Power Consumption Analysis Report

Exploratory Data Analysis (EDA) for Power Consumption

Feature Engineering and Initial Data Inspection

This section includes code for loading the dataset, converting the 'time' column to datetime, and extracting and creating new features such as hour, day, month, sine and cosine transformations of these time units, and additional features like average temperature, weekend indicator, public holiday indicator, lagged power consumption, and rolling average of power consumption.

Seasonal Patterns: Monthly Average Power Consumption

A bar plot was created to visualize the monthly average power consumption, revealing significant seasonal variation with higher consumption during colder months, particularly in January and February.

Weekday vs. Weekend Consumption

A comparison between average power consumption on weekdays versus weekends did not show a significant difference in this dataset, indicating the potential similarity in power usage patterns throughout the week.

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Impact of Temperature

A scatter plot illustrated the relationship between power consumption and average daily temperature, showing a correlation where lower temperatures are associated with higher power consumption, particularly during colder months.

Lagged Power Consumption

Analyzing the correlation between current power consumption and its value from 24 hours ago revealed some degree of temporal dependency, suggesting past consumption can inform future consumption predictions.