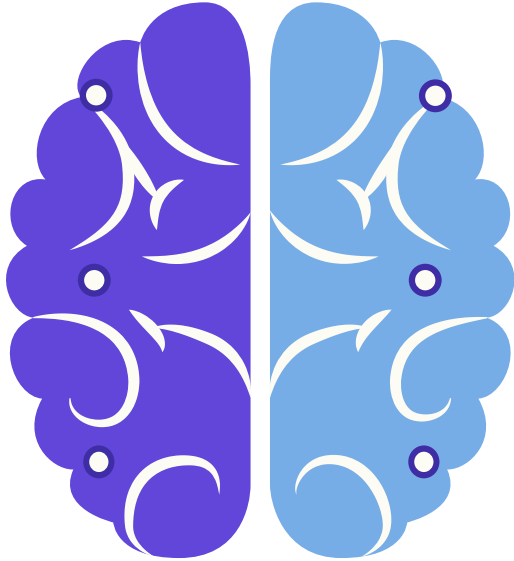




Health Analytics & Stroke in U.S patients

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Project Content



Dataset

Centers for Disease Control and Prevention - U.S / 2022
(419473 rows, 326 columns)

Clean dataset

(285314 rows, 29 columns)

Hypothesis testing

Relationship between sleep time and stroke

Models

6 different models to predict stroke in a patient

API

Scottish Stroke Statistics - Scotland / 2011 - 2022
(3000 rows, 14 columns)

Before we dive in, what is a stroke?



Cerebrovascular accident (CVA):

It occurs when blood flow is cut off from the brain, depriving the brain of much-needed oxygen and nutrients so the body can carry out essential functions.



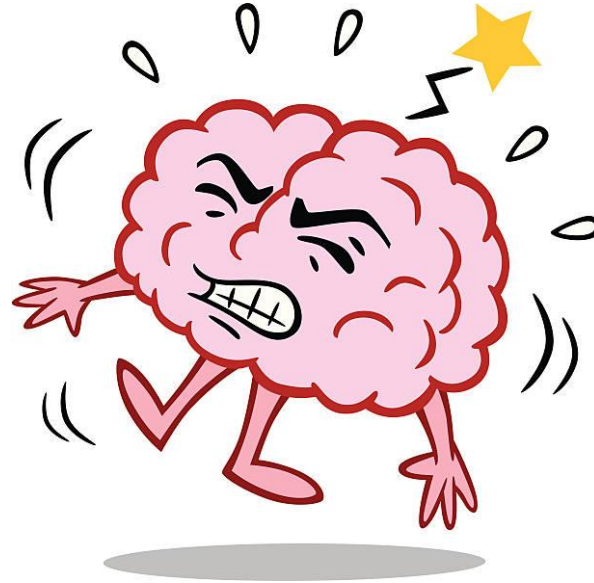
Ischemic stroke: blood clot or plaque buildup narrows or blocks an artery that supplies blood to the brain.



Hemorrhagic stroke: less common but more severe in terms of mortality.



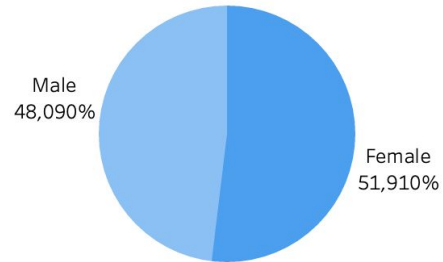
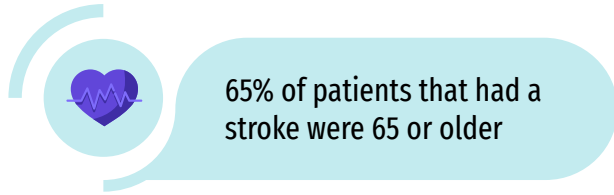
Symptoms: Numbness or weakness, especially on one side of the body, severe headache, speech difficulty.



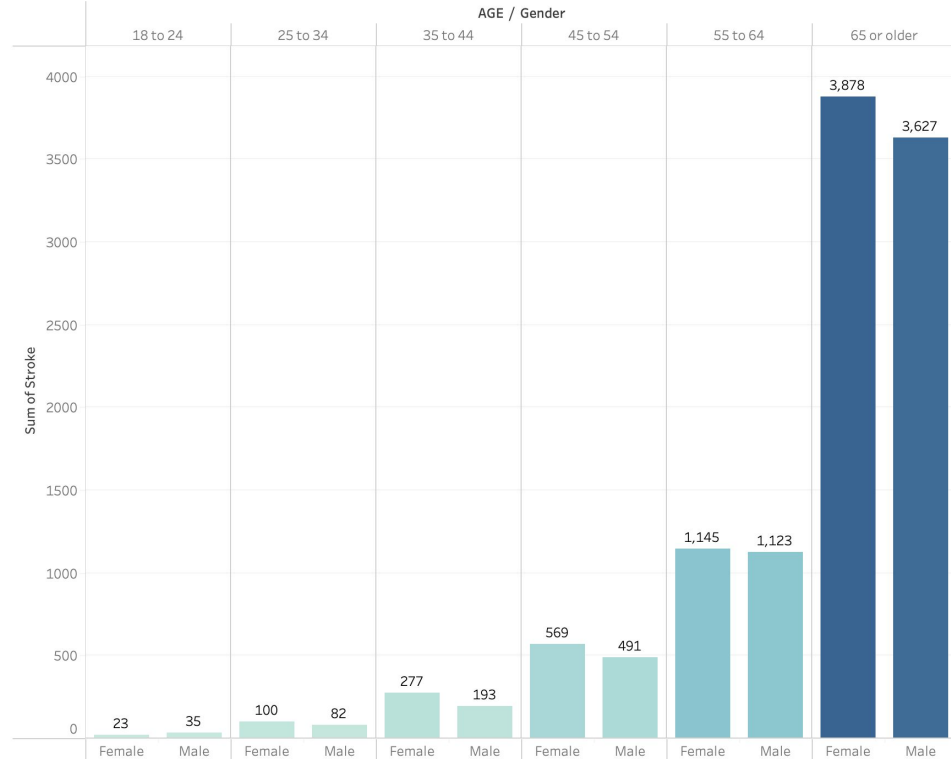
Motivation & Questions



Age and Gender



Stroke presence per Age and Gender



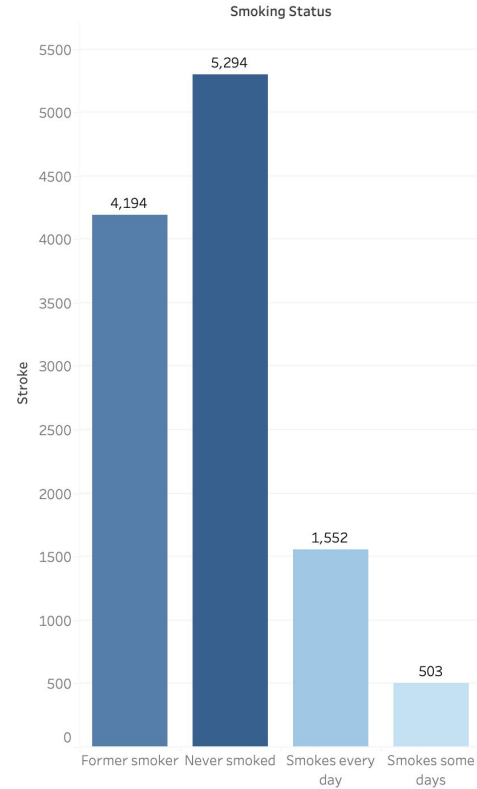
Smoking



54% of patients that had a stroke, smokes or have smoked at some point



Smoking status & Stroke



Alcohol



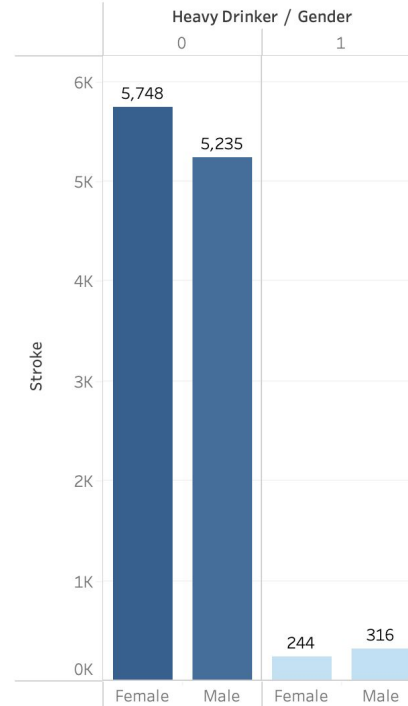
Only 5% of patients that had a stroke were heavy drinkers

***Heavy drinkers:** (adult men having more than 14 drinks per week and adult women having more than 7 drinks per week)



0: No
1: Yes

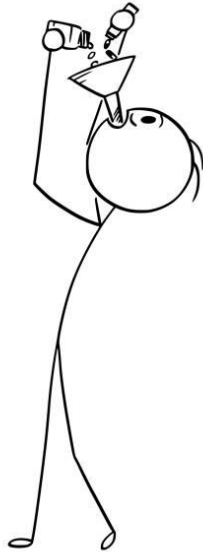
Alcohol & Stroke



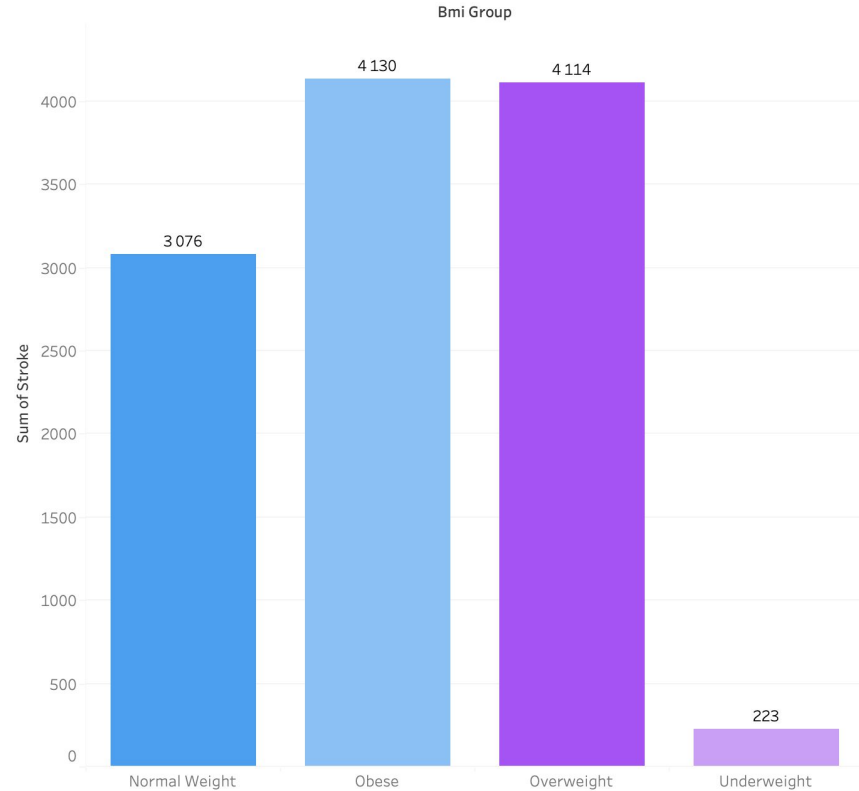
BMI



71% of patients that had a stroke,
where either obese or overweight



BMI & Stroke



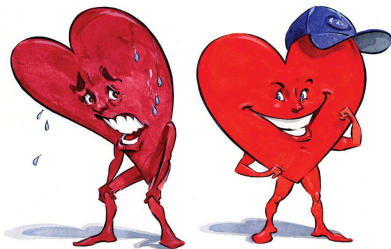
Heart Disease



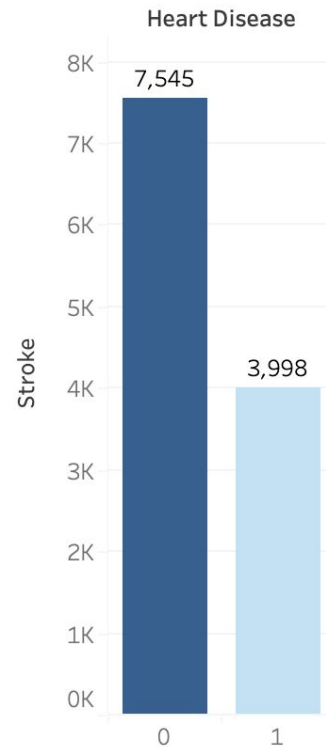
34% patients that had a stroke, had a heart disease

0: No


1: Yes



Heart Disease



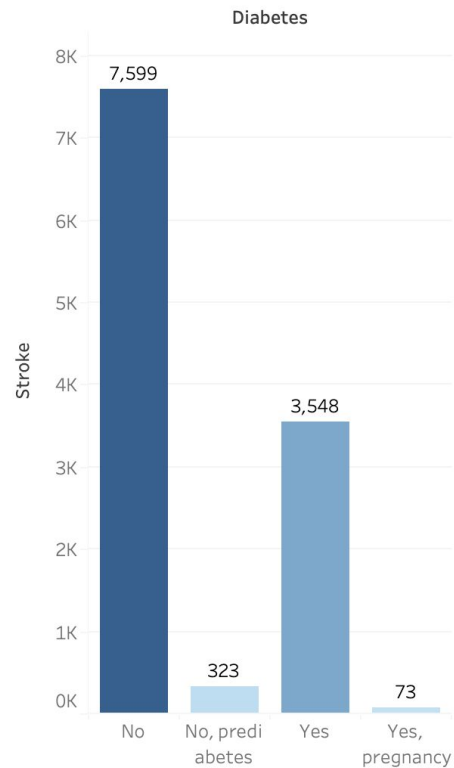
Diabetes



31% of patients that had a stroke, had diabetes



Diabetes & Stroke



Washington & Florida were the states with the most strokes in 2022

State	Strokes per 100,000
Alaska	116.0
Hawaii	247.0
Washington	629.0
Florida	476.0
Other States (in order of decreasing rate)	357.0, 335.0, 330.0, 323.0, 294.0, 279.0, 253.0, 248.0, 245.0, 243.0, 237.0, 231.0, 221.0, 210.0, 206.0, 189.0, 187.0, 180.0, 178.0, 177.0, 173.0, 165.0, 162.0, 154.0, 153.0, 137.0, 131.0, 127.0, 113.0, 99.0, 97.0, 91.0

State	Sum of Stroke
Florida	480
Maryland	455
Ohio	480
Washington	630

Sleep Time - Hypothesis testing



H0:

There is no significant difference in the mean sleep time between individuals who had a stroke (STROKE = 1) and those who did not have a stroke (STROKE = 0).



H1:

There is a significant difference in the mean sleep time between individuals who had a stroke (STROKE = 1) and those who did not have a stroke (STROKE = 0).

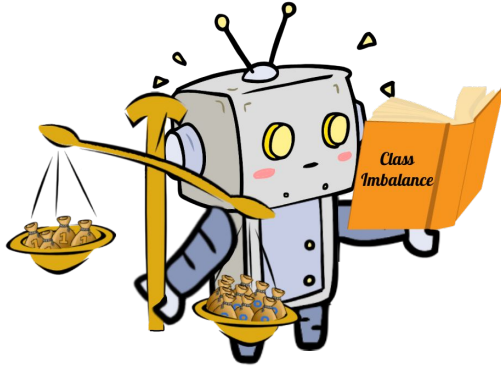


H0 stands, there is no significant difference in sleep time between groups

P value: 0.62

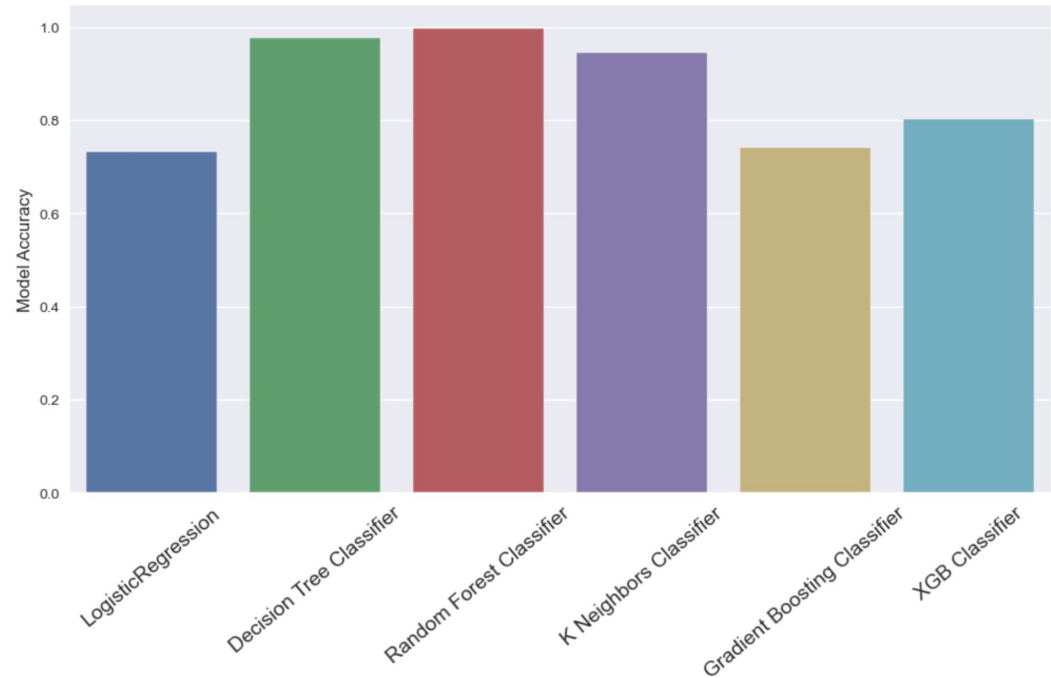
We do not reject the null hypothesis

Machine Learning Models



Accuracy obtained by Logistic Regression model: 73.30518628401894
Accuracy obtained by Decision Tree Classifier model: 97.63678895418496
Accuracy obtained by Random Forest Classifier model: 99.64626005591374
Accuracy obtained by K Neighbors Classifier model: 94.52844183260113
Accuracy obtained by Gradient Boosting Classifier model: 74.12791692816796
Accuracy obtained by XGB Classifier model: 80.11867404575797

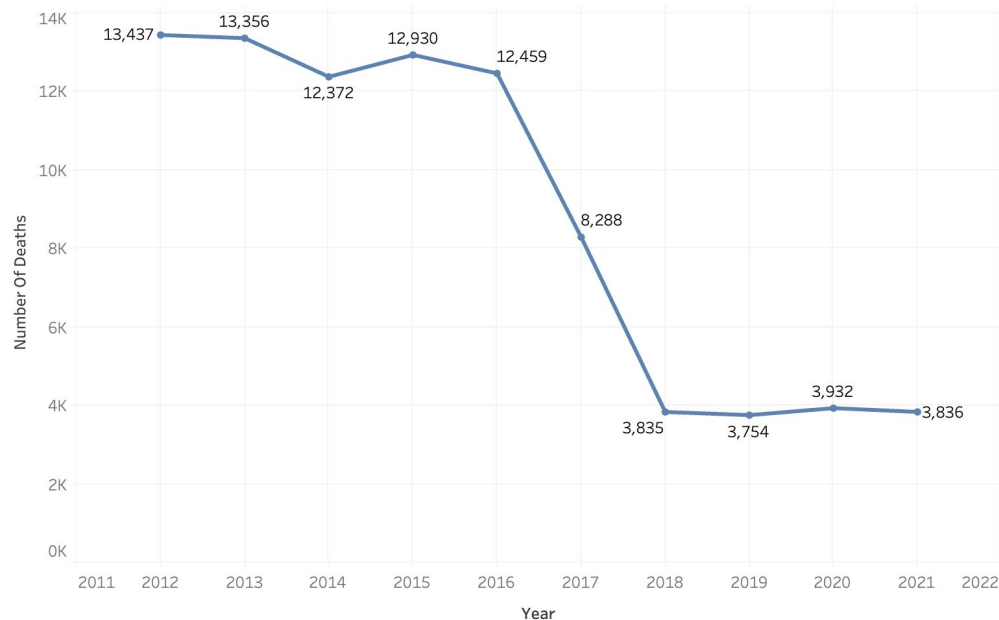
Model Comparison - Model Accuracy



🏠 / Themes / Health and care / Scottish Stroke Statistics / **Stroke Activity By Health ...**

🧪 Data API

Deaths due to Stroke over time - Scotland



Know the Warning Signs of a Stroke and Act Quickly to Save a Life

STROKE SYMPTOMS

Remember, recognize and act fast



F

Face

drooping



A

Arm

weakness



S

Speech

difficulties



T

Time

to call

Thank you!

