Cairo Hotels Analysis Report

1. Project Overview

Briefly describe the goal of the project — e.g., to analyze hotel booking data from Cairo and provide business insights on revenue, pricing, reviews, and customer behavior.

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2. Dataset Summary

1. **Source**: Cairo hotel dataset (Excel)
2. **Original Fields**:
    - ❖ hotel_id, hotel_name, address, check_in, check_out, review_count, rating, description, price_amount, price_per_night, nights, calculated_price

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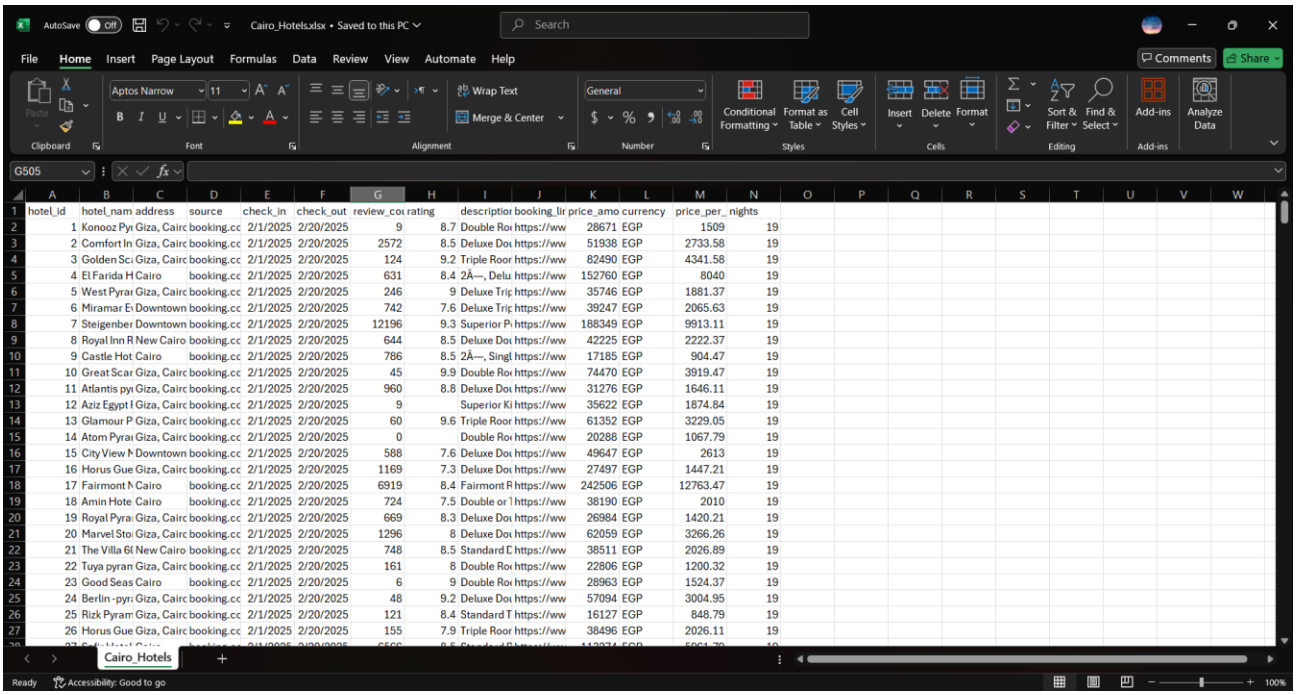
3. Data Before Cleaning

Describe the condition of the raw dataset.

1. Missing values in rating, price_per_night, check_out
2. Inconsistent date formats (check_in, check_out)
3. Irregular capitalization and typos in hotel_name, description
4. Outliers in price_per_night (e.g., prices below 100 or above 10,000)
5. Duplicated hotel entries



4. Data Cleaning Steps

Task	Tool	Description
Handling missing values	Python (pandas)	Imputed missing rating using median; dropped rows missing key dates
Standardizing formats	Python	Converted check_in/check_out to datetime
Removing outliers	Python	Removed rows with unrealistic price_per_night values
Cleaning text	Python	Lowercased hotel_name, removed punctuation from description
Derived columns	Python	Calculated nights from check-in/out, validated calculated_price
Removing duplicates	SQL / Python	Removed duplicate hotel_id entries
Filtering valid entries	SQL	Filtered records with rating between 0–10 and price > 0

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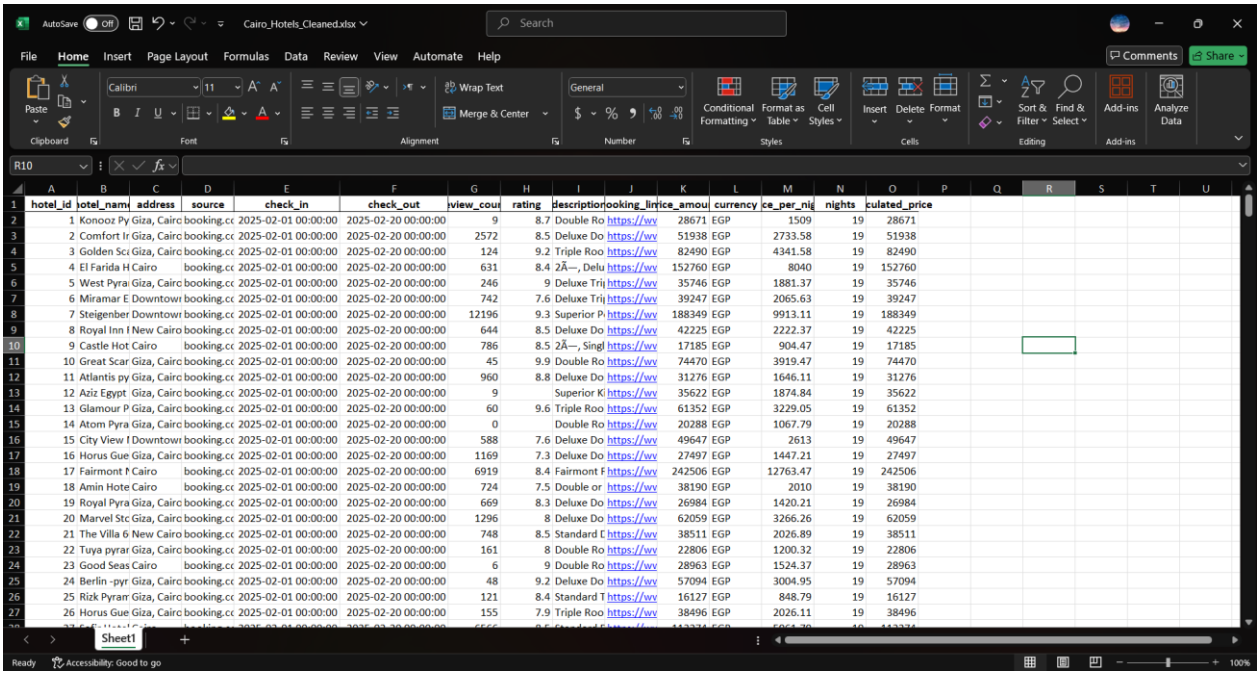
5. Data After Cleaning

Summary stats after transformation:

1. Total records: 23,000+
2. No nulls in key columns (price_per_night, rating, check_in)
3. Consistent and normalized text fields
4. Verified columns derived: nights, calculated price



6. Tools & Workflow

Python (Data Cleaning + EDA)

1. Libraries: pandas, numpy, matplotlib
2. Tasks:
    - ❖ Cleaned and validated data
    - ❖ Exploratory Data Analysis (EDA): Histograms, boxplots, correlation heatmaps
    - ❖ Exported cleaned dataset to CSV/Excel for further use

SQL (Data Validation + Aggregation)

1. Database: SQLite / PostgreSQL (or similar)
2. Used for:
    - ❖ Checking for duplicates and nulls
    - ❖ Grouping hotels by address for revenue and rating aggregates
    - ❖ Writing reusable queries for Power BI loading

Power BI (Visualization & Insights)

1. Imported cleaned data from Excel/SQL
2. Created dashboards for:
    - ❖ Hotel performance metrics (revenue, ratings, reviews)
    - ❖ Price vs. value analysis
    - ❖ Location-based analysis (Giza, Cairo, etc.)
    - ❖ Time trends (seasonality, duration, monthly revenue)
    - ❖ Keyword insights from hotel descriptions (via Power Query and custom visuals)

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7. Key Findings

This section summarizes the major insights found from Power BI dashboards, such as:

1. Giza and Cairo dominate in revenue and customer duration
2. “Luxury” hotels show high ratings but are not always the most reviewed
3. Seasonal spikes in check-ins during winter months
4. Descriptions containing “budget” often correlate with lower stay durations

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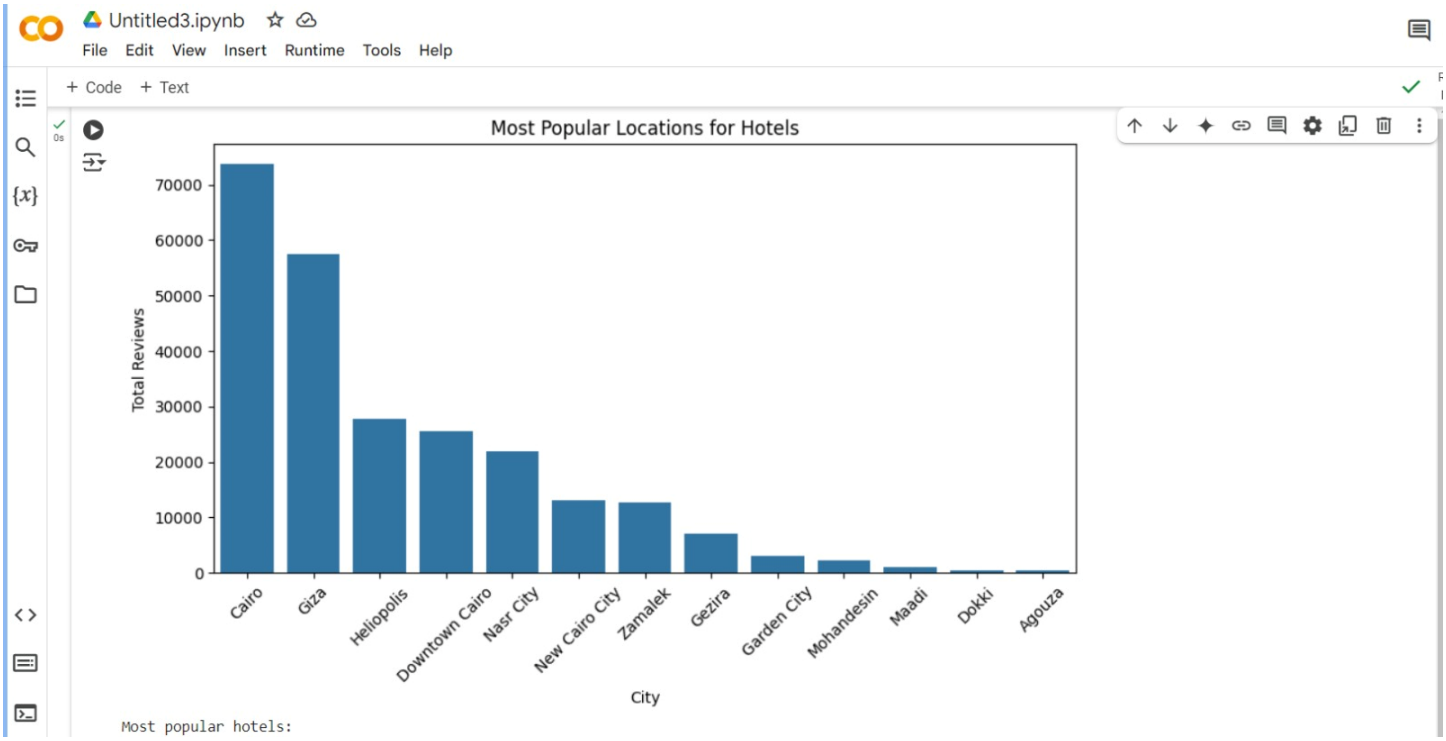
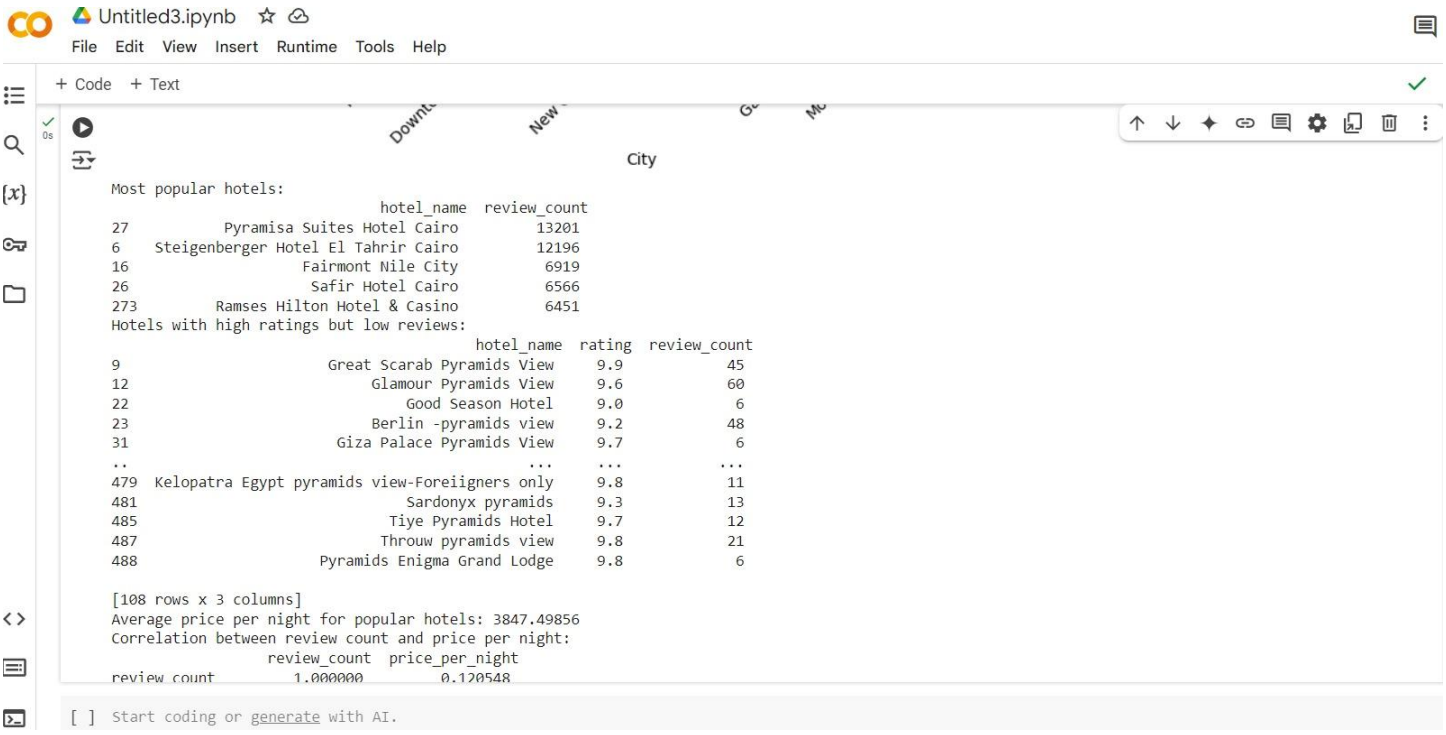
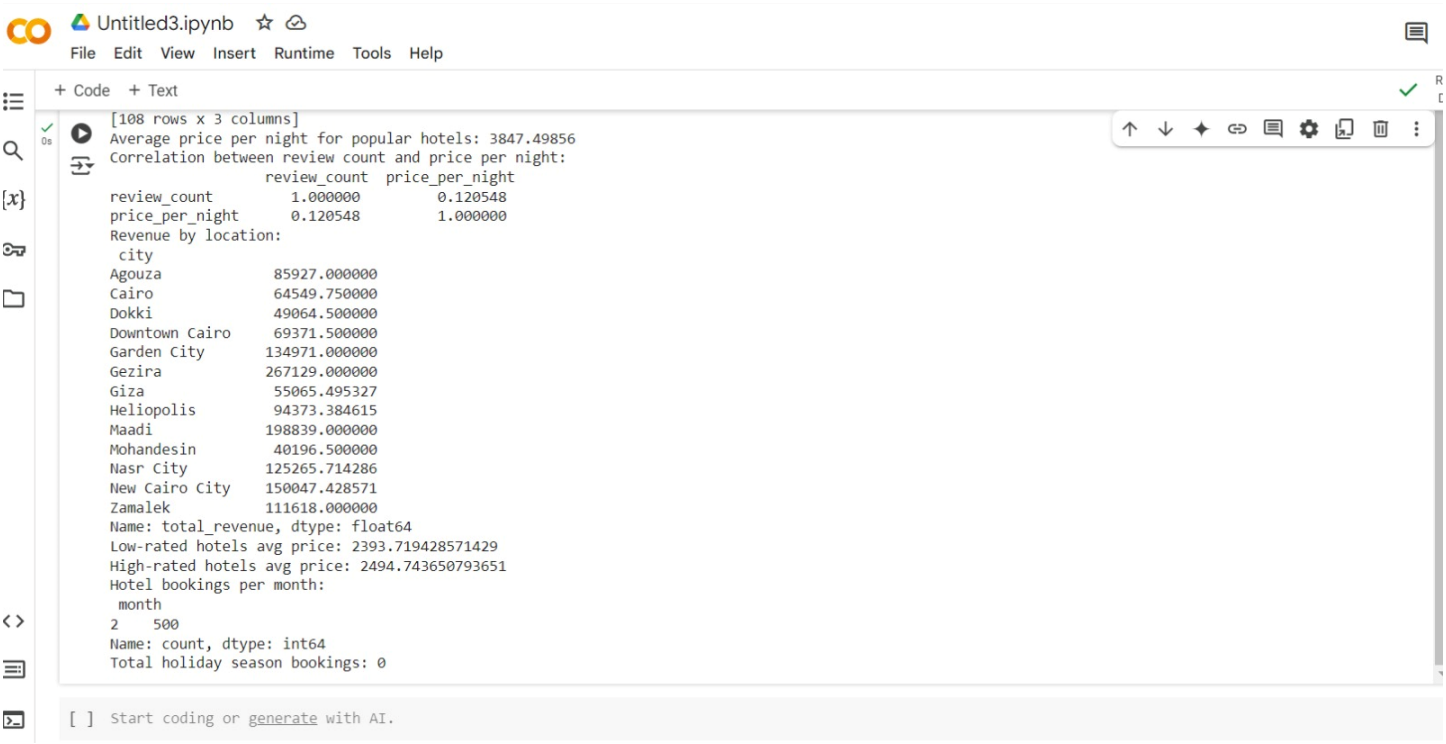
Python Data Visualization:






Untitled3.ipynb
File Edit View Insert Runtime Tools Help
+ Code + Text
[108 rows x 3 columns]
Average price per night for popular hotels: 3847.49856
Correlation between review count and price per night:
review_count price_per_night
review_count 1.000000 0.120548
price_per_night 0.120548 1.000000
Revenue by location:
city
Agouza 85927.000000
Cairo 64549.750000
Dokki 49064.500000
Downtown Cairo 69371.500000
Garden City 134971.000000
Gezira 267129.000000
Giza 55065.495327
Heliopolis 94373.384615
Maadi 198839.000000
Mohandesin 40196.500000
Nasr City 125265.714286
New Cairo City 150047.428571
Zamalek 111618.000000
Name: total_revenue, dtype: float64
Low-rated hotels avg price: 2393.719428571429
High-rated hotels avg price: 2494.743650793651
Hotel bookings per month:
month
2 500
Name: count, dtype: int64
Total holiday season bookings: 0
[ ] Start coding or generate with AI.

SQL Data Visualization

```sql
##How do hotel prices in Cairo vary by location?

SELECT address,
       AVG(price_per_night) AS avg_price
FROM cairo_hotels
GROUP BY address
ORDER BY avg_price DESC;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

address	avg_price
Garden City, Cairo	11092
Maadi, Cairo	10465.21
Zamalek, Cairo	9385.105
New Cairo City, Cairo	9324.371818181819
Gezira, Cairo	9171.95
Nasr City, Cairo	7481.4712500000005

Result 25

```sql
2##Which hotels in Cairo have the highest number of reviews?

SELECT hotel_name, review_count, rating, price_per_night
FROM cairo_hotels
ORDER BY review_count DESC
LIMIT 10;

##How does the average rating of hotels in Cairo?
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: | Fetch rows:

hotel_name	review_count	rating	price_per_night
Pyramisa Suites Hotel Cairo	13201	8.1	5325.47
Steigenberger Hotel El Tahrir Cairo	12196	9.3	9913.11
Fairmont Nile City	6919	8.4	12763.47
Safir Hotel Cairo	6566	8.5	5961.79
Ramses Hilton Hotel & Casino	6451	7.2	8833.47
Radisson Blu Hotel, Cairo Heliopolis	5902	7.9	10743.53

cairo_hotels 26

```
16
17  3##How does the average rating of hotels in Cairo?
18
19      SELECT AVG(rating) AS cairo_avg_rating
20      FROM cairo_hotels
21      WHERE address LIKE '%Cairo%';
22
23      ##What are the most common types of hotel rooms booked by tourists in Cairo?
24
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

cairo_avg_rating
8.375796507778887

```
23  4##What are the most common types of hotel rooms booked by tourists in Cairo?
24
25      SELECT description AS room_type, COUNT(*) AS booking_count
26      FROM cairo_hotels
27      GROUP BY description
28      ORDER BY booking_count DESC
29      LIMIT 10;
30
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: | Fetch rows:

room_type	booking_count
Deluxe Double Room with Balcony, 2 single bed...	3
Deluxe Double Room, 1 large double bed, Break...	2
Deluxe Double or Twin Room, 2 single beds, Bre...	2
2Ã—, Deluxe Single Room, 2 single beds, Free c...	2
Deluxe Double or Twin Room, 2 single beds, Bre...	2
Deluxe Triple Room, 3 single beds, Breakfast inc...	2

Result 28 ×

```
30
31  5##What is the average duration of stay for tourists in Cairo based on hotel booking data?
32
33      SELECT AVG(nights) AS avg_stay_duration
34      FROM cairo_hotels;
35
36      ##Do higher-rated hotels receive more bookings compared to lower-rated ones?
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

avg_stay_duration
19.0000

```
36  6##Do higher-rated hotels receive more bookings compared to lower-rated ones?
37
38      SELECT rating, COUNT(*) AS total_bookings
39      FROM cairo_hotels
40      GROUP BY rating
41      ORDER BY rating DESC;
42
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

rating	total_bookings
9.9	3
9.7	3
9.6	9
9.5	6
9.4	7
9.3	8

```sql
7##How do tourists accommodation choices differ between budget and luxury hotels?

SELECT
    CASE
        WHEN price_per_night < 3000 THEN 'Budget Hotel'
        WHEN price_per_night BETWEEN 3000 AND 8000 THEN 'Mid-Range Hotel'
        ELSE 'Luxury Hotel'
    END AS hotel_category,
    COUNT(*) AS total_bookings
FROM cairo_hotels
GROUP BY hotel_category
ORDER BY total_bookings DESC;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

hotel_category	total_bookings
Budget Hotel	204
Mid-Range Hotel	74
Luxury Hotel	26

```sql
9##How does the presence of nearby attractions (e.g., Pyramids) impact hotel bookings?

SELECT
    CASE
        WHEN address LIKE '%Giza%' THEN 'Near Pyramids'
        ELSE 'Other Areas'
    END AS location_category,
    COUNT(*) AS total_bookings,
    AVG(price_per_night) AS avg_price
FROM cairo_hotels
GROUP BY location_category;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

location_category	total_bookings	avg_price
Near Pyramids	200	2407.3409000000006
Other Areas	104	5423.438076923074

```sql
##Are there seasonal fluctuations in hotel pricing and tourist demand in Cairo?

SELECT
    MONTH(STR_TO_DATE(check_in, '%m/%d/%Y')) AS booking_month,
    AVG(price_per_night) AS avg_price,
    COUNT(*) AS total_bookings
FROM cairo_hotels
GROUP BY booking_month
ORDER BY booking_month;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

booking_month	avg_price	total_bookings
2	3439.1636184210497	304

```sql
##Most popular booking platform among tourists in Cairo

SELECT source, COUNT(*) AS total_bookings
FROM cairo_hotels
GROUP BY source
ORDER BY total_bookings DESC;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

source	total_bookings
booking.com	304

```sql
##Correlation between number of reviews and hotel ranking

SELECT hotel_name, review_count, rating
FROM cairo_hotels
ORDER BY review_count DESC, rating DESC;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: | Fetch rows:

hotel_name	review_count	rating
Pyramisa Suites Hotel Cairo	13201	8.1
Steigenberger Hotel El Tahrir Cairo	12196	9.3
Fairmont Nile City	6919	8.4
Safir Hotel Cairo	6566	8.5
Ramses Hilton Hotel & Casino	6451	7.2
Radisson Blu Hotel, Cairo Heliopolis	5902	7.9
Cairo Marriott Hotel & Omar Khayyam Casino	5512	8.1
Sonesta Hotel Tower & Casino Cairo	5392	7.8
Le Passage Cairo Hotel & Casino	3921	8.4
Hayat Pyramids View Hotel	3871	7.8
Up Town Hotel	3092	7.6
Concorde El Salam Cairo Hotel & Casino	2910	8.4

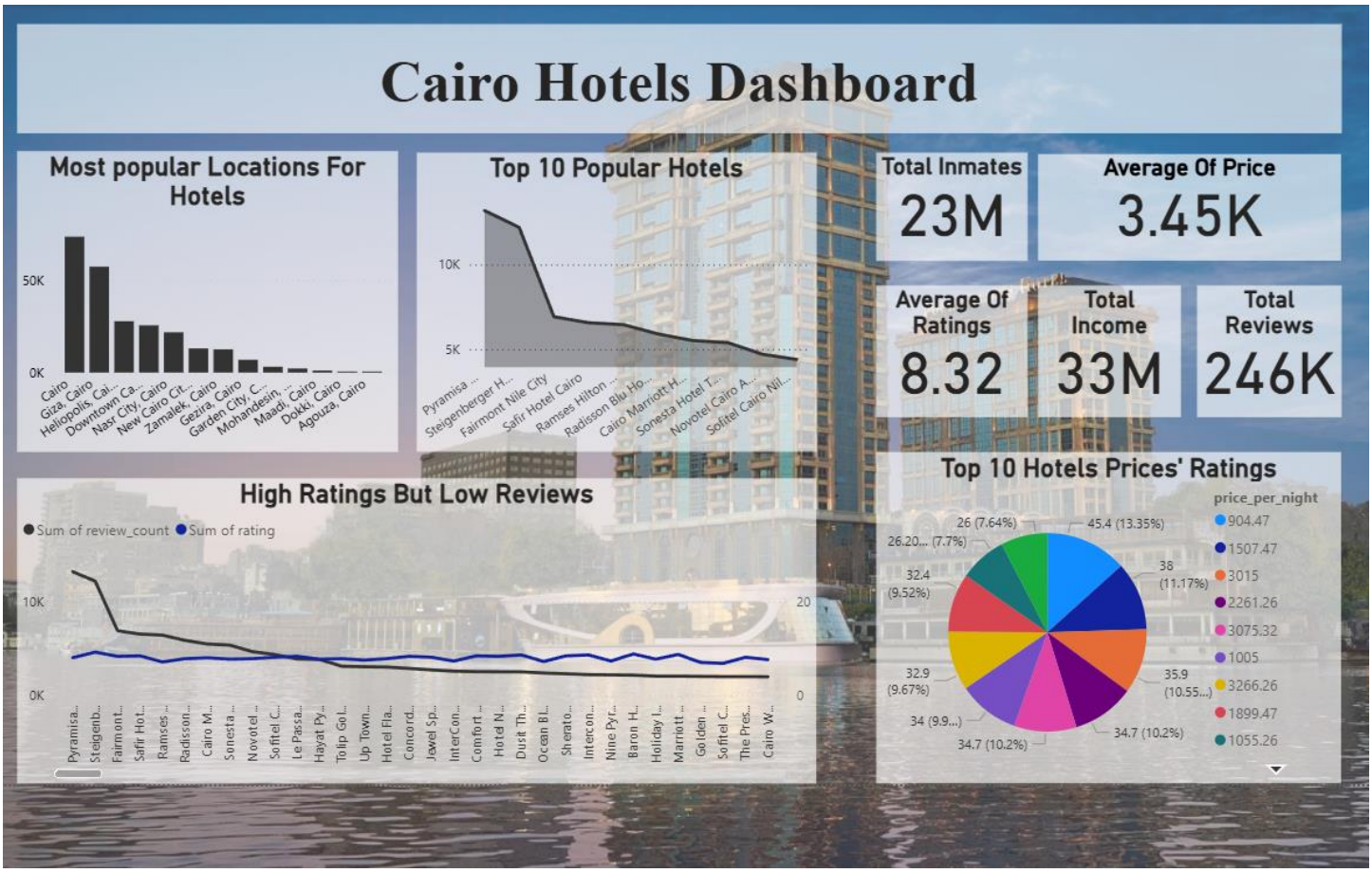
```sql
##Impact of discounts and promotions on hotel bookings

SELECT hotel_name, price_per_night, rating, review_count
FROM cairo_hotels
ORDER BY price_per_night ASC, review_count DESC;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: | Fetch rows:

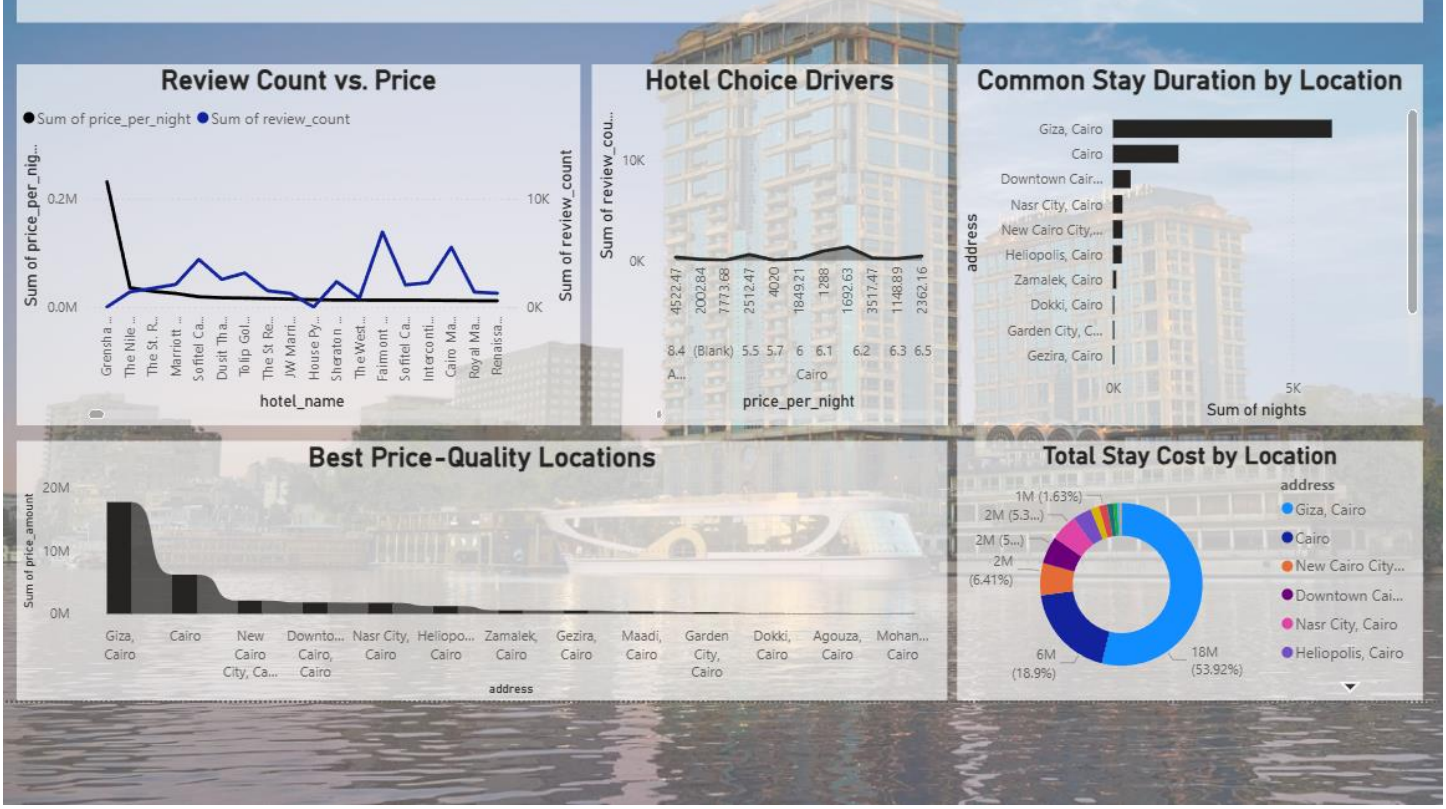
hotel_name	price_per_night	rating	review_count
Golden Pyramids of the Middle East	401	8.1	10
Anubis kingdom pyramids	491.21	7.1	221
Pyramids solar boat ROOM	603	9.6	5
Anubis Retreat Pyramids View	605	6.7	44
Brilliant pyramids view	615.05	9.2	26
Anubis pyramids & jacuzzi	615.05	7.4	13
New Farida Pyramids & Grand Museum View	615.05	9.4	10
Pyramids Heaven Inn	701.47	9.1	10
First Pyramid Inn	704.79	8.1	30
vacation Pyramids inn	714.16	7.9	50
Horus The Horizon Pyramids View	753.74	7.7	24
Venus Guest House	768.84	8	80

Power BI Data Visualization:

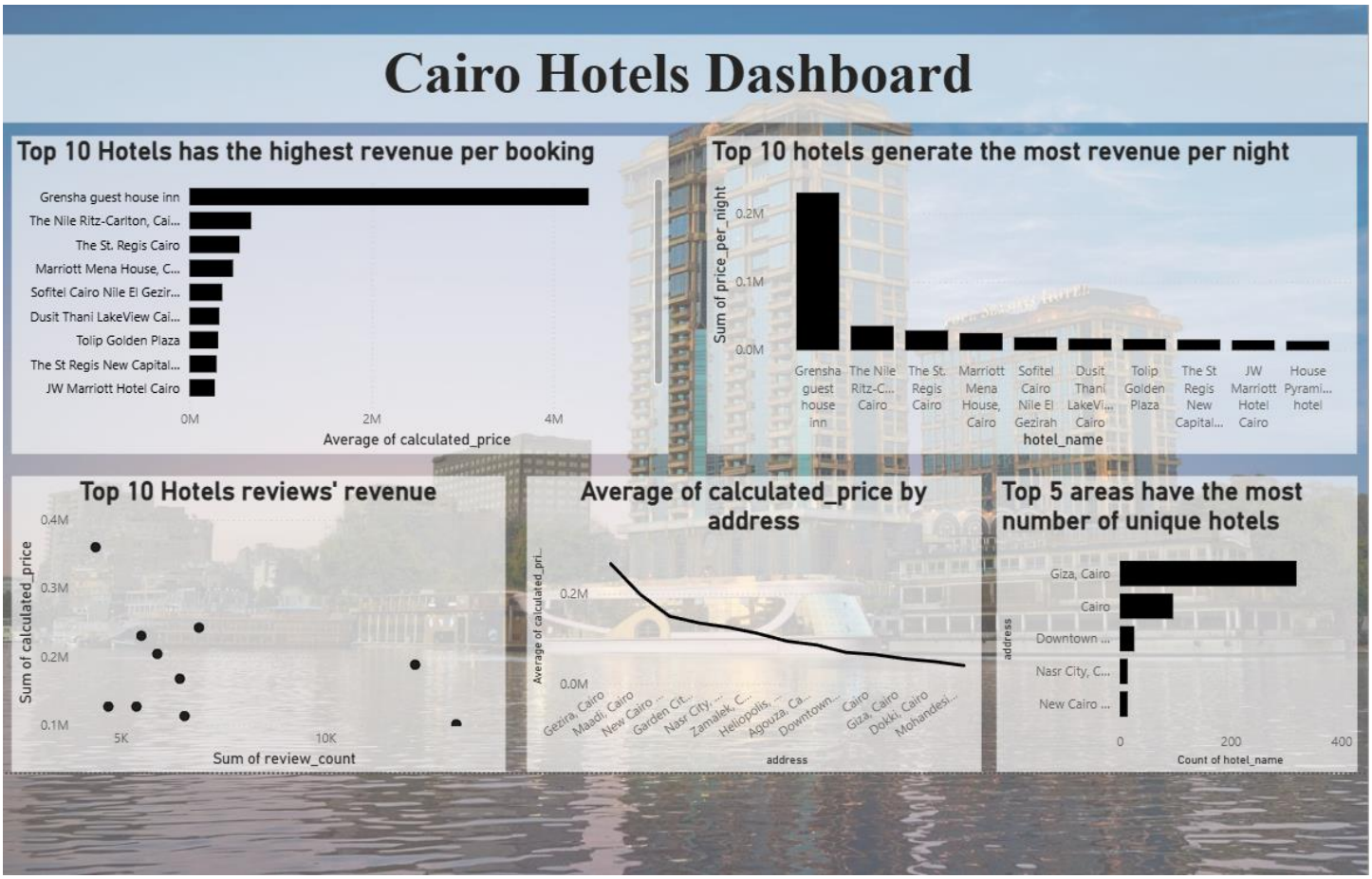
Cairo Hotels Dashboard



Cairo Hotels Dashboard



Cairo Hotels Dashboard



Cairo Hotels Dashboard