

Team 6

March Madness

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What is March Madness?

March Madness is the NCAA (National Collegiate Athletics Association) college basketball tournament for Division I basketball players generally played in the month of March.

64 teams play in the first round of March Madness

Sweet Sixteen are the top 16 teams.

Elite Eight are the top 8 teams.

Final Four are the top 4 team.

The 64 teams are split up into 4 regions (South, East, West, Midwest)

Then are ranked from 1-16 in their regions which gives them their seed number



March Madness Brackets

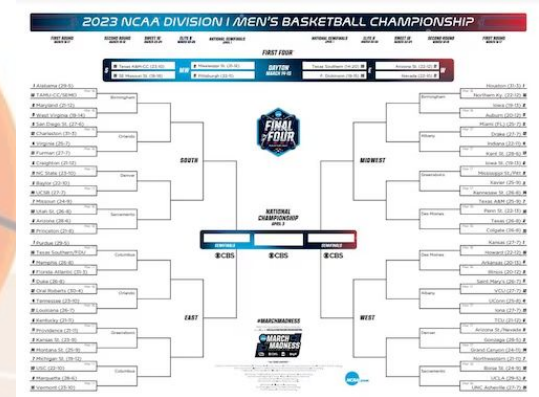
People make brackets to determine who they believe the winners will be.

This year there were more than 22 million brackets made for Men's Division I

The odds of filling out a perfect bracket run from 1 in 128 billion to 1 in 19 quintillion

A number 16 seed has never beat a number 1 seed.

At least 1 number 1 seed has made it to Final 4 since seeding began in 1979



Some Terms to Know



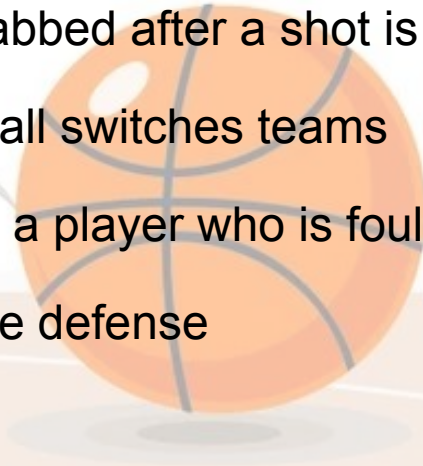
Field Goal- Any two or three point basket

Offensive Rebound- When the ball is grabbed after a shot is missed

Turnover- When the possession of the ball switches teams

Free Throw- Uncontested shots given to a player who is fouled

Foul- Unnecessary contact usually by the defense



More Terms to Know



Offensive Efficiency- the average number of points scored by a basketball player per shot taken

Defensive Efficiency- the number of points a team allows per 100 possessions

Tempo- a way of looking at how fast a team plays, or how fast a basketball game was played

Efficiency Margin- is the difference between a team's offensive and defensive efficiency

Hypothesis

We can analyze data to determine who is most likely to win March Madness.



Data Description

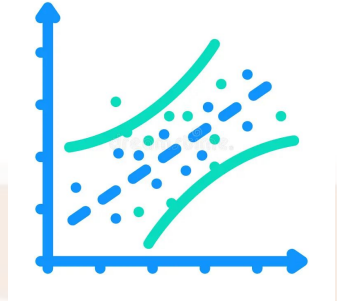
- Source: (Kaggle)
 - <https://www.kaggle.com/datasets/jonathanpilafas/2024-march-madness-statistical-analysis>
- Summary:
 - Team performance during the March Madness seasons from 2002 to 2024 are analyzed in this dataset. Every NCAA Division 1 men's basketball team is represented by a separate line item in each season.
- General Info: There were 144 columns in the data set. Here are a few:
 - TeamName, Effective Field Goal Percentage Rate (eFGPct) and its ranking (RankeFGPct), Turnover Percentage(TOPct) and its ranking (RankTOPct),
 - Offensive Rebound Percentage (ORPct) and its ranking (RankORPct),
 - Free Throw Rate (FTRate) and its ranking (RankFTRate)

Pic of Data

Season	Team Name	Conference	Historical Conference	Adjusted Tempo	Adjusted Tempo Rank	Raw Tempo	Raw Tempo Rank	A
2015	Kentucky	Southeastern Conference (SEC)	Southeastern Conference (SEC)	62.4	274	63.8	242	
2021	Gonzaga	West Coast Conference (WCC)	West Coast Conference (WCC)	73.8	7	74.3	14	
2008	Kansas	Big 12 Conference	Big 12 Conference	66.8	109	68.5	120	
2019	Virginia	Atlantic Coast Conference (ACC)	Atlantic Coast Conference (ACC)	59.4	353	60.6	353	
2002	Duke	Atlantic Coast Conference (ACC)	Atlantic Coast Conference (ACC)	74.5	8	76.8	9	
2021	Baylor	Big 12 Conference	Big 12 Conference	67.4	213	69.3	170	
2015	Wisconsin	Big Ten Conference (Big 10)	Big Ten Conference (Big 10)	58.7	345	59.5	344	
2018	Villanova	Big East Conference	Big East Conference	68.7	150	70	138	
2011	Ohio State	Big Ten Conference (Big 10)	Big Ten Conference (Big 10)	63.8	250	64.2	283	
2010	Duke	Atlantic Coast Conference (ACC)	Atlantic Coast Conference (ACC)	64.7	229	66.7	210	
2019	Gonzaga	West Coast Conference (WCC)	West Coast Conference (WCC)	70.2	62	71.4	66	
2013	Louisville	Atlantic Coast Conference (ACC)	Big East Conference	65.8	116	66.5	145	
2024	UConn	Big East Conference	Big East Conference	64.8	315	66.3	294	
2005	North Carolina	Atlantic Coast Conference (ACC)	Atlantic Coast Conference (ACC)	73.1	7	75.9	3	
2005	Illinois	Big Ten Conference (Big 10)	Big Ten Conference (Big 10)	64.1	249	65.3	250	
2012	Kentucky	Southeastern Conference (SEC)	Southeastern Conference (SEC)	65.4	150	67	161	
2015	Duke	Atlantic Coast Conference (ACC)	Atlantic Coast Conference (ACC)	65.8	104	65.9	120	
2015	Arizona	Pac-12 Conference	Pac-12 Conference	65.8	102	66.6	92	
2004	Duke	Atlantic Coast Conference (ACC)	Atlantic Coast Conference (ACC)	67.7	94	69.8	98	
2017	Gonzaga	West Coast Conference (WCC)	West Coast Conference (WCC)	70.1	76	70.8	104	
2016	Villanova	Big East Conference	Big East Conference	66	274	67.2	264	
2010	Kansas	Big 12 Conference	Big 12 Conference	67.2	105	69.9	71	
2024	Houston	Big 12 Conference	Big 12 Conference	63.6	346	64.3	351	
2008	Memphis	American Athletic Conference (AAC)	Conference USA (CUSA)	68.1	76	69.9	72	
2007	North Carolina	Atlantic Coast Conference (ACC)	Atlantic Coast Conference (ACC)	72.4	8	73.6	11	
2015	Florida	Southeastern Conference (SEC)	Southeastern Conference (SEC)	61.3	355	62.3	355	

Methodologies We Used

1. Cross Tab
2. Classification
3. Brand Conceptual Map
4. Factor Analysis
5. Regression



Cross Tab



Cross Tab Analysis

Step 1: Download Dataset from Kaggle

Step 2: Open zip file and select, “INT _ KenPom _ Efficiency.csv”

Step 3: Filter data to year “2024” via excel

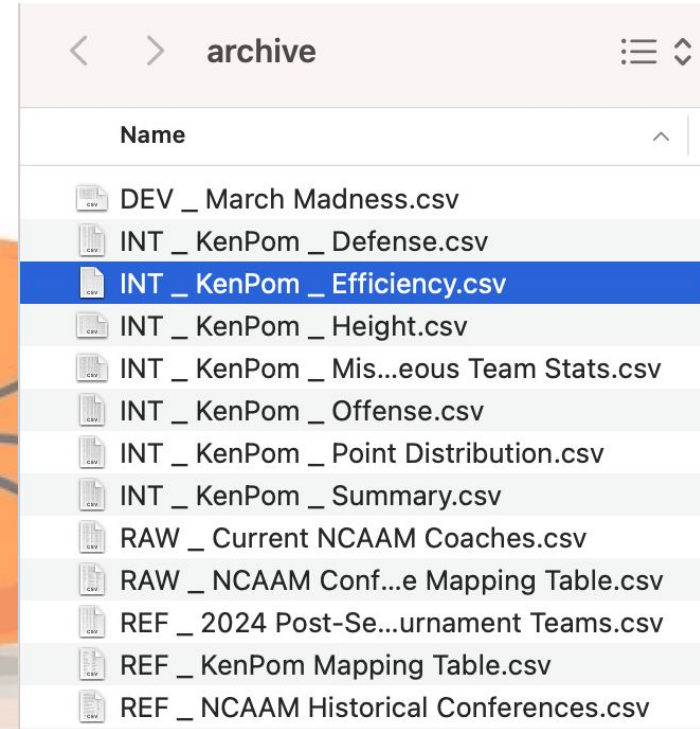
Step 4: Identify key columns to compare

i.e. “Adjusted Offensive Efficiency Rank” and “Avg Possession Length (Offense)”

Step 5: Group dataset under similar categories through range values

Step 6: Filter data and fill in CrossTab Analysis

Step 7: Make predictions based on the dataset



Cross Tab Analysis

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	Season	Team	Conference	Adjusted Ter	Adjusted Ter	Raw Tempo	Raw Tempo	Adjusted Off	Adjusted Off	Raw Offensi	Raw Offensi	Adjusted Def	Adjusted Def	Raw Defensi	Raw Defensi	Avg Possessi	Avg Possessi	Avg Possessi	Avg Possessi
2	2024	Abilene Chris	WAC	68.5	113	70.5	65	101.5	259	99.1	294	105.6	163	103.3	126	17	103	16.9	47
3	2024	Air Force	MWC	61.8	359	63.4	355	106.1	178	103.5	219	113.2	322	114	346	20.5	362	17.2	95
4	2024	Akron	MAC	66	271	66.7	273	106.8	164	107.4	130	102.2	98	100.3	54	18	244	18	296
5	2024	Alabama	SEC	72.9	8	74.3	6	125.1	4	121.4	2	102.4	101	107.6	248	14.5	3	17.6	207
6	2024	Alabama A&S	SWAC	70.6	42	71.7	39	94.2	346	96	331	108.6	225	105	178	17.1	108	16.3	8
7	2024	Alabama St.	SWAC	67.1	199	69.1	138	93	352	94	347	105.3	156	100.6	60	17	99	17.6	214
8	2024	Albany	AE	73.1	6	74.3	7	105.3	196	104.5	199	111.1	281	106.2	215	16.1	32	16.3	9
9	2024	Alcorn St.	SWAC	66.4	248	68.3	188	106.4	172	105.1	183	116.6	354	113.3	341	18.4	288	17.1	70
10	2024	American	Pat	62.8	355	62.9	359	103.5	227	106.3	150	113.9	334	106.9	227	19.6	349	18.4	349
11	2024	Appalachian	SB	67	215	68.7	158	108.3	138	109.5	93	98.6	40	97.3	18	17.8	217	16.9	53
12	2024	Arizona	P12	72.1	16	73.5	10	120.7	9	117.1	13	93.5	10	96.4	9	15.2	8	17.5	169
13	2024	Arizona St.	P12	69.1	83	70.6	63	104	217	97.5	315	100	62	104.6	172	17	107	16.7	31
14	2024	Arkansas	SEC	70.8	36	72.2	26	109.9	103	105.9	164	104.1	134	109.1	273	17.3	144	16.2	5
15	2024	Arkansas Pin	SWAC	71.8	18	73	15	102.2	251	103.9	213	118.9	360	114.4	352	15.4	13	17.5	177
16	2024	Arkansas St.	SB	68.1	139	70.2	79	113.5	61	112.5	39	110.7	269	109.9	293	17.1	122	17	56
17	2024	Army	Pat	63.1	352	63.2	357	90.9	357	93.7	349	109.8	247	102.9	114	19.2	340	18.4	344
18	2024	Auburn	SEC	69.9	58	70.9	55	120.4	10	117.2	12	92.5	5	96.3	8	16.3	49	17.7	234
19	2024	Austin Peay	ASun	64.7	326	65.6	325	108.1	142	109.6	91	114.1	337	111.8	326	19	335	17.5	179
20	2024	Ball St.	MAC	66.9	220	67.5	241	103	240	105.3	177	110.8	271	106.6	221	17.5	179	17.9	269
21	2024	Baylor	B12	65.7	281	66.7	275	122.4	6	117.5	10	100.5	68	104.3	160	18.3	279	17.9	276
22	2024	Bellarmine	ASun	64.8	316	66.5	281	100.3	280	100.6	272	113.4	329	114.4	351	18.3	284	17.8	255
23	2024	Belmont	MVC	71.2	29	71.9	35	109.3	114	107.5	126	104	132	105.4	190	16.2	41	17	68
24	2024	Bethune Co	SWAC	69.8	62	70.8	57	97.9	313	98.5	304	108.9	237	102.8	111	16.6	71	17.2	101
25	2024	Binghamton	AE	66.3	256	68.1	201	102.5	247	101.5	258	111.5	290	107.4	244	17.9	233	17.1	74
26	2024	Boise St.	MWC	66.6	243	66.4	286	113.5	60	110.4	68	97.2	29	100.8	68	18.9	324	17.4	151
27	2024	Boston College	ACC	66.9	218	67.7	224	113.7	56	108.7	110	102.5	103	105.5	193	17.5	176	17.9	265
28	2024	Boston Univ	Pat	65.8	275	65.7	320	98.2	309	99.1	293	108.7	228	100.9	73	18.1	255	18.3	338
29	2024	Bowling Green	MAC	67.7	161	68.6	165	102.3	248	104.2	206	107.9	210	103.5	136	17.7	204	17.1	82
30	2024	Bradley	MVC	66.3	254	67	265	112.2	75	109.6	89	99.9	60	100	47	17.4	163	18.3	340
31	2024	Brown	Ivy	67.2	197	67.6	230	104.3	215	102.8	233	106.7	184	105.8	199	18.1	251	17.4	159
32	2024	Bryant	AE	74.2	3	75.4	2	101.1	268	99.4	291	102	96	98.7	34	15.4	11	16.6	21
33	2024	Bucknell	Pat	64.8	319	64.1	352	100.2	282	100.8	270	108.6	227	103.7	142	19.6	351	17.7	233
34	2024	Buffalo	MAC	69.1	85	70.1	84	95.4	338	95.6	333	115	345	113.1	340	17.3	143	16.9	49
35	2024	Butler	BE	68.5	117	69.3	126	112.9	71	107.8	120	100.9	80	104.4	163	17.2	132	17.5	171
36	2024	BYU	B12	69.1	84	69.9	96	119.8	13	116.4	16	99.8	57	100.1	51	16.5	63	17.8	250
37	2024	Cal Baptist	WAC	63.6	347	65.3	333	103	238	102	247	105.8	166	102.2	100	18.6	308	18.3	333
38	2024	Cal Poly	BW	65.9	272	66.5	280	94.6	343	93.8	348	112.3	307	110.7	307	18.7	315	17.1	94
39	2024	Cal St. Baker	BW	64.8	320	65.7	318	101.2	267	100.8	269	107.1	195	105.8	201	19.2	339	17.3	141

Cross Tab Analysis

Adjusted Offensive Efficiency Rank	Avg Possession Length (Offense)
259	17
178	20.5
164	18
4	14.5
346	17.1
352	17
196	16.1
172	18.4
227	19.6
138	17.8
9	15.2
217	17
103	17.3
251	15.4
61	17.1
357	19.2
10	16.3
142	19
240	17.5
6	18.3
280	18.3
114	16.2
313	16.6
247	17.9
60	18.9
56	17.5
309	18.1
248	17.7
75	17.4
215	18.1

Adjusted Offensive Efficiency Rank	Avg Possession Length (Offense)
1	17.4
2	18.5
3	17.8
4	14.5
5	17.4
6	18.3
7	16.3
8	15.6
9	15.2
10	16.3
11	17.5
12	15.9
13	16.5
14	18.9
15	15.4
16	16.1
17	19
18	15.9
19	15.3
20	16.7
21	17
22	16.5
23	18.5
24	17.4
25	17.7
26	17.5
27	18.3
28	19.3
29	17.1
30	15.9

Cross Tab Analysis

Average Position Length (Offense)

Adjusted Offensive
Efficiency Rank

	14.01-15	15.01-16	16.01-17	17.01-18	18.01-19	19.01-20+	Total
1-100	2	13	27	35	20	3	100
101-200	2	3	20	38	29	7	99
201-300	1	6	20	44	20	9	100
301+	0	2	11	23	19	7	62
Total	5	24	78	140	88	26	361

Average Position Length (Offense) → duration team holds a certain position

longer position = more deliberate/methodical vs shorter position = quick transitions/dynamic play

Adjusted Offensive Efficiency Rank → higher rank = higher efficiency in scoring points per offensive opportunity

Cross Tab Analysis

Interpreting the Relationship →

Longer position lengths with high offensive efficiency: Indicates a deliberate offensive strategy with efficient scoring.

Short position lengths with high offensive efficiency: Suggests quick offensive transitions and high scoring efficiency.

Discrepancies between position length and offensive efficiency may highlight areas for strategic adjustments or improvement.

Analyzing these metrics together offers insights into a team's offensive strategy, stability, efficiency, and potential areas for enhancement.



Classification



Classification- Neural Network

Defensive Efficiency

****Open zip file and select, "INT _ KenPom _ Defense.csv" from Kaggle.****

Predictor Variables: eFGPct, TOPct, ORPct, and FTRate

Target Variable to predict= TOPct(turnover percentage)

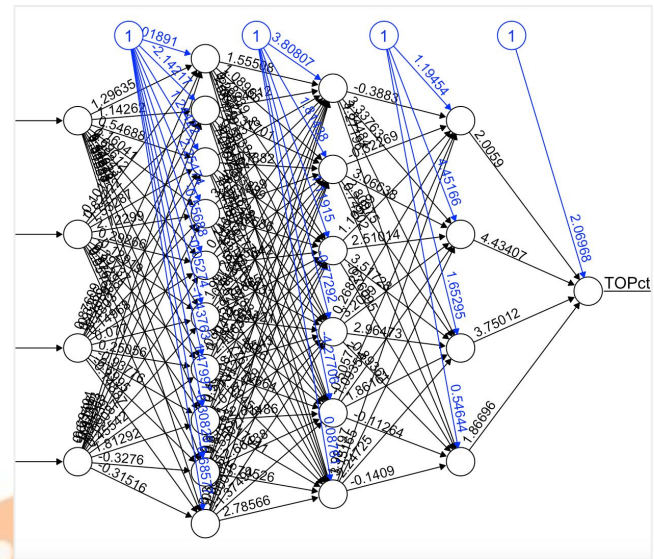
Input Layer: has 4 neurons corresponding to the 4 predictors ("eFGPct", "TOPct", "ORPct", "FTRate") in the dataset.

Hidden Layers:

- first hidden layer has 10 neurons
- second hidden layer has 6 neurons
- third hidden layer has 4 neurons

Output Layer: The output layer has a single neuron since it's a binary classification problem.

- The low accuracy indicates that there's significant room for improvement in the model's predictive performance for the "TOPct" target variable.



```
predicted_classes 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298
                  1  28  26  26  27  26  26  25  25  26  25  26  26  25  27  26  27  25  26  27  26  26

predicted_classes 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319
                  1  25  27  26  27  26  26  25  25  26  26  27  26  27  26  27  27  26  26  25  25  24

predicted_classes 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340
                  1  23  24  23  23  23  23  22  20  20  20  19  19  19  19  18  18  17  17  17  17

predicted_classes 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361
                  1  17  16  16  16  15  13  13  20  10  10  10  5  5  3  3  3  3  2  2  2

predicted_classes 362 363
                  1  2  1

>
> # Calculate accuracy
> accuracy <- sum(diag(confusion_matrix)) / sum(confusion_matrix)
> print(paste("Accuracy:", round(accuracy * 100, 2), "%"))
[1] "Accuracy: 0.29 %"
```

Classification Analysis- Defensive Efficiency

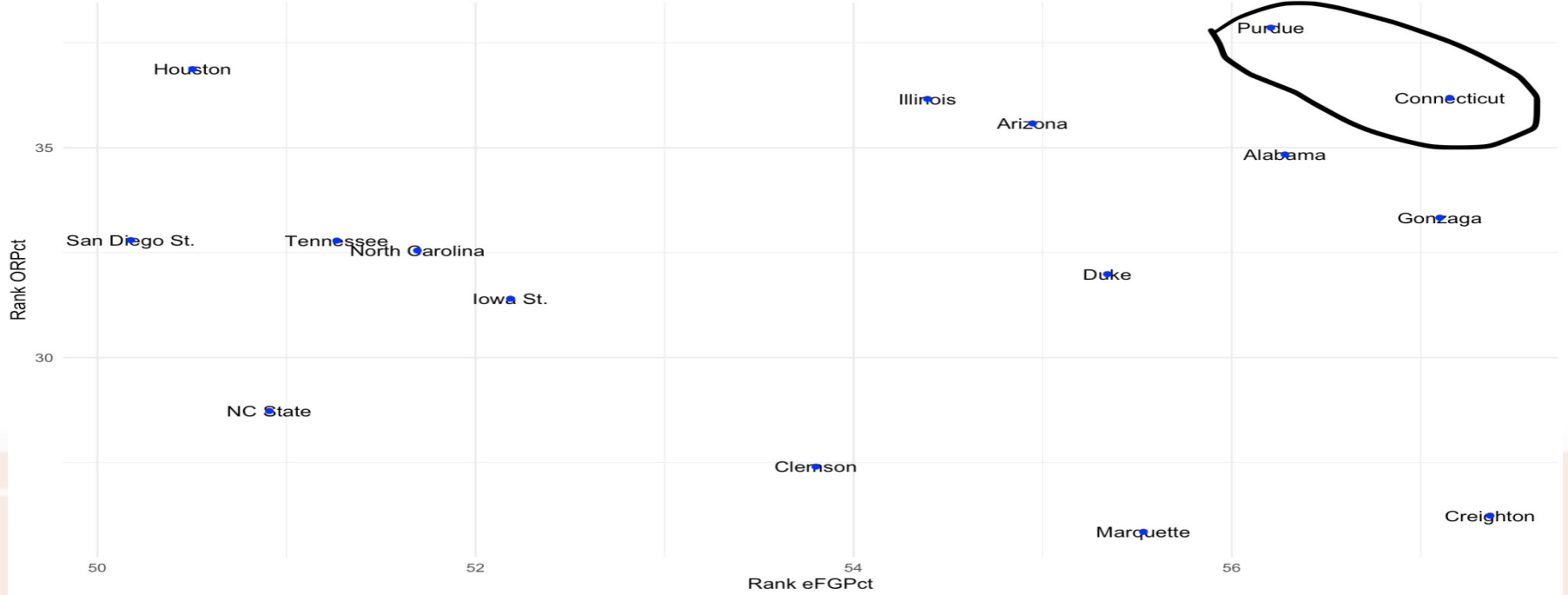
- **Effective Field Goal Percentage (Opponent_eFGPct) of the Opponent:** A lower Opponent_eFGPct indicates stronger defense in minimizing the opponent's scoring effectiveness.
- **Turnover Percentage (Opponent_TOPct) of the Opponent:** A higher Opponent_TOPct shows more potent defensive pressure and the capacity to force turnovers.
- **Defensive Rebound Percentage (DRPct):** A higher DRPct shows a stronger capacity to shut down opponents' second-chance opportunities and secure defensive rebounds.
- In all, this test helps provide an insightful analysis of a team's performance by highlighting key factors which affect victory and can help predict a team's performance in future games.

Brand Conceptual Map



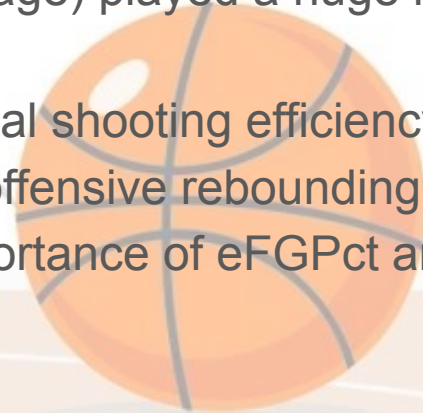
Brand Conceptual Map

Shooting Precision and Rebounding Dominance Among the Top 16 Teams, March Madness 2024



Understanding the Brand Conceptual Map

- Our theory suggests that we can use data analysis to understand what stats are defining for a winning team. When looking at the top 16 teams from this year, we can see that eFGPct(Effective field goal Percentage) and ORPct(Offensive Rebound Percentage) played a huge role in the stats of the 2 finalists(Purdue and UConn).
- Their high eFGPct shows exceptional shooting efficiency and their strong ORPct shows how well they did in offensive rebounding.
- Both of these stats indicate the importance of eFGPct and ORPct to win games.



Factor Analysis



Factor Analysis Steps

Step 1: Download Dataset from Kaggle

Step 2: Open zip file and select, “INT _ KenPom _ Summary.csv”

Step 3: Find eigenvalues

Step 4: Perform a Factor Analysis for 3 factors using a varimax rotation

Step 5: Interpret Findings

INT _ KenPom _ Summary

Season	TeamName	Tempo	RankTempo	AdjTempo	RankAdjTempo	OE	RankOE	AdjOE	RankAdjOE	DE	RankDE	AdjDE	RankAdjDE	AdjEM	RankAdjEM
2016	Ablene Christian	69.2993	153	67.8147	186	99.6473	255	97.0532	308	109.222	301	112.298	307	-15.245	317
2016	Air Force	68.8318	185	66.9617	239	96.1161	310	99.0546	283	105.133	203	105.977	195	-6.92273	242
2016	Akron	68.8965	177	67.4518	210	109.899	56	110.115	90	99.9521	86	101.482	109	8.63274	88
2016	Alabama	66.1149	308	64.7709	322	99.7067	253	105.516	164	102.079	125	97.4435	48	8.07278	96
2016	Alabama A&M	65.444	325	65.2419	309	101.412	225	100.147	257	105.289	208	113.423	323	-13.2754	301
2016	Alabama St.	69.2149	160	68.9694	124	99.6116	256	99.1344	282	104.897	195	110.722	284	-11.5871	286
2016	Albany	67.6852	243	66.1852	264	109.445	65	106.931	141	97.3488	39	102.683	131	4.24832	121
2016	Alcorn St.	66.4983	294	65.4793	299	98.2264	284	98.016	296	106.932	245	112.569	309	-14.5531	313
2016	American	62.026	350	61.2971	349	92.0236	335	92.1027	336	104.948	198	107.441	219	-15.3382	319
2016	Appalachian St.	70.831	84	70.3316	69	99.7228	252	102.726	206	109.369	304	110.897	287	-8.17074	258
2016	Arizona	69.8827	128	68.3085	154	112.807	24	116.806	20	96.4588	29	95.8348	29	20.9712	19
2016	Arizona St.	69.7922	133	67.87	181	104.206	169	109.594	95	105.109	202	101.213	106	8.38124	93
2016	Arkansas	71.4168	67	69.6666	94	107.304	94	110.718	78	102.855	146	100.272	90	10.4455	73
2016	Arkansas Little Rock	64.0981	343	63.3513	342	108.254	83	109.237	98	94.2568	10	96.0002	33	13.2372	56
2016	Arkansas Pine Bluff	65.3422	326	64.0521	332	86.6389	350	88.9931	345	107.009	248	109.686	268	-20.6928	344
2016	Arkansas St.	72.577	35	72.0363	30	98.4587	281	100.293	254	105.49	217	107.799	229	-7.50656	251
2016	Army	72.394	42	72.1807	25	102.828	196	99.4696	274	101.794	120	107.038	213	-7.56804	254
2016	Auburn	72.5817	34	71.788	35	96.422	300	101.685	222	107.561	261	104.242	162	-2.55694	189
2016	Austin Peay	70.5129	96	69.4864	101	104.719	153	104.45	176	108.947	292	109.552	266	-5.10202	217
2016	Ball St.	66.0731	311	65.3181	304	103.886	177	103.486	190	99.5454	78	102.648	130	0.838059	155
2016	Baylor	67.1587	265	66.6149	252	112.42	26	118.899	14	103.109	149	99.8379	84	19.0612	24

Factor Analysis Output

eigen() decomposition

\$values

```
[1] 6.942512e+00 3.495955e+00 1.955780e+00 8.613557e-01 2.667694e-01 1.962121e-01 1.255411e-01  
[8] 5.399948e-02 4.509336e-02 3.513267e-02 9.443543e-03 7.126122e-03 5.078565e-03 4.403322e-10
```

	Factor1	Factor2	Factor3
SS loadings	4.573	3.992	3.202
Proportion Var	0.327	0.285	0.229
Cumulative Var	0.327	0.612	0.840

Test of the hypothesis that 3 factors are sufficient.
The chi square statistic is 206483 on 52 degrees of freedom.
The p-value is 0

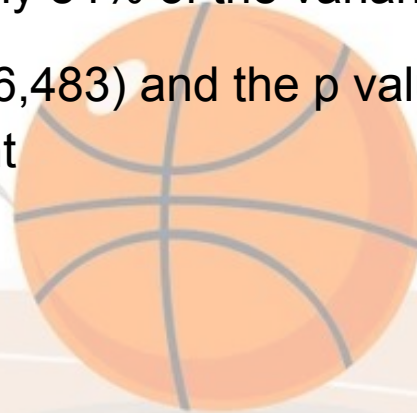
Factor Analysis Results

There are three eigenvalues >1

Factors: Offensive Efficiency, Defensive Efficiency and Tempo.

After adding the third factor approximately 84% of the variance can be explained.

The chi square statistic is very large (206,483) and the p value is $0 < 0.05$, so the three factors are sufficient and significant



Linear Regression



Regression #1

Null hypothesis: There is no correlation between Center Height and Offensive Rebounds

Alternate Hypothesis: There is correlation between Center Height and Offensive Rebounds

R Output:

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	17.53231	0.05760	304.389	<2e-16 ***
CenterHeight	-0.10112	0.04766	-2.122	0.0345 *

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 1.096 on 360 degrees of freedom

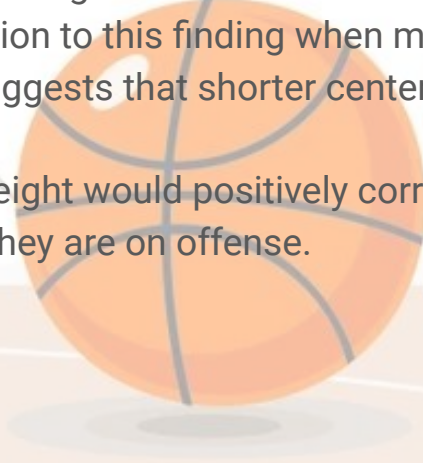
Multiple R-squared: 0.01235, Adjusted R-squared: 0.009608

F-statistic: 4.502 on 1 and 360 DF, **p-value: 1.025e-06**



Regression #1 Analysis

- The p-value is extremely low, indicating an extremely strong statistical significance.
- There is overwhelming evidence against the null hypothesis, suggesting a significant correlation between having a shorter Center Height and Offensive Rebounds.
- This highly significant result underscores the likelihood of a meaningful relationship between the height of centers and their performance in securing offensive rebounds.
- Coaches and analysts should pay close attention to this finding when making decisions related to team composition and player strategy, as it suggests that shorter centers tend to excel in grabbing offensive rebounds.
- This would also mean that defensive center height would positively correlate with more offensive rebounds because once they receive the ball they are on offense.



Regression #2

Null hypothesis: There is no correlation between Center Height and Avg Possession Length (Offense)

Alternate Hypothesis: There is correlation between Center Height and Avg Possession Length (Offense)

R Output:

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	17.53231	0.05760	304.389	<2e-16 ***
CenterHeight	-0.10112	0.04766	-2.122	0.0345 *

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 1.096 on 360 degrees of freedom

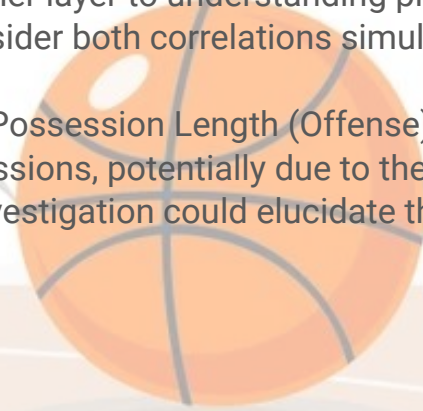
Multiple R-squared: 0.01235, Adjusted R-squared: 0.009608

F-statistic: 4.502 on 1 and 360 DF, **p-value: 0.03453**



Regression #2 Analysis

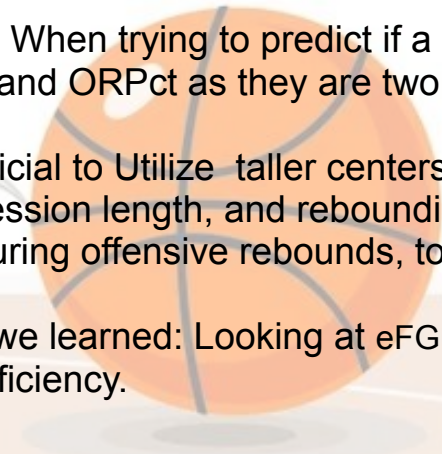
- The p-value of 0.03 for the correlation between Center Height and Avg Possession Length (Offense) indicates statistical significance.
- This suggests there is evidence to reject the null hypothesis, implying a correlation between Center Height and Avg Possession Length (Offense).
- While the correlation between Center Height and Offensive Rebounds has been established, this correlation with Avg Possession Length (Offense) adds another layer to understanding player performance.
- Coaches and analysts may find it valuable to consider both correlations simultaneously when devising strategies or evaluating player effectiveness.
- The relationship between Center Height and Avg Possession Length (Offense) could imply that shorter centers may contribute to longer offensive possessions, potentially due to their influence on ball movement, shot selection, or defensive strategies. Further investigation could elucidate the mechanisms behind this correlation.



Recommendations



Recommendations

1. From the CrossTab Analysis we learned: This information can be used for coaches/managers to focus on training efforts/adjust tactics and by identifying historical patterns, we can predict future outcomes.
 2. From the Factor Analysis we learned: When deciding on who you believe will win March Madness three specific factors we recommend looking at that explain a majority of the variance are offensive efficiency, defensive efficiency, and tempo.
 3. From the Brand Conceptual Map we learned: When trying to predict if a team will win the tournament, it is important to look at eFGPct and ORPct as they are two defining stats on offense that the 2 finalists dominated in this year.
 4. From the Regressions we learned: It is beneficial to Utilize taller centers for both offensive efficiency, leveraging their influence on possession length, and rebounding prowess, capitalizing on their statistically significant advantage in securing offensive rebounds, to strategically optimize team performance.
 5. From the Neural Network Classification Test we learned: Looking at eFGPct, TOPct, ORPct, and FTRate is not an effective way to predict defensive efficiency.
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Summary

- Data Analysis can be effectively utilized to determine which team is most likely to win March Madness
 - Examine statistical factors and historical trends = informed predictions
 - Guide decision-making for teams
 - Identify factors to predict future outcomes
- Various methodologies can provide more insights and accurate understanding of team performance and outcomes
 - Predictive power enables teams to allocate resources more effectively, prioritize matchups, and optimize game plans based on opponent strengths and weaknesses (competitive advantage)

Thank You

