



# Hotel Cancel Culture

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Predicting Reservation Cancellations

# Overview

- “Heads in Beds” Philosophy
- Guiding Questions
- Reservation Results
- Final Recommendations
- Next Steps

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# “Heads in Beds” Philosophy

- Maximize revenue
  - Oversell rooms with expectation of cancellations
- Minimize cost
  - Weekly scheduling and ordering supplies
  - Relocating guests when sold-out

# Goal:

To identify the top and bottom 3 attributes when predicting whether a reservation will cancel.

# Guiding Questions:

## Check-Out or Cancel?

What is the likelihood of a given reservation canceling?

## Pros and Cons

- Practical use for same-day decision-making
- Useful for forecasting future demand

## Guest Generalizations

Can we generalize certain attributes are more/less likely to cancel?

## Pros and Cons

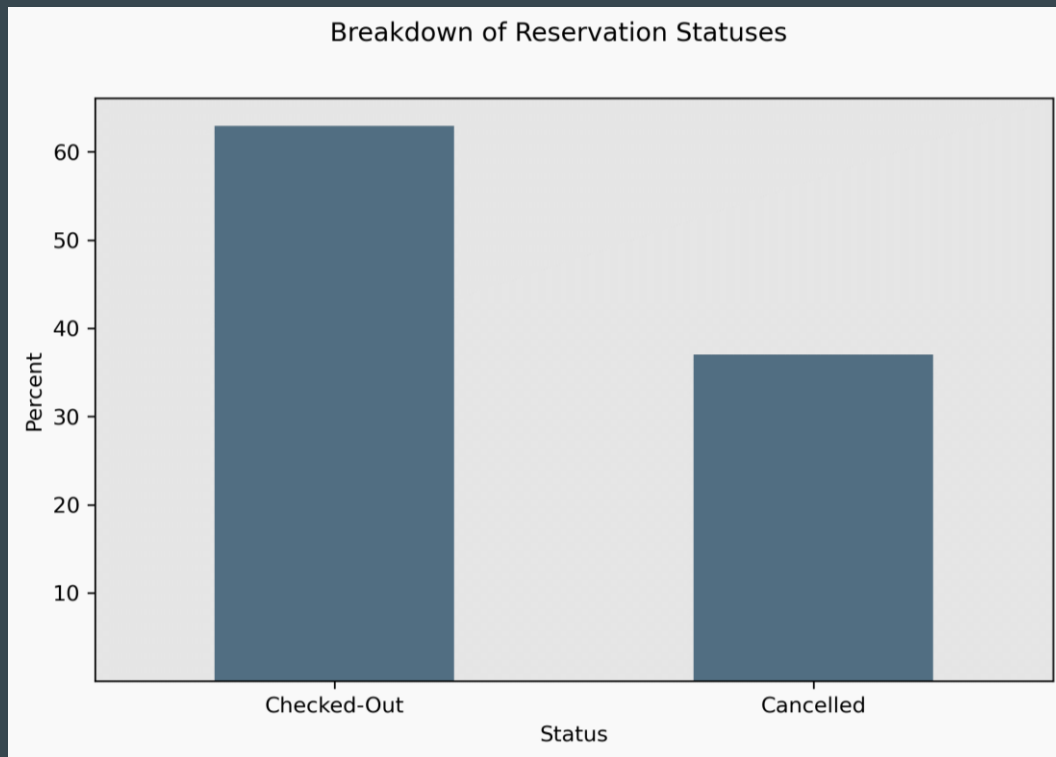
- Simple/easily understood
- Less accurate vs. full analysis
- May lead to biases about guests

# Data Details

- Hotel reservation data from two anonymous European hotels
- Nearly 120,000 reservations from 2015 to 2017
- Details including stay dates, rates, preferences, and more

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# Checkouts vs. Cancellations



# Getting to Know Your Guests





# Models and their Results

## Baseline

- 50% accuracy
- Not better or worse than random chance.

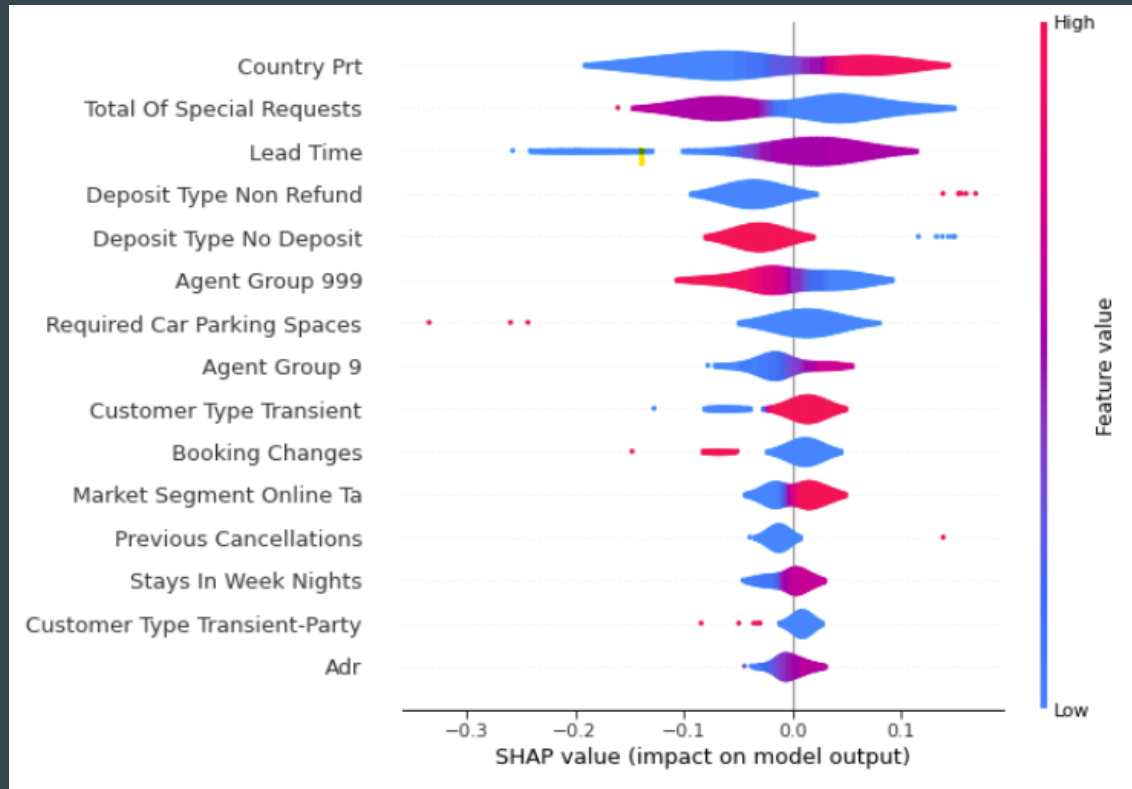
## Logistic Regression

- 80% accuracy
- Negatively impacted by imbalanced reservation statuses.

## Random Forest Classifier

- Best model results
  - 88% accurate
- Negatively impacted by imbalance.

# Visualizing the Random Forest Classifier



# Strongest Characteristics – Random Forest Classifier

## Country of Origin

- Reservations from Portugal are more likely to cancel for these hotels.

## Number of Requests

- Fewer requests increase likelihood of cancellations
- Greater number of requests may indicate guest is committed to staying

## Lead Time

- Booking far in advance of arrival allows for more time for plans to change
- Shorter time – more committed to stay

# Recommendations Based on Random Forest Classifier:

Confirm Early Bookings

- Proactively confirm reservations will arrive

Monitor Domestic Bookings vs. International

- Domestic bookings more likely to cancel

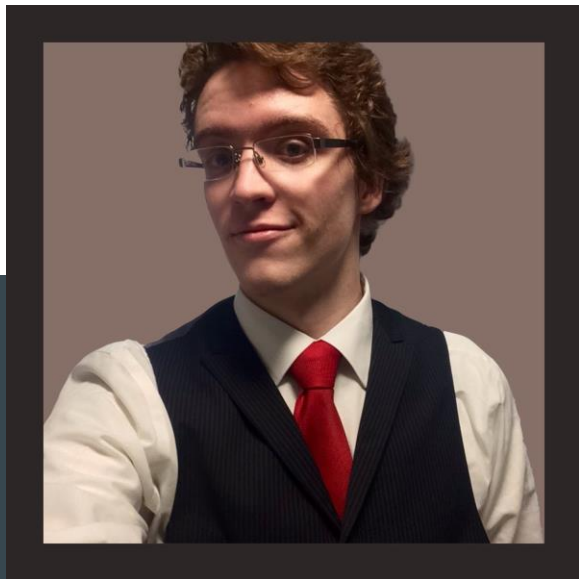
Limit Non-Refundable Rates

- More likely to cancel vs. refundable

# What's Next?

- Consider additional factors
    - Holidays, recurring local events
    - Sales/promotions
    - Group sales/events
  - Predict, forecast bookings and cancellations by room type
  - Reduce reservation details – more generalizable to other hotels
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# Thank You!



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