Bank of America Consumer Complaint Analysis (2017-2023) using Python

Executive Summary

This report analyses consumer complaints filed against Bank of America from 2017 to 2023. The analysis reveals key insights into complaint patterns, product issues, resolution methods, and response timeliness. Major findings include a significant increase in complaints from 2019 to 2022, with checking and savings accounts being the most complained-about products. The majority of complaints are resolved with explanations to the consumer, and there's a notable seasonal pattern with Q3 showing the highest number of complaints. Recommendations focus on improving account management services, enhancing credit card purchase dispute processes, and addressing the spike in Q3 complaints.

Project Overview

The project aims to analyse consumer complaints about Bank of America's financial products and services from 2017 to 2023. The analysis focuses on identifying seasonal patterns, most problematic products and their common issues, typical resolution methods, and insights from untimely responses.

Business Objectives

The primary goal of this analysis is to gain actionable insights from consumer complaints to improve Bank of America's products, services, and customer satisfaction. Specific business objectives include:

Identifying Seasonal Patterns: Understand if consumer complaints follow any seasonal trends. This knowledge can help in resource allocation and proactive problem-solving during peak complaint periods.

Pinpointing Problematic Products and Issues: Determine which products generate the most complaints and what the most common issues are. This information is crucial for targeted product improvements and enhanced customer support.

Evaluating Complaint Resolution Effectiveness: Analyze how complaints are typically resolved to assess the efficiency of current resolution processes and identify areas for improvement.

Improving Response Timeliness: Investigate complaints with untimely responses to understand underlying causes and develop strategies to enhance response times.

Enhance Customer Satisfaction: Use insights from the complaint analysis to implement changes that will reduce complaint volume and improve overall customer experience.

Data Source

The data for this analysis was sourced from **Maven Analytics**. It includes details such as complaint submission dates, products and issues mentioned, and the company's responses.

Data Cleaning and Transformation

The data cleaning and transformation process involved several steps:

1. Importing necessary libraries (pandas, matplotlib, seaborn).

2. Loading the data from a CSV file.

3. Handling missing values:

   - 'Timely response?' column: Missing values filled with 'Under Review'

   - Other columns: Missing values filled with 'NA'

4. Converting date columns to datetime format.

5. Shortening product names for easier visualization.

6. Creating additional columns:

   - 'Year' from 'Date submitted'

   - 'Month' from 'Date submitted'

   - 'Quarter' and 'Quarter_Short' for temporal analysis

   - 'Time to Receive' to calculate complaint processing time

This process ensured data consistency and created necessary features for in-depth analysis.

Data Analysis

The analysis focused on four main areas:

1. **Temporal Analysis**: Visualized complaint distribution by year and quarter and identified seasonal patterns in complaint submission.
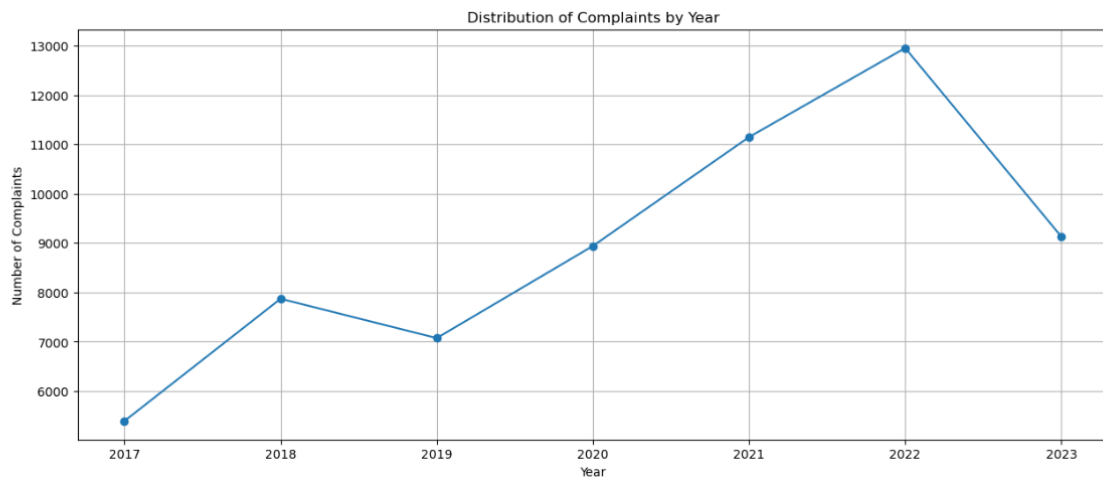

Figure 1: Distribution of Complaints by Year

This chart shows the trend of complaints from 2017 to 2023. There's a notable increase from 2019 to 2022, followed by a sharp decline after 2022
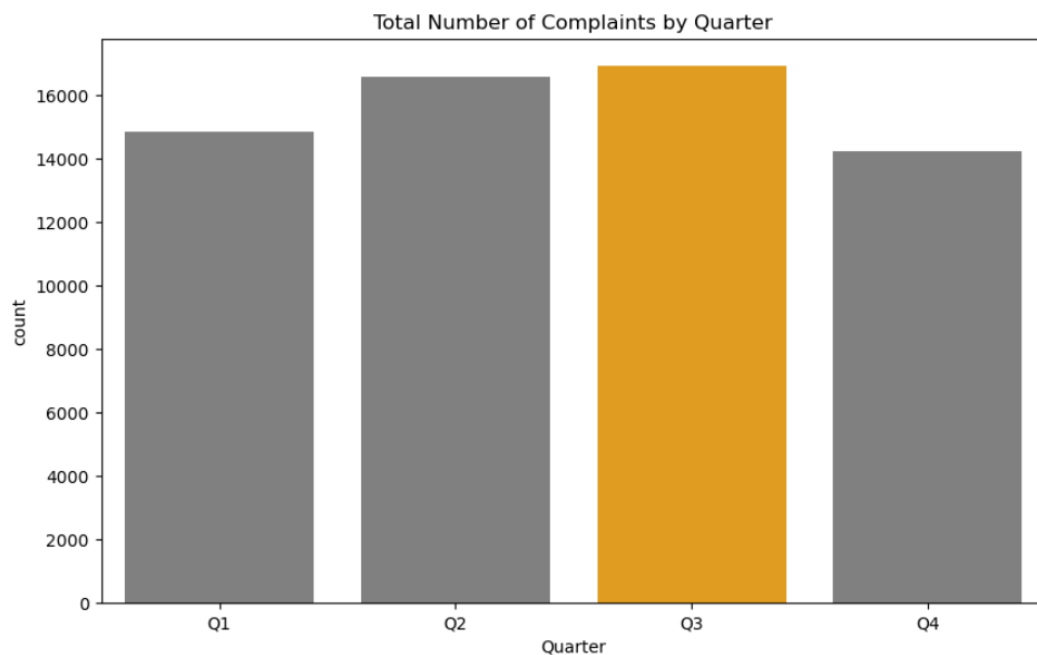

Figure 2: Total Complaints by Quarter of Year

This chart highlights that Q3 consistently has the highest number of complaints, while Q4 has the lowest.

2. Product and Issue Analysis:

a. Identified the major channels through which complaints are received

b. Identified top complained-about products and their common issues.

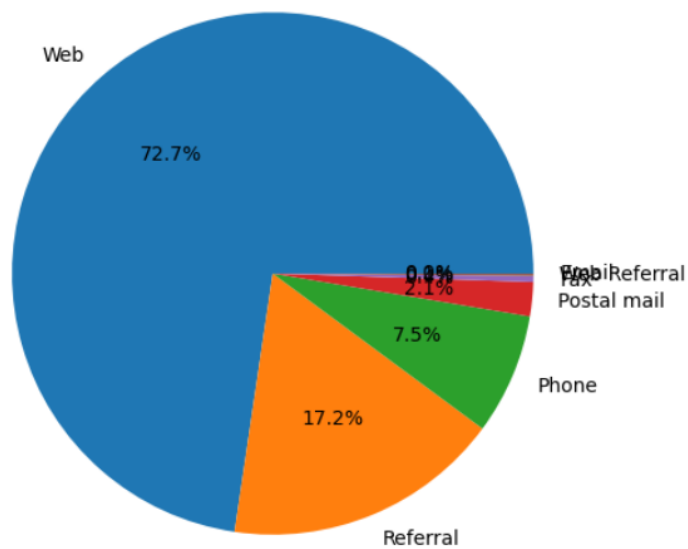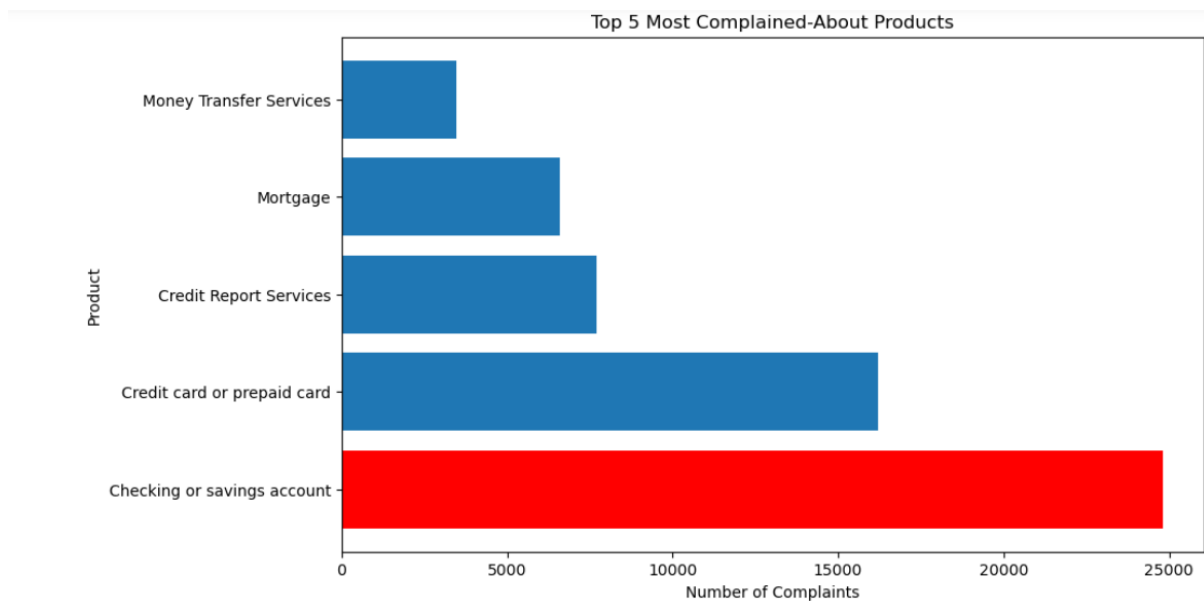c. Analyzed product-wise complaint trends over years.

Figure 3: Distribution of Complaint Submission Methods

This chart shows that Web and Referral are the major channels for complaint submission.

Products with most complaints:

Figure 4: Products with most complaints

This visualisation shows that complaints with Checking/Savings account are the most common.

Common Issues that consumers face:

```
Managing an account                                15109
Incorrect information on your report                4931
Problem with a purchase shown on your statement     4415
Closing an account                                  2953
Trouble during payment process                      2827
```

Consumers face the maximum issues with managing their account i.e facing problems with opening/closing their accounts.

3. Complaint Resolution Analysis:

  a. Examined common resolution methods.

  b. Focused on complaints closed with monetary relief.
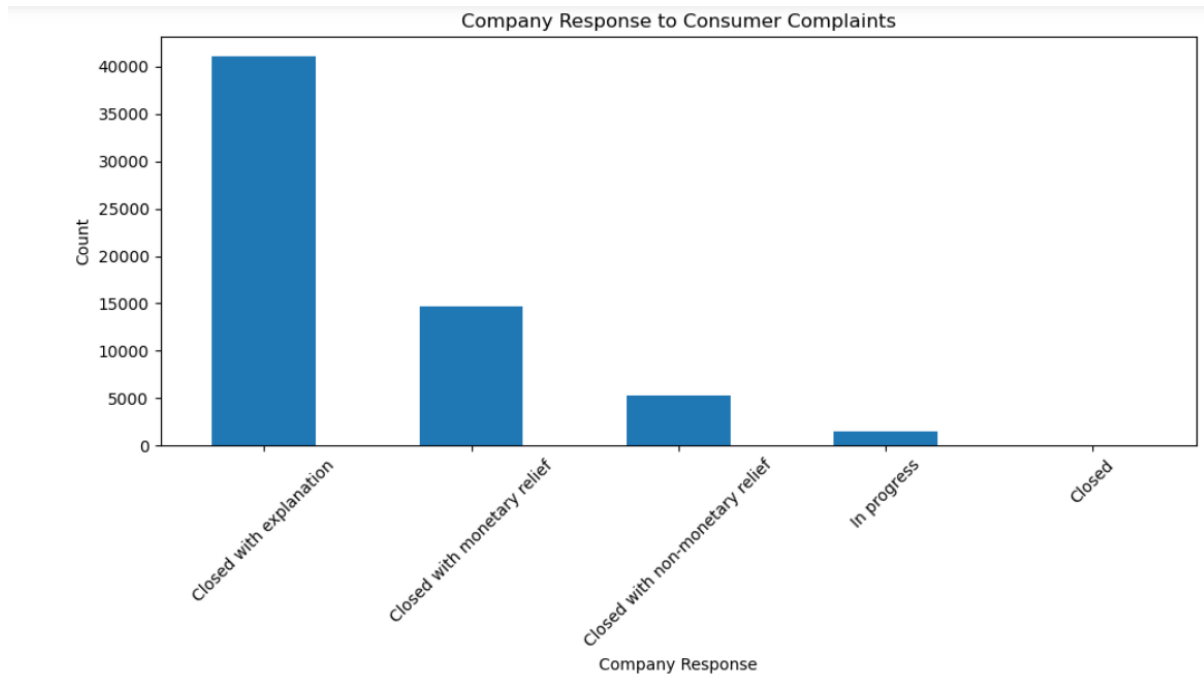

Figure 5:Company Response to Complaints

This chart shows the distribution of different resolution types, with "Closed with explanation" being the most common.

Issues that require monetary relief:

```
Top 3 issues that are closed with monetary relief: Issue
Managing an account                                        5206
Problem with a purchase shown on your statement            1811
Problem with a lender or other company charging your account  978
```

Top 3 products with which consumers face issues that require monetary relief:

```
Checking or savings account    8027
Credit card or prepaid card    4798
Mortgage                        750
```

4. Timely Resolution Analysis:

    a. Calculated the rate of untimely responses.

    b. Analysed issues and products associated with untimely responses.

```
Timely response?
Yes            58619
No              2403
Under Review    1494
Name: count, dtype: int64
```
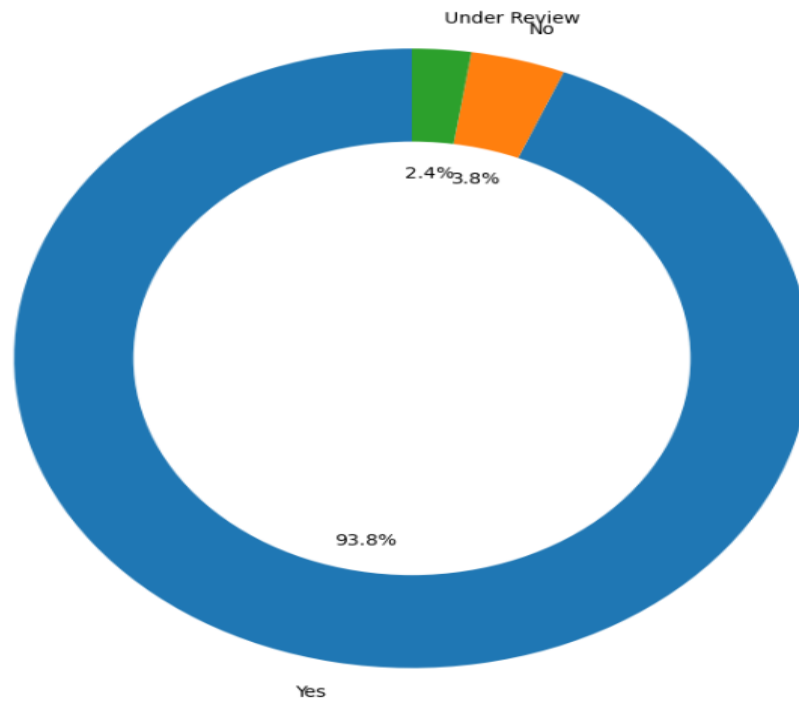

Figure 6: Donut Chart showing how many responses are timely

Findings

1. **Temporal Patterns:**
   - Complaints increased significantly from 2019 to 2022, with a sharp decline after 2022.

   - Q3 consistently showed the highest number of complaints, while Q4 had the lowest.

2. **Product and Issue Analysis:**
   - Top complained-about products: Checking/savings accounts (24,814 complaints), Credit cards (16,197), Credit reporting services (7,710).

   - Most common issues: Managing accounts (15,109 complaints), Incorrect information on reports (4,931), Problems with purchases on statements (4,415).

3. **Complaint Resolution:**
   - Most complaints (41,044) were closed with explanation.

   - 14,697 complaints were closed with monetary relief.

   - For monetary relief cases, top issues were account management, purchase problems, and account charging issues.

4. **Timely Resolution:**
   - 3.84% of responses were untimely.

   - Top products with untimely responses: Checking/savings accounts, credit cards, and credit reporting services.

   - 28% of untimely responses were closed with monetary relief.

Recommendations

- **Enhance Account Management Services**: Develop more user-friendly interfaces and provide clearer account information to reduce management-related complaints, particularly for checking/savings accounts and credit cards.
- **Implement Seasonal Staffing Strategy:** Allocate additional resources to customer service during Q3 to handle the increased volume of complaints, focusing on the most common issues identified in the analysis.
- **Improve Response Timeliness**: Analyze the root causes of untimely responses, particularly in checking/savings accounts and credit card departments, and implement a fast-track system for potentially high-impact complaints to ensure timely resolution.