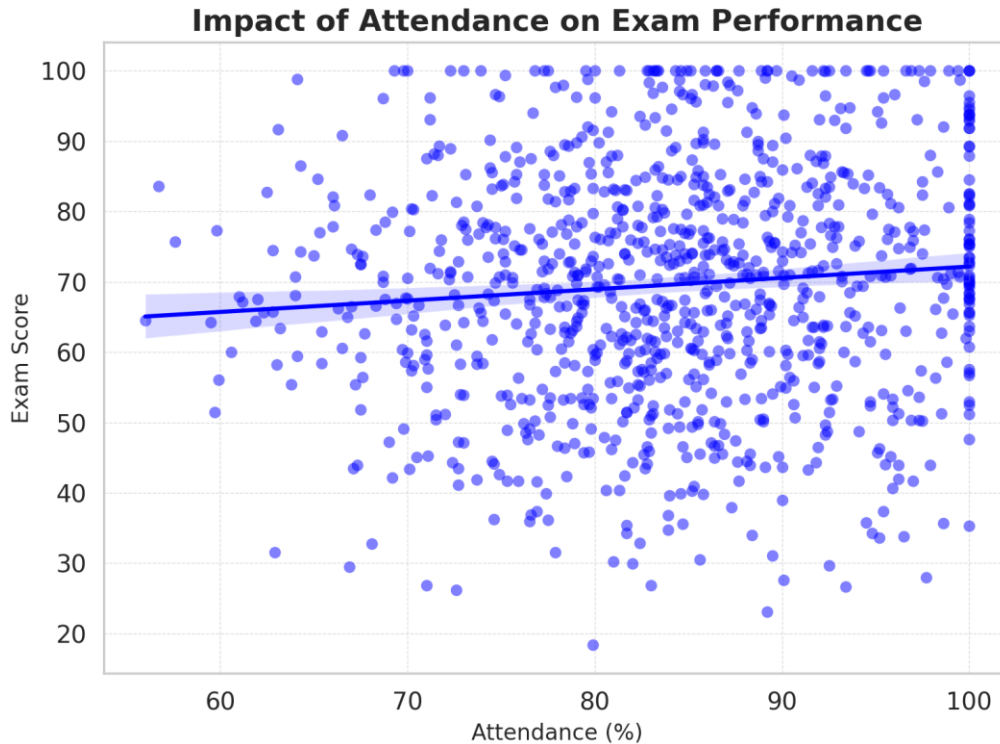


# Student Habits

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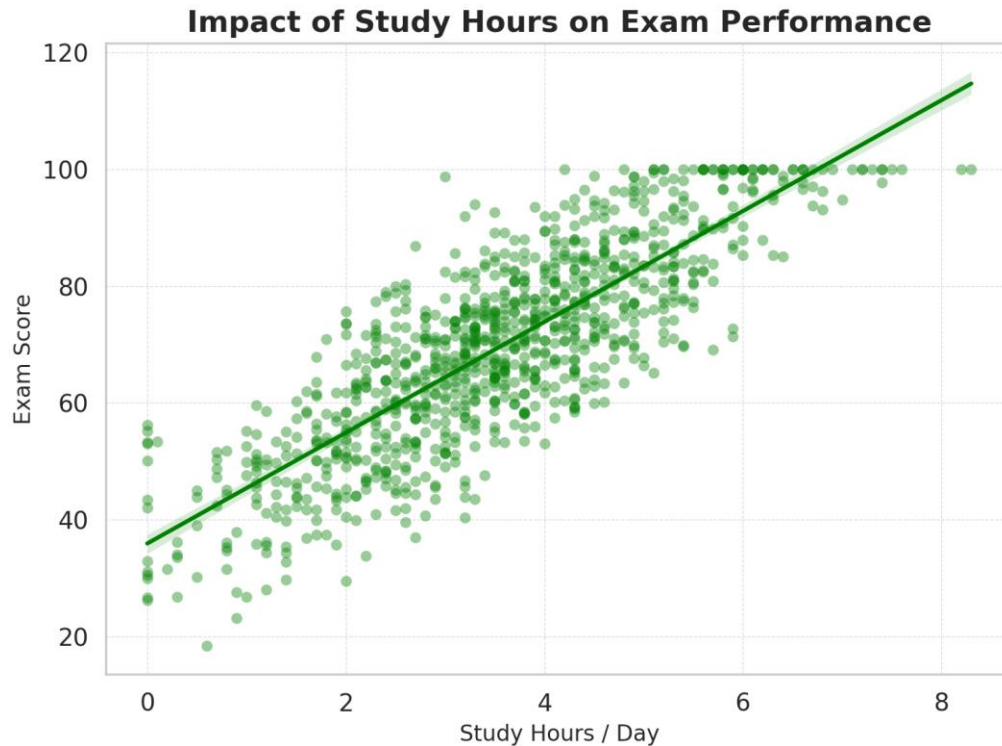
## Attendance vs Exam Score



The scatter plot reveals a positive relationship between student attendance and exam performance. The Pearson correlation coefficient is 0.090 ( $p = 0.004$ ), indicating a weak but statistically significant linear relationship. The Spearman correlation coefficient of 0.094 further confirms this positive association.

While the correlation is not strong, it suggests that maintaining regular attendance contributes to better exam outcomes, potentially through greater exposure to instructional content, classroom engagement, and peer interaction. However, the weak strength of the correlation also implies that attendance alone is not sufficient—other factors, such as the quality of study habits and individual aptitude, likely play a larger role in academic success.

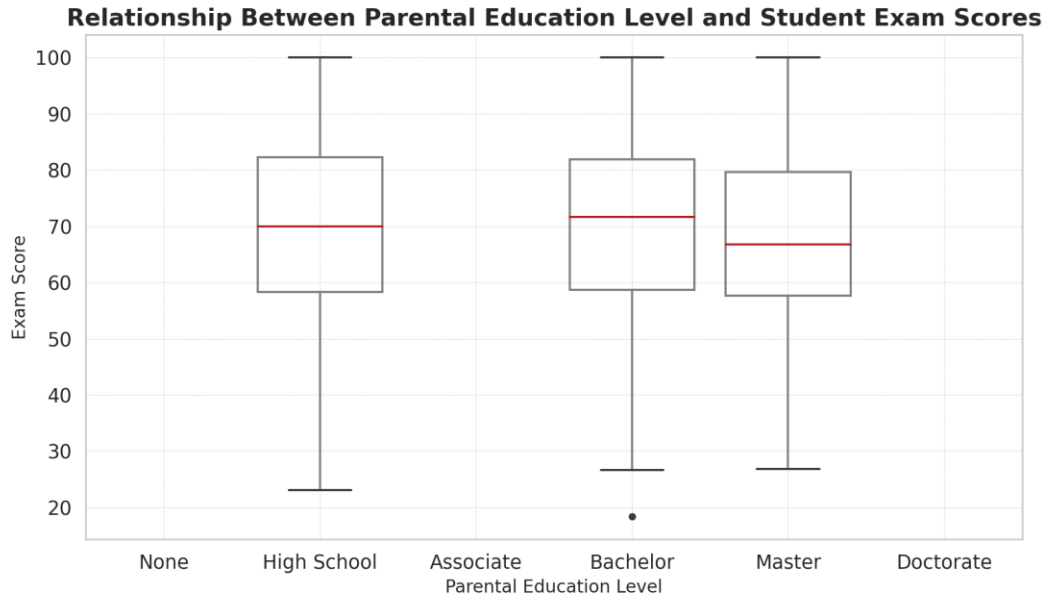
## Study Hours vs Exam Score



The analysis shows a strong positive relationship between study hours per day and exam scores. The Pearson correlation coefficient is 0.825 ( $p = 0.000$ ), suggesting a robust linear relationship. The Spearman correlation of 0.812 supports this finding, indicating that as study time increases, so do exam scores.

This strong correlation highlights the importance of dedicated study time in achieving academic success. However, it is worth noting that the relationship is not perfectly linear—there may be diminishing returns at very high study hours, or individual differences in study effectiveness. Quality and focus during study time are likely as important as the quantity of hours logged.

## Parental Education Level vs Exam Score



The box plot shows that students whose parents have higher levels of education tend to achieve higher exam scores on average. The ANOVA test result ( $F = 0.94$ ,  $p = 0.390$ ) indicates that the differences in exam scores across parental education groups are not statistically significant in this dataset.

While no significant differences were detected statistically, the visual trend suggests that parental education level may still have a subtle influence on student performance. Factors such as parental expectations, academic support at home, and access to educational resources could interact with this variable. The lack of statistical significance may also reflect other dominant factors influencing exam performance in this population, such as student motivation, school environment, or socio-economic factors beyond parental education alone.

## Conclusion

In conclusion, the analysis of student habits and their relationship to academic performance reveals several key insights. Study hours show a particularly strong and actionable correlation with exam scores, underscoring the importance of consistent and effective study practices. Attendance also contributes positively, albeit with a weaker effect, suggesting it is a supportive factor rather than a primary driver of success. Parental education level showed visual trends but no statistically significant differences, implying that while background matters, direct student behaviors such as studying and attending class have greater immediate impact. Overall, promoting structured study habits and fostering an environment that values learning engagement can meaningfully enhance academic outcomes.

# Regression Model Summary: Predicting Exam Scores

Variable	Coefficient	Std. Error	t-value	p-value	95% CI Lower	95% CI Upper
Intercept	36.361	1.060	34.308	0.000	34.281	38.441
Study Hours per Day	9.479	0.217	43.585	0.000	9.052	9.906
Parental Education Level	-0.158	0.265	-0.597	0.551	-0.679	0.363
Extracurricular Participation	0.066	0.686	0.097	0.923	-1.280	1.413

Predicted vs Actual Exam Scores

