



ANALYZING HOTEL BOOKING CANCELLATIONS



PRESENTED BY : SOUMYADEEP DHAR

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LET ME SHARE A LITTLE



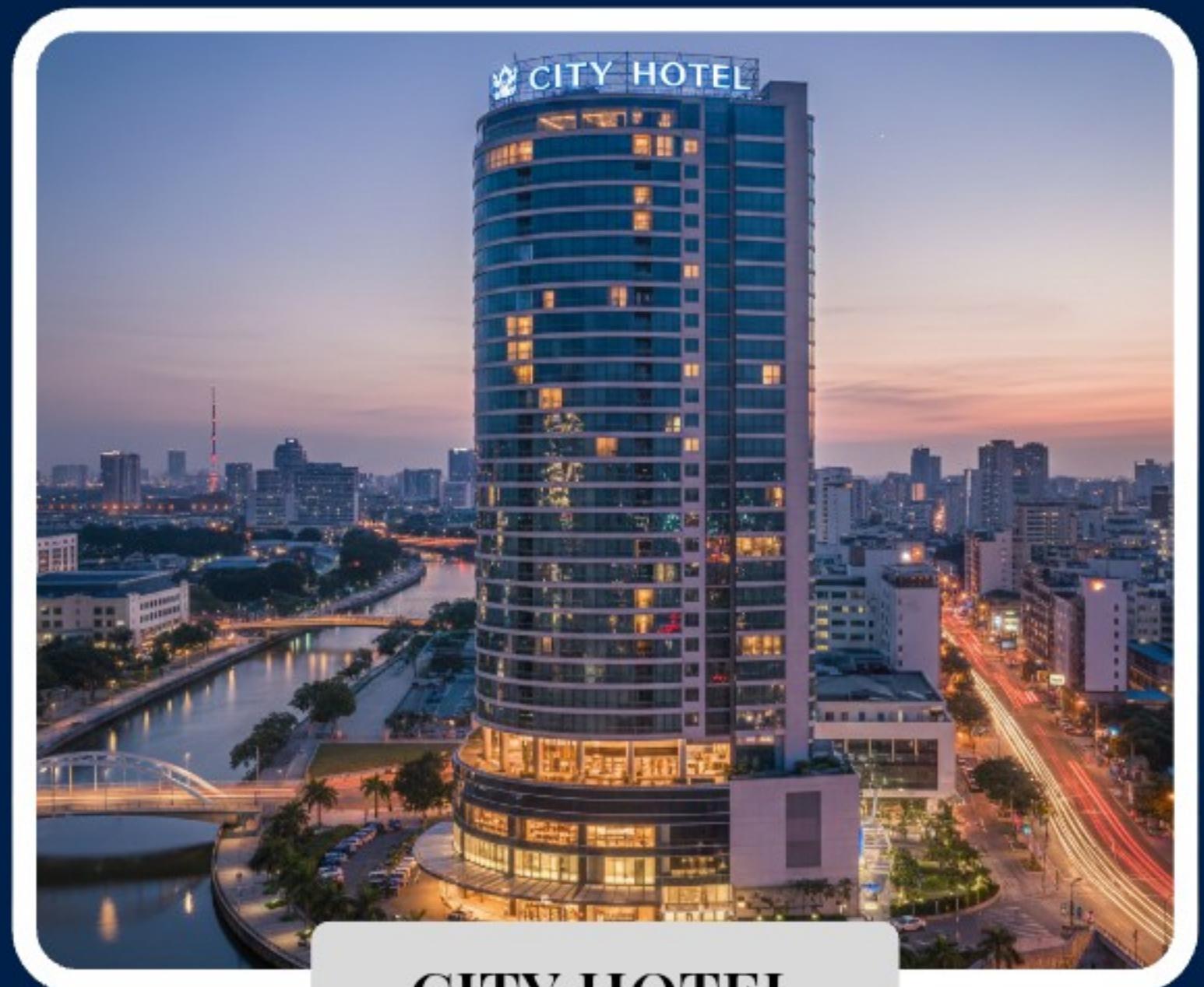
ABOUT ME

Results-driven Data Analyst transforming raw data into actionable insights.

Core Skills

Advanced Excel
SQL
Power BI
Python
ETL

Currently doing Virtual Internship at
AtliQ Technologies



CITY HOTEL

- 🏙️ Urban / Downtown Location
- 💼 Business Travelers – Short stays (1–3 nights)
- 国旗 Compact, Functional Rooms
- 📶 Business Amenities – Meeting rooms, WiFi, gym
- 🍽️ Limited Dining Options
- ⚡ Fast-Paced Atmosphere
- 🚌 Near Transport & Major Attractions
- 🏢 High-Rise Buildings



RESORT HOTEL

- 🏖️ Scenic Locations – Beach, mountains
- 📅 Leisure Travelers – Longer stays (5–7+ nights)
- 🌅 Spacious Rooms with Scenic Views
- 🏊♂️👩‍👦‍👦♀🚩 Recreation Amenities – Pools, spa, golf, water sports
- 🍽️ Multiple Restaurants – All-inclusive options
- 😊 Relaxed Atmosphere
- 🌴 Self-Contained Destination
- 🏡 Spread-Out Campus-Style Layout

Business Problem

Challenges

- City Hotel and Resort Hotel have experienced **High Cancellation Rates** in recent years
- Both hotels are dealing with multiple issues as a result:
 1. Fewer revenues
 2. Less than ideal hotel room use

Primary Goal

- Lower cancellation rates at both hotels
- Increase efficiency in generating revenue
- Provide thorough business advice to address this problem

Report Focus

- Analysis of hotel booking cancellations

The Logic of Hospitality Revenue & Cancellations

The Impact of Cancellations

Cancellations are the primary revenue threat.

They are the biggest factor affecting a hotel's ability to earn income effectively.



Cancellations result in vacant rooms.



A cancellation leaves a room empty for the entire duration of the original booking.

Same-year booking and cancellation cycle.

The logic assumes clients make and cancel their reservations within the same calendar year.

Analytical Foundations

Data is current and actionable.

The information provided is valid for efficiently analyzing and planning hotel strategies.

Untapped revenue potential.

The framework assumes the hotel is not yet using the suggested optimization solutions.



Executive Summary



Vital Signs

118,897

Total Bookings Analyzed

37.1%

Cancellation Rate (Critical) ↴

\$102.00

Average Daily Rate (ADR)

3.2%

Repeat Guest Rate

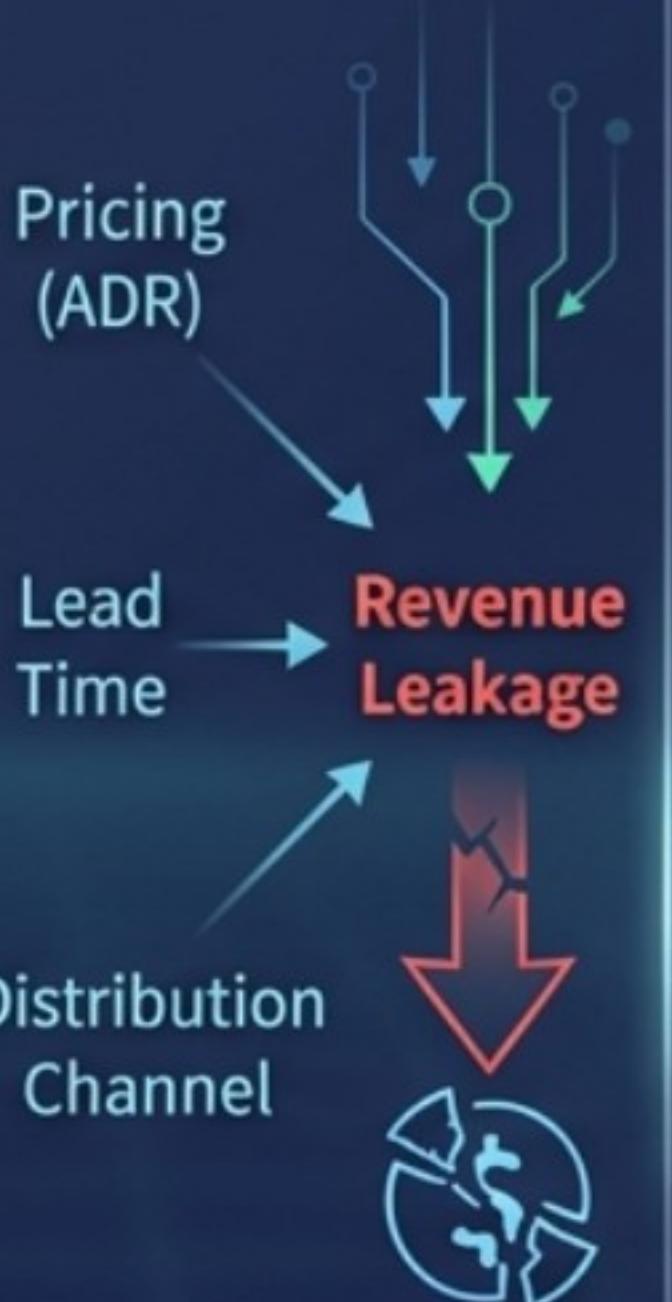


Core Insight

High cancellations are driving significant revenue leakage.

This is not random; it is driven by identifiable factors:

Pricing (ADR), Lead Time, and Distribution Channel.



The Opportunity



1. Risk-Based Deposits:
Targeting long lead times and City Hotels.



2. Dynamic Pricing:
Adjusting ADR to mitigate price sensitivity.



3. Channel Independence:
Reducing OTA reliance (currently **47.4%**).

Hypothesis

- More cancellations occur when prices are higher. 
- When there is a longer waiting list, customers tend to cancel more frequently. 
- The majority of clients are coming from offline travel agents to make their reservations. 

Research Questions

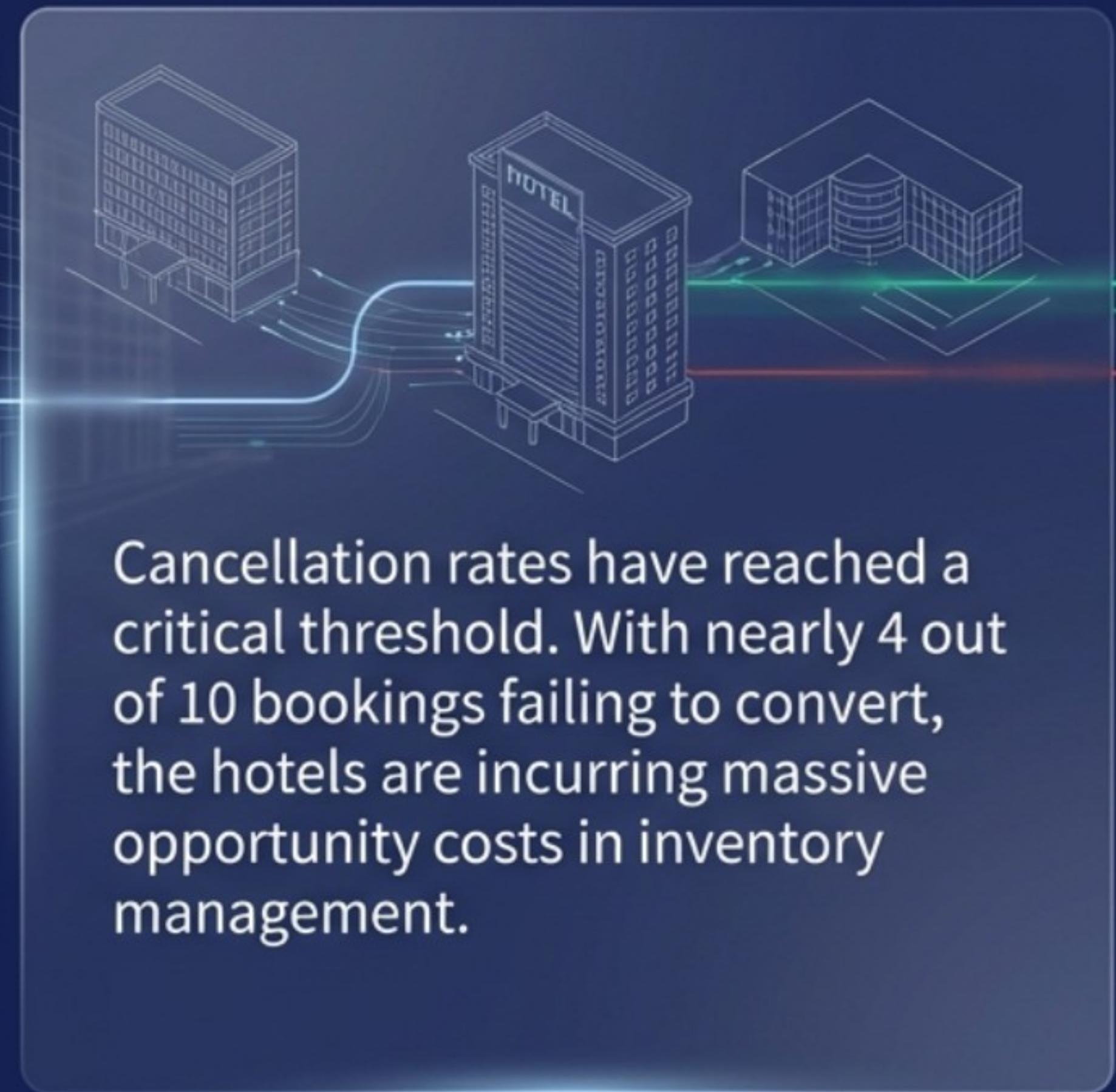
- What are the variables that affect hotel reservation cancellations?
- How can we make hotel reservations cancellations better?
- How will hotels be assisted in making pricing and promotional decisions?



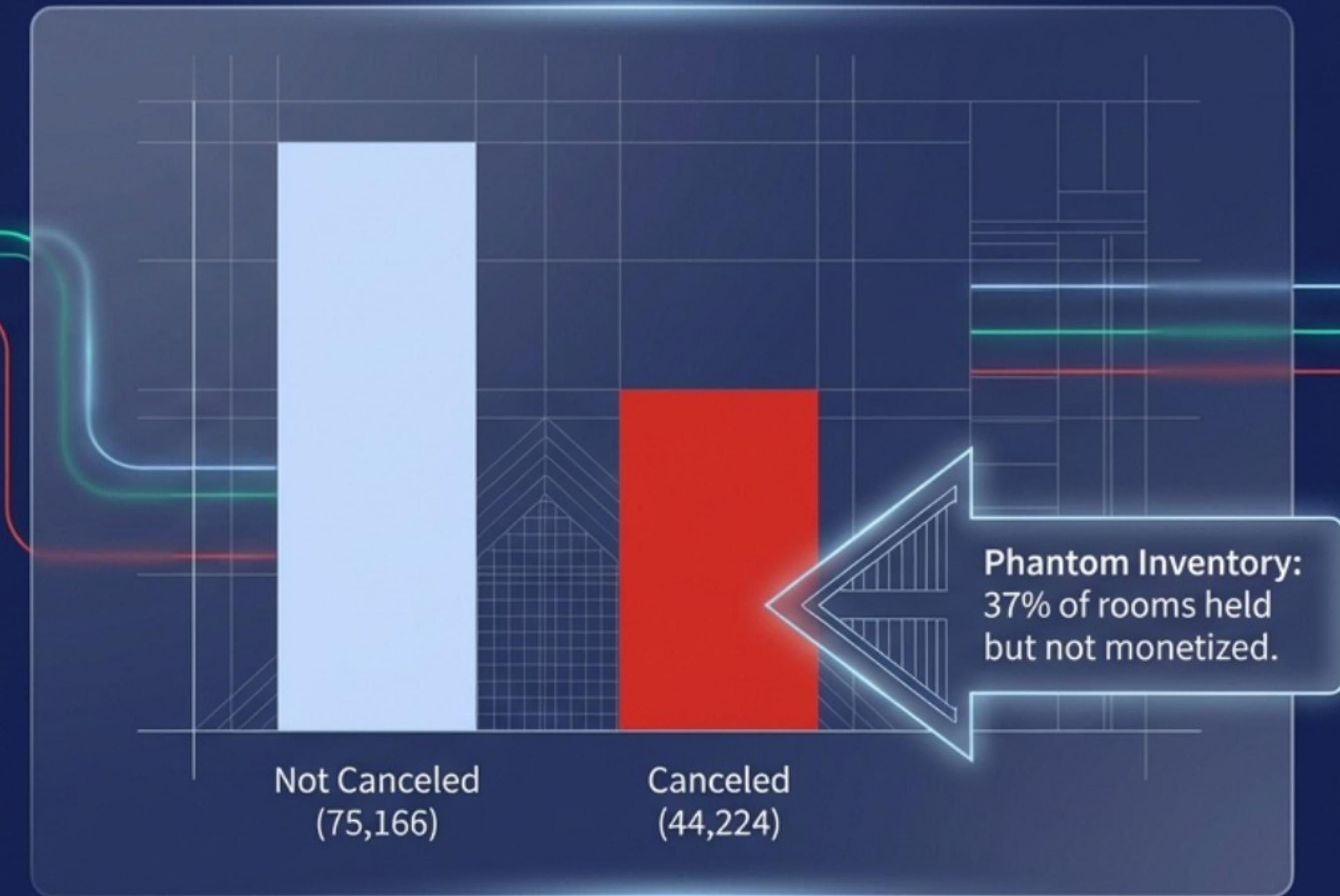
DATA ANALYSIS



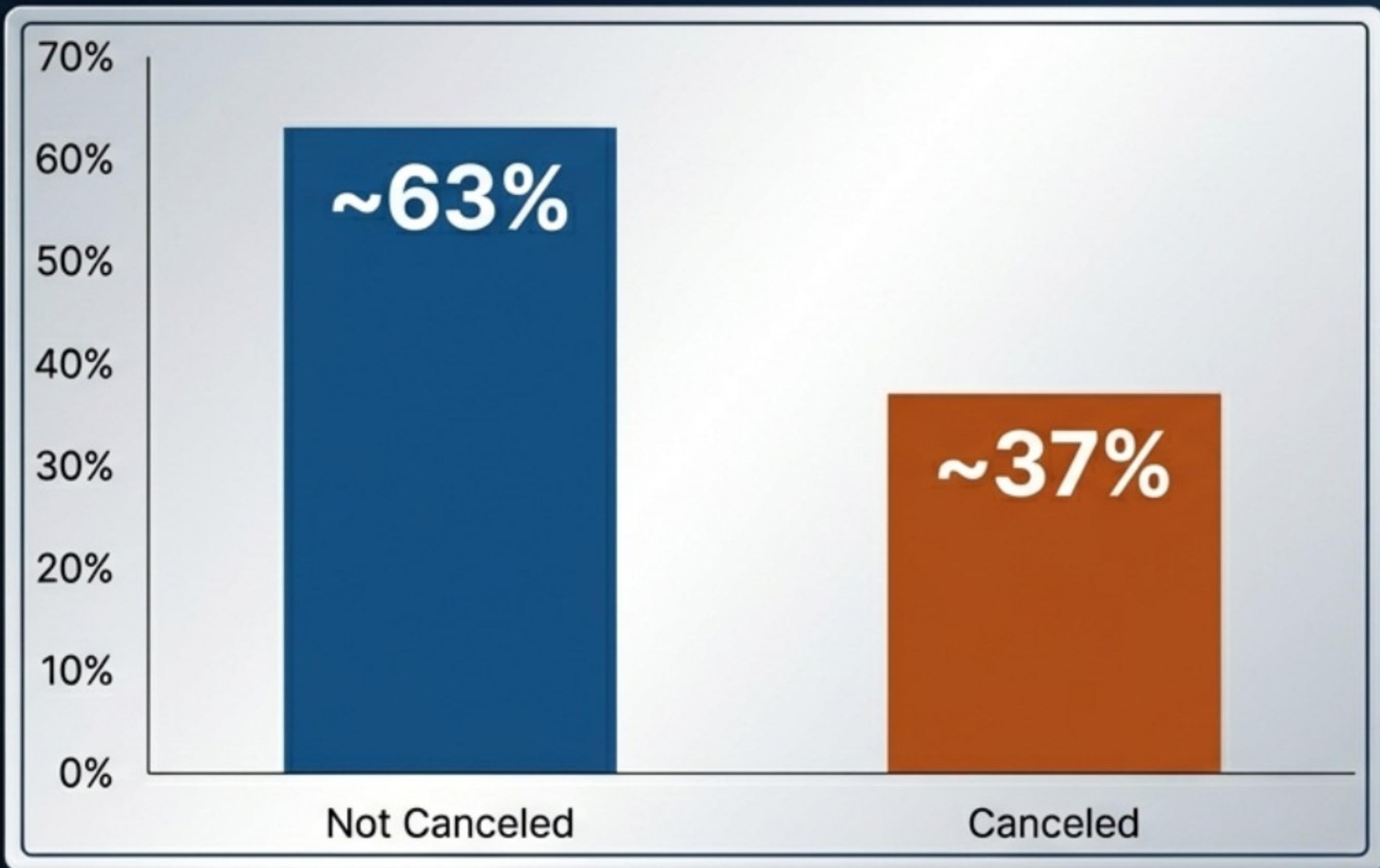
The Symptom: Operational Inefficiency at Scale



Cancellation rates have reached a critical threshold. With nearly 4 out of 10 bookings failing to convert, the hotels are incurring massive opportunity costs in inventory management.



Cancellation Volume is Eroding Operational Efficiency



Key Insight:

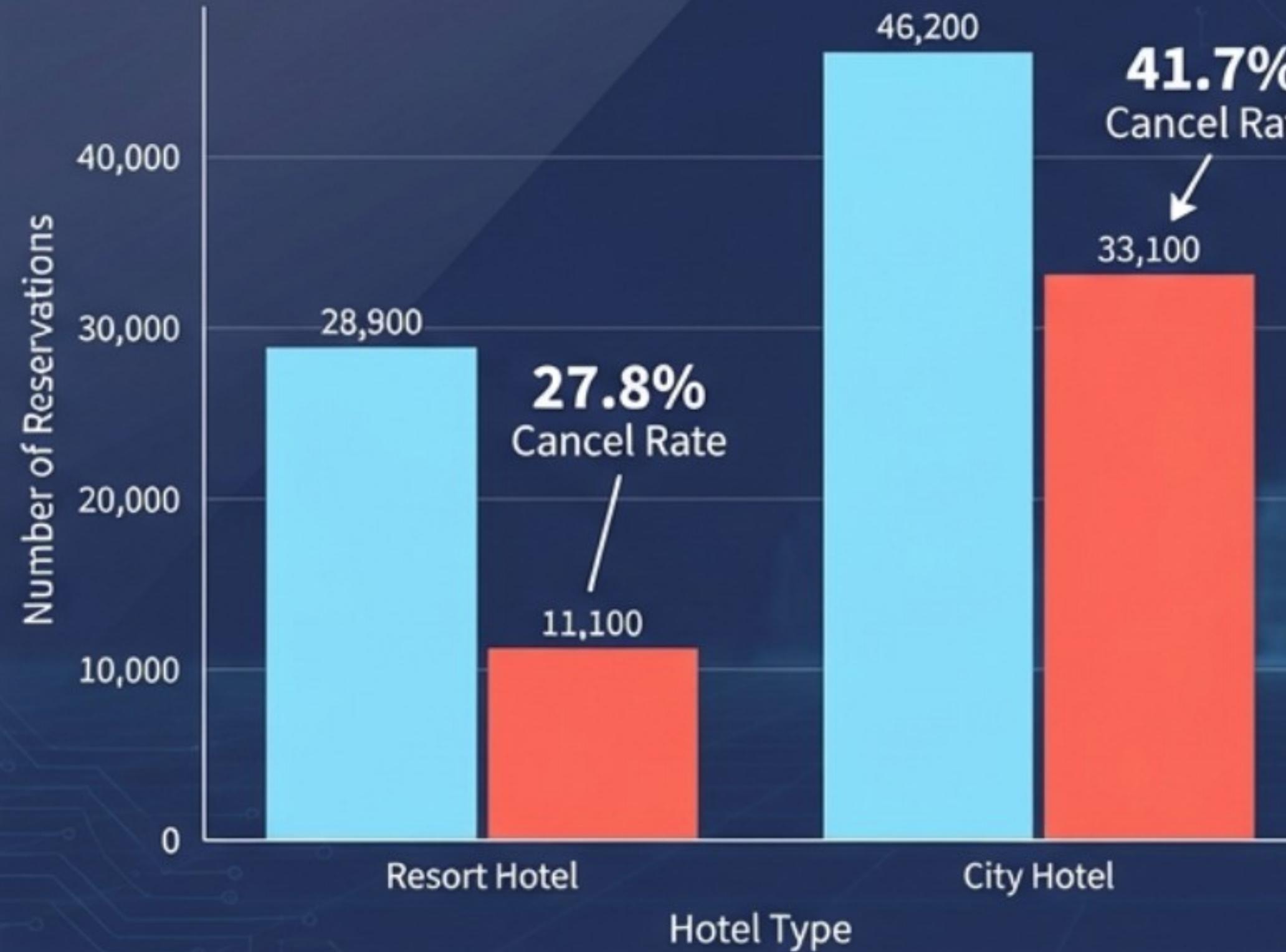
More than 1 in 3 bookings results in zero revenue. This 37% gap represents vacant inventory that consumes administrative overhead but yields no return.

✓ Retained Bookings: **~63%** in Inter

✗ Lost Bookings: **~37%** in Inter

Diagnosis: The City Hotel Variance

Cancellation Variance by Hotel Type



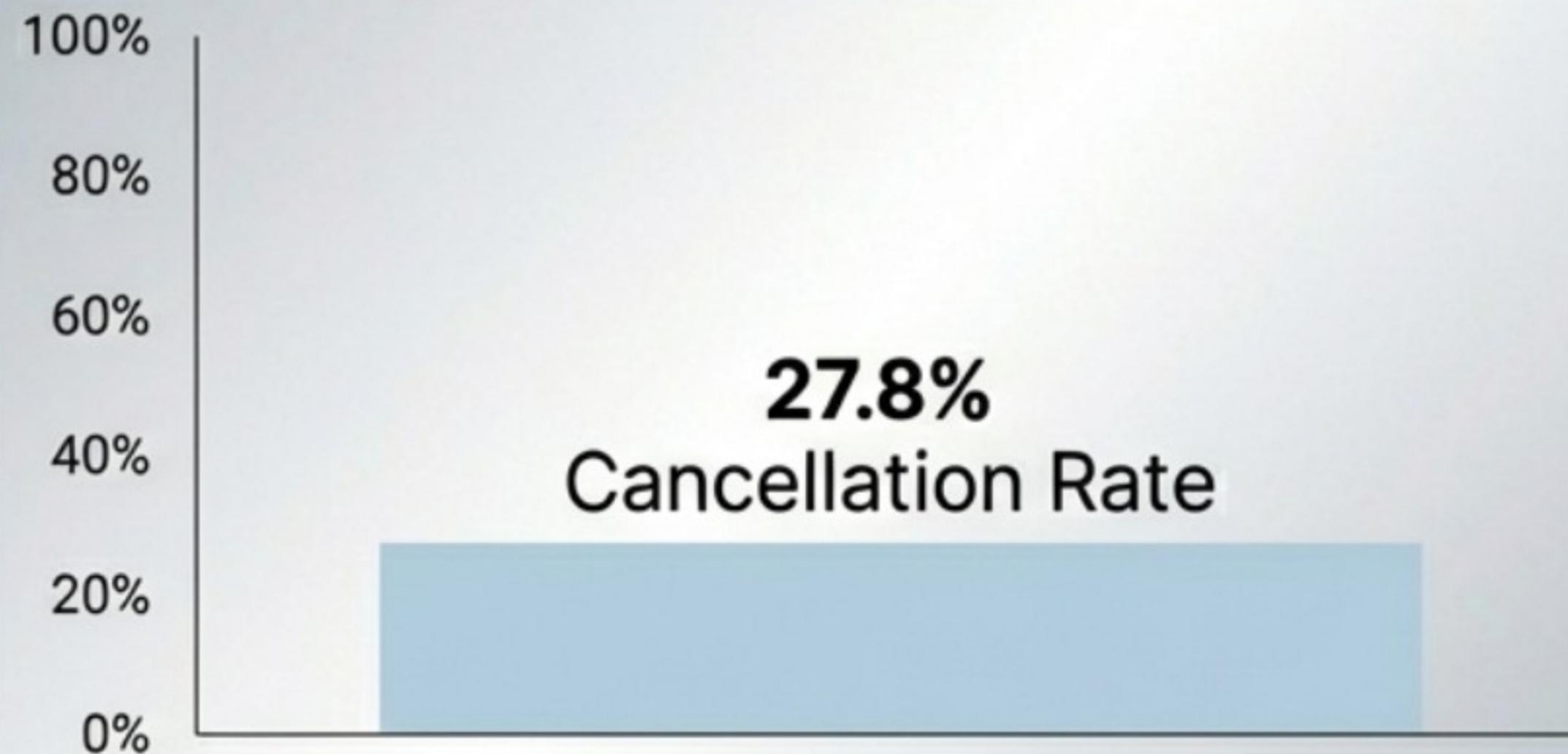
Strategic Implication

The hemorrhage is not evenly distributed. City Hotels show a cancellation rate nearly 14 percentage points higher than Resort locations.

Interventions must be aggressive for City assets.

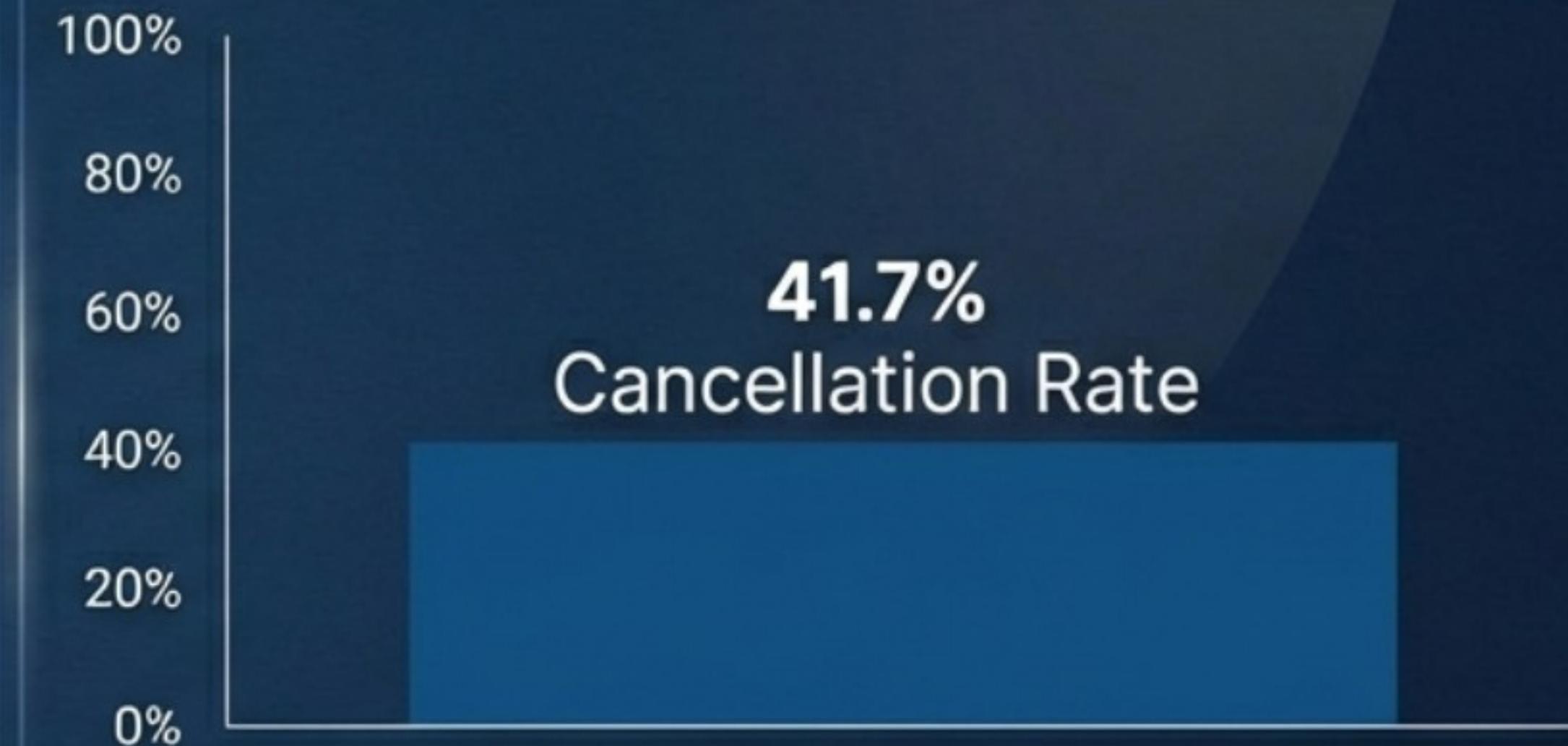
City Hotels Face a Cancellation Crisis (41.7%)

Resort Hotel

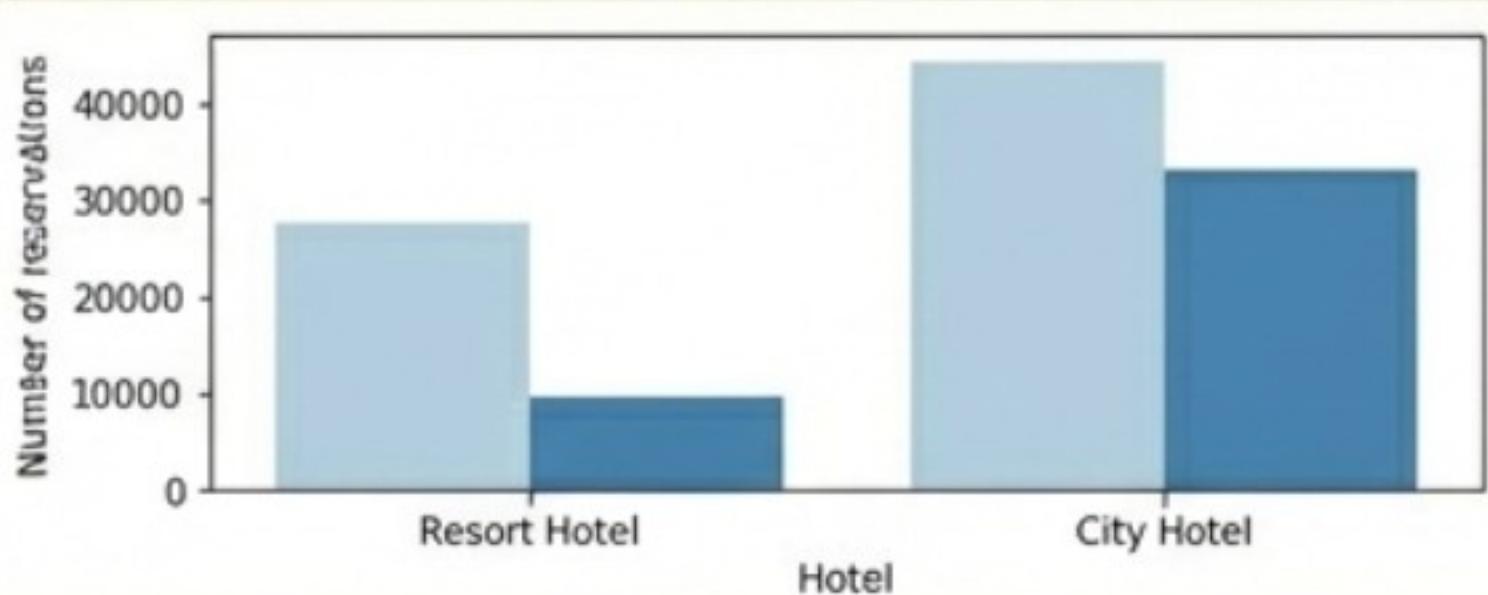


Manageable operational risk.

City Hotel

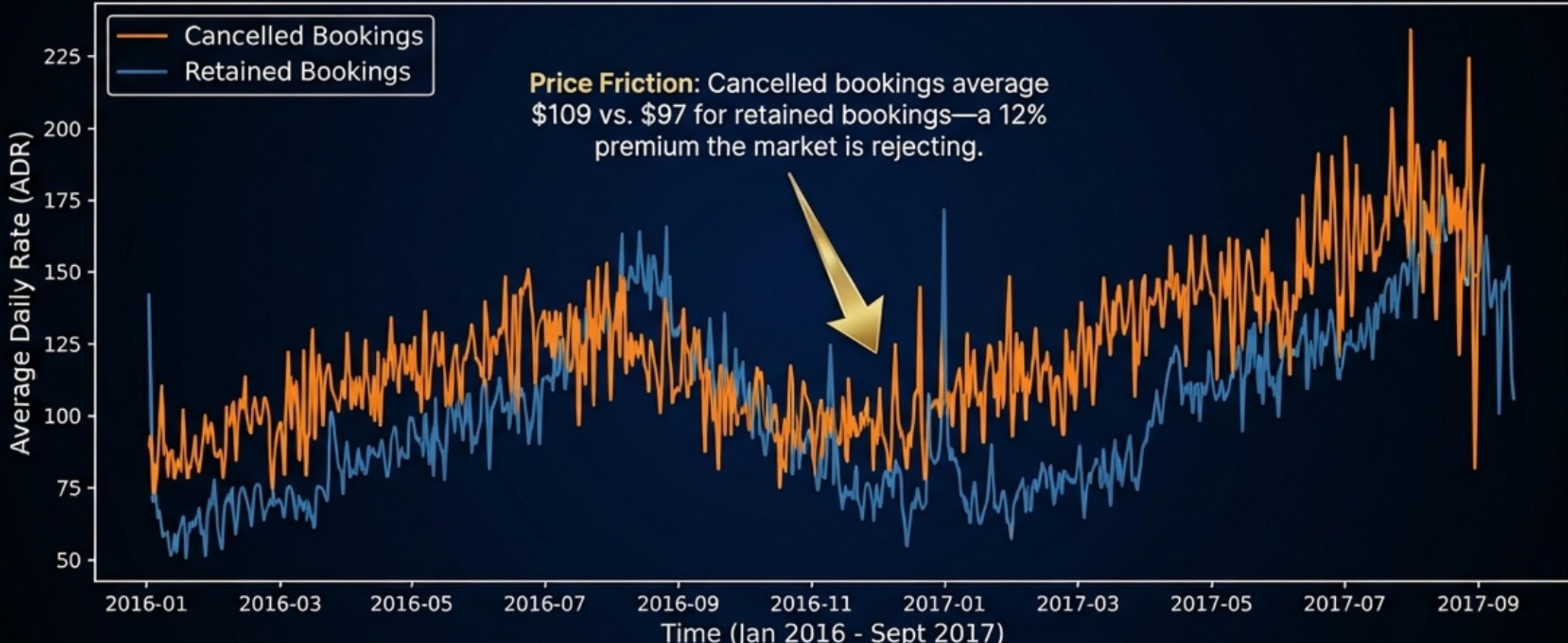


CRITICAL: 50% higher likelihood of cancellation.



Hypothesis: Lower barrier to entry and transient nature of City Hotel traffic leads to lower guest commitment compared to Resort stays.

Price Sensitivity: Cancelling vs Retaining



Seasonality: Volume vs. Vulnerability

Reservation Status per Month



ADR per Month

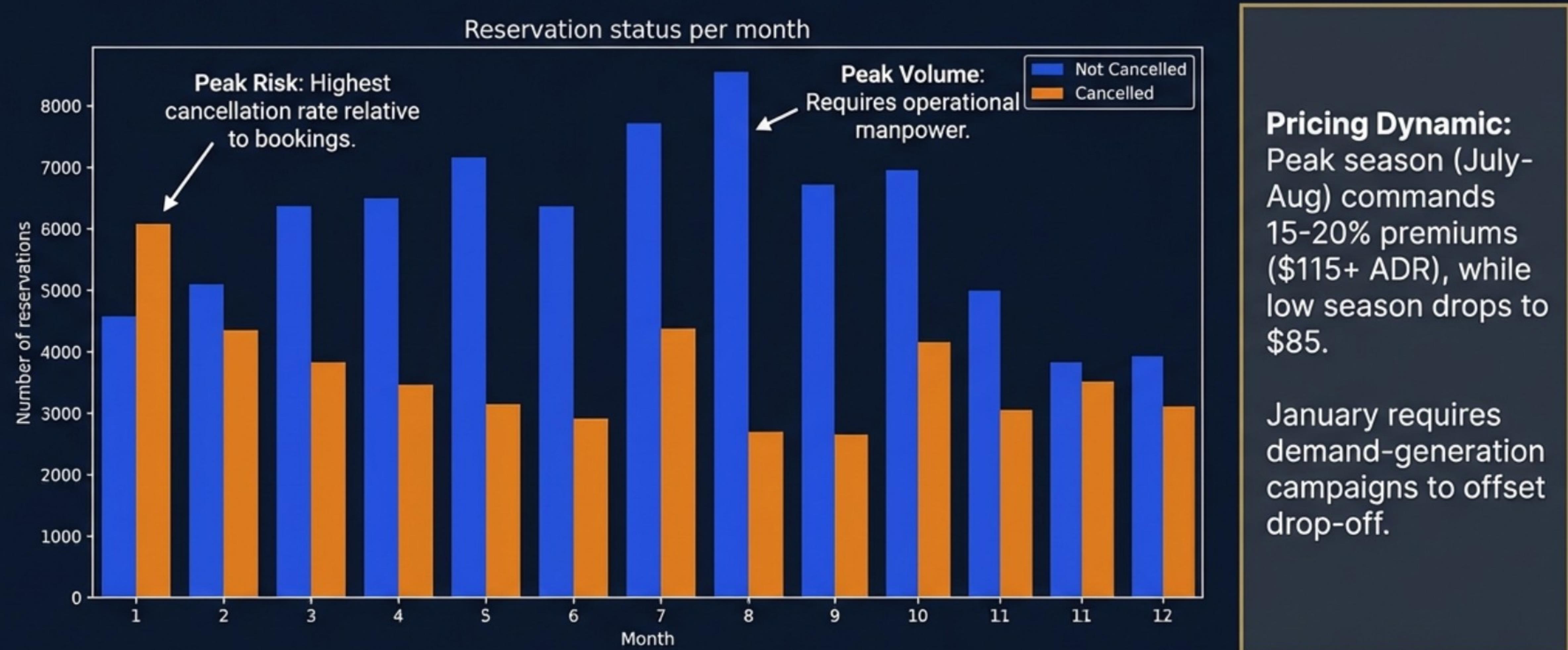


January Anomaly: High cancellation spikes despite lower volume.

August Resilience: Highest premiums (\$115+) and volume, yet better retention.

Conclusion: Peak season guests are value-resilient; off-peak guests are fragile.

Seasonality: August Volume vs. January Risk



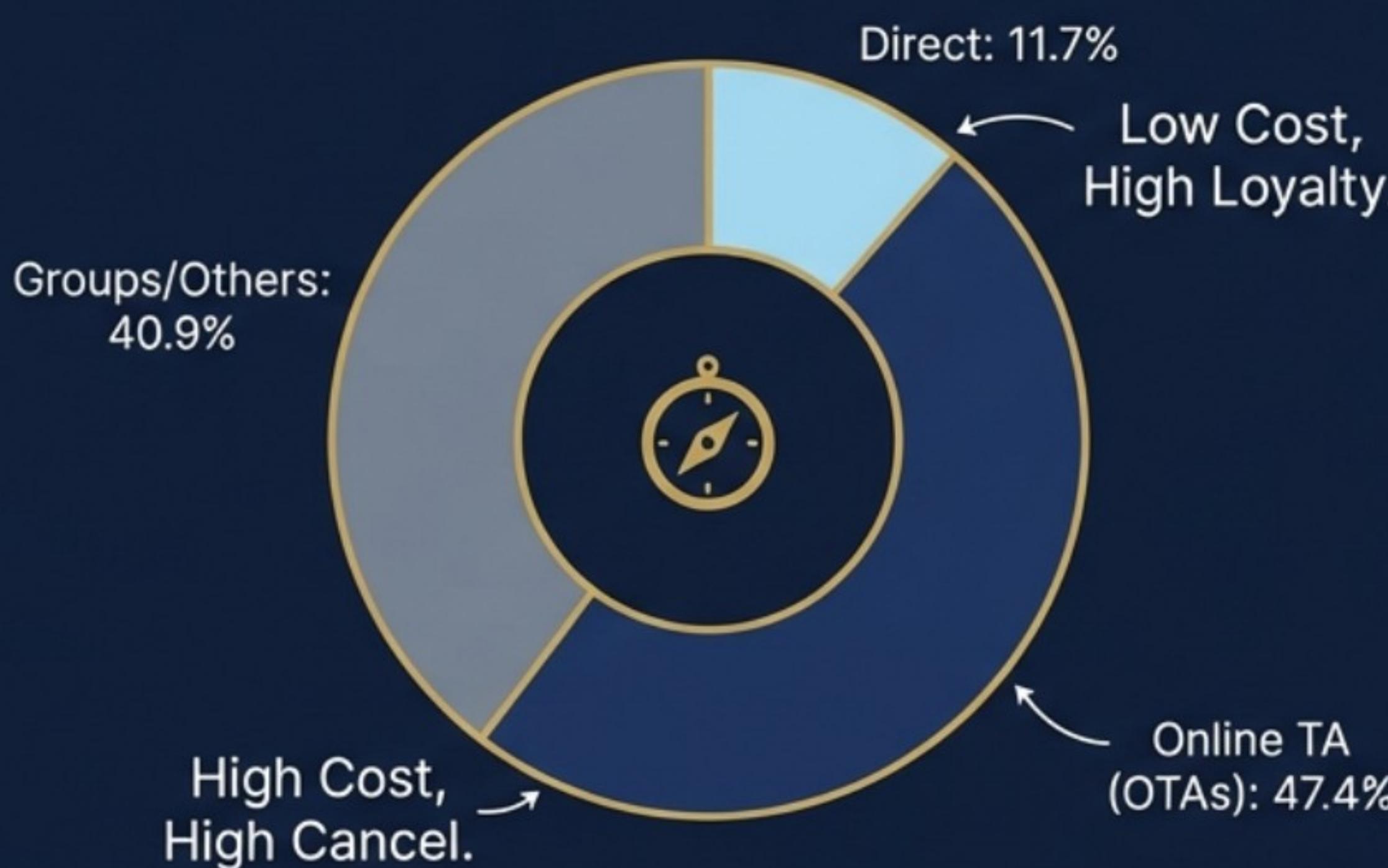
The Lead Time Danger Zone (>90 Days)



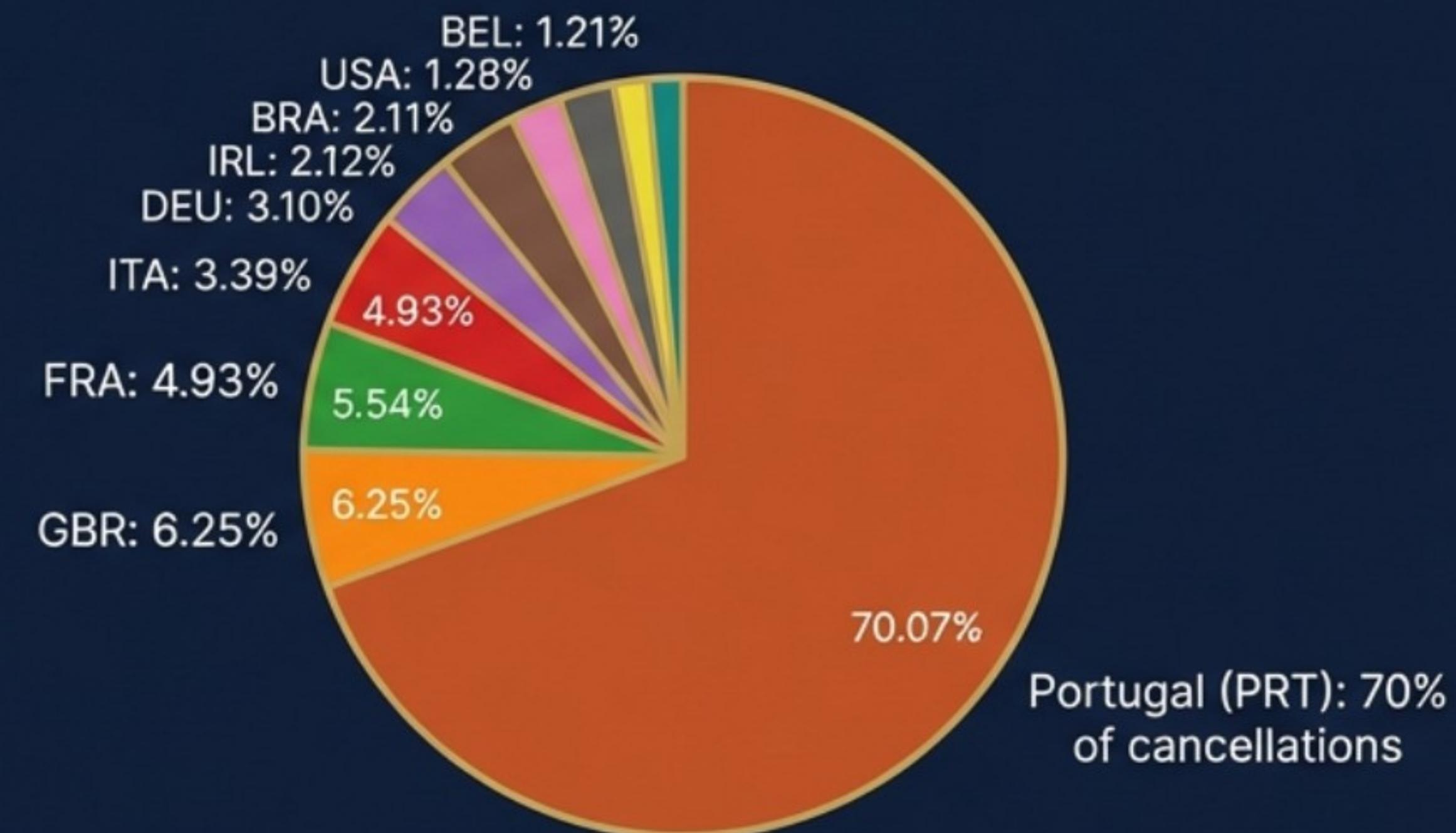
Strategic Implication: Bookings made 3+ months in advance are statistically coin flips. Holding this inventory without a deposit is a financial liability.

Distribution & Market Concentration Risks

Booking Channels



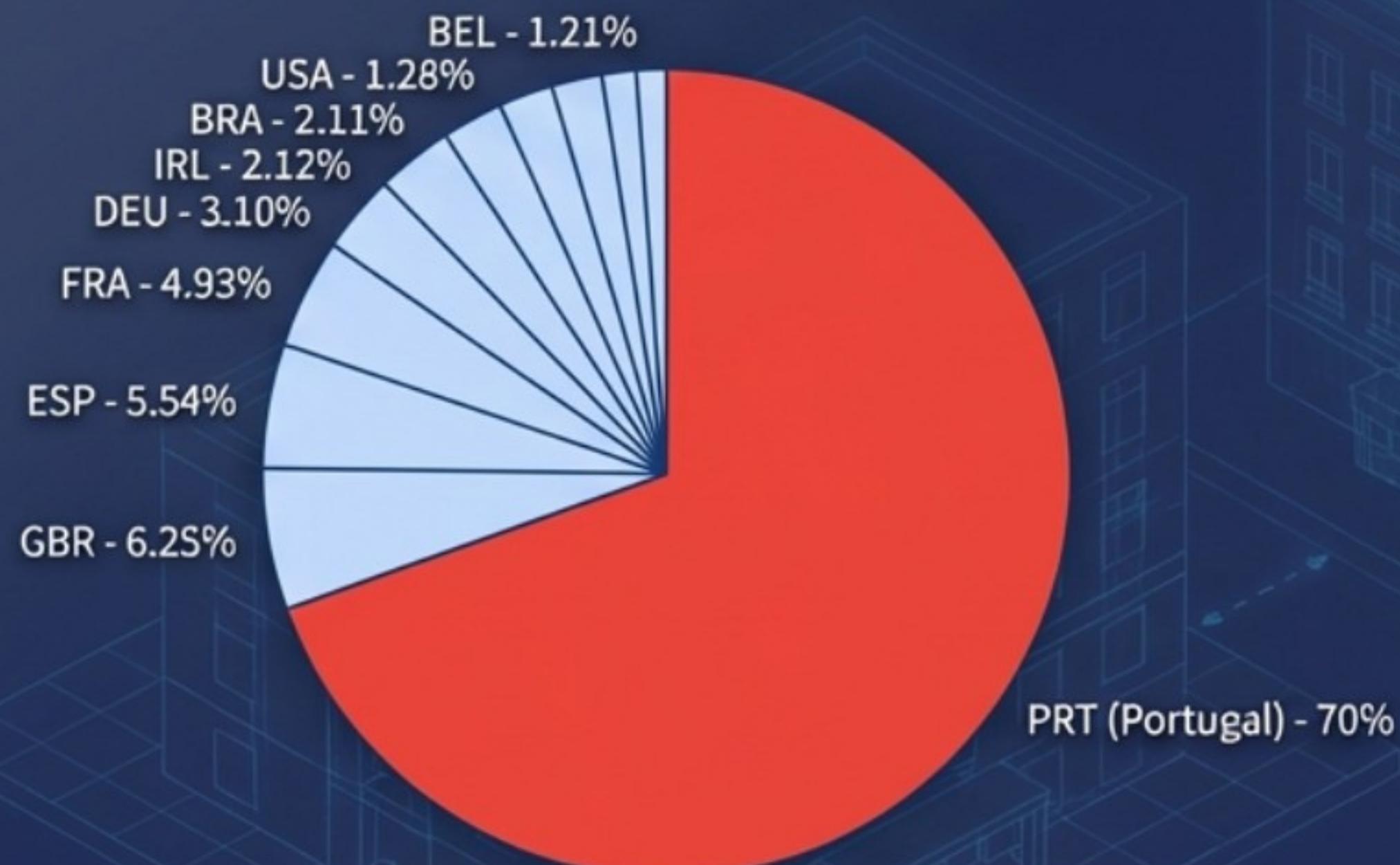
Top Cancellation Origins



Over-indexed on local Portuguese traffic via OTAs, leading to high price sensitivity and "trip chaining" behavior.

Source Dependency: Channel & Market Risks

Top 10 Countries with Reservations Canceled



Booking Channels

Online Travel Agents (OTA):
47.4% (High Risk)

Direct Bookings:
11.7% (Critically Low)

Offline/Groups: ~40%

Over-reliance on OTAs and a single domestic market (Portugal) creates structural fragility.
We lack a direct relationship with 88% of our guests.

Strategic Solutions



PRIORITY:
HIGH

Strategic Pillar 1: Risk-Based Deposit Policies



Stop treating all bookings equally.
Apply friction where risk is quantifiable.

Non-refundable deposits reduce cancellation rates by ~85%.

Action Plan Checklist

- **Trigger 1:** Require non-refundable deposits for bookings **>90 days out**.
- **Trigger 2:** Apply stricter cancellation windows for City Hotels (**41.7% fail rate**).
- **Exception:** Maintain flexibility for **repeat guests** and special requests.

Strategy 1: Risk-Based Deposit Policies (High Priority)

The Logic

Data indicates non-refundable deposits reduce cancellations by ~85%.

Current 'No Deposit' policy applies to 87% of bookings, leaving inventory exposed.

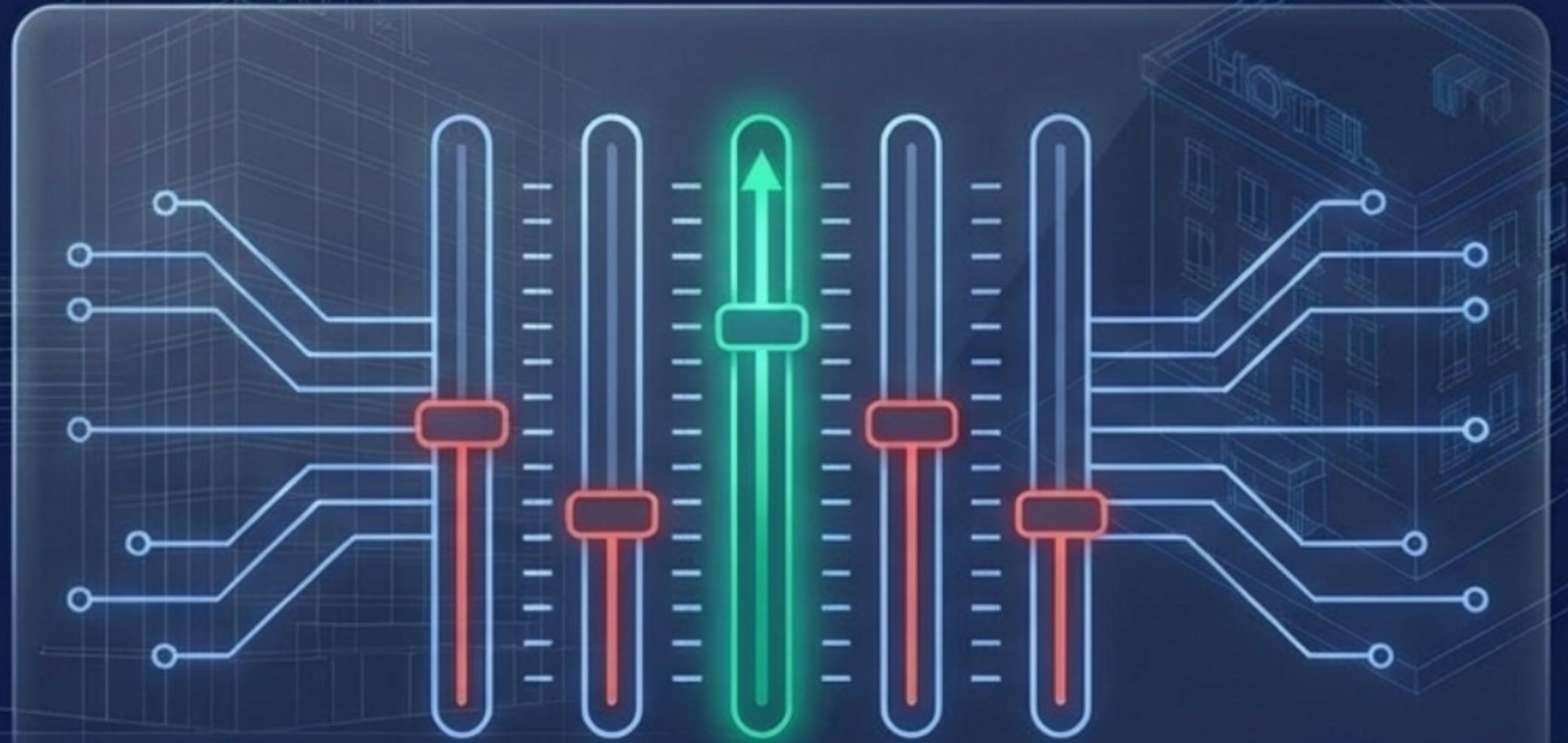
The New Policy Framework

1. **Long-Lead Rule:** Require non-refundable deposit for ALL bookings made >90 days in advance.
2. **City Hotel Rule:** Apply stricter modification policies specifically for City Hotel reservations.
3. **Loyalty Exception:** Waive deposits for Repeat Guests to encourage direct retention.

Expected Outcome: Reduce overall cancellation rate from 37.1% to ~30%.

PRIORITY:
HIGH

Strategic Pillar 2: Dynamic Pricing Engine



Price for conversion, not just theoretical revenue.

Action Plan Checklist

- **Risk-Adjusted ADR:** Automate 5-8% rate reductions for **high-risk profiles** to lock in sales.
- **Refill Strategy:** Deploy 'Last Minute' packages (7-14 days out) to refill canceled inventory.
- **Peak Strategy:** In August/July, use **value-add bundles** (e.g., parking, breakfast) instead of discounting.

Strategy 2: Dynamic Pricing Engine

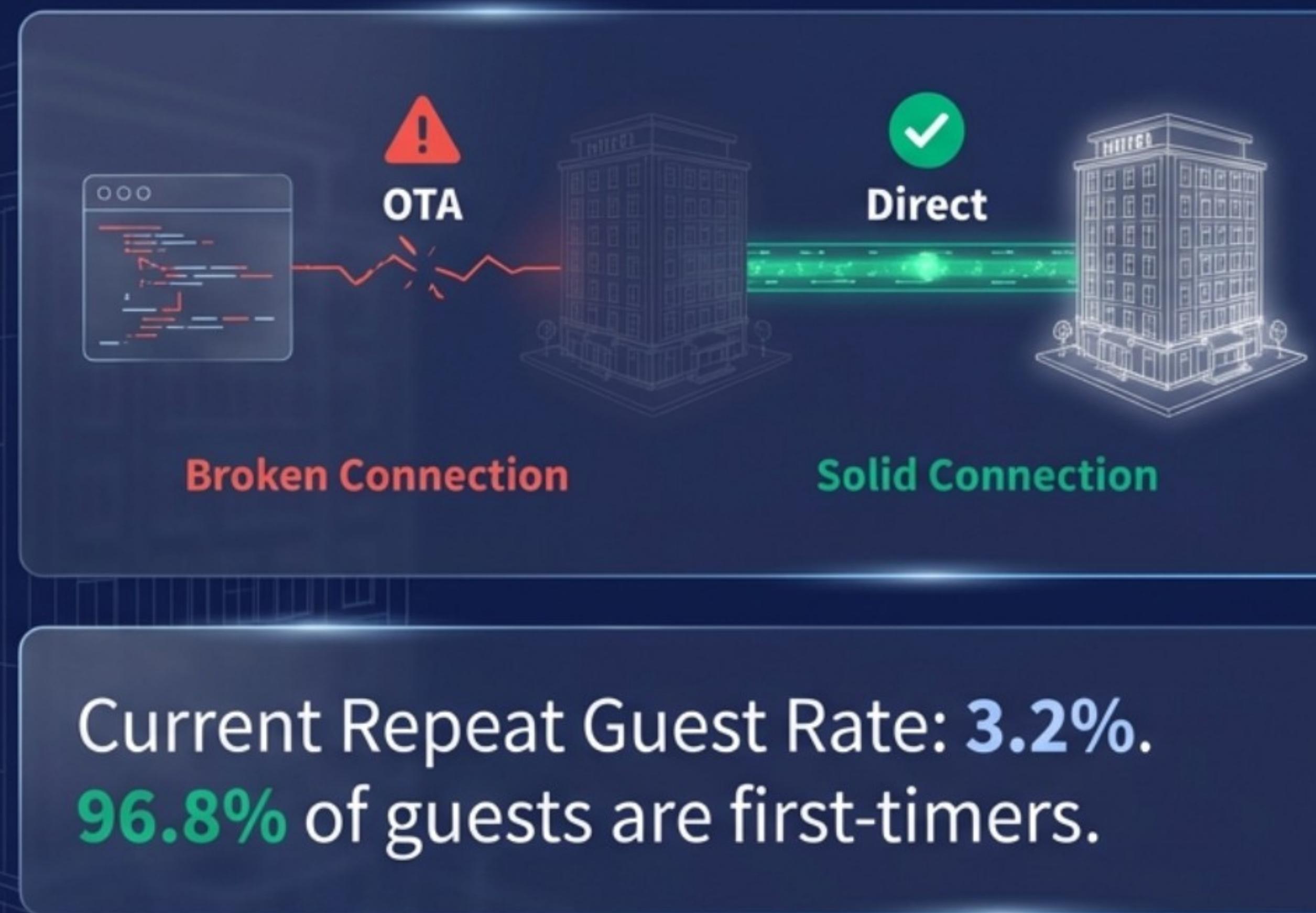
Smart Pricing Curve



The 12% ADR gap between cancelled and retained bookings proves we are pricing ourselves out of conversion. We must price for stickiness, not just yield.

Strategic Pillar 3: Channel & Loyalty Optimization

PRIORITY: MEDIUM



Action Plan Checklist

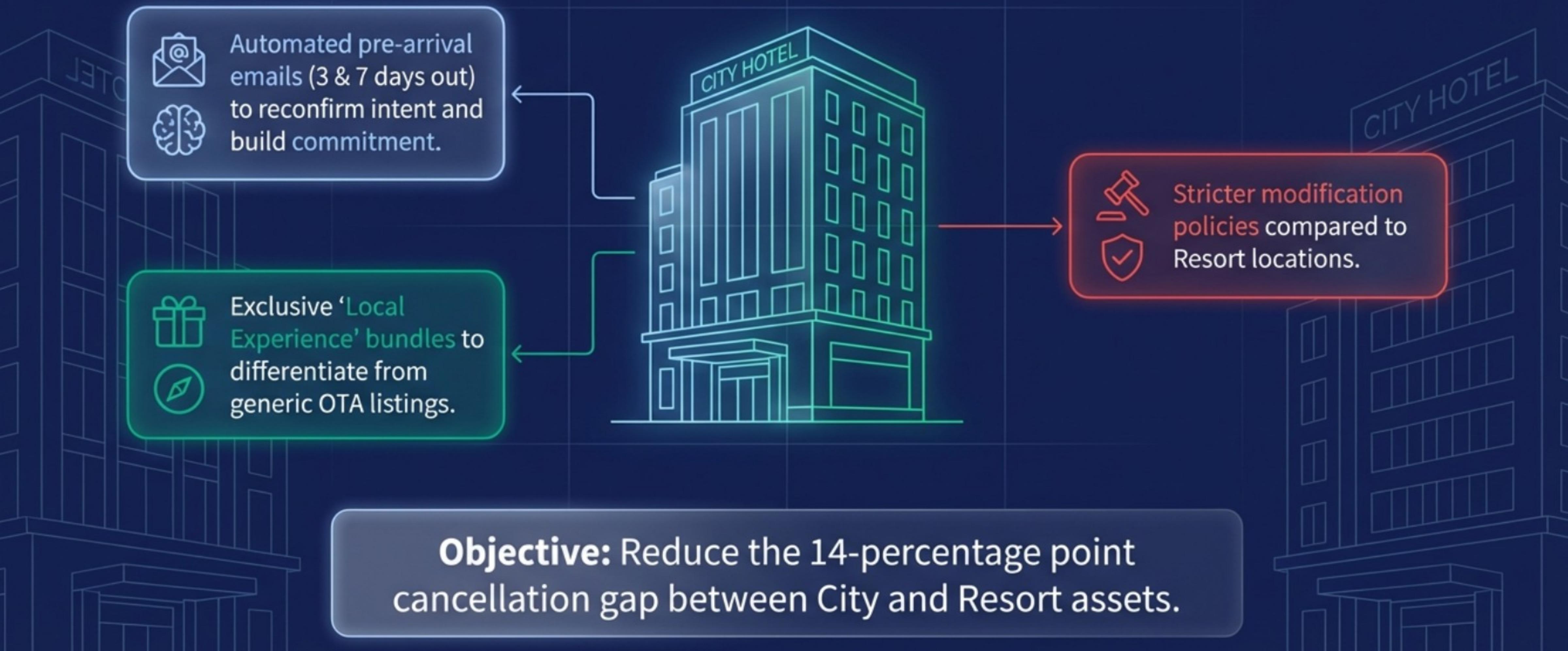
- Goal:** Grow direct bookings from 11.7% to **20%** in 12 months.
- Incentive:** Offer **10-15%** discounts for direct bookings (offsetting OTA commissions).
- Loyalty:** Launch simple loyalty program targeting the **96%** first-timer base.

Strategy 3: Shift Share to Direct Channels

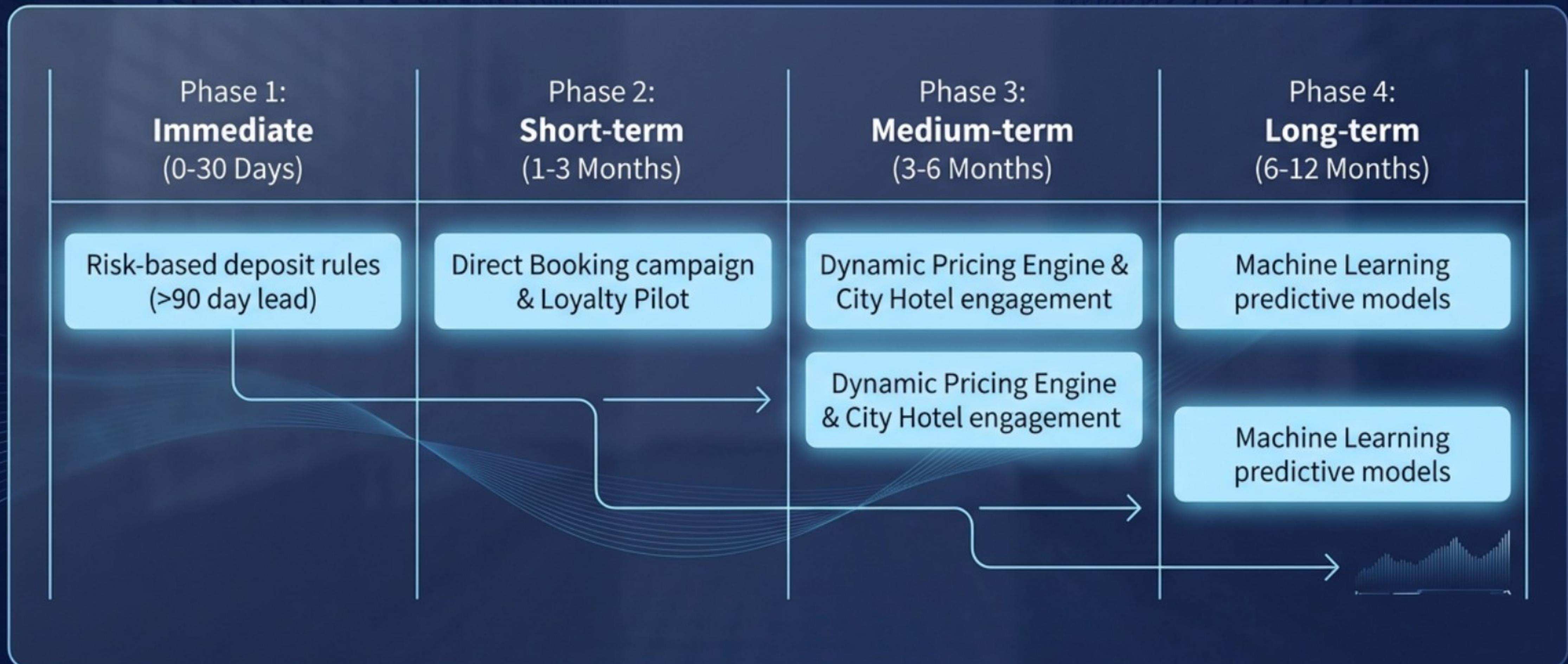


Currently, 96.8% of guests are first-time visitors. Building a direct channel is the only path to sustainable repeat revenue.

Tactical Focus: The ‘City Hotel’ Rescue Plan



Implementation Roadmap



Projected Impact: A \$1.5M Opportunity

37.1% → 29%

Target Cancellation
Rate Reduction

11.7% → 20%

Target Direct Booking
Share

\$1.5M

Annual Recoverable
Revenue

"By aligning deposit policies with risk profiles and optimizing our channel mix, we transform cancellations from an operational drain into a manageable revenue variable."

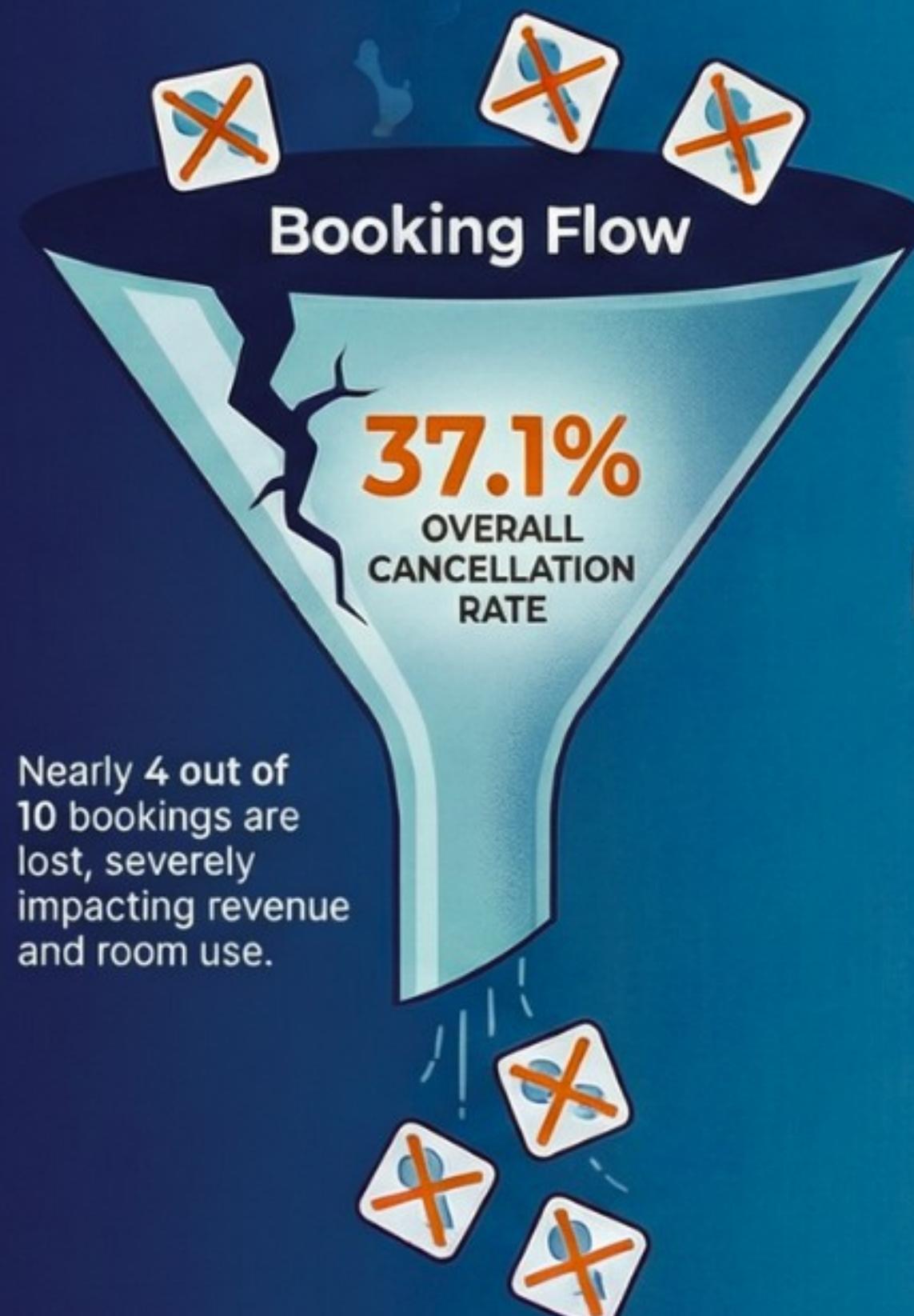
Summary

Data-Driven Recovery: Solving the Hotel Cancellation Crisis

Critical drivers of hotel booking cancellations and a strategic roadmap to recover lost revenue.

PROBLEM

THE CANCELLATION CRISIS



CITY HOTELS vs. RESORT HOTELS



KEY FINDING:

The Price-Cancellation Correlation



SOLUTION

STRATEGIC ROADMAP FOR RECOVERY



IMPLEMENT RISK-BASED DEPOSITS

Require non-refundable deposits for bookings made >90 days in advance.



DYNAMIC PRICING OPTIMIZATION

Reduce ADR by 5-8% for high-risk booking profiles to improve conversion rates.



20% DIRECT BOOKING TARGET

CURRENT: 11.7% DIRECT CHANNELS TARGET: 20% DIRECT BOOKING

Shift dependency away from OTAs (47.4%) via loyalty programs.

Methodology & Data Integrity



Data Source

118,897 verified booking records (July 2015 – Aug 2017).



Tools

Python, Pandas,
Seaborn, Matplotlib.

Cleaning Protocol

- ✓ - Removed outlier ADRs >\$5,000.
- ✓ - Excluded invalid 0-guest bookings.
- ✓ - Dropped 'Company' and 'Agent' columns (excessive missing data).

Statistical Validation

- ✓ **Chi-square Test:** Confirmed Hotel Type/Cancellation correlation ($p < 0.001$).
- ✓ **T-test:** Confirmed ADR significance.

THANKS FOR WATCHING

CONTACT DETAILS

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