Postpartum Depression

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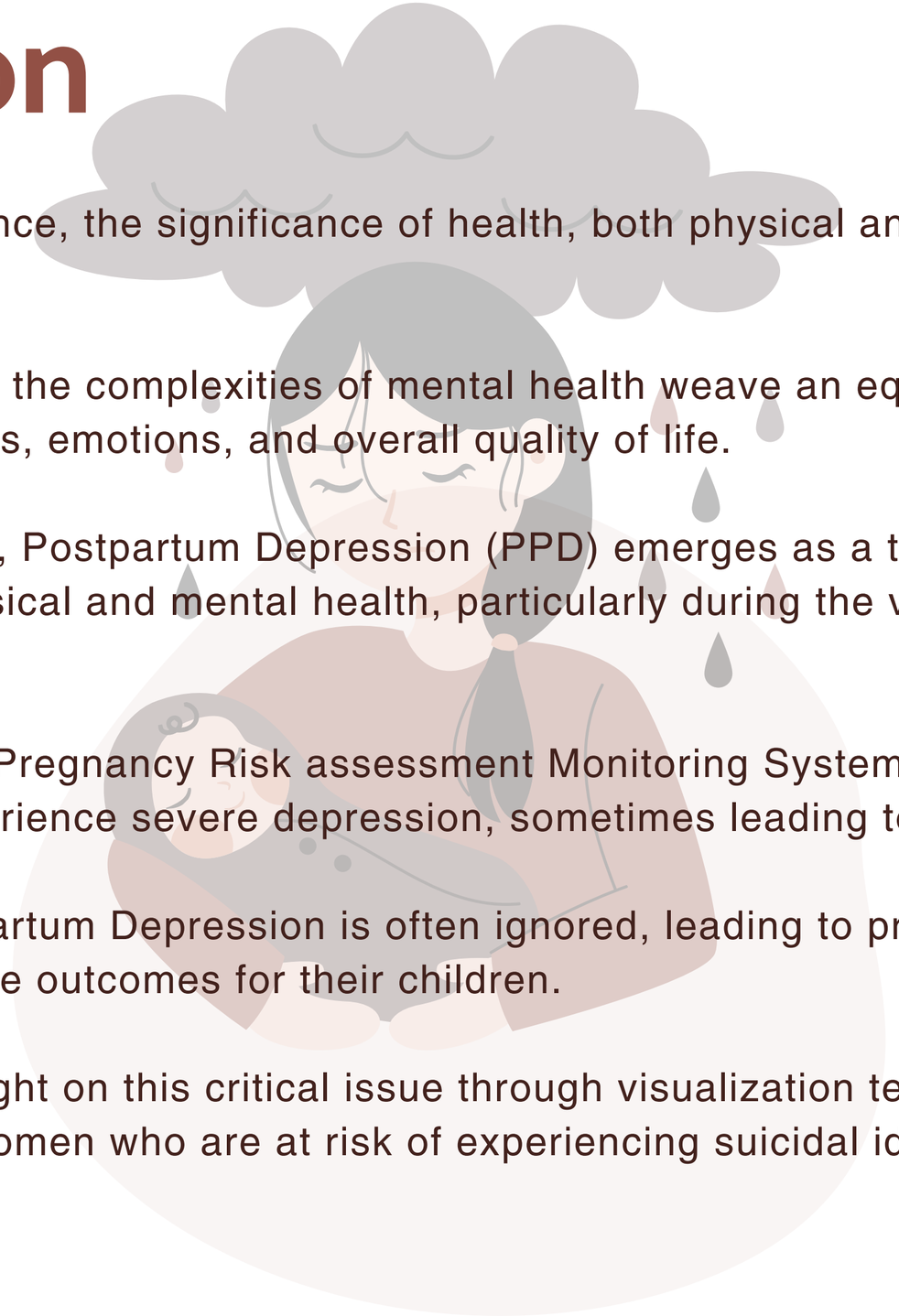
Introduction



- In the journey of human existence, the significance of health, both physical and mental, is incredibly important.
- Along with physical well-being, the complexities of mental health weave an equally crucial thread, shaping individuals' perceptions, emotions, and overall quality of life.
- Within this complex framework, Postpartum Depression (PPD) emerges as a touching reminder of the interdependence between physical and mental health, particularly during the vulnerable period following childbirth.
- As per the studies by PRAMS(Pregnancy Risk assessment Monitoring System), around 10-20% of women commit suicide or experience severe depression, sometimes leading to suicidal thoughts.
- Despite its prevalence, Post Partum Depression is often ignored, leading to prolonged suffering for mothers and potentially adverse outcomes for their children.
- Our team endeavors to shed light on this critical issue through visualization techniques and develop predictive models to identify women who are at risk of experiencing suicidal ideation or attempting suicide.

Objective

- Our project will undergo thorough evaluation utilizing a combination of analysis, visualization techniques using Tableau, and predictive modeling.

- We'll assess how well the predictive model can accurately identify new mothers who are at risk of experiencing suicidal thoughts or attempts based on their reported symptoms of postpartum depression.

- Our successful project will have a predictive model that reliably predicts which individuals are more likely to experience suicidal thoughts or behaviors

- A successful project will demonstrate that the predictive model provides significant value in terms of improved patient outcomes and healthcare efficiency without imposing excessive financial burden.

- By coupling advanced analytics with predictive modeling, our evaluation aims to not only enhance our understanding of PPD but also provide healthcare practitioners with actionable insights to identify and intervene with at-risk patients more effectively, ultimately reducing the incidence of maternal suicide associated with PPD

Project Flow

IDENTIFYING THE PROBLEM

DATA ACQUISITION AND SELECTION

CDC

kaggle

NIH National Library of Medicine
National Center for Biotechnology Information

PRE-PROCESSING & TRANSFORMING DATA

python™

pandas

jupyter

VISUALIZATION AND ANALYSIS

+ a b | e a u

X

MODEL DEVELOPMENT AND PREDICTION

scikit learn

Joblib

WEB APPLICATION

Flask
web development, one drop at a time

HTML

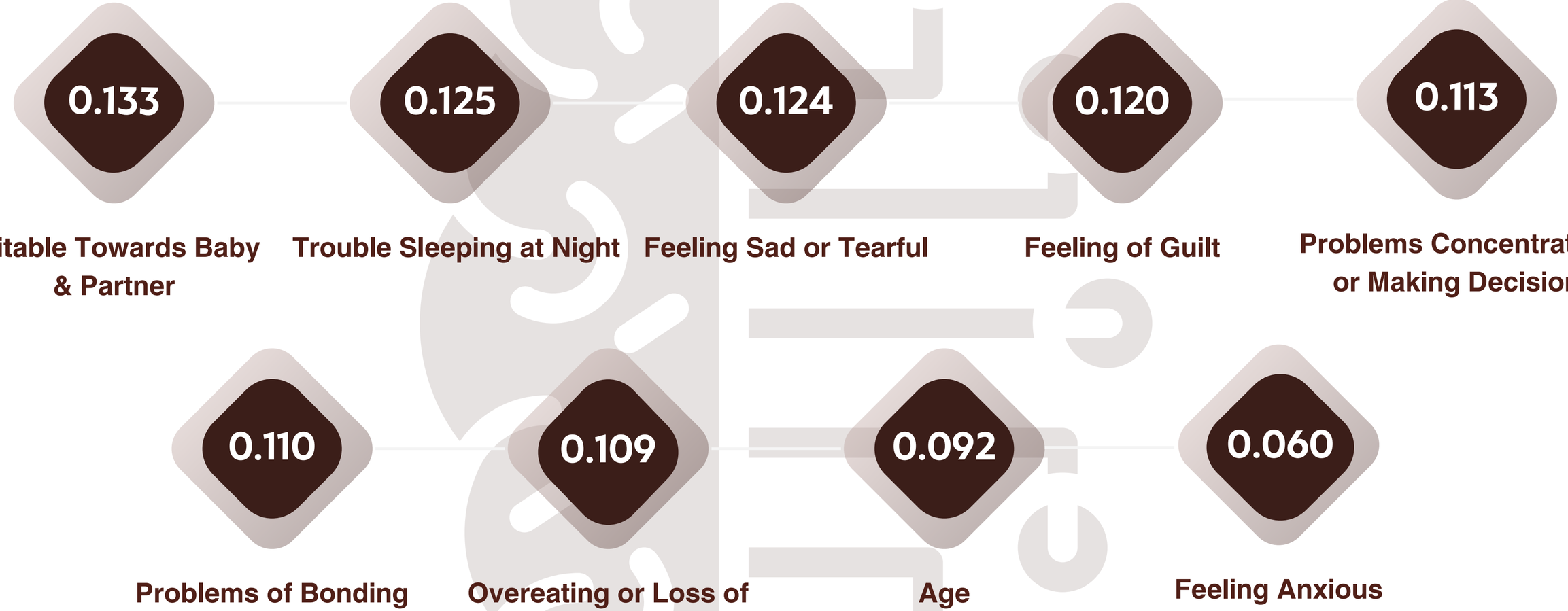
CSS

JS

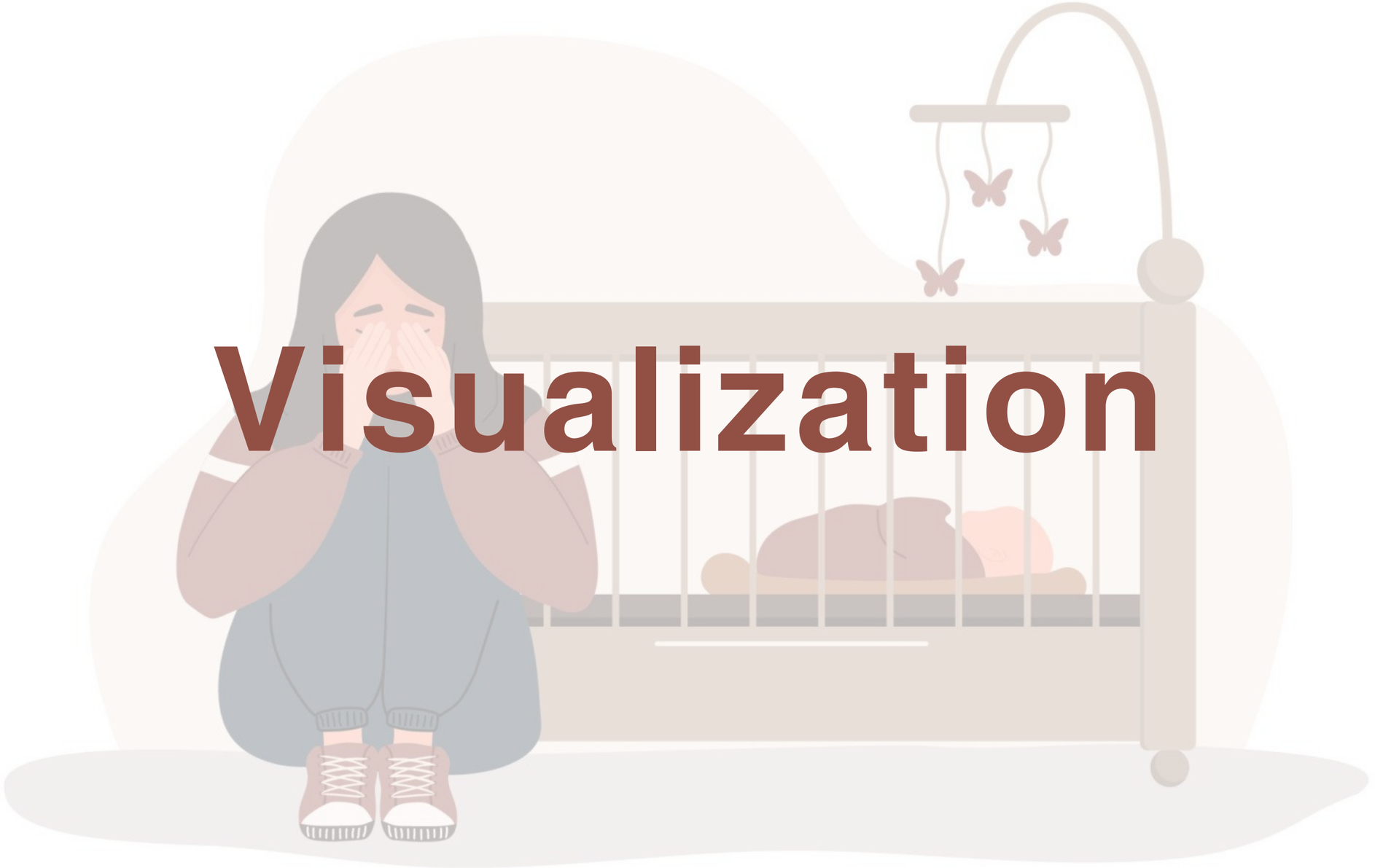
Data Set

- The dataset utilized in this project was originally collected from a medical hospital using questionnaire administered through survey.
- The original dataset initially consisted of 1503 records. To enhance its size, bootstrapping technique was used, resulting in an expansion to 150 thousand records.
- The original dataset was utilized for visualization purposes, leveraging its 1503 records to gain insights into the patterns and trends related to postpartum depression.
- To meet the requirements of machine learning algorithms, which typically perform better with larger datasets, we applied bootstrapping techniques to augment the dataset. This process expanded the dataset, enabling more robust model training and evaluation.

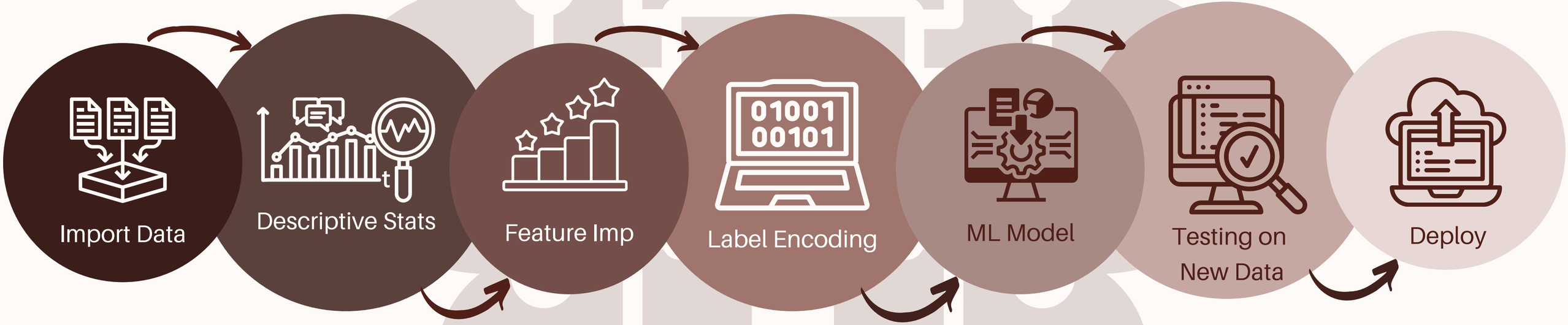
Features & Their Impact



Visualization



Machine Learning



Web App

app.ipynb (6) - JupyterLab

127.0.0.1:5000

127.0.0.1:5000

St. Clair NumPy pandas scikit-learn Category Encoders keras Drive Login

Postpartum Depression

What is the Age of the Patient?

Choose One

Is the Patient Feeling Sad or Tearful?

Choose One

Does the Patient get Irritable Towards Baby &/or her Partner?

Choose One

Does the patient have any Trouble Sleeping at Night?

Choose One

Is the patient Facing Problems Concentrating or Making Decisions?

Choose One

Is the Patient Overeating or feeling the Loss of Appetite?

Choose One

Is the patient Feeling Anxious?

Choose One

Is the patient Feeling Guilty?

5°

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Limitations

- This machine learning model, with its 93% accuracy, serves as a predictive tool. While it may classify a patient as "extremely likely" to commit suicide, it's crucial to understand that this prediction does not guarantee the patient's actions. Human behavior is complex and influenced by various factors, and this model should be viewed as an aid rather than a definitive diagnosis.

- The original dataset used in this project comprised 1503 records. To enhance its size and statistical robustness, bootstrapping technique was applied, resulting in a significant increase in the dataset size.

Benefits

Early detection and intervention to prevent suicide

Implementation of precautionary measures recommended by healthcare professionals

Enhancement of mental well-being

Facilitation of patient experiences sharing to offer support and insights to others

Thank You!