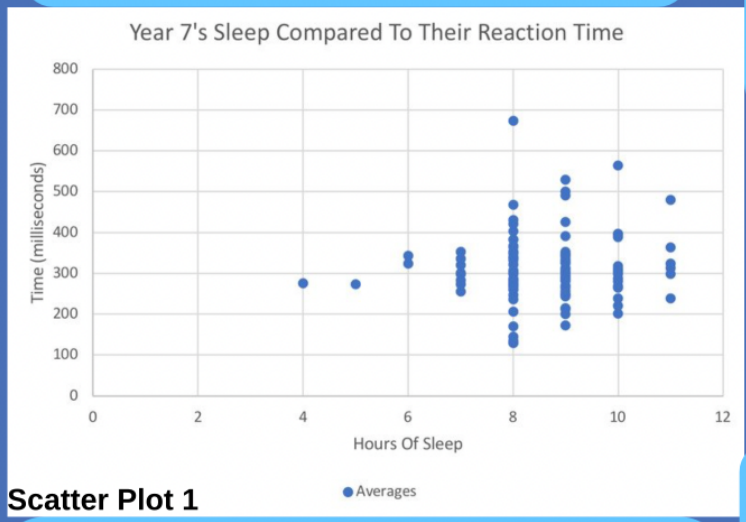
How Does Sleep Affect Year 7's Reaction Time?

Aim

The aim of this investigation is to establish if there is a link between amount of sleep year 7s get and how that affects their reaction time.

Hypothesis

We predict that the amount of sleep that a year 7 student gets will change their reaction time becoming faster or slower. We think that the less hours of sleep a year 7 student receives, means the reaction speed will be slower and the more hours of sleep they get means their reaction time will be faster.



Scatter Plot 1

Analysis

This graph shows the median amount of sleep every student got in year 7. For children aged 12 to 13 the recommended hours of sleep are 9 - 13 hours, this means that only half are getting the recommended hours of sleep. 8 hours of sleep is the mode of our data and that is below the recommended hours.

Limitations

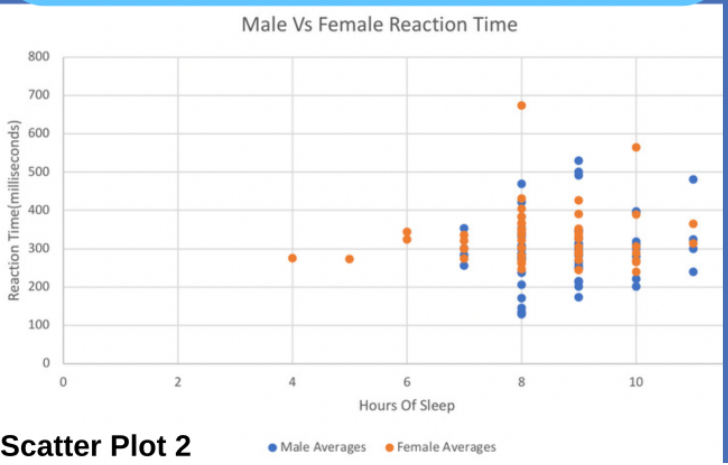
A whole year 7 census was conducted but some people didn't complete the survey or they couldn't use the link to open the reaction time. The results ended up with some false data and not a complete census. Another limitation was that the Scatter plot 1 included discrete data only when scatter plots are usually used for continuous data..

Analysis 2

The data is bivariant but the scatterplot does illustrate that boys have the faster reaction speed, however boys also do have the slowest reaction speed. The plot also shows that most of girls are the people who didn't get much sleep.

Method

1. A Year 7 Census was delivered online to 135 students via the Microsoft Forms app.
2. Students completed the 30 question survey and data was collected and sorted using Microsoft Excel.
3. The average for each person's reaction time was calculated.
4. The results for the amount of sleep were tabled.
5. All the unnecessary information was then removed.
6. The data was then grouped into tables.
7. Three seperate graphs were then plotted with the table's information.
8. The data was then analysed and a conclusion was made.
9. All the information was then put onto a poster which displayed the graphs, aim, hypothesis and conclusion.



Scatter Plot 2

Conclusion

The results from the scatter plot show that the fastest reaction speed was from a student who received 8 hours of sleep. A student who received 8 hours of sleep had a reaction time of 673.5ms. This means it is an outlier in our data as most of the students had a reaction speed of under 500ms. It's important in daily life that we have a quick reaction time. Like when driving a car, we need to look at the motorway only. While we lack sleep we have a slower reaction speed and it's unsafe to drive.When 13 year olds get enough sleep, it allows them to process information quicker. Their reaction time is faster.

Bibliography:
https://humanbenchmark.com/tests/reactiontime/ and https://www.cdc.gov/sleep/about_sleep/how_much_sleep.html