

How Useful is the Crypto Fear and Greed Index When Making Cryptocurrency Investment Decisions

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Abstract:

An analysis of the relationships of both the price and trading volume of Bitcoin, Ethereum, Cardano, Avalanche and Dogecoin with the Crypto Fear and Greed Index, whether the Index is used as a comparison with future prices or measured over a series of previous days, provides very patchy results, with very little agreement between cryptocurrencies. The clearest results are derived when the Index is divided into greed, mid-range and fear but even then, nothing is consistent. Measuring relationships over long periods should be avoided, but when divided into smaller groups, such as months, adjacent months can have totally different outcomes. The Crypto Fear and Greed Index may give investors some idea of the current perception of some aspects of the cryptocurrency market but it is not useful as a tool for making investment decisions.

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1.0 Introduction

The original Fear and Greed Index was developed by CNNMoney to measure market sentiment that influences how much investors are prepared to pay for stocks. It is based on the premise that greed can result in stocks trading above their worth and fear can result in stocks trading below their intrinsic value. They use a number of variables to gauge fear and greed in the market, such as: the S&P500 versus its 125 day moving average; the number of stocks reaching a 52 week high; trading volume; put and call option trading; junk bond demand; market volatility; and the difference in stock returns versus treasury bills. Each of the above are measured on a scale of 0 to 100 and an average score is calculated.¹

From the original Fear and Greed Index the Crypto Fear and Greed Index was developed, focusing on the behaviour of Bitcoin. It is published by the website **alternative.me** and uses a number of sources to gauge current crypto market sentiment:

- The current value of Bitcoin is compared to its average value over the previous 30 and 90 days. (25%)
- Volume of Bitcoin over the last 30 and 90 days (25%)
- Social media sentiment on Bitcoin trading (15%)
- Bitcoin's share of the crypto market (10%)
- Search trends relevant to Bitcoin (10%)
- Surveys of 2,000-3,000 market participants. (15%, but currently paused)

While the Fear and Greed Index for the stock market relates to a stock's intrinsic value, this is not the case in the crypto market which has no intrinsic value and where coins are traded for a price at which someone else is prepared to pay. The Crypto Fear and Greed Index may measure past performance and current sentiment but can it be used to make investment decisions that relate to future performance and does it apply to other crypto currencies given all the source material relates to Bitcoin. An extensive search of the literature finds no research relevant to the performance of the Crypto Fear and Greed Index.

¹ More details can be found at <https://www.investopedia.com/terms/f/fear-and-greed-index.asp>

The data used in this analysis are described in Section 2 and the methodology in Section 3, Details of the analysis of five cryptocurrencies are covered in Section 4 and a summary and conclusions are presented in Section 5.

2. Data

In order to test the usefulness of the Crypto Fear and Greed Index, five cryptocurrencies are sampled from January 2021 to December 2022: Bitcoin, Ethereum, Cardano, Avalanche and Dogecoin. All except Avalanche are extracted from data supplied by *investing.com* while Avalanche is taken from *coinmktcap.com/currencies/avalanche* as the daily Avalanche data available on *investing.com* is incomplete. For each cryptocurrency the following daily data is extracted: opening, highest, lowest and closing prices as well as the daily trading volume. All are expressed in US dollars.

The Crypto Fear and Greed Index is taken from the graph supplied by *alternative.me* (<https://alternative.me/ctryptos/fear-and-greed-index/>) covering the period December 2020 to December 2022. The extra data in December 2020 is used:

- when examining the ability of the Crypto Fear and Greed Index to predict prices in the days ahead; and
- estimating the change in the Crypto Fear and Greed Index over a number of days and testing it against the current crypto price.

3. Methodology

As none of the price data nor the Crypto Fear and Greed Index are normally distributed, Spearman Rank correlations are used to test the ability of the Crypto Fear and Greed Index to predict future prices, one day, five days and 10 days ahead. Dancy and Reidy (2004) are used to interpret the Spearman Rank correlation outcomes. Table 1 details their findings that apply whether the outcome is positive or negative.

Table 1
Spearman Rank Correlation Details from Dancy and Reidy (2004)

Spearman ρ	Correlation	Designation
≥ 0.70	Very strong relationship	VS
0.40 – 0.69	Strong relationship	S
0.30 – 0.39	Moderate relationship	M
0.20 – 0.29	Weak relationship	
0.01 – 0.19	No or negligible relationship	

As results can vary depending on the size of the estimation period, a range of periods are analysed:

- The total 2021 – 2022 period (24 months);
- 2021 and 2022 separately (365 days each);
- Each month in 2021 and 2022 (28 to 31 days depending on the month);

- Periods when the Crypto Fear and Greed Index is ≥ 75 (extreme greed) or ≤ 25 (extreme fear). There are 93 days at ≥ 75 and 278 days at ≤ 25 , leaving 359 days when the Index ranges from 26 to 74.

Three perspectives are used in the analysis:

- whether the Crypto Fear and Greed Index has any impact on future prices and trading volume, one day, five days and 10 days ahead as well as the current day;
- whether changes in the Crypto Fear and Greed Index, measured from the previous day, over the previous five days or the previous 10 days, impact on the current price and trading volume; and
- whether the relationship between the Crypto Fear and Greed Index and price and trading volume differ across the three levels of the Index: fear, greed and mid-range.

4. Analysis

Each of the five crypto currencies are analysed separately to enable a comparison between them. Each are designed for a specific purpose:

- Bitcoin was originally designed by Nakamoto (2009) as a payments system.
- Ethereum was designed with smart contract functionality.
- Cardano was launched in 2017 using a proof-of-stake protocol rather than a proof-of-work protocol which is considered a greener alternative.
- Avalanche is a decentralized, open-source proof-of-stake blockchain with smart contract functionality.
- Dogecoin was originally created as a 'joke' payments system, but despite its origins it is considered, by some, as a legitimate investment.

4.1 Bitcoin

The construction of the Crypto Fear and Greed Index is based entirely on the behaviour and sentiment of Bitcoin. Bitcoin prices make up 60% of the index with the remaining 40% based on Bitcoin's market sentiment.

4.1.1 Bitcoin and the Crypto Fear and Greed Index

Table 2 is an analysis of the whole two year period: 2021 – 2022. Using the correlation output as interpreted by Dancey and Reidy (2004) we find a strong relationship between The Crypto Fear and Greed Index and Bitcoin prices which declines as we look further and further ahead; through one day, 5 days and 10 days. This relationship holds for opening, highest, lowest and closing prices but with trading volume the relationship is negative and negligible.

Table 2
Spearman Rank Correlations Between the Crypto Fear and Greed Index
and Bitcoin Prices and Trading Volume
January 2021 to December 2022

Crypto Fear and Greed Index	Volume	Opening Prices	Highest prices	Lowest Prices	Closing Prices
Same Day	-0.1856	0.6040 ^s	0.6032 ^s	0.6003 ^s	0.6000 ^s
1 Day ahead	-0.1687	0.5967 ^s	0.5967 ^s	0.5940 ^s	0.5977 ^s
5 Days Ahead	-0.1403	0.5892 ^s	0.5938 ^s	0.5826 ^s	0.5918 ^s
10 Days Ahead	-0.1441	0.5872 ^s	0.5883 ^s	0.5699 ^s	0.5809 ^s

S = a strong relationship. Red is negative.

Tables 3 and 4 represent the splitting of the observation period into two separate years. Here the picture changes and we find that in 2021 there is only a moderate relationship between the Bitcoin price and the Crypto Fear and Greed Index, that declines as we look further ahead. The relationship between trading volume and the Crypto Fear and Greed Index is no longer negative but remains negligible.

Table 3
Spearman Rank Correlations Between the Crypto Fear and Greed Index
and Bitcoin Prices and Daily Volume
January to December 2021

Crypto Fear and Greed Index	Volume	Opening Prices	Highest prices	Lowest Prices	Closing Prices
Same Day	0.1005	0.3832 ^m	0.3866 ^m	0.3688 ^m	0.3775 ^m
1 Day ahead	0.1444	0.3646 ^m	0.3739 ^m	0.3499 ^m	0.3691 ^m
5 Days Ahead	0.1763	0.3405 ^m	0.3531 ^m	0.3194 ^m	0.3467 ^m
10 Days Ahead	0.1908	0.3058 ^m	0.3236 ^m	0.2756	0.3008 ^m

M = Moderate relationship.

Table 4 represents the 2022 relationships, including both price and trading volume, Both decline to a negligible level.

Table 4
Spearman Rank Correlations Between the Crypto Fear and Greed Index
and Bitcoin Prices and Daily Volume
January to December 2022

Crypto Fear and Greed Index	Volume	Opening Prices	Highest prices	Lowest Prices	Closing Prices
Same Day	0.2438	0.2065	0.1872	0.2112	0.1856
1 Day ahead	0.2551	0.1901	0.1744	0.1976	0.1781
5 Days Ahead	0.2874	0.1634	0.1534	0.1689	0.1561
10 Days Ahead	0.2576	0.1662	0.1606	0.1685	0.1571

The outcomes continue to vary as the observation period is reduced to months. Details are provided in Appendix A.1. From the summary in Table 5, it can be seen that as we look further ahead through one, five and 10 days, the most obvious trend is a declining relationship between the Bitcoin price and the Crypto Fear and Greed Index, indicating that this index may not be useful for making investment decisions.

Table 5
Summary of Relationships
Between Bitcoin Closing Prices and the Crypto Fear and Greed Index
Monthly Basis

Relationship	Fear & Greed Index	1 Day Ahead	5 Days Ahead	10 days Ahead
	+ve / -ve	+ve / -ve	+ve / -ve	+ve / -ve
2021				
Very Strong	5/0	3/0	3/0	2/0
Strong	3/0	5/0	3/0	3/1
Moderate	3/0	1/0	1/0	2/1
Negligible	1	3	5	3
2022				
Very Strong	4/0	2/0	1/0	1/0
Strong	6/0	7/0	2/1	3/0
Moderate	0/0	1/0	3/0	0/1
Negligible	2	2	5	7

From the details in Appendix A.1, May and August 2021 both stand out with strong positive relationships across all four measurement periods, while March and December 2021 indicate a negligible relationship.

Figure 1 shows the Bitcoin price and the Crypto Fear and Greed Index for May 2021. Both decline over the month. The Bitcoin price goes from US\$60,000 to US\$35,000, while the Crypto Fear and Greed Index declines from 70 to just 10, while August 2021, shown in Figure ,2 indicates a slightly increasing Bitcoin price and Index values.

Figure 1
May 2021

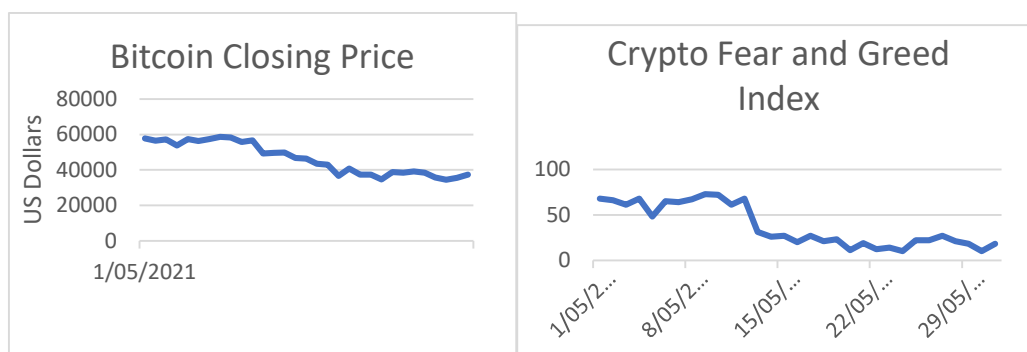
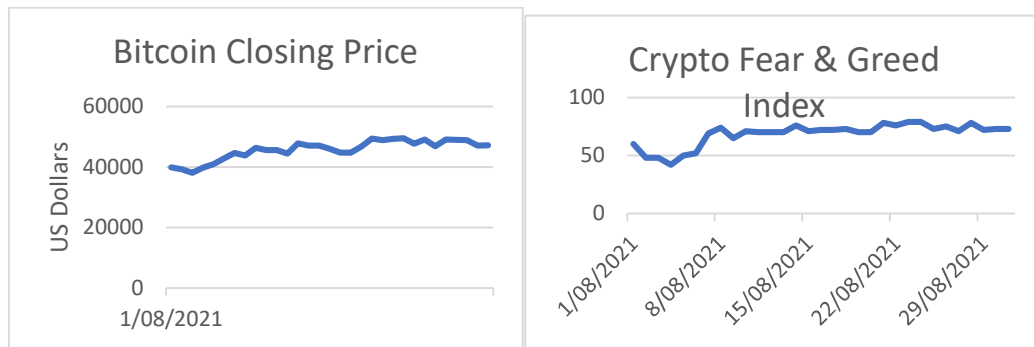


Figure 2
August 2021



March and December 2021, Figures 3 and 4 both indicate a very low level correlation. In both instances, the Bitcoin price is relatively stable with a more volatile Crypto Fear and Greed Index. A volatile index is not useful for making investment decisions.

Figure 3
March 2021

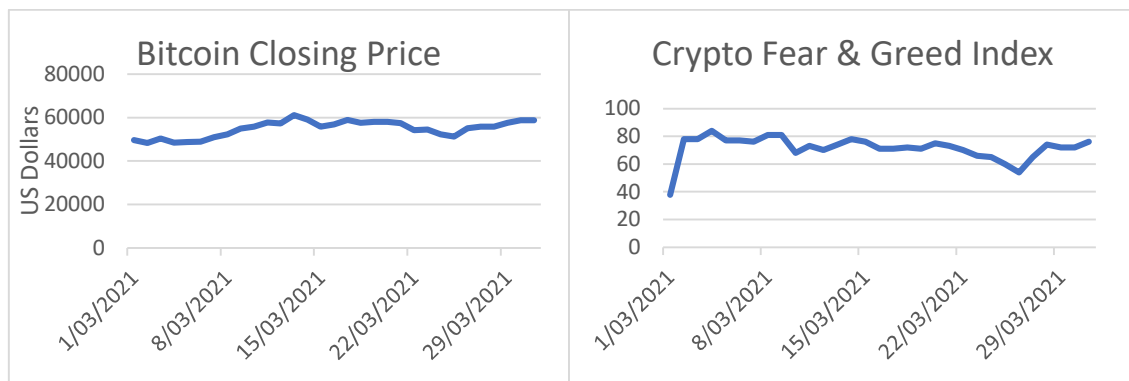
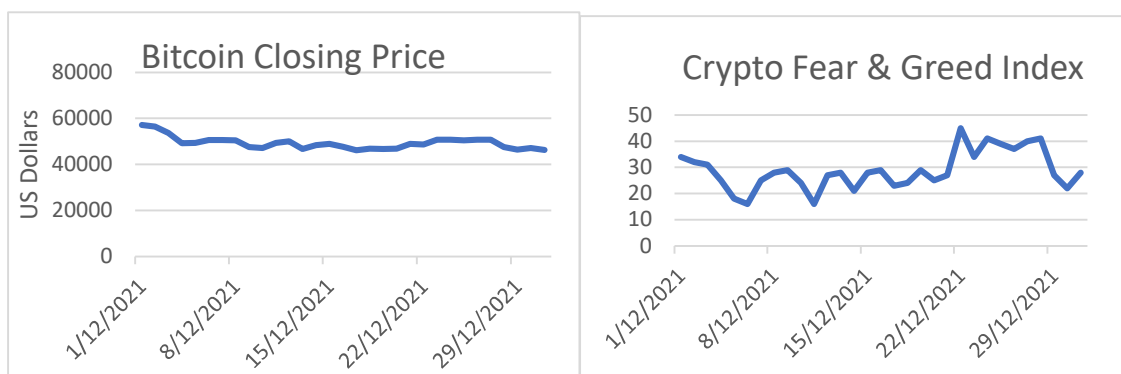


Figure 4
December 2021



In 2022, April and July Bitcoin prices have a strong relationship with the Crypto Fear and Greed Index, while in December of the same year, that relationship is now negligible and negative. Although the relationship is

strong in both April and July, the price and Index movements are quite different. In April 2022, Figure 5, both the Bitcoin price and the Index decline while just a few months later in July, Figure 6, both increase.

Figure 5
April 2022

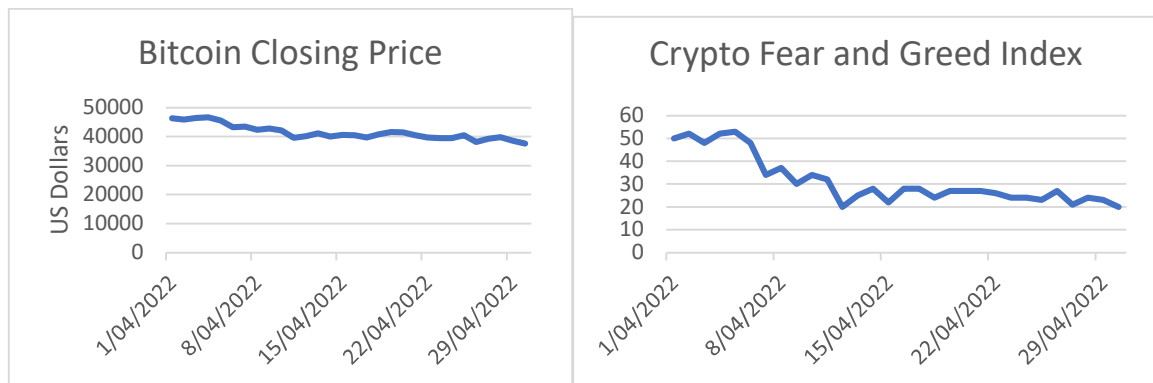
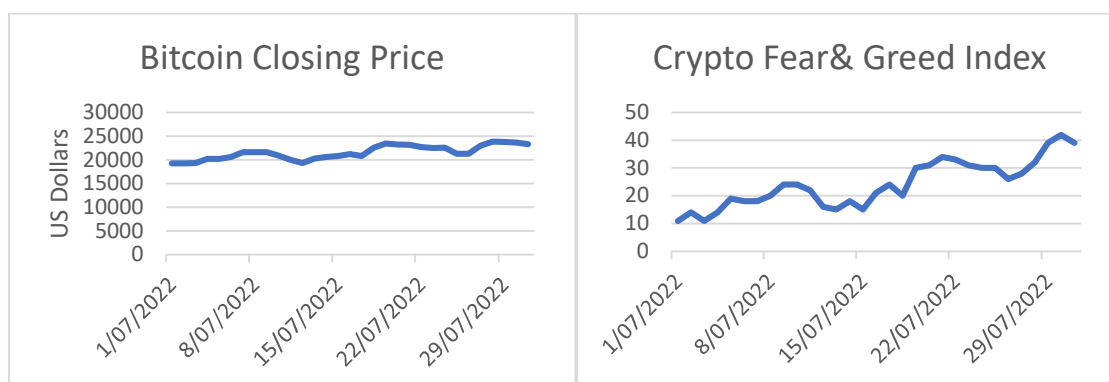
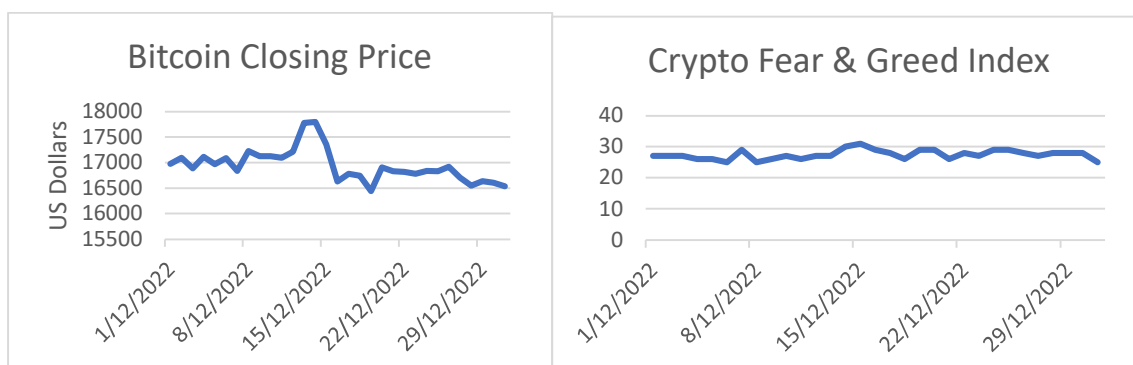


Figure 6
July 2022



Why is December 2022, so different? As can be seen in Figure 7, in December the Bitcoin price fluctuates between US\$16,000 and US\$18,000 while the Crypto Fear and Greed index is relatively stable, barely moving out of the 25 to 30 range.

Figure 7
December 2022



Nothing is consistent. Relationships change from month to month, which is not useful for making investment decisions.

With regard to trading volume, during 2021 and 2022, in only one month, May 2022 is there a strong positive relationship between trading volume and the Crypto Fear and Greed Index, not only at the current Index level but looking one, five and 10 days ahead as well, while the most significant negative relationship is in August 2021. Table 6 is a summary of volume and Index correlations. Once again, there is no consistency.

Table 6
Summary of Relationships
Between Trading Volume and the Crypto Fear and Greed Index
Monthly Basis

Relationship	Fear & Greed Index	1 Day Ahead	5 Days Ahead	10 days Ahead
	+ve / -ve	+ve / -ve	+ve / -ve	+ve / -ve
2021				
Very Strong	0/0	0/0	0/0	0/0
Strong	0/3	0/1	0/1	0/0
Moderate	0/2	0/2	1/1	1/1
Negligible	7	9	9	10
2022				
Very Strong	0/0	0/0	1/0	0/0
Strong	2/3	3/1	0/1	1/0
Moderate	1/0	1/0	2/0	2/1
Negligible	6	7	8	8

Trading volume does not increase as the Index increases nor does it decline as the Index declines. Not unexpected, as investors may be cautious when the Bitcoin price is high, not being prepared to pay such high prices to enter the market. Even for traders with substantial holdings, purchasers may be difficult to find. When the Bitcoin price is low, purchasers may be easy to find, but sellers may be reluctant to sell, preferring to hold their Bitcoin until the price increases.

4.1.2 Bitcoin and Changes in the Crypto Fear and Greed Index

An examination of changes in the Crypto Fear and Greed Index and its relationship with the current Bitcoin price, over 2021 and 2022, as seen in Table 7, finds no significant relationship between the two. Even when split into two separate years the relationship doesn't change.

Table 7
Spearman Rank Correlations Between Changes in the Crypto Fear and Greed Index
and Bitcoin Prices and Daily Volume
January 2021 to December 2022

Change in the Crypto Fear and Greed Index	Volume	Opening Prices	Highest prices	Lowest Prices	Closing Prices
From Previous Day	-0.0553	0.0234	0.0166	0.0213	0.0117
Over Previous 5 Days	-0.0736	0.0217	0.0144	0.0281	0.0143
Over Previous 10 Days	-0.0473	0.0244	0.0190	0.0366	0.0281

Testing each month in 2021 and 2022 finds there is slightly more evidence of a relationship which is more significant as the change in the Crypto Fear and Greed Index is measured over five and 10 days. This is evident in four of the 12 months in 2021 (March, May, June and November) and 7 of the 12 in 2022 (February, March, July, August, September, October and November). The strongest relationships in 2021 are in April and July, while in 2022, March and August indicate the strongest relationships but only when the relationships are measured against the Crypto Fear and Greed Index over the previous five and 10 days. Table 8 is a summary of the relationship findings relating to the Bitcoin price and changes in the Crypto Fear and Greed Index, while Table 9 focuses on trading volume.

Table 8
Summary of Relationships
Between Bitcoin Price and Changes in the Crypto Fear and Greed Index
Monthly Basis

Relationship	From Previous Day	Over the last 5 Days	Over the last 10 days
	+ve / -ve	+ve / -ve	+ve / -ve
2021			
Very Strong	0/0	0 /0	2/0
Strong	1/0	5/ 1	3/ 2
Moderate	2/0	1/ 1	2/0
Negligible	9	4	4
2022			
Very Strong	0/0	1/0	2/0
Strong	0/0	4/0	3/0
Moderate	0/0	0/0	2/0
Negligible	12	7	5

Volume has barely any relationship with changes in the Crypto Fear and Greed Index. March, May, June and December in 2021 and March and June in 2022 are the only months where the relationship is significant but it is negative, indicating that as the Fear and Greed Index increases, so volume declines and vice versa.

Table 9
Summary of Relationships
Between Bitcoin Trading Volume and Changes in the Crypto Fear and Greed Index
Monthly Basis

Relationship	From Previous Day	Over the last 5 Days	Over the last 10 days
	+ve / -ve	+ve / -ve	+ve / -ve
2021			
Very Strong	0/0	0/0	0/0
Strong	0/ 1	1/ 1	0/ 2
Moderate	1/0	0/ 2	1/0
Negligible	10	8	9
2022			
Very Strong	0/0	0/0	0/0
Strong	0/0	0/ 1	1/ 2
Moderate	0/0	0/ 1	0/0
Negligible	12	10	9

4.1.3 Splitting the Bitcoin Data by the Value of the Crypto Fear and Greed Index.

Dividing the sample into three zones, based on the level of the Crypto Fear and Greed Index throws up some surprising results. Table 10 covers the Spearman Rank correlation results.

Table 10
Correlations Between the Bitcoin Closing Price and Volume
With the Level of the Crypto Fear and Greed Index

Crypto Fear and Greed Index Level		Price Range US\$	No, of Observations	Bitcoin Closing Price	Trading Volume
Greed	≥ 75	29,360 – 67,528	93	-0.3231 ^M	0.4826 ^S
Mid-Range	26-74	15,887 – 65,508	359	0.6940 ^S	0.3733 ^M
Fear	≤ 25	15,776 – 54,766	278	0.0901	0.1688

S = Strong Relationship. M= Moderate Relationship. Red indicates a negative relationship

With regard to Bitcoin's closing price, the mid-range 26-74 indicates the highest correlation between the Bitcoin price and the Crypto Fear and Greed Index. When the Index is at the greed level of ≥75 the relationship with prices is negative indicating that this level of the Index is not always associated with high Bitcoin prices. At the fear level of ≤25, there is no relationship of note. With regard to trading volume, once again at the fear level there is no relationship between trading volume and Index level, while at the greed level there is a strong relationship and a moderate relationship in the Index mid-range.

4.2 Ethereum

Ethereum entered the crypto market in July 2015. It is second to Bitcoin in terms of market capitalisation but is designed with smart contract functionality, not as a currency, like Bitcoin.

4.2.1 Ethereum and the Crypto Fear and Greed Index

Table 11 indicates that when taken as a whole, the 2021-2022 period doesn't indicate any significant relationship between Ethereum prices and trading volume with the Crypto Fear and Greed Index, unlike Bitcoin.

Table 11
Spearman Rank Correlations Between the Crypto Fear and Greed Index
and Ethereum Prices and Daily Volume
January 2021 to December 2022

Crypto Fear and Greed Index	Volume	Opening Prices	Highest prices	Lowest Prices	Closing Prices
Same Day	0.1126	0.2357	0.2397	0.2334	0.2389
1 Day ahead	0.1280	0.2331	0.2403	0.2313	0.2400
5 Days Ahead	0.1634	0.2386	0.2485	0.2317	0.2464
10 Days Ahead	0.1942	0.2416	0.2522	0.2276	0.2448

When split into two separate years (Tables 12 and 13) we find no significant relationship in 2021 with the Crypto Fear and Greed Index with either the Ethereum price or trading volume but some indication that in 2022 there is evidence of an increasing relationship as the Crypto Fear and Greed Index looks further ahead. A relationship not evident with Bitcoin in 2022, plus in 2022 the relationship between Ethereum's trading volume and the Crypto Fear and Greed Index is now negative.

Table 12
Spearman Rank Correlations Between the Crypto Fear and Greed Index
and Ethereum Prices and Daily Volume
January to December 2021

Crypto Fear and Greed Index	Volume	Opening Prices	Highest prices	Lowest Prices	Closing Prices
Same Day	0.1513	-0.2585	-0.2663	-0.2471	-0.2588
1 Day ahead	0.1701	-0.2649	-0.2682	-0.2548	-0.2611
5 Days Ahead	0.1908	-0.2703	-0.2699	-0.2643	-0.2650
10 Days Ahead	0.2474	-0.2904	-0.2881	-0.2966	-0.2920

Red is negative

Table 13
Spearman Rank Correlations Between the Crypto Fear and Greed Index
and Ethereum Prices and Daily Volume
January to December 2022

Crypto Fear and Greed Index	Volume	Opening Prices	Highest prices	Lowest Prices	Closing Prices
Same Day	-0.2737	0.3059 ^M	0.2959	0.3149 ^M	0.2972
1 Day ahead	-0.2562	0.3005 ^M	0.2937	0.3094 ^M	0.2976
5 Days Ahead	-0.2059	0.3022 ^M	0.2979	0.3056 ^M	0.3015 ^M
10 Days Ahead	-0.2167	0.3397 ^M	0.3328 ^M	0.3395 ^M	0.3338 ^M

M= moderate relationship. Red is negative.

Splitting the time period into months finds a slightly different outcome to Bitcoin in 2021. The most significant months for Ethereum in 2021 are May and September with the least significant relationships in June and December and with January the most significant negative relationship. 2022 is similar to Bitcoin with April and July having the strongest relationships while December is all negative.

With regard to trading volume, there is very little evidence of any relationship with the Crypto Fear and Greed Index plus most are negative. The details of Ethereum's monthly' analysis are in the Appendix at Table A.2. A summary is presented below in Table 14.

Table 14
Summary of Relationships
Between Ethereum Closing Prices and the Crypto Fear and Greed Index
Monthly Basis

Relationship	Fear & Greed Index	1 Day Ahead	5 Days Ahead	10 days Ahead
	+ve / -ve	+ve / -ve	+ve / -ve	+ve / -ve
2021				
Very Strong	3/0	1/1	2/0	1/0
Strong	4/1	6.0	0/1	2/2
Moderate	0/0	0/1	5/0	4/1
Negligible	4	3	4	2
2022				
Very Strong	4/0	3/0	1/0	1/0
Strong	5/0	6/0	3/1	3/1
Moderate	1/0	1/0	2/0	0/0
Negligible	2	2	5	7

The difference between 2021 and 2022 is evident in Table 14, with the increasing number of negligible relationships as the Crypto Fear and Greed Index looks further ahead in 2022, not evident in 2021. With regards to Ethereum's trading volume, which is presented in detail in Table A.2.2, 63% have a negative relationship with the Crypto Fear and Greed Index, although in 2022 by the time we look at the Crypto Fear and Greed Index 10 days ahead, nine months are now indicating a positive but still mostly insignificant relationship.

4.2.2 Ethereum and Changes in the Crypto Fear and Greed Index

Table 15 details the 2021-2022 outcomes. Taking the two years together, there is no relationship between Ethereum's volume and price with changes in the Crypto Fear and Greed Index, whether we look at changes over the last day, the previous five days or changes over the previous 10 days. When split into two separate years, the results are similar and no relationship is evident.

Table 15
Spearman Rank Correlations Between Changes in the Crypto Fear and Greed Index
and Ethereum Prices and Daily Trading Volume
January 2021 to December 2022

Change in the Crypto Fear and Greed Index	Volume	Opening Prices	Highest prices	Lowest Prices	Closing Prices
From Previous Day	-0.0570	0.0339	0.0247	0.0320	0.0242
Over Previous 5 Days	-0.0680	0.0117	0.0029	0.0211	0.0063
Over Previous 10 Days	-0.0987	0.0125	0.0066	0.0287	0.0175

Red is negative

Examining the relationship, each month, between changes in the Crypto Fear and Greed Index and the price of Ethereum we find just one month, February 2022, with significant positive outcomes across all three

measurement periods. Table 16 is a summary of the outcomes. As can be seen, the number of negligible relationships declines as the number of days over which the change is measured, increases, indicating that there may be an influence on the Ethereum price as the Crypto Fear and Greed Index changes over time.

Table 16
Summary of Relationships
Between Ethereum Price and Changes in the Crypto Fear and Greed Index
Monthly Basis

Relationship	From Previous Day	Over the last 5 Days	Over the last 10 days
	+ve / -ve	+ve / -ve	+ve / -ve
2021			
Very Strong	0/0	0/0	0/1
Strong	0/0	3/1	4/3
Moderate	0/0	0/0	1/0
Negligible	12	8	3
2022			
Very Strong	0/0	1/0	2/0
Strong	0/0	3/0	3/0
Moderate	1/0	1/0	2/1
Negligible	11	7	4

When it comes to Ethereum's trading volume the relationship with changes in the Crypto Fear and Greed Index in 2021, is virtually negligible. Two of the three measurable relationship are negative. As can be seen in Table 17, 2022 is slightly different as the relationship strengthens as the period over which the Crypto Fear and Greed Index is measured, is increased. However, in six of the eight months where there is a measurable relationship, that relationship is negative. This indicates a stronger relationship than is observed with Bitcoin.

Table 17
Summary of Relationships
Between Ethereum Trading Volume and Changes in the Crypto Fear and Greed Index
Monthly Basis

Relationship	From Previous Day	Over the last 5 Days	Over the last 10 days
	+ve / -ve	+ve / -ve	+ve / -ve
2021			
Very Strong	0/0	0/0	0/0
Strong	1/0	0/0	0/1
Moderate	0/1	0/0	0/0
Negligible	10	12	11
2022			
Very Strong	0/0	0/0	0/0
Strong	0/1	0/4	1/2
Moderate	0/0	0/0	1/2
Negligible	11	8	6

There are no months with significant outcomes across all three measurement periods.

4.2.3 Splitting Ethereum Data by the Value of the Crypto Fear and Greed Index.

Table 18 covers the Spearman Rank Correlation results after dividing the sample into three zones, based on the level of the Crypto Fear and Greed Index.

Table 18
Correlations Between the Ethereum Closing Price and Volume
With the Level of the Crypto Fear and Greed Index

Crypto Fear and Greed Index Level		Price Range US\$	No, of Observations	Bitcoin Closing Price	Trading Volume
Greed	≥ 75	729.12 – 4,808.40	93	-0.3693 ^M	0.2750
Mid-Range	26-74	1,100.80 – 4,667.30	359	0.3548 ^M	0.2525
Fear	≤ 25	995.61 – 4,353.30	278	0.2085	-0.3172 ^M

M= Moderate Relationship. Red is negative

The relationship between Ethereum prices and the Crypto Fear and Greed Index, when the index is in the greed zone, is moderately significant but negative. The price range when the index is ≥75 is interesting in that it ranges from the lowest price of US\$720.12 through to the highest price of US\$4,808.40 all while the index is at the greed level. The only significant positive correlation, between the Ethereum price and the index, is in the mid-range section of the Crypto Fear and Greed Index, 26 to 74. While in the fear level of ≤25, the range of Ethereum's prices is US\$995.81 to US\$4354.30, which is only US\$459 short of the highest price in 2021-2022. With prices there is a range of outcomes: negative and moderate at the greed level; positive and moderate at the mid-range level and no relationship at the fear level plus no relationship between the Index and Ethereum's trading volume at the greed and mid-range levels but a moderate negative relationship at the fear level.

4.3 Cardano

Cardano is open-sourced and decentralized, with consensus achieved using proof-of-stake. It can facilitate peer-to-peer transactions with its internal cryptocurrency, ADA. It is currently 7th in the crypto market in terms of market capitalisation.

4.3.1 Cardano and the Crypto Fear and Greed Index

As can be seen in Table 19, taking the two year period as a whole there is no obvious relationship between the Cardano price and the Crypto Fear and Greed Index. However, the Cardano trading volume does have a positive and measurable relationship with the Index.

When split into two separate years, the two years are the reverse of each other. In 2021 (Table 20) Cardano's trading volume has a moderate and strong relationship with the Index while Cardano's price has a negative but negligible relationship.

Table 19
Spearman Rank Correlations Between the Crypto Fear and Greed Index
and Cardano Prices and Daily Trading Volume
January 2021 to December 2022

Crypto Fear and Greed Index	Volume	Opening Prices	Highest prices	Lowest Prices	Closing Prices
Same Day	0.3494 ^M	0.2771	0.2802	0.2813	0.2785
1 Day ahead	0.3484 ^M	0.2736	0.2799	0.2775	0.2791
5 Days Ahead	0.3854 ^M	0.2775	0.2865	0.2739	0.2833
10 Days Ahead	0.4116 ^S	0.2826	0.2944	0.2725	0.2867

S = strong relationship, M= moderate relationship.

Table 20
Spearman Rank Correlations Between the Crypto Fear and Greed Index
and Cardano Prices and Daily Volume
January to December 2021

Crypto Fear and Greed Index	Volume	Opening Prices	Highest prices	Lowest Prices	Closing Prices
Same Day	0.3284 ^M	-0.2327	-0.2394	-0.2207	-0.2389
1 Day ahead	0.3497 ^M	-0.2457	-0.2454	-0.2355	-0.2453
5 Days Ahead	0.4101 ^S	-0.2523	-0.2407	-0.2543	-0.2457
10 Days Ahead	0.4522 ^S	-0.2711	-0.2583	-0.2895	-0.2728

S = strong relationship, M= moderate relationship. Red is negative.

In 2022, Cardano's trading volume (Table 21) now has a negative but negligible relationship with the Index and the relationship with the Cardano closing price is now positive but insignificant.

Table 21
Spearman Rank Correlations Between the Crypto Fear and Greed Index
and Cardano Prices and Daily Volume
January to December 2022

Crypto Fear and Greed Index	Volume	Opening Prices	Highest prices	Lowest Prices	Closing Prices
Same Day	-0.1502	0.1183	0.1036	0.1340	0.1060
1 Day ahead	-0.1768	0.1103	0.0999	0.1286	0.1082
5 Days Ahead	-0.1624	0.1149	0.1034	0.1227	0.1066
10 Days Ahead	-0.1855	0.1385	0.1363	0.1450	0.1345

Details of the relationship when measured on a monthly basis can be found in Appendix A.3. A summary is contained in Table 22. Cardano has two months, August and September of 2021 where the price and the Crypto Fear and Greed Index are highly correlated. There are two months where the relationship is significant and negative across the board, January and October. The best months in 2022 are April and July with December 2022 having a strong negative relationship with the current Crypto Fear and Greed Index as well as looking one, five and ten days ahead. From the summary in Table 22 it can be seen that fewer and fewer correlations are significant as the time increases to 10 days ahead.

Table 22
Summary of Relationships
Between Cardano Closing Prices and the Crypto Fear and Greed Index
Monthly Basis

Relationship	Fear & Greed Index	1 Day Ahead	5 Days Ahead	10 days Ahead
	+ve / -ve	+ve / -ve	+ve / -ve	+ve / -ve
2021				
Very Strong	3/0	2/0	3/0	3/1
Strong	2/1	2/2	2/2	0/1
Moderate	1/1	2/0	0/1	0/0
Negligible	4	5	4	7
2022				
Very Strong	4/0	3/0	3/0	0/0
Strong	4/0	3/0	1/1	3/2
Moderate	0/1	2/0	2/0	0/0
Negligible	3	4	6	7

With regard to trading volume (Table 23), of the 17 correlations that are significant in 2021, six are negative. In 2022 of the 18 significant correlations four are negative. Only January 2021 and March and July in 2022 reach a significant level in their relationship with the Crypto Fear and Greed Index.

Table 23
Summary of Relationships
Between Cardano Trading Volume and the Crypto Fear and Greed Index
Monthly Basis

Relationship	Fear & Greed Index	1 Day Ahead	5 Days Ahead	10 days Ahead
	+ve / -ve	+ve / -ve	+ve / -ve	+ve / -ve
2021				
Very Strong	0/0	2/0	2/0	4/0
Strong	2/2	0/3	0/1	1/0
Moderate	0/0	0/0	0/0	0/0
Negligible	8	7	9	7
2022				
Very Strong	1/0	0/0	0/0	0/0
Strong	2/1	3/0	3/0	2/1
Moderate	1/0	1/1	0/1	1/0
Negligible	7	7	8	0

4.3.2 Cardano and Changes in the Crypto Fear and Greed Index

As can be seen in Table 24, none of the correlations between Cardano price and trading volume with the Crypto Fear and Greed Index are significant whether the change is measured over the previous day, the previous five days or the previous 10 days.

Table 24
Spearman Rank Correlations Between Changes in the Crypto Fear and Greed Index
and Cardano Prices and Daily Trading Volume
January 2021 to December 2022

Change in the Crypto Fear and Greed Index	Volume	Opening Prices	Highest prices	Lowest Prices	Closing Prices
From Previous Day	-0.0123	0.0386	0.0286	0.0401	0.0280
Over Previous 5 Days	-0.0471	0.0200	0.0096	0.0328	0.0140
Over Previous 10 Days	-0.0807	0.0094	-0.0003	0.0282	0.0110

Red is negative

When split into two separate years, the outcome is the same, Nothing is significant except in 2022 the relationship between trading volume and changes in the Crypto Fear and Greed Index are now positive but still insignificant.

From the summary in Table 25 it can be observed that there is only one month in each year in which Cardano prices are related to the previous day's change in the Crypto Fear and Greed Index. In 2021, October and November indicate a positive relationship with changes in the Crypto Fear and Greed Index over five and 10 days. Three other months, April, June and July, have just one measurement period showing a positive results with four months indicating negative results and another three are insignificant. In 2022 just three months have a strong relationship with the Crypto Fear and Greed Index, February, March and August. Seven months have no measurable relationship at all.

Table 25
Summary of Relationships
Between Cardano Prices and Changes in the Crypto Fear and Greed Index
Monthly Basis

Relationship	From Previous Day +ve / -ve	Over the last 5 Days +ve / -ve	Over the last 10 days +ve / -ve
2021			
Very Strong	0/0	0/0	2/1
Strong	1/0	3/3	1/2
Moderate	0/0	0/0	1/0
Negligible	11	6	5
2022			
Very Strong	0/0	1/0	3/0
Strong	1/0	3/0	2/0
Moderate	0/0	0/0	0/0
Negligible	11	8	7

From Table 26, it can be observed that there are very few significant relationships between Cardano's trading volume and the Crypto Fear and Greed Index, with just one month in 2021, November, indicating a positive relationship, but that is just for the five day period.

2022 is similar to 2021 with nine months indicating no significant relationship with the changes in the Crypto Fear and Greed Index. Two other months, May and June, have a negative relationship, while on the positive side is March with a very strong positive relationship with changes in the Index.

Table 26
Summary of Relationships
Between Cardano Trading Volume and Changes in the Crypto Fear and Greed Index
Monthly Basis

Relationship	From Previous Day	Over the last 5 Days	Over the last 10 days
	+ve / -ve	+ve / -ve	+ve / -ve
2021			
Very Strong	0/0	0/1	0/0
Strong	0/0	1/0	0/3
Moderate	0/0	0/0	0/0
Negligible	12	10	9
2022			
Very Strong	0/0	1/0	1/0
Strong	0/0	1/1	0/1
Moderate	1/0	0/0	0/1
Negligible	11	9	9

4.3.3 Splitting the Cardano Data by the Value of the Crypto Fear and Greed Index.

Splitting the data by the level of the Crypto Fear and Greed Index (Table 27) provides some evidence of relationships with closing prices and trading volume. When the Index is at the greed level the relationship with the closing price is strong but negative while trading volume has a strong positive relationship with the Index. Mid-range has a positive relationship with both price and volume, both significant. At the Fear level, ≤ 25 , there is no relationship between the Index and closing prices while the Index's relationship with trading volume is moderately significant but negative.

Table 27
Correlations Between the Cardano Closing Price and Volume
With the Level of the Crypto Fear and Greed Index

Crypto Fear and Greed Index Level		Price Range US\$	No. of Observations	Bitcoin Closing Price	Trading Volume
Greed	≥ 75	0.1750 – 2.9153	93	-0.4644 ^S	0.3973 ^M
Mid-Range	26-74	0.2439 – 2.9652	359	0.4917 ^S	0.3919 ^M
Fear	≤ 25	0.2456 – 2.3003	278	-0.0085	-0.3152 ^M

S = Strong Relationship. M= Moderate Relationship. Red indicates a negative relationship

4.4 Avalanche

Avalanche is an open, programmable smart contract platform for decentralized applications. It is low cost and eco-friendly.

4.4.1 Avalanche and the Crypto Fear and Greed Index

An examination of Avalanche data over the total two year period (Table 28), finds no significant relationship between the Avalanche prices or trading volume with the Crypto Fear and Greed Index. All the Spearman-Rank correlations are below the significant level.

Table 28
Spearman Rank Correlations Between the Crypto Fear and Greed Index
and Avalanche Prices and Daily Trading Volume
January 2021 to December 2022

Crypto Fear and Greed Index	Volume	Opening Prices	Highest prices	Lowest Prices	Closing Prices
Same Day	0.0332	0.1492	0.1558	0.1556	0.1575
1 Day ahead	0.0333	0.1516	0.1599	0.1577	0.1620
5 Days Ahead	0.0686	0.1722	0.1828	0.1739	0.1832
10 Days Ahead	0.0760	0.1923	0.2015	0.1882	0.1977

When broken down into two separate years (Tables 29 and 30) there is still no observable significant relationships, nor any negative relationships, with the Crypto Fear and Greed Index.

Table 29
Spearman Rank Correlations Between the Crypto Fear and Greed Index
and Avalanche Prices and Daily Volume
January to December 2021

Crypto Fear and Greed Index	Volume	Opening Prices	Highest prices	Lowest Prices	Closing Prices
Same Day	0.1212	0.0173	0.0201	0.0205	0.0220
1 Day ahead	0.1282	0.0165	0.0240	0.0194	0.0253
5 Days Ahead	0.1801	0.0355	0.0466	0.0385	0.0473
10 Days Ahead	0.1802	0.0375	0.0454	0.0339	0.0427

Table 30
Spearman Rank Correlations Between the Crypto Fear and Greed Index
and Avalanche Prices and Daily Volume
January to December 2022

Crypto Fear and Greed Index	Volume	Opening Prices	Highest prices	Lowest Prices	Closing Prices
Same Day	0.0796	0.2226	0.2139	0.2332	0.2147
1 Day ahead	0.0665	0.2186	0.2080	0.2269	0.2112
5 Days Ahead	0.0849	0.2102	0.2004	0.2139	0.2033
10 Days Ahead	0.0882	0.2353	0.2253	0.2387	0.2263

Table 31 is a summary of the outcomes when the data set is broken down into months. Details of each month are available in Appendix A.4. Two months, May and August stand out in 2021 with strong positive relationships between Avalanche prices and the Crypto Fear and Greed Index. January, September and November 2021 have significant relationships with the Crypto Fear and Greed Index but all the outcomes are negative, while March and June have no relationship with the Index at all. Judging from the summary. There are a significant number of negative relationships in 2021.

Table 31
Summary of Relationships
Between Avalanche Closing Prices and the Crypto Fear and Greed Index
Monthly Basis

Relationship	Fear & Greed Index	1 Day Ahead	5 Days Ahead	10 days Ahead
	+ve / -ve	+ve / -ve	+ve / -ve	+ve / -ve
2021				
Very Strong	1/2	3/2	2/0	1/0
Strong	5/1	3/1	2/3	1/2
Moderate	0/1	0/1	1/1	0/2
Negligible	2	2	3	6
2022				
Very Strong	4/0	4/0	2/0	2/0
Strong	6/0	5/0	2/1	2/1
Moderate	0/0	1/1	1/0	0/0
Negligible	2	1	6	7

In 2022 there are fewer negative relationships, though December's outcome is negative and significant. April and July show the strongest positive relationship with the Index.

When it comes to trading volume, August 2021 is the only month within the two years, with a significant positive relationship with the Index across the current day, one, five days and 10 days ahead. Much of 2021 is negative as can be seen in the summary in Table 32. While there are fewer significant relationships in

2022, only November reaches the 'very strong' level and that is only at one day ahead, while May, June and August do not indicate a significant relationship at any level.

Table 32
Summary of Relationships
Between Avalanche Trading Volume and the Crypto Fear and Greed Index
Monthly Basis

Relationship	Fear & Greed Index	1 Day Ahead	5 Days Ahead	10 days Ahead
	+ve / -ve	+ve / -ve	+ve / -ve	+ve / -ve
2021				
Very Strong	1/0	2/0	1/0	1/0
Strong	4/2	3/2	2/0	1/0
Moderate	0/1	0/1	1/1	0/2
Negligible	4	4	7	8
2022				
Very Strong	0/0	1/0	0/0	0/0
Strong	5/1	2/0	2/0	3/0
Moderate	1/0	1/0	2/0	1/0
Negligible	5	8	8	8

4.2.2 Avalanche and Changes in the Crypto Fear and Greed Index

When we examine the relationship between Avalanche price and trading volume with changes in the Crypto Fear and Greed Index (Table 33) all are insignificant whether the change is measured over the previous day, the previous five days or the previous 10 days. Apart from two results that are close to zero, the rest are negative.

Table 33
Spearman Rank Correlations Between Changes in the Crypto Fear and Greed Index
and Avalanche Prices and Daily Trading Volume
January 2021 to December 2022

Change in the Crypto Fear and Greed Index	Volume	Opening Prices	Highest prices	Lowest Prices	Closing Prices
From Previous Day	-0.0050	0.0008	-0.0054	0.0002	-0.0051
Over Previous 5 Days	-0.0545	-0.0239	-0.0295	-0.0165	-0.0258
Over Previous 10 Days	-0.0579	-0.0491	-0.0502	-0.0358	-0.0423

Red = negative relationship

The results are the same when the data is split into two separate years, apart from 2022 where the correlations are still insignificant but mostly positive.

When splitting the data into months, April 2021 prices have a strong positive relationship with changes in the Crypto Fear and Greed Index. February, May and September 2021 all indicate no relationship, as do April,

May and November in 2022. In 2022, March, July and August indicate the most significant positive relationships. For the remainder of the months there are only a few instances where the relationship between Avalanche prices and changes in the Crypto Fear and Greed Index are significant at any level. Table 34 is a summary of the correlation outcomes when comparing the Avalanche price to changes in the Crypto Fear and Greed Index.

Table 34
Summary of Relationships
Between Avalanche Prices and Changes in the Crypto Fear and Greed Index
Monthly Basis

Relationship	From Previous Day	Over the last 5 Days	Over the last 10 days
	+ve / -ve	+ve / -ve	+ve / -ve
2021			
Very Strong	0/0	0/0	0/2
Strong	1/0	1/1	3/1
Moderate	0/0	0/1	2/1
Negligible	11	9	3
2022			
Very Strong	0/0	0/0	1/0
Strong	0/0	4/0	5/0
Moderate	0/0	2/0	1/1
Negligible	12	6	4

Table 35 is a summary of observable relationships between Avalanche trading volume and changes in the Crypto Fear and Greed Index. For five months in each of 2021 (May, June, September, October and December) and 2022 (February, April, May, June and August) there is no significant relationship at all. For the rest of the months, there may be one of two instances where there is a measurable relationship but nothing consistent.

Table 35
Summary of Relationships
Between Avalanche Trading Volume and Changes in the Crypto Fear and Greed Index
Monthly Basis

Relationship	From Previous Day	Over the last 5 Days	Over the last 10 days
	+ve / -ve	+ve / -ve	+ve / -ve
2021			
Very Strong	0/0	0/0	0/1
Strong	0/0	0/2	1/2
Moderate	0/0	2/1	2/0
Negligible	12	7	6
2022			
Very Strong	0/0	0/0	0/0
Strong	0/0	0/0	2/1
Moderate	1/0	1/1	2/1
Negligible	11	10	6

4.3.3 Splitting Avalanche Data by the Value of the Crypto Fear and Greed Index.

As can be seen in Table 36 none of the correlation results indicate that there is any relationship between Avalanche price and trading volume data with the Crypto fear and Greed Index when the data is split into three levels: fear, greed and mid-range.

Table 36
Correlations Between the Cardano Closing Price and Volume
With the Level of the Crypto Fear and Greed Index

Crypto Fear and Greed Index Level		Price Range US\$	No, of Observations	Bitcoin Closing Price	Trading Volume
Greed	≥ 75	3.47 - 91.18	93	-0.02476	-0.2247
Mid-Range	26-74	10.27 – 134.53	359	0.1831	0.0524
Fear	≤ 25	9.65 – 116.02	278	0.0449	-0.1425

Red indicates a negative relationship

Interestingly, the smallest price range is held by the greed level of the Index which has both the lowest minimum and the lowest maximum. The largest price range is during the Crypto Fear and Greed mid-range level, going from a minimum of US\$10.27 to a maximum of US\$134.53. Even the fear range is greater than the greed range with both a higher minimum and higher maximum, The Crypto Fear and Greed Index appears to have very little connection with Avalanche prices and trading volume.

4.5 Dogecoin

The Dogecoin Foundation is a not-for-profit organisation. It was established in 2014 to provide advocacy and support for the Dogecoin project. It was established as a currency but for many it is an investment, even though it was originally developed as a joke.

4.5.1 Dogecoin and the Crypto Fear and Greed Index

Taking the two years together, as shown in Table 37. It would appear that there is a strong relationship between Dogecoin trading volume and the Crypto Fear and Greed Index but no relationship with Dogecoin's price.

Table 37
Spearman Rank Correlations Between the Crypto Fear and Greed Index
and Dogecoin Prices and Daily Trading Volume
January 2021 to December 2022

Crypto Fear and Greed Index	Volume	Opening Prices	Highest prices	Lowest Prices	Closing Prices
Same Day	0.4560 ^S	0.0177	0.0305	0.0136	0.0196
1 Day ahead	0.4553 ^S	0.0152	0.0291	0.0127	0.0200
5 Days Ahead	0.4633 ^S	0.0154	0.0284	0.0076	0.0198
10 Days Ahead	0.4630 ^S	0.0151	0.0296	0.0081	0.0216

S = Strong Relationship.

However, when split into two separate years another picture emerges. In 2021 (Table 38) there is still a measurable relationship between trading volume and the Index but a negative and significant relationship between Dogecoin's price and the Crypto Fear and Greed Index.

Table 38
Spearman Rank Correlations Between the Crypto Fear and Greed Index
and Dogecoin Prices and Daily Trading Volume
January 2021 to December 2021

Crypto Fear and Greed Index	Volume	Opening Prices	Highest prices	Lowest Prices	Closing Prices
Same Day	0.3934 ^M	-0.3687 ^M	-0.3604 ^M	-0.3672 ^M	-0.3671 ^M
1 Day ahead	0.4063 ^S	-0.3734 ^M	-0.3602 ^M	-0.3711 ^M	-0.3644 ^M
5 Days Ahead	0.3753 ^M	-0.3785 ^M	-0.3692 ^M	-0.3863 ^M	-0.3747 ^M
10 Days Ahead	0.3619 ^M	-0.3978 ^M	-0.3850 ^M	-0.4097 ^S	-0.3922 ^M

S = Strong Relationship. M= Moderate Relationship. Red = a negative relationship

When we examine 2022, Table 39, there is no longer any relationship with trading volume. When we examine Dogecoin's price, there is only a moderate relationship with the Crypto Fear and Greed Index on the same day, with the opening and lowest prices, but nothing in the days ahead. The two years couldn't be more different.

Table 39
Spearman Rank Correlations Between the Crypto Fear and Greed Index
and Dogecoin Prices and Daily Trading Volume
January 2022 to December 2022

Crypto Fear and Greed Index	Volume	Opening Prices	Highest prices	Lowest Prices	Closing Prices
Same Day	0.1491	0.3004 ^M	0.2996	0.3031 ^M	0.2894
1 Day ahead	0.1285	0.2916	0.2931	0.2979	0.2889
5 Days Ahead	0.1435	0.2837	0.2816	0.2807	0.2923
10 Days Ahead	0.1269	0.2948	0.2910	0.2950	0.2933

M= Moderate Relationship.

Details of the breakdown into months is provided in Appendix A.5. A summary of the relationships between Dogecoin closing prices and the Crypto Fear and Greed Index is detailed in Table 40. In 2021, although the level of significance declines as the days increase, there are significant correlations in May, September and November, while the lowest correlations are in January and April.

In 2022 the best months are March, April and August but in these months significance declines by the time we get to day+10. December 2022 is entirely negative, but significant across days 0, +1, +5 and +10.

Table 40
Summary of Relationships
Between Dogecoin Closing Prices and the Crypto Fear and Greed Index
Monthly Basis

Relationship	Fear & Greed Index	1 Day Ahead	5 Days Ahead	10 days Ahead
	+ve / -ve	+ve / -ve	+ve / -ve	+ve / -ve
2021				
Very Strong	2/0	2/0	1/0	0/0
Strong	3/0	2/0	5/0	4/1
Moderate	2/0	3/0	1/1	1/1
Negligible	5	5	4	5
2022				
Very Strong	1/0	1/0	0/0	0/0
Strong	8/0	7/0	4/1	3/2
Moderate	1/1	0/1	1/0	0/0
Negligible	1	3	6	7

Table 41 is Dogecoin's trading volume summary. In all of the 24 months, just one, May 2021, stands out as significantly positive across the current day and days +1, +5 and +10. The rest taper off or change sign by the time day+10 is reached. There is no consistent pattern of behaviour.

Table 41
Summary of Relationships
Between Dogecoin Trading Volume and the Crypto Fear and Greed Index
Monthly Basis

Relationship	Fear & Greed Index	1 Day Ahead	5 Days Ahead	10 days Ahead
	+ve / -ve	+ve / -ve	+ve / -ve	+ve / -ve
2021				
Very Strong	0/0	0/0	0/0	0/1
Strong	4/1	4/1	3/1	2/0
Moderate	2/0	1/0	0/0	0/0
Negligible	5	6	8	9
2022				
Very Strong	1/0	0/0	0/0	0/0
Strong	2/1	2/1	2/0	3/1
Moderate	3/1	1/1	0/1	1/1
Negligible	4	7	9	6

4.5.2 Dogecoin and Changes in the Crypto Fear and Greed Index

Table 42 provides details of the analysis of the full two year period. No relationship is observed between Dogecoin price and trading volume when compared with the changes in the Crypto Fear and Greed Index

Table 42
Spearman Rank Correlations Between Changes in the Crypto Fear and Greed Index
and Dogecoin Prices and Daily Trading Volume
January 2021 to December 2022

Change in the Crypto Fear and Greed Index	Volume	Opening Prices	Highest prices	Lowest Prices	Closing Prices
From Previous Day	0.0017	0.0296	0.0297	0.0284	0.0259
Over Previous 5 Days	-0.0009	0.0342	0.0393	0.0405	0.0357
Over Previous 10 Days	0.0254	0.0440	0.0489	0.0472	0.0463

Red = negative relationship

Split into two separate years, the correlation results are almost identical.

When Dogecoin is analysed on a monthly basis we find that for both price and trading volume their relationship with the Crypto Fear and Greed Index strengthens as the time period over which the change in the Index is measured, increases. This is easiest to see in Tables 43 and 44 where the number of negligible relationships declines as the time period increases.

Table 43
Summary of Relationships
Between Dogecoin Prices and Changes in the Crypto Fear and Greed Index
Monthly Basis

Relationship	From Previous Day +ve / -ve	Over the last 5 Days +ve / -ve	Over the last 10 days +ve / -ve
2021			
Very Strong	0/0	0/0	1/0
Strong	0/0	1/1	2/0
Moderate	0/0	2/1	4/2
Negligible	12	7	3
2022			
Very Strong	0/0	0/0	2/0
Strong	0/0	3/0	5/0
Moderate	2/0	2/0	1/0
Negligible	10	7	4

In 2021, there are six months where the only significant relationship between price and the Crypto Fear and Greed Index is in day+10. 2022 is slightly different. Two months, February and July have a positive relationship between price and the Index across all time periods: 1, 5 and 10 days. However, at the same time there are four months without any measurable relationship between price and the index.

Trading volume's relationship with the Crypto Fear and Greed Index (Table 44) does improve as the change in the Index is measured over a longer time period, but overall the relationship is sketchy with the most positive relationship in March 2022.

Table 44
Summary of Relationships
Between Dogecoin Trading Volume and Changes in the Crypto Fear and Greed Index
Monthly Basis

Relationship	From Previous Day	Over the last 5 Days	Over the last 10 days
	+ve / -ve	+ve / -ve	+ve / -ve
2021			
Very Strong	0/0	9/9	0/0
Strong	0/0	4/0	3/1
Moderate	0/0	0/1	1/1
Negligible	12	7	6
2022			
Very Strong	0/0	1/0	1/0
Strong	1/0	1/1	3/0
Moderate	0/0	0/0	1/1
Negligible	11	9	6

4.5.3 Splitting Dogecoin Data by the Value of the Crypto Fear and Greed Index

After splitting the two years of data into three Crypto Fear and Greed levels the results are mixed. As can be seen in Table 45, the greed level of the Crypto Fear and Greed Index has both the lowest minimum price and the lowest maximum, while the fear level has the highest minimum and the mid-range is associated with the highest maximum of US\$0.6869.

Table 45
Correlations Between the Dogecoin Closing Price and Volume
With the Level of the Crypto Fear and Greed Index

Crypto Fear and Greed Index Level		Price Range US\$	No, of Observations	Bitcoin Closing Price	Trading Volume
Greed	≥ 75	0.00566 – 0.3656	93	-0.3155 ^M	0.3153 ^M
Mid-Range	26-74	0.00824 – 0.6869	359	0.2312	0.4119 ^S
Fear	≤ 25	0.05290 – 0.5130	278	0.0963	-0.1842

S = Strong Relationship. M= Moderate Relationship. Red = a negative relationship

Neither price no trading volume show any relationship to the Crypto Fear and Greed Index when the Index is at the fear level. At the greed level the price appears to be negatively related to the Index but trading volume is positively related. The mid-range is a bit of both, no relationship with price but a moderate relationship with trading volume.

5.0 Summary and Conclusion

From Table 46, evidence from the analysis of five crypto currencies indicates that making judgements of price over long periods is not feasible. The best example of this is Bitcoin that has a strong relationship between prices and the Crypto Fear and Greed Index over 2021-2022 but when broken down into two separate years, there is a moderate relationship in 2021 and no significant relationship in 2022. Amongst the other four currencies Ethereum has a moderate relationship in 2022 and Dogecoin in 2021, the rest indicate no relationship when using yearly data.

Table 46
Summary of Price Relationships
Crypto Fear and Greed Index Ability to Relate to Forward Crypto Prices

	Bitcoin	Ethereum	Cardano	Avalanche	Dogecoin
Yearly Analysis					
2021-2022	Strong	-	-	-	-
2021	Moderate	-	-	-	Moderate
2022	-	Moderate	-	-	-
Monthly Analysis					
Strong Positive Relationship					
2021	May August	May September	August September	May August	May September November
2022	April July	April July	April July	April July	March April August
Strong Negative Relationship					
2021	-	January	January October	January September November	-
2022	-	-	December	December	December

When the period of the analysis is shortened to months, there is some agreement between currencies. May has a strong relationship with the Index across four currencies in 2021 and April across all five in 2022. January in 2021 and December in 2022 both have strong negative relationships amongst three of the five currencies.

When examining the impact of changes in the Fear and Greed Index, Table 47, we find no evidence of any consistent relationships across the currencies examined. There is a measurable relationship across the two year period with Cardano and Dogecoin, but this dissipates in 2022. As the analysis is broken down into months there are no consistent results.

Table 47
Summary of Price Relationships
Changes in the Crypto Fear and Greed Index over the
Previous Day, Previous 5 and 10 Days

	Bitcoin	Ethereum	Cardano	Avalanche	Dogecoin
Yearly Analysis					
2021-2022	-	-	Moderate	-	Strong
2021	-	-	Moderate/Strong	-	Moderate
2022	-	-	-	-	-
Monthly Analysis					
Strong Positive Relationship					
2021	-	-	January	August	May
2022	May	-	March July	November	-
Strong Negative Relationship					
2021	August	-	-	-	-
2022	-	-	-	-	-

Splitting the data into Crypto Fear and Greed levels, Table 48, still doesn't produce any consistent results across the five currencies, but there is some agreement between four of them. At the greed level four currencies, Bitcoin, Ethereum, Cardano and Dogecoin all indicate a significant negative relationship between their price and the Crypto Fear and Greed Index. Three of those also agree on a significant positive relationship at the mid-range level. There is nothing significant at the fear level and Avalanche appears to have no relationship with the Index at any level.

Table 48
Summary of Price Relationships
When the Data is Split into Crypto Fear and Greed Index Levels

Crypto F&G Levels	Bitcoin	Ethereum	Cardano	Avalanche	Dogecoin
Greed ≥ 75	Moderate	Moderate	Strong	-	Moderate)
Mid-Range 26-74	Strong	Moderate	Strong	-	-
Fear ≤ 25	-	-	-	-	-

Red indicates a negative relationship

The relationship between the Crypto Fear and Greed Index and trading volume is sketchy at best, nothing is consistent either at the yearly or monthly level whether the Index is looking ahead or being measured as a change over previous days. The most interesting results are when the data is divided into three levels based on the Crypto Fear and Greed Index. Table 49 covers these outcomes. Bitcoin, Cardano and Dogecoin agree on a significant positive relationship at the greed and mid-range levels while Ethereum and Cardano

both have a negative relationship between trading volume and the Index at the fear level. Once again Avalanche has no relationship between its trading volume and the Crypto Fear and Greed Index.

Table 49
Summary of Trading Volume Relationships
When the Data is Split into Crypto Fear and Greed Index Levels

Crypto F&G Levels	Bitcoin	Ethereum	Cardano	Avalanche	Dogecoin
Greed \geq 75	Strong	-	Moderate	-	Moderate
Mid-Range 26-74	Moderate	-	Moderate	-	Strong
Fear \leq 25	-	Moderate	Moderate	-	-

Red indicates a negative relationship

Conclusion, overall the results are patchy. The clearest results are derived when the Index is divided into greed, mid-range and fear but even then, nothing is consistent. Measuring relationships over long periods should be avoided but when divided into small groups, such as months, adjacent months can have totally different outcomes. The Crypto Fear and Greed Index may give investors some idea of the current performance of some aspects of the cryptocurrency market but it is not useful for making investment decisions.

References

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Appendix
A.1 Bitcoin

Table A.1.1
Monthly Spearman Rank Correlations
Between the Bitcoin Closing Price and the Crypto Fear and Greed Index

2021	Current F&G Index	1 Day ahead	5 days ahead	10 days ahead
January	0.3069 ^M	0.2918	0.5082 ^S	0.4645 ^S
February	0.5796 ^S	0.6448 ^S	0.7918^{VS}	0.6730 ^S
March	-0.1530	-0.1503	0.1658	-0.2931
April	0.7177^{VS}	0.5388 ^S	-0.1715	-0.3688^M
May	0.8220^{VS}	0.8278^{VS}	0.7102^{VS}	0.3413 ^M
June	0.3858 ^M	0.3341 ^M	-0.2901	-0.4058^S
July	0.7183^{VS}	0.6144 ^S	0.2498	0.3428 ^M
August	0.6852 ^S	0.7162^{VS}	0.7271^{VS}	0.7242^{VS}
September	0.8270^{VS}	0.6549 ^S	0.3635 ^M	0.6479 ^S
October	0.5961 ^S	0.5794 ^S	0.6406 ^S	0.7259^{VS}
November	0.8395^{VS}	0.8088^{VS}	0.6717 ^S	0.1631
December	0.3604 ^M	0.2519	0.0289	0.2237

2022	Current F&G Index	1 Day ahead	5 days ahead	10 days ahead
January	0.4486 ^S	0.3510 ^M	0.2716	0.6160 ^S
February	0.6794 ^S	0.5784 ^S	0.0827	-0.2553
March	0.8778^{VS}	0.6239 ^S	0.3213 ^M	-0.0229
April	0.7430^{VS}	0.6760 ^S	0.8221^{VS}	0.4292 ^S
May	0.5262 ^S	0.5995 ^S	0.3975 ^M	0.4838 ^S
June	0.5708 ^S	0.5426 ^S	0.3759 ^M	0.1306
July	0.8695^{VS}	0.7537^{VS}	0.5586 ^S	0.7870^{VS}
August	0.8127^{VS}	0.8200^{VS}	0.2772	-0.1278
September	0.2600	0.1768	0.1316	-0.3156^M
October	0.4165 ^S	0.4143 ^S	-0.2552	0.0633
November	0.5499 ^S	0.5741 ^S	0.5561 ^S	0.1431
December	-0.1586	-0.1902	-0.4531^S	-0.1239

VS = very strong, S = strong, M=moderate relationship. Red = negative relationship

Table A.1.2
Monthly Spearman Rank Correlations
Between the Bitcoin Trading Volume and the Crypto Fear and Greed Index

2021	Current F&G Index	1 Day ahead	5 days ahead	10 days ahead
January	0.2302	0.2627	0.2806	0.2567
February	0.1933	0.1609	0.1168	0.0412
March	-0.4969 ^S	-0.1731	0.2997	-0.0158
April	0.0265	0.1399	0.1657	0.3835 ^M
May	-0.5677 ^S	-0.5664 ^S	-0.3324 ^M	0.0386
June	-0.3566 ^M	-0.3366 ^M	0.2549	0.2290
July	0.0797	0.2766	0.0218	0.2291
August	-0.4539 ^S	-0.3778 ^M	-0.5060 ^S	-0.3621 ^M
September	0.0933	0.1750	0.2437	0.0116
October	-0.0079	0.1217	-0.1795	-0.0849
November	0.0241	-0.0145	-0.0792	-0.0786
December	-0.3584 ^M	-0.0042	0.3507 ^M	0.2109
2022	Current F&G Index	1 Day ahead	5 days ahead	10 days ahead
January	-0.4228 ^S	-0.1565	-0.0248	-0.2522
February	-0.2210	-0.1502	-0.1286	0.0444
March	-0.6305 ^S	-0.5350 ^S	-0.0702	-0.1120
April	-0.0509	-0.0121	0.0252	-0.0203
May	0.4720 ^S	0.5884 ^S	0.7462^{VS}	0.5953 ^S
June	-0.4996 ^S	-0.5077 ^S	-0.0472	0.3274 ^M
July	0.4276 ^S	0.3590 ^M	0.3819 ^M	0.3613 ^M
August	-0.2298	-0.2822	-0.1096	0.1833
September	-0.1286	0.0245	-0.4032 ^S	-0.2388
October	0.1673	-0.1080	0.0622	0.1214
November	0.3777 ^M	0.5000 ^S	0.3925 ^M	0.2230
December	0.1355	-0.0861	-0.1987	-0.4201 ^S

VS = very strong, S = strong, M=moderate relationship. Red = negative relationship

A.2 Ethereum

Table A.2.1
Monthly Spearman Rank Correlations
Between the Ethereum Closing Price and the Crypto Fear and Greed Index

2021	Current F&G Index	1 Day ahead	5 days ahead	10 days ahead
January	-0.6509 ^S	-0.7045 ^{VS}	-0.6264 ^S	-0.3911 ^M
February	0.6907 ^S	0.6648 ^S	0.3920 ^M	0.1340
March	0.1501	0.1384	0.3211 ^M	-0.4609 ^S
April	-0.2475	-0.3623 ^M	-0.2307	0.5260 ^S
May	0.7124 ^{VS}	0.7790 ^{VS}	0.8165 ^{VS}	0.3426 ^M
June	0.0484	0.0124	-0.2513	-0.4727 ^S
July	0.7000 ^{VS}	0.6288 ^S	0.3781 ^M	0.3086 ^M
August	0.5404 ^S	0.6103 ^S	0.6664 ^S	0.5689 ^S
September	0.8067 ^{VS}	0.6765 ^S	0.4437 ^S	0.6880 ^S
October	0.4099 ^S	0.4335 ^S	0.7394 ^{VS}	0.8278 ^{VS}
November	0.6516 ^S	0.6145 ^S	0.2984	-0.0883
December	0.1055	-0.0329	-0.0244	0.4223 ^S

2022	Current F&G Index	1 Day ahead	5 days ahead	10 days ahead
January	0.4191 ^S	0.3879 ^M	0.3008 ^M	0.6346 ^S
February	0.6887 ^S	0.5026 ^S	-0.0659	-0.4503 ^S
March	0.8628 ^{VS}	0.6797 ^S	0.2900	-0.1098
April	0.7539 ^{VS}	0.7200 ^{VS}	0.8393 ^{VS}	0.4760 ^S
May	0.4042 ^S	0.5894 ^S	0.5577 ^S	0.6557 ^S
June	0.5967 ^S	0.5852 ^S	0.3529 ^M	0.0387
July	0.8534 ^{VS}	0.7709 ^{VS}	0.6675 ^S	0.8533 ^{VS}
August	0.7274 ^{VS}	0.7161 ^{VS}	0.2789	-0.0371
September	0.2254	0.1905	-0.0612	-0.1234
October	0.3956 ^M	0.4503 ^S	-0.2425	0.0020
November	0.6041 ^S	0.5835 ^S	0.6174 ^S	0.1364
December	-0.2451	-0.2833	-0.4900 ^S	-0.2016

VS = very strong, S = strong, M=moderate relationship. Red = negative relationship

Table A.2.2
Monthly Spearman Rank Correlations
Between the Ethereum Trading Volume and the Crypto Fear and Greed Index

2021	Current F&G Index	1 Day ahead	5 days ahead	10 days ahead
January	0.2830	0.2561	0.2990	0.2948
February	-0.2680	-0.1697	-0.2941	-0.0492
March	0.1350	0.0635	-0.1358	-0.1158
April	0.3084	0.4388 ^S	0.4611 ^S	-0.1698
May	-0.6268 ^S	-0.6713 ^S	-0.5654 ^S	-0.1453
June	-0.0518	-0.1778	0.0013	0.1695
July	-0.0937	0.1333	-0.0020	-0.1213
August	-0.2205	-0.1429	-0.3949 ^M	-0.2176
September	-0.1307	-0.0499	0.1535	-0.1260
October	-0.3271 ^M	-0.3426 ^M	-0.3269 ^M	-0.2048
November	-0.1190	-0.1599	-0.2299	-0.1689
December	-0.4112	-0.1293	-0.0467	0.4578 ^S
2022	Current F&G Index	1 Day ahead	5 days ahead	10 days ahead
January	-0.4920 ^S	-0.2561	-0.0802	-0.2719
February	-0.4167 ^S	-0.2643	-0.1264	0.1892
March	-0.6285 ^S	-0.6250 ^S	-0.1692	-0.1472
April	-0.1230	-0.0234	-0.0045	0.0793
May	-0.3546 ^M	-0.2683	0.1535	0.1149
June	-0.4938 ^S	-0.4795 ^S	-0.1349	0.1533
July	-0.1080	-0.1884	0.1959	0.1523
August	0.0097	-0.1125	-0.0595	0.1078
September	0.0082	0.1073	-0.1424	0.0187
October	0.3453 ^M	0.0716	0.0445	0.1206
November	0.1444	0.3457 ^M	0.3777 ^M	0.1973
December	0.1909	0.0031	-0.2482	-0.4326 ^M

VS = very strong, S = strong, M=moderate relationship. Red = negative relationship

A.3 Cardano

Table A.3.1
Monthly Spearman Rank Correlations
Between the Cardano Closing Price and the Crypto Fear and Greed Index

2021	Current F&G Index	1 Day ahead	5 days ahead	10 days ahead
January	-0.6347 ^S	-0.6635 ^S	-0.5870 ^S	-0.2580
February	-0.0535	0.1381	0.7294 ^{VS}	0.8434 ^{VS}
March	-0.1087	-0.1864	-0.0608	0.0610
April	0.4290 ^S	0.1679	-0.3837 ^M	0.0794
May	-0.0523	0.0491	0.1656	0.1116
June	0.0455	0.0105	-0.2622	-0.4946 ^S
July	0.3398 ^M	0.3843 ^M	0.5433 ^S	0.0180
August	0.7090 ^{VS}	0.7763 ^{VS}	0.8638 ^{VS}	0.8168 ^{VS}
September	0.8032 ^{VS}	0.6834 ^S	0.7172 ^{VS}	0.7303 ^{VS}
October	-0.3774 ^M	-0.4456 ^S	-0.6915 ^S	-0.8546 ^{VS}
November	0.9037 ^{VS}	0.8537 ^{VS}	0.6744 ^S	0.2866
December	0.4283 ^S	0.4178 ^S	0.2879	0.2966

2022	Current F&G Index	1 Day ahead	5 days ahead	10 days ahead
January	0.2903	0.2115	0.2145	0.2678
February	0.5766 ^S	0.3725 ^M	-0.2151	-0.6798 ^S
March	0.8713 ^{VS}	0.7137 ^{VS}	0.3686 ^M	-0.1084
April	0.7997 ^{VS}	0.7713 ^{VS}	0.8415 ^{VS}	0.5023 ^S
May	0.4899 ^S	0.5780 ^S	0.4757 ^S	0.5702 ^S
June	0.4886 ^S	0.4135 ^S	0.2233	0.1411
July	0.7869 ^{VS}	0.6873 ^S	0.3896 ^M	0.6701 ^S
August	0.8176 ^{VS}	0.8118 ^{VS}	0.2781	0.1841
September	0.2348	0.2276	-0.0239	-0.0665
October	0.2371	0.2447	-0.2291	-0.1092
November	0.5405 ^S	0.5575 ^S	0.7626 ^{VS}	0.2809
December	-0.3747 ^M	-0.2961	-0.5363 ^S	-0.5054 ^S

VS = very strong, S = strong, M=moderate relationship. Red = negative relationship

Table A.3.2
Monthly Spearman Rank Correlations
Between the Cardano Trading Volume and the Crypto Fear and Greed Index

2021	Current F&G Index	1 Day ahead	5 days ahead	10 days ahead
January	0.5577 ^S	0.6162 ^S	0.6939 ^S	0.5853 ^S
February	-0.4336 ^S	-0.3265 ^M	-0.1896	0.0661
March	0.0103	0.0695	0.1612	0.4739 ^S
April	0.2029	0.1417	0.2701	0.2142
May	-0.4215 ^S	-0.3621 ^M	0.0678	0.0472
June	-0.1296	-0.3315 ^M	-0.0096	0.0767
July	0.0979	0.1988	0.0106	0.3046 ^M
August	0.4473 ^S	0.4998 ^S	0.4348 ^S	0.4137 ^S
September	-0.0343	0.0397	0.2449	0.0405
October	-0.0198	-0.1415	0.1468	0.2012
November	0.1083	0.0326	-0.3198 ^M	-0.2100
December	-0.2474	-0.0659	0.0107	0.4411 ^S
2022	Current F&G Index	1 Day ahead	5 days ahead	10 days ahead
January	-0.4099 ^S	-0.3634 ^M	-0.1918	-0.5799 ^S
February	-0.1677	-0.2550	-0.1041	0.1846
March	0.7736 ^{VS}	0.4500 ^S	0.4500 ^S	-0.2123
April	-0.0538	0.0446	0.0642	-0.0492
May	-0.2725	-0.2819	0.2102	0.3667 ^M
June	-0.1148	-0.0870	0.2403	0.4543 ^S
July	0.5514 ^S	0.4974 ^S	0.5562 ^S	0.6630 ^S
August	0.2164	0.1311	0.1505	0.2533
September	0.0610	0.1682	-0.3832 ^M	-0.0450
October	0.2842	-0.0438	0.2876	0.0771
November	0.3766 ^M	0.5111 ^S	0.6516 ^S	0.2682
December	0.4119 ^S	0.3568 ^M	0.1043	-0.0986

VS = very strong, S = strong, M=moderate relationship. Red = negative relationship

A.4 Avalanche

Table A.4.1
Monthly Spearman Rank Correlations
Between the Avalanche Closing Price and the Crypto Fear and Greed Index

2021	Current F&G Index	1 Day ahead	5 days ahead	10 days ahead
January	-0.7769^{VS}	-0.7614^{VS}	-0.6707^S	-0.3379^M
February	0.6761 ^S	0.7719^{VS}	0.4607 ^S	0.2775
March	-0.1340	-0.0164	0.3149 ^M	-0.3300^M
April	0.6284 ^S	0.4070 ^S	-0.3036^M	-0.2113
May	0.6537 ^S	0.7130^{VS}	0.8302^{VS}	0.4272 ^S
June	0.0542	0.0497	-0.1598	-0.5334^S
July	0.4553 ^S	0.4671 ^S	0.5385 ^S	0.0694
August	0.7925^{VS}	0.8048^{VS}	0.8177^{VS}	0.8827^{VS}
September	-0.5478^S	-0.6739^S	-0.6137^S	-0.5785^S
October	-0.3474^M	-0.3183^M	0.0306	0.1080
November	-0.7764^{VS}	-0.7810^{VS}	-0.4614^S	-0.1265
December	0.5268 ^S	0.4004 ^S	0.0804	-0.2816

2022	Current F&G Index	1 Day ahead	5 days ahead	10 days ahead
January	0.4118 ^S	0.3459 ^M	0.3333 ^M	0.6638 ^S
February	0.6659 ^S	0.7033^{VS}	0.2212	0.1602
March	0.8187^{VS}	0.6298 ^S	0.2758	-0.1011
April	0.7903^{VS}	0.7539^{VS}	0.8386^{VS}	0.4299 ^S
May	0.4138 ^S	0.5555 ^S	0.5664 ^S	0.7323^{VS}
June	0.6709 ^S	0.5693 ^S	0.1504	-0.1429
July	0.8629^{VS}	0.7465^{VS}	0.5865 ^S	0.8307^{VS}
August	0.7541^{VS}	0.7196^{VS}	0.2357	-0.0136
September	0.2383	0.1887	-0.1215	0.0226
October	0.4738 ^S	0.4547 ^S	-0.2444	-0.0878
November	0.6159 ^S	0.5933 ^S	0.7035^{VS}	0.2376
December	-0.2650	-0.3643^M	-0.5113^S	-0.4702^S

VS = very strong, S = strong, M=moderate relationship. Red = negative relationship

Table A.4.2
Monthly Spearman Rank Correlations
Between the Avalanche Trading Volume and the Crypto Fear and Greed Index

2021	Current F&G Index	1 Day ahead	5 days ahead	10 days ahead
January	-0.4825 ^S	-0.4740 ^S	-0.3456 ^M	-0.0627
February	0.6099 ^S	0.7264 ^{VS}	0.0885	-0.0678
March	0.0265	0.0703	0.6307 ^S	0.0129
April	0.4408 ^S	0.4072 ^S	0.0497	-0.1771
May	0.5477 ^S	0.5020 ^S	0.7197 ^{VS}	0.4847 ^S
June	-0.1080	-0.1205	-0.0078	-0.3684 ^M
July	0.4473 ^S	0.5153 ^S	0.3517 ^M	-0.1603
August	0.7107 ^{VS}	0.7212 ^{VS}	0.6549 ^S	0.9017 ^{VS}
September	-0.2173	-0.2463	-0.0285	-0.1874
October	-0.3153 ^M	-0.3611 ^M	-0.2274	-0.3166 ^M
November	-0.5544 ^S	-0.6342 ^S	-0.2373	-0.0755
December	-0.0954	0.0012	0.1016	-0.2018

2022	Current F&G Index	1 Day ahead	5 days ahead	10 days ahead
January	-0.4001 ^S	-0.2445	0.3126 ^M	0.1719
February	0.0099	0.0705	0.0132	0.5106 ^S
March	0.4305 ^S	0.2137	0.0621	-0.2060
April	0.4459 ^S	0.4509 ^S	0.5925 ^S	0.3479 ^M
May	-0.1127	-0.1058	0.2286	0.2518
June	-0.0159	0.0783	0.2564	0.1615
July	0.4706 ^S	0.3202 ^M	0.3136 ^M	0.6072 ^S
August	0.2395	0.0811	0.0728	0.0012
September	0.3518 ^M	0.4174 ^S	-0.0186	-0.2164
October	0.4392 ^S	0.0882	0.1433	-0.0017
November	0.5976 ^S	0.7097 ^{VS}	0.5677 ^S	0.1899
December	0.2645	-0.0305	-0.1759	-0.4688 ^S

VS = very strong, S = strong, M=moderate relationship. Red = negative relationship

A.5 Dogecoin

Table A.5.1
Monthly Spearman Rank Correlations
Between the Dogecoin Closing Price and the Crypto Fear and Greed Index

2021	Current F&G Index	1 Day ahead	5 days ahead	10 days ahead
January	0.2997	0.2050	0.1164	-0.0497
February	0.3949 ^M	0.4528 ^S	0.0027	-0.0865
March	0.0231	0.0886	0.5058 ^S	-0.4300 ^S
April	-0.0910	-0.0713	0.0425	0.4313 ^S
May	0.6143 ^S	0.6669 ^S	0.8305^{VS}	0.3034 ^M
June	-0.0007	-0.0410	-0.3473 ^M	-0.4520 ^S
July	0.3558 ^M	0.3973 ^M	0.5004 ^S	-0.0505
August	0.5827 ^S	0.6599 ^S	0.5980 ^S	0.5645 ^S
September	0.8252^{VS}	0.7440^{VS}	0.6705 ^S	0.6795 ^S
October	0.2068	0.2350	0.3625 ^M	0.5843 ^S
November	0.8462^{VS}	0.7912^{VS}	0.6437 ^S	0.2334
December	0.4564 ^S	0.3602 ^M	0.1356	0.0071

2022	Current F&G Index	1 Day ahead	5 days ahead	10 days ahead
January	0.3021 ^M	0.1956	0.1888	0.4146 ^S
February	0.6673 ^S	0.5097 ^S	0.0310	-0.5527 ^S
March	0.8357^{VS}	0.6990 ^S	0.5030 ^S	-0.0350
April	0.5854 ^S	0.5045 ^S	0.5811 ^S	0.6845 ^S
May	0.4180 ^S	0.5786 ^S	0.5010 ^S	0.6566 ^S
June	0.6720 ^S	0.5928 ^S	0.2012	-0.1644
July	0.4122 ^S	0.2581	-0.1702	0.2830
August	0.6823 ^S	0.7749^{VS}	0.4917 ^S	-0.0627
September	-0.0137	-0.1852	-0.0381	0.1845
October	0.4132 ^S	0.4753 ^S	-0.1674	-0.0926
November	0.6406 ^S	0.5420 ^S	0.3448 ^M	-0.2360
December	-0.3798 ^M	-0.3515 ^M	-0.5023 ^S	-0.4967 ^S

VS = very strong, S = strong, M=moderate relationship. Red = negative relationship

Table A.5.2
Monthly Spearman Rank Correlations
Between the Dogecoin Trading Volume and the Crypto Fear and Greed Index

2021	Current F&G Index	1 Day ahead	5 days ahead	10 days ahead
January	0.5345 ^S	0.4869 ^S	0.2790	0.0743
February	-0.0338	0.0069	-0.6374 ^S	-0.7004 ^{VS}
March	0.4277 ^S	0.3979 ^M	0.4596 ^S	0.2515
April	0.4840 ^S	0.4792 ^S	0.2668	0.1415
May	0.6024 ^S	0.6276 ^S	0.4782 ^S	0.4340 ^S
June	-0.4010 ^S	-0.5249 ^S	0.1308	0.0914
July	-0.1658	0.0581	-0.2178	-0.0951
August	0.1440	0.1091	-0.2852	-0.0158
September	0.3638 ^M	0.4852 ^S	0.5631 ^S	0.1551
October	0.1955	0.0915	0.2122	0.5889 ^S
November	0.3538 ^M	0.2440	-0.0794	-0.2810
December	-0.0992	0.0539	0.0208	0.0770

2022	Current F&G Index	1 Day ahead	5 days ahead	10 days ahead
January	-0.5136 ^S	-0.4166 ^S	-0.0520	-0.3907 ^M
February	0.2489	0.2973	0.1731	-0.0694
March	0.8347 ^{VS}	0.5307 ^S	0.2879	-0.1152
April	0.1632	0.0751	0.2059	0.4233 ^S
May	-0.1160	-0.0362	0.4977 ^S	0.5307 ^S
June	-0.3694 ^M	-0.3126 ^M	-0.1028	-0.1026
July	0.3013 ^M	0.2268	0.1516	0.3984 ^M
August	0.3218 ^M	0.2446	0.2881	0.1910
September	0.3525 ^M	0.3185 ^M	-0.3249 ^M	0.1324
October	0.4617 ^S	0.2271	0.0874	0.0521
November	0.5452 ^S	0.5718 ^S	0.5008 ^S	-0.1660-
December	0.1563	-0.1418	0.0442	-0.4554 ^S

VS = very strong, S = strong, M=moderate relationship. Red = negative relationship