

Improving risk management for moneyline betting on UFC fights

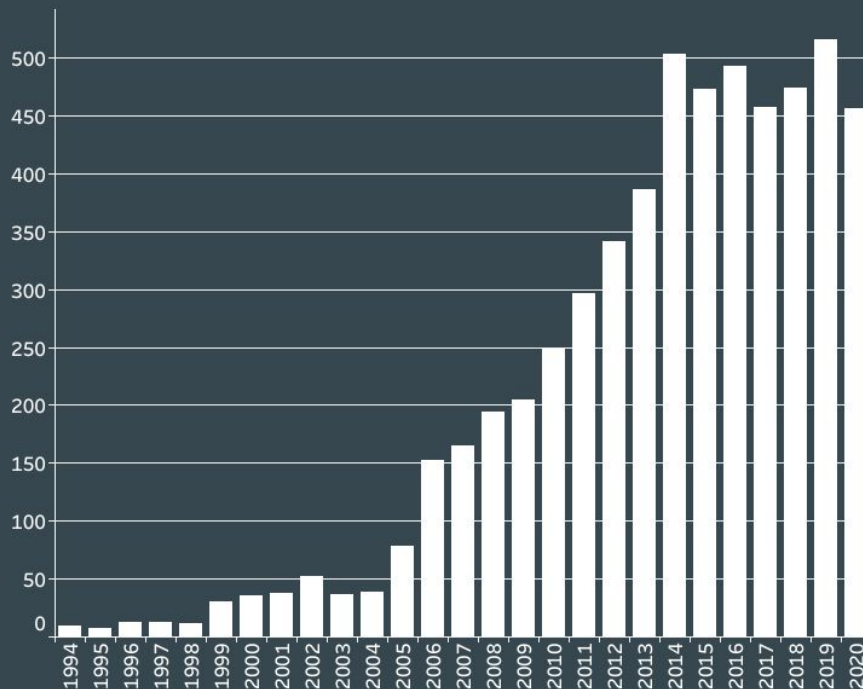
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Ultimate Fighting Championship (“UFC”)

- Explosive growth in popularity in recent years
- Growing revenue share for DraftKings

of UFC bouts, historical



Bookmaking for sports betting is about risk management

Moneyline for Ronda Rousey vs. Holly Holm @ UFC 193, November 14, 2015

Ronda Rousey (favorite)	-750 (probability to win 88%)	if won, \$750 bet pays out \$100 (excl. principle)
Holly Holm (underdog)	+525 (probability to win 16%)	if won, \$100 bet pays out \$525
Over-round ("expected profit")	4% of all bets made	88% + 16% = 100%

Simplified example of cash flow among 3 bets:				
2 bets on Ronda Rousey + 1 bet on Holly Holm	→ DraftKings collects	\$1,600	$2 * \$750 + 1 * \100	= \$1,600
Expected payout: \$1,600 - 2 bets for Ronda	→ Expected return is	(\$100)	$\$1,600 - 2 * (\$750 + \$100)$	= -\$100
Actual result is upset: \$1,600 - 1 bet for Holy	→ Actual return is	\$975	$\$1,600 - (\$525 + \$100)$	= \$975

Surprise

About $\frac{1}{3}$ of the time

* based on processed dataset

Fighter name	Total upsets*	Total fights*	% of upset
Michael Johnson	15	19	79%
Donald Cerrone	10	30	33%
Tim Boetsch	10	18	56%
Carlos Condit	10	14	71%
Rafael Dos Anjos	9	25	36%
Charles Oliveira	9	24	38%
Jeremy Stephens	9	21	43%
Diego Sanchez	9	17	53%
Mauricio Rua	9	16	56%
Jan Blachowicz	9	13	69%
Ben Rothwell	9	12	75%
Ross Pearson	8	22	36%
Johnny Hendricks	8	19	42%
Darren Elkins	8	18	44%
Neil Magny	8	16	50%
Thiago Alves	8	12	67%
Jim Miller	7	27	26%
Demian Maia	7	24	29%
Matt Brown	7	20	35%
Cub Swanson	7	17	41%
Dennis Bermudez	7	16	44%
<i>Other (1,279 fighters)</i>	1,978	5,878	
<i>Sum total</i>	2,161	6,278	<i>Average 34%</i>

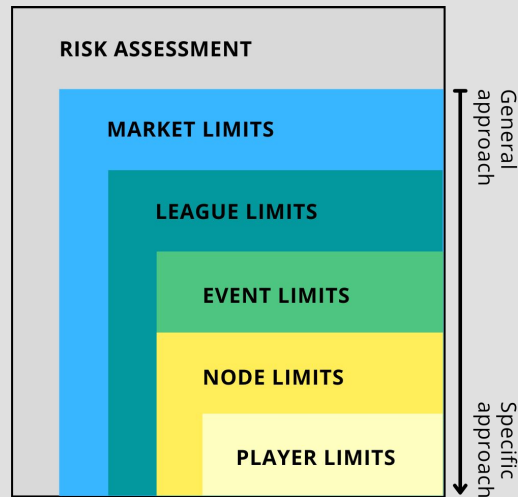
Improving your risk & revenue metrics

Build a predictive model

What is the likelihood of a fight to result in an upset?

Measures of success

- Improved tracking error and lowered value-at-risk
- Accurate identification of upsets



Key elements

Collect dataset of previous fight statistics & betting odds



Data analysis



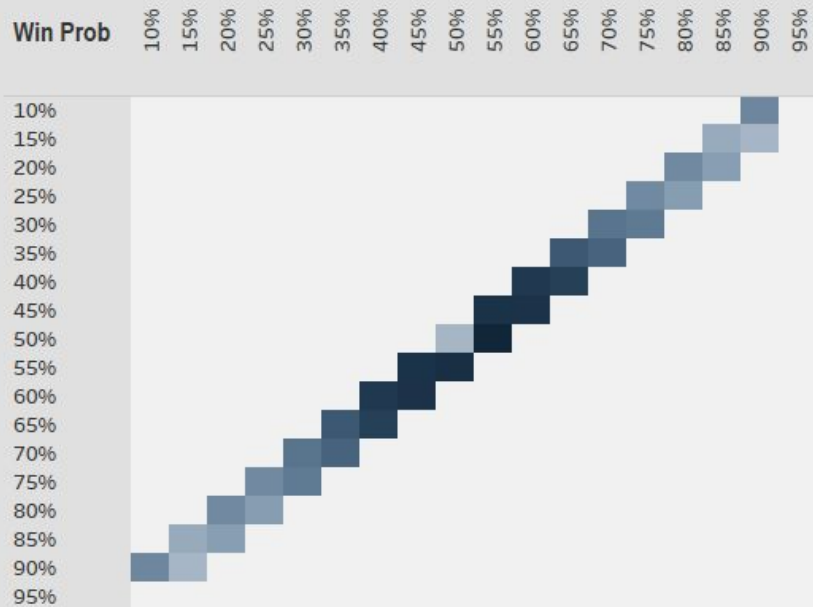
Predictive modeling to identify the upsets



Adjust odds in guidance with the predictive model outputs

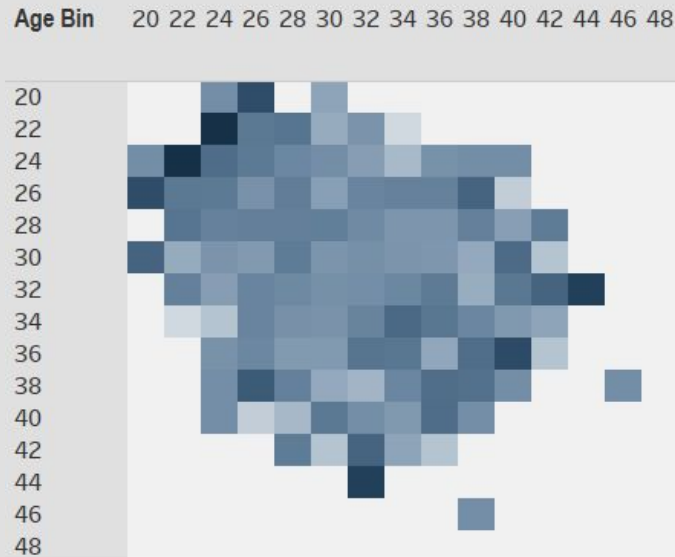
Exploring the upsets

Upsets as % of all fights, by implied win probability*



Upsets by win probability
0.0000 0.5140

Upsets as a % of all fights, by fighter ages**



Upset by ages
0.0000 0.7500

* derived from odds

** filtered for fighter-pairs with more than 2 fights

Potential

Sentiment analysis

Analyze online sentiment and flow of money to understand the drivers for changes in the odds for the duration that they are offered in the market

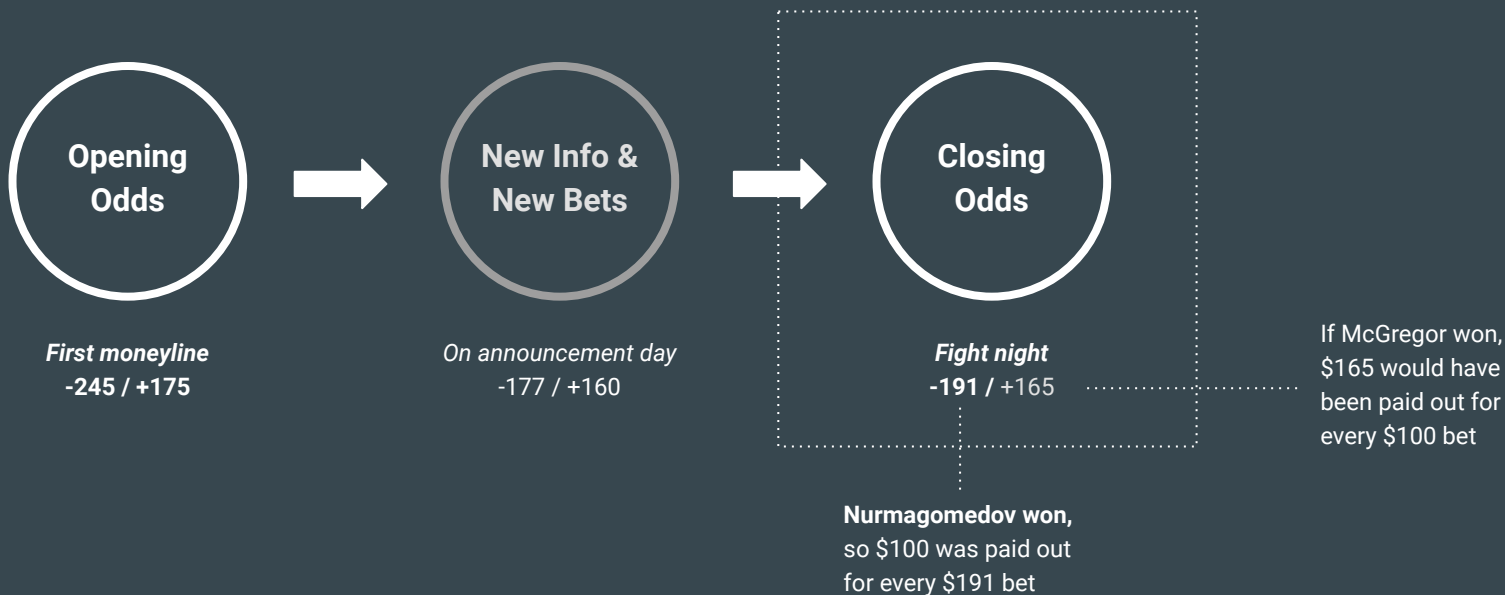
Competitor analysis

Using the historical odds listed by the competitors, build a model that maximizes revenue

Q&A

Appendix - Moneyline Betting

Khabib Nurmagomedov (title defense) / Conor McGregor (underdog)



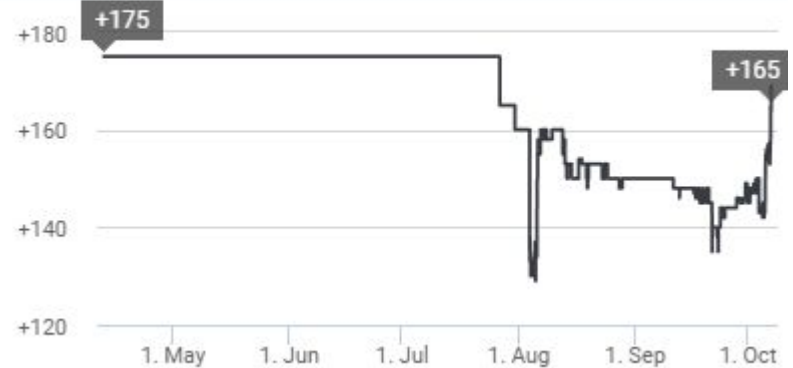
Appendix - Moneyline Betting

Khabib Nurmagomedov / Conor McGregor

Khabib Nurmagomedov (vs. Conor McGregor) – Mean odds

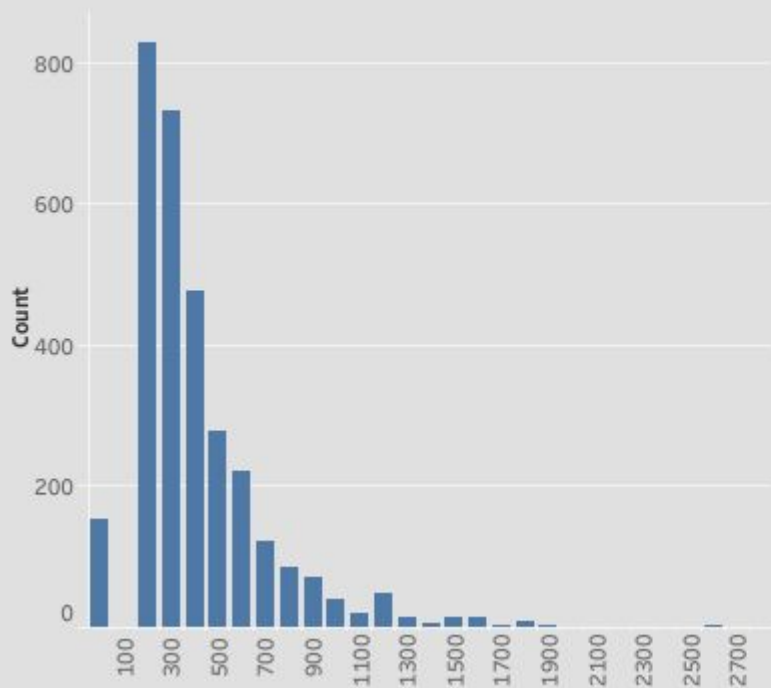


Conor McGregor (vs. Khabib Nurmagomedov) – Mean odds

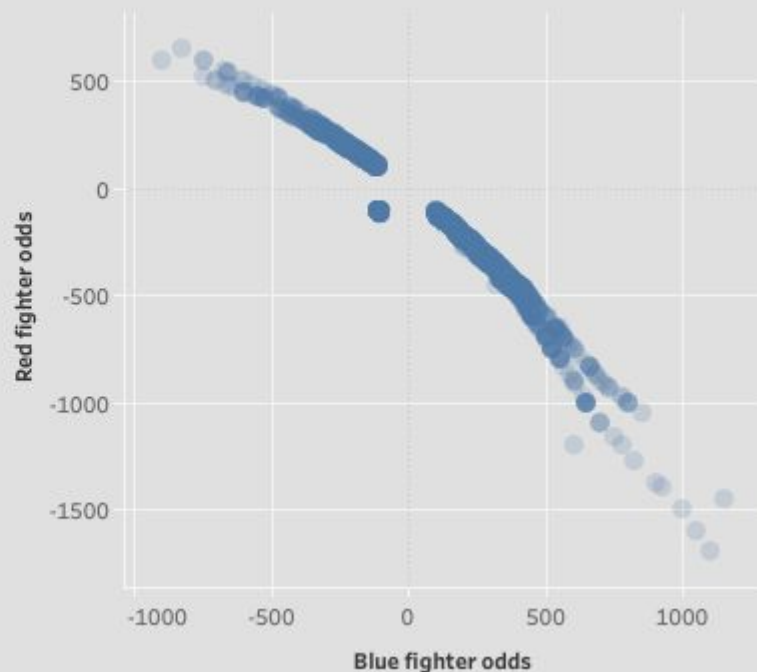


Appendix - EDA

Distribution of all spreads

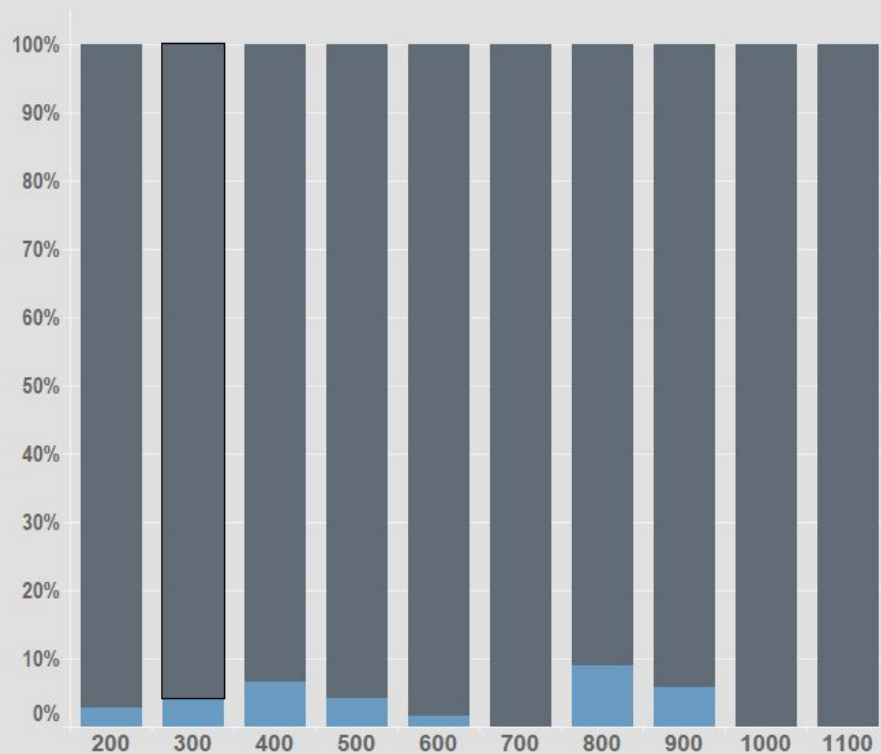


All pairings of odds



Appendix - EDA

Number of upsets in %, by spread



Number of upsets in %, by fight type

