

# MGT 6203 Group Project Proposal Template

## TEAM INFORMATION (1 point)

**Team #:** 61

### **Team Members:**

1. Mindy Wyatt; mwyatt33. Currently a Strategic Analyst for the City of Hoover, AL. Responsibilities related to this course include data strategy planning, analysis, reporting across various governmental business activities including finance, economic development, operations, and administration. Some examples include general ledger analysis, incentive package analysis, tax analysis, business analytics, dashboards & visual reports, KPI program development, project management & grant reporting. I have over 20 years of experience in application & data management. Education includes bachelor's degree from University of Alabama at Birmingham in Management Information Systems; certifications include PMP and PMI-PBA.
2. Adam Johnson; ajohnson723. Assistant Director, Software Engineering at Northwestern Mutual. Supports data mastering for General Account investments data lifecycle. Undergrad in Business, IT Management at Western Governors University, and finished the Georgia Tech Micromasters in Analytics.
3. Nick Loeffelholz; nloeffelholz3. Worked in professional baseball for the past four years. Undergrad in industrial engineering at Mississippi State. Various modeling projects relating to different aspects of pro baseball (roster management and player development mostly).
4. Christopher Raddatz; craddatz6; Full-Time OMSA Student; Bachelor's in Biology from University of Alabama with a Mathematics Minor. Worked at the National Cancer Institute for two years before starting OMSA.
5. Yatri Patel; ypatel306. Software Engineer at Tennessee Valley Authority with experience in developing data dashboards. I have a bachelor's degree in computer science with concentration in Data Science from the University of Tennessee at Chattanooga. Engaged in research projects focusing on public transit optimization and ridership prediction for the City of Chattanooga, as well as traffic analysis in Chicago utilizing Size and Landuse-Aware Vehicle to Buildings Assignment methodologies.

## OBJECTIVE/PROBLEM (5 points)

**Project Title:** Effects of Politician Investment in Stocks on those Stock's Returns

### **Background Information on chosen project topic:**

Politicians vote on policies that can affect industries or individual companies, even companies that they themselves are invested in. There are no rules at the federal level preventing this. Since 2012, Senators, House Members, and Executive Branch employees have been required to make financial disclosures, including stock transactions.

**Problem Statement (clear and concise statement explaining purpose of your analysis and investigation):**

We want to explore possible relationships between politicians' investment activity and the returns of the stocks they invest in.

**State your Primary Research Question (RQ):**

Is there a correlation between a politician's investment (or divestment) in a stock and that stock's price?

**Add some possible Supporting Research Questions (2-4 RQs that support problem statement):**

1. Are there companies or industries that are more attractive to politicians? Do they share any characteristics?
2. What side of the aisle makes more investments? Is there a significant difference between Republican and Democratic activity in this subject area?
3. What states consistently have politicians who see huge growth in their portfolios?

**Business Justification: (Why is this problem interesting to solve from a business viewpoint? Try to quantify the financial, marketing or operational aspects and implications of this problem, as if you were running a company, non-profit organization, city or government that is encountering this problem.)**

Politicians are required to report their financial holdings according to Title I of the Ethics in Government Act of 1978, as amended. 5 U.S.C. app. § 101 et seq. They are NOT prohibited from voting on rules and regulations that affect companies they may invest in; therefore, they may be in a position to gain personal profit by voting for outcomes that favorably impact these companies. This analysis seeks to explore the relationship between a politician and the performance of his or her investments. If there is a positive correlation between company performance and political shareholders, further investigation should be done as to what bills were voted on (if any) that benefited the company and how many shares of that company a politician owns.

If, during further investigation, a direct cause link should be established, politicians should be required to abstain from voting on any regulation or law that affects a company they have an ownership stake in.

## **DATASET/PLAN FOR DATA (4 points)**

**Data Sources (links, attachments, etc.):**

1. <https://www.capitoltrades.com/trades?txDate=30d>
2. <https://www.kaggle.com/datasets/iveeaten3223times/massive-yahoo-finance-dataset>
3. <https://api.tiingo.com/tiingo/daily/<ticker>/prices?startDate=2012-1-1&endDate=2016-1-1>

**Data Description (describe each of your data sources, include screenshots of a few rows of data):**

\*Numbers correlate to sources in DATASET Section

1. Description: API with politician trades

**TRADES** 30 DAYS

Find by politician | Congress Chamber | Find by issuer | Issuer State | Transaction Type

Political Party | Committee | Sector | Issuer Country | Trade Size

Politician State | Gender | Market Cap | Asset Type | Transaction Label

181 TRADES | 24 FILINGS | 8.40M VOLUME | 22 POLITICIANS | 108 ISSUERS

POLITICIAN	TRADED ISSUER	PUBLISHED	TRADED	FILED AFTER	OWNER	TYPE	SIZE	PRICE
Thomas Kean Jr Republican House NJ	Permed-Ricard PERCYUS	08-05 Today	30 Jan 2024	21 days	Undisclosed	BUY*	1K-15K	33.246
Max Miller Republican House OH	RAC OPPORTUNITY FUND II LP N/A	19 Feb 2024	16 Feb 2024	0 days	Undisclosed	BUY*	1K-15K	N/A
Scott Peters Democrat House CA	US TREASURY BILLS N/A	16 Feb 2024	31 Jan 2024	15 days	Spouse	BUY	250K-500K	N/A
Victoria Spartz Republican House IN	Simon Property Group Inc SPDUS	16 Feb 2024	2 Feb 2024	13 days	Undisclosed	BUY*	50K-100K	137.94

a.

2. Description: Dataset with financial data for stocks across 2018-2023.

	B	C	D	E	F	G	H	I	J	K	L
1	Year	Month	Day	Open	High	Low	Close	Volume	Dividends	Stock Splits	Company
2	2018	11	29		43.83	43.86	42.64	43.08	167080000	0	0 AAPL
3	2018	11	29		104.77	105.52	103.53	104.64	28123200	0	0 MSFT
4	2018	11	29		54.18	55.01	54.10	54.73	31004000	0	0 GOOGL
5	2018	11	29		83.75	84.50	82.62	83.68	132264000	0	0 AMZN
6	2018	11	29		39.69	40.06	38.74	39.04	54917200	0.04	0 NVDA
7	2018	11	29		135.92	139.99	135.66	138.68	24238700	0	0 META
8	2018	11	29		23.13	23.17	22.64	22.74	46210500	0	0 TSLA
9	2018	11	29		106.37	106.80	106.07	107.94	4688300	0	0 LLY
10	2018	11	29		135.97	135.98	134.06	134.44	8751500	0	0 V
11	2018	11	29		33.52	33.89	33.45	33.50	7056600	0	0 TSM
12	2018	11	29		260.29	264.95	260.18	262.26	4177800	0	0 UNH

a.

3. Description: Tiingo, a Stock and Financial Market API

a. Still working on API Pull

b. Sample data from an example for a single stock:

In [116]: tiingo\_data

```
Out[116]: {'AAPL':
  date
  2012-01-03 411.23 412.50 409.00 409.4000 10793600 12.555996
  2012-01-04 413.44 414.68 409.28 410.0000 9286500 12.623474
  2012-01-05 418.03 418.55 412.67 414.9500 9688200 12.763619
  2012-01-06 422.40 422.75 419.22 419.7700 11367600 12.897047
  2012-01-09 421.73 427.75 421.35 425.5001 14072300 12.876590
  ...
  2022-01-27 159.22 163.84 158.28 162.4500 121954638 158.784866
  2022-01-28 170.33 170.35 162.80 165.7100 179935660 169.864503
  2022-01-31 174.78 175.00 169.51 170.1600 115541590 174.302341
  2022-02-01 174.61 174.84 172.31 174.0100 86213911 174.132806
  2022-02-02 175.84 175.88 173.33 174.7450 84914256 175.359445

  adjHigh adjLow adjOpen adjVolume divCash \
  date
  2012-01-03 12.594773 12.487908 12.500121 302221102 0.0
  2012-01-04 12.661334 12.496457 12.518441 260022260 0.0
  2012-01-05 12.779496 12.599963 12.669578 271269871 0.0
```

**Key Variables:** (which ones will be considered independent and dependent? Are you going to create new variables? What variables do you hypothesize beforehand to be most important?)

Independent: Politician Buys and Sells.

Dependent: Company Stock Prices.

Other variables: Political Party, State, Industry, Market/Index Data

We may also exchange independent and dependent variables to see how stock performance might drive a politician's investments.

## **APPROACH/METHODOLOGY (8 points)**

**Planned Approach (In paragraph(s), describe the approach you will take and what are the models you will try to use? Mention any data transformations that would need to happen. How do you plan to compare your models? How do you plan to train and optimize your model hyper-parameters?))**

Our approach involves analyzing the politician trades dataset and comparing it with the subsequent performance of the invested stocks over the following month from the date of the trade. Following the data exploration, we would create a predictive model that would predict stock's growth based on its profile and politician investment (including party affiliation of the politician, age, sex, etc.)

While the model would give us predictable insight into how the stocks perform when politicians are invested in it, we also want to compare the predictive accuracy of market trends against those of the Senate's investment behaviors. One approach could involve modeling the anticipated movement of stock prices based on transaction volumes, comparing this with the actual performance of stocks purchased by politicians.

Additionally, we may set up a natural experiment where we look at how often the market's purchasing habits correctly predict stocks rising and falling vs the senate's purchasing habits predicting the same. We may also model how much a stock price would be expected to go up/down based on how many people are buying it at any given time, then relative to that how the stocks being bought by politicians perform.

Our overall goal through comparison of various model approaches is two-fold:

1. Mitigate the potential bias of assuming politicians possess unique insights, ensuring a more objective assessment.
2. Look for correlations between a stock's performance and political investment in those stocks.

Training and data optimization is still under discussion; however, we anticipate separating data into train and test sets for any predictive analytics modeling. We anticipate creating categorical variables and dummy variables as needed for each model. Through these various models, we plan to control for other variables, such as earnings release statements, change in business strategies, anything that could affect the stock without the influence of a politician.

**Anticipated Conclusions/Hypothesis (what results do you expect, how will your approach lead you to determining the final conclusion of your analysis) Note: At the end of the project, you do not have to be correct or have acceptable accuracy, the purpose is to walk us through an analysis that gives the reader insight into the conclusion regarding your objective/problem statement**

We expect to see a positive correlation between political investment and company performance. We do not expect to rule out all factors that lead to positive company growth; therefore, we only expect to see correlation. Proving causation is beyond the scope of this analysis. It is also possible that company performance can drive politician investments.

**What business decisions will be impacted by the results of your analysis? What could be some benefits?**

If a strong correlation is found, individual investors could monitor political investments as part of their investment strategy. (There are some individuals already doing this.) If cause could be established through other studies, one could argue for stronger ethics laws that require politicians to abstain from voting on regulatory measures that affect a company's performance where they are shareholders.

## PROJECT TIMELINE/PLANNING (2 points)

**Project Timeline/Mention key dates you hope to achieve certain milestones by:**

- 1) Data Cleaning: March 10<sup>th</sup>
- 2) Exploratory Data Analysis: March 17<sup>th</sup>
- 3) Finish Progress Report: March 17<sup>th</sup>
- 4) Build Models: March 31<sup>st</sup>
- 5) Review, further work on analysis/model: April 7<sup>th</sup>
- 6) Write Final Report: April 21<sup>st</sup>

## References

- <https://onlinelibrary.wiley.com/doi/full/10.1002/smj.3459>
- <https://www.sciencedirect.com/science/article/abs/pii/S0047272722000044>
- <https://www.jstor.org/stable/30031880>
- <https://efdsearch.senate.gov/search/home/>
- <https://govtrades.org/>
- <https://www.kaggle.com/datasets/jeeqarmaru/us-campaign-finance-20192020-fec>
- <https://www.smartinsider.com/politicians/>
- <https://www.opensecrets.org/personal-finances/most-popular-investments>
- <https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/XPDSYQ>
- [Stock\\_data.xlsx](#)
- <https://www.kaggle.com/datasets/iveeaten3223times/massive-yahoo-finance-dataset>

**Appendix (any preliminary figures or charts that you would like to include):**