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Lally Datathon 2020: Advising the CFPB How to Reduce Consumer Complaints

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Missing values counts and percentage

Date received	object
Product	object
Sub-product	object
Issue	object
Sub-issue	object
Consumer complaint narrative	object
Company public response	object
Company	object
State	object
ZIP code	object
Tags	object
Consumer consent provided?	object
Submitted via	object
Date sent to company	object
Company response to consumer	object
Timely response?	object
Consumer disputed?	object
Complaint ID	int64
dtype:	object

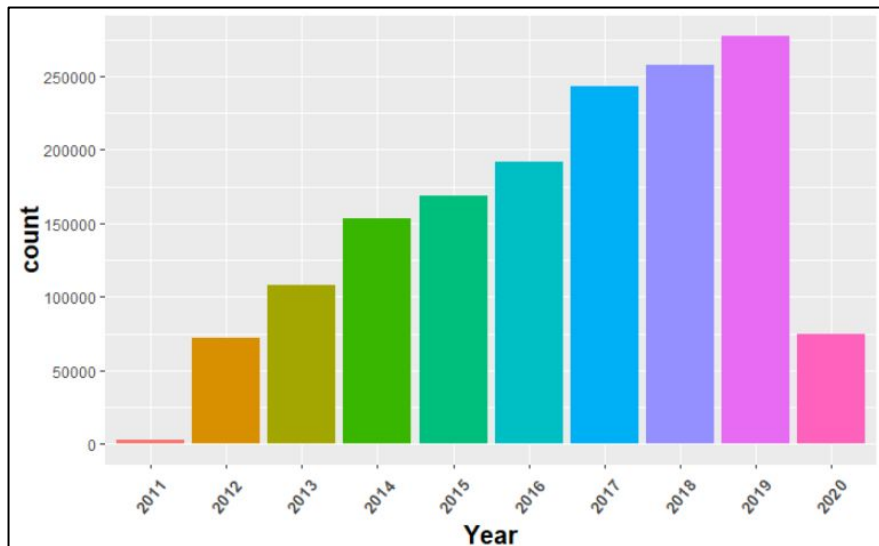
All columns except complaint ID are object types.

Your selected dataframe has 18 columns.
There are 10 columns that have missing values.

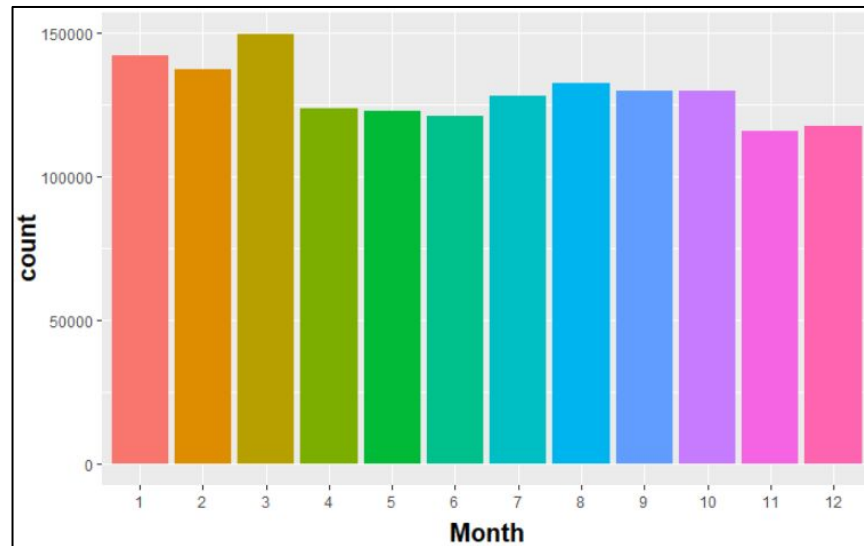
	Missing Values	% of Total Values
Tags	1338359	86.4
Consumer complaint narrative	1036855	67.0
Company public response	961714	62.1
Consumer disputed?	779916	50.4
Consumer consent provided?	626548	40.5
Sub-issue	563408	36.4
Sub-product	235165	15.2
ZIP code	146449	9.5
State	26229	1.7
Company response to consumer	1	0.0

10 out of 18 columns has missing values.
Consumers tend not to fill out detailed complaints.

The Number of Complaints is Growing with Time

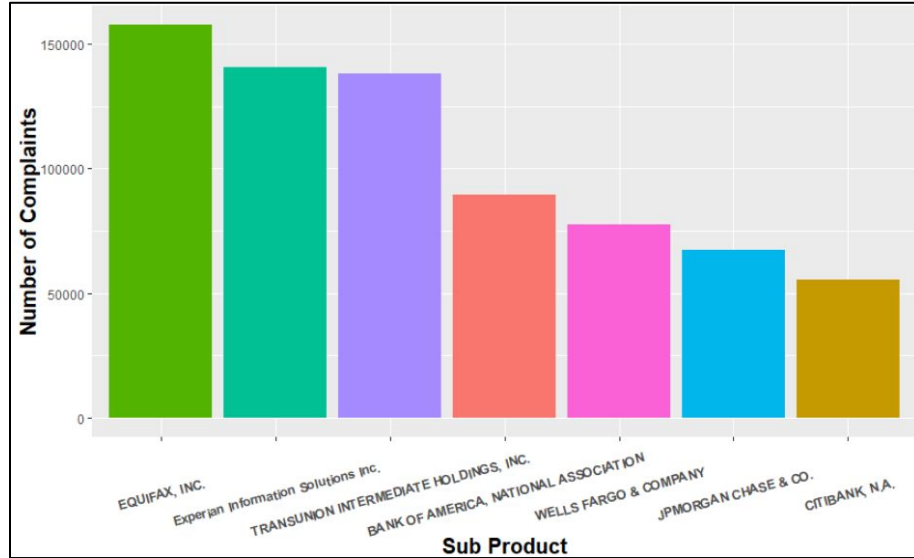


The number of complaints are increasing every year and we can predict 2020 to follow this trend (about 75k at Q1). It is necessary to not only stop this growth but begin to decrease these numbers

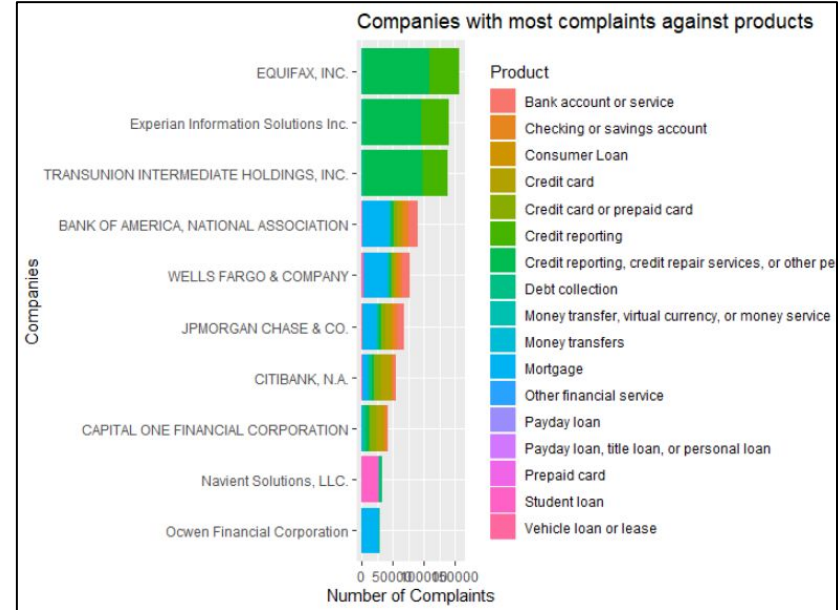


Month of the year doesn't have too much influence but the first three months see the highest amount of complaints.

Credit Reporting Agencies Get the Most Complaints

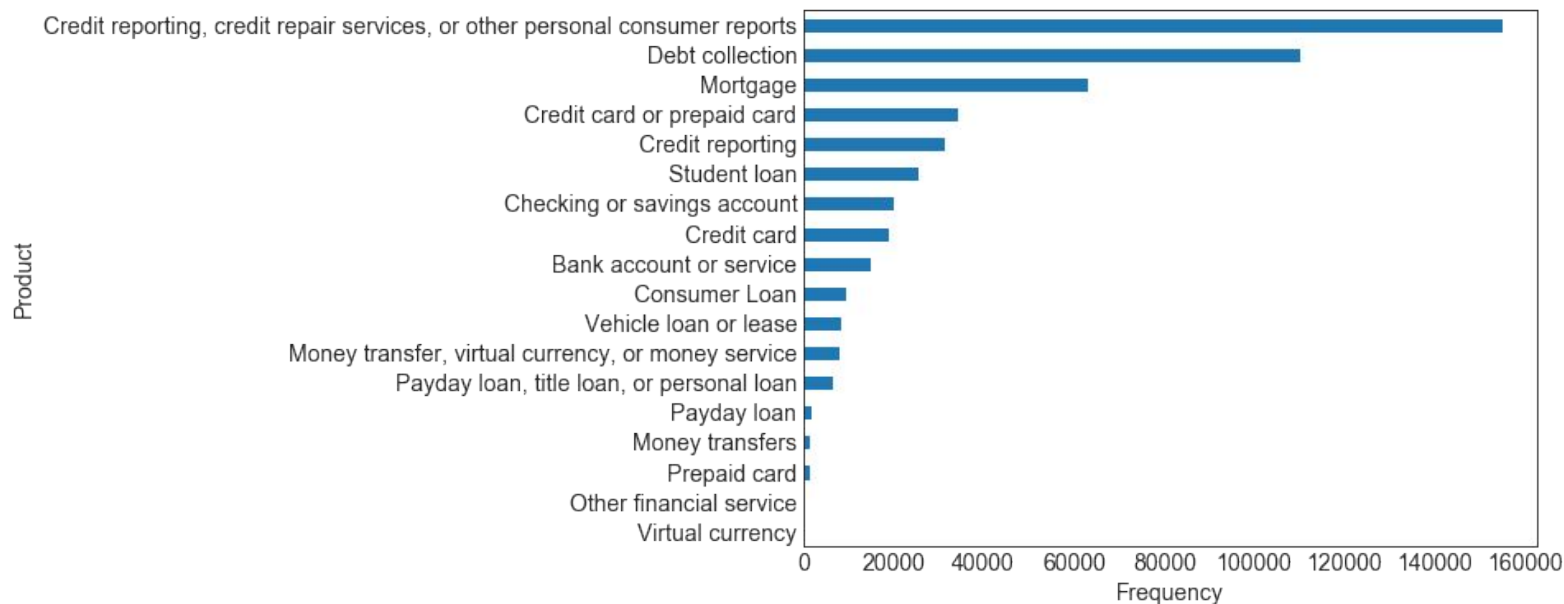


The top three recipients of complaints are Equifax, Experian, and Transunion -- companies that deal with credit reporting. Next are major banks: Bank of America, Wells Fargo, JP Morgan, CitiBank



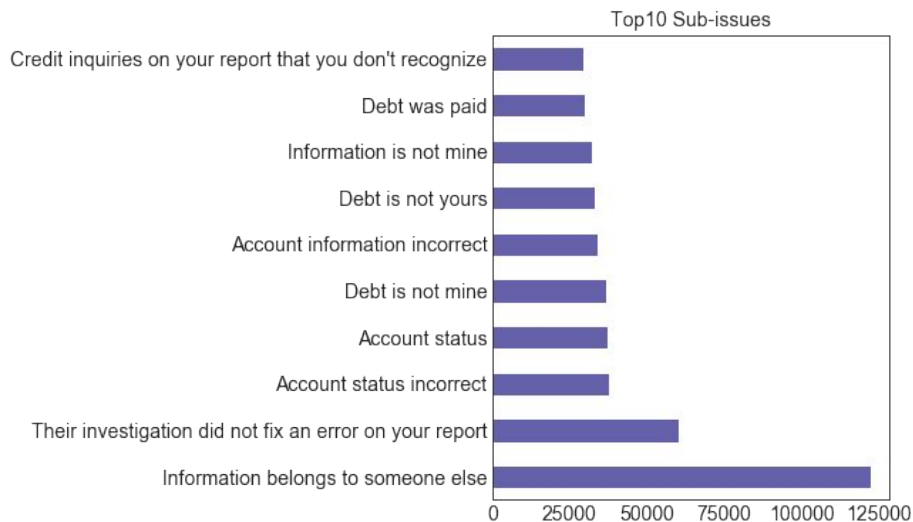
We can see that the top three companies face credit reporting complaints. The next three are primarily mortgage complaints. The rest are a mixed bag

Number of complaints grouped by product



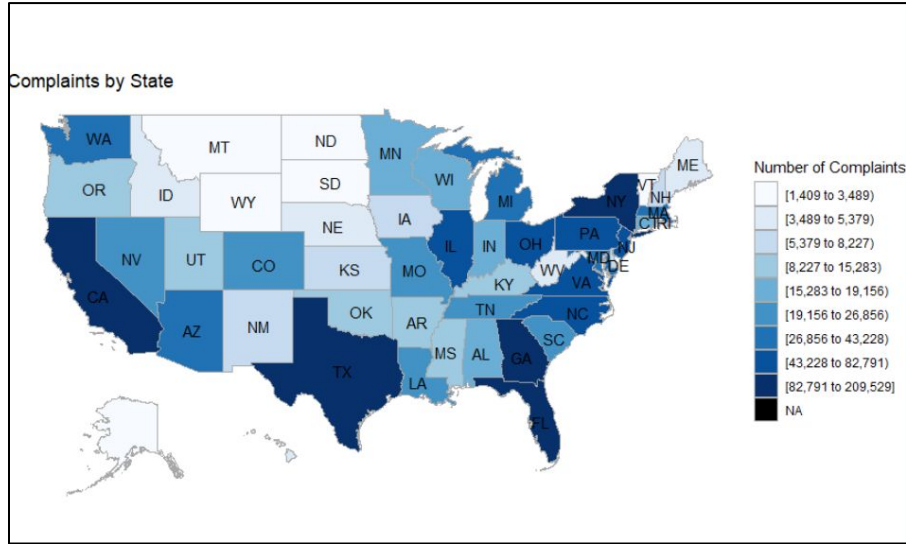
We see an uneven number of complaints for each product category. Consumers' complaints tend to favour debt collections, credit reports and mortgages.

Insights by Issues

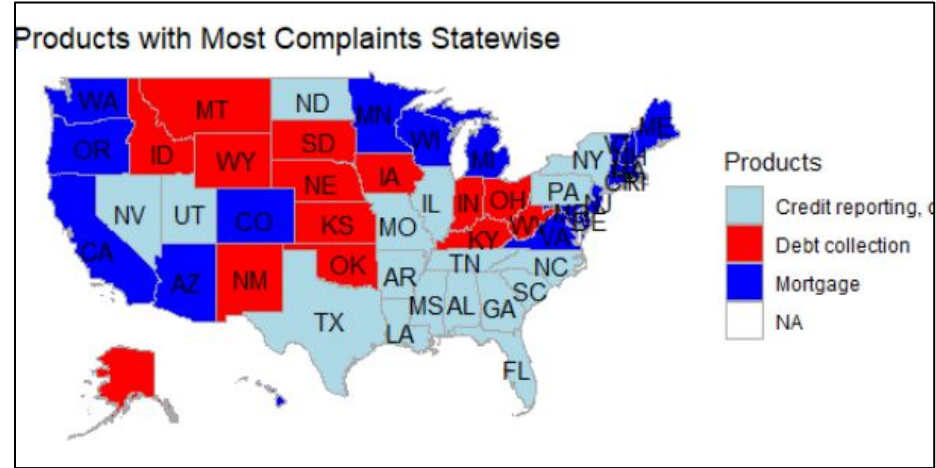


We find the most complaints received by the CFPB are on **Incorrect information on your report**, followed by complaints on **Loan modification, collection, and foreclosure** and **Incorrect information on credit report**. These are issues over 100,000 cases. For sub issues, we find that **Information belongs to someone else** is the major problem corresponding to incorrect information on your report. Also, **Their investigation did not fix an error** also has over 50,000 cases.

As Expected, More Populated States Submit More Complaints

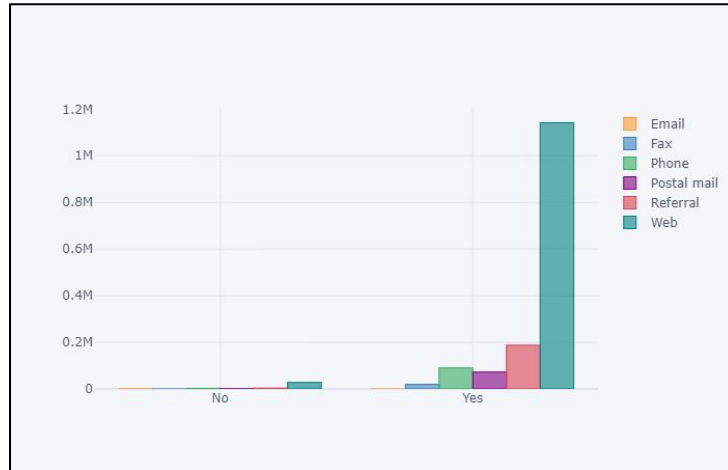


The top states that file complaints are CA, FL, TX, NY, and GA with CA in 1st by a margin. These numbers are not surprising as they are the most populated states. Four of the five most populated states take up this top 5



It looks like the southern states primarily deal with credit reporting complaints. Debt collection takes up a lot of the midwest and mortgage complaints are fairly scattered.

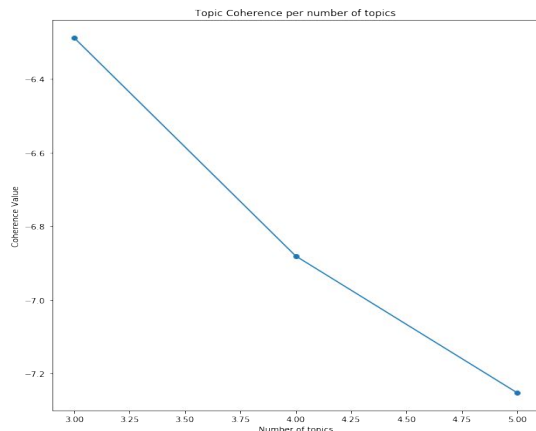
Most Submissions are by Web but See a Longer Response Time





Submitted via	Email	Fax	Phone	Postal mail	Referral	Web
Timely response?						
No	0.000278	0.013119	0.072185	0.036551	0.097646	0.780221
Yes	0.000270	0.013336	0.059654	0.047954	0.124068	0.754718

Complaints submitted through referral and postal mail have better on-time response rate. However, if complaints are submitted through the web, which is the most common method, the response time is longer than average. Thus, they might need to improve the service via web and may result in great improvement.

Model Concept - Classify Narratives



- Tokenize, remove stopwords, N-grams, lemmatize and tag data.
- Create dictionary and bow and change the bow to tfidf.
- Use an unsupervised learning method to maximize the possibility of assigning words to one of the K fixed topics.

	PerformanceVector
Performance	PerformanceVector: Avg. within centroid distance: 43.155 Avg. within centroid distance_cluster_0: 0.000 Avg. within centroid distance_cluster_1: 76.531 Avg. within centroid distance_cluster_2: 0.000 Avg. within centroid distance_cluster_3: 100.000 Davies Bouldin: 0.316
	
Description	

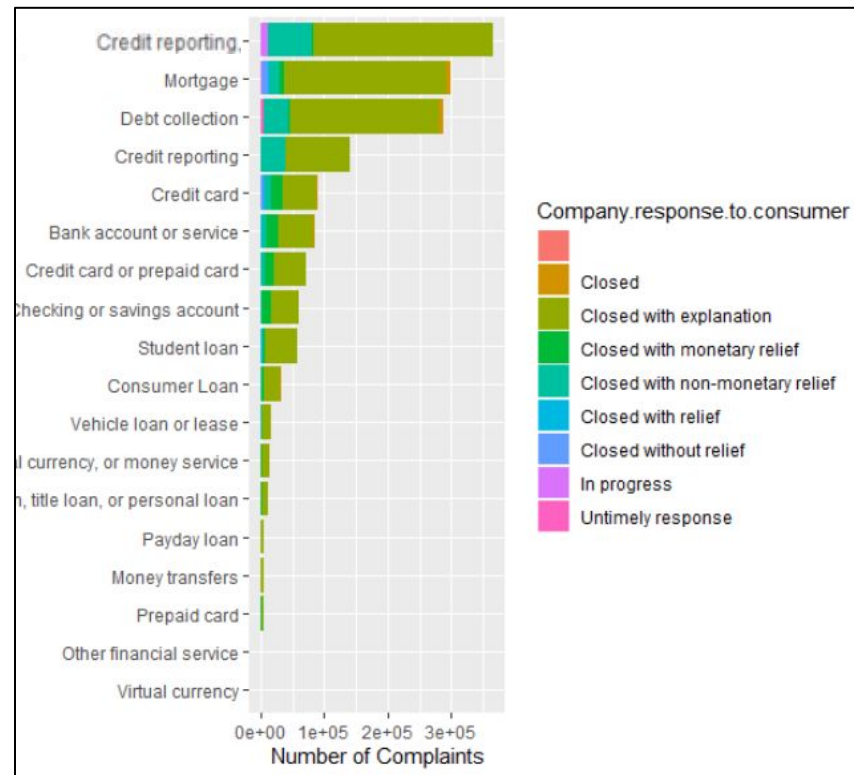
==>Using this model, the institutes can set different departments corresponding to K topics.

Proposal #1 - Get Consumers Comfortable with Credit

- Most complaints are targeted at credit reporting agencies for having incorrect information on consumer reports. This can be the result of identity/credit fraud or other reasons.
- The current law, the Fair Credit Reporting Act (FCRA), requires these agencies to provide consumers with a free copy of their credit report once a year.
- Having a one check per year limit creates a mentality that you should be distanced and uninformed about your credit score and fear checking it.
- We propose increasing this number so that individuals can monitor their credit report for sudden changes and potential threats instead of saving their report check for “something later”

Proposal #2: Raise the Public's Financial Knowledge

- Many issues arise from a lack of financial knowledge and the majority of disputes are settled with only an explanation (no monetary help)
- In some cases, if the consumer understood that explanation beforehand, the complaint would not have existed
- Raising the public's understanding of financial matters would reduce complaints and have other positive effects
- This could take place through various federal proposals



Proposal #2: Raise the Public's Financial Knowledge

Tested Screenings before Financial Applications

Prior to receiving student loans, students must go through an e-course to understand the specifics of what they are agreeing to. Something similar could be added to credit card applications, mortgages, car loans, etc.

Community Workshop Events in Public Spaces

A curriculum could be created to be taught in federally funded libraries and community centers with the goal of increasing the financial literacy of the population. There could be incentives offered to citizens who went through it similar to incentives from a defensive driving course

Youth Savings Education

The Financial Literacy and Education Commission of the U.S. Treasury already promotes youth savings programs through in-school banking. Putting more resources this direction will bring up the next generation with more financial knowledge and therefore more financial responsibility

Issue: Too Much Time to Receive Complaints

- We calculated the time to send a complaint to the company by taking the difference of the date received and the date sent to the company (avg ~3 days)
- For 4,416 complaints, it took more than 100 days to be sent to the company
- Somehow, 18 complaints took more than 900 days to be sent
- It is unlikely that these were data errors and more likely that they were mishandled. While this remains a small percentage of complaints, it is still too many
- Specifically, complaints submitted through web are the most, but the response time is longer than the average.

Proposal #3: Improve Complaint Delivery Time

- We propose placing a hard limit on how long it takes for a complaint to be sent to the company. If the current average is roughly 3 days, it would not be unreasonable to set a hard deadline of one month from when a complaint was received
- This way the company can receive feedback and make adjustments accordingly in a timely manner, not 4 months down the road
- This deadline is achievable with more training, better tracking, and accounting.

Issue: Rampant Credit Fraud/Identity Theft

Top Issues with Credit Reporting Products

	Issue	counts
3	Incorrect information on credit report	32486
1	Credit reporting company's investigation	5920
4	Unable to get credit report/credit score	3482
2	Improper use of my credit report	1800
0	Credit monitoring or identity protection	1690

Top Issues with Debt Collection Products

	Issue	counts
0	Attempts to collect debt not owed	2219
8	Written notification about debt	200
4	False statements or representation	88
7	Took or threatened to take negative or legal a...	46
2	Cont'd attempts collect debt not owed	30

→ Text analysis reveals that credit fraud and identity theft are major complaints among credit reporting and debt collection products

Proposal #4: Credit Notifications

- “The Fair Credit Billing Act (FCBA) protects consumers against inaccurate or fraudulent credit card charges” - Justia, Deceptive Practices and Fraud
- “The FTC enforces the Fair Debt Collection Practices Act (FDCPA), which makes it illegal for debt collectors to use abusive, unfair, or deceptive practices when they collect debts.” - FTC Consumer Information
- Credit reporting agencies send a notification when new debt is accrued with the consumer’s information (new credit card/application, etc.)
- This would allow consumers to respond quicker if there are fraudulent charges

Proposal #5: Mandatory Mortgage Contingency Plans

- The Issue of 'Loan modification, collection, foreclosure' constitutes the most complaints by issue for mortgage products, the majority appearing to be resulting from a job loss and a subsequent request for a loan modification
- We propose a contingency plan to help those who are out of a job in two ways:
 1. An agreement at signing that has a plan in place regarding action after job loss, discussed with a US HUD Counselor
 2. Considering the effect of COVID-19 and unemployment, something similar to the response in 2007 -- the US Treasury set up the Hardest Hit Fund to help people make payments who were the most affected

3-Gram Analysis for Loan modification, collection, foreclosure

```
[('I', 'told', 'I'), 865),  
 (('loan', 'modification', 'I'), 784),  
 (('I', 'received', 'letter'), 634),  
 (('I', 'would', 'like'), 540),  
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 (('I', 'applied', 'loan'), 212),  
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 (('I', 'A', 'I'), 209),  
 (('I', 'fell', 'behind'), 191),  
 (('loan', 'modification', 'process'), 189),  
 (('loan', 'modification', 'application'), 185)]
```

References

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- <https://www.justia.com/consumer/deceptive-practices-and-fraud/credit-card-fraud/>
- <https://www.consumer.ftc.gov/articles/0155-free-credit-reports>
- <https://www.treasury.gov/initiatives/financial-stability/TARP-Programs/housing/hhf/Pages/default.aspx>
- <https://www.nolo.com/legal-encyclopedia/i-lost-job-can-i-help-mortgage.html>