$ dollarbills

Congressional Members & Market Performance

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Agenda

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Executive Summary

Who are we?

- $dollarbills is a VC being pitched by a small startup looking for investment. The company claims you can outperform the market trading like members of congress. We created an MVP to test that theory.

Hypothesis

- There have been a number of news stories lately of congressional members outperforming the market and financially benefiting from information they are privy to in their day-to-day
- In fact, there is a law that was proposed in 2022 to ban lawmakers and their families from trading stocks - It is estimated that members of congress and their families bought and sold over **$500 million** worth of assets in 2022

Research Questions

- Which members of congress trade tech stocks the most?
- Do republicans or democrats trade tech stocks most?
- Were there any time periods that had high trading volume on specific or multiple stocks?
- Is there a correlation between trading activity and location?
- Do members of congress benefit financially from their own bills?

Data collection, cleanup, and exploration

Data Collection, Cleanup, and Exploration

- **Approach -> Walk through of Jupyter Notebook**

Analysis & Findings

Data Overview

Question answered:

1. Which members of congress trade tech stocks the most?

Review which representatives traded tech stocks

Josh Gottheimer	169
Doug Lamborn	82
Gilbert Cisneros	66
Kevin Hern	61
Susie Lee	52

Explore each representatives trades in data frames

```
Donald_S_Beyer_Jr_df=tech_house_df.loc[tech_house_df.representative=='Donald S. Beyer, Jr.']
Donald_S_Beyer_Jr_df
```

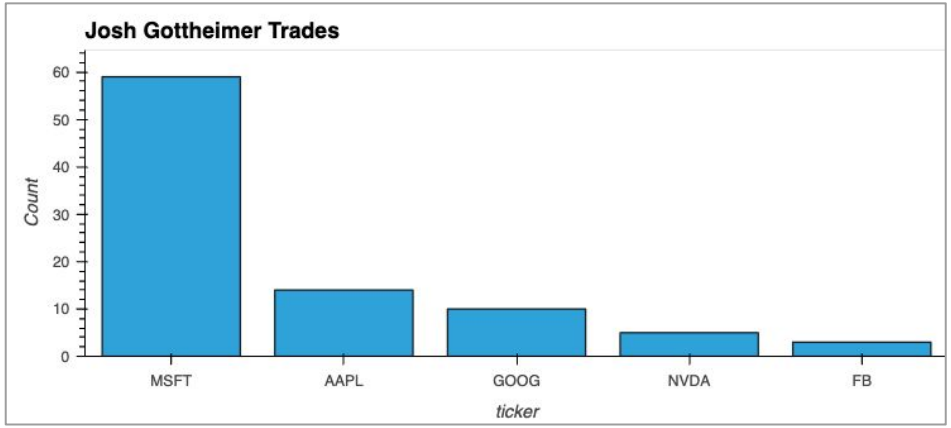
```
Susie_Lee_df=tech_house_df.loc[tech_house_df.representative=='Susie Lee']
Susie_Lee_df
```

```
Gilbert_Cisneros_df=tech_house_df.loc[tech_house_df.representative=='Gilbert Cisneros']
Gilbert_Cisneros_df
```

```
Doug_Lamborn_df=tech_house_df.loc[tech_house_df.representative=='Doug Lamborn']
Doug_Lamborn_df
```

```
Josh_Gottheimer_df=tech_house_df.loc[tech_house_df.representative=='Josh Gottheimer']
Josh_Gottheimer_df
```

```
bar_chart_JG = ticker_value_counts_JG.hvplot.bar(x='ticker', y='Count', title='Josh Gottheimer Trades')
bar_chart_JG
```



Data Overview

Question answered:

1. Do republicans or democrats trade tech stocks most?

Create a data frame for republicans and democrats

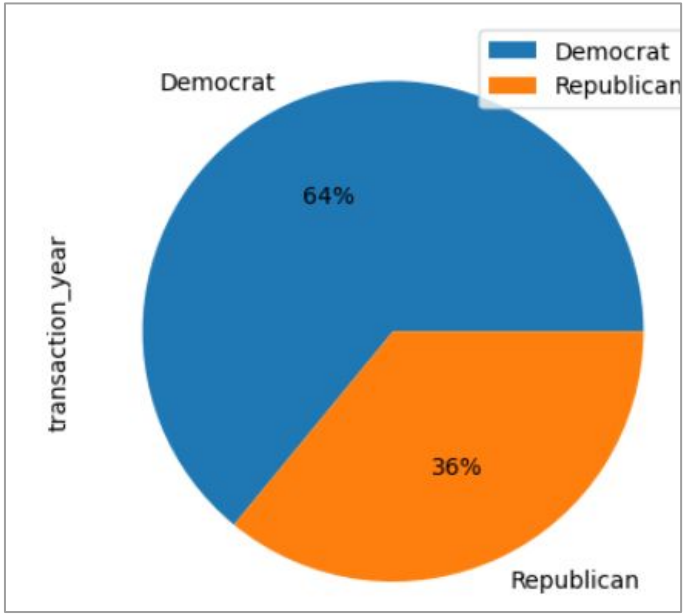
```
rep_tech_df=tech_house_df.loc[tech_house_df.party=='Republican']
rep_tech_df
```

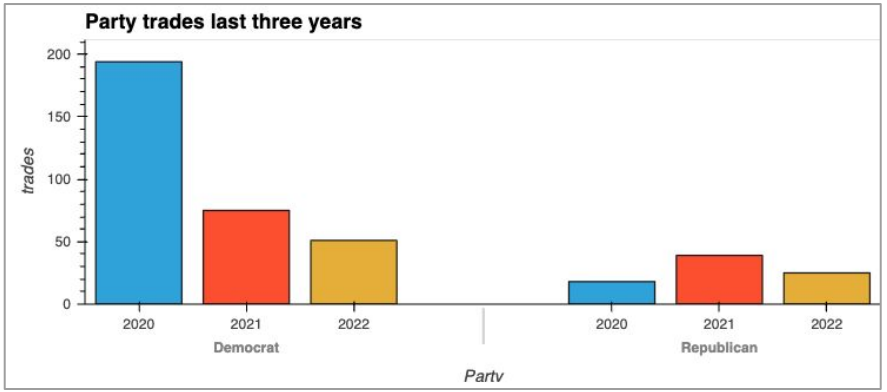
```
dem_tech_df=tech_house_df.loc[tech_house_df.party=='Democrat']
dem_tech_df
```

Create graphs

```
tech_house_df.groupby(['party']).sum().plot(kind='pie',y='transaction_year',autopct='%1.0f%%')
```

```
pd.concat([Josh_Gottheimer_df,Doug_Lamborn_df,Gilbert_Cisneros_df,Susie_Lee_df,Donald_S_Beyer_Jr_df],axis=0).groupby(['transaction_year','party'
    x='party',
    y='count',
    by='transaction_year',
    title='Party trades last four years',
    xlabel='Party',
    ylabel='trades',
)
```





Inside Influence & Outperformance

Question answered:

1. Were there any time periods that had high trading volume on specific or multiple stocks?
2. Is there a correlation between trading activity and location?
3. Do members of congress benefit financially from their own bills?

Review which tech stocks are being traded most often

```
stock_data['ticker'].value_counts()
```

```
MSFT    141
AAPL     84
NTAP     84
FB       51
NVDA     50
       ...
TEL       1
SHLS      1
GWRE      1
ROG       1
RP        1
```

Create hvplot graph of top 5 tickers per year

```
# Plot top 5 tickers by year

top_5_tickers = ['MSFT', 'AAPL', 'NTAP', 'FB', 'NVDA']
filtered_ticker_data = stock_data[stock_data['ticker'].isin(top_5_tickers)]

ticker_count_grouped = filtered_ticker_data.groupby(['transaction_year', 'ticker']).size().reset_index(name='count')

bar_chart = ticker_count_grouped.hvplot.bar(
    x='transaction_year',
    y='count',
    by='ticker',
    title='Ticker Counts by Year',
    xlabel='Transaction Year',
    ylabel='Count',
)

bar_chart
```

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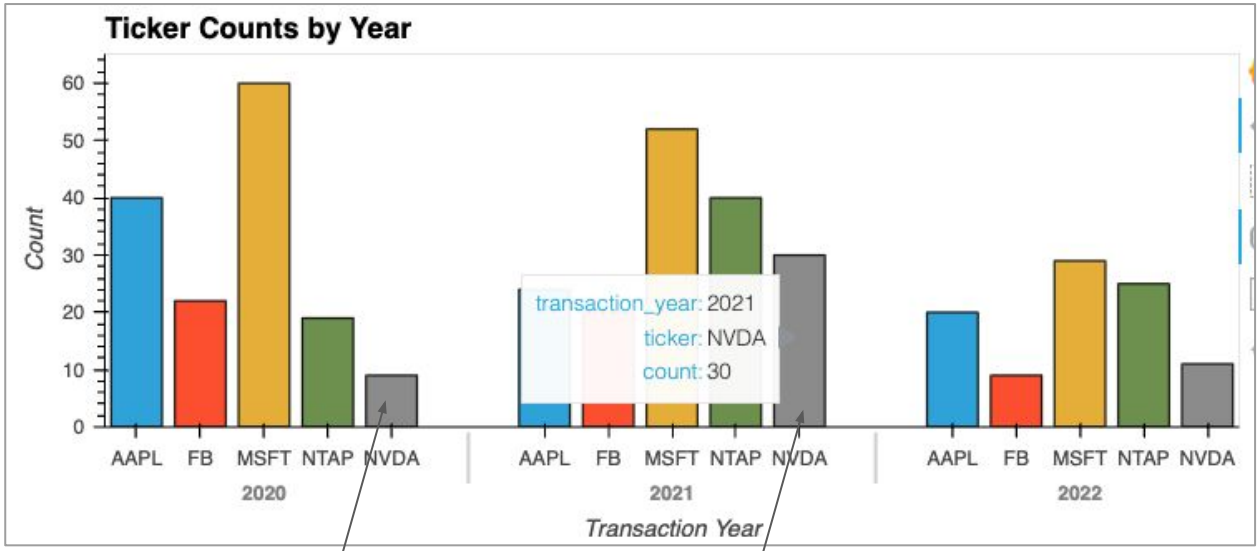
After reviewing the hvplot, we noticed there was a large increase in trading volume of Nvidia's (NVDA) stock. The following slides will uncover why and by whom.



Who is Nvidia?

A $1T market cap AI and chip processor company based in the US

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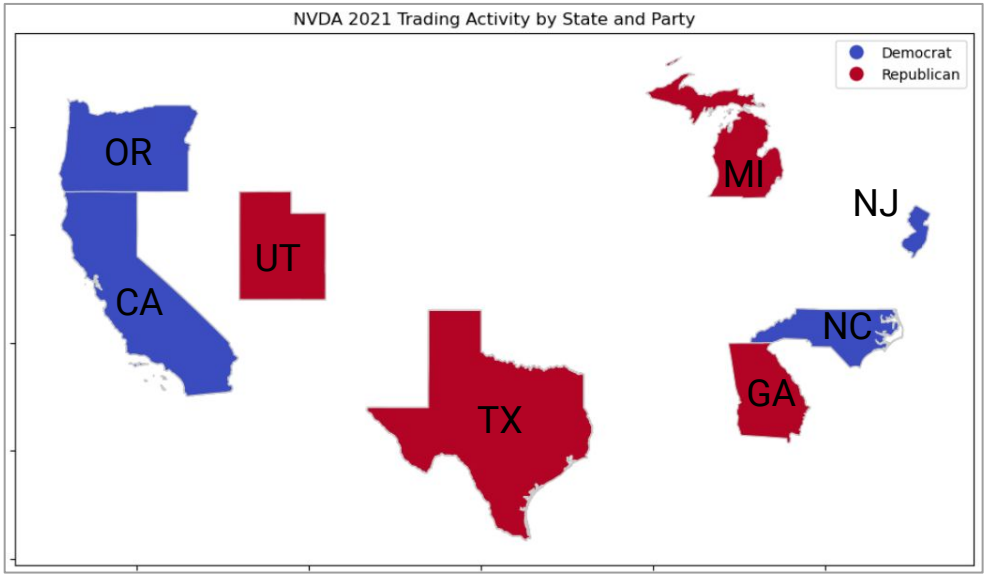
To map the location and party of the congressional members trading NVDA, we used a new library called “geopandas.” Geopandas allowed us to plot the full state without needing longitude/latitude. We then color coded the states by Republican vs Democrat.

```
# What states had the most NVDA activity?

# Install geopandas and read state boundary state to plot state

gdf_states = gpd.read_file('us_states.geojson')

merged_df = gdf_states.merge(NVDA_2021, left_on='abbr', right_on='state')

fig, ax = plt.subplots(1, 1, figsize=(12, 8))

merged_df.plot(ax=ax, column='party', legend=True,
               cmap='coolwarm', linewidth=0.8, edgecolor='0.8')

plt.title('NVDA 2021 Trading Activity by State and Party')
plt.xlabel(' ')
plt.ylabel('States')
plt.show()
```



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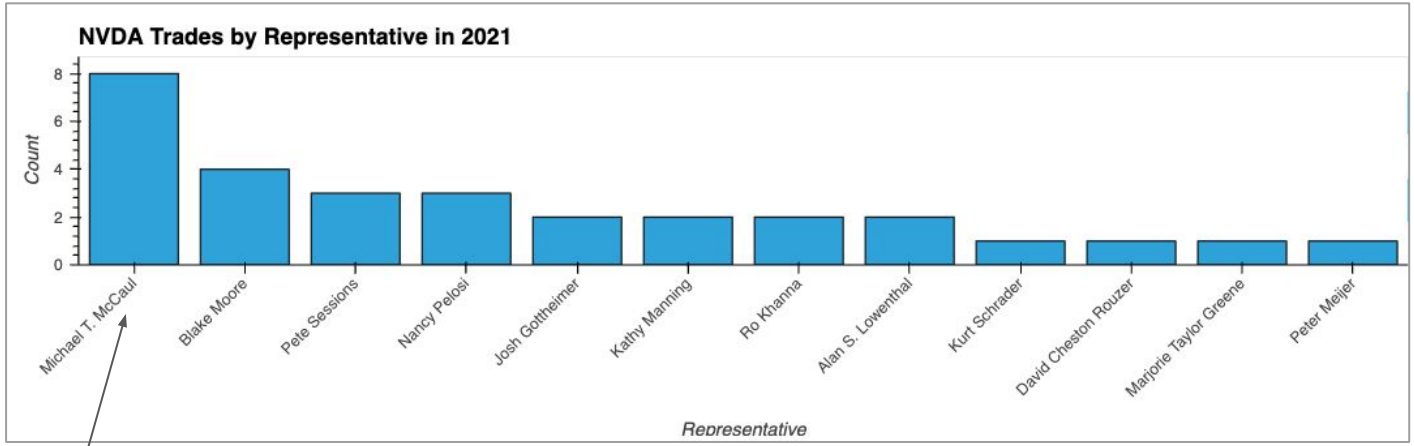
As a next step, we dove deeper into which congressional members were trading NVDA.

```
# Which representatives were trading NVDA stock in 2021

NVDA_2021 = stock_data[(stock_data['ticker'] == 'NVDA') & (stock_data['transaction_year'] == 2021)]
representative_count = NVDA_2021['representative'].value_counts().reset_index()
representative_count.columns = ['representative', 'count']
representative_count
```

```
NVDA_2021_reps = representative_count.hvplot.bar(
    x='representative',
    y='count',
    title='NVDA Trades by Representative in 2021',
    xlabel='Representative',
    ylabel='Count',
    width = 1000,
    rot=45,
)
NVDA_2021_reps
```

	representative	count
0	Michael T. McCaul	8
1	Blake Moore	4
2	Pete Sessions	3
3	Nancy Pelosi	3
4	Josh Gottheimer	2
5	Kathy Manning	2
6	Ro Khanna	2
7	Alan S. Lowenthal	2
8	Kurt Schrader	1
9	David Cheston Rouzer	1
10	Marjorie Taylor Greene	1
11	Peter Meijer	1



Michael T. McCaul of TX traded NVDA 8 times in 2021

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When and how much NVDA did McCaul buy?

```
# See transaction dates & amounts for Michael T. McCaul

mccaul_transactions = NVDA_2021[(NVDA_2021['representative'] == 'Michael T. McCaul')]
mccaul_transactions_table = mccaul_transactions[['amount_high']]
mccaul_transactions_table
```

transaction_date	amount_high
2021-03-23	50000.0
2021-03-23	50000.0
2021-03-16	100000.0
2021-03-16	100000.0
2021-03-10	50000.0
2021-03-10	50000.0
2021-03-09	50000.0
2021-03-09	50000.0

```
# Merge close prices with mccaul_transactions

mccaul_NDVA_close = pd.merge(mccaul_transactions_table, NVDA_close[['Close']], left_index=True, right_index=True, how='inner')
mccaul_NDVA_close
```

```
# Estimate number of shares

mccaul_NDVA_close['Estimated Shares Bought'] = mccaul_NDVA_close['amount_high']/mccaul_NDVA_close['Close']
mccaul_NDVA_close
```

	amount_high	Close	Estimated Shares Bought
2021-03-09	50000.0	125.20	399.361022
2021-03-09	50000.0	125.20	399.361022
2021-03-10	50000.0	124.68	401.026628
2021-03-10	50000.0	124.68	401.026628
2021-03-16	100000.0	132.91	752.388835
2021-03-16	100000.0	132.91	752.388835
2021-03-23	50000.0	130.71	382.526203
2021-03-23	50000.0	130.71	382.526203

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How many shares did he buy? What was his cost basis? And what are the shares worth today?

```
# Sum the estimated shares bought

total_mccaul_shares = mccaul_NDVA_close['Estimated Shares Bought'].sum()

print(f"McCaul owns {round(total_mccaul_shares,2)} shares of NVDA.")
```

```
McCaul owns 3870.61 shares of NVDA.
```

```
# Sum amount_high as cost basis

total_mccaul_cost_basis = mccaul_NDVA_close['amount_high'].sum()

formatted_cost_basis = locale.format_string("%.2f", total_mccaul_cost_basis, grouping=True)

print(f"McCaul's cost basis for NVDA is ${formatted_cost_basis}.")
```

```
McCaul's cost basis for NVDA is $500,000.00.
```

```
# How much are his shares worth today?

NVDA_today = 446.80

NVDA_mccaul_value = total_mccaul_shares * NVDA_today

formatted_NVDA_mccaul_value  = locale.format_string("%.2f", NVDA_mccaul_value, grouping=True)

print(f"McCaul's shares are worth ${formatted_NVDA_mccaul_value} today.")
```

```
McCaul's shares are worth $1,729,386.48 today.
```

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How much have his shares appreciated? Can we say he outperformed the market?

```
# What is the percent change?

percent_change = (NVDA_mccaul_value - total_mccaul_cost_basis) / total_mccaul_cost_basis

formatted_percentage_change = '{:.2%}'.format(percent_change)

print(f"McCaul's shares have appreciated {formatted_percentage_change} since 2021.")
```

```
McCaul's shares have appreciated 245.88% since 2021.
```

```
# How much did qqq appreciate over the same time period?

qqq_today = 375.19

percent_change_qqq = (qqq_today - qqq_price_on_2021_03_09) / qqq_price_on_2021_03_09 *100
percent_change_qqq
```

```
print(f"The QQQ has appreciated 20.34% in the same period.")
```

```
The QQQ has appreciated 20.34% in the same period.
```

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Why is this interesting?

Founder and co-chair of the Congressional High Tech & Semiconductor Caucus

McCaul, Eshoo, AI Caucus Leaders Introduce Bill to Expand Access to AI Research

July 28, 2023 **Press Release**

WASHINGTON – Today, U.S. Congressmembers Michael McCaul (R-Texas), Anna G. Eshoo (D-Calif.), Don Beyer (D-Va.), and Jay Obernolte (R-Calif.) — co-chairs and vice-chairs of the Congressional Artificial Intelligence Caucus — introduced the Creating Resources for Every American To Experiment with Artificial Intelligence Act of 2023 (CREATE AI Act). The CREATE AI Act establishes the National Artificial Intelligence Research Resource (NAIRR), a shared national research infrastructure that provides AI researchers with greater access to the complex resources, data, and tools needed to develop safe and trustworthy artificial intelligence.

McCaul, Bipartisan Members Introduce Bill to Boost Domestic Semiconductor Manufacturing and Design

Washington, DC - Today, **Congressman Michael McCaul** (R-TX) and a bipartisan group of members of the House of Representatives introduced the Facilitating American-Built Semiconductors Act or the FABS Act, a bill intended to drive long term investment into the United States for the design and manufacturing of semiconductor chips.

McCaul Pleased CHIPS for America Act Signed into Law

- As Nvidia is the largest AI company and creator of processing chips and semiconductors. These bills will further his gain in NVDA.

Results & Conclusions

Results & Conclusions

Summary

- From this analysis, we can infer that members of congress do outperform the market relative to others
- McCaul is just one example of congressional members financially benefiting from laws they put into action. We can't know for sure, but he could potentially be trading on insider information. It is possible that NVDA information was divested in a private meeting.

Difficulties, Additional Questions, Further Research

- Data cleanup was very difficult given the data was not standardized in a number of cases
- We'd like to dive deeper into researching other members of congress + matching them up with what committee they sit on to see if they trade those industry specific stocks more frequently
- We'd also like to explore the purchase/ sales activity to see if members of congress bought or sold a stock before a large news story broke

Q&A