AI Bootcamp:Team Congress

Using Data Analytics and AI to Analyze Congressional Stock Trading: Beyond Nancy Pelosi

Executive Summary:

The scrutiny of congressional stock trading has long focused on high-profile figures like Nancy Pelosi. However, a comprehensive analysis of congressional trading datasets from QuiverQuant and Yahoo Finance reveals a more nuanced picture of trading activities across the legislative branch. This exploration aims to uncover whether Pelosi truly stands out in terms of successful trades or if other members of Congress warrant equal or greater attention. Spoiler - the analysis will show that Pelosi doesn't present any real interesting trading activity. We used public datasets, organized by **QuiverQuant API** and by **Yahoo Finance**.

An overview of the data collection, cleanup, and exploration processes:

Using the APIs, we queried them and downloaded a csv of the QuiverQuant data, cleaning it up with Pandas and exploring it with MatPlotLib, Prophet, and various plotting techniques. By examining 27,911 entries spanning various representatives, transaction types, and market sectors, we can gain insights into the broader landscape of congressional trading. This analysis will not only shed light on individual performance but also illuminate patterns and trends that may support curiosity around implications for policy, ethics, and market dynamics.

To achieve the project goals as a group, we used resources such as Trello for project management, GitHub as our source code repository, and gamma.app for our presentation.

For our branching strategy, each team member had our own development branch, and then we used a main branch with pull requests, to ensure that only production-ready code made it to the main branch.

Understanding the Dataset: A Comprehensive Overview

Key Data Points

The dataset encompasses crucial information such as Representative names, **BioGuideIDs**, transaction details, and party affiliations. This wealth of data allows for multifaceted analysis across various dimensions, enabling researchers to uncover patterns and anomalies in congressional trading behavior.

Temporal Aspects

With ReportDate and TransactionDate fields, the dataset provides a temporal framework for analyzing trading activities. This time-based perspective is essential for identifying trends, seasonal patterns, and potential correlations with legislative events or market movements.

Financial Granularity

The Range and Amount columns offer insights into the scale of transactions, allowing for a detailed examination of trading volumes and potential impact on personal finances. This granularity is crucial for assessing the significance of individual trades and overall trading strategies.

Party-Based Analysis: Trends and Disparities

1

Overall Party Performance

Compare the average success rates of trades made by members of different political parties. This analysis can reveal whether party affiliation correlates with trading success.

2

Sector Preferences by Party

Examine whether members of different parties tend to favor trades in specific sectors or industries. This may highlight ideological influences on trading decisions.

3

Transaction Timing

Analyze patterns in the timing of trades relative to major political events or legislative actions, broken down by party affiliation.

4

Risk Profiles

Assess the risk levels associated with trades made by members of each party, considering factors such as transaction size and volatility of chosen stocks.

Ethical Considerations and Policy Implications

Conflict of Interest

Examine the potential for conflicts of interest arising from congressional stock trading, particularly in sectors affected by legislation. Consider the need for stricter disclosure requirements or trading restrictions.

Insider Information

Analyze patterns that might suggest the use of non-public information in trading decisions. Discuss the challenges of proving and preventing such activities within the current regulatory framework.

Public Trust

Consider the impact of congressional trading activities on public perception and trust in government institutions. Explore potential reforms to enhance transparency and accountability.

Market Impact

Assess the potential influence of congressional trades on market dynamics, particularly for smaller cap stocks or niche sectors. Discuss the broader economic implications of these trading activities.

Congressional Trading Performance: A Closer Look

1 Transaction Volume

Analyze the frequency and volume of trades for all Congress members. This metric provides context for the overall trading activity and potential market impact.

2 Sector Preferences

Examine the industries and sectors in which trades are concentrated. This analysis may reveal patterns or potential conflicts of interest related to legislative work.

3 Success Rate

Calculate the percentage of trades that meet the defined success criteria. Compare this rate to the average success rate across all Congress members to gauge relative performance.

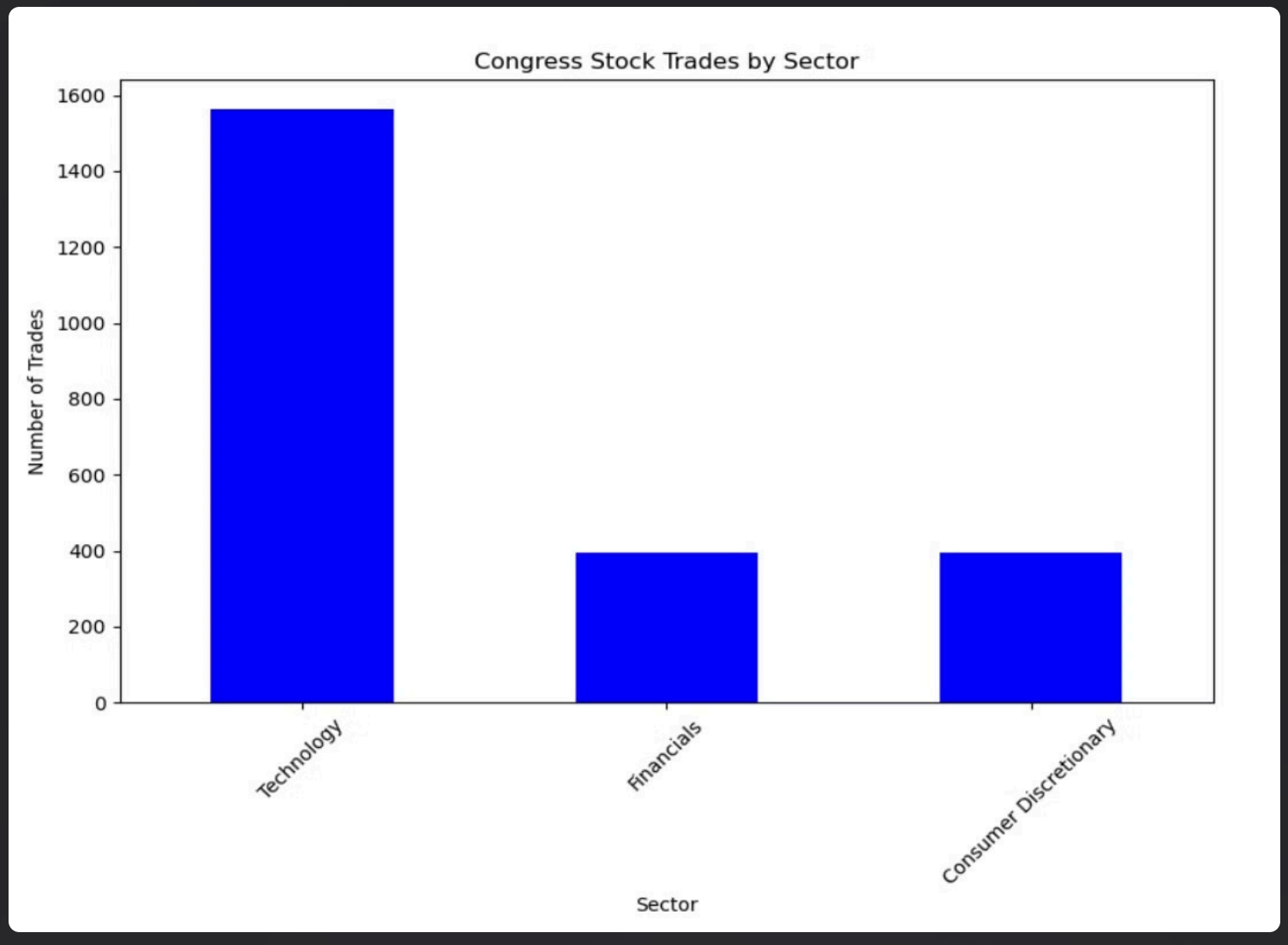
4 Timing Analysis

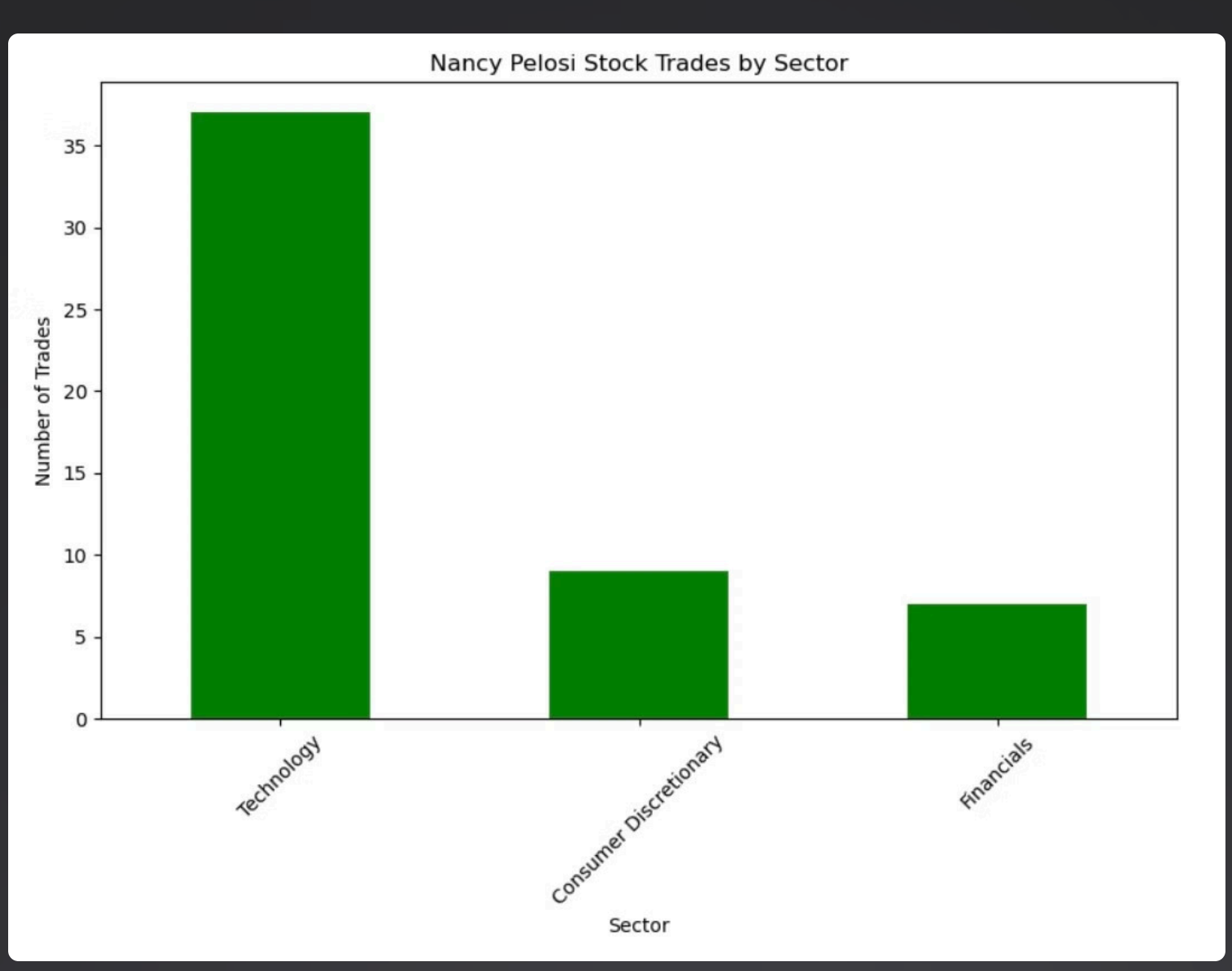
Investigate the timing of Congressional trades in relation to market events, legislative actions, or public announcements. This temporal analysis can highlight any potential informational advantages.

Trades by Sector: Key Takeaways

Question: What patterns can be detected in the types of stocks traded by Congress or Pelosi and are there specific sectors of repeated interest?

1. **Technology Dominates**: Both Pelosi and Congress as a whole show a strong focus on technology, likely reflecting the sector's prominence in the market.
2. **Balanced Diversification**: While tech dominates, there is still some balanced trading in **Financials** and **Consumer Discretionary** sectors, indicating a diversified investment approach.
3. **Congressional Patterns**: Congress members' overall behavior mirrors Pelosi's in terms of sector preference, suggesting that technology is a shared point of focus.





Question: Are there other successful outliers that we should be interested in?

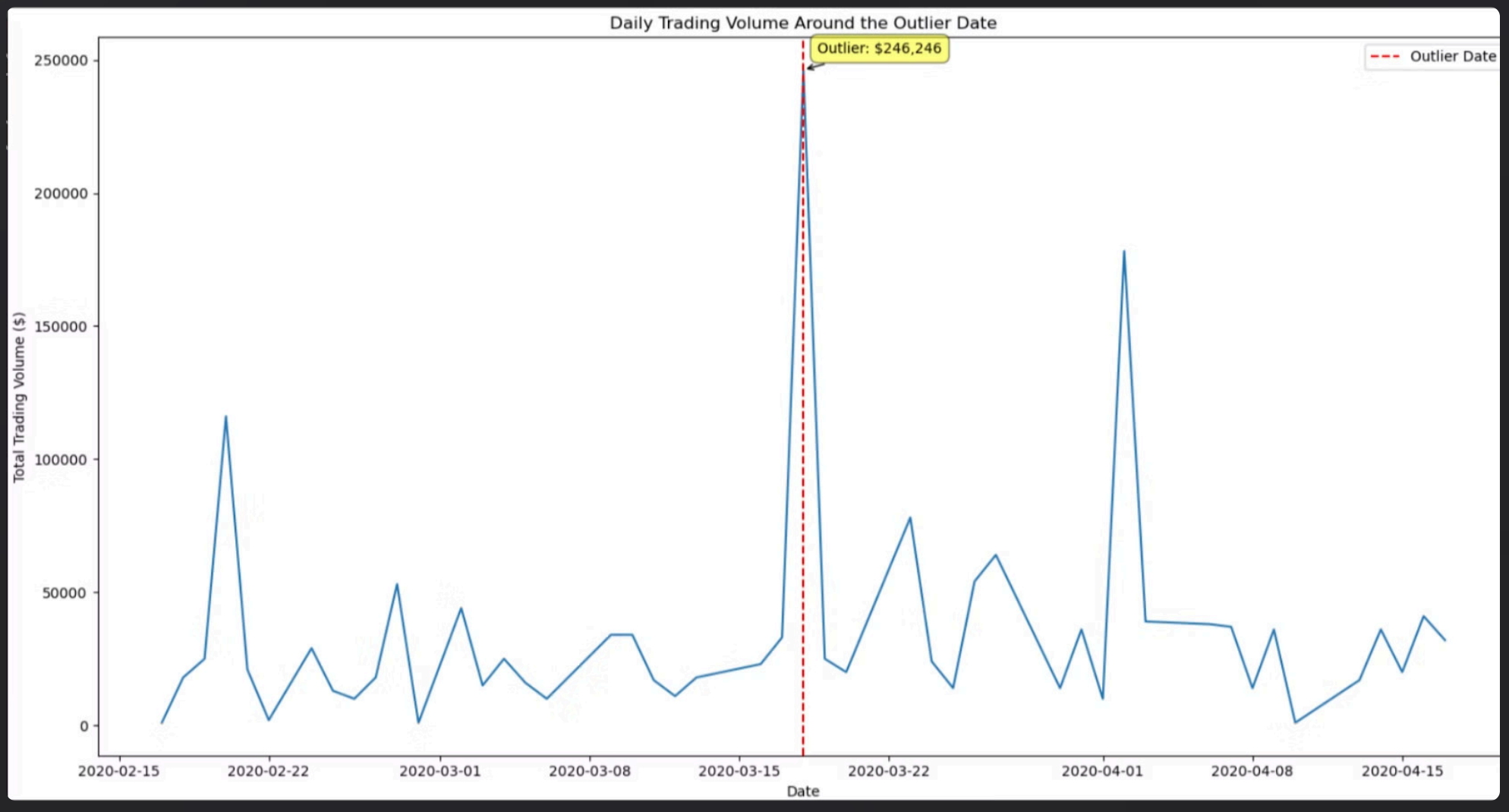
Answer:

COVID-19 Pandemic

The outlier date is March 18, unknown link **Thursday (12 March) Black Thursday was a global stock market crash on 12 March 2020**

Outlier Explanation:

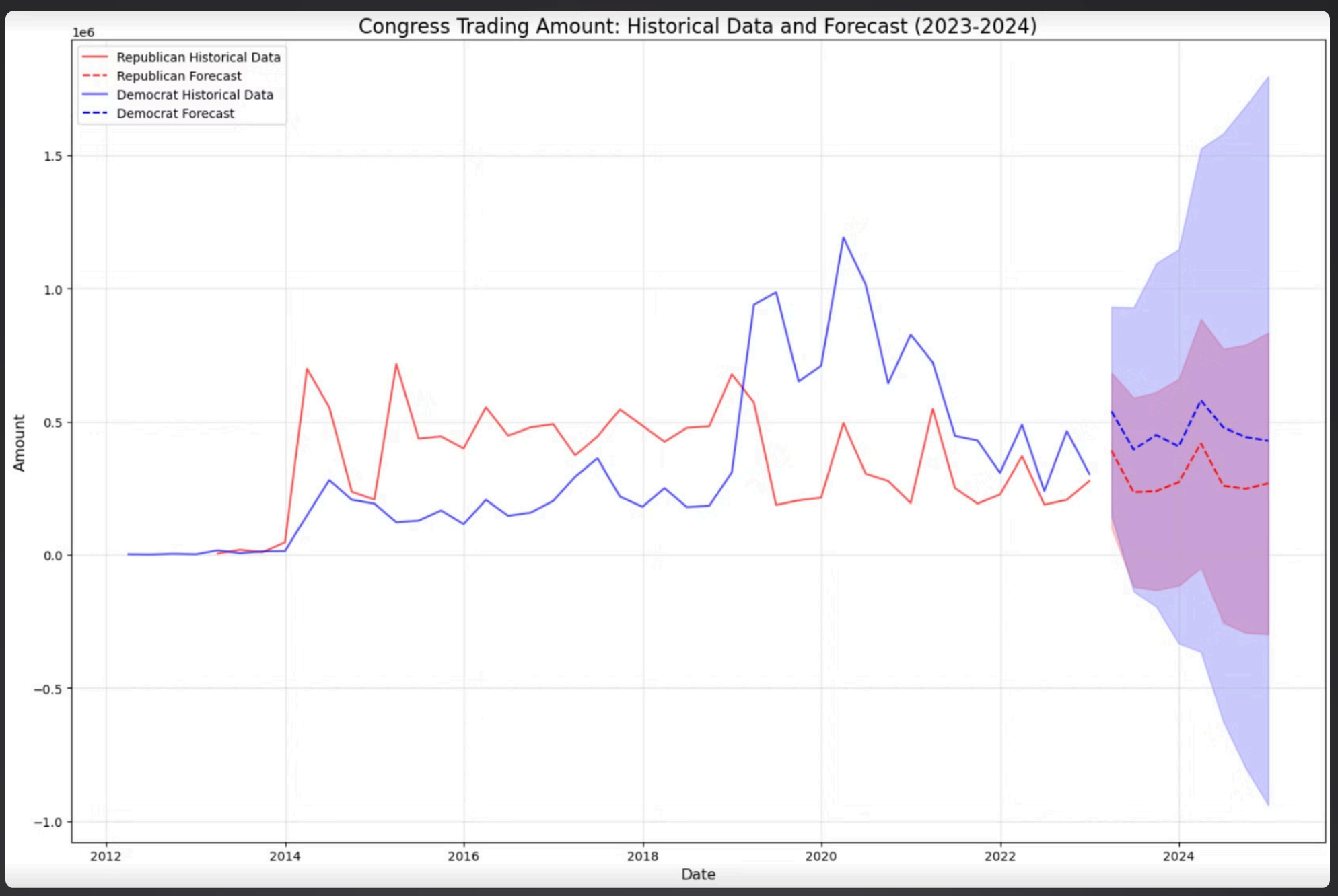
Market Panic Reaction - The high trading volume likely reflects a reaction by members of Congress to the market crash.



Question: Can we use historical data to forecast future trading activity?

Answer: Yes, we can use historical data to forecast future trading activity, but the forecasts did not seem interesting. The following forecast is represented in millions (1e6).

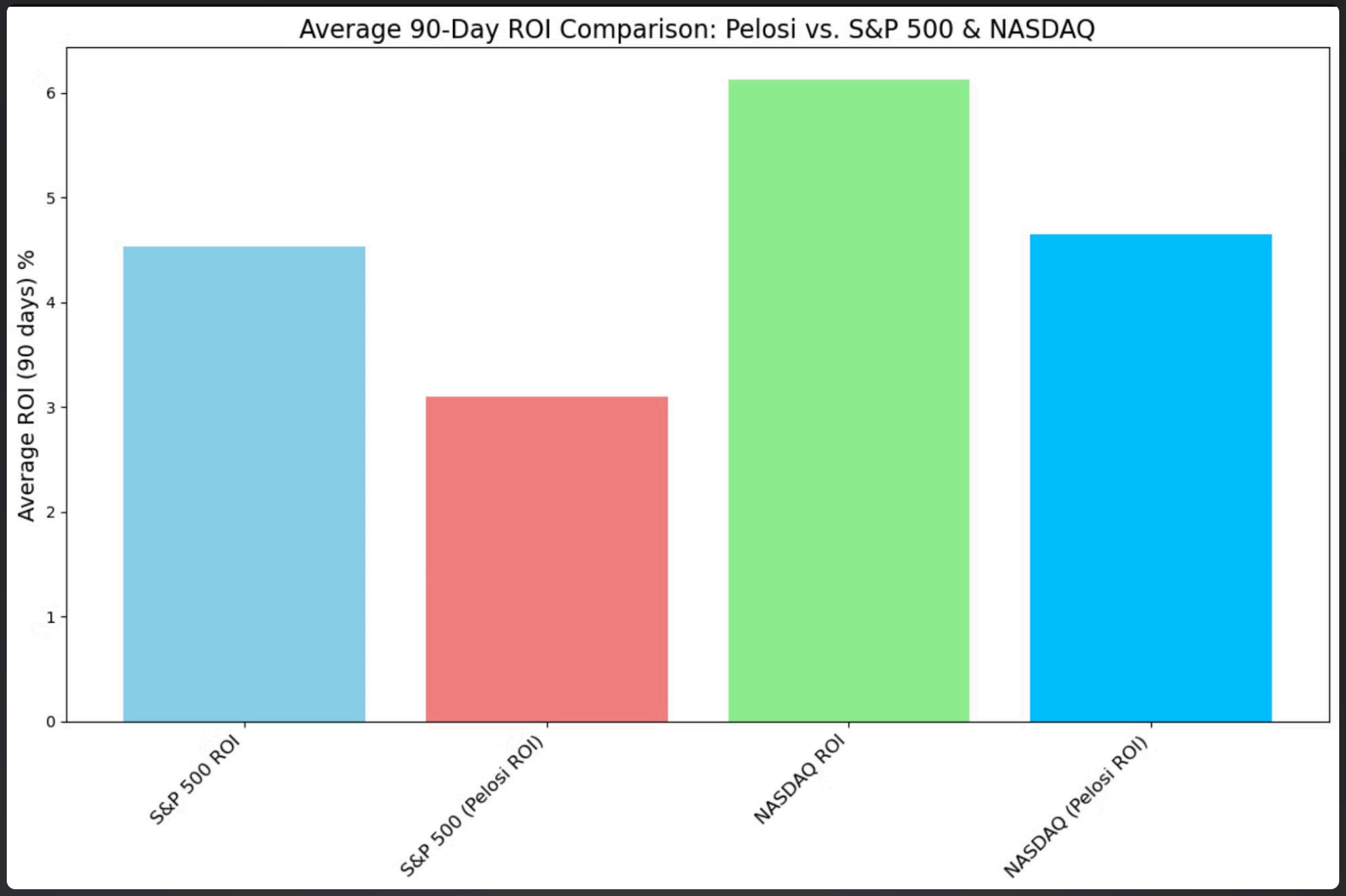
- Key takeaway: Democratic trading is forecasted to be significantly higher than Republican trading



Question: How do Congress or Pelosi's stock trades in the S&P500 and NASDAQ perform relative to those same indexes?

Answer:

- Key Takeaway: Nancy Pelosi's underperformed in trading for both the S&P 500 and the NASDAQ, when looking at an average ROI over 90 days



Legislative Events and Trading Activity: Not Much to See

Question: Does Congress show an advantage in trading due to having insider information?

Our analysis identified three significant legislative events since 2019 that coincided with notable spikes in congressional trading activity: the Pharmaceutical Pricing Reform (February 2024), the Tech Industry Regulation Bill (May 2024), and the Healthcare Reform Bill (June 2024). These events saw an uptick in trading within days of their occurrence, possibly raising questions about the potential influence of insider information on congressional trading decisions.

However, it's crucial to note that these instances represent a small fraction of the total legislative events during this period. Further, these trades occurred after legislation passed, suggesting that most congressional trading activities may not be directly linked to specific policy decisions. Nonetheless, the presence of even a few such correlations underscores the importance of public trust; requiring continued scrutiny and transparency in congressional financial activities.

1

Legislation Introduced

Bill proposed in Congress, potentially affecting specific industries or companies.

2

Information Dissemination

Details of the proposed legislation become known to lawmakers and their staff.

3

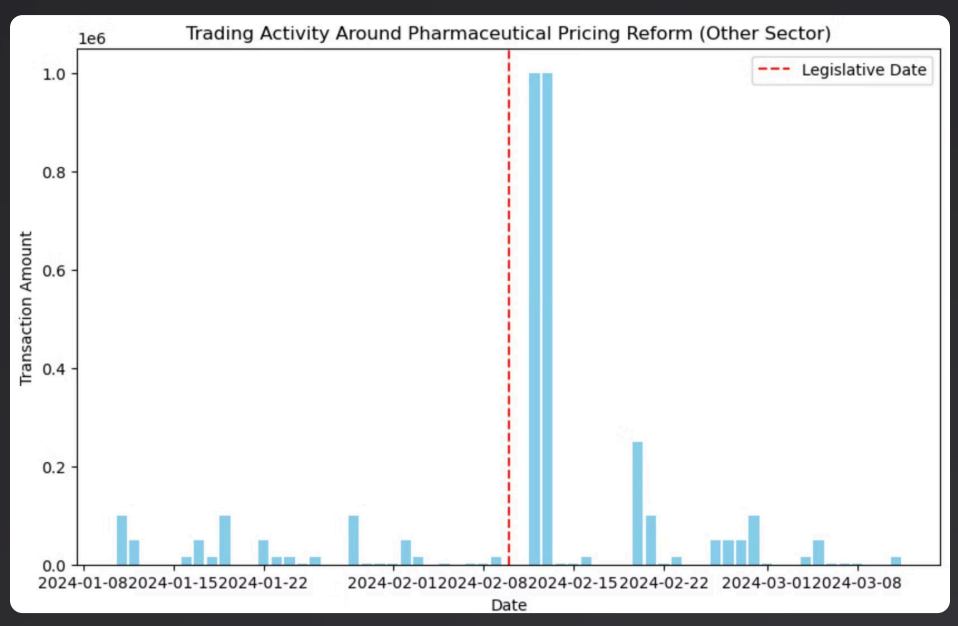
Market Reaction

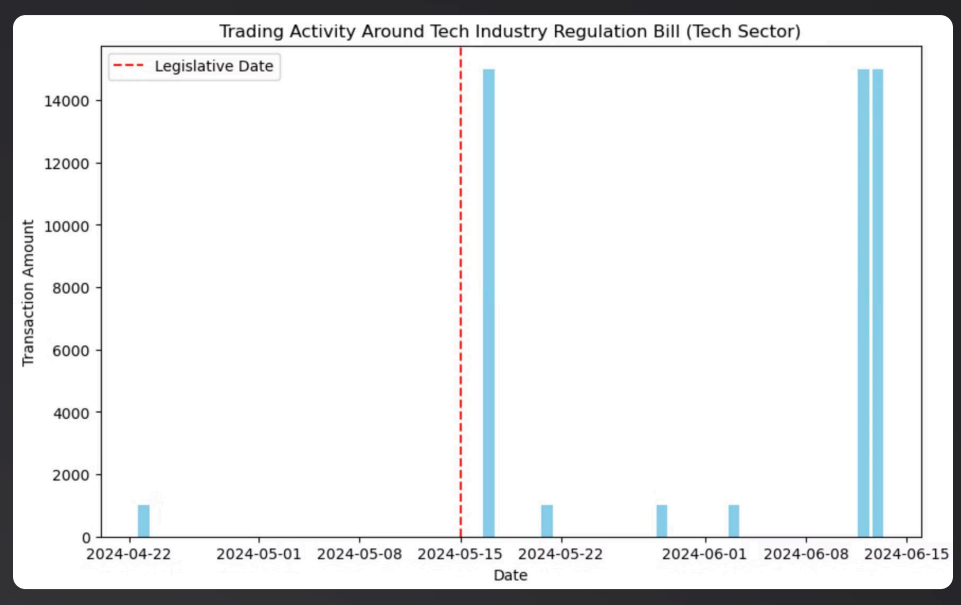
Stock prices may fluctuate as the market anticipates potential impacts of the legislation.

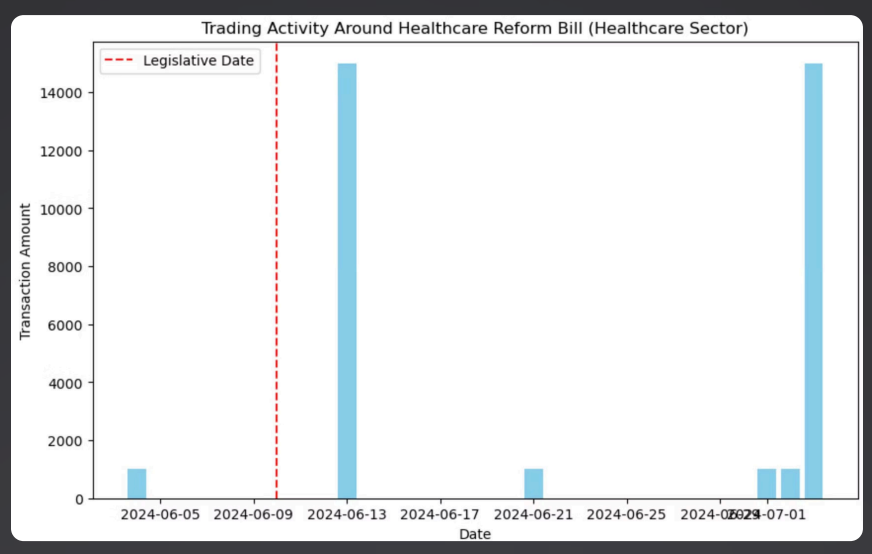
4

Congressional Trading

Some lawmakers may engage in trading activity based on their advanced understanding of the legislation's potential effects.



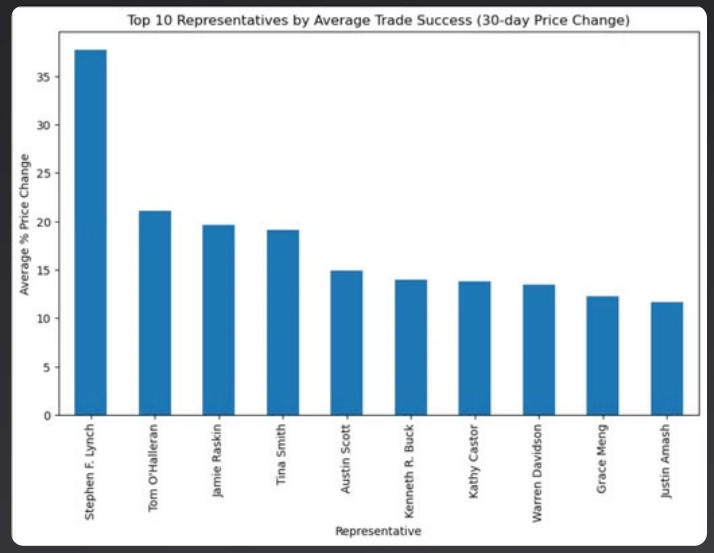


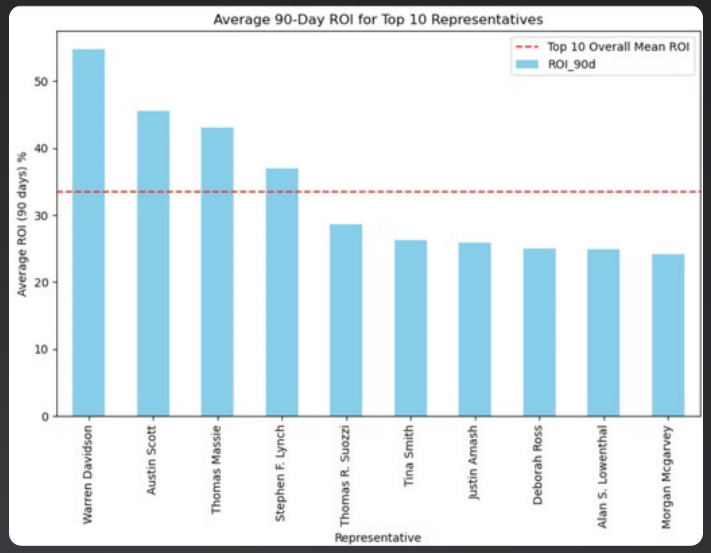


Top Performers: Identifying Standout Traders in Congress

Question: Does Nancy Pelosi show an advantage in trading performance, compared to the rest of Congress?

While Nancy Pelosi's trades are a popular topic, it's notable that she isn't even amongst the top 10 successful Congressional stock traders in terms of 30 price change success nor 90 day ROI success. It's likely that her trading activity is mentioned more in social media, because her role gets more attention.





Conclusion: Reframing the Congressional Trading Narrative

Comprehensive Analysis

Our investigation reveals that focusing solely on high-profile figures like Nancy Pelosi provides an incomplete picture of congressional trading activities. The bottom line is that she isn't even amongst the top 10 most successful stock traders in Congress. She's likely just more scrutinized and picked on because her high-powered position sparks debate and controversy. A thorough analysis of all members' trades is necessary for a balanced understanding.

Performance Metrics

By establishing clear success metrics and conducting party-based analyses, we've identified patterns and top performers that challenge preconceived notions about congressional trading success.

Ethical Considerations

The study highlights the need for ongoing ethical scrutiny and potential policy reforms to address conflicts of interest and maintain public trust in legislative institutions.

Future Research

This analysis lays the groundwork for future studies, emphasizing the importance of continuous monitoring and analysis of congressional trading activities to ensure transparency and accountability.

Other research might focus on longer time periods, and analyze technology sector trading in more detail.