

CHURN PREDICTION

YOUNG TALENT CONSULTING GROUP

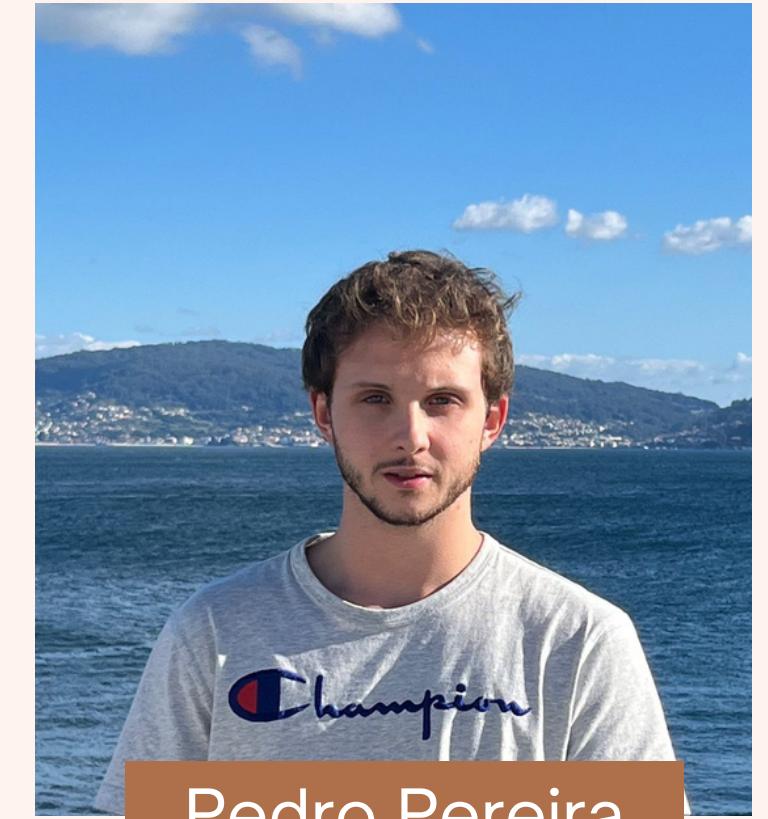
Our Team



Carolina Costa



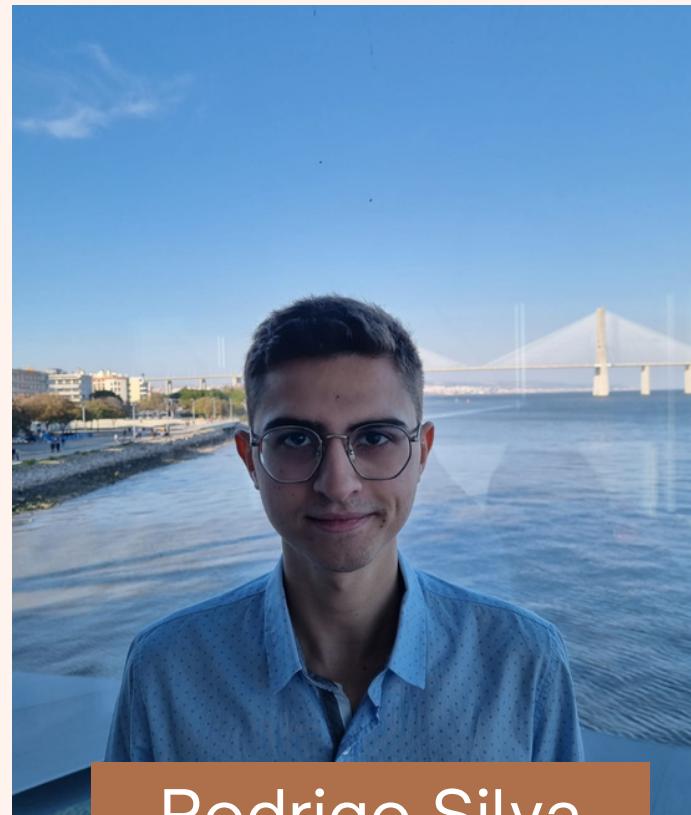
Martim Santos



Pedro Pereira



Rúben Serpa



Rodrigo Silva

Industry Overview

Bookings made with **60 or more** days in advance are **65%** more likely to be canceled



47%

Overnight stays in
4-star hotels in
Lisbon

40%

Cancelation rate
via online
channels

BUSINESS OBJECTIVES



- 01 Reduce **uncertainty** about demand
- 02 Implement better **pricing** and **overbooking policies**
- 03 Identify bookings with a **high likelihood of canceling**

5-Step Plan

02 Data Understanding and Treatment

01 Business Objectives

03 Modeling and Interpretability

04 Model Deployment and Implications

05 Recomendations for the Hotel

Current Business Performance



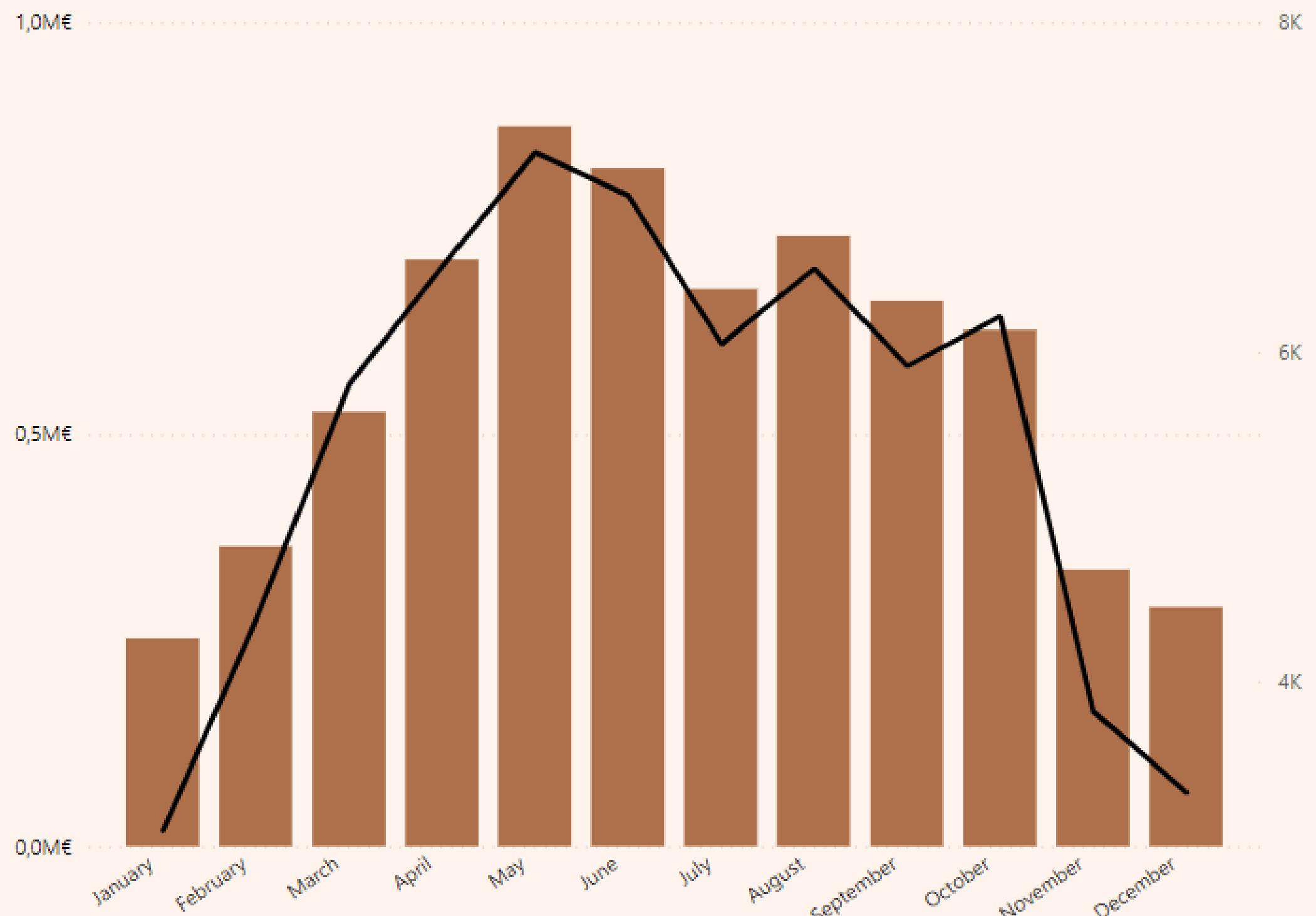
This is what data discloses about the Hotel's performance

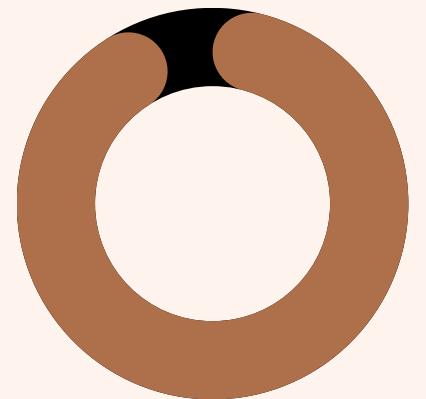
Sesonality

65.8k

Number of bookings from 2015 to 2017

- Total Revenue
- Number of bookings





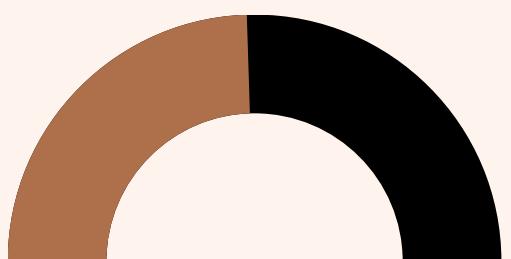
New Customers

95% of the bookings



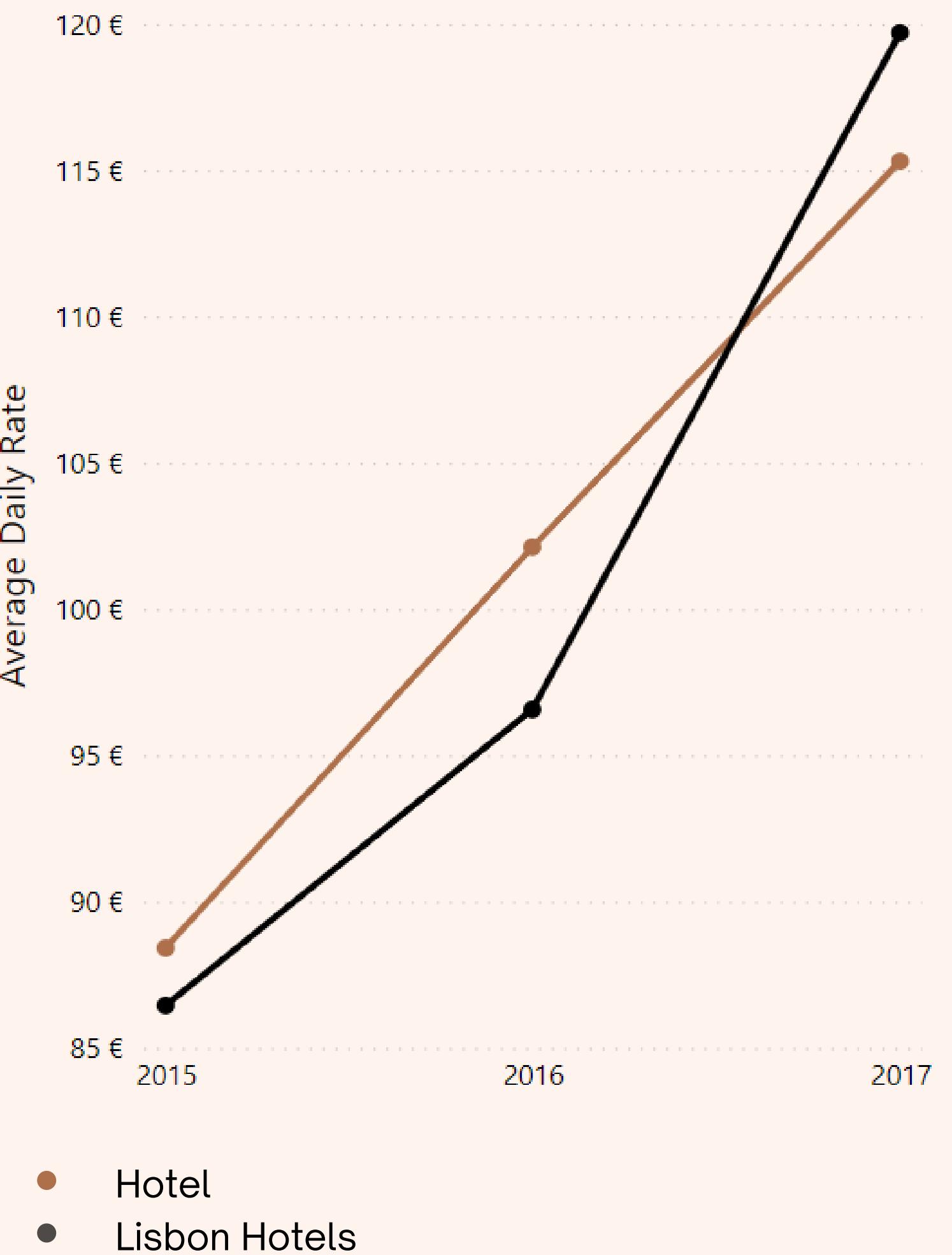
Type A

81% rooms booked



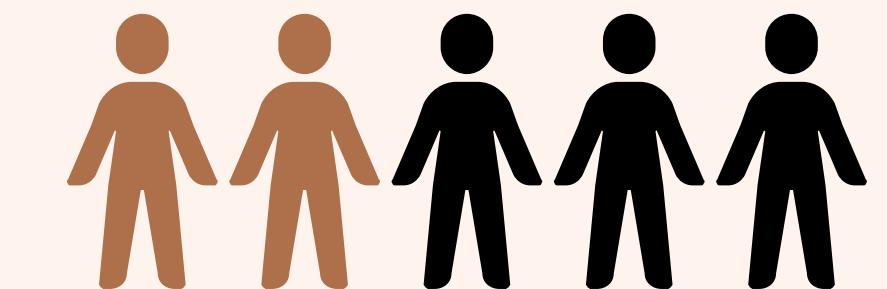
Online TA

49% of the customers



2.83

Average Length of Stay (ALOS)



2

Average nr of guests per booking

98.45

Average Lead Time

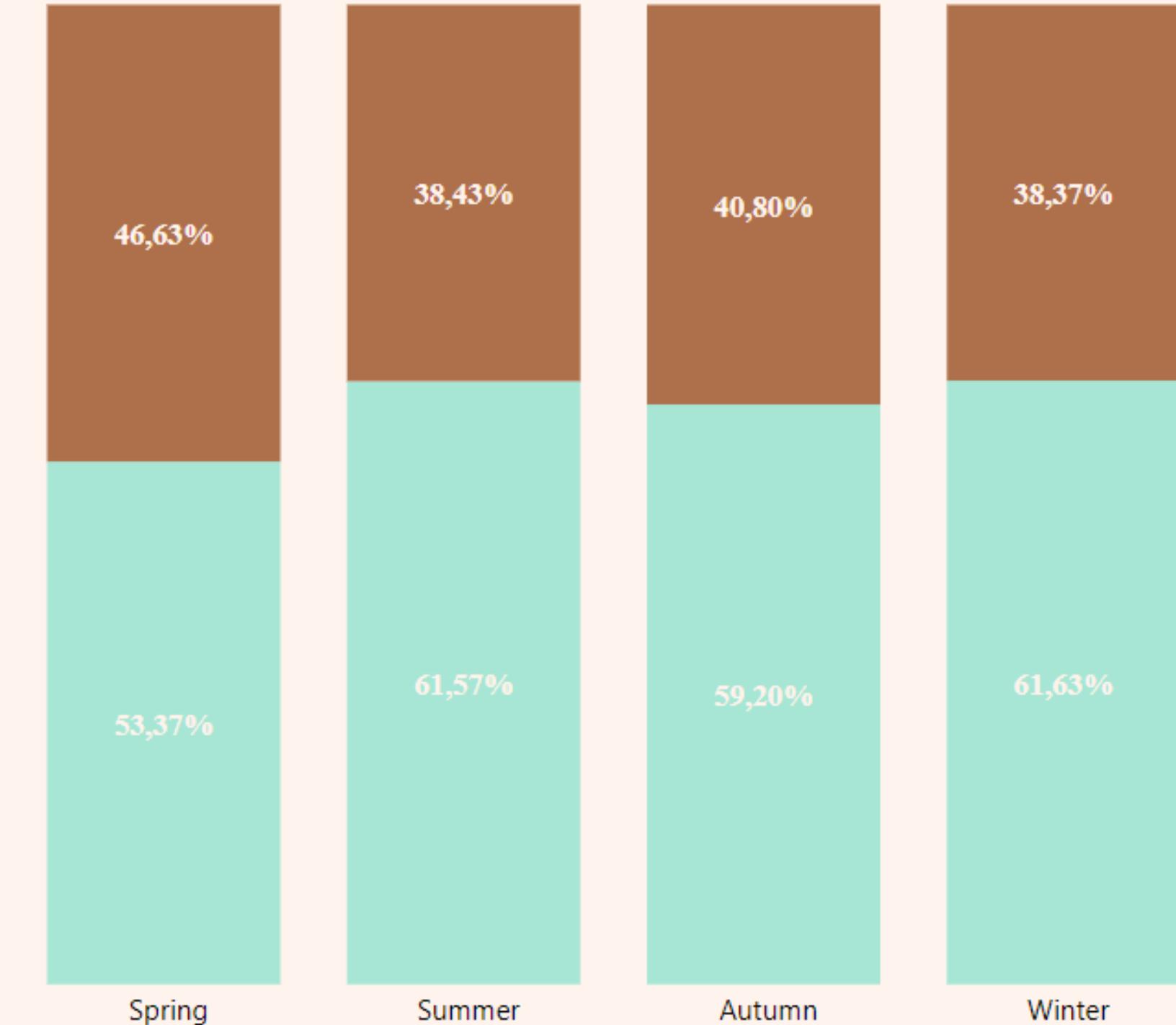
- Hotel
- Lisbon Hotels

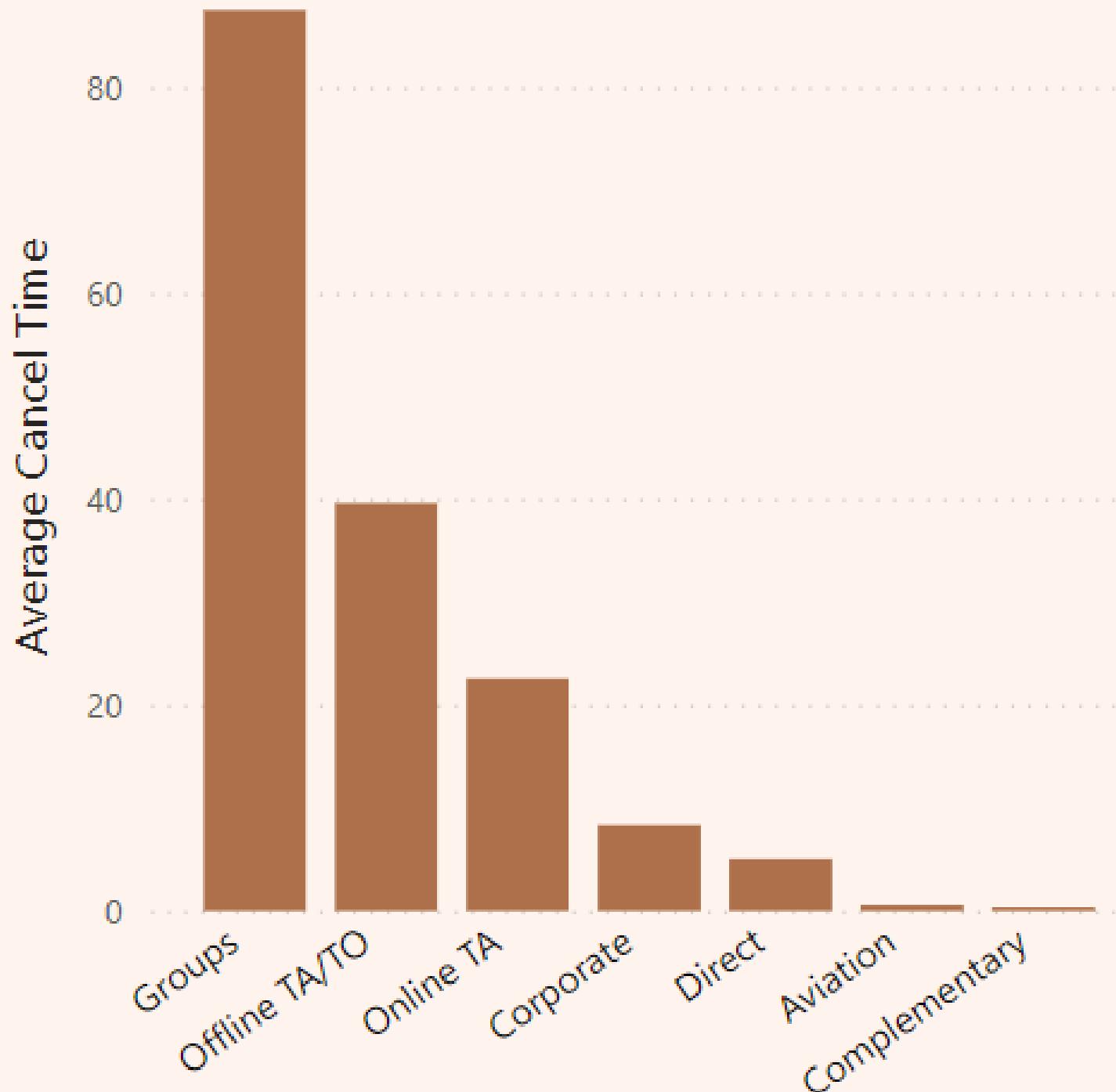
Customer Churn

41.53%

Average Cancellation Rate from **2015** to **2017**

- Churn
- Retention





84.8

Average **nr of days** that
customers cancel in advance

**Higher Lead
Time** for
canceled
bookings

64% of
Groups
canceled

99.9% of Non-
Refund
bookings were
canceled

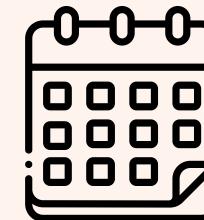
Data Sets Implemented



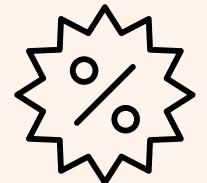
GDP AND INFLATION RATE



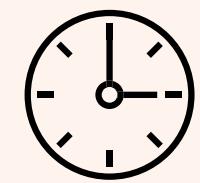
WEATHER DATA



LARGE EVENTS DATA



AVERAGE DAILY RATE



HOLIDAYS DATA



Modeling

- 01 Encoding the categorical variables
- 02 Use default parameters to allow for model selection
- 03 Hypertuning and performance evaluation



1

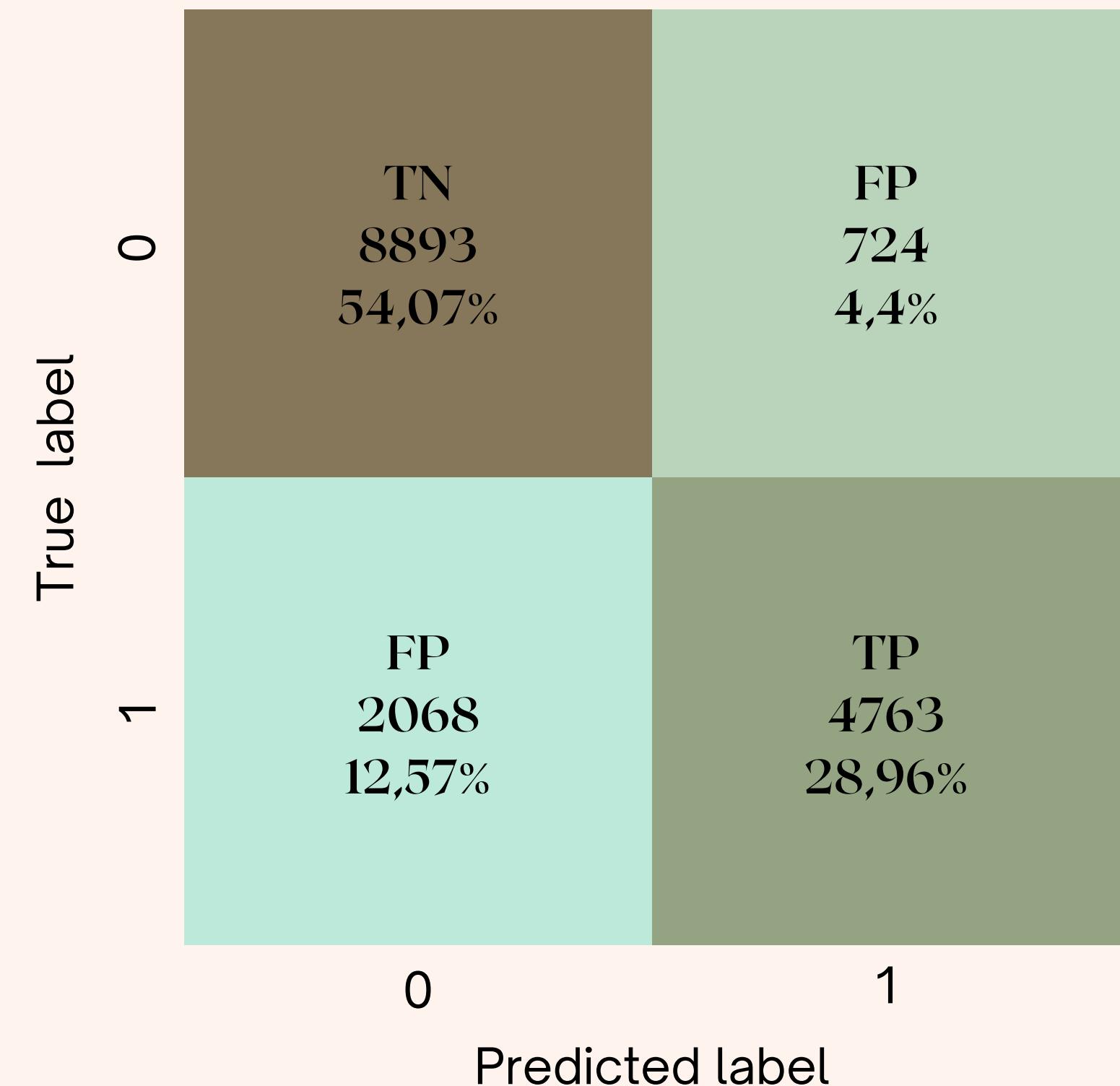
Cat Boost

2

XGBOOST

Confusion Matrix

- **Accuracy** = 0,830
- **Precision** = 0,868
- **Recall** = 0,697
- **F1 Score** = 0,773



Results Evaluation

Make reservations with more **time in advance**
Non-Refundable Deposit Type
Transient Type



28.9%

TP

69.7%

Recall

4763 Customers



Strategies

- Contact the guests to confirm their booking and offer exclusive benefits
- Send personalized and timely pre-arrival emails
- Allow data changes and provide credits for future stays
- Personalized upselling and cross-sell additional services

Models Evaluation

12.67% FN

2068 Customers

Strategies

- Understand whether there are particular customer segments consistently missed
- Collect additional data to enhance the model's predictive power

Models Evaluation

4.4% FP

724 Customers

Strategies

- Establish a feedback loop with front-line employees
- Implement a confirmation process

Customer Churn Strategies I



Neutralize OTA's competitive advantage

Provide clients with an updated and friendly-user website.
Offer discounts or value-added incentives on direct bookings.

Personalized customer service and right incentives

Exclusive benefits depending on customer's preferences.
Eco-friendly features or partnerships with cultural places.

Customer Churn Strategies II



Continue the client journey after check-out

Send a personalized email after they stay.
Encourage the client to post a review.

Enhance online presence and reputation

Actively manage and answer online reviews.
Invest in social media platforms to engage with potential and current guests.
Influencer Marketing.

Deployment and Maintenance Plans

01

Prepare the infrastructure

02

Monitor performance and track key metrics

03

Train Staff on how to use churn predictions effectively

04

Update and retrain the model with new data

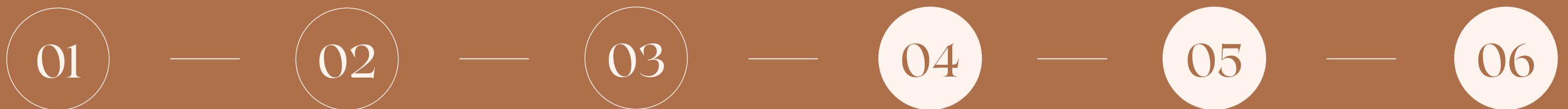
05

Establish a feedback loop with front-line employees

06

Track performance and monitor for drift

Deployment and Maintenance Plans



01
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Thank you
for your visit!