

# NBA FAS Capstone

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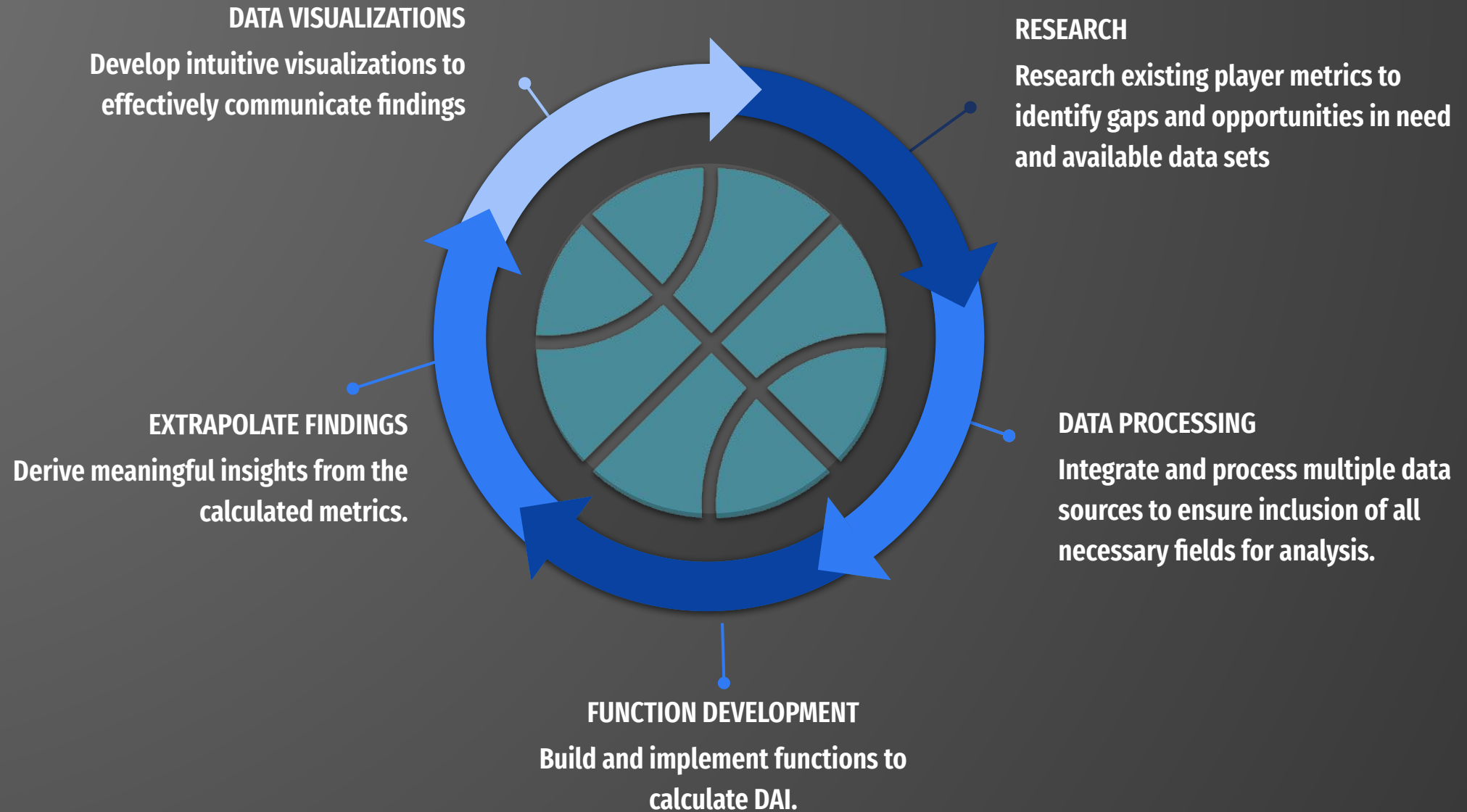


# Novel Tracking Metric: Defensive Attention Index (DAI)

- DAI: # of players drawn by ball handler / possessions
  - “At each time-stamp”
- Inspiration: Emerging Era of Offense
  - Average points scored per game = **115.6** (highest since the 1970 )
  - Offensive Progression > Defensive Progression
- Prioritize Defense through DAI
  - Offensive metric to prepare defensive strategies
    - General Manager & Coach insight
    - Trade/Draft notes

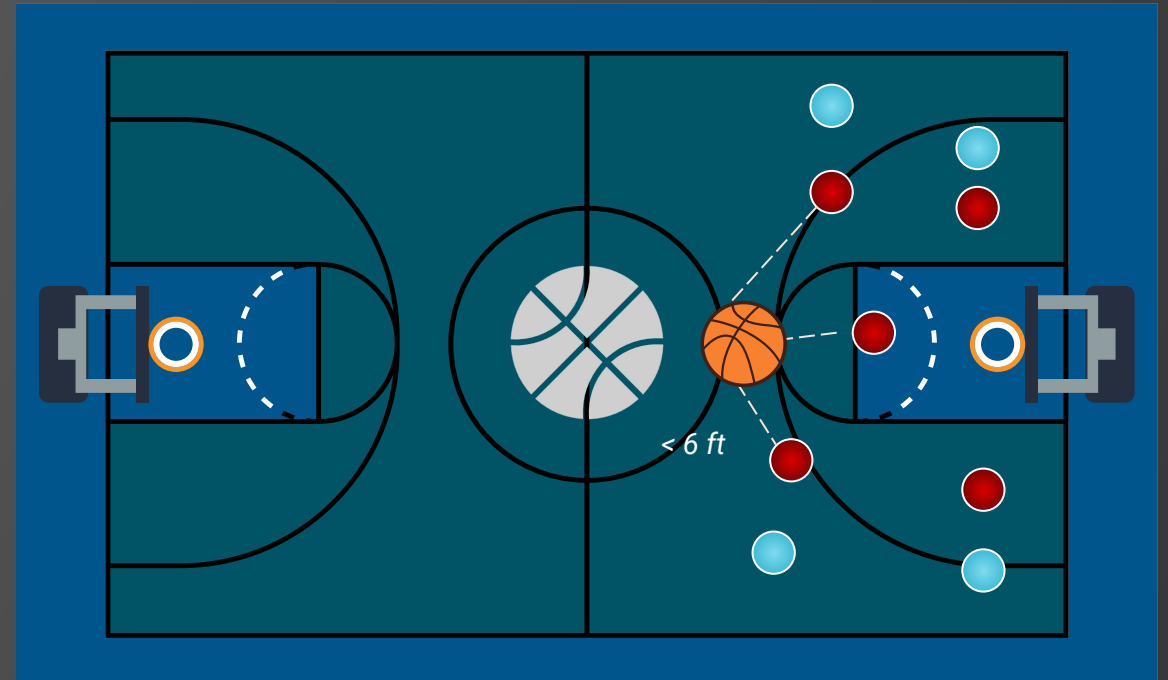


# Strategic Process

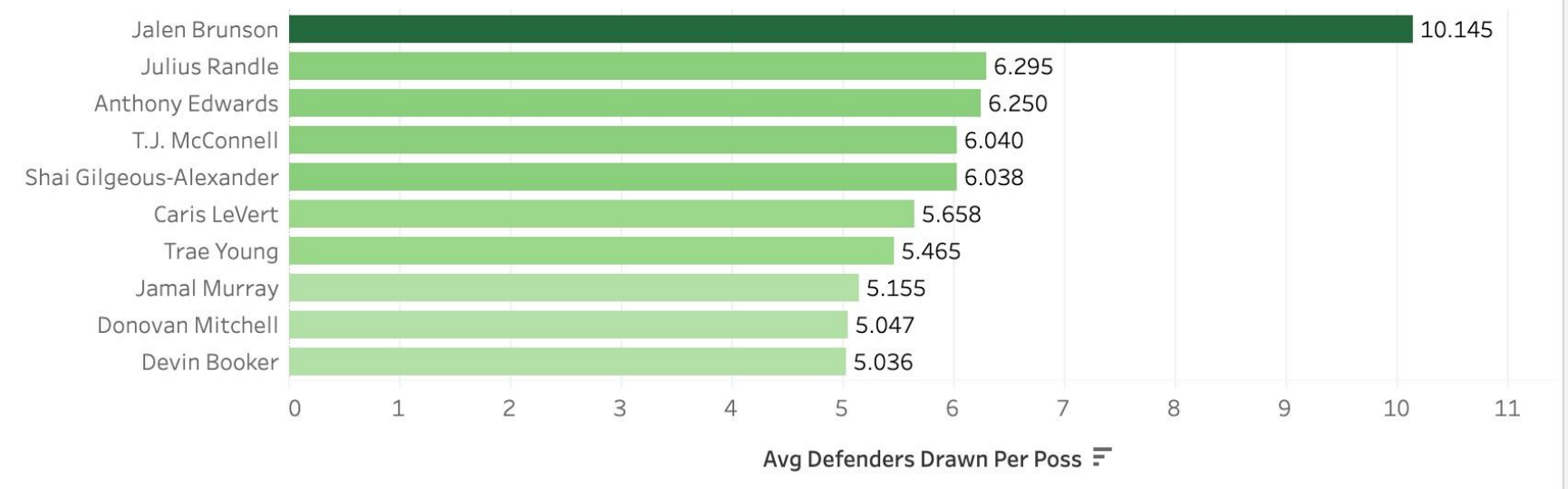


# Function Definition & Data Handling

- Calculating Distance & Active Defenders
  - Joined tracking & events data
  - Leveraged coordinate data to calculate distance between handler & defender @ each timestamp
  - Removed certain events, due to duplicate timestamp
    - Rebounds get counted as two events under the same timestamp ("REBOUND" and "TOUCH")
    - Only "TOUCH" is counted
  - Active defender must be within 6ft of ball handler
  - Calculated the sum of active defenders drawn per game
- Calculating Number of Possessions
  - Joined tracking with possessions
  - Calculated number of total possessions for each player.
  - Condition was minimum 20 possessions.
- Calculating DAI
  - Joined total defenders drawn & total # of possessions with player name & game ID
  - New DAI column (# defenders drawn / # of total possessions)



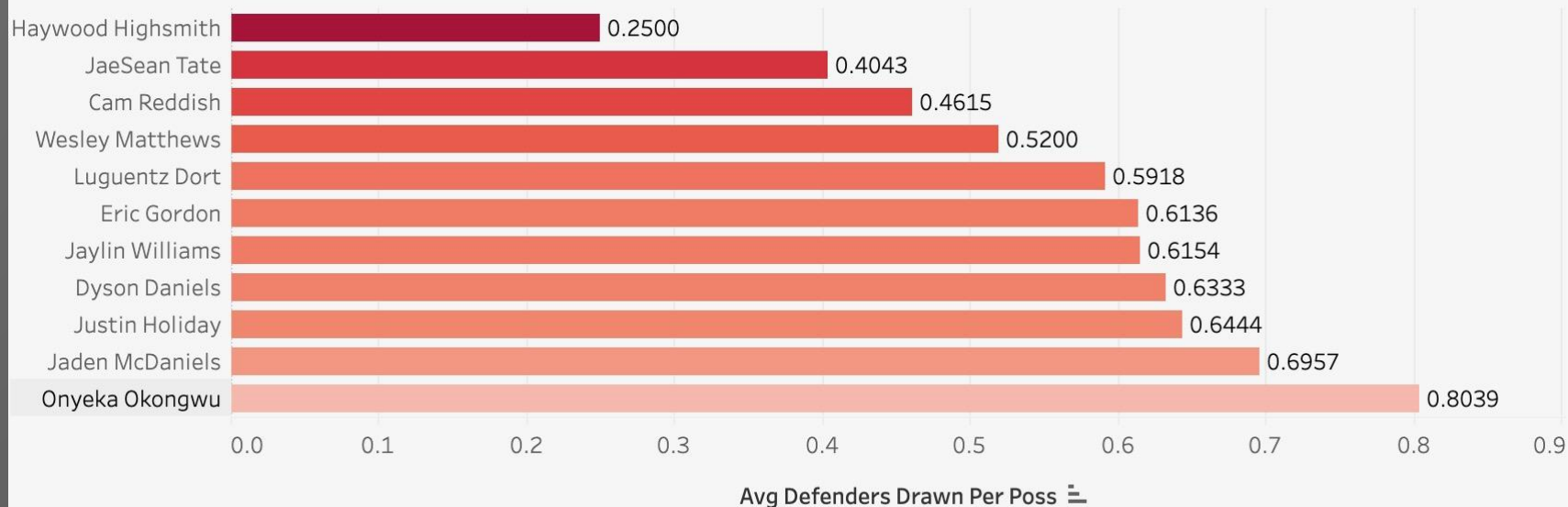
# NBA Players with Highest Average DAI



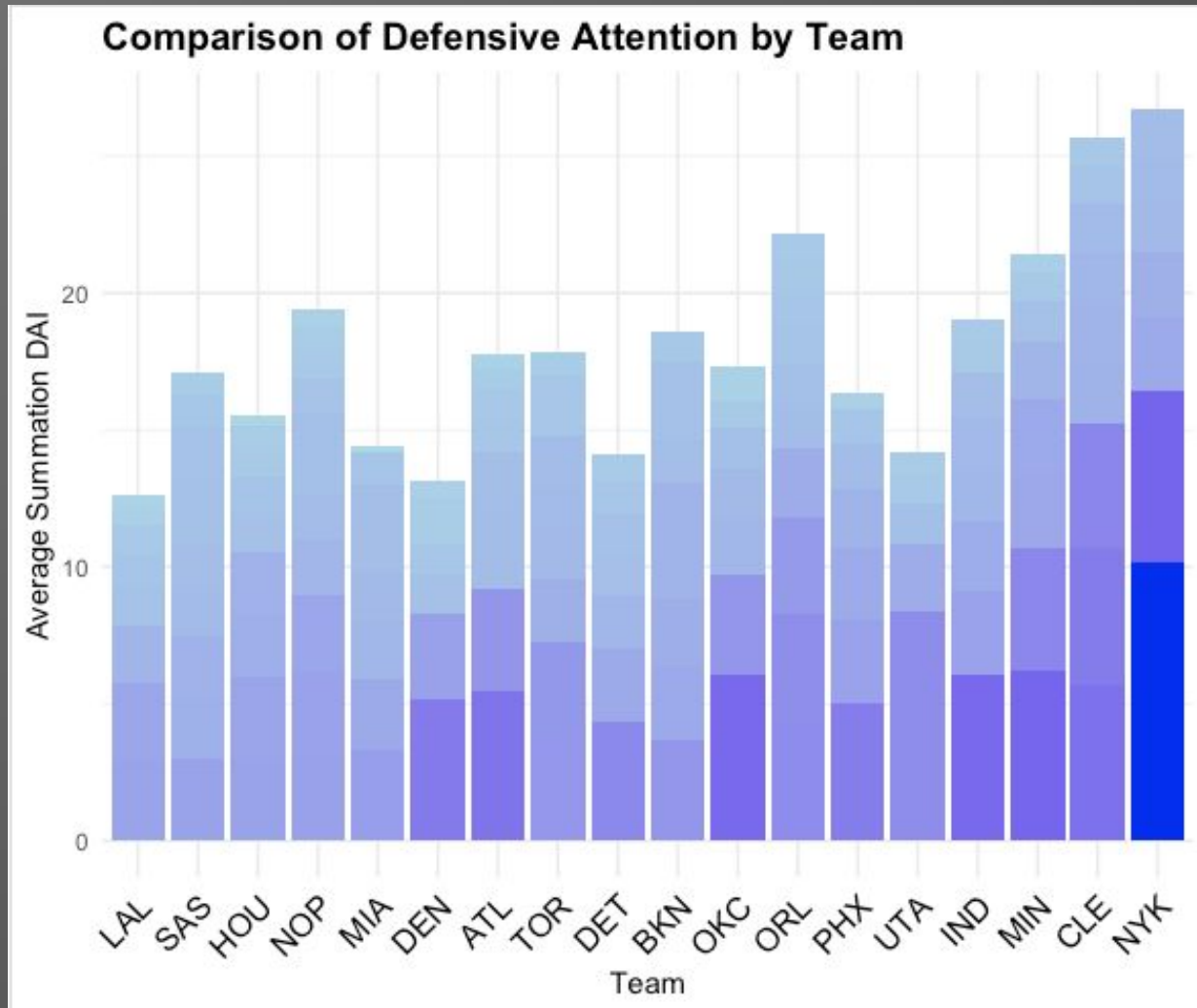
	playerName.x	avg_defenders_drawn_per_poss	total_defenders_drawn	total_num_of_poss
1	Jalen Brunson	10.1454545	558	55
2	Julius Randle	6.2954545	277	44
3	Anthony Edwards	6.2500000	325	52
4	T.J. McConnell	6.0400000	151	25
5	Shai Gilgeous-Alexander	6.0377358	320	53
6	Caris LeVert	5.6578947	215	38
7	Trae Young	5.4653061	574	104
8	Jamal Murray	5.1551724	299	58
9	Donovan Mitchell	5.0468750	323	64
10	Devin Booker	5.0363636	277	55



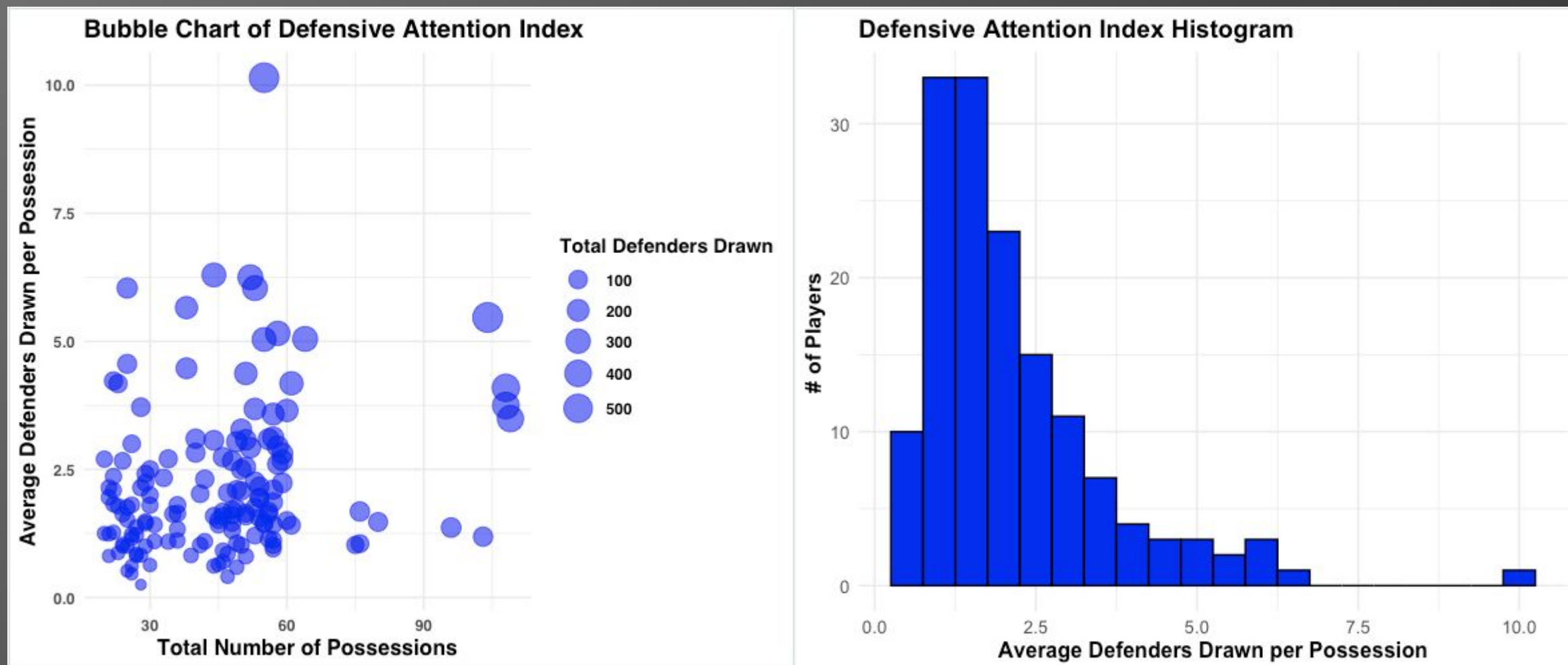
## NBA Players with the Lowest Average DAI



139	Onyeka Okongwu	0.8039216	41	51
140	Jaden McDaniels	0.6956522	32	46
141	Justin Holiday	0.6444444	29	45
142	Dyson Daniels	0.6333333	19	30
143	Jaylin Williams	0.6153846	16	26
144	Eric Gordon	0.6136364	27	44
145	Luguentz Dort	0.5918367	29	49
146	Wesley Matthews	0.5200000	13	25
147	Cam Reddish	0.4615385	12	26
148	JaeSean Tate	0.4042553	19	47
149	Haywood Highsmith	0.2500000	7	28



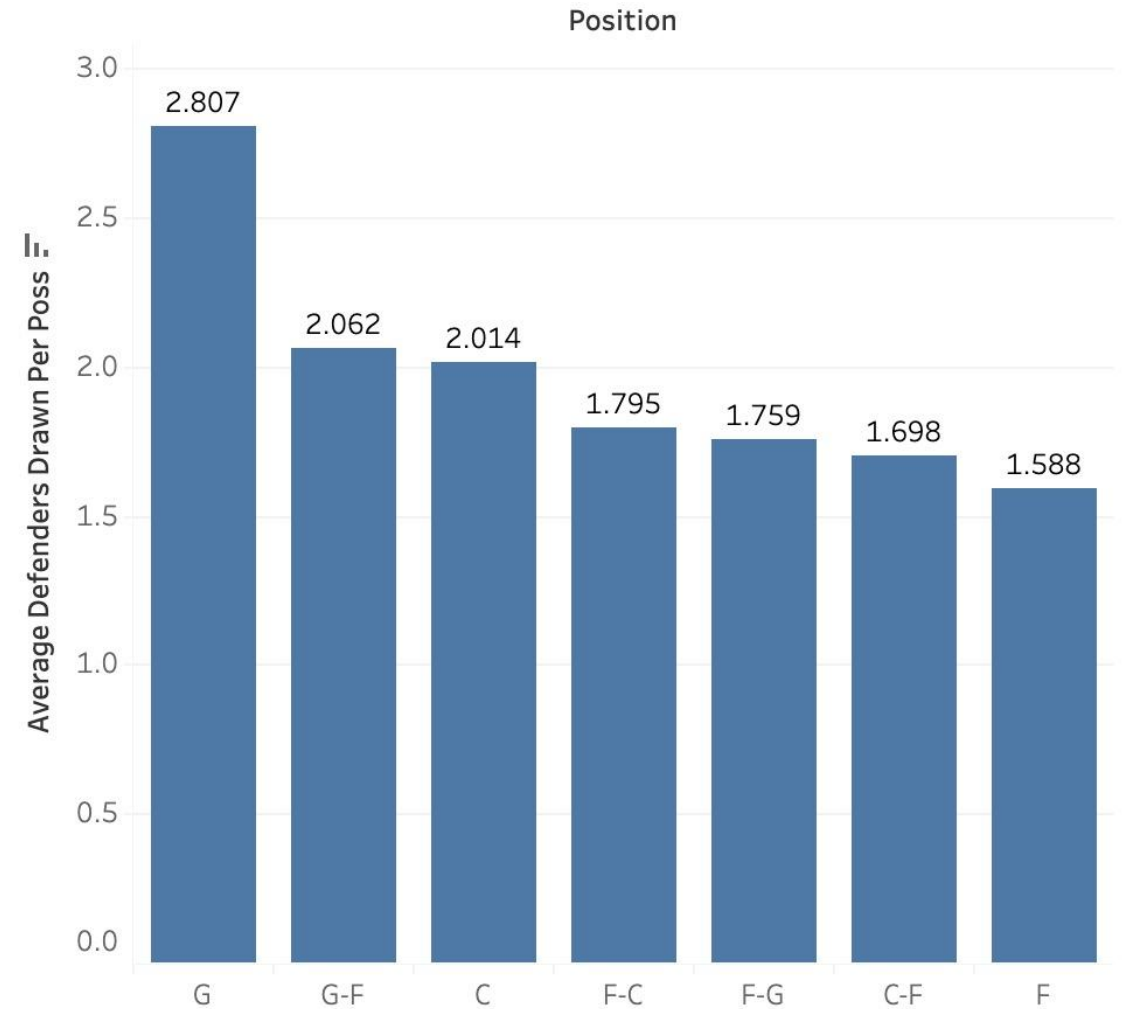
- Teams that engage more players defensively
  - New York Knicks **lead** teams in DAI
  - Cleveland, Orlando, Minnesota
- Teams that engage **less** players defensively
  - Los Angeles Lakers came **last** in DAI
  - Denver, Utah, Detroit
- Players with higher/lower DAI -> darker/lighter gradients
  - Jalen Brunson (NYK): **10.145 (highest)**
  - Haywood Highsmith (MIA): **0.25 (lowest)**
- Applications
  - Reinforce defensive emphasis
  - Classification (pass-first, iso, slow/fast, etc.)







Average DAI Per Position



# Recap/Future Applications



- **Build offensive/defensive strategies**
  - Cater against specific teams
- **Player Evaluation & Scouting Metric**
  - Review players' defensive effectiveness
- **Post-game Performance Analysis**
  - Adjust substitution patterns
  - Take advantage of mis-matches