

Consumer Complaint

GROUP 6

Jahnavi Reddy Ganesina

Vaishnavi Meghana Poluru

Harini Ramesh Babu

Yogashree Varavani Honnegowda



A G E N D A

- Overview
- Data Cleaning
- Data Visualization
- Statistical Methods
- Conclusion

OVERVIEW

- The Consumer Complaint Dataset from data.gov is a comprehensive collection of complaints related to consumer financial products and services.
- These complaints were submitted to various companies for resolution.
- Our focus narrows down to complaints specifically related to the financial product category of Mortgage.
- The filtered dataset specifically targeting Mortgage-related complaints comprises a substantial 71,721 rows and 18 columns.

RAW DATA

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Date received Product	Sub-product	Issue	Sub-issue	Consumer complaint	Company public response	Company	State	ZIP code	Tags	Consumer co	Submitted via	Date sent to	Company response to consumer	Timely response?	Consumer disputed?	Complaint ID	
6/13/23	Mortgage	Conventional	Struggling to None	I am a xxxx xxxx XXXX XXXX XXXX veteran and I was XXXX with severe XXXX for approximately 30 days, in XXXX 2022. Upon my release from the hospital and after my recovery, I experienced a financial hardship. I reached out to my mortgage company, 21st Mortgage several times in the months of XXXX - XX/XX/2022, for assistance due to my financial hardship from my XXXX XXXX but was not extended any assistance or	Company has responded to BANK OF AM FL	33483	None	N/A	Phone	6/13/23	Closed with explanation	Yes	N/A	7111543			
4/13/23	Mortgage	Conventional	Struggling to None	None	21ST MORTGAG	474XX	Servicemem	Consent prov Web	5/18/23	Closed with explanation	Yes	N/A	6834651				
9/20/23	Mortgage	Conventional	Applying for	I was preapproved fo	NATIONS RE KY	41018	None	Consent prov Web	9/20/23	Closed with explanation	No	N/A	7580627				

DATA CLEANING

- Checking for NULL Values

Date received	0
Product	0
Sub-product	0
Issue	0
Sub-issue	61839
Consumer complaint narrative	33907
Company public response	35610
Company	0
State	432
ZIP code	334
Tags	51999
Consumer consent provided?	14765
Submitted via	0
Date sent to company	0
Company response to consumer	1
Timely response?	0
Consumer disputed?	71720
Complaint ID	0

- Checking for Duplicate Values

```
#Checking for duplicates
duplicate_rows = data[data.duplicated()]
# Display the duplicate rows
print("Duplicate Rows:")
print(duplicate_rows)
```

Duplicate Rows:
Empty DataFrame

DATA CLEANING

- Dropping Columns with low significance

```
data.drop(['Sub-issue', 'Company public response', 'ZIP code', 'Tags', 'Consumer disputed?'], axis=1, inplace=True)
```

- Checking for NULL values after cleaning

Date received	0
Product	0
Sub-product	0
Issue	0
Consumer complaint narrative	0
Company	0
State	0
Consumer consent provided?	0
Submitted via	0
Date sent to company	0
Company response to consumer	0
Timely response?	0
Complaint ID	0

DATA CLEANING

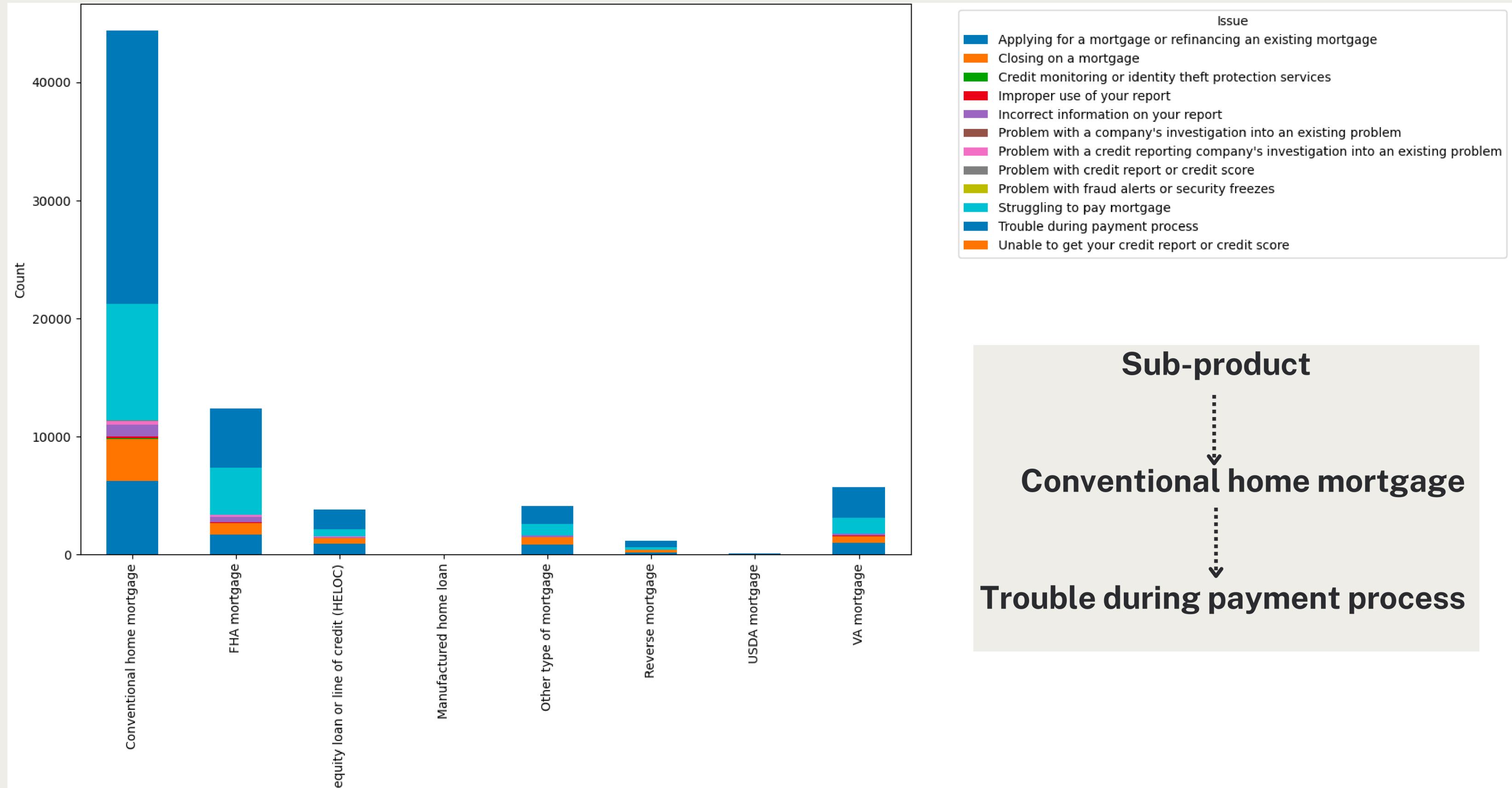
- Categorized Values of Column “Timely Response” with 1's and 0's

```
data['Timely response?'] = data['Timely response?'].replace({'Yes': 1, 'No': 0})
data.head()
```

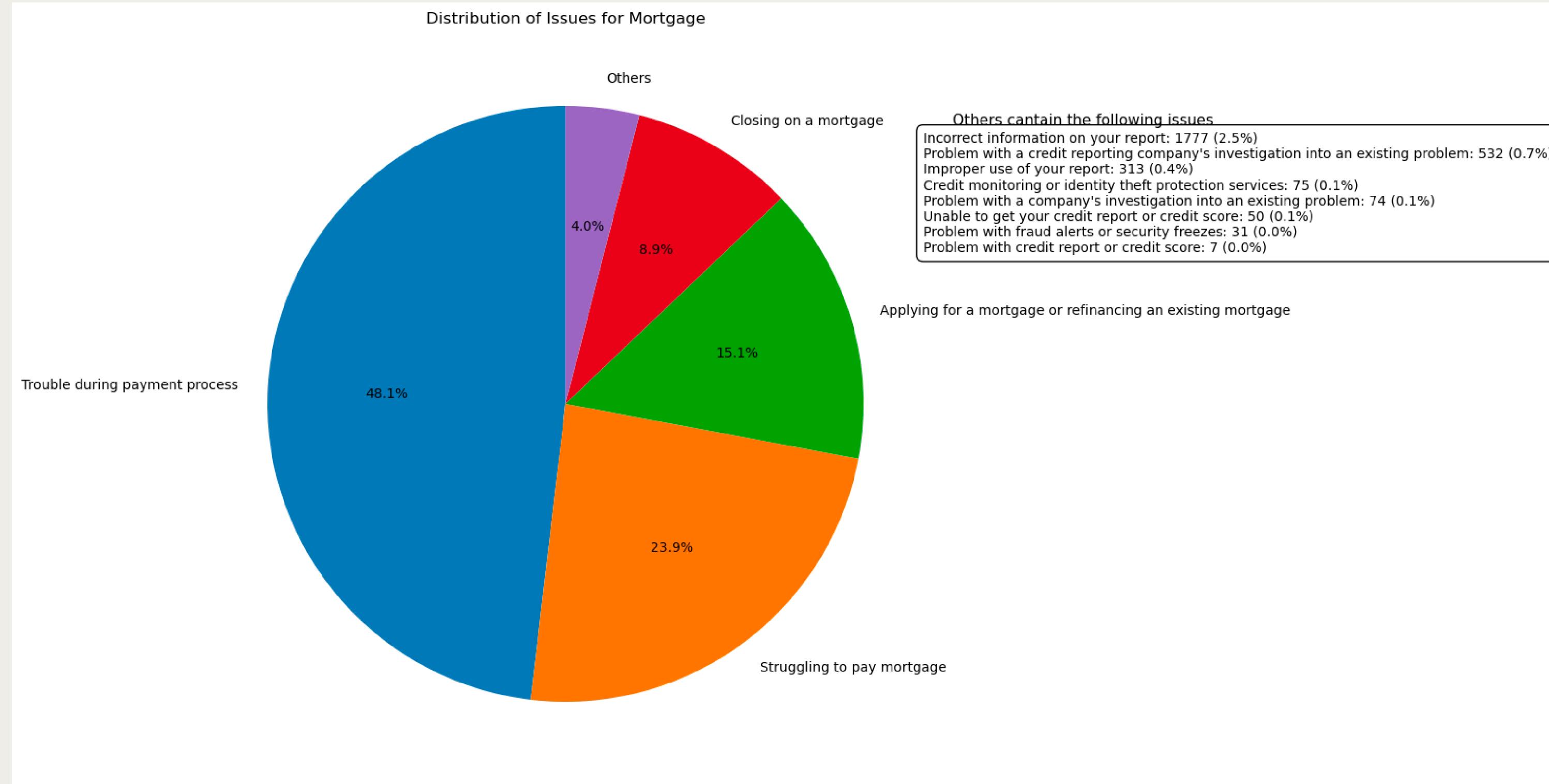
	Date received	Product	Sub-product	Issue	Consumer complaint narrative	Company	State	Consumer consent provided?	Submitted via	Date sent to company	Company response to consumer	Timely response?	Complaint ID
1	04/13/23	Mortgage	Conventional home mortgage	Struggling to pay mortgage	I am a XXXX XXXX XXXX XXXX veteran and I ...	21ST MORTGAGE CORP.	IN	Consent provided	Web	05/18/23	Closed with explanation	1	6834651
2	09/20/23	Mortgage	Conventional home mortgage	Applying for a mortgage or refinancing an exist...	I was preapproved for a conventional mortgage ...	NATIONS RELIABLE LENDING LLC	KY	Consent provided	Web	09/20/23	Closed with explanation	0	7580627
3	09/09/23	Mortgage	Conventional home mortgage	Trouble during payment process	I paid {\$100000.00} to Freedom Mortgage on XX/...	Freedom Mortgage Company	DC	Consent provided	Web	09/09/23	Closed with explanation	1	7524616
4	11/06/23	Mortgage	Conventional home mortgage	Trouble during payment process	Contacted mortgage servicer XX/XX/2023 to requ...	SELECT PORTFOLIO SERVICING, INC.	TN	Consent provided	Web	11/06/23	Closed with explanation	1	7806521
5	01/12/23	Mortgage	Conventional home mortgage	Trouble during payment process	After being told by Rocket Mortgage 's " Custo...	Rocket Mortgage, LLC	CA	Consent provided	Web	01/12/23	Closed with explanation	1	6431206

DATA VISUALIZATION

STACKED HISTOGRAM-SUB PRODUCT VS ISSUE

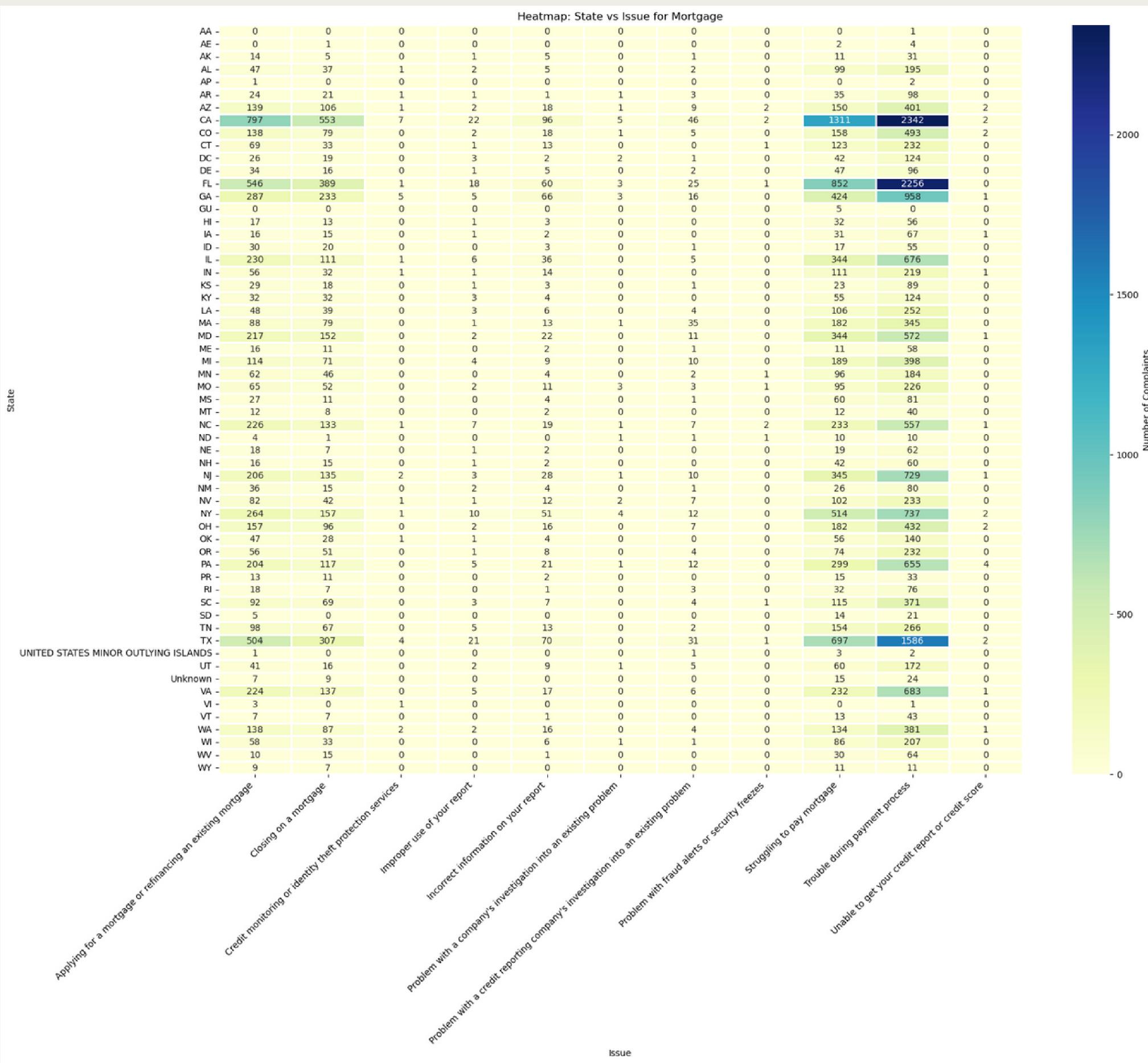


PIE CHART- ISSUE DISTRIBUTION



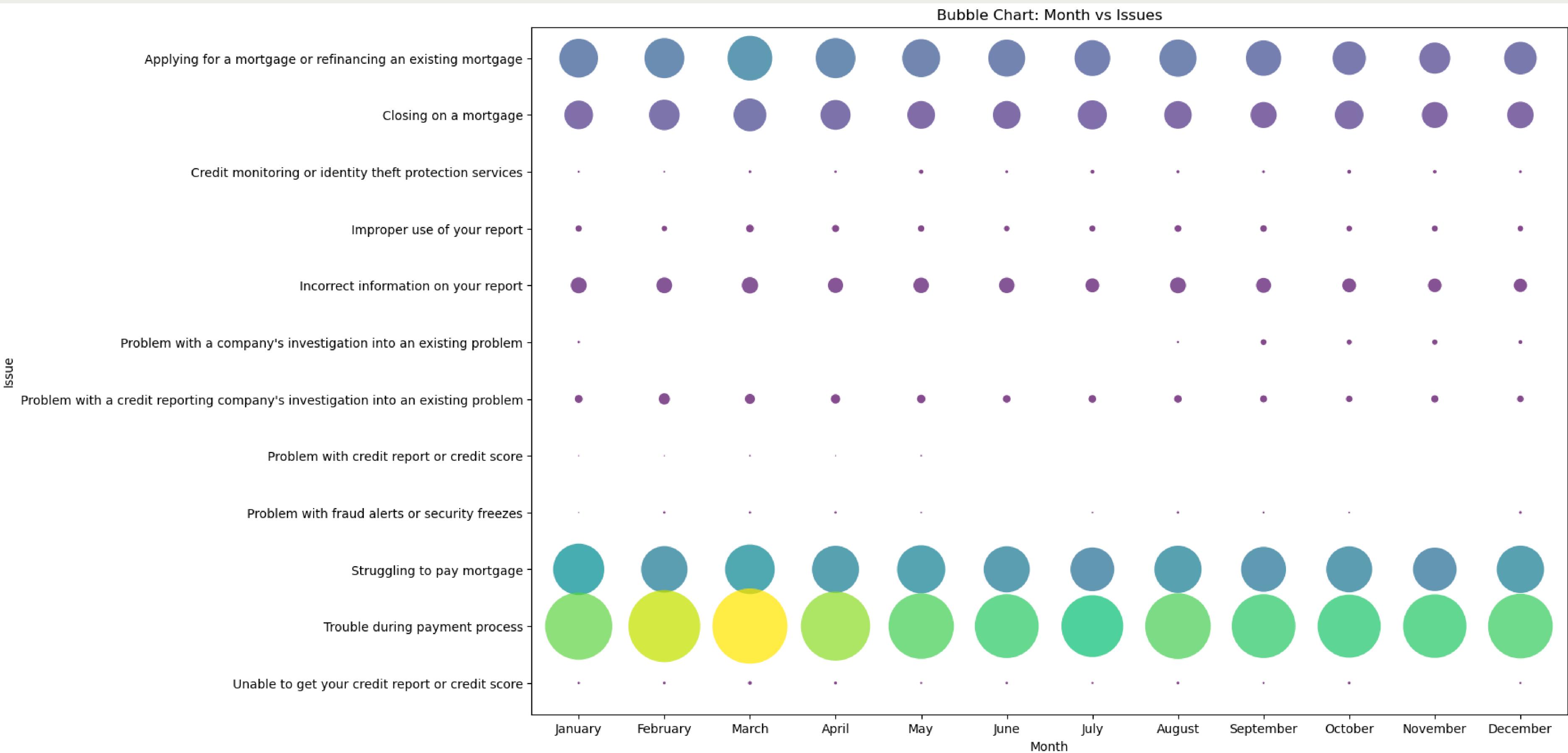
Trouble during the payment process - approx 50%!

HEAT MAP - STATE VS ISSUE

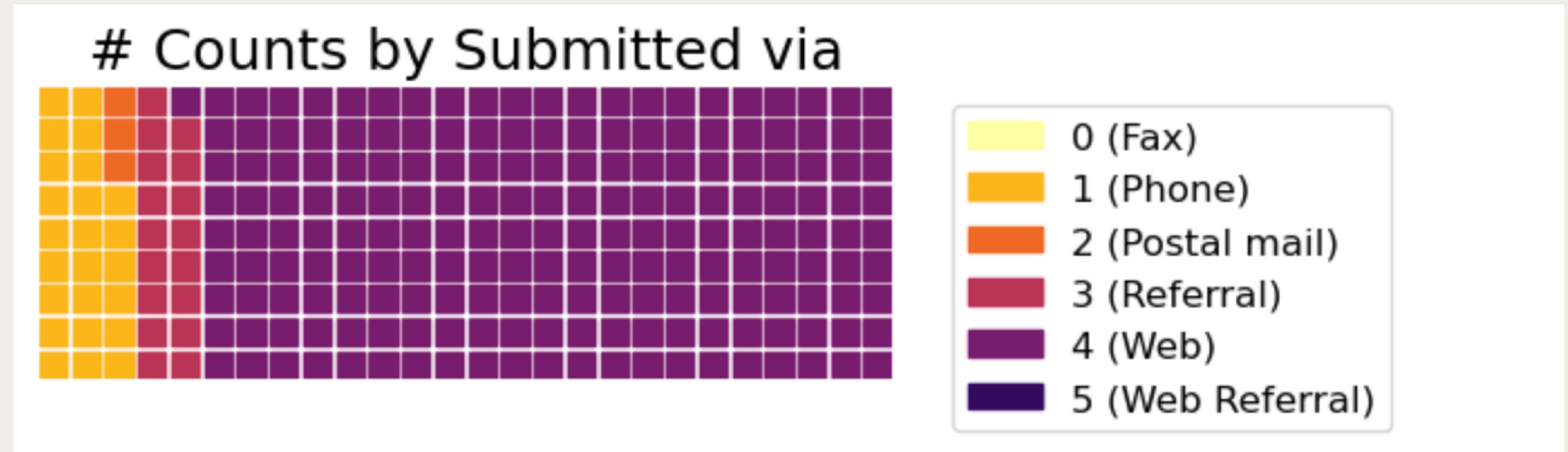


- California and Florida stand out with Texas coming in a close third.
- All three states have ‘Trouble during the payment process’ and ‘Struggling to pay the mortgage’ as their top two reasons.

BUBBLE CHART - MONTH VS ISSUE



WAFFLE CHART - COUNT BY MEDIUM



- Demonstrates the Dominance of Web-Based Applications
- All Banks Embrace Digital Channels for Customer Support
- Phone - Second-Largest Medium for Customer Assistance

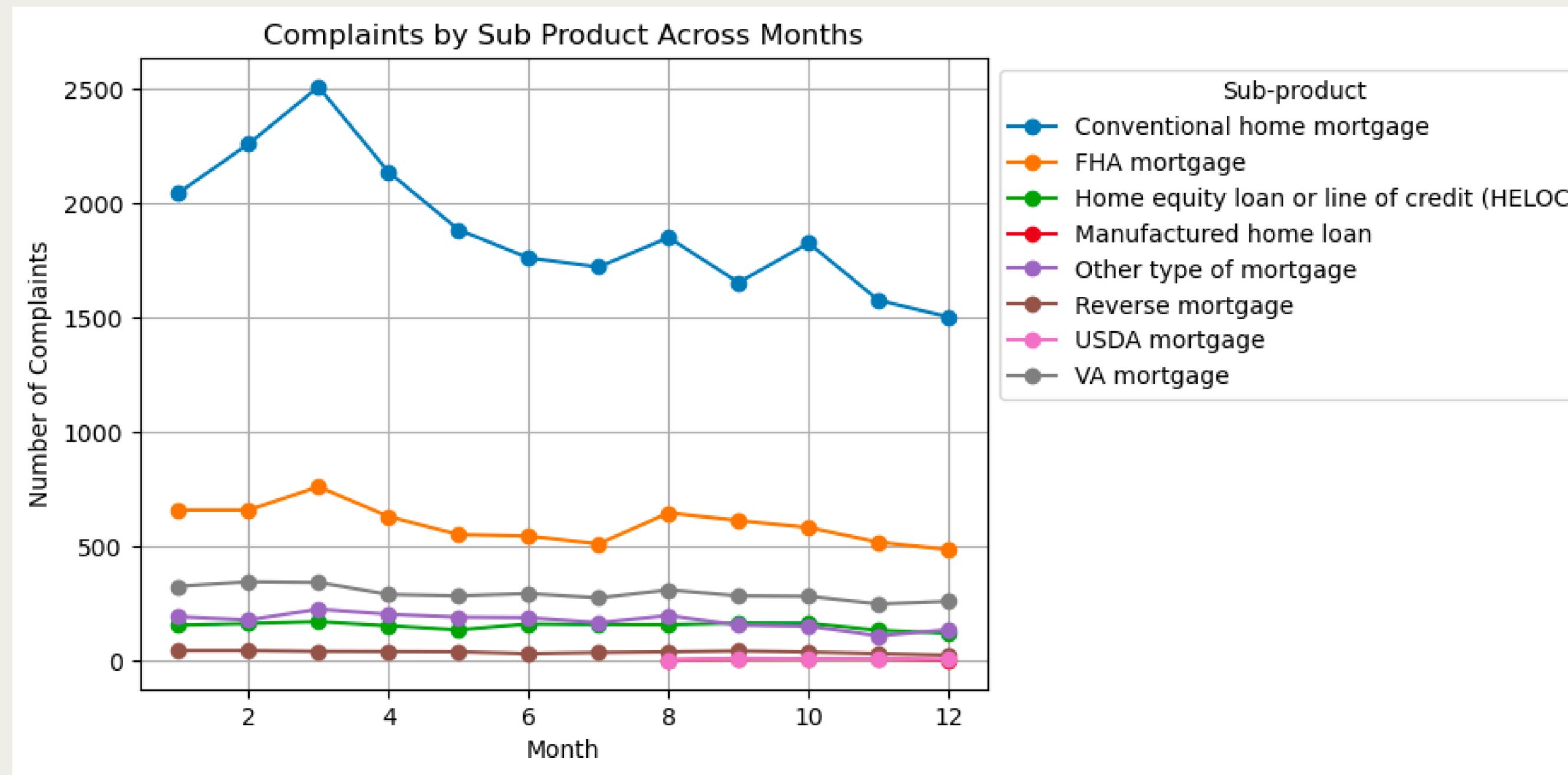
STATISTICAL ANALYSIS

Company	Number of Issues	Count of Timely Response 0	% Distribution of Issues
WELLS FARGO & COMPANY	2982	0	0.0
Mr. Cooper Group Inc.	2787	1	0.04
Shellpoint Partners, LLC	2068	3	0.15
Ocwen Financial Corporation	1598	0	0.0
SELECT PORTFOLIO SERVICING, INC.	1506	2	0.13
Freedom Mortgage Company	1439	0	0.0
LoanCare, LLC	1196	20	1.67
Specialized Loan Servicing Holdings LLC	1138	6	0.53
BANK OF AMERICA, NATIONAL ASSOCIATION	1015	3	0.3

- Employing fundamental statistical methods to evaluate companies' effectiveness in handling consumer complaints.
- Wells Fargo & Company stands out with a flawless record of timely responses, setting a benchmark.
- Bank of America, National Association identified with room for enhancement in resolving complaints, offering actionable insights for companies to refine consumer management processes.



LINE GRAPH - COMPLAINTS ACROSS MONTHS



- Notable Surge in Home Loan and FHA Mortgage Complaints in March
- December Records Minimal Complaints Across Most Sub-Products



CONCLUSION

- Consumer Complaint Database Overview.
- Challenges in Conventional Home loans :
Highest Issues identified in Sub-product -> Conventional Home loans.
- Digital Transformation in Banking.
- Temporal Trends in Complaints.
- Company Performance Analysis.



PANDAS PROFILING

- ProfileReport() which generates a basic report on the input DataFrame.

Overview Alerts 13 Reproduction

Dataset statistics		Variable types	
Number of variables	18	DateTime	2
Number of observations	71720	Categorical	8
Missing cells	270607	Text	5
Missing cells (%)	21.0%	Boolean	1
Duplicate rows	0	Unsupported	1
Duplicate rows (%)	0.0%	Numeric	1
Total size in memory	133.2 MiB		
Average record size in memory	1.9 KiB		



Thank you!

