Course Project Report

STA 2101: Statistics & Probability

Project Title : Dhaka AQ

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Abstract

This project analyzes the link between weather and air quality in Dhaka. It uses the "Dhaka Daily Air Quality and Weather" dataset. The study identifies key weather factors that impact the Air Quality Index (AQI). The analysis applies the statistical and probability concepts of STA 2101.

Contents

1 Milestone 1: Dataset Selection

- **Dataset Name :** Dhaka Daily Air Quality and Weather Dataset
- **Dataset URL :** `https://www.kaggle.com/datasets/albab12/dhaka-daily-air-quality-and-weather-dataset`
- **Description :** This project uses the "Dhaka Daily Air Quality & Weather" dataset. The dataset provides daily records for Dhaka, Bangladesh. It contains two main types of information: air quality and weather. The air quality data includes the Air Quality Index (AQI). It also measures several pollutants. These pollutants include PM2.5, PM10, nitrogen dioxide, ozone, carbon monoxide, and sulfur dioxide. The weather data includes daily temperature. It also has information on humidity, barometric pressure, and wind speed.

  This dataset was chosen because it provides comprehensive variables for both air quality and weather. This makes it ideal for studying the relationship between these factors in Dhaka using Statistics & Probability concept.

2 Milestone 2: Descriptive Statistics

Describe summary statistics of your dataset. Include tables, mean, median, mode, standard deviation, etc.

Example of a table:

Variable	Mean	Standard Deviation
Column A	12.3	2.1
Column B	45.7	5.6

Table 1: Sample descriptive statistics

3 Milestone 3: Data Visualization

Add graphs and figures using LaTeX. Example:

4 Milestone 4: Probability Distributions

Identify probability distributions in your dataset. Perform fitting, plots, and discuss results.

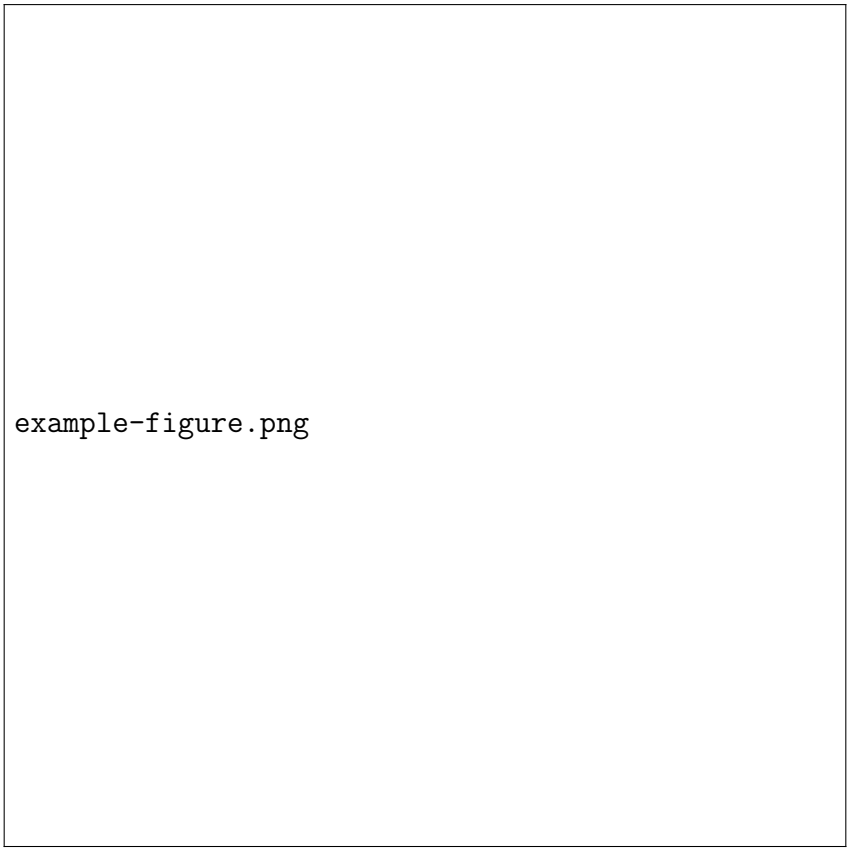

Figure 1: Sample dataset visualization (replace with your figure)

5 Milestone 5: Hypothesis Testing

State hypotheses, perform tests, and report conclusions.

6 Milestone 6: Regression Analysis

Fit regression models, explain coefficients, and evaluate model fit.

7 Milestone 7–12: Further Analysis

Continue documenting each milestone here as instructed in class.

8 Final Conclusion

Summarize the overall findings of your project. Mention challenges, learning outcomes, and possible future work.

References

List your references here in proper citation format. If you prefer, you may use BibTeX.