Benchmarking Credit Union Performance: A Comparative Analysis against Peers and State-Level Counterparts

BDM Capstone Project

Submitted by

Name: Neel Gandhi

Roll number: 23DS3000166

IITM Online BS Degree Program,

Indian Institute of Technology, Madras, Chennai Tamil Nadu,

India, 600036

Contents

<u>Declaration Statement</u>

I am working on a Project Title "Benchmarking Credit Union Performance: A Comparative Analysis against Peers and State-Level Counterparts".

I hereby assert that the data presented and assessed in this project report is genuine and precise to the utmost extent of my knowledge and capabilities. The data has been gathered through secondary sources and carefully analyzed to assure its reliability.

Additionally, I affirm that all procedures employed for the purpose of data collection and analysis have been duly explained in this report. The outcomes and inferences derived from the data are an accurate depiction of the findings acquired through thorough analytical procedures.

I am dedicated to adhering to the information of academic honesty and integrity, and I am receptive to any additional examination or validation of the data contained in this project report.

I understand that the execution of this project is intended for individual completion and is not to be undertaken collectively. I thus affirm that I am not engaged in any form of collaboration with other individuals, and that all the work undertaken has been solely conducted by me. In the event that plagiarism is detected in the report at any stage of the project's completion, I am fully aware and prepared to accept disciplinary measures imposed by the relevant authority.

I agree that all the recommendations are business-specific and limited to this project exclusively, and cannot be utilized for any other purpose with an IIT Madras tag. I understand that IIT Madras does not endorse this.

Signature of Candidate: (**Digital Signature**)
Name: Neel Gandhi
Date: 11-04-2025

1. Executive Summary

The **National Credit Union Administration (NCUA)** regulates credit unions across the U.S., ensuring compliance, financial stability, and member protection. Since 1991, its quarterly **5300 Call Report** has provided detailed insights into credit unions' assets, liabilities, membership, and operations, covering **over 3,500 variables across 17 tables**. However, the absence of a structured benchmarking approach makes it difficult for individual credit unions to assess their performance against peers (NCUA defines credit unions in six peer groups based on the assets they hold, measured in millions) and state-level counterparts, limiting their ability to identify strengths and address weaknesses.

This project benchmarks **Navy Federal Credit Union (NFCU)**, headquartered in Virginia with a credit union number of 5536, which falls within NCUA's Peer Group 6, against 361 peer institutions and 85 state-level credit unions. It analyzes **10 quarters of data (2022–2024)** to assess NFCU's **financial health, operational efficiency**, and **market performance** relative to peer and state-level averages. The methodology involves selecting and preprocessing key financial, operational, and market performance variables from NCUA's 5300 Call Reports for the credit union in focus, as well as its state and peer level counterparts. Python scripts automate data cleaning and aggregation, streamlining the derivation of key performance indicators. This analysis primarily employs descriptive and exploratory data analysis (EDA), leveraging bar charts, line charts, and stacked column charts to visualize trends, distributions, and comparisons across institutions. Pandas, Matplotlib, and Seaborn are utilized for visualization, enabling comparative insights across industry peers and state-level counterpart. The findings are then synthesized to identify performance gaps and inefficiencies, paving the way for strategic recommendations.

The study delivers actionable insights into **NFCU's** competitive standing, identifying areas of strength, inefficiencies, and growth opportunities. It highlights strategies to enhance competitiveness, optimize service offerings, and drive long-term member engagement. Additionally, it establishes a replicable methodology, enabling other credit unions to conduct similar analyses and make data-driven strategic decisions for continuous improvement.

2. Proof of Originality

The primary data source for this analysis is publicly accessible through the NCUA's official website (Link),[1]. Each quarter's data is available for download in a zip format, containing all relevant tables with variables in CSV format. Since this data is publicly available, anyone can conduct their own analysis based on their specific interests. The final metadata, derived from variables of interest across all ten quarters from 2022 to 2024, can also be found in the reference section (Link) [2]. The Python code used to conduct the **complete analysis** of the credit union in focus is available in reference section (Link) [3].

3. Meta data and Descriptive Statistics

The final metadata is derived from variables of interest across a specified period consists of a total of 48,093 rows and 105 columns. Among these 105 columns, the variables CU_Name, Year_Quarter, and State are of data type object, whereas CU_Number, Peer_Group, and all remaining hundred columns that describe account details are of data type integer or float.

Briefly summarizing the descriptive statistics, with a total row count of 48,093, there are 5,043 unique CU_Names and their corresponding CU_Numbers. Additionally, there are 10 distinct Year_Quarter values, while the credit unions (CUs) represent 54 distinct states and are categorized into six distinct peer groups based on their total assets. Due to space constraints, descriptive statistics (min, max, mean, median, quartiles) for all **100 numerical account variables** are not detailed here; please refer to this **(Link)** for further information.

4. Comprehensive Explanation of the Analysis Procedure

The entire project cycle, encompassing everything from selecting variables for analysis to reporting the results, can be divided into eight critical steps. These steps must be executed sequentially to effectively carry out the benchmark analysis. For a detailed overview of these steps in the form of a flow chart, please refer to [this link].

4.1 Detailed Explanation of Planning and Targeting Steps

The planning stage begins with selecting variables that represent key banking parameters. This involves reviewing the **AcctDesc** file from each quarterly 5300 Call Report, which lists all 3,500 variables and their table locations. It serves as a critical reference for identifying relevant variables. A snapshot of the first five entries is shown in Fig-1.

Note: Due to page width limitations, it is not possible to represent the data as a continuous table as a result, it is shown as an image.

Account	AcctName	AcctDesc	TableName	Annualize	CBSAccount	FPRAccount	STATAcctMain	STATAcctState	STATAcctGraph	STATAcctTable8	STATUS
Acct_001	Amount - Total Other Loans (Purchased or to non-members)	Include the dollar amount of outstanding loans involving repossession of collateral, any note or contract receivable resulting from the sale of assets acquired in the liquidation of loans and loans to non-members.	FS220A	FALSE	TRUE	TRUE	TRUE	TRUE	FALSE	FALSE	Inactive
Acct_002	Amount of Leases Receivable	Leases Receivable. Include the rate, number, and dollar amount of outstanding direct financing leases as defined by GAAP (credit union is lessor). Credit unions that lease personal property such as vehicles to members make direct financing leases.	FS220A	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	Active
Acct_003	Loans Held for Sale	Loans Held for Sale. Report the amount of outstanding loans either identified for sale at origination or subsequently for which there has been a decision to sell. Loans held for Sale should not be included in the amounts reported under the Loan & Leases section lines 15 through 22.	FS220C	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	Active
Acct_007	Land and Building	Land and building, less depreciation on building, if any.	FS220	FALSE	TRUE	TRUE	TRUE	TRUE	FALSE	TRUE	Active
Acct_008	Other Fixed Assets	All other fixed assets such as furniture and fixtures, and leasehc	FS220	FALSE	TRUE	TRUE	TRUE	TRUE	FALSE	TRUE	Active
Acct_009	Other Assets	Include prepaid expenses, accounts receivable, accrued income	FS220	FALSE	TRUE	TRUE	TRUE	TRUE	FALSE	FALSE	Inactive

Figure 1 AcctDesc File in Python Environment

Variables were selected based on key banking trends across operational, market, and financial aspects to enable a comprehensive 360-degree comparative analysis. These are documented in an Excel file with essential details and table locations, forming the basis for metric derivation and preprocessing. With this, Steps 1 and 2—Planning and Targeting—are complete. A sample of this file is shown in the table below.

ACCT Description	Table	Account Code	Category	Description in Brief
Total Cash and other Deposits	FS220P	AS0009	Cash and Cash Equivalents	Total Cash and other Deposits includes several components that reflect the liquid assets of credit unions
Total Cash on Hand	FS220A	730A	Cash & Other Deposits	Total Cash Components that reflect the liquid assets of credit unions
Total YTD Charge-offs	FS220	550	Charge Off's & Recoveries	Refers to the Cumulative amount of loans that a credit union has written off as uncollectible during the year
Total YTD Recoveries	FS220	551	Charge Off's & Recoveries	Refers to the Cumulative amount of previously charged of loans that have been recovered by credit union for this year

Table 1 Few Records from the Excel File Consisting of Table and Variable Information of Interest

4.2 Preprocessing and Data Aggregation Steps

This section outlines Steps 3 and 4 of the project cycle—Data Preprocessing and Aggregation**.** Using the Excel file of target variables and table locations, a Python script (**PS-1**)(Link) was used to automate table cleaning and variable selection. From the 24 tables in the 5300 Call Report, 12 relevant tables were retained, and only essential variables were extracted. This process was repeated for each quarter from 2022 to 2024 to ensure consistency across the dataset marking the completion of step—3 Data Preprocessing

Cleaned text files were then aggregated quarterly using a second script (**PS-2**)(Link) to generate Meta files for every quarter. Table-3 presents a sample Meta file with five entries for 2022-Q1. Finally, Meta files from all quarters were combined into a **single consolidated file** using the same python script PS-2, completing Step 4—Data Aggregation.

CU - NUMBER	CU -NAME	Year-Quarter	STATE	Peer-Group	…..	ACCT_RL0015	ACCT_RL0017	ACCT_RL0050	ACCT_SH0880
1	MORRIS SHEPPARD TEXARKANA	2022-Q1	TX	3	…..	0	0	0	0
6	THE NEW ORLEANS FIREMEN'S	2022-Q1	LA	5	…..	0	1226950	4774704	4960000
12	FRANKLIN TRUST	2022-Q1	CT	4	…..	0	280272	0	0
13	EFCU FINANCIAL	2022-Q1	LA	6	…..	2197991	15805872	63946294	4147900
16	WOODMEN	2022-Q1	NE	3	….	0	0	1787954	0

Table 2 First Five Entries of 2022-Q1 Meta File

Note: Code for table selection, variable selection, Meta file creation, and consolidated Meta file creation are provided in the reference section **[4-5].**

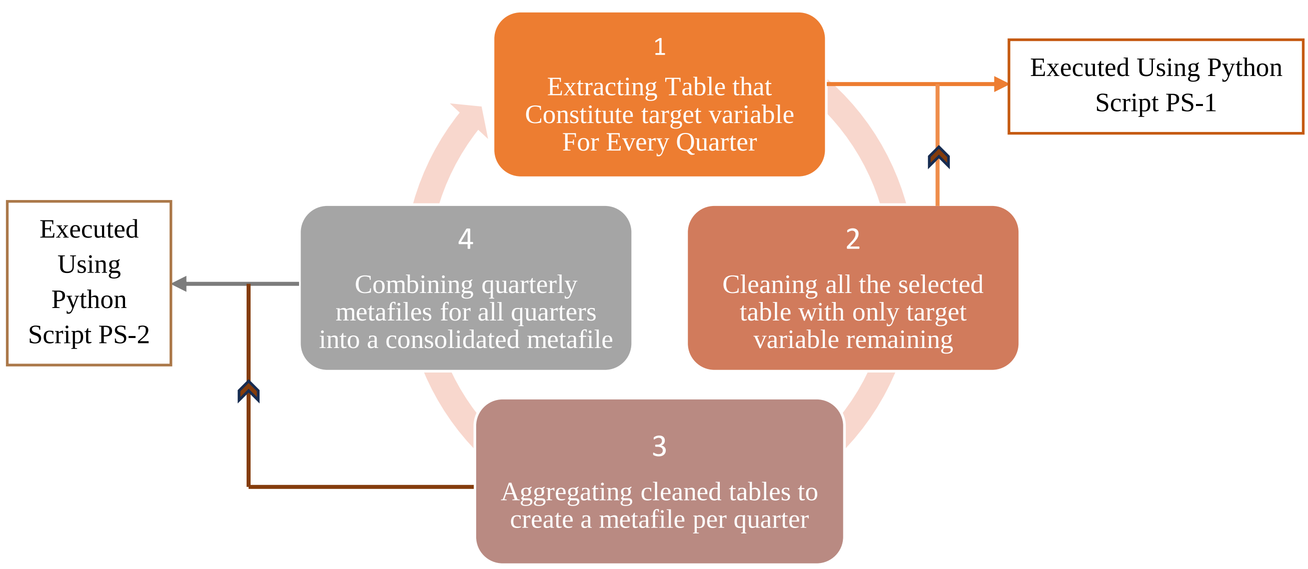

Figure 2 Execution of Python Scripts for Multiple Purposes

4.3 Deriving Indicators

This section outlines **step 5** of the project cycle, focusing on deriving key indicators/metrices to compare trends across various banking domains such as operations, market trends, and financial trends. The formulas used to derive this indicator are provided in the reference section **[6]**, along with a report of the variables involved.

Operational Trends: These trends help a Credit Union (CU) understand how well it is using its staff and branches to serve its members. By looking at a few key numbers, the CU can see how efficiently it operates, how well it reaches people in its community, and where it can grow.

- **Active Members Per Branch** – Shows how busy each branch is. This helps the CU find out which branches are overcrowded or underused, so they can plan better.
- **Members Per Full-Time Employee (M/FTE)** – Measures how many members each employee serves. It tells whether the CU has the right number of staff for the work they do.
- **Members Per Potential Member** – Looks at how many people in the area the CU is reaching. This helps spot areas where more people could be served.

These indicators help the CU understand how its staff and branches are doing and help it make smart decisions about staffing and branch operations.

Note: Derivation of these metrics is provided in the reference section below **[6]**.

Market Trends: These metrics help a Credit Union (CU) understand how its members use services like loans and savings. They also show whether the CU is focusing more on lending, growing savings, or adding new members. Most importantly, they highlight what the CU is doing well and where it can improve to serve its community better.

Below are the key derived metrices, explained in simple terms:

- **Borrowers to Members Ratio** – Shows how many members are taking loans. This helps the CU know if it needs to promote its loan products better.
- **Shares to Members Ratio** – Tells how much money members are saving in the CU. It reflects how much members trust the CU with their savings.
- **Total Loans to Number of Loans Ratio** – Helps understand whether the CU gives out a few large loans or many smaller ones.
- **Loan Growth vs. Savings Growth** – Compares how fast lending is growing versus how fast savings are growing. A balance between the two is important.
- **Asset and Membership Growth** – Shows if the CU is growing overall—both in terms of money it manages and the number of people it serves.

Together, these numbers give helpful insights into the CU's overall performance, guiding better plans for growth and member service.

Note: Details of each metric and how they are calculated can be found in Reference **[6].**

Financial Trends: These trends help a Credit Union (CU) clearly understand how it's doing financially—how stable it is, how wisely it uses its money, and how well it manages costs, risks, and investments.

- **Asset Allocation** – Shows how the CU divides its total assets across different areas.
- **Consolidated Net Worth Ratio** – A snapshot of the CU's overall financial health.
- **Annual Yield vs. Funding Costs** – Compares how much the CU earns from loans vs. how much it pays for funds.
- **Non-Interest Expenses vs. Net Interest Margin** – Reveals how efficiently the CU controls costs and earns from lending.
- **Loan Portfolio Distribution** – Shows how loan types are spread out, helping understand lending strategy.
- **Loan Delinquency & Net Charge-Offs** – Indicates how many loans are overdue or written off—helpful in spotting risk.
- **Delinquency (as % of Total Loans)** – Highlights what portion of loans are not being repaid on time.
- **Investment Portfolio Classification & Maturity Breakdown** – Helps evaluate how diverse and liquid the CU's investments are.
- **Savings Maturity (as % of Total Deposits)** – Tells how long members are locking in their savings, showing stability in funds.

These metrics provide a full picture of how the CU is managing its finances and risks, helping it make smart choices and stay financially strong.

Note: Details of these ten metrics—including the variables used and the formulas applied—can be found in Reference **[6]**. A more technical explanation of the financial terms is available in Reference **[8].**

5. Results and Findings

This section covers Steps 6 and 7 of the project, which focus on evaluating a selected credit union by comparing it against its peers and state-level counterparts. The analysis will be conducted using key indicators derived in the preceding section, facilitating a structured assessment of performance, strengths, and areas requiring improvement. A **detailed case study** will be presented to illustrate how credit unions can benchmark their standing and optimize strategic decision-making.

For this case study, **Navy Federal Credit Union (NFCU)**—based in Virginia and serving U.S. Armed Forces members—has been selected. With its total asset size, NFCU falls into **Peer Group 6** and is identified by **Credit Union Number 5536**. The study will compare NFCU's financial, operational, and market performance against its peers and state level counterparts using the derived indicators.

Operational Trends Analysis:

1. Active Members Per Branch

The bar graph was chosen for its ability to clearly compare active members per branch across categories (CU, peers, state) over multiple years, highlighting trends and differences in magnitude effectively. Moreover, the CU in focus exhibited significantly higher magnitudes compared to its peers for this indicator; hence, a broken bar graph was chosen to effectively display this trend

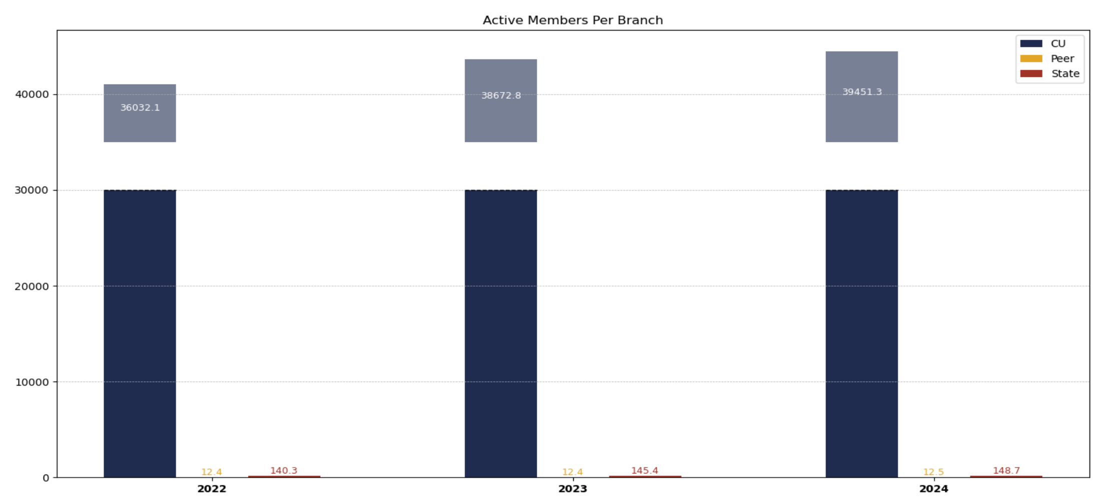

Figure 3 Active Members per Branch

Findings: Navy Federal Credit Union consistently maintains a significantly higher number of active members per branch compared to both its peers and state-level counterparts as displayed in Fig-3. For example, in 2024, the CU recorded 39,451 active members per branch, compared to 12.5 and 148.7 for its peer group and state average, respectively. This highlights the credit union's operational efficiency in utilizing its branches to serve a large member base effectively.

2. Member per Full time Employee

The bar graph was chosen for its clarity in comparing member-to-staff efficiency across different categories (CU, peers, state) and over time. Its straightforward design effectively highlights trends, emphasizes differences in magnitude, and showcases the CU's performance compared to its peers.

Findings: The Federal Navy Credit Union consistently outperforms its peer group and aligns closely with the state average as shown in Fig-4, with a steady increase in the ratio over years shows fewer employees are serving more members, which may indicate **high efficiency** or **potential understaffing** over the years. For instance, in 2024, the CU reported 577.1 members per FTE compared to 403.6 for peers and 562.2 for the state average

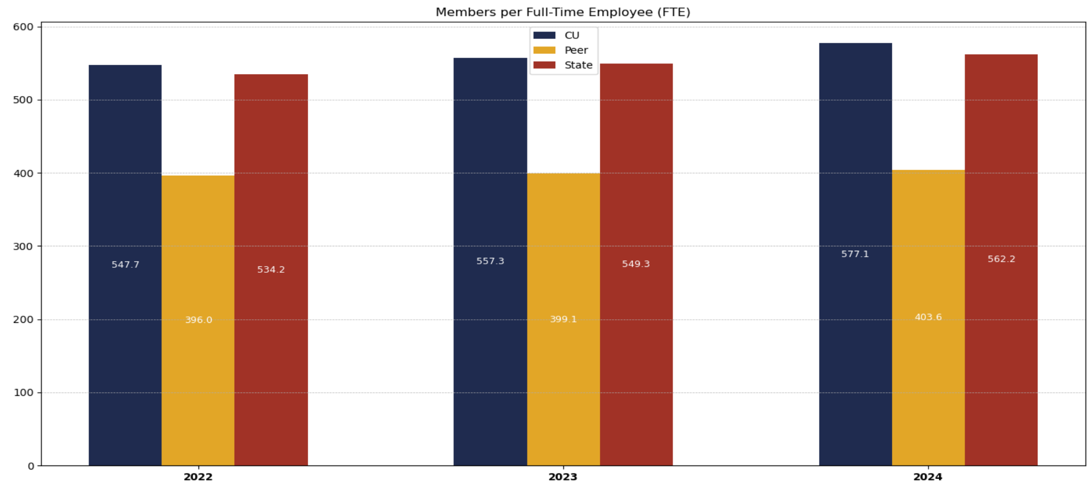

Figure 4 Members per Full Time Employee

3. Member's Per Potential Member

The bar graph was selected for its effectiveness in visually comparing market penetration across different categories (CU, peers, state) and over time. Its simplicity and clarity make it easy to emphasize the CU's superior performance in converting potential members into active ones, showcasing trends and differences at a glance.

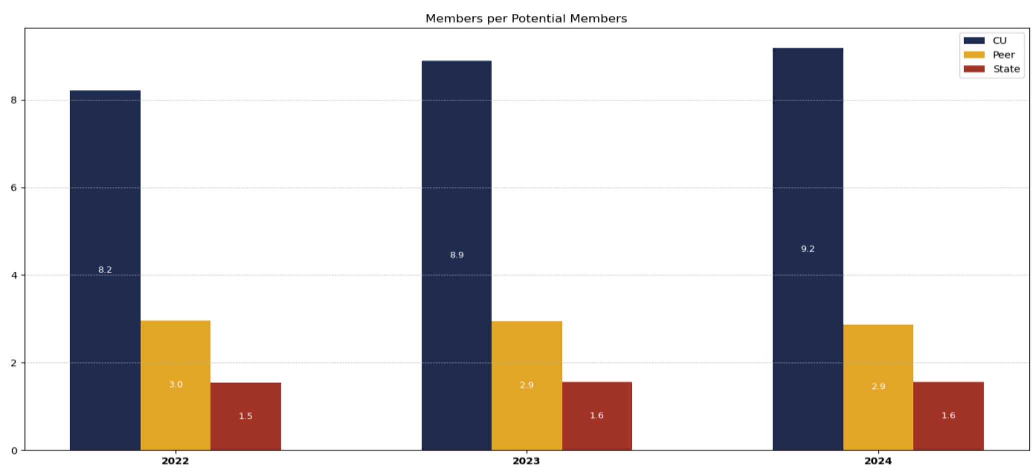

Figure 5 Members per Potential Members

<u>Findings:</u> The Navy Federal Credit Union consistently demonstrates a significantly higher ratio, reflecting its strong market penetration and ability to convert potential members into actual members. For instance, in 2024, the CU recorded 9.2 members per potential member, compared to 2.9 for peers and 1.6 for the state average as illustrated in Fig-5. This highlights the CU's exceptional outreach and effectiveness in engaging its target audience.

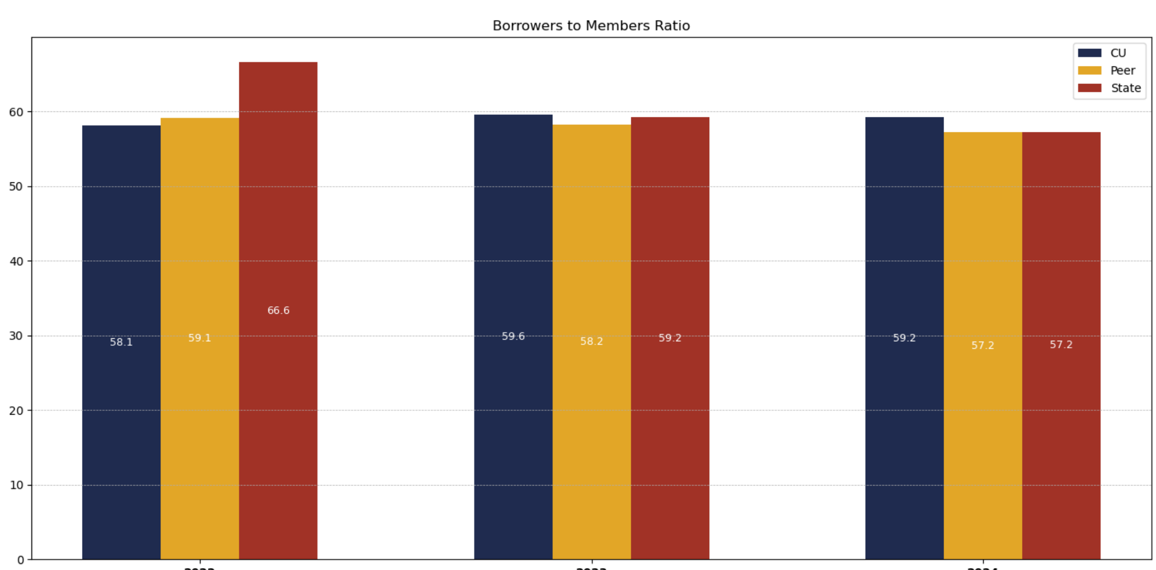

Figure 6 Borrowers to Member Ratio Trend

<u>Market Trends Analysis</u>

1. Borrower's to Members Ratio

The bar graph effectively compares the borrowers-to-members ratio across categories (CU, peers, state) over time. Its simple design highlights consistency and variations, making trend analysis and benchmarking straightforward.

<u>Findings:</u> Fig-6 presents the trend of the borrowers-to-members ratio for Navy Federal Credit Union (CU), its peer group, and state-level averages from 2022 to 2024. The CU shows a stable performance in this ratio, maintaining values close to its peers and state averages. For example, in 2024, the CU reported a ratio of 59.2%, slightly higher than the state and peer average of 57.2%. This indicates that the CU effectively engages its members in borrowing activities, consistent with industry standards

2. Shares to Members Ratio

The bar graph's ability to visually group data for multiple years makes it ideal for illustrating temporal consistency or deviations, helping stakeholders quickly identify areas where the CU diverges from its peers and state level counter parts.

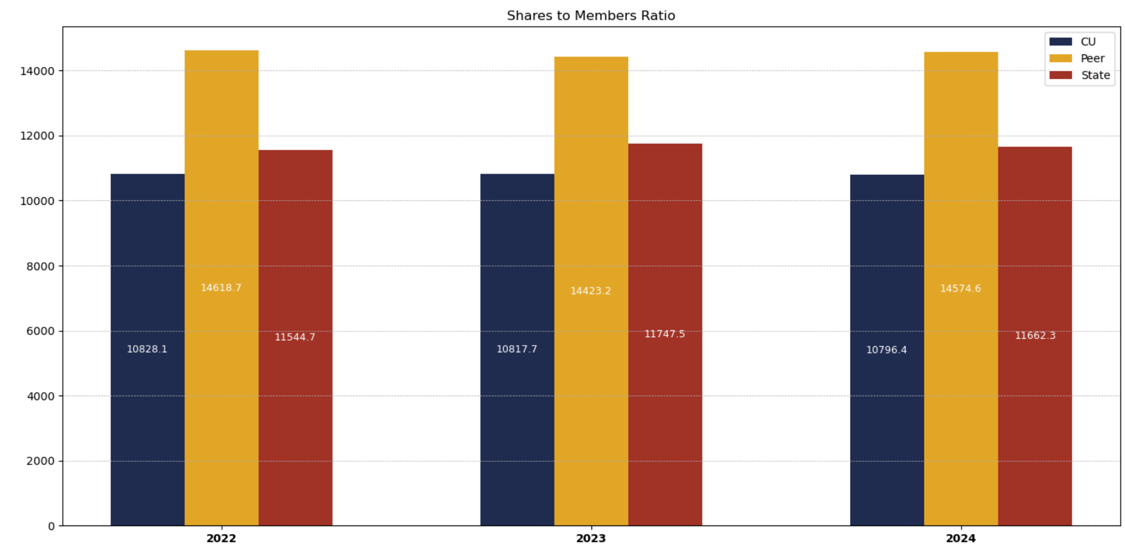

Figure 7 Shares to Members Ratio

<u>Findings:</u> The CU consistently exhibits lower ratios compared to its peers and state counterparts shown in Fig 7, with a ratio of 10,796.4 in 2024, compared to 14,574.6 for peers and 11,662.3 for the state average. This indicates that while the CU effectively engages its members, its shares per member are comparatively lower, potentially highlighting differences in member deposit behaviors or lending product focus.

3. Total Loans to No of Loans Ratio

The bar graph was selected to visually emphasize the distribution of loan sizes across CU, peers, and state-level counterparts over time. This format effectively highlights differences in lending strategies and allows for straightforward comparisons.

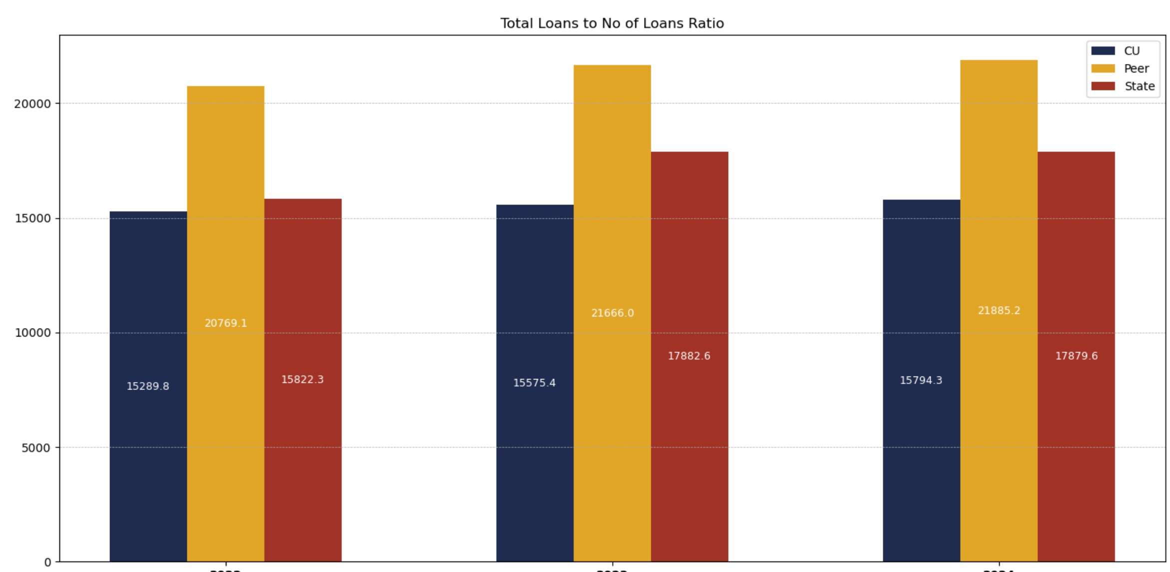

Figure 8 Total Loans to No of Loans Ratio

<u>Findings:</u> The Navy Federal Credit Union consistently maintains a lower ratio compared to its peers and state averages as shown in Fig 8, with a ratio of 15,794.3 in 2024, compared to 21,885.2 for peers and 17,879.6 for the state average. This indicates that the CU focuses on offering a higher number of smaller loans, potentially to better serve a diverse range of member needs.

4. Annual Loan vs Share Growth Analysis

The line graph was chosen for its ability to effectively visualize year-over-year changes in loan and share growth across multiple categories (CU, peers, state). Its continuous structure highlights the progression and trends over time, enabling easy identification of growth trajectories, shifts, and comparative dynamics.

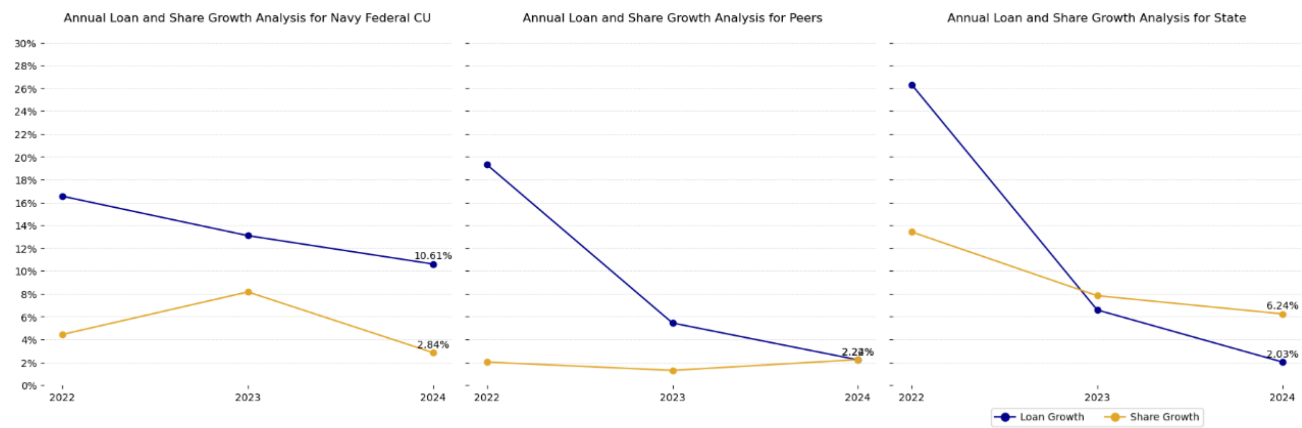

Figure 9 Annual Loan vs Share Growth Analysis

<u>Findings:</u> Navy Federal Credit Union shows a consistent decline in loan growth, dropping from 16.4% in 2022 to 10.61% in 2024, as illustrated in Fig-9. Simultaneously, its share growth rate has also followed a downward trend, reaching 2.84% in 2024. In comparison, peers and state-level counterparts exhibit similarly steep declines in loan growth, while their share growth rates show a more gradual decline over the same period. This indicates a shift in growth strategies and a more cautious approach to loan disbursements in recent years.

5. Yearly Asset and Membership Growth Analysis

The line graph was chosen to illustrate the interplay between asset and membership growth trends over time. Its continuous structure highlights divergences and convergences between the two metrics, offering a clear visual representation of how these growth rates evolve and align.

<u>Findings:</u> Navy Federal CU demonstrates a unique trend with asset growth surpassing membership growth in 2023 (8.5% asset growth vs. 8.1% membership growth), followed by a steady decline in both metrics to 7.52% and 6.37% respectively in 2024 as illustrated in Fig-10. In comparison, peers and state averages exhibit consistently lower growth rates, with 2024 figures showing 2.71% asset growth for peers and 3.81% for the state. This trend suggests that Navy Federal CU's asset accumulation is not solely driven by membership expansion but rather by increased deposits, higher loan balances, or investment growth. While this may indicate strong financial positioning, a declining membership growth rate could raise concerns about long-term sustainability and member engagement.

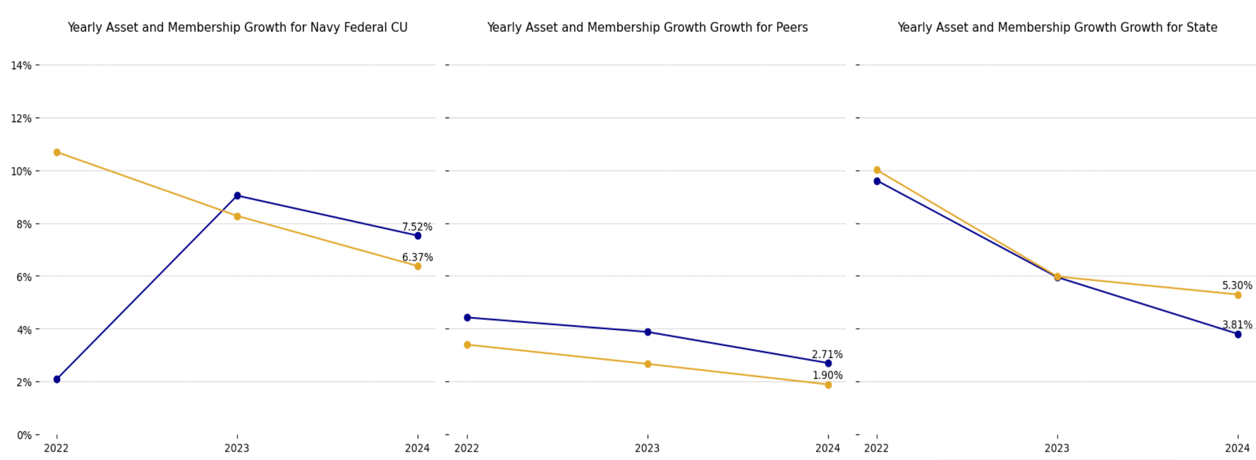

Figure 10 Yearly Asset & Membership Growth

<u>Financial Trends Analysis</u>

1. Asset Allocation (percentage of Total Assets)

The stacked bar chart was selected to provide a comprehensive view of asset allocation distribution across multiple components (e.g. net loans, investments, cash etc.) and entities (CU, peers, state) over time. This format allows for an easy comparison of proportional contributions, highlighting changes and trends in asset management strategies.

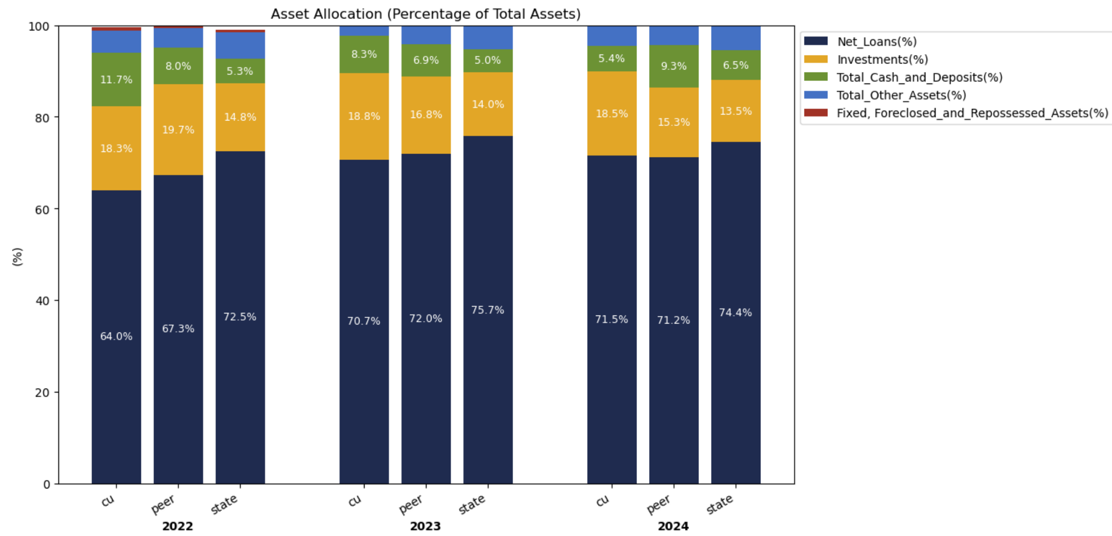

Figure 11 Asset Allocation (Percentage of Total Assets)

<u>Findings:</u> Navy Federal CU consistently allocates a significant portion of its assets to net loans, increasing from 64.0% in 2022 to 71.5% in 2024, highlighting its strong focus on lending activities, as shown in Fig-11. Similarly, peers and state counterparts exhibit a consistent increase in allocations to net loans over the same period, followed by a slight decline toward the end of 2024. Investments and total cash and deposits constitute the next largest portions of asset allocation. Navy Federal CU maintains a steady allocation to investments across the years while reducing its percentage allocation to cash and deposits. In comparison, peers and state counterparts exhibit lower allocations to investments from 2023 onward, while maintaining higher allocations to cash and deposits, particularly in 2024. This reflects different strategic priorities in managing liquidity and asset portfolios.

2. Consolidated Net worth Ratio

The discrete nature of the bar graphs emphasizes both positive and negative fluctuations, enabling a straightforward analysis of changes and disparities.

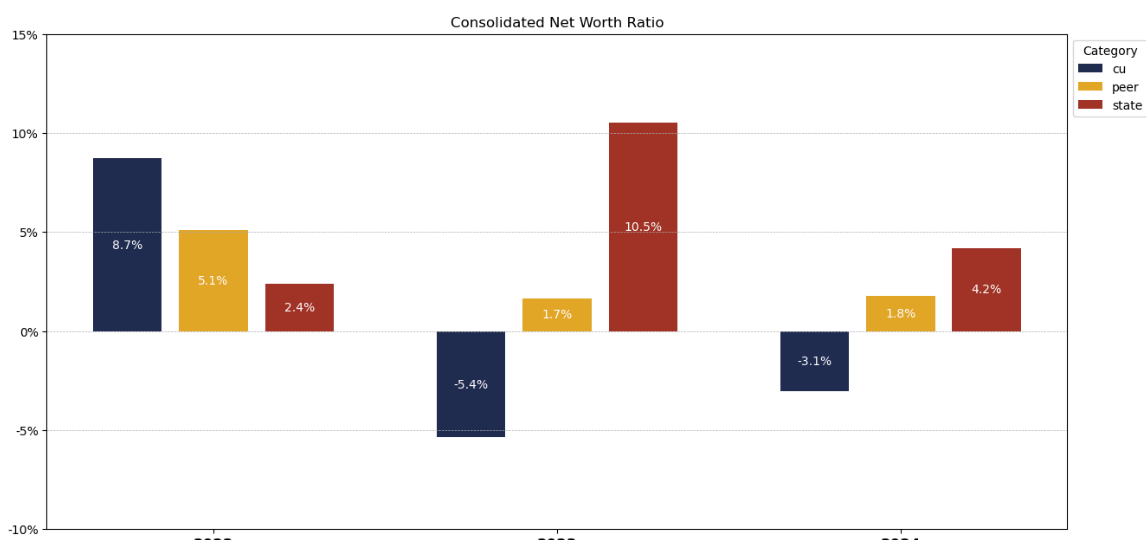

Figure 12 Consolidated Net-Worth Ratio

<u>Findings:</u> In 2022, the Navy Federal Credit Union demonstrated a strong net worth ratio of 8.7%, outperforming its peers (5.1%) and the state average (2.4%) as depicted in Fig-12. However, in 2023, NFCU's net worth ratio declined sharply to **-5.4%**, primarily due to increased loan losses and reduced operational income—a trend observed across the **ten largest credit unions**. In contrast, the state's net worth ratio rose significantly to 10.5% during the same period. By 2024, the CU showed signs of recovery, improving to -3.1%, though it remained below its peers (1.8%) and the state (4.2%). This trend highlights the CU's financial challenges regarding its net worth in recent years compared to its competitors.

3. Annual Yield versus Funding Costs

The line graph was selected for its ability to track and compare the progression of YOL, YOI, and COF over time across CU, peers, and state entities. Its continuous nature effectively showcases the trends and differences, aiding stakeholders in understanding long-term performance dynamics.

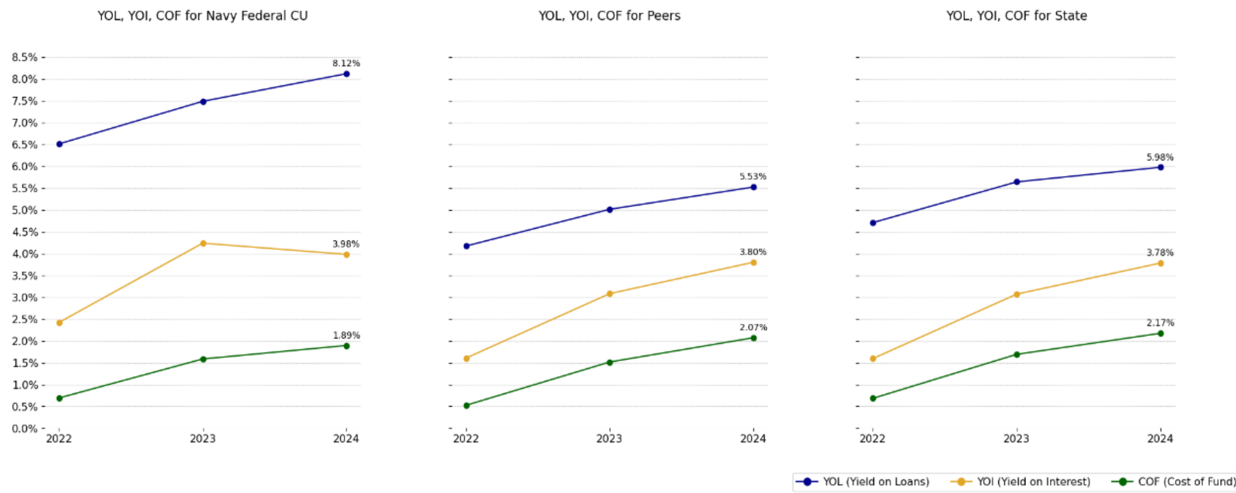

Figure 13 Annual Yield versus Funding Costs

Findings: Navy Federal CU shows a consistent rise in YOL as depicted in Fig-13, increasing from 6.5% in 2022 to 8.12% in 2024, reflecting its robust lending profitability. However, its COF also rises, though remaining significantly lower than YOL, indicating effective cost management. For peers and state counterparts, YOL grows at a slower rate, reaching 5.53% and 5.98%, respectively, by 2024. COF for both groups remains higher than Navy Federal CU but exhibits a gradual increase, reflecting an industry-wide trend of rising funding costs. YOI across all groups demonstrates stability, with slight fluctuations, showing a balanced return on investments and deposits.

4. Annual Non-Interest Expenses and Net Interest Margin

The line graph was chosen for its ability to effectively illustrate the dynamic relationship between NIE and NIM over time for multiple categories. Its clarity helps highlight trends, divergences, and alignments, offering a comprehensive view of operational costs versus revenue efficiency.

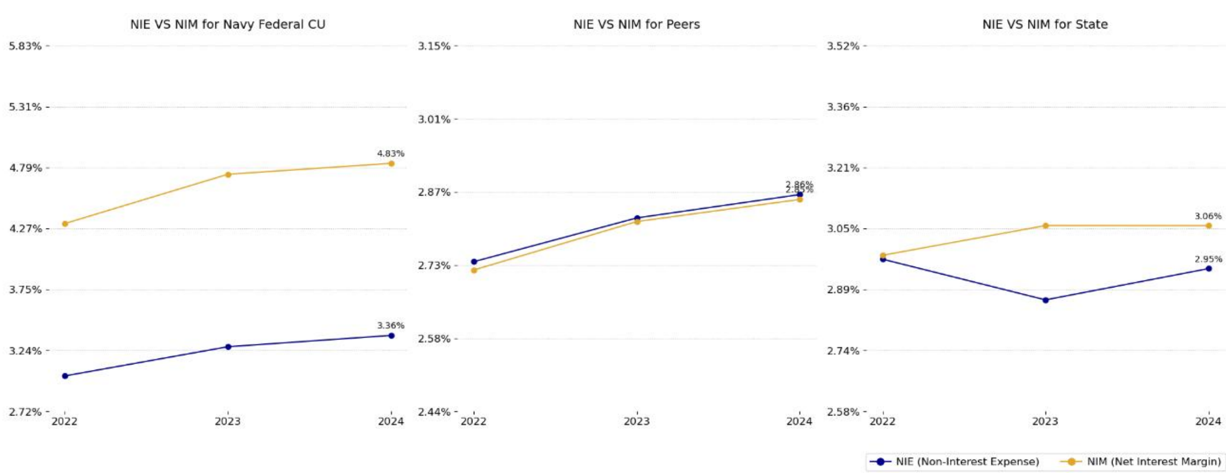

Figure 14 Annual Non-Interest Expenses and Net Interest Margin

Findings: Navy Federal CU, NIM shows a steady increase, rising from 4.27% in 2022 to 4.83% in 2024, indicating higher earnings from its lending activities as indicated in Fig-14. In contrast, NIE exhibits moderate growth, reaching 3.36% in 2024, highlighting the CU's ability to manage interest income relative to its expense. Peers display a more balanced trend, with NIE and NIM closely aligned, both increasing modestly to 2.86% by 2024. State-level counterparts show an initial decline in NIE to again an increment of 2.95% in 2024, while NIM improves slightly to 3.06%, This suggests that despite rising operational costs, the CU’s interest income generation has remained stable.

5. Loan Portfolio Distribution (Percentage of Total Loans)

The stacked bar graph unique ability of combining absolute percentages in a single visual, the graph offers a clear comparison among the CU, its peers, and state counterparts, enabling stakeholders to identify strengths and diversification strategies at a glance.

Findings: Navy Federal CU shows a gradual decline in real estate loans, dropping from 47.8% in 2022 to 44.7% in 2024, reflecting a shift in lending focus. Simultaneously, vehicle loans experience consistent growth, rising from 21.6% in 2022 to 24.3% in 2024, indicating increased emphasis on vehicle financing as displayed in Fig-15. Credit card and unsecured loans maintain stable contributions, suggesting consistent demand. In comparison, peers allocate a larger share to real estate loans, peaking at 57.5% in 2024, with a slight decrease in vehicle loans and somewhat consistent allocation to credit card and unsecured loans. At the state level, a higher allocation to credit card and unsecured loans is observed compared to its counterparts.

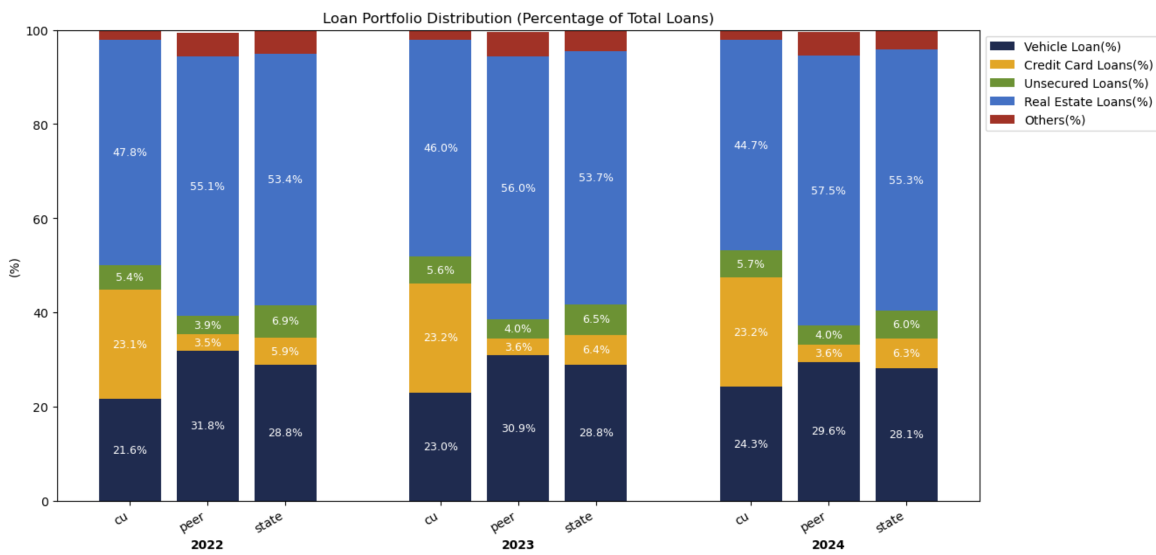

Figure 15 Loan Portfolio Distribution (Percentage of Total Loans)

6. Loan Delinquency and Net Charge-Offs

The line graph was chosen to effectively showcase the evolving relationship among multiple indicators charge-offs (COs), recoveries (RCs), net charge-offs (NCOs), and delinquency to loans (Del) over time. The continuous lines enable clear tracking of upward lower or stable trends.

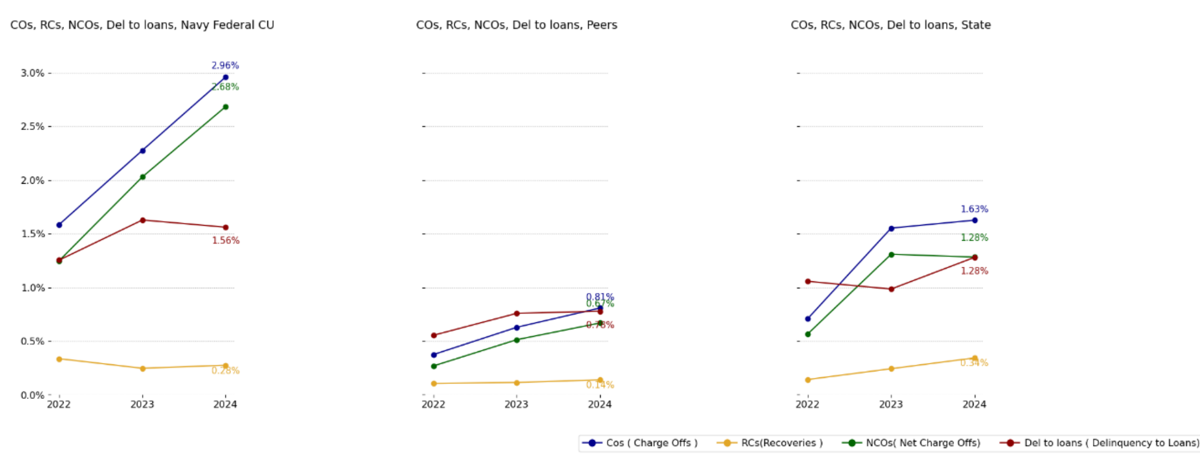

Figure 16 Loan Delinquency and Net Charge-Offs

Findings: Navy Federal CU, delinquency to loans (red) has shown a gradual increase, reaching **1.56%** in 2024, suggesting rising but moderate repayment risks as depicted in Fig-16. Net charge-offs (blue) have risen more significantly, peaking at **2.68%** by 2024, indicating challenges in managing loan defaults. Peers exhibit steadier performance, with delinquency rates stabilizing at **0.78%** and net charge-offs at **0.67%** by 2024 reflecting effective credit risk management practices. At the state level, delinquency and net charge-offs both rise slightly to **1.28%** each in 2024, showing consistency and moderate risk levels compared to the CU.

7. Delinquency (% of Total Delinquent Loans)

The stacked bar chart along with a trend line effectively conveys the proportional breakdown of delinquent loans by category while overlaying the delinquency amount in absolute terms. It provides a clear visualization of both the distribution of delinquencies across timeframes and their financial magnitude, allowing for an insightful comparison across entities and years.

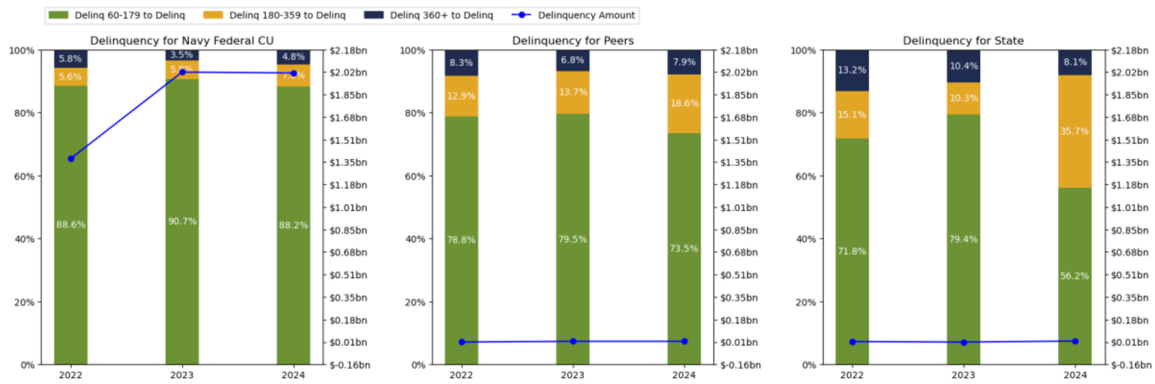

Figure 17 Delinquency (% of Total Delinquent Loans)

<u>Findings:</u> Navy Federal CU, 60-179 days delinquent loans constitute the majority of delinquent loans, holding steady at approximately **88%-90%** over the years as shown in Fig-17. Loans delinquent for 360+ days, represented in blue, show a slight decrease from **5.8% in 2022 to 4.8% in 2024**, while loans delinquent for 180-359 days remain stable at approximately **5.6%-5.8%** till 2022-2023 whereas it observed as sudden jump of **7%** in 2024, reflecting effective management of long-term delinquencies (360+ days) but highlight growing risks in mid-term (180-359 days) and short-term (60-179 days) delinquencies. Peers demonstrate a steady decline in short-term delinquencies (60-179 days), from 78.8% in 2022 to 73.5% in 2024, with a gradual rise in mid-range delinquencies (180-359 days) and subtle decrease in long-range delinquency from 8.3%in 2022 to 7.9% in 2024, While the reduction in short-term delinquencies suggests improved early-stage collections, the increase in mid-range delinquencies may indicate potential rollover risks. Conversely, state-level counterparts show a significant increase in mid-range delinquencies (180-359 days), doubling from 15.1% in 2022 to 35.7% in 2024, signaling escalating mid-term repayment challenges.

8. Investment Portfolio Classification (Percentage of Total Investment)

The stacked bar chart was selected for its ability to visually represent the proportional breakdown of different investment categories. By stacking the components, it clearly shows how each investment type contributes to the whole, enabling easy comparison across multiple entities(CU, peers, and state) and over time.

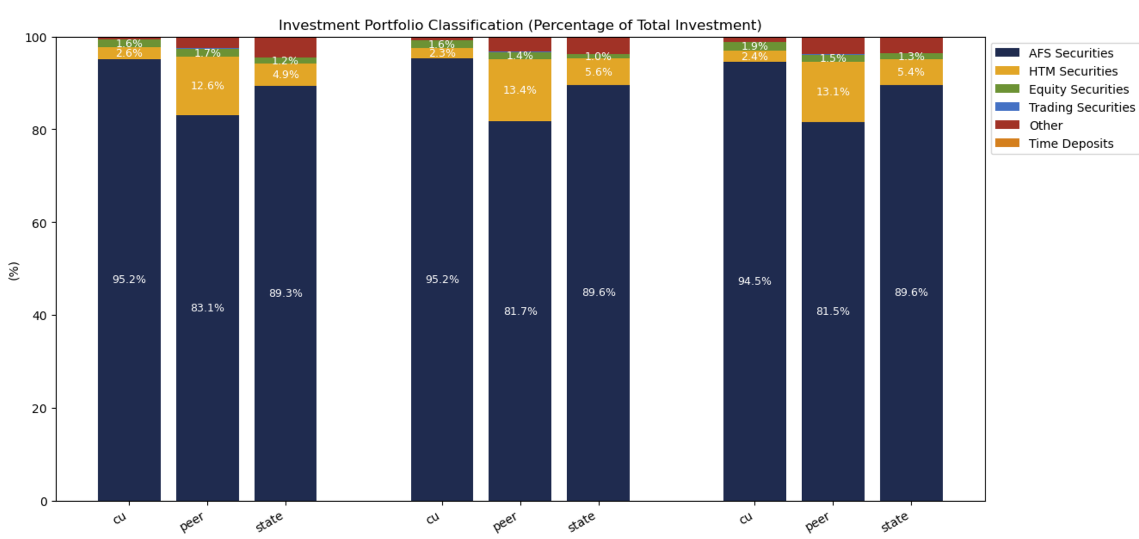

Figure 18 Investment Portfolio Classification (Percentage of Total Investment)

<u>Findings:</u> Navy Federal CU predominantly invests in AFS (Available for Sale) Securities, maintaining a significant proportion of its investment portfolio at 95.2% in 2022 and 94.5% in 2024, as shown in Fig-18. This consistent preference highlights a focus on liquid and low-risk investments. In contrast, peers exhibit a slightly more diversified portfolio, with AFS Securities decreasing from 83.1% in 2022 to 81.5% in 2024, and a slightly higher allocation to Time Deposits, which rise to 5.6% in 2024.State-level counterparts display a similar trend, with AFS Securities maintaining a stable but lower proportion of around 89%, complemented by modest allocations to HTM (Held-to-Maturity) and Equity Securities. This analysis indicates that Navy Federal CU prioritizes maintaining liquidity, while peers and state-level counterparts show a balanced approach with increased diversification in their investment strategies.

9. Investment Maturity Breakdown (Percentage of Total Investment)

The stacked bar chart was chosen for its ability to represent the proportional breakdown of investment maturity categories as a percentage of total investments. It allows for a clear comparison of the distribution across different entities (CU, peers, and state) and over time. The layout effectively communicates both individual component contributions and overall investment composition in a single, intuitive visualization.

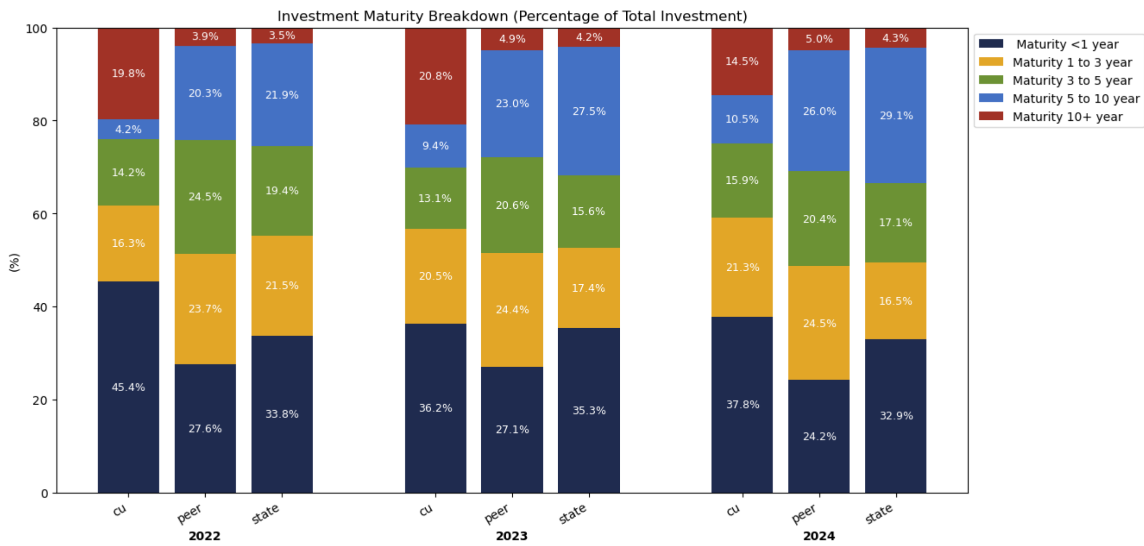

Figure 19 Investment Maturity Breakdown (Percentage of Total Investment)

Findings: Navy Federal CU previously focused heavily on short-term investments (<1 year), which decline from 45.4% in 2022 to 37.8% in 2024, as shown in Fig-19. This shift suggests a reduced emphasis on immediate liquidity and quick fund access. Medium-term investments (1-5 years) increased steadily from 30.5% in 2022 to 37.2% in 2024, reflecting a shift toward balanced investment strategies, while long-term investments (5-10+ years) increased slightly from 24% in 2022 to 25% in 2024, indicating somewhat constant long-term exposure. Peers adopt a balanced strategy, with medium-term investments making up a significant 44% share. Short-term investments decline from 27.6% in 2022 to 24.2% in 2024, while long-term investments (5-10+ years) steadily increase from 24.2% to 33.4% over the same period. This trend suggests a strategic shift toward long-term stability and higher returns, with reduced reliance on immediate liquidity. State-level counterparts short term investments remain constant at 33%, whereas decline from medium-term maturities is clearly observed with 40.9% in 2022 to 33.6 % in 2024, while long-term investments steadily rise from 24.2% to 33.4% over the same period. Reflecting a strategic move toward long-term financial stability, balancing risk and return while reducing exposure to mid-term investments.

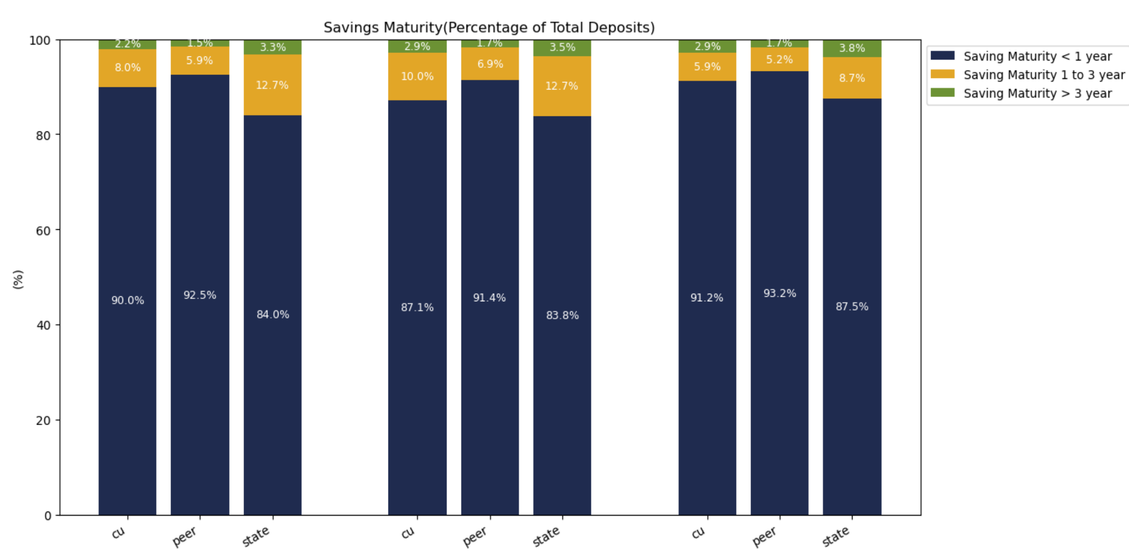

Figure 20 Savings Maturity (Percentage of Total Deposits)

10. Savings Maturity (Percentage of Total Deposits)

The stacked bar chart is ideal for visualizing investment maturity breakdowns across multiple categories (CU, peers, and state-level counterparts) and over time. By segmenting the bars into maturity ranges (short-term, medium-term, and long-term), this chart effectively communicates the proportional contribution of each maturity type to the overall portfolio.

Findings: Navy Federal CU prioritizes short-term savings maturities (<1 year), comprising 90.0% of deposits in 2022, dipping to 87.1% in 2023, and recovering to 91.2% in 2024, as shown in Fig-20. Medium-term (1-3 years) and long-term (>3 years) maturities remain minimal, reflecting limited orientation towards longer-term deposits. Peers consistently prioritize short-term maturities, maintaining an annual share above 91% and peaking at 93.2% in 2024. Their mid-to-long-term maturity allocations remain aligned with those of the CU. State-level counterparts exhibit greater diversity, with short-term maturities dropping to 83.8% in 2023 before rising to 87.5% in 2024 and somewhat higher allocations to medium- and long-term maturities in comparison with its counterparts. This indicates Navy Federal CU and peers prioritize liquidity, while state-level counterparts cater to more varied depositor preferences.

6. Interpretation of Results and Recommendation

This section addresses steps 7 and 8 of the project cycle. Fig-21 presents a heatmap summarizing key performance indicators, showing Navy Federal CU's position relative to state and peer benchmarks. For instance, the average Members per Full-Time Employee is 560 for Navy Federal, compared to 548 (state) and 399 (peers), resulting in a "Lead" label for Navy Federal, "Average" for the state, and "Lag" for peers. Other indicators are similarly categorized based on relative performance. Multi-variable metrics like Asset Allocation, previously shown via stacked column charts, are excluded from Fig-21 due to visualization complexity. The following sub-sections offer detailed interpretations and recommendations based on these trends.

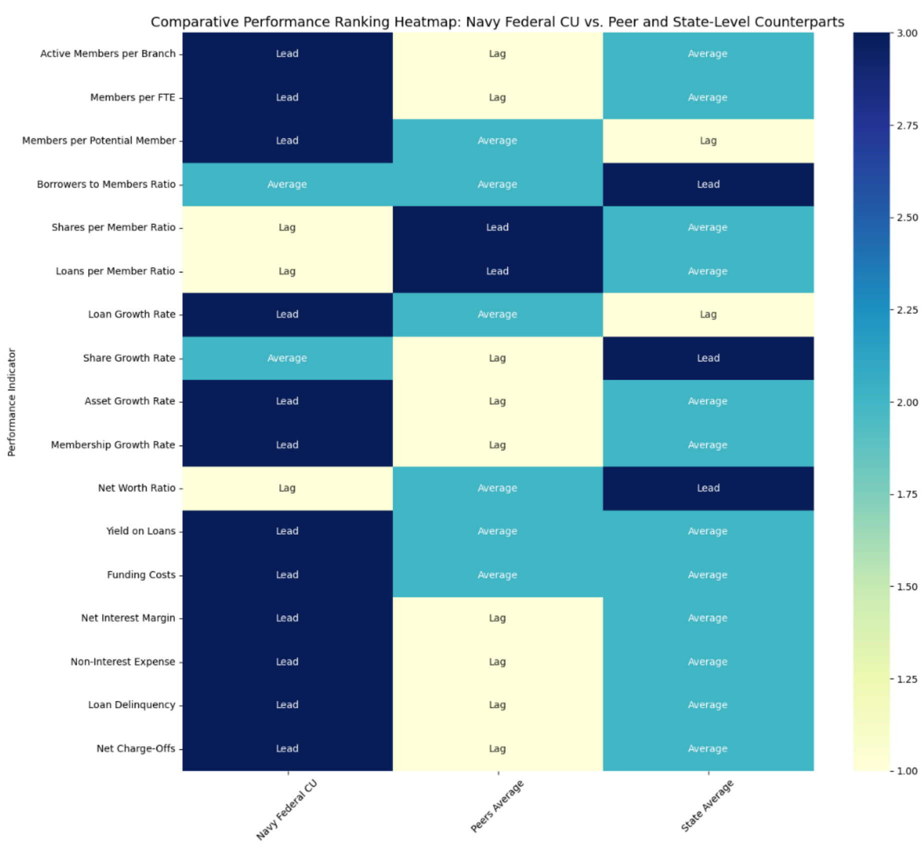

Figure 21 Heat Map Analysis of CU-InFocus Compared to Peers and State-Level Counterparts Across Multiple Metrics

1. Operational Trends

Interpretations:

1. Operational Efficiency and Resource Utilization:

Navy Federal CU exhibits **high operational efficiency**, with a Members-Per-Branch ratio of 39,451 in 2024, significantly exceeding peers (12.4) and the state average (148). Similarly, its Members-Per-FTE ratio stands at 577.1, surpassing peers (403.6) and slightly exceeding the state average (562.2). While these figures suggest cost efficiency and optimized workforce utilization, their impact depends on service quality, staffing, and infrastructure scalability. If well-managed, they reflect strong operational capacity, but if not, they could lead to overcrowding, longer wait times, workforce strain, and declining member satisfaction.

2. Market Penetration and Member Conversion:

Navy Federal CU's impressive ratio of 9.2 members per potential member in 2024, far exceeding peers (2.9) and the state average (1.6), highlights its exceptional market penetration. This success reflects the CU's effective marketing, branding, and customer service strategies, fostering trust and converting potential members into active ones at a superior rate.

Recommendations:

1. **Maintain Operational Excellence:** To maintain operational efficiency, Navy Federal CU should continue investing in advanced branch technology, including AI-driven member support, self-service kiosks, and automated workflows, to optimize resource utilization. Simultaneously, expanding staff training programs will ensure FTEs are well-equipped to manage the growing member base, with a focus on enhancing customer service, cross-selling products, and efficiently resolving member queries.
2. **Enhance Member Engagement and Retention:** To enhance member engagement and retention, Navy Federal CU could consider leveraging data analytics to develop personalized engagement strategies. This may include offering tailored loan products, financial advice, or savings plans based on member preferences and demographics. Additionally, implementing member loyalty programs, such as referral rewards or incentives for long-term membership, could strengthen relationships and help reduce attrition rates.
3. **Optimize Branch Network:** Regularly evaluate branch performance to identify underperforming locations and implement targeted improvements. In densely populated areas, adopt a hub-and-spoke model, with central branches managing complex transactions and smaller branches or digital kiosks handling basic services.

2. Market Trends

Interpretations:

Navy Federal CU effectively engages its members through stable borrowing activities, maintaining a borrowers-to-members ratio of **59.2% in 2024**, slightly higher than peers and state averages of **57.2%**. Its focus on offering smaller, diverse loans is reflected in a lower total loans per member ratio of **15,794.3 in 2024**, compared to **21,885.2** for peers and **17,879.6** for state averages. However, its lower shares per member, recorded at **10,796.4 in 2024**, compared to **14,574.6** for peers and **11,662.3** for the state, suggests opportunities to enhance member deposits. "The CU's declining loan growth from **16.4% in 2022 to 10.61% in 2024** is likely impacted by a slowdown in share growth, which fell from **8% in 2023 to 2.84% in 2024**. This trend suggests a shift toward a more cautious financial strategy, possibly driven by liquidity constraints, risk management efforts, or adjustments to changing economic conditions. However, despite slower loan and share growth, the CU has maintained strong asset growth, surpassing membership growth in **2023 (8.5% vs. 8.1%)** and continuing at **7.52% in 2024**—outpacing both peers (**2.71%**) and state averages (**3.81%**). This suggests that the CU is effectively leveraging alternative revenue streams or investment strategies to sustain financial stability.

Recommendations:

1. **Enhance Deposit Products:** Develop and promote deposit products that appeal to a broader member base, encouraging higher shares per member.
2. **Sustain Loan Growth:** Explore innovative lending solutions tailored to member needs, such as small business loans or environmentally sustainable financing, to revitalize loan growth.
3. **Leverage Asset Growth Strength:** Utilize superior asset growth to invest in technology and member-centric initiatives, further enhancing operational efficiency and member satisfaction.
4. **Balance Loan Disbursements and Membership Growth:** Focus on aligning loan disbursement strategies with membership growth to ensure balanced and sustainable expansion.

3. Financial Trends

Interpretations:

a) Operational Efficiency:

Navy Federal CU demonstrates exceptional asset management efficiency, allocating **71.5% of assets to net loans in 2024**, up from **64.0% in 2022**, reflecting its focus on lending and resource optimization. These efforts highlight strong operational processes and workforce productivity. However, challenges persist in net worth management, with a decline to **-5.4% in 2023**, recovering to **-3.1% in 2024**, alongside rising delinquency (**1.56%**) and net charge-offs (**2.68%**), indicate increasing risks in loan repayment performance, suggesting that while operational processes are robust, financial risk management needs strengthening to maintain long-term stability.

b) Lending Focus:

Navy Federal CU is shifting its lending focus, reducing reliance on real estate loans, which declined from **47.8% in 2022 to 44.7% in 2024**, while increasing its emphasis on vehicle loans, which grew from **21.6% to 24.3%** in the same period. This reflects a strategic effort to diversify loan products and cater to evolving member needs, particularly in vehicle financing. Meanwhile, stable allocations to credit card and unsecured loans indicate consistent demand and effective portfolio management. However, persistent delinquency in the **60–179-day category** remains a significant concern, making up a substantial portion of the CU's overall delinquency percentage. These trends highlight the CU's adaptability in a competitive market but underscore the need to strengthen credit assessment and risk mitigation strategies to manage rising delinquency and net charge-off rates, ensuring sustainable portfolio growth

c) Investment and Savings Strategies:

Navy Federal CU emphasizes liquidity by allocating **94.5% of its investment portfolio to AFS (Available for Sale) Securities in 2024**, ensuring quick fund access and reduced risk from illiquid assets. Additionally, **91.2% of deposits** are in short-term savings (<1 year), reflecting its focus on flexibility for members. However, a decline in long-term investments from **19.8% in 2022** to **14.5% in 2024**, alongside minimal medium- and long-term savings maturities, indicates limited efforts to capture higher returns or foster longer-term commitments. While these strategies support liquidity and accessibility, incorporating a balanced approach with medium- and long-term horizons could improve returns and enhance long-term financial stability.

Recommendations:

a) Operational Efficiency:

1. **Strengthen Financial Risk Management:**
   - Implement advanced credit risk assessment tools and predictive analytics to proactively identify potential loan defaults.
   - Enhance loan monitoring and repayment tracking to address rising delinquency and net charge-offs effectively.

2. **Improve Net Worth Stability:**
   - Focus on building reserves and diversifying income streams to recover and stabilize the CU's net worth.
   - Explore cost optimization strategies to improve financial resilience.

b) Lending Focus:

1. **Diversify Loan Products:**
   - Expand into niche lending areas, such as green loans, education loans, or small business financing, to further diversify the portfolio and meet evolving member needs.
2. **Enhance Risk Mitigation Strategies:**
   - Introduce stricter underwriting standards and tailored loan terms to manage the increased risks associated with delinquency and charge-offs.
   - Offer member education programs on responsible borrowing to reduce default rates.

c) Investment and Savings Strategies:

1. **Balance Investment Horizons:**
   - Increase allocations to medium- and long-term investments to capture higher returns while maintaining adequate liquidity.
   - Regularly review investment strategies to align with changing economic conditions and member needs.
2. **Encourage Long-Term Savings:**
   - Develop attractive incentives for long-term deposit products, such as higher interest rates or additional benefits for members committing to longer maturities.

This concludes the case study on conducting a 360-degree competitive analysis of Navy Federal Credit Union, assessing its performance relative to peers and state-level counterparts. Additionally, it establishes a framework for evaluating the performance of any of the nearly 5,000 credit unions registered with the NCUA. While the reported metrics represent just the tip of the iceberg, there is significant potential to derive deeper and more insightful indicators for a comprehensive analysis of various banking trends. Furthermore, by leveraging the underlying metadata, one could develop an application that enables real-time visualization of these trends for any registered credit union—offering valuable insights and supporting data-driven decision-making.

7. References

1. Raw data spanning the financial years 2022-2024. (Link)
2. Metadata utilized in the analysis. (Link)
3. Python Code for Reproducibility of the Analysis (Link)
4. Python code for preprocessing the data tables (PS-1 Script). (Link)
5. Python code for generating the quarter wise metadata and consolidated meta data (PS-2 Script). (Link)
6. Document detailing the derivation of the indicators. (Link)
7. Descriptive statistics for acct variables used in the analysis. (Link)
8. Ease of Understanding of Financial Terms (Link)