

DSC630Assignment1BKudaimiRMD

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Importing libraries and generating summary statistics

```
## Warning: package 'rjson' was built under R version 4.0.3

## Warning: package 'blsAPI' was built under R version 4.0.5

## Warning: package 'dplyr' was built under R version 4.0.3

##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##   filter, lag

## The following objects are masked from 'package:base':
##
##   intersect, setdiff, setequal, union

## Loading required package: lattice

## Loading required package: survival

## Loading required package: Formula

## Loading required package: ggplot2

##
## Attaching package: 'Hmisc'

## The following objects are masked from 'package:dplyr':
##
##   src, summarize

## The following objects are masked from 'package:base':
##
##   format.pval, units
```

```
## Warning: package 'gmodels' was built under R version 4.0.5
```

```
## CA2$CA_Unemployment_Rate
```

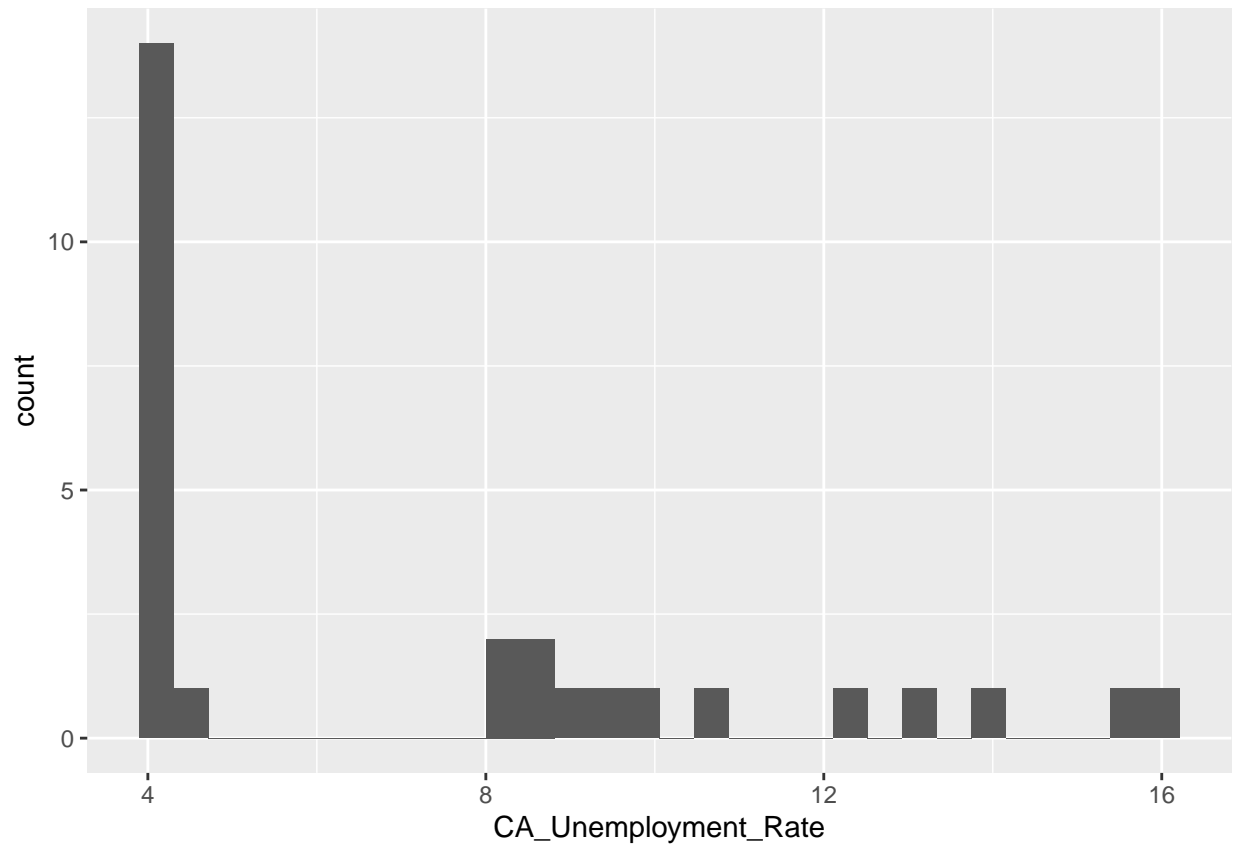
```
##      n missing distinct      Info      Mean      Gmd      .05      .10
##     28      0      16    0.975    7.375    4.246    4.100    4.100
##     .25     .50     .75     .90     .95
##    4.100    4.400    9.425   13.470   15.075
##
## lowest :  4.1  4.2  4.3  4.5  8.3, highest: 12.3 13.2 14.1 15.6 16.0
##
## Value      4.1  4.2  4.3  4.5  8.3  8.5  8.7  9.0  9.3  9.8 10.6
## Frequency      8   3   3   1   2   1   1   1   1   1   1
## Proportion 0.286 0.107 0.107 0.036 0.071 0.036 0.036 0.036 0.036 0.036 0.036
##
## Value      12.3 13.2 14.1 15.6 16.0
## Frequency      1   1   1   1   1
## Proportion 0.036 0.036 0.036 0.036 0.036
```

```
## CA2$CA_EP_Ratio
```

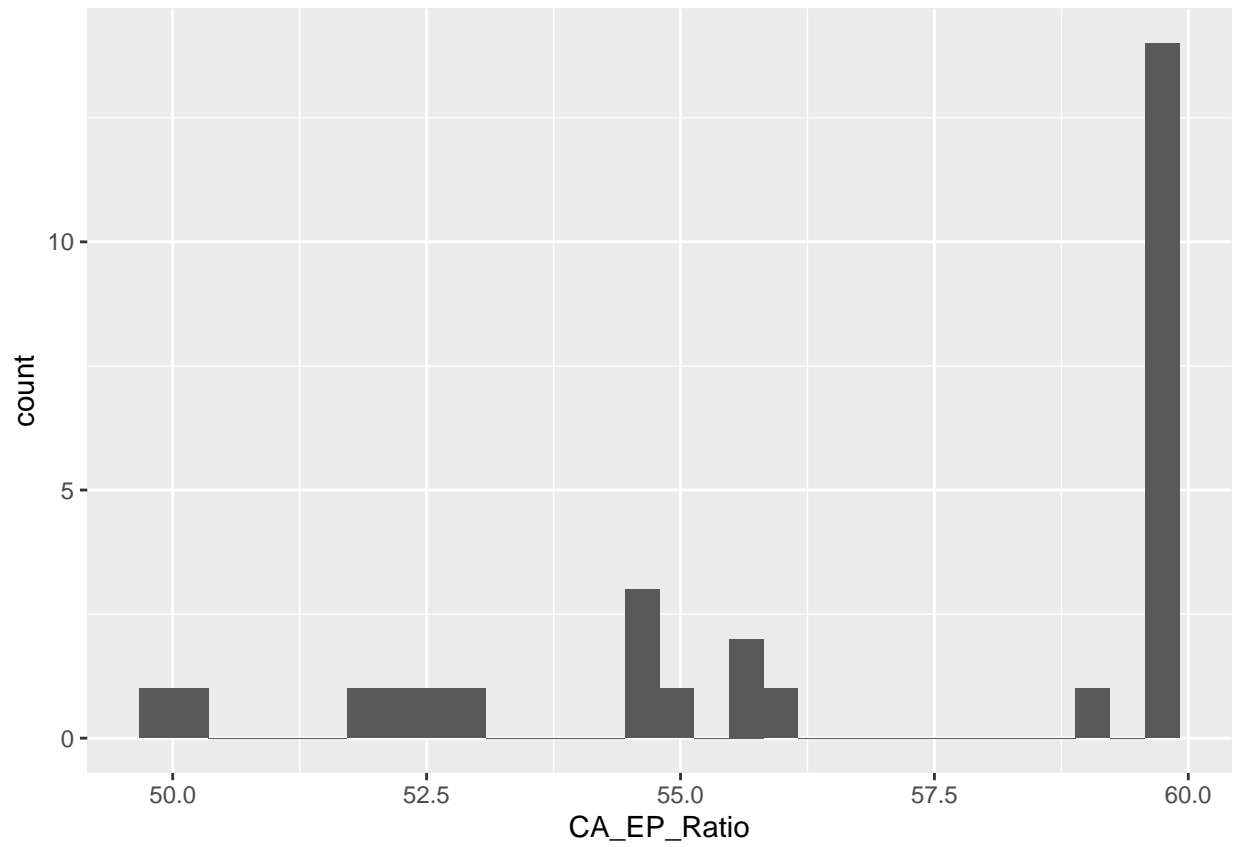
```
##      n missing distinct      Info      Mean      Gmd      .05      .10
##     28      0      16    0.981    56.86    3.715    50.89    52.28
##     .25     .50     .75     .90     .95
##    54.58    59.30    59.73    59.90    59.90
##
## lowest : 50.0 50.3 52.0 52.4 52.7, highest: 55.9 58.9 59.7 59.8 59.9
##
## Value      50.0 50.3 52.0 52.4 52.7 52.9 54.5 54.6 54.8 55.7 55.8
## Frequency      1   1   1   1   1   1   1   2   1   1   1
## Proportion 0.036 0.036 0.036 0.036 0.036 0.036 0.036 0.071 0.036 0.036 0.036
##
## Value      55.9 58.9 59.7 59.8 59.9
## Frequency      1   1   7   3   4
## Proportion 0.036 0.036 0.250 0.107 0.143
```

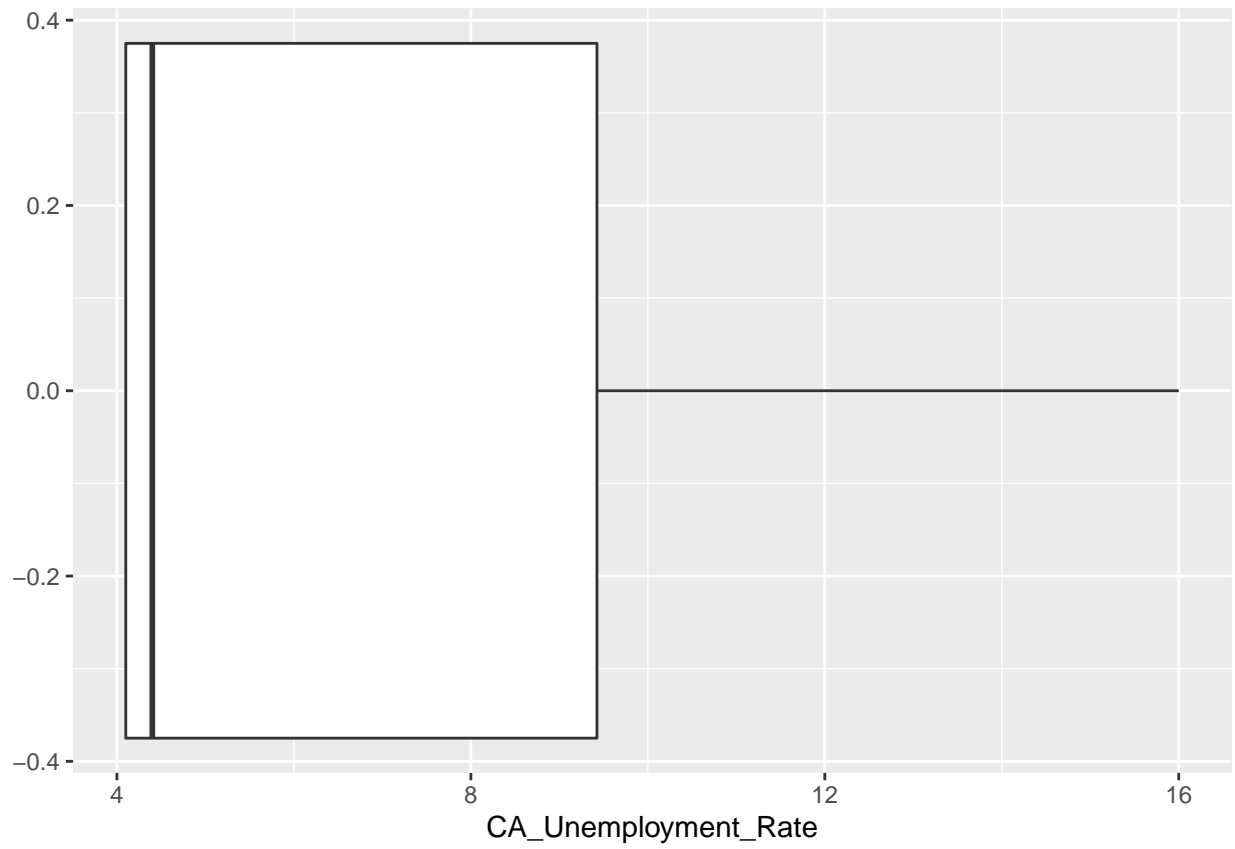
Histograms, boxplots, and density plots of two variables

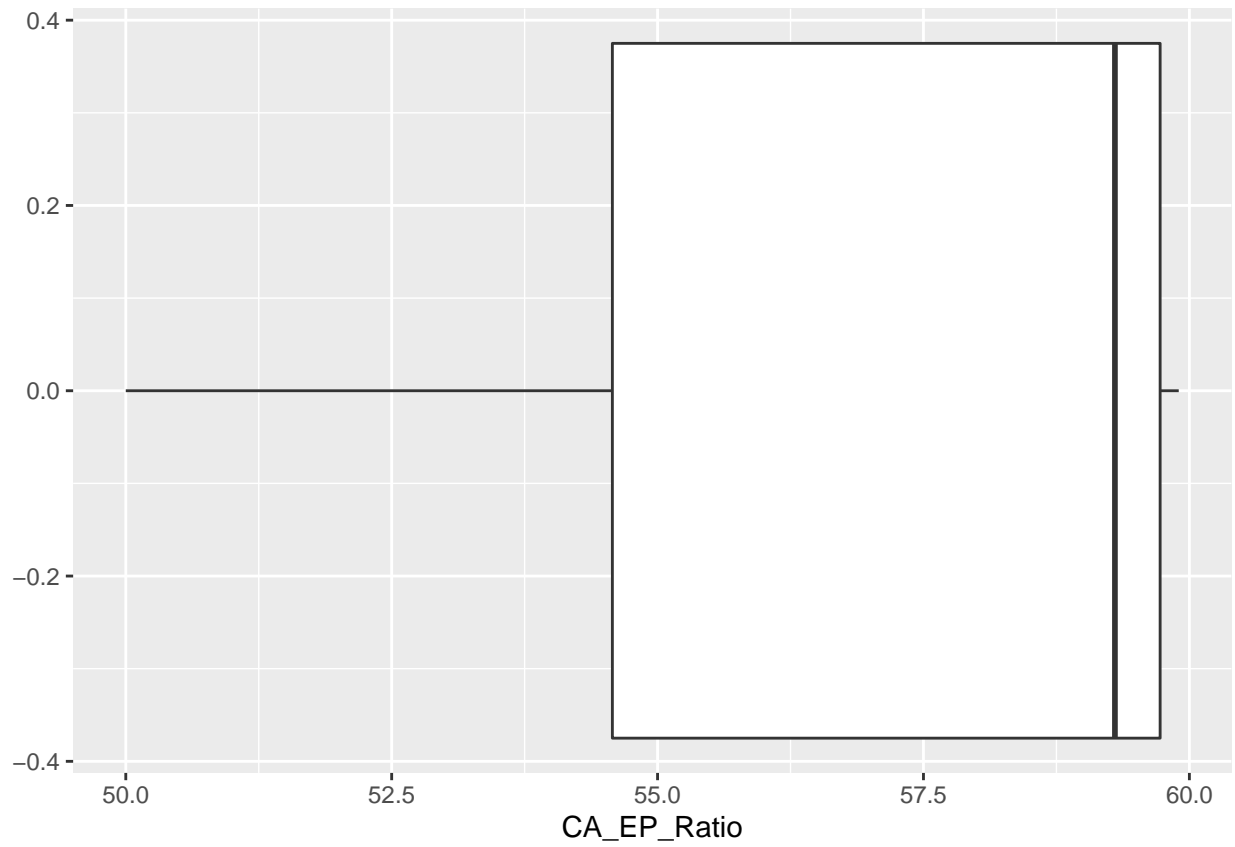
```
## 'stat_bin()' using 'bins = 30'. Pick better value with 'binwidth'.
```

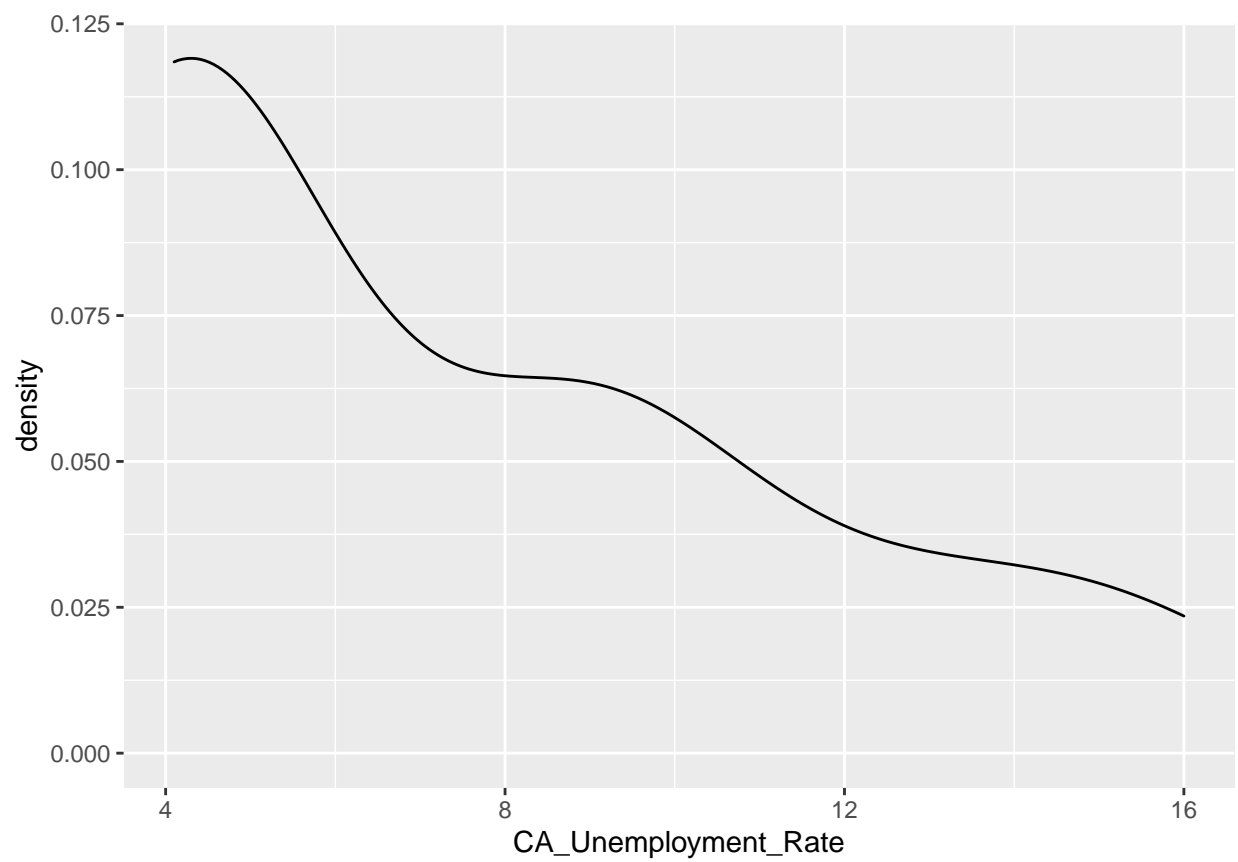


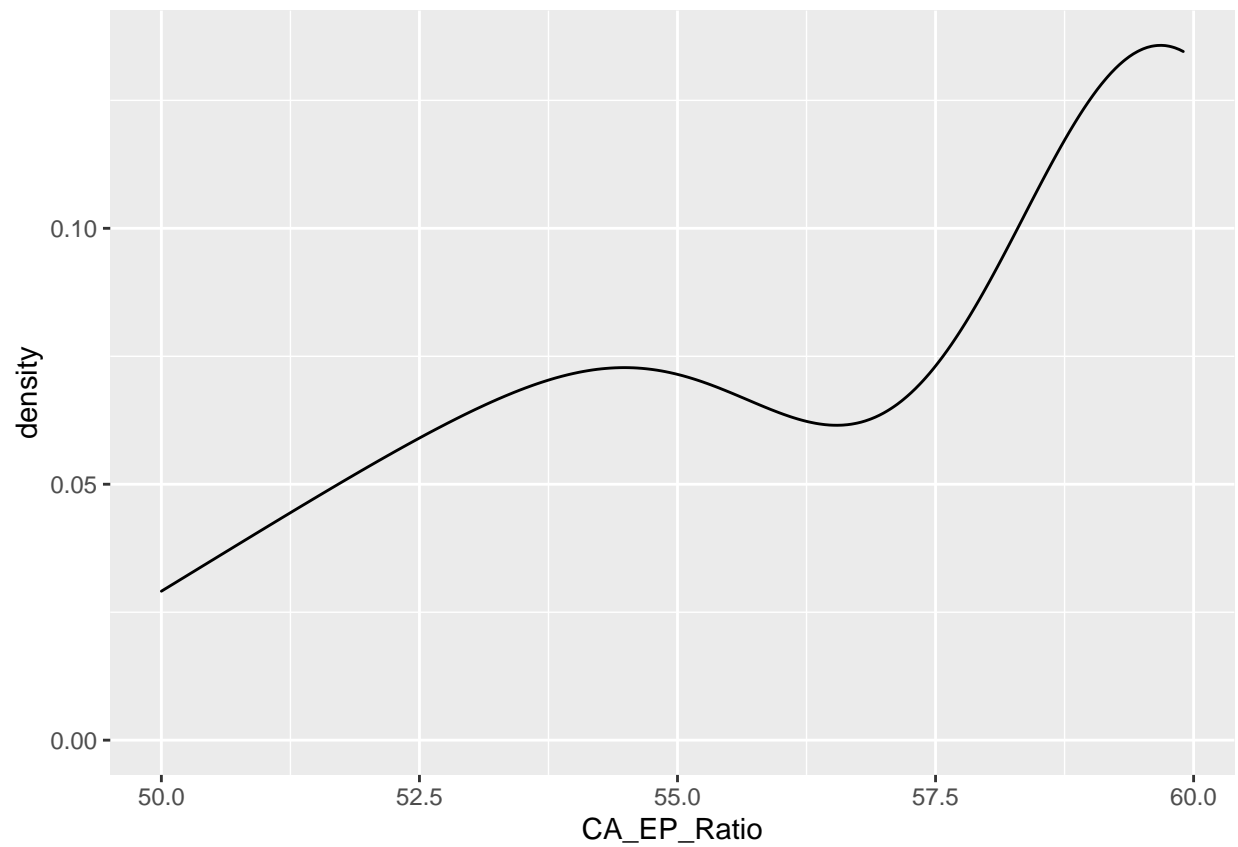
```
## 'stat_bin()' using 'bins = 30'. Pick better value with 'binwidth'.
```



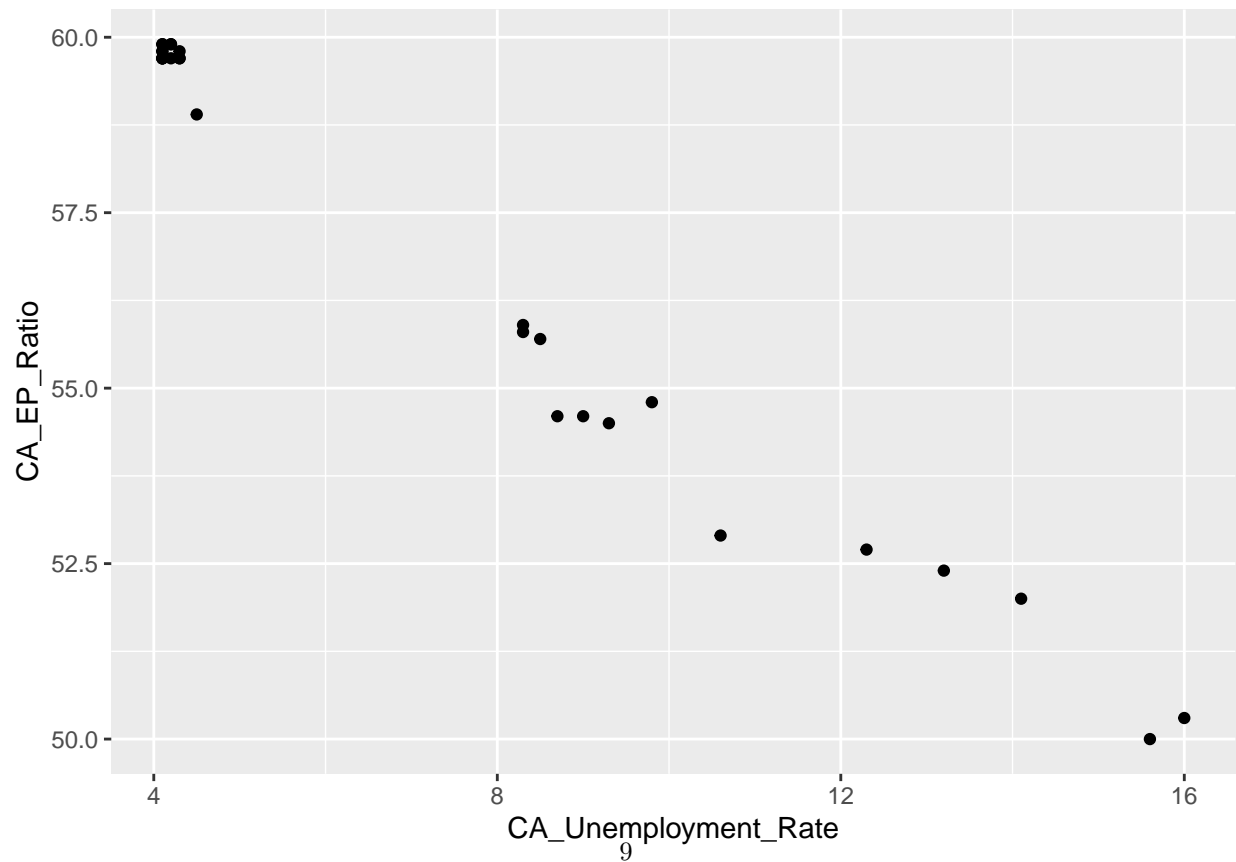
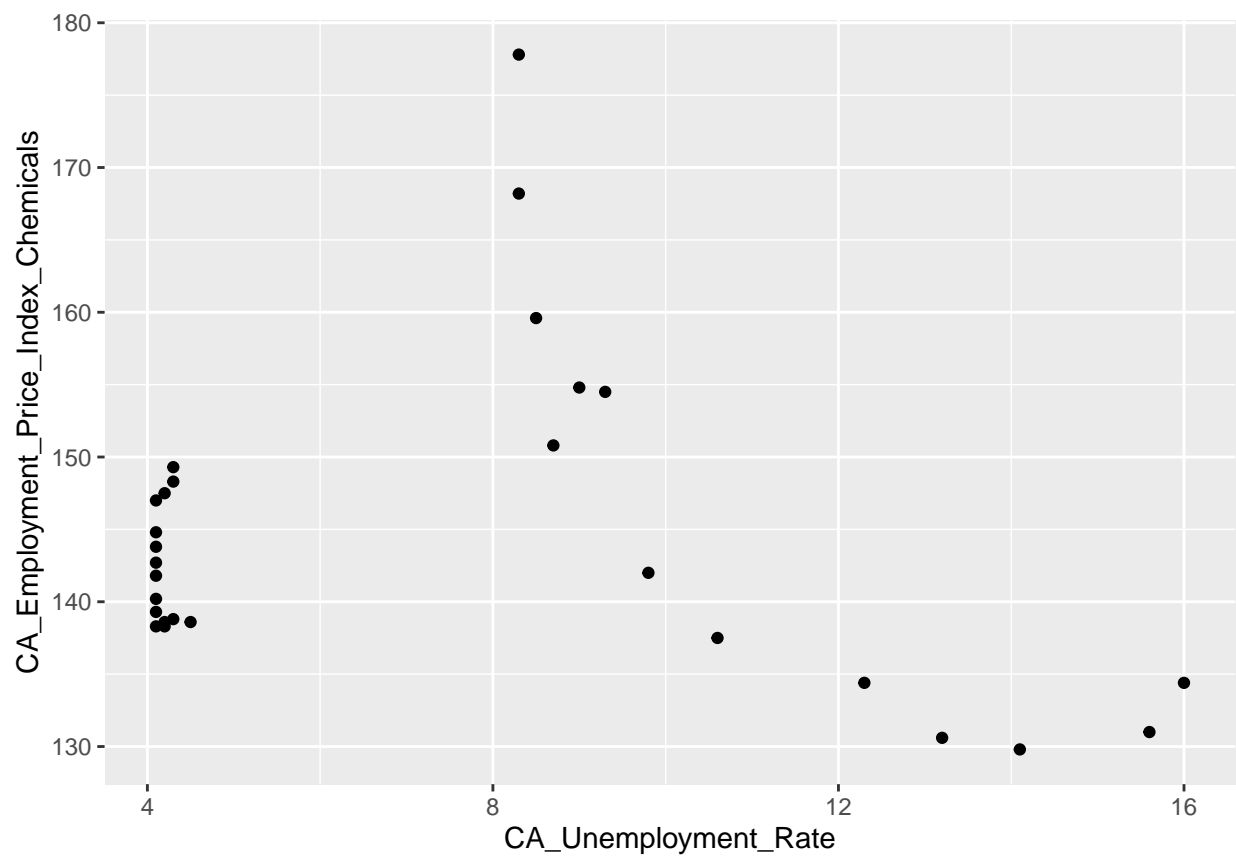


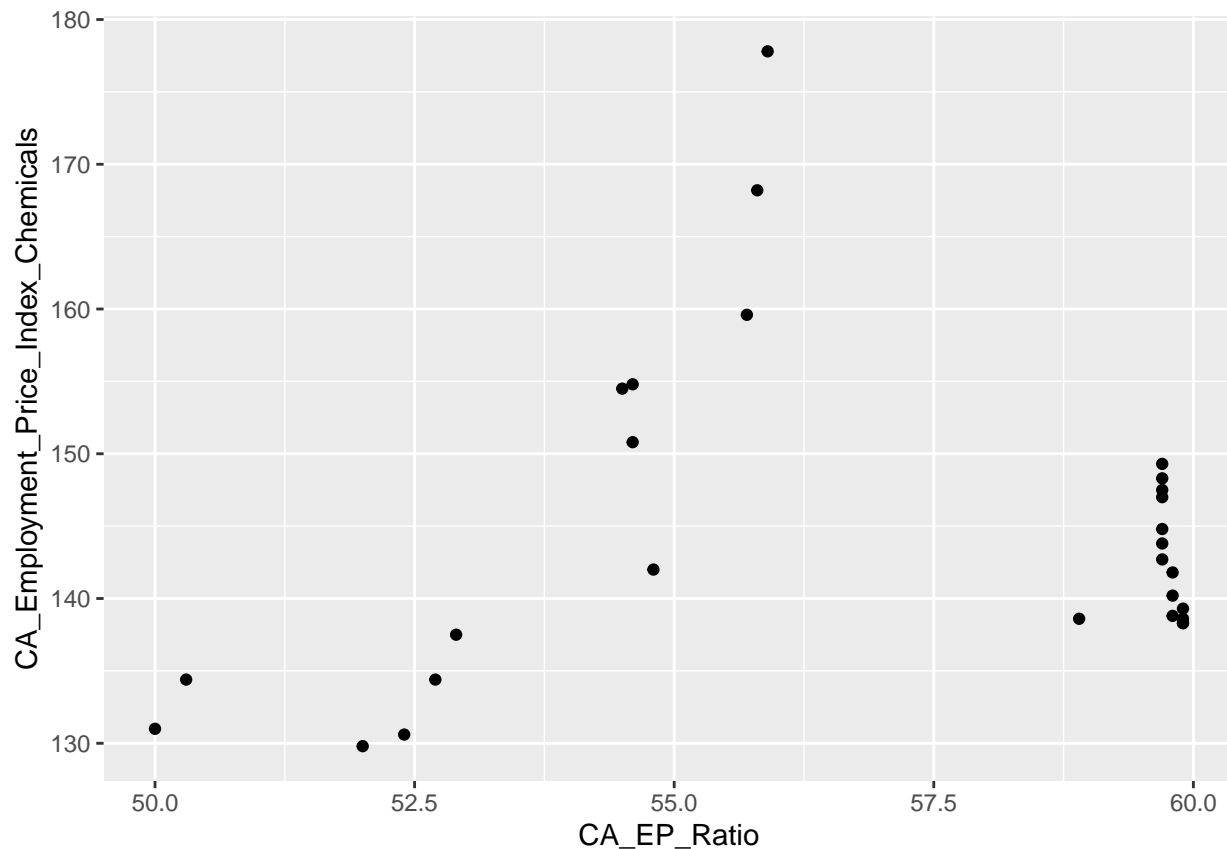






Bivariate plots and cross tables of different variables





```
##
##
##   Cell Contents
## |-----|
## |              N |
## | Chi-square contribution |
## |      N / Row Total |
## |      N / Col Total |
## |      N / Table Total |
## |-----|
##
##
## Total Observations in Table:  28
##
##
##           | CA2$CA_Employment_Price_Index_Chemicals
## CA2$CA_Unemployment_Rate |      129.8 |      130.6 |      131 |      134.4 |      137.5 |      138.3 |
## -----|-----|-----|-----|-----|-----|-----|
##           4.1 |          0 |          0 |          0 |          0 |          0 |          1 |
##           |      0.29 |      0.29 |      0.29 |      0.57 |      0.29 |      0.32 |
##           |      0.00 |      0.00 |      0.00 |      0.00 |      0.00 |      0.12 |
##           |      0.00 |      0.00 |      0.00 |      0.00 |      0.00 |      0.50 |
##           |      0.00 |      0.00 |      0.00 |      0.00 |      0.00 |      0.04 |
## -----|-----|-----|-----|-----|-----|-----|
##           4.2 |          0 |          0 |          0 |          0 |          0 |          1 |
##           |      0.11 |      0.11 |      0.11 |      0.21 |      0.11 |      2.88 |
```

##		0.00	0.00	0.00	0.00	0.00	0.33
##		0.00	0.00	0.00	0.00	0.00	0.50
##		0.00	0.00	0.00	0.00	0.00	0.04
##							
##	4.3	0	0	0	0	0	0
##		0.11	0.11	0.11	0.21	0.11	0.21
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00
##							
##	4.5	0	0	0	0	0	0
##		0.04	0.04	0.04	0.07	0.04	0.07
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00
##							
##	8.3	0	0	0	0	0	0
##		0.07	0.07	0.07	0.14	0.07	0.14
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00
##							
##	8.5	0	0	0	0	0	0
##		0.04	0.04	0.04	0.07	0.04	0.07
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00
##							
##	8.7	0	0	0	0	0	0
##		0.04	0.04	0.04	0.07	0.04	0.07
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00
##							
##	9	0	0	0	0	0	0
##		0.04	0.04	0.04	0.07	0.04	0.07
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00
##							
##	9.3	0	0	0	0	0	0
##		0.04	0.04	0.04	0.07	0.04	0.07
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00
##							
##	9.8	0	0	0	0	0	0
##		0.04	0.04	0.04	0.07	0.04	0.07
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00
##							
##	10.6	0	0	0	0	1	0
##		0.04	0.04	0.04	0.07	26.04	0.07

##		0.00	0.00	0.00	0.00	1.00	0.00
##		0.00	0.00	0.00	0.00	1.00	0.00
##		0.00	0.00	0.00	0.00	0.04	0.00
##	-----	-----	-----	-----	-----	-----	-----
##	12.3	0	0	0	1	0	0
##		0.04	0.04	0.04	12.07	0.04	0.07
##		0.00	0.00	0.00	1.00	0.00	0.00
##		0.00	0.00	0.00	0.50	0.00	0.00
##		0.00	0.00	0.00	0.04	0.00	0.00
##	-----	-----	-----	-----	-----	-----	-----
##	13.2	0	1	0	0	0	0
##		0.04	26.04	0.04	0.07	0.04	0.07
##		0.00	1.00	0.00	0.00	0.00	0.00
##		0.00	1.00	0.00	0.00	0.00	0.00
##		0.00	0.04	0.00	0.00	0.00	0.00
##	-----	-----	-----	-----	-----	-----	-----
##	14.1	1	0	0	0	0	0
##		26.04	0.04	0.04	0.07	0.04	0.07
##		1.00	0.00	0.00	0.00	0.00	0.00
##		1.00	0.00	0.00	0.00	0.00	0.00
##		0.04	0.00	0.00	0.00	0.00	0.00
##	-----	-----	-----	-----	-----	-----	-----
##	15.6	0	0	1	0	0	0
##		0.04	0.04	26.04	0.07	0.04	0.07
##		0.00	0.00	1.00	0.00	0.00	0.00
##		0.00	0.00	1.00	0.00	0.00	0.00
##		0.00	0.00	0.04	0.00	0.00	0.00
##	-----	-----	-----	-----	-----	-----	-----
##	16	0	0	0	1	0	0
##		0.04	0.04	0.04	12.07	0.04	0.07
##		0.00	0.00	0.00	1.00	0.00	0.00
##		0.00	0.00	0.00	0.50	0.00	0.00
##		0.00	0.00	0.00	0.04	0.00	0.00
##	-----	-----	-----	-----	-----	-----	-----
##	Column Total	1	1	1	2	1	2
##		0.04	0.04	0.04	0.07	0.04	0.07
##	-----	-----	-----	-----	-----	-----	-----
##							
##							
##	Cell Contents						
##	-----						
##	N						
##	Chi-square contribution						
##	N / Row Total						
##	N / Col Total						
##	N / Table Total						
##	-----						
##							
##							
##	Total Observations in Table:	28					
##							

##		CA2\$CA_EP_Ratio					
##	CA2\$CA_Unemployment_Rate	50	50.3	52	52.4	52.7	52.9

##	4.1	0	0	0	0	0	0
##		0.29	0.29	0.29	0.29	0.29	0.29
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00

##	4.2	0	0	0	0	0	0
##		0.11	0.11	0.11	0.11	0.11	0.11
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00

##	4.3	0	0	0	0	0	0
##		0.11	0.11	0.11	0.11	0.11	0.11
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00

##	4.5	0	0	0	0	0	0
##		0.04	0.04	0.04	0.04	0.04	0.04
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00

##	8.3	0	0	0	0	0	0
##		0.07	0.07	0.07	0.07	0.07	0.07
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00

##	8.5	0	0	0	0	0	0
##		0.04	0.04	0.04	0.04	0.04	0.04
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00

##	8.7	0	0	0	0	0	0
##		0.04	0.04	0.04	0.04	0.04	0.04
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00

##	9	0	0	0	0	0	0
##		0.04	0.04	0.04	0.04	0.04	0.04
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00

##	9.3	0	0	0	0	0	0
##		0.04	0.04	0.04	0.04	0.04	0.04

##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00
##	-----	-----	-----	-----	-----	-----	-----
##	9.8	0	0	0	0	0	0
##		0.04	0.04	0.04	0.04	0.04	0.04
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00
##	-----	-----	-----	-----	-----	-----	-----
##	10.6	0	0	0	0	0	1
##		0.04	0.04	0.04	0.04	0.04	26.04
##		0.00	0.00	0.00	0.00	0.00	1.00
##		0.00	0.00	0.00	0.00	0.00	1.00
##		0.00	0.00	0.00	0.00	0.00	0.04
##	-----	-----	-----	-----	-----	-----	-----
##	12.3	0	0	0	0	1	0
##		0.04	0.04	0.04	0.04	26.04	0.04
##		0.00	0.00	0.00	0.00	1.00	0.00
##		0.00	0.00	0.00	0.00	1.00	0.00
##		0.00	0.00	0.00	0.00	0.04	0.00
##	-----	-----	-----	-----	-----	-----	-----
##	13.2	0	0	0	1	0	0
##		0.04	0.04	0.04	26.04	0.04	0.04
##		0.00	0.00	0.00	1.00	0.00	0.00
##		0.00	0.00	0.00	1.00	0.00	0.00
##		0.00	0.00	0.00	0.04	0.00	0.00
##	-----	-----	-----	-----	-----	-----	-----
##	14.1	0	0	1	0	0	0
##		0.04	0.04	26.04	0.04	0.04	0.04
##		0.00	0.00	1.00	0.00	0.00	0.00
##		0.00	0.00	1.00	0.00	0.00	0.00
##		0.00	0.00	0.04	0.00	0.00	0.00
##	-----	-----	-----	-----	-----	-----	-----
##	15.6	1	0	0	0	0	0
##		26.04	0.04	0.04	0.04	0.04	0.04
##		1.00	0.00	0.00	0.00	0.00	0.00
##		1.00	0.00	0.00	0.00	0.00	0.00
##		0.04	0.00	0.00	0.00	0.00	0.00
##	-----	-----	-----	-----	-----	-----	-----
##	16	0	1	0	0	0	0
##		0.04	26.04	0.04	0.04	0.04	0.04
##		0.00	1.00	0.00	0.00	0.00	0.00
##		0.00	1.00	0.00	0.00	0.00	0.00
##		0.00	0.04	0.00	0.00	0.00	0.00
##	-----	-----	-----	-----	-----	-----	-----
##	Column Total	1	1	1	1	1	1
##		0.04	0.04	0.04	0.04	0.04	0.04
##	-----	-----	-----	-----	-----	-----	-----
##							
##							
##							
##							

```

##      Cell Contents
## |-----|
## |              N |
## | Chi-square contribution |
## |      N / Row Total |
## |      N / Col Total |
## |      N / Table Total |
## |-----|
##
##
## Total Observations in Table:  28
##
##
##      | CA2$CA_Employment_Price_Index_Chemicals
## CA2$CA_EP_Ratio |      129.8 |      130.6 |      131 |      134.4 |      137.5 |      138.3 |      138.6
## -----|-----|-----|-----|-----|-----|-----|-----|
##      50 |      0 |      0 |      1 |      0 |      0 |      0 |      0
##      |      0.04 |      0.04 |      26.04 |      0.07 |      0.04 |      0.07 |      0.07
##      |      0.00 |      0.00 |      1.00 |      0.00 |      0.00 |      0.00 |      0.00
##      |      0.00 |      0.00 |      1.00 |      0.00 |      0.00 |      0.00 |      0.00
##      |      0.00 |      0.00 |      0.04 |      0.00 |      0.00 |      0.00 |      0.00
## -----|-----|-----|-----|-----|-----|-----|
##      50.3 |      0 |      0 |      0 |      1 |      0 |      0 |      0
##      |      0.04 |      0.04 |      0.04 |      12.07 |      0.04 |      0.07 |      0.07
##      |      0.00 |      0.00 |      0.00 |      1.00 |      0.00 |      0.00 |      0.00
##      |      0.00 |      0.00 |      0.00 |      0.50 |      0.00 |      0.00 |      0.00
##      |      0.00 |      0.00 |      0.00 |      0.04 |      0.00 |      0.00 |      0.00
## -----|-----|-----|-----|-----|-----|-----|
##      52 |      1 |      0 |      0 |      0 |      0 |      0 |      0
##      |      26.04 |      0.04 |      0.04 |      0.07 |      0.04 |      0.07 |      0.07
##      |      1.00 |      0.00 |      0.00 |      0.00 |      0.00 |      0.00 |      0.00
##      |      1.00 |      0.00 |      0.00 |      0.00 |      0.00 |      0.00 |      0.00
##      |      0.04 |      0.00 |      0.00 |      0.00 |      0.00 |      0.00 |      0.00
## -----|-----|-----|-----|-----|-----|-----|
##      52.4 |      0 |      1 |      0 |      0 |      0 |      0 |      0
##      |      0.04 |      26.04 |      0.04 |      0.07 |      0.04 |      0.07 |      0.07
##      |      0.00 |      1.00 |      0.00 |      0.00 |      0.00 |      0.00 |      0.00
##      |      0.00 |      1.00 |      0.00 |      0.00 |      0.00 |      0.00 |      0.00
##      |      0.00 |      0.04 |      0.00 |      0.00 |      0.00 |      0.00 |      0.00
## -----|-----|-----|-----|-----|-----|-----|
##      52.7 |      0 |      0 |      0 |      1 |      0 |      0 |      0
##      |      0.04 |      0.04 |      0.04 |      12.07 |      0.04 |      0.07 |      0.07
##      |      0.00 |      0.00 |      0.00 |      1.00 |      0.00 |      0.00 |      0.00
##      |      0.00 |      0.00 |      0.00 |      0.50 |      0.00 |      0.00 |      0.00
##      |      0.00 |      0.00 |      0.00 |      0.04 |      0.00 |      0.00 |      0.00
## -----|-----|-----|-----|-----|-----|-----|
##      52.9 |      0 |      0 |      0 |      0 |      1 |      0 |      0
##      |      0.04 |      0.04 |      0.04 |      0.07 |      26.04 |      0.07 |      0.07
##      |      0.00 |      0.00 |      0.00 |      0.00 |      1.00 |      0.00 |      0.00
##      |      0.00 |      0.00 |      0.00 |      0.00 |      1.00 |      0.00 |      0.00
##      |      0.00 |      0.00 |      0.00 |      0.00 |      0.04 |      0.00 |      0.00
## -----|-----|-----|-----|-----|-----|-----|
##      54.5 |      0 |      0 |      0 |      0 |      0 |      0 |      0
##      |      0.04 |      0.04 |      0.04 |      0.07 |      0.04 |      0.07 |      0.07

```

##		0.00	0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00	0.00
##	-----							
##	54.6	0	0	0	0	0	0	0
##		0.07	0.07	0.07	0.14	0.07	0.14	0.14
##		0.00	0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00	0.00
##	-----							
##	54.8	0	0	0	0	0	0	0
##		0.04	0.04	0.04	0.07	0.04	0.07	0.07
##		0.00	0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00	0.00
##	-----							
##	55.7	0	0	0	0	0	0	0
##		0.04	0.04	0.04	0.07	0.04	0.07	0.07
##		0.00	0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00	0.00
##	-----							
##	55.8	0	0	0	0	0	0	0
##		0.04	0.04	0.04	0.07	0.04	0.07	0.07
##		0.00	0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00	0.00
##	-----							
##	55.9	0	0	0	0	0	0	0
##		0.04	0.04	0.04	0.07	0.04	0.07	0.07
##		0.00	0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00	0.00
##	-----							
##	58.9	0	0	0	0	0	0	1
##		0.04	0.04	0.04	0.07	0.04	0.07	12.07
##		0.00	0.00	0.00	0.00	0.00	0.00	1.00
##		0.00	0.00	0.00	0.00	0.00	0.00	0.50
##		0.00	0.00	0.00	0.00	0.00	0.00	0.04
##	-----							
##	59.7	0	0	0	0	0	0	0
##		0.25	0.25	0.25	0.50	0.25	0.50	0.50
##		0.00	0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00	0.00
##	-----							
##	59.8	0	0	0	0	0	0	0
##		0.11	0.11	0.11	0.21	0.11	0.21	0.21
##		0.00	0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00	0.00
##		0.00	0.00	0.00	0.00	0.00	0.00	0.00
##	-----							
##	59.9	0	0	0	0	0	2	1
##		0.14	0.14	0.14	0.29	0.14	10.29	1.79

##		0.00	0.00	0.00	0.00	0.00	0.50	0.25
##		0.00	0.00	0.00	0.00	0.00	1.00	0.50
##		0.00	0.00	0.00	0.00	0.00	0.07	0.04
##	-----	-----	-----	-----	-----	-----	-----	-----
##	Column Total	1	1	1	2	1	2	2
##		0.04	0.04	0.04	0.07	0.04	0.07	0.07
##	-----	-----	-----	-----	-----	-----	-----	-----
##								
##								

Correlation between CA unemployment rate and employment price index (EPI) for the organic chemical industry

```
## [1] -0.2622223
```

Correlation between CA unemployment rate and CA employment to population ratio

```
## [1] -0.9893901
```

Correlation between CA employment to population ratio and EPI for the organic chemical industry

```
## [1] 0.1452926
```

Sumamry report of the data

##	year	periodName	period.x	CA_Unemployment_Rate
##	Length:28	Length:28	Length:28	Min. : 4.100
##	Class :character	Class :character	Class :character	1st Qu.: 4.100
##	Mode :character	Mode :character	Mode :character	Median : 4.400
##				Mean : 7.375
##				3rd Qu.: 9.425
##				Max. :16.000
##	seriesID.x	period.y	CA_EP_Ratio	seriesID.y
##	Length:28	Length:28	Min. :50.00	Length:28
##	Class :character	Class :character	1st Qu.:54.58	Class :character
##	Mode :character	Mode :character	Median :59.30	Mode :character
##			Mean :56.86	
##			3rd Qu.:59.73	
##			Max. :59.90	
##	period	CA_Employment_Price_Index_Chemicals	seriesID	
##	Length:28	Min. :129.8	Length:28	
##	Class :character	1st Qu.:138.3	Class :character	
##	Mode :character	Median :141.9	Mode :character	
##		Mean :144.4		

```
##          3rd Qu.:148.6
##          Max.    :177.8

## 'data.frame':  28 obs. of  11 variables:
## $ year          : chr  "2019" "2019" "2019" "2019" ...
## $ periodName     : chr  "April" "August" "December" "February" ...
## $ period.x       : chr  "M04" "M08" "M12" "M02" ...
## $ CA_Unemployment_Rate : num  4.1 4.1 4.2 4.3 4.3 4.1 4.1 4.2 4.1 4.1 ...
## $ seriesID.x     : chr  "LASST0600000000000003" "LASST0600000000000003" "LASST0600000000000003" ...
## $ period.y       : chr  "M04" "M08" "M12" "M02" ...
## $ CA_EP_Ratio    : num  59.7 59.8 59.9 59.7 59.7 59.7 59.7 59.7 59.9 ...
## $ seriesID.y     : chr  "LASST0600000000000007" "LASST0600000000000007" "LASST0600000000000007" ...
## $ period        : chr  "M04" "M08" "M12" "M02" ...
## $ CA_Employment_Price_Index_Chemicals: num  147 142 138 148 149 ...
## $ seriesID      : chr  "EIUID29" "EIUID29" "EIUID29" "EIUID29" ...
```

Discussion of four results of the data:

1: As the unemployment rate rises past 8 percent, the employment price index (EPI) of organic chemicals falls exponentially. EPI documents the changes in the costs of labor for businesses in the US; this EPI series is exclusively for the organic chemical manufacturing sector. The drop in EPI could be because as people lose their jobs, the cost of labor drops dramatically due to an increased supply of vacant jobs. A similar trend was seen after 2008, when the unemployment rate rose as well.

2: As the unemployment rate rises in general, the employment to population (EP) ratio drops linearly. This result was to be expected, as the greater the percentage of unemployed persons in a population, the lower the ratio of employed people in that population becomes.

3: As the EP ratio increases, the EPI for organic chemicals exponentially increases. This makes sense, as the EP ratio and unemployment rate are inversely correlated. As the EP ratio rises, that means a greater percent of the population is employed, leading to a lower supply of vacant jobs and driving up the cost of labor.

4: The Spearman correlation coefficient for the relationship between CA unemployment rate and chemical EPI was -0.26, a lot lower than I expected. The bivariate plot between the two variables implied that a high Spearman correlation would be achieved. Perhaps the low correlation was because there are several outliers around 4% unemployment.