Análise do Dataset: Telco Customer Churn

Dados de clientes que cancelaram contrato, ou não, com uma empresa de telecomunicação.

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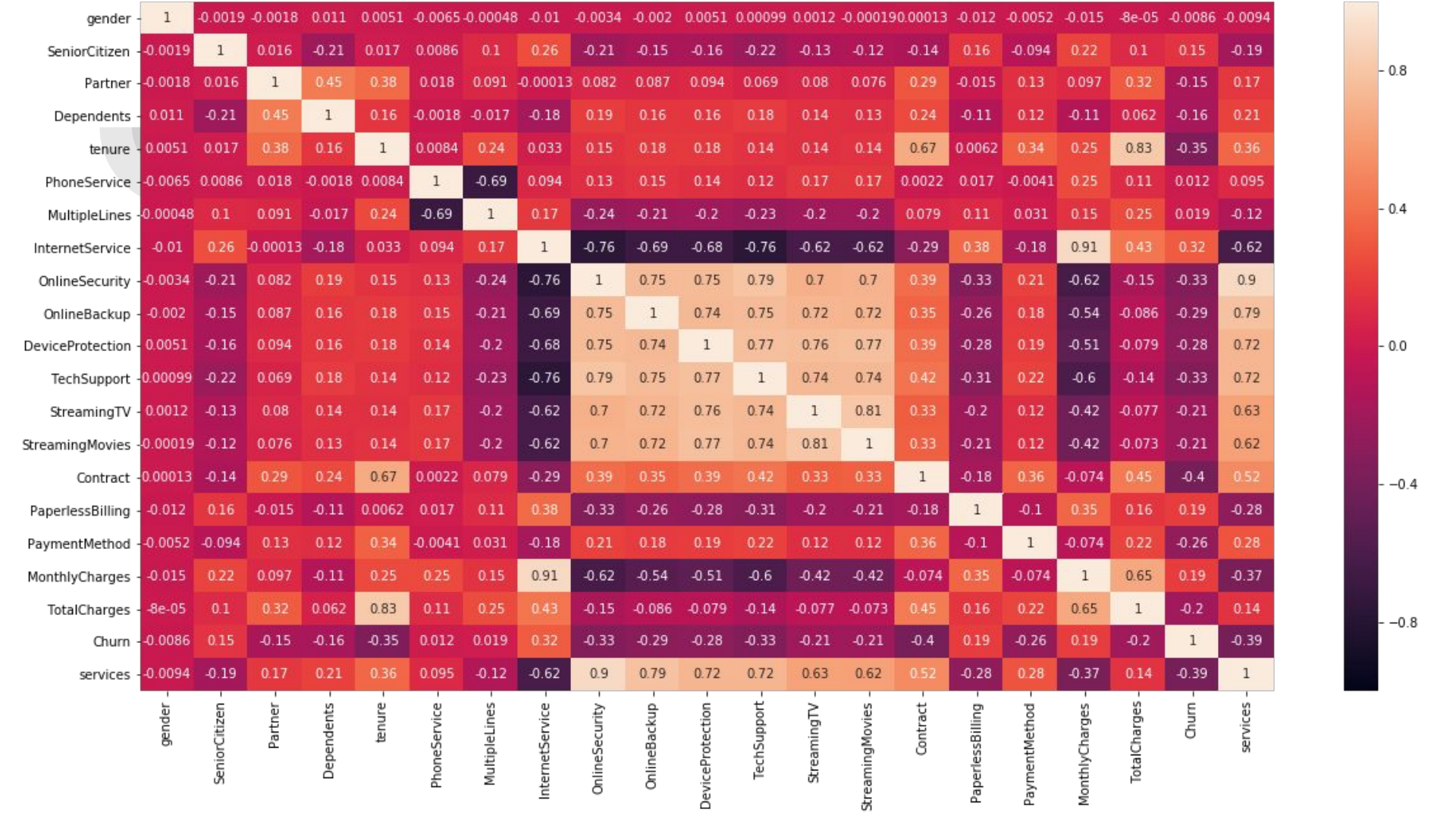
Dataset

	customerID	gender	SeniorCitizen	Partner	Dependents	tenure	PhoneService	MultipleLines	InternetService	OnlineSecurity	OnlineBackup
0	7590-VHVEG	Female	0	Yes	No	1	No	No phone service	DSL	No	Yes
1	5575-GNVDE	Male	0	No	No	34	Yes	No	DSL	Yes	No
2	3668-QPYBK	Male	0	No	No	2	Yes	No	DSL	Yes	Yes

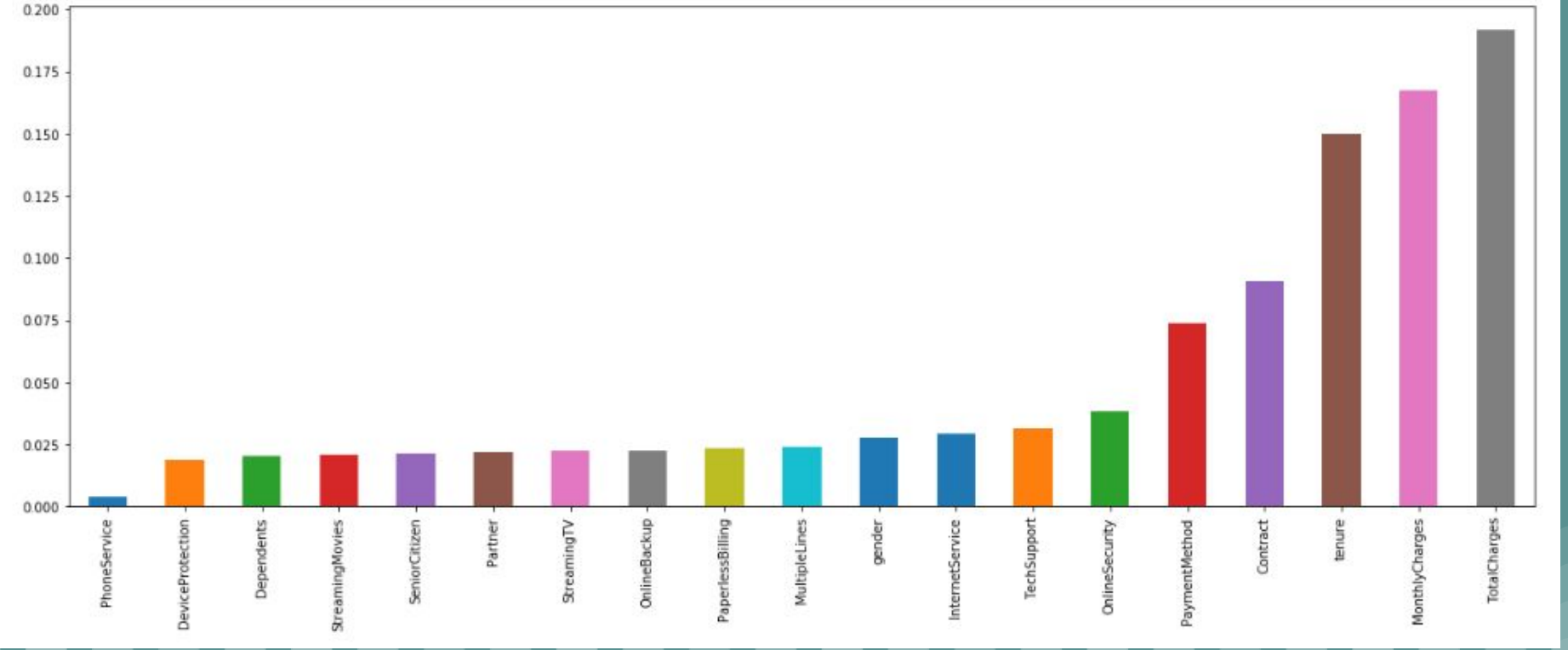
	DeviceProtection	TechSupport	StreamingTV	StreamingMovies	Contract	PaperlessBilling	PaymentMethod	MonthlyCharges	TotalCharges	Churn
0	No	No	No	No	Month-to-month	Yes	Electronic check	29.85	29.85	No
1	Yes	No	No	No	One year	No	Mailed check	56.95	1889.5	No
2	No	No	No	No	Month-to-month	Yes	Mailed check	53.85	108.15	Yes

shape: (7043, 21)
SeniorCitizen - Se a pessoa é idosa ou não
Partner - Se o cliente possui parceiro
tenure - Total de meses que o cliente ficou na empresa
PaperlessBilling - Se recebe faturas em papel
Churn - Se o cliente cancelou ou não o serviço


gender 1 -0.0019 -0.0018 0.011 0.0051 -0.0065 -0.00048 -0.01 -0.0034 -0.002 0.0051 0.00099 0.0012 -0.00019 0.00013 -0.012 -0.0052 -0.015 -8e-05 -0.0086 -0.0094
SeniorCitizen -0.0019 1 0.016 -0.21 0.017 0.0086 0.1 0.26 -0.21 -0.15 -0.16 -0.22 -0.13 -0.12 -0.14 0.16 -0.094 0.22 0.1 0.15 -0.19
Partner -0.0018 0.016 1 0.45 0.38 0.018 0.091 -0.00013 0.082 0.087 0.094 0.069 0.08 0.076 0.29 -0.015 0.13 0.097 0.32 -0.15 0.17
Dependents 0.011 -0.21 0.45 1 0.16 -0.0018 -0.017 -0.18 0.19 0.16 0.16 0.18 0.14 0.13 0.24 -0.11 0.12 -0.11 0.062 -0.16 0.21
tenure 0.0051 0.017 0.38 0.16 1 0.0084 0.24 0.033 0.15 0.18 0.18 0.14 0.14 0.14 0.67 0.0062 0.34 0.25 0.83 -0.35 0.36
PhoneService -0.0065 0.0086 0.018 -0.0018 0.0084 1 -0.69 0.094 0.13 0.15 0.14 0.12 0.17 0.17 0.0022 0.017 -0.0041 0.25 0.11 0.012 0.095
MultipleLines -0.00048 0.1 0.091 -0.017 0.24 -0.69 1 0.17 -0.24 -0.21 -0.2 -0.23 -0.2 -0.2 0.079 0.11 0.031 0.15 0.25 0.019 -0.12
InternetService -0.01 0.26 -0.00013 -0.18 0.033 0.094 0.17 1 -0.76 -0.69 -0.68 -0.76 -0.62 -0.62 -0.29 0.38 -0.18 0.91 0.43 0.32 -0.62
OnlineSecurity -0.0034 -0.21 0.082 0.19 0.15 0.13 -0.24 -0.76 1 0.75 0.75 0.79 0.7 0.7 0.39 -0.33 0.21 -0.62 -0.15 -0.33 0.9
OnlineBackup -0.002 -0.15 0.087 0.16 0.18 0.15 -0.21 -0.69 0.75 1 0.74 0.75 0.72 0.72 0.35 -0.26 0.18 -0.54 -0.086 -0.29 0.79
DeviceProtection 0.0051 -0.16 0.094 0.16 0.18 0.14 -0.2 -0.68 0.75 0.74 1 0.77 0.76 0.77 0.39 -0.28 0.19 -0.51 -0.079 -0.28 0.72
TechSupport 0.00099 -0.22 0.069 0.18 0.14 0.12 -0.23 -0.76 0.79 0.75 0.77 1 0.74 0.74 0.42 -0.31 0.22 -0.6 -0.14 -0.33 0.72
StreamingTV 0.0012 -0.13 0.08 0.14 0.14 0.17 -0.2 -0.62 0.7 0.72 0.76 0.74 1 0.81 0.33 -0.2 0.12 -0.42 -0.077 -0.21 0.63
StreamingMovies -0.00019 -0.12 0.076 0.13 0.14 0.17 -0.2 -0.62 0.7 0.72 0.77 0.74 0.81 1 0.33 -0.21 0.12 -0.42 -0.073 -0.21 0.62
Contract 0.00013 -0.14 0.29 0.24 0.67 0.0022 0.079 -0.29 0.39 0.35 0.39 0.42 0.33 0.33 1 -0.18 0.36 -0.074 0.45 -0.4 0.52
PaperlessBilling -0.012 0.16 -0.015 -0.11 0.0062 0.017 0.11 0.38 -0.33 -0.26 -0.28 -0.31 -0.2 -0.21 -0.18 1 -0.1 0.35 0.16 0.19 -0.28
PaymentMethod -0.0052 -0.094 0.13 0.12 0.34 -0.0041 0.031 -0.18 0.21 0.18 0.19 0.22 0.12 0.12 0.36 -0.1 1 -0.074 0.22 -0.26 0.28
MonthlyCharges -0.015 0.22 0.097 -0.11 0.25 0.25 0.15 0.91 -0.62 -0.54 -0.51 -0.6 -0.42 -0.42 -0.074 0.35 -0.074 1 0.65 0.19 -0.37
TotalCharges -8e-05 0.1 0.32 0.062 0.83 0.11 0.25 0.43 -0.15 -0.086 -0.079 -0.14 -0.077 -0.073 0.45 0.16 0.22 0.65 1 -0.2 0.14
Churn -0.0086 0.15 -0.15 -0.16 -0.35 0.012 0.019 0.32 -0.33 -0.29 -0.28 -0.33 -0.21 -0.21 -0.4 0.19 -0.26 0.19 -0.2 1 -0.39
services -0.0094 -0.19 0.17 0.21 0.36 0.095 -0.12 -0.62 0.9 0.79 0.72 0.72 0.63 0.62 0.52 -0.28 0.28 -0.37 0.14 -0.39 1
gender
SeniorCitizen
Partner
Dependents
tenure
PhoneService
MultipleLines
InternetService
OnlineSecurity
OnlineBackup
DeviceProtection
TechSupport
StreamingTV
StreamingMovies
Contract
PaperlessBilling
PaymentMethod
MonthlyCharges
TotalCharges
Churn
services
0.8
0.4
0.0
−0.4
−0.8

Features Importantes

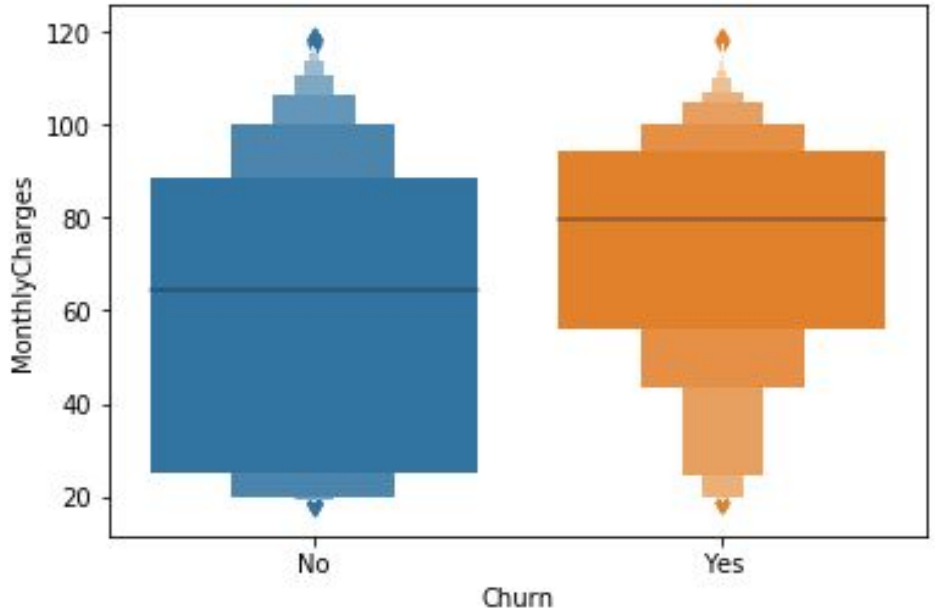
```
pd.Series(modelo.feature_importances_, features).sort_values().plot(figsize=(20,7),kind='bar');
```



Features Importantes: Monthly Charges

Os clientes perdidos pagavam uma mensalidade maior.

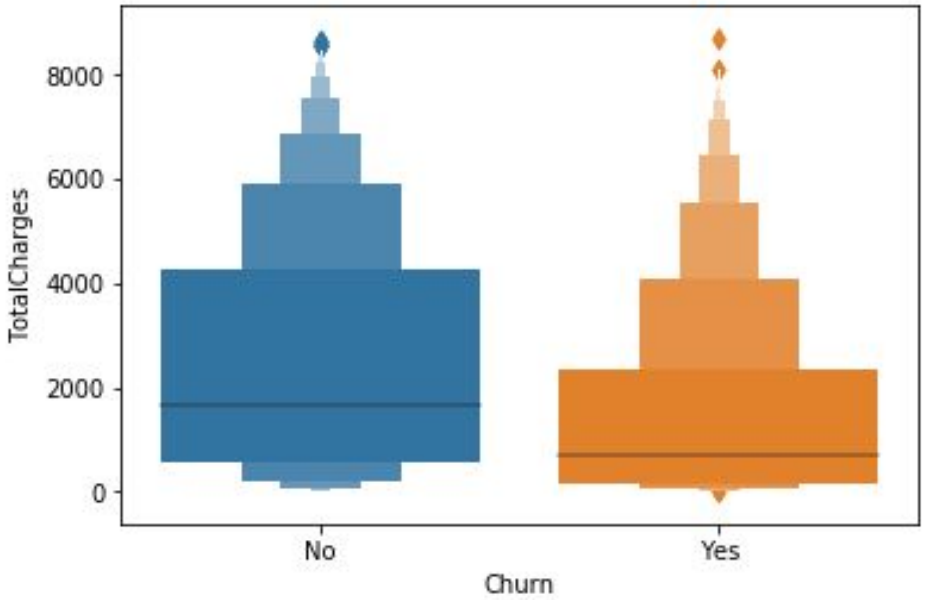
```
sns.boxenplot(y='MonthlyCharges', x='Churn', data=df_telco2);
```



Features Importantes: Total Charges

Clientes com um maior valor no total tendem a ficar na empresa. Pode se justificar com contratos mais longos, que levam à mais mensalidades.

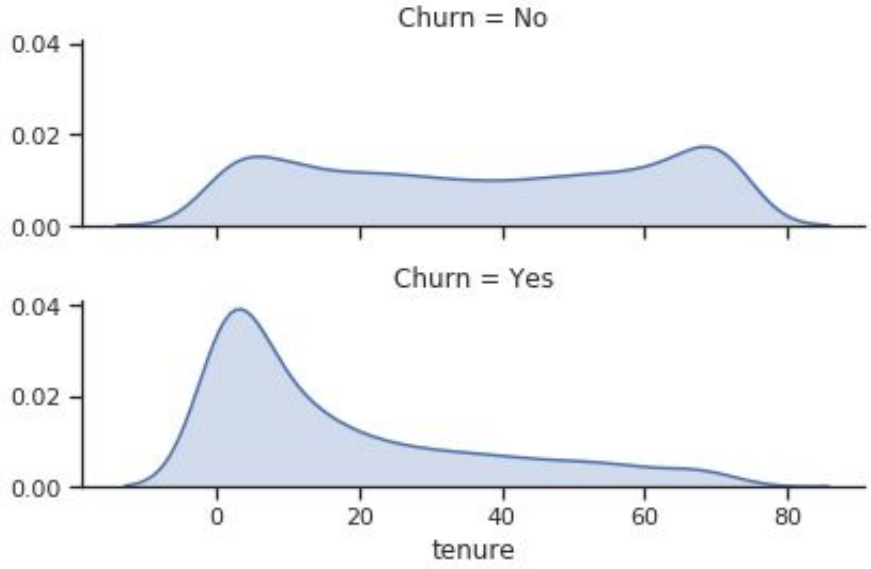
```
sns.boxenplot(y='TotalCharges', x='Churn', data=df_telco2);
```



Features Importantes: Tenure

Existe uma grande perda dos clientes logo nos primeiros meses.

```
g = sns.FacetGrid(df_telco, row='Churn', height=2, aspect=3)
g.map(sns.distplot, 'tenure', hist=False, kde_kws={'shade': True});
```

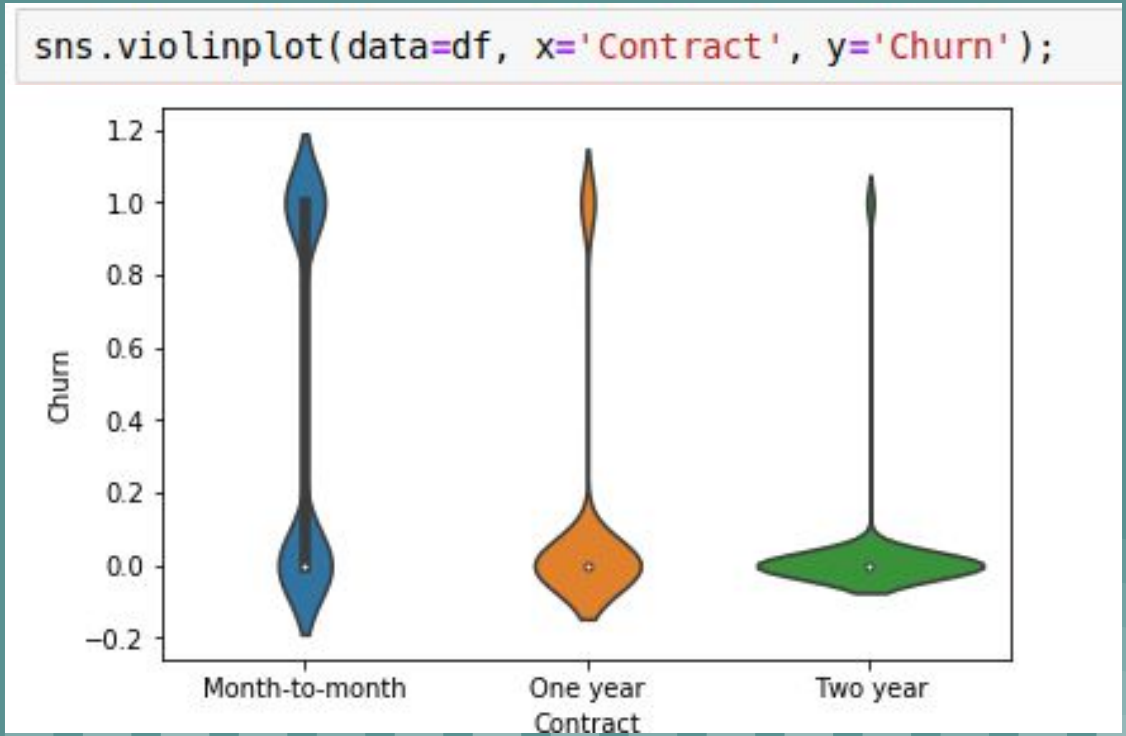


Features Importantes: Contract

Clientes que possuem contrato de um ou dois anos, em sua maioria, não cancelaram o serviço.

Cancelaram

Sim = 1
Não = 0



Obrigado pela atenção!