# Bank Customer Churn

## Introduction

This is a project based on Santosh Kumar's "Bank Customer Churn" dataset from Kaggle (https://www.kaggle.com/santoshd3/bank-customers).

It is also based on Meigaron Data Science project challenge named "Increase company revenues with churn prediction".

TopBank is a big company of financial services. It operates mostly in European countries offering financial products, from bank accounts to investiments, some types of insurance and investiment products. The business model is based on services, i.e. it sells banking services to its customers through physical branches and online portal.

The main product is a bank account Where the customer can deposit your salary, make withdrawals, deposits and transfers to Other accounts. This bank account is free and it has a 12 month tenure, i.e. the customer needs to renew the account contract to continue using for the next 12 months.

According to TopBank's Analytics team, each customer that holds such account returns a value of 15% of their estimated salary if this is smaller than the average and 20% if this salary is bigger than the average, during the current period of their account. This value is calculated anually.

For instance, if the monthly salary is $1,000.00 and the average of the salaries is $800.00, the company makes $200.00 anually with this customer. If this customer has been with the bank for 10 years, the company alreay earned $2,000.00 with their transactions and account use.

In the last months, the Analytics team noticed that customer rate cancelling their accounts and leaving the bank has reached unprecedent numbers. Concerned with this churn increase, the team planed an action plan for reducing the customer churn rate.

Overall, Churn is a metric that indicates the number of customers that cancelled the contract or stopped buying the products in a certain time period. For instance, customers that cancelled the service contract or after the due date of the same, did not renew, are considered customers in churn.

Another example would be the customers that do not purchase for more than 60 days. These customers could be considered customers in churn until a new purchase is done. The period of 60 days is completely arbitrary and may vary among companies.

# Diagnosis – Exploratory Data Analysis

After an Exploratory Data Analysis, the Analytics team could present some numbers and interesting insights:

- According to the dataset used, the customer churn rate is around **20%**

- Churn per Country is as follows:
  - France: 16% (the country owns 50% of the bank customers)
  - Spain: 17% (the country owns 25% of the bank customers)
  - Germany: **32%** (the country owns 25% of the bank customers)

- Churn rate per Gender:
  - Men represent 53% of the customers and current churn is 16%
  - Women represent 47% and churn is **25%**

- Churn rate per Number of Products:
  - **22%** of the customers that purchase 1 product left the bank; the total customers having only one product represents 51% of the bank customers
  - 7% have left the bank when having 2 products and these represent 46% of the customers

- Churn per Balance:
  - **26%** among customers with 100K-150K; these customer range represents 38% of the total customers
  - 14% amongst the ones with No Balance; these represent 36% of the customers
  - 20% amongst 50K-100K; these represent 15% of the total
  - 22% amongst 150K-200K; these represent 9% of the total

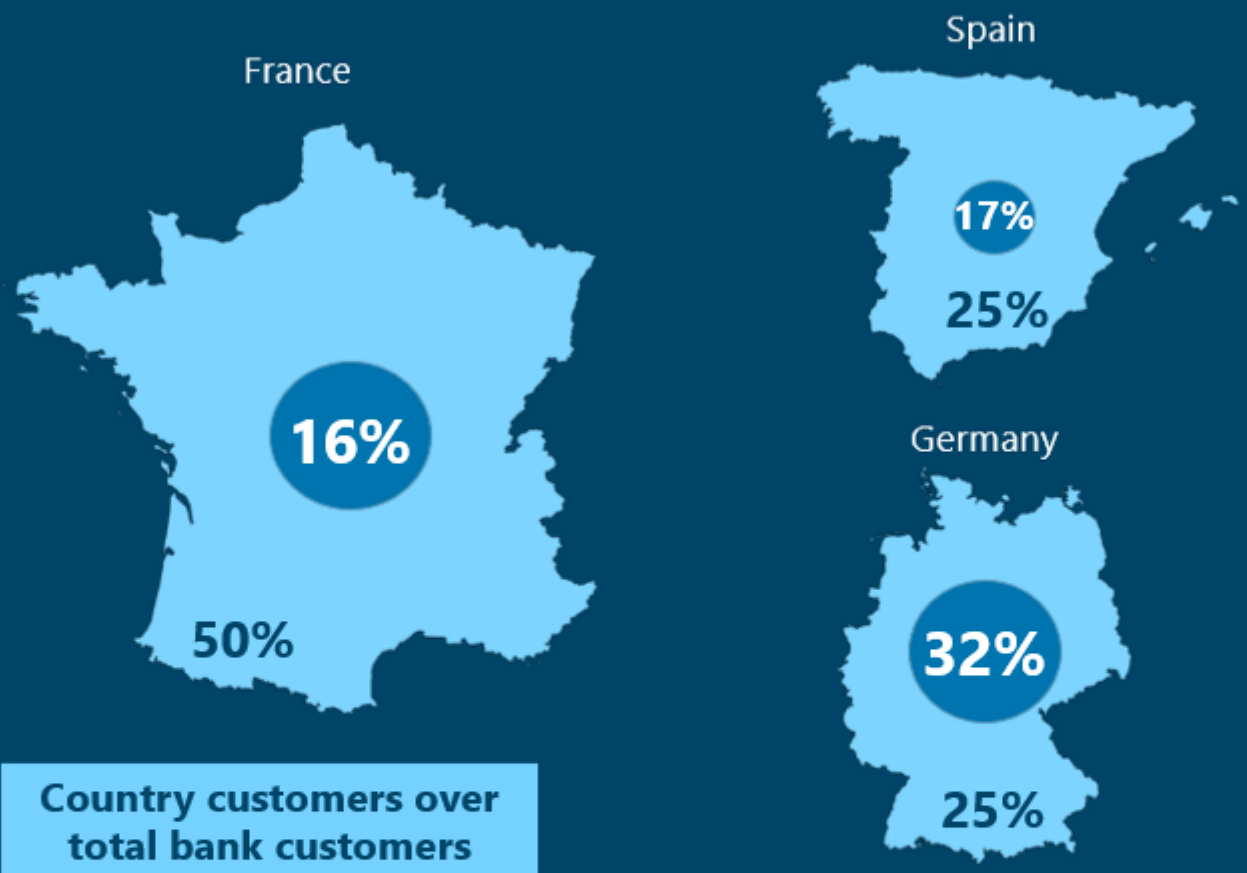
- Churn per Age:
  - **31%** among the 40-49; this range represents 26% of the total
  - **56%** amongst 50-59; this range representes 9% of the customers
  - 11% amongst 30-39; these are 43% of the total
  - **35%** amongst 60-69; these are just 4%
  - **8%** among the ones below 30; these represent 16% of the total

Based on this analysis, some conclusions and questions can be elaborated:

1. The churn rate in Germany is above the average. Why this is happening?
2. Why women has a higher churn rate than men?
3. The more products the customer has, the lower is the churn rate. Is this true?
4. Churn is higher among the customers with more account balance. Why this happens?
5. Churn is higher among older customers (above 40 years old). Why this is occurring?

**Customer Churn** 20.4%

## Churn per Country




Country customers over total bank customers

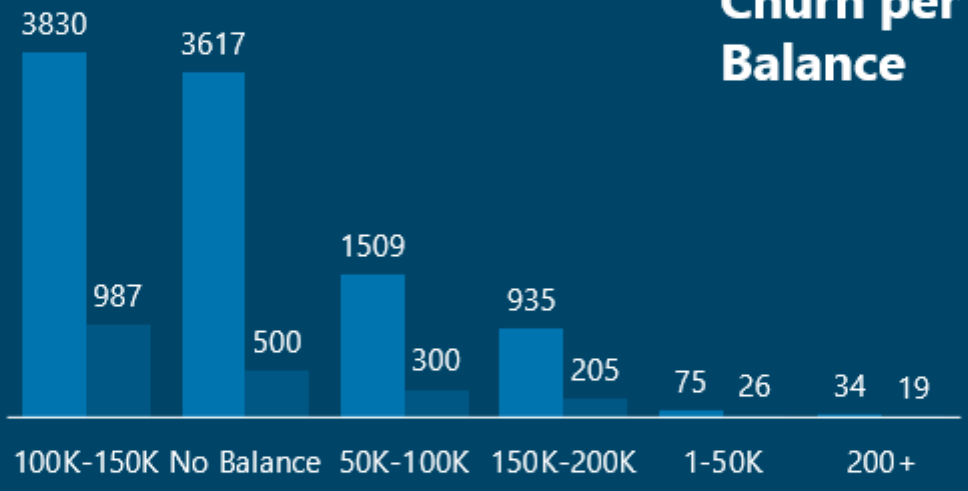
## Churn per Gender

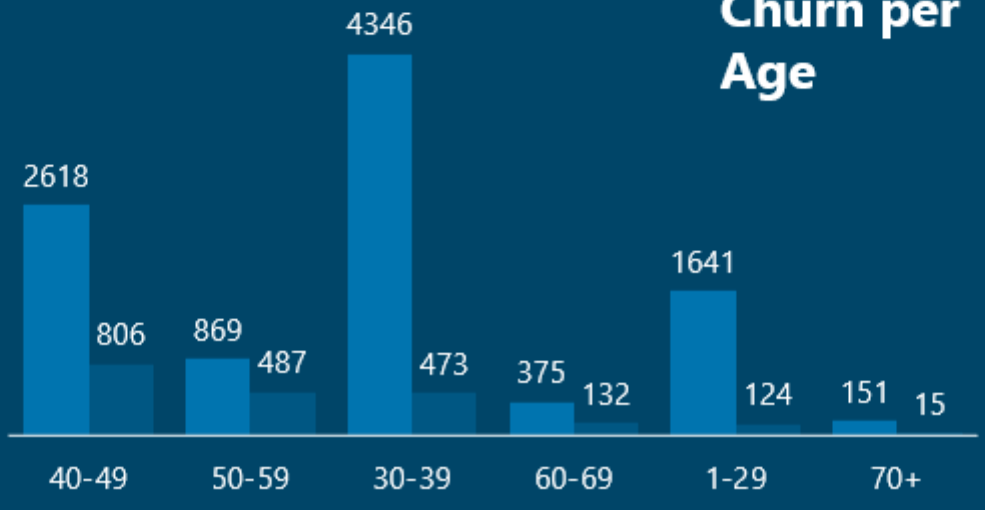
## Churn per Number of Products

**1 Product (51%)**

**2 Products (46%)**

## Churn per Balance




## Churn per Age