

# 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.

## 2. Dataset Summary

- Source:** Cairo hotel dataset (Excel)
- Original Fields:**
  - ❖ hotel\_id, hotel\_name, address, check\_in, check\_out, review\_count, rating, description, price\_amount, price\_per\_night, nights, calculated\_price

## 3. Data Before Cleaning

Describe the condition of the raw dataset.

- Missing values in rating, price\_per\_night, check\_out
- Inconsistent date formats (check\_in, check\_out)
- Irregular capitalization and typos in hotel\_name, description
- Outliers in price\_per\_night (e.g., prices below 100 or above 10,000)
- Duplicated hotel entries

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Analyze Data

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## 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

## 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

AutoSave

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A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	hotel_id	hotel_name	address	source	check_in	check_out	view_count	rating	description	booking_link	price	amount	currency	price_per_night	nights	calculated_price				
2	1	Konoz Py Giza, Cairo	booking.cc	2025-02-01 00:00:00	2025-02-20 00:00:00	9	8.7	Double Ro	<a href="https://www.booking.com/hotel/1/konoz-py-giza-cairo.html">https://www.booking.com/hotel/1/konoz-py-giza-cairo.html</a>	28671	EGP	1509	19	28671						
3	2	Comfort Ir Giza, Cairo	booking.cc	2025-02-01 00:00:00	2025-02-20 00:00:00	2572	8.5	Deluxe Do	<a href="https://www.booking.com/hotel/2/comfort-ir-giza-cairo.html">https://www.booking.com/hotel/2/comfort-ir-giza-cairo.html</a>	51938	EGP	2733.58	19	51938						
4	3	Golden Sci Giza, Cairo	booking.cc	2025-02-01 00:00:00	2025-02-20 00:00:00	124	9.2	Triple Roo	<a href="https://www.booking.com/hotel/3/golden-sci-giza-cairo.html">https://www.booking.com/hotel/3/golden-sci-giza-cairo.html</a>	82490	EGP	4341.58	19	82490						
5	4	El Farida H Cairo	booking.cc	2025-02-01 00:00:00	2025-02-20 00:00:00	631	8.4	2A-- Delu	<a href="https://www.booking.com/hotel/4/el-farida-h-cairo.html">https://www.booking.com/hotel/4/el-farida-h-cairo.html</a>	152760	EGP	8040	19	152760						
6	5	West Pyra/ Giza, Cairo	booking.cc	2025-02-01 00:00:00	2025-02-20 00:00:00	246	9	Deluxe Tri	<a href="https://www.booking.com/hotel/5/west-pyra-giza-cairo.html">https://www.booking.com/hotel/5/west-pyra-giza-cairo.html</a>	35746	EGP	1881.37	19	35746						
7	6	Miramar E Downtow	booking.cc	2025-02-01 00:00:00	2025-02-20 00:00:00	742	7.6	Deluxe Tri	<a href="https://www.booking.com/hotel/6/miramar-e-downtow.html">https://www.booking.com/hotel/6/miramar-e-downtow.html</a>	39247	EGP	2065.63	19	39247						
8	7	Steigember Downtow	booking.cc	2025-02-01 00:00:00	2025-02-20 00:00:00	12196	9.3	Superior P	<a href="https://www.booking.com/hotel/7/steigember-downtow.html">https://www.booking.com/hotel/7/steigember-downtow.html</a>	188349	EGP	9913.11	19	188349						
9	8	Royal Inn I New Cairo	booking.cc	2025-02-01 00:00:00	2025-02-20 00:00:00	644	8.5	Deluxe Do	<a href="https://www.booking.com/hotel/8/royal-inn-i-new-cairo.html">https://www.booking.com/hotel/8/royal-inn-i-new-cairo.html</a>	42225	EGP	2222.37	19	42225						
10	9	Castle Hot Cairo	booking.cc	2025-02-01 00:00:00	2025-02-20 00:00:00	786	8.5	2A-- Singl	<a href="https://www.booking.com/hotel/9/castle-hot-cairo.html">https://www.booking.com/hotel/9/castle-hot-cairo.html</a>	17185	EGP	904.47	19	17185						
11	10	Great Scar Giza, Cairo	booking.cc	2025-02-01 00:00:00	2025-02-20 00:00:00	45	9.9	Double Ro	<a href="https://www.booking.com/hotel/10/great-scar-giza-cairo.html">https://www.booking.com/hotel/10/great-scar-giza-cairo.html</a>	74470	EGP	3919.47	19	74470						
12	11	Atlantis py Giza, Cairo	booking.cc	2025-02-01 00:00:00	2025-02-20 00:00:00	960	8.8	Deluxe Do	<a href="https://www.booking.com/hotel/11/atlantis-py-giza-cairo.html">https://www.booking.com/hotel/11/atlantis-py-giza-cairo.html</a>	31276	EGP	1646.11	19	31276						
13	12	Aziz Egypt Giza, Cairo	booking.cc	2025-02-01 00:00:00	2025-02-20 00:00:00	9	9	Superior K	<a href="https://www.booking.com/hotel/12/aziz-egypt-giza-cairo.html">https://www.booking.com/hotel/12/aziz-egypt-giza-cairo.html</a>	35622	EGP	1874.84	19	35622						
14	13	Glamour P Giza, Cairo	booking.cc	2025-02-01 00:00:00	2025-02-20 00:00:00	60	9.6	Triple Roo	<a href="https://www.booking.com/hotel/13/glamour-p-giza-cairo.html">https://www.booking.com/hotel/13/glamour-p-giza-cairo.html</a>	61352	EGP	3229.05	19	61352						
15	14	Atom Pyra Giza, Cairo	booking.cc	2025-02-01 00:00:00	2025-02-20 00:00:00	0	8	Double Ro	<a href="https://www.booking.com/hotel/14/atom-pyra-giza-cairo.html">https://www.booking.com/hotel/14/atom-pyra-giza-cairo.html</a>	20288	EGP	1067.79	19	20288						
16	15	City View I Downtow	booking.cc	2025-02-01 00:00:00	2025-02-20 00:00:00	588	7.6	Deluxe Do	<a href="https://www.booking.com/hotel/15/city-view-i-downtow.html">https://www.booking.com/hotel/15/city-view-i-downtow.html</a>	49647	EGP	2613	19	49647						
17	16	Horus Gue Giza, Cairo	booking.cc	2025-02-01 00:00:00	2025-02-20 00:00:00	1169	7.3	Deluxe Do	<a href="https://www.booking.com/hotel/16/horus-gue-giza-cairo.html">https://www.booking.com/hotel/16/horus-gue-giza-cairo.html</a>	27497	EGP	1447.21	19	27497						
18	17	Fairmont f Cairo	booking.cc	2025-02-01 00:00:00	2025-02-20 00:00:00	6919	8.4	Fairmont F	<a href="https://www.booking.com/hotel/17/fairmont-f-cairo.html">https://www.booking.com/hotel/17/fairmont-f-cairo.html</a>	242506	EGP	12763.47	19	242506						
19	18	Amin Hote Cairo	booking.cc	2025-02-01 00:00:00	2025-02-20 00:00:00	724	7.5	Double or	<a href="https://www.booking.com/hotel/18/amin-hote-cairo.html">https://www.booking.com/hotel/18/amin-hote-cairo.html</a>	38190	EGP	2010	19	38190						
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21	20	Marvel Stc Giza, Cairo	booking.cc	2025-02-01 00:00:00	2025-02-20 00:00:00	1296	8	Deluxe Do	<a href="https://www.booking.com/hotel/20/marvel-stc-giza-cairo.html">https://www.booking.com/hotel/20/marvel-stc-giza-cairo.html</a>	62059	EGP	3266.26	19	62059						
22	21	The Villa f New Cairo	booking.cc	2025-02-01 00:00:00	2025-02-20 00:00:00	748	8.5	Standard C	<a href="https://www.booking.com/hotel/21/the-villa-f-new-cairo.html">https://www.booking.com/hotel/21/the-villa-f-new-cairo.html</a>	38511	EGP	2026.89	19	38511						
23	22	Tuya pyra/ Giza, Cairo	booking.cc	2025-02-01 00:00:00	2025-02-20 00:00:00	161	8	Double Ro	<a href="https://www.booking.com/hotel/22/tuya-pyra-giza-cairo.html">https://www.booking.com/hotel/22/tuya-pyra-giza-cairo.html</a>	22806	EGP	1200.32	19	22806						
24	23	Good Seas Cairo	booking.cc	2025-02-01 00:00:00	2025-02-20 00:00:00	6	9	Double Ro	<a href="https://www.booking.com/hotel/23/good-seas-cairo.html">https://www.booking.com/hotel/23/good-seas-cairo.html</a>	28963	EGP	1524.37	19	28963						
25	24	Berlin -pyr Giza, Cairo	booking.cc	2025-02-01 00:00:00	2025-02-20 00:00:00	48	9.2	Deluxe Do	<a href="https://www.booking.com/hotel/24/berlin-pyr-giza-cairo.html">https://www.booking.com/hotel/24/berlin-pyr-giza-cairo.html</a>	57094	EGP	3004.95	19	57094						
26	25	Rizk Pyram Giza, Cairo	booking.cc	2025-02-01 00:00:00	2025-02-20 00:00:00	121	8.4	Standard T	<a href="https://www.booking.com/hotel/25/rizk-pyram-giza-cairo.html">https://www.booking.com/hotel/25/rizk-pyram-giza-cairo.html</a>	16127	EGP	848.79	19	16127						
27	26	Horus Gue Giza, Cairo	booking.cc	2025-02-01 00:00:00	2025-02-20 00:00:00	155	7.9	Triple Roo	<a href="https://www.booking.com/hotel/26/horus-gue-giza-cairo.html">https://www.booking.com/hotel/26/horus-gue-giza-cairo.html</a>	38496	EGP	2026.11	19	38496						

Sheet1

## 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)

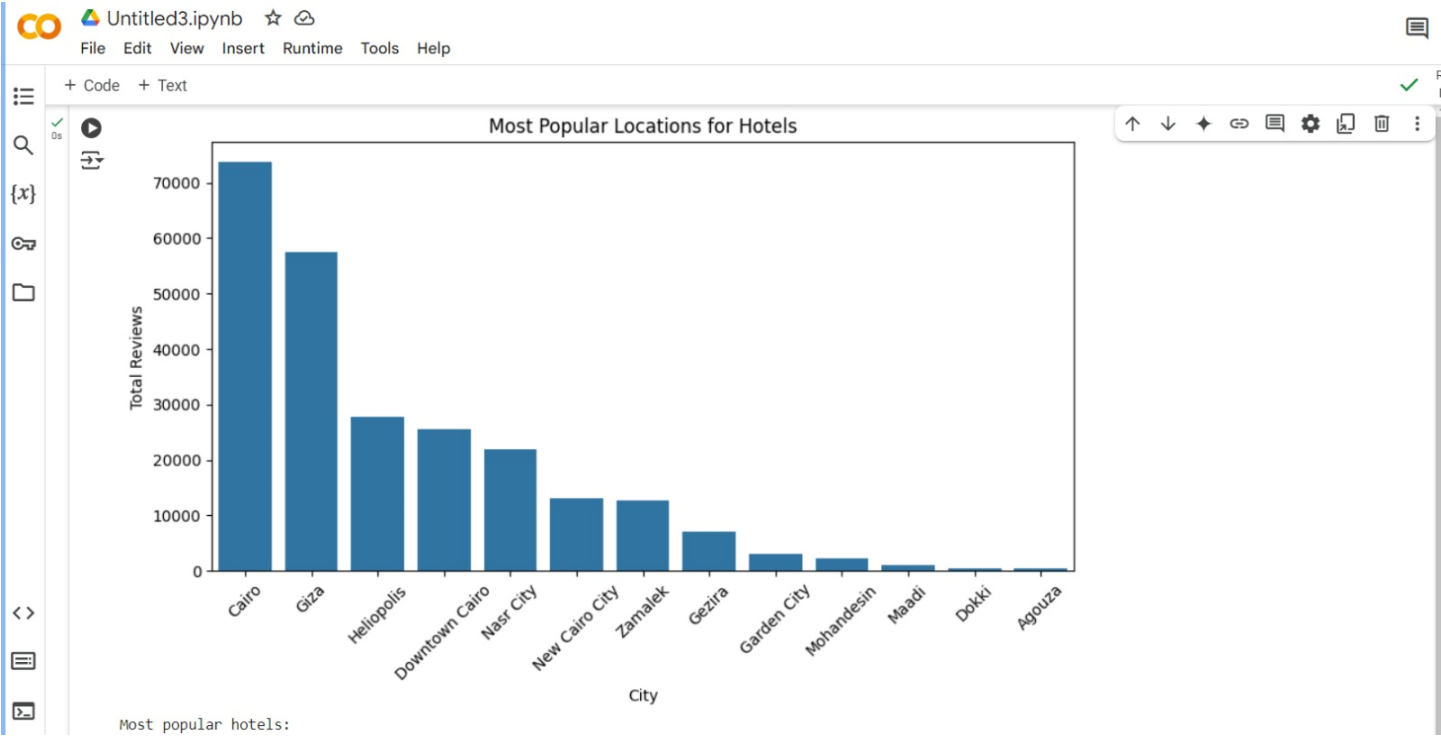
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## 7. Key Findings

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
-

# Python Data Visualization:



Most popular hotels:

	hotel_name	review_count
27	Pyramisa Suites Hotel Cairo	13201
6	Steigenberger Hotel El Tahrir Cairo	12196
16	Fairmont Nile City	6919
26	Safir Hotel Cairo	6566
273	Ramses Hilton Hotel & Casino	6451

Hotels with high ratings but low reviews:

	hotel_name	rating	review_count
9	Great Scarab Pyramids View	9.9	45
12	Glamour Pyramids View	9.6	60
22	Good Season Hotel	9.0	6
23	Berlin -pyramids view	9.2	48
31	Giza Palace Pyramids View	9.7	6
..	...	...	...
479	Kelopatra Egypt pyramids view-Foreigners only	9.8	11
481	Sardonyx pyramids	9.3	13
485	Tiye Pyramids Hotel	9.7	12
487	Throuw pyramids view	9.8	21
488	Pyramids Enigma Grand Lodge	9.8	6

[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	0.170548

[ ] Start coding or [generate with AI](#).

The screenshot shows a Jupyter Notebook with the following content:

```

[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

```

At the bottom of the notebook, there is a prompt: `[ ] Start coding or generate with AI.`

## SQL Data Visualization

```
1
2  ##How do hotel prices in Cairo vary by location?
3
4  • SELECT address,
5         AVG(price_per_night) AS avg_price
6  FROM cairo_hotels
7  GROUP BY address
8  ORDER BY avg_price DESC;
9
```

Result Grid

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 x

```
10  ##Which hotels in Cairo have the highest number of reviews?
11
12  SELECT hotel_name, review_count, rating, price_per_night
13  FROM cairo_hotels
14  ORDER BY review_count DESC
15  LIMIT 10;
16
17  ##How does the average rating of hotels in Cairo?
18
```

Result Grid

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 x



```

16
17  ###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  ###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

```

<   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



43 ##How do tourists accommodation choices differ between budget and luxury hotels?

44

45 SELECT

46 CASE

47 WHEN price\_per\_night < 3000 THEN 'Budget Hotel'

48 WHEN price\_per\_night BETWEEN 3000 AND 8000 THEN 'Mid-Range Hotel'

49 ELSE 'Luxury Hotel'

50 END AS hotel\_category,

51 COUNT(\*) AS total\_bookings

52 FROM cairo\_hotels

53 GROUP BY hotel\_category

54 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

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

67

68 SELECT

69 CASE

70 WHEN address LIKE '%Giza%' THEN 'Near Pyramids'

71 ELSE 'Other Areas'

72 END AS location\_category,

73 COUNT(\*) AS total\_bookings,

74 AVG(price\_per\_night) AS avg\_price

75 FROM cairo\_hotels

76 GROUP BY location\_category;

77

<

Result Grid Filter Rows:  Export: Wrap Cell Content:

	location_category	total_bookings	avg_price
►	Near Pyramids	200	2407.3409000000006
	Other Areas	104	5423.438076923074

```

56  ##Are there seasonal fluctuations in hotel pricing and tourist demand in Cairo?
57
58  •  SELECT
59      MONTH(STR_TO_DATE(check_in, '%m/%d/%Y')) AS booking_month,
60      AVG(price_per_night) AS avg_price,
61      COUNT(*) AS total_bookings
62  FROM cairo_hotels
63  GROUP BY booking_month
64  ORDER BY booking_month;

```

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

	booking_month	avg_price	total_bookings
2		3439.1636184210497	304

```

78  ##Most popular booking platform among tourists in Cairo
79
80  •  SELECT source, COUNT(*) AS total_bookings
81  FROM cairo_hotels
82  GROUP BY source
83  ORDER BY total_bookings DESC;
84

```

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

	source	total_bookings
▶	booking.com	304

```

85     ##Correlation between number of reviews and hotel ranking
86
87 •   SELECT hotel_name, review_count, rating
88     FROM cairo_hotels
89     ORDER BY review_count DESC, rating DESC;
90

```

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		

```

91     ##Impact of discounts and promotions on hotel bookings
92
93 •   SELECT hotel_name, price_per_night, rating, review_count
94     FROM cairo_hotels
95     ORDER BY price_per_night ASC, review_count DESC;
96

```

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	

# CAIRO HOTELS



introduction

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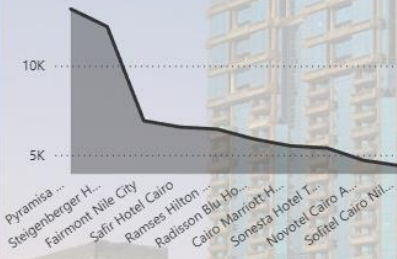


# Cairo Hotels Dashboard

## Most popular Locations For Hotels



## Top 10 Popular Hotels



## Total Inmates

23M

## Average Of Price

3.45K

## Average Of Ratings

8.32

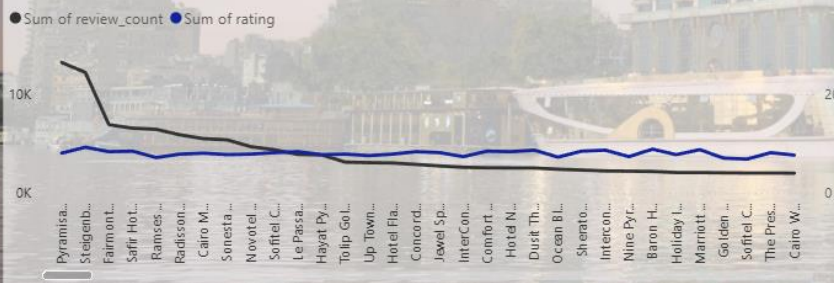
## Total Income

33M

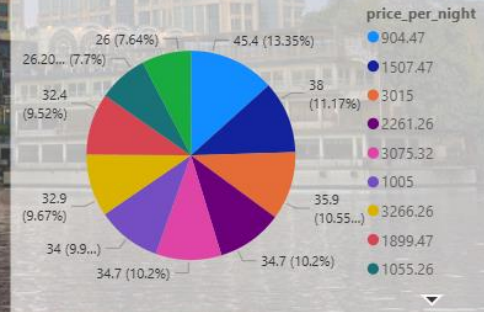
## Total Reviews

246K

## High Ratings But Low Reviews



## Top 10 Hotels Prices' Ratings

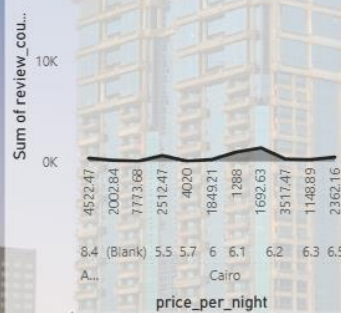


# Cairo Hotels Dashboard

## Review Count vs. Price



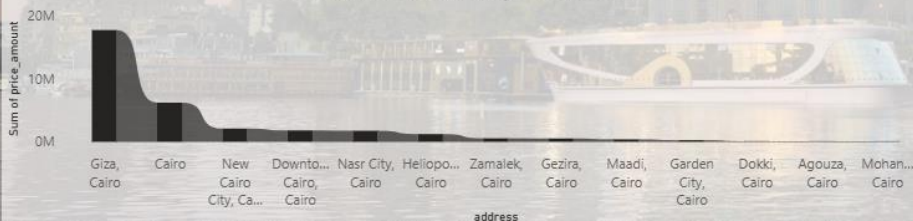
## Hotel Choice Drivers



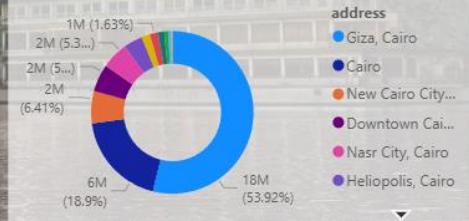
## Common Stay Duration by Location



## Best Price-Quality Locations



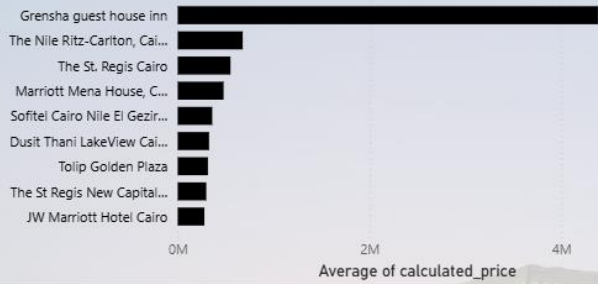
## Total Stay Cost by Location





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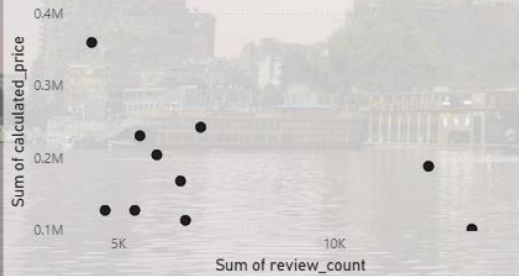
Top 10 Hotels has the highest revenue per booking



Top 10 hotels generate the most revenue per night



Top 10 Hotels reviews' revenue



Average of calculated\_price by address



Top 5 areas have the most number of unique hotels



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Top 10 Hotels Ratings' revenue



Average Address' Price



Top 10 Hotels' Price per night to rating



Top 10 Room Description's Rating

