Impact of Physical & Lifestyle factors on Sleep Health : Analysis

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DATE: 6TH AUGUST 2024

CLASS: ALY 6000 – INTRODUCTION TO ANALYTICS

Dataset Overview

Source of the dataset: https://www.kaggle.com/datasets/henryshan/sleep-health-and-lifestyle

Dataset Description:

- This dataset, contains 373 rows and 13 columns, encompasses a broad spectrum of variables associated with sleep and daily routines of the working group people aged between 24 to 59 years.

- It provides information on aspects like gender, age, profession, duration of sleep, sleep quality, level of physical activity, stress levels, BMI classification, and the existence or non-existence of sleep disorders.

Why Studying this data is Important?

◦ Adequate sleep is crucial for both mental and physical health, that influences conditions such as obesity, diabetes, and cardiovascular diseases.

◦ Understanding sleep's impact on health can guide public and organizations health interventions and policies.

Key Questions

1. Pattern of sleep across different gender and different age groups?

2. How does physical activity affect sleep?

3. How does BMI affect sleep?

4. How does stress correlate with sleep?

5. Occupation affects sleep?

Glimpse of Data

Count of Categorical variables – 4
Count of Numerical variables – 5

Categorical Variables:
1. Gender – Male / Female
2. BMI category – Normal / Overweight / Obese
3. Sleep disorder – Insomnia / Sleep Apnea / None
4. Occupation

Summary of Numerical Variables:

	Age (in Years)	Quality of sleep (in hours)	Physical activity (in mins/day)	Stress level (Rated 0-10)	Heart Rate (bpm)
Min.	27.00000	4.000000	30.00000	3.000000	65.00000
1st Qu.	35.00000	6.000000	45.00000	4.000000	68.00000
Median	43.00000	7.000000	60.00000	5.000000	70.00000
Mean	42.13941	7.308311	59.12869	5.391421	70.17158
3rd Qu.	50.00000	8.000000	75.00000	7.000000	72.00000
Max.	59.00000	9.000000	90.00000	8.000000	86.00000

Key Summary:
-   There are **4 Categorical and 5 Numerical variables**

-   Age of the **sample represents working group population** aged between 27 to 59.

-   The **sleeping hours** of the sample population ranges between 4 to 9 hours with the **mean of 7.30 hours**.

-   The sample population's time spent on **physical activity** ranges from 30 mins to 90 mins a day with the **mean of 60 mins**.

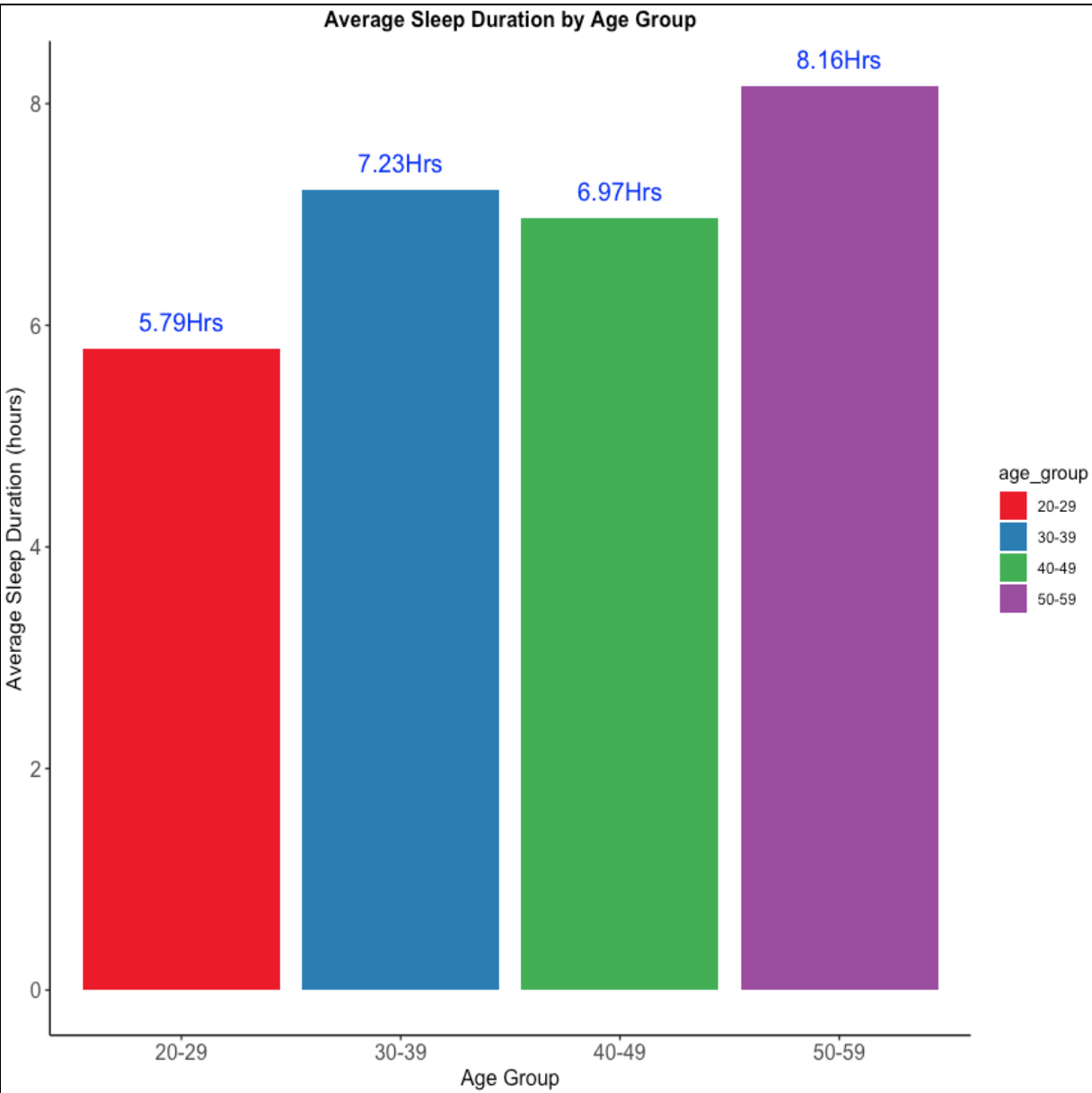-   The **mean Stress level rating** of the sample is **5.39** and the max is 8.

Gender-Wise Sleep Pattern
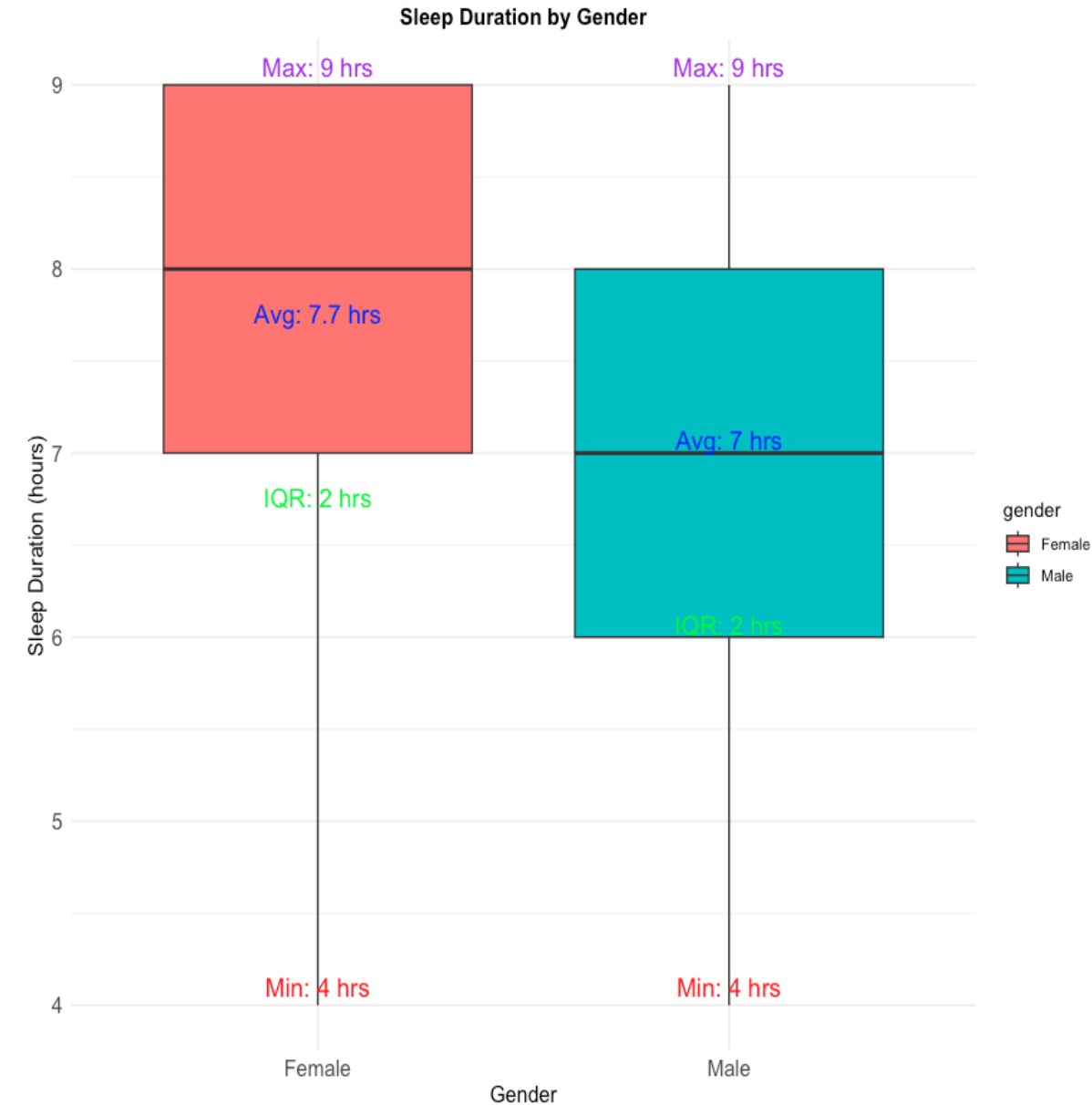
Key Points:

➤ Females tend to sleep slightly longer than males on average.

➤ Both genders have fairly symmetrical sleep distribution, as there are no visible outliers.

Age-Wise Sleep Pattern

Key Points:

➤ Increasing trend of Sleep duration with Age.

➤ The peak in the 50-59 age group reflect a greater emphasis on health and well-being.

➤ Increase in sleep might be due to : more "routine" regular work schedule and people prioritizing health and sleep.

Average Sleep Duration by Physical Activity Category
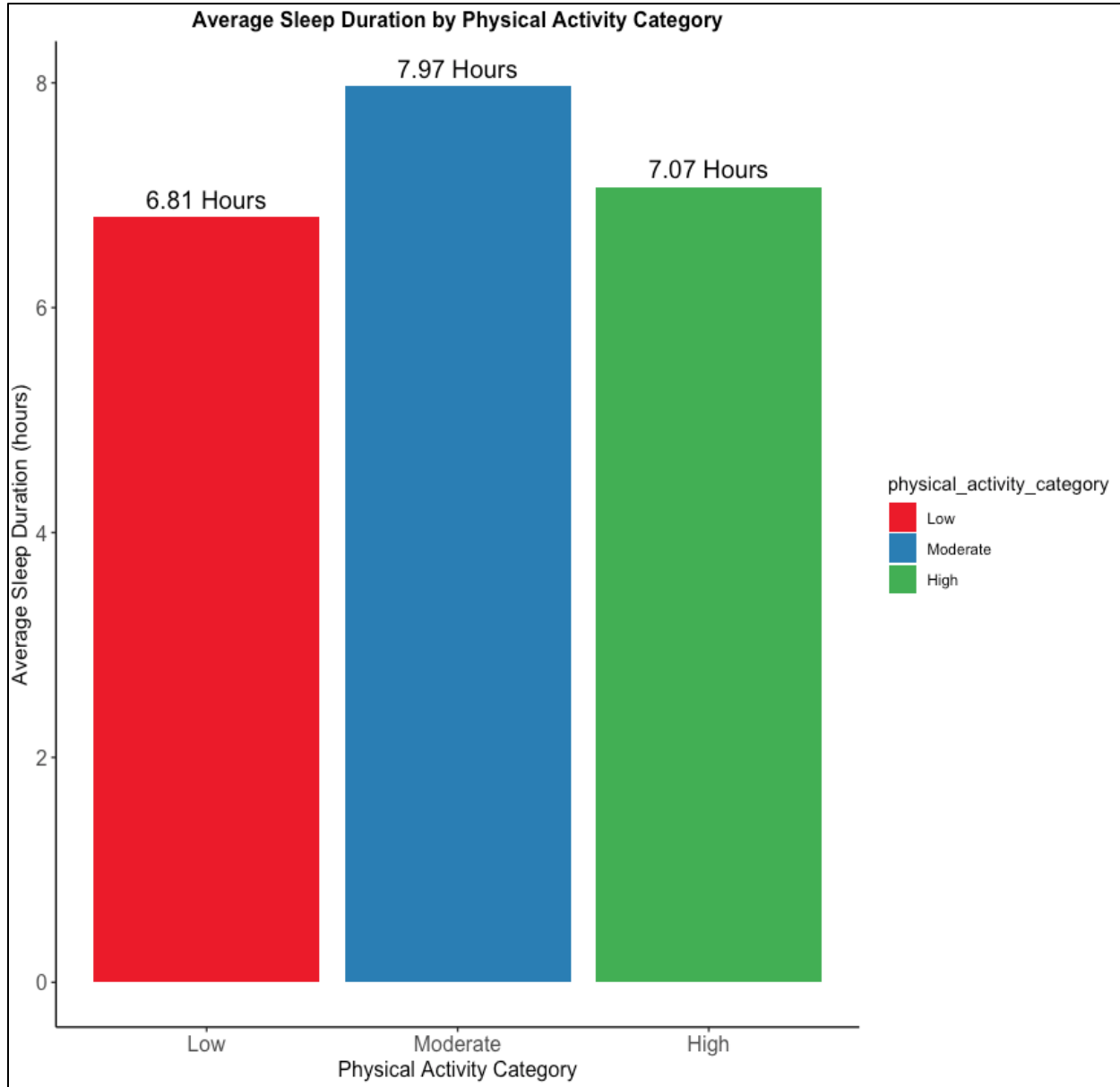
Physical activity affects sleep quality?

Key Points:

➤ Sample population exhibit **no sleep pattern based on physical activity**

➤ Both low and high physical activity population has a quality sleep of almost 7 hours a day.

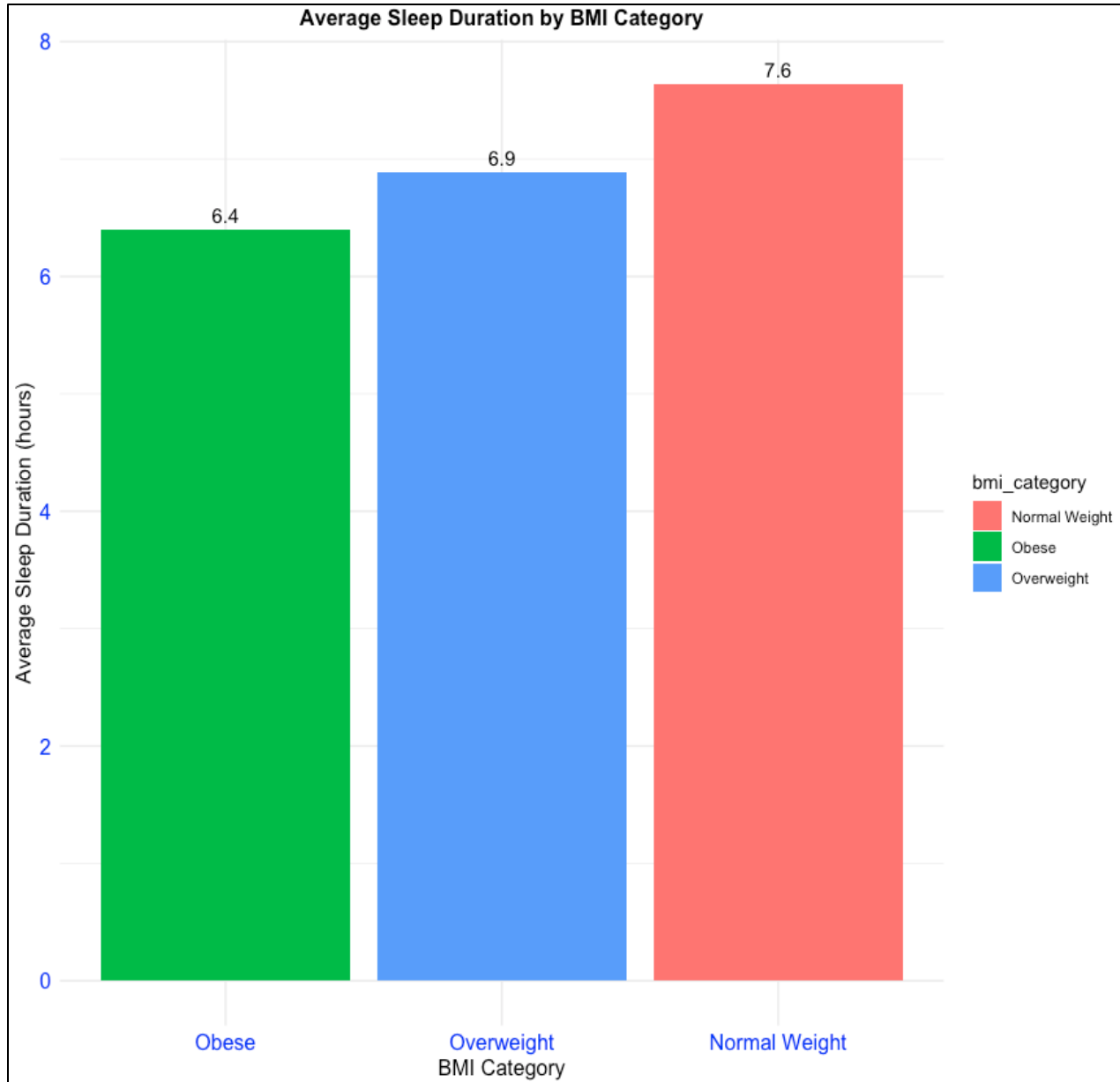➤ Hence, no correlation of sleep quality on physical activity.

Heart Rate Vs Sleep Pattern
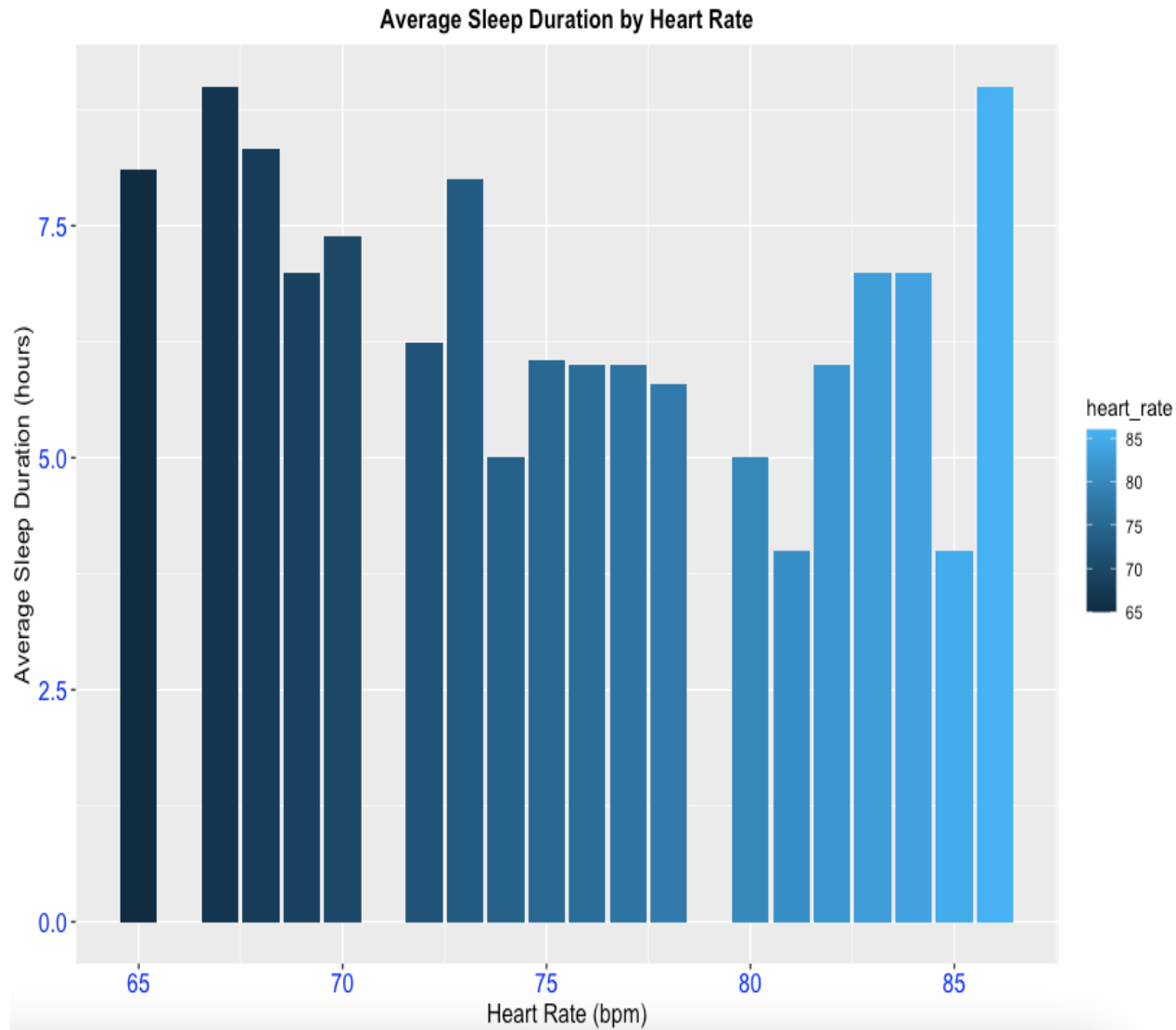
Key Points:

➤ Heart rate does not affect the sleep cycle

➤ No visible trend in chart
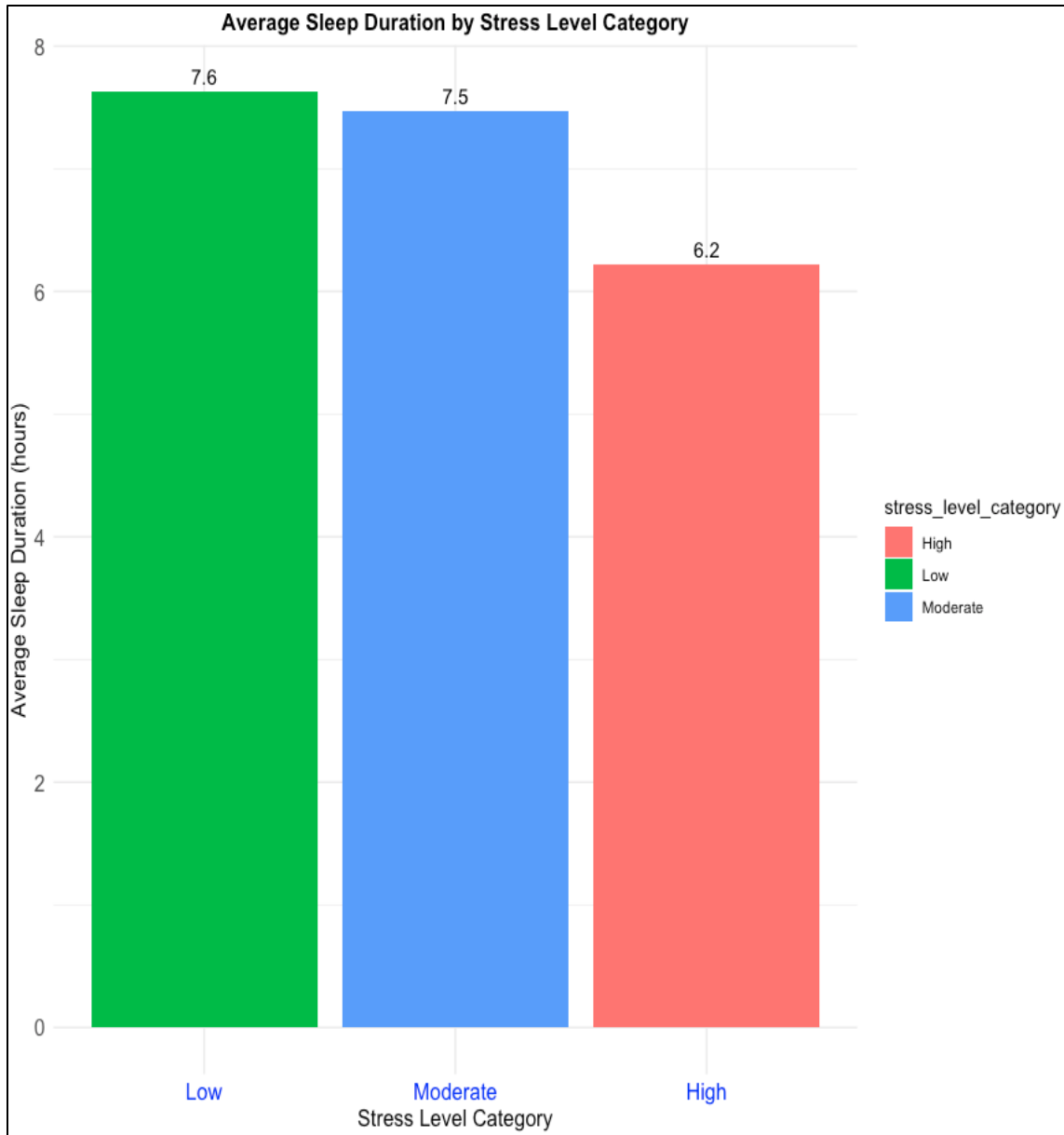
Average Sleep Duration by BMI Category

BMI Affects Sleep quality?

Key Points:

➤ Obesity deteriorates body sleep cycles.

➤ Chart shows, Normal BMI category population shows better sleep quality than overweight and obese BMI category.
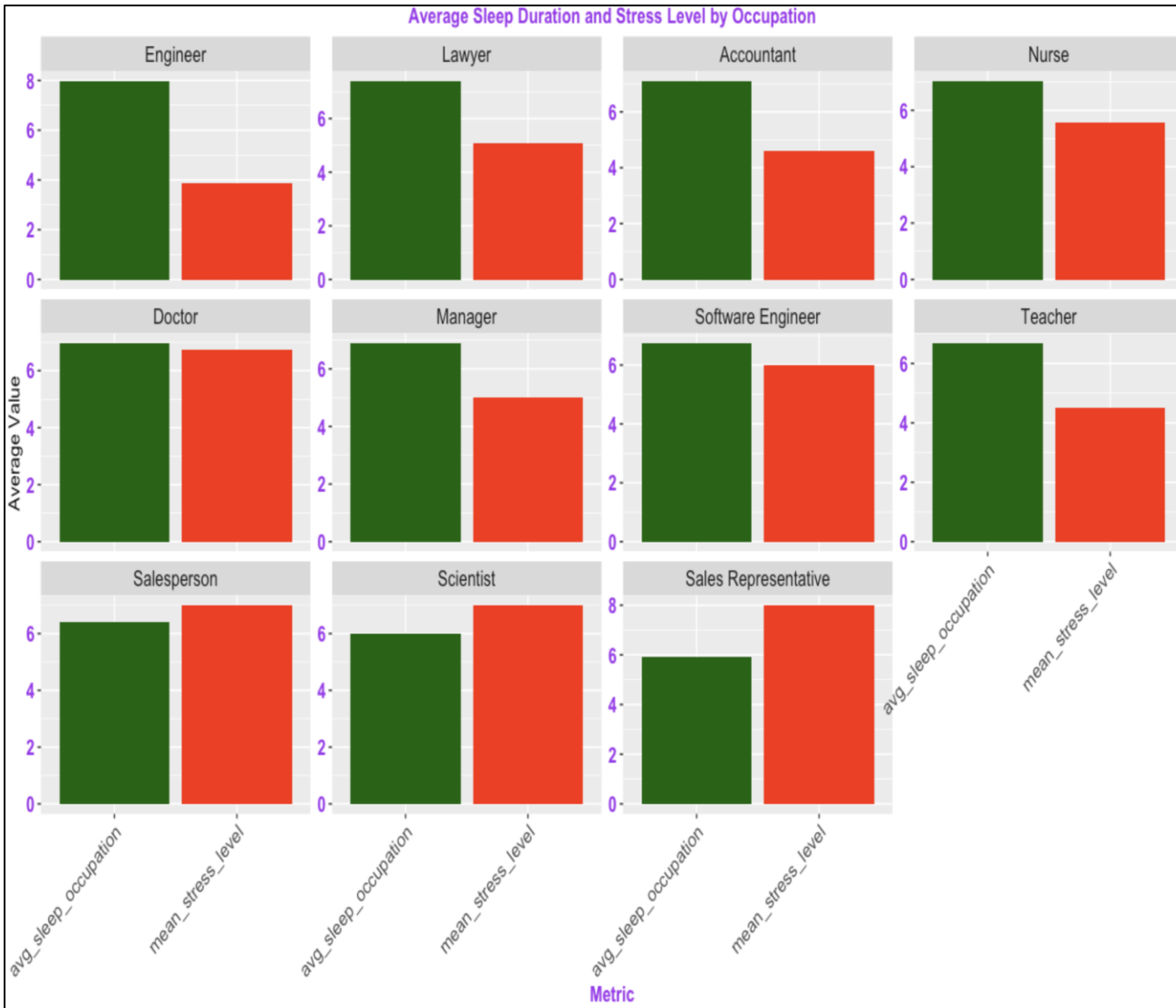
Average Sleep Duration by Stress Level Category

Stress Affects Sleep quality?

Key Points:

➢ Stress affects sleep cycles.

➢ High stress level sample population sleeps less than population with low stress

Average Sleep Duration and Stress Level by Occupation

Occupation-Wise Stress & Sleep Pattern

Key Points:

➤ Occupation affects sleep quality.

➤ **Target oriented jobs** like Sales Representatives, scientists has **more stress and less sleep.**

➤ **Stable, routine jobs** like Engineer, Accountants have **less stress and good sleep pattern.**

Key Findings & Conclusion

1. **Gender Differences:** Females generally have a higher average sleep duration compared to males, suggesting potential differences in sleep needs or behaviors between genders.

2. **Age Factor:** The trend of increasing sleep duration with age highlights the importance of focusing on health and sleep as people age. This could be due to increased awareness and health issues requiring more rest.

3. **Physical Activity and Heart Rate:** The lack of correlation between physical activity and heart rate with sleep duration suggests that other factors might be more influential in determining sleep duration in this population.

4. **Impact of Obesity:** The negative effect of obesity on sleep cycles emphasizes the importance of maintaining a healthy BMI for better sleep health.

5. **Occupational Stress Influence:** Occupational stress significantly impacts sleep quality. Target-oriented jobs, such as sales representatives and scientists, are associated with higher stress and shorter sleep durations, whereas stable, routine jobs like engineers and accountants experience lower stress and better sleep patterns.

To improve Sleep Quality…

1. Maintain healthy BMI

2. Individuals need to maintain their stress levels despite their work load

3. Organizations should identify and tailor health and wellness programs addressing specific stressors and health issues related to different occupations to improve overall sleep health.

References

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