

CUSTOMER EXPERIENCE (CX)

A/B Testing - Camil Hennebert, Manh Tung Pham



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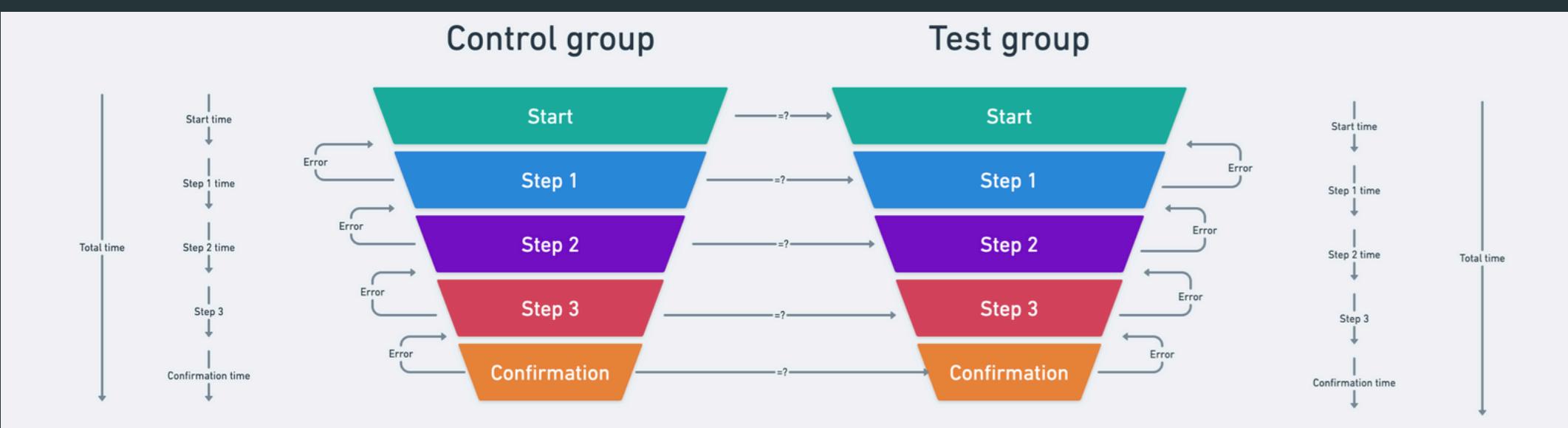
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Welcome to Vanguard

Since 1975, Vanguard has provided support for all investors and commitment to our clients, offering low cost, long-term investment products. You're our number one priority.

CX A/B-TESTING



Did the new UI lead to higher completion rates?



04

Data overview

DATASETS:
from
Client Profiles

client_id	clnt_tenure_yr	clnt_tenure_mnths	clnt_age	gindr	num_accts	bal	calls_6_mnths	logons_6_mnths
836976	6.0	73.0	60.5	U	2.0	45105.3	6.0	9.0
2304905	7.0	94.0	58.0	U	2.0	110860.3	6.0	9.0
1439522	5.0	64.0	32.0	U	2.0	52467.78999999999	6.0	9.0
1562045	16.0	198.0	49.0	M	2.0	67454.65	3.0	6.0
5126305	12.0	145.0	33.0	F	2.0	103671.75	0.0	3.0

Digital Footprints

client_id	visitor_id	visit_id	process_step
9988021	580560515_7732621733	781255054_21935453173_531117	step_3
9988021	580560515_7732621733	781255054_21935453173_531117	step_2
9988021	580560515_7732621733	781255054_21935453173_531117	step_3
9988021	580560515_7732621733	781255054_21935453173_531117	step_2
9988021	580560515_7732621733	781255054_21935453173_531117	step_3

Experiment Roster

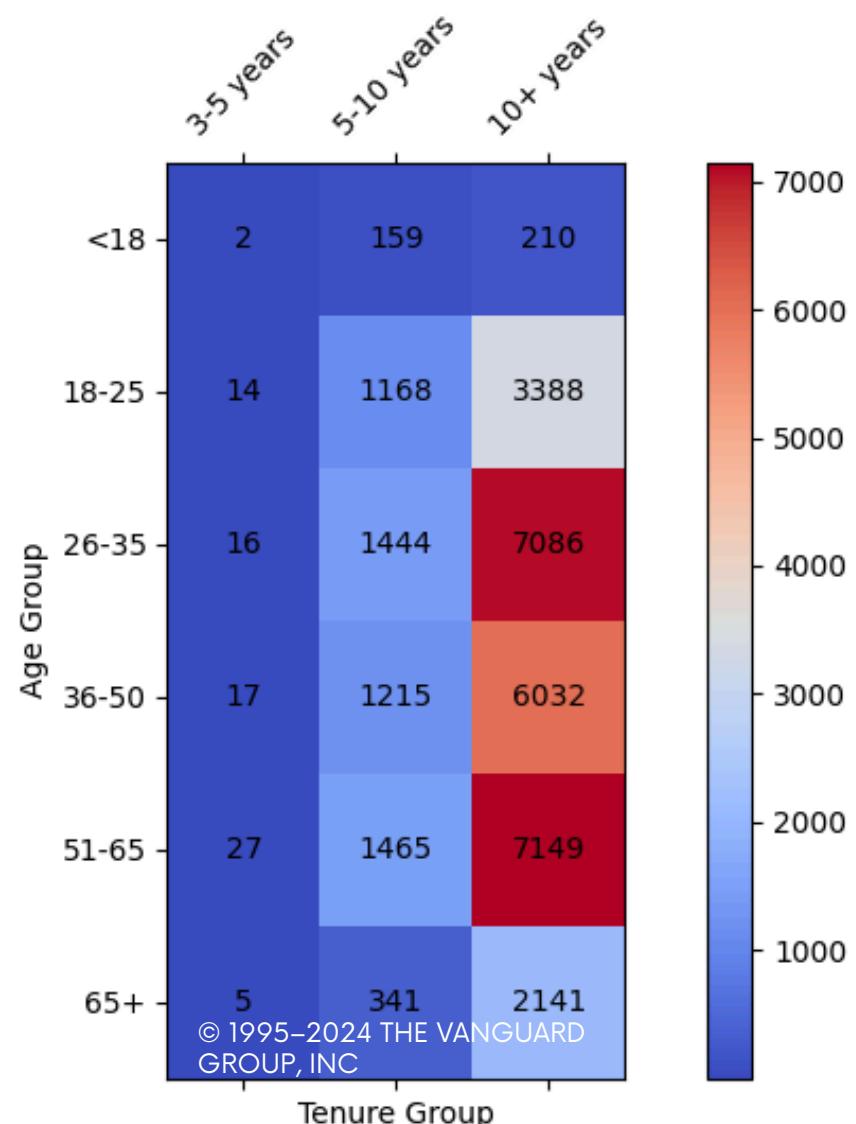
client_id	Variation
9988021	
8320017	
4033851	
1982004	
9294070	

into
all_clients

client_id	visitor_id	visit_id	process_step	date_time
9988021	580560515_7732621733	781255054_21935453173_531117	step_3	2017-04-17 15:27:0
9988021	580560515_7732621733	781255054_21935453173_531117	step_2	2017-04-17 15:26:5
9988021	580560515_7732621733	781255054_21935453173_531117	step_3	2017-04-17 15:19:2
9988021	580560515_7732621733	781255054_21935453173_531117	step_2	2017-04-17 15:19:1
9988021	580560515_7732621733	781255054_21935453173_531117	step_3	2017-04-17 15:18:0

solutions

Heatmap: Age Group vs Tenure Group



05

EDA

EXPLORATORY DATA ANALYSIS

key demographics

Variation	Age Group						
	<18	18-25	26-35	36-50	51-65	65+	
Control	154	8,189	21,549	27,716	35,287	18,912	
Test	201	9,949	25,920	32,678	43,031	23,233	

Age Group

- <18
- 18-25
- 26-35
- 36-50
- 51-65
- 65+



initial findings:

- several attempts on multiple days
- lot of NaN in "variation"



PERFORMANCE METRICS

Key Performance Indicators such as:

- average solution time per step / in total
- error rate per step / in total
- age groups
(<18, 18-25, 26-35, 36-50, 51-65, 65+)
- number of accounts

avg time for CONTROL clients:

Start to Step 1: 79.70 seconds
Step 1 to Step 2: 88.11 seconds
Step 2 to Step 3: 99.20 seconds
Step 3 to Confirm: 102.49 seconds
Total time: 349.34

avg time for TEST clients:

Start to Step 1: 81.09 seconds
Step 1 to Step 2: 90.38 seconds
Step 2 to Step 3: 99.91 seconds
Step 3 to Confirm: 105.49 seconds
Total time: 365.80

Control Error Rate Per Step

Step 1: 13.15%
Step 2: 16.86%
Step 3: 8.40%
Errors rate for control group: 38.4 %

Test Error Rate Per Step

Step 1: 11.90%
Step 2: 8.99%
Step 3: 5.89%
Errors rate for test group: 26.78 %

NEXT WORK
ON THE METRICS

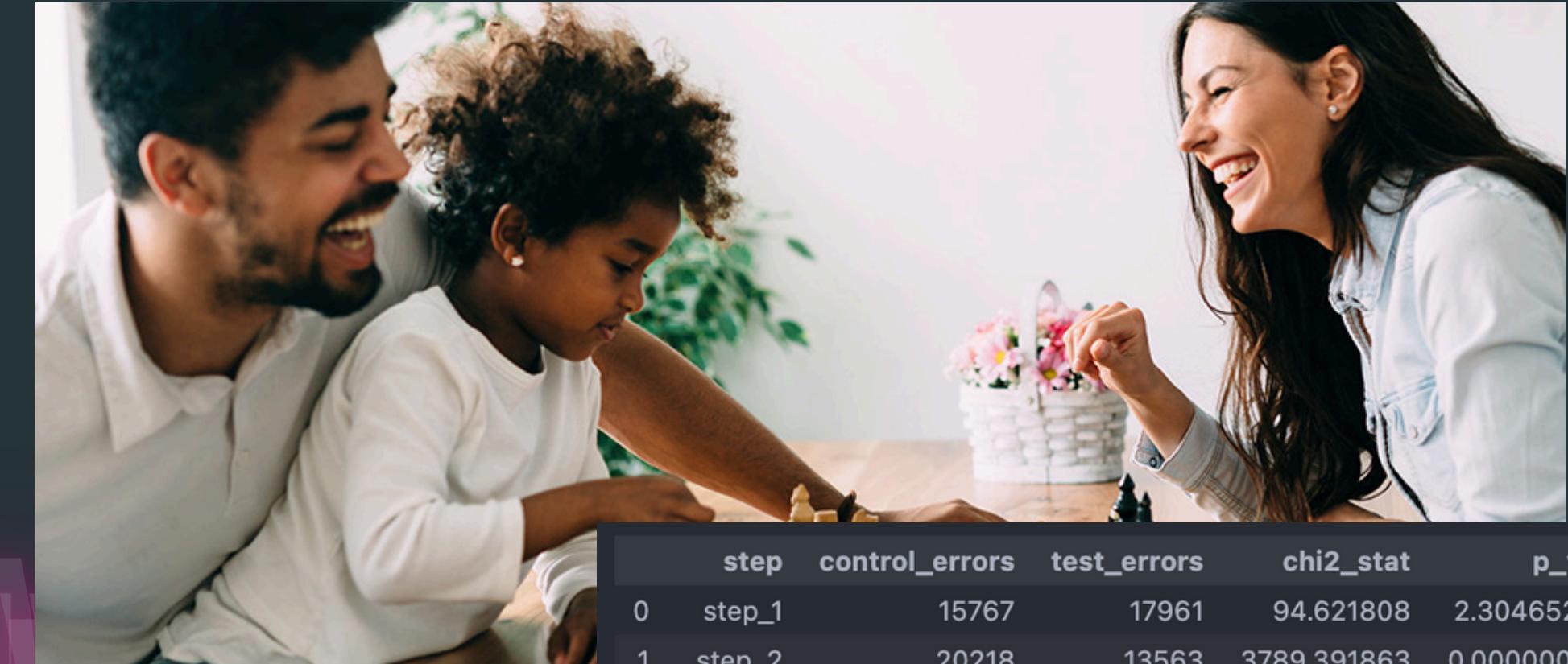
HYPOTHESIS TESTING

ON INDEPENDENT TWO SAMPLE TTEST

H₀: no difference in control and test

H₁: test performs better than control

p value: 0.05



RESULTS:

- H₁ CONFIRMED FOR ERROR RATES
- H₁ & H₀ BOTH DENIED FOR AVG TEST

step	control_errors	test_errors	chi2_stat	p_value
0	step_1	15767	17961	94.621808 2.304652e-22
1	step_2	20218	13563	3789.391863 0.000000e+00
2	step_3	10071	8885	645.921309 1.722465e-142
3	confirm	110390	148107	5761.960488 0.000000e+00

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TABLEAU VIZZ

more
data

THIS
NEXT
LEVEL

Order Now!

TEAMWORK & PROJECT MANAGEMENT

Foundation of the project (data cleaning, merging, concatenation, creation of the "age group" column and all basic preparations) were done together.

The analysis work was divided between calculating time and error rates.

Progress sharing and daily updates at the end of each day, along with defining objectives for the following day and tracking tasks using a Kanban board.



CAMIL HENNEBERT

Data Analyst
Python /SQL / Power BI /Tableau



MANH TUNG PHAM

Data Analyst student learning
Python/SQL/Tableau/EDA

please rate us



CHALLENGES & LEARNINGS



fun



01



improved teamwork based
on two weeks work

02



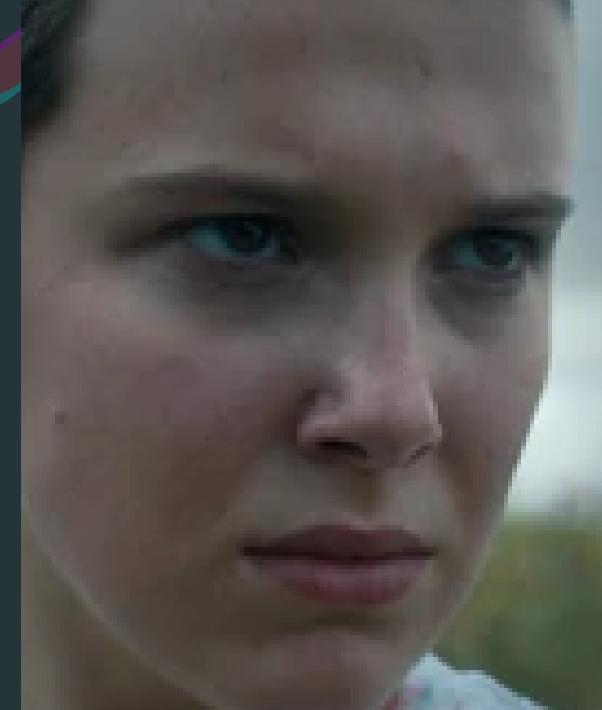
03

Be careful at each step of the process; even a small mistake can lead to restarting the entire analysis from the beginning.

RETIRO

New website still viable due to decrease
of error rates.

Completion time difference neglectable
(~1-2 seconds)



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A/B - TESTING

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