Improving customer retention

Outline

1. Context & objectives of the meeting

2. Presentation of the data analysis results

3. Machine Learning methodology used

4. Results and recommended marketing strategies

1. Context & objectives

Improving customer retention

Objective: Reduce customer churn by identifying at-risk customers and understanding the factors contributing to their decision to leave.

Our analysis leverages data analytics and machine learning to:

- Identify patterns and segments within the customer base.
- Predict customer churn using advanced predictive modeling.
- Provide actionable insights to reduce churn rates and enhance customer satisfaction.

Key questions

Which customers are most at risk of churning?

What common traits define customers who are likely to churn?

How can the company improve customer retention?

2. Data Analysis results

Data

Churn: target variable

Services

subscriptions of customers

Customer account and billing details

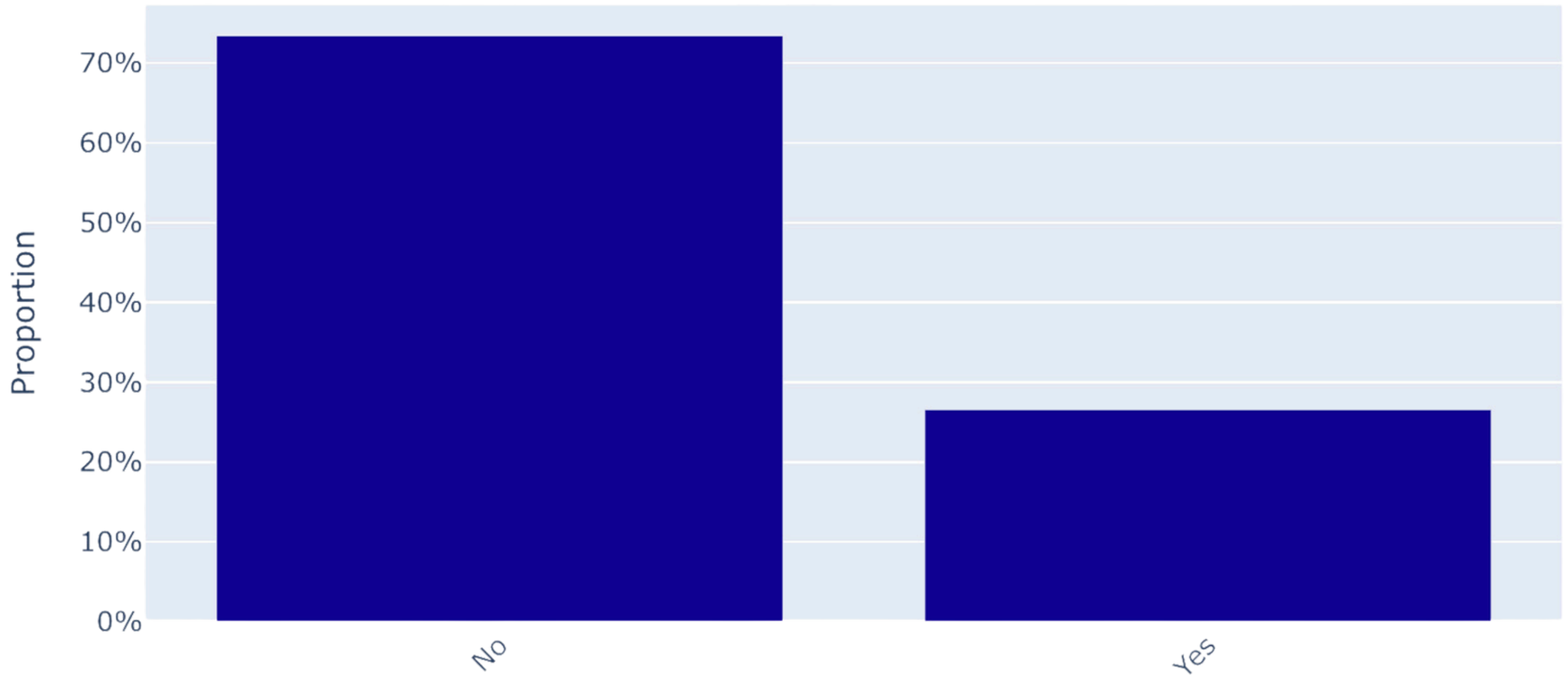
Demographic data

Gender, age, partners, dependants

Distribution of churn

No: 5163 - 73%

Yes: 1869 - 27%



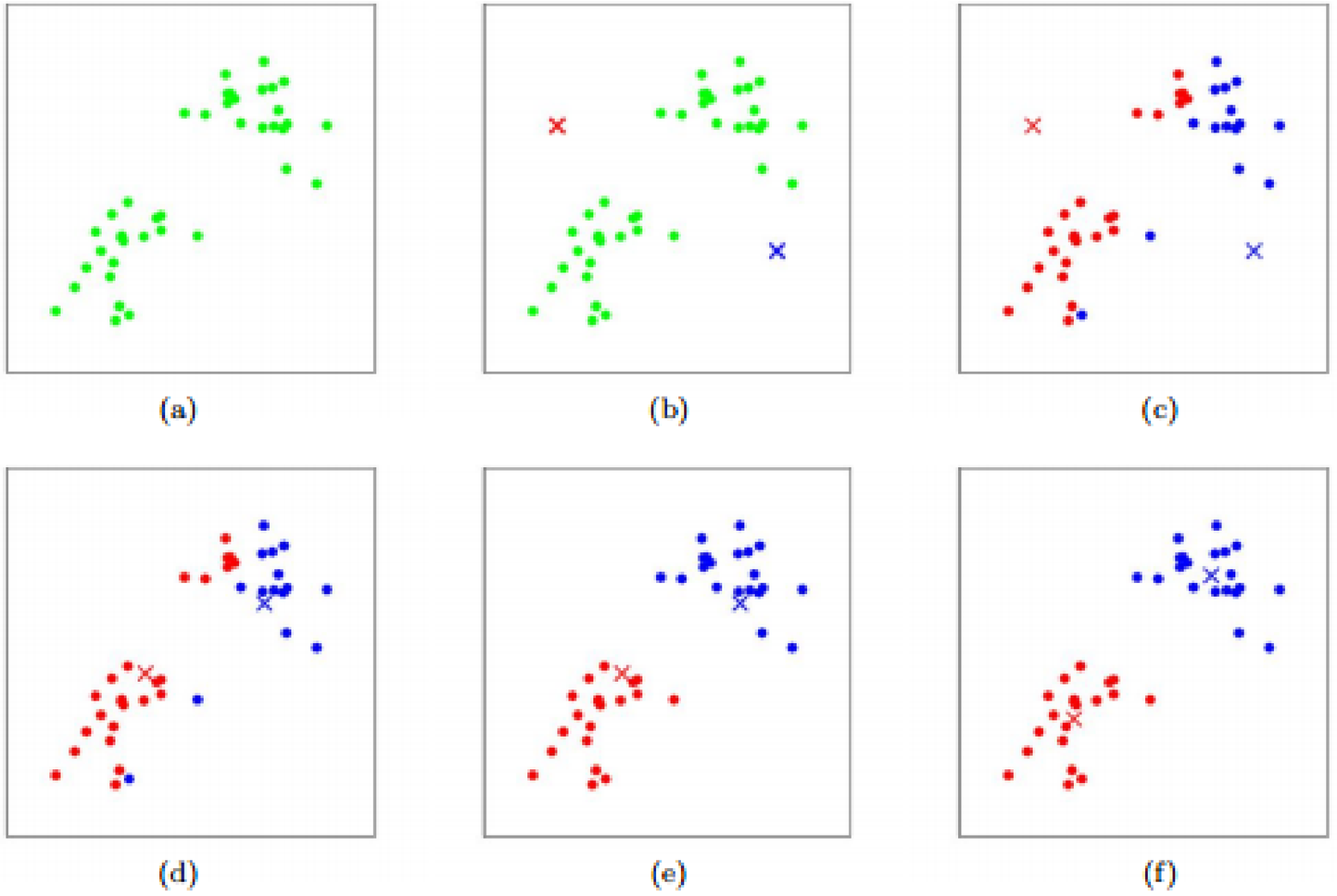
Clustering methods

k-means clustering:

Principle should be known

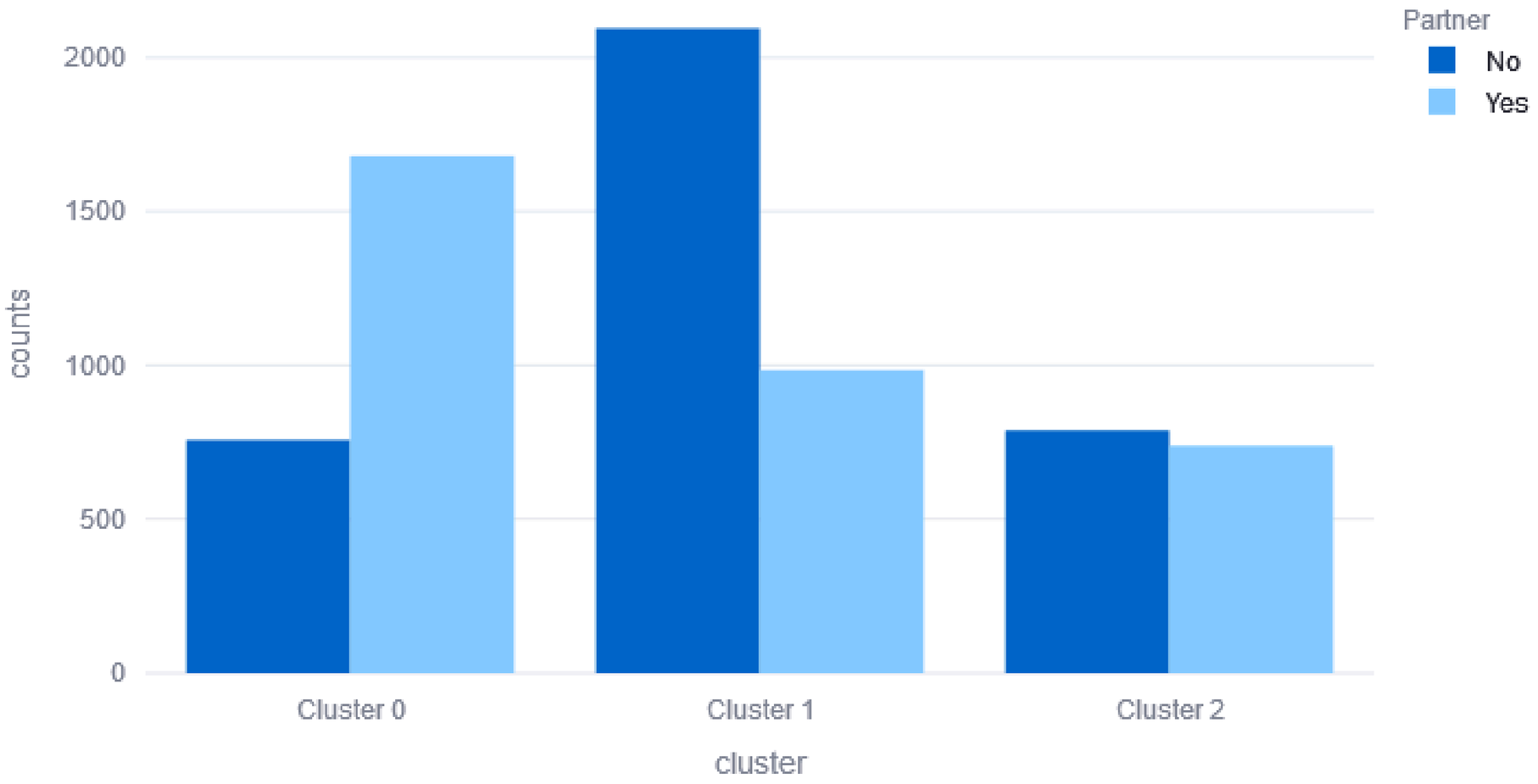
Some issues: One-hot encoding

Another method: the AFC

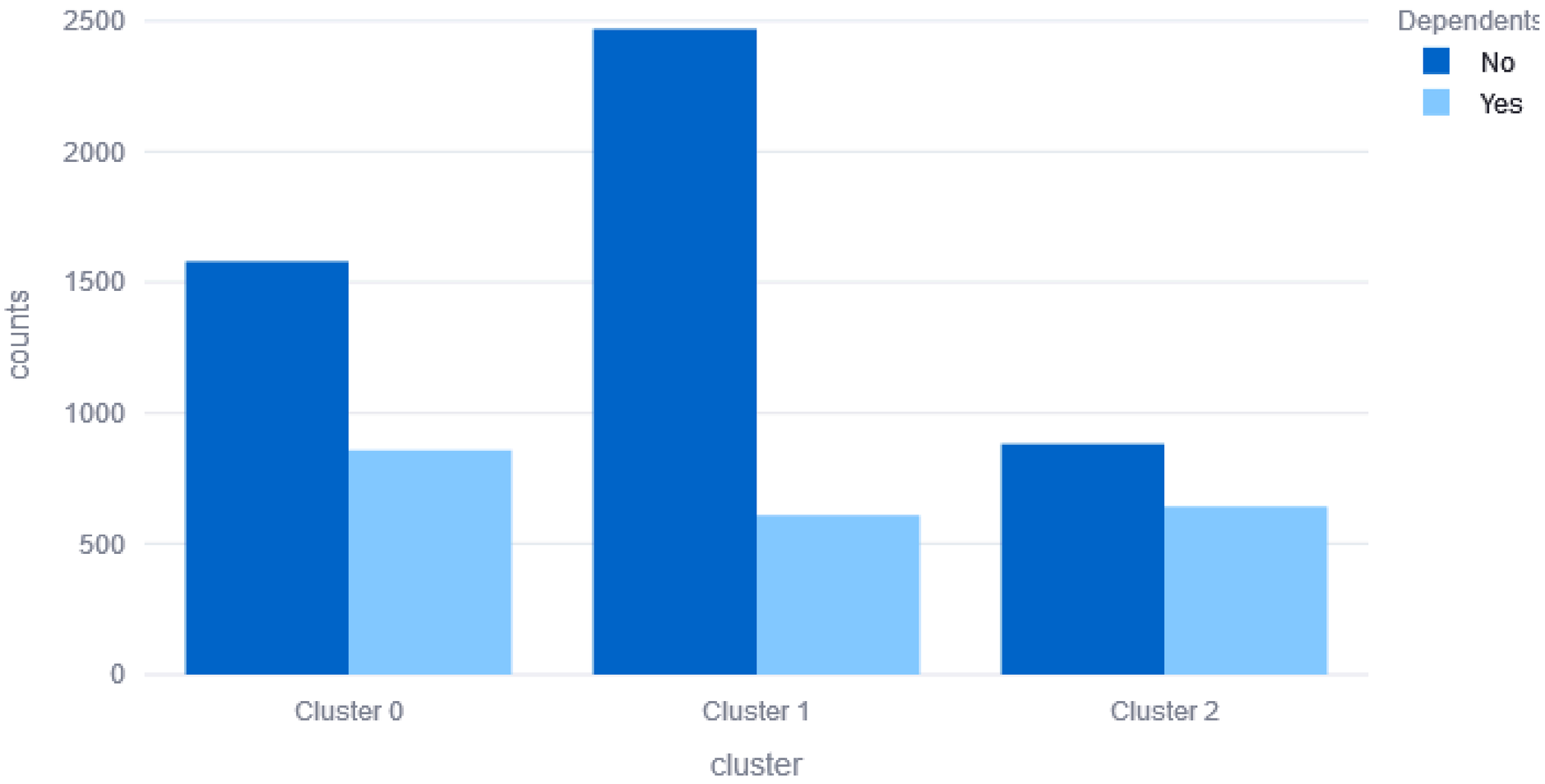


Dashboard

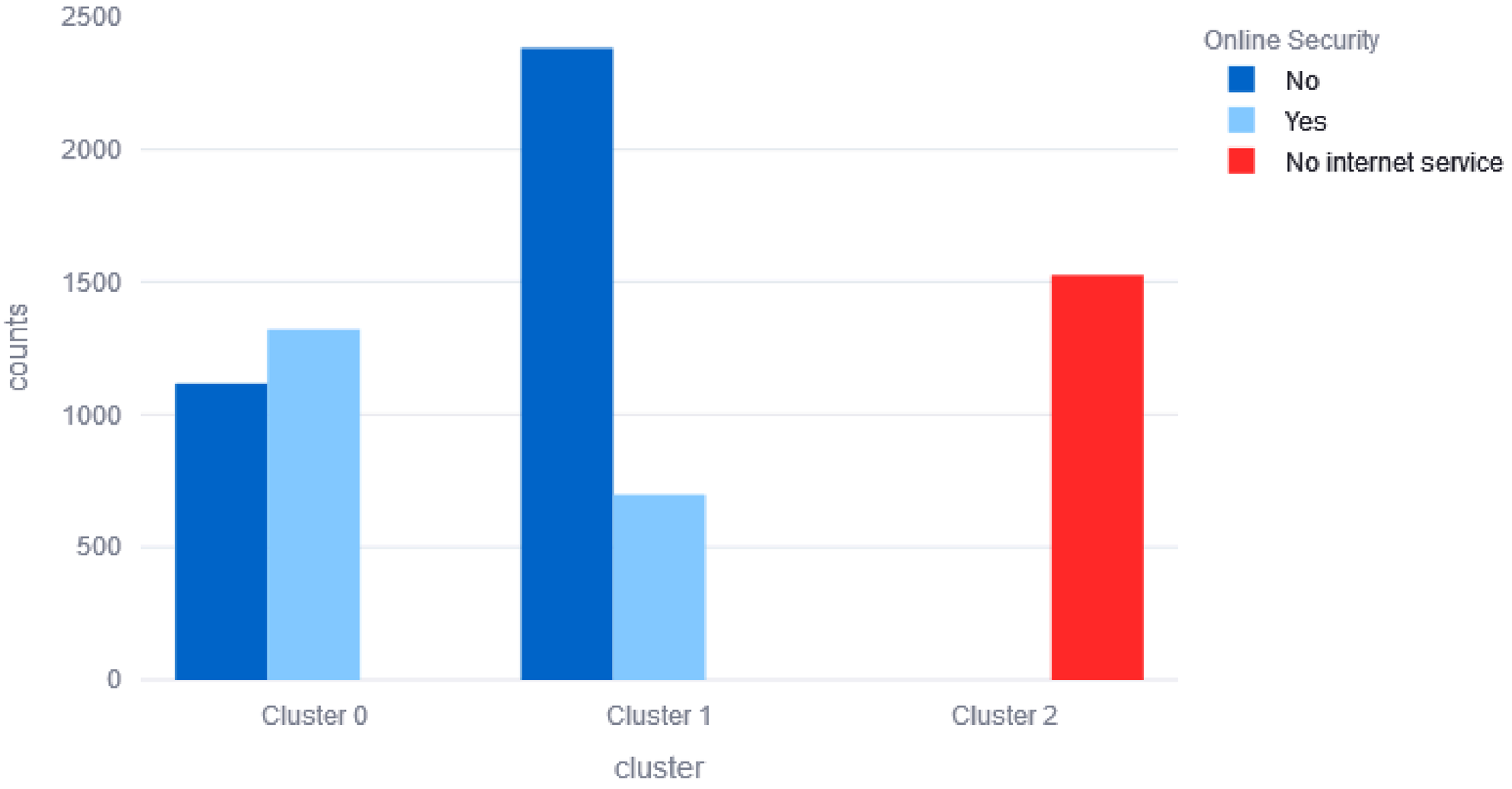
Partner status by cluster



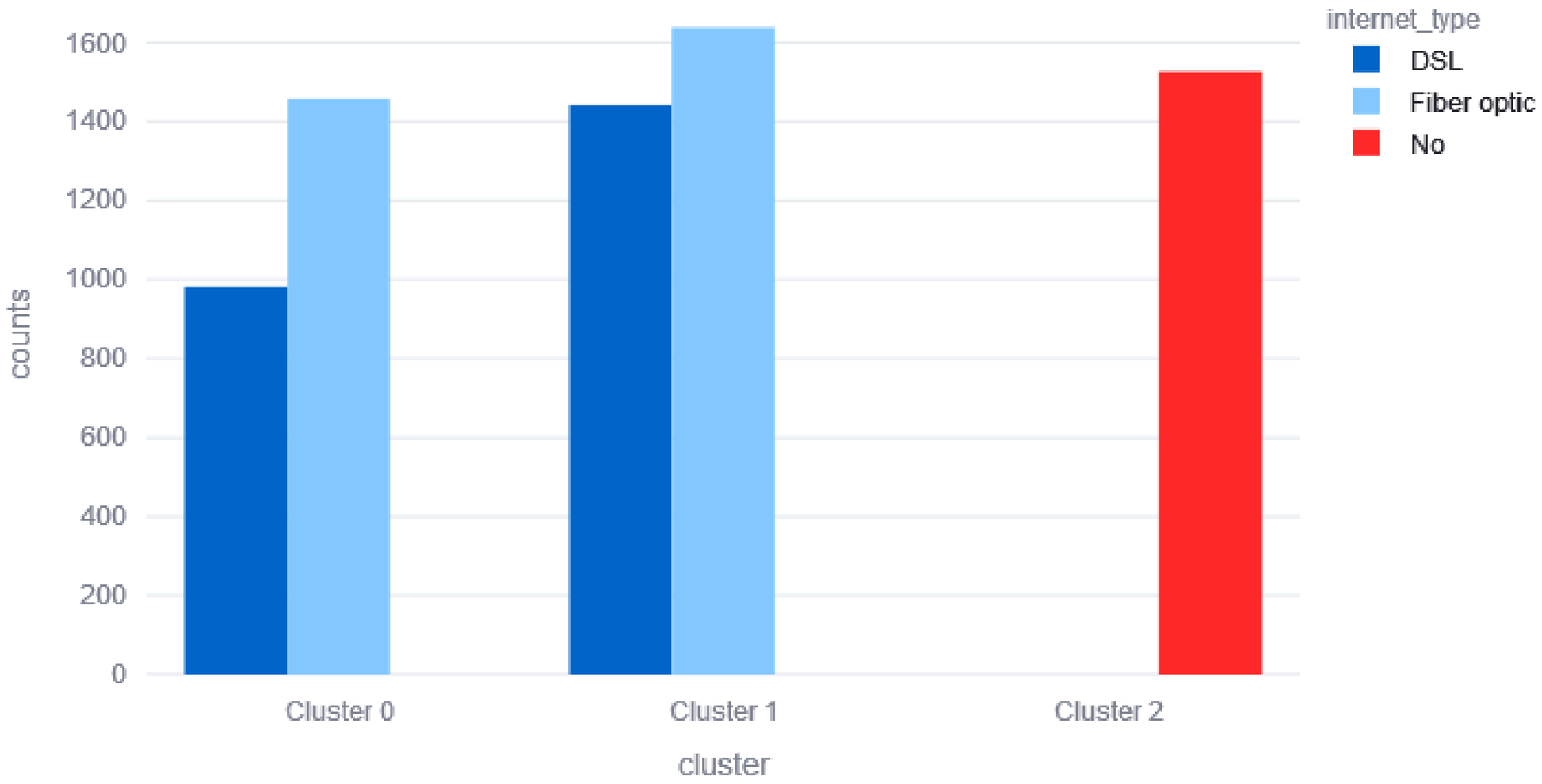
Dependent by cluster



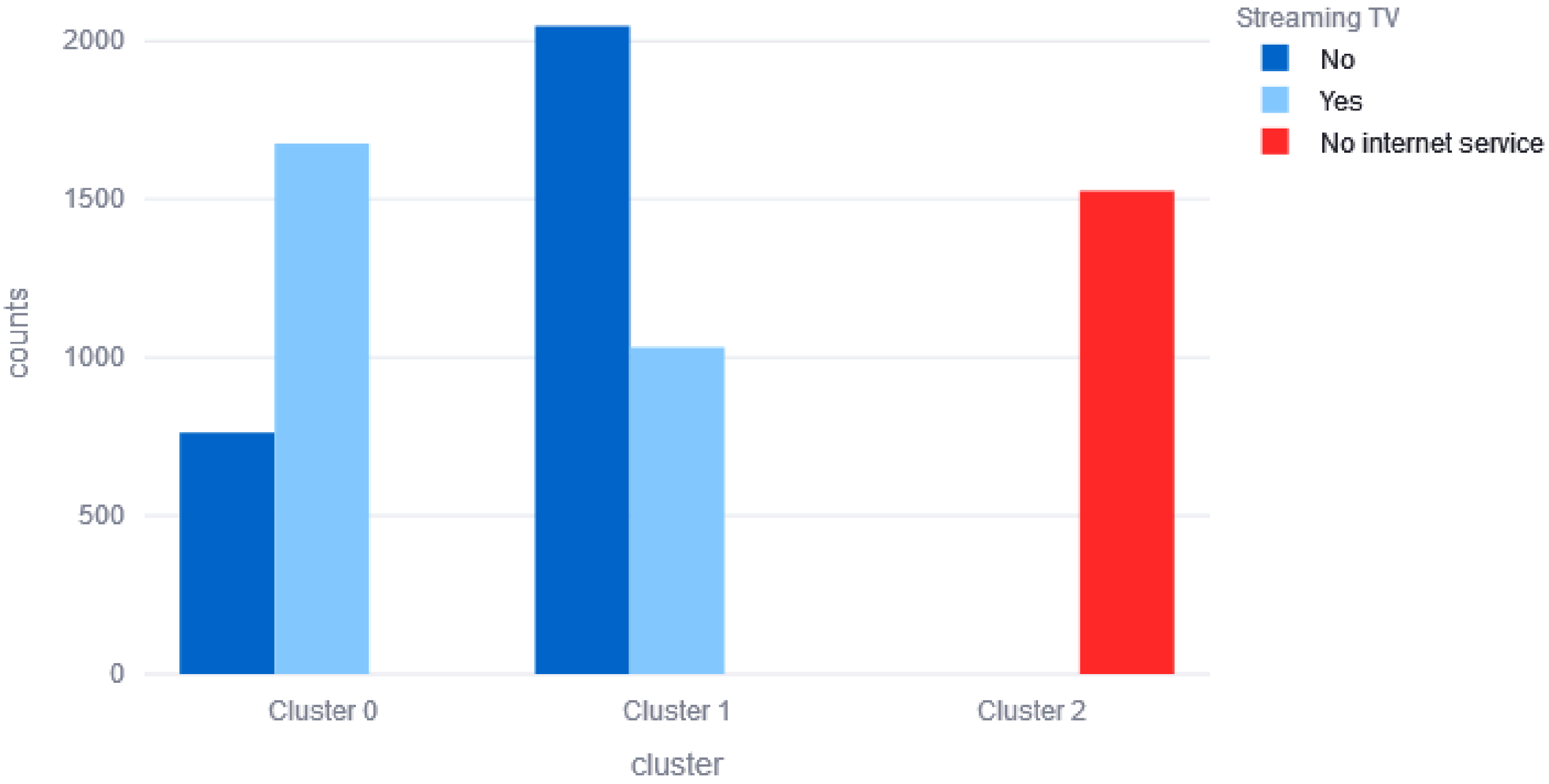
Online Security by cluster



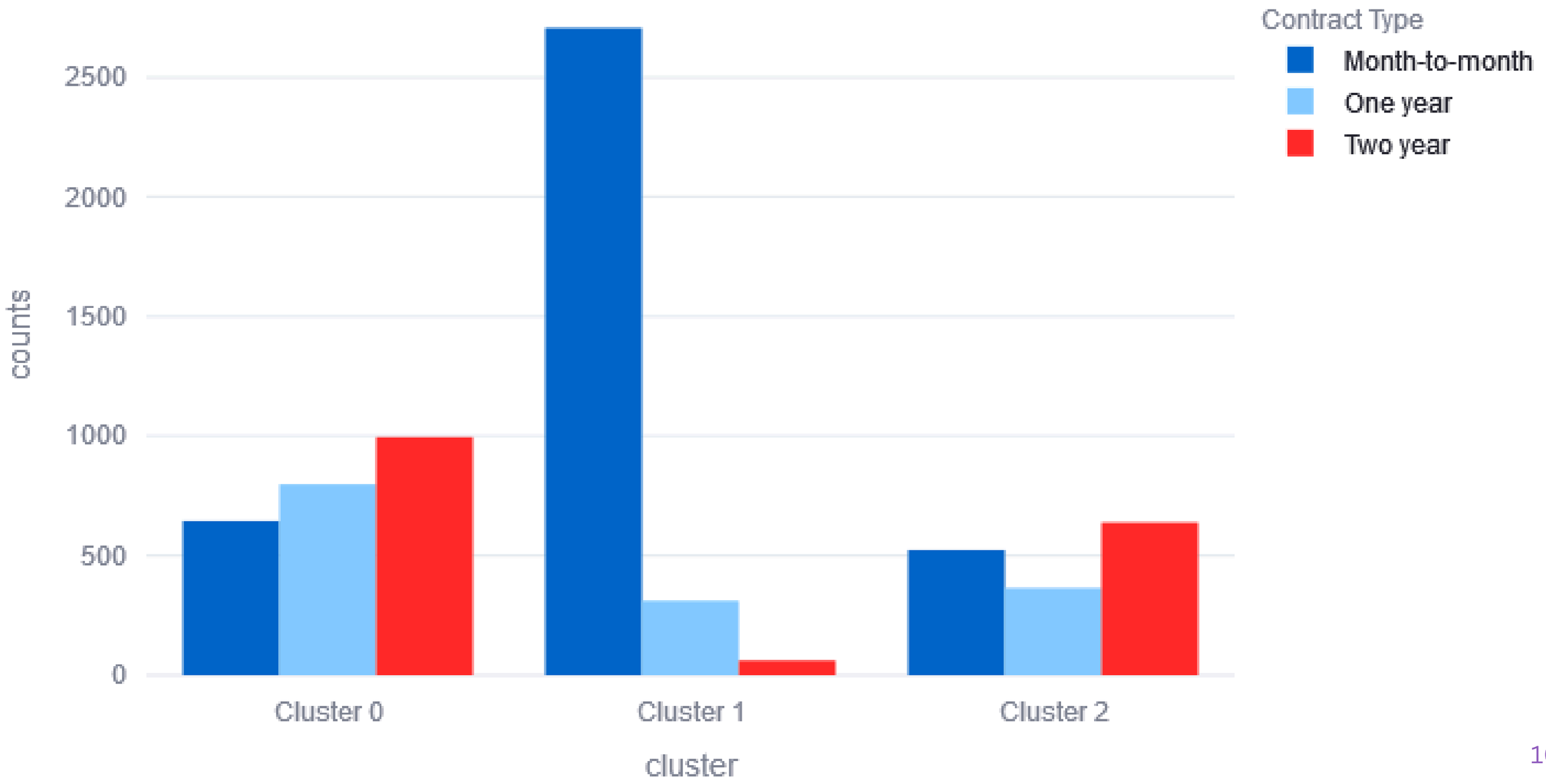
Internet Service by cluster



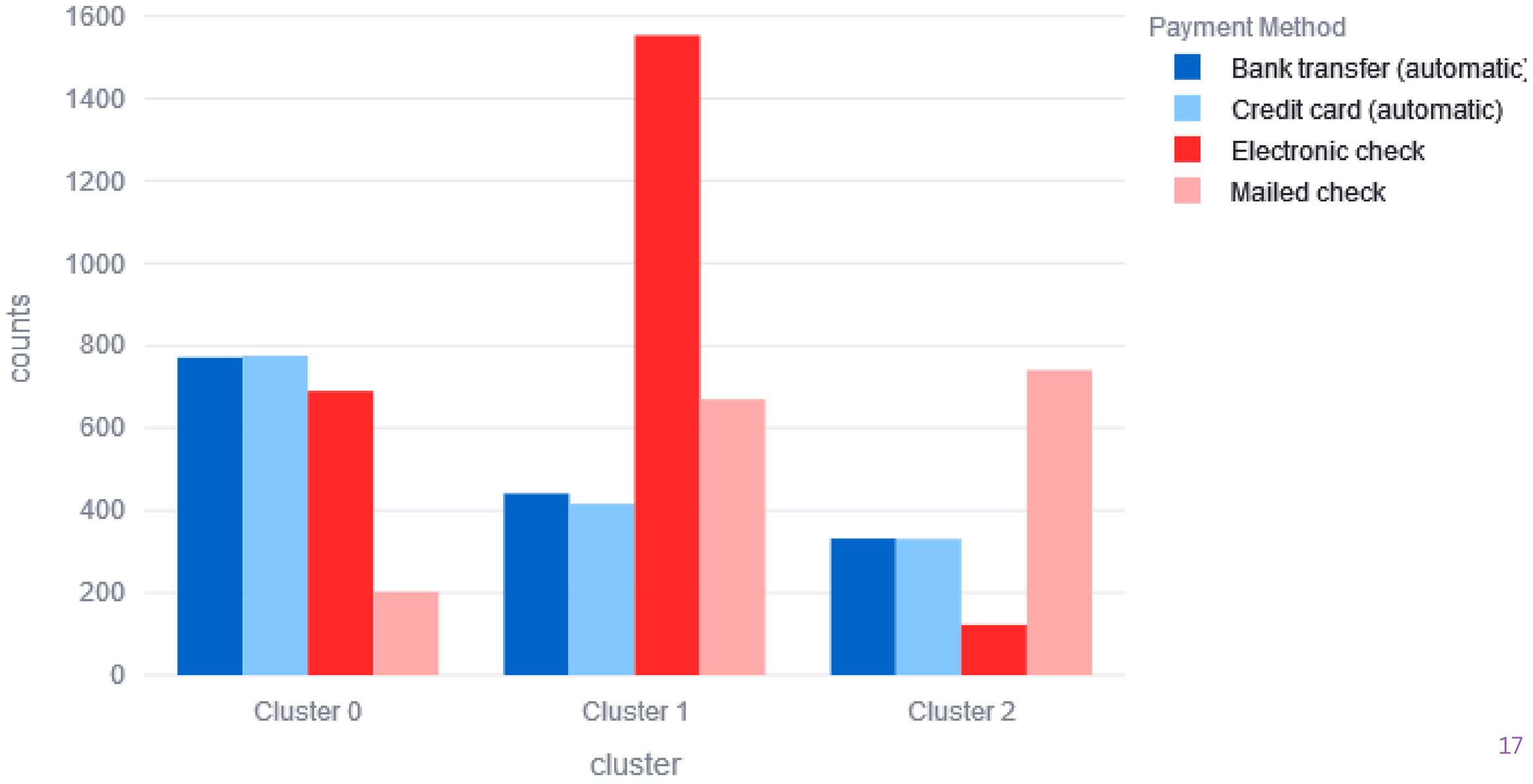
Streaming TV by cluster



Contract Type by cluster



Payment method by cluster

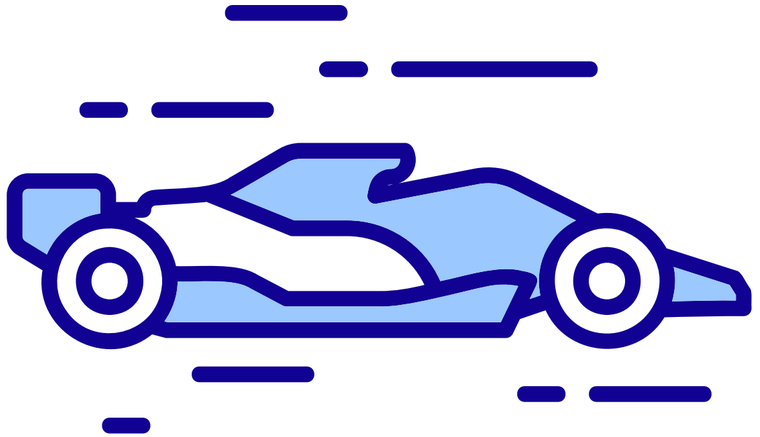


3. Machine learning models

Differents models

- Logistic Regression
- Random Forest
- Support Vector Machine
- XGBoost
- LightGBM

Scoring metric : F1 score



- Good when the data is unbalanced
- Combines precision and recall
- Precision : how many of the predicted positives were actually correct
- Recall : how many of the actual positives were correctly predicted

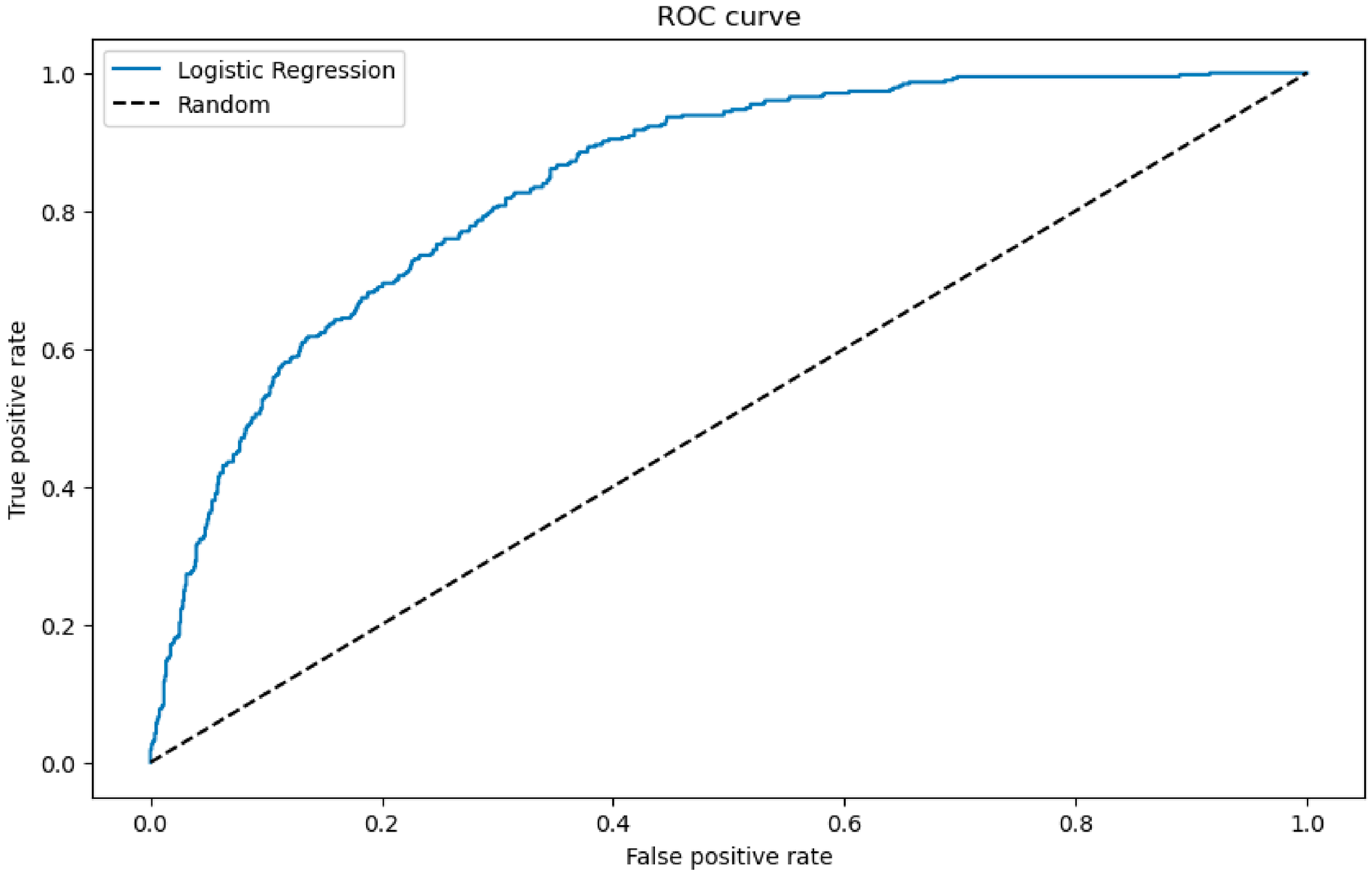
Scoring metric : ROC and AUC

- ***ROC Curve:*** Plots how well a model separates two classes (True Positive Rate vs. False Positive Rate).
- ***AUC:*** A single score summarizing the ROC curve—higher means better at distinguishing classes
- ***Perfect AUC:*** 1.0 = always correct, 0.5 = random guessing.
- Compares models without needing a fixed threshold.

Results :

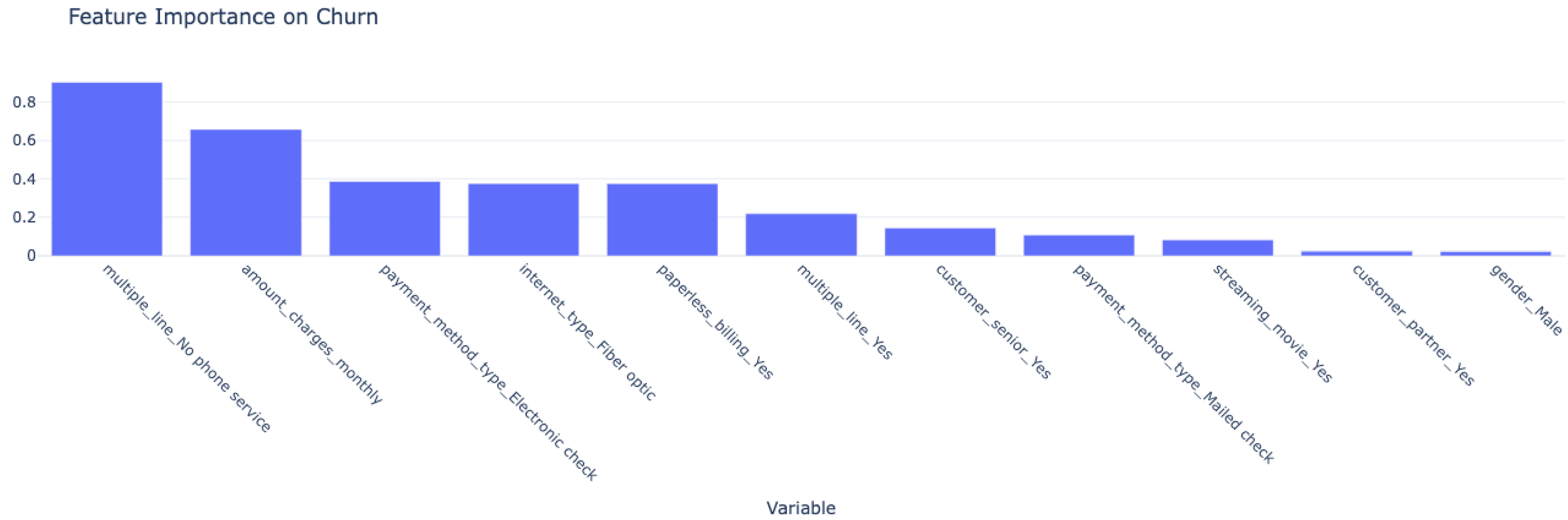
	F1 Score	AUC
Logistic Regression	**0.64**	**0.86**
Random Forest	0.59	**0.86**
Support Vector Machine	**0.64**	0.85
XGBoost	0.59	**0.86**
LightGBM	0.58	**0.86**

ROC curve for Logistic Regression :



4. Results and recommendations

Feature importance on Churn



Most important features

No phone service

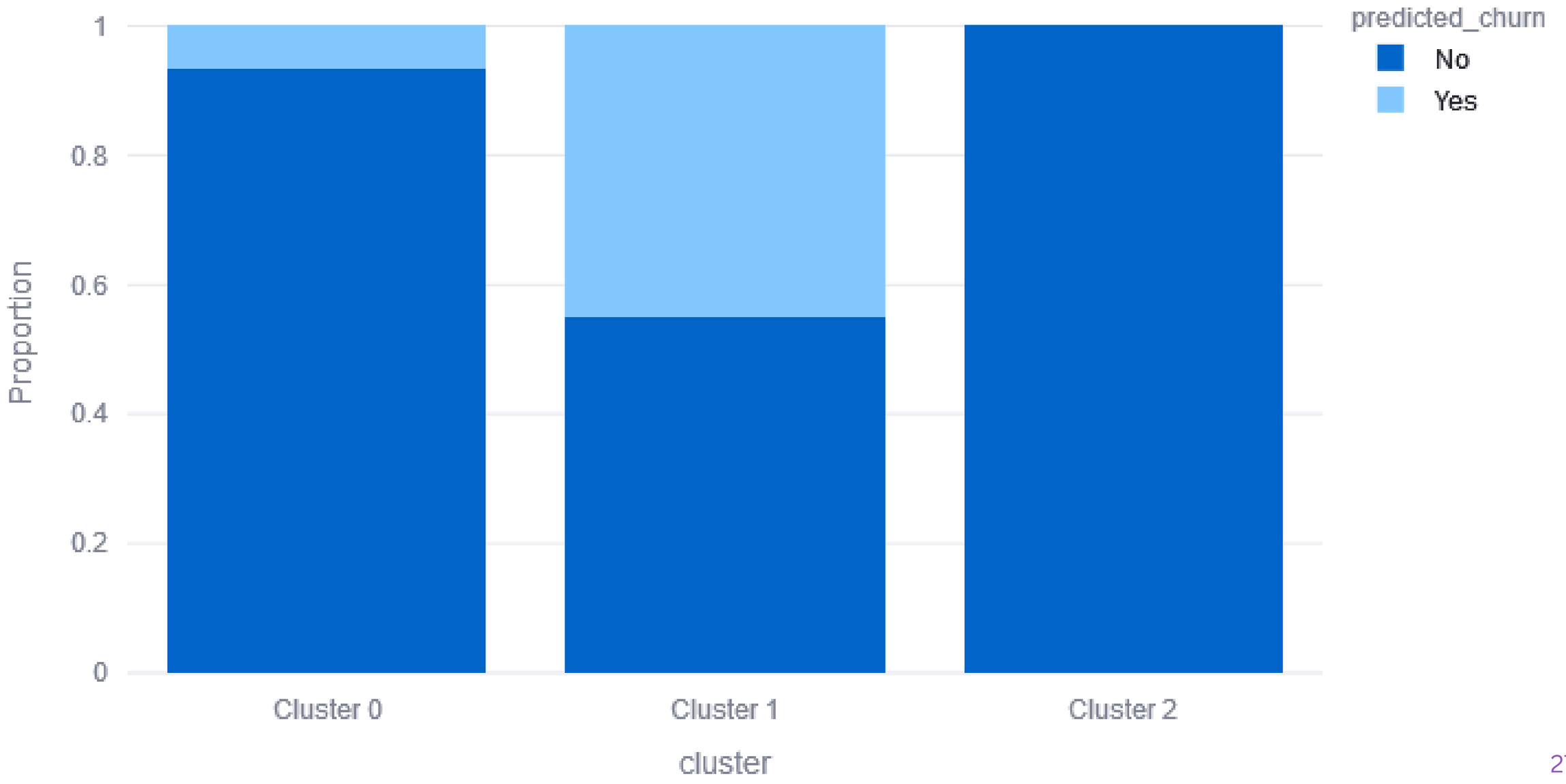
Amount charges monthly

Electric check

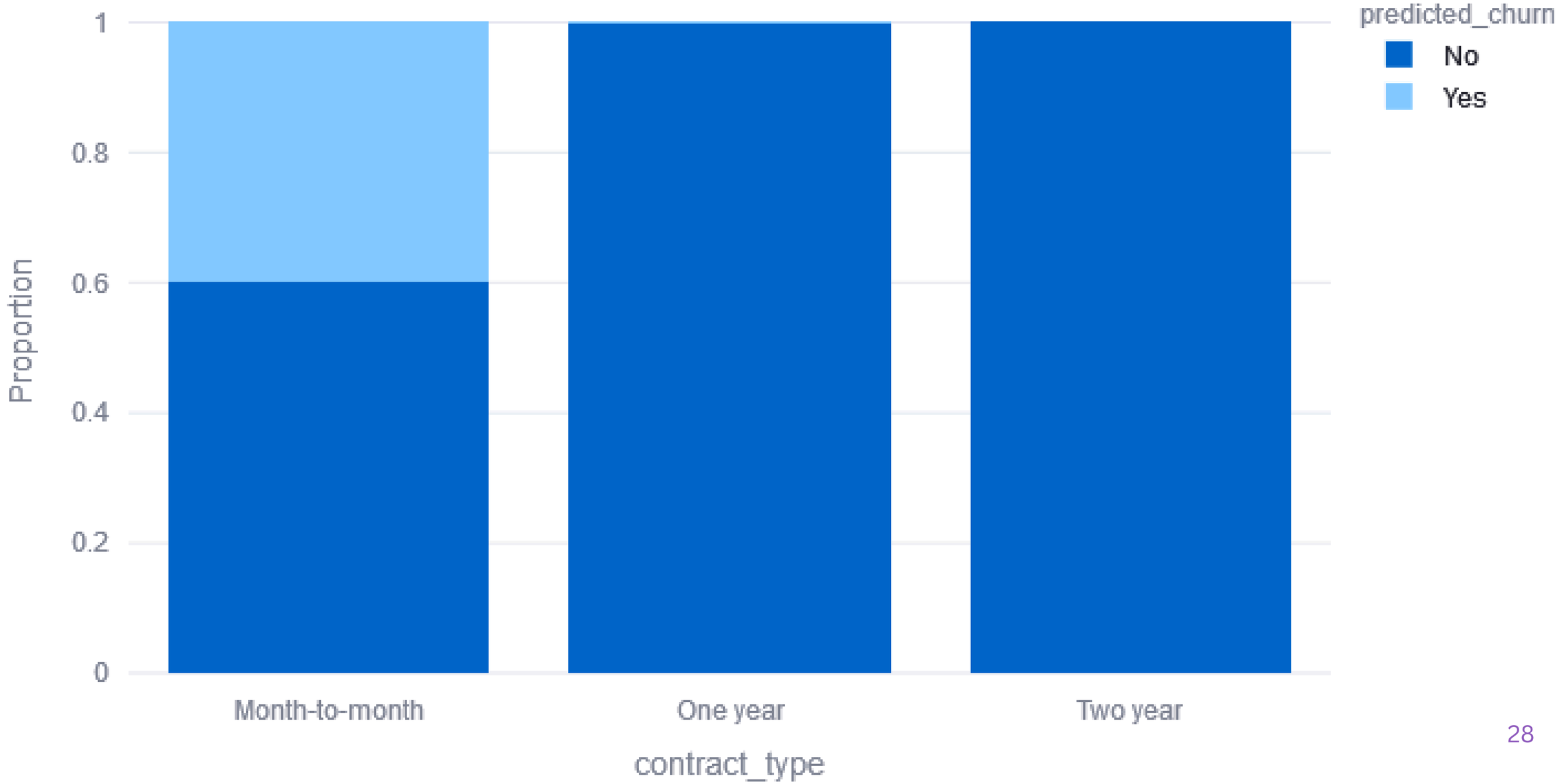
Fiber optic

Paperless billing

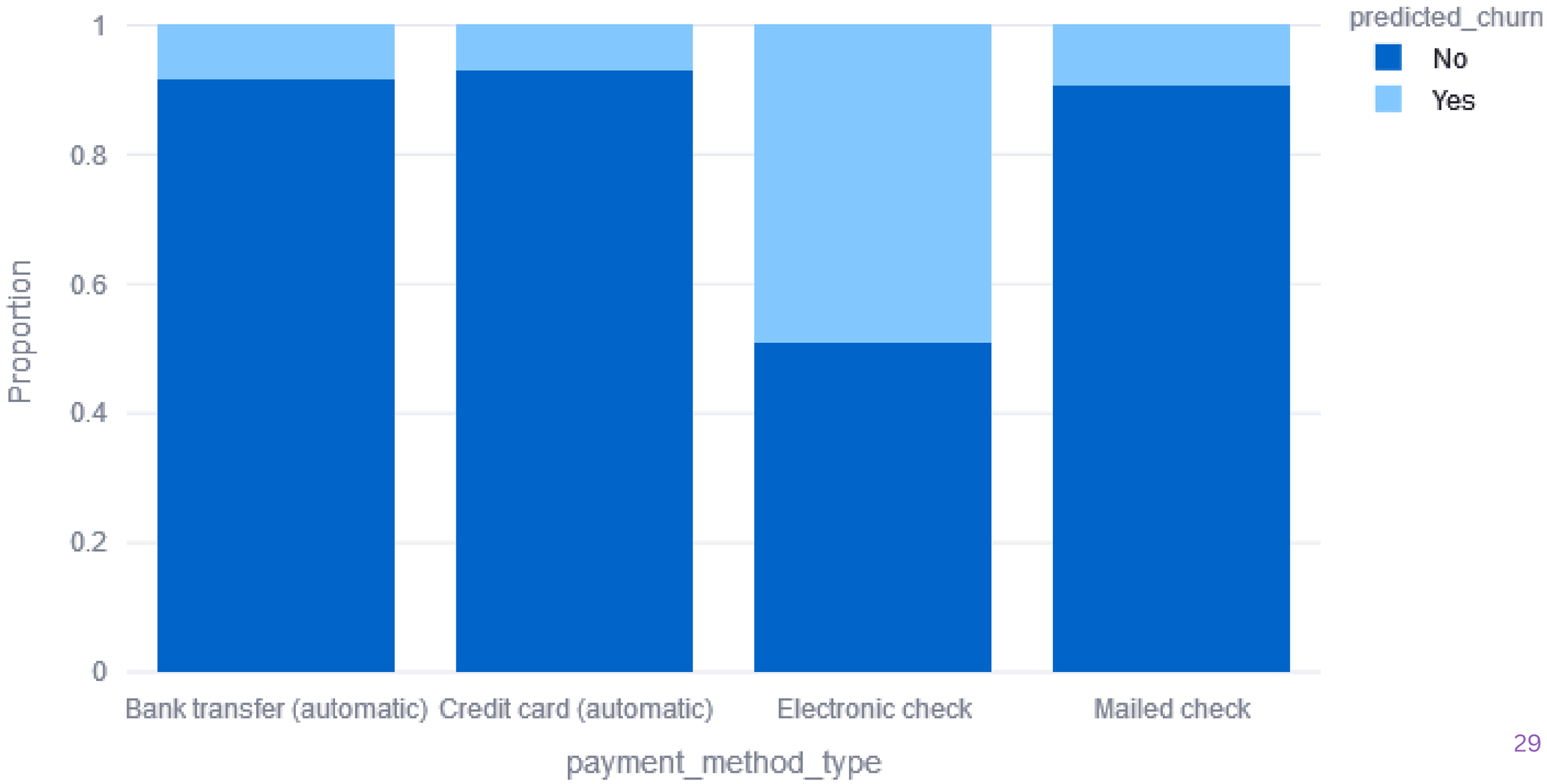
Predicted Churn rate by cluster



Predicted Churn rate by contract type



Predicted Churn rate by Payment method



Cluster 0: Loyal, High-Value Customers

Enhance Loyalty Programs: Offer exclusive deals and recognition

Cross-Selling Opportunities: Introduce new premium services

Maintain Service Excellence: Ensure high-quality customer service

Solicit Feedback: Engage in feedback programs

Cluster 2: Phone Service Only Customers

Upselling Internet Services: Introduce attractive bundled packages

Loyalty Programs: Implement rewards for continued patronage.

Promote Convenience Features: Highlight benefits of paperless billing.

Cluster 1: Newer, Price-sensitive customers

Retention Efforts: Implement retention campaigns focusing on satisfaction

Promote Long-Term Contracts: Offer incentives for longer-term contracts.

Upsell Add-on Services: Educate on the value of additional services.

Personalized Communication: Use targeted messaging