Package ‘SpatialBall’

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Type Package
Title Spatial NBA Visualization and Analysis
Version 0.1.0
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Description Creates offensive and defensive shot charts for teams, players and seasons, and more comprehensively for spatial analysis of NBA data. Includes data from the 2016-17 NBA season extracted from <http://stats.nba.com>.
URL https://derek-corcoran-barrios.github.io/SpatialBall.html
Depends R (>= 2.10)
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R topics documented:

  DefShotSeasonGraphTeam ................................................. 2
  OffShotSeasonGraphTeam ............................................... 3
  PointShotSeasonGraphPlayer .......................................... 4
  season2017 .................................................................. 5
  ShotSeasonGraph ............................................................ 6
  ShotSeasonGraphPlayer ..................................................... 7

Index 8
**DefShotSeasonGraphTeam**

*Generates an defensive shot chart for a given team*

**Description**

Creates a defensive Shot Chart for the desired team on a given season, that is a shot chart of the shots the team receives during the year.

**Usage**

```r
DefShotSeasonGraphTeam(Seasondata, team, quant = 0.4, type = "PPS")
```

**Arguments**

- **Seasondata**: a data frame with the details of the season
- **team**: the name of the team that you want to make a graph of
- **quant**: the quantile of shots to be graphed, defaults to 0.4
- **type**: either "PPS" for points per shot or "PCT" for percentage

**Value**

a shot chart graph

**Author(s)**

Derek Corcoran <derek.corcoran.barrios@gmail.com>

**Examples**

```r
data("season2017")
# Examples with several teams
DefShotSeasonGraphTeam(season2017, team = "Sas")
DefShotSeasonGraphTeam(season2017, team = "Cle")
# Examples with shooting percentage instead of Points per Shot
DefShotSeasonGraphTeam(season2017, team = "Cle", type = "PCT")
```
Generates an offensive shot chart for a given team

Description

creates an offensive Shot Chart for the desired team on a given season

Usage

OffShotSeasonGraphTeam(Seasondata, team, quant = 0.4, type = "PPS")

Arguments

Seasondata a data frame with the details of the season
team the name of the team that you want to make a graph ofquant the quantile of shots to be graphed, defaults to 0.4type either "PPS" for points per shot or "PCT" for percentage

Value

a shot chart graph

Author(s)

Derek Corcoran <derek.corcoran.barrios@gmail.com>

Examples

data("season2017")
#Examples with several teams
OffShotSeasonGraphTeam(season2017, team = "GSW")
OffShotSeasonGraphTeam(season2017, team = "Hou")
#Examples with shooting percentage instead of Points per Shot
OffShotSeasonGraphTeam(season2017, team = "ORL", type = "PCT")
**PointShotSeasonGraphPlayer**

*Generates a point based shot chart for a given player*

**Description**

Creates a shot chart for a player on a given season creating a point for each taken shot separating by colors mades and misses, also as you can add a kernel of the frequency of usage of areas.

**Usage**

```r
PointShotSeasonGraphPlayer(Seasondata, player, Type = "Both", kernel = TRUE)
```

**Arguments**

- **Seasondata**: a data frame with the details of the season.
- **player**: the name of the player that you want to make a graph of.
- **Type**: either "Both" (default), for plotting every point, "Made" to plot only the made shots or "Missed" to plot only the missed shots.
- **kernel**: Logical, weather to plot or not the kernel of shots.

**Value**

- a shot chart graph

**Author(s)**

Derek Corcoran <derek.corcoran.barrios@gmail.com>

**Examples**

```r
data("season2017")
#Examples with several players
PointShotSeasonGraphPlayer(season2017, player = "James Harden")
PointShotSeasonGraphPlayer(season2017, player = "DeMar DeRozan")

PointShotSeasonGraphPlayer(season2017, player = "Stephen Curry", kernel = FALSE)
```
dataset for all the shots in the 2016-17 season of the NBA

Description
A dataset containing a dataframe

Usage
season2017

Format
Data frame with the following columns:

<table>
<thead>
<tr>
<th>Column</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRID_TYPE</td>
<td>A stack with eight time slices for species A</td>
</tr>
<tr>
<td>GAME_ID</td>
<td>A stack with eight time slices for species b</td>
</tr>
<tr>
<td>GAME_EVENT_ID</td>
<td>Id of the play when the shot happened</td>
</tr>
<tr>
<td>PLAYER_ID</td>
<td>Numeric code of the player who took the shot</td>
</tr>
<tr>
<td>PLAYER_NAME</td>
<td>Name of the player who took the shot</td>
</tr>
<tr>
<td>TEAM_ID</td>
<td>Numeric code of the team</td>
</tr>
<tr>
<td>TEAM_NAME</td>
<td>Name of the team of the player who took the shot</td>
</tr>
<tr>
<td>PERIOD</td>
<td>Quarter when the shot was taken 1 to 4, if there are overtimes it keeps adding, that is period 6 is the second overtime</td>
</tr>
<tr>
<td>MINUTES_REMAINING</td>
<td>minutes remaining</td>
</tr>
<tr>
<td>SECONDS_REMAINING</td>
<td>seconds remaining in the minute</td>
</tr>
<tr>
<td>EVENT_TYPE</td>
<td>Weather the shot was made or not</td>
</tr>
<tr>
<td>ACTION_TYPE</td>
<td>What kind of shot was taken, this has 52 options ranging from hook bank shot to reverse dunk shot</td>
</tr>
<tr>
<td>SHOT_TYPE</td>
<td>Weather the shot was 2 point or 3 point shot</td>
</tr>
<tr>
<td>SHOT_ZONE_BASIC</td>
<td>Factor, one of &quot;Above the Break 3&quot;, &quot;Backcourt&quot;, &quot;In The Paint (Non-RA)&quot;, &quot;Left Corner 3&quot;, &quot;Mid-Range&quot;, &quot;Restricted Area&quot;, &quot;Right Corner 3&quot;</td>
</tr>
<tr>
<td>SHOT_ZONE_AREA</td>
<td>One of &quot;Back Court(BC)&quot;, &quot;Center(C)&quot;, &quot;Left Side Center(LC)&quot;, &quot;Left Side(L)&quot;, &quot;Right Side Center(RC)&quot;, &quot;Right Side(R)&quot;</td>
</tr>
<tr>
<td>SHOT_ZONE_RANGE</td>
<td>Distance range were the shot was attempted</td>
</tr>
<tr>
<td>SHOT_DISTANCE</td>
<td>Shot distance in feet</td>
</tr>
<tr>
<td>LOC_X</td>
<td>x coordinate of the player when the shot was attempted</td>
</tr>
<tr>
<td>LOC_Y</td>
<td>y coordinate of the player when the shot was attempted</td>
</tr>
<tr>
<td>SHOT_ATTEMPTED_FLAG</td>
<td>value 1 which means that there was an attempted shot</td>
</tr>
<tr>
<td>SHOT_MADE_FLAG</td>
<td>integer, 1 if the shot was made, 0 if it was missed</td>
</tr>
<tr>
<td>GAME_DATE</td>
<td>Date when the game was played</td>
</tr>
<tr>
<td>HTM</td>
<td>Name of the home team</td>
</tr>
<tr>
<td>VTM</td>
<td>Name of the visiting team</td>
</tr>
</tbody>
</table>
ShotSeasonGraph  
*plot the shot chart of a whole NBA Season*

**Description**

This function takes an NBA season object and makes a shot chart of all the shots taken throughout that regular season. You can choose to either plot the results based on Points per Shot or on Shooting Percentage.

**Usage**

```r
ShotSeasonGraph(Seasondata, quant = 0.4, type = "PPS")
```

**Arguments**

- `Seasondata`: The information of shots, it can be downloaded with function `read_season`.
- `quant`: A number between 0 and 1, it determines quantile of shots used to plot the shot chart, (default is 0.4).
- `type`: A character to specify if the shot chart is based on Points per Shot ("PPS") or percentage ("PCT").

**Value**

A `ggplot` object plotting the shot chart of a given NBA season.

**Author(s)**

Derek Corcoran <derek.corcoran.barrios@gmail.com>

**See Also**

- `DefShotSeasonGraphTeam`
- `OffShotSeasonGraphTeam`

**Examples**

```r
data("season2017")
ShotSeasonGraph(season2017, quant = 0.4)
ShotSeasonGraph(season2017, quant = 0.4, type = "PCT")
```
**ShotSeasonGraphPlayer**

Generates a shot chart for a given player

**Description**

Creates a shot chart for a player on a given season

**Usage**

```
ShotSeasonGraphPlayer(Seasondata, player, quant = 0.4, type = "PPS")
```

**Arguments**

- **Seasondata**: a data frame with the details of the season
- **player**: the name of the player that you want to make a graph of
- **quant**: the quantile of shots to be graphed, defaults to 0.4
- **type**: either "PPS" for points per shot or "PCT" for percentage

**Value**

a shot chart graph

**Author(s)**

Derek Corcoran <derek.corcoran.barrios@gmail.com>

**Examples**

```
data("season2017")
#Examples with several players
ShotSeasonGraphPlayer(season2017, player = "Stephen Curry")
ShotSeasonGraphPlayer(season2017, player = "DeMar DeRozan")

#Examples with percentage instead of points per shot
ShotSeasonGraphPlayer(season2017, player = "Stephen Curry", type = "PCT")
```
Index

*Topic datasets
  season2017, 5

DefShotSeasonGraphTeam, 2, 6
OffShotSeasonGraphTeam, 3, 6
PointShotSeasonGraphPlayer, 4

season2017, 5
ShotSeasonGraph, 6
ShotSeasonGraphPlayer, 7