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Consumer Financial Protection Bureau (CFPB) Consumer Complaints Analysis

Group 2:
Nupur Pathak, Revathi Boopathi, Sree Divya Cheerla, Vani Bhat

Agenda

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1. Introduction
2. Project Objective
3. Datasets
4. Stages of Implementation
    1. Data Cleaning and Wrangling
    2. Data Join
    3. Visualizations
    4. Dashboards
5. Use Case Demonstration
6. Conclusion and Future Scope

Introduction

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- CFPB is a U.S. government agency dedicated to making sure you are treated fairly by **banks**, **lenders** and other **financial institutions**.
- Consumer complaint database is CFPB's database of financial product and service complaints to see how various financial companies respond to consumers.
- These complaints act as a **powerful tool** to provide insights for the companies to identify whether the consumers are satisfied with their product and service offerings.

Problem Statement:

- From the 'Consumer Complaint Database' we can infer that many consumers are dissatisfied with the banking services offered by their company.
- This is reflected from the number of complaints raised by the consumers. It is important to analyse from both consumer and the company's perspective as to why, what and where the issues are being faced and address them appropriately.

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Project Objective

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- The main objective of this project is to identify the major areas of the banking/ financial product services where the consumers are facing maximum issues and address them for the respective product categories offered by the companies.
- Our analysis can help CFPB to regulate consumer financial products and services and also educate and empower consumers to make informed financial decisions.

- **Key Questions:**
  - What are the products/sub-products with maximum consumer complaints ?
  - What are the prominent Issues faced by consumers ?
  - Which states have seen the highest number of complaints registered ?
  - Is there a correlation between number of complaints and population density ?
  - What mode do consumers prefer to log their complaints ?
  - What are the top companies with the highest complaints and how are the companies responding to registered complaints?
  - What actions companies need to take to improve the consumer experience?

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Datasets

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Dataset - I

Field name	Type	Description
Date received	Numeric	The date the CFPB received the complaint
Product	Categorical	The type of product the consumer identified in the complaint
Sub-product	Categorical	The type of sub-product the consumer identified in the complaint
Issue	Categorical	The issue the consumer identified in the complaint
Sub-issue	Categorical	The sub-issue the consumer identified in the complaint
Consumer complaint narrative	Categorical	Consumer-submitted description of “what happened” from the complaint
Company public response	Categorical	The company’s optional, public-facing response to a consumer’s complaint
Company	Categorical	The complaint is about this company
State	Categorical	The state of the mailing address provided by the consumer
ZIP code	Categorical	The mailing ZIP code provided by the consumer
Tags	Categorical	Data that supports easier searching and sorting of complaints submitted by or on behalf of consumers
Consumer consent provided	Categorical	Identifies whether the consumer opted in to publish their complaint narrative
Submitted via	Categorical	How the complaint was submitted to the CFPB
Date sent to company	Numeric	The date the CFPB sent the complaint to the company
Company response to consumer	Categorical	This is how the company responded
Timely response	Categorical	Whether the company gave a timely response
Consumer disputed	Categorical	Whether the consumer disputed the company’s response
Complaint ID	Numeric	The unique identification number for a complaint

Dataset - II

Field name	Type	Description
State	Categorical	The state for which the population is indicated
Year	Numeric	The year for which the population is recorded
Population	Numeric	The population for a state for a given year
State_Code	Categorical	The state code for which the population is indicated
Region	Categorical	Geographical areas categorised into regions
Division	Categorical	Geographical areas categorised into divisons

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Data Cleaning and Wrangling

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Data pre-processing and wrangling has been done in Jupyter Notebook and tableau. Below are the preprocessing steps incorporated.

1. Converted the 'Date Sent' and 'Date Received' column of the data set to the appropriate format yyyy-mm-dd
2. Dataset is filtered for year >2018
3. Dropped the 'Consumer Narrative' column in the dataset as this is a text heavy field which had led to the slowness of the tableau desktop
4. Modified the column names in Tableau to adhere with the standards
5. Ensured the null values are handled

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Data Join

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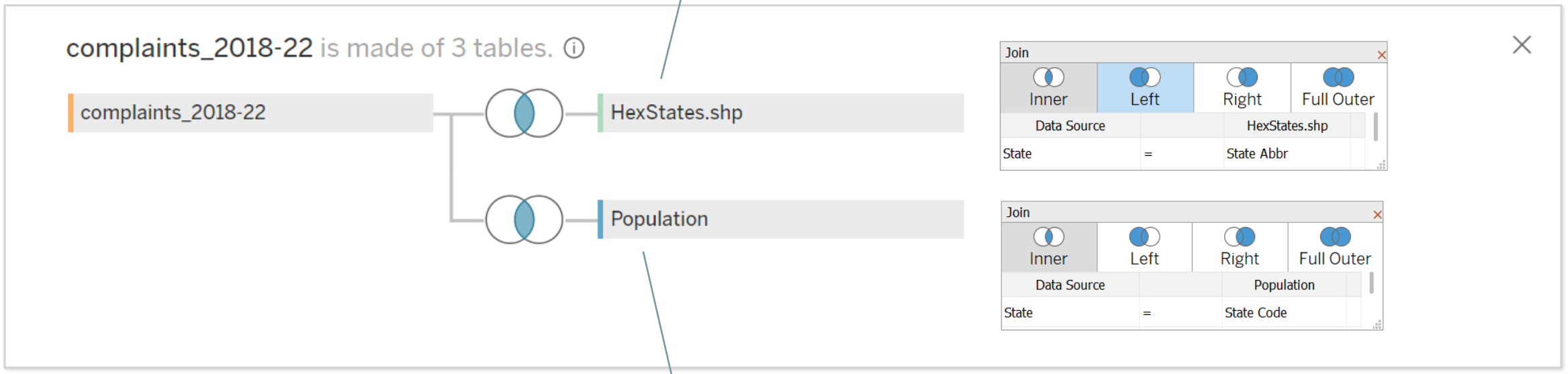
We have performed an inner join operation of the Consumer Complaint dataset with the US population dataset and Hex Spatial file(to help generate hex maps for US states) with the intention of bringing out the state wise correlation between the number of complaints registered and the population density.

Spatial File: Used to generate Hex Maps for United States



Population Dataset: Used to correlate complaints registered and population density

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Total Complaints

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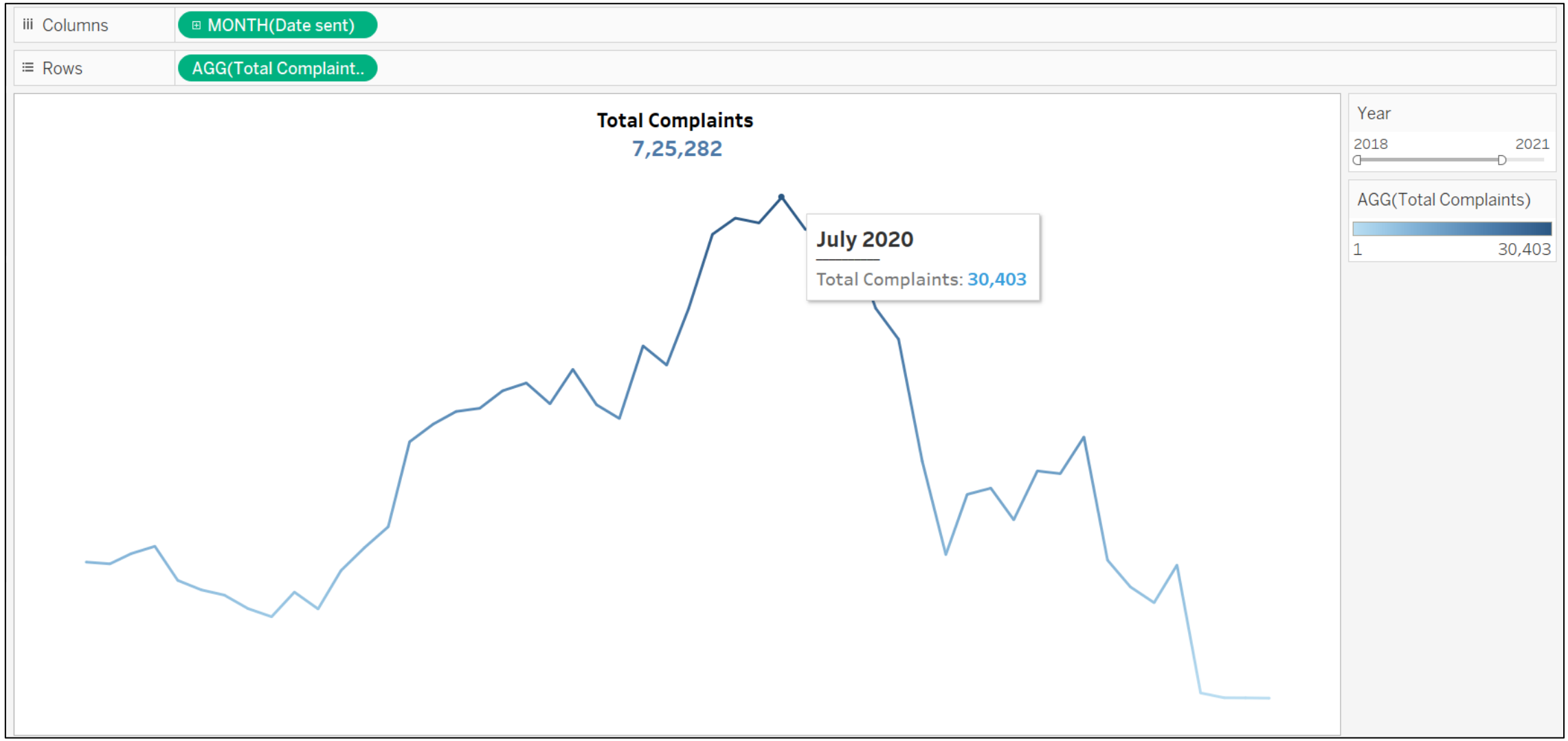

Type of chart: Line

Y-o-Y Growth

Type of chart: Dual combination

Complaints by State

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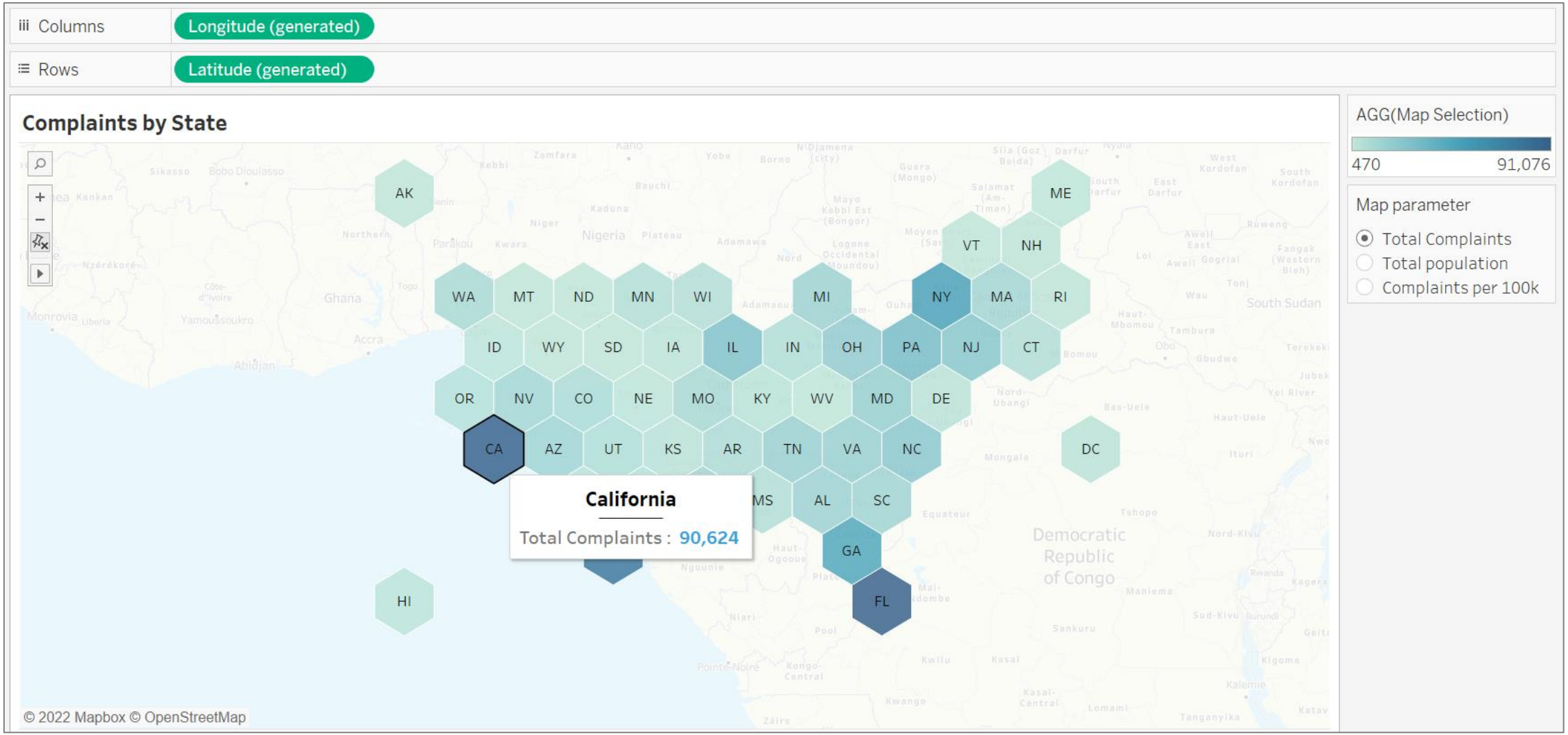

Type of chart: Hex Maps

Complaint Analysis – By Product

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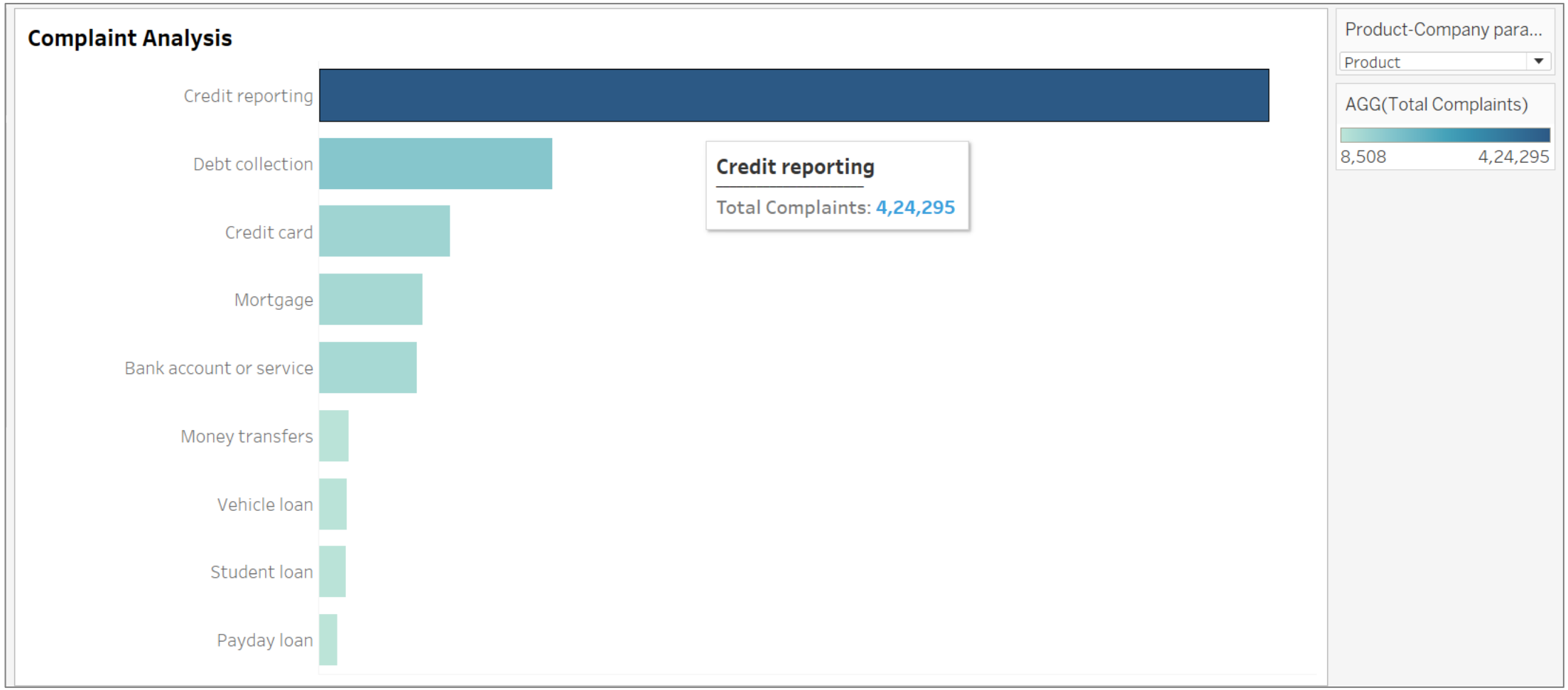

Type of chart: Horizontal bars

Complaint Analysis – By Company

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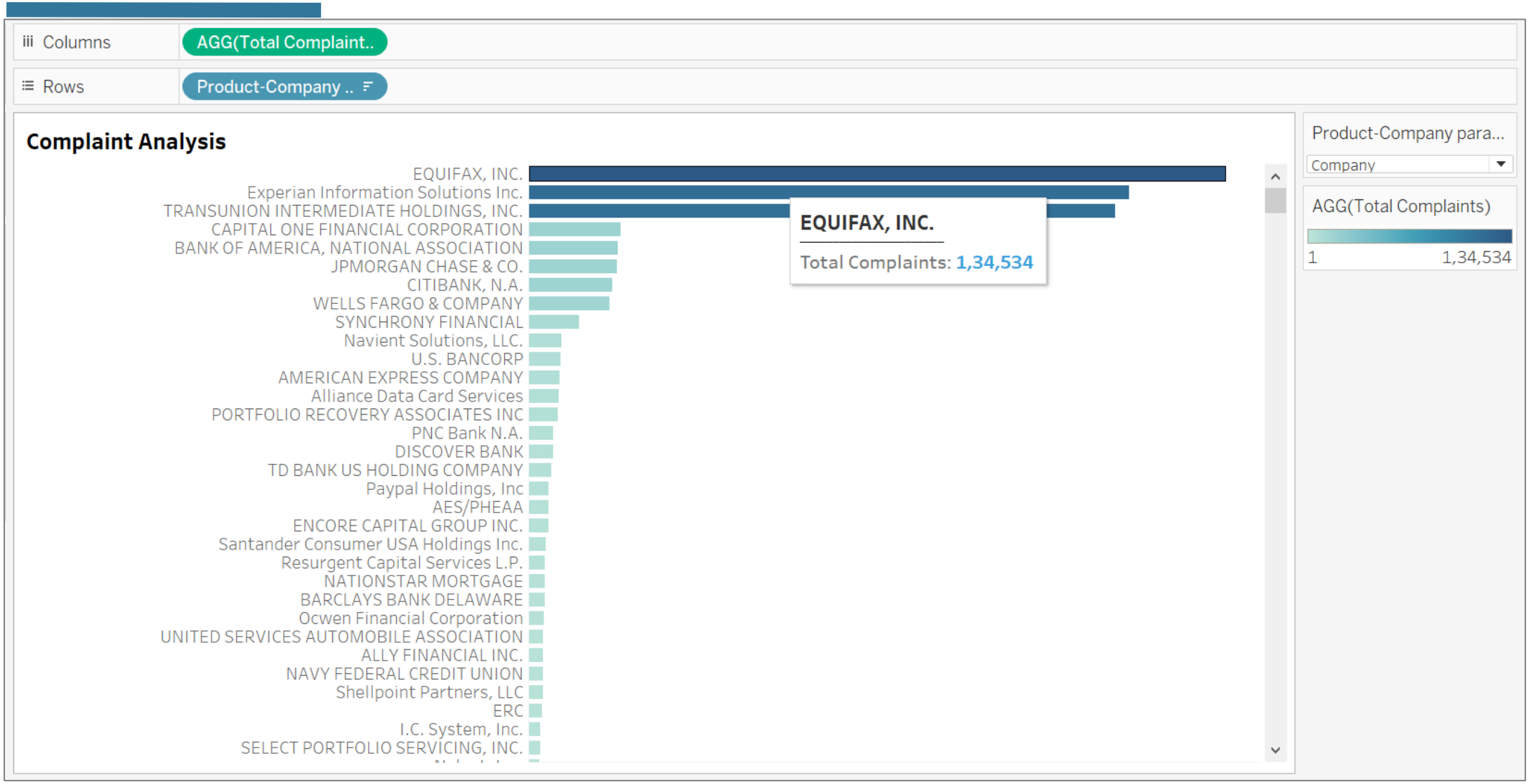

Type of chart: Horizontal bars

Complaints by Issue

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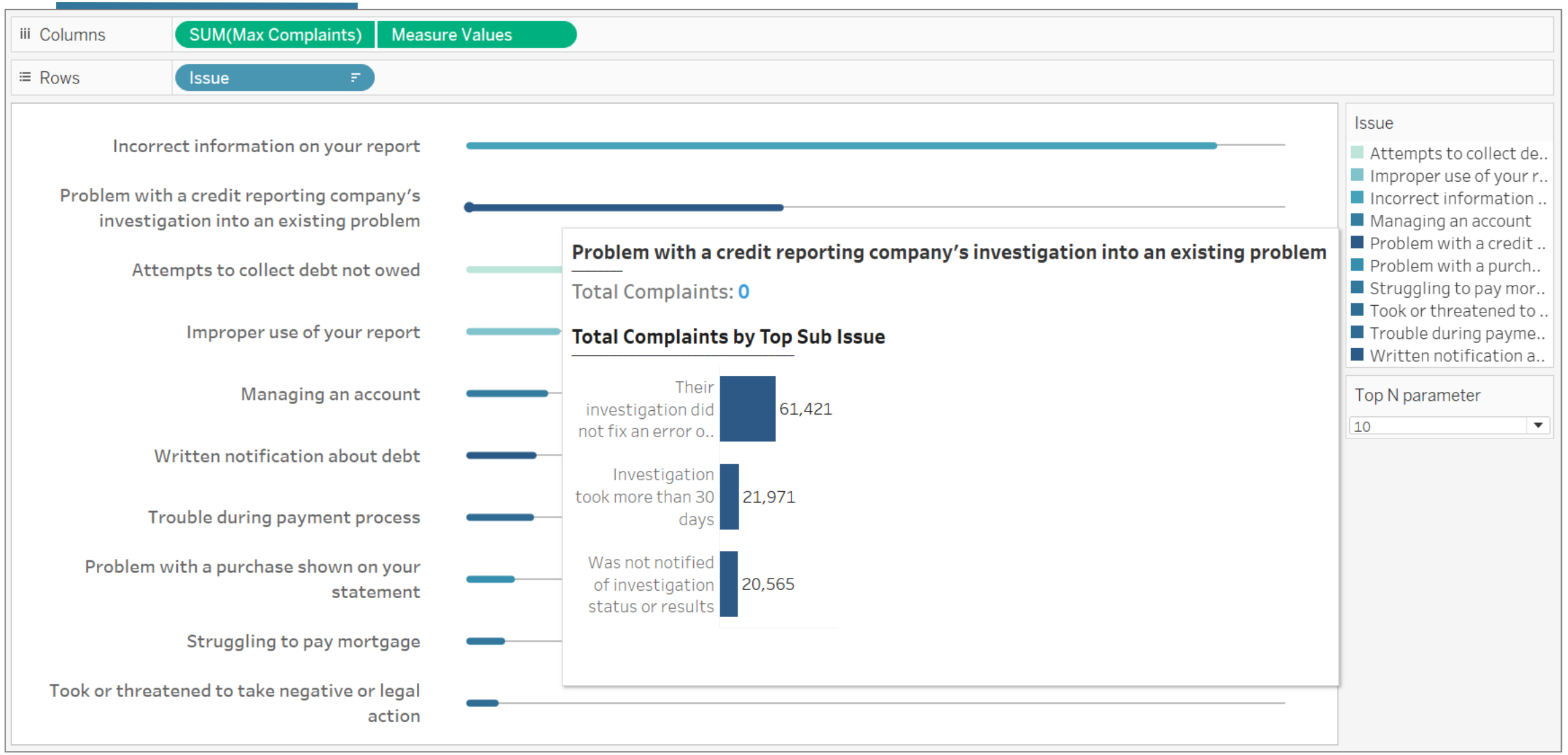

Type of chart: Horizontal bars

Complaints by Submission Medium

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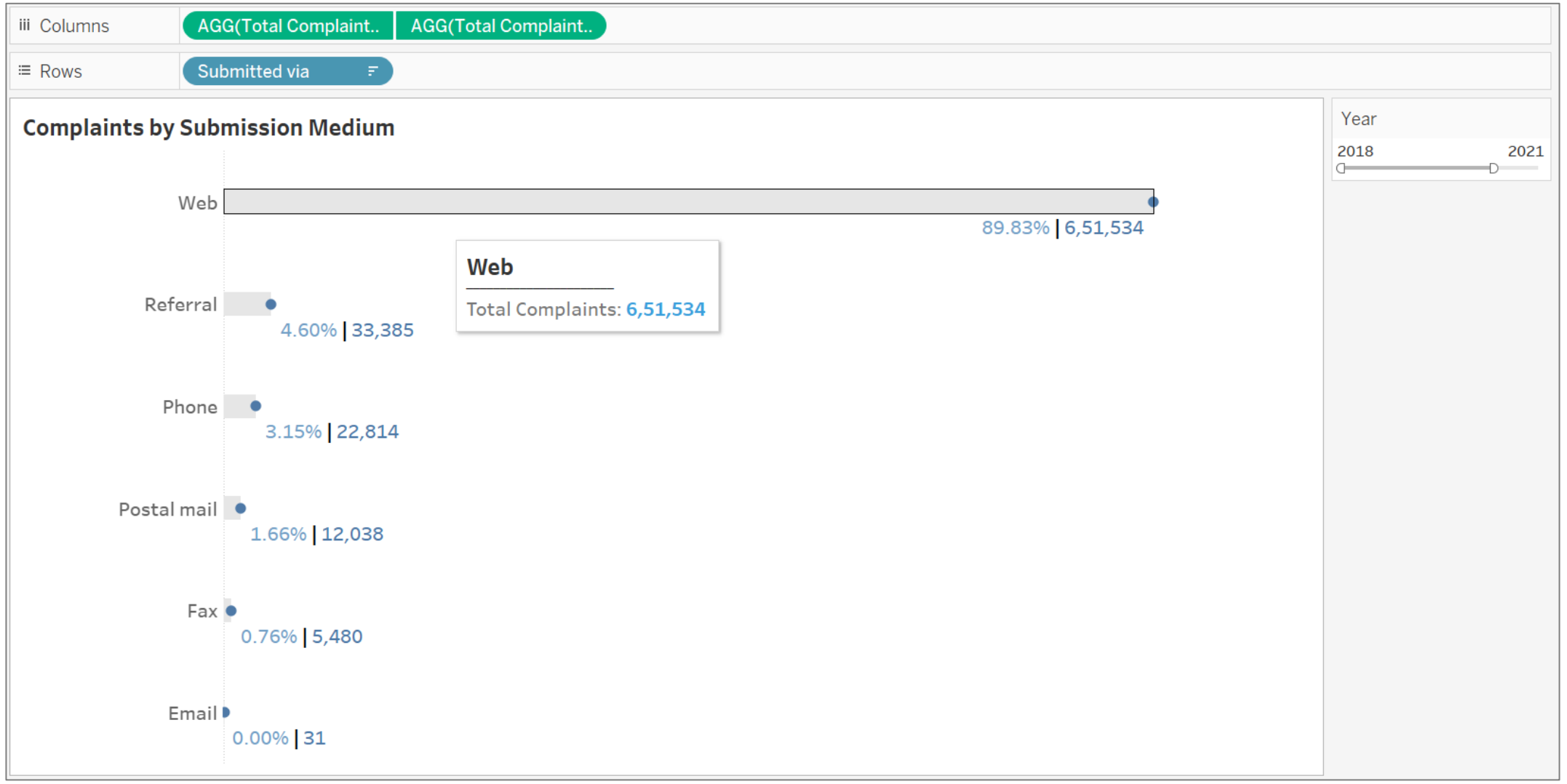

Type of chart: Horizontal bars and Scatter plots

Total Complaints

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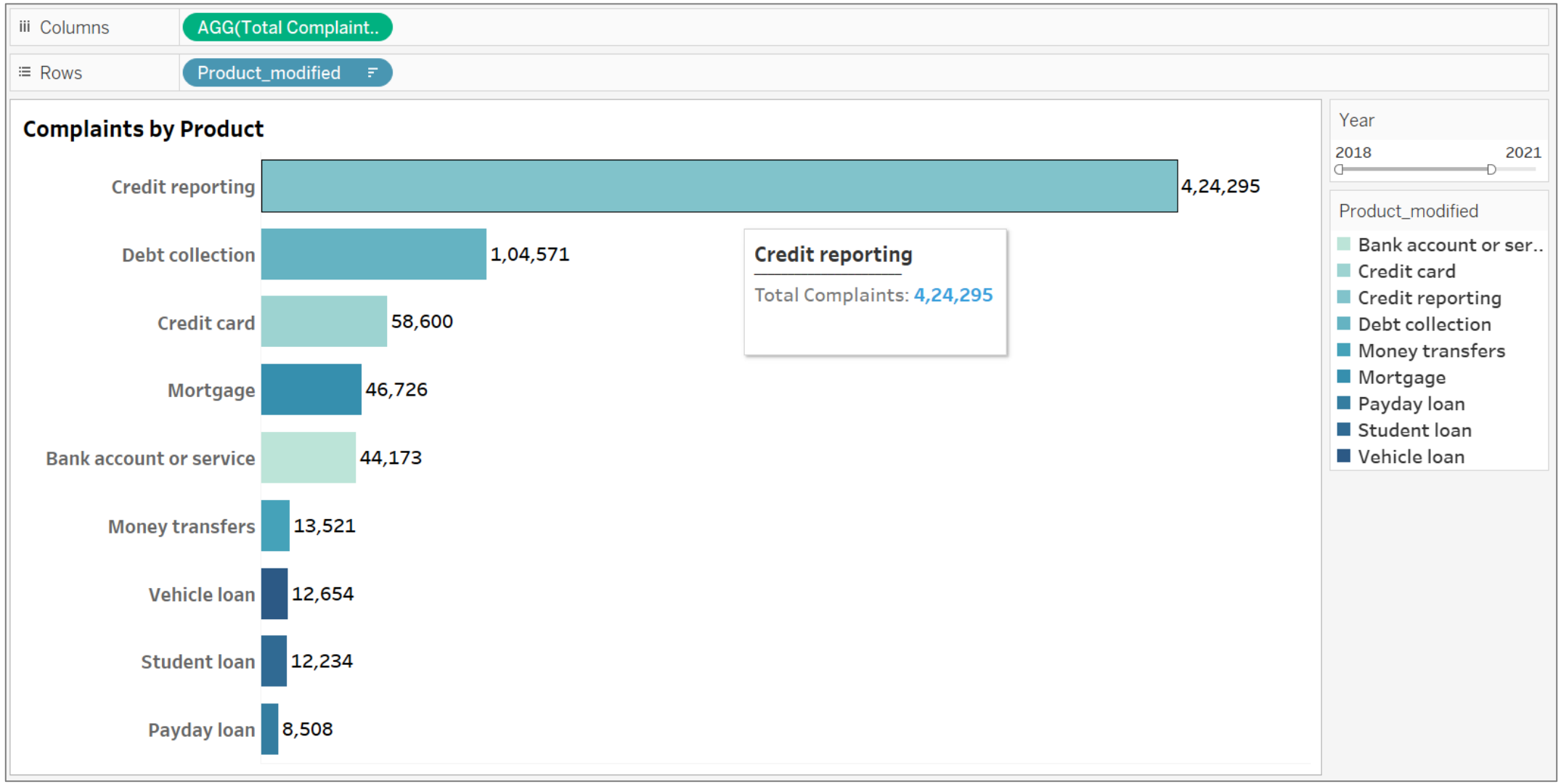

Type of chart: Horizontal bars

Complaints by Sub Product

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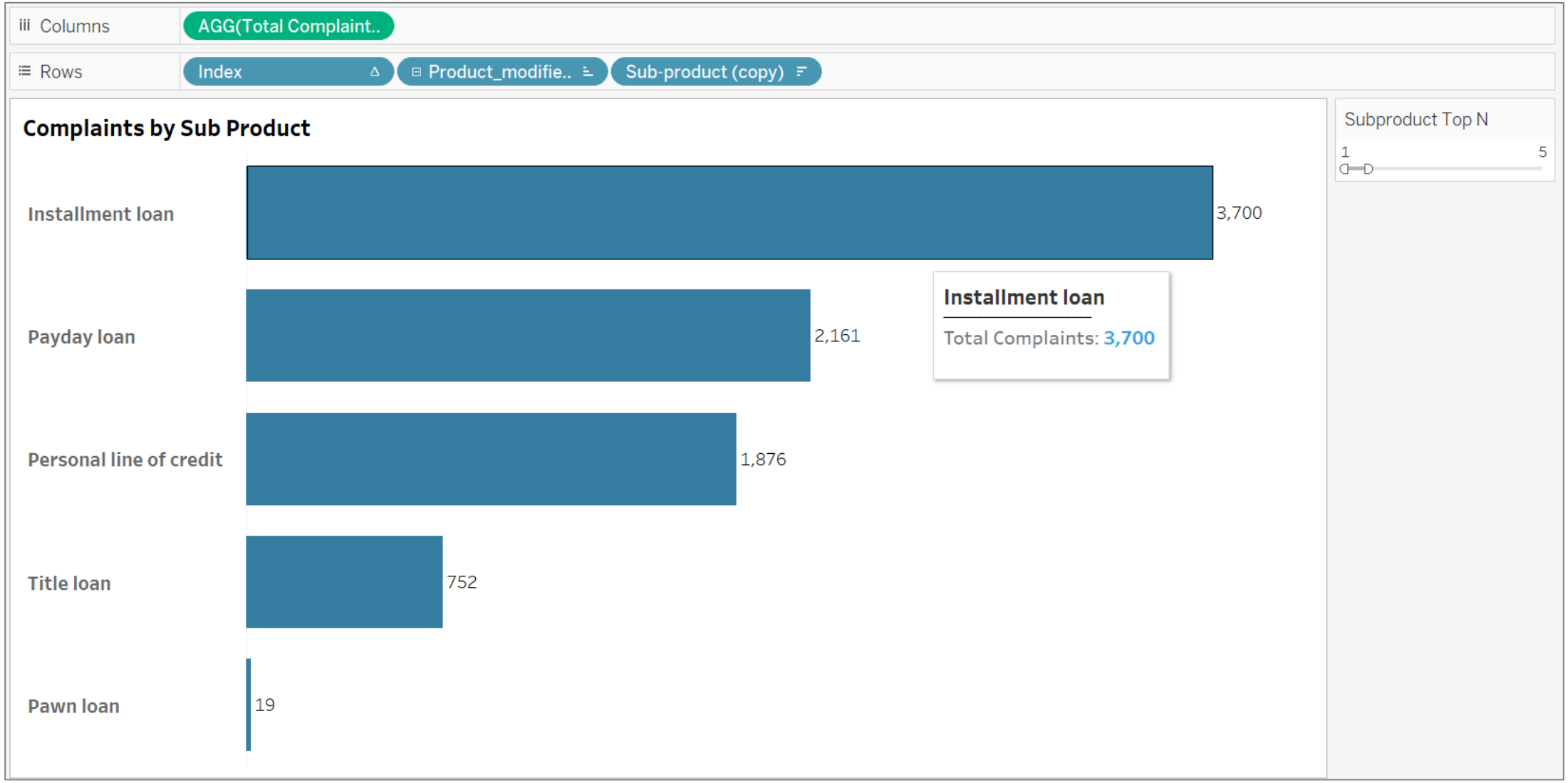

Type of chart: Horizontal bars

Product – Year Analysis

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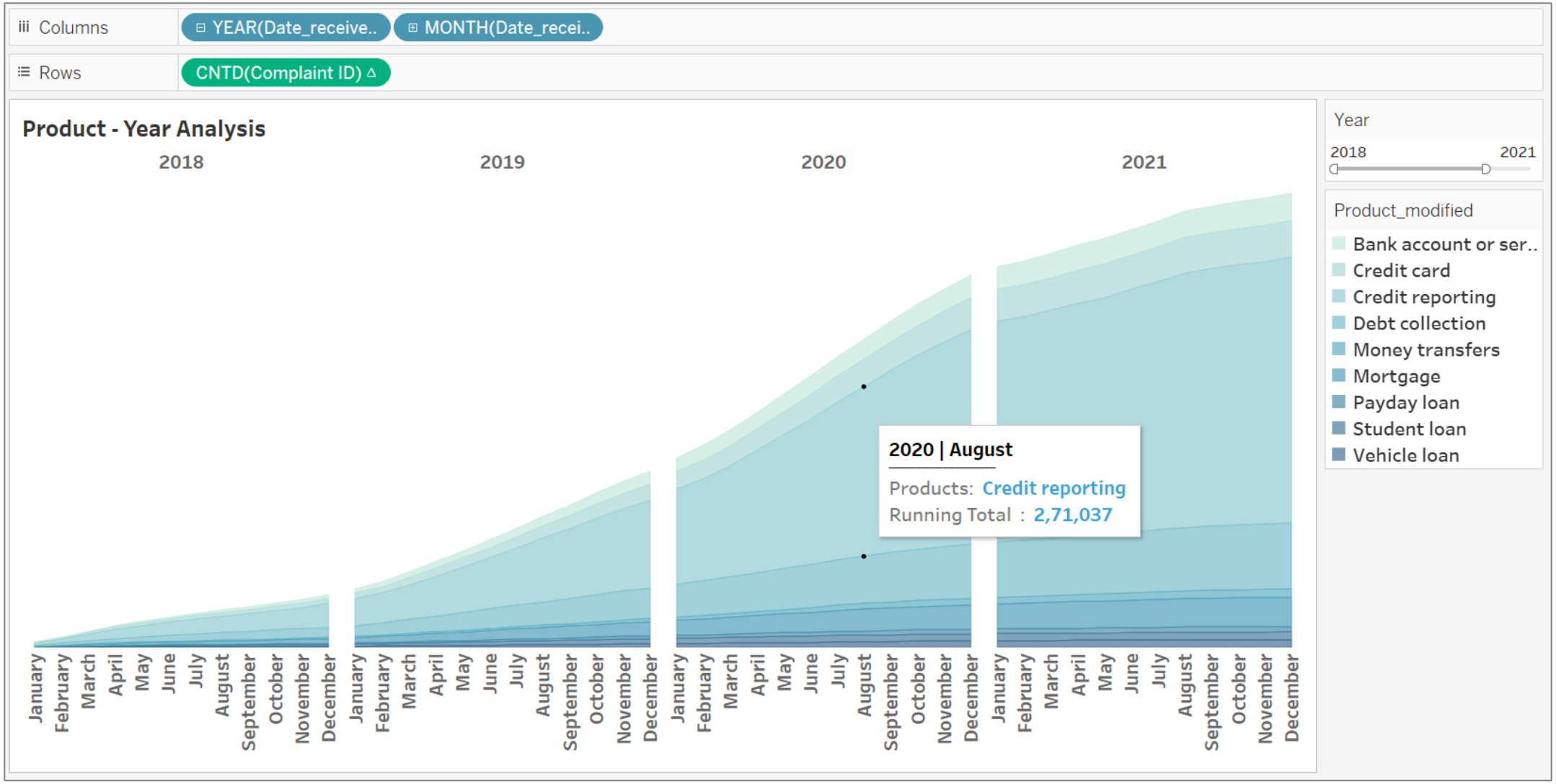

Type of chart: Area

Complaints by Issue

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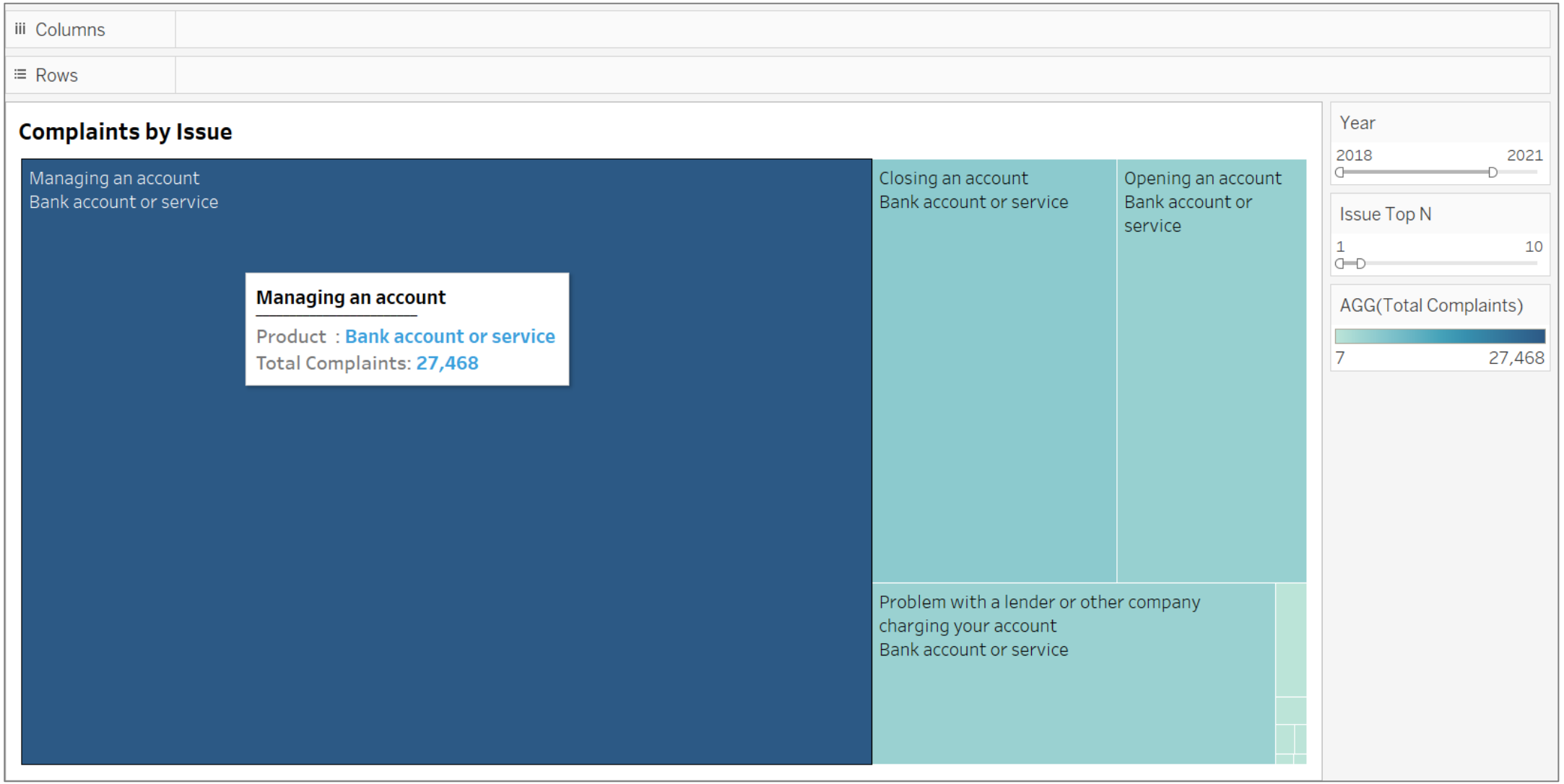

Type of chart: Treemaps

Company Response

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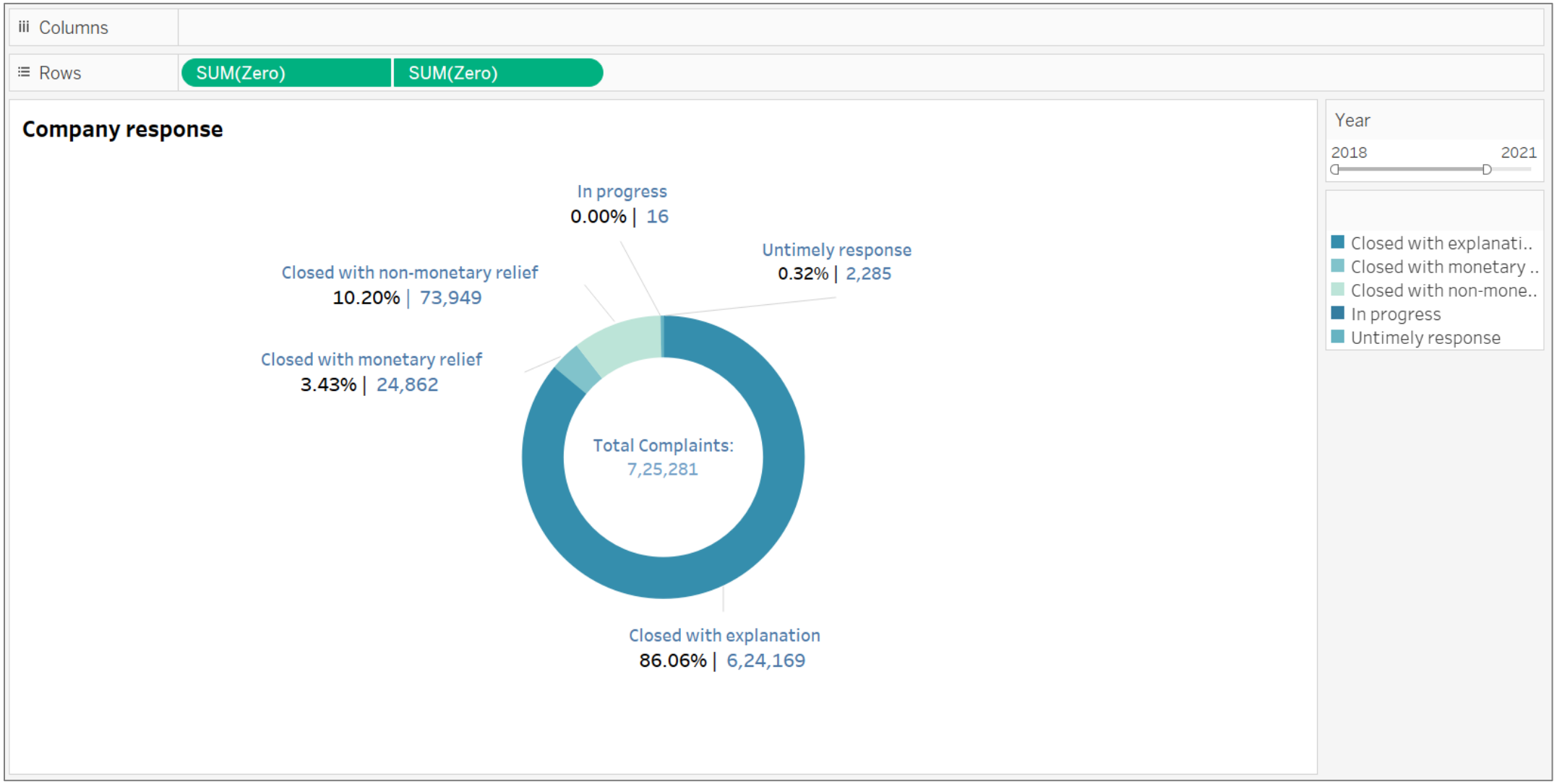

Type of chart: Doughnut

consumer Tag

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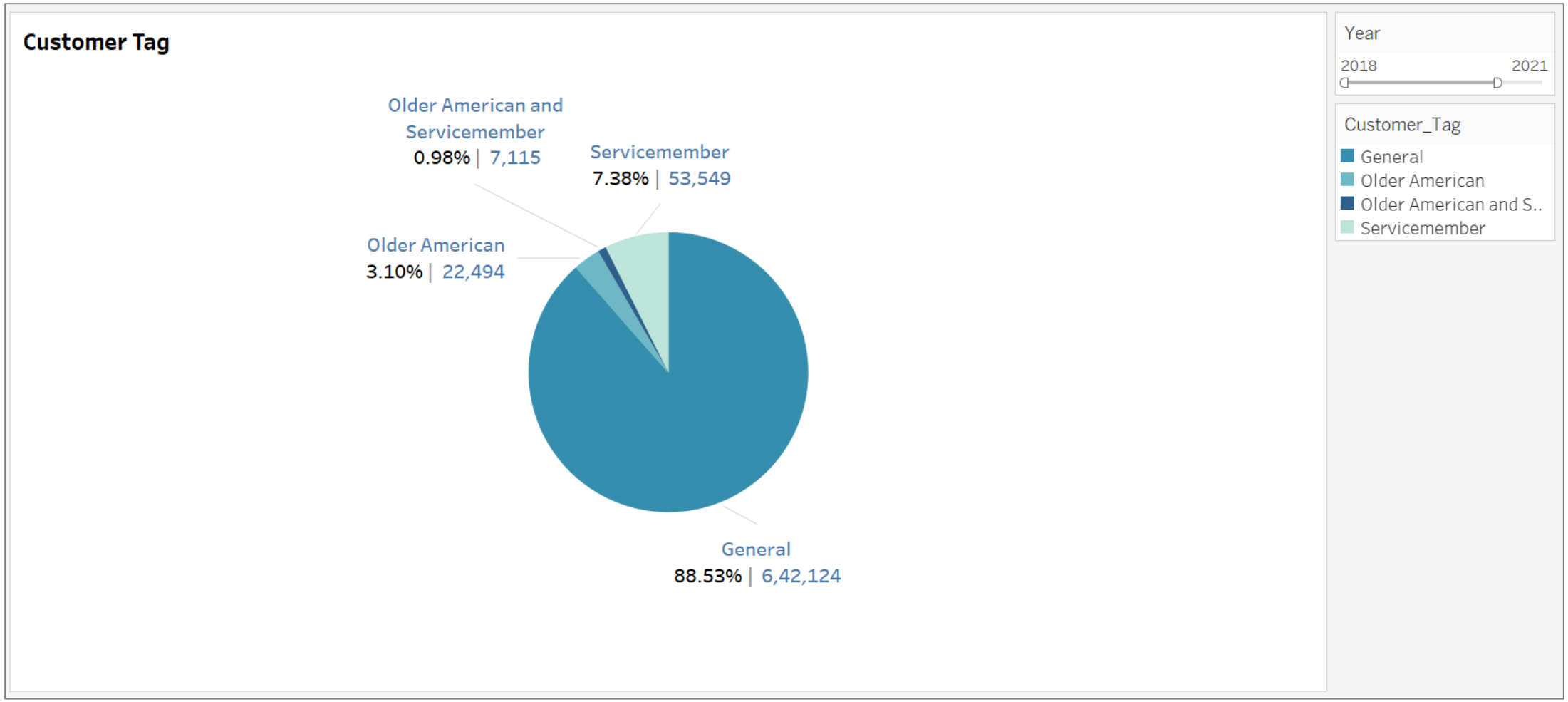

Type of chart: Pie

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Dashboard

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We have come up with 4 dashboards to provide information at glance.

1. Executive summary dashboard
2. Product analysis dashboard
3. Company product analysis
4. Company response analysis

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Executive Summary

Product Analysis

Company Product Analysis

Company Response Analysis

Consumer Financial Protection Bureau (CFPB)

Consumer Complaints Analysis

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CONSUMER FINANCIAL COMPLAINTS ANALYSIS

Year 2018 — 2021

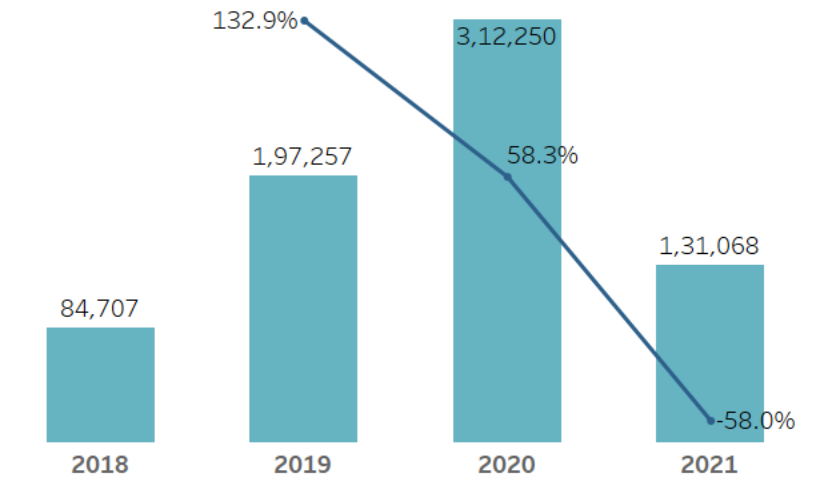
Total Complaints
7,25,282

Timely Response
98.74%

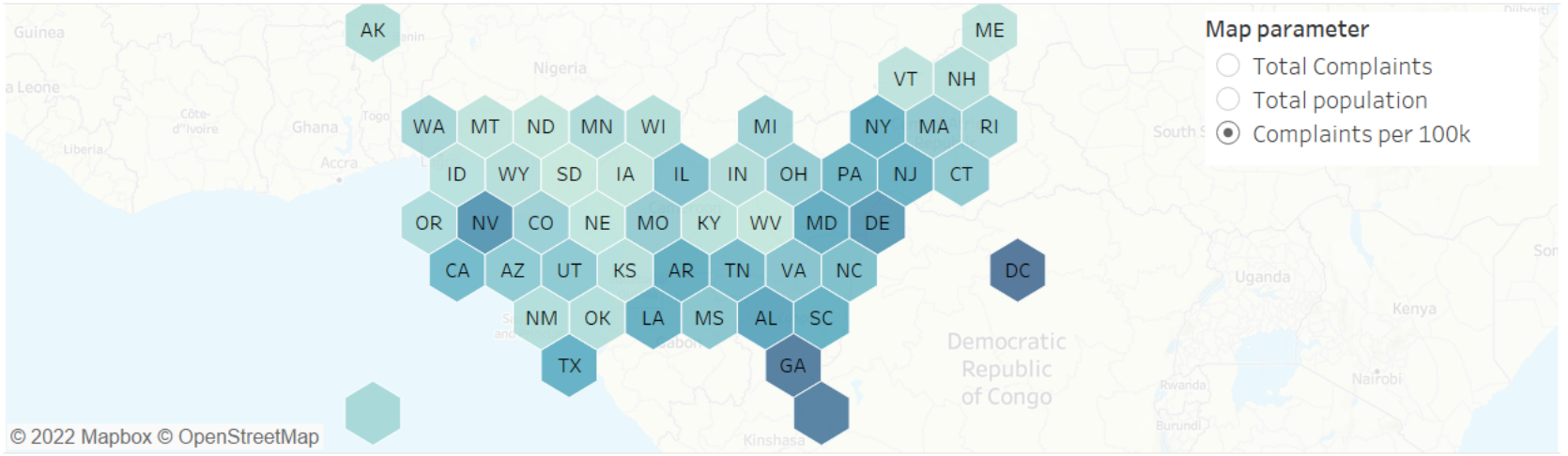
Non - Monetary Response
96.57%

In progress
16

Y-o-Y Growth

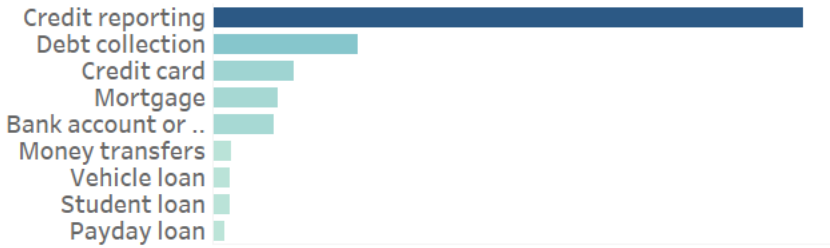


Complaints by State



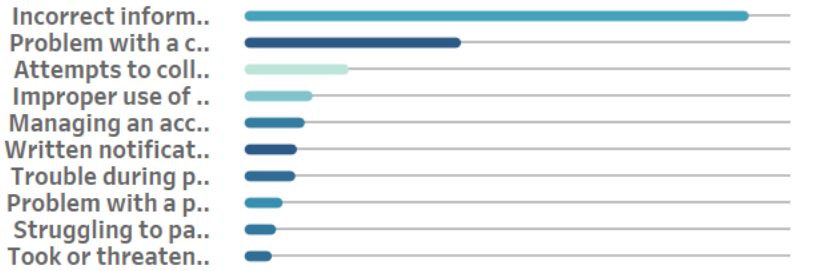
Complaint Analysis

Product



Complaints by Issue

Top N: 10



Complaints by Submission Medium

Home | Executive Summary | Product Analysis | Company Product Analysis | Company Response Analysis

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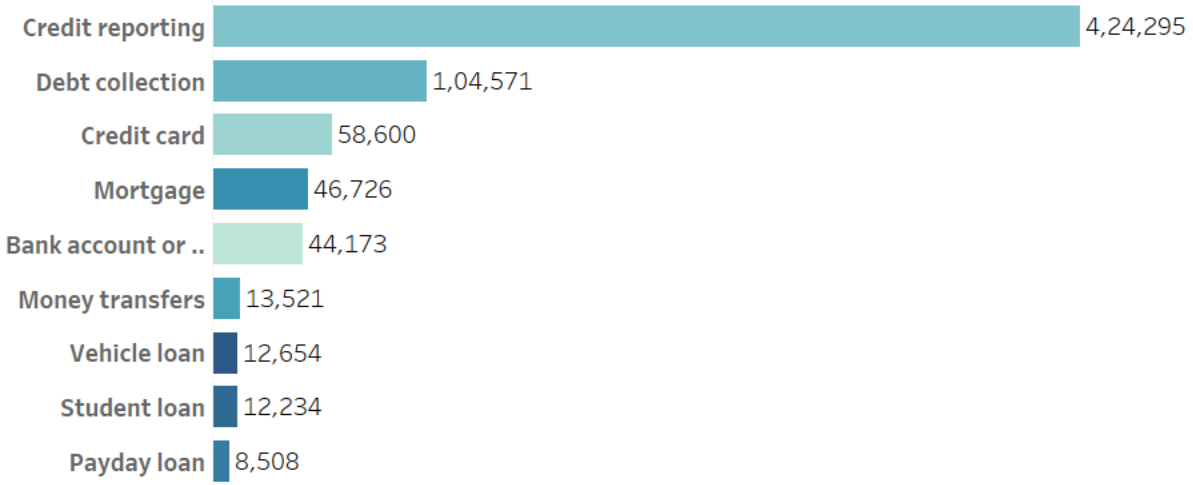
PRODUCT ANALYSIS

Subproduct Top N: 1 — 5

Issue Top N: 1 — 10

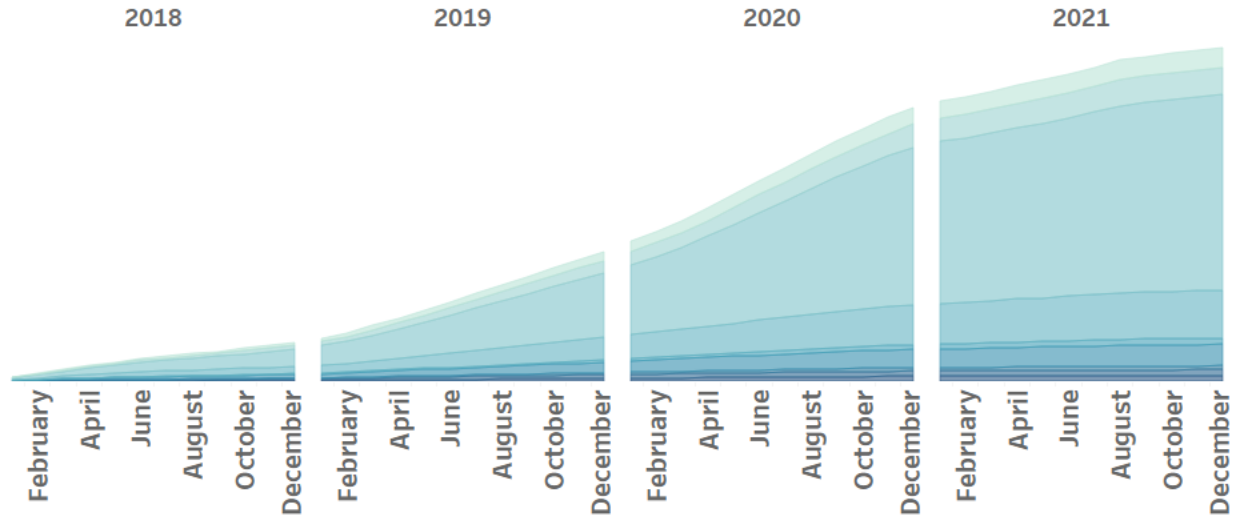
Year: 2018 — 2021

Complaints by Product



Complaints by Sub-product

Product - Year Analysis



Complaints by Issue

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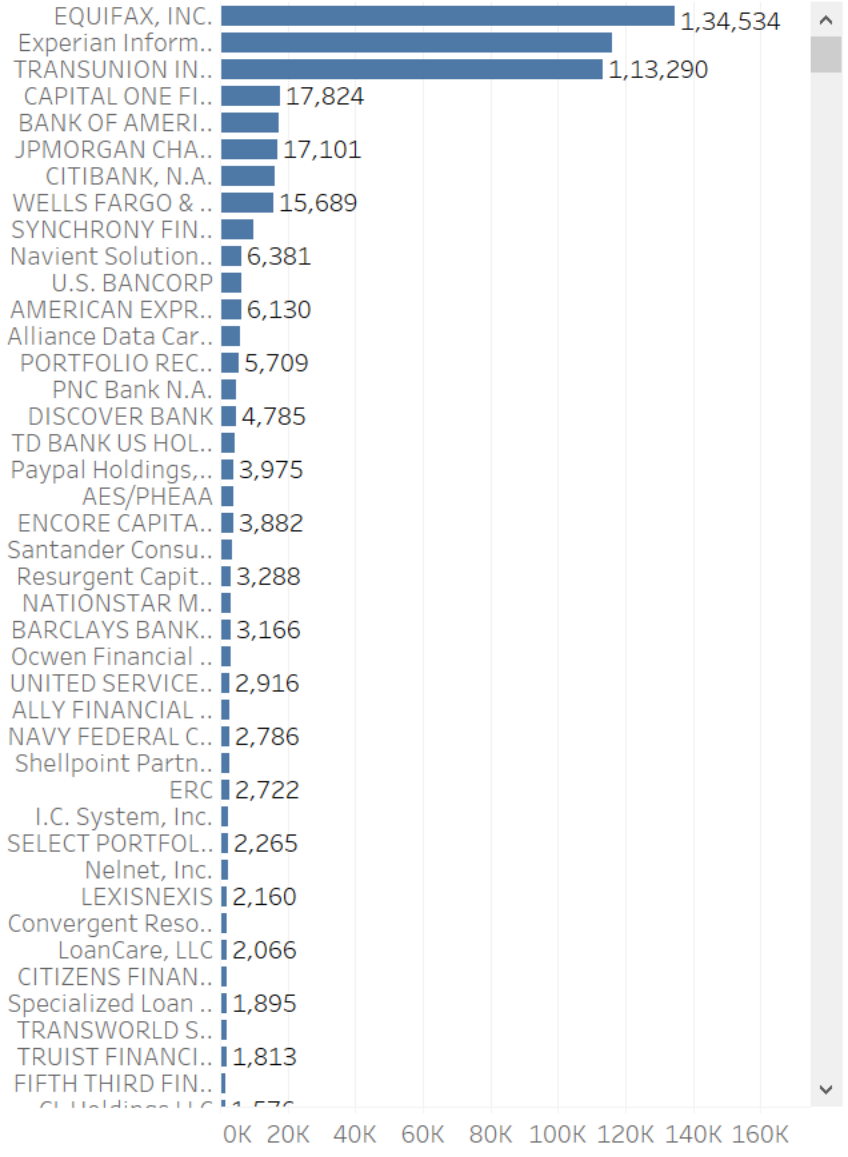
COMPANY PRODUCT ANALYSIS

Issue Top N: 1 — 10

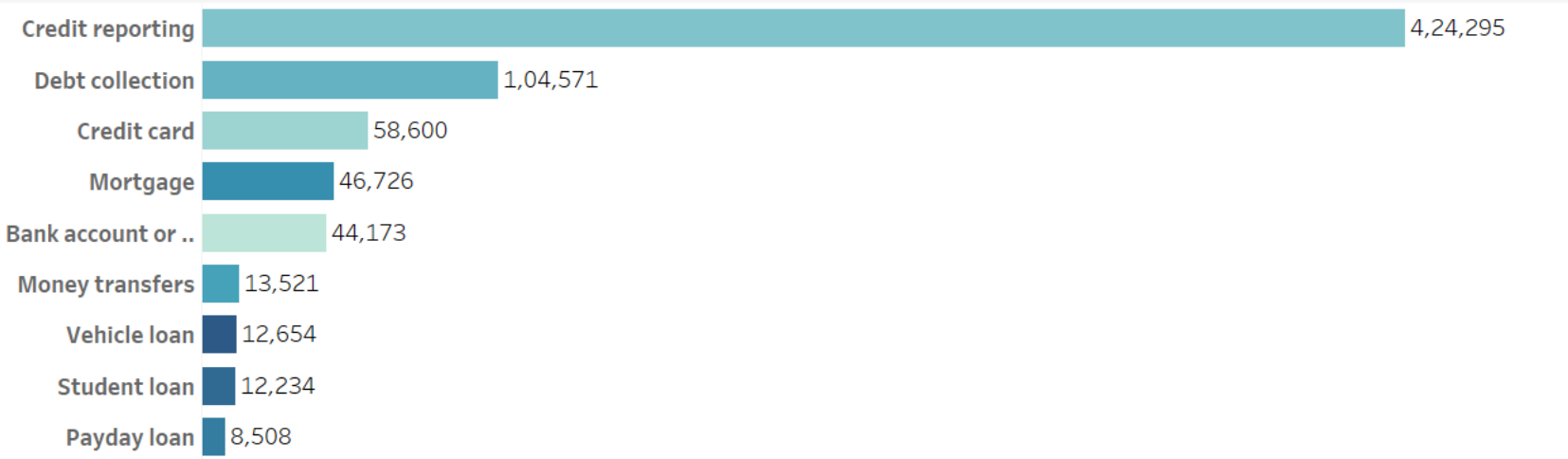
Year: 2018 — 2021

Complaints by Company



Product | Response

Complaints by Product



Complaints by Issue

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COMPANY RESPONSE ANALYSIS

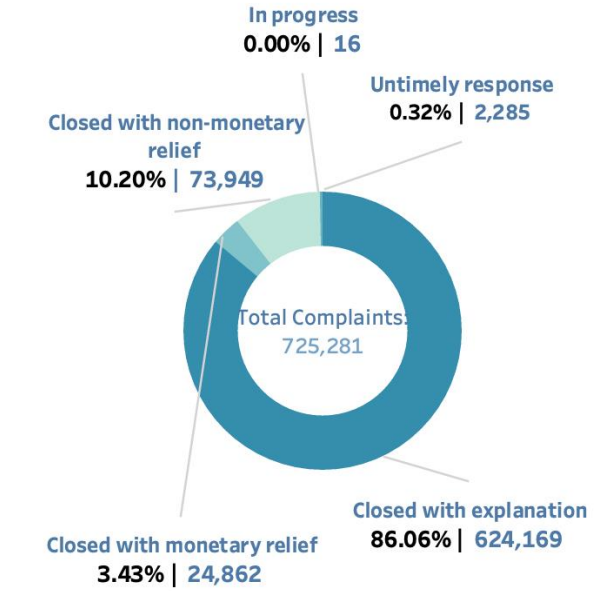
Top N parameter: 10

Year: 2018 – 2021

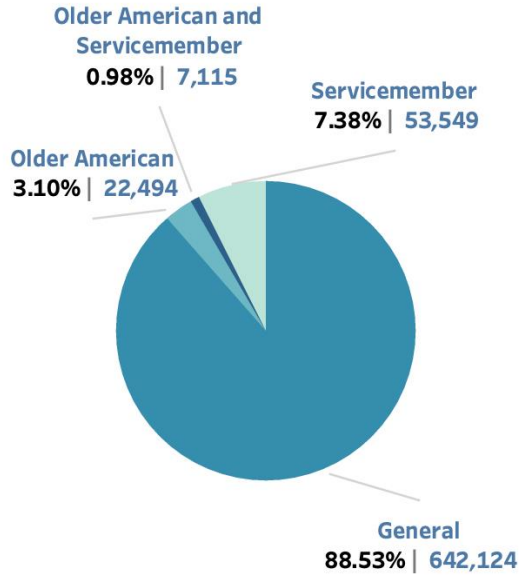
Complaints by Company

Product | **Response**

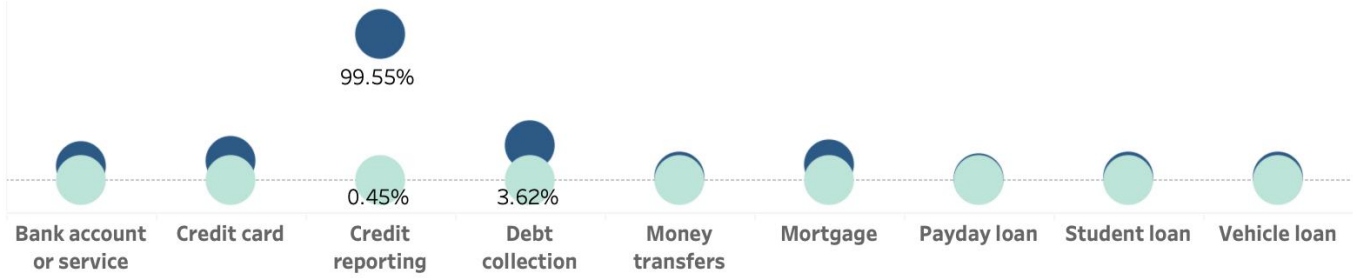
Company Response



Consumer Segments Responded



Timely Response



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Use Case Demonstration

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Conclusion and Future Scope

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1. Based on the insights derived from the product analysis companies can improve their products and services and identify new offerings, thereby enhancing consumer experience.
2. Based on the geographical distribution analysis of complaints and population density, companies can analyse each state whether to increase consumer support as well as further investigate the issues in their products.
3. Consumer pain points can be inferred through sentiment analysis from the narratives of those consumers who have consented to give their feedback. This would help the companies to take necessary actions to bring down consumer financial complaints in future
4. Further analysis on consumer segments like Service members, Older American groups, etc. will help in better profiling of consumers and thereby providing targeted financial offers for impacted consumers

Thank you