**Disclaimer:** The findings presented in this report are based on the available data, which may have limitations and uncertainties. The unusual covariance structure between Depression and Anxiety scores suggests that the data may not be entirely reliable. Therefore, the conclusions drawn from this analysis should be considered preliminary and subject to further investigation.

## Data Collection

The group chose the topic of sleep and how different factors such as mental health affect students' sleep. We obtained our data from a case study that conducted a comprehensive analysis of stress factors affecting students through a machine learning approach. This case study can be found in the data availability section of the article. https://link.springer.com/article/10.1007/s44163-024-00169-6#data-availability.

## Challenges

The biggest challenge our group faced was data collection. We originally found data on Kaggle but after a closer evaluation of its reliability, we found that the data was artificial. As a result, we had to find different data which led us to this study. The data had multiple columns such as depression, sleep quality, academic performance, etc as quantitative data on different scales. The report offered no explanation of how these different columns were scaled so the team had to go one by one to figure out what scale each column had. We also had challenges ensuring that the “Stress Level Dataset” was reliable, while completing our analyses, we found the data seemed a bit fishy, but due to time constraints, we were instructed to continue with this dataset.

## Sleep-Deprived Dreams

The hallmark of modern education is the relentless pursuit of academic and extracurricular excellence. But these aspirations come with a big cost which is losing sleep quality. We explore the complex relationship between sleep, mental health, academic performance, and how sleep deprivation affects student well-being.

Based on the data we collected from a recent study; we found a clear negative correlation between the number of extracurricular activities and sleep quality. Students who participated in multiple activities were more likely to report insufficient sleep and poorer sleep quality. As a result of sleep deprivation, an array of negative consequences is triggered, including an increase in anxiety and depression, which eventually destroys their self-esteem and negatively impacts their academic performance in the long run.

Despite having multiple extracurricular commitments, students often find themselves sleep-deprived, with an average sleep duration of less than 8 hours. Chronic sleep deprivation disrupts hormone and neurotransmitter balance, resulting in cognitive and emotional dysfunctions.

The lack of sleep is a strong risk factor for mental health disorders. As sleep-deprived students struggle to cope with their packed schedules, their anxiety levels soar. Sleep disturbances can worsen depression in students, leaving them feeling overwhelmed and hopeless as they become increasingly irritable and have difficulty concentrating on academics.

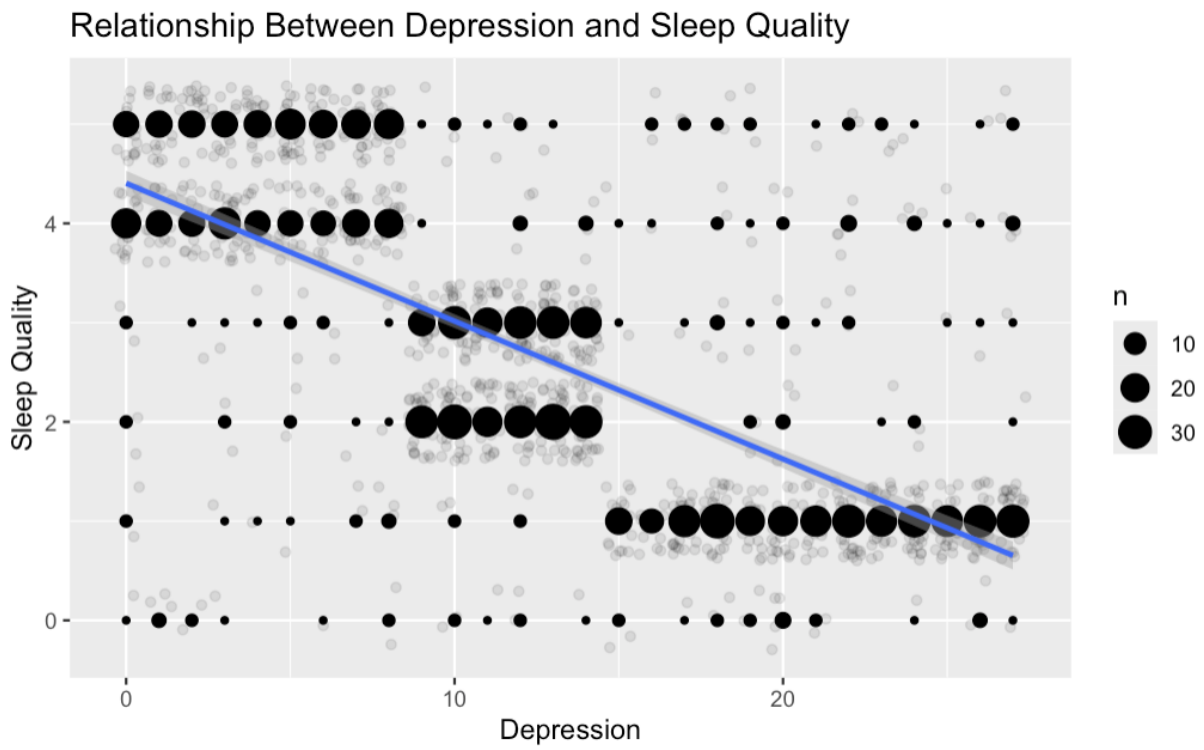
Based on the data collected we also noticed that sleep deprivation correlates with how students view themselves. When students don't keep up, they lose their self-esteem. They may feel inadequate, unworthy, and always lagging. This erosion of self-esteem can intensify anxiety and depression.

Academic performance is the ultimate casualty of sleep deprivation. Chronic sleep deprivation causes students to struggle to pay attention in class, retain information, and solve problems. Grades suffer, and motivation wanes. It is possible for the bright student who excelled in academics to struggle to keep up with the class.

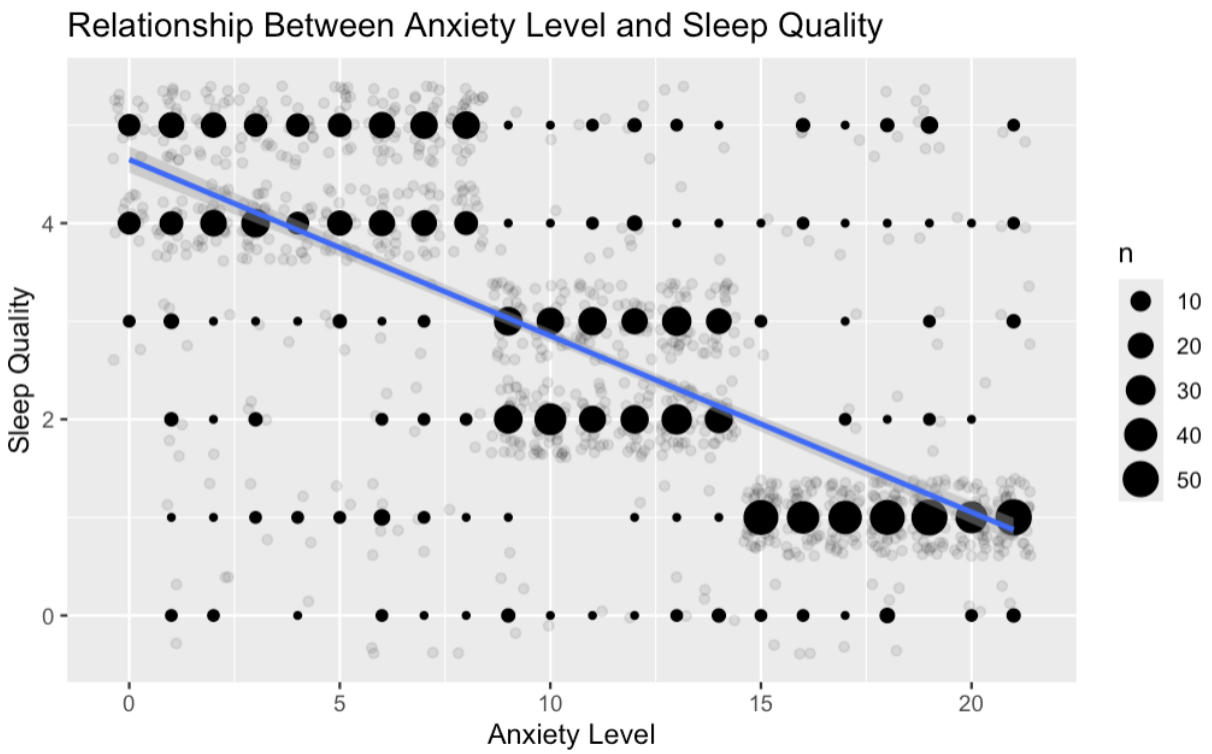
Creating a more balanced and sustainable approach to education is essential. Schools, parents, and students themselves need to work together to prioritize sleep as a fundamental component of student well-being. The cycle of sleep deprivation and its consequences can be broken if we encourage students to set realistic goals, manage their time effectively, and prioritize sleep.

Students should not sacrifice their mental health or academic performance to achieve academic and extracurricular excellence. To empower students to thrive in and out of the classroom, we must acknowledge the importance of sleep and take steps to prioritize it. Together, we can ensure that our students are well-rested, mentally healthy, and academically successful.

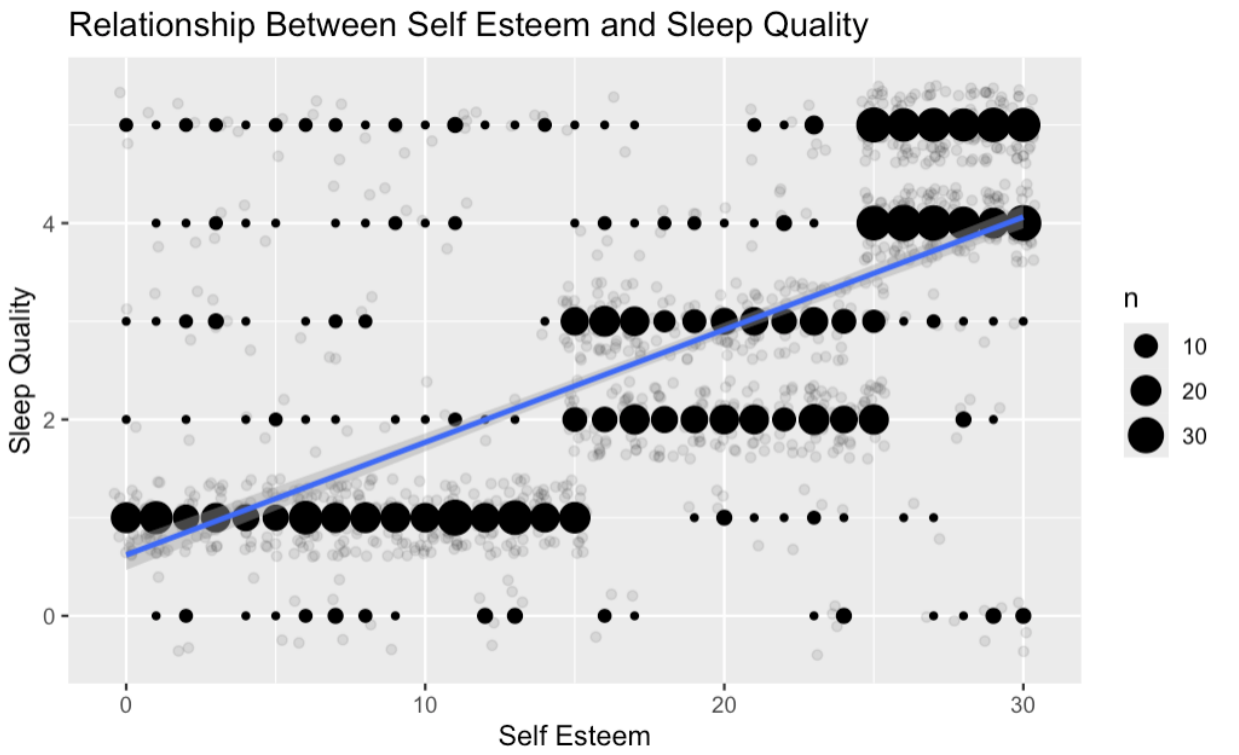
**Visualizations:**



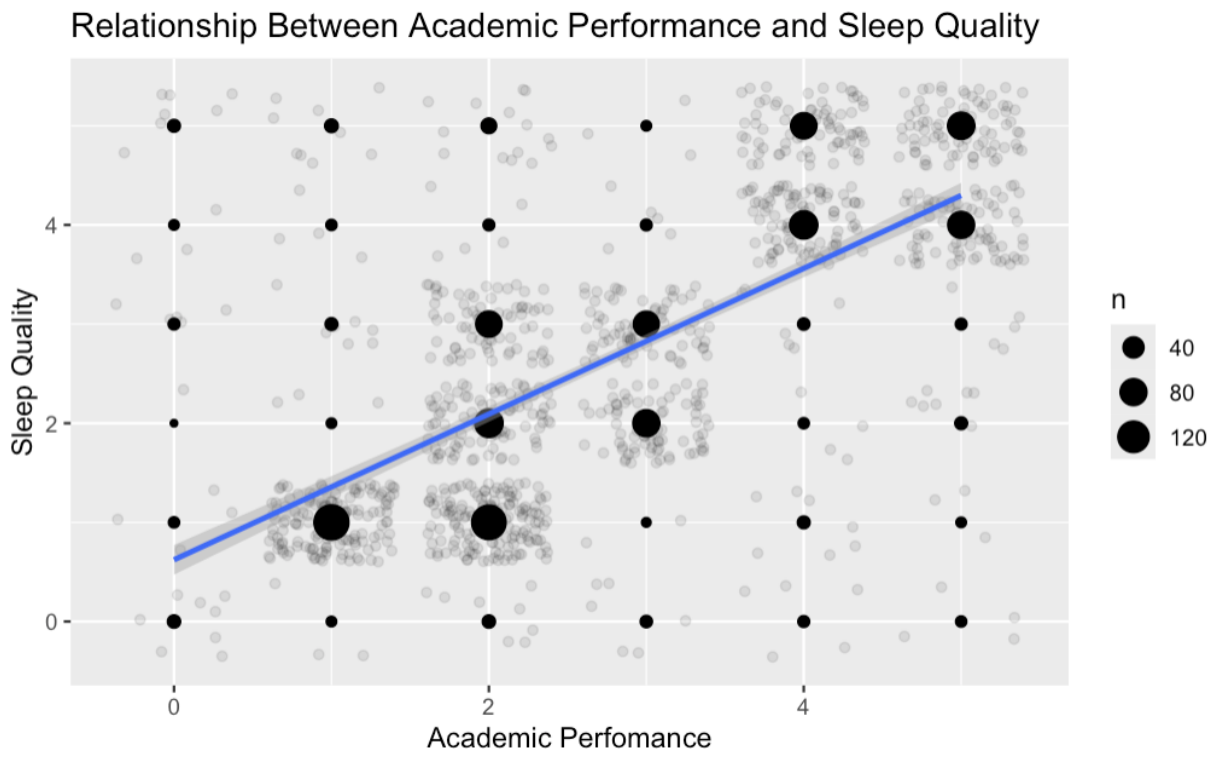

As depression levels increase, sleep quality decreases (negative correlation).



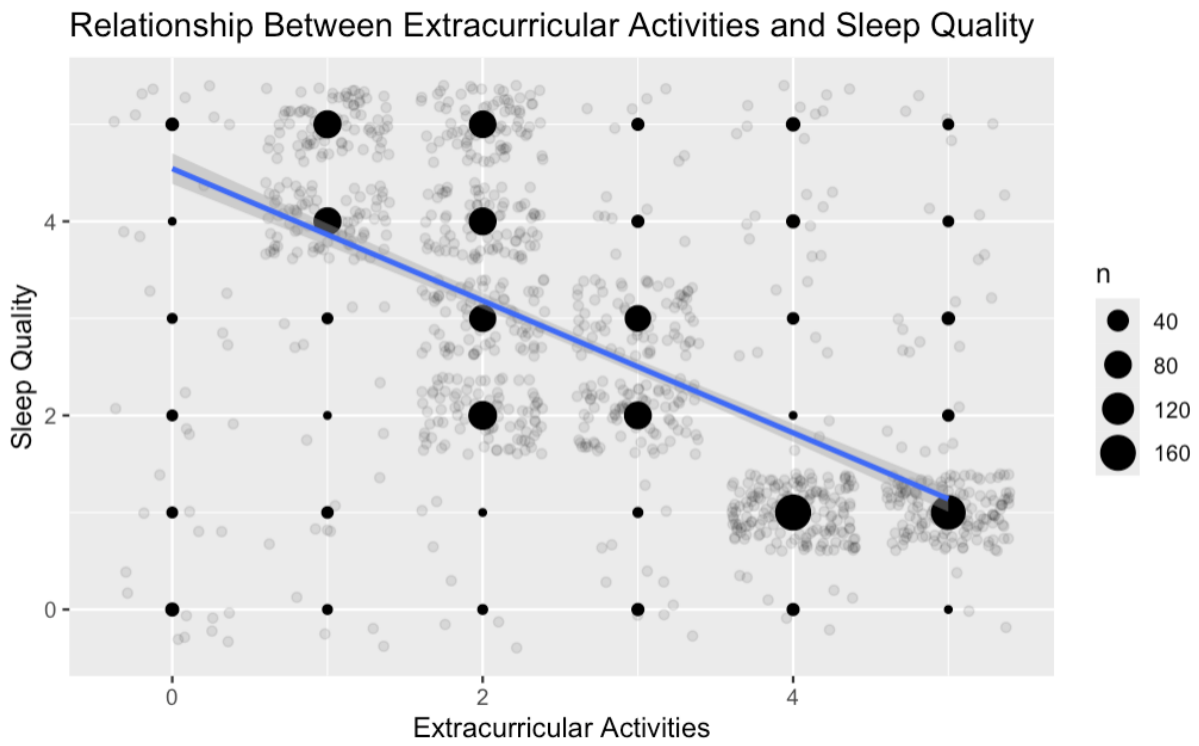

As anxiety levels increase, sleep quality decreases (negative correlation).




As self esteem increases, sleep quality increases (positive correlation).




As academic performance increases, sleep quality increases (positive correlation).




As extracurricular activities increase, sleep quality decreases (negative correlation)