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DSC 640: Data Presentation & Visualization - Winter 2023

WEEKS 9-10 Exercises: Heat Maps, Spatial Charts, and Lollipop Charts (PYTHON)

IMPORTING LIBRARIES.

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

import warnings
warnings.filterwarnings('ignore')

# nltk.download('example')
# pip install squarify
```

IMPORTING DATA.

```
In [2]: player_df = pd.read_csv('/Users/aaronbrown/Documents/Classwork/DSC 640 - Data Presentation and Visualization/Data/ppg2008.csv')
```

```
In [3]: player_data = player_df
```

```
In [4]: player_data = player_data.rename(columns={'Name': 'Player'})
```

```
In [5]: player_data.sort_values("PTS", ascending=False, inplace=True)
```

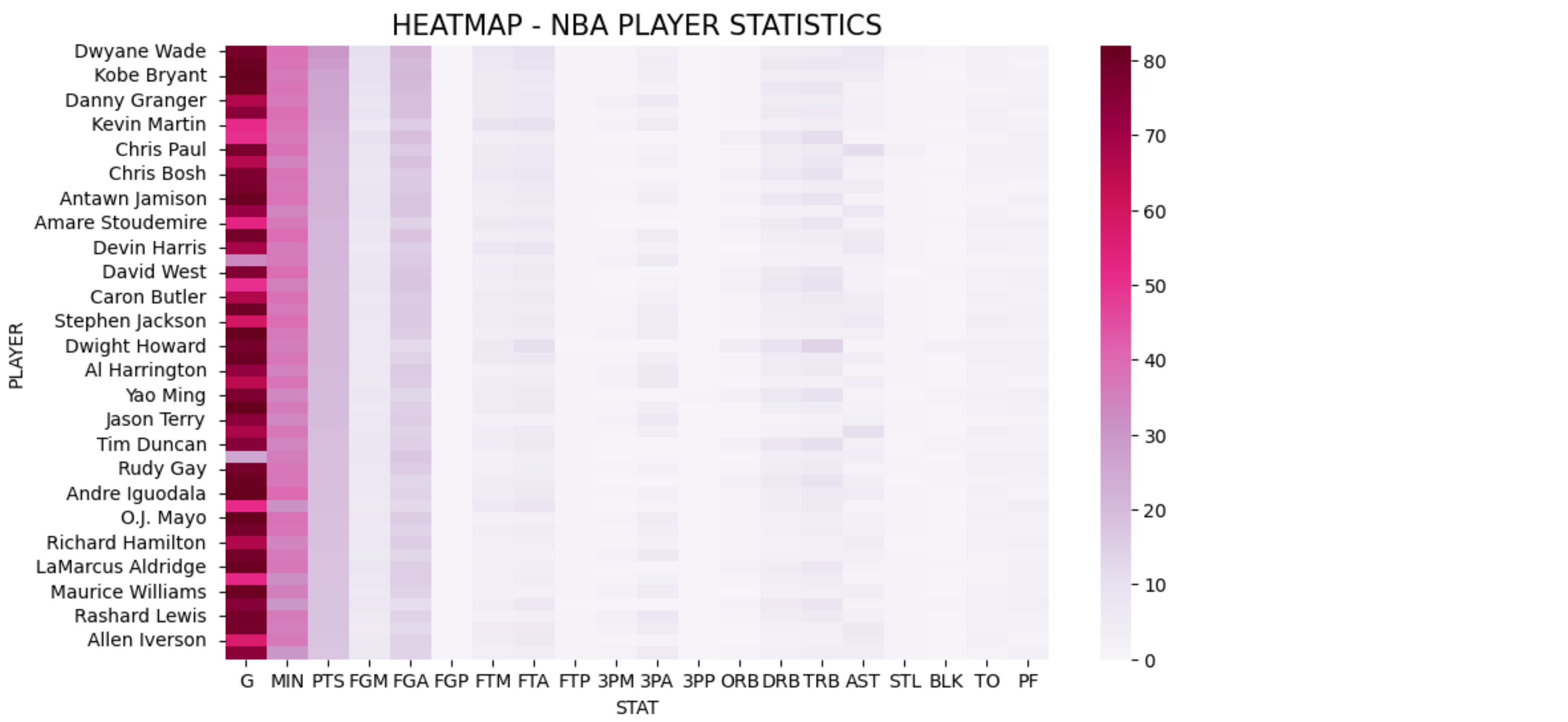
```
In [6]: player_data.set_index("Player", inplace=True)
player_data.head(3)
```

	G	MIN	PTS	FGM	FGA	FGP	FTM	FTA	FTP	3PM	3PA	3PP	ORB	DRB	TRB	AST	STL	BLK	TO	PF
Player																				
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	3.9	5.0	7.5	2.2	1.3	3.4	2.3
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	6.3	7.6	7.2	1.7	1.1	3.0	1.7
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	4.1	5.2	4.9	1.5	0.5	2.6	2.3

GENERATING HEATMAP.

```
In [7]: fig, ax = plt.subplots(figsize=(10, 6))

sns.heatmap(player_data, cmap = "PuRd")
plt.title("HEATMAP - NBA PLAYER STATISTICS", fontsize = 15)
plt.xlabel("STAT", fontsize = 10)
plt.ylabel("PLAYER", fontsize = 10)
plt.show()
```



IMPORTING DATA.

```
In [8]: costco_df = pd.read_csv('/Users/aaronbrown/Documents/Classwork/DSC 640 - Data Presentation and Visualization/Data/costcos-geocoded.csv')

costco_data = costco_df
costco_data.head()
```

	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

GENERATING SPATIAL CHART.

```
In [9]: fig = px.scatter_geo(costco_data, lat = costco_data.Latitude, lon = costco_data.Longitude,
width = 1000, height = 600, color = "State")
fig.update_layout(title = "SPATIAL CHART - COSTCO LOCATIONS IN AMERICA", geo_scope = "usa")
fig.show()
```



GENERATING LOLLIPOP CHART.

```
In [10]: from pandas import *
from matplotlib import pyplot as plt
```

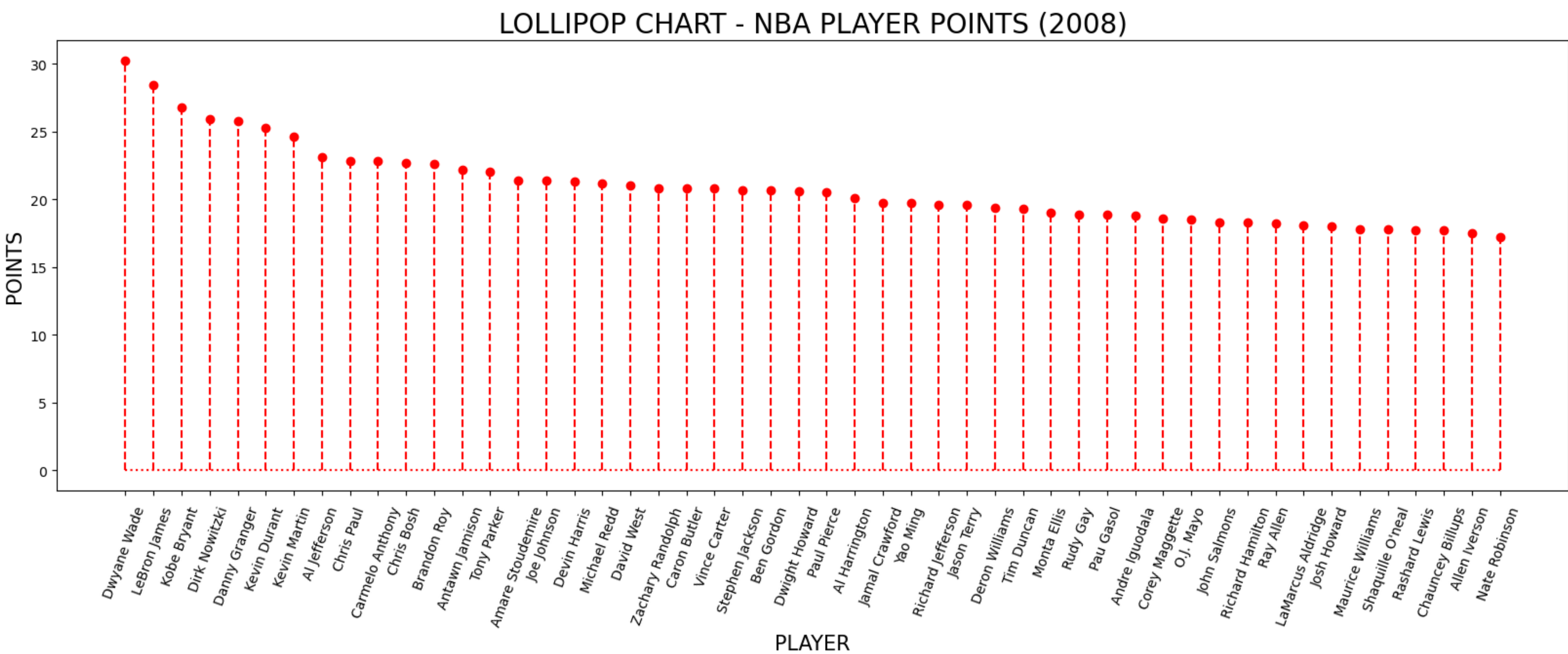
```
In [11]: player_df.head()
```

	Name	G	MIN	PTS	FGM	FGA	FGP	FTM	FTA	FTP	...	3PA	3PP	ORB	DRB	TRB	AST	STL	BLK	TO	PF
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	1.3	3.4	2.3
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	1.1	3.0	1.7
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	0.5	2.6	2.3
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	0.8	1.9	2.2
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	1.4	2.5	3.1

5 rows x 21 columns

```
In [12]: player_df = player_df.rename(columns={'Name': 'Player'})
```

```
In [13]: plt.figure(figsize = (20, 6))
plt.stem(player_df['Player'], player_df.PTS, markerfmt = 'ro', linefmt='r--', basefmt = 'r:')
plt.xticks(rotation = 70)
plt.xlabel("PLAYER", fontsize = 15)
plt.ylabel("POINTS", fontsize = 15)
plt.title("LOLLIPOP CHART - NBA PLAYER POINTS (2008)", fontsize = 20)
plt.show()
```



References

Choosing Colormaps in Matplotlib:

<https://matplotlib.org/stable/tutorials/colors/colormaps.html>

List of named colors in matplotlib:

https://matplotlib.org/stable/gallery/color/named_colors.html

Seaborn Styling, Color:

<https://www.codecademy.com/article/seaborn-design-ii#>

Plotly legend title:

<https://stackoverflow.com/questions/45555266/plotly-legend-title>

Bubble Charts in Python:

<https://plotly.com/python/bubble-charts/>

Built-in Continuous Color Scales in Python.

<https://plotly.com/python/built-in-colorscales/>

Plotly: How to change the colorscheme of a plotly express scatterplot?:

<https://stackoverflow.com/questions/60962274/plotly-how-to-change-the-colorscheme-of-a-plotly-express-scatterplot>

Part 4 - Plotting Using Seaborn - Heatmap, Lollipop Plot, Scatter Plot: <https://aakashkh.github.io/python/visualisation/2019/08/23/Plotting-Seaborn-Heatmap-Lollipop.html>