IQIC - Quantitative Tools

#11: Visualization

Why Visualize Financial Data?

Patterns are often easier to see than calculate

Quantitative investors use visualizations to:

- Identify trends and unusual movements
- Compare strategies and benchmarks
- Understand risk
- Check whether results make sense

For example, **+12% annual return** tells you the outcome. A performance chart shows **how the portfolio got there over time.**

Performance Charts

Different Charts Answer Different Questions

Price Chart: How has an asset's price changed?

Return Chart: How have returns varied over time?

Cumulative Performance Chart: How has $1 or $100 invested grown?

Strategy vs. Benchmark: Did the strategy outperform its comparison

Choose a chart based on the question you are trying to answer

Visualizing Risk

Returns don’t show the entire journey

A **drawdown chart** shows how far a portfolio is below its previous peak over time.

Example:

> **Portfolio Value:** $100 → $120 → $90 → $125
>
> Maximum Drawdown from $120 → $90: **-25%**

A drawdown chart **makes the size, timing, and duration of losses easier to understand**

Visualizing Risk - Example

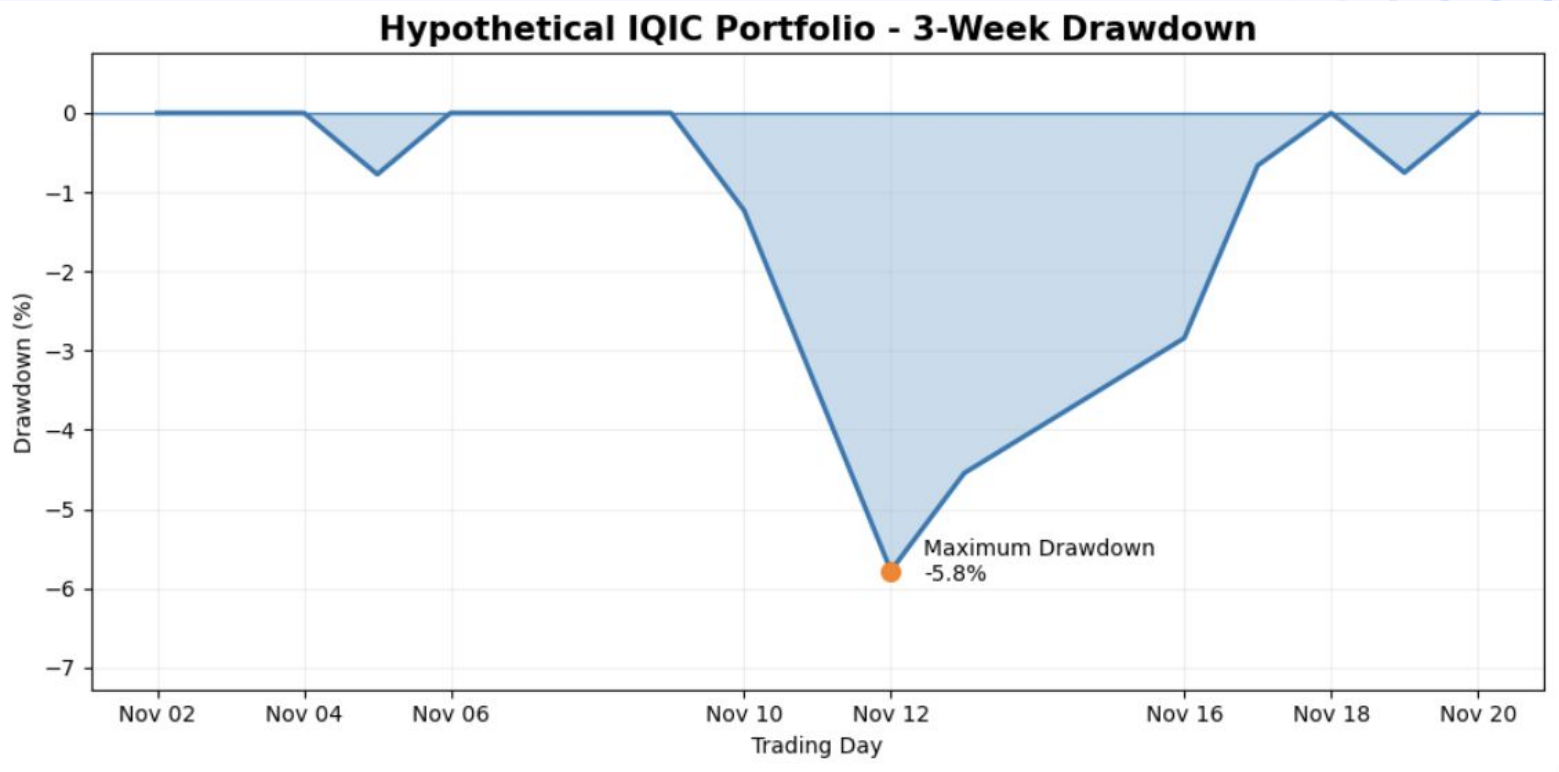


Chart Example - What Happened?

- The portfolio initially climbed from $100,000 to $105,600, establishing a new peak
- A series of losses then pushed i down to $99,500, producing a maximum drawdown of about 05.8%
- The portfolio later recovered above its previous peak and finished at $107,400
- Notice that the **drawdown returns to 0% whenever a new portfolio high is reached**

Good vs. Misleading Visualizations

Good Visualizations	Misleading Visualization
• Clear labels and units • Appropriate scale • Relevant comparison • Consistent timeframe • Shows the complete data needed for context	• Truncated axes exaggerating changes • Different scales used unfairly • Selective time periods • Missing labels or context

Additional Resources

1. **Matplotlib - Tutorials:** Link
   a. Official tutorials for creating and customizing financial and other data visualizations with Python
2. **Python Graph Gallery:** Link
   a. A collection of practical Python chart examples that students can adapt when visualizing financial data