

# CUSTOMER CHURN ANALYSIS



# HELLO!

**We Are,**

1. Anisha Alluru
2. Derrick Hung
3. Nithin Saseendran
4. Vishal Ramachandran



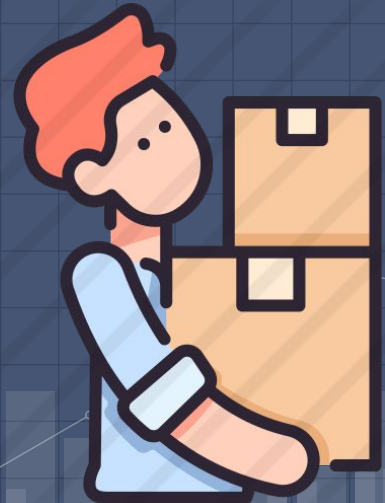
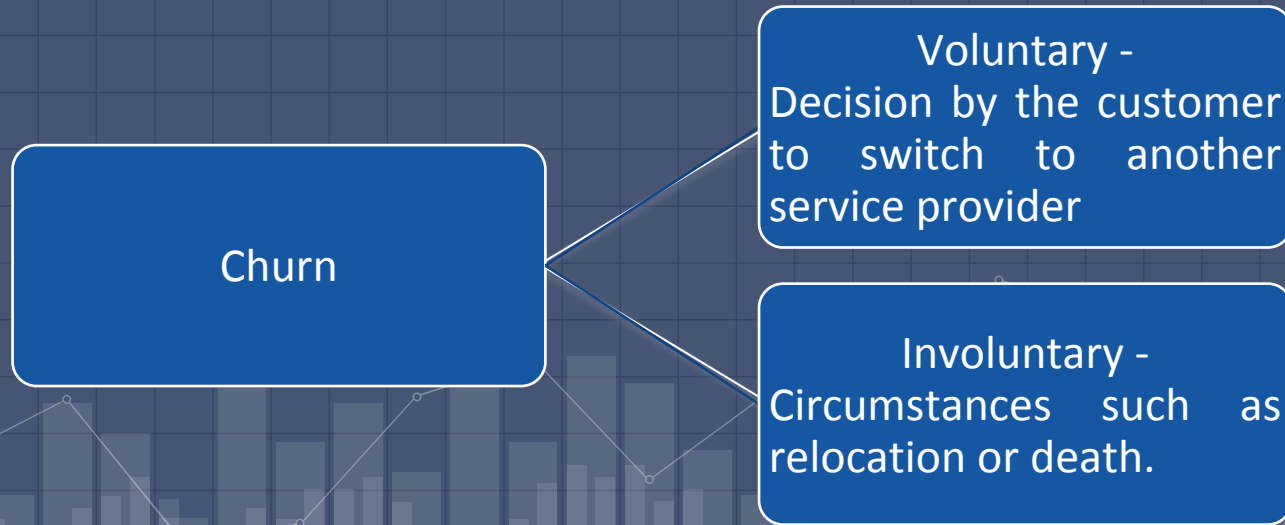
“Get closer than ever to your customers. So close, in fact, that you tell them what they need well before they realize it themselves.”

– Steve Jobs



# What is Churn?

When a customer ceases his or her relationship with a company.



# Why Churn Analysis?



- Acquiring a new customer is anywhere from five to 25 times more expensive than retaining an existing one - *Harvard Business Review*
- Increasing customer retention rates by 5% increases profits by 25% to 95% according to research done by Bain & Company

# DATASET

- Open Data with CC license from IBM Watson Analytics
- 7043 rows and 21 columns

customerid	gender	SeniorCitiz	Partner	Dependent	tenure	PhoneServ	MultipleLi	InternetSe	OnlineSect	OnlineBac	DevicePro	TechSupp	Streaming	StreamingI	Contract	PaperlessE	PaymentM	MonthlyCh	TotalCharg	Churn
7590-VHVI	Female	0	Yes	No	1	No	No phone	DSL	No	Yes	No	No	No	No	Month-to-	Yes	Electronic	29.85	29.85	No
5575-GNV	Male	0	No	No	34	Yes	No	DSL	Yes	No	Yes	No	No	No	One year	No	Mailed che	56.95	1889.5	No
3668-QPYI	Male	0	No	No	2	Yes	No	DSL	Yes	Yes	No	No	No	No	Month-to-	Yes	Mailed che	53.85	108.15	Yes
7795-CFO	Male	0	No	No	45	No	No phone	DSL	Yes	No	Yes	Yes	No	No	One year	No	Bank trans	42.3	1840.75	No
9237-HQIT	Female	0	No	No	2	Yes	No	Fiber optic	No	No	No	No	No	No	Month-to-	Yes	Electronic	70.7	151.65	Yes
9305-CDSI	Female	0	No	No	8	Yes	Yes	Fiber optic	No	No	Yes	No	Yes	Yes	Month-to-	Yes	Electronic	99.65	820.5	Yes
1452-KIOV	Male	0	No	Yes	22	Yes	Yes	Fiber optic	No	Yes	No	No	Yes	No	Month-to-	Yes	Credit card	89.1	1949.4	No
6713-OKO	Female	0	No	No	10	No	No phone	DSL	Yes	No	No	No	No	No	Month-to-	No	Mailed che	29.75	301.9	No
7892-POO	Female	0	Yes	No	28	Yes	Yes	Fiber optic	No	No	Yes	Yes	Yes	Yes	Month-to-	Yes	Electronic	104.8	3046.05	Yes
6388-TABC	Male	0	No	Yes	62	Yes	No	DSL	Yes	Yes	No	No	No	No	One year	No	Bank trans	56.15	3487.95	No
9763-GRSI	Male	0	Yes	Yes	13	Yes	No	DSL	Yes	No	No	No	No	No	Month-to-	Yes	Mailed che	49.95	587.45	No
7469-LKBC	Male	0	No	No	16	Yes	No	No	No interne	No interne	No interne	No interne	No interne	No interne	Two year	No	Credit card	18.95	326.8	No

# DATA CLEANING

NULL Value Check

Deleted 11 non-churn rows with null values for 'Total Charges'

Internet Service = "No"

Marked associated services of Internet service to "No" when internet service is not availed.

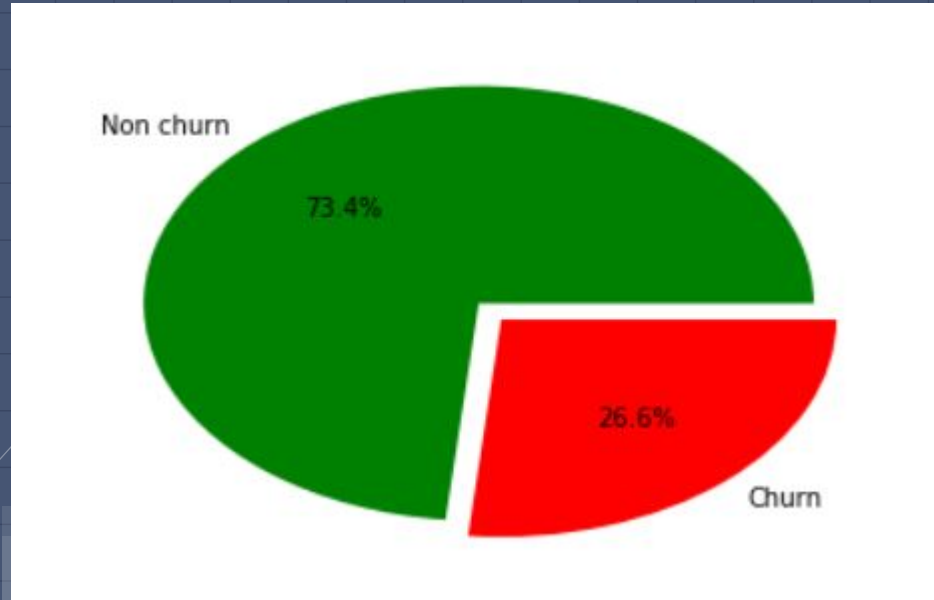
# EXPLORATORY DATA ANALYSIS



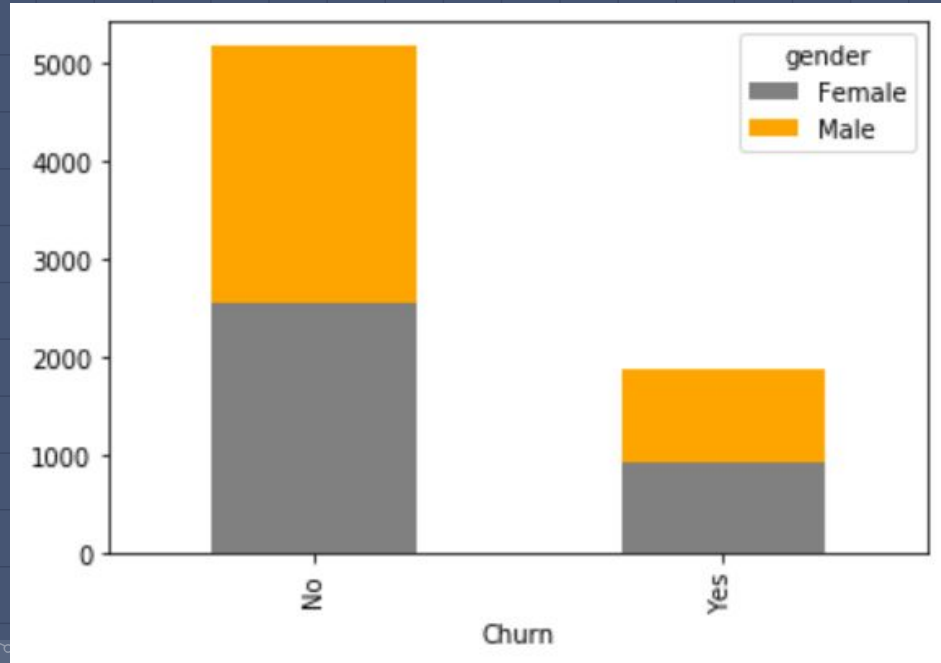


# CHURN AND NON-CHURN CUSTOMERS

- 1869 churn customers
- 5163 non-churn customers

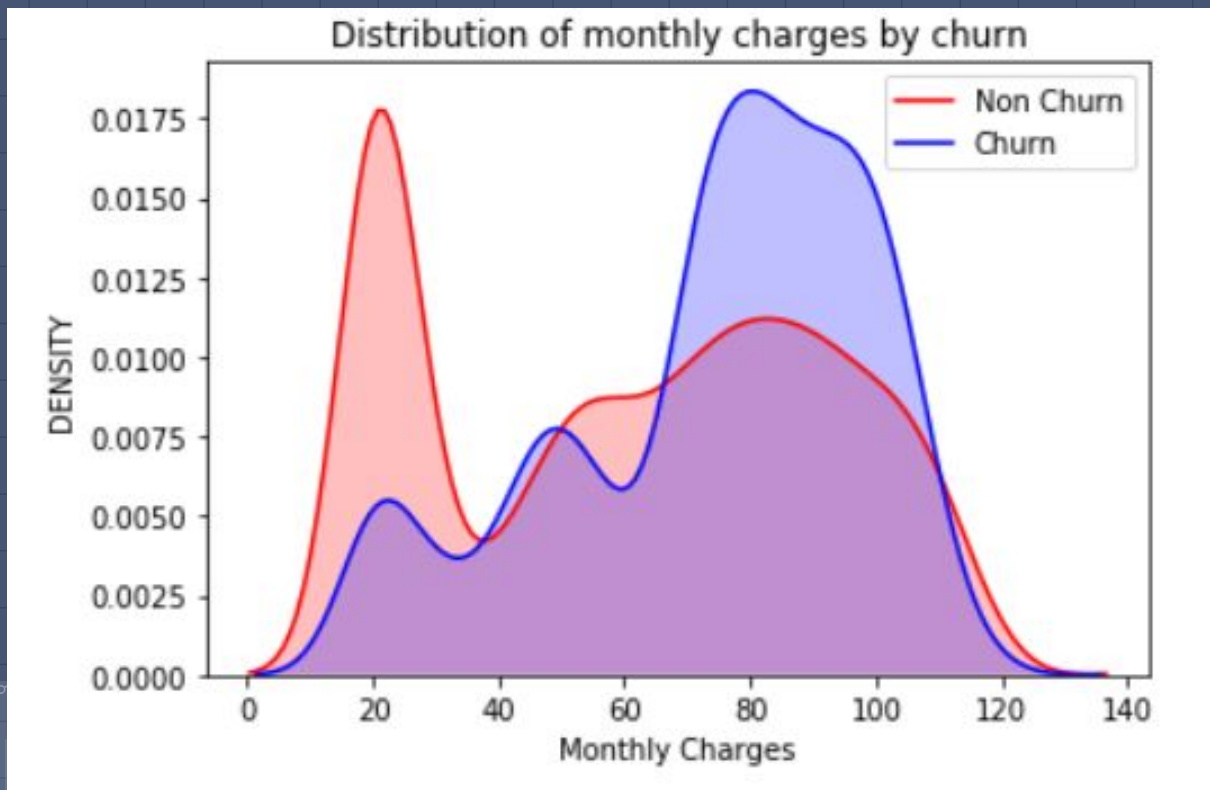


# CHURN AND NON-CHURN BY GENDER



Gender is equally divided among both churn and non churn customers showing that gender might not have an relation with churn.

# DISTRIBUTION OF MONTHLY CHARGES



Customers who pay high monthly charges seem to have a greater tendency to move out.

Let's see if we can confirm this...

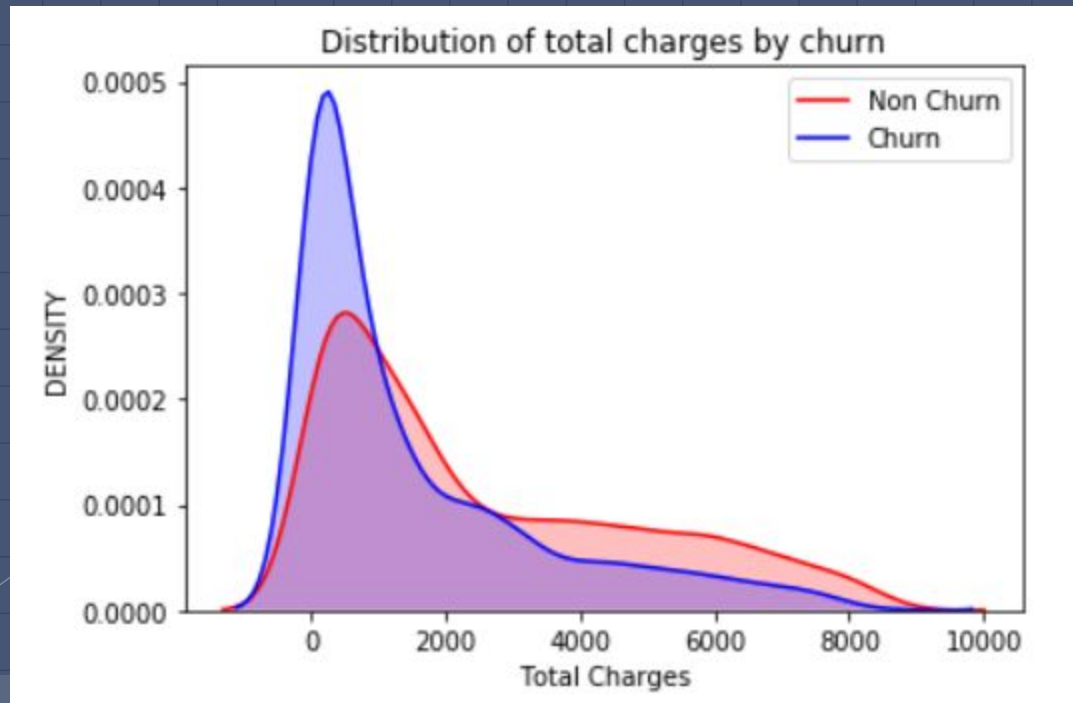
# IMPACT OF TOTAL CHARGES

Hmm...This is strange.

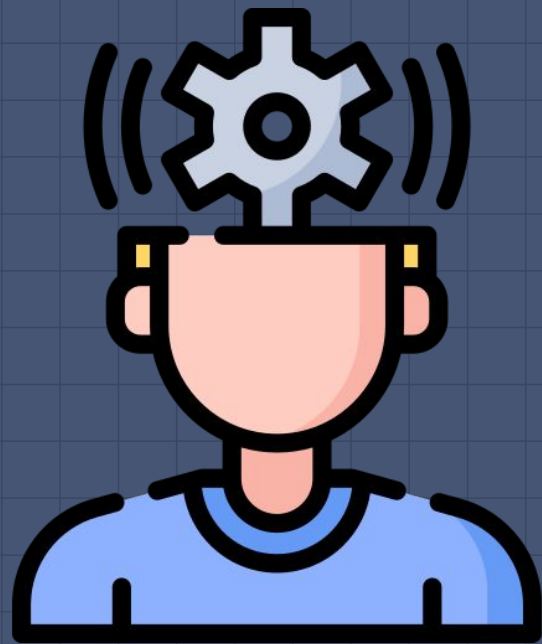
There is a higher concentration of churn in lower end of total charges.

Median\_Churn = 703

Median\_Nonchurn = 1683

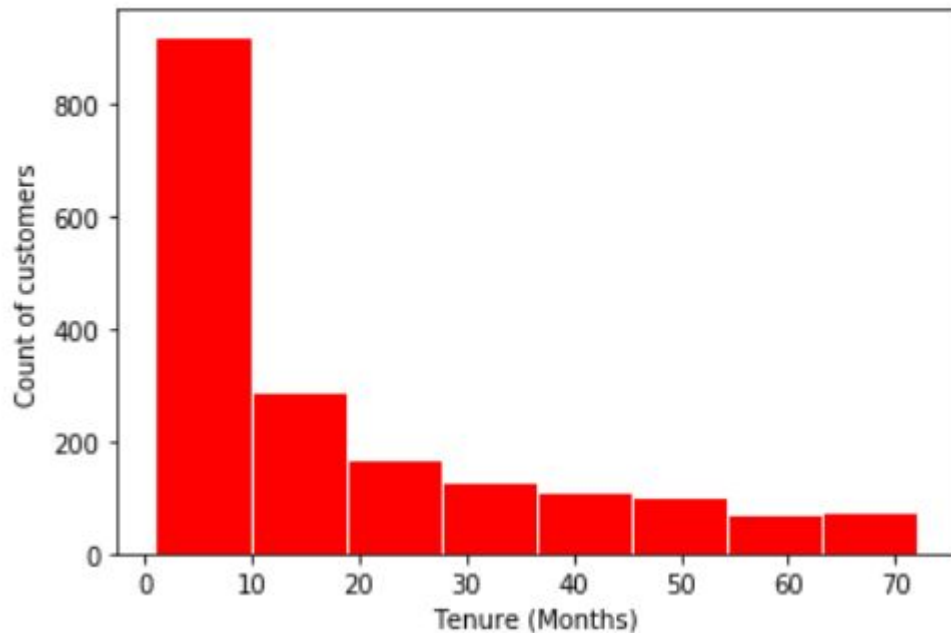


Why is there a higher concentration of churn in the lower end of total charges?



# IMPACT OF TENURE ON CHURN CUSTOMERS

Distribution of tenure among churn customers

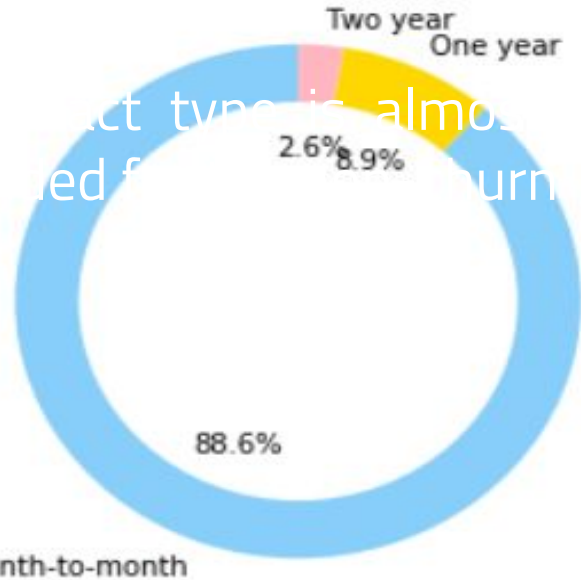


That makes sense...

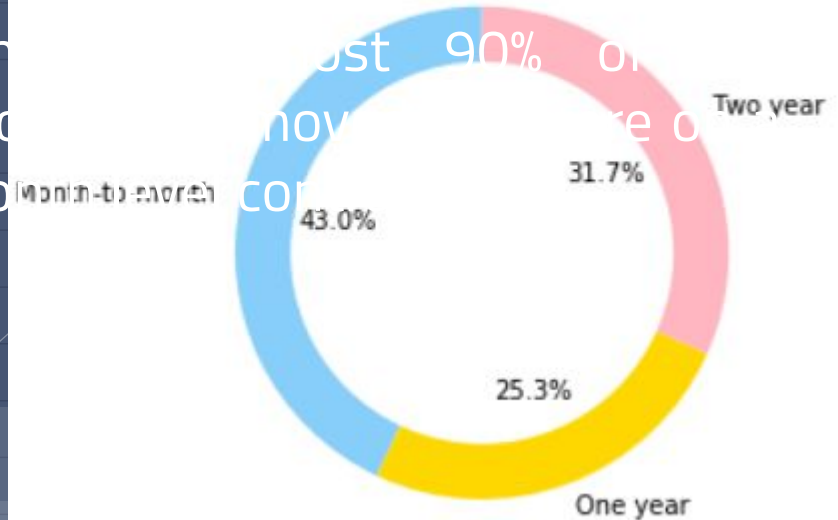
Since most of the people who left had a very small tenure, their total charges were also low.

# IMPACT OF CONTRACT TYPE

## Contract type in churn

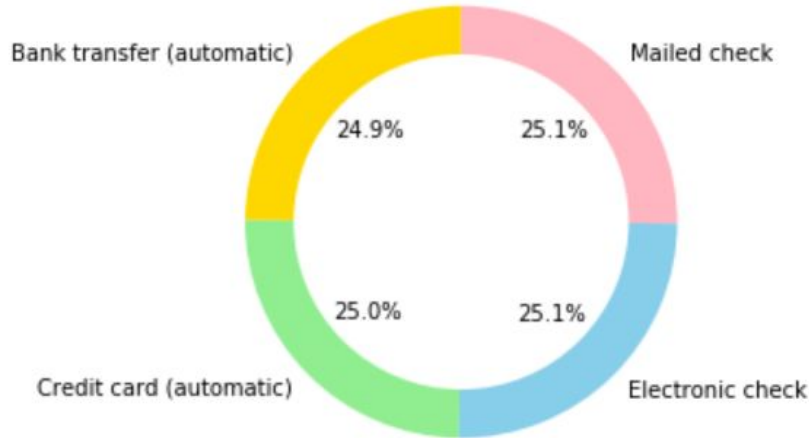


## Contract type in non churn

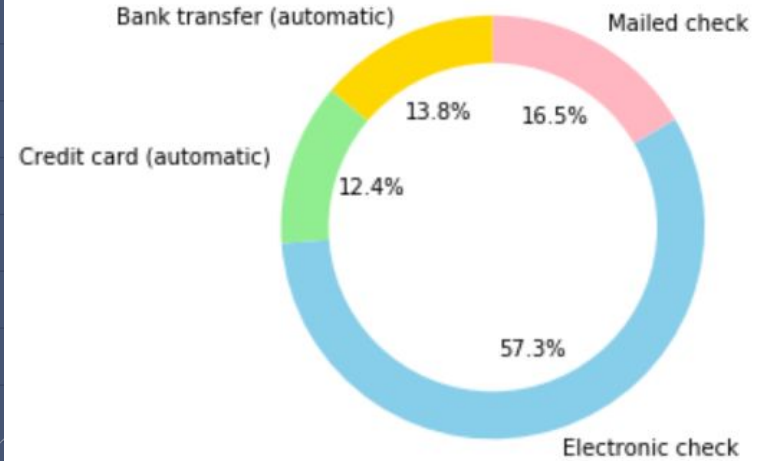


# PAYMENT METHOD DISTRIBUTION

Payment method in non churn



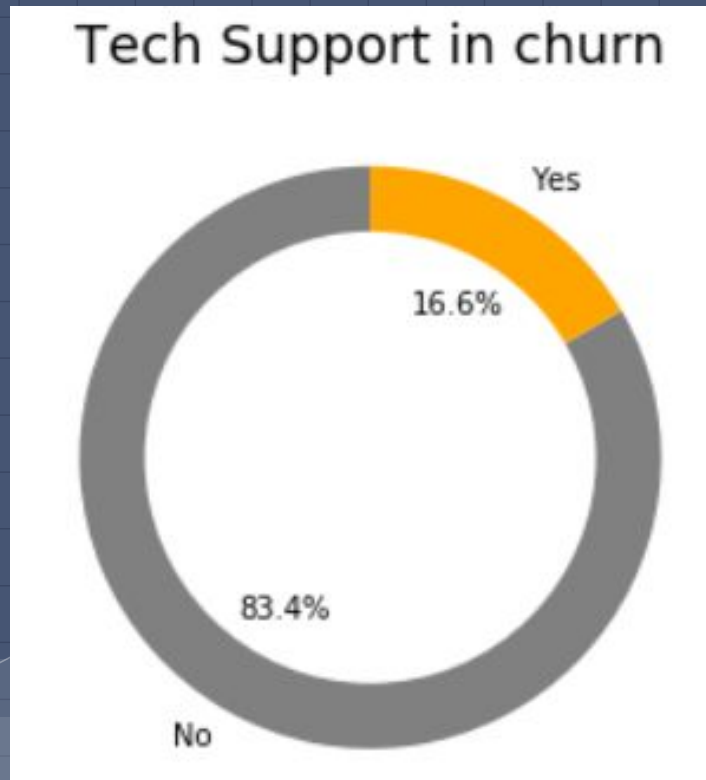
Payment method in churn



There seems to be a greater tendency among churn customers to use electronic check to make payments.



# DID CUSTOMERS CONTACT TECH SUPPORT?

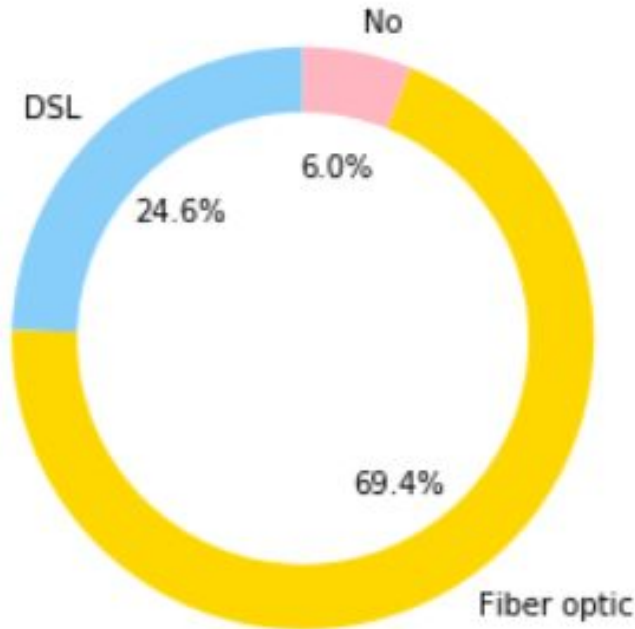


Not really !!

Only 16.6% of the churn customers have reached out to the technical support which implies customers didn't leave due to technical issues.

# WHICH INTERNET SERVICE TYPE DID THEY USE?

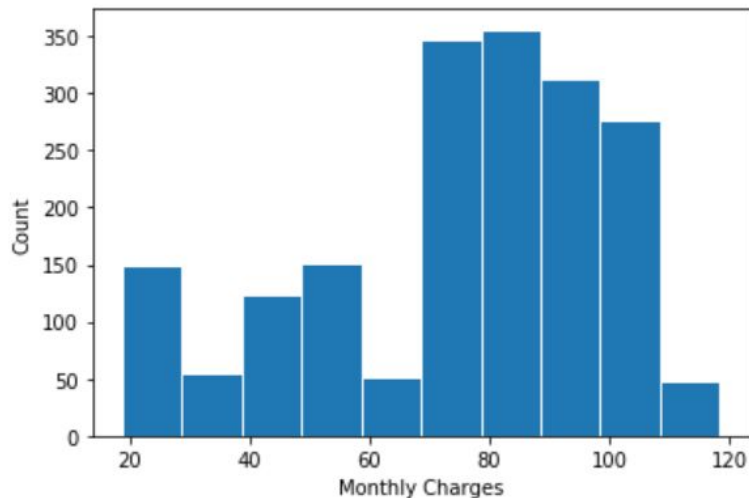
Internet service in churn



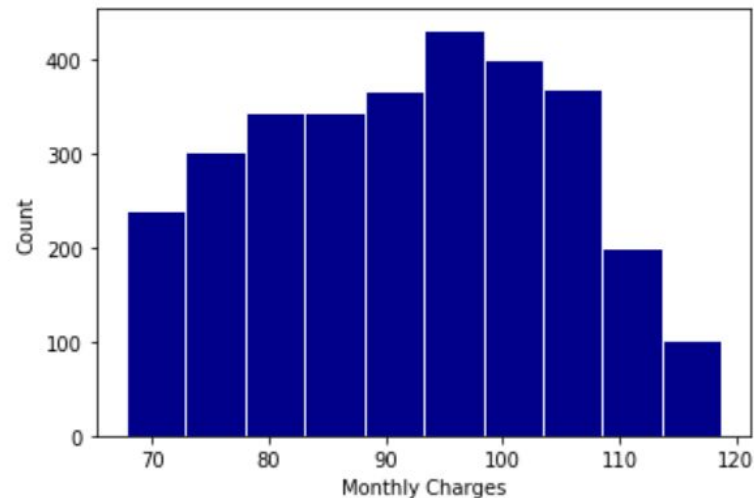
Majority of the customers who left were using Fiber optic internet service.

# WHAT WAS THE PROBLEM WITH FIBRE OPTICS?

Distribution of monthly charges for Churn "Yes"



Distribution of Monthly charges of Fiber Optic Service



...it is costly and the dense region of monthly charges of Churn "Yes" corresponds to the range of fiber optics monthly charges.

# MODEL IMPLEMENTATION

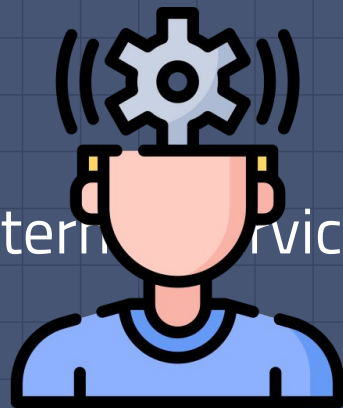
# RANDOM FOREST MODEL

- Split the data into train (75%) and test (25%) sets
- Obtained an AUC of 0.81
- Top 6 features:

	importance
<b>TotalCharges</b>	0.162047
<b>MonthlyCharges</b>	0.151360
<b>tenure</b>	0.138866
<b>Contract_Month-to-month</b>	0.068604
<b>InternetService_Fiber optic</b>	0.038668
<b>PaymentMethod_Electronic check</b>	0.030926

# Who discontinued services?

1. Customers on monthly contracts.
2. Customers who opted for Fiber optics internet service incurring higher monthly charges.



# RECOMMENDATION

1. Develop economic plans for Fiber optic service.
2. Offer discounts to customers opting for yearly contracts.



# THANKS!

**Any questions?**

