
# Cryptocurrency Portfolio Analysis

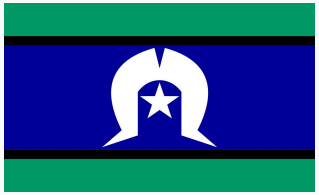
17 January 2022

# Acknowledgement of Country

We acknowledge the Traditional Owners of the land on which we are hosting this presentation from.

We also acknowledge the Traditional Custodians of the various lands on which you all are  working from today.

We pay our respects to Elders, past and present, and emerging and celebrate the diversity of Aboriginal people and their connection to the land and water of Victoria.



# Meet the Team!

Vincent Jadraque

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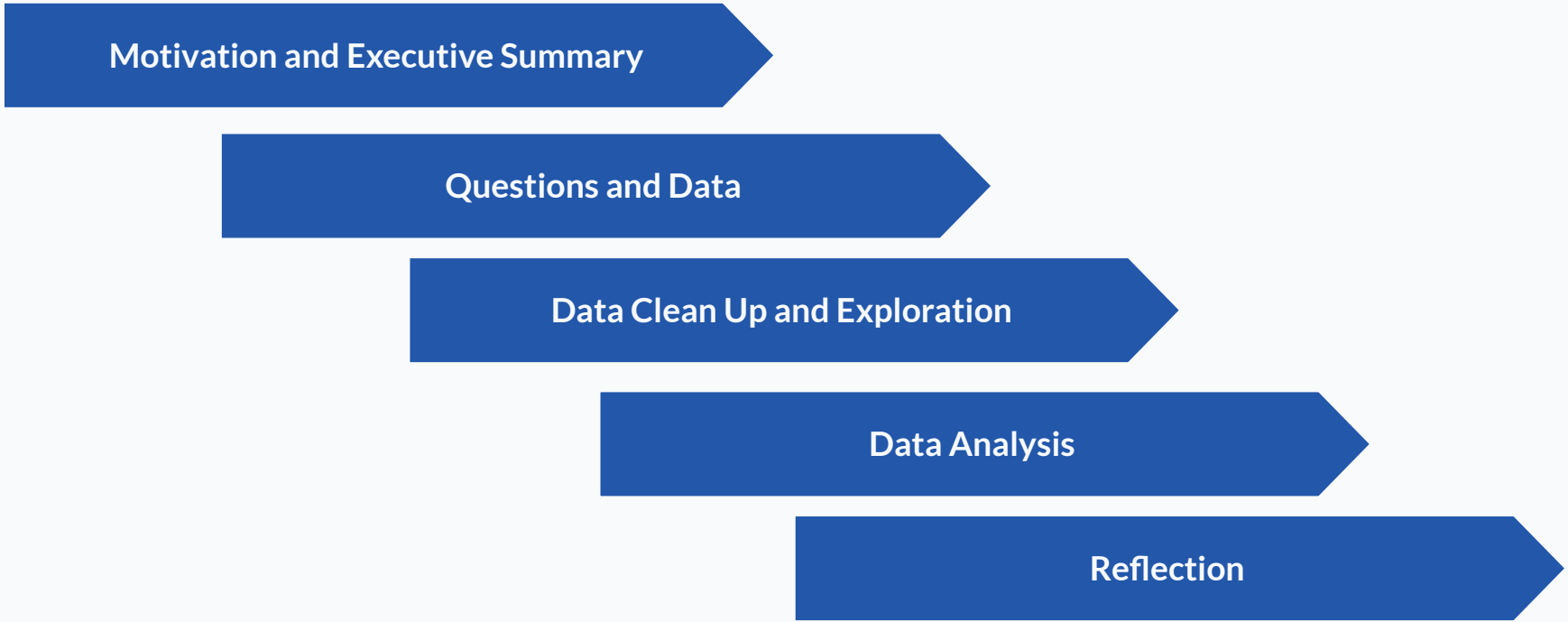
# Presentation will consist of five main parts



# Motivation and Executive Summary

**Situation**

Interest in cryptocurrency has grown at an unprecedented rate in the past five years. The most prolific group of crypto investors are young adults (between ages 18 and 34).

**Complication**

However, the inherent volatility of cryptocurrency means that investors cannot reliably track and hedge against risks using different currencies.

**Question**

How can we provide a tool that assist users to evaluate and optimise their portfolios?

**Answer**

A portfolio dashboard that allows users to select and view their cryptocurrencies in terms of:

- Historical Performance
- Portfolio Forecast
- Performance against BTC
- Portfolio Optimisation

# Our project focused on three questions

**Date sources**

Where do we get accurate and neat data?

Bianance

**Tailored experience**

How do we create a personalised and easy to use experience?

Streamlit Widgets

**Selected plots**

What information/graphics would be meaningful to users?

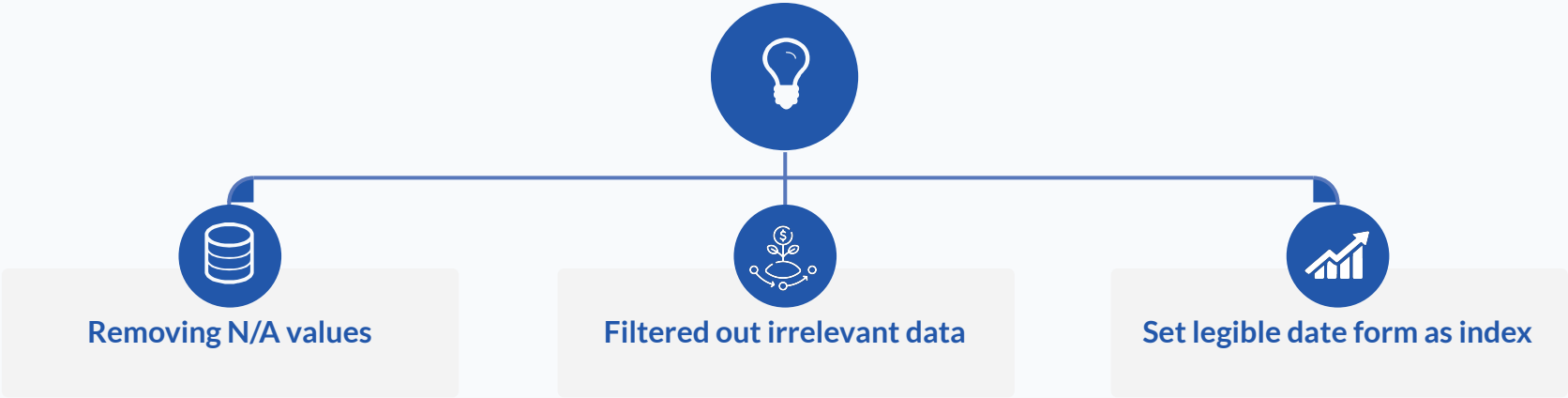
Historical Performance

Beta & Correlation

Portfolio Forecasting

Portfolio Optimisation

# Data was cleaned based on relevance to users



# Data was cleaned based on relevance to users

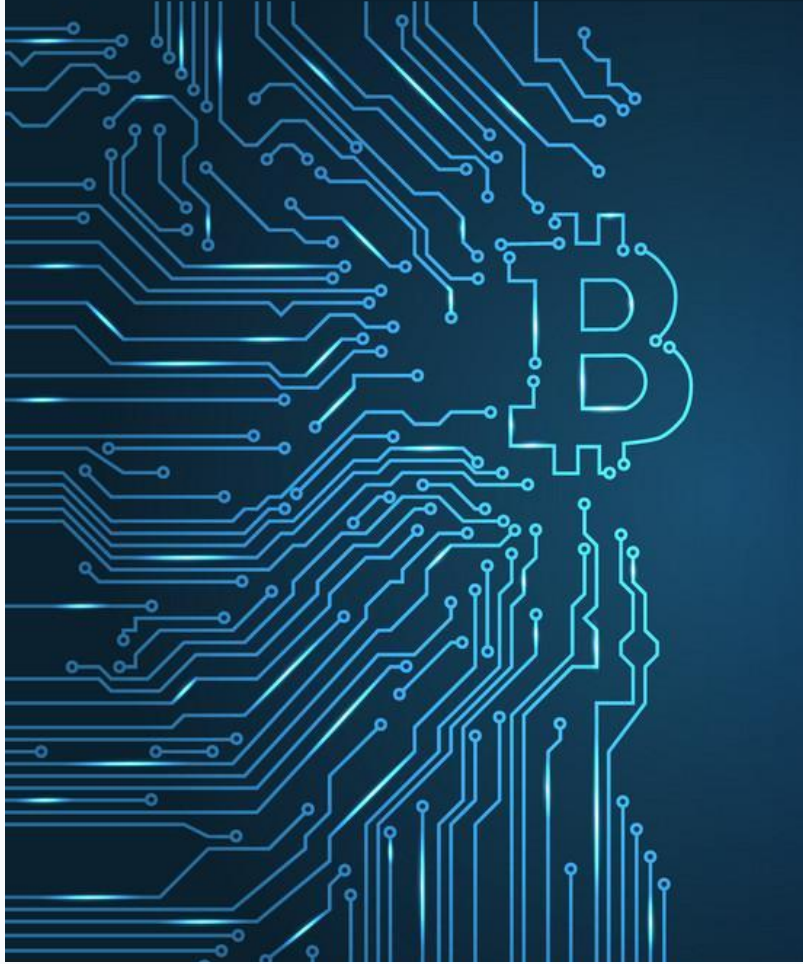
| | BTC | ETH | SOL |
|---|---|---|---|
| **timestamp** | | | |
| 2021-01-18 | 36631.27 | 1258.45 | 3.7868 |
| 2021-01-19 | 35891.49 | 1365.36 | 3.6287 |
| 2021-01-20 | 35468.23 | 1376.99 | 3.7166 |
| 2021-01-21 | 30850.13 | 1110.96 | 2.9899 |
| 2021-01-22 | 32945.17 | 1232.62 | 3.3352 |

# Data was cleaned based on relevance to users

| | BTC | | | | | ETH | | | | | SOL | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | open | high | low | close | volume | open | high | low | close | volume | open | high | low | close | volume |
| timestamp | | | | | | | | | | | | | | | |
| 2021-01-18 | 35824.99 | 37469.83 | 34800.00 | 36631.27 | 70698.118750 | 1232.50 | 1260.75 | 1182.58 | 1258.45 | 9.980501e+05 | 3.8243 | 4.1700 | 3.6167 | 3.7868 | 6226924 |
| 2021-01-19 | 36622.46 | 37850.00 | 35844.06 | 35891.49 | 79611.307769 | 1258.52 | 1438.30 | 1251.49 | 1365.36 | 2.278853e+06 | 3.7873 | 4.0498 | 3.6000 | 3.6287 | 4768719 |
| 2021-01-20 | 35901.94 | 36415.31 | 33400.00 | 35468.23 | 89368.422918 | 1365.36 | 1407.93 | 1235.42 | 1376.99 | 2.219138e+06 | 3.6288 | 3.7413 | 3.3400 | 3.7166 | 4801640 |
| 2021-01-21 | 35468.23 | 35600.00 | 30071.00 | 30850.13 | 131803.182926 | 1376.72 | 1390.00 | 1086.00 | 1110.96 | 2.254165e+06 | 3.7199 | 3.7411 | 2.9717 | 2.9899 | 4375407 |
| 2021-01-22 | 30851.99 | 33826.53 | 28850.00 | 32945.17 | 142971.684049 | 1111.98 | 1273.79 | 1042.31 | 1232.62 | 2.020593e+06 | 2.9893 | 3.4992 | 2.5295 | 3.3352 | 6481502 |

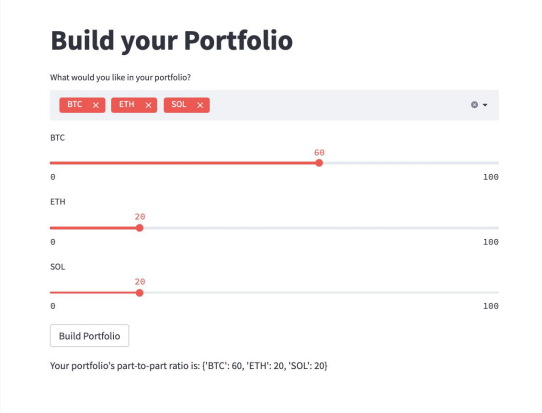
# Financial Analysis

- Historical Performance
- Portfolio Forecasting
- Portfolio Optimisation



# Step 1: Users get to choose which coins form part of their portfolio

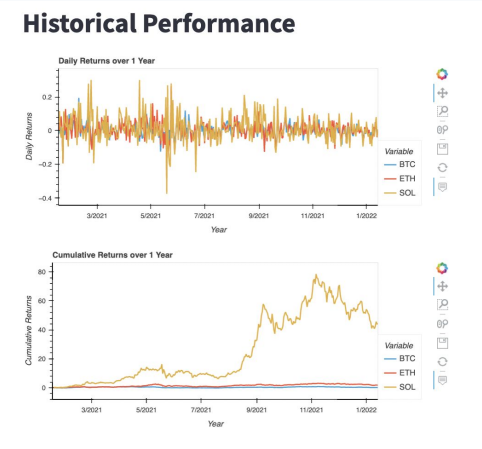
## Build your Portfolio




### Asset Selection

This section allows the investor to choose which assets are held in their portfolio, with a part-to-part slider to select the amount

## Historical Performance




### Historical Performance

Gives the investor a background on how the selected assets have performed relative to their peers

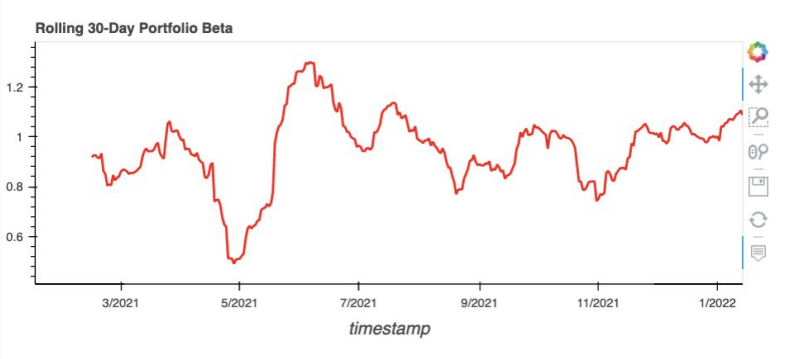
# Step 2: Users can view their beta and correlation over 30 days

## Portfolio Correlation


### Correlation

This shows the correlation of a rolling 30 day average with the diversified portfolio and closing price of Bitcoin

## Portfolio Beta

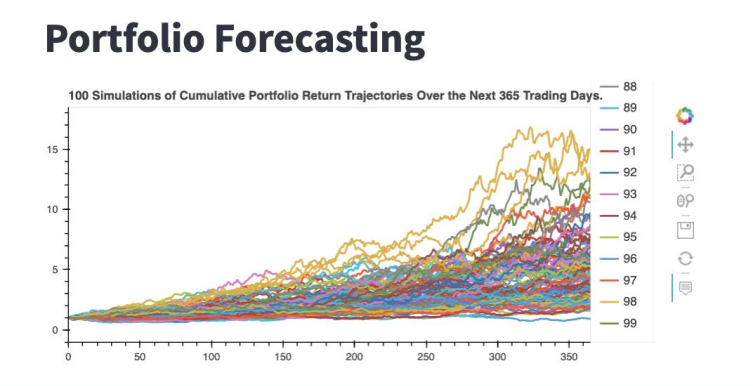



### Beta

This is a 30-day rolling average of the portfolio that has been selected giving the investor an idea on volatility

# Step 3: Users can see likely future performance of their portfolios

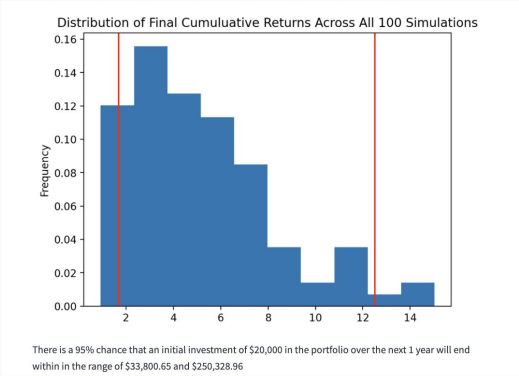
## Monte Carlo Simulations




### Monte Carlo Simulation

This chart plots 100 randomly generated simulations that show possible portfolio outcomes over 365 trading days

## Distribution of Simulations

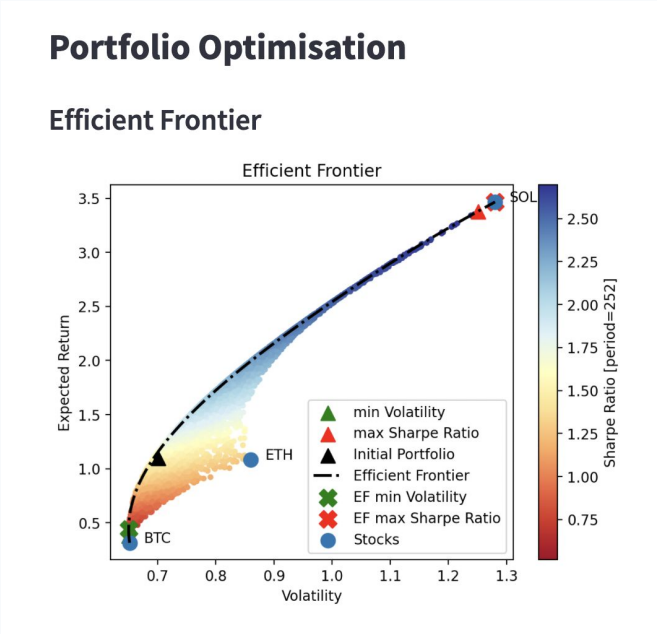



### Distribution of Simulations

This plot shows the distribution of simulations, which indicates the most likely outcome for the selected portfolio

# Step 4: Users can rely on results to improve portfolio performance

## Portfolio Optimisation



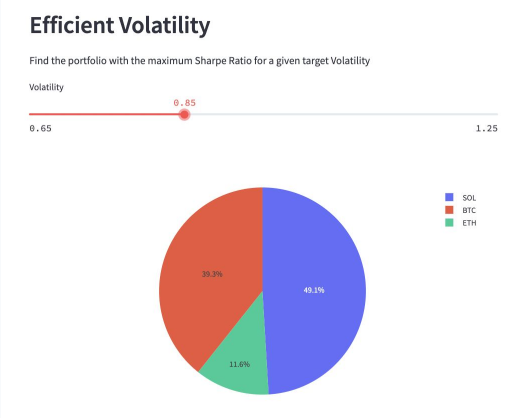

### Efficient Frontier

The set of optimal portfolios that offer the highest expected return for a defined level of risk or the lowest risk for a given level of expected return.

Portfolios that lie below the efficient frontier are sub-optimal because they do not provide enough return for the level of risk.

# Step 4: Optimisation can be achieved in two ways

## Efficient Volatility




### Efficient Volatility

Given a defined level of risk, find the portfolio weightings which offer the highest expected return.

## Efficient Expected Return


### Efficient Expected Return

Given a defined expected return, find the portfolio weightings which offer the lowest risk.

# The dashboard can assist users in four ways

## Portfolio Optimisation

- Efficient Frontier
- Minimise volatility risk
- Maximise risk-reward

## Portfolio Analysis

- Rolling Beta
- Correlation to Bitcoin

## Portfolio Forecasting

- Montecarlo Simulations
- 95% Confidence Interval distribution plot

## Provide financial information

- Past performance
- Volatility
- Expected Return

# We faced three challenges in this project

Integrating into Streamlit

Reliability of Plots

Enabling dashboard access to new users

# Dashboard Showcase

# Q&A