



LEVERAGING THE CRYPTO-CURRENCY MARKET TO CREATE DIVERSIFICATION
IN THE TRADITIONAL BALANCE SHEET & THE STANDARD PORTFOLIO.

Rethinking Liquidity Use

Meet the Team



Andrew



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OVERVIEW



MADE WITH
beautiful.ai

USDC Ethereum Bitcoin Cash Synthetix
AAVE Maker Uniswap BSC
Chainlink Polygon Flow
Cardano Ontology
Litecoin Nexo Ravencoin
ZRX Solana Zilliqa IOTA Filecoin Theta Algorand
Tether NEM Tezos Terra
Dai 1Inch EOS Holo
Bancor Decred Tron ICON ETC Harmony
Neo Avalanche QTUM XRP Voyager
Avalanche BAT ICP
Vechain Shiba Paxos
Elrond Polkadot Bitcoin
Dogecoin Compound

What is the Blockchain?

- What is Decentralized Finance (DeFi)?
 1. **Built on top of blockchain networks.**
 2. **Open-source, permissionless, and transparent financial service ecosystem**
 3. Peer-to-peer (P2P)
- What are the potential use cases for DeFi?
 1. **Borrowing & Lending**
 2. **Monetary banking services** - These can include the issuance of **stablecoins, mortgages, and insurance.**
 3. **Decentralized Marketplaces - DeX**
- What are the main advantages of DeFi?
 1. **Do not need any intermediaries or arbitrators.**
 2. **Single points of failure are eliminated**
 3. **Ease of access for individuals**
- What challenges does DeFi face?
 1. **Poor performance**
 2. **High risk of user error**
 3. Bad user experience:
 4. Cluttered ecosystem:



Total Value Locked



Basics

Since most DeFi applications require capital to be deposited, often in the form of loan collateral or liquidity in a trading pool – locking up value – the best measure of adoption so far is total value locked (TVL).

Putting TVL in perspective

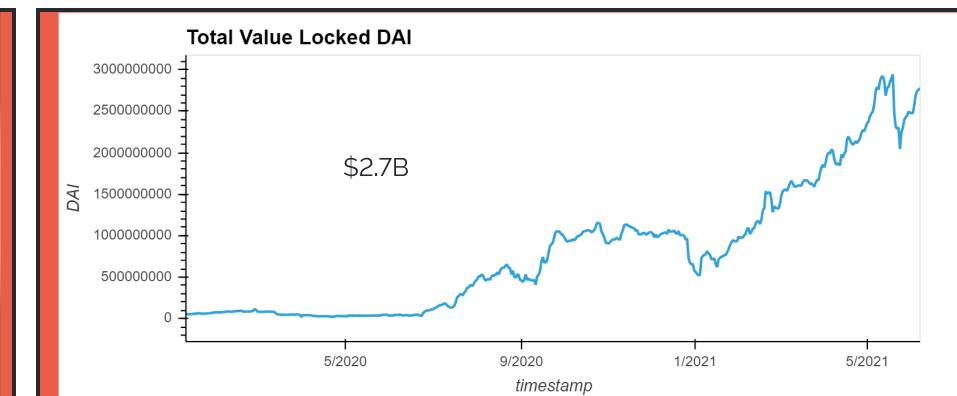
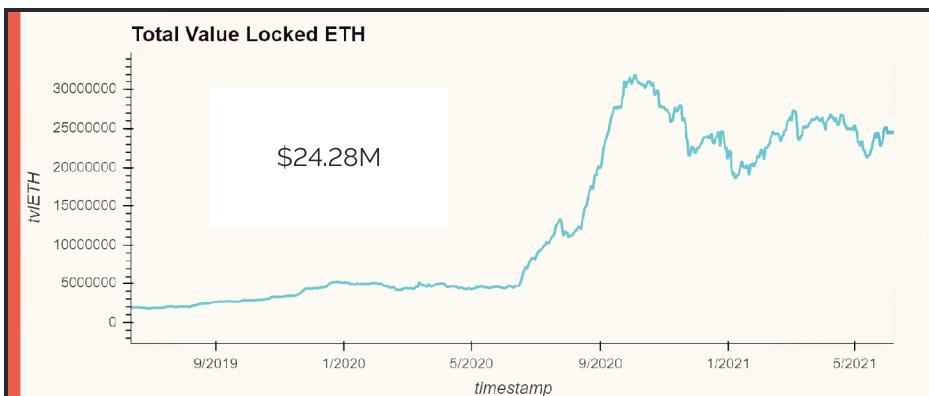
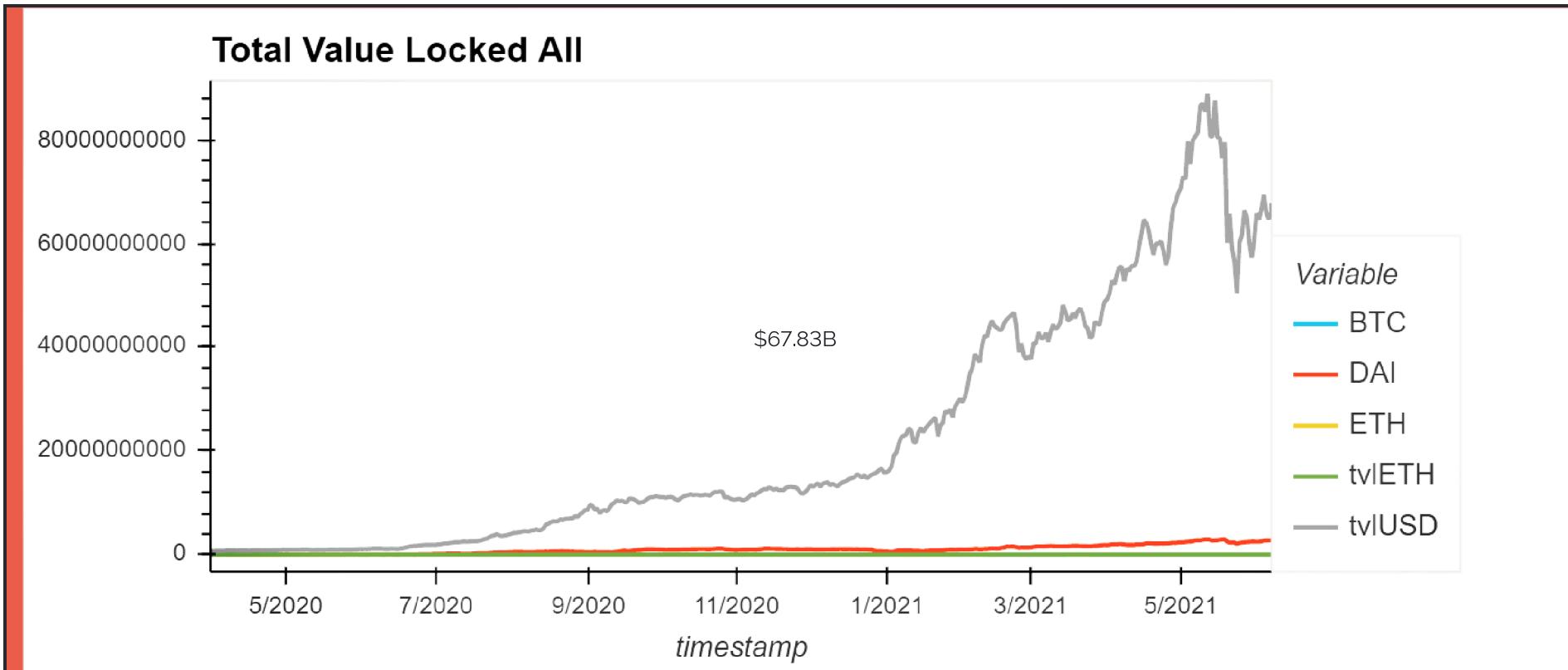
TVL in DeFi is at around US\$ 67bn mark. This is undeniably a good sign for DeFi fans, yet it needs to be interpreted correctly. First of all, this figure is highly reliant on the price of Ether (ETH), whose price has increased 281% since the beginning of the year.

Numbers

In **2018**, TVL more than tripled from ~\$70 million to \$300 million. In **2019**, it more than doubled to \$667 million on December 31, **2019**. And on 6-2-2020 it passed 1 billion dollars in value. Today 6/6/21 it is \$67.83B

DeFi Pulse

DeFi Pulse has become the chief referee of who's in the lead in decentralized finance, using a metric it created, "Total Value Locked." TVL represents the dollar value of all the tokens locked in the smart contract of a given decentralized lending project.



Defi Platforms

- Maker
- Aave
- Compound
- C.R.E.A.M. Finance



Compound is an algorithmic money market protocol on Ethereum that lets users earn interest or borrow assets against collateral.



Aave (from the Finnish word for "ghost") is an open source non-custodial protocol on Ethereum for decentralized lending and borrowing.

MakerDAO is a decentralized credit platform on Ethereum that supports **Dai**, a stablecoin whose value is pegged to USD.



DeFi

Lending and Borrowing

STABLECOINS

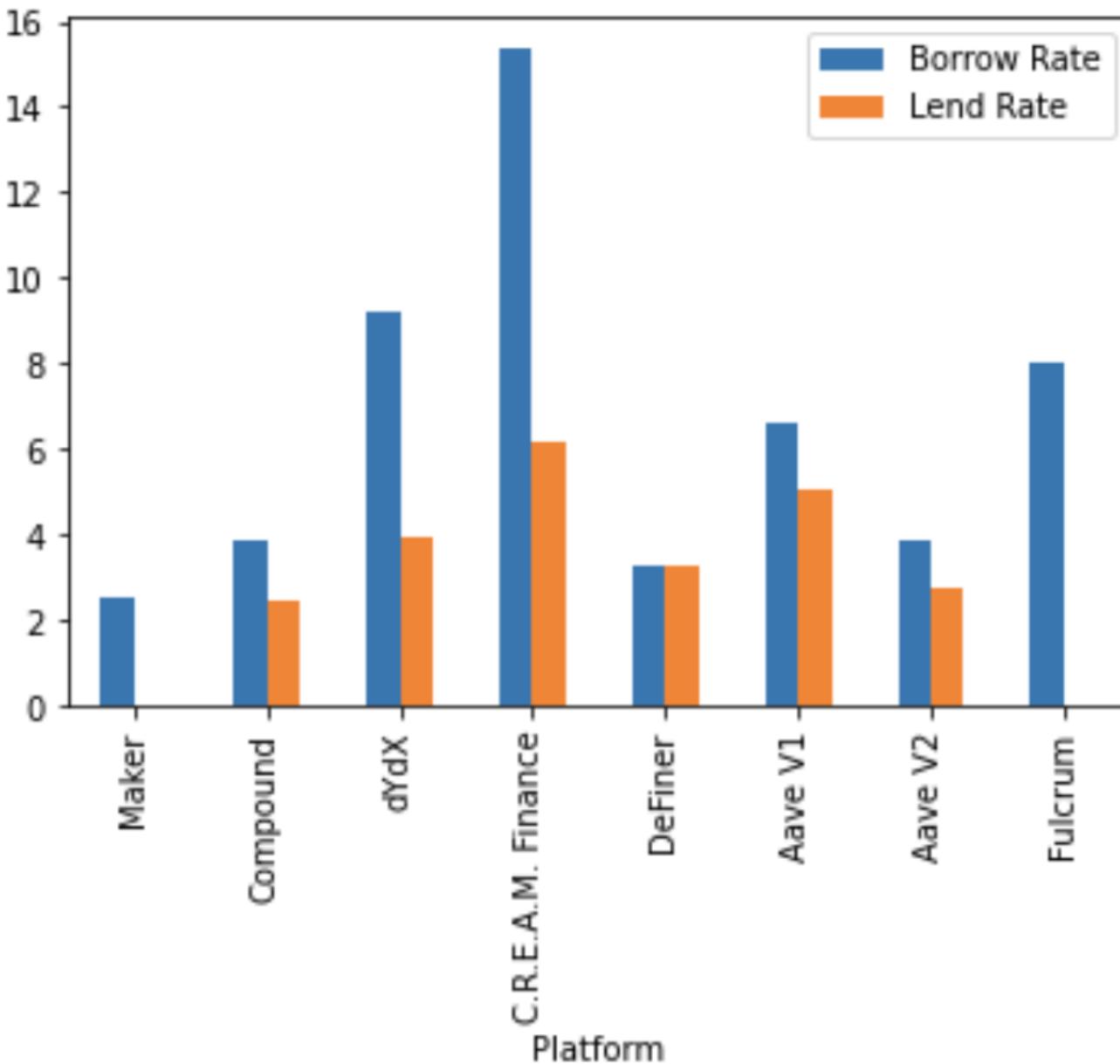


A "stablecoin" is a type of cryptocurrency whose value is tied to an outside asset, such as the U.S. dollar or gold, to stabilize the price.

1 DAI ≈ \$1

In this case we will analyze the 'DAI' stable coin, with data we gathered from the Defi Pulse API .

DEFI Platforms Interest Rates



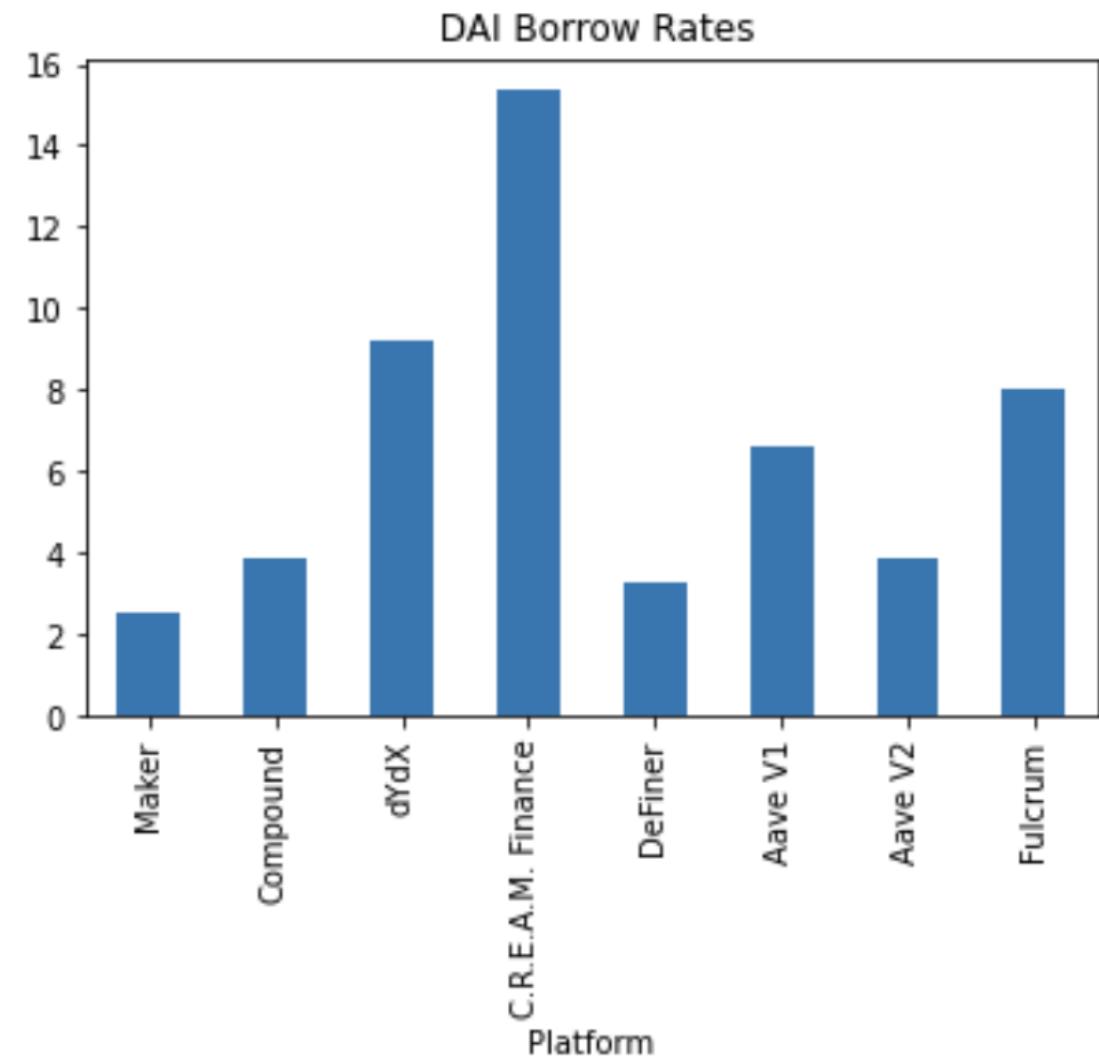
'DAI' Interest Rates

Platform	Borrow Rate	Lend Rate
Maker	2.58026	0.01001
Compound	3.82654	2.42615
Aave V1	6.48140	4.91994
Aave V2	3.81634	2.69615
dYdX	5.10021	1.19092
C.R.E.A.M. Finance	15.37511	6.16447
DeFiner	3.26410	3.26292
Fulcrum	8.00000	0.01000

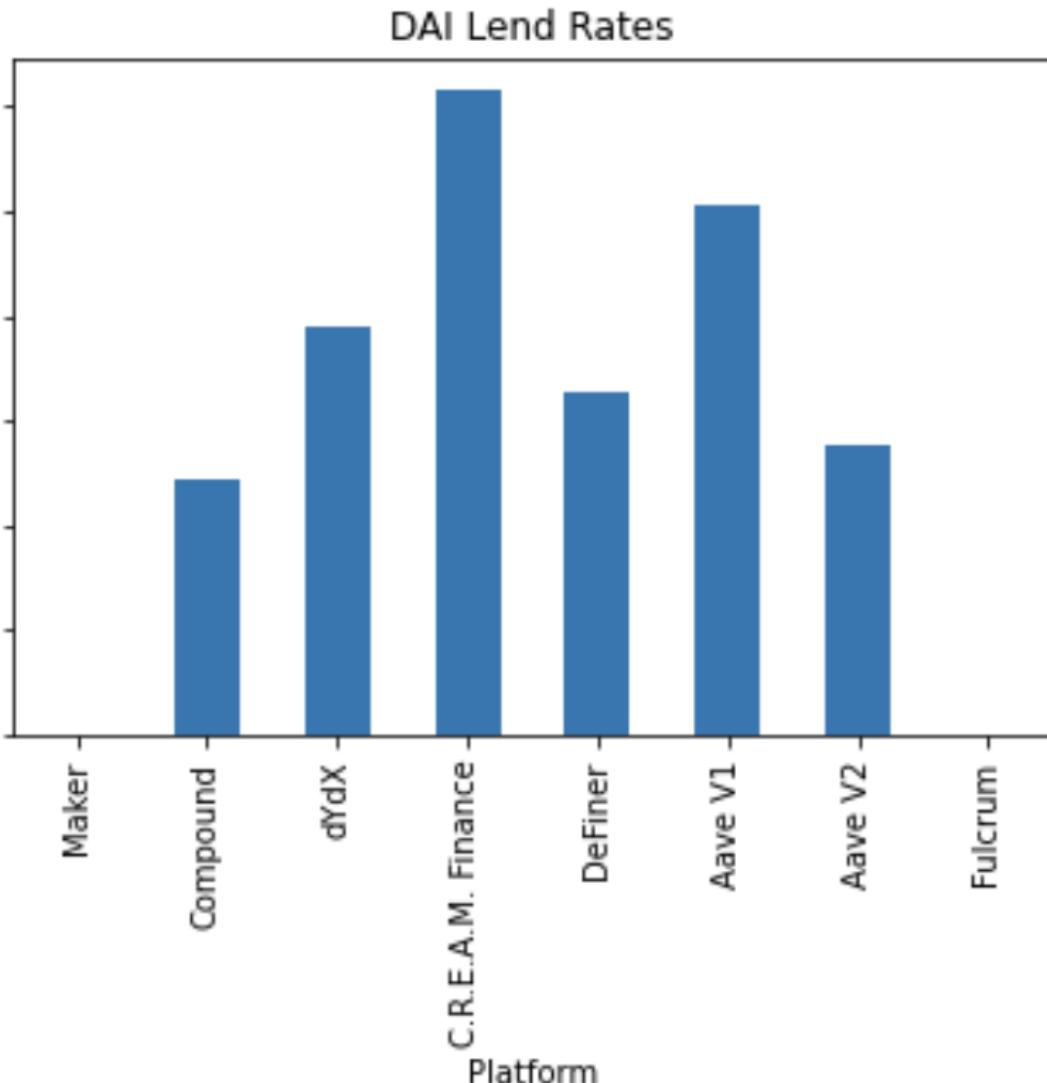
DeFi Platforms Lending & Borrow Rates

What defi platform offers the best interest rate for borrowing 'DAI' ?

With this bar graph we can come to the conclusion that MAKER has the lowest interest borrow rate of **%2**, while C.R.E.A.M. Finance holds the highest interest borrow rate of **%15**.

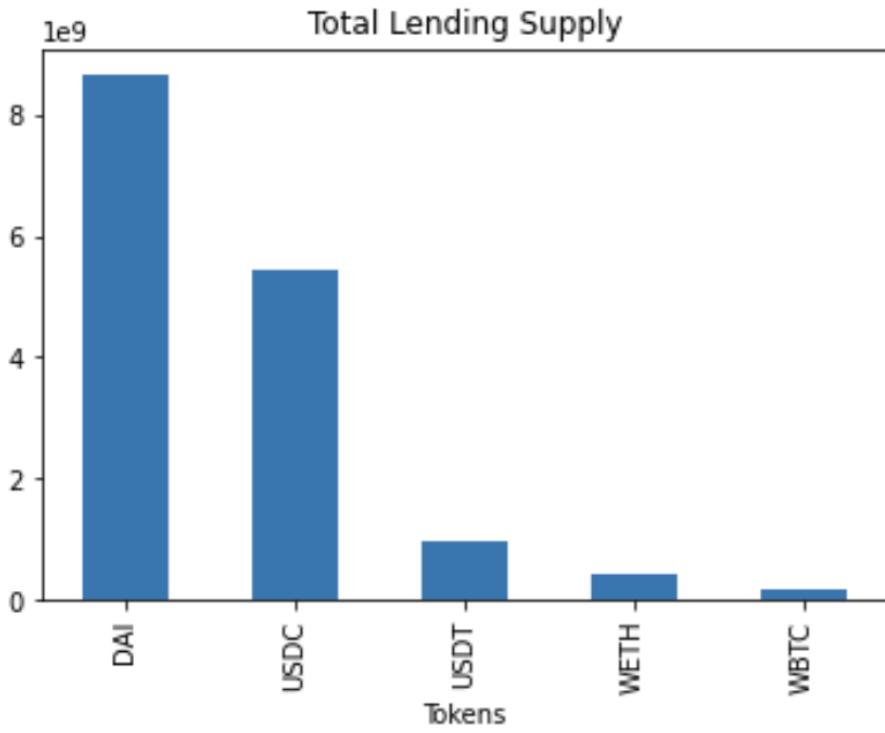


DeFi Platforms Lending & Borrow Rates



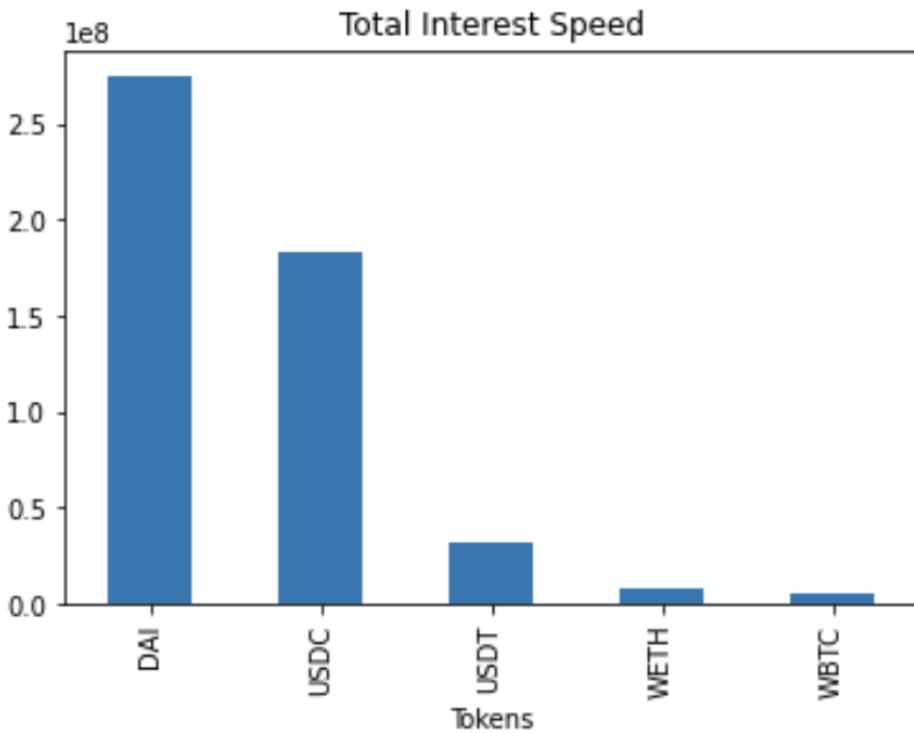
Which Platform will give me the highest lending interest rate for my '**DAI**' ?

As we can analyze on the bar graph **C.R.E.A.M. Finance** has the highest lending interest rate of **%6**, while **MAKER** and **Fulcrum** both come in with the lowest lending interest rate of less than **%1**.



Which tokens have the most lending supply?

This graph gives us the top 5 tokens with current total lending supply.

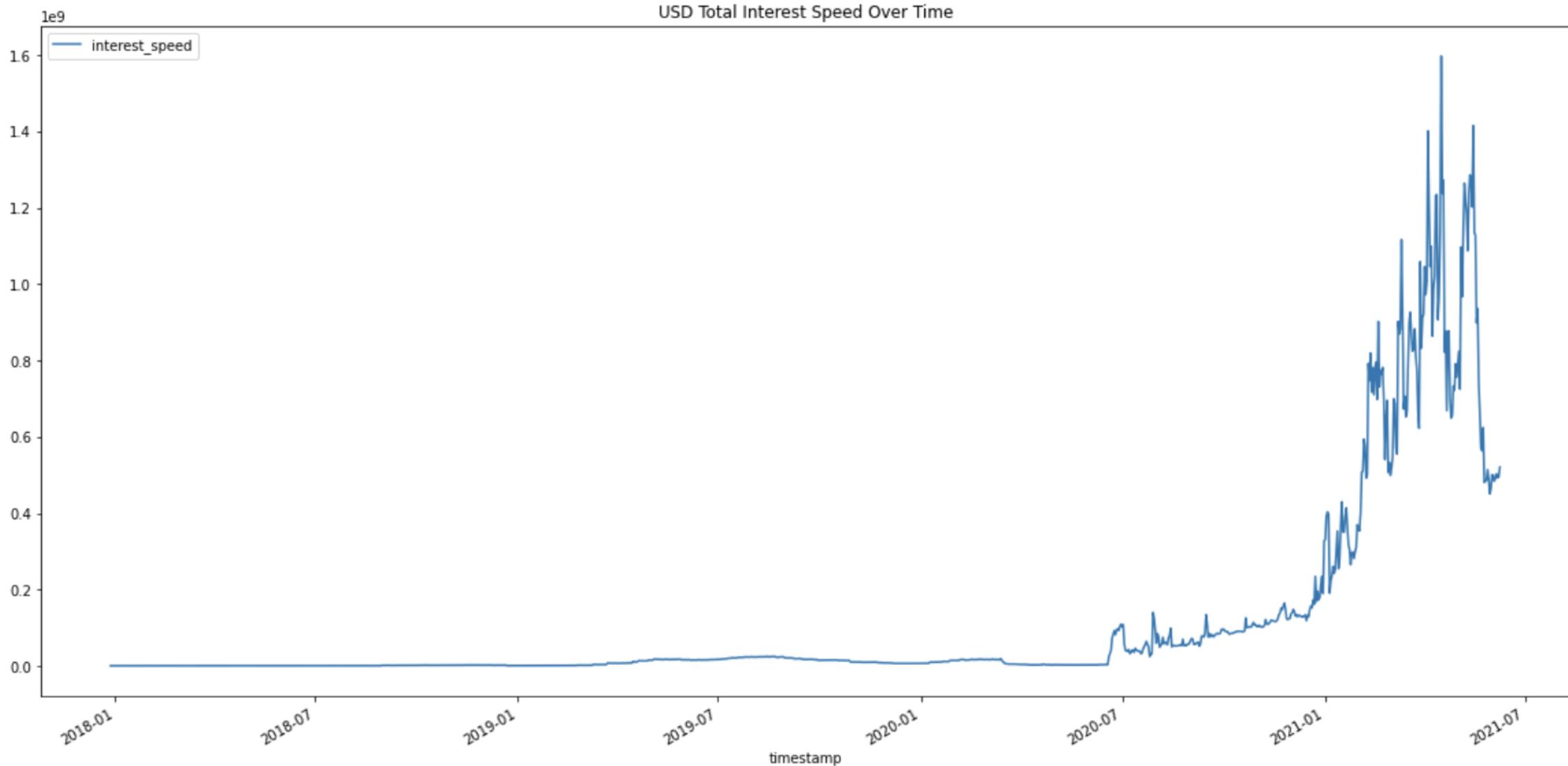


This graph gives us a total amount of interest being generated by token.

Another observation we can see is that 3 out of the top 5 are considered 'Stablecoins'. We can then make the assumption that people rather go with low volatility risk.

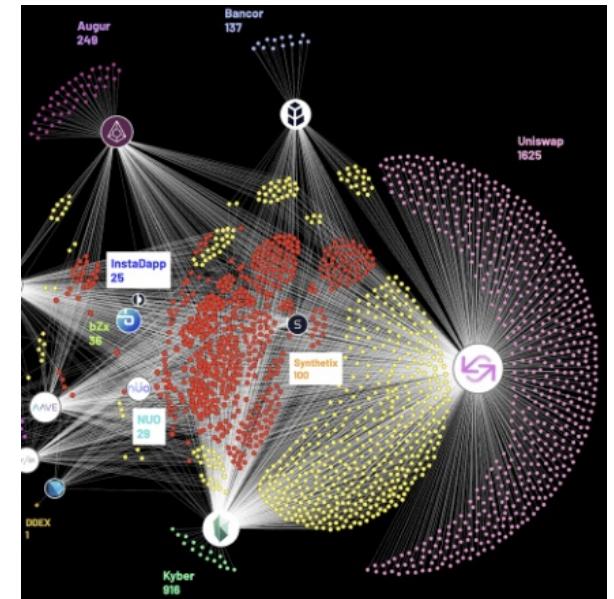
Total Interest Speed Over Time in USD

We noticed the exponential growth of Defi lending and borrowing from the beginning of this year 2021 to current date, with some volatility in between.



- What Is an Automated Market Maker (AMM)?
 1. Robot quoting a price between two assets
 2. Trade trustlessly
 3. Provide liquidity
 4. **AMMs are still in their infancy.** ex Uniswap, Curve, and PancakeSwap.

- How does an automated market maker (AMM) work?
 1. Trading pairs example, ETH/DAI.
 2. peer-to-peer (P2P) transaction - ex Binance DeX.
 3. AMMs - peer-to-contract (P2C). No counterparties.
 4. Pricing Algorithm - For example, Uniswap uses $x * y = k$,



Automated Market Makers trades history Analysis

Trades
Historical data of trades in a specific AMM pool

GET Trades for Exchange

<https://data-api.defipulse.com/api/v1/blocklytics/pools/v1/trades/{address}>

Returns historical trading data for a specific AMM pool.

Request **Response**

Path Parameters

address	string	Exchange address
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Query Parameters

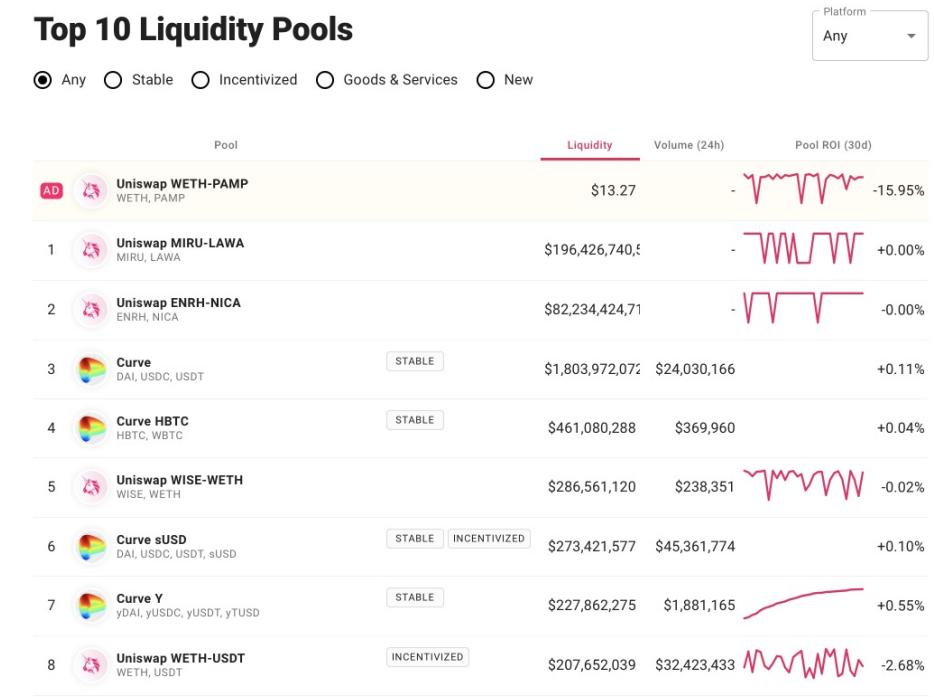
api-key	string	Create a free account at data.defipulse.com to obtain an API key
platform	string	Platform. Available values: - uniswap - uniswap-v2 - balancer - bancor - curve
direction	string	Order direction. Available values: - asc - desc
orderBy	string	Key to order by

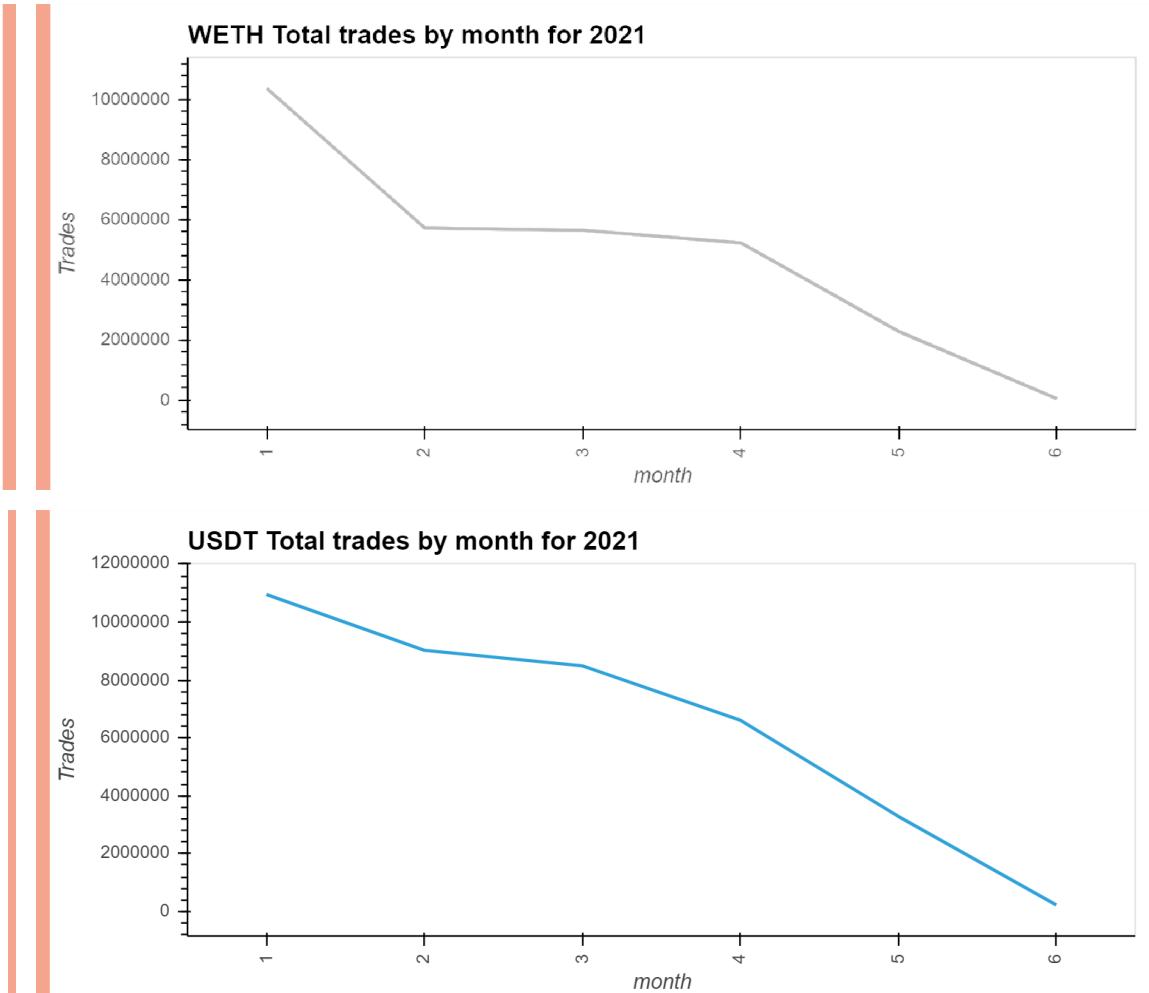
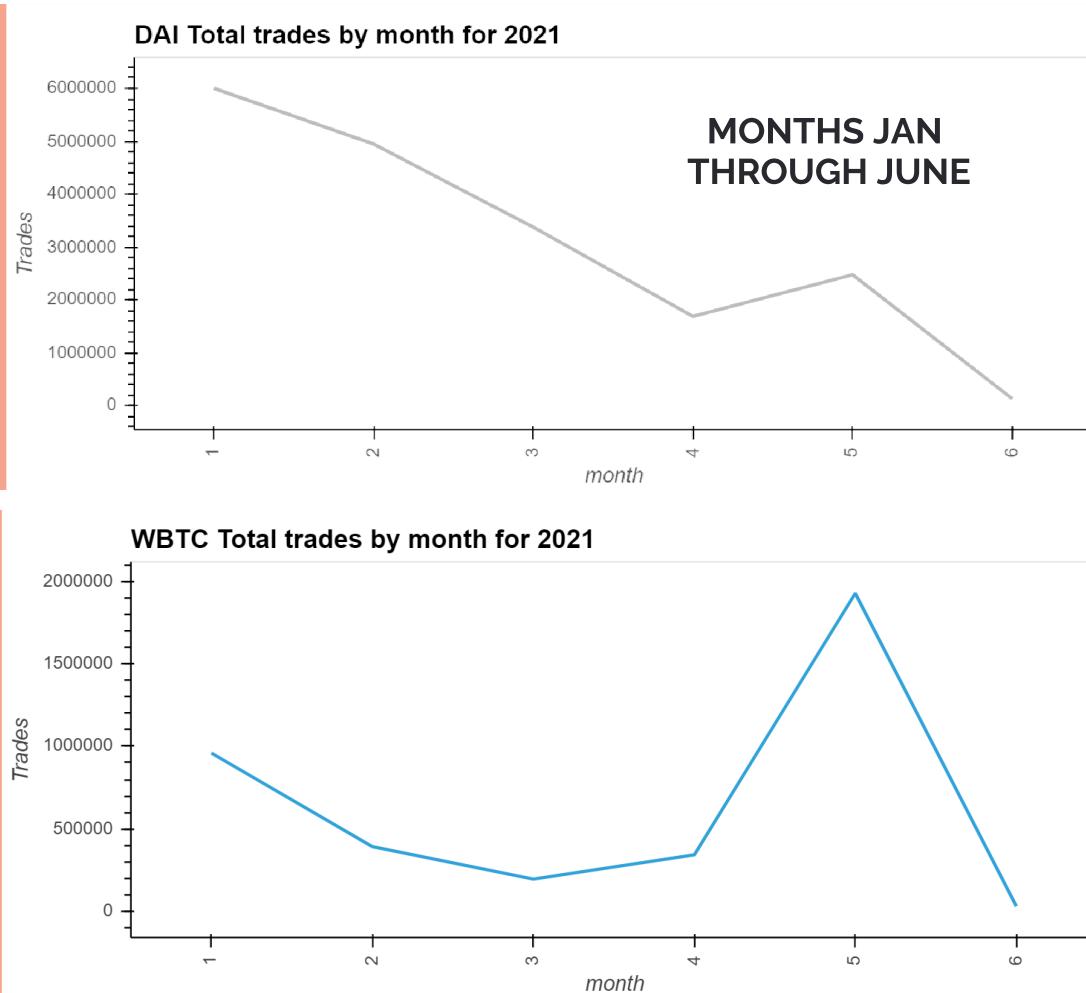
```
#print(index)
#print(row)
loop2_cnt=1
#print('Loop1= ', Loop1_cnt)
print('loop1 = ', loop1_cnt, 'Master = ', master)
for dt in dt_list:
    from_dt = dt
    to_dt = dt + timedelta(2)
    #print(from_dt, ' --- ', to_dt)
    #print('Exchange = ', row['Exchange'])
    trades_url = f"https://data-api.defipulse.com/api/v1/blocklytics/pools/v1/trades/{row['Exchange']}?to={to_dt}&from={from_dt}&platform=curve&api-key={defipulse_api_key}"
    trades10_response_data = requests.get(trades_url).json()
    if 'results' not in trades10_response_data:
        break
    tmp_list.append(row)
    tmp_list.append(trades10_response_data['results'])
    tmp_list = []
    #print(type(tmp_list))
    tmp_list.append(master[0])
    tmp_list.append(master[1])
    tmp_list.append(master[2])
    tmp_list.append(master[3])
    tmp_list.append(master[4])
    tmp_list.append(master[5])
    tmp_list.append(master[6])
    tmp_list.append(master[7])
    tmp_list.append(master[8])
    trades = len(trades10_response_data['results'])
    tmp_list.append(to_dt)
    from_amt = 0
    for hist in trades10_response_data['results']:
        from_amt = from_amt + hist['fromAmount']
        exchanges_f.append(master[2])
        platform_f.append(master[4])
        pool_f.append(master[5])
        date_f.append(master[6])
```

date	Exchange	Platform	Pool	FromAmount	ToAmount	FromSymbol	ToSymbol	Price	Trades
2021-06-02	0x45f783cce6b7ff23b2ab2d70e416cdb7d6055f51	Curve	Curve Y	3556211.308	3555924.795	USDT	TUSD	1.000	33
2021-06-02	0x45f783cce6b7ff23b2ab2d70e416cdb7d6055f51	Curve	Curve Y	610338.766	610376.408	USDT	TUSD	1.000	33
2021-06-02	0x45f783cce6b7ff23b2ab2d70e416cdb7d6055f51	Curve	Curve Y	610444.680	610509.173	USDT	TUSD	1.000	33
2021-06-02	0x45f783cce6b7ff23b2ab2d70e416cdb7d6055f51	Curve	Curve Y	610334.908	610448.175	USDT	TUSD	1.000	33
2021-06-02	0x45f783cce6b7ff23b2ab2d70e416cdb7d6055f51	Curve	Curve Y	610162.120	610275.886	USDT	TUSD	1.000	33
2021-06-02	0x45f783cce6b7ff23b2ab2d70e416cdb7d6055f51	Curve	Curve Y	610021.004	610165.623	USDT	TUSD	1.000	33
2021-06-02	0x45f783cce6b7ff23b2ab2d70e416cdb7d6055f51	Curve	Curve Y	68704.668	68779.755	DAI	TUSD	1.001	33
2021-06-02	0x45f783cce6b7ff23b2ab2d70e416cdb7d6055f51	Curve	Curve Y	271128.122	271353.110	DAI	USDC	1.001	33
2021-06-02	0x45f783cce6b7ff23b2ab2d70e416cdb7d6055f51	Curve	Curve Y	40000.000	39990.113	USDT	USDC	1.000	33
2021-06-02	0x45f783cce6b7ff23b2ab2d70e416cdb7d6055f51	Curve	Curve Y	58953.222	59006.652	DAI	USDC	1.001	33
2021-06-02	0x45f783cce6b7ff23b2ab2d70e416cdb7d6055f51	Curve	Curve Y	959936.305	959288.578	TUSD	USDT	0.999	33
2021-06-02	0x45f783cce6b7ff23b2ab2d70e416cdb7d6055f51	Curve	Curve Y	40902.895	40876.590	TUSD	USDT	0.999	33
2021-06-02	0x45f783cce6b7ff23b2ab2d70e416cdb7d6055f51	Curve	Curve Y	1059250.000	1060321.235	DAI	USDT	1.001	33
2021-06-02	0x45f783cce6b7ff23b2ab2d70e416cdb7d6055f51	Curve	Curve Y	386529.605	386406.587	USDC	USDT	1.000	33
2021-06-02	0x45f783cce6b7ff23b2ab2d70e416cdb7d6055f51	Curve	Curve Y	20000.000	19993.940	USDC	USDT	1.000	33
2021-06-02	0x45f783cce6b7ff23b2ab2d70e416cdb7d6055f51	Curve	Curve Y	877768.361	877306.361	USDC	USDT	0.999	33
2021-06-02	0x45f783cce6b7ff23b2ab2d70e416cdb7d6055f51	Curve	Curve Y	287917.984	287614.600	TUSD	USDT	0.999	33
2021-06-02	0x45f783cce6b7ff23b2ab2d70e416cdb7d6055f51	Curve	Curve Y	46.000	45.976	USDC	USDT	0.999	33

Top 10 Liquidity Pools

Any
 Stable
 Incentivized
 Goods & Services
 New





Example Portfolios



We can analyze individual portfolios to return different risks levels that you are willing to accept. We have broken down some sample portfolios as examples. For easy math, we will assume you have 100k in reserve USD that you are willing to invest.

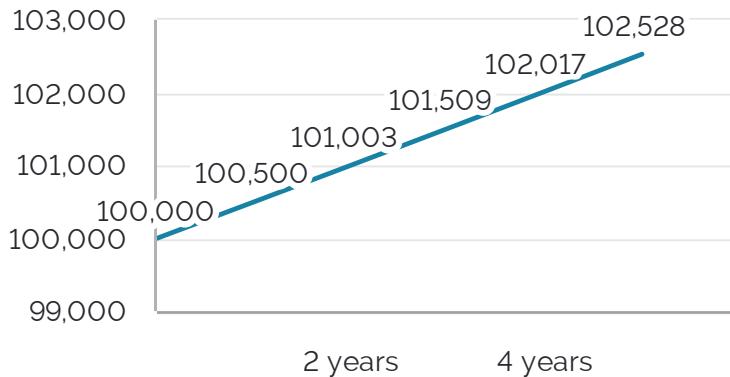
Traditional Saving Account vs. CeFi

-For the safest return of 100% USD cash reserve in a traditional savings account earning .5% apy
- over 5 years you would have a return of a little under \$3,000

-If using a Cefi saving account that returns a yeild of 8.6%
- over 5 years you would have a return of \$51,000

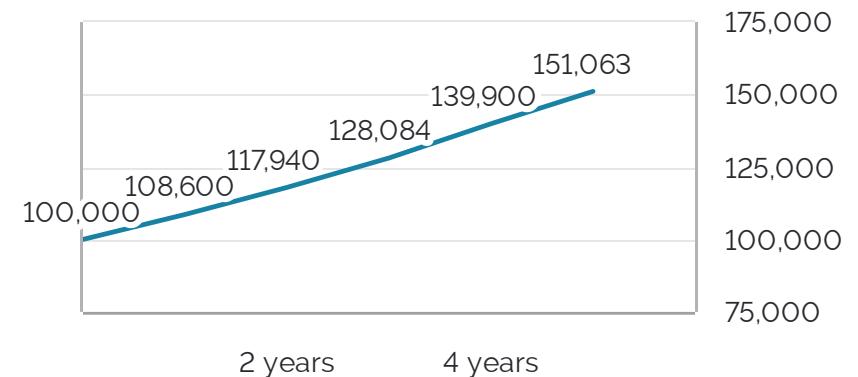


Interest from Bank account(.5%)



VS.

Interest from Stable Coin(8.6%)



SP 500 Index

For a baseline we will look at holding a traditional index fund that tracks the SP 500. We have taken the previous historical returns and then extrapolated them through a monti carlo simulation. Using 100k USD for our investment.

- The graph below shows us a return on investment after 5 years.

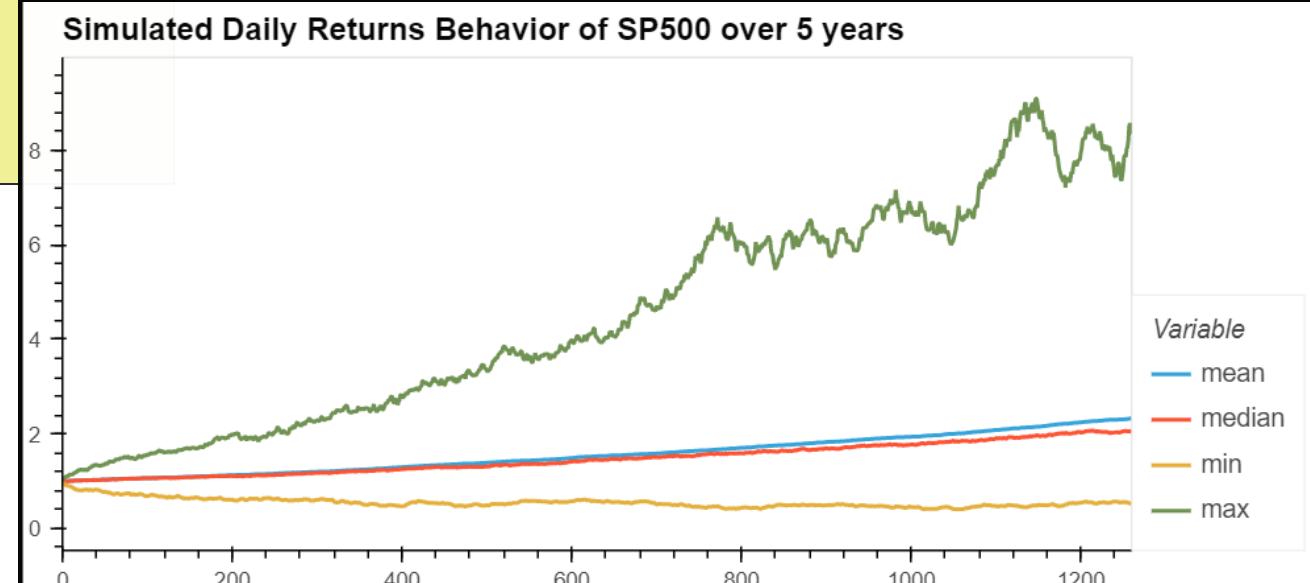
95% confidence interval -\$81,725 to \$510,347.

Min-\$34,104

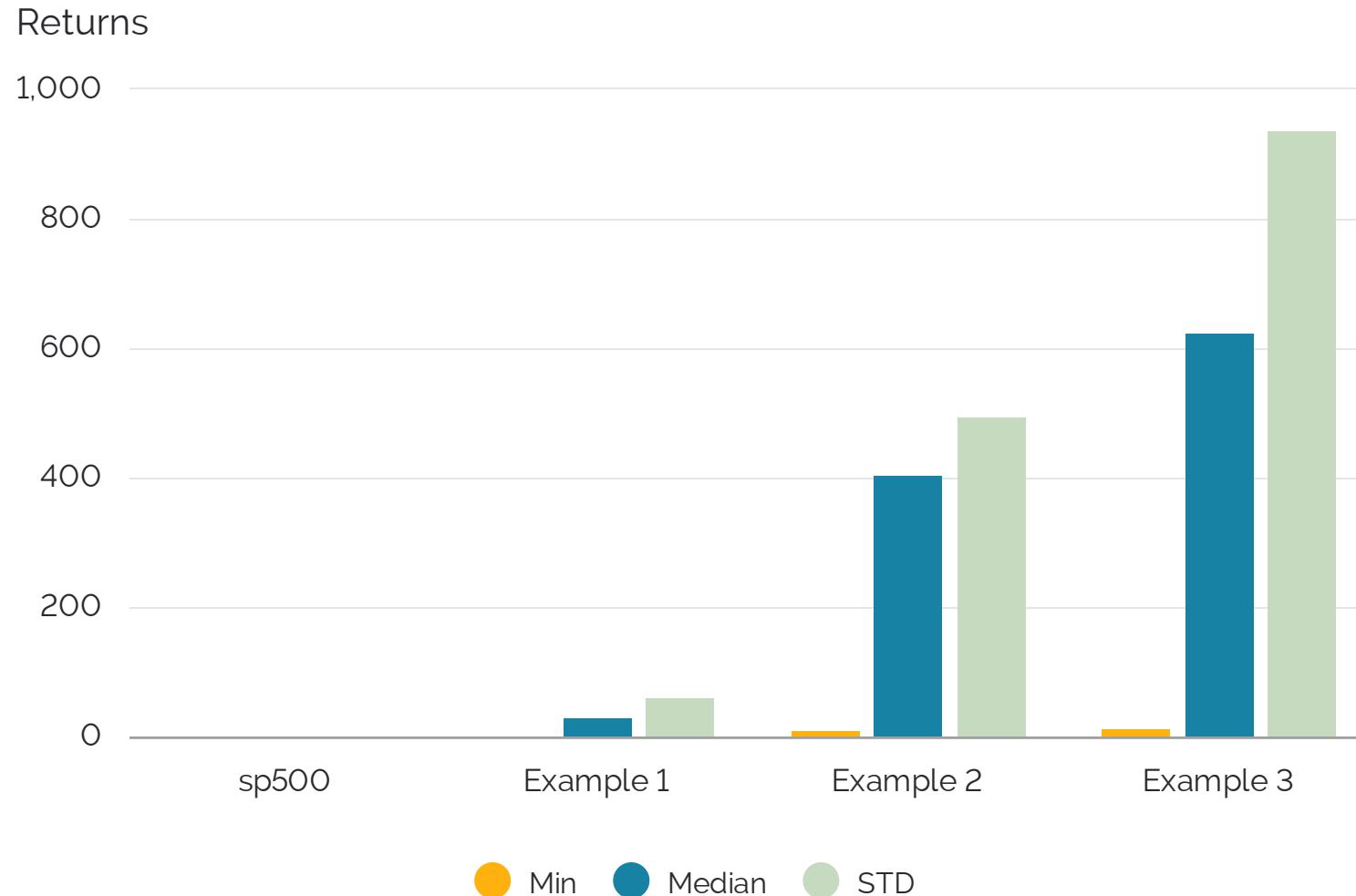
Median-\$226,000

Max-780,000

count	500.000000
mean	2.264399
std	1.132102
min	0.341043
25%	1.472070
50%	2.046779
75%	2.815505
max	7.860142
95% CI Lower	0.817256
95% CI Upper	5.103474



Portfolio Performance Comparison



600x

COMPARED TO SP-500

This return comes with the risk associated with a more volatile asset. With Crypto being so new It near impossible to predict without more data.

50/50 USDC and BTC

-Using a 50/50 split between USDC on a DeFi account and BTC

- 50k USDC returns \$25531 in a interest account

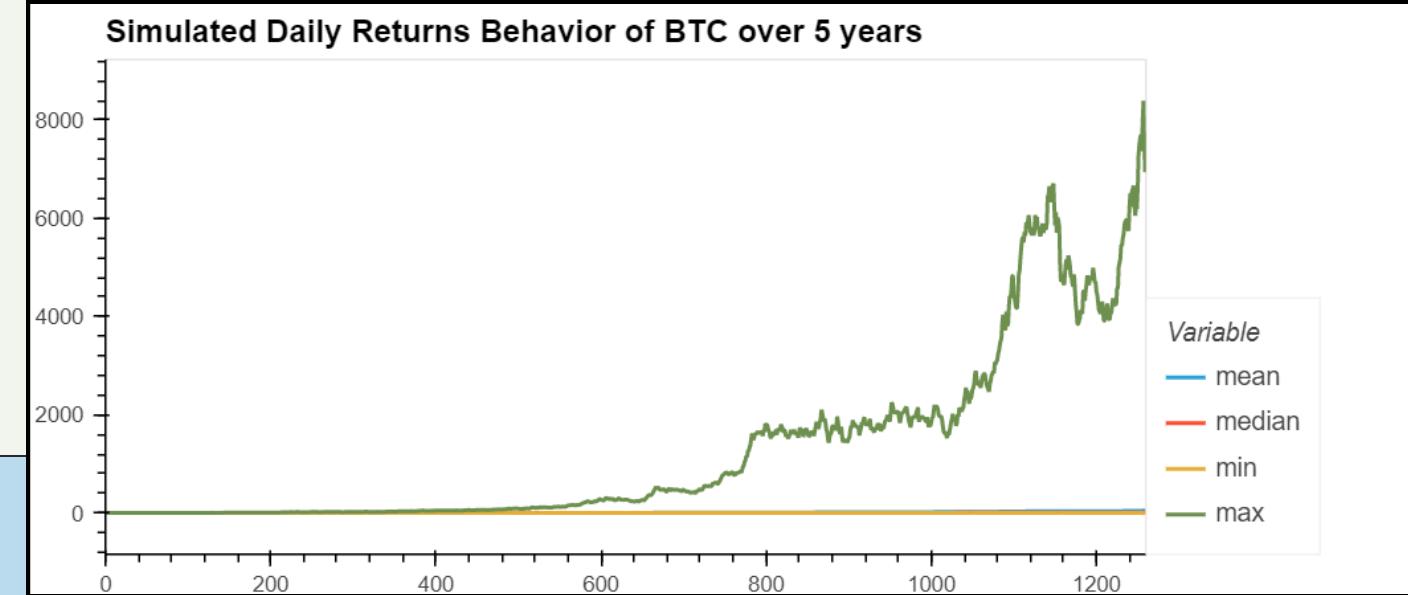
- 50k BTC

95% confidence interval - total of \$25705
to \$9,426,508

Median-\$1,600,000

Min \$3119

Max-\$31,800,000



count	500.000000
mean	31.997691
std	62.120984
min	0.062395
25%	4.040243
50%	11.089668
75%	31.368742
max	636.235680
95% CI Lower	0.514112
95% CI Upper	188.530173

Increased Risk

Holdings(25%USDC,25%BTC,25%ETH, 8%ADA,8%LINK,8%

25k- USDC

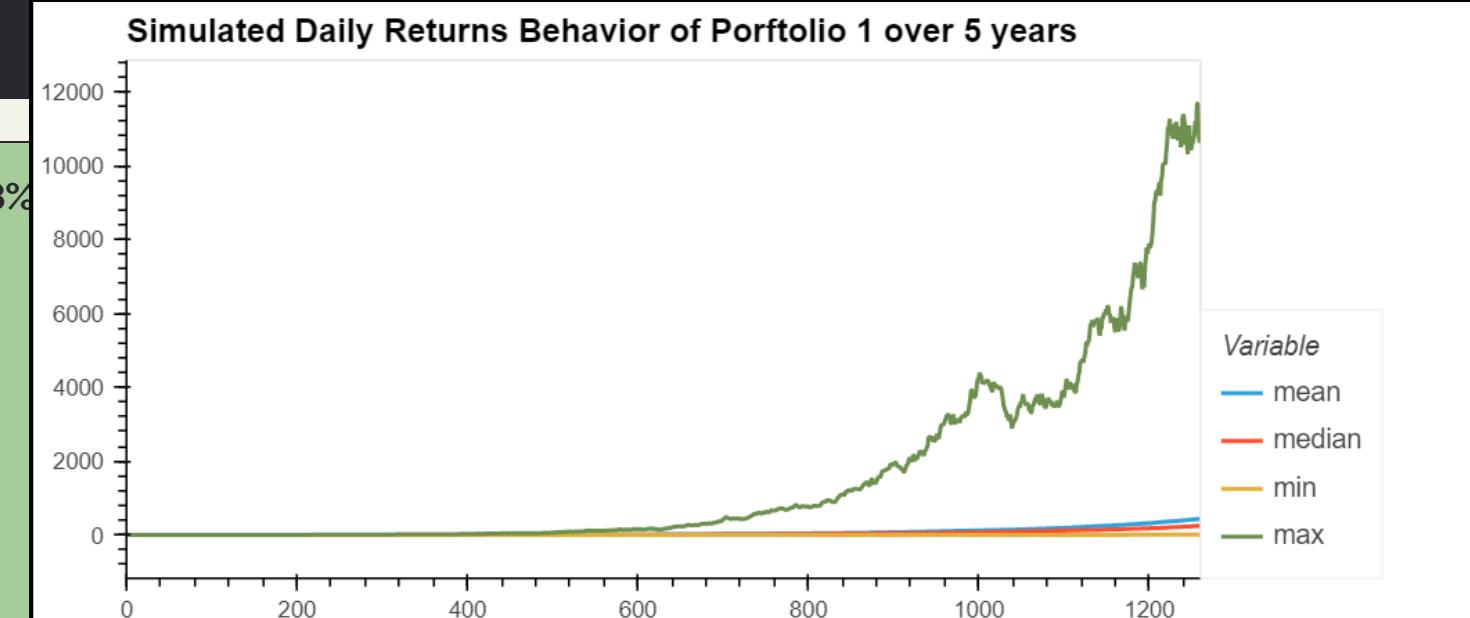
-returns \$12,765 in yield

75k- BTC/ETH/ADA/LINK/XRP

95% confident interval- returns total of 2,177,250 to
\$142,500,000

min-825,000

max-378,000,000



count	500.000000
mean	405.818749
std	497.993211
min	11.729665
25%	125.928028
50%	234.971245
75%	489.222455
max	5048.593774
95% CI Lower	29.032683
95% CI Upper	1900.797747

20% Distribution

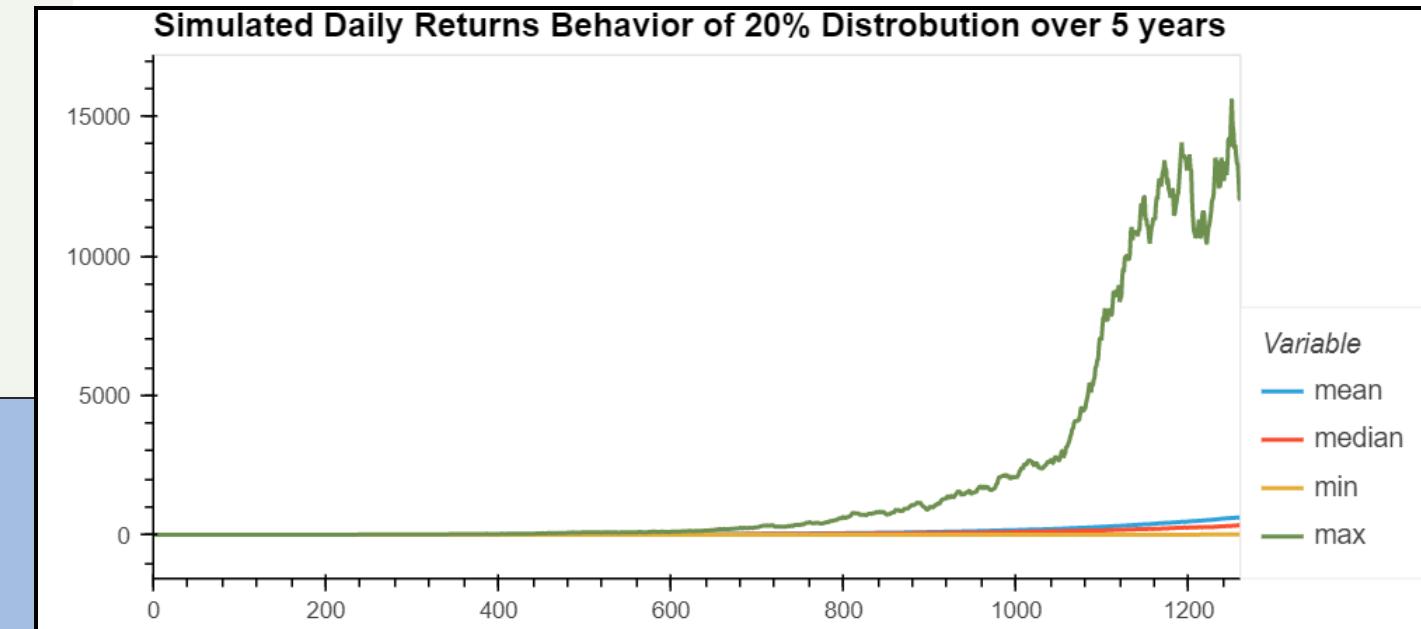
-Holdings-100k
20%BTC,ETH,ADA,LINK,XRP

-95% confidence interval- \$2,694,010
and \$228,720,682

Min-\$1,320,000

Median-62,487,000

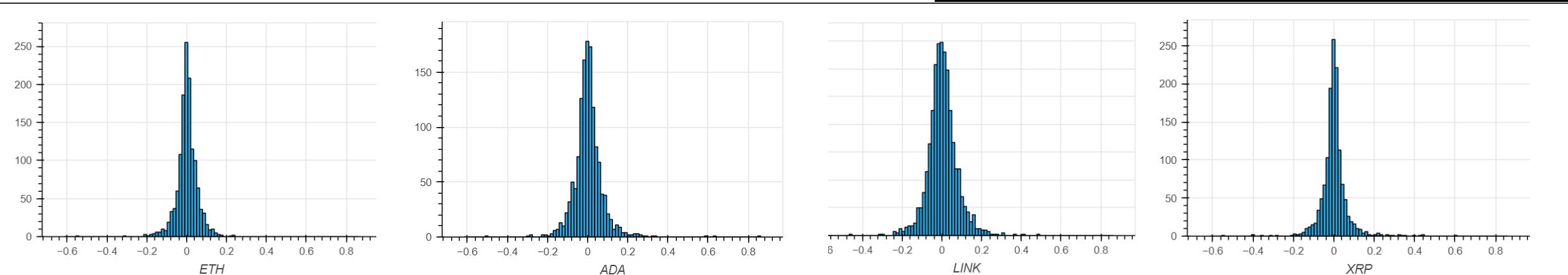
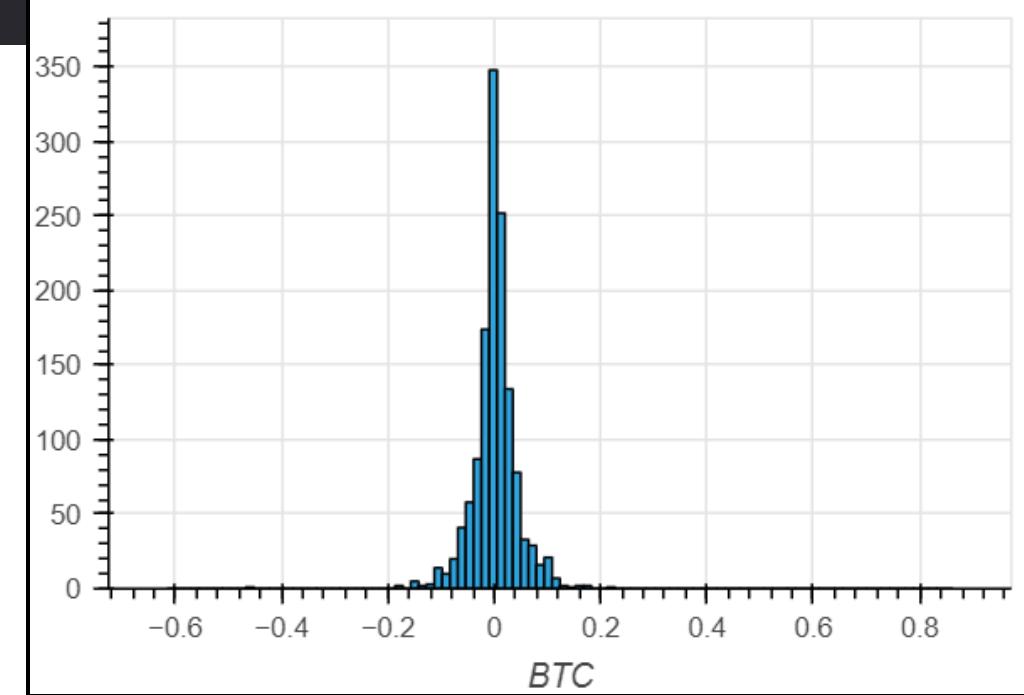
Max-\$1,199,600,000



count	500.000000
mean	624.871255
std	933.502044
min	13.207798
25%	157.902785
50%	343.787811
75%	681.521617
max	11996.894682
95% CI Lower	35.920135
95% CI Upper	3049.609097

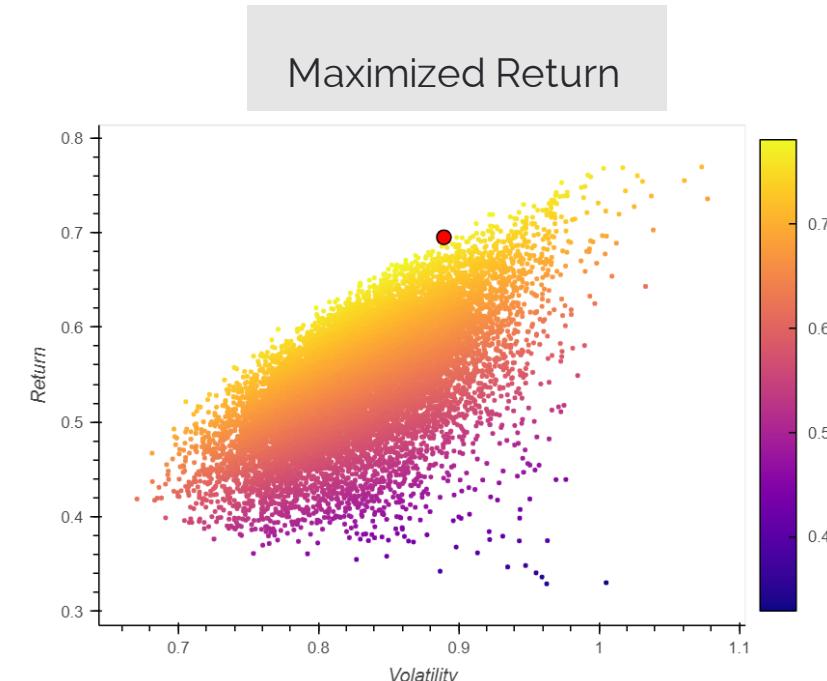
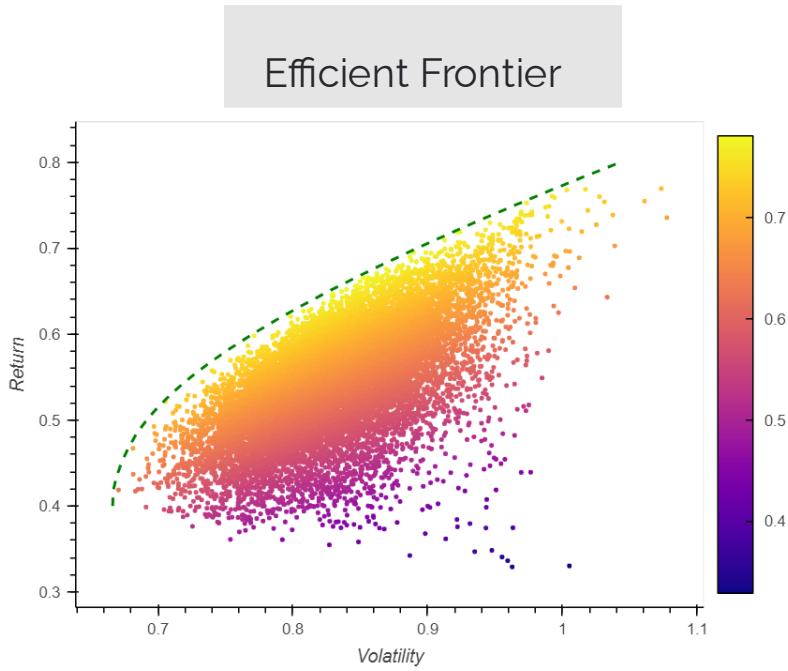
Calculating Efficient Frontier and Best Portfolio Weights

Using the volatility from the different assets we can assess the best portfolio by running it through a program that can test different weights for the portfolio and measure their return and volatility. The goal is to be on the efficient frontier that maximizes returns while limiting the volatility.



Efficient Frontier

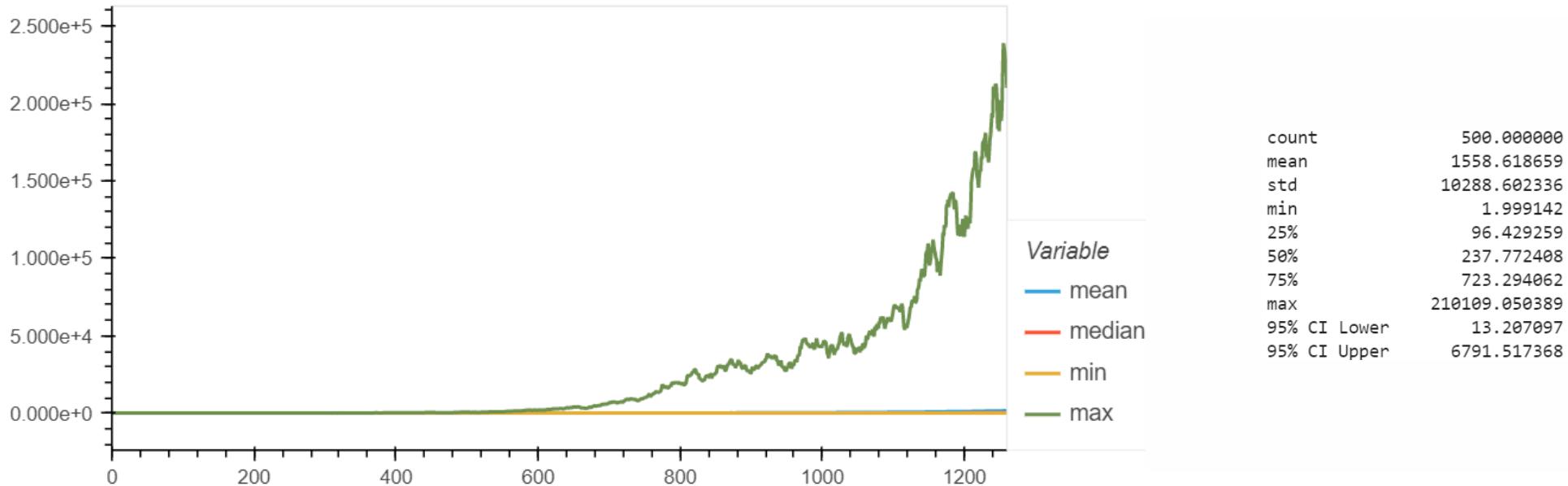
- Using these volatility measurements we can run a program that tests different weights to find the most efficient profile. For testing, we have run 15,000 different weight balances and found that **26% BTC, 38% ADA, and 36% LINK** result in the best return for the volatility.



Efficient Frontier Portfolio Returns

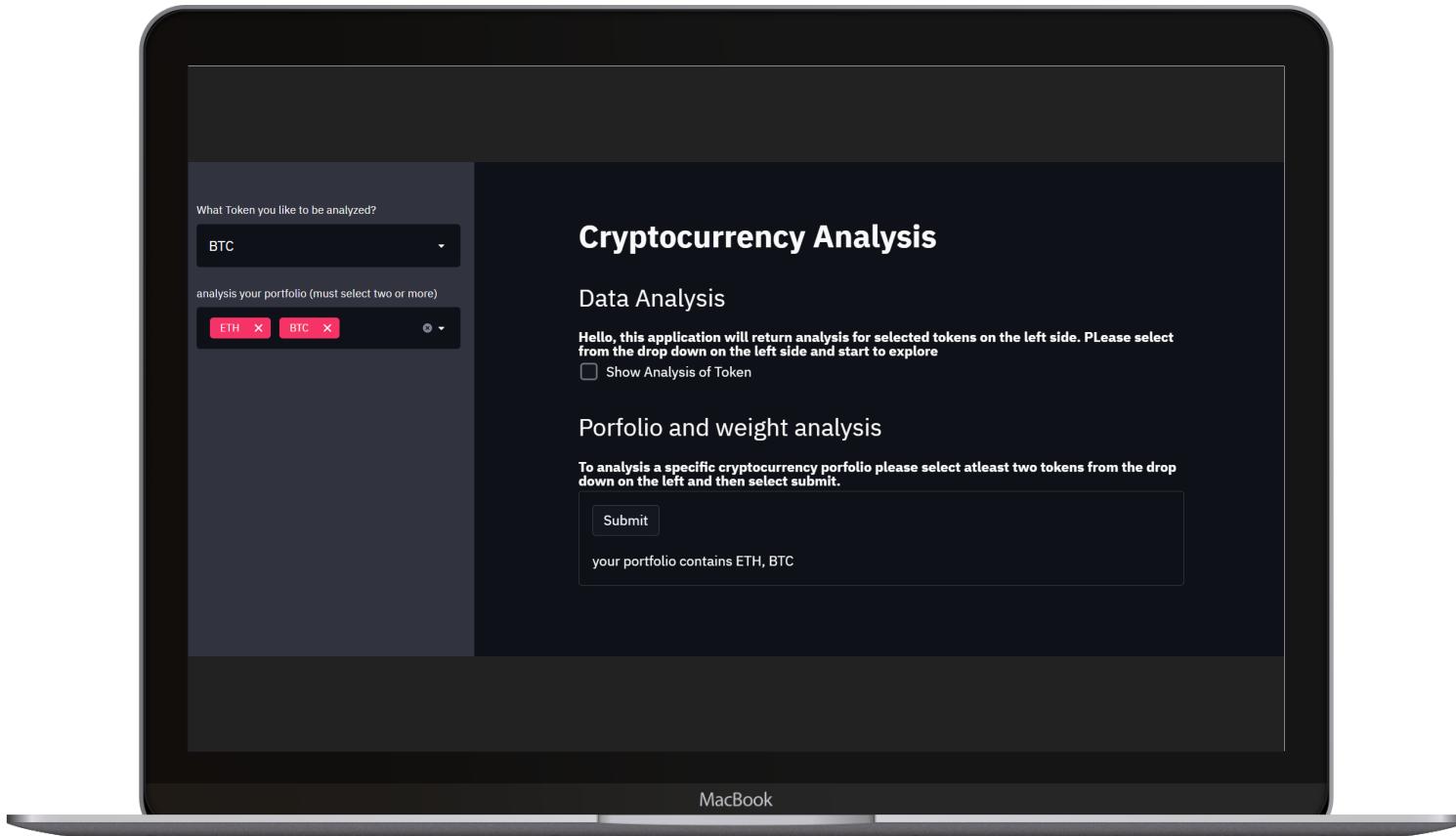
-Holding
-95% confidence interval- total value between \$1,321,000 and \$679,150,000
Median-\$155,800,000
Min-\$199,000
Max-\$21,010,900,000

Simulated Daily Returns Behavior of Maximum Sharpe Ratio over 5 years



Try It Yourself

->Cryptocurrency Analysis



Single Token Analytics

Get a break down on how a token is preforming with up to date data



Portfolio Analytics

Enter in your portfolio or a portfolio that you are thinking about and see how it measures up.



Custom Portfolio Weight Re-balancing

It takes in your portfolio and runs different weights to give you the most efficient portfolio in regards to risk vs. return.

Crypto on the Balance Sheets

- Microstrategy, Square, and Tesla have BTC on the balance sheet
- Criticism and speculation remains prominent
- Is there a better solution of crypto on the balance sheet?



Microstrategy

Market Capitalization	Bitcoin Holdings	Current Value
\$5.09 billion	91,850	\$4.6 billion

Tesla

Market Capitalization	Bitcoin Holdings	Current Value
\$622.7 billion	43,200	\$2.5 billion

Created with Datawrapper

Square

Market Capitalization	Bitcoin Holdings	Current Value
\$111.13 billion	8,027	\$461 million

Created with Datawrapper

BTC Holdings

5-Year Monte Carlo Simulation

Upper 95% CI +28,230%

Lower 95 % CI -52%

Microstrategy

\$3.4 B initial value

\$ 971,549,544,134.96 upper 95% CI

\$ 1,635,441,160.98 lower 95% CI

Tesla

\$1.6 B initial value

\$ 456,950,901,541.98 upper 95% CI

\$ 769,200,415.40 lower 95% CI

Square

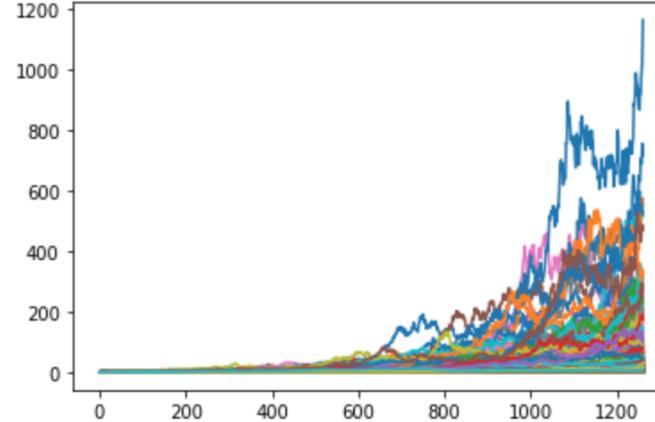
\$ 306,163,400 initial value

\$ 86,736,050,755.65 upper 95% CI

\$ 146,005,634.40 upper 95% CI

```
line_plot = MC_joined_even.plot_simulation()
```

500 Simulations of Cumulative Portfolio Return Trajectories Over the Next 1260 Trading Days.



```
even_ci_lower = round(even_tbl[8]*3429403450,2)
even_ci_upper = round(even_tbl[9]*3429403450,2)

# Print results
print(f"There is a 95% chance that microstrategy's investment of $3,429,403,450 in BTC on the balance sheet"
      f" over the next 5 years will end within in the range of"
      f" ${even_ci_lower} and ${even_ci_upper}.)")
```

There is a 95% chance that microstrategy's investment of \$3,429,403,450 in BTC on the balance sheet over the next 5 years will end within in the range of \$1635441160.98 and \$971549544134.96.

```
even_ci_lower = round(even_tbl[8]*1612958400,2)
even_ci_upper = round(even_tbl[9]*1612958400,2)

# Print results
print(f"There is a 95% chance that Tesla's investment of $1,612,958,400 in BTC on the balance sheet"
      f" over the next 5 years will end within in the range of"
      f" ${even_ci_lower} and ${even_ci_upper}.)")
```

There is a 95% chance that Tesla's investment of \$1,612,958,400 in BTC on the balance sheet over the next 5 years will end within in the range of \$769200415.4 and \$456950901541.98.

```
even_ci_lower = round(even_tbl[8]*306163400,2)
even_ci_upper = round(even_tbl[9]*306163400,2)

# Print results
print(f"There is a 95% chance that Square's investment of $306,163,400 in BTC on the balance sheet"
      f" over the next 5 years will end within in the range of"
      f" ${even_ci_lower} and ${even_ci_upper}.)")
```

There is a 95% chance that Square's investment of \$306,163,400 in BTC on the balance sheet over the next 5 years will end within in the range of \$146005634.4 and \$86736050755.65.

ETH Holdings

5-Year Monte Carlo Simulation

Upper 95 % CI +898,635%

Lower 95% CI +10%

Microstrategy

\$3.4 B initial value

\$ 30,821,258,048,066.40 upper 95% CI

\$ 3,770,394,616.47 lower 95% CI

Tesla

\$ 1.6 B initial value

\$ 14,496,225,886,515.70 upper 95% CI

\$ 1,773,337,478.84 lower 95% CI

Square

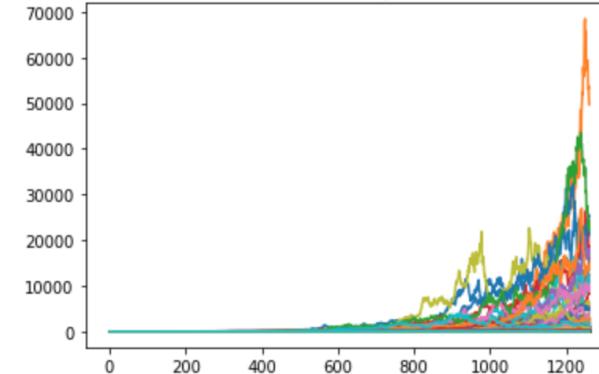
\$ 306,163,400 initial value

\$ 2,751,598,432,162.71 upper 95% CI

\$ 336,605,725.15 lower 95% CI

```
line_plot_eth = MC_joined_eth.plot_simulation()
```

500 Simulations of Cumulative Portfolio Return Trajectories Over the Next 1260 Trading Days.



```
simulated_returns_data_eth = {
    "mean": list(MC_joined_eth.simulated_return.mean(axis=1)),
    "median": list(MC_joined_eth.simulated_return.median(axis=1)),
    "min": list(MC_joined_eth.simulated_return.min(axis=1)),
    "max": list(MC_joined_eth.simulated_return.max(axis=1))
}
```

```
even_ci_lower = round(even_tbl_eth[8]*3429403450,2)
even_ci_upper = round(even_tbl_eth[9]*3429403450,2)
```

```
# Print results
print("There is a 95% chance that Microstrategy's investment of $3,429,403,450 in ETH on the balance sheet"
      f" over the next 5 years will end within in the range of"
      f" ${even_ci_lower} and ${even_ci_upper}.")
```

There is a 95% chance that Microstrategy's investment of \$3,429,403,450 in ETH on the balance sheet over the next 5 years will end within in the range of \$3770394616.47 and \$30821258048066.46.

```
even_ci_lower = round(even_tbl_eth[8]*1612958400,2)
even_ci_upper = round(even_tbl_eth[9]*1612958400,2)
```

```
# Print results
print("There is a 95% chance that Tesla's investment of $1,612,958,400 in ETH on the balance sheet"
      f" over the next 5 years will end within in the range of"
      f" ${even_ci_lower} and ${even_ci_upper}.")
```

There is a 95% chance that Tesla's investment of \$1,612,958,400 in ETH on the balance sheet over the next 5 years will end within in the range of \$177337478.84 and \$14496225886515.74.

```
even_ci_lower = round(even_tbl_eth[8]*306163400,2)
even_ci_upper = round(even_tbl_eth[9]*306163400,2)
```

```
# Print results
print("There is a 95% chance that Square's investment of $306,163,400 in ETH on the balance sheet"
      f" over the next 5 years will end within in the range of"
      f" ${even_ci_lower} and ${even_ci_upper}.")
```

There is a 95% chance that Square's investment of \$306,163,400 in ETH on the balance sheet over the next 5 years will end within in the range of \$336605725.15 and \$2751598432162.71.

LINK Holdings

5-Year Monte Carlo Simulation

Upper 95% CI + 1,675,466%

Upper 95% CI -72%

Microstrategy

\$ 3.4 B initial value

\$ 57,461,930,988,571.60 upper 95% CI

\$ 943,116,769.49 lower 95% CI

Tesla

\$ 1.6 B initial value

\$ 27,026,188,554,232.90 upper 95% CI

\$ 443,578,055.98 lower 95% CI

Square

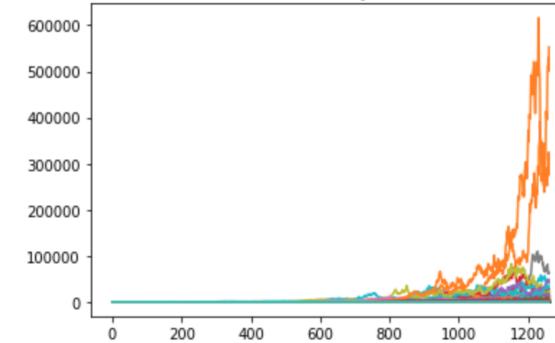
\$ 306,163,400 initial value

\$ 5,129,970,975,571.99 upper 95% CI

\$ 84,197,686.55 lower 95% CI

```
line_plot_link = MC_joined_link.plot_simulation()
```

500 Simulations of Cumulative Portfolio Return Trajectories Over the Next 1260 Trading Days.



```
simulated_returns_data_link = {
    "mean": list(MC_joined_link.simulated_return.mean(axis=1)),
    "median": list(MC_joined_link.simulated_return.median(axis=1)),
    "min": list(MC_joined_link.simulated_return.min(axis=1)),
    "max": list(MC_joined_link.simulated_return.max(axis=1))
}
```

```
even_ci_lower = round(even_tbl_link[8]*3429403450,2)
even_ci_upper = round(even_tbl_link[9]*3429403450,2)
```

```
# Print results
print(f"There is a 95% chance that microstrategy's investment of $3,429,403,450 in link on the balance sheet"
      f" over the next 5 years will end within in the range of"
      f" ${even_ci_lower} and ${even_ci_upper}.")
```

There is a 95% chance that microstrategy's investment of \$3,429,403,450 in link on the balance sheet over the next 5 years will end within in the range of \$943116769.49 and \$57461930988571.62.

```
even_ci_lower = round(even_tbl_link[8]*1612958400,2)
even_ci_upper = round(even_tbl_link[9]*1612958400,2)
```

```
# Print results
print(f"There is a 95% chance that Tesla's investment of $1,612,958,400 in link on the balance sheet"
      f" over the next 5 years will end within in the range of"
      f" ${even_ci_lower} and ${even_ci_upper}.")
```

There is a 95% chance that Tesla's investment of \$1,612,958,400 in link on the balance sheet over the next 5 years will end with in in the range of \$443578055.98 and \$27026188554232.92.

```
even_ci_lower = round(even_tbl_link[8]*306163400,2)
even_ci_upper = round(even_tbl_link[9]*306163400,2)
```

```
# Print results
print(f"There is a 95% chance that Square's investment of $306,163,400 in link on the balance sheet"
      f" over the next 5 years will end within in the range of"
      f" ${even_ci_lower} and ${even_ci_upper}.")
```

There is a 95% chance that Square's investment of \$306,163,400 in link on the balance sheet over the next 5 years will end withi n in the range of \$84197686.55 and \$5129970975571.99.

ADA Holdings

5-Year Monte Carlo Simulation

Upper 95% CI +1,067,423%

Upper 95% CI -85%

Microstrategy

\$ 3.4 B initial value

\$ 36,609,660,674,658.30 upper 95% CI

\$ 595,749,687.82 lower 95% CI

Tesla

\$ 1.6 B initial value

\$ 17,218,697,236,202.90 upper 95% CI

\$ 280,200,179.79 lower 95% CI

Square

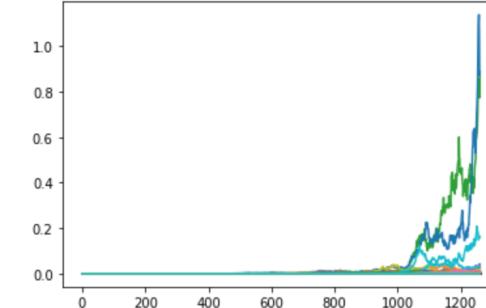
\$ 306,163,400 initial value

\$ 3,268,363,827,242.22 upper 95% CI

\$ 53,186,145.24 lower 95% CI

```
line_plot_cardano = MC_joined_cardano.plot_simulation()
```

500 Simulations of Cumulative Portfolio Return Trajectories Over the Next 1260 Trading Days.



```
simulated_returns_data_cardano = {
    "mean": list(MC_joined_cardano.simulated_return.mean(axis=1)),
    "median": list(MC_joined_cardano.simulated_return.median(axis=1)),
    "min": list(MC_joined_cardano.simulated_return.min(axis=1)),
    "max": list(MC_joined_cardano.simulated_return.max(axis=1))
}
```

```
: even_ci_lower = round(even_tbl_cardano[8]*3429403450,2)
even_ci_upper = round(even_tbl_cardano[9]*3429403450,2)

# Print results
print(f"There is a 95% chance that microstrategy's investment of $3,429,403,450 in ADA on the balance sheet"
      f" over the next 5 years will end within in the range of"
      f" ${even_ci_lower} and ${even_ci_upper}.")
```

There is a 95% chance that microstrategy's investment of \$3,429,403,450 in ADA on the balance sheet over the next 5 years will end within in the range of \$595749687.82 and \$36609660674658.33.

```
: even_ci_lower = round(even_tbl_cardano[8]*1612958400,2)
even_ci_upper = round(even_tbl_cardano[9]*1612958400,2)
```

```
# Print results
print(f"There is a 95% chance that Tesla's investment of $1,612,958,400 in ADA on the balance sheet"
      f" over the next 5 years will end within in the range of"
      f" ${even_ci_lower} and ${even_ci_upper}.")
```

There is a 95% chance that Tesla's investment of \$1,612,958,400 in ADA on the balance sheet over the next 5 years will end within in the range of \$280200179.79 and \$17218697236202.94.

```
: even_ci_lower = round(even_tbl_cardano[8]*306163400,2)
even_ci_upper = round(even_tbl_cardano[9]*306163400,2)
```

```
# Print results
print(f"There is a 95% chance that Square's investment of $306,163,400 in ADA on the balance sheet"
      f" over the next 5 years will end within in the range of"
      f" ${even_ci_lower} and ${even_ci_upper}.")
```

There is a 95% chance that Square's investment of \$306,163,400 in ADA on the balance sheet over the next 5 years will end within in the range of \$53186145.24 and \$3268363827242.22.

DOT Holdings

5-Year Monte Carlo Simulation

Upper 95% CI +259,394%

Lower 95% CI -98%

Microstrategy

\$ 3.4 B initial value

\$ 8,899,085,349,073.45 upper 95% CI

\$ 78,368,262.37 lower 95% CI

Tesla

\$ 1.6 B initial value

\$ 4,185,525,172,345.92 upper 95% CI

\$ 36,859,106.53 lower 95% CI

Square

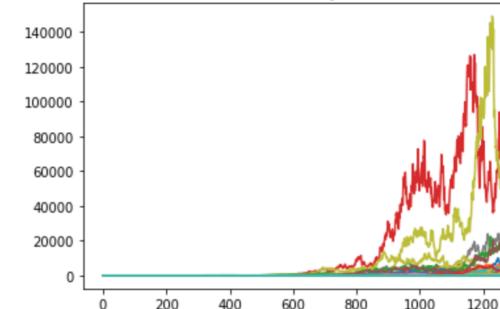
\$ 306,163,400 initial value

\$ 794,474,685,491.59 upper 95% CI

\$ 6,996,404.48 lower 95% CI

```
line_plot_dot = MC_joined_dot.plot_simulation()
```

500 Simulations of Cumulative Portfolio Return Trajectories Over the Next 1260 Trading Days.



```
simulated_returns_data_dot = {
    "mean": list(MC_joined_dot.simulated_return.mean(axis=1)),
    "median": list(MC_joined_dot.simulated_return.median(axis=1)),
    "min": list(MC_joined_dot.simulated_return.min(axis=1)),
    "max": list(MC_joined_dot.simulated_return.max(axis=1))
}
```

```
even_ci_lower = round(even_tbl_dot[8]*3429403450,2)
even_ci_upper = round(even_tbl_dot[9]*3429403450,2)

# Print results
print(f"There is a 95% chance that microstrategy's investment of $3,429,403,450 in DOT on the balance sheet"
      f" over the next 5 years will end within in the range of"
      f" ${even_ci_lower} and ${even_ci_upper}.")
```

There is a 95% chance that microstrategy's investment of \$3,429,403,450 in DOT on the balance sheet over the next 5 years will end within in the range of \$78368262.37 and \$8899085349073.45.

```
even_ci_lower = round(even_tbl_dot[8]*1612958400,2)
even_ci_upper = round(even_tbl_dot[9]*1612958400,2)

# Print results
print(f"There is a 95% chance that Tesla's investment of $1,612,958,400 in DOT on the balance sheet"
      f" over the next 5 years will end within in the range of"
      f" ${even_ci_lower} and ${even_ci_upper}.")
```

There is a 95% chance that Tesla's investment of \$1,612,958,400 in DOT on the balance sheet over the next 5 years will end within in the range of \$36859106.53 and \$4185525172345.92.

```
even_ci_lower = round(even_tbl_dot[8]*306163400,2)
even_ci_upper = round(even_tbl_dot[9]*306163400,2)

# Print results
print(f"There is a 95% chance that Square's investment of $306,163,400 in DOT on the balance sheet"
      f" over the next 5 years will end within in the range of"
      f" ${even_ci_lower} and ${even_ci_upper}.")
```

There is a 95% chance that Square's investment of \$306,163,400 in DOT on the balance sheet over the next 5 years will end within in the range of \$6996404.48 and \$794474685491.59.

Conclusions

- ① Defi expansion
- ② Increase in Lending & Borrowing rates & TVL
- ③ One coin doesn't rule them all
- ④ Pick your poison: Diversification is key
- ⑤ Manage risk/reward when adding to balance sheet





Data Cleanup/ Exploration / Issues

David

1. Difficult to mutate datasets.
2. Learning curves on new Libraries.
3. Bug Running.
4. What programs work well with each other.

Chuck

1. Huge Dataset for trades DefiPulse API would give only 3 days at a time due to limit.
2. Exhausting the API free credit
3. Total Value Locked API stopped working.

Gerrardo

1. Hard time reading data given by api.
2. Some trouble while making plots, converting objects into afloat.
3. Understanding key words for example 'interest speed'.

Andrew

1. Troublesooting MC simulation
2. Getting the weights mixed up with datasets
3. Getting correct API