

```
In [1]: import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
```

DATA CLEANING: (removing duplicates (two rows of the same player), and players who average less than 15 mins per game) (also removing rank row)

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In [2]: df = pd.read_csv('nba_stats333.csv')
cleaned1 = df.drop_duplicates(subset=['FULL NAME'], keep='first')
#print(cleaned1.head(10))
cleaned2 = cleaned1[cleaned1['MPG'] > 15]
cleaned3 = cleaned2.drop(columns='RANK')
print(cleaned3.head(20))
```

	FULL NAME	TEAM	POS	AGE	GP	MPG	MIN%	USG%	TO%	\
0	Precious Achiuwa	Tor	F	22.48	58	23.0	47.8	18.1	11.3	
1	Steven Adams	Mem	C	28.65	65	26.5	55.2	12.3	19.8	
2	Bam Adebayo	Mia	C-F	24.66	44	33.2	69.1	25.2	14.7	
4	LaMarcus Aldridge	Bro	C-F	36.65	45	22.8	47.6	22.7	7.8	
5	Nickeil Alexander-Walker	Nor	G	23.53	50	26.3	54.9	24.8	11.2	
7	Grayson Allen	Mil	G	26.43	56	27.8	57.8	15.6	5.5	
8	Jarrett Allen	Cle	C	23.90	56	32.3	67.3	18.1	12.7	
10	Justin Anderson	Cle	F-G	28.32	3	15.5	32.4	11.1	17.0	
12	Kyle Anderson	Mem	F-G	28.48	56	21.4	44.6	16.1	11.7	
13	Giannis Antetokounmpo	Mil	F	27.27	57	32.8	68.4	34.8	12.1	
15	Carmelo Anthony	Lal	F	37.79	59	26.5	55.3	20.2	7.3	
16	Cole Anthony	Orl	G	21.83	55	32.8	68.3	25.5	14.2	
17	OG Anunoby	Tor	F	24.66	42	36.7	76.4	21.0	9.8	
19	Trevor Ariza	Lal	F	36.70	22	18.9	39.3	10.2	10.1	
22	Deni Avdija	Was	F	21.19	66	23.1	48.2	15.0	11.9	
24	Deandre Ayton	Pho	C	23.64	47	29.5	61.5	20.9	11.0	
26	Marvin Bagley III	Sac	F	23.00	30	21.9	45.6	18.7	7.3	
28	LaMelo Ball	Cha	G	20.56	61	32.1	66.9	28.2	15.0	
29	Lonzo Ball	Chi	G	24.38	35	34.6	72.2	17.3	17.2	
30	Mo Bamba	Orl	C	23.84	58	26.1	54.4	16.8	10.9	

	FTA	...	RPG	TRB%	APG	AST%	SPG	BPG	TOPG	VIV	ORTG	DRTG
0	105	...	6.8	16.0	1.1	6.9	0.52	0.53	1.10	6.9	103.8	103.2
1	177	...	9.8	19.3	3.3	15.7	0.83	0.75	1.57	9.3	123.5	104.7
2	259	...	10.4	17.6	3.5	17.9	1.55	0.82	2.77	10.7	114.1	96.8
4	102	...	5.6	13.3	0.9	6.5	0.31	1.02	0.93	7.2	120.0	108.7
5	97	...	3.3	6.8	2.8	16.3	0.82	0.38	1.70	7.5	96.5	109.8
7	63	...	3.4	6.4	1.6	8.0	0.79	0.27	0.55	5.7	119.9	109.6
8	233	...	10.7	18.2	1.6	8.2	0.77	1.34	1.68	8.1	132.7	102.8
10	4	...	2.0	7.1	2.0	17.5	0.33	0.00	0.67	6.7	126.3	102.5
12	85	...	5.4	13.1	2.6	16.3	1.14	0.63	0.98	8.7	107.8	103.1
13	659	...	11.5	18.4	5.9	32.9	1.05	1.39	3.23	15.4	124.2	99.2
15	142	...	4.2	8.4	1.0	5.6	0.73	0.83	0.92	5.8	115.2	107.0
16	220	...	5.6	9.1	5.7	28.2	0.78	0.27	2.73	10.0	103.0	107.0
17	107	...	5.5	8.1	2.6	10.9	1.55	0.57	1.76	6.9	109.9	106.4
19	15	...	3.2	9.1	1.0	7.1	0.50	0.18	0.45	4.9	98.8	110.9
22	98	...	5.0	12.0	1.7	10.1	0.76	0.56	0.92	6.9	106.2	104.6
24	111	...	10.0	18.1	1.4	7.5	0.74	0.74	1.57	8.4	124.9	99.4
26	47	...	7.2	17.7	0.6	3.9	0.30	0.37	0.70	6.3	111.0	109.1
28	214	...	6.9	11.2	7.3	34.9	1.51	0.43	3.21	12.4	109.3	104.8
29	28	...	5.4	8.8	5.1	19.8	1.83	0.89	2.34	8.2	110.0	106.9
30	58	...	8.0	16.2	1.1	6.8	0.59	1.74	1.10	6.9	112.8	103.0

[20 rows x 28 columns]

\$\newline\$ Querying: (based off offensive and defensive efficiency) \$\newline\$ Q1 = players who have a defensive rating and offensive rating greater than 105 \$\newline\$ Q2 = players who have a defensive rating and offensive rating greater than 110 \$\newline\$ Q3 = players in Q2 who average atleast .75 steal or .75 block a game

In [3]:

```

q1 = cleaned3[(cleaned3['DRTG']>=105) & (cleaned3['ORTG']>=105)]
print("Number of players out of 356 that have ORTG & DRTG greater than 105: {
q2 = q1[(q1['DRTG']>=110) & (q1['ORTG']>=110)]
print("Number of players out of 147 that have ORTG & DRTG greater than 110: {
#print(q2.head(20))
q3 = q2[(q2['SPG']>=.75) | (q2['BPG']>=.75)]
print("Number of players out of q2 that averages .75 steals or blocks per gam

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Number of players out of 356 that have ORTG & DRTG greater than 105: 147

Number of players out of 147 that have ORTG & DRTG greater than 110: 36

Number of players out of q2 that averages .75 steals or blocks per game: 17

\$\newline\$ Querying (based off versatility (ability to rbd, score and assist frequently))

\$\newline\$ Q4 = players who avg 10+ ppg, 5+ apg, 5+rpg \$\newline\$

In [4]:

```

q4 = cleaned3[(cleaned3['PPG']>10) & (cleaned3['APG']>5) & (cleaned3['RPG']>5
print("Number of players who average > 10ppg & 5apg & 5rpg out of 356: {}".fo
print(q4.head(23))

```

Number of players who average > 10ppg & 5apg & 5rpg out of 356: 23

	FULL NAME	TEAM	POS	AGE	GP	MPG	MIN%	USG%	TO%	FTA
\										
13	Giannis Antetokounmpo	Mil	F	27.27	57	32.8	68.4	34.8	12.1	659
16	Cole Anthony	Orl	G	21.83	55	32.8	68.3	25.5	14.2	220
28	LaMelo Ball	Cha	G	20.56	61	32.1	66.9	28.2	15.0	214
29	Lonzo Ball	Chi	G	24.38	35	34.6	72.2	17.3	17.2	28
74	Malcolm Brogdon	Ind	G	29.25	34	33.6	70.1	24.5	10.9	162
96	Jimmy Butler	Mia	F	32.50	47	34.0	70.8	26.8	10.4	384
138	Cade Cunningham	Det	G	20.47	54	32.5	67.8	27.1	17.0	130
141	Stephen Curry	Gol	G	34.00	62	34.9	72.7	30.7	13.1	290
149	DeMar DeRozan	Chi	G-F	32.60	63	36.1	75.1	31.9	9.0	501
158	Luka Doncic	Dal	F-G	23.04	52	35.7	74.3	37.1	15.3	386
173	Kevin Durant	Bro	F	33.45	41	36.6	76.3	31.5	12.0	290
216	Paul George	Lac	F	31.87	26	35.5	74.0	34.0	15.2	117
218	Josh Giddey	Okl	G	19.43	54	31.5	65.6	22.2	19.5	79
246	James Harden	Bro	G	32.55	44	37.0	77.1	28.4	19.8	350
306	Brandon Ingram	Nor	F	24.53	50	34.2	71.3	29.4	11.6	277
317	LeBron James	Lal	F	37.20	49	36.8	76.7	32.0	12.5	292
337	Nikola Jokic	Den	C	27.06	61	33.1	69.0	31.4	15.7	361
435	Khris Middleton	Mil	F	30.59	56	32.4	67.6	26.8	14.0	255
451	Ja Morant	Mem	G	22.59	55	33.3	69.3	33.7	12.4	399
461	Dejounte Murray	San	G	25.48	59	34.7	72.3	27.1	11.6	192
532	Julius Randle	Nyk	F-C	27.29	66	35.5	73.9	28.6	15.0	362
574	Pascal Siakam	Tor	F	27.95	54	37.6	78.3	25.4	11.9	293
662	Russell Westbrook	Lal	G	33.33	66	34.3	71.5	27.5	17.7	338

	...	RPG	TRB%	APG	AST%	SPG	BPG	TOPG	VIV	ORTG	DRTG
13	...	11.5	18.4	5.9	32.9	1.05	1.39	3.23	15.4	124.2	99.2
16	...	5.6	9.1	5.7	28.2	0.78	0.27	2.73	10.0	103.0	107.0
28	...	6.9	11.2	7.3	34.9	1.51	0.43	3.21	12.4	109.3	104.8
29	...	5.4	8.8	5.1	19.8	1.83	0.89	2.34	8.2	110.0	106.9
74	...	5.3	8.6	6.0	27.4	0.88	0.38	2.09	10.1	116.2	112.5
96	...	6.1	10.2	5.6	27.2	1.79	0.51	2.15	10.6	122.8	105.8
138	...	5.9	9.7	5.3	28.1	1.15	0.65	3.50	10.0	95.5	106.9
141	...	5.3	8.2	6.4	30.2	1.35	0.37	3.23	10.9	114.7	104.3
149	...	5.4	8.4	5.1	24.1	0.94	0.32	2.37	10.2	118.2	109.8
158	...	9.3	14.4	8.6	45.2	1.21	0.56	4.50	14.7	108.9	101.0
173	...	7.3	10.8	5.9	28.1	0.80	0.93	3.22	11.9	119.5	109.8
216	...	7.1	10.4	5.5	26.9	2.04	0.38	4.19	11.1	97.9	102.4
218	...	7.8	12.6	6.4	32.7	0.94	0.37	3.17	10.9	97.5	108.1
246	...	8.0	11.7	10.2	40.2	1.27	0.70	4.82	13.2	111.5	107.9
306	...	5.7	9.1	5.5	27.9	0.64	0.46	2.72	10.5	110.3	109.7
317	...	8.1	11.8	6.3	31.2	1.43	1.04	3.43	12.5	117.0	107.8
337	...	13.8	23.1	8.1	44.1	1.33	0.82	3.72	17.3	125.6	99.8
435	...	5.3	8.6	5.4	25.7	1.11	0.23	2.84	10.3	113.3	105.8
451	...	5.8	9.0	6.7	34.5	1.20	0.38	3.38	12.3	115.5	109.1
461	...	8.4	12.7	9.3	40.9	2.10	0.32	2.58	13.5	112.4	106.2
532	...	9.9	14.8	5.2	25.2	0.76	0.56	3.47	11.5	103.8	103.1
574	...	8.3	11.9	5.1	22.2	1.24	0.65	2.65	10.4	113.7	103.6
662	...	7.5	11.6	7.1	32.0	0.97	0.27	3.88	11.5	99.8	105.6

[23 rows x 28 columns]

## Leaders in assists (Top 10)

In [7]: `cleaned3.nlargest(n=10, columns=['APG'])`

Out[7]:

	FULL NAME	TEAM	POS	AGE	GP	MPG	MIN%	USG%	TO%	FTA	...	RPG	TRB%	AF
500	Chris Paul	Pho	G	36.86	58	33.0	68.8	20.0	15.6	185	...	4.5	7.2	10
246	James Harden	Bro	G	32.55	44	37.0	77.1	28.4	19.8	350	...	8.0	11.7	10
690	Trae Young	Atl	G	23.48	62	34.8	72.4	34.8	14.5	446	...	3.8	6.0	9
461	Dejounte Murray	San	G	25.48	59	34.7	72.3	27.1	11.6	192	...	8.4	12.7	9
158	Luka Doncic	Dal	F-G	23.04	52	35.7	74.3	37.1	15.3	386	...	9.3	14.4	8
211	Darius Garland	Cle	G	22.13	53	34.9	72.8	27.9	18.1	157	...	3.4	5.3	8
337	Nikola Jokic	Den	C	27.06	61	33.1	69.0	31.4	15.7	361	...	13.8	23.1	8
395	Kyle Lowry	Mia	G	35.97	52	34.2	71.4	18.3	20.6	144	...	4.6	7.6	7
231	Draymond Green	Gol	F	32.03	34	29.9	62.4	14.4	31.5	67	...	7.6	13.7	7
241	Tyrese Haliburton	Sac	G	22.04	51	34.4	71.8	18.2	15.4	104	...	3.9	6.1	7

10 rows × 28 columns

In [10]: `cleaned3.nlargest(n=20, columns=['PPG', 'APG'])`

Out[10]:

	FULL NAME	TEAM	POS	AGE	GP	MPG	MIN%	USG%	TO%	FTA	...	RPG	TRB%
<b>180</b>	Joel Embiid	Phi	C-F	28.00	54	33.3	69.3	37.1	10.7	646	...	11.3	18.9
<b>317</b>	LeBron James	Lal	F	37.20	49	36.8	76.7	32.0	12.5	292	...	8.1	11.8
<b>13</b>	Giannis Antetokounmpo	Mil	F	27.27	57	32.8	68.4	34.8	12.1	659	...	11.5	18.4
<b>173</b>	Kevin Durant	Bro	F	33.45	41	36.6	76.3	31.5	12.0	290	...	7.3	10.8
<b>690</b>	Trae Young	Atl	G	23.48	62	34.8	72.4	34.8	14.5	446	...	3.8	6.0
<b>149</b>	DeMar DeRozan	Chi	G-F	32.60	63	36.1	75.1	31.9	9.0	501	...	5.4	8.4
<b>158</b>	Luka Doncic	Dal	F-G	23.04	52	35.7	74.3	37.1	15.3	386	...	9.3	14.4
<b>451</b>	Ja Morant	Mem	G	22.59	55	33.3	69.3	33.7	12.4	399	...	5.8	9.0
<b>605</b>	Jayson Tatum	Bos	F-G	24.03	65	36.4	75.8	32.2	10.6	405	...	8.2	12.7
<b>337</b>	Nikola Jokic	Den	C	27.06	61	33.1	69.0	31.4	15.7	361	...	13.8	23.7
<b>307</b>	Kyrie Irving	Bro	G	29.97	18	36.2	75.3	29.0	9.8	78	...	4.6	6.8
<b>64</b>	Devin Booker	Pho	G	25.37	57	34.3	71.5	31.8	9.6	282	...	5.1	8.0
<b>141</b>	Stephen Curry	Gol	G	34.00	62	34.9	72.7	30.7	13.1	290	...	5.3	8.1
<b>442</b>	Donovan Mitchell	Uta	G	25.51	55	33.5	69.9	32.7	11.8	244	...	4.1	6.7
<b>216</b>	Paul George	Lac	F	31.87	26	35.5	74.0	34.0	15.2	117	...	7.1	10.4
<b>378</b>	Zach LaVine	Chi	G-F	27.01	54	34.8	72.5	29.1	11.9	270	...	4.9	7.9
<b>630</b>	Karl-Anthony Towns	Min	C-F	26.33	62	33.6	70.0	27.5	13.8	388	...	9.8	15.4
<b>387</b>	Damian Lillard	Por	G	31.66	29	36.4	75.9	29.4	11.6	181	...	4.1	6.1
<b>219</b>	Shai Gilgeous-Alexander	Okc	G-F	23.67	52	34.6	72.2	30.7	11.2	382	...	4.9	7.1
<b>44</b>	Bradley Beal	Was	G	28.71	40	36.0	74.9	30.7	13.6	203	...	4.7	7.1

20 rows x 28 columns