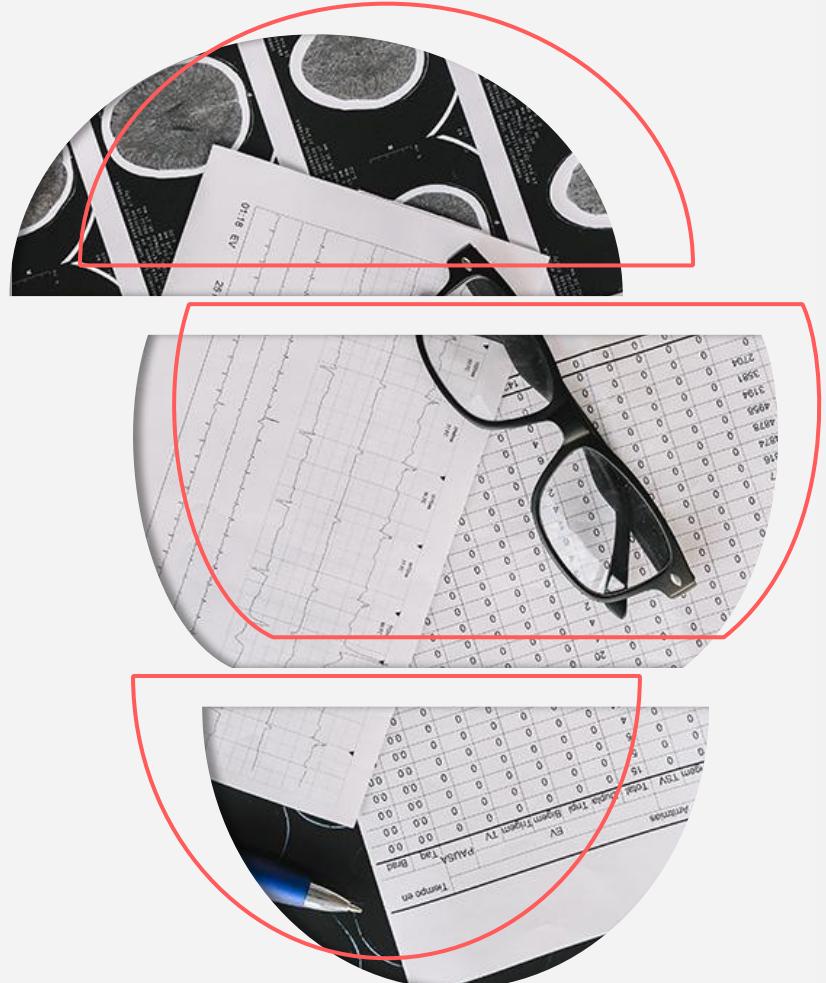




SAML

Medical Research

STROKE RESEARCH





SAML TEAM



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04

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- Project Framework
- Tableau Dashboard

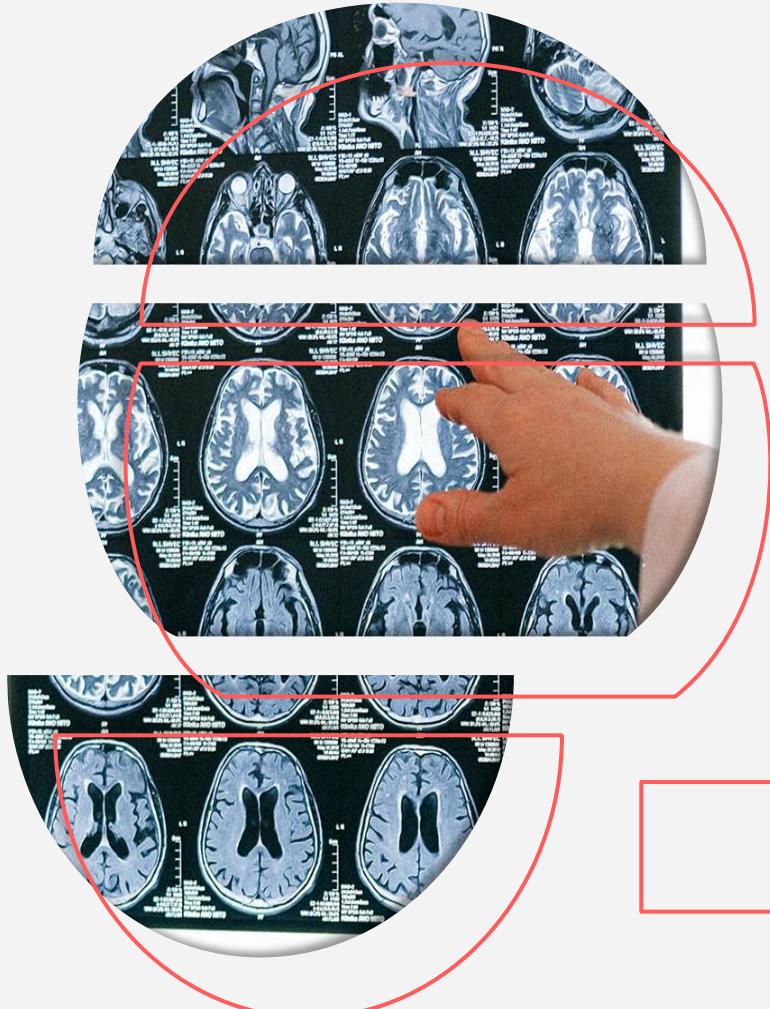
06

CONCLUSIONS

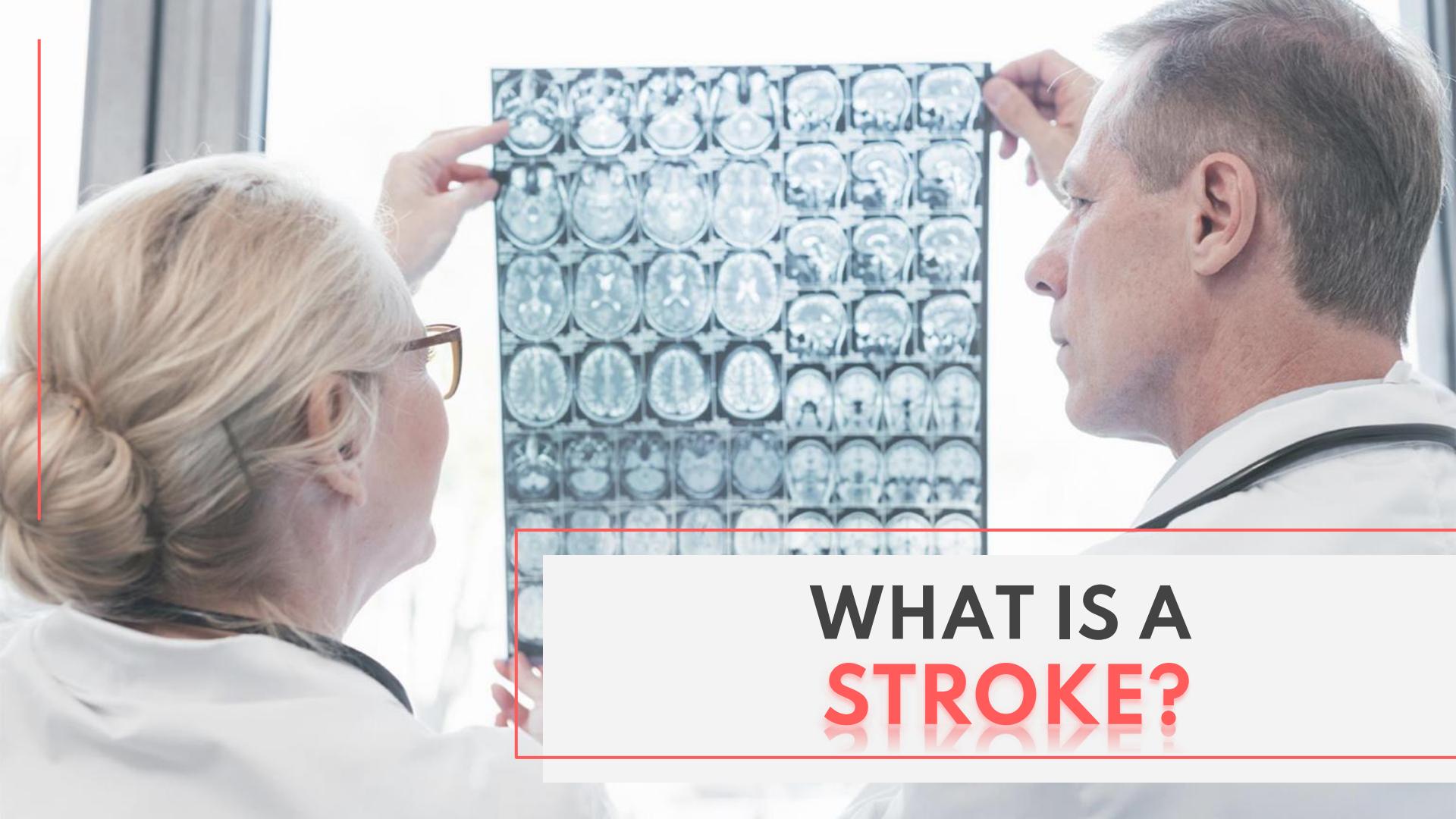
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01

INTRODUCTION



What is a stroke?
How do you detect a stroke?



WHAT IS A **STROKE?**

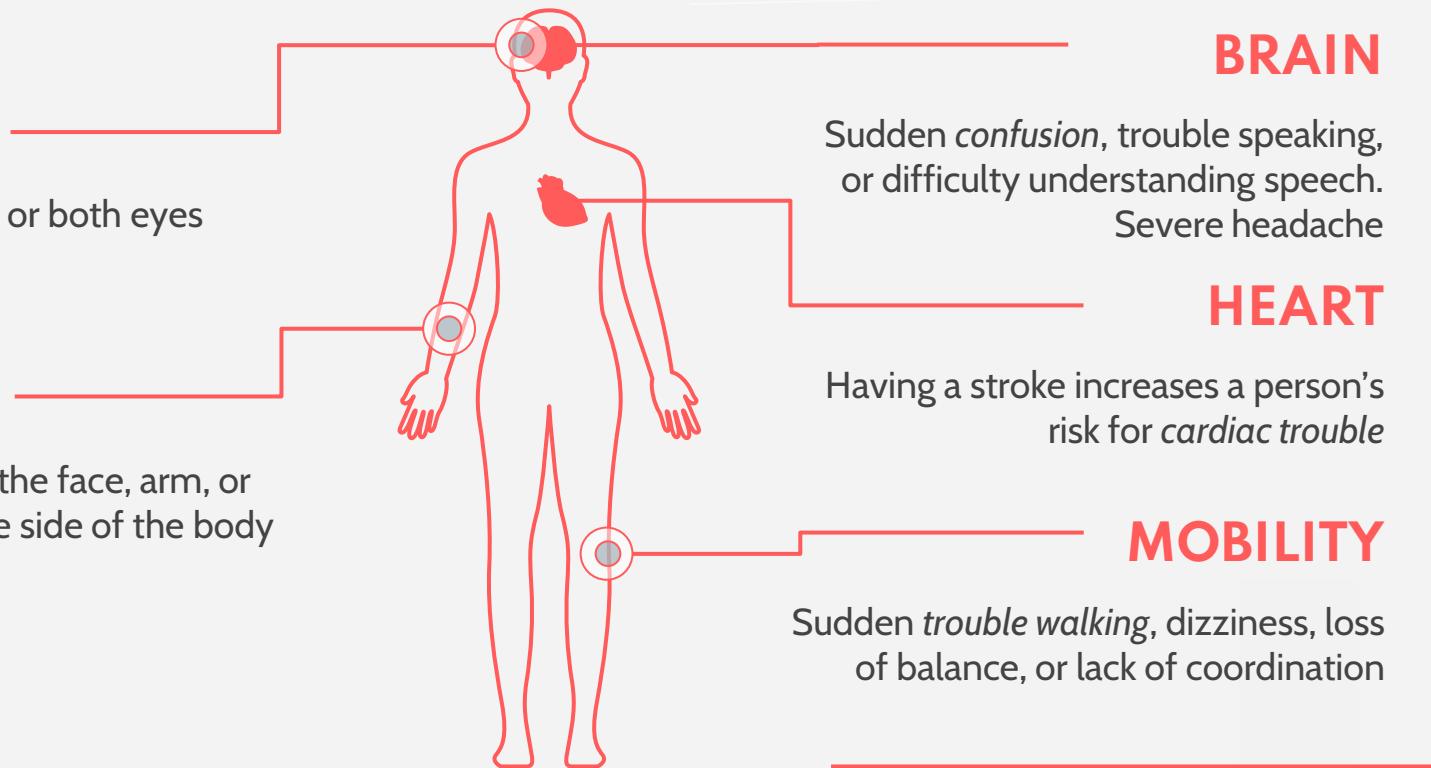
SYMPTOMS OF A STROKE

EYES

Trouble seeing in one or both eyes

NUMBNESS

Sudden weakness in the face, arm, or leg, especially on one side of the body



BRAIN

Sudden confusion, trouble speaking, or difficulty understanding speech.
Severe headache

HEART

Having a stroke increases a person's risk for cardiac trouble

MOBILITY

Sudden trouble walking, dizziness, loss of balance, or lack of coordination

02

PURPOSE



Why is predicting strokes important?
What do we hope to conclude?

WHY CHOOSE THIS TOPIC?



QUESTIONS TO ANSWER...



SUCCESS

Can our Machine Learning model be used to predict stroke risk?



ACCURACY

Which aspect is more accurate to predict risk:
Medical or Personal data?

03

STROKE DATA

What does the dataset include?
What were our initial findings?



STROKE DATASET

| ID# | Gender | Age | Hypertension | Heart_Dise... | Avg_Glucose_Lvl | BMI | Ever_Married | Work_Type | Residence_Type | Smoker | Stroke |
|-----|--------|-----|--------------|---------------|-----------------|-------|--------------|---------------|----------------|---------|--------|
| | str | int | int | int | float | float | str | str | str | str | int |
| 1 | Male | 67 | 0 | 1 | 228.69 | 36.6 | Yes | Private | Urban | Former | 1 |
| 3 | Male | 80 | 0 | 1 | 105.92 | 32.5 | Yes | Private | Rural | Never | 1 |
| 4 | Female | 49 | 0 | 0 | 171.23 | 34.4 | Yes | Private | Urban | Current | 1 |
| 5 | Female | 79 | 1 | 0 | 174.12 | 24.0 | Yes | Self-employed | Rural | Never | 1 |
| 6 | Male | 81 | 0 | 0 | 186.21 | 29.0 | Yes | Private | Urban | Former | 1 |
| 7 | Male | 74 | 1 | 1 | 70.09 | 27.4 | Yes | Private | Rural | Never | 1 |
| 8 | Female | 69 | 0 | 0 | 94.39 | 22.8 | No | Private | Urban | Never | 1 |
| 10 | Female | 78 | 0 | 0 | 58.57 | 24.2 | Yes | Private | Urban | Unknown | 1 |
| 11 | Female | 81 | 1 | 0 | 80.43 | 29.7 | Yes | Private | Rural | Never | 1 |
| 12 | Female | 61 | 0 | 1 | 120.46 | 36.8 | Yes | Govt_job | Rural | Current | 1 |

Shape
(5,109, 12)

Features
Categorical: 8
Numerical: 3

Missing Values
201 NaNs in "BMI" column

| |
|-------------------|
| All Criteria |
| Medical Criteria |
| Personal Criteria |

PERSONAL CRITERIA



AGE

From birth to 82 years of age



GENDER

Male or Female



EVER MARRIED

Yes or No



WORK TYPE

Government, Private, Self-Employed,
& Raise Children



RESIDENCE TYPE

Rural or Urban



SMOKING STATUS

Current, Former, Never,
& Unknown

MEDICAL CRITERIA



AGE

From birth to 82 years of age



GENDER

Male or Female



HYPERTENSION

Yes or No



HEART DISEASE

Yes or No



AVG GLUCOSE LVL

From 55 to 268

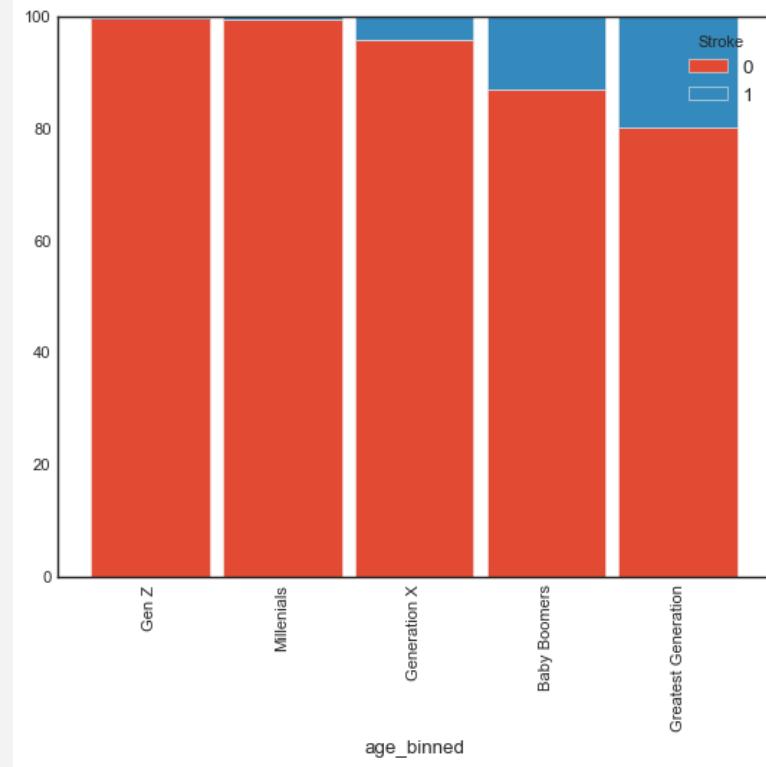
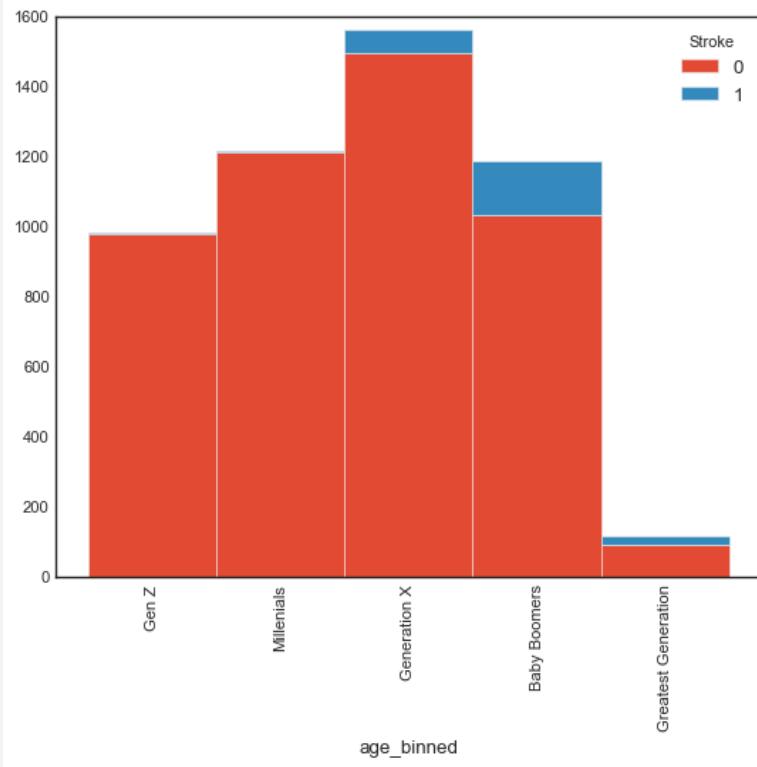


BMI

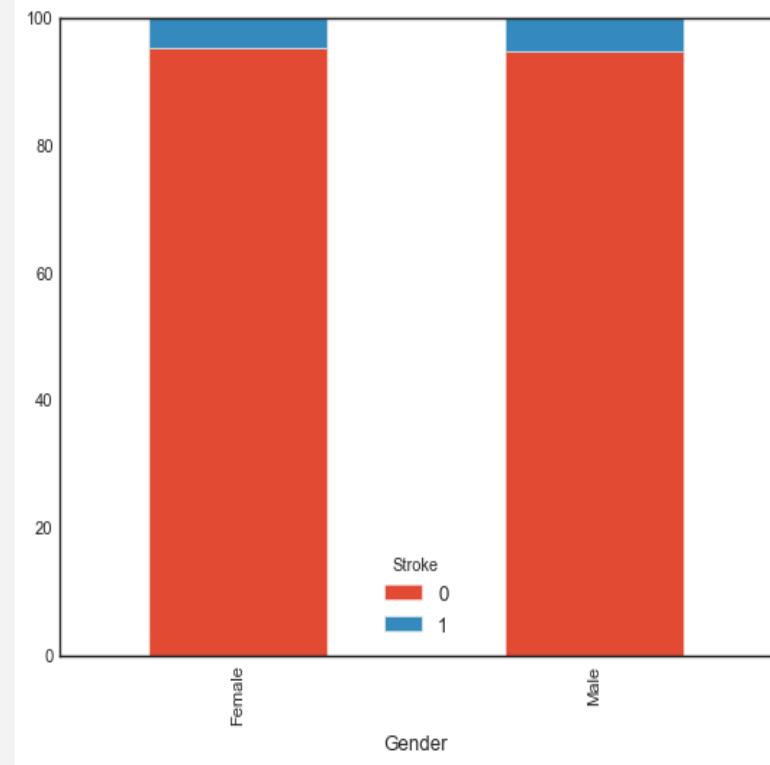
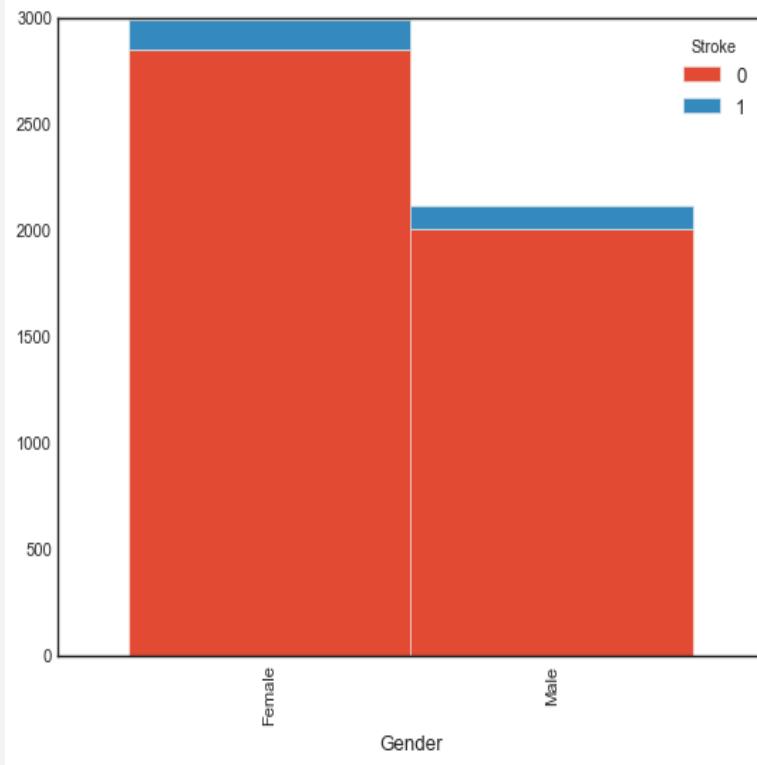
From 10 to 98

DEMOGRAPHIC ANALYSIS

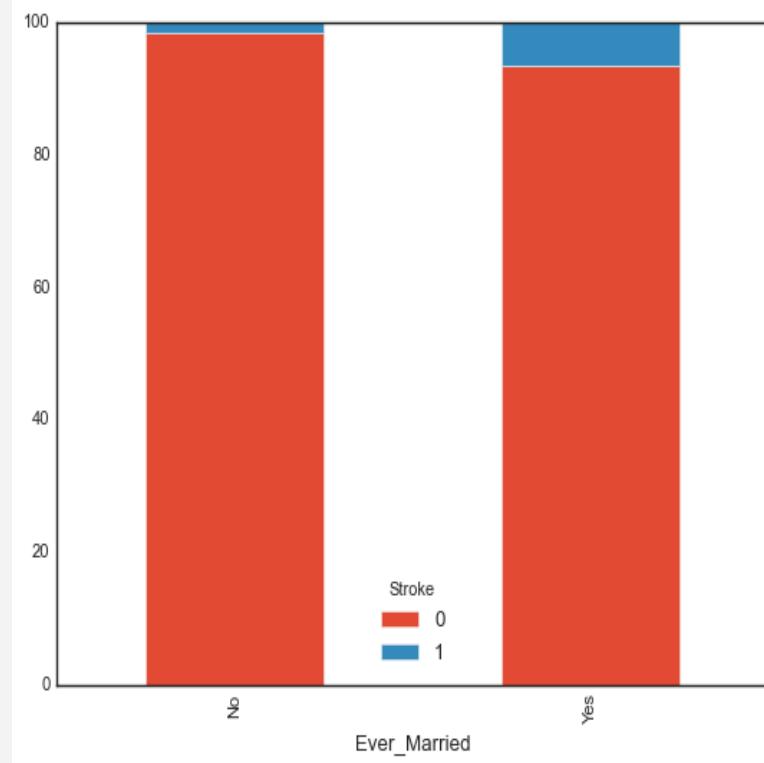
(AGE)



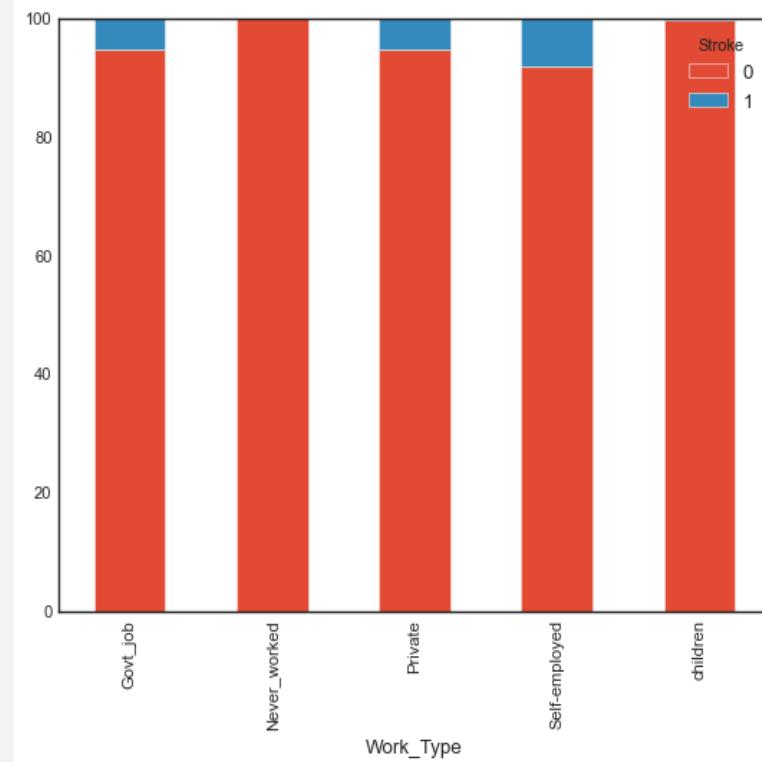
DEMOGRAPHIC ANALYSIS (GENDER)



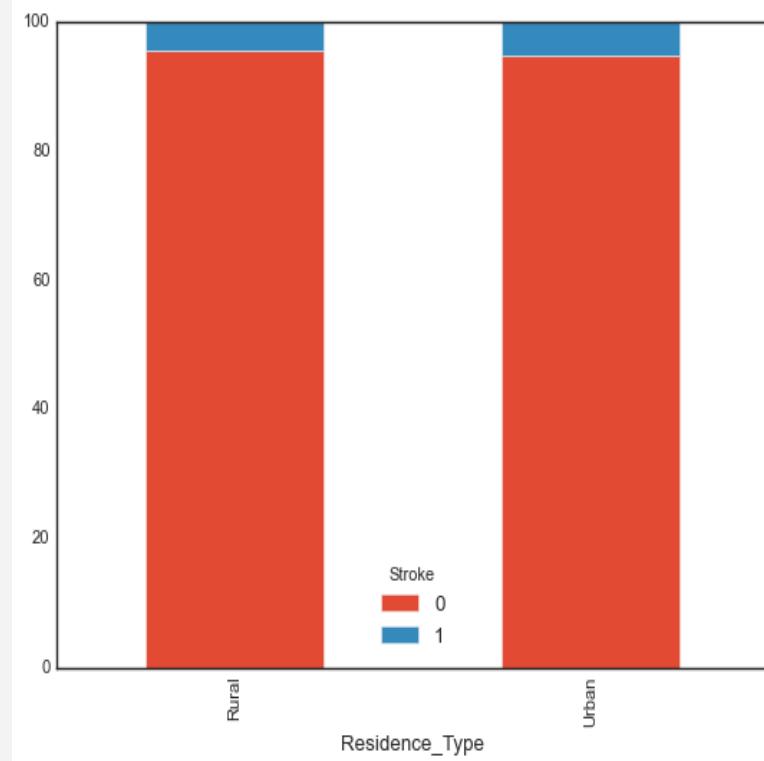
PERSONAL ANALYSIS (EVER MARRIED)



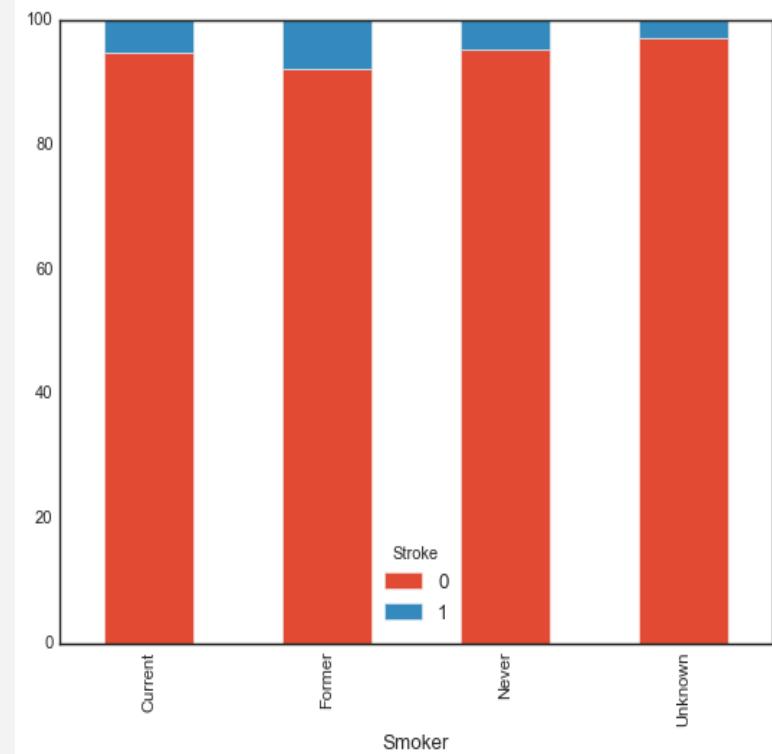
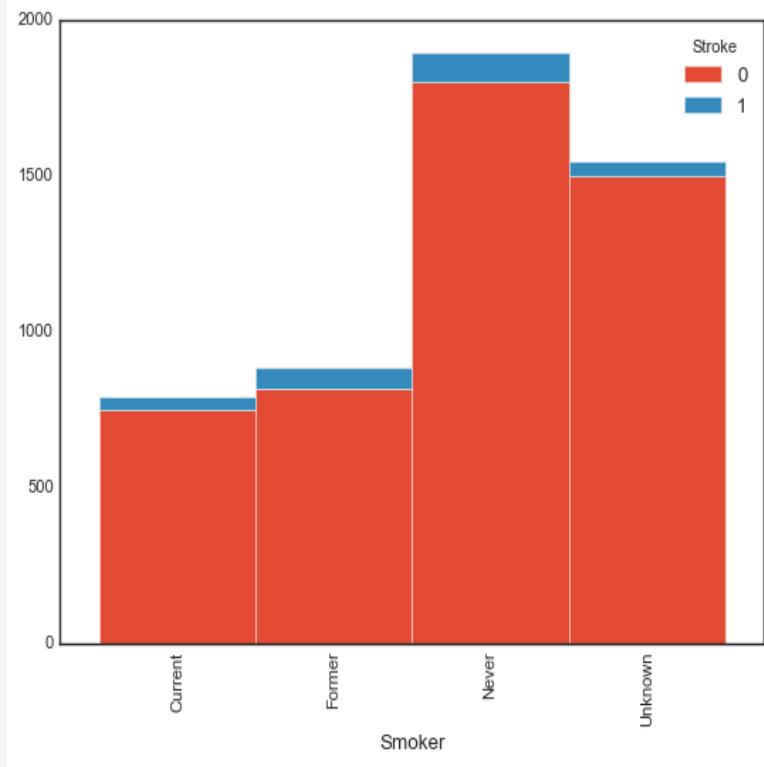
PERSONAL ANALYSIS (WORK TYPE)



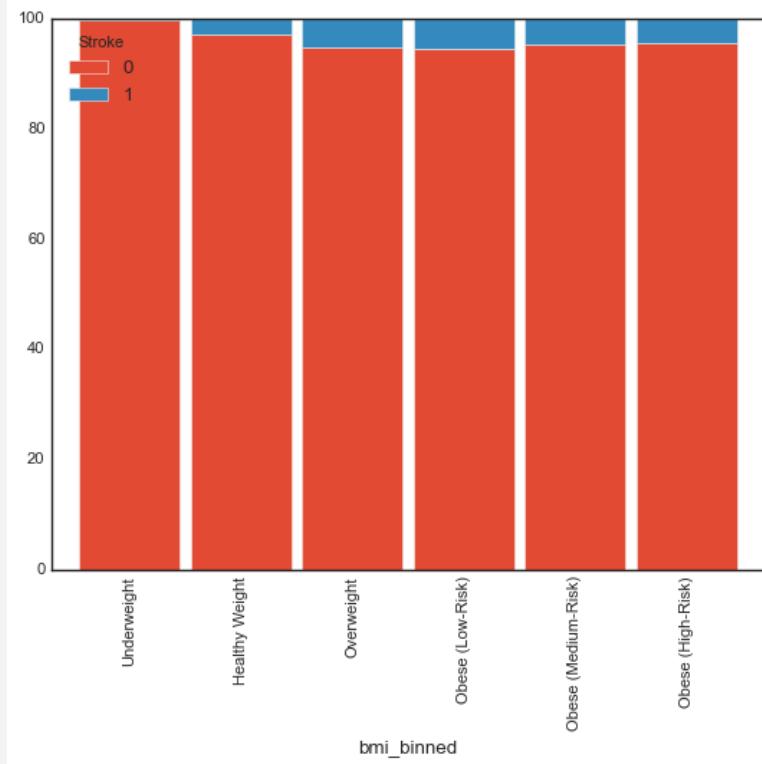
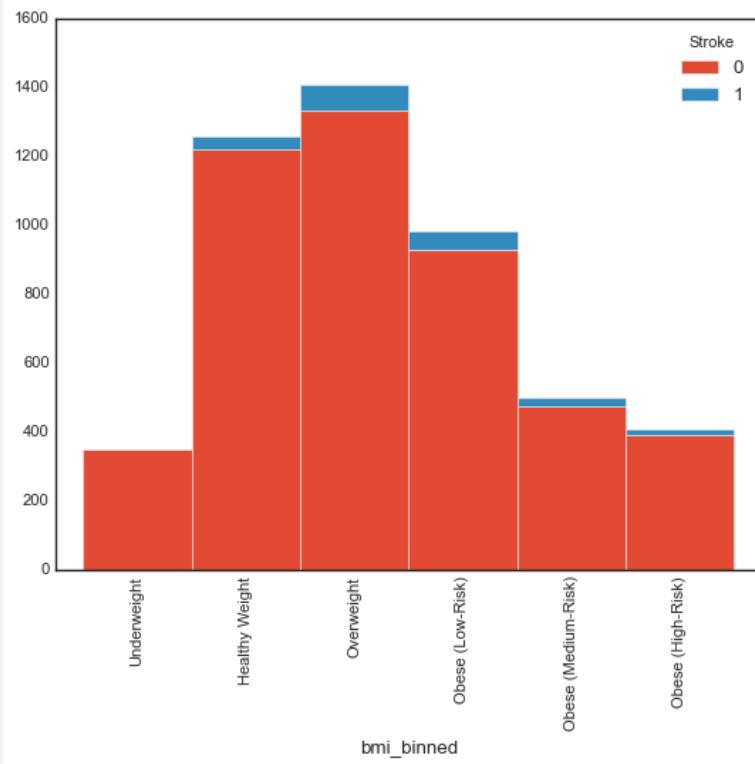
PERSONAL ANALYSIS (RESIDENCE TYPE)



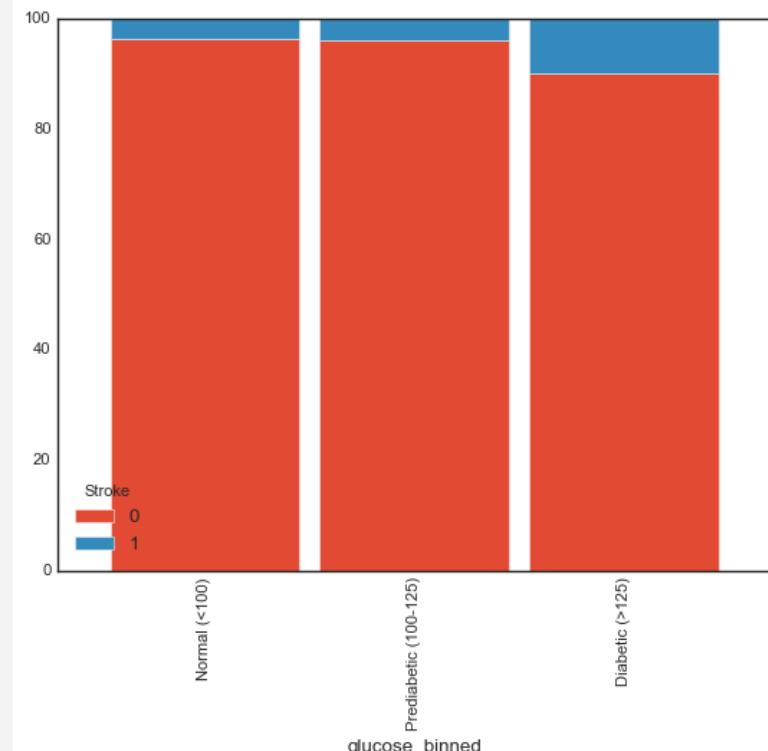
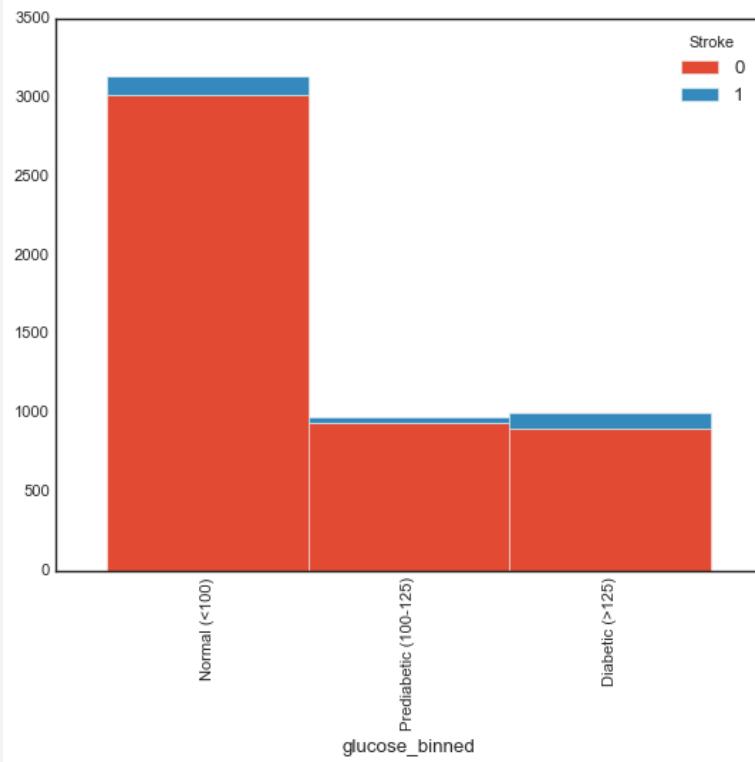
PERSONAL ANALYSIS (SMOKING STATUS)



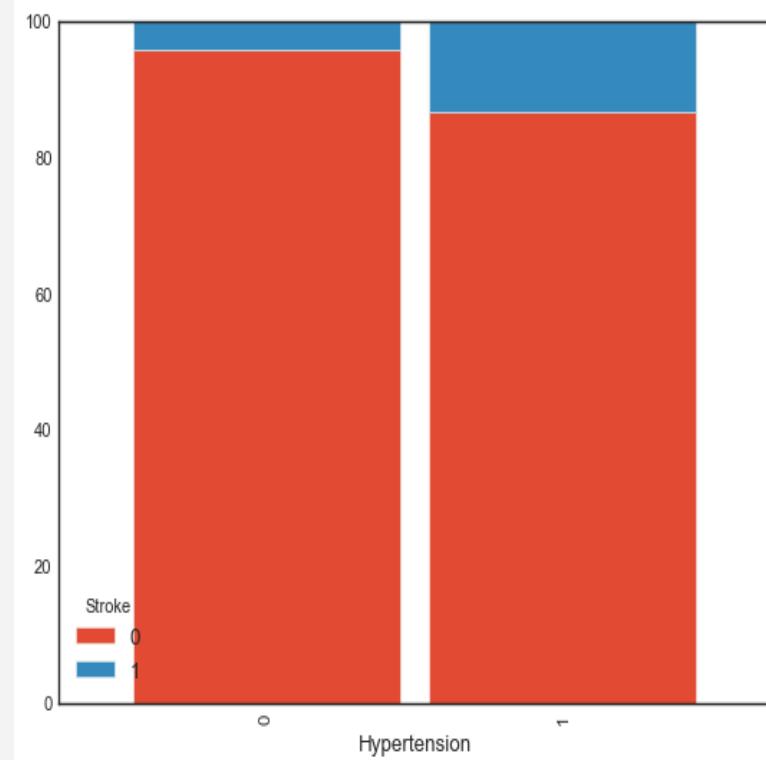
MEDICAL ANALYSIS (BMI)



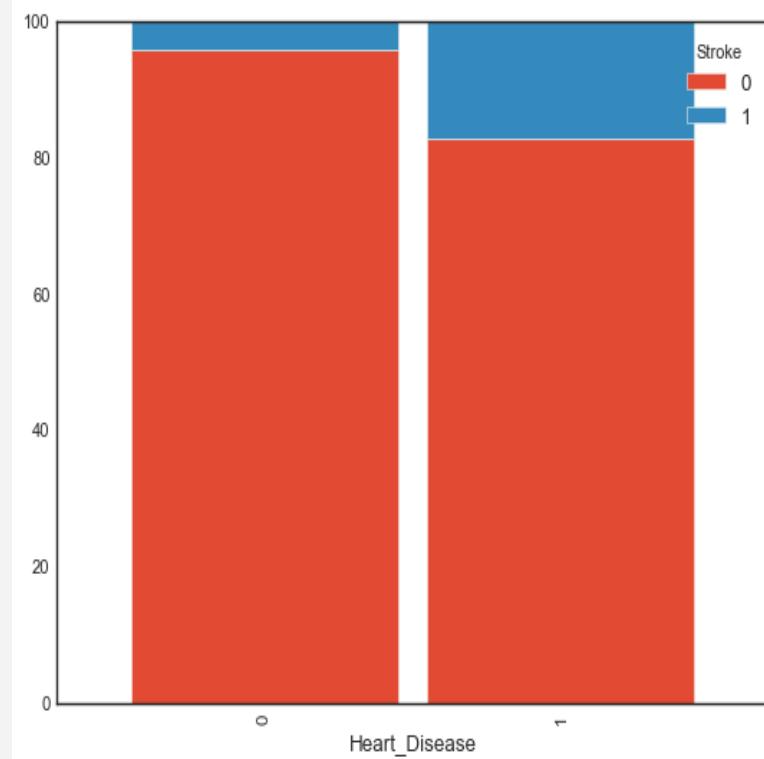
MEDICAL ANALYSIS (AVG GLUCOSE)



MEDICAL ANALYSIS (HYPERTENSION)



MEDICAL ANALYSIS (HEART DISEASE)



EDA SUMMARY

Demographics

Stroke risk increases among patients that:

- Are greater in “Age”

* Stroke risk between “Genders” is undetermined from the dataset

Personal

Stroke risk increases among patients that:

- Are or were married at one point in time
- Are “Self-Employed”, “Private” and “Government” employed workers
- Were “Current” or “Former” smokers

* Stroke risk between “Residence Type” is undetermined from the dataset

Medical

Stroke risk increases among patients that:

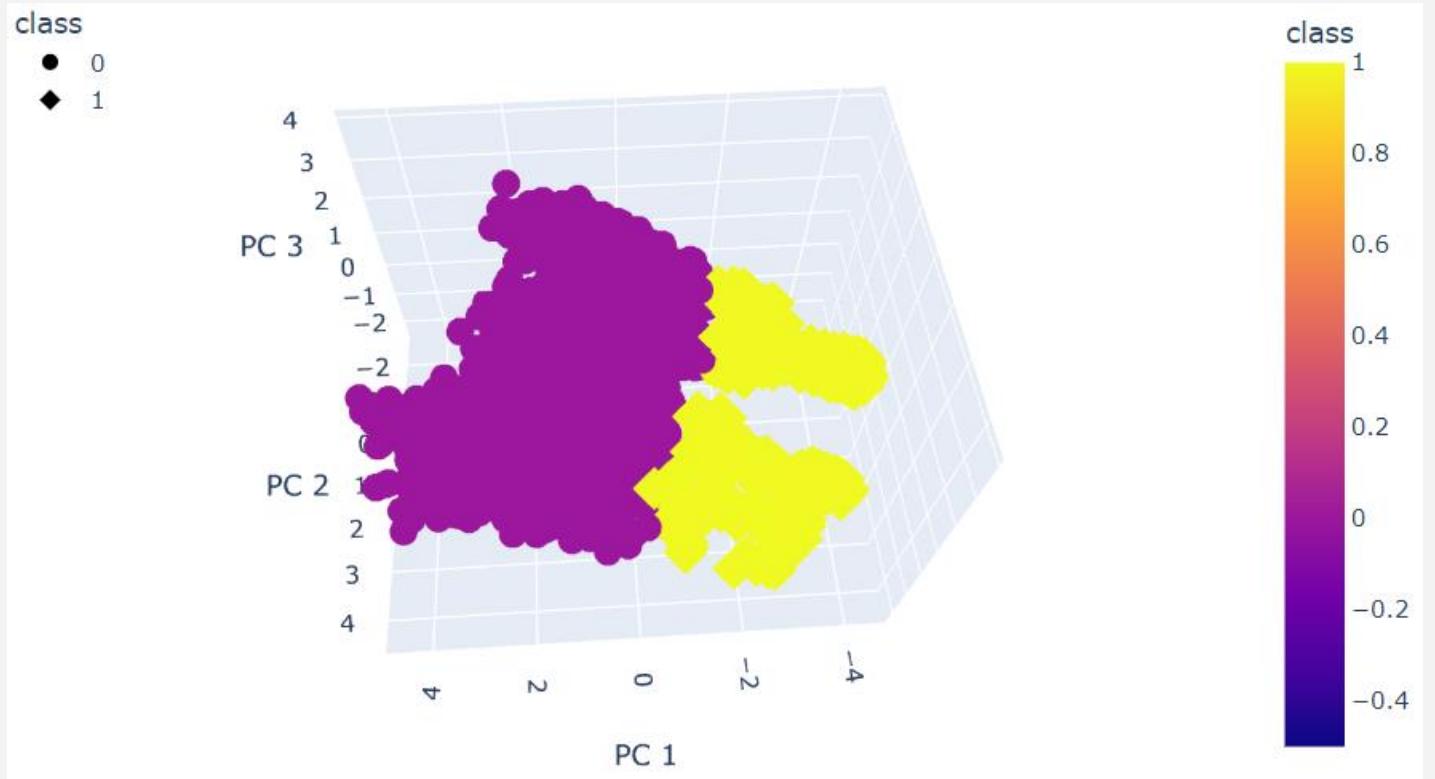
- Are “Overweight” or “Obese”
- Have “Diabetes”
- Have “Hypertension”
- Have “Heart Disease”

04

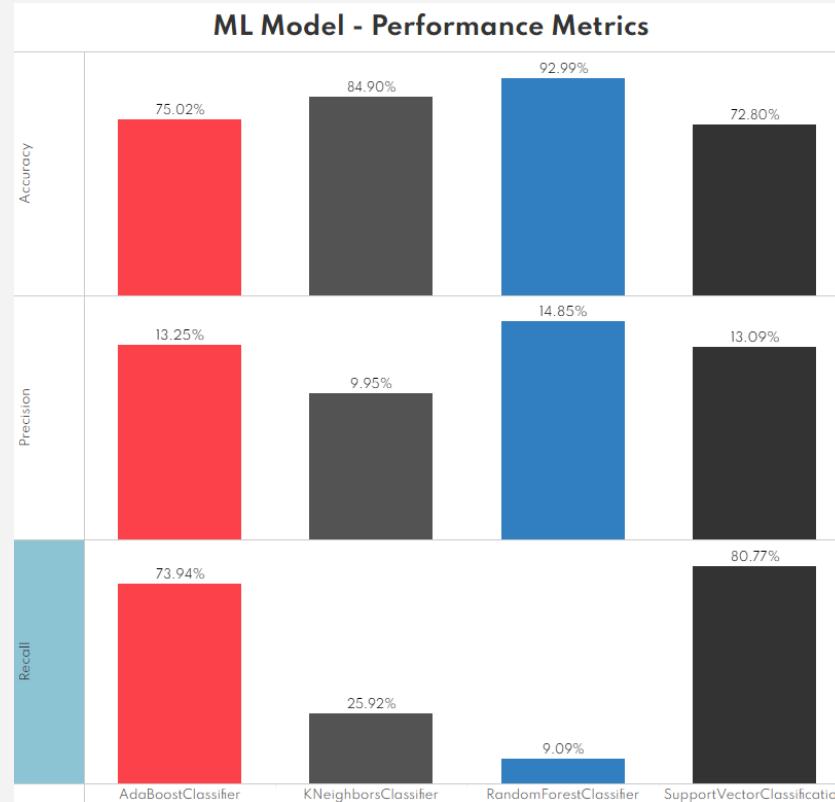
ML MODEL



ANALYSIS



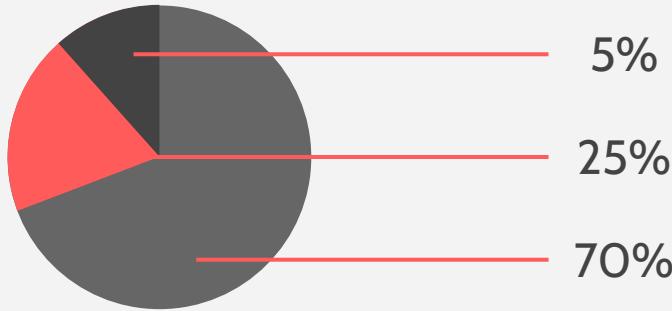
ANALYSIS



ANALYSIS

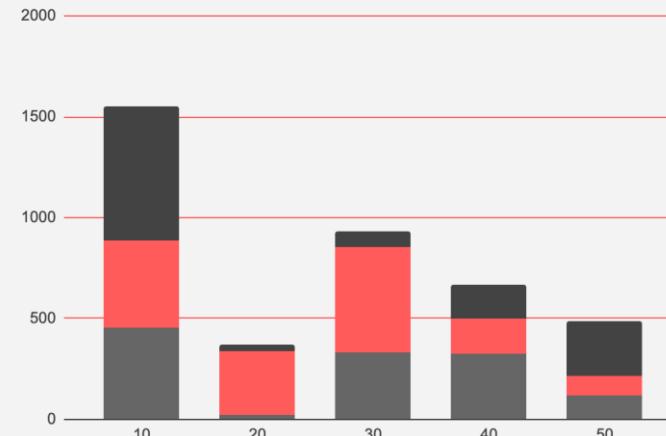
● Pluto ● Sun ● Jupiter

EVOLUTION



120,000,000
Important number

PREVALENCE



Follow the link in the graph to modify its data and then paste the new one here. [For more info, click here](#)

9h 55m 23s

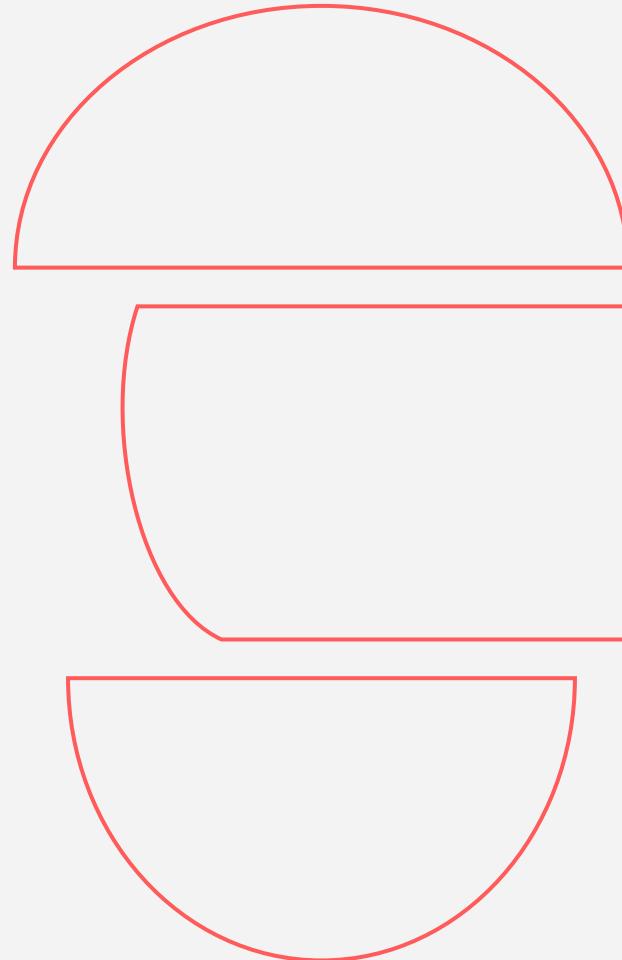
Is Jupiter's rotation period

333,000,000

Earths is the Sun's mass

386,000 km

Is the distance between Earth and the Moon



RECOMMENDATIONS

STEP 1

Venus is the second planet from the Sun



STEP 3

Despite being red, Mars is a cold place



STEP 2

Mercury is the smallest planet

STEP 4

Neptune is very far from the Sun

EDA FINDINGS

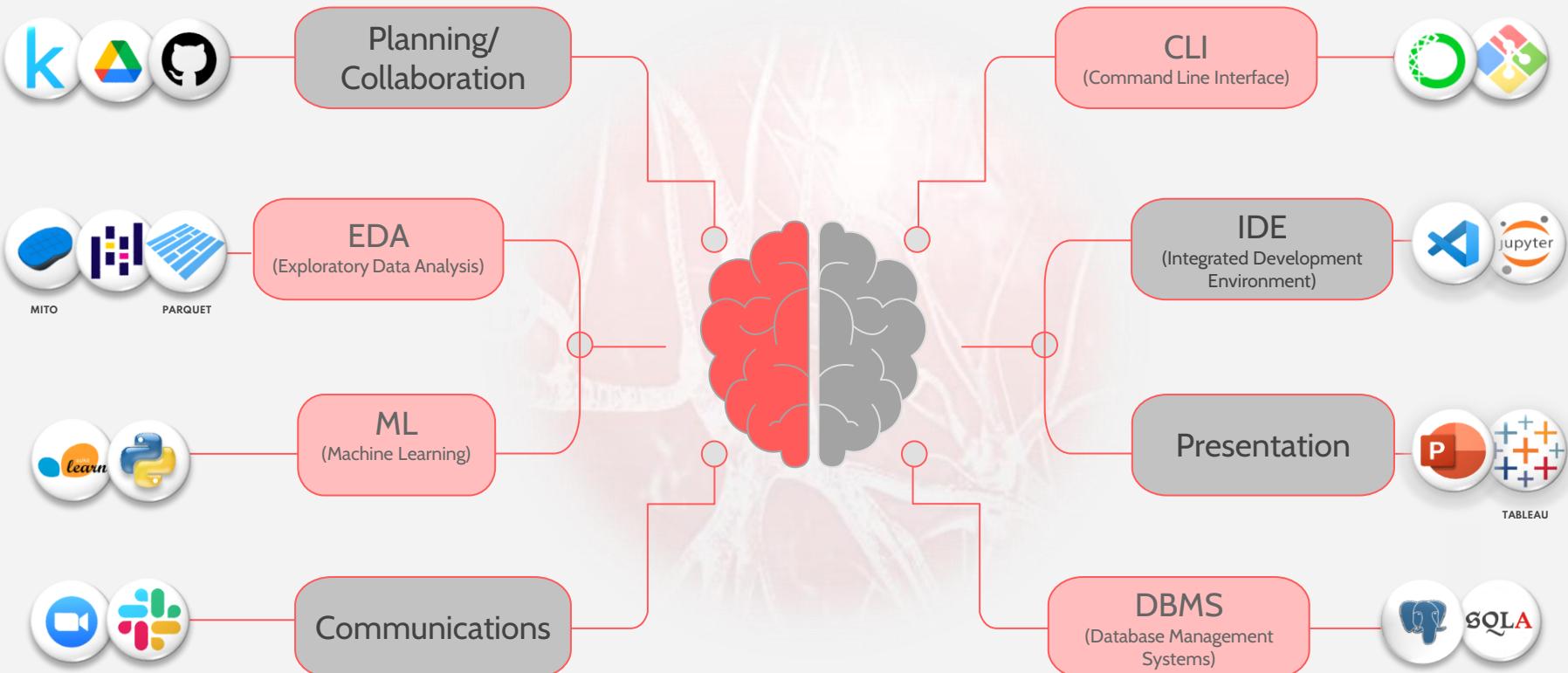
| | Pandas | PostgreSQL |
|---------|---|---|
| Mercury |  |  |
| Venus |  |  |
| Mars |  |  |
| Saturn |  |  |

05

TOOLS



PROJECT FRAMEWORK



06

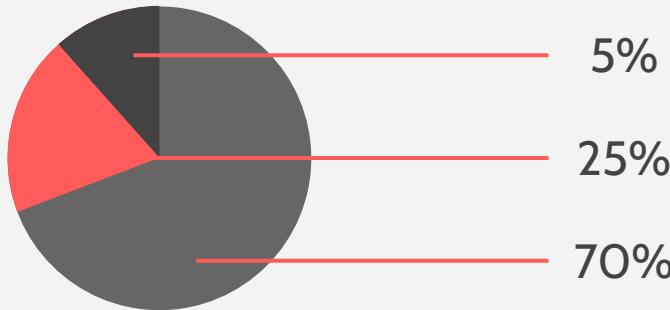
CONCLUSIONS



RESULTS

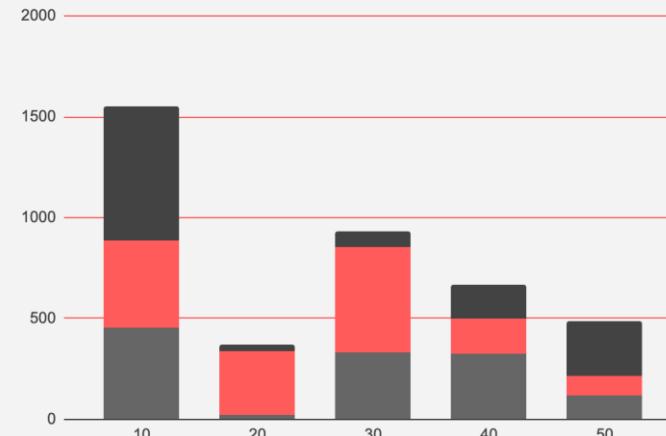
● Pluto ● Sun ● Jupiter

EVOLUTION



120,000,000
Important number

PREVALENCE



Follow the link in the graph to modify its data and then paste the new one here. [For more info, click here](#)

9h 55m 23s

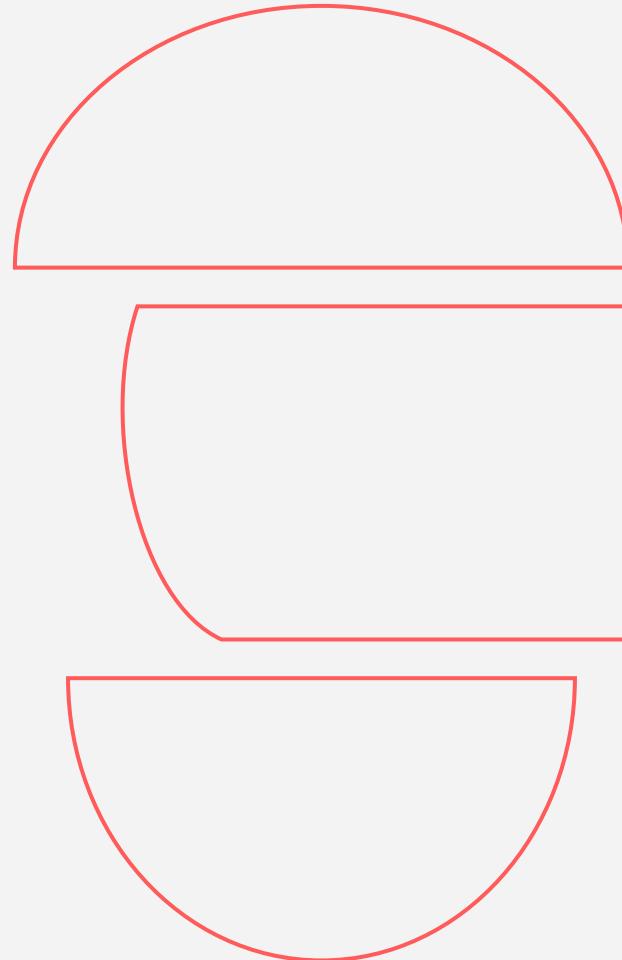
Is Jupiter's rotation period

333,000,000

Earths is the Sun's mass

386,000 km

Is the distance between Earth and the Moon



WHAT WOULD WE HAVE DONE DIFFERENTLY?

1. Find a dataset with more datapoints (specifically one with more positive stroke cases)
2. Exhaust options for ML Models
3. Go deeper into finding correlations between features/combination-of-features with target
4. Attempt a Supervised ML model first and not focus so intently on supervised models
5. Attempt a Deep Learning model as we believe it would be well suited for this dataset
6. Develop a webpage using Javascript that allows users to input their information and assess their personal stroke risk

THANKS!

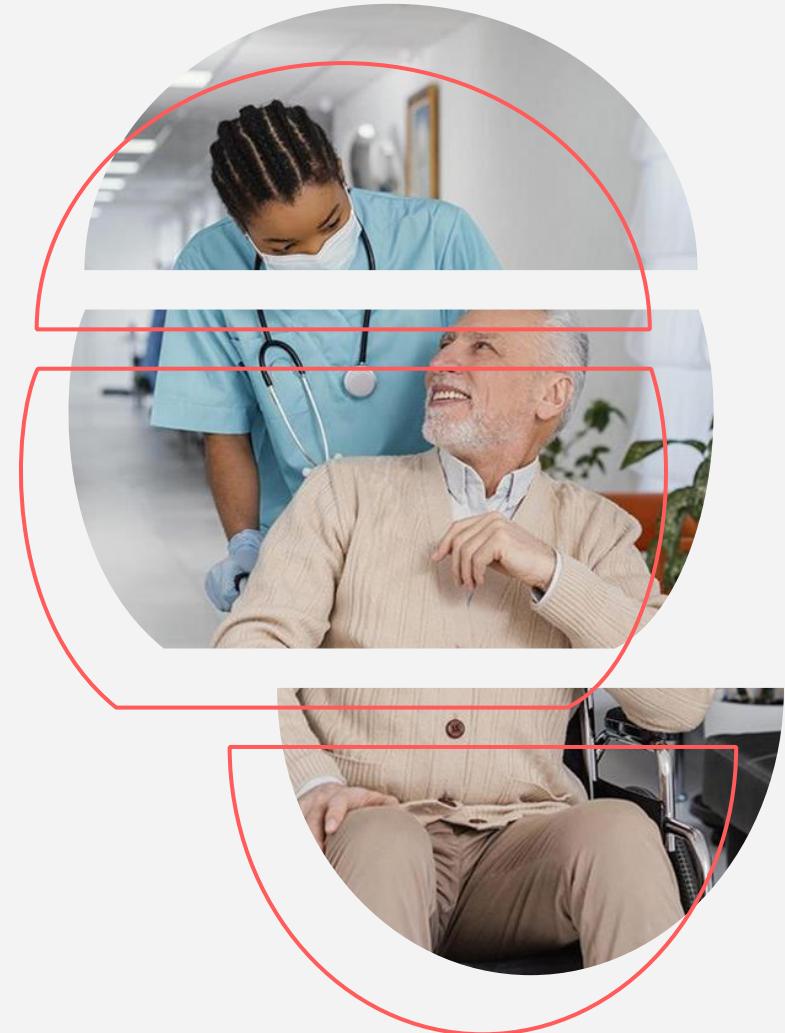


DO YOU HAVE ANY QUESTIONS?

info@SAML.com

+1 512 555 SAML

https://github.com/boborodono/San_Antonio

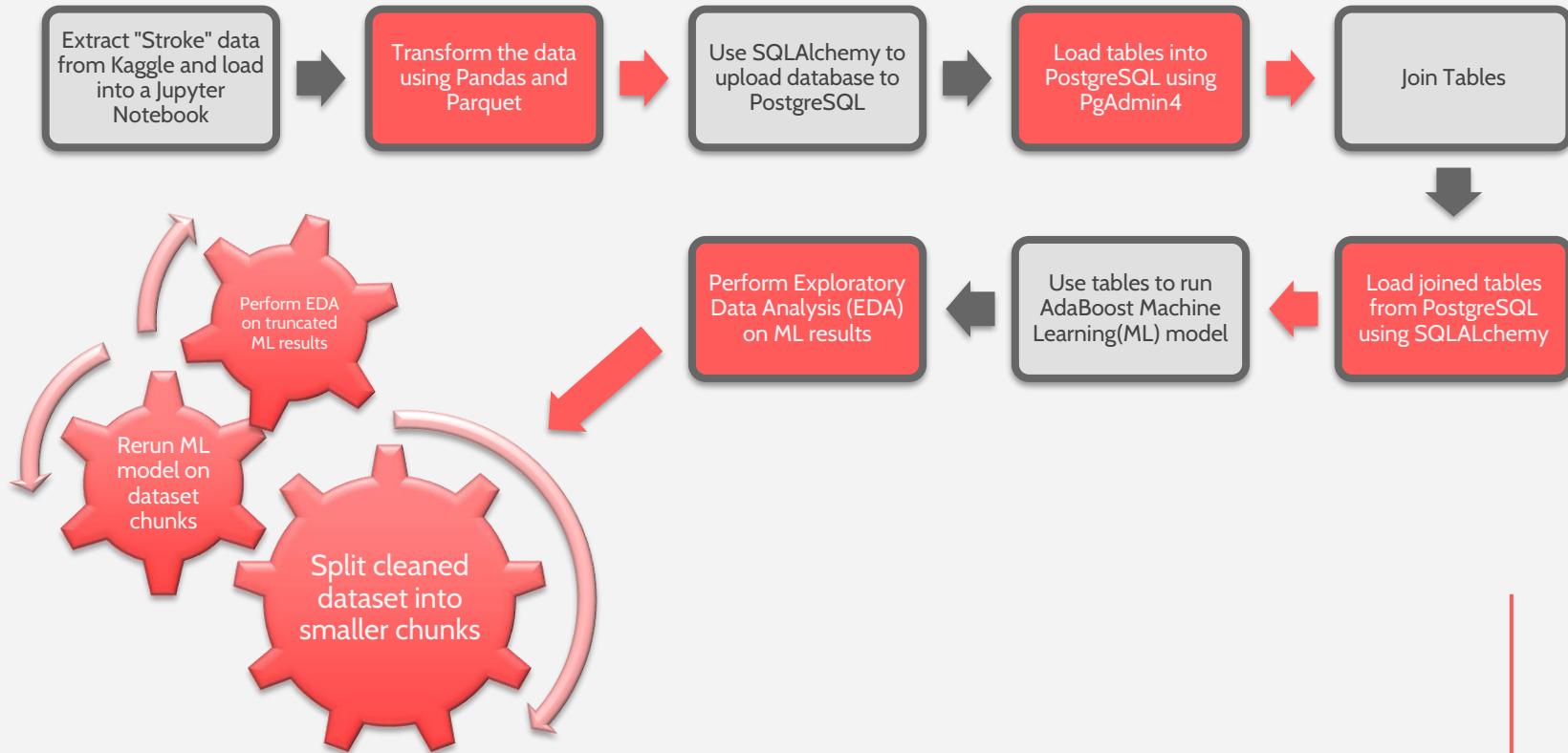




**END OF
SLIDE DECK**

PROJECT OUTLINE

PROJECT OUTLINE



TECHNOLOGIES

| Languages | Tools | Collaboration & Storage | Communications | CLIs | IDEs | Presentation/Dashboard |
|---|--|--|--|--|--|--|
|  PYTHON |  PANDAS |  GOOGLE DRIVE |  SLACK |  ANACONDA |  JUPYTER NOTEBOOK |  TABLEAU |
|  POSTGRESQL |  MITO |  GITHUB |  ZOOM |  GITBASH |  VS CODE |  POWERPOINT |
| |  PARQUET |  KAGGLE | | |  PgADMIN | |
| |  SCIKIT-LEARN |  GIT | | | | |
|  SQLALCHEMY | | | | | | |



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Spartan

(<https://fonts.google.com/specimen/Spartan>)

Cabin

(<https://fonts.google.com/specimen/Cabin>)

#434343

#f3f3f3

#ff5b5b

#666666

**END OF
FONTS &
COLOR**

ABOUT THE DISEASE...



RECOMMENDATIONS

NEPTUNE

Mercury is the closest planet to the Sun and the smallest one



JUPITER

Venus has a beautiful name and is the second planet from the Sun



Despite being red, Mars is actually a cold place. It's full of iron oxide dust



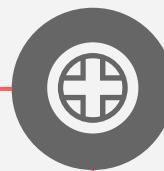
Saturn is a gas giant and has several rings. It's composed of hydrogen



RECOMMENDATIONS

STEP 1

Venus is the second planet from the Sun



STEP 3

Despite being red, Mars is a cold place



STEP 2

Mercury is the smallest planet

STEP 4

Neptune is very far from the Sun

CONCLUSIONS

Do you know what helps you make your point clear?

Lists like this one:

- They're simple
- You can organize your ideas clearly
- You'll never forget to buy milk!

And the most important thing: the audience won't miss the point of your presentation

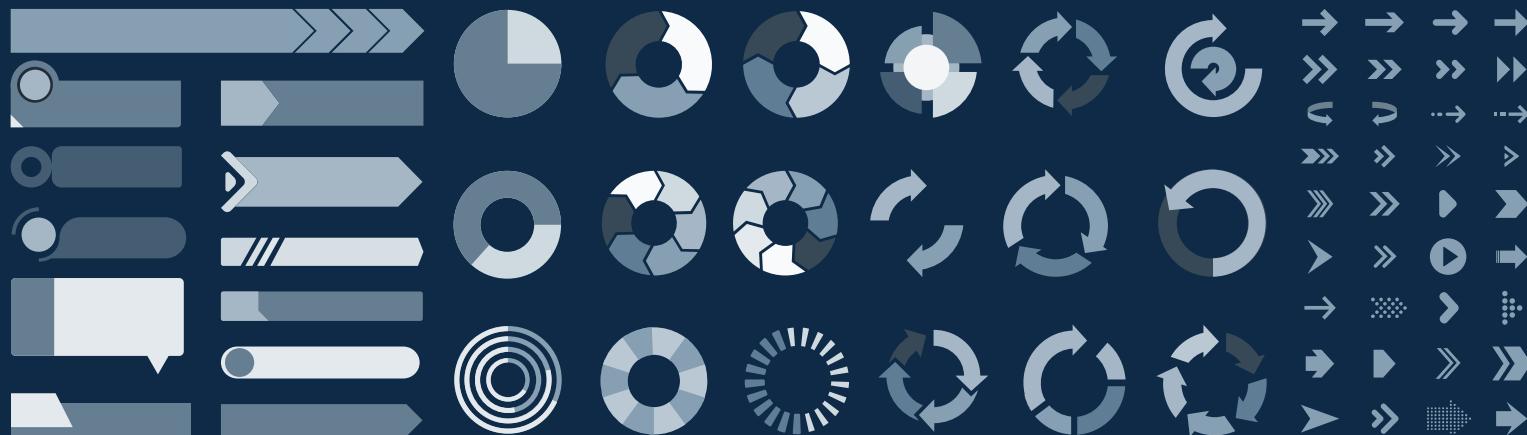


WRLD. CANCER AWRNSS. DAY PACK

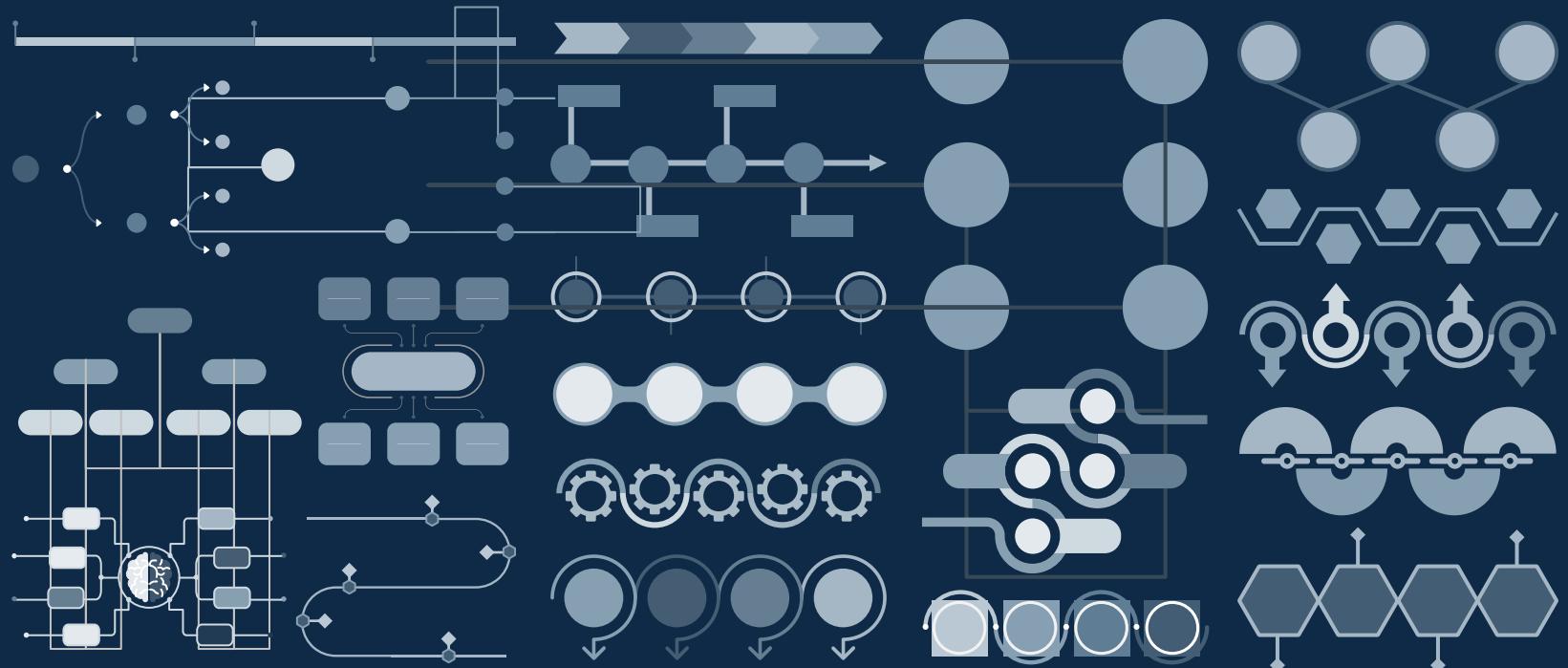


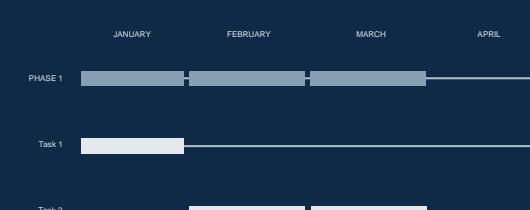
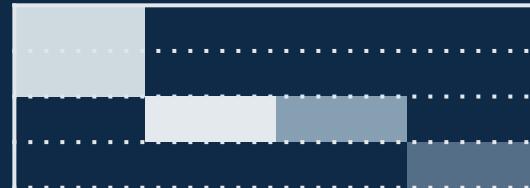
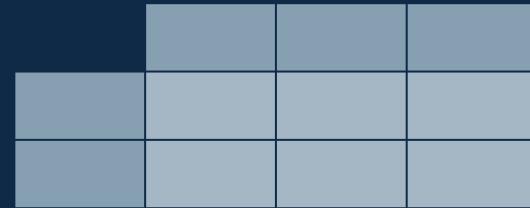
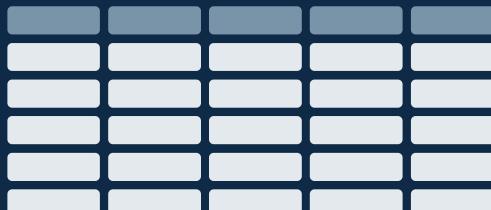
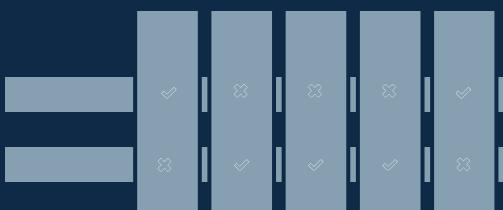
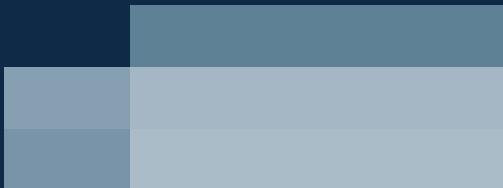
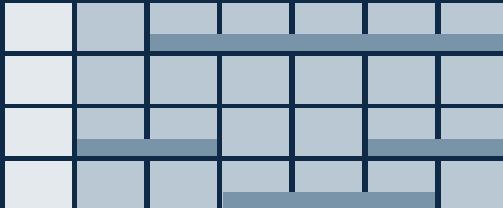
Use our editable graphic resources...

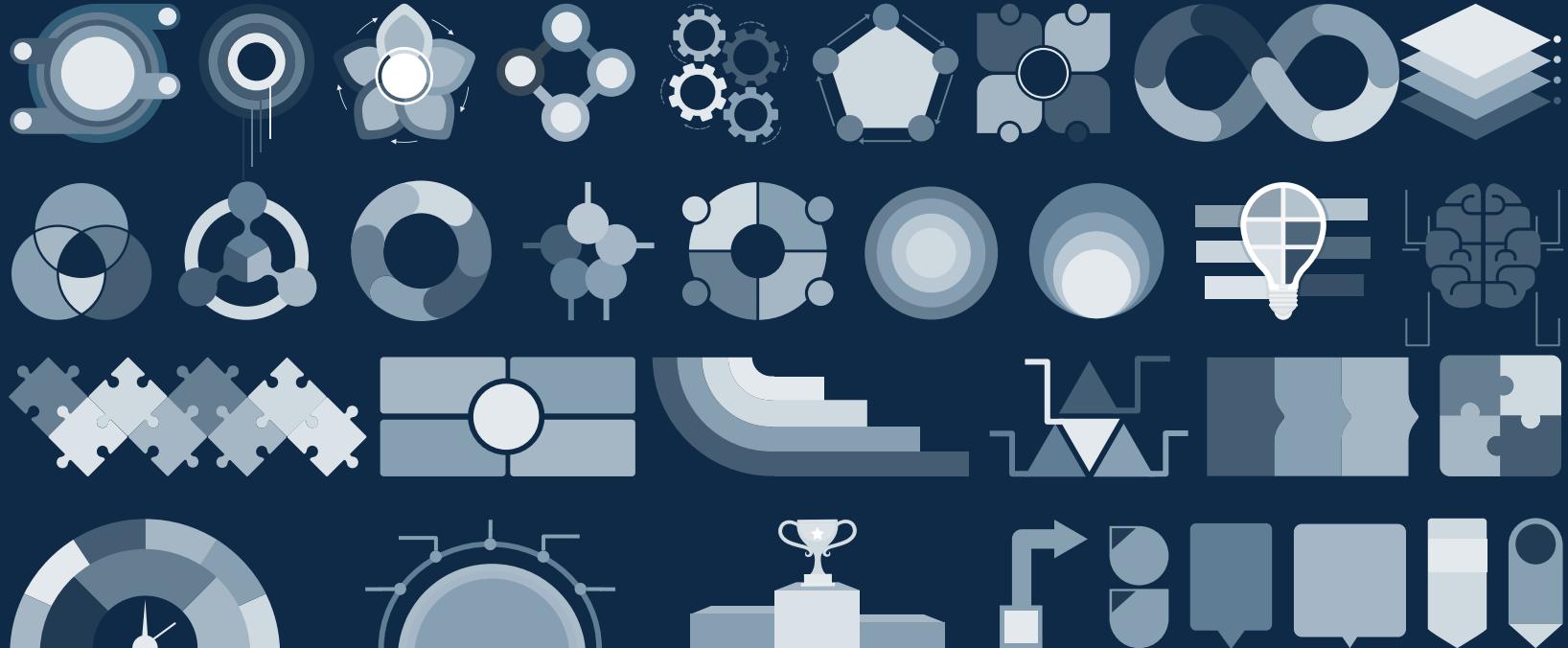
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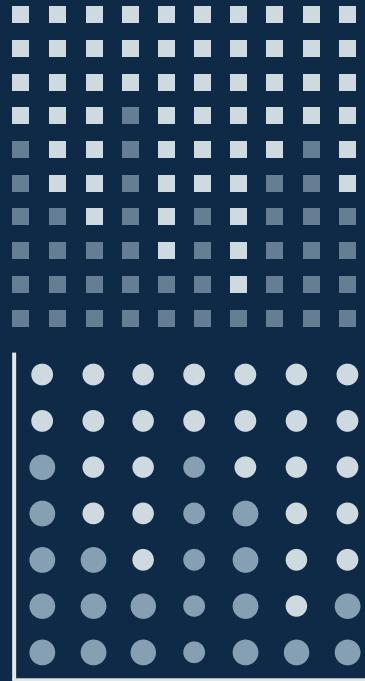












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Educational Icons



Medical Icons



Business Icons



Teamwork Icons



Help & Support Icons



Avatar Icons



Creative Process Icons



Performing Arts Icons



Nature Icons



SEO & Marketing Icons

