

Title: “Analyzing Seoul Bike Rental Demand using Python ”

Subject Name: Business Analytics Using Python

MEC201

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Name of the Students:

ADONE SOVICHEN(2437005)

MERIN SHIBU (2437035)

NESLIN JAMES (2437040)

THEJUS JOSEPH (2437059)

Class: 2MAECO

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Submitted to:

Course Faculty’s Name: Nikhil Sebastian



MA APPLIED ECONOMICS

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NON TECHNICAL REPORT ON SEOUL BIKE RENTAL DEMAND DATA

Introduction

Currently, rental bikes have been introduced in many urban cities to enhance mobility and provide greater convenience. Ensuring these rental bikes are ready and accessible to the public at the right time is crucial, as it helps minimize wait times. However, maintaining a consistent supply of rental bikes throughout the city poses a significant challenge. To address this, accurately estimating the number of bikes required at each hour becomes an essential factor.

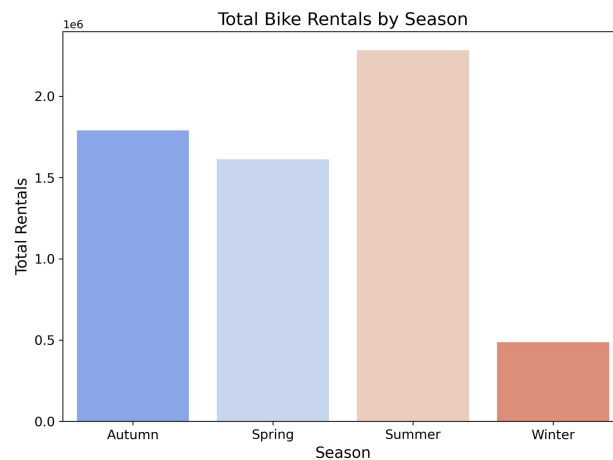
The Seoul Bike Data dataset contains information about bike rentals in Seoul, South Korea. This dataset includes hourly data on the number of rented bikes and various environmental factors that may influence the demand for bike rentals. The dataset consists of 8,760 entries, representing hourly bike rental data over a full year (365 days). It provides insight into how various environmental factors such as temperature, humidity, wind speed, and solar radiation correlate with bike rental demand. Analyzing this data can help identify patterns in bike rentals, which can be valuable for optimizing bike sharing programs, improving urban planning, and understanding public transportation trends.

Data Analysis

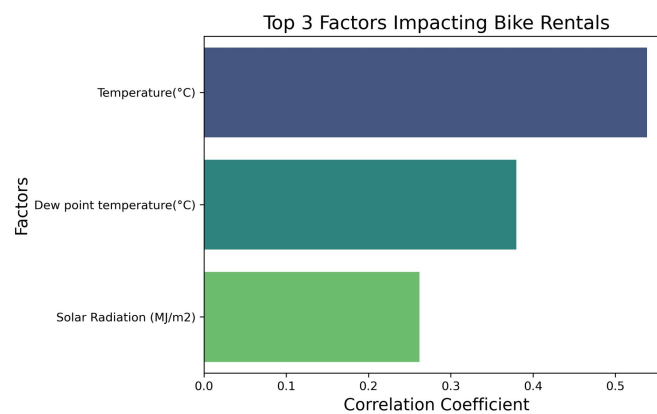
The given data was analyzed to draw meaningful insights on bike rental trends in Seoul. From this we were able to extract the average temperature, humidity and windspeed for each season.

	Temperature(°C)	Humidity(%)	Wind speed (m/s)
Seasons			
Autumn	14.120833	59.228480	1.494734
Spring	13.046694	58.776721	1.874592
Summer	26.582790	64.981431	1.609420
Winter	-2.540463	49.744907	1.922685

We also classified rental frequency during different seasons as shown below:



We were also able to classify the top three factors (temperature, windspeed, humidity, etc.) that seem to have the greatest impact on bike rentals.



Findings

- The averages of different seasons showed large variations especially temperature and humidity
- Summer was the peak season for bike rentals while during winter it decreased considerably
- Temperature was the factor that influenced bike rentals the most.

Conclusion

By exploring environmental variables such as temperature, humidity, wind speed, and seasonal changes, we identified key factors that directly impact bike rentals. Notably, warmer temperatures, higher solar radiation, and favorable weather conditions show a strong positive correlation with increased bike usage, while adverse weather conditions like rainfall and snowfall tend to reduce demand. It might be due to convenience, safety, ideal situation for outdoor activities etc. Additionally, seasonal and hourly trends provide valuable information for optimizing bike-sharing services.