**Exploring and Modeling**

**on Mental Health Data**

**: Insights from Kaggle Data Analysis**

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**Introduction**

Mental health challenges are becoming more visible across different sectors, affecting individuals in diverse ways. Understanding the factors that contribute to mental stress is essential for developing effective support systems. This research will explore mental health data using various classification models to identify key factors influencing mental health outcomes. Specifically, we will examine how variables such as mood swings, family history, treatment status, occupations, and time spent indoors affect mental health. By analyzing these factors through data models, we hope to uncover patterns that can help improve mental health management and prevention strategies.

This study seeks to address the following key question:

***Initial Research Question:***

How can we develop models to assess mental stress, and which factors are most influential in predicting mental health outcomes?

***Additional Research Questions:***

Question 1: What are the top five factors contributing to the escalation of stress levels in individuals?

Question 2: Does a family history of mental health issues influence whether individuals seek treatment for mental stress?

Question 3: What specific factors contribute to the increase in stress among students?

**Research Methods**

To achieve these objectives, we will perform the following tasks:

***Task 1. Data Acquisition and Preparation***

The dataset used in this study is available on Kaggle at this ([link](https://www.kaggle.com/datasets/bhavikjikadara/mental-health-dataset)). It contains 292,364 observations with 17 variables.

***Task 2. Exploratory Data Analysis and Data Visualization***

We will conduct exploratory data analysis to identify key trends, relationships, and distributions in the dataset.

***Task 3. Modeling and Evaluation***

Various classification models will be employed, including Logistic Regression, SVM, KNN, and Random Forest, to assess the impact of identified factors on mental health outcomes.

**Results**

**Conclusions**

In conclusion, the top five factors contributing to growing stress across all occupations include Mental Health History, Days Indoors, Work Interest, Mood Swings, and Changes in Habits. For students, the primary stressors are Changes in Habits, Days Indoors, Gender, Mood Swings, and Social Weakness. Individuals with a family history of mental health issues may be more likely to recognize their symptoms or seek treatment. To mitigate stress, it is important across all sectors to spend more time outdoors, acknowledge stress when experiencing changes in habits or frequent mood swings, and seek treatment when symptoms arise. The negative relationship between growing stress and treatment underscores the critical need to address stress proactively.

**Recommendations**

**Reference**

Git Repository: [**github**](https://github.com/sairachanak/6103-Team7.git)