Sleep vs Lifestyle Patterns & Factors

By: Shaina Joseph, Tom Bagley, Julia McKinnon, Ernesto Garcia

Why Sleep is Important?

Sleep is a vital component to an individual’s overall health and well-being throughout their lifespan. According to the National Heart, Lung, and Blood Institute, during sleep, an individual's body is working to maintain and support healthy brain function and physical health. Sleep can affect an individual's heart and circulatory system, metabolism, respiratory system, and immune system. Getting inadequate sleep over time can can have an alarming impact like increasing an individual’s risk for chronic health problems.

How Sleep Can Be Affected?

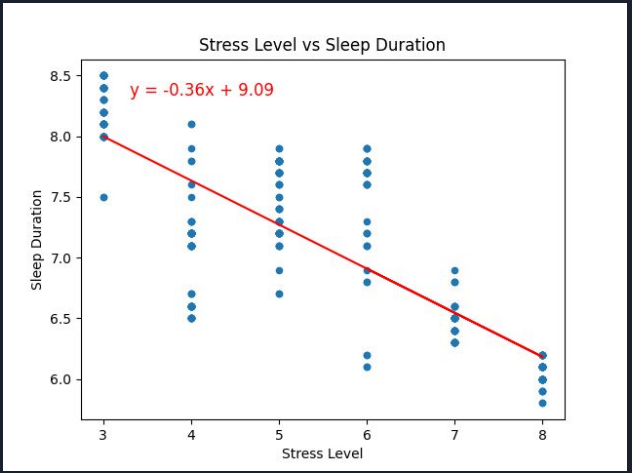
Certain lifestyle habits can be influential to an individual's overall sleep duration and quality. In this presentation we will be going over how different lifestyle variables influence an individual's overall sleep.

Questions we will be going over in this presentation:

- How does stress caused by occupation affect sleep?
- How does sleep levels differ by occupation?
- Do women or men tend to sleep longer?
- How do our sleep patterns (sleep duration) change as we age?
- How does the quality of sleep relate to stress levels?

Stress Level vs Quality of Sleep

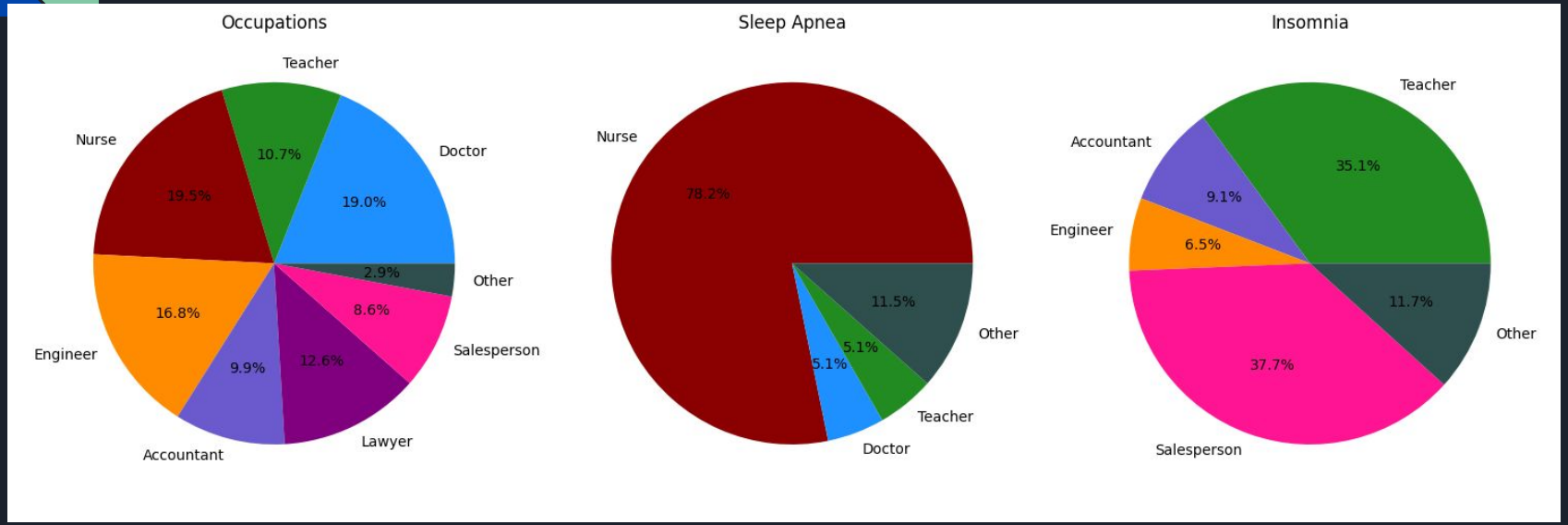
The r^2 value is 0.657758351774422
The p value is 1.2378076181537591e-88
The pearson correlation coefficient is -0.8110230278940432



The r^2 value is 0.8077552132338894
The p value is 2.880124240943373e-135
The pearson correlation coefficient is -0.8987520310040414

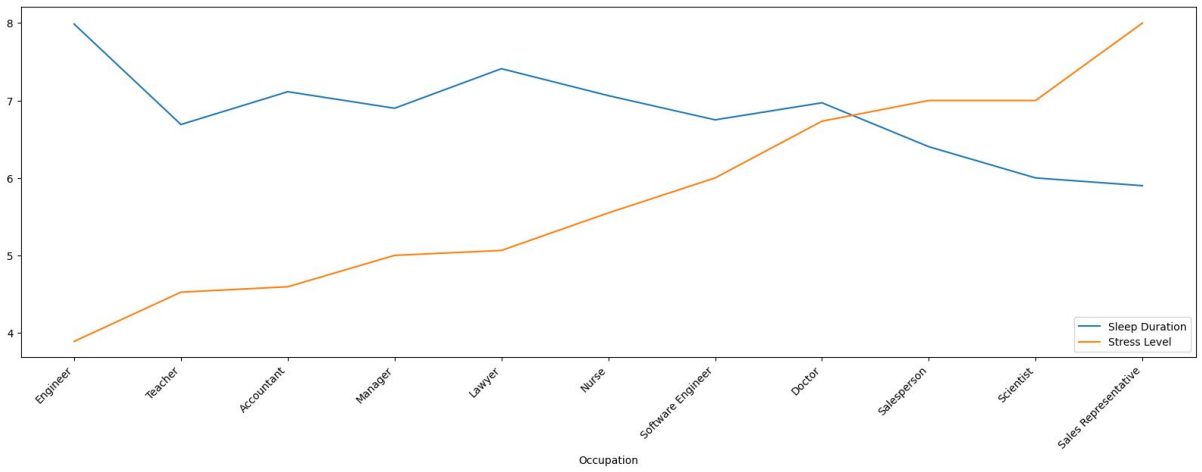
According to a US News and World report on May 22, 2024 data scientist was listed as one of the 15 least stressful jobs that you could have. Other jobs included actuaries, choreographers, dental hygienists, and graphic designers.

Occupations vs Sleep



In our data set there is a relatively balanced distribution of occupations. However when we look at those with sleep apnea it is mostly nurses and when we look at those with insomnia it is mostly teachers and salespersons.

Occupation, Stress Level, and Sleep Duration



According to Baylor College of Medicine, high levels of stress impair sleep by increasing the amount of time it takes to fall asleep and causing fragmentation in sleep. An inadequate amount of sleep can trigger our body's stress response system, leading to an elevation in stress hormones like cortisol which can negatively affect sleep. Chronic sleep loss has also been associated with decreases in an individual's metabolism and endocrine functions, so overall sleep is crucial to an individual's overall health.

Age vs Sleep

The r-squared value is: 0.11882454160634962
The p-value is: 7.1171395312160525e-12

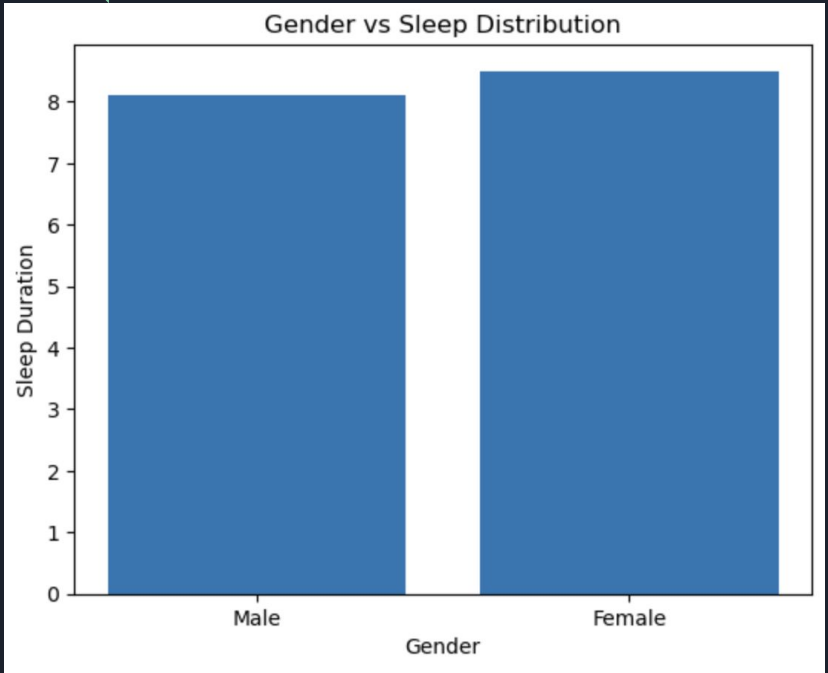
In this graph, it shows a positive correlation between the amount of sleep an individual gets and their age.

It is important to note that the pearson correlation coefficient between both factors is 0.34, showing a weak positive correlation.

We believe this is due to

- External factors affecting our ability and opportunity to sleep
- As a person ages they undergo a variety of developmental changes (less melatonin produced, changes in circadian alerting system) which may affect a person's overall sleep

Gender vs Sleep



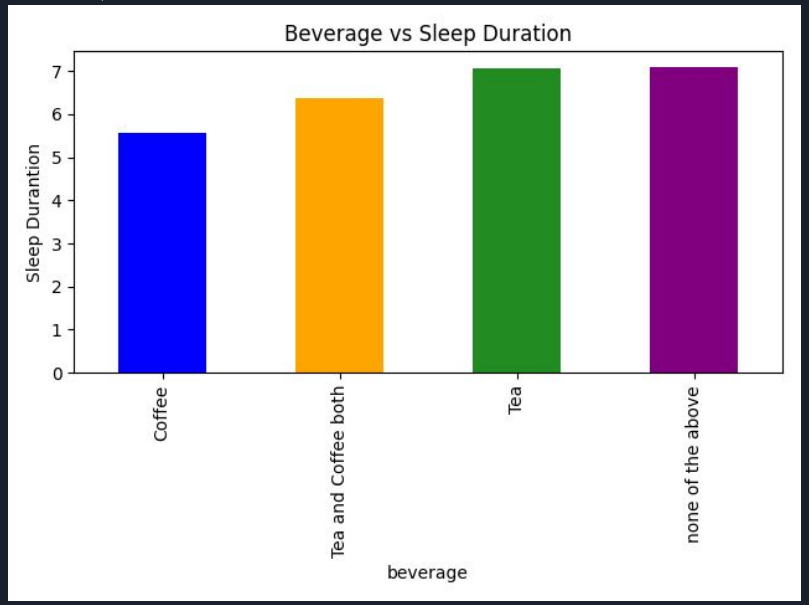
For this graph, we were looking at whether there was a difference between gender and sleep duration.

The bar graph shows that females tend to sleep longer than males, but only by a small margin.

After further researching this trend, research shows that women tend to get sleep more than men by only 11 to 13 minutes (Healthline, 2024).

This is possibly due to various behavioral and biological variables that would cause the body to adapt.

Beverages vs Sleep



In this graph, we wanted to see if there was any trends between beverages and sleep duration.

Our findings are that individuals who drink tea or none of these beverages sleep more than individuals who drink coffee.

This can be explained through the research of coffee containing caffeine which is a stimulant that promotes alertness. A person's body takes four to six hours to metabolize half the caffeine consumed, so individuals need to be mindful when they are consuming it.

According to Cleveland Clinic, herbal teas are the best for sleep due to sedative effects that occur because of their interaction with neurotransmitters in the brain.

In Conclusion

In conclusion, the analysis highlights significant insights into the relationship between sleep disorders, stress levels, and sleep duration among various professions, particularly nurses, salespeople, and teachers. While sleep disorders appear to have little influence on overall sleep duration, the findings let on that sales representatives experience the highest stress levels and the lowest sleep duration. Coffee consumption correlates with lowered sleep duration, whereas tea may mitigate some negative effects when consumed together with coffee. Notably, strong linear relationships —particularly the high R-squared values of 0.6578 and 0.8078—underscore the profound influence of stress on both sleep duration and quality. These results suggest that managing stress could be most crucial for upgrading sleep among individuals in high-stress professions.

Recommendations!

Stress can have a huge impact on your sleep and you're much more likely to sleep badly when you're going through a stressful period. According to the Cleveland Clinic and sleepstation, this is a list of recommended actions to take in order to destress before bed:

Stress Prevention/Reduction

- Delegate tasks and say "no" to additional responsibilities
- Exercise
- Mediation
    - Meditative Movement: Yoga, tai chi
    - Guided Meditation:verbally guided through a meditative experience and encouraged to visualize a calming location
    - Mindfulness Meditation:observing feelings, thoughts, and emotions as they pass without judgment

Sleep Hygiene

- Dark and quiet environment
- Warm shower/bath
- Limit alcohol and caffeine
- Meditation

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