

# Telco Customer Churn Project

By David VH

# What are we trying to accomplish?

- ◎ Predict
- ◎ Reduce
- ◎ Strategize

# Data Set

## Telco Customer Churn for Quarter 3

- ◎ Demographics
- ◎ Status
- ◎ Services
- ◎ Population
- ◎ Location

# Data Cleaning

## Demographics

- ◎ Marriage Status
- ◎ # of Dependents
- ◎ Is the customer a senior citizen

## Location

- ◎ Zip Code
- ◎ Longitude/Latitude

## Services

- ◎ All Services
  - phone
  - internet
  - streaming
  - other
- ◎ Time with Telco (months)
- ◎ Billing info

## Status

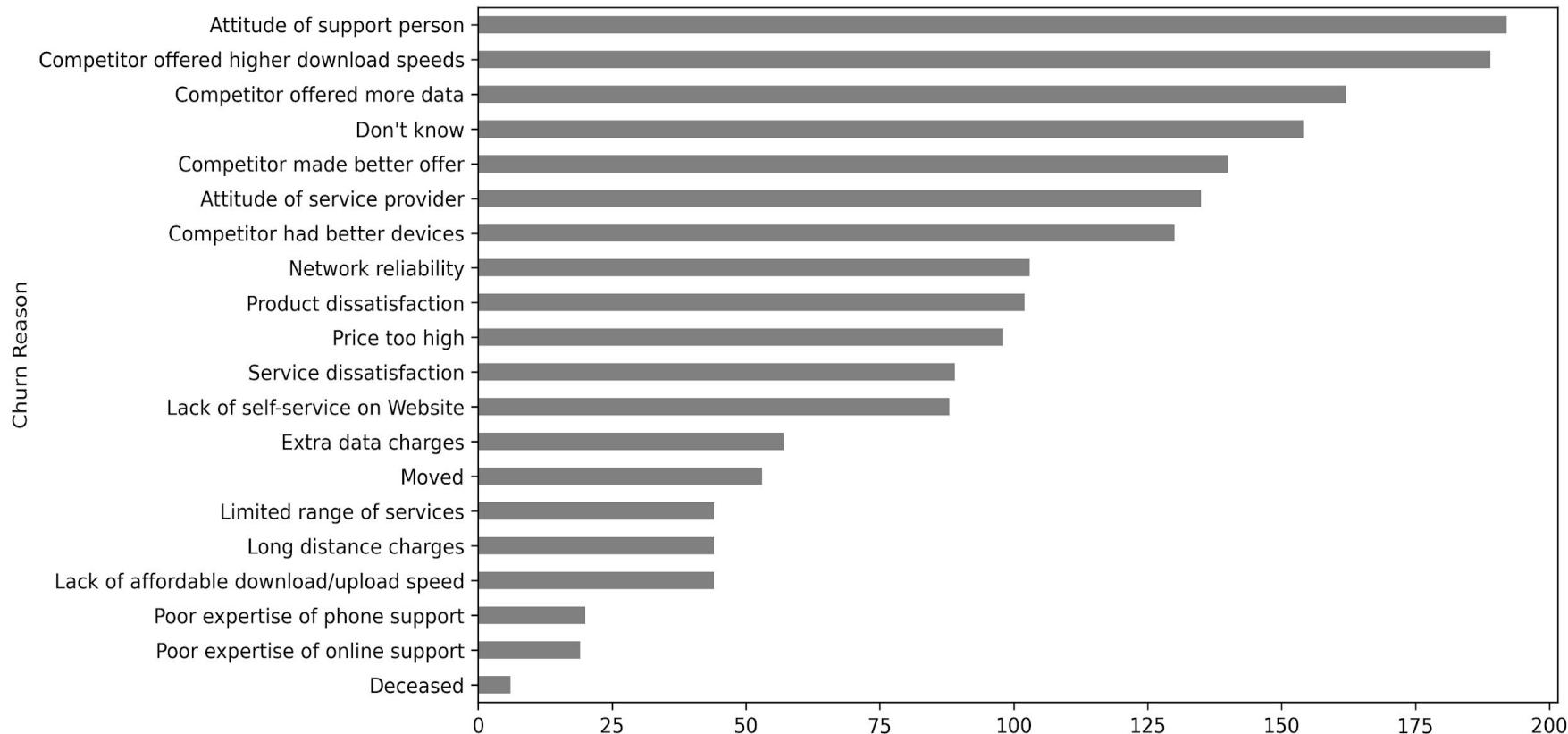
- ◎ **Churn Value**
  - Our target variable

# Exploring the data

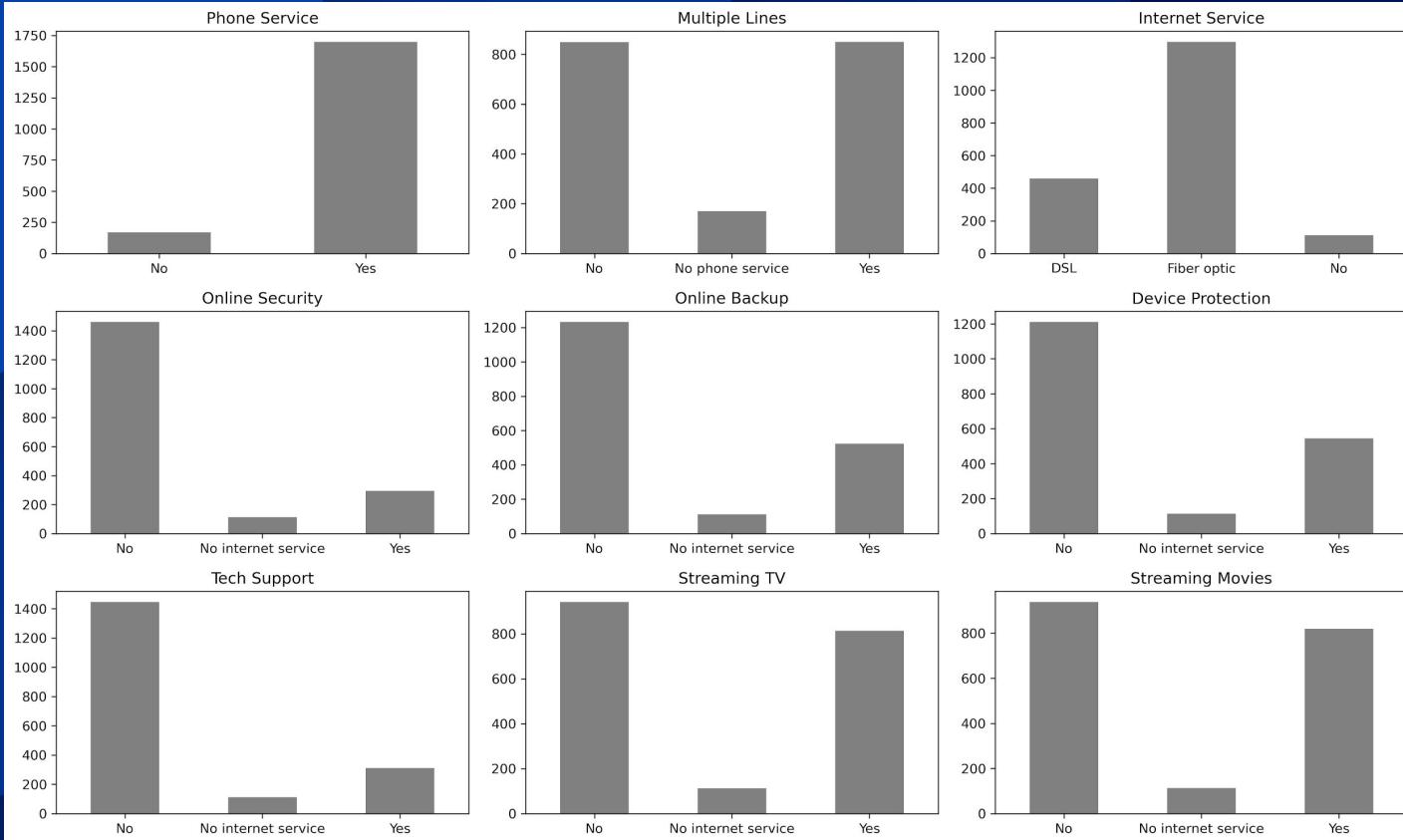
Two main reasons given for leaving:

- ◎ Competitor Offers
- ◎ Technical support issues

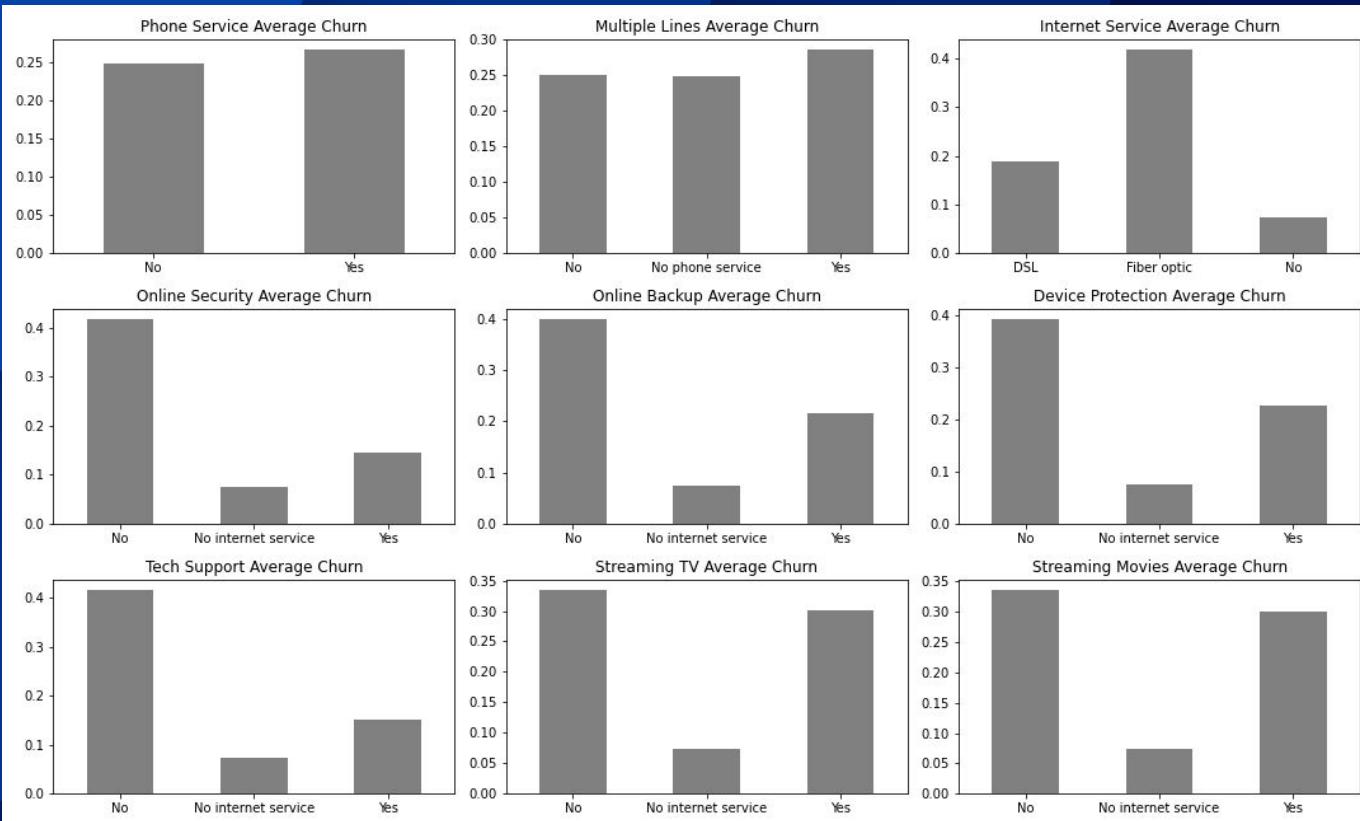
Total Churn based on reasons for churn



# Total churn per service



# Average Churn per service



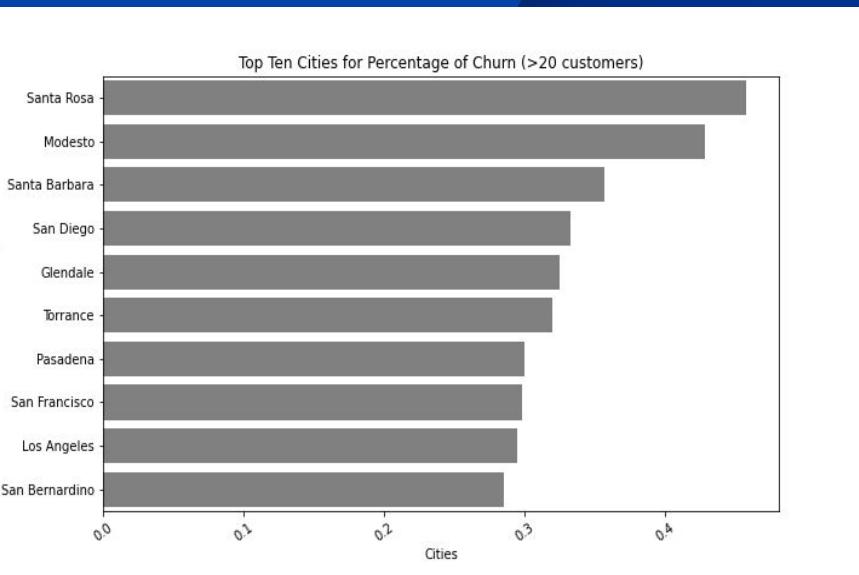
# Comparison of services

Takeaways:

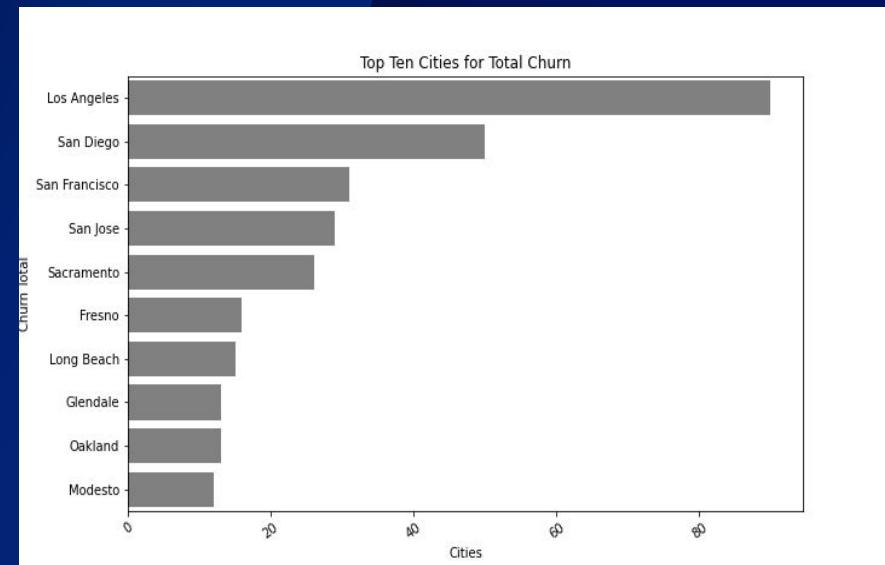
- ◎ Fiber optics customers twice as likely to leave!!
- ◎ Customers without optional services more likely to leave

# City Comparison

## Churn Percentage



## Churn Total



# **Creating the model**

Feature selection in model creation

- ◎ **Tenure Months**
- ◎ **Internet Service\_Fiber optic**
- ◎ **Contract\_Month-to-month**
- ◎ **Contract\_Two year**
- ◎ **Payment Method\_Electronic check**

(Selected using SelectKBest from scikit learn)

Models created for comparison

- ◎ **K Means Classifier**
- ◎ **Ridge Classifier**
- ◎ **Support Vector Classification**
- ◎ **Sequential Neural Network**

# Metrics

## True Positive Rate Comparison

Model	True Positive Rate
K Means	0.910079
<b>Ridge</b>	<b>0.914032</b>
SVC	0.898221
Sequential NN	0.907115

# Ridge Classifier Evaluation

- ④ Grid Search used to optimize alpha
  - alpha = 0.1
- ④ Compared to Dummy Classifier
  - Dummy TPR: 0.7480
  - Ridge TPR: 0.9140

# **Model Comparison to business rules**

Tested model against three basic business rules

1. Customers with Telco for 16 months or less will churn
2. Customers with Month-to-Month contract will churn
3. Customers with Month-to-Month contract AND fiber optics will churn

Model/Business Rules	True Positive Rate
<b>Ridge</b>	<b>0.914032</b>
Rule 1	0.762846
Rule 2	0.571146
Rule 3	0.794466

# Recommendations

# **Recommendation 1**

Customers with Fiber Optics should be given incentive to sign longer term contracts.

## **Recommendation 2**

Customers should be offered Technical support services as part of their plans more regularly.

# Future Improvements

- ④ Collect more data to make a better model
- ④ Increase more features for model creation
- ④ Research competitor offers

