**Competition – 2**

**DSCI 5360 DATA VISUALIZATION- Section 006 - Class Nbr 10433- Day: Wednesday Times: 6:30PM to 9:20PM**

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Question1: Net Profits Analysis:

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In order to analyze the net earnings for hosts across various neighborhoods, the task entails constructing a geographical visualization. The money that hosts keep after deducting various expenses including taxes, cleaning fees, and maintenance costs is referred to as net profit. We may target marketing campaigns or make investment selections by identifying the neighborhoods that provide hosts more financial returns by displaying this data on a map.

Important insights on the spatial distribution of Airbnb listings and the corresponding net earnings are offered by the geographical representation. It makes it possible to locate possible hotspots or groups of highly performing listings, which may help hosts choose affluent areas for their rental properties.   
  
Overlaying further layers of data, such as neighborhood boundaries, demographic statistics, or tourist destinations, would be helpful to improve the research even more since it might uncover relationships between net profits and particular area attributes.

The analysis reveals that the Huguenot neighborhood has the highest average net profits of any of the remaining neighborhoods, coming in at around $20861. The Dumbo neighborhood comes in second place, with an average net profit of $19356.   
With the use of this data, we were able to determine which neighborhoods have the highest and lowest average net earnings.

Question 2: Optimal Rent Type Recommendation:

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We are analyzing the net profits and their relative contributions to the overall average host net profits in order to assess the profitability of each type of rental for hosts and ascertain which kind of rental delivers more profitability overall. By doing this, we are able to determine the ideal rental type recommendation. This information is essential for advising new hosts on the best rental type to maximize their revenues in the short-term rental market.

**Analysis:**

Hotel Room: Based on the Bar chart, it is evident that hotel rooms make up the largest category, accounting for a substantial share of the rental market.

Whole Room: These come next, making up a significant but lesser percentage in comparison to hotel rooms.

Shared Room: The smallest of the market suggests a lower prevalence of shared rooms.

Private Room: The private room category lies in between the occurrence of entire rooms and shared rooms.

**Net Profits:**

Hotel Room: With an average of $17,073, hotel room hosts have the largest net profits, accounting for 370.53% of all average host net profits.

complete Room: The average net profits for hosts who provide complete rooms come to $5,753, which is 124.85% of the average net profits for hosts overall.

Shared room: Part of the portion that is smaller and represents a shared space is the shared room.

Private room: The average net profit made by hosts who rent out shared rooms is $1,880, which accounts for 40.80% of the total average host net earnings.

In conclusion, the average net profit received by hosts of private rooms is $2,998, which represents 65.06% of the average host net profits.

Question 3: Olivia's Renovation Analysis

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**Explanation:**

A line chart that shows several parameters pertaining to refurbishment for Airbnb rental units is the visualization that is offered. The y-axis displays the values of the computed metrics, and the x-axis represents various months.   
  
The statistic "ROI" (Return on Investment), which is perhaps the most important one for assessing the possible return from a restoration, is the main emphasis of the graphic. As a line representing the ROI values, they seem to follow a cyclical pattern, peaking in April and December and falling in other months.

In addition to ROI, other metrics included in the chart are "Host Since," which indicates how long the host has been in operation, and a number of aggregated statistics, such as AVG(Price), AVG(Bedrooms), and AGG(ROI)2. These extra measurements give context and enable a more thorough examination of the impact of the refurbishment.  
  
By displaying the variations in ROI values over the course of several months, the visualization successfully conveys the possible return on investment. Olivia may use this information to determine when it will be best to schedule her planned renovations, allowing her to maximize her return on investment by focusing on times when the ROI is anticipated to be greater.

It's crucial to remember that, even though the visualization is enlightening, it could be wise to take into account additional elements, such the property type, precise location, and current market conditions, in order to make an informed choice regarding the refurbishment project.

Question 4: Market Comparison:

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It is clear that Olivia's property offers competitive features and facilities when comparing it to comparable rentals in the neighborhood of her choice. The market study does show that certain comparable properties might have better occupancy rates or somewhat cheaper rental rates. We advise using a pricing plan in line with the market trends in various neighborhoods to make sure Olivia's listing stays competitive while optimizing rental income.

Olivia's preferred neighborhood and room type in Brooklyn are shown in this pricing graph. However, our study led us to the conclusion that Olivia would only be interested in two sorts of rooms: those with two beds and one bathroom. In order to preserve pricing competition in the market, we can obtain pricing insights and tactics by comparing all of the neighborhoods.

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The study for every neighborhood is provided below, together with pricing information for different types of rooms and the host's net profit.

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Olivia can obtain knowledge about various room types' price tactics in various neighborhood groupings by utilizing this chart.   
Let's start by looking at the complete home type. The price in Brooklyn is 206.4, which is lower than the highest price in Manhattan, but it provides the hosts with the highest average net profit. While prices in the other neighborhoods are higher than those in Brooklyn, average net earnings are likewise lower, and the prices in the other communities are too low in comparison.

Let's take a look at the private room type. The price in this neighborhood is median, and the net profit is also very low when compared to other neighborhoods, coming in last place. Based on our analysis, it appears that the pricing strategies are ineffective here because the average net profit increases as the price decreases.  
  
As the assignment comes to an end, we can advise Olivia that since average net profits in neighborhoods are rising when private room prices are lowered, Brooklyn should lower its private room prices in order to adopt a competitive pricing strategy and generate the highest average net profit.

Question 5: Customer Recommendations:

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**Explanation:**

For someone thinking about becoming an Airbnb host, the dashboard that is offered has a wealth of information and advice. Making educated decisions on the kinds and locations of rentals is made easier by the range of metrics and visualizations it provides.

The "PRICING ACCORDING TO ROOM TYPE AT All NEIGHBOURHOOD" bar chart presents a comparison of typical prices from several neighborhoods in New York City, including the Bronx, Brooklyn, Manhattan, and Queens, for various room kinds (private room, shared room, and complete home/apt). The most profitable neighborhoods and room kinds based on price can be found by prospective hosts with the aid of this depiction.

Based on the study, a clear recommendation for the best rental type is given in the "Optimal Rental Type Recommendation" section. The chart indicates that the "home/apt" rental category is the most profitable in terms of average host net profits, yielding the highest percentage of overall average host net profits.

Bergen Beach is marked on the map located in the upper-right corner, and it seems to be a suitable site for hosting. This particular location can have benefits or distinctive qualities that draw Airbnb rentals.

Key performance indicators including host net profits, price, and host gross profits are also displayed on the dashboard, offering more information about the possible financial outcomes of various renting choices.

A prospective host thinking about getting into the New York City Airbnb market should seriously consider offering whole house/apartment rentals based on the dashboard's visualizations and recommendations. Furthermore, given that they might have higher prices and perhaps even more demand for Airbnb rentals, districts like Brooklyn, Manhattan, and possibly Bergen Beach look like attractive places to investigate.  
  
But it's crucial to remember that other aspects, such regional laws, rivalry, and individual tastes, should also be taken into account before deciding on the kind and location of renting.

KPI

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Key performance indicators (KPIs) for Airbnb rental properties are shown in the visualization, with an emphasis on listings for full homes and apartments. It displays the averages for the three key metrics—price, host gross profits, and host net profits—that are used to assess the profitability and prospective income of these listings.   
  
The visuals' ease of use makes it possible to quickly and easily evaluate these crucial KPIs. The averages of the three variables may be quickly compared, providing insight into the pricing patterns and overall financial success of all house and apartment rentals in the dataset.   
  
Even though it's brief, this visualization can be used as a springboard for more research and analysis, especially when paired with other segmentations or filters to pinpoint precise variables affecting these KPI values.