

DATA 400 CAPSTONE

mini project

DO NBA BACK-TO-BACK GAMES HURT
PERFORMANCE?

OCTOBER 2ND 2025

JOHNNY NGUYEN

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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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

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BaseballFootball (college)Basketball (college)HockeySoccerBlogStathead®Immaculate Grid®


BASKETBALL
REFERENCE

Enter Person, Team, Section, e

TeamsSeasonsLeadersScores1WNBADraftStatheadNewsletter

History Statistics, scores, and history for the NBA, ABA, WNBA, and top European competition.

Every WNBA Player



NEW

Immaculate Grid Stats

Save, view, and share your personal Grid Stats across all your devices.

See Your Stats

Pages

James, Michael Jordan, Stephen Curry, Kobe
nt, Russell Westbrook, Nikola Jokić, Shaquille
den

aylen Sims (CHO), Isaiah Stevens (MIA), Tyson
w Timme (BRK) and Phillip Wheeler (PHI)

NBA, NBL, G League, and top
ayers

ts of players. International leagues include top
and EuroLeague and Euro Cup competitions. as

Every NBA Team

2024-25 NBA Standings

SummaryScheduleScoresLeadersRookies

| East | W | L | West | W | L |
|--------------------------|---|-------|--------------------------|---|-------|
| CLE (1) | E | 64 18 | OKC (1) | E | 68 14 |
| BOS (2) | E | 61 21 | HOU (2) | E | 52 30 |
| NYK (3) | E | 51 31 | LAL (3) | E | 50 32 |
| IND (4) | E | 50 32 | DEN (4) | E | 50 32 |
| MIL (5) | E | 48 34 | LAC (5) | E | 50 32 |
| DET (6) | E | 44 38 | MIN (6) | E | 49 33 |
| ORL (7) | E | 41 41 | GSW (7) | E | 48 34 |
| ATL (8) | E | 40 42 | MEM (8) | E | 48 34 |
| CHI (9) | E | 39 43 | SAC (9) | E | 40 42 |
| MIA (10) | E | 37 45 | DAL (10) | E | 39 43 |
| TOR (11) | E | 30 52 | PHO (11) | E | 36 46 |
| BRK (12) | E | 26 56 | POR (12) | E | 36 46 |
| PHI (13) | E | 24 58 | SAS (13) | E | 34 48 |
| CHO (14) | E | 19 63 | NOP (14) | E | 21 61 |
| WAS (15) | E | 18 64 | UTA (15) | E | 17 65 |

Select Team Page:

Choose a team

... then a page

Go!

Team pages include statistics, rosters, payroll, schedules, game logs, splits, advanced stats, and more.

exploratory data



82 GAMES TOTAL

- 67 NON-B2B
- 15 B2B



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

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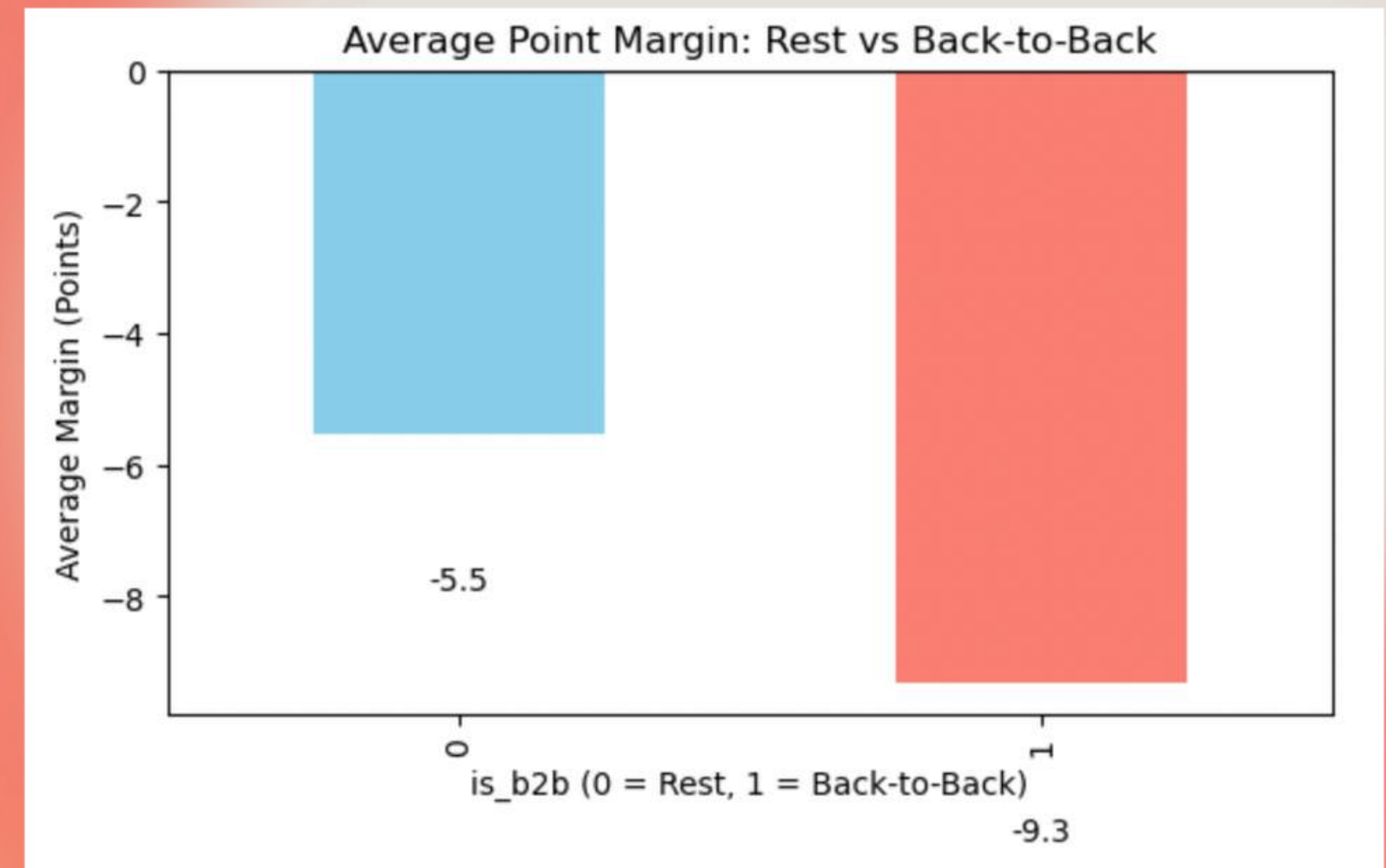
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team performance

AVERAGE MARGIN:

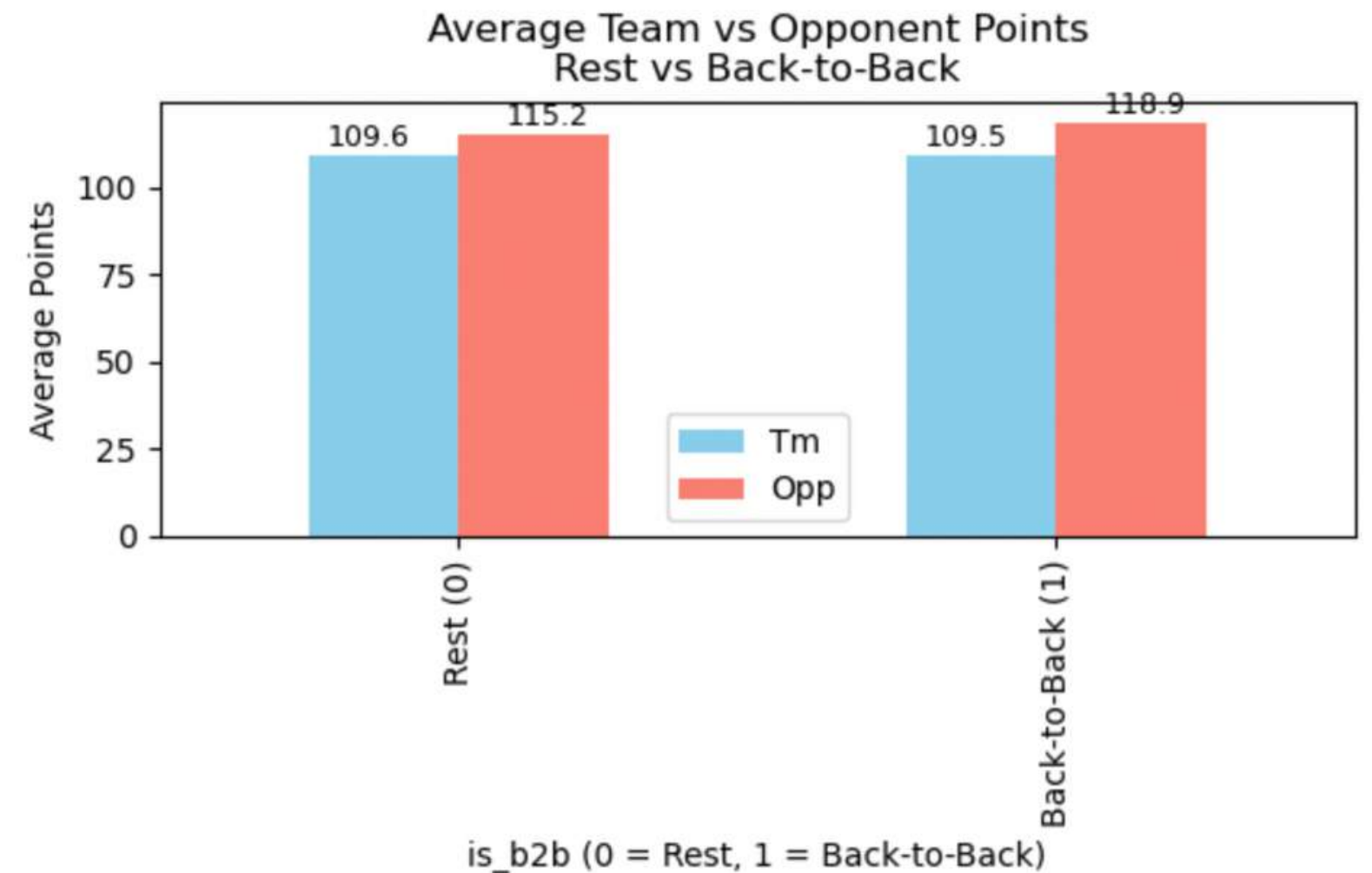
- NON-B2B: -5.54
- B2B: -9.33
- DIFFERENCE \approx -3.8 PTS (WORSE ON B2B)

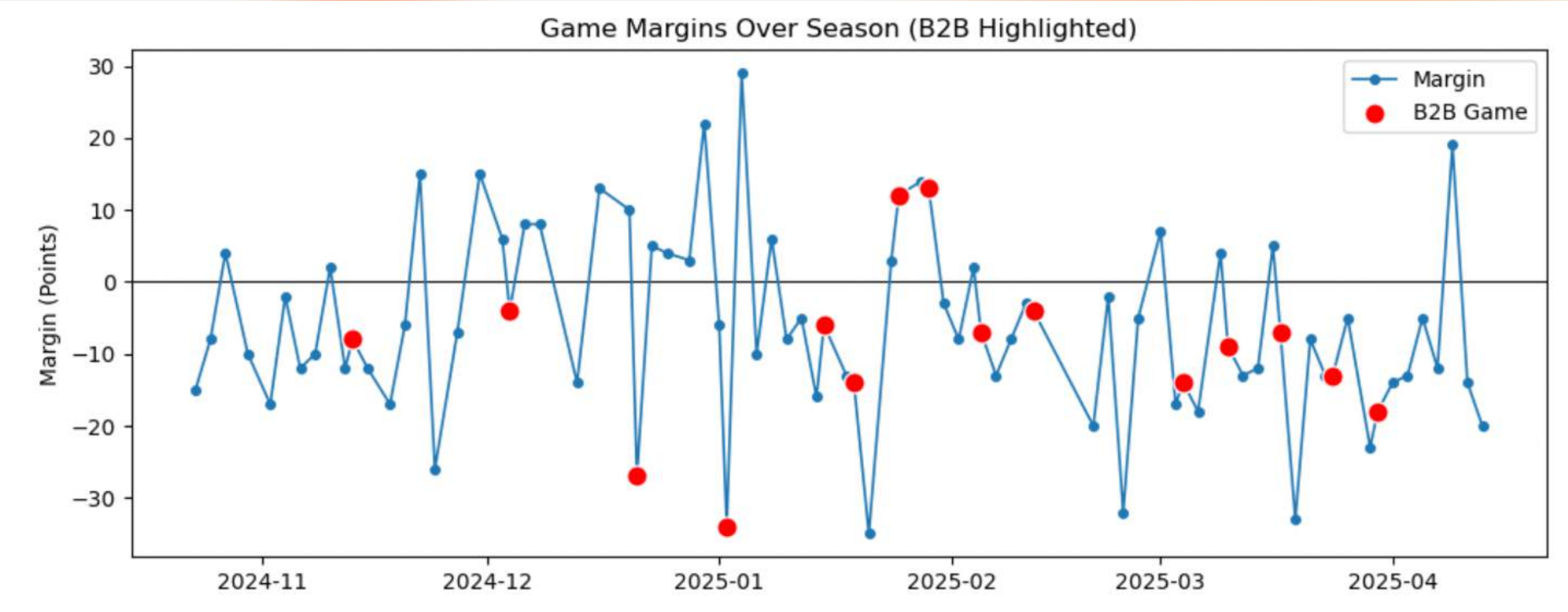
BOXPLOT OF MARGIN BY B2B

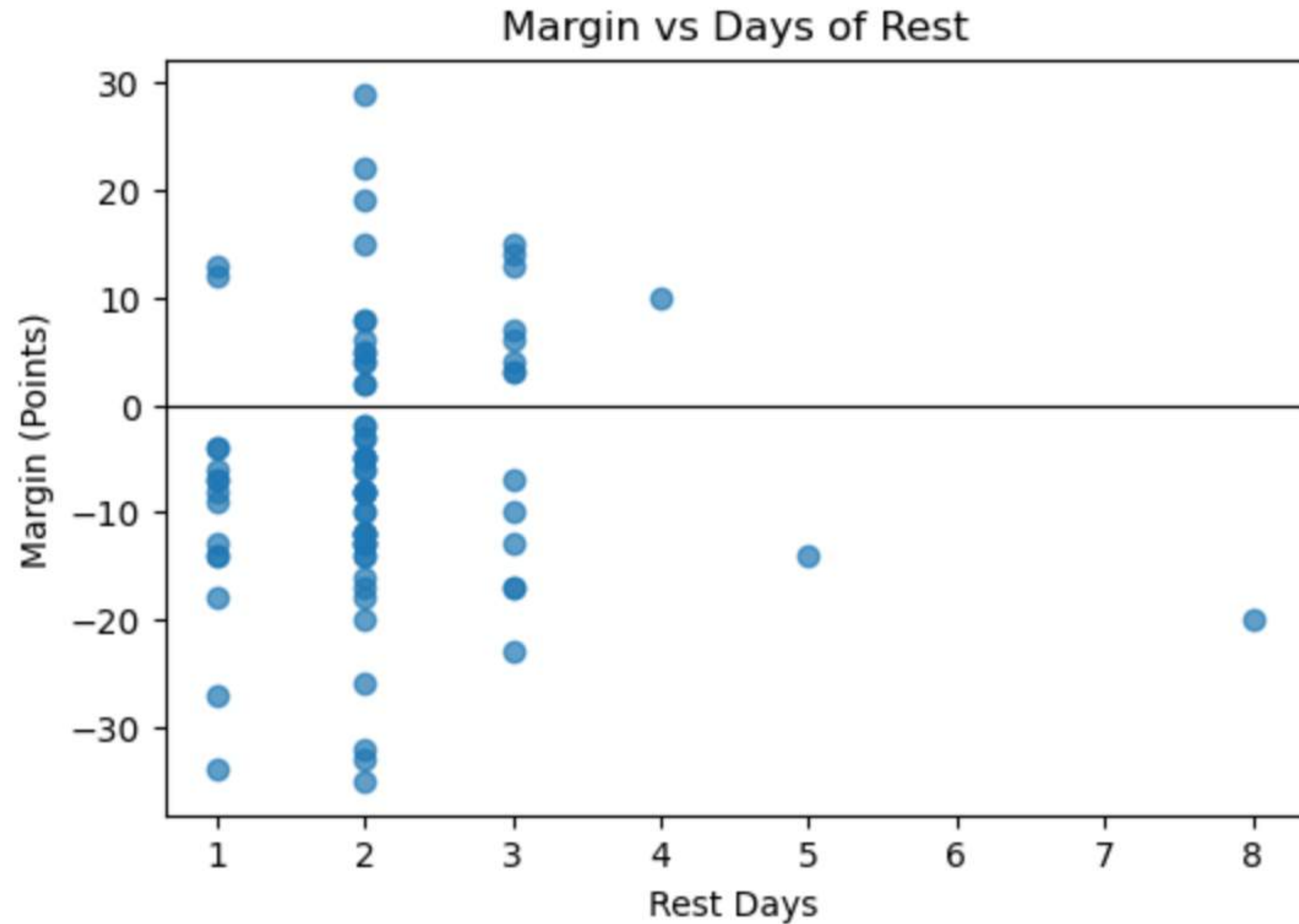


offense & defense

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







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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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conclusions

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

IMPACT IS MORE ON DEFENSE THAN OFFENSE

IMPLICATIONS FOR STAKEHOLDERS:

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

FUTURE WORK: EXPAND TO MULTIPLE TEAMS, ADD OPPONENT WIN% & TRAVEL DISTANCE

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thank you

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