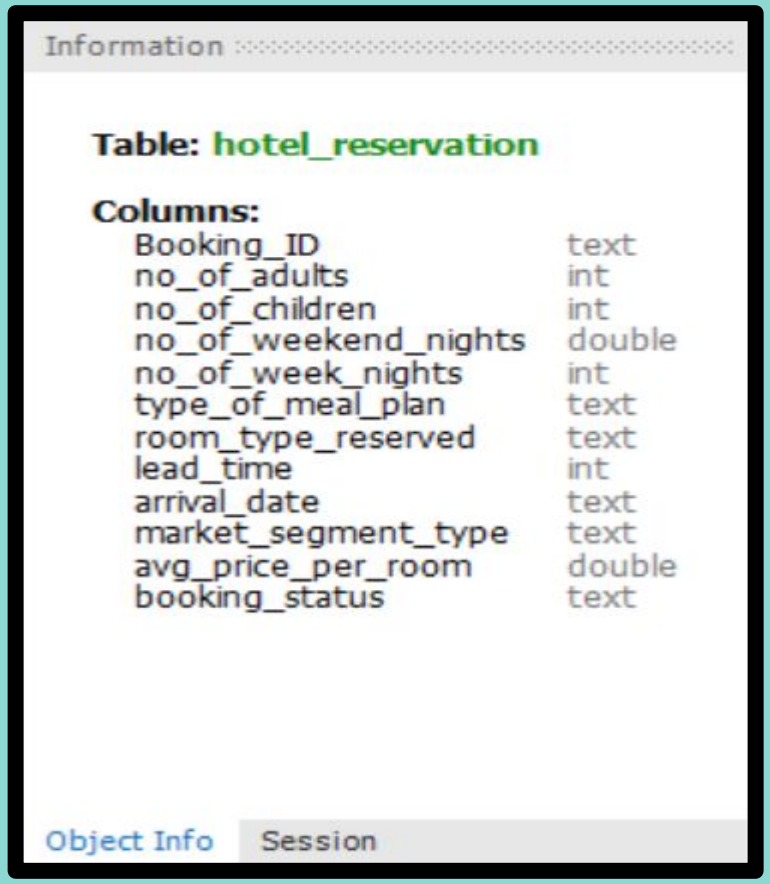
Hotel Reservation Analysis with SQL

INTRODUCTION

Objective: Welcome to this presentation on analyzing a hotel reservation dataset to uncover insights into guest preferences, booking trends, and operational factors crucial to enhancing guest experiences and optimizing hotel operations.

Dataset Overview: The dataset we are exploring contains comprehensive information about hotel reservations, including booking details, guest demographics, stay duration, and booking status. By leveraging SQL queries, we aim to extract meaningful insights that will inform strategic decisions and improve overall service delivery.

COLUMNS


Information
Table: hotel_reservation
Columns:
Booking_ID text
no_of_adults int
no_of_children int
no_of_weekend_nights double
no_of_week_nights int
type_of_meal_plan text
room_type_reserved text
lead_time int
arrival_date text
market_segment_type text
avg_price_per_room double
booking_status text
Object Info
Session

Total Number of Reservations

```sql
USE hotel_database;

-- 1. What is the total number of reservations in the dataset?
SELECT
      COUNT(*) AS TOTAL_RESERVATIONS
FROM
      hotel_reservation;
```

Result Grid | Filter Rows:

TOTAL_RESERVATIONS
700

Most Popular Meal Plan

```sql
-- 2. Which meal plan is the most popular among guests?
SELECT
      type_of_meal_plan AS 'popular meal plan',
      COUNT(*) AS COUNT
FROM
      hotel_reservation
WHERE
      type_of_meal_plan <> 'Not Selected'
GROUP BY
      type_of_meal_plan
ORDER BY
      COUNT DESC
LIMIT 1;
```

	popular meal plan	COUNT
▶	Meal Plan 1	527

Average Price per Room for Reservations Involving Children

```sql
-- 3. What is the average price per room for reservations involving children?

SELECT
      ROUND(AVG(avg_price_per_room),2) AS 'average_price/room with children'
FROM
      hotel_reservation
WHERE
     no_of_children > 0;
```

Result Grid | Filter Rows:

	average_price/room with children
▶	144.57

Reservations Made for a Specific Year

```sql
-- 4. How many reservations were made for the year 2017 ?
SELECT
    COUNT(*) AS total_reservations_2017
FROM
    hotel_reservation
WHERE
    YEAR(STR_TO_DATE(arrival_date, '%d-%m-%Y')) = 2017;
```

Result Grid | Filter Rows:

total_reservations_2017
123

Most Commonly Booked Room Type

```sql
-- 5. What is the most commonly booked room type?
SELECT
      room_type_reserved AS 'most common room type',
      COUNT(*) AS count
FROM
     hotel_reservation
GROUP BY
     room_type_reserved
ORDER BY
     count DESC
LIMIT 1;
```

Result Grid | Filter Rows:

most common room type	count
Room_Type 1	534

Reservations on Weekends

```sql
-- 6. How many reservations fall on a weekend (no_of_weekend_nights > 0)?

SELECT
      COUNT(*) AS 'reservation on weekends'
FROM
     hotel_reservation
WHERE
     no_of_weekend_nights > 0;
```

Result Grid | Filter Rows:

	reservation on weekends
▶	383

Highest and Lowest Lead Time

```sql
-- 7. What is the highest and lowest lead time for reservations?
SELECT
     MAX(lead_time) AS 'highest lead time',
     MIN(lead_time) AS 'lowest lead time'
FROM
     hotel_reservation
```

	highest lead time	lowest lead time
▶	443	0

Most Common Market Segment Type

```sql
-- 8. What is the most common market segment type for reservations?
SELECT
	market_segment_type AS 'most common market type',
	COUNT(*) AS count
FROM
	hotel_reservation
GROUP BY
	market_segment_type
ORDER BY
	count  DESC
LIMIT 1;
```

	most common market type	count
▶	Online	518

Reservations with Confirmed Booking Status

```sql
-- 9. How many reservations have a booking status of "Confirmed"?

SELECT
	COUNT(*) AS 'NO. OF BOOKING STATUS CONFIRMED'
FROM
	hotel_reservation
WHERE
	booking_status = 'Not_Canceled'
```

Result Grid | Filter Rows:

NO. OF BOOKING STATUS CONFIRMED
493

Total Number of Adults and Children

```sql
-- 10. What is the total number of adults and children across all reservations?

SELECT
	SUM(no_of_adults) AS 'total no. of adults',
	SUM(no_of_children) AS 'total no. of children',
	SUM(no_of_adults) + SUM(no_of_children) AS 'TOTAL'
FROM
	hotel_reservation
```

Result Grid | Filter Rows: | Expo

	total no. of adults	total no. of children	TOTAL
▶	1316	69	1385

Average Weekend Nights for Reservations Involving Children

```
106
107     -- 11. What is the average number of weekend nights for reservations involving children?
108
109 •   SELECT
110           AVG(no_of_weekend_nights) AS 'average no of reservation at weekend nights'
111     FROM
112         hotel_reservation
113     WHERE
114         no_of_weekend_nights > 0 AND no_of_children > 0
```

Result Grid | Filter Rows: | Expor

	average no of reservation at weekend nights
▶	1.6

Reservations Made in Each Month of the Year

```sql
-- 12. How many reservations were made in each month of the year?
SELECT
    SUM(CASE WHEN MONTH(STR_TO_DATE(arrival_date, '%d-%m-%Y')) = 1 THEN 1 ELSE 0 END) AS January,
    SUM(CASE WHEN MONTH(STR_TO_DATE(arrival_date, '%d-%m-%Y')) = 2 THEN 1 ELSE 0 END) AS February,
    SUM(CASE WHEN MONTH(STR_TO_DATE(arrival_date, '%d-%m-%Y')) = 3 THEN 1 ELSE 0 END) AS March,
    SUM(CASE WHEN MONTH(STR_TO_DATE(arrival_date, '%d-%m-%Y')) = 4 THEN 1 ELSE 0 END) AS April,
    SUM(CASE WHEN MONTH(STR_TO_DATE(arrival_date, '%d-%m-%Y')) = 5 THEN 1 ELSE 0 END) AS May,
    SUM(CASE WHEN MONTH(STR_TO_DATE(arrival_date, '%d-%m-%Y')) = 6 THEN 1 ELSE 0 END) AS June,
    SUM(CASE WHEN MONTH(STR_TO_DATE(arrival_date, '%d-%m-%Y')) = 7 THEN 1 ELSE 0 END) AS July,
    SUM(CASE WHEN MONTH(STR_TO_DATE(arrival_date, '%d-%m-%Y')) = 8 THEN 1 ELSE 0 END) AS August,
    SUM(CASE WHEN MONTH(STR_TO_DATE(arrival_date, '%d-%m-%Y')) = 9 THEN 1 ELSE 0 END) AS September,
    SUM(CASE WHEN MONTH(STR_TO_DATE(arrival_date, '%d-%m-%Y')) = 10 THEN 1 ELSE 0 END) AS October,
    SUM(CASE WHEN MONTH(STR_TO_DATE(arrival_date, '%d-%m-%Y')) = 11 THEN 1 ELSE 0 END) AS November,
    SUM(CASE WHEN MONTH(STR_TO_DATE(arrival_date, '%d-%m-%Y')) = 12 THEN 1 ELSE 0 END) AS December
FROM
    hotel_reservation;
```

January	February	March	April	May	June	July	August	September	October	November	December
11	28	52	67	55	84	44	70	80	103	54	52

Average Nights Spent by Guests for Each Room Type

```sql
-- 13. What is the average number of nights (both weekend and weekday) spent by guests for each room type?
SELECT
    room_type_reserved AS room_type,
    AVG(
        CASE WHEN no_of_weekend_nights > 0 THEN no_of_weekend_nights ELSE 0 END
        + CASE WHEN no_of_week_nights > 0 THEN no_of_week_nights ELSE 0 END
    ) AS avg_nights_total
FROM hotel_reservation
WHERE room_type_reserved IN ('Room_Type 1', 'Room_Type 2', 'Room_Type 4', 'Room_Type 5', 'Room_Type 6', 'Room_Type 7')
GROUP BY room_type_reserved
ORDER BY room_type_reserved;
```

room_type	avg_nights_total
Room_Type 1	2.8782771535580522
Room_Type 2	3
Room_Type 4	3.8
Room_Type 5	2.5
Room_Type 6	3.611111111111111
Room_Type 7	2.6666666666666665

Most Common Room Type with Children and Average Price

```sql
-- 14. For reservations involving children, what is the most common room type, and what is the average price for that room type?
SELECT
      room_type_reserved AS 'common room type with child',
      COUNT(*) AS count,
      AVG(avg_price_per_room) AS average_price_per_room
FROM
    hotel_reservation
WHERE
    no_of_children > 0
GROUP BY
    room_type_reserved
ORDER BY
    count DESC
LIMIT 1;
```

common room type with child	count	average_price_per_room
Room_Type 1	24	123.12291666666665

Market Segment Type with Highest Average Price

```sql
-- 15. Find the market segment type that generates the highest average price per room.
SELECT
    market_segment_type,
    AVG(avg_price_per_room) AS average_price_per_room
FROM
    hotel_reservation
GROUP BY
    market_segment_type
ORDER BY
    average_price_per_room DESC
LIMIT 1;
```

market_segment_type	average_price_per_room
Online	112.45521235521232

Conclusion

The hotel reservation dataset provides valuable insights into guest preferences and booking trends. Key findings include Meal Plan 1 as the favored choice among guests, with Room_Type 1 being the most frequently booked. Analysis of lead times reveals varied booking behaviors, while the majority of reservations are confirmed, indicating robust booking management. Market segmentation highlights online, influencing pricing strategies. Reservations involving children command 125+ , reflecting family-friendly offerings. These insights equip hotels to refine marketing approaches and optimize guest experiences, ensuring competitive edge and guest satisfaction.