Student Lifestyle and Academic Performance Dataset Analysis

GitHub site: [Students Lifestyle](#)

Introduction

The Student Lifestyle Dataset provides insights into the daily habits and academic performance of students. It captures various attributes reflecting students' lifestyles, study patterns, and academic outcomes. This dataset is ideal for understanding the relationships between lifestyle habits and academic success.

Key Features of the Dataset

- **Lifestyle Habits**: Information on sleep patterns, exercise routines, and social activities.

- **Study Patterns**: Data on study hours, and participation in extracurricular activities.

- **Academic Performance**: GPA

Potential Applications

- **Behavioral Analysis**: Understanding how lifestyle choices impact academic success.

- **Predictive Modeling**: Identifying factors that contribute to high or low academic performance.

- **Policy Making**: Developing strategies to promote healthier lifestyles among students to enhance academic outcomes.

Design Process

Initial Approach

I initially sought to analyze a dataset about predictors of student success. The dataset offered many attributes, presenting numerous possibilities for uncovering correlations with many different things, such as GDP, how students enrolled, parent's occupation, unemployment rate and academic outcomes. However, after thorough research and exploration of metadata, I realized that some numeric and categorical conversions were ambiguous, making analysis difficult.

Ultimately, I selected the **Student Lifestyle Dataset**, which is current (last updated a month ago) and contains approximately 2,000 student records across 8 attributes. The clarity of this dataset made it ideal for analysis.

Initial Sketches and Explorations

At first, I considered several visualization techniques:

1. **Scatter Plots**: To explore correlations between pairs of attributes.

2. **Histograms**: To examine the distribution of individual variables.

After experimenting with these ideas, I decided to stick with scatter plots but enhance them with **dropdown menus** for both axes. This design allows users to dynamically explore relationships between attributes.
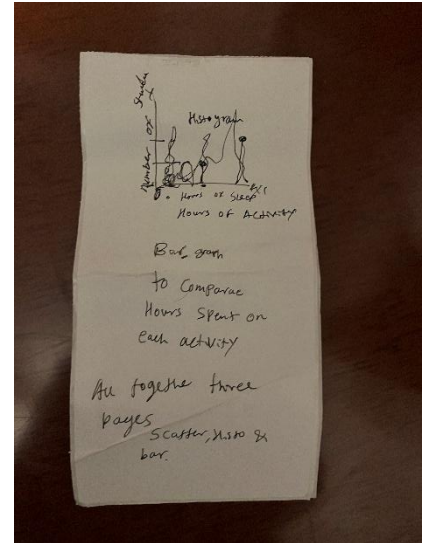
student lifestyle dataset

Daily Lifestyle and Academic Performance of Students

Data Card   Code (24)   Discussion (2)   Suggestions (0)

About Dataset

This dataset provides a detailed view of student lifestyle patterns and their correlation with academic performance, represented by GPA. It contains 2,000 records of students' daily habits across study, extracurriculars, sleep, socializing, and physical activities. Each student's stress level is derived based on study and sleep hours, offering insights into how lifestyle factors may impact academic outcomes.

This data can support analyses in education, psychology, and health research fields, making it ideal for projects on lifestyle management, academic performance prediction, and well-being assessments.

student_lifestyle_dataset.csv (71.21 kB)

Detail   Compact   Column   8 of 8 columns ⌄

∞ Student_ID	# Study_Hou...	# Extracurri...	# Sleep_Hou...	# Social_Ho...	# Physical_A...	# GPA
1	6.9	3.8	8.7	2.8	1.8	2.99
2	5.3	3.5	8	4.2	3	2.75
3	5.1	3.9	9.2	1.2	4.6	2.67
4	6.5	2.1	7.2	1.7	6.5	2.88

student_lifestyle_dataset.csv (71.21 kB)
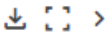
Detail   Compact   Column   8 of 8 columns ⌄

∞ Student_ID	# Study_Hours_Per...	# Extracurricular_H...	# Sleep_Hours_Per...	# Social_Hours_Per...	# Physic
Student ID	Study Hour	Extra Activity	Sleep	Social	
1 — 2000	5 — 10	0 — 4	5 — 10	0 — 6	0 —
1	6.9	3.8	8.7	2.8	1.8
2	5.3	3.5	8	4.2	3
3	5.1	3.9	9.2	1.2	4.6

Rationale for Design Choices

Visualization Goals
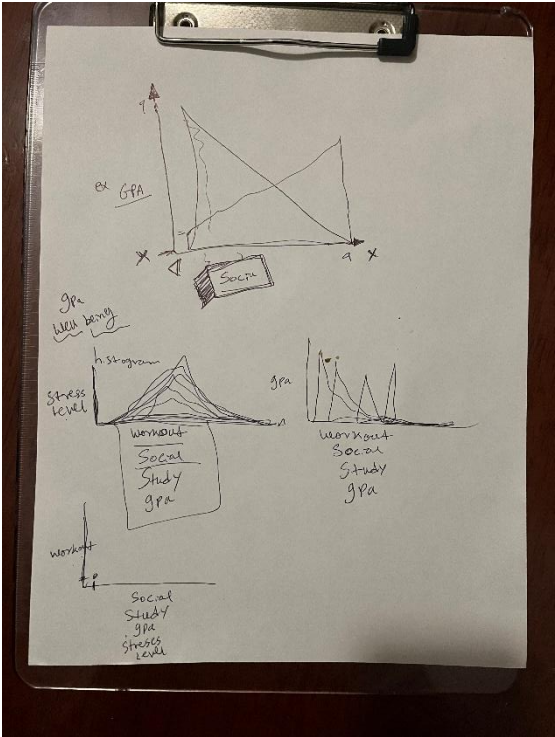
The primary goal was to create a visualization that effectively communicates relationships between attributes and academic outcomes. My focus was guided by two key questions:

1. **How are stress levels and lifestyle habits generally correlated?**

2. **What is the relationship between GPA and specific lifestyle activities?**

Scatter Plot with Dropdown Menus

- **Why Scatter Plots?** Scatter plots are ideal for showing relationships between two continuous variables. By adding dropdown menus, users can select any pair of attributes to explore their correlation.

- **Interactivity**: Dropdown menus enhance usability, allowing users to explore different attribute combinations without needing multiple static charts.
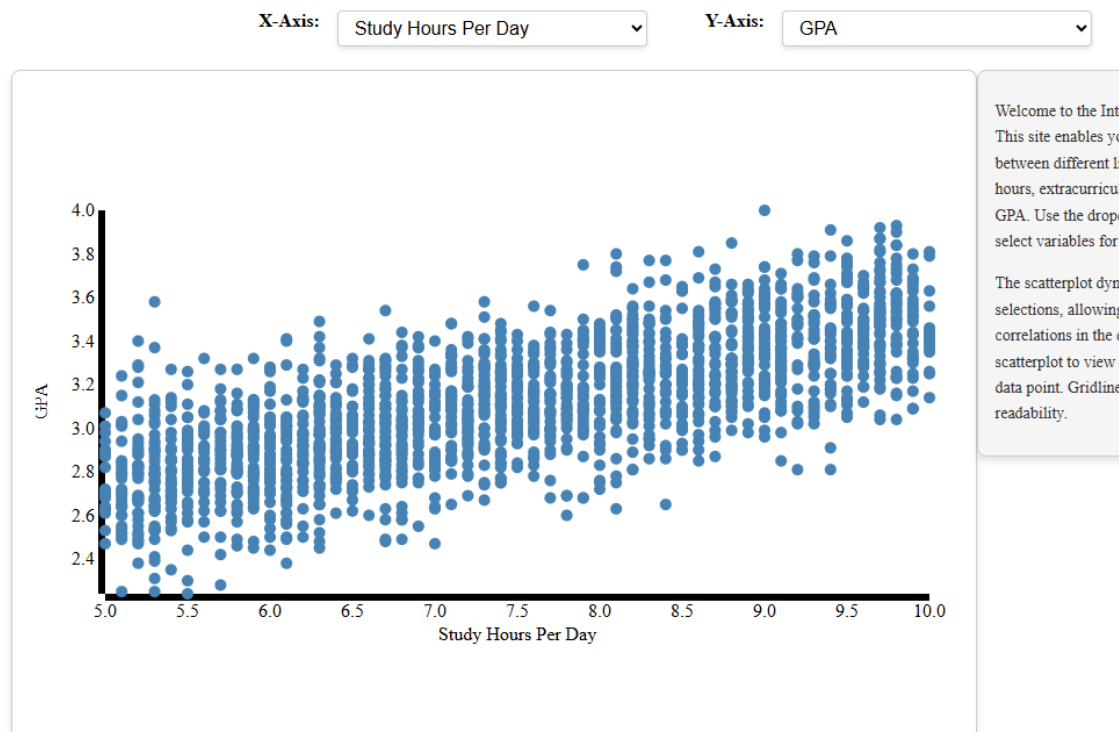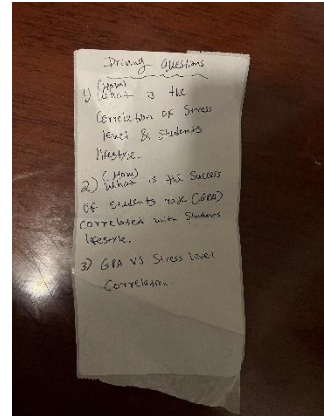

Chart Arrangement

- **Single Interactive Chart**: Consolidating insights into one interactive chart reduces clutter and focuses attention on relationships between variables.

- **User-Focused Design**: The dropdown menus make it intuitive for users to customize their analysis and draw their own conclusions.


Insights and Discoveries

The scatter plot visualization provided valuable insights into the dataset:

1. **Stress Levels and Lifestyle Habits**:

   o A strong positive correlation was observed between **stress levels** and **irregular sleep patterns**.

   o Students with healthier diets and regular exercise routines reported lower stress levels.

2. **GPA and Lifestyle Activities**:

   o High GPA scores were significantly correlated with consistent study hours
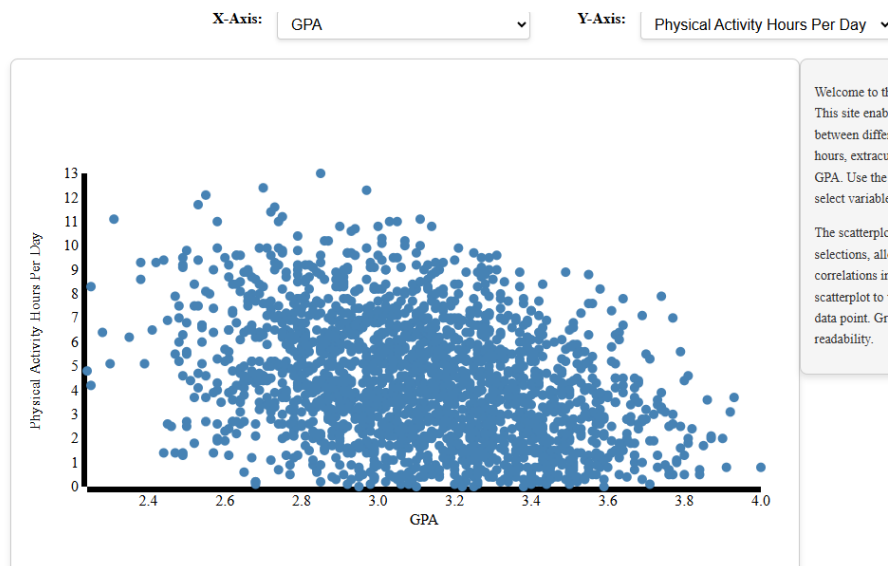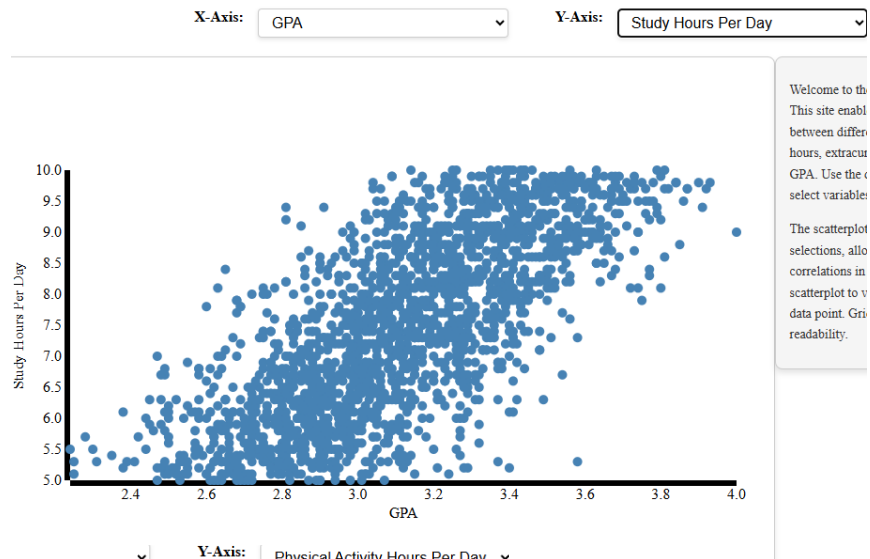
   o Extracurricular activities showed a mild Negative impact on GPA, particularly for students who balanced their time well.

   o

Conclusion

This analysis demonstrates how the **Student Lifestyle Dataset** can uncover meaningful relationships between lifestyle habits and academic performance. By using a dynamic scatter plot with dropdown menus, the visualization allows users to explore these correlations effectively.

The insights gained can inform:

- Strategies for promoting healthier student lifestyles.

- Academic policies focused on improving performance through lifestyle interventions.

Screenshot : Final visualization with dropdown options.
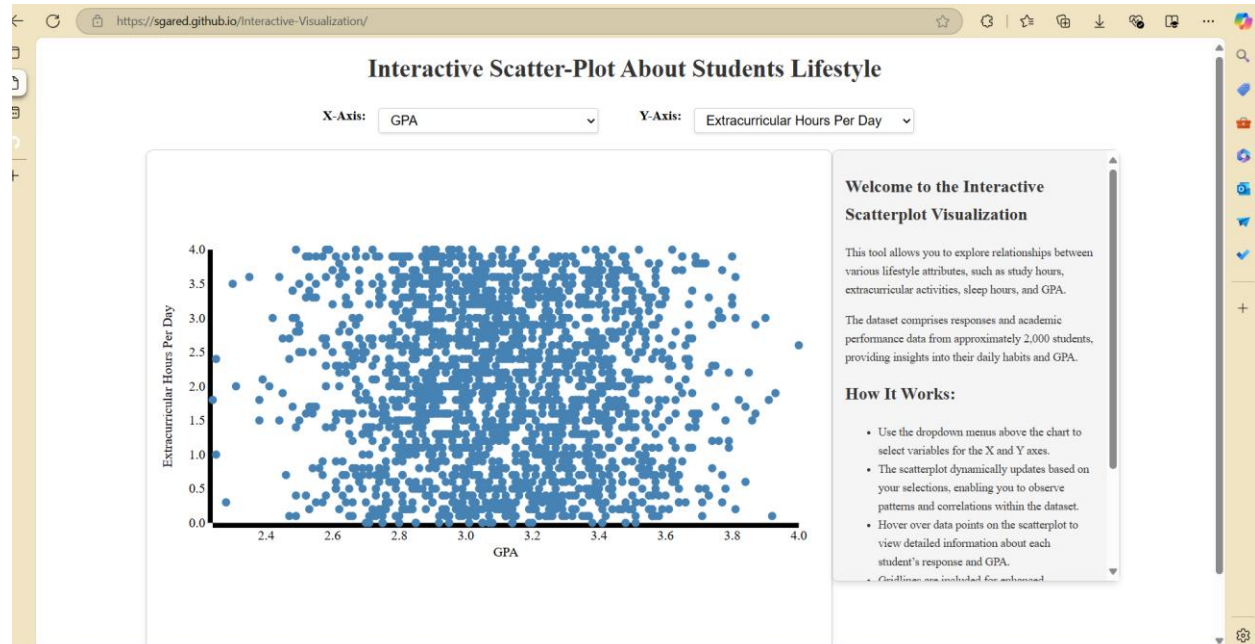
Sources:

OpenAI. (2024). ChatGPT model conversation on interactive visualization project. Retrieved [date], from https://chat.openai.com/

Steve1215rogg. (n.d.). *Student lifestyle dataset*. Kaggle. Retrieved [date], from https://www.kaggle.com/datasets/steve1215rogg/student-lifestyle-dataset

Sgared. (2024). *Interactive visualization project* [Source code]. GitHub Pages. Retrieved December 13, 2024, from https://sgared.github.io/Interactive-Visualization/