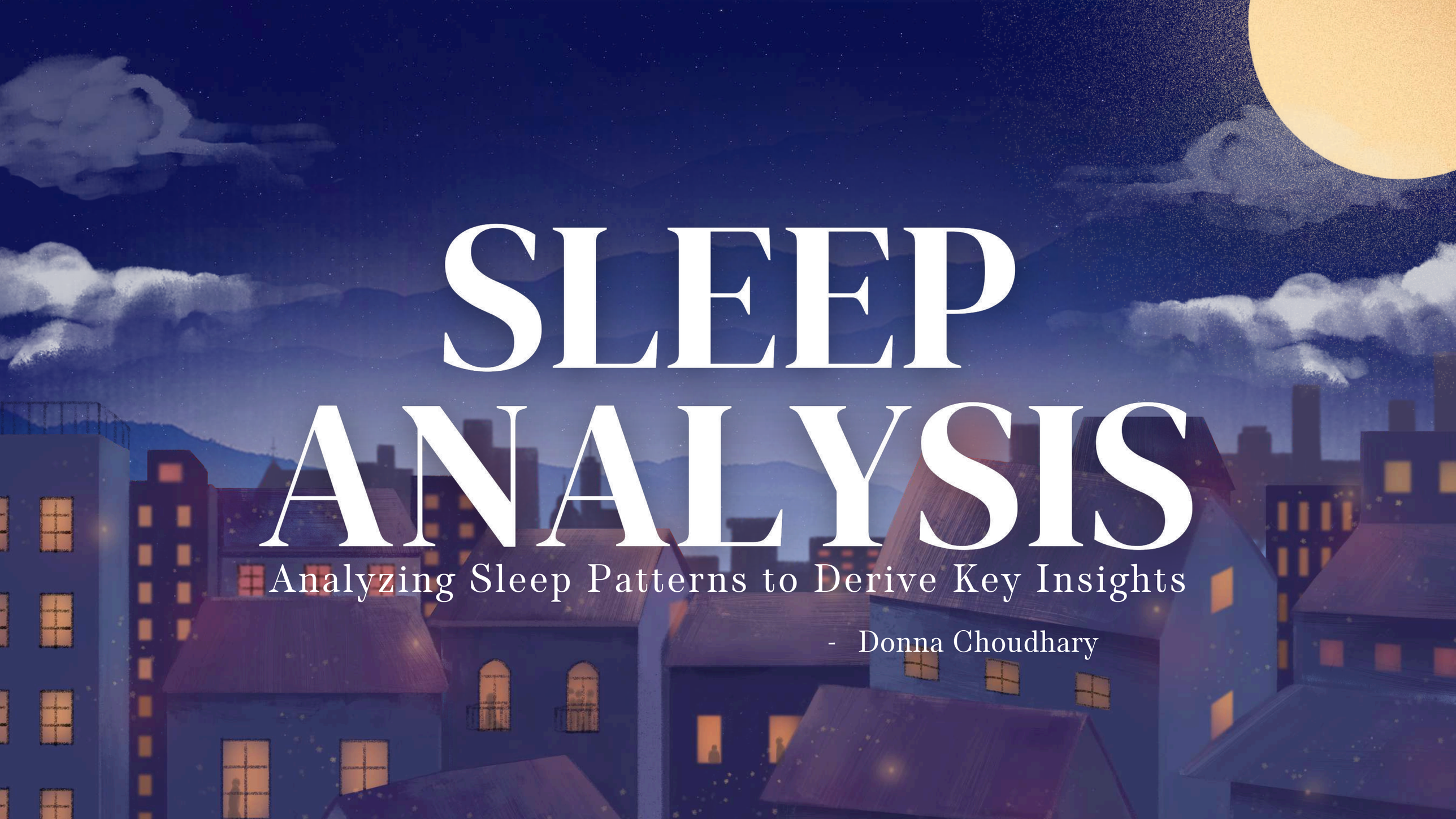

SLEEP ANALYSIS

Analyzing Sleep Patterns to Derive Key Insights

- Donna Choudhary

Project Objective

Understanding patterns in sleep duration, quality, and influencing factors

DATA COLLECTION

Source : Health Sleep Statistics (Kaggle)

Sample Size : Dataset contains sleep records from 1200 individuals

DATA PROCESSING AND CLEANING

Techniques : Handling missing values

Tools : Google Colab, Python(libraries)

ANALYSIS TECHNIQUES

- Libraries Used:
  - Pandas for data manipulation and cleaning
  - NumPy for efficient numerical operations
  - Matplotlib and Seaborn for data visualization
- Exploratory Data Analysis (EDA):

Visualizations: Created histograms, time series plots, and scatter plots to explore sleep patterns and distributions.

Insights: Used Seaborn for correlation heatmaps to analyze relationships between variables.

KEY FINDINGS

 **Age Group Focus**: The dataset centers on adults aged 20 to 50, providing insights into sleep patterns within this demographic.

 **Average Sleep Quality**: The overall sleep quality score averages at 7 out of 10, reflecting moderate restfulness across participants.

 **Gender Differences**: Women generally enjoy higher sleep quality, likely due to more frequent physical activity compared to their male counterparts.

 **Activity Impact**: Increased physical activity correlates strongly with improved sleep quality, underscoring the benefits of an active lifestyle for restful sleeep

Age Trend: Sleep quality exhibits a steady decline as age rises, suggesting a linear relationship between aging and reduced sleep efficiency.

Optimal Bedtime and Wake Time: A 10 PM bedtime aligns with optimal sleep quality, and those who wake up around 6:45 AM report the highest sleep quality within the group.

CHALLENGES

Data Quality & Cleaning

The Kaggle dataset contained some missing values and outliers. Applied data cleaning techniques using Pandas to handle missing values and used descriptive statistics to detect and manage outliers.

Visualizing Complex Relationships

Used Seaborn and Matplotlib to create clear, multi-dimensional visualizations, including correlation heatmaps and line plots, to effectively communicate trends.

Learning Curve with Libraries

Experimented with documentation and tutorials to maximize the libraries' functionalities and improve analytical workflows.

TOOLS & TECHNOLOGIES

Python - Pandas, Matplotlib, Seaborn, Numpy

Data Analysis Platform: Google Colab

Techniques: EDA, Data Cleaning & Processing


GOOD NIGHT