

PYTHON

```
In [52]: import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import plotly.express as px
```

```
In [70]: #Load world population data into a dataframe
world_population_df = pd.read_excel('world-population.xlsm')
world_population_df.head(5)
```

```
Out[70]:
```

	Year	Population
0	1960	3028654024
1	1961	3068356747
2	1962	3121963107
3	1963	3187471383
4	1964	3253112403

```
In [3]: #Load unemployment data into a dataframe
unemployment_rate_df = pd.read_csv('unemployment-rate-1948-2010.csv')
unemployment_rate_df.head(5)
```

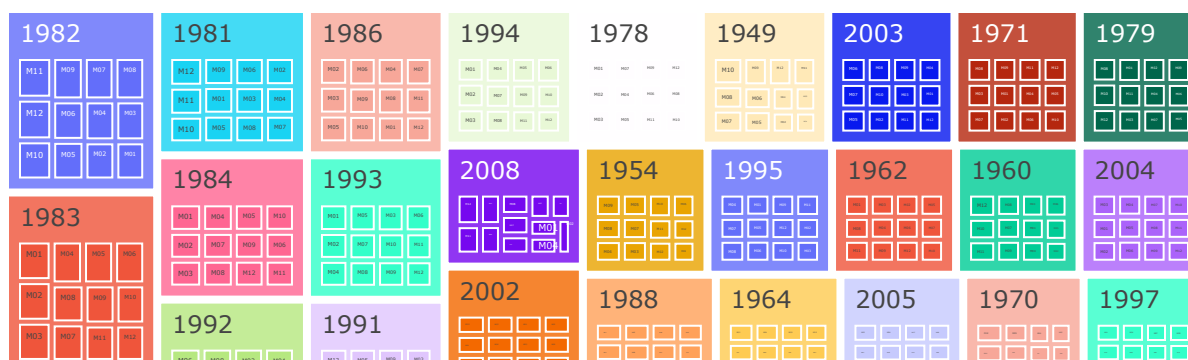
```
Out[3]:
```

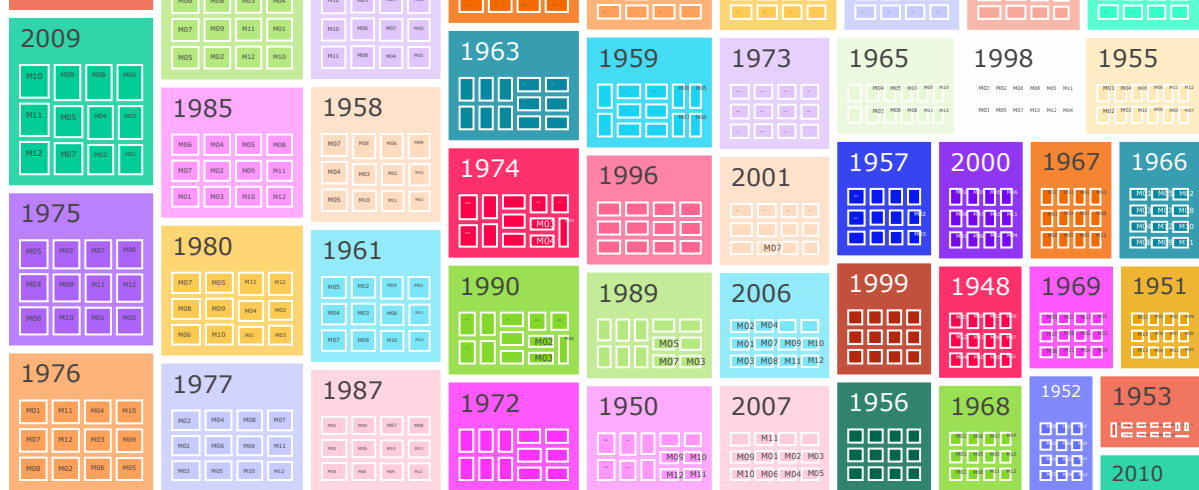
	Series id	Year	Period	Value
0	LNS14000000	1948	M01	3.4
1	LNS14000000	1948	M02	3.8
2	LNS14000000	1948	M03	4.0
3	LNS14000000	1948	M04	3.9
4	LNS14000000	1948	M05	3.5

Tree Map

```
In [69]: #Plot a Treemap
fig = px.treemap(unemployment_rate_df, path=['Year', 'Period'], values='Value')
fig.update_layout(margin = dict(t=50, l=25, r=25, b=25), title = "Python - TreeMap for U")
fig.show('notebook')
```

Python - TreeMap for Unemployment Rate by Year and Month

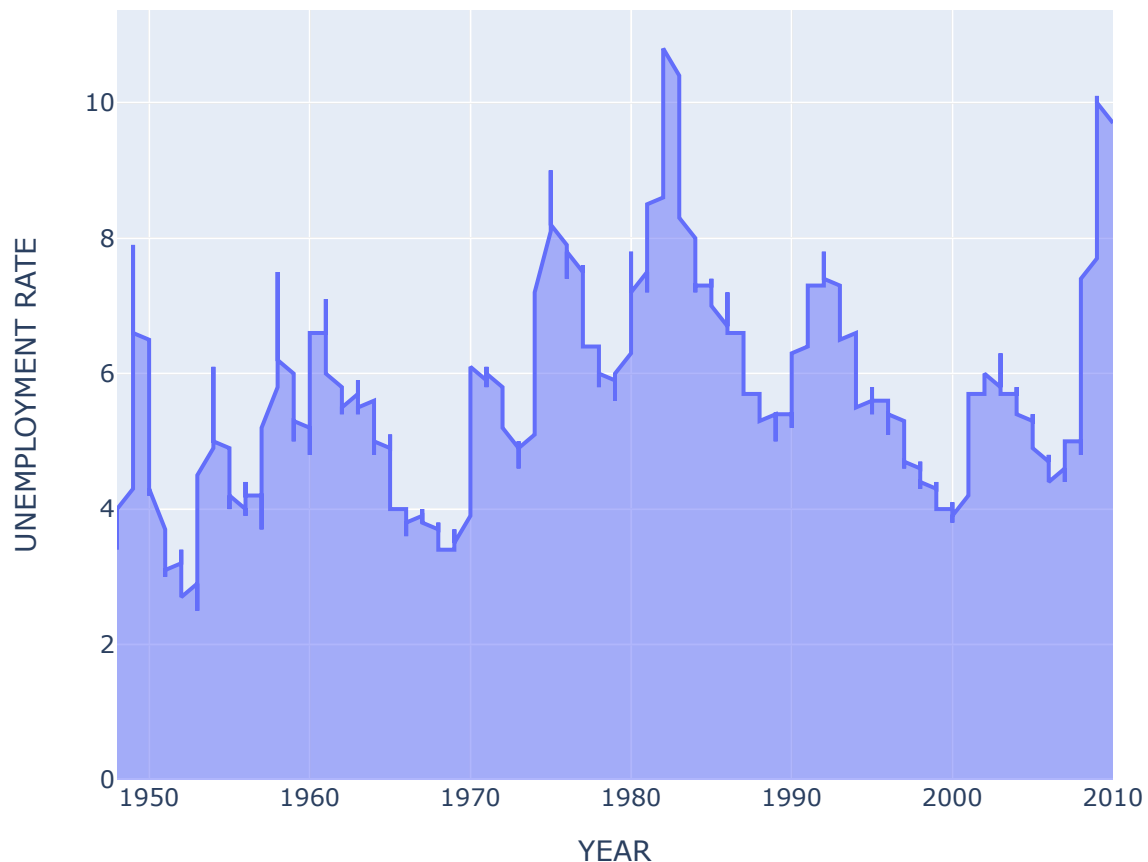




Area Chart

```
In [80]: fig = px.area(unemployment_rate_df, x= 'Year' , y= 'Value') #,line_group="Period"
fig.update_layout(title = 'Python - Area Chart for Unemployment Rate by Year',
                    xaxis_title="YEAR",
                    yaxis_title="UNEMPLOYMENT RATE")
fig.show()
```

Python - Area Chart for Unemployment Rate by Year

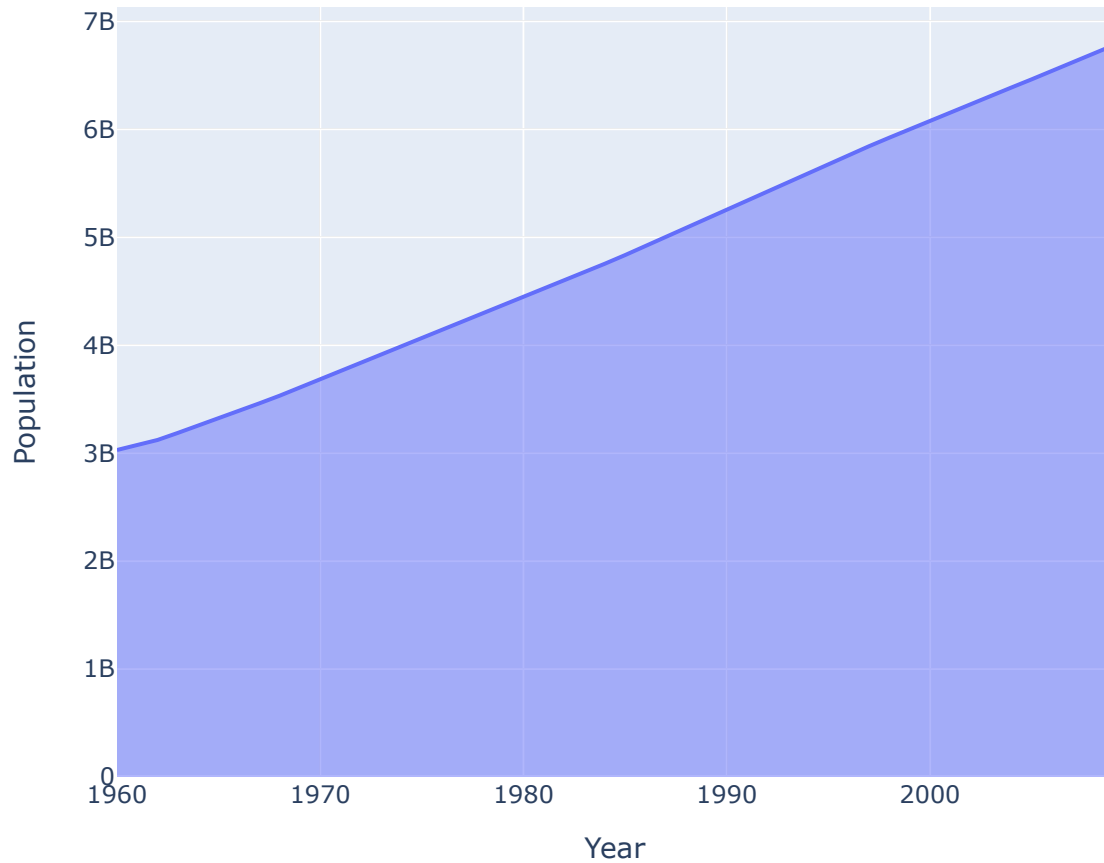


```
In [ ]: ## Additional area chart using world population data for practice
```

```
In [79]: fig = px.area(world_population_df, x= 'Year' , y= 'Population') #,line_group="Period"
```

```
fig.update_layout(title = 'Python - Area Chart for Population by Year',
                  xaxis_title="Year",
                  yaxis_title="Population")
fig.show()
```

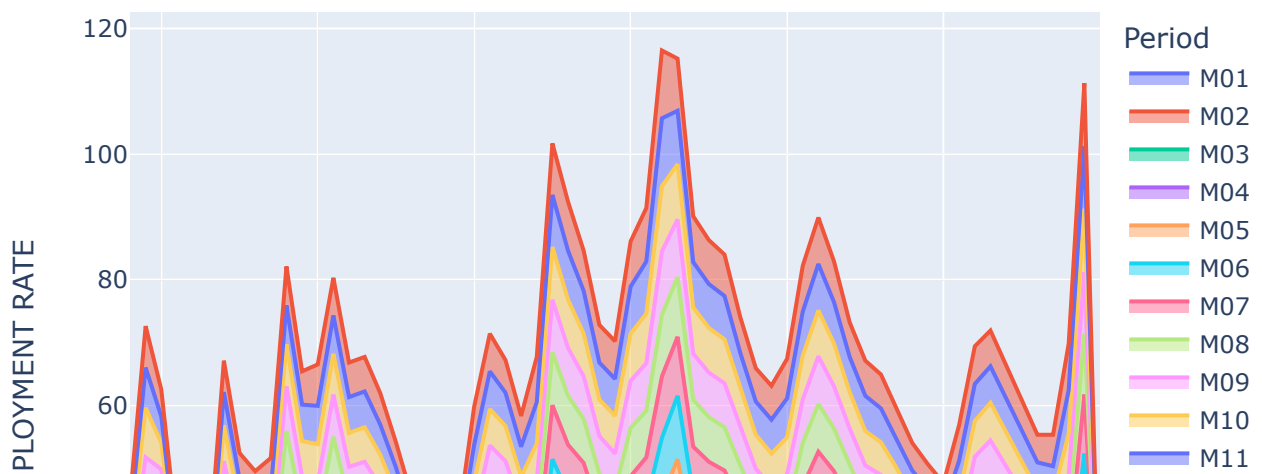
Python - Area Chart for Population by Year

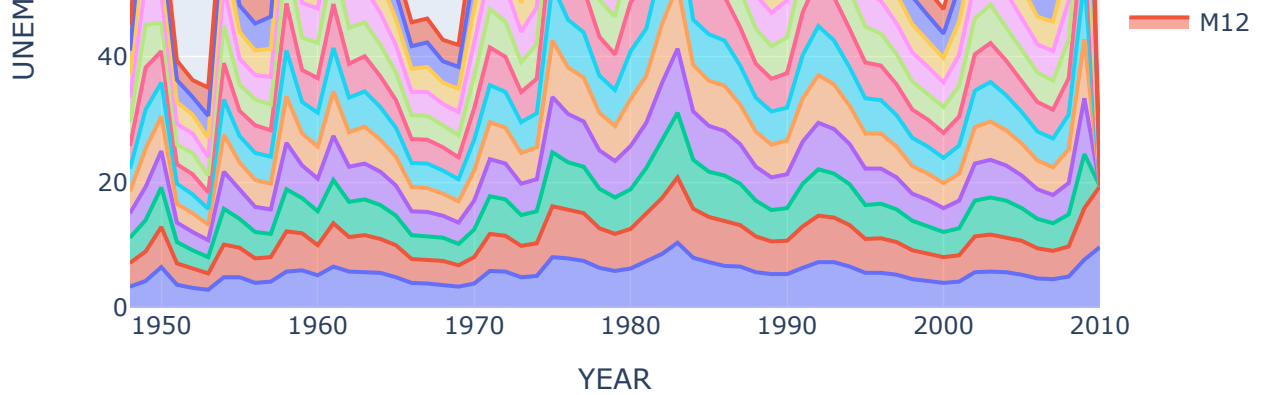


Stacked Area Chart

```
In [78]: fig = px.area(unemployment_rate_df, x= 'Year' , y= 'Value', color="Period", line_group=
fig.update_layout(title = 'Python - Stacked Area Chart for Unemployment Rate by Year',
                  xaxis_title="YEAR",
                  yaxis_title="UNEMPLOYMENT RATE")
fig.show()
```

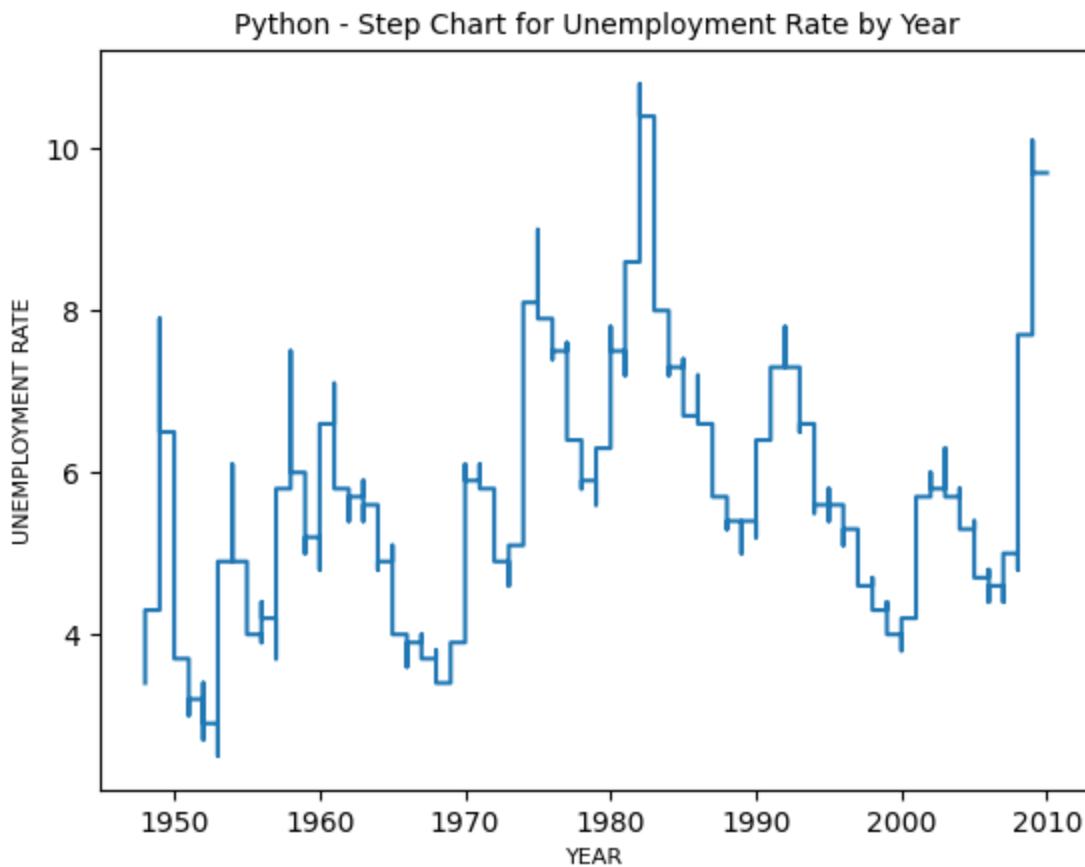
Python - Stacked Area Chart for Unemployment Rate by Year





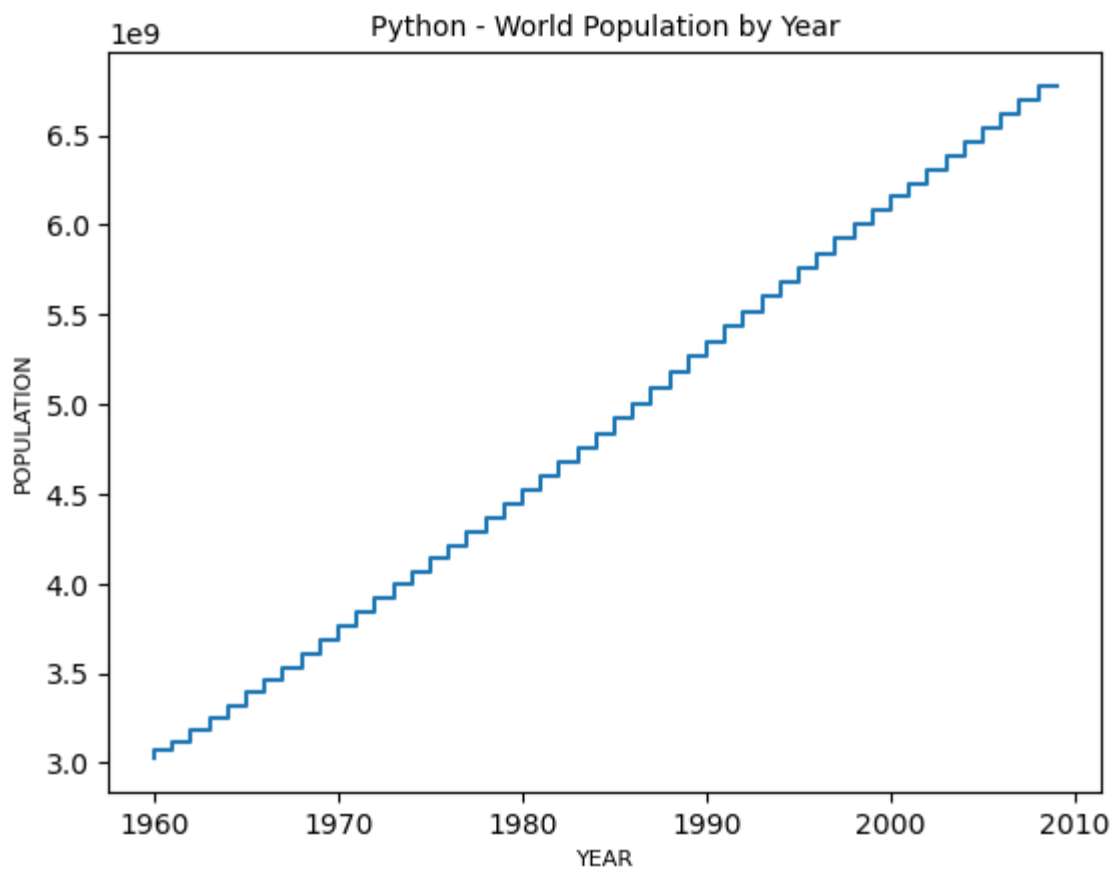
Step Chart

```
In [63]: plt.step(unemployment_rate_df.Year, unemployment_rate_df.Value)
plt.title("Python - Step Chart for Unemployment Rate by Year",fontsize=10)
plt.xlabel('YEAR', fontsize=8)
plt.ylabel('UNEMPLOYMENT RATE',fontsize=8)
plt.show()
```



```
In [ ]: ## Additional step chart using world population data for practice
```

```
In [71]: plt.step(world_population_df.Year, world_population_df.Population)
plt.title("Python - World Population by Year",fontsize=10)
plt.xlabel('YEAR', fontsize=8)
plt.ylabel('POPULATION',fontsize=8)
plt.show()
```



Assignment 2.2 - Week 3&4 in R

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2023-06-27

```
library(readxl)
library(ggplot2)
library(RColorBrewer)
library(plotly)
```

Load required libraries

```
##
## Attaching package: 'plotly'

## The following object is masked from 'package:ggplot2':
##
##   last_plot

## The following object is masked from 'package:stats':
##
##   filter

## The following object is masked from 'package:graphics':
##
##   layout
```

```
library(treemapify)
```

```
## Warning: package 'treemapify' was built under R version 4.2.3
```

```
library(treemap)
```

```
## Warning: package 'treemap' was built under R version 4.2.3
```

```
unemployment_rate_df <- read.csv("C:/Masters/GitHub/Summer2023/DSC640-Data Presentation & Visualization")
nrow(unemployment_rate_df)
```

Read xls into a dataframe

```
## [1] 746
```

```
head(unemployment_rate_df,5)
```

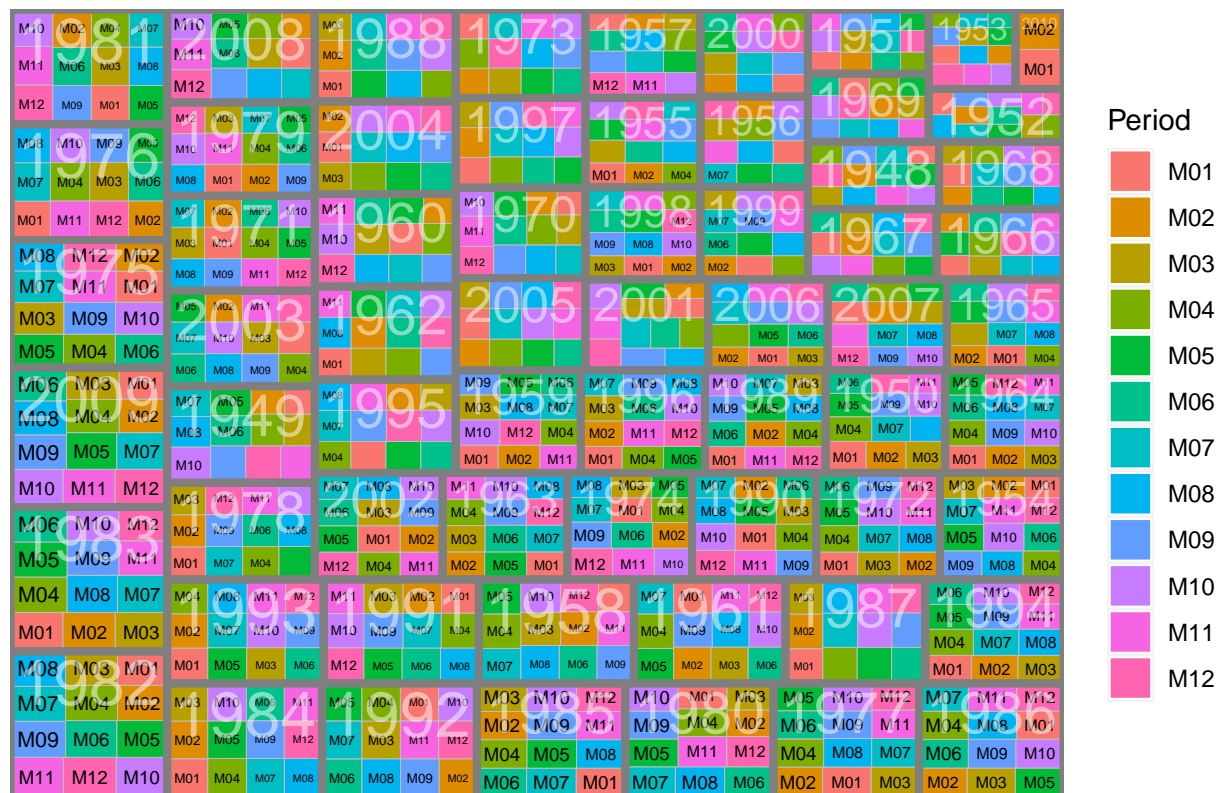
```
##      Series.id Year Period Value
## 1 LNS14000000 1948   M01   3.4
## 2 LNS14000000 1948   M02   3.8
## 3 LNS14000000 1948   M03   4.0
## 4 LNS14000000 1948   M04   3.9
## 5 LNS14000000 1948   M05   3.5
```

TREE MAP

```
p <- ggplot(unemployment_rate_df, aes(area = Value, fill = Period, label = Period, subgroup = Year)) +
  geom_treemap() + geom_treemap_subgroup_border() +
  geom_treemap_text(place = "middle", grow = F, size = 10) +
  geom_treemap_subgroup_text(place = "top", grow = F, alpha = 0.5, color = "white") +
  labs(title = "R - TreeMap for Unemployment Rate by Year and Month")
```

p

R – TreeMap for Unemployment Rate by Year and Month



The multidimensional chart above appears cluttered and difficult to read because of overlapping. Modifying the same for readability.

```
exp_agg_df <- aggregate(unemployment_rate_df$Value, by = list(Year = unemployment_rate_df$Year), FUN = sum)
group <- exp_agg_df$Year
```

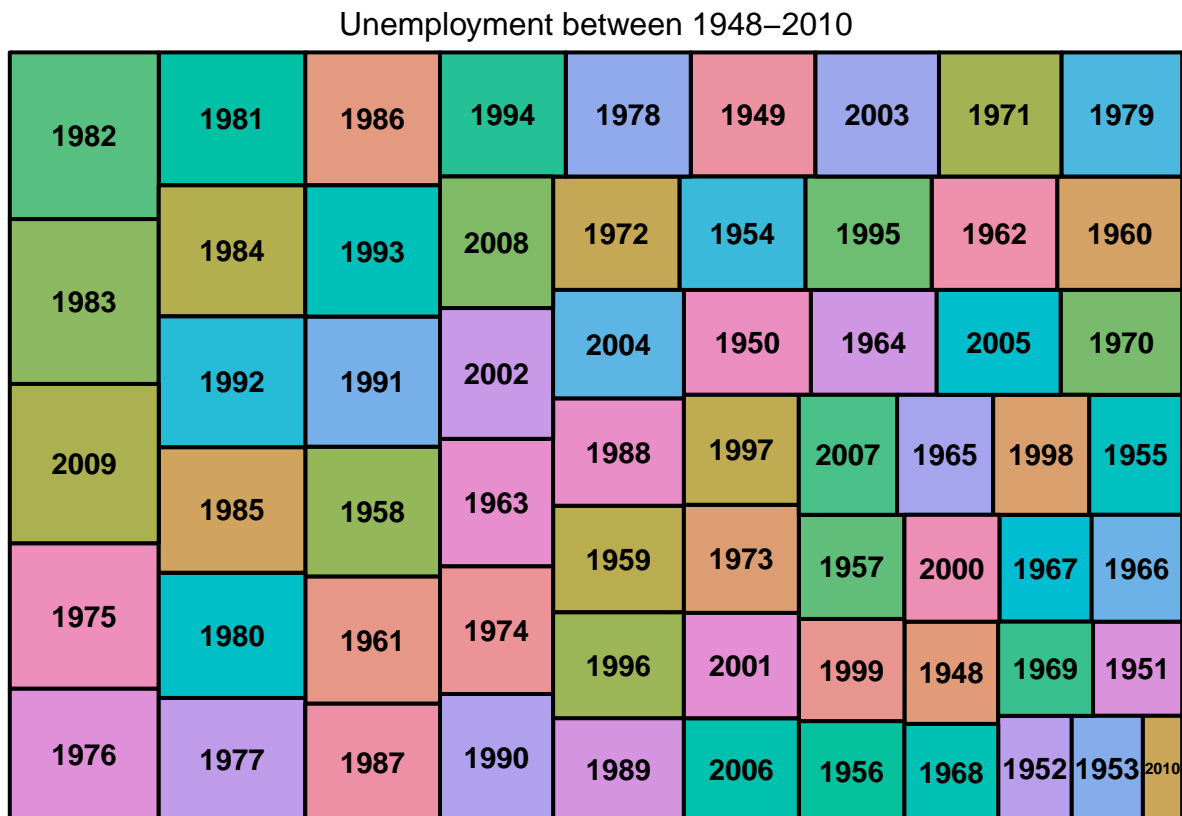
```

value<-exp_agg_df$x

df_exp_agg<-data.frame(group,value)

treemap(df_exp_agg,index="group",vSize="value",type="index",
        title="Unemployment between 1948-2010",fontsize.title = 12)

```



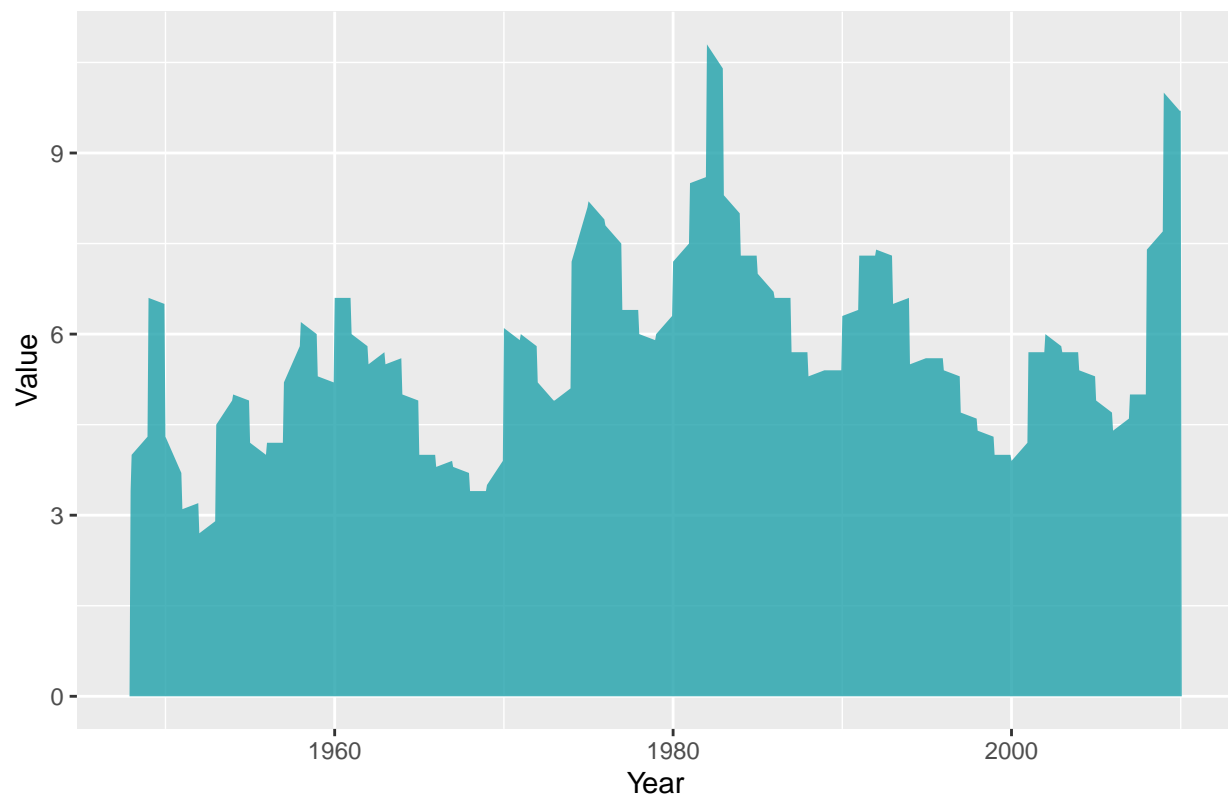
AREA CHART

```

ggplot(unemployment_rate_df,aes(x=Year,y=Value)) +
  geom_area(fill = "#20a2ab", size=0.2,alpha=0.8) +
  ggtitle("R - Unemployment Per Year - Area Chart")

```


R – Unemployment Per Year – Area Chart

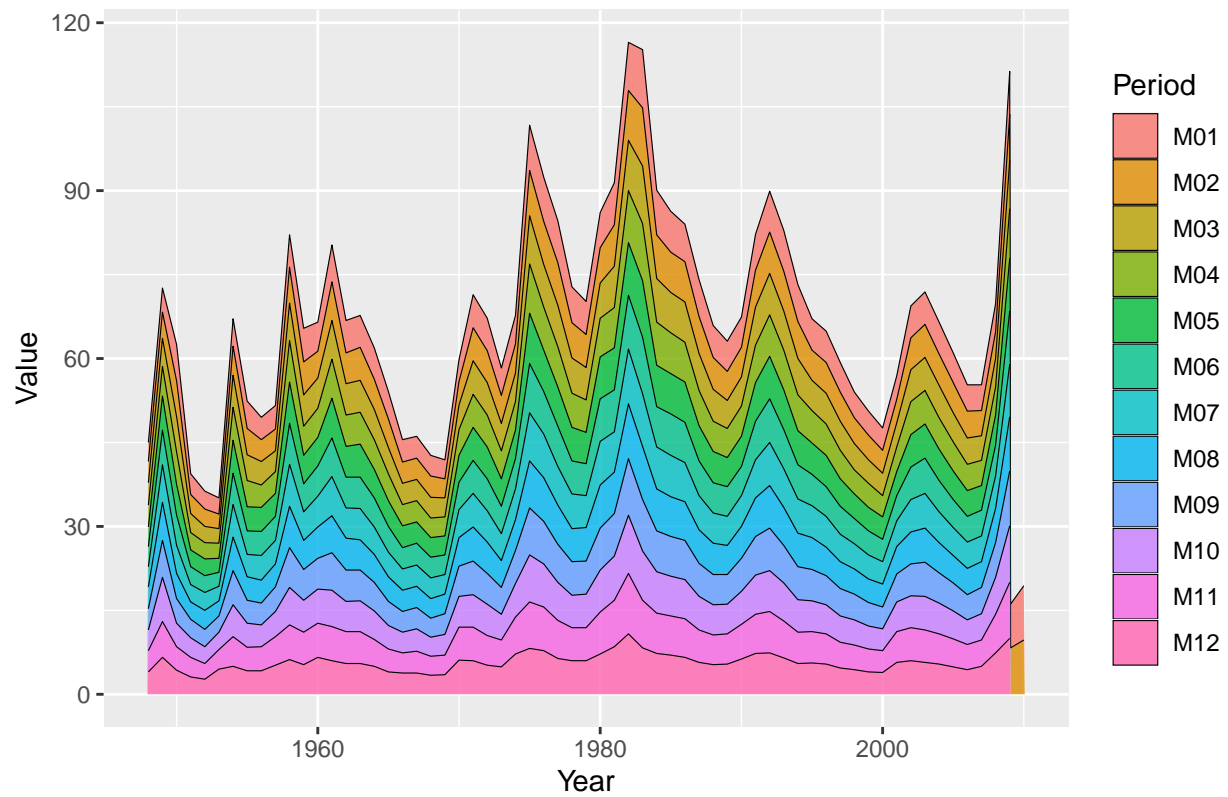


```
#fig <- plot_ly(data = unemployment_rate_df, x = ~Year, y = ~Value, type = 'scatter', mode = 'lines',  
#fig <- fig %>% layout(xaxis = list(title = 'Year'),  
#      yaxis = list(title = 'Unemployment Rate'),  
#      title = "R - Stacked Area Chart for Unemployment Rate by Year")  
#fig
```

STACKED AREA CHART

```
ggplot(unemployment_rate_df, aes(x=Year, y=Value, fill=Period)) +  
  geom_area(color="black", size=0.2, alpha=0.8) +  
  ggtitle("R - Unemployment Per Year - Stacked Area Chart")
```

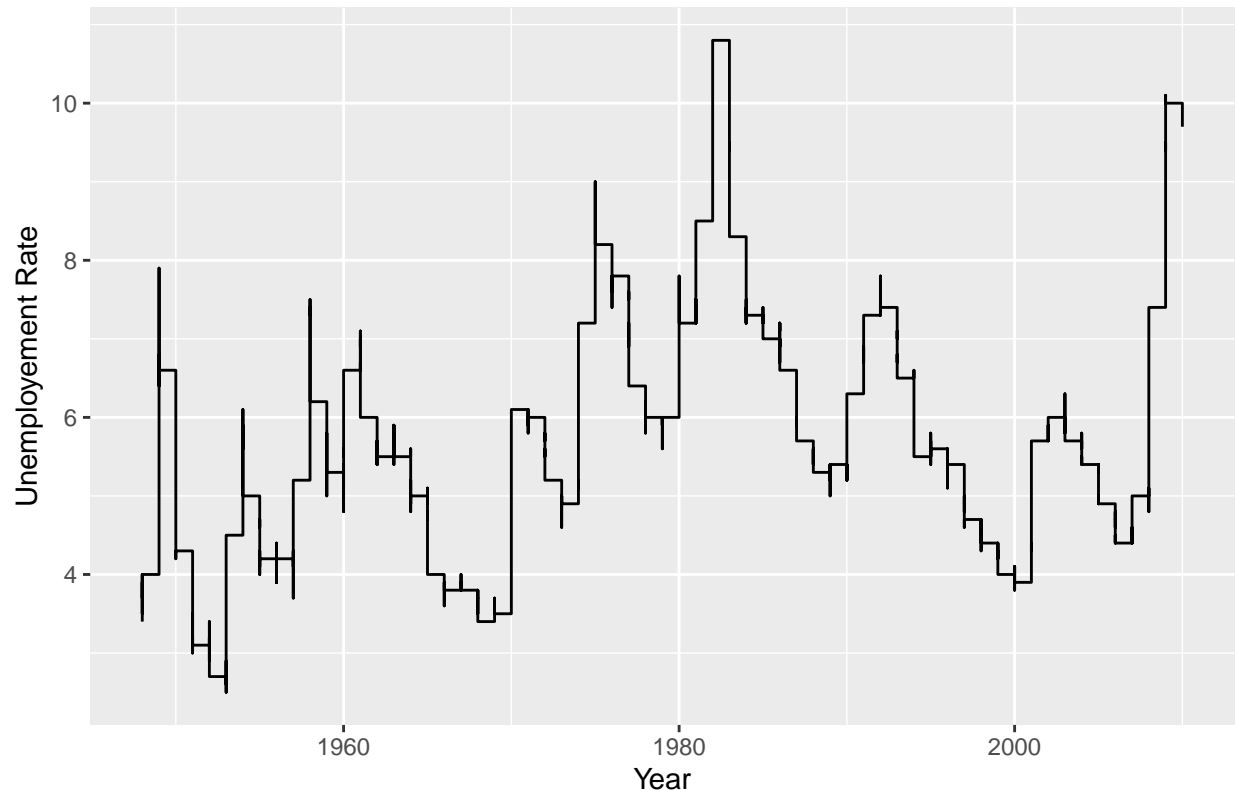
R – Unemployment Per Year – Stacked Area Chart



STEP CHART

```
p <- ggplot(unemployment_rate_df, aes(Year, Value)) + geom_step()+
  labs(title="R - Step Chart for Unemployment Rate by Year" + xlab("Year") + ylab("Unemployment Rate".
p
```

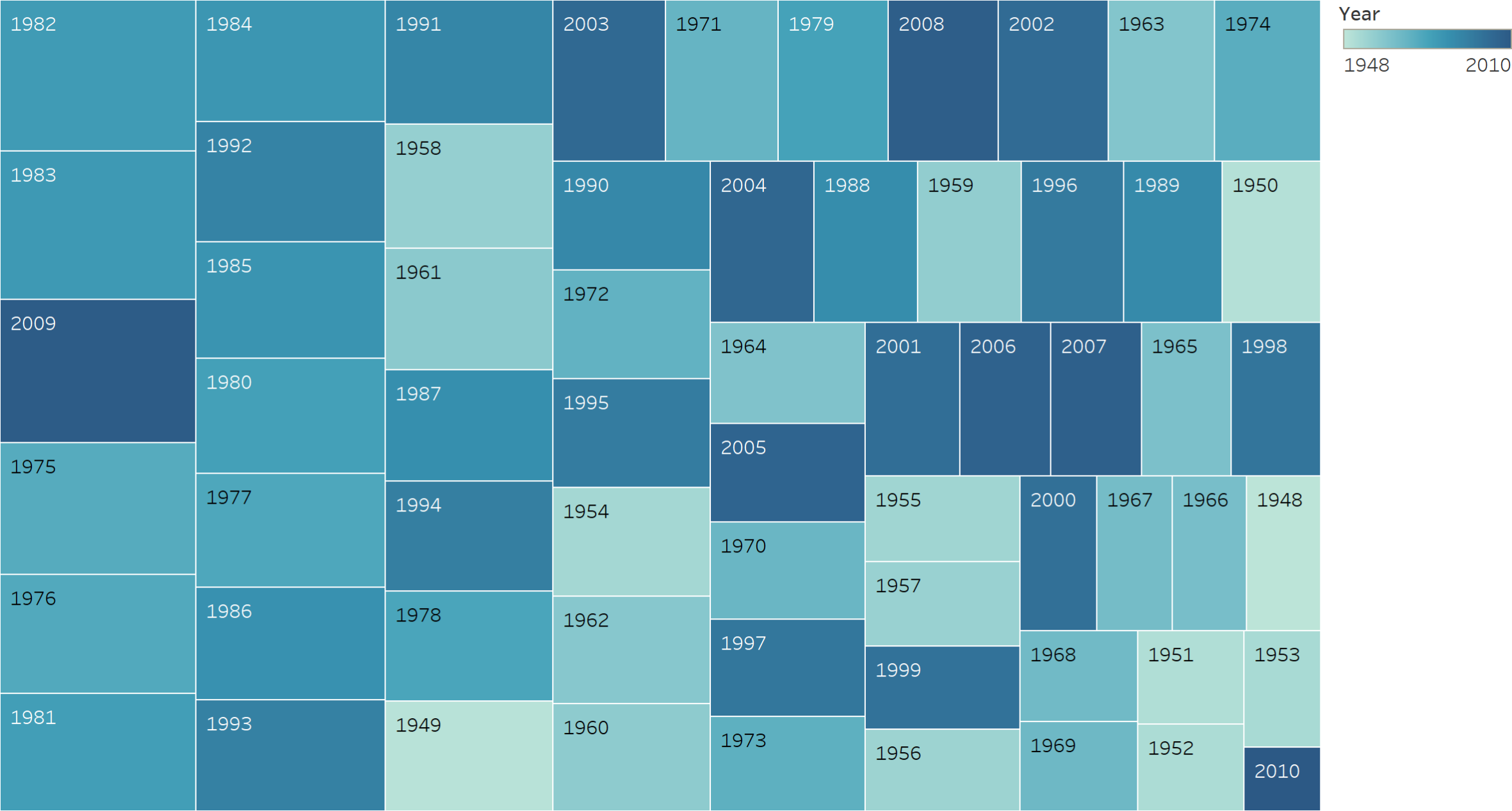
R – Step Chart for Unemployment Rate by Year



Week3&4

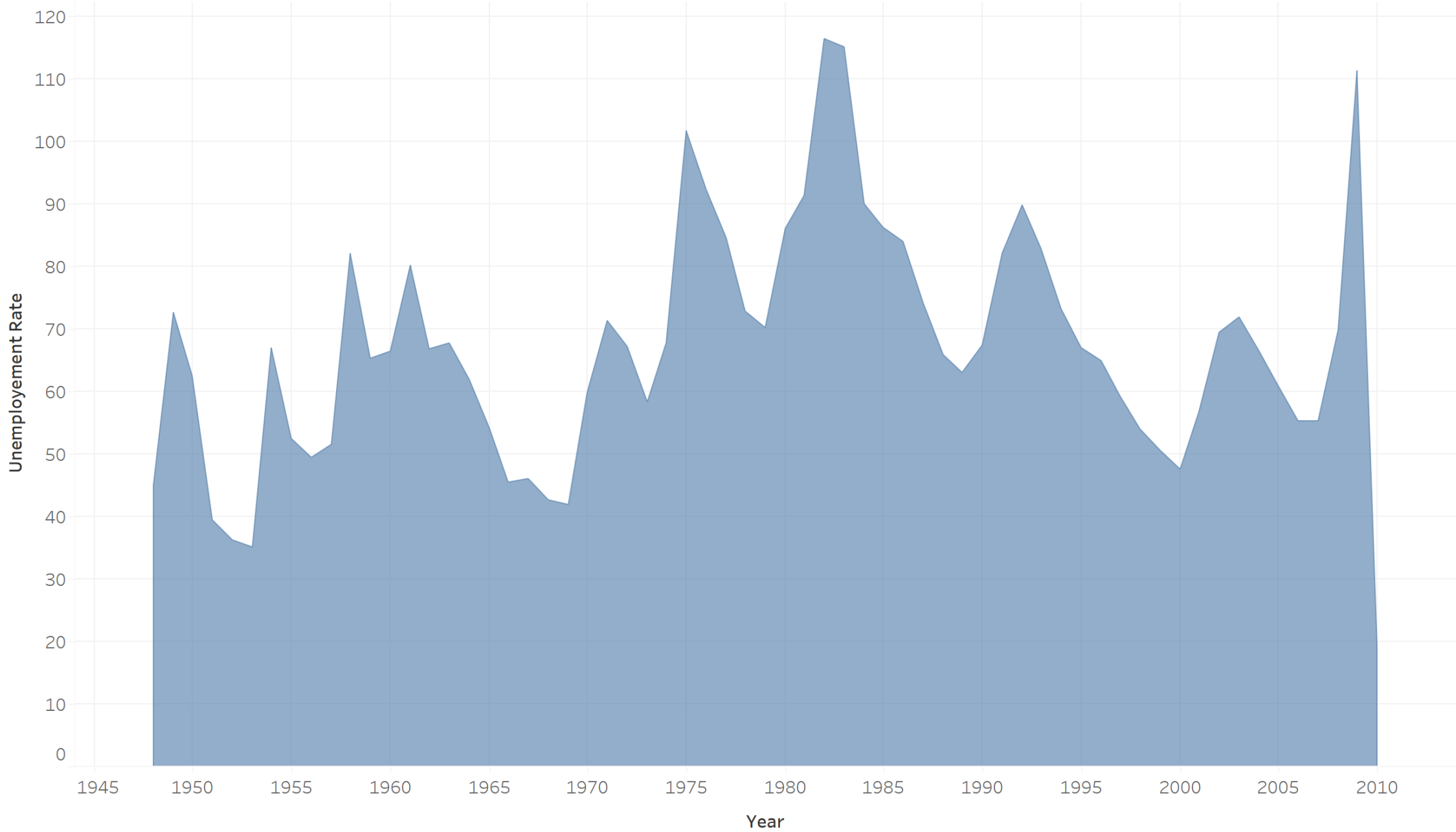
File created on: 7/2/2023 12:34:08 AM

Tableau - TreeMap for Unemployment Rate by Year



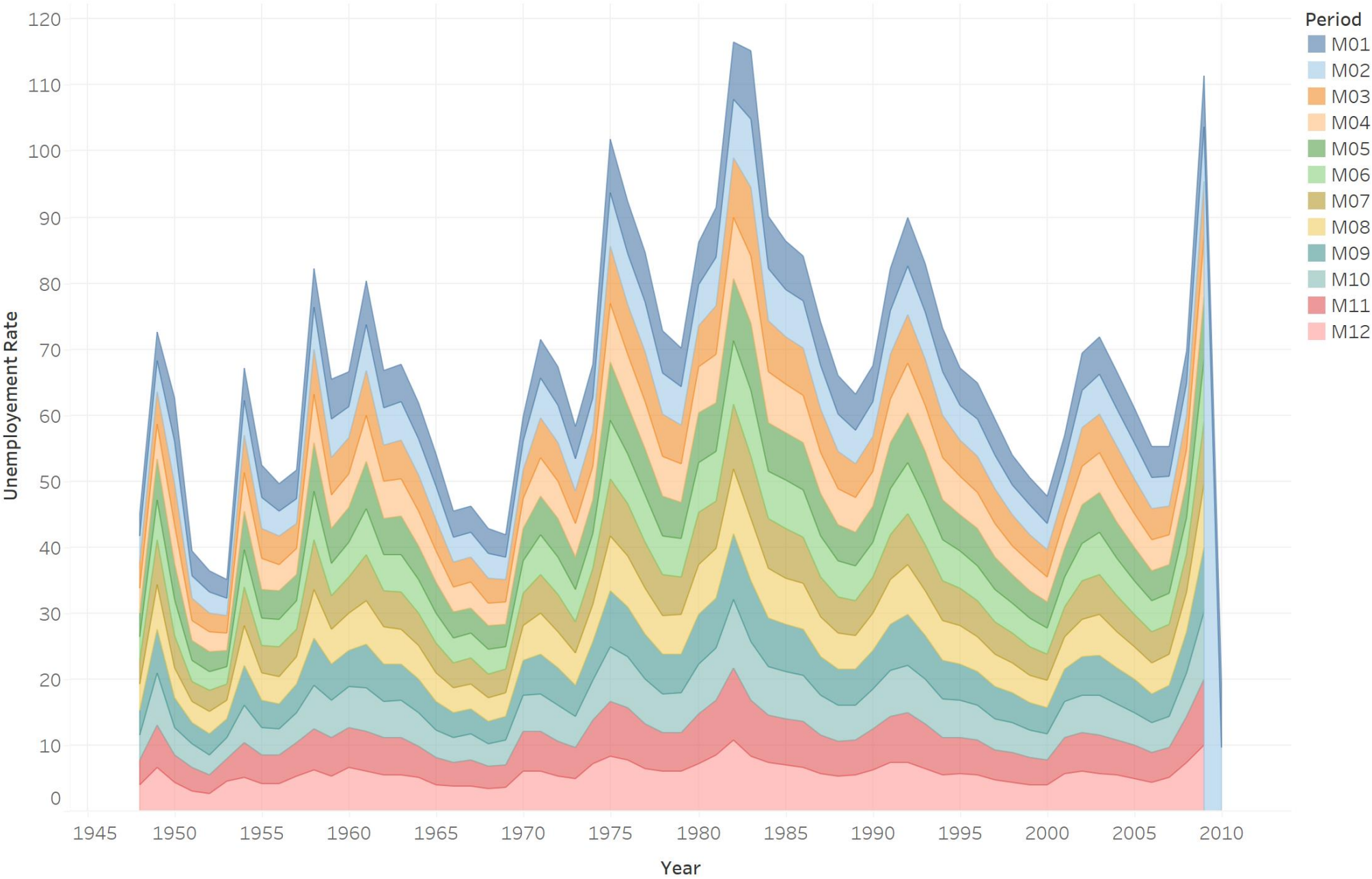
Year. Color shows details about Year. Size shows sum of Value. The marks are labeled by Year.

Tableau - Area Chart for Unemployment Rate by Year



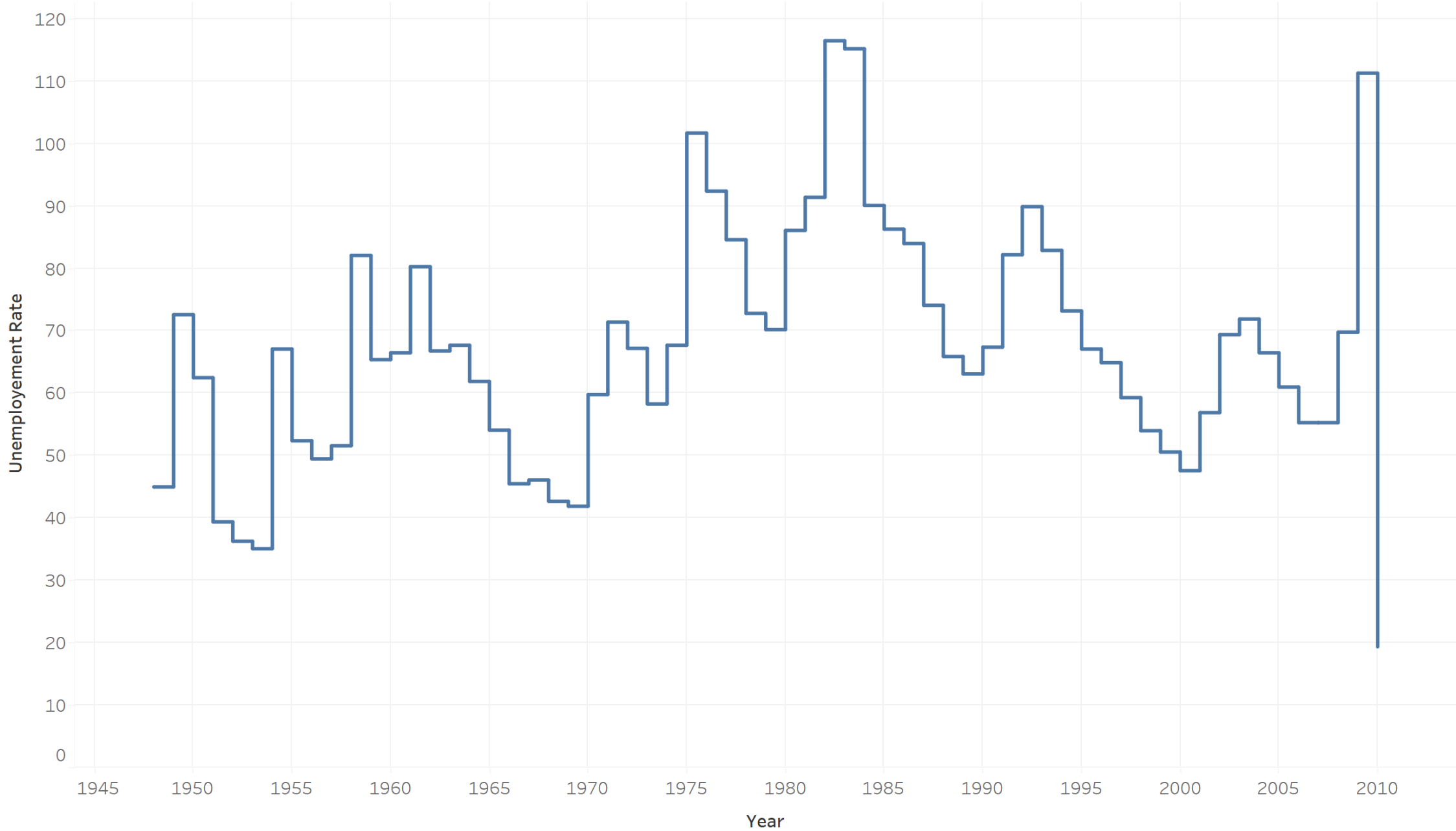
The plot of sum of Value for Year.

Tableau - Stacked Area Chart for Unemployment Rate by Year



The plot of sum of Value for Year. Color shows details about Period.

Tableau - Step Chart for Unemployment Rate by Year



The trend of sum of Value for Year.