

# Google Colab Link

[cleaned dataset](#)

## Customer Churn Prediction

### 1. Overview

This project focuses on predicting customer churn to identify which customers are most likely to leave a service. A machine learning model was developed and the results were visualized using an interactive dashboard.

### 2. Key Results

- **Total Customers:** 10,000
- **Churned Customers:** 2,037
- **Retention Rate:** 79.63%
- **Churn Rate:** 20.37%

A churn rate above 20% indicates that customer retention is an important business priority.

### 3. Major Churn Drivers

The analysis shows that churn is mainly influenced by:

- Age
- Number of products
- Credit score
- Balance and income

- Customer activity status
- Tenure
- Geography

Inactive customers and middle-aged customers (31-50) show the highest churn tendency. Customers in **France** churn more compared to other regions.

#### 4. Customer Segments at High Risk

- Inactive customers
- Single-product customers
- Customers aged 31-50
- Customers with lower credit scores
- Short-tenure customers

#### 5. Key Insights

- Engagement strongly reduces churn
- Multi-product customers are more loyal
- Region-specific churn patterns exist
- Financial stress indicators link to churn

#### 6. Recommendations

- Re-engage inactive users with offers and reminders
- Promote cross-selling to deepen relationships
- Focus retention efforts in high-churn regions
- Provide financial guidance for vulnerable customers
- Improve onboarding for new customers

#### 7. Conclusion

The churn prediction system helps identify at-risk customers early. Implementing targeted retention strategies can significantly reduce churn and improve customer loyalty.