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|  | | Survey on hours of sleep and GPA | | | | |  | |
| Black and white spiralling staircase |  | | | | | | |  |
|  | | | | Ahmed Moataz |  | | | |
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|  | | | | 3/9/2024—Data Analysis—Dr Mohamed Taher |  | | | |
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|  | | Lines on wood |  |  |  | | | |
|  | | INTRODUCTION | | |  | | | |
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|  | In the world of modern education, it’s a well-known and accepted fact that certain majors and fields of study will need much more of your time than others, sometimes even making you sacrifice your sleep to ensure you can study harder and work better.  But does that effort pay off? Or does it only lead to more fatigue and lower grades in the long run? | | | | | | |  |
|  | RESEARCH QUESTION Are your Grades Affected by the Hours you Sleep? | | | | |  |  |  |
|  | HYPOTHESIS The amount of sleep people get is negatively correlated with their grades. Specifically, lower sleep is hypothesized to be associated with higher grades. | | | | |  |  |  |

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|  | | SAMPLING | | |  | | | |
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|  | POPULATION OF INTEREST This survey’s population of interest is university students in Egypt. I have decided to choose this population as university students are known to spend much more time on their studies and work, while also paying extra attention to their grades. To achieve this population, I sent my survey to multiple universities across Egypt. | | | | | | |  |
|  | SAMPLING METHOD | | | | |  |  |  |
|  | For this assignment, I used a combination of convenience sampling and stratified sampling. Convenience sampling because I selected universities and high schools that were easy for me to access, and stratified sampling because I specifically targeted university students. These sampling methods allowed me to gather data from a diverse group of students across many different faculties and universities in Egypt, maintaining cost and time efficiency while increasing the generalizability of my findings. BIAS IDENTIFICATION To minimize bias in my survey, I used a couple strategies and techniques. I ensured anonymity in my survey so that participants would give honest answers, especially for sensitive questions related to CGPA and hours of sleep. I also used clear and neutral language so that there is no leading or suggestive wording that could influence participants' responses. Finally, I used data validation techniques to identify and remove any invalid or unreliable responses, such as responses that are too quick or inconsistent. | | | | |  |  |  |

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|  | | | | | | SURVEY | | | | | | | | |  | | | | | |
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|  | | | QUESTIONS  1. Academic Year 2. Gender 3. What faculty are you in? 4. What is your CGPA? 5. How many hours of sleep do you get a day?  SURVEY LINK<https://forms.gle/Q5oG7Ajx25oLgmtVA>SAMPLES COLLECTED Number of samples collected: 32 | | | | | | | | | | | | | |  | | | |
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|  | | | | | | DATA ANALYSIS | | | | | | | | |  | | | | | |
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| Putting all the data into Python, we can calculate the mean, median and mode and visualize these results in a box plot:  **AVERAGE C-GPA:**    From the data collected, we can see that on average, students have an average C-GPA of 3.217. Most people who took the survey reported a C-GPA of 2.3.    **HOURS SLEPT:**  From the graph below, we can see that most people reported sleeping between 5-6 hours a day. Additionally, we can see that there is an equal amount of people who reported sleeping 6-7 hours a day and people who reported sleeping more than 8 hours a day. There is also an equal amount of people who reported sleeping less than 5 hours a day and people who reported sleeping between 6-7 hours a day. | | | | | | | | | | | | | |
| GRAPHS After gathering all the data and putting it into a bar chart, we are left with the graph above. From the graph, it is seen that people who sleep between 5-6 hours a day have the highest GPA among the responses, with an average GPA of 3.4125, only slightly higher than those who sleep less than 5 hours a day, who have an average GPA of 3.40. Interestingly, people who sleep between 7-8 hours a day have the lowest average GPA of the responses, with an average of 2.60, much less than those who sleep between 6-7 hours a day (3.2383) and those who sleep more than 8 hours a day (3.2950).    However, if we look at this graph, it can be deduced that most people reported sleeping around 5-6 hours a day, potentially meaning that my results could have been skewed due to an uneven number of responses. | | | | | | | | | | | | | |
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|  | | | | | | | CONCLUSION | | | | | | | | |  | | | | | |
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|  | | | | In conclusion, from the data I have collected, it cannot be definitively concluded that the amount of sleep a person gets correlates with the grades they receive. Therefore, *grades are not necessarily impacted by the amount of sleep you get.* Interestingly, most responses reported sleeping fewer hours a day. If I had taken a larger sample size, I could have potentially seen different results and different responses. | | | | | | | | | | | | | | | |  | |
|  | | | | POTENTIAL ISSUES | | | | | | | | | | | | | |  |  |  | |
|  | | | | Some potential issues with my data could be that my sample size was too small. As mentioned before, most people who took the survey answered that they sleep low amounts per day (at most 6 hours). Perhaps if I took a larger sample such as 100 people, I could have seen a true correlation, and the data collected would’ve yielded stronger and more apparent results. Another issue is that because of time and cost, I used convenience sampling. If I spread my survey to a wider range of university students around the world, I may have gotten less bias and more accurate answer relative to the diverse global student population. In terms of confounding variables, I can’t seem to find any. Age/academic year could also have been a confounding variable, as seniors could potentially have higher workloads than freshman, for example. Same cannot be said about the gender. The average C-GPA was similar for both males and females. Therefore, within this survey, we can say that there may have been 1 confounding variables. | | | | | | | | | | | | | |  |  |  | |

THANK YOU!