Electrical Energy Consumption Dataset for Machine Learning

This dataset provides insights into energy consumption patterns based on various building characteristics and environmental factors. It includes data for different building types, their square footage, the number of occupants, appliances used, average temperature, and the day of the week. The objective is to create a predictive model that estimates energy consumption using these attributes.

This dataset is ideal for training machine learning models, such as linear regression, to forecast energy needs based on building features. The insights derived from this data can help optimize energy consumption, understand demand patterns, and improve energy management across diverse building types and conditions.

Dataset can be downloaded from Kaggle:
https://www.kaggle.com/datasets/govindaramsriram/energy-consumption-dataset-linear-regression?select=train_energy_data.csv

Suggested Power BI Dashboard Visuals:

1. **Energy Consumption by Building Type**

a. **Visualization**: Bar Chart or Pie Chart
b. **Purpose**: Show the distribution of energy consumption across different building types (Residential, Commercial, Industrial).

2. **Energy Consumption vs. Square Footage**

a. **Visualization**: Scatter Plot
b. **Purpose**: Identify correlations between a building's size and its energy usage.

3. **Average Energy Consumption by Day of the Week**

a. **Visualization**: Line Chart or Column Chart
b. **Purpose**: Highlight energy usage trends across weekdays and weekends.

4. **Energy Consumption vs. Number of Occupants**

a. **Visualization**: Bubble Chart or Scatter Plot

b. **Purpose**: Analyze how the number of occupants influences energy consumption.

5. **Energy Consumption vs. Average Temperature**

a. **Visualization**: Line Chart or Heatmap
b. **Purpose**: Show the impact of temperature on energy consumption patterns.

6. **Appliance Usage Impact on Energy Consumption**

a. **Visualization**: Stacked Bar Chart
b. **Purpose**: Illustrate how the number of appliances used affects energy consumption across building types.

7. **Comparative Analysis of Energy Consumption (Weekday vs. Weekend)**

a. **Visualization**: Clustered Bar Chart
b. **Purpose**: Compare energy consumption trends for weekdays and weekends.

8. **Energy Consumption per Square Foot by Building Type**

a. **Visualization**: Treemap
b. **Purpose**: Visualize energy consumption efficiency across building types relative to square footage.

9. **Interactive Map (Optional)**

a. **Visualization**: Map Chart (if geolocation data is available)
b. **Purpose**: Display energy consumption geographically for better spatial analysis.

10. **Summary Card or KPI Indicators**

a. **Visualization**: KPI Tiles
b. **Purpose**: Highlight key metrics such as total energy consumption, average energy consumption per building, or peak energy usage.

Each visual can be made interactive, allowing users to filter by specific building types, days of the week, or temperature ranges to gain deeper insights.