BARCELONA AIRBNB

Pricing Analysis

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Executive Summary

Objective:

To deliver a descriptive dashboard that uncovers pricing trends, seasonal patterns, and performance differences across room types and neighborhoods in Barcelona's Airbnb market, in order to guide strategic pricing decisions.

Context:

Javier, a Revenue Optimization Manager at Airbnb, needs to identify which types of listings generate the most revenue and guest satisfaction — not just in volume, but across location and time — to better advise hosts on pricing strategies.

Approach:

We used a blend of descriptive analytics and data visualization (Python and Tableau) to analyze:

- Average nightly price trends over the past 4 years
- Neighborhood and room type segmentation
- Seasonal performance fluctuations
- Price outliers and estimated revenue potential

Tools & Data:

Inside Airbnb datasets (listings, calendar, reviews), Python (Pandas/Seaborn), and Tableau

Hello,

I’m Javier

Revenue Optimization Manager

Role:

Javier works at Airbnb headquarters, overseeing pricing strategy across key European cities. His **focus is on optimizing revenue by understanding market dynamics;** including how different types of listings perform across neighborhoods and time periods.

Pain Point

"I need to know which types of listings perform best in Barcelona ; not just in terms of volume, but also in revenue potential. I want to compare how private rooms, entire homes, and shared spaces differ in price, location and guest satisfaction so we can better **guide host pricing strategies.**"

Data Fluency

Intermediate – Javier is confident using dashboards, visual trends, and aggregated KPIs but avoids SQL, Python or raw data.

Goal

This project simulates a revenue performance analysis for Airbnb Barcelona, with a **focus on understanding pricing behavio**r across different room types, neighborhoods, and seasons. It explores key metrics such as average nightly price, estimated revenue, amenities, and guest satisfaction, with a focus on visual trends and actionable comparisons to support pricing strategy decisions at the city level.

Process

The project begins with data preparation in Python (Pandas), including merging multiple Airbnb datasets, standardizing prices, and capping outliers. Descriptive metrics and seasonal trends are computed, followed by visual exploration in Tableau, where room type, neighborhood, and pricing behavior are analyzed through interactive dashboards.

Highlights

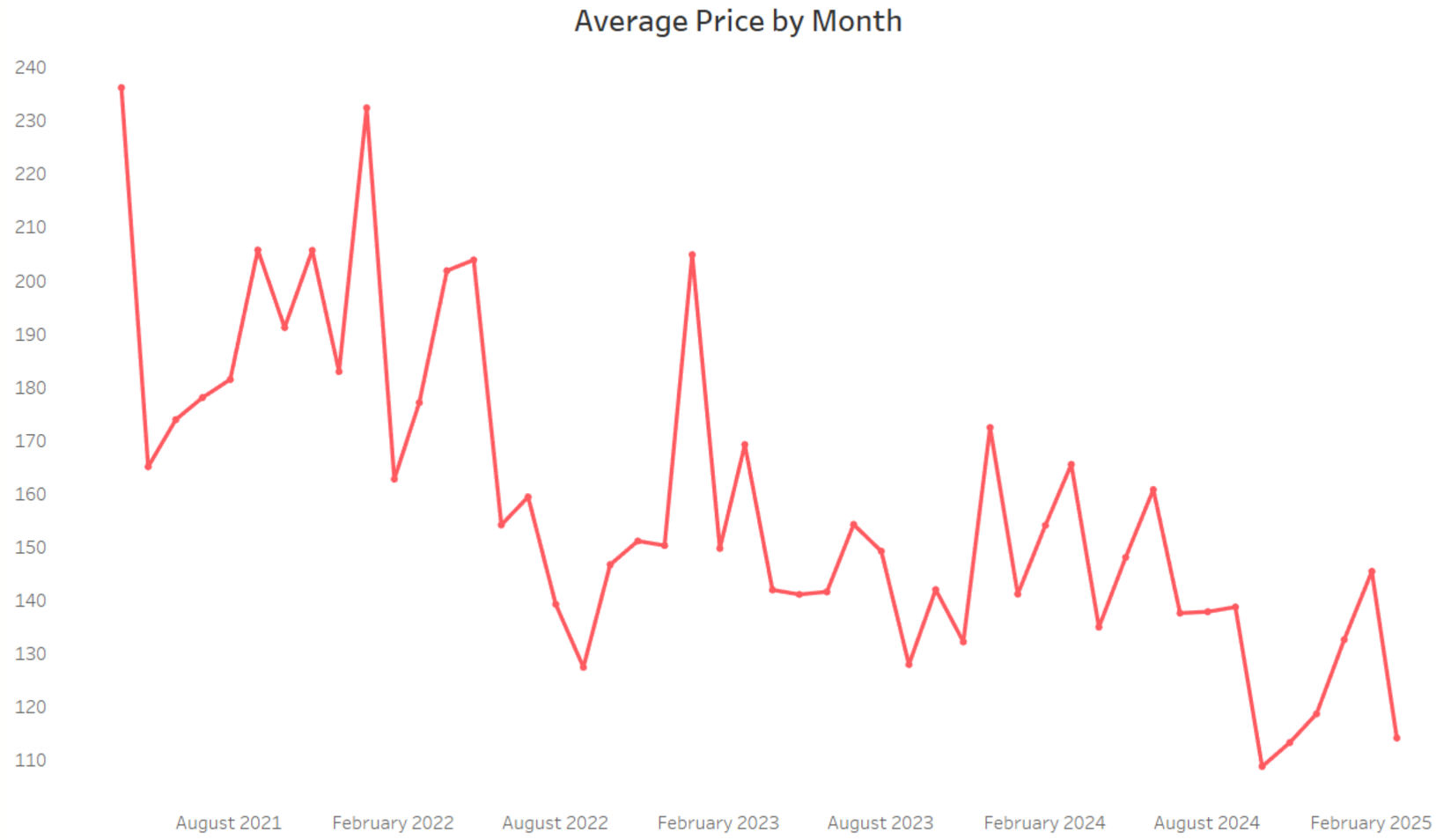
The final product is a multi-layered Tableau dashboard and Python report featuring:

- **Dynamic filtering** by room type, neighborhood, price range, date and selected metrics.
- **Seasonality insights** with average monthly pricing trends over the past 4 years.
- **Regional comparison** of average prices across Barcelona’s neighborhoods.
- **Room type** comparison for price and review ratings.

How do average nightly prices vary seasonally in Barcelona, and how can we adjust pricing strategy to maximize revenue?

Between 2021 and 2025, the **highest** average nightly price occurred in **April 2021 (€236.17),** while the **lowest** was in **October 2024 (€108.86).** This suggests clear seasonal variation, with spring months showing higher pricing potential and autumn months showing a notable dip in average rates.

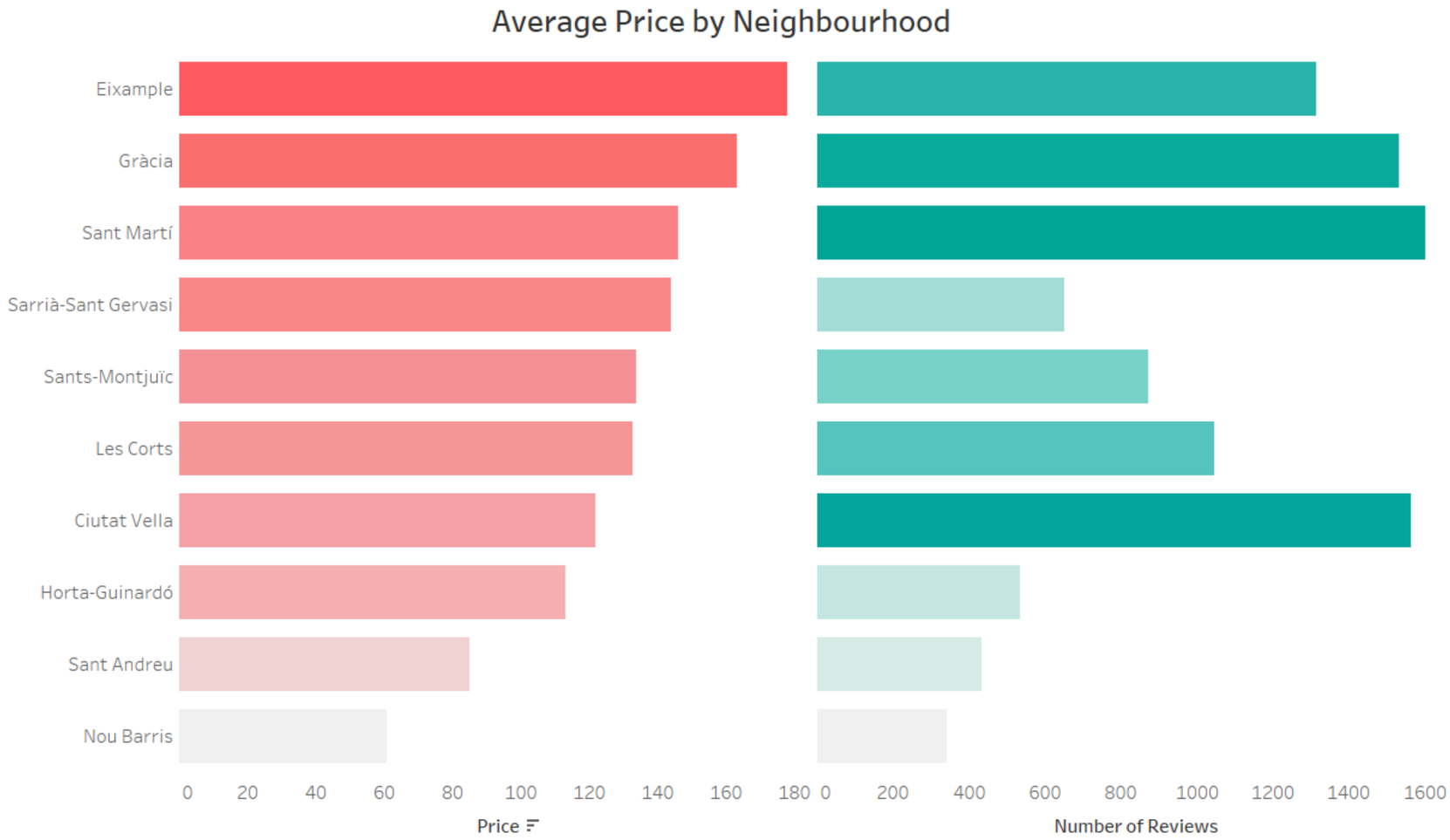
To combat this, Javier should **promote premium listings in spring,** especially around April, to maximize revenue. Furthermore, he should offer **targeted discounts or promotions in autumn** (especially October) to boost occupancy during lower-demand periods. Ultimately, he should use this seasonal pattern to guide host pricing strategies and set expectations around revenue fluctuations.



How can we optimize pricing across neighborhoods to maximize revenue while remaining competitive?

Eixample, Gràcia, and Sant Martí have the highest average prices, indicating strong demand in central and coastal areas. Ciutat Vella shows high guest engagement despite mid-range pricing, while Nou Barris and Sant Andreu remain low-cost, low-traffic zones.

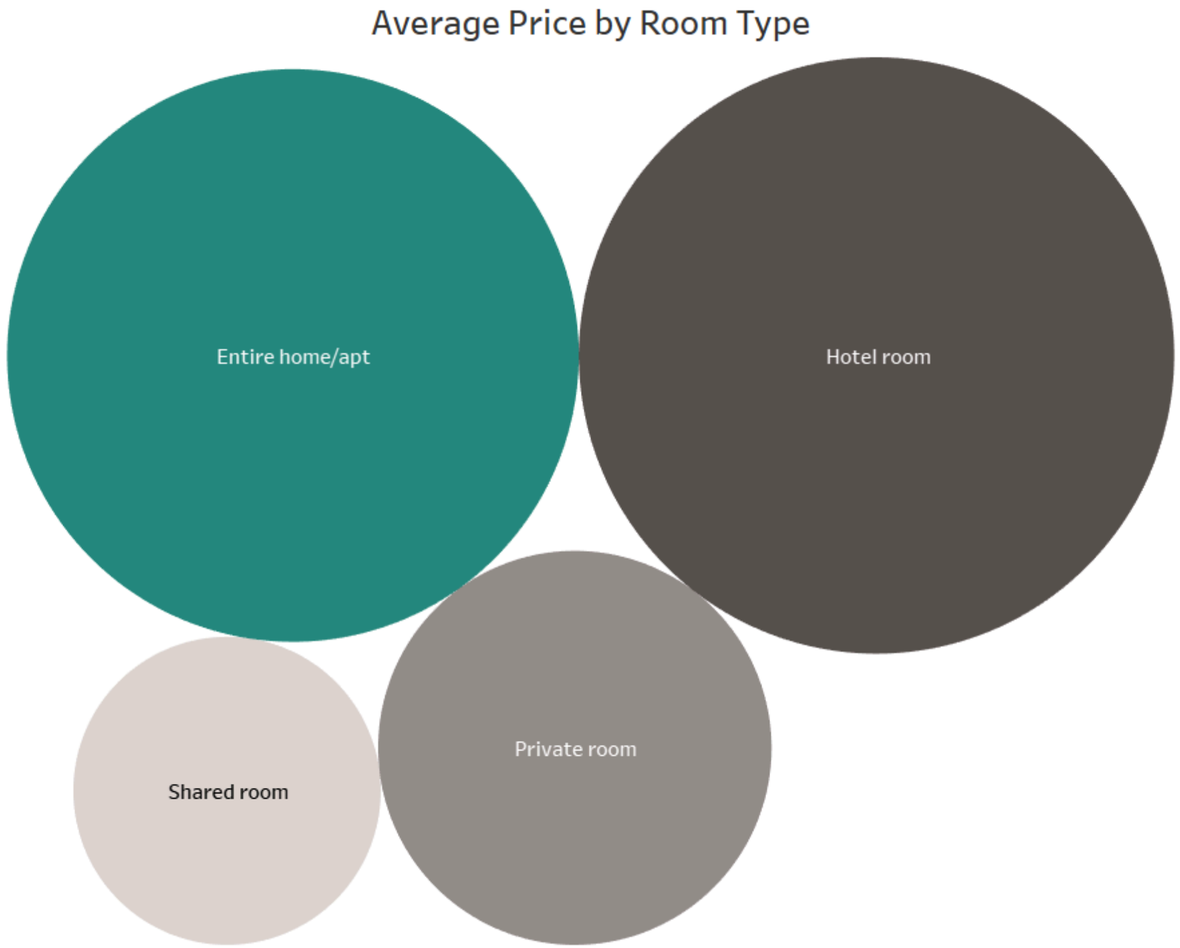
Javier should apply **premium pricing in high-demand neighborhoods** like Eixample and Sant Martí, while using **promotional pricing and visibility boosts** to drive bookings in lower-engagement areas like Nou Barris and Sant Andreu.



How can we optimize pricing across neighborhoods to maximize revenue while remaining competitive?

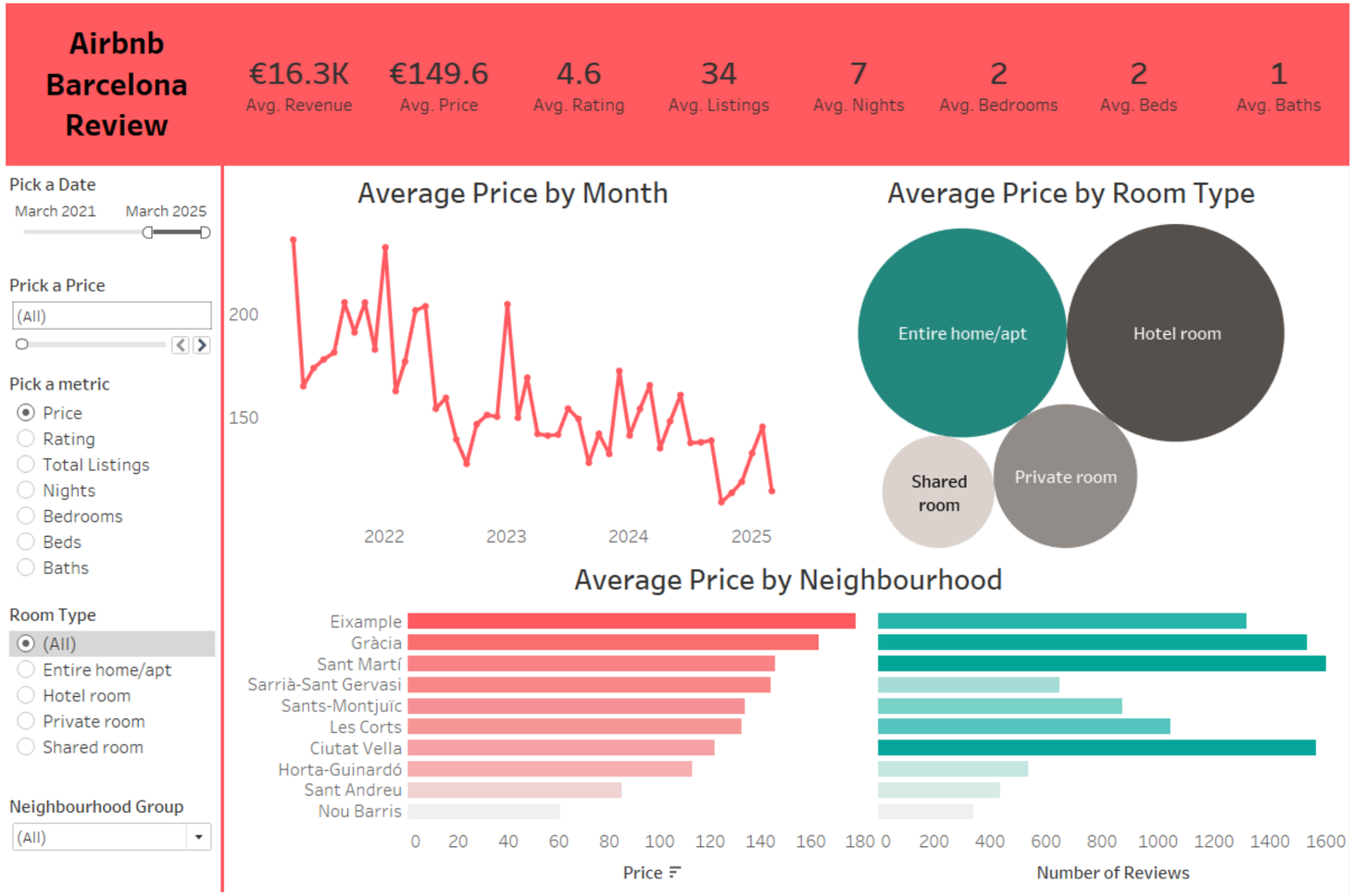
Hotel rooms had the **highest** average price (€202.2), followed closely by **entire homes** (€186.4), reflecting their premium positioning. Private (€88.3) and shared rooms (€53.9) remained the most budget-friendly options, appealing to price-sensitive travelers.

Javier should continue **promoting entire homes as a high-revenue option** with strong guest appeal. Lower-cost listings, like **private and shared rooms,** should be **positioned as accessible** alternatives during low-demand seasons or in price-sensitive markets.



Final Recommendations to Guide Host Pricing

Javier should focus on **premium pricing** in high-demand neighborhoods like Eixample and Sant Martí, where full-property stays perform best. To stay competitive, aim for the **citywide median** (~€140) and use **targeted promotions** in lower-engagement areas. By positioning **entire homes** as high-revenue drivers and offering **value-focused** options for budget travelers, Javier can better guide hosts and maximize overall booking potential.



View dashboard:
https://public.tableau.com/views/BarcelonaAirbnbPricingAnalysis/Dashboard2?:language=en-US&:sid=&:redirect=auth&:display_count=n&:origin=viz_share_link

Thank you