

# Week 7 & 8 - Assignment 4.2

## PYTHON

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

```
In [2]: #Load costco data into a dataframe
costco_df = pd.read_csv('costcos-geocoded.csv')
costco_df.head(5)
```

```
Out[2]:
```

	Address	City	State	Zip Code	Latitude	Longitude
0	1205 N. Memorial Parkway	Huntsville	Alabama	35801-5930	34.743095	-86.600955
1	3650 Galleria Circle	Hoover	Alabama	35244-2346	33.377649	-86.812420
2	8251 Eastchase Parkway	Montgomery	Alabama	36117	32.363889	-86.150884
3	5225 Commercial Boulevard	Juneau	Alaska	99801-7210	58.359200	-134.483000
4	330 West Dimond Blvd	Anchorage	Alaska	99515-1950	61.143266	-149.884217

```
In [3]: #Load ppg(points per game) data into a dataframe
ppg_df = pd.read_csv('ppg2008.csv')
ppg_df.head(5)
```

```
Out[3]:
```

	Name	G	MIN	PTS	FGM	FGA	FGP	FTM	FTA	FTP	...	3PA	3PP	ORB	DRB	TRB	AST	STL	BLK
0	Dwyane Wade	79	38.6	30.2	10.8	22.0	0.491	7.5	9.8	0.765	...	3.5	0.317	1.1	3.9	5.0	7.5	2.2	1
1	LeBron James	81	37.7	28.4	9.7	19.9	0.489	7.3	9.4	0.780	...	4.7	0.344	1.3	6.3	7.6	7.2	1.7	1
2	Kobe Bryant	82	36.2	26.8	9.8	20.9	0.467	5.9	6.9	0.856	...	4.1	0.351	1.1	4.1	5.2	4.9	1.5	0
3	Dirk Nowitzki	81	37.7	25.9	9.6	20.0	0.479	6.0	6.7	0.890	...	2.1	0.359	1.1	7.3	8.4	2.4	0.8	0
4	Danny Granger	67	36.2	25.8	8.5	19.1	0.447	6.0	6.9	0.878	...	6.7	0.404	0.7	4.4	5.1	2.7	1.0	1

5 rows × 21 columns

```
In [4]: ppg_df.columns
```

```
Out[4]: Index(['Name', 'G', 'MIN', 'PTS', 'FGM', 'FGA', 'FGP', 'FTM', 'FTA', 'FTP',
              '3PM', '3PA', '3PP', 'ORB', 'DRB', 'TRB', 'AST', 'STL', 'BLK', 'TO',
              'PF'],
              dtype='object')
```

## Python - HeatMap

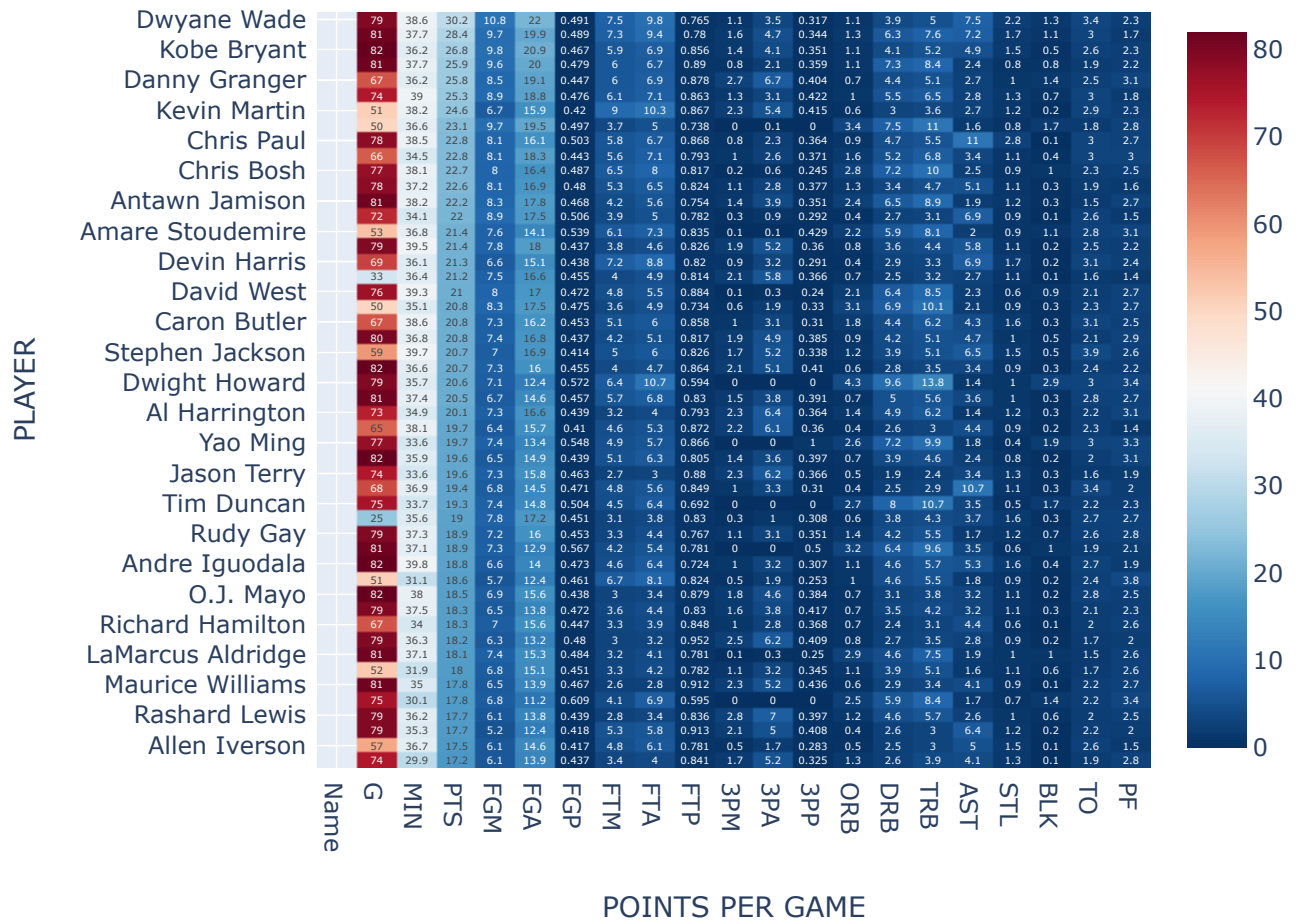
```
In [5]: fig = px.imshow(ppg_df, text_auto=True, aspect="auto", color_continuous_scale='RdBu_r', y=
```

```

labels=dict(x="POINTS PER GAME", y="PLAYER")
fig.update_layout(title = "2008 BASKETBALL PLAYER POINTS PER GAME")
fig.show()

```

## 2008 BASKETBALL PLAYER POINTS PER GAME



## Python - Spatial Chart

```

In [6]: map=folium.Map(prefer_canvas=True)

def plot(point):
    folium.CircleMarker(location=[point.Latitude,point.Longitude],
        radius=2, popup=point.Address+" "+point.City+" "+point.State+" "+
        fill_color=point.State,
        fill=True,
        fill_opacity=0.7,
        weight=5).add_to(map)

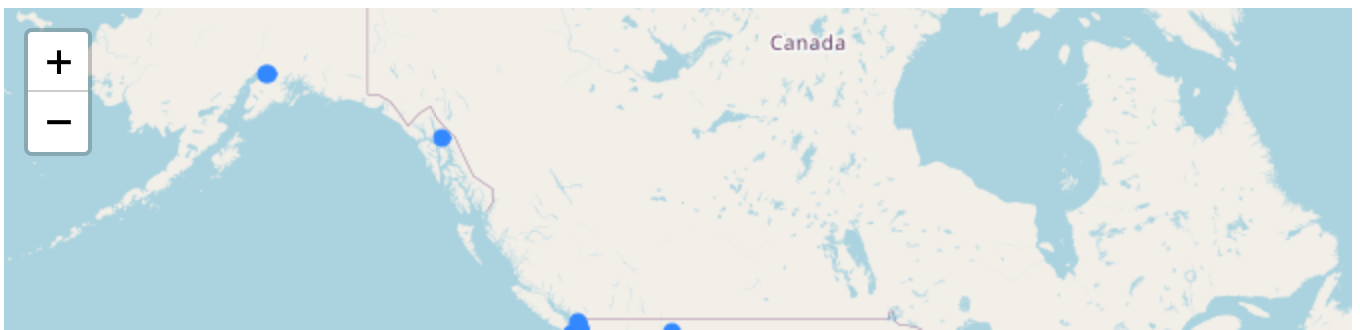
```

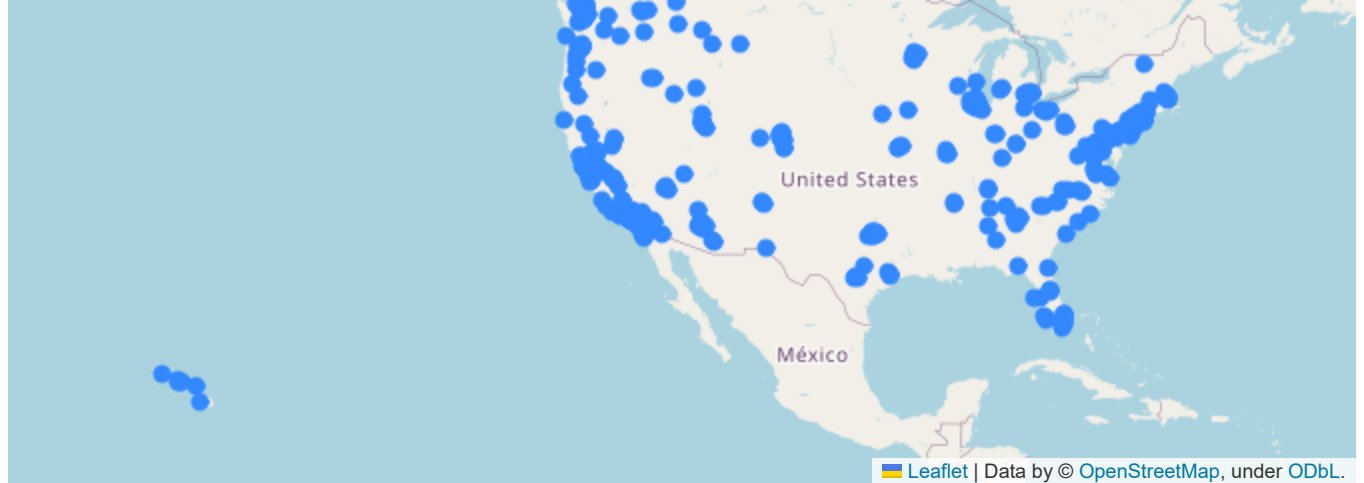
```

In [7]: costco_df.apply(plot,axis=1)
map.fit_bounds(map.get_bounds())
map

```

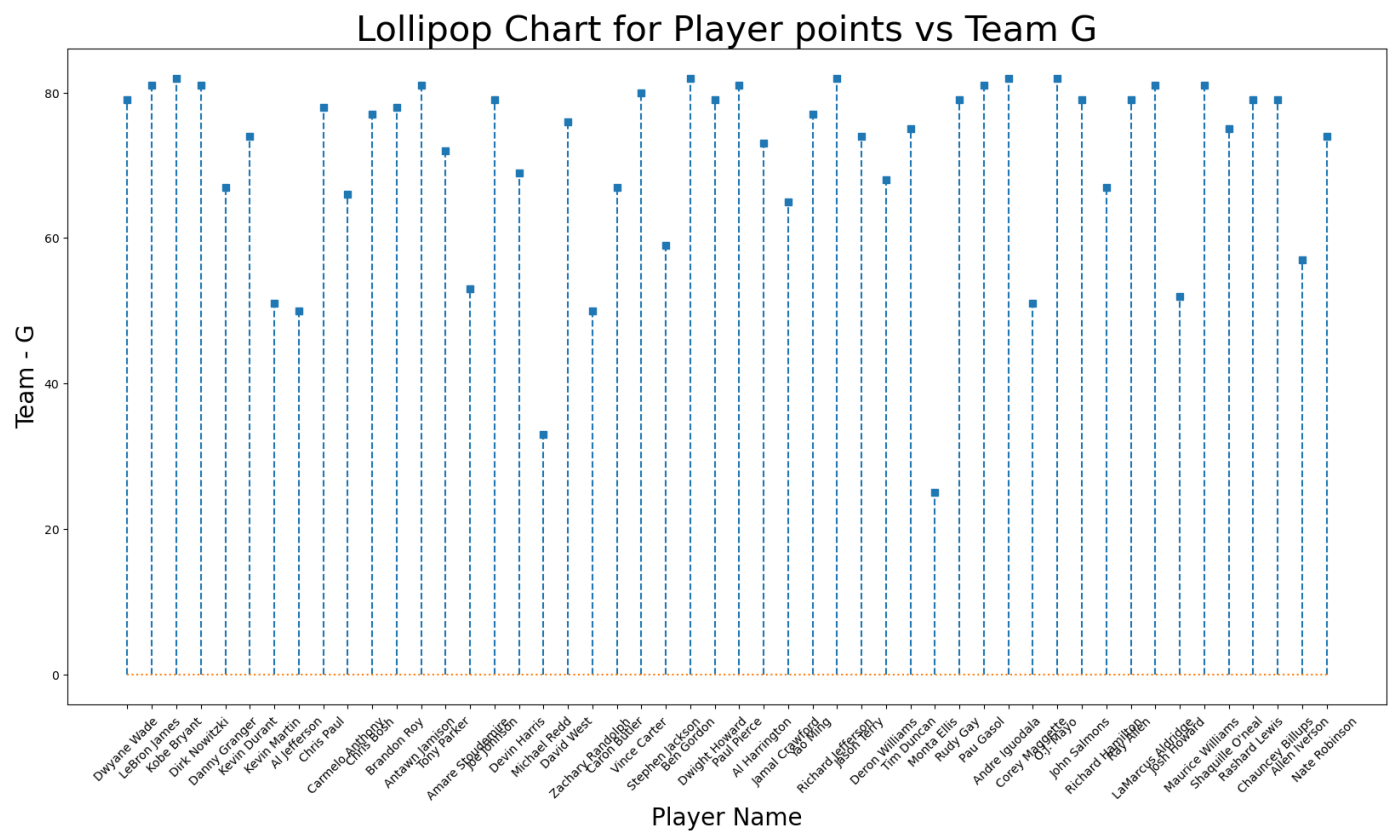
Out[7]:





## Python - Lollipop chart

```
In [8]: plt.figure(figsize=(20,10))
plt.stem(ppg_df['Name'], ppg_df.G, markerfmt = 's', linefmt='--', basefmt = ':')
plt.xticks(rotation=45)
plt.xlabel("Player Name", fontsize = 20)
plt.ylabel("Team - G", fontsize = 20)
plt.title("Lollipop Chart for Player points vs Team G", fontsize = 30)
plt.show()
```



# Assignment 4.2 - Week 5&6 in R

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2023-07-26

Load required libraries

```
library(readxl)
library(ggplot2)
library(plotly)
library(reshape2)
library(mapview)
```

Read xls into a dataframe

```
costco_df <- read.csv("C:/Masters/GitHub/Summer2023/DSC640-Data Presentation & Visualization/Week7&8/ex5-2/costcos-geocoded.csv")
nrow(costco_df)
```

```
## [1] 417
```

```
head(costco_df,5)
```

```
##           Address      City  State  Zip.Code Latitude Longitude
## 1  1205 N. Memorial Parkway Huntsville Alabama 35801-5930 34.74309 -86.60096
## 2    3650 Galleria Circle    Hoover Alabama 35244-2346 33.37765 -86.81242
## 3   8251 Eastchase Parkway Montgomery Alabama      36117 32.36389 -86.15088
## 4  5225 Commercial Boulevard    Juneau Alaska 99801-7210 58.35920 -134.48300
## 5    330 West Dimond Blvd  Anchorage  Alaska 99515-1950 61.14327 -149.88422
```

```
ppg_df <- read.csv("C:/Masters/GitHub/Summer2023/DSC640-Data Presentation & Visualization/Week7&8/ex5-2/ppg2008.csv")
nrow(ppg_df)
```

```
## [1] 50
```

```
head(ppg_df,5)
```

```
##           Name  G  MIN  PTS  FGM  FGA   FGP FTM FTA   FTP X3PM X3PA  X3PP ORB
## 1  Dwyane Wade 79 38.6 30.2 10.8 22.0 0.491 7.5 9.8 0.765  1.1  3.5 0.317 1.1
## 2  LeBron James 81 37.7 28.4  9.7 19.9 0.489 7.3 9.4 0.780  1.6  4.7 0.344 1.3
## 3   Kobe Bryant 82 36.2 26.8  9.8 20.9 0.467 5.9 6.9 0.856  1.4  4.1 0.351 1.1
## 4 Dirk Nowitzki 81 37.7 25.9  9.6 20.0 0.479 6.0 6.7 0.890  0.8  2.1 0.359 1.1
## 5 Danny Granger 67 36.2 25.8  8.5 19.1 0.447 6.0 6.9 0.878  2.7  6.7 0.404 0.7
##   DRB TRB AST STL BLK  TO  PF
## 1 3.9 5.0 7.5 2.2 1.3 3.4 2.3
## 2 6.3 7.6 7.2 1.7 1.1 3.0 1.7
## 3 4.1 5.2 4.9 1.5 0.5 2.6 2.3
## 4 7.3 8.4 2.4 0.8 0.8 1.9 2.2
## 5 4.4 5.1 2.7 1.0 1.4 2.5 3.1
```

## R - HEAT MAP

```
library(scales)
library(plyr)

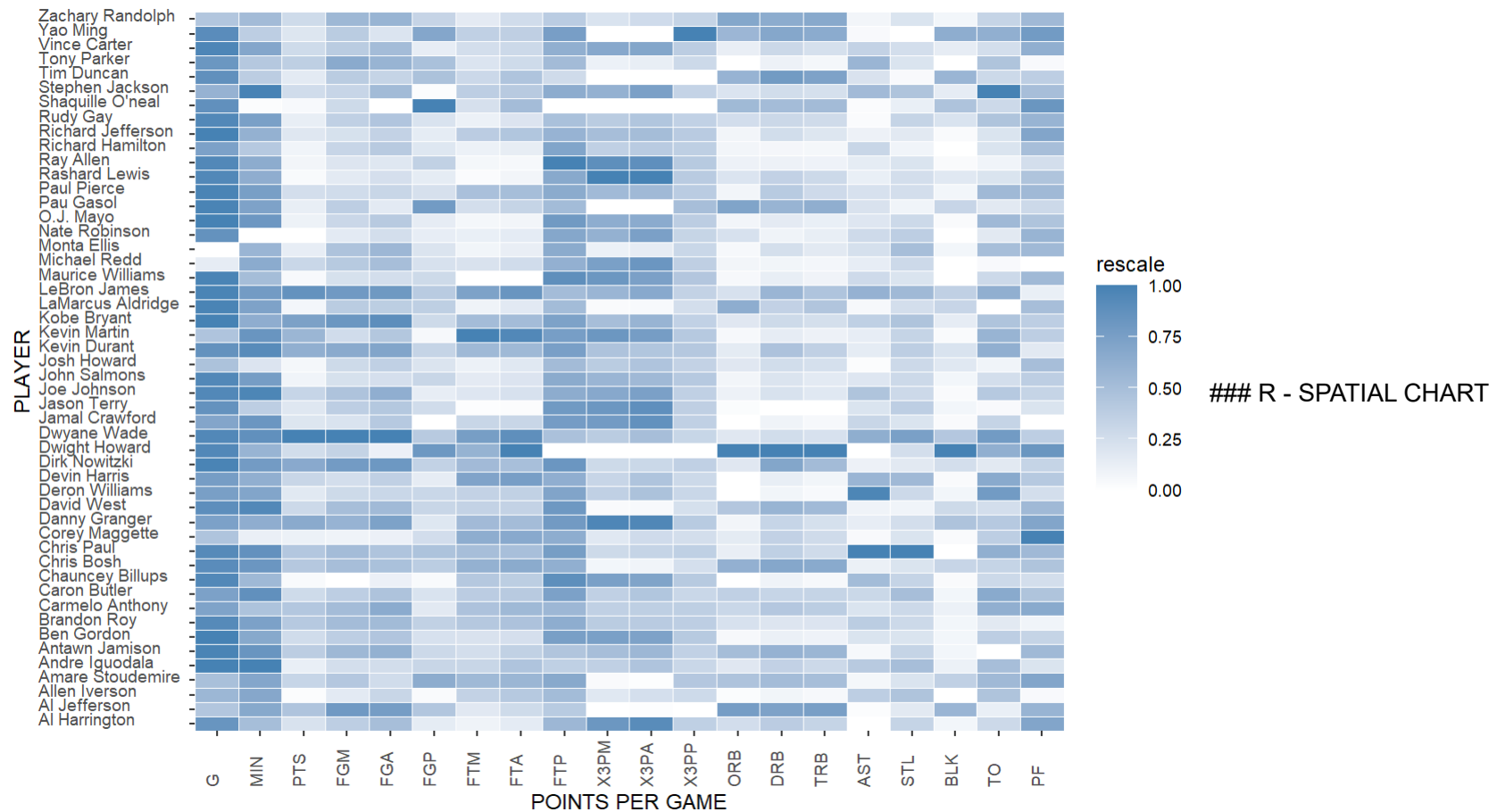
df_melt <- melt(ppg_df)

df_melt <- ddply(df_melt, .(variable),transform,rescale=rescale(value))
base_size <- 9

ggp <- ggplot(df_melt, aes(variable,Name)) +
  geom_tile(aes(fill=rescale),color='white') +
  scale_fill_gradient(low="white",high = "steelblue")+
  theme_grey(base_size = base_size) + labs(x = "", y = "") + scale_x_discrete(expand = c(0, 0)) +
  scale_y_discrete(expand = c(0, 0)) +
  theme(axis.text.x=element_text(angle=90, hjust=0, vjust= 0.1)) +
  theme(axis.text.y=element_text(hjust=0, vjust= 0.1)) +
  ggtitle("R - 2008 BASKETBALL PLAYER POINTS PER GAME") +
  xlab("POINTS PER GAME") +
  ylab("PLAYER")

ggp
```

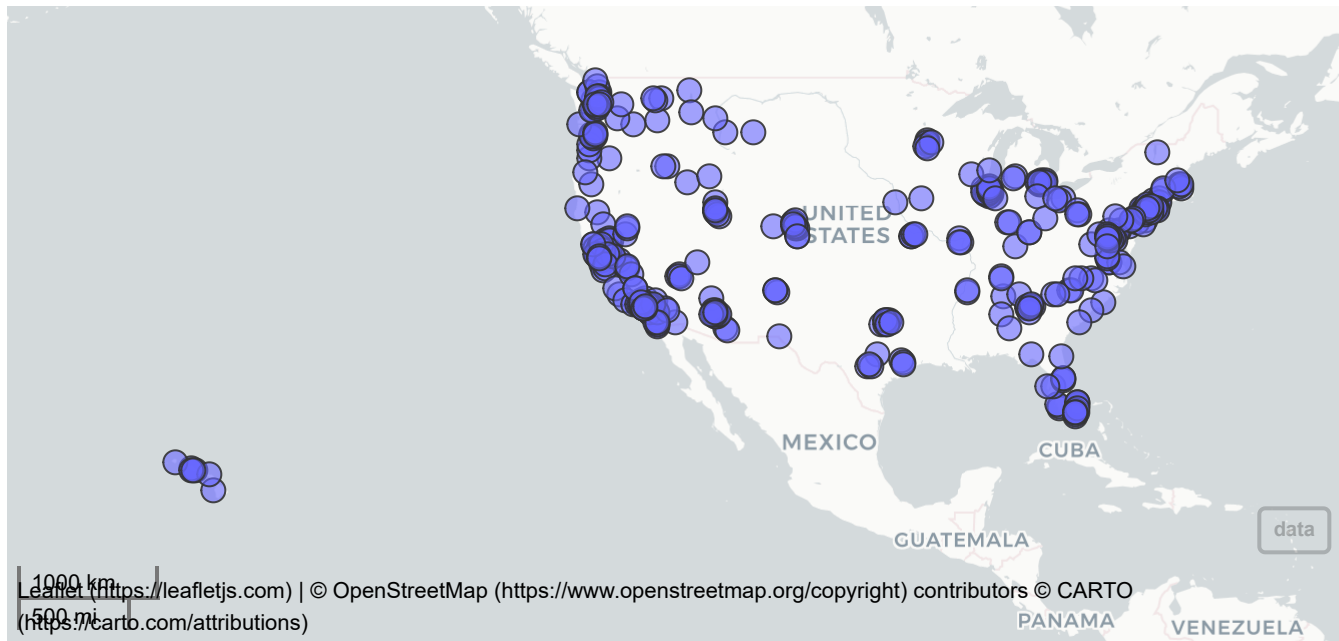
## R - 2008 BASKETBALL PLAYER POINTS PER GAME



```
fig <- mapview(costco_df, xcol = "Longitude", ycol = "Latitude", crs = 4269, grid = FALSE, legend = TRUE,
  geometry = TRUE, geography = "tract")
```

fig

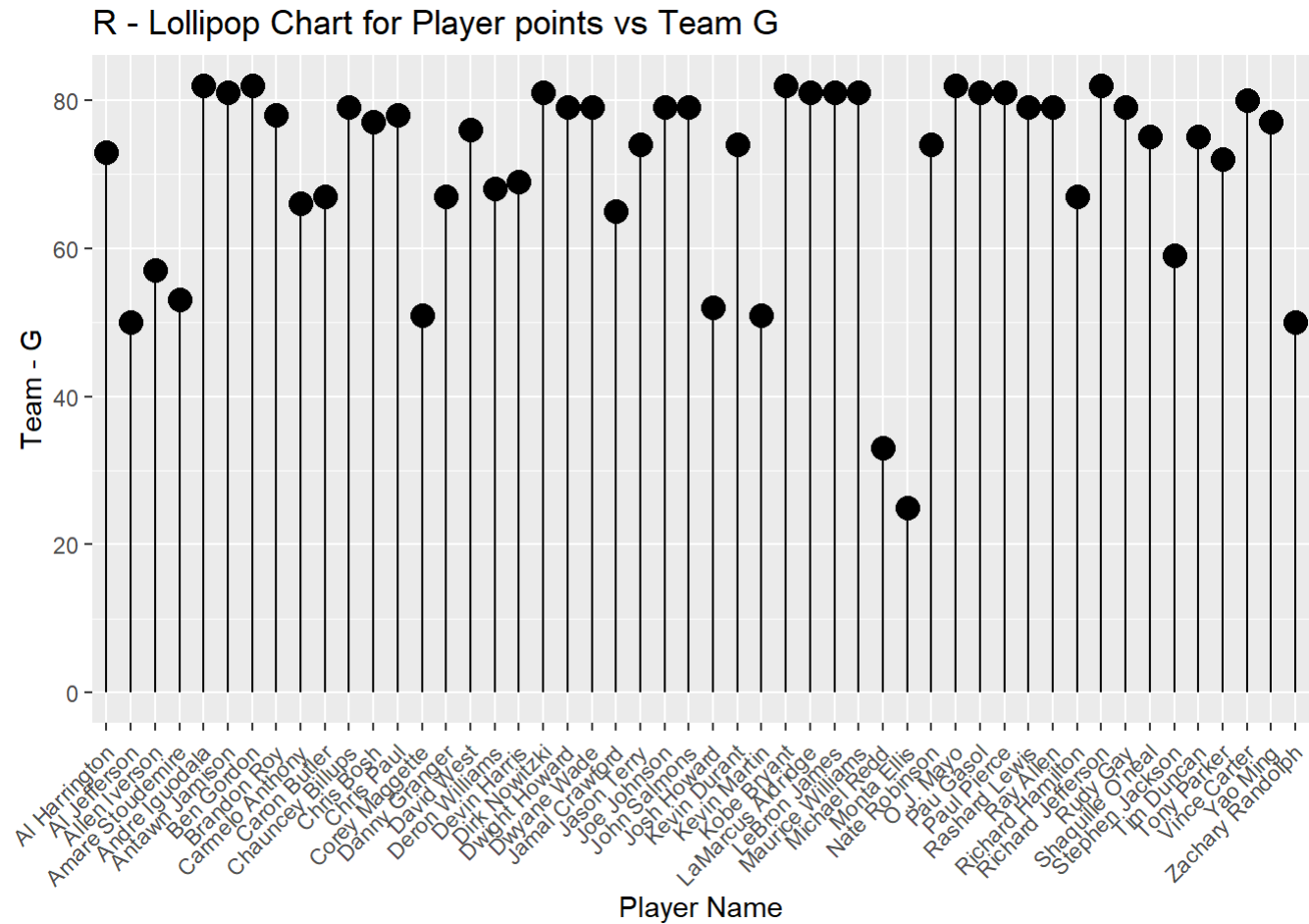






# R - LOLLIPOP CHART

```
ggplot(ppg_df, aes(x=Name, y=G)) +
  geom_segment(aes(x=Name, xend=Name, y=0, yend=G)) +
  geom_point(size=4) + scale_x_discrete(guide = guide_axis(angle = 45)) +
  ggtitle("R - Lollipop Chart for Player points vs Team G") +
  xlab("Player Name") +
  ylab("Team - G")
```



# Week7&8

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# Tableau - HeatMap

Name	3PA	3PM	3PP	AST	BLK	DRB	FGA	FGM	FGP	FTA	FTM	FTP	G	MIN	ORB	PF	PTS	STL	TO	TRB	Measure Values
Al Harrin..	6.40	2.30	0.36	1.40	0.30	4.90	16.60	7.30	0.44	4.00	3.20	0.79	73.00	34.90	1.40	3.10	20.10	1.20	2.20	6.20	
Al Jeffer..	0.10	0.00	0.00	1.60	1.70	7.50	19.50	9.70	0.50	5.00	3.70	0.74	50.00	36.60	3.40	2.80	23.10	0.80	1.80	11.00	
Allen Ive..	1.70	0.50	0.28	5.00	0.10	2.50	14.60	6.10	0.42	6.10	4.80	0.78	57.00	36.70	0.50	1.50	17.50	1.50	2.60	3.00	
Amare St..	0.10	0.10	0.43	2.00	1.10	5.90	14.10	7.60	0.54	7.30	6.10	0.84	53.00	36.80	2.20	3.10	21.40	0.90	2.80	8.10	
Andre Ig..	3.20	1.00	0.31	5.30	0.40	4.60	14.00	6.60	0.47	6.40	4.60	0.72	82.00	39.80	1.10	1.90	18.80	1.60	2.70	5.70	
Antawn J..	3.90	1.40	0.35	1.90	0.30	6.50	17.80	8.30	0.47	5.60	4.20	0.75	81.00	38.20	2.40	2.70	22.20	1.20	1.50	8.90	
Ben Gord..	5.10	2.10	0.41	3.40	0.30	2.80	16.00	7.30	0.46	4.70	4.00	0.86	82.00	36.60	0.60	2.20	20.70	0.90	2.40	3.50	
Brandon ..	2.80	1.10	0.38	5.10	0.30	3.40	16.90	8.10	0.48	6.50	5.30	0.82	78.00	37.20	1.30	1.60	22.60	1.10	1.90	4.70	
Carmelo ..	2.60	1.00	0.37	3.40	0.40	5.20	18.30	8.10	0.44	7.10	5.60	0.79	66.00	34.50	1.60	3.00	22.80	1.10	3.00	6.80	
Caron Bu..	3.10	1.00	0.31	4.30	0.30	4.40	16.20	7.30	0.45	6.00	5.10	0.86	67.00	38.60	1.80	2.50	20.80	1.60	3.10	6.20	
Chaunce..	5.00	2.10	0.41	6.40	0.20	2.60	12.40	5.20	0.42	5.80	5.30	0.91	79.00	35.30	0.40	2.00	17.70	1.20	2.20	3.00	
Chris Bosh	0.60	0.20	0.25	2.50	1.00	7.20	16.40	8.00	0.49	8.00	6.50	0.82	77.00	38.10	2.80	2.50	22.70	0.90	2.30	10.00	
Chris Paul	2.30	0.80	0.36	11.00	0.10	4.70	16.10	8.10	0.50	6.70	5.80	0.87	78.00	38.50	0.90	2.70	22.80	2.80	3.00	5.50	
Corey M..	1.90	0.50	0.25	1.80	0.20	4.60	12.40	5.70	0.46	8.10	6.70	0.82	51.00	31.10	1.00	3.80	18.60	0.90	2.40	5.50	
Danny Gr..	6.70	2.70	0.40	2.70	1.40	4.40	19.10	8.50	0.45	6.90	6.00	0.88	67.00	36.20	0.70	3.10	25.80	1.00	2.50	5.10	
David W..	0.30	0.10	0.24	2.30	0.90	6.40	17.00	8.00	0.47	5.50	4.80	0.88	76.00	39.30	2.10	2.70	21.00	0.60	2.10	8.50	
Deron Wi..	3.30	1.00	0.31	10.70	0.30	2.50	14.50	6.80	0.47	5.60	4.80	0.85	68.00	36.90	0.40	2.00	19.40	1.10	3.40	2.90	
Devin Ha..	3.20	0.90	0.29	6.90	0.20	2.90	15.10	6.60	0.44	8.80	7.20	0.82	69.00	36.10	0.40	2.40	21.30	1.70	3.10	3.30	
Dirk Now..	2.10	0.80	0.36	2.40	0.80	7.30	20.00	9.60	0.48	6.70	6.00	0.89	81.00	37.70	1.10	2.20	25.90	0.80	1.90	8.40	
Dwight H..	0.00	0.00	0.00	1.40	2.90	9.60	12.40	7.10	0.57	10.70	6.40	0.59	79.00	35.70	4.30	3.40	20.60	1.00	3.00	13.80	
Dwyane ..	3.50	1.10	0.32	7.50	1.30	3.90	22.00	10.80	0.49	9.80	7.50	0.77	79.00	38.60	1.10	2.30	30.20	2.20	3.40	5.00	
Jamal Cr..	6.10	2.20	0.36	4.40	0.20	2.60	15.70	6.40	0.41	5.30	4.60	0.87	65.00	38.10	0.40	1.40	19.70	0.90	2.30	3.00	
Jason Te..	6.20	2.30	0.37	3.40	0.30	1.90	15.80	7.30	0.46	3.00	2.70	0.88	74.00	33.60	0.50	1.90	19.60	1.30	1.60	2.40	
Joe John..	5.20	1.90	0.36	5.80	0.20	3.60	18.00	7.80	0.44	4.60	3.80	0.83	79.00	39.50	0.80	2.20	21.40	1.10	2.50	4.40	
John Sal..	3.80	1.60	0.42	3.20	0.30	3.50	13.80	6.50	0.47	4.40	3.60	0.83	79.00	37.50	0.70	2.30	18.30	1.10	2.10	4.20	
Josh Ho..	3.20	1.10	0.35	1.60	0.60	3.90	15.10	6.80	0.45	4.20	3.30	0.78	52.00	31.90	1.10	2.60	18.00	1.10	1.70	5.10	
Kevin Du..	3.10	1.30	0.42	2.80	0.70	5.50	18.80	8.90	0.48	7.10	6.10	0.86	74.00	39.00	1.00	1.80	25.30	1.30	3.00	6.50	
Kevin Ma..	5.40	2.30	0.42	2.70	0.20	3.00	15.90	6.70	0.42	10.30	9.00	0.87	51.00	38.20	0.60	2.30	24.60	1.20	2.90	3.60	
Kobe Bry..	4.10	1.40	0.35	4.90	0.50	4.10	20.90	9.80	0.47	6.90	5.90	0.86	82.00	36.20	1.10	2.30	26.80	1.50	2.60	5.20	
LaMarcu..	0.30	0.10	0.25	1.90	1.00	4.60	15.30	7.40	0.48	4.10	3.20	0.78	81.00	37.10	2.90	2.60	18.10	1.00	1.50	7.50	
LeBron J..	4.70	1.60	0.34	7.20	1.10	6.30	19.90	9.70	0.49	9.40	7.30	0.78	81.00	37.70	1.30	1.70	28.40	1.70	3.00	7.60	
Maurice ..	5.20	2.30	0.44	4.10	0.10	2.90	13.90	6.50	0.47	2.80	2.60	0.91	81.00	35.00	0.60	2.70	17.80	0.90	2.20	3.40	
Michael ..	5.80	2.10	0.37	2.70	0.10	2.50	16.60	7.50	0.46	4.90	4.00	0.81	33.00	36.40	0.70	1.40	21.20	1.10	1.60	3.20	
Monta El..	1.00	0.30	0.31	3.70	0.30	3.80	17.20	7.80	0.45	3.80	3.10	0.83	25.00	35.60	0.60	2.70	19.00	1.60	2.70	4.30	
Nate Rob..	5.20	1.70	0.33	4.10	0.10	2.60	13.90	6.10	0.44	4.00	3.40	0.84	74.00	29.90	1.30	2.80	17.20	1.30	1.90	3.90	
O.J. Mayo	4.60	1.80	0.38	3.20	0.20	3.10	15.60	6.90	0.44	3.40	3.00	0.88	82.00	38.00	0.70	2.50	18.50	1.10	2.80	3.80	
Pau Gasol	0.00	0.00	0.50	3.50	1.00	6.40	12.90	7.30	0.57	5.40	4.20	0.78	81.00	37.10	3.20	2.10	18.90	0.60	1.90	9.60	
Paul Pier..	3.80	1.50	0.39	3.60	0.30	5.00	14.60	6.70	0.46	6.80	5.70	0.83	81.00	37.40	0.70	2.70	20.50	1.00	2.80	5.60	
Rashard ..	7.00	2.80	0.40	2.60	0.60	4.60	13.80	6.10	0.44	3.40	2.80	0.84	79.00	36.20	1.20	2.50	17.70	1.00	2.00	5.70	
Ray Allen	6.20	2.50	0.41	2.80	0.20	2.70	13.20	6.30	0.48	3.20	3.00	0.95	79.00	36.30	0.80	2.00	18.20	0.90	1.70	3.50	
Richard ..	2.80	1.00	0.37	4.40	0.10	2.40	15.60	7.00	0.45	3.90	3.30	0.85	67.00	34.00	0.70	2.60	18.30	0.60	2.00	3.10	
Richard J..	3.60	1.40	0.40	2.40	0.20	3.90	14.90	6.50	0.44	6.30	5.10	0.81	82.00	35.90	0.70	3.10	19.60	0.80	2.00	4.60	
Rudy Gay	3.10	1.10	0.35	1.70	0.70	4.20	16.00	7.20	0.45	4.40	3.30	0.77	79.00	37.30	1.40	2.80	18.90	1.20	2.60	5.50	
Shaquille..	0.00	0.00	0.00	1.70	1.40	5.90	11.20	6.80	0.61	6.90	4.10	0.60	75.00	30.10	2.50	3.40	17.80	0.70	2.20	8.40	
Stephen ..	5.20	1.70	0.34	6.50	0.50	3.90	16.90	7.00	0.41	6.00	5.00	0.83	59.00	39.70	1.20	2.60	20.70	1.50	3.90	5.10	
Tim Dunc..	0.00	0.00	0.00	3.50	1.70	8.00	14.80	7.40	0.50	6.40	4.50	0.69	75.00	33.70	2.70	2.30	19.30	0.50	2.20	10.70	
Tony Par..	0.90	0.30	0.29	6.90	0.10	2.70	17.50	8.90	0.51	5.00	3.90	0.78	72.00	34.10	0.40	1.50	22.00	0.90	2.60	3.10	
Vince Car..	4.90	1.90	0.39	4.70	0.50	4.20	16.80	7.40	0.44	5.10	4.20	0.82	80.00	36.80	0.90	2.90	20.80	1.00	2.10	5.10	
Yao Ming	0.00	0.00	1.00	1.80	1.90	7.20	13.40	7.40	0.55	5.70	4.90	0.87	77.00	33.60	2.60	3.30	19.70	0.40	3.00	9.90	
Zachary ..	1.90	0.60	0.33	2.10	0.30	6.90	17.50	8.30	0.48	4.90	3.60	0.73	50.00	35.10	3.10	2.70	20.80	0.90	2.30	10.10	

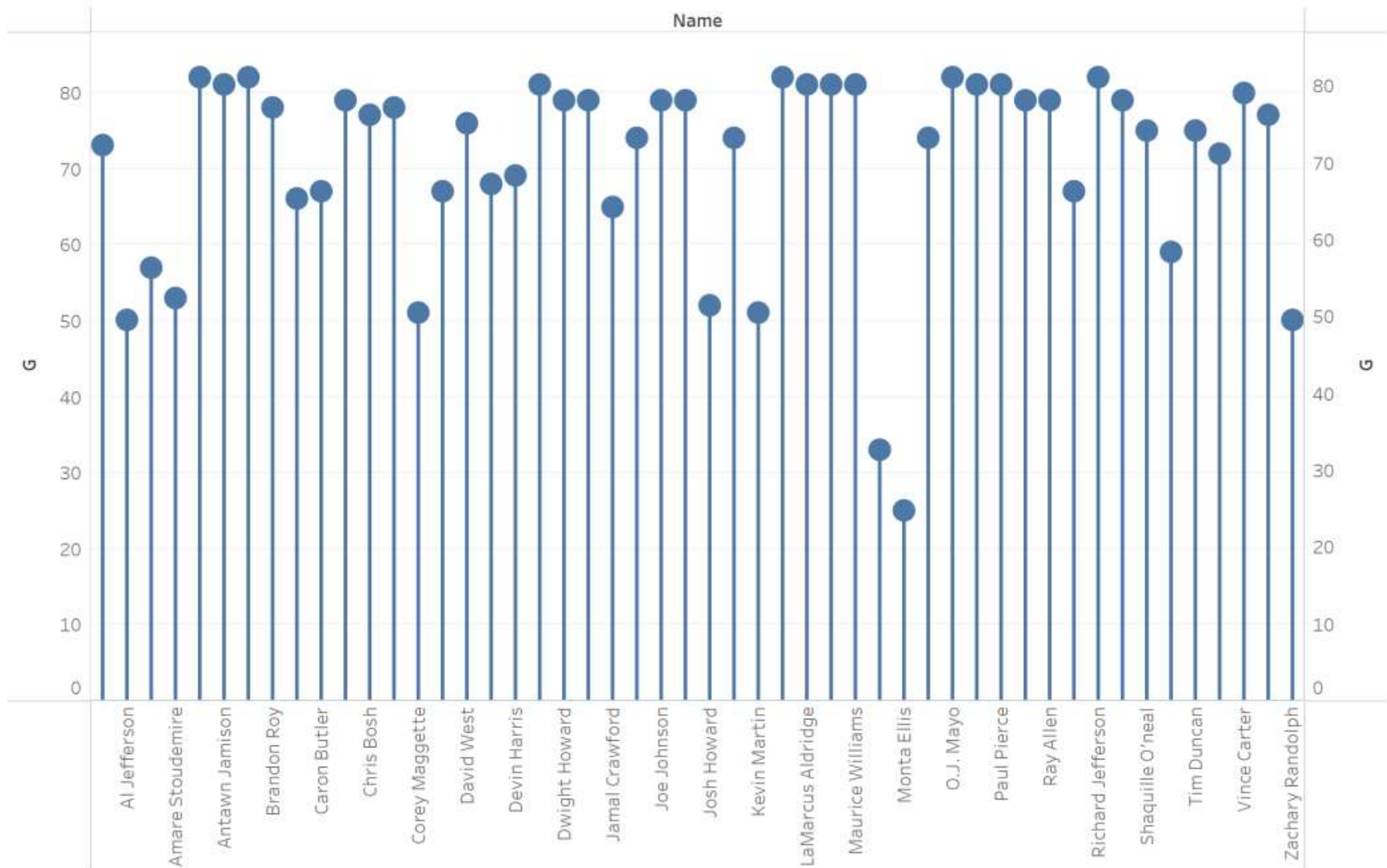
3PA, 3PM, 3PP, AST, BLK, DRB, FGA, FGM, FGP, FTA, FTM, FTP, G, MIN, ORB, PF, PTS, STL, TO and TRB (color) broken down by Name.

## Tableau - Spatial Chart





# Tableau - Lollipop Chart



Sum of G and sum of G for each Name.