



The illustration shows a person with dark hair and glasses, wearing a blue shirt, sitting in a black office chair and working at a desk. There are three computer monitors on the desk. The top monitor displays a network diagram with blue boxes and wavy lines. The two bottom monitors display code or data in a dark theme. A small potted plant with green leaves is on the desk to the right. The background is a light blue circle.

Churn Ultimatum inc.

On a mission to uncover
hidden truths about
customer retention

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Business Case & Data
Overview

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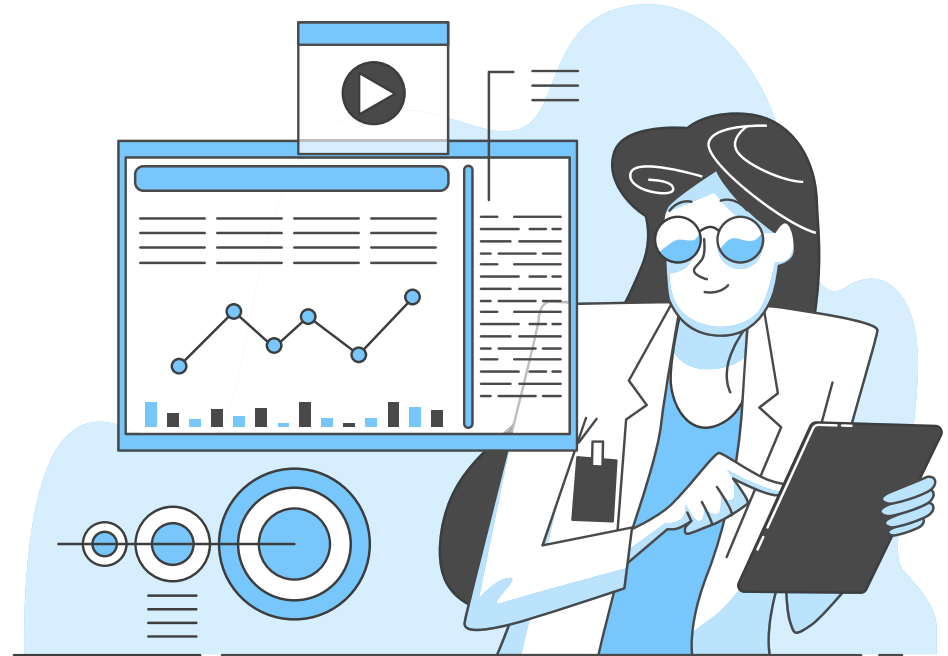
Key Insights

...

03

Conclusions & Next Steps

...



Understanding Churn



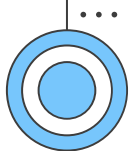
Identify Precisely

Focus on customers
who will most likely
churn



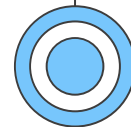
Wasted Resources

Ensure effective
allocation of
resources



Model Performance

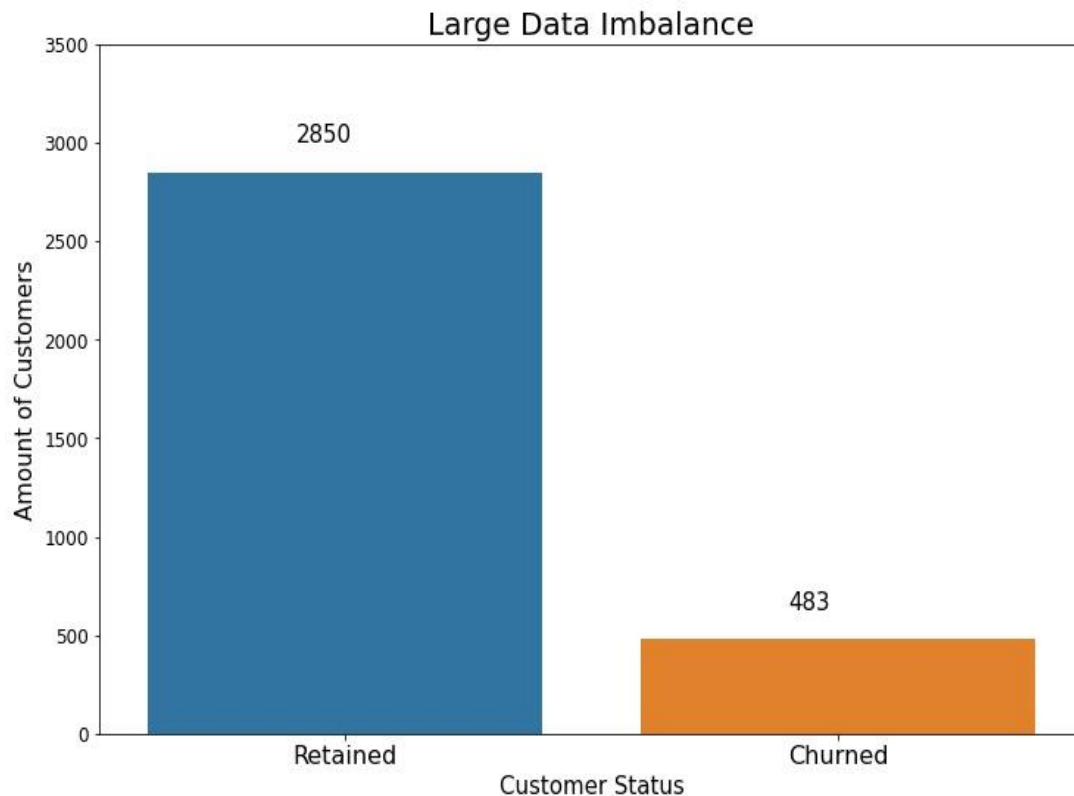
	Predicted: No-Churn	Predicted: Will Churn
Actual: No-Churn	Predicted not to churn correctly	Predicted to churn but actually not going to churn
Actual: Will Churn	Customer will churn and model did not predict it.	Predicted to churn correctly



Large Data Imbalance

Much **fewer churned** data points

Can be **difficult to predict** a minority class



Dummy Model

128 times predicted
customer would churn
but did not.....

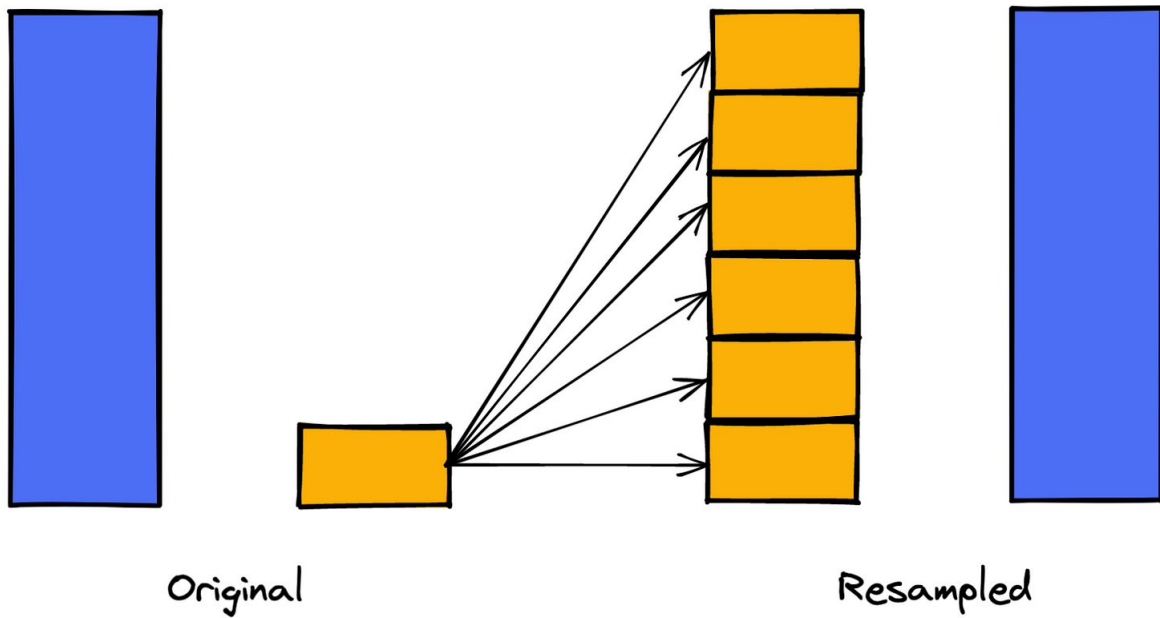
... or **128** times
resources wasted

0.13
Precision
score

	Predicted: No-Churn	Predicted: Will Churn
Actual: No-Churn	Predicted not to churn correctly 727	Predicted to churn incorrectly 128
Actual: Will Churn	Predicted to not churn incorrectly 123	Predicted to churn correctly 22

SMOTE

Oversampling



Final Model: test results

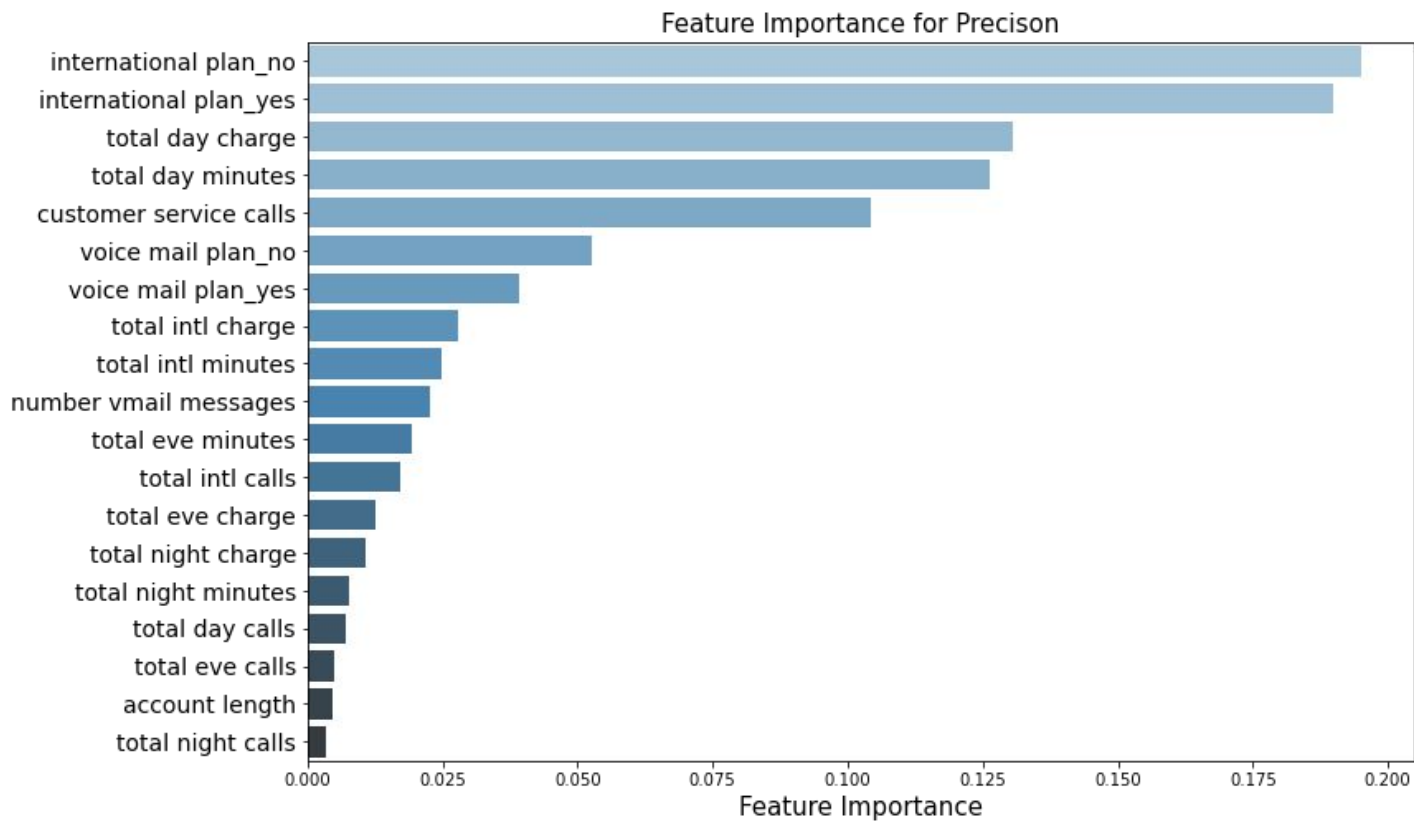
0 times predicted
customer would churn...
Model may be **overfit**

Final model **does not**
predict all churn

1.0 precision (.91
cross-val)

	Predicted: No-Churn	Predicted: Will Churn
Actual: No-Churn	Predicted not to churn correctly 855	Predicted to churn incorrectly 0
Actual: Will Churn	Predicted not to churn incorrectly 123	Predicted to churn correctly 21

Final Features

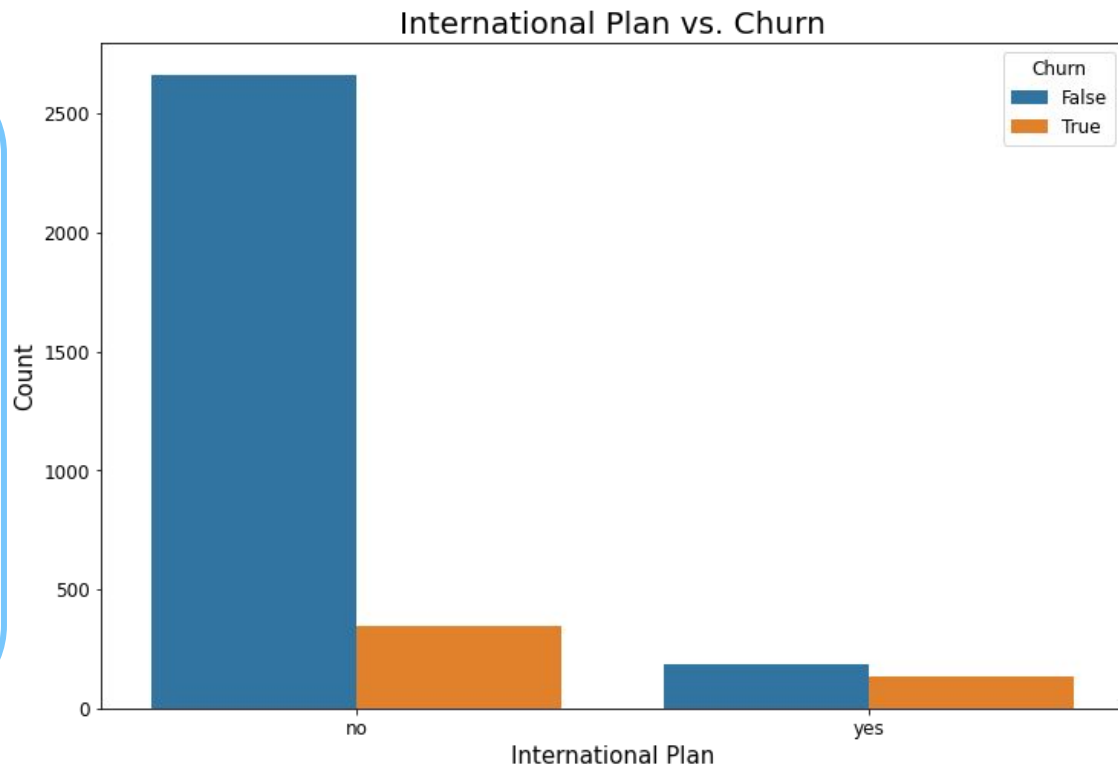


Final Features

Model shows highest importance for your **international plan**

Likely an area you will want to focus on

May want to consider an **indirect approach**



Conclusions

- **Precision** allows you to be confident with resource allocation
- Model is **precise** in targeting ACTUAL churn and not targeting FALSE churn. But still misses a lot of churn
- Model is more **precise** when it comes to international plan indicating this could be an area of concern.

Next Steps

Feature

Engineering

Experiment by adding, removing, merging or transforming features

Adjusting Model for recall

Tweak the model to miss less positive cases by trying different algorithms and parameters

Analyze location features

Certain locations could be more competitive or provide worse coverage



Thanks!

Do you have any questions?

For additional info, contact Max Ross on GitHub
(<https://github.com/ImMaxRoss>)

