BANK OF AMERCIA CUSTOMER COMPLAINTS ANALYSIS WITH PYTHON

INTRODUCTION

Bank of America (BoA), a financial institution based in the United States, has received numerous customer complaints over the years. To address this, BoA has decided to analyze consumer complaints related to its financial products and services from 2017 to 2023. A comprehensive dataset has been provided, containing detailed information on each complaint, including submission and receipt dates, associated products and issues, and BoA's responses. This case study invites analysts and policymakers to explore the dataset to uncover insights and develop strategies for addressing customer complaints more effectively.

OBJECTIVE

The primary goal of this case study is to analyze the data, identify patterns, and propose informed, data-driven recommendations that BoA can implement to effectively address and reduce customer complaints.

ANALYSIS

Our dataset has **62,516 rows**/observations in **12 columns** as shown below with their descriptions

1. **Complaint ID:**   The unique identification number for a complaint
2. **Submitted via**:   How the complaint was submitted to the CFPB
3. **Date submitted**:   The date the CFPB received the complaint
4. **Date received:**   The date the CFPB sent the complaint to the company
5. **State:**   The state of the mailing address provided by the consumer
6. **Product:**   The type of product the consumer identified in the complaint
7. **Sub-product:**   The type of sub-product the consumer identified in the complaint (not all Products have Sub-products)
8. **Issue:**   The issue the consumer identified in the complaint (possible values are dependent on Product)
9. **Sub-issue:**   The sub-issue the consumer identified in the complaint (possible values are dependent on Product and Issue, and not all Issues have corresponding Sub-issues)
10. **Company public response:** The company's optional, public-facing response to a consumer's complaint. Companies can choose to select a response from a pre-set list of options that will be posted on the public database. For example, "Company believes complaint is the result of an isolated error."
11. **Company response to consumer:** This is how the company responded. For example, "Closed with explanation."
12. **Timely response?:**   Whether the company gave a timely response (Yes/No)

INSIGHTS

I carried out exploratory data analysis (EDA) on the dataset using python's pandas and matplotlib libraries. The following insights were drawn from my analysis.

Which financial products or services are generating the highest volume of complaints, and are there any identifiable trends over time?
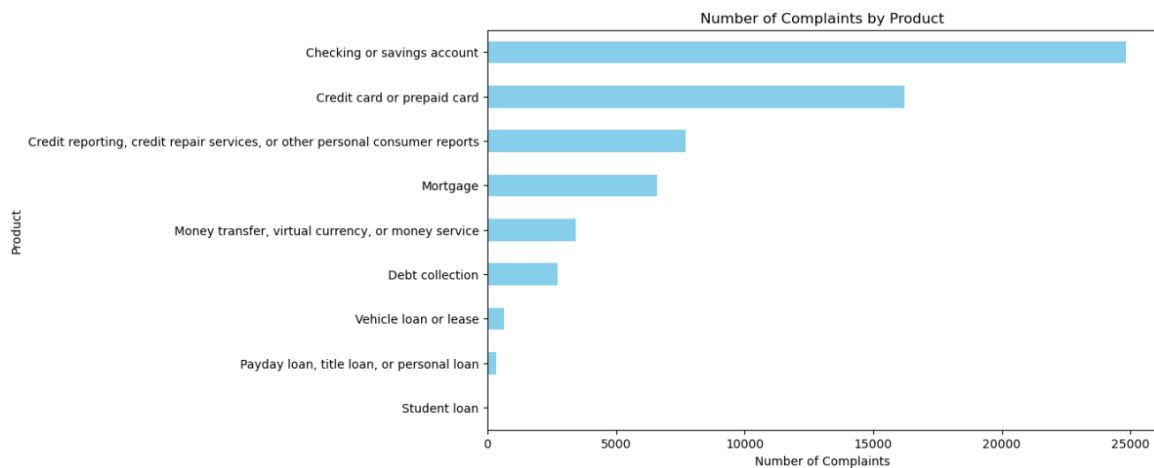

- **Checking or savings account** have the highest volume of complaints, followed by Credit Card or Prepaid Card

What are the most common issues that customers face with specific BoA products, and how do these issues vary by submission channel?

The most common issues that BoA customers complain about based on product category are:

S/N	PRODUCT	MOST COMMON ISSUE
1	Mortgage	Trouble during payment process
2	Money transfer, virtual currency, or money service	Fraud or scam
3	Credit reporting, credit repair services, or other personal consumer reports	Incorrect information on your report
4	Credit card or prepaid card	Problem with a purchase shown on your statement
5	Checking or savings account	Managing an account
6	Vehicle loan or lease	Managing the loan or lease
7	Debt collection	Attempts to collect debt not owed
8	Payday loan, title loan, or personal loan	Getting a line of credit
9	Student loan	Dealing with your lender or service

Analyze *Company response* to consumer and *Timely response?* over the years to see if response rates or resolution types have improved or worsened.
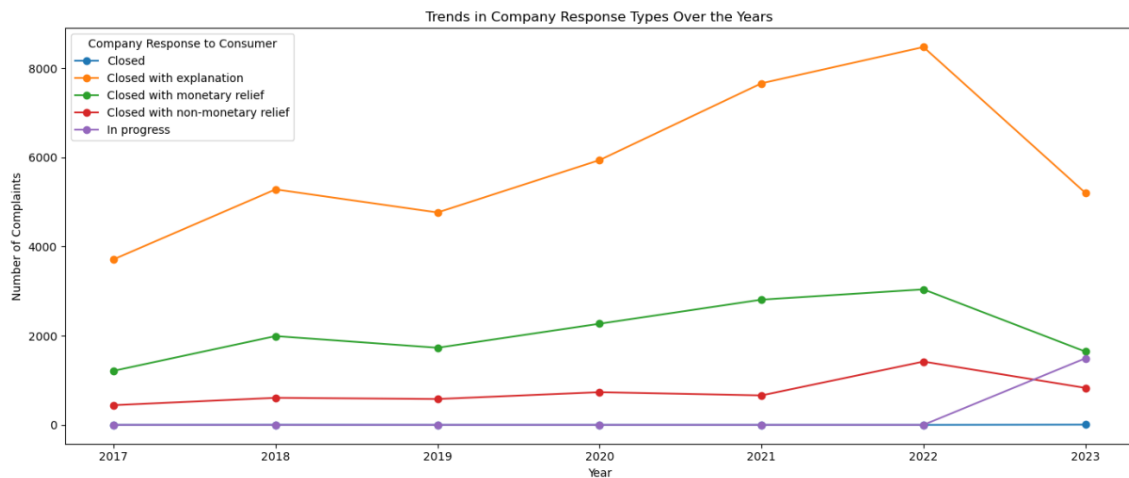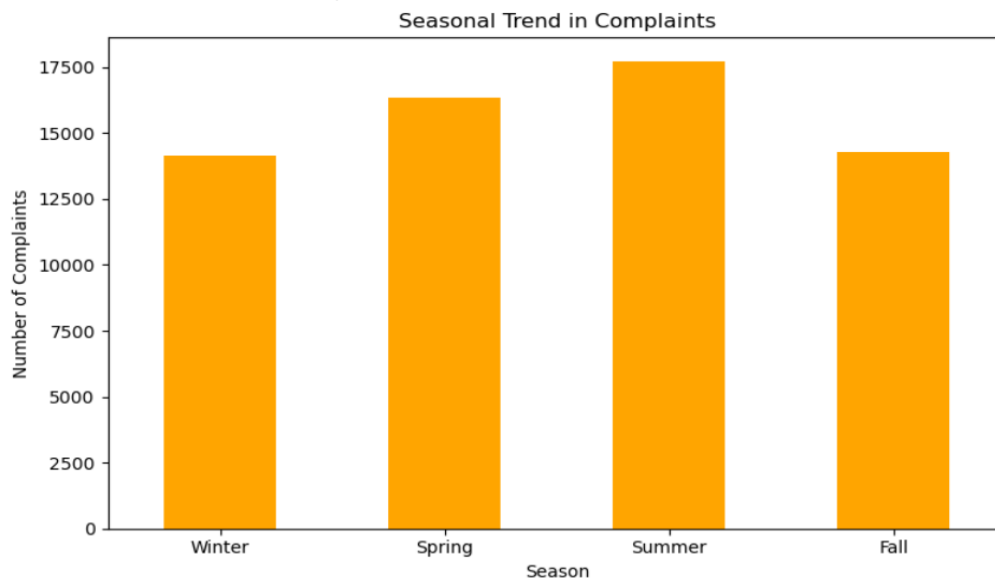

Trends in Company Response Types Over the Years

- BoA has a high ***"Closed with explanation"*** rate compared with other Response Types,
- Next is ***"Closed with monetary relief",*** though, this represents a substantial number, as it means that were complaints cannot be closed with just explanation, the next option is to close with monetary relief. BoA may need to look at how to reduce this.
- There are no ***"In progress"*** requests from previous years except for 2023
- Only a few complaints were resolved with ***"Closed"*** through the years, meaning it is rare to simply close complaints with no explanation or a sort of relief

Trends in Timely Responses Over the Years
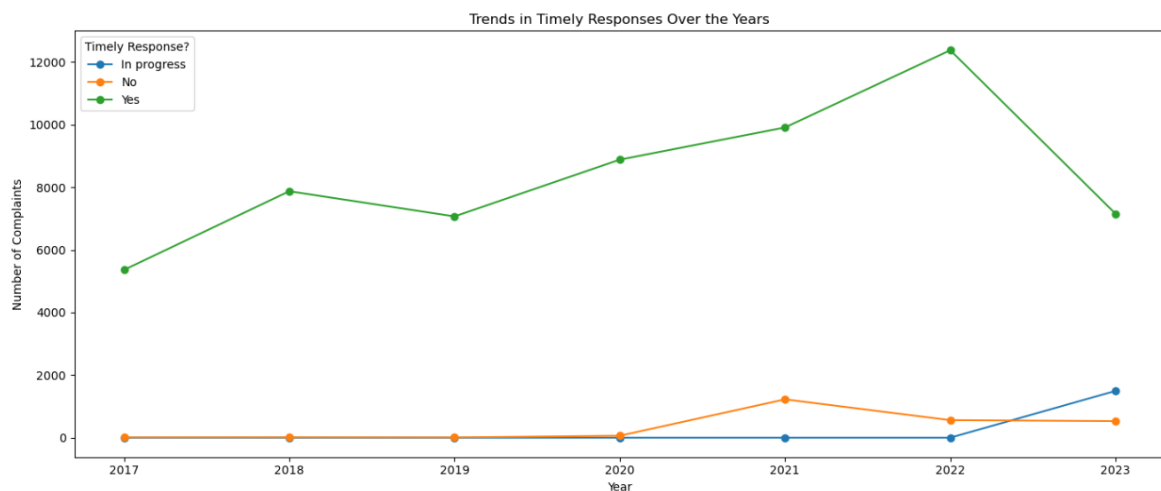
- It can be seen that the company responded timely to most complaints over the years, with all complaints responded on time between 2017 and 2020,
- Between 2021 and 2023, the number of timely responses with 'No' response increased
- **2022 is the year with most number of timely responses**

Are there particular seasons or periods where complaints spike, indicating potential areas for improved resource allocation?

- Most complaints happen during Summer

Seasonal Trend in Complaints

- The number of complaints are less during the end of the year (October to December) and only begin to pick-up during March with the **peak happening during July (mid-year)**


Monthly Trend in Complaints
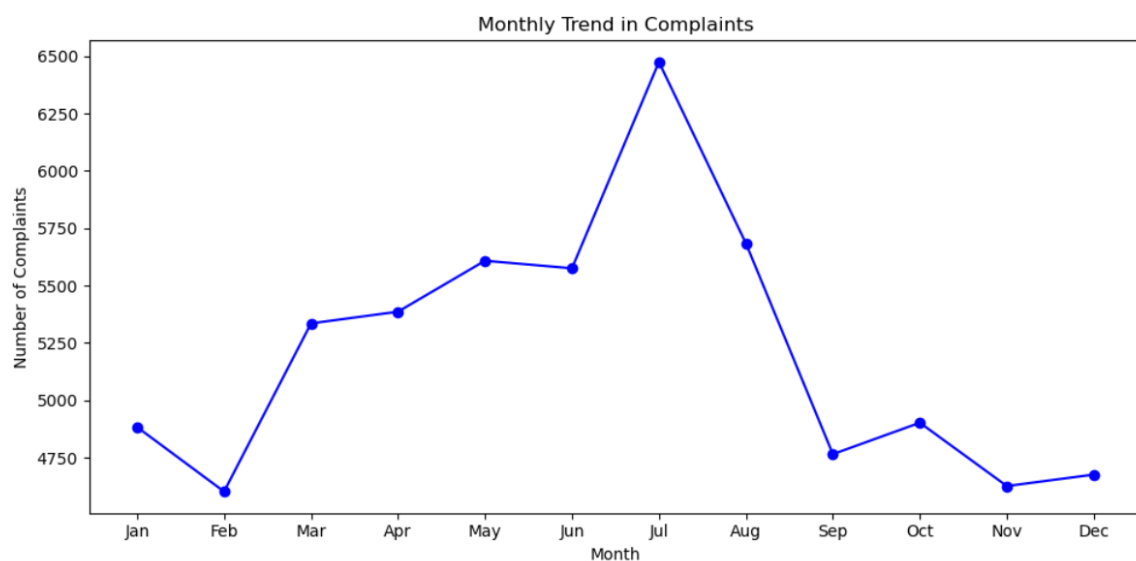
How effective are BoA's different resolution types (e.g., explanation, monetary relief)?

- BoA has a **high "Closed with explanation" rate** compared with other Response Types,
- **Next is "Closed with monetary relief**", though, this represents a substantial number, as it means that were complaints cannot be closed with just explanation, the next option is to close with monetary relief. BoA may need to look at how to reduce this.
- There are no "In progress" requests from previous years except for 2023
- Only a few complaints were resolved with "Closed" through the years, meaning it is rare to simply close complaints with no explanation or a sort of relief
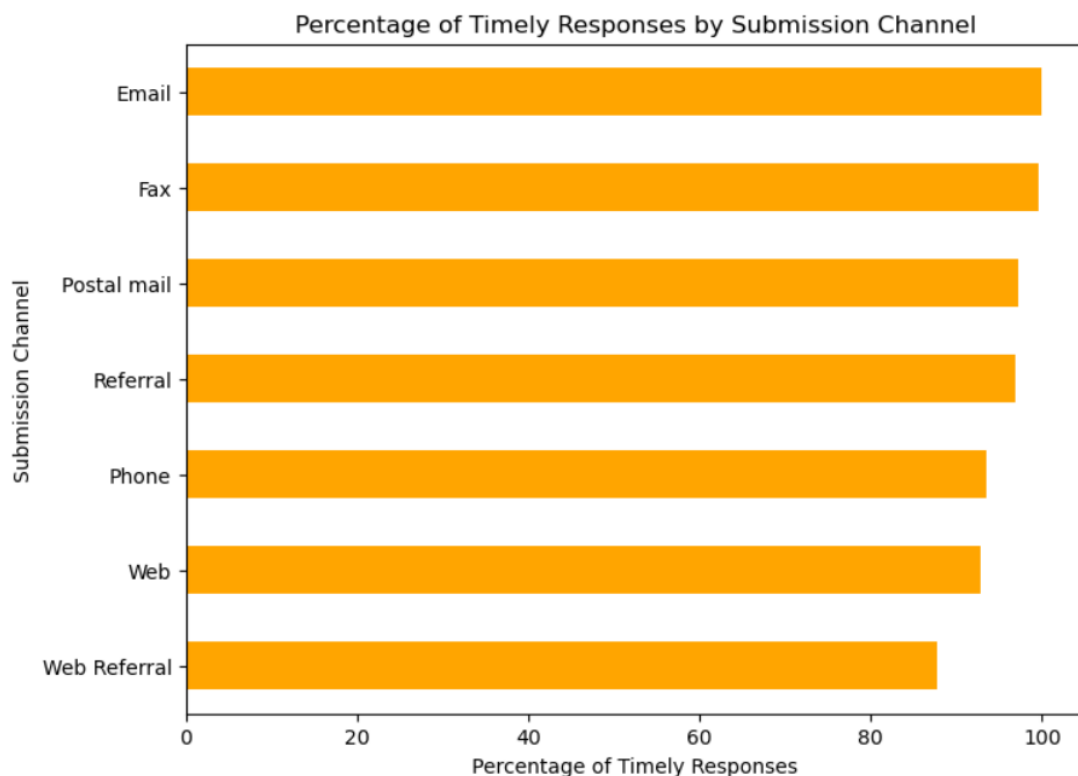
Which complaint types most frequently receive delayed responses?

Overdraft, savings, or rewards features issues have a poor percentage, meaning respondents don't attend to them as quickly as other issues

Which complaint channels have delayed responses?
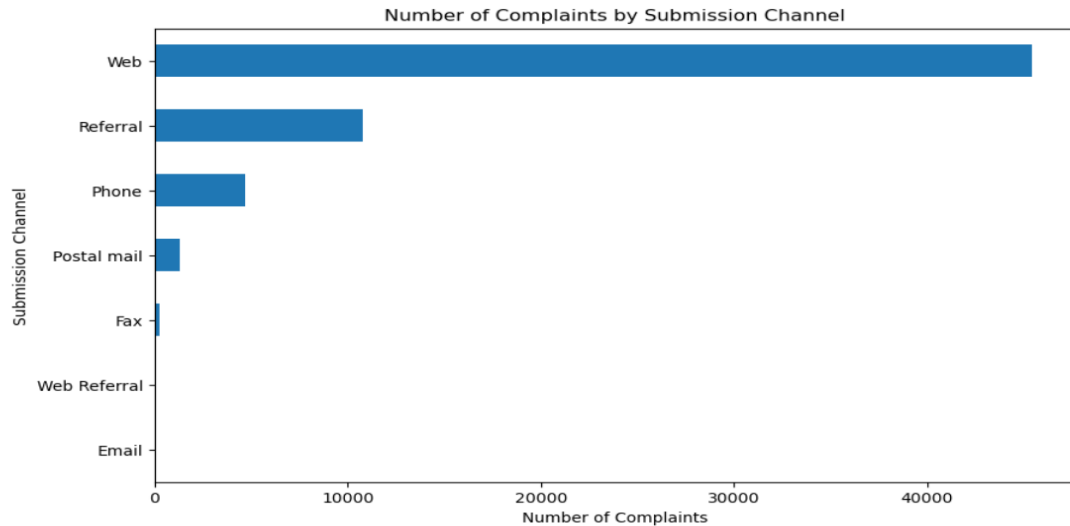
Most complaints **(45,423)were submitted via the web channel** and only a few (2) via email


Complaints **submitted via Email have the highest percentage of timely responses**, closely followed by complaints via postal mail. Web referral-based complaints have the lowest percentage of timely responses; however, based on the volume of complaints by channel, complaints raised via Web have the lowest timely response percentage (1,917 complaints with no timely response)

Are there specific states with consistently high complaint volumes, and what are the common issues in those states?

- The state with the **highest number of complaints is CA (California)**, followed by FL (Florida)

Total Number of Complaints by State
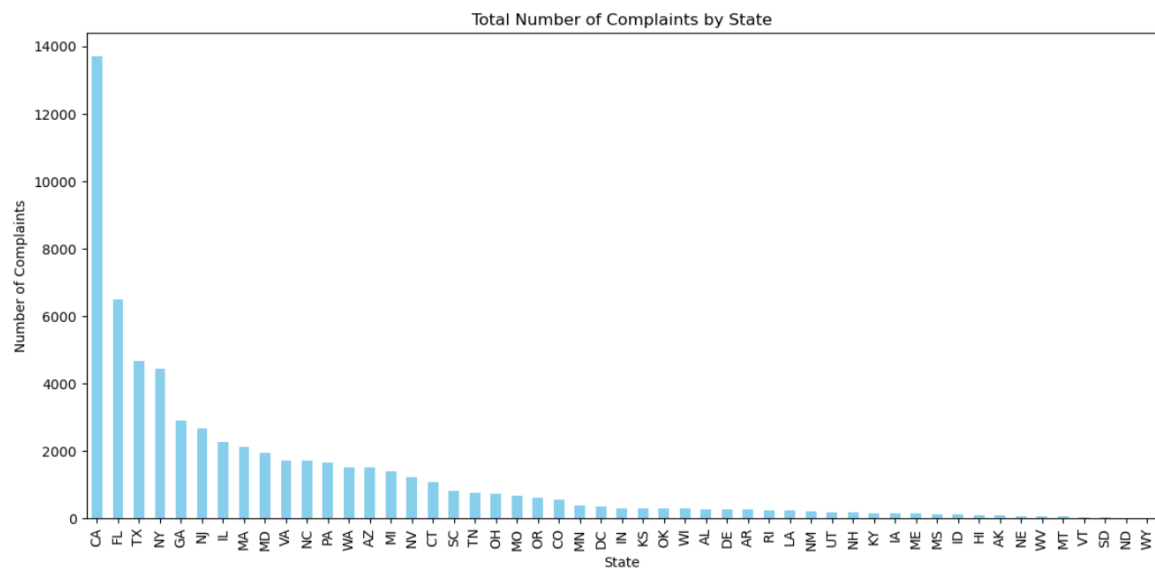
- Complaints from **SD (South Dakota) have the highest percentage of timely responses,** meaning most of the complaints from this State are attended to almost immediately. Conversely, ND (North Dakota) has the lowest timely response percentage

Percentage of Timely Responses by State
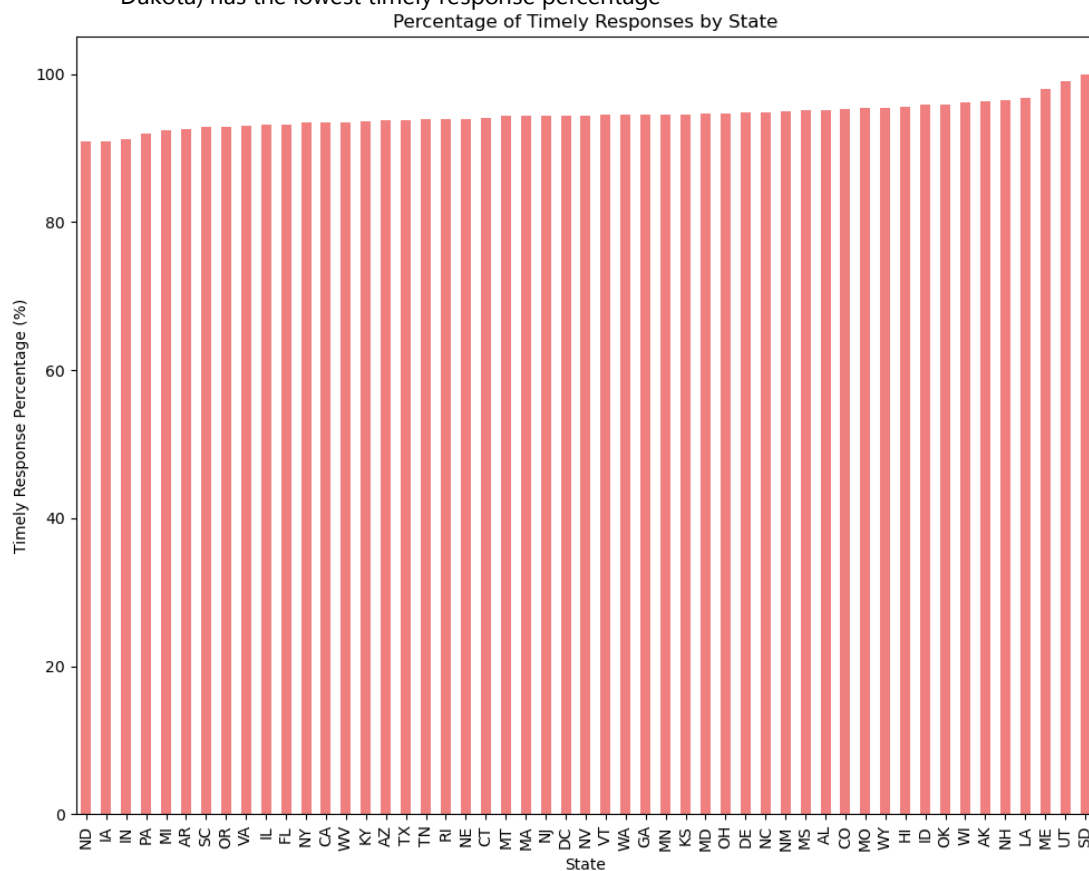
- **Managing an account is the most pressing issue in California**, as well as in Texas and Floria

RECOMMENDATIONS

Based on the findings from my analysis, here are some actionable business recommendations for Bank of America (BoA) to enhance customer service and operational practices:

1. **Enhance Support for High-Complaint Products**
   - **Focus on Checking and Savings Accounts:** Since checking or savings accounts have the highest volume of complaints, BoA should focus on optimizing the user experience, simplifying account management processes, and ensuring effective customer support channels for these products.
   - **Specialized Teams for Frequent Issues:** Common issues like mortgage payment processing, money transfer fraud, and incorrect credit report information should have dedicated support teams or streamlined procedures to resolve these complaints faster and more effectively.

2. **Optimize Timely Responses Based on Submission Channels**
   - **Improve Web-Based Complaint Handling:** Given that web-based complaints have the lowest timely response rate, BoA should consider implementing automated triage systems or increasing staff dedicated to handling online complaints. Quick acknowledgment and initial automated responses can improve customer satisfaction, even if a full resolution takes time.
   - **Review Resource Allocation for Different Channels:** While email and postal complaints generally have higher timely response rates, BoA should investigate if this aligns with demand and adjust resources to ensure consistency across all channels.

3. **Address Seasonal Peaks with Dynamic Resource Allocation**
   - **Increase Staffing and Support in Summer:** Since complaints peak during mid-year (especially July), BoA should consider hiring temporary support staff, enabling overtime, or optimizing workflows during these months. This will allow the bank to handle the higher complaint volumes without delays.
   - **Evaluate Seasonal Patterns for Proactive Measures**: BoA could identify potential factors causing these seasonal spikes and implement preemptive customer communications or resources to prevent common issues before they lead to complaints.

4. **Reduce Dependency on Monetary Relief for Complaint Resolutions**
   - **Enhance First-Contact Resolution Quality:** Since a large number of complaints are closed with "explanation," followed by "monetary relief," BoA should work towards enhancing the quality of first-contact resolutions, aiming to resolve issues satisfactorily without the need for monetary compensation.
   - **Training and Empowerment of Support Staff:** Provide training that empowers customer service agents to resolve complaints effectively with clear explanations and alternative solutions where possible. This can help reduce reliance on monetary relief and improve overall customer satisfaction.

5. **Improve Processes for Overdraft, Savings, and Rewards Issues**
   - **Prioritize Responses for Slow-Responded Issues**: Issues related to overdraft, savings, or rewards features often face delayed responses. BoA should identify the root causes behind these delays, whether it's workflow complexity, staffing levels, or specific procedural bottlenecks, and address them to ensure these issues receive timely attention.
   - **Process Mapping and Simplification:** Simplifying the processes for handling common overdraft or rewards-related complaints can help reduce the time required to resolve them and lead to faster, more efficient responses.

6. **Monitor and Improve the "Closed with Explanation" Response**
   - **Quality Control for Explanations:** Since most complaints are closed with an explanation, BoA should implement quality control measures to ensure that explanations are clear, accurate, and helpful. This can reduce customer dissatisfaction and lower follow-up complaint rates.
   - **Customer Feedback on Explanations**: Collect customer feedback specifically on whether the explanations provided were satisfactory. This feedback loop can help refine the way BoA communicates resolutions and identifies areas where additional support might be needed.

7. **Focused Resource Allocation in High-Complaint States**
   - **Prioritize California and Florida:** With California (CA) and Florida (FL) being the states with the highest number of complaints, BoA should consider allocating additional resources and customer service support to these regions. This could include increasing staffing levels, extending service hours, or providing specialized training for common complaint types in these states.

- **Address Account Management Issues:** Since "managing an account" is a prominent issue in California, Texas, and Florida, BoA should conduct a deeper investigation into account management processes specific to these regions. Simplifying online and mobile banking features, enhancing account security, and providing clearer guidelines for account-related issues could help reduce complaints.

8. **Improve Timely Response Rates in Low-Performing States**

- **Focus on North Dakota:** North Dakota (ND) has the lowest timely response percentage, indicating potential bottlenecks in complaint handling in this region. BoA should review the workflow and identify any delays specific to ND, such as staffing shortages, procedural inefficiencies, or delays in complaint routing. Investing in automation tools or setting up a dedicated team for North Dakota could help improve timely responses in this region.
- **Adopt Best Practices from South Dakota:** South Dakota (SD) has the highest percentage of timely responses, meaning BoA's response practices in this state are effective. BoA could analyze the workflows, staffing structure, and response strategies used in SD and apply these best practices to states with lower timely response rates, such as North Dakota.

9. **Implement Targeted Training and Support for Common Issues**

- **Specialized Training for Account Management:** Since "Managing an account" is the most pressing issue in key states, BoA should provide specialized training for support agents in California, Texas, and Florida to address these issues more effectively. Training should focus on resolving account-related concerns swiftly and providing proactive guidance to prevent recurring problems.
- **Regular Performance Reviews for Timeliness:** Implement a monitoring and evaluation system that tracks the timeliness of responses by state. This can help ensure that regions like North Dakota improve their response times, while high-performing states like South Dakota maintain their effectiveness.

These recommendations are designed to address specific trends and gaps identified in the analysis, providing a roadmap for BoA to improve both customer experience and operational efficiency.