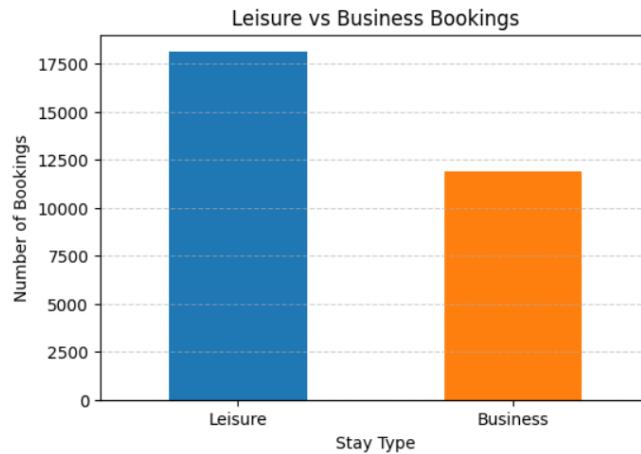


Highlight at least 3 meaningful trends or patterns in the data.

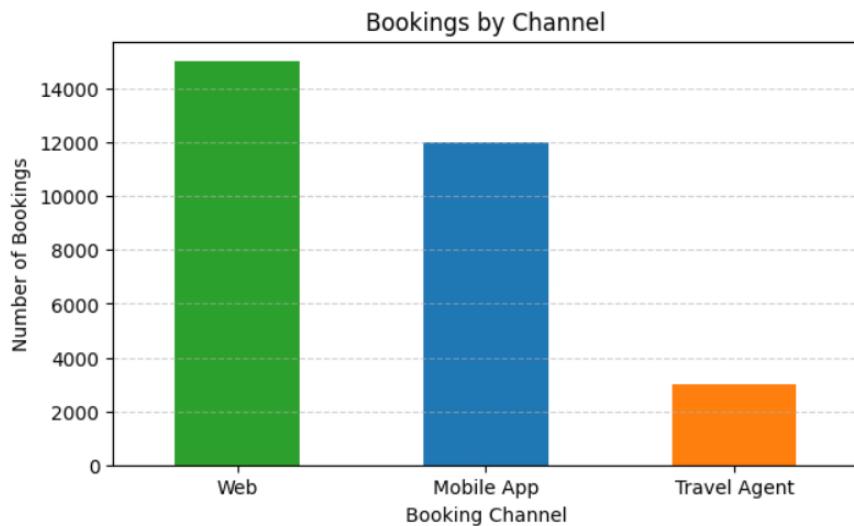
### Trend 1: Leisure Travel Dominates Bookings

- Majority of bookings are Leisure stays, not Business.
- Leisure travelers appear across all major cities (San Francisco, Dallas, Los Angeles, Orlando, Miami).
- Even longer stays (4–7 nights) are mostly leisure, indicating vacation or personal travel demand.



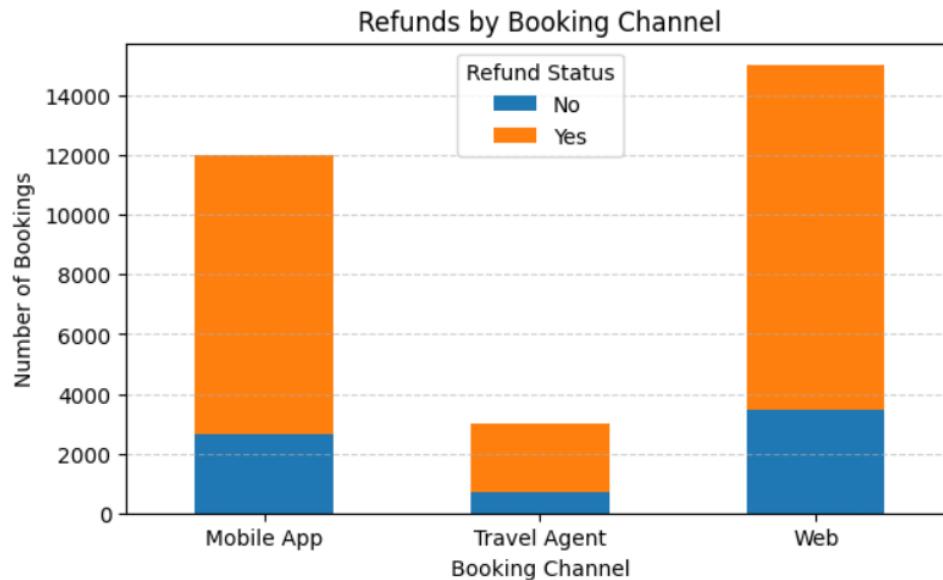
## Trend 2: Web & Mobile App Are the Primary Booking Channels

- Most bookings come from Web and Mobile App channels.
- Travel Agent bookings are minimal.
- Mobile App users often use cashback and coupons, while Web bookings show higher average booking values.



## Trend 3: Refunds Are Common, Especially in Leisure & App-Based Bookings

- A significant number of bookings show refund status = Yes.
- Refunds are more frequent in:
  - Leisure bookings
  - Mobile App / Android / Web channels
- Even confirmed bookings sometimes include partial refunds.

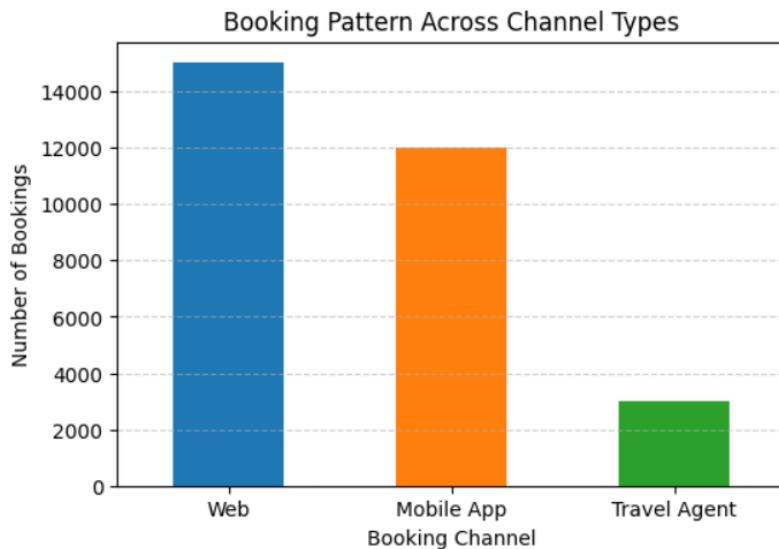


How do booking patterns vary across channels, room types, and star ratings?

## 1. Booking Patterns by Channel

### Observed Pattern

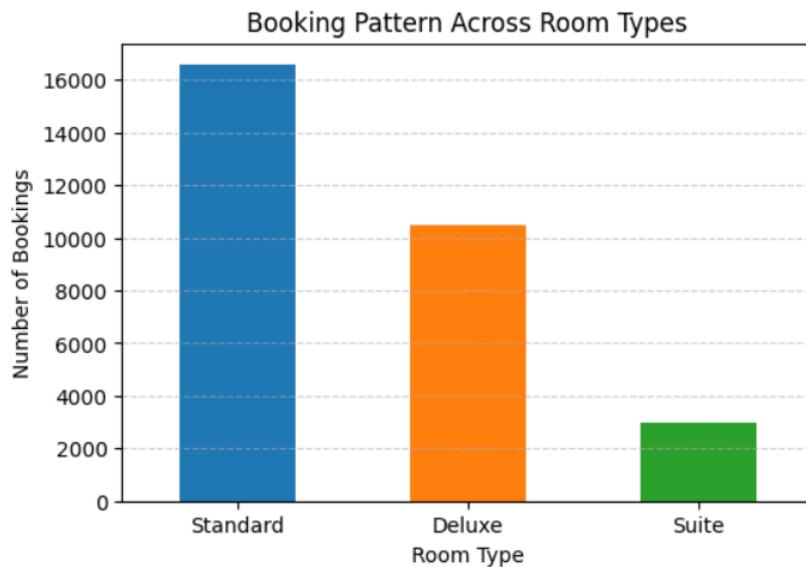
- Web and Mobile App dominate total bookings.
- Mobile App bookings are more common for Standard and Deluxe rooms.
- Travel Agent bookings are rare and mostly linked to higher room categories (Suites).



## Booking Patterns by Room Type

### Observed Pattern

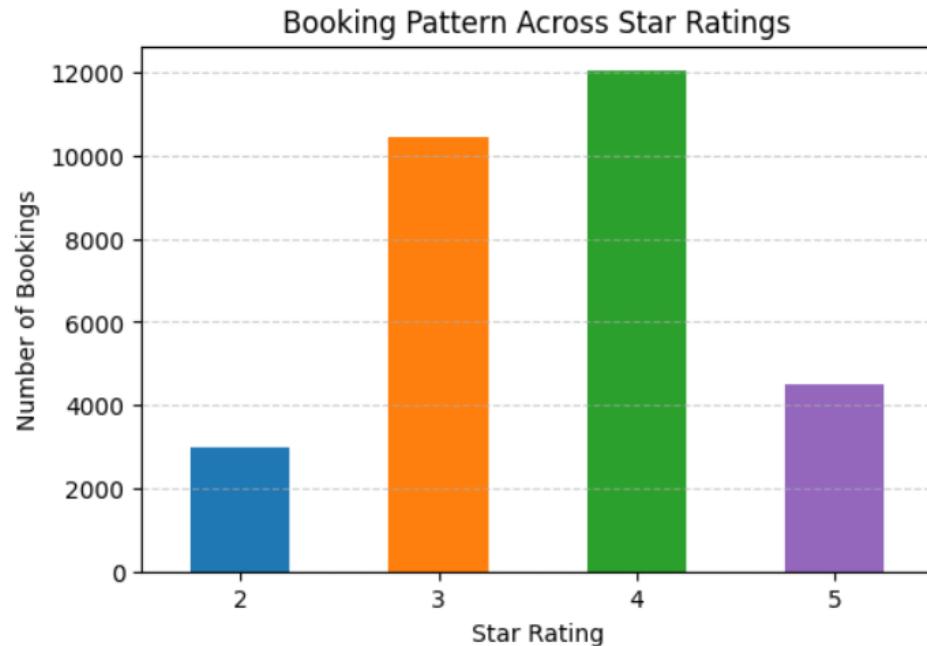
- Standard rooms have the highest booking volume.
- Deluxe rooms are the second most booked, especially for leisure travel.
- Suites have the lowest booking count and are often linked to:
  - Higher star-rated properties
  - Business or agent-based bookings



# Booking Patterns by Star Rating

## Observed Pattern

- 3-star and 4-star hotels account for most bookings.
- 5-star hotels have fewer bookings but:
  - Higher average selling prices
  - More Deluxe and Suite room bookings
- Lower star hotels mostly sell Standard rooms.



What do you notice about cancellation behavior?

## **Payment Method Influence**

- Possibly because refund processing is easier compared to Bank Transfer or Credit Card.

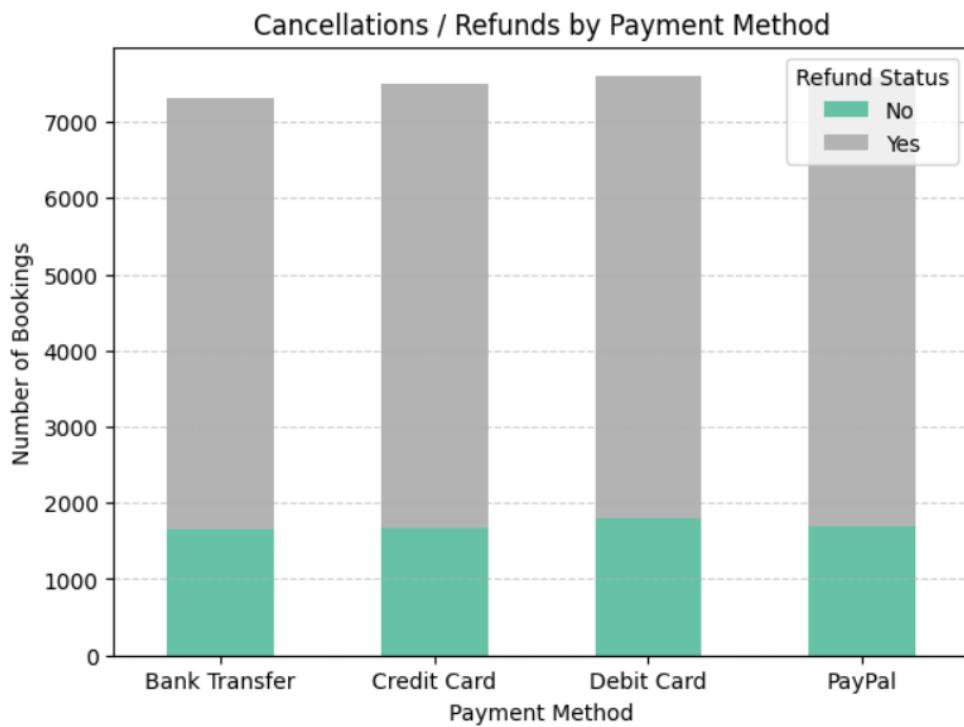
## **Booking Lead Time / Advance Booking**

- Bookings made weeks or months in advance are more likely to be canceled.
- Travelers often cancel or modify plans if their check-in date is far away.

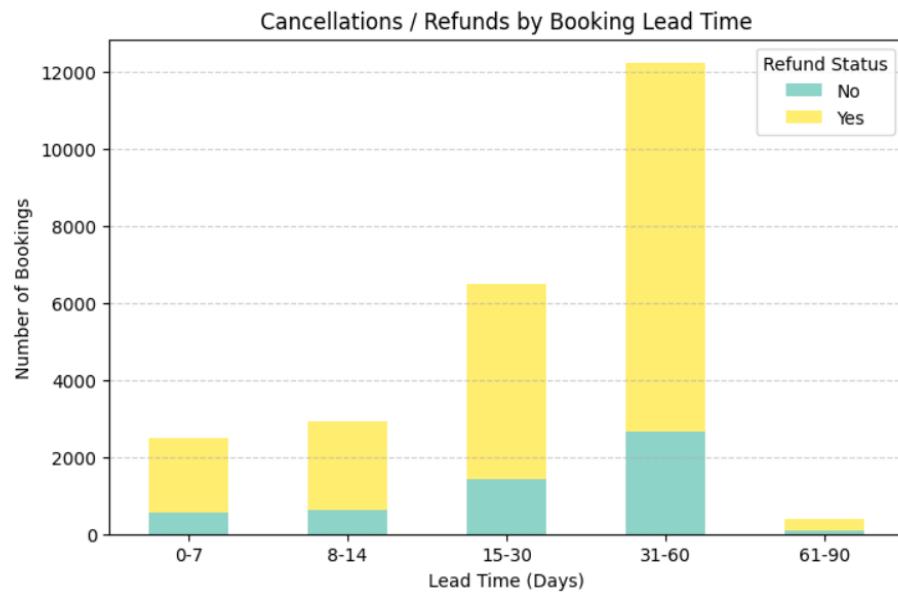
## **Stay Length**

- Short stays (1–2 nights) are more likely to be canceled than longer stays.
- Longer stays are often planned carefully and less flexible.
- Some payment methods (like PayPal or Debit Card) tend to have higher cancellations.

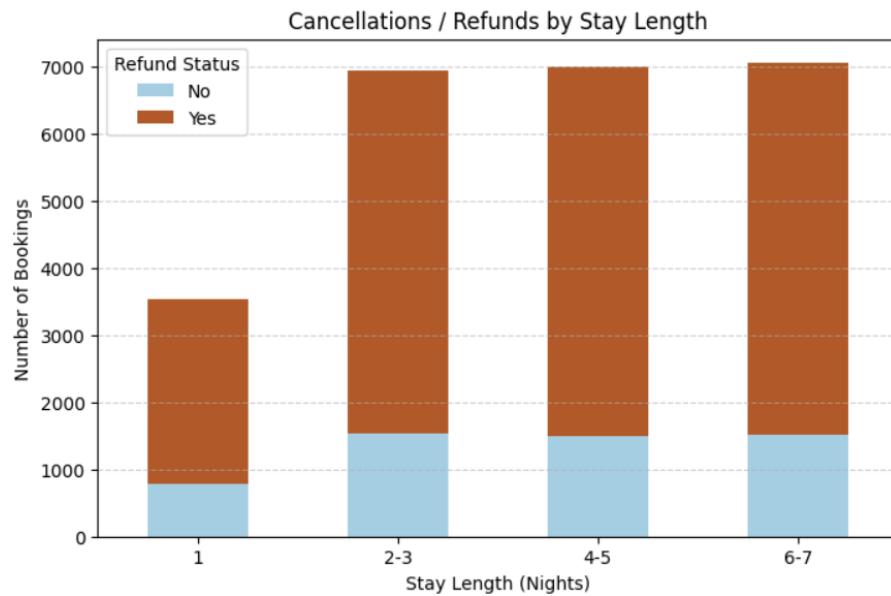
# Payment Method Influence



# Booking Lead Time



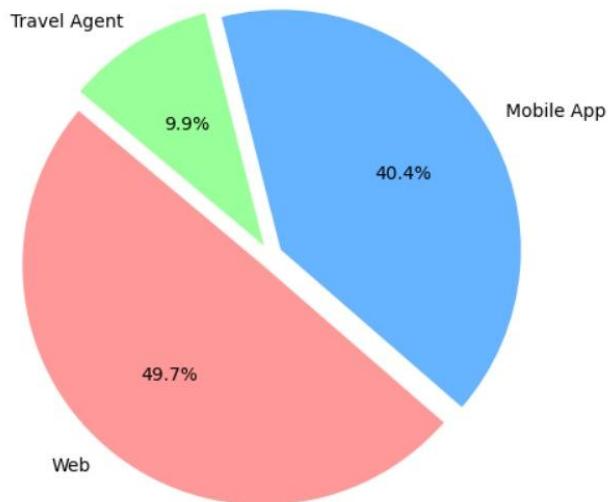
# Stay Length



What might be the reasons for the observed cancellation patterns?

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Cancellations by Booking Channel (% of Total Cancellations)



## **1. Web Bookings**

### **Possible Reasons for Cancellations:**

- **Ease of Cancellation**
  - Web portals often allow customers to cancel bookings online with minimal friction.
- **Speculative Bookings**
  - Leisure travelers might book multiple options to compare and later cancel the less preferred ones.
- **Payment Method Flexibility**
  - Customers paying via PayPal, Debit Card, or Credit Card can often get **quick refunds**, encouraging cancellations.

## **2. Mobile App Bookings**

### **Possible Reasons for Cancellations:**

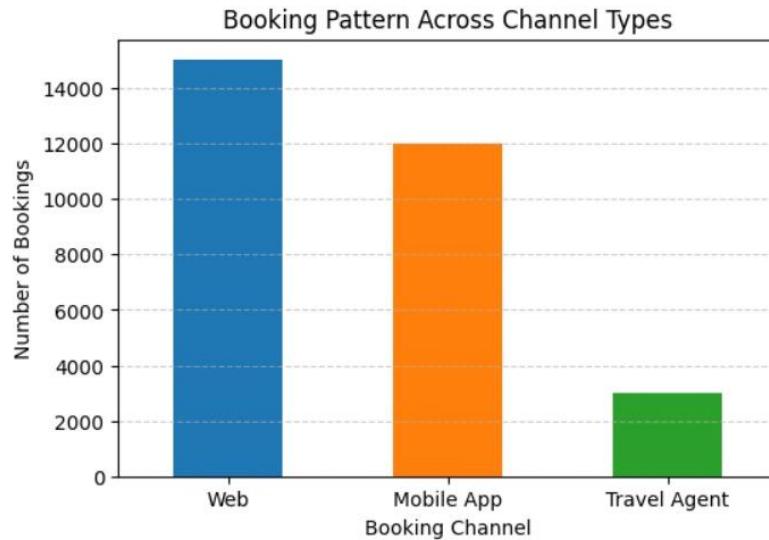
- **High Convenience = Low Commitment**
  - Booking via app is fast and easy; users may cancel if plans change.
- **Impulse Bookings / Promotions**
  - Mobile apps often send **push notifications or offers** that encourage immediate bookings, leading to potential cancellations later.
- **Refund-Friendly Payment Options**
  - Mobile app payments via digital wallets or PayPal make **processing refunds easier**, encouraging users to cancel if needed.

### **3. Travel Agent Bookings**

#### **Possible Reasons for Cancellations:**

- **Lower Cancellation Rate but Still Occurs**
  - Business travelers might book through agents; cancellations usually occur **due to schedule changes or corporate policy**.
- **Payment Method Dependency**
  - Payments via Bank Transfer or Credit Card might be harder to cancel, but exceptions happen for business accounts.
- **Fewer Impulse Cancellations**
  - Unlike Web or App, bookings through Travel Agents involve **human interaction**, reducing impulsive cancellations

Why do some booking channels or property types perform better than others?



```
[27]: booking_channel  
Web      50.00  
Mobile App 40.03  
Travel Agent 9.97  
Name: count, dtype: float64
```

- **High Booking Volume**

- Web portals are easily accessible to a **large audience**, including domestic and international travelers.
- This ensures **higher total bookings** compared to Mobile App or Travel Agents.

- **Convenience and Self-Service**

- Customers can **search, compare, and book anytime** without depending on agents.
- Self-service reduces friction and improves the customer experience.

- **Marketing and Promotions**

- Hotels often run **special discounts, coupons, and cashback offers** online.
- These incentives encourage **more customers to book through the Web**.

- **Flexibility and Planning**

- Web bookings allow users to **modify or cancel bookings** if needed.
- This flexibility appeals especially to **leisure travelers**, increasing booking numbers.

## **Affordability & Accessibility**

- Standard rooms are typically the most affordable option, making them accessible to a broader range of travelers, including budget-conscious leisure travelers and small business travelers.
- This wider customer base drives higher booking volumes

## **Higher Demand & Volume**

- Due to affordability and accessibility, Standard rooms attract the most bookings, which naturally leads to a larger share in the dataset.
- This high volume helps hotels maintain steady occupancy and revenue.

## **Flexible Booking Behavior**

- Travelers who book Standard rooms often have flexible plans and might book or cancel more frequently compared to guests booking premium rooms.
- This behavior increases the total number of bookings, making Standard rooms a consistent revenue driver.

## **1.Core Product Offering**

1. Standard rooms are considered the core inventory for most hotels.
2. They serve a wide range of traveler needs without the exclusivity or premium pricing of Suites or Deluxe rooms.

Are there seasonal or temporal trends influencing booking values or stay lengths?

### **Seasonal Trends Affect Booking Values:**

- Prices are higher during busy seasons like holidays when many people travel.
- Prices drop in quieter seasons to attract more guests.

### **Temporal Trends Influence Stay Lengths:**

- People stay longer during holidays and breaks.

### **Weekend vs. Weekday Effects:**

- Weekend stays tend to be longer than weekday stays.

### **Booking Lead Time Variation:**

- In busy times, people book earlier.
- In slow times, many book closer to their travel date.
- Business travelers usually stay shorter during the week.

Suggest strategies to reduce cancellations.

## **Flexible Cancellation Policies with Fees**

- Allow cancellations but charge a small fee to discourage casual cancellations.
- Offer options like non-refundable rates at a discount to encourage commitment

## **Improved Communication**

- Send timely reminders and confirmations via email or SMS.
- Provide easy ways to modify bookings instead of canceling.

## **Incentives for Keeping Bookings**

- Offer discounts, upgrades, or loyalty points for guests who do not cancel.
- Provide special perks for early or confirmed bookings.

## **Better Payment Methods**

- Use payment options that encourage commitment, like partial prepayments or deposits.
- Limit payment methods that have easy refund options which encourage cancellations.

## **Targeted Promotions and Policies**

- Tailor cancellation policies based on customer type (e.g., stricter for business travelers).
- Use promotions that require commitment, such as advance purchase deals.

## **Offer Loyalty Programs**

- Reward repeat customers with points, discounts, or special perks.
- Encourage guests to book again with exclusive benefits.

## **Upsell and Cross-Sell**

- Offer room upgrades, add-ons like breakfast or spa services during booking.
- This increases revenue per guest without extra acquisition cost.

## **Targeted Promotions**

- Use past booking data to send personalized offers.
- Encourage off-peak bookings to increase occupancy and revenue.

## **Flexible Pricing Strategies**

- Adjust prices based on demand, season, and customer type.
- Optimize room rates to maximize revenue without losing bookings.

Identify opportunities to optimize pricing, promotions, or channel strategy.

By using dynamic pricing, targeted promotions, focusing on high-performing channels, offering value-added packages, and analyzing booking trends, hotels can optimize revenue and profitability, reduce cancellations, attract the right customer segments, and ensure better occupancy throughout the year.