

## Executive Report: Bitcoin and Cryptocurrencies Dataset Analysis

### Introduction

Since the introduction of Bitcoin in 2008, the cryptocurrency market has expanded significantly, with many new coins emerging, each based on blockchain technology. Cryptocurrencies, while volatile, have demonstrated considerable potential for value, with Bitcoin reaching a market capitalization of over \$200 billion in December 2017.

### Dataset Overview

The analysis begins with a dataset obtained from CoinMarketCap on December 6, 2017, detailing various cryptocurrencies and their market metrics. The dataset includes information on market capitalization, volume, rank, and price, among other indicators. However, not all cryptocurrencies in the dataset have a known market capitalization, necessitating a filtering process.

### Data Preprocessing

The dataset is first cleaned to remove cryptocurrencies with missing market capitalization values. This is done by filtering out rows with NaN values in the 'market\_cap\_usd' column. After this step, the dataset only includes cryptocurrencies with a valid market capitalization.

### Bitcoin's Market Dominance

At the time of analysis, Bitcoin continued to be the dominant cryptocurrency by market capitalization. A barplot visualization of the top 10 cryptocurrencies by market capitalization was generated, showing Bitcoin's overwhelming share of the market. A log-scale transformation was applied to better highlight the distribution among the top coins. The barplot used color coding to categorize cryptocurrencies based on similarities, such as Bitcoin forks (e.g., Bitcoin Cash) and Ethereum-based smart contract platforms (e.g., Cardano).

### Volatility Analysis

The cryptocurrency market is renowned for its volatility. A closer look at the 24-hour and 7-day percentage changes in cryptocurrency values reveals dramatic fluctuations. This volatility is significant for market participants, as it can lead to rapid gains or losses. Cryptocurrencies like IOTA, Monero, and EOS experienced large percentage changes, both positive and negative, highlighting the unpredictable nature of the market.

### Conclusion

Bitcoin remains the leader in market capitalization within the cryptocurrency space, although its dominance is challenged by various competitors offering unique technologies. The cryptocurrency market's volatility is evident, with large fluctuations in value over short periods. Investors must exercise caution and conduct thorough research before entering the market.