POWER BI|EXCEL|MYSQL

Capstone Project – Hotel Booking Analysis

PUBLICATION

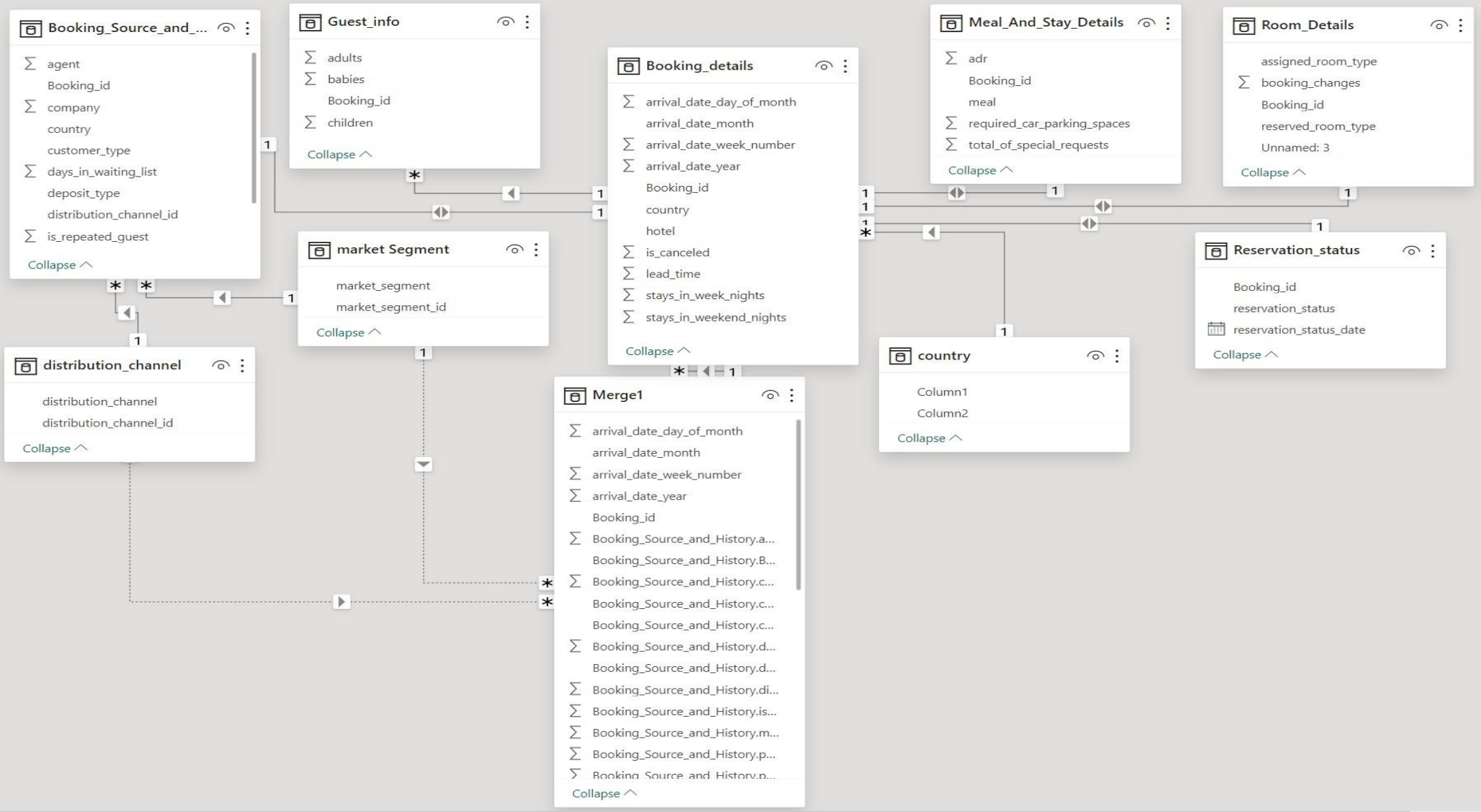
HOTEL BOOKING ANALYSIS	Analyzing hotel bookings is a complete study of data related to room reservations. It aims to get useful knowledge for making big decisions and improving how things in hotels.
HOTEL BOOKING GUEST INFO ANALYSIS	This involves analyzing guest information related to hotel bookings. It could include demographics, preferences, booking patterns, and any other relevant data to understand and enhance the guest
MEAL AND STAY HOTEL BOOKING ANALYSIS	Examining data associated with meal and accommodation bookings. This analysis may focus on the correlation between types of meals chosen and the duration of the stay, providing insights into guest behavior and preferences.
Source and History Hotel Booking Analysis	Evaluating the sources through which guests find and book hotel rooms. This analysis can help identify effective marketing channels and understand how historical data contributes to booking trends.
HOTEL ROOM ANALYSIS	Examining the characteristics and performance of different hotel rooms. This analysis may include occupancy rates, pricing strategies, and guest satisfaction metrics for various room types.
HOTEL RESERVATION ANALYSIS	Studying the reservation process, including booking patterns, cancellation rates, and factors influencing reservations. This analysis aims to optimize the reservation system and improve overall efficiency.
EDA QUESTION SOLUTION	Addressing questions related to Exploratory Data Analysis (EDA). This involves using statistical and visualization techniques to explore data, identify patterns, and derive meaningful insights.
EXCEL DASHBOARD	Creating a visual representation of key performance indicators and metrics related to hotel bookings. An Excel dashboard provides a user-friendly interface for monitoring and analyzing data trends.
SQL ANALYSIS	Leveraging SQL (Structured Query Language) to analyze and query the database associated with hotel bookings. This could involve extracting specific information, aggregating data, and gaining insights through SQL queries.

Objective: The objective of this project is to create a comprehensive Power BI dashboard utilizing the Sample Publication Database. The dashboard aims to provide valuable insights into the publishing company's book sales performance, author royalties, and store distribution, enabling data-driven decision-making and strategic planning.

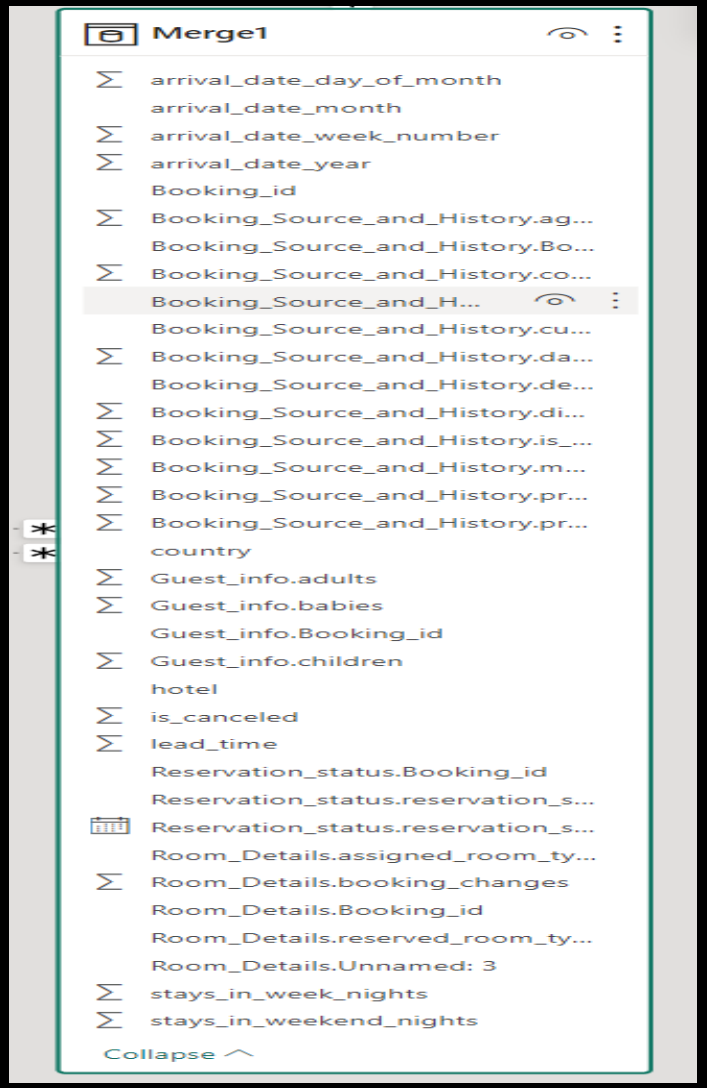
Analysis Scope: The analysis will focus on various aspects of the publication process, including book sales, author contributions, store performance, and the impact of discounts. It will encompass historical sales data, author royalties based on royalty schedules, and distribution data from multiple bookstores.

Goal: The primary goal of this Power BI dashboard is to offer a holistic view of the publishing company's operations. It will provide actionable insights to optimize book sales, enhance author collaboration, improve store distribution strategies, and identify opportunities for growth and efficiency.

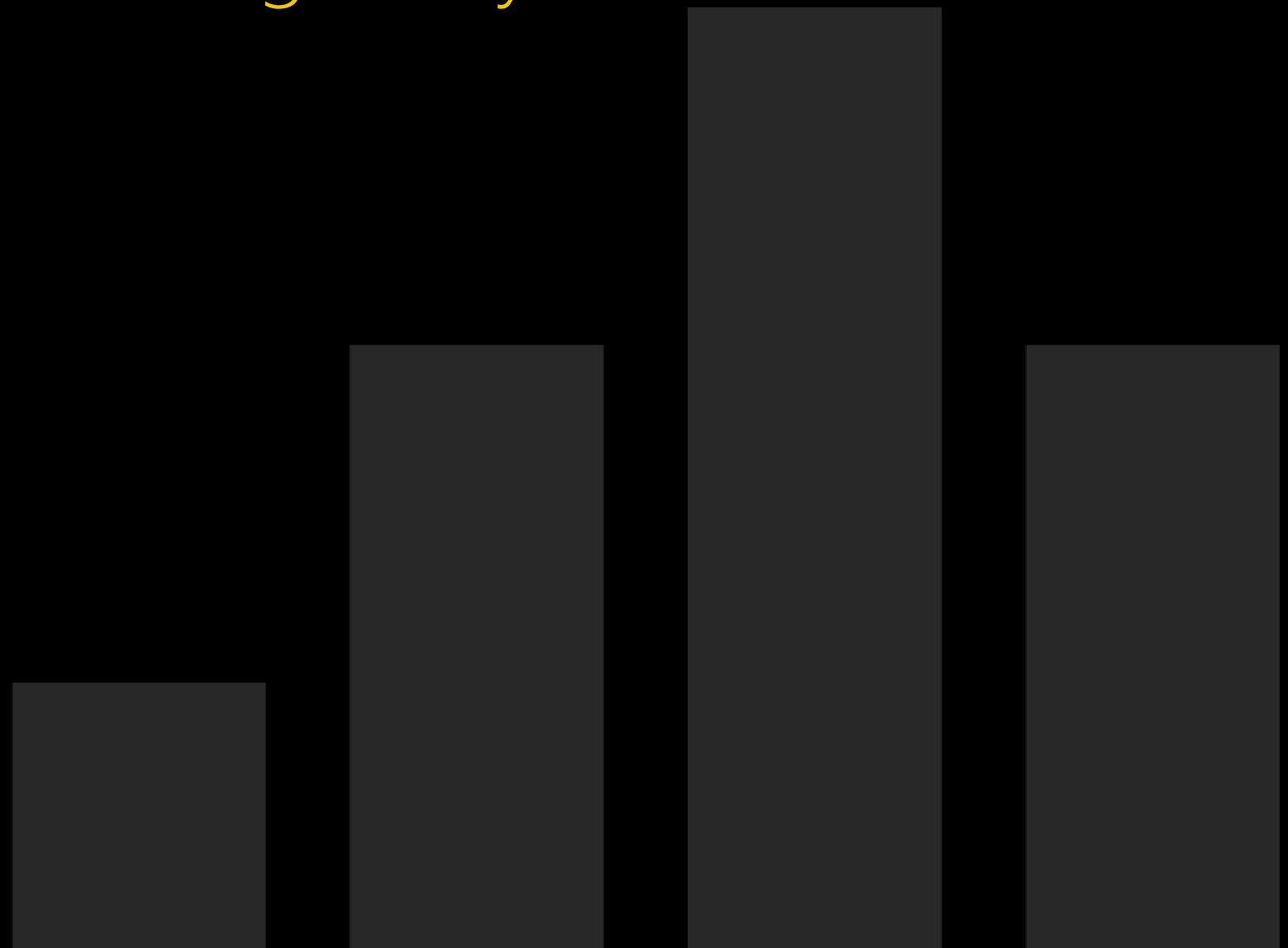
ER Diagram


Booking_Source_and_...
agent
Booking_id
company
country
customer_type
days_in_waiting_list
deposit_type
distribution_channel_id
is_repeated_guest
Collapse
Guest_info
adults
babies
Booking_id
children
Collapse
Booking_details
arrival_date_day_of_month
arrival_date_month
arrival_date_week_number
arrival_date_year
Booking_id
country
hotel
is_canceled
lead_time
stays_in_week_nights
stays_in_weekend_nights
Collapse
Meal_And_Stay_Details
adr
Booking_id
meal
required_car_parking_spaces
total_of_special_requests
Collapse
Room_Details
assigned_room_type
booking_changes
Booking_id
reserved_room_type
Unnamed: 3
Collapse
market Segment
market_segment
market_segment_id
Collapse
Reservation_status
Booking_id
reservation_status
reservation_status_date
Collapse
distribution_channel
distribution_channel
distribution_channel_id
Collapse
country
Column1
Column2
Collapse
Merge1
arrival_date_day_of_month
arrival_date_month
arrival_date_week_number
arrival_date_year
Booking_id
Booking_Source_and_History.a...
Booking_Source_and_History.B...
Booking_Source_and_History.c...
Booking_Source_and_History.c...
Booking_Source_and_History.c...
Booking_Source_and_History.d...
Booking_Source_and_History.d...
Booking_Source_and_History.di...
Booking_Source_and_History.is...
Booking_Source_and_History.m...
Booking_Source_and_History.p...
Collapse

FINAL MERGER TABLE

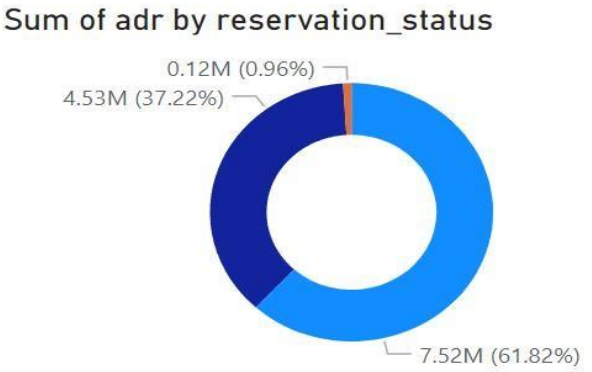


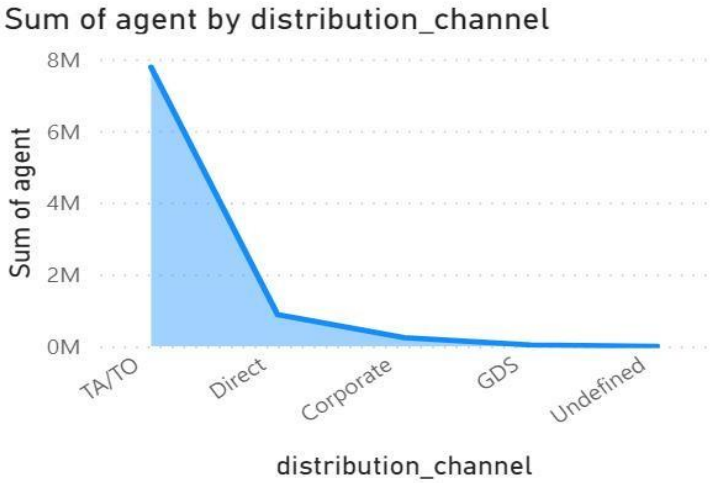
POWER BI – Hotel Booking Analysis

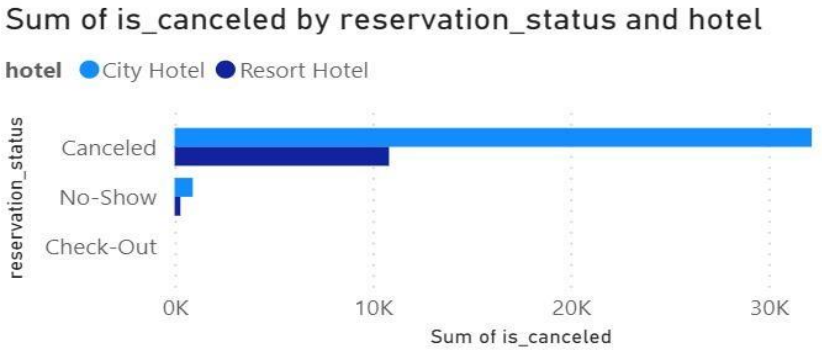


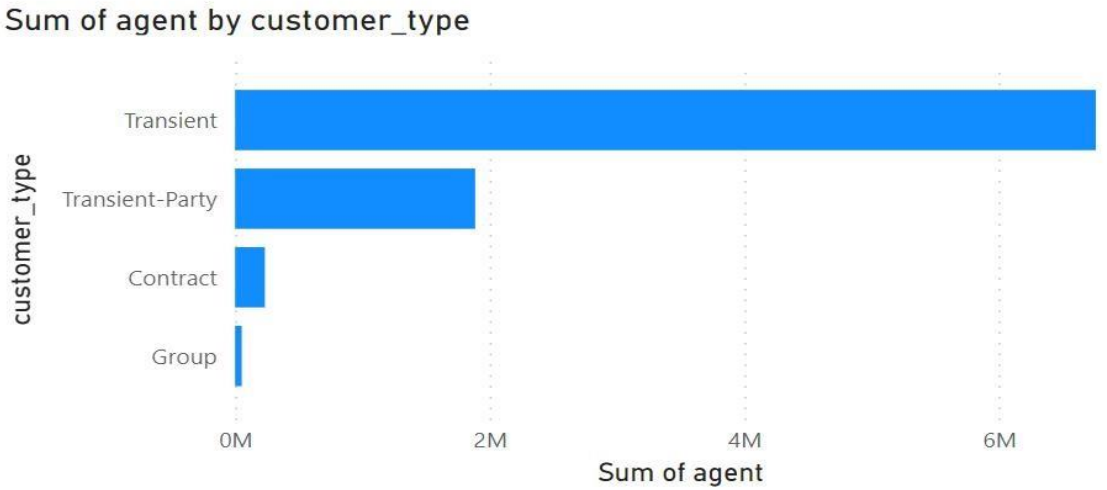
A

HOTEL BOOKING ANALYSIS









August
217742
Sum of arrival_date_da...

July
203974
Sum of arrival date da...

City Hotel
167
Count of country

Resort Hotel
126
Count of country

Total Agent and Company

8933753
Sum of agent

1286446
Sum of company

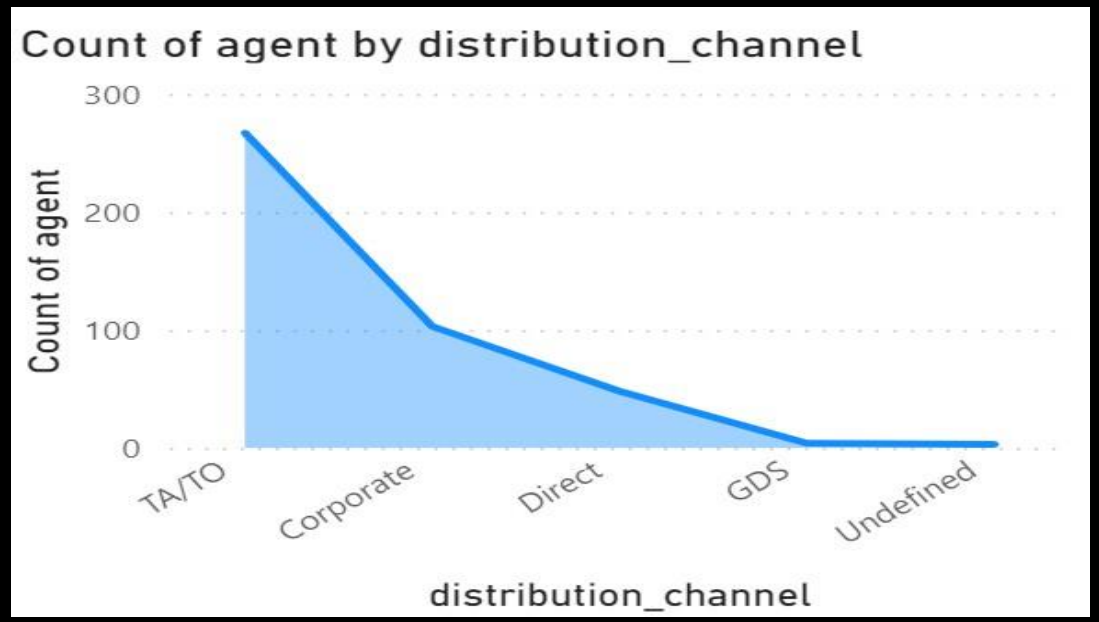
Customer Category

221636
Sum of adults

949
Sum of babies

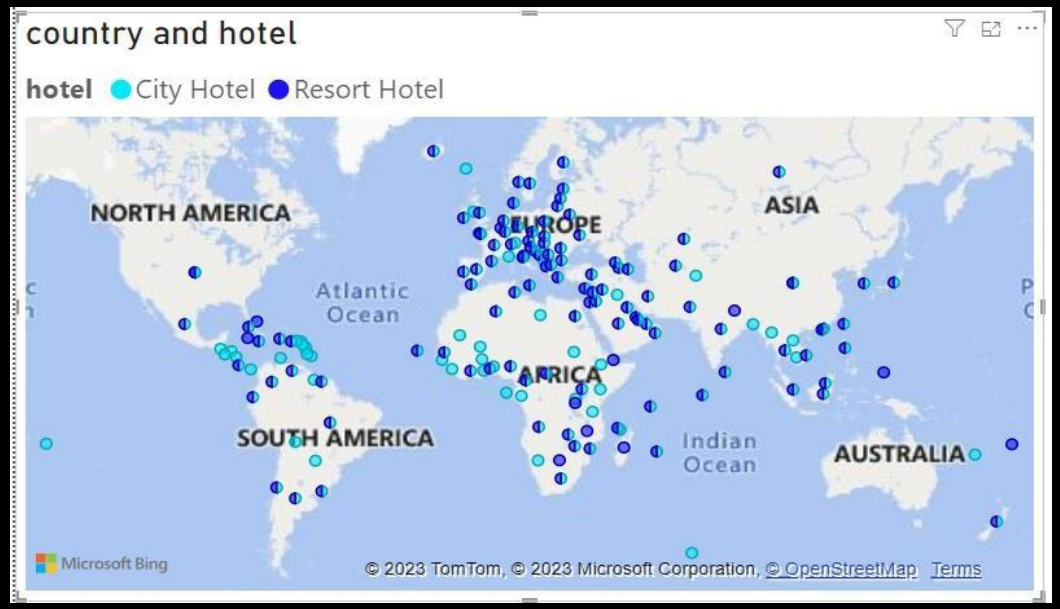
12403
Sum of children

How many agents are in different distribution channel?



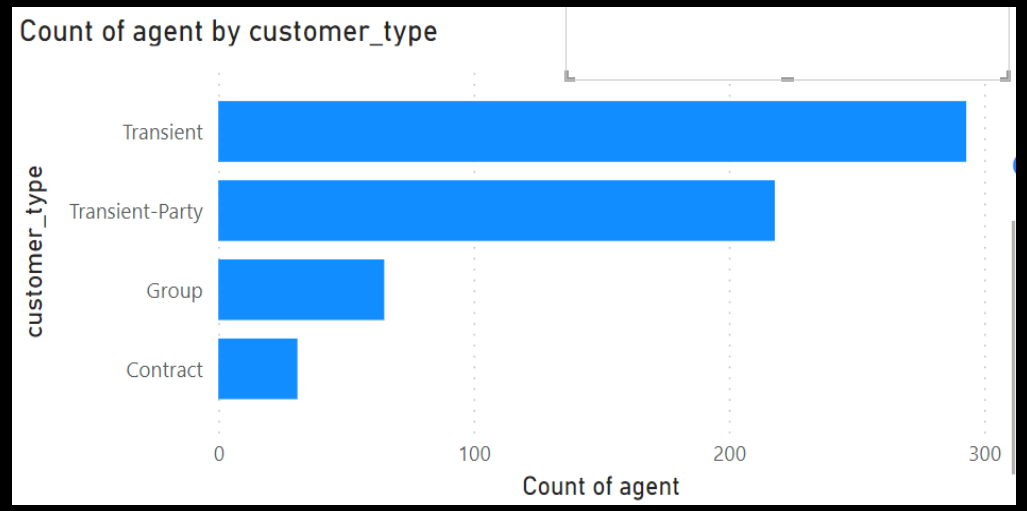
- Gleaning the graph, the count of different agents across different distribution channel, where TA/TO has highest level of agent count.

How many hotels across different country?



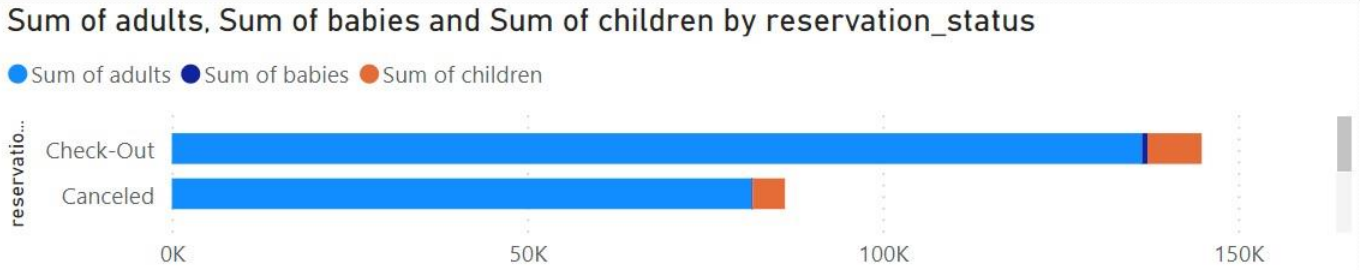
- Gleaning from the Country Report, it becomes apparent clear that there are two types of hotel, city hotel and resort hotel, which are speared across different country.

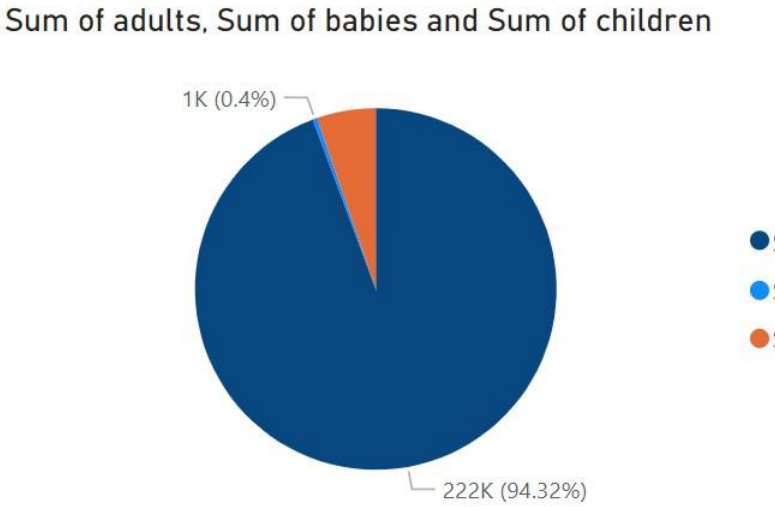
How many agents across connect to different customers type?

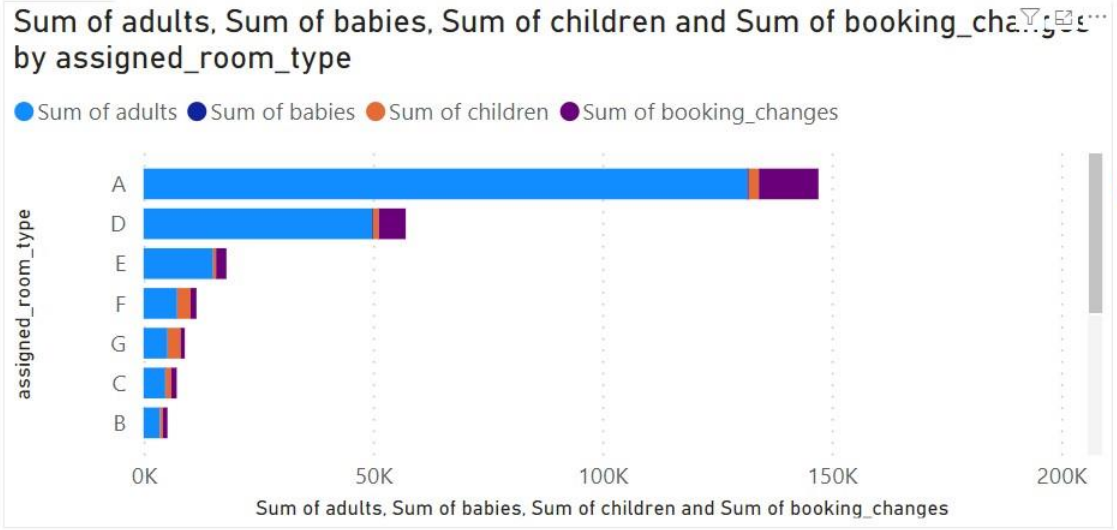


- Gleaning from the customer type report there are maximum transient customers, and value of different customer is decreasing

HOTEL BOOKING GUEST INFO ANALYSIS





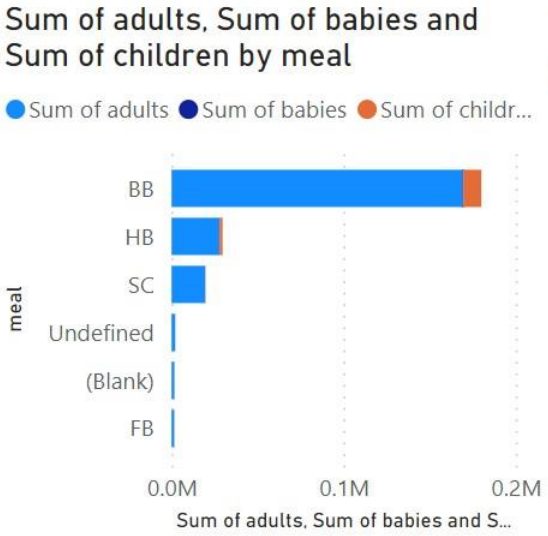


Customer Category

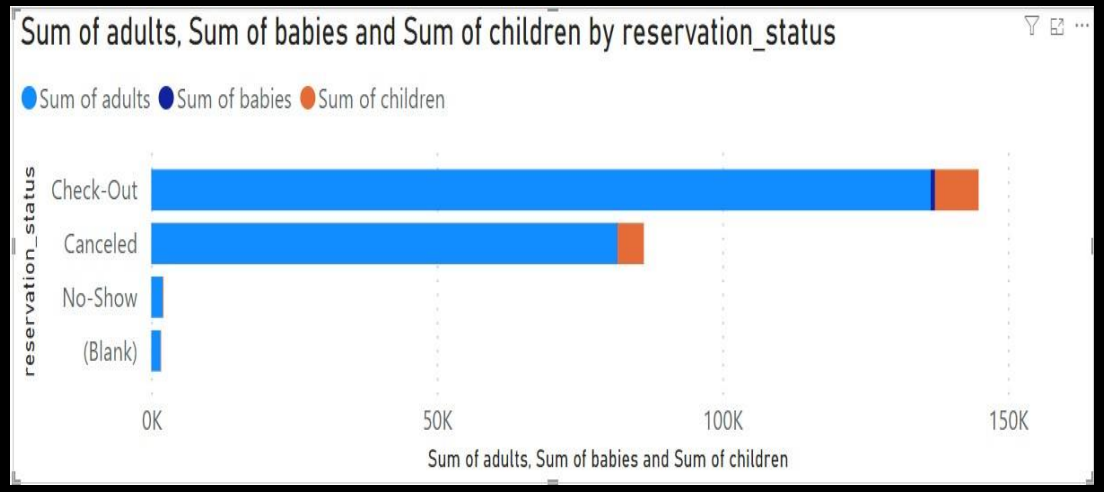
221636
Sum of adults

949
Sum of babies

12403
Sum of children

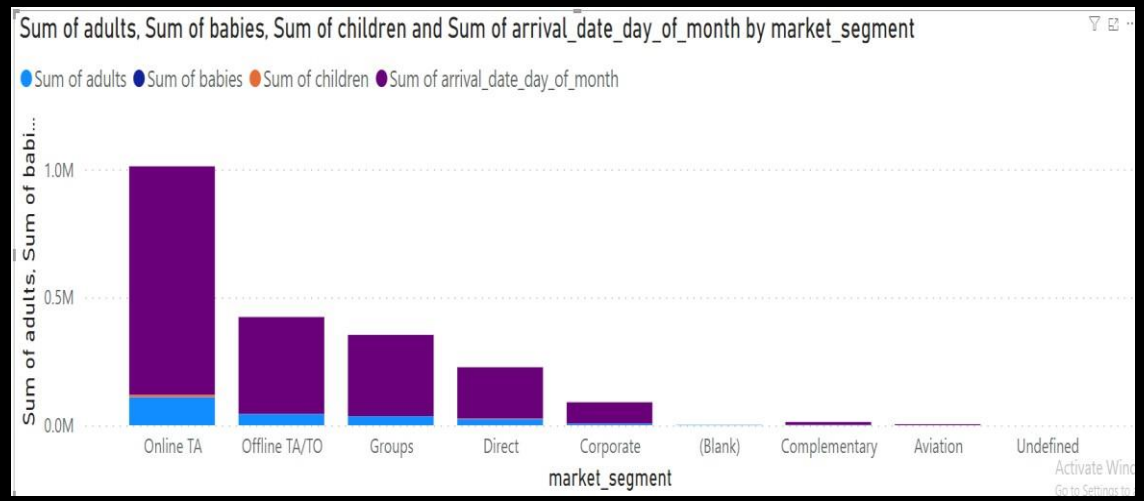


How many adults, babies, children are in the reservation category?



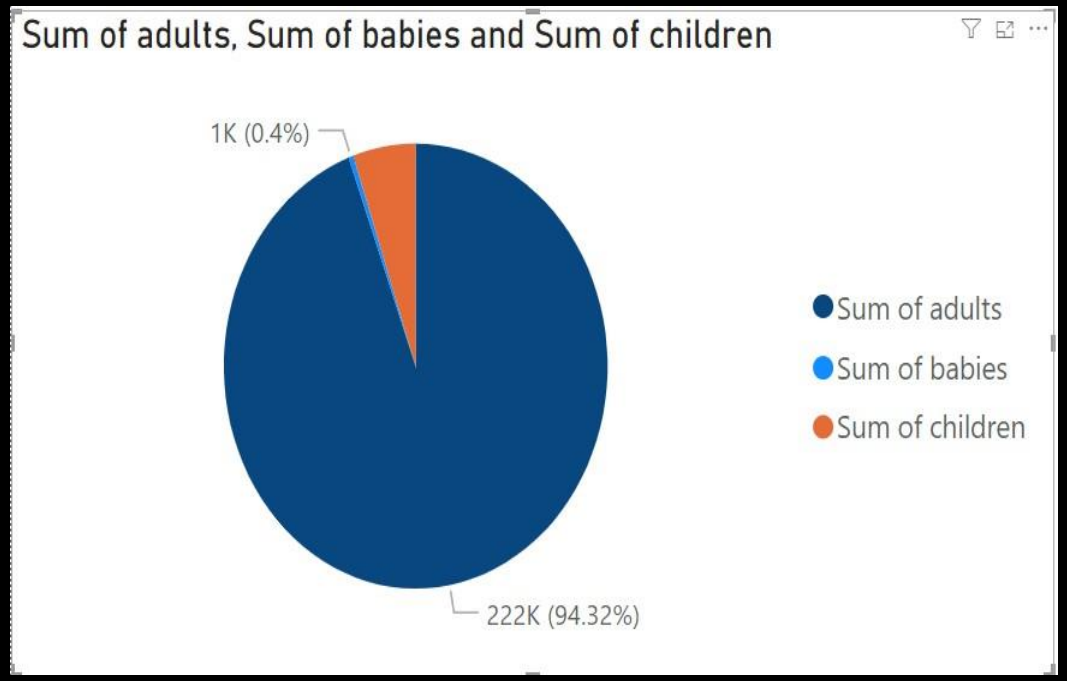
- Gleaning from the graph maximum number of adults are check-out and canceled, while other are not shown.

How many guest are category in different market segment ?



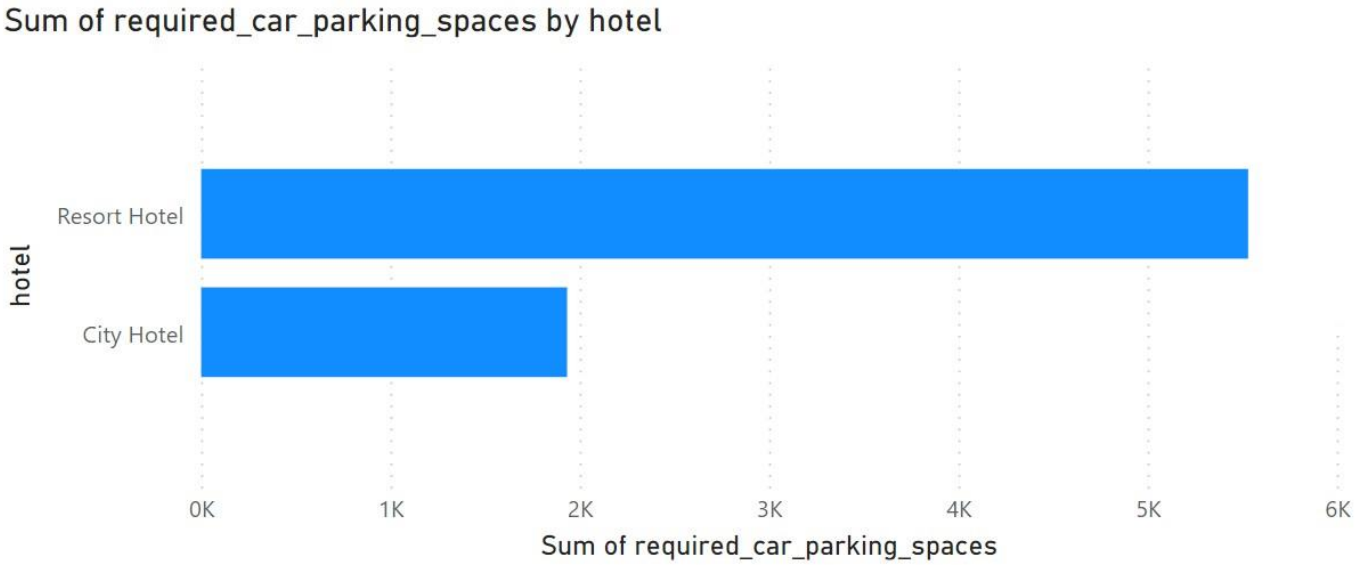
- Gleaning from the graph online TA has the highest guest ,while corporate has the lows level,

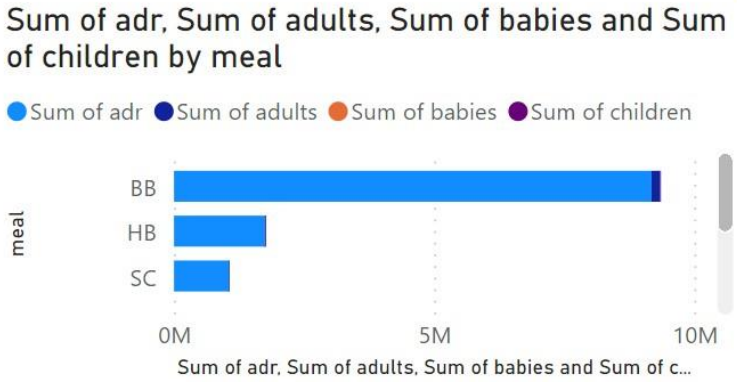
what is the ratio of adult , babies , children?

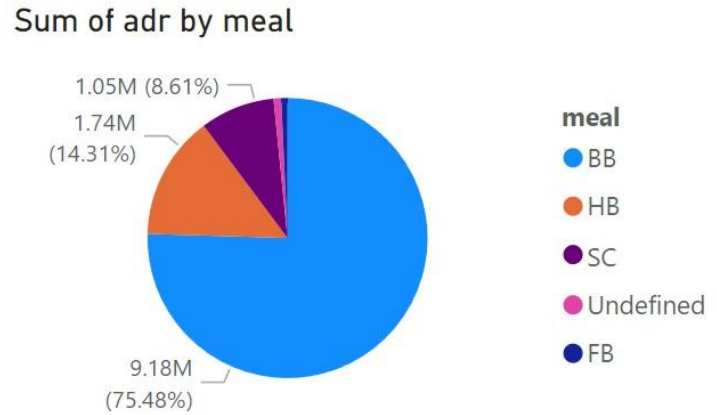


- Gleaning from the Report there are 94% of adult and 0.4% of children and the rest of the is babies.

Source and History Hotel Booking Analysis







7464

Sum of required_car_parking_spaces

MEAL CATEGORY

BB

91,76,264.00

Sum of adr

6798990

Sum of agent

FB

87,014.30

Sum of adr

76770

Sum of agent

HB

17,40,000.73

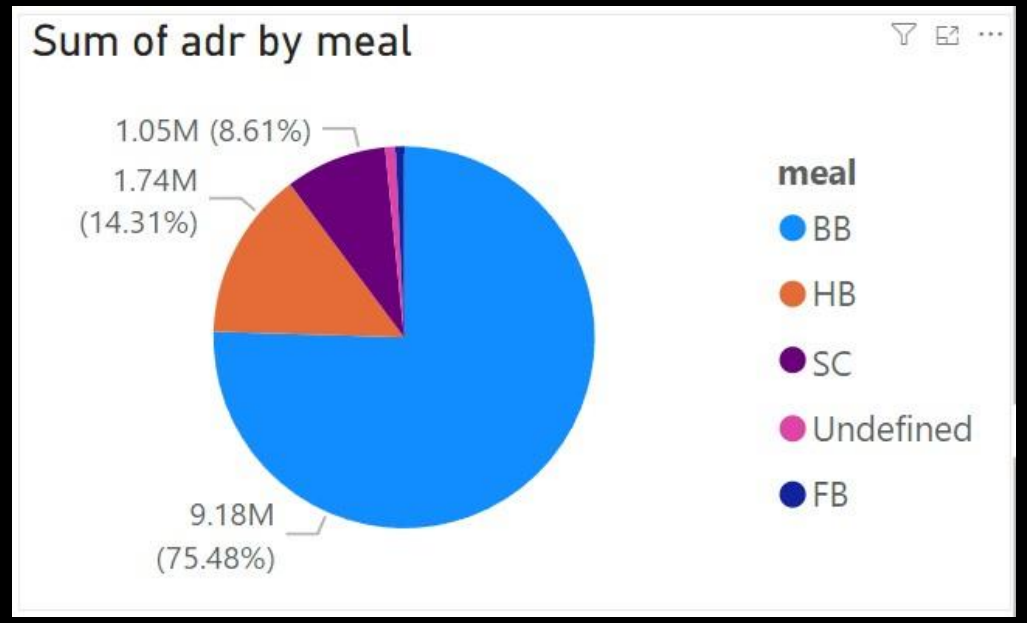
Sum of adr

1694628

Sum of agent

Activate Windows
Go to Settings to activate

What is the average daily rate with meals?

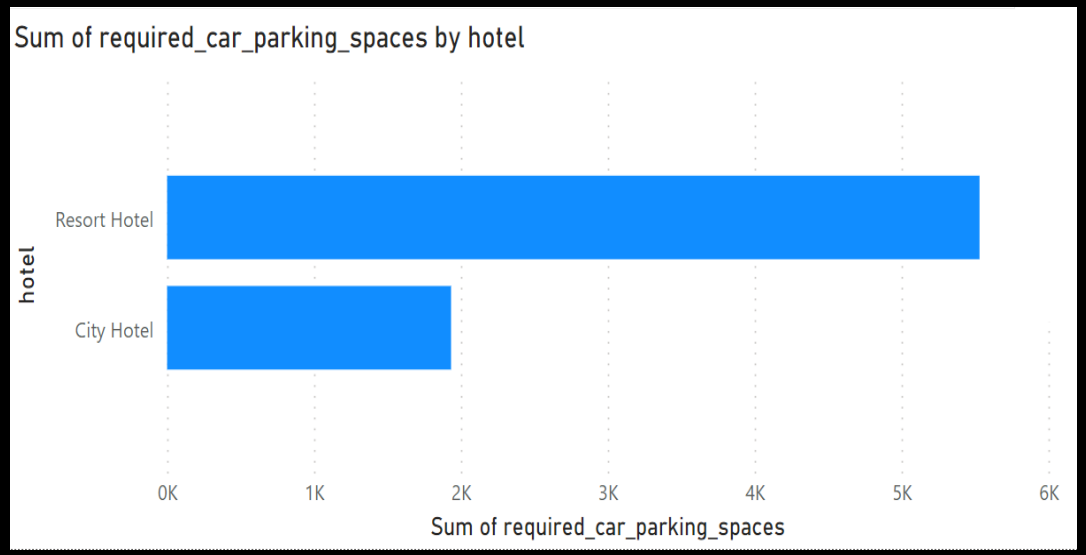


- Gleaning from the report 75% of adr serve bb meal and 14% hb meal and 9% Sc meal.

what is different meal serve different guest type?

- City hotel and resort meal both receive bb meal maximum while resort receive FB ,HB , SC very less.

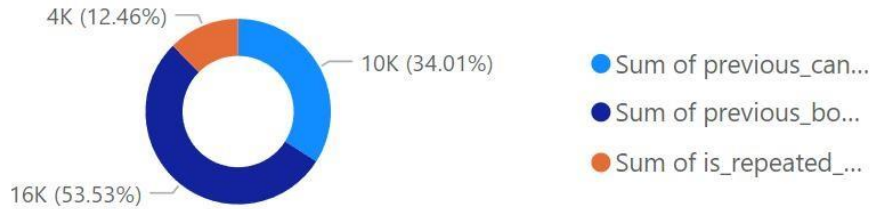
What are the car parking request in different hotel?



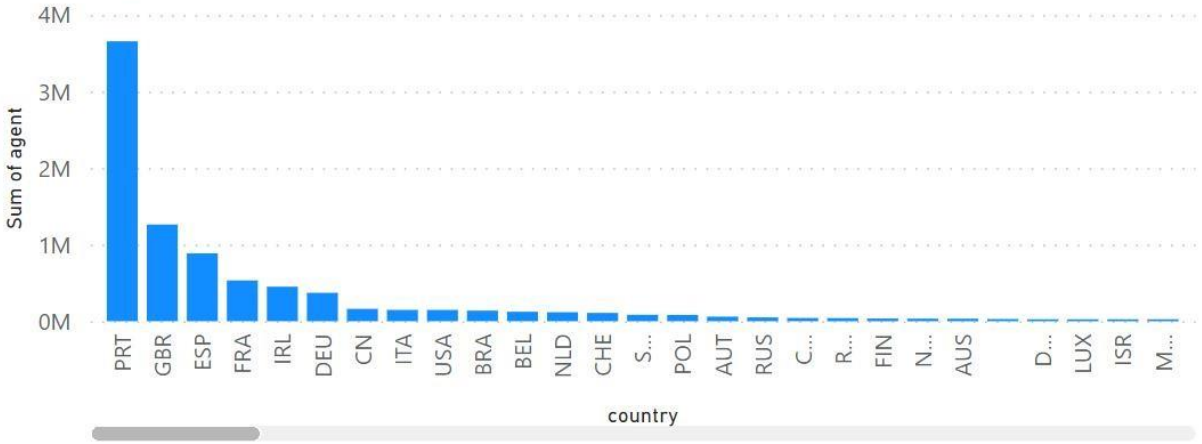
- Gleaning from the report resort hotel receive maximum parking request.

MEAL AND STAY HOTEL BOOKING

Sum of previous_cancellations, Sum of previous_bookings_not_canceled and Sum of is_repeated_guest



Sum of agent by country



Sum of days_in_waiting_list and Sum of agent by hotel

CUSTOMER CATEGORY

Transient
661762
Sum of company

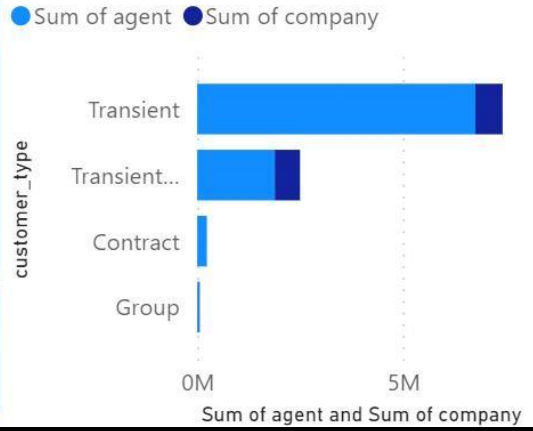
Transient-Party
612987
Sum of company

Group
11559
Sum of company

Contract
138
Sum of company

Sum of company by country

Sum of agent and Sum of company by customer_type

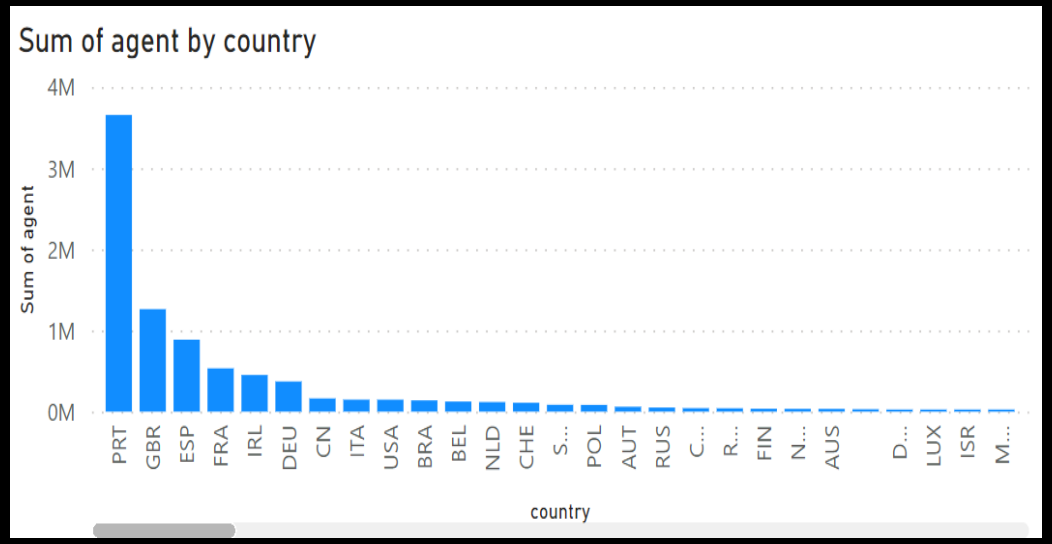


Sum of previous_cancellations, Sum of previous_bookings_not_canceled and Sum of is_repeated_guest by hotel

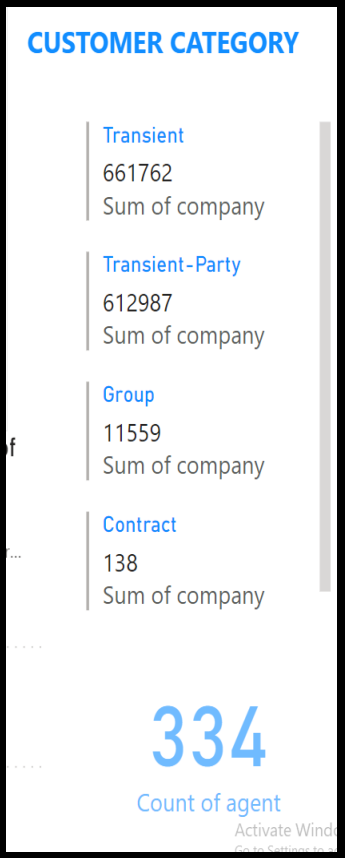
334
Count of agent

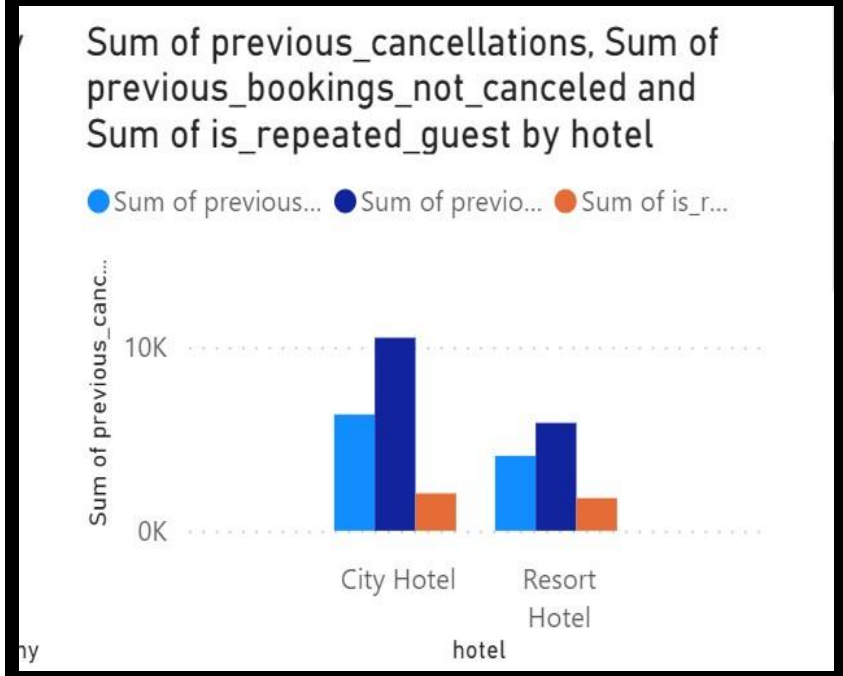
Activate Windo
Go to Settings to ac

what are number of agent in different country?



- Gleaning from the report most of agents are in PRT AREA.



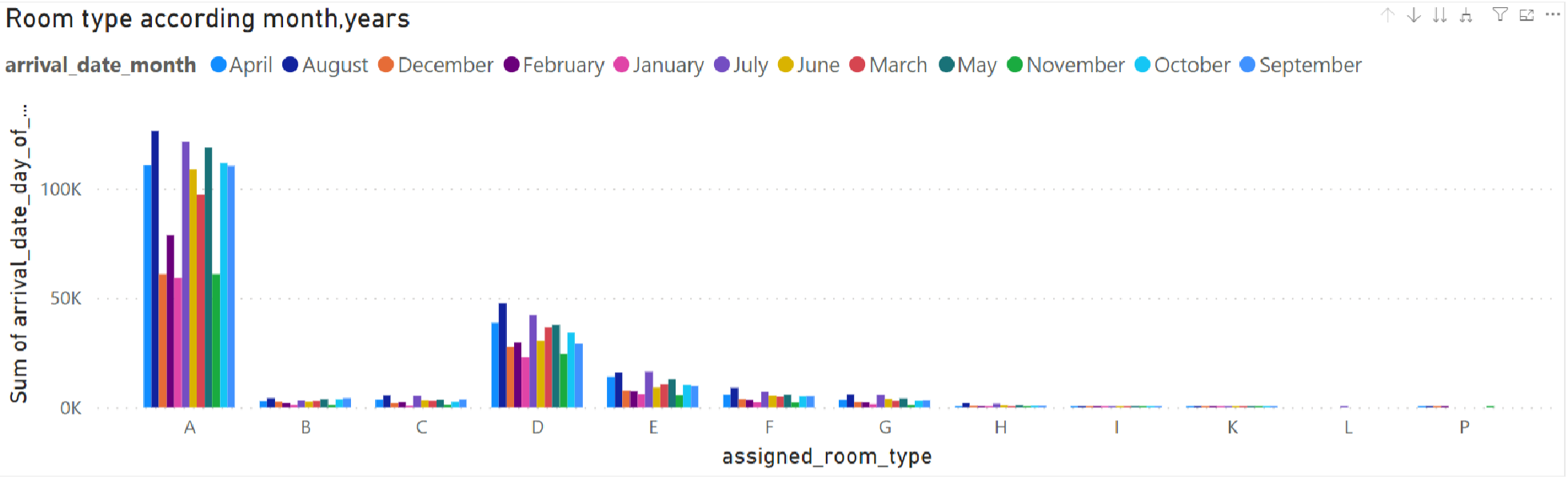


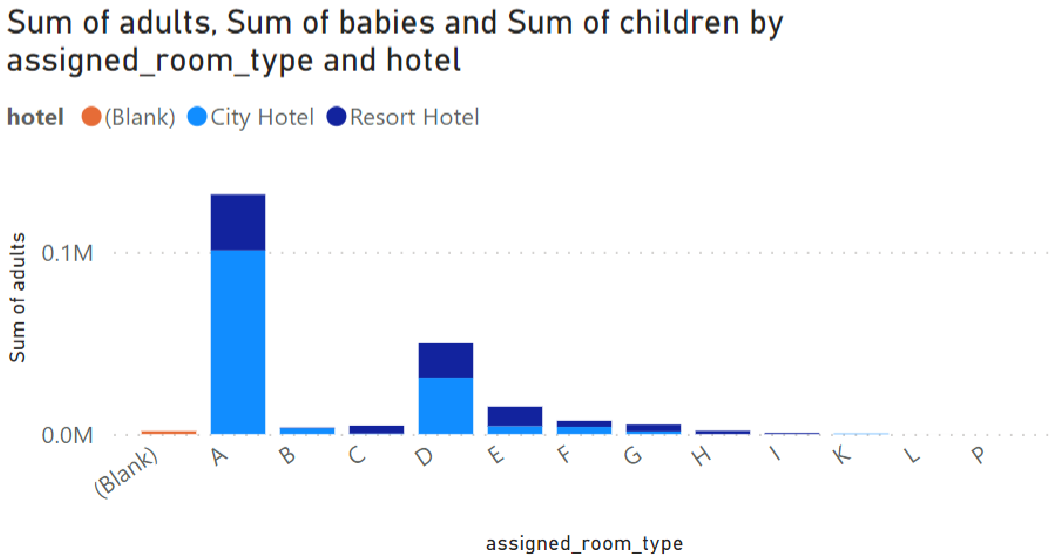
How many cancelation, repetition, previous boking not cancel?

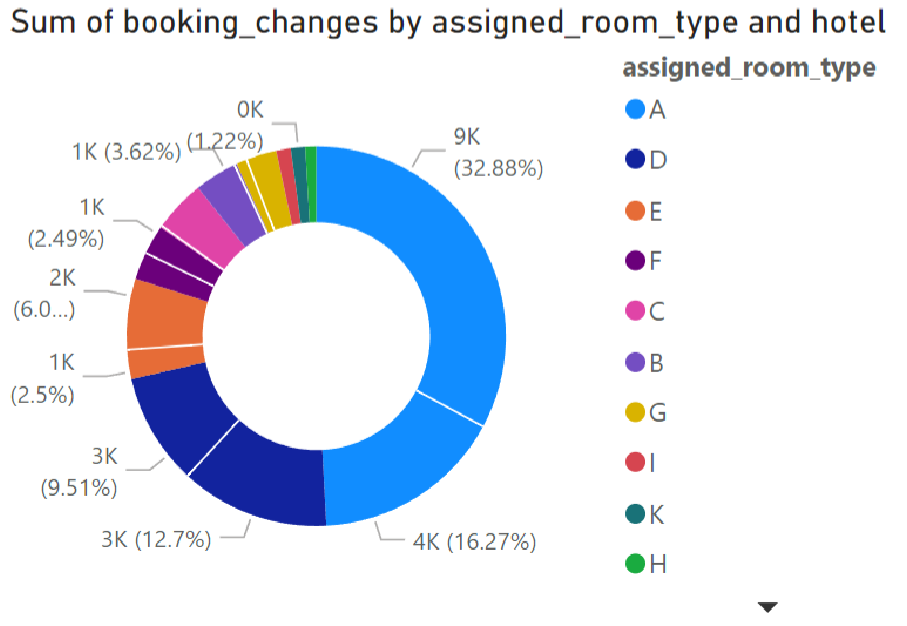
- Gleaning from report most of hotel has previous booking not cancel.

Numbers of agent in comparison with days in waiting list.

HOTEL ROOM ANALYSIS







ROOM PRICESS

A
12976
Sum of booking_changes

B
1009
Sum of booking_changes

C
1207
Sum of booking_changes

D
5865
Sum of booking_changes

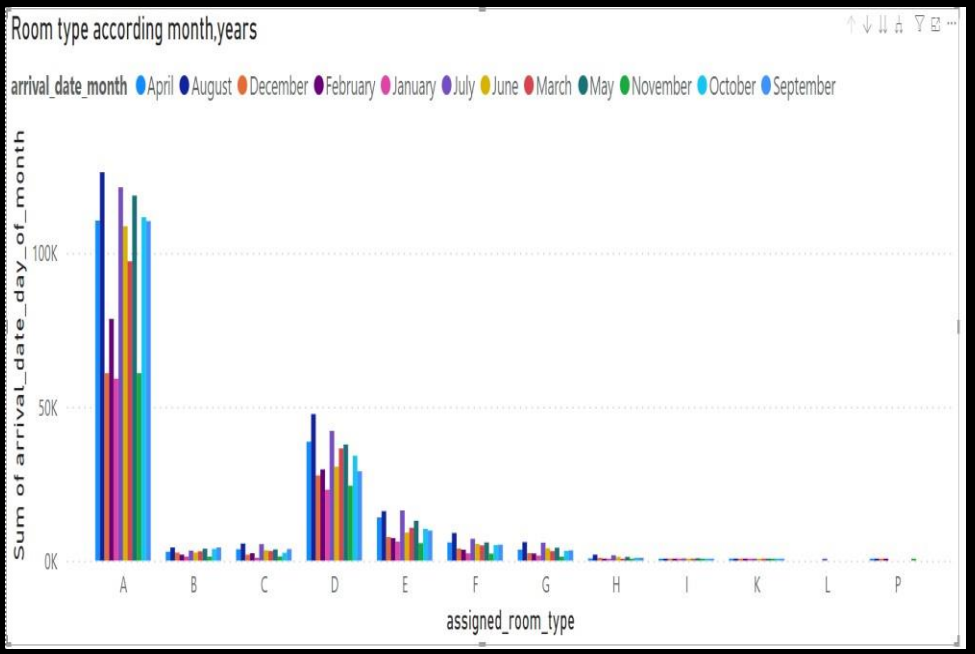
E
2253
Sum of booking_changes

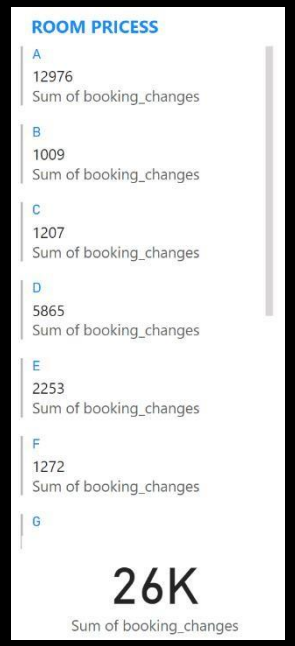
F
1272
Sum of booking_changes

G

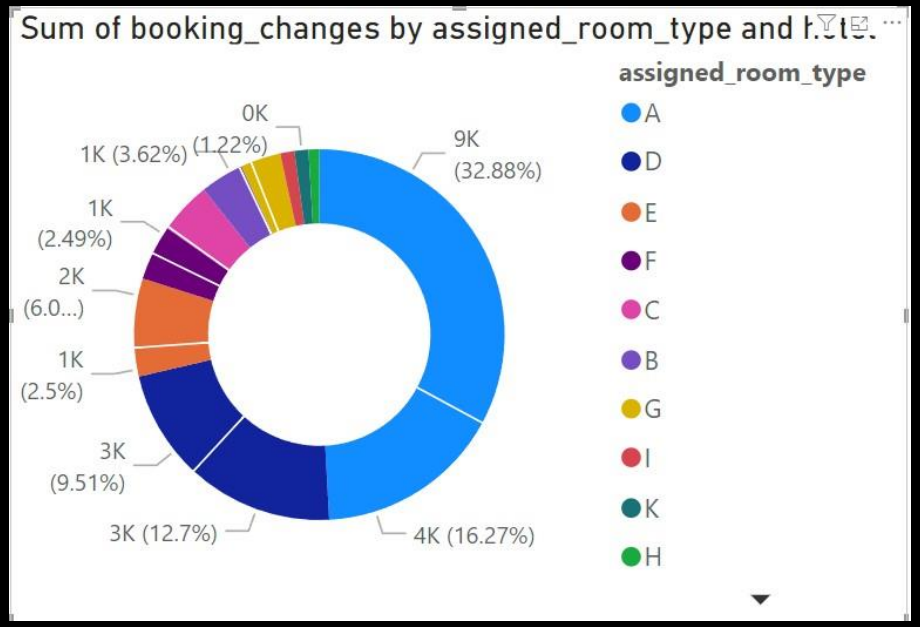
26K
Sum of booking_changes

Activate Wind
Go to Settings to a

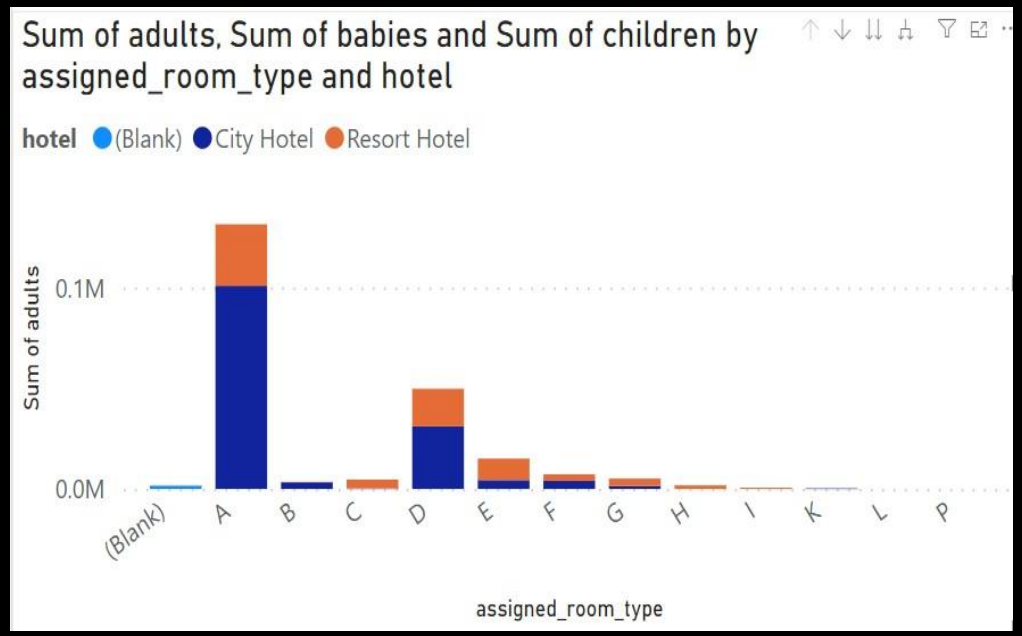




These are assigned room type according to the arrival date of the months.



These are the sum of booking changes by assigned room type and hotel type.



The graph represents the different guest type is staying in different room types and which hotel type has highest room reserved.

HOTEL RESERVATION ANALYSIS

Sum of adults	Sum of babies	Sum of children
222K	949	12K

Sum of previous_cancellations by reservation_status and market_segment

Sum of adr by reservation_status and meal

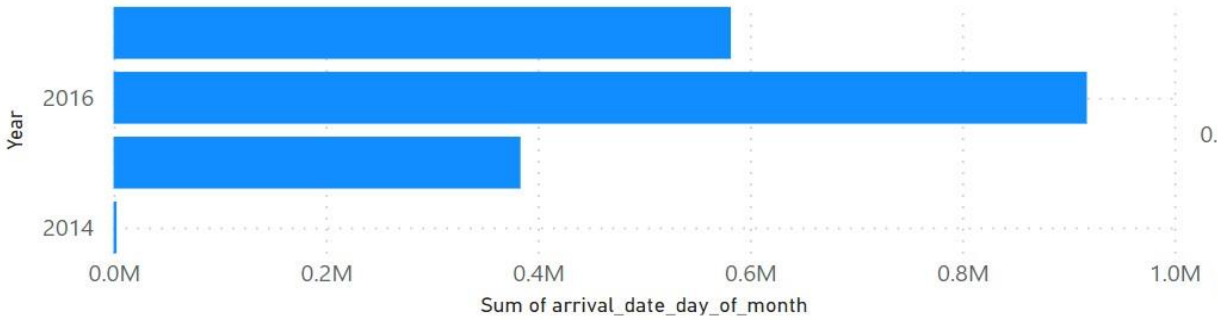
RESERVATION GUEST WISE

1632
Sum of adults

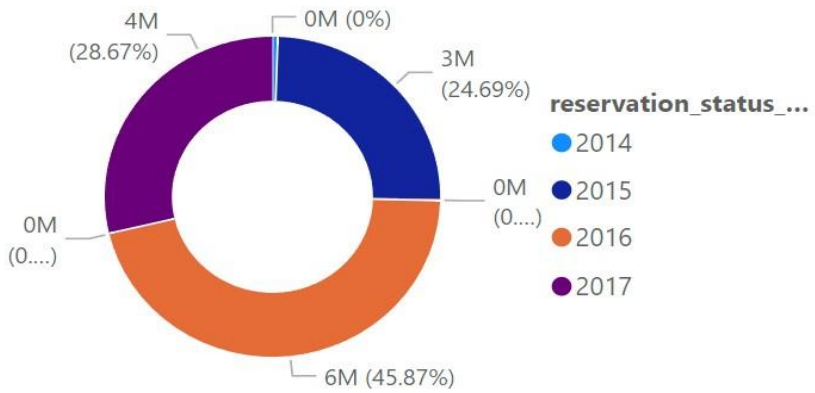
Canceled
81547
Sum of adults

Check-Out
136470
Sum of adults

Sum of arrival_date_day_of_month by Year



Sum of is_canceled and Sum of lead_time by Year



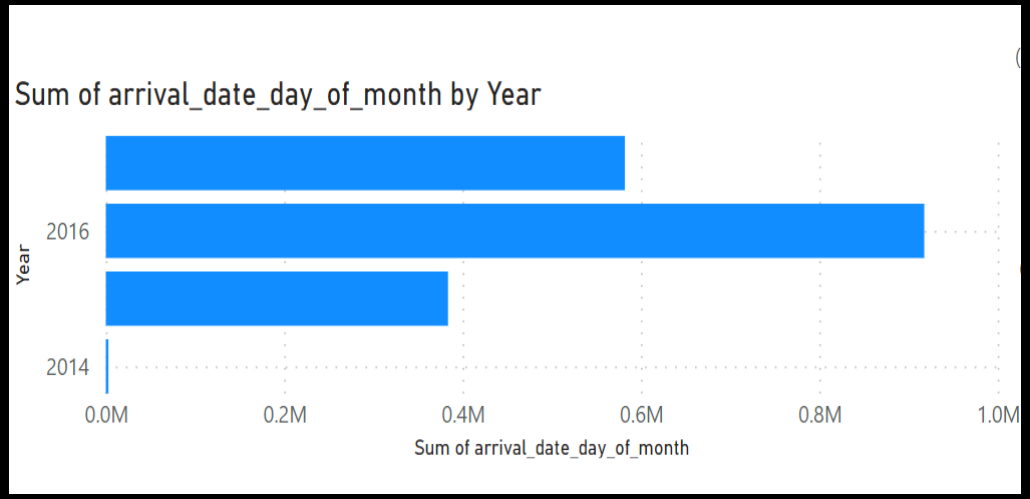
RESERVATION STATUS

Canceled
4068
Sum of booking_changes

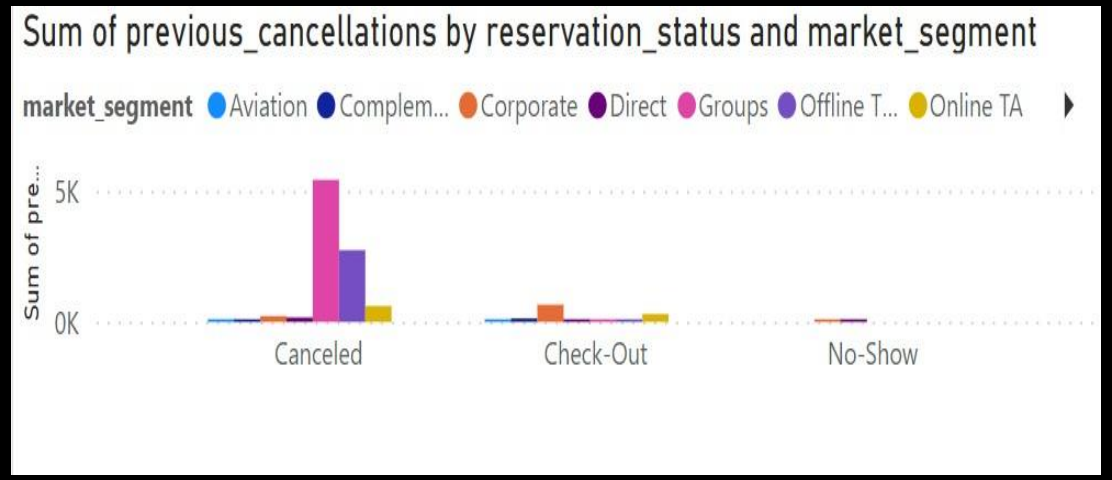
Check-Out
22051
Sum of booking_changes

No-Show
281
Sum of booking_changes

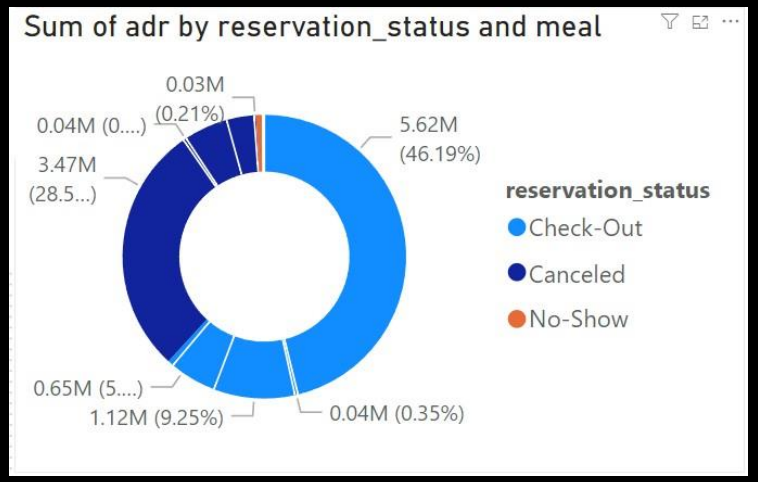
Sum of adults, Sum of babies and Sum of children by reservation_status

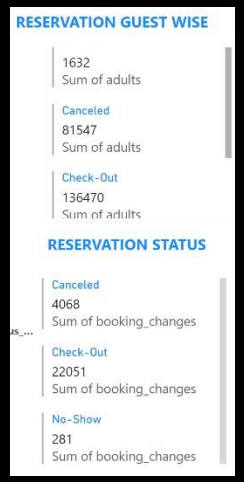


The graph represents how many people have arrived on the date of the month on different years.



The graph represents the sum of pervious cancellation by reservation status and market segment.

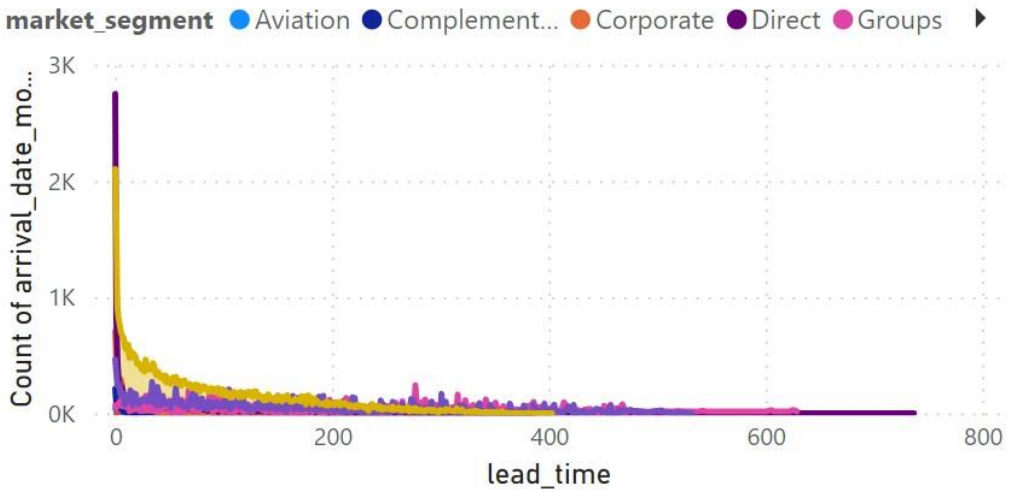




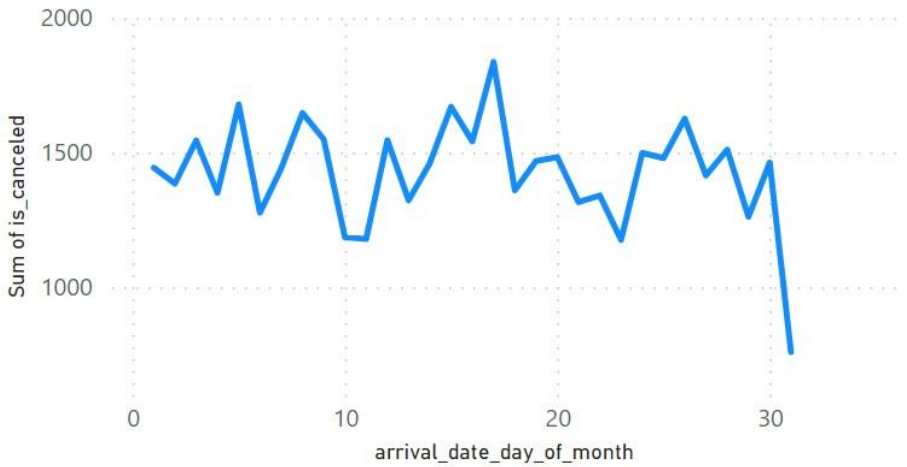
The graph represents sum of average daily rate by reservation status and meal plan and also show the total numbers adults, cancelation and check-out.

EDA QUESTION SOLUTION

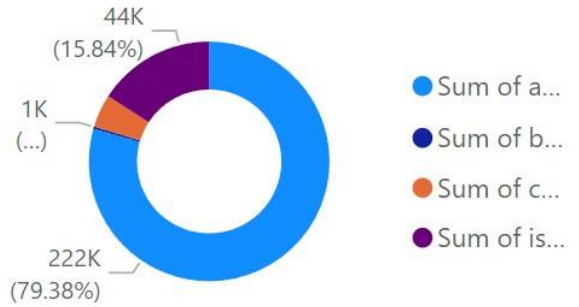
Count of arrival_date_month by lead_time and market_segment



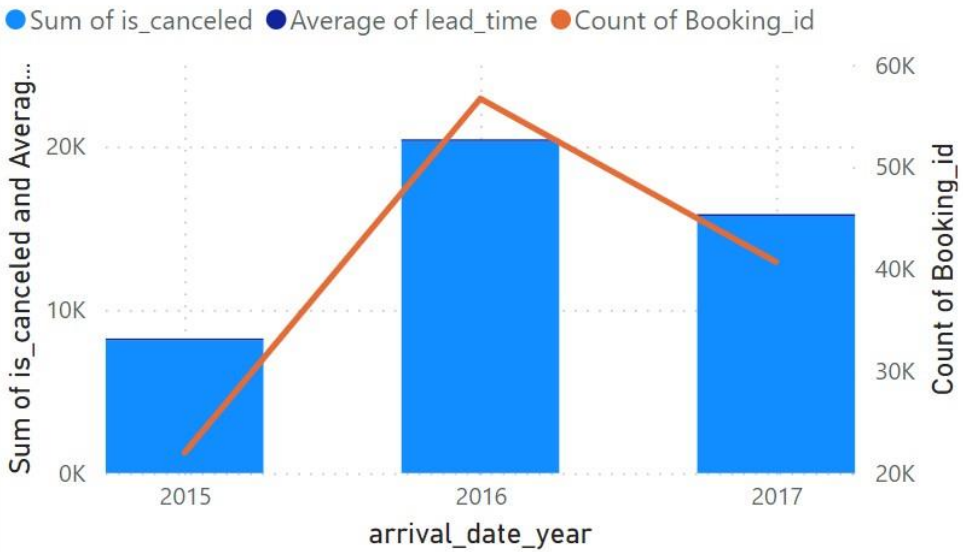
Sum of is_canceled and First Booking_id by arrival_date_day_of_month



Sum of adults, Sum of babies, Sum of children and Sum of is_canceled

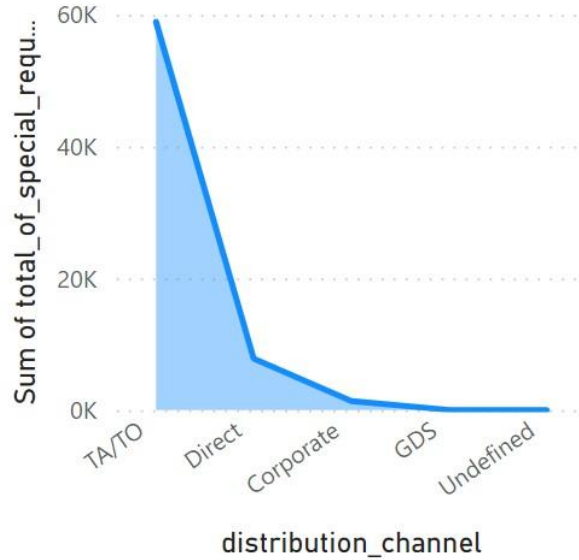


Sum of is_canceled, Average of lead_time and Count of Booking_id by arrival_date_year

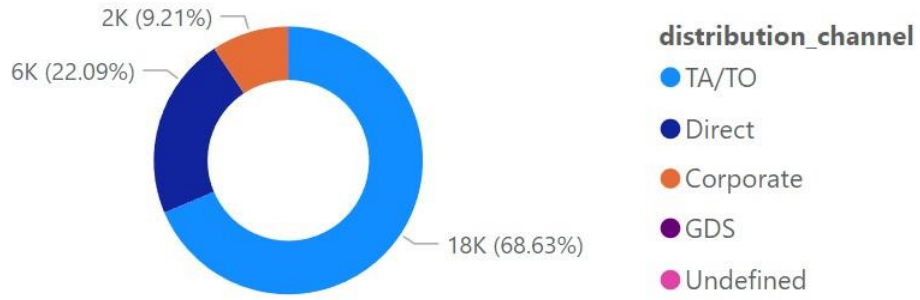


Sum of stays_in_week_nights and Sum of stays_in_weekend_nights by hotel

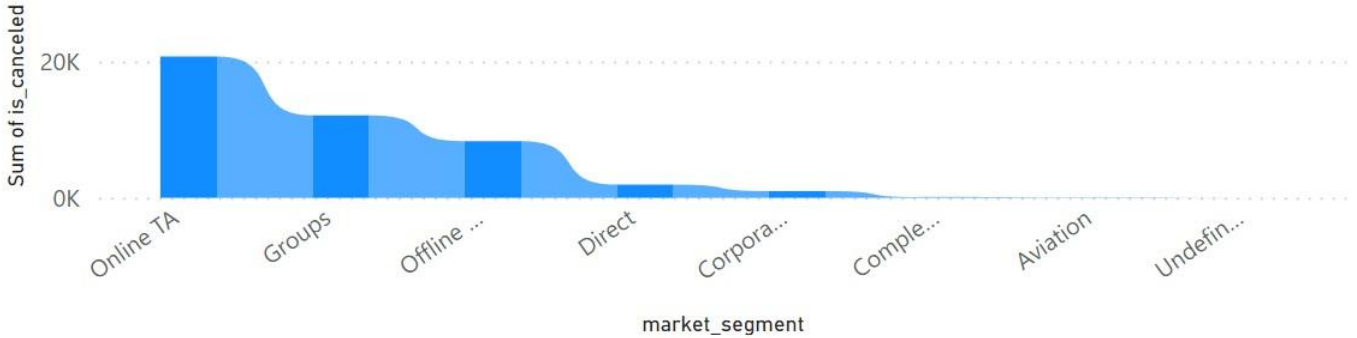
Sum of total_of_special_requests by distribution_channel



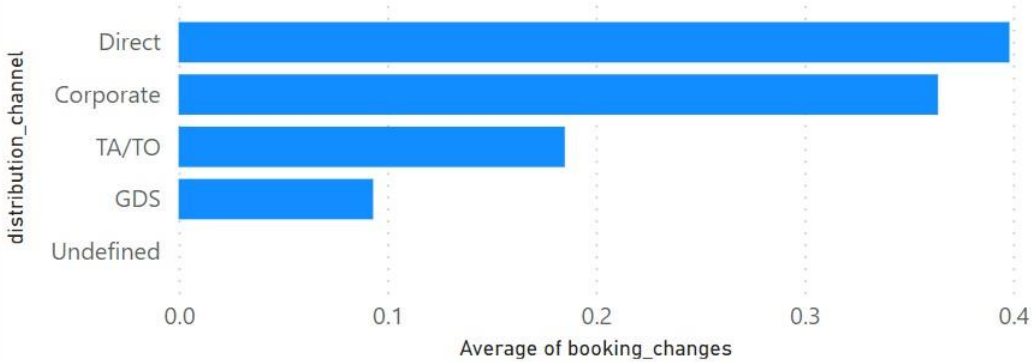
Sum of booking_changes by distribution_channel



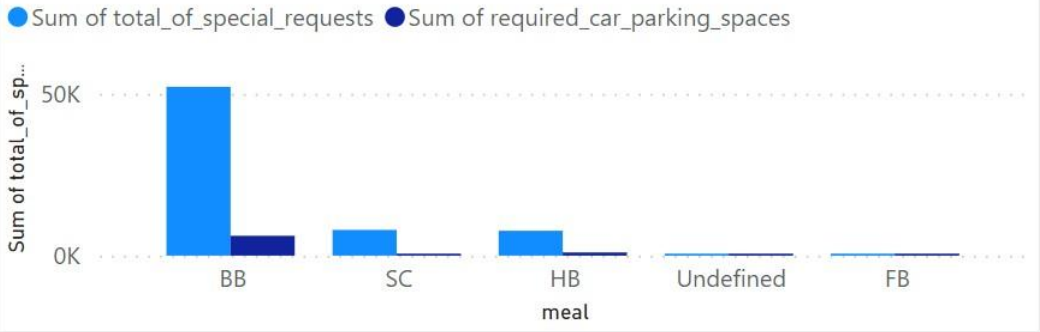
Sum of is_canceled by market_segment



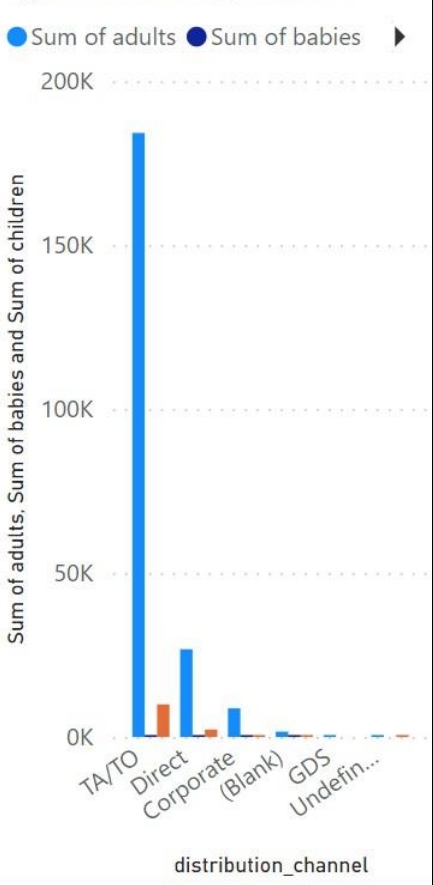
Average of booking_changes by distribution_channel



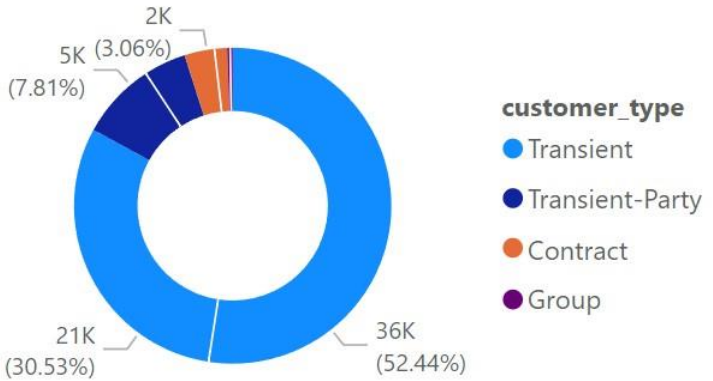
Sum of total_of_special_requests and Sum of required_car_parking_spaces by meal



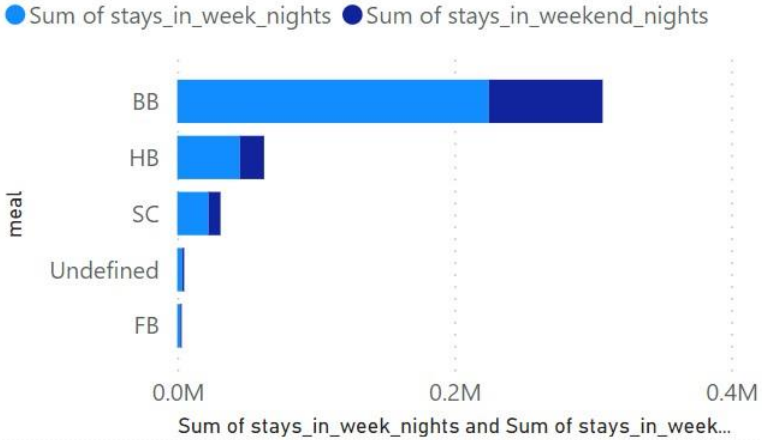
Sum of adults, Sum of babies and Sum of children by distribution_channel



Sum of total_of_special_requests by customer_type and hotel

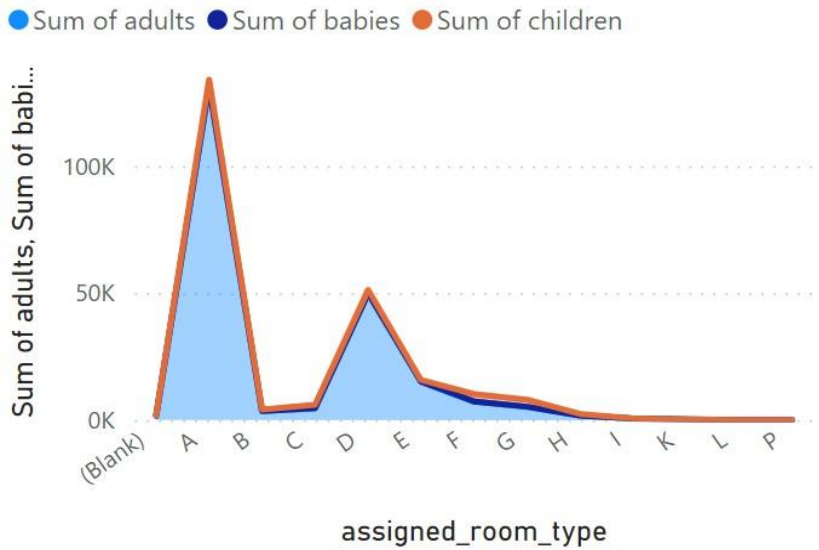


Sum of stays_in_week_nights and Sum of stays_in_weekend_nights by meal

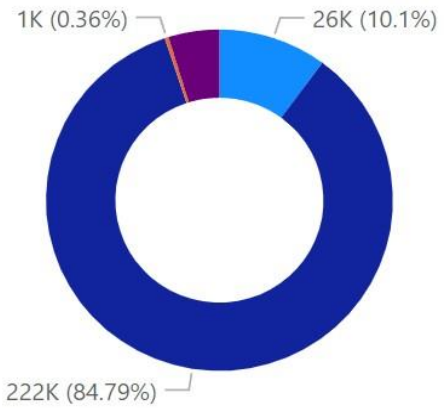


Sum of required_car_parking_spaces by hotel

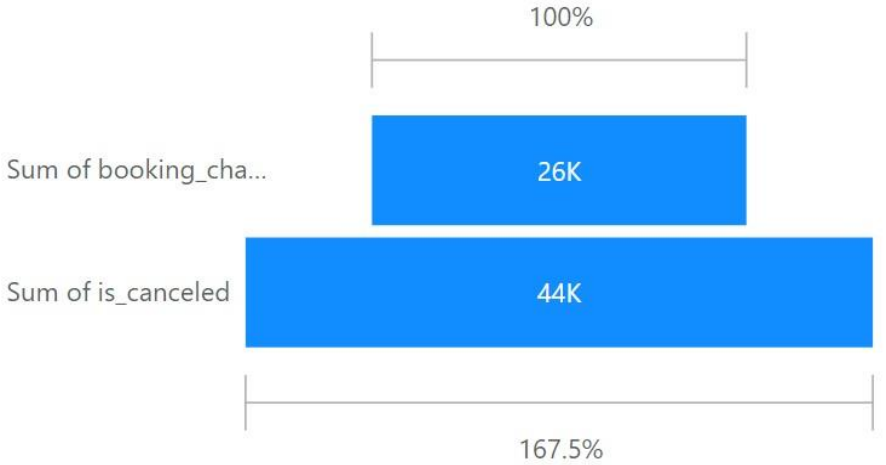
Sum of adults, Sum of babies and Sum of children by assigned_room_type



Sum of booking_changes, Sum of adults, Sum of babies and Sum of children

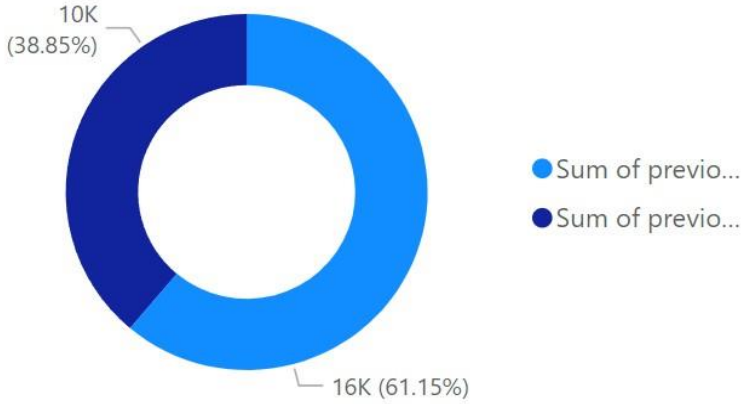


Sum of booking_changes and Sum of is_canceled



%GT Sum of is_repeated_guest by hotel and arrival_date_month

Sum of previous_bookings_not_canceled and Sum of previous_cancellations



EDA Problem Statements Excel & SQL

- ## EDA questions

Q1. These are the questions that you will need to answer after doing the required analysis. (Note: You may earn bonus marks by providing additional analysis.)
Q2.Understand the distribution of arrival dates, including the most common arrival days and summary statistics for lead times.
Q3.Identify peak booking months and analyse reasons for spikes in bookings, including holidays or events.
Q4.Calculate the average length of stays for different hotel types and explore variations by meal plans.
Q5.Analyse how booking patterns have evolved over the years, including year over year changes in bookings and cancellations.
Q6.Understand the distribution of the number of adults, children, and babies and identify any outliers.
Q7.Calculate summary statistics for ADR and explore differences between Resort Hotel and City Hotel bookings.
Q8.Analyse the distribution of required car parking spaces for each hotel type and determine if one type attracts more guests with cars.
Q9.Compare the total number of special requests made by different customer types (e.g., Transient, Group) and identify which customer type makes more requests.
Q10.Understand the distribution of meal plans (e.g., BB, HB, FB, SC) and identify any patterns or preferences.
Q11.Analyse Average Daily Rates (ADR) by meal plan type to identify variations in pricing.
Q12.Investigate the distribution of required car parking spaces and special requests by hotel type and meal plan. 12. Compare the distribution of meal plans among

- Q13.different customer types (e.g., Transient, Group) to identify preferences.
Q14.Understand the distribution of bookings across different market segments and calculate summary statistics for lead times within each segment.
Q15.Analyse the distribution of bookings through different booking channels (e.g., online travel agents, direct bookings) and calculate the percentage of bookings through each channel.
Q16.Calculate the proportion of repeated guests and investigate their booking behaviour. Identify any patterns or differences in preferences compared to first-time guests.
Q17.Explore the impact of a guest's booking history on their likelihood of cancelling a current booking. Calculate cancellation rates based on previous cancellations and noncancelled bookings.
Q18.Understand the distribution of reserved and assigned room types. Calculate summary statistics for the consistency between reserved and assigned room types.
Q19.Analyse the impact of booking changes on cancellation rates. Calculate cancellation rates for bookings with different numbers of changes.
Q20.Explore how room type preferences vary across different customer types (e.g., Transient, Group). Identify if certain customer types have specific room preferences.
Q21.Examine whether guests who make multiple bookings have consistent room type preferences or if their preferences change over time.
Q22.Understand the distribution of reservation statuses and calculate summary statistics for reservation status dates.
Q23.Analyse trends in reservation status dates, including the most common checkout dates and any seasonality patterns.
Q24.Explore how reservation statuses vary across different customer types (e.g., Transient, Group) using Excel or SQL. Calculate cancellation rates by customer type.
Q25.Investigate whether there are differences in Average Daily Rates (ADR) based on reservation status (e.g., canceled vs. checked out).

PIVOT TABLE DATA

Row Labels	Sum of adults	Sum of children	Sum of babies	Sum of lead_time
City Hotel	**146838**	**7248**	**392**	**8705335**
Contract	4363	205	14	290909
Group	513	19	3	16744
Transient	112307	6559	343	5935558
Transient-Party	29655	465	32	2462124
Resort Hotel	**74798**	**5155**	**557**	**3712588**
Contract	3461	62	18	291836
Group	841	19	2	15024
Transient	56774	4730	478	2424933
Transient-Party	13722	344	59	980795
Grand Total	**221636**	**12403**	**949**	**12417923**

Row Labels	Sum of agent
Corporate	243000
Direct	880767
GDS	36919
TA/TO	7773044
Undefined	23
Grand Total	**8933753**

Row Labels	Sum of adr
Canceled	4525613.87
Check-Out	7515674.93
No-Show	116328.8
Grand Total	**12157617.6**

Row Labels	Sum of agent
Contract	233742
Group	52130
Transient	6761737
Transient-Party	1886144
Grand Total	**8933753**

Row Labels	Sum of total_of_special_requests	Sum of required_car_parking_spaces
Canceled	13899	0
Check-Out	53673	7464
No-Show	643	0
Grand Total	**68215**	**7464**

Sum of is_canc	Column Labels		
Row Labels	City Hotel	Resort Hotel	Grand Total
Canceled	32186	10831	43017
Check-Out	0	0	0
No-Show	916	291	1207
Grand Total	**33102**	**11122**	**44224**

Row Labels	Sum of booking_changes
Contract	**488**
2015	226
2016	164
2017	98
Group	**170**
2015	51
2016	48
2017	71
Transient	**16835**
2015	1975
2016	8065
2017	6795
Transient-Party	**8907**
2015	1656
2016	4473
2017	2778
Grand Total	**26400**

HOTEL BOOKING ANALYSIS

Average daily rate

12157617.6

BASIC QUANTITATIVE VALUES

12417923

customer_type: Contract, Group, Transient, Transient-Party

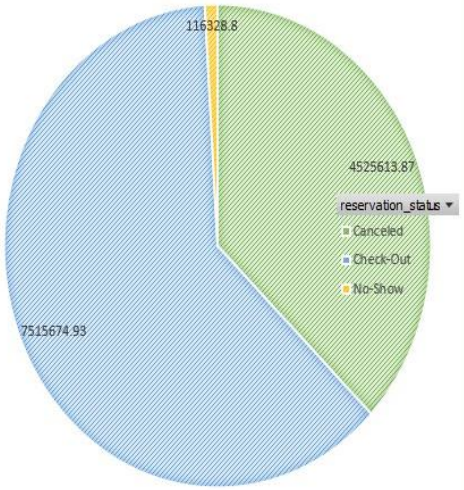
reserved_room_type: A, B, C, D, E, F, G, H, L, P

babies: 0

adults: 0

children: 0

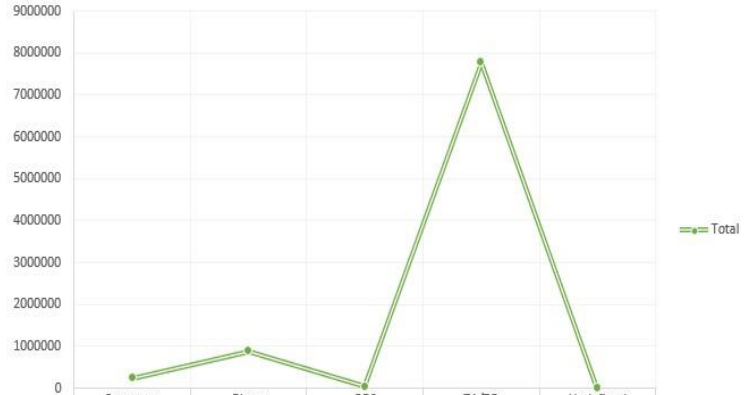
RESERVATION STATUS VS ADR



meal: BB, FB, HB, SC, Undefined

distribution_cha...: Corporate, Direct, GDS, TA/TO, Undefined

SUM OF AGENT BY DISTRIBUTION CHANNEL



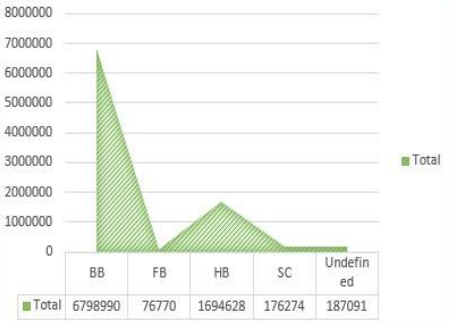
	Corporate	Direct	GDS	TA/TO	Undefined
Total	243000	880767	36919	7773044	23

reservation_status: Canceled, Check-Out, No-Show

deposit_type: No Deposit, Non Refund, Refundable

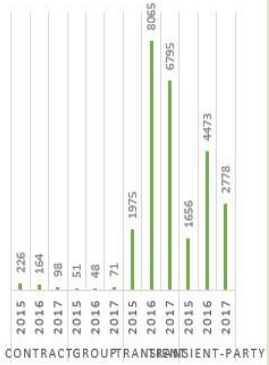
hotel: City Hotel, Resort Hotel

MEAL PLAN ACCORDING AGENT

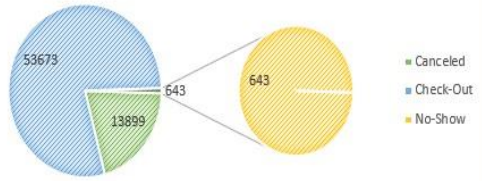


	BB	FB	HB	SC	Undefined
Total	6798990	76770	1694628	176274	187091

BOOKING CANGES



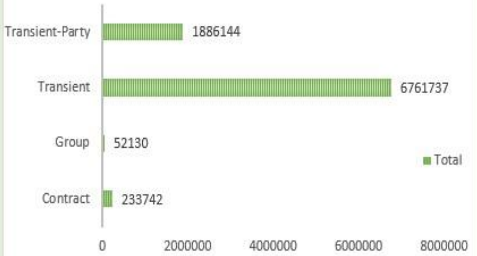
SUM OF TOTAL_OF_SPECIAL_REQUESTS



HOTEL CANCELATION RESERVATION STATUS

	Canceled	Check-Out	No-Show
City Hotel	32186	0	916
Resort Hotel	10831	0	291

COUSTOMER TYPE AGENT



	Contract	Group	Transient	Transient-Party
Total	233742	52130	6761737	1886144

SQL ANALYSIS

1. Distribution of Arrival Dates:

```sql
SELECT arrival_date_year, COUNT(*) as bookings_count
FROM Booking_Details
GROUP BY arrival_date_year
ORDER BY bookings_count DESC;
```

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

arrival_date_year	bookings_count
2016	56707
2017	40687
2015	21996

2. Peak Booking Months and Analysis:

```sql
SELECT YEAR(reservation_status_date) AS reservation_year,
       MONTH(reservation_status_date) AS reservation_month,
       COUNT(*) AS bookings_count
FROM Reservation_Status
WHERE reservation_status = 'Check-Out'
GROUP BY reservation_year, reservation_month
ORDER BY bookings_count DESC;
```

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

reservation_year	reservation_month	bookings_count
2016	10	3694
2016	5	3593
2017	5	3573
2016	9	3348
2016	4	3347
2017	7	3336
2015	10	3304
2016	8	3240
2017	3	3216
2017	6	3198
2016	3	3194
2017	4	3182
2016	6	3168
2017	8	3097
2016	7	3080
2016	11	3052
2015	9	2986
2017	2	2705
2017	1	2635
2016	2	2435
2016	12	2233
2015	8	2224
2015	11	1987
2016	1	1985
2015	12	1640
2015	7	1321
2017	9	393

SQL ANALYSIS

3. Average Length of Stays for Different Hotel Types and Meal Plans:

```sql
SELECT
    b.hotel,
    m.meal,
    AVG(b.stays_in_week_nights + b.stays_in_weekend_nights) AS avg_length_of_stay
FROM
    Meal_And_Stay_Details m
JOIN
    Booking_Details b ON m.Booking_id = b.Booking_id
GROUP BY
    b.hotel, m.meal;
```

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

hotel	meal	avg_length_of_stay
Resort Hotel	BB	3.9833
Resort Hotel	FB	4.0703
Resort Hotel	HB	5.5730
Resort Hotel	SC	6.7907
Resort Hotel	Undefined	4.2678
City Hotel	HB	2.7832
City Hotel	BB	3.0116
City Hotel	SC	2.9003
City Hotel	FB	2.7273

. Booking Patterns Evolution Over Years

```sql
SELECT
    YEAR(arrival_date_year) AS reservation_year,
    COUNT(*) AS total_bookings,
    SUM(is_canceled) AS total_cancellations
FROM
    booking_details
GROUP BY
    reservation_year;
```

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

reservation_year	total_bookings	total_cancellations
NULL	119390	44224

SQL ANALYSIS

5. Distribution of Adults, Children, And Babies:

```
2  SELECT AVG(adults), AVG(children), AVG(babies)
3  FROM Guest_Info;
4
5
6
7
```

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

AVG(adults)	AVG(children)	AVG(babies)
1.8564	0.10388990333874994	0.0079

6. Summary Statistics for ADR by Hotel Type:

```
3      m.meal,
4      AVG(adr) AS avg_adr
5  FROM
6      Meal_And_Stay_Details m
7  JOIN
8      Booking_Details b ON m.Booking_id = b.Booking_id
9  GROUP BY
10     b.hotel, m.meal;
11
12
13
```

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

hotel	meal	avg_adr
Resort Hotel	BB	88.0700219963341
Resort Hotel	FB	110.94535809018561
Resort Hotel	HB	120.50782873477517
Resort Hotel	SC	6.127790697674416
Resort Hotel	Undefined	91.94830624465357
City Hotel	HB	120.05528128408956
City Hotel	BB	104.86675210656918
City Hotel	SC	99.04619556985854
City Hotel	FB	76.39772727272727

SQL ANALYSIS

7. Distribution of Required Car Parking Spaces by Hotel Type:

```sql
SELECT
    b.hotel, AVG(required_car_parking_spaces
) as avg_parking_spaces
FROM
    Meal_And_Stay_Details m
JOIN
    Booking_Details b ON m.Booking_id = b.Booking_id
GROUP BY
    b.hotel, m.meal;
```

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

hotel	avg_parking_spaces
Resort Hotel	0.1515
Resort Hotel	0.0703
Resort Hotel	0.1092
Resort Hotel	0.1163
Resort Hotel	0.0376
City Hotel	0.0170
City Hotel	0.0255
City Hotel	0.0219
City Hotel	0.0455

8. Total Special Requests by Customer Types:

```sql
SELECT
    b.customer_type,
    SUM(m.total_of_special_requests) AS total_requests
FROM
    Meal_And_Stay_Details m
JOIN
    Booking_Source_and_History b ON m.Booking_id = b.Booking_id
GROUP BY
    b.customer_type;
```

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

customer_type	total_requests
Transient	56598
Contract	2971
Transient-Party	8274
Group	372

SQL ANALYSIS

9. Distribution of Meal Plans:

```
1  SELECT meal, COUNT(*) as plan_count
2  FROM Meal_And_Stay_Details
3  GROUP BY meal;
4
5
6
7
```

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

meal	plan_count
BB	92310
FB	798
HB	14463
SC	10650
Undefined	1169

10. ADR by Meal Plan Type:

```
1  SELECT meal, AVG(ADR) as avg_adr
2  FROM Meal_And_Stay_Details
3  GROUP BY meal;
4
5
6
7
```

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

meal	avg_adr
BB	99.40704149062469
FB	109.0404761904761
HB	120.30704072460644
SC	98.29586854459978
Undefined	91.9483062446536

SQL ANALYSIS

11.Distribution of Parking Spaces and Special Requests by Hotel type Meal plan.

```sql
SELECT
    hotel,
    meal,
    AVG(required_car_parking_spaces) AS avg_parking_spaces,
    AVG(total_of_special_requests) AS avg_special_requests
FROM
    Meal_And_Stay_Details m
JOIN
    Booking_Details b ON m.Booking_id = b.Booking_id
JOIN
    Booking_Source_and_History bs ON m.Booking_id = bs.Booking_id
GROUP BY
    hotel, meal;
```

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

hotel	meal	avg_parking_spaces	avg_special_requests
Resort Hotel	BB	0.1515	0.6497
Resort Hotel	FB	0.0703	0.2308
Resort Hotel	HB	0.1092	0.6110
Resort Hotel	SC	0.1163	0.4419
Resort Hotel	Undefined	0.0376	0.1762
City Hotel	BB	0.0255	0.5246
City Hotel	HB	0.0170	0.4326
City Hotel	SC	0.0219	0.7491
City Hotel	FB	0.0455	0.2727

12. Comparison of Meal Plans Among different customer type,

```sql
SELECT
    customer_type,
    meal,
    COUNT(*) AS plan_count
FROM
    Meal_And_Stay_Details m
JOIN
    Booking_Source_and_History bs ON m.Booking_id = bs.Booking_id
GROUP BY
    customer_type, meal;
```

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

customer_type	meal	plan_count
Transient	BB	70692
Transient	FB	547
Transient	HB	8020
Contract	BB	3260
Contract	HB	613
Transient-Party	BB	17859
Transient-Party	FB	245
Transient-Party	HB	5794
Group	BB	499
Transient	SC	9968
Group	HB	36
Transient-Party	SC	460
Transient-Party	Und...	766
Transient	Und...	386
Contract	SC	183
Group	SC	39
Group	Und...	2
Contract	Und...	15
Contract	FB	5
Group	FB	1

SQL ANALYSIS

13. Distribution of Bookings Across Market Segments:

```sql
SELECT
    m.market_segment,
    COUNT(*) AS bookings_count,
    AVG(b.lead_time) AS avg_lead_time
FROM
    Booking_Source_and_History bs
JOIN
    market_segment m ON bs.market_segment_id = m.market_segment_id
JOIN
    booking_details b ON b.Booking_id = bs.Booking_id
GROUP BY
    m.market_segment;
```

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

market_segment	bookings_count	avg_lead_time
Direct	12606	49.8591
Corporate	5295	22.1256
Online TA	56477	82.9987
Offline TA/TO	24219	135.0045
Complementary	743	13.2867
Groups	19811	186.9731
Aviation	237	4.4430
Undefined	2	1.5000

14. Distribution of Bookings Through Different Channels:

```sql
SELECT
    distribution_channel,
    COUNT(*) AS bookings_count,
    AVG(B.lead_time) AS avg_lead_time
FROM
    Booking_Source_and_History bs
JOIN
   distribution_channel m ON bs.distribution_channel_id= m.distribution_channel_id
JOIN
    booking_details b ON b.Booking_id = bs.Booking_id
GROUP BY
  distribution_channel
```

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

distribution_channel	bookings_count	avg_lead_time
Direct	14645	57.8294
Corporate	6677	44.9103
TA/TO	97870	115.1224
GDS	193	20.7150
Undefined	5	23.0000

SQL ANALYSIS

15. Proportion of Repeated Guests and Their Booking Behavior:

```sql
SELECT
    is_repeated_guest,
    COUNT(*) AS guest_count,
    AVG(lead_time) AS avg_lead_time
FROM
    Booking_Source_and_History bs
JOIN
    booking_details b ON b.Booking_id = bs.Booking_id
GROUP BY
is_repeated_guest
```

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

is_repeated_guest	guest_count	avg_lead_time
0	115580	106.4252
1	3810	30.7864

16.Impact of Guest's Booking History on Cancellation Likelihood:

```sql
SELECT
   is_repeated_guest,
    AVG(is_canceled) AS cancellation_rate
FROM
    Booking_Source_and_History bs
JOIN
    booking_details b ON b.Booking_id = bs.Booking_id
GROUP BY
is_repeated_guest
```

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

is_repeated_guest	cancellation_rate
0	0.3779
1	0.1449

SQL ANALYSIS

17.Distribution of Reserved and Assigned Room Types:

```sql
SELECT
    reserved_room_type,
    assigned_room_type,
    COUNT(*) AS room_count
FROM
    Room_Details
GROUP BY
    reserved_room_type, assigned_room_type;
```

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

reserved_room_type	assigned_room_type	room_count
E	A	15
F	I	10
P	P	12
F	D	4
F	H	3
F	A	6
C	A	5
L	L	1
C	E	4
L	A	1
B	B	988
L	B	1
C	D	6
D	H	9
H	D	1
H	I	6
C	B	2
E	C	8
G	E	4
B	D	5
A	K	210
B	E	2
F	B	17
E	K	16
B	G	8
B	A	111
B	K	2
G	A	5
D	K	44
D	B	27
E	B	3
B	F	2
G	B	2
F	K	3
G	K	4

18.Impact of Booking Changes on cancellation rate

```sql
SELECT
    booking_changes,
    AVG(is_canceled) AS cancellation_rate
FROM
    Room_Details r
    join
    booking_details b on r.Booking_id=b.Booking_id
GROUP BY
   booking_changes;
```

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

booking_changes	cancellation_rate
3	0.1553
4	0.1782
0	0.4085
1	0.1423
2	0.2013
5	0.1695
17	0.0000
6	0.2857
7	0.0968
13	0.0000
16	0.5000
8	0.2353
10	0.1667
12	0.0000
9	0.1250
20	0.0000
11	0.0000
15	0.0000
14	0.2000
21	0.0000
18	0.0000

SQL ANALYSIS

19.Variation of Room Type Preferences Across Customer Types:

```sql
SELECT
    customer_type,
    reserved_room_type,
    COUNT(*) AS room_count
FROM
    Room_Details r
JOIN
    Booking_Source_and_History bs ON r.Booking_id = bs.Booking_id
GROUP BY
    customer_type, reserved_room_type;
```

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

customer_type	reserved_room_type	room_count
Transient	C	828
Transient	A	60948
Transient	D	16420
Transient	E	5569
Transient	G	1957
Contract	E	177
Transient	F	2663
Contract	D	843
Transient-Party	E	756
Contract	A	2867
Transient-Party	D	1795
Transient	H	574
Transient-Party	A	21814
Transient-Party	F	122
Transient	L	6
Group	A	365
Contract	C	10
Transient-Party	G	124
Transient-Party	C	89
Transient-Party	H	24
Group	H	2
Group	D	143
Group	E	33
Contract	F	102
Transient	B	637
Group	G	12
Transient-Party	B	400
Contract	B	75
Group	F	10
Transient	P	11
Contract	H	1
Group	P	1
Group	C	5
Group	B	6
Contract	G	1

20.Consistency of Room Type Preferences for Guests Making Multiple Bookings:

```sql
SELECT
    Booking_id,
    COUNT(DISTINCT reserved_room_type) AS unique_room_types
FROM
    Room_Details
GROUP BY
    Booking_id;
```

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

Booking_id	unique_room_types
00002a76	1
00004d67	1
0001033b	1
0001201b	1
0002d2b5	1
00048e04	1
00054994	1
00067773	1
000885cf	1
000b3baa	1
000bb70a	1
000be780	1
000ce55f	1
000d630b	1
000d755d	1
000dcf96	1
000e1220	1
000e2eac	1
000ffb1f	1
001004cd	1
001014aa	1
00108d5c	1
0011902b	1
0011c7fc	1
0013af0e	1
00148a4e	1
00151651	1
001523e7	1
0015b47c	1
0015d877	1
0015f8ab	1
00160845	1
00176197	1
0017a94d	1
0017b3b9	1

SQL ANALYSIS

21.Distribution of Reservation Statuses:

```sql
SELECT
    reservation_status, COUNT(*) AS status_count
FROM
    Reservation_Status
GROUP BY reservation_status;
```

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

reservation_status	status_count
Check-Out	75166
Canceled	43017
No-Show	1207

22. Analysis of Trends in Reservation Status Dates:

```sql
SELECT
    YEAR(reservation_status_date) AS status_year,
    MONTH(reservation_status_date) AS status_month,
    COUNT(*) AS status_count
FROM
    Reservation_Status
GROUP BY
    status_year, status_month
ORDER BY
    status_year, status_month;
```

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

status_year	status_month	status_count
2014	10	180
2014	11	1
2015	1	948
2015	2	44
2015	3	85
2015	4	151
2015	5	275
2015	6	666
2015	7	3615
2015	8	3247
2015	9	4017
2015	10	5742
2015	11	3077
2015	12	3062
2016	1	4482
2016	2	4596
2016	3	5319
2016	4	5214
2016	5	5023
2016	6	4552
2016	7	4453
2016	8	4585
2016	9	4993
2016	10	5221
2016	11	5021
2016	12	4338
2017	1	5251
2017	2	4858
2017	3	4826
2017	4	4634
2017	5	5006
2017	6	4060
2017	7	4038
2017	8	3417
2017	9	393

SQL ANALYSIS

23.Variation of Reservation Statuses Across Customer Type

```sql
SELECT
    b.customer_type,
    r.reservation_status,
    COUNT(*) AS status_count
FROM
    Reservation_Status r
JOIN
    Booking_Source_and_History b ON r.Booking_id = b.Booking_id
GROUP BY
    b.customer_type, r.reservation_status;
```

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

customer_type	reservation_status	status_count
Transient	Check-Out	53099
Transient	Canceled	35557
Contract	Check-Out	2814
Transient-Party	Check-Out	18735
Contract	Canceled	1236
Transient	No-Show	957
Contract	No-Show	26
Transient-Party	Canceled	6169
Group	Check-Out	518
Transient-Party	No-Show	220
Group	Canceled	55
Group	No-Show	4

24.Differences in ADR Based on Reservation Status:

```sql
SELECT
    r.reservation_status,
    AVG(m.adr) AS avg_adr
FROM
    Reservation_Status r
JOIN
    Meal_And_Stay_Details m ON r.Booking_id = m.Booking_id
GROUP BY
    r.reservation_status;
```

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

reservation_status	avg_adr
Check-Out	99.98769297288553
Canceled	105.2052414161817
No-Show	96.37845898922951

THANKYOU