

HOTEL BOOKING CANCELLATION PREDICTION

Kelvin
Murithi

2024-08-29

TABLE OF CONTENTS

01

BUSINESS
PROBLEM

02

DATA
UNDERSTANDING

03

DATA
PREPARATION

04

MODELING

05

EVALUATION

06

RECOMMENDATIONS

07

FUTURE STEPS



BUSINESS PROBLEM

Hotel cancellations have risen to an average of 40% of overall bookings.

Goal: Accurately predict hotel booking cancellations

- Build a predictive model to forecast cancellations.
- Analyze key factors influencing cancellations
- Implement strategies to reduce cancellation rates.

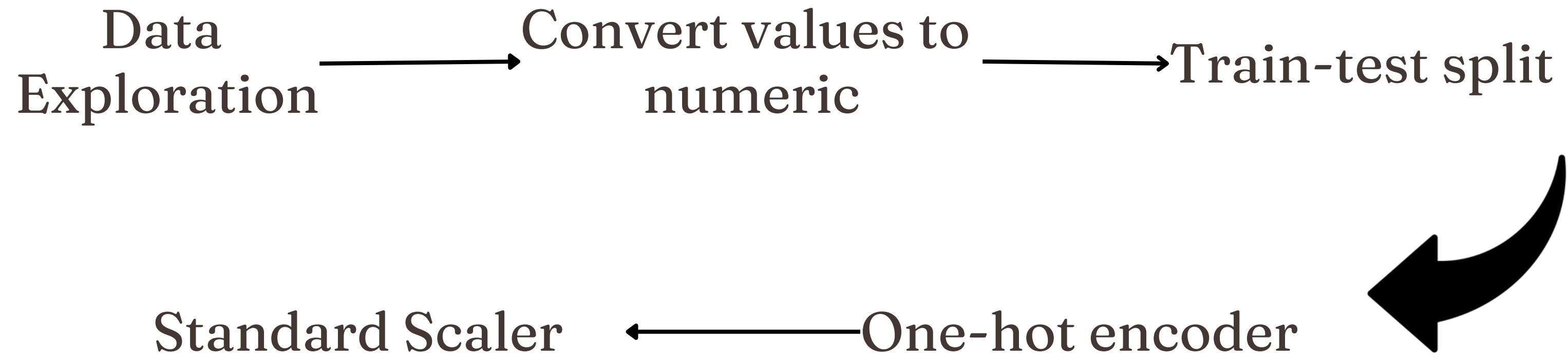


DATA UNDERSTANDING

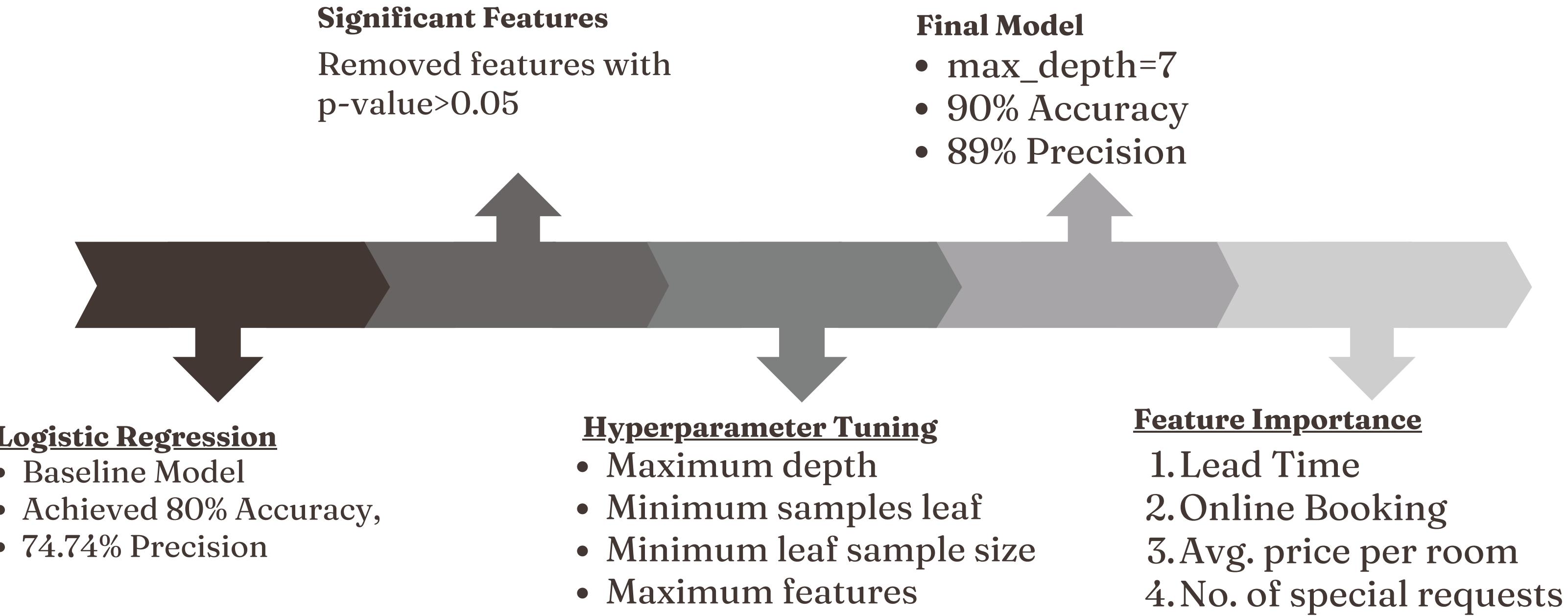
Hotel Dataset

- 36275 hotel bookings.
- Includes 18 unique attributes of the customer reservation details.
- Booking Status is our target column.

DATA PREPARATION



MODELING PROCESS



EVALUATION

80% ACCURACY

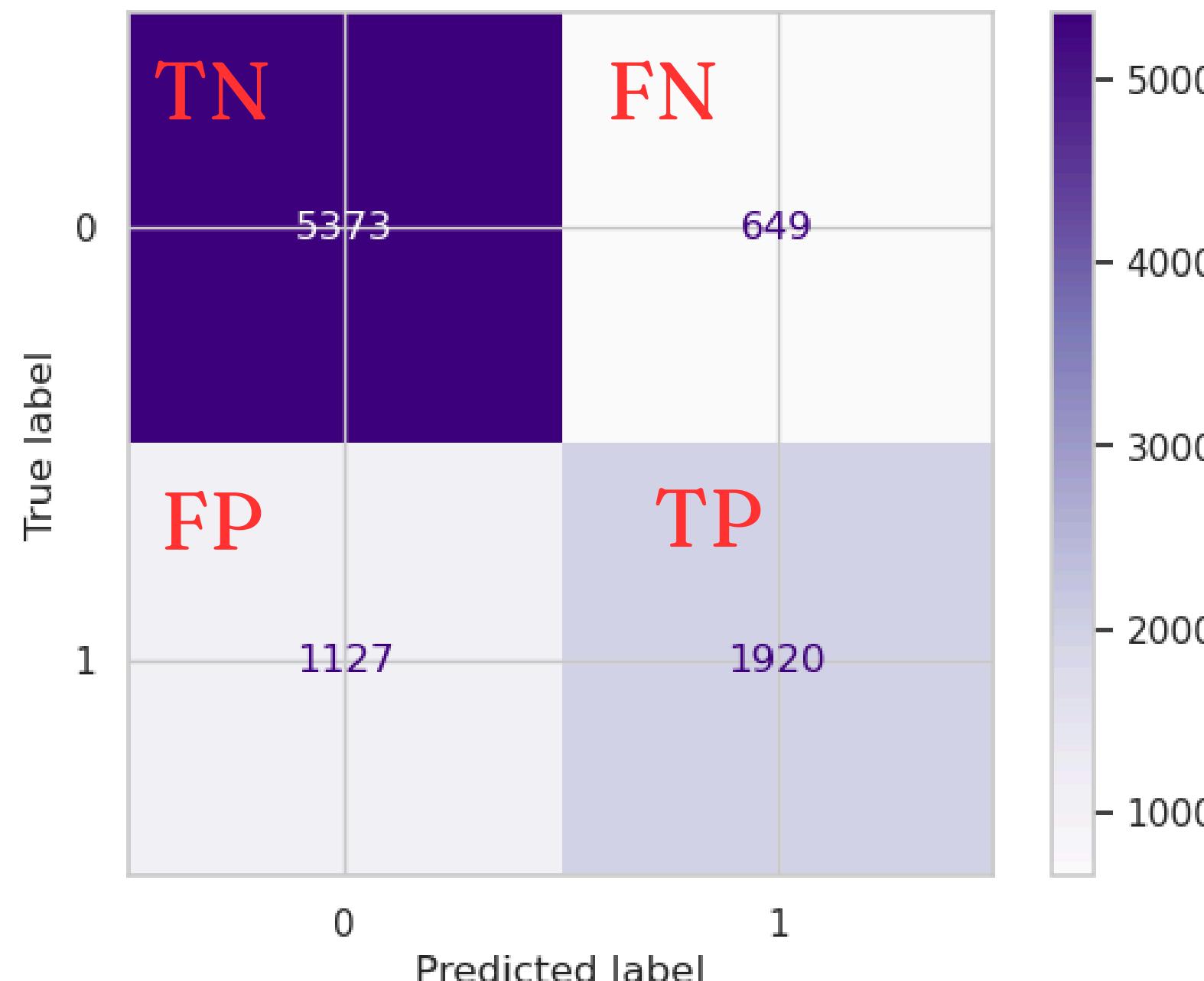
75% PRECISION

63% RECALL

68% F1 SCORE

0.76 AUC

BASELINE - LOGISTIC REGRESSION



649

retained bookings that were
predicted to cancel

EVALUATION

85% ACCURACY

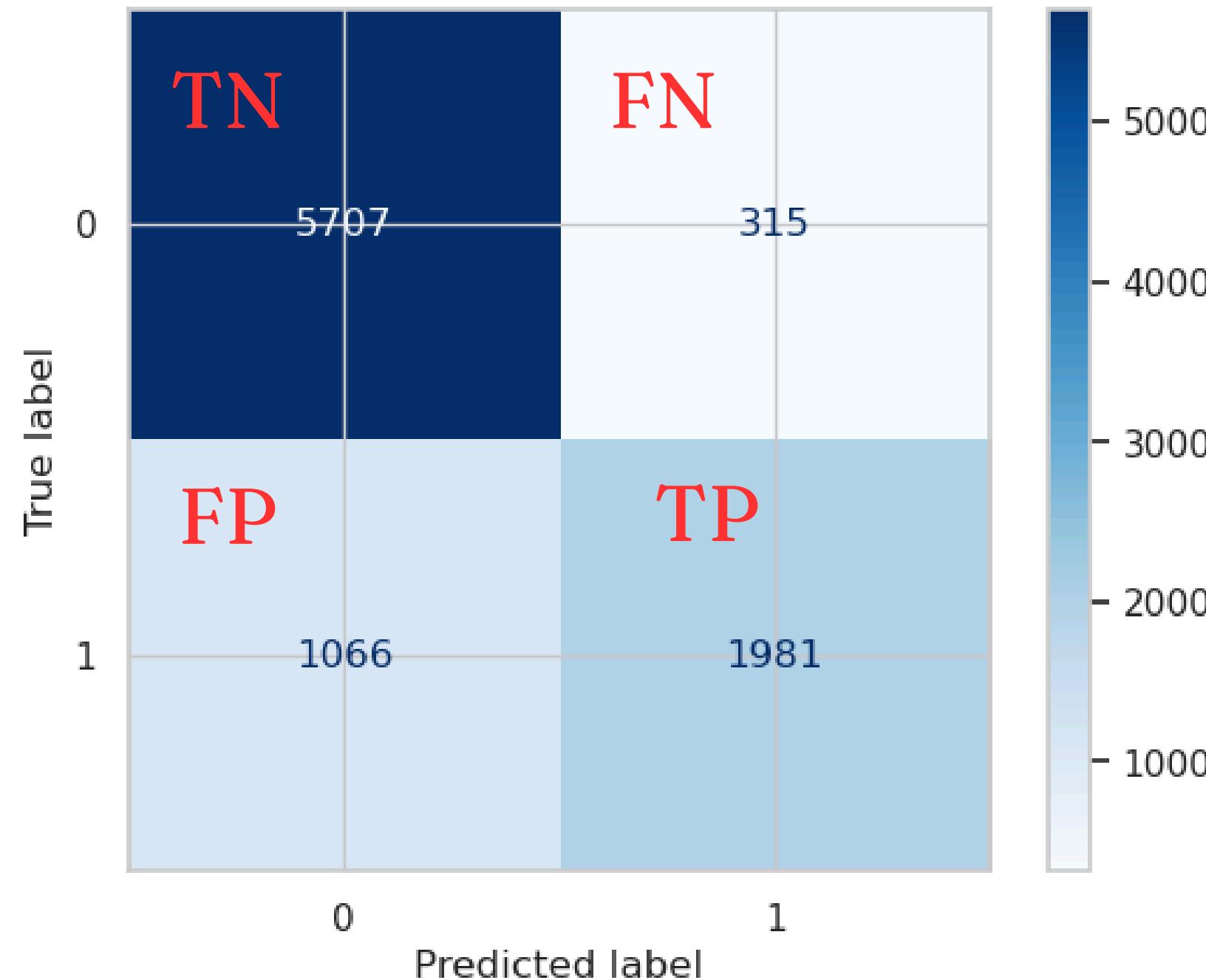
86% PRECISION

65% RECALL

74% F1 SCORE

0.8 AUC

DECISION TREE



315

retained bookings that were predicted to cancel

EVALUATION

90% ACCURACY

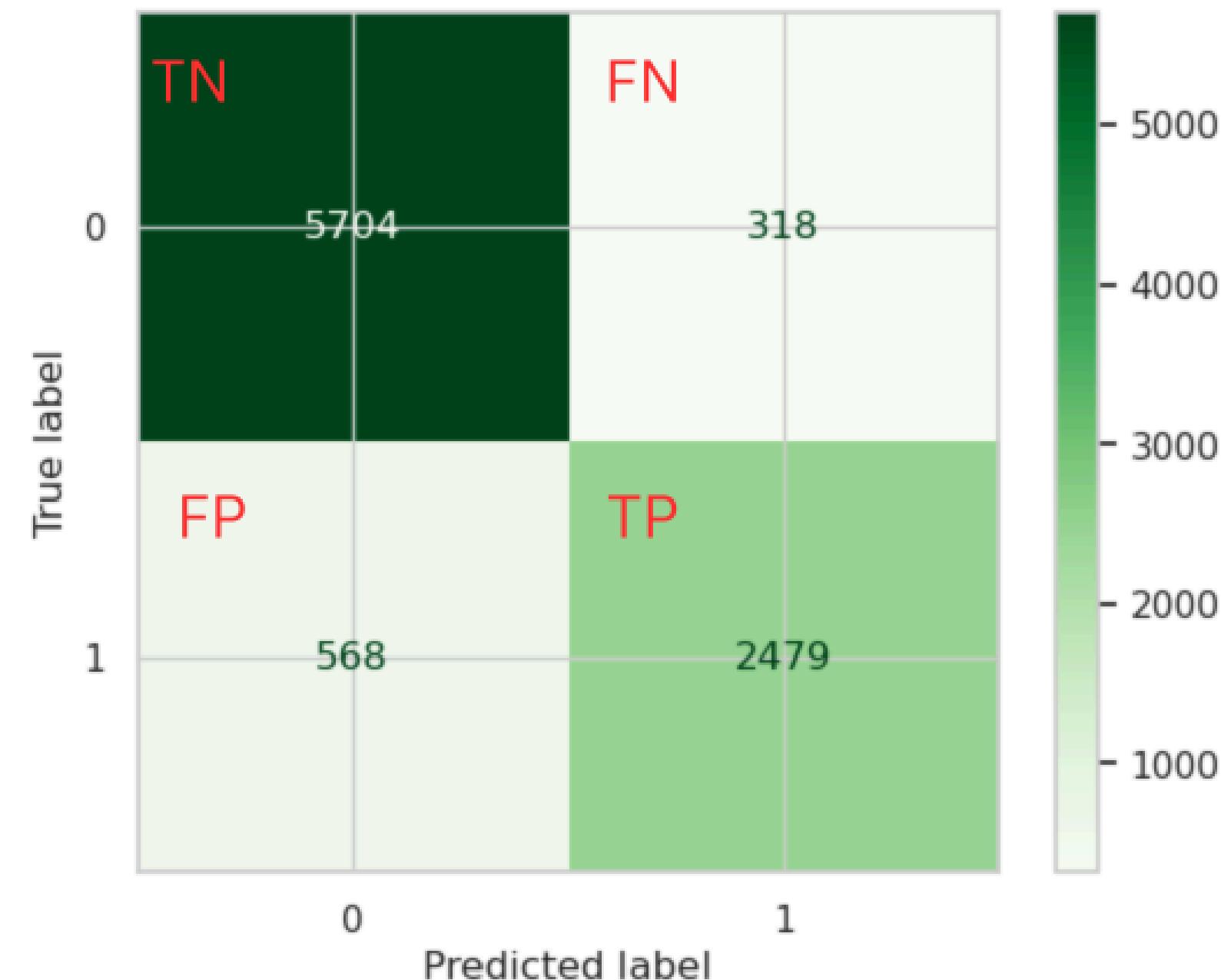
89% PRECISION

81% RECALL

85% F1 SCORE

0.88 AUC

FINAL - RANDOM FOREST



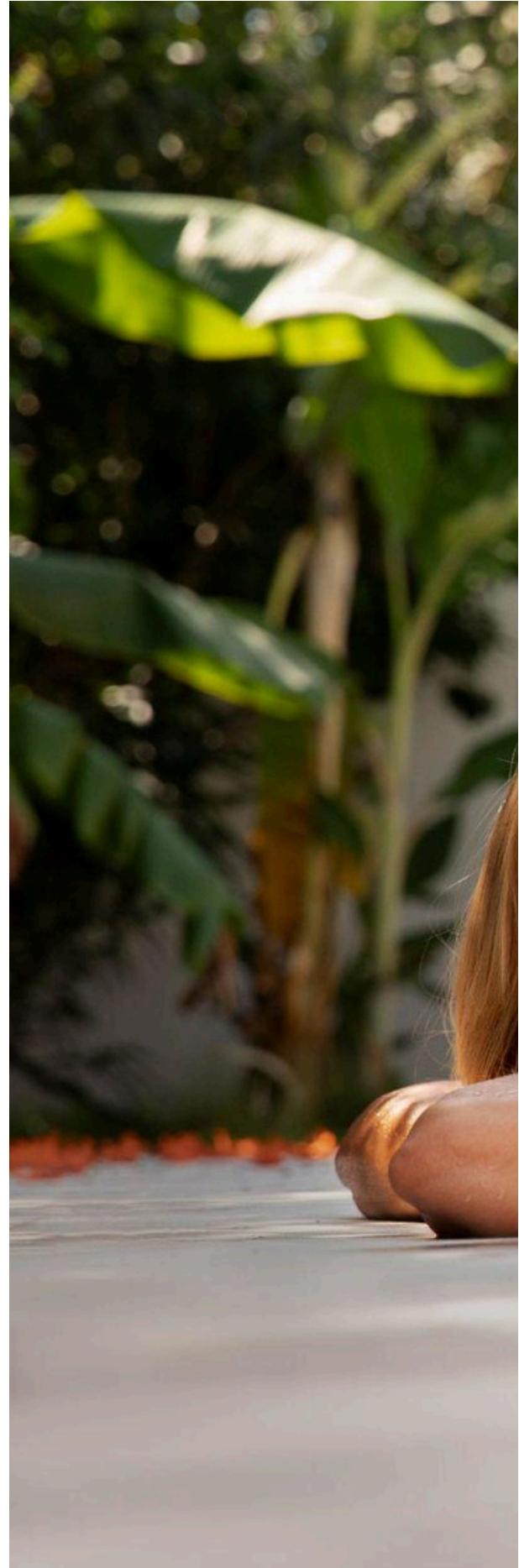
318

retained bookings that were predicted to cancel

RECOMMENDATIONS

1. Lead time - Longer lead times increase cancellation risk. Consider policy adjustments/early confirmation incentives.
2. Dynamic pricing - Adjust room rates based on cancellation likelihood.
3. Monitor market segments - Tailor strategies to each segment.
4. Loyalty program - offer incentives for booking retention.





NEXT STEPS

1. Experiment with other ML models to try and improve performance.
2. Gather recent data.
3. Investigate further the top factors of cancellations.
4. Incorporate additional features in the data like weather and reputation.

THANKS!

Do you have any questions?
Email: kelvin@valcheq.com
GitHub: [kev065](#)

