Week 9&10: heat maps, spatial charts, and contour charts

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import required packages

In [5]:
```
import plotly.express as px
import pandas as pd
import numpy as np
from IPython.display import HTML
import seaborn as sns
import matplotlib.pyplot as plt
import plotly.figure_factory as ff
# import geopandas as gpd

from IPython.core.interactiveshell import InteractiveShell
InteractiveShell.ast_node_interactivity = 'all'
```

In [2]:
```
# load data set

nba = pd.read_csv('Data/ppg2008.csv')
```

In [3]:
```
# display shape and head

nba.shape
nba.head()
```

Out[3]: (50, 21)

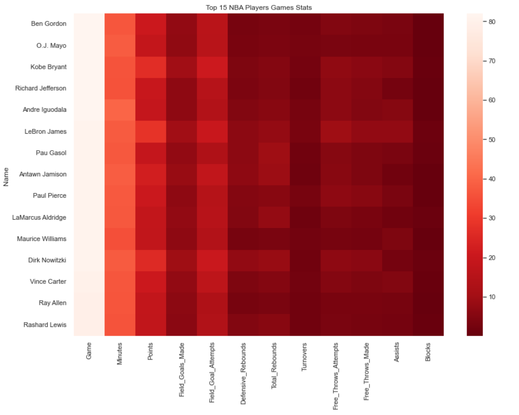
Out[3]:

	Name	Game	Minutes	Points	Field_Goals_Made	Field_Goal_Attempts	Field_Goal_Percentage	Free_Throws_Made	Free_Throws_
0	Dwyane Wade	79	38.6	30.2	10.8	22.0	0.491	7.5	
1	LeBron James	81	37.7	28.4	9.7	19.9	0.489	7.3	
2	Kobe Bryant	82	36.2	26.8	9.8	20.9	0.467	5.9	
3	Dirk Nowitzki	81	37.7	25.9	9.6	20.0	0.479	6.0	
4	Danny Granger	67	36.2	25.8	8.5	19.1	0.447	6.0	

5 rows × 21 columns

In [24]:
```
#  make dataset for heatmap

nba_heat_map = nba[['Name   ','Game','Minutes','Points','Field_Goals_Made','Field_Goal_Attempts','Defensive_Rebo
nba_heat_map.sort_values(by=['Game'],axis=0,ascending=False,inplace=True)
nba_heat_map.reset_index(inplace=True,drop=True)
nba_heat_map.set_index(keys=['Name   '],inplace=True,drop=True)
nba_heat_map = nba_heat_map.head(15)
```

In [42]:
```
# plot heat map

# nba_heat_map = nba[['Game','Minutes','Points','Field_Goals_Made','Field_Goal_Attempts','Defensive_Rebounds',

sns.set(style='white')
plt.figure(figsize=(14,10))

sns.heatmap(data=nba_heat_map,cmap='Reds_r')

plt.title('Top 15 NBA Players Games Stats')

plt.show();
```



In [66]:
```
# load spatial data
from shapely import geometry
# import geoplot

df = pd.read_csv('Data/costcos-geocoded.csv')
df['zip'] = df['Zip Code'].apply(lambda x: x[:5])

abbrev_to_us_state = dict(usa_states.us_state_to_abbrev.items())  # stored usa stated abbrv to py file
df['state_code'] = df['State'].apply(lambda x:abbrev_to_us_state.get(x))

df.shape
df.head()
```

Out[66]: (417, 8)

Out[66]:

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

In [67]:
```
# group by states to get count of staores in each state

df0 = df.groupby(['state_code'],as_index=False)['Address'].count()
df0['Address'] = df0['Address'].astype('int')
# df0['zip'] = df0['zip'].astype('int')
df0.head(2)
```

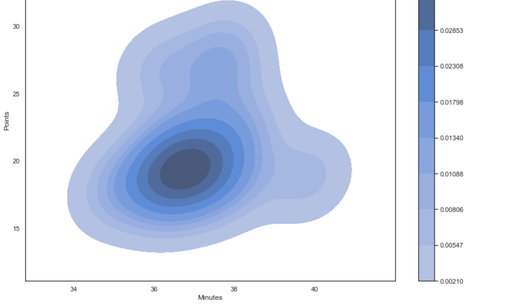
Out[67]:

	state_code	Address
0	AK	3
1	AL	3

In [86]:
```
# plot spatial chart

fig = px.choropleth(df0,  locations='state_code', color='Address', # lat='Latitude',lon='Longitude',# geojson=
                          color_continuous_scale="blues",
                          range_color=(0, 115),
                          locationmode = "USA-states",
                          scope="usa",
                          labels={'Address':'Store Density'}
                         )
# fig.update_layout(margin={"r":0,"t":0,"l":0,"b":0})
fig.show()
# HTML(fig.to_html())
```

In [51]:
```
# plot contour chart

sns.set(style='white')
plt.figure(figsize=(14,10))

sns.kdeplot(nba_heat_map.Minutes,nba_heat_map.Points,levels=10,shade=True,cbar=True)

plt.title('Contour Plot - Minutes & Points')

plt.show();
```

```
/Users/ganeshkale/work/virtual_envs/venv/lib/python3.8/site-packages/seaborn/_decorators.py:36: FutureWarning:
Pass the following variable as a keyword arg: y. From version 0.12, the only valid positional argument will be
`data`, and passing other arguments without an explicit keyword will result in an error or misinterpretation.
  warnings.warn(
```



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