


LONDON SMART METERS ANALYSIS



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About the Data

The Data Ranges from 2011 - 2014. The data size is 8 GB(all files combined). There are 5 important files in this dataset :

informations_households.csv : This file that contains all the information on the households in the panel (their acorn group, their tariff) and in which block.csv.gz file their data are stored.

halfhourly_dataset : These files that contain the block files with the half-hourly smart meter measurement

daily_dataset : These files that contain the block files with the daily information like the number of measures, minimum, maximum, mean, median, sum and std.

acorn_details.csv : Details on the acorn groups and their profile of the people in the group. There are 5 Acorn Groups in the original dataset.

weatherdailydarksky.csv : This contains the daily data from darksky api.

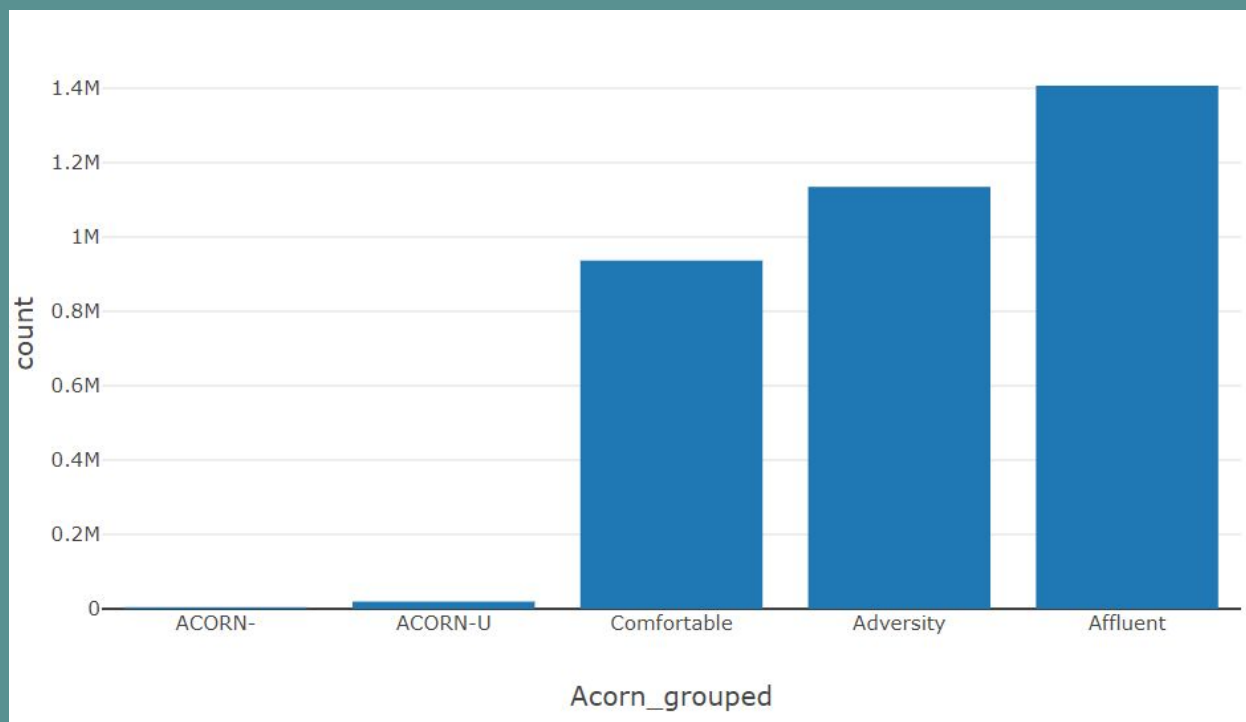
Data Source - <https://data.london.gov.uk/dataset/smartmeter-energy-use-data-in-london-households/>



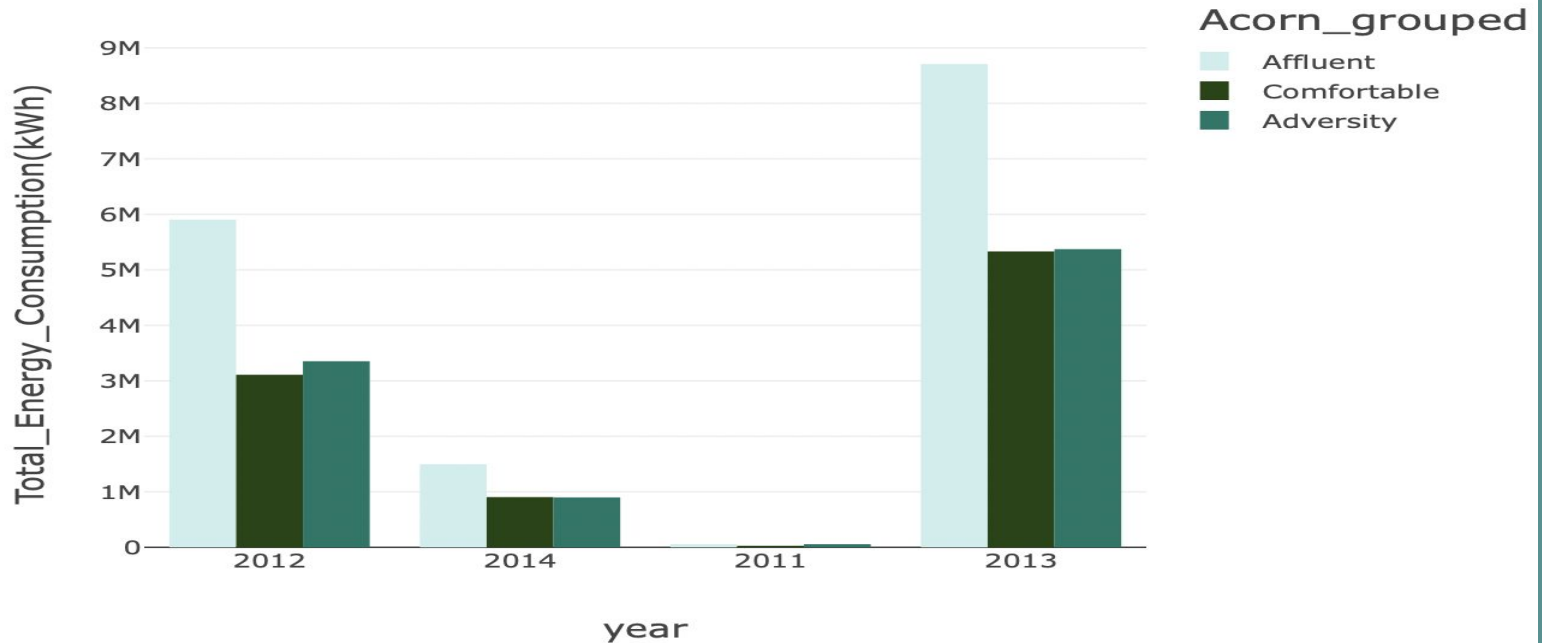
Topics of Analysis

1. Year wise energy consumption based on the ACORN Groups.
2. Month wise energy consumption based on the ACORN Groups.
3. Daily energy consumption based on the ACORN Groups.
4. The average of how much energy does a typical household in UK consume in a day across the year.
5. Which hours of the day consumes the most energy?
6. The impact of Humidity on the energy consumption.
7. The impact of temperature on the energy consumption.

Data Distribution for ACORN Groups

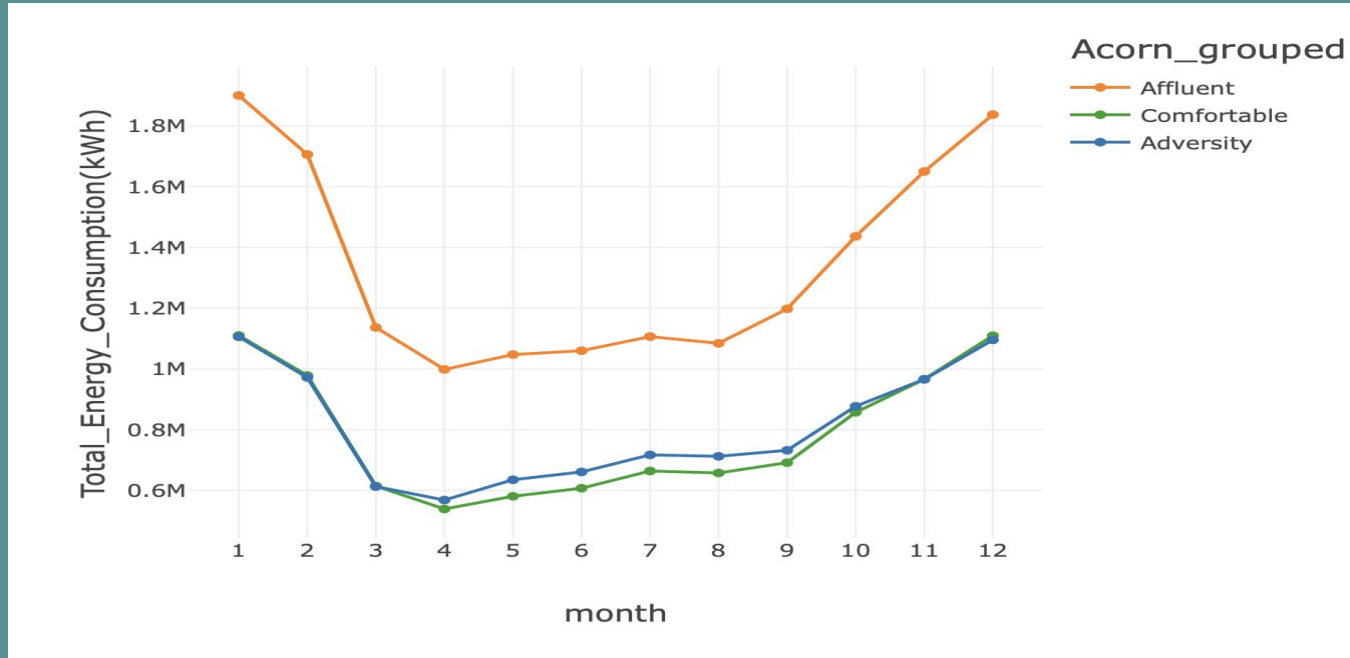


Year wise energy consumption based on the ACORN Groups

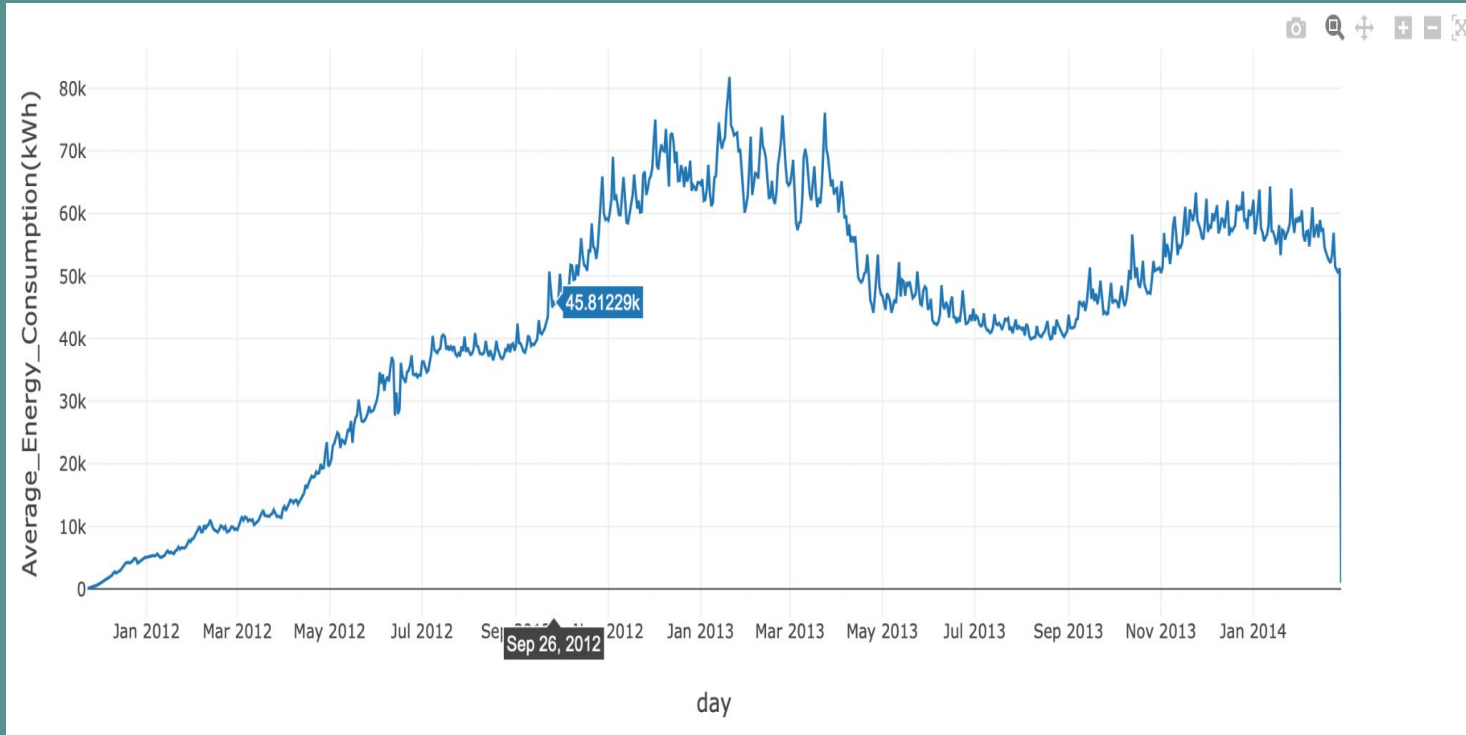


Month wise energy consumption based on the ACORN Groups

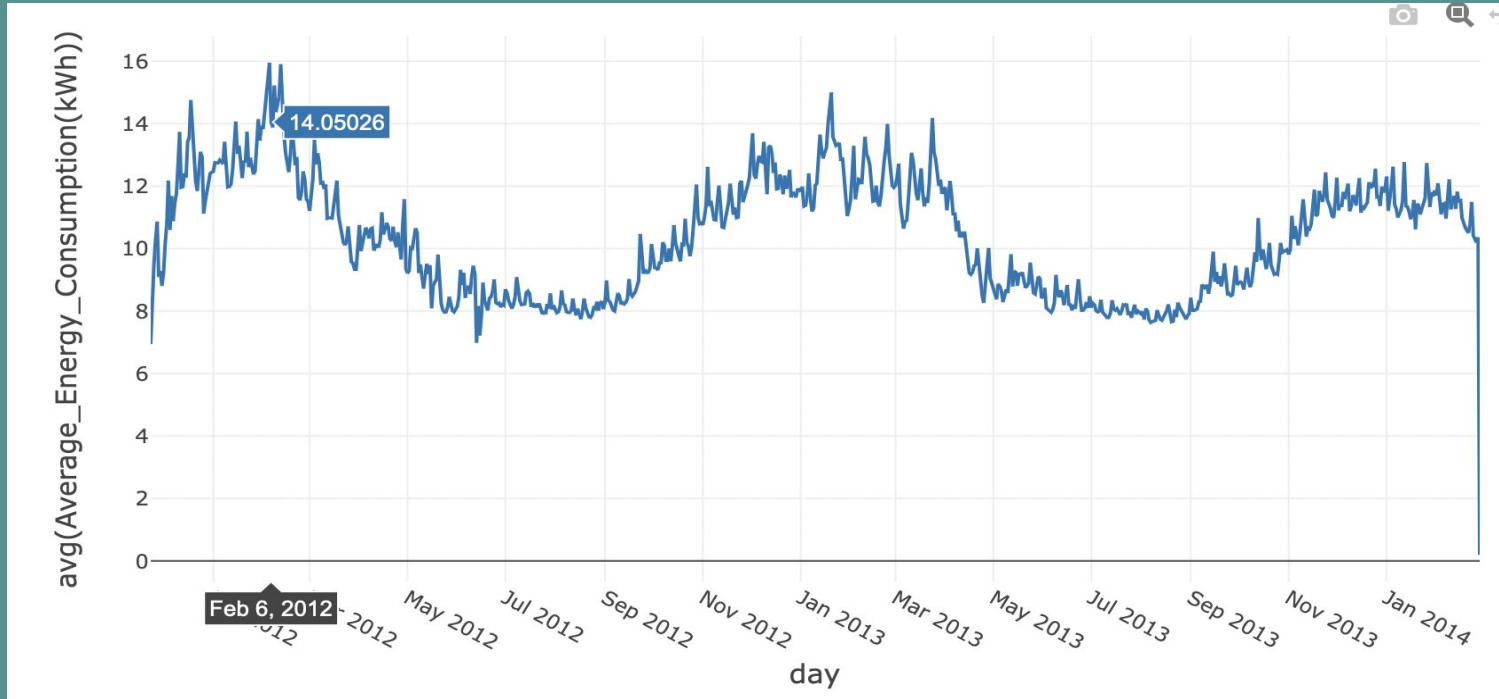
Hypothesis : The consumption of comfortable group will be more than the adversity group.



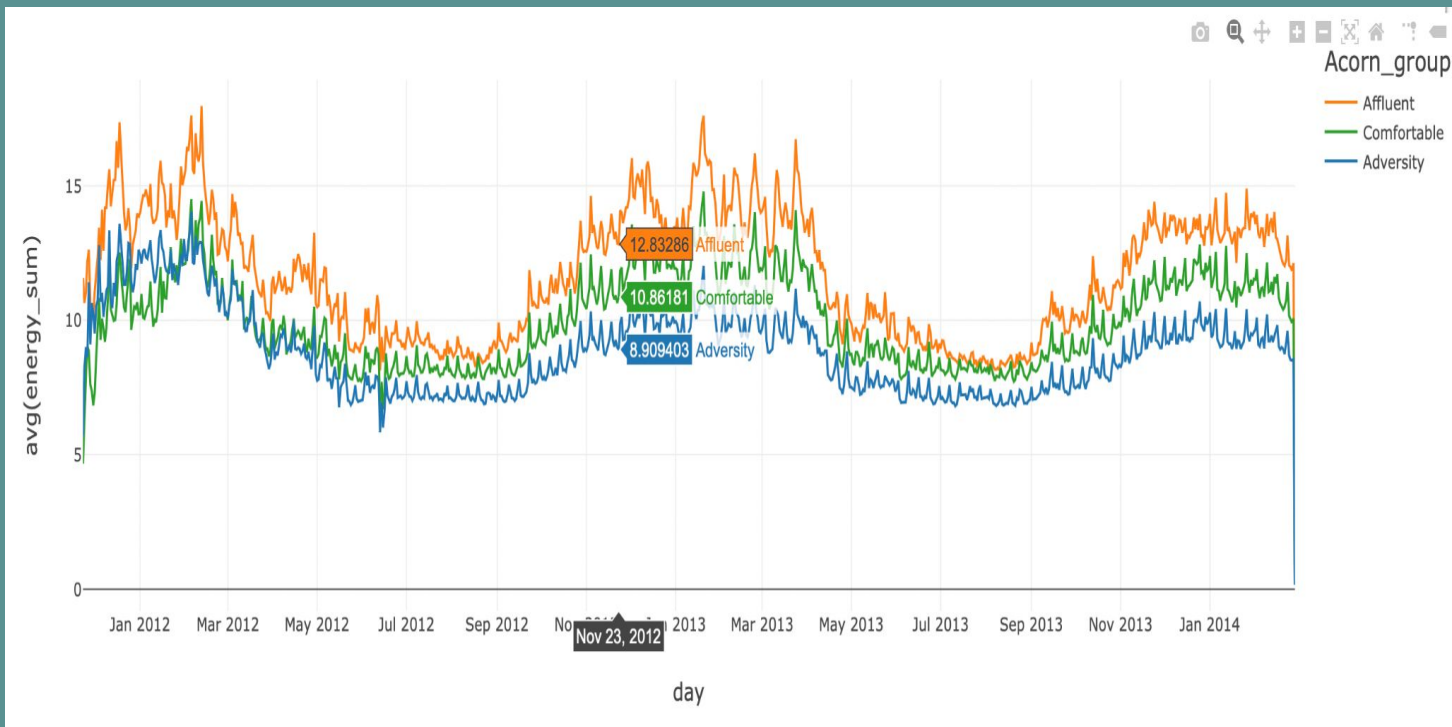
Average Daily Energy Consumption of all households in UK



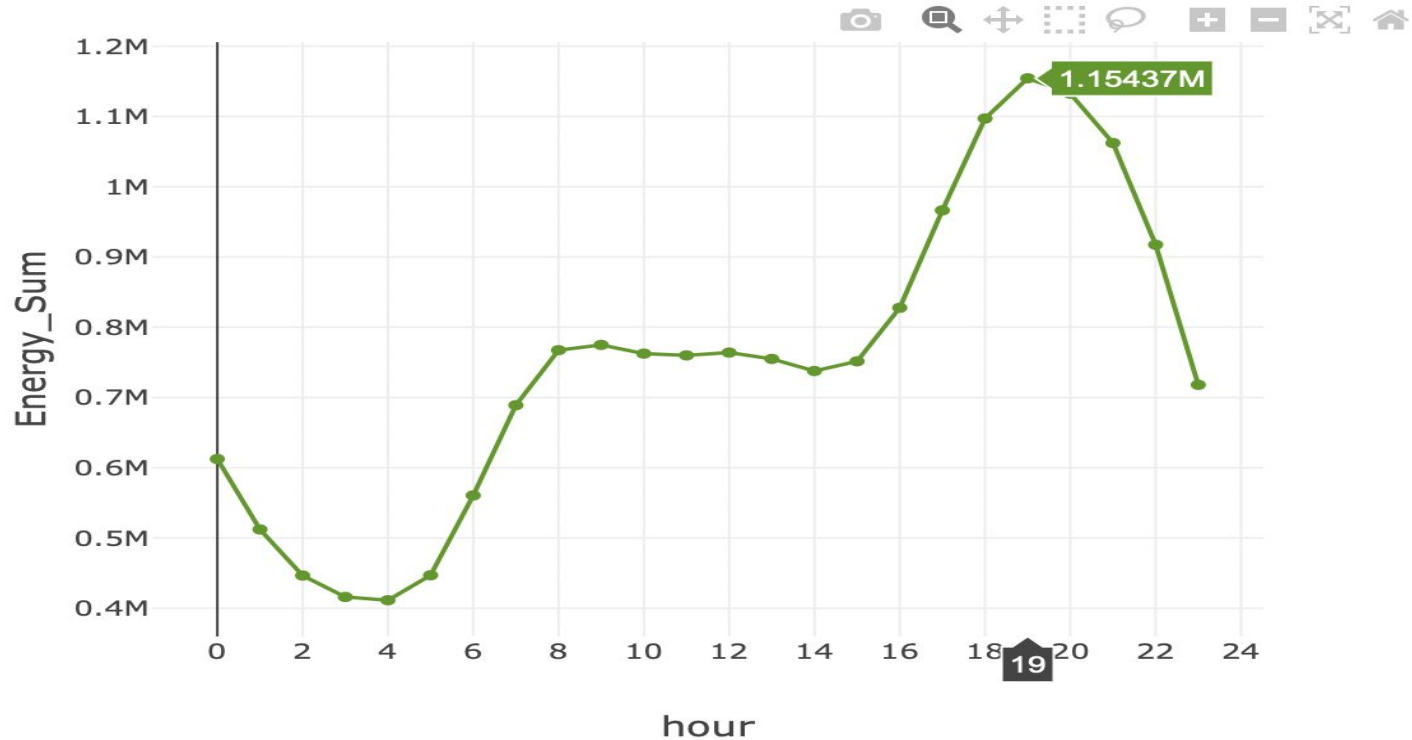
The average of how much energy does a typical household in UK consume in a day across the year.



The average of how much energy does a typical household in UK consume in a day across the year (ACORN GROUPS)



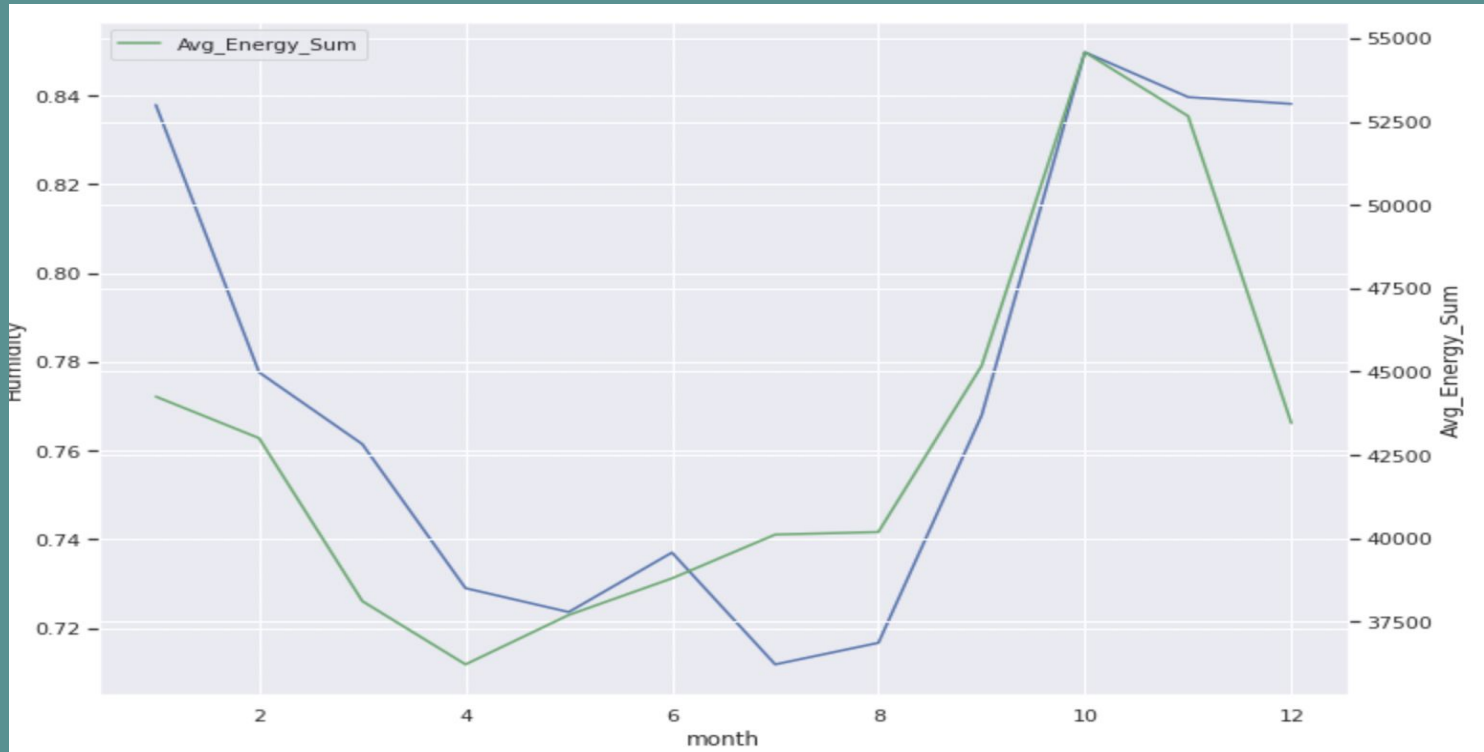
Which hours of the day consumes the most energy?(maximum)



Which hours of the day consumes the minimum energy?

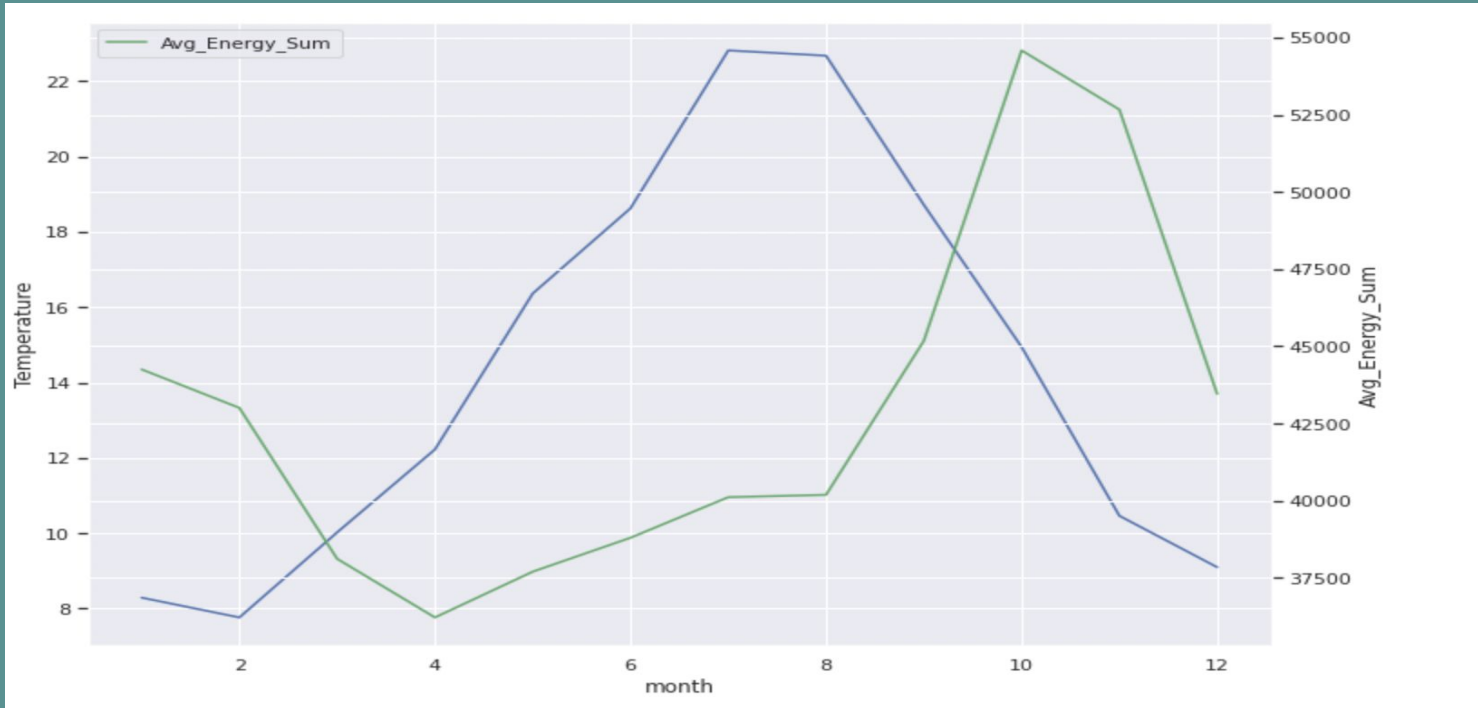


What is the impact of Humidity on the energy consumption?



What is the impact of Temperature on the energy consumption?

Hypothesis : The energy consumption changes as the temperature increases.





SUMMARY

1. **Affluent Group** has the highest consumption of electricity - Daily, Monthly and Yearly.
2. The month of **January** is when the energy consumption is at the peak across all acorn groups.
3. The total energy consumption reaches the peak in **January 2013** with the value of 81.2 thousand kWh.
4. The average energy consumption for any household in a day in UK ranges from **0-16 kWh**.
5. The energy consumption **increases** drastically from **15th hour (3 p.m)** and reaches the **peak** at **19th hour (7 p.m)**.
6. Energy consumption is **directly proportional** to the **humidity** and **inversely proportional** to the **temperature**.



Future Prospects of the Project

1. Census Data can be merged with these files to have a better understanding of population wise energy consumption. (eg. for a particular number of household members what is the average energy consumption).
2. Geographical Location dataset can be merged to understand which areas of UK have the highest energy consumption (both weather wise and population wise.)
3. Separate dataset for industries and offices with a comparison of the Household Consumption.
4. Add recent year data files for better results. And live streaming can be used to constantly update the data.



Thank You!

