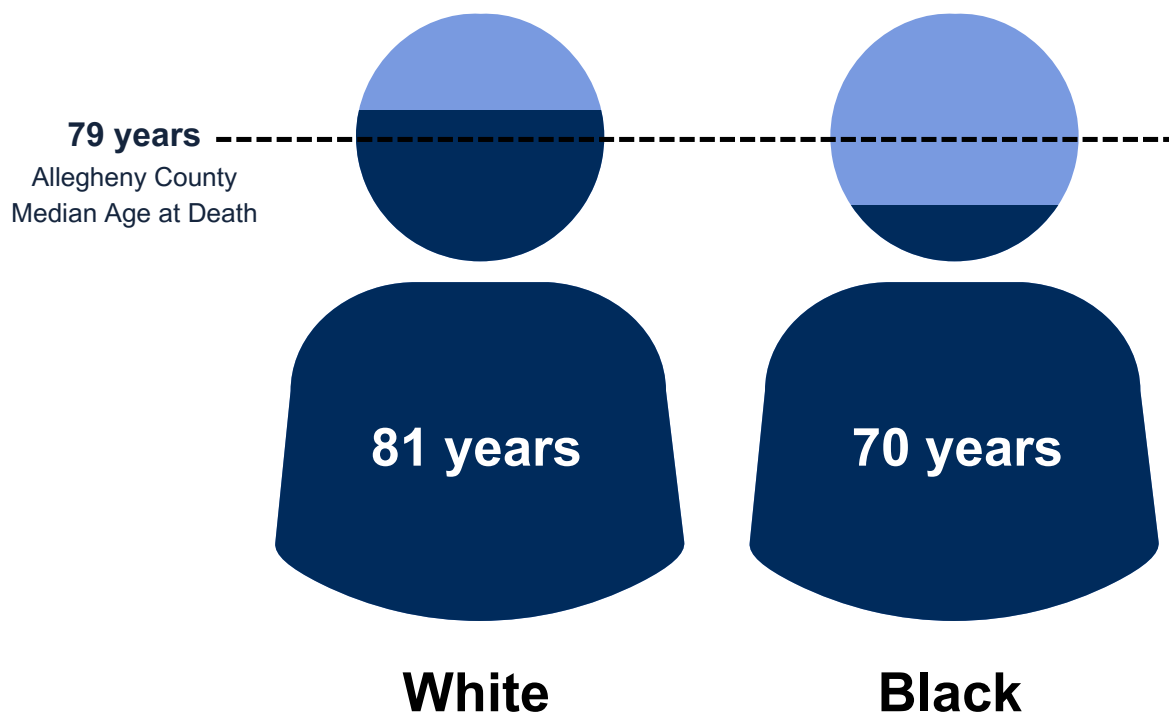
In addition to disparities in mortality rates, the top 10 leading causes of death differ between female and male residents. Notable differences in leading causes of death in 2020 include unintentional injuries and suicide. Unintentional injuries remained the third leading cause of death among male residents, while COVID-19 was the third leading cause of death for female residents. Suicide was the tenth leading cause of death among male residents and fifteenth for female residents, with a mortality rate 3.3 times higher for males. Alzheimer's disease was the only leading cause of death with a higher mortality rate for female residents compared to males in 2020.

# Racial Disparities in Mortality

Racial disparities in mortality have been documented nationally, and locally in Allegheny County.<sup>2,4</sup> Communities of color often experience mortality at higher rates and at younger ages compared to White, non-Hispanic, residents with similar conditions. Interpersonal and structural racism have created inequities in social determinants of health, like income and insurance status, causing disparities in access to care and health outcomes.<sup>5</sup> These disparities have widened throughout the COVID-19 pandemic.<sup>6</sup>

Life expectancy among Black residents in the United States is four years lower than White residents. While life expectancy decreased for all racial and ethnic groups amid the pandemic, there were larger decreases observed among American Indian and Alaska Native, Hispanic and Black residents.<sup>4,6</sup> The widening gap in life expectancy and increasing mortality rates among racial-ethnic minority groups highlights the need to address inequities in access to care and insurance coverage that can lead to worse health outcomes.

**Figure 5. Median Age at Death by Race, Allegheny County, 2020.**



Racial-ethnic disparities in mortality rates and median age at death continue to be observed in Allegheny County. In 2020, the median age at death was 11 years younger for Black residents compared to White residents.

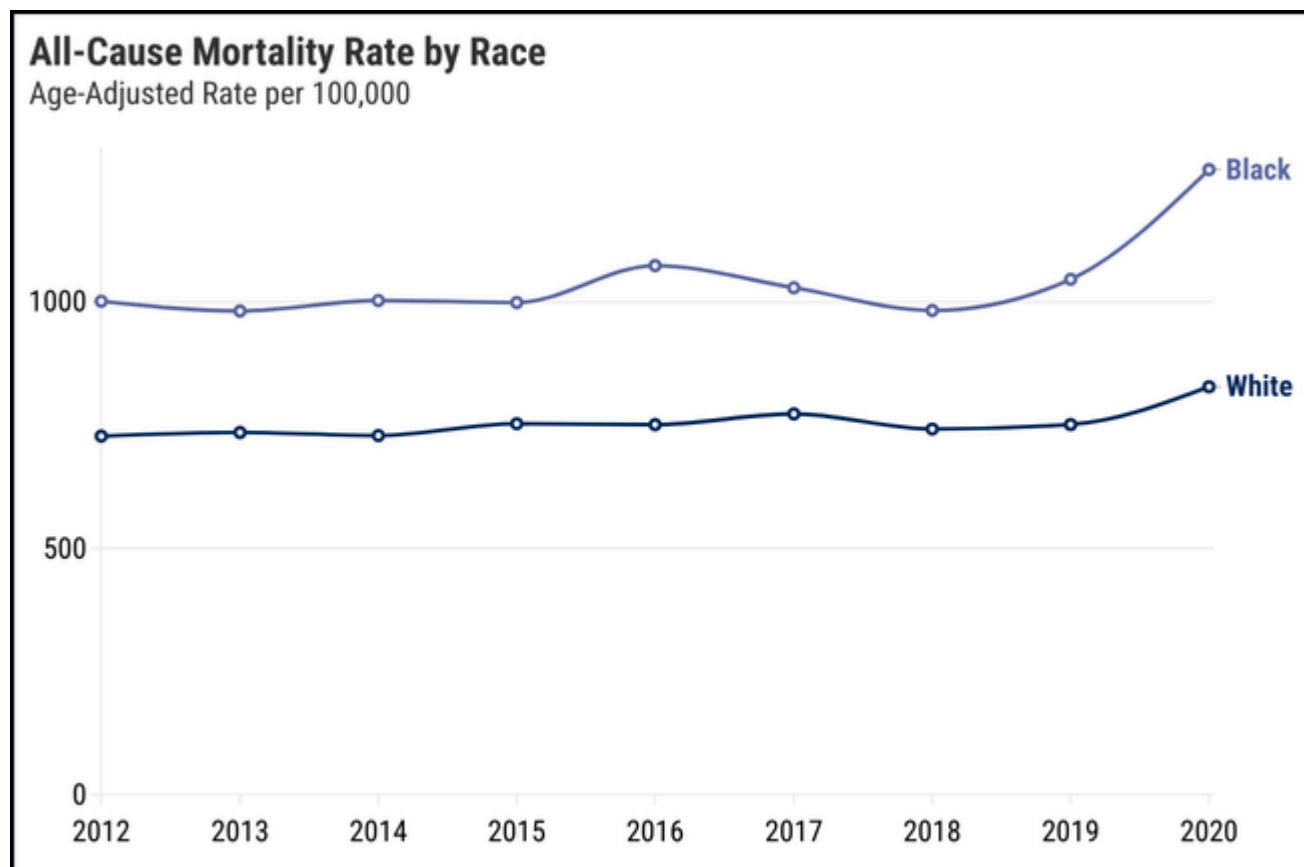
# Racial Disparities in Mortality

All-cause mortality rates have decreased since 1970 among both Black and White residents, though Black mortality rates have remained consistently higher. Since 2012, mortality rates remained relatively stable among both Black and White residents, but increased in 2020.<sup>2</sup>

The all-cause mortality rate in 2020 among Black residents at 1,268.5 per 100,000 was 1.5 times higher than White residents at 827.8 per 100,000 residents. This 2020 disparity rate ratio between Black and White residents was the highest since 2012.

All-Cause Mortality by Race	
Age-Adjusted Rate per 100,000	
Year	Disparity Rate Ratio
2012	1.4
2013	1.3
2014	1.4
2015	1.3
2016	1.4
2017	1.3
2018	1.3
2019	1.4
2020	1.5

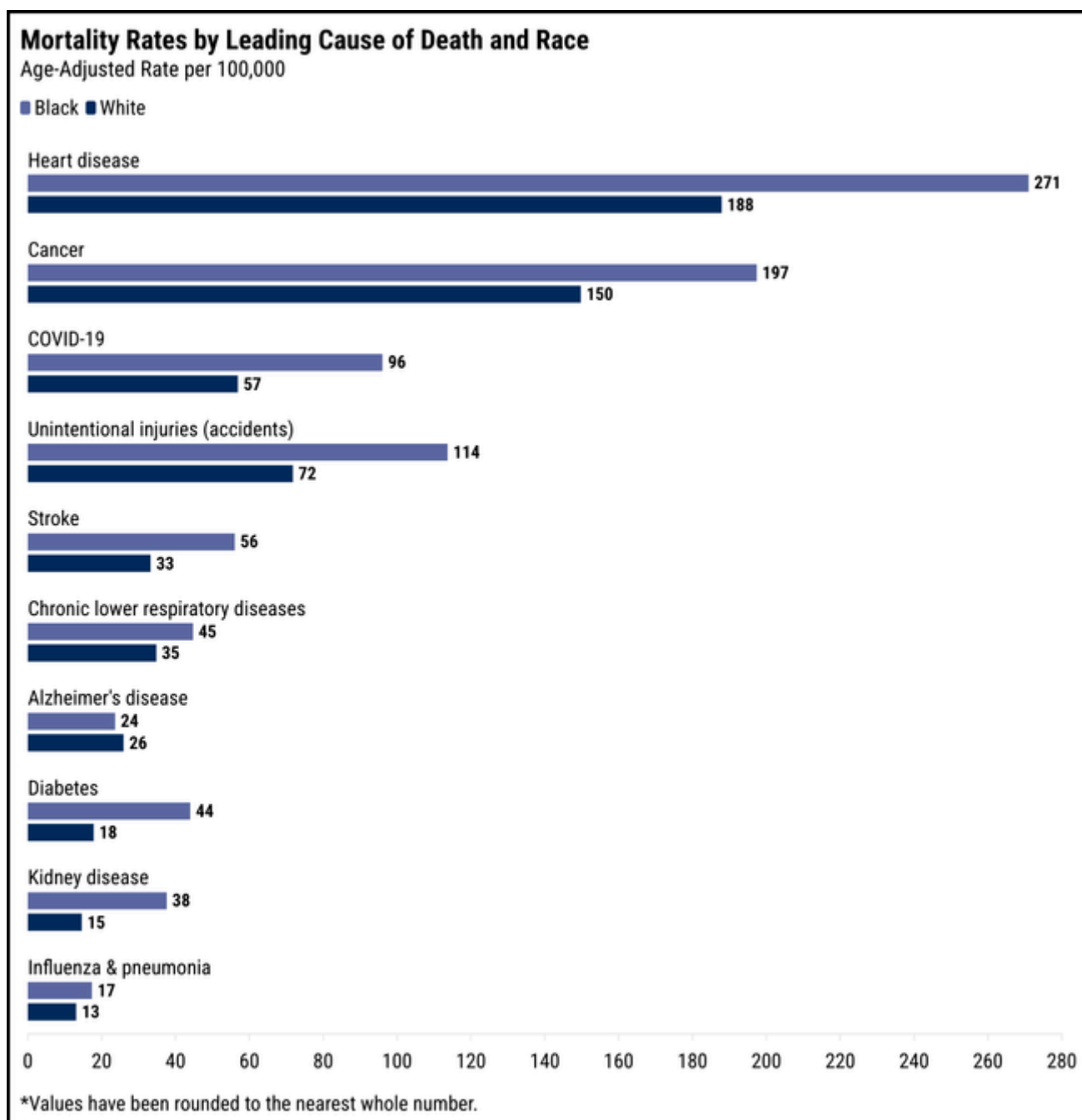
Figure 6. All-Cause Mortality by Race, Allegheny County, 2012-2020.



# Racial Disparities in Mortality

Black residents had higher rates of mortality for all of the 2020 top ten leading causes of death, except for Alzheimer's disease. The greatest racial disparity among the leading causes of death in Allegheny County was for deaths from kidney disease and diabetes. Kidney diseases and diabetes mortality rates were 2.6 and 2.5 times higher among Black residents, respectively.

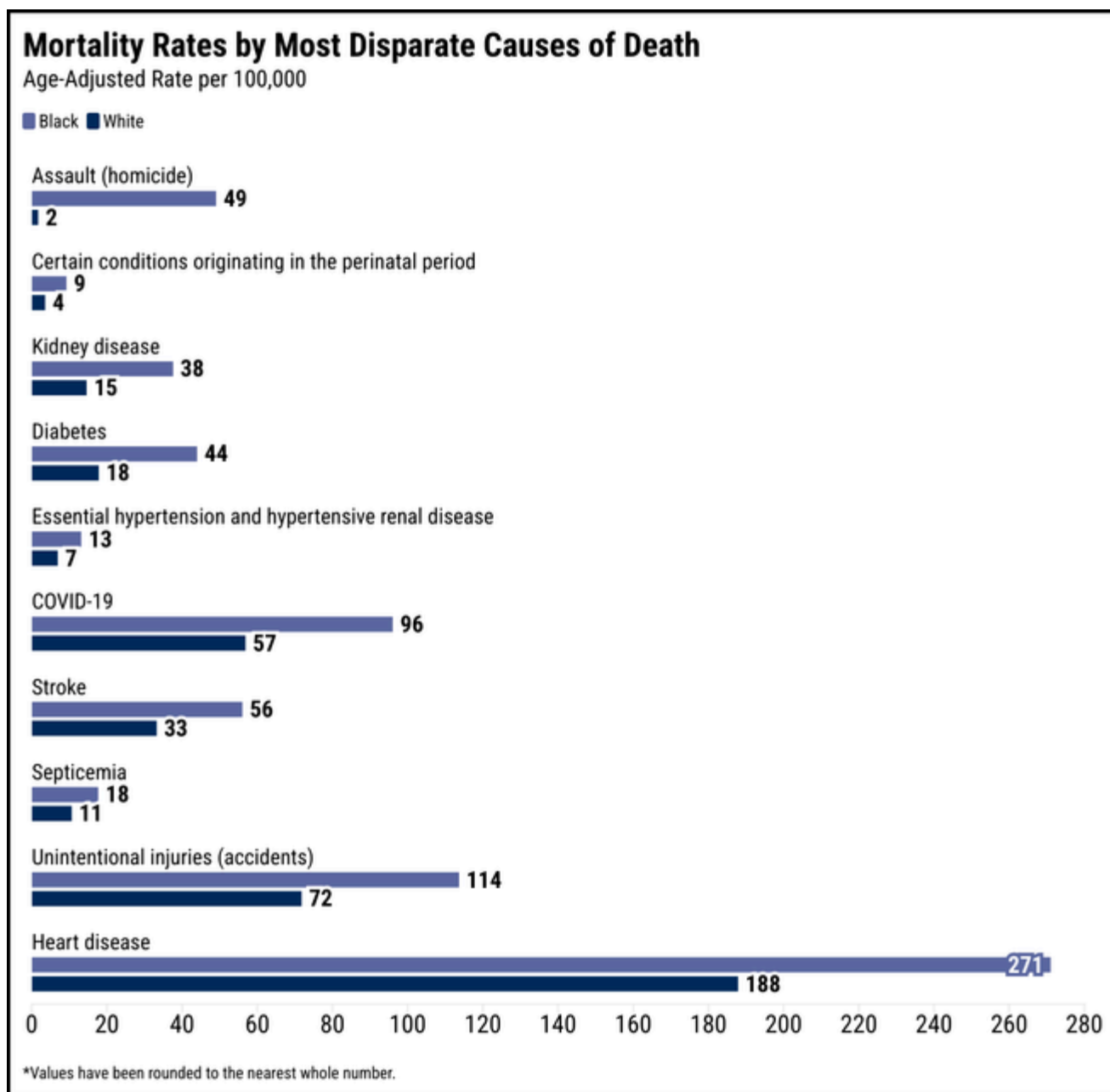
**Figure 7. Age-Adjusted Mortality Rates by Top 10 Leading Cause of Death and Race per 100,000 residents, Allegheny County, 2012-2020.**



# Racial Disparities in Mortality

Including all leading causes of death beyond the top 10 for 2020, the greatest disparity in mortality between Black and White residents in 2020 was for homicides. The homicide mortality rate was 28.7 times higher for Black residents. In addition to kidney disease, mortality rates for certain conditions originating in the perinatal period, which consist of deaths among newborns affected by maternal complications during pregnancy, labor, and/or delivery, were 2.6 times higher among Black residents.

**Figure 8. Age-Adjusted Mortality Rates by Top 10 Most Disparate Leading Causes of Death and Race per 100,00 residents, Allegheny County, 2012-2020.**

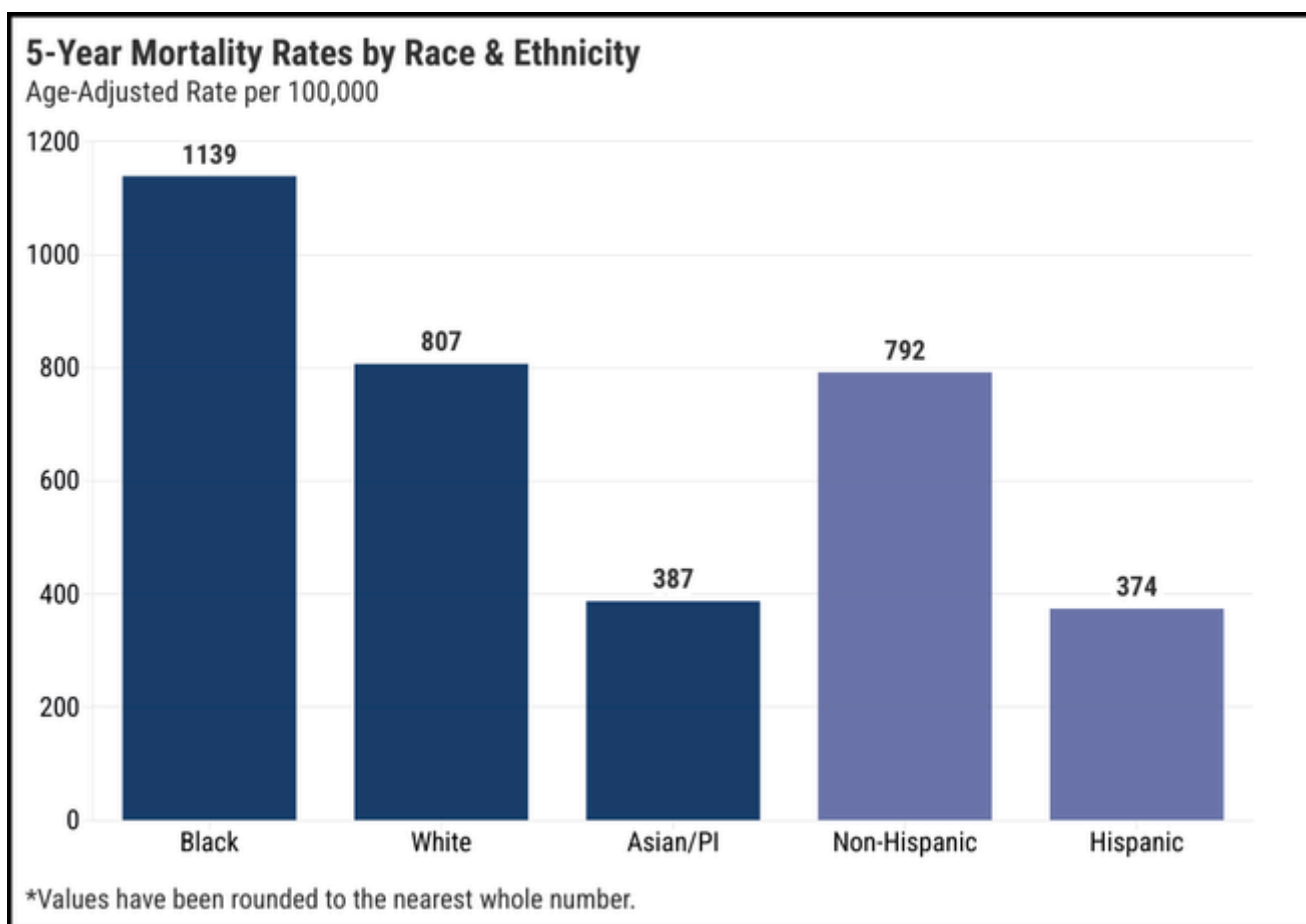




# Racial & Ethnic Disparities

Comparison of yearly mortality rates for races, other than Black or White, could not be performed because total death counts were too small to produce reliable estimates. A five-year mortality rate was calculated using death data from 2016-2020 to produce comparable estimates. Mortality data from multiple years is combined to create age-adjusted rates among racial and ethnic groups with smaller populations in Allegheny County, like Hispanic and Asian residents.

**Figure 9. 5-Year Age-Adjusted Mortality Rates by Race and Ethnicity per 100,000 Residents, Allegheny County, 2016-2020.**



The highest age-adjusted five-year mortality rate by race from 2016-2020 was among Black residents and was 1.4 times higher than the rate among White residents. The highest age-adjusted mortality rate by ethnicity was among non-Hispanic residents at 792 per 100,000 residents.

The mortality rate among Asian/Pacific Islander residents was 387 per 100,000. The mortality rate among Hispanic residents was 374 per 100,000 residents. These age-adjusted mortality rates are significantly lower than other racial group (Black and White) and ethnic (Non-Hispanic) groups.

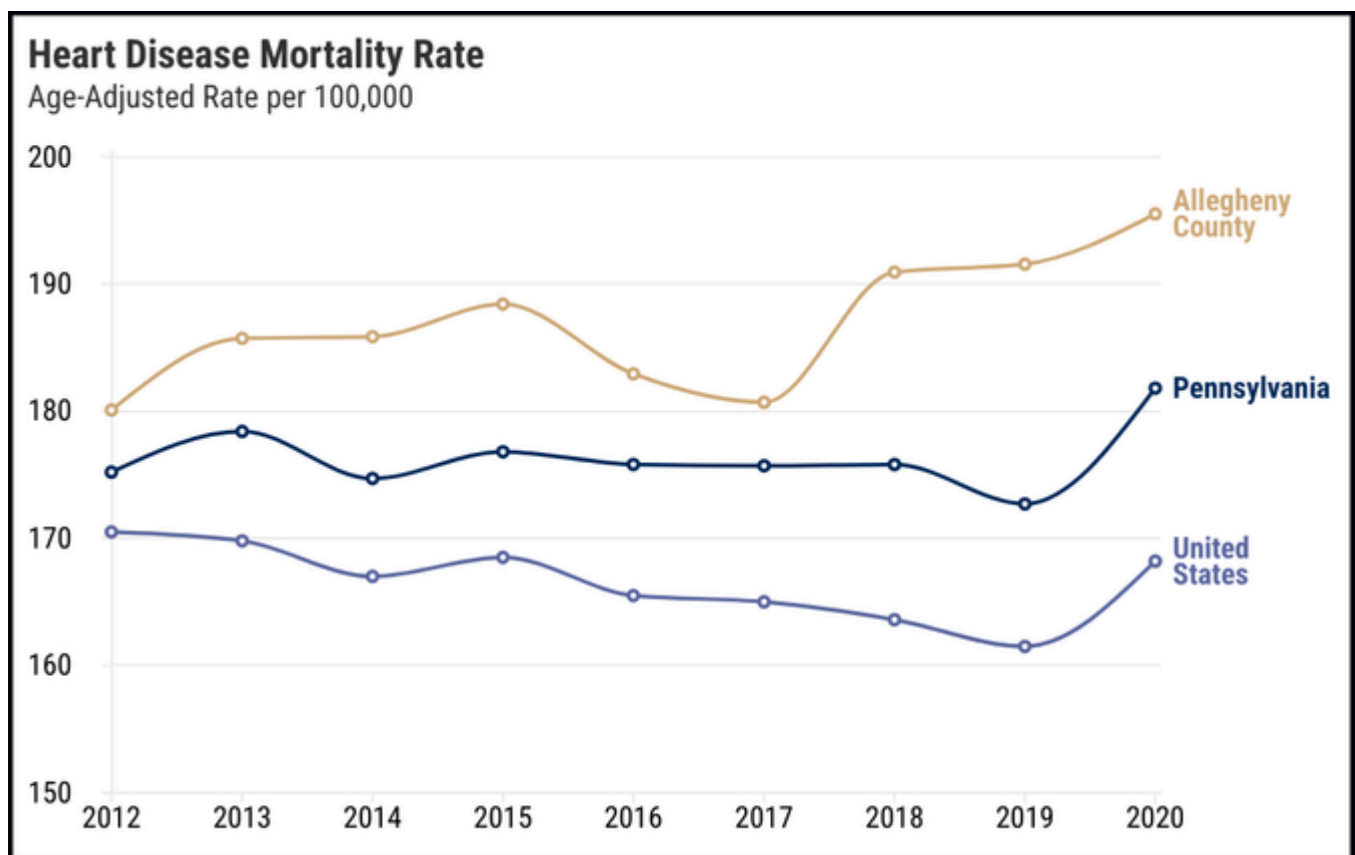
# Heart Disease Mortality

In 2020, 3,558 people died from heart diseases in Allegheny County. The median age at death for heart disease was 82 years. Heart disease was the leading cause of death for women, men, and all racial and ethnic groups. The most common type of heart disease is coronary artery disease, which is a condition where plaque buildup in the arteries begins to affect blood flow to the heart. However, heart disease also includes several types of heart conditions like congestive heart failure and high blood pressure.<sup>7</sup>

Heart disease accounted for nearly 1 in 4 Allegheny County deaths in 2020



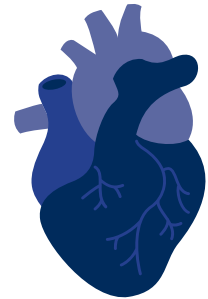
Figure 10. Age-Adjusted Rates for Heart Disease Mortality per 100,000 Residents by Geography, 2012-2020



From 2012 to 2020, the Allegheny County heart disease mortality rate increased. The age-adjusted mortality rate for heart disease in 2020 was 195.5 in Allegheny County. This rate remains significantly higher than both Pennsylvania and the United States.

# Heart Disease Mortality

Lifestyle behaviors and certain medical conditions can increase the risk of developing heart disease and heart disease mortality. Increasing physical activity, eating healthier foods, quitting tobacco products and managing high blood pressure can reduce these cardiac events. Heart disease may not be diagnosed until a person experiences a cardiac event like a heart attack, heart palpitations, or heart failure, so it is important to maintain good cardiovascular health through regular wellness visits with a primary care provider.<sup>7</sup>



## Risk Factors

- High blood pressure
- High cholesterol
- Smoking/tobacco use
- Excessive alcohol use
- Physical inactivity
- Unhealthy diet
- Obesity

## Allegheny County

- 32 percent of adults have high blood pressure (2019)<sup>8</sup>
- 31 percent of adults have high cholesterol (2019)<sup>8</sup>
- 19 percent of the Medicare population were treated for heart disease (2021)<sup>8</sup>

There are resources in Allegheny County to help residents find free or low cost medical care, quit tobacco products and increase physical activity and access to healthy foods.

## Low-Cost Medical Care & Healthy Living Resources

- Allegheny County Health Department's [Resource Guide](#) to care for under- or uninsured provides links to health centers and clinics that provide free or low cost medical care.
- The free PA Quitline 1-800-QUIT-NOW offers free phone counseling and the possibility of free medication (nicotine patches, gum, or lozenges).
- [Adagio Health](#) offers local smoking cessation classes in Allegheny County
- [Live Well Allegheny](#), an initiative to help improve the health and wellness of county residents, compiles local resources for activities and services to help residents take an active role in managing their own health.
  - Allegheny County Parks Department offers 12 [health and fitness programs](#) throughout the county every summer.
  - [Food assistance programs](#) in Allegheny County
  - [Interactive map and list](#) of farmer's markets and farm stands in Allegheny County

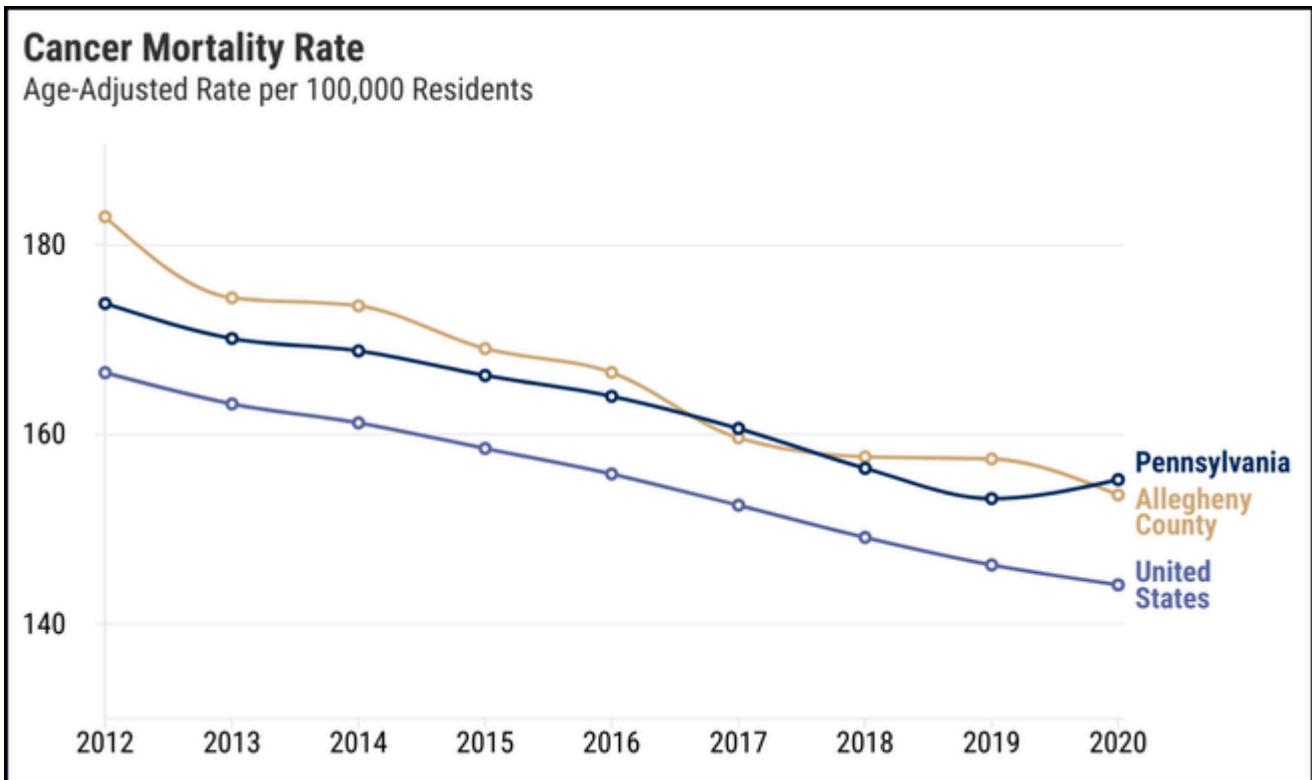
# Cancer Mortality

In 2020, 2,740 people died from malignant neoplasms (cancers) in Allegheny County. Cancer was the second leading cause of death for women, men, and all racial and ethnic groups. Cancer prevention, like screening tests and vaccines, can reduce your risk of developing common cancer types. Early diagnosis is important for early treatment, when the treatment will likely work best. Other healthy lifestyle choices like avoiding tobacco products, protecting your skin from the sun with an SPF sunscreen and keeping a healthy weight can lower your risk of developing cancer.<sup>9</sup>

**Cancer accounted for nearly 1 in 5 Allegheny County deaths in 2020**



**Figure 11. Age-Adjusted Rates for Cancer Disease Mortality per 100,000 Residents by Geography, 2012-2020**

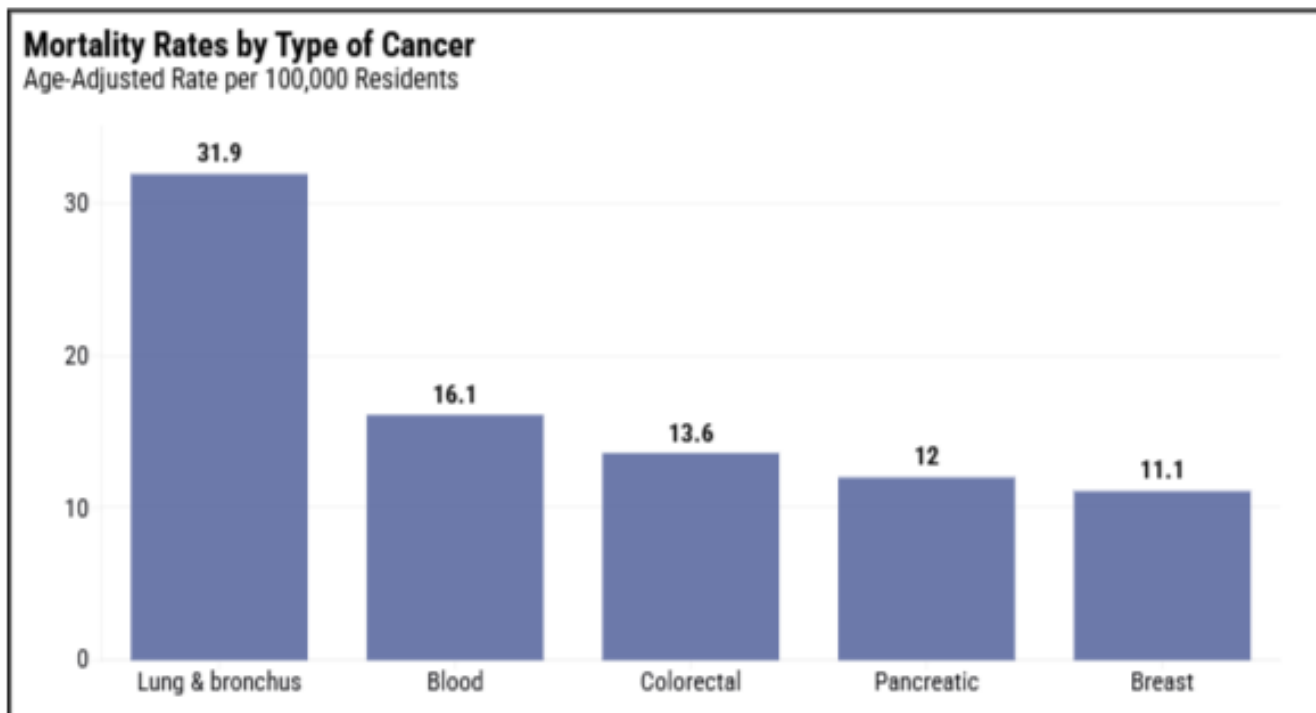


Cancer mortality rates have declined in Allegheny County, Pennsylvania and the United States. The 2020 Allegheny County cancer mortality rate, 153.6 per 100,000 residents, is lower than the Pennsylvania rate, but higher than the US rate. Allegheny County and Pennsylvania have consistently higher cancer mortality rates compared to the US.

# Cancer Mortality

In 2020, the top five cancer types by age-adjusted mortality rate were lung and bronchus, blood, colorectal, pancreatic and breast cancers. The highest mortality rate by cancer type was for lung and bronchus cancers at 31.9 per 100,000 residents.

**Figure 12. Age-Adjusted Mortality Rate by Cancer Type per 100,000 Residents, 2020.**



## Risk Factors

- Family history
- Alcohol use
- Tobacco/smoking
- Obesity
- Environment exposures

## Allegheny County

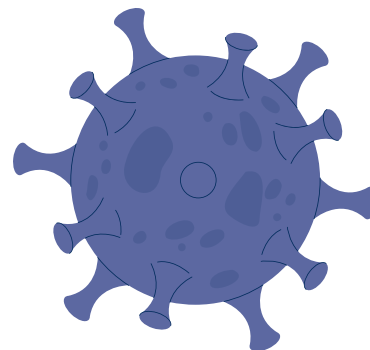
- 7.3 percent of adults 18 and older have reported ever having cancer (2020)<sup>8</sup>
- 74.1 percent of women ages 50-74 received a mammogram in the past two years (2020)<sup>8</sup>

The U.S. Preventive Services Task Force (USPSTF) recommends the following screening tests for breast, cervical, colorectal (colon) and lung cancers:

- Mammograms are recommended every two years for people ages 50 to 74
- Pap tests are recommended at age 21 for people with cervixes, with additional screenings later in life per doctor's recommendations
- Colorectal screening is recommended to begin at age 45, for those at normal risk
- Annual lung cancer screening is recommended for people who are between 50 and 80 years old or anyone with a history of heavy smoking

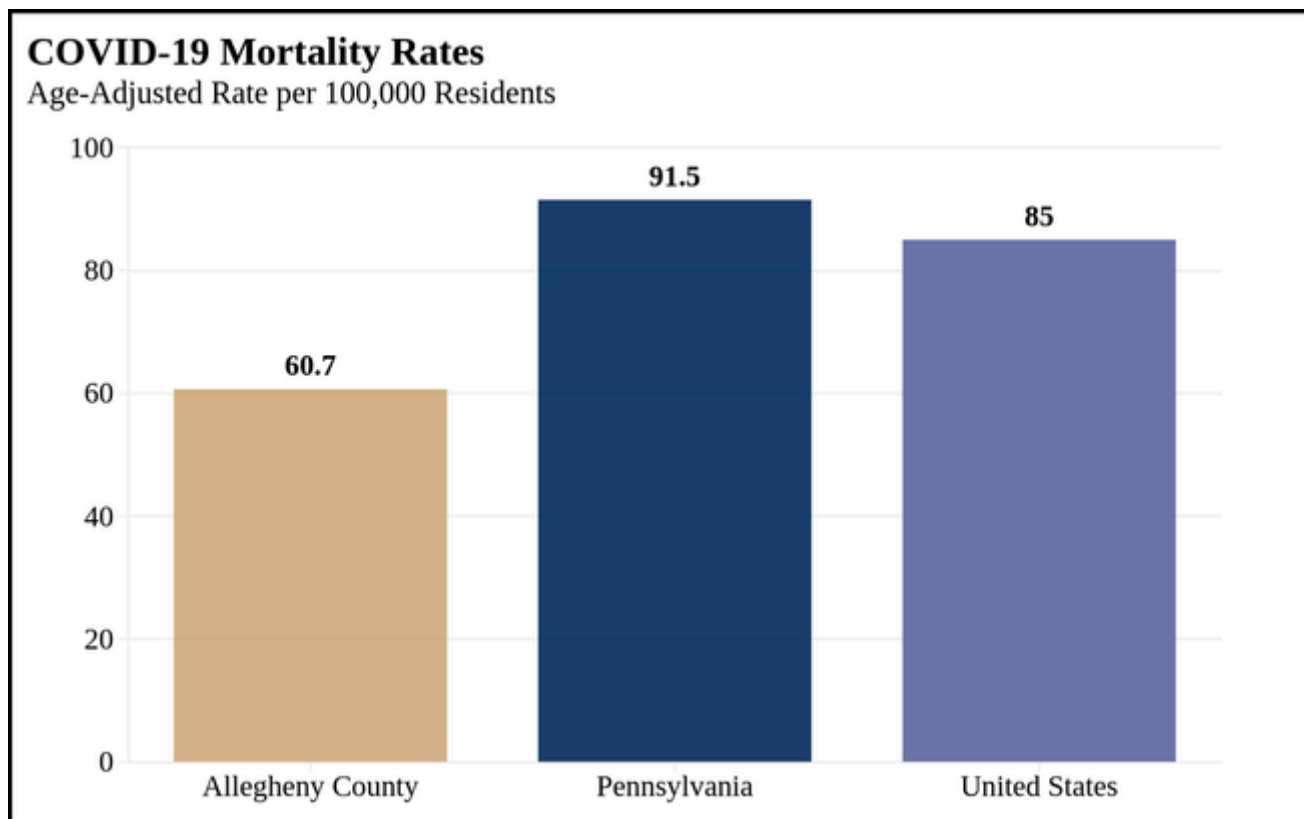
# COVID-19 Mortality

COVID-19 is an infectious disease caused by a virus called SARS-CoV-2, a new virus reported in December 2019 (WHO). Most people exposed to COVID-19 experience mild to moderate respiratory symptoms, however, older adults and those with underlying health conditions have a higher risk of developing more severe outcomes, including death.<sup>10</sup>



According to death certificates, 1,106 people died from COVID-19 in Allegheny County in 2020. The median age at death for COVID-19 was 84 years. The Allegheny County age-adjusted mortality rate of 60.7 per 100,000 residents was lower than both Pennsylvania and the United States.

**Figure 13. Age-Adjusted Rates for COVID-19 Mortality per 100,000 Residents by Geography, 2020**



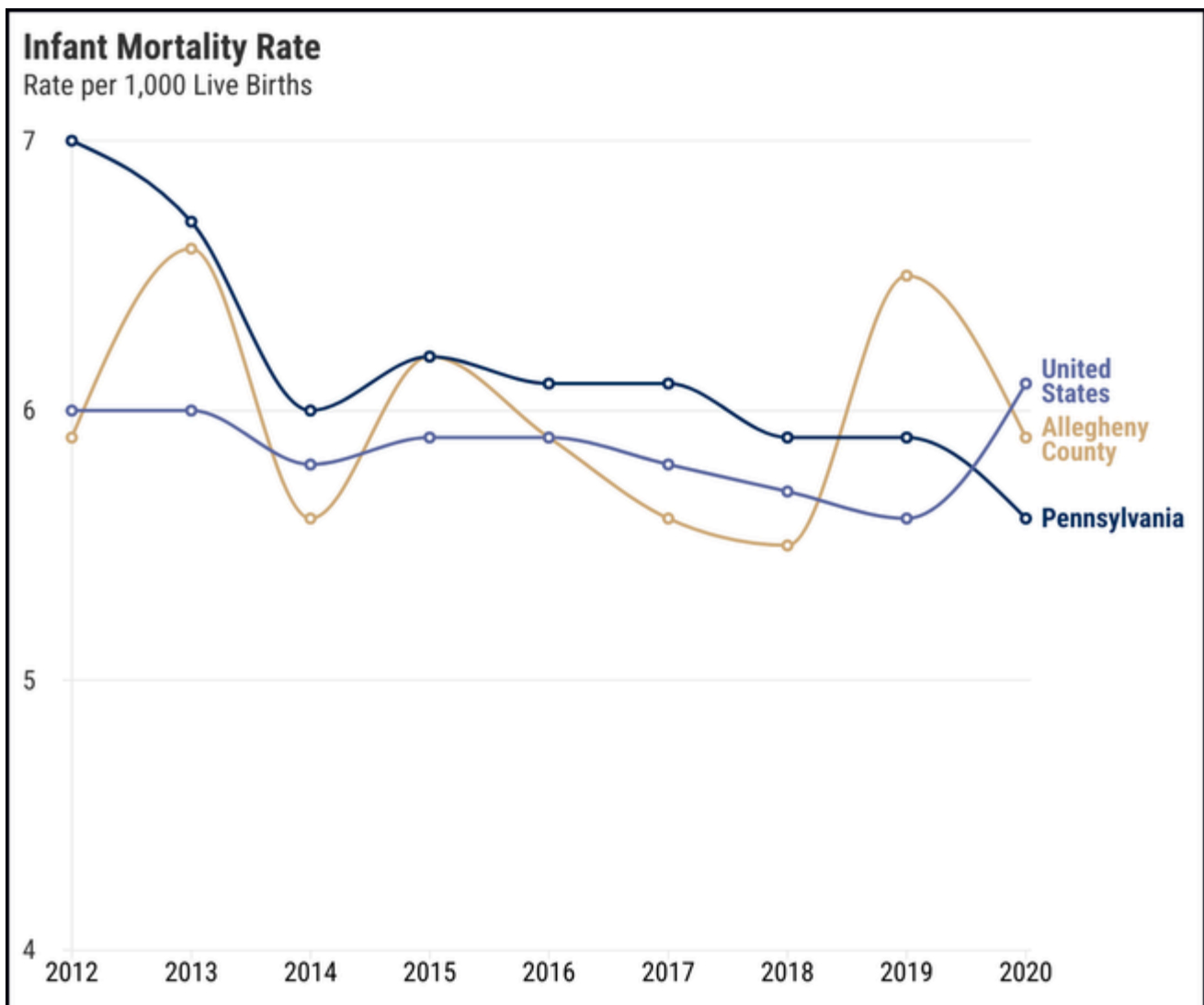
One of the most effective to protect against severe outcomes from COVID-19 includes staying up-to-date with vaccinations. The COVID-19 vaccine is recommended for everyone ages 6 months and older.<sup>11</sup> For additional guidelines, visit the [CDC Overview of COVID-19 Vaccination Schedule](#).

# Infant Mortality

Infant mortality is defined as death occurring within the first year of life. In Allegheny County, the top two causes of infant mortality are disorders related to short gestation and low birth weight and sudden unexpected infant deaths (SUID).<sup>12</sup> Additional information about infant mortality (including causes of infant death and potential risk factors) can be found in the most recent [Allegheny County Linked Infant Mortality Report](#).

There were 75 infant deaths in 2020, with an infant mortality rate of 6.1 per 1,000 live births. The 2020 infant mortality rate decreased from 6.5 per 1,000 live births in 2019. From 2012 to 2020, infant mortality decreased in Allegheny County. The Allegheny County infant mortality rate was higher than Pennsylvania in 2020.

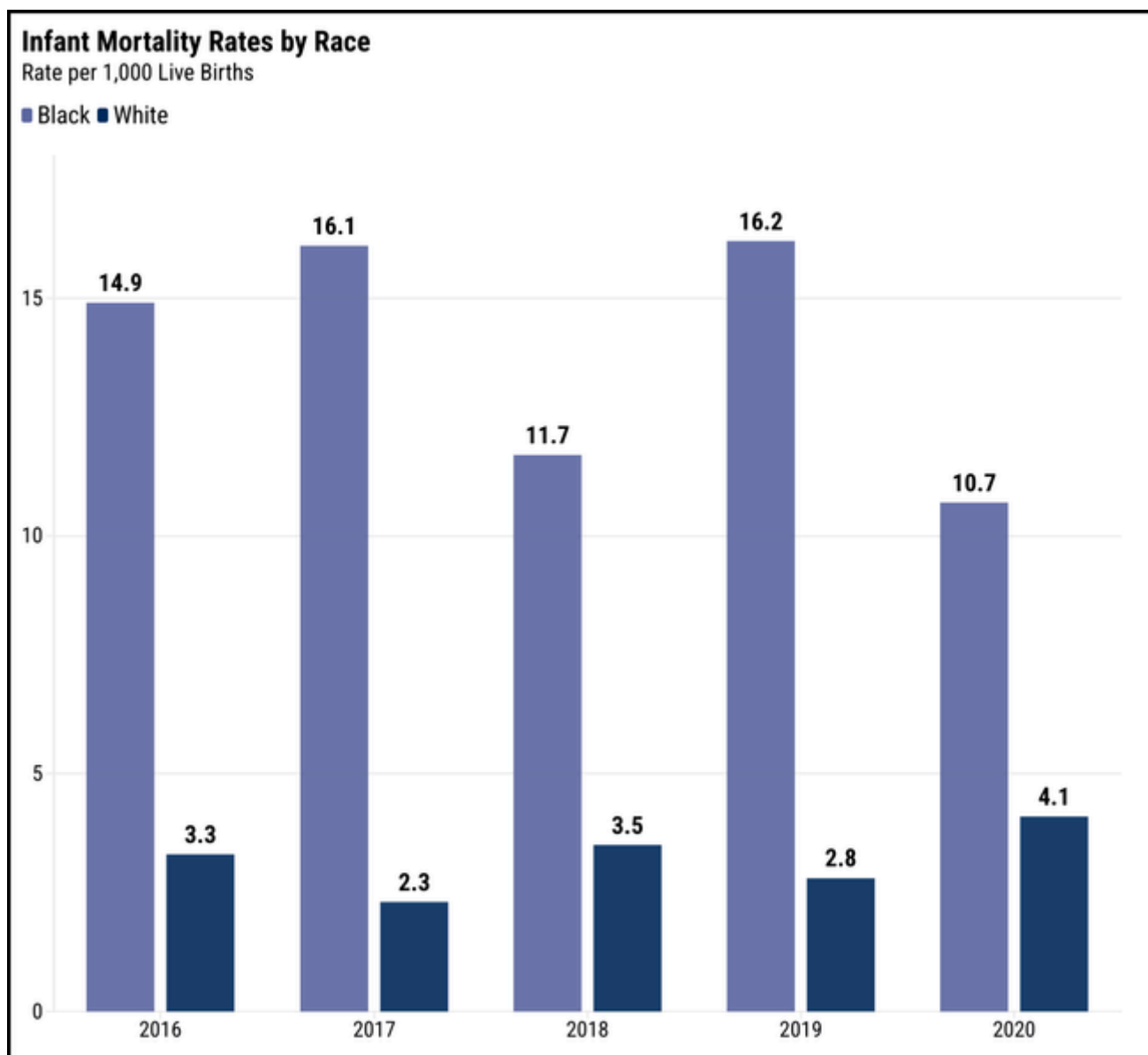
**Figure 14. Infant Mortality Rates per 1,000 Live Births by Geography, 2012-2020**



# Infant Mortality

As with other mortality measures, there are racial disparities in infant mortality between Black and White residents. These disparities are observed locally, in Pennsylvania and at the national level.<sup>13</sup> The Black-to-White infant mortality ratio (where higher values indicate greater disparity for Black infants) decreased in 2020 due to an increase in White infant mortality and a small decrease in Black infant mortality. The mortality rate was 5.8 times higher for Black infants in 2019 and 2.6 times higher in 2020 compared to White infants.

**Figure 15. Infant Mortality Rates per 1,000 Live Births by Race, 2016-2020**

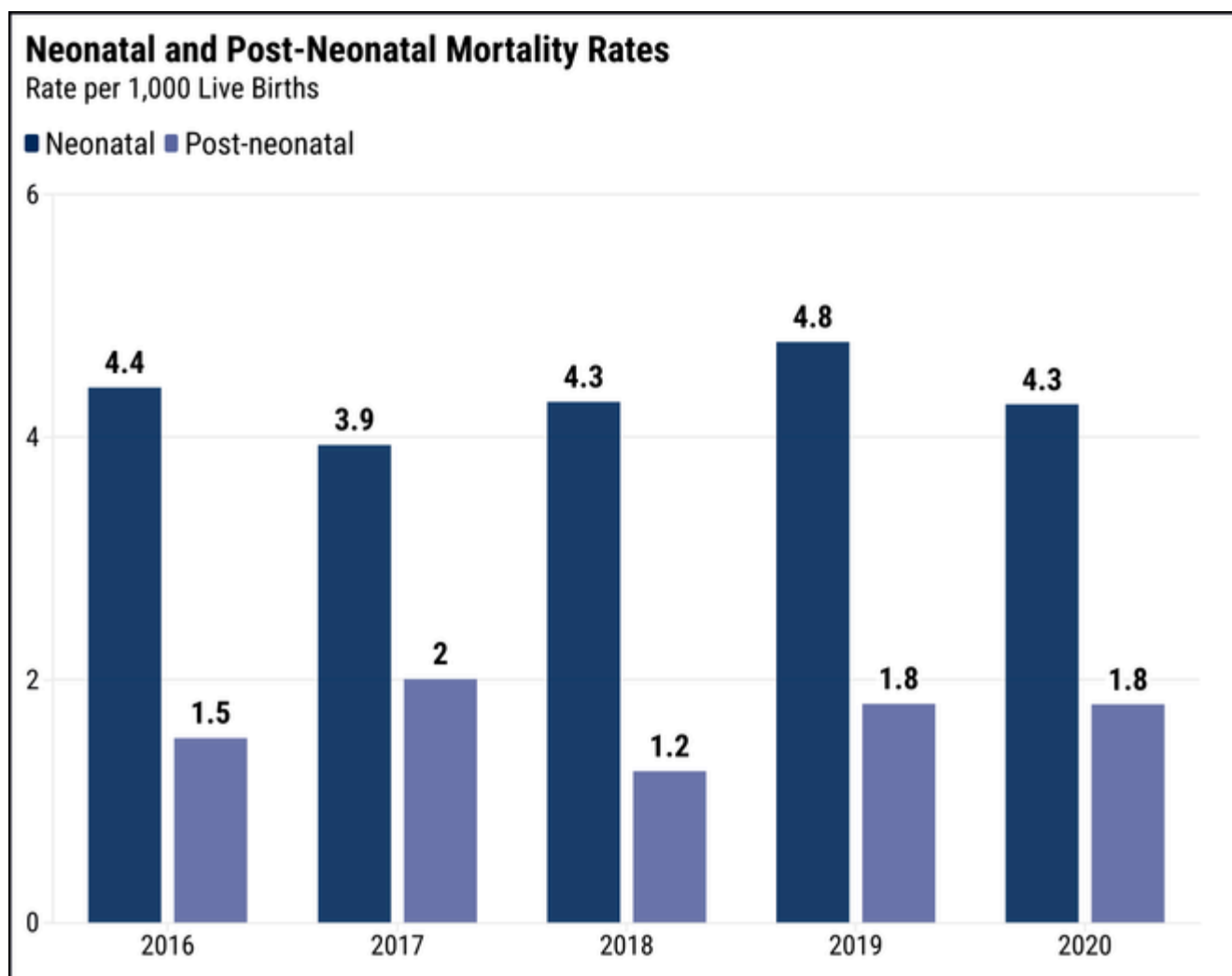




# Infant Mortality

Infant mortality is also measured in two subgroups by age: neonatal and post-neonatal mortality. These age groups are typically associated with different causes of death. Neonatal mortality refers to a death that occurs within the first 28 days of life and is related to gestational age, low birth weight and other health problems pre-birth. Post-neonatal mortality refers to a death that occurs between the 28 and 364 day of life and is related to sudden unexpected infant death (SUID).<sup>14</sup> Both neonatal and post-neonatal rates have remained stable since 2014, however, there was a slight decrease in both neonatal and post-neonatal infant deaths from 2019 to 2020. In 2019, there were 61 neonatal and 23 post-neonatal deaths among Allegheny County infants, and 53 and 22 in 2020, respectively. The neonatal infant mortality rate in 2020 was 4.3 per 1,000 live births and the post-neonatal infant mortality rate was 1.8 per 1,000 live births.

**Figure 16. Neonatal and Post-Neonatal Mortality Rates per 1,000 Live Births, Allegheny County, 2012-2020.**



# Appendix

## Data Sources

### Death Records

The latest revision of the U.S. Standard Certificate of Death was implemented by Pennsylvania in 2006. These revisions were based upon changes made by the Centers for Disease Control and Prevention, and consisted of three new data items added to the certificate. These three questions pertained to tobacco use contributing to death, pregnancy at the time of death, and type of transportation injury death in a transportation-related injury death occurred. Beginning in 2013, race was derived from multiple race selections, when previously it was derived from a single race designation. From 2013, "multirace" was a new designation assigned to people who chose more than one race out of the possible selections. When only one race was selected, the individual would be designated as that race only.

### Allegheny County Community Indicators

Allegheny Community Indicators (ACI) is a set of interactive dashboards that enables users to see data about different public health topics in an easy to understand format. Allegheny County estimates used in this report are taken from the ACI.

### Population Data

Population estimates used to calculate mortality rates were taken from the U.S. Census Bureau's American Community Survey 2020 5-Year Estimates Subject Tables.

### Pennsylvania Mortality Data

Pennsylvania mortality rates used for comparison in this report were taken from the Pennsylvania Department of Health's Enterprise Data Dissemination Informatics Exchange (EDDIE). These data were provided by the Division of Health Informatics, Pennsylvania Department of Health. The department specifically disclaims responsibility for any analyses, interpretations or conclusions.

### United States Mortality

United States mortality rates used for comparison in this report were taken from CDC Wonder, an online database with national public health information. The mortality data available on CDC WONDER are national mortality and population data produced by National Center for Health Statistics (NCHS) at the Centers for Disease Control and Prevention (CDC). Mortality information is collected by state registries and provided to the National Vital Statistics System.

# Formulas

## Calculating Age-Adjusted Rates

As mortality increases with age, older adults are expected to have higher mortality rates than younger adults. Age-adjustment allows the ACHD to compare rates by adjusting for the bias different age distributions can cause. The age-adjusted rates in this analysis were calculated using the direct standardization method. The direct standardization method involves calculating an age-specific rate, which means dividing the number of deaths in a specific age groups by the total population in that specific age group. The rate is then weighted with a standard population, the U.S. 2000 Standard population, for each age group.

### Age-Specific Rate

$$= \frac{\text{Number of deaths in a specific age group}}{\text{Population in specific age group}} \times 100,000$$

### Age-Adjusted Rate

$$= \frac{\text{Sum of (age-specific rates per 100,000 for selected population} \\ \text{X standard population for the specific age groups)}}{\text{Sum of the standard population}} \times 100,000$$

### Crude Death Rate

$$= \frac{\text{Number of total deaths}}{\text{Total population}} \times 100,000$$

### Infant Mortality Rate

$$= \frac{\text{Number of infant deaths (under 1 year of age)}}{\text{Number of live births}} \times 1,000$$

### Cause Specific Mortality Rate

$$= \frac{\text{Number of deaths from a specific cause}}{\text{Total population}} \times 100,000$$

### Race Specific Mortality Rate

$$= \frac{\text{Number of deaths of a specific race}}{\text{Population of a specific race}} \times 100,000$$

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