جامعة مصر للمعلوماتية
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Computer and Information Systems
Data Analysis Course

Data Analysis
Relation between performance and Attendance.

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Introduction

This study aims to explore the relationship between **academic performance** and **class attendance** among students. Your responses will help us understand how attendance habits impact engagement, learning methods, and overall GPA.

Research Question

How does class attendance impact students' academic performance (GPA) across different academic levels?"

Hypothesis

"Students with higher attendance levels tend to have higher GPAs compared to those who frequently miss classes."

Population of Interest:

2023 EUI students.

Sampling Method:

Convenience sampling was used, as the survey was distributed through the university's WhatsApp group. This method was chosen because it allows for quick and easy data collection from a relevant population—EUI students—while ensuring efficiency and practicality. It enables rapid data gathering without the need for complex randomization, making it ideal for this study's scope. Additionally, since the survey specifically targets university students, using a university group ensures responses from the right participants. While convenience sampling may introduce some bias, such as the overrepresentation of students who are more active in the group, it still provides valuable insights into the general trend between attendance and GPA.

Bias Identification:

To minimize bias, several measures were taken in designing the survey. First, the form was kept **anonymous**, ensuring that students felt comfortable providing honest responses without fear of judgment. Additionally, GPA was collected using **range-based choices** (e.g., 1.0–1.9, 2.0–2.9, etc.), preventing students from feeling shy or pressured to report an exact number. While **convenience sampling** was used, which may introduce some bias by overrepresenting students active in the WhatsApp group, the approach still provides meaningful insights. By using clear, predefined response options and a larger sample size, the study aims to enhance data accuracy and reduce misleading or vague answers.

Survey Questions:

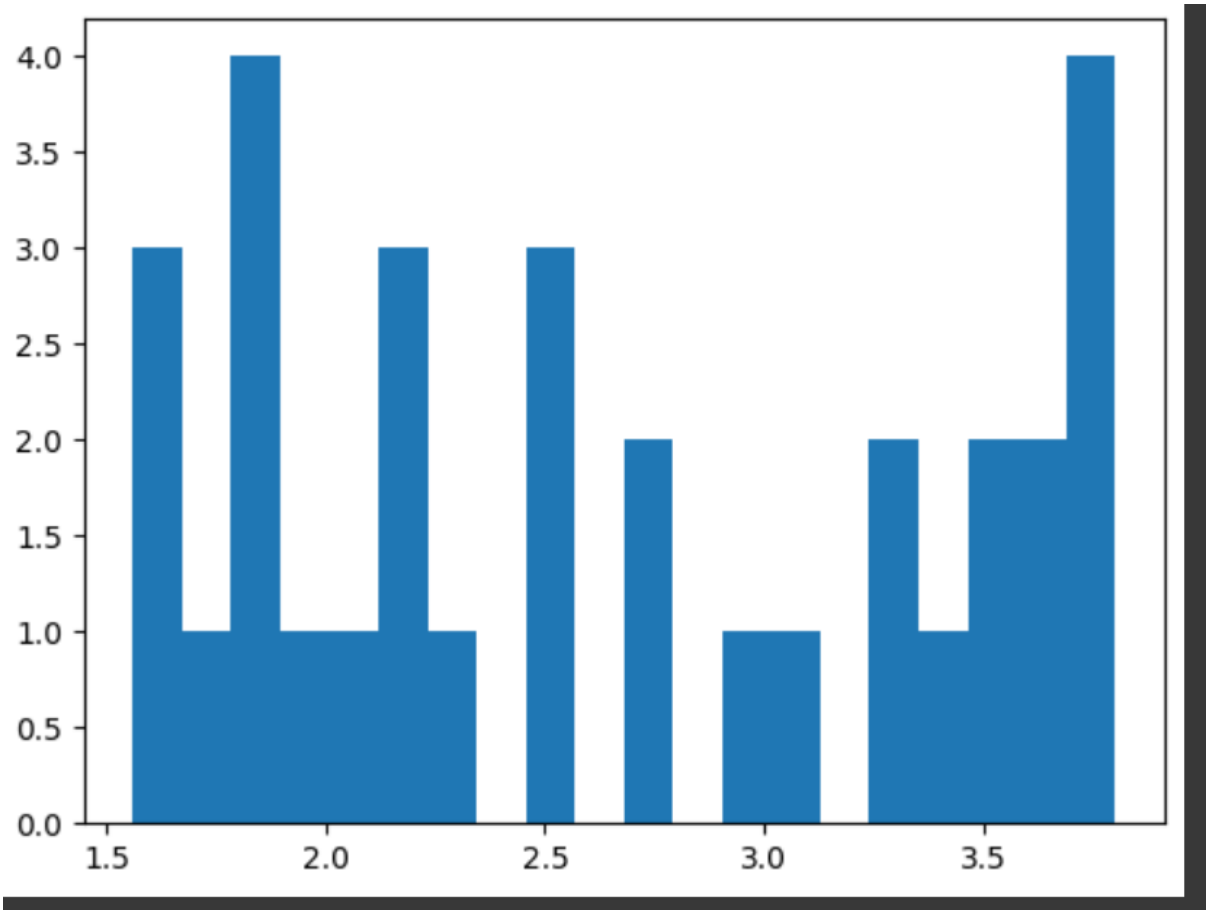
- What is your current academic level?
- On average, how often do you miss classes?
- What is your current GPA or grade point average?
- How do you catch up if you missed a class?

- Do you feel that regular attendance helps you stay more engaged with the course material?

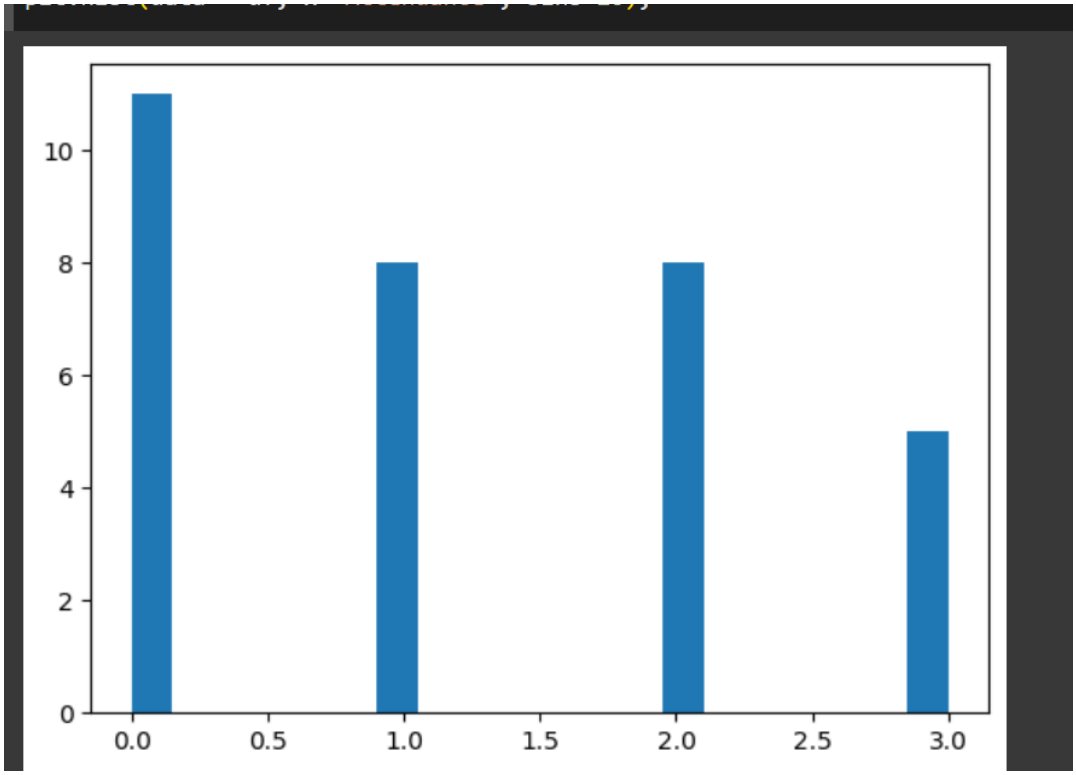
Online survey link:
https://docs.google.com/forms/d/e/1FAIpQLSdXGGdlxC70bSAlzwAn9lwcnYUkukwr0p4GKze-lFwUrAMSeQ/viewform?usp=dialog

Number of samples collected: 32

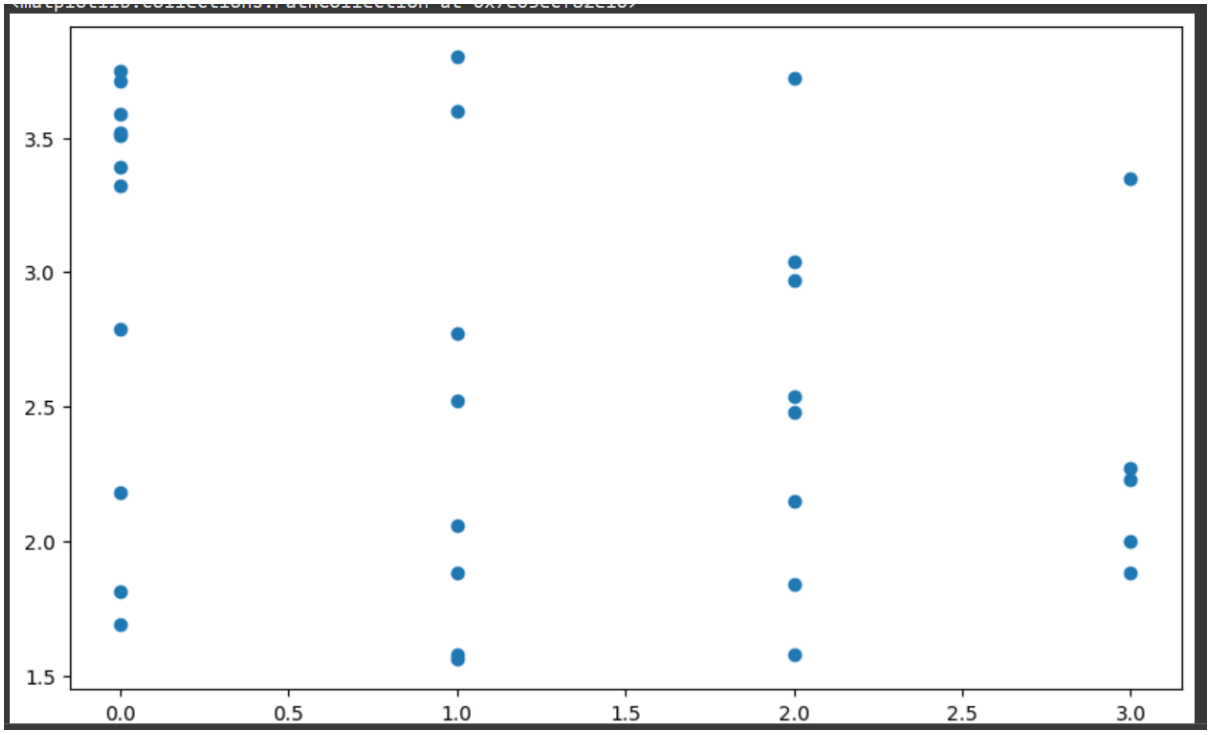
Analysis:



This histogram represents the distribution of GPA responses from the survey, showing how student GPAs are spread across different ranges. The data suggests that while some students have high GPAs (above 3.5), a significant portion falls within the lower and mid-range (around 2.0–3.0), indicating a diverse academic performance among participants.



This histogram represents the distribution of attendance levels among students based on the survey responses. The x-axis indicates different attendance categories (0 = Never, 1 = Rarely, 2 = Often, 3 = Always), while the y-axis shows the number of students in each category. The visualization suggests that a significant number of students rarely or never attend classes, while fewer students maintain consistent attendance, which could indicate a potential challenge in engagement and academic performance.



This scatter plot represents the relationship between class attendance (x-axis) and GPA (y-axis). The x-axis values correspond to different attendance levels (0 = Never, 1 = Rarely, 2 = Often, 3 = Always), while the y-axis shows the students' GPA. The distribution of points suggests a general trend where students with higher attendance tend to have higher GPAs, supporting the hypothesis that regular attendance positively impacts academic performance. However, some outliers indicate that other factors might also contribute to GPA variations.

Description:

	GPA	Attendance
count	32.00000	32.000000
mean	2.65875	1.218750
std	0.77091	1.099395
min	1.56000	0.000000
25%	1.97000	0.000000
50%	2.53000	1.000000
75%	3.42000	2.000000
max	3.80000	3.000000

Conclusion

Based on the responses collected, this survey provides insights into the relationship between **academic performance (GPA)** and **class attendance** among students. The data suggests that students who attend classes more regularly tend to have **higher GPAs**, while those who frequently miss classes may struggle academically.
Additionally, the survey highlights different ways students compensate for missed lectures, such as **self-study, online resources, or relying on lecture notes from classmates**. However, regular attendance appears to contribute to better **engagement with course material**, reinforcing the importance of in-class participation.

Any potential issues

- **Sampling Bias** – Convenience sampling may not represent the entire student population, as it only includes those active in the WhatsApp group.
- **Small Sample Size** – With only 32 participants, the findings may not be generalizable to a larger student body.
- **Self-Reported Data** – Participants may not provide entirely accurate responses due to memory bias or personal preference.
- **Lack of Control Variables** – Other factors influencing GPA (e.g., study habits, prior academic performance, socioeconomic status) are not accounted for.
- **Online Survey Limitations** – Some students may not complete the survey seriously, leading to inconsistent or unreliable data.