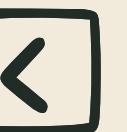
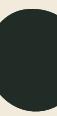


Introduction to stock investment

Stock Analysis with Makeni

Presented by Long Bui & Alissa Dao



Scenario

Imagine that you just get your first job after graduation. Your company decides to open a workshop that introduce you to stock investment. Since we're part of the data analytics team, we are responsible for designing this workshop.

Goals for today's presentation:

- Understand the basics of stock investment
- Have a list of stocks that you can start investing

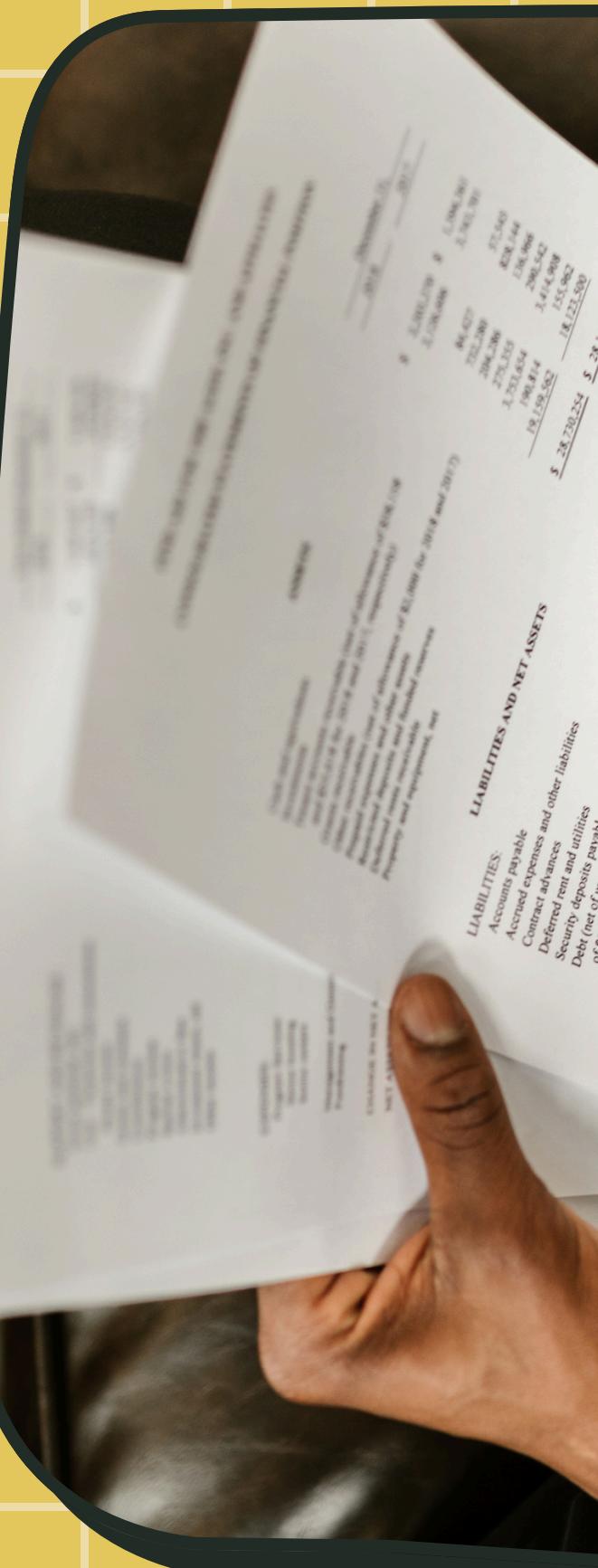
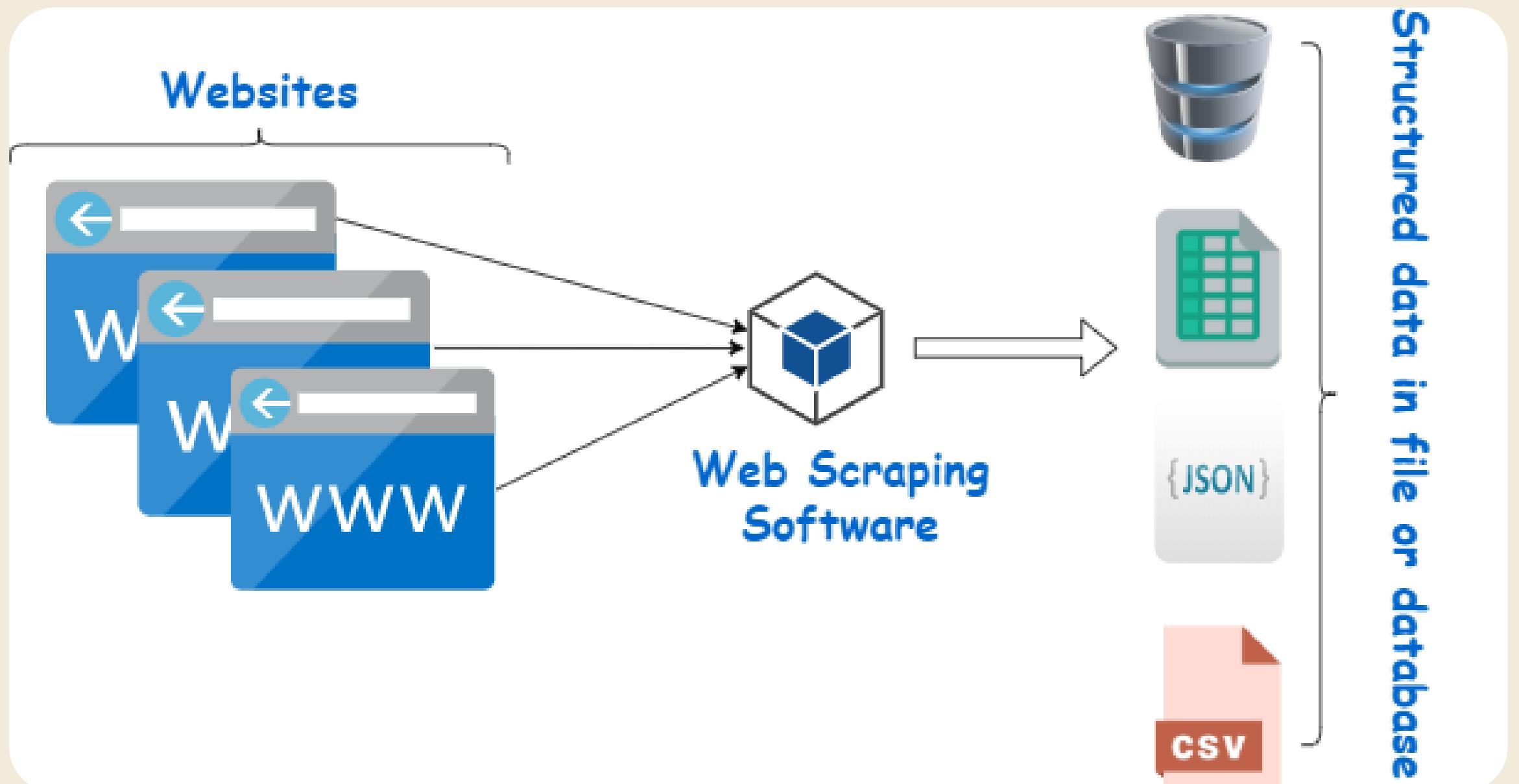




Table of Content

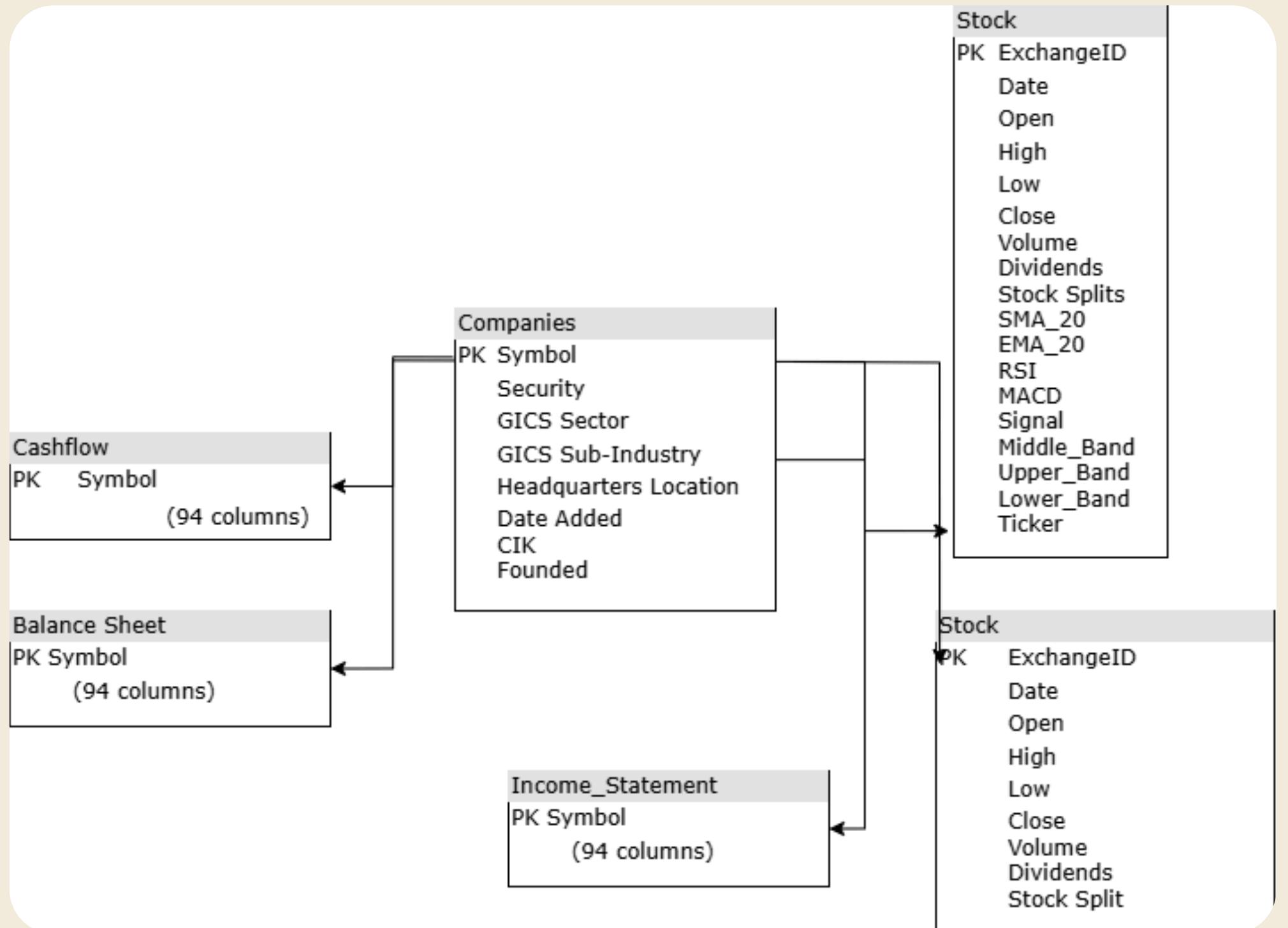
- •
1. Tractable data
- •
2. Data retrieval
- •
3. Exploratory Data Analysis
- •
4. Predictive Model
- •
5. Implications for stakeholders
- •
6. Ethical, legal, and societal implications

Tractable Data



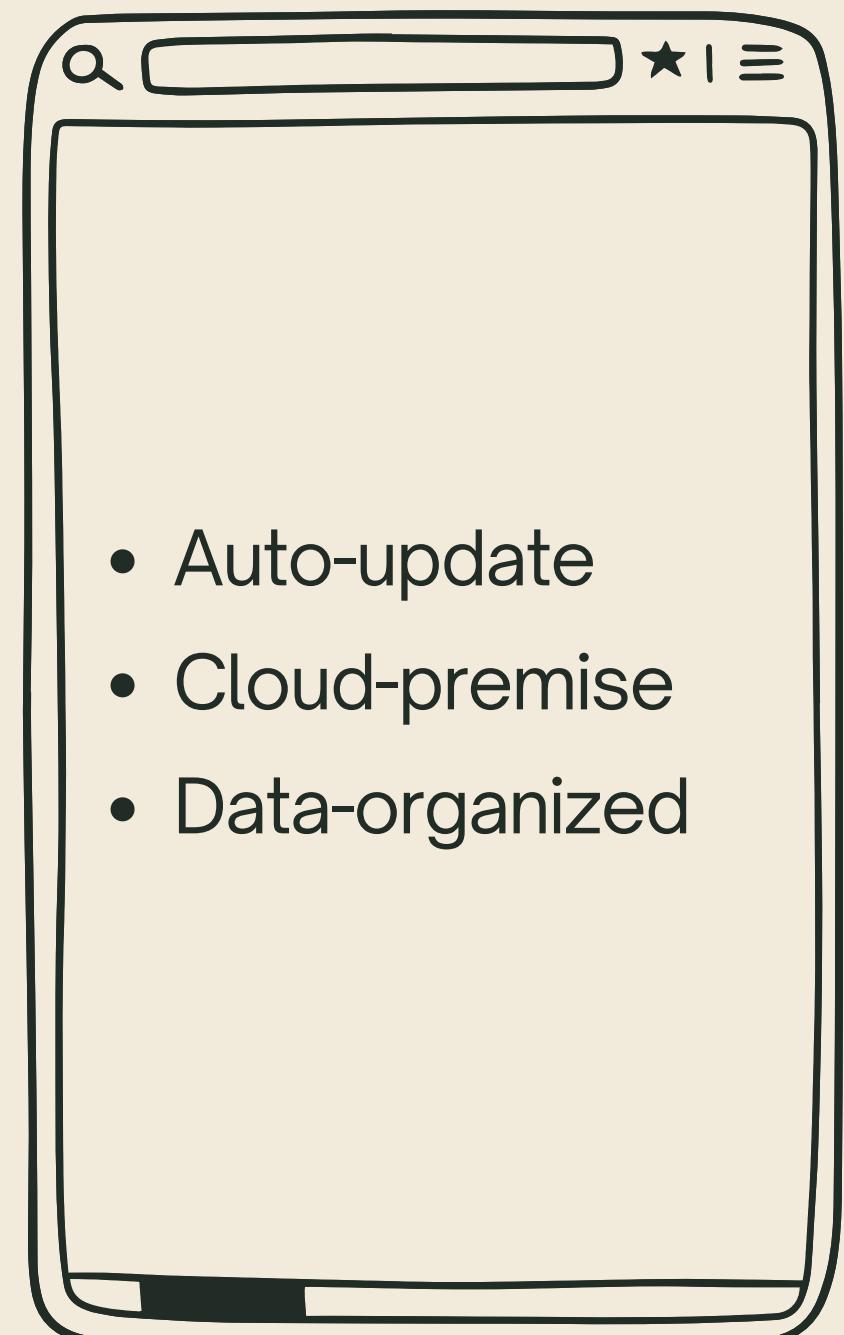
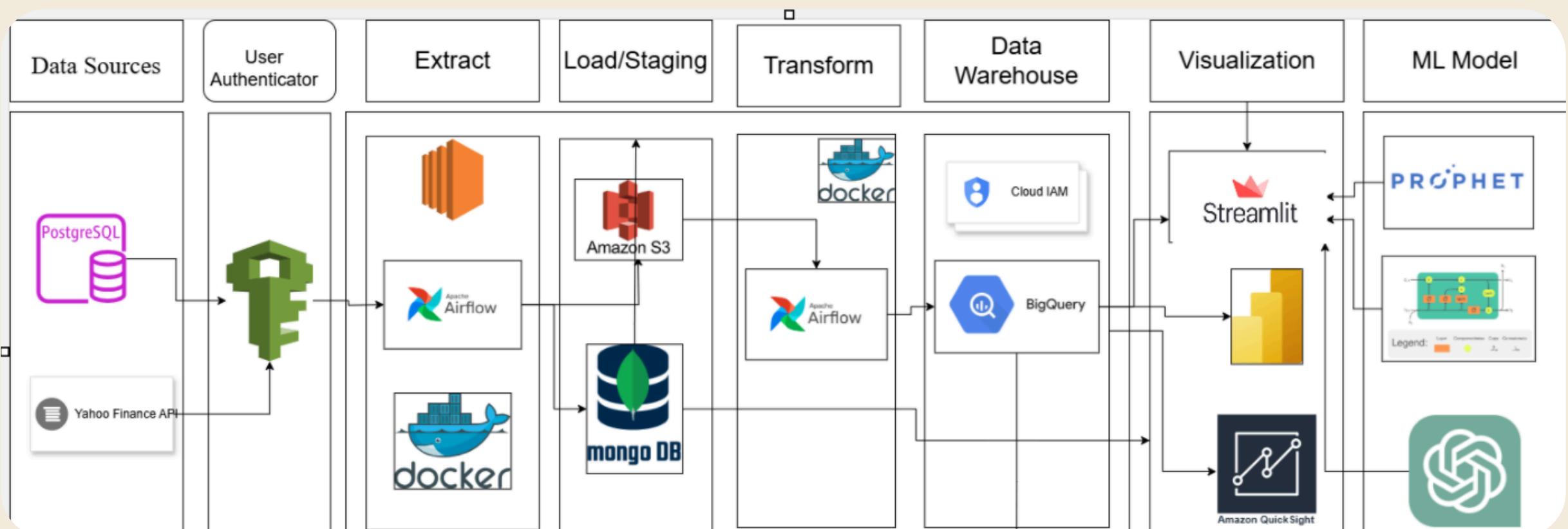
- Real-time and historical S&P500 bond data
- Information about S&P500 companies
- Financial data about S&P500 companies including balance sheet statements, income statements, cash-flow statements
- News

Tractable Data



- 2 Million rows per table
- 3 tables that has 94 columns

Data retrieval



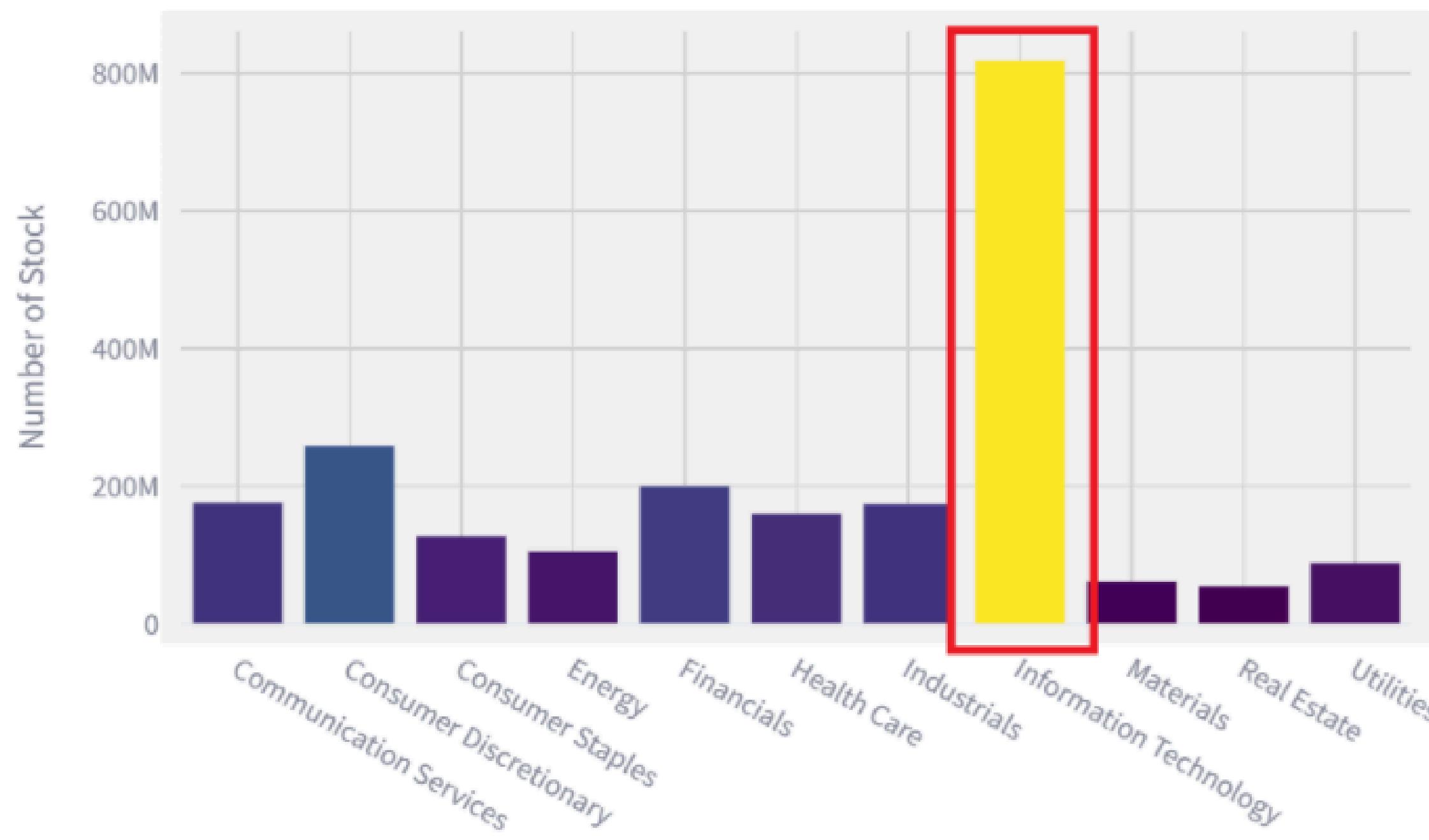
Exploratory Data Analysis

What metrics should we look for when choosing companies to invest in?

- What is the current market situation ?
- How to analyze stock trends ?
- How is the company performance ?
- Future stock price prediction by model ?

a) Market Performance

Volume of Stock by Sector

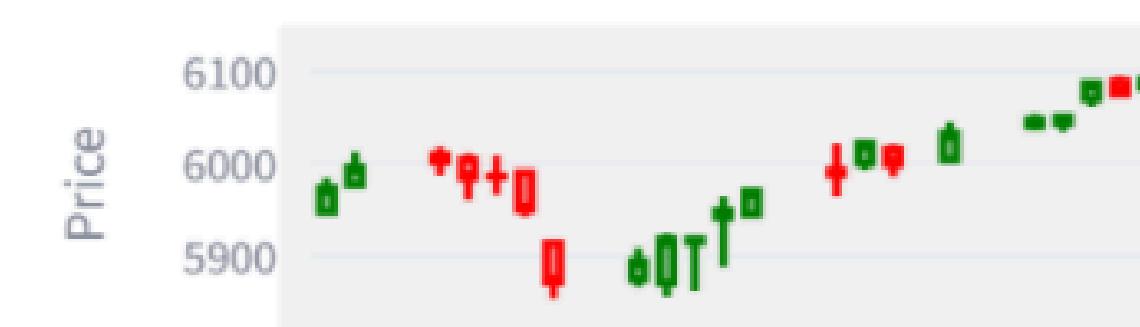


S&P 500 Intraday Chart

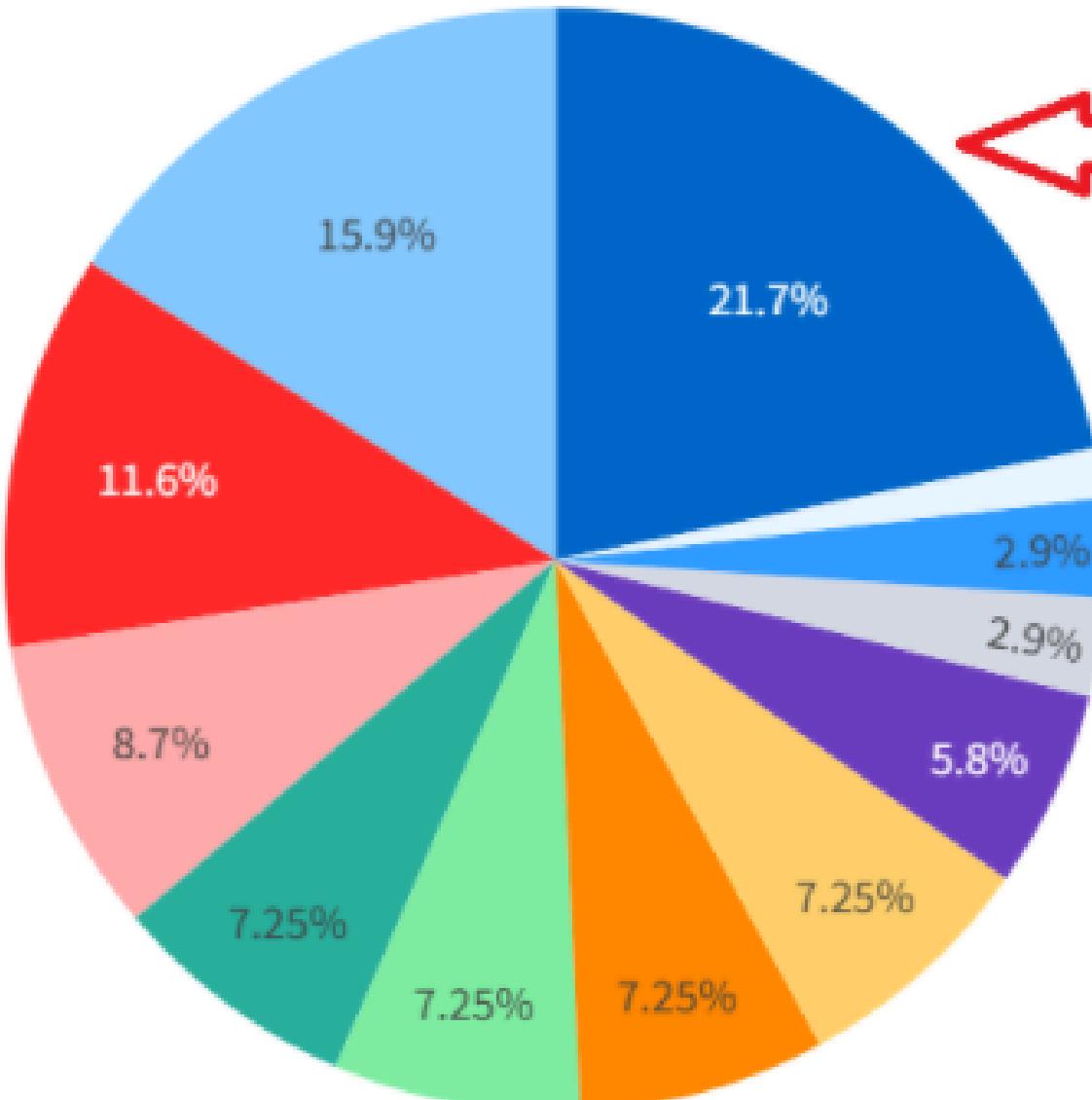


Time

Candlestick Chart

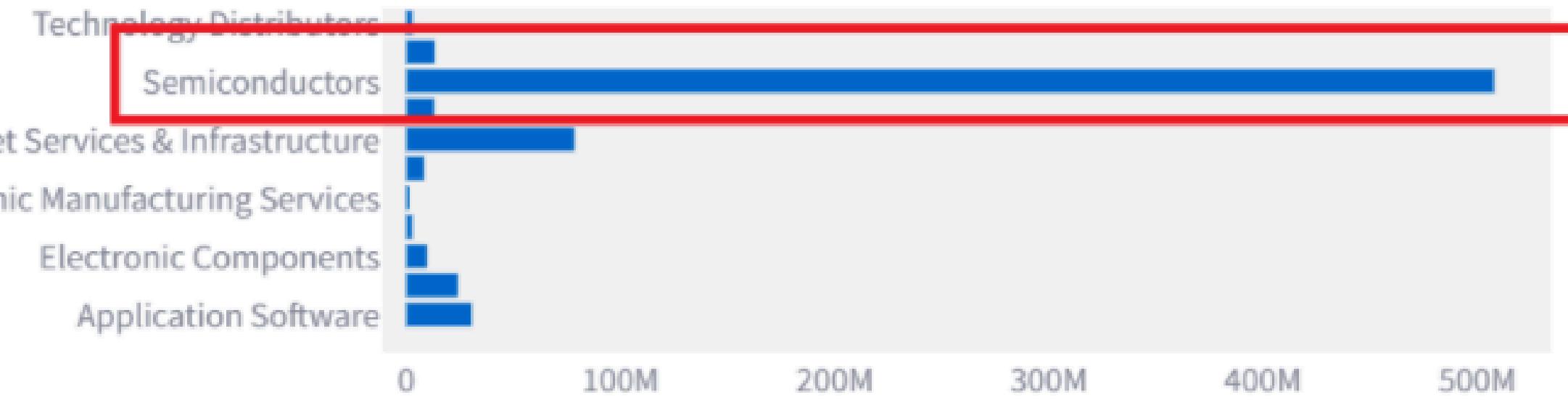


Number of Companies by Sub Industry



Semiconductor

Company Volumes Treemap



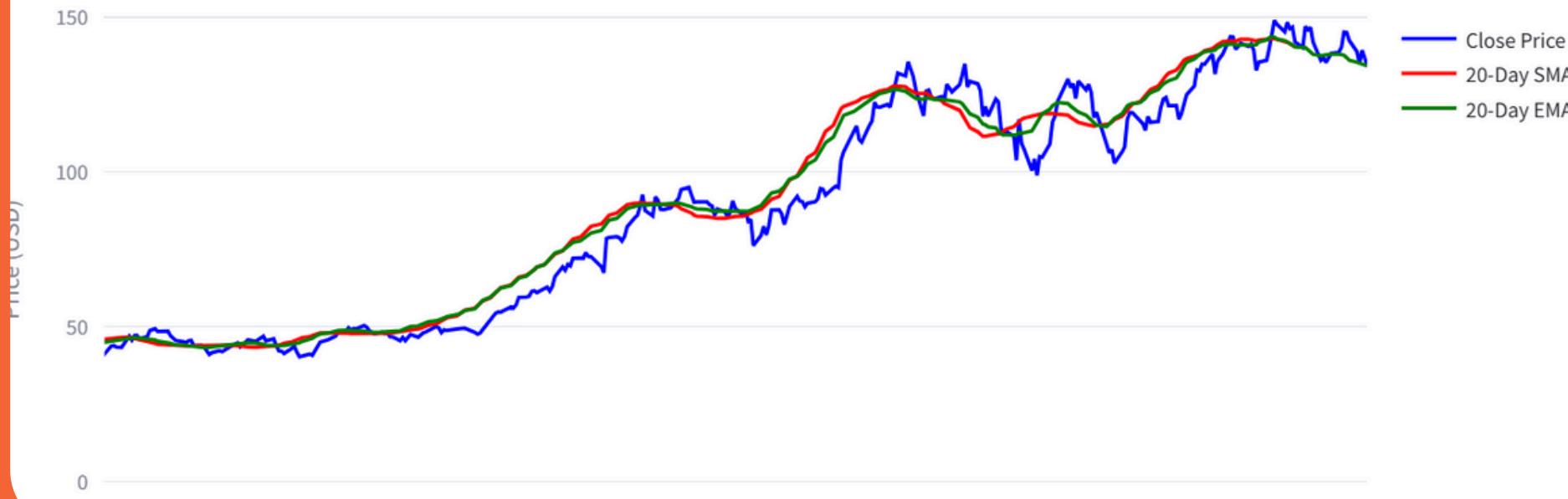
Security	Close
CDW	176
NXP Semiconductors	217
Corning Inc.	48
Oracle Corporation	173
Dell Technologies	118
Tyler Technologies	612
Verisign	197
Applied Materials	169
Broadcom	225
Teradyne	123
Cognizant	80
Autodesk	304

b) Stock Trends (NVidia)

Current Price
\$134.25
↓ -2.25%

Volume
230,976,400
↑ 45.08%

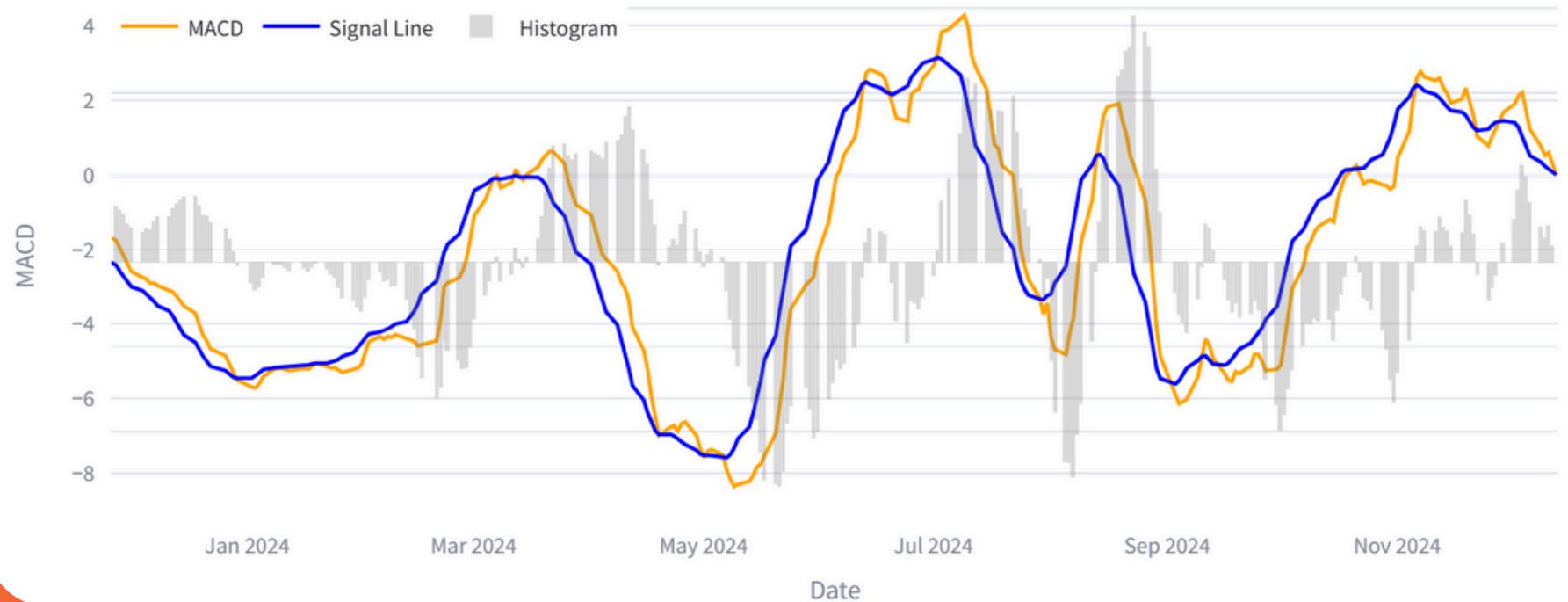
Close Price with 20-Day SMA and EMA



Relative Strength Index (RSI)



MACD



Candlestick Chart with Bollinger Band



Top 8 Companies with Highest Free Cash Flow Growth

FCF represents the cash a company generates after accounting for cash outflows to support operations and maintain its capital assets. It is a key indicator of a company's financial health and its ability to generate cash to expand operations, pay dividends, and reduce debt. Positive FCF: Indicates that the company is generating more cash than it needs to maintain or expand its asset base, which is a good sign for investors.

● 2023 ● 2022

120bn

100bn

80bn

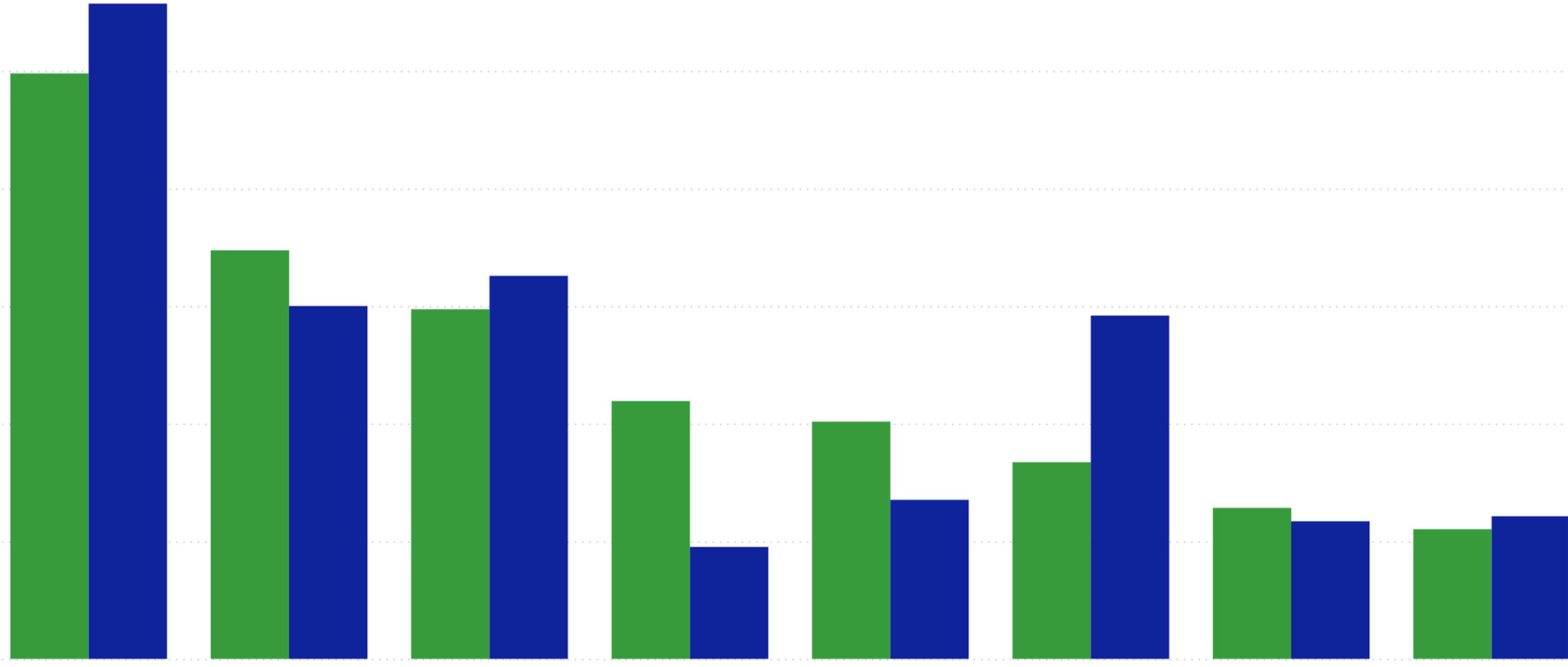
60bn

40bn

20bn

0bn

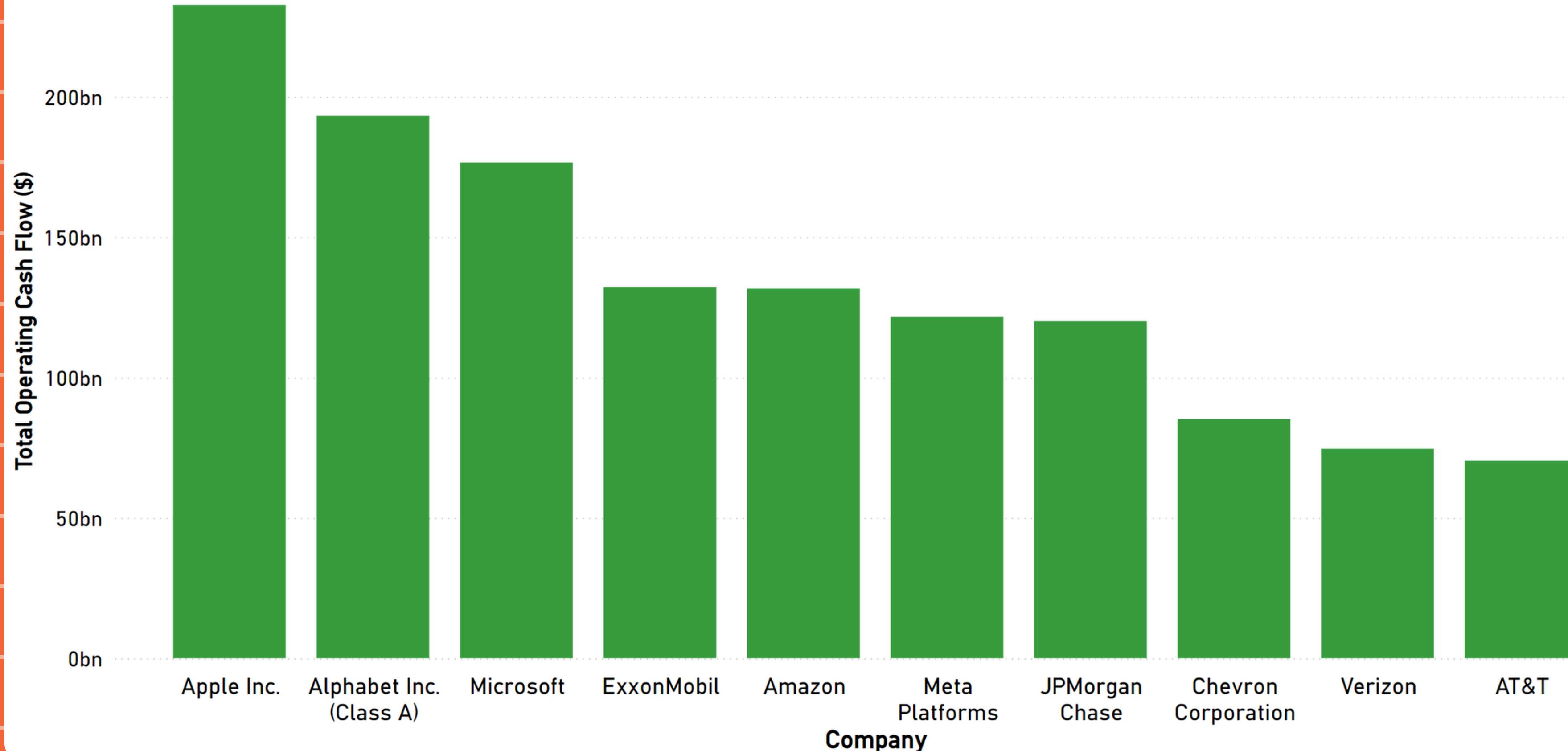
Total Free Cash Flow (\$)



Company

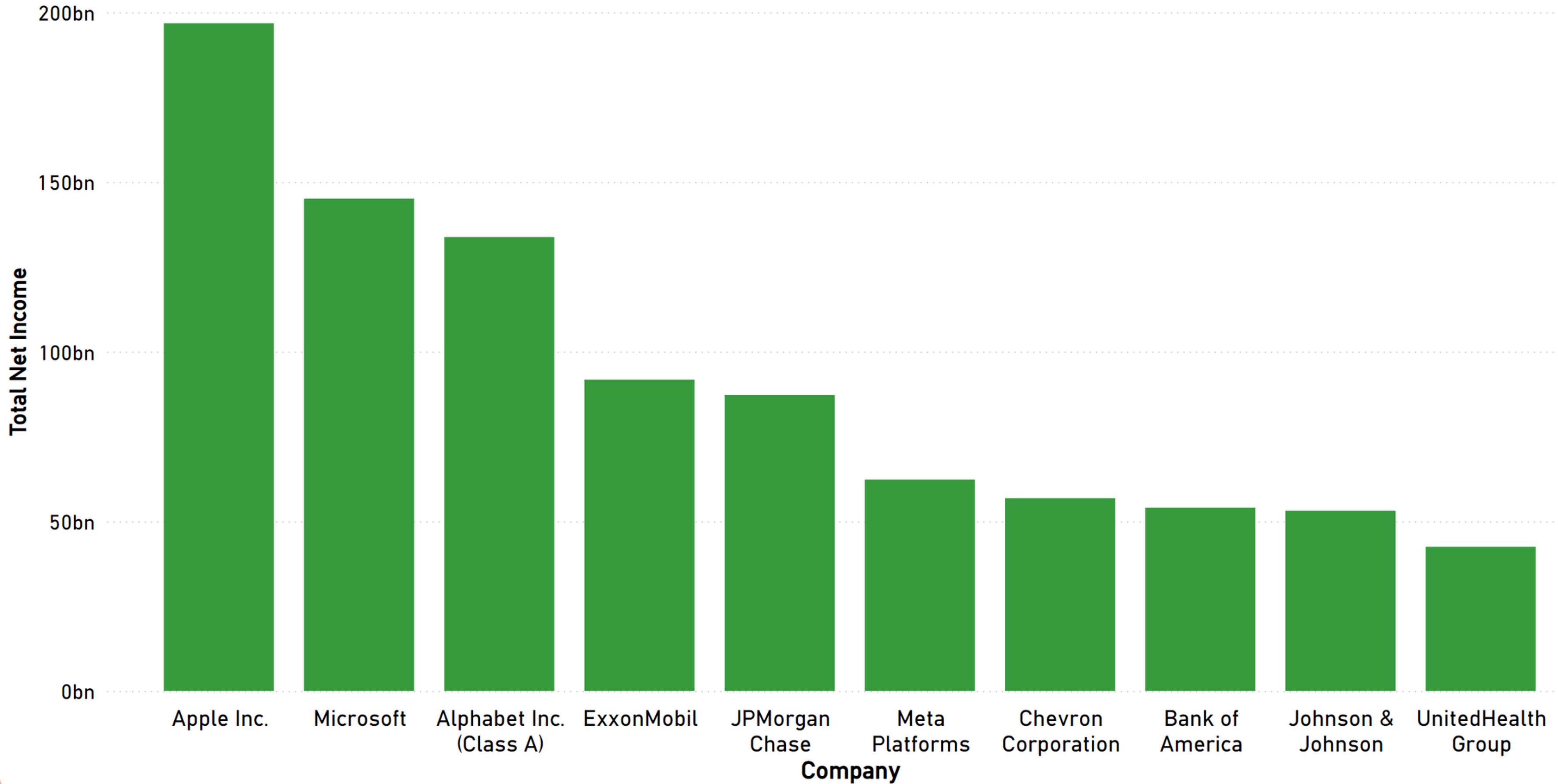
Top 10 Companies with Highest Operating Cash Flow (OCF)

OCF measures the cash generated by a company's regular business operations. It is a crucial indicator of the company's ability to generate sufficient cash flow to maintain and grow its operations. High OCF: Suggests that the company's core business operations are strong and generating significant cash, which is a positive sign for investors.



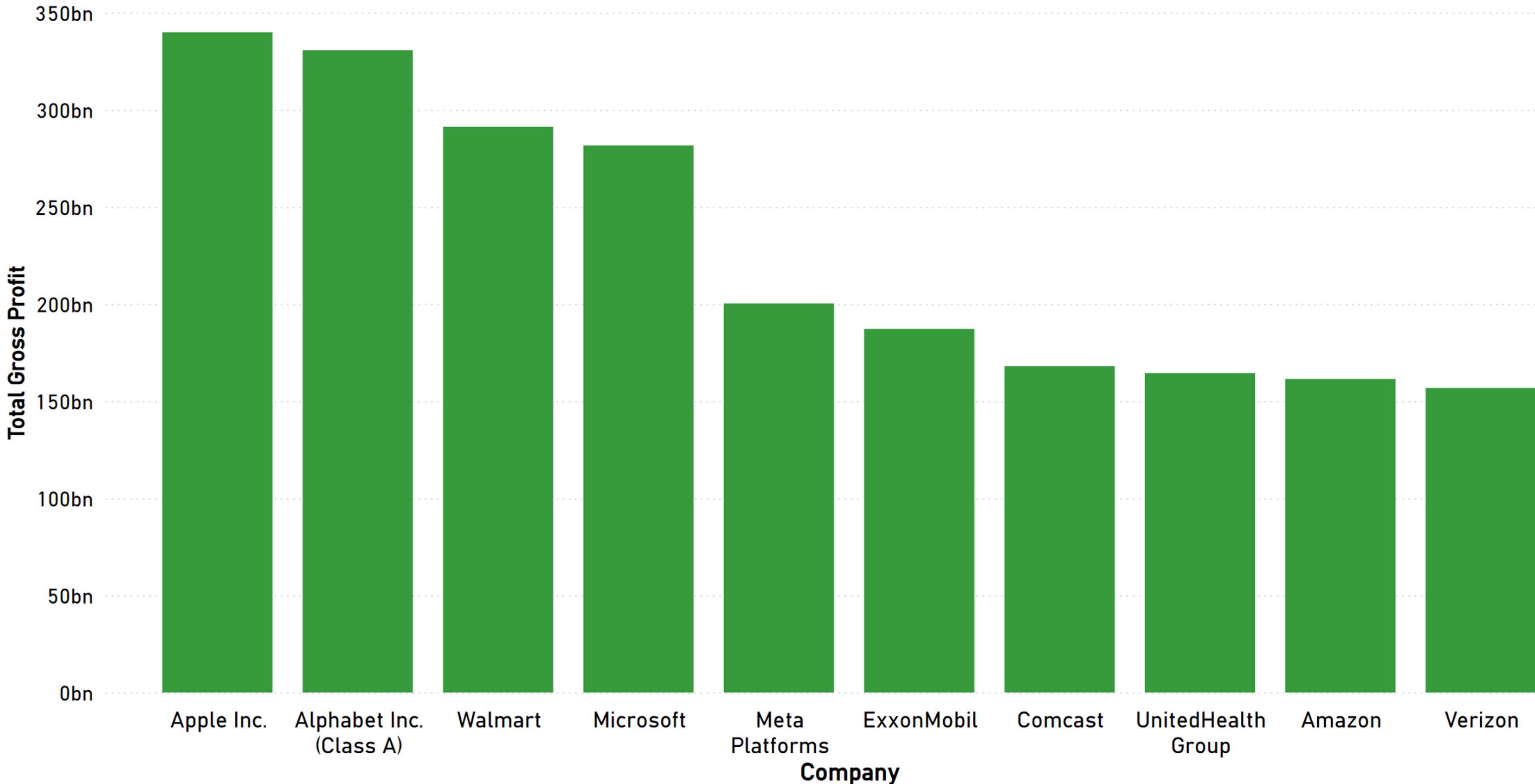
Top 10 Companies with Highest Net Income

Net income represents the company's total earnings, reflecting its profitability after all expenses, taxes, and costs have been deducted from total revenue. It is a key indicator of a company's financial health and its ability to generate profit.



Top 10 Companies with Highest Gross Income

Gross Profit represents the difference between total revenue and the cost of goods sold (COGS). It indicates how efficiently a company is producing and selling its products.



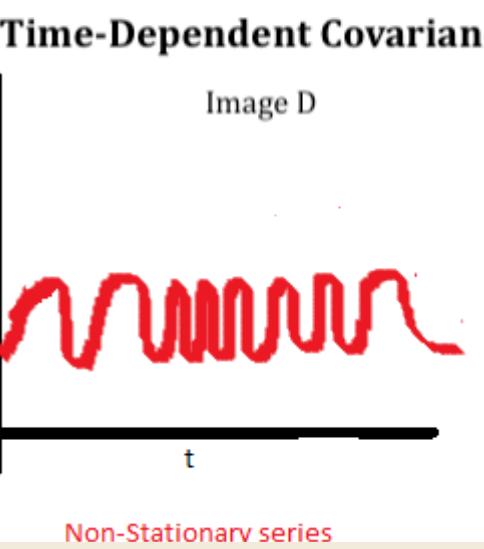
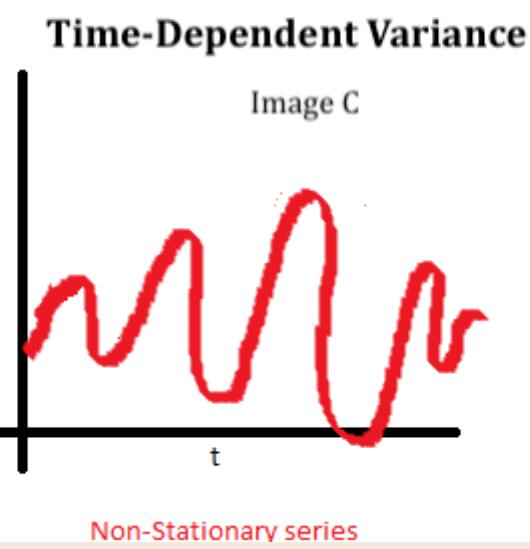
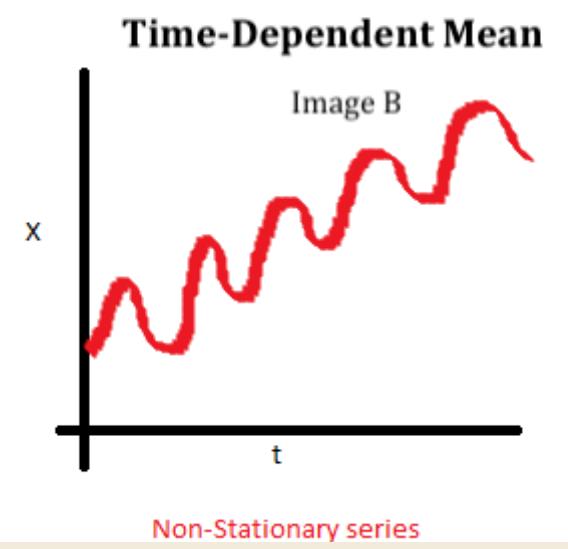
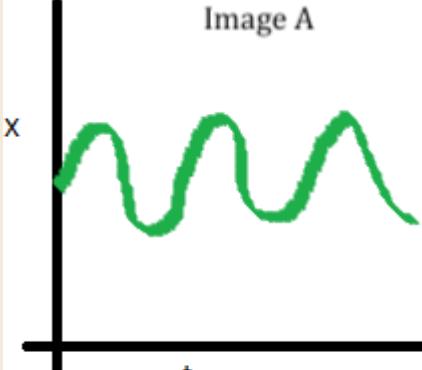
Predictive Model

Time-series predicting Modeling

- Check Stationary
- Training Data
- Test Models

a) Stationary

The Principles of Stationarity



ADF Statistic: -3.6682234894285743

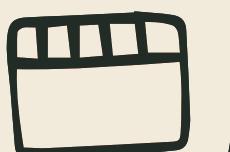
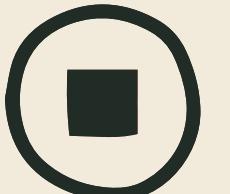
p-value: 0.004582981549475072

Critical Values: {'1%': -3.436459052172655,

Strong evidence against the null hypothesis

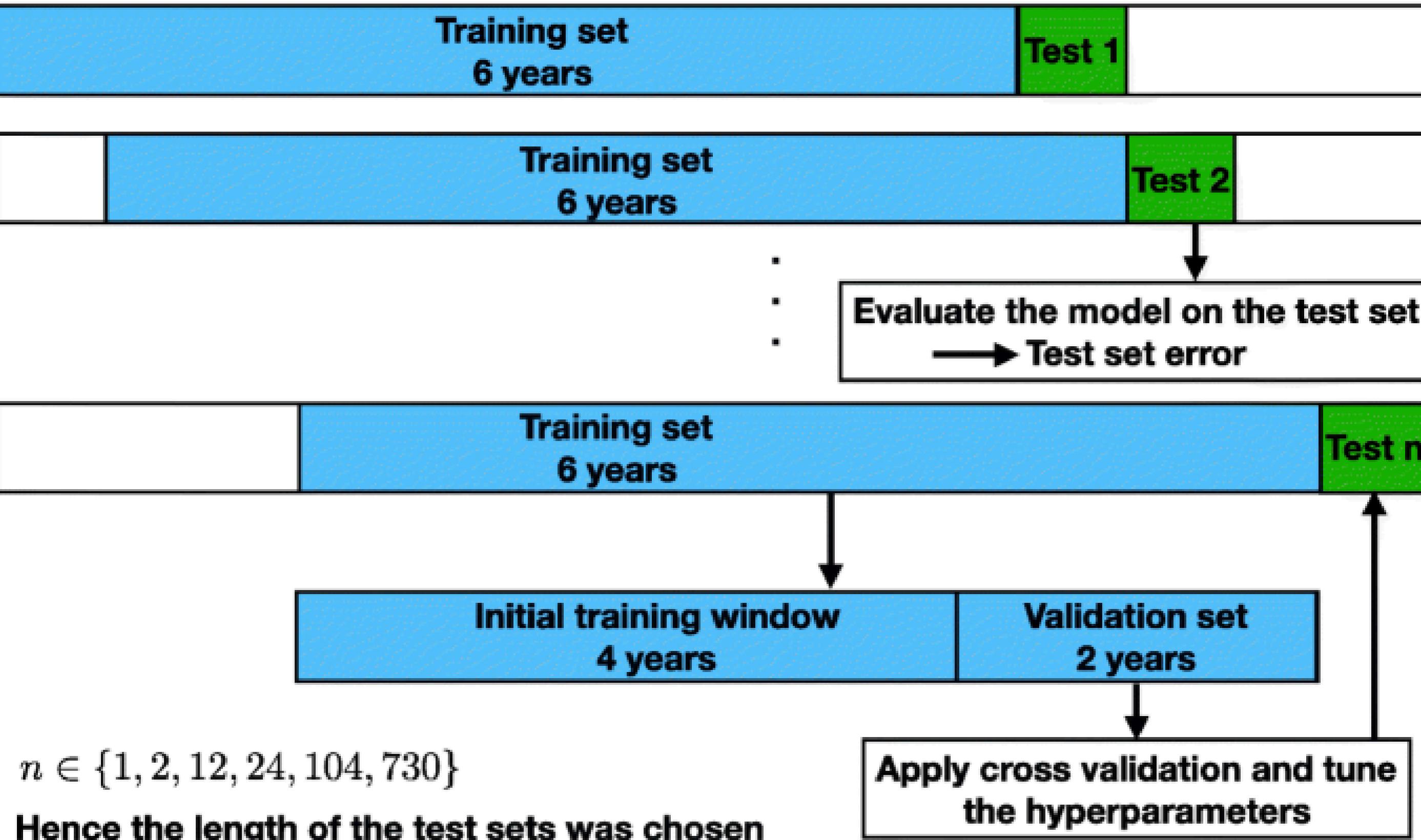
Reject the null hypothesis

Data is stationary



b) Training Data

Machine learning algorithms



c) Models training

ARIMA
Model

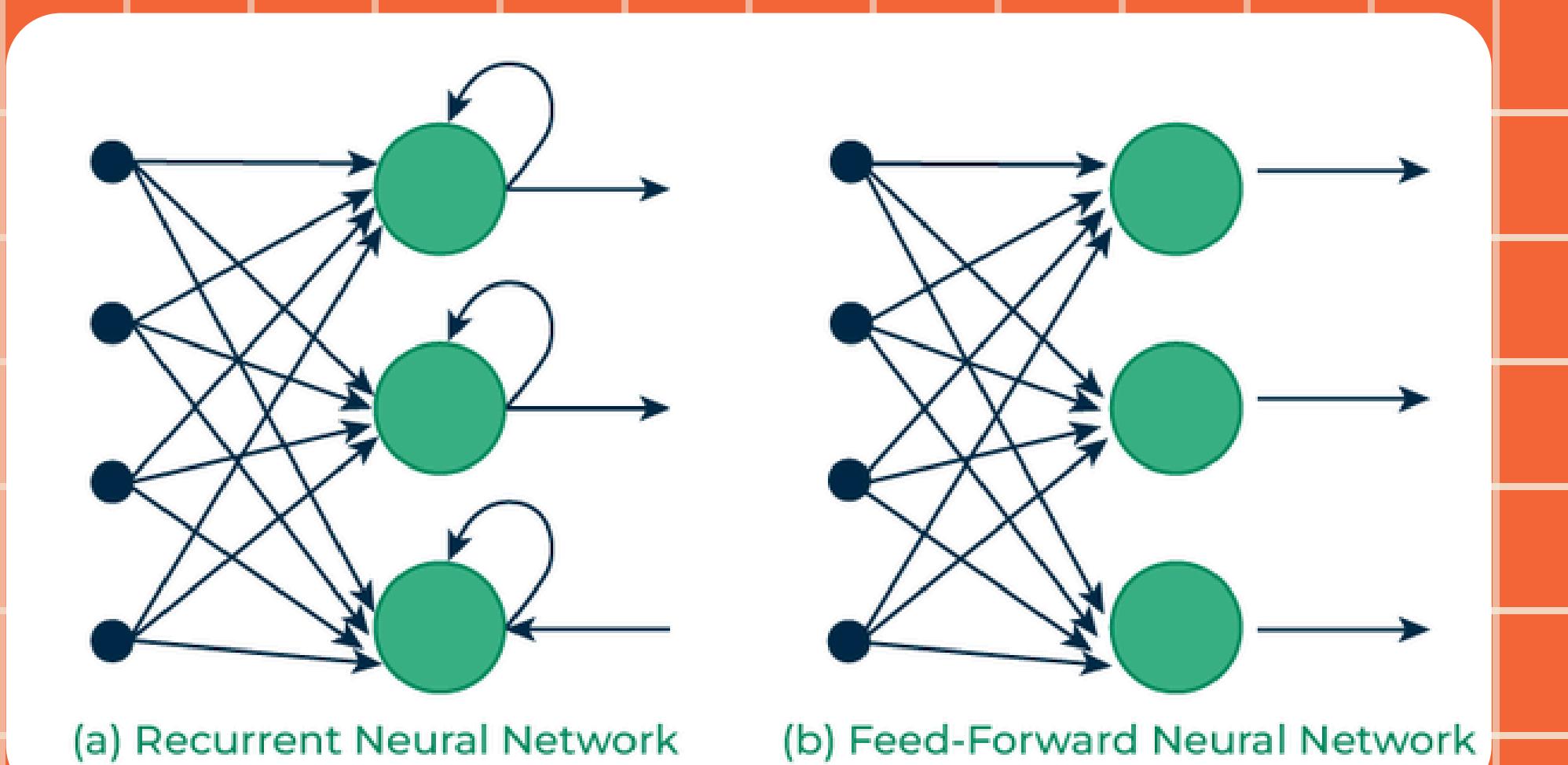
ARMA
Model

GARCH
Model

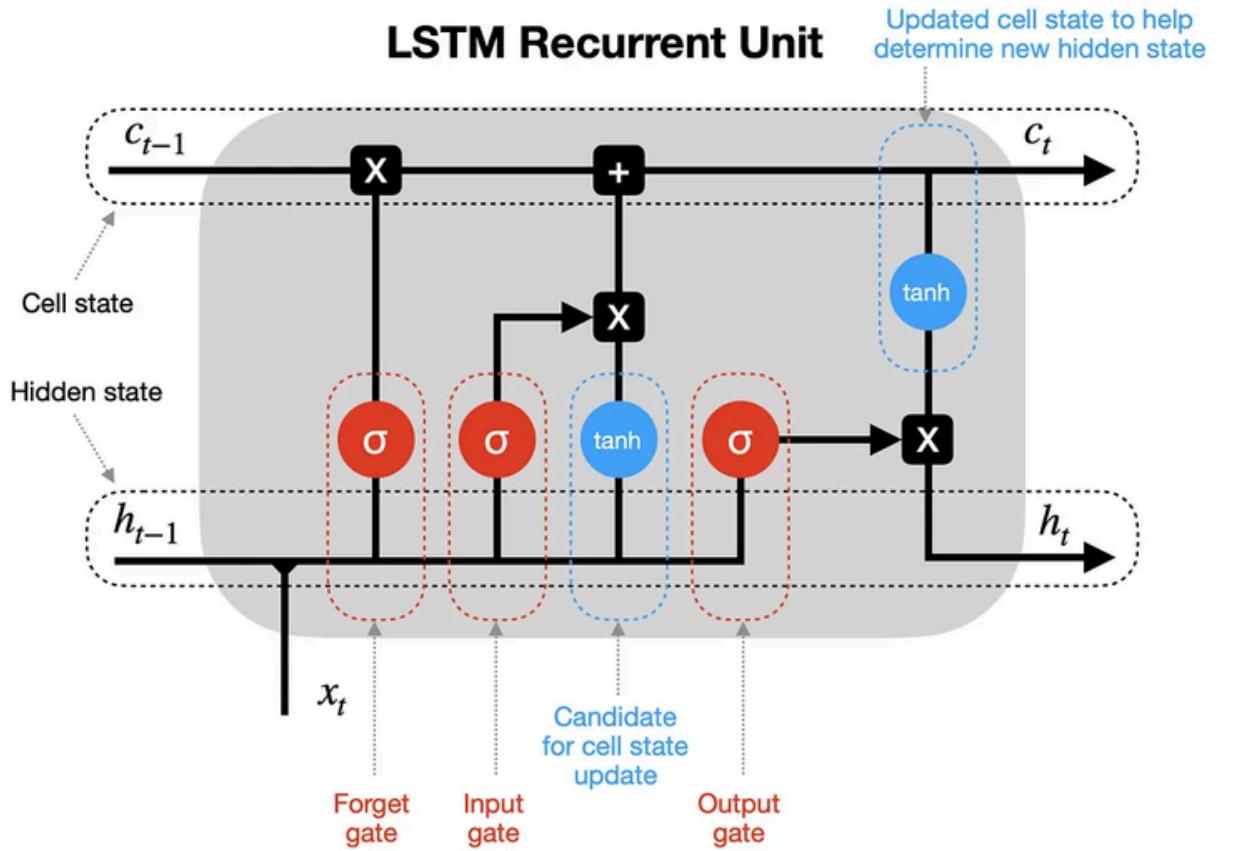
VAR
model

- + M/L model
- + Not fit with real data
- + Prone to overfitting
- => Try deep learning model

c) Long-short Term Memory (LSTM) Model

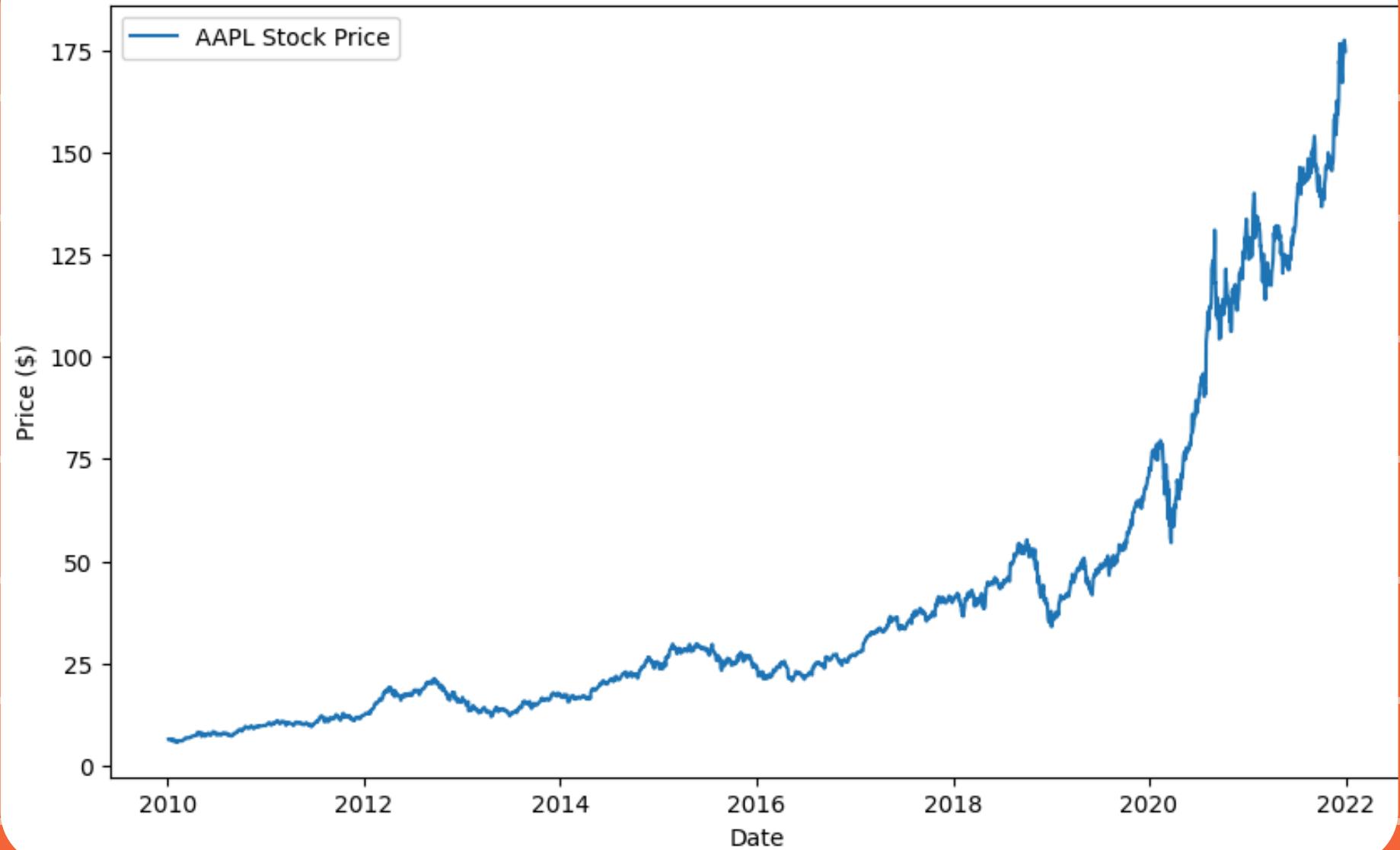


LONG SHORT-TERM MEMORY NEURAL NETWORKS

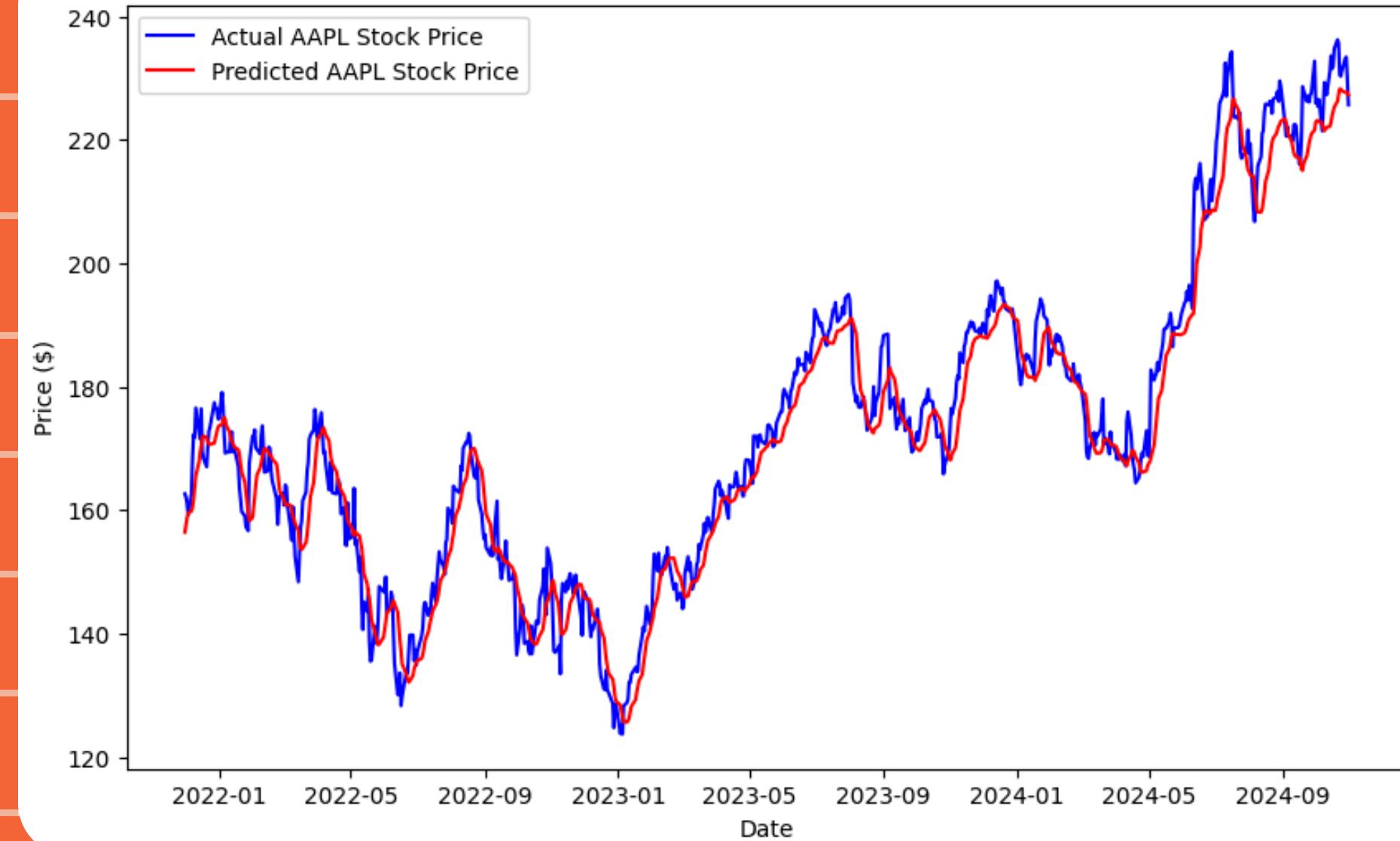


e) Test Model

Apple Stock Price (Adjusted Close)



Apple Stock Price Prediction (LSTM)

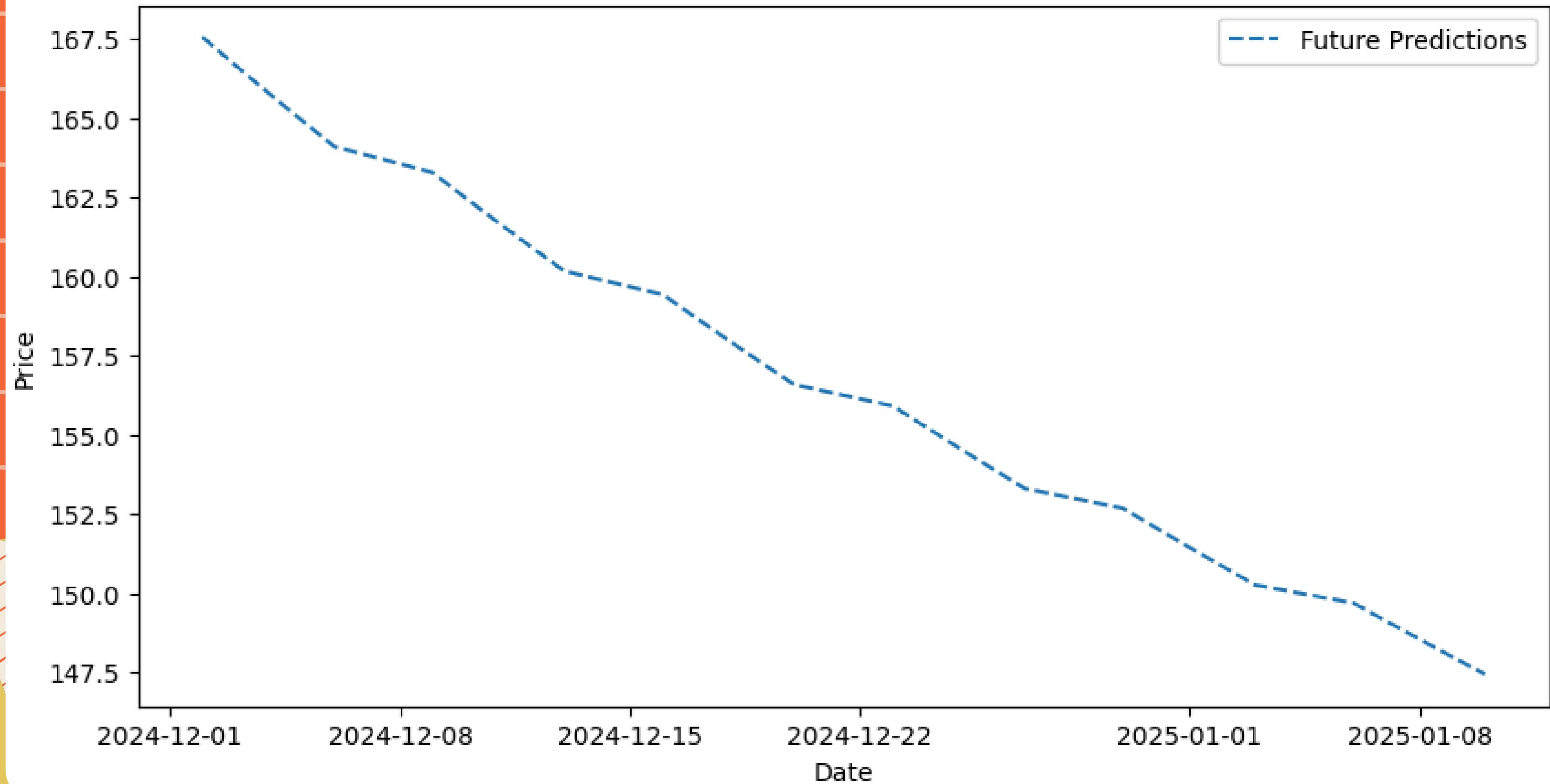


Implications for stakeholders

- Results from predictions
- What stocks should we invest in?

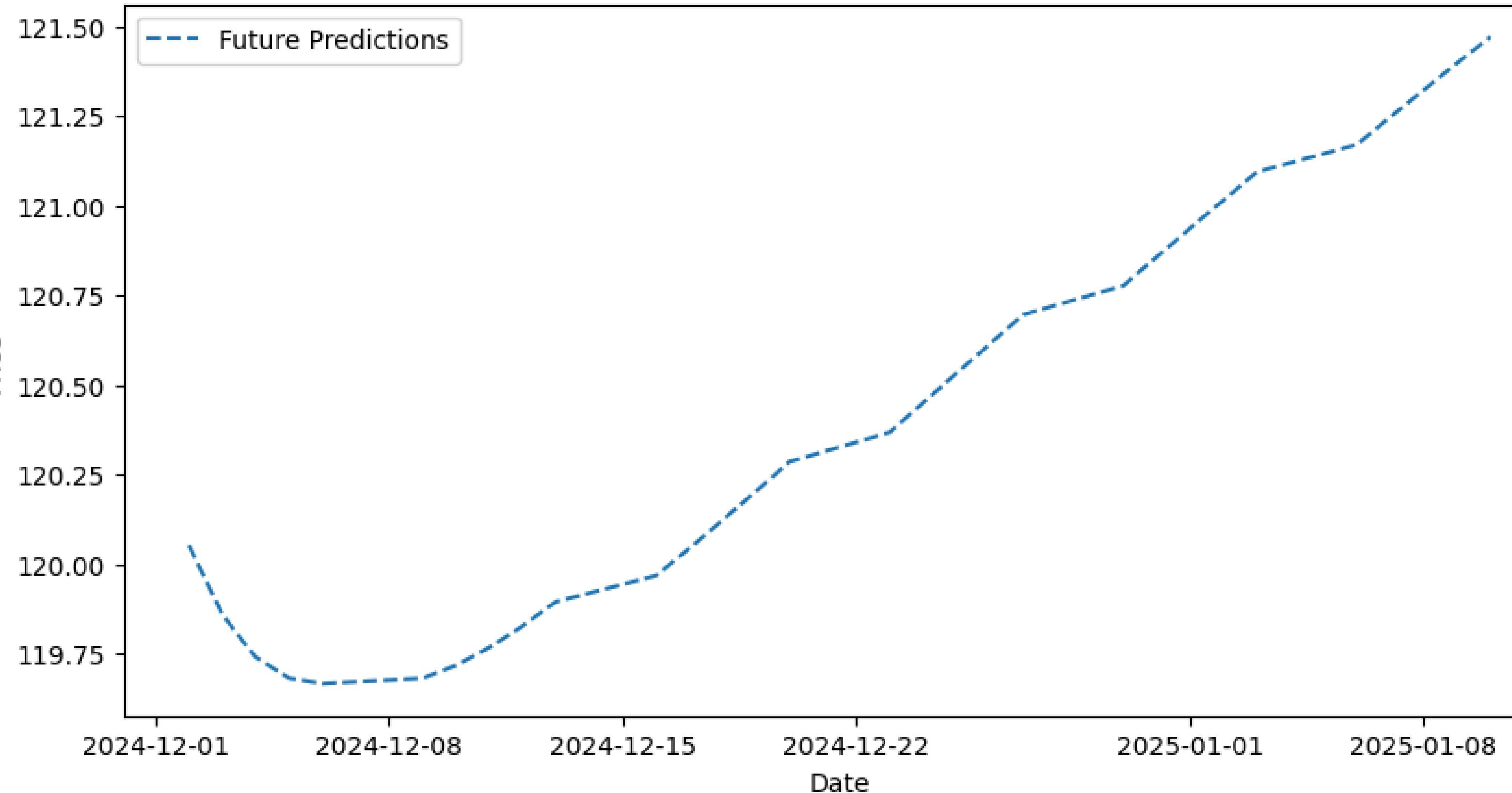
Tên cty + tsao đặc biệt

GOOG Stock Price Predictions for Next Month



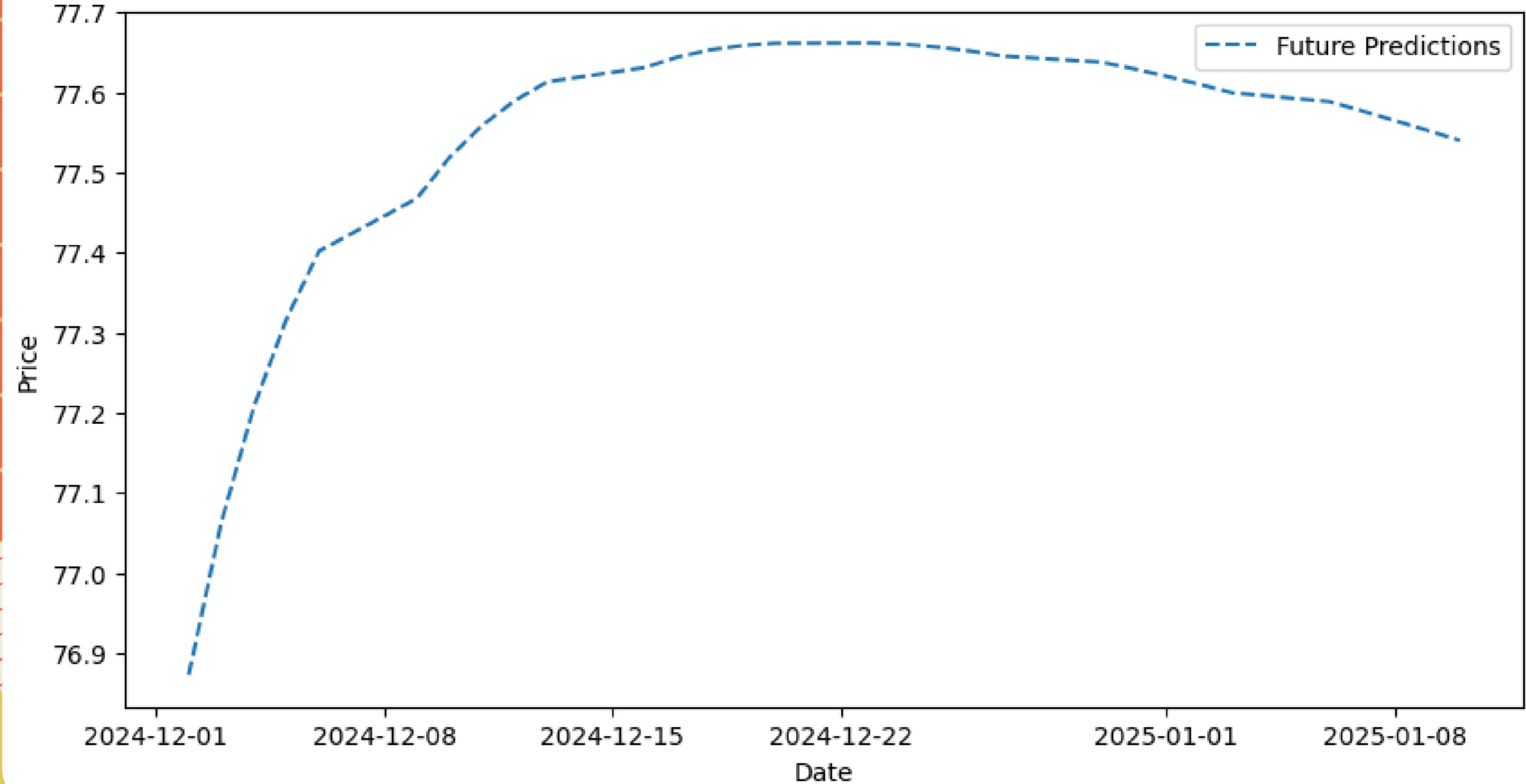
Tên cty + tsao đặc biệt

XOM Stock Price Predictions for Next Month



Tên cty + tsao đặc biệt

WFC Stock Price Predictions for Next Month



Stock should invest

01

Exxon Mobile

*Lore ipsum dolor sit erio amet,
consect adipiscing elit.
Curabitur purus dui, efficitur quis
libero idgre vehicula sagittis
nulla.*

*Nulla auctor diam non les
placerat malesuada et.
Phasellus euismod mi eu justo
ullamcorpe eleifend.*

02

Verizon

03

Bank of America

04

Wells Fargo

05

Johnson & Johnson

06

Comcast

Emplifications

Company Performance is important

- Tie to Revenue Growth and Profitability, Operational Efficiency and Management, Long-Term Value Creation
- Understanding a company's performance helps mitigate risks and ensures they're placing funds in financially sound and well-managed businesses.

The market dynamics is crucial too

- Market dynamics influence stock prices through broader trends and conditions that go beyond an individual company's control: Economic Climate, Industry Trends
- Relying solely on company performance without understanding market conditions can lead to poor timing, such as buying at peaks or selling during panic-driven declines.

Dashboard

A mobile phone screen showing a financial dashboard titled "Makeni Metrics: SP500 Stock Real Time Dashboard". The phone has a black frame and a white background. On the left is a vertical navigation bar with items: sp500 (highlighted), company, MakeniTalks, stock, stock prediction, and test. On the right are "Deploy" and three-dot menus. The main content area features a red header with the title, followed by a "Navigation Bar" with five buttons: Market Dashboard, Stock Dashboard, Talk with Makeni AI, Company Financial Portfolio, and Stock Prediction. Below this is a "Market Overview" section with three buttons: Current Value, Total Volume, and Overbought. A large circular button with a square icon is centered at the bottom.

sp500

company

MakeniTalks

stock

stock prediction

test

Deploy :

Makeni Metrics: SP500 Stock Real Time Dashboard

Navigation Bar

Market Dashboard

Stock Dashboard

Talk with Makeni AI

Company Financial Portfolio

Stock Prediction

Market Overview

Current Value

Total Volume

Overbought

Ethical, legal, and societal implications

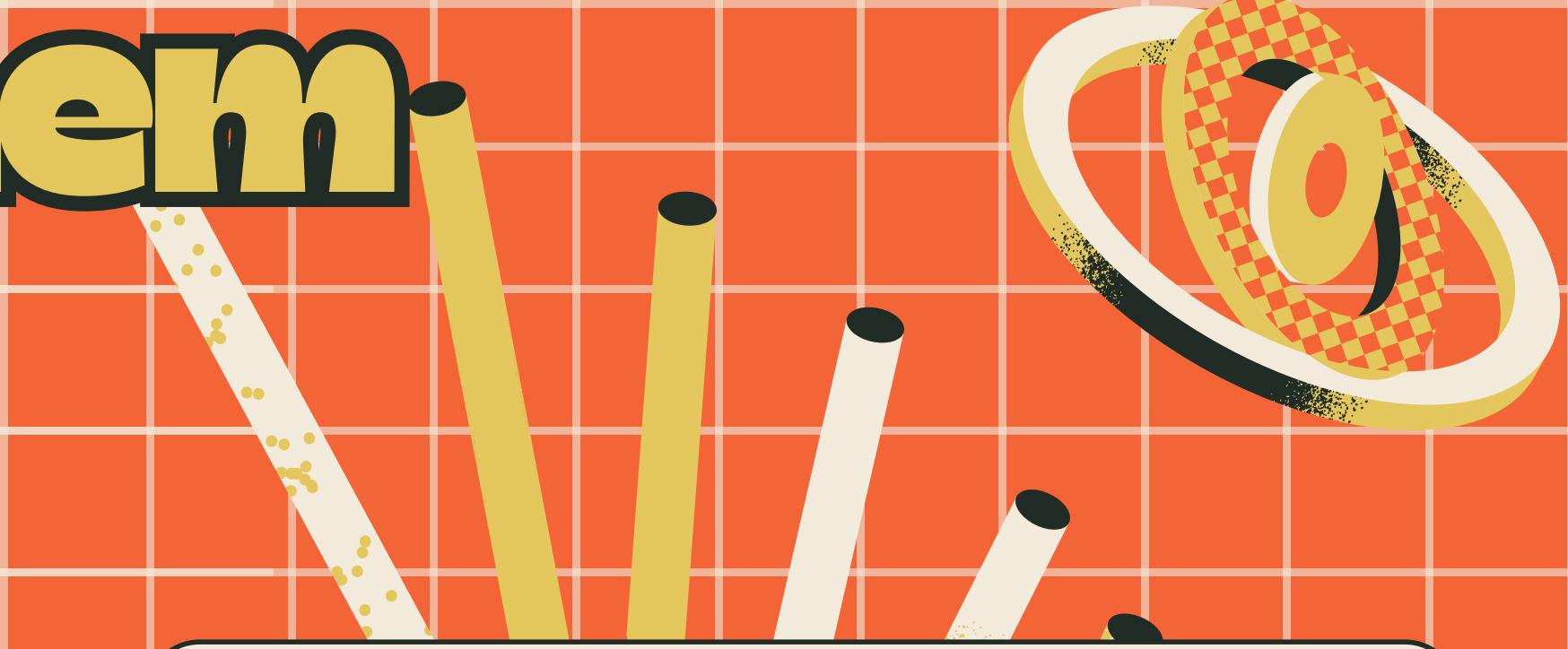
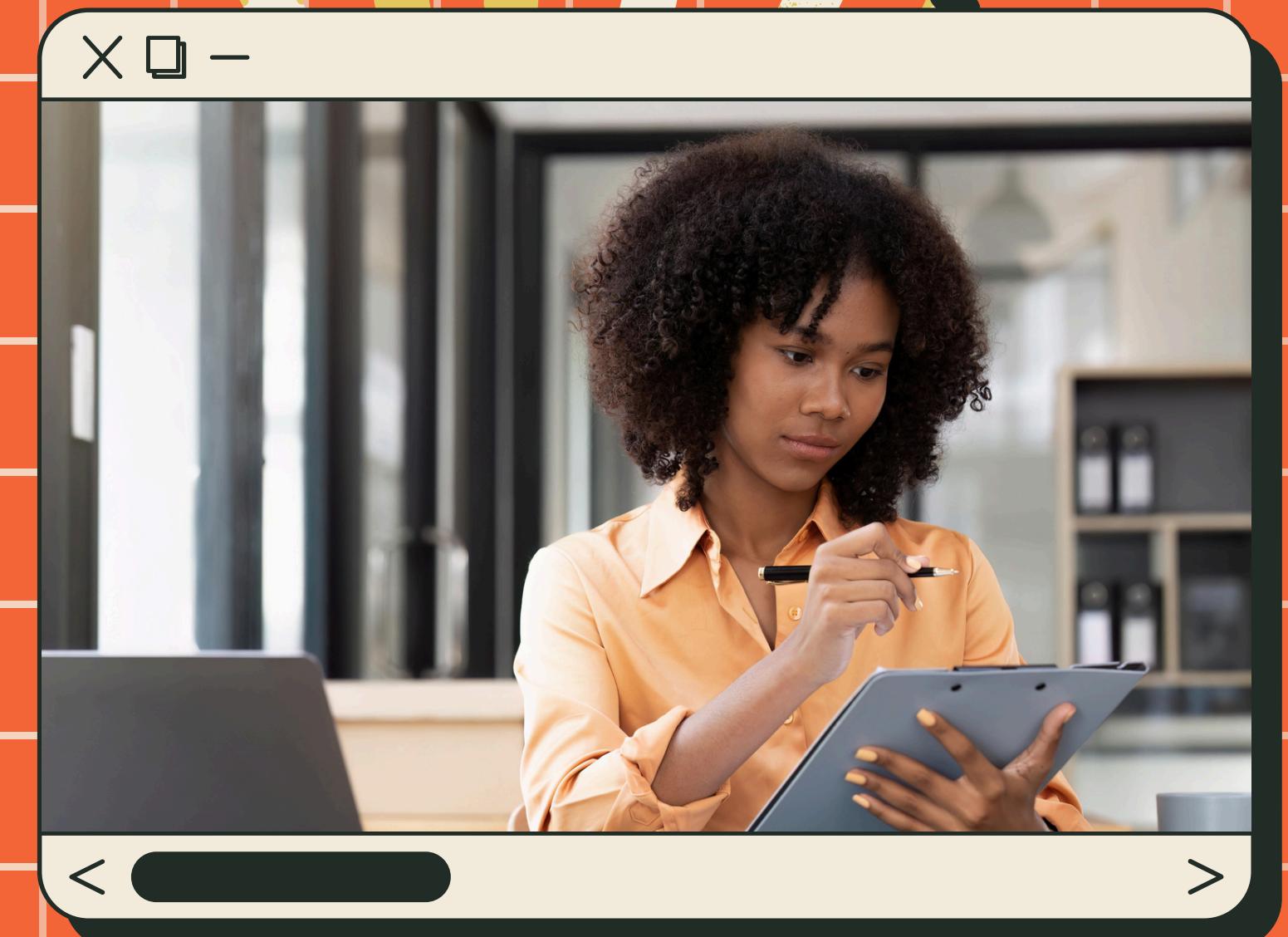
particularly in the context of analyzing financial data, several ethical, legal, and societal implications arise

Ethical Problem



Wealth Disparity

- Promoting stocks that primarily benefit large corporations or wealthy investors could contribute to increasing societal inequality.
- Mitigation: Highlight opportunities for ethical and sustainable investments that support small or emerging companies.

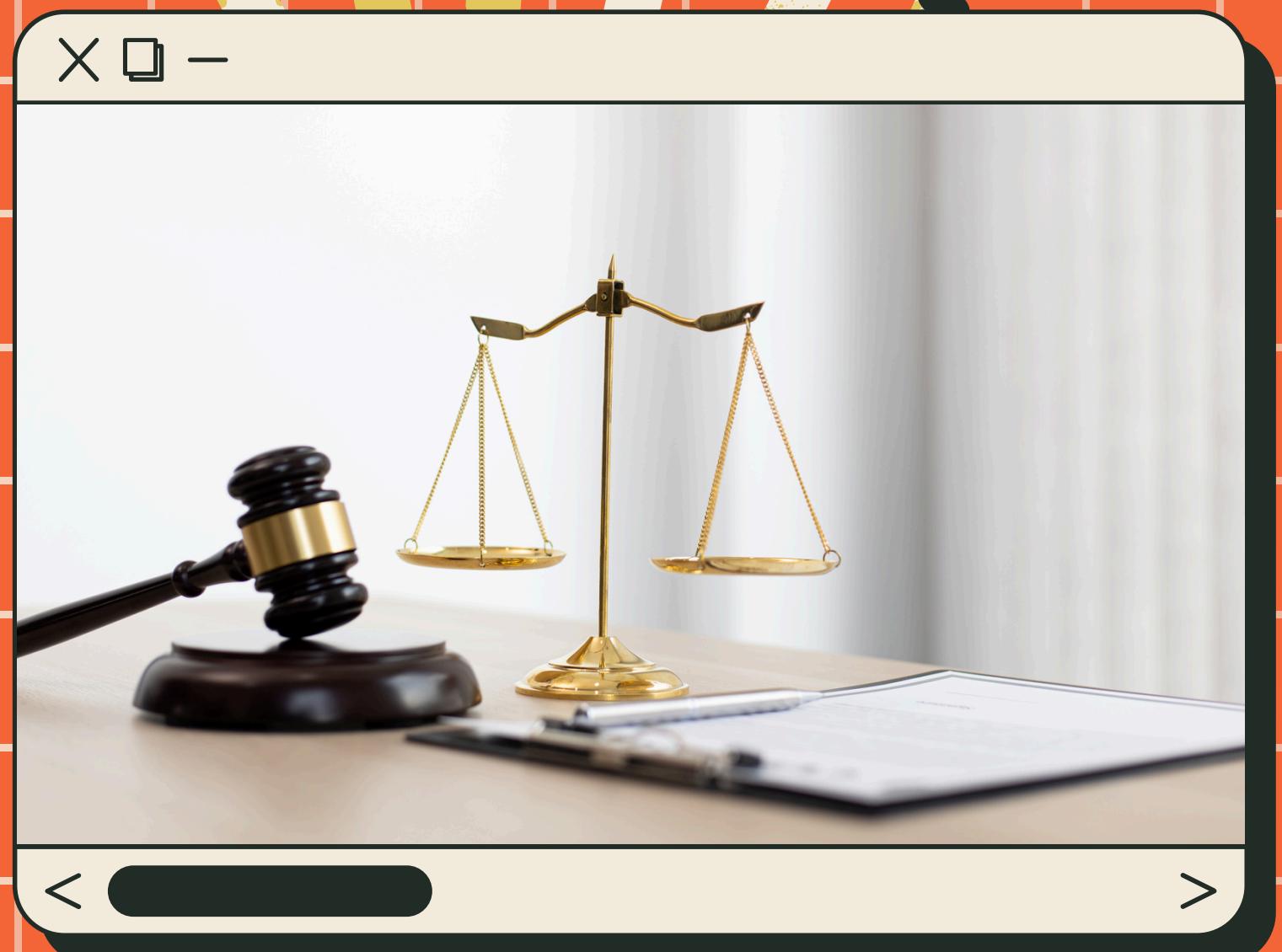


Legal Implications



Investment Advice Regulations

- Providing financial recommendations can be considered investment advice and may require specific qualifications, licenses, or disclosures under regulations like the SEC (Securities and Exchange Commission) rules.
- Mitigation: Consider my suggestions as data-driven insights rather than definitive financial advice, and add disclaimers.



Societal Implications

The slide has a title 'Market Influence and Herd Behavior' and two bullet points:

- Recommending certain stocks could lead to concentrated investment, artificially inflating prices and creating volatility.
- Mitigation: Encourage diversification and educate audiences about the importance of balanced investment strategies.



thank
you very
much!

