Lifestyle Habits and Their Influence on Sleep Efficiency

Exploring the Impact of Lifestyle Choices on Sleep Efficiency

Introduction

Sleep efficiency, a metric derived from sleep analysis, measures the quality and effectiveness of sleep by assessing the percentage of time spent asleep relative to the total time spent in bed.

Lifestyle choices such as caffeine consumption, alcohol intake, smoking, and exercise can influence sleep.

Our objective is to analyze the impact of these activities on sleep efficiency and explore their effects on sleep patterns.

Table of contents

01

Data Source

Data Source

The dataset, discovered on Kaggle, originates from a study in Morocco by ENSIAS AI engineering students.

The data was collected using a combination of self-reported surveys, actigraphy, and polysomnography, a sleep monitoring technique.

The dataset contains information about a group of test subjects and their sleep patterns like

Data Source

Some of the fields include

- Bedtime
- Wakeup Time
- Sleep Duration
- Sleep Efficiency
- Deep sleep percentage
- Awakenings
- Caffeine consumption
- Alcohol consumption
- Smoking status
- Exercise frequency

We aim to analyze the correlation between lifestyle and sleep efficiency, excluding certain non-impactful data fields such as wake-up time, sleep time, and gender.

Therefore, our focus is on a specific data field that directly influences our analysis

02

Preprocessing

Preprocessing - Missing Values

Missing Data in %

Awakenings	4.42%
Alcohol consumption	3.10%
Caffeine consumption	5.53%
Exercise frequency	1.33%

Total Number of Rows

452 → 388

Remove Instances with missing values

Preprocessing - Data Transformation

Binarization

No Alcohol vs Alcohol

No Caffeine vs Caffeine

No Exercise vs Exercise

Preprocessing - Data Transformation

Linear Scaling

Sleep Efficiency New = Sleep Efficiency x 100

03

Data Insights

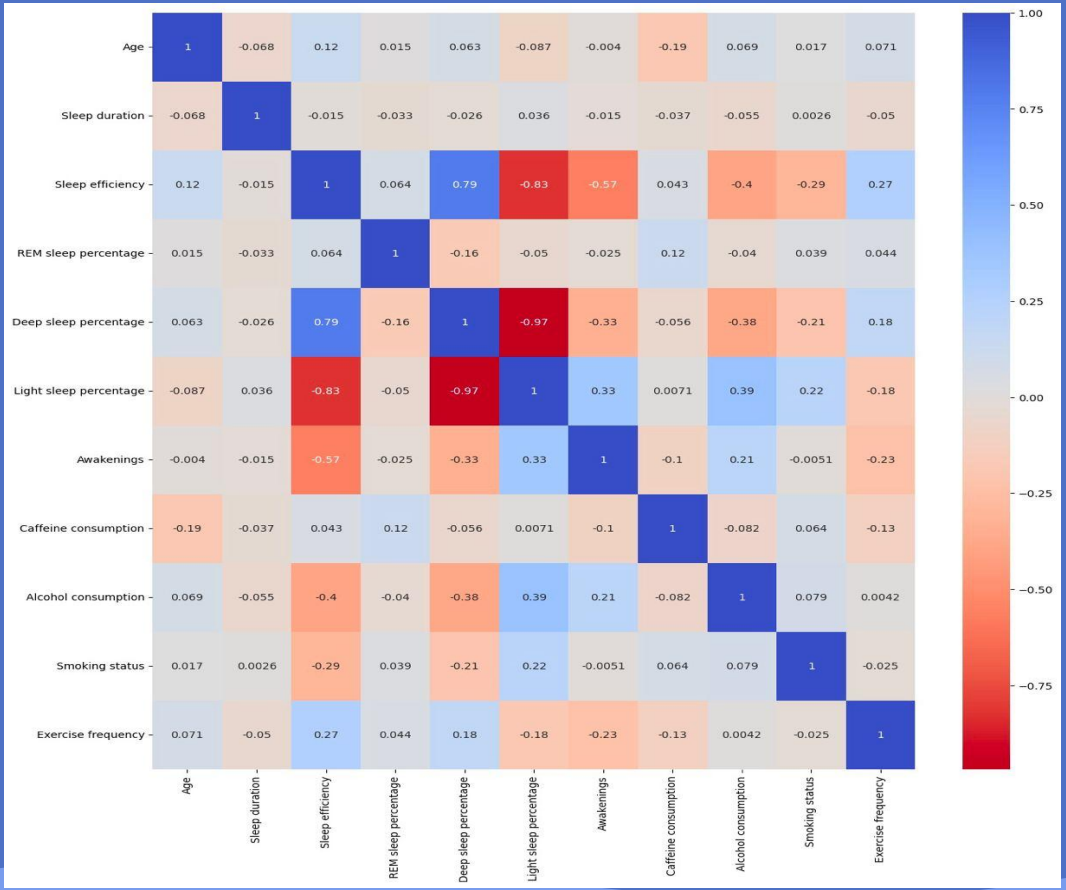
Data Insights

Through Exploratory Data Analysis, we uncovered valuable insights about key features in our dataset.

The correlation matrix analysis further highlighted relationships and patterns within the data.

By employing these analytical approaches, we gained a comprehensive understanding of the dataset's main features.

Data Insights



04

Design choices and challenges

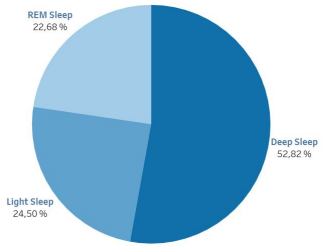
Design choices

The high amount of text asks for a simple **white background** in order to improve readability.

Monochromatic Colour Schemes have been used for depicting the different values of intensity for sleep phases (ordinal variables).

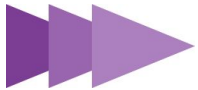
Hue: Blue representing the “calmness” quality of sleep, Orange representing the awakening states.

Brightness: different for each sleep state (the lighter the color, the lighter the sleep)



Design choices

The same Monochromatic Colour Scheme has been adopted for the other different pages of the Tableau Story, finding a **color scheme that would be immediately recognizable** by the user.



Purple hue for representing Alcohol use (associated with wine)

Yellow hue for representing Exercise frequency (associated with energy and activity)

Grey hue for representing Smoking habit (associated with the smoke)

Brown hue for representing Caffeine assumption (associated with coffee)

Challenges

1) **Team collaboration** is hindered in Tableau Public - it is not possible to work on the same visualization between colleagues.

2) **Screen resolution** and objects disposition in Dashboards and Story has emerged as a complicated accessibility issue.

3) Color sensitivity has been an issue during the design phase (having a **colourblind member** of the team).

Link To The Dashboard

Thank You!