Stage 2 Fundamentals of Data Science

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Topic: Analysis of Online Gaming on Sleep Patterns and Academic Performance in Adolescents

1. Problem Analysis

As more children are exposed to the gaming industry, this can lead to substantial negative effects in sleep patterns and academic performances. Not only does being addicted to gaming take away a large portion of their time in a day, but it can cause sleep deprivation and a decline in their academic grades. This topic will be an analysis on how online gaming can affect student’s sleep patterns and academic performance

1. Related Work

The analysis will be discussing about several effects that is related to one another such as:

1. Online gaming habits effects to sleep patterns
2. Online gaming habits effects to academic performance
3. Online gaming habits effects to behavioural outcomes which contributes to lifestyle (sleep patterns and academic performance)
4. Sleep patterns effects to academic performance
5. Dataset and Preprocessing

Our group will use websites that provide data sets that provide:

1. Gaming habits (e.g., hours spent gaming per day, time of day, game genres).
2. Sleep patterns (e.g., sleep duration, sleep disturbances, bedtime routine).
3. Academic performance (e.g., GPA, self-reported grades, time spent on schoolwork).

With that here are the links that will provide us with data sets for our final project:

Mahmud, S., Jobayer, M. a. A., Salma, N., Mahmud, A., & Tamanna, T. (2023). Online gaming and its effect on academic performance of Bangladeshi university students: A cross‐sectional study. Health Science Reports, 6(12). https://doi.org/10.1002/hsr2.1774

Zaman, M., Babar, M. S., Babar, M., Sabir, F., Ashraf, F., Tahir, M. J., Ullah, I., Griffiths, M. D., Lin, C., & Pakpour, A. H. (2022). Prevalence of gaming addiction and its impact on sleep quality: A cross-sectional study from Pakistan. Annals of Medicine and Surgery, 78. https://doi.org/10.1016/j.amsu.2022.103641

Firdos, S., Al-Omar, S., Aldossary, F., Alshamrani, T., Alhussain, M., Al-Otaibi, T., & Alhusain, I. (2024). Exploring the impact of gaming habits on sleep patterns among young adults in Saudi Arabia: a Cross-Sectional study. Cureus. https://doi.org/10.7759/cureus.56224

1. Model and Techniques

Before using the data, it would be cleaned by removing duplicates and simplifying the key data points. It would all be put into a dataframe using a library like pandas. After the data is cleaned the multiple regression model will be used to determine the relationship between sleep, gaming habits and academic performance. We can also further analyse the data using a library like matplotlib to plot the data points. All of these combined can then be used to predict academic performance using gaming habits and sleep patterns.