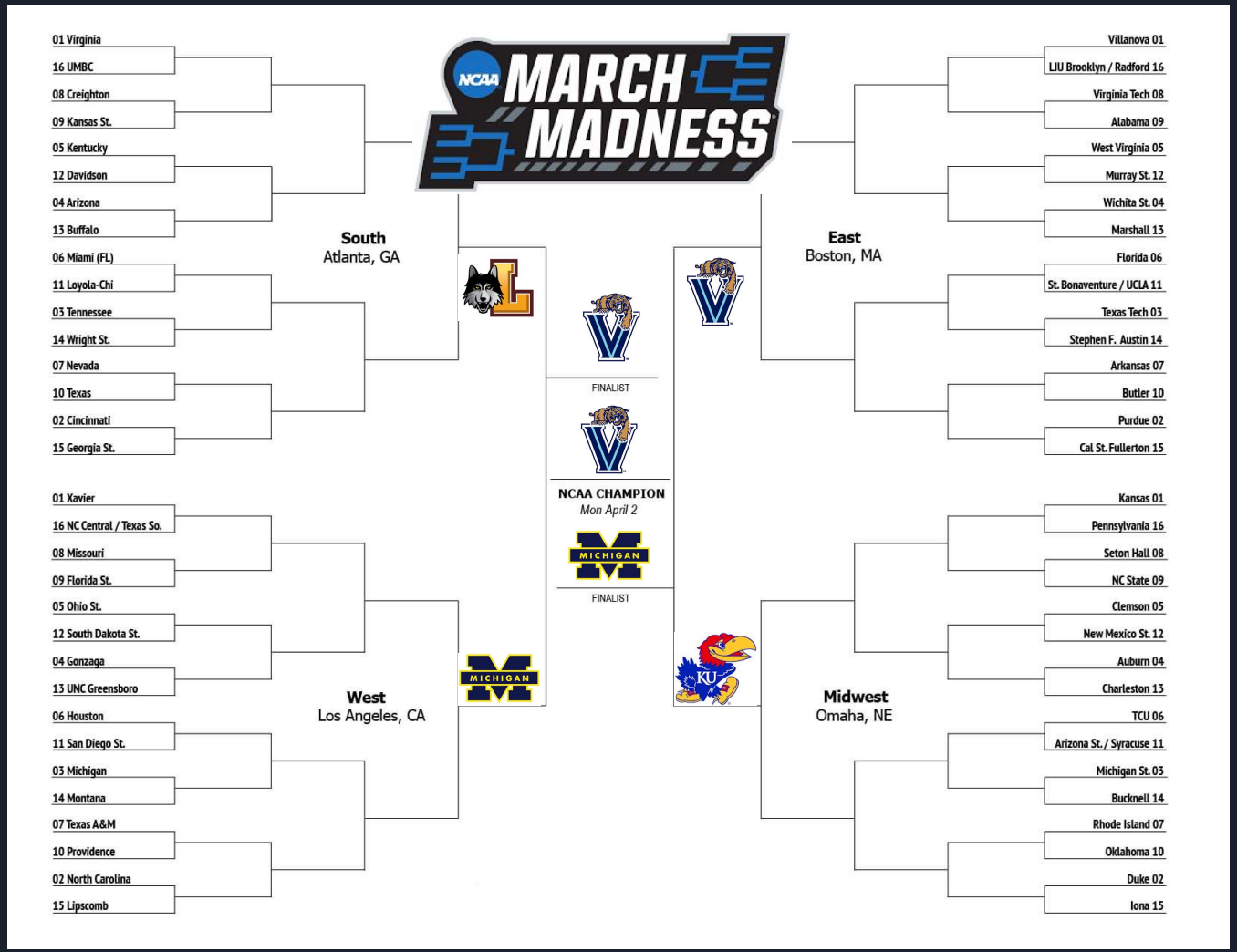
Bracket Buster

Sean Costello


NCAA MARCH MADNESS
South
Atlanta, GA
01 Virginia
16 UMBC
08 Creighton
09 Kansas St.
05 Kentucky
12 Davidson
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13 Buffalo
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11 Loyola-Chi
03 Tennessee
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07 Nevada
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Bracket Buster

- Machine Learning model using Gradient Boosted classification and K-Means clustering to predict March Madness winners.

Skip the research and get in the game!

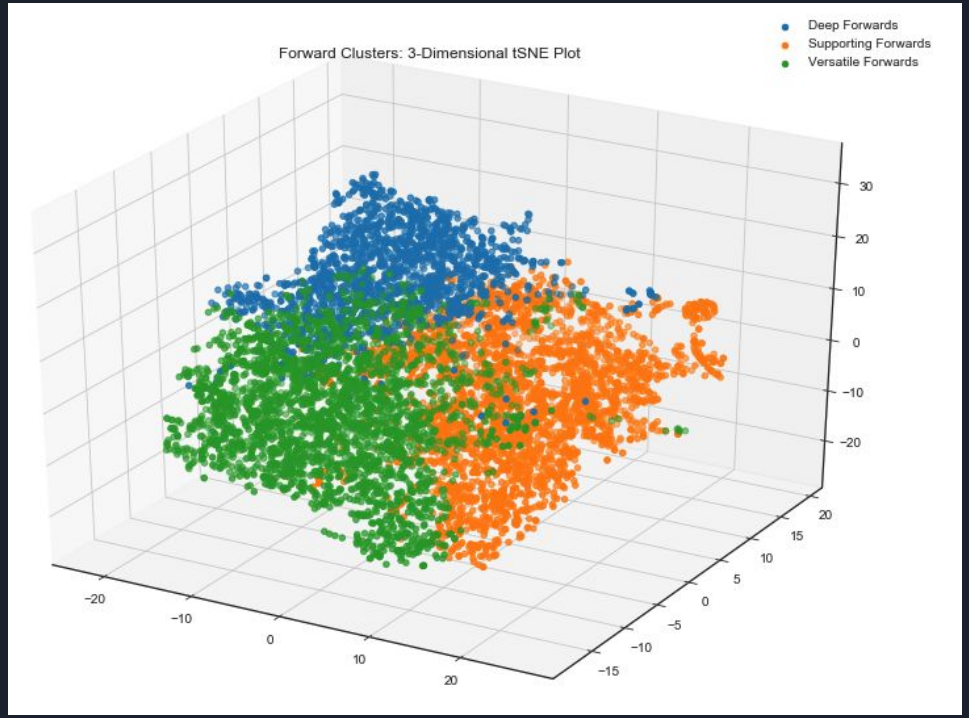
Data and Feature Engineering

Team game logs and player stats over the past 5 season from: www.sports-reference.com

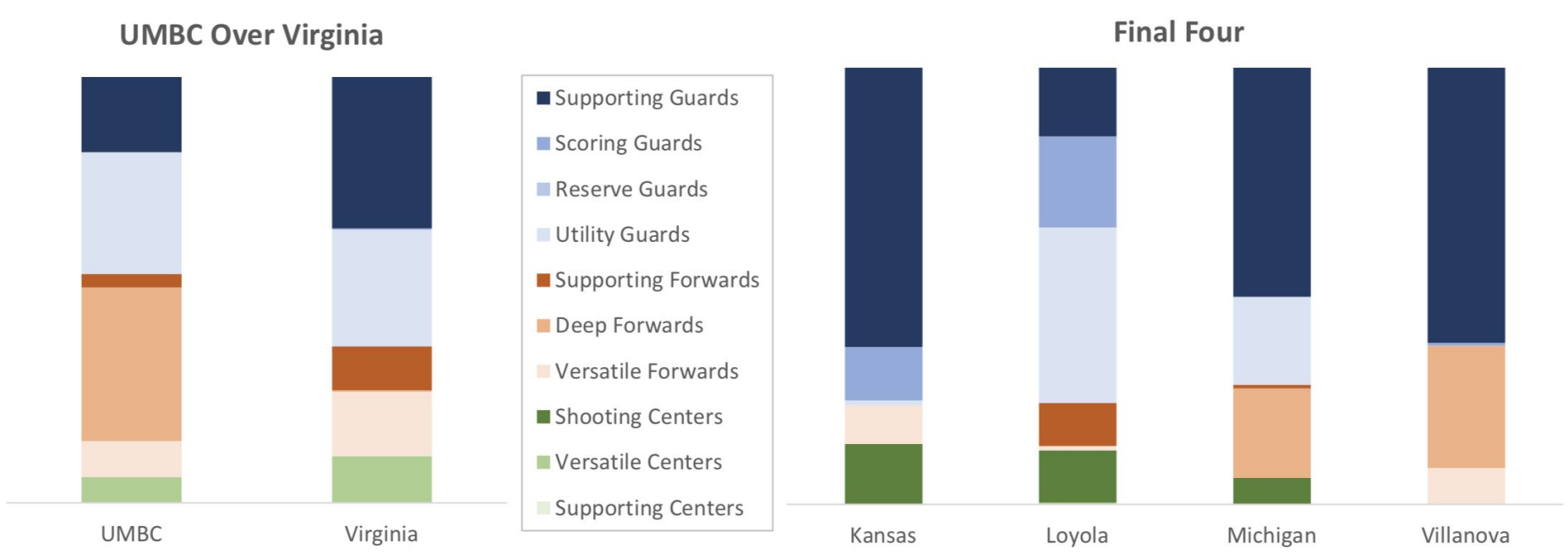
Features	Calculated
Win percentage	Cumulative
Strength of Schedule	Season Average
Team Experience	Season Average normalized by minutes played
Team Composition	Season Average normalized by minutes played
Points	5-game rolling average
Points Allowed	5-game rolling average
Field Goal %	5-game rolling average
3-Point %	5-game rolling average
Free Throw %	5-game rolling average
Assists	5-game rolling average
Blocks	5-game rolling average
Steals	5-game rolling average
Rebounds	5-game rolling average
Offensive Rebounds	5-game rolling average
Turnover	5-game rolling average
Personal Fouls	5-game rolling average

Player Archetypes with K-Means Clustering

Position	Archetype
Centers	Supporting Centers
	Versatile Centers
	Shooting Centers
Forwards	Versatile Forwards
	Deep Forwards
	Supporting Forwards
Guards	Utility Guards
	Reserve Guards
	Scoring Guards
	Supporting Guards



Team Composition Features



Model & Feature Importances

Model: Two Gradient Boosted Classifier Models

Training Data: 2014 - 2017 season games

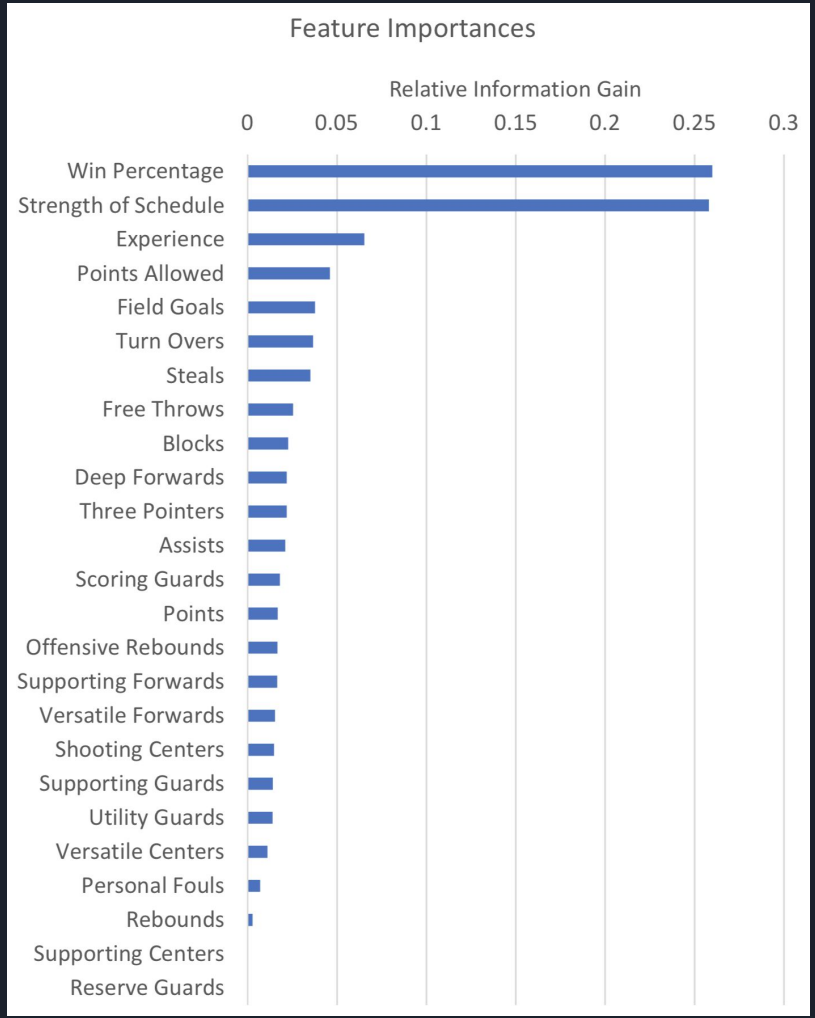
- 4,471 games

Testing Data: 2018 season games

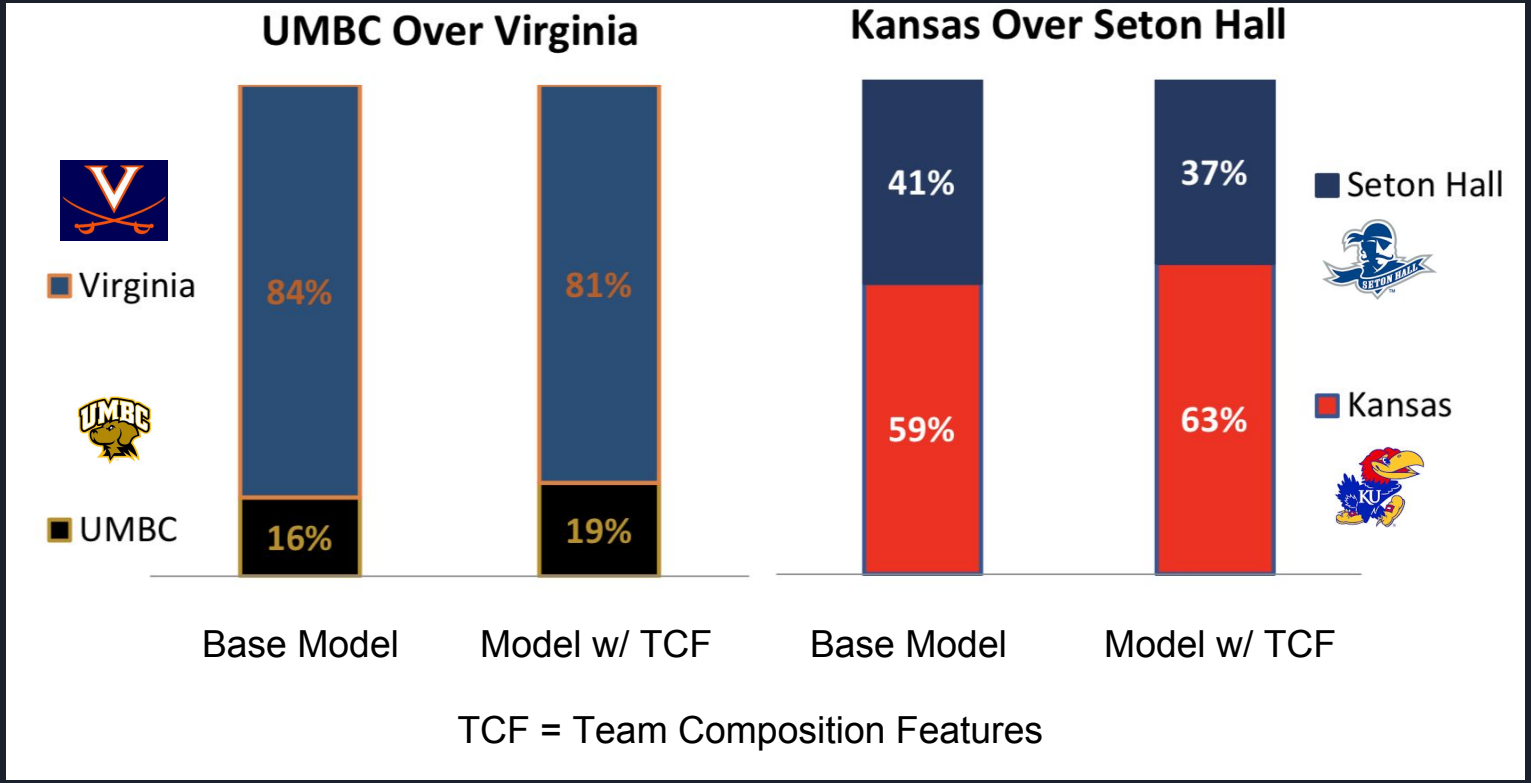
- 1,101 games

Test Accuracy:

- 66% (base model)
- 67% (model with team composition features)



Prediction Examples



TCF = Team Composition Features

2018 March Madness Bracket Results

Rank	Bracket Owner	Total Score	Winner	Logo
1	ESPN Bracket Challenge Winner	167	Villanova	
2	Model w/o Team Comp Features	120	Villanova	
3	Taryn	112	Villanova	
4	Reid Forgrave (CBS)	99	Villanova	
5	Chris Feller	82	Michigan State	
6	Seed/Ranking	81	Virginia	
7	Model w/ Team Comp Features	81	Michigan	
8	ESPN People's Bracket	74	Virginia	
9	Charles Barkley	60	Michigan State	
10	Obama	56	Michigan State	

Tech Stack

Contact

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Repo:
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www.linkedin.com/in/seanecostello

Appendix

- Model brackets
- Model performance over rounds
- Future Updates
- Hypothetical matchup
- Larger Comparison results

Future Updates

- Test on previous tournaments
- Test with per 100 possession data instead of per game data
- Explore clustering
  - Alternate group numbers (k's)
  - Fuzzy Clustering (GMM)
- Deep Learning
  - MLP
- Auto Bracket generation
  - Produce each team's probability of winning
- Predict Point Spread (change to regression)
- Betting algorithm
- Web app
- Auto Update model with Airflow

Hypothetical Matchup

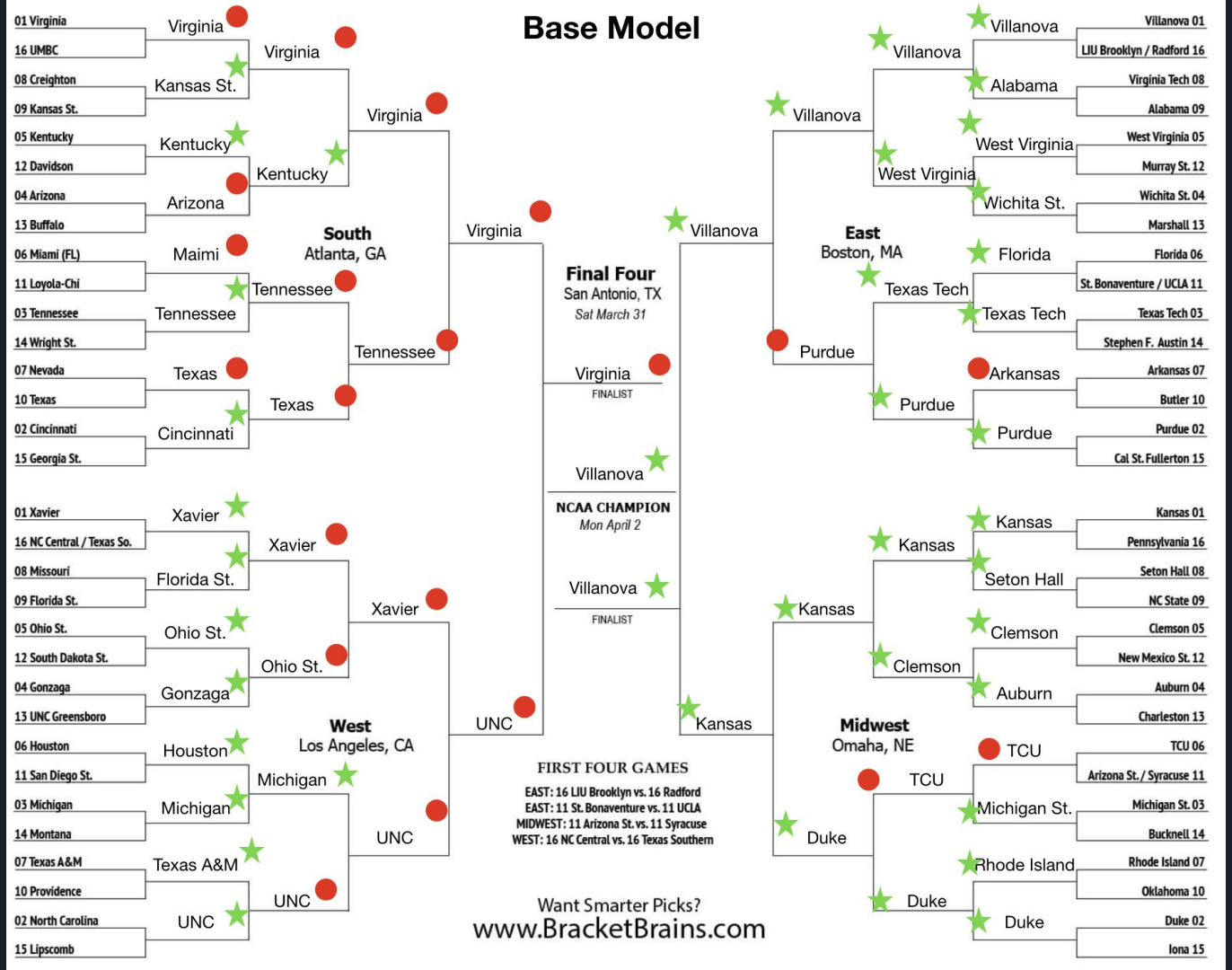
?

Hypothetical Matchup

45%

55%

Base Model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Ohio St.
Michigan
UNC
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WEST: 16 NC Central vs. 16 Texas Southern
Want Smarter Picks?
www.BracketBrains.com
Villanova
Purdue
Kansas
Duke
Villanova
West Virginia
Purdue
Texas Tech
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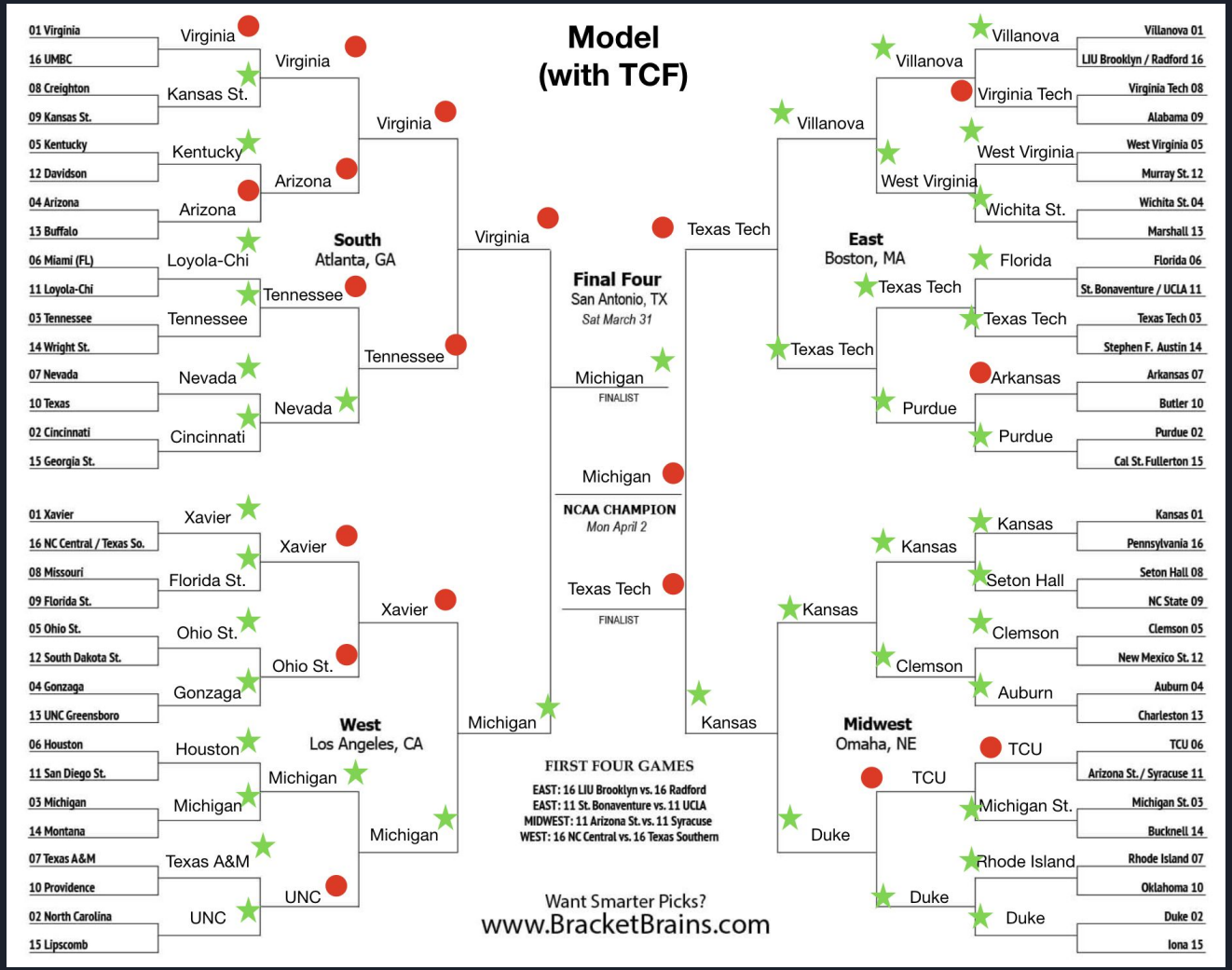
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(with TCF)
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