

# NYC Energy Consumption

Ironhack  
Data Analytics  
Bootcamp



Project report by:  
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# 01

# Motivation



The sector of energy in general has always been part of my academic life and interest, so this topic was decided based on a personal interest to know more about energy consumption in one of the most exciting and iconic city in the word, New York - United States of America.

## "NEW YORK CITY HAS WASTED MORE ENERGY THAN ANY OTHER MEGACITY IN 2015."

A study made from the University of Columbia, NY, as concluded that New York city has wasted huge amounts of energy in 2015. Based on this statement, the project has been directed to analyse the total energy consumption in the five boroughs of New York considering residential and non residential buildings since 2010 until the present year.



# Methodology 02

The first approach consisted in finding the data that would be relevant for the study. The data was obtained from NYC open data website, which has thousands of datasets regarding many sectors of the city.



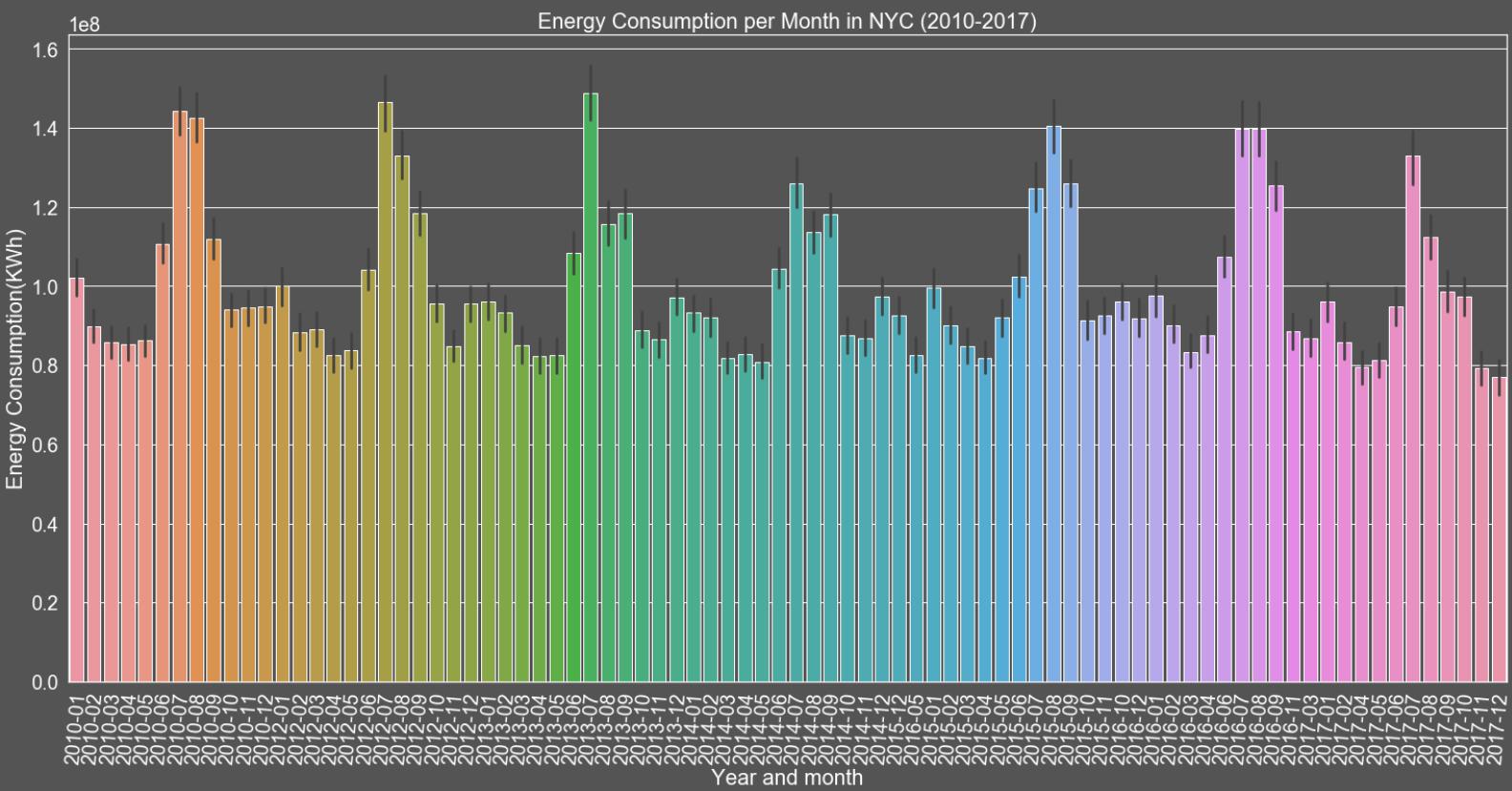
To start this project, three datasets were used to study today's population per borough in New York city, population projections for 2030 and 2040 and finally, the datasets containing energy consumption per building and per borough since 2010 until mid 2019 (2018 not included in dataset).

Once data cleaning and manipulation were done, relevant data visualisations were done using *matplotlib* and *seaborn* in order to show important insights.



Finally, to compare energy consumption within the same period (July 2015) for 2017 and 2019, a statistical analysis was performed. The chosen test was a t-student independent sample test, to compare energy consumption of July 2015 with July 2017 and to compare energy consumption of July 2015 with July 2019.

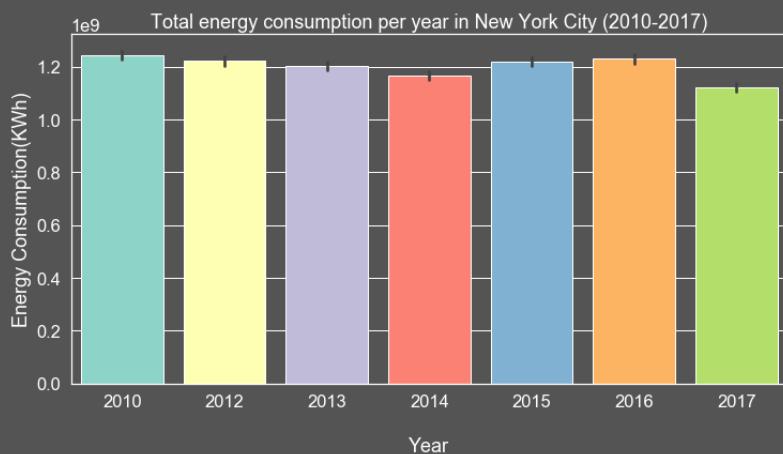
# Results 03



Energy consumption seems to be lower after 2016, but the peak consumption months since 2010 are July and August. Lower energy consumption is registered to be between February and April.

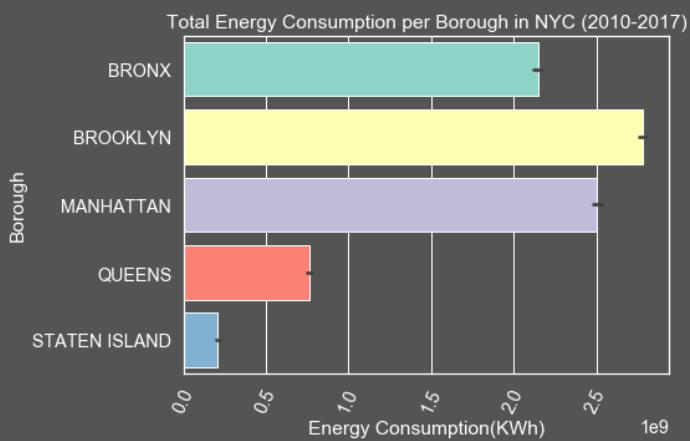
# Results 04

## ENERGY CONSUMPTION PER YEAR



Energy consumption has been steady, but a significant decrease can be seen in 2017.

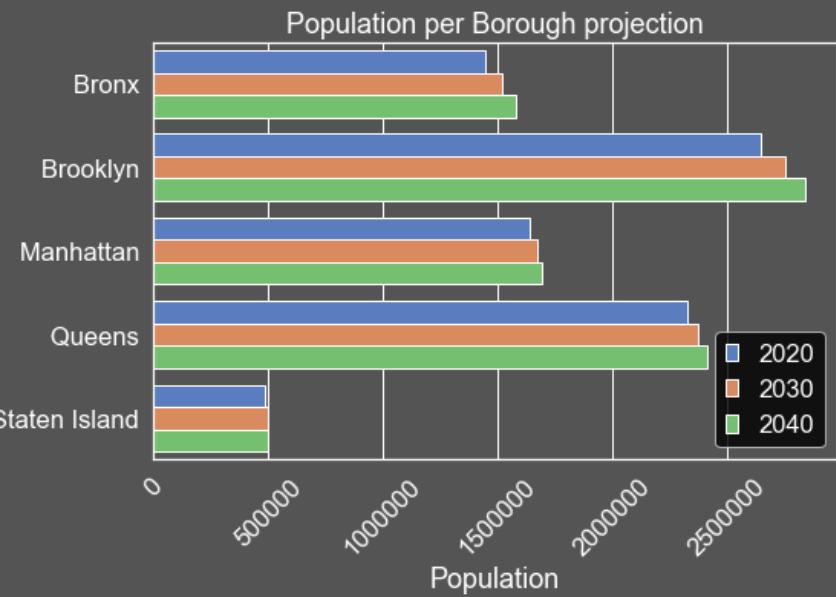
## ENERGY CONSUMPTION PER BOROUGH



Brooklyn is the borough with the highest total energy consumption since 2010.

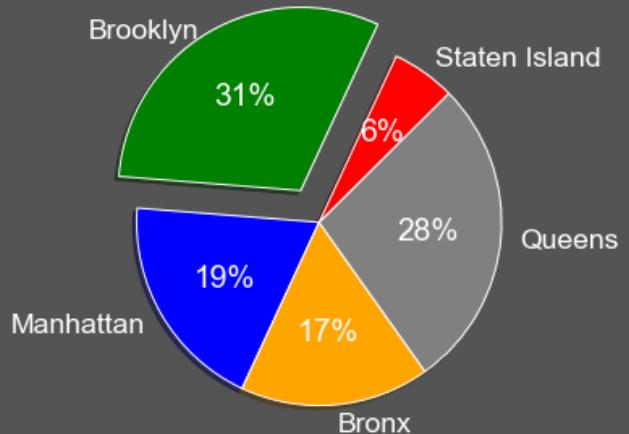
# Results 05

## ANALYSING NYC POPULATION



TOTAL NYC  
POPULATION IS  
CURRENTLY 8.5  
MILLION AND KEEPS  
GROWING

Population per borough in NYC (2019)



## STATISTICAL TEST (T-STUDENT TEST)

### TEST 1

JULY 2015 AND JULY 2017  
(SAMPLE SIZE = 500)

THERE ARE NO  
SIGNIFICANT  
DIFFERENCES BETWEEN  
THESE TWO PERIODS OF  
TIME

### TEST 2

JULY 2015 AND JULY 2019  
(SAMPLE SIZE = 500)

THERE ARE SIGNIFICANT  
DIFFERENCES BETWEEN  
THESE TWO PERIODS OF  
TIME

# Conclusions

06

JULY AND AUGUST ARE MONTHS WHERE ENERGY IS MORE CONSUMED

BROOKLYN IS THE BOROUGH WITH HIGHER ENERGY CONSUMPTION

AVERAGE ENERGY CONSUMPTION WAS SIGNIFICANTLY THE SAME IN JULY 2015 AND JULY 2017

AVERAGE ENERGY CONSUMPTION WAS SIGNIFICANTLY DIFFERENT IN JULY 2015 AND JULY 2019