

Cryptocurrency Fundamental Analysis Tool

Team 5

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Executive Summary

We created an interactive tool that displays the historical information of selected coin data for BTC, ETH, DOGE and USDT.

Goal #1

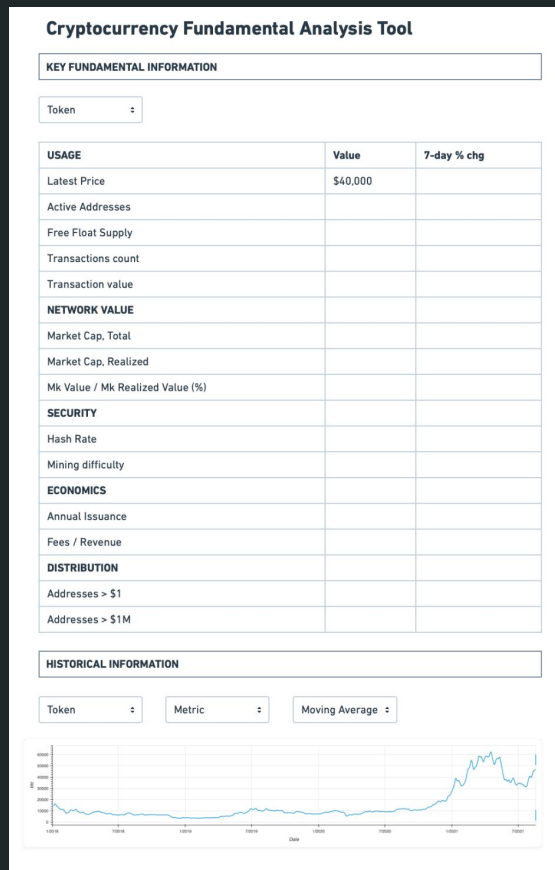
Access on-chain metrics for selected tokens

Goal #2

Identify leading indicators of price movements

Preparation

- Proposal
- Research questions
- Wireframe with tool layout



Data Collection

Timeframe

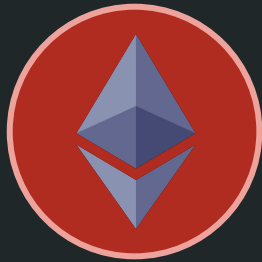
January 1, 2018 - Present

Assets

BTC, ETH, DOGE, USDT

API

CoinMetrics



Choosing the Coin Metrics API



The diagram features a central light red box with a thick border, containing text about the chosen API. Above this box is a light red arrow pointing upwards. To the right is a darker red box with a thin border, containing text about other APIs that were reviewed but rejected. Below the central box is a dark red arrow pointing downwards. The entire diagram is set against a dark blue background.

We chose Coin Metrics as the API for data retrieval

Extensive coverage of tokens and
on-chain metrics

Great documentation and easy to use
(no library or token needed)

Free access

CoinMarketCap and CoinGecko
APIs were also reviewed but are
inferior to Coin Metrics

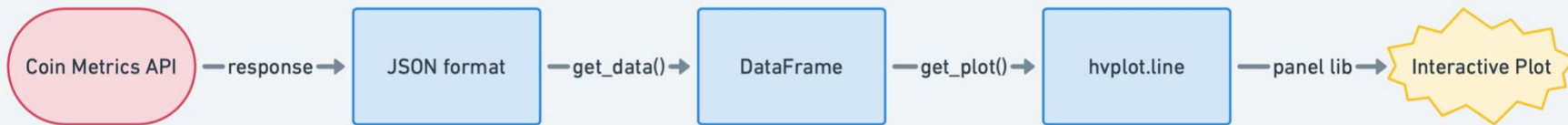
Approach: Select Fundamental Metrics

- **Reference Rate**
 - Represents the price of a crypto asset for a transaction between buyer and seller. Determines when major of trades took place.
- **Active Addresses**
 - The sum count of unique active addresses in a network during an interval of time
- **Free Float Supply**
 - The number of native units of a crypto asset that are available to trade in open markets
- **Transaction Count**
 - The sum count of transactions that interval
- **Market Cap, Total**
 - The sum of USD value of the current supply (market capitalization)
- **Market Cap, Realized**
 - The sum of USD value based on the USD closing price for that day
- **MVRV Ratio**
 - The ratio of the sum of USD value of the current supply to the sum realized USD value of the current supply
- **Addresses over \$1**
 - The sum count of unique addresses holding at least one dollars worth of native units
- **Addresses over \$1M**
 - The sum count of unique addresses holding at least one million dollars worth of native units

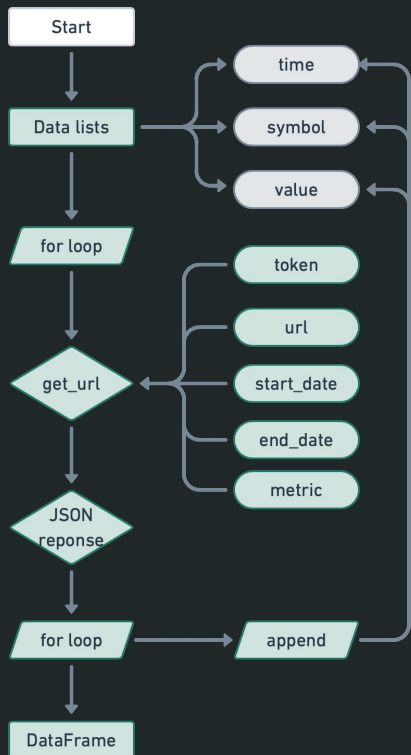
Code's Logic

Inputs

url_endpoint	<code>https://community-api.coinmetrics.io/v4/timeseries/asset-metrics?</code>
start_date	January 1, 2018
end_date	Today
tokens	BTC, ETH, DOGE, USDT



get_data(): Pulling data from API and creating DataFrames

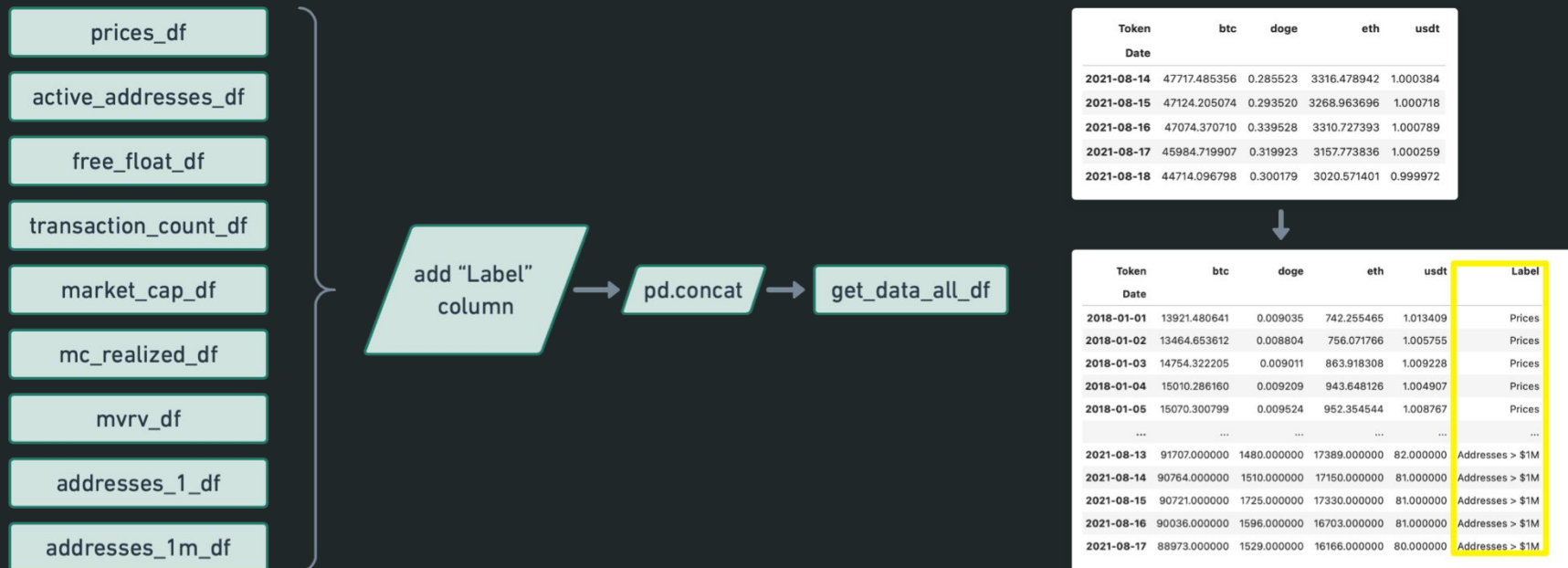


```
"data": [  
  {  
    "asset": "btc",  
    "time": "2021-08-18T00:00:00.00000000Z",  
    "ReferenceRate": "44714.0967982466"  
  },  
  {  
    "asset": "btc",  
    "time": "2021-08-17T00:00:00.00000000Z",  
    "ReferenceRate": "45984.7199070719"  
  },  
  {  
    "asset": "btc",  
    "time": "2021-08-16T00:00:00.00000000Z",  
    "ReferenceRate": "47074.370710111"  
  }  
]
```

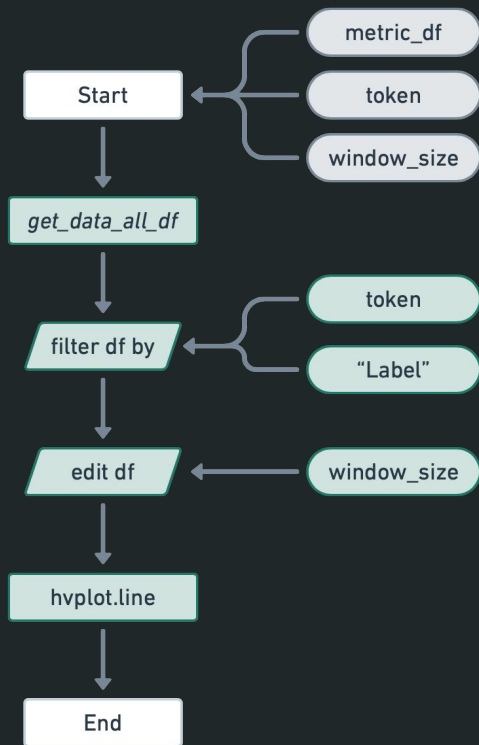
Token	btc	doge	eth	usdt
Date				
2018-01-01	13921.480641	0.009035	742.255465	1.013409
2018-01-02	13464.653612	0.008804	756.071766	1.005755
2018-01-03	14754.322205	0.009011	863.918308	1.009228
2018-01-04	15010.286160	0.009209	943.648126	1.004907
2018-01-05	15070.300799	0.009524	952.354544	1.008767
...
2021-08-14	47717.485356	0.285523	3316.478942	1.000384
2021-08-15	47124.205074	0.293520	3268.963696	1.000718
2021-08-16	47074.370710	0.339528	3310.727393	1.000789
2021-08-17	45984.719907	0.319923	3157.773836	1.000259
2021-08-18	44714.096798	0.300179	3020.571401	0.999972

1326 rows x 5 columns

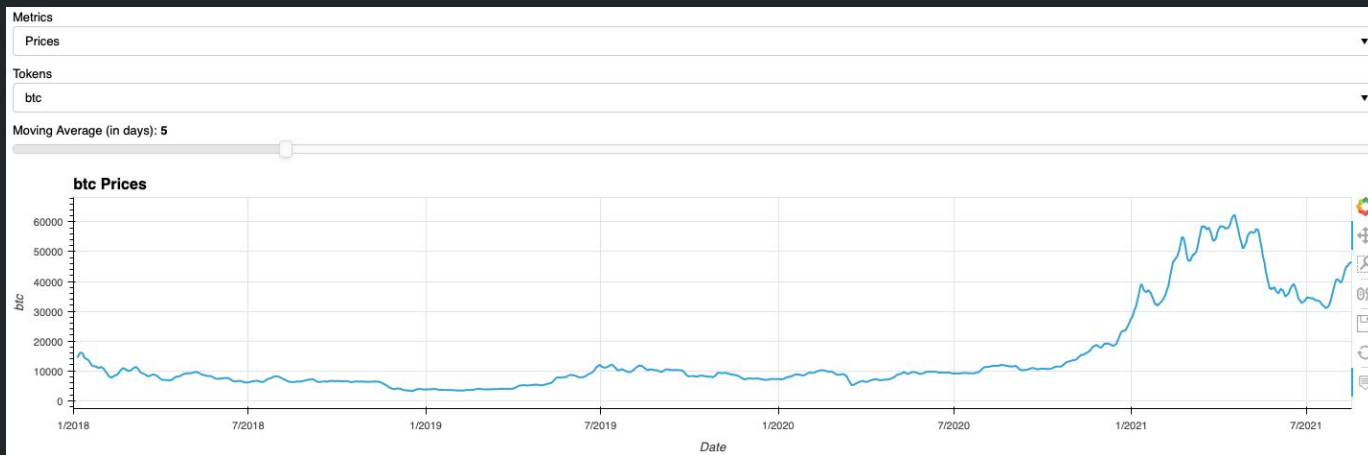
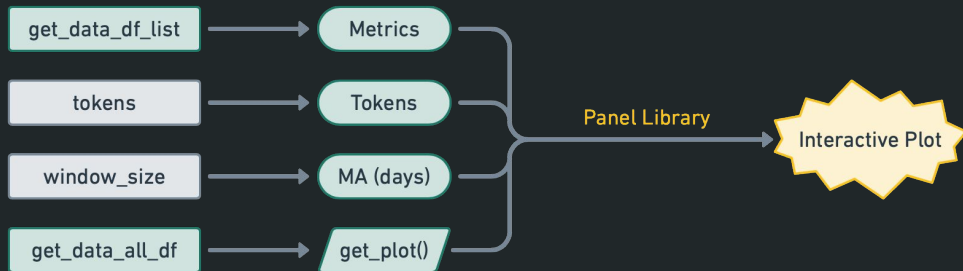
Concatenated DataFrames to comply with DRY standard



get_plot(): Transforming DataFrame into hvplot lines

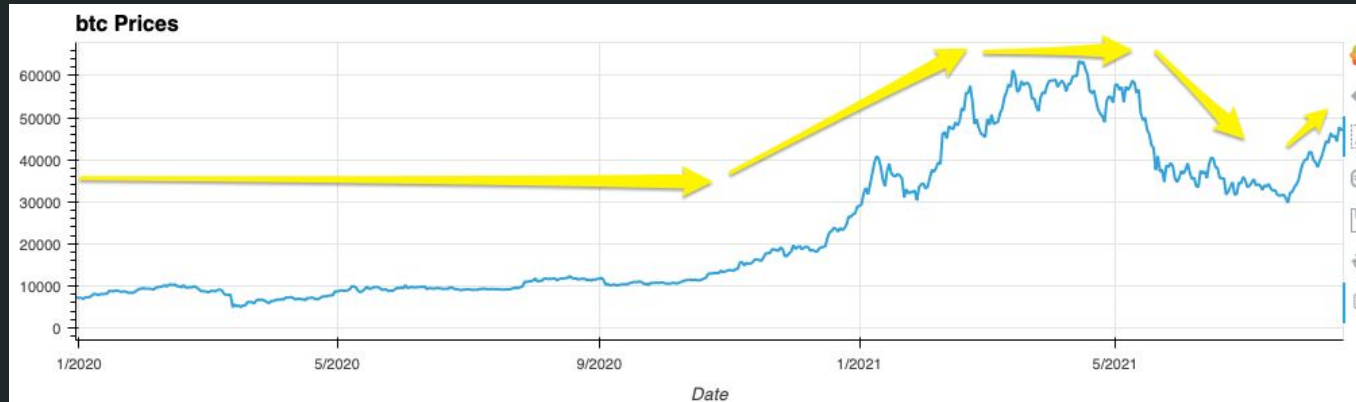
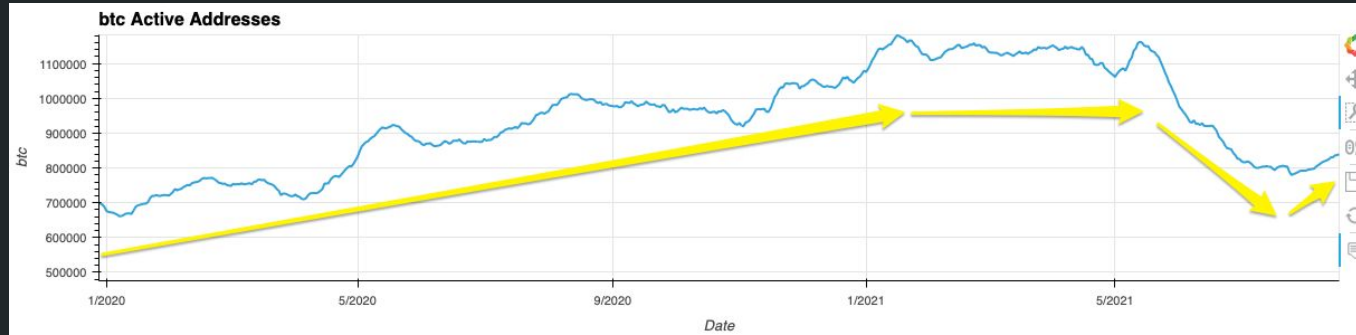


Used the *Panel* library to build an interactive tool



Analysis of On-Chain Data

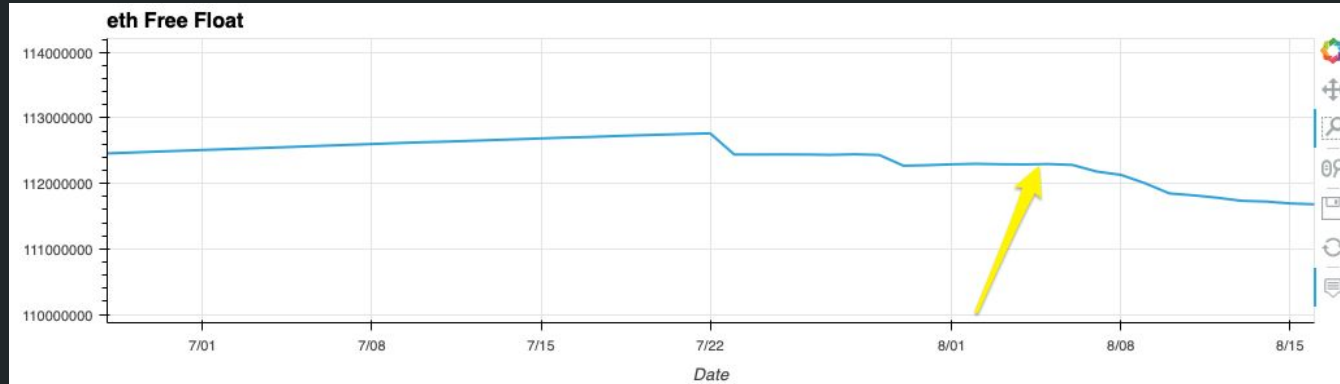
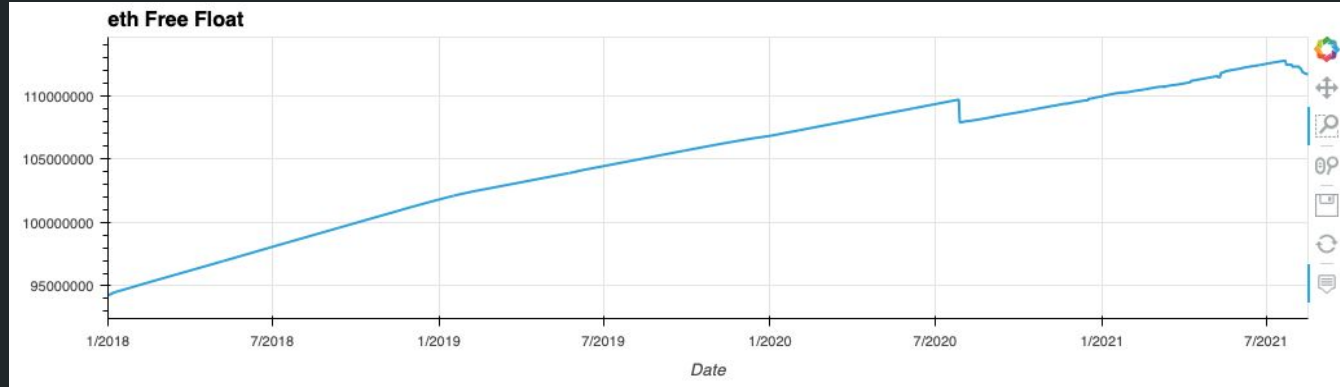
Active Addresses may be a leading indicator of BTC prices



MVRV as a gauge for market valuation in BTC



Decline in the supply of \$ETH after adoption of EIP-1559



Next Steps

Step 1

Expand the number of fundamental metrics in the tool.

Step 2

Snapshot of the latest changes in metrics

Step 3

Plot multiple metrics in a single plot

Step 4

Look for correlations in the data

Appendix

GitHub Repo

<https://github.com/MoustafaMous/Project-1/>

Coin Metrics API Docs

<https://docs.coinmetrics.io/api/v4>