What Factors Affect Sleep Duration Among Students?

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Problem Statement

- In today’s fast-paced student life, sleep is often neglected.
- While screen time is commonly blamed for poor sleep, other factors like academic workload, stress, and lack of exercise may also contribute.
- This project aims to explore how various lifestyle and academic factors influence sleep duration among college students.

Variables Considered

Variable	Type	Why it is Useful
Screen Time (hrs/day)	Numeric	Main factor under study
Sleep Duration (hrs)	Numeric	Main outcome (dependent variable)
Age	Numeric	Sleep needs change with age
Gender	Categorical	To check gender-based patterns
Stress Level (1–10)	Numeric	Stress can disrupt sleep
Physical Activity (times/week)	Numeric	Exercise improves sleep quality
Academic Year	Categorical	Pressure differs by year
Workload/Assignments (hrs/day)	Numeric	Higher workload may reduce sleep

Research Question

"Which lifestyle and academic factors have the greatest effect on sleep duration among students?"

This includes:

- The impact of screen time on sleep
- Whether high stress and workload reduce sleep
- If physical activity improves sleep quality

Type of Problems & Models Used

Type of Problem:

- Multi-variable predictive and relational problem.

Models to Be Used:

- Multiple Linear Regression
- Logistic Regression
- ANOVA

Brief Description of the Chosen Model

1. Multiple Linear Regression:

- Models effect of multiple variables on sleep hours
- Output: continuous value (e.g., 6.5 hours)

2. Logistic Regression:

- Classify students as "sleep-deprived" or "not" (Yes/No)
- Useful for turning sleep into a category

3. ANOVA / t-test:

- Compare sleep across different groups (gender, academic year, workload levels)

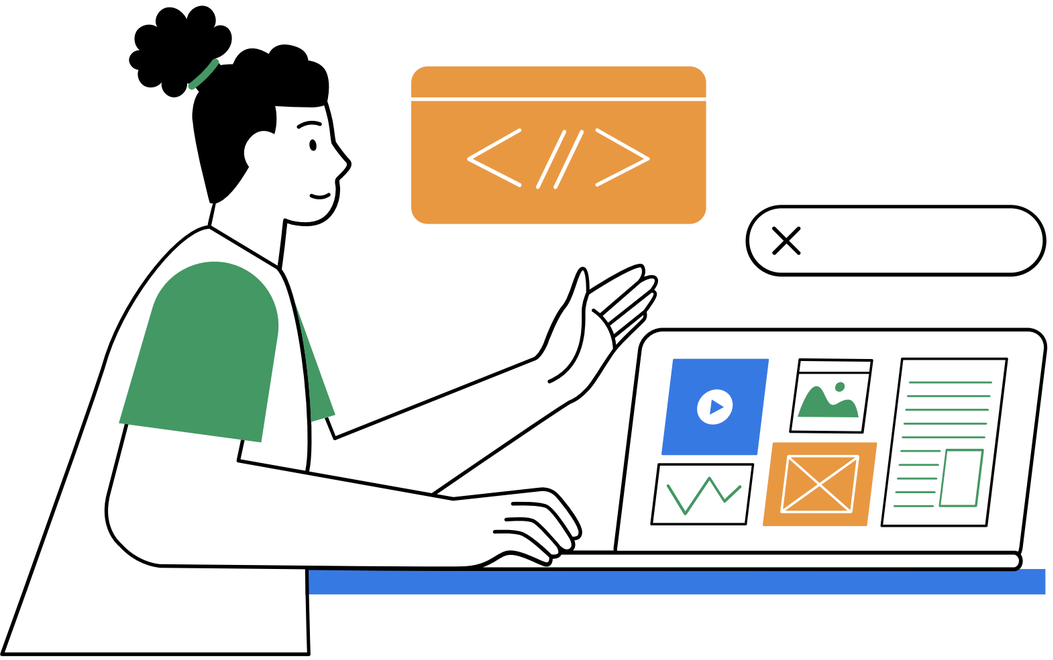
Data

Here is this link to the Kaggle dataset:

https://www.kaggle.com/code/devraai/analyzing-student-sleep-patterns-and-predicting

Literature Review

- Alshoaibi et al. (2023) found that high screen time is linked to poor sleep quality among adolescents.
- Chang et al. (2021) identified that factors such as sleep mood, night eating syndrome, pain, and social networks significantly influence sleep quality in young adults.
- Chandra Sekhar et al. (2024) found that increased screen time is associated with poorer sleep quality and reduced academic performance among school-aged children.



Expected Outcomes

- Identify which factor has the strongest impact on sleep.
- Predict sleep hours using lifestyle and academic habits.
- Provide recommendations for improving student sleep health.

References

- Alshoaibi, Y., Bafil, W., & Rahim, M. (2023). The effect of screen use on sleep quality among adolescents in Riyadh, Saudi Arabia. Journal of Family Medicine and Primary Care, 12(7), 1379–1388. https://doi.org/10.4103/jfmpc.jfmpc_159_23

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Thank You