Final Project – COSC/MATH 3570
Group: Win Rs
Group Members: Allan Akkathara, Katy Carter, Madeline Flint, Michael Hankins
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<u>**How You Can Sleep Better: A Data Analysis**</u>

Project Goals: The primary aim of this project is to conduct comprehensive data analysis to uncover the underlying factors contributing to poor sleep quality and to provide actionable insights for improving sleep habits. Our research question centers around understanding what demographic factors, medical conditions, and lifestyle habits correlate with poorer sleep quality, and how individuals can address these issues to enhance their overall sleep experience. We plan to introduce statistical analysis techniques learned in class, specifically logistical regression, and data visualization techniques that are focused on easy and clear readability, to identify patterns and relationships within the dataset.

Description of the Dataset: The dataset for our analysis encompasses a wide range of variables related to demographics, medical information, and sleep habits. The Sleep Health and Lifestyle Dataset comprises 400 rows and 13 columns, covering a wide range of variables related to sleep and daily habits. It includes details such as gender, age, occupation, sleep duration, quality of sleep, physical activity level, stress levels, BMI category, blood pressure, heart rate, daily steps, and the presence or absence of sleep disorders.

Important Insights within the dataset include:

- Comprehensive Sleep Metrics: Explore sleep duration, quality, and factors influencing sleep patterns.
- Lifestyle Factors: Analyze physical activity levels, stress levels, and BMI categories.
- Cardiovascular Health: Examine blood pressure and heart rate measurements.
- Sleep Disorder Analysis: Identify the occurrence of sleep disorders such as Insomnia and Sleep Apnea.

The dataset is substantial, comprising a diverse sample size to ensure representation across different demographic (specifically age, gender, and occupation) groups and sleep patterns. While the dataset matches our requirements for "tidy data", we will still employ necessary data importing techniques from class to ensure proper usage. Once we have analyzed our first dataset, we intend to include a second and possibly third data set to give analytical insight into *what* habits can be changed to ensure better health, *how* does our data back that, and *why* those changes can be effective.

Note: While we propose a focus on understanding sleep patterns and factors influencing sleep quality, we remain open to adapting our project topic post-submission based on emerging findings or evolving research interests.