HOW DOES WHITE LIGHT AFFECT YOUR SLEEP?

Introduction

Data collected explored the comparison between activities that involve white light and activities that do not, and how they affect sleep patterns. When viewed, white light helps brains produce melatonin, which controls your body's circadian rhythms. Circadian rhythms are a person's internal "body clock" that help human bodies carry out essential functions, including the amount of sleep gotten.

Data collection

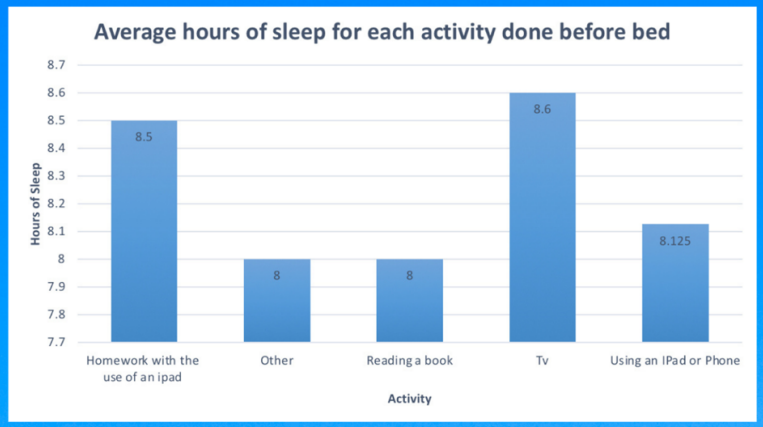
A survey was conducted and primary data was collected. The survey was sent out to one Year 7 class and 5 questions were asked: ***How many hours of sleep did you get last night? What did you do one hour before you went to bed? What time did you go to bed? How hard is it for you to fall asleep? What time did you wake up?***

From this data, categorical nominal and numerical discrete data was obtained. After examining the results, the following questions were focused on as they provided the most insight into the statistical question: "How hard is it for you to fall asleep?", "What did you do an hour before you went to bed?" and "How many hours of sleep did you get last night?" Lastly, the measure of center was calculated for graphs to be constructed.

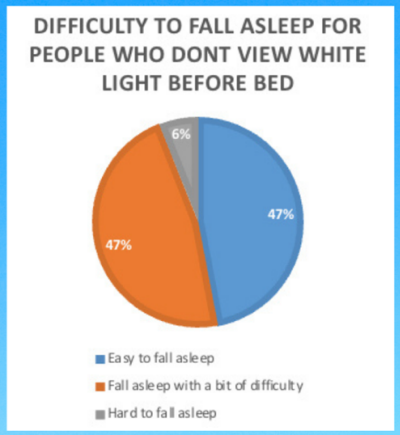
Hypothesis

It is predicted that students who view white light in their activity an hour before bed will get less sleep than those who does an activity that does not involve white light.

Graph 1 - Column graph showing average hours of sleep for each activity



Graph 2 - Pie chart showing the difficulty to fall asleep for people who don't view white light before bed



Graph 3 - Pie chart showing the difficulty to fall asleep for people who don't view white light before bed

Analysis

In order to measure the centre of data, the mean hours of sleep for each activity chosen was calculated and displayed in Graph 1. This shows the average hours of sleep students got was the highest in the television before bed category and the homework with the use of an iPad category. The range of average hours displayed in this graph is narrow with a calculated range of 0.6 hours.

The average sleep students got before bed was calculated to be 8.21 hours. When compared with the median, 8 hours, it shows that the data is slightly skewed by less noticeable outliers. Considering that the mean is greater than the median, it shows that these outliers are on the larger side.

Graph 2 shows that the bimodal categories of students who do not view white light is both 'a bit of difficulty when falling asleep' and 'fall asleep easily' compared to the modal category students who do view white light, displayed in Graph 3, which is 'a bit of difficulty when falling asleep'.

Conclusion

The data collected partially proved our hypothesis, but also partially proved the opposite. Further research should be conducted in order to fully answer our statistical question, possibly with a larger sample.

References

https://www.cdc.gov/niosh/emres/longhourstraining/color.html#:~:text=Exposure%20to%20blue%20light%20(and,including%20boosting%20alertness%20and%20mood.

https://www.health.harvard.edu/staying-healthy/blue-light-has-a-dark-side

https://www.healthline.com/nutrition/block-blue-light-to-sleep-better

https://www.webmd.com/sleep-disorders/sleep-blue-light