Hotel Reservation Analysis

Analysis of Reservations, Prices, and Trends

Mentorness Internship Project By Hemangini Ninama

Agenda

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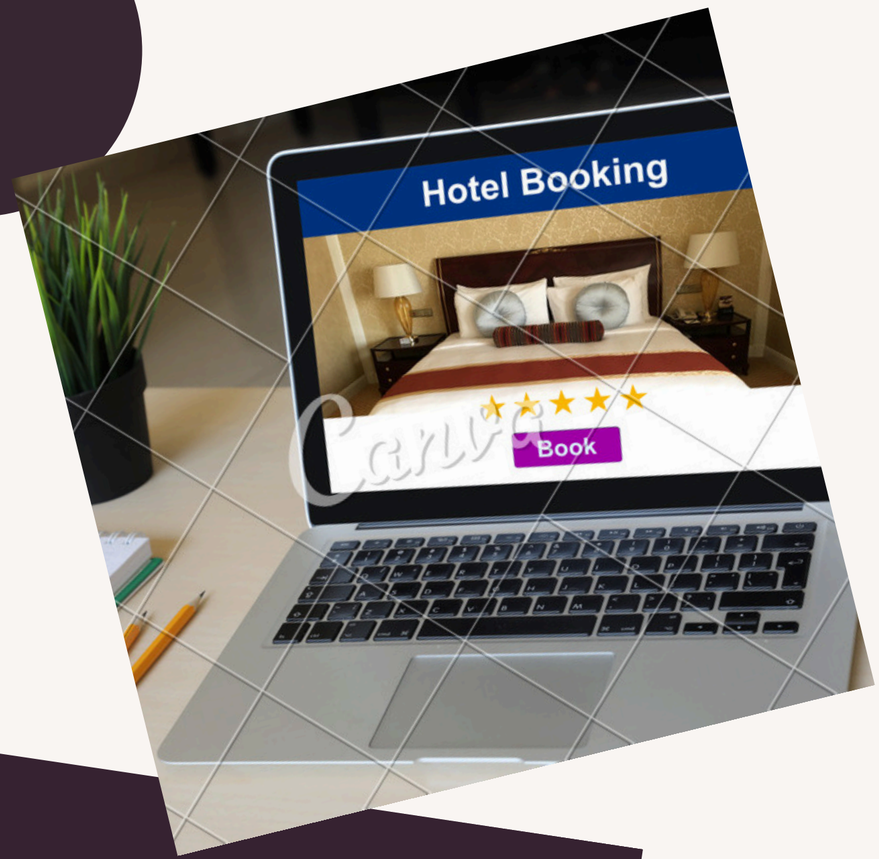


Analysis Overview

The hotel industry relies on data to make informed decisions and provide a better guest experience. In this internship, you will work with a hotel reservation dataset to gain insights into guest preferences, booking trends, and other key factors that impact the hotel's operations. You will use SQL to query and analyze the data, as well as answer specific questions about the dataset.

Dataset Details

- **Booking_ID:** A unique identifier for each hotel reservation.
- **no_of_adults:** The number of adults in the reservation.
- **no_of_children:** The number of children in the reservation.
- **no_of_weekend_nights:** The number of nights in the reservation that fall on weekends.
- **no_of_week_nights:** The number of nights in the reservation that fall on weekdays.
- **type_of_meal_plan:** The meal plan chosen by the guests.
- **room_type_reserved:** The type of room reserved by the guests.
- **lead_time:** The number of days between booking and arrival.
- **arrival_date:** The date of arrival.
- **market_segment_type:** The market segment to which the reservation belongs.
- **avg_price_per_room:** The average price per room in the reservation.
- **booking_status:** The status of the booking.

Data Cleaning and Preparation

```
---Change the datatype
ALTER TABLE [intership].[dbo].[Hotel Reservation Dataset]
ALTER COLUMN avg_price_per_room FLOAT;
ALTER TABLE [intership].[dbo].[Hotel Reservation Dataset]
ALTER COLUMN no_of_adults INT;
ALTER TABLE [intership].[dbo].[Hotel Reservation Dataset]
ALTER COLUMN no_of_children INT;
ALTER TABLE [intership].[dbo].[Hotel Reservation Dataset]
ALTER COLUMN no_of_weekend_nights INT;

---Clean or Correct the Invalid Dates
UPDATE [intership].[dbo].[Hotel Reservation Dataset]
SET arrival_date = NULL
WHERE TRY_CONVERT(DATE, arrival_date) IS NULL AND arrival_date IS NOT NULL;

---Convert the Column Type
ALTER TABLE [intership].[dbo].[Hotel Reservation Dataset]
ALTER COLUMN arrival_date DATE;
```

Analysis Questions and Findings

Q:1 What is the total number of reservations in the dataset?

SQL Query: `SELECT COUNT([Booking_ID]) AS total_reservations FROM [intership].[dbo].[Hotel Reservation Dataset]`

RESULT :

Results | Messages

	total_reservations
1	700

Q:2 Which meal plan is the most popular among guests?

SQL Query:

```
SELECT TOP 1 type_of_meal_plan,
COUNT(*) AS count FROM [intership].[dbo].[Hotel Reservation Dataset]
GROUP BY type_of_meal_plan
ORDER BY count DESC ;
```

RESULT :

Results | Messages

	type_of_meal_plan	count
1	Meal Plan 1	527

Q:3 What is the average price per room for reservations involving children?

SQL Query: SELECT AVG(avg_price_per_room) AS avg_price_per_room_with_children
FROM [intership].[dbo].[Hotel Reservation Dataset] WHERE no_of_children > 0;

RESULT :

Results | Messages

	avg_price_per_room_with_children
1	144.568333333333

Q :4 How many reservations were made for the year 20XX (replace XX with the desired year)?

SQL Query:

```
SELECT COUNT(*) AS reservations_in_year  FROM [intership].[dbo].[Hotel Reservation Dataset] WHERE YEAR(arrival_date) = 2024;
```

RESULT :

Results | Messages

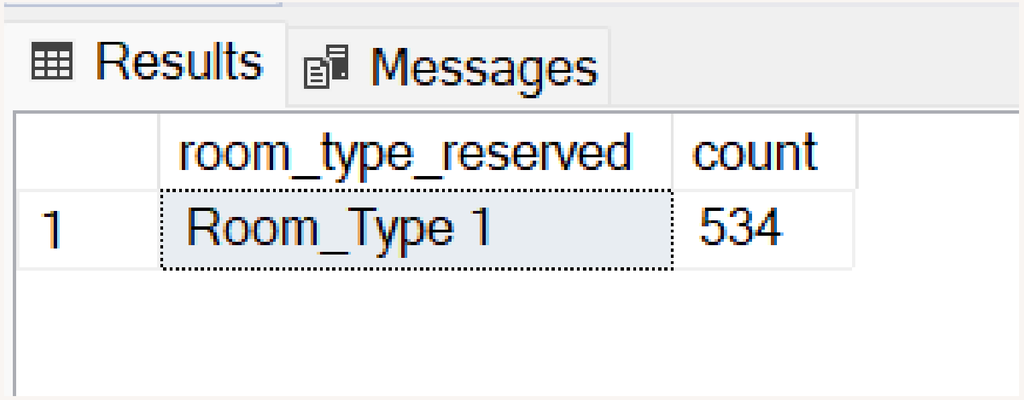
	reservations_in_year
1	0

Q :5 What is the most commonly booked room type?

SQL Query:

```
SELECT TOP 1 room_type_reserved, COUNT(*) AS count
FROM [intership].[dbo].[Hotel Reservation Dataset]
GROUP BY room_type_reserved
ORDER BY count DESC;
```

RESULT :

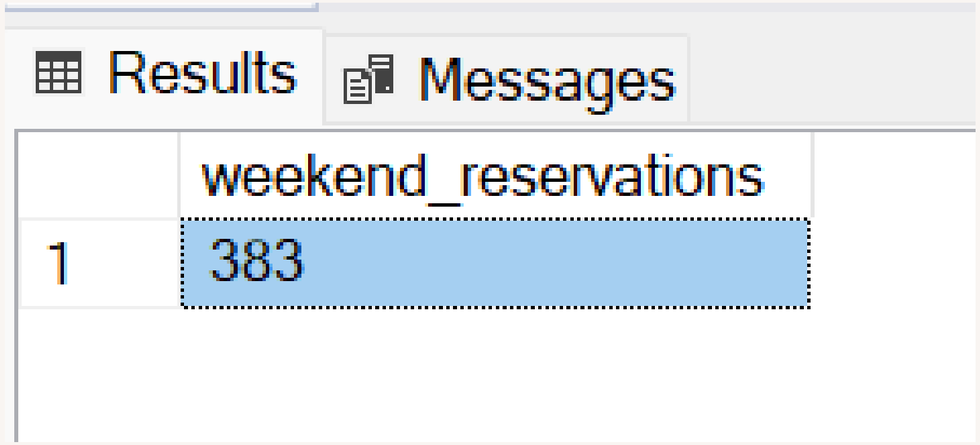


	room_type_reserved	count
1	Room_Type 1	534

Q :6 How many reservations fall on a weekend (no_of_weekend_nights > 0)?

SQL Query: SELECT COUNT(*) AS weekend_reservations FROM [intership].[dbo].[Hotel Reservation Dataset] WHERE no_of_weekend_nights > 0;

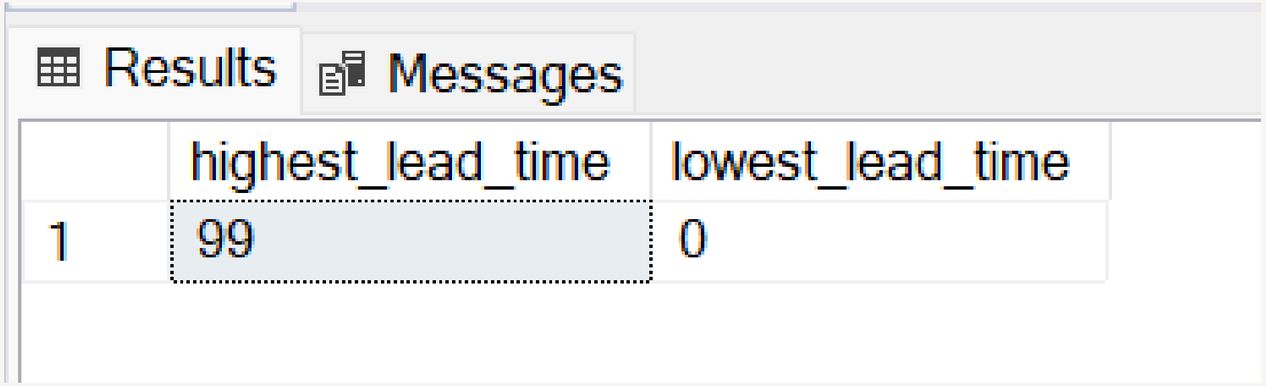
RESULT :



Q :7 What is the highest and lowest lead time for reservations?

SQL Query: SELECT MAX(lead_time) AS highest_lead_time, MIN(lead_time) AS lowest_lead_time FROM [intership].[dbo].[Hotel Reservation Dataset];

RESULT :



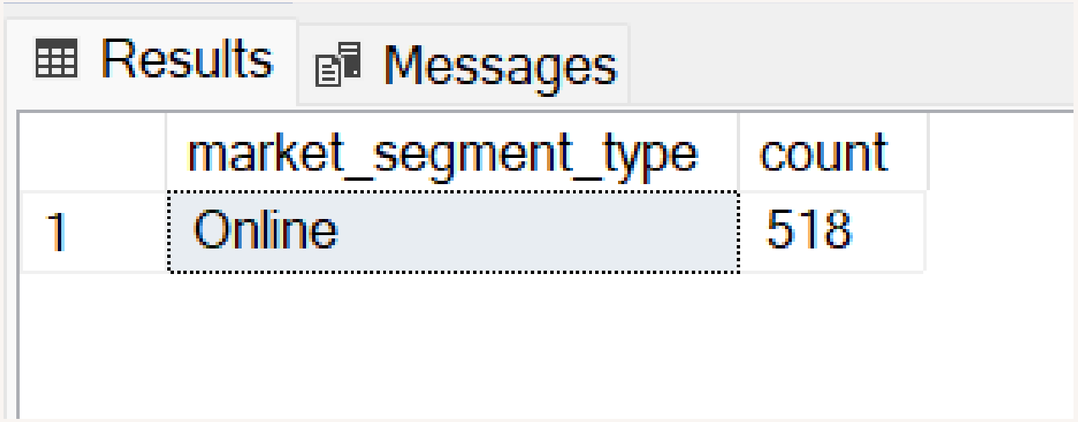
	highest_lead_time	lowest_lead_time
1	99	0

Q :8 What is the most common market segment type for reservations?

SQL Query:

```
SELECT TOP 1 market_segment_type, COUNT(*) AS count
FROM [intership].[dbo].[Hotel Reservation Dataset]
GROUP BY market_segment_type
ORDER BY count DESC;
```

RESULT :



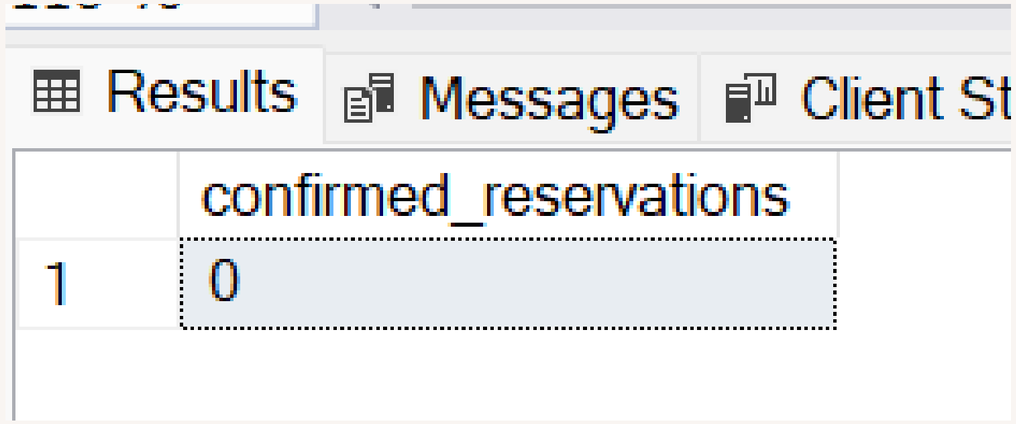
	market_segment_type	count
1	Online	518

Q :9 How many reservations have a booking status of "Confirmed"?

SQL Query:

```
SELECT COUNT(*) AS confirmed_reservations
FROM [intership].[dbo].[Hotel Reservation Dataset]
WHERE booking_status = 'Confirmed';
```

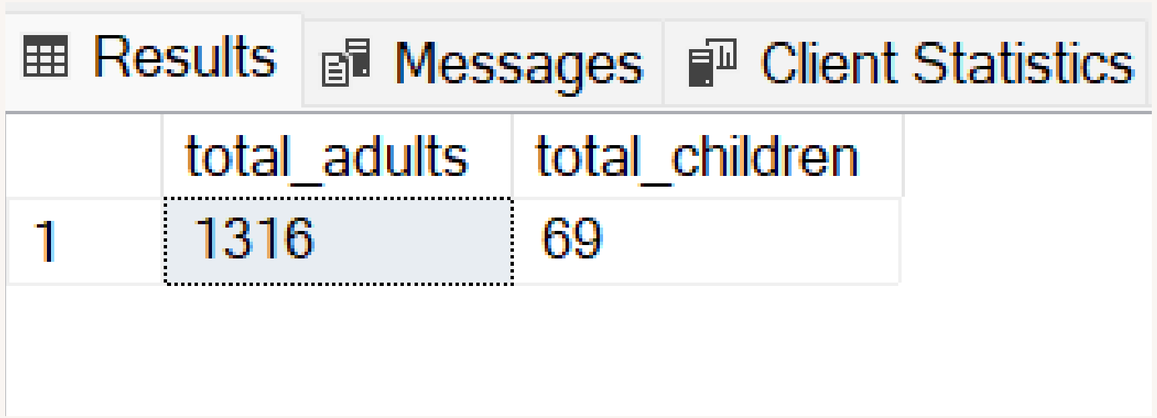
RESULT :



Q :10 What is the total number of adults and children across all reservations?

SQL Query: SELECT SUM(no_of_adults) AS total_adults, SUM(no_of_children) AS total_children FROM [intership].[dbo].[Hotel Reservation Dataset];

RESULT :



Q :11 What is the average number of weekend nights for reservations involving children?

SQL Query:

```
SELECT AVG(no_of_weekend_nights) AS avg_weekend_nights_with_children
FROM [intership].[dbo].[Hotel Reservation Dataset]
WHERE no_of_children > 0;
```

RESULT :

Results | Messages | Client Statistics

	avg_weekend_nights_with_children
1	1

Q :12 How many reservations were made in each month of the year?

SQL Query: SELECT MONTH(arrival_date) AS month, COUNT(*) AS reservations_count FROM [intership].[dbo].[Hotel Reservation Dataset] GROUP BY MONTH(arrival_date) ORDER BY month;

RESULT :

Results | Messages | Client Statistics

	month	reservations_count
1	NULL	437
2	1	24
3	2	24
4	3	22
5	4	18
6	5	24
7	6	28
8	7	18
9	8	28
10	9	23
11	10	22

Q :13 What is the average number of nights (both weekend and weekday) spent by guests for each room type?

SQL Query: SELECT room_type_reserved, AVG(no_of_weekend_nights + no_of_week_nights) AS avg_total_nights FROM [intership].[dbo].[Hotel Reservation Dataset] GROUP BY room_type_reserved;

RESULT :

Results | Messages | Client Statistics

	room_type_reserved	avg_total_nights
1	Room_Type 1	2
2	Room_Type 2	3
3	Room_Type 4	3
4	Room_Type 5	2
5	Room_Type 6	3
6	Room_Type 7	2

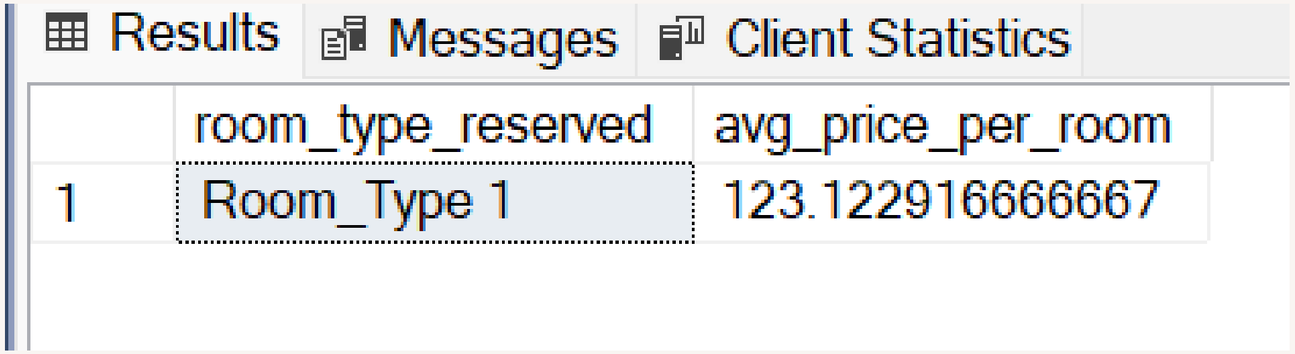
Q : 14 For reservations involving children, what is the most common room type, and what is the average price for that room type?

SQL Query:

```
WITH CommonRoomType AS (SELECT TOP 1 room_type_reserved
FROM [intership].[dbo].[Hotel Reservation Dataset] WHERE no_of_children > 0
GROUP BY room_type_reserved ORDER BY COUNT(*) DESC)

SELECT room_type_reserved, AVG(avg_price_per_room) AS avg_price_per_room
FROM [intership].[dbo].[Hotel Reservation Dataset WHERE room_type_reserved =
(SELECT room_type_reserved FROM CommonRoomType) AND no_of_children > 0
GROUP BY room_type_reserved;
```

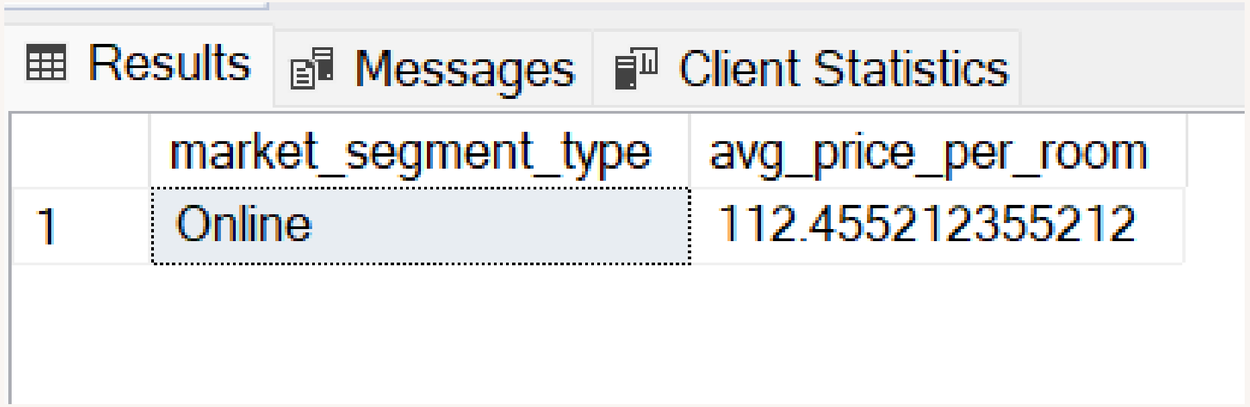
RESULT :



Q :15 Find the market segment type that generates the highest average price per room.

SQL Query: SELECT TOP 1 market_segment_type, AVG(avg_price_per_room) AS avg_price_per_room FROM [intership].[dbo].[Hotel Reservation Dataset] GROUP BY market_segment_type ORDER BY avg_price_per_room DESC;

RESULT :



Conclusion

In conclusion, this analysis provided valuable insights into hotel reservation trends and patterns. We identified the total number of reservations, cleaned and prepared the data, and answered key questions that can help hotel management optimize operations and enhance customer satisfaction. Continuous analysis and monitoring of such data will be beneficial for staying updated with changing trends and preferences.