Process Book: Cryptocurrency Visualizations

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Overview

This interactive visualization allows the exploration of the increasing popularity and usage of cryptocurrencies and their trends relating to trading volume and price since 2009. We use bar charts, line graphs, scatter plots, and a dynamic chronological animation to visually represent the history of cryptocurrencies.

Research Questions:

- How do the less popular digital currencies compare to bitcoin in terms of growth, trade volumes, and other metrics over time?
- Do digital currencies exhibit similar trends of emergence and growth or are they independent?
- How does the growth of newer currencies impact the alternative currency market?

Motivation:

- We decided to choose this project because alternative currencies are increasing in popularity and yet there is no easy way to understand the aggregate dataset of all the different digital currencies. The terms bitcoin and litecoin and becoming so commonplace that we think it is important to be able to understand the trends in usage and volumes of exchange. Neither of us have backgrounds in digital currency, but we are both interested in the topic.
- Some benefits of visualizing this data include being able to analyze trends over time amongst different currencies and potentially using it as a tool to predict future trends.

Related Work:

One visualization that inspired us was the Map of Coins: http://mapofcoins.com/. It shows how all the cryptocurrencies developed from each other. Most coins developed predominantly from Litecoin and Bitcoin. It was also interesting to look at Blockchain: https://blockchain.info/api to see the numerous public transactions being made in realtime.

Data Collection

Data Sources:

- Cryptocoin Charts: We grabbed data on the price and volume of different alternative currencies, as well as the exchange rates between currencies through the API found on the website: https://www.cryptocoincharts.info/v2/tools/api.

- Bitcoin Charts: We grabbed data from this API http://bitcoincharts.com/about/markets-api/ related to more specific trading data, such as highest trade of the day, number of trades, and the base currency of the market.

Data Refinement:

- None done so far

Issues with Data Collection:

One issue we came across in data collection was that we couldn't find all the data we needed in just one API. We had to manage different API calls because we couldn't find all the data we needed from one source. Also, all of the APIs had limits on the number of requests we could make within a certain time frame, which was frustrating when testing and working with the data for our visualization.

Exploratory Data Analysis and Design Decisions:

To look at our data, we first wanted to just see which cryptocurrencies had the highest trading volumes relative to Bitcoin. We thought this would be an interesting first visualization to see for anyone visiting our site so we made it the first visualization on the home page.

One interesting insight we noticed was that Litecoin is actually traded at higher volumes than Bitcoin and in fact, at a much higher volume than any other coin. On the bar chart, Litecoin showed such a significant difference between the other coin volumes that the other bars were not even visible with the scale we were using. This insight made us allow the tooltip to be over the name of the coin and not just the bar since it wasn't always visible.

Another interesting insight we gained from this graph was that Aurora coin, a cryptocurrency only released in Iceland a week ago on March 25th, was already traded at such a high volume.

Visualizing Data and Implementation

Initial Design

This was our original visualization. We pivoted from some of our original designs because we thought it made the page too cluttered and we also found that we could learn a lot more from the data we found.

Bar Charts:

- Shows Volume of Trade for Cryptocurrencies in last 24 Hours

- Bar Charts are a good way of showing rankings.
- We decided to put a button of viewing top 10, next top 10, and etc. because the scale would change and the bars could then become visible.
- Dynamic tool-tips to display more data about each coin, including actual volume and trading velocity.

As mentioned before in our Exploratory Data Analysis, it was interesting to see that even though most people only hear about Bitcoin, Litecoin actually trades in higher volume.

Price to Volume Scatter Plot - still needs to be implemented

Since the CryptoCoin Chart data set included price and volume data, we wanted to see if price was correlated to volume.

Data Mapped on Globe - still needs to be implemented

- Shows volume of cryptocurrency transactions according to location based on IP address
- We decided to show 3D bar graphs on a globe interactive so that you could see what location has the highest trading volume based on the relative height of the bar

Website Design:

At first, we were just going to have all the visualizations on one page. However, we thought it'd be cleaner to have a tabbed list on the top of the page so that the user could easily choose what visualization they wanted to see. We decided to use bootstrap so that our site would be responsively designed/optimal for mobile.

Evaluation: What did you learn about the data by using your visualizations? How did you answer your questions? How well does your visualization work, and how could you further improve it?