Hotel Reservation Analytics: Uncovering Customer Behavior Patterns

Good morning/afternoon everyone. Today I'll be presenting our comprehensive analysis of hotel reservation data, where we analyzed over 36,000 booking records to uncover key insights about customer behavior, booking patterns, and revenue optimization opportunities.

Key Findings at a Glance

Let me start with our key findings. We analyzed 36,285 reservation records across 17 different variables with perfect data quality - 100% completeness with no missing values or duplicates. Our analysis reveals a 67.2% reservation success rate, meaning about 1 in 3 customers cancel their bookings. The data shows strong patterns in customer preferences and booking channels that present significant business opportunities.

| **36,285**	**67.2%**	**32.8%**	**100%**
Total Reservations	**Success Rate**	**Cancellation Rate**	**Data Quality Score**

Robust Data Foundation

Our analysis is built on a solid foundation. We're working with 36,285 hotel reservations containing 17 key features including customer demographics, booking details, and service preferences. The dataset demonstrates exceptional quality with zero missing values and no duplicates, giving us confidence in our findings. The data spans multiple booking channels and time periods, providing a comprehensive view of customer behavior.
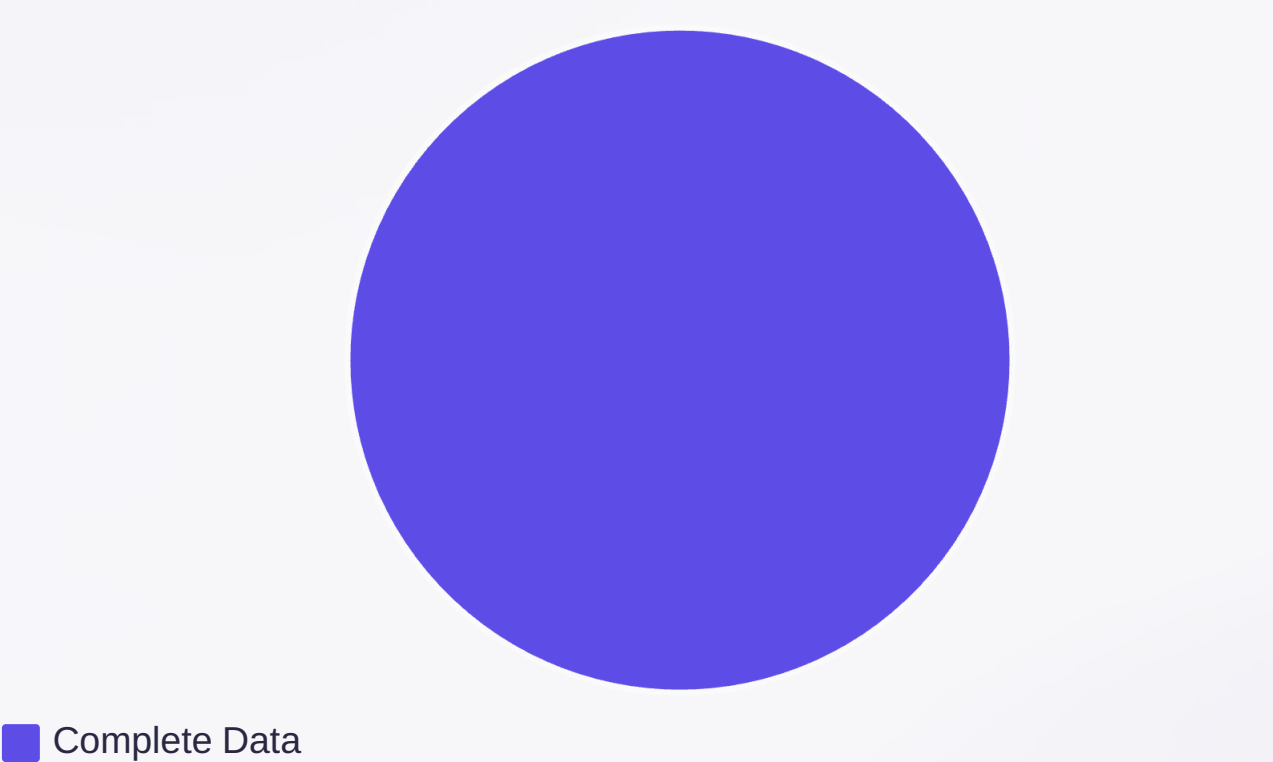
■ Complete Data

Data Quality: 100% Complete Data
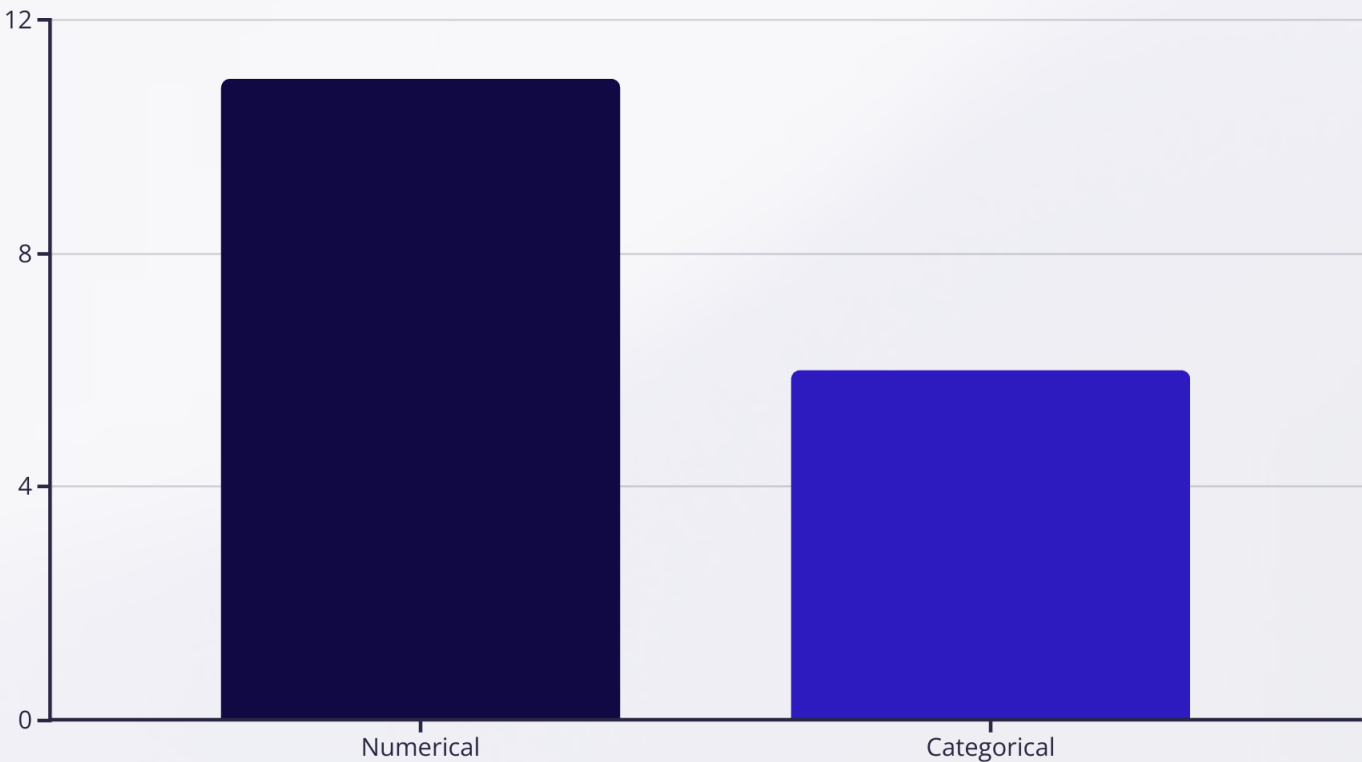
Dataset Statistics

- Records: 36,285
- Features: 17
- Size: 16.8 MB
- Quality Score: Excellent

The Core Business Metric: Show vs No-Show

Now let's dive into our core business question - the probability of customers showing up versus not showing up. Our data reveals that 67.2% of reservations result in actual hotel stays, while 32.8% are canceled. This gives us P_c (probability of coming) at 67.2% and P_not_c (probability of not coming) at 32.8%. Interestingly, our P-C risk score averages 0.023, while P-not-C averages 0.153, suggesting our predictive models are identifying higher-risk bookings effectively.


■ Not Canceled   ■ Canceled
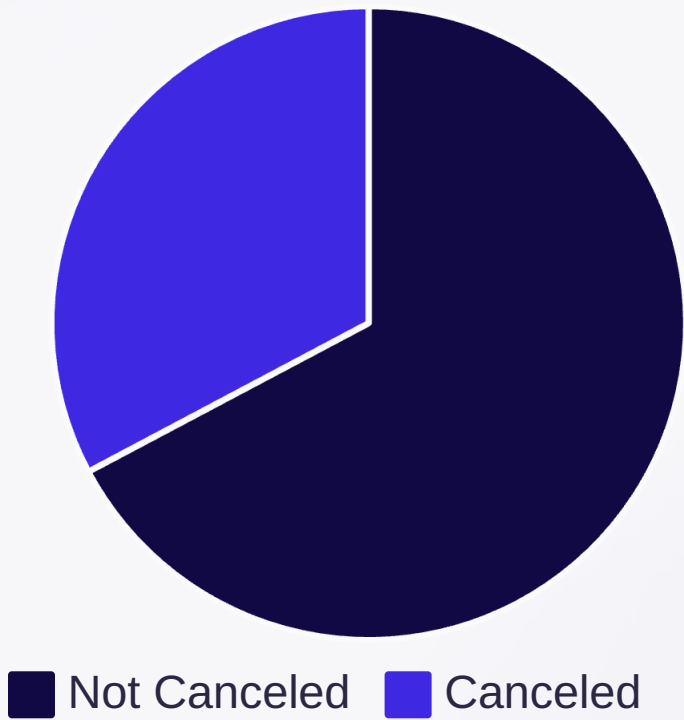
Reservation Success Analysis
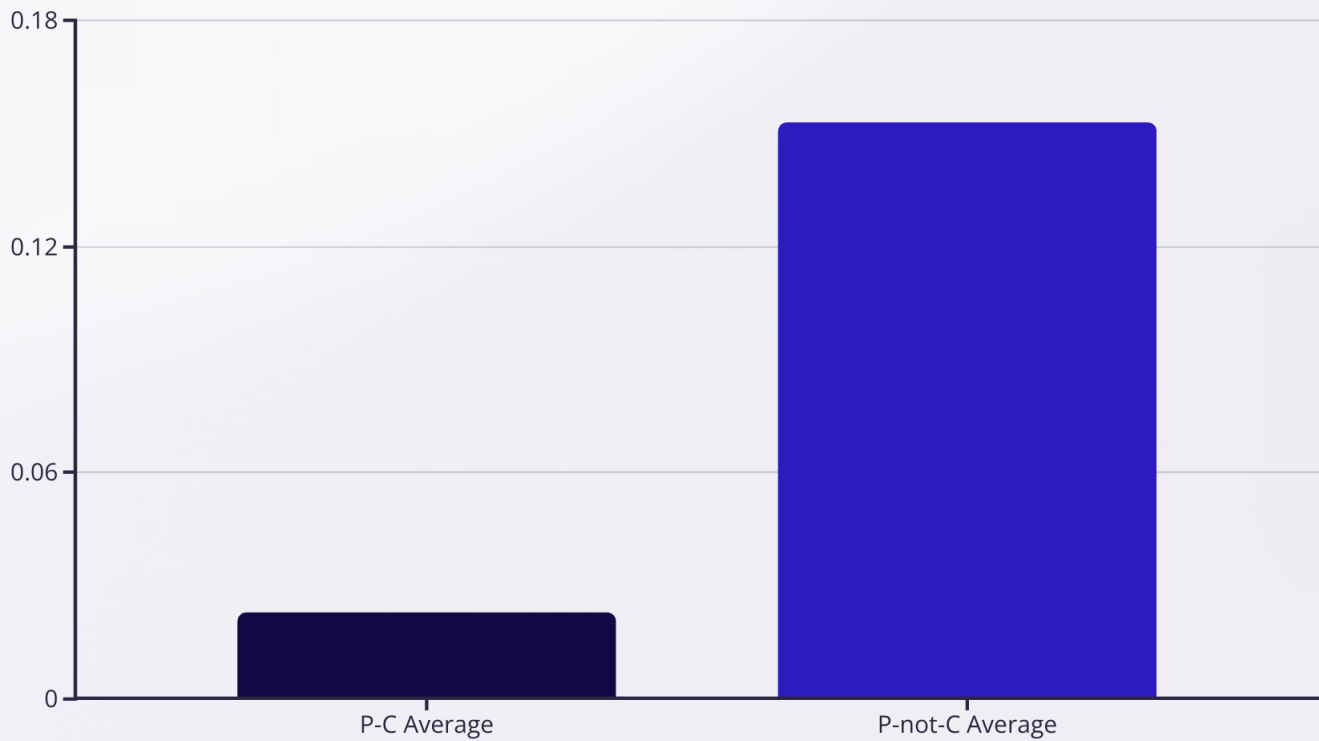

Risk Score Comparison

Online Dominates, But Aviation Opportunity Exists

When we examine how customers book with us, online channels clearly dominate at 64% of all reservations, followed by offline bookings at 29%. Corporate bookings represent 5.6% of our business, while complementary bookings account for 1.1%. Most interestingly, aviation bookings represent only 0.3% of our total reservations - just 125 bookings - presenting a significant growth opportunity if we can tap into travel industry partnerships.
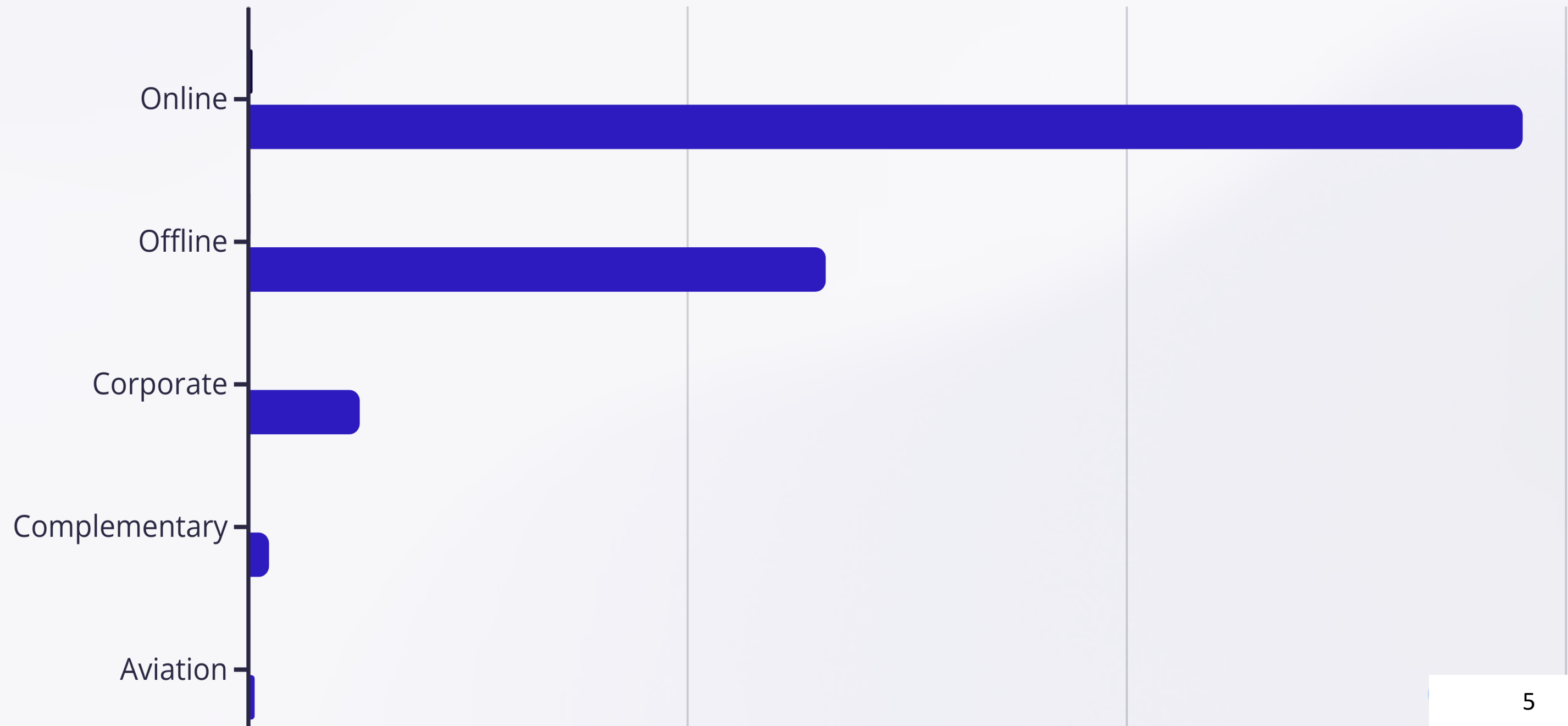
Understanding What Customers Want

Looking at customer preferences, we see clear patterns. 77.5% of guests prefer Room Type 1, with Room Type 4 being the second choice at 16.7%. For meals, 76.7% select Meal Plan 1, while surprisingly 14.1% choose no meal plan at all. Only 2.6% of our customers are repeat visitors, and just 3.1% require parking spaces. These insights suggest opportunities to increase customer retention and better understand why so many guests decline meal plans.

Room Type 1   Room Type 4   Other
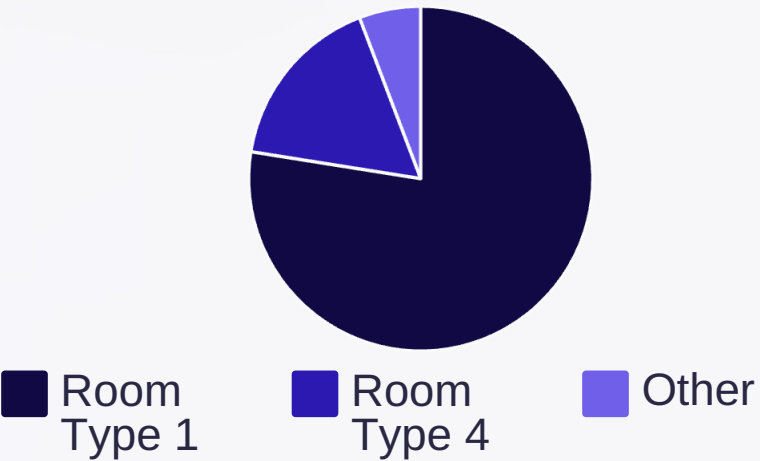
Room Type Distribution (Top 3)
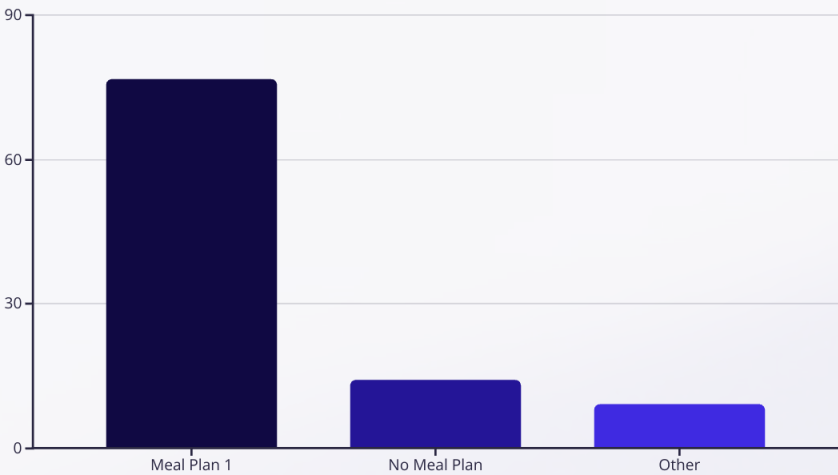
Meal Plan Preferences

2.6%

Repeat Visitors

3.1%

Parking Required

Customer Behavior Metrics

When and How Customers Plan Their Stays

Our analysis reveals interesting booking behavior patterns. Customers book an average of 85.2 days in advance, indicating that most reservations are planned well ahead of time. The average booking includes 1.84 adults and 0.11 children, suggesting our primary market is couples or business travelers. Guests typically stay for 2.2 week nights and 0.8 weekend nights, with an average of 0.8 special requests per booking.

Average Lead Time

85.2 days

Average Adults

1.84

Average Children

0.11

Week Nights

2.2

Weekend Nights

0.8

Special Requests

0.8

Actionable Insights for Business Growth

Based on our analysis, I recommend six strategic actions. First, implement dynamic pricing strategies to reduce the 32.8% cancellation rate. Second, invest in aviation channel partnerships to tap into the underutilized 0.3% market share. Third, investigate why 14.1% of guests decline meal plans and create targeted packages. Fourth, develop retention programs to increase our 2.6% repeat customer rate. Fifth, optimize Room Type 1 availability since it's preferred by 77.5% of guests. Finally, create early booking incentives leveraging the 85-day average lead time.

Reduce 32.8% Cancellation Rate

Expand Aviation Channel (Currently 0.3%)

Optimize Meal Plans (14.1% decline rate)

Boost Repeat Customers (Currently 2.6%)

Maximize Room Type 1 Availability

Leverage 85-Day Booking Window

Turning Data into Revenue

In conclusion, our analysis of 36,285 hotel reservations reveals clear opportunities for revenue optimization. With a 32.8% cancellation rate and significant untapped potential in aviation bookings and meal plan adoption, we have specific, data-driven targets for improvement. The high data quality and clear customer patterns give us confidence that implementing these recommendations will drive measurable business results. I recommend we begin with a pilot program focusing on reducing cancellations through dynamic pricing, while simultaneously exploring aviation industry partnerships.

Target

Reduce cancellations to <25%

Impact

Potential 10-15% revenue increase

1　　　　**2**　　　　**3**　　　　**4**

Goal

Increase aviation bookings by 500%

Timeline

6-month implementation