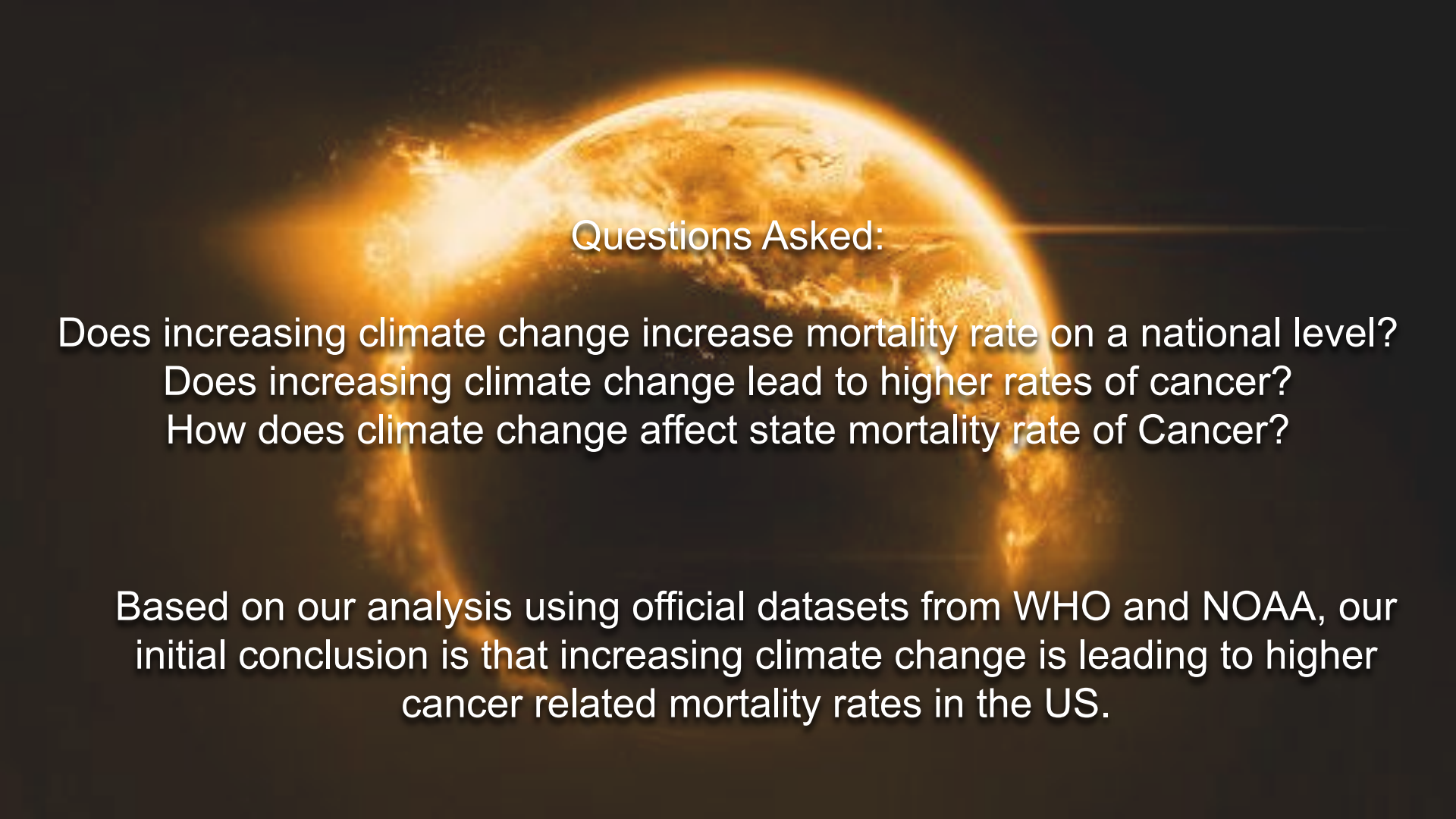
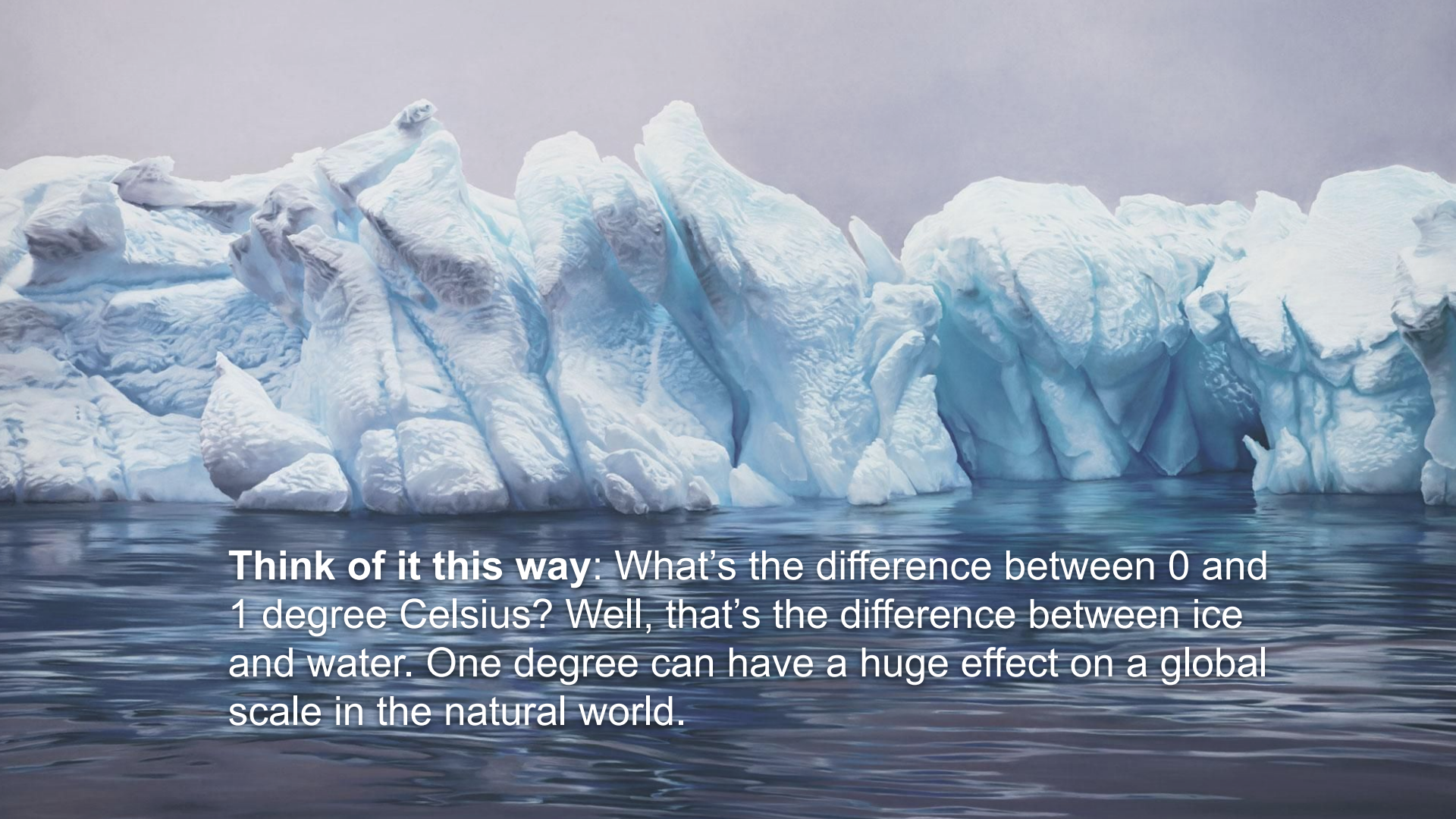

Climate Change Kills People



Questions Asked:

Does increasing climate change increase mortality rate on a national level?
Does increasing climate change lead to higher rates of cancer?
How does climate change affect state mortality rate of Cancer?

Based on our analysis using official datasets from WHO and NOAA, our initial conclusion is that increasing climate change is leading to higher cancer related mortality rates in the US.



Think of it this way: What's the difference between 0 and 1 degree Celsius? Well, that's the difference between ice and water. One degree can have a huge effect on a global scale in the natural world.

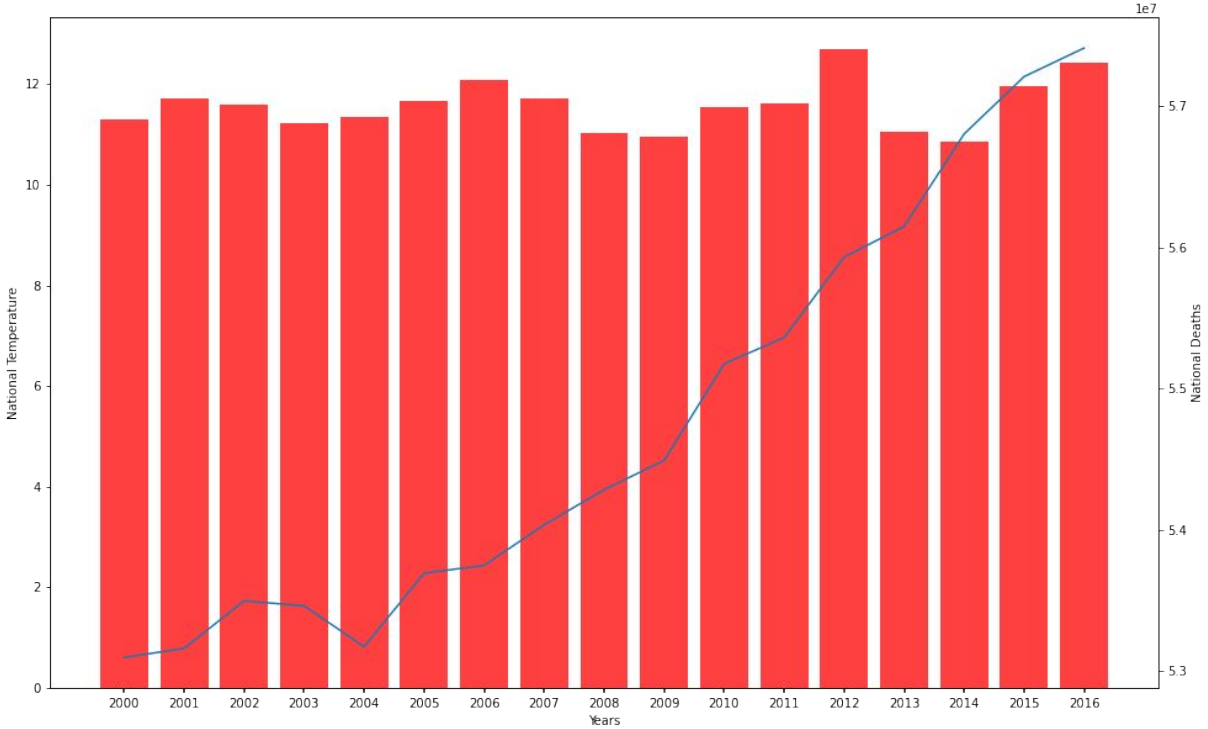
Datasets

We utilized datasets from Data.world. The datasets utilized sources like the CDC and National Oceanic and Atmospheric Administration Climate Divisional Database.

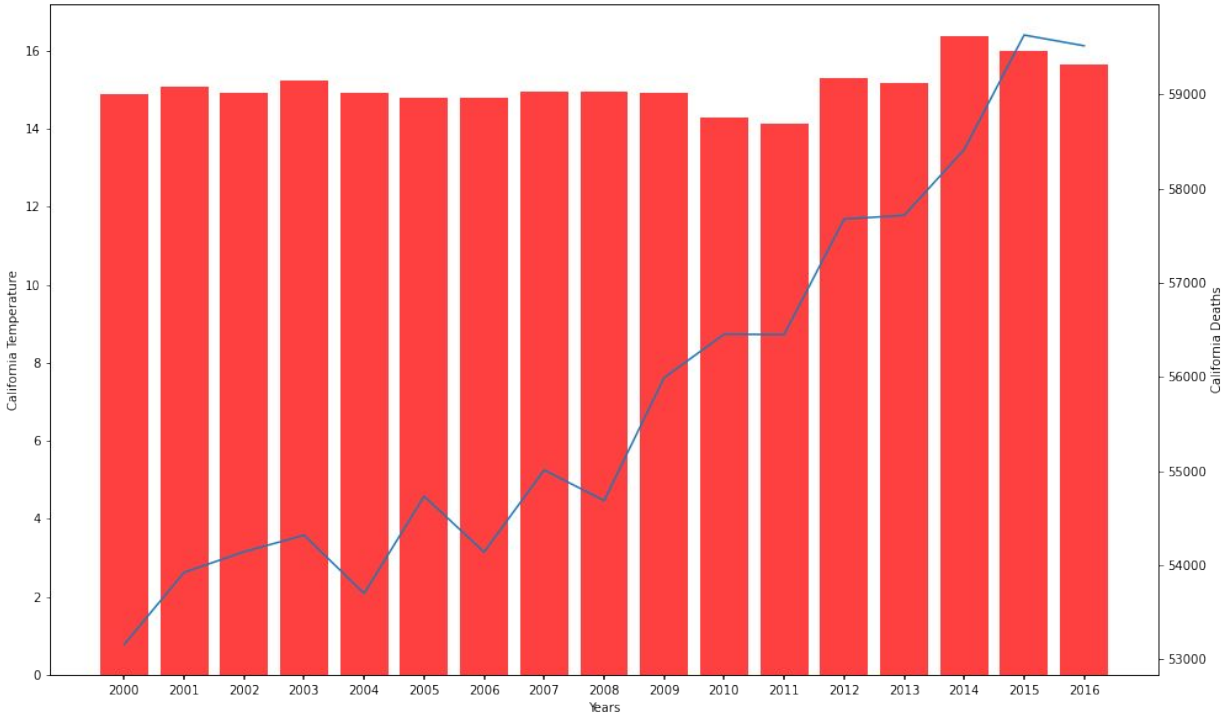
1. Causes of Death in US
    a. Data Owner: U.S. Department of Health & Human Services
    b. Data Summary: This dataset presents the age-adjusted death rates for the 10 leading causes of death in the United States beginning in 1999. Data are based on information from all resident death certificates filed in the 50 states and the District of Columbia using demographic and medical characteristics. Age-adjusted death rates (per 100,000 population) are based on the 2000 U.S. standard population.
2. Climate Change Data in US
    a. Data Owners: Environmental Data
    b. Data Summary: The Washington Post used the National Oceanic and Atmospheric Administration's Climate Divisional Database (nClimDiv) and Gridded 5km GHCN-Daily climate and Precipitation Dataset (nClimGrid) data sets, which provide monthly climate data between 1895 and 2019 for the Lower 48 states.

Sources: https://data.world/us-hhs-gov/3fd8159c-1043-4ac5-b030-547c998c3bcc/workspace/file?filename=csv-1.csv
https://data.world/environmentdata/analysis-of-noaa-climate-change-data/workspace/file?filename=climdiv_state_year.csv

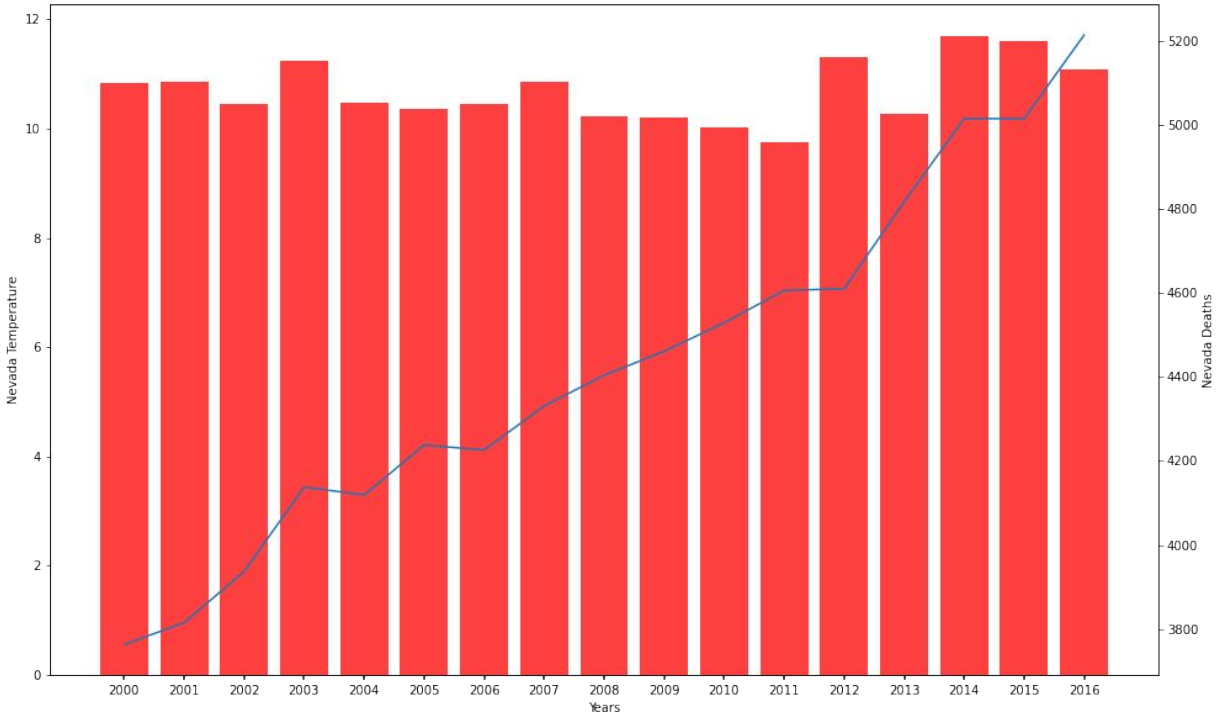
Nationwide - Cancer Deaths and Avg. Temp



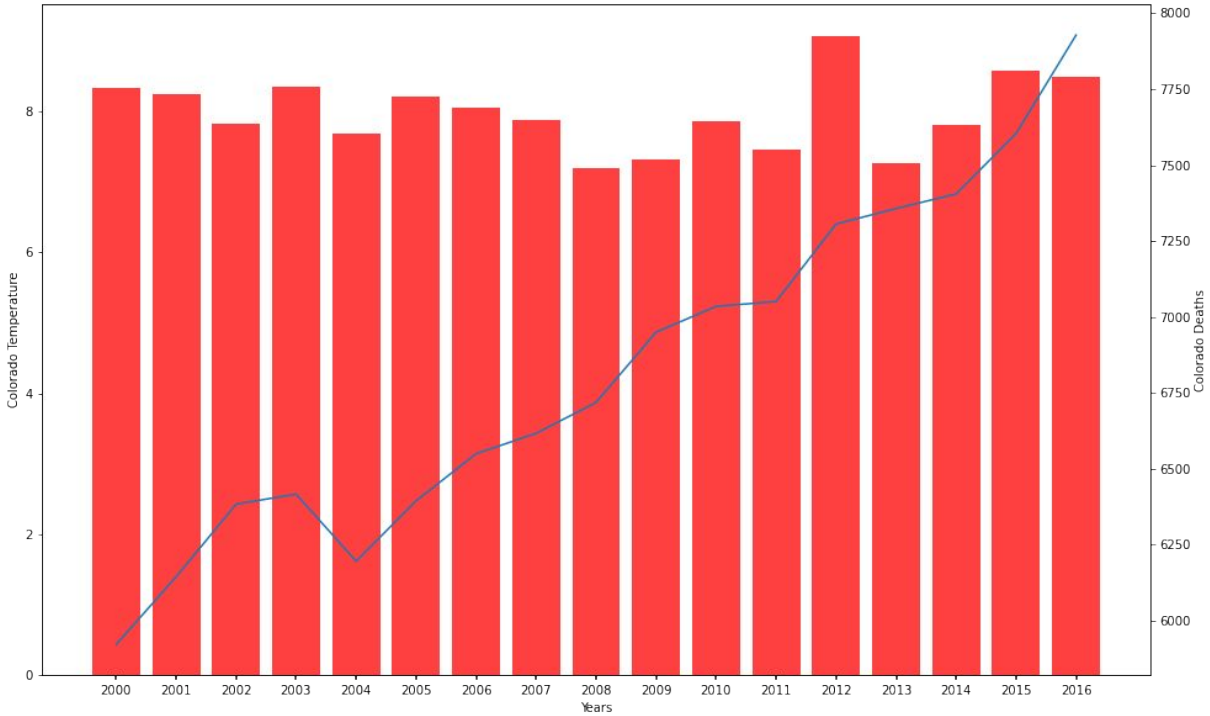
California - Cancer Deaths and Avg. Temp



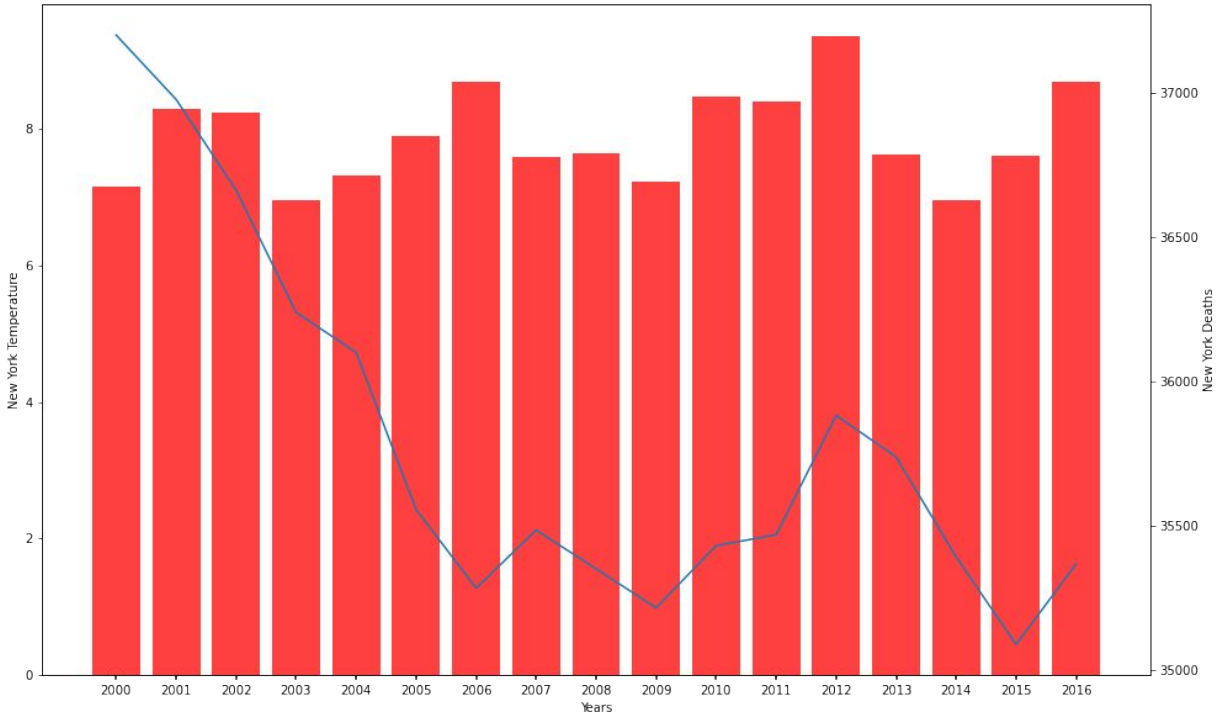
Nevada - Cancer Deaths and Avg. Temp



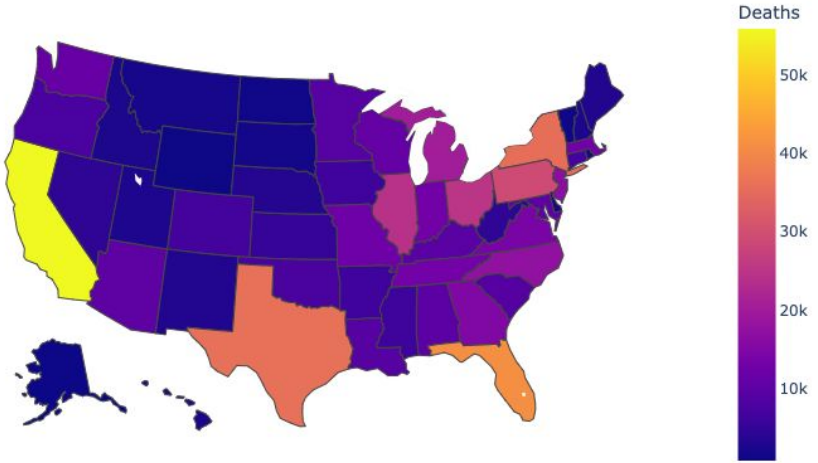
Colorado - Cancer Deaths and Avg. Temp

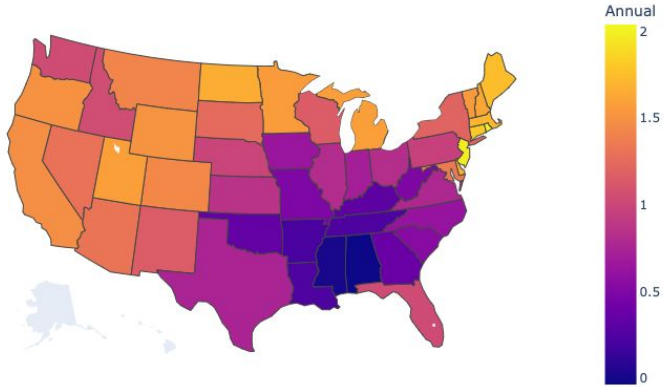


New York - Cancer Deaths and Avg. Temp



Heatmap for Deaths and Temp. Change





Discussion

Based on our findings, our team accomplished our goal. However, as we dug deeper through cross referencing some articles and recent data. Variables and contradictions started to arise. With more time, we would dive deeper in the specifics of mortality related to sun damage or climate.

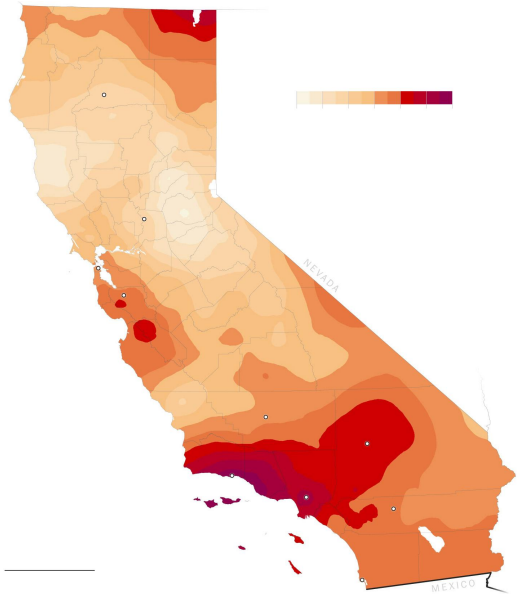
From our data, our general conclusions are:

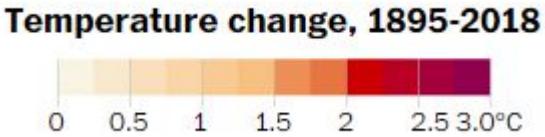
- **On a nationwide level**, mortality rate through cancer related diseases has been steadily increasing. The sharper increase align with spikes of climate change as well.
- **On a state level,** most states mortality rate through cancer related diseases followed a similar pattern to the nationwide level. Steady increase with sharper spikes as climate increases.
- **Some states were not supportive of our thesis, like New York.** The state had variations of climate change, but a declining mortality rate. There were some spikes around the hottest times, but other than that steadily decreasing.

From our data, we can conclude that climate average is increasing on a national level. However, it requires more data to determine if is this is directly affecting mortality rate.

Reference Artifacts

1. Washington Post: climate change, 1895-2018 in California.*

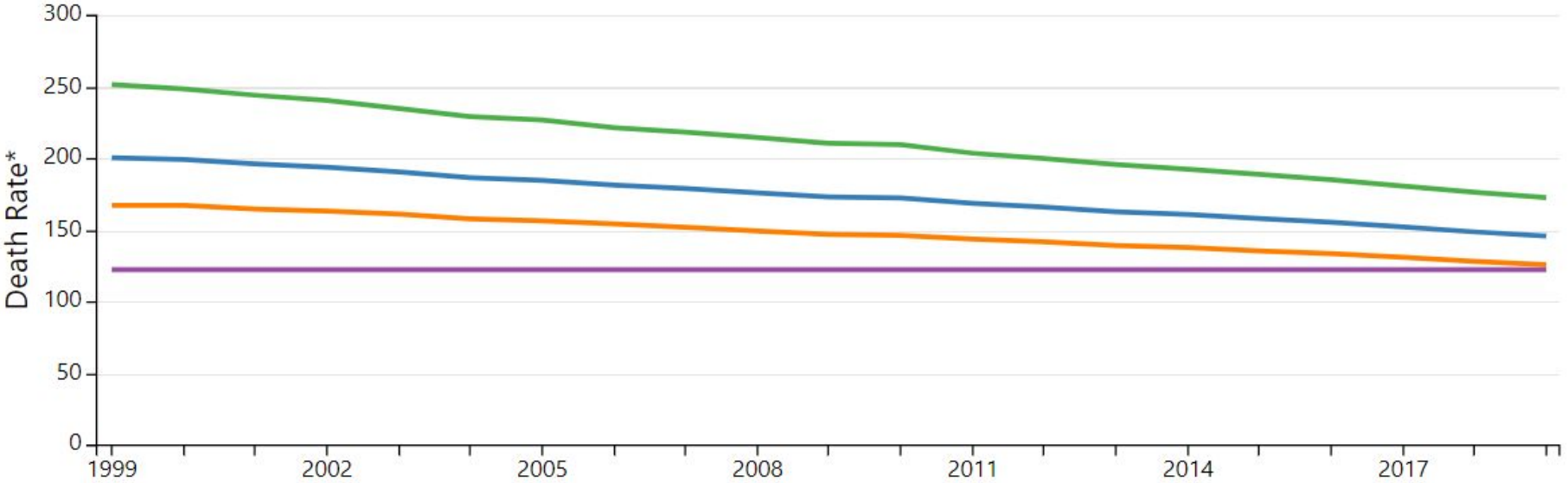




*Source: https://www.washingtonpost.com/graphics/2019/national/climate-environment/climate-change-california/

Reference Artifacts

1. CDC: Cancer Mortality Rates. This article that from 1999 to 2019, cancer death rates went down 27%, from 200.8 to 146.2 deaths per 100,000 population.*



*Source: https://www.cdc.gov/cancer/dcpc/research/update-on-cancer-deaths/index.htm

Post Mortem

Discuss any difficulties that arose, and how you dealt with them:

- We used a national mortality rate data set. This included all types of mortality including non-disease related causes. This data was irrelevant to our thesis, so our team had to remove it from the initial datasets. Using Python, we specified cancer related deaths to format our initial code.
- Initial code accomplished the goal, but was not optimized for scale. After we achieved the graphs we wanted from data, we cleaned up the code to make it scalable and organized.
- **Visualizations:** climate doesn't look drastic on a graph, however if known 1 degree of climate has a dramatic difference. We will try to find a better way to show this change in climate.

Discuss any additional questions that came up, but which you didn't have time to answer: What would you research next, if you had two more weeks?

- If we had two more weeks, our team would get more specific on sun-related cancer/diseases. Our data includes all types of cancer, and some may not be related to climate change. However, we would need more time and medical knowledge.

- We would source more Reference Artifacts to help determine how severe degrees of climate affect people and the environment. In addition, we would create statistics and visualizations to help showcase this.

Questions?