

Bitcoin/Crypto Analysis

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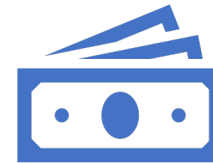
What are we looking for?



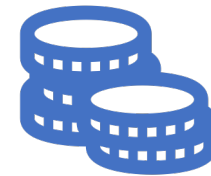
What is the best time of year to invest in Bitcoin? Is there a certain time of year where the price may be lower consistently?



Is there any relationship between the price of the coin and the Circulating Supply?



Is the price always at its highest when the Market Cap is at its highest



How is Bitcoin performing in comparison to other popular coins such as Ethereum and Litecoin

Key Terms

Crypto Currency: a digital currency in which transactions are verified and records maintained by a decentralized system using cryptography, rather than by a centralized authority

Market Cap: Crypto market capitalization is the total value of a cryptocurrency

Circulating Supply: Circulating Supply is the total number of coins or tokens that are actively available for trade and are being used in the market and in general public

The Data



As we haven't been provided a dataset for this piece of analysis, I've had to source the data myself. To achieve this, I designed a web Scraper using some python software called Scrapy, this allowed me to download a dataset of Crypto Prices from the website www.coinmarketcap.com

Date	Name	Symbol	Price	Market Cap	Circulating Supply
Historical Snapshot - 18 May 2014	Bitcoin	BTC	\$446.26	\$5,706,167,060.01	12,786,525
Historical Snapshot - 18 May 2014	Litecoin	LTC	\$10.36	\$295,067,065.81	28,480,054
Historical Snapshot - 18 May 2014	XRP	XRP	\$0.006004	\$46,938,108.57	7,817,889,792
Historical Snapshot - 18 May 2014	Peercoin	PPC	\$2.07	\$44,387,387.33	21,412,062
Historical Snapshot - 18 May 2014	Nxt	NXT	\$0.03905	\$39,047,534.81	999,997,120
Historical Snapshot - 18 May 2014	Dogecoin	DOGE	\$0.0004486	\$35,125,175.50	78,300,807,168
Historical Snapshot - 18 May 2014	Dash	DASH	\$6.38	\$27,439,485.61	4,301,024
Historical Snapshot - 18 May 2014	Namecoin	NMC	\$1.98	\$17,412,679.43	8,795,332
Historical Snapshot - 18 May 2014	Omni	OMNI	\$23.39	\$14,492,684.55	619,478
Historical Snapshot - 18 May 2014	BlackCoin	BLK	\$0.08454	\$6,301,694.01	74,537,360

Data After Cleaning

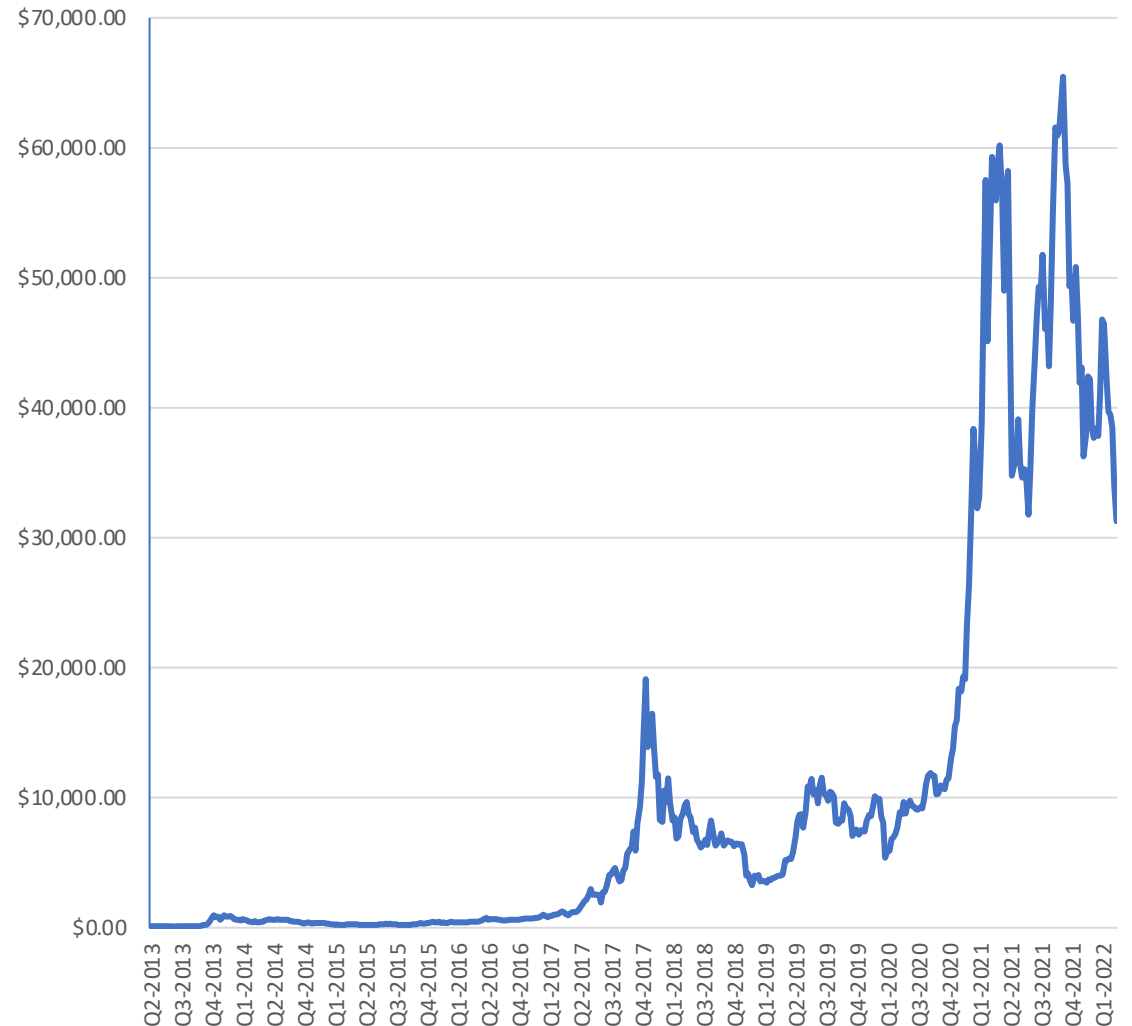
- The data cleaning process was done using the Pandas library with Python, it was also done on a Jupyter Notebook which will be attached to this presentation. A couple of steps in the data cleaning were
 - Remove text from the data column and format the number as a date
 - Sort the values so the coins appear concurrently instead of in any order
 - Save a separate dataset for each coin with over a 52 weeks worth of data, this is for further analysis and will be attached

Formatted date	Name	Symbol	Price(\$)	Market Cap (\$)	Circulating Supply
28/04/2013	Bitcoin	BTC	134.21	1488566972	11091325
05/05/2013	Bitcoin	BTC	115.91	1288693216	11118050
12/05/2013	Bitcoin	BTC	115	1281982625	11147675
19/05/2013	Bitcoin	BTC	121.99	1363205020	11174725
26/05/2013	Bitcoin	BTC	133.48	1495292967	11202375
02/06/2013	Bitcoin	BTC	122.29	1373839383	11234075
09/06/2013	Bitcoin	BTC	100	1126642500	11266425

Is there a good time of year to invest in Bitcoin?

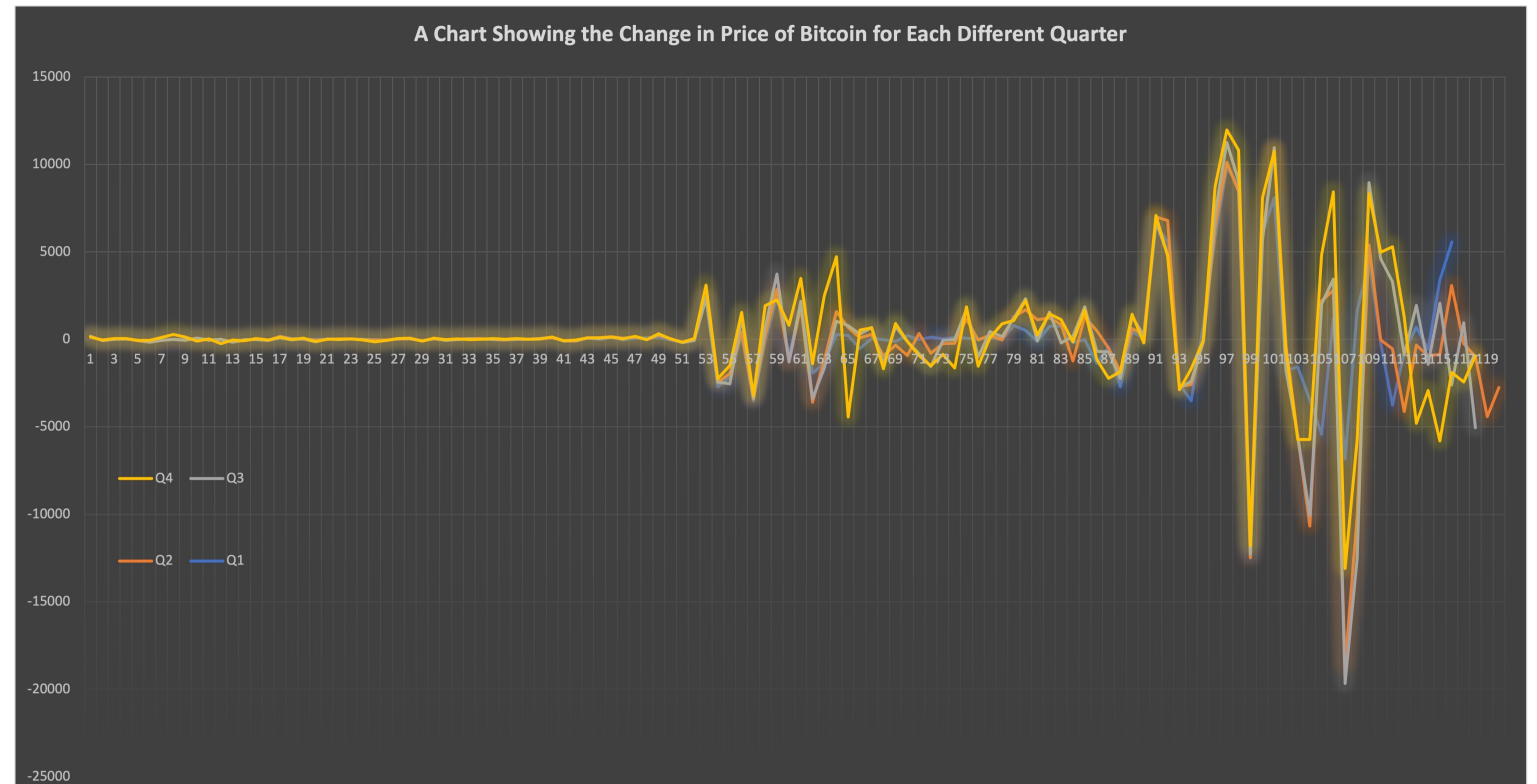
- I thought the best way to answer this question was through a simple Line Graph plotting the price of Bitcoin against the time of year. I think this chart shows the price of Bitcoin is very volatile, however it does appear that most of the major rises occur around the 4th quarters, further investigation would be required to determine if this is the case though.

A Chart Plotting the Price Of Bitcoin Against the Time of Year



Further Investigation

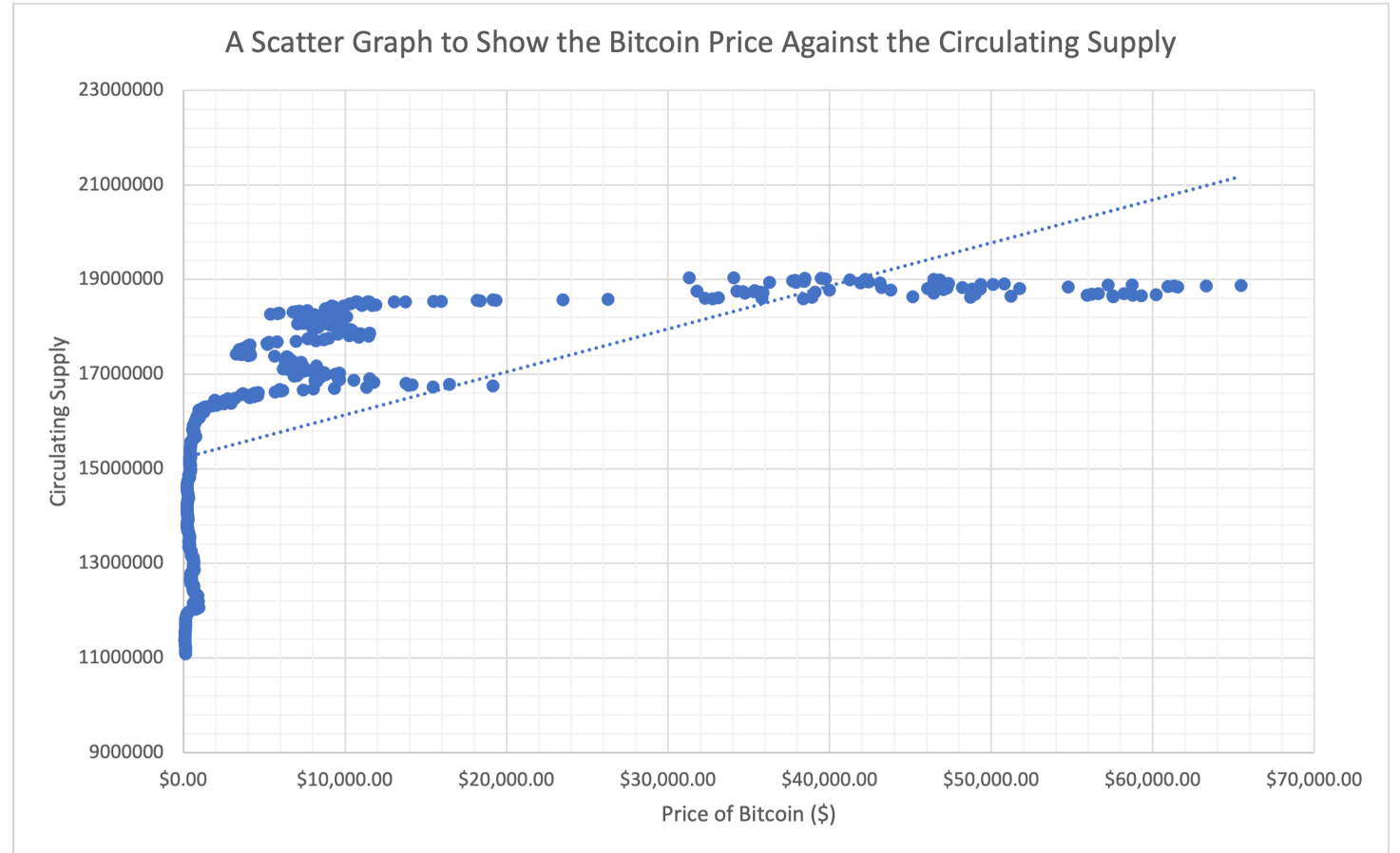
This line graph shows us the different price changes for each quarter, I think the numbers in the table and the line chart tell us that if you were going to invest in Bitcoin, then just before the 4th quarter may be the best time to do it, it has the highest average change and highest sum of changes, also from the chart it looks like Q4 has the highest highs but not the lowest lows.



	Average Changes	Sum of Changes
Q1	159.3344828	18482.8
Q2	-227.24425	-27269.31
Q3	74.52355932	8793.78
Q4	264.0985593	31163.63

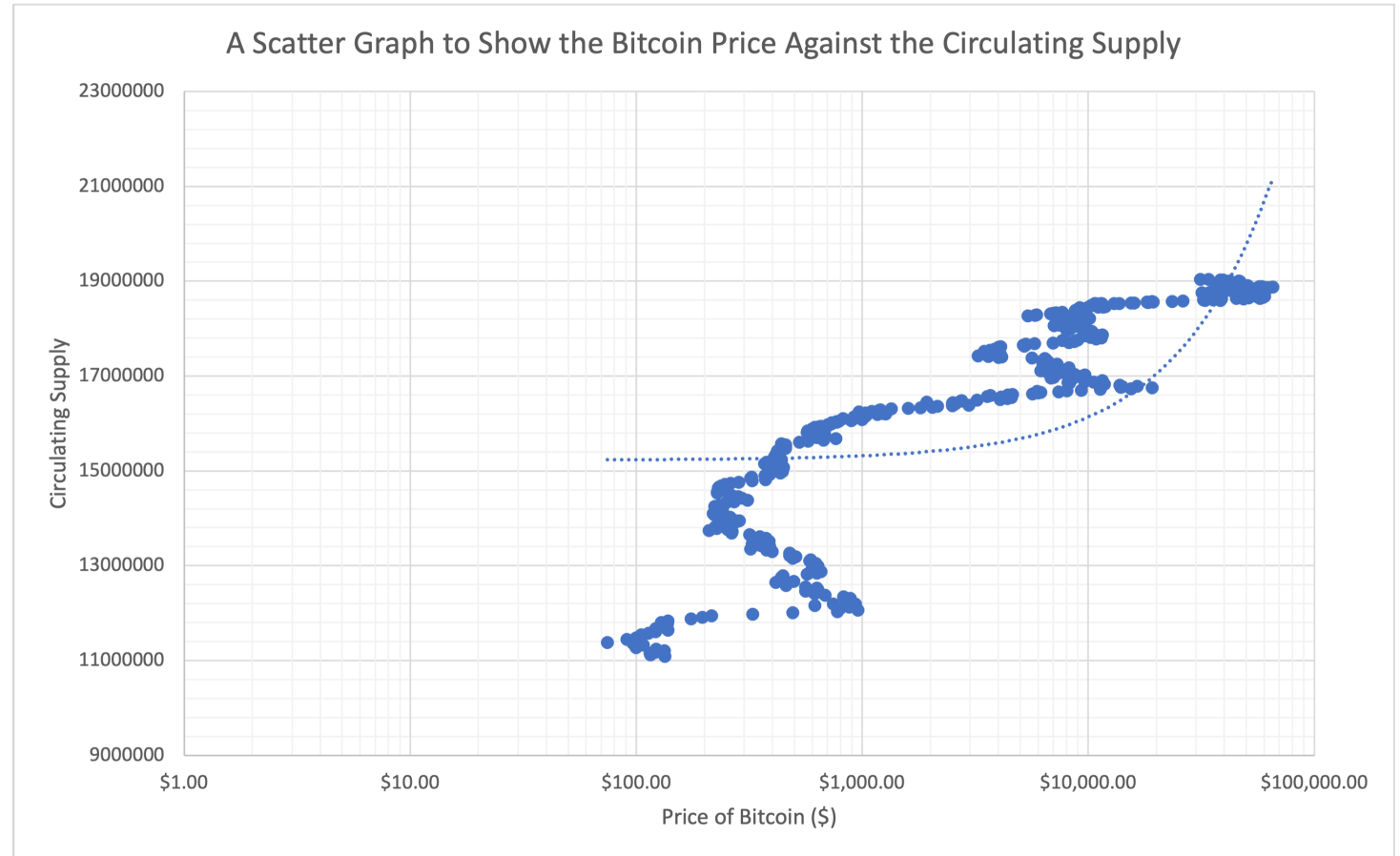
Price Vs Supply

- This is a chart plotting the Price of Bitcoin against the Circulating Supply with a trend line cutting through it. Note that the Y-axis doesn't start at 0, this is because the minimum value for the supply is 10000000 and starting at 0 would have wasted a lot of space, to get a better idea of the relationship between these two characteristics, I have edited the chart, so the price increases on a logarithmic scale, allowing us to see more clearly when the price of the coin is lower.



Price v Supply Correlation

This scatter chart has a lot more clarity at the lower end of the price scale, note that the Y-axis starts at 9 million again. We do see that there is a positive trend between the price of the coin and the circulating supply, this is also shown by our working of the correlation coefficient below the chart, a result of 0.634 tells us there is a positive correlation between these two figures, however the chart tells us that when the price drops the supply doesn't, suggesting only correlation and not causation.



Correlation Coefficient

0.634409092

		Date
Max Change	£9,813.85	14/02/2021
Min Change	-£12,402.17	28/02/2021
Average Price Change		\$66.04
Highest Price	£65,466.84	14/11/2021
Lowest Price	£74.56	07/07/2013
Average Price		\$10,395.53
Max Market Cap	£1,235,580,000,000.00	14/11/2021
Min Market Cap	£848,838,935.60	07/07/2013

Is the Price the Highest when Market Cap is Highest?

This table shows that the highest market cap occurs while the price is at its highest.

This is also the case for the lowest figures.

How is Bitcoin Performing in Comparison to Other Popular Coins

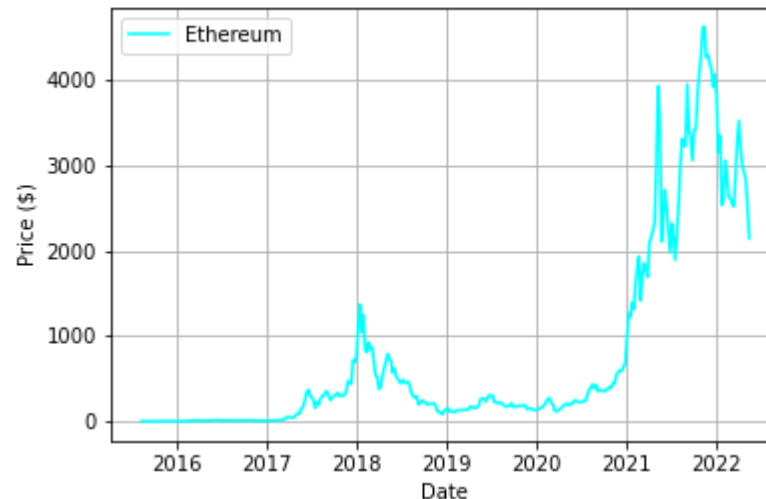
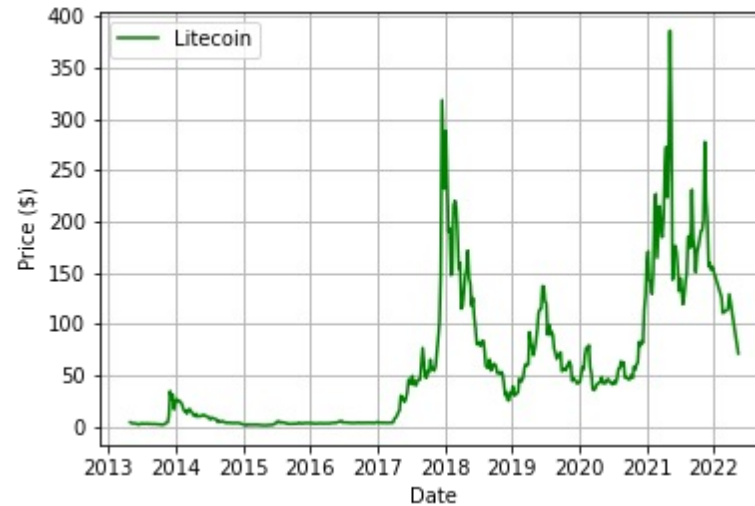
Row Labels	Count of Name	Average of Price(\$)
Bitcoin	473	£10,395.53
XRP	459	£0.30
Litecoin	459	£57.09
Ethereum	354	£749.26
Monero	346	£63.85
Stellar	326	£0.12
Dash	305	£121.64
Dogecoin	257	£0.05
Tether	251	£1.00
Cardano	241	£0.49
Bitcoin Cash	222	£545.89
Binance Coin	196	£118.02
Ethereum Classic	191	£13.44

Row Labels	Count of Name	Average of Price(\$)
Solana	1	£58.81
Wrapped Bitcoin	1	£31,259.19
TRON	1	£0.07
Bitcoin	1	£31,305.11
Binance USD	1	£1.00
Cardano	1	£0.60
Tether	1	£1.00
Dogecoin	1	£0.09
USD Coin	1	£1.00
Ethereum	1	£2,145.71
XRP	1	£0.45
Litecoin	1	£71.53
Polkadot	1	£11.80

The pivot table on the left was created to show us which coins we were able to get the most data on, these are the more popular coins.

The table on the right has been created to check whether we have up to date data on the coins, the date set at the time was the 15th of May 2022

Line Graphs to show the Price of Crypto Coins



These line graphs all show the price of the coins against the dates, due to the vast difference in prices make sure to check the y axes as they all differ, what these charts do show us though is that all these cryptos follow a similar pattern, with all of them having a high in 2018, and again in 2021, with them all dropping in 2022

Correlation Coefficient Matrix

	Bitcoin	XRP	Litecoin	Ethereum
Bitcoin	1	0.66642808	0.79916143	0.93313531
XRP	0.66642808	1	0.87186758	0.71065561
Litecoin	0.79916143	0.87186758	1	0.75411305
Ethereum	0.93313531	0.71065561	0.75411305	1

The table above gives us the Pearson Correlation Coefficients of each of these crypto currencies plotted against each other.

The Pearson Correlation Coefficient measures the strength and direction of the linear relationship between each variable.

As there isn't a value in the matrix below 0.6, we can determine that all these Crypto prices generally head in the same direction, however it seems that the relationship between the price of Bitcoin and Ethereum is very strong, meaning that if one is rising then the other probably will be too.

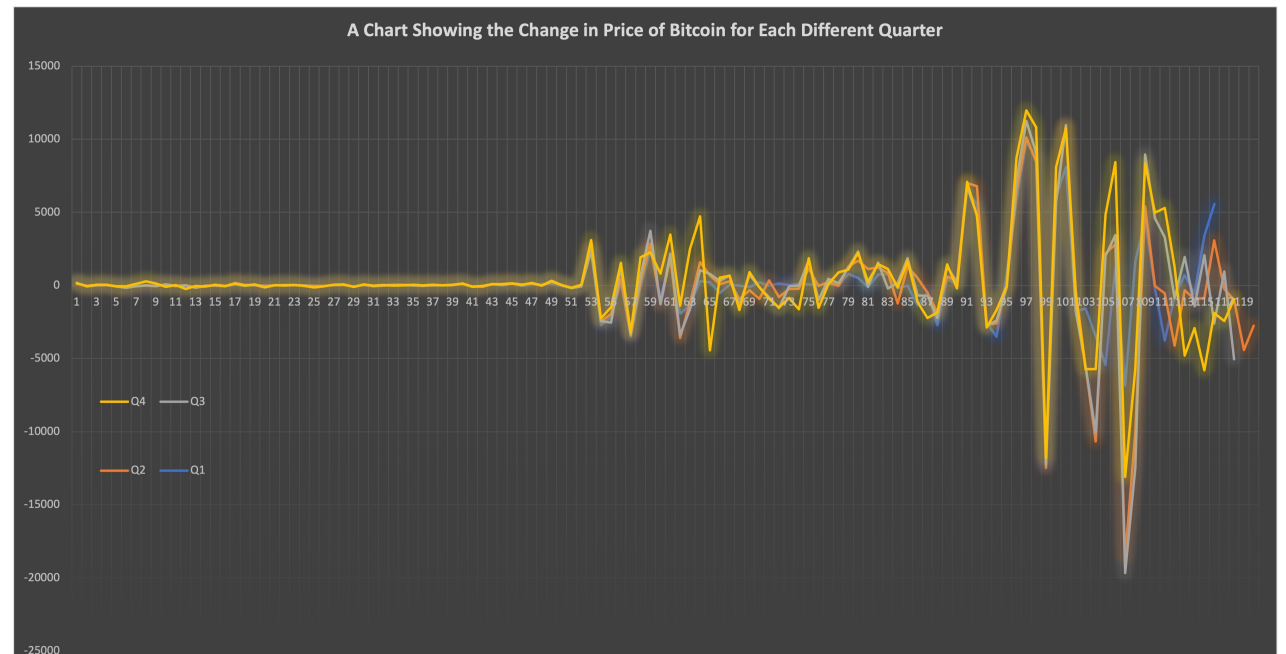
Conclusions

Is one time of year better to invest than another?

The best time to invest in Bitcoin would appear to be the beginning of the fourth quarter, as this is where the biggest rises in profit occur.

The worst time would be at the start of the second quarter, this is the only quarter with net overall losses, I don't know why this could be

	Average Changes	Sum of Changes
Q1	159.3344828	18482.8
Q2	-227.24425	-27269.31
Q3	74.52355932	8793.78
Q4	264.0985593	31163.63



Correlation Coefficient

0.634409092

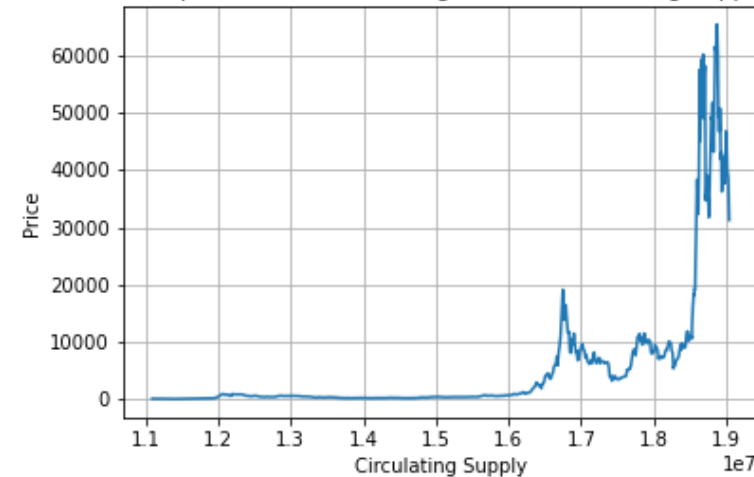
Is the market capitalization highest when the price is at the highest?

Yes, it is.

		Date
Max Change	£9,813.85	14/02/2021
Min Change	-£12,402.17	28/02/2021
Average Price Change	\$66.04	
Highest Price	£65,466.84	14/11/2021
Lowest Price	£74.56	07/07/2013
Average Price	\$10,395.53	
Max Market Cap	£1,235,580,000,000.00	14/11/2021
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With a correlation coefficient of 0.63, there does seem to be some sort of linear relationship between these two characteristics, however the circulating supply doesn't drop and keeps rising when the price drops

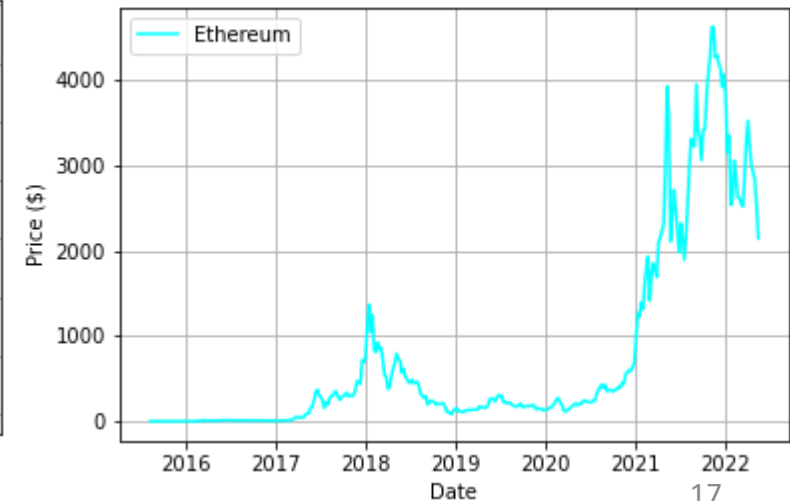
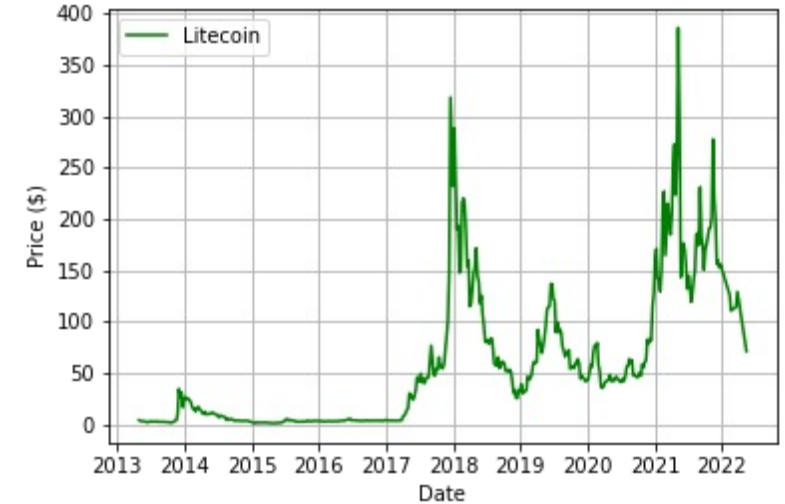
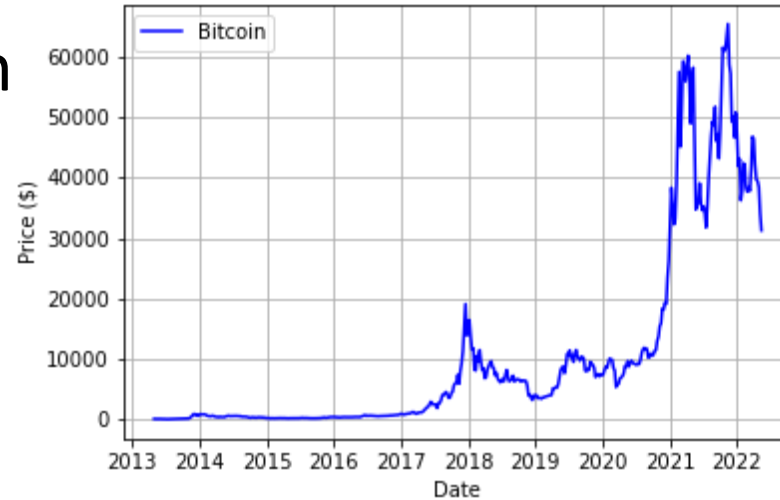
A Graph to Show the Price against the Circulating Supply



Is there a relationship between the price of the coin and the circulating supply?

Performance against other Crypto Coins

From the information we have, I would say that Bitcoin is performing similarly well to the other currencies explored, with the information we have I wouldn't specifically be able to recommend a different coin though



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Thankyou for paying attention!

This report was made using Excel, Word,
Python, Pandas, Numpy and Powerpoint!

A report by Thomas Wasnidge