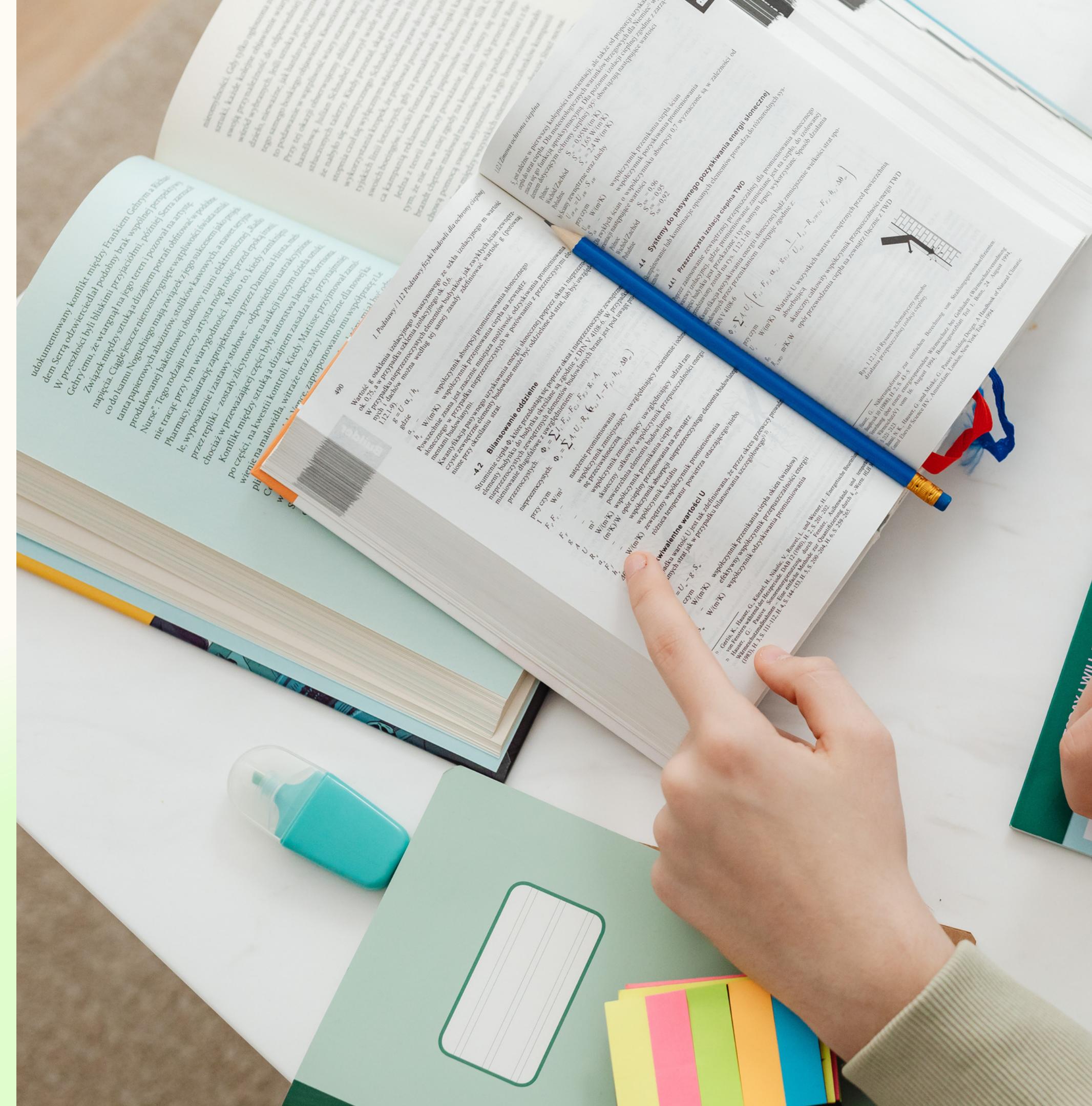
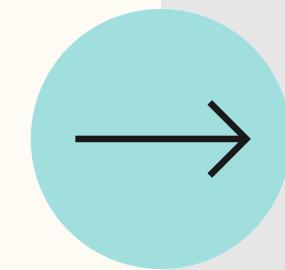


Business Case Study Analysis

Presented by: SALONI

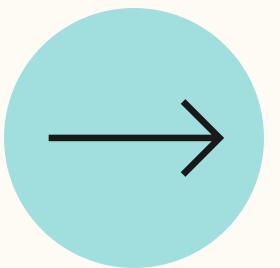




Optimizing Booking Conversion Rates with Urgency Messaging

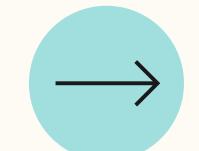
Introduction

- Importance of boosting booking numbers for XYZ company.
- The power of urgency messaging in influencing user behavior.
- Purpose of the case study: understanding the impact of price movement and booking proximity on conversion rates.



Analysis Overview

- Jupyter Notebook
- Tableau Dashboard



- **Jupyter Notebook:**
 - All necessary statistical analyses performed.
 - Detailed exploration and interpretation of data insights provided through statistical examination.

Tableau Dashboard

- Implementation of visualization techniques to render data in an insightful and user-friendly manner.
- Integration of analytical mapping for enhanced understanding and interpretation of data patterns.

Overview of steps

Understanding Data and Data Types:

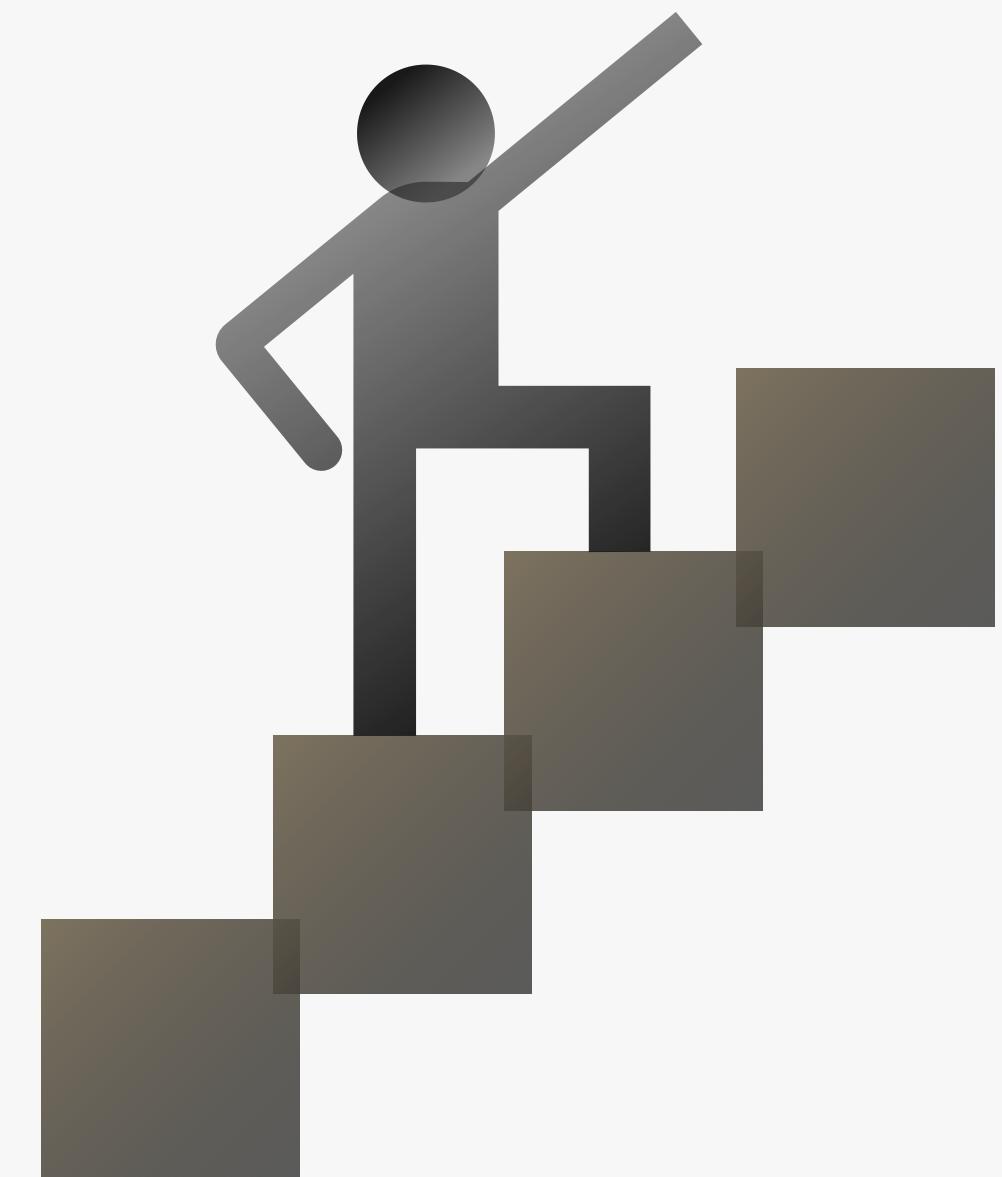
- **Steps:** Describe the dataset structure and variables, identify data types, and convert them as necessary.
- **Interpretation:** Understanding the dataset's structure provides insights into the available information and potential analysis approaches.
- **Use Case:** Helps in selecting appropriate analysis techniques and preprocessing methods based on the nature of the data.

Missing Value Treatment:

- **Steps:** Identify and handle missing values using imputation methods like KNN and Random Forest.
- **Interpretation:** Imputing missing values ensures the completeness of the dataset for accurate analysis.
- **Use Case:** Maintains data integrity and reliability in statistical and machine learning models by addressing missing information.

Analyzing Distribution and Spread of Data:

- **Steps:** Visualize data distributions and spreads using histograms, box plots, etc.
- **Interpretation:** Analyzing data variability and patterns helps in understanding the dataset's characteristics.
- **Use Case:** Identifying skewed distributions or outliers informs decisions on data transformation or outlier handling strategies.



Overview of steps

Check Seasonality and Trends:

- **Steps:** Analyze seasonality and trends in datetime columns.
- **Interpretation:** Identifying seasonality and trends provides insights into recurring patterns and temporal effects on bookings and ADR.
- **Use Case:** Guides marketing and pricing strategies by recognizing seasonality and tailoring approaches accordingly.

Correlation Analysis:

- **Steps:** Compute correlation coefficients between variables.
- **Interpretation:** Correlation analysis reveals relationships between variables, indicating potential predictors of booking conversion rates.
- **Use Case:** Helps in feature selection for predictive modelling by identifying highly correlated variables.

Outlier Detection and Treatment:

- **Steps:** Detect and handle outliers using methods like IQR and handle using imputation methods like KNN and Random Forest.
- **Interpretation:** Addressing outliers ensures robust and reliable analysis outcomes by minimizing the influence of anomalies.
- **Use Case:** Ensures the accuracy and validity of analysis results by handling data points that deviate significantly from the norm.



Overview of steps

Feature Engineering:

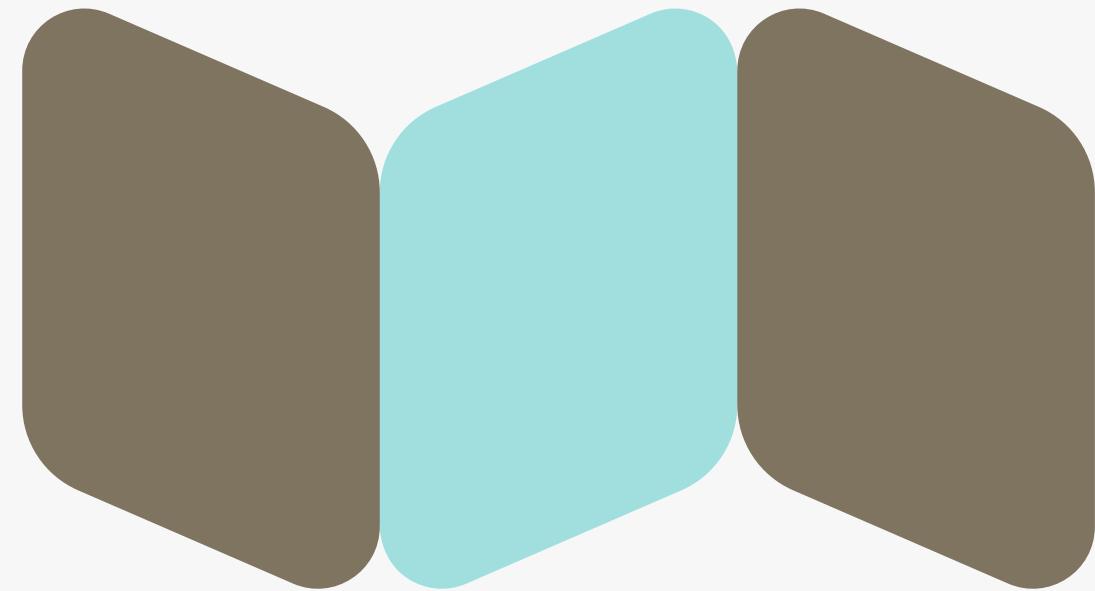
- **Steps:** Create new features to enhance model performance.
- **Interpretation:** Feature engineering uncovers hidden insights and enhances predictive power by capturing additional information or patterns.
- **Use Case:** Helps in understanding complex relationships and improving the effectiveness of predictive models for booking conversion rates.

ANOVA Test:

- **Steps:** Conduct ANOVA tests to compare variables across different categories.
- **Interpretation:** ANOVA tests determine whether there are statistically significant differences between groups.
- **Use Case:** Guides decision-making by identifying factors that significantly influence booking conversion rates, such as ADR variations across different booking categories.

Price Movement Analysis:

- **Steps:** Analyze price movement trends over time.
- **Interpretation:** Price movement analysis reveals the dynamics of pricing changes and their impact on booking behaviour.
- **Use Case:** Helps in setting competitive prices, optimizing pricing strategies, and implementing effective urgency messaging based on pricing dynamics.



Overview of steps

OLS Regression Analysis:

- **Steps:** Perform OLS regression to model relationships between variables.
- **Interpretation:** OLS regression quantifies the impact of variables on booking and ADR, aiding in prediction and inference.
- **Use Case:** Understand the influence of factors like booking date proximity on ADR and identify strategies.

Clustering using K-Means:

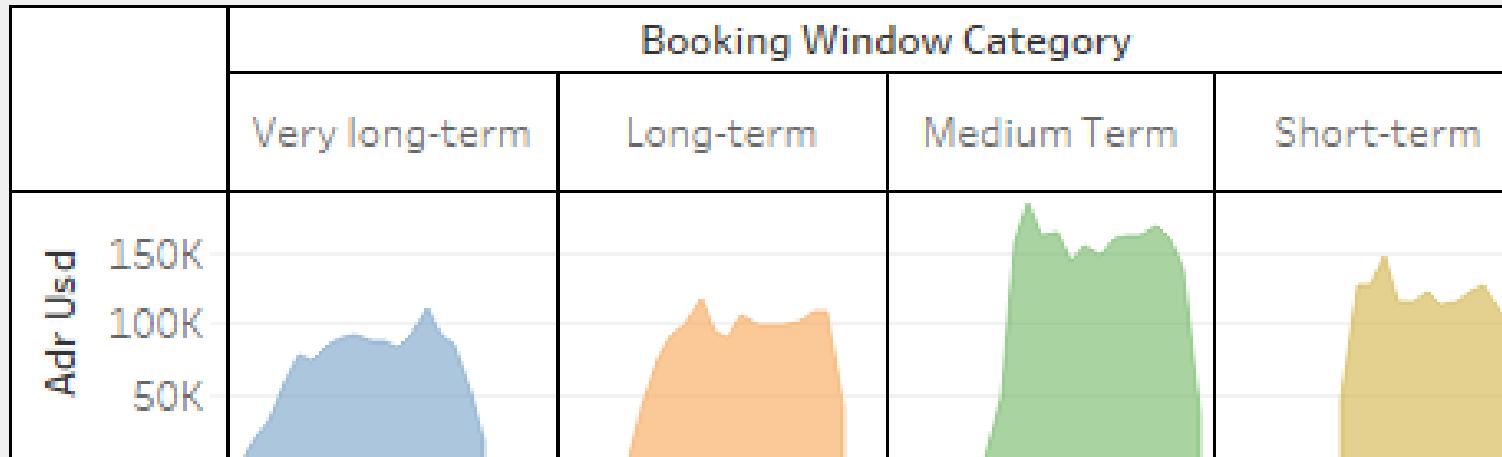
- **Steps:** Apply K-means clustering to segment data into homogeneous groups.
- **Interpretation:** Clustering identifies patterns and segments within the data, aiding in customer segmentation and targeted marketing strategies.
- **Use Case:** Personalize marketing messages and offerings to improve conversion rates by targeting specific customer segments based on behaviour.



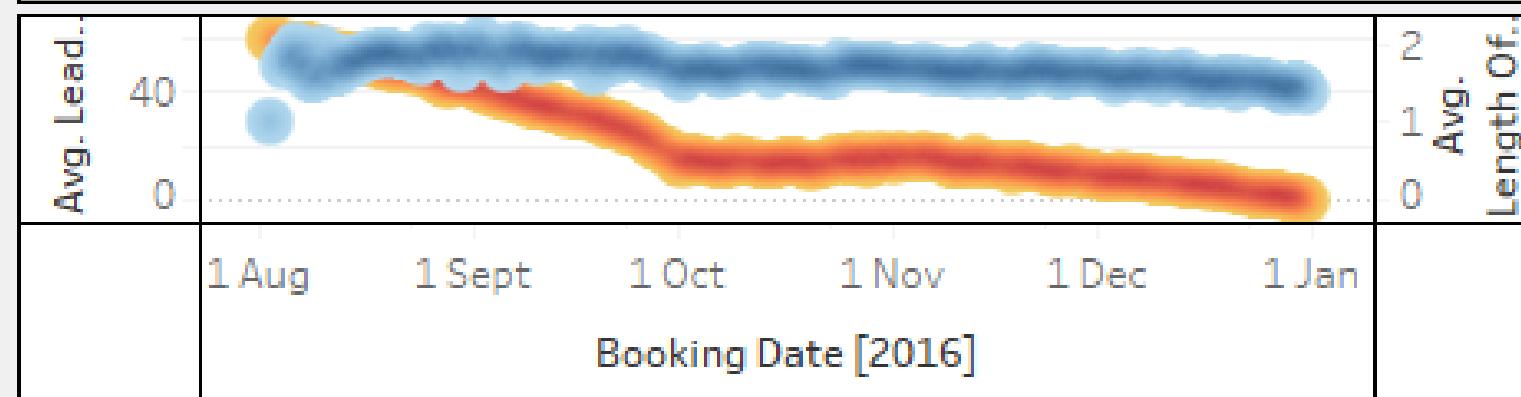
Tableau Analytical Dashboard

PRICING ANALYSIS

Booking Window Influence on ADR: Insights by Category



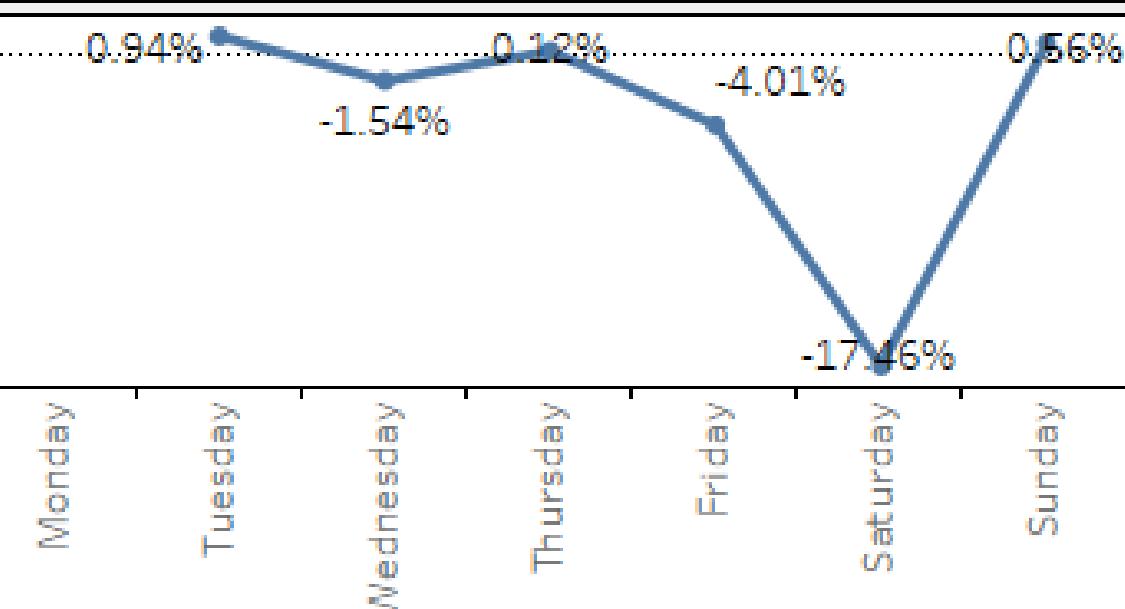
Temporal Patterns: Booking Date Impact on Lead Time and Stay Duration



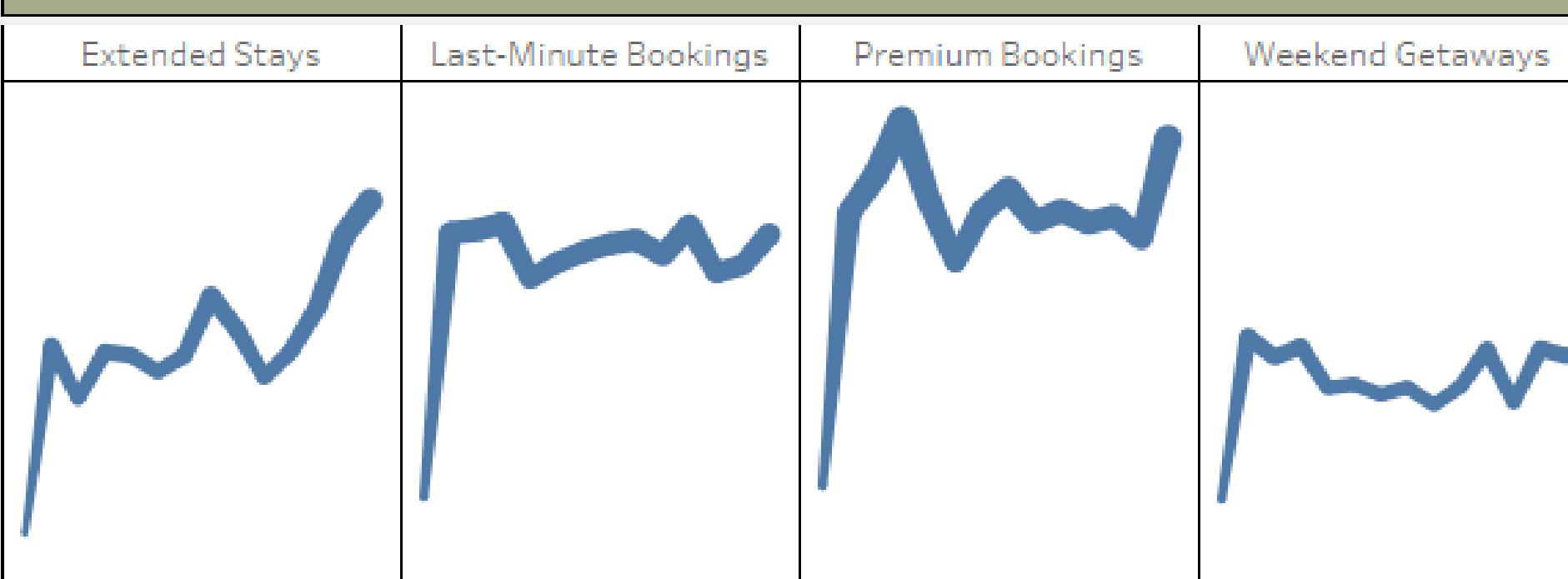
Key Booking Dates: Top 5 ADR and Booking Counts

4 October 2016	5 October 2016	21 October 2016	2 November 2016	7 November 2016	Grand Total
ADR: \$78.62K Bookings: 591	ADR: \$82.99K Bookings: 619	ADR: \$79.50K Bookings: 596	ADR: \$78.63K Bookings: 606	ADR: \$81.36K Bookings: 616	ADR: \$401.11K Bookings: 3,028

Analyzing ADR Fluctuations: Booking Weekday Perspective



Cluster-wise ADR Variation Over Check-in Dates



Month of Booking Date

- August
- September
- October
- November
- December

Cluster Name

- Extended Stays
- Last-Minute Bookings
- Premium Bookings
- Weekend Getaways

Star Rating

- All values

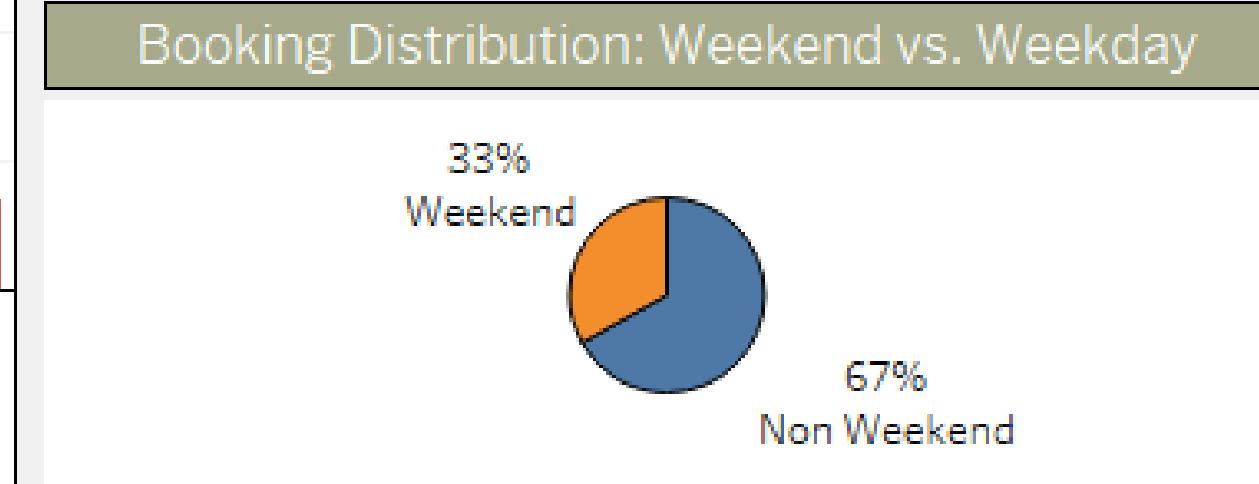
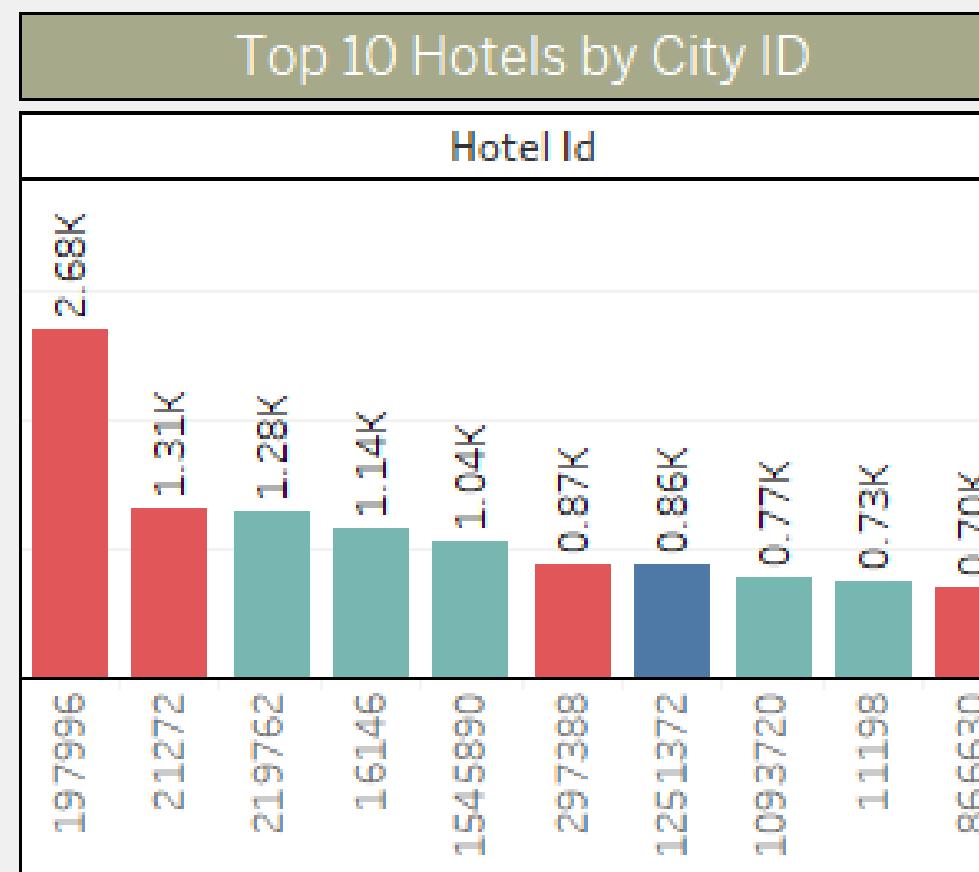
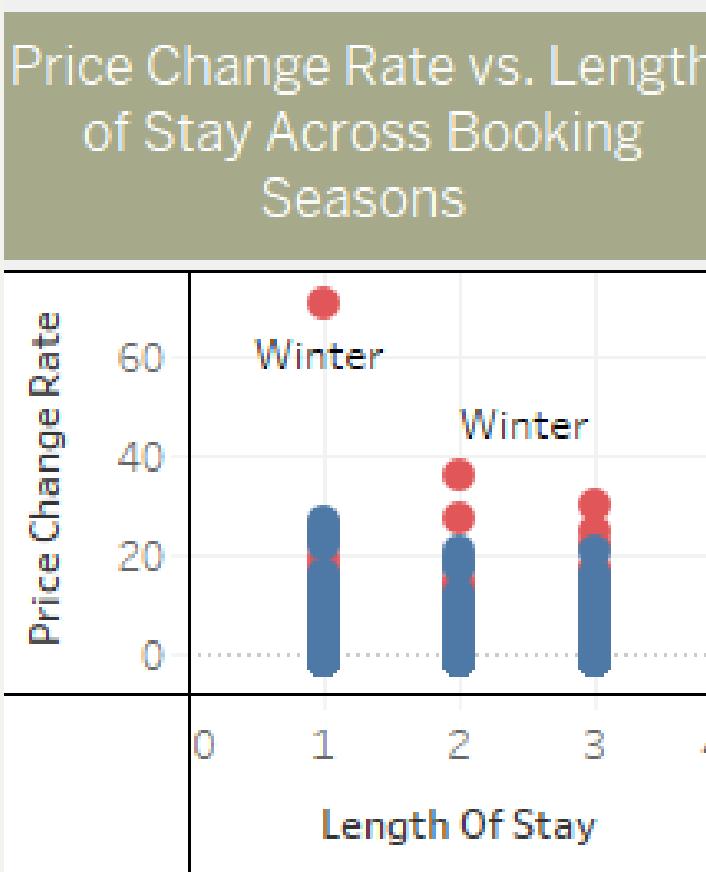
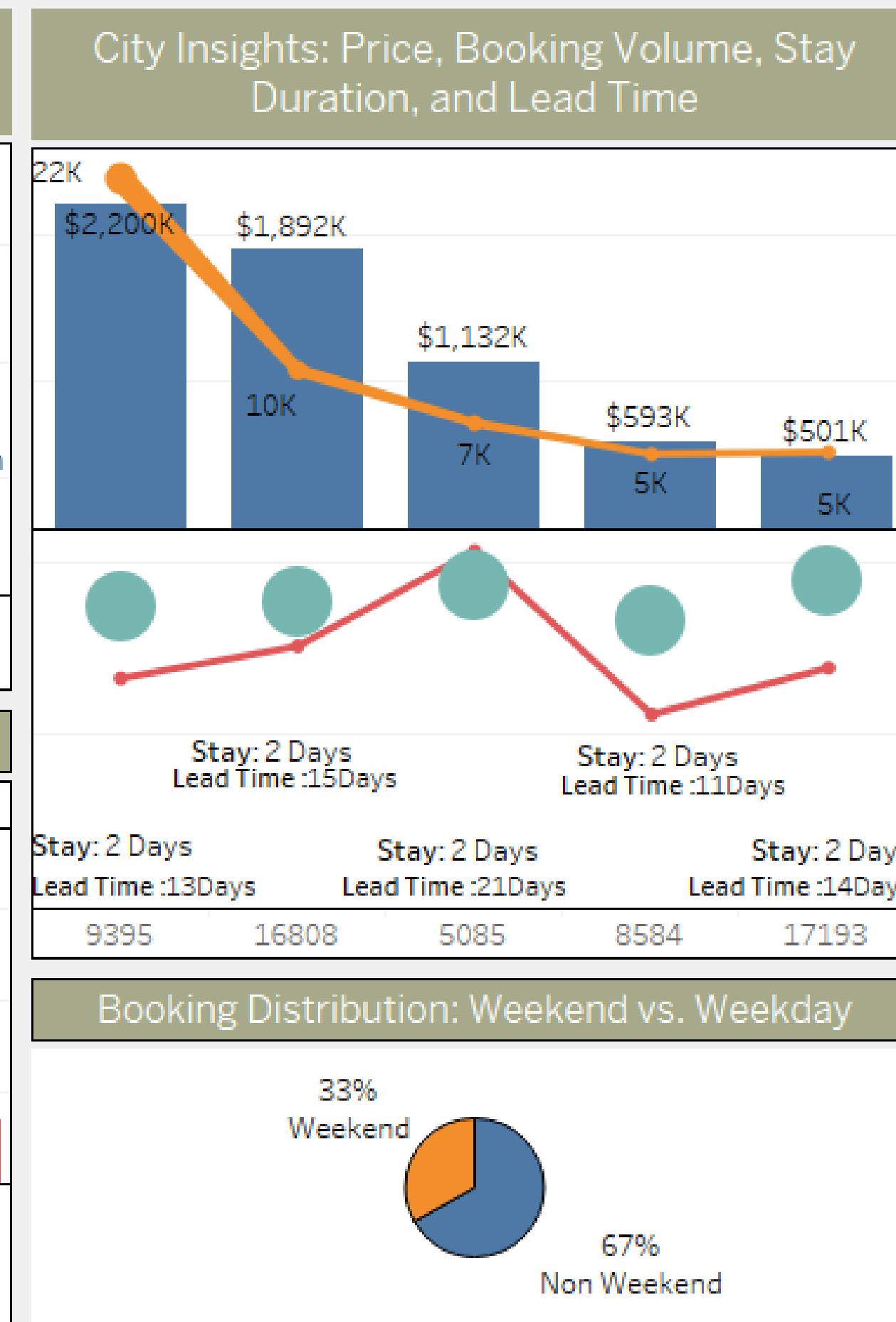
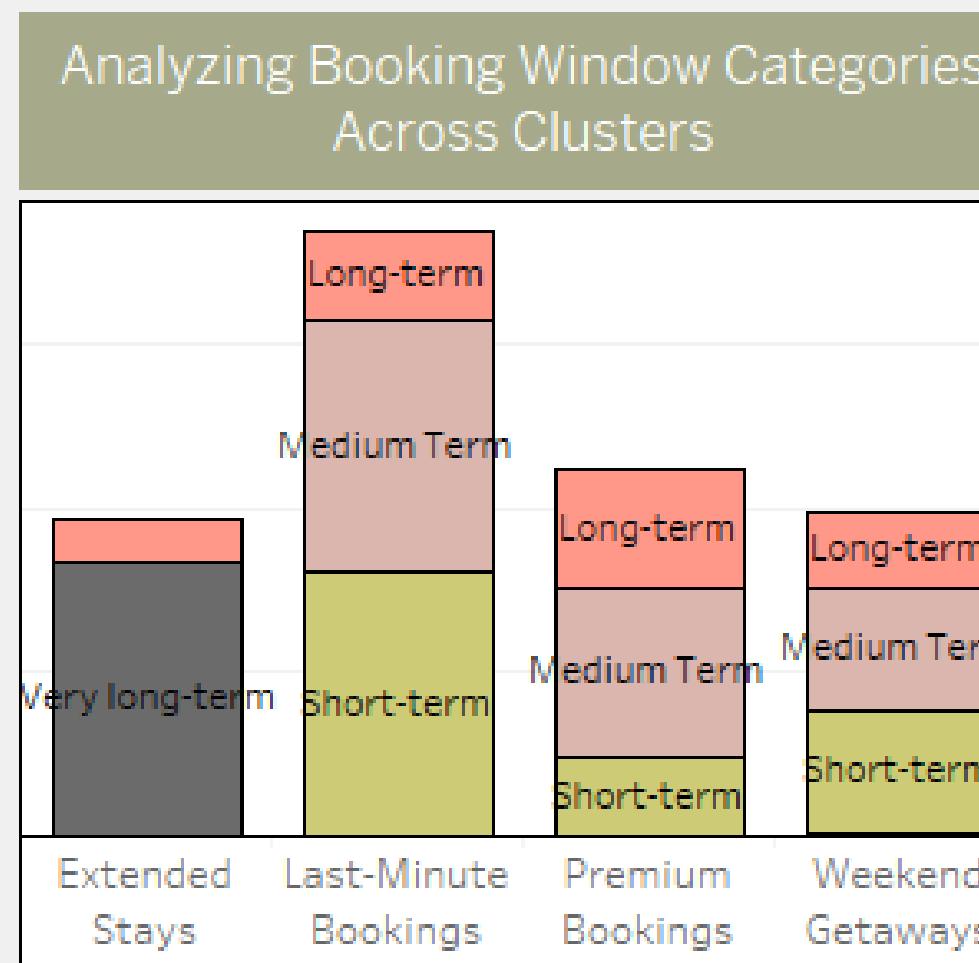
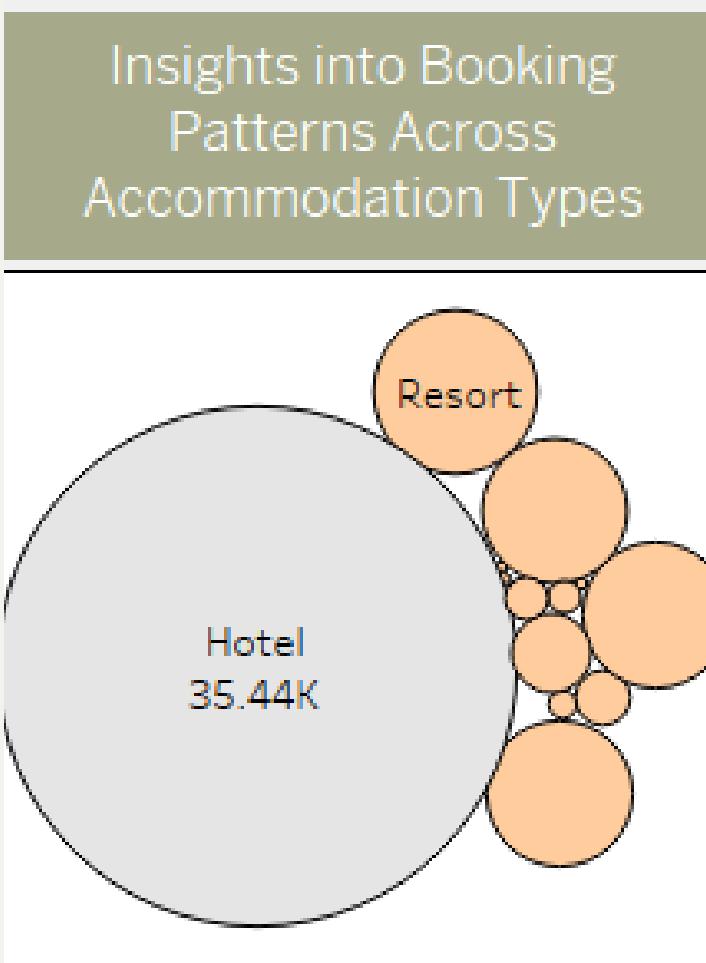
City Id

- 5085
- 8584
- 9395
- 16808
- 17193

Chain Hotel

- chain
- non-chain

Tableau Analytical Dashboard



- Month of Booking Date**
 August
 September
 October
 November
 December

- Cluster Name**
 Extended Stays
 Last-Minute Bookings
 Premium Bookings
 Weekend Getaways

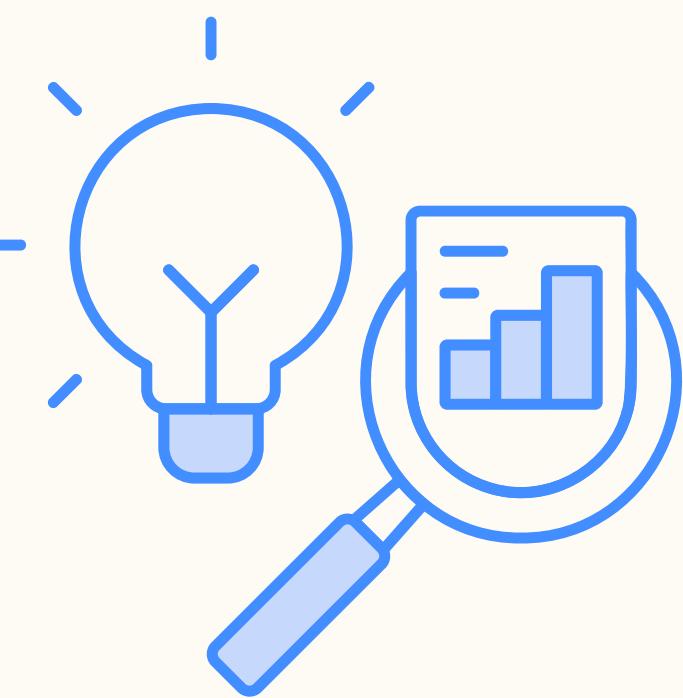
- Star Rating**
 All values

- City Id**
 5085
 8584
 9395
 16808
 17193

- Chain Hotel**
 chain
 non-chain

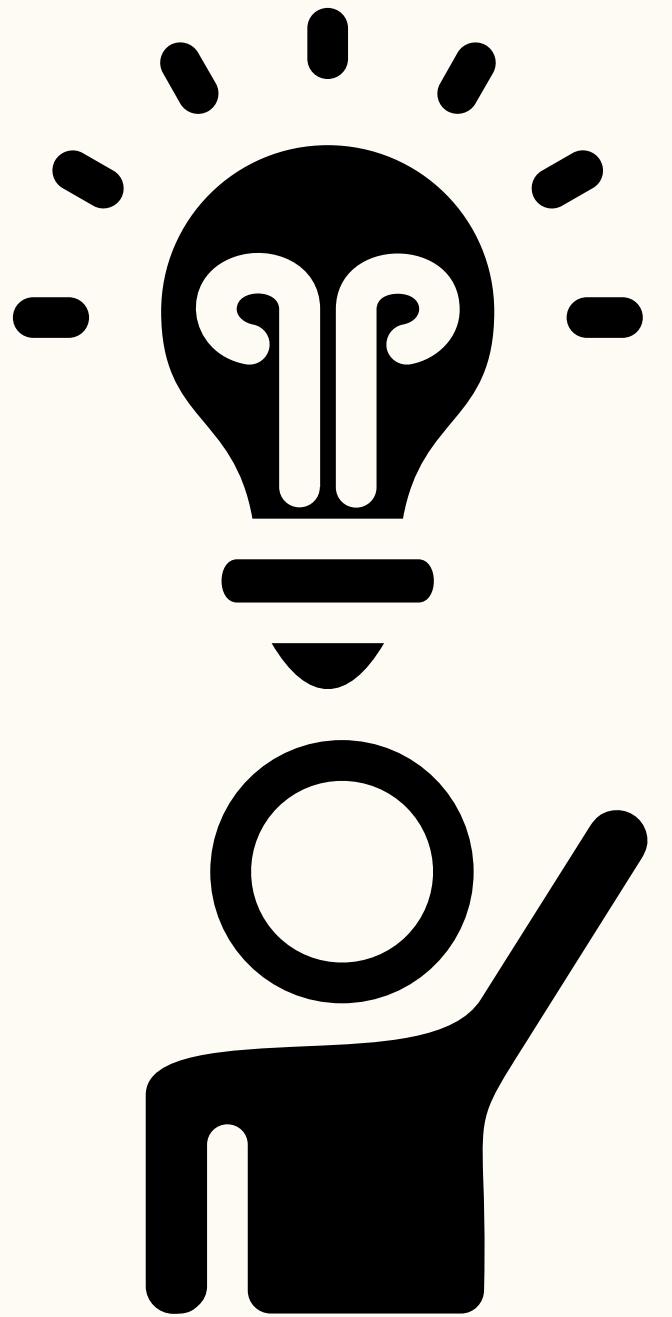
Key Insights from the Analysis

- **Booking window influence on ADR:** The average daily rate (ADR) tends to be higher for bookings made further in advance. For example, in the "Booking Window Influence on ADR: Insights by Category" table, the ADR for "medium term" bookings is significantly higher than the ADR for "Short-term" bookings. This suggests that guests who book well in advance are willing to pay more per night.
- **Temporal patterns:** The ADR also varies depending on the time of year. The table shows that the ADR is highest in December and lowest in August. This is likely due to seasonal fluctuations in demand. Hotels can use this information to adjust their prices accordingly.
- **Length of stay:** Length of stay varies depending on the booking window. For example, guests who book very long-term tend to stay for longer periods of time than guests who book short-term. This suggests that hotels can offer discounts or other incentives to encourage longer stays. The table shows longer booking windows ("Very long-term" and "Long-term") also tend to have longer stays ("Extended Stays").
- **Key booking dates:** The table "Key Booking Dates: Top 5 ADR and Booking Counts" shows the top 5 dates in terms of ADR and booking counts. This information can be used to identify peak periods of demand and to target marketing campaigns accordingly. For example, the highest ADR is on October 4th at \$78.62 with 591 bookings.



Key Insights from the Analysis

- **ADR fluctuations:** The dashboard also shows that the ADR varies depending on the day of the week that a booking is made. For example, the table "Analyzing ADR Fluctuations: Booking Weekday Perspective" shows that the ADR is highest on weekends. This suggests that hotels can charge higher prices for weekend stays.
- **Booking patterns across Accommodation Types:** The dashboard shows long-term bookings are more frequent for resorts whereas short-term bookings are more frequent for hotels. This suggests that people tend to book resorts in advance, whereas hotels can be booked closer to the stay date.
- **Star Rating vs. Length of Stay:** The "Length Of Stay" distribution graph might reveal trends between star rating and length of stay. For instance, it appears that higher star-rated hotels (5 Star) have a higher concentration of shorter stays (1-2 days) compared to lower star-rated hotels (3 Star) that tend to have a higher concentration of longer stays (4-7 days). This could be due to factors like business travellers frequenting higher-rated hotels for shorter stays, while leisure travellers tend to stay longer at lower-rated properties.



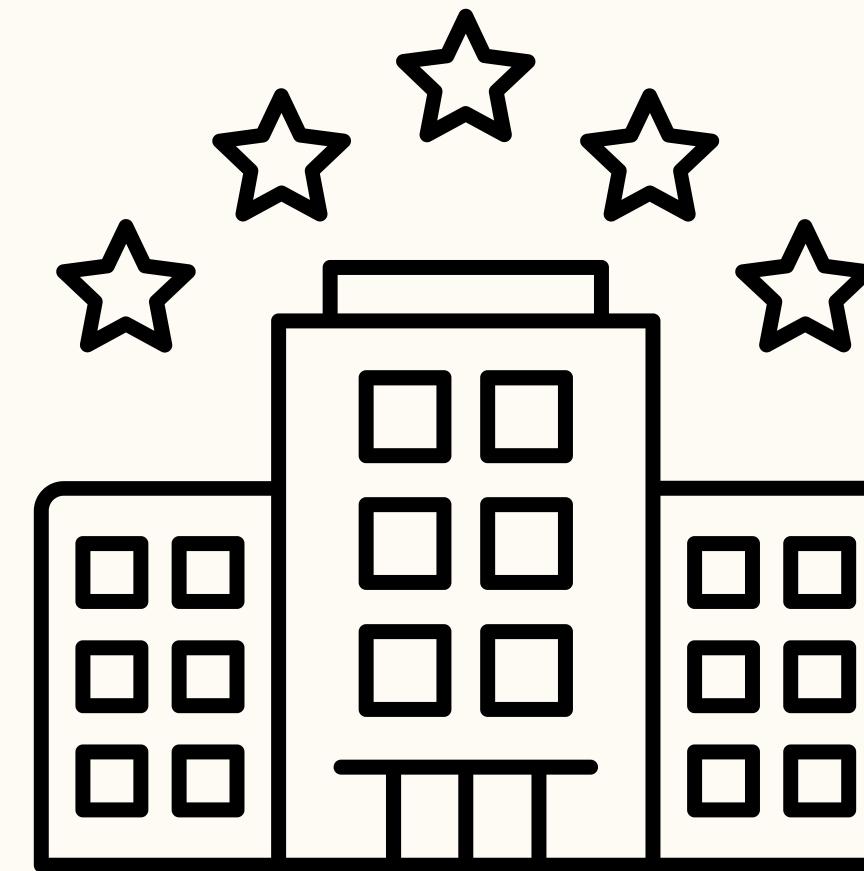
Key Insights from the Analysis

- **City Insights:** We can observe differences in booking volume, ADR, lead time, and stay duration across cities. CityID 9396 seems to have the highest booking volume and ADR, suggesting strong demand and higher pricing. Conversely, CityID 17193 might have the lowest ADR and booking volume. For example, hotels in CityID 9396 with high ADR and booking volume may focus on offering premium services and targeting affluent customers, while those in CityID 17193 may adopt strategies to attract budget-conscious travelers.



Key Insights from the Analysis

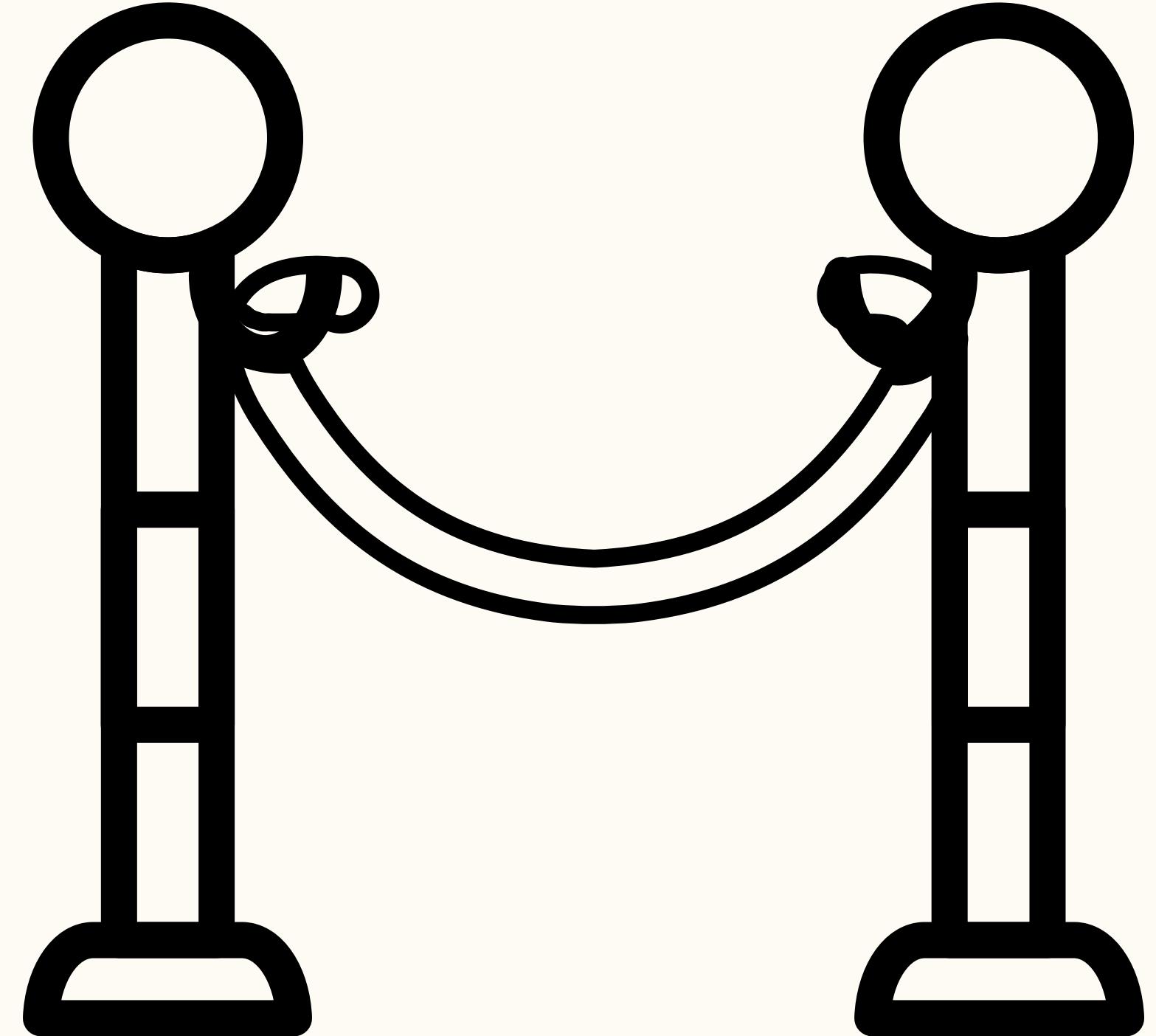
- **Most Popular Hotels:** The "Most Popular Hotels" chart showcases the top 20 hotels based on the number of bookings. These hotels represent destinations that are highly sought after by travelers, indicating their popularity and demand. For travelers seeking well-visited and reputable accommodations, these top-ranked hotels could serve as excellent options.

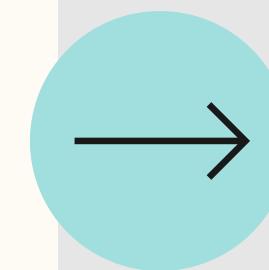


Limitations to Consider

The other factors that may influence pricing dynamics:

1. Specific room types offered by the hotel
2. Guest demographics (business vs. leisure travelers)
3. Local events or festivals





Strategies for
implementing
urgency
messaging
based on
analytical
insights

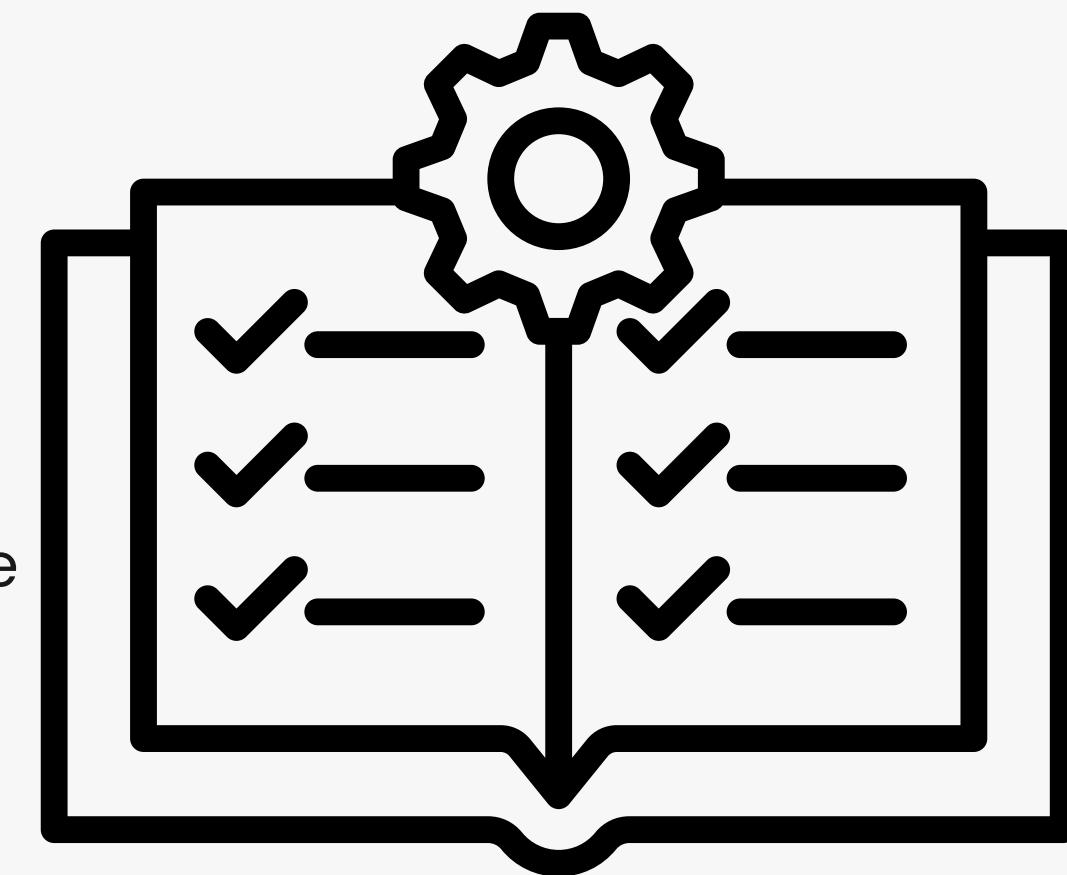
Urgency Messages Based on Booking Window

- **Highlight Early Bird Discounts:**

The “Booking Window Influence on ADR: Insights by Category” table shows a positive correlation between booking window and ADR. This suggests guests who book well in advance are willing to pay more. You can leverage urgency messaging to promote early bird discounts. For instance, ***“Book 30 days in advance and save 15% off your stay!”***

- **Create Last-Minute Deals:**

Short-term bookings have a lower ADR but higher occupancy, suggesting price sensitivity for last-minute bookings. Create urgency messaging around last-minute deals to fill vacancies. For instance, ***“Limited time offer! Book your stay within the next 24 hours and get 10% off.”***



Urgency Messages Based on Seasonality

- **Promote Peak Season Activities:**

The table might reveal variations in ADR across months. If December has the highest ADR, you can craft messaging highlighting the benefits of booking during the peak season. For instance, ***"Experience the magic of winter wonderland! Book your stay now for the December holidays."***

- **Offer Shoulder Season Incentives:**

Conversely, for slower months like August with lower ADR, introduce urgency messaging with special offers to incentivize bookings. For instance, ***"Beat the summer rush! Book your relaxing getaway in August and enjoy 20% off."***



Summer



Spring



Winter

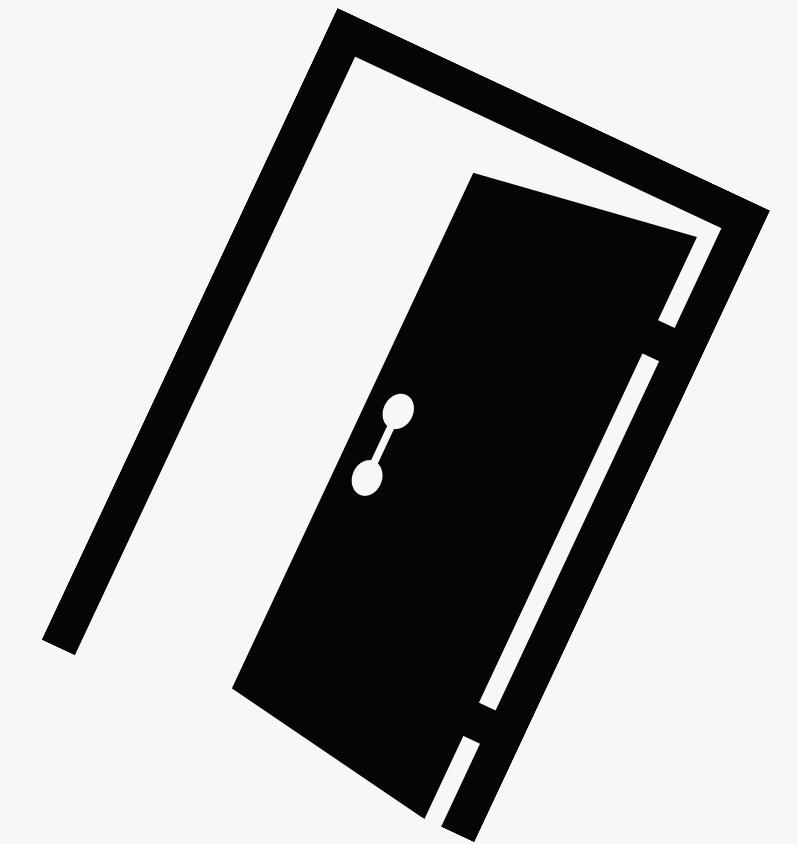


Autumn

Urgency Messages Based on Room Availability and Local Events

- **Limited-Time Room Offers:**

Consider implementing a real-time room availability indicator on your website. Combine this with urgency messaging to create a sense of scarcity, especially for popular room types. For instance, ***"Only 2 rooms left at this discounted rate! Book yours now before they're gone."***



- **Package Deals Around Events:**

The data doesn't have information, but we can consider integrating data on local events from external sources. Create urgency messaging around package deals that bundle your hotel stay with event tickets. For instance, ***"Don't miss out on the music festival! Book your stay now and get exclusive access to discounted festival tickets."***



Urgency Messaging Based on Length of Stay

- **Package Deals for Longer Stays:**

The table “Booking Window Influence on ADR: Insights by Category” also shows a correlation between booking window and length of stay. For instance, it might show that “Long Term” bookings tend to be stays categorized as “Extended Stays”. Create urgency messaging with package deals that incentivize longer stays. For example, ***“Book a relaxing week-long getaway and enjoy 20% off your stay, plus a complimentary breakfast daily!”***



Leverage Cancellation Rates for Implementing Urgency messaging

- **Highlight Low Cancellation Rates for Specific Room Types:**

Show cancellation rates vary by room type (e.g., Suites have a lower cancellation rate than Standard Rooms), use urgency messaging to emphasize the security of booking a less-cancellable room type. For example, ***"Relax, knowing your stay is secure! Suites boast a lower cancellation rate, perfect for peace-of-mind planning."***

- **Urgency for Last-Minute Bookings with Free Cancellation:**

If they offer a free cancellation window for short-term bookings, create urgency messaging highlighting this benefit. For example, ***"Spontaneous getaway? Book your stay within 48 hours and enjoy the flexibility of free cancellation!"***



Urgency Messaging Based on Historical Data and Events

- **Urgency for Events with Limited Availability:**

Integrate data on local events from external sources and combine it with historical booking trends. Create urgency messaging around limited rooms available for popular events. For example, "***The DJAY Carnival is almost here! Don't miss out, book your stay now and secure your spot in the heart of the action.***"

- **Urgency for Recurring Events (Seasonal Sales):**

For events that occur regularly (e.g., Black Friday sale), analyze historical booking data to identify peak booking windows. Create urgency messaging highlighting limited-time discounts activated just before these peak periods. For example, "***Black Friday deals are coming soon! Sign up for our newsletter to receive early access and book your discounted stay before they're gone!***"



Utilize Personalization and Dynamic Urgency messaging

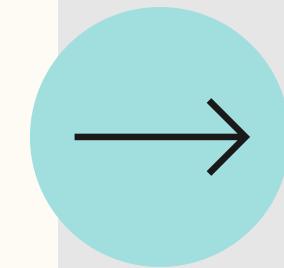
- **Urgency Based on User Behavior (Website Tracking):**

If the website has tracking capabilities, use urgency messaging based on user behavior. For instance, if a user abandons a partially filled booking form, send an email with urgency messaging highlighting limited availability for their chosen dates. For example, ***"We noticed you were interested in staying with us! Don't miss out, rooms for your chosen dates are filling up fast. Book now to confirm your reservation."***



- **Urgency Based on Past Booking Preferences:**

For returning guests, consider urgency messaging based on their past booking preferences. For example, if a guest frequently books specific room types or amenities, create urgency messaging highlighting limited availability for their preferred options. For example, ***"Your favorite Ocean View Suite is in high demand! Book your next stay now and secure your relaxing getaway."***



Other
Solutions

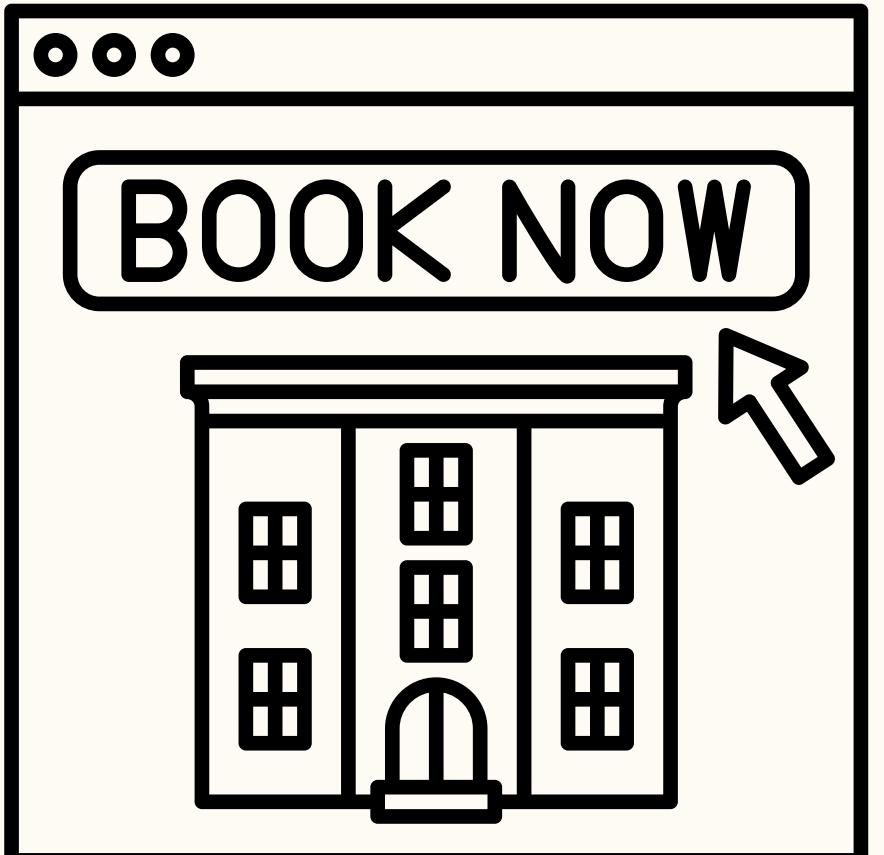
Dynamic Pricing Strategies:

- **Leverage Machine Learning:** Integrate a machine learning algorithm with your booking system. This allows for dynamic pricing that adjusts room rates based on real-time factors like booking window, occupancy, competitor pricing, and local events. This can help optimize revenue and ensure you're not undercutting or overpricing your rooms.
- **Implement Price Thresholds:** Set minimum and maximum price thresholds for each room type based on historical data and market trends. This ensures you maintain profitability while allowing for some flexibility in pricing based on real-time demand.



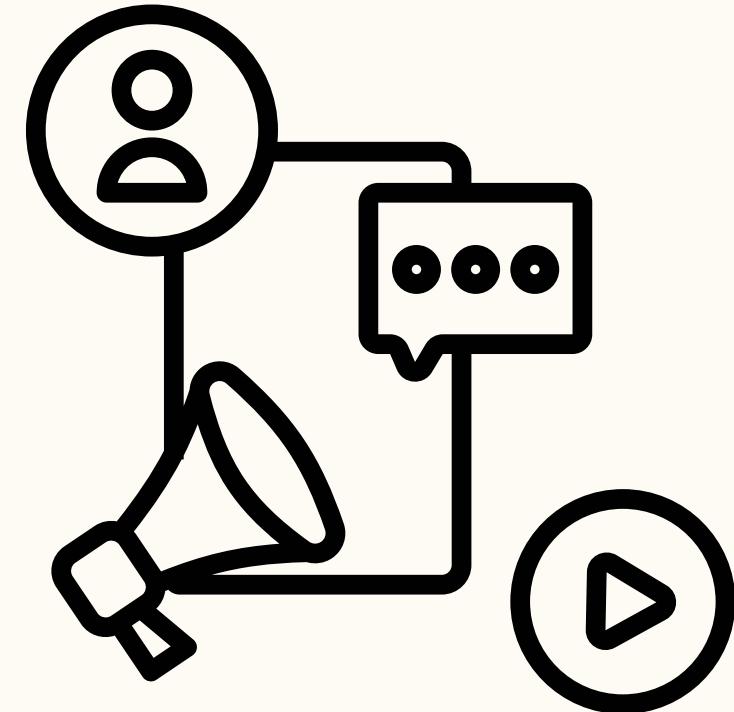
Optimizing Booking Channels:

- **Analyze Channel Performance:** Include a section on booking channels (e.g., direct website, OTAs), analyze the performance of each channel (conversion rates, booking volume, and revenue generated). Focus marketing efforts and potentially offer exclusive deals on high-performing channels.
- **Direct Booking Incentives:** If the dashboard shows a higher ADR for direct bookings, consider offering incentives like loyalty points or exclusive room upgrades to encourage guests to book directly through your website.



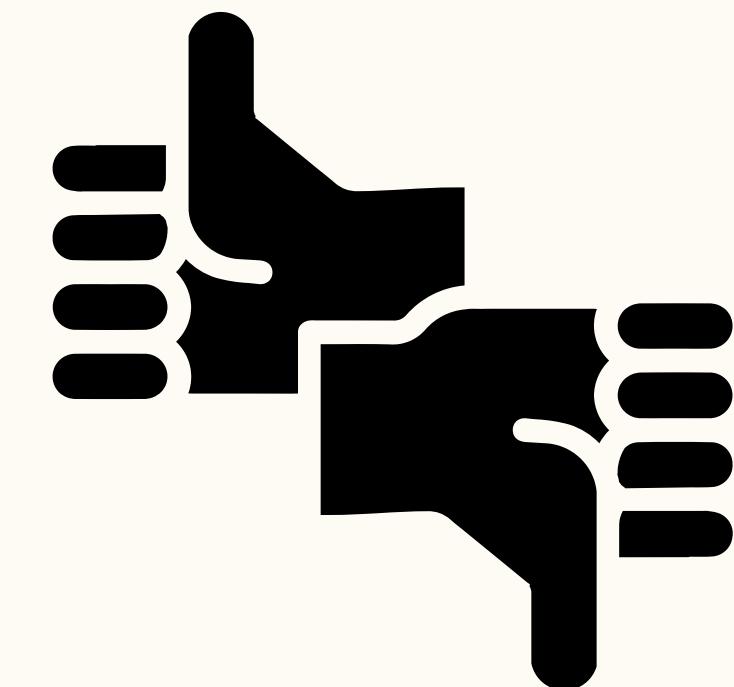
Targeted Marketing and Promotions:

- **Segment-Specific Promotions:** Segment your guest base based on demographics (business vs. leisure travellers) and booking behaviour. Tailor marketing campaigns and promotions to each segment's specific needs and preferences. For example, offer weekend getaway packages for leisure travelers and corporate discounts for business travelers.
- **Retargeting Campaigns:** Leverage retargeting ads to reach website visitors who have shown interest in your hotel but haven't booked yet. Use urgency messaging within these ads to incentivize them to complete their booking



Leveraging Guest Reviews and Feedback:

- **Identify Guest Preferences and Amenities:** Analyze guest reviews and feedback data (if available on the dashboard) to understand guest preferences and desired amenities. Use this information to tailor room packages that bundle popular amenities (e.g., spa treatments, breakfast) or highlight specific room features in your marketing materials (e.g., balconies with stunning views).
- **Address Negative Feedback and Upsell Opportunities:** Identify recurring themes in negative reviews. Address these issues proactively to improve guest experience. Furthermore, use positive feedback to identify upselling opportunities. For instance, if guests frequently praise the hotel's rooftop bar, consider offering a room package that includes a complimentary drink voucher.



Package Deals and Revenue Management:

- **Dynamically Create Packages:** Integrate your dashboard data with a package creation tool. This allows you to create dynamic packages that combine room rates with in-house activities (e.g., spa treatments, restaurant meals) based on real-time occupancy and demand.
- **Analyze Package Performance:** Track the performance of different package deals to identify which ones generate the most revenue. Refine your package offerings based on this data to maximize their effectiveness in driving bookings and increasing overall revenue.

Leveraging Length of Stay Insights:

- **Extended Stay Discounts:** We have a correlation between booking window and length of stay, offer targeted discounts for extended stays. This can incentivize guests to book for longer periods, potentially leading to increased revenue per guest.
- **Optimize Housekeeping Services:** Analyze data on length of stay for different room types. For shorter stays, consider offering daily housekeeping, while for extended stays, implement an opt-in system for housekeeping services to optimize cleaning staff schedules and potentially reduce operational costs.

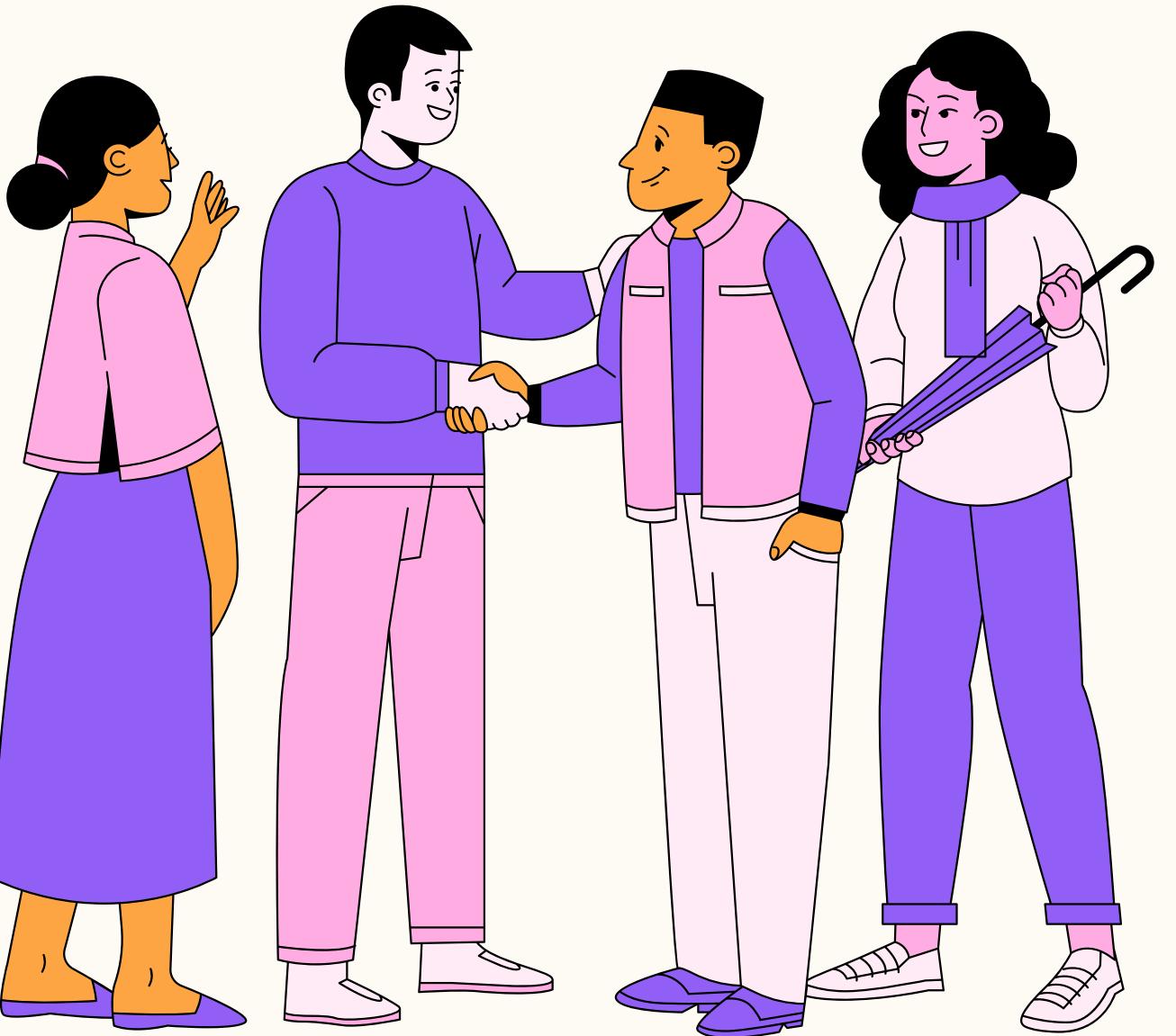


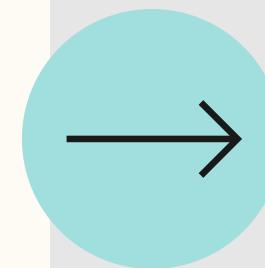
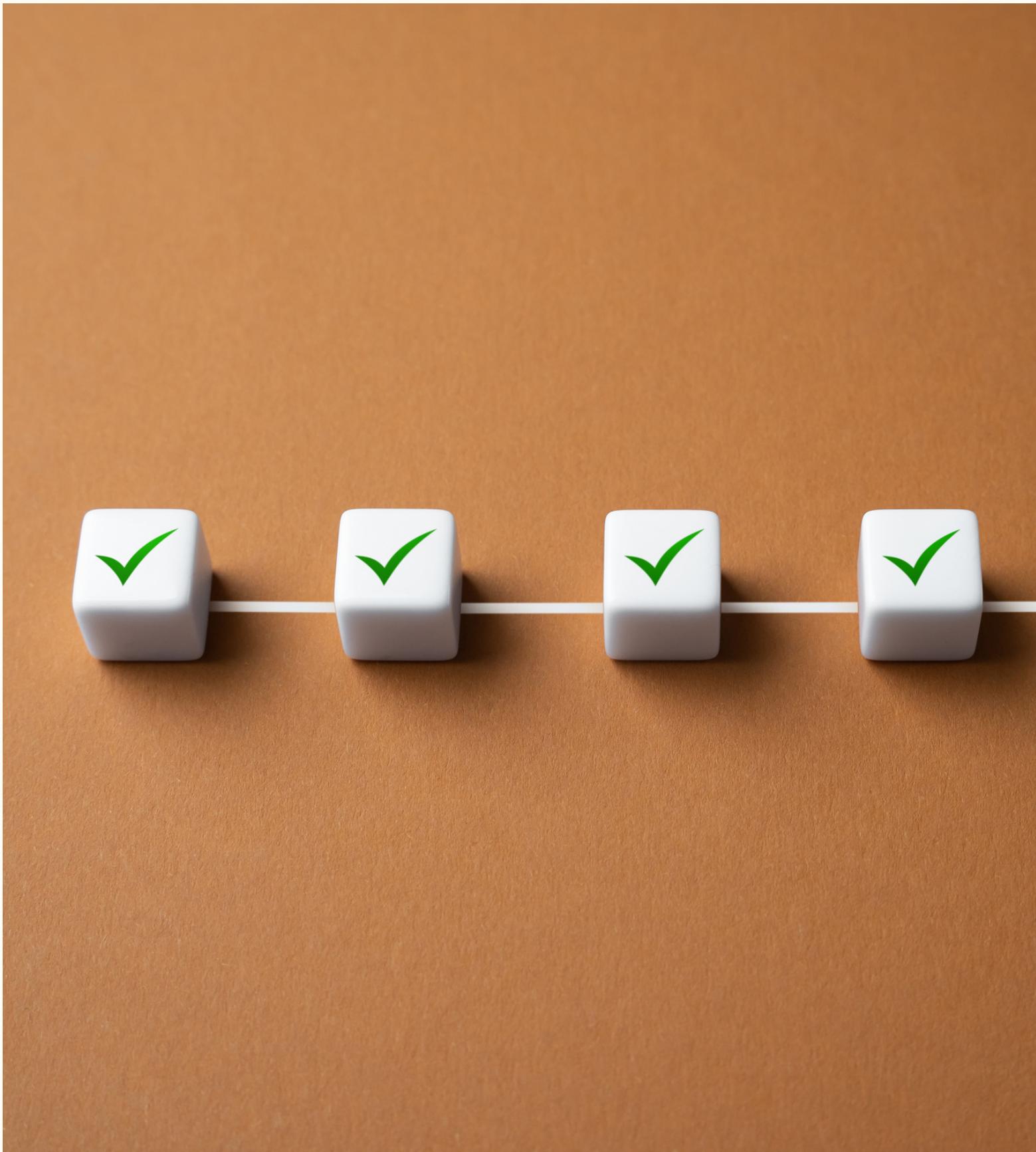
DISCOUNT

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Enhancing Guest Experience and Repeat Bookings:

- **Loyalty Programs:** Consider implementing a loyalty program that rewards guests with points for frequent stays or spending at your hotel. This can incentivize repeat bookings and build guest loyalty
- **Personalized Guest Communication:** Leverage booking data to personalize communication with guests before, during, and after their stay. For instance, send pre-arrival emails highlighting hotel amenities or special offers relevant to their booking preferences. Following their stay, send personalized surveys to gather feedback and encourage repeat bookings

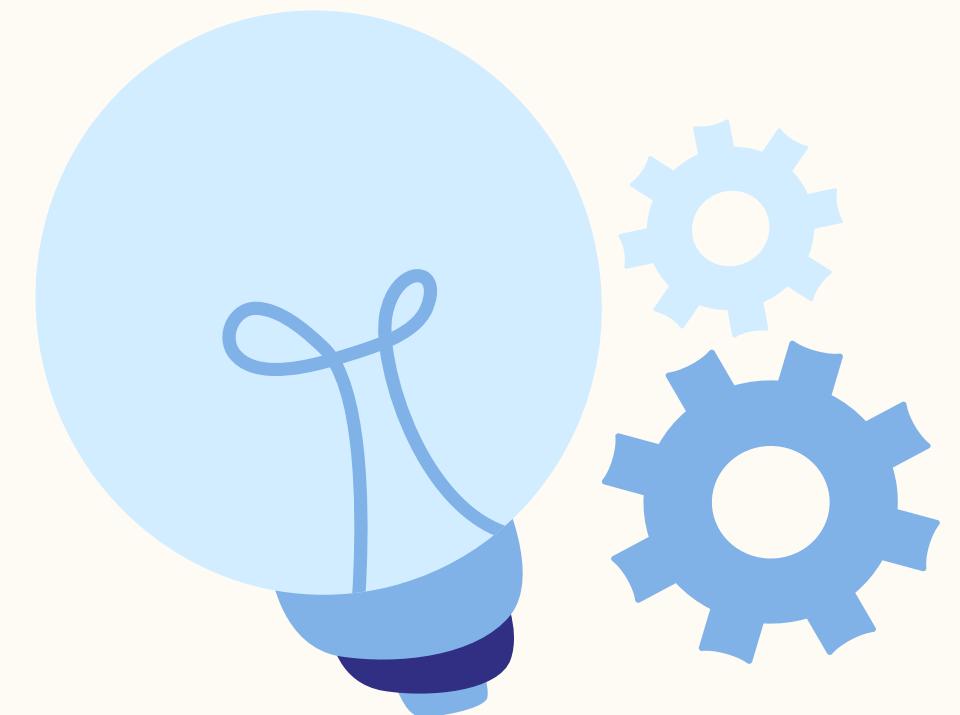




Strategies for
validating
assumptions

Validation Strategies

- **A/B Testing:** This is a powerful technique to test different versions of your proposed solutions against a control group. For example, A/B test different urgency messaging variations or pricing strategies to see which one drives the most bookings and revenue.
- **Data Analysis with Historical Data:** Before implementing a new solution, analyze historical data to see if it supports your assumptions. For instance, if you plan to offer discounts for longer stays, analyze past booking trends to see if guests respond positively to such incentives.
- **Customer Surveys and Feedback:** Collect feedback from potential and existing guests through surveys, focus groups, or social media polls. Gauge their response to proposed solutions like package deals or loyalty programs.



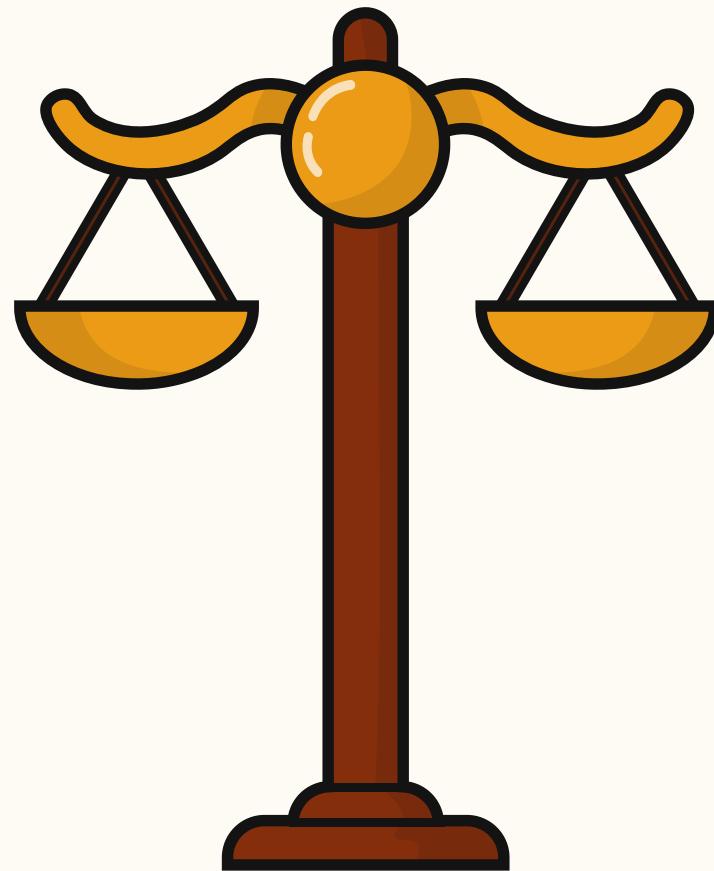
Implementation Strategies

- **Phased Rollout:** Instead of launching a new solution hotel-wide at once, consider a phased rollout. This allows you to test its effectiveness in a smaller group before full implementation. This can be particularly helpful for testing new pricing strategies or loyalty programs.
- **Clear Communication and Training:** Ensure clear communication with staff across departments (reservations, marketing, housekeeping) about the new solution's purpose and execution. Provide relevant training for staff members to ensure they can effectively implement the solution.
- **Performance Measurement and Iteration:** Once you implement a solution, monitor its performance using key metrics. These might include booking conversion rates, revenue per booking, or guest satisfaction scores. Regularly analyze this data and be prepared to iterate and refine your solution based on its effectiveness.



Additional Considerations

- **Technology Integration:** Some solutions, like dynamic pricing or personalized communication, might require integration with existing hotel technology systems. Ensure compatibility and proper data flow to avoid technical hiccups.
- **Budget Allocation:** Allocate a realistic budget for each solution based on its potential impact and implementation costs. Prioritize solutions with the highest potential return on investment (ROI).
- **Stakeholder Alignment:** Secure buy-in from key stakeholders (hotel management, marketing team) for the proposed solutions. This promotes collaboration and ensures everyone works towards shared goals.



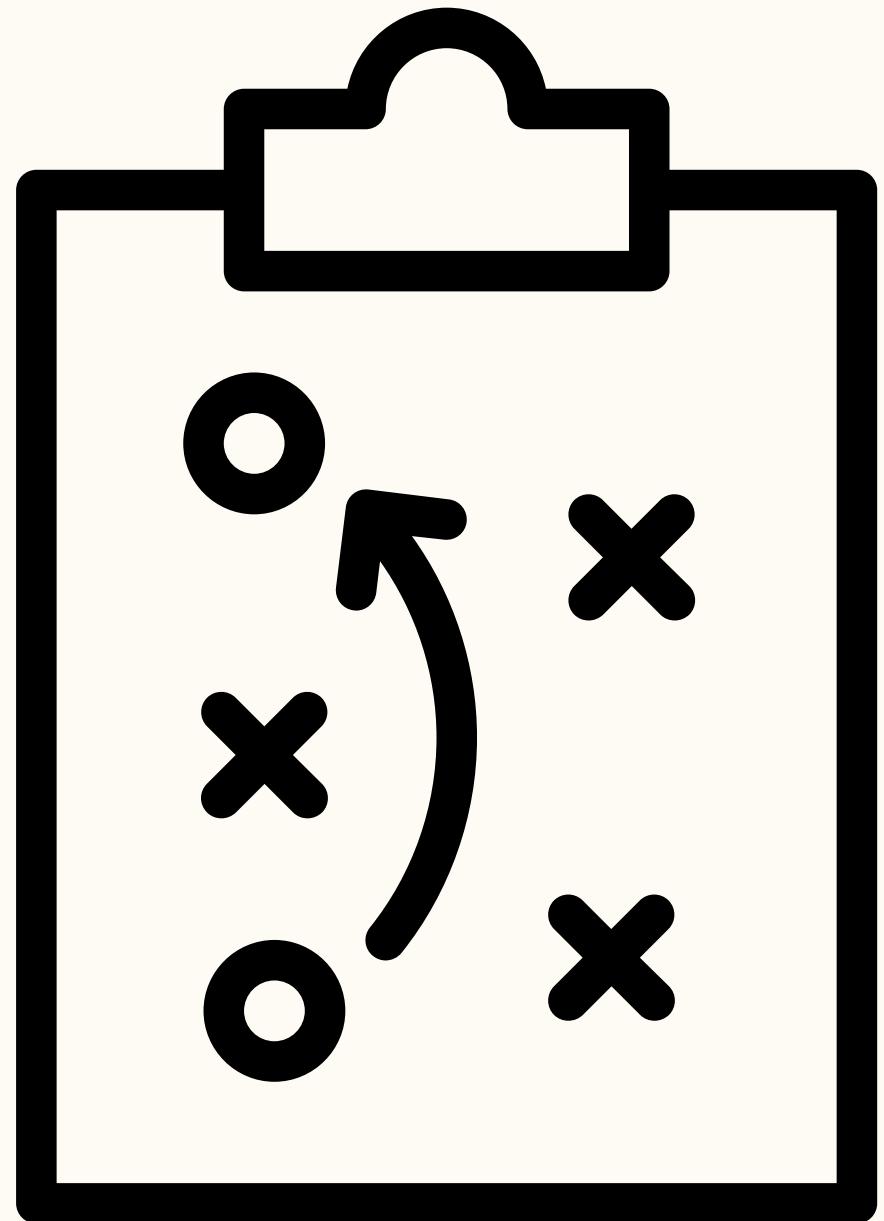
External Market Research

- **Competitor Analysis:** Regularly analyze your competitors' pricing strategies, promotions, and offerings. Identify areas where you can differentiate yourself and adjust your solutions accordingly. For example, if a competitor offers a popular spa package, consider creating a unique package that bundles your hotel stay with a different in-house activity.
- **Industry Trends:** Stay informed about broader industry trends in the hospitality sector. This includes new guest expectations, sustainability initiatives, and technological advancements. Integrate these trends into your revenue optimization strategy to remain competitive and cater to evolving guest needs.



Long-Term Vision and Strategic Planning

- **Guest Lifetime Value:** Look beyond immediate revenue and consider the guest lifetime value (LTV). Implement solutions that foster guest loyalty and encourage repeat bookings. For example, invest in exceptional guest service experiences and loyalty programs that reward guests for their continued patronage.





THANK YOU



saloniverma1906@gmail.com