



Customer support

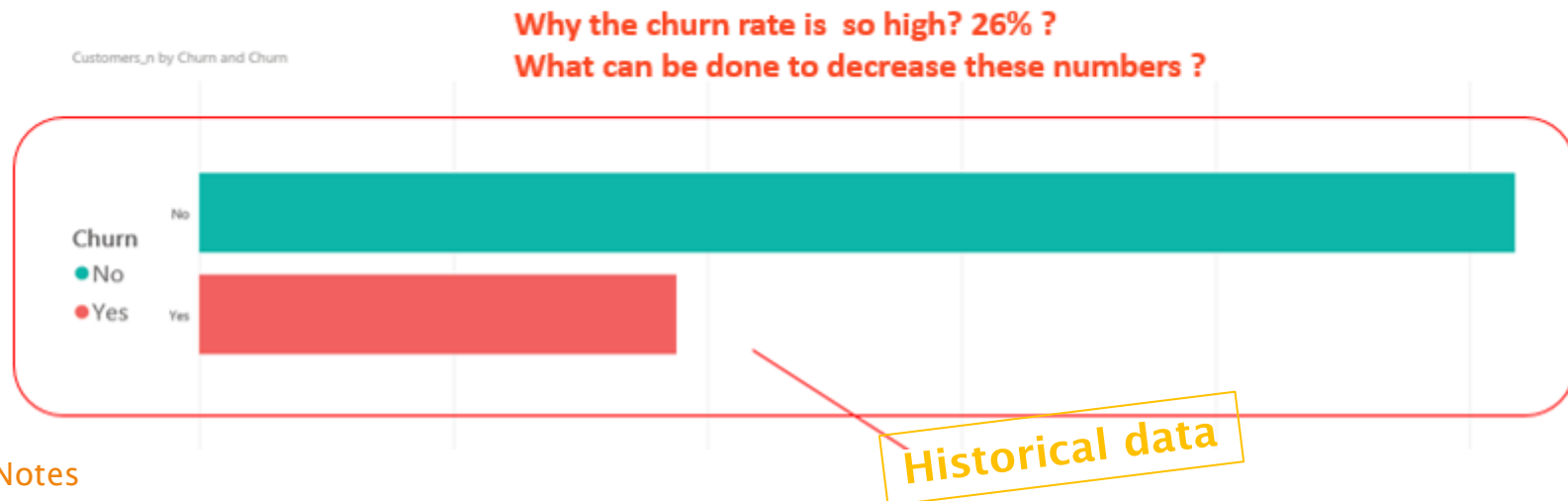
How to engage and retain customers



- Executive summary
 - Business requirements
- Project solution
 - Data driven methodology – data science project
 - Business and data understanding
 - Data preparation
 - Modeling, evaluation and deployment
- Deliverables and next steps
 - Deployment considerations
 - Process improvement guidelines

- Summary
 - The current situation shows that around 26% of customer base (historical information) are associated with customers that left the company
- Business requirement
 - Understand how and why the customer churn is too high
 - Expectation to receive some guidelines to build an action plan to fix the current situation

Business requirement



Notes

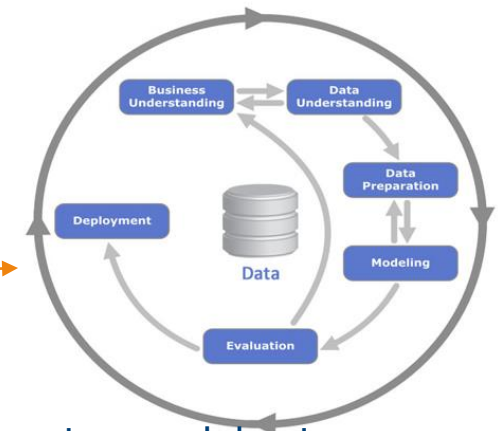
- The sample historical data are available at data/ dir and was provided by IBM

- This data science project will follow CRISP-DM methodology

- Quick-off – Business requirement
 - Understand how and why the customer churn is high

- Project solution and methodology

CRISP-DM
Process
Diagram



- Business understanding and data understanding
 - Exploratory data analysis, descriptive statistics and one basic machine learning model using Random Forest to evaluate some characteristics / features that could lead the customer to left the company as an starting point of the project
- Data preparation
 - Apply statistics and data engineering to prepare the data for machine learning
- Modeling, evaluation and deployment
 - Start the evaluation with the global and simple metric accuracy and finalize the evaluation with recall metric (Recall = sensitivity = True Positive Rate/TPR)
 - Build and evaluation of dozen of algorithms/machine learning models using different frameworks, such as Sklearn, H2O.ai, Apache Spark, XGBoost and LightGBM
 - Deployment of the best machine learning with higher RECALL metric that identifies which customers will churn along with options and best ways how to deploy the solution

- Deliverables
 - Automated process to identify in advance which customers will churn
 - Try to anticipate and drive actions for customer retention
 - Batch process execution explained with results provided
 - This batch process can be executed on demand with new customer base to get newer information
 - Presented the top 3 main reasons that lead the customer to leave the company, along with complete analysis about the current situation related to customers
 - All notebooks, code, reports and 1 machine learning model for deployment in production (23 machine learning models build with respective evaluation metric)
- Next steps
 - Setup the final project with guidelines proposed
 - Document: [Phase_3_Deployment_considerations_and_next_steps.html](#)
 - Follow the results achieved and evaluate the process improvement with this new action plan

- Information provided in the doc - [Phase_3_Deployment_considerations_and_next_steps.html](#)

Top 3 main important features related to churn (Yes) are:

- Month-to-Month contract
- Small to Medium Tenure and associated with
- Higher Monthly Charges

The process improvement to tackle here is basically decrease the numbers of customers churn

The chart below shows 2 main important information to follow

- Decrease the orange area (revenue associated with customer churners) and
- Increase the blue area (revenue related to current customers)

