Heart Disease and Stroke Prevention Capstone Proposal

In the United States alone, CVD claims over 859,000 lives annually, and puts a huge strain on the health care system and the economy, both in terms of cost of care, and lost productivity We are living in a great era of our lives where we have easily available facilities. Sometimes enjoying this luxurious life, we forget about good health. According to CDC among present disease one of the long-lasting diseases is Heart failure because of heart disease and stroke. More than 877,500 Americans die of heart disease, stroke, or other cardiovascular diseases every year. Heart disease and stroke are the first and fifth leading causes of death in the United States.

Cardiovascular disease develops 7 to 10 years later in women than in men and is still the major cause of death in women over the age of 65 years. The risk of heart disease in women is often underestimated due to the misperception that females are 'protected' against cardiovascular disease. Recent data from the National Health and Nutrition Examination Surveys (NHANES) have shown that over the past two decades the prevalence of myocardial infarctions has increased in midlife (35 to 54 years) women, while declining in similarly aged men.[1] In a report from the European Heart Survey on stable angina pectoris it was found that women are less likely to be referred for functional testing for ischemia and that a lower rate of diagnostic angiograms and interventional procedures are performed compared with men.

1 IN 3 DEATHs.
more than 859,000
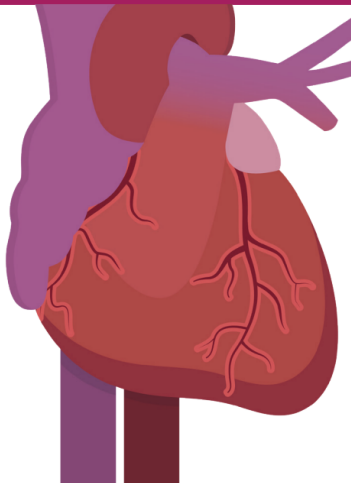people each year

$216 BILLION.
in health care system costs.

$147 BILLION
in lost productivity
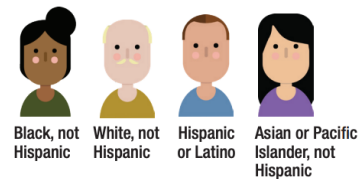on job from
premature death
from the job.

Heart disease is the leading cause of death in the United States, and risk of heart disease death differs by race and ethnicity.

This Spotlight explores racial and ethnic disparities in three heart disease topic areas: deaths, reported prevalence, and risk factors. Even though four clinical risk factors—hypertension, obesity, diabetes, and high total cholesterol—are explored here, behavioral risk factors, such as smoking and physical inactivity, also differ by race and ethnicity[1,2,3].

Heart disease topic areas

Deaths   Prevalence   Risk factors

Racial and ethnic groups

Black, not Hispanic   White, not Hispanic   Hispanic or Latino   Asian or Pacific Islander, not Hispanic
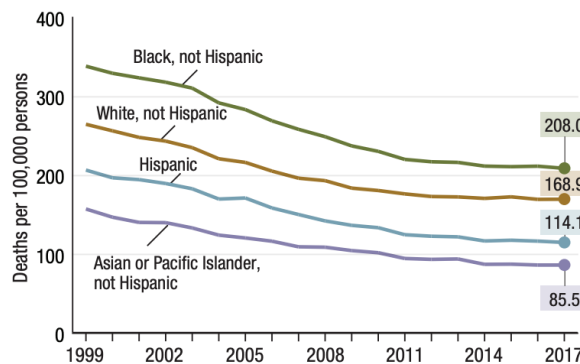
DEATHS

SOURCE

National Center for Health Statistics (NCHS), National Vital Statistics System (NVSS).

NOTES

Data for racial and ethnic groups, other than non-Hispanic white and non-Hispanic black, are subject to inconsistencies in reporting on the death certificate. However, misclassification is generally minor for Hispanic and non-Hispanic Asian or Pacific Islander groups.

Age-adjusted death rates for heart disease, by race and Hispanic origin: 1999–2017

Black, not Hispanic — 208.0
White, not Hispanic — 168.9
Hispanic — 114.1
Asian or Pacific Islander, not Hispanic — 85.5

(Deaths per 100,000 persons; years 1999, 2002, 2005, 2008, 2011, 2014, 2017)

From 1999 through 2017, death rates for heart disease **decreased for all racial and ethnic groups**.

The rate of decrease for each group **slowed in recent years**.

Non-Hispanic black persons were **MORE THAN TWICE** as likely as non-Hispanic Asian or Pacific Islander persons to die of heart disease in 1999 and 2017.

Deaths per 100,000 persons

Year	Black, not Hispanic	Asian or Pacific Islander, not Hispanic
1999	337.4	156.5
2017	208.0	85.5
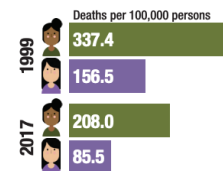
. Unfortunately, under-represented racial/ethnic groups—which collectively form nearly 40% of the total US population—continue to be victimized by deep-rooted structural racism; entrenched in, and perpetrated by historical policies and institutional practices. As a result, the benefits of groundbreaking advancements in cardiovascular care, and associated decline in CVD mortality in the United States in recent decades, have not been reaped equitably across racial and ethnic boundaries. Black adults experience higher burden of CV risk factors such as hypertension and obesity, and are more than twice as likely to die of CVD, relative to White adults. Similarly, American Indian individuals are 1.5 times as likely to be diagnosed

with coronary heart disease, compared with the White population. Increasing evidence points to structural racism as the root cause of racial/ethnic disparities in the United States, including 4 recent scientific statements and Presidential Advisory from the American Heart Association.

To analyze the CVDs, we can analyze previous data with the help of python libraries. Data will be imported from the source 'Kaggle' which is a site of datasets. We can analyze the previous data by importing in Jupyter notebook. We have over 42640 records and 29 attributes. After exploration of data, we further investigate its trends and get more insight in data and build a model using regression and random forest which help to identify our Target problem i.e., cardiovascular disease.

Heart disease is the leading cause of death for both men and women in the United States, and New Mexico is no different," said **Dr. Laura Parajon, Deputy Cabinet Secretary for the Department of Health**. "Taking better care of ourselves now not only makes life better, but it can also save us heart problems and expensive medical treatments in the future. "Health problems that increase the risk of heart disease include being overweight and having high blood pressure, high cholesterol, and diabetes.

Big changes don't have to be made all at once to improve your heart health. Small steps will get you where you want to go

Reference:

- https://www.cdc.gov/chronicdisease/resources/publications/factsheets/heart-disease-stroke.htm

- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3018605/

- https://www.nmhealth.org/news/healthy/2023/2/?view=1932

- https://www.cdc.gov/nchs/hus/spotlight/HeartDiseaseSpotlight_2019_0404.pdf

- https://www.ahajournals.org/doi/full/10.1161/CIRCOUTCOMES.121.007917

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