

A background image showing three call center agents in a dimly lit office. They are wearing headsets and working at desks with laptops. The focus is on the woman in the foreground on the right, who is wearing glasses and a grey blazer. The other two agents are slightly out of focus in the background.

FINANCIAL CONSUMER COMPLAINTS ANALYSIS USING SQL

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INTRODUCTION

This project focuses on analyzing a dataset of financial consumer complaints to uncover insights about customer grievances in the financial sector. By leveraging SQL for data cleaning, transformation, and analysis, this project aims to identify trends in complaints, assess the timeliness of company responses, and provide actionable insights to enhance customer satisfaction and service delivery.

OBJECTIVE

Analyze consumer complaints data to identify trends, assess timely responses by companies, and highlight key areas for improvement in customer service.

ABOUT DATA

Consumer complaints on financial products & services for Bank of America from 2017 to 2023. The dataset includes critical information such as complaint submission methods, date of submission to the CFPB, product categories, issues faced by consumers, and company responses.



TOOL USED

MySQL was used to query this SQL project. The areas of SQL covered in this project:

- Aggregate Functions
- Window Functions
- Common Table Expressions
- Date Functions

DATA PREPARATION

The data import was done using MySQL Workbench. I created a database schema and table for data import in csv file. The table was constraints to its csv file. It consists of 62,516 rows and 12 columns.



Create the database schema and tables

```
1  -- Create a new schema
2  • CREATE SCHEMA `consumer_complaints` ;
3
4  -- Create new table
5  • CREATE TABLE consumer_complaints.`complaints` (
6    complaint_id int not null,
7    submitted_via varchar(255),
8    date_submitted date,
9    date_received date,
10   state varchar(10),
11   product varchar(255),
12   sub_product varchar(255),
13   issue varchar(255),
14   sub_issue varchar(255),
15   company_public_response text,
16   company_response varchar(255),
17   timely_response varchar(20),
18   primary key (complaint_id)
19 );
```

Total no of rows and columns

```
1  -- total rows
2  • SELECT count(*) as row_count
3    FROM consumer_complaints.complaints;
4
```

Result Grid | Filter Rows: | Export:

row_count
62516

```
5  -- total columns
6  • SELECT count(*) as column_count
7    FROM information_schema.columns
8    WHERE table_schema = 'consumer_complaints'
9    AND table_name = 'complaints'
```

Result Grid | Filter Rows: | Export: | Wrap

column_count
12



EXPLORATORY DATA ANALYSIS

Complaints Analysis

Analysis consumer complaints across submission methods, product categories and issues.

- Total number of complaints

```
40 -- total no of complaints
41 • SELECT count(complaint_id) as total_complaints
42 FROM consumer_complaints.complaints;
43
```

Result Grid	Filter Rows:	Export:	Wrap Cell
total_complaints			
62516			

- Total number of unresolved complaints

```
44 -- total no of unresolved complaints
45 • SELECT count(complaint_id) as total_unresolved_complaints
46 FROM consumer_complaints.complaints
47 WHERE company_response = 'In progress';
```

Result Grid	Filter Rows:	Export:	Wrap Cell Content:
total_unresolved_complaints			
1494			

Key Insight: There is a total of **62,516** consumer complaints, of which **61,022** have been resolved, while **1,494** remain unresolved.



- No of Complaints by Submission Method

```

44  -- No of Complaints by Submission Methods
45  •  SELECT submitted_via,
46         count(complaint_id) as total_complaints
47  FROM consumer_complaints.complaints
48  GROUP BY 1
49  ORDER BY 2 DESC;

```

submitted_via	total_complaints
Web	45423
Referral	10766
Phone	4684
Postal mail	1318
Fax	233
Web Referral	90
Email	2

- Top 5 Products with the Most Complaints

```

59  -- No of Complaints by Product (Top 5)
60  •  SELECT product,
61         count(complaint_id) as total_complaints
62  FROM consumer_complaints.complaints
63  GROUP BY 1
64  ORDER BY 2 DESC
65  Limit 5;

```

product	total_complaints
Checking or savings account	24814
Credit card or prepaid card	16197
Credit reporting, credit repair services, or other...	7710
Mortgage	6601
Money transfer, virtual currency, or money ser...	3453

- Top 5 Issues for Each of the Top 5 Products

```

-- Top Issues for Each of the Top 5 Products

-- Common Table Expression Created
WITH
product_issue AS (
SELECT
    product,
    issue,
    COUNT(complaint_id) AS total_issues,
    rank() over (partition by product order by product, COUNT(complaint_id) desc) AS rank_issue
FROM
    consumer_complaints.complaints
GROUP BY
    product, issue
)

SELECT product,
       issue,
       total_issues
FROM product_issue
WHERE rank_issue = 1
LIMIT 5;

```

product	issue	total_issues
Checking or savings account	Managing an account	15109
Credit card or prepaid card	Problem with a purchase shown on your statement	4415
Credit reporting, credit repair services, or other...	Incorrect information on your report	4145
Debt collection	Attempts to collect debt not owed	1351
Money transfer, virtual currency, or money ser...	Fraud or scam	1951

Key Insight: The majority of consumer complaints are related to **Check or Savings account services**, with the primary issue being difficulties in managing an account. For **Credit Card or Prepaid Card services**

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Trends Over Time

Analysis the seasonal trends and patterns in consumer complaints.

- Complaints by Year

```
106 -- Complaints by Year
107 • SELECT year(date_received) as Year,
108         count(complaint_id) as total_complaints
109 FROM consumer_complaints.complaints
110 GROUP BY 1;
```

Year	total_complaints
2017	5369
2018	7884
2019	7075
2020	8943
2021	11133
2022	12936
2023	9176

- Complaints by Day

```
112 -- Complaints by Day
113 • SELECT dayname(date_received) as month,
114         count(complaint_id) as total_complaints
115 FROM consumer_complaints.complaints
116 GROUP BY 1
117 ORDER BY 2 DESC;
```

month	total_complaints
Tuesday	12049
Wednesday	11632
Thursday	11088
Friday	10489
Monday	9833
Saturday	4387
Sunday	3038

Key Insight: They have been a consistent yearly increase in complaints from 2020 – 2022 with a significant decline in 2023. The majority of consumer complaints are submitted on weekdays, with significantly fewer received during weekends.



Timely Response Analysis

Analysis the timeliness of responses provided to consumer complaints.

- Total Complaints by Timely Response with Percentage

```
133 -- Total Complaints by Timely Response with Percentage
134 • SELECT
135     timely_response,
136     COUNT(complaint_id) AS total_complaints,
137     ROUND((COUNT(complaint_id) * 100.0 /
138     (SELECT COUNT(*)
139     FROM consumer_complaints.complaints
140     WHERE company_response != 'In progress' )), 2) AS 'percentage_complaints(%)'
141 FROM consumer_complaints.complaints
142 WHERE company_response != 'In progress'
143 GROUP BY timely_response
144 ORDER BY total_complaints DESC;
```

Result Grid	Filter Rows:	Export:	Wrap Cell Content:
timely_response	total_complaints	percentage_complaints(%)	
Yes	58619	96.06	
No	2403	3.94	

- Timely Response by Submission Method

```
140 -- Timely Response by Submission Method
141 • SELECT submitted_via,
142     timely_response,
143     count(complaint_id) as total_complaints
144 FROM consumer_complaints.complaints
145 WHERE company_response != 'In progress'
146 GROUP BY 1,2
147 ORDER BY 3 DESC;
```

Result Grid	Filter Rows:	Export:	Wrap Cell Content:
submitted_via	timely_response	total_complaints	
Web	Yes	42210	
Referral	Yes	10434	
Phone	Yes	4380	
Web	No	1917	
Postal mail	Yes	1282	

Key Insight: The company demonstrates excellent customer service efficiency, with a high percentage of complaints (96.06%) receiving a timely response ("Yes"). The web channel demonstrates the highest rate of timely responses, while the phone channel has the lowest.



- Average Timely Response Rate Products

```

155 -- Average Timely Response Rate by Product
156 • SELECT product,
157       ROUND(SUM(CASE WHEN timely_response = 'Yes' THEN 1 ELSE 0 END) * 100.0 /
158       COUNT(timely_response), 2) AS 'avg_timely_response_rate(%)'
159 FROM consumer_complaints.complaints
160 GROUP BY 1
161 ORDER BY 2 DESC;

```

product	avg_timely_response_rate(%)
Student loan	100.00
Mortgage	99.06
Payday loan, title loan, or personal loan	96.40
Money transfer, virtual currency, or money service	93.95
Checking or savings account	93.64
Credit card or prepaid card	93.20
Vehicle loan or lease	92.26
Debt collection	91.89
Credit reporting, credit repair services, or other personal...	91.37

- Timely Response Over Time

```

157 -- Timely Response Over Time
158 • SELECT year(date_received),
159       timely_response,
160       count(complaint_id) as total_complaints
161 FROM consumer_complaints.complaints
162 WHERE timely_response = 'Yes'
163 GROUP BY 1,2
164 ORDER BY 1,2

```

year(date_received)	timely_response	total_complaints
2017	Yes	5360
2018	Yes	7872
2019	Yes	7068
2020	Yes	8881
2021	Yes	9909
2022	Yes	12376
2023	Yes	7153

- Top 5 Products with the Most Complaints

```

157 -- Timely Response by Issue
158 • SELECT issue,
159       timely_response,
160       count(complaint_id) as total_complaints
161 FROM consumer_complaints.complaints
162 WHERE timely_response = 'Yes'
163 GROUP BY 1,2
164 ORDER BY 3 DESC;

```

issue	timely_response	total_complaints
Managing an account	Yes	14232
Incorrect information on your report	Yes	4529
Problem with a purchase shown on your statem...	Yes	4155
Trouble during payment process	Yes	2803
Closing an account	Yes	2754
Opening an account	Yes	2518
Problem with a lender or other company chargin...	Yes	2301
Struggling to pay mortgage	Yes	1890
Fraud or scam	Yes	1869

- Average response times by products

```

97 -- Average response times by product
98 • SELECT product,
99       ROUND(AVG(datediff(date_received, date_submitted)), 2) AS avg_response_times
100 FROM consumer_complaints.complaints
101 GROUP BY 1
102 ORDER BY 2;

```

product	avg_response_times
Credit reporting, credit repair services, or other...	0.74
Money transfer, virtual currency, or money ser...	1.06
Credit card or prepaid card	1.13
Checking or savings account	1.23
Vehicle loan or lease	1.44
Debt collection	1.64
Payday loan, title loan, or personal loan	1.68
Mortgage	1.86
Student loan	2.13



Complaint Resolution Outcome

Analysis the company responses provided to consumer complaints.

- Company Responses Count

```
181 -- Company Responses Count
182 • SELECT company_response,
183         count(complaint_id) as response_count
184 FROM consumer_complaints.complaints
185 GROUP BY 1
186 ORDER BY 2 DESC;
```

company_response	response_count
Closed with explanation	41044
Closed with monetary relief	14697
Closed with non-monetary relief	5273
In progress	1494
Closed	8

- Company Responses by Product

```
168 • WITH responses as (
169     SELECT product,
170            company_response,
171            count(complaint_id) as response_count,
172            rank() over (partition by product order by product, count(complaint_id) desc) as rank
173 FROM consumer_complaints.complaints
174 GROUP BY 1,2
175 )
176 SELECT product, company_response, response_count
177 FROM responses
178 WHERE rank count IN (1,2,3);
```

product	company_response	response_count
Checking or savings account	Closed with explanation	14836
Checking or savings account	Closed with monetary relief	8027
Checking or savings account	Closed with non-monetary relief	1241
Credit card or prepaid card	Closed with explanation	9361
Credit card or prepaid card	Closed with monetary relief	4798
Credit card or prepaid card	Closed with non-monetary relief	1621
Credit reporting, credit repair services, or other...	Closed with explanation	6067
Credit reporting, credit repair services, or other...	Closed with non-monetary relief	1178
Credit reporting, credit repair services, or other...	Closed with monetary relief	273

Key Insight: The majority of resolved complaints are either closed with an explanation or resolved by providing monetary relief to the consumers. Checking or savings accounts and credit card services are the most likely to result in monetary relief for consumers.

SUMMARY OF FINDINGS

- There is a total of **62,516** consumer complaints, of which **61,022** have been resolved, while **1,494** remain unresolved.
- The majority of consumer complaints are submitted via **Web and Referral channels**.
- The majority of consumer complaints are related to **Check or Savings account services**, with the primary issue being difficulties in managing an account. For **Credit Card or Prepaid Card services**, the most common issue reported is problems with purchases.
- **Credit reporting and money transfer services** receive the fastest response times across all products, particularly when submitted through fax, email, or web channels.
- They have been a consistent yearly increase in complaints from **2020 – 2022** with a significant decline in **2023**.
- The company demonstrates excellent customer service efficiency, with a high percentage of complaints (**96.06%**) receiving a timely response ("**Yes**"). This highlights the organization's strong commitment to addressing customer concerns promptly.
- The **web channel** demonstrates the highest rate of timely responses, while the **phone channel** has the lowest. This suggests that online customer service is more efficient compared to other communication channels.
- The **student loan service** achieves a **100%** average timely response rate, closely followed by the **mortgage service**. This highlights their strong commitment to providing excellent customer service for loan-related complaints.
- The majority of resolved complaints are either closed with an explanation or resolved by providing monetary relief to the consumers.
- **Checking or savings accounts** and **credit card services** are the most likely to result in monetary relief for consumers.



RECOMMENDATIONS

- Invest in enhancing web and referral submission channels, as they are the most popular methods for submitting complaints. Ensure these channels remain efficient and user-friendly.
- Focus on improving customer service efficiency for phone submissions, as this channel has a very low timely response rate. Consider allocating more resources or training for staff handling phone complaints.
- Focus on improving issue resolution processes for checking/savings accounts and credit card services, as these account for the majority of complaints. This includes resolving common issues such as account management difficulties and purchase problems.
- Investigate the reasons behind the decline in complaints and timely responses in 2023. This could involve analyzing resource allocation, changes in processes, or external factors affecting performance.
- Continue the excellent customer service efficiency for student loan and mortgage-related complaints, as these areas have achieved a near-perfect timely response rate.
- Ensure that products most likely to result in monetary relief (e.g., checking/savings accounts and credit cards) are prioritized for fair and consistent resolutions.



CONCLUSIONS

This analysis highlights key insights into consumer complaint trends and the company's response efficiency. With a total of 62,516 complaints, the company has demonstrated strong performance in resolving 96.06% of complaints within the required time frame, showcasing its commitment to customer service excellence. The web channel is the most efficient for timely responses, while phone complaints require improvement. Loan services, including student loans and mortgages, exhibit the highest customer service standards.

By focusing on resource allocation, process improvements, and consumer education, the company can continue to excel in customer complaint management and maintain high levels of customer satisfaction.



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