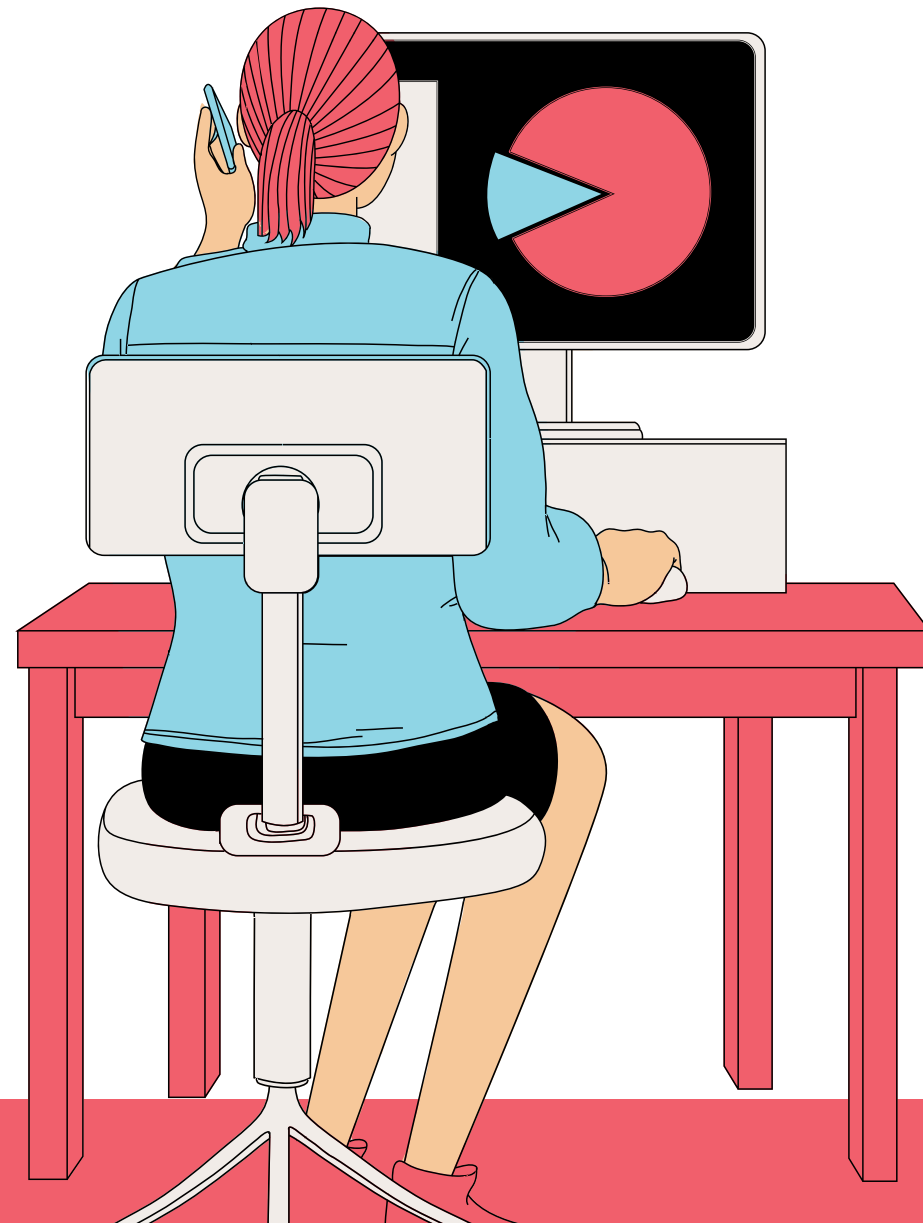


Airbnb Listing Performance Analysis Dashboard

Travel & Hospitality

Team : G7

Faculty : Archit Raj



Context & Problem Statement

- Short-term rentals depend heavily on pricing, location, and listing characteristics.
- Hosts need data-driven decisions to improve occupancy and revenue.

Which listing characteristics, pricing strategies, and location factors most influence occupancy and estimated revenue?

OBJECTIVE : Support decisions Like

- Listing strategy
- Pricing optimization
- Revenue improvement



Data Engineering

Dataset Source: [Inside Airbnb Listings \(Amsterdam\)](#)

Dataset Size: 10361 Rows

Cleaning :

- Currency formatting in Price (€)
- Missing / inconsistent availability values Clean-up
(like Median in place of missing Price value)

Key Column selected :

- Neighbourhood • ID • Price • Occupancy Rate
- Days Available Per Year • Estimated Revenue



KPI & Metrics Framework

KPI Used :	Purpose
<ul style="list-style-type: none">• Total Listings• Average Price• Occupancy Rate• Estimated Revenue	<ul style="list-style-type: none">(Market Supply)(Pricing Strategy)(Demand & Utilization)(Business Performance)
(With Respect to Neighbourhood & Room Type)	

Why These KPIs?

Because hospitality is driven by
Price + Occupancy → Revenue outcome



Key Insights (EDA)

- Listings priced between €200–€300 show the highest occupancy (~84%).

This suggests that guests prefer value-for-money options rather than extreme low or premium pricing.

- Entire home/apt listings dominate supply and maintain strong occupancy (~78%).

These listings represent the core revenue engine of the marketplace.

- Listings above €500 experience significantly lower occupancy.

High pricing limits demand and reduces utilization unless strong differentiation exists.

- Some listings with lower occupancy still earn high revenue due to higher average pricing.

Hosts should optimize revenue, not only booking volume.

Advanced Pricing Segmentation & Root Cause Discovered Analysis



SEGMENTATION ANALYSIS (PRICE BUCKETING)

Listings were segmented into price. Segmentation is a standard analytical method where raw data is grouped and performance is compared across categories.



ROOT CAUSE ANALYSIS (DEMAND DRIVERS)

Instead of just observing occupancy:
What is driving occupancy differences?
Variables analysed:

- Price Range
- Room Type
- Neighbourhood

Identify the factors influencing demand and revenue.

(Industry analytics often use root-cause style analysis to identify drivers behind performance changes.)

NEW UNDERSTANDING

- Occupancy is Price-Sensitive
- Revenue \neq Occupancy
- Market Segmentation Exists
- Multiple Drivers Work Together

DASHBOARD WALKTHROUGH

Purpose:

- Helps decision-makers understand overall market health.
- Quickly evaluates pricing efficiency and revenue performance.
- Supports strategic decisions without needing deep analysis.

Designed for fast executive-level monitoring.

ROOM TYPE ANALYSIS

- Occupancy by Room Type
 - Price by Room Type
 - Estimated Revenue by Room Type
- Used to:
- Compare listing category performance.
 - Identify the most profitable room types.

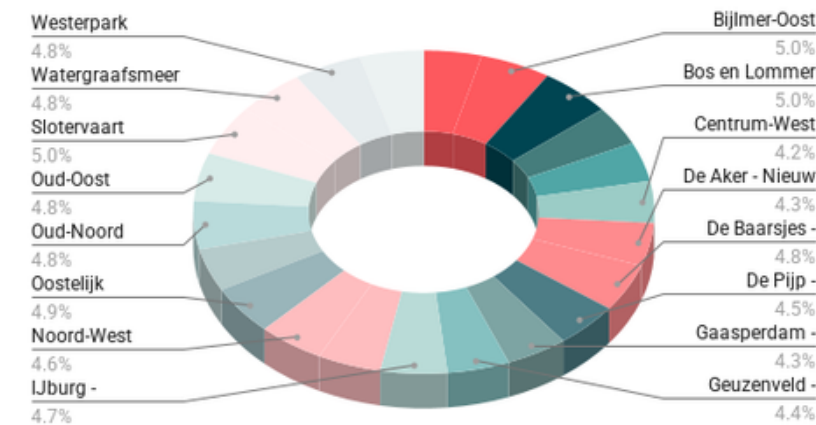
PRICING STRATEGY ANALYSIS

- Occupancy Rate by Price Range (Area Chart)
- Used to:
- Discover the optimal pricing segment.
 - Understand demand sensitivity to price.

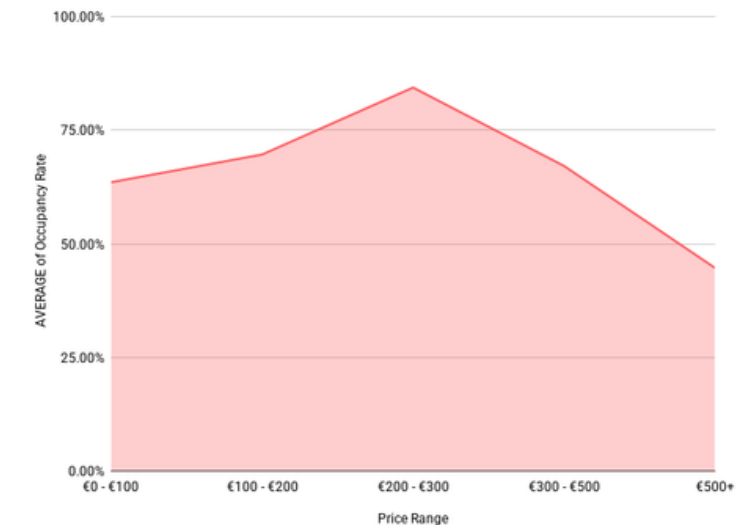
NEIGHBOURHOOD ANALYSIS

- Revenue by Neighbourhood
 - Occupancy by Neighbourhood
 - Price by Neighbourhood
- Used to:
- Identify high-performing locations.
 - Compare geographic market performance.

Occupancy by Neighbourhood



Occupancy Rate by Price Range



Analysis by Neighbourhood

Neighbourhood All

Total Listing
By Neighbourhood

10361

Occupancy
AVG

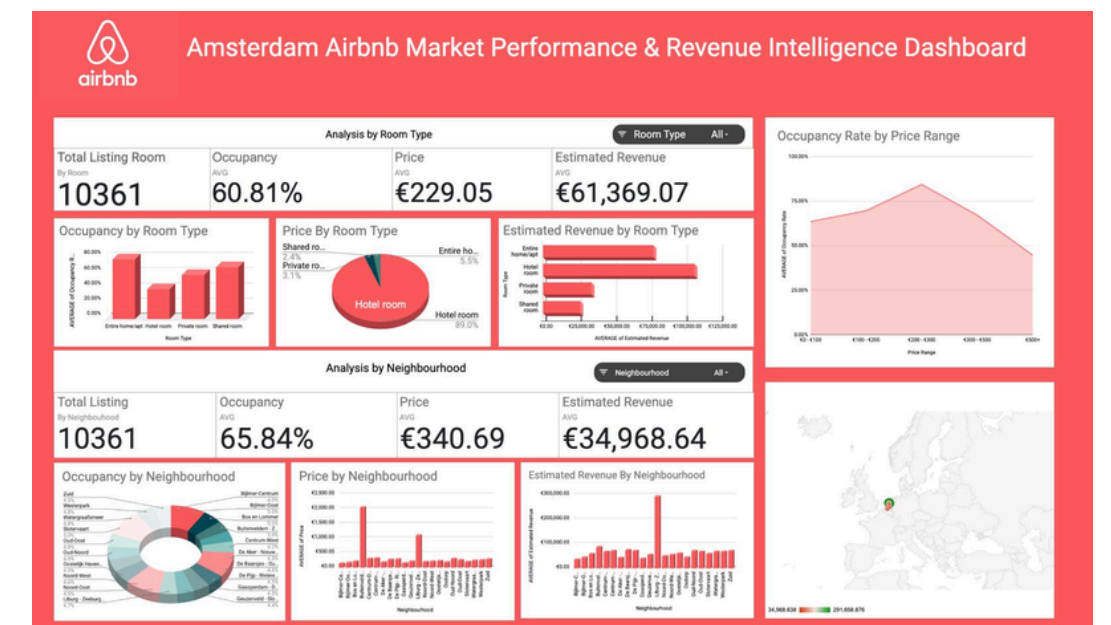
65.84%

Price
AVG

€340.69

Estimated Revenue
AVG

€34,968.64



RECOMMENDATIONS

Optimize Pricing Around Mid-Range Segment

Highest occupancy observed in €200–€300 price range.

Recommendation:

- Encourage hosts to price listings within this range whenever possible.
- Use dynamic pricing suggestions to avoid overpricing.

Expected Result: Higher booking rates and better occupancy stability.

Expand Entire Home/Apt Supply Strategy

Entire home/apt listings dominate occupancy and revenue performance.

Recommendation:

- Promote entire-home listings through platform incentives.
- Provide visibility boosts for high-performing properties.

Expected Result: Increased platform revenue contribution.

EVALUATE OUTCOMES

Premium listings show significantly lower occupancy.

Recommendation:

- Introduce targeted marketing for premium stays.
- Encourage value additions (experience bundles, premium services).

Expected Result: Improved utilization of luxury inventory.

PLAN INITIATIVES

Certain neighbourhoods generate higher estimated revenue.

Recommendation:

- Prioritize advertising and host acquisition in high-performing areas.
- Use location-based promotions.

Expected Result: Higher ROI from marketing spend.



IMPACT & VALUE

Revenue Optimization Impact

By identifying the optimal pricing segment (€200–€300):

- Hosts can improve occupancy rates.
- Better pricing alignment increases overall revenue consistency.

Expected Impact:

Higher booking frequency and improved revenue per listing.

Operational Efficiency Improvement

The dashboard centralizes key metrics:

- Price
- Occupancy
- Revenue
- Location performance

Decision-makers no longer need manual analysis.

Impact:

- Faster decision-making
- Reduced analysis time
- Data-driven operations

STRATEGIC MARKET INSIGHTS

Neighbourhood and room-type analysis allows:

- Smarter marketing investments.
- Better host acquisition strategies.

Impact:

- Higher ROI on growth strategies.
- Focus on high-performing areas.

Better Resource Allocation

Segment-level insights help Airbnb:

- Support underperforming listings.
- Promote strong-performing categories.

Impact:

- Improved marketplace balance.
- Reduced inefficiencies.

LIMITATIONS & FUTURE IMPROVEMENTS

DATA LIMITATIONS

Some variables influencing bookings (guest ratings, reviews sentiment, special events) were not included.

POTENTIAL DATA BIAS

Listings with incomplete or missing data were cleaned or removed.

ANALYTICAL LIMITATIONS

Analysis mainly focuses on descriptive and segmentation analysis.

FUTURE IMPROVEMENTS

Add Time-Series Analysis, Integrate Review & Rating Data

