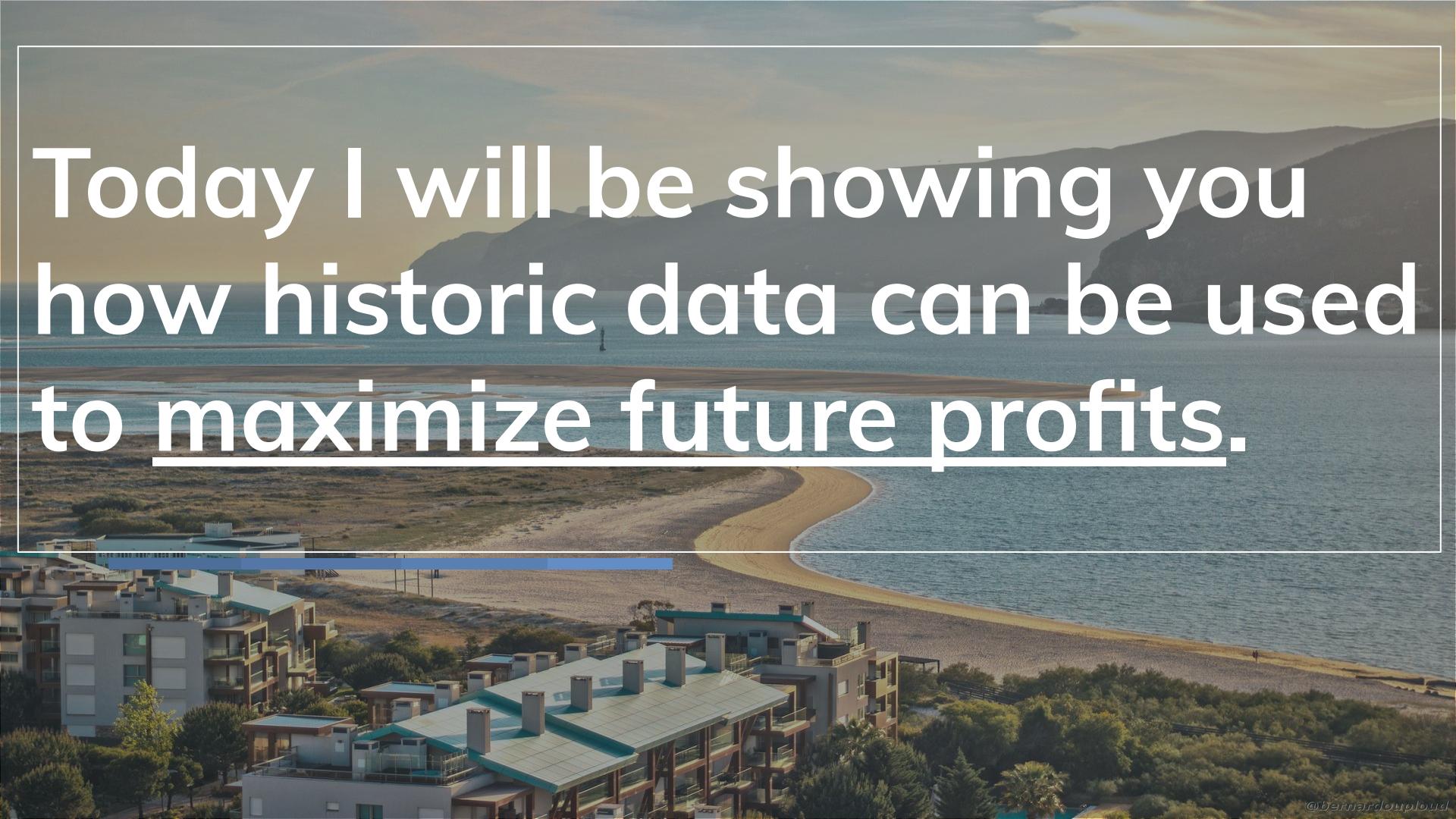


Predicting Cancellations

To Improve Annual Hotel Profits



A scenic coastal landscape featuring a wide, sandy beach that curves along a body of water. In the background, there are dark, silhouetted mountains under a sky with scattered clouds. The foreground shows the tops of several modern, multi-story residential buildings with light-colored facades and green roofs. The overall scene is bright and airy.

Today I will be showing you
how historic data can be used
to maximize future profits.

Understanding the Problem

In an average month,

there are

1,000
reservations

370
cancellations

118
predicted cancellations



This costs the company
up to
€135,676
in lost profits.

By understanding and
predicting cancellations,
business decisions can be
made to limit profit loss.

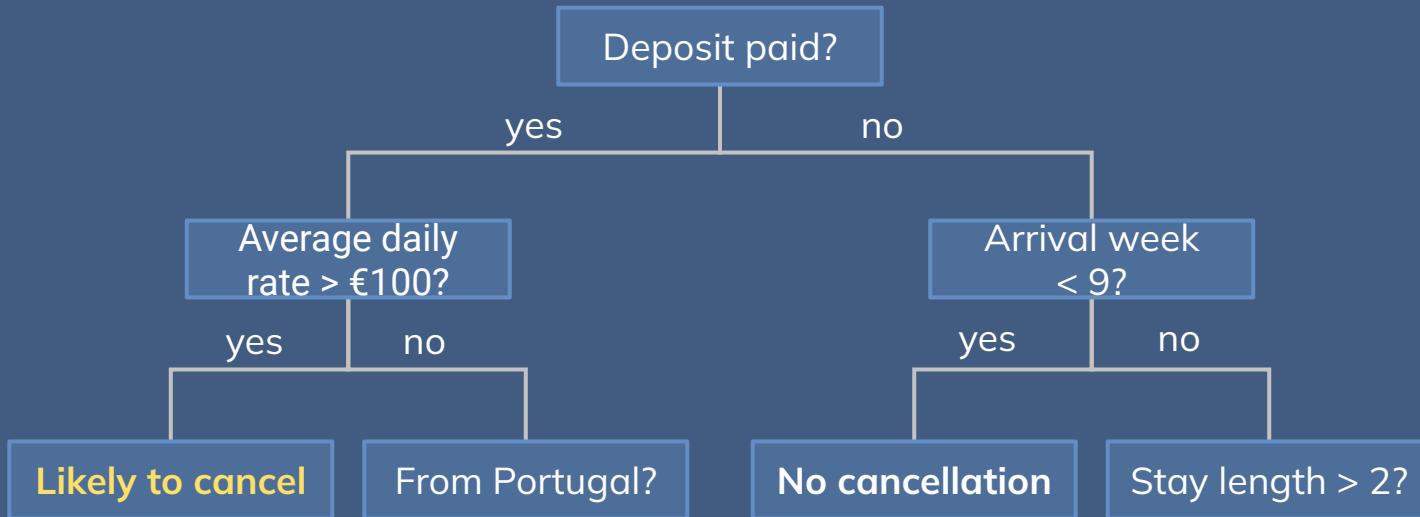
Using a Model to Predict Cancellations

Methodology

The data from 119,390 reservations made between July 1, 2015 and August 13, 2017 were analyzed and used to build a model to predict which customers are likely to cancel their reservations.



A Simplified Example of How the Model Works



The model is asking questions about 38 different features of a reservation and makes thousands of decision trees.

87% Accuracy

Based on which
customers are
charged a deposit,
the current accuracy
rate is 74%

How good is the model at predicting cancellations?

Out of 1,000 Reservations...

303

Are predicted to cancel
out of the

370

That actually cancel



82%

recall rate

67
cancellations
are missed

303

Actually cancel
out of the

368

That are predicted to
cancel



82%

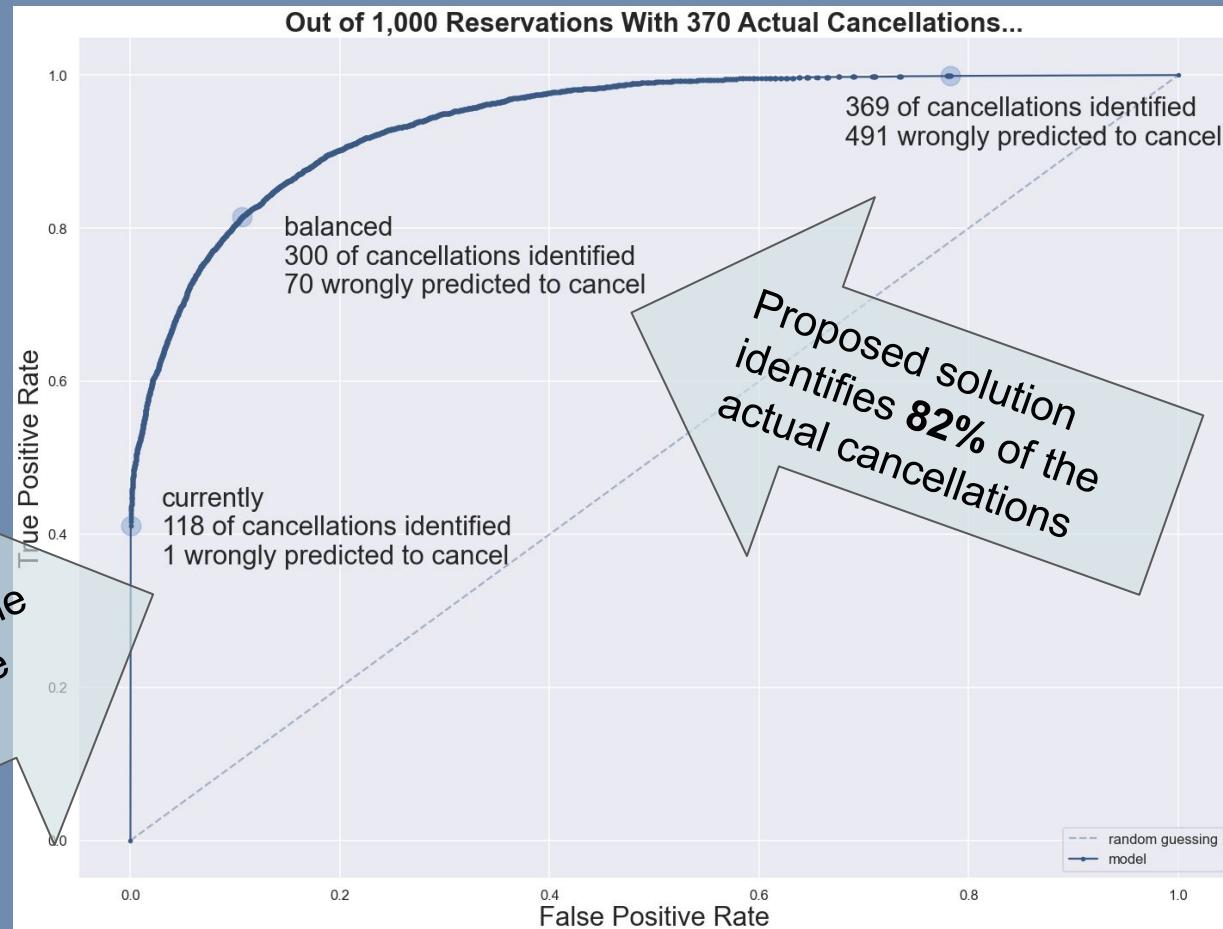
precision rate

65 reservations
are incorrectly
predicted to cancel

Out of 1,000 reservations with 370 actual cancellations...

156% improvement
in identifying
cancellations.

Currently, only 32% of the
actual cancellations are
being identified



What Does the Model Tell Us About Cancellations?

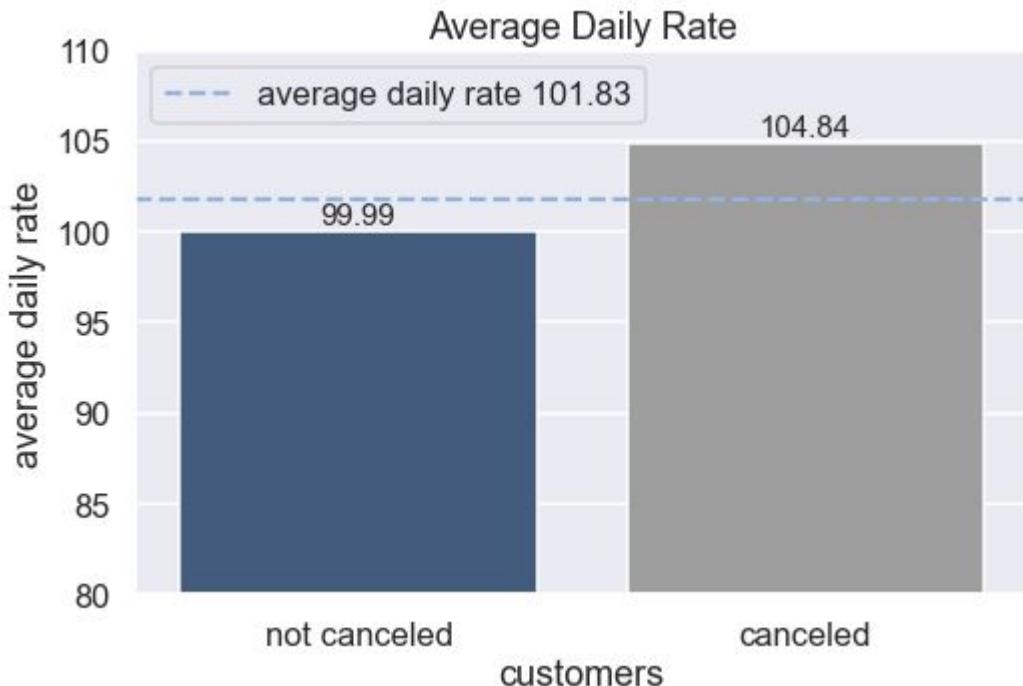
Most important features that impact cancellations:

- Average daily rate
- Arrival date (week)
- Deposit paid
- Resident of Portugal



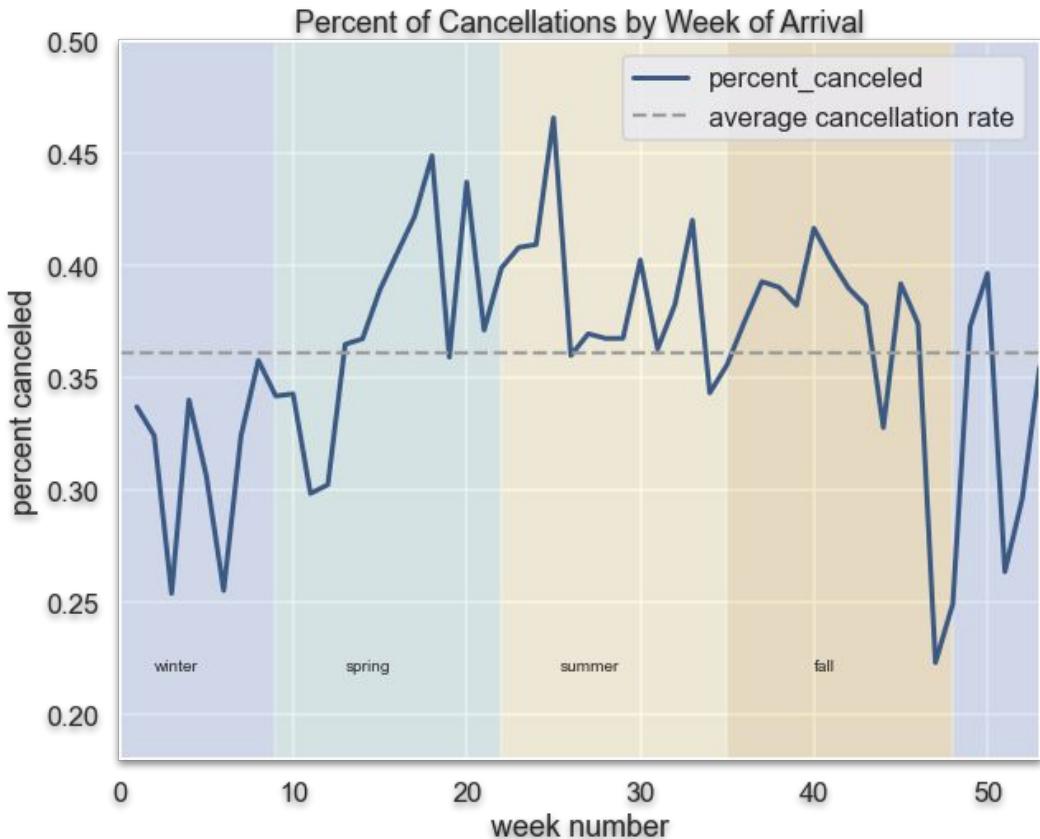
- Average daily rate (16.4%)
- Arrival date (week)
- Deposit paid
- Resident of Portugal

Those that cancel tend to book more expensive rooms.



- Average daily rate
- Arrival date (week) (13.7%)
- Deposit paid
- Resident of Portugal

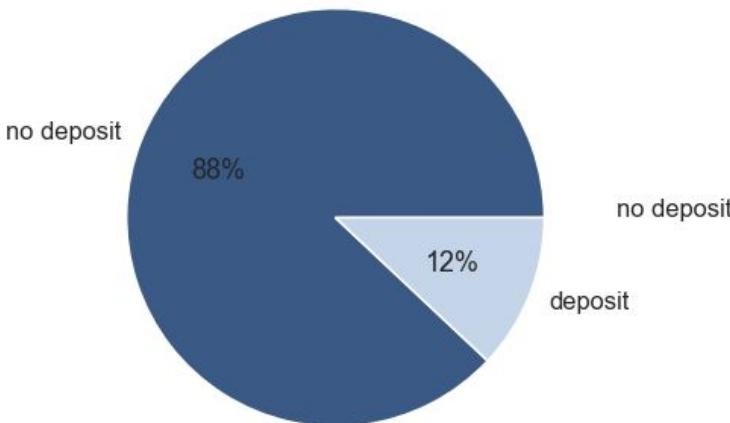
Cancellations peak in the late spring and early summer.



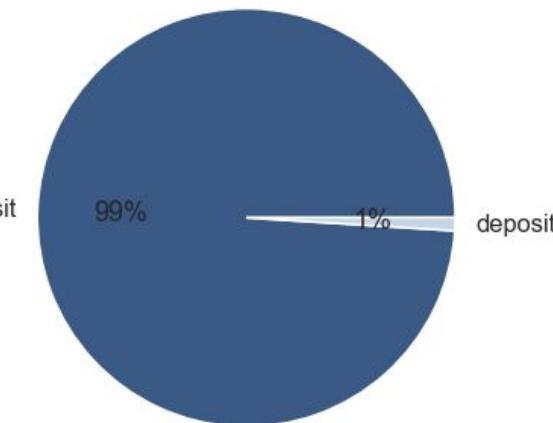
- Average daily rate
- Arrival date (week)
- Deposit paid (13.2%)
- Resident of Portugal

Customers that cancel are more likely to have paid a deposit.

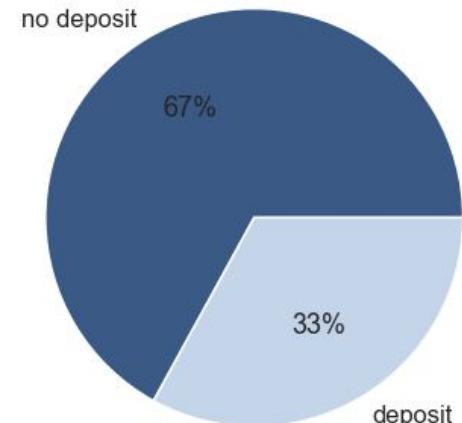
All Customers



Customers That Do Not Cancel

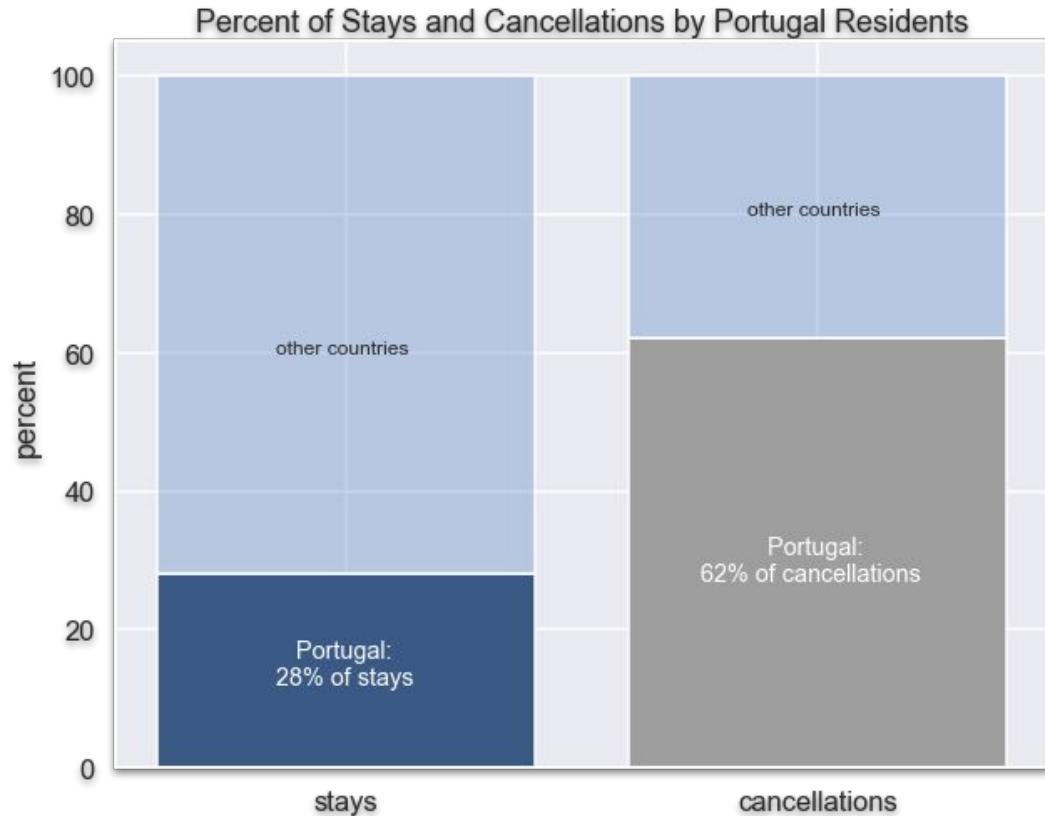


Customers That Canceled



- Average daily rate
- Arrival date (week)
- Deposit paid
- Resident of Portugal (9.3%)

Customers from Portugal make up more than half of the cancellations.



In an Average Month....



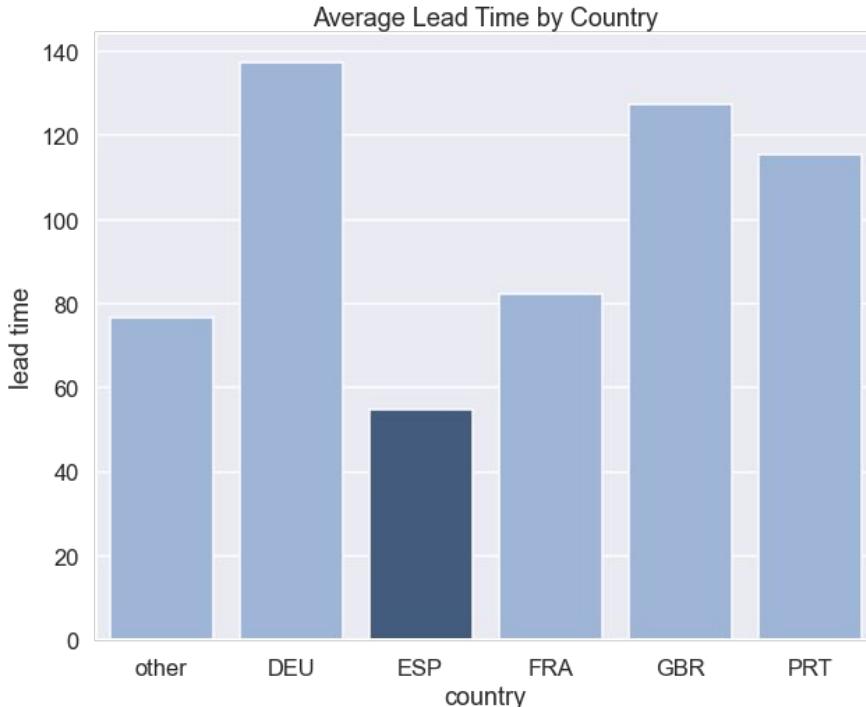
How can this information help reduce profit loss due to cancellations?

Recommendations for Improved Profits

Predictions of upcoming
cancellations allow for
responsive business decisions.

Recommendation 1:

Use predictions of upcoming cancellations to make adjustments in marketing.

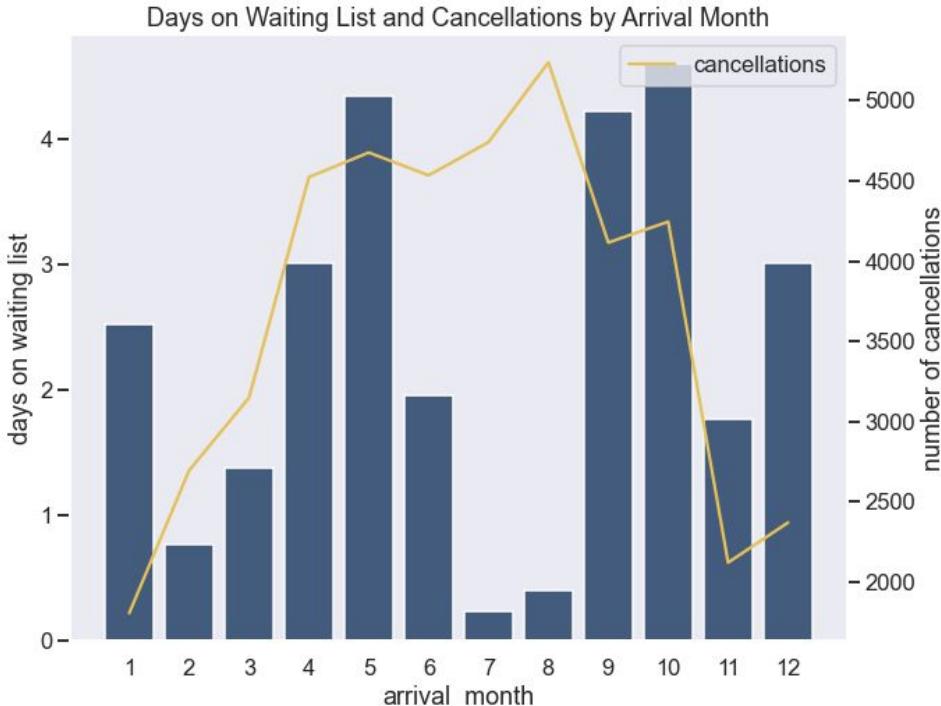


Customers from Spain book their hotel rooms closer to the expected arrival date than other countries.

When cancellations are predicted to be high, increase targeted marketing efforts in Spain.

Recommendation 2:

Use predictions of upcoming cancellations to make adjustments in waitlist policies.

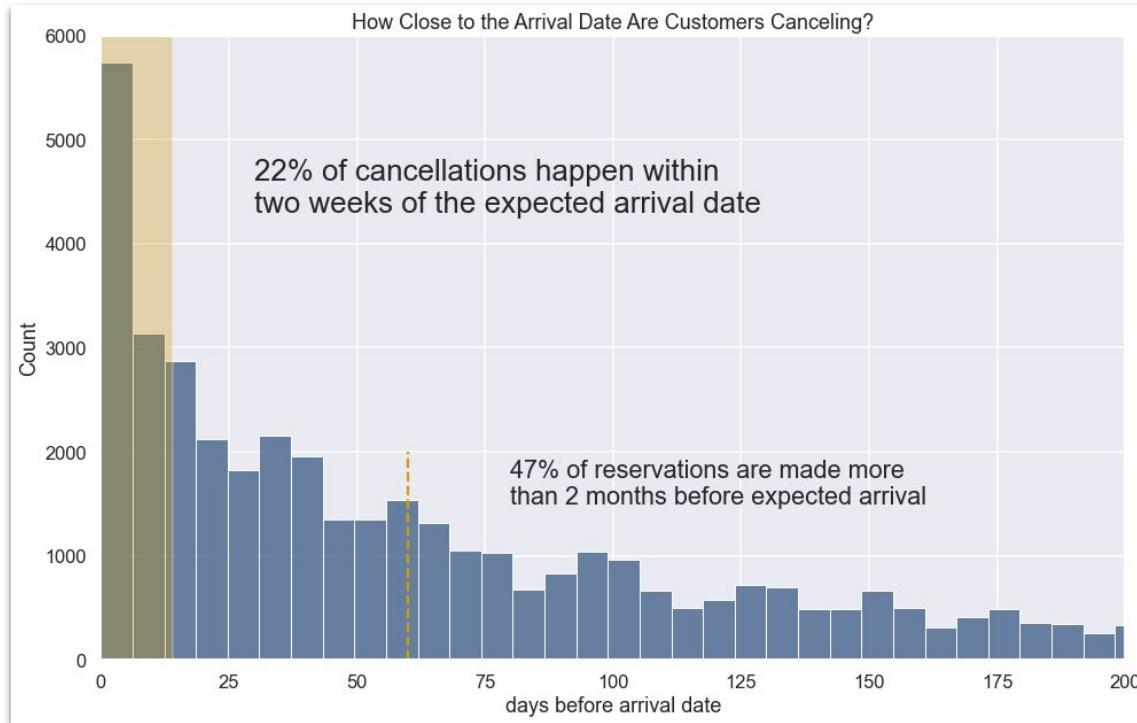


Cancellations and the number of days a customer is on a waiting list fluctuate throughout the year.

When cancellations are predicted to be high, overbook a certain percentage of rooms to reduce and/or eliminate the days a customer spends on the waitlist.

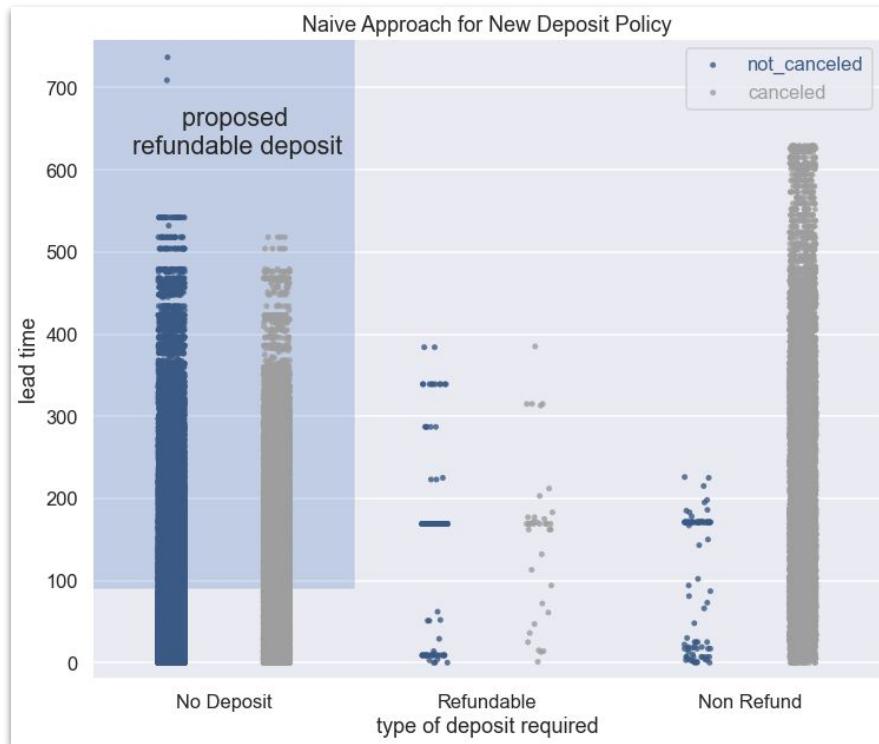
Recommendation 3:

Update deposit requirements to discourage last-minute cancellations.



Recommendation 3:

Update deposit requirements - the naive approach.



Charge a refundable deposit (with the percent refunded based dependent upon how many days before arrival the customer cancels) for customers that book three months or more in advance.

Pros: Easy to identify customers and will recapture some of the lost profits due to cancellations.

Cons: Most of the customers asked to pay a deposit will not cancel and the addition of a deposit may dissuade customers from booking.

Recommendation 3:

Update deposit requirements - the targeted approach.



At the time of booking, if a customer is identified as likely to cancel and they are not already required to pay a deposit, charge a refundable deposit.

Pros: Deposits are targeted towards customers that are more likely to cancel and those that are unlikely to cancel won't be asked to pay one.

Cons: Some of the customers who will cancel will not be identified and will not pay a deposit.



Recommendations

Increase marketing to Spain when cancellations are expected to be high.



Modify waitlist policies when cancellations are predicted to be high.



Use increased and targeted deposits to discourage last-minute cancellations and to help recoup lost profits.





Where Do We Go From Here?

- to determine which cancellations result in vacant rooms will allow for a more systematic approach to predicted cancellations

**Obtain data
on
vacancies**

-to reflect impact of new deposit strategies on cancellations

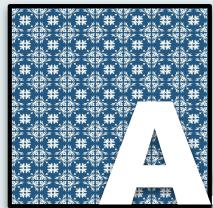
**A/B testing
on deposit
strategies**

**Update
prediction
model**

**Collect data
from
2020-2021**

-to determine impact of different deposit schedules on cancellation rates, cancellation timing and customer retention

-to analyze impact of Covid and regional lockdowns on cancellations



Azulejos
Ltd.

Thank you for your time today.

Are there any questions?