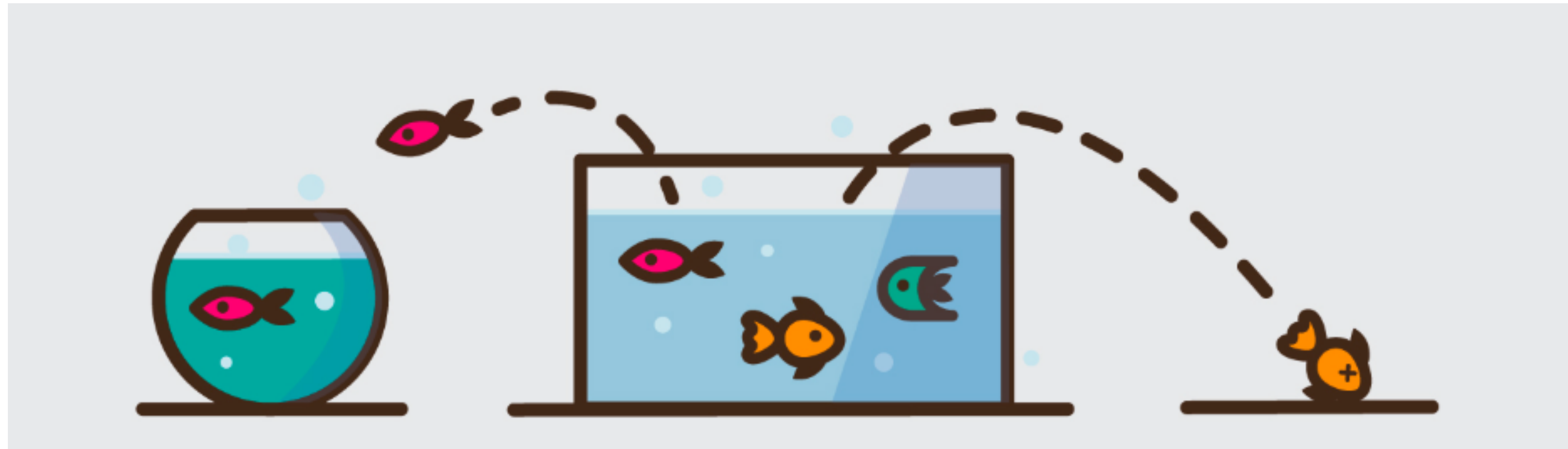


# Predicting Churn for Bank Customers

Marina Trofimovich

Who's going to leave?



Customer churn

Let's try to predict!

## Profit

- predict future revenue;
- identify, address, and get back customers that are likely to churn;
- identify and improve upon areas where customer service is lacking.

# Problem

**Bank customer churn dataset: 14 features, 10.000 customers.**

	RowNumber	CustomerId	Surname	CreditScore	Geography	Gender	Age	Tenure	Balance	NumOfProducts	HasCrCard	IsActiveMember	EstimatedSalary	Exited
0	1	15634602	Hargrave	619	France	Female	42	2	0.00	1	1	1	101348.88	1
1	2	15647311	Hill	608	Spain	Female	41	1	83807.86	1	0	1	112542.58	0
2	3	15619304	Onio	502	France	Female	42	8	159660.80	3	1	0	113931.57	1
3	4	15701354	Boni	699	France	Female	39	1	0.00	2	0	0	93826.63	0
4	5	15737888	Mitchell	850	Spain	Female	43	2	125510.82	1	1	1	79084.10	0

**features**

**target**

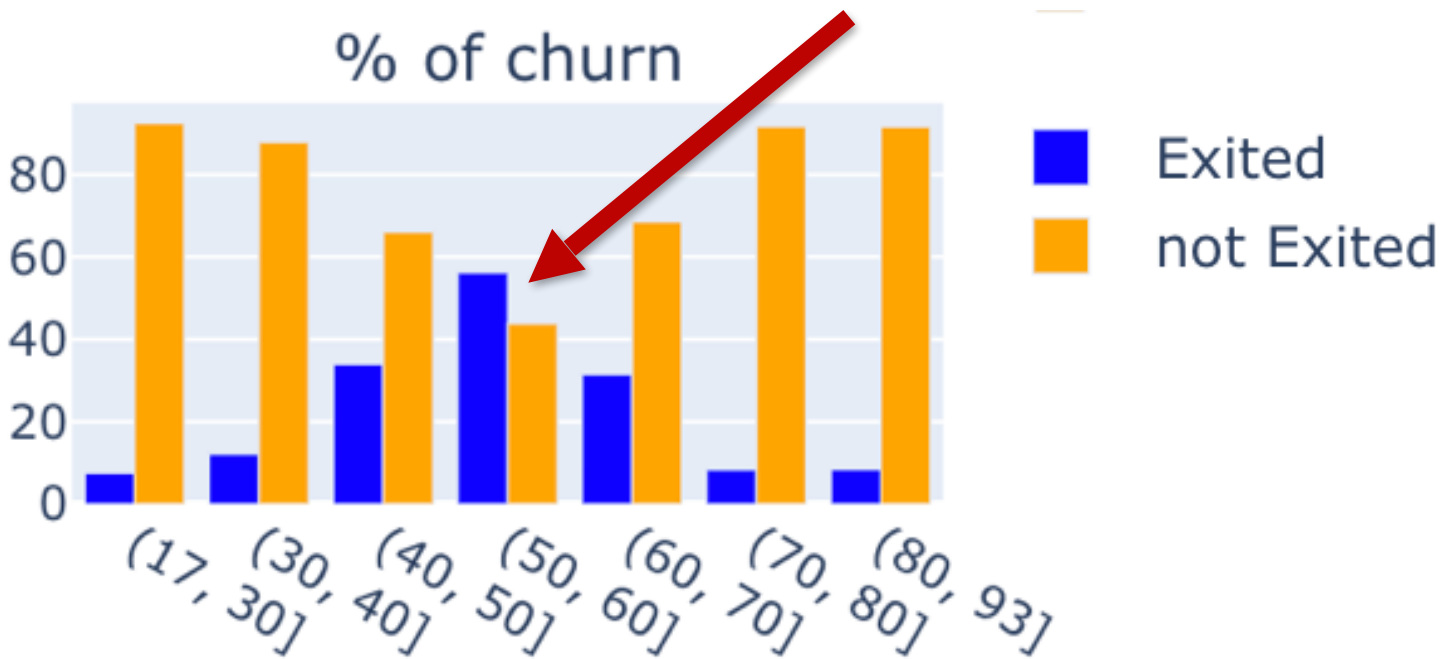
## Objectives

- **identify and visualize which factors contribute to the customer churn;**
- **build a prediction model that will classify if a customer is going to churn or not.**

# Features that contribute the most & The highest risk zone

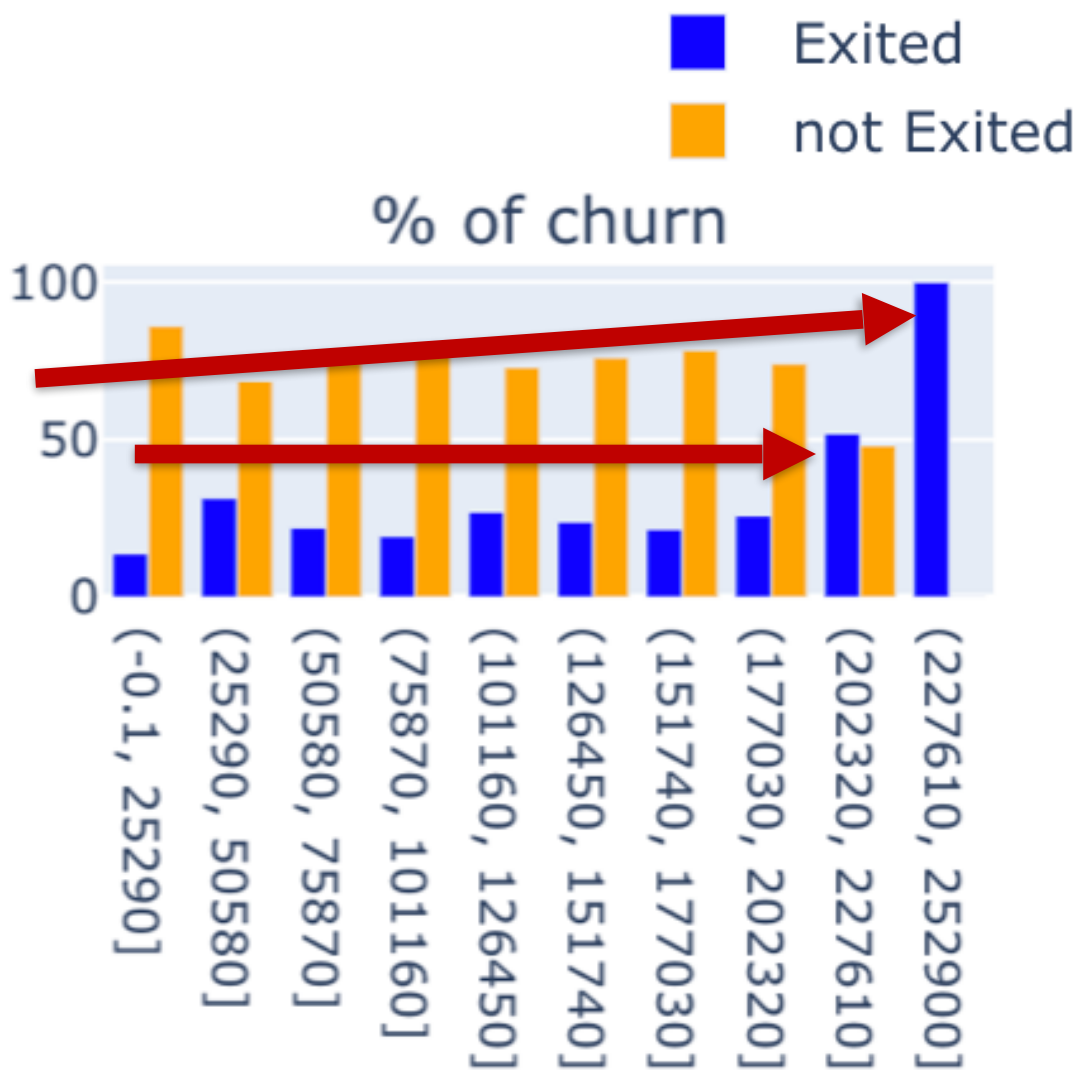
Age

(50, 60]



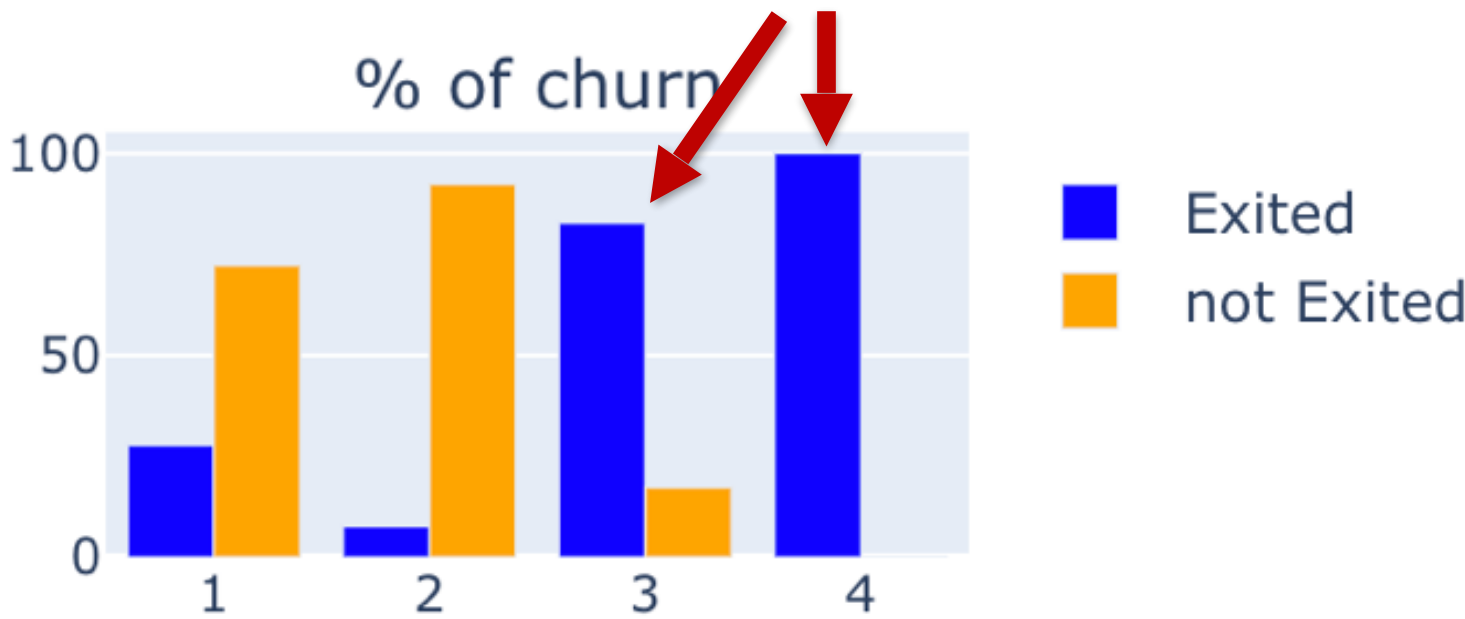
Balance

> 200.000



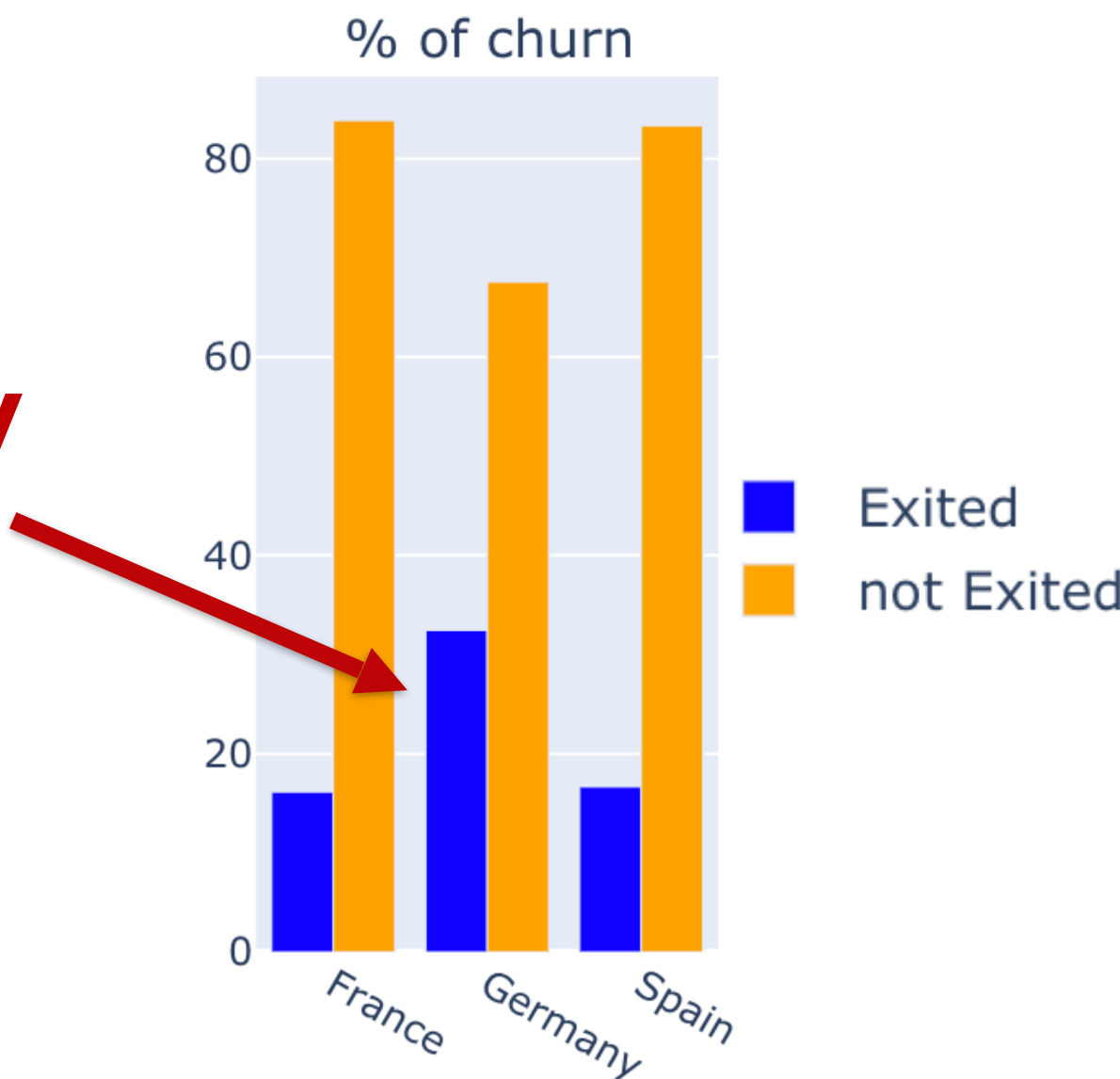
NumOfProducts

3 or 4



Geography

Germany



# Machine learning models



	Accuracy	Precision	Recall	F1
Logistic regression	0.85	0.74	0.50	0.60
K nearest neighbours	0.85	0.78	0.39	0.52
Support Vector Machine	0.86	0.84	0.43	0.57
Random Forest	0.87	0.78	0.52	0.63

**52%** of actual "Exited" customers are predicted correctly.

**78%** of predicted to be "Exited" customers are actual "Exited".

## Applications

- **developing retention programs for high-risk groups of customers;**
- **identifying customers who are going to leave and suggesting to them individual solutions;**
- **further research to identify reasons for high churn in particular groups and realize the preventive measures.**

# THANK YOU!