



CRYPTOBOARD
CRYPTO INSIGHTS

CryptoBoard: Trader Dashboard for Cryptocurrency Insights

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Objectives

- Develop a dashboard for experienced traders who are looking to understand the movements of cryptocurrencies compared with traditional stocks and indices.
- Highlight key areas of stock movement, volatility, returns and influential events and their bearing on market movements
- Perform the above with an intuitive and familiar set of visualizations



User Goals and Tasks

- **User Goal 1:** Be able to assess the returns on cryptocurrencies compared to publicly traded stocks and indices.
- **User Goal 2:** Be able to compare the ATR (longer term volatility) versus returns of cryptocurrencies against publicly traded stocks and indices.
- **User Goal 3:** Be able to assess the volatility of cryptocurrencies versus stocks by assessing the fluctuations in price.
- **User Goal 4:** Be able to understand the impact of events on the prices of cryptocurrencies versus other stocks.



Data Sources

- We analyzed several datasets including Yahoo Finance, Twitter trends, Elon Musk tweets, and a collection of relevant world events and news articles
- Our events database was constructed with data that we retrieved independently, including Elon Musk's tweets, government announcements that impacted the crypto market as well as other world events that may have an influence on crypto market performance
- Our initial work that includes data importing, data transformation, exploratory data analysis and even basic charts was done in Altair

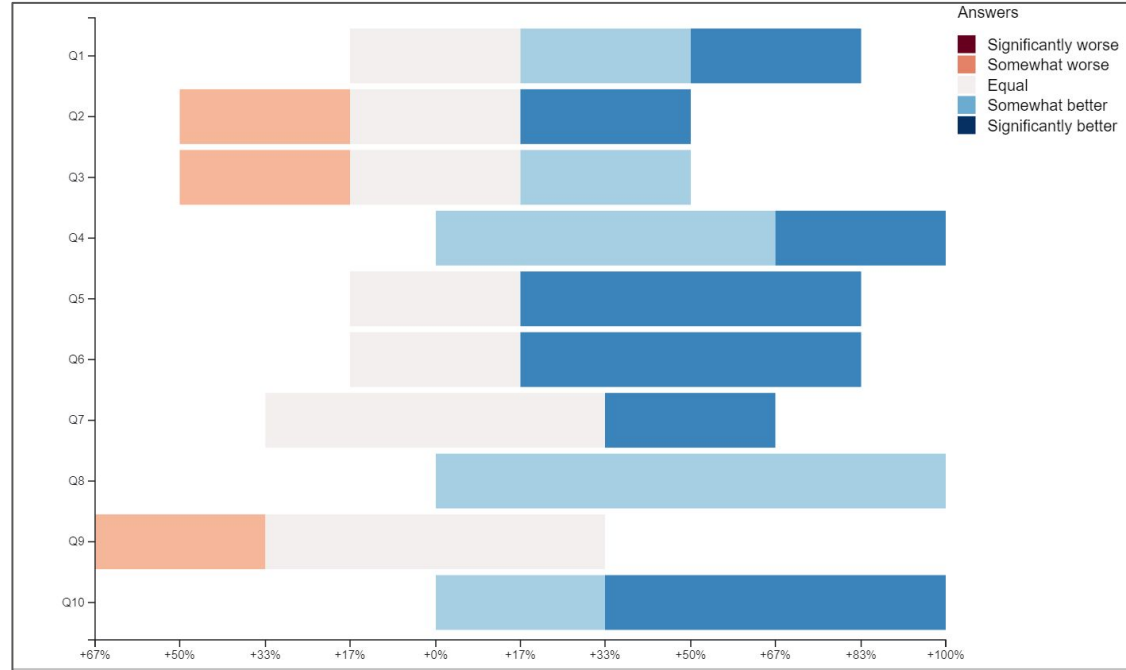


Tools Selected

Activity/Component	Framework/Tool
EDA	Python, Matplotlib, Altair
Website	Apache, Python, Flask, HTML, Javascript
Dashboard	Observable, D3, Vega, VegaLite

Usability Test Result and Reviews

- Individual usability tests were performed by every member of the group with 3 test users each
- Tests included some activity tasks to explore our Dashboard, a likert scale to grade the functionalities and overall usability.
- Based on their feedback our team decided to work on some enhancements to improve the Dashboard.



Some Example Tasks/Questions:

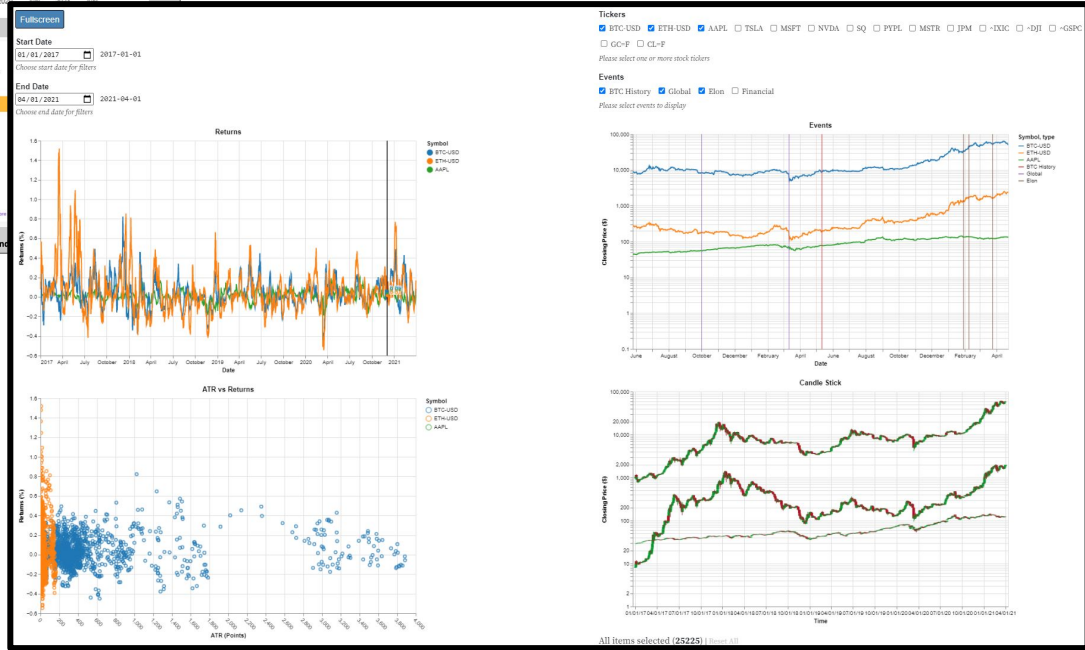
- One interesting feature of The Cryptocurrency Trading Dashboard is that I can easily pick a social media news/event and relate it to the market volatility
- All the charts of The Cryptocurrency Trading Dashboard were quite interactive (use of tooltip, mark line, zoom and select tickers and events by checkbox)

Top Recommendations and Enhancements

Issue or Recommendation	Enhancement
Difficulty seeing detail, plots covered many years of data compressed into one graph	Added both the ability to select start and end dates as well as added zoom feature to each graph
Unable to compare different assets due to scale of Bitcoin versus other stocks, loss of detail	Implemented log scale to correct for Bitcoins' larger values compared to other stocks
Not enough details at particular points in graphs or tooltip text not informative	Reformatted tool tip text and added additional details such as date and value
Some users not sure about terminology and acronyms like ATR	Created a help page with acronyms, definitions and descriptions of graphs
Unsure the value of units	Added unit measurements to X and Y axis and added explanations to help page

Enhancements - Dashboard

Previous

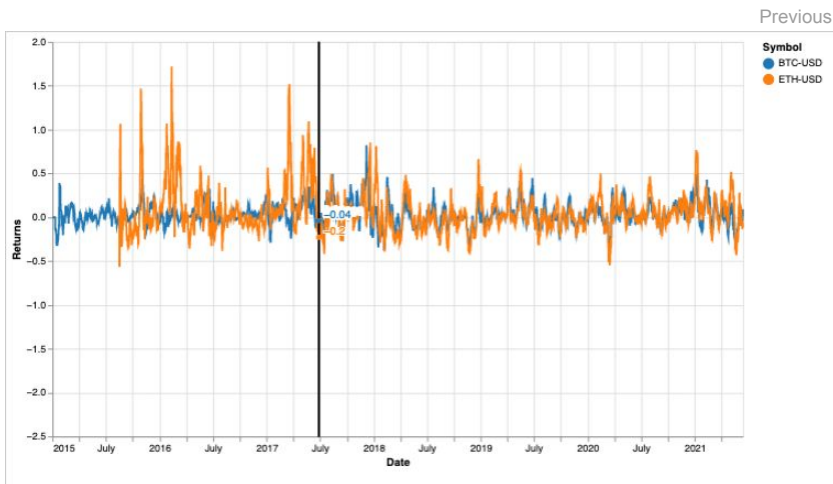


Final

Key Enhancements:

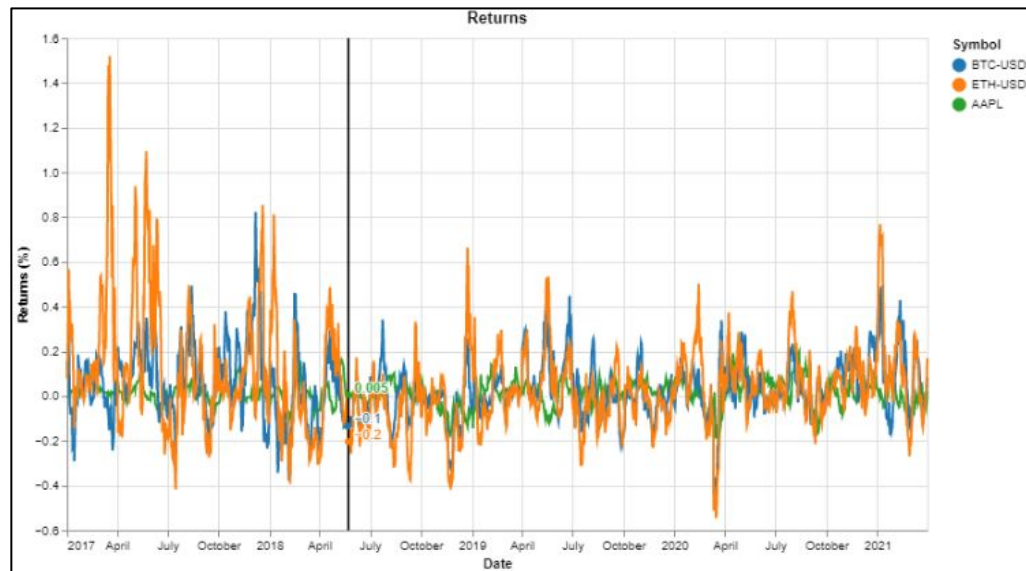
- Full screen feature
- Checkboxes vs radio buttons
- Selectable date ranges
- Checkboxes reflected in all charts

Enhancements - Chart 1: Returns



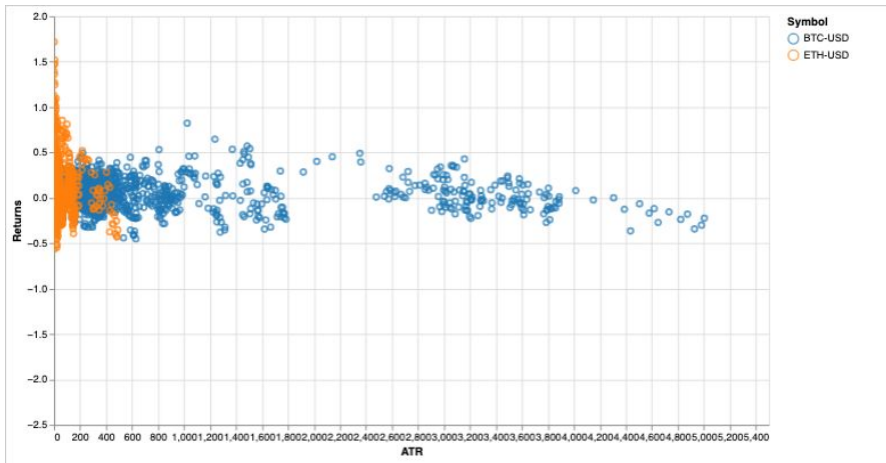
Key Enhancements:

- Detailed tooltip text
- Ability to zoom in and out
- Change time scale
- Units on Y axis
- Text appearing over trend lines

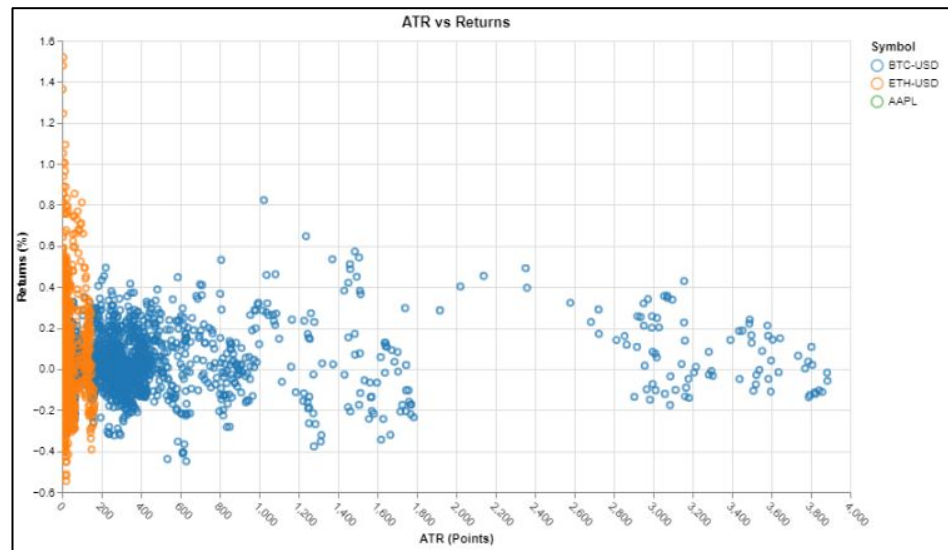


Enhancements - Chart 2: ATR vs Returns

Previous



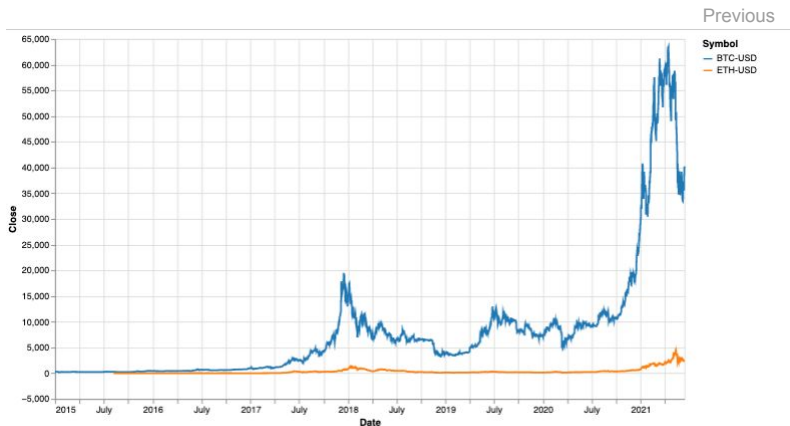
Final



Key Enhancements:

- Added values to X and Y axis
- Rotated X axis text to make more visible
- Added zoom in and out feature
- High contrast colors

Enhancements - Chart 3: Volatility



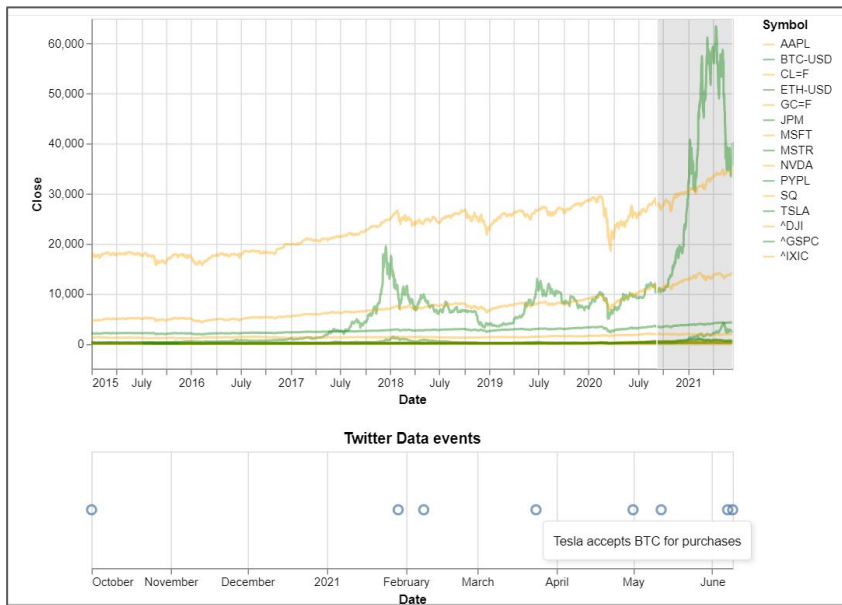
Key Enhancements:

- Ability to zoom in to see daily candlesticks
- Tooltip text with low, high, begin and end values
- Ability to change date range



Final

Enhancements - Chart 4: Events



Key Enhancements:

- Events from separate graph to main
- Added tooltip text with high contrast
- Ability to zoom in and out
- Ability to pan left and right

Previous

Tickers

☒ BTC-USD ☒ ETH-USD ☐ AAPL ☐ TSLA ☐ MSFT ☐ NVDA ☐ SQ ☐ PYPL ☐ MSTR ☐ JPM ☐ [^]IXIC ☐ [^]DJI ☐ [^]GSPC

☐ GC=F ☐ CL=F

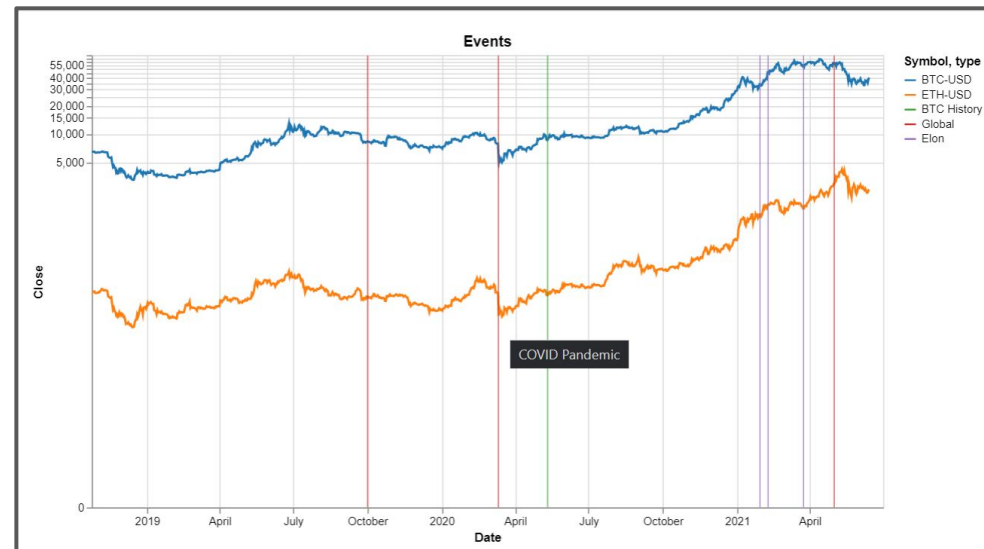
Please select one or more stock tickers

Events

☒ BTC History ☒ Global ☒ Elon ☐ Financial

Please select events to display

Final



Conclusion

What did we learn?

What were our challenges?

How did we overcome our challenges?



More Information

- Our dashboard is available in the observable :
<https://observablehq.com/@berkeleyvis/w209-final-project-cryptocurrency-trader-dashboard>
- More details about cryptocurrencies are available on our website:
<https://apps-summer21.ischool.berkeley.edu/w209-cryptocurrency/>
- All our work has been uploaded to Github:
<https://github.com/powchang/W209-BitCoin-Final-Project/tree/main/documentation>
- Published to iSchool Project site:
<https://www.ischool.berkeley.edu/projects/2021/w209-team-1-final-project-cryptoboard>
- Team Members:

Matt White



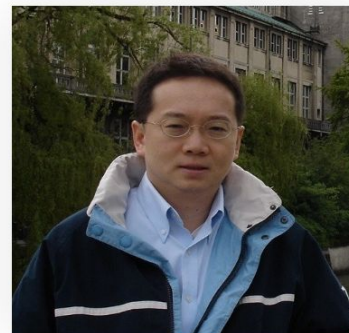
Sweta bhattacharya



Jeffrey Adams



Pow Chang



THANK YOU !!!

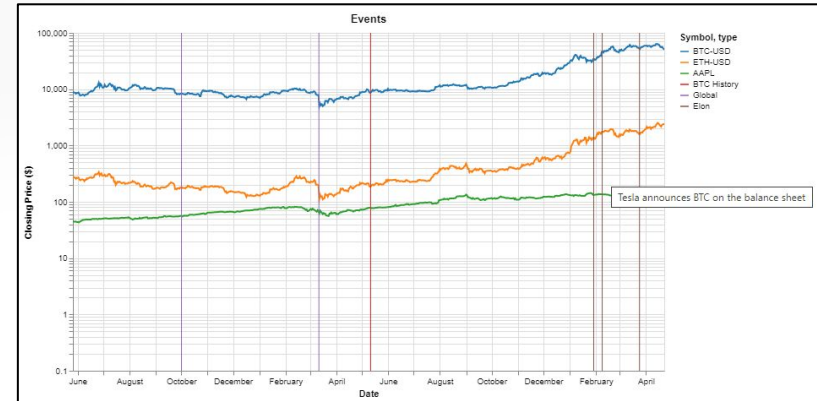
Additional Slides

Enhancements from Usability Study

- Create date filter that filters all charts
- Change Y axis to log scale to compare different assets
- Clean up tool tips
- Add units to all labels
- Allow individual zooming on appropriate charts

Start Date
 2015-01-01
Choose start date for filters

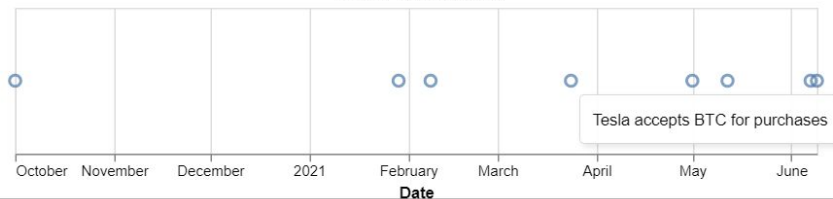
End Date
 2021-05-01
Choose end date for filters



Enhancements



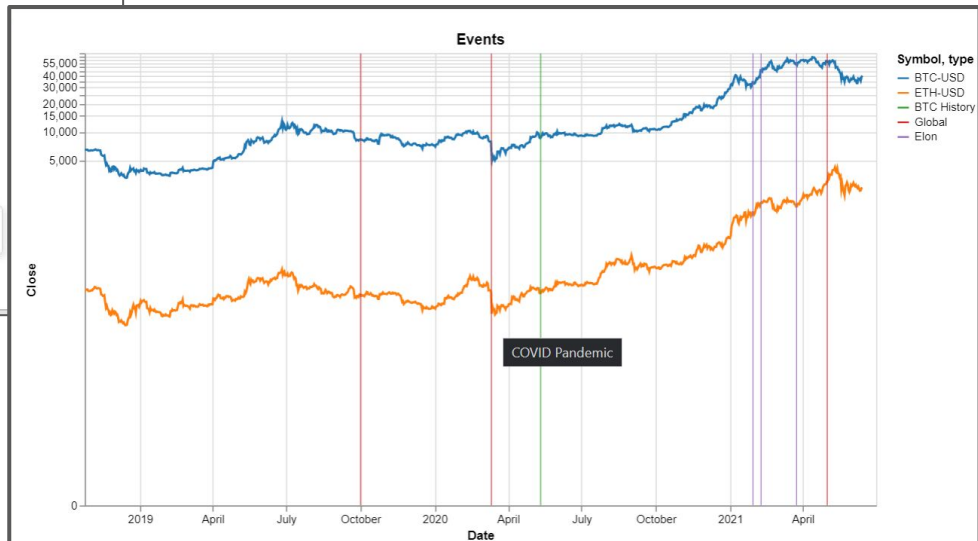
Twitter Data events



Older version of Event Chart

- Initially, the Event chart was done with crossfiltering function. However, this method was not very intuitive for the users.
- The newer version of Event Chart is simple design with marklines and Tooltip option.

New version of Event chart



Enhancements

- Added a help section with descriptions of the different terms and tickers

CryptoBoard Help

Charts:

Returns: This chart shows the money made or lost over a period of time. At the daily frequency, the mean return on cryptocurrency is 0.52 percent and the standard deviation is 5.55 percent. At the monthly frequency, the mean return on cryptocurrency is 21.60 percent and the standard deviation is 69.46 percent.

ATR vs Returns: ATR is a tool used in technical analysis to measure volatility. Unlike many of today's popular indicators, the ATR is not used to indicate the direction of price. Rather, it is a metric used solely to measure volatility, especially volatility caused by price gaps or limit moves. <https://www.investopedia.com/terms/a/atr.asp>

Volatility: This chart shows the fluctuations over the course of the day in the price of a stock or cryptocurrency along with its highs and lows. It helps the trader understand the volatility of a particular stock or cryptocurrency and observe trends in order to decide whether to be bearish or bullish on a particular stock or cryptocurrency.

Price and Events: Social media news has a correlation with Cryptocurrency prices. This chart shows the prices of Bitcoin and Ethereum and four categories of news - Bitcoin history, global/international, Elon Musk tweets and financial news. The news events show up in a markline on the exact date of the price trend going up or down.

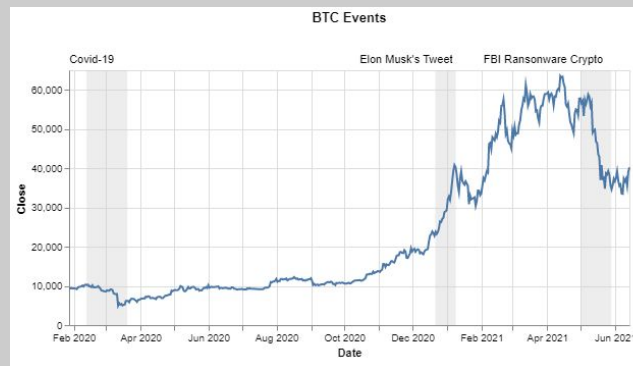
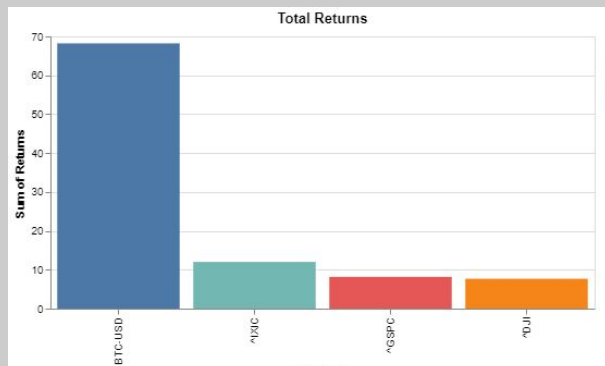
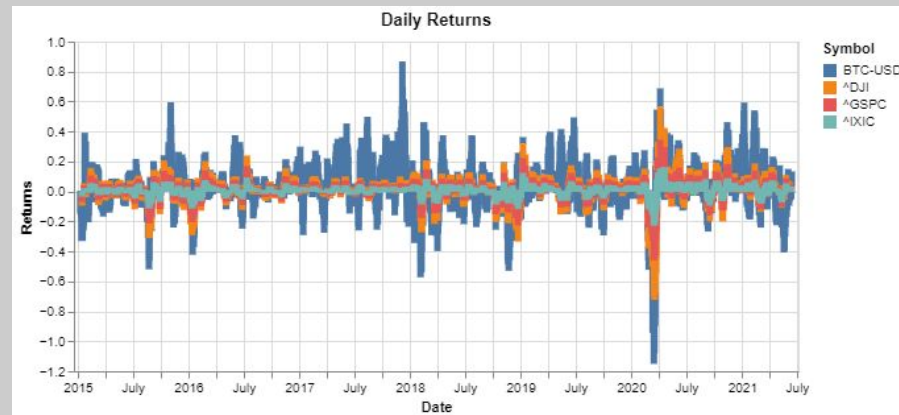
Tickers:

BTC-USD : Bitcoin USD

ETH-USD :Ethereum USD

Trader Dashboard

CryptoTrader



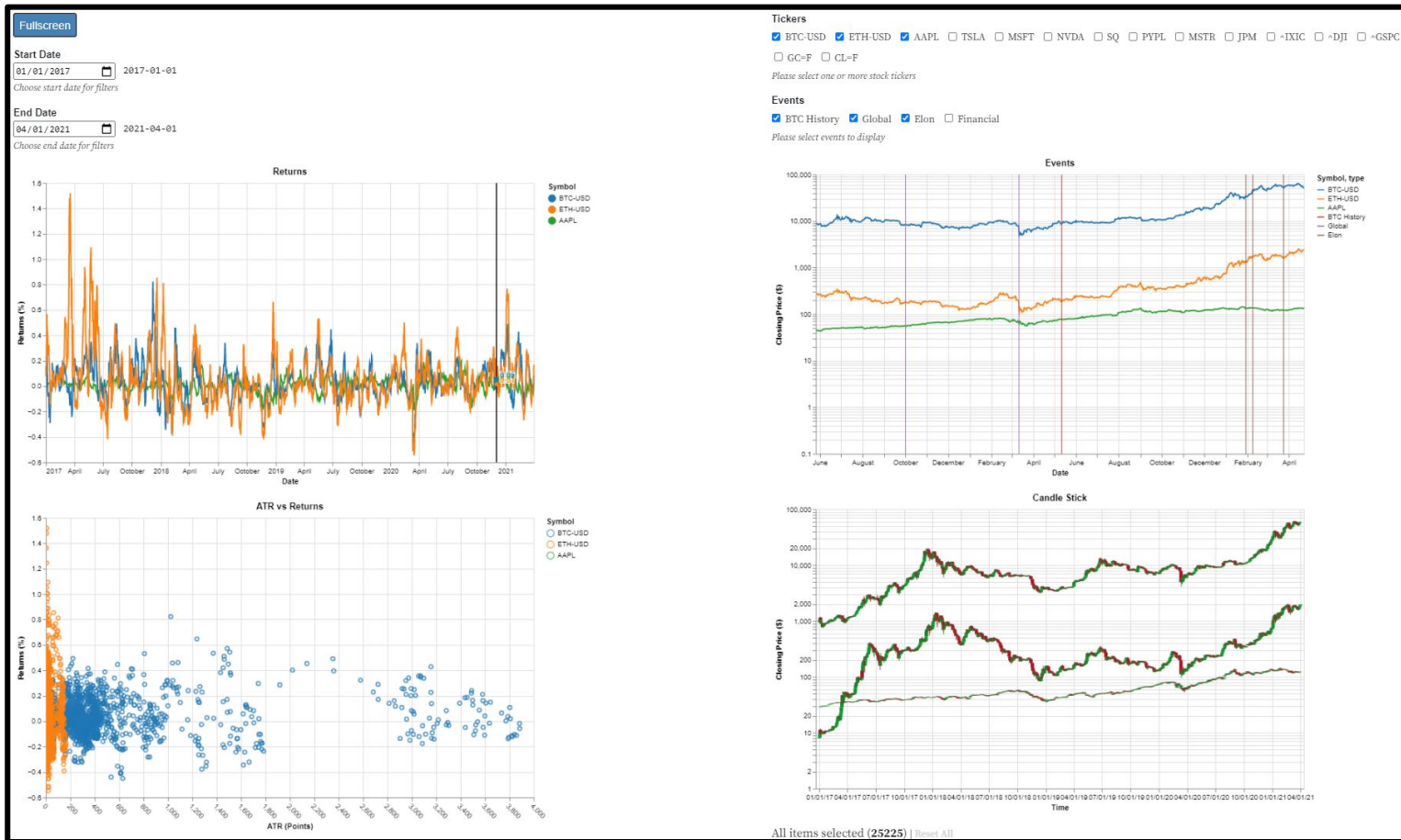
Sell Order			Buy Order		
Price	Amount	Total	Price	Amount	Total
82.3	0.15	\$134.12	86.2	0.35	\$126.26
83.9	0.18	\$227.31	93.9	0.55	\$212.56
84.2	0.25	\$252.58	84.2	0.25	\$252.58
86.2	0.35	\$126.26	91.6	0.75	\$46.92
91.6	0.75	\$46.92	83.9	0.18	\$277.31
92.6	0.21	\$123.27	82.3	0.15	\$134.12
93.9	0.55	\$212.56	92.6	0.21	\$123.27
94.2	0.18	\$129.26	94.2	0.18	\$129.26

Show more

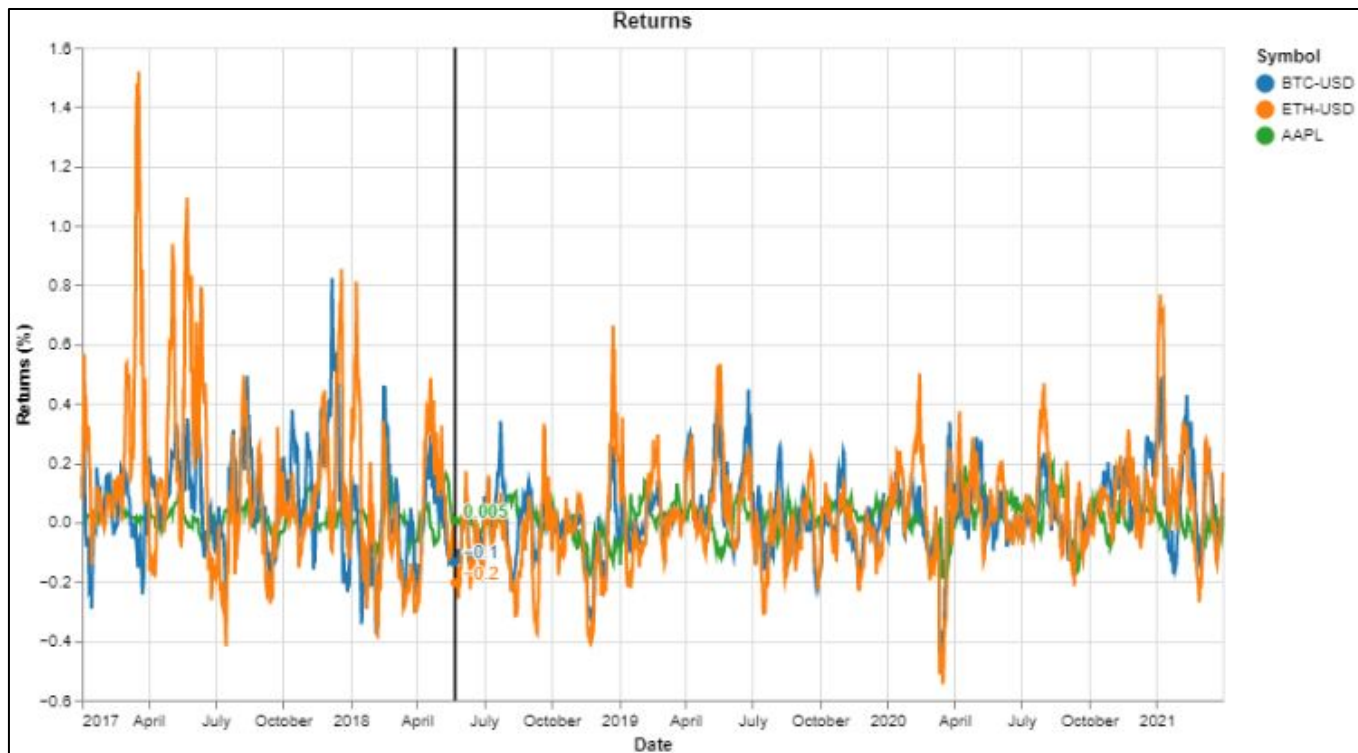
Comparison : ☐ All ☒ Index Funds ☐ All Stocks ☐ Tech Stocks ☐ Alt Coins ☐ Moving Ave

Events: ☒ All ☐ Global ☐ Elon ☐ Google Trends

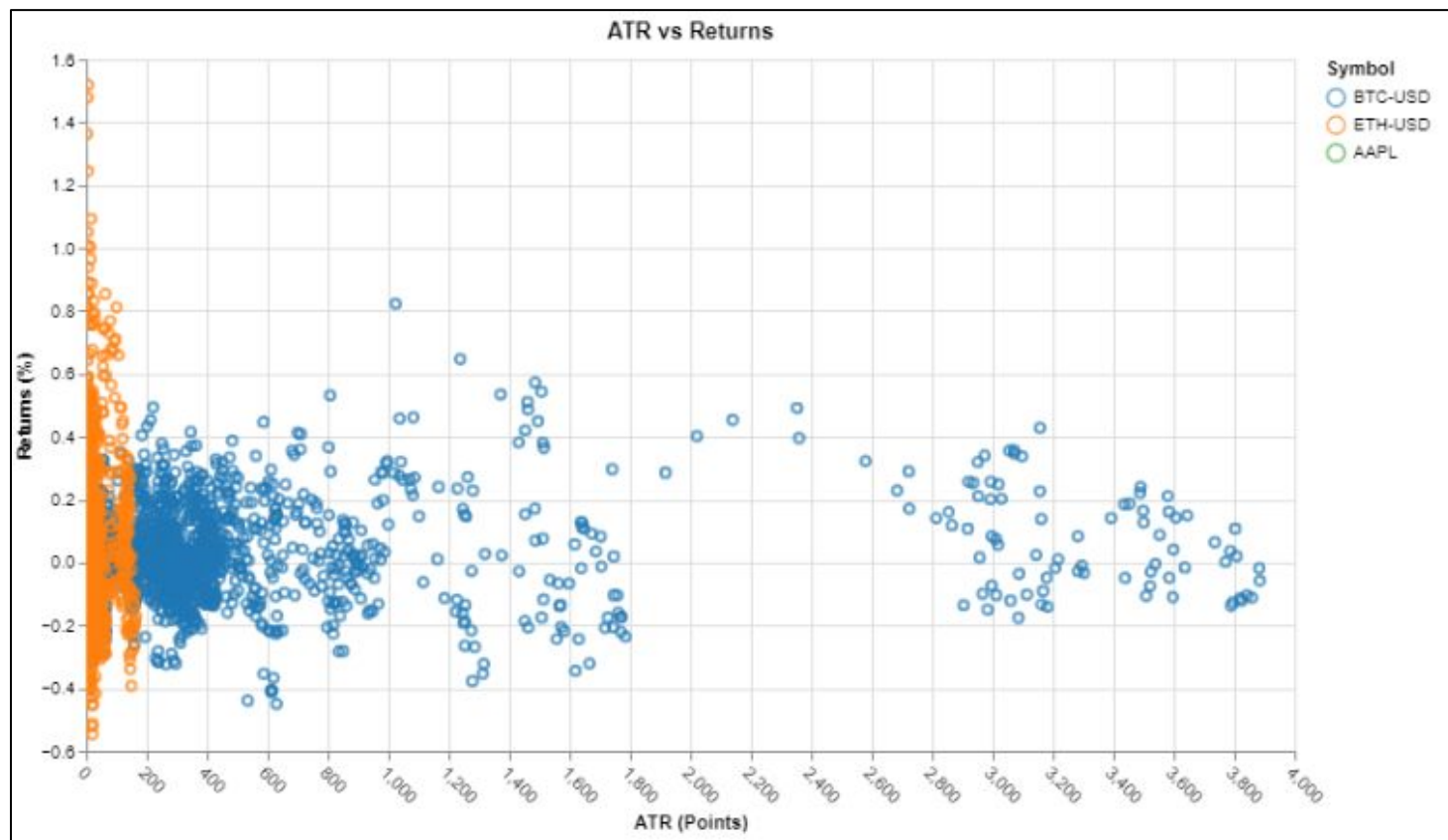
CryptoBoard - Final



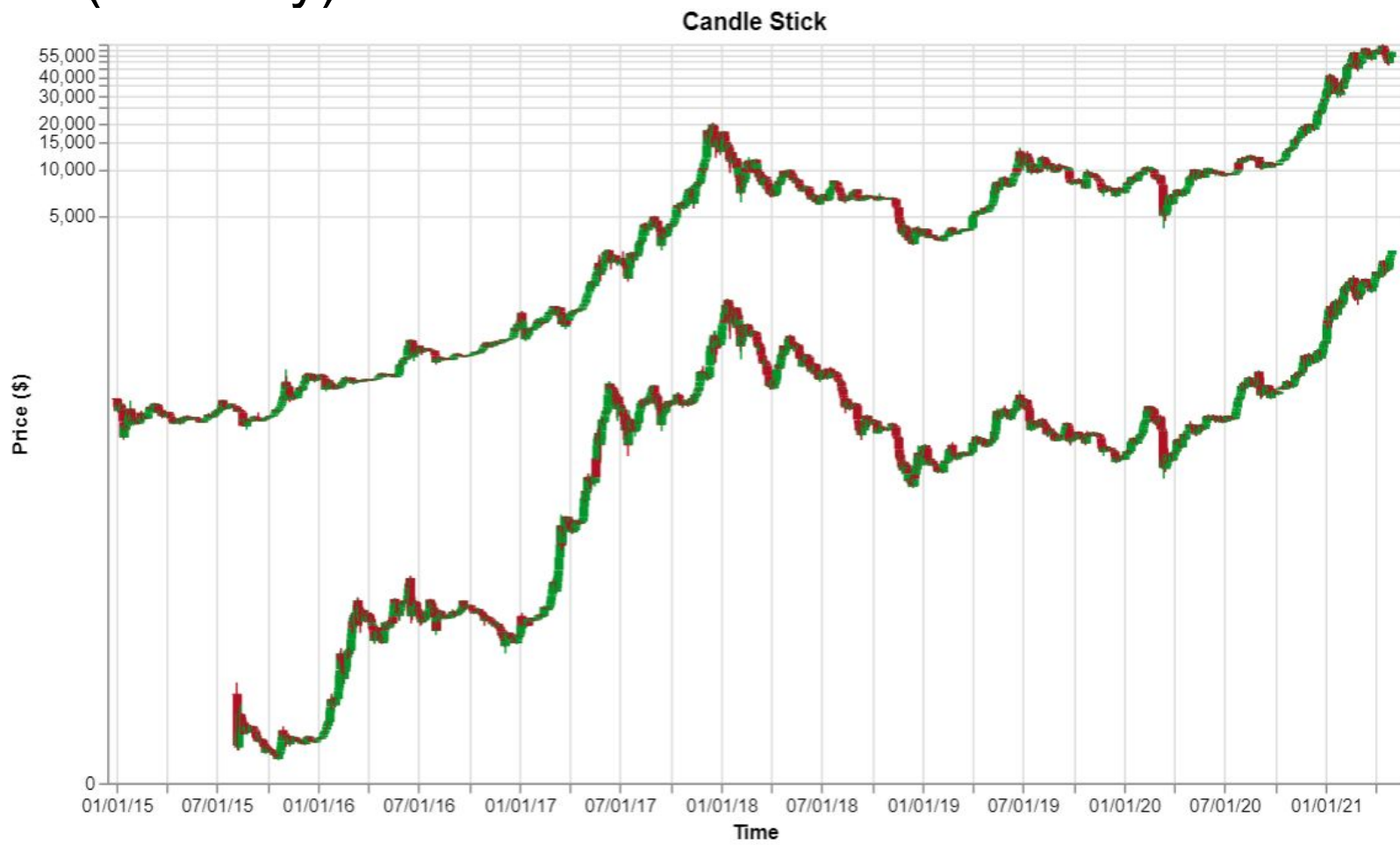
Chart#1 (Returns)



Chart#2 (ATR vs Returns)

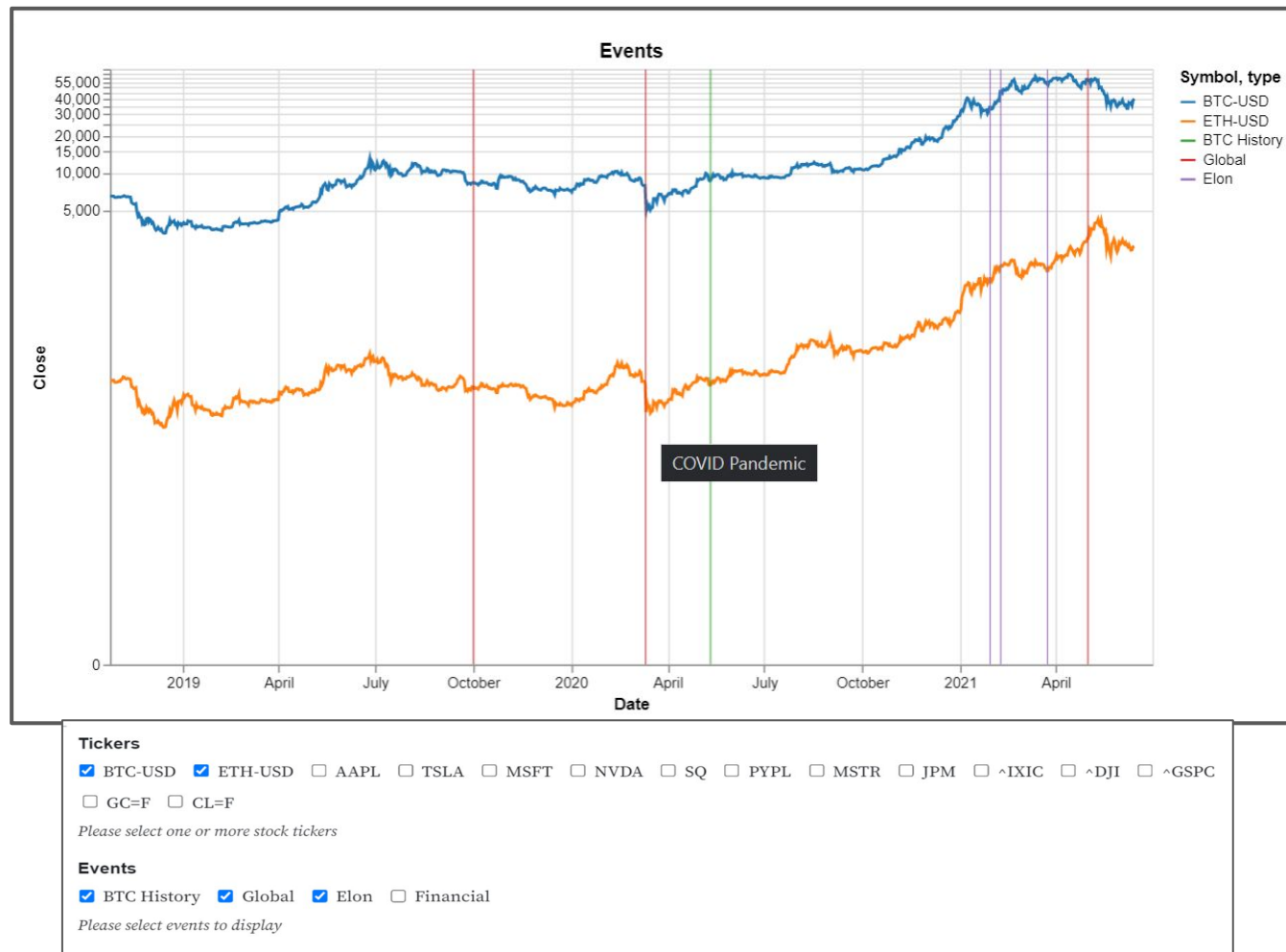


Chart#3 (Volatility)



Chart#4 (Events)

- Our Events chart shows some events that correlates to this cryptocurrency trendline (Closing price in \$ vs Date)
- Users can select the type of Events and the Tickers they want to visualize
- Initially our Events chart including a brushing feature which due to



Rubric

- 12 points - Is the final product of appropriate form?
- 12 points - Does it successfully solve a problem or inform the user?
- 12 points - Is the explanatory text clear?
- 12 points - Did you show substantial iteration?
- 10 points - Can the visualization be understood without too much effort?
- 10 points - Is it aesthetically pleasing?
- 10 points - Did you include results of usability testing?
- 8 points - Did you present data in a novel way?
- 8 points - Did you explain your choice of tools?
- 6 points - Did everyone in your group participate?