GITHUB PORTFOLIO

Demographic Behavioral Data

E-REPORT

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DEMOGRAPHIC

E REPORT

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BI120L

INTRODUCTION

- Topic: Analysis of demographic and behavioral health data from 1,000 patients.
- Key Variables: Age, sex, weight, height, BMI, region, socioeconomic status, education, smoking, alcohol use, physical activity, health literacy, patient satisfaction.

METHODS USED FOR ANALYSIS

Data Cleaning:

- Removed columns with >80% missing data.
- Excluded rows missing values in core variables (age, sex, BMI, PA, smoking).

Variable Transformation:

- Categorical conversion: sex (Female = 0, Male = 1); smoking_status (Non-Smoker = 0, Occasional = 1, Chainsmoker = 2).

Statistical Tools:

- Descriptive stats: summary(), describe().
- Visualizations: Histogram (Health Literacy), Bar plot (Smoking), Box plot (BMI by sex), Scatter plot (BMI vs. PA).

Statistical tests:

- Pearson correlation: BMI vs Physical Activity.
- Welch Two-Sample t-test: BMI by sex.
- Correlation matrix: All numeric variables.

KEY RESULTS AND FIGURES

Pearson Correlation (Table 1):

- BMI vs Physical Activity: r = -0.00038, p = 0.9905
- ➤ No significant correlation.

Welch Two-Sample t-test (Table 2):

- Mean BMI (Females): 28.29
- Mean BMI (Males): 26.28
- t = 6.87, p < 0.001 ➤ Statistically significant difference

Notable Correlations:

- BMI ↔ Height: -0.75 (strong negative)
- BMI ↔ Weight: 0.51 (moderate positive)
- Socioeconomic Status ↔ Weight: 0.46
- Education ↔ Health Literacy: 0.39
- Drinking Status ↔ Socioeconomic Status: -0.41

FIGURES

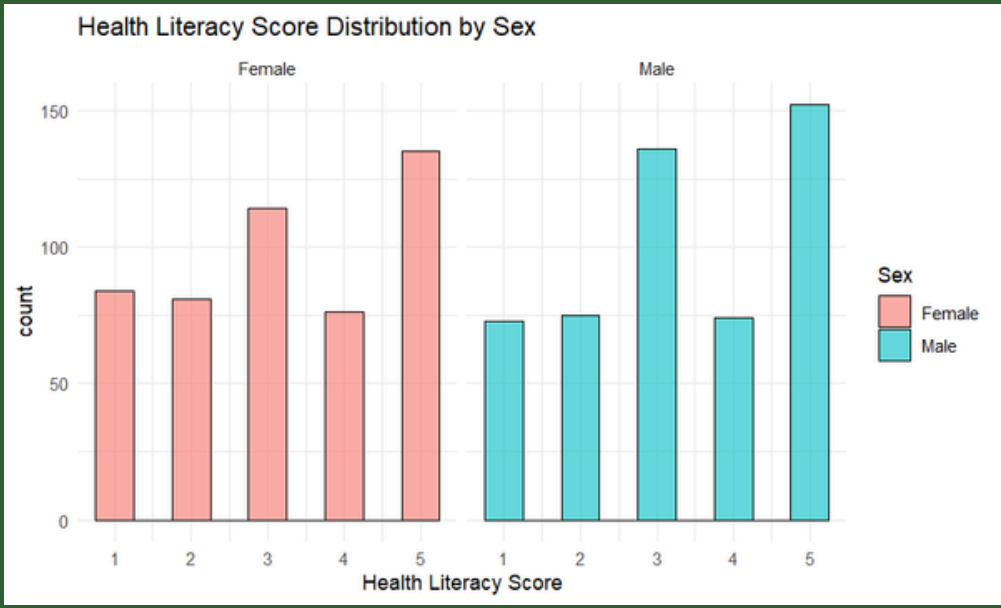

Figure 1: Health Literacy Scores skewed high; similar for both sexes.

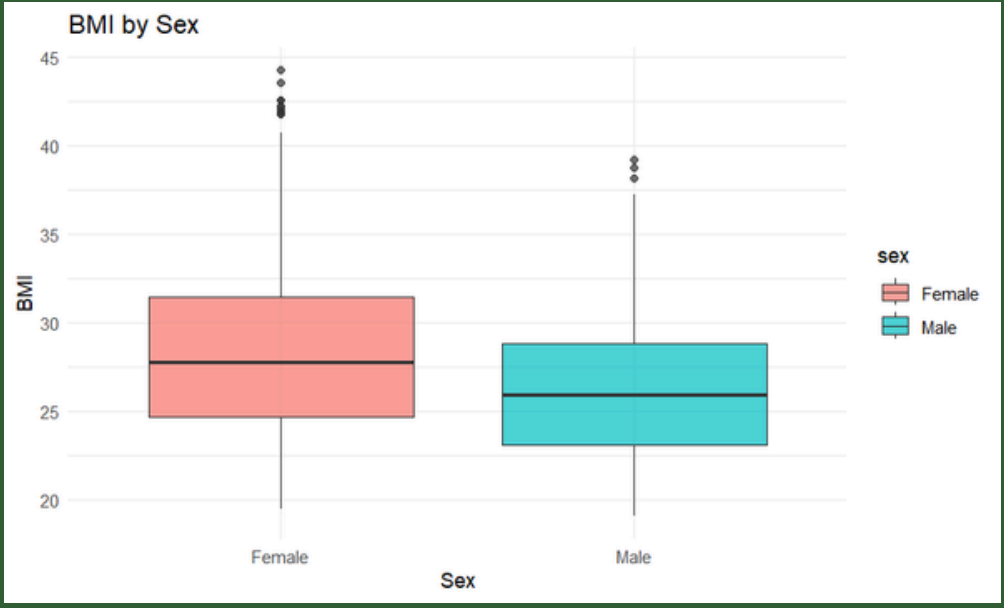

Figure 2: Box plot shows females have higher median BMI.

FIGURES

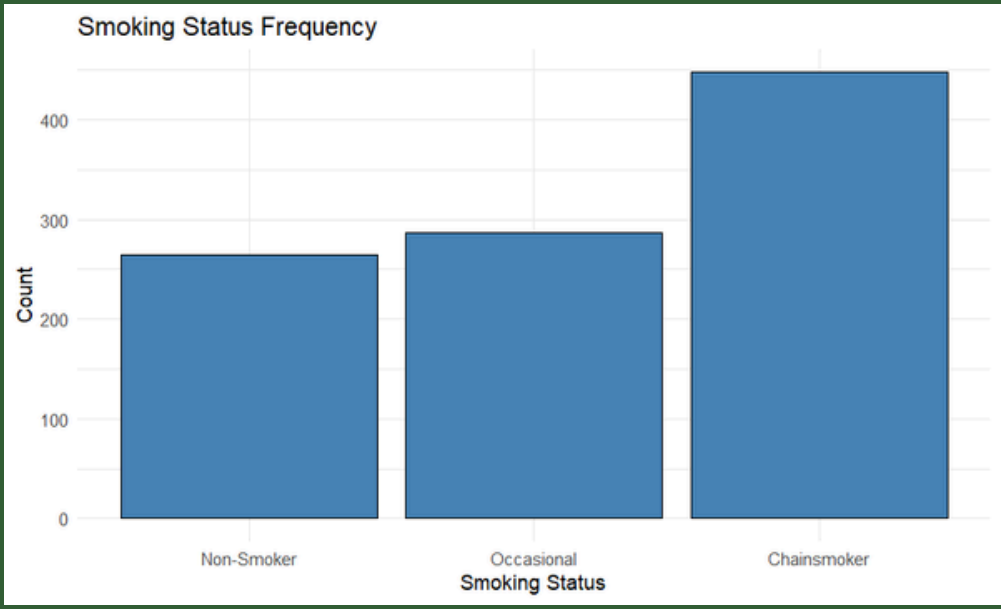

Figure 3: Chainsmokers most common smoking group.

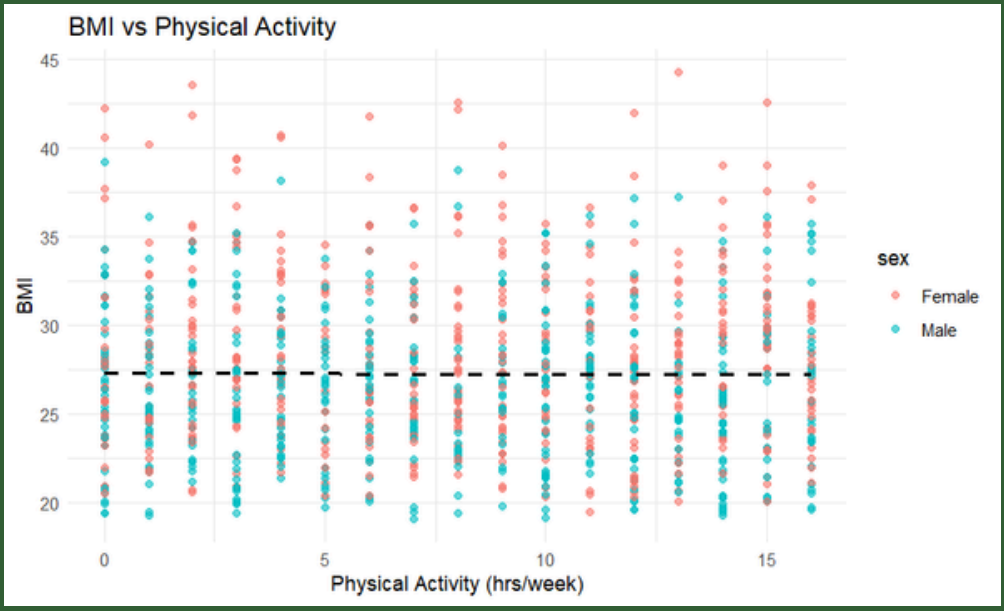

Figure 4: Scatter plot (BMI vs. PA) suggests no clear linear relationship.

INTERPRETATION AND BRIEF CONCLUSION

Significant Sex-Based Difference in BMI:

- Females had significantly higher BMI than males.

No Linear Relationship Found:

- No significant correlation between BMI and physical activity hours.
- Behavioral and Demographic Insights:
- Higher socioeconomic status associated with higher weight.
- Higher education linked to better health literacy.
- More frequent drinking associated with lower socioeconomic status.

Conclusion:

- While expected relationships (e.g., BMI and weight) were confirmed, the lack of association between BMI and physical activity highlights complexity in health behavior.
- Suggests need for deeper analysis using non-linear models or considering confounding factors (e.g., diet, stress, sleep).