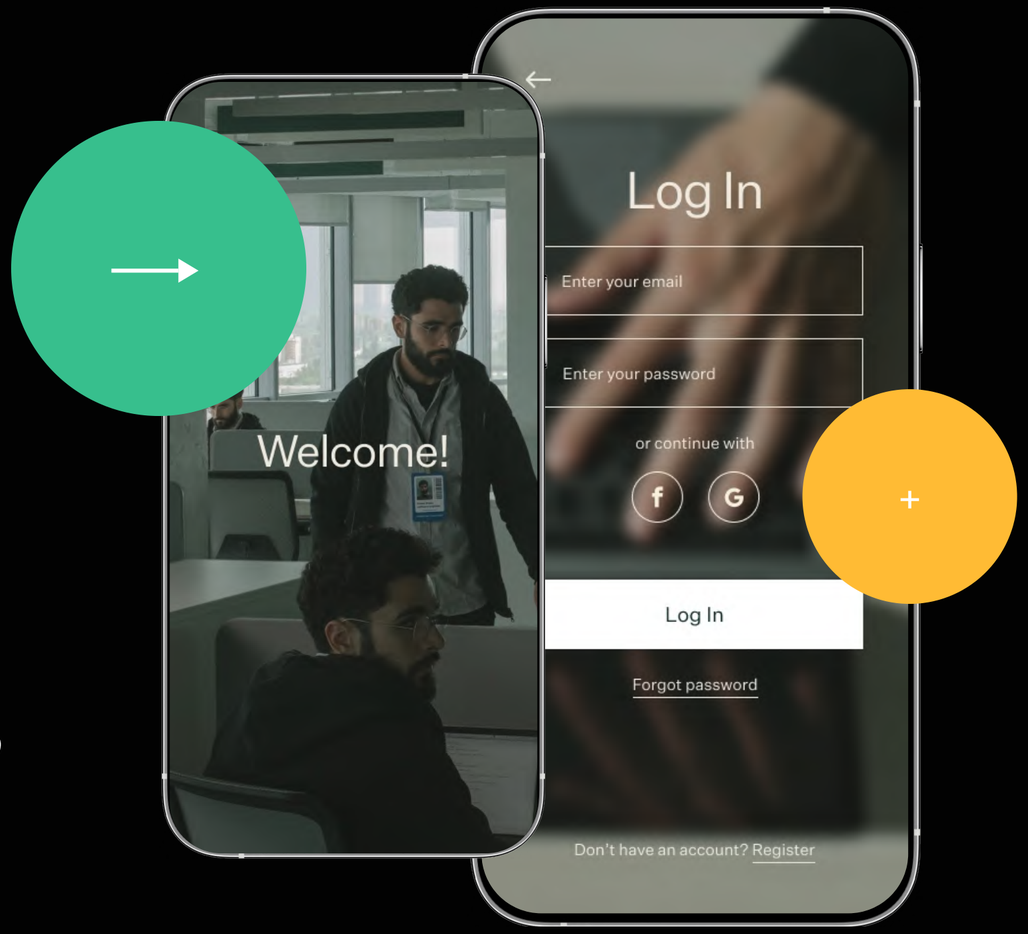
Dec 12th 2032

João Lousada

Zendesk Challenge

How well are we supporting our customers?



Try Pitch

Content

01 Problem Framing

02 Hypothesis Definition

03 Data Exploration and Transformation

04 Model

05 Key Results and Limitations

Try Pitch

Customer Service

"73 % of consumers will leave for a competitor after multiple poor interactions"

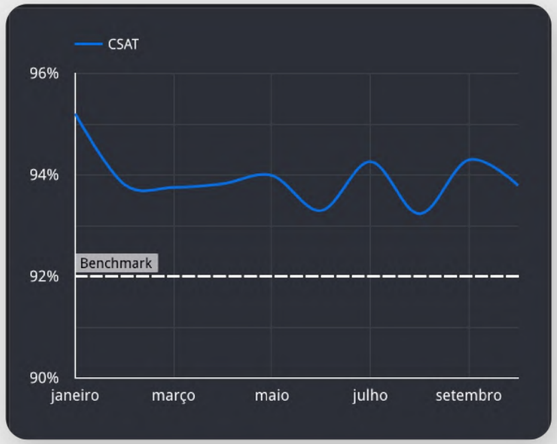
Zendesk Blog

01 Why it matters	Attract new business, boost retention and increase sales among existing customer base.
02 What is an excellent CX	Quick, easy, personalized and empathetic
03 Success Metrics	How can we measure performance and improve ?

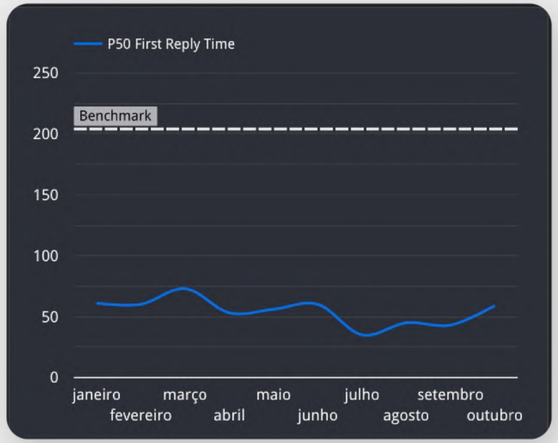
Try Pitch

KPIs

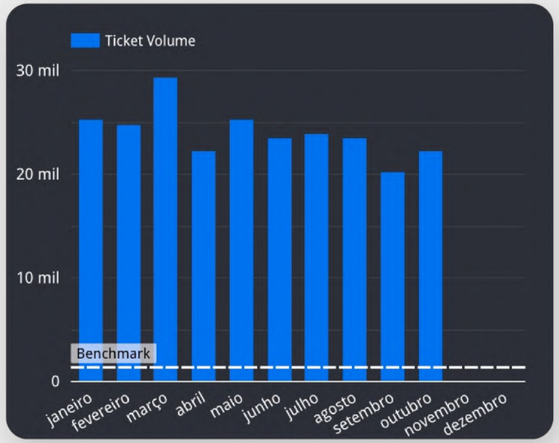
01



02

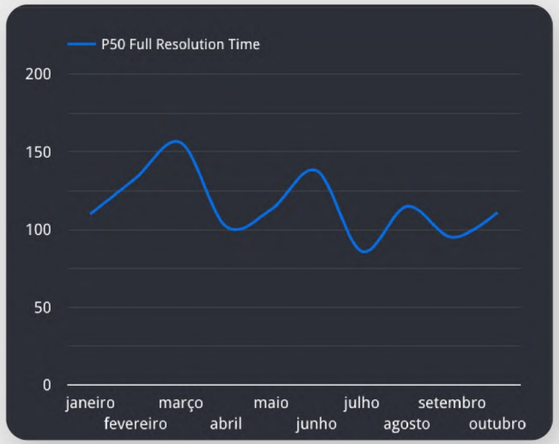


03



03

05



06

Benchmark data collected from Zendesk CX Trends Report 2023

Try Pitch

Channel Performance

01

Key takeaway

Although Full Resolution Time is extremely higher on the Web vs. Chat, it does not mean lower satisfaction

It is not safe to say that long resolution times, lead to lower satisfaction.

TicketChannel	TicketID	Response Rate	CSAT	FirstReplyTime	FullResolutionTime
chat	36,55%	22,54%	93,63	64	39
web	27,7%	21,62%	94,26	81	5 728
email	18,63%	17,55%	93,7	55	2 472
voice	13,68%	8,84%	95,81	16	14
api	1,98%	10,68%	91,37	76	1 766
twitter	0,85%	0%	-	15	45
facebook	0,34%	0%	-	13	56
help_center	0,26%	4,24%	88,89	214	2 478
mobile	+0%	9,09%	0	1 256	1 703

Channel performance broken down by main KPIs

Try Pitch

Agent Performance

01

Key takeaway

Main Hypothesis is that agent overload is tied to geography and that it leads to lower satisfaction.

Lower CSAT and high Avg. Tickets p/ Worker in Manila is evidence of possible understaffing.

	WorkerLocation	Record Count	CSAT	Response Rate	Avg Tickets p/ Worker	FullResolutionTime	FullResolutionTime
1.	Madison	40,72%	95,02%	19,5%	1 166,63	366	7 717,98
2.	Dublin	23,93%	94,58%	18,31%	1 556,62	88	3 670,46
3.	Manila	14,41%	88,14%	17,25%	3 852	7	1 188,06
4.	San Francisco - 989	7,61%	95,62%	20,18%	631,66	1 406	9 388,01
5.	Melbourne	5,93%	94,73%	17,68%	1 189,33	903	7 540,87
6.	London	4,6%	92,58%	20,59%	1 006,45	1 539	8 212,16
7.	Copenhagen	1,92%	96,51%	22,86%	2 316	149	4 525,13
8.	Montpellier	0,3%	97,52%	22,64%	355,5	9 066	16 337,47
9.	San Francisco - 1019	0,26%	79,31%	4,65%	89	363	4 689,85

Density of tickets and KPIs per Location

Try Pitch

Hypothesis

Satisfaction

When is it more likely that a customer gives feedback ?

Productivity

Based on resolution time, which can be automated ?

Performanc e

Are tickets being assigned in the right order ?

Agents

How can we make the life of agents easier ?

Try Pitch

Model Phases

Get Data

- Stored in BigQuery, imported into Looker and python bquery connector
- Imputed missing values

Explore Data

- KPI Report in Looker
- Histograms and pairplots
- Correlation Analysis

Prepare Data

Data Cleaning:

- Dropped null CustomerSatisfaction instances + open tickets
- LabelEncoder on Categorical Variables

Feature Transformation:

- applied logp1() on continuous variables

Model Data

- **Baseline Model:** Logistic Regression
- **Feature Engineering:** TimeAboveMean + Workload
- **Better Model:** Random Forest
- **Fine tuning** with Optuna

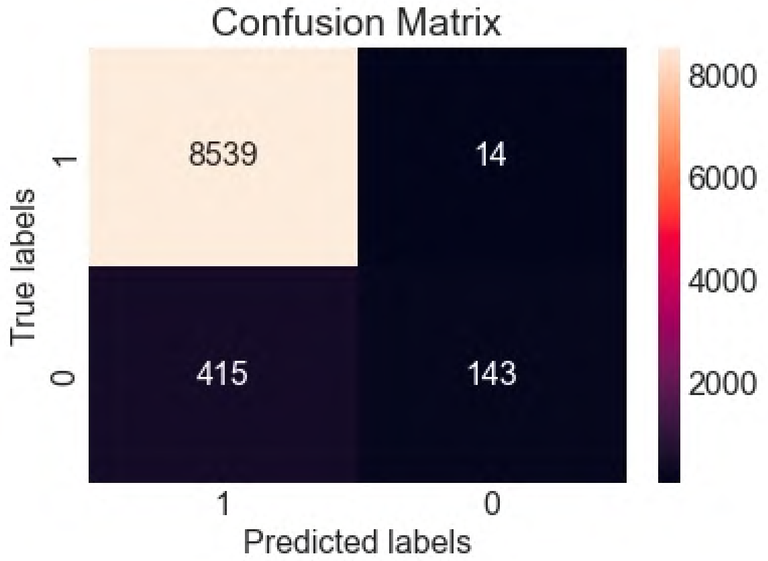
Try Pitch

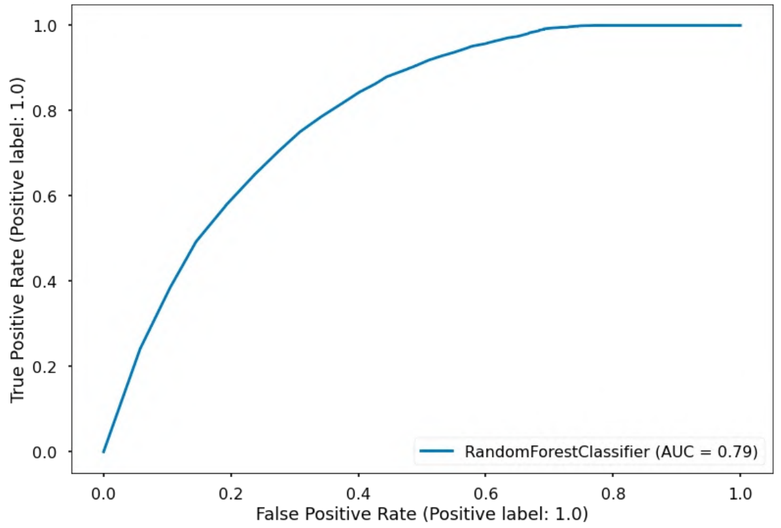
Model Results

Key takeaways

- **Precision**: 0.954
- **Recall**: 0.998
- **F1-Score**: 0.976
- **Accuracy**: 0.953l

- Imbalanced data set makes it hard to predict negative classes
- Considerable amount of False Positives, which is indicates the model is biased towards positive class





Try Pitch

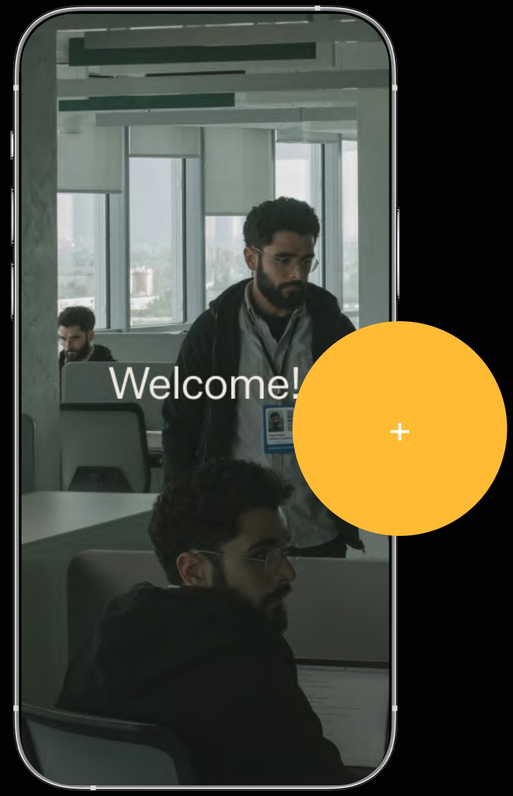
Limitations

Context	• Gain more business context • Understand better the biggest problems • Solid security program
Data	• Explore more data trends, i.e. combine more variables, multivariate analysis. • Gather more data: Product Area/Feature, Message Request, Customer Info
Features	• Perform Feature Selection and investigate collinearity • Feature Engineering: promising data transformations, feature combination and scaling.
Modelling	• Try different classification models: SVMs, NNs, Bayesian • Use incomplete data for Semi-Supervised Learning with K-Means • Use text data for sentiment analysis or automate responses

Try Pitch

Thank you

Any Questions ?



Try Pitch