Bitcoin Booms and Busts

How are cryptocurrencies fulfilling their promises of decentralized cash systems

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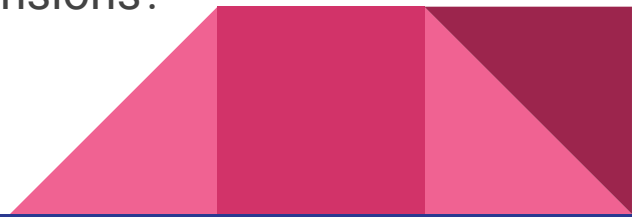
Crypto and Bitcoin Proposed Advantages

- Decentralized
  - not controlled by any particular entity (e.g., government)
  - less subject to manipulations
- Store of value
  - sticky and predictable purchasing power
  - bitcoin proponents liken it to gold
- Fast and cheap transactions
  - fast and affordable transactions, relying on the public blockchain

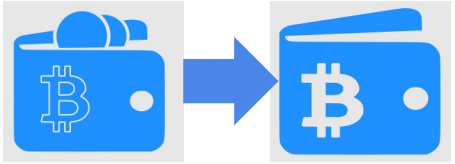
=> How do cryptos, especially bitcoin, fare on these dimensions?



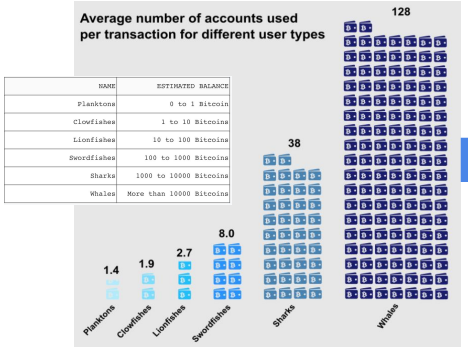
1) Decentralized: is it?

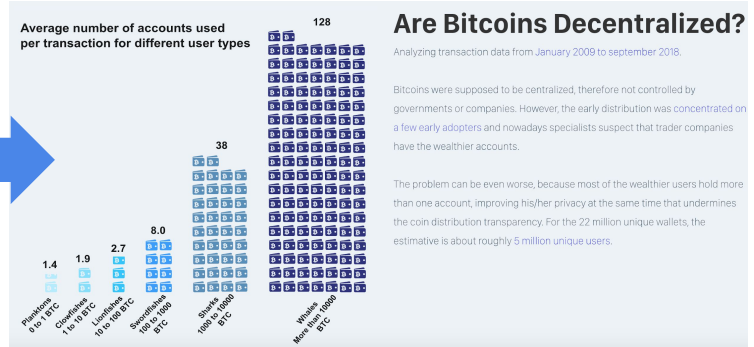
- User
  - Crypto traders and people interested in getting in the market
- Data
  - Transactions recorded in blockchain since the January 2009 (GBQ)
  - Approx. 587 GB and 340M Rows
  - Transformed tables
- Task
  - Verify if the distribution of coins throughout the user database

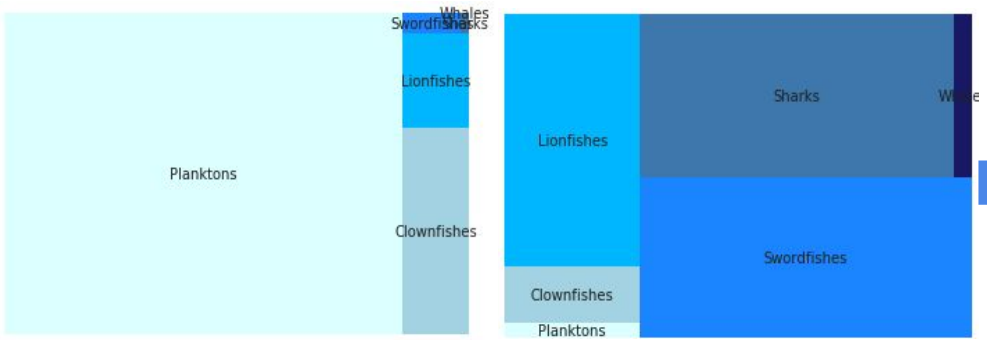
1) Decentralized: Iterations and Test

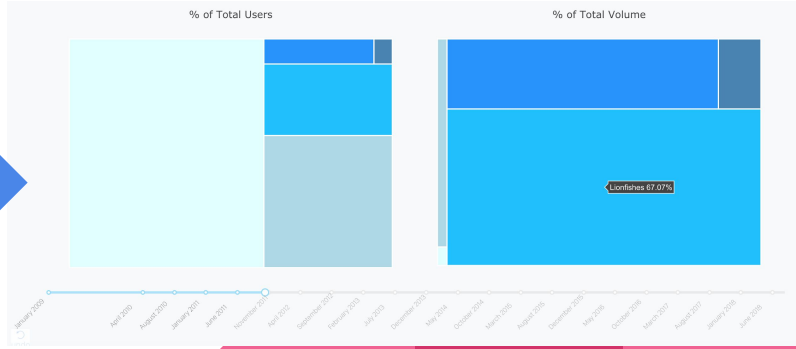


- Cameras vs wallets
- Bins and Story
- Annotations vs tooltips
- Timestamp Slider



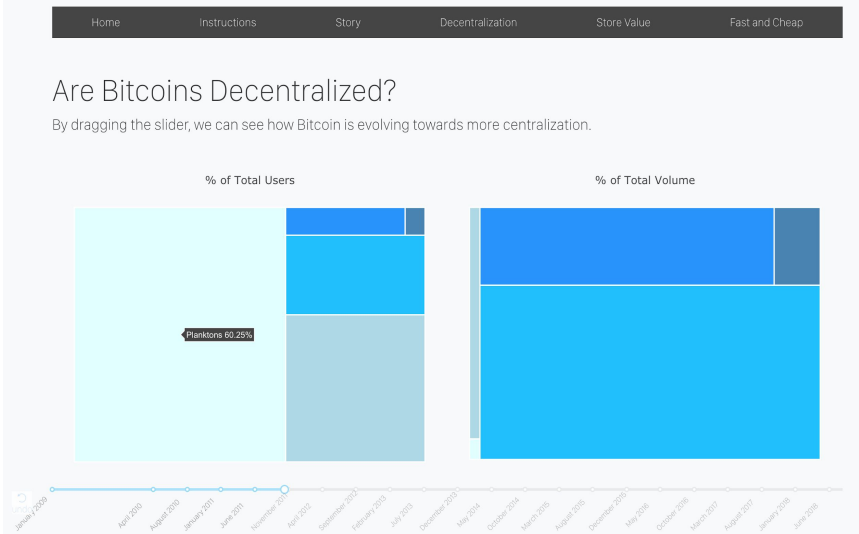






1) Decentralized: Viz

- Area chart with custom markers: static
- Context story with links for references
- Tooltips to identify bins
- Timestamp slider with live treemaps
- Design changes to fit framework

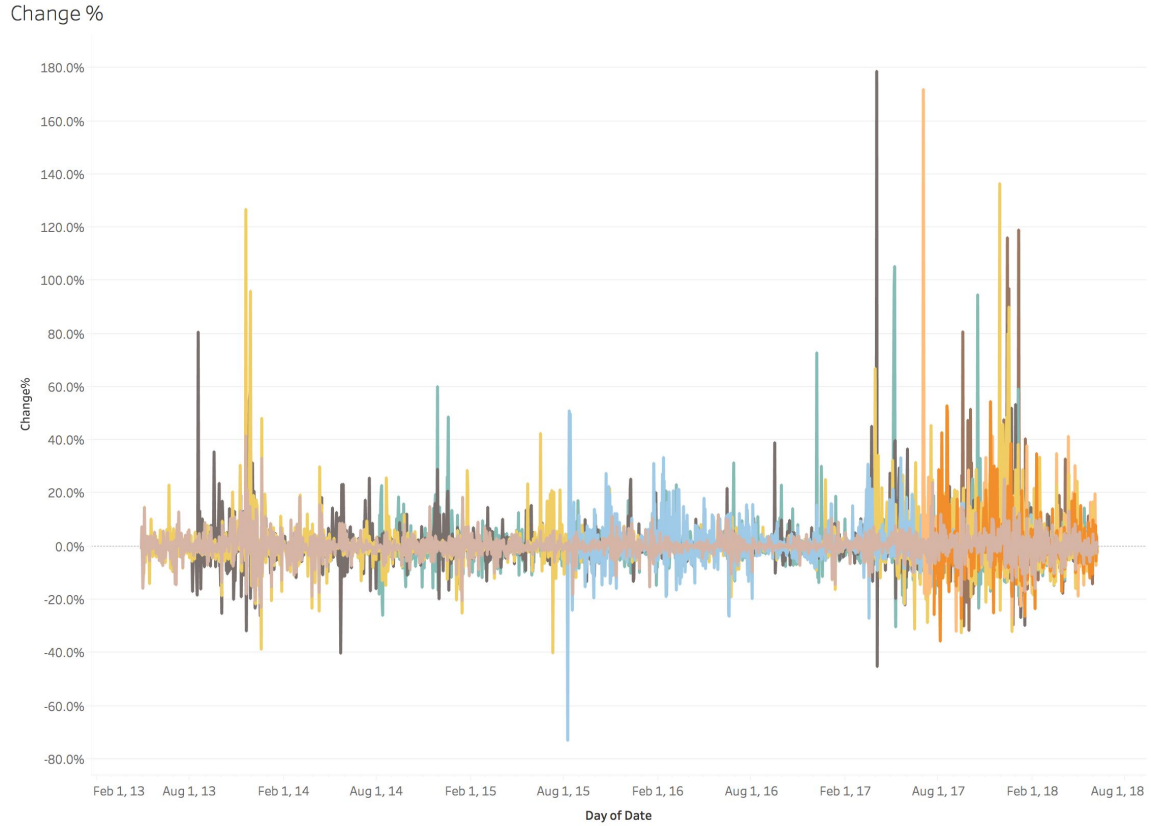


2) Store of Value

- User
  - People interested in learning about cryptocurrency markets and crypto traders
- Data
  - Cryptocurrencies price and transaction data
    - 1644 tokens
  - Open, high, lows, spread, marketcaps
- Task
  - How volatile are prices?

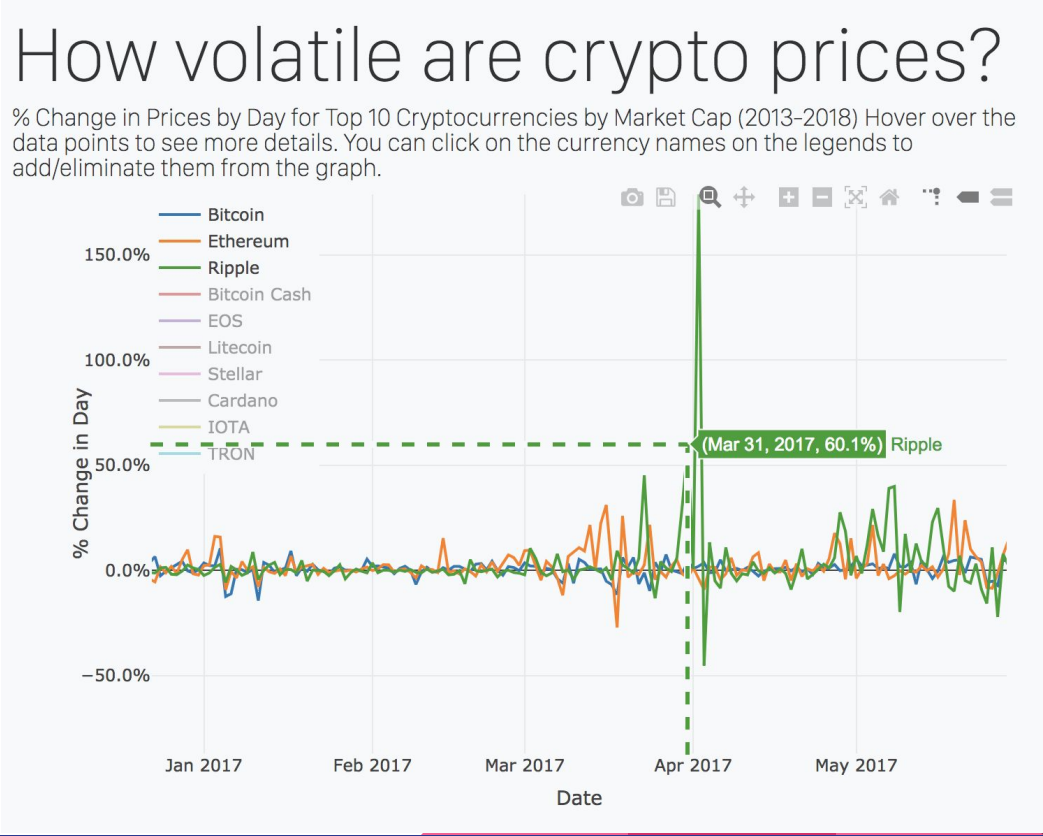
2) Store of Value, Iterations and Test

- From 2013 to 2018
  - Top 10 currencies



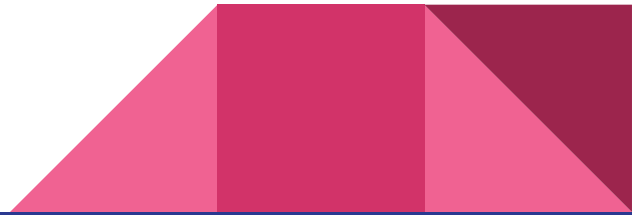
2) Store of Value, Viz

- Interactive with tooltips
- Export images
- Tableau => Dash
- More interactions
  - Zoom in dates
  - More detail
- Reference lines
  - (from user testing)
- Select currencies of interest
  - (from user testing)
- Response and dates zoom
  - (from user testing)

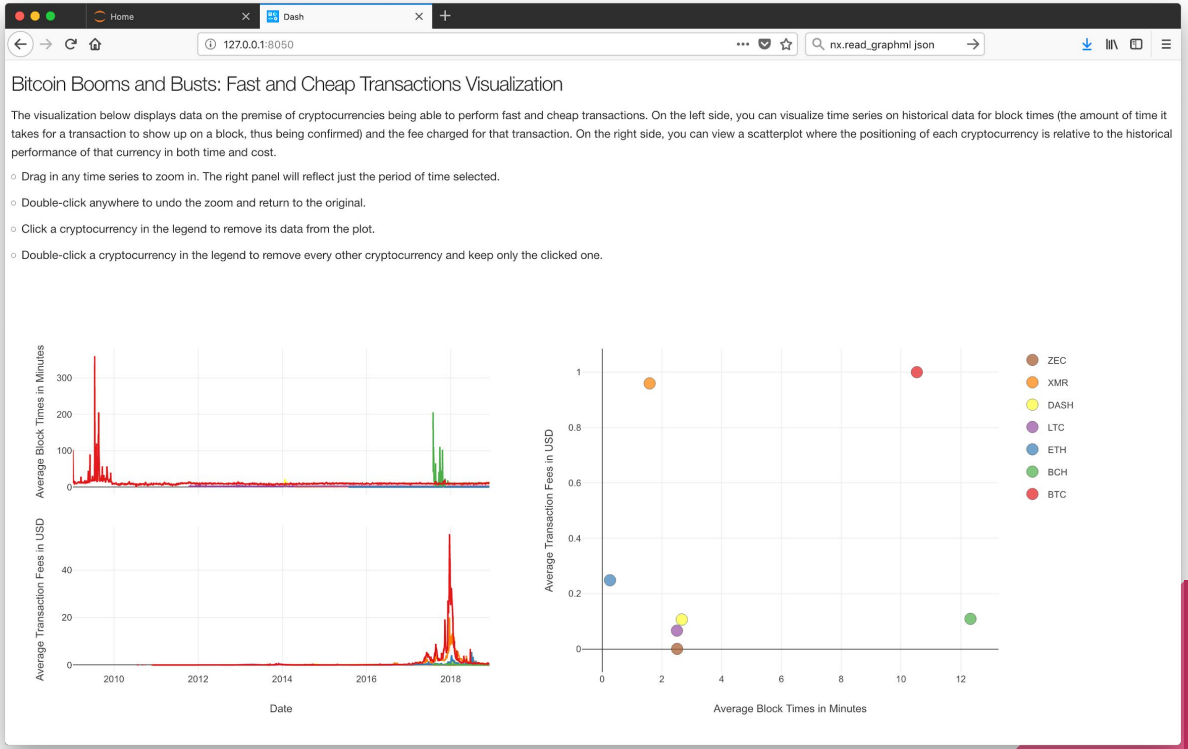


3) Fast and Cheap Transactions

- Users
  - People interested in learning about cryptocurrency markets and crypto traders
  - Users interested in choosing a cryptocurrency for transactions
- Data
  - Historical cryptocurrency data scrapped from BitInfoCharts.com
- Task
  - Quickly verify adherence to fast and cheap transactions
  - Analyze cryptocurrency historical behavior and performance
  - Understand and compare current scenario for common cryptocurrencies



3) Fast and Cheap, Iterations and Test



3) Fast and Cheap Transactions, Viz

Fast and Cheap Transactions

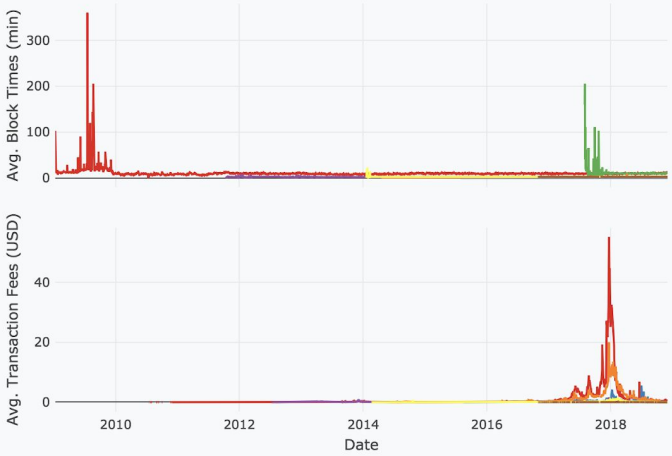
On the left side, you can visualize time series on historical data for block times (the amount of time it takes for a transaction to show up on a block, thus being confirmed) and the fee charged for that transaction. On the right side, the positioning of each cryptocurrency is relative to it's historical performance in both time and cost.

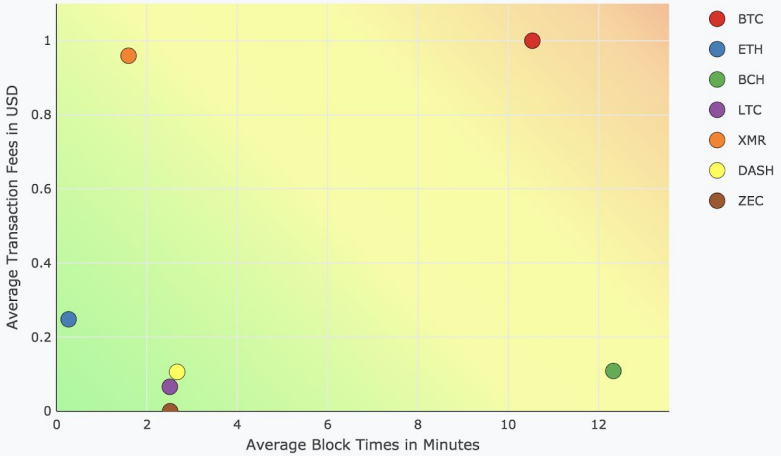
Start Date

01/09/2009

End Date

12/03/2018





Choice of Tools

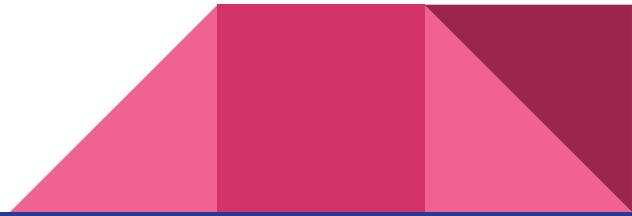
- BigQuery
  - Bitcoin Blockchain transaction data
- BeautifulSoup
  - For web scraping
- Dash
  - Python framework for data viz. Interactive, integrates data processing
- WebSlides
  - HTML, CSS, interactive slides
- Github
  - Data and code sharing and collab
- Heroku
  - For server, direct link to github report

Concluding: Insights and Use Cases

- Decentralized
  - Bitcoin decentralized, but seems to be getting more concentrated
- Store of Value
  - Volatile prices
    - 100% swing in day. From $100B (June 2017) to $800B (Jan 2018) to $100B (Dec 2018)
  - Speculation or hedge?
- Fast and Cheap Transactions
  - Cheaper and faster than banks, slower than cards and PayPal
    - <$1 cost & ~10 min per transaction
  - Issues with scale (2017 boom): average of $54 cost & ~200 min per trans.

=> Hard to predict where it'll go, as tech < 10 years

DEMO



Thank you!

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Data

- Cryptocurrencies price and transaction data
  - 1644 tokens
  - Open, high, lows, spread, marketcaps
  - Kaggle dataset
- Bitcoin blockchain transaction records, from Google BigQuery
  - Especially transactions public keys, timestamps and values.
- Transaction fees and block time data scraped from bitinfocharts.com