

# Portfolio Risk Analysis Report

**Report Date:** November 07, 2025  
**Portfolio Size:** 21 Assets  
**Analysis Period:** 52 Weeks (Weekly Data)  
**Data Frequency:** Weekly Adjusted Prices  
**Generated by:** Automated Risk Analysis Pipeline

## Risk Assessment Summary

**HIGH RISK (RED):** 12 Assets  
**MEDIUM RISK (YELLOW):** 4 Assets  
**LOW RISK (GREEN):** 5 Assets

## Executive Summary

This report presents a comprehensive risk analysis of a portfolio containing 21 assets with a combined market capitalization of \$17451.0 billion. Analysis is based on weekly adjusted price data covering approximately 52 weeks of trading history. **Key Findings:** • 12 assets (57.1%) are rated as HIGH RISK (RED) • 4 assets (19.0%) are rated as MEDIUM RISK (YELLOW) • Average portfolio volatility (annualized): 41.2% • Maximum drawdown observed: -61.3% **Risk Concentration:** The analysis reveals significant risk concentration in 16 assets requiring immediate attention and potential portfolio rebalancing. **Sentiment Analysis:** • 0 RED-flagged assets show negative market sentiment • Average sentiment score for flagged assets: 0.005 • News coverage indicates heightened market concern for these positions

## Portfolio Overview

### Sector Allocation

Sector	Assets	Market Cap (\$B)	Percentage
Technology	7	12896.38	73.9%
Consumer Discretionary	5	1606.05	9.2%
Consumer Staples	2	1152.15	6.6%
Financial Services	2	713.43	4.1%
Energy	2	483.02	2.8%
Healthcare	1	450.47	2.6%
Industrial	2	149.56	0.9%

## Risk Analysis Results

### Risk Distribution:

- HIGH RISK (RED): 12 assets
- MEDIUM RISK (YELLOW): 4 assets
- LOW RISK (GREEN): 5 assets

### High Risk Assets

Symbol	Sector	Risk Rating	Volatility (Annualized)	Max Drawdown	Risk Score
AMC	Consumer Discretionary	RED	45.2%	-45.2%	4
SNAP	Technology	RED	43.5%	-42.7%	3
BLNK	Energy	RED	78.0%	-57.2%	3
CRM	Technology	YELLOW	30.3%	-33.5%	2
SBUX	Consumer Discretionary	RED	35.9%	-31.3%	2
BA	Industrial	RED	41.8%	-25.9%	2

SHOP	Technology	RED	61.8%	-40.1%	2
PYPL	Financial Services	YELLOW	34.6%	-36.4%	2
TSLA	Consumer Discretionary	RED	51.8%	-45.1%	2
NVDA	Technology	RED	47.2%	-34.7%	2
GME	Consumer Discretionary	RED	49.7%	-35.4%	2
RIVN	Consumer Discretionary	RED	53.3%	-34.8%	2
SPCE	Industrial	RED	95.2%	-61.3%	2
AAPL	Technology	YELLOW	33.4%	-26.2%	1
PG	Consumer Staples	YELLOW	16.6%	-15.3%	1
UBER	Technology	RED	36.9%	-18.6%	1

## Machine Learning Analysis

Advanced machine learning techniques were applied to identify anomalies and predict future risk ratings. **Anomaly Detection Summary:**

- Total Anomalies Detected: 3
- Critical Anomalies: 1
- High Risk Anomalies: 1
- Anomaly Rate: 14.3%

**Risk Prediction Model:**

- Model Accuracy: 85.7%
- Rating Changes Predicted: 1
- Assets Predicted to Deteriorate: 1
- Assets Predicted to Improve: 0

## Key Machine Learning Insights

- 1 assets show critical anomalous behavior requiring immediate review
- 1 assets predicted to deteriorate in risk rating
- Anomaly detection identified 3 assets with unusual patterns
- Key risk drivers: Volatility, Max Drawdown, Rsi

## Critical Anomalies Detected

Symbol	Sector	Anomaly Score	Severity	Recommendation
BLNK	Energy	100.0	CRITICAL	Critical anomaly - Consider immediate po...
SPCE	Industrial	78.5	HIGH	Significant anomaly - Conduct thorough d...

## Predicted Risk Rating Changes

Symbol	Current Rating	Predicted Rating	Confidence	Trend
PYPL	YELLOW	RED	51.0%	DETERIORATING

## Top Risk Factors (Feature Importance)

- 1. Volatility: 32.0% importance
- 2. Max Drawdown: 28.4% importance
- 3. Rsi: 7.6% importance
- 4. Sharpe Ratio: 6.0% importance
- 5. Beta: 5.6% importance

## ML Validation Results

Overall Validation Status: PASS

Checks Passed: 4 / 4

✓ **Anomaly Detection Validation:** PASS

total\_assets: 21, anomalies\_detected: 3, anomaly\_rate: 14.3

✓ **Risk Prediction Validation:** PASS

model\_accuracy: 85.7, predictions\_made: 21, rating\_changes: 1

✓ **Feature Quality Validation:** PASS

features\_checked: 9, nan\_features: 0, total\_samples: 21

✓ **Feature Importance Validation:** PASS

total\_importance: 100.0, top\_feature: Volatility, top\_importance: 32.0

## Sentiment Analysis

Sentiment analysis was conducted on 13 RED-flagged assets using financial news from the past 12 months. **Key Findings:**

- Average sentiment score: 0.005
- Assets with negative sentiment: 0/13
- Total news articles analyzed: 7

## Sentiment Analysis Results

Symbol	Sentiment Score	Label	News Count	Trend	Key Themes
NVDA	-0.187	NEUTRAL	1	DETERIORATING	earnings
BA	0.000	NEUTRAL	0	STABLE	None
UBER	0.000	NEUTRAL	0	STABLE	None
SHOP	0.000	NEUTRAL	0	STABLE	None
TSLA	0.000	NEUTRAL	2	STABLE	None
GME	0.000	NEUTRAL	0	STABLE	None
AMC	0.000	NEUTRAL	0	STABLE	None
RIVN	0.000	NEUTRAL	1	STABLE	earnings
SPCE	0.000	NEUTRAL	0	STABLE	None
BLNK	0.000	NEUTRAL	0	STABLE	None
PYPL	0.000	NEUTRAL	0	STABLE	None
SBUX	0.040	NEUTRAL	1	STABLE	None

SNAP	0.213	NEUTRAL	2	IMPROVING	earnings
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## News Articles Referenced

The following news sources were analyzed to generate sentiment scores:

**AMC** - No recent news articles found

**BA** - No recent news articles found

**BLNK** - No recent news articles found

**GME** - No recent news articles found

**NVDA** - Technology (1 articles analyzed)

1. ■ [Qualcomm reports earnings, revenue beat and issues strong forecast](#) (CNBC US Markets)

**PYPL** - No recent news articles found

**RIVN** - Consumer Discretionary (1 articles analyzed)

1. ■ [Rivian beats Wall Street's Q3 expectations, maintains guidance](#) (CNBC Finance)

**SBUX** - Consumer Discretionary (1 articles analyzed)

1. ■ [Starbucks union authorizes open-ended strike as busy holiday season begins](#) (CNBC Finance)

**SHOP** - No recent news articles found

**SNAP** - Technology (2 articles analyzed)

1. ■ [Snap stock jumps 9% after announcing Perplexity AI deal, reporting strong rev...](#) (CNBC US Markets)
2. ■ [Snap shares rocket 15% on strong forecast, \\$400 million Perplexity deal](#) (CNBC US Markets)

**SPCE** - No recent news articles found

**TSLA** - Consumer Discretionary (2 articles analyzed)

1. ■ [Elon Musk says Tesla needs to build 'gigantic chip fab' to meet AI and roboti...](#) (CNBC Top News)
2. ■ [Tesla says shareholders approve Musk's \\$1 trillion pay plan with over 75% vot...](#) (CNBC Top News)

**UBER** - No recent news articles found

## Detailed Asset Analysis

### Asset: AMC

**Sector:** Consumer Discretionary

**Current Price:** \$2.60

**Market Cap:** \$1.33B

**Risk Rating:** RED

**Risk Metrics:**

- Volatility: 45.2%
- Maximum Drawdown: -45.2%
- Beta: 0.89
- Sharpe Ratio: -1.32

- RSI: 41.3

**Performance:**

- 1-Month Return: -11.9%
- 3-Month Return: -11.3%
- 6-Month Return: -4.8%

**Risk Flags:**

- High Volatility, Extreme Drawdown, Poor Risk Return, Momentum Breakdown

**Market Sentiment:**

- Sentiment Score: 0.000 (NEUTRAL)
- News Articles: 0
- Trend: STABLE

## Asset: SNAP

**Sector:** Technology

**Current Price:** \$8.01

**Market Cap:** \$13.77B

**Risk Rating:** RED

**Risk Metrics:**

- Volatility: 43.5%
- Maximum Drawdown: -42.7%
- Beta: 0.04
- Sharpe Ratio: -0.77
- RSI: 39.5

**Performance:**

- 1-Month Return: 3.0%
- 3-Month Return: 8.1%
- 6-Month Return: -2.9%

**Risk Flags:**

- High Volatility, Extreme Drawdown, Poor Risk Return

**Market Sentiment:**

- Sentiment Score: 0.213 (NEUTRAL)
- News Articles: 2
- Trend: IMPROVING

## Asset: BLNK

**Sector:** Energy

**Current Price:** \$1.51

**Market Cap:** \$0.17B

**Risk Rating:** RED

**Risk Metrics:**

- Volatility: 78.0%
- Maximum Drawdown: -57.2%
- Beta: -1.58
- Sharpe Ratio: 0.27
- RSI: 62.2

**Performance:**

- 1-Month Return: -25.2%
- 3-Month Return: 74.6%
- 6-Month Return: 80.2%

**Risk Flags:**

- High Volatility, Extreme Drawdown, Severe Decline

**Market Sentiment:**

- Sentiment Score: 0.000 (NEUTRAL)
- News Articles: 0
- Trend: STABLE

## Asset: CRM

**Sector:** Technology

**Current Price:** \$239.27

**Market Cap:** \$227.79B

**Risk Rating:** YELLOW

**Risk Metrics:**

- Volatility: 30.3%
- Maximum Drawdown: -33.5%
- Beta: 0.07
- Sharpe Ratio: -1.02
- RSI: 44.0

**Performance:**

- 1-Month Return: -1.0%
- 3-Month Return: -0.3%
- 6-Month Return: -12.8%

**Risk Flags:**

- Extreme Drawdown, Poor Risk Return

## Asset: SBUX

**Sector:** Consumer Discretionary

**Current Price:** \$82.22

**Market Cap:** \$93.48B

**Risk Rating:** RED

**Risk Metrics:**

- Volatility: 35.9%
- Maximum Drawdown: -31.3%
- Beta: -0.76
- Sharpe Ratio: -0.46
- RSI: 45.4

**Performance:**

- 1-Month Return: 4.8%
- 3-Month Return: -10.1%
- 6-Month Return: 3.8%

**Risk Flags:**

- High Volatility, Extreme Drawdown

**Market Sentiment:**

- Sentiment Score: 0.040 (NEUTRAL)
- News Articles: 1
- Trend: STABLE

## Recommendations

Based on the comprehensive risk analysis, the following recommendations are provided:

**Immediate Actions (RED-flagged assets):**

1. Consider reducing position sizes for 12 high-risk assets
2. Implement stop-loss orders to limit further downside exposure
3. Review fundamental analysis for potential divestiture candidates
4. Monitor daily price movements and news flow closely

**Medium-term Actions (YELLOW-flagged assets):**

1. Conduct deeper due diligence on 4 medium-risk assets
2. Consider hedging strategies for positions with high volatility
3. Review correlation with overall portfolio risk

4. Set up enhanced monitoring and alerts

**Portfolio-level Recommendations:**

1. Diversify across sectors to reduce concentration risk
2. Consider alternative investments to reduce correlation
3. Implement systematic risk management framework
4. Schedule monthly portfolio risk reviews

**Sentiment-based Actions:**

1. Monitor news flow for 0 assets with negative sentiment
2. Consider contrarian opportunities if fundamentals remain strong
3. Assess impact of market sentiment on price movements
4. Review analyst coverage and institutional positioning



# Appendix

## Methodology

This risk analysis employs a five-stage pipeline methodology using weekly data: **Stage 1 - Data Ingestion:** • Weekly adjusted price data (~52 weeks of history) • Weekly trading volume information • Market capitalization data • Sector classifications • Data source: Alpha Vantage API (weekly adjusted series) **Stage 2 - Core Analysis:** • Volatility calculation (annualized using  $\sqrt{52}$  factor for weekly data) • Maximum drawdown analysis on weekly cumulative returns • Beta coefficient estimation • Risk-adjusted return metrics (Sharpe ratio, annualized) • Technical indicators (RSI with 14-week period) • Price momentum analysis (4/13/26-week lookback periods) • Volume trend analysis (4/12-week windows) • Rule-based risk flagging system calibrated for weekly data **Stage 3 - ML Analysis:** • Anomaly detection using Isolation Forest algorithm • Risk prediction using Random Forest Classifier • Feature importance analysis • ML validation and quality checks **Stage 4 - Sentiment Analysis:** • News article collection for RED-flagged assets only • Natural language processing for sentiment scoring (TextBlob) • Trend analysis and confidence metrics • Key theme extraction from financial news **Stage 5 - Report Generation:** • Comprehensive risk assessment compilation • Visual data presentation with weekly time axes • Actionable recommendations • Professional PDF report output with CSV exports

## Risk Assessment Thresholds

**RED Flag Thresholds (calibrated for weekly data):** • Volatility > 35% (annualized from weekly returns using  $\sqrt{52}$ ) • Maximum drawdown < -20% • Volume decline > 50% (comparing 4-week vs 12-week averages) • 1-month price decline > 15% **YELLOW Flag Thresholds (calibrated for weekly data):** • Volatility > 22% (annualized from weekly returns using  $\sqrt{52}$ ) • Maximum drawdown < -10% • Volume decline > 30% • Multiple warning indicators present **Sentiment Thresholds:** • Negative sentiment: Score < -0.3 • Positive sentiment: Score > 0.3 • Neutral sentiment:  $-0.3 \leq \text{Score} \leq 0.3$

### Report Generation Details:

- Generated: 2025-11-07 13:02:29
- Analysis Period: 12 months
- Total Assets Analyzed: 21
- Pipeline Version: 1.0

## Test Data - Portfolio Details

Complete portfolio and risk analysis data has been exported to CSV files for further analysis:

**Portfolio Data CSV:** portfolio\_data\_20251107\_130229.csv

**Risk Analysis CSV:** risk\_analysis\_20251107\_130229.csv

The tables below provide summary information for quick reference.

### Performance Metrics Data

Symbol	1M Return	3M Return	6M Return	Vol Decline	Sharpe Ratio
AAPL	10.0%	17.8%	36.2%	-4.5%	0.53
AMC	-11.9%	-11.3%	-4.8%	49.5%	-1.32
BA	-6.8%	-14.2%	0.8%	1.2%	0.76
BLNK	-25.2%	74.6%	80.2%	-24.8%	0.27
CRM	-1.0%	-0.3%	-12.8%	-4.6%	-1.02
GME	-8.4%	-4.1%	-22.5%	-25.9%	-0.44
JNJ	-2.0%	8.7%	23.2%	-3.9%	1.31
MSFT	-2.7%	-4.6%	13.7%	1.9%	0.80
NVDA	2.7%	3.0%	61.3%	-2.2%	0.89
PG	-1.7%	-4.1%	-6.0%	10.5%	-1.18
PYPL	-5.1%	-2.1%	-5.7%	25.8%	-0.71
RIVN	18.9%	29.1%	6.7%	-3.9%	0.66
SBUX	4.8%	-10.1%	3.8%	8.1%	-0.46
SHOP	3.3%	4.3%	70.0%	15.2%	0.78
SNAP	3.0%	8.1%	-2.9%	-49.7%	-0.77
SPCE	-12.5%	15.5%	16.6%	13.5%	-0.38
TSLA	7.8%	35.3%	49.5%	-6.6%	0.74
UBER	-1.4%	2.9%	11.2%	-2.7%	0.84
V	-1.9%	0.2%	-4.1%	-2.1%	0.37
WMT	-0.2%	-1.7%	5.4%	-11.6%	0.48
XOM	3.4%	8.2%	8.7%	-14.4%	0.03

### Risk Flags Details

Symbol	High Vol	Ext. DD	Vol Collapse	Severe Dec	Ext. Dec	Poor Sharpe	Mom. Break
AMC	✓	✓	✗	✗	✗	✓	✓
SNAP	✓	✓	✗	✗	✗	✓	✗
BLNK	✓	✓	✗	✓	✗	✗	✗
CRM	✗	✓	✗	✗	✗	✓	✗

SBUX	✓	✓	✗	✗	✗	✗	✗
BA	✓	✓	✗	✗	✗	✗	✗
SHOP	✓	✓	✗	✗	✗	✗	✗
PYPL	✗	✓	✗	✗	✗	✓	✗
TSLA	✓	✓	✗	✗	✗	✗	✗
NVDA	✓	✓	✗	✗	✗	✗	✗
GME	✓	✓	✗	✗	✗	✗	✗
RIVN	✓	✓	✗	✗	✗	✗	✗
SPCE	✓	✓	✗	✗	✗	✗	✗
AAPL	✗	✓	✗	✗	✗	✗	✗
PG	✗	✗	✗	✗	✗	✓	✗
UBER	✓	✗	✗	✗	✗	✗	✗
MSFT	✗	✗	✗	✗	✗	✗	✗
JNJ	✗	✗	✗	✗	✗	✗	✗
V	✗	✗	✗	✗	✗	✗	✗
WMT	✗	✗	✗	✗	✗	✗	✗
XOM	✗	✗	✗	✗	✗	✗	✗

**Data Summary:**

- Total Assets: 21
- Data Generated: 2025-11-07 13:02:29
- Note: This test data is provided for further analysis, validation, and detailed review purposes.
- All metrics are calculated from 252 trading days of historical data.