

# Telecom Customer Churn Analysis

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# Outline

- Business Problem
- Data
- Model
- Evaluation
- Conclusions / Recommendations

# Business Problem

SyriaTel wants to reduce customer churn

- High cost of customer acquisition
- Customers pay monthly
- Retention is key to profitability



# Data source

SyriaTel provided a subset of customer data

- 1 geographical location
- 3 area codes
- 3333 total customers
- 486 churning customers
- 14.5% churn rate



# Data details

Created classification models based on:

- Plan type
- Account length
- Number of calls and total minutes by time of day
- Number of customer service calls

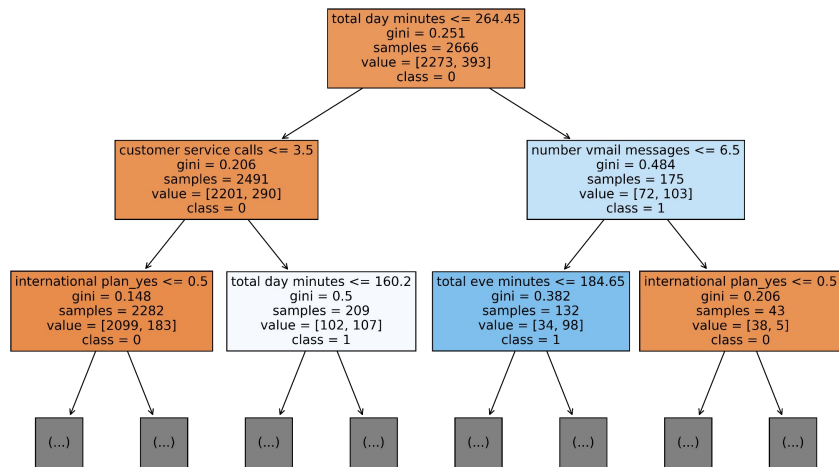
# Data limitations

- Small number of customers
- One geographical area
- Only basic usage data available
- Financial evaluation based on broad estimates

# Modeling

Created and refined:

- Logistic regression model
- Decision tree classifier



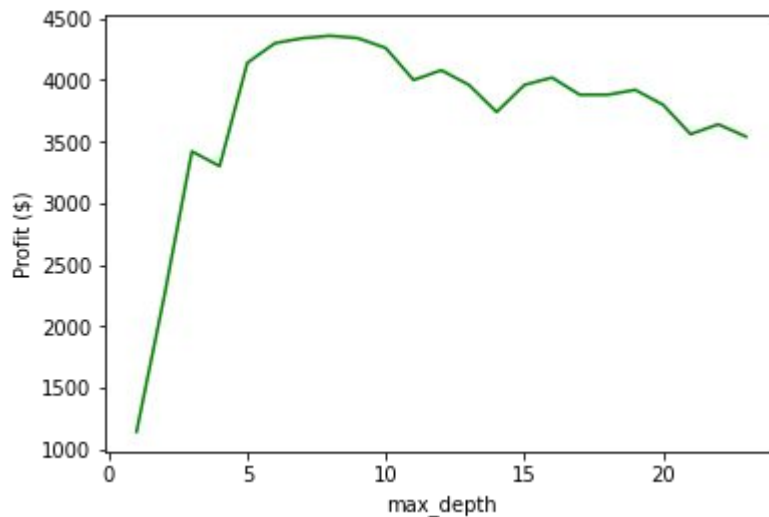
# Modeling - tuning

Logistic regression model:

- Scaled all inputs
- Oversampled churning customers

Decision tree classifier:

- Oversampled churning customers
- Hypertuning





# Evaluation

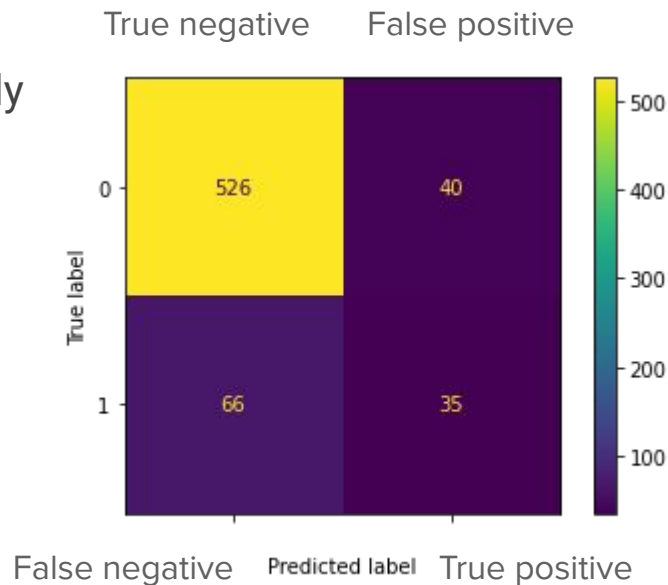
Estimates from previous experiments and analysis,

- Lost potential revenue is \$240/customer churned
- Retention strategies are ~33% effective on well-identified customers
- Value is \$80/well-identified customer
- Outreach costs \$20/ customer



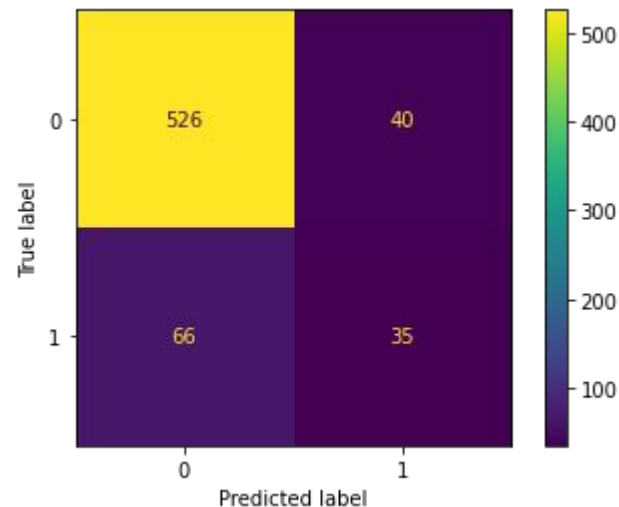
# Evaluation

- Model value =  $\$80 * \# \text{ of properly-identified customers}$   
 $-\$20 * \text{total} \# \text{ of customers identified}$
- Recall: % of churning customers identified properly
- Precision: % of those identified as likely to churn who actually churned



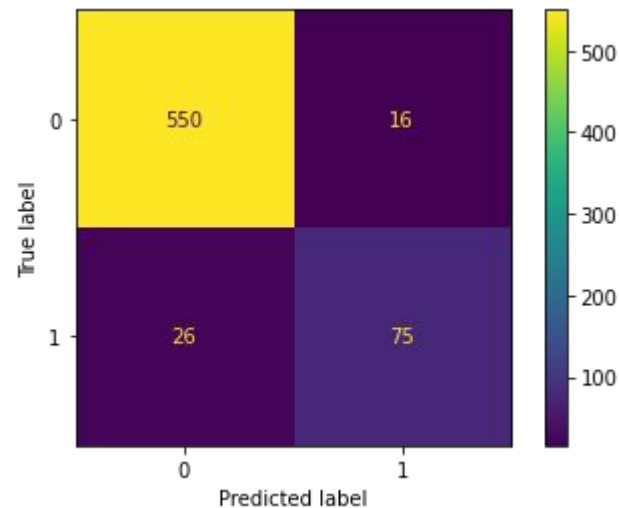
# Results - logistic regression

- Profit: \$1300
- Recall: 35% of churning customers identified
- Precision: 47% of those identified churned



# Results - decision tree classifier

- Profit: \$4180
- Recall: 74% of churning customers identified
- Precision: 82% of those identified churned



# Conclusions and insights

- Decision tree classifier model provides positive value
- High usage and no voice mail plan were associated with high churn (~90% churn)
- Low usage and high customer service calls were associated with high churn
- Low usage, few customer service calls, and no international plan were associated with low churn

# Thank You!

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