

# NVDA - Financial Analysis Report.

## Performance and Risk Assessment for NVIDIA Corporation

Date Period: From 08-12-2021 to 08-11-2025.

Industry: Semiconductors.

MarketCap: 4440.13 Bn.

### Executive Summary:

This report analyzes the daily returns of a financial asset to assess its historical performance and risk profile. Using Python and libraries such as Pandas and NumPy, key descriptive statistics such as mean, standard deviation, skewness, and kurtosis were calculated. The findings reveal the asset's volatility, the probability of extreme price movements, and its risk-adjusted return. This analysis provides a solid foundation for investment decision-making, demonstrating the ability to transform raw data into strategic insights and communicate complex findings concisely.

Tools: Python Libraries: Pandas, Matplotlib, Seaborn, FPDF, Yfinance, Datetime.

Report Date: 08-12-2025

# Returns and Volatility Analysis

## Calculation of the Average Annual Return

Mean Return: Displays the annualized average return.

Average Annual Return: 71.02%

## Calculation of the Annual Standard Deviation

Standard Deviation (Std Dev Return): Displays the annualized standard deviation. This metric is defined as the primary measure of an asset's risk or volatility.

Annual Volatility (Standard Deviation): 55.19%

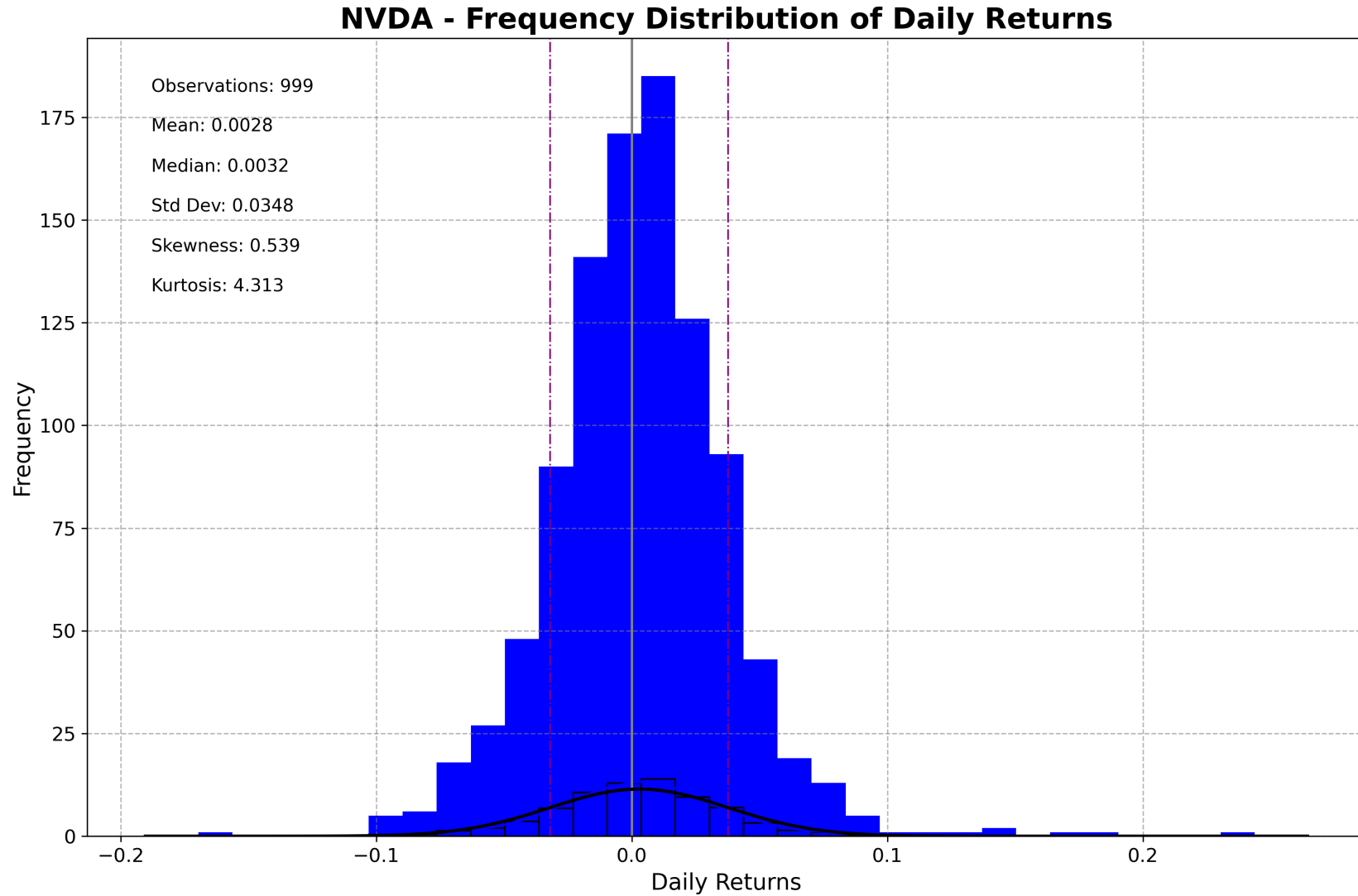
## Sharpe Ratio Calculation

Sharpe Ratio: It explains that this value measures risk-adjusted performance, helping to determine whether the asset's return justifies the volatility it entails.

Annual Risk-Free Rate: 4.00%

Sharpe Ratio: 1.21

## Graphic Analysis



Graph Interpretation: Explain what the histogram shows. State whether the distribution is "normal" or has fat tails, which could indicate a higher risk of extreme events. You may use a caption to describe the graph.

# Definition of terms and concepts

## Skewness: Interpretation

Skewness = 0 (Symmetric Distribution): The distribution is perfectly symmetric, like a normal bell curve. This means that negative and positive returns of the same magnitude are equally likely.

Skewness > 0 (Positive/Right Skew): The tail of the distribution is longer on the right side. This implies that extreme positive returns are more common than extreme negative returns. In the context of returns, this could be perceived as a "positive" factor, as large movements are more often in the upward direction.

Skewness < 0 (Negative/Left Skew): The tail of the distribution is longer on the left side. This suggests that extreme negative returns are more common than extreme positive returns. In finance, this is a sign of risk, as it indicates a higher probability of large losses or occasional crashes.

## Kurtosis: Interpretation

Kurtosis is interpreted by comparing the distribution of returns with a normal distribution (bell curve). In modern statistics, excess kurtosis is used, which is kurtosis minus 3 (since the kurtosis of a normal distribution is 3).

Mesokurtic (Excess kurtosis = 0): The distribution is similar to a normal distribution. Extreme returns are as likely as would be expected in a normal model.

Leptokurtic (excess kurtosis > 0): The distribution has a higher peak and heavier tails than the normal distribution. This means there is a greater concentration of returns around the mean, but also a higher probability of extreme events, both positive and negative. In finance, this is a sign of risk, as market shocks (large drops) are more likely.

Platykurtic (Excess kurtosis < 0): The distribution is flatter and has thinner tails than the normal distribution. This indicates that the data are less concentrated around the mean, and extreme returns are less likely. The asset's volatility is more stable and predictable.

## Std Deviation: Interpretation

Standard deviation indicates the volatility of a financial asset. It's a measure of dispersion that shows how evenly distributed returns are relative to the average return.

Low standard deviation: The histogram has a narrower, taller shape. This means that daily returns tend to cluster around the mean. An asset with a low standard deviation is considered less volatile and therefore less risky, as its prices are more stable and predictable..

High standard deviation: The histogram is wider and flatter. This indicates that returns are more dispersed, deviating more frequently from the average. An asset with a high standard deviation is more volatile and considered riskier, as its prices experience larger and more sudden fluctuations.

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## Mean Ret: Interpretation

The mean indicates the central tendency of the data. In simple terms, it is the average return a financial asset has generated over a period of time.

Positive Value (+): A positive average return suggests that the asset has generally generated profits over the period analyzed. The majority of the histogram would be concentrated on the right side, although this can be influenced by skewness.

Negative Value (-): A negative average return indicates that the asset has lost value on average. The histogram would shift to the left of zero.

## Median Ret: Interpretation

The median, in the context of a histogram of daily returns, tells us the middle value of the data. It is the return that divides the distribution into two halves, so that 50% of the returns are less than or equal to the median and 50% are greater than or equal to it.

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Difference between Median and Average Return (Mean).

**Median = Mean:** If the median and mean are nearly equal, the distribution is relatively symmetrical, meaning that extreme returns are not significantly skewing the average.

**Median > Mean:** If the median is greater than the mean, the distribution has a negative skew (long tail on the left). This is common in financial markets, where sudden, sharp drops can drag down the average return, while the median reflects the "typical" return that the asset experiences most frequently.

## **Sharpe Ratio: Interpretation**

The Sharpe Ratio is a financial measure that tells you the risk-adjusted performance of an investment. Its purpose is to determine how well an investment compensates the investor for the risk they are taking. In simple terms, the Sharpe Ratio measures the amount of return you get for each unit of risk (volatility or standard deviation). It is the return that divides the distribution into two halves, so that 50% of the returns are less than or equal to the median and 50% are greater than or equal to it.

**Sharpe Ratio > 1:** Generally considered a good risk-adjusted return. It indicates that the asset is generating a return above the risk-free rate and is adequately offsetting the associated volatility.

**Sharpe Ratio < 1:** Indicates that the asset isn't generating a return high enough to justify the risk assumed. You could be getting a better risk-adjusted return from a safer investment.

**Negative Sharpe Ratio:** A negative value means the asset's return is even lower than the risk-free rate. In this case, the investment doesn't compensate for the risk at all.