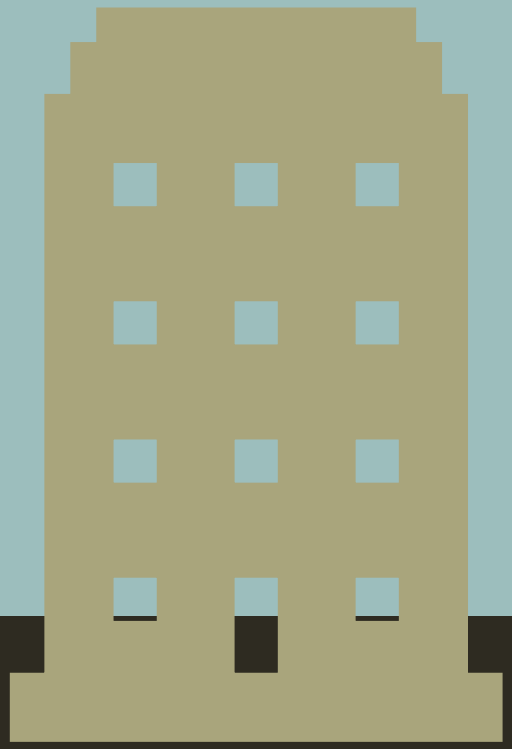

HOTEL BOOKING

Cancellations Prediction Study

Outcomes

D4B Consulting

BACKGROUND

Hotel chain C

Business Goals

- Implement predictive models to forecast net demand based on reservations on-the-books.
- Implement better price and overbooking policies.
- Identify high cancellation likelihood bookings.
- Implement actions to prevent cancellation.
- Reduce cancellations to a rate of 20%.

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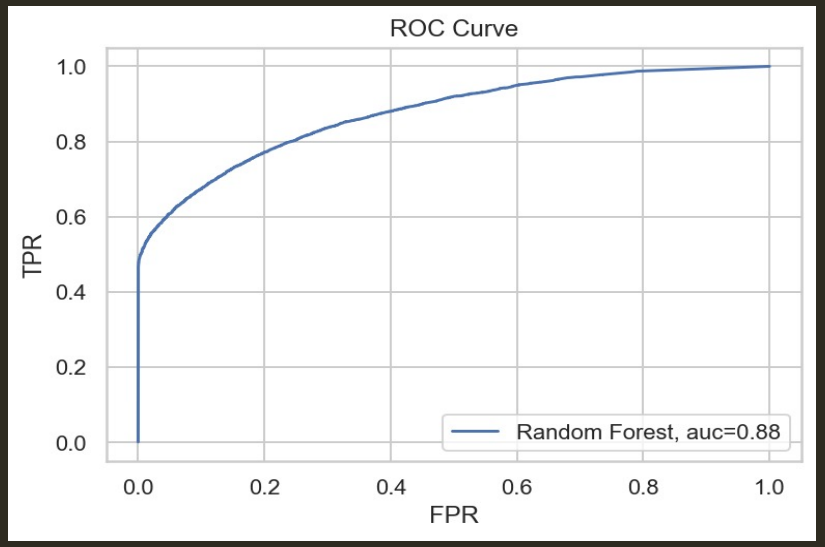
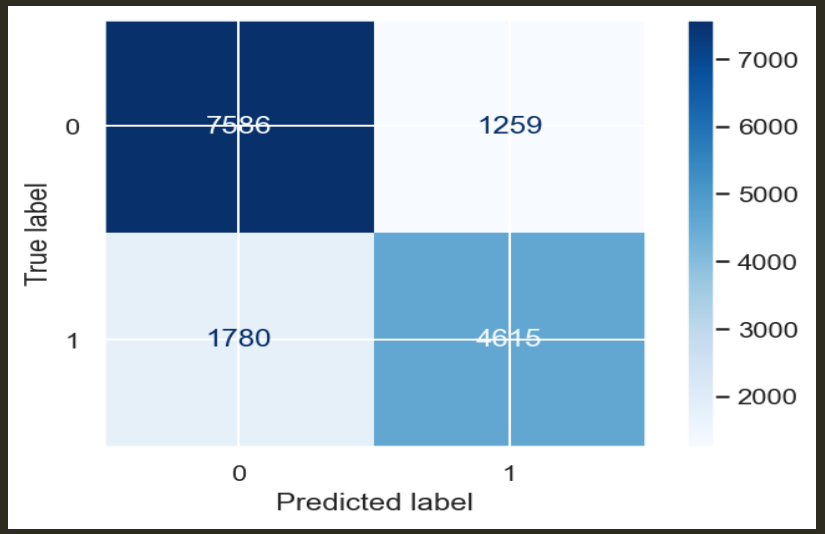
KEY FINDINGS

- Algorithm:

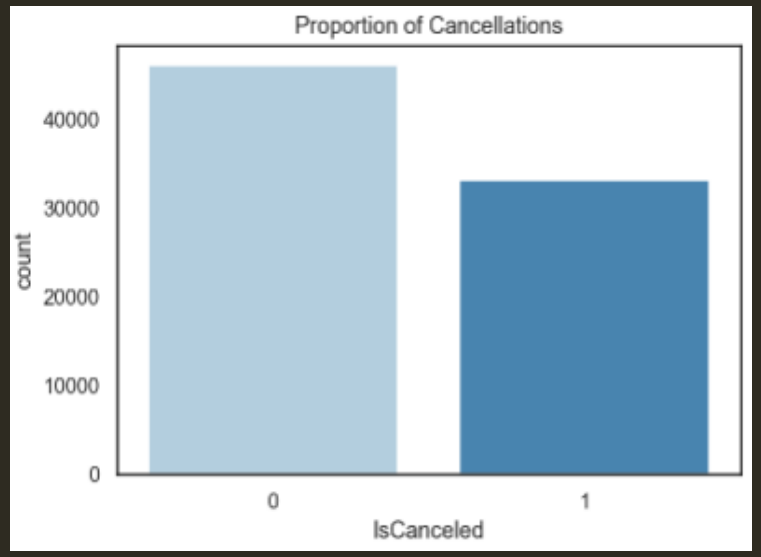
  Random Forest Classifier

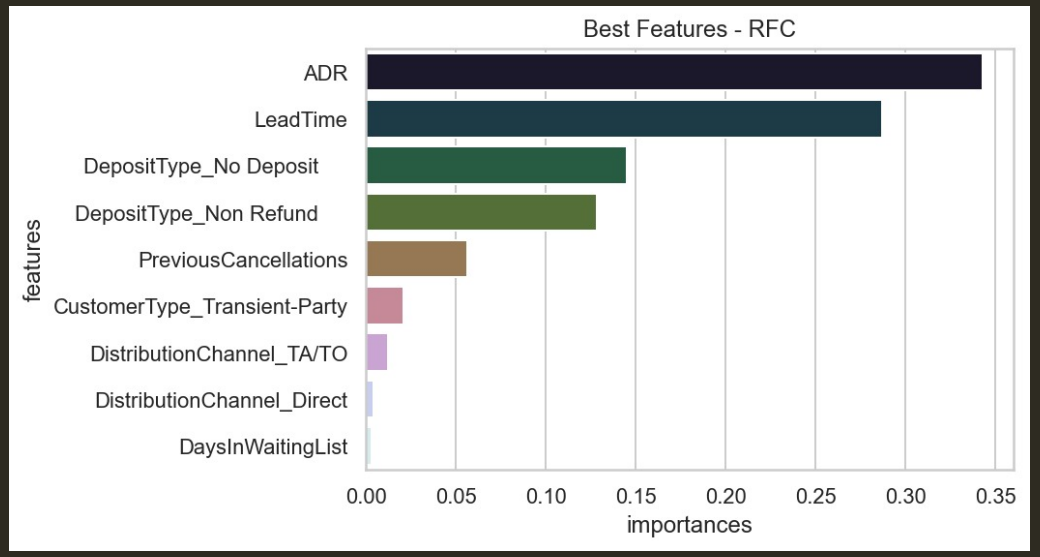
```
 TEST - Random Forest Classifier
------------------------------------------------------------
- Accuracy score: 0.8
- Precision score: 0.79

- Classification report:
              precision    recall  f1-score   support

           0       0.81      0.86      0.83      8858
           1       0.79      0.71      0.75      6382

    accuracy                           0.80     15240
   macro avg       0.80      0.79      0.79     15240
weighted avg       0.80      0.80      0.80     15240
```





KEY FINDINGS



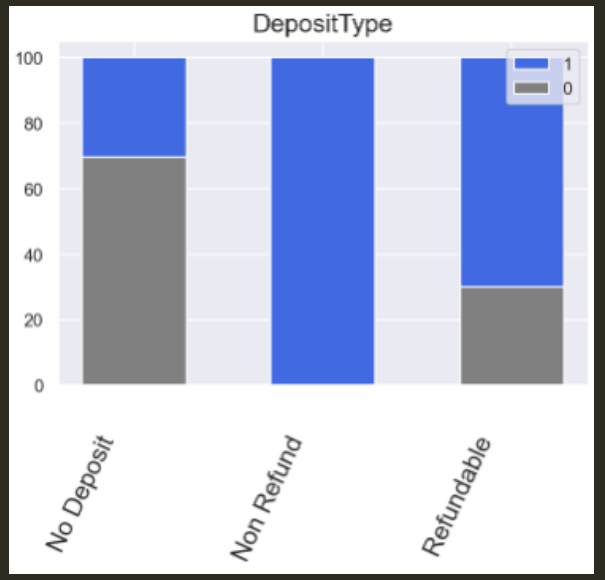


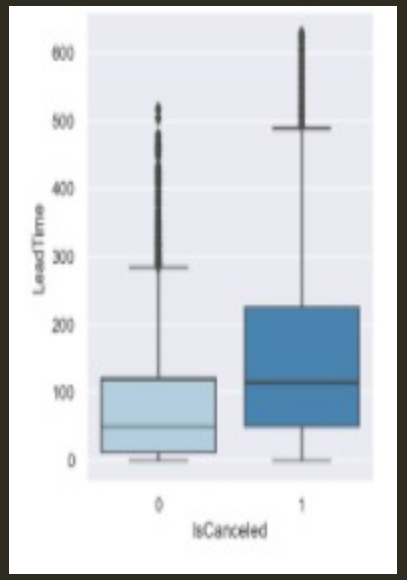
More willing to cancel:

- Arrival months: April to June
- Bookings with no children and/or babies
- Meals: Bed & Breakfast
- Distribution channel: TA or TO
- Higher lead time

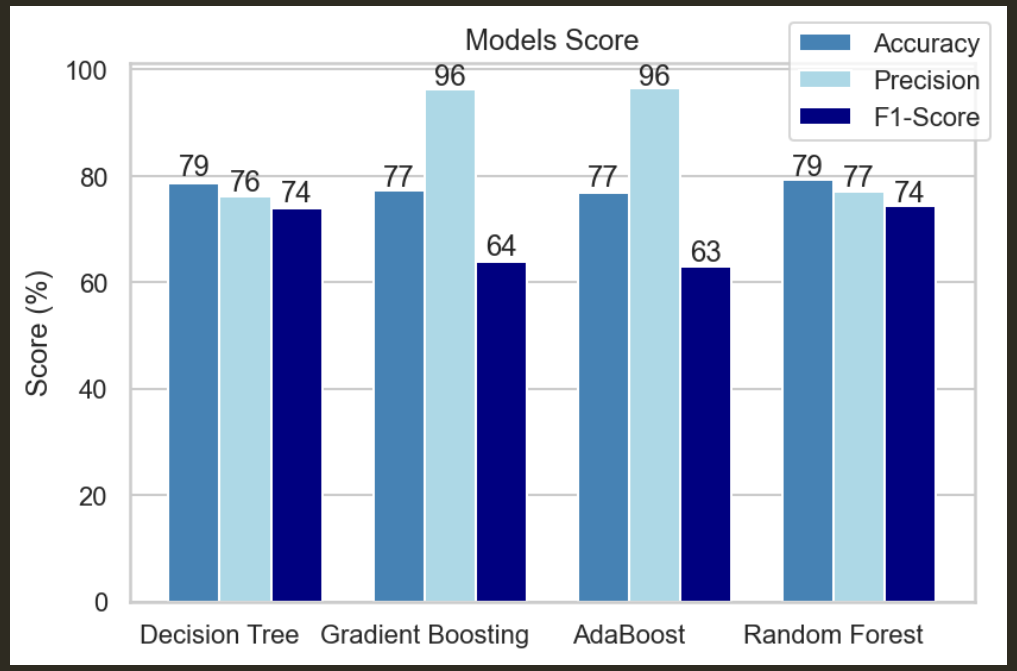
Less willing to cancel:

- Customer type: Groups and transient-party
- Repeated guests





PROJECT PLAN



- Data preparation: Analysis and removal of irrelevant information (missing values, inconsistent data and outliers)
- Generate test design: Keep the duplicates and distribute them equally between the training and test datasets. Cross validation on training dataset.
- Feature selection: Mutual Information Coefficient
- Modelling: Decision Tree, Gradient Boosting, AdaBoost, Random Forest
- Evaluation: Accuracy, Precision, F1-Score

KEY TAKEAWAYS

- Main variables to the predictive model: *ADR*, *LeadTime*, *DepositType*, *PreviousCancellations*
- Bookings made far in advance are more likely to be cancelled
- Repeated guests are more reliable (<3% of the current number of bookings)
- The model presents good accuracy, precision and F1-Score, that will help C to implement actions to prevent cancellation

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THANK YOU!

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