Report on the Analysis of the Performance of Bangladeshi Students
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Group Number: 16
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Abstract

The project explores factors influencing academic performance among Bangladeshi students. Using Python and data analysis tools, we delve into the effects of internet access, extracurricular activities, and demographics on student outcomes. The insights aim to guide educators and policymakers to improve educational strategies while enhancing our technical and analytical skills.

Introduction

Education is essential for the progress of society. This project "Analysis of the Performance of Bangladeshi Students" explores important factors that influence academic success, including internet access, geographic location, and parental involvement. By thoroughly analyzing a large dataset, we aim to identify trends that affect education in Bangladesh. This initiative is not only an academic endeavor but also an opportunity to offer practical insights that can lead to improved educational outcomes.

Objectives

Our objectives to
- ✓ Investigate how internet usage impacts students in urban and rural areas.
- ✓ Compare academic performance across subjects and demographics.
- ✓ Analyze relationships between age, gender, and academic achievements.
- ✓ Explore connections between location, internet access, study time, and tutoring.
- ✓ Assess the influence of extracurricular activities on students.
- ✓ Provide actionable insights to address educational challenges.

Methodology

✓ **Data Overview**

The dataset contains information about 8,612 students with details such as:
- Personal Information: Age, Gender, Location, Family Size.
- Education Details: Subjects like English, Math, Science, and Social Science.
- Other Attributes: Internet Access, Study Time, and Extracurricular Participation.

✓ **Data Preparation**

We cleaned the data by:
- Removing missing or inconsistent values.

- Ensuring data fields like internet access and gender were standardized.

✓ **Tools Used**

Python Libraries:

- *pandas* for data handling.
- *matplotlib* and *seaborn* for creating graphs and charts.
- *numpy* for statistical calculations.

✓ **Analysis Techniques**

- Grouped data based on key attributes like internet access and student groups.
- Visualized trends using bar graphs and stacked charts for easy interpretation.

Flowchart

A flowchart illustrating the working process of the Suspicious Link Checker extension should be inserted here:
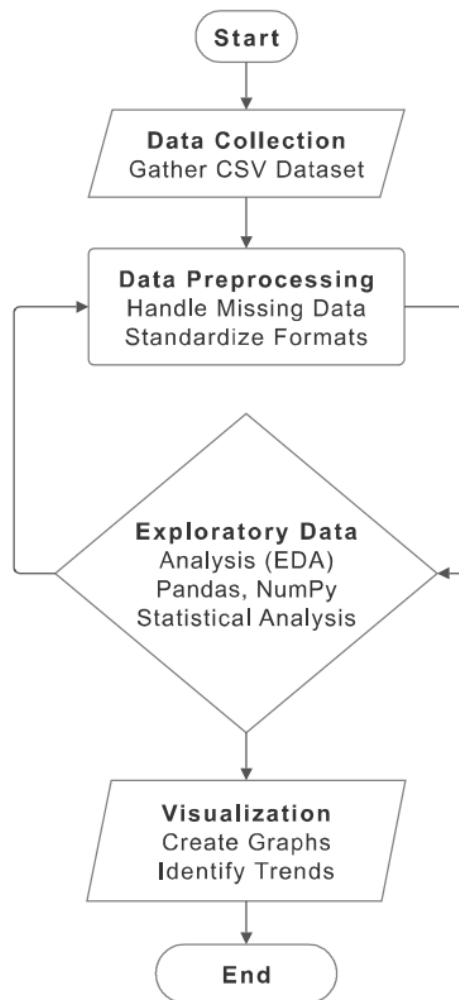
Figur-1: Flowchart illustrating the analysis technique.

Key Findings

✔ Internet Access and Extracurricular Activities
- Students with internet access are more likely to participate in extracurricular activities (55%) compared to those without internet access (50%).
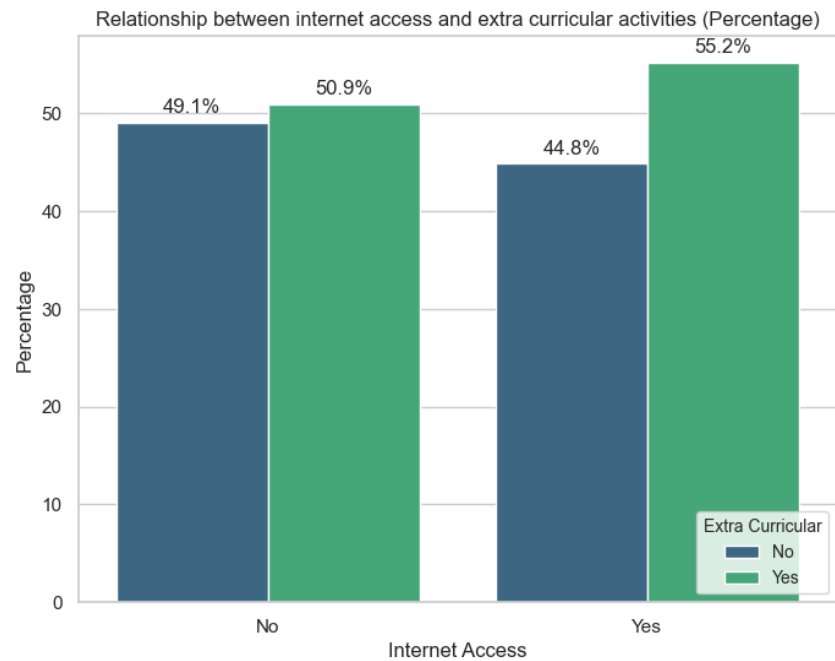
Figur-2: Internet access effect in extracurricular activities.

✔ Academic Performance by Group
- Science Group: Excels in Math and Science with high overall scores.
- Commerce Group: Strong in English and Finance.
- Humanities Group: Balanced performance in Social Science and English.
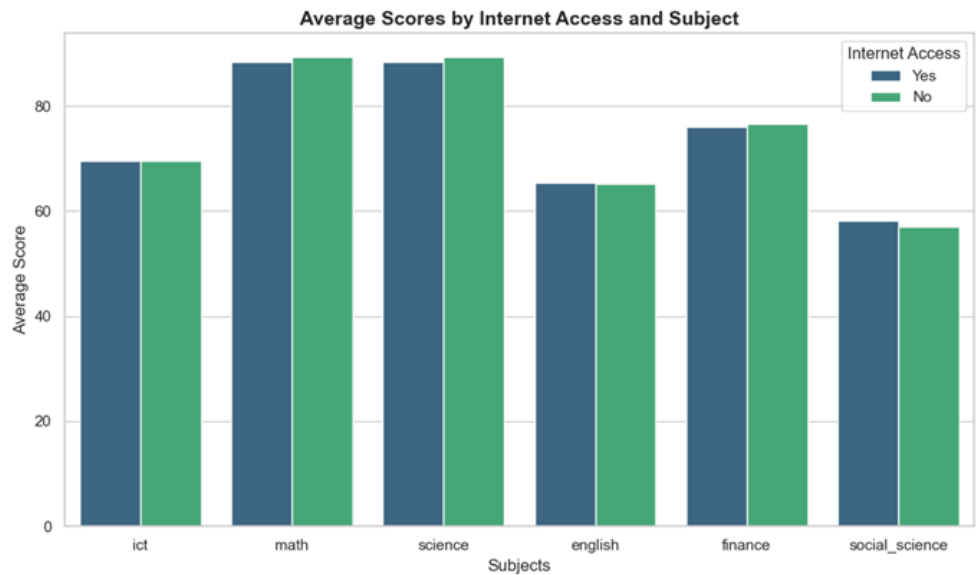
Figur-3: Internet access effect in academic performance.
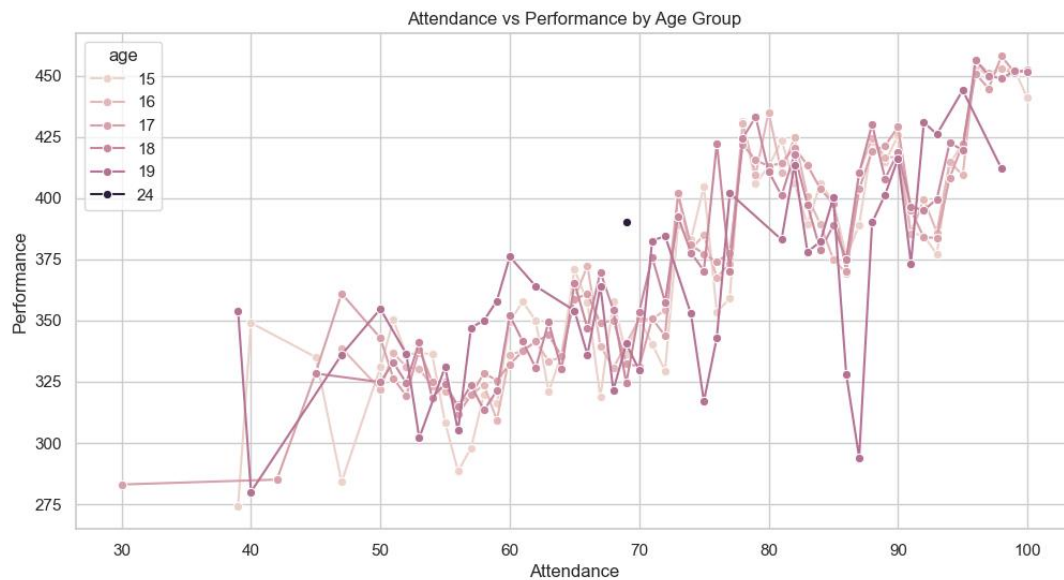
✓ Location and Study Time
  ● Urban Students: Perform better across all subjects compared to rural and city students.
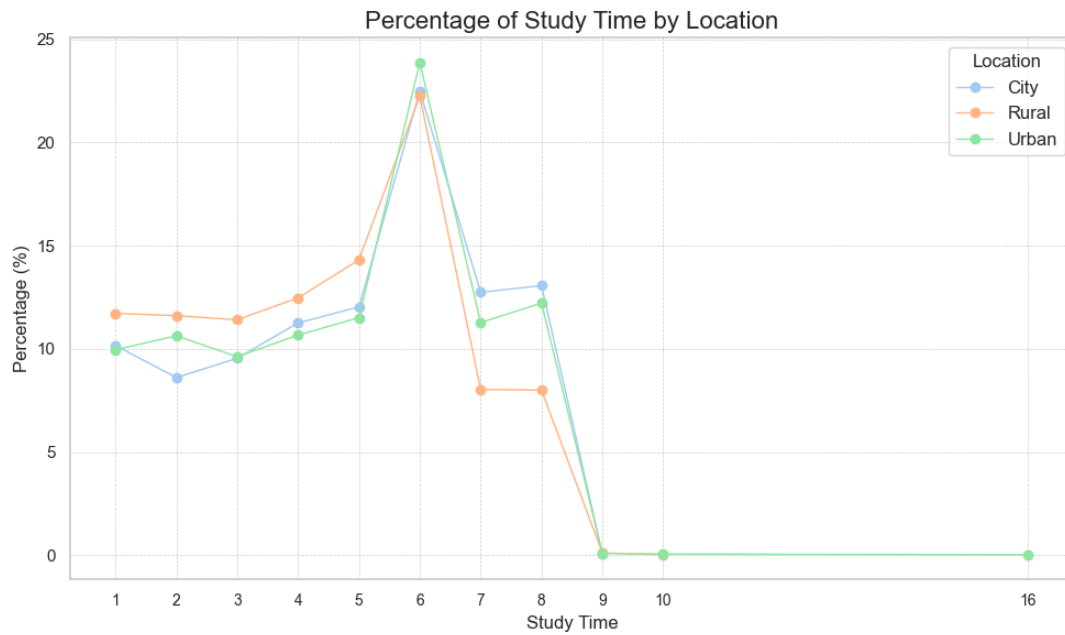
Figur-4: Study performance in different locations.

✓ Class attendance in difference ages
  ● Younger ages students perform better than older students.
  ● 17-year-old students generally perform better than all other age groups.

Figur-5: Class attendance affects in academic performance.

Visual Highlights

- **Internet Access and Extracurricular Participation**: A stacked bar chart shows that most students with internet access are engaged in extracurricular activities, highlighting the digital divide.
- **Group Performance Trends**: Bar graphs illustrate the subject-wise performance of Science, Commerce, and Humanities groups, making it easy to compare scores.

Challenges

- **Data Imbalance**: There were fewer students without internet access, which made comparisons challenging.
- **Visualization Complexity**: Combining multiple attributes into clear and simple graphs required careful planning.

Learning Outcomes

- **Technical Skills:** Improved ability to clean and analyze data using Python.
- **Visualization Expertise:** Learned how to create meaningful charts that simplify complex data.
- **Critical Thinking:** Developed insights into how various factors influence student performance.

Future Improvements

- Add **prediction models** to forecast student performance.
- Create an **interactive dashboard** for real-time analysis.
- Collect more detailed data to explore regional differences.

Conclusion

This project gave us valuable insights into the factors that affect Bangladeshi students academic success. We found that internet access and extracurricular activities play a vital role in enhancing performance. By analyzing this data, we learned the importance of data-driven decisions in education. This project not only fulfilled our course objectives but also inspired us to explore more opportunities in educational data analysis.

Acknowledgment

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Appendix

Bangladeshi Student Performance Analysis Repository (2025, January). [GitHub]
https://github.com/rony1duet/Bangladeshi-Student-Performance-Analysis