WEEKEND PHONE USAGE VS ACADEMIC PERFORMANCE

9th grade only

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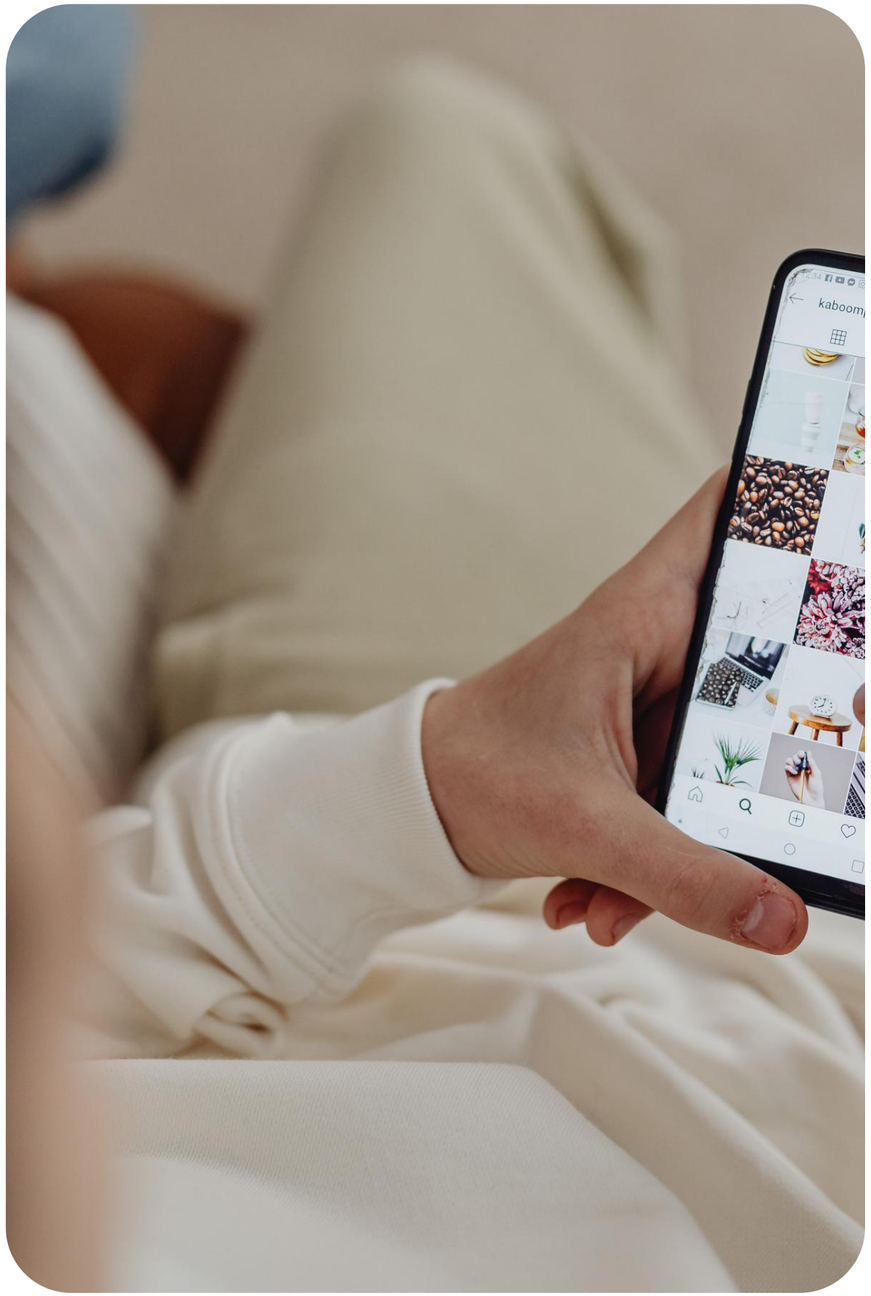
WEEKEND PHONE USAGE VS ACADEMIC PERFORMANCE

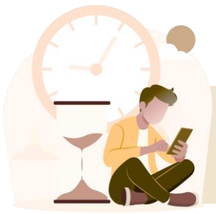
Many teenagers use their smartphones often, especially on weekends. This project explores whether using the phone too much can negatively affect school performance.

9TH GRADE ONLY



RESEARCH QUESTION

Do students who use their phones more on weekends get lower grades (GPA)?



HYPOTHESIS

Students who spend more time on their phones will have lower grades.

PURPOSE

Use basic statistics and graphs to find out if there's a connection between phone use and academic performance.

DATASET

Initially, 3,000 student records were available. Due to computational considerations, we analyzed the first 2,000 records.

Only students in the 9th grade were selected for this study to maintain a consistent academic level across all observations.

Weekend_Usage_Hours

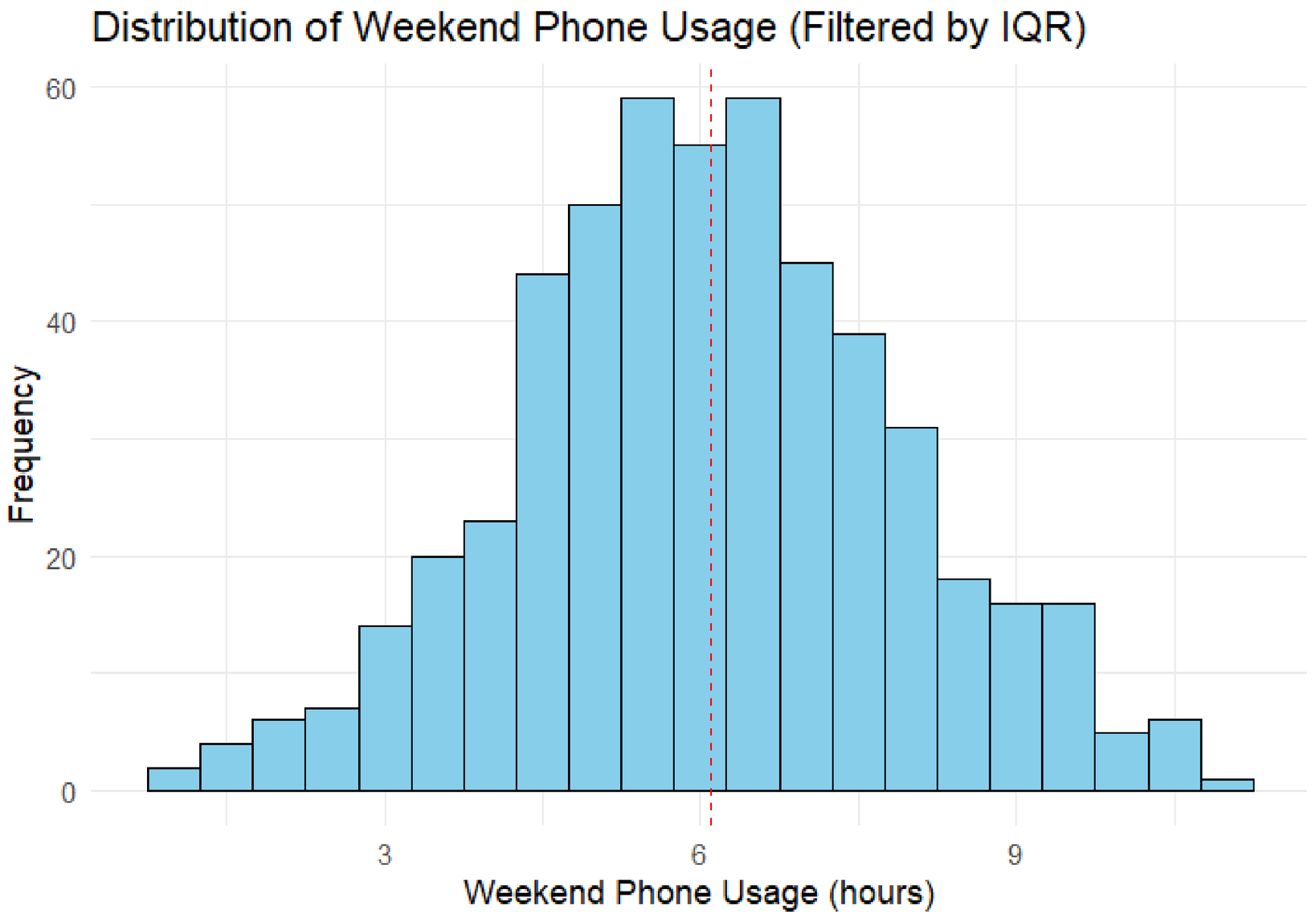
KEY VARIABLES

Measured using students' GPA

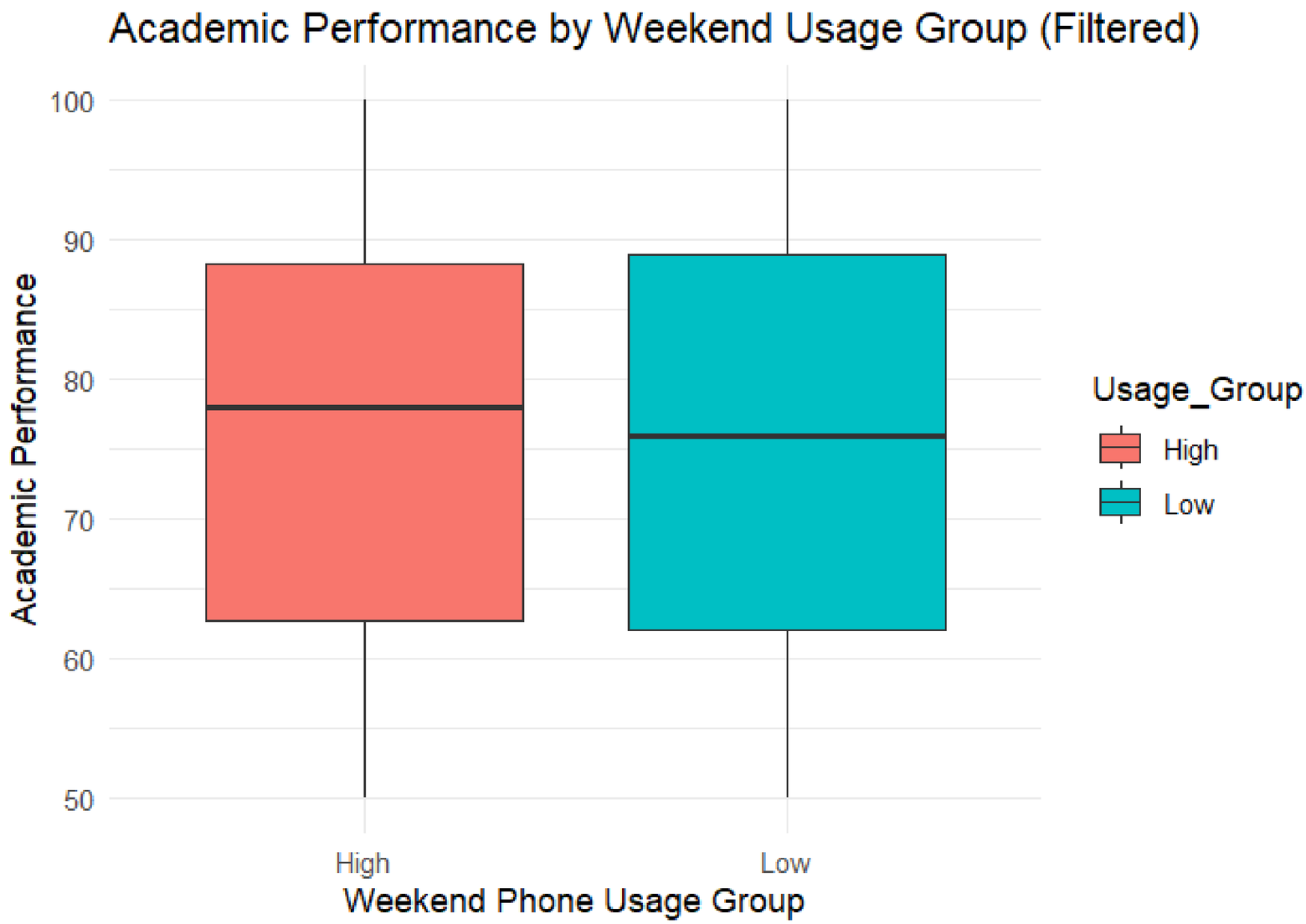
GROUP CLASSIFICATION

We calculated the median of weekend phone usage across all students. This value served as the threshold to create two groups:

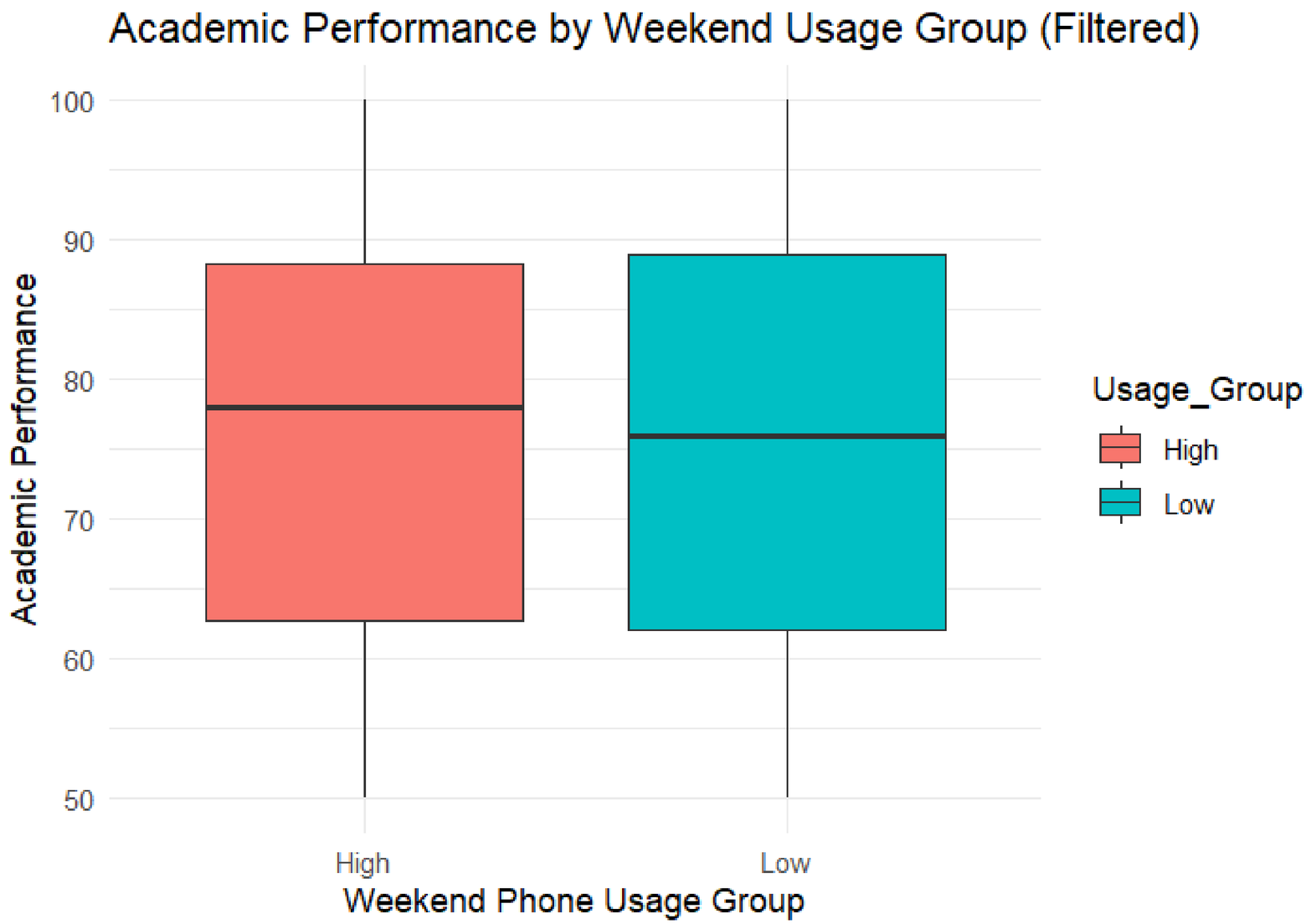
- **High Usage Group: Students whose phone usage exceeds the median.**
- **Low Usage Group: Students whose phone usage is at or below the median.**



HISTOGRAM OF WEEKEND PHONE USAGE



BOXPLOT OF ACADEMIC PERFORMANCE BY GROUP



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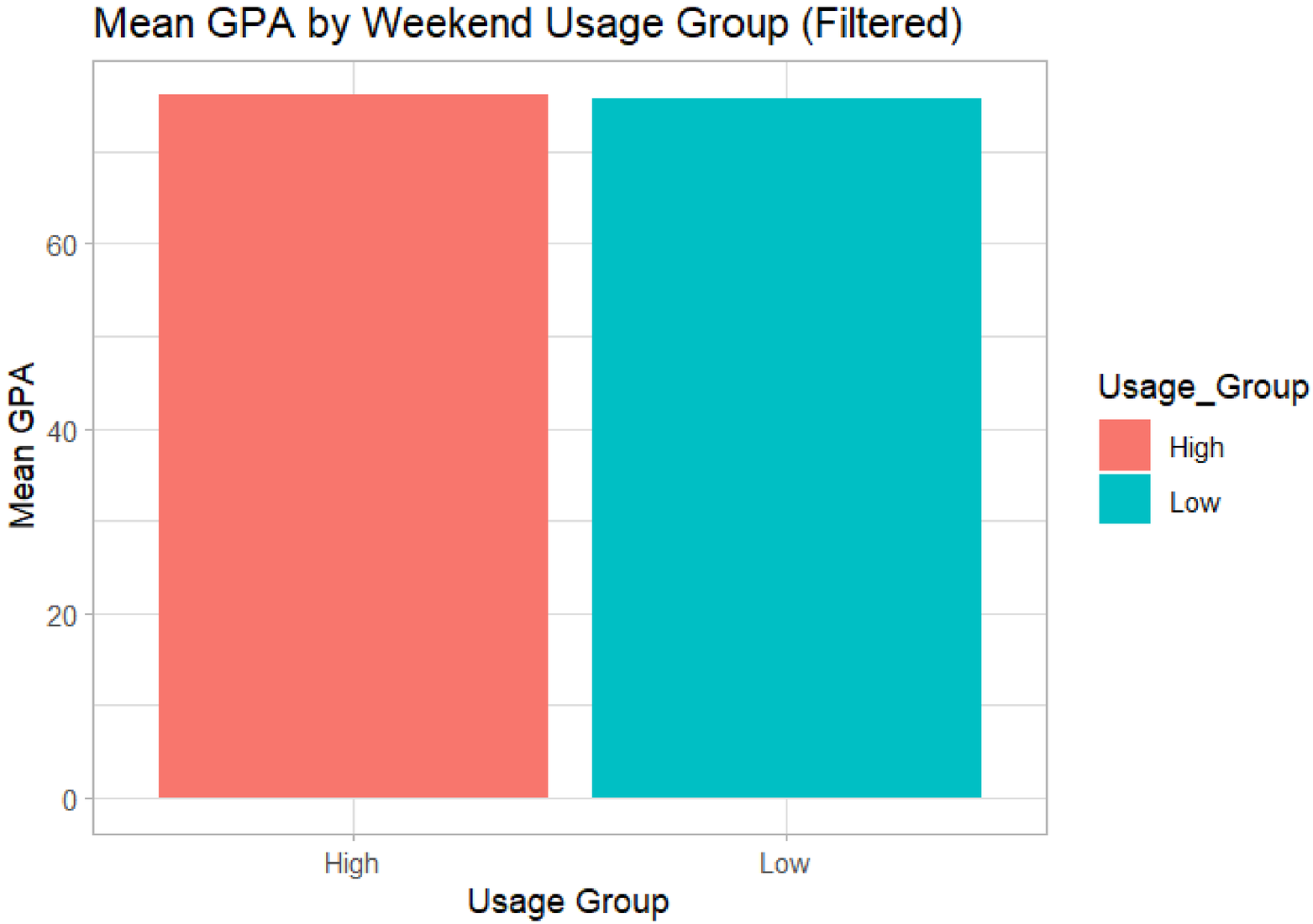
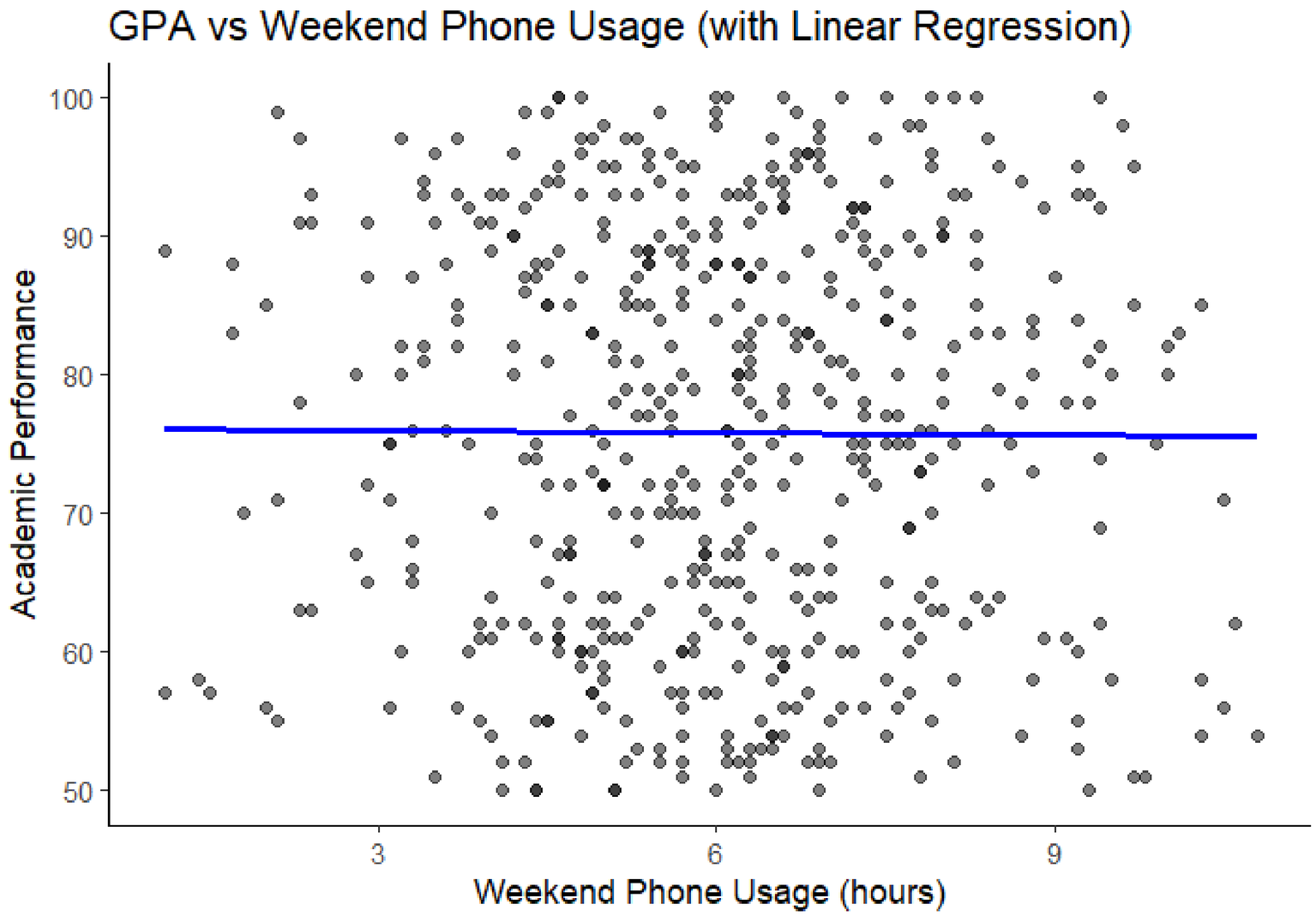


BAR CHART OF MEAN GPA BY GROUP



LINEAR REGRESSION

- **The line has a slightly negative slope, but very close to zero.**
- **This means as phone usage increases, GPA barely changes.**
- **There is high dispersion (spread) in GPA values at all phone usage levels.**
- **The low slope suggests that weekend phone usage does NOT meaningfully predict GPA.**

LINEAR REGRESSION

The linear regression model shows no significant relationship between weekend phone usage and academic performance (p = 0.885). The R^2 value is nearly zero, indicating that phone usage explains almost none of the variation in GPA.

Interpretation of Results		
Intercept	76.12	Predicted GPA when weekend usage is 0 hours.
Slope	-0.051	GPA decreases slightly (~0.05) per hour of phone use, but this effect is not significant.
p-value (slope)	0.885	Much greater than 0.05 → no significant relationship between usage time and GPA.
R^2	0.00004	Model explains virtually none of the variation in GPA.
F-statistic p-value	0.8848	The overall model is not statistically significant.

Linear Regression Equation:

- **Academic_Performance =** **76.12 − 0.05 × Weekend_Usage_Hours**

T-TEST RESULTS (HYPOTHESIS TESTING)

Test Applied: Two-sample t-test comparing GPA between High and Low Usage groups.

Since the p-value = 0.7264 is much greater than 0.05, we fail to reject the null hypothesis.

- **Null hypothesis (H_0): The mean GPA of High and Low usage groups is the same.**
- **Alternative hypothesis (H_1): The mean GPA is different between the two groups.**
  - **t-statistic: 0.35 (very close to 0)**
  - **95% Confidence Interval: [−2.08, 2.98]**

“There is no statistically significant difference in academic performance between the High and Low weekend phone usage groups”.

Welch Two Sample t-test					
t:	0.3344	df:	515.17	p-value:	0.7382

Alternative Hypothesis:	True difference in means between group High and group Low is not equal to 0

95 percent confidence interval	
-2.100466	2.962204

Mean in group High	Mean in group Low
76.04365	75.61278

"The t-test shows no significant difference in academic performance between students with high vs. low weekend phone usage (p = 0.7264), suggesting that phone use alone may not strongly affect GPA."

CONCLUSIONS

The data does not support a significant relationship between weekend phone usage and academic performance. Both linear regression and hypothesis testing suggest that phone usage alone is not a meaningful predictor of GPA among 9th-grade students.