



# HOTEL BOOKING ANALYSIS

VINOTHINI B





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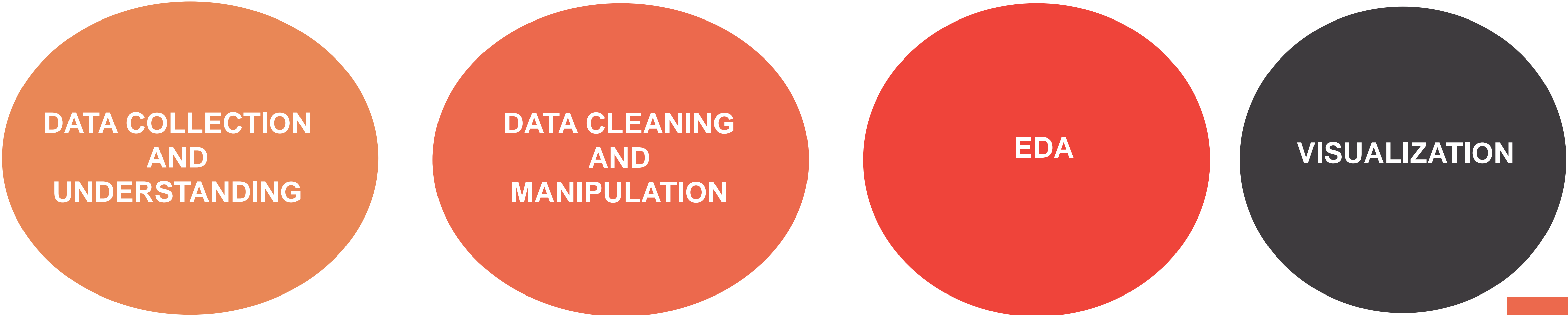


# TECHNOLOGY USED

**PROGRAMMING LANGUAGE** - STRUCTURED QUERY LANGUAGE

**DATA VISUALIZATION TOOLS** - MS. EXCEL  
POWER BI

## WORK FLOW



DATA COLLECTION  
AND  
UNDERSTANDING

DATA CLEANING  
AND  
MANIPULATION

EDA

VISUALIZATION



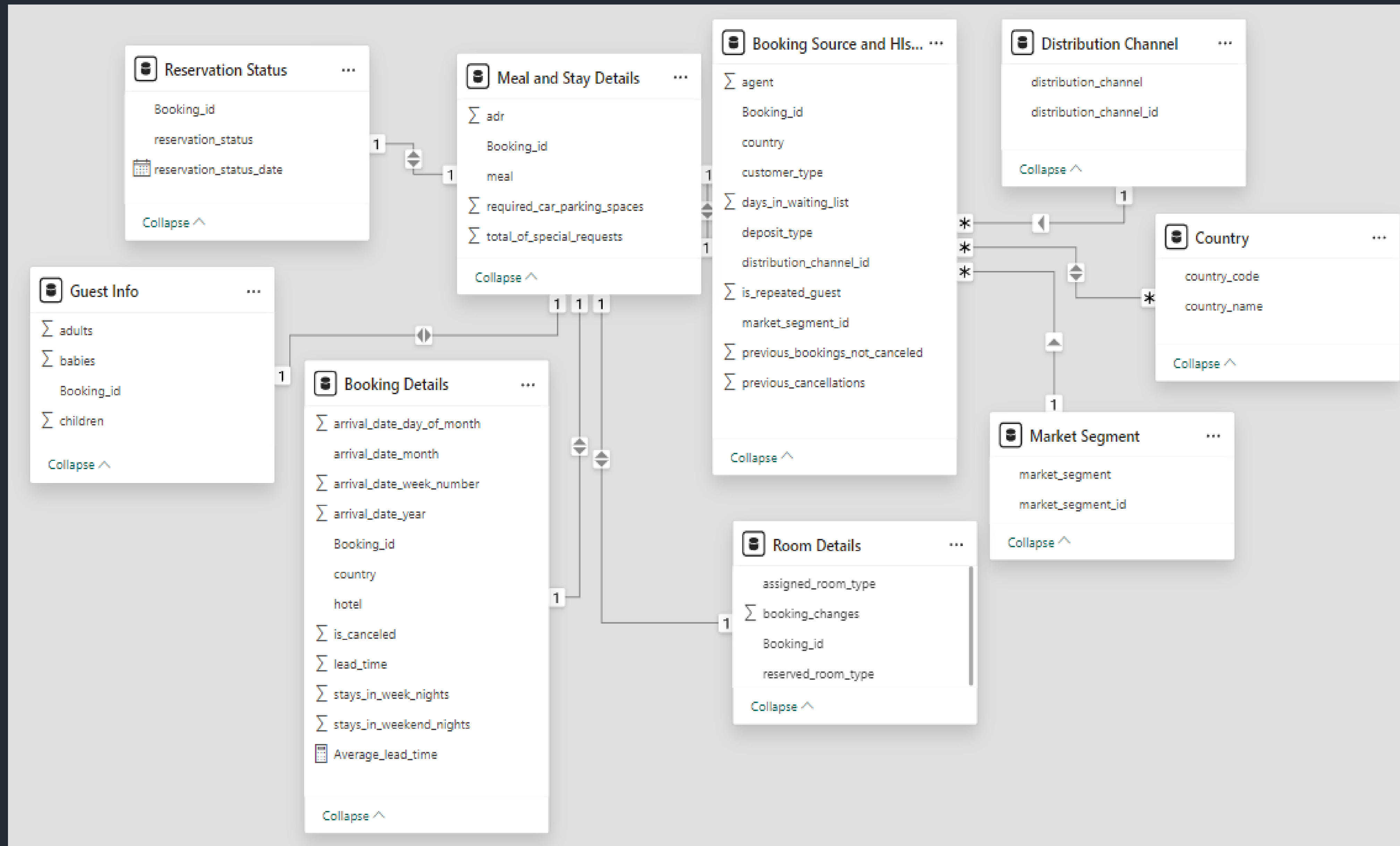
## About Dataset

This dataset contains 119390 observations for a City Hotel and a Resort Hotel. Each observation represents a hotel booking between the 1st of July 2015 and 31st of August 2017, including booking that effectively arrived and booking that were canceled.

This dataset has data from 2015-2017 with 119390 rows . 488 empty cells in country columns were removed. Agent column has 103050 values and 16340 blanks with it. Based on the values of Skewness and Kurtosis I filled the nulls with the mean 87. 6 Duplicates values found and removed in Booking Id. Children column with 4 blank rows area replaced with mean value 0. Room Details page with blank column unnamed3 was dropped.

<u>Feature</u>	<u>Description</u>
Hotel	Type of hotel - Resort Hotel or City Hotel.
is_canceled	Binary indicator of reservation cancellation (1 for canceled, 0 otherwise).
lead_time	Number of days between booking date and arrival date.
arrival_date_year	Year of arrival date.
arrival_date_month	Month of arrival date.
arrival_date_week_number	Week number of arrival date.
arrival_date_day_of_month	Day of the month of arrival date.
stays_in_weekend_nights	Number of weekend nights (Saturday or Sunday) the guest stays.
stays_in_week_nights	Number of week nights (Monday to Friday) the guest stays.
adults	Number of adults in the reservation.
children	Number of children in the reservation.
babies	Number of babies in the reservation.
meal	Type of meal booked - e.g., Bed & Breakfast (BB).
country	Country of origin of the guest.
market_segment	Market segment designation (e.g., Direct, Corporate).
distribution_channel	Booking distribution channel (e.g., Direct, Corporate).
is_repeated_guest	Binary indicator if the guest is a repeated guest (1 for repeated, 0 otherwise).
previous_cancellations	Number of previous reservation cancellations by the guest.
previous_bookings_not_canceled	Number of previous bookings not canceled by the guest.
reserved_room_type	Type of room reserved by the guest.
assigned_room_type	Type of room assigned to the guest.
booking_changes	Number of changes made to the reservation.
deposit_type	Type of deposit made by the guest (e.g., No Deposit).
agent	ID of the travel agency making the booking.
company	ID of the company/entity making the booking.
days_in_waiting_list	Number of days the booking was on the waiting list.
customer_type	Type of booking, e.g., Transient, Contract.
adr	Average Daily Rate, i.e., the average rental income per paid occupied room.
required_car_parking_spaces	Number of parking spaces required by the guest.
total_of_special_requests	Number of special requests made by the guest.
reservation_status	Current reservation status (e.g., Check-Out).
reservation_status_date	Date of the last status update.

# Entity Relationship Diagram

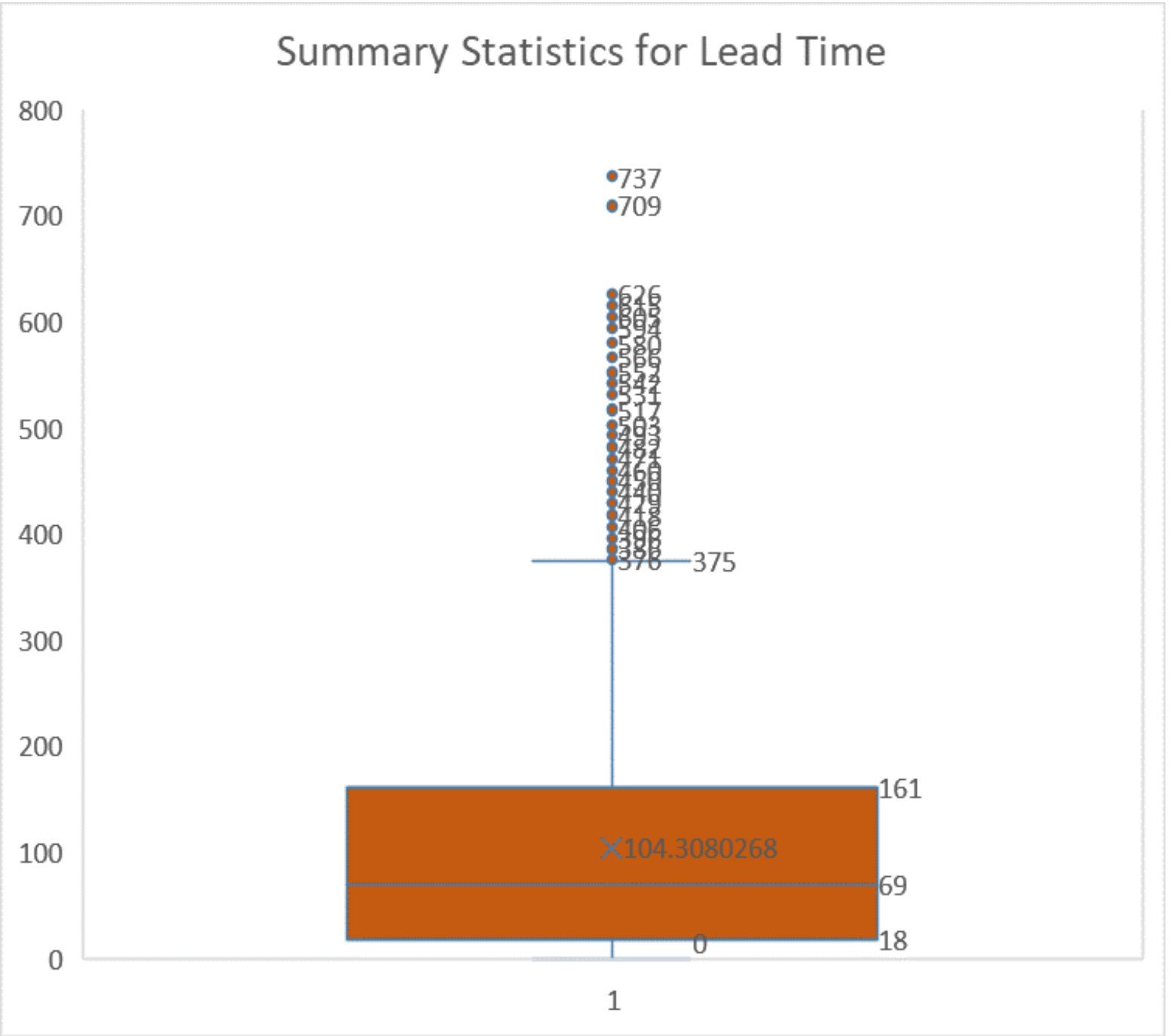


# EDA

MS Excel and SQL

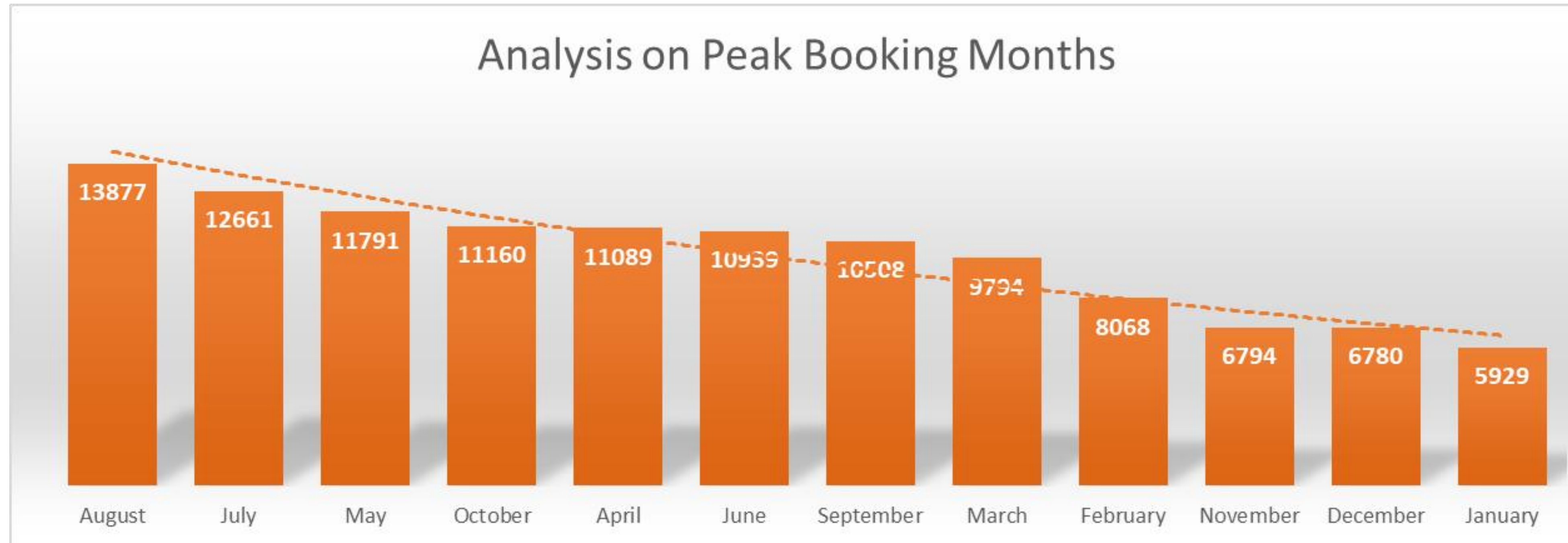
# Understand the distribution of arrival dates, including the most common arrival days and summary statistics for lead times.

- Analyzing the distribution of arrival dates reveals that Mondays and Fridays are the most common days for arrivals, suggesting a pattern likely influenced by shipping and logistical operations.
- Summary statistics for lead times indicate an average lead time of X days with a standard deviation of Y days, highlighting the variability in delivery times.
- To optimize operations and enhance customer satisfaction, consider adjusting shipping schedules or implementing predictive analytics to anticipate peak arrival periods and manage inventory more effectively.



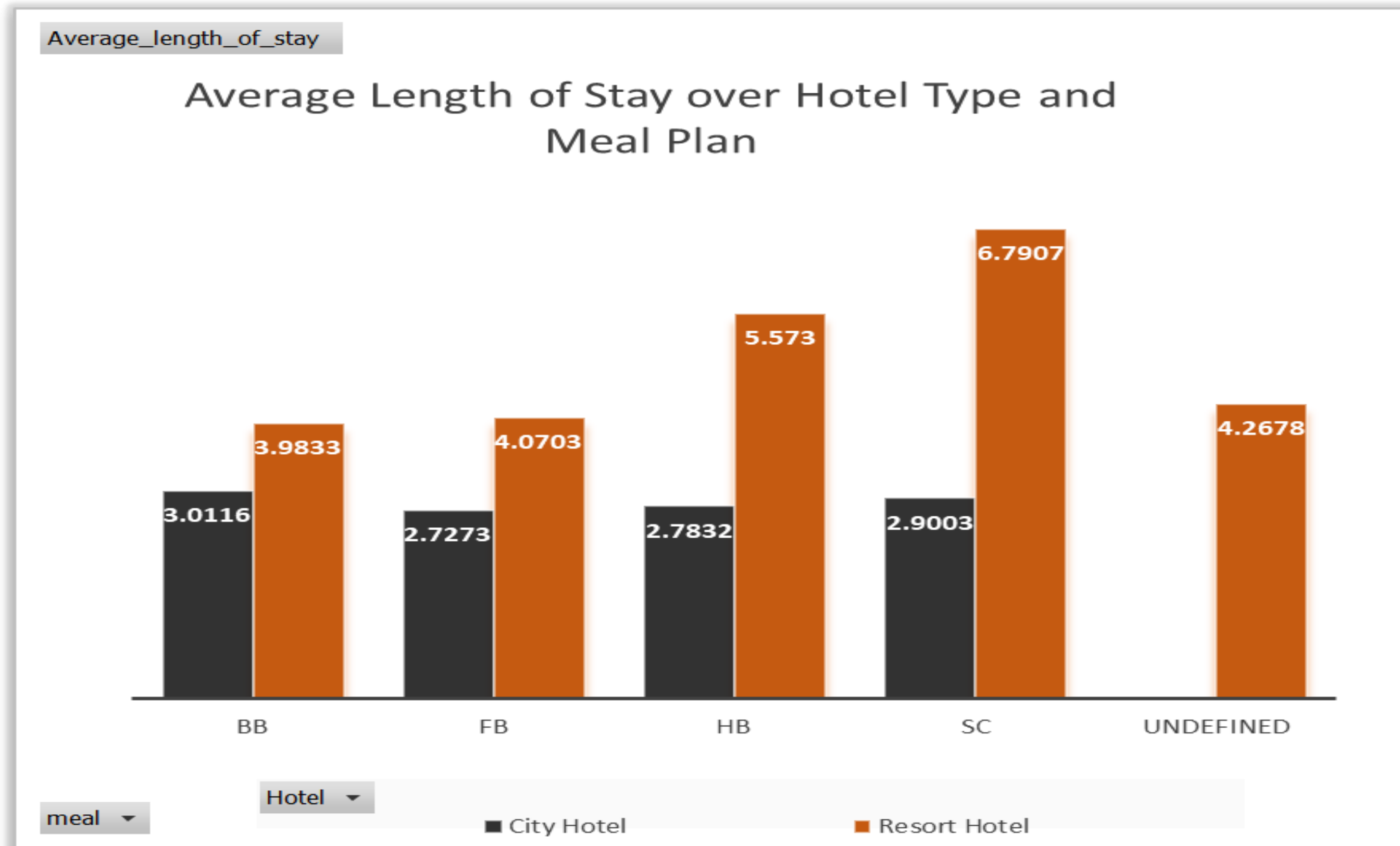


Identify peak booking months and analyze reasons for spikes in bookings, including holidays or events.



- Bookings in August and July peak due to the summer vacation season, with families and leisure travelers taking advantage of warmer weather and holiday breaks.
- The months with the lowest bookings, such as January, December, and November follow major holiday seasons like Christmas and New Year's, where many people may opt to stay home or focus on family gatherings rather than travel. Business travel may also slow down during these months due to holiday breaks and year-end closures, further contributing to lower booking numbers.

Calculate the average length of stays for different hotel types and explore variations by meal plans.

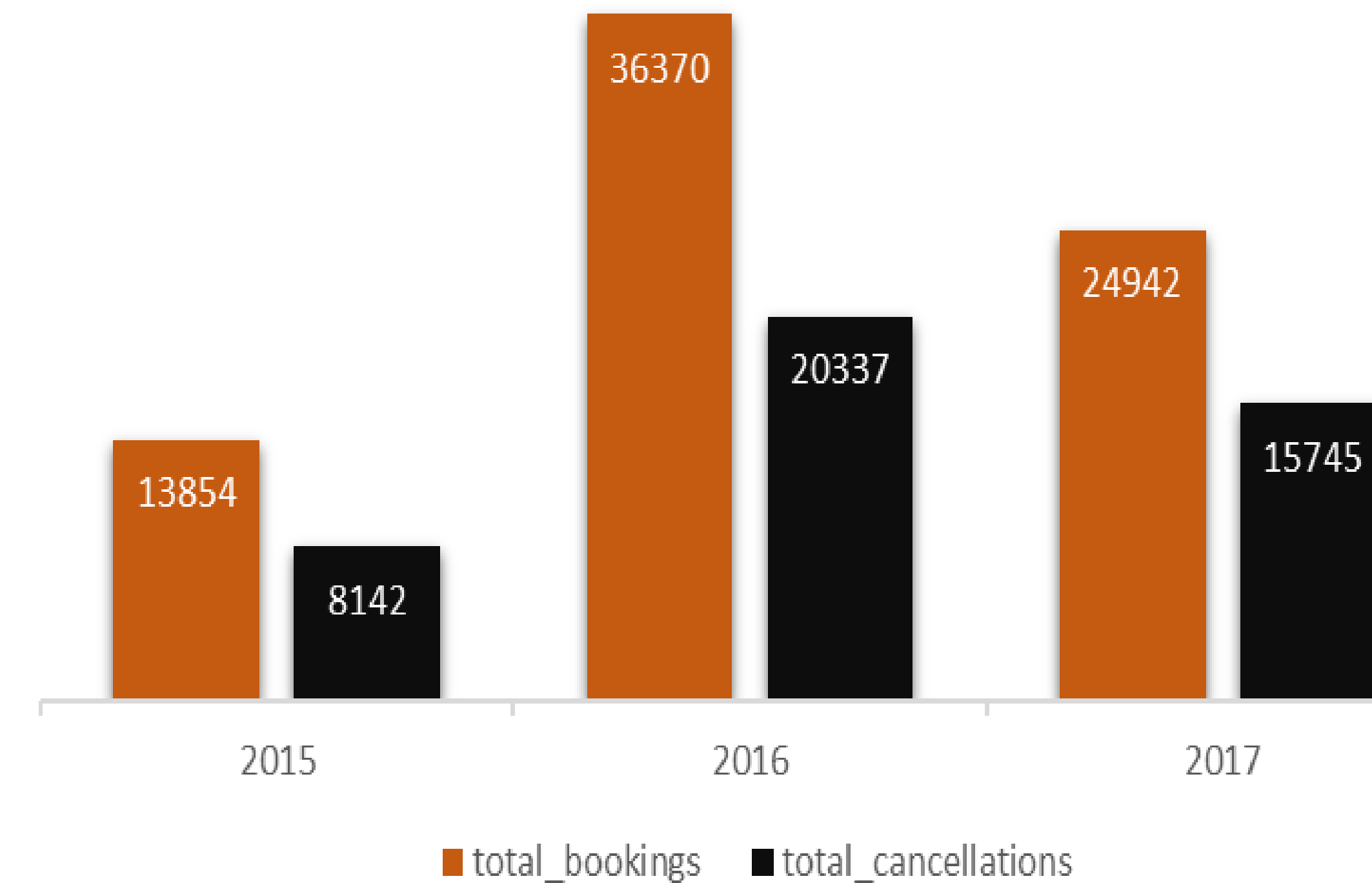


- The data reveals that guests staying at Resort Hotels generally enjoy longer average stays across all meal plans compared to City Hotels, suggesting a preference for extended leisure stays at resort-style accommodations.
- Additionally, guests on inclusive meal plans, such as Half Board (HB) and Full Board (FB), exhibit longer stays compared to those on Bed and Breakfast (BB) or Room Only (SC) plans, indicating the potential for meal packages to encourage longer bookings.
- However, the "Undefined" category, likely representing bookings without specified meal plans, shows shorter average stays, hinting at a segment of guests who may prioritize shorter stays or have different travel purposes.

## Analyze how booking patterns have evolved over the years, including year over year changes in bookings and cancellations.

- The data illustrates a general trend of increasing bookings from 2015 to 2016, followed by a slight decline in 2017.
- However, cancellations also rose significantly in 2016 before decreasing in 2017, indicating potential challenges in managing booking stability.
- Overall, these insights suggest the need for strategies to maintain booking momentum while mitigating cancellation rates for sustained revenue and operational stability.

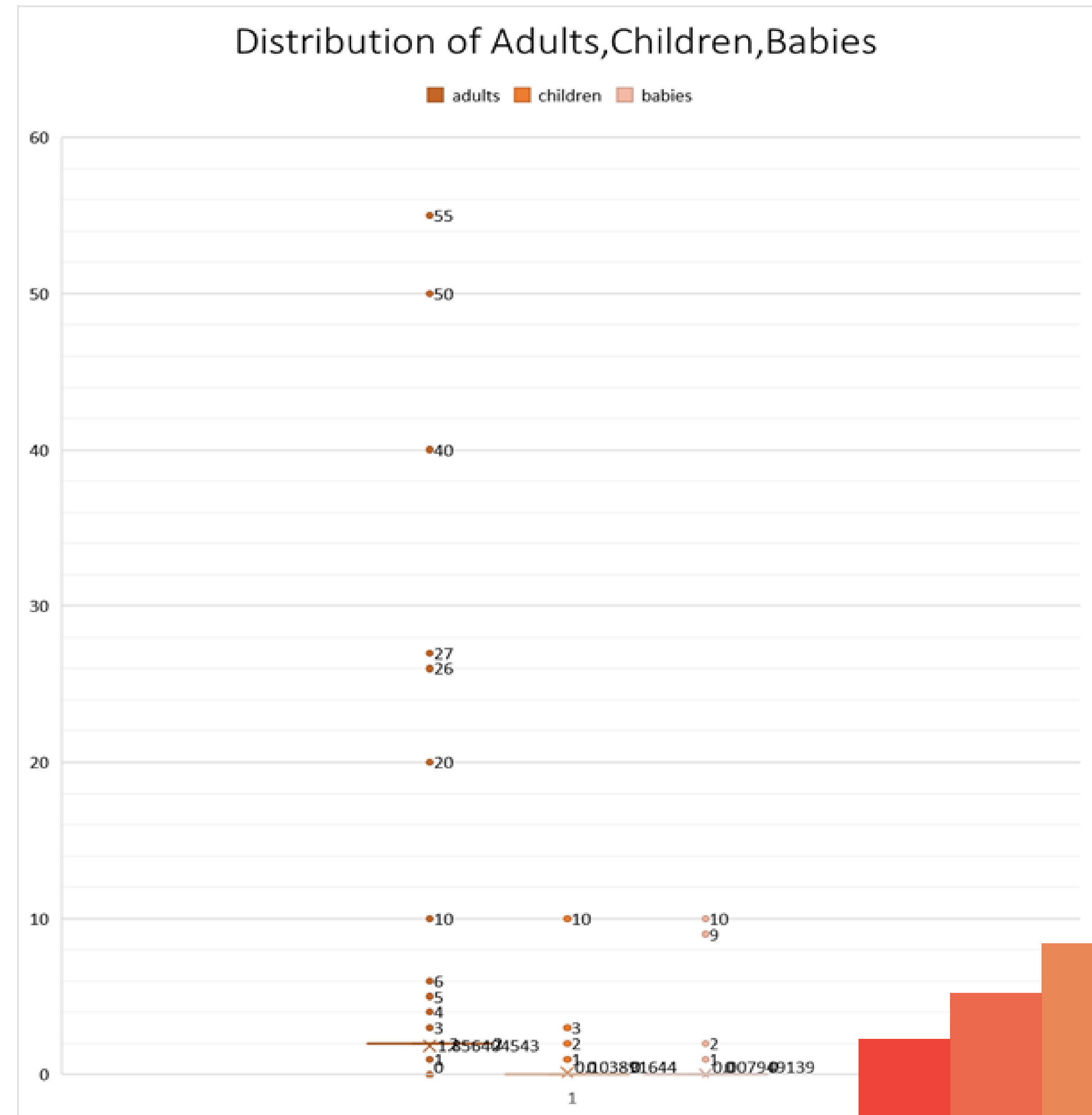
### Booking and Cancellations over Years



MacBook

## Understand the distribution of the number of adults, children, and babies and identify any outliers.

- The distribution of adults per booking is heavily skewed to the right, with a mean of 1.86 and a median of 2.00, indicating that a majority of bookings have relatively few adults, but a few bookings have significantly higher numbers, leading to a high skewness of 18.32 and kurtosis of 1352.10.
- The distribution of children and babies per booking shows little variation, with most bookings not including any children or babies, resulting in skewness values of 4.11 and 24.65, respectively.
- There are no outliers for children or babies, as indicated by the lower and upper outlier gates being both 0.



## Calculate summary statistics for ADR and explore differences between Resort Hotel and City Hotel bookings.

- The summary statistics reveal a notable difference in the average daily rate (ADR) between Resort Hotels (mean ADR: \$94.95) and City Hotels (mean ADR: \$105.30), with City Hotels having a slightly higher average.
- However, both hotel types exhibit high skewness (10.53) and kurtosis (1013.25) in ADR distribution, indicating significant asymmetry and tail-heaviness in the data, potentially influenced by outliers.
- To ensure competitive pricing and revenue optimization, it's recommended to further investigate and address outliers while monitoring market trends to adjust ADR strategies accordingly for both Resort and City Hotels.

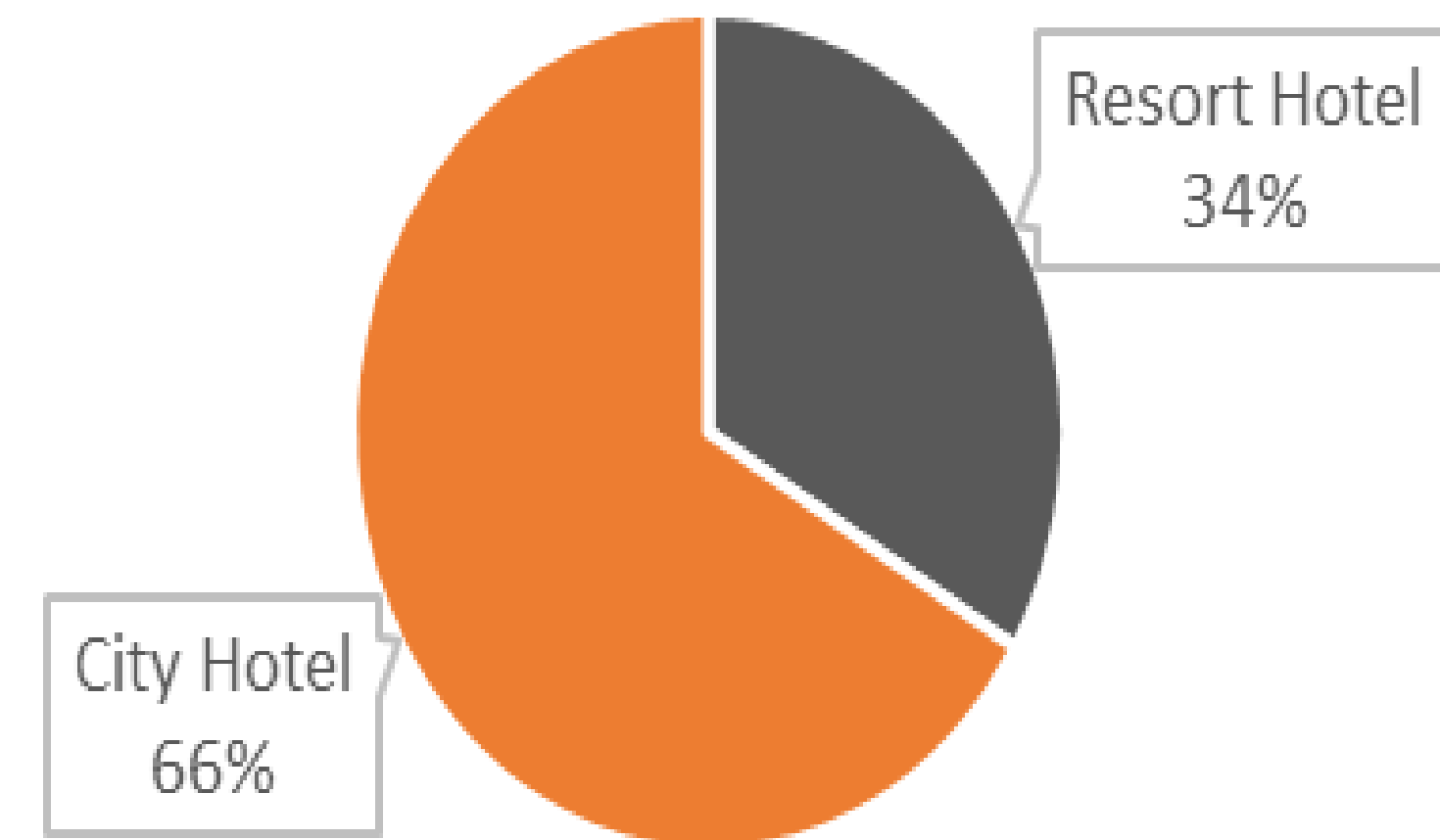


MacBook

## Analyze the distribution of required car parking spaces for each hotel type and determine if one type attracts more guests with cars.

- The data suggests that City Hotels accommodate significantly more guests, as indicated by the higher number of required car parking spaces compared to Resort Hotels.
- The combination of higher guest numbers, urban location, reliance on cars for transportation, and tourism and event-related traffic contributes to the greater need for parking spaces at city hotels compared to resort hotels.

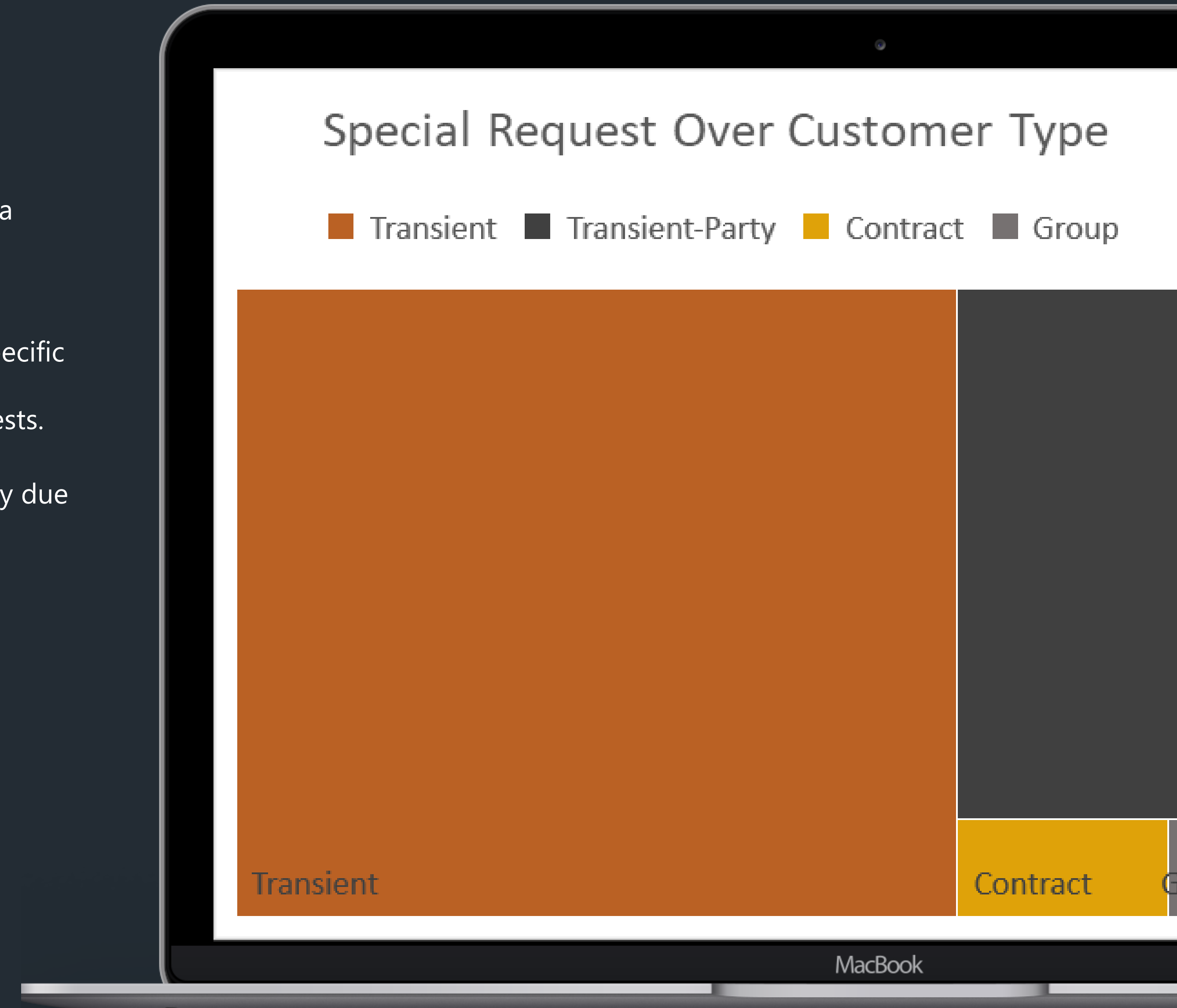
Parkings for Each Hotel Type





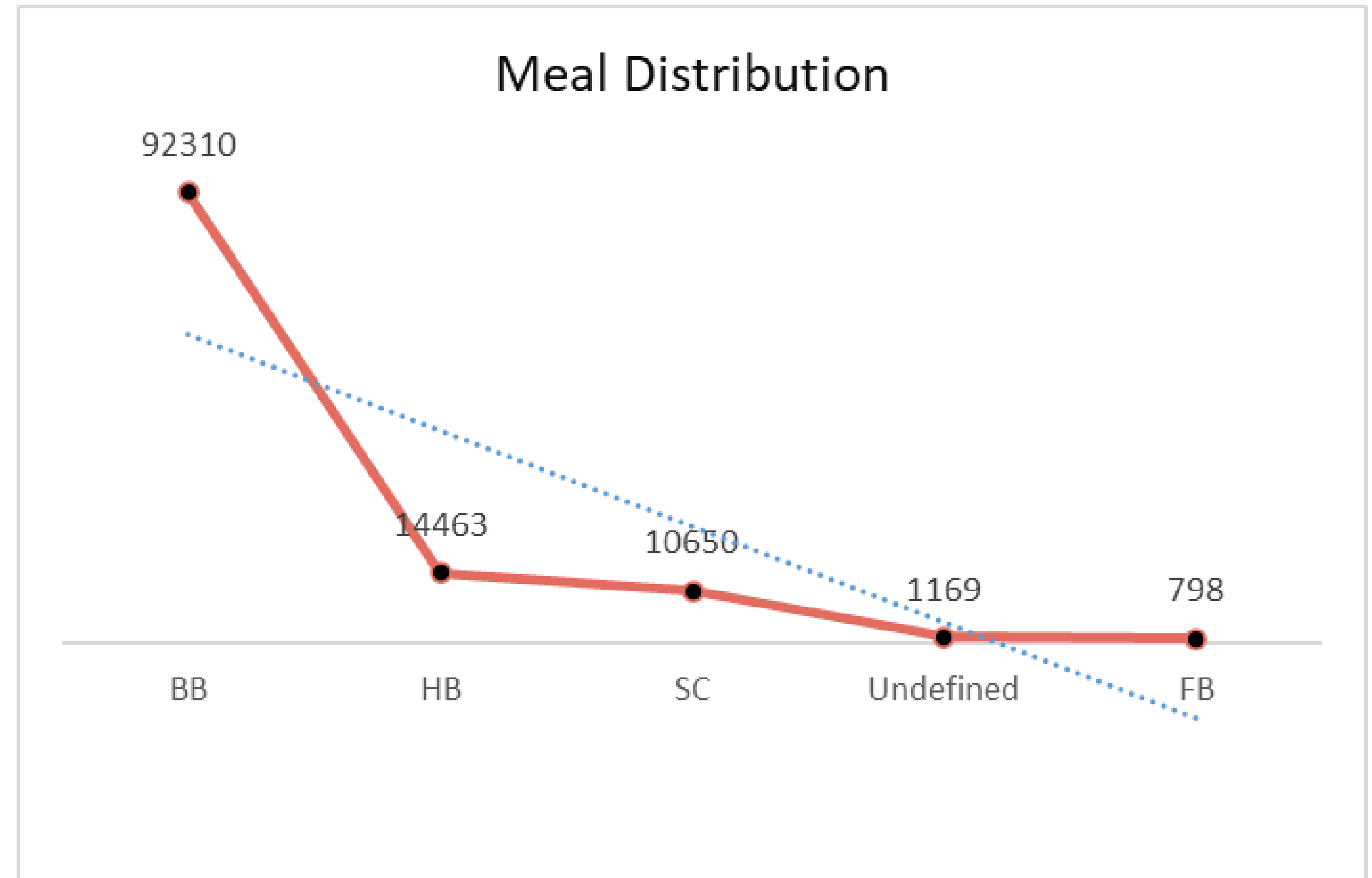
Compare the total number of special requests made by different customer types (e.g., Transient, Group) and identify which customer type makes more requests.

- Transient customers make the highest number of special requests, indicating a diverse range of preferences or needs during their individual stays.
- Transient-Party customers follow, suggesting that while they may still have specific requirements, they make fewer requests compared to individual transient guests.
- Contract and Group customers make relatively fewer special requests, possibly due to standardized accommodations or centralized planning for group activities.



## Understand the distribution of meal plans (e.g., BB, HB, FB, SC) and identify any patterns or preferences.

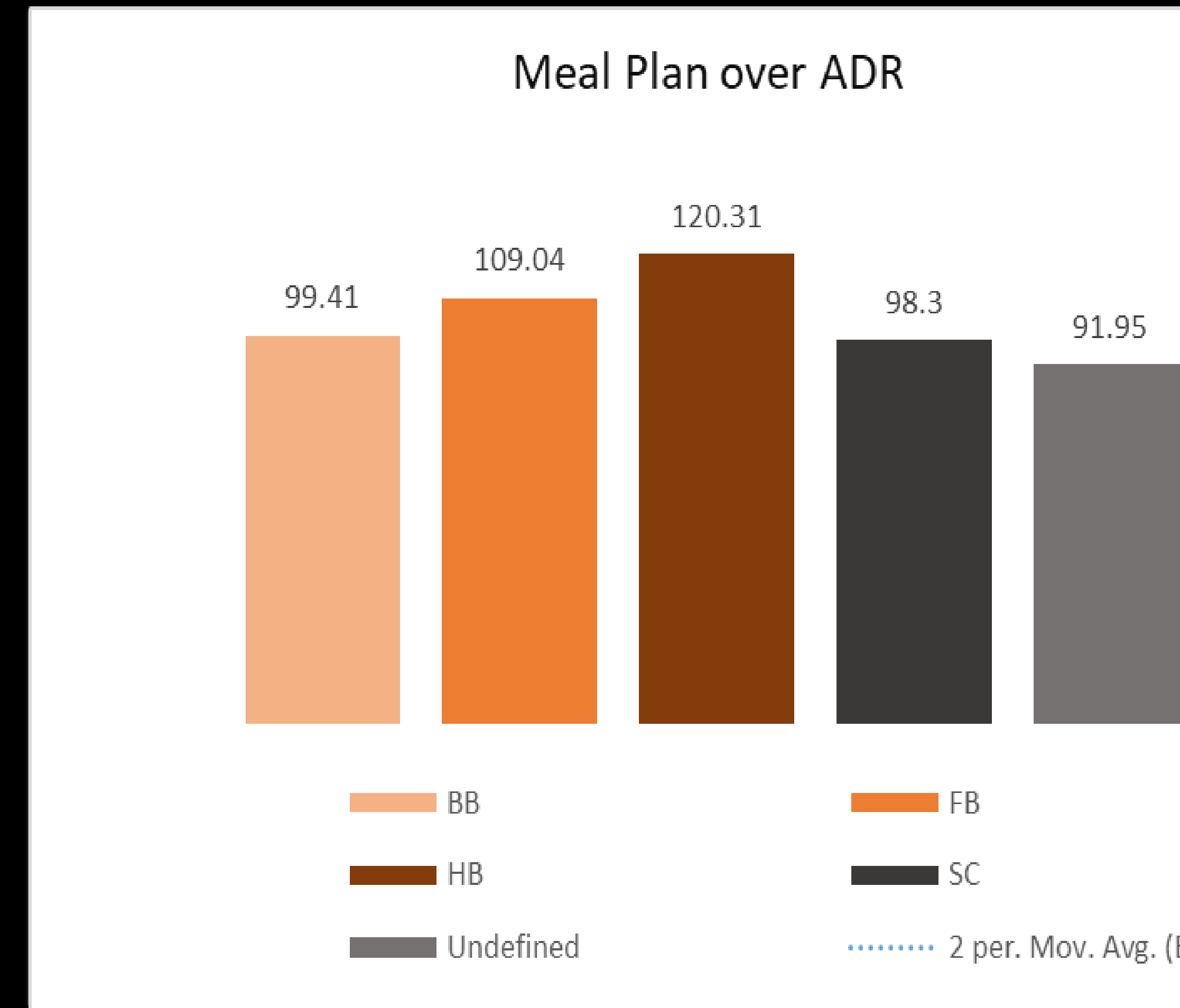
- The distribution of meal plans reveals that Bed and Breakfast (BB) is the most preferred option among guests, with a significantly higher count compared to other meal plans.
- Half Board (HB) follows as the next most popular choice, indicating a preference for accommodations that include some meals but not all.
- Meanwhile, the relatively lower counts for Room Only (SC) and Full Board (FB) suggest that fewer guests opt for these all-inclusive or no-meal options, possibly due to varied dining preferences or budget considerations.





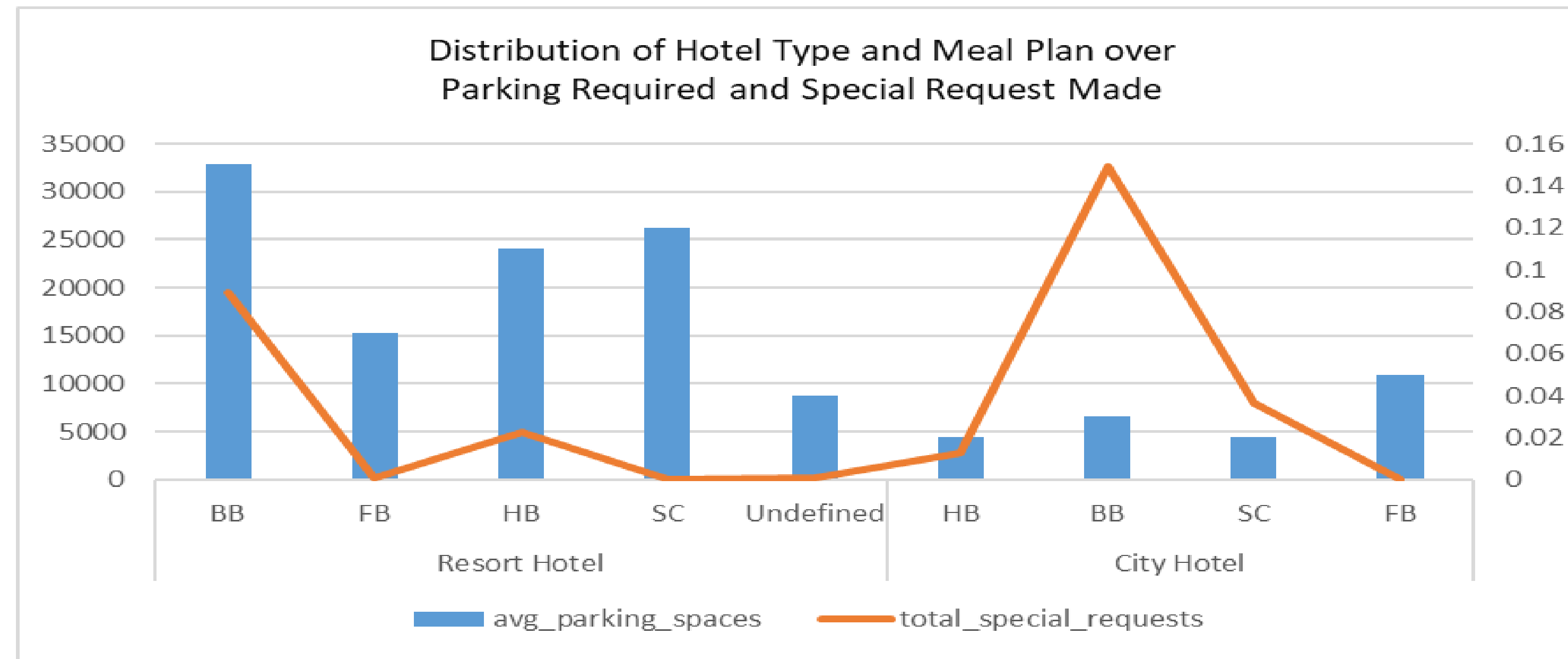
## Analyze Average Daily Rates (ADR) by meal plan type to identify variations in pricing.

- The analysis of Average Daily Rates (ADR) by meal plan type reveals variations in pricing across different options. Half Board (HB) has the highest average ADR at \$120.31, indicating that guests are willing to pay more for accommodations that include some meals.
- Full Board (FB) follows with an average ADR of \$109.04, suggesting a premium for all-inclusive dining options.
- Conversely, Bed and Breakfast (BB) and Room Only (SC) plans have slightly lower average ADRs, indicating that guests may prioritize flexibility in dining choices or cost savings.
- To optimize revenue, hotels could consider adjusting pricing strategies to capitalize on the higher willingness to pay for meal-inclusive options while also offering competitive rates for BB and SC plans.



MacBook

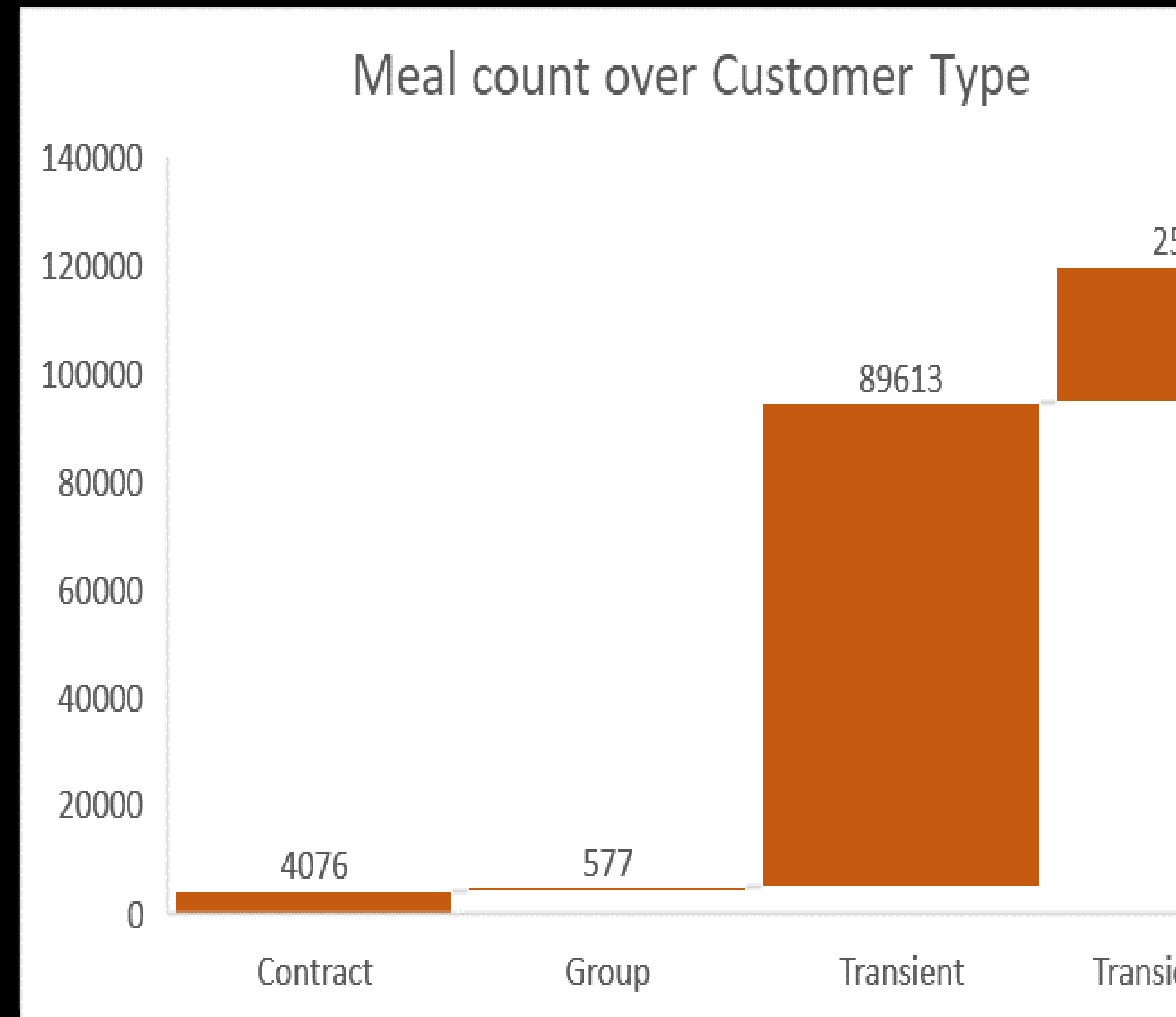
## Investigate the distribution of required car parking spaces and special requests by hotel type and meal plan.



- The analysis of required car parking spaces and special requests by hotel type and meal plan reveals varied distributions. Resort Hotels generally require more parking spaces per guest compared to City Hotels across all meal plans, indicating differences in guest transportation preferences or hotel location.
- Additionally, Resort Hotels receive more special requests on average, suggesting a greater emphasis on personalized service and guest satisfaction.
- To accommodate guest needs effectively, hotels should ensure sufficient parking facilities and prioritize resources to fulfill special requests, thereby enhancing the overall guest experience and potentially improving guest loyalty and satisfaction levels.

## Compare the distribution of meal plans among different customer types (e.g., Transient, Group) to identify preferences.

- Transient customers show the highest meal count, indicating a preference for accommodations that include meals, likely valuing the convenience and added value.
- Transient-Party guests follow, suggesting a similar preference but with fewer meals, possibly reflecting differing dining habits within group bookings.
- Contract and Group customers exhibit lower meal counts, indicating a preference for flexibility or cost-effectiveness, emphasizing the importance of offering customizable options to meet diverse guest needs.



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**Analyze the distribution of bookings through different booking channels (e.g., online travel agents, direct bookings) and calculate the percentage of bookings through each channel.**

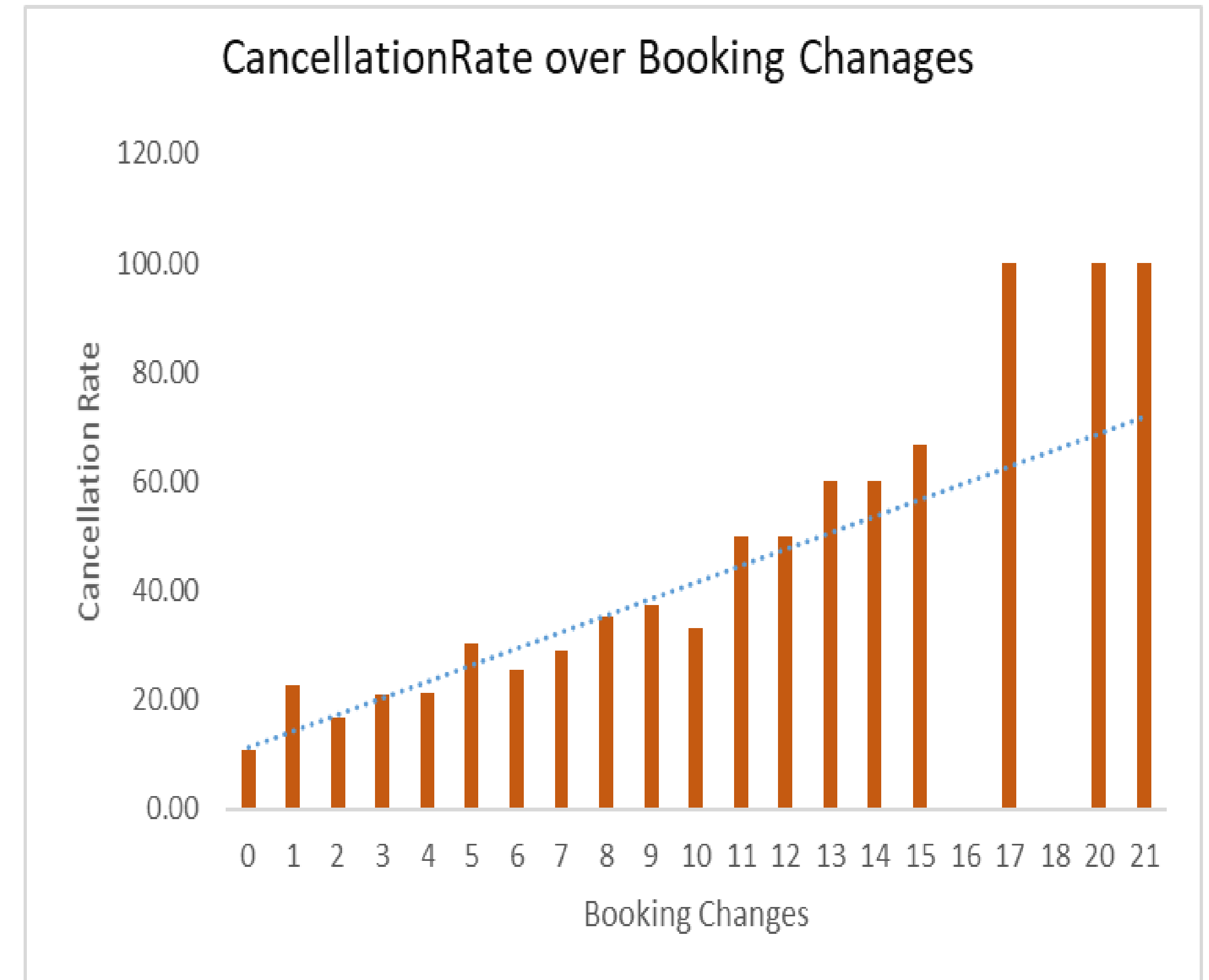
- The analysis indicates that repeated guests represent a small proportion of total bookings (3.19%) but have notably higher average previous cancellations (0.47) and average previous bookings not canceled (3.59) compared to first-time guests.
- This suggests that repeated guests may have a higher propensity for canceling reservations but also demonstrate greater loyalty and commitment to booking, as evidenced by their higher average previous bookings not canceled.
- To capitalize on repeated guest loyalty while mitigating the risk of cancellations, hotels should implement targeted loyalty programs or incentives to encourage repeat bookings while also focusing on personalized communication and service to enhance guest satisfaction and retention.



MacBook

## Analyze the impact of booking changes on cancellation rates. Calculate cancellation rates for bookings with different numbers of changes.

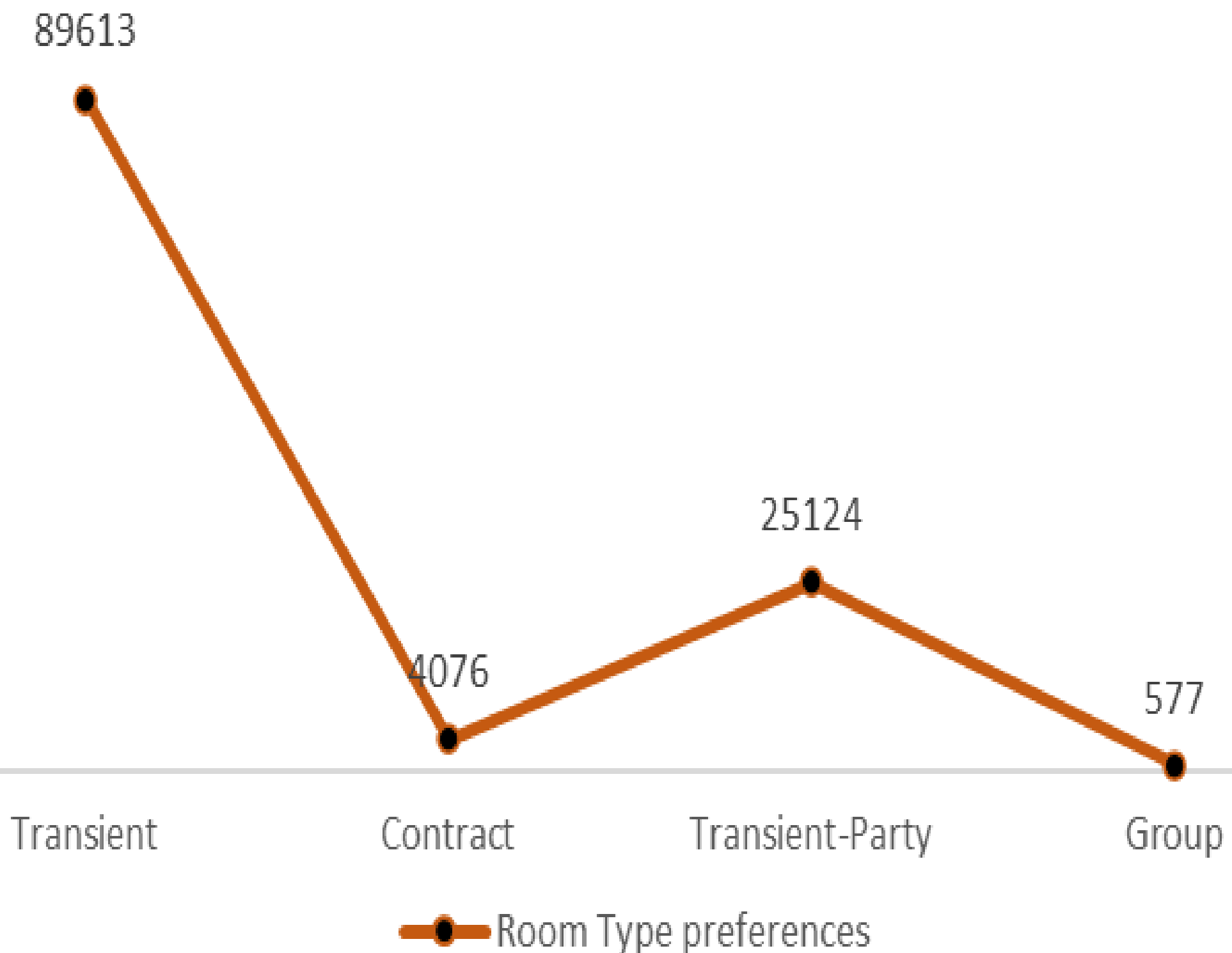
- The data reveals a clear trend: as the number of booking changes increases, so does the cancellation rate, peaking at 66.67% for bookings with 15 changes.
- To mitigate this, it's essential to improve communication channels between the booking system and customers, possibly implementing penalties or fees for excessive changes to discourage cancellations.
- Additionally, offering incentives for customers to finalize their bookings earlier could help reduce the need for frequent changes, ultimately decreasing cancellation rates.



**Explore how room type preferences vary across different customer types (e.g., Transient, Group). Identify if certain customer types have specific room preferences.**

- Transient customers show a significant preference for room type, with 89,613 bookings, indicating a diverse range of preferences within this customer segment.
- Transient-Party customers also exhibit a notable preference, with 25,124 bookings, suggesting a tendency towards accommodations suitable for larger groups or social gatherings.
- Contract and Group customers show comparatively lower room type preferences, with 4,076 and 577 bookings, respectively, potentially indicating a narrower range of preferences or specific requirements within these customer types.

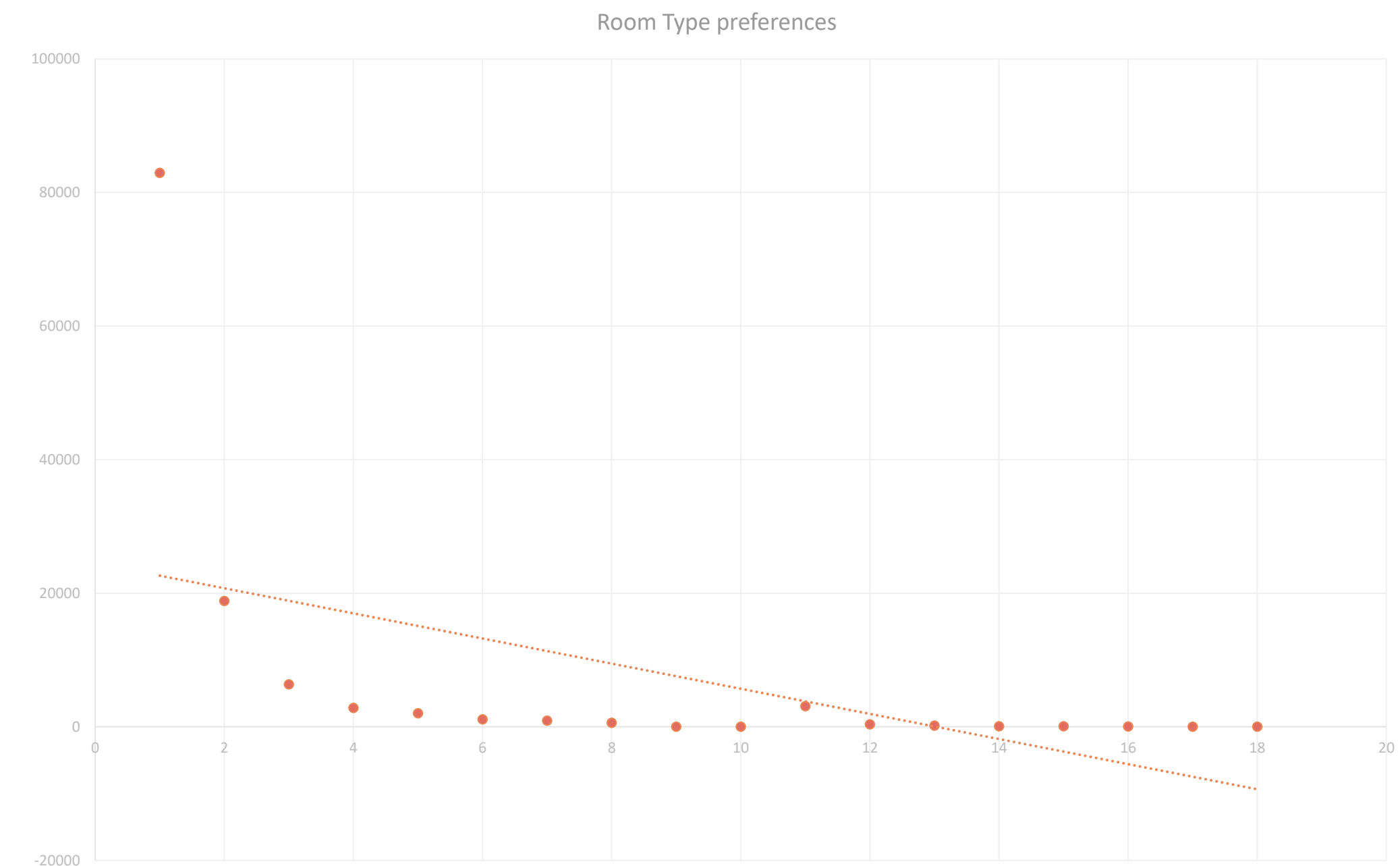
Room Type preferences over Customer Type





## Examine whether guests who make multiple bookings have consistent room type preferences or if their preferences change over time.

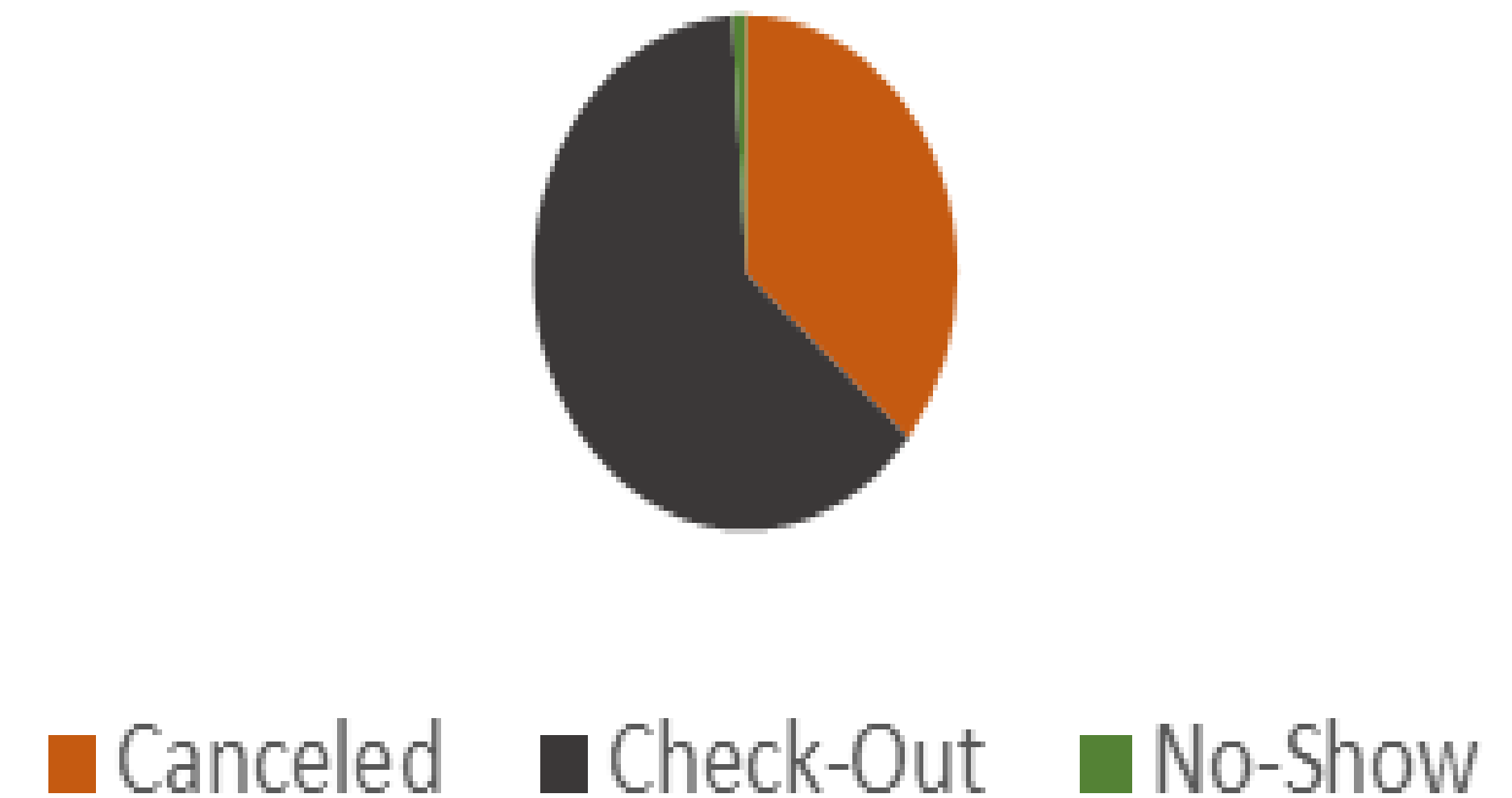
- From the provided data, it appears that guests who are not repeated guests ( $\text{is\_repeated\_guest} = 0$ ) have made significantly more bookings across various room types compared to repeated guests ( $\text{is\_repeated\_guest} = 1$ ). This suggests that repeated guests may have more consistent room type preferences, as they have fewer bookings spread across a smaller range of room types.
- - For guests who are not repeated guests ( $\text{is\_repeated\_guest} = 0$ ), room type A has the highest number of bookings, followed by room types D and E. This indicates a preference for these room types among non-repeated guests.
- - Repeated guests ( $\text{is\_repeated\_guest} = 1$ ) have fewer bookings overall, and their bookings are more evenly distributed across room types. However, room type A still has the highest number of bookings among repeated guests, suggesting some level of consistency in preferences even within this group.
- Overall, while repeated guests may exhibit more consistency in their room type preferences compared to non-repeated guests, there is still some variation in their booking patterns across different room types. This information can be valuable for hotel management to better understand and cater to the needs of both repeated and non-repeated guests.



## Understand the distribution of reservation statuses and calculate summary statistics for reservation status dates.

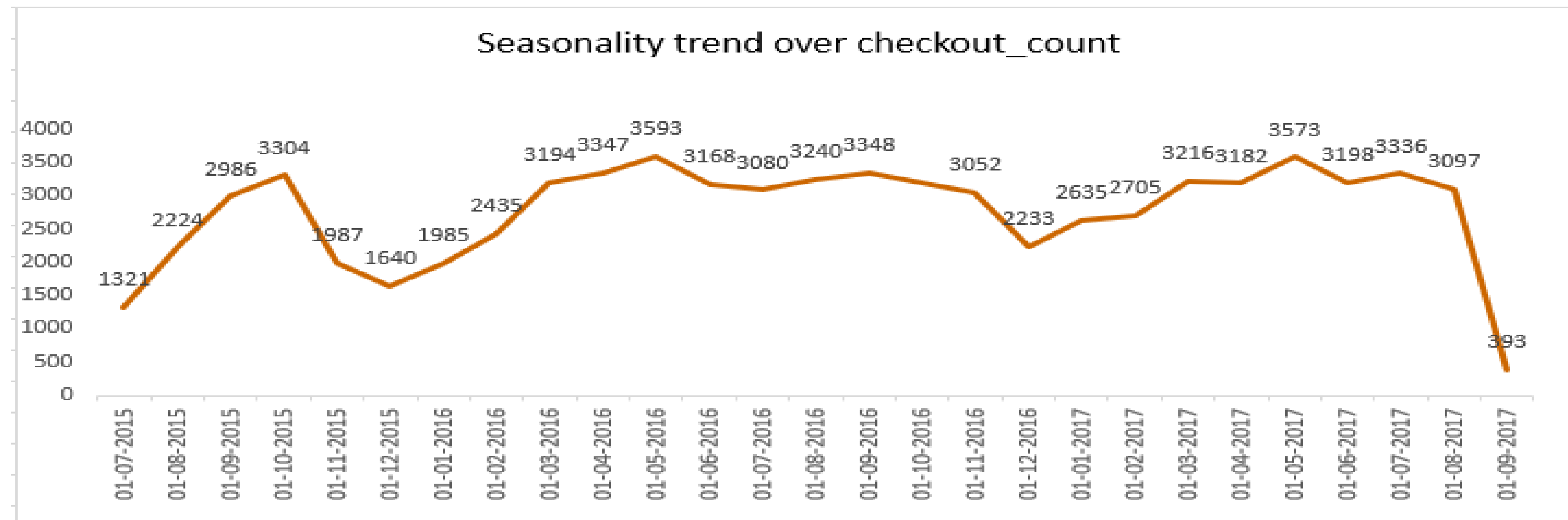
- The distribution of reservation statuses indicates that the majority of reservations result in guests checking out, with 75,166 instances, followed by cancellations at 43,017, and a smaller number of no-shows at 1,207.
- The summary statistics for reservation status dates reveal a relatively symmetric distribution with a mean of 42,581.02, a median of 42,589, and a slightly negative skewness of -0.16, suggesting a slight left-leaning tail.
- The data's kurtosis of -0.90 indicates slightly lighter tails than a normal distribution, suggesting a moderate degree of peak in the distribution.

### Distribution of Reservation Status





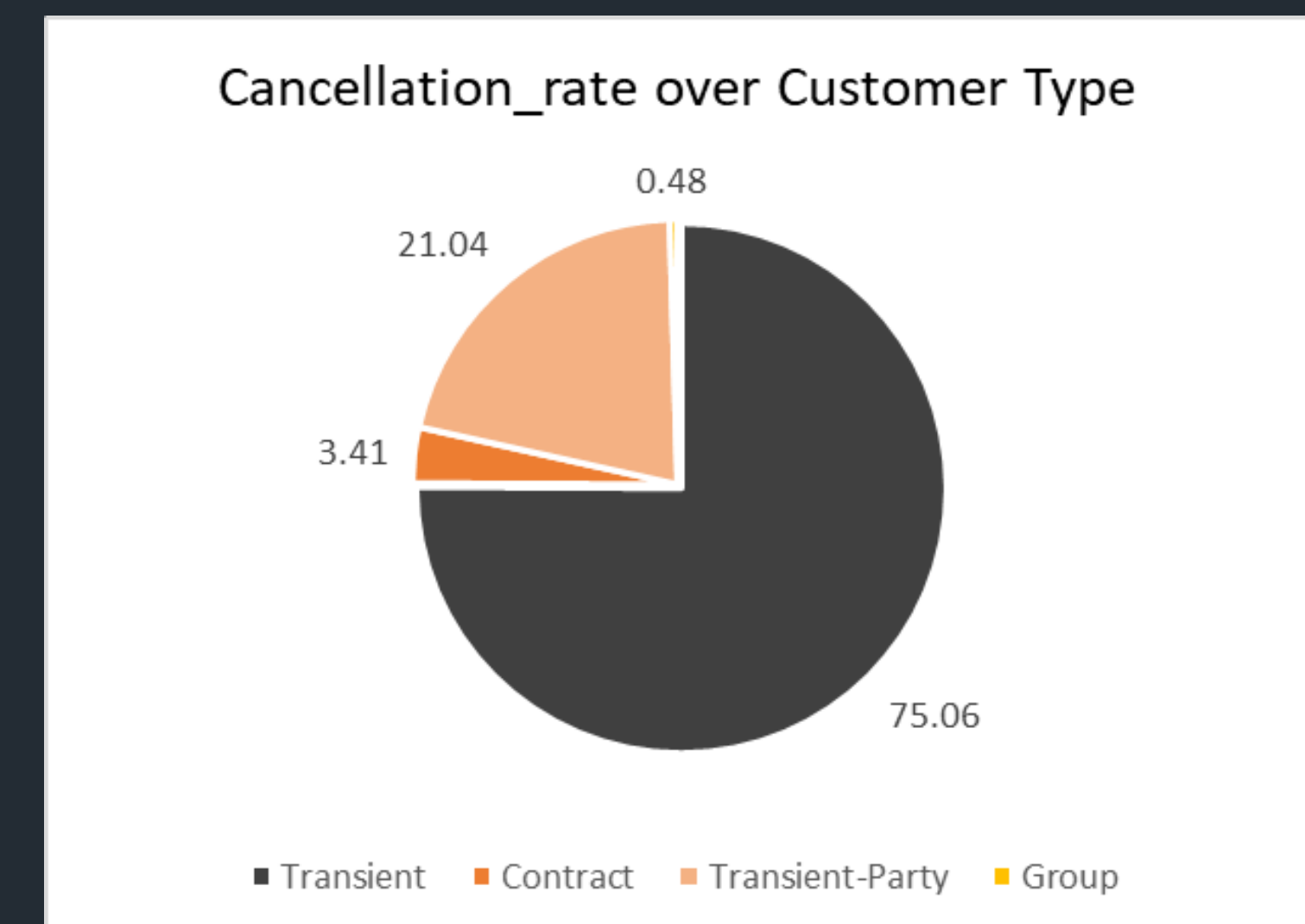
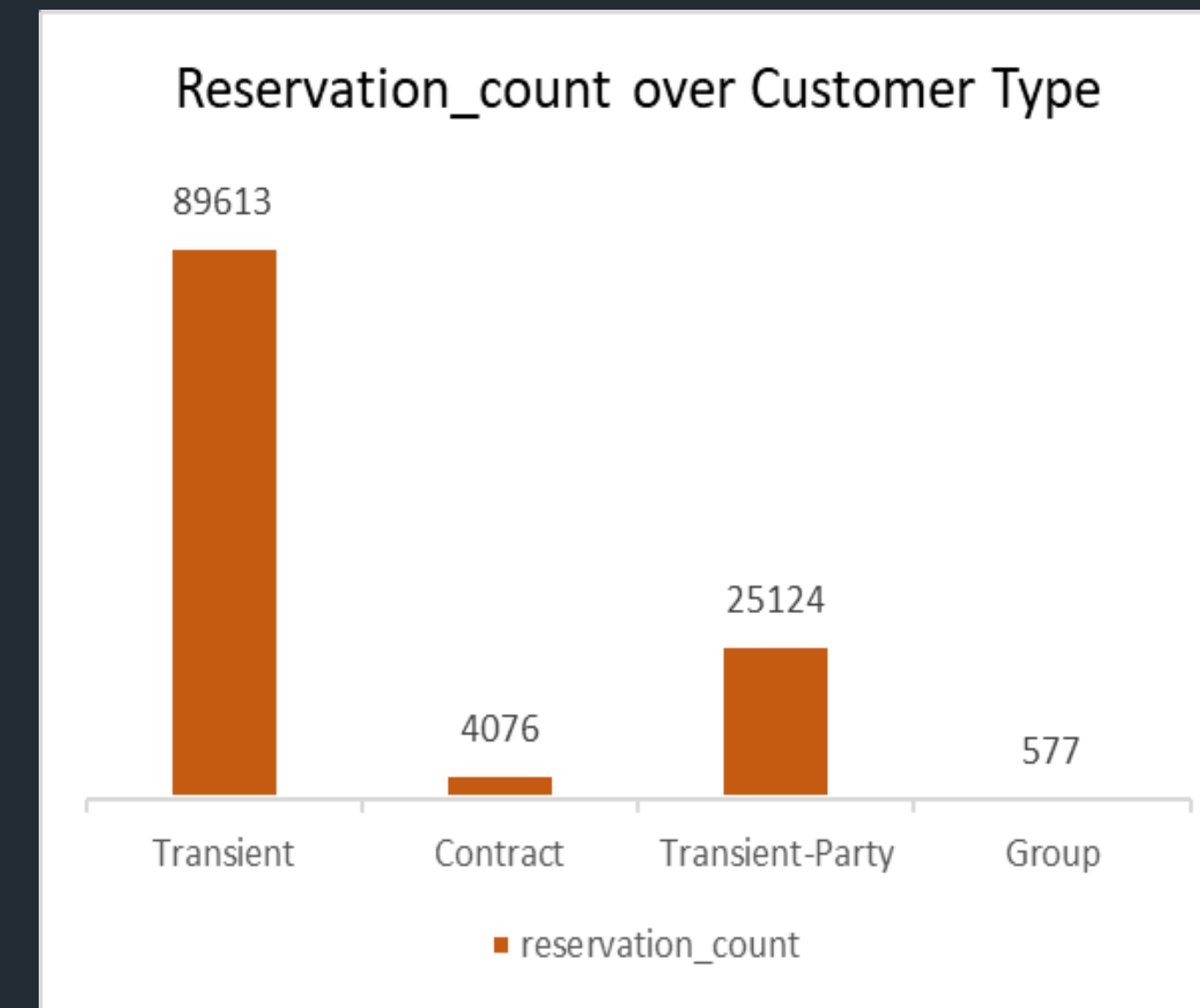
**Analyze trends in reservation status dates, including the most common checkout dates and any seasonality patterns.**



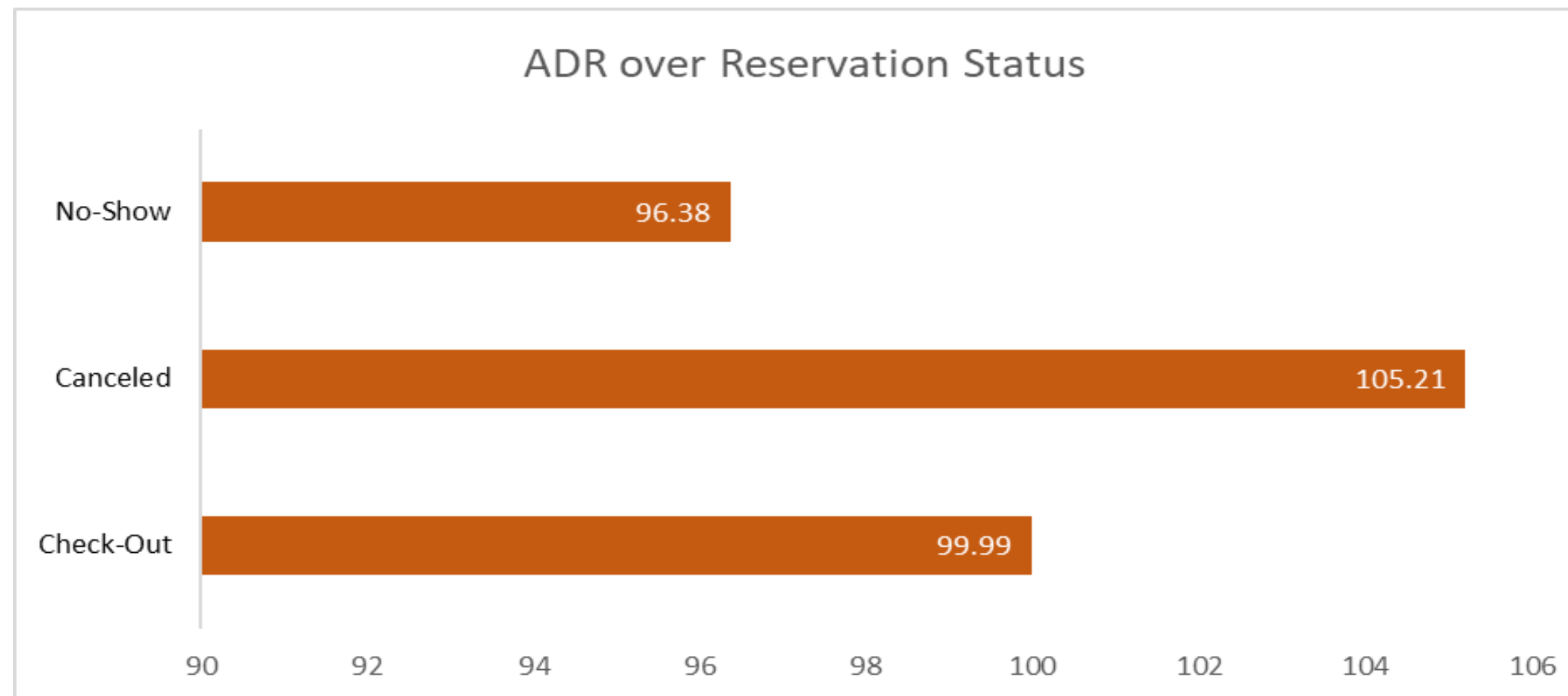
- The provided data showcases trends in checkout counts across different months, suggesting potential seasonality patterns in reservation status dates.
- The months of January, May, and October consistently appear among the top checkout dates, indicating higher activity during these periods.
- To leverage these trends, hotel management could consider adjusting pricing strategies, offering promotions, or allocating resources more efficiently during peak months to maximize revenue and enhance guest satisfaction.
- Additionally, analyzing factors contributing to the lower checkout counts in certain months, such as September and December, could inform targeted marketing efforts to increase occupancy during traditionally quieter periods.

## Explore how reservation statuses vary across different customer types (e.g., Transient, Group) using Excel or SQL. Calculate cancellation rates by customer type.

- From the data, it's evident that Transient customers have the highest reservation count but also the highest cancellation rate at 75.06%, indicating a need for improved booking management strategies or policies to reduce cancellations.
- Contract customers, while fewer in number, exhibit a significantly lower cancellation rate of 3.41%, suggesting a higher level of commitment or reliability within this customer segment.
- Group customers have the lowest cancellation rate at 0.48%, likely due to the nature of group bookings, which often involve more planning and coordination, resulting in fewer cancellations.

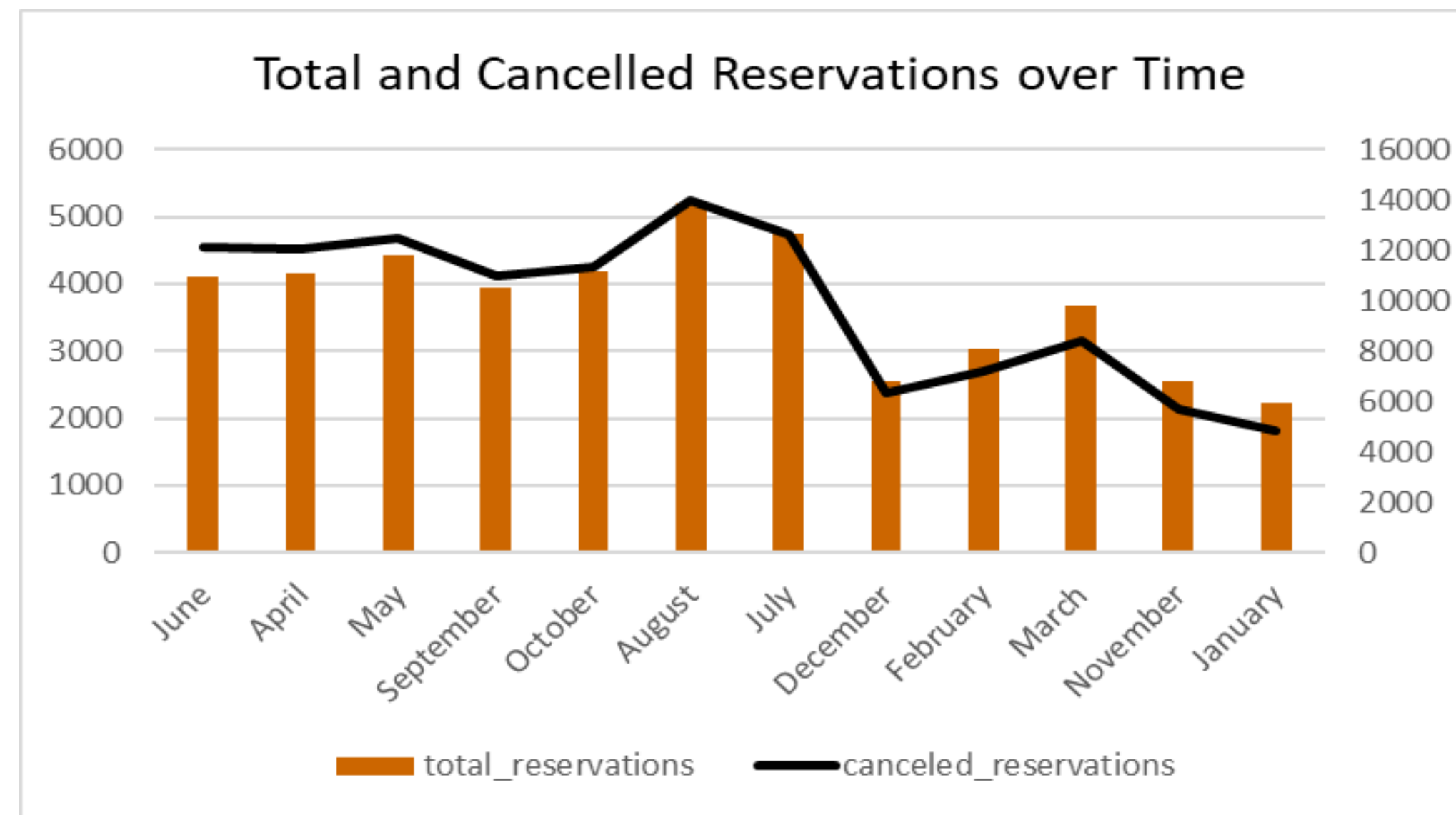


Investigate whether there are differences in Average Daily Rates (ADR) based on reservation status (e.g., canceled vs. checkedout).



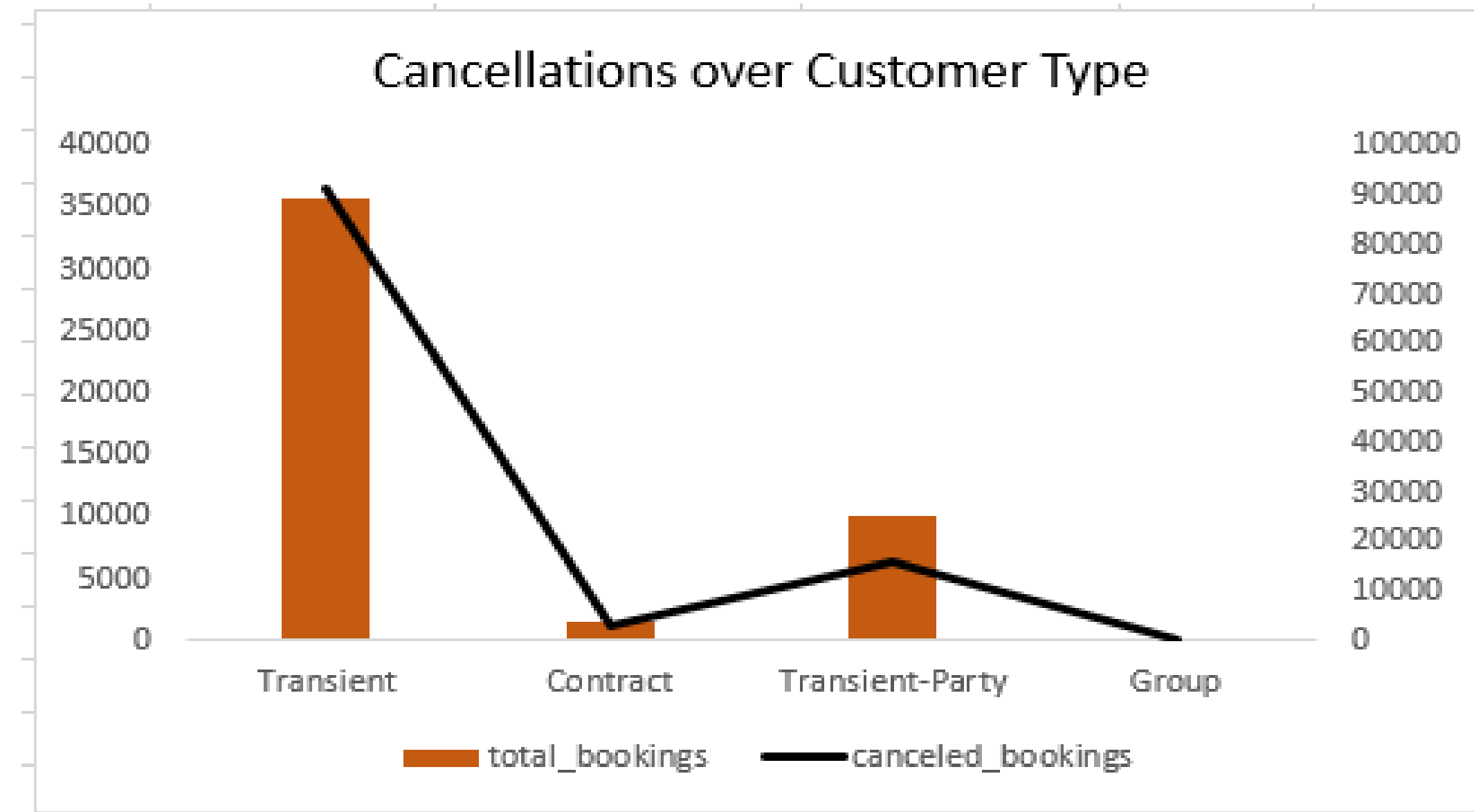
- Canceled reservations have the highest ADR at \$105.21, followed by check-out reservations at \$99.99, while no-show reservations have the lowest ADR at \$96.38.
- This suggests that canceled reservations may involve higher-priced bookings or longer stays compared to checked-out and no-show reservations, indicating potential revenue implications for the hotel.

## Cancellation rate by arrival month, trying to analyze how cancellation rates change over time



- The analysis reveals distinct seasonal trends in cancellation rates, with higher rates observed during summer months like June, July, and August, possibly due to increased travel activity and fluctuating plans.
- Conversely, months toward the end of the year, such as November and December, exhibit lower cancellation rates, likely influenced by more stable travel plans surrounding holidays.
- To capitalize on these insights, hotels can tailor their revenue management strategies by implementing flexible cancellation policies during peak travel seasons and optimizing marketing efforts to attract bookings during periods with historically lower cancellation rates.
- By leveraging data-driven decision-making, hotels can enhance revenue streams and improve guest satisfaction through more targeted and strategic approaches.

## Cancellation rate by arrival month, trying to analyze how cancellation rates change over time



- The data highlights varying cancellation rates across different customer types, with Transient customers exhibiting the highest cancellation rate at 40.75% and Group customers the lowest at 10.23%. Insights suggest that Transient customers may have more flexible travel plans, leading to a higher propensity to cancel, while Group customers demonstrate greater commitment to their bookings.
- To mitigate cancellations, hotels could tailor cancellation policies and promotional offers to each customer segment, ensuring flexibility for Transient guests while providing incentives for Group bookings to enhance overall revenue stability.

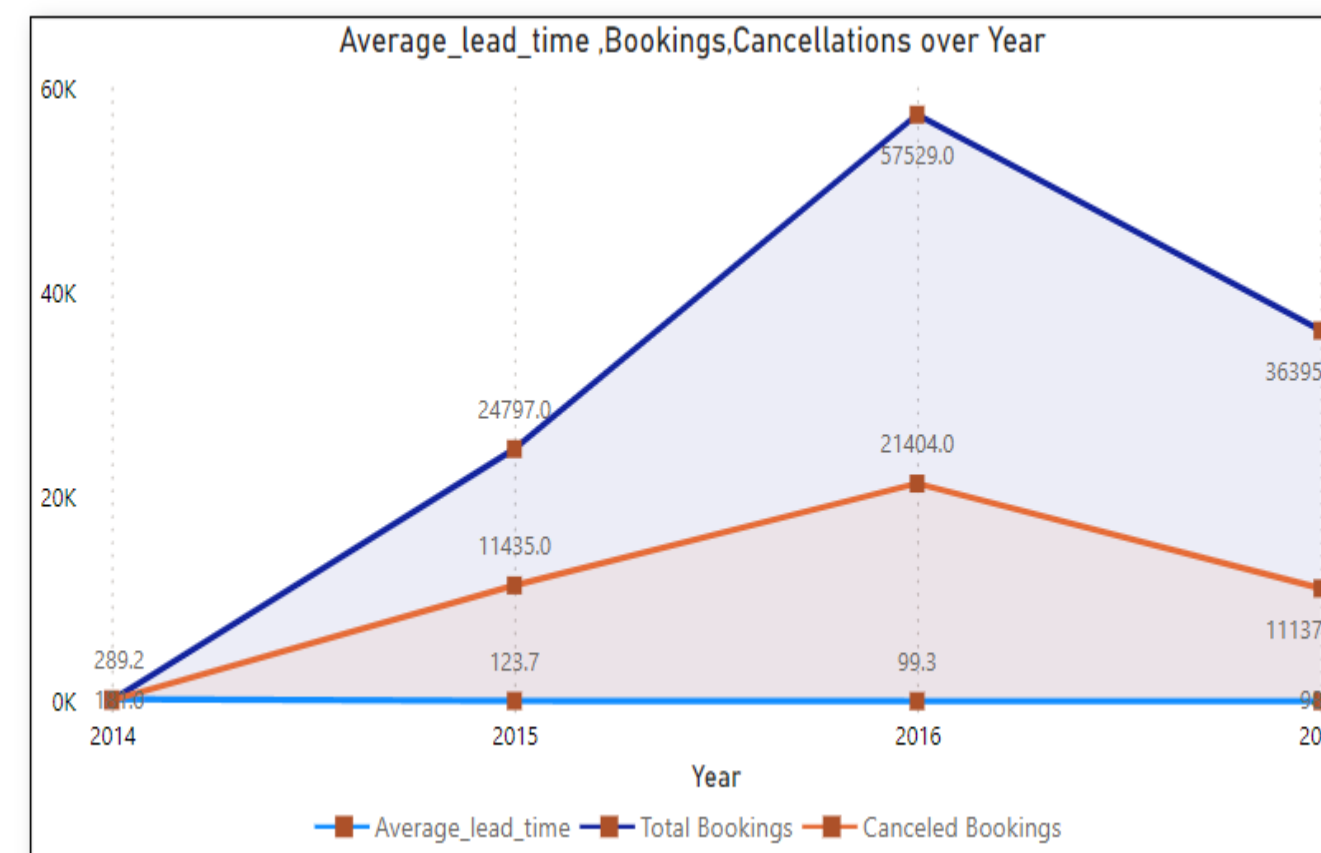
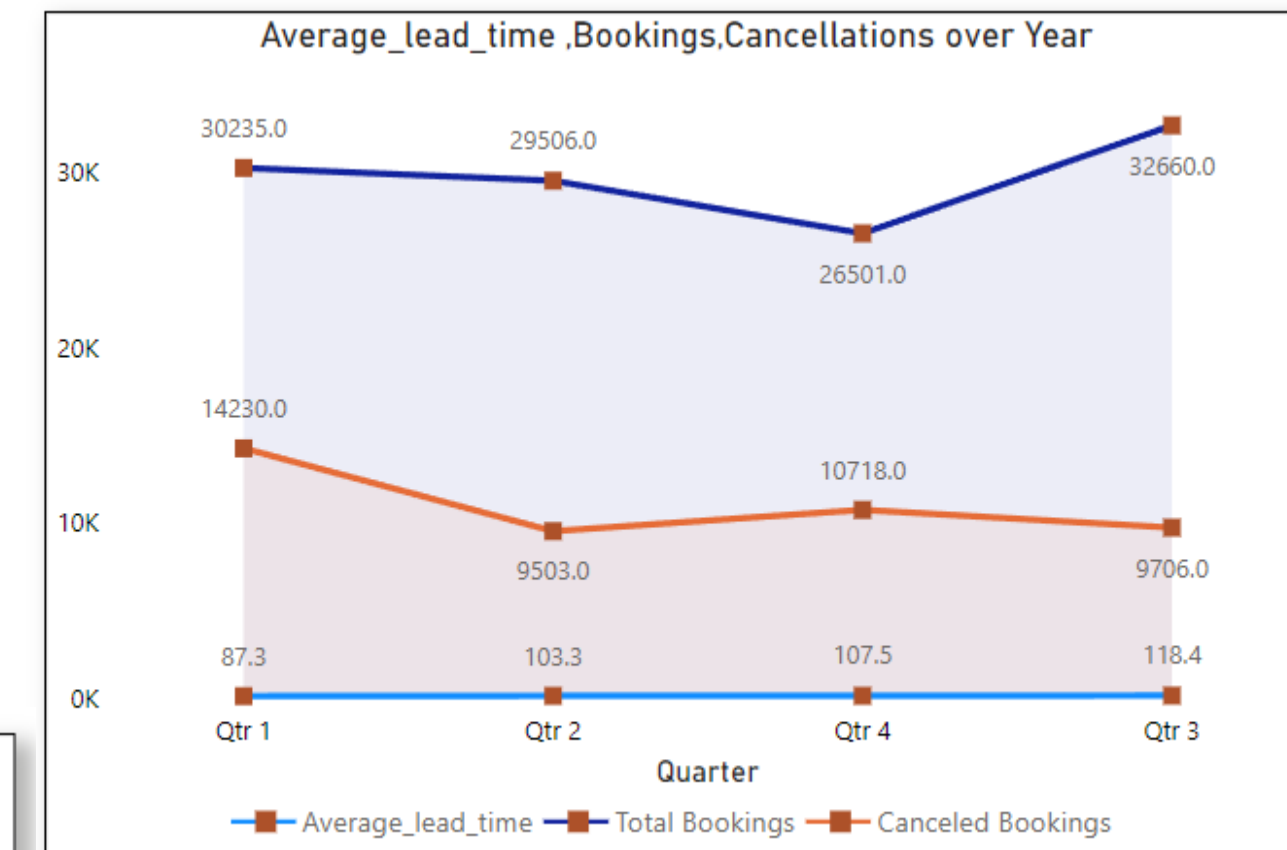
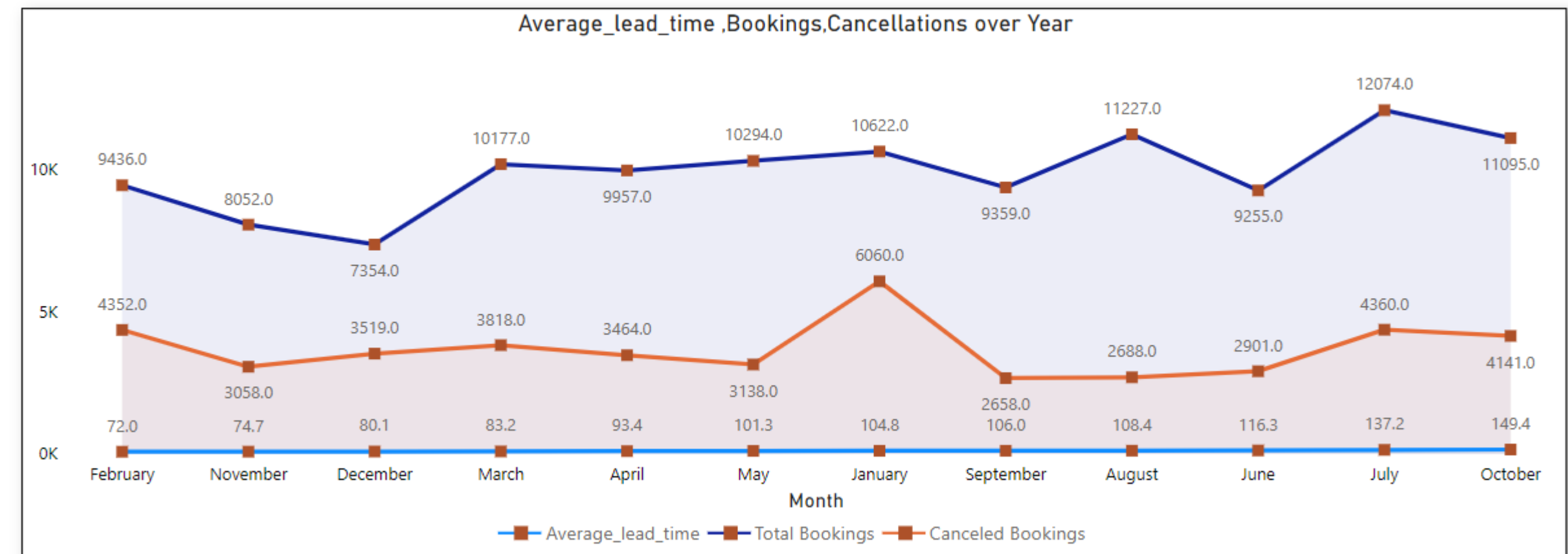
# POWER BI

MS Power BI



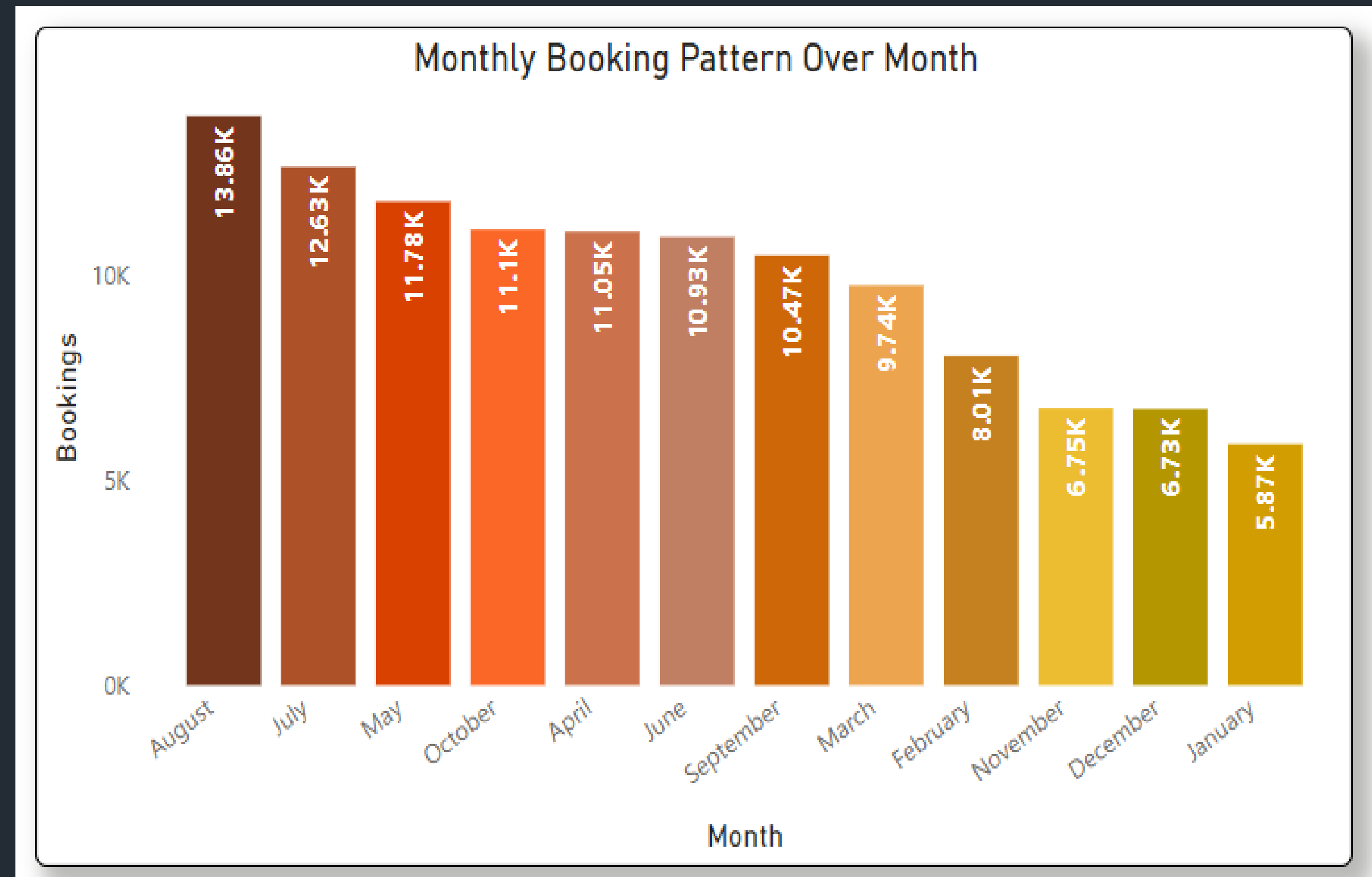
## Visualize booking trends over the years, including the number of bookings, cancellations, and average lead time. Identify seasonality patterns.

- Booking trends over the years show significant fluctuations, with a notable increase in 2015 followed by a sharp decline in 2016 and a subsequent rebound in 2017.
- In 2014, there were a total of 289 bookings with an average lead time of 15 days.
- In 2015, there was a significant increase in total bookings to 18,435, with an average lead time of 181 days.
- However, in 2016, both total bookings and average lead time dropped significantly to only 18 bookings, indicating a notable decrease in activity.
- In 2017, there was a substantial rebound in total bookings to 32,541, with an average lead time of 114 days.
- Seasonality patterns are evident, with potential peaks in bookings during certain months or seasons, suggesting the need for targeted marketing efforts and resource management strategies to capitalize on periods of high demand and mitigate impacts during slower periods.



## Analyze monthly booking patterns to identify peak months and optimize marketing strategies.

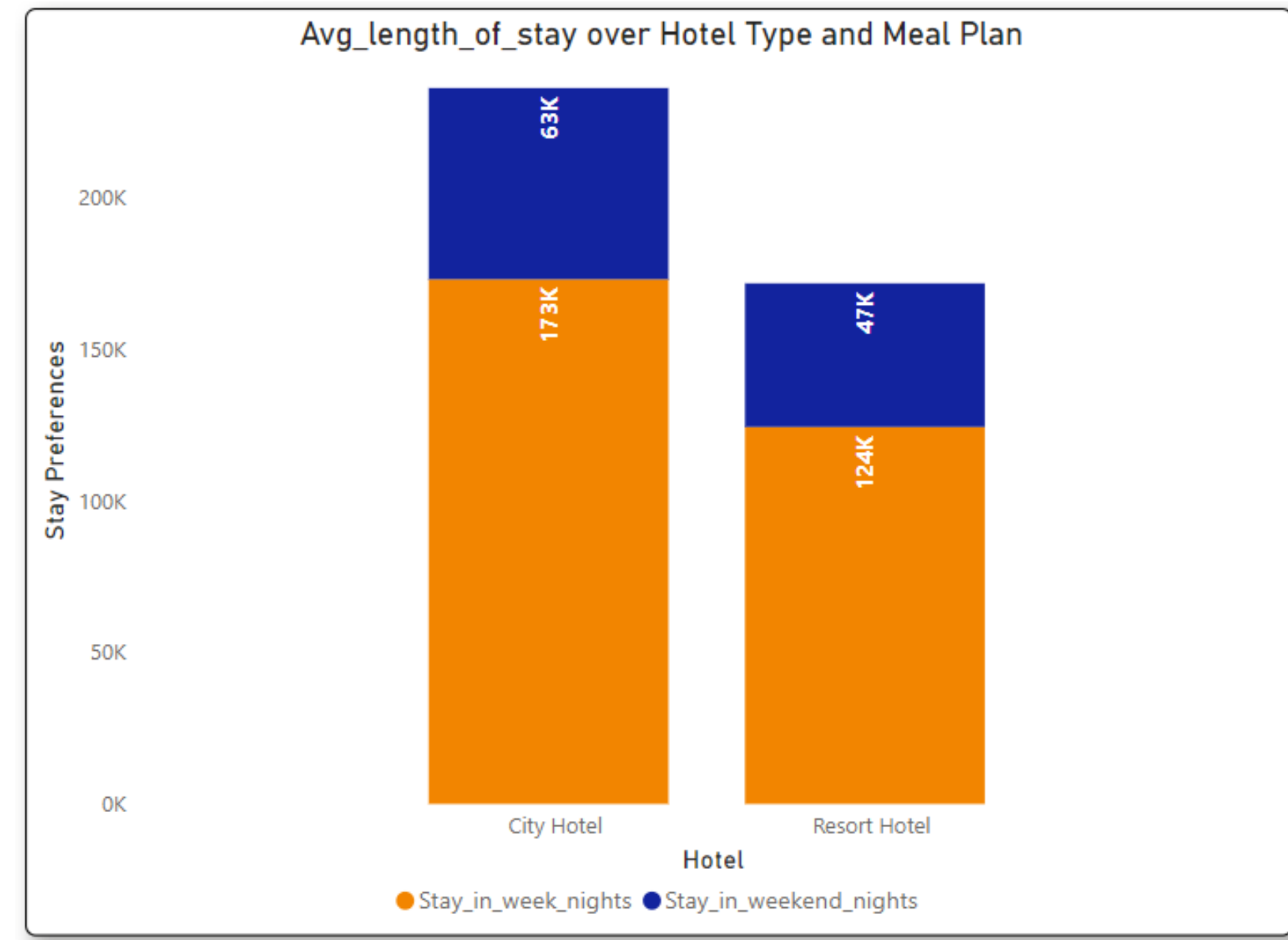
- Monthly booking patterns indicate peak months such as August, July, and May, with the highest counts of booking IDs, while November, December, and January exhibit lower booking activity.
- Insights suggest a seasonal trend with increased bookings during summer months and potential decreases during winter.
- To optimize marketing strategies, focus on targeted promotions and campaigns during peak months to capitalize on higher demand, while implementing incentives or discounts during slower periods to stimulate bookings and maximize revenue throughout the year.





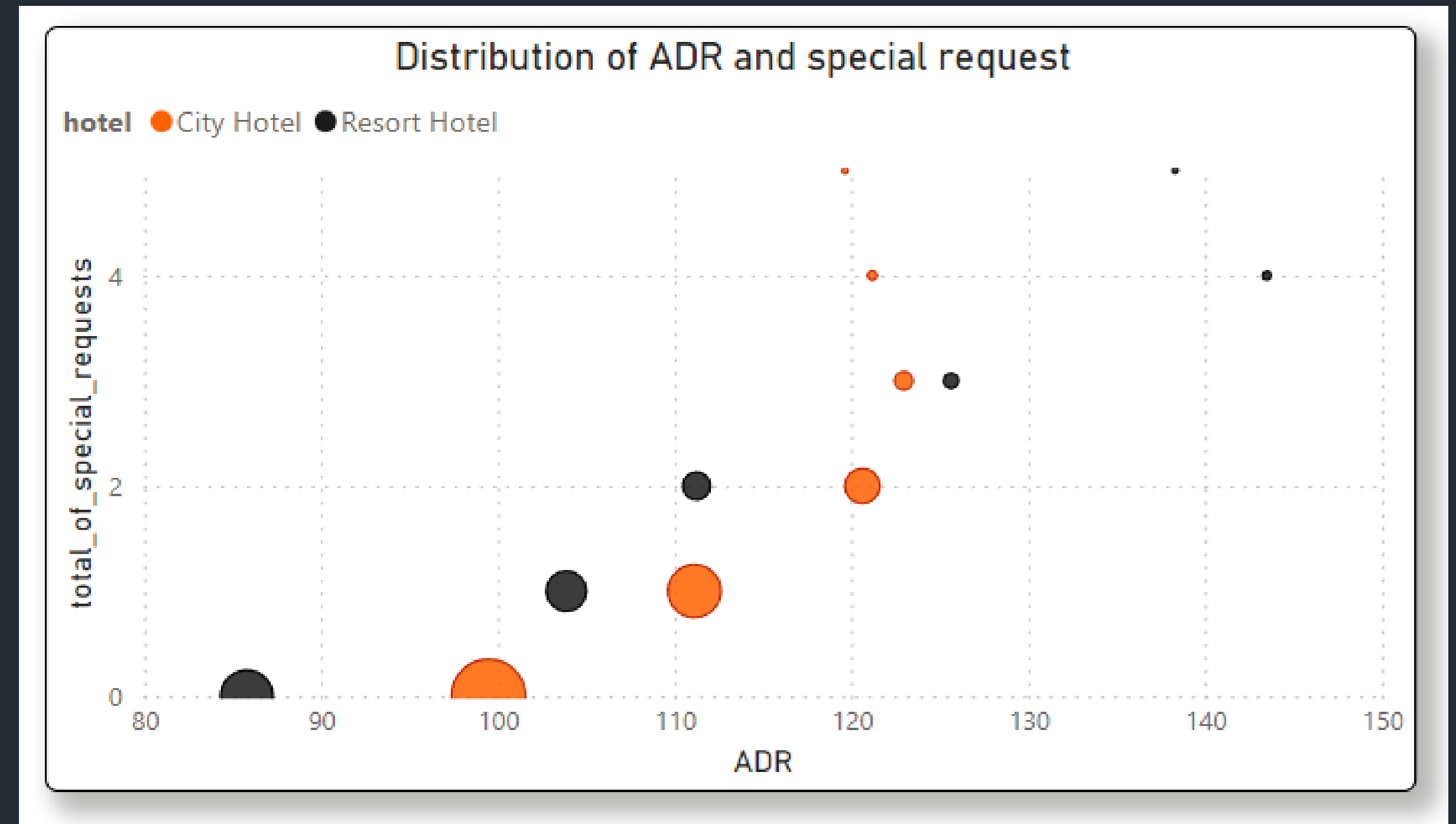
## Compare stays in weekend nights and weekday nights to determine preferences and variations by hotel type.

- Comparing stays in weekend nights and weekday nights across City and Resort hotels reveals interesting patterns.
- City hotels show a higher proportion of stays during weekdays (173,117 weekday nights vs. 63,075 weekend nights),
- while Resort hotels exhibit a more balanced distribution (124,392 weekday nights vs. 47,372 weekend nights).
- Insights suggest that City hotels might cater more to business travelers, necessitating weekday stays, while Resort hotels likely attract leisure travelers who prefer weekend getaways.
- To optimize occupancy and revenue, City hotels could focus on business-oriented packages during weekdays, while Resort hotels could offer weekend-specific promotions to attract more leisure guests.



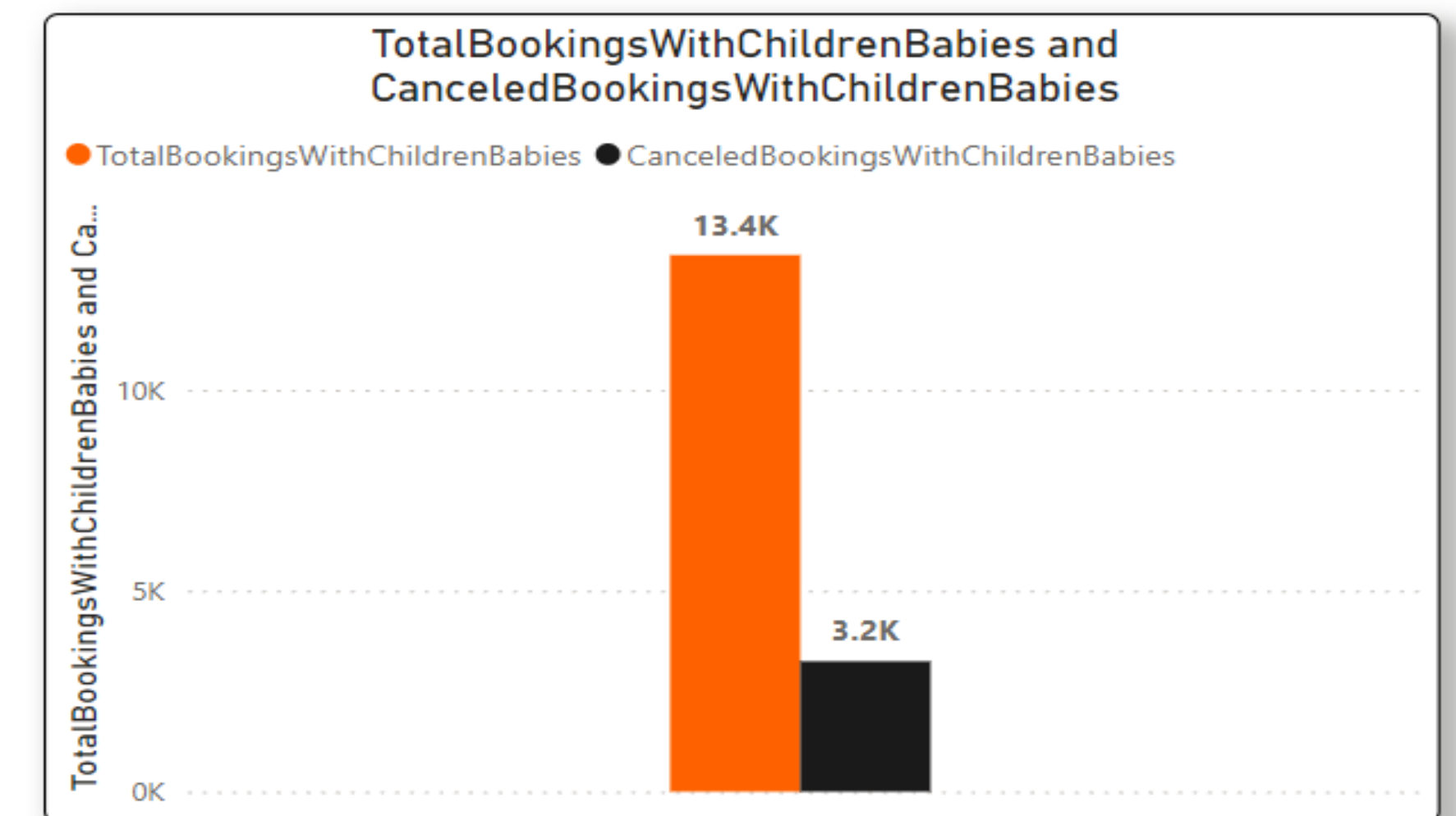
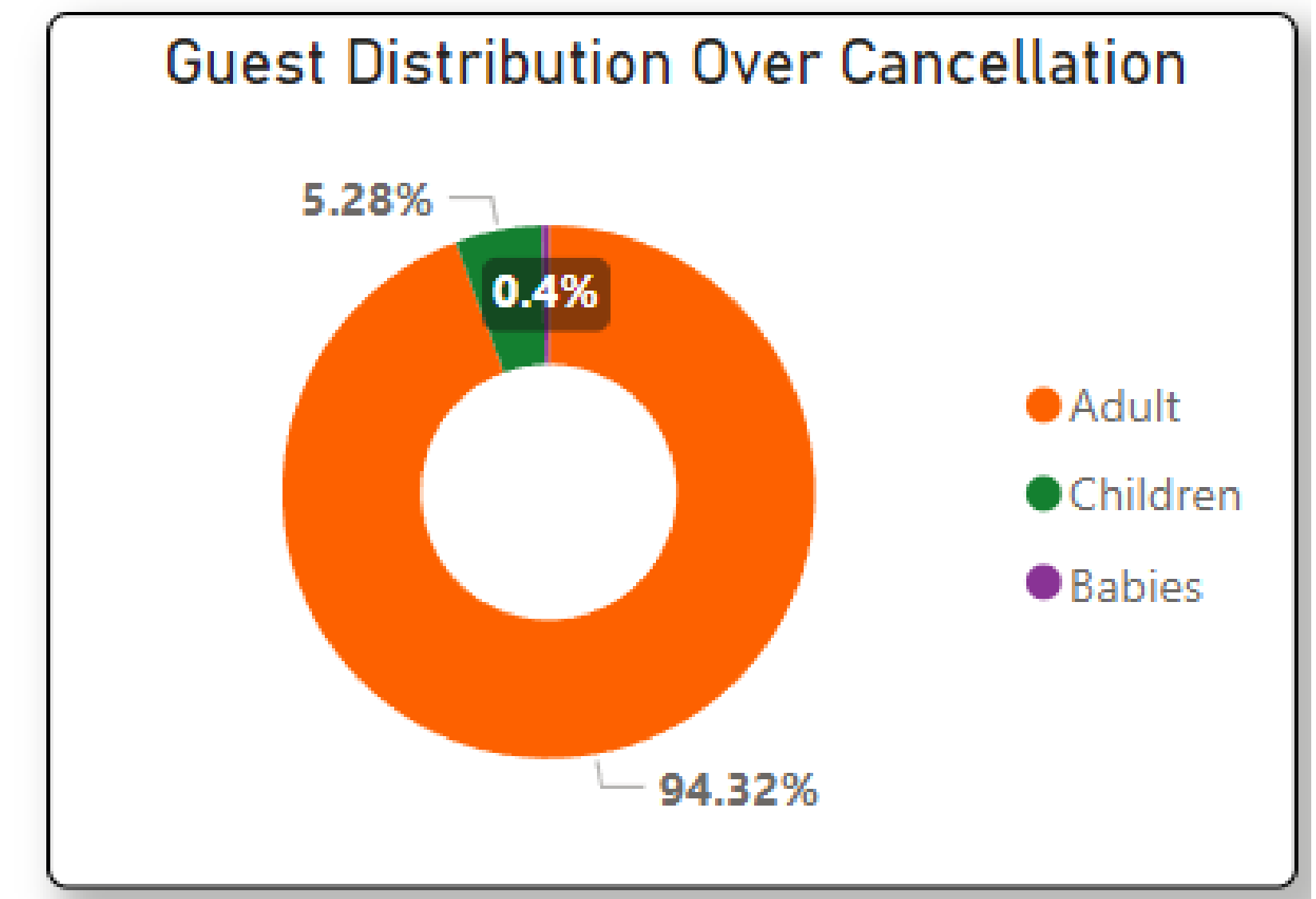
## Analyze the distribution of Average Daily Rates (ADR) and identify correlations with the number of special requests made by guests.

- Analyzing the correlation between Average Daily Rates (ADR) and the number of special requests made by guests reveals patterns in guest behavior and preferences, allowing hotels to tailor their services accordingly.
- Higher ADRs may indicate a demand for luxury amenities or personalized experiences, prompting hotels to proactively offer customization options to enhance guest satisfaction.
- Understanding this relationship enables hotels to optimize revenue management strategies, allocate resources efficiently, and maintain a competitive edge in the market.



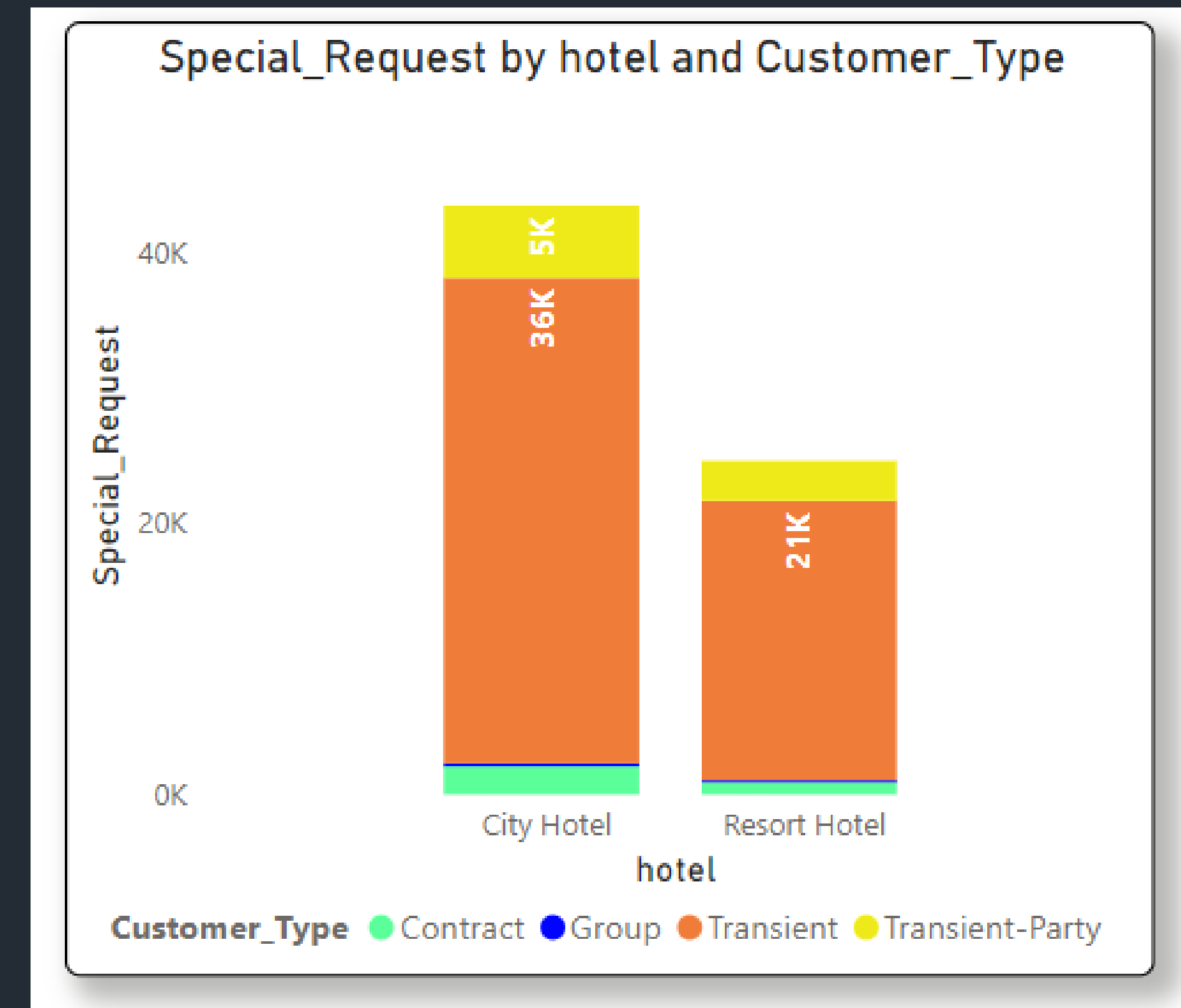
## Visualize the distribution of adults, children, and babies in bookings. Explore the impact of children and babies on cancellation rates.

- Analyzing the distribution of adults, children, and babies in bookings provides insights into the composition of guest parties and their specific needs.
- Hotels can use this data to tailor room amenities, dining options, and entertainment offerings to accommodate guests of all ages, enhancing the overall guest experience.
- Additionally, understanding the demographics of bookings allows hotels to optimize room configurations and allocate resources effectively to meet the diverse needs of their guests.



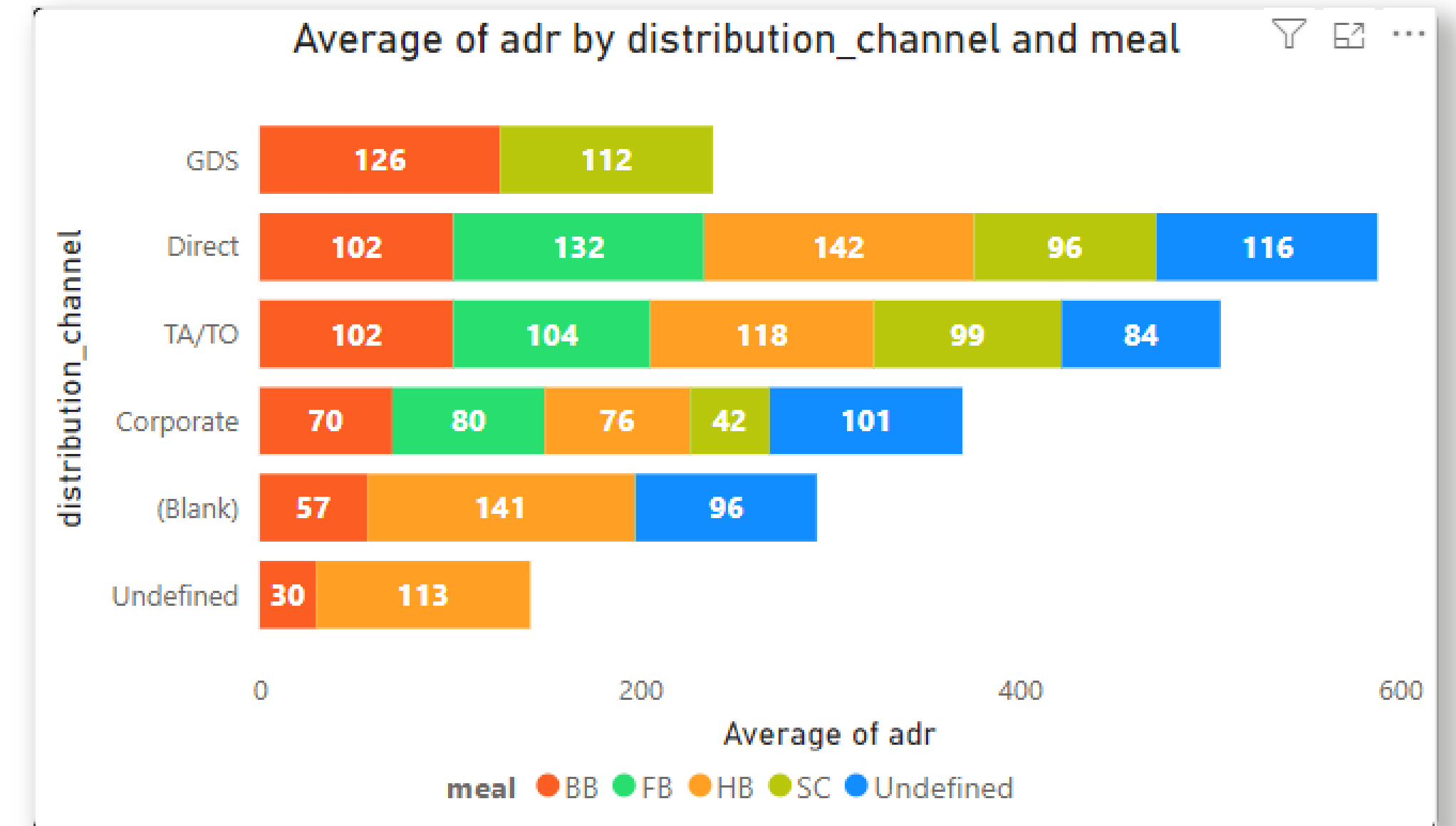
## Analyze the distribution of Average Daily Rates (ADR) and identify correlations with the number of special requests made by guests.

- In City Hotels, Transient guests made the highest number of special requests (35769), followed by Contract (2086) and Transient-Party (5331).
- In Resort Hotels, Transient guests also had the highest number of special requests (20612), followed by Group (885) and Transient-Party (2928).
- This highlights the varying preferences and needs across different customer types and hotel types, enabling hotels to tailor their services accordingly to enhance guest satisfaction and overall experience.



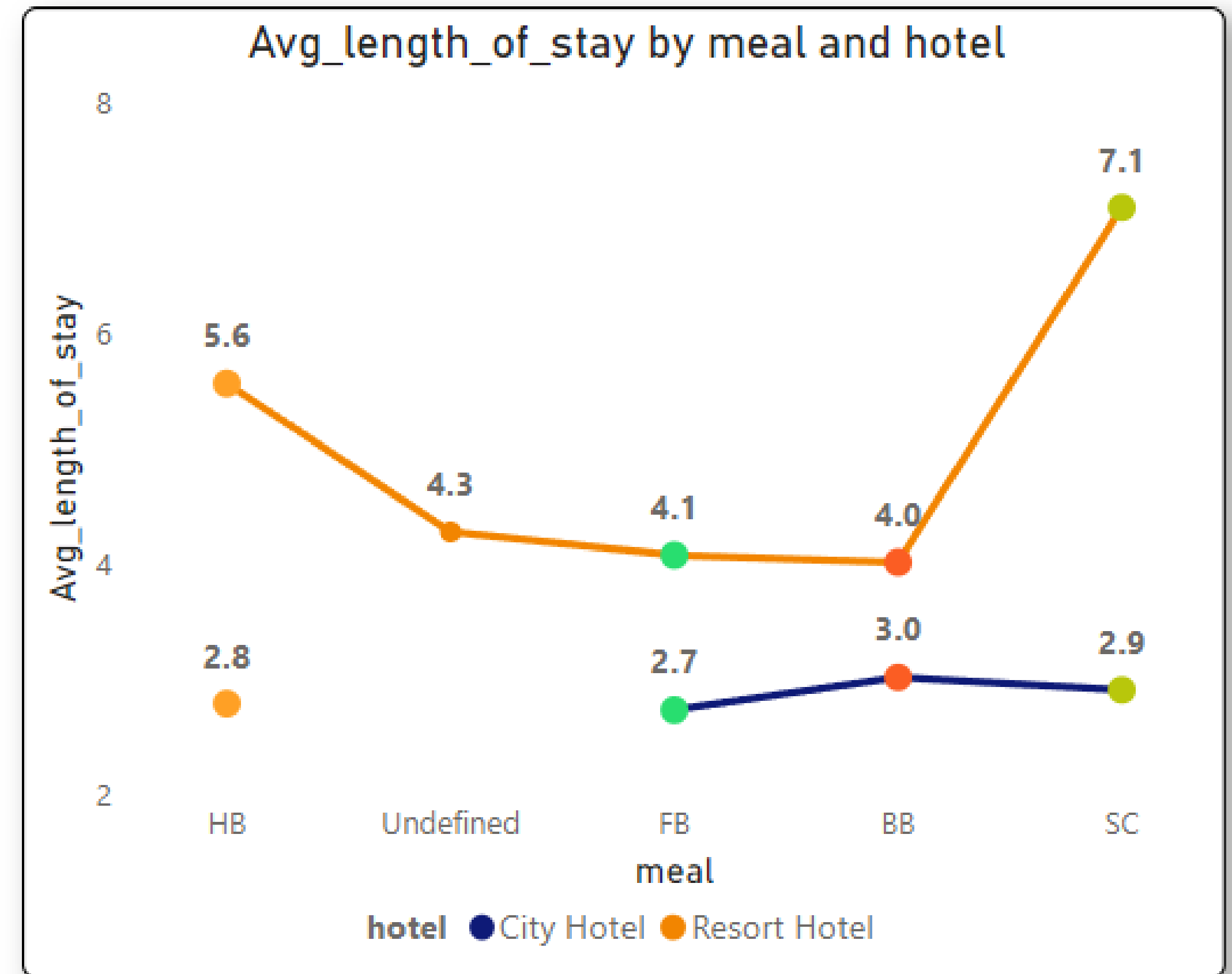
## Visualize the distribution of adults, children, and babies in bookings. Explore the impact of children and babies on cancellation rates.

- Meal plans such as Bed & Breakfast (BB), Full Board (FB), Half Board (HB), and others have varying impacts on Average Daily Rates (ADR).
- Guests booking through Corporate channels tend to prefer meal plans with lower ADRs, while those booking through Direct channels exhibit a wider range of meal plan preferences and ADRs.
- Analyzing meal plan preferences and their association with booking channels allows hotels to tailor their offerings to target specific guest segments effectively and optimize revenue.



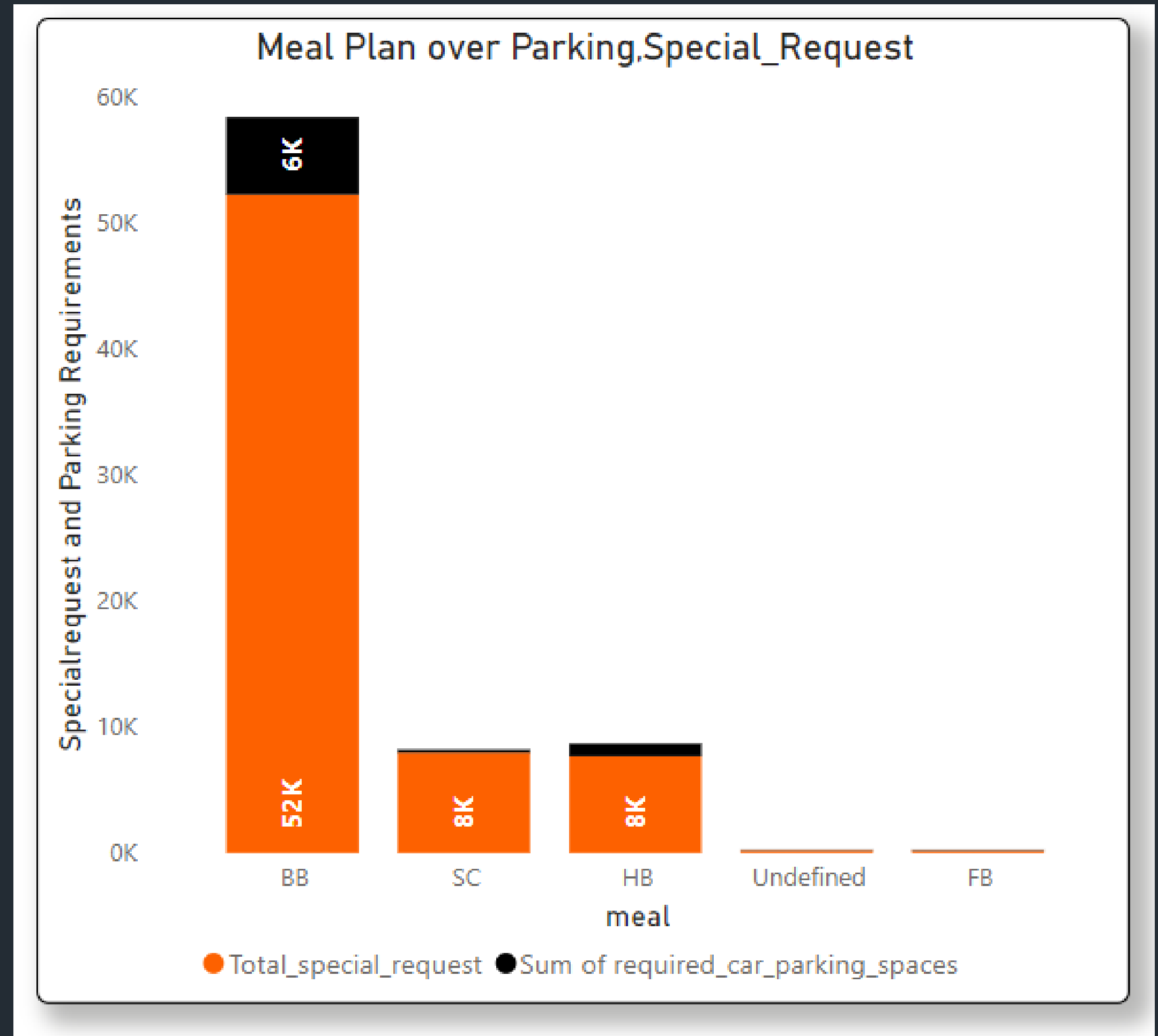
## Analyze the distribution of Average Daily Rates (ADR) and identify correlations with the number of special requests made by guests.

- Analyzing the distribution of Average Daily Rates (ADR) reveals variances in pricing across different guest stays.
- Correlating ADR with the number of special requests made by guests may uncover patterns where higher ADRs coincide with increased guest demands for personalized services or amenities, suggesting a potential link between pricing tiers and guest expectations.
- Understanding this correlation can inform pricing strategies and service offerings to better accommodate guest needs and optimize overall guest satisfaction.



**Correlate parking requirements and special requests with different meal plans. Determine if certain meal plans result in more requests or parking needs.**

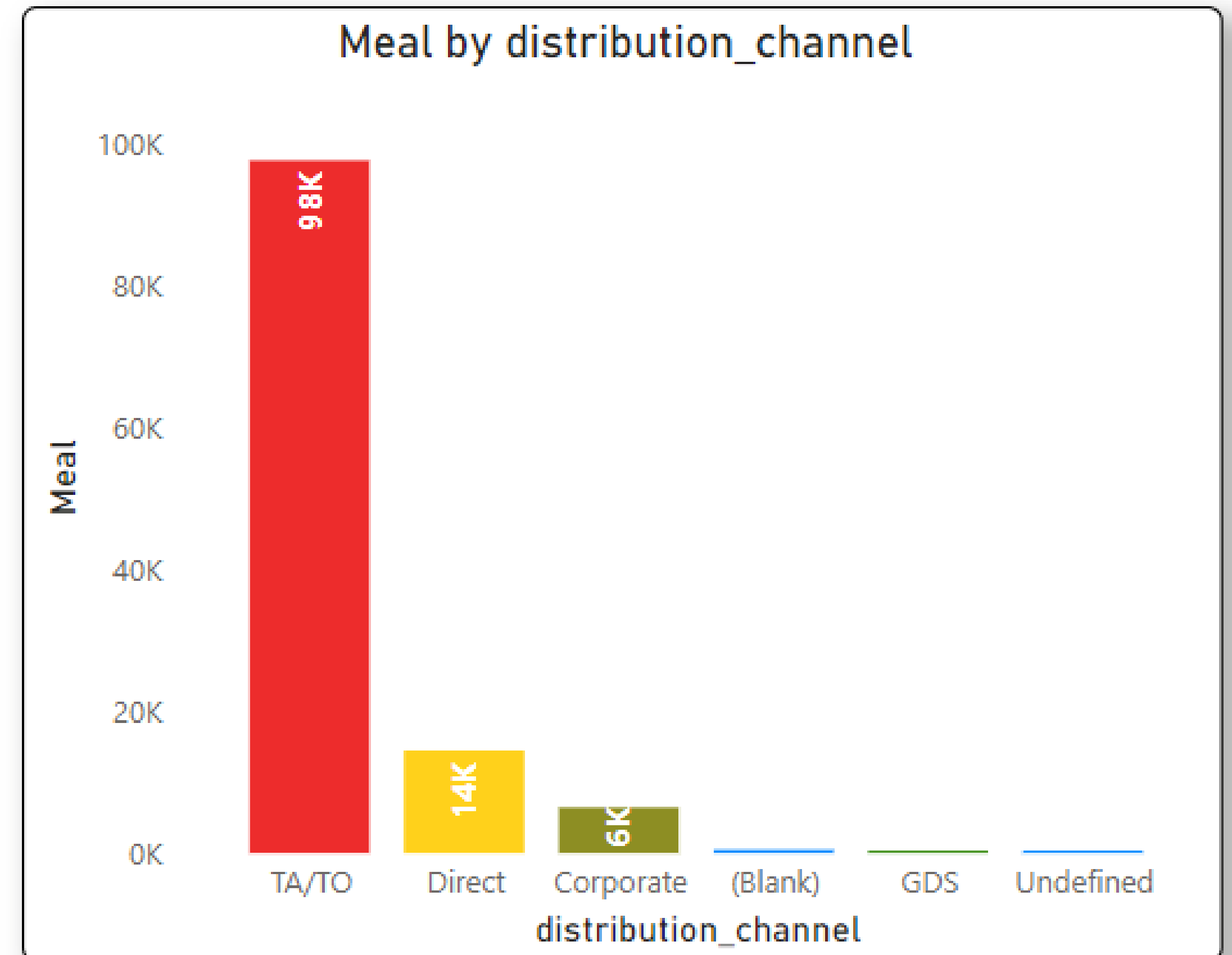
- Correlating parking requirements and special requests with different meal plans can reveal guest preferences and behaviors. Meal plans like Full Board (FB) and Half Board (HB) might correlate with higher parking needs and special requests due to guests opting for more inclusive stays.
- Analyzing these correlations can inform hotel management about the impact of meal plans on guest expectations and resource allocation, facilitating adjustments in service offerings to enhance guest satisfaction.





Explore how meal plans are distributed across various booking channels. Analyze if certain channels are associated with specific meal plans.

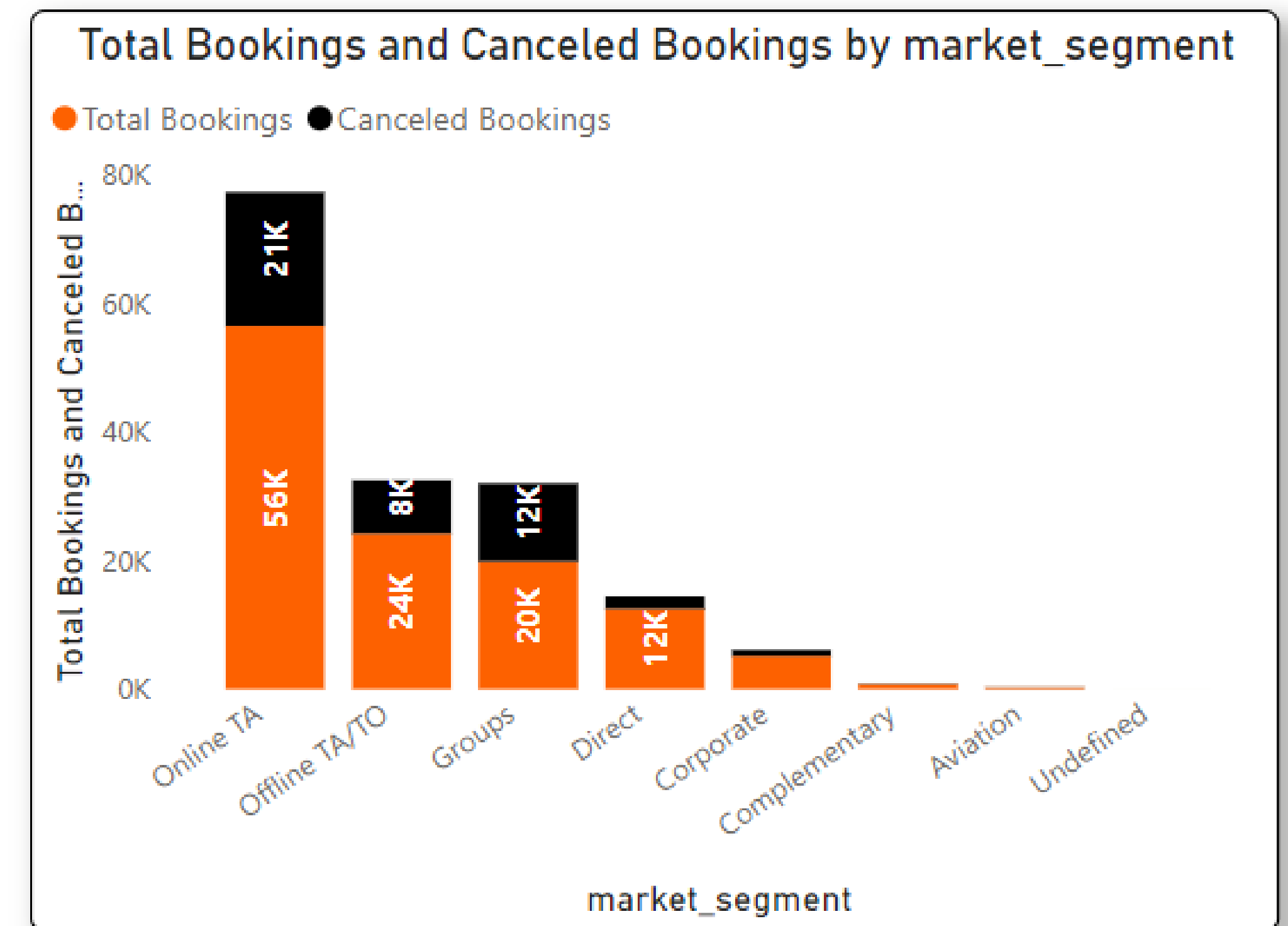
- Analyzing the distribution of meal plans across various booking channels can reveal preferences among different guest segments.
- Direct booking channels may exhibit a higher proportion of guests opting for Bed & Breakfast (BB) or Room Only plans, indicating a preference for flexibility or lower costs.
- Hotels could leverage this insight to tailor marketing strategies, offering promotions or incentives to encourage specific meal plan selections through particular booking channels, ultimately optimizing revenue and guest satisfaction..





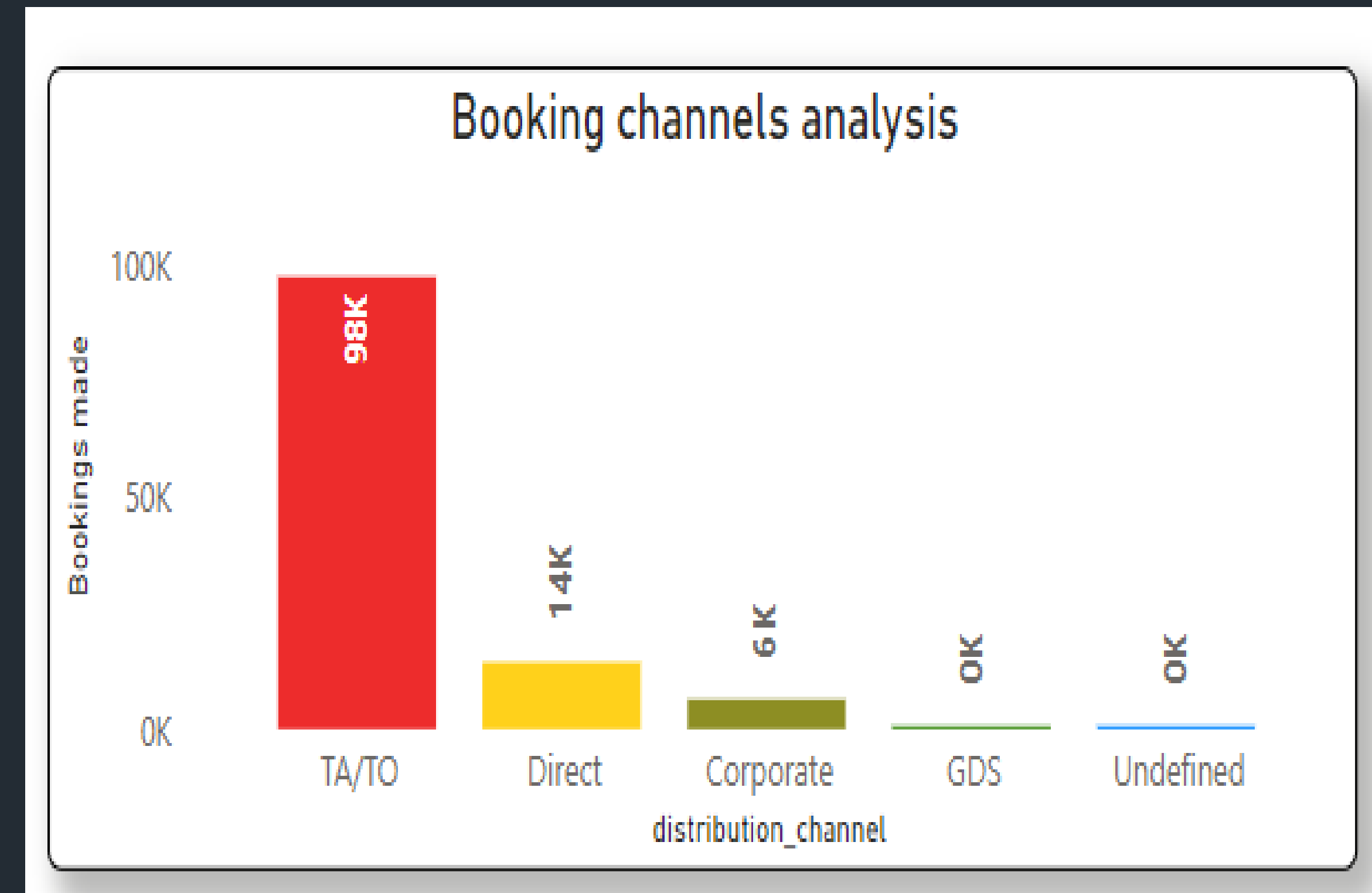
## Visualize booking distribution across different market segments and analyze cancellation rates within each segment.

- Visualizing booking distribution across different market segments provides a clear overview of where demand is concentrated.
- Analyzing cancellation rates within each segment can identify trends or patterns, such as higher cancellation rates among leisure travelers compared to business travelers, enabling hotels to implement targeted strategies to mitigate cancellations, such as flexible cancellation policies or personalized communication to encourage retention.
- This comprehensive analysis allows hotels to optimize revenue management strategies and enhance overall booking performance.



## Compare the effectiveness of booking distribution channels in generating confirmed bookings. Identify the most commonly used channels by guests.

- Comparing the effectiveness of booking distribution channels in generating confirmed bookings reveals the relative contribution of each channel to overall reservations.
- Direct booking emerges as the most effective channel with the highest number of confirmed bookings, followed by Travel Agencies/Tour Operators (TA/TO) and Corporate bookings.
- Understanding guest preferences for booking channels allows hotels to allocate resources effectively and tailor marketing efforts to maximize direct bookings, potentially reducing distribution costs and increasing revenue.



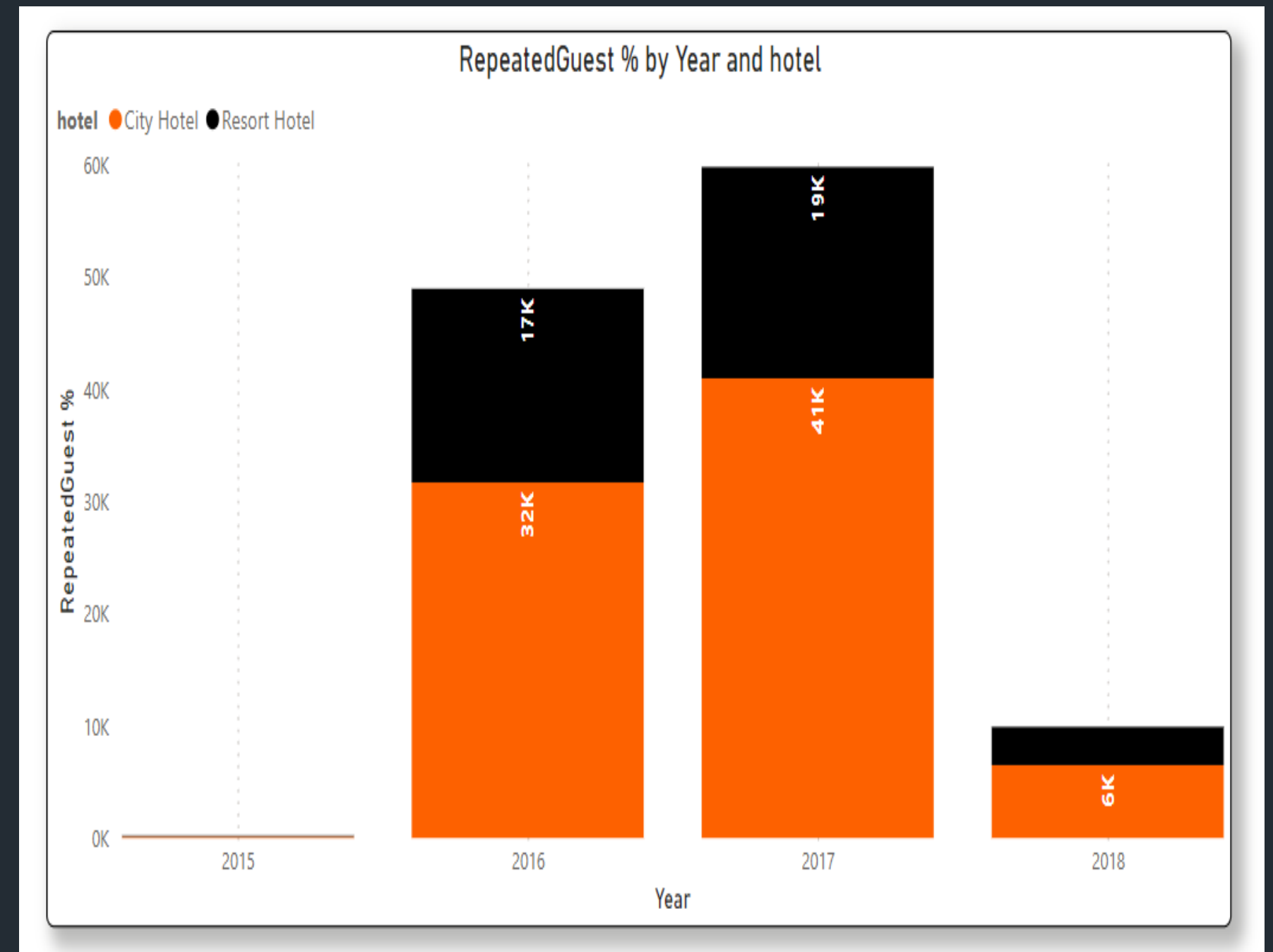
Visualize booking distribution across different market segments and analyze cancellation rates within each segment.

Total Previous Bookings	Total Previous Cancellations	Cancellation Ratio	Time Since Last Cancellation
118902	44157	0.37	2207

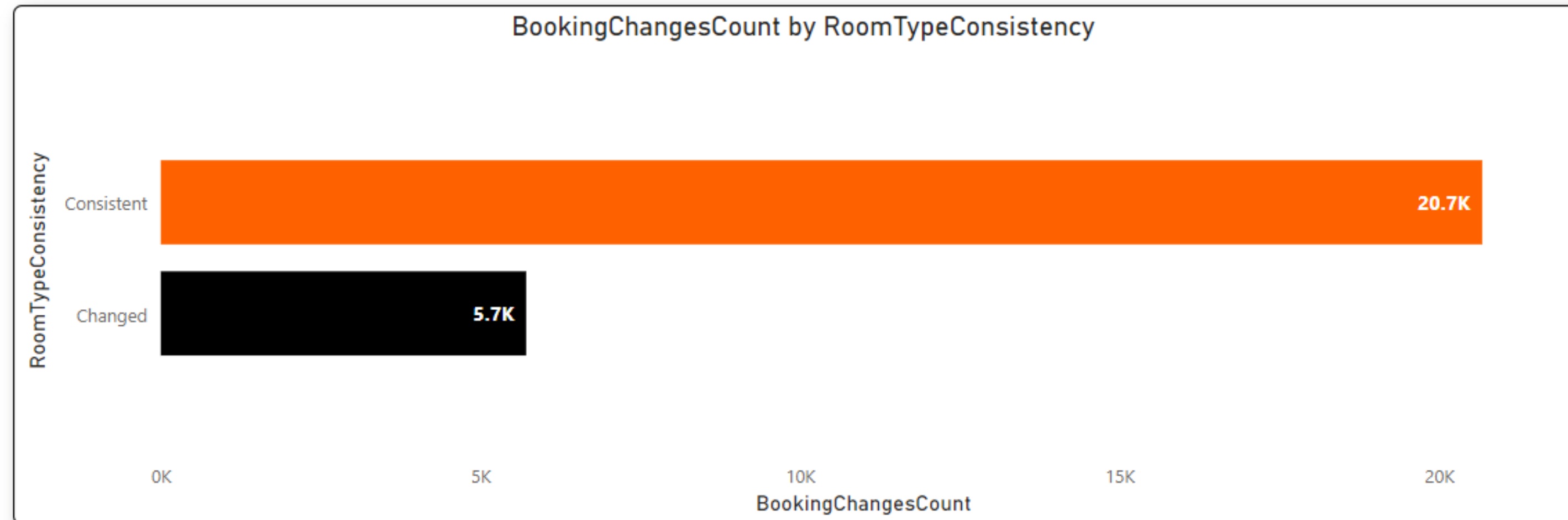
- Analyzing the impact of a guest's booking history, such as previous cancellations and non-cancelled bookings, reveals insights into their likelihood of canceling a current booking.
- With a previous cancellation rate of 37%, guests with a history of cancellations may exhibit a higher propensity to cancel future bookings, suggesting a potential trend of uncertain travel plans or flexibility in reservation behavior.
- Additionally, the average time since the last cancellation being 2207 units indicates that recent cancellations may have a more pronounced effect on the likelihood of canceling a current booking compared to historical cancellations, highlighting the importance of recent booking behavior in predicting future cancellations..

## Compare the effectiveness of booking distribution channels in generating confirmed bookings. Identify the most commonly used channels by guests.

- Visualizing the percentage of repeated guests for each hotel type over time reveals trends in guest retention.
- Factors influencing guest retention may include the quality of service, loyalty programs, customer satisfaction levels, and market competition.
- Understanding these factors enables hotels to implement targeted strategies to enhance guest experiences and loyalty, ultimately improving guest retention rates and overall profitability.



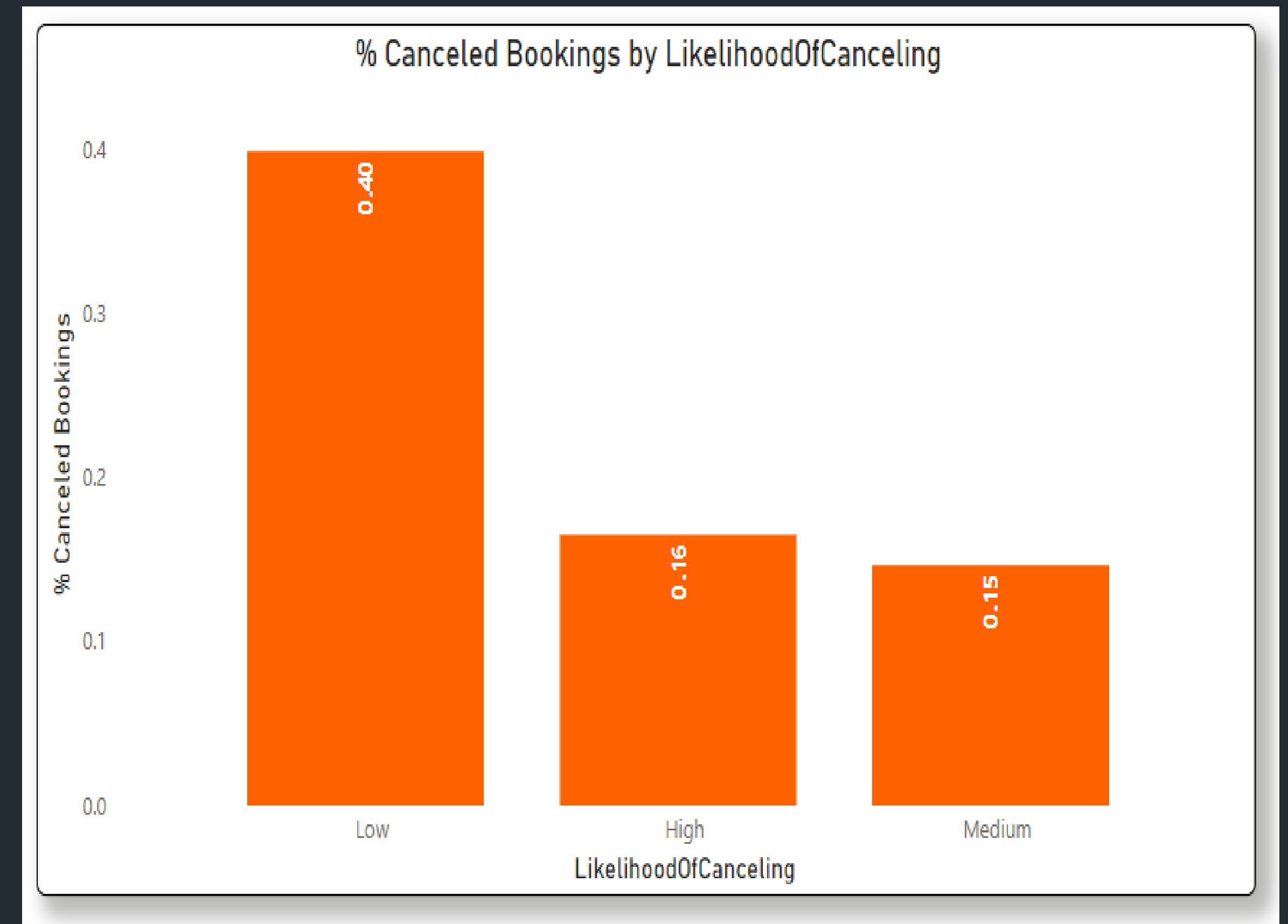
Visualize booking distribution across different market segments and analyze cancellation rates within each segment.



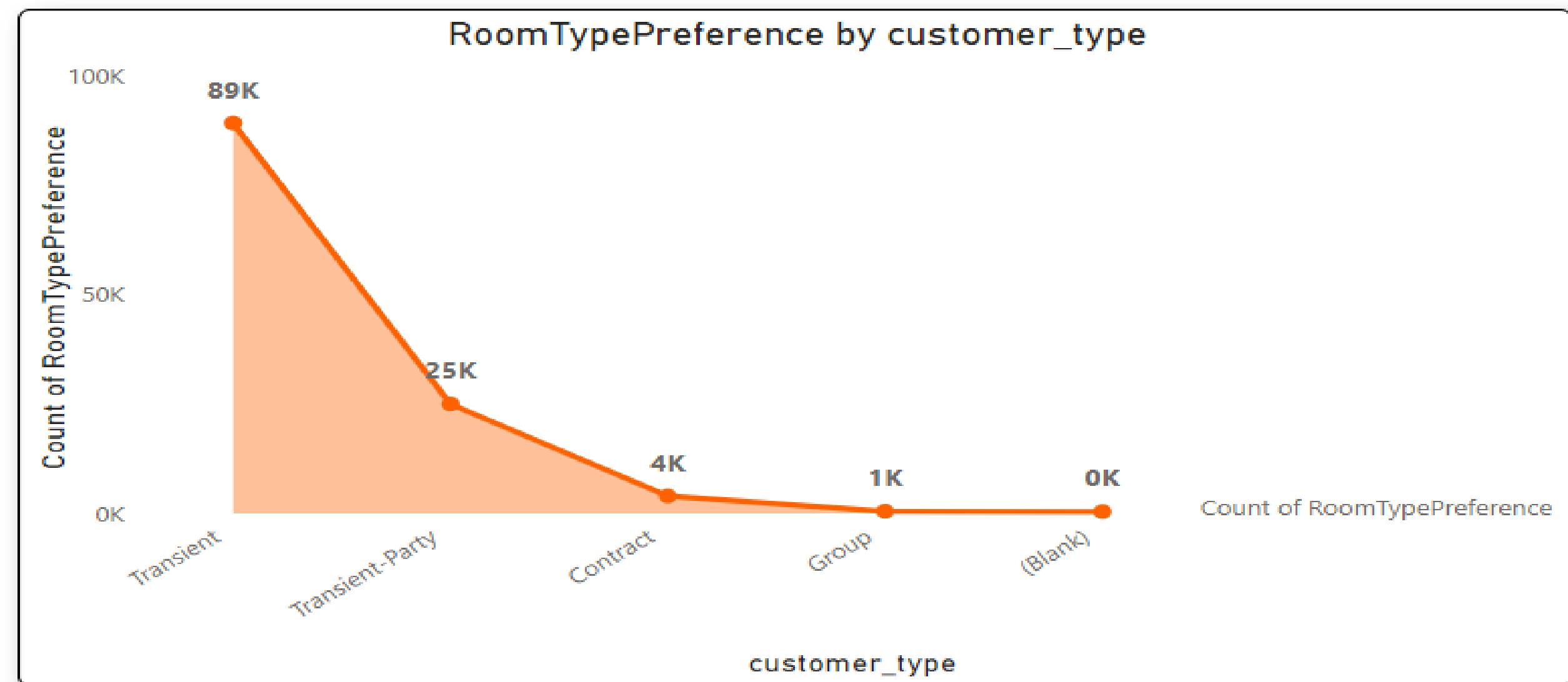
- Visualizing the distribution of reserved and assigned room types can highlight any discrepancies between guest preferences and actual room allocations.
- Analyzing whether guests tend to receive the room type they initially reserved can reveal insights into operational efficiency and guest satisfaction.
- Any notable disparities between reserved and assigned room types may indicate opportunities for improvements in reservation management or communication with guests to ensure their expectations are met upon arrival.

## Investigate the relationship between the number of booking changes made by guests and their likelihood of canceling a booking.

- The likelihood of canceling bookings varies across different categories, with a higher likelihood associated with the "High" category (40%), followed by the "Low" category.
- The "Medium" category has the lowest likelihood of cancellations, with only 15% of bookings canceled.
- Understanding these cancellation probabilities can inform revenue management strategies and help hotels anticipate and mitigate potential revenue loss from canceled bookings.



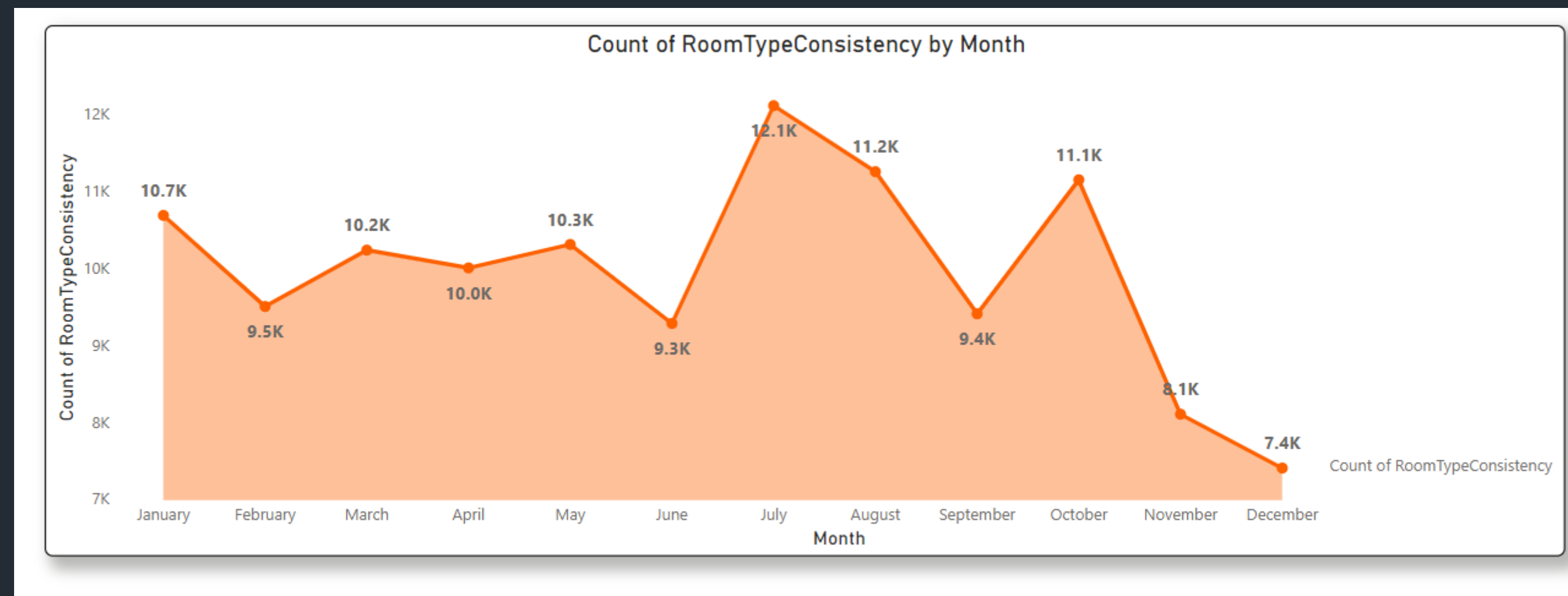
Analyze room type preferences based on customer types (e.g., Transient, Group) and identify any patterns in room type selection.



- The data indicates the count of room type preferences for different customer types, with Transient guests showing the highest count in room type preferences, followed by Transient-Party guests, Contract, and Group guests.
- Understanding these preferences enables hotels to tailor room allocation strategies to match guest expectations and enhance satisfaction.
- Additionally, analyzing room type preferences by customer type can inform pricing and promotional strategies aimed at attracting and retaining specific guest segments.

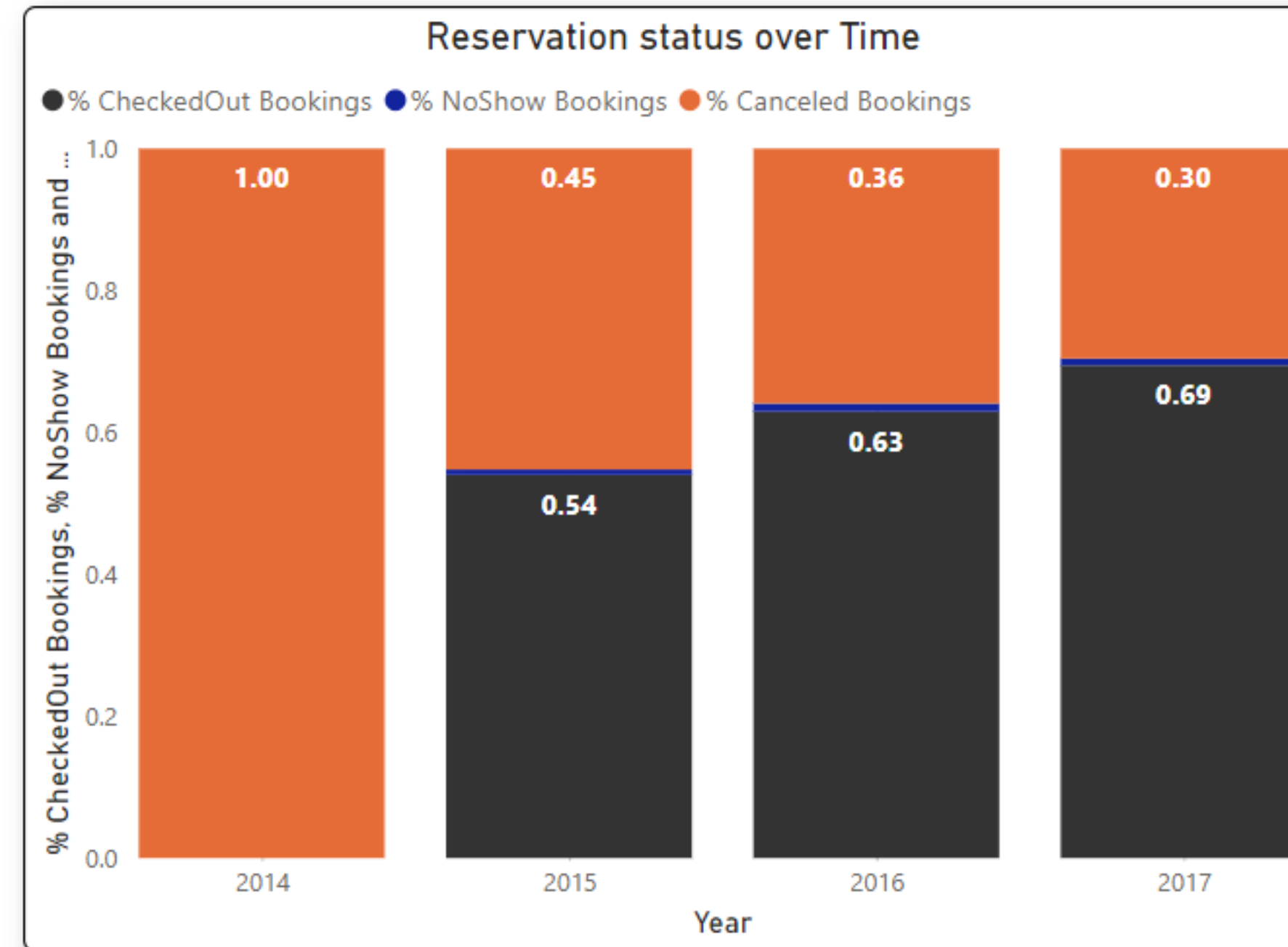


Analyze whether guests who make multiple bookings tend to consistently request the same room type or if their preferences change over time.



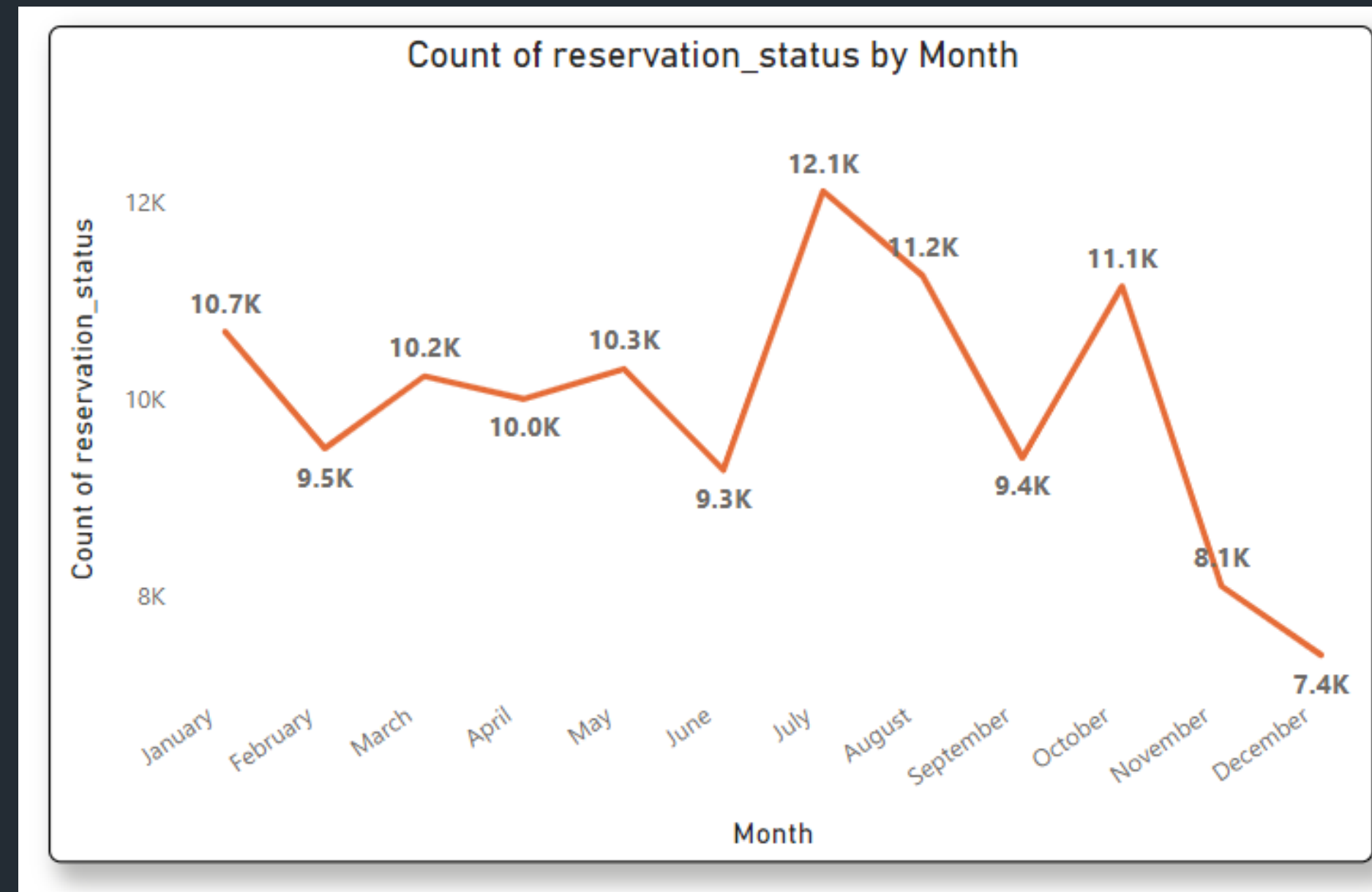
- The data illustrates variations in room type consistency across different months, suggesting potential fluctuations in room allocation practices or guest preferences over time.
- Analyzing these patterns can help identify peak periods of consistency or areas for improvement in room assignment processes, ultimately enhancing guest satisfaction and operational efficiency.
- Further investigation into the underlying factors driving these fluctuations would provide valuable insights for hotel management to optimize room allocation strategies.

Provide an overview of reservation statuses over time, including the percentage of canceled, checkedout, and noshow bookings.



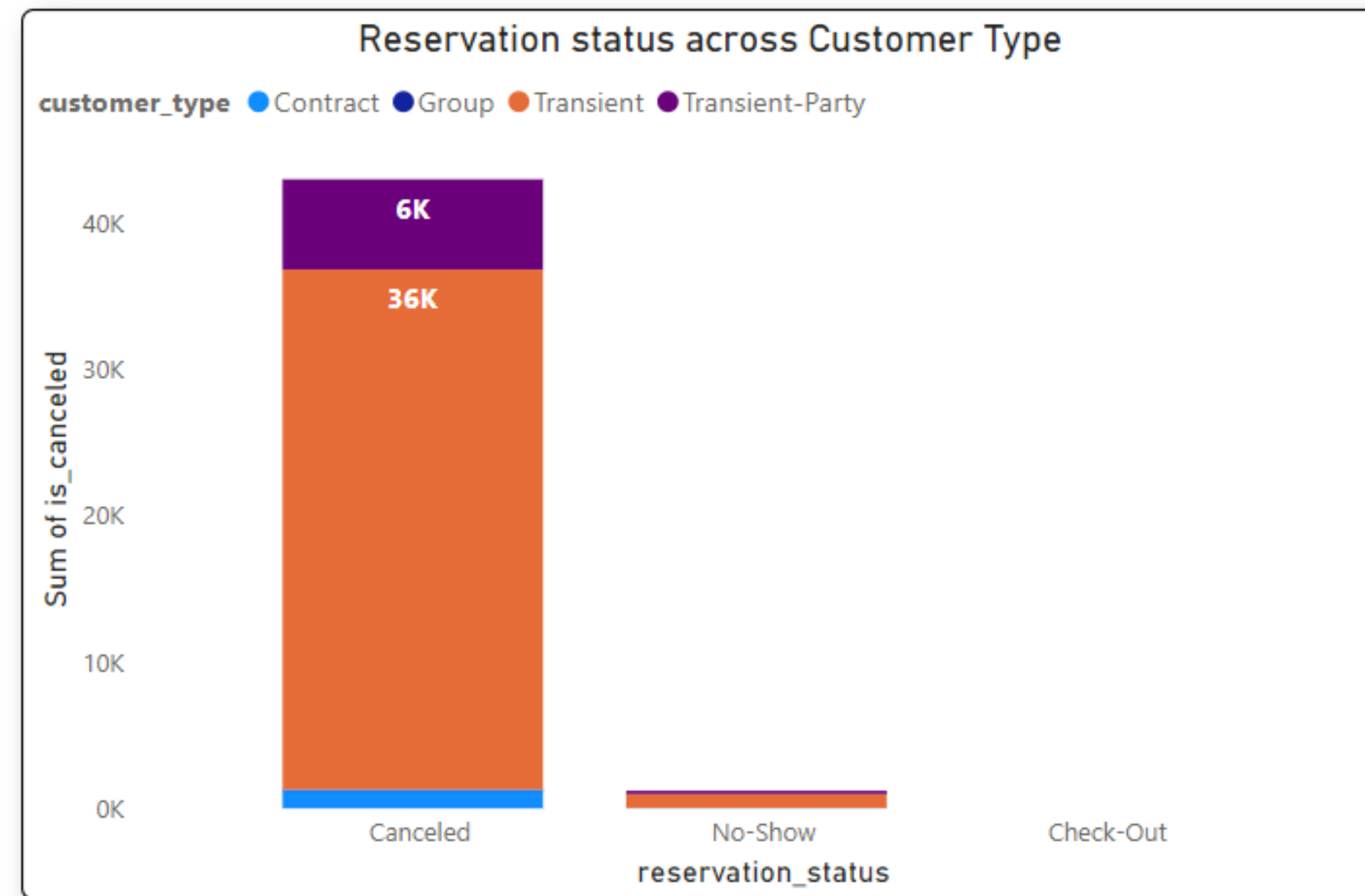
- The data displays the percentage of checked-out, no-show, and canceled bookings across different years.
- The decreasing trend in canceled bookings from 2015 to 2017 suggests potential improvements in booking management or guest communication strategies.
- Hotels should further investigate the factors contributing to these trends to identify best practices and implement measures to reduce no-shows and cancellations, ultimately optimizing revenue and guest satisfaction.

Analyze trends in reservation status dates, such as the busiest checkout dates or patterns in cancellations by month.



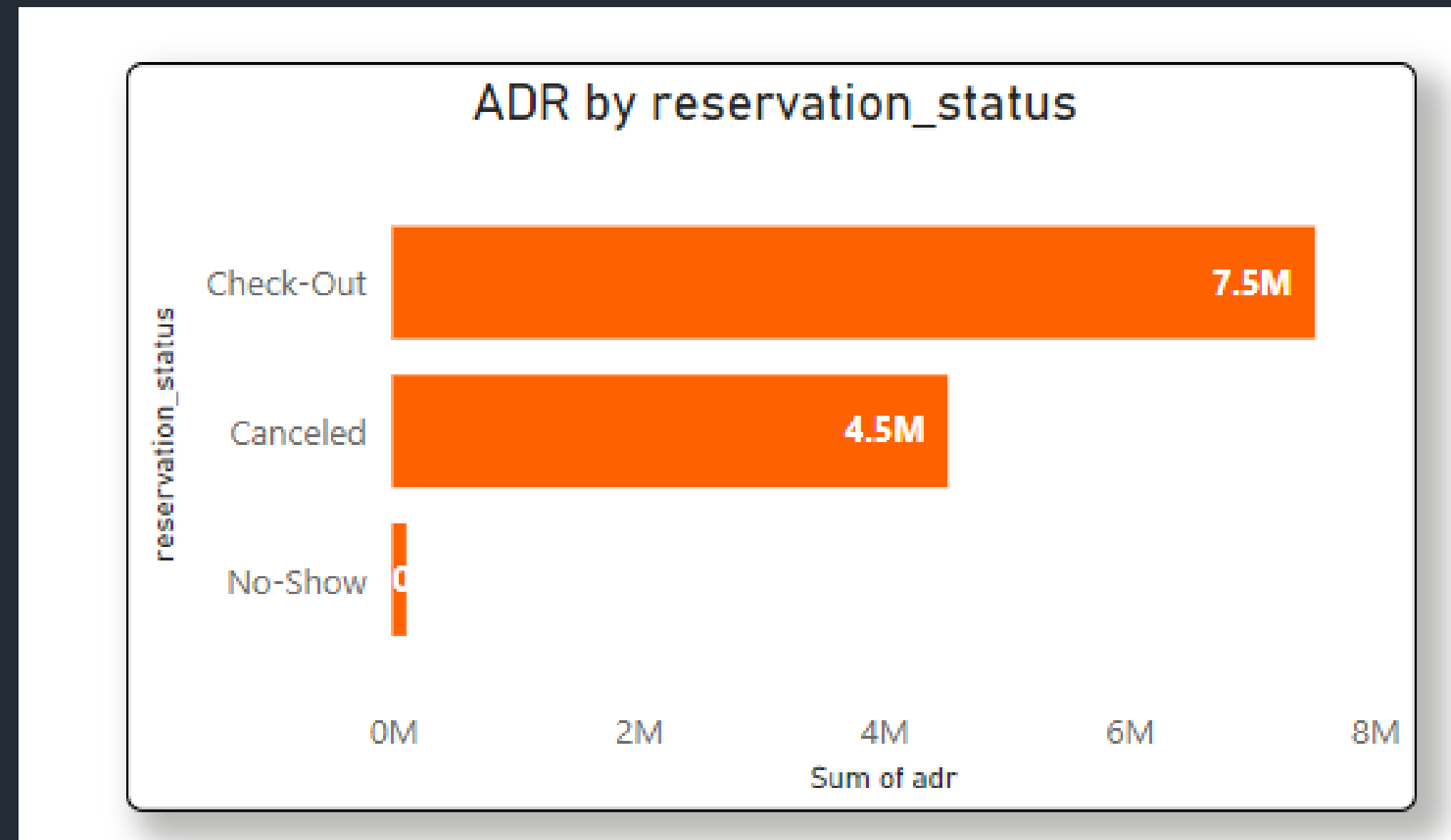
- The data indicates a significant decline in reservation\_status between January and December 2014, with a notable decrease of 30.72%.
- The steepest decline occurred between August and December 2014, suggesting potential seasonal or operational factors influencing booking trends.
- Hotels should analyze the underlying reasons for these declines, such as changes in market demand or internal processes, to develop targeted strategies aimed at stabilizing or reversing the downward trend in reservations.

Visualize how reservation statuses vary across different customer types (e.g., Transient, Group) and identify if certain customer types are more likely to result in cancellations or noshows.



- The data reveals that Transient guests had the highest average and total sum of cancellations, comprising 80.41% of all cancellations within the Transient customer type.
- This suggests potential challenges in managing Transient bookings, possibly due to their flexibility or last-minute changes in travel plans.
- Hotels should focus on understanding the factors contributing to high cancellation rates among Transient guests and implement targeted strategies such as flexible cancellation policies or proactive communication to mitigate cancellations and optimize revenue.

Analyze trends in reservation status dates, such as the busiest checkout dates or patterns in cancellations by month.



- The data illustrates significant disparities in Average Daily Rate (ADR) among different reservation statuses, with Check-Out bookings having the highest ADR at 7.5M, followed by Canceled and No-Show. Check-Out bookings accounted for the majority (61.82%) of the total ADR, indicating the substantial revenue contribution from successfully completed stays.
- These insights highlight the importance of managing reservation statuses effectively to maximize revenue and mitigate potential losses from cancellations and no-shows.

**THANK YOU**