

Investigating Alpha in Horse Racing

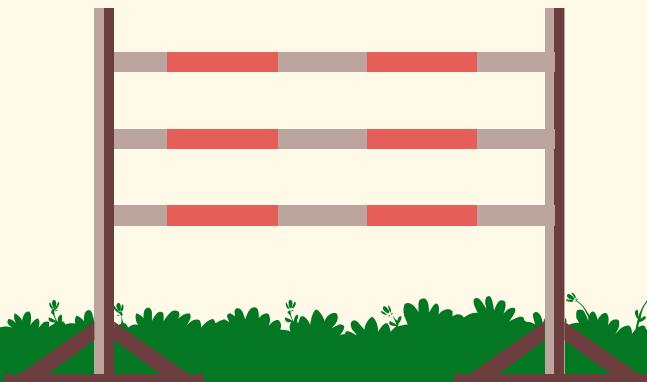


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Introduction to Horse Betting

What is Horse Betting and how does it work?



How it works

- **Race Categories:**
 - Categorized based on factors such as **horse age, class, and distance**
 - Common race types include Class 1, Class 2, Class 3, and so on, as well as feature races such as the Hong Kong Derby and the Queen Elizabeth II Cup
- **Race Day:**
 - On race day, spectators gather at the racecourse to watch the races and place their bets
 - Lively atmosphere, with food and beverage stalls, entertainment, and live music
- **Race Procedure:**
 - Races are run on the **turf or all-weather tracks**, with each race featuring a field of horses competing to cross the **finish line first**
 - Typically preceded by a parade in the paddock area, where spectators can get a **closer look** at the contenders.



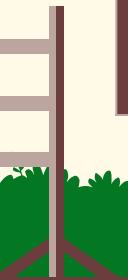
Dividend Qualification

Single-race Pools	Dividend Qualification
Win	1 st in a race
Place	1 st , 2 nd or 3 rd in a race, or 1 st or 2 nd in a race of 4 to 6 declared starters (applicable to local races) 1 st , 2 nd , 3 rd or 4 th in a race, or 1 st , 2 nd or 3 rd in a race of 7 to 20 declared starters, or 1 st or 2 nd in a race of 4 to 6 declared starters (applicable to designated simulcast races)
Quinella	1 st and 2 nd in any order in a race
Quinella Place	Any two of the first three placed horses in any order in a race
Forecast	1 st and 2 nd in correct order in a race
Trio	1 st , 2 nd and 3 rd in any order in a race
Tierce	1 st , 2 nd and 3 rd in correct order in a race
First 4	1 st , 2 nd , 3 rd and 4 th in any order in a race
Quartet	1 st , 2 nd , 3 rd and 4 th in correct order in a race



Payouts

Single Pools	% of Pool paid out as Dividend
<i>Win / Place / Quinella / Quinella Place / Double</i>	82.5%
Forecast	80.5%
Trio	77%
Tierce / First 4 / Quartet / Treble	75%
Triple Trio 7.5 percent of the Pool will be deducted as Jackpot Reserve Deduction	75%
Double Trio / Six Up 0.5 percent of the Pool will be deducted as Operator Reserve Deduction (to be deducted from the Club's revenue)	75%



Types of Bets

Pari-Mutuel

AKA **Pool Betting**

- Winners share a pool of winnings
- Bookmakers take a cut of the total pool before winners take their share
- Odds are adjusted based on the bets, the favourites

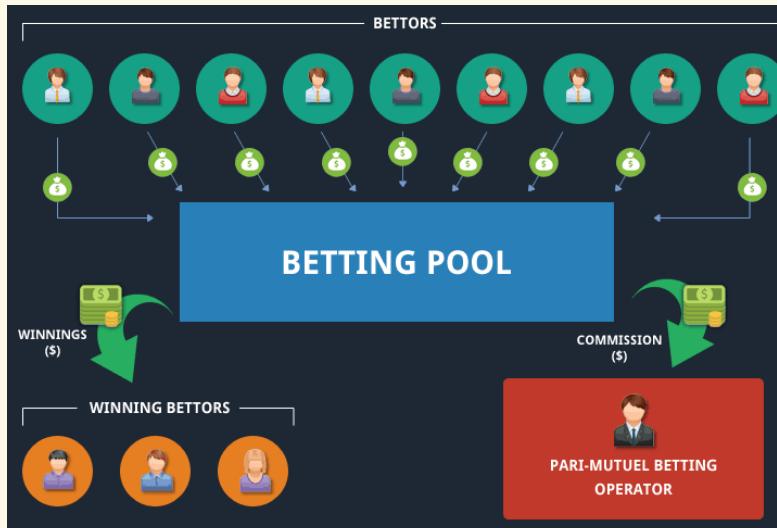
Fixed-Odds

Against the bookmaker

- Bettors accept the price at which the bookmakers set
- Predetermined odds remain constant
- Payout is known regardless of changes in the market



Pari-Mutuel Betting



- **Odds are not fixed** until betting closes and race starts
- Payout for each winning bet is calculated by dividing the total amount wagered on the winning participant by the total amount wagered on all participants in the race which determines the **payout factor**, which is then **multiplied by the amount of the winning bet** to determine the payout amount
- After outcome is determined, the total betting pool is divided amongst winners, amount won by each bettor depends on the **size of their wager and the odds at which they placed their bet**

03

Benchmarking



Benchmarking Strategies

Betting Proportionally to Win Odds

Betting on every horse with bet weight equivalent to winning chances

Longshot Betting

Betting on the horse with lowest winning chances

Favourite Betting

Betting on the horse with highest winning chances



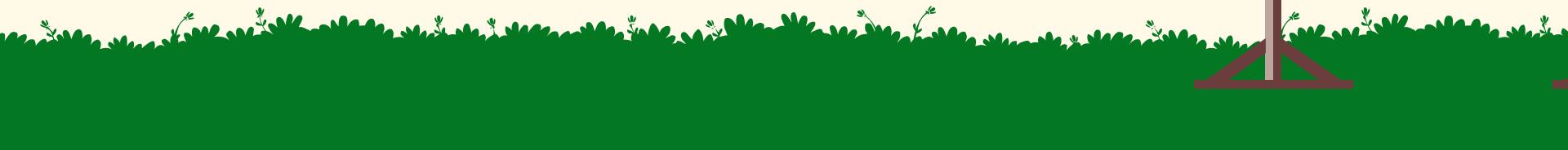
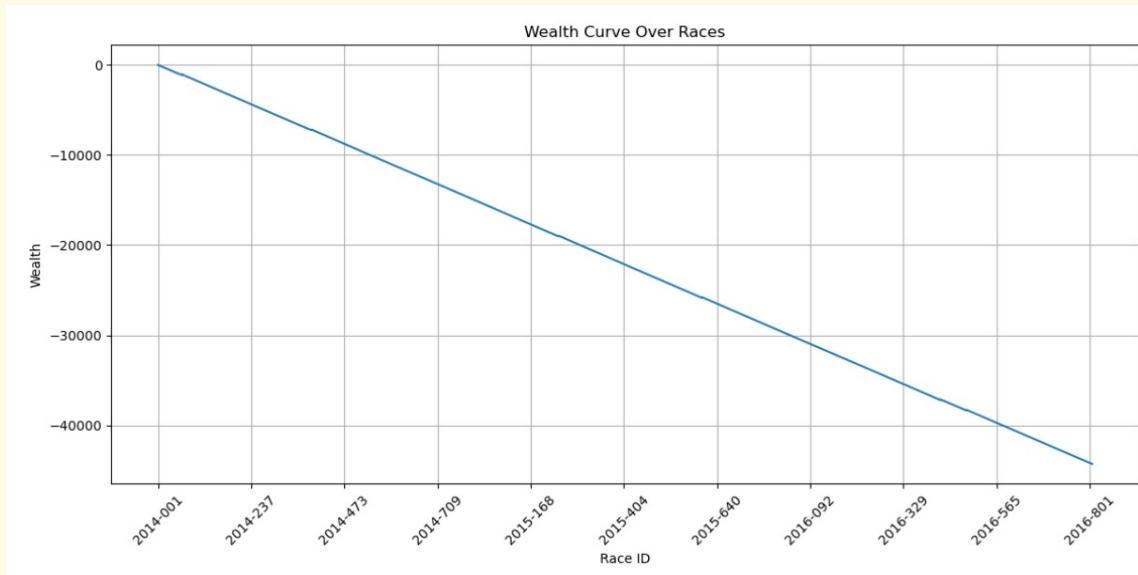
Proportional to Win Odds Betting

Rationale:

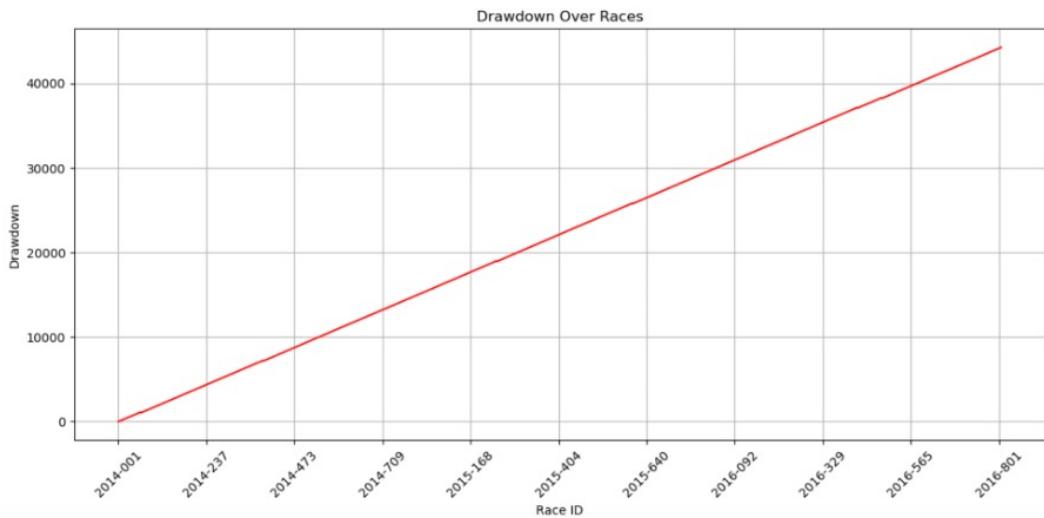
- Guarantee a return every race
- Manage risk by allocating bet by win odds

Methodology:

- Calculate implied winning probability
 - $1 / \text{Win Odds}$
- Normalise to 100% to get bet weight
 - $\text{Implied winning probability} / \text{Sum of implied winning probability}$
- Assume \$100 bet per race over 2367 races



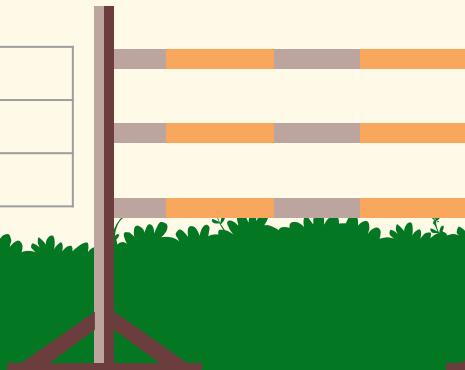
Proportional to Win Odds Betting



Analysis:

- Low win rate of 7.86% due to majority of bets each race losing (1 Winner)
- Returns from the winner insufficient to cover the losses from betting on all other horses
- Consistent losses with mean return of -26.9% due to bookmaker's margin
- 2nd best performing strategy with a total return of - \$44,275

Win Rate: 7.86%	Total Pct Return: - 18.71%	Median: - 100.0%
Total Bets: \$236,621	Mean: - 26.90%	Max Drawdown: - \$44,336
Total Return: - \$44,275	Standard Deviation: 406.11%	Sharpe Ratio: -0.0662



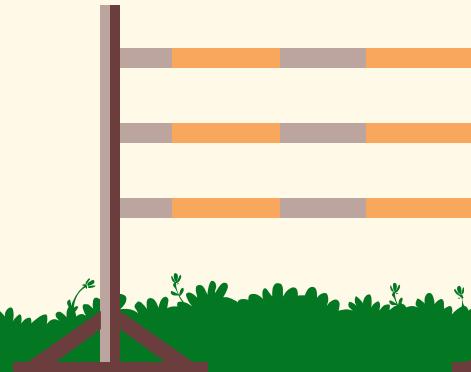
Bookmaker's Margin

	horse_name	win_odds	winning_chance	total_winning_chance
0	DOUBLE DRAGON	3.8	0.263158	1.225693
1	PLAIN BLUE BANNER	8.0	0.125000	1.225693
2	GOLDWEAVER	5.7	0.175439	1.225693
3	SUPREME PROFIT	6.1	0.163934	1.225693
4	THE ONLY KID	6.1	0.163934	1.225693
5	WINNING ADVANTAGE	24.0	0.041667	1.225693
6	CARE FREE ELEGANCE	99.0	0.010101	1.225693
7	COOL PAL	21.0	0.047619	1.225693
8	TAI PO FORTUNE	10.0	0.100000	1.225693
9	SUPER HORSE	27.0	0.037037	1.225693
10	AMAZING GIFT	17.0	0.058824	1.225693
11	LITTLE WIND	46.0	0.021739	1.225693
12	EVERSPRING	58.0	0.017241	1.225693
13	SHANTARAAM	Nan	Nan	1.225693

Winning Chance = 1 \div Win Odds

Adding up the implied winning chance of each horse per race results in a total winning chance of more than 100%

The 22.57% excess total winning chance represents the Bookmaker's Margin

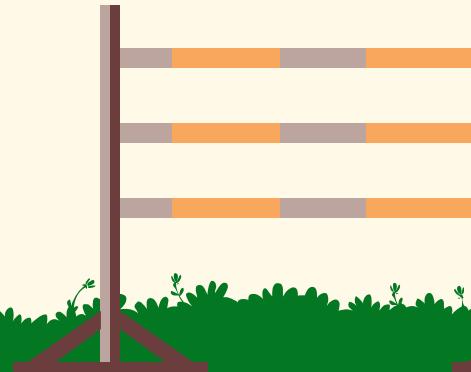


Bookmaker's Margin

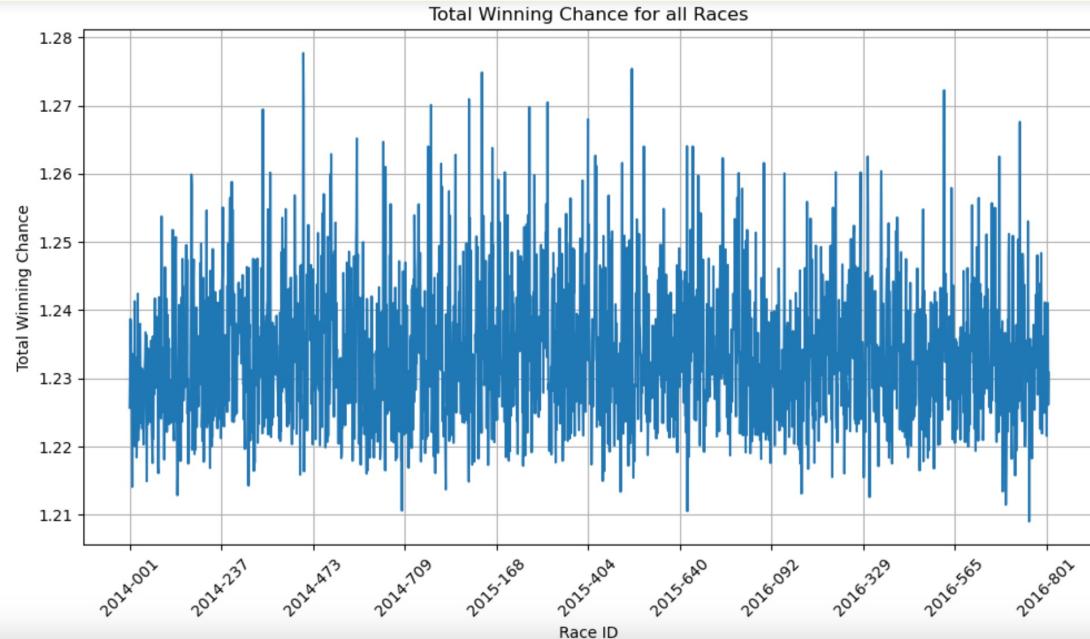
	horse_name	win_odds	winning_chance	normalised_winning_chance	fair_win_odds
0	DOUBLE DRAGON	3.8	0.263158	0.214701	4.657634
1	PLAIN BLUE BANNER	8.0	0.125000	0.101983	9.805545
2	GOLDWEAVER	5.7	0.175439	0.143134	6.986451
3	SUPREME PROFIT	6.1	0.163934	0.133748	7.476728
4	THE ONLY KID	6.1	0.163934	0.133748	7.476728
5	WINNING ADVANTAGE	24.0	0.041667	0.033994	29.416635
6	CARE FREE ELEGANCE	99.0	0.010101	0.008241	121.343621
7	COOL PAL	21.0	0.047619	0.038851	25.739556
8	TAI PO FORTUNE	10.0	0.100000	0.081586	12.256931
9	SUPER HORSE	27.0	0.037037	0.030217	33.093715
10	AMAZING GIFT	17.0	0.058824	0.047992	20.836783
11	LITTLE WIND	46.0	0.021739	0.017736	56.381885
12	EVERSPRING	58.0	0.017241	0.014067	71.090202
13	SHANTARAAM	Nan	Nan	Nan	Nan

Normalising the winning chance to 100% shows the actual winning chance is lower than implied by win odds

Fair win odds given by reciprocal of normalised winning chance is higher than the actual win odds



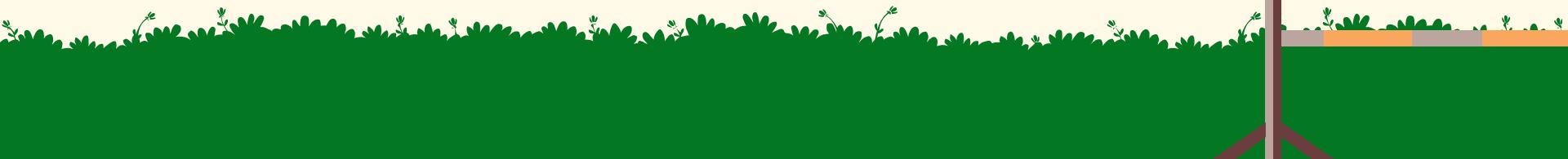
Bookmaker's Margin



Mean Total Winning Chance: 123.33%

Implications for Bettors:

- Reduced value for multiple bets as the bookmaker's margin gets compounded
- Lower expected return for winning due to odds being overpriced



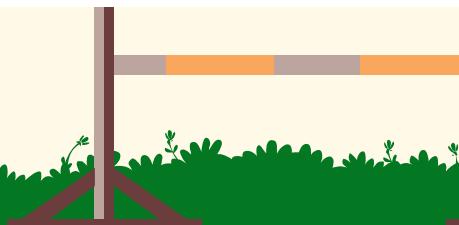
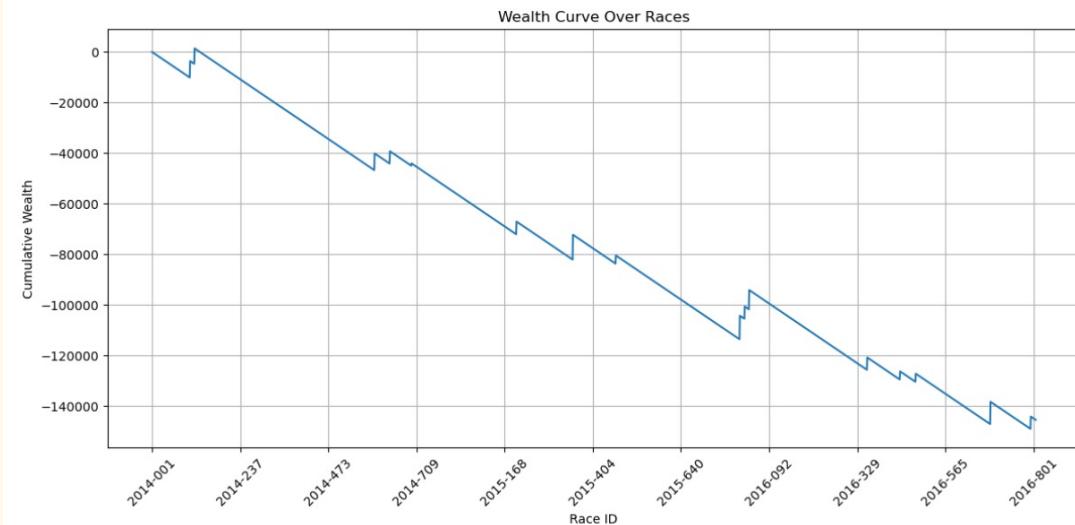
Longshot Betting

Rationale:

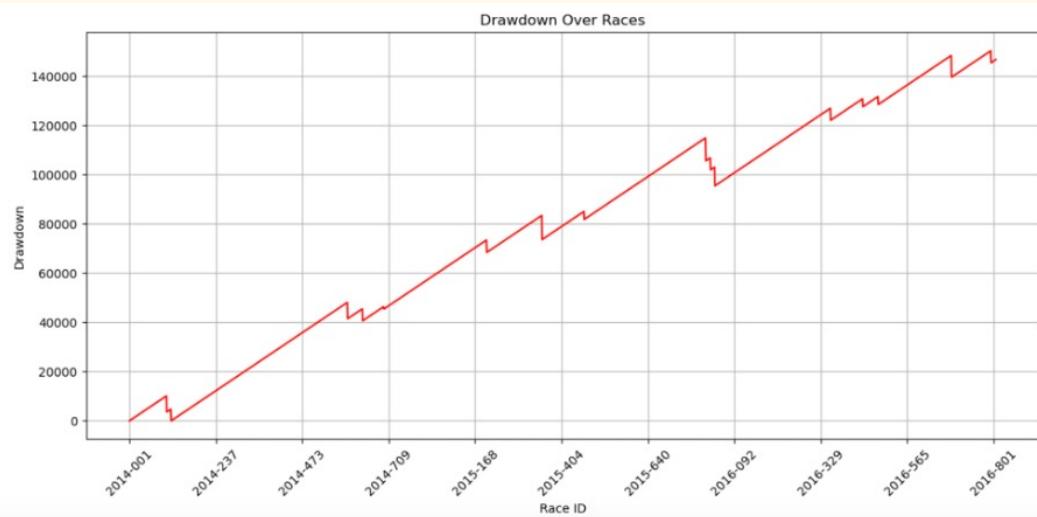
- Horse with the **Highest Win Odds** has highest payout
- Win less frequently but profit more

Methodology:

- Highest Win Odds horse bet weight of 1
- If multiple longshots, divide bet equally
- Assume \$100 bet per race over 2367 races



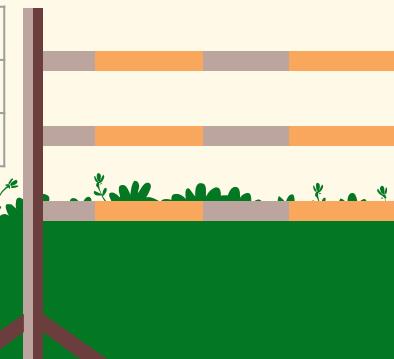
Longshot Betting



Analysis:

- Low probability of the longshot winning 0.68%
- Occasional high returns insufficient to compensate for consistent losses
- Resulting in a mean return of - 61.47%
- Worst performing benchmark strategy with total returns of - \$145,500

Win Rate: 0.68%	Total Pct Return: - 61.47%	Median: - 100.0%
Total Bets: \$236,700	Mean: - 61.47%	Max Drawdown: - \$150,350
Total Return: - \$145,500	Standard Deviation: 506.06%	Sharpe Ratio: -0.1215



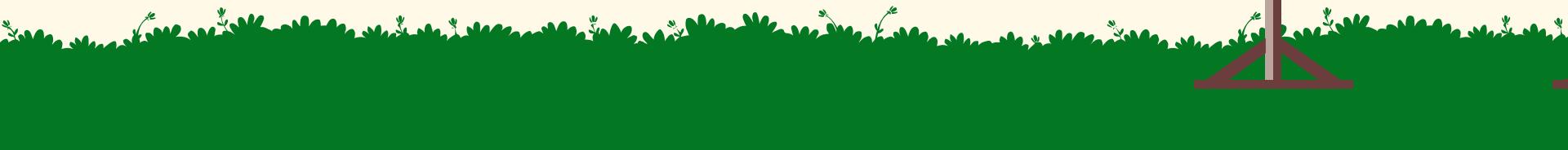
Favourite Betting

Rationale:

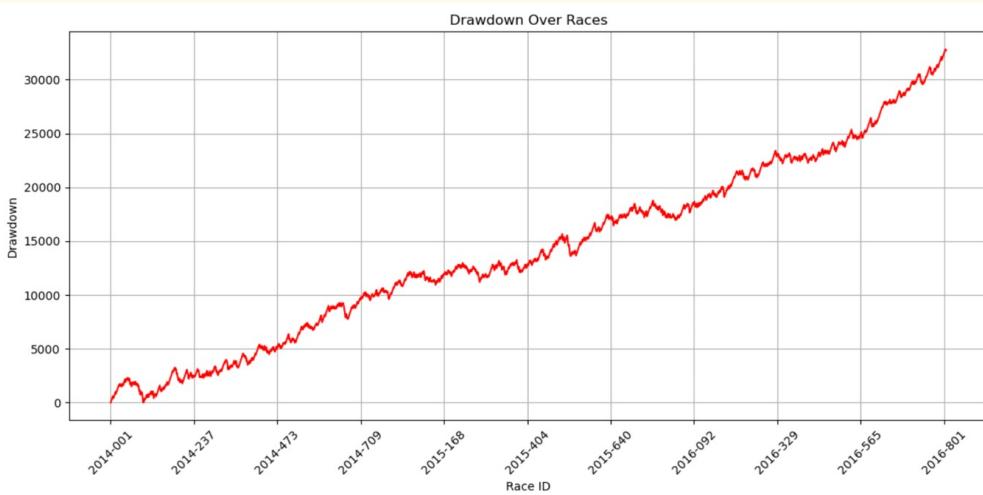
- Horse with the **Lowest Win Odds** has the highest implied winning probability
- Win more frequently but profit less

Methodology:

- Lowest Win Odds horse bet weight of 1
- If multiple Favourites, divide bet equally
- Assume \$100 bet per race over 2367 races



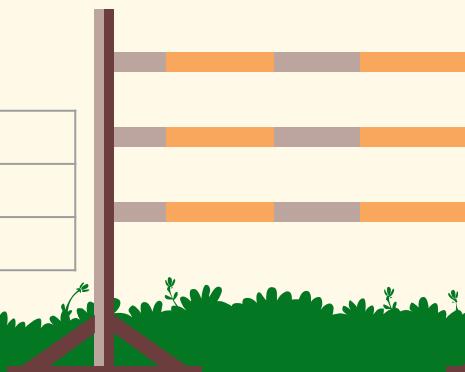
Favourite Betting



Analysis:

- Favourite has the lowest win odds (lowest payout) and wins only 31.61% of the time
- Resulting in mean returns of - 13.68%
- Best performing benchmark strategy with total returns of - \$32,375

Win Rate: 31.61%	Total Pct Return: - 13.68%	Median: - 100%
Total Bets: \$236,600	Mean: - 13.68%	Max Drawdown: - \$32,800
Total Return: - \$32,375	Standard Deviation: 135.30%	Sharpe Ratio: - 0.1011

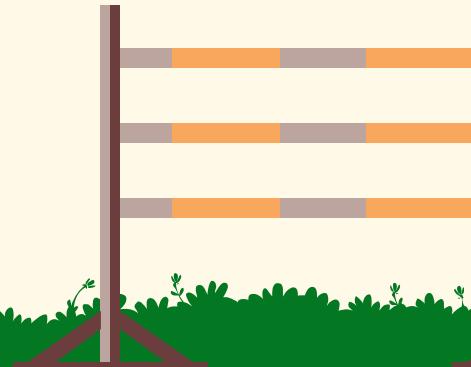


Benchmarking Summary

Strategy	Win Rate	Mean Return
Favourite Betting	31.61%	-13.68%
Proportional Win Odds Betting	7.86%	-26.9%
Longshot Betting	0.68%	-61.47%

Insights:

- Reduced value for each additional bet placed due to bookmaker's margin
- Win Odds are unreliable in predicting the winner (31.61% success rate)



03

Mean Variance Solutions



Target Variable: Time

Rationale:

- **Shorter** average race time → More likely to **win**

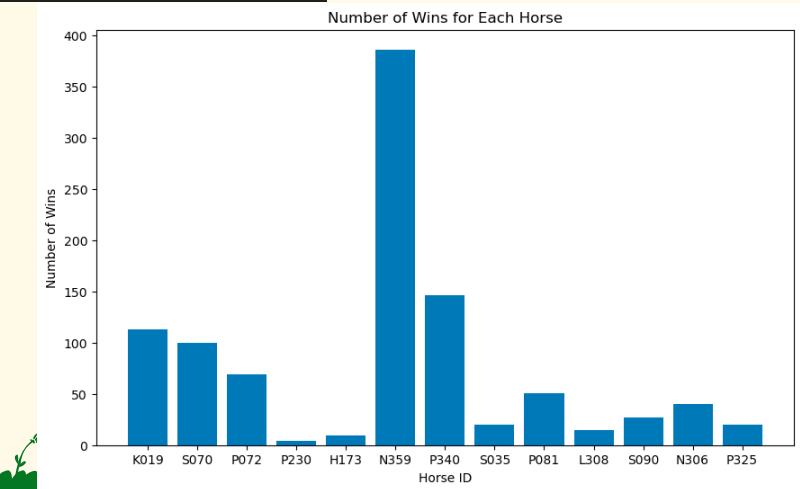
Methodology:

- Calculate **Mean** and **Variance** of a Horse **race time**
- Simulate 1000 races using **Monte Carlo**
 - **Continuous** distribution → **Ordinal** distribution

Assumptions:

- Assume race time follows **Normal Distribution**

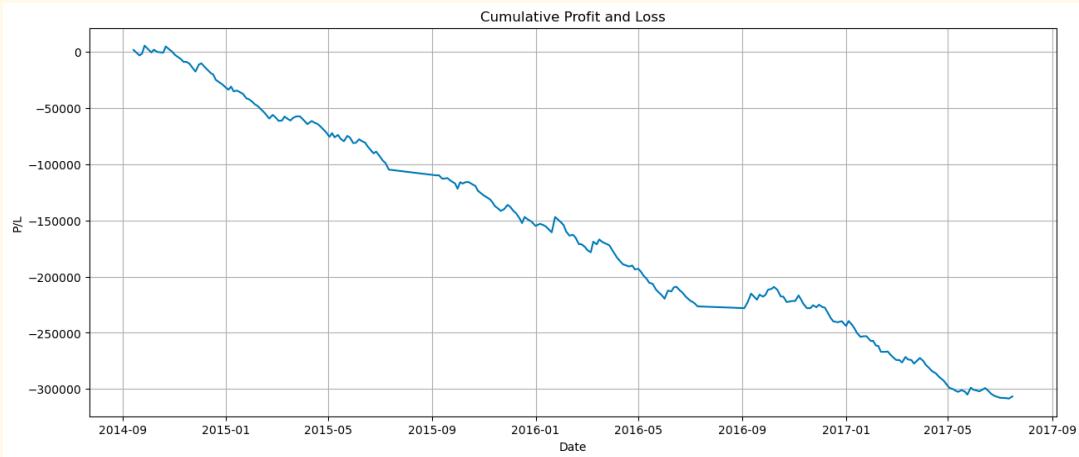
horse_id	avg_finish_time	std_finish_time
A001	70.716667	0.995707
A002	116.136667	17.454524
A003	92.130000	10.591308
A004	80.852222	13.205040
A005	89.147500	12.924722



Time – Betting Strategy 1

Betting Strategy:

- Bet a **fixed \$100**
- Bet on **any** horse if **empirical** win probability is **greater** than **implied** win probability
- Bet on the horses that has ran **at least** 10 races.
 - **Increase** confidence level



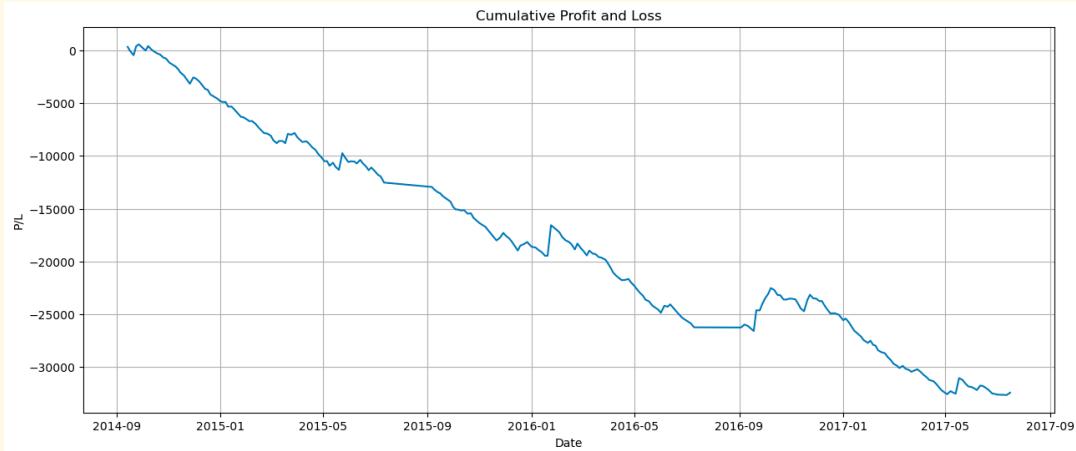
Win Rate: 1.18 %	Total Pct Return: -30.11 %	Median: -100.0 %
Total Bets: \$1,018,100	Mean: -30.11 %	Max Drawdown: -\$315,970.0
Total Return: -\$306,580.0	Standard Deviation: 498.73 %	Sharpe Ratio: -0.0604



Time – Betting Strategy 2

Betting Strategy:

- Bet **fraction** of \$100 based on **Kelly Criterion**
- Bet on **any** horse where Kelly fraction is **positive**
 - Do nothing if fraction is negative
- Bet on the horses that has ran **at least** 10 races.
 - **Increase** confidence level



Win Rate: 1.18 %	Total Pct Return: -34.7 %	Median: -100.0 %
Total Bets: \$93,512.92	Mean: -30.14 %	Max Drawdown: -\$33,572.63
Total Return: -\$32,449.47	Standard Deviation: 498.63 %	Sharpe Ratio: -0.0604



Time – Betting Strategy 3

Betting Strategy:

- Bet **fraction** of \$100 based on **Kelly Criterion**
- Bet on **the** horse with **greatest** win probability
- Bet on the horses that has ran **at least** 10 races.
 - **Increase** confidence level



Win Rate: 0.28 %	Total Pct Return: -34.4 %	Median: -100.0 %
Total Bets: \$40,496.1	Mean: -27.89 %	Max Drawdown: -\$15,059.38
Total Return: -\$13,932.04	Standard Deviation: 486.98 %	Sharpe Ratio: -0.0573



Target Variable: Speed

Rationale:

- Larger average race speed → More likely to win

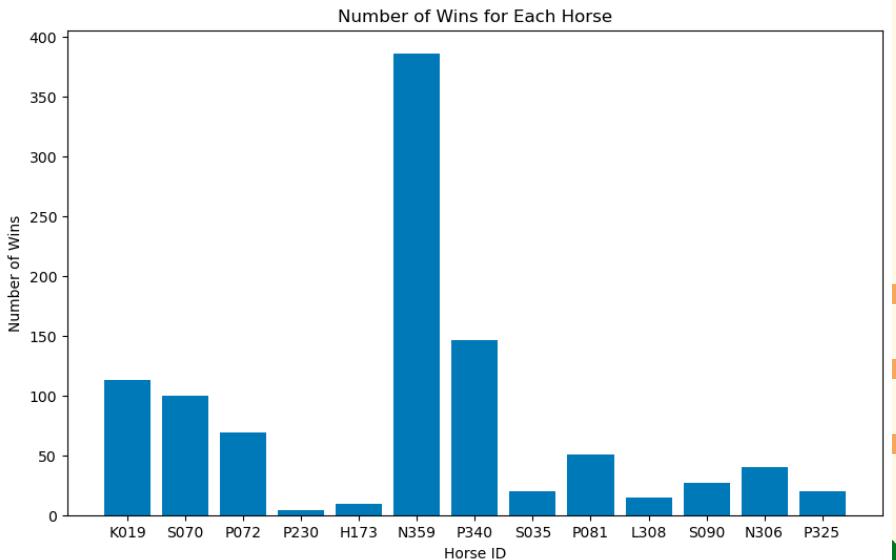
Methodology:

- Calculate Mean and Variance of a Horse race speed
- Simulate 1000 races using Monte Carlo
 - Continuous distribution → Ordinal distribution

Assumptions:

- Assume race time follows Normal Distribution

horse_id	avg_finish_time	std_finish_time	avg_race_distance	std_race_distance	avg_speed	std_speed
A001	70.716667	0.995707	1200.000000	0.000000	16.971352	0.237131
A002	116.136667	17.454524	1916.666667	262.274434	16.536088	0.302170
A003	92.130000	10.591308	1537.500000	157.548179	16.711866	0.336438



Speed – Betting Strategy 1

Betting Strategy:

- Bet a **fixed** \$100
- Bet on **any** horse if **empirical** win probability is **greater** than **implied** win probability
- Bet on the horses that has ran **at least** 10 races.
 - **Increase** confidence level

Time:

Win Rate:	Total Pct Return:	Median:
1.18 %	-30.11 %	-100.0 %
Total Bets:	Mean:	Max Drawdown:
\$1,018,100	-30.11 %	-\$315,970
Total Return:	Standard	Sharpe Ratio:
-\$306,580	Deviation: 498.73 %	-0.0604

Speed:

Win Rate:	Total Pct Return:	Median:
1.62 %	-17.45 %	-100.0 %
Total Bets:	Mean:	Max Drawdown:
\$1,040,300	-17.45 %	-\$193,270
Total Return:	Standard	Sharpe Ratio:
-\$181,500	Deviation: 520.13 %	-0.0335



Speed – Betting Strategy 2

Betting Strategy:

- Bet **fraction** of \$100 based on **Kelly Criterion**
- Bet on **any** horse where Kelly fraction is **positive**
 - Do nothing if fraction is negative
- Bet on the horses that has ran **at least** 10 races.
 - **Increase** confidence level

Time:

Win Rate: 1.18 %	Total Pct Return: -34.7 %	Median: -100.0 %
Total Bets: \$93,512.92	Mean: -30.14 %	Max Drawdown: -\$33,572.63
Total Return: -\$32,449.47	Standard Deviation: 498.63 %	Sharpe Ratio: -0.0604

Speed:

Win Rate: 1.62 %	Total Pct Return: -14.98 %	Median: -100.0 %
Total Bets: \$83,656.24	Mean: -17.47 %	Max Drawdown: -\$15,222.38
Total Return: -\$12,534.09	Standard Deviation: 520.06 %	Sharpe Ratio: -0.0336



Speed – Betting Strategy 3

Betting Strategy:

- Bet **fraction** of \$100 based on **Kelly Criterion**
- Bet on **the** horse with **greatest** win probability
- Bet on the horses that has ran **at least** 10 races.
 - **Increase** confidence level

Time:

Win Rate: 0.28 %	Total Pct Return: -34.4 %	Median: -100.0 %
Total Bets: \$40,496.1	Mean: -27.89 %	Max Drawdown: -\$15,059.38
Total Return: -\$13,932.04	Standard Deviation: 486.98 %	Sharpe Ratio: -0.0573

Speed:

Win Rate: 0.5 %	Total Pct Return: -1.73 %	Median: -100.0 %
Total Bets: \$35,226.72	Mean: 1.02 %	Max Drawdown: -\$5,610.39
Total Return: -\$609.82	Standard Deviation: 497.0 %	Sharpe Ratio: 0.0021

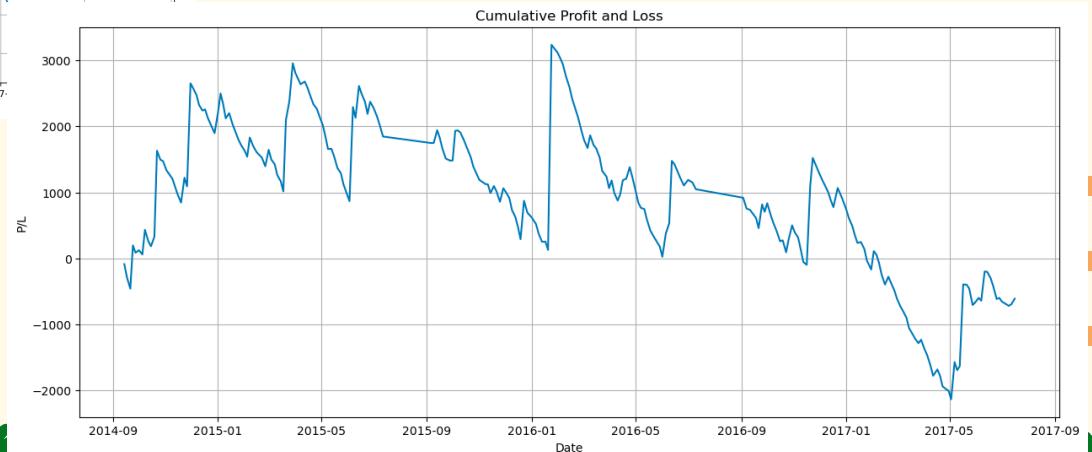


Speed – Betting Strategy 3



Time

Speed



EMA: Speed & Time

Rationale:

- Recent performances are **more relevant** than **older** performances

Methodology:

- Exponential Moving **Average** and **Variance** of a Horse
- Simulate 1000 races using **Monte Carlo**
 - **Continuous** distribution → **Ordinal** distribution

Assumptions:

- Assume race time follows **Normal Distribution**
- Alpha = 0.2



EMA Speed & Time – Betting Strategy 3

Betting Strategy:

- Bet **fraction** of \$100 based on **Kelly Criterion**
- Bet on **the** horse with **greatest** win probability

Previous Best (Speed):

Win Rate: 0.5 %	Total Pct Return: -1.73 %	Median: -100.0 %
Total Bets: \$35,226.72	Mean: 1.02 %	Max Drawdown: -\$5,610.39
Total Return: -\$609.82	Standard Deviation: 497.0 %	Sharpe Ratio: 0.0021

EMA Time:

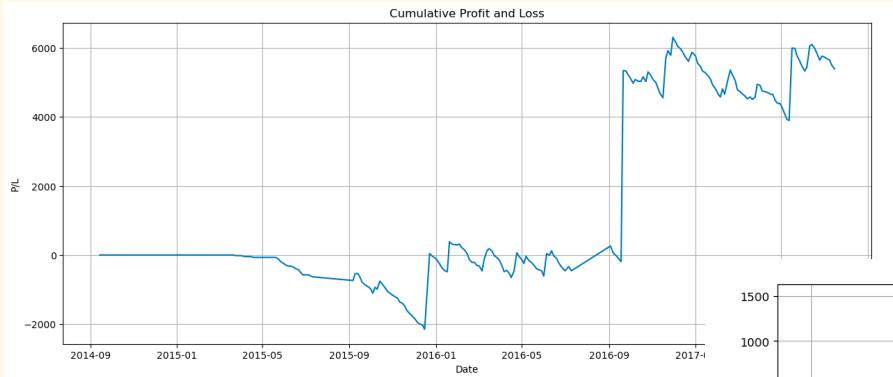
Win Rate: 0.19 %	Total Pct Return: 28.58 %	Median: -100.0 %
Total Bets: \$18,852.71	Mean: 7.02 %	Max Drawdown: -\$2,533.67
Total Return: \$5,388.03	Standard Deviation: 497.74 %	Sharpe Ratio: 0.0141

EMA Speed:

Win Rate: 0.15 %	Total Pct Return: -3.58 %	Median: -100.0 %
Total Bets: \$16,738.64	Mean: -15.29 %	Max Drawdown: -\$3,583.28
Total Return: -\$598.48	Standard Deviation: 470.74 %	Sharpe Ratio: -0.0325



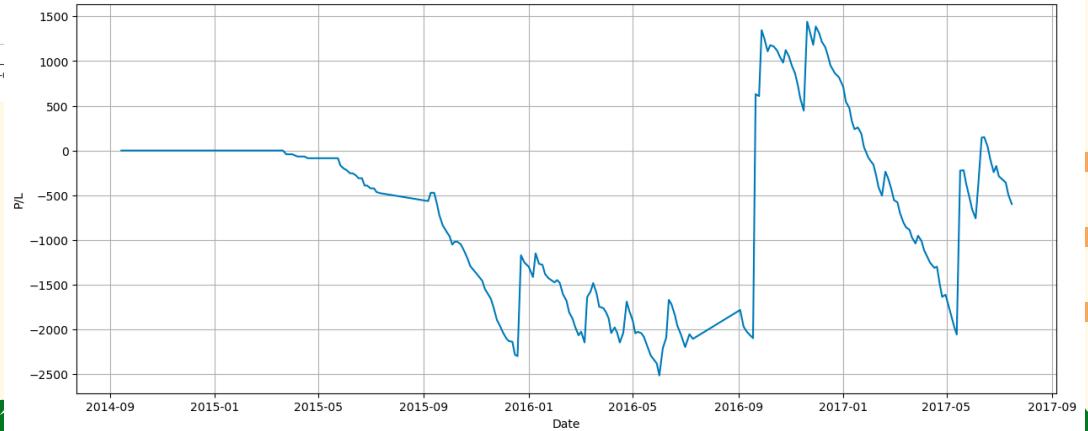
EMA Speed & Time – Betting Strategy 3



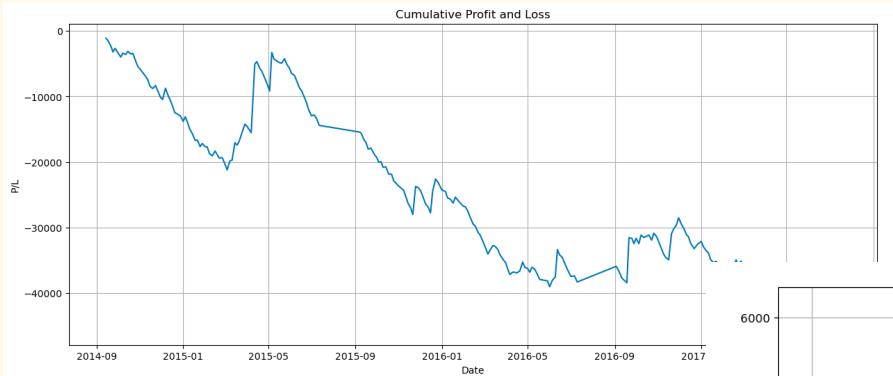
Time

Speed

Cumulative Profit and Loss

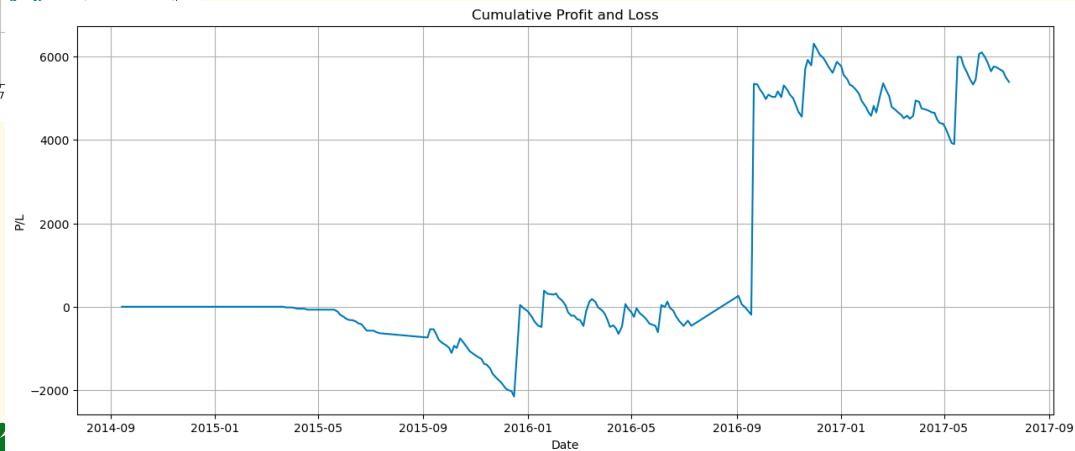


EMA Speed & Time – Betting Strategy 3



Without Kelly

With Kelly



04

Applying Machine Learning

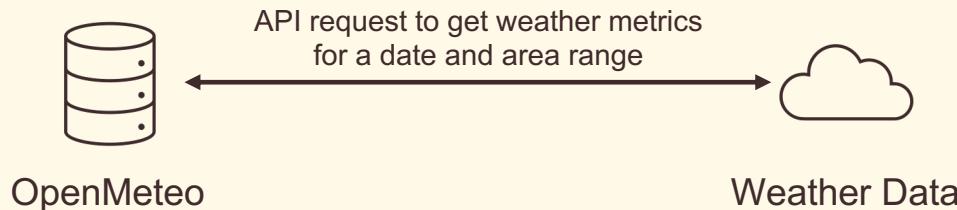


Machine Learning Methodology

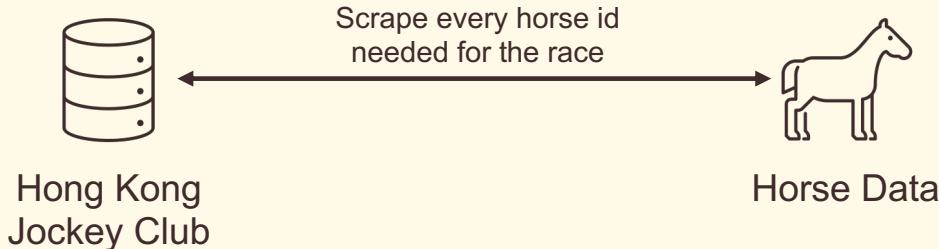


Data Sourcing

Goal: Identify and source for as many features to be used for subsequent analysis



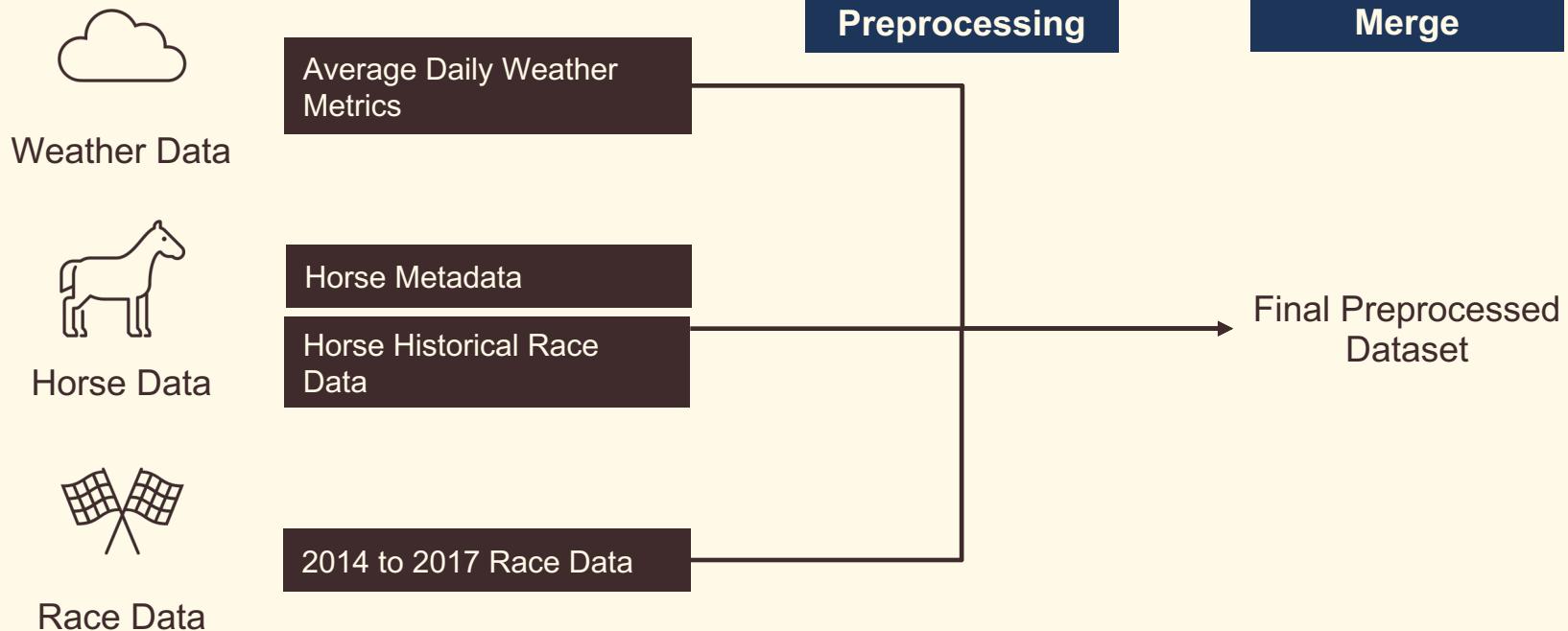
Average Daily Weather Metrics



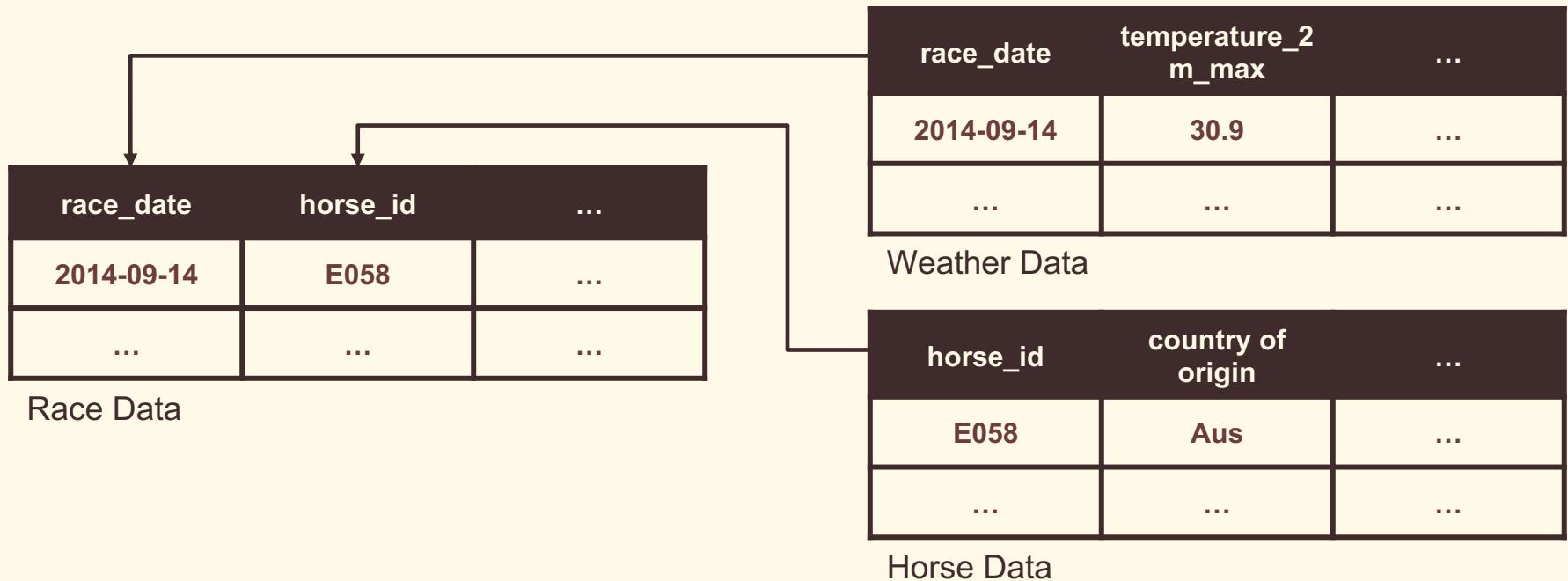
Horse Metadata

Horse Historical Race Data

Data Pre-processing



Data Pre-processing



Feature Engineering

Goal: Reduce the number of features and create impactful features

1

Handling Categorical
values

2

Identifying Correlated
features

3

Performing PCA
Analysis

Handling Categorical Values

Nominal Values

Nominal data is data that can be made to fit various categories
eg. race course

```
Sha Tin      19469
Happy Valley 10049
Name: race_course, dtype: int64
```

Ordinal Values

Ordinal data is data that can be ranked or ordered
eg. track condition

```
GOOD           16108
GOOD TO FIRM   10799
GOOD TO YIELDING 1540
YIELDING       354
WET SLOW        287
FAST            236
WET FAST         170
YIELDING TO SOFT 12
SOFT             12
Name: track_condition, dtype: int64
```

Handling Nominal Values

Nominal Values

Nominal data is data that can be made to fit various categories
eg. race course



We can **encode** them for easy interpretation by the model subsequently

Handling Ordinal Values

Ordinal Values

Ordinal data is data that can be ranked or ordered
eg. track condition

GOOD	16108
GOOD TO FIRM	10799
GOOD TO YIELDING	1540
YIELDING	354
WET SLOW	287
FAST	236
WET FAST	170
YIELDING TO SOFT	12
SOFT	12
Name: track_condition, dtype: int64	



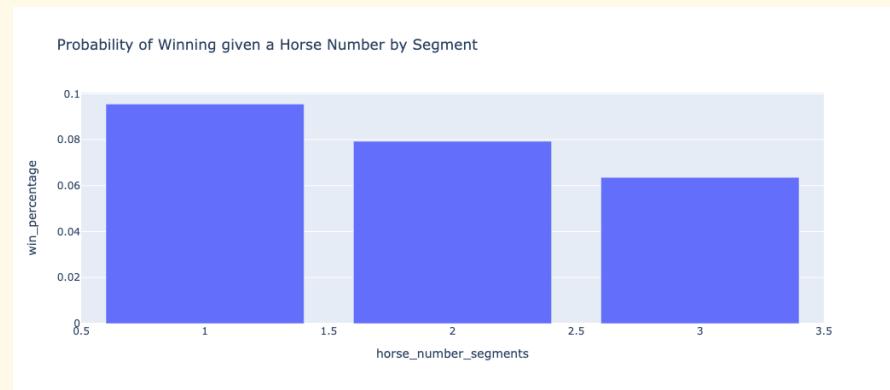
We can map them to a numerical value, if applicable

Going (Turf Track)		Going (All Weather Track)	
Going	Penetrometer Reading	All Weather Track	
Firm	F	< 2.50	FT: Fast
Good To Firm	G/F	2.50 - 2.75	GD: Good
Good	G	2.75 - 3.00	SL: Slow
Good To Yielding	G/Y	3.00 - 3.25	SE: Sealed
Yielding	Y	3.25 - 3.50	WE: Wet
Yielding To Soft	Y/S	> 3.50	RA: Rain affected
Soft	S		NW: Normal watering
Heavy	H		In general, higher the clegg hammer reading, firmer the surface or vice versa on normal weather condition.

It should be noted that penetrometer readings are used as reference for determining track going; jockeys opinion, turf surface and weather conditions are also taken into account.

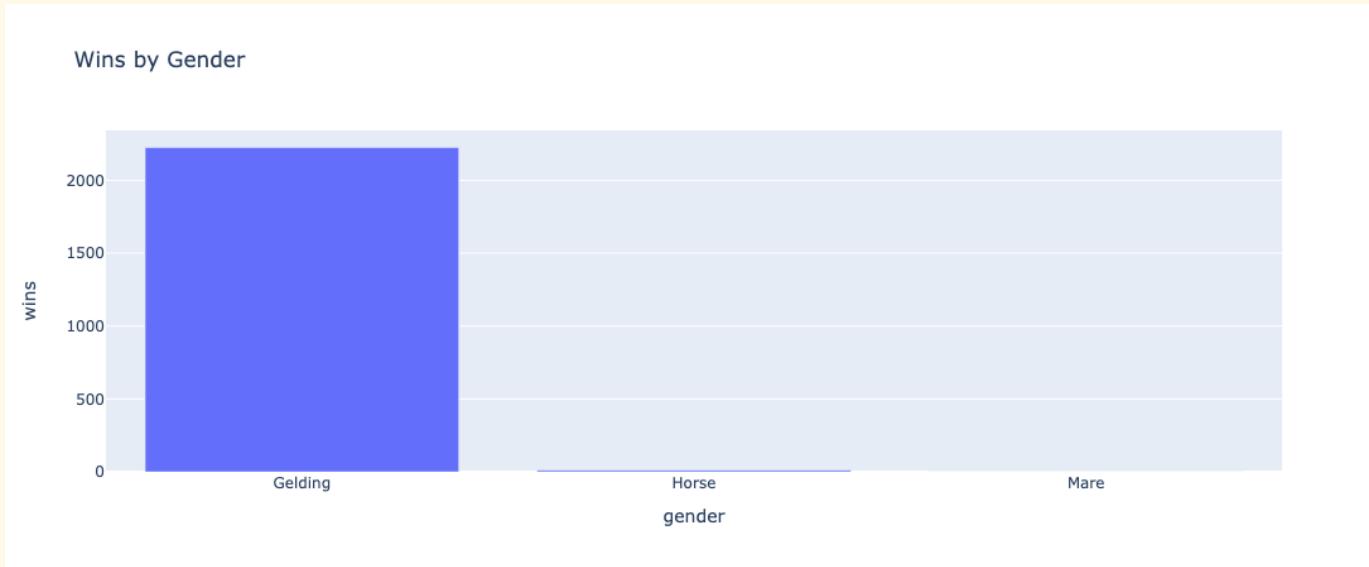
Grouping Categorical Values

Classes that have the same relationship with the dependent variable can be grouped together to **reduce the complexity of the data and highlight patterns more effectively**



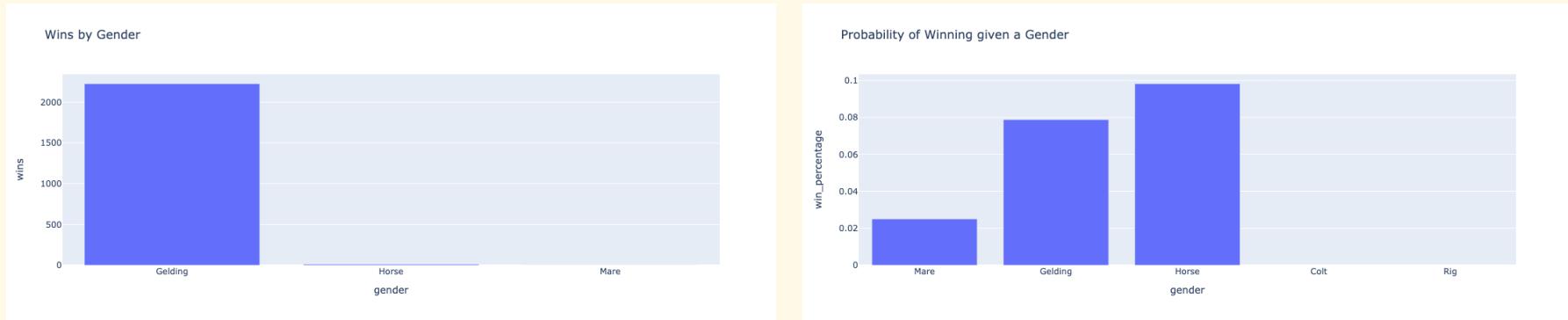
Identifying Correlated Features

Using **Conditional Probability** to determine the underlying relationship between a feature and a dependent variable by **adjusting for class imbalance**



Identifying Correlated Features

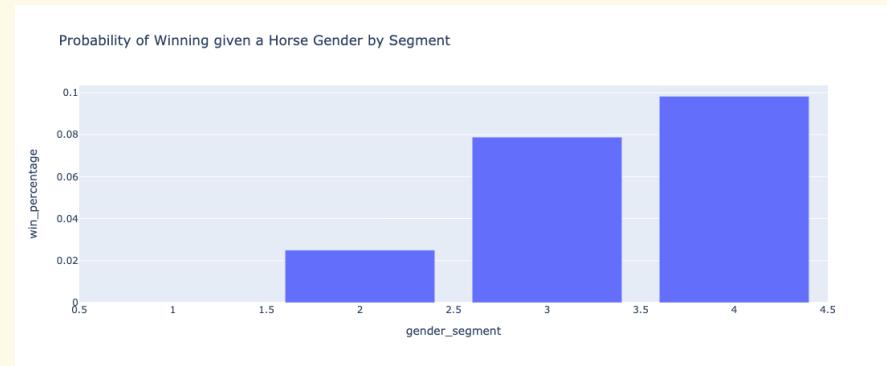
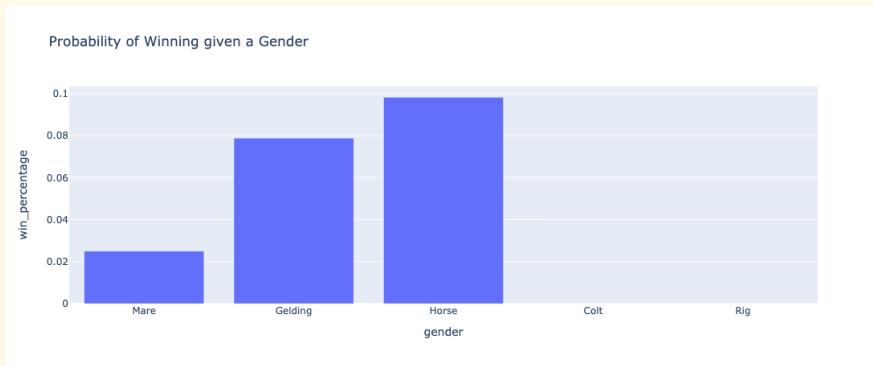
Using **Conditional Probability** to determine the underlying relationship between a feature and a dependent variable by **adjusting for class imbalance**



Given a gender, the Horse Gender has the highest probability of winning, not Gelding

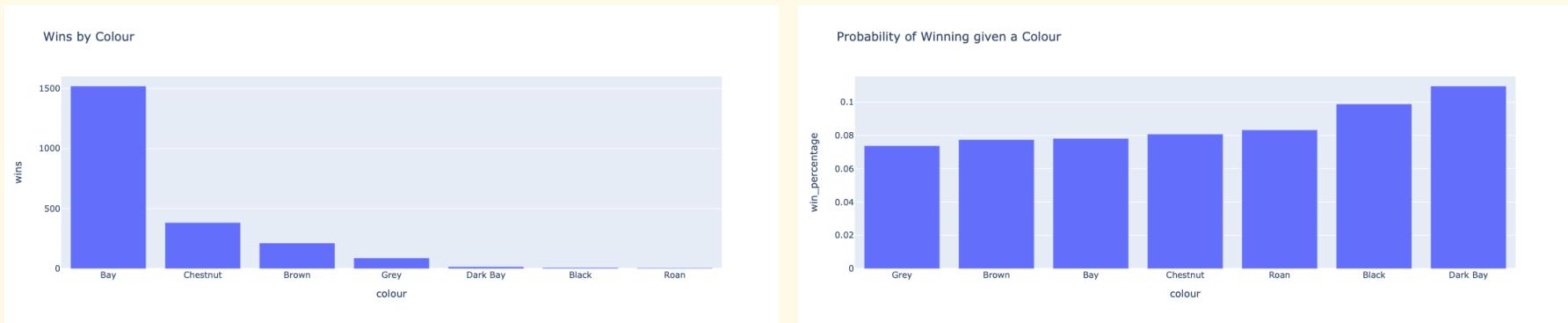
Identifying Correlated Features

Grouping the Horse Gender categorical variable based on probability of winning given a gender



Identifying Correlated Features

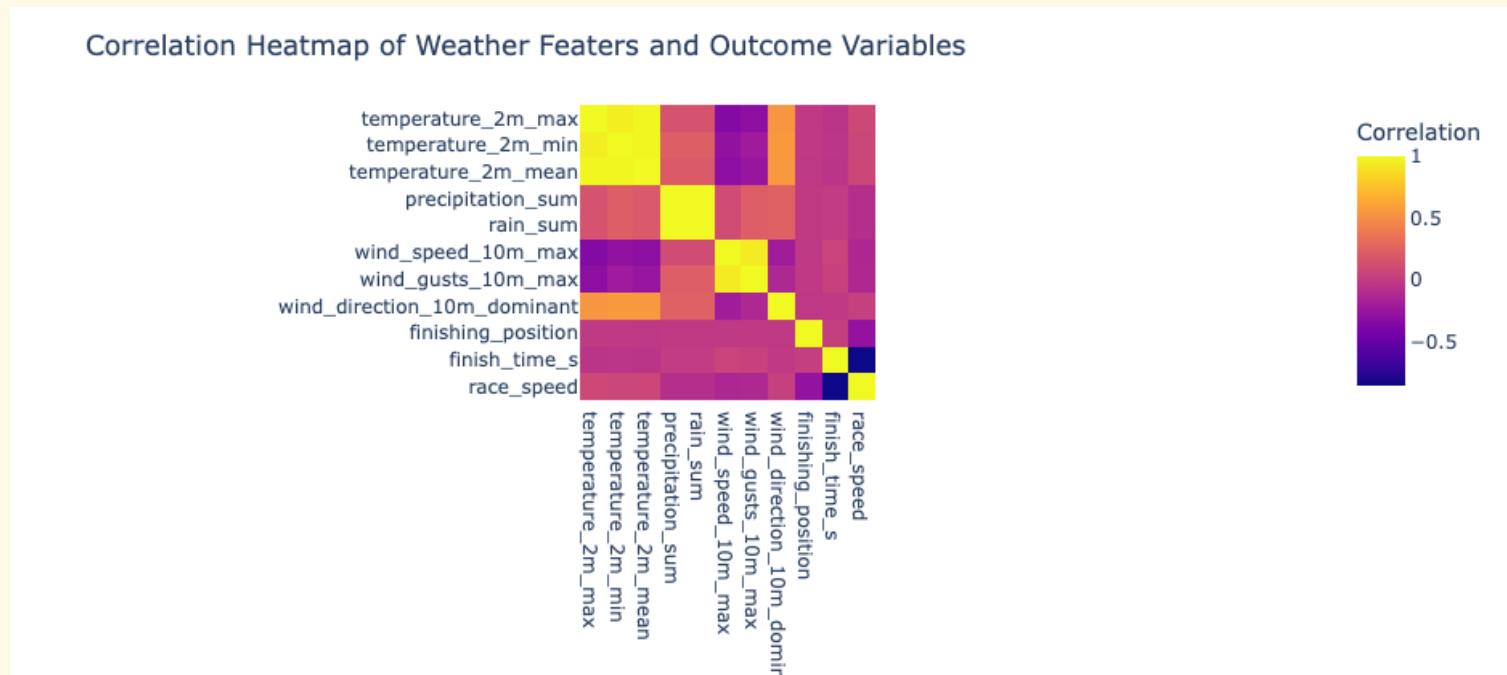
When looking at Horse Colour and its relationship with the probability of winning, we also see that **absolute wins differs greatly from adjusted wins**



Identifying Correlated Features

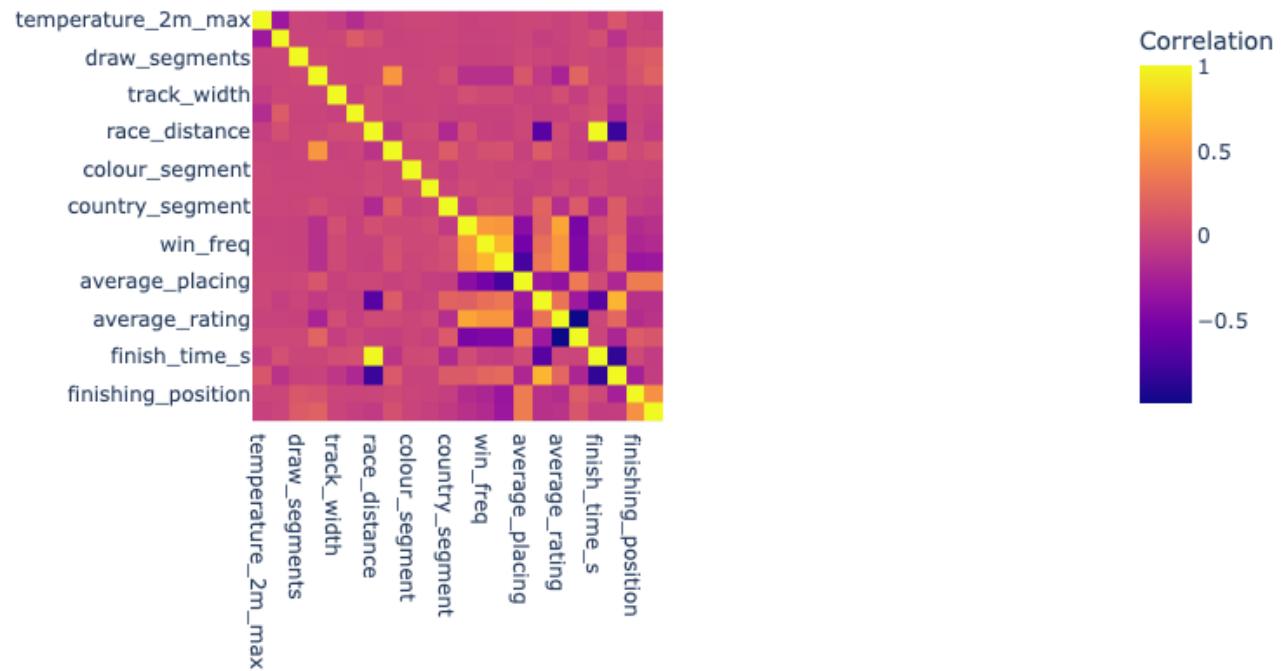
Correlation Matrix of numerical features and dependent variables

While there might be weak correlation, a non-linear relationship might still exist with the dependent variables

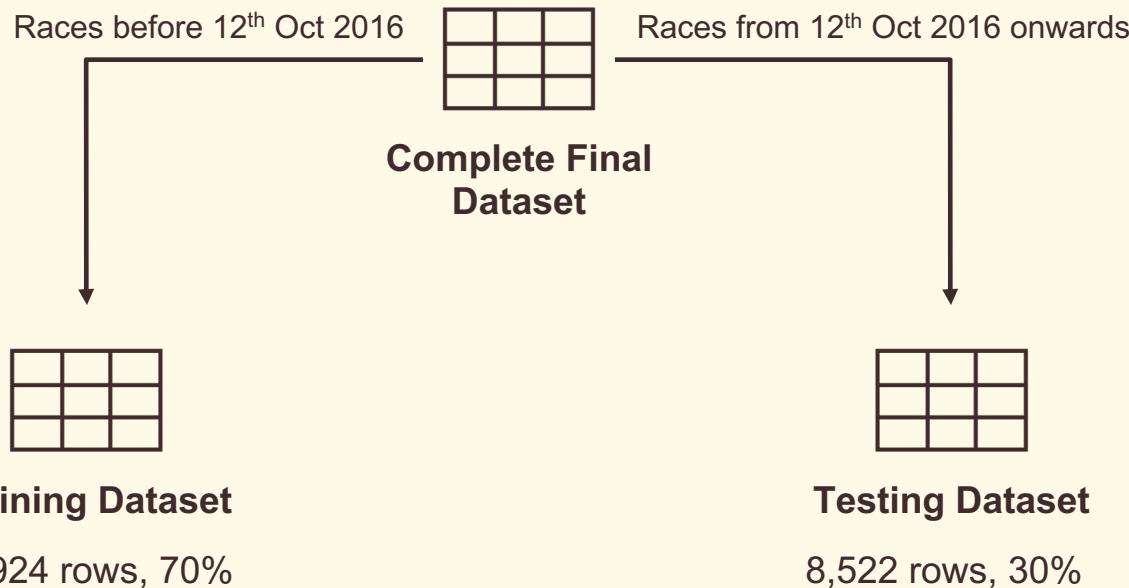


Final Feature Set

Correlation Heatmap



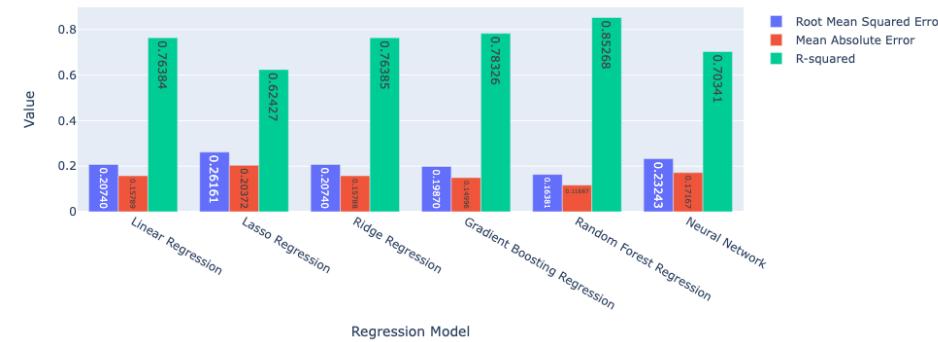
Model Training



Evaluating Regression Model Training

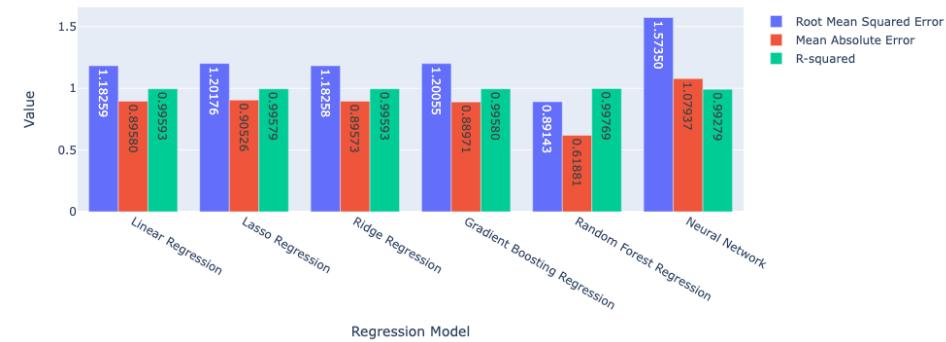
Predicting Horse Race Speed

Race Speed Regression Models Performance Metrics



Predicting Horse Finish Time

Finish Time Regression Models Performance Metrics



Classification Model Training

Predicting Horse Finishing Position Class

Class 1

Finishing Positions in the Top 3

Class 0

Finishing Positions below the Top 3

Why?

1

Simplicity of Binary Classification

2

Managing Imbalance

Evaluating Classification Model Training

Predicting Horse Finishing Position Class



Predicting Probability of a Horse Winning

Predicting probability of a horse winning using an ensemble of models

$$P_{win} = \frac{1}{n} \sum_{i=1}^n \frac{1}{p_i}$$

where:

P_{win} = probability of the horse winning,

n = number of races,

p_i = predicted finishing position of the horse in the i^{th} race

Predicting Probability of a Horse Winning

	Race Speed	Position	Probability
Lasso Regression	102.52s	4 th	0.25
Ridge Regression	101.15s	2 nd	0.5
Probability of Horse Winning			0.375

Predicting Probability of a Horse Winning

Probability of Finish Position Class

Random Forest
Classifier

0.8

XGBoost
Classifier

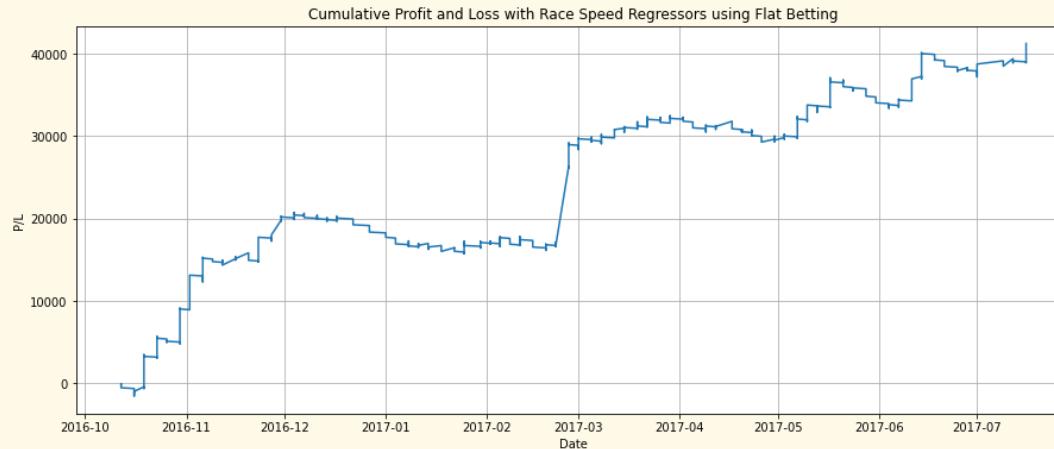
0.47869

Probability of Horse
Winning

0.63934

Performance of Race Speed Regressors

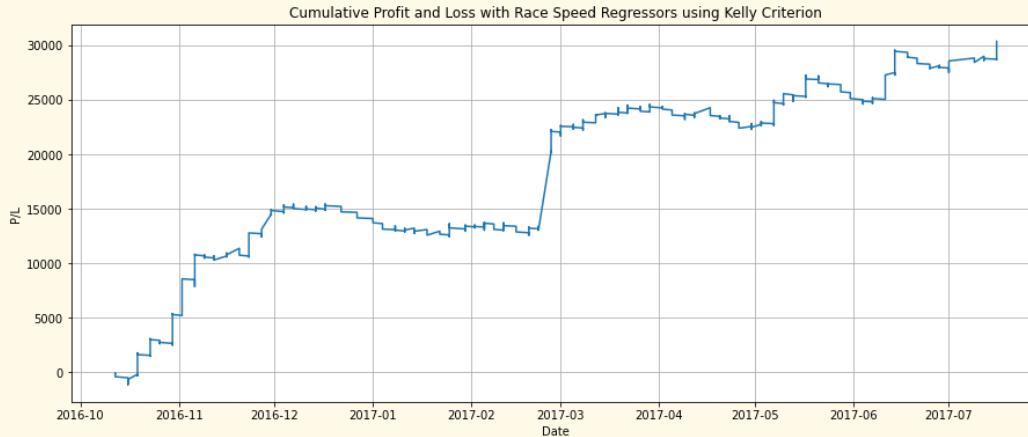
Placing flat bets of \$100 on the horse that has the highest probability of winning in a race



Win Rate: 21.04 %	Total Pct Return: 4.79 %	Median: -7.69 %
Total Bets: \$862,000	Mean: 4.57 %	Max Drawdown: -\$5,010
Total Return: \$41,250	Standard Deviation: 42.21 %	Sharpe Ratio: 0.1081

Performance of Race Speed Regressors

Using Kelly Criterion to allocate bet amounts based on the probability of winning in a race



Win Rate: 20.99 %	Total Pct Return: 17.93 %	Median: -27.63 %
Total Bets: \$169,322.30	Mean: 16.5 %	Max Drawdown: -\$2,980.16
Total Return: \$30,360.08	Standard Deviation: 140.59 %	Sharpe Ratio: 0.1174

Performance of Finish Time Regressors

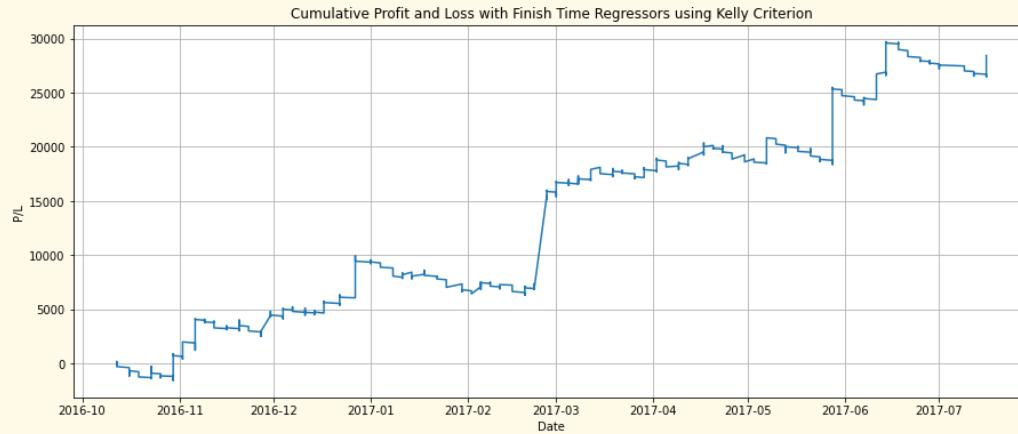
Placing flat bets of \$100 on the horse that has the highest probability of winning in a race



Win Rate: 20.2 %	Total Pct Return: 3.63 %	Median: -8.33 %
Total Bets: \$862,900	Mean: 4.76 %	Max Drawdown: -\$4,420
Total Return: \$31,290	Standard Deviation: 65.69 %	Sharpe Ratio: 0.0726

Performance of Finish Time Regressors

Using Kelly Criterion to allocate bet amounts based on the probability of winning in a race



Win Rate: 20.2 %	Total Pct Return: 14.93 %	Median: -28.45 %
Total Bets: \$190,352.67	Mean: 14.69 %	Max Drawdown: -\$3,644.38
Total Return: \$28,419.82	Standard Deviation: 181.17 %	Sharpe Ratio: 0.0811

Performance of Finish Position Classifiers

Placing flat bets of \$100 on the horse that has the highest probability of winning in a race



Win Rate: 17.39 %	Total Pct Return: 0.99 %	Median: -8.33 %
Total Bets: \$852,200	Mean: 1.59 %	Max Drawdown: -\$6,230
Total Return: \$8,430	Standard Deviation: 45.39 %	Sharpe Ratio: 0.035

Performance of Finish Position Classifiers

Using Kelly Criterion to allocate bet amounts based on the probability of winning in a race



Win Rate: 16.52 %	Total Pct Return: 3.43 %	Median: -17.93 %
Total Bets: \$143,148.79	Mean: 4.97 %	Max Drawdown: -\$2,820.93
Total Return: \$4,914.48	Standard Deviation: 128.53 %	Sharpe Ratio: 0.0387

Takeaways

- 1 Race Speed Regressors with a flat bet strategy is the most profitable model making \$41,250 and having a prediction accuracy of 57.3% (highest)
- 2 Betting using Kelly Criterion helps to limit downside risk

Conclusion

Performance Statistic	Benchmark	Naive Mean Variance		EMA Mean Variance	
Target Variable	NA	Speed		Time	
Bet Type	Fixed Bet	Fixed Bet	Kelly	Fixed Bet	Kelly
Absolute Returns	-\$32,375.00	\$15,650.00	\$35,226.72	-\$43,470.00	\$5,388.03
Mean Returns (%)	-13.68%	6.58%	1.02%	-18.19%	7.02%
Standard Deviation (%)	135.30%	517.17%	497.00%	419.34%	497.74%
Max Drawdown	-\$32,800.00	-\$25,190.00	-\$5,610.39	-\$46,020.00	-\$2,533.67
Sharpe Ratio	-0.1011	0.0127	0.0021	-0.0434	0.0141

Performance Statistic	Benchmark	Regression		Classification	
Target Variable	NA	Speed		Rankings	
Bet Type	Fixed Bet	Fixed Bet	Kelly	Fixed Bet	Kelly
Absolute Returns	-\$32,375.00	\$41,250.00	\$30,360.08	\$8,430.00	\$4,914.48
Mean Returns (%)	-13.68%	4.57%	16.50%	1.59%	4.97%
Standard Deviation (%)	135.30%	42.21%	140.59%	45.39%	128.53%
Max Drawdown	-\$32,800.00	-\$5,010.00	\$2,980.16	-\$6,230.00	-\$2,820.93
Sharpe Ratio	-0.1011	0.1081	0.1174	0.0350	0.0387

HK Gold Cup 2024 G1



https://www.youtube.com/watch?v=ZQg3JJNf_Dq

HK Gold Cup 2024 G1

Pla.	Horse No.	Horse	Jockey	Trainer	Act. Wt.	Declar. Horse Wt.	Dr.	LBW	Running Position	Finish Time	Win Odds
1	1	ROMANTIC WARRIOR (E486)	J McDonald	C S Shum	126	1173	11	-			1.6
2	2	VOYAGE BUBBLE (E436)	Z Purton	P F Yiu	126	1224	7	N			4
3	8	NIMBLE NIMBUS (E249)	A Atzeni	P F Yiu	126	1161	1	3-1/4			24
4	3	STRAIGHT ARRON (G435)	H Bowman	C Fownes	126	1130	6	4			6.8
5	10	FIVE G PATCH (G286)	M Chadwick	A S Cruz	126	1021	3	4-1/4			35
6	4	BEAUTY JOY (E058)	K C Leung	A S Cruz	126	1042	9	4-1/4			27
7	6	ENCOUNTERED (G236)	K Teetan	K L Man	126	1146	2	5-1/2			16
8	9	SEÑOR TOBA (G103)	A Hamelin	C Fownes	126	1151	4	7-1/2			80
9	5	SWORD POINT (G448)	L Hewitson	F C Lor	126	1135	5	11			75
10	11	CHAMPION DRAGON (G070)	A Badel	A S Cruz	126	1136	8	13-3/4			78
11	7	MONEY CATCHER (G171)	L Ferraris	F C Lor	126	1141	10	19			108

Note: [Special Incidents Index](#)

<https://racing.hkjc.com/racing/information/English/Racing/LocalResults.aspx?RaceDate=2024/02/25&Racecourse=ST&RaceNo=7>

HK Gold Cup 2024 G1



https://www.youtube.com/watch?v=ZQg3JJNf_Dq

Results

- | | |
|------|------------------|
| 1st | Romantic Warrior |
| 2nd | Voyage Bubble |
| 3rd | Nimble Nimbus |
| 4th | Straight Arron |
| 5th | Five G Patch |
| 6th | Beauty Joy |
| 7th | Encountered |
| 8th | Senor Toba |
| 9th | Sword Point |
| 10th | Champion Dragon |
| 11th | Money Catcher |

THANK YOU

Questions and Answers

