mini project

DO NBA BACK-TO-BACK GAMES HURT
PERFORMANCE?

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research question

DO THE PHILADELPHIA 76ERS PERFORM WORSE IN GAMES PLAYED ON BACK-TO-BACK NIGHTS COMPARED TO GAMES WITH AT LEAST ONE REST DAY?

WHY IT MATTERS:
- PLAYER HEALTH & FATIGUE
- FAIRNESS IN SCHEDULING
- COACHING/ROTATION STRATEGY

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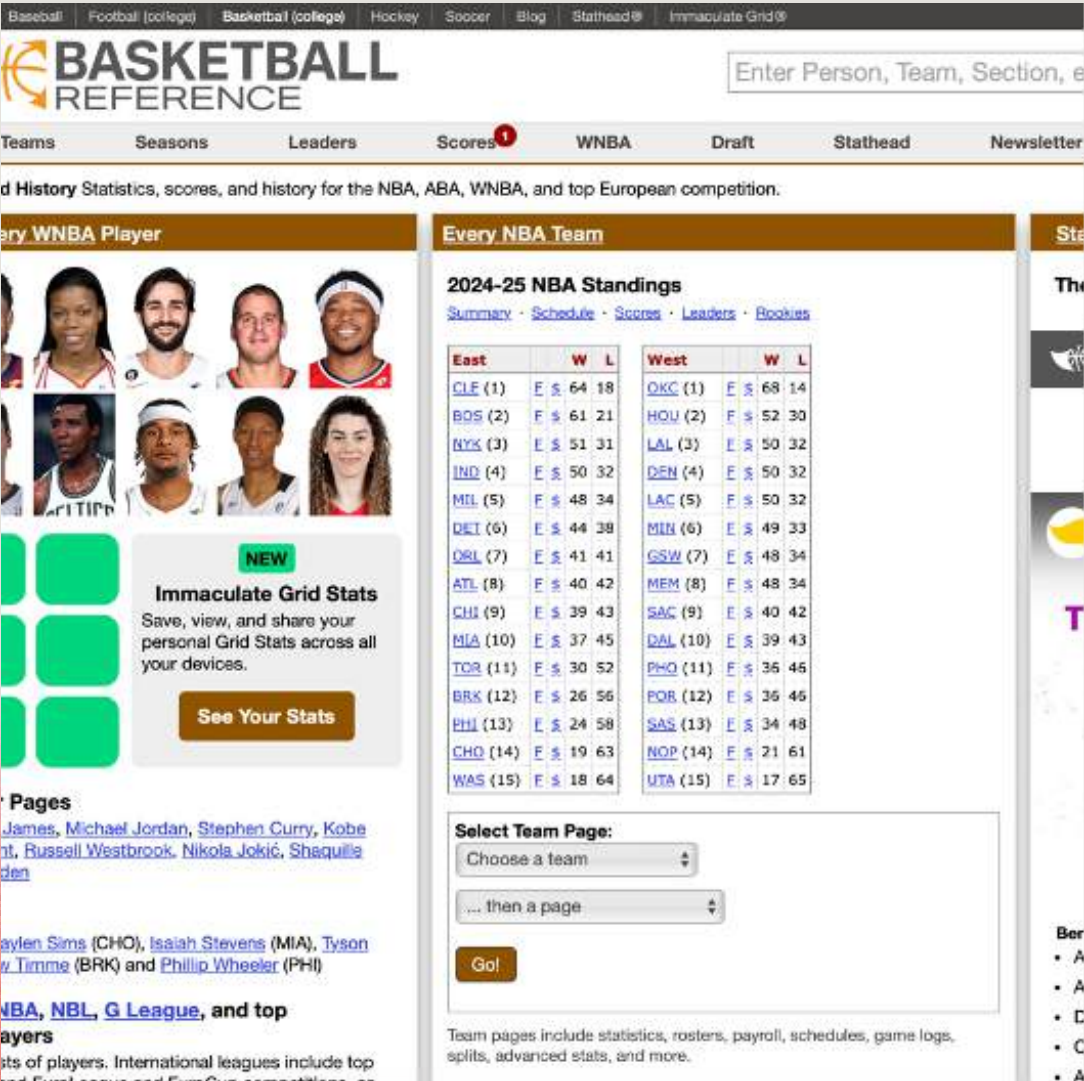
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data & method

SOURCE: BASKETBALL-REFERENCE (TEAM SCHEDULE & BOX SCORES)
SCOPE: 82 GAMES, 2024-25 SEASON
FEATURE ENGINEERING:
- REST_DAYS = DAYS SINCE LAST GAME
- IS_B2B = 1 IF REST_DAYS == 1
METRICS: TEAM POINTS, OPPONENT POINTS, MARGIN

	G	Date	Start (ET)	Unnamed: 3	Unnamed: 4	Unnamed: 5	Opponent	Unnamed: 7	Unnamed: 8	Tm	...	W	L	Streak	Attend.	LOG	Notes	home	margin	rest_da
0	1	2024-10-23	7:30p	NaN	Box Score	NaN	Milwaukee Bucks	L	NaN	109	...	0	1	L 1	19754	2:28	NaN	1	-15	NaN
1	2	2024-10-25	7:00p	NaN	Box Score	@	Toronto Raptors	L	NaN	107	...	0	2	L 2	18345	2:47	NaN	1	-8	2
2	3	2024-10-27	3:30p	NaN	Box Score	@	Indiana Pacers	W	OT	118	...	1	2	W 1	17274	2:52	NaN	1	4	2
3	4	2024-10-30	7:00p	NaN	Box Score	NaN	Detroit Pistons	L	NaN	95	...	1	3	L 1	19759	2:15	NaN	1	-10	3
4	5	2024-11-02	7:30p	NaN	Box Score	NaN	Memphis Grizzlies	L	NaN	107	...	1	4	L 2	20066	2:12	NaN	1	-17	3

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exploratory data

82 GAMES TOTAL

- 67 NON-B2B
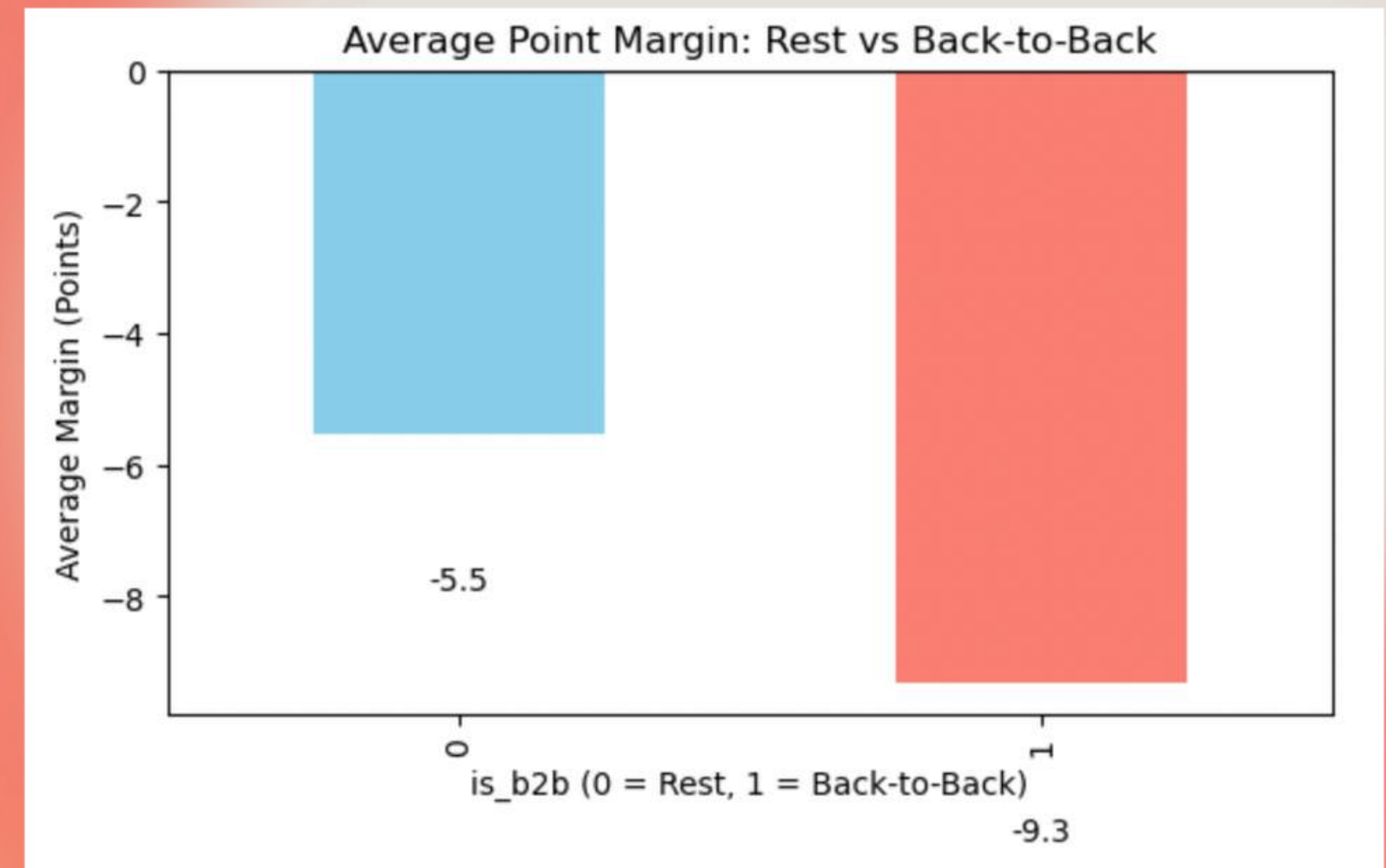- 15 B2B

BAR PLOT OF MEAN MARGIN
(IS_B2B=0 VS 1)

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team performance

AVERAGE MARGIN:
- **NON-B2B: -5.54**
- **B2B: -9.33**
- **DIFFERENCE ≈ -3.8 PTS (WORSE ON B2B)**

BOXPLOT OF MARGIN BY B2B

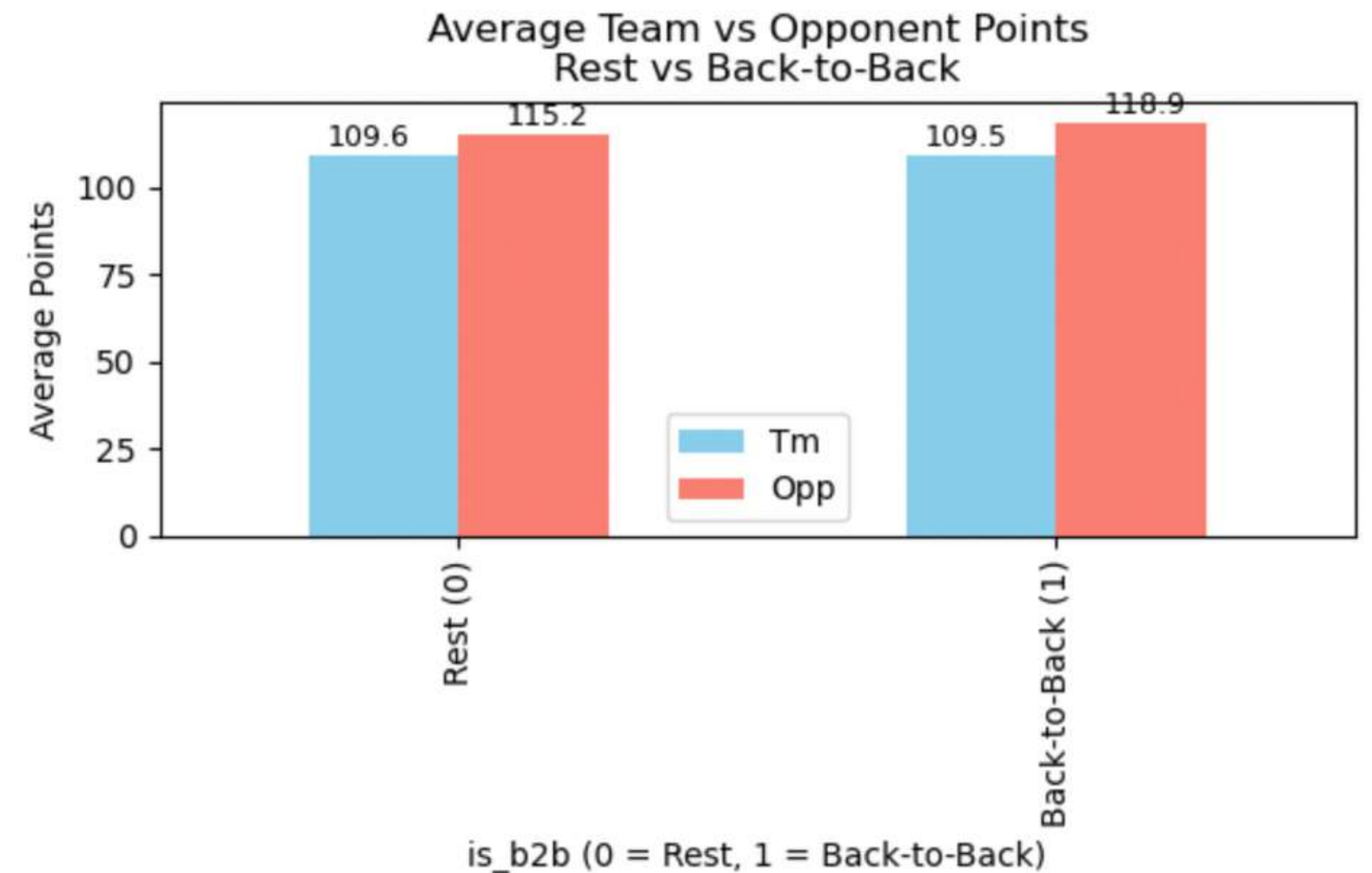Average Point Margin: Rest vs Back-to-Back

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offense & defense

TEAM SCORING ≈ SAME (~109 PTS)
OPPONENT SCORING HIGHER ON B2B:
- 118.9 VS 115.2
- SUGGESTS DIP IS DEFENSIVE, NOT OFFENSIVE

Average Team vs Opponent Points
Rest vs Back-to-Back

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Game Margins Over Season (B2B Highlighted)

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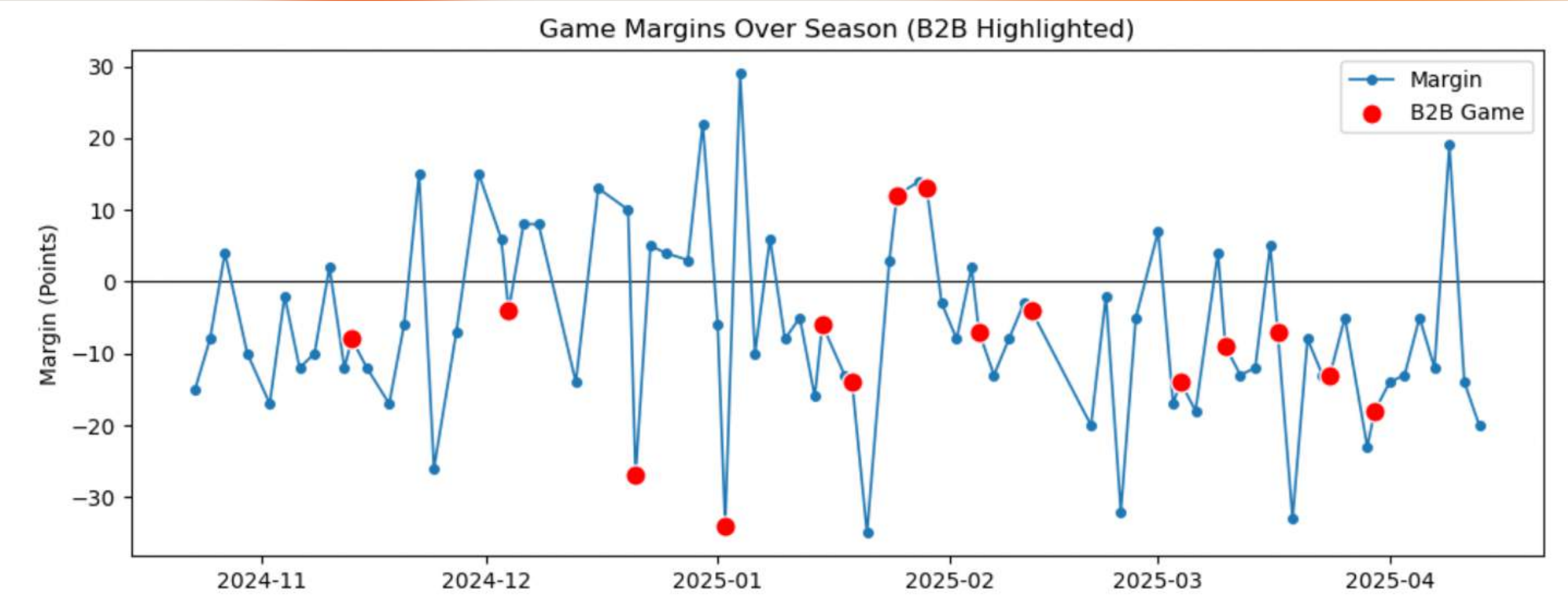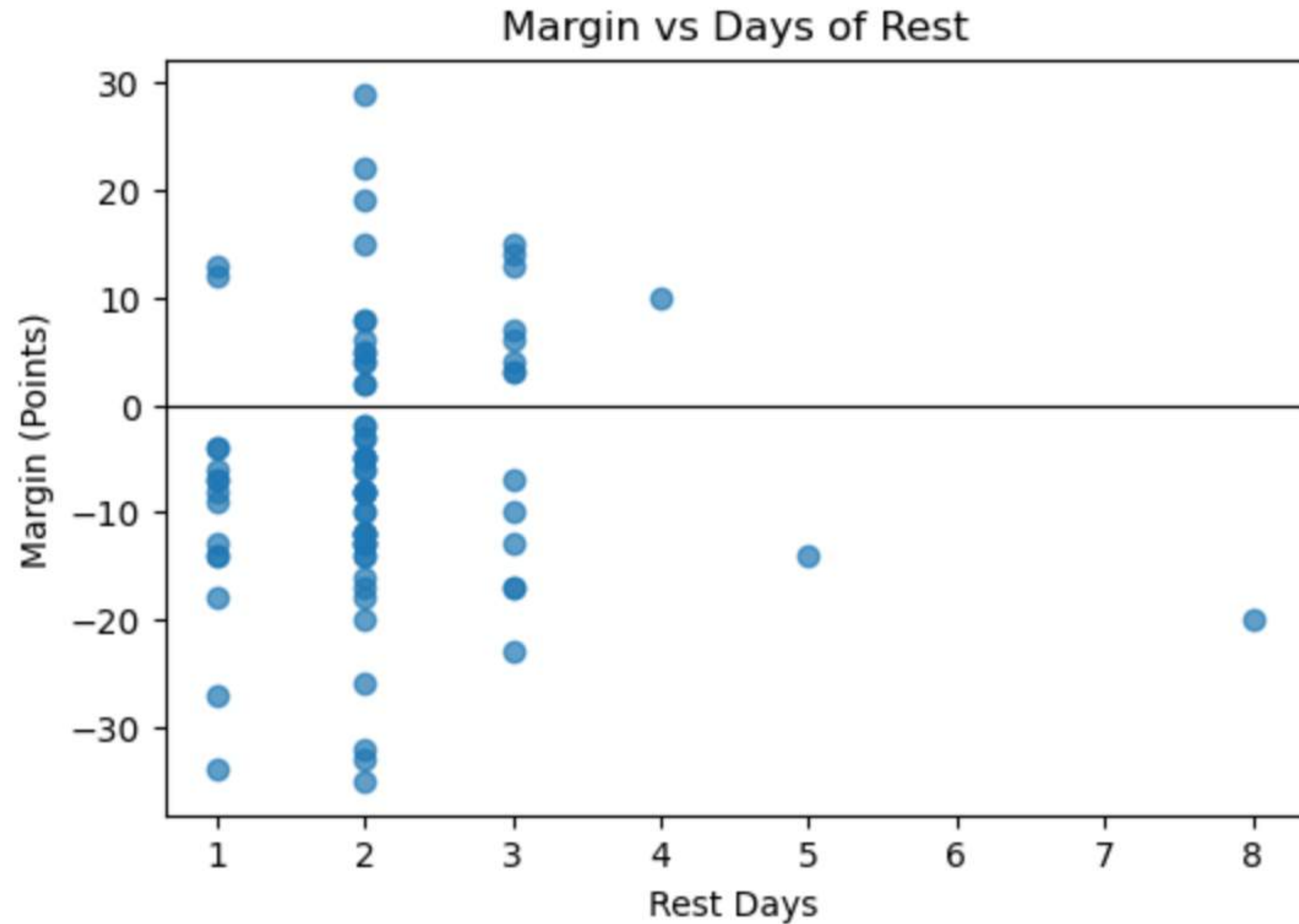
modeling & limitations

LOGISTIC REGRESSION ON "ABOVE-AVERAGE PERFORMANCE" GAVE WEAK SIGNAL:
- SMALL, IMBALANCED SAMPLE (15 B2BS ONLY)
- PREDICTED MOSTLY ONE CLASS
- BETTER: USE REGRESSION ON CONTINUOUS MARGIN (OLS)

LIMITATIONS:
- SMALL B2B SAMPLE
- OPPONENT STRENGTH, INJURIES, TRAVEL NOT INCLUDED

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implications

FOR STAKEHOLDERS:
- **COACHES → ADJUST ROTATIONS ON B2B NIGHTS**
- **LEAGUE SCHEDULERS → EVIDENCE FOR FEWER B2BS**
- **FANS/ANALYSTS → CONTEXT FOR INTERPRETING RESULTS**

OTHERS:
- **ETHICAL: PLAYER HEALTH > PROFITS**
- **LEGAL: FATIGUE EVIDENCE IN CONTRACTS/CBAS**
- **SOCIETAL: HIGHLIGHTS REST & FAIRNESS IN SPORTS/WORK**

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conclusions

BACK-TO-BACKS LINKED TO ~3-4 PT WORSE OUTCOMES
FOR PHI

IMPACT IS MORE ON DEFENSE THAN OFFENSE

FUTURE WORK: EXPAND TO MULTIPLE TEAMS, ADD
OPPONENT WIN% & TRAVEL DISTANCE, EARLIER YEARS'
GAMES

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thank you

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