



Saving Lives through Stroke Prediction

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introduction

About 800,000 people have a stroke in the US each year according to the Mayo Clinic and the Centers for Disease Control and Prevention.

WHY I CHOOSE THIS TOPIC: My fathers heart surgery and the scare of my life.


WHAT I SEEK TO LEARN:

- Prevention
- Detection
- Prediction



The problem of our stakeholders.

- Increased patient death rate due to stroke.
- Increased hospital care resources to provide treatment.
- Decreased new patient admissions because of negative hospital outlook by potential new patients.
- Decreased patient revisits of heart patients and high-risk stroke patients.

The background features a composition of organic, flowing shapes in muted colors: a large olive green shape in the upper right, a light grey shape in the center, and a dark brown shape in the lower left. A stylized pine branch with needle-like leaves is visible in the upper left corner. Two thin, white, wavy lines curve across the bottom of the image.

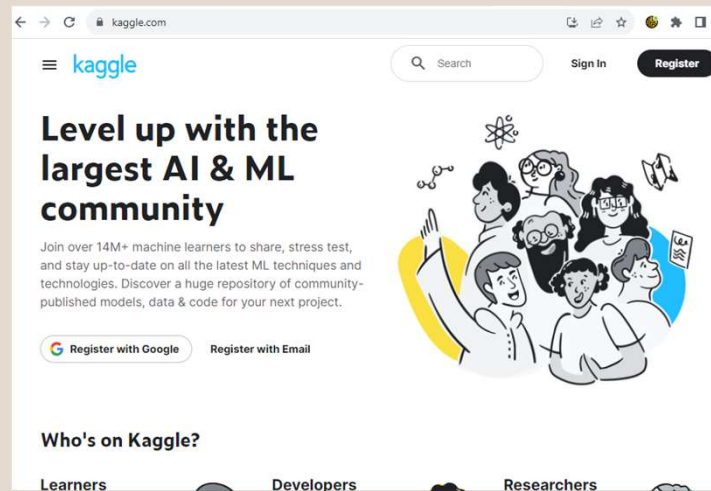
predicting a
stroke...

Machine Learning to predict stroke.

- Machine Learning uses computers, lots of complex math, and decision techniques to solve complex problems much faster than a person can. And with great accuracy.
- Some of these problems may be too complex and hard for us as people to ingest and make useful decisions with.
- We will use Machine Learning to predict the possibility of stroke in patients and use our findings to enhance our hospital care and patient services.

Where can we learn about stroke patients right now?

- <https://www.kaggle.com/>



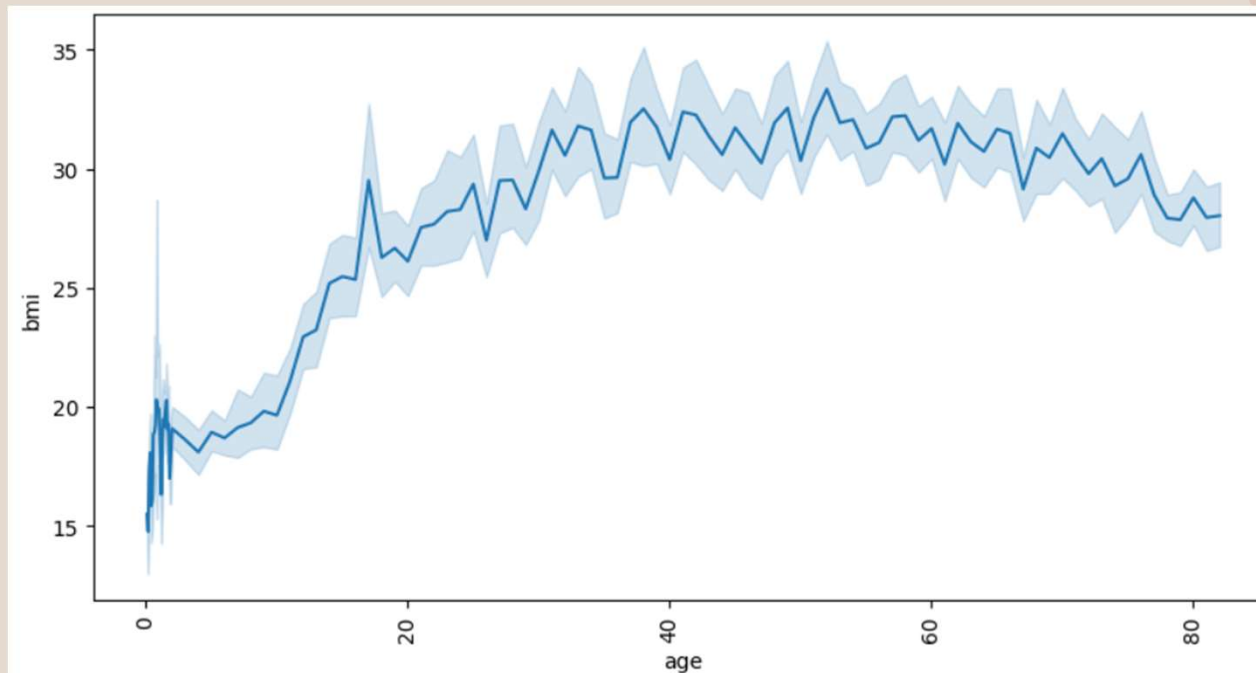
- Here is where I downloaded their stroke prediction to use for my study.

What's in the downloaded data?

- The data is a list of 5,110 people and 12 of recorded pieces of information about each of them. Some include...
1. Gender
 2. Age
 3. Hypertension
 4. Heart Disease
 5. Ever Married
 6. Type of work
 7. If they smoke.

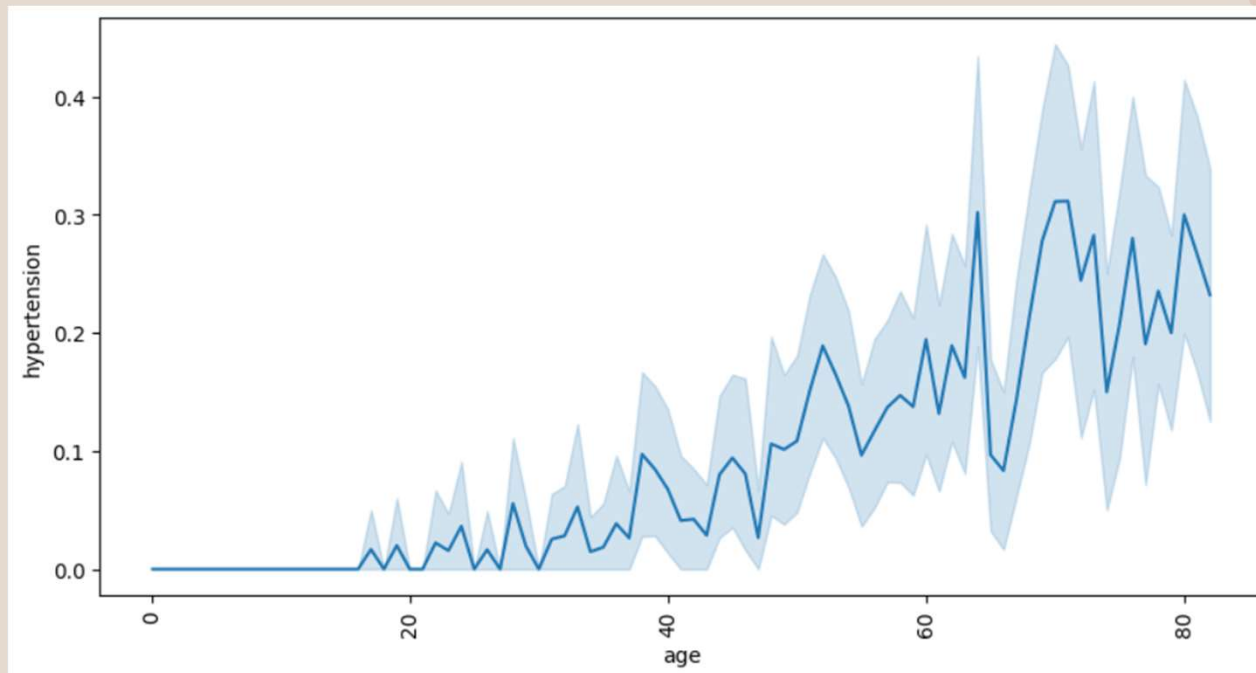
What some of the data shows?

Age vs Body Mass Index (BMI)



What some of the data shows?

Age vs Hypertension



What our predictive model says.

- Our initial predictive model has successfully predicted 83% of patients who will have a stroke.
- Successfully predicted 74% of patients that will not have a stroke.

These are a great baseline of prediction. But there is room for improvement!

What our data says.

- Our data is greatly imbalanced. Which negatively impacts model prediction accuracy.
- 95.12% of our data are patients who haven't had a stroke.
- 4.87% of or data are patients who have had a stroke.

WE NEED MORE DATA! MORE PRECISLEY, WE NEED A
LARGE AMOUNT OF EVEN DATA. EVEN DATA MAKES
MORE ACCURATE PREDICTIONS.

Final Suggestions

- We can automate our model's new findings as new data becomes available (daily or in near real-time).
- With new findings, better decisions can be made to directly increase hospital revenue and hospital growth.
- Better decisions can lead to less law suits against the hospital because of malpractice.



FINAL WORDS

Let's use our great technology to our great advantage and provide the best care and services available.

The background features a light beige base with large, soft-edged shapes in muted olive green and terracotta red. In the upper left, there are faint, grey line-art sketches of leaves or branches.

thank you

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