BRACKET CHALLENGE

Can a model beat the biggest College Basketballs fans?

WHAT IS MARCH MADNESS?

- NCAA D1 Basketball Championships
- 64 teams (different leagues), 6 rounds, one-and-done
- 36.5 million people filled out brackets in 2022
- Odds of perfection - 1 in 9.2 quintillion
- Warren Buffet offered $1B for a perfect bracket

NCAA MARCH MADNESS

The Bracket


2023 NCAA DIVISION I MEN'S BASKETBALL CHAMPIONSHIP
FIRST ROUND MARCH 16-17
SECOND ROUND MARCH 18-19
SWEET 16 MARCH 23-24
ELITE 8 MARCH 25-26
NATIONAL SEMIFINALS APRIL 1
FIRST FOUR
S
16 Texas A&M-CC (23-10)
16 SE Missouri St. (19-16)
E
16 Texas Southern (14-20)
16 F. Dickinson (19-15)
DAYTON MARCH 14-15
W
Arizona St. (22-12) 11
Nevada (22-10) 11
MW
Mississippi St. (21-12) 11
Pittsburgh (22-11) 11
1 Alabama (29-5)
16 TAMU-CC/SEMO
8 Maryland (21-12)
9 West Virginia (19-14)
5 San Diego St. (27-6)
12 Charleston (31-3)
4 Virginia (25-7)
13 Furman (27-7)
6 Creighton (21-12)
11 NC State (23-10)
3 Baylor (22-10)
14 UCSB (27-7)
7 Missouri (24-9)
10 Utah St. (26-8)
2 Arizona (28-6)
15 Princeton (21-8)
1 Purdue (29-5)
16 Texas Southern/FDU
8 Memphis (26-8)
9 Florida Atlantic (31-3)
5 Duke (26-8)
12 Oral Roberts (30-4)
4 Tennessee (23-10)
13 Louisiana (26-7)
6 Kentucky (21-11)
11 Providence (21-11)
3 Kansas St. (23-9)
14 Montana St. (25-9)
7 Michigan St. (19-12)
10 USC (22-10)
2 Marquette (28-6)
15 Vermont (23-10)
Birmingham
Orlando
Denver
Sacramento
Columbus
Orlando
Greensboro
Columbus
SOUTH
EAST
FINAL FOUR
NATIONAL CHAMPIONSHIP
APRIL 3
SEMIFINALS
SEMIFINALS
CBS
CBS
CBS
#MARCHMADNESS
MARCH MADNESS
Houston (31-3) 1
Northern Ky. (22-12) 16
Iowa (19-13) 8
Auburn (20-12) 9
Miami (FL) (25-7) 5
Drake (27-7) 12
Indiana (22-11) 4
Kent St. (28-6) 13
Iowa St. (19-13) 6
Mississippi St./Pitt 11
Xavier (25-9) 3
Kennesaw St. (26-8) 14
Texas A&M (25-9) 7
Penn St. (22-13) 10
Texas (26-8) 2
Colgate (26-8) 15
Kansas (27-7) 1
Howard (22-12) 16
Arkansas (20-13) 8
Illinois (20-12) 9
Saint Mary's (26-7) 5
VCU (27-7) 12
UConn (25-8) 4
Iona (27-7) 13
TCU (21-12) 6
Arizona St./Nevada 11
Gonzaga (28-5) 3
Grand Canyon (24-11) 14
Northwestern (21-11) 7
Boise St. (24-9) 10
UCLA (29-5) 2
UNC Asheville (27-7) 15
Birmingham
Albany
Greensboro
Des Moines
Des Moines
Albany
Denver
Sacramento
MIDWEST
WEST
NCAA.com

Potential Approaches

THE DATA

- *Team Data (2022-2023 Year or Historical Franchise Performance)*
- *Player Data (2022-2023 Year or Historical)*
- *Historical March Madness Tournament Results - Seedings*

THE MODEL

- *Head-to-head matchups*
- *Overall rankings (re-run each round or not)*

THE STRUCTURE

- *Weighting recent games heavier*
- *Type of model*

Data Collection

- NCAA Site has exportable stats
- Following Datasets:
  - NCAA Stats (Conference, Net Rankings, Quadrants, etc.)
  - Field Goals (Rank, FGM, FGA, FG%)
  - FG Opponent (Rank, OPP FG, OPP FGA, OPP FG%)
  - Free Throws (Rank, FT, FTA, Avg)
  - Threes (Rank, GM, 3FG, 3FGA, 3FG%)
  - Scoring Margin (Rank, PTS, PPG, OPP PTS, OPP PPG, SCR, MAR)
  - Rebounds (Rank, ORebs, DRebs, REB, RPG)
  - Assists & Turnovers (Rank, AST, TO, Ratio)
- Created dataset with bracket teams (21/22 & 22/23)
- Clean team names & merge
- Result: 2 dfs with 68 teams, 57 variables

Modelling Rationale

- Goal - try to do something unique
- Lots of trial & error (lm's, glm, pca, etc.)
- Train on 21/22 (with tournament results) and test (predict) on 22/23

Training Models

LM (Backwards Selection) -

Residual standard error: 3.632 on 22 degrees of freedom

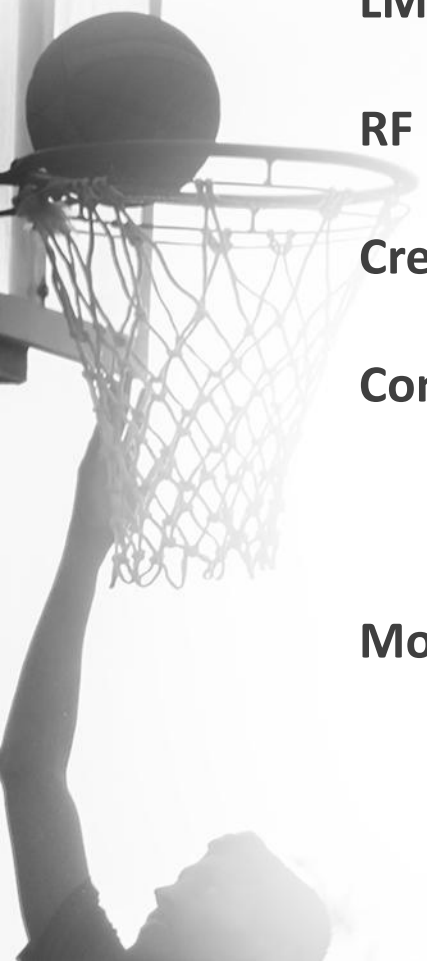
Multiple R-squared: 0.9652, Adjusted R-squared: 0.9003

F-statistic: 14.87 on 41 and 22 DF, p-value: 3.309e-09

RF (Ranger) -

Type:	Regression
Number of trees:	5000
Sample size:	64
# of independent variables:	54
Mtry:	7
Target node size:	5
Variable importance mode:	impurity
Splitrule:	variance
OOB prediction error (MSE):	91.9587
R squared (OOB):	0.3050238

Testing Models



Training Data - Ranking range from 1 to 33 (predicts in which round the team will lose)

LM - Ranking range from 0.6 to 36

RF - Ranking range from 12 to 30

Creating Brackets - Start from bottom-up and ensure worst teams are ‘losers’

Conflicts:

LM - 7 in first round
RF - 1 in first round

Model Prediction Difference:

Mean = 12.53
SD = 10.47

Results

4 Brackets:

- LM
- RF
- Highest Seeds
- ESPN ‘Smart’

CHAMP	BRACKET NAME	STATUS	GROUPS	PTS	PCT%	MAX
	LM_Predictions	In Progress	Hilbers Create or Join a Group	140	100%	1860

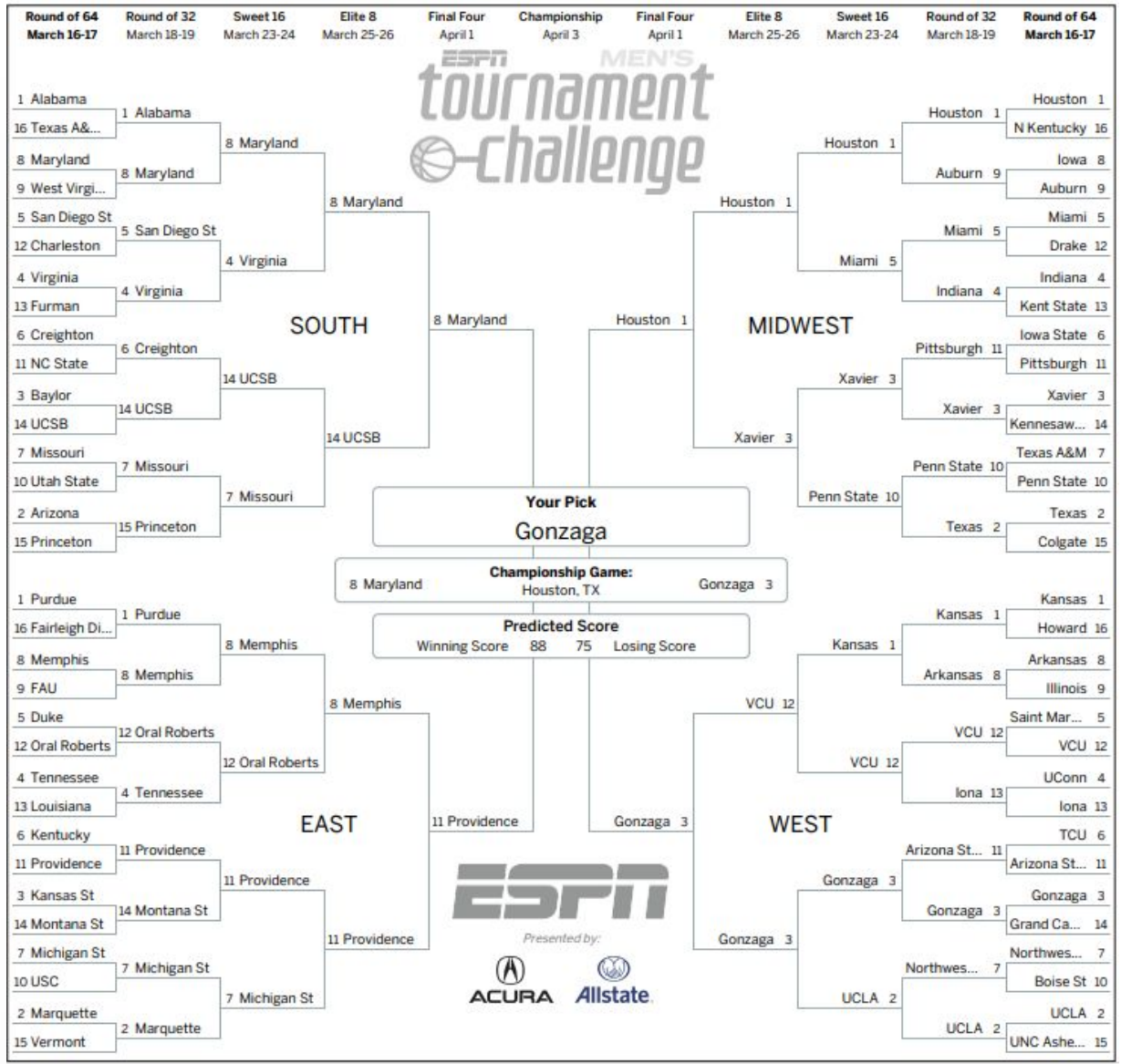
THANK YOU

LM_Predictions	In Progress	Hilbers Create or Join a Group	260	19%	1100
RF_Predictions	In Progress	Hilbers Create or Join a Group	360	98%	1580

2021/22 MM Tourney Data

Round	Number of Teams Losing in Round	Ranking Value
Round of 64	32	33
Round of 32	16	17
Sweet 16	8	9
Elite 8	4	5
Final 4	2	3
Finals	1	1, 2

LM Bracket


Round of 64 March 16-17
Round of 32 March 18-19
Sweet 16 March 23-24
Elite 8 March 25-26
Final Four April 1
Championship April 3
Final Four April 1
Elite 8 March 25-26
Sweet 16 March 23-24
Round of 32 March 18-19
Round of 64 March 16-17
ESPN MEN'S tournament challenge
SOUTH
MIDWEST
EAST
WEST
1 Alabama
16 Texas A&...
8 Maryland
9 West Virgi...
5 San Diego St
12 Charleston
4 Virginia
13 Furman
6 Creighton
11 NC State
3 Baylor
14 UCSB
7 Missouri
10 Utah State
2 Arizona
15 Princeton
1 Purdue
16 Fairleigh Di...
8 Memphis
9 FAU
5 Duke
12 Oral Roberts
4 Tennessee
13 Louisiana
6 Kentucky
11 Providence
3 Kansas St
14 Montana St
7 Michigan St
10 USC
2 Marquette
15 Vermont
Houston 1
N Kentucky 16
Iowa 8
Auburn 9
Miami 5
Drake 12
Indiana 4
Kent State 13
Iowa State 6
Pittsburgh 11
Xavier 3
Kennesaw... 14
Texas A&M 7
Penn State 10
Texas 2
Colgate 15
Kansas 1
Howard 16
Arkansas 8
Illinois 9
Saint Mar... 5
VCU 12
UConn 4
Iona 13
TCU 6
Arizona St... 11
Gonzaga 3
Grand Ca... 14
Northwes... 7
Boise St 10
UCLA 2
UNC Ashe... 15
Your Pick
Gonzaga
Championship Game:
Houston, TX
8 Maryland
Gonzaga 3
Predicted Score
Winning Score 88 75 Losing Score
Presented by:
ACURA
Allstate.

RF Bracket


Round of 64 March 16-17
Round of 32 March 18-19
Sweet 16 March 23-24
Elite 8 March 25-26
Final Four April 1
Championship April 3
Final Four April 1
Elite 8 March 25-26
Sweet 16 March 23-24
Round of 32 March 18-19
Round of 64 March 16-17
ESPN MEN'S tournament challenge
SOUTH
MIDWEST
EAST
WEST
1 Alabama
16 Texas A&...
8 Maryland
9 West Virgi...
5 San Diego St
12 Charleston
4 Virginia
13 Furman
6 Creighton
11 NC State
3 Baylor
14 UCSB
7 Missouri
10 Utah State
2 Arizona
15 Princeton
1 Purdue
16 Fairleigh Di...
8 Memphis
9 FAU
5 Duke
12 Oral Roberts
4 Tennessee
13 Louisiana
6 Kentucky
11 Providence
3 Kansas St
14 Montana St
7 Michigan St
10 USC
2 Marquette
15 Vermont
Houston 1
N Kentucky 16
Iowa 8
Auburn 9
Miami 5
Drake 12
Indiana 4
Kent State 13
Iowa State 6
Pittsburgh 11
Xavier 3
Kennesaw... 14
Texas A&M 7
Penn State 10
Texas 2
Colgate 15
Kansas 1
Howard 16
Arkansas 8
Illinois 9
Saint Mar... 5
VCU 12
UConn 4
Iona 13
TCU 6
Arizona St... 11
Gonzaga 3
Grand Ca... 14
Northwes... 7
Boise St 10
UCLA 2
UNC Ashe... 15
Your Pick
Alabama
Championship Game:
Houston, TX
1 Alabama
Gonzaga 3
Predicted Score
Winning Score 93 90 Losing Score
Presented by:
ACURA
Allstate

Last Year's Results

How you fared last tourney...

BRACKET	PTS	RNK	PCT
espnfan0352598386 2	620	4,878,145	71.9%
Maddy	1,000	1,085,017	93.7%
espnfan0352598386 3	430	12,988,732	25.2%

Round Scores		
MAX **1000**	**Round of 64**	220 of 320
	Round of 32	140 of 320
	Sweet Sixteen	80 of 320
	Elite Eight	80 of 320
	Final Four	160 of 320
	Championship	320 of 320