

Project

“Airbnb NYC Market/Data Analysis”

Objective

This project aims to analyze Airbnb NYC listings to uncover trends and provide actionable insights into pricing, availability, host activity, and neighborhood trends. These insights can benefit hosts, travelers, and decision-makers.

The goal of this project is to extract actionable insights from the Airbnb dataset to assist both hosts and users:

- **Hosts:** Can use this information to price their listings competitively and understand demand trends.
- **Travelers:** Can identify budget-friendly neighborhoods or premium areas based on their preferences.

Tools

- PostgreSQL: For database management and querying.

Dataset Overview

Key Features

Column Name	Description
id	Unique listing ID
name	Listing name
price	Price per night
neighbourhood_group	Borough of NYC (e.g., Manhattan, Brooklyn)
availability_365	Number of available days in a year
number_of_reviews	Total number of reviews received




Exploratory Queries

1.1: Average Price by Neighborhood Group

- To compare average pricing across neighborhood groups.

- Helps identify premium or budget-friendly groups for both hosts and travelers.

```
select
    neighbourhood_group,
    round(avg(price),2) as avg_price,
    count(*)as total_listings
from airbnb_nyc
where price>0
group by neighbourhood_group
order by avg_price desc
```

	neighbourhood_group 	avg_price 	total_listings 
	text	numeric	bigint
1	Manhattan	196.88	21660
2	Brooklyn	124.44	20095
3	Staten Island	114.81	373
4	Queens	99.52	5666
5	Bronx	87.58	1090

Insight:

Manhattan is the most premium neighborhood group with an average price of \$196.88, significantly higher than other groups.

Queens and Bronx are the most budget-friendly, with average prices of \$99.52 and \$87.58.

This highlights a clear segmentation in pricing, with Manhattan catering to high-end travelers and Bronx catering to budget-conscious ones.

Hosts in Manhattan can justify premium pricing due to the area's appeal, while hosts in Queens or Bronx may focus on competitive pricing to attract more travelers.

1.2: High-Demand Listings

- To identify neighborhoods with listings that receive high reviews, signaling strong demand.
- Helps highlight hotspots popular with travelers.

```
select
    neighbourhood_group,
    neighbourhood,
    count(*)as high_demand_listings
from airbnb_nyc
where number_of_reviews>100
group by neighbourhood_group, neighbourhood
order by high_demand_listings desc
```

	neighbourhood_group text	neighbourhood text	high_demand_listings bigint
1	Brooklyn	Bedford-Stuyvesant	339
2	Brooklyn	Williamsburg	221
3	Manhattan	Harlem	201
4	Manhattan	Hell's Kitchen	162
5	Brooklyn	Bushwick	132
6	Manhattan	East Village	119
7	Manhattan	East Harlem	110
8	Brooklyn	Crown Heights	95
9	Manhattan	Upper West Side	85
10	Manhattan	Chelsea	72
11	Manhattan	Upper East Side	71

Insight:

Brooklyn's Bedford-Stuyvesant and Williamsburg neighborhoods are key destinations, indicating strong traveler demand. Hosts in these areas can benefit from optimizing their offerings to maintain competitiveness. The trend shows that Brooklyn and Manhattan have significant traveler interest, with a balance of affordability and accessibility.

Manhattan's Harlem and Hell's Kitchen also show a consistent appeal, aligning with their cultural and logistical significance for travelers.

This analysis highlights potential areas for strategic investment and focus for Airbnb hosts.

1.3: Neighborhoods with the Highest Average Price

- To pinpoint luxury neighborhoods within each group.
- Useful for identifying premium areas for targeted marketing or pricing strategies.

```
select
    neighbourhood_group,
    neighbourhood,
    round(avg(price),2) as avg_price,
    count(*) as total_listings
from airbnb_nyc
where price>0
group by neighbourhood_group, neighbourhood
order by avg_price desc
```

	neighbourhood_group text	neighbourhood text	avg_price numeric	total_listings bigint
1	Staten Island	Fort Wadsworth	800.00	1
2	Staten Island	Woodrow	700.00	1
3	Manhattan	Tribeca	490.64	177
4	Brooklyn	Sea Gate	487.86	7
5	Bronx	Riverdale	442.09	11
6	Staten Island	Prince's Bay	409.50	4
7	Manhattan	Battery Park City	367.56	70
8	Manhattan	Flatiron District	341.93	80
9	Staten Island	Randall Manor	336.00	19
10	Manhattan	NoHo	295.72	78
11	Manhattan	SoHo	287.10	358

Insight:

Staten Island and Manhattan host some of the most luxurious neighborhoods with high pricing, catering to premium travelers and luxury-seeking guests.

Tribeca and Battery Park City in Manhattan, as well as Sea Gate in Brooklyn, represent neighborhoods with a balance of higher price and moderate listing count, making them prime locations for high-end investments.

Hosts targeting luxury travelers should focus on areas like Tribeca and Battery Park City, while areas like Fort Wadsworth and Woodrow are niche but high-value opportunities.

1.4: Host Activity

- To find the most active hosts managing multiple listings.
- Helps Airbnb identify key hosts for potential partnerships.

```
select
    host_name,
    count(*) as total_listings,
    neighbourhood_group
from airbnb_nyc
group by
    host_name,
    neighbourhood_group
order by
    total_listings desc
```

	host_name text	total_listings bigint	neighbourhood_group text
1	Sonder (NYC)	327	Manhattan
2	Blueground	230	Manhattan
3	Michael	212	Manhattan
4	David	202	Manhattan
5	Michael	159	Brooklyn
6	John	151	Manhattan
7	David	142	Brooklyn
8	Kara	135	Manhattan
9	Mike	134	Manhattan
10	Alex	134	Manhattan
11	Sarah	133	Brooklyn

Insights:

1. Dominance of Active Hosts:
 - The host *Sonder (NYC)* leads with 327 total listings, predominantly in Manhattan.
 - *Blueground* and *Michael* follow with 230 and 212 listings, respectively, also focusing on Manhattan.
2. Neighborhood Focus:
 - Manhattan is the hotspot for high-activity hosts, with most of the top hosts managing their listings in this neighborhood.
 - A few hosts, like *David* and *Michael*, also manage listings in Brooklyn, indicating expansion outside Manhattan.
3. Potential Key Players:
 - Hosts such as *Sonder (NYC)* and *Blueground* are significant contributors to Airbnb's inventory and could be ideal candidates for strategic collaborations.

This analysis highlights the importance of Manhattan as a hub for Airbnb's high-volume hosts. Collaborating with top hosts in Manhattan, such as Sonder (NYC), could enhance Airbnb's overall supply. Furthermore, understanding the preferences and strategies of these top hosts could help Airbnb improve inventory in less saturated neighborhoods like Queens and Bronx.

1.5: Room Type Availability

- To analyze availability trends for different room types.
- Helps guide hosts in choosing room types based on demand.

```
select
    neighbourhood_group, room_type,
    round(avg(availability_365), 2) as avg_availability,
```

```

count(*) AS total_listings

from
    airbnb_nyc
group by room_type,neighbourhood_group
order by avg_availability desc

```

	neighbourhood_group text	room_type text	avg_availability numeric	total_listings bigint
1	Staten Island	Private room	226.36	188
2	Queens	Shared room	192.19	198
3	Staten Island	Entire home/apt	178.07	176
4	Brooklyn	Shared room	178.01	413
5	Bronx	Private room	171.33	652
6	Bronx	Entire home/apt	158.00	379
7	Bronx	Shared room	154.22	60
8	Queens	Private room	149.22	3372
9	Manhattan	Shared room	138.57	480
10	Queens	Entire home/apt	132.27	2096
11	Manhattan	Entire home/apt	117.14	13199

Insights:

Highest Average Availability:

- Private rooms in Staten Island have the highest average availability, with 226.36 days per year, indicating they are available for booking most of the time.
- Shared rooms in Queens follow with 192.19 days of average availability.

Neighborhood Trends:

- Staten Island and Queens dominate the list for high availability, suggesting they have less competition or consistent demand.
- Manhattan's Entire home/apartments show significantly lower availability (117.14 days), indicating higher demand or shorter listing durations.

Room Type Trends:

- Private rooms and shared rooms generally have higher availability compared to entire homes/apartments, suggesting these are more likely to remain unoccupied.

Listings with Maximum Volume:

- Private rooms in Bronx lead in the total number of listings (652 listings) but have moderate availability (171.33 days).
- Entire homes/apartments in Manhattan dominate in volume (13,199 listings) but exhibit the lowest availability, aligning with their popularity and demand.
- Staten Island and Queens are ideal for guests seeking consistent availability, particularly for private and shared rooms. In contrast, Manhattan's entire homes/apartments are highly competitive and less available, reflecting strong demand. Hosts in Manhattan could benefit from adjusting prices or availability settings to meet demand effectively, while hosts in Staten Island and Queens could focus on promoting listings to attract more bookings.

1.6: Revenue Potential

- To calculate and compare revenue potential across neighborhoods.
- Helps identify areas with the highest earning opportunities for hosts.

```
select
    neighbourhood_group,
    round(avg(price*availability_365),2) as avg_revenue_potential,
    count(*) as total_listings
from airbnb_nyc
where price>0
group by neighbourhood_group
order by avg_revenue_potential desc
```

	neighbourhood_group text	avg_revenue_potential numeric	total_listings bigint
1	Manhattan	26610.23	21660
2	Staten Island	24308.23	373
3	Bronx	15500.55	1090
4	Queens	15264.28	5666
5	Brooklyn	13924.37	20095

- Manhattan leads with the highest average revenue potential of \$26,610.23 across 21,660 listings, making it the most profitable neighborhood for Airbnb hosts.
- Staten Island ranks second with \$24,308.23, despite having only 373 listings, highlighting its high profitability for limited listings.
- Bronx (\$15,500.55) and Queens (\$15,264.28) show moderate revenue potential, offering good opportunities for hosts.
- Brooklyn, despite having 20,095 listings, shows the lowest revenue potential (\$13,924.37), likely due to lower prices or availability.
- Manhattan is the top choice for revenue potential, while Staten Island offers high profitability for select listings. Brooklyn hosts may need to optimize pricing strategies.

1.7: Availability Analysis

- To calculate the average availability (in days per year) for listings in each neighbourhood_group.
- Helps identify areas with consistent availability patterns.

```
select
    neighbourhood_group,
    round(avg(availability_365),2) as avg_availability,
    count(*)as total_listings
```

```

from airbnb_nyc
group by neighbourhood_group
order by avg_availability desc

```

	neighbourhood_group text	avg_availability numeric	total_listings bigint
1	Staten Island	199.68	373
2	Bronx	165.76	1091
3	Queens	144.45	5666
4	Manhattan	111.98	21661
5	Brooklyn	100.23	20104

- Staten Island has the highest average availability with 199.68 days per year across 373 listings, indicating that listings here are generally available throughout the year.
- Bronx follows with 165.76 days, offering relatively high availability across 1,091 listings.
- Queens shows moderate availability at 144.45 days but has a significant number of listings (5,666).
- Manhattan and Brooklyn have the lowest average availability with 111.98 days and 100.23 days respectively, despite having the highest number of listings.

Staten Island and Bronx provide the most consistent availability for Airbnb guests, while Manhattan and Brooklyn might experience more fluctuations in listing availability due to high demand or other factors. This insight helps hosts optimize availability strategies in different neighborhoods.

Recommendation

Based on the analysis, the following actionable recommendations are for Airbnb and hosts:

1. Focus on High-Value Neighborhoods:
 - Manhattan emerges as the top neighborhood group in terms of average price (\$196.90) and revenue potential (\$26,610). It should be prioritized for premium listings and marketing campaigns targeting high-income guests.
 - Staten Island, while not the most expensive, provides consistent availability and the second-highest revenue potential (\$24,308), making it a lucrative area for growth.
2. Optimize Availability Strategies:
 - Staten Island and Bronx offer the highest average availability, making them attractive options for guests seeking last-minute or flexible bookings. Hosts in these areas should leverage this to attract more bookings.
3. High-Demand Listings and Hosts:
 - Neighborhoods like Bedford-Stuyvesant (339 listings) and Williamsburg (221 listings) show significant demand. Investments in these areas can enhance Airbnb's market share.

- Key hosts like Sonder (NYC), managing 327 listings in Manhattan, and Blueground, managing 230 listings, represent critical partnerships. Airbnb should consider engaging them for loyalty programs or partnerships.
- 4 . Room-Type Specific Strategies:
 - Private rooms in Staten Island and shared rooms in Queens offer the highest availability. Hosts can capitalize on this by targeting long-term renters or budget-conscious travelers.
 - Entire home/apartment listings in Bronx and Brooklyn are ideal for families and groups due to reasonable availability and pricing.
- 5 . Expand in Underserved Neighborhoods:
 - Neighborhoods with the highest average prices like Fort Wadsworth (\$800) and Woodrow (\$700) in Staten Island offer premium opportunities but have very few listings. Expanding listings in these areas could drive revenue growth.

Conclusion

This project provided a comprehensive analysis of Airbnb's New York City listings across neighborhood groups, room types, host activity, demand, and availability trends.

- Manhattan is the standout performer with high demand, revenue potential, and pricing power, making it ideal for luxury and high-value listings.
- Staten Island balances availability and revenue potential, offering a promising market for consistent earnings.
- Bronx and Queens show opportunities for affordable listings targeting budget travelers with consistent availability.
- Hosts and Airbnb can leverage data-driven insights to tailor their strategies, such as enhancing host partnerships, targeting underserved high-value areas, and optimizing room-type offerings for different traveler profiles.

By implementing these recommendations, Airbnb can maximize its market potential and revenue growth in New York City. This data-driven approach ensures actionable insights and aligns the platform's strategies with customer demand and market opportunities.