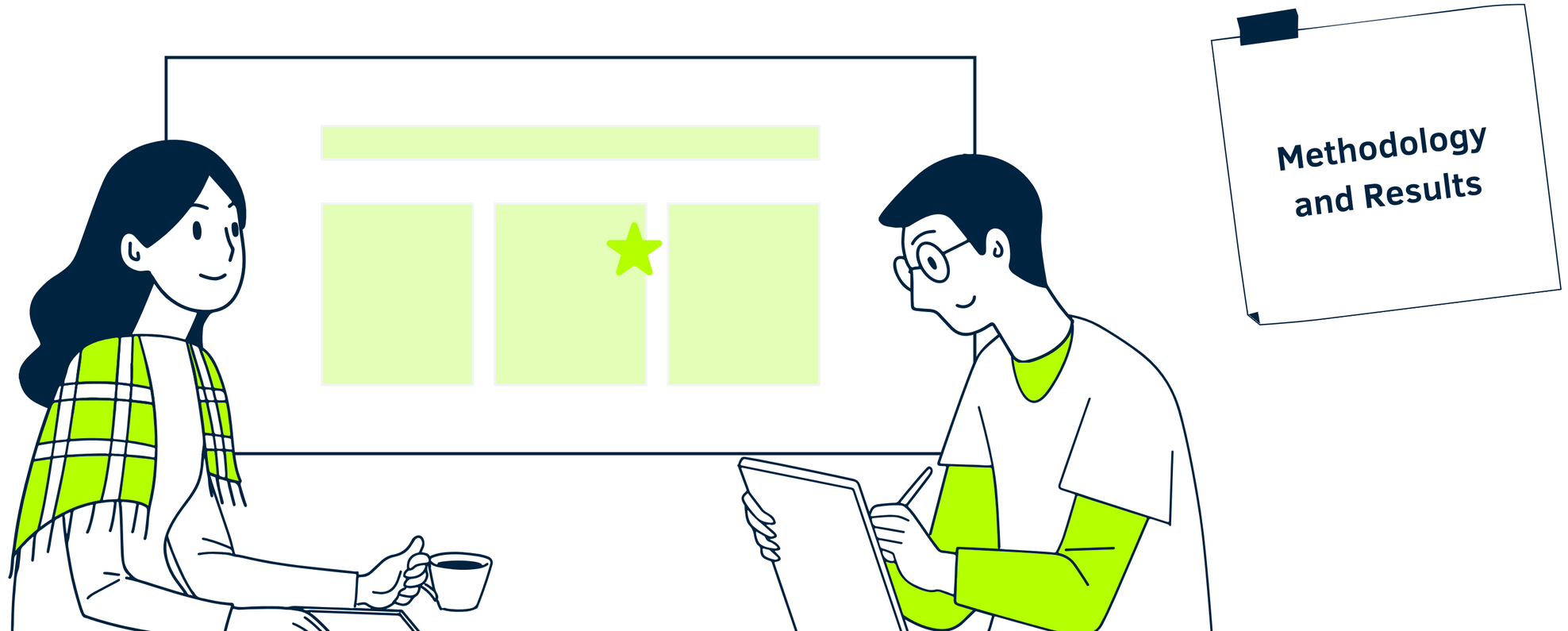
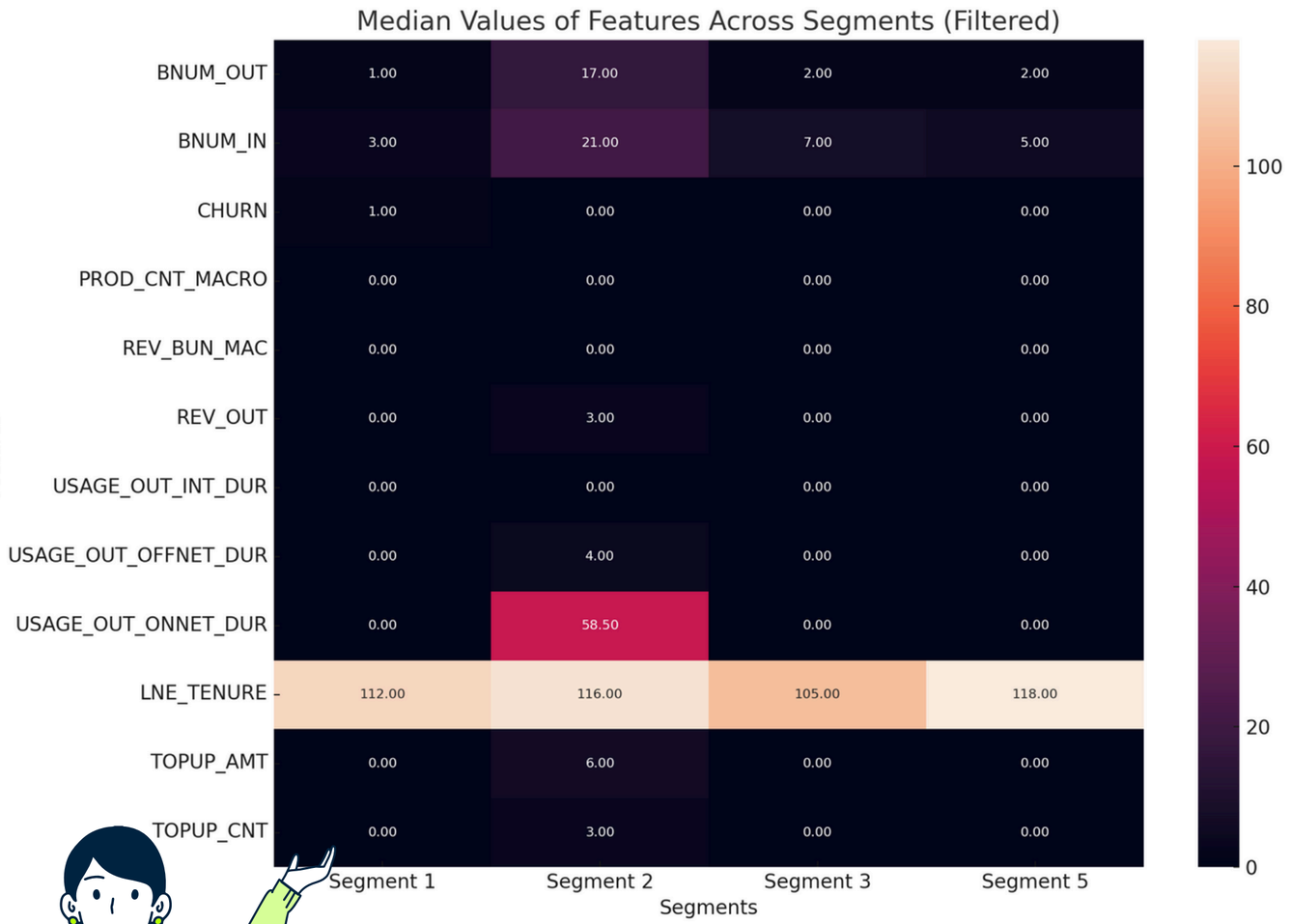
Classification Model Presentation

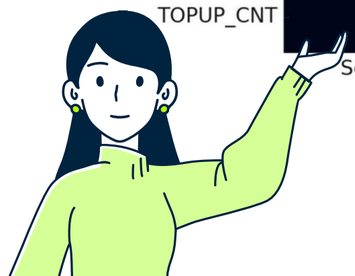


Methodology

1. Data Cleaning
2. Describing difference between segments
3. Prediction model selection
4. Building a model

Difference between identified customer segments





1. The first difference is that Segment 1, unlike the others, has a 100% churn rate, while the others have a 100% retention rate. Additionally, the medians of the features in Segment 1 are lower than the others.

2. The t-test results showed we cannot reject the null hypothesis, meaning there is no reason to conclude that the averages differ.

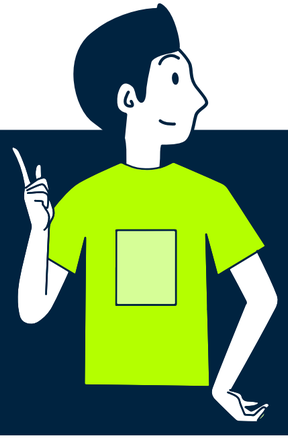
3. This may indicate that the sample is biased compared to the general population. Collaboration with Data Engineers has helped improve the data quality for further investigation of our target user groups.

4. The Segment feature proved highly significant for modeling, effectively differentiating clients by behavior and enhancing both model accuracy and interpretability

Prediction model selection

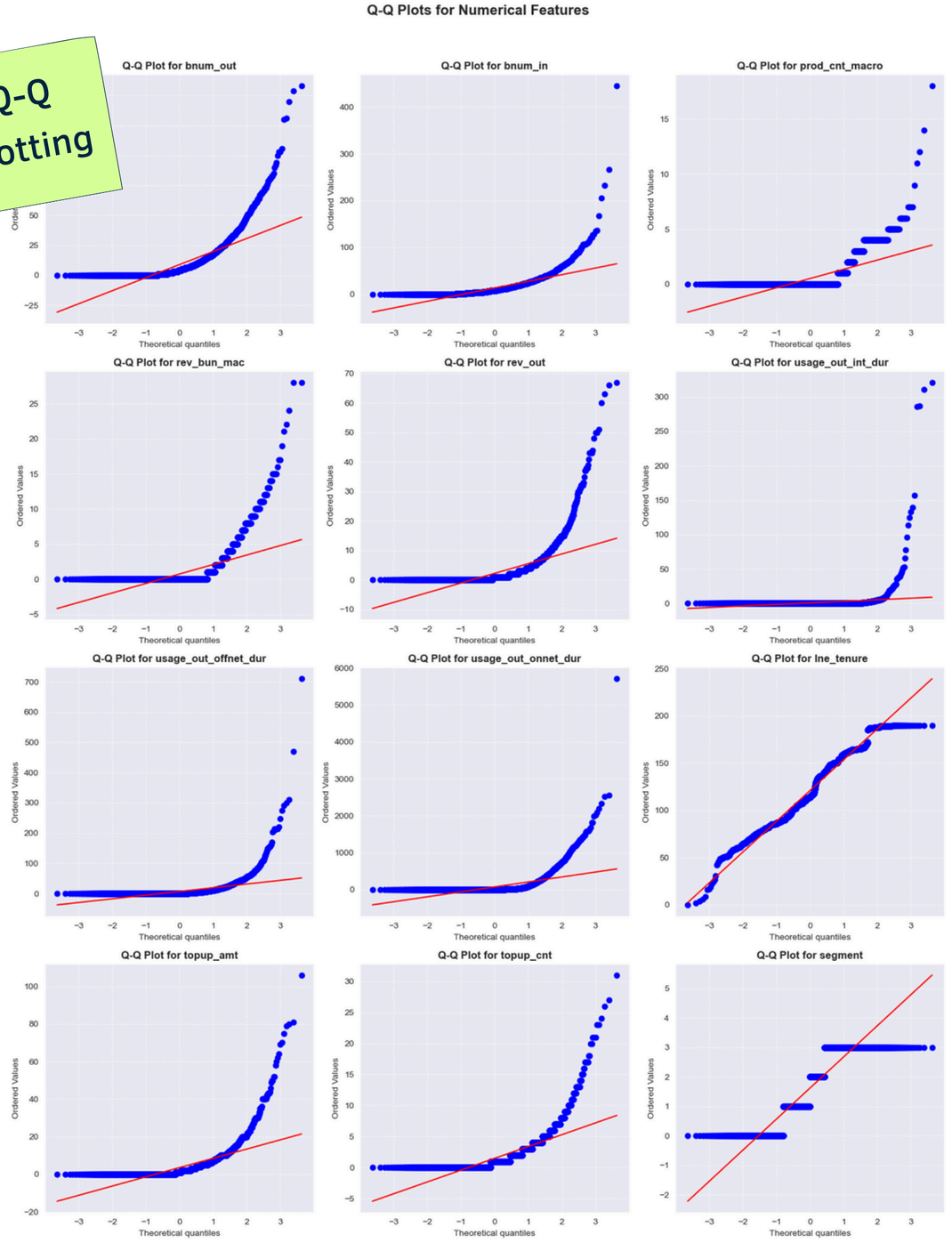
According to the task requirements, we need to build a **Binary Classification model**

Q-Q Plotting



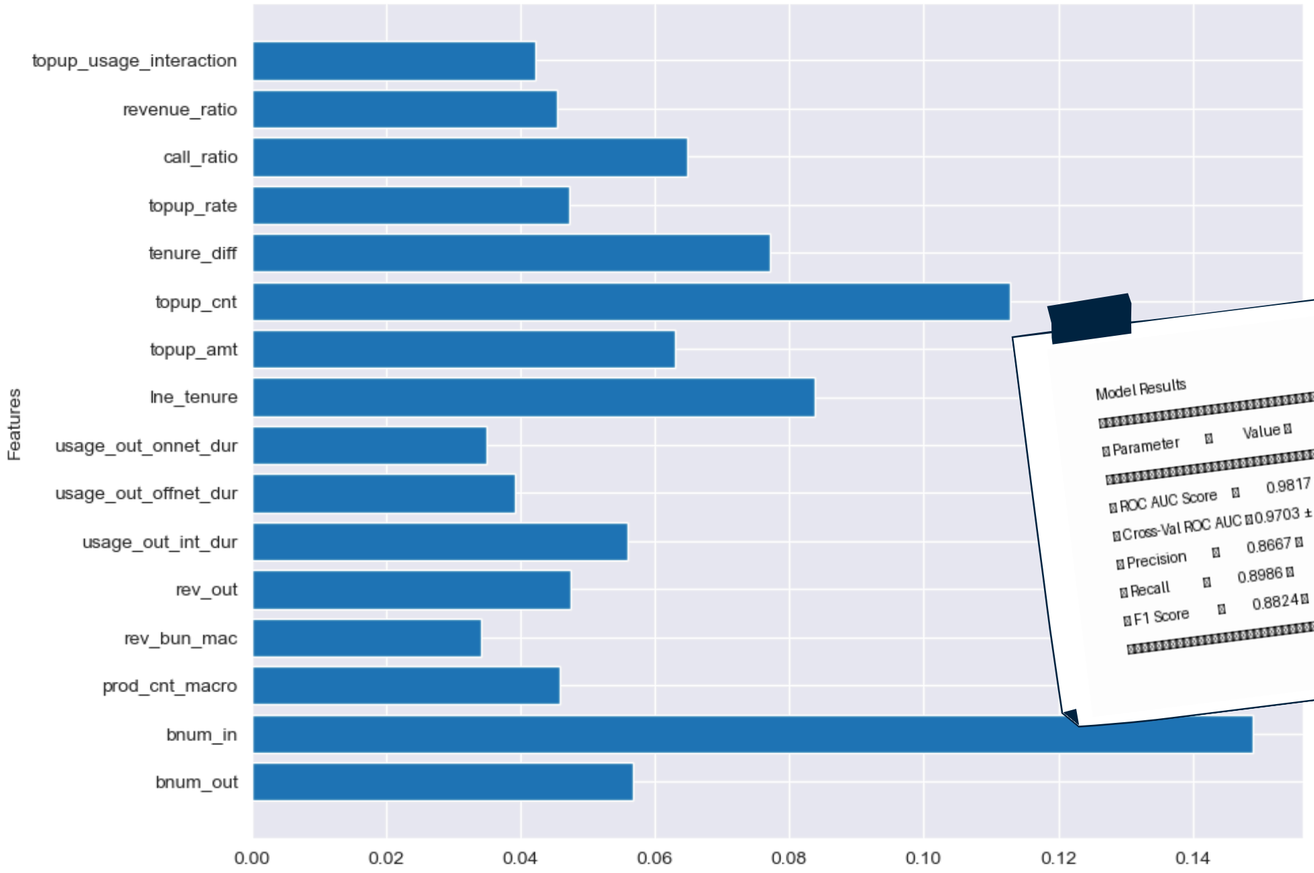
I chose **Gradient Boosting** because this method is best suited for working with data that:

- Do not have a normal distribution, as the algorithm uses decision trees that are insensitive to the scale and distribution of data
- May contain outliers and missing values, which gradient boosting handles effectively
- Require the modeling of complex nonlinear dependencies between features and the target variable



Success!

- **Model successfully identifies customer churn with high accuracy**
- **Key features provide actionable insights for retention strategies**
- **Limitations: Imbalanced data in certain segments**



1. **Integrate model predictions into customer management system**
2. **Conduct A/B testing with churn reduction strategies**
3. **Collaborate with Data Engineers to further enhance data quality**
4. **Monitor data quality and model performance regularly and retrain as needed**

Hvala lepo!