Exercise 3.2 Python

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1 Exercise 3.2: Tree Maps, Area Charts, and Stacked Area Charts: Python

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[1]:
```
import matplotlib as mpl
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import squarify
import matplotlib.ticker as ticker
```

2 Tree map

[2]:
```
df = pd.read_table('expenditures.txt')
df.head()
```

[2]:

	year	category	expenditure	sex
0	2008	Food	6443	1
1	2008	Alcoholic Beverages	444	1
2	2008	Housing	17109	1
3	2008	Apparel	1801	1
4	2008	Transportation	8604	1

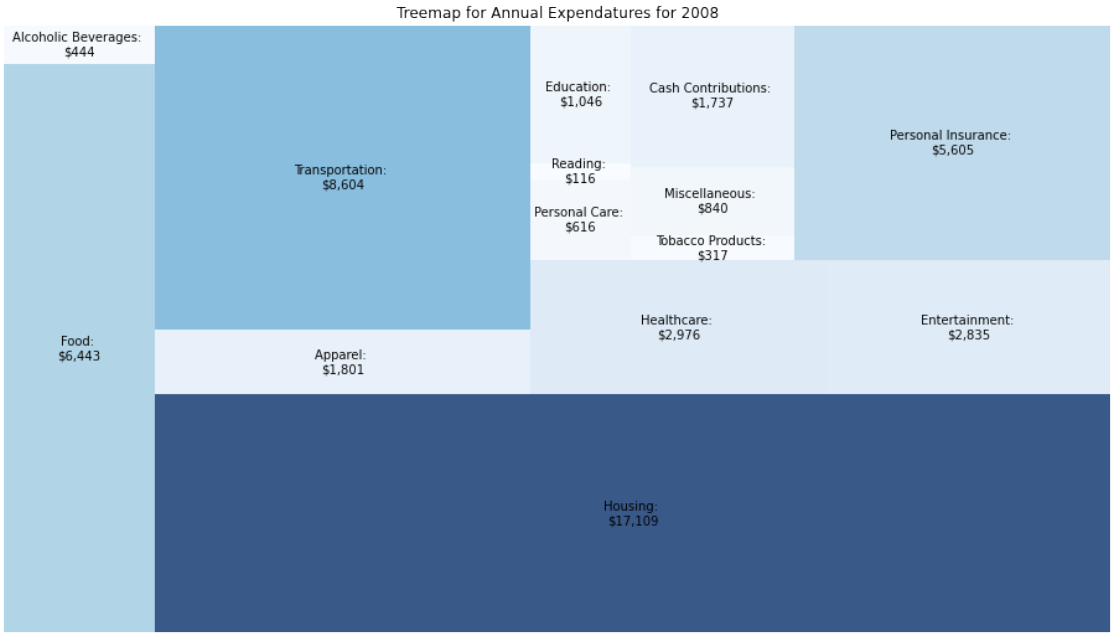
[3]:
```
df['money'] = ["${:,.0f}".format(i) for i in df['expenditure']]
df['labels'] = df['category'] + ": \n" + df['money']
```

[4]:
```
df2 = df[df['year'] == 2008]
my_values=df2['expenditure']

# create a color palette, mapped to these values
cmap = mpl.cm.Blues
mini=min(my_values)
maxi=max(my_values)
norm = mpl.colors.Normalize(vmin=mini, vmax=maxi)
colors = [cmap(norm(value)) for value in my_values]
```

```
plt.figure(figsize=(16,9))
squarify.plot(sizes=my_values, label = df2['labels'] , alpha=.8, color=colors );

plt.title("Treemap for Annual Expendatures for 2008")
plt.axis('off')
plt.show()
```



3 Area chart

[5]:
```
df = pd.read_csv("unemployement-rate-1948-2010.csv")
df.head()
```

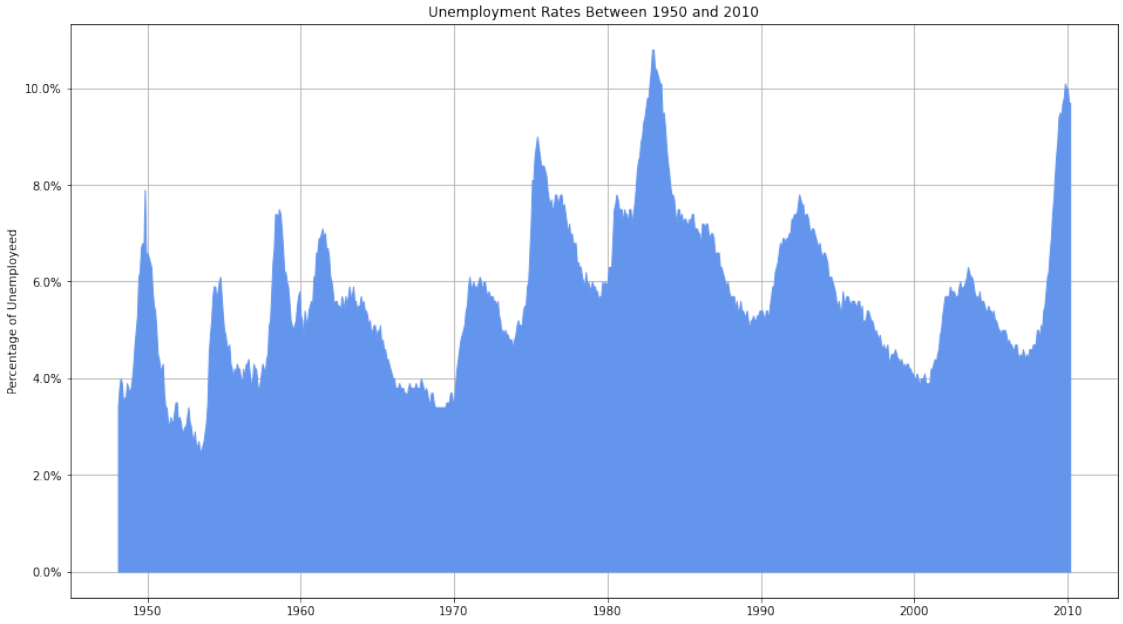
[5]:

	Series id	Year	Period	Value
0	LNS14000000	1948	M01	3.4
1	LNS14000000	1948	M02	3.8
2	LNS14000000	1948	M03	4.0
3	LNS14000000	1948	M04	3.9
4	LNS14000000	1948	M05	3.5

[6]:
```
df['Date'] = df['Year'] + df['Period'].apply(lambda x: int(x[1::])/12)
df['Percentage'] = df['Value'] / 100
```

[7]:
```
plt.figure(figsize=(16,9))
plt.fill_between(df['Date'], df['Percentage'], color = 'cornflowerblue', zorder␣
↪= 4)
```

```
plt.title("Unemployment Rates Between 1950 and 2010")
plt.ylabel("Percentage of Unemployeed")
plt.grid()
plt.gca().yaxis.set_major_formatter(ticker.PercentFormatter(1))
plt.show()
```



4 Stacked Area Chart

[8]:
```
df = pd.read_table('expenditures.txt')
df.head()
```

[8]:

	year	category	expenditure	sex
0	2008	Food	6443	1
1	2008	Alcoholic Beverages	444	1
2	2008	Housing	17109	1
3	2008	Apparel	1801	1
4	2008	Transportation	8604	1

[9]:
```
df = df.pivot_table(values="expenditure", columns='category', index='year')
df = df.reset_index()
```

[10]:
```
fig, ax = plt.subplots(figsize = (16,9))

ax.stackplot(df['year'],
             df['Alcoholic Beverages'],
             df['Apparel'],
```

```
              df['Cash Contributions'],
              df['Education'],
              df['Entertainment'],
              df['Food'],
              df['Healthcare'],
              df['Housing'],
              df['Miscellaneous'],
              df['Personal Care'],
              df['Personal Insurance'],
              df['Reading'],
              df['Tobacco Products'],
              df['Transportation'],
             labels=df.columns[1:])

ax.legend(loc = 'upper left')
plt.title("Yearly Expendatures")
formatter = ticker.FormatStrFormatter('$%1.0f')
ax.yaxis.set_major_formatter(formatter)

plt.xlim(min(df['year']), max(df['year']))
plt.show()
```