

# Smart Street Bets

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Figure 1: Bitcoin is the most well-known cryptocurrency out there, reaching a peak of over a trillion dollar market cap in 2021.

## ABSTRACT

The purpose of the visualization is to aid people when attempting to trade Bitcoin by giving them access to both quantitative insight to previous historic trades and sentimental analysis for any day within a given range of dates by being able to read and analyze social media posts and threads from Reddit and news articles from various media outlets. Having access to both allows people to be more flexible and thorough with planning and following through with their personalized trading strategy. Although just because something has happened in the past and that does not mean does not mean people cannot gain insight from studying the past and looking for key catalysts from multiple angles for why major events occurred.

## 1 INTRODUCTION

The cryptocurrency field is like the wild west; there are stories of people who had bought Bitcoin for less than 100 dollars many years ago and have millions' worth of Bitcoin today. People believe that getting into cryptocurrency is a certain way to make money, and go into this field without much thought or care; they hear what is the current trending cryptocurrency and decide to follow into the trending cryptocurrency with more money than they can afford to lose.

However, this is not the case; throughout the years, many have lost money, be it a little or most of their net worth, to this tumultuous landscape. People essentially gamble. Diving into anything without a game-plan is almost a sure-fire way to end up losing in the long run, and saying that this is only for the short-term is essentially gambling. It is important to know the difference between investing/trading and gambling.

Studies done in post-Soviet Union Kazakhstan indicate personality traits have some influence on people's tolerance for risk (Pak, Mahmood, 2015) [1]. It has happened many times; people do not consider their risk tolerance, put more money than they are comfortable losing, and take out their cash from the market at an immediate loss. If one wants to enter a volatile market with the aim of making money, they should use whatever resources they have to make what they at least believe to be a winning medium/long-term strategy and follow through with it. With this in mind, we have worked on this visualization to provide people eager to enter the cryptocurrency market a set of tools they may be able to use to figure out a strategy they would be satisfied with and follow through with by back-testing using either or both quantitative historical price data and articles and threads/posts from years' prior.

## 2 METHODS

For determining what type of historic data to provide to users interested in the cryptocurrency market, we made a questionnaire for fellow college student peers who are interested in speculative markets and asked what they viewed to be important when debating on a trade or investment decision.

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A majority, if not all, of our peers indicated that some sort of quantitative chart is necessary for making decisions for their trading/investing strategies. In the end, we decided on a candlestick chart as opposed to a line chart or simple bar chart to display the historical prices of Bitcoin, as a candlestick chart offers more information than a line chart or simple bar chart for each time frame/data point while not complicating the chart to the degree where efficiency in looking for significant in the visualization is compromised in any way.

A significant portion of peers who indicated they are interested in investing based on trends or for the long term — a few years minimum — stated that they believe current events information in the form of news articles were very helpful for them when they wished to find early opportunities to invest in.

Some percentage of peers, moreso those who became interested in speculative markets over the last year or couple of months, mentioned they base a lot of the decisions on what people are saying on social media threads and posts. Some state that they pick up on potential "big plays" on subreddits such as 'r/wallstreetbets', and others state they simply do the opposite of what is trending on social media because they view this strategy to be profitable in the long run.

### 3 RESULTS



Figure 2: Historical price chart of Bitcoin

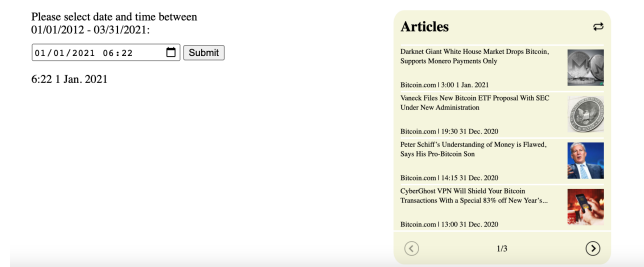


Figure 3: Left: Date/Time input for a blast to the past Right: Past articles and posts/threads

As you can see in the figures above, our visualization provides both quantitative and sentimental historical data with a candlestick pattern and a list of either new articles or social media posts/threads. For the candlestick graph, access to both historical data for one day and 3 months' time frames, which are adjustable with the press of a button, and past, all viewable within the same window view

A prime and unique use case for this visualization is to look at prior

major (or minor, relatively) events through multiple different lenses. A person who is interested in the cryptocurrency crash of 2018 can look at the event in terms of a quantitative trader; look at charts and see if there are patterns leading up to the crash. They could also take the stance of and read up on news articles that were released before and during the crash. Even further, they could be in the shoes of a teenager or young adult who surfs social media, seeing what people are saying during the crash and how people are reacting to such a catastrophic event.

### 4 DISCUSSION

With the combination of extensive historical price data as well as articles and social media posts and threads dating years and years back, we provide a varied and enormous amount of historical, relevant information for users interested in the cryptocurrency market to back-test and create/polish their trading and/or investing strategies.

Interest in sentimental analysis has been growing over the recent months and years. Traders and investors believe they can have an edge on others if they are able to accurately analyze sentiment across different sectors and adjust their strategies based on what they find. The section of provides plenty of datapoints and perspectives for someone who is looking to back test public sentiment across many different demographics

For example, if one wishes to see the majority sentiment the news outlets' journalists had for articles during a time of economic/market downturn, they can do that. If one wishes to see the varied responses of different people on social media and forum posts during a time of economic crisis, they can do that. The key thing is, users are able to take all these varied sentiments and form a hypothesis on how such sentiments affect the market. People should and do take any edge they can in speculative markets; having a visualization that provides such varied sources to extract sentiments can only lead to upsides when fine-tuning one's strategies.

### 5 FUTURE WORK

Below is the list of functionalities that we believe can be refined or extended.

#### 5.1 Candlesticks hovering

In the visualization, there is a functionality where a user could hover over a candlestick to see the detail of that data point. This tooltip shows date, open price, close price, low price and high price. We implemented this functionality because it's not possible for users to know the exact price via simply looking at the chart. Still, the current implementation might not work when the open price and the close price are very close, and in turn, making the candlestick small such that a user cannot use a mouse to hover over it, or can do it with difficulty. One way to refine this feature is that instead of hovering over a candlestick to see detail, we could implemented an invisible block that spans the entire range of y-axis, and if the user hover over the block, they will be able to see the detail of that data point. This solution is possible because there is only one data per timestamp on the graph.

#### 5.2 The time range and source of articles

Currently, after a user pick a date and time on the calendar, the articles of the day before up to the selected date and time will be loaded. For example, if the user pick 14:00 01/24/2020 on the calendar, articles on 01/23/2020 and articles on 01/24/2020 before 14:00 will be loaded and shown to the user. We were on the dilemma on what is the right time range to pull articles from. It might be better to extend this range to a week or more to include more articles, but we do not want to overwhelm a user with too many articles. Apart from the time range, the source of articles is limited. We scraped

most of the articles from MarketWatch and Bitcoin.com as these are the source that we knew and could access without subscription. Hence, for future work, we think about finding more trustworthy sources for Bitcoin-related articles.

### 5.3 Range of the chart

At the top-left corner of the chart, there are two buttons, 1D and 3M. The two buttons is the range of data that is shown on the graph at once. In 1D mode, the x-axis spans 12 hours, and the time range between two consecutive data is 15 minutes. In 3M mode, the x-axis spans 3 months, and the time range between two consecutive data is one day. In the future work, it is possible to add more options for users, so that they can look at the chart with multiple views. Even though we would like to have a mode that the time range between two consecutive data is one minute, we could not find the quality dataset. The current dataset that we used scraped the price of Bitcoin every 15 minute, which is the shortest time range that we could offer to users.

### 5.4 Risk management tools

A key factor in creating a winning strategy is to account for the fact that you cannot always be right; even if you are right, things can and will go against you. As such, users would have to calculate several different odds when deciding on a decision: the odds that they will be right, how much they will make if they are right, how much can they lose if they are not right or not right enough, and more. There are other websites and visualizations present which give users the ability to calculate their risk for a given trade/investment decision, but the tools are fragmented. It would be a benefit if users are able to do their quantitative and sentimental research and also all on one page, making it a seamless experience.

### REFERENCES

- [1] Olga Pak and Monowr Mahmood, "Impact of Personality on Risk Tolerance and Investment Decisions," *International Journal of Commerce and Management*, pp. 370-384, September 2015.