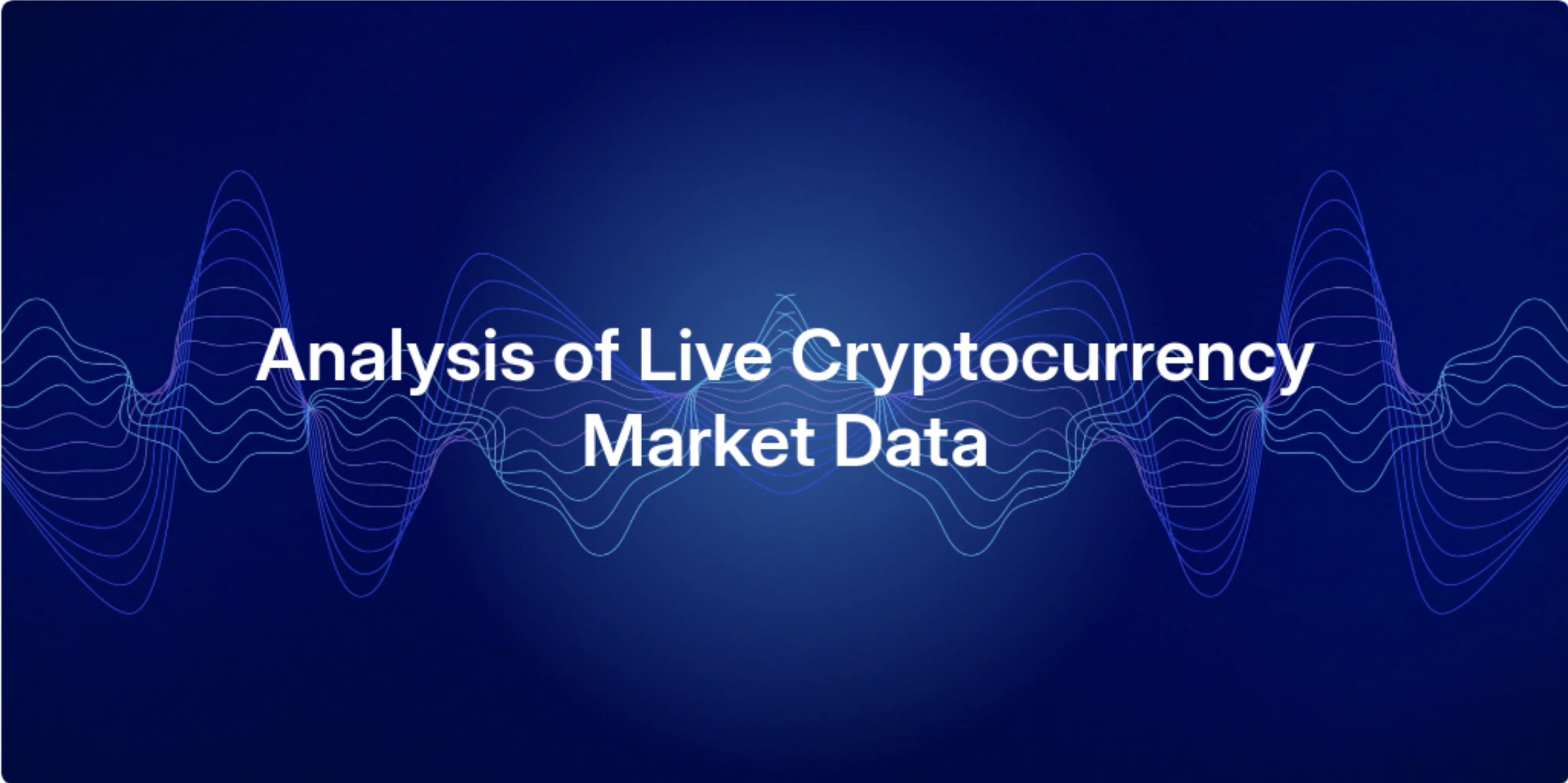


Analysis of Live Cryptocurrency Market Data



About the dataset

The dataset provides a snapshot of the live cryptocurrency market, focusing on key metrics for various digital currencies. The primary columns include the cryptocurrency name and symbol, current price, market capitalization, total trading volume, and the percentage change in price over the last 24 hours. The data encompasses 50 entries, with notable cryptocurrencies such as Bitcoin, Ethereum, and Tether among the sample data.

From the sample data, Bitcoin stands out with the highest current price of 98,191.00 and a market cap of over 1.9 trillion, indicating its dominant position in the market. Ethereum follows with a significant market cap of approximately 327 billion and a current price of 2,709.89. Tether, known for its stability, maintains a price close to 1.00, reflecting its role as a stablecoin. The dataset reveals a wide range in market caps, from a minimum of around 2.8 billion to a maximum of nearly 1.95 trillion, highlighting the diversity in market presence among cryptocurrencies.

The average price change percentage over 24 hours is 3.42%, with Bitcoin showing a modest increase of 0.31% and Solana experiencing a slight decrease of 0.06%. This variability underscores the volatile nature of the cryptocurrency market. Overall, the data provides valuable insights into the current state and dynamics of the cryptocurrency market, offering a comprehensive view of its key players and their market performance.

Relevant Inquiries

Q1.What is the distribution of current prices among different cryptocurrencies, and how does it compare to the mean and standard deviation?

Statistical Analysis

- **Mean Price:** The mean current price of cryptocurrencies is approximately **\$4,258.60**.
- **Standard Deviation:** The standard deviation is approximately **\$19,367.30**, indicating a wide spread in the price distribution.

Visualization Insights

- **Histogram Overview:** The histogram shows the distribution of current prices among different cryptocurrencies.
- **Mean and Standard Deviation Overlay:** The mean is marked with a black dashed line, while the red dashed lines represent one standard deviation above and below the mean. The wide spread of the standard deviation suggests significant variability in cryptocurrency prices.

Conclusion and Insights

- **Price Variability:** The large standard deviation compared to the mean indicates high variability in cryptocurrency prices, suggesting that prices are spread out over a wide range.
- **Distribution Shape:** The histogram suggests that the distribution may not be normal, as the standard deviation is much larger than the mean, potentially indicating outliers or a skewed distribution.

Q2.Analyze the relationship between the total volume and the market cap of cryptocurrencies. How does trading volume impact the market cap?

Correlation and Regression Analysis

- **Correlation:** The correlation between total volume and market cap is approximately **0.63**, indicating a moderate positive relationship. This suggests that as the trading volume increases, the market cap tends to increase as well, but not strongly.
- **Regression Slope:** The slope of the regression line is **20.64**, meaning that for each unit increase in total volume, the market cap increases by approximately 20.64 units.
- **Regression Intercept:** The intercept is **10,815,124,920.01**, representing the estimated market cap when the total volume is zero.

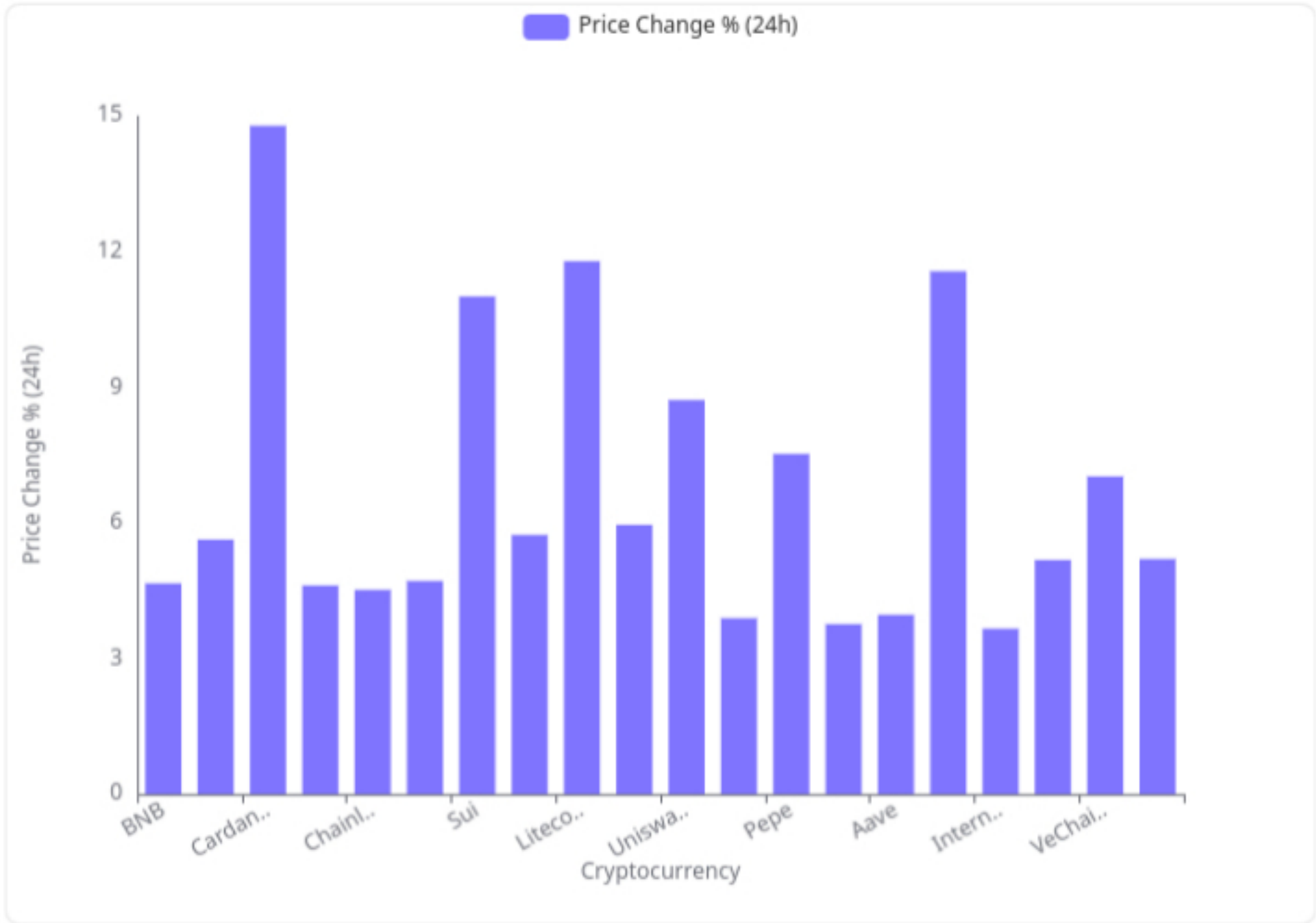
Visualization Insights

- **Scatter Plot:** The scatter plot shows a spread of data points with a regression line that is relatively flat, indicating that while there is a positive relationship, it is not very strong.
- **Regression Line:** The red regression line illustrates the average trend, but the wide dispersion of data points suggests variability in the relationship.

Conclusion and Insights

- **Moderate Positive Relationship:** There is a moderate positive correlation between total volume and market cap, suggesting that higher trading volumes are generally associated with higher market caps.
- **Variability in Impact:** The scatter plot indicates significant variability, meaning other factors might also influence market cap beyond trading volume alone.

Q3.Which cryptocurrencies have experienced the highest price change percentage in the last 24 hours, and how do they compare to the average change?



Significant Price Changes

- **Average Price Change:** The average price change percentage in the last 24 hours is approximately **6.69%**.
- **Cryptocurrencies with Significant Changes:**
 - **Cardano (ADA):** 14.77%
 - **Litecoin (LTC):** 11.78%
 - **Sui (SUI):** 11.00%
 - **Aave (AAVE):** 11.56%

These cryptocurrencies have experienced price changes significantly above the average.

Visualization of Price Changes

- The bar chart illustrates the price change percentages for various cryptocurrencies.
- **Cardano** shows the highest increase, followed by **Litecoin**, **Sui**, and **Aave**.

Conclusion and Insights

- **Key Observations:** Cardano, Litecoin, Sui, and Aave have experienced the most significant price changes, well above the average of 6.69%.
- **Market Dynamics:** These changes may indicate increased market activity or news affecting these specific cryptocurrencies. Monitoring such trends can provide insights into potential investment opportunities.

Q4.Analyze the correlation between the current price of cryptocurrencies and their market cap. How does this relationship compare to the one between total volume and market cap?

Correlation between Current Price and Market Cap

- **Correlation Value:** The correlation between the 'current_price' and 'market_cap' is **0.68**. This indicates a **moderate positive relationship**, suggesting that as the current price of a cryptocurrency increases, its market cap tends to increase as well.

Correlation between Total Volume and Market Cap

- **Correlation Value:** The correlation between the 'total_volume' and 'market_cap' is **0.63**. This also indicates a **moderate positive relationship**, implying that higher trading volumes are associated with larger market caps.

Conclusion and Insights

- **Comparison of Relationships:** Both the current price and total volume show a moderate positive correlation with market cap, with the current price having a slightly stronger relationship (0.68) compared to total volume (0.63). This suggests that while both factors are important, the current price might have a slightly more significant impact on the market cap of cryptocurrencies.
- **Implications for Investors:** Investors might consider focusing on the current price as a slightly more influential factor when assessing the potential market cap of a cryptocurrency, although trading volume remains an important metric to consider.

Q5.What are the outliers in terms of current price, and how do they affect the overall mean and standard deviation?

Identification of Outliers

- **Outliers Identification:** Outliers in the 'current_price' column were identified using the IQR method. The lower and upper bounds were calculated to filter out these outliers.

Effect on Mean and Standard Deviation

- **Mean Before Removing Outliers:** The mean of 'current_price' before removing outliers was **4258.60**.
- **Standard Deviation Before Removing Outliers:** The standard deviation was **19367.30**, indicating a wide spread due to outliers.
- **Mean After Removing Outliers:** After removing outliers, the mean dropped significantly to **44.58**.
- **Standard Deviation After Removing Outliers:** The standard deviation also decreased to **98.93**, showing a more consistent dataset.

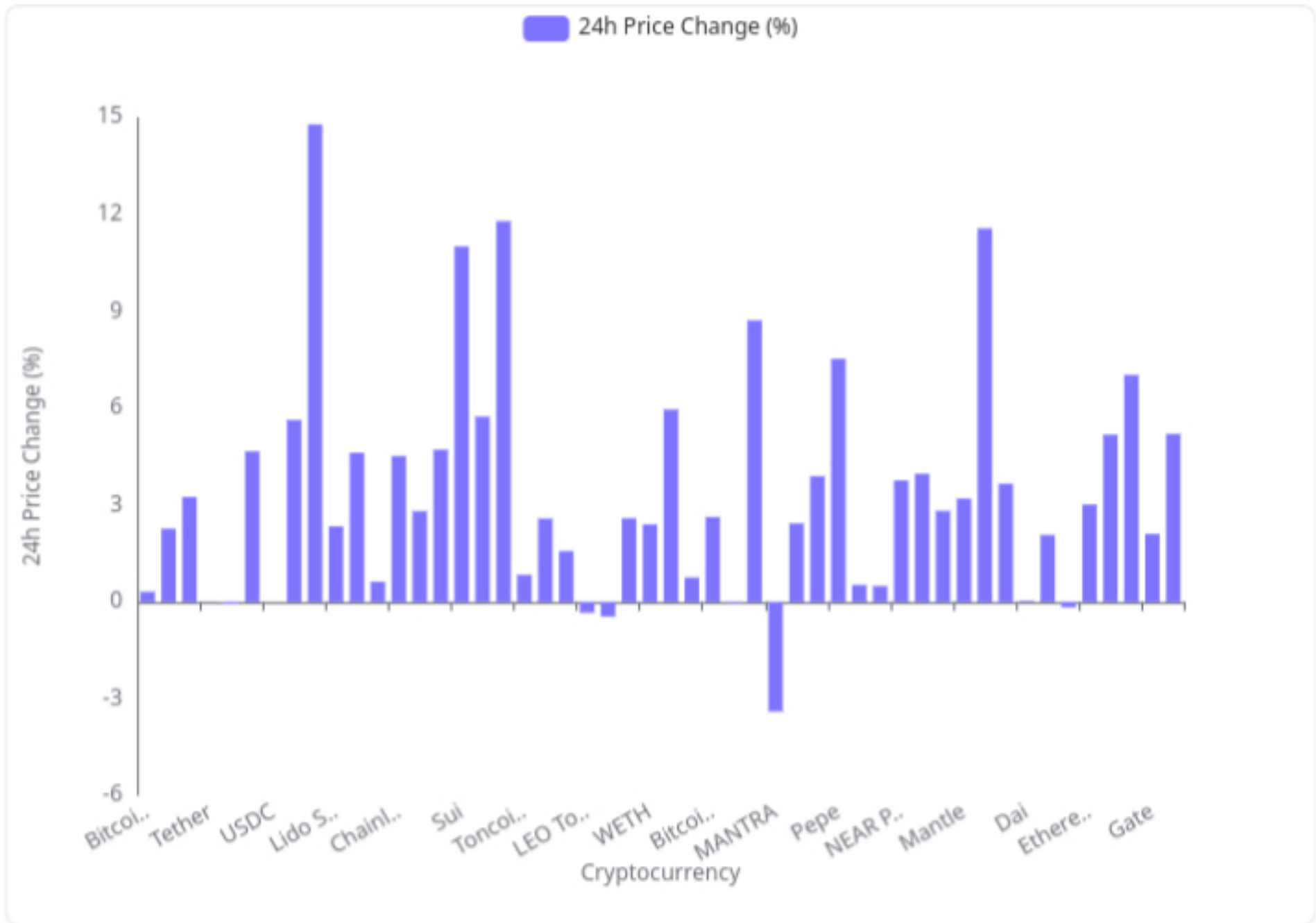
Visualization of Distribution

- **Box Plot Analysis:** The box plots illustrate the distribution of 'current_price' with and without outliers. The presence of outliers significantly skews the data, affecting the mean and standard deviation.

Conclusion and Insights

- **Impact of Outliers:** Outliers had a substantial impact on the overall mean and standard deviation, inflating both metrics significantly.
- **Data Consistency:** Removing outliers resulted in a more consistent dataset, as evidenced by the reduced mean and standard deviation.

Q6.How does the price change percentage in the last 24 hours vary across different cryptocurrencies?



Statistical Overview

- **Mean Change:** The average price change percentage across cryptocurrencies is **3.42%**.
- **Standard Deviation:** The variation in price change is **3.56%**, indicating moderate volatility.
- **Range:** The price change percentage ranges from **-3.39%** to **14.77%**.

Detailed Observations

- **Highest Increase:** Cardano experienced the highest increase at **14.77%**.
- **Significant Decreases:** MANTRA saw the largest decrease at **-3.39%**.
- **Notable Increases:** Cryptocurrencies like Litecoin and Sui also showed significant increases, with changes of **11.78%** and **10.99%** respectively.

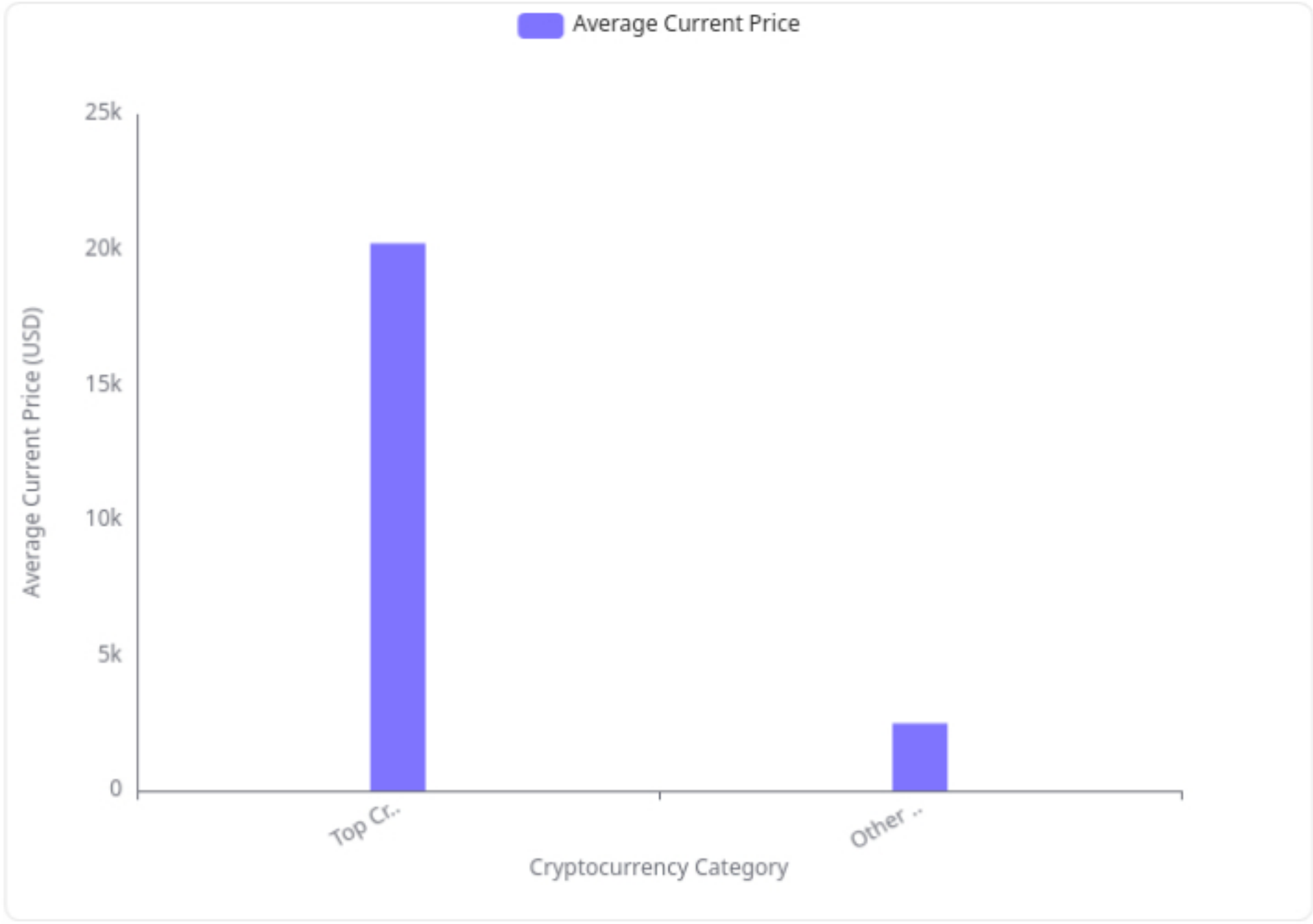
Visualization Insights

- **Distribution:** The bar chart shows a wide distribution of price changes, with several cryptocurrencies experiencing increases above **10%**.
- **Negative Changes:** A few cryptocurrencies, such as MANTRA, experienced negative changes, indicating a decline in price.

Conclusion and Insights

- **Volatility:** The data indicates a high level of volatility in the cryptocurrency market, with significant fluctuations in price changes over a 24-hour period.
- **Investment Consideration:** Investors should be aware of the potential for both high gains and losses, as demonstrated by the wide range of price changes.

Q7.Which cryptocurrencies have the highest market cap, and how does their current price compare to others?



Average Current Price Analysis

- **Top Cryptocurrencies:** The average current price is **\$20,221.75**.
- **Other Cryptocurrencies:** The average current price is **\$2,484.92**.

Visualization of Price Comparison

- The bar chart clearly shows that **top cryptocurrencies** have a significantly higher average current price compared to **other cryptocurrencies**.

Conclusion and Insights

- **Price Disparity:** There is a substantial difference in the average current price between top cryptocurrencies and others, with top cryptocurrencies being much more expensive.
- **Market Influence:** The higher prices of top cryptocurrencies may reflect their market dominance and perceived value compared to lesser-known cryptocurrencies.

Q8.What is the trend in total volume for the top 5 cryptocurrencies by market cap?

Total Volume Analysis

- **Top 5 Cryptocurrencies:** The top 5 cryptocurrencies by market cap are Bitcoin, Ethereum, XRP, Tether, and Solana.
- **Total Volume Statistics:** The mean total volume is approximately 21.56 billion, with a standard deviation of 19.12 billion. The total volume ranges from a minimum of 3.93 billion to a maximum of 47.88 billion.

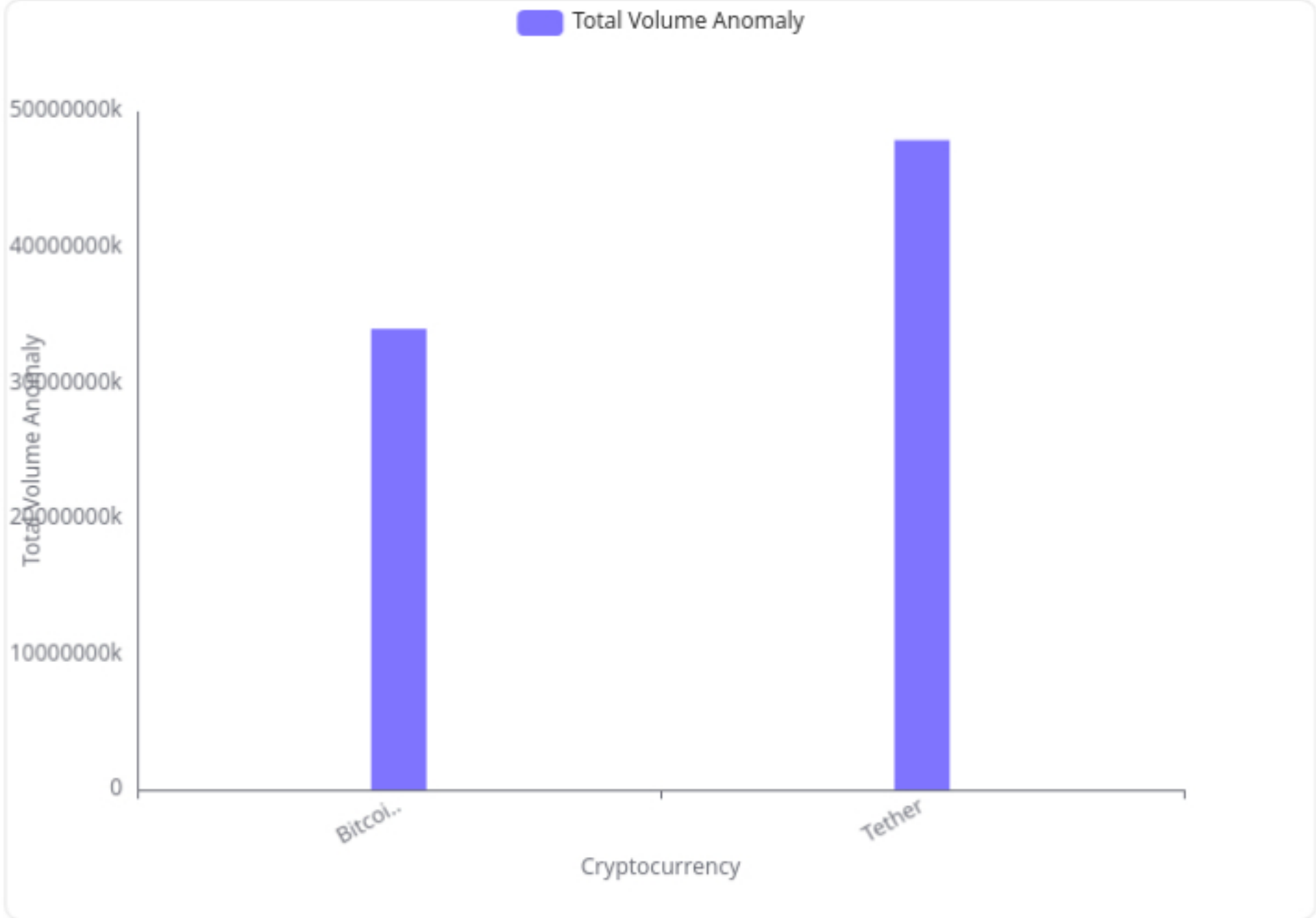
Visualization Insights

- **Bitcoin and Tether:** These cryptocurrencies have the highest total volumes, with Tether leading at approximately 47.88 billion.
- **Ethereum, XRP, and Solana:** These have lower total volumes, with Ethereum at around 17.43 billion, XRP at 3.93 billion, and Solana at 4.61 billion.

Conclusion and Insights

- **Volume Leaders:** Tether and Bitcoin dominate in terms of total volume, indicating higher trading activity.
- **Volume Variation:** There is significant variation in total volume among the top 5, with Tether and Bitcoin having substantially higher volumes compared to the others.

Q9.Are there any anomalies in the total volume data that could indicate unusual trading activity?



Statistical Analysis

- **Mean and Standard Deviation:** The mean of the total volume anomaly is approximately 40,925,398,559.50, with a standard deviation of 9,838,925,707.69.
- **Identified Anomalies:** Two cryptocurrencies, Bitcoin and Tether, have been identified with total volume anomalies. Bitcoin has a total volume anomaly of 33,968,227,472.00, and Tether has 47,882,569,647.00.

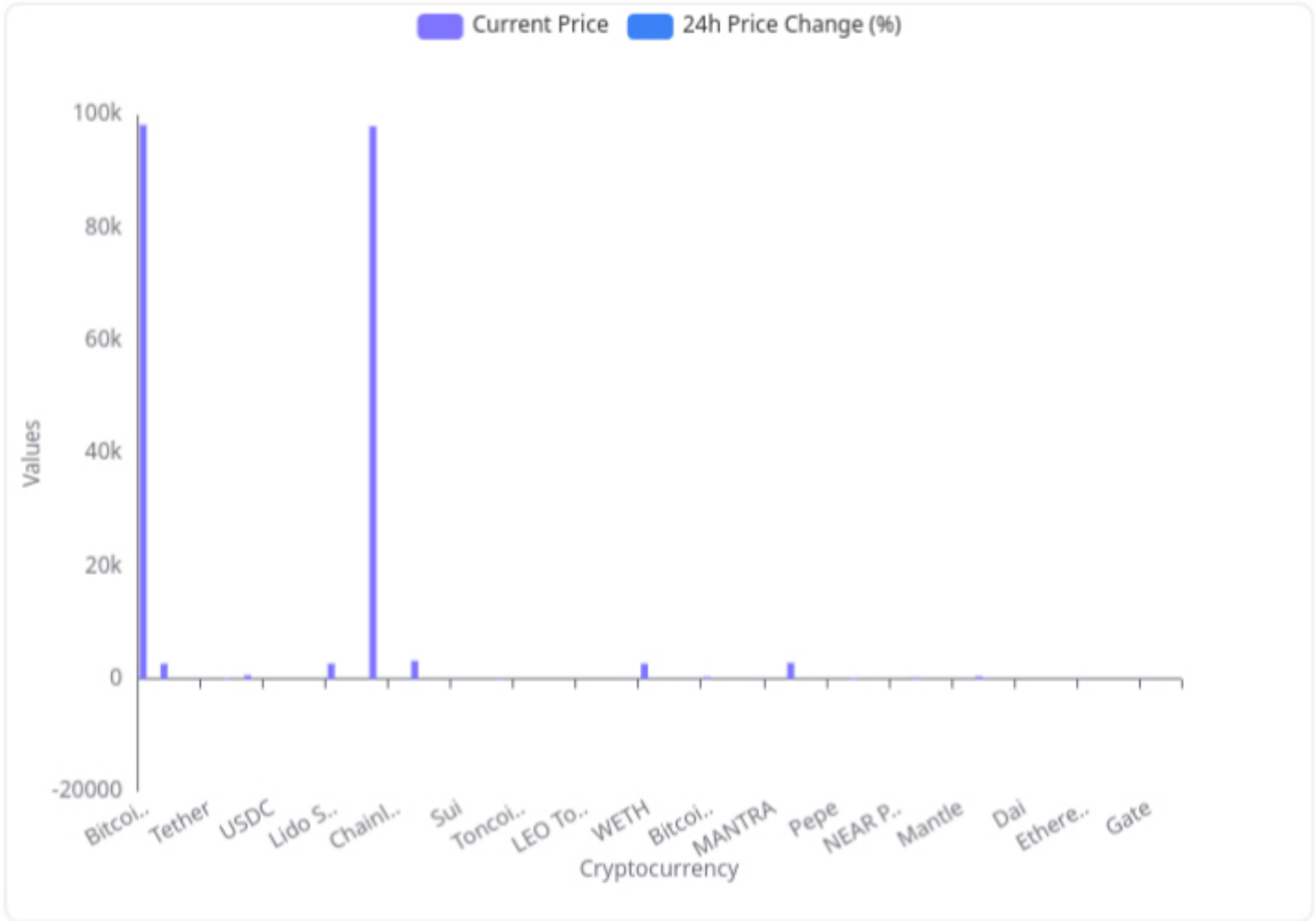
Visualization

- **Graphical Representation:** The bar chart highlights the anomalies in total volume for Bitcoin and Tether, showing significant deviations from the mean.

Conclusion and Insights

- **Unusual Trading Activity:** The identified anomalies in the total volume for Bitcoin and Tether suggest unusual trading activity, as these values significantly deviate from the calculated mean.
- **Further Investigation:** These anomalies warrant further investigation to understand the underlying causes, which could include market events or external influences affecting trading volumes.

Q10.How does the current price of Bitcoin compare to other cryptocurrencies in terms of percentage change over the last 24 hours?



Current Price and 24h Change

- **Bitcoin's Current Price:** Bitcoin has the highest current price among the listed cryptocurrencies at **98191.0**.
- **24h Price Change:** Bitcoin's percentage change over the last 24 hours is **0.30679%**, which is relatively low compared to other cryptocurrencies.

Comparison with Other Cryptocurrencies

- **Price Comparison:** Bitcoin's price is significantly higher than most other cryptocurrencies, with only Wrapped Bitcoin having a comparable price.
- **Percentage Change:** Many other cryptocurrencies have experienced higher percentage changes over the last 24 hours. For example, Solana and Dogecoin have changes of **14.7744%** and **5.62579%**, respectively.

Conclusion and Insights

- **Bitcoin's Stability:** Despite having the highest price, Bitcoin's percentage change is relatively stable compared to other cryptocurrencies, indicating less volatility.
- **Market Dynamics:** Other cryptocurrencies show more significant fluctuations in percentage change, suggesting higher volatility and potential for short-term gains or losses.