U.S. Consumer Financial Complaints

Data Visualization - ISOM 657

Master of Science in Business Analytics
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Overview and Motivation

Everyone has a story.

“William told us that debt collectors requested that he pay $8,000 for a debt he never owed, ruining his credit in the process.” He filed a complaint with the CFPB and was helped soon after. “More than ten years after filing for bankruptcy, Jorge found that the bankruptcy was still showing up on his credit report. After getting nowhere with the credit reporting agency, Jorge reached out to the CFPB.” And was helped soon after.

The dashboards elaborated on in this report serve to help effortlessly extrapolate insights from the Consumer Complains database*, and provide a comprehensive overview of the current scenario that will help the Consumer Financial Protection Bureau CFPB build strategy for customer service and financial record improvement going forward.

The CFPB logs complaints from consumers about products from banks and other financial institutions. CFPB’s main objective is to protect these consumers from unfair treatment, and help them get to the bottom of the issue without incurring any unwarranted damages of a fiscal or other nature.

With a fourth of the American population declaring being in a state of worry in a 2018 - 2019 population survey (GoBanking rates), there is good reason to delve into the ‘why’ behind this statistic. On a scale of 1-5 for how worried one was within the population surveyed, 14% said their state of mind scored a 5, and 11% said their state of mind scored a 4. We believe that a fair amount of this worry stems from false credit reports, unclosed debt records, unpaid mortgages and other such financial troubles lurking in the corners of the American mind. The CFPB’s record is thus a great way to extrapolate insights on the banks potentially indulging in malpractices, on products or sub - products that seem to complained about in suspicious volumes and frequencies, and regions of the United States that seem to witness more aggressive complaint activity (Do relatively lower income regions have more troubles consumers? Do higher blue collar job volume regions receive poorer customer service than others?). We see this venture as an important step in taking the effort to the next level - one where corrective measures are taken to ensure that incorrect information isn’t recorded on consumers, companies are able to resolve customer problems in a timely fashion, and terms like ‘credit card debt’ or ‘mortgage payments’ don’t immediately cause hearts to sink.

** source listed at the end*

Related Work and inspiration

The Dodd-Frank Wall Street Reform and Consumer Protection Act, which created the CFPB, gave the CFPB authority to make public information about the markets for consumer financial products and services. In December, the CFPB asked the public to comment on a proposed policy of making some credit card complaint data publicly available. After considering those comments, the CFPB finalized its policy for disclosing some of the data through its Consumer Complaint Database.

We found a few visualisations on Tableau public for the CFPB complaints data. But they were not as detailed or technically well executed as we expected. We did draw inspiration from a few sources.

For the Credit Bureau dashboard, we decided to use a hex map instead of the Tableau default map. A hex-tile map conveys the same message but uses less space and also takes away the “Alaska-effect”. The Alaska effect occurs because Alaska is separated from the major land mass of the US and a visualisation including Alaska would waste unnecessary space on the dashboard. The following visual on tableau public was used as an inspiration:
https://public.tableau.com/profile/abhishek.shah#!/vizhome/ConsumerComplaints_51/CFPBComplaints

Data

The main dataset we used is Consumer_Complaints.csv dataset (source cited in last section) was obtained from Kaggle, and the following features were assessed and used:

1. Complaint ID
2. Date complaint was sent
3. **Date** complaint was received
4. **Product** complaint was about (product category such as mortgage, debt collection, credit reporting, etc.)
5. **Sub - product** complaint was about (sub-product category such as medical, vehicle loan, payday loan, etc.)
6. **Issue** stated
7. **Sub - issue** stated
8. **Company**
9. Public response socialized by Company
10. **Company response** to consumer
11. **State** of complaint generation
12. **Zipcode** of complaint generation
13. Whether or not consumer consent was provided
14. Whether or not consumer **disputed** outcome
15. Platform of complaint submission
16. Tags on consumer
17. Whether response was socialized in a **timely** fashion

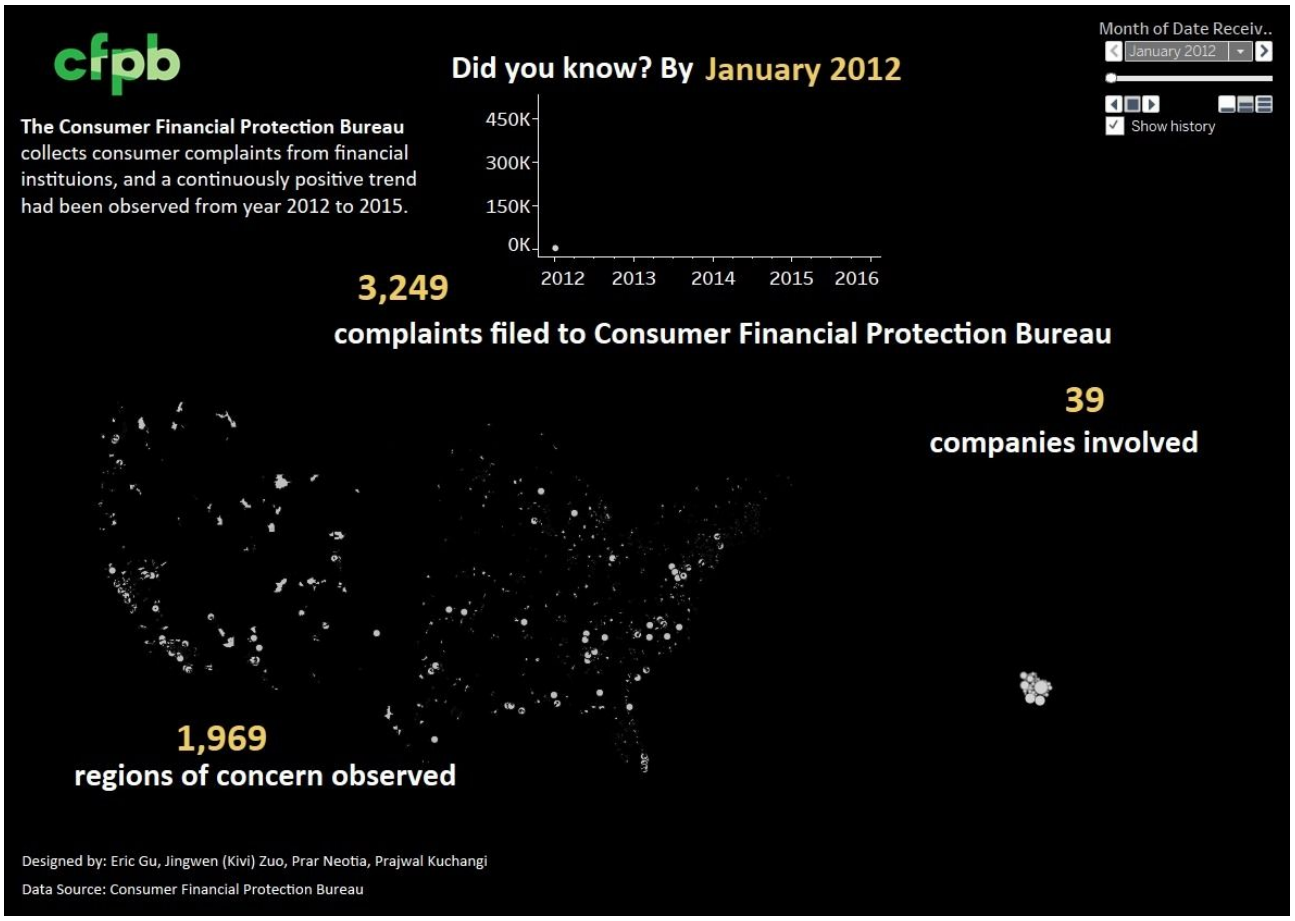
The bolded features were especially significant to multiple analyses for the Debt, Mortgage and Credit Reporting dashboards, along with the Overview.

We have also used population data for every state
https://www.census.gov/data/datasets/2017/demo/popest/state-total.html

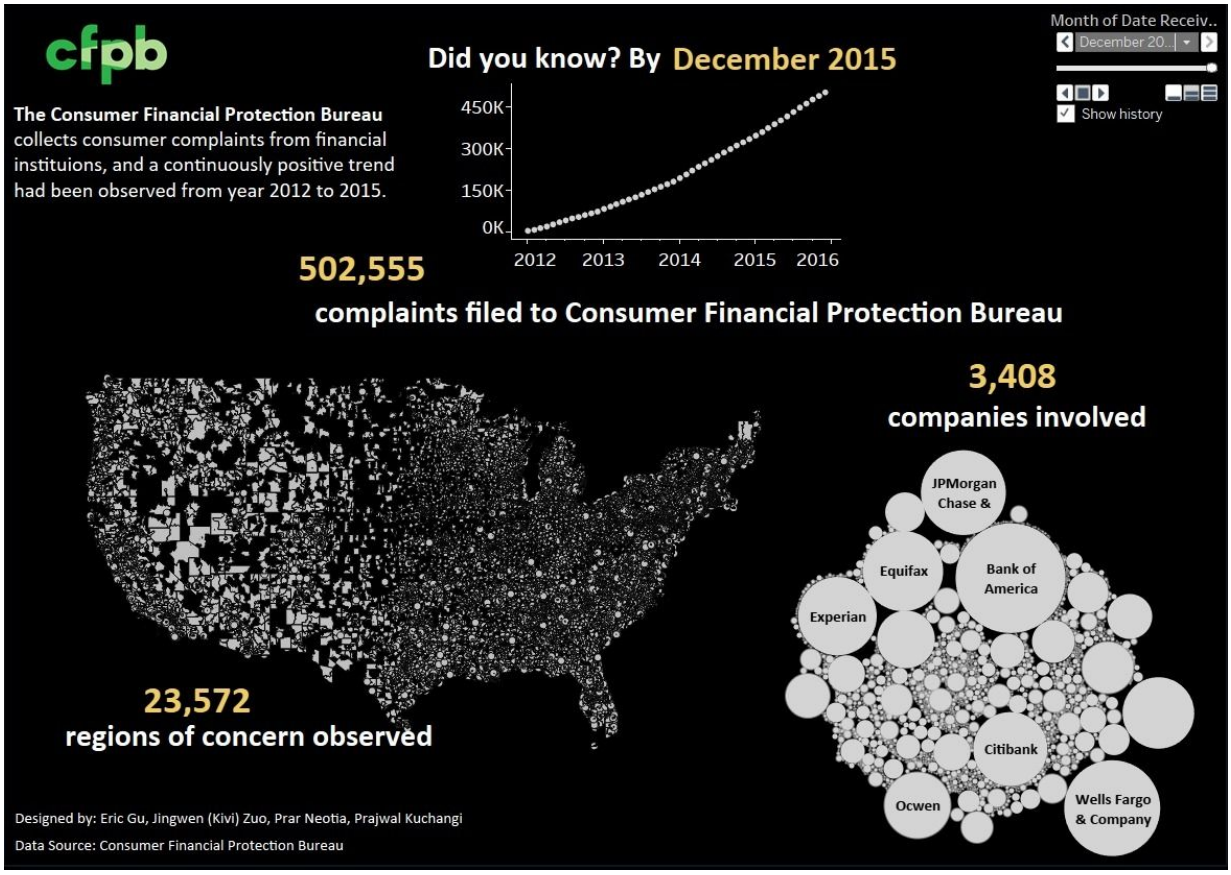
Dashboard (Build process, design consideration and insights)

Dashboard - Overview 1:

Before running animation



After running animation

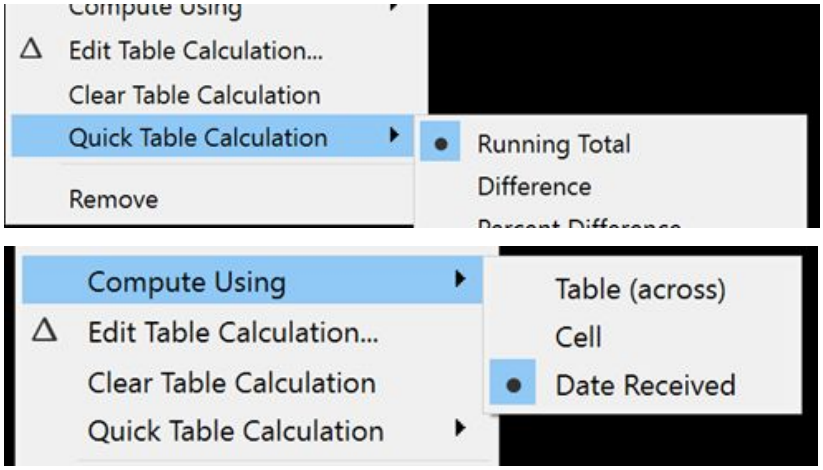


Our first dashboard serves a dynamic overview of how things have been changing from January 2012 to December 2015, a four year window. The idea is to show that as time goes, the number of complaints have been constantly going up at an increasing rate (the slope of the Number of complaints vs year plot is getting steeper). Also, more and more regions (in terms of zip code) and companies have been involved. We used animation with “show history” feature for the plots to show the cumulative result. For the map, our original approach is to build a traditional map that involves all the country boundaries, labeled countries and states, but zoom in to United States. But since “less is more” and we’re only focusing on America, then we thought it would be better to convey the message by only showing the regions that have issues instead of the whole country. So we de-selected all the map layers to only show the observed regions. And the animation is cooler because it has become a process to build up a map of America because at the end of the day, pretty much all the regions in the states have been involved.

For the bubble chart, with animation feature, it illustrates the evolution of a small cluster (with only 39 companies at the beginning) to become a large cluster (with over 3400 companies involved) at the end. With bubble chart, it is intuitive to see the

evolution process and the size of each bubble represents the number of complaints a company has received up till that point.

Then we thought it would also be cool to dynamically show the change in number of regions and companies involved up till a certain month. For the total number of complaints, we used Tableau's "Quick Filter Calculation" to calculate the "Running total" of "number of records" and computed it using "Date Received", which is the date feature we put in "Page" to show animation. With this, the cumulative number complaints would be calculated for each month.



However, to get the running total of number of regions and companies involved up till a month is a bit trickier because if we simply do running total, the repetitive ones would be included which makes our result inaccurate. For example, if 100 companies were observed in January and another 100 companies were observed in February and if we simply do the running total, the result would be 100+100=200. However, out of 100 companies observed in February, if only 20 of them are new companies, then the actual running total of the companies involved would be 100+20 = 120. To tackle this problem, we created the multiple calculation fields.

1. We first created [company_monthly_amount] to calculate the number of distinct companies of each month.

company_monthly_amount

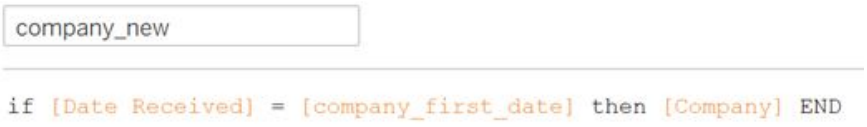
```
{FIXED [Company], DATETRUNC('month', [Date Received]):COUNTD([Company])}
```

2. We created [company_first_date] that finds the first month a company is observed in a complaint.

company_first_date

```
{FIXED [Company]: MIN([Date Received])}
```

3. Then we created [company_new] which is an if statement to see if the current month is the month that the company has its first appearance. If the condition is satisfied, the name of the new company would be returned.

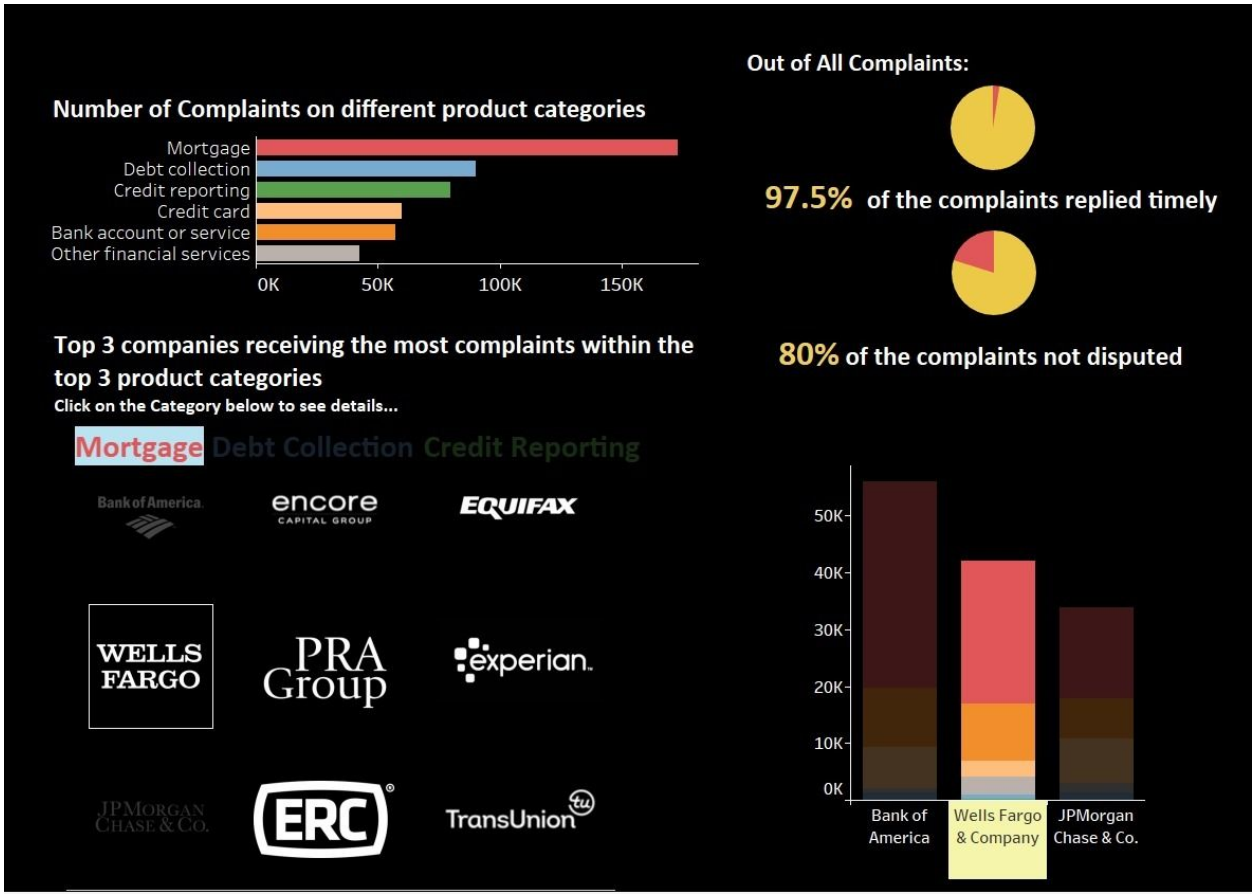


4. Finally, we count the number of distinct, new companies.

Then, again with Tableau's "Running total" calculation feature, we can calculate the cumulative sum of the number of the distinct companies involved up till a certain month by using similar method as we did before. The running total of regions is done in a similar way. Another good thing about this is since the numbers are generated by calculation fields, when new data on complaints from CFPB is fed in, it will automatically update the numbers.

For the color choice, we used light grey/white for plots because we have a dark background. We used yellow for our numbers because we want to highlight them but also differentiate them from the white text. Compared with "red" or "green" that is generally related to "bad" and "good", yellow is kind of neutral and when you think about a traffic light. A complaint is something that can potentially be solved so it's not actually a "bad" thing. Again, since we have a black background, yellow would stand out more with white.

Dashboard - Overview 2:



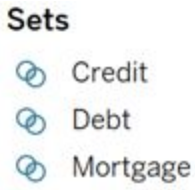
The main idea of our 2nd dashboard is an overview to show out of 500,000 complaints, what are the main things are being complained about, how are the complaints being handled, what the companies that have the most complaints are and what are the major issues with those companies.

To start with, we used a bar chart to rank the financial products that receives the most complaints and it appears that mortgage, debt collection and credit reporting are the top 3 products that had received the most complaints. Since we have a lot of different product categories but many of them have small number of complaints, we grouped everything after “Bank account or service” into “other financial services” because the sum of number of complaints on all of those categories together is still less than the number of complaints on “bank account or service”. This way our bar chart is also a lot easier to interpret without of having too many bars. We used bar chart because it is very straightforward for the audience to tell the difference. They are color-coded because we want to use them as a color legend. We use red/orange gradient color for mortgage, bank service and credit card because they are all banking-related services. It also comes out aesthetically better on the stacked bar chart

at lower right corner because it follows the gradient. Since debt collection and credit reporting are in totally different categories, we used green and blue to differentiate them from the banking services.

The pie charts on the top right shows the percentage of complaints that were replied in a timely manner and closed without dispute. Even though we are well aware that pie charts are not good for comparison, since we only have two things to compare and one of them has a much larger proportion than the other, so the quantitative message we're trying to tell here is actually really clear with pie charts. We used red for the proportion of complaints that is not replied in a timely manner or gets disputed after closure since red indicates "bad". The percentage is calculated and we used yellow for the the number because we want to be consistent with the color usage as we did in the first dashboard (yellow and white as narrative perspective). The yellow part on the pie chart is consistent with the yellow number so we don't need a another color legend to show what yellow and red means. Again, less is more!

The plot at the lower left corner shows the top 3 companies that have received the most complaints within mortgage, debt collection and credit reporting product categories. Originally we used bar charts to show the top 3 companies but then we figured it would be more straightforward to just use the logo of those companies to be more intuitive. We downloaded the logos from each companies' website, changed the color of the logo to black and white to fit our background and imported them into Tableau as shapes. Then we assigned those logos to the companies listed. Our original plan is to use each logo as a filter that links to a stacked bar chart to see what are the major issues within each company. But then we thought it would be better if we can show all top 3 companies together with one click so we can compare them. To do so, we first created 3 sets: [Mortgage], [Debit], and [Credit Collection] that group the top 3 companies within each category.



For example, for [Mortgage] set we have "Bank of America", "Wells Fargo" and "JP Morgan". Then, we created a calculation field [Choose_Product] that puts all the sets together as a new filter.

Choose_Product | consumer_complaints

```
If [Mortgage] = true then "Mortgage"

Elseif [Debt] = true then "Debt Collection"

Elseif [Credit] = true then "Credit Reporting"

else "else"

END
```

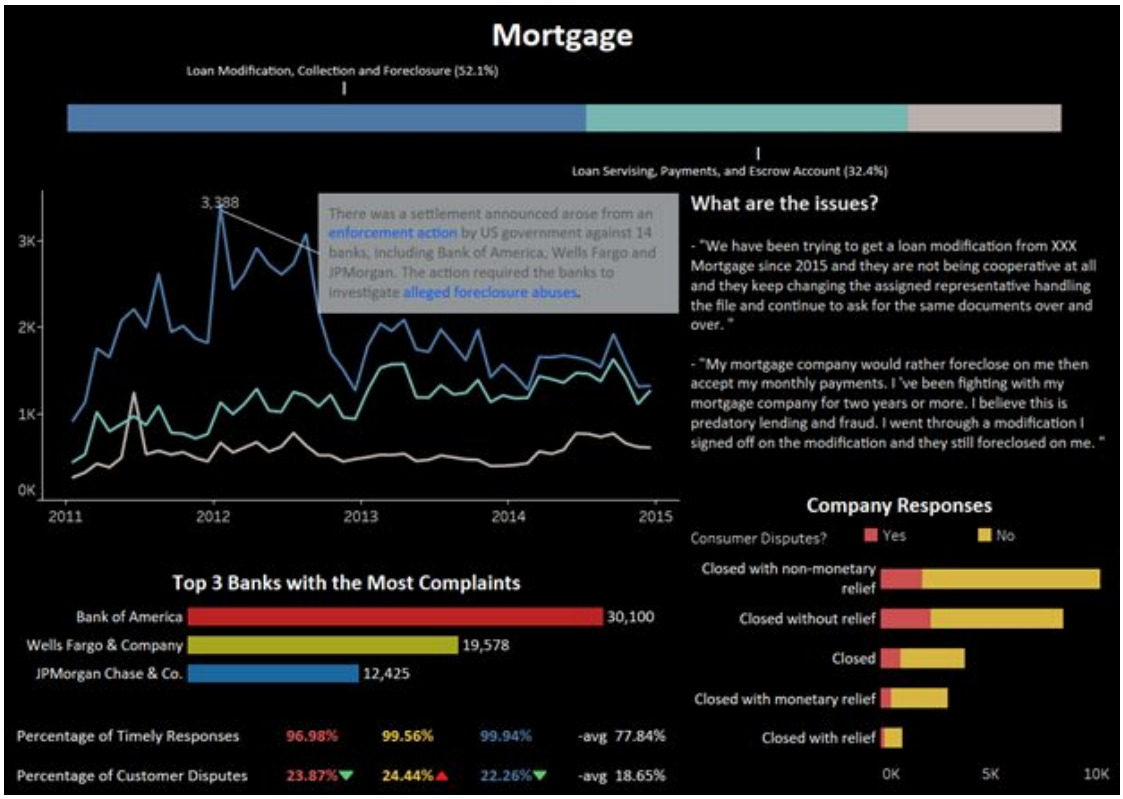
Since we do not want to show “else” but only the three categories we focus on, we created a duplicate of [Choose_Product], dragged it into our filter and excluded the “else”. Then we dragged [Choose_Product] into text as our “text filter” and created a dashboard filter action that links this filter to stacked bar chart at the lower right corner. The idea of stacked bar chart is to compare the number of complaints the companies receive and what the major issues are with each company. For example, if we click on Mortgage, three stacked bar charts would appear and it’s interesting to see that even though it makes sense that the companies that have received most complaints in mortgage are banks because they deal with mortgage stuff a lot, you would think they probably have more complaints in bank service or credit cars because that’s what people complain about all the time. However, it turns out mortgage is a common major issue for all those banks. We sort the bars in descending order of product category with the largest volume of complaints. As stated above, the color of the bar chart follows the color legend we created for the first bar chart so we don’t need another color legend. We also created dashboard “highlight” actions so when you click on the logo of a company, its corresponding bar chart will be highlighted.

Dashboard - Mortgage:

To focus on mortgage, a specific dashboard is created to answer the questions including:

1. Are there major issues within mortgage? If yes, what are the major issues and has mortgage always had the same major issues overtime?
2. What exactly are customers' complaints on the major issues?
3. What are the top three banks with the most complaints within the two major issues?
4. How do companies respond to the complaints within these two major issues, especially for the top three banks?
5. Do they have a high ratio of customer disputes after the complaints are solved?
6. Using percentages of timely responses and customer disputes as KPIs, how are the top three banks positioned within the pool of institutions that received complaints on mortgage?

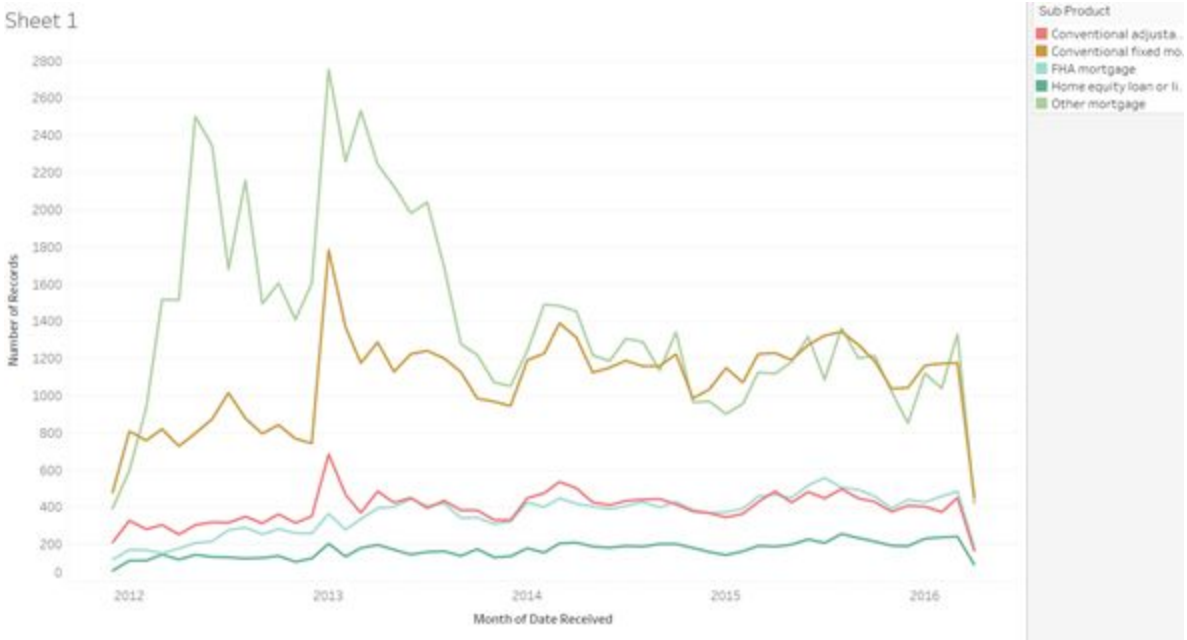
The questions above follow a storyline to dig deeper into the data of mortgage, and they were always in the process of improvement during building the dashboard as it is necessary to ensure all charts are related and represents meaningful insights.

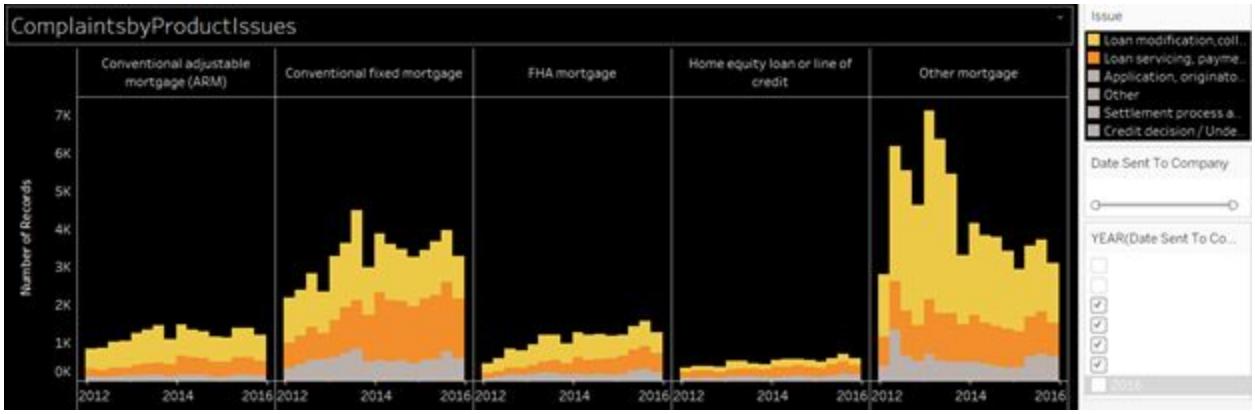


Exploratory data analysis & Design Evolution

Firstly, all attributes are assessed relating to the number of records to investigate if there is any pattern. For example, how complaints are submitted had a relatively large portion on web with over 50% of the complaints.

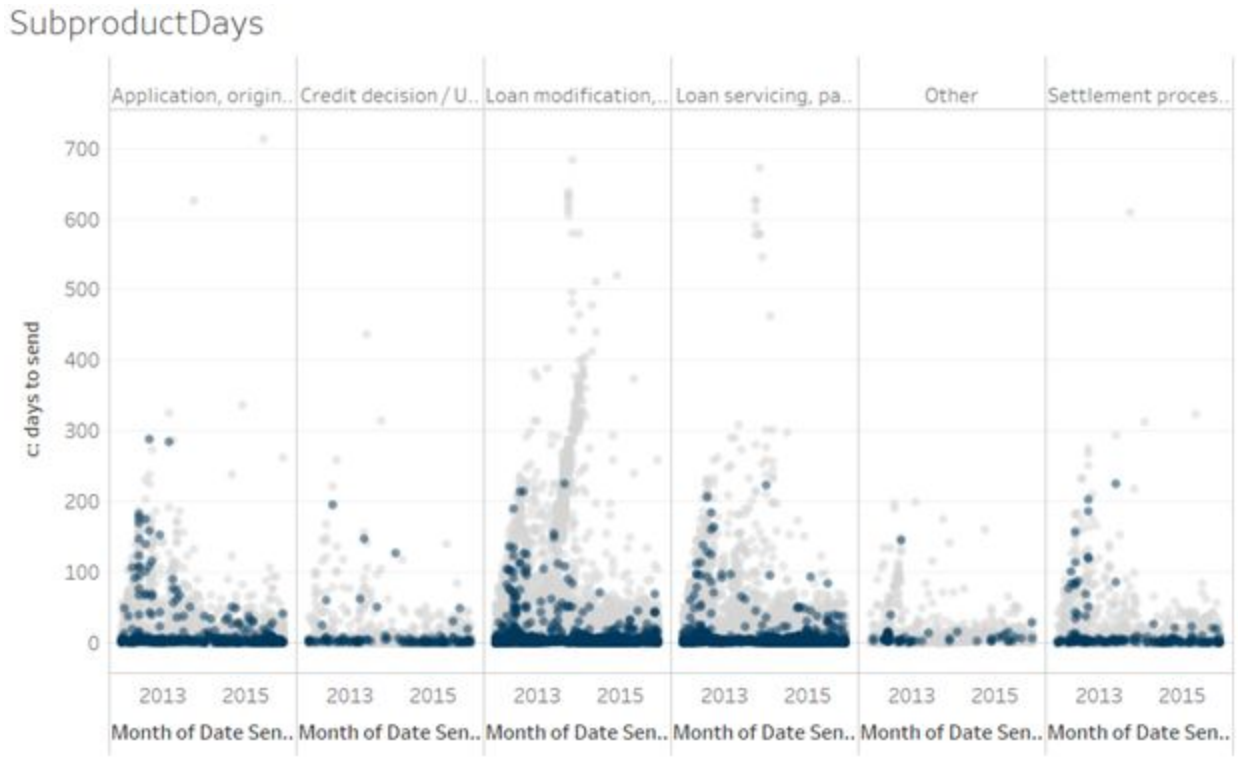
The mortgage sub-product that received the most complaints is “Other Mortgage” without supplement information. Also, the trend of complaint volume is assessed by different subproducts, and they all have very similar trends.

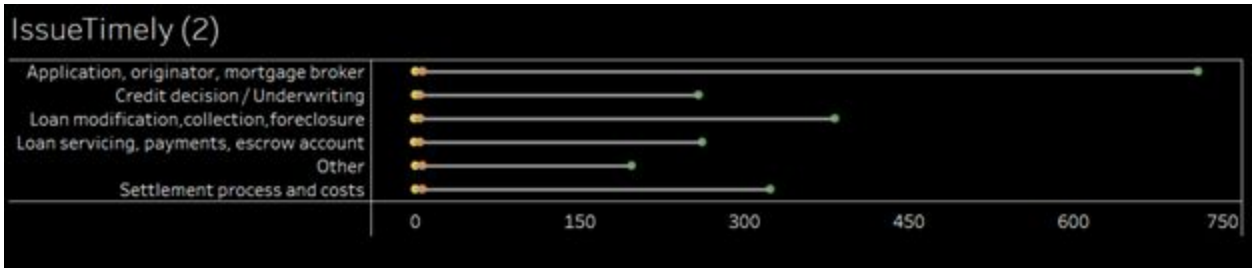




Consumer consents, company public response and consumer complaint narrative do not have complete records for all complaints, so they are excluded as well.

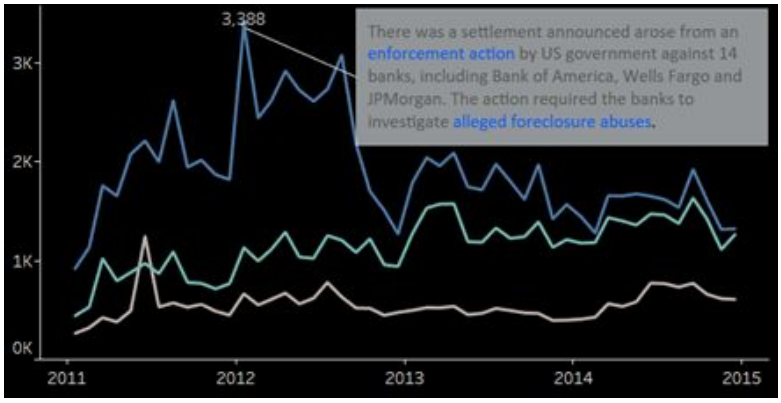
Another element is considered is the lag time after customers sent their complaints until companies start to process. However, all issues show very similar variation, even differentiating by timely responses does not show much pattern with a jitter plot. Another plot was considered was dumbbell chart, but the range of lag times does not tell much insights.



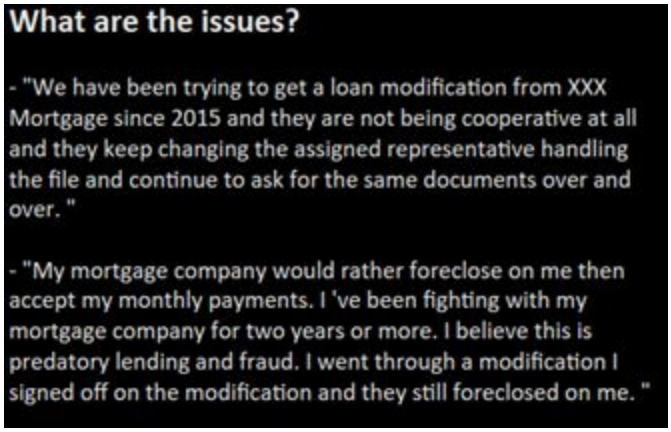


Secondly, it is noticed that certain issues within mortgage occupied over 80% of the complaints volume within the time frame: loan modification and payments. All other issues only have less than 20%. To dig into those issues, all other issues are grouped into one category to differentiate from the former two issues more clearly.
A single bar is used to represent the proportion of different issues within the category and placed at the top for an overview. Annotations are added to clarify the issue with its percentage of total complaints.

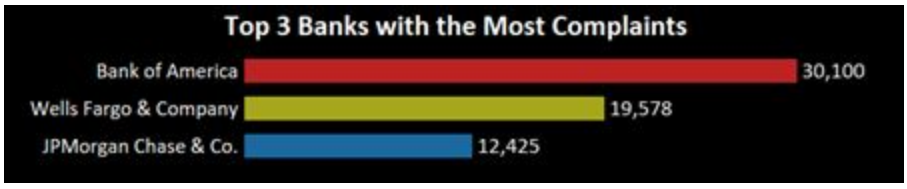
Thirdly, creating a line chart that visualize the overtime change of complaints on different issues also shows a trend of much higher portion of the major issues of the complaint volume. A dramatic peak appeared in January 2013 on loan modification, and it was followed by an enforcement action by the US government to banks, including the three banks we will focus on later, to investigate alleged foreclosure abuses and compensate customers.

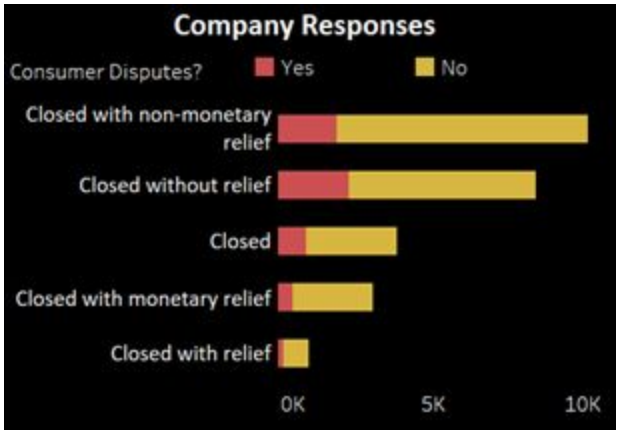


Next, to better understand what exactly the two major issues are, two examples are taken from the complaint narratives to clarity for audience. Loan modifications include issues when customers do not get their modification requests resolved after multiple attempts, and some pointed out the reasons are because of different representatives assigned and inefficiency on the bank side. Loan payments include issues when customer have difficulties making their regular payments, and reasons varies on multiple charges, unaccepted payments or changes on customer economic situation.



The following step is using a bar chart to investigate which companies are having the most complaints, and top 3 banks are selected by ranking the number of complaints on the two selected issues. From plotting the percentage of total records on the two major issues of mortgage, Bank of America, Wells Fargo and JPMorgan Chase has over 42% of the complaints within the time frame. By applying the month of year filter from the line chart to this ranking of companies, these three banks have always been the top three. For more details, a bar chart of how companies respond to the complaints is plotted beside with a select filter on the company ranking. Even including all companies that received complaints on mortgage, there are a high ratio of closing complaints with non-monetary relief or without relief from the descending sort, which have the higher ratio of consumer disputes.





Lastly, two KPIs are calculated to assess the three banks performance: average percentage of timely responses and average percentage of consumer disputes, as these are used to for companies to prioritize complaints..

Calculation fields:

1. Converting target value to 1 or 0 in a new column in the dataset

c: disputecalc

```
IF [Consumer Disputed?]="Yes" THEN 1 ELSE 0 END
```

c: timelycalc consumer_complaints_kaggle

```
IF [Timely Response]="Yes" THEN 1 ELSE 0 END
```

2. Calculating the percentage of value 1 out of the total number rows that satisfy the group

c: %ofdispute

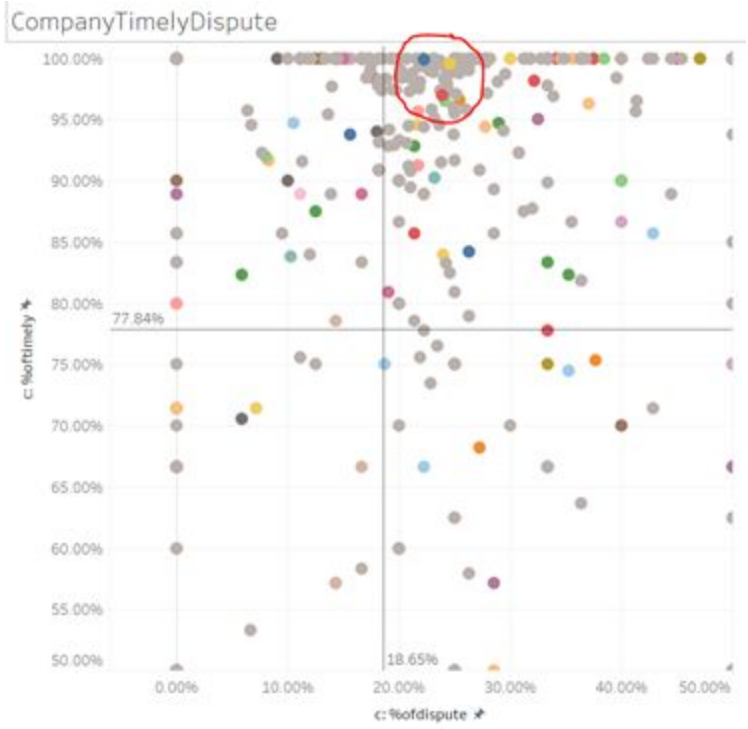
```
SUM([c: disputecalc])/sum([Number of Records])
```

c: %oftimely consumer_complaints_kaggle

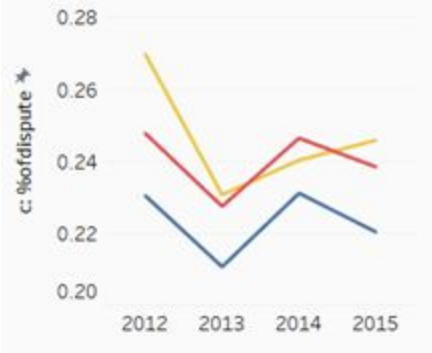
```
SUM([c: timelycalc])/SUM([Number of Records])
```

To identify how the three banks perform within the pool, a scatter plot is plotted using x-axis as % of disputes and y-axis as % of timely responses as shown below. However, due to the large pool of companies involved, only the average of two KPIs are taken to shown on the dashboard for comparison. All three companies have higher than average timely responding rates and lower than average dispute rates. However, due to

the complexity of this plot, it was decided to not include on the dashboard but the average percentages will be used as benchmarks to the target companies.



To further study on the three companies, their percentages of timely responses and customer disputes' trends overtime are assessed. By comparing rate from 2015 to 2014, both Bank of America in red and JPMorgan Chase in blue have dispute rates decreasing, but Wells Fargo's rate in yellow is increasing. An increasing or decreasing sign is placed besides the company's KPI on consumer disputes.



Percentage of Timely Responses	96.98%	99.56%	99.94%	-avg 77.84%
Percentage of Customer Disputes	23.87%▼	24.44%▲	22.26%▼	-avg 18.65%

Implementation:

Since mortgage has the most complaints of all products in the dataset, it is important to investigate the major issues from complaints. In fact, the large amount of complaints raises a red flag on banks' misconducting on their alleged foreclosure abuses. In both April 2012 and January 2013, the banks were enforced to $26 billion and $8 million settlements for charges and compensating unfairly treated customers. The purpose of collecting financial complaints is for the CFPB to oversee the complaint cases, and the dashboard will help with highlighting the issues, increasing trends and problematic institutions for further investigations.

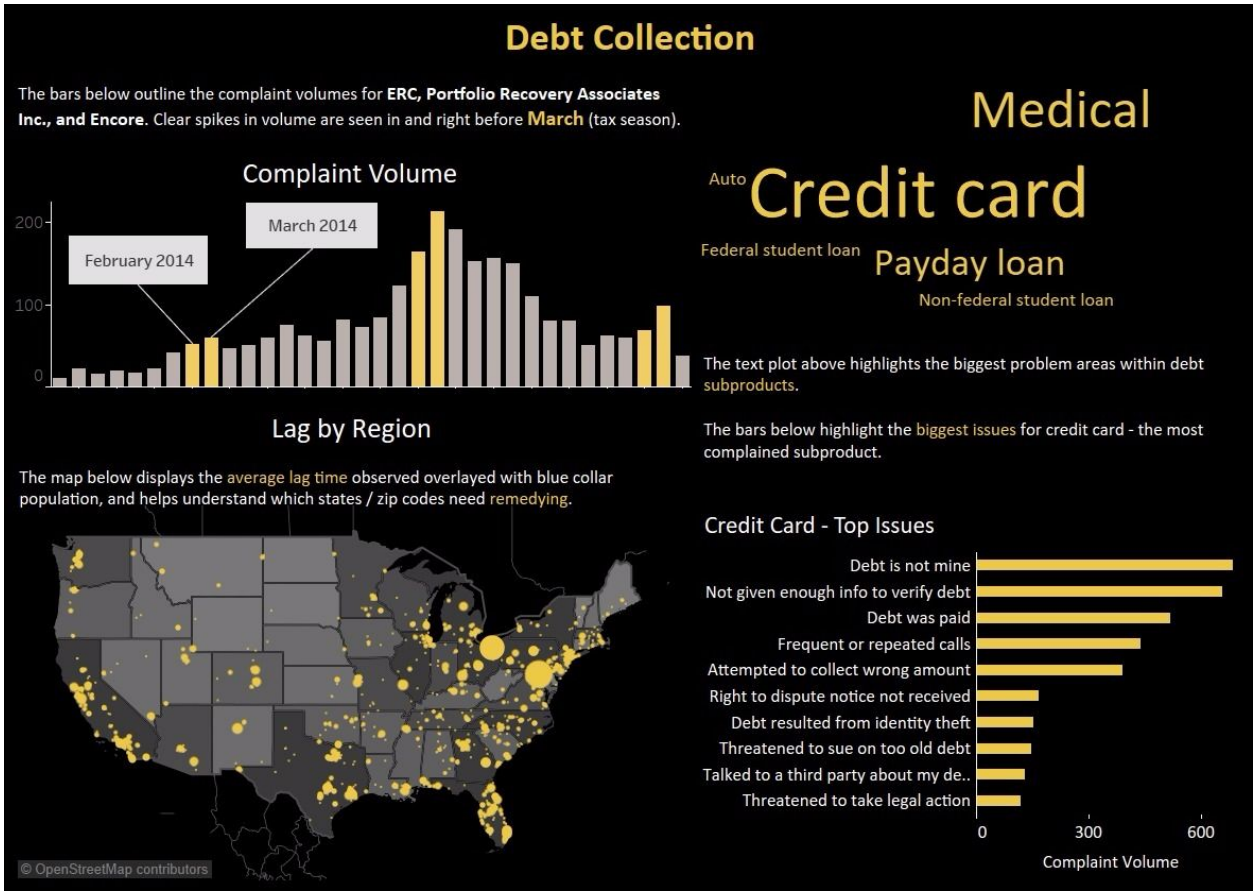
Further insights can be analyzed from the text mining on complaint narratives, which will tell more about the issues.

Dashboard - Debt Collection

Questions

The main questions aimed to be answered in this section are comprised of:

1. Is there a visible trend in complaint volume between 2012 and 2015?
2. Is customer service noticeably good or bad in certain parts of the country? Are there any insights that can be drawn from observed correlations?
3. Are there specific products within debt that seem to receive more heat than others?
4. What does all of this mean from the consumer's perspective? Can we shine more light on their voice?



Data

The data, with all its features, is used for this section initially, and assessed for relevance later. All rows are filtered on the product Debt to start off.

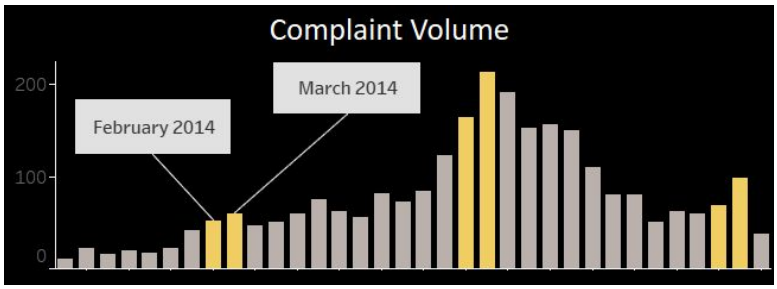
The number of records is taken to represent the complaint volume, by month, for the graph on the top left on the Debt dashboard. The same aggregation is used for the word cloud on the top right.

A calculated field ‘Lag’, which is also mentioned under mortgage, is computed by taking the difference of days between the date a complaint was sent by consumer and the date it was received by a financial company. This measure helps unpack the quality of customer service provided by the financial company a little further.

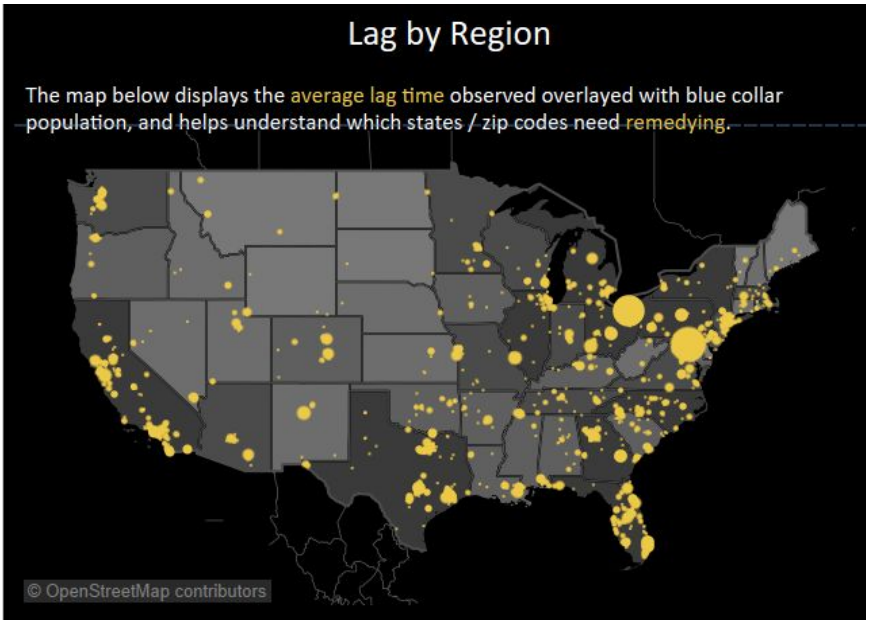
Design Evolution

The vision for the Debt dashboard is to clarify to the audience the trends in complaint activity for Debt Collection products. These could include surges in complaint volume, certain regions or products being more prone to vexed customers, and/or other noteworthy takeaways through the analysis.

The visual on the top left is a simple bar chart that helps shine light on the peaks and troughs in consumer complaint activity through the months from 2012 to 2015. Bar charts are great for comparing volumes on a discrete - value x axis, and the peaks in complaint volume before and during tax season are immediately visible to the viewer February and March are highlighted in yellow).

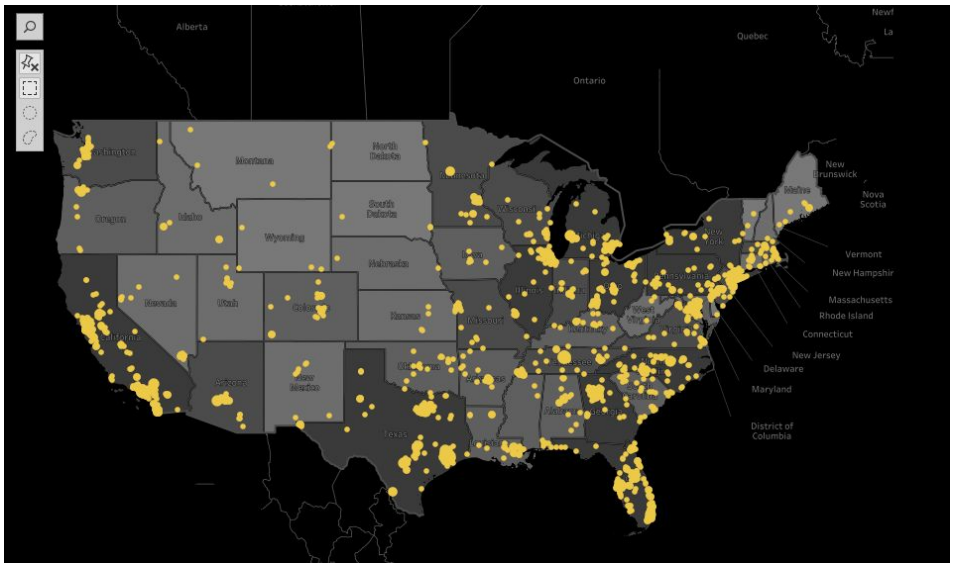


The map on the bottom left displays the lag in customer service observed through the difference zip codes. This lag uses the calculated field mentioned earlier and helps understand how long (relatively) it takes for a financial company to declare a complaint as ‘received’ after a consumer sends it from their end. This, when overlaid on the percentage of blue collar jobs in each state, helps bring out a clear correlation between those with lower paying vocations (and therefore possible lower income per capita) and those having to tolerate slower response turnaround times and thus a lower quality customer service experience.



The deduction here is that an individual with a lower income is more prone to having an imperfect credit score, and therefore might be lower on the priority list of customers for a financial company. A customer lower on a company's priority list is more likely to receive poor customer service.

Initially, the map showed consumer complaint volumes instead of company turnaround lag. This was switched to the current visual because deeper insights can be drawn from the kind of treatment (customer service) a consumer receives by region, as opposed to complaint volumes (which can be dependent on external factors like regional population, etc.). This was determined due to the clear disparity in income strength / professional trajectories in the different states in our country (Florida vs. New York, for example.)



The word cloud on the top right is a mere text display of the sub - products within debt (detail changed to Text), adjusted to size by a count of Complaint ID. This is filtered by the 3 financial companies that are most often complained about - Encore Capital Group, ERC, and Portfolio Recovery Associates Inc - companies with the most complaints. The importance of this chart lies in the immediate message of credit card debt, medical and payday loans being the biggest sources of grief for consumers. The message here is easy to parse, and conveys the significance of the issue.

The bars on the bottom right helps understand which sub - issues are most often brought up for credit card debt, and about the 3 focal companies mentioned earlier. Once again, a simple bar chart is used to help compare the differences in volume for these discrete categories. It is clear that ‘debt is not mine’, ‘not given enough information to clarify’, ‘debt was paid’, are some of the major issues that consumers seem to be highlight when logging a complaint to the CFPB. These point to a potential trend where financial companies do not treat customers with as much care and diligence as they should.

Initially, there were 3 separate bar charts for the top 3 states with slowest company response turnaround rates, but it was later realized that national consumer concerns with credit card debt (the dominant sub - product within Debt products) were more relevant. Consumer concerns (or sub - issues) may not have a lot to do with slow company response rates, and we thought it wise to sidestep the landmine or correlation and causation.

Implementation

The charts on the left talk are overviews for Debt products for all companies, and the charts on the right are filtered for Encore Capital Group, ERC, and Portfolio Recovery Associates Inc. The left side builds a high level understanding of complaint trends and consumer experiences for Debt products, and the right side drills into the 3 focal companies and then further into the sub - products of focus.

Insights

With clear consumer complaint volume spikes being witnessed in February and March of every year and Florida, Maryland and Ohio being the slowest to respond, the CFPB might want to think about encouraging financial institutions in these states to enhance their customer service protocols, at least for this chunk of the year if not perennially. This could be done by creating company targeted incentives for the 3 focal companies, to begin with.

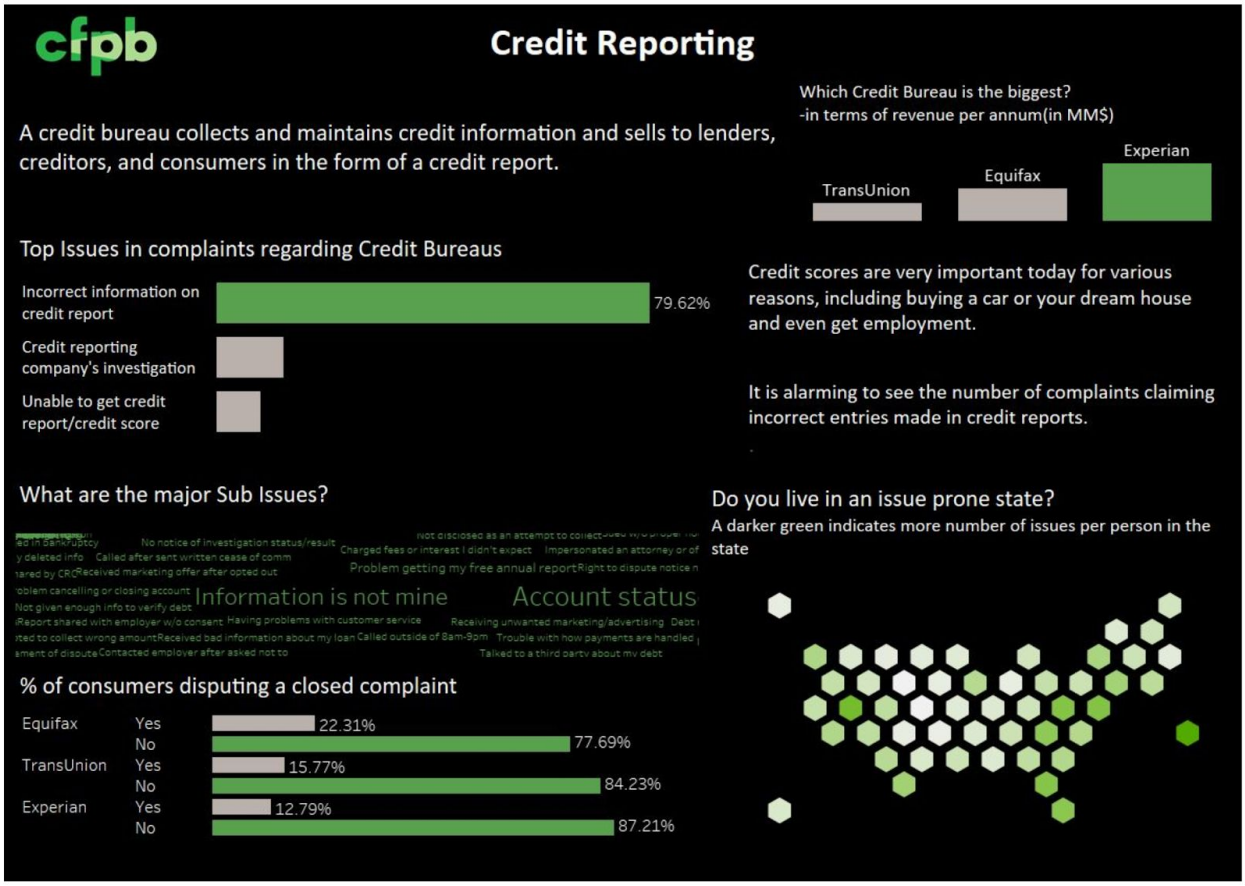
Since credit card debt is the biggest issue and sub - issues like ‘debt is not mine’ and ‘debt was paid’ surface frequently, encouraging financial companies overall and

especially the 3 focal ones to maintain cleaner consumer information records would be another good step toward making the experience more seamless for everyone involved. If the debt is paid, the customer should be stricken off the indebted consumer list. This can be achieved by frequent updates of company records. Similar to the first suggestion, CFPB creating company incentives to maintain clean and updated data can be a crucial step toward eradicating this issue.

Dashboard - Credit Reporting

The dashboard aims to highlight the major issues with consumers regarding credit bureaus. Something we noticed in the dataset was that “Incorrect information on credit report” was a major issue and we wanted to dive deeper into this.

The dashboard first gives a short introduction to credit bureaus to inform users who are unaware of what credit bureaus are. We then dig deeper into the issues and sub - issues. The user can also get a quick overview of the most issue prone states in the US and also see which Bureau provides the best service. The user can dig deeper into each category, filtering by credit bureau, location and issue type.



<u>Exploratory Data Analysis, Evolution and Implementation</u>

As mentioned previously, we were alarmed to see that the issue type which had the highest percentage of total was ‘incorrect information on credit report”. Even more alarming was that one of the major sub issues was “information is not mine”. We wanted to highlight this.

We chose to use bar graphs to show the biggest credit bureau in the US, the major issues and also the performance of credit bureaus in responding to complaints.

Percentages were used instead of numbers and annotations were used to highlight these percentages wherever we felt necessary. Example - “incorrect information on credit report“ was a major issue and we felt it should be annotated. Bar graphs are easy to interpret.

We used a word cloud to highlight the major sub issues. There were numerous sub issues and it would be difficult for the user to view each sub issue individually. Therefore, we used the word map to highlight major sub issues in just one glance.
To ensure that our map for states with most issues is not just a population map, we calculated number of complaints per capita by joining the population for each state. Initially we were using just the Tableau map default. But this occupied too much space on the dashboard and did not allow us to convey the most information in the least space possible. Therefore, we decided to use a Hex-tile map in place of the map.

The Hex map was constructed using X and Y coordinates from a separate data source. The hexagon image was added to the shapes folder in the “My Tableau repository/Shapes” to include it in the graph. This link was used as a reference https://www.tableau.com/about/blog/2017/1/viz-whiz-hex-tile-maps-64713

We also had information regarding how the complaint was registered and customer - tags such as “Elderly American” which we tried to include in the analysis. But this would dump too much information on the user and deviate from the main point and thus, we avoided it.

We had some time stamped data as well. Since there was no particular trend that we observed, we chose not to show it.

The color schema used was green, black and white which was in line with the color schema used in the Overview dashboard. Green was used to highlight wherever necessary.

Most users tend to read from left to right and then top to bottom. The layout was designed to convey the story in this order.

Text was added where we felt the user needs further background to understand what they are looking at and also how to interpret the results. Text of bigger size was used for headings. Different font was looked into, but as it did not provide any additional value, alternative fonts was ignored.

Insights:

Experian is the largest Credit Bureau in the US. “Incorrect information in credit report” is a major issue (almost 80%) of all complaints. “Information is not mine” is a major sub issue, which is alarming. Imagine you see that your credit score has dropped by a 100 points because of defaulting on a loan that you did not take! Georgia seems to have a high complaints per person which is worrisome for residents like us. Equifax

seems to have the worst service with more than 20% of the consumers disputing a closed complaint.

Evaluation

We believe that our team managed to look at a rather dry subject from varied viewpoints and gather many insights. Our dashboard would be extremely beneficial to a user seeking to obtain breadth and depth of knowledge in a short amount of time regarding the issues faced by consumers on a regular basis, as well as to the CFPB in terms of building next steps' strategy for enhancing the financial services landscape.

As our dashboard deals with data which is going to be used most likely in a professional setting, we aimed to create a professional dashboard which conveys insights in the simplest way possible. As a result, we have limited the number of animations and graphs which are not very intuitive.

We believe we have accomplished our aim to deliver a professional dashboard.

Sources

Dataset (Kaggle - consumer_complaints.csv)
https://www.kaggle.com/cfpb/us-consumer-finance-complaints/version/1

GoBankingRates 2018 - 2019 survey
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https://money.cnn.com/2013/01/07/news/economy/new-foreclosure-settlement/index.html?iid=EL

CFPB Launches Consumer Complaint Database
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