Presented by :
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How reaction of crowd affect to psychology of fighter

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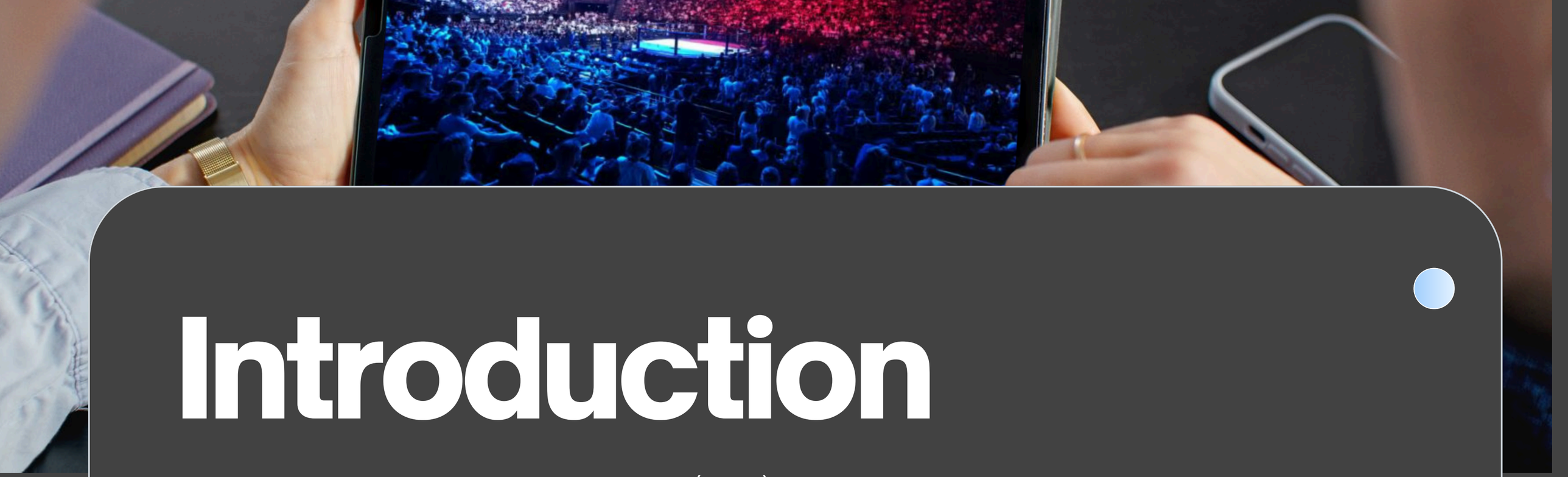
Course: Data Mining

Today's Agenda



Introduction

- Ultimate Fighting Championship (UFC) is one of the most intense professional combat sports
- Fighters face not only physical challenges but also strong psychological pressure
- One of the key external psychological factors is crowd reaction

Problem Statement

UFC fighters compete under extreme physical and psychological pressure

PROBLEM 1

Crowd reaction (support, booing, noise) is a strong external psychological factor

PROBLEM 2

No official UFC data exists to measure crowd reaction quantitatively

PROBLEM 3

As a result, the psychological impact of the crowd is rarely analyzed using data

Actuality & Relevance

UFC is a global sport with high emotional intensity

Fighters perform individually, making them more sensitive to audience pressure

Understanding this effect is important for fighters, coaches, and analysts

Novelty & Originality

01

Crowd reaction is treated as a measurable psychological variable

02

Data was collected manually by watching UFC fight videos

03

- crowd reaction
- psychological indicators
- performance statistics

04

Fighter-level analysis: one fight → two fighter records

Literature Overview

Research on home advantage suggests that audience support can affect motivation, confidence, and decision-making

Some studies report that crowd behavior may also influence aggression and risk-taking

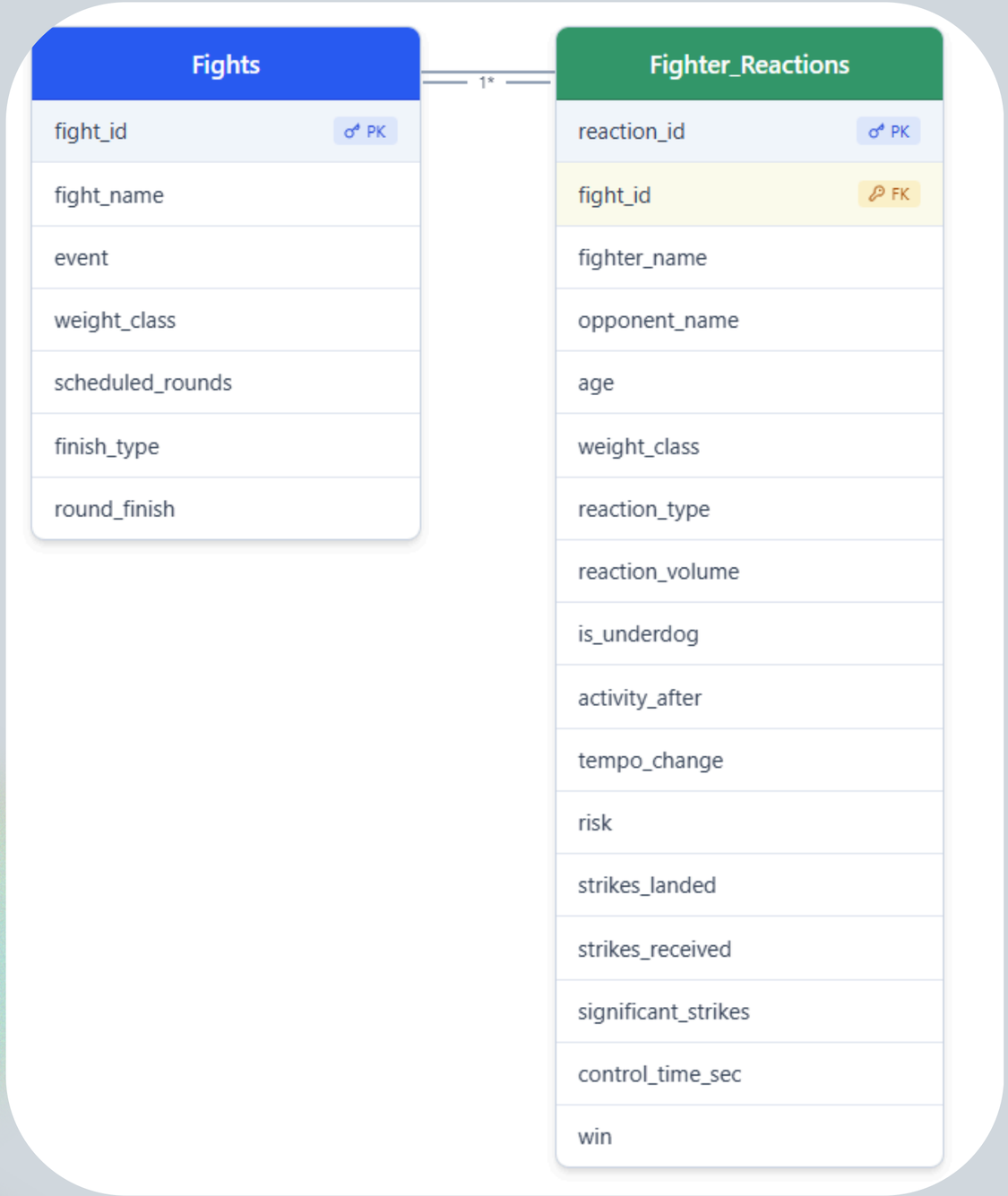
In individual sports, audience pressure is associated with increased stress and performance variability

Previous studies in sports psychology show that crowd presence influences athlete performance

Dataset overview

The project is based on two manually compiled tables, which are merged at the fight and fighter level.

The data was collected manually



Relations between key features

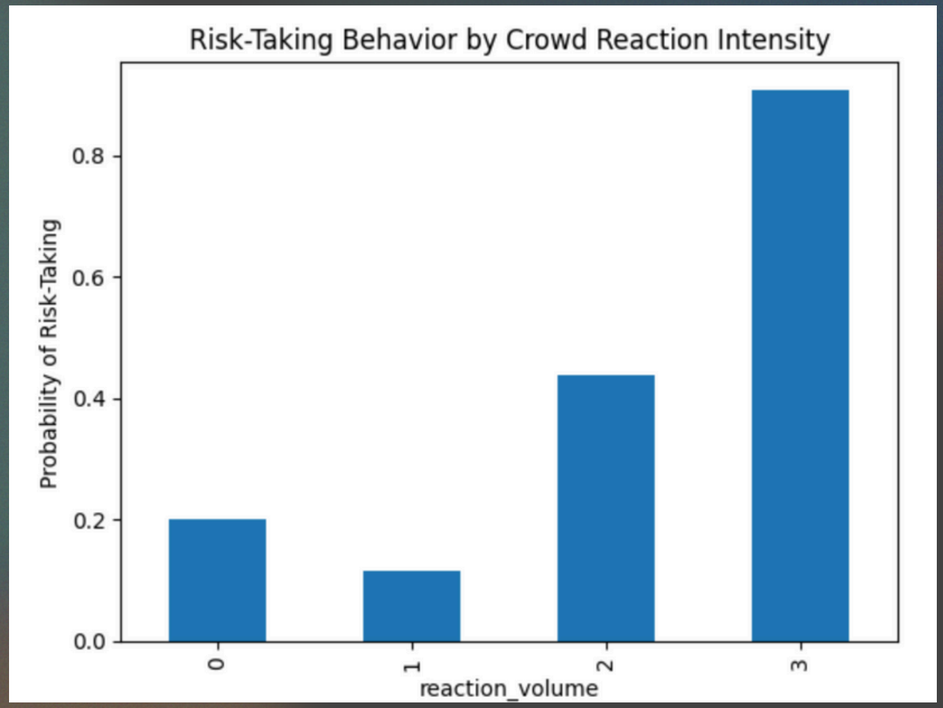
activity_change	0	1
reaction_type		
negative	0.949367	0.050633
neutral	0.846154	0.153846
positive	0.181818	0.818182

risk	0	1
reaction_type		
negative	0.835443	0.164557
neutral	0.884615	0.115385
positive	0.195804	0.804196

	activity_change	0	1
reaction_type	is_underdog		
negative	0	0.800000	0.200000
	1	0.971014	0.028986
neutral	0	0.857143	0.142857
	1	0.842105	0.157895
positive	0	0.123810	0.876190
	1	0.342105	0.657895

risk	0	1
activity_change		
0	0.845528	0.154472
1	0.104000	0.896000

tempo_change	0	1
reaction_type		
negative	0.949367	0.050633
neutral	0.923077	0.076923
positive	0.209790	0.790210



	activity_change
reaction_volume	
0	0.200000
1	0.058140
2	0.333333
3	0.944954

Relations between key features 2

activity_change	win
0	0.319672
1	0.669355

win	0.0	1.0
risk		
0	0.698276	0.301724
1	0.330769	0.669231

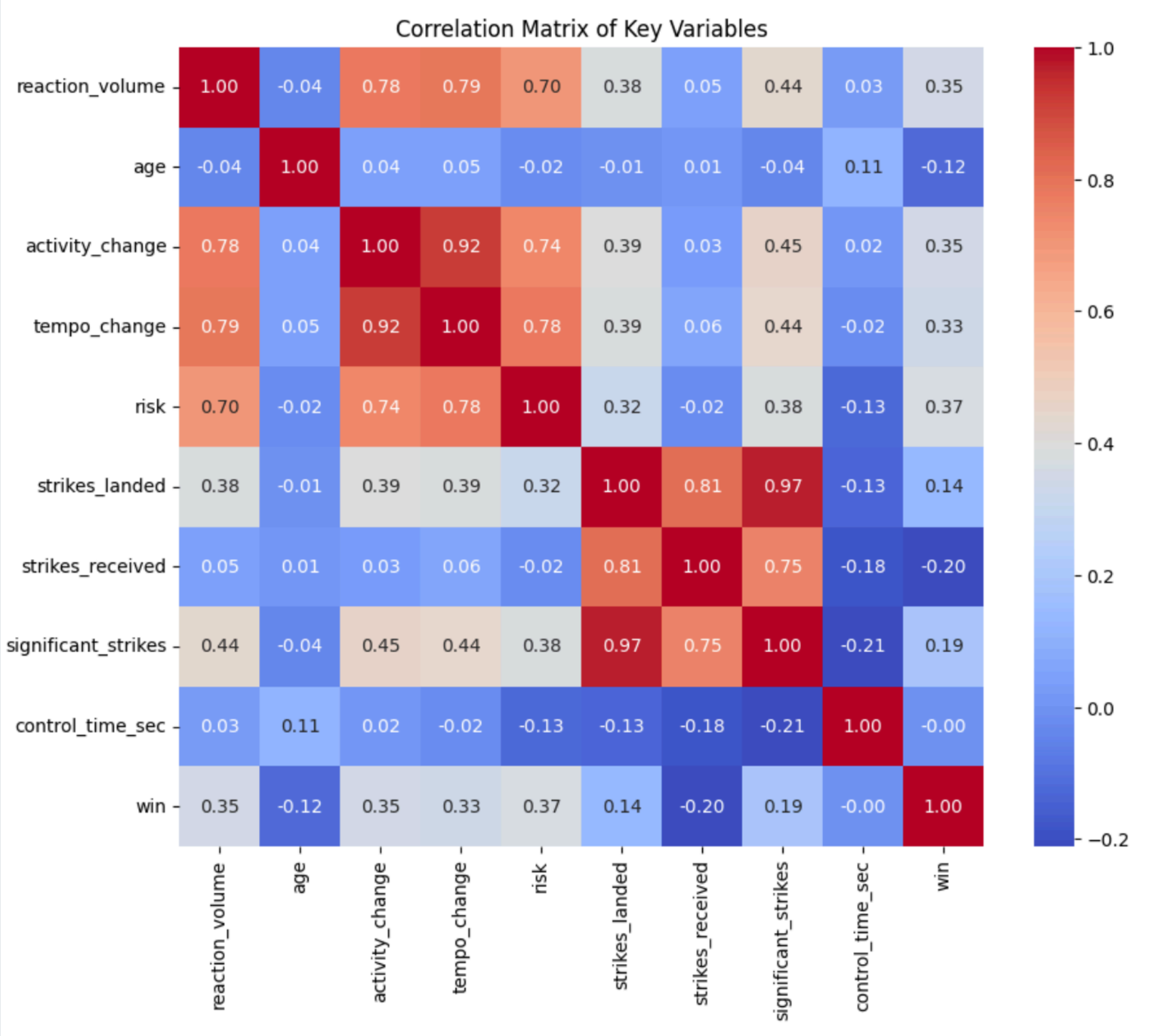
		win
activity_change	risk	
0	0	0.271845
	1	0.578947
1	0	0.538462
	1	0.684685

		win
activity_change	high_control	
0	0	0.323077
	1	0.315789
1	0	0.684932
	1	0.647059

win	0.0	1.0
activity_change		
0	0.680328	0.319672
1	0.330645	0.669355

		win
reaction_volume	activity_change	
0	0	0.250000
	1	0.000000
1	0	0.300000
	1	0.200000
2	0	0.375000
	1	0.625000
3	0	0.333333
	1	0.705882

Correlation matrix



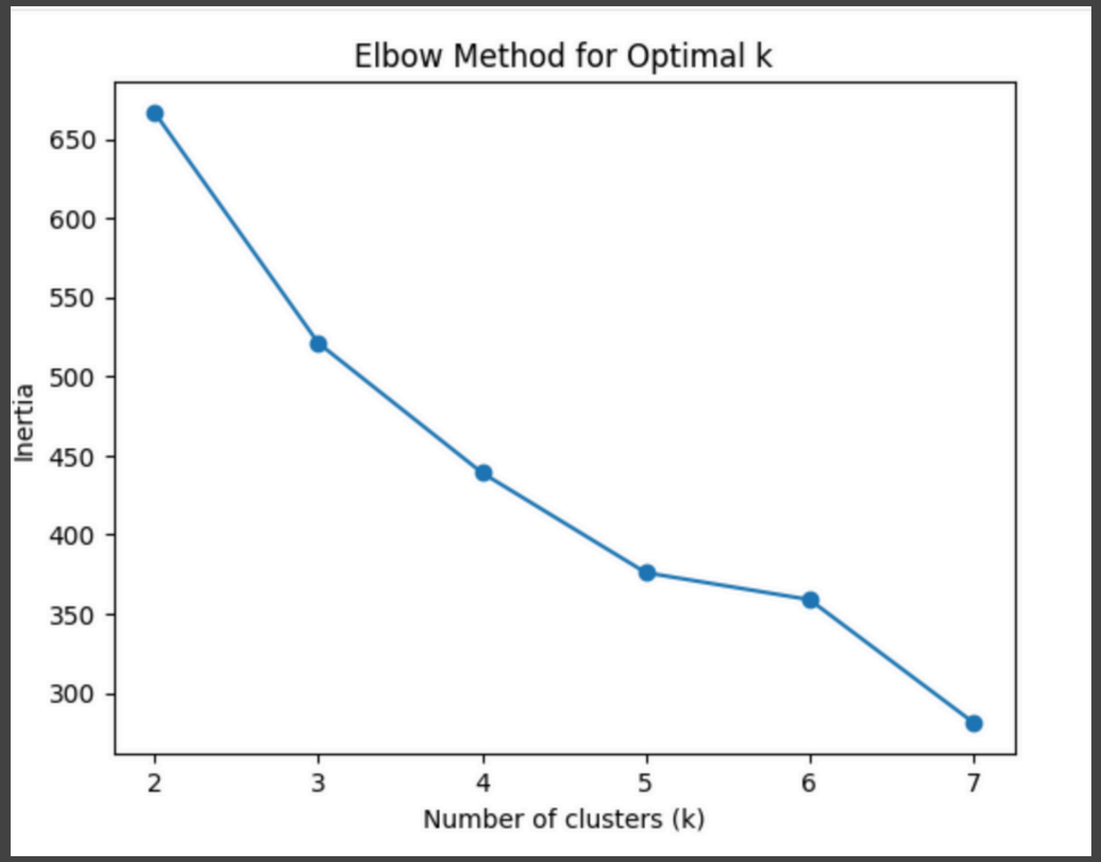
logistic regression

	feature	coefficient
6	strikes_landed	0.817628
8	significant_strikes	0.529912
1	activity_change	0.264666
0	reaction_volume	0.130545
3	risk	0.115648
9	control_time_sec	0.077540
5	is_underdog	-0.115275
2	tempo_change	-0.252949
4	age	-0.300283
7	strikes_received	-1.573357

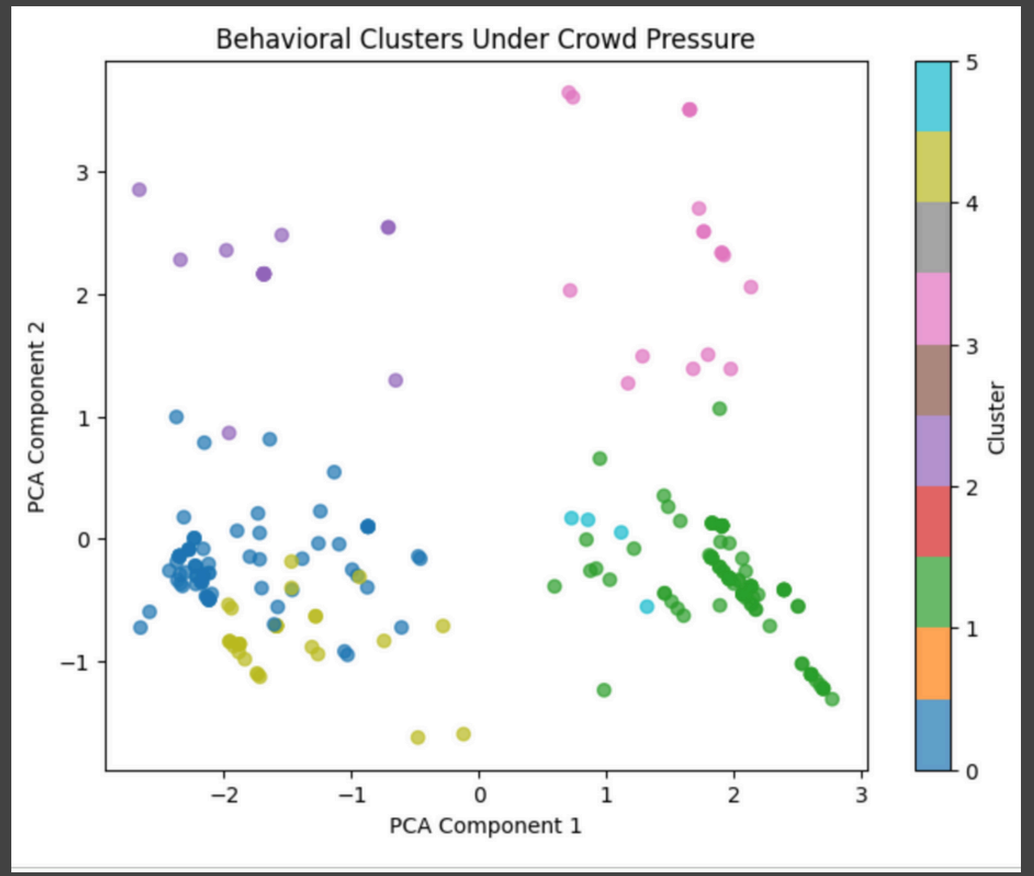
random forest

	feature	importance
4	age	0.220134
7	strikes_received	0.209734
6	strikes_landed	0.145548
8	significant_strikes	0.136166
5	is_underdog	0.074083
9	control_time_sec	0.064820
0	reaction_volume	0.057558
3	risk	0.036059
1	activity_change	0.033830
2	tempo_change	0.022068

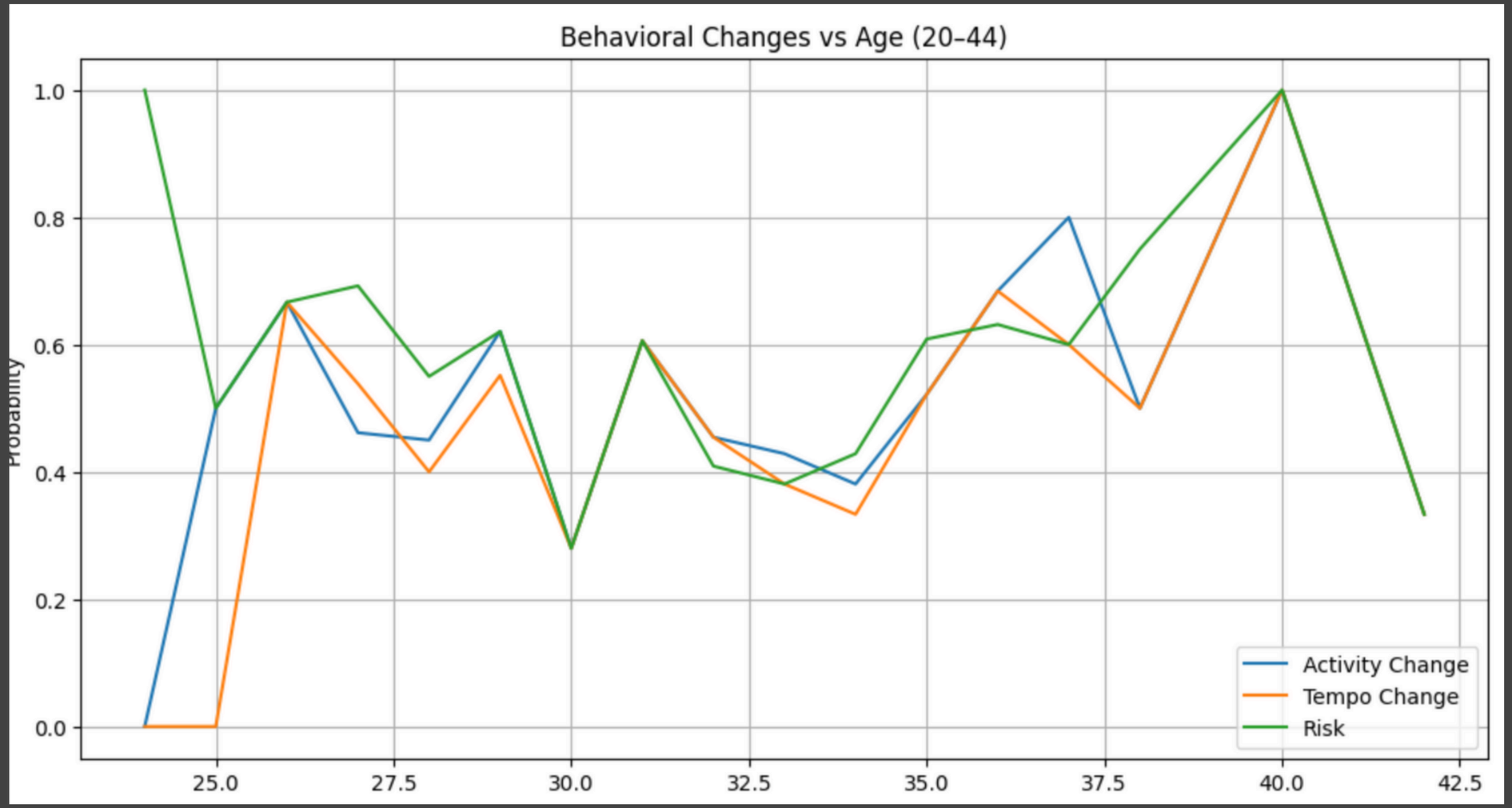
elbow method, k = 6

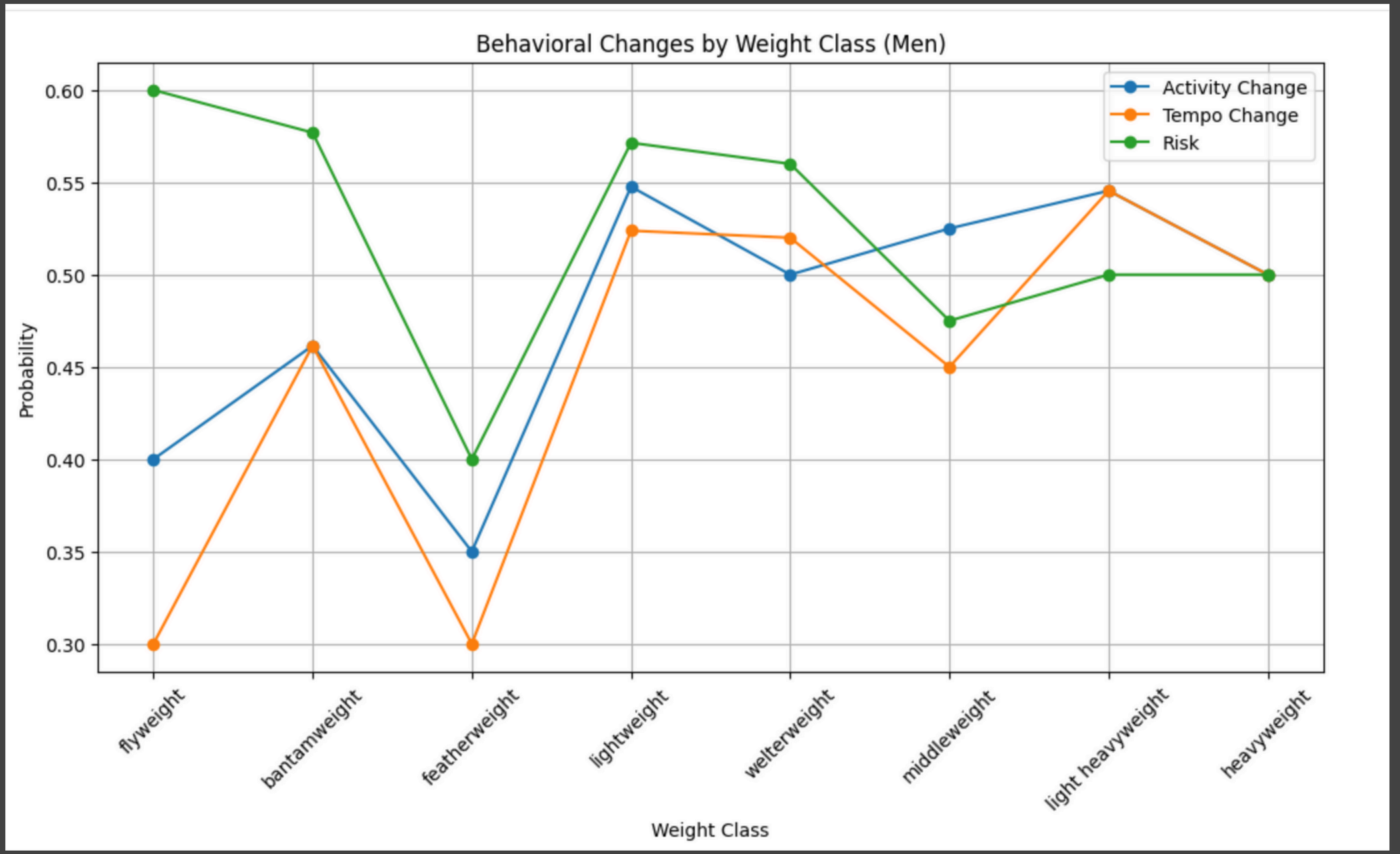


clustering result

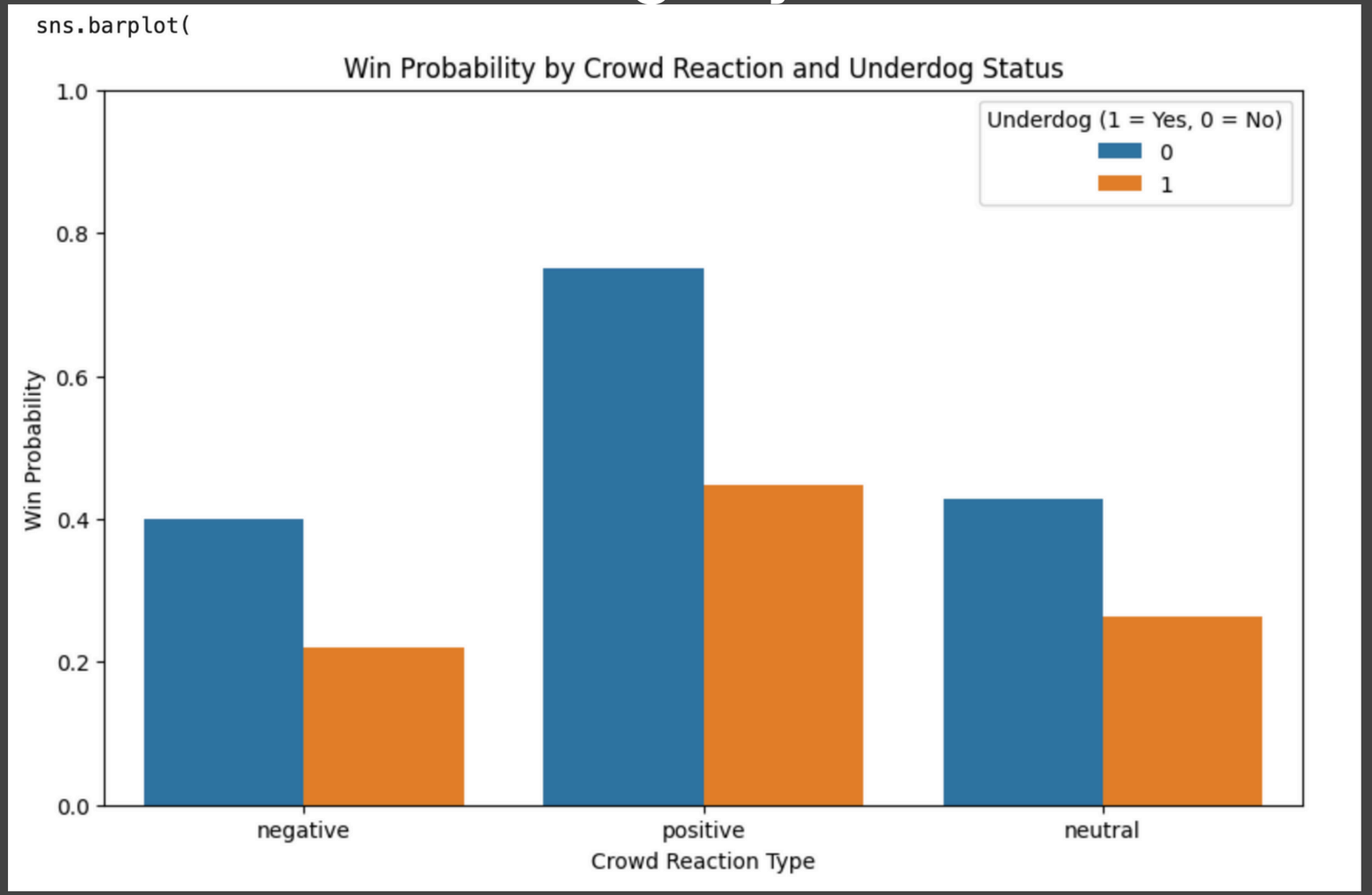


correlation between age and risk, tempo change and activity change




Behavioral Changes by Weight Class (Men)
Activity Change
Tempo Change
Risk
Probability
0.60
0.55
0.50
0.45
0.40
0.35
0.30
flyweight
bantamweight
featherweight
lightweight
welterweight
middleweight
light heavyweight
heavyweight
Weight Class

how the reaction type affects to favorites and underdogs by win rate



Meet Our Team

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Thank You

for your time
and attention