UNIVERSITY OF
WOLVERHAMPTON

HERALD
COLLEGE
KATHMANDU

| Academic Year | Module | Assessment Number | Assessment Type |
|---|---|---|---|
| 2024 | 5CS037/HJ1: Concepts and Technologies of AI (Herald College, Kathmandu, Nepal) 2024/5 OSEAI | Assessment 1 | Report |

# Analysis of the World Happiness Report: Exploring South Asian and Middle East Perspectives.

Student Id       : 2432210
Student Name   : Samrat Prajapati
Section           : L5CG11
Module Leader  : Siman Giri
Tutor             : Prakriti Regmi
Submitted on    : 20-12-2024

Abstract

This report is to analyze the world happiness index and to compute various values in the given file. The main purpose of the study is to understand the world happiness index, and is to learn how to handle different missing values, means, median, standard deviation, etc.

Analysis of World Happiness.

Introduction

The World Happiness Index is fundamental in the measurement of happiness across the world because it provides details of several aspects of influence. This paper aims to gain an understanding of the happiness trends in South Asia and Middle eastern countries in which both statistical analysis and exploratory data analysis were used.

Data Overview

The data file called "World Happiness Report.csv" contains happiness index points in consideration with GDP per capita, social support, life expectancy, freedom, and generosity. In the methodology of analysis, the first step was to import the data into the dataset, and it has a Mean Score & Median Score. Analyzing the first 10 rows found that there are variations in the happiness scores for the countries.

Key Statistics

- Mean Score: X (5.52758041958042)
- Median Score: Y (5.785)
- Standard Deviation: Z (1.1707165099442995)

The countries with the highest and lowest happiness scores were determined as follows:

- Highest: Finland
- Lowest: Afghanistan

Data Exploration

Missing Values

The analysis revealed Mean Score columns with missing values, indicating areas for potential data cleaning.

Filtering and Sorting

Countries with a score greater than 7.5 were filtered, and the top 10 were sorted by GDP per Capita. The results highlighted the correlation between economic factors and happiness.

Visualizations

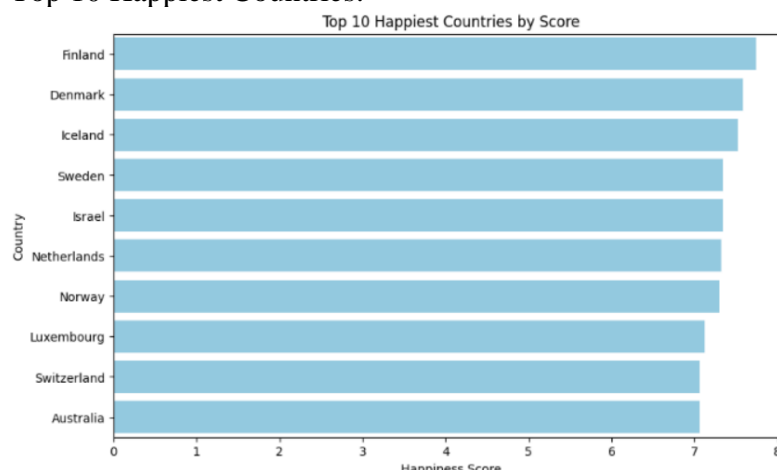1. Top 10 Happiest Countries:



Figure: Top 10 Happiest Countries

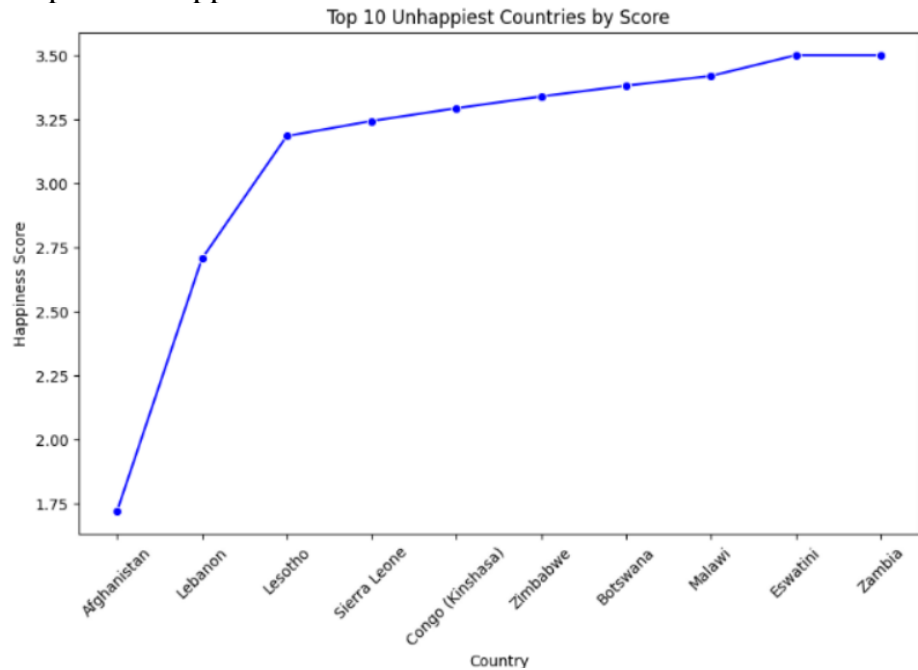2. Top 10 Unhappiest Countries:



Figure: Top 10 Unhappiest Countries

3. Histogram of Happiness Scores:



Figure: Histogram of Happiness Scores

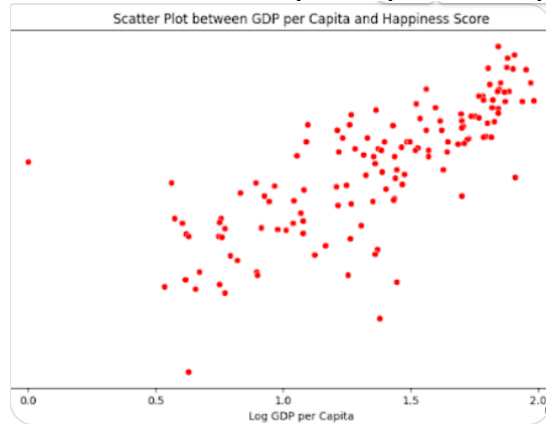4. Scatter Plot of GDP per Capita vs. Happiness Score:



Figure: Scatter Plot of GDP per Capita vs. Happiness Score

# Advanced Data Exploration

## South Asia Dataset

The South Asian countries were filtered based on certain criteria, and a score was computed from GDP per capita, perceived social support, and healthy life expectancy. According to this score, countries having high-ranking scores that have been depicted are aligned with overall happiness index.

## Outlier Detection

Outliers were identified using the $1.5 \times$ IQR rule, highlighting countries that significantly deviated from the norm in terms of happiness and GDP per Capita.

## Comparing metrices

### Correlation Analysis

When conducting a correlation analysis, high values were found between happiness scores and the level of freedom as well as generosity. Such relationships can be easily explained with the help of scatter plots.
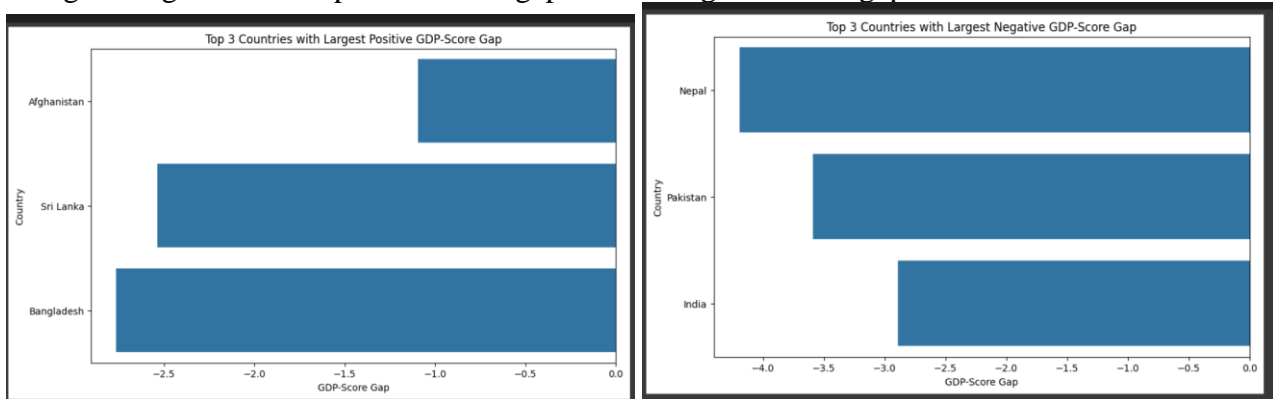
## Comparative Analysis

A comparison of the average happiness index of South Asia with that country of the Middle East depicted the variations in the basic parameters. The overall Middle East was happier than other regions, although there were substantial differences in GDP per Capita and social support.

## Gap Analysis

By the difference between Log GDP per Capita and the score a new column, GDP-Score Gap, was created. The countries with the largest positive gap were Sri Lanka and India, while Afghanistan had the largest negative gap.

The given figures are the positive GDP gap and the negative GDP gap.



## Middle East Dataset

### Descriptive Statistics

Calculated the mean and standard deviation of both South Asian and middle east countries and the results were

South Asia - Mean: 3.895666666666667, Standard Deviation: 1.1770690152521501
Middle East - Mean: 5.412100000000001, Standard Deviation: 1.5662011684327144

By the comparison, it states that Middle East has a higher average happiness score

## Top and Bottom performance

By comparison of the score the top 3 performers in South Asia were
Nepal,Pakistan and India
Bottom 3 performers in South Asia were

Afghanistan, Bangladesh and Sri Lanka
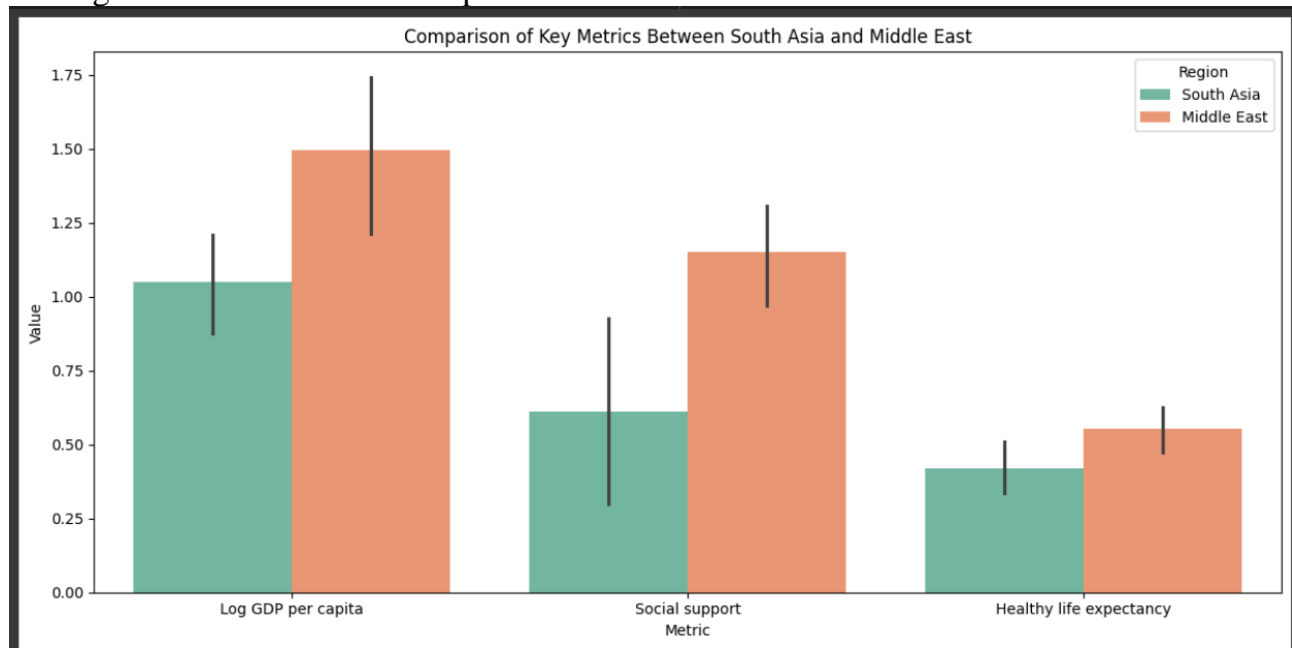
Likewise in Middle East
The top 3 performers were – Isarel, Kuwait, and United Arab Emirates
The bottom 3 performers were – Lebanon, Yemen and Jordan

Metric Comparison
The comparison of South Asian countries and Middle East countries were done in terms of GDP per capita, Social Support, and healthy life expectancy where it was seen that middle east countries were ahead in all metrices than that of south Asian countries

The figure below shows the comparison of all metrices with both countries
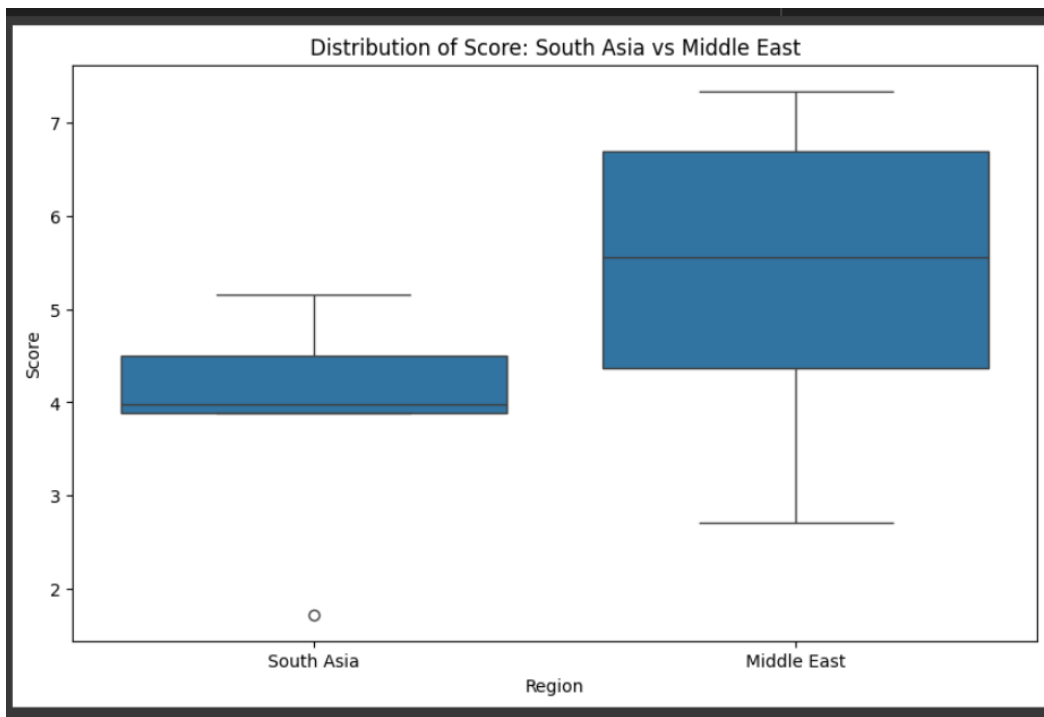


Happiness Disparity
By calculating the minimum and maximum range and the coefficient of variation for both South Asia and Middle East it was seen that South Asia has greater variability in happiness.

Visualization
The following figures show that the middle east has a higher happiness score distribution than that of South Asia due to the more outliers.
The following figures show the comparison between Middle East and South Asia

Distribution of Score: South Asia vs Middle East

## Conclusion

In the research World Happiness Report it is shown, how factors that affect the population happiness are intertwined in various regions. The results obtained in this study support the importance of economic stability, social support, and freedom for increasing well-being. Subsequent research may venture deeper into the implications of these outcomes on policy know-how and growth realm.