**Student Lifestyle and Academic Performance Dataset Analysis**

**GitHub site:** [**Students Lifestyle**](https://sgared.github.io/Interactive-Visualization/)

**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.

A piece of paper with writing on it

Description automatically generatedUltimately, 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.

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**Rationale for Design Choices**

**Visualization Goals**

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Description automatically generatedThe 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.

*A screen shot of a graph

Description automatically generated***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**:
   * A strong positive correlation was observed between **stress levels** and **irregular sleep patterns**.
   * Students with healthier diets and regular exercise routines reported lower stress levels.
2. A screen shot of a graph

   Description automatically generated**GPA and Lifestyle Activities**:
   * A screen shot of a graph

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

**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.*

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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>

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