

# Lawrence 'Chuck' Williams - Capstone I Proposal - July 16, 2020

## Motivating Question:

Is there a recurring trend in the SPY ETF (S&P500 Index) action following precipitous changes in prior day closing, vis-a-vis next day open? Does it vary by direction of the move? Which indicators most accurately produce support and/or resistance? Can we detect a noticeable delta in volume the day before a catalyzing announcement? Insiders?

$H_0$ : Price action is random, there is no ascertainable consistency in indication/prediction.

$H_a$ : This EDA will identify higher probability trends that can improve a win-ratio (>50%)

## The Data:

The data has been obtained via TradingView charting software. A paid for service that serious traders utilize for accurate, fast real-time data. In this case, the data is 100% historical as we are trying to predict future action from the past. Daily data starting July 1994 and ending July 14, 2020. This team of Data Scientist has collected data focusing on:

- Date
- Open Price
- High of Day Price
- Low of Day Price
- Closing Price
- Volume Weighted Average Price
- 200 Day Moving Average
- 100 Day Moving Average
- 20 Day Moving Average
- Volume Moving Average
- Relative Strength Index

#	Column	Non-Null Count	Dtype
0	date	16558 non-null	datetime64[ns]
1	open	16558 non-null	float64
2	high	16558 non-null	float64
3	low	16558 non-null	float64
4	close	16558 non-null	float64
5	Plot	0 non-null	float64
6	Plot.1	0 non-null	float64
7	52 Week High	0 non-null	float64
8	52 Week Low	0 non-null	float64
9	vwap	16558 non-null	float64
10	200_ma	16558 non-null	float64
11	100_ma	16558 non-null	float64
12	20_ema	16558 non-null	float64
13	volume	16558 non-null	int64
14	volume_ma	16558 non-null	float64
15	rsi	16558 non-null	float64

## The Minimum Viable Product: Via Exploratory Data Analysis

- Identify higher probability opportunities that will increase the day/swing trader's win-ratio, and ultimately increase ROI.
- Develop a system that can be used on other securities after a catalyzing event.
  - Earnings release, news (good or bad), breakthroughs, etc..

## The Minimum Viable Product + and ++:

- Bayesian Inference for live probability updating while in a position.
- Real-time plots for increased probability entries, exits, stop-losses and intermittent profit points to scale out of a position to ensure profitability.