Computational Thinking Project

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Problem Statement

Our problem deals with Airbnb prices and locations in New York City

It is hard to find something to compare prices, based on their location and price

We made a program that does this for people and shows a price distribution, to see if they are getting a good deal

Data Source

- The data source we used was a file that we found on Kaggle, a free data gathering site
- The data set has several columns of information, we chose to focus on just using the neighborhoods and the pricing information
- Source: https://www.kaggle.com/datasets/dgomonov/new-york-city-airbnb-open-data?resource=download

Solution Approach

- For our solution we broke down the data in terms of price
- We separated the data into highest priced neighborhoods, and the lowest price neighborhoods
- We then showed a price distribution for the data
- We also show the average price per room in the whole city of New York City
- With this solution, you can see the price average, based on a relatively expensive or inexpensive neighborhood

Solution Code- Utilities Module

In our utility's module, we imported multiple libraries, pandas, numpy and matplotlib

We used the pandas library to read in our data file

We used numpy to calculate some basic summary statistics for the data as whole, mean and median and others

Finally, we used the matplotlib to plot a price distribution in the form of a histogram

Solution Code- Main File

- In the utilities file, we created a program for potential tourists to use to see if they were getting a good deal
- In our main file, we called all of our functions that we implemented in the utilities module
- We printed all the information calculated there, and printed out price distribution

```
"""
import utilities

# Load the data
data = utilities.load_data('AB_NYC_2019.csv')

print("Analyzing AirBnB Prices in New York City")
print("For Tourists' Future Trip Planning")
print("")

#Neighborhoods with the highest average price
top_neighborhoods = utilities.get_top_neighborhoods(data, 10)
print(top_neighborhoods)
print("")

#Neighborhoods with the lowest average price
lowest_priced_neighborhoods = utilities.get_low_neighborhoods(data, 10)
print(lowest_priced_neighborhoods)
print("")

#Histogram of the prices of all listings
utilities.plot_price_histogram(data)
print("")

#Summary statistics about the reviews per listing
review_stats = utilities.calculate_review_stats(data)
print(review_stats)

#Average price per room type
```

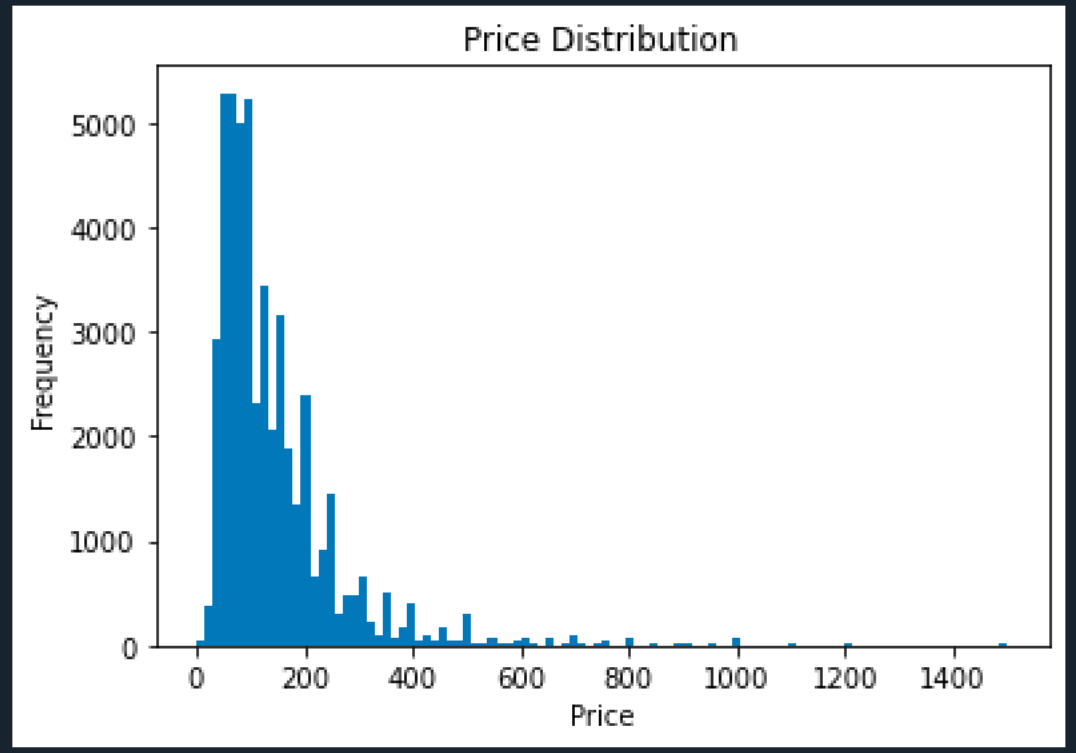
Output

- Our output shows the most expensive neighborhoods for Airbnb's in New York City on an average price per night basis
- It also shows the cheapest average price per night according to the neighborhood

Analyzing AirBnB Prices in New York City
For Tourists' Future Trip Planning

Most Expensive Neighborhoods	Average Price per Night
Fort Wadsworth	800.00
Woodrow	700.00
Tribeca	490.64
Sea Gate	487.86
Riverdale	442.09
Prince's Bay	409.50
Battery Park City	367.56
Flatiron District	341.92
Randall Manor	336.00
NoHo	295.72

Least Expensive Neighborhoods	Average Price per Night
Bull's Head	47.33
Hunts Point	50.50
Tremont	51.55
Soundview	53.47
New Dorp	57.00
Bronxdale	57.11
New Dorp Beach	57.40
Grant City	57.67
Concord	58.19
Mount Eden	58.50




```
Number of Reviews Summary Statistics:
Mean # of Reviews: 23.27
Median # of Reviews: 5.0
Minimum # of Reviews: 0
Maximum # of Reviews: 629

Average Price Per Room Type:
Entire home/apt: $211.79
Private room: $89.78
Shared room: $70.13
None
```

Output

- Our Output also shows a price distribution based on the calculations
- Summary statistics are also provided, showing the mean number of reviews, median number of reviews, the maximum and minimum number of reviews per neighborhood
- It also shows pricing information regarding the type of Airbnb you get

Takeaway

- The takeaway for this program and project is to be able to make good decisions while browsing for an Airbnb
- By using the information provided, like the neighborhood, the price distributions and the price of various room types, people can get the best price for their travels