

# Airbnb Listing Performance Analysis Dashboard



Travel & Hospitality

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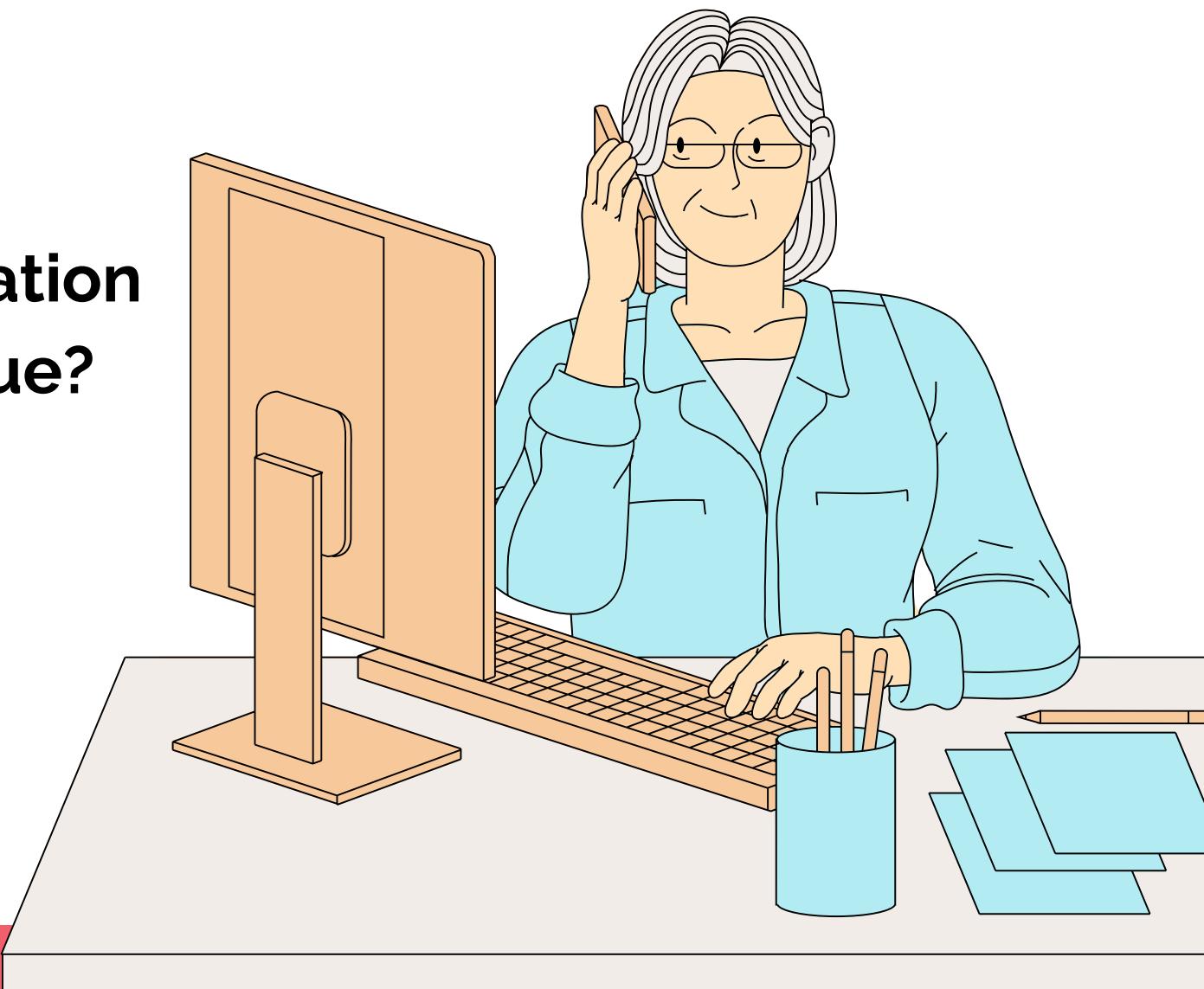
# Context & Problem Statement

- 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                |
|---|------------------------|
| • Total Listings                            | (Market Supply)        |
| • Average Price                             | (Pricing Strategy)     |
| • Occupancy Rate                            | (Demand & Utilization) |
| • Estimated Revenue                         | (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.

# AdvancPricing Segmentation & Root Cause Discoveryed 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 ≠ 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.

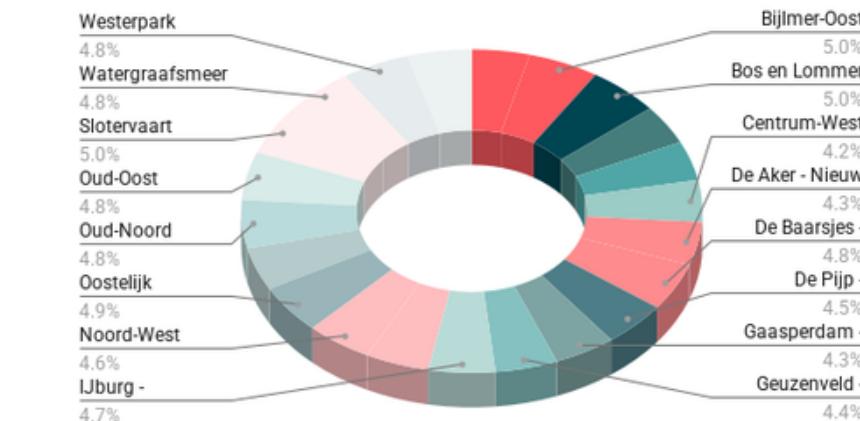
## PRICING STRATEGY ANALYSIS

### Occupancy Rate by Price Range (Area Chart)

Used to:

- Discover the optimal pricing segment.
- Understand demand sensitivity to price.

## Occupancy by Neighbourhood



## Occupancy Rate by Price Range



## Analysis by Neighbourhood

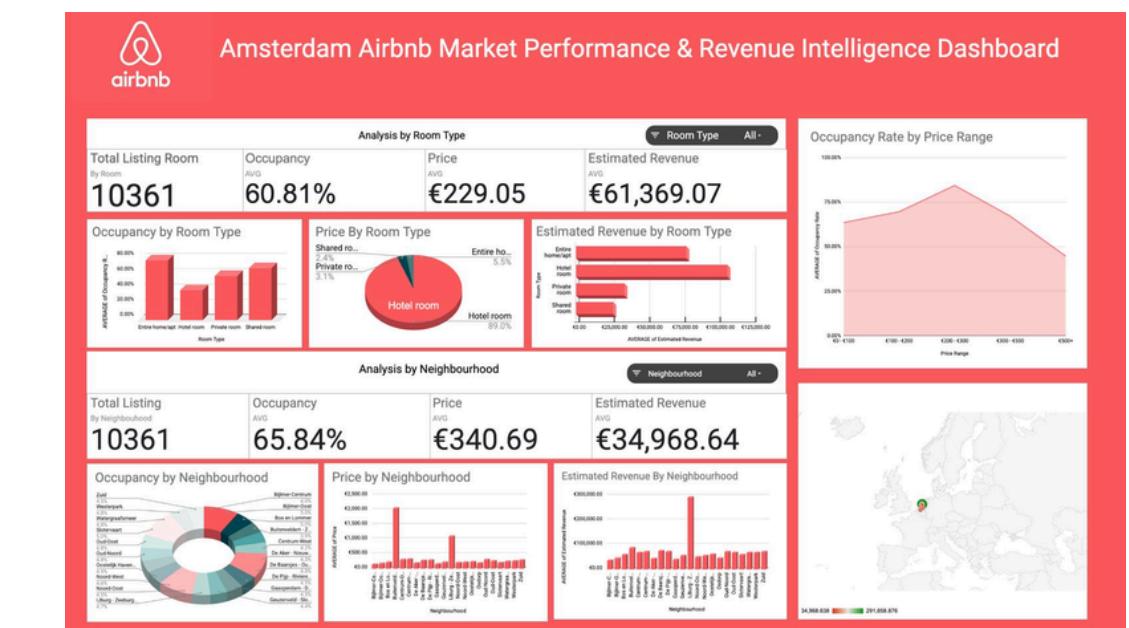
| Total Listing By Neighbourhood | Occupancy AVG | Price AVG | Estimated Revenue AVG |
|--------------------------------|---------------|-----------|-----------------------|
| 10361                          | 65.84%        | €340.69   | €34,968.64            |

## NEIGHBOURHOOD ANALYSIS

- Revenue by Neighbourhood
- Occupancy by Neighbourhood
- Price by Neighbourhood

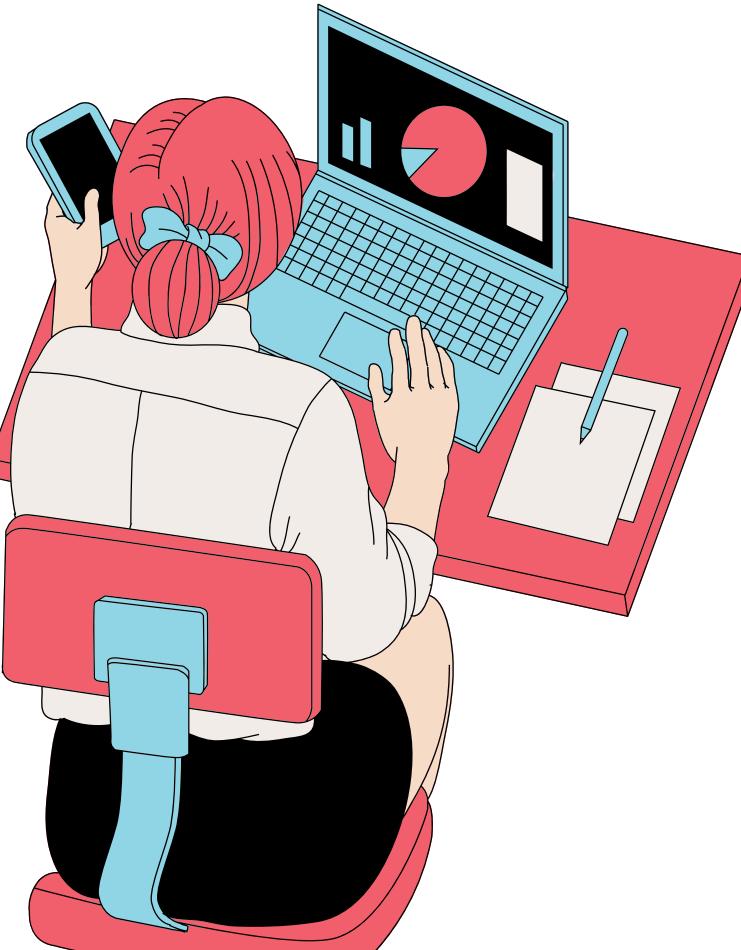
Used to:

- Identify high-performing locations.
- Compare geographic market performance.



# RECOMMENDATIONS

|  |  |  |  |
|--|--|--|--|
| <p><b>Optimize Pricing Around Mid-Range Segment</b></p> <p>Highest occupancy observed in €200–€300 price range.</p> <p><b>Recommendation:</b></p> <ul style="list-style-type: none"><li>• Encourage hosts to price listings within this range whenever possible.</li><li>• Use dynamic pricing suggestions to avoid overpricing.</li></ul> <p><b>Expected Result:</b> Higher booking rates and better occupancy stability.</p> | <p><b>Expand Entire Home/Apt Supply Strategy</b></p> <p>Entire home/apt listings dominate occupancy and revenue performance.</p> <p><b>Recommendation:</b></p> <ul style="list-style-type: none"><li>• Promote entire-home listings through platform incentives.</li><li>• Provide visibility boosts for high-performing properties.</li></ul> <p><b>Expected Result:</b> Increased platform revenue contribution.</p> | <p><b>EVALUATE OUTCOMES</b></p> <p>Premium listings show significantly lower occupancy.</p> <p><b>Recommendation:</b></p> <ul style="list-style-type: none"><li>• Introduce targeted marketing for premium stays.</li><li>• Encourage value additions (experience bundles, premium services).</li></ul> <p><b>Expected Result:</b> Improved utilization of luxury inventory.</p> | <p><b>PLAN INITIATIVES</b></p> <p>Certain neighbourhoods generate higher estimated revenue.</p> <p><b>Recommendation:</b></p> <ul style="list-style-type: none"><li>• Prioritize advertising and host acquisition in high-performing areas.</li><li>• Use location-based promotions.</li></ul> <p><b>Expected Result:</b> Higher ROI from marketing spend.</p> |
|--|--|--|--|



# 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

