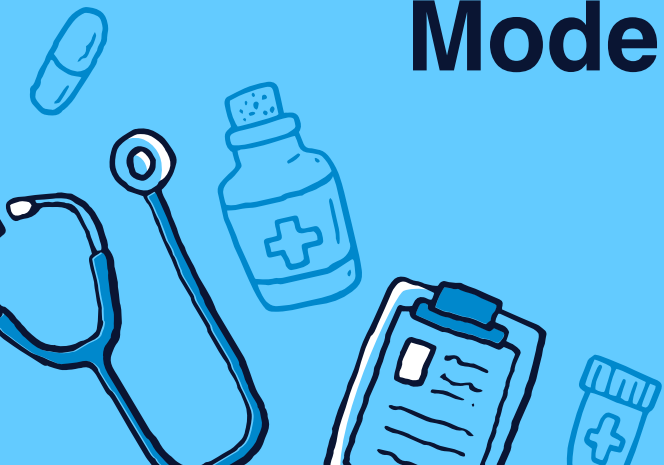




Reason to Build a Predictive Model for Heart Disease

By: Edward Kerr



Workflow

Get Data

Kaggle data set and
various related websites

Charts

Created charts on Google
Sheets and Tableau

01

02

03

04

EDA

Cleaned and organize
data on Google Sheets
and Tableau

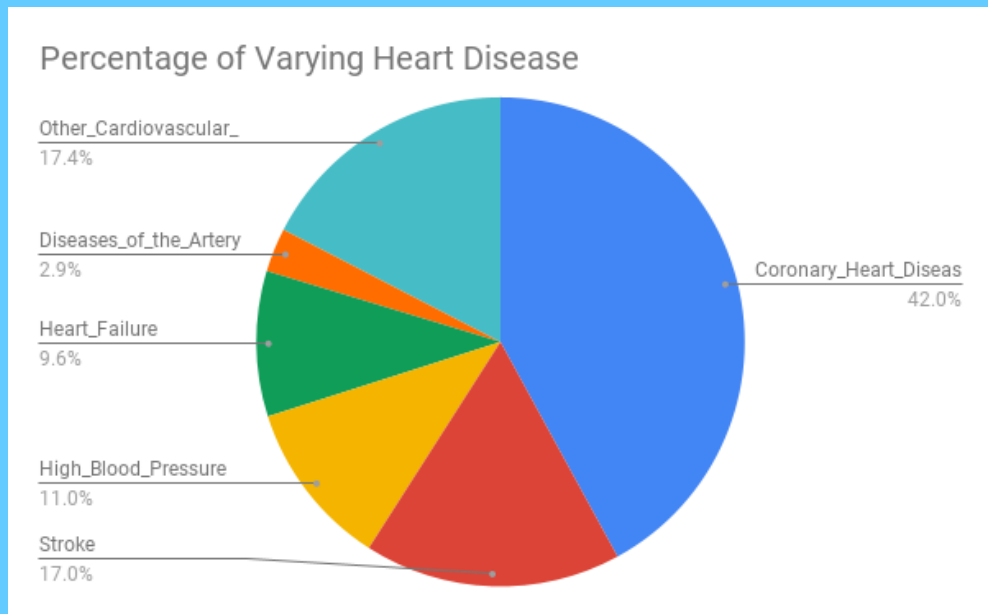
Analyze Charts

Analyze Charts




Introduction

- Heart Disease is a leading cause for death at 659,000 people in the United States.
- Goals are to recommend building a data science model to predict heart disease and lower hospital cost.



A collection of hand-drawn medical icons in the top-left corner, including a syringe, a flask with blue liquid, a stethoscope, a pill, and a first aid kit with a cross.

\$363 Billion

- From 2016 to 2017.
 - Amount spent annually by hospitals in US.
 - Includes cost of health care services, medicines, and lost of productivity due to death.
- 
- A collection of hand-drawn medical icons in the bottom-right corner, including a pill bottle with a cross, a stethoscope, a clipboard with a checklist, and a pill.

Methodology



Data set

Data set was
collect from
Kaggle



For EDA

Using Google
sheets and
Tableau.



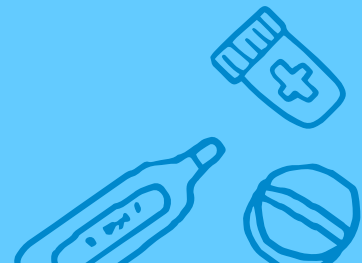
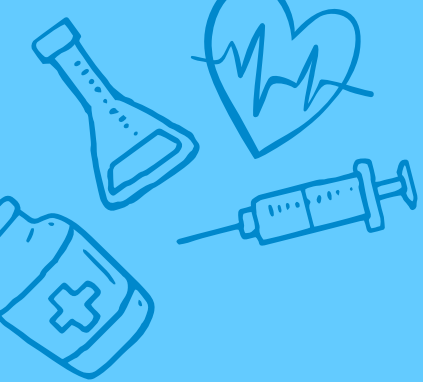
Google Sheets

Used to create
tables and
charts.



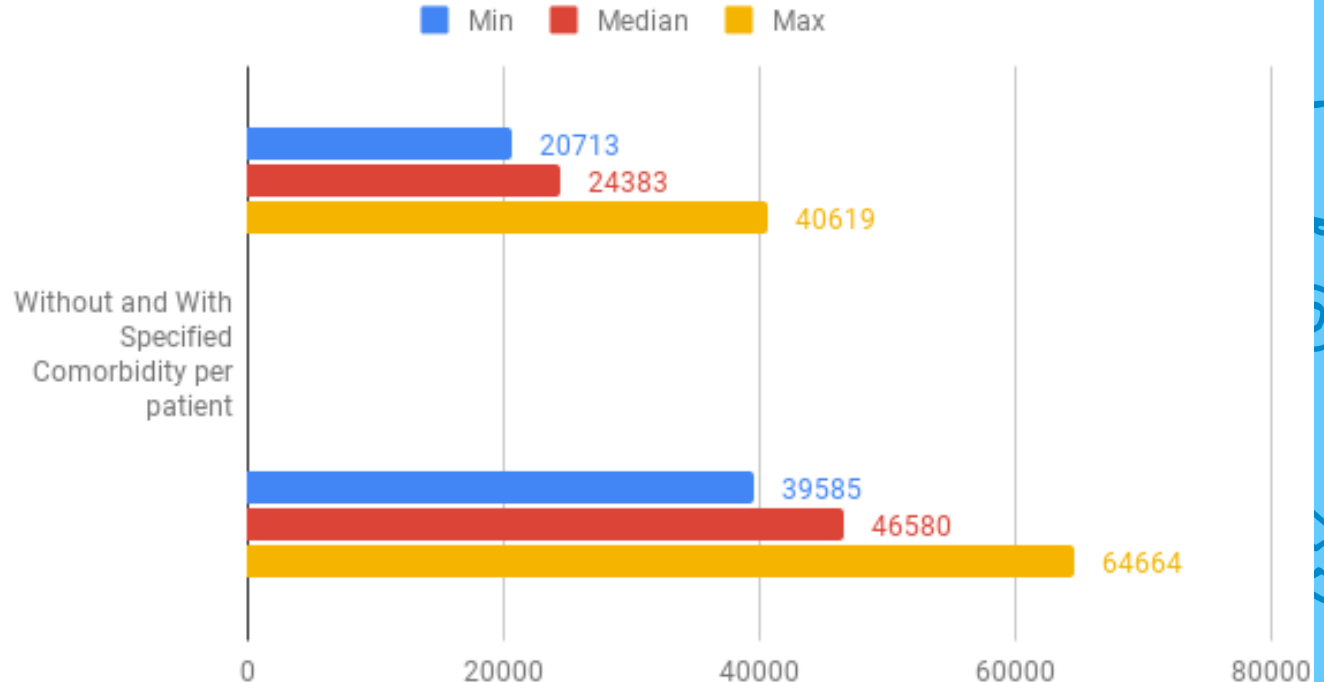
Tableau

Create
visualization of
data set.



Cost

Annual Cost for Heart Failure (per patient)



- Price a hospital pays per patient.
- Top: without Comorbidity
- Bottom: with Comorbidity.

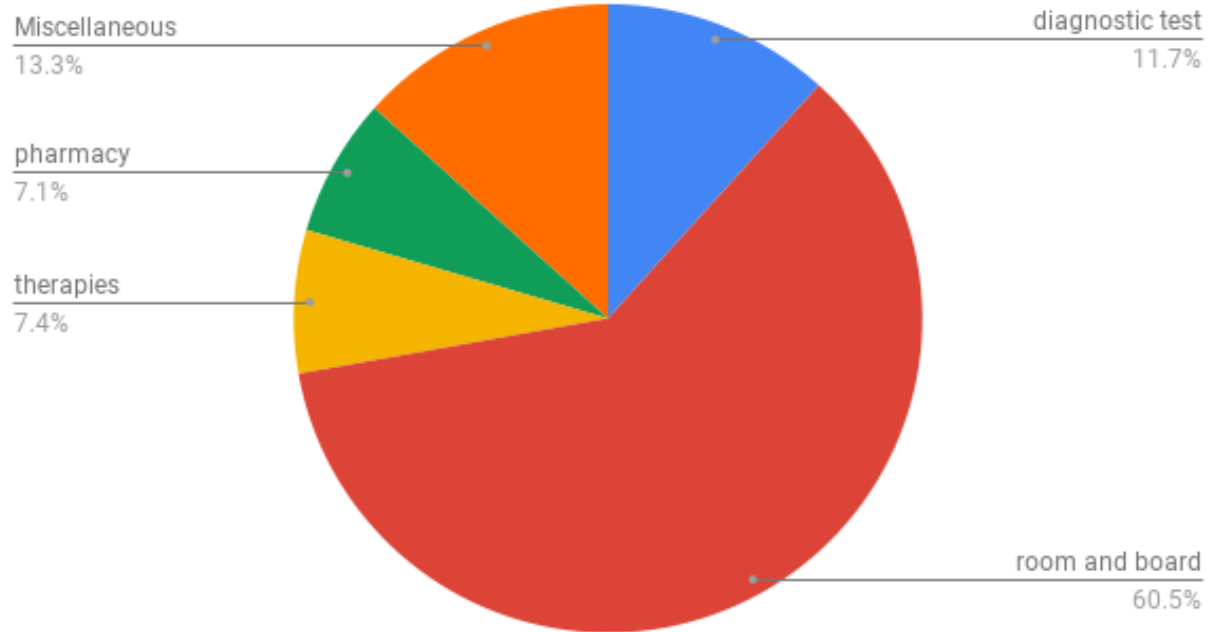


Other Expenses

Other expenses a hospital incurs:

- Room and Board
- Diagnostic Test
- Miscellaneous
- Therapies
- Pharmacy

Other Expenses Per Patient



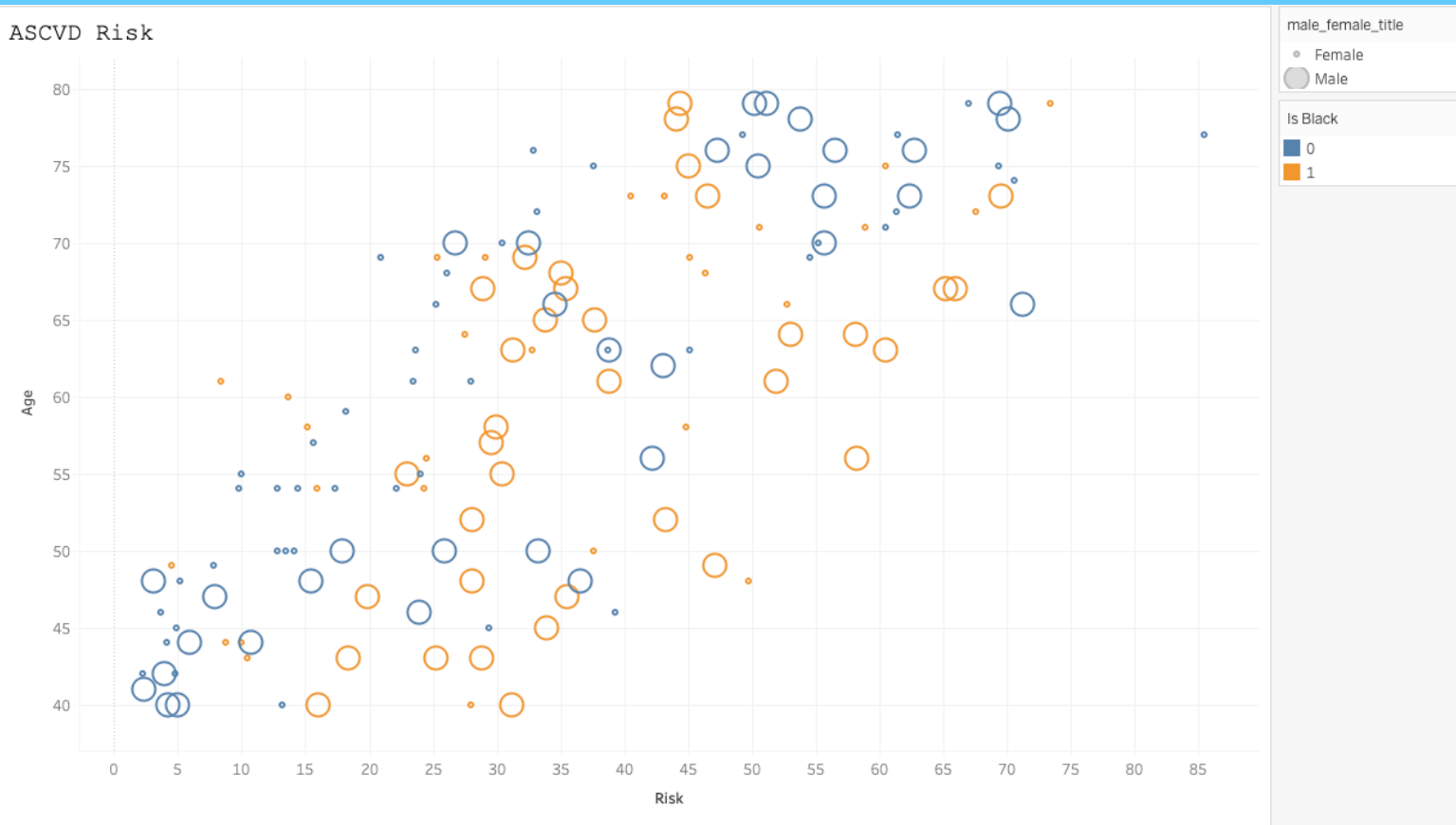


**ASCVD Risk
(Atherosclerotic
Cardiovascular Disease)**

Results

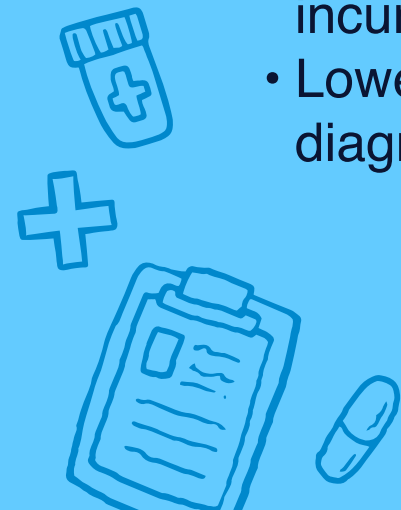
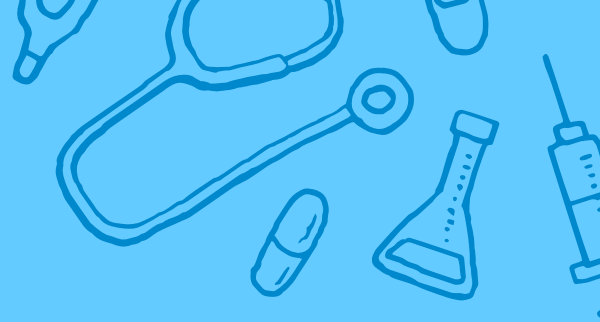


ASCVD Risk
With filters:
• Smokers
• Diabetic
• Hypertensive



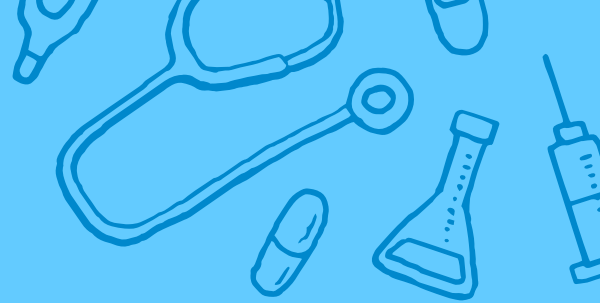
Conclusions

- Recommend building a predictive model will:
 - The doctors can potentially lower the chance for a patient to incur more medical cost as well as survive heart disease.
 - Lower the amount spent by the hospital to care for patients diagnose with heart disease.



Future Work

- Calculate exactly how much money the hospital will save annually.
- Gather more data sets to help build a machine learning model that can help predict if the patient has heart disease.



Resources



Websites:

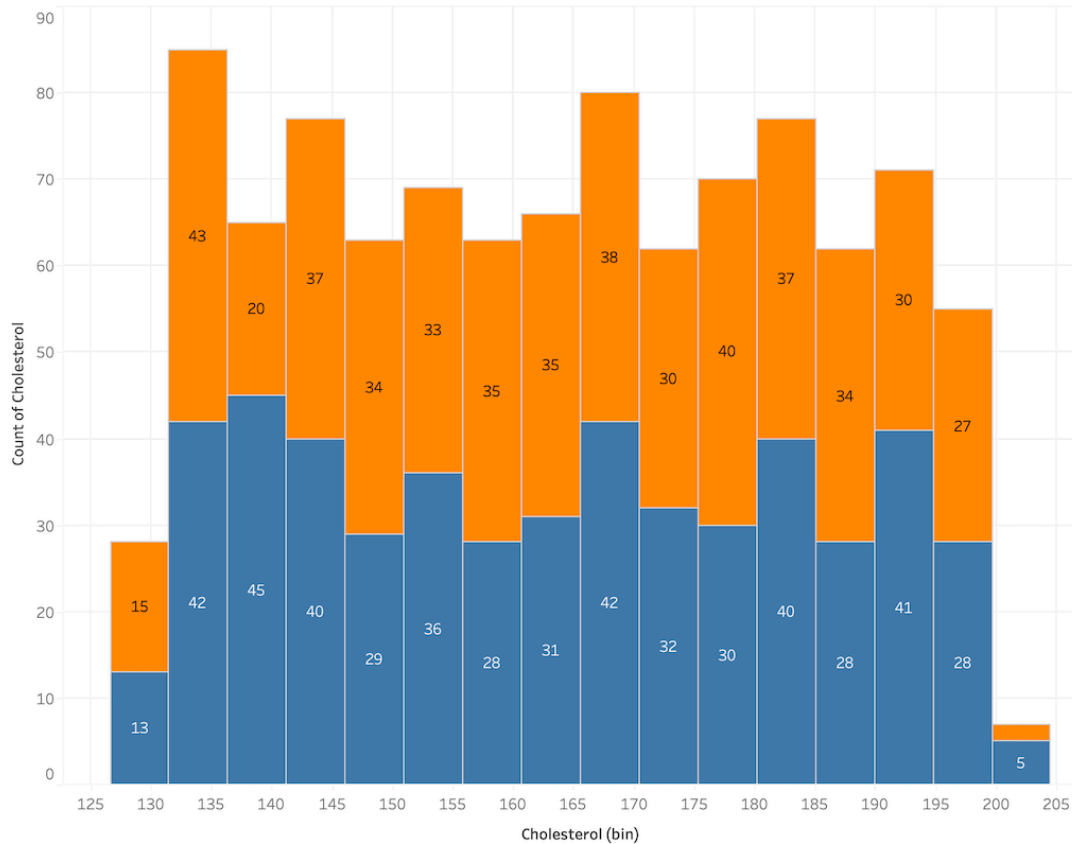
- [Kaggle Data set \(ASCVD\)](#)
- [Heart Disease Facts](#) by the CDC
- [A Systematic Review of Medical Costs Associated with Heart Failure in the USA \(2014–2020\)](#)

Thank You



Appendix

Cholesterol





Appendix

ASCVD (%)



Low - Borderline

0 to 4.9 - Low
5 to 7.4 - Borderline



Intermediate - High

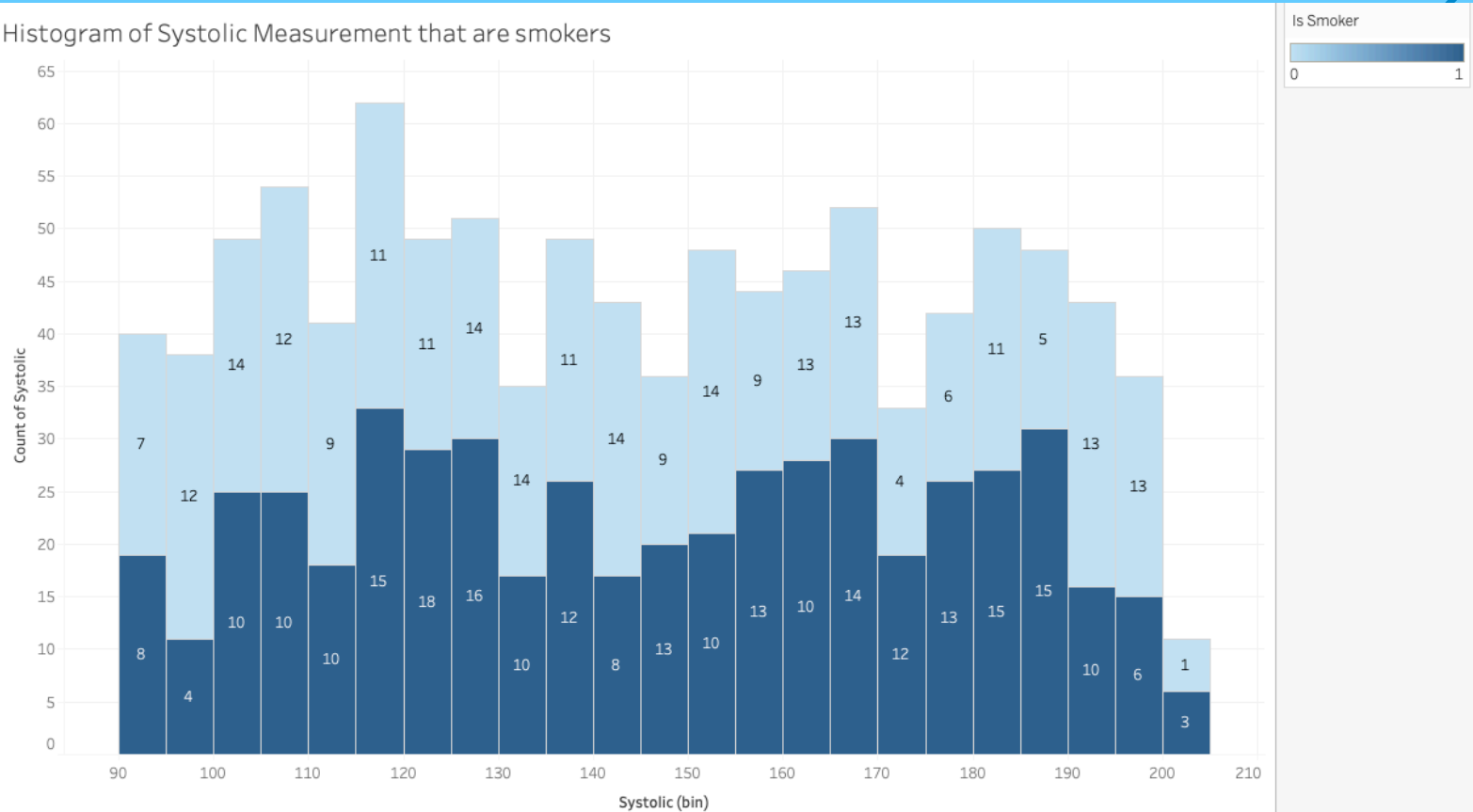
7.5 to 20 - Intermediate
Greater than 20 - High



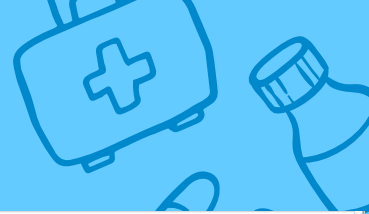
Appendix



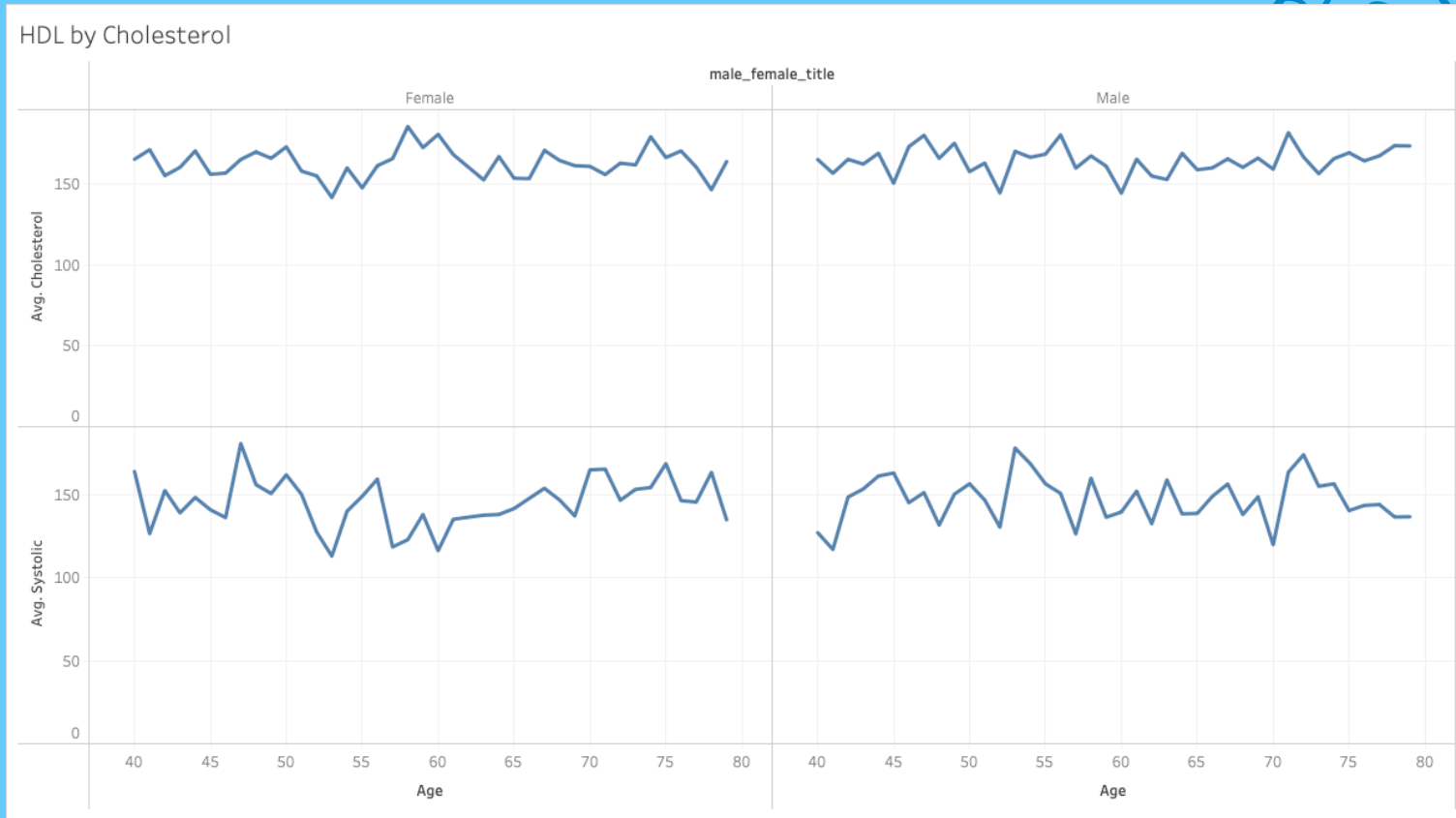
Histogram of Systolic Measurement that are smokers



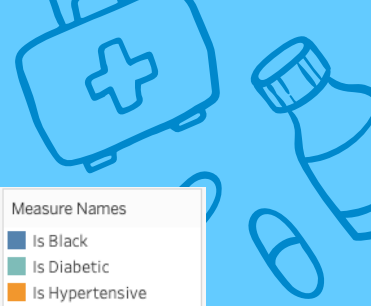
Appendix



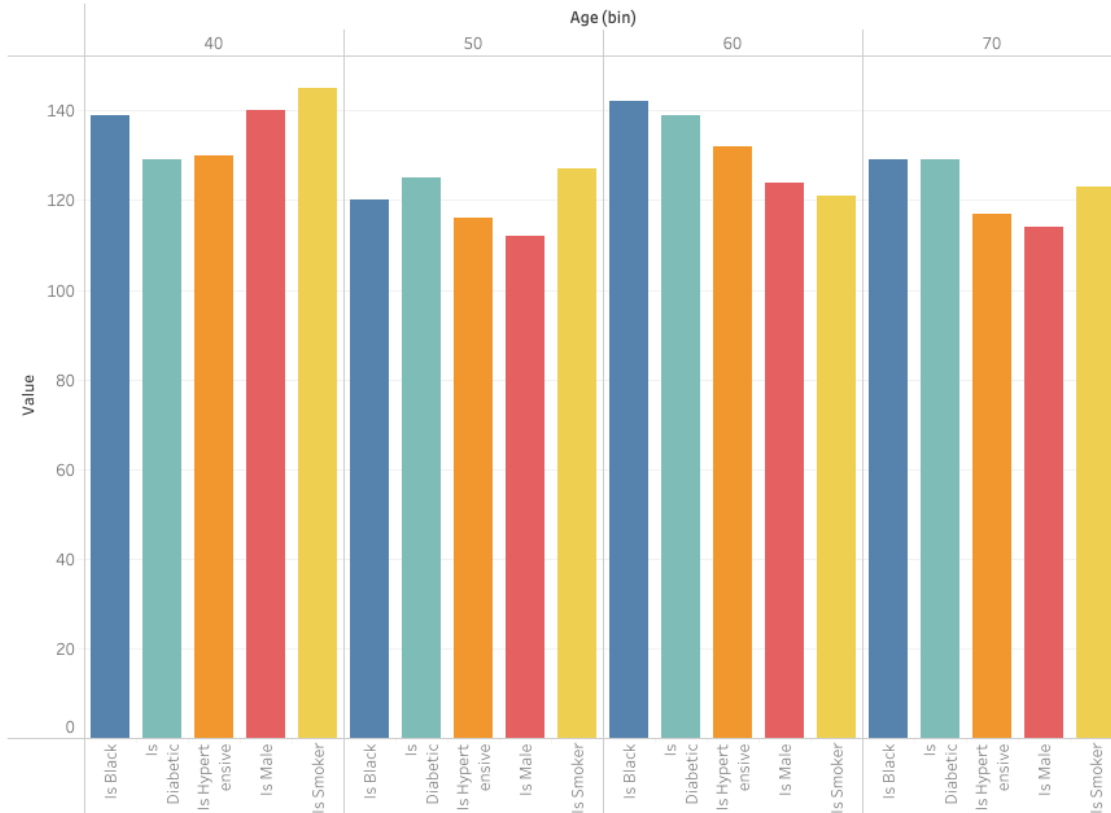
With filter for smokers



Appendix



Ages by Factors



Measure Names

- Is Black
- Is Diabetic
- Is Hypertensive
- Is Male
- Is Smoker

Appendix

Systolic Minimum Measurement (mm Hg)

