Assignment 5.2 - Heat Maps, Spatial Charts & Contour Charts in Python

Date: 2/18/2023

Libraries

In [1]:
```
# Import libraries
import pandas as pd
import matplotlib.pyplot as plt
import matplotlib as mpl
import numpy as np
import chart_studio.plotly as py
import cufflinks as cf
import seaborn as sns
import plotly.offline as plo
```

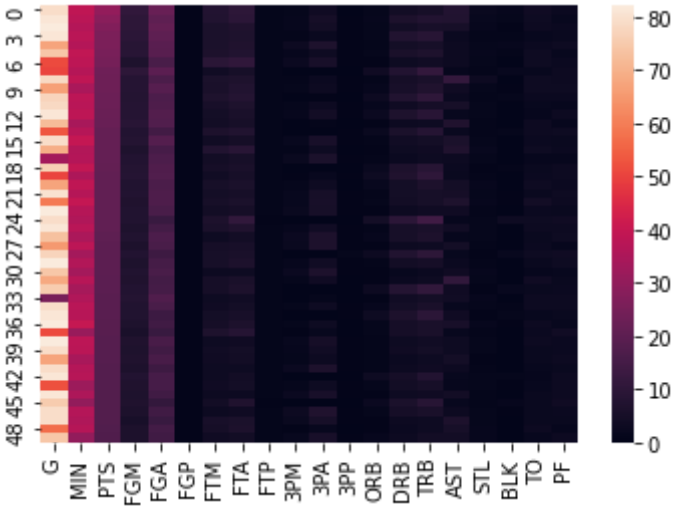
Datasets

In [2]:
```
# Read world population data
dirData = 'ex5-2/'
f_costco = 'costcos-geocoded.csv'
f_ppg = 'ppg2008.csv'

dir_costco = dirData+f_costco
dir_ppg = dirData+f_ppg

costco = pd.read_csv(dir_costco)
ppg = pd.read_csv(dir_ppg)

# summarize statewide Costco store count

costco_sum = pd.Series.to_frame(costco.groupby('State')['Address'].count())
costco_sum = costco_sum.rename({'Address':'store_count'}, axis=1, inplace=False
costco_sum = pd.DataFrame(costco_sum.to_records())
```

Heat Map - Python

In [3]:
```
sns.heatmap(ppg.iloc[:,1:])
```

Out[3]:
```
<AxesSubplot:>
```



Spatial Plot - Python

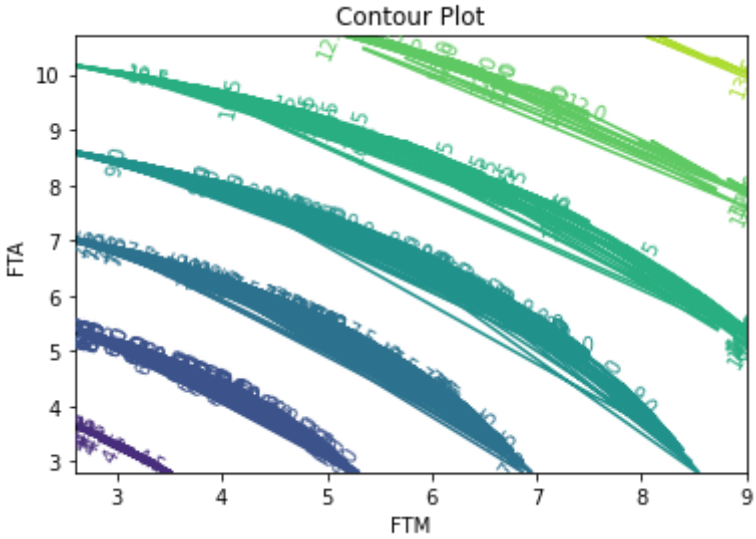
In [4]:
```
# plot the costco store count across US states

data=[dict(type='choropleth', autocolorscale = False,
           locations=costco_sum['State'], z=costco_sum['store_count'],
           locationmode='USA-states', colorscale='YlOrRd',
           colorbar=dict(title='Store Count'))]

layout = dict(title='Costco Store Count',
              geo=dict(scope='usa', projection=dict(type='albers usa'),
                       showlakes=True, lakecolor='rgb(66,165,245)'))

fig=dict(data=data, layout=layout)

plo.plot(fig)
```

Out[4]:
```
'temp-plot.html'
```

Countour plot - Python

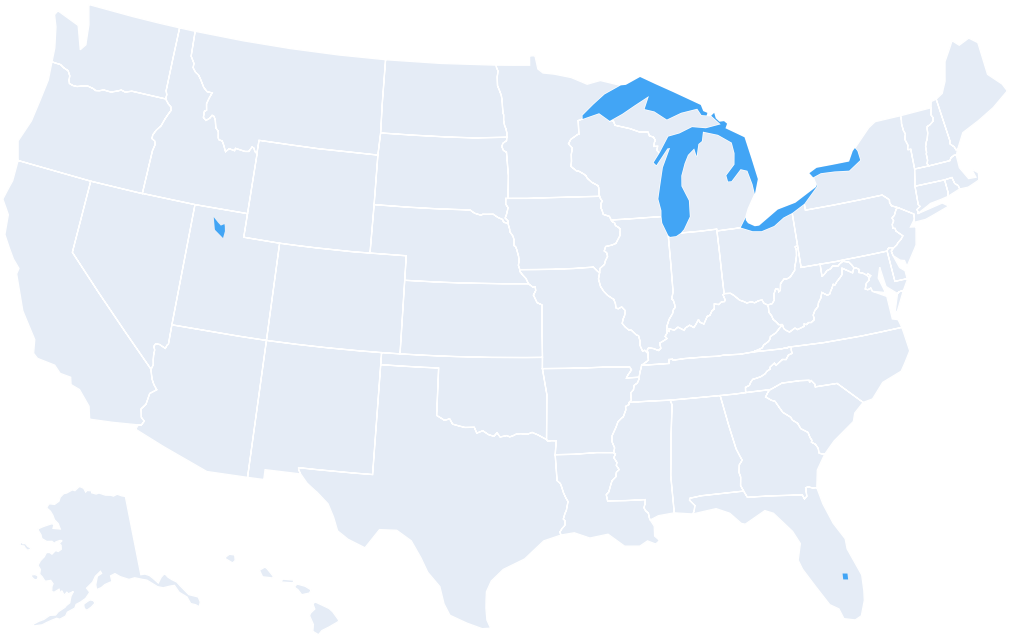
In [5]:
```
%matplotlib inline

# define function

def f(x, y):
    """
    Args:
        two numpy arrays (x, y)
    Returns:
        square root of sum of square of x and y
    """
    return np.sqrt(x**2 + y**2)

x = np.array(ppg['FTM'])
y = np.array(ppg['FTA'])

X, Y = np.meshgrid(x, y)
Z = f(X, Y)
```

```
plt.figure()
cp = plt.contour(X, Y, Z)
plt.clabel(cp, inline=True,
           fontsize=10)
plt.title('Contour Plot')
plt.xlabel('FTM')
plt.ylabel('FTA')
plt.show()
```



End of code

Costco Store Count



Assignment 5.2

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02/18/2023

```
## Loading required package: ggplot2
```

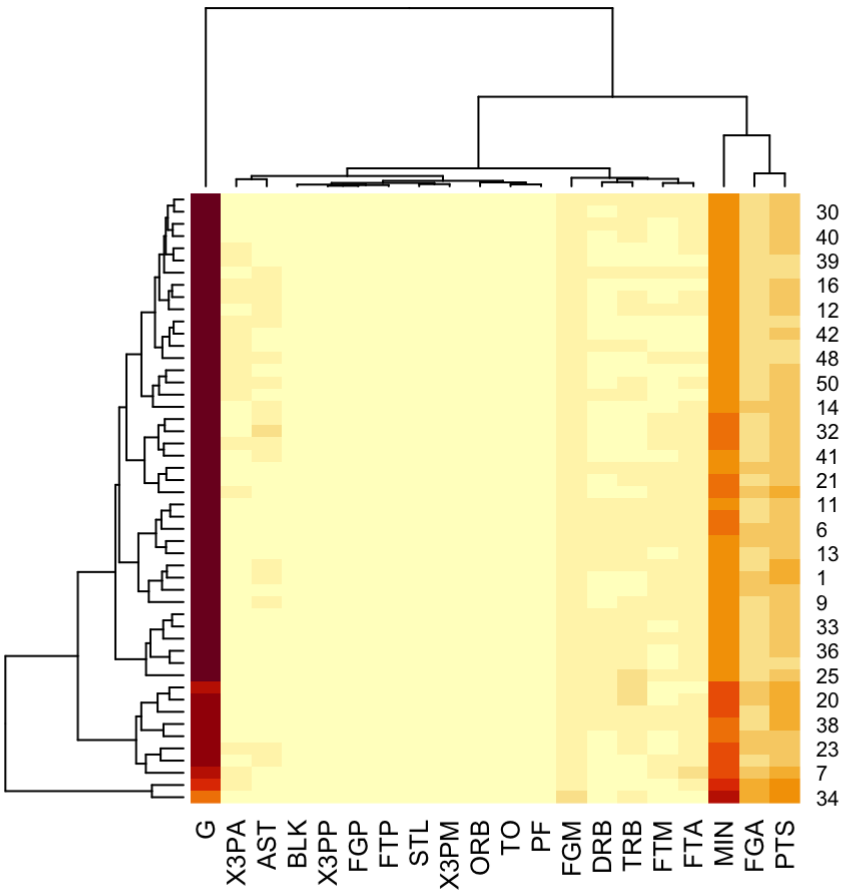
```
## ℹ Google's Terms of Service: <https://mapsplatform.google.com>
```

```
## ℹ Please cite ggmap if you use it! Use `citation("ggmap")` for details.
```

```
##
## Attaching package: 'ggmap'
```

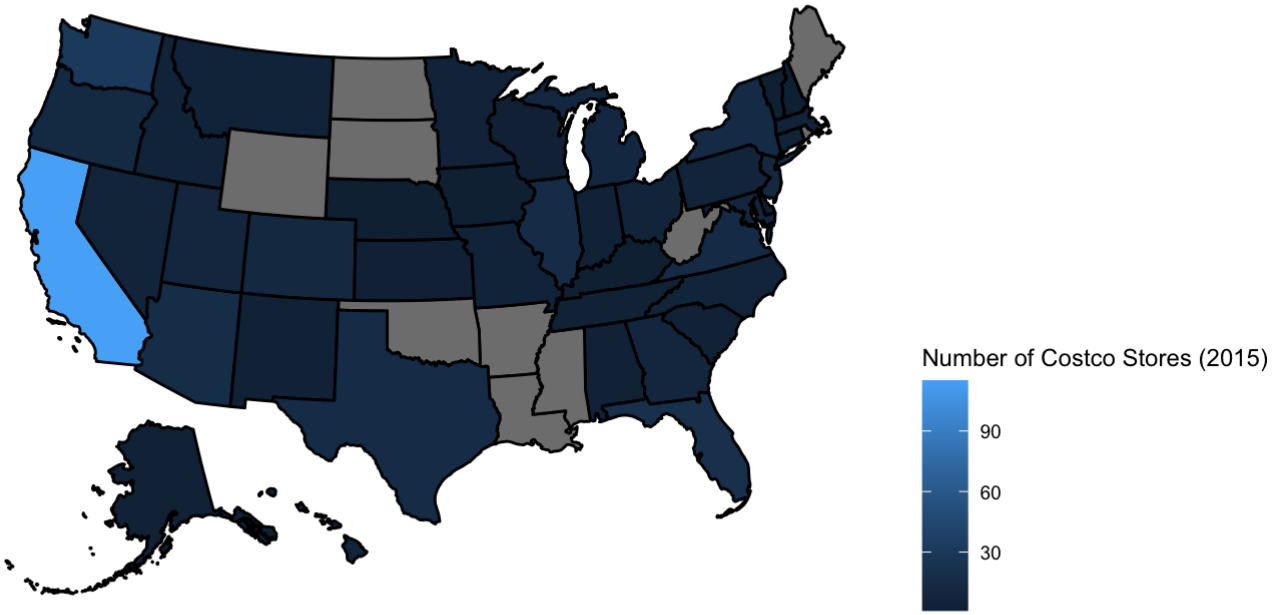
```
## The following object is masked from 'package:magrittr':
##
##     inset
```

Plot1: Heat Map - R



Plot2: Spatial Chart - R

```
## Warning: Ignoring unknown parameters: lines, linewidth
```



Plot3: Contour Plot - R

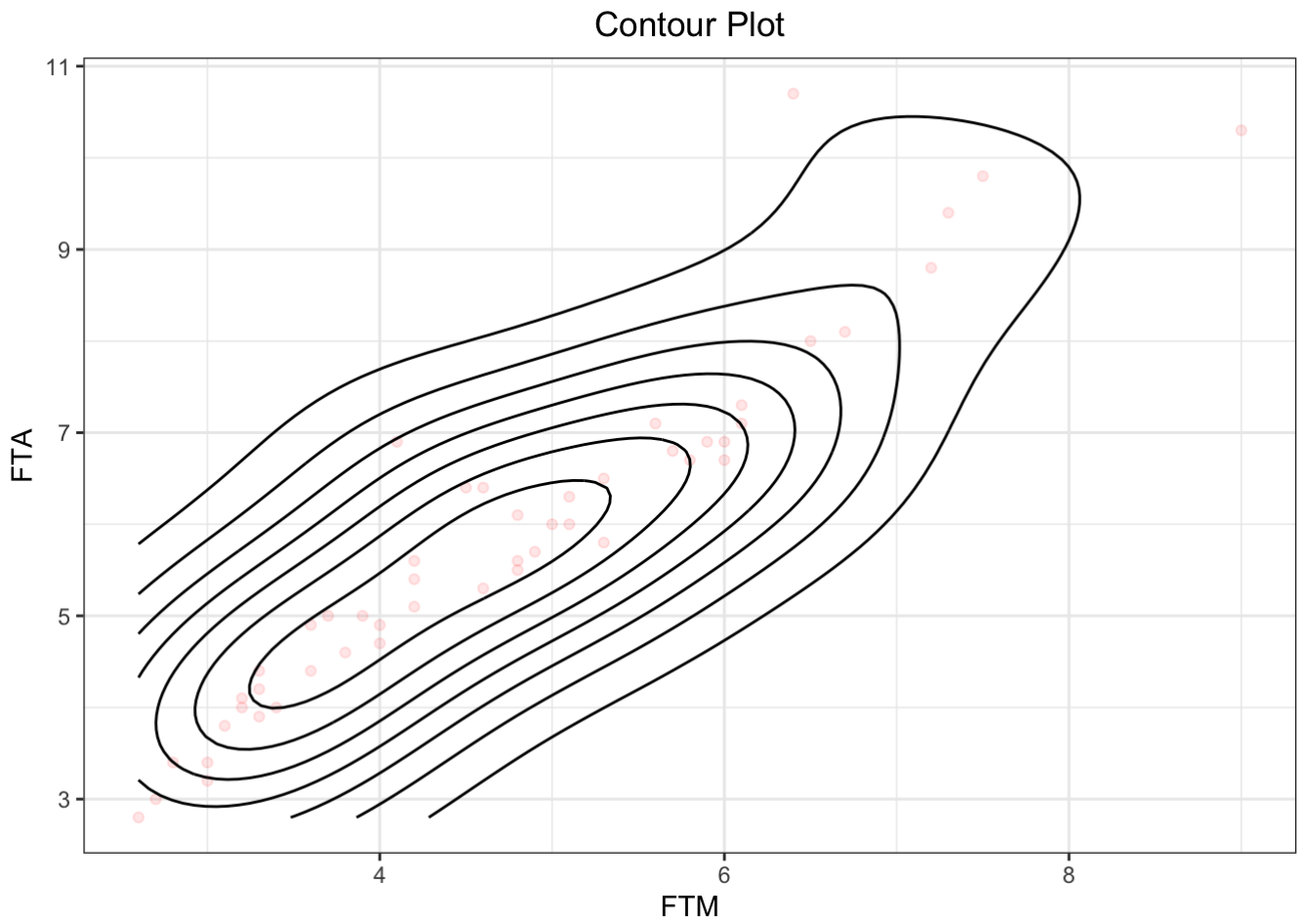
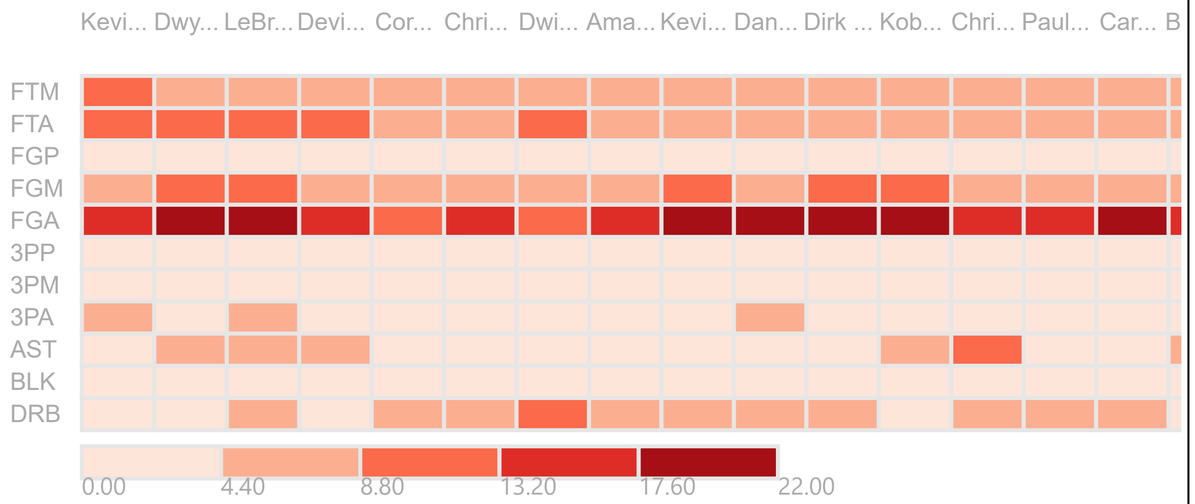


Table Heatmap using custom visual

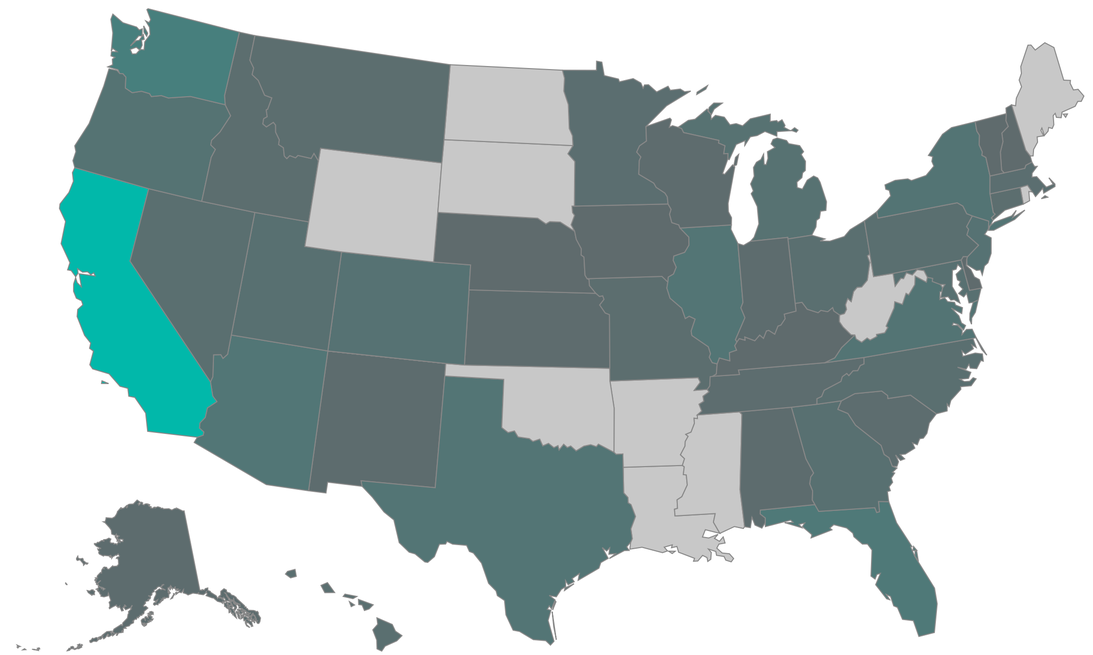


Heat Map#2: Measure for Names

Name	MIN	G	FTP	FTM	FTA	AST
Al Harrington	34.90	73	0.79	3.20	4.00	1.40
Al Jefferson	36.60	50	0.74	3.70	5.00	1.60
Allen Iverson	36.70	57	0.78	4.80	6.10	5.00
Amare Stoudemire	36.80	53	0.84	6.10	7.30	2.00
Andre Iguodala	39.80	82	0.72	4.60	6.40	5.30
Antawn Jamison	38.20	81	0.75	4.20	5.60	1.90
Ben Gordon	36.60	82	0.86	4.00	4.70	3.40
Brandon Roy	37.20	78	0.82	5.30	6.50	5.10
Carmelo Anthony	34.50	66	0.79	5.60	7.10	3.40
Caron Butler	38.60	67	0.86	5.10	6.00	4.30
Chauncey Billups	35.30	79	0.91	5.30	5.80	6.40
Chris Bosh	38.10	77	0.82	6.50	8.00	2.50
Chris Paul	38.50	78	0.87	5.80	6.70	11.00
Corey Maggette	31.10	51	0.82	6.70	8.10	1.80
Danny Granger	36.20	67	0.88	6.00	6.90	2.70
David West	39.30	76	0.88	4.80	5.50	2.30
Deron Williams	36.90	68	0.85	4.80	5.60	10.70

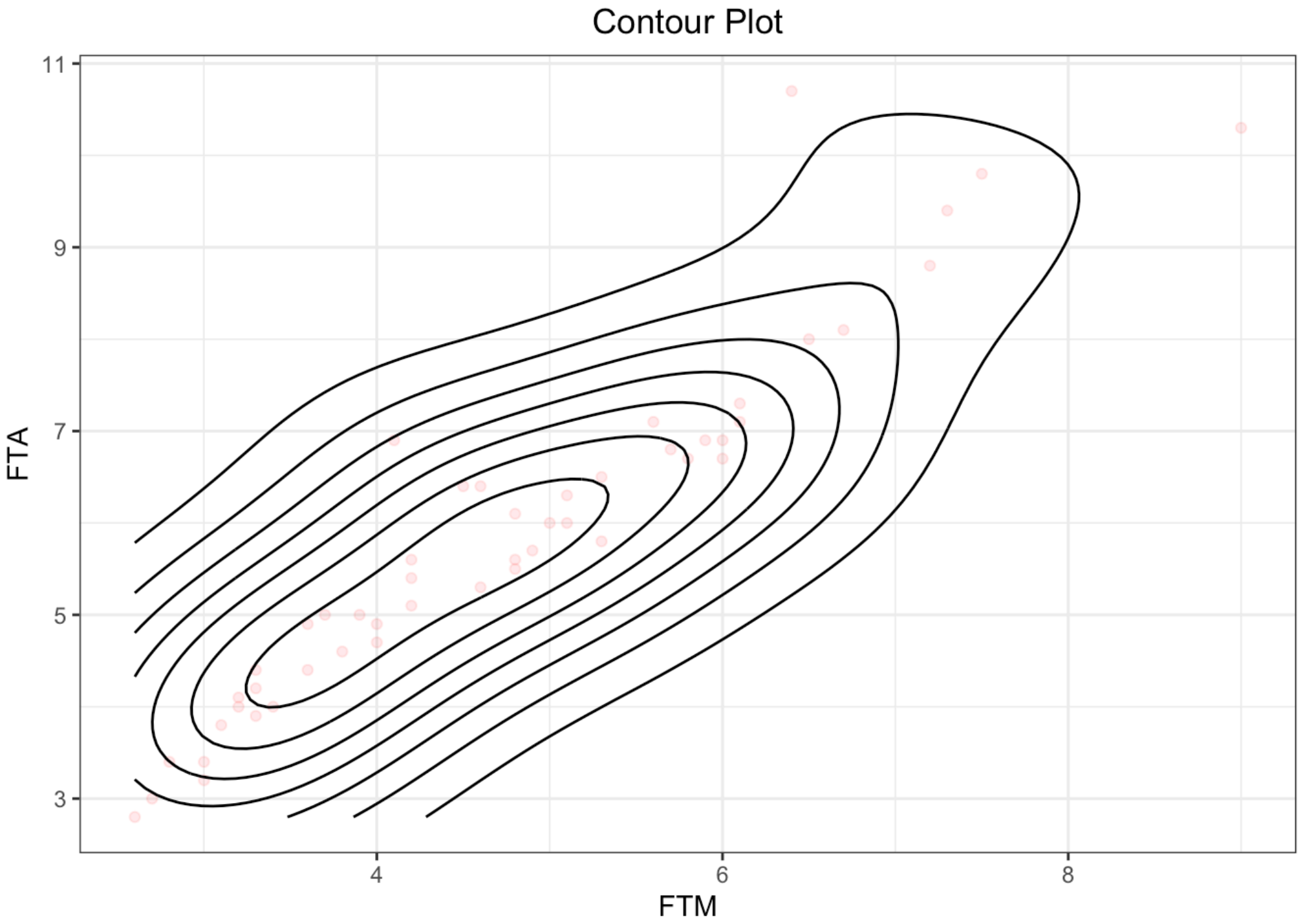
This visual does not support exporting.

StoreCount by State: Shape Map



R visuals are not supported with this operation. Learn more

Since no custom visual for contour plot in Power BI could be found, R scripting visualization has been used for the same.


Contour Plot
11
9
7
5
3
FTA
4
6
8
FTM