

ASSIGNMENT 3: INTERACTIVE VISUALIZATION

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Introduction

- **Objective:** Create an interactive visualization to explore dimensions of stock market data for top NYSE companies.
- **Dataset:** NYSE stock data, focusing on daily price movements (open, high, low, close) and market valuations over time.
- **Purpose:** Enable users to explore price fluctuations across different timeframes and observe trends in market valuations.

Visualization: Daily Price Movements

How do the daily price movements (open, high, low, close) of the top 10 NYSE stocks vary over different timeframes (3 months, 6 months, and 1 year)?



Figure 1: Interactive Candle stick chart

- **Data Focus:** Daily stock price movements (open, high, low, close) of top 10 NYSE stocks.
- **Color-coded candles:** Green for days where the closing price was higher than the opening price, and red for the opposite.
- **High and low wicks:** Representing the range between the highest and lowest trading prices for each day.
- **Zoom Controls:** Allows users to zoom in for a more detailed analysis or zoom out for a broader view.
- **Tooltips on Hover:** Shows detailed information about the open, close, high, and low prices for a given day, enhancing the exploration experience.
- **Interactions:**
 - **Timeframe Selection:** Dropdown or button options for 3 months, 6 months, and 1-year views.
 - **Highlighting:** Mouse-over highlights specific data points for clarity.
 - **Sorting:** Users can sort stocks by their average price or volatility over selected timeframes.
- **Design Rationale:**

- Emphasized simplicity with clear labels for open, high, low, and close values.
- Used a candlestick chart to represent daily price variations, as it captures price trends effectively.
- **Strengths:**
 - Provides detailed insight into short-term vs. long-term price patterns.
 - Interactive sorting and timeframe adjustments enhance user exploration.
- **Weaknesses:**
 - Candlestick charts can be visually dense; users may require guidance on interpreting them.

The chart enables an interactive exploration of stock data, allowing users to investigate different patterns and compare how stocks perform across multiple timeframes. The zoom functionality is particularly helpful in observing price behavior in a more granular way for specific dates. The visualization effectively uses color and tooltips to communicate important information, enhancing the overall usability of the chart for financial analysis.

Visualization: Market Valuations Over Time

How have the market valuations of the top publicly traded companies changed over the years?

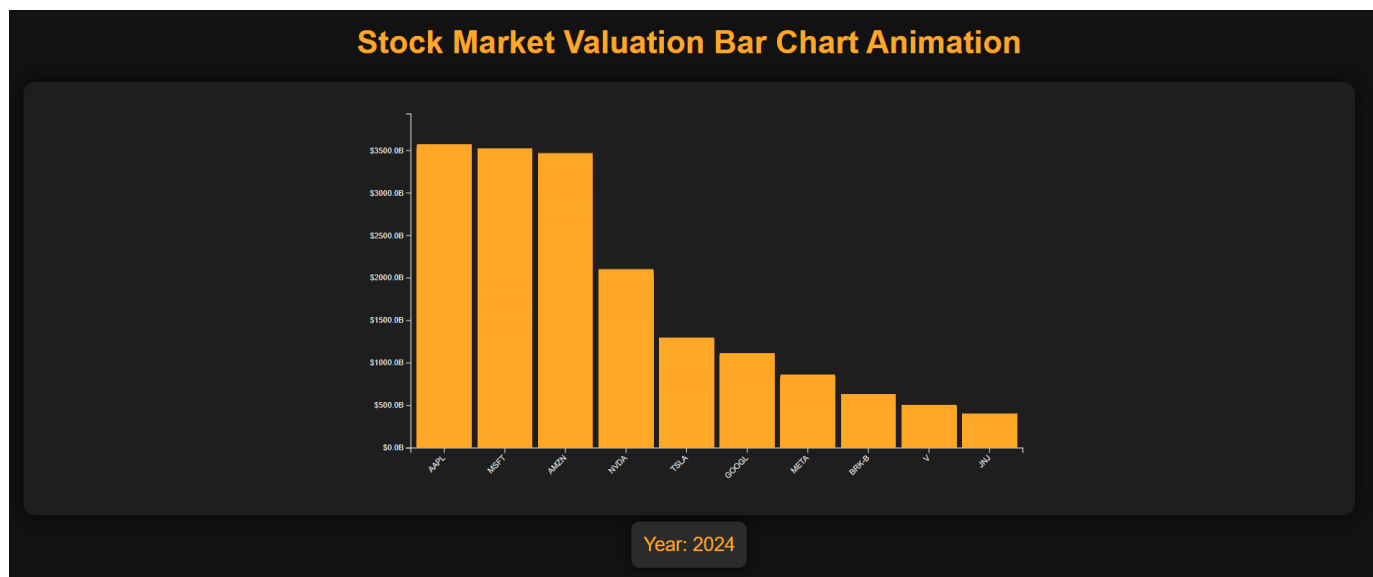


Figure 2: Animated Bar chart

- **Data Focus:** Market valuations of top publicly traded companies over a multi-year period.
- **Interactions:**
 - **Yearly Playback:** Animated bar chart changes yearly to show shifts in rankings and valuations.
 - **Filtering:** Users can select specific companies to focus on their growth trajectory over time.
 - **Highlighting:** Top-performing companies in each year are highlighted for emphasis.
- **Design Rationale:**
 - Used an animated bar chart to convey valuation changes dynamically, making trends and growth patterns easily observable.
 - Focused on the top companies to reduce visual clutter and emphasize significant valuation shifts.
- **Strengths:**
 - Clear visualization of year-over-year valuation changes and relative growth.

- Animation enhances understanding of changes in market hierarchy.
- **Weaknesses:**
 - May be challenging for users to compare all companies simultaneously due to animation pace.

Conclusion

- The interactive visualizations effectively illustrate key trends and allow users to explore stock data across different dimensions.
- **Insights:**
 - Users can understand short-term price volatility and longer-term growth patterns through interactive timeframe and sorting options.
 - Market valuation trends reveal which companies have consistently grown, offering insights into market leaders and industry shifts.
- **Strengths of interactivity:** Enhances user engagement and provides flexibility in data exploration.
- **Limitations:** Certain visual elements may require user guidance for effective interpretation.