



Customer Churn

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Overview

Stakeholder(s)

- Telecommunications company/companies
- Stakeholders for TC

Problem

- Broadly: How do we prevent customer churn?
- Narrow: What factors affect when a customer leaves X Telecom Company?



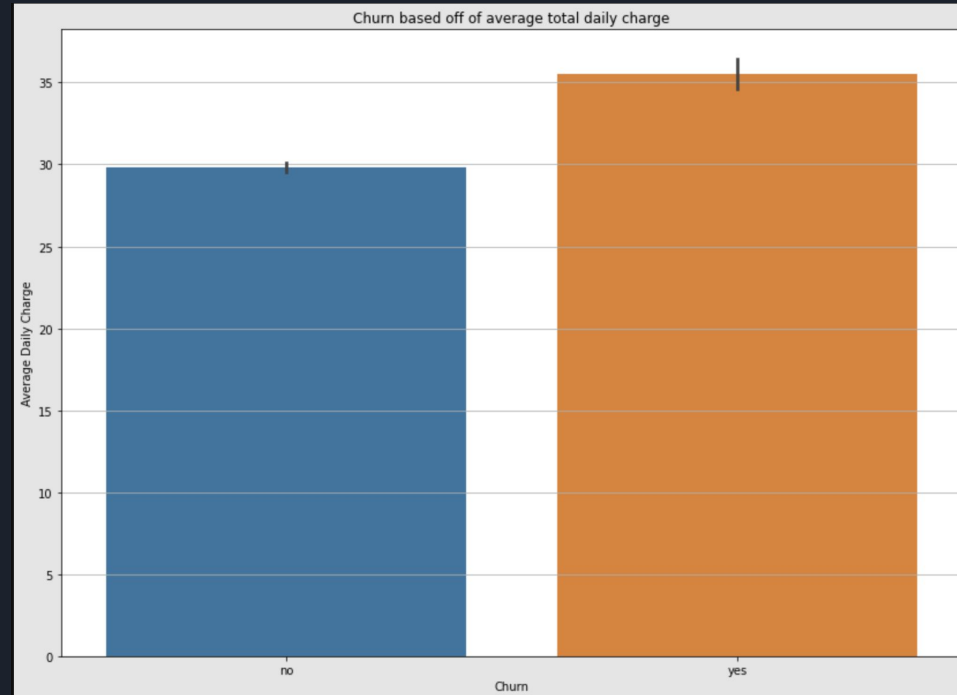
Data

- 19 variables considered
- 4250 examples used
- Most data was focused on calls: how many a customer made, when a customer made them, how long the customer was on calls, etc.
- No variables had a high ($> 50\%$) correlation with churn

Variable Name	Description
State	US State of Customer Residence
Account Length	# Months Customer has been with TC provider
Area Code	3 digit area code
International Plan	Whether or not a customer has an international plan
Voice Mail Plan	Whether or not a customer has a voice mail plan
Number VM Messages	Total number of voice mail messages
Total Day Minutes	Total minutes of day calls
Total Day Calls	Total number of day calls
Total Day Charge	Total charge for day calls
Total Evening Minutes	Total minutes of evening calls
Total Evening Calls	Total number of evening calls
Total Evening Charge	Total charge for evening calls
Total Night Minutes	Total minutes of night calls
Total Night Calls	Total number of night calls
Total Night Charge	Total charge for night calls
Total International Minutes	Total minutes of international calls
Total International Calls	Total number of international calls
Total International Charge	Total charge for night calls
Number Customer Service Calls	Number of calls to customer service
Churn	Whether a customer churned or not

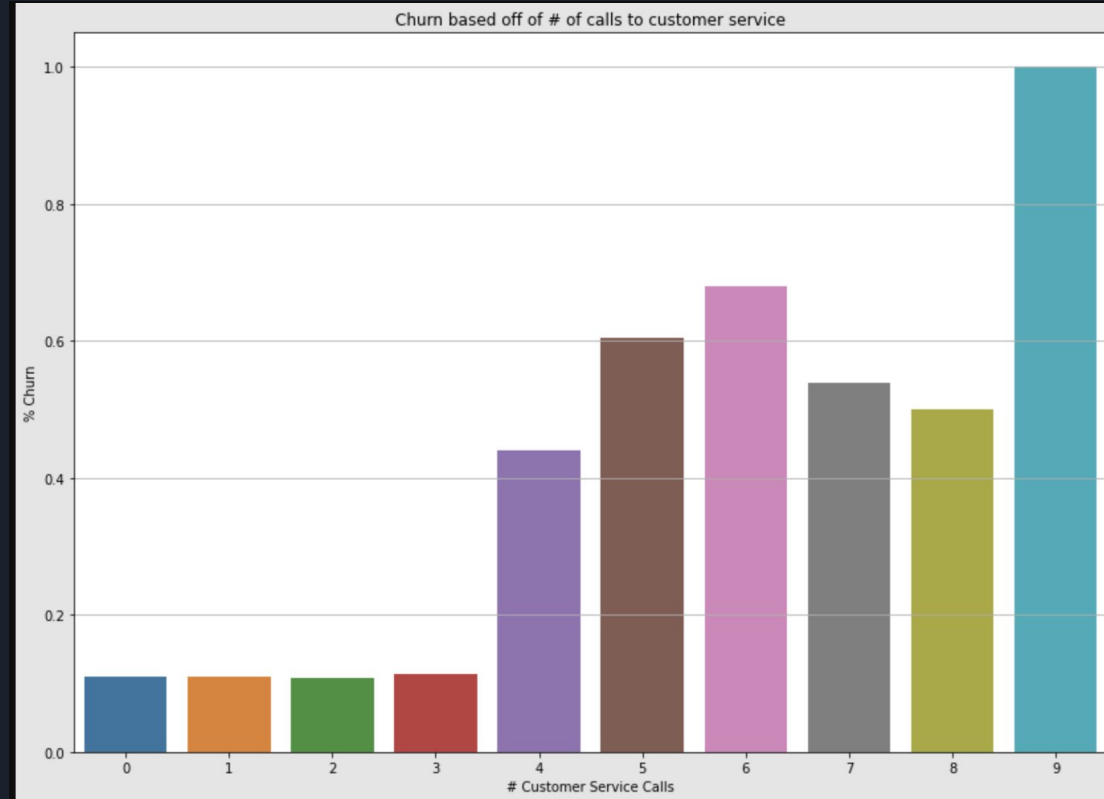
Relationship between Churn and charge

- Correlation between churn and total average daily charge was 0.22 (22%)
- Customers that paid more on average were more likely to churn than customers that paid less.



Relationship between customer service and churn

- Correlation between churn and calls to customer service was 0.24 (24%)
- After 3 calls to customer service, the % of customers that churned rose to well over 40%, eventually completely churning at 9 calls





Model benefits and drawbacks

Pros

- High degree of accuracy at 94%
- Performs well at identifying customers that will not churn
- 95% precision
- 98% recall

Cons

- Dataset is skewed towards customers that do not churn.
- Does not perform well at identifying customers that will churn
- 88% Precision
- 69% recall

Recommendations





Recommendations

Focus on decreasing customer service calls by improving customer service quality

Run A/B testing and Market Research Online Communities to determine if feasible to reduce rates on day calls.

Continue to gather and analyze data utilizing time series and exponential smoothing to further increase accuracy of model