

MARCH 12, 2021

CHURN at PowerCo

Group Datathon – Team C

Agenda



Mission/
Solution



Approach



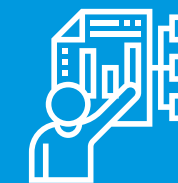
Findings/
Insights



Execution Plan



Advanced
Analytics



Conclusion



Strategy



Team

Mission

For the SME segment we will:

- Leverage customer data
- Identify drivers of churn
- Develop effective counteractions to reduce churn

Problem

Why customers are churning?

- Market trends
- Competitors
- **Internal dynamics**

Solution

Holistic approach:

- Utilize advanced analytics
- Apply machine learning algorithms
- Save 3.8 million in revenue
- Provide action plan

Findings

01

Sales Channel

The largest channel has the highest churn, and other channels are more price-sensitive

02

Province

Vizcaya, Madrid and Barca have the highest churn rate

03

Industry

Some industries have a higher churn rate; others have higher price sensitivity

04

Customer lifespan

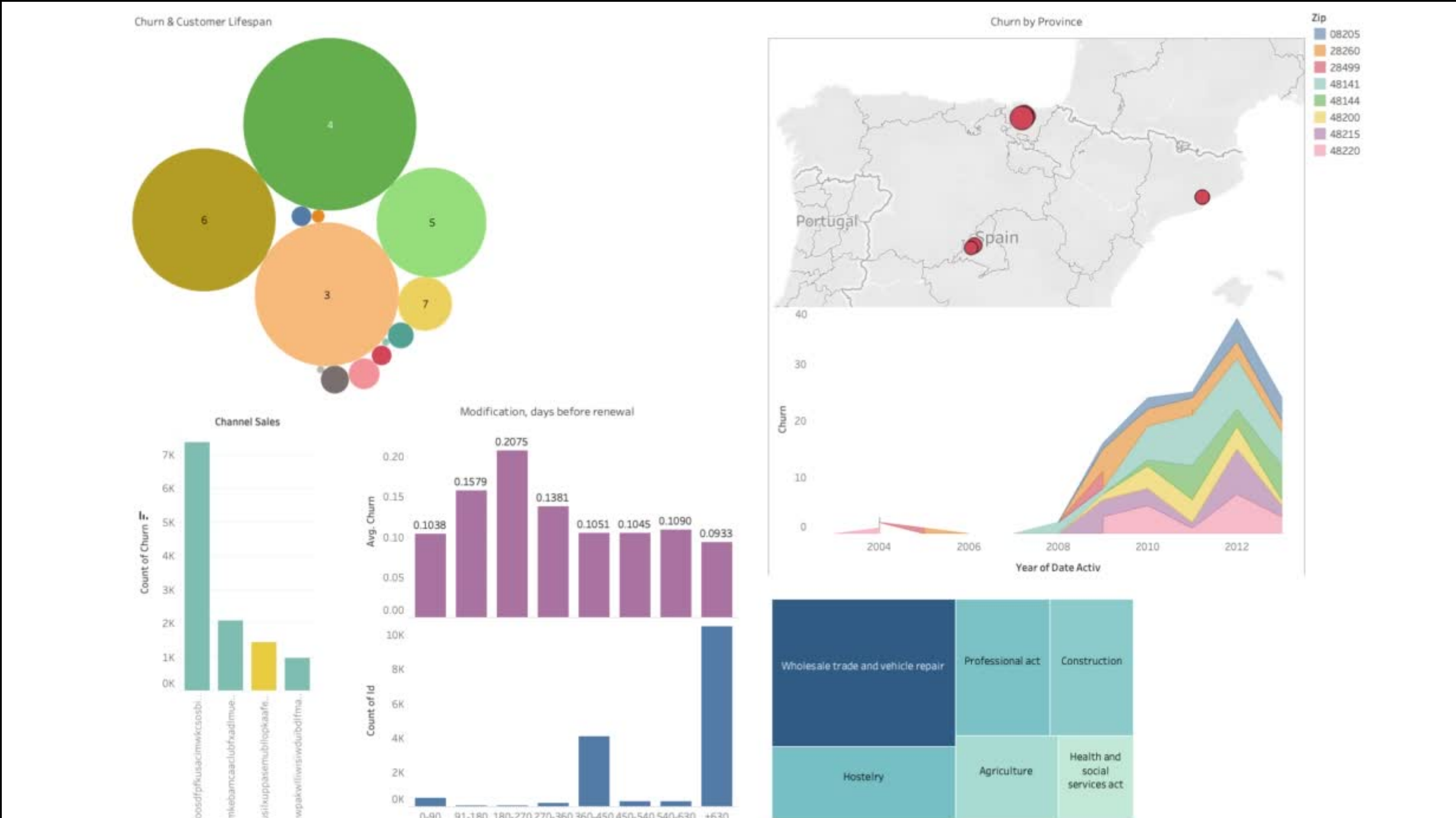
Years 3–5 of customer lifespan are critical (majority of churn)

05

Contractual changes

Client calls between 180 and 270 days are critical (highest churn rate)

Dashboard



Key Insights

Insight 1

Price is not always the main driver for churn.

Insight 2

Key drivers of churn rarely occur in a silo.

Insight 3

There are drivers of churn outside of our current datasets.

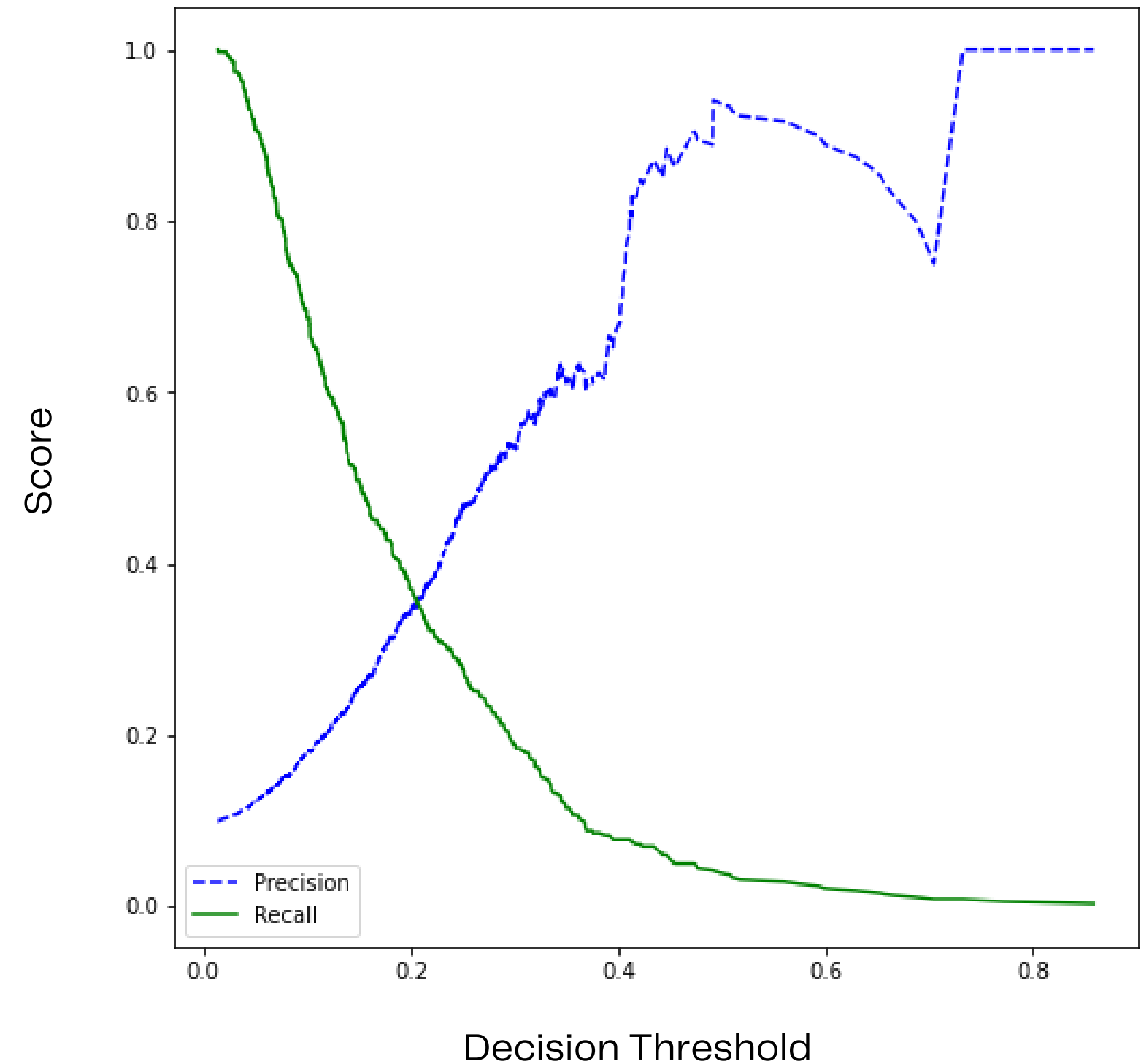


Advanced Analytics

We are looking for variables beyond duration and price change that impact the probability of churn

True label	No Churn	Churn
	No Churn	Churn
No Churn	3363	271
Churn	241	143

Precision and Recall Scores
as a function of the decision threshold

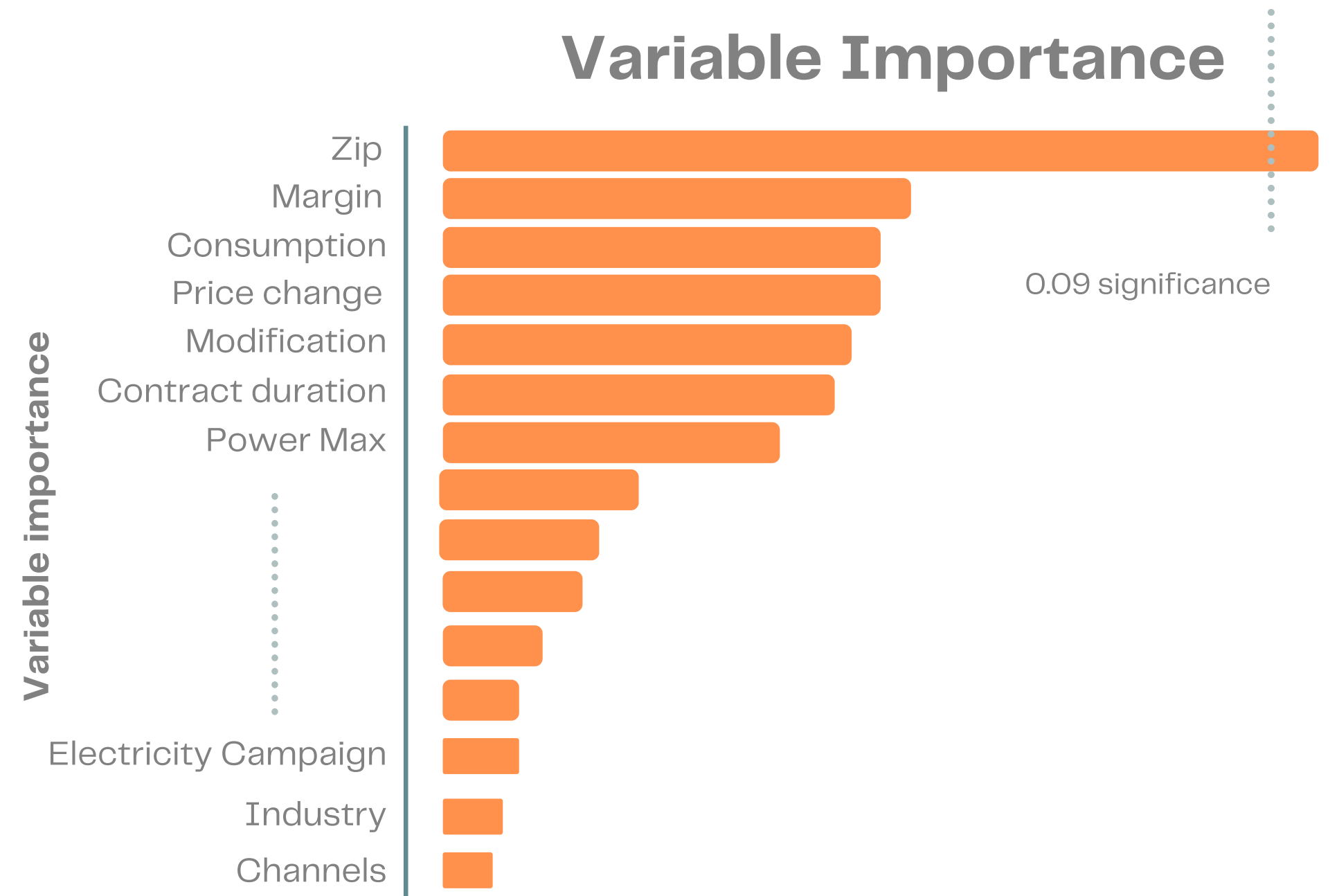


Advanced Analytics

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True label	No Churn	Churn
	No Churn	Churn
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Predicted label



Cost & Benefit Analysis

4 million €
Potential Revenue Savings

3.7 million €
Actual Revenue Savings

2,575€
False-negative cost

2.8 million €
Total Benefit

515€
False-positive cost

Best cut-off

Minimizes the cost of false-positive, false-negative (in terms of revenue) AND maximizes saved revenue.

10%

Proba_1 Cutoff	TP	TN	FP	FN	FP Cost	FN Cost	Total Cost	Saved Revenue	Total Benefit
5.00%	1,552	11,918	2,577	36	€ 1,327,174	€ 92,701	€ 1,419,875	€ 3,996,457	€ 2,576,582
10.00%	1,467	13,281	1,214	121	€ 625,219	€ 311,579	€ 936,798	€ 3,777,579	€ 2,840,780
15.00%	1,394	13,936	559	194	€ 287,889	€ 499,557	€ 787,446	€ 3,589,601	€ 2,802,155
20.00%	1,345	14,224	271	243	€ 139,567	€ 625,734	€ 765,301	€ 3,463,424	€ 2,698,123
25.00%	1,309	14,374	121	279	€ 62,316	€ 718,435	€ 780,751	€ 3,370,723	€ 2,589,972
30.00%	1,275	14,432	63	313	€ 32,445	€ 805,986	€ 838,432	€ 3,283,172	€ 2,444,740
35.00%	1,246	14,468	27	342	€ 13,905	€ 880,663	€ 894,568	€ 3,208,496	€ 2,313,928
40.00%	1,232	14,481	14	356	€ 7,210	€ 916,713	€ 923,923	€ 3,172,445	€ 2,248,522
45.00%	1,222	14,492	3	366	€ 1,545	€ 942,463	€ 944,008	€ 3,146,695	€ 2,202,686

Strategy

The customer experience is the next competitive battleground.

– Jerry Gregoire

Customize

Based on features such as:

- Net margin
 - Customer lifespan
 - ISIC Code (industry)
-

Targeted Actions

Communicate value through:

- Price reductions
 - Exclusive customer benefits through portal (industry-specific)
-

Continuous improvement

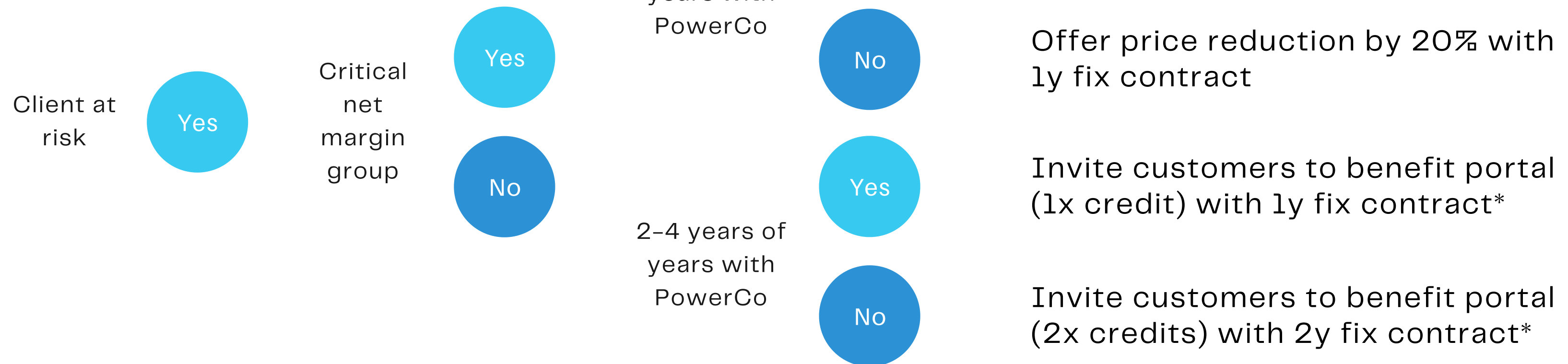
Understand client needs to improve:

- Model
 - Monetary & non-monetary incentives
 - Choice of communication channel
-

Differentiated targeted actions lead to increased retention and client satisfaction

Approach

Forget about your competitors, just focus on your customers
– Jack Ma



Strengthen client relationship/ loyalty through **increased two-way communication**

Understand client needs (with increasing focus over time) and **act proactively**

* Lower monetary value compared to 20% margin

Execution Plan

01 $t+15$

Communication (internally)

- Develop communication campaign
- Breakdown goals into individual goals
- Communicate new strategy, timeline, KPIs, and individual goals (mail, information call)

02 $t+30$

Train people & Process

- Train call center agents on new offerings (options) as well as call script/ process
- Perform a front-to-back test run of the communication process (mail, e-mail)

03 $t+45$

Execute & measure impact

- Contact clients at risk via the appropriate channel
- Measure impact of actions on sign-ups
- Collect feedback (on why clients leave the company) in the central process

04 $t+135$

Revise actions, offerings & interate

- Review actions based on the effectiveness of standard actions as well as qualitative client feedback
- Run a new prediction model with additional data collected throughout the process

Tool

Continuous improvement achieved through constant monitoring



Conclusion

Situation

PowerCo a major utility company in Spain is facing increasing customer defection (> average).

Liberalization introduced more intense competition

Mission

Identify drivers of churn using advanced analytics

Develop a strategy and plan with counter-actions addressing the drives to reduce churn

Impact

Churn reduced by up to 92% percent

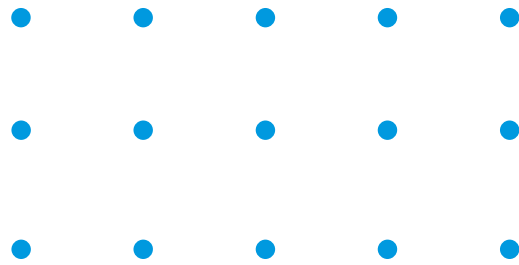
Overall increase of customer loyalty (long term contracts)

Improved client revenue (2.8 million EUR)

Solution

Identify "at-risk" clients with AA model

Targeted customer reach out campaign offering discounts and industry-specific benefits



The Team



ALLISON

Director



ELEONORA

Quant



LEO

Strategist



RAYAN

Analytics



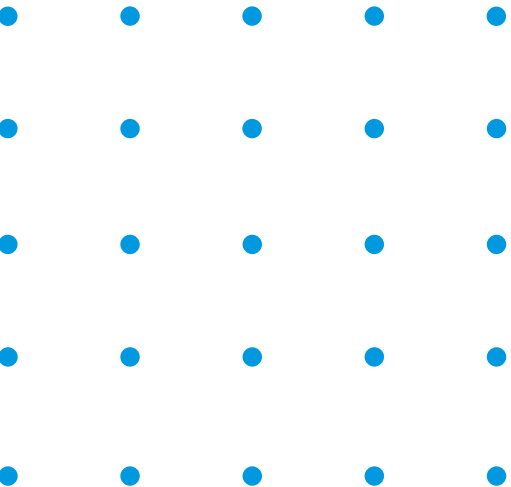
GEORGY

Quant



DENNIS

Strategist



Appendix

Task Overview

EDA Approach

Assumptions Log

Task Overview

Mapping of slides vs. tasks

Descriptive statistics & visualizations	<ul style="list-style-type: none">• 4-6• 13• 18
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Churn Prediction	<ul style="list-style-type: none">• 7-9
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Assessment of Strategy	<ul style="list-style-type: none">• 10-12• 14
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This is an overview to explain which slide relates to which task. Please note that there is a certain thematic overlap. The split is for this reason only indicative.

Exploratory Data Analysis

Quickly describe our process

We enrich data throughout the process

Steps at the right were performed in response to the outcome of the EDA

01

Issues

$\geq 60\%$ of NULL values for

- campaign_disc_ele
- date_first_acitv
- forecast_base_bill_ele
- forecast_bill_year
- forecast_bill_12m
- forecast_cons

$\geq 50\%$ of 0 values for

- price_p2_var
- price_p3_var
- price_p2_fix
- price_p3_fix

Unbalanced dataset with CURN rate $< 9\%$

02

Cleaning

Drop column mentioned above

Oversample (only for the training set)

03

Enrich

For clear identification:

- Add ZIP code/ provinces
- ISIC codes/ industry

Calculation/ new column:

- Termination date – modification date

Assumption Log

- Potential revenue savings calculated on the training dataset with the forecasted median revenue
- False negative and false positive costs are calculated on the training dataset
- False negative: Calculated as the lost forecasted median revenue
- False positive: Calculated as 20% of the false negative cost