MEDICAL DESERTS

The impact of medical deserts on the health of Americans
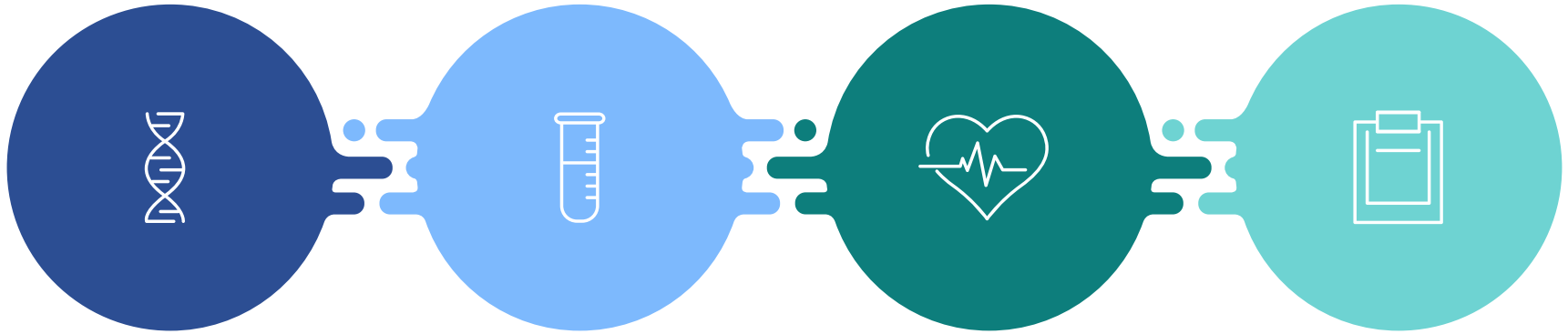
Meet the Team

Lisa Binegar - *Team Captain keeping us organized*
Has a background in health care as a nurse and pediatric nurse practitioner, and currently works for a medical device company as a trainer for a cancer treatment therapy.

Allison Bartlett- *Creativity Queen*
Currently works for a Senior Living Company as a HR Coordinator

D'Ana Rogers- *Database Aficionado*
Currently working as a Data Analyst for TN Dept of Health with the Covid-19 Vaccine Response.

Kola Oyedele- *Master of all Machine Learning*
Currently a data Analyst with Cherokee Health Systems.

What is a HOSPITAL DESERT?

A hospital desert is defined as an area without an acute care hospital within 60 miles in distance.
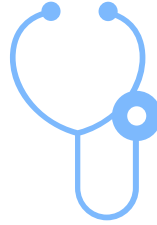
Acute care hospitals are defined by CMS as a hospital that provides inpatient medical care and other related services for surgery, acute medical conditions or injuries (usually for a short term illness or condition).

According to the University of North Carolina's NC Rural Health Research Program, 118 rural hospitals have closed since 2010.

Project Goals
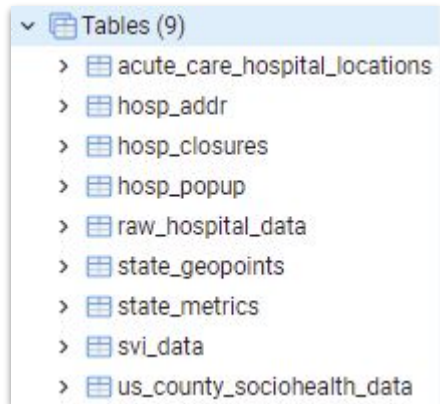
Question

Hypothesis

Purpose

Database Storage

- PostgreSQL database hosted on AWS RDS.

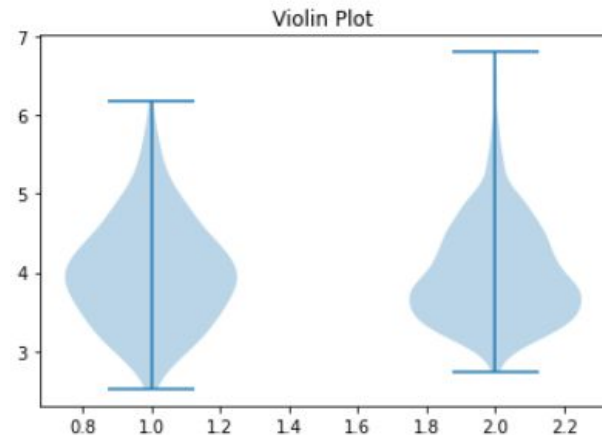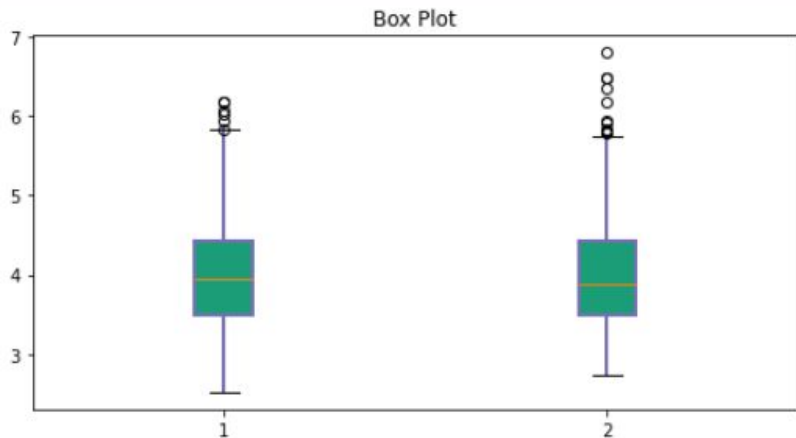- AWS S3 was the storage container for our csv files.

  - PySpark was used to form the connection to AWS RDS.

  - Sqlalchemy, specifically psycopg2 was used to connect our database to the machine learning model.

Tables (9)
- acute_care_hospital_locations
- hosp_addr
- hosp_closures
- hosp_popup
- raw_hospital_data
- state_geopoints
- state_metrics
- svi_data
- us_county_sociohealth_data

Linear Regression - Machine Learning

Model Accuracy: 87%

Box Plot

Violin Plot
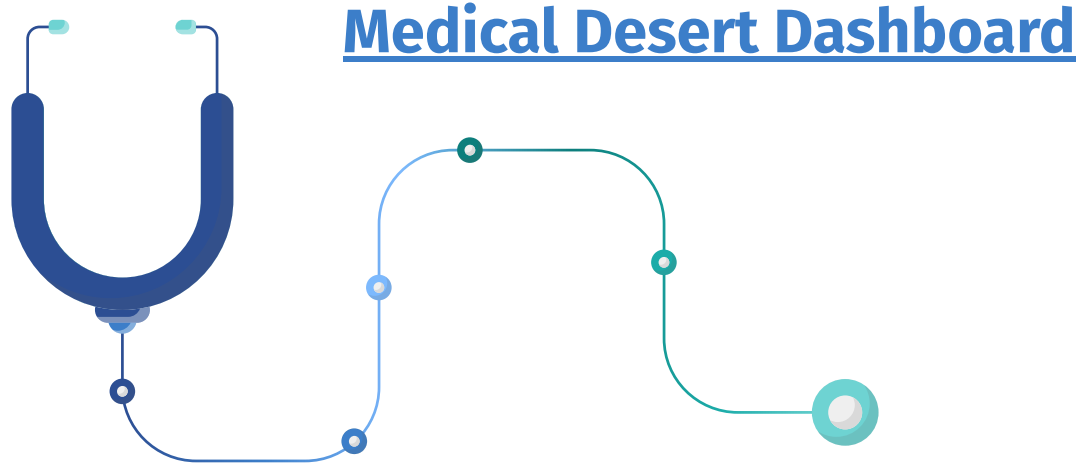
- 2,891 Counties
- 79 Medical desert Counties
- 2,148 records for training set
- 743 records for test set
- No clear difference in # of physically unhealthy days between medical desert counties and other counties

Dashboard

We used Tableau to present our Data

Medical Desert Dashboard

Future Analysis

Economic Impact of Hospital Closures

Specify Measurement of Distance

Incorporate 2020 Covid-19 Pandemic Data

Hospital Closure Mitigations

Conclusions

Challenges & Key Takeaways

Machine Learning
Model pivot

Dashboard Deliberation

Additional Dataset
Exploration

Data
Uniformity

Medical Desert Footprint: Counties or Driving Time?

Questions

Thank You

Resources

<u>Citations:</u>

1. Mortality data, all causes: Dataset created All deaths, state level, 2019: www.wonder.cdc.gov
2. Cost of living data: data manipulated, averaged city data together for state metric: https://advisorsmith.com/data/coli/
3. Geopoints for center of state: https://www.kaggle.com/paultimothymooney/latitude-and-longitude-for-every-country-and-state
4. SVI Data: https://www.atsdr.cdc.gov/placeandhealth/svi/data_documentation_download.html
5. Hospital Locations: https://www.kaggle.com/andrewmvd/us-hospital-locations
6. Rural hospital closures: https://www.shepscenter.unc.edu/programs-projects/rural-health/rural-hospital-closures/
7. https://www.nbcnews.com/news/us-news/rural-hospital-closings-cause-mortality-rates-rise-study-finds-n1048046
8. https://www.kaggle.com/johnjdavisiv/us-counties-covid19-weather-sociohealth-data?select=us_county_sociohealth_data.csv
9. https://www.rasmussen.edu/degrees/health-sciences/blog/medical-deserts/
10. https://www.cms.gov/Research-Statistics-Data-and-Systems/Research/ResearchGenInfo/Downloads/DataNav_Glossary_Alpha.pdf

ERD site: https://dbdiagram.io/d