BTC Fair and Greed

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# BTC Fair and Greed Dataset

This dataset specifically includes daily closing prices of Bitcoin, as well as daily volumes of Bitcoin, and the Fear and Greed Index values for the overall crypto market. It was collect from Yahoo Finance and Alternative.me.

# Attributes of the dataset :

Date of closing price

fear and greed index value

fear and greed classification(fear, Extreme Fear, Neutral, Greed, Extreme Greed)

Closing price

BTC volume.

# Plans for data exploration

The plan for data exploration were:

1. Visualize the data
2. Clean the data
3. Formulate hypothesis
4. Test hypothesis

# Visualize the data

Chart, bar chart

Description automatically generated

Firstly the number of days for each fear and greed classifiers were plotted in a histogram. Then used a line graph to plot the closing price of BTC over the year.

For almost two years, there were more days when traders were afraid than any other emotion. Individuals experienced a state of extreme fear for 520 days, while feelings of greed dominated for 320 days. There were around 190 days where both extreme greed and neutral emotions were present.

Chart

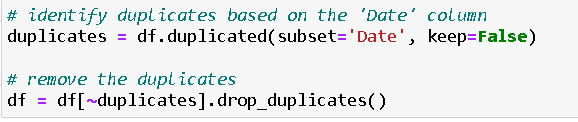
Description automatically generated

According to the line graph, there was an increase in the price of Bitcoin from 2021 to 2022. It is speculated that this increase was influenced by the COVID-19 pandemic, as many people were staying at home during this time. Additionally, there was a high level of greed among investors during this period. The graph also suggests that when the prices of Bitcoin decrease, fear among investors tends to increase, and vice versa.

# Cleaning the data

To clean the data various methods were use such as standardization and delete.

## Duplicates



The dataset was inspected for duplicate entries by comparing the values in the Date column, which is assumed to be unique. Once the duplicate rows were identified, they were removed from the dataset, using the drop\_duplicates() method.

## Normalization

Logo, company name

Description automatically generated

In the above code initially the 'Date' column to a datetime object using the to\_datetime() method from pandas library. This converts the Date column values to a standardized datetime format, which makes it easier to work with dates in the analysis.

In the next part of the code Normalizing the 'Value' column to be between 0 and 1 by subtracting the minimum value of the 'Value' column from each value in the column, then dividing by the range of the 'Value' column (the difference between the maximum and minimum values). This normalization step helps to put all the values in the 'Value' column on a comparable scale, which can be helpful for analysis and visualization purposes. The normalized values are stored in a new column called 'Value\_Norm'.

# Hypothesis

## Hypothesis 1

Hypothesis: The volume of BTC traded on weekends is significantly different from the volume of BTC traded on weekdays.

Null hypothesis: There is no significant difference in the average volume of BTC traded between weekends and weekdays.

## Hypothesis 2

Hypothesis: The value of BTC was significantly higher during 2022 then the previous years.

Null hypothesis: There was no difference between price during 2022 and the previous years.

## Hypothesis 3

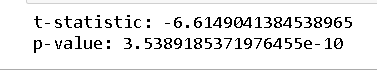
Hypothesis: the average BTC closing price during periods of extreme fear is significantly different from the average BTC closing price during periods of extreme greed.

Null hypothesis: there is no significant difference in the average BTC closing price between these two periods, while the alternative hypothesis would be that there is a significant difference.

To test this hypothesis, the researcher can use a two-sample t-test. By comparing the mean BTC closing price during periods of extreme fear to the mean BTC closing price during periods of extreme greed, the researcher can determine if there is a statistically significant difference between the two.

In this case, the t-statistic suggests that the difference in means between extreme fear and extreme greed periods is significant, as it is more than 6 standard errors away from zero. The p-value is extremely small (3.5389185371976455e-10), which indicates that there is strong evidence against the null hypothesis and we can reject it in favor of the alternative hypothesis.

Therefore, we can conclude that there is a significant difference in the average BTC closing price between periods of extreme fear and extreme greed.



# Conclusion

Adequate data cleaning has been performed on the BTC Fear and Greed dataset, making it suitable for analysis without requiring significant further cleaning. This dataset can serve as a valuable tool for novice analysts to gain experience in data analysis.