How Much Do Quadrant Wins Matter? Estimating The Incremental Signal of Quadrant Resume Features

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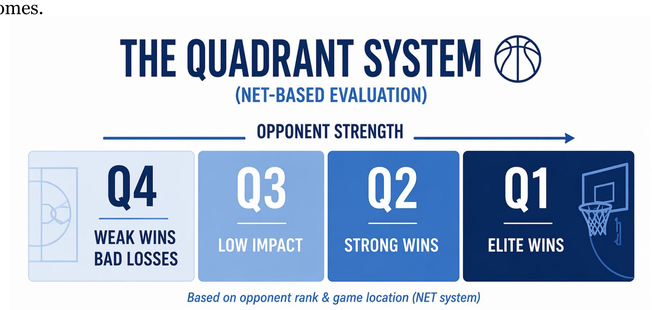
ABSTRACT

This study evaluates whether NCAA quadrant metrics improve the ability to predict tournament seeding. Using regression models, we estimate a series of nested models that progressively incorporate quadrant performance (Q1–Q4) alongside core team resume indicators such as NET ranking, strength of schedule, and win percentage. Model performance is compared using adjusted R^2 and prediction error metrics to determine whether quadrant variables provide additional explanatory power beyond traditional measures. The goal is to identify whether quadrant results represent a meaningful source of new information or simply restate existing team quality indicators in a different form.

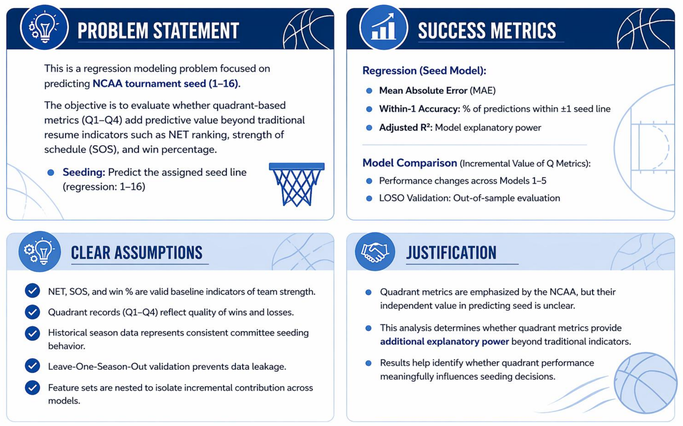
BUSINESS PROBLEM FRAMING

- This project examines whether the NCAA's 2019 implementation of the Quadrant System impacts tournament selection and seeding decisions. The system, part of the NET ranking, categorizes wins and losses into four groups (Q1–Q4) based on opponent strength and game location, with Q1 representing the highest-quality wins and Q4 the weakest outcomes.
- Because selection directly affects team opportunities and program success, understanding the system's value is critical. If influential, it shapes scheduling and resume-building, with implications for fairness across college basketball.
- Primary stakeholders include the NCAA Selection Committee, college programs and coaches, athletic departments, analysts, and fans. The system may also introduce bias, as power conference teams have more opportunities for Q1 wins than mid-major programs.
- This project uses post-2019 data and is constrained by available metrics (NET, SoS, win percentage, quadrant records) and the challenge of modeling subjective committee decisions. Performance is evaluated by comparing prediction accuracy across models with and without quadrant data.
- The results provide insight into whether quadrant metrics add value, inform scheduling strategy, improve transparency, and support more consistent, data-driven selection outcomes.



RQ: Do quadrant-based metrics (Quad 1 and 2 wins) provide better predictive power than traditional metrics such as NET rankings and Strength of Schedule?

ANALYTICS PROBLEM FRAMING



DATA

Important Data Relationship

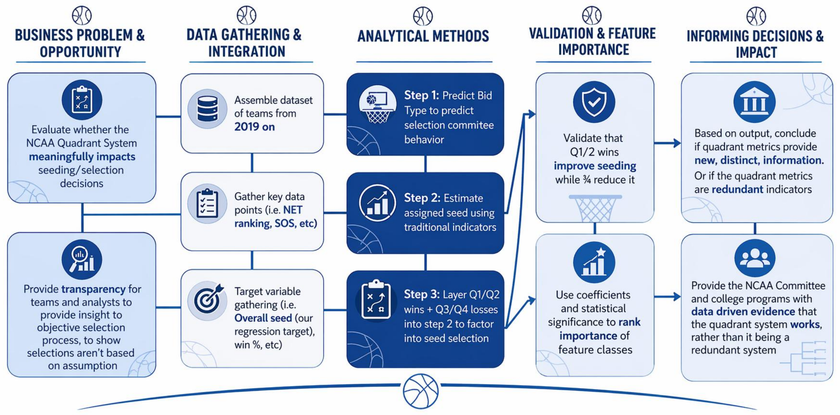
- Q1+Q2 wins increase selection and seeding, whereas Q3+Q4 losses decrease both. Even when controlling for strength of schedule.

Business Problem Framing Reflection

- Confronts the idea of if the Quadrant systems shows meaningful predictive value for selections in the tournament by framing the issue itself as classification and regression and using structured performance metrics to approximate committee decision making

FEATURE	PRIORITY	DESCRIPTION	ROLE
NET Rank	High	NCAA ranking tool	Team quality metric
NETSOS	High	Strength of Schedule rank	Measures schedule difficulty
WL	High	Overall win-loss record	Captures team success
Conf Record	Medium	Conference WL record	In conference performance
Quadrant 1	High	Record vs top teams	High quality wins
Quadrant 2	High	Record vs strong teams	Good wins
Quadrant 3	Medium	Record vs weaker teams	Less good performances
Quadrant 4	High	Record vs weakest teams	Bad losses
Overall Seed	High	Tournament seed	Regression target
Bid Type	High	At large selection	Selection outcome

METHODOLOGY



MODEL BUILDING & EXPERIMENTAL RESULTS

- This table summarizes the performance of predictive models across incremental feature sets. It highlights how adding quadrant-based metrics improves model accuracy, demonstrates minimal overfitting, and provides insight into the value of contextual performance variables beyond traditional indicators like NET and SOS.

MODEL PERFORMANCE & QUADRANT IMPACT

MODEL PERFORMANCE (MAE)

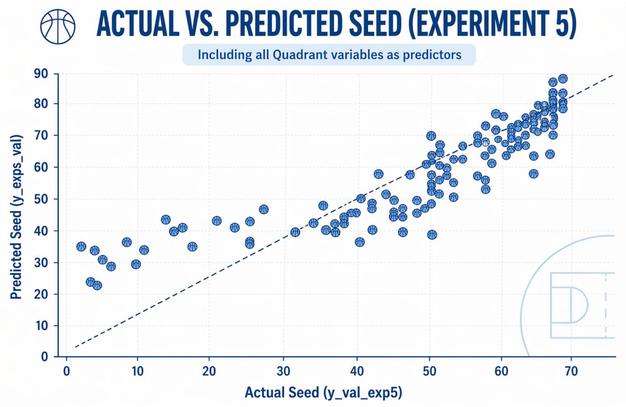
FEATURES	TRAIN MAE	TEST MAE
Base Model *NET + SOS + Efficiency Metrics + + WinPct + Conf/Road Splits*	4.80	4.86
+ Quadrant 1	4.31	4.43
+ Quadrant 1–2	4.18	4.29
+ Quadrant 1–3	4.13	4.21
+ Quadrant 1–4 (Full Model)	**4.03**	**4.04**

QUADRANT IMPACT

FEATURE	EFFECT ON SEED	SIGNIFICANCE
Q1 Wins	Strong Positive	Significant
Q2 Wins	Moderate Positive	Significant
Q3 Wins	Minimal Impact	Not Significant
Q4 Losses	Negative	Significant

Quadrant 1 wins are the primary driver of selection and seeding, while Quadrant 3 shows limited statistical impact. Together, all quadrants meaningfully improve our ability to predict NCAA Tournament seeds.

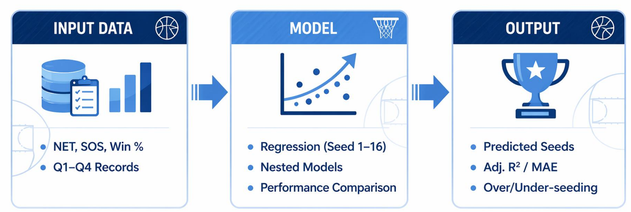
- The linear regression model with all quadrant variables (Experiment 5) shows strong alignment between predicted and actual seeds. The tight clustering around the diagonal indicates high predictive accuracy, confirming that including full quadrant performance significantly improves model reliability.



DEPLOYMENT & LIFECYCLE MANAGEMENT

- Our model provides a data-driven benchmark for NCAA tournament seeding, identifying over- and under-seeded teams
- Out results show that adding quadrant metrics (Q1-Q4) improves prediction accuracy, indicating the value of contextual performance.
- Can be used by analysts, media, and teams, to project seeds and evaluate committee decisions in real time.
- This model can be updated throughout the season and retrained annually to reflect changes in committee behavior.

MODEL FRAMEWORK



KEY TAKE-AWAYS

What went well:

- Quadrant Features were able to slightly improve model accuracy
- Simpler models performed consistently well

What didn't go well/key considerations:

- Adding more features did not always mean great results
- Some models were inconsistent in performance

Competition Outcome:

- Gained authentic experience working with real data and models
- Learned how to compare models while also evaluating performance

Personal Development & Outcomes

- Completed 2 DataCamp courses on Python Programming
- Applied the INFORMS Business Problem Framing Course
- Developed an understanding of how to build models using Google Colab
- Developed a much greater understanding of Python, Colab, and SAS overall