Analysis Component Group E

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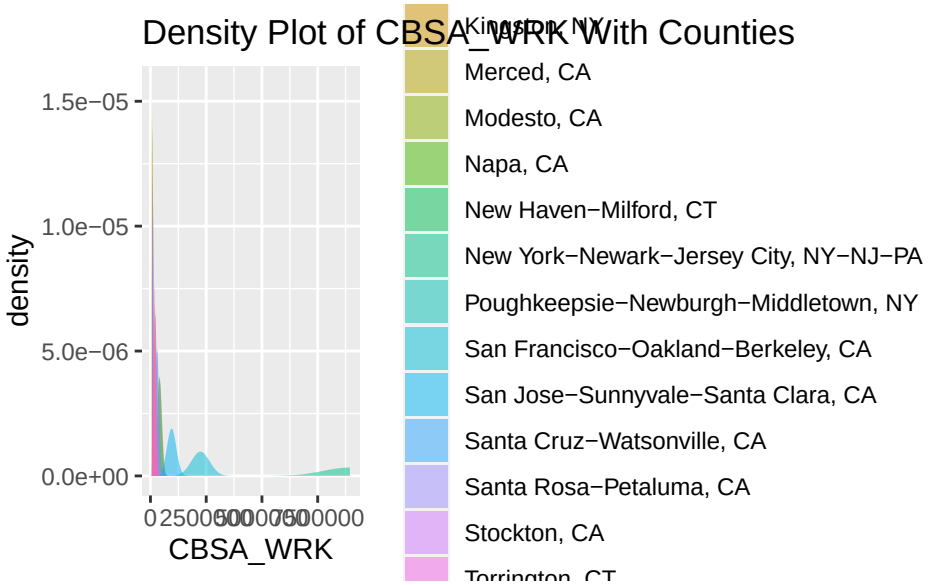
2024-03-28

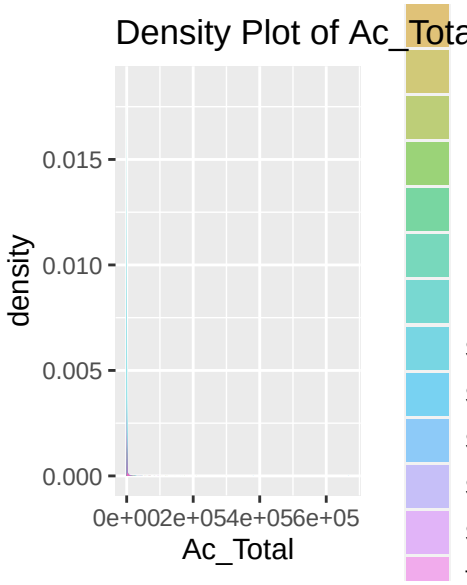
```
SLD <- read_csv("data/NewYork_SanFrancisco_data.csv", show_col_types = FALSE)
```

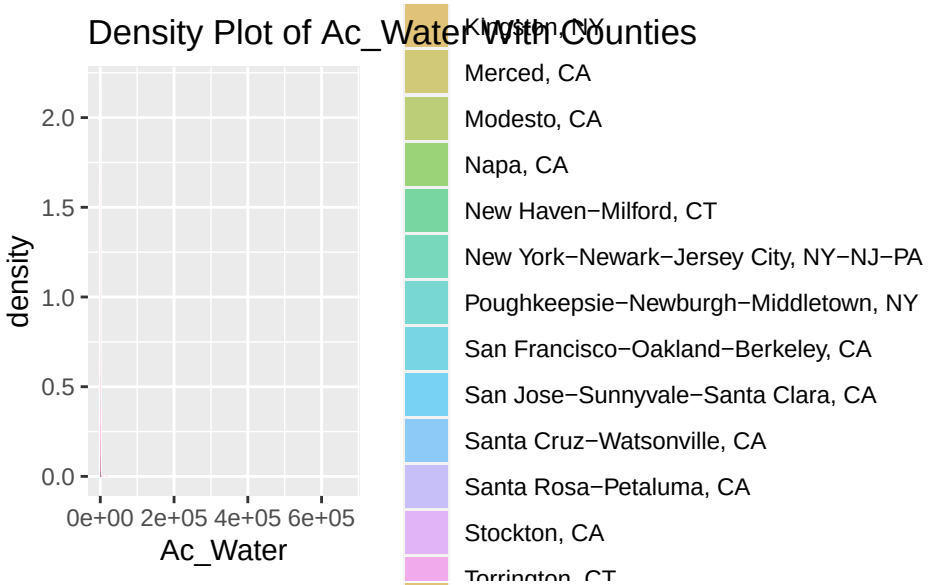
```
## New names:
## * `` -> `...1`
```

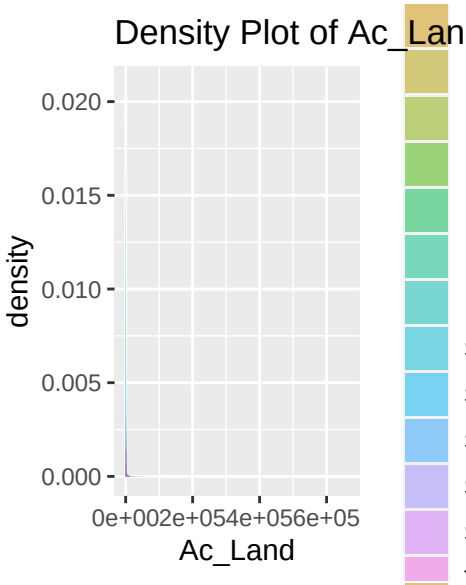
```
create_density_plots_all <- function(data, start_col, end_col) {
  numeric_vars <- names(data)[sapply(data, is.numeric)]
  selected_vars <- numeric_vars[start_col:end_col]

  for (var in selected_vars) {
    # Create density plot for each variable
    plot <- gf_density(as.formula(paste("~", var)), data = data, fill = ~CBSA_Name,
                       title = paste("Density Plot of", var, "With Counties"))
    print(plot)
  }
}
```

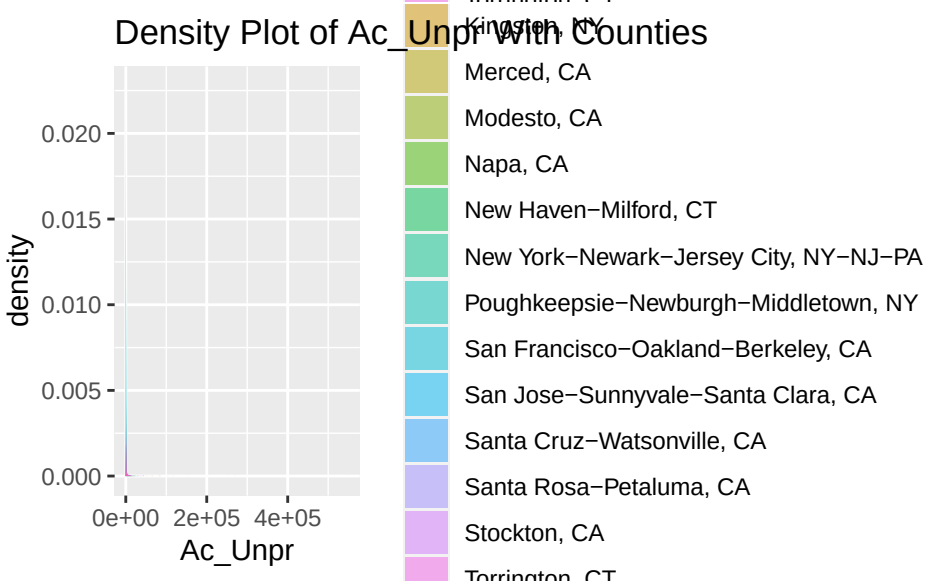
```
create_density_plots_all(SLD, 13, 33)
```

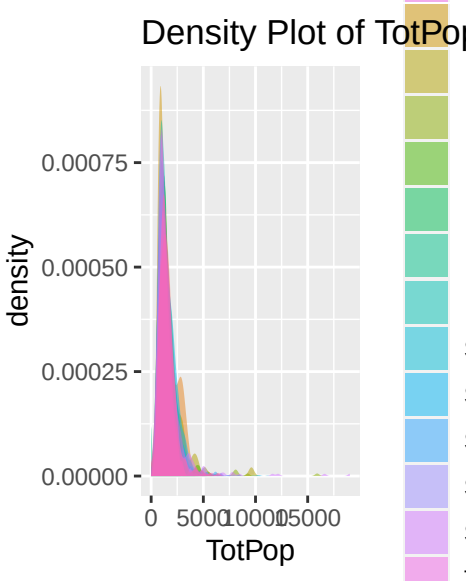


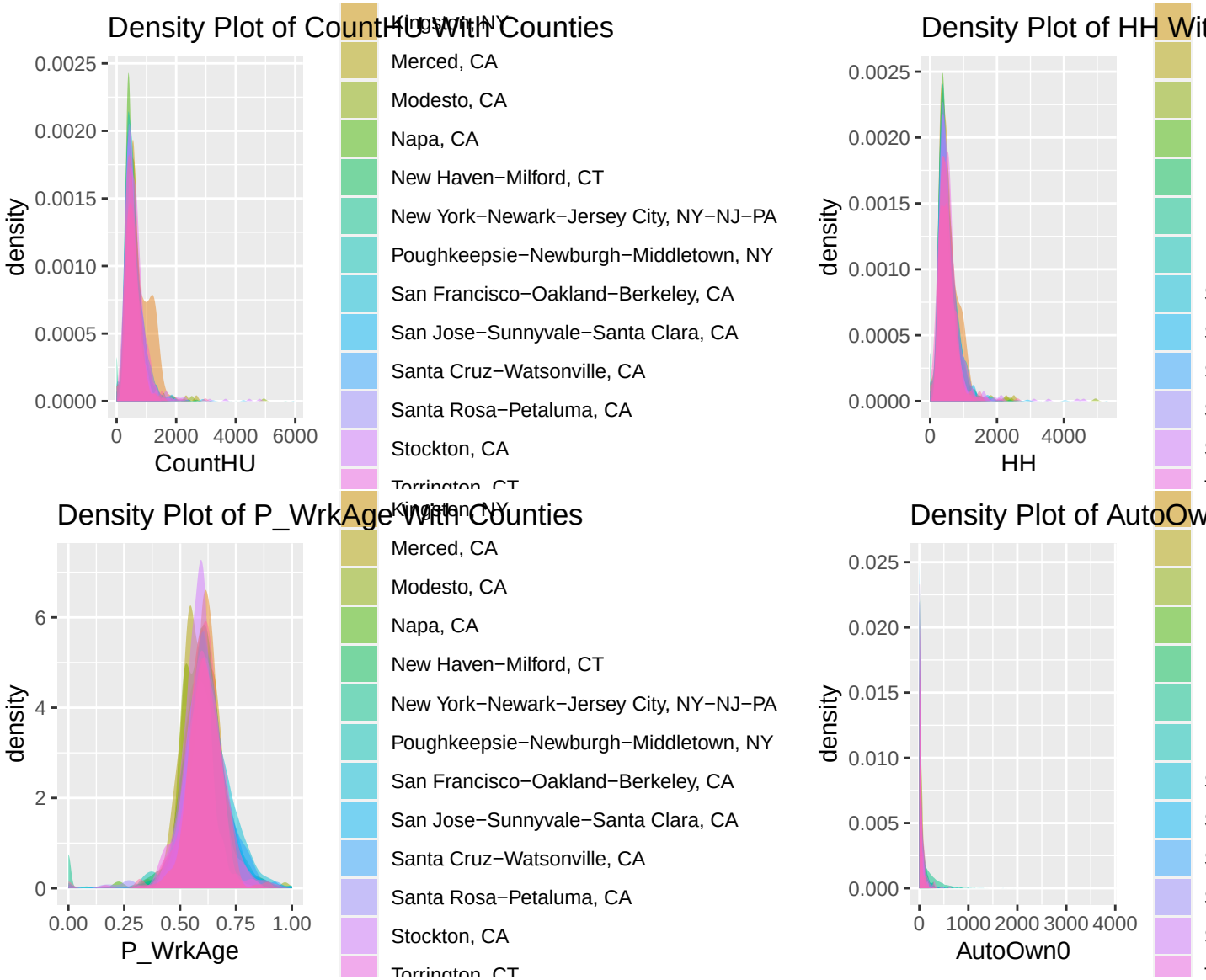


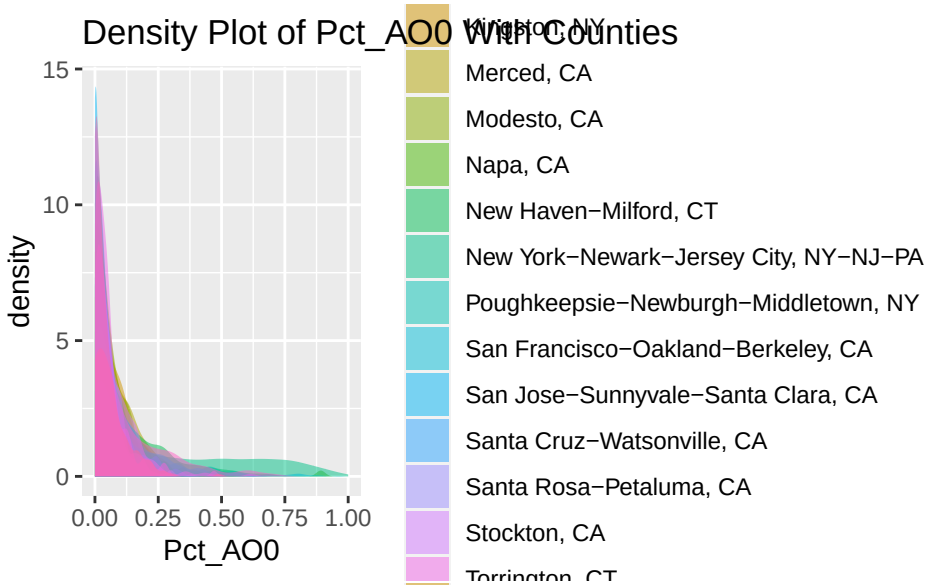

Density Plot of Ac_Water With Counties
density
2.0
1.5
1.0
0.5
0.0
0e+00 2e+05 4e+05 6e+05
Ac_Water
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

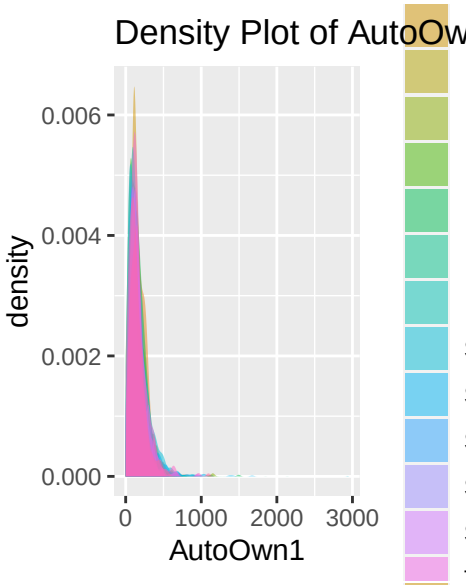

Density Plot of Ac_Lan
density
0.020
0.015
0.010
0.005
0.000
0e+002e+054e+056e+05
Ac_Land

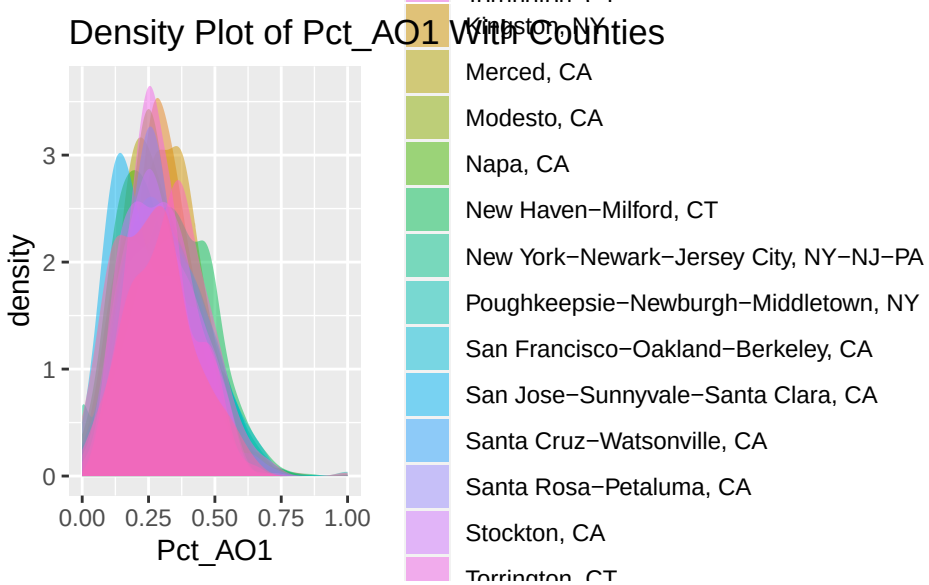

Density Plot of Ac_Unpr With Counties
density
0.020
0.015
0.010
0.005
0.000
0e+00 2e+05 4e+05
Ac_Unpr
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

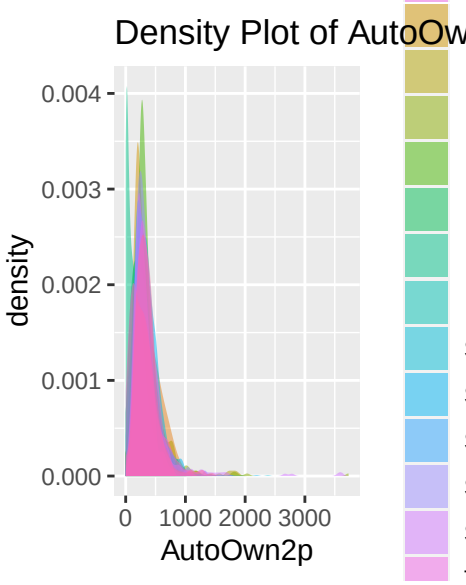

Density Plot of TotPop
density
0.00075
0.00050
0.00025
0.00000
0 5000 10000 15000
TotPop

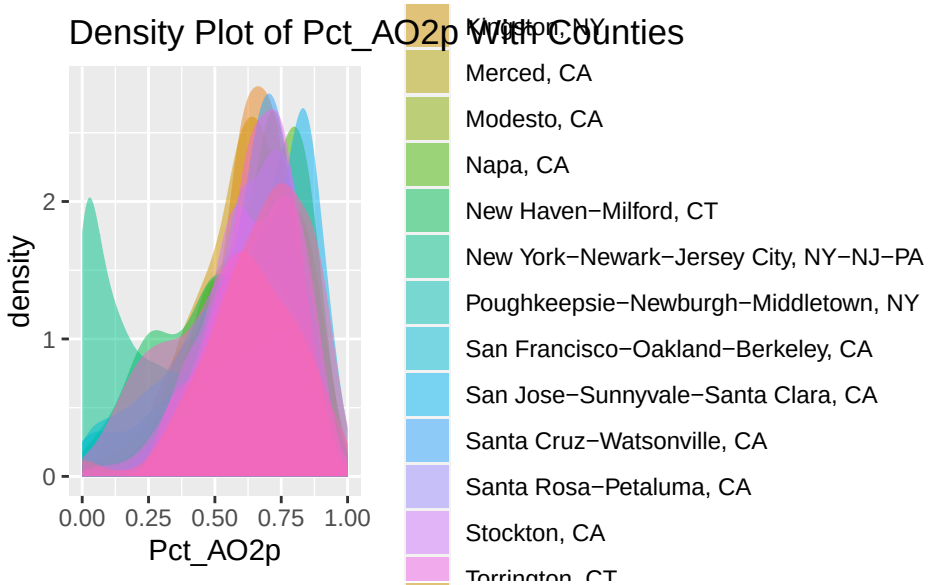

Density Plot of CountHU With Counties
density
CountHU
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
0
2000
4000
6000
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT
Density Plot of HH Wit
density
HH
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
0
2000
4000
Density Plot of P_WrkAge With Counties
density
P_WrkAge
6
4
2
0
0.00
0.25
0.50
0.75
1.00
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT
Density Plot of AutoOw
density
AutoOwn0
0.025
0.020
0.015
0.010
0.005
0.000
0
1000
2000
3000
4000

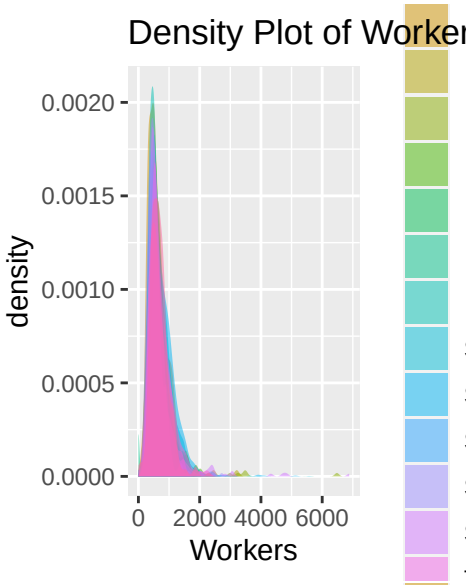

Density Plot of Pct_AO0 With Counties
density
Pct_AO0
0.00 0.25 0.50 0.75 1.00
0 5 10 15
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

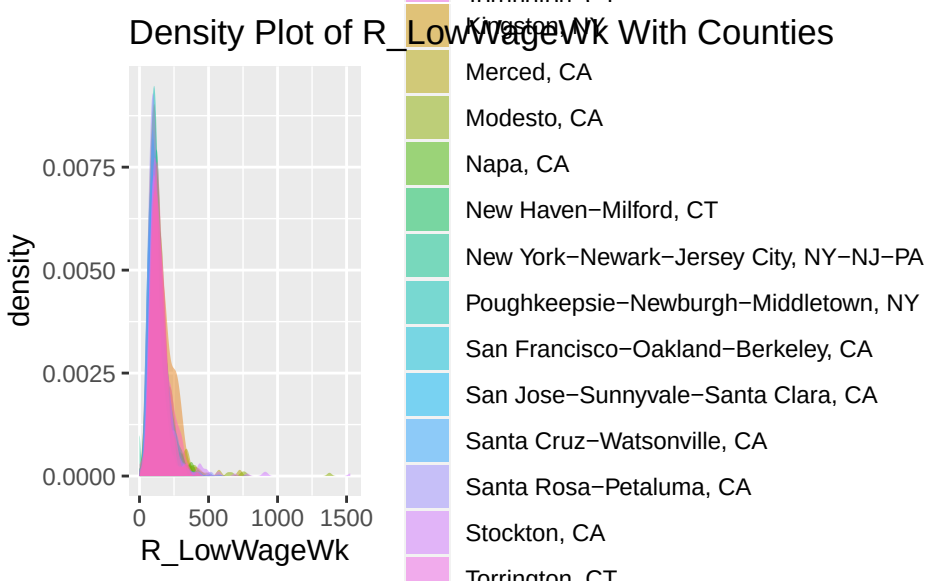

Density Plot of AutoOw
density
AutoOwn1
0 1000 2000 3000
0.000 0.002 0.004 0.006

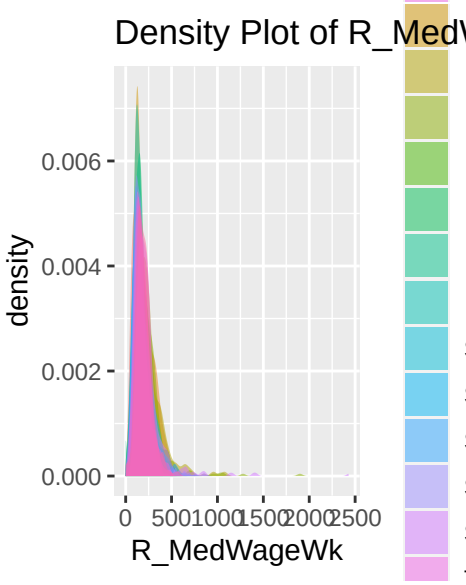

Density Plot of Pct_AO1 With Counties
density
Pct_AO1
0.00 0.25 0.50 0.75 1.00
0 1 2 3
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

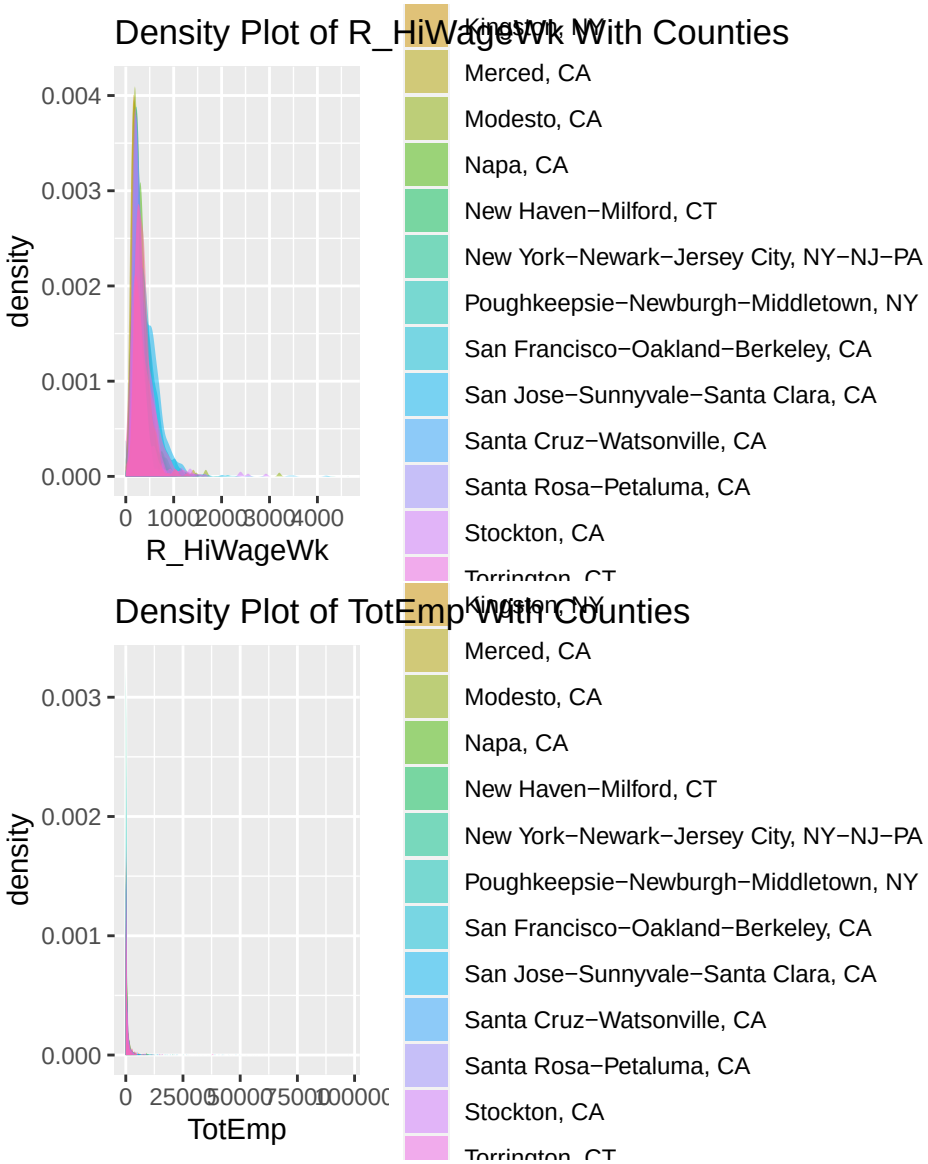

Density Plot of AutoOw
density
AutoOwn2p
0 1000 2000 3000
0.000 0.001 0.002 0.003 0.004

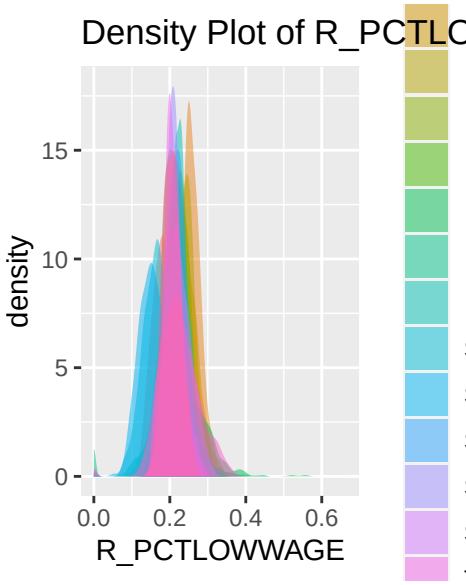

Density Plot of Pct_AO2p With Counties
density
Pct_AO2p
0.00
0.25
0.50
0.75
1.00
0
1
2
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT


Density Plot of Worker
density
Workers
0
2000
4000
6000
0.0000
0.0005
0.0010
0.0015
0.0020

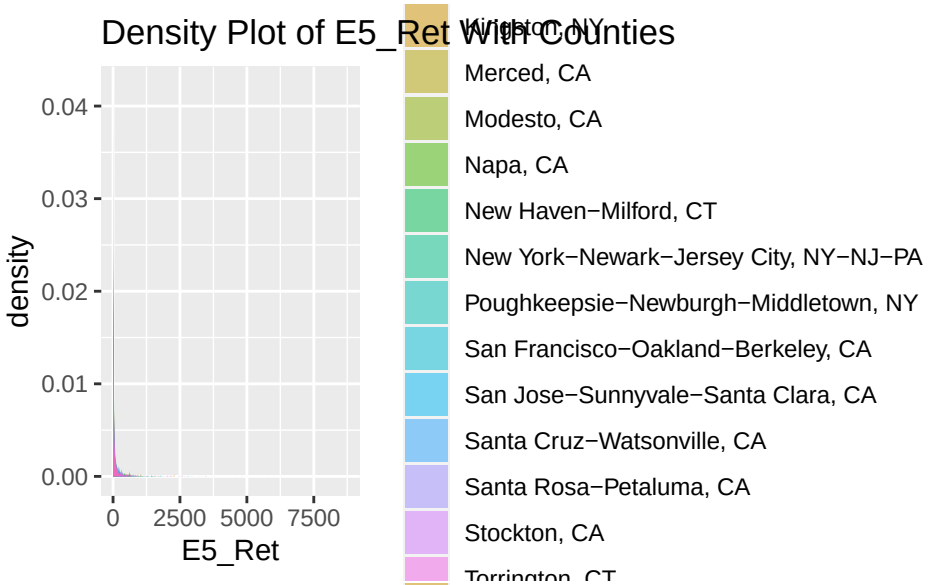

Density Plot of R_LowWageWk With Counties
density
R_LowWageWk
0
500
1000
1500
0.0000
0.0025
0.0050
0.0075
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

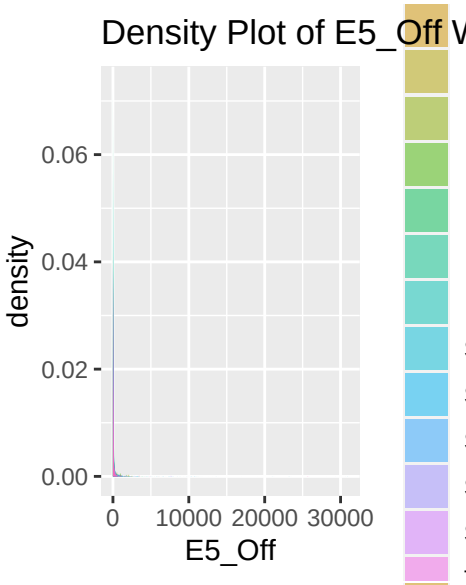

Density Plot of R_MedW
density
R_MedWageWk
0
500
1000
1500
2000
2500
0.000
0.002
0.004
0.006

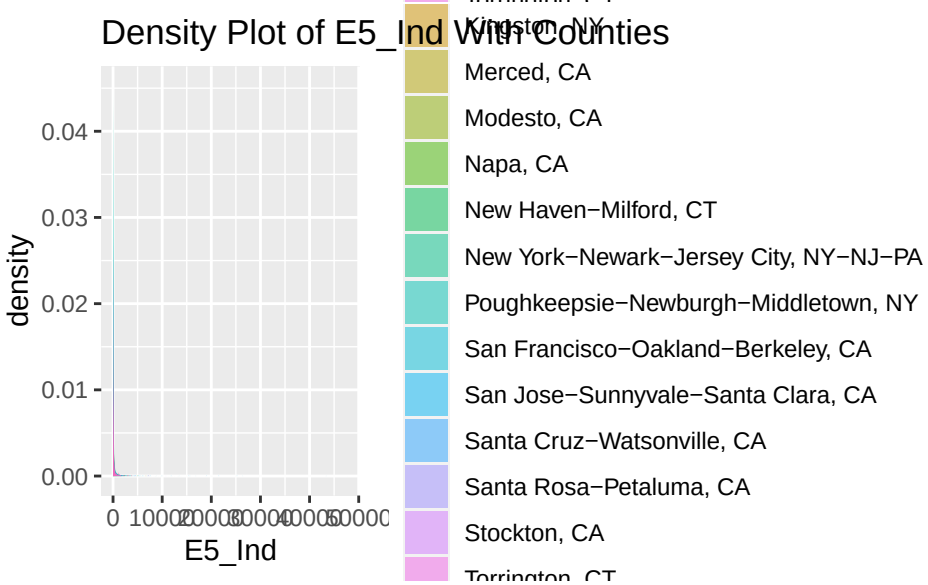


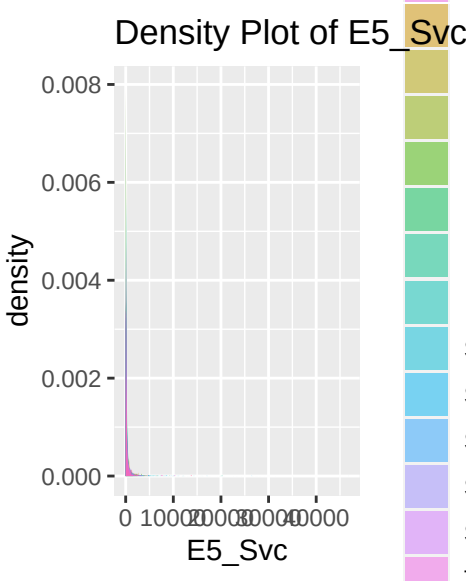


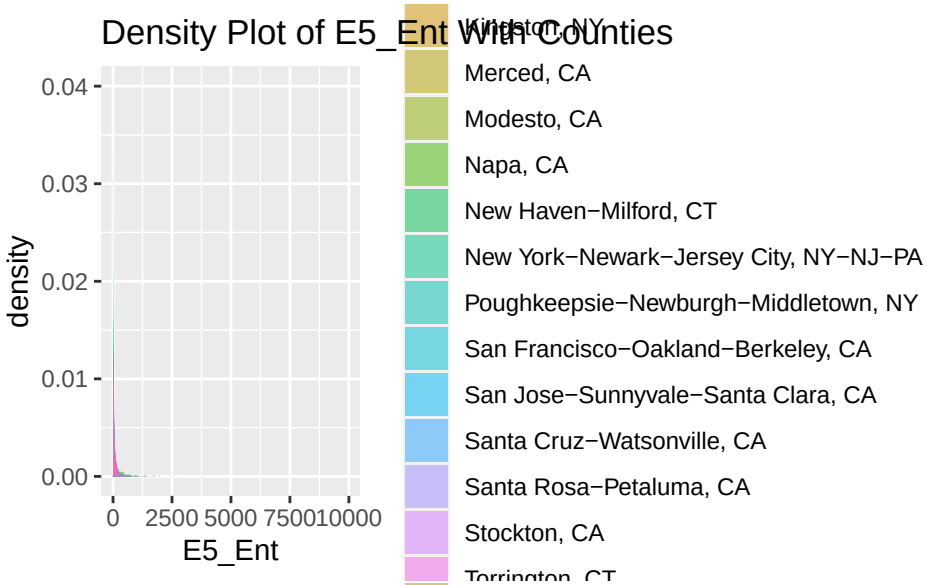

```
create_density_plots_all(SLD, 34, 54)
```

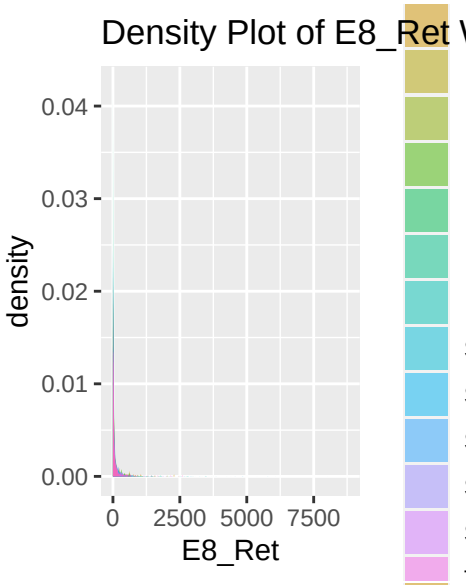

Density Plot of E5_Ret With Counties
density
0.04
0.03
0.02
0.01
0.00
0
2500
5000
7500
E5_Ret
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

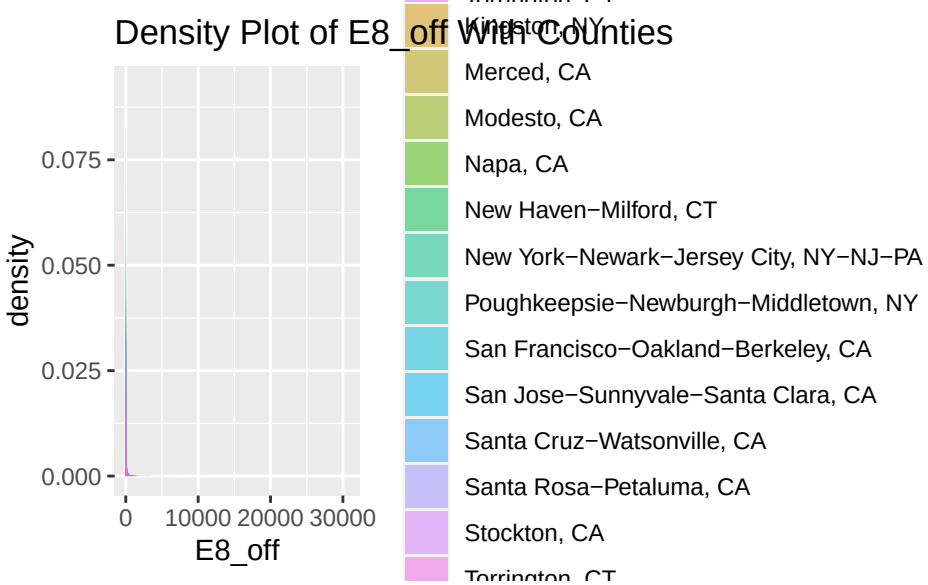

Density Plot of E5_Off W
density
0.06
0.04
0.02
0.00
0
10000
20000
30000
E5_Off

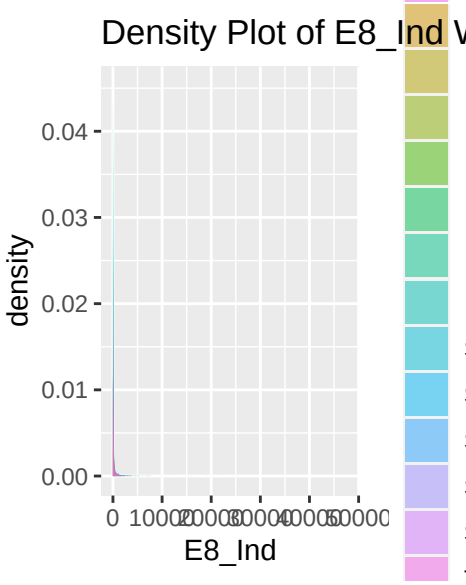

Density Plot of E5_Ind With Counties
density
0.04
0.03
0.02
0.01
0.00
0
10000
20000
30000
40000
50000
E5_Ind
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

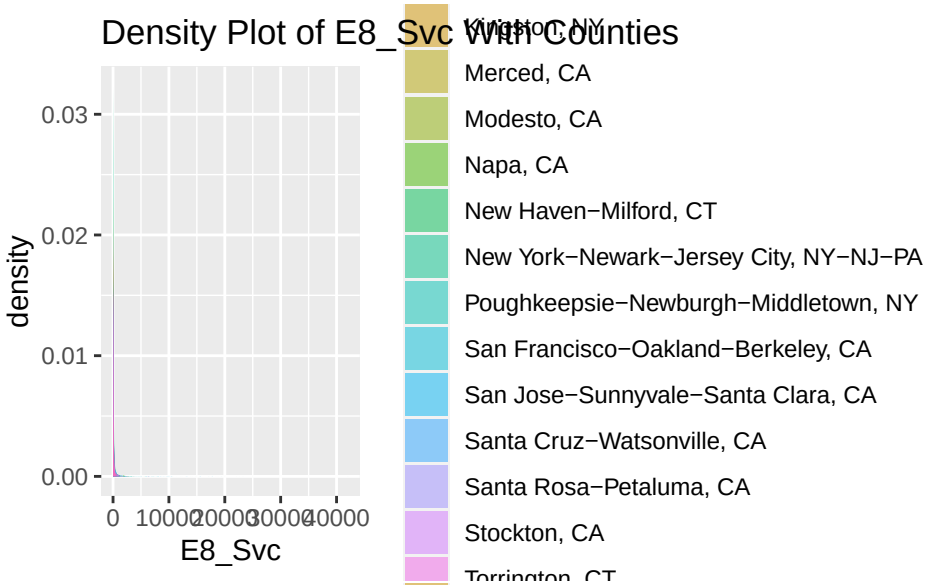

Density Plot of E5_Svc
density
0.008
0.006
0.004
0.002
0.000
0
10000
20000
30000
40000
E5_Svc

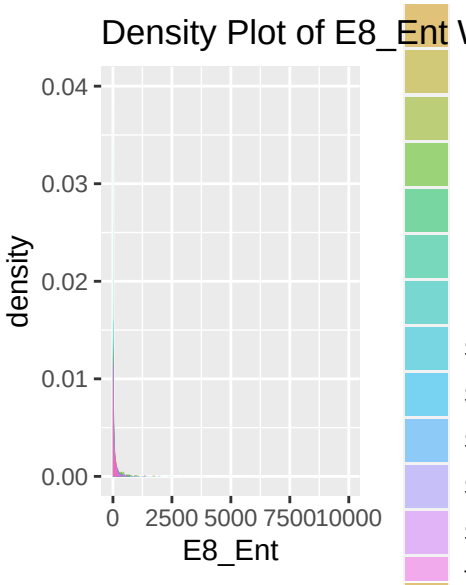

Density Plot of E5_Ent With Counties
density
0.04
0.03
0.02
0.01
0.00
0
2500
5000
7500
10000
E5_Ent
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

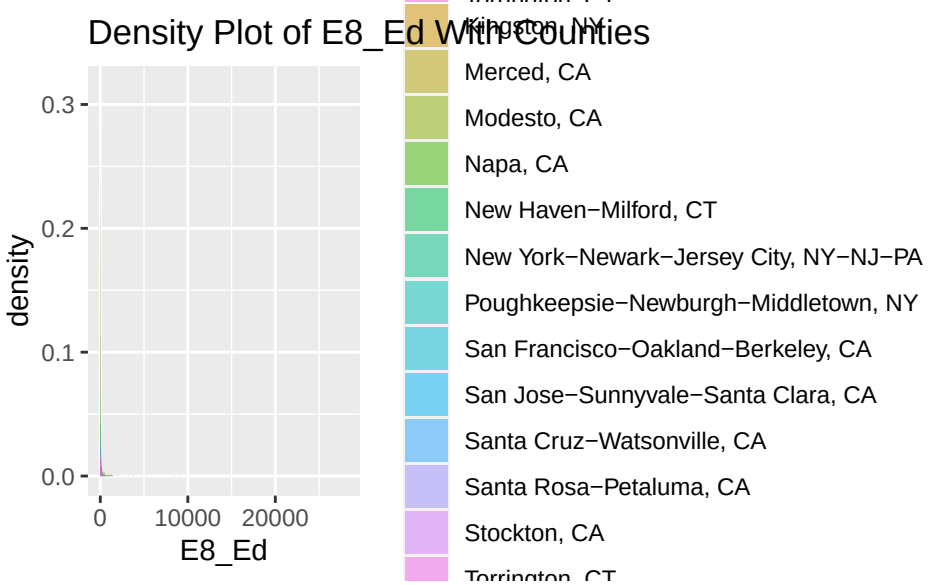

Density Plot of E8_Ret
density
0.04
0.03
0.02
0.01
0.00
0
2500
5000
7500
E8_Ret

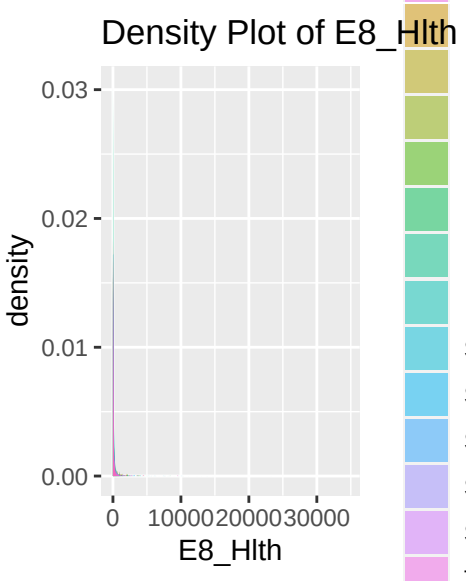

Density Plot of E8_off With Counties
density
0.075
0.050
0.025
0.000
0
10000
20000
30000
E8_off
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

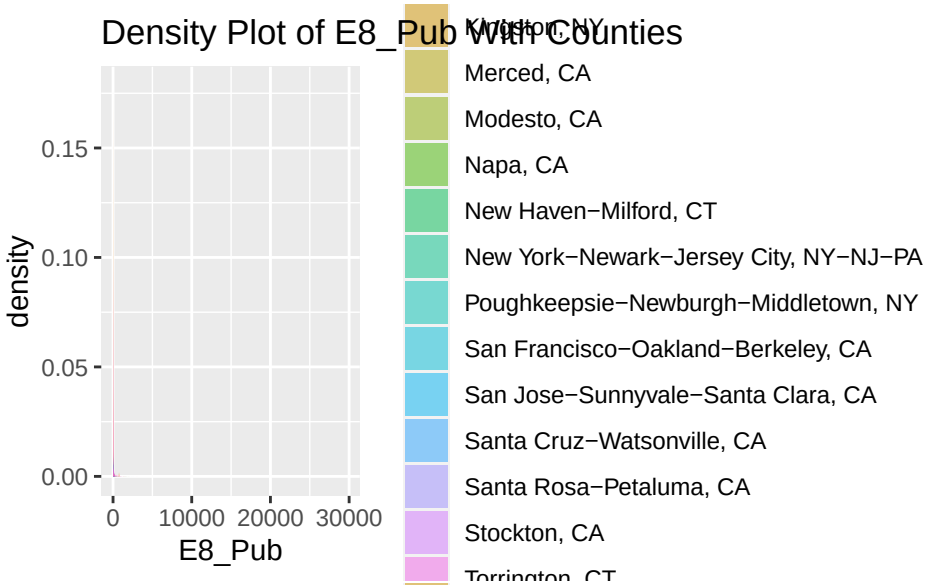

Density Plot of E8_Ind
density
0.04
0.03
0.02
0.01
0.00
0
10000
20000
30000
40000
50000
E8_Ind

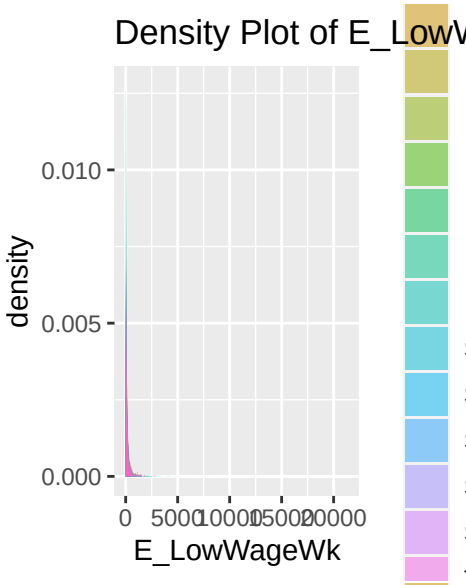

Density Plot of E8_Svc With Counties
density
0.03
0.02
0.01
0.00
0
10000
20000
30000
40000
E8_Svc
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

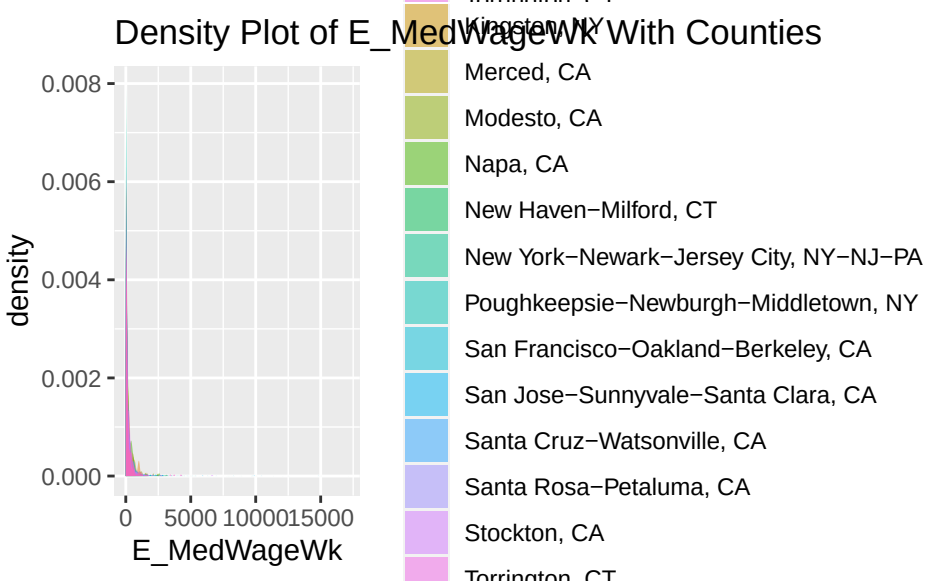

Density Plot of E8_Ent
density
0.04
0.03
0.02
0.01
0.00
0
2500
5000
7500
10000
E8_Ent

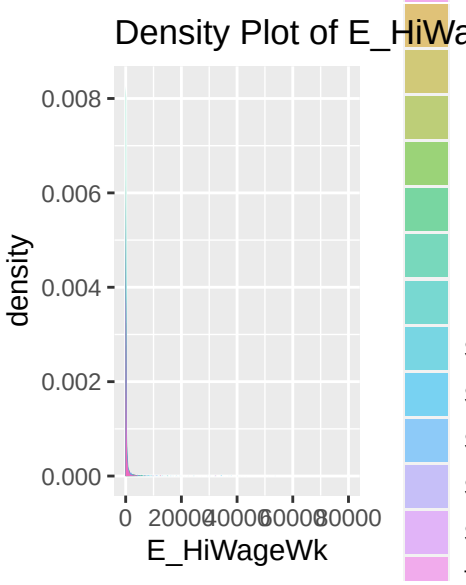

Density Plot of E8_Ed With Counties
density
0.3
0.2
0.1
0.0
0
10000
20000
E8_Ed
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

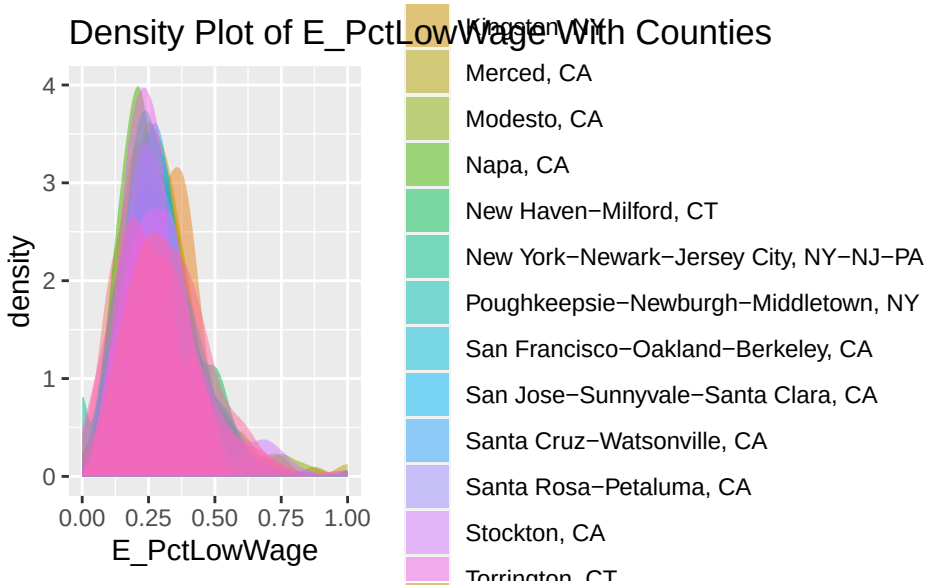

Density Plot of E8_Hlth
density
0.03
0.02
0.01
0.00
0
10000
20000
30000
E8_Hlth

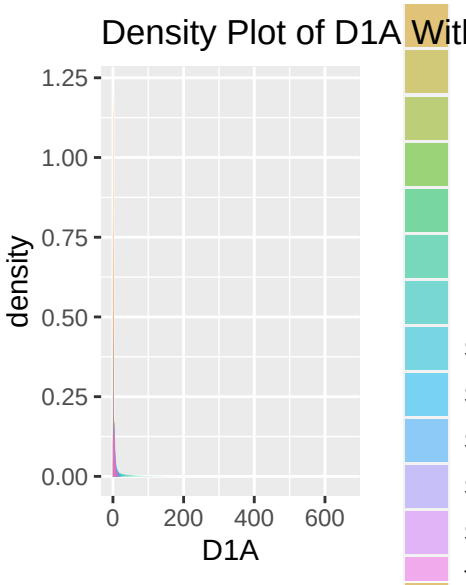

Density Plot of E8_Pub With Counties
density
0.15
0.10
0.05
0.00
0
10000
20000
30000
E8_Pub
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

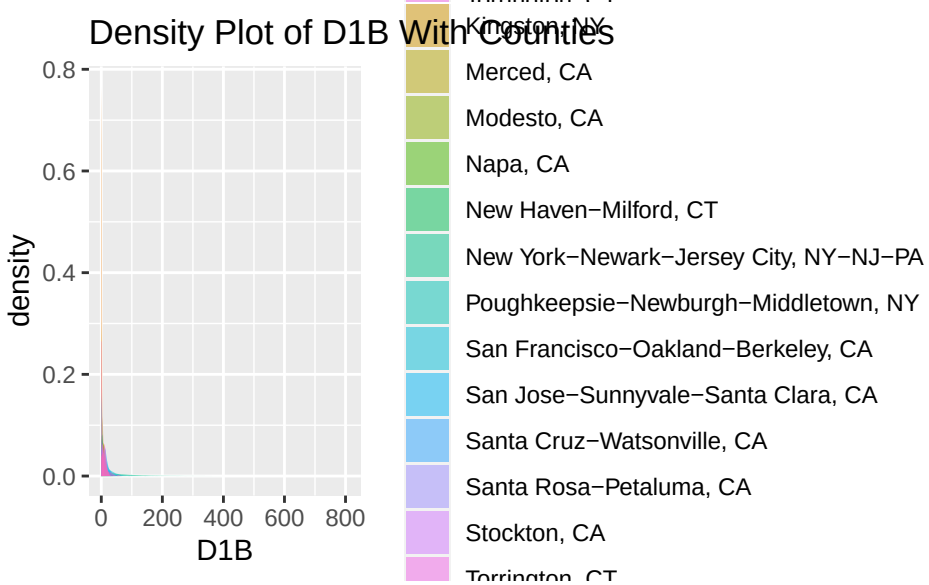

Density Plot of E_LowW
density
0.010
0.005
0.000
0
5000
10000
15000
20000
E_LowWageWk

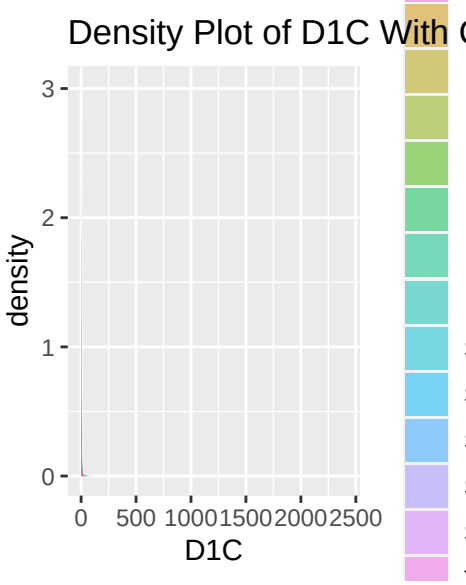

Density Plot of E_MedWageWk With Counties
density
0.008
0.006
0.004
0.002
0.000
0
5000
10000
15000
E_MedWageWk
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

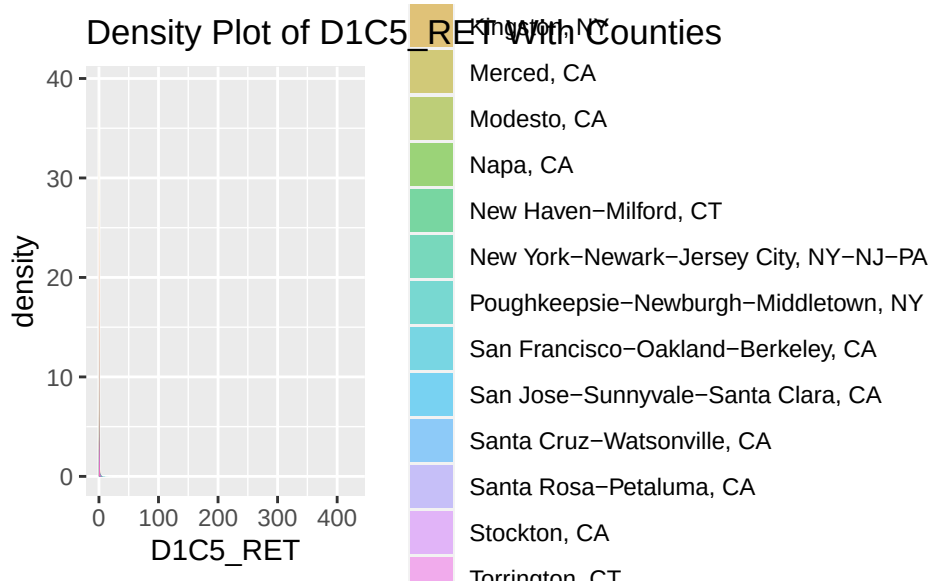

Density Plot of E_HiWa
density
0.008
0.006
0.004
0.002
0.000
0
20000
40000
60000
80000
E_HiWageWk


Density Plot of E_PctLowWage With Counties
density
E_PctLowWage
0.00
0.25
0.50
0.75
1.00
0
1
2
3
4
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

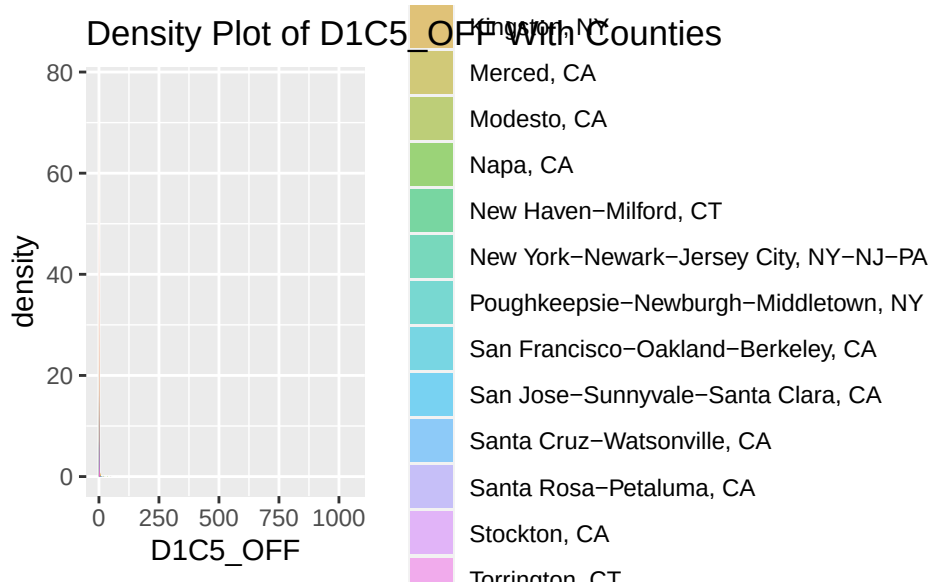

Density Plot of D1A Wit
density
D1A
0.00
0.25
0.50
0.75
1.00
1.25
0
200
400
600

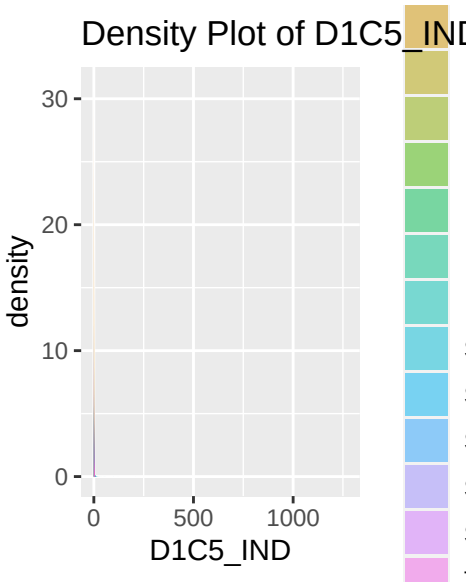

Density Plot of D1B With Counties
density
D1B
0.0
0.2
0.4
0.6
0.8
0
200
400
600
800
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

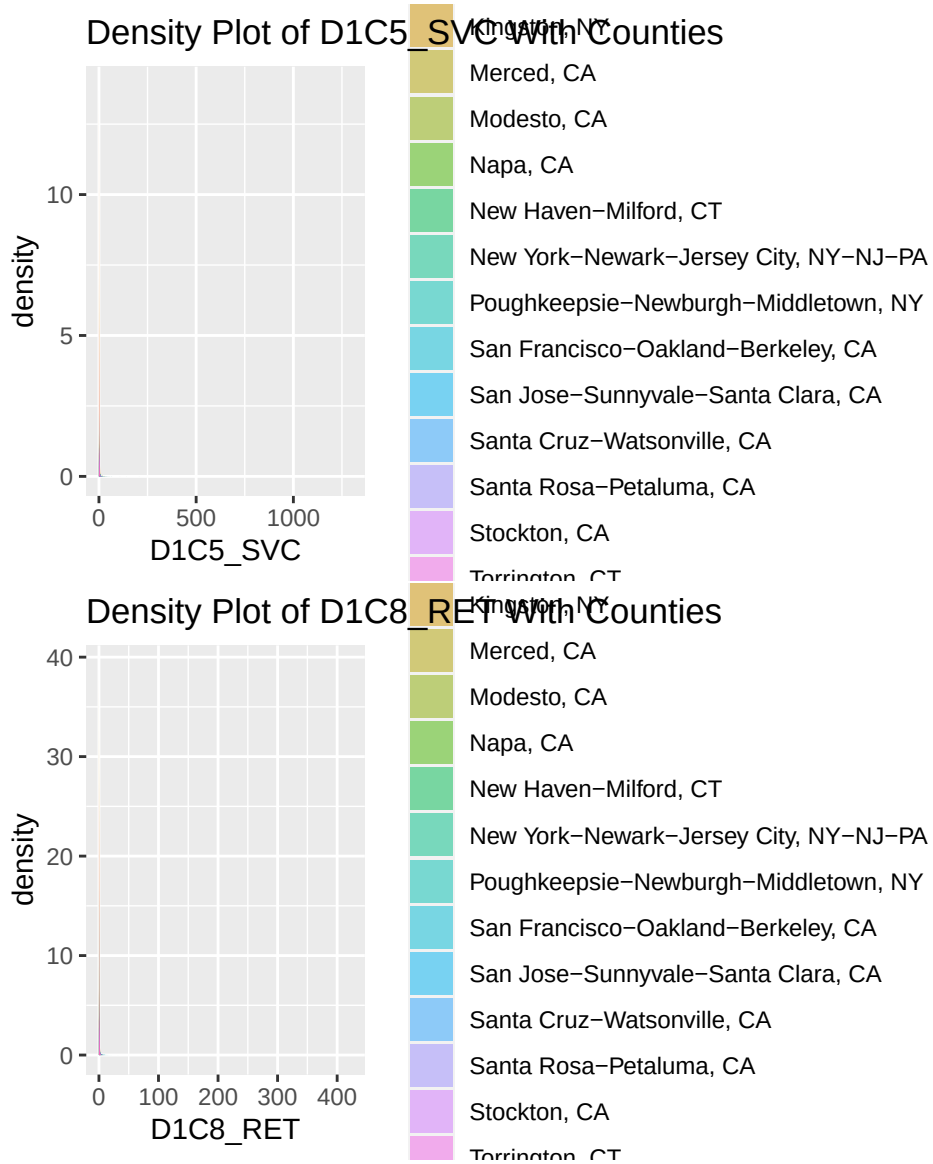

Density Plot of D1C With
density
D1C
0
1
2
3
0
500
1000
1500
2000
2500

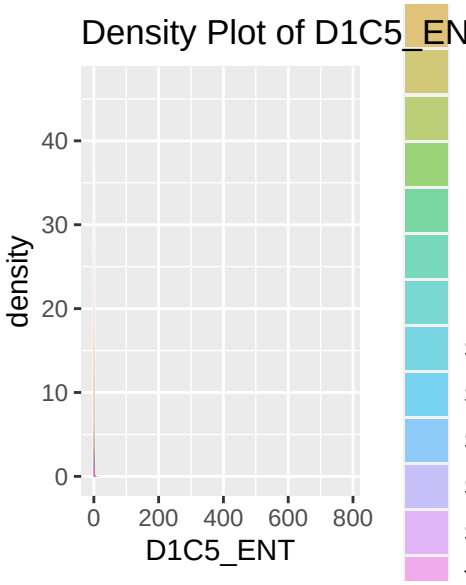



```
create_density_plots_all(SLD, 55, 76)
```

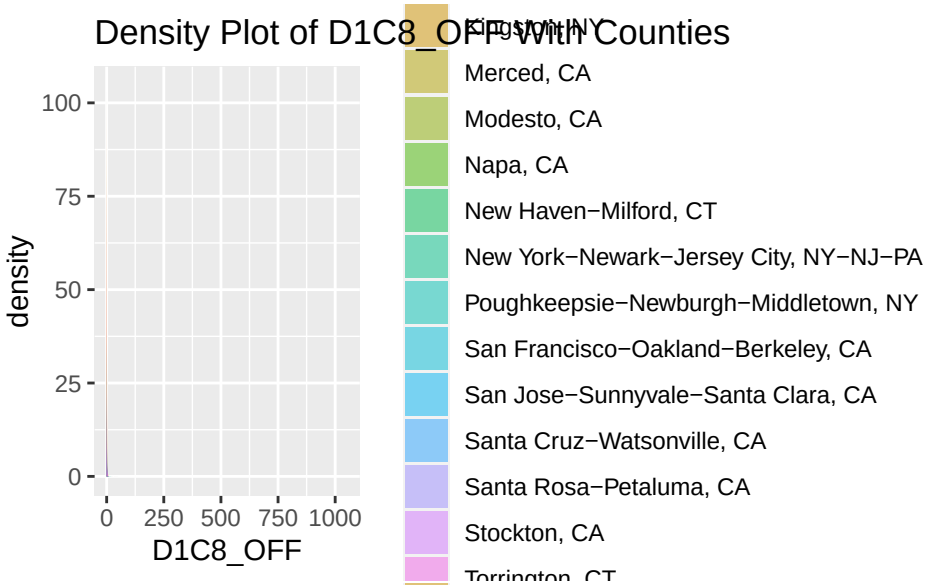


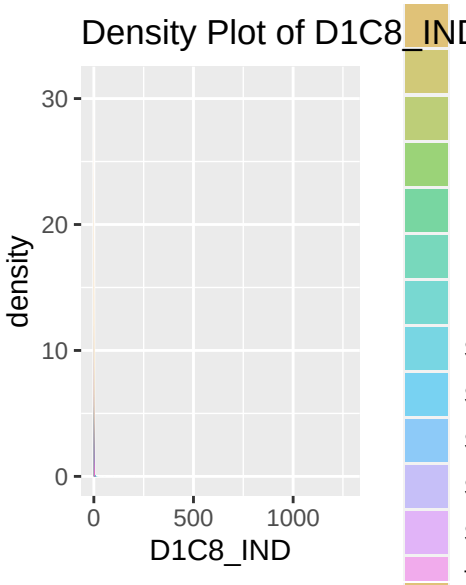


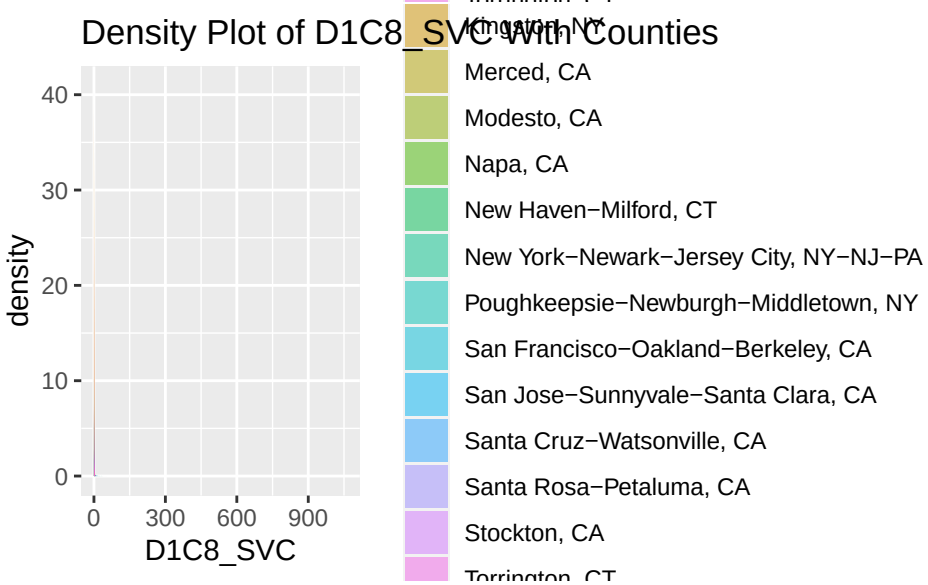


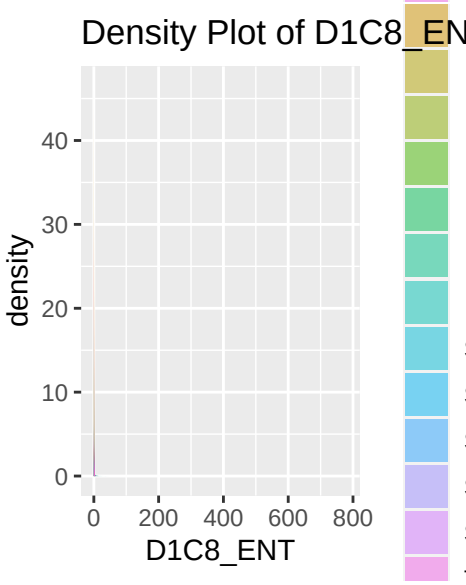


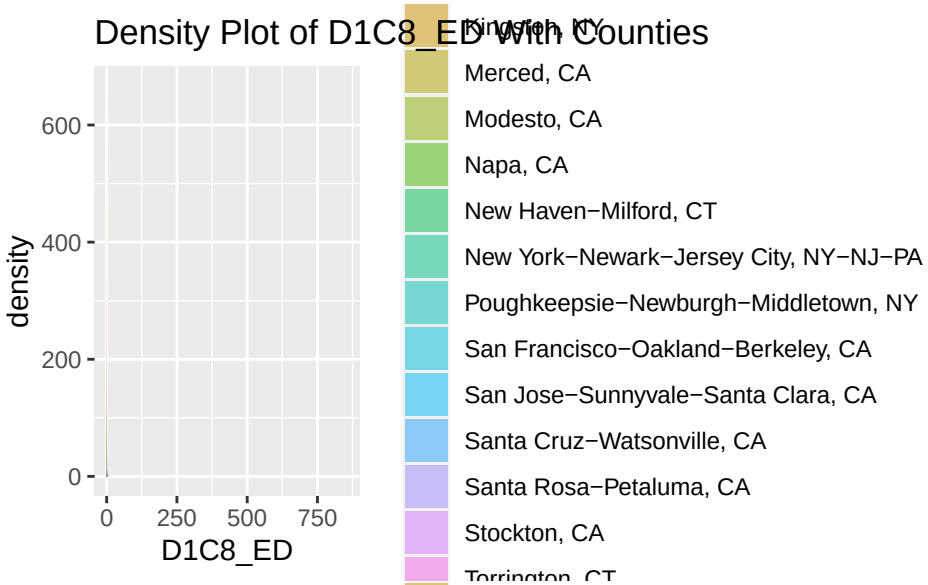

```
## Warning: Removed 232 rows containing non-finite values (‘stat_density()‘).
```

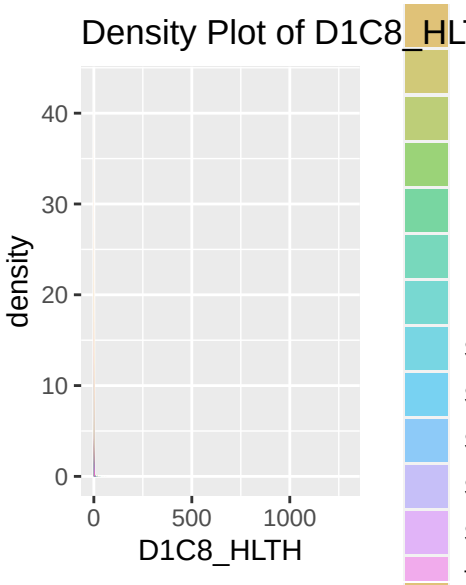

Density Plot of D1C8_OFF with Counties
density
D1C8_OFF
0
25
50
75
100
0
250
500
750
1000
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

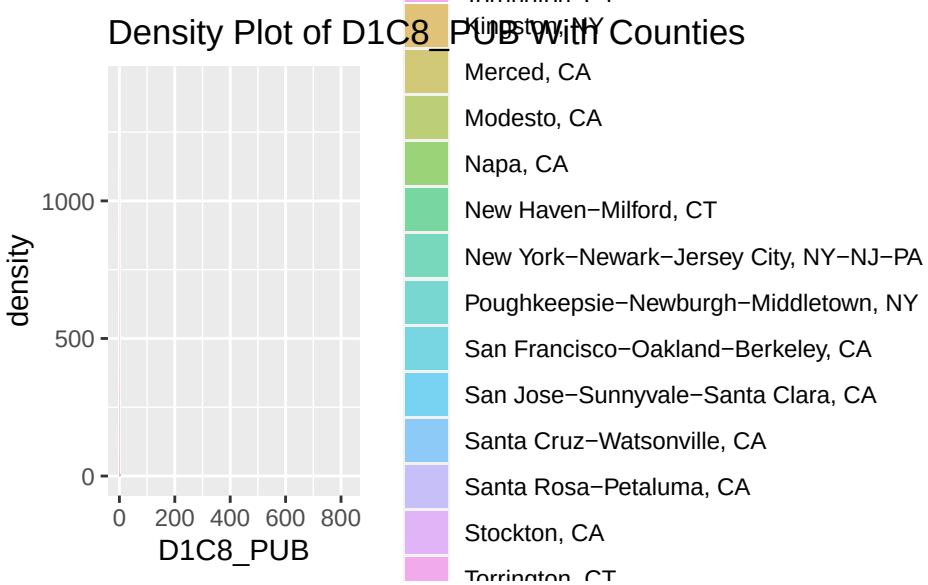

Density Plot of D1C8_IND
density
D1C8_IND
0
10
20
30
0
500
1000

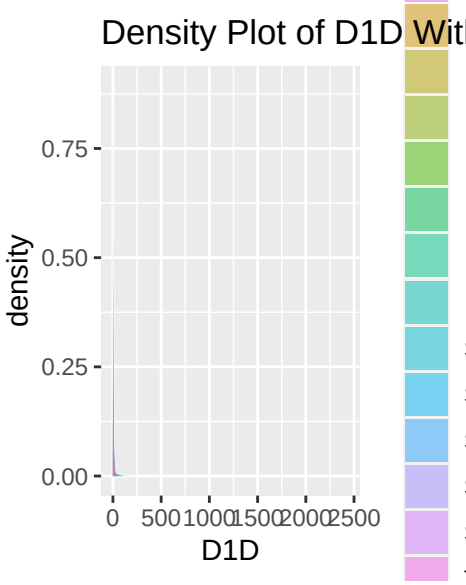

Density Plot of D1C8_SVC with Counties
density
D1C8_SVC
0
10
20
30
40
0
300
600
900
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

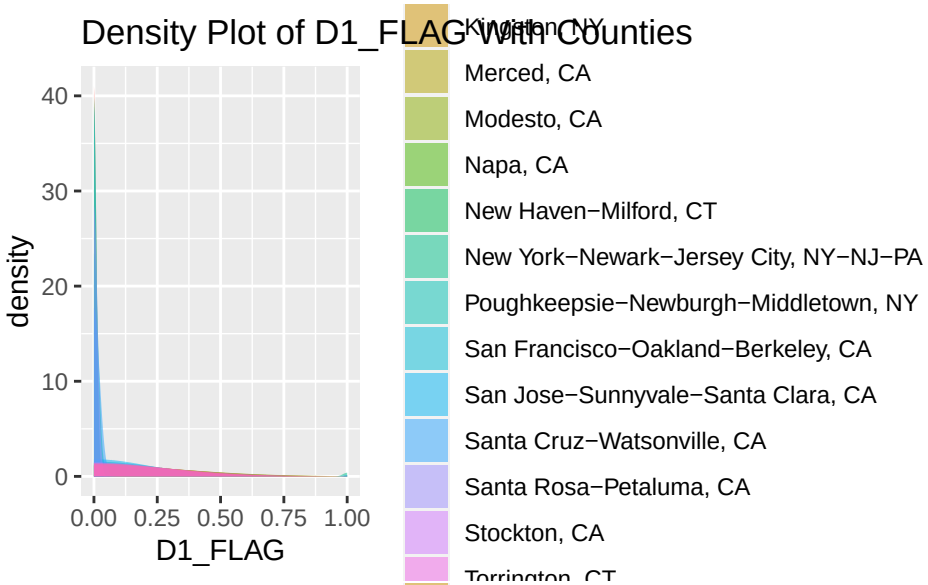

Density Plot of D1C8_ENT
density
D1C8_ENT
0
10
20
30
40
0
200
400
600
800

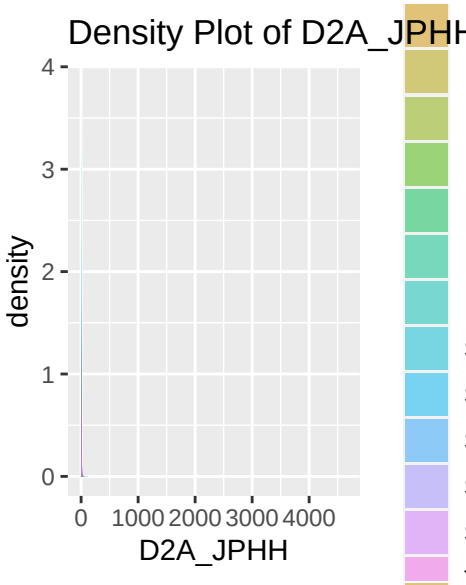

Density Plot of D1C8_ED with Counties
density
D1C8_ED
0
200
400
600
0
250
500
750
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

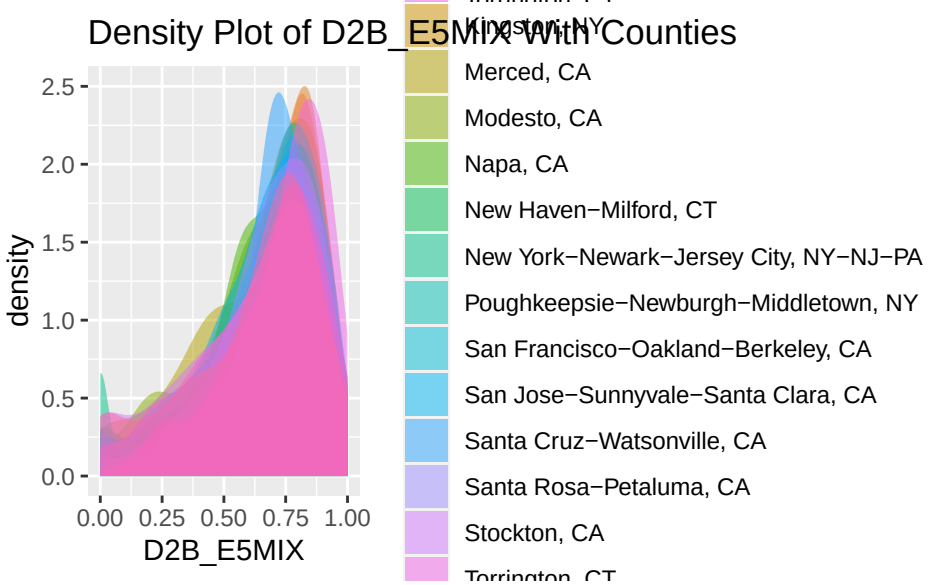

Density Plot of D1C8_HL
density
D1C8_HLTH
0
10
20
30
40
0
500
1000

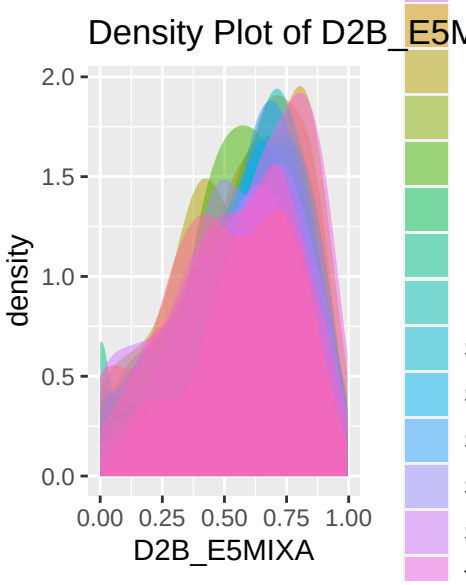

Density Plot of D1C8_PUB with Counties
density
D1C8_PUB
0
500
1000
0
200
400
600
800
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

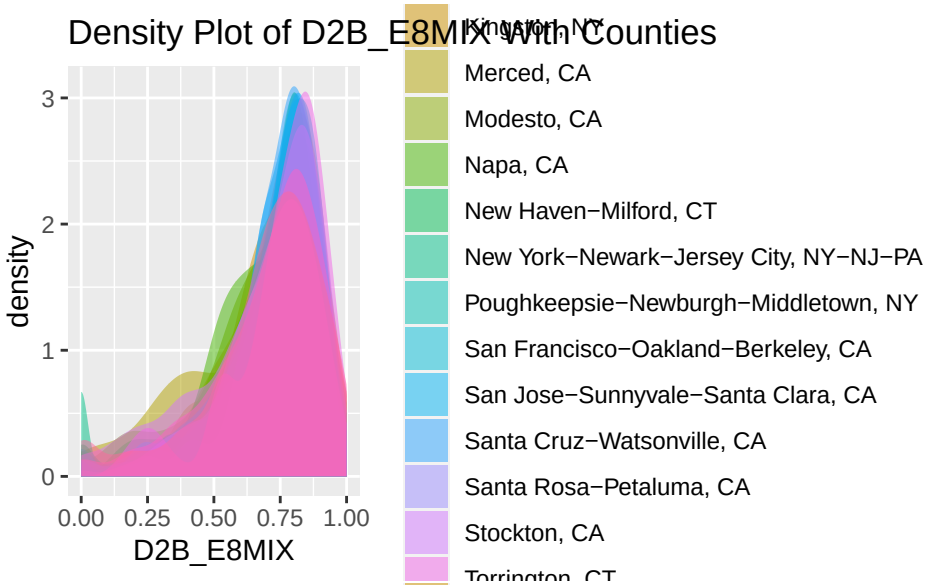

Density Plot of D1D Wit
density
D1D
0.00
0.25
0.50
0.75
0
500
1000
1500
2000
2500

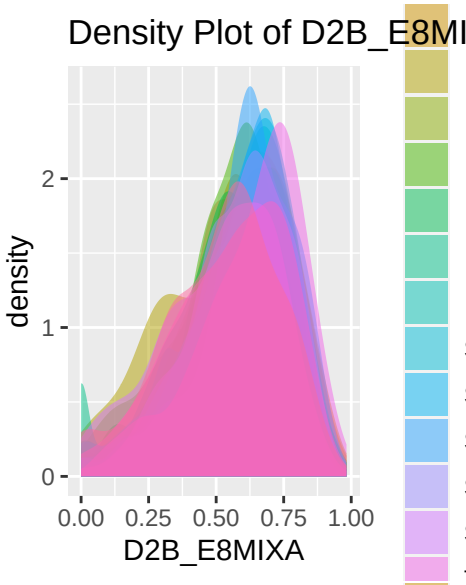

Density Plot of D1_FLAG With Counties
density
D1_FLAG
0.00 0.25 0.50 0.75 1.00
0 10 20 30 40
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

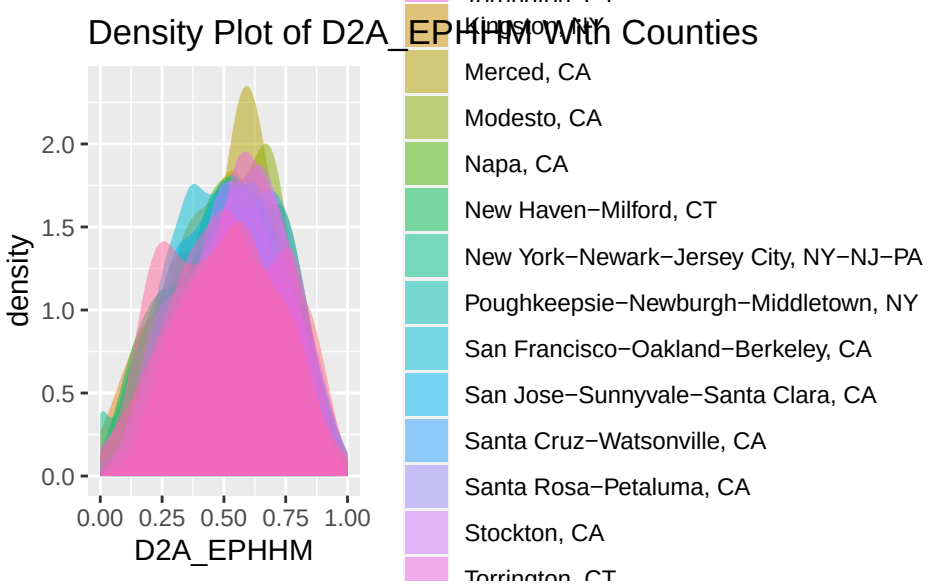

Density Plot of D2A_JPHH
density
D2A_JPHH
0 1000 2000 3000 4000
0 1 2 3 4

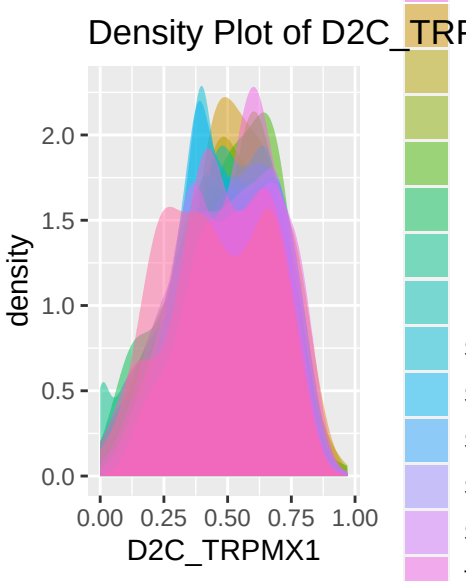

Density Plot of D2B_E5MIX With Counties
density
D2B_E5MIX
0.00 0.25 0.50 0.75 1.00
0.0 0.5 1.0 1.5 2.0 2.5
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

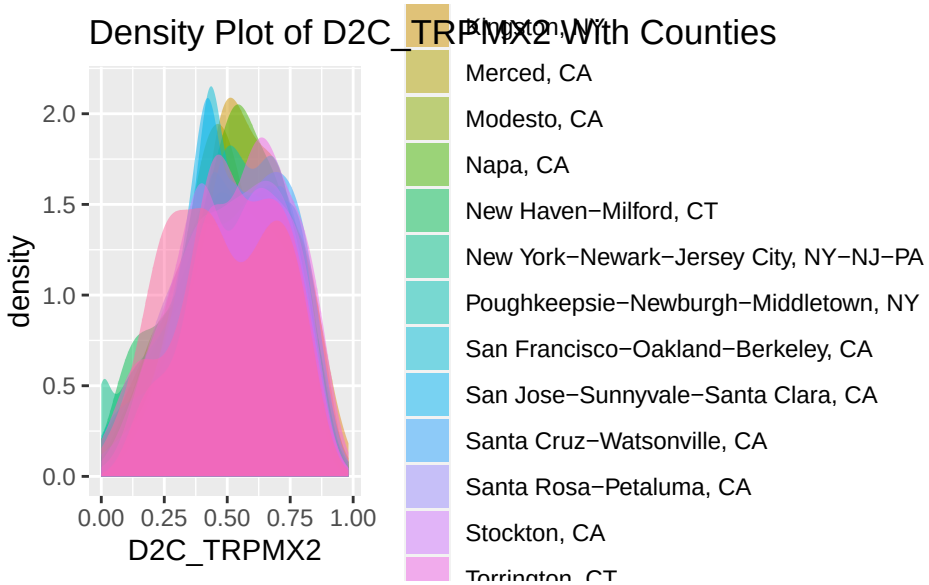

Density Plot of D2B_E5M
density
D2B_E5MIXA
0.00 0.25 0.50 0.75 1.00
0.0 0.5 1.0 1.5 2.0


Density Plot of D2B_E8MIX With Counties
density
D2B_E8MIX
0.00 0.25 0.50 0.75 1.00
0 1 2 3
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

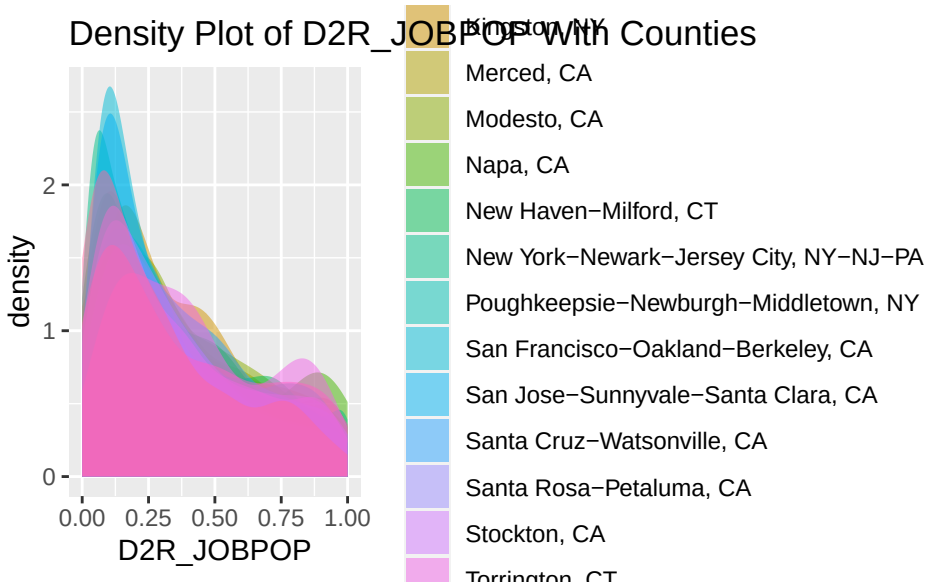

Density Plot of D2B_E8MI
density
D2B_E8MIXA
0.00 0.25 0.50 0.75 1.00
0 1 2

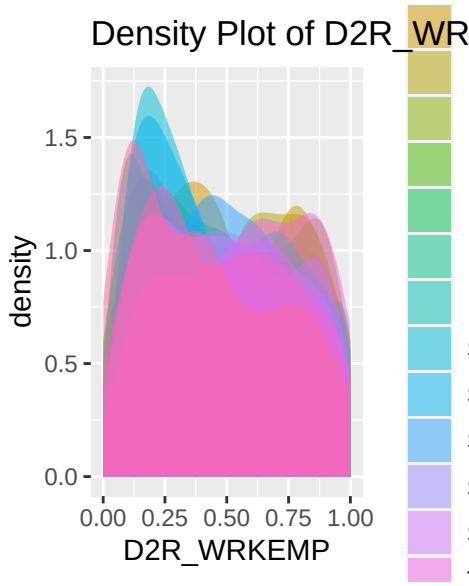

Density Plot of D2A_EPHHM With Counties
density
D2A_EPHHM
0.00 0.25 0.50 0.75 1.00
0.0 0.5 1.0 1.5 2.0
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

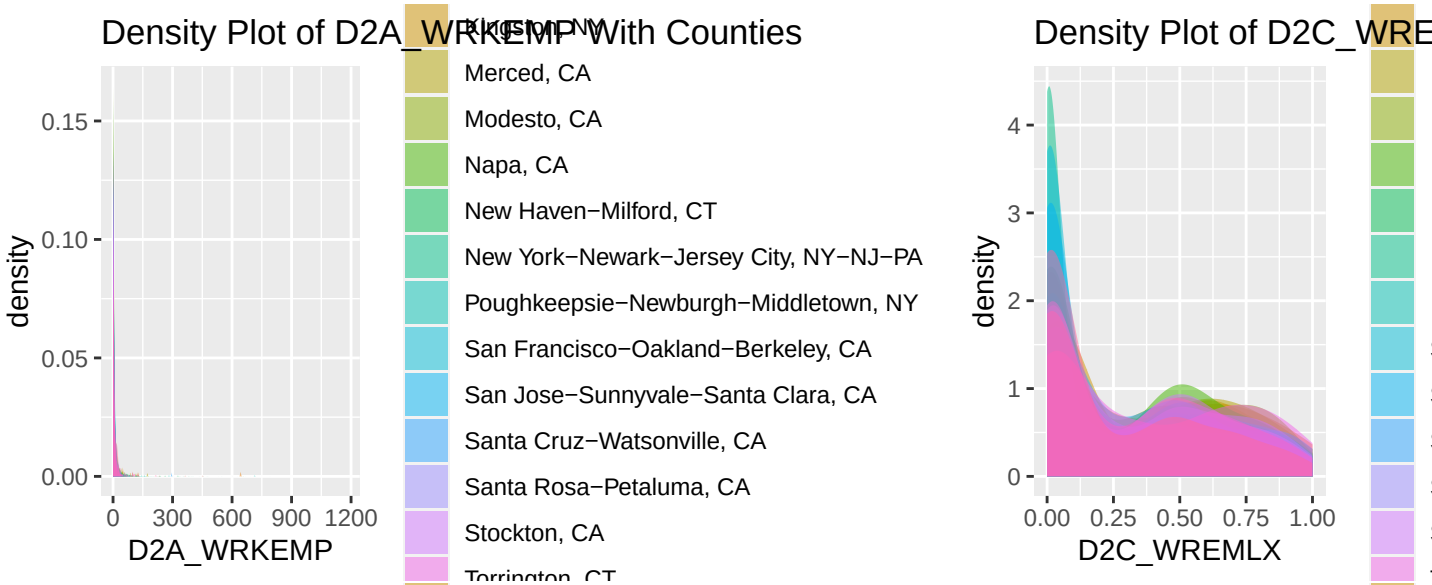

Density Plot of D2C_TRP
density
D2C_TRPMX1
0.00 0.25 0.50 0.75 1.00
0.0 0.5 1.0 1.5 2.0



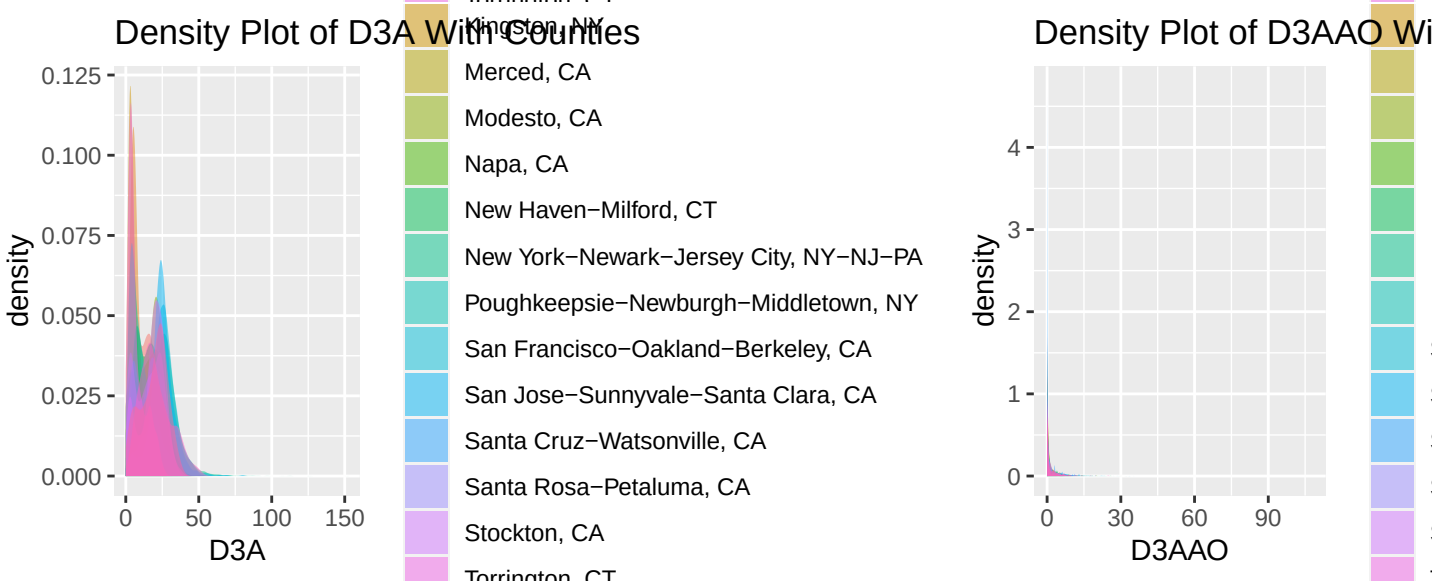

```
create_density_plots_all(SLD, 78, 98)
```



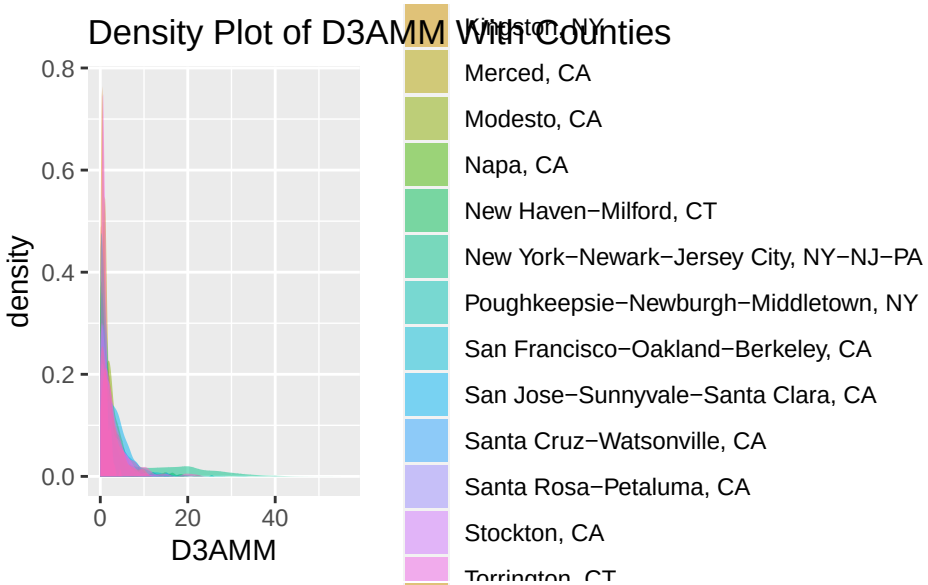


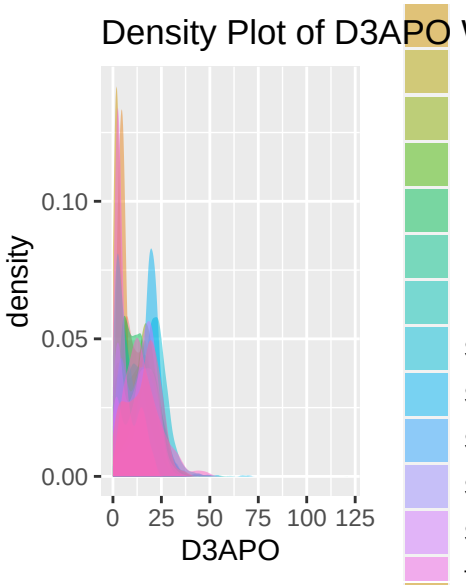

Density Plot of D2A_WRKEMP With Counties
density
0.15
0.10
0.05
0.00
0
300
600
900
1200
D2A_WRKEMP
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

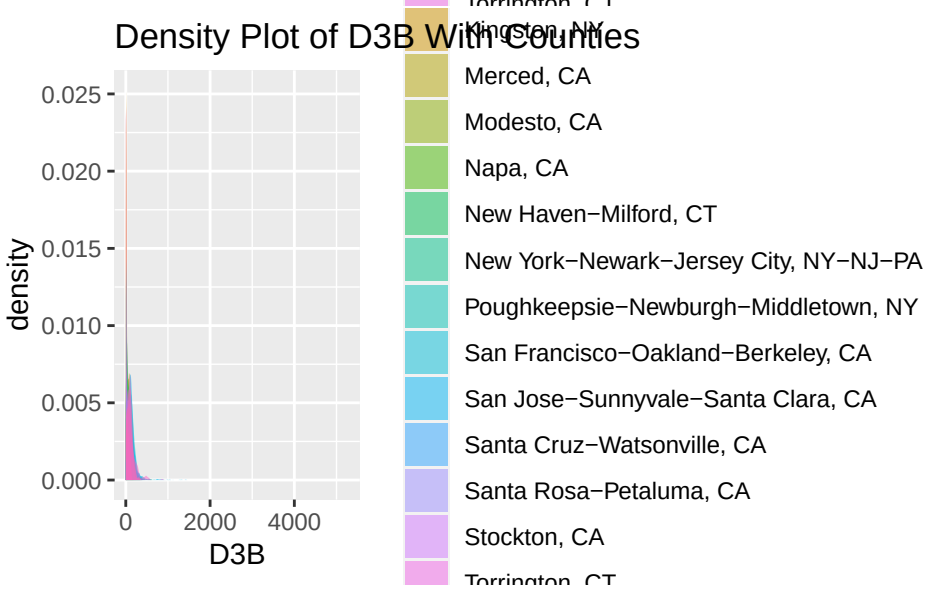
Density Plot of D2C_WRE
density
4
3
2
1
0
0.00
0.25
0.50
0.75
1.00
D2C_WREMLX

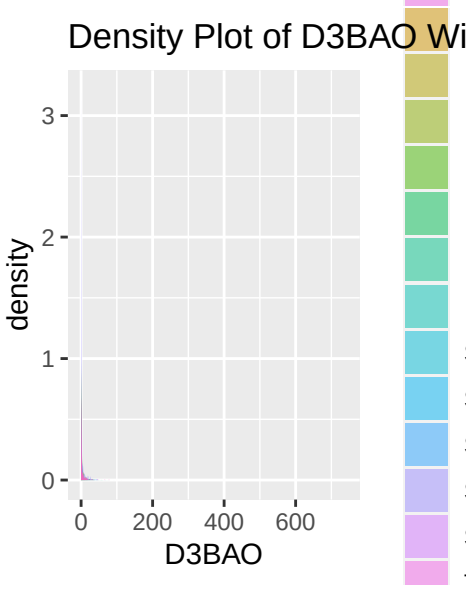

Density Plot of D3A With Counties
density
0.125
0.100
0.075
0.050
0.025
0.000
0
50
100
150
D3A
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

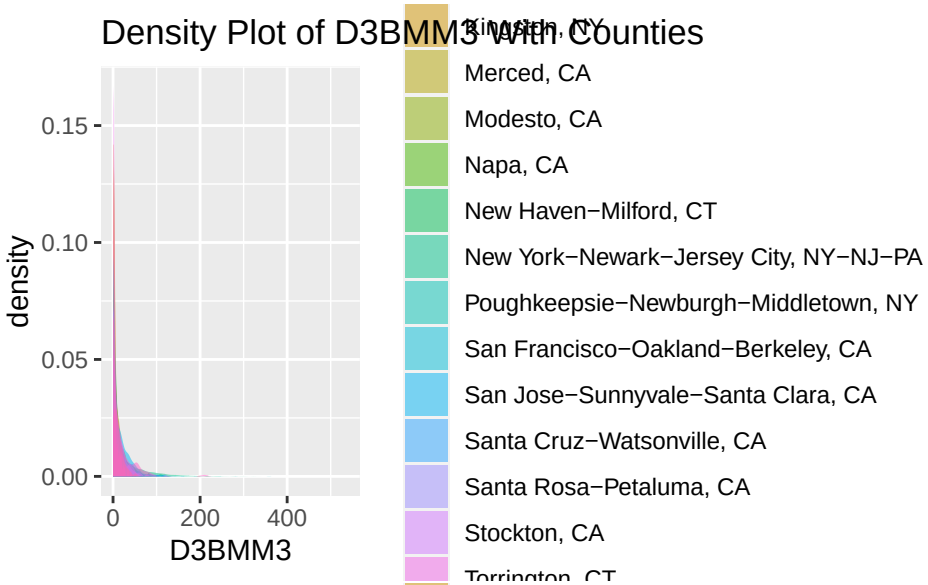
Density Plot of D3AAO Wi
density
4
3
2
1
0
0
30
60
90
D3AAO

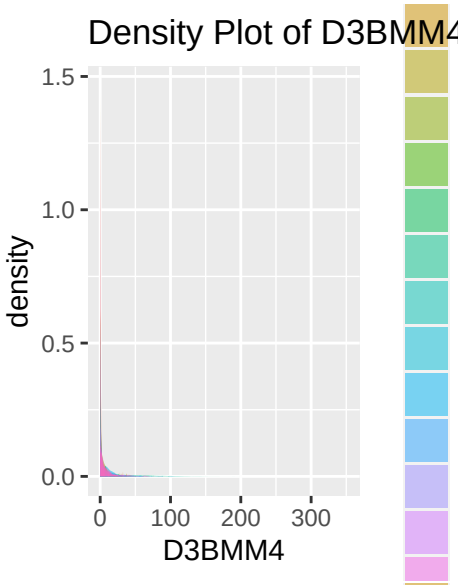

Density Plot of D3AMM With Counties
density
D3AMM
0.0
0.2
0.4
0.6
0.8
0
20
40
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

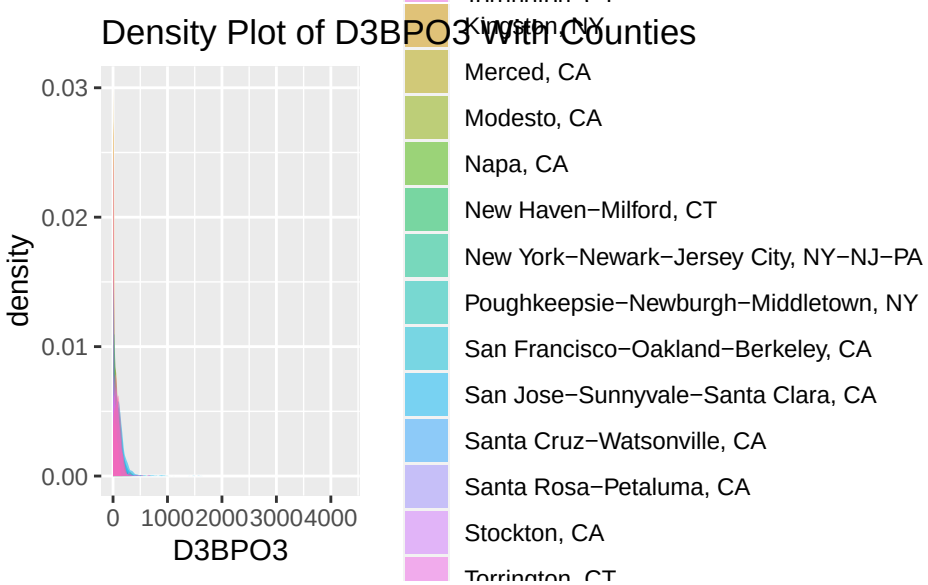

Density Plot of D3APO
density
D3APO
0.00
0.05
0.10
0
25
50
75
100
125

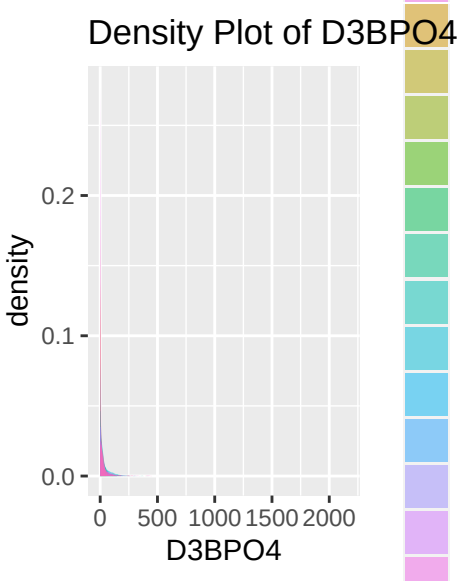

Density Plot of D3B With Counties
density
D3B
0.000
0.005
0.010
0.015
0.020
0.025
0
2000
4000
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

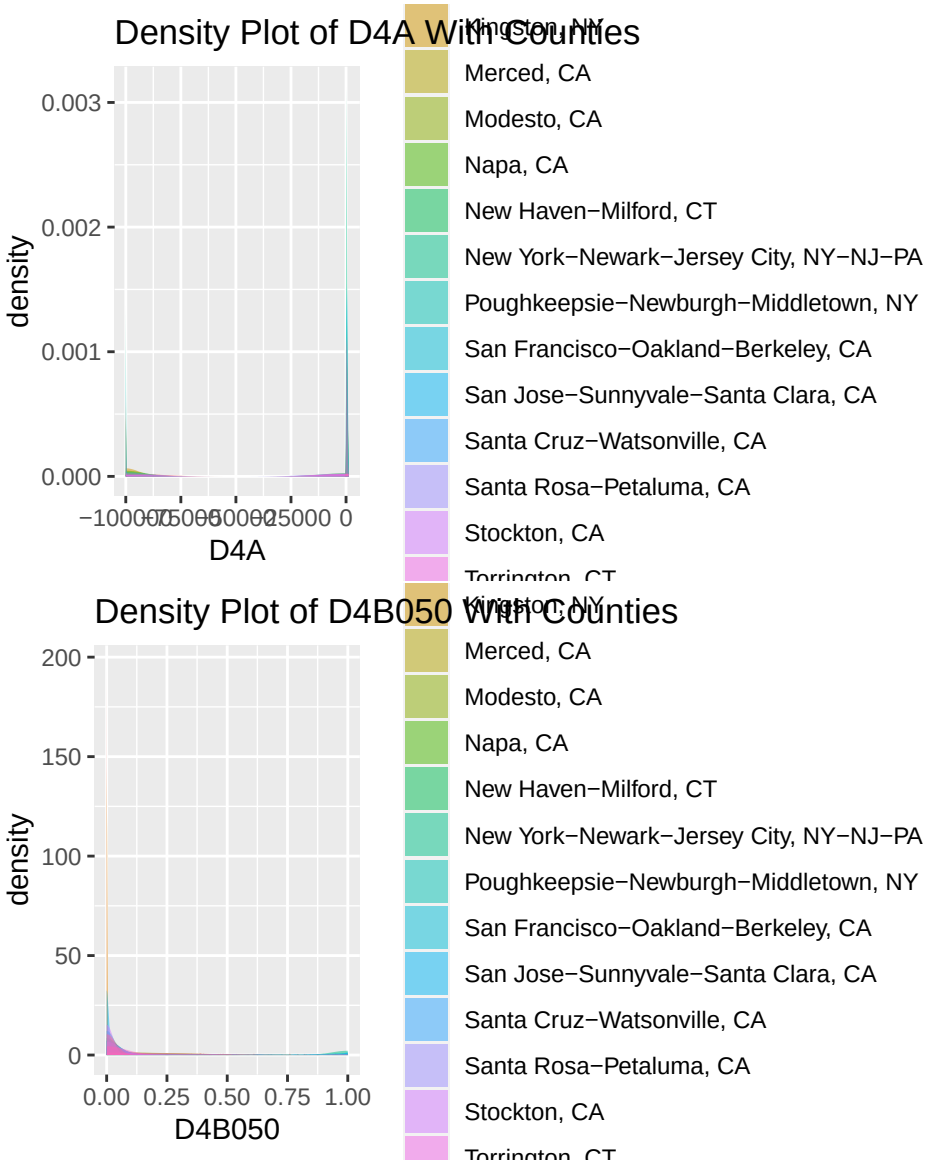

Density Plot of D3BAO Wi
density
D3BAO
0
1
2
3
0
200
400
600

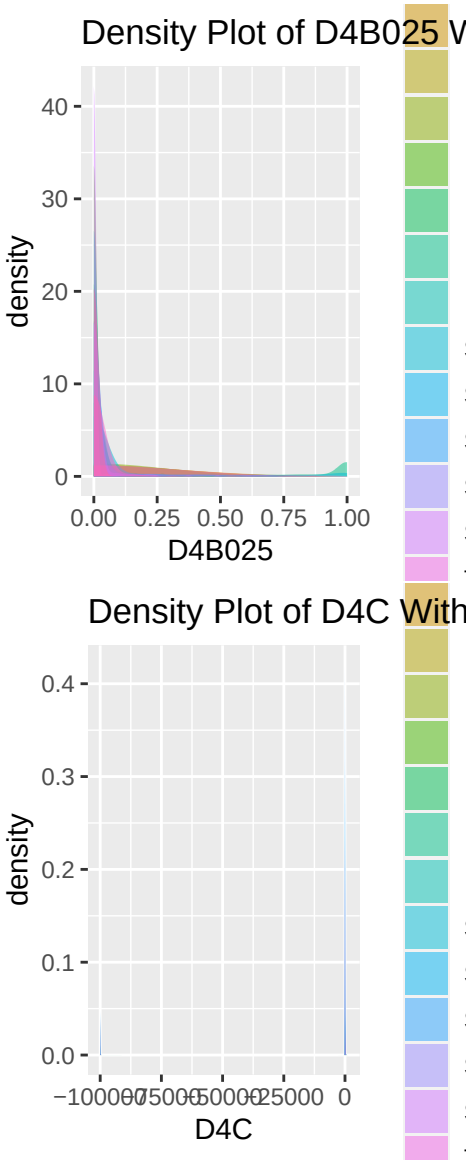

Density Plot of D3BMM3 With Counties
density
0.15
0.10
0.05
0.00
0
200
400
D3BMM3
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT


Density Plot of D3BMM4
density
1.5
1.0
0.5
0.0
0
100
200
300
D3BMM4


Density Plot of D3BPO3 With Counties
density
0.03
0.02
0.01
0.00
0
1000
2000
3000
4000
D3BPO3
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

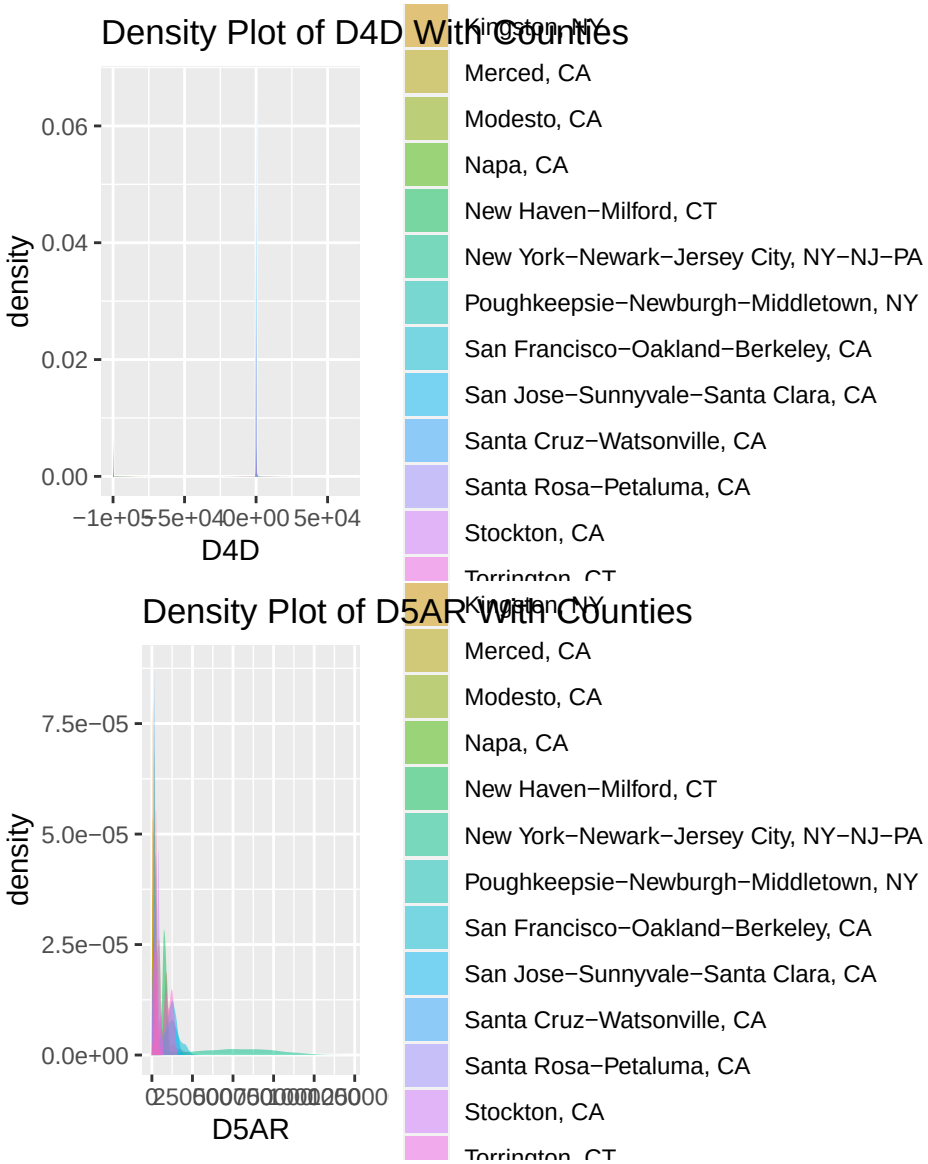

Density Plot of D3BPO4
density
0.2
0.1
0.0
0
500
1000
1500
2000
D3BPO4

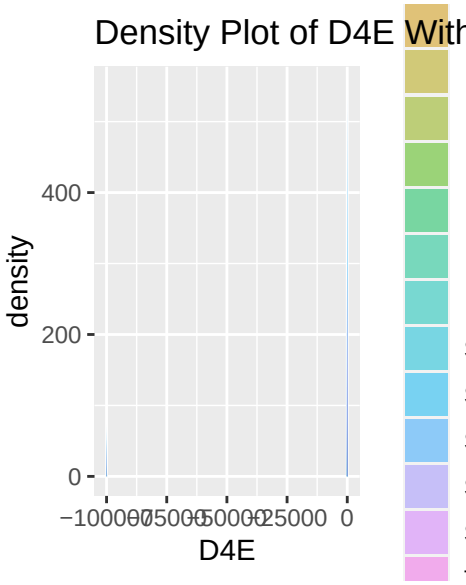

Density Plot of D4A With Counties
density
0.003
0.002
0.001
0.000
−100000
−75000
−50000
−25000
0
D4A
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT


Density Plot of D4B025 W
density
40
30
20
10
0
0.00
0.25
0.50
0.75
1.00
D4B025

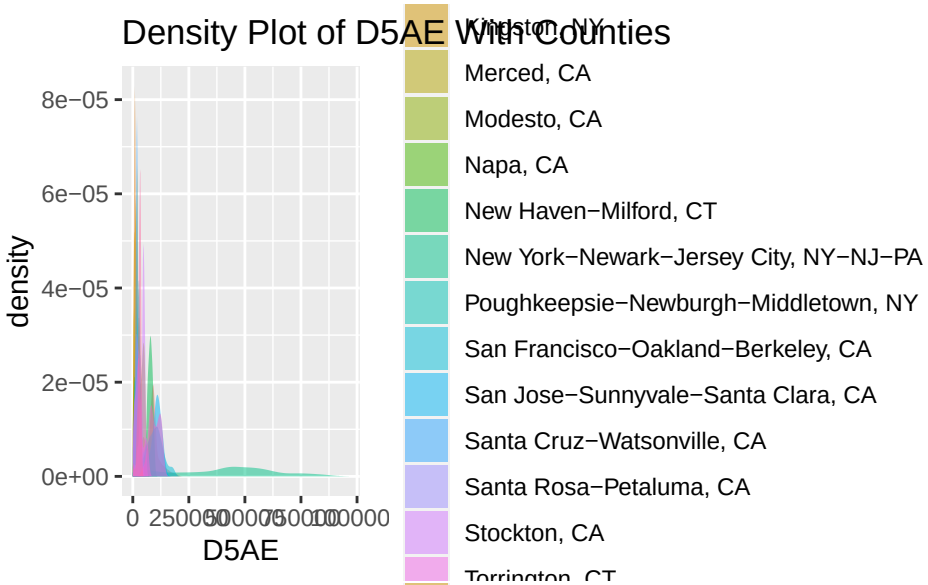
Density Plot of D4B050 With Counties
density
200
150
100
50
0
0.00
0.25
0.50
0.75
1.00
D4B050
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

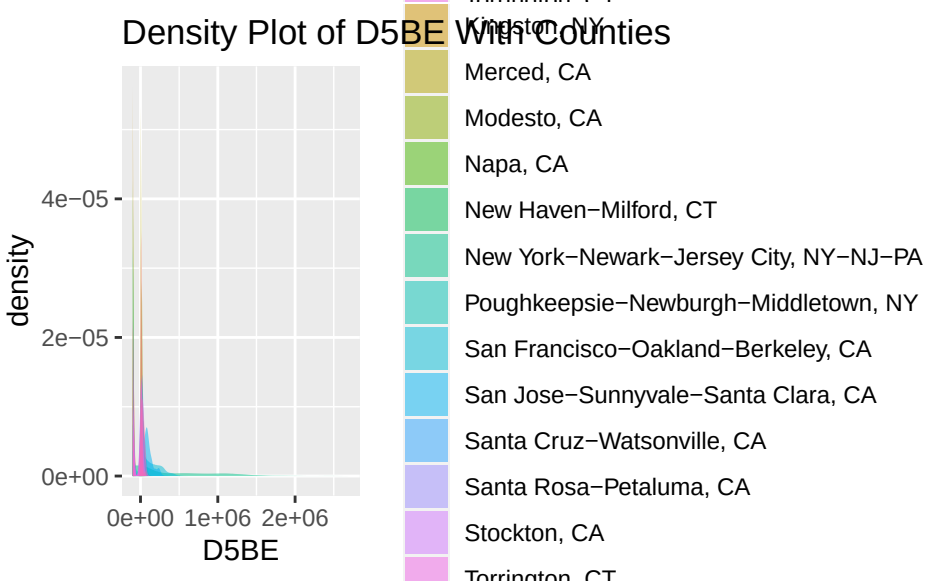
Density Plot of D4C With
density
0.4
0.3
0.2
0.1
0.0
−100000
−75000
−50000
−25000
0
D4C

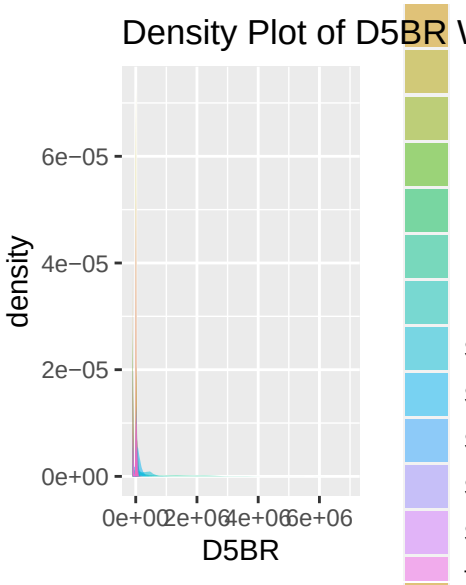


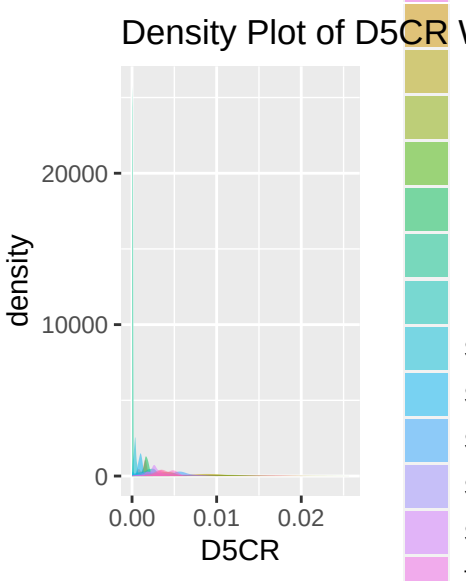


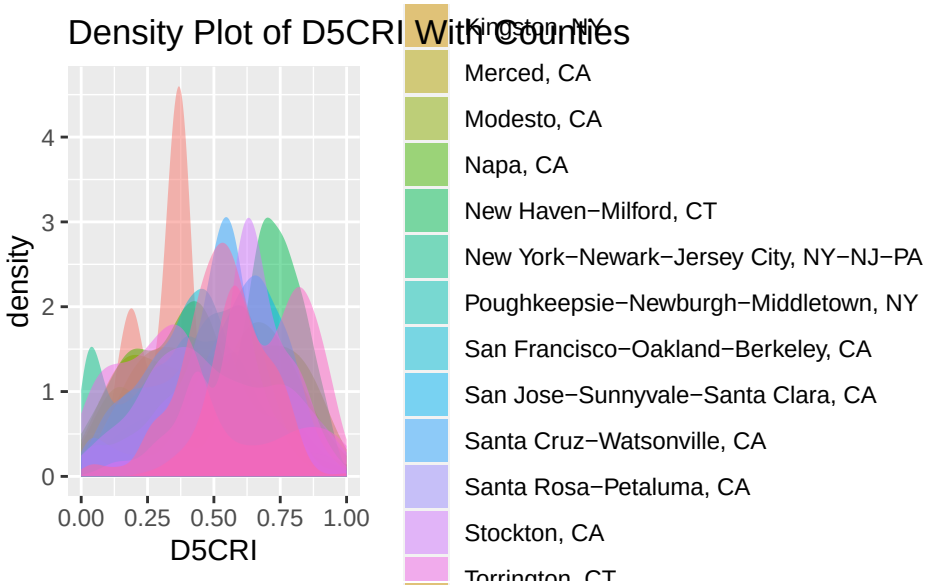

```
create_density_plots_all(SLD, 99, 118)
```

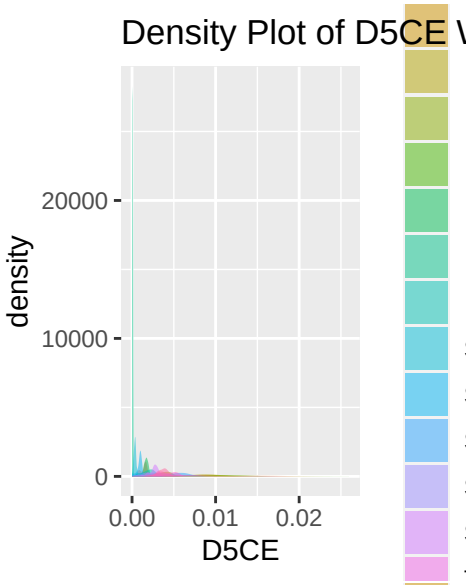

Density Plot of D5AE With Counties
density
8e−05
6e−05
4e−05
2e−05
0e+00
0
250000
500000
750000
1000000
D5AE
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

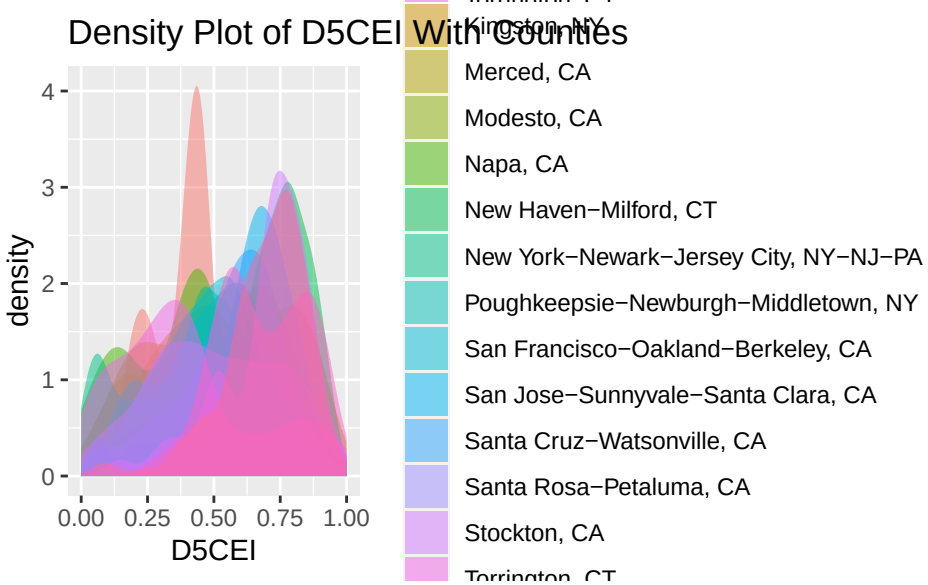

Density Plot of D5BE With Counties
density
4e−05
2e−05
0e+00
0e+00
1e+06
2e+06
D5BE
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

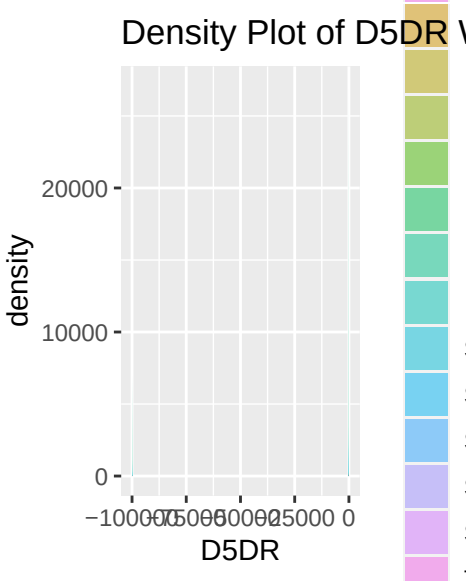

Density Plot of D5BR
density
6e−05
4e−05
2e−05
0e+00
0e+00
2e+06
4e+06
6e+06
D5BR

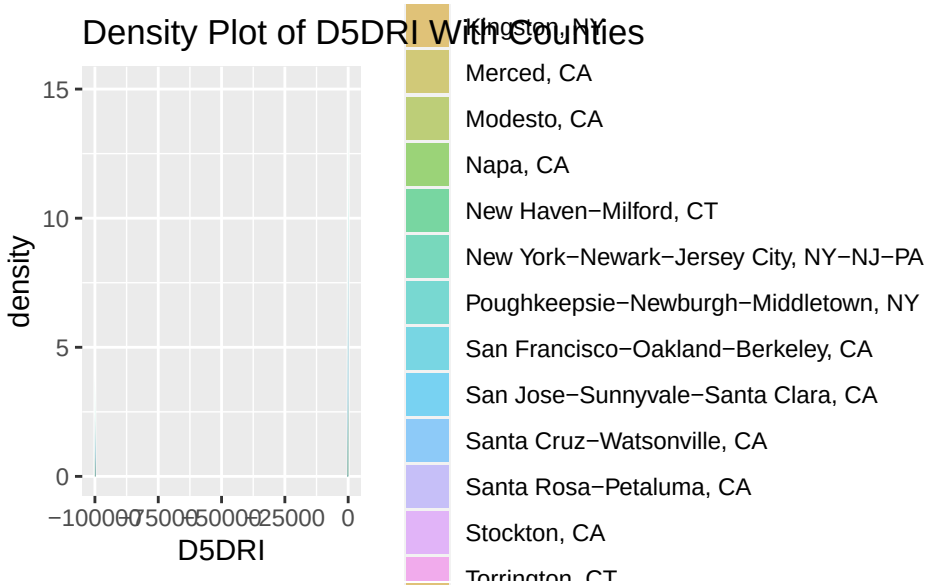

Density Plot of D5CR
density
20000
10000
0
0.00
0.01
0.02
D5CR

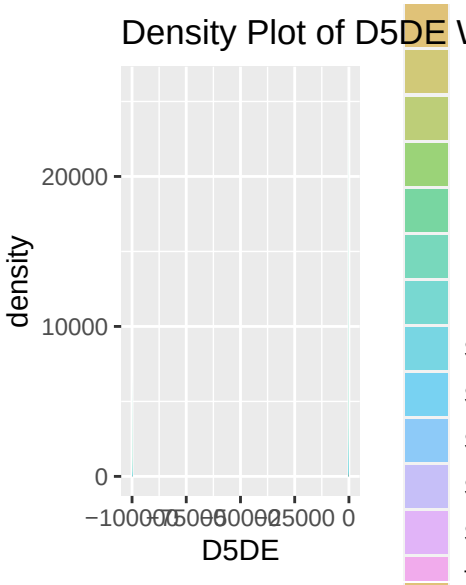

Density Plot of D5CRI With Counties
density
D5CRI
0.00
0.25
0.50
0.75
1.00
0
1
2
3
4
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

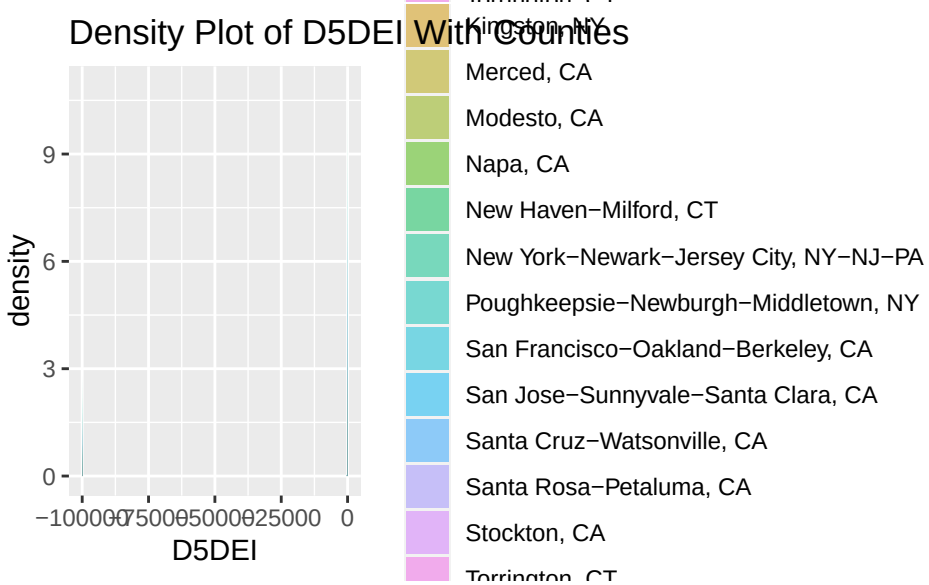

Density Plot of D5CE
density
D5CE
0.00
0.01
0.02
0
10000
20000

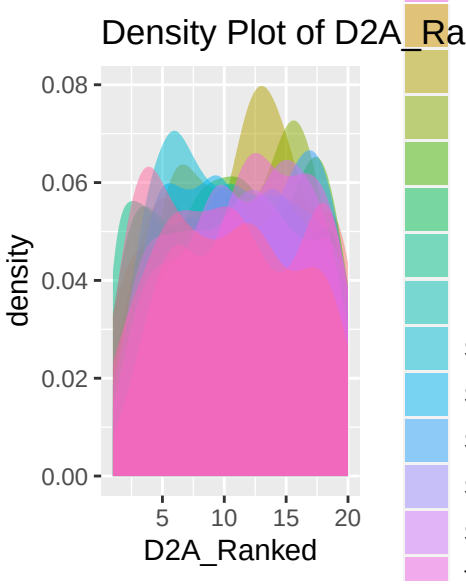

Density Plot of D5CEI With Counties
density
D5CEI
0.00
0.25
0.50
0.75
1.00
0
1
2
3
4
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

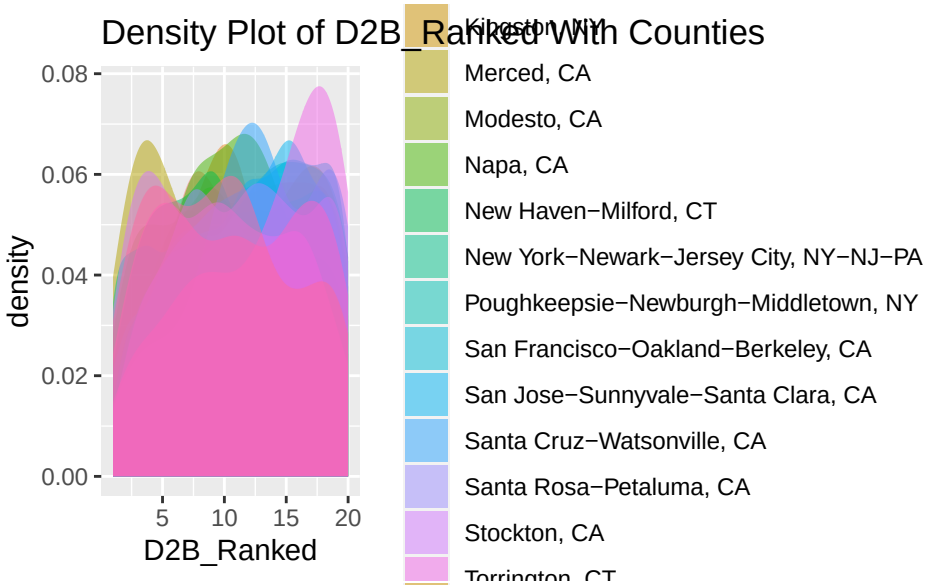

Density Plot of D5DR
density
D5DR
0
10000
20000

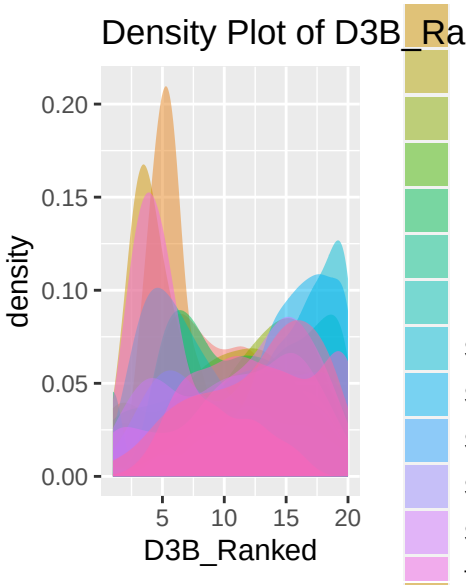

Density Plot of D5DRI With Counties
density
D5DRI
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

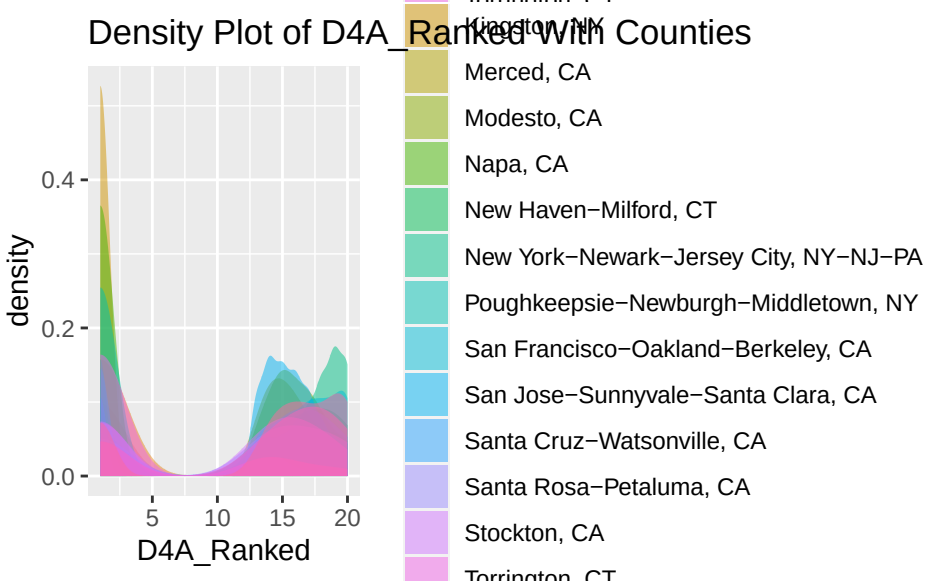

Density Plot of D5DE
density
D5DE

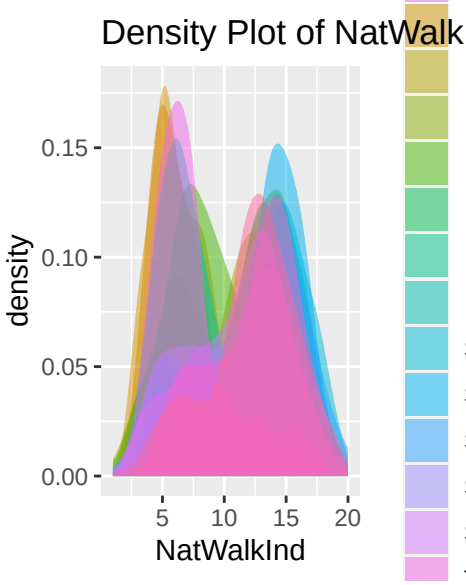

Density Plot of D5DEI With Counties
density
D5DEI
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

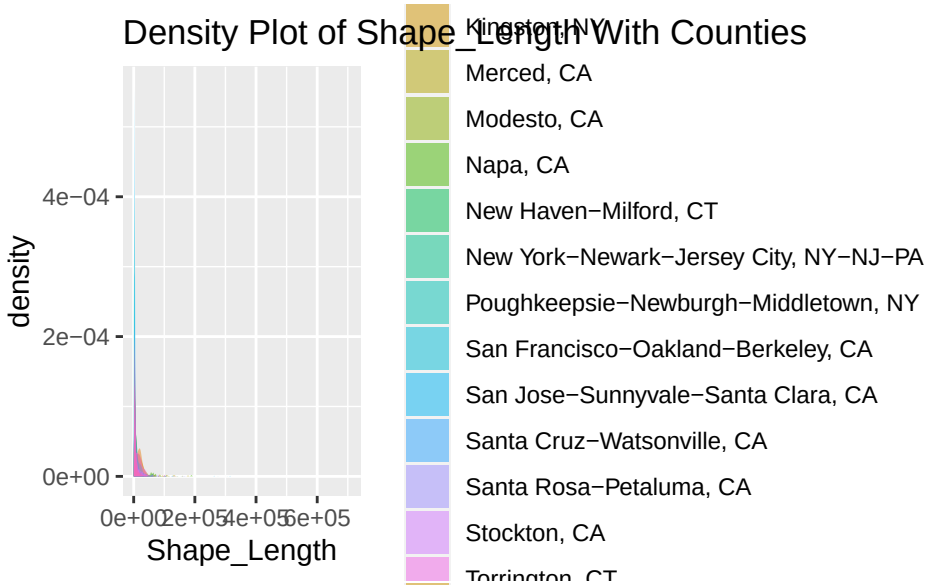

Density Plot of D2A_Ra
density
D2A_Ranked

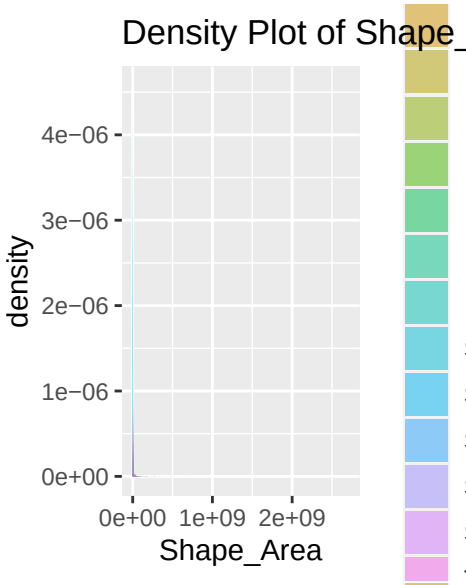

Density Plot of D2B_Ranked With Counties
density
0.08
0.06
0.04
0.02
0.00
5
10
15
20
D2B_Ranked
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT

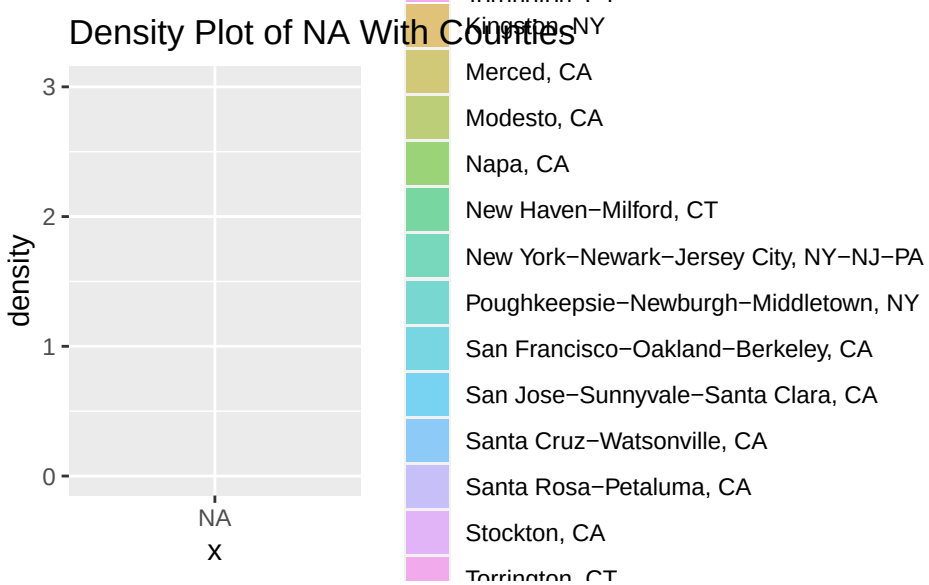

Density Plot of D3B_Ra
density
0.20
0.15
0.10
0.05
0.00
5
10
15
20
D3B_Ranked

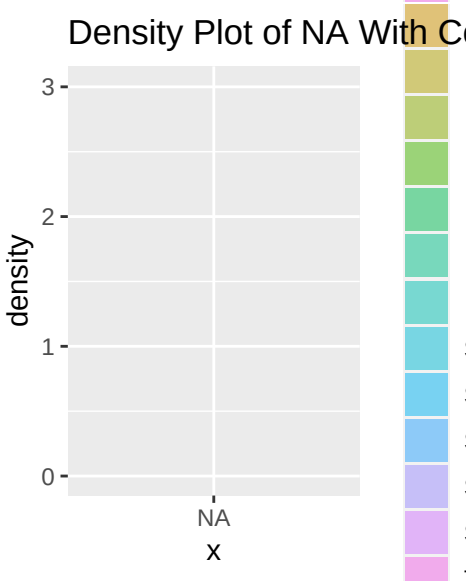

Density Plot of D4A_Ranked With Counties
density
0.4
0.2
0.0
5
10
15
20
D4A_Ranked
Kingston, NY
Merced, CA
Modesto, CA
Napa, CA
New Haven−Milford, CT
New York−Newark−Jersey City, NY−NJ−PA
Poughkeepsie−Newburgh−Middletown, NY
San Francisco−Oakland−Berkeley, CA
San Jose−Sunnyvale−Santa Clara, CA
Santa Cruz−Watsonville, CA
Santa Rosa−Petaluma, CA
Stockton, CA
Torrington, CT


Density Plot of NatWalk
density
0.15
0.10
0.05
0.00
5
10
15
20
NatWalkInd










```
NewYork_SanFrancisco_data <- read_csv("data/NewYork_SanFrancisco_data.csv", show_col_types = FALSE)
```

```
## New names:
## * `` -> `...1`
```

```
names(NewYork_SanFrancisco_data)
```

```
##   [1] "...1"          "OBJECTID"      "GEOID10"       "GEOID20"       "STATEFP"
##   [6] "COUNTYFP"      "TRACTCE"       "BLKGRPCE"      "CSA"           "CSA_Name"
##  [11] "CBSA"          "CBSA_Name"     "CBSA_POP"      "CBSA_EMP"      "CBSA_WRK"
##  [16] "Ac_Total"      "Ac_Water"      "Ac_Land"       "Ac_Unpr"       "TotPop"
##  [21] "CountHU"       "HH"            "P_WrkAge"      "AutoOwn0"      "Pct_AO0"
##  [26] "AutoOwn1"      "Pct_AO1"       "AutoOwn2p"     "Pct_AO2p"      "Workers"
##  [31] "R_LowWageWk"   "R_MedWageWk"   "R_HiWageWk"    "R_PCTLOWWAGE"  "TotEmp"
##  [36] "E5_Ret"        "E5_Off"        "E5_Ind"        "E5_Svc"        "E5_Ent"
```

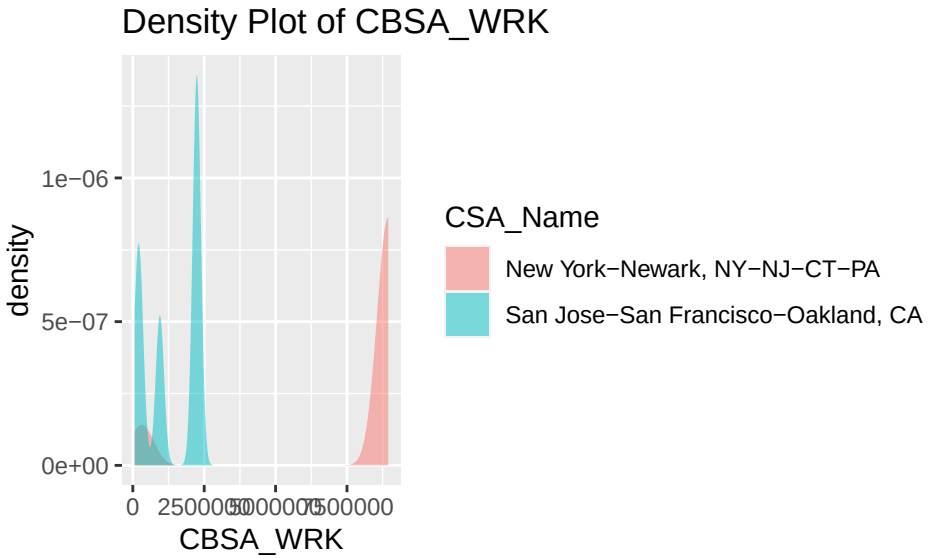
```
##  [41] "E8_Ret"       "E8_off"       "E8_Ind"       "E8_Svc"       "E8_Ent"
##  [46] "E8_Ed"        "E8_Hlth"      "E8_Pub"       "E_LowWageWk"  "E_MedWageWk"
##  [51] "E_HiWageWk"   "E_PctLowWage" "D1A"          "D1B"          "D1C"
##  [56] "D1C5_RET"     "D1C5_OFF"     "D1C5_IND"     "D1C5_SVC"     "D1C5_ENT"
##  [61] "D1C8_RET"     "D1C8_OFF"     "D1C8_IND"     "D1C8_SVC"     "D1C8_ENT"
##  [66] "D1C8_ED"      "D1C8_HLTH"    "D1C8_PUB"     "D1D"          "D1_FLAG"
##  [71] "D2A_JPHH"     "D2B_E5MIX"    "D2B_E5MIXA"   "D2B_E8MIX"    "D2B_E8MIXA"
##  [76] "D2A_EPHHM"    "D2C_TRPMX1"   "D2C_TRPMX2"   "D2C_TRIPEQ"   "D2R_JOBPOP"
##  [81] "D2R_WRKEMP"   "D2A_WRKEMP"   "D2C_WREMLX"   "D3A"          "D3AAO"
##  [86] "D3AMM"        "D3APO"        "D3B"          "D3BAO"        "D3BMM3"
##  [91] "D3BMM4"       "D3BPO3"       "D3BPO4"       "D4A"          "D4B025"
##  [96] "D4B050"       "D4C"          "D4D"          "D4E"          "D5AR"
## [101] "D5AE"         "D5BR"         "D5BE"         "D5CR"         "D5CRI"
## [106] "D5CE"         "D5CEI"        "D5DR"         "D5DRI"        "D5DE"
## [111] "D5DEI"        "D2A_Ranked"   "D2B_Ranked"   "D3B_Ranked"   "D4A_Ranked"
## [116] "NatWalkInd"   "Shape_Length" "Shape_Area"
```

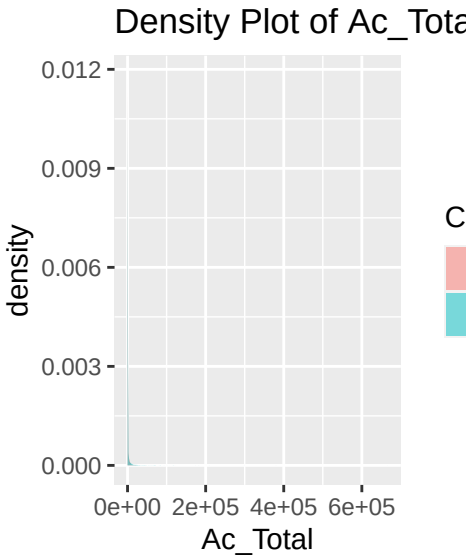
```
#removing missing values.
NewYork_SanFrancisco_data <- na.omit(NewYork_SanFrancisco_data)
```

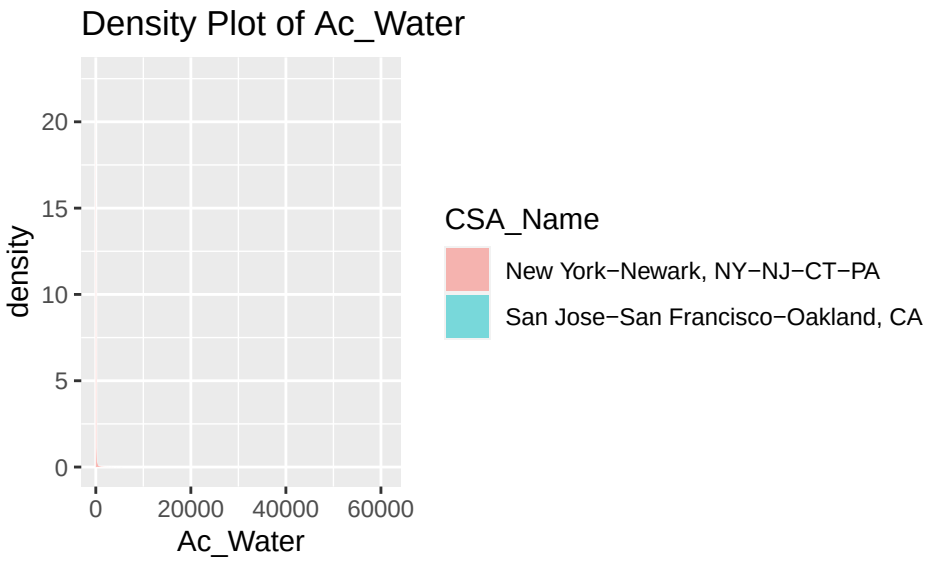
#Univariate Analysis:

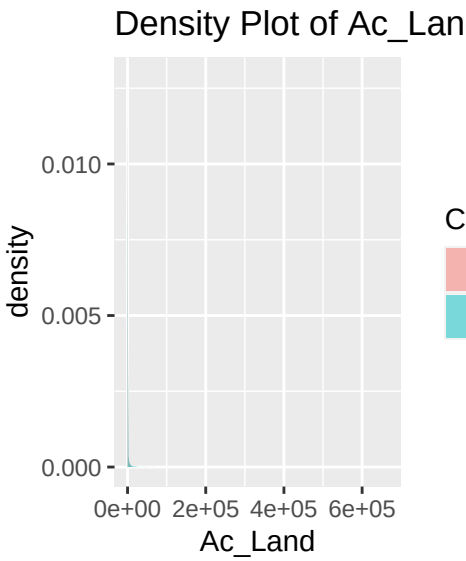
```
create_density_plots_subset <- function(data, start_col, end_col) {
  numeric_vars <- names(data)[sapply(data, is.numeric)]
  selected_vars <- numeric_vars[start_col:end_col]

  for (var in selected_vars) {
    # Create density plot for each variable
    plot <- gf_density(as.formula(paste("~", var)), data = data, fill = ~CSA_Name,
                       title = paste("Density Plot of", var))
    print(plot)
  }
}

# Function to create density plots for all numeric variables


# Example usage:
# Assuming 'data' is your dataset and you want to create density plots for columns 1 to 10:
```

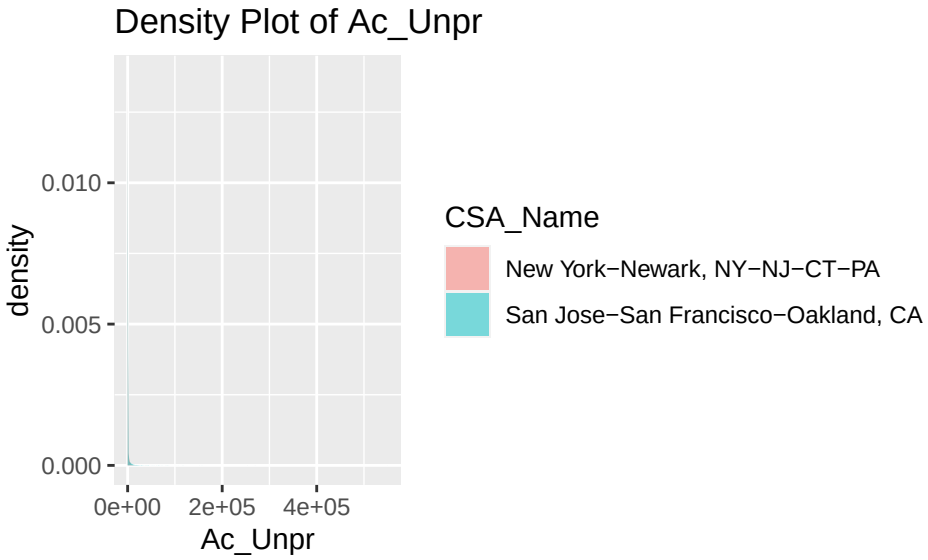
```
create_density_plots_subset(NewYork_SanFrancisco_data, 13, 33)
```

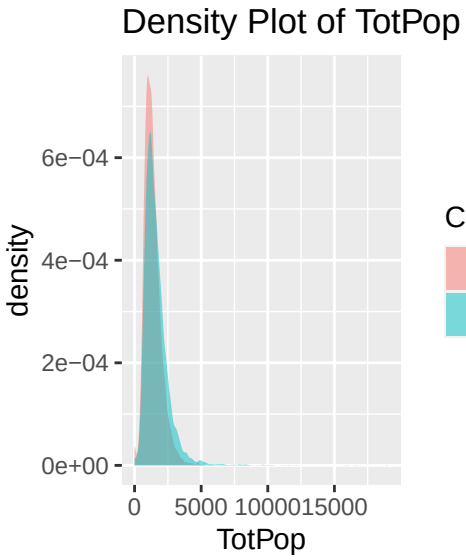

Density Plot of CBSA_WRK
density
1e−06
5e−07
0e+00
0
CBSA_WRK
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

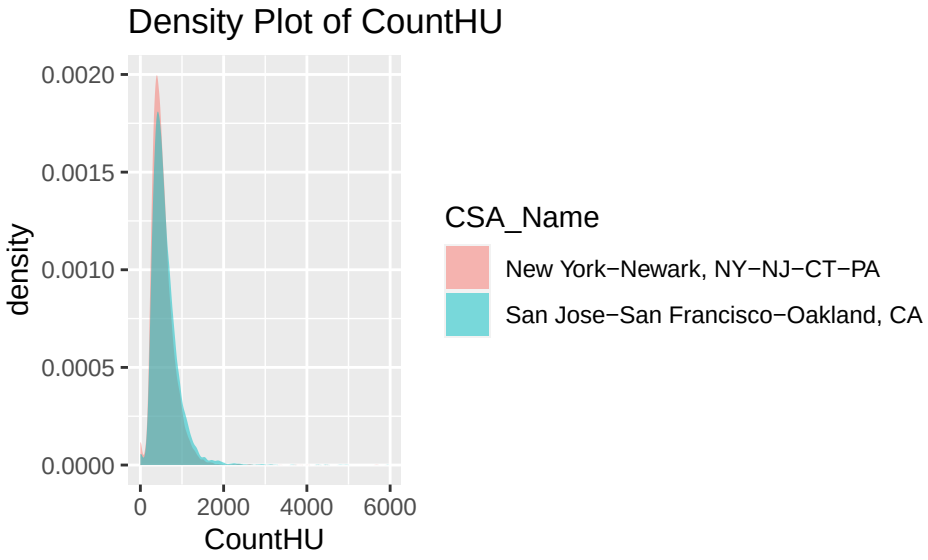

Density Plot of Ac_Tota
density
0.012
0.009
0.006
0.003
0.000
0e+00
2e+05
4e+05
6e+05
Ac_Total
C

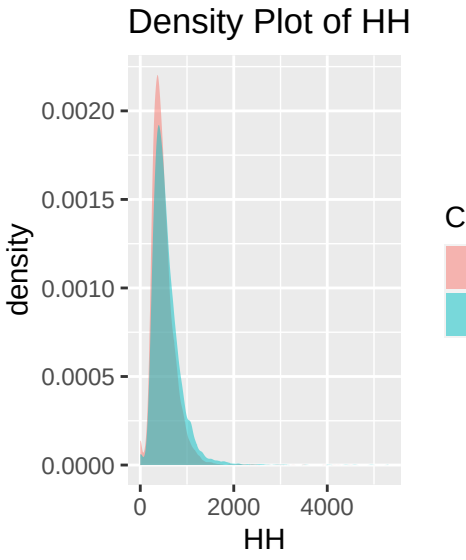

Density Plot of Ac_Water
density
20
15
10
5
0
0
20000
40000
60000
Ac_Water
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

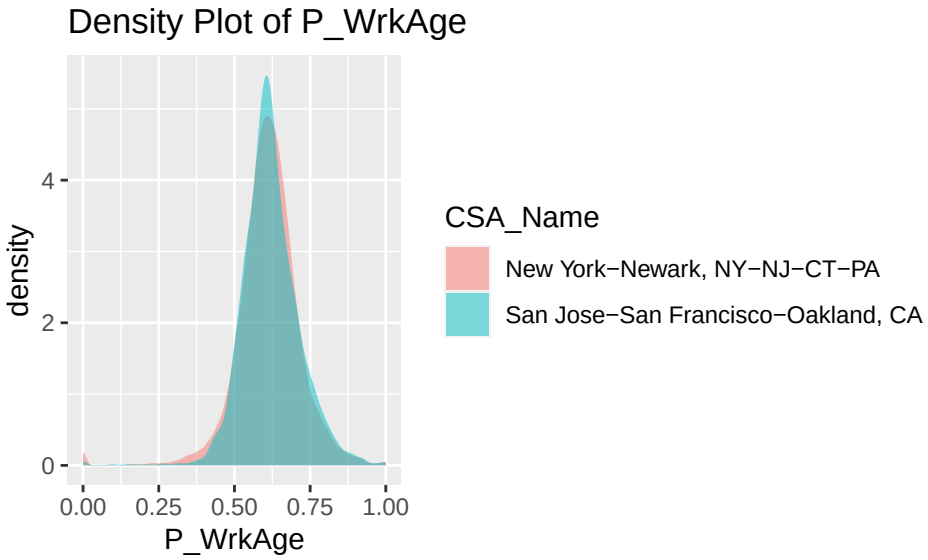

Density Plot of Ac_Lan
density
0.010
0.005
0.000
0e+00
2e+05
4e+05
6e+05
Ac_Land
C

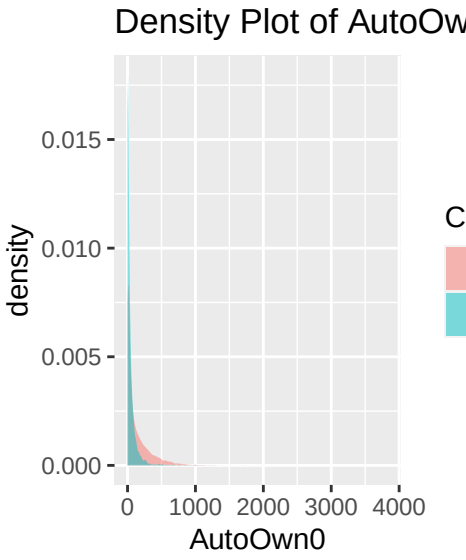

Density Plot of Ac_Unpr
density
0.010
0.005
0.000
0e+00
2e+05
4e+05
Ac_Unpr
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

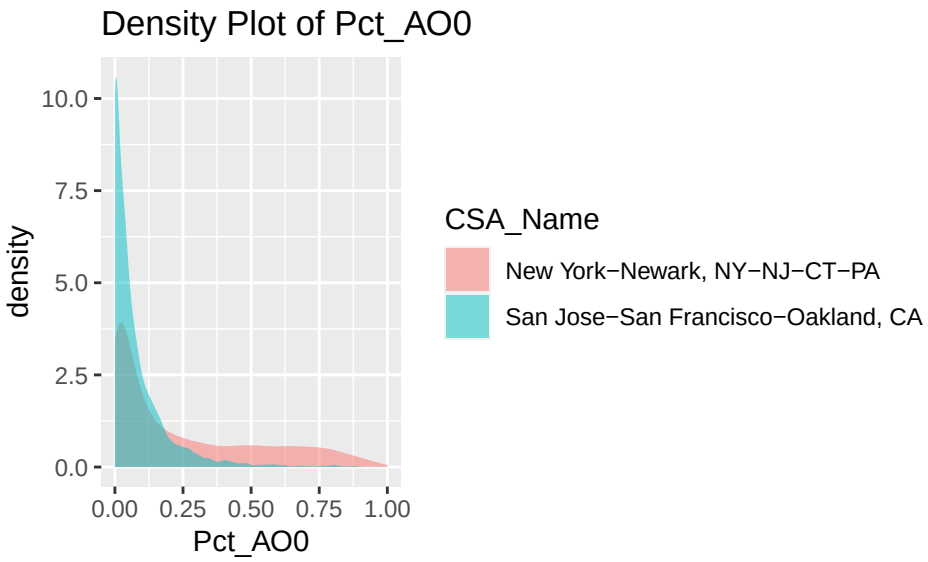

Density Plot of TotPop
density
6e−04
4e−04
2e−04
0e+00
0
5000
10000
15000
TotPop

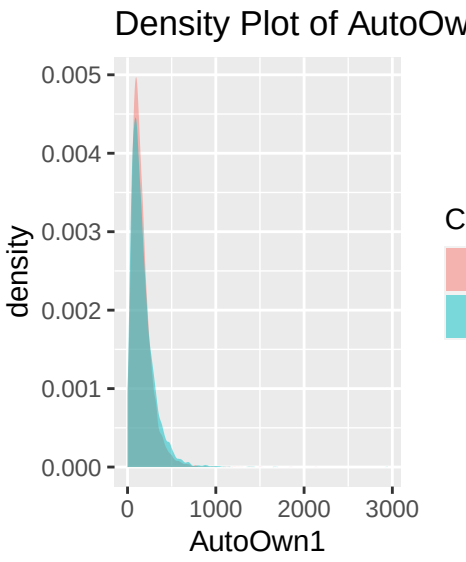

Density Plot of CountHU
density
0.0020
0.0015
0.0010
0.0005
0.0000
0
2000
4000
6000
CountHU
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

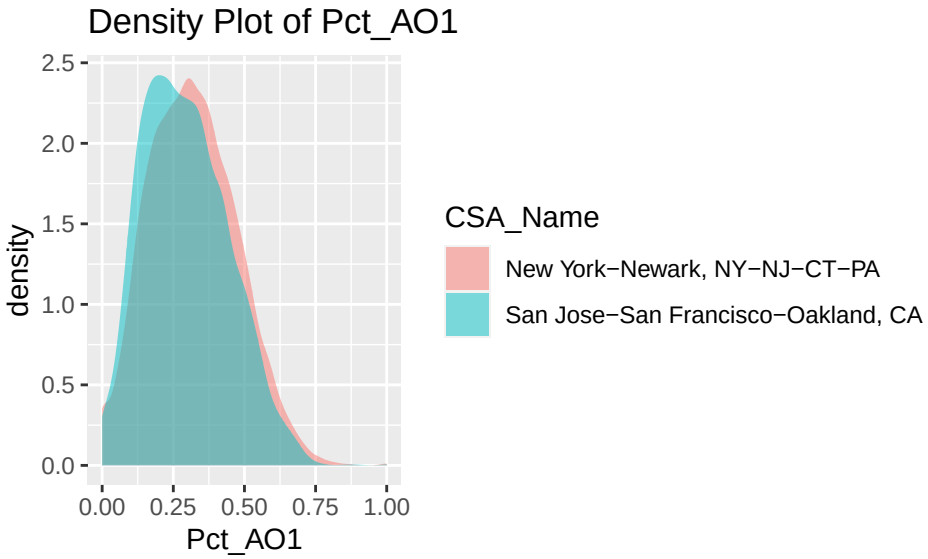

Density Plot of HH
density
0.0020
0.0015
0.0010
0.0005
0.0000
0
2000
4000
HH

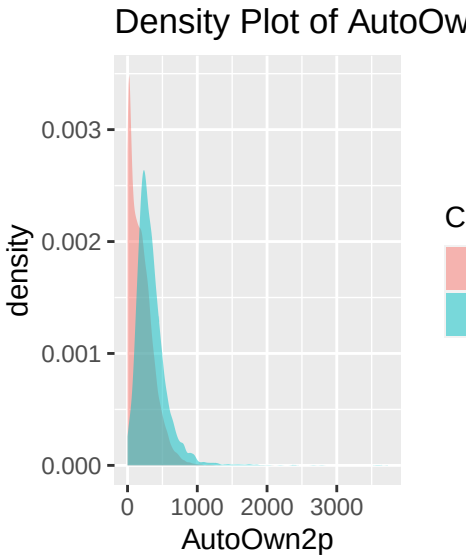

Density Plot of P_WrkAge
density
P_WrkAge
0.00
0.25
0.50
0.75
1.00
0
2
4
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

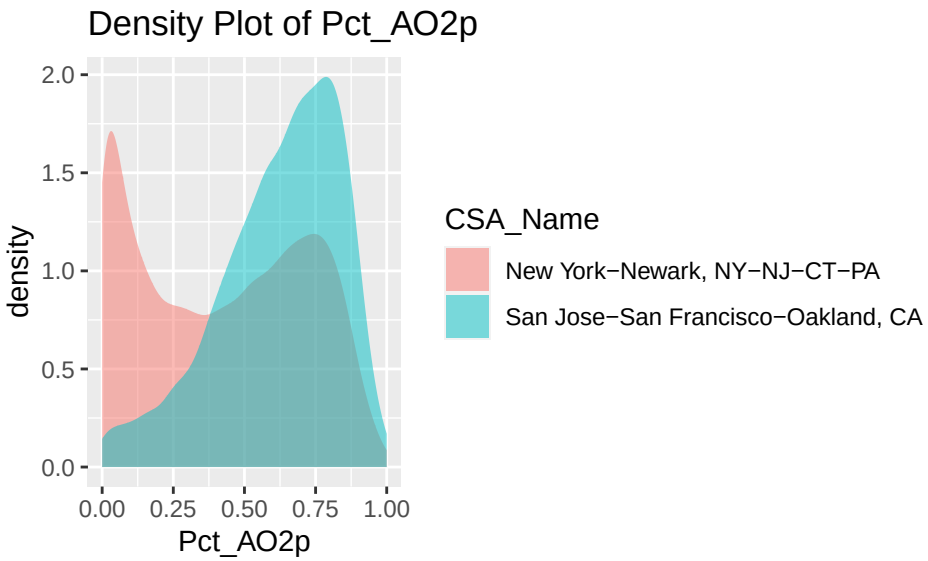

Density Plot of AutoOw
density
AutoOwn0
0
1000
2000
3000
4000
0.000
0.005
0.010
0.015

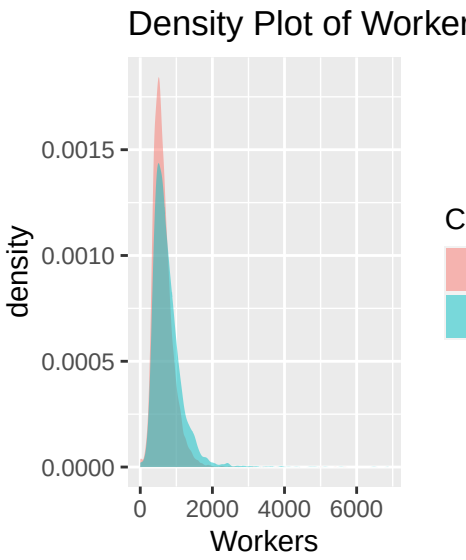

Density Plot of Pct_AO0
density
Pct_AO0
0.00
0.25
0.50
0.75
1.00
0.0
2.5
5.0
7.5
10.0
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

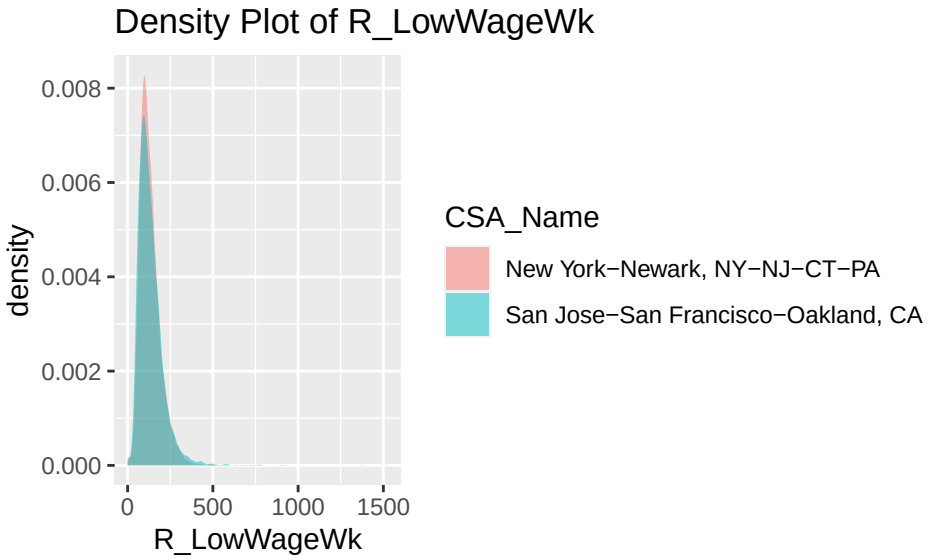

Density Plot of AutoOw
density
AutoOwn1
0
1000
2000
3000
0.000
0.001
0.002
0.003
0.004
0.005

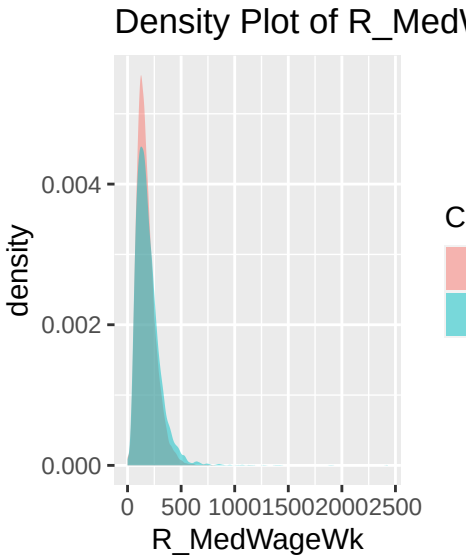

Density Plot of Pct_AO1
density
Pct_AO1
0.00
0.25
0.50
0.75
1.00
0.0
0.5
1.0
1.5
2.0
2.5
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

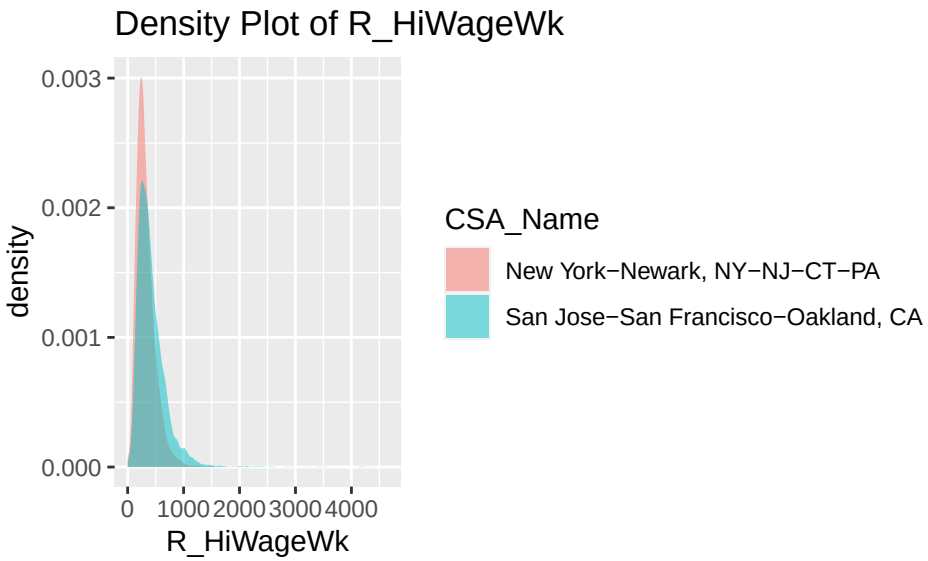

Density Plot of AutoOw
density
AutoOwn2p
0
1000
2000
3000
0.000
0.001
0.002
0.003
C

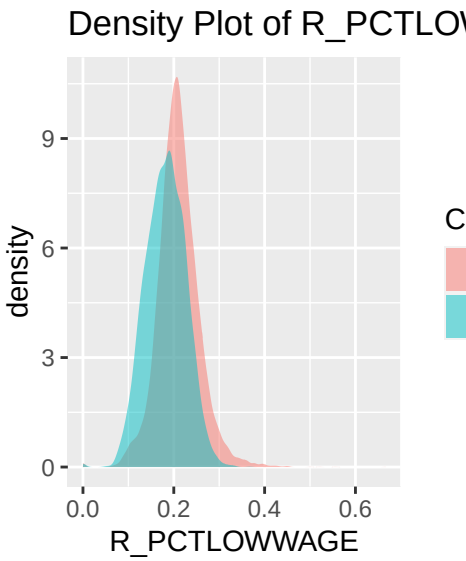

Density Plot of Pct_AO2p
density
Pct_AO2p
0.00
0.25
0.50
0.75
1.00
0.0
0.5
1.0
1.5
2.0
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

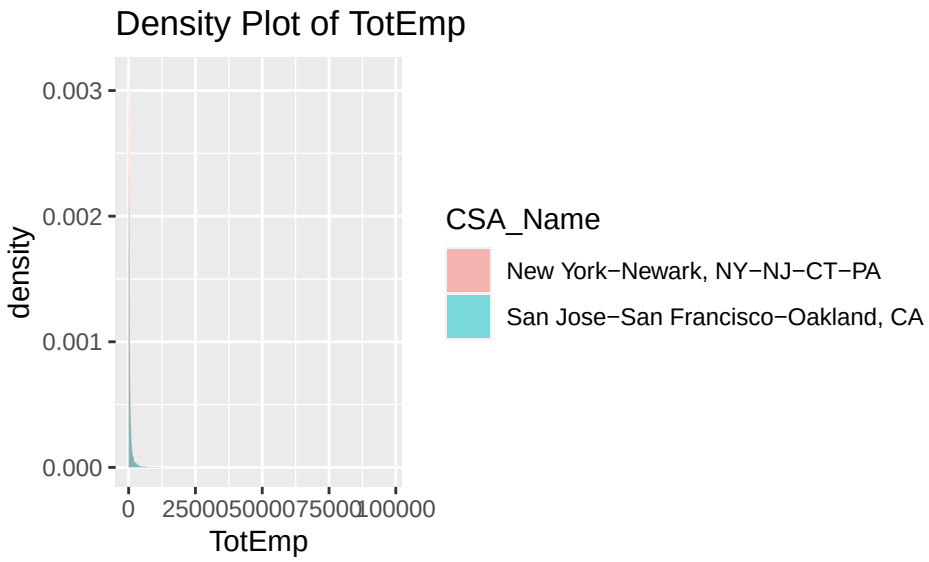

Density Plot of Worker
density
Workers
0
2000
4000
6000
0.0000
0.0005
0.0010
0.0015
C


Density Plot of R_LowWageWk
density
0.008
0.006
0.004
0.002
0.000
0
500
1000
1500
R_LowWageWk
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

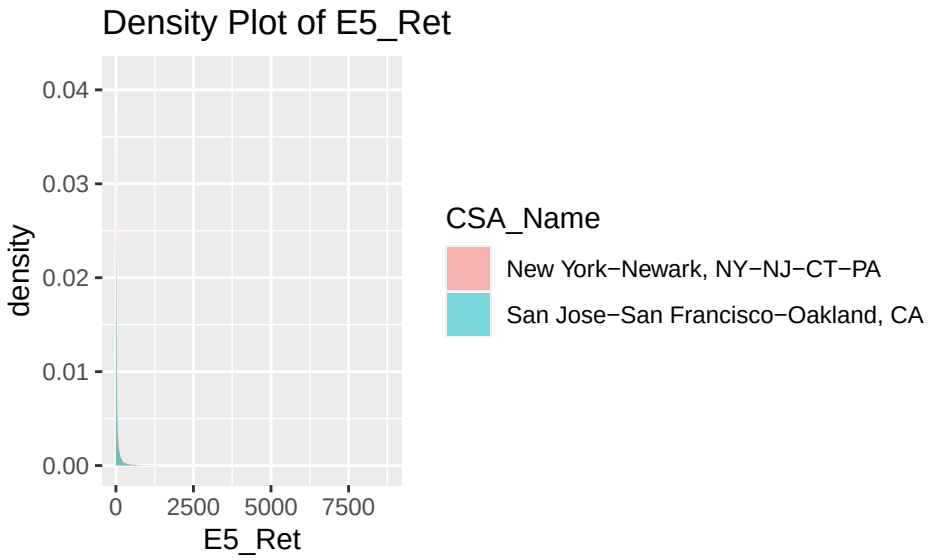

Density Plot of R_MedW
density
0.004
0.002
0.000
0
500
1000
1500
2000
2500
R_MedWageWk
C

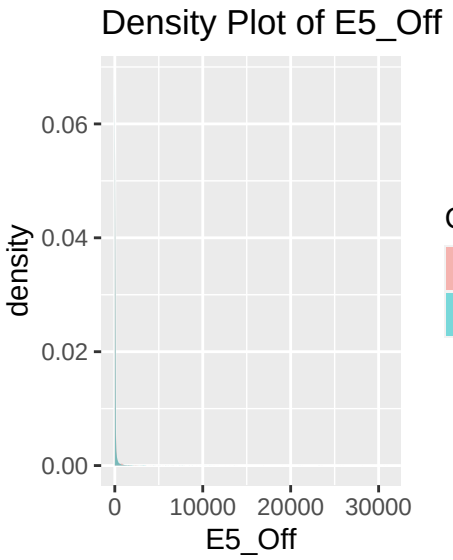

Density Plot of R_HiWageWk
density
0.003
0.002
0.001
0.000
0
1000
2000
3000
4000
R_HiWageWk
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

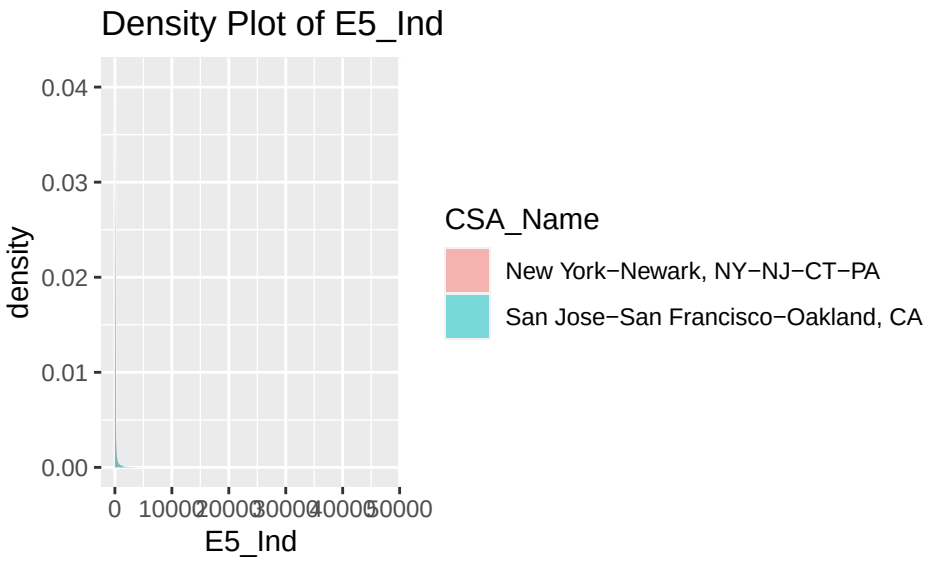

Density Plot of R_PCTLO
density
9
6
3
0
0.0
0.2
0.4
0.6
R_PCTLOWWAGE
C

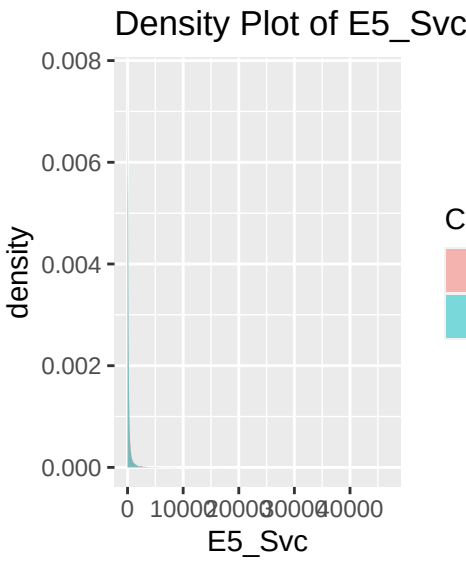


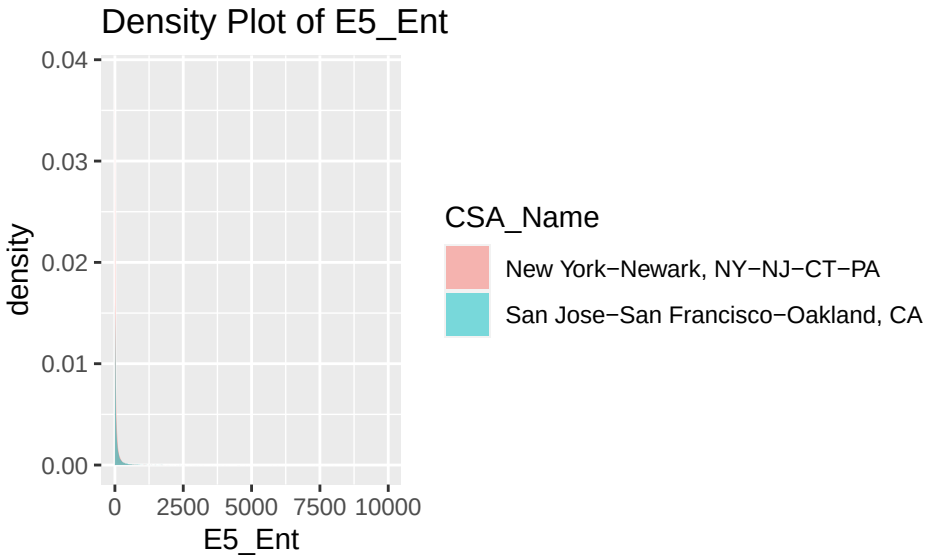

```
create_density_plots_subset(NewYork_SanFrancisco_data, 34, 54)
```

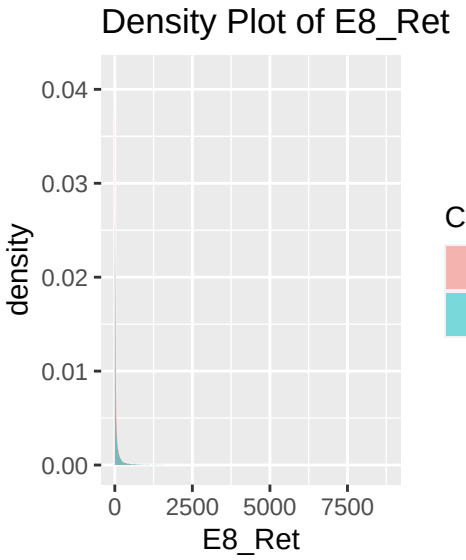


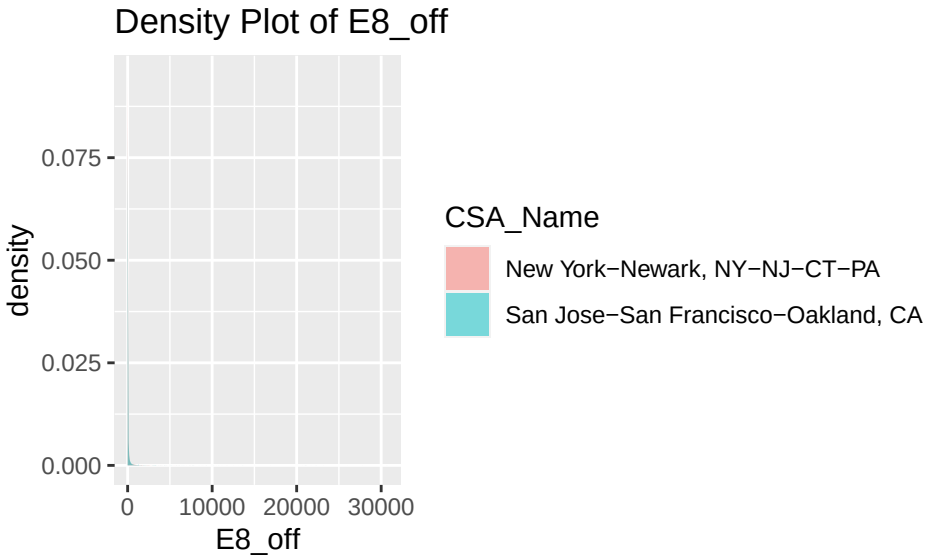


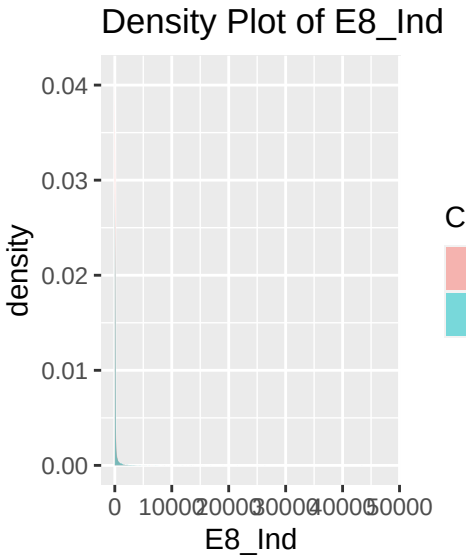

Density Plot of E5_Ind
density
0.04
0.03
0.02
0.01
0.00
0
10000
20000
30000
40000
50000
E5_Ind
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

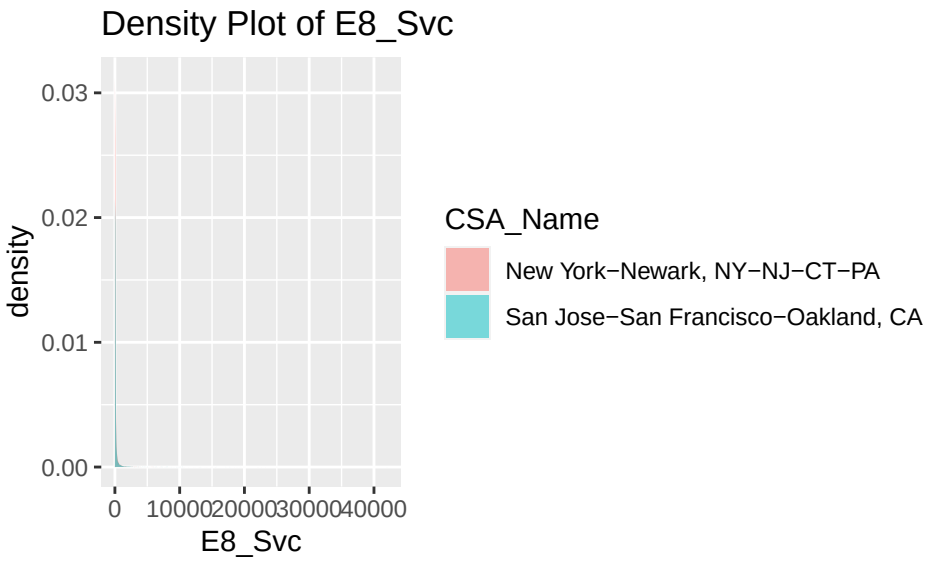

Density Plot of E5_Svc
density
0.008
0.006
0.004
0.002
0.000
0
10000
20000
30000
40000
E5_Svc
C

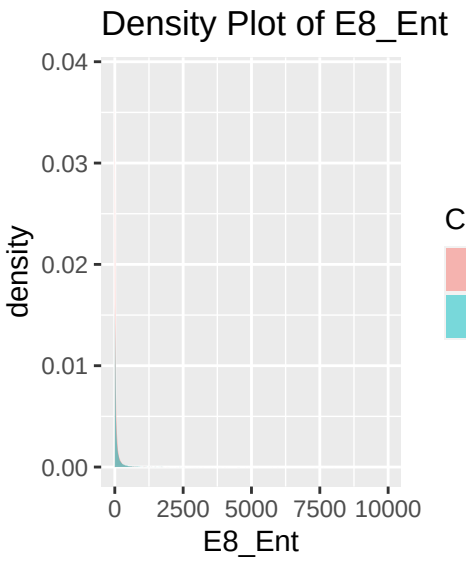

Density Plot of E5_Ent
density
0.04
0.03
0.02
0.01
0.00
0
2500
5000
7500
10000
E5_Ent
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

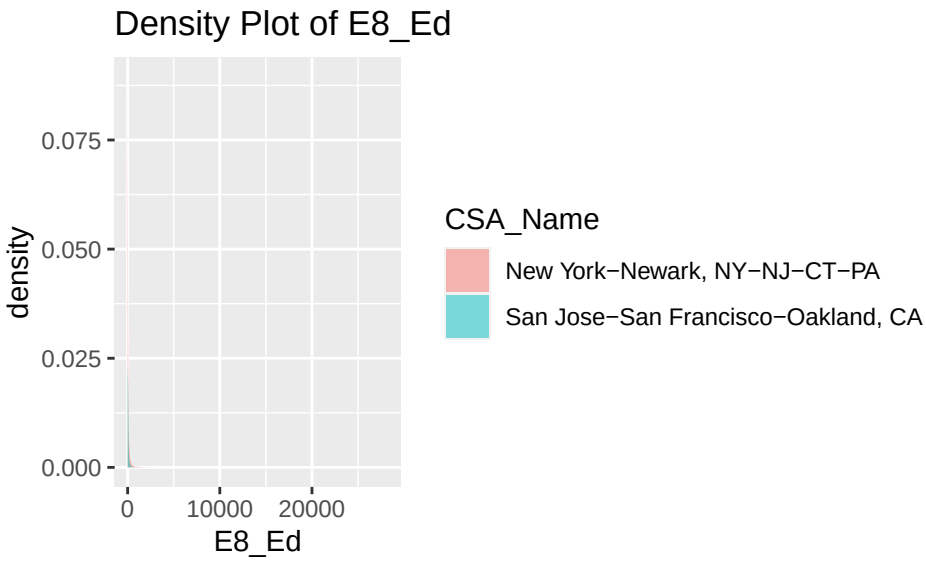

Density Plot of E8_Ret
density
0.04
0.03
0.02
0.01
0.00
0
2500
5000
7500
E8_Ret
C

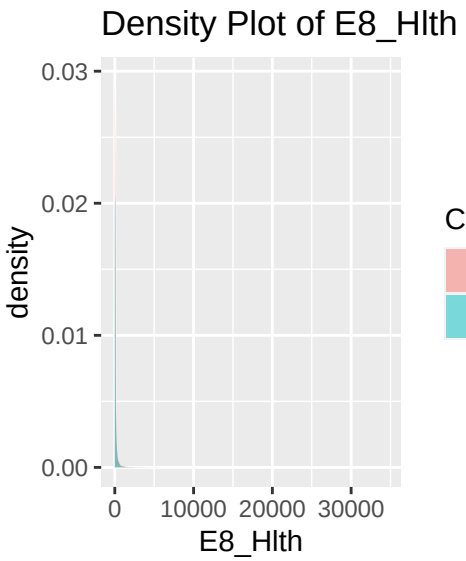

Density Plot of E8_off
density
0.075
0.050
0.025
0.000
0
10000
20000
30000
E8_off
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

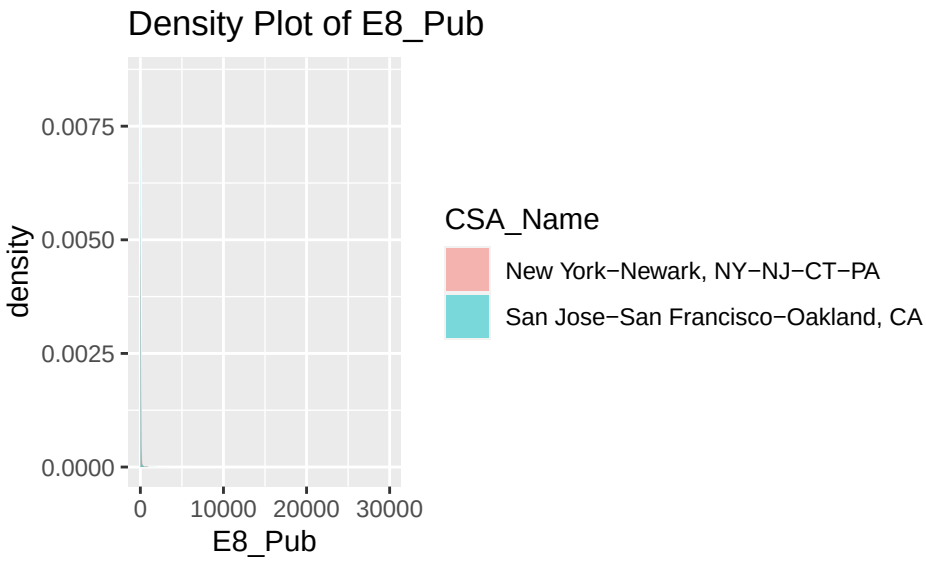

Density Plot of E8_Ind
density
0.04
0.03
0.02
0.01
0.00
0
E8_Ind

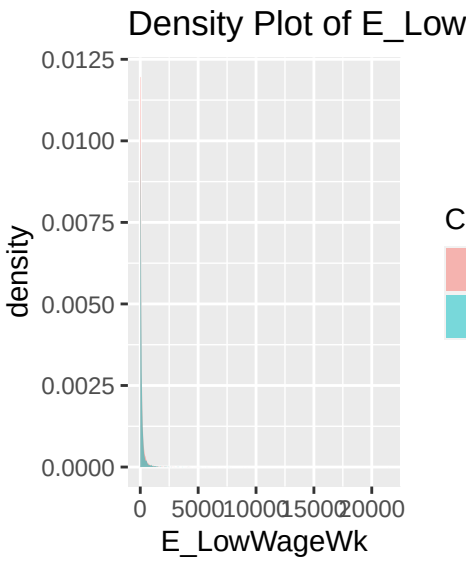

Density Plot of E8_Svc
density
0.03
0.02
0.01
0.00
0
10000
20000
30000
40000
E8_Svc
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

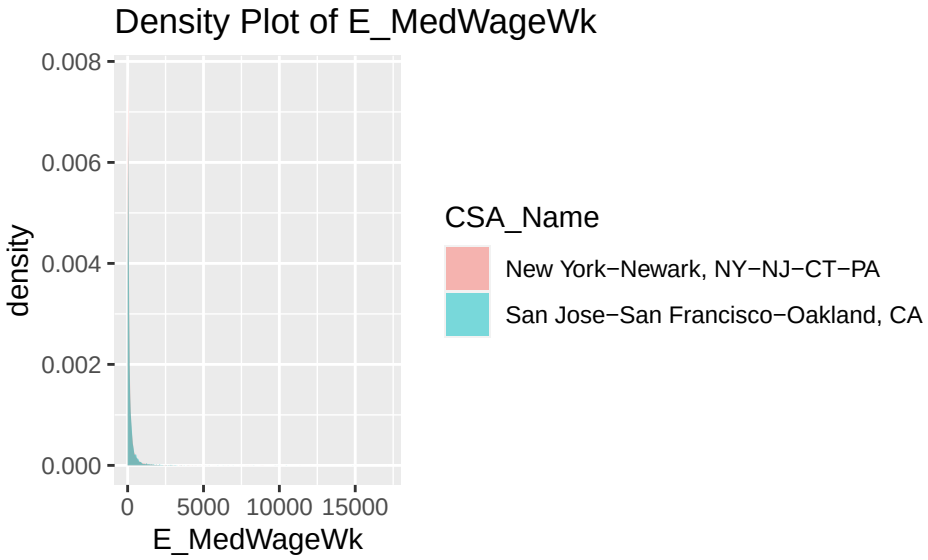

Density Plot of E8_Ent
density
0.04
0.03
0.02
0.01
0.00
0
2500
5000
7500
10000
E8_Ent

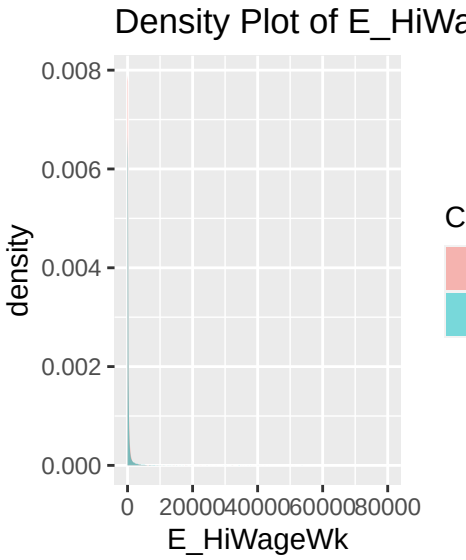

Density Plot of E8_Ed
density
0.075
0.050
0.025
0.000
0
10000
20000
E8_Ed
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

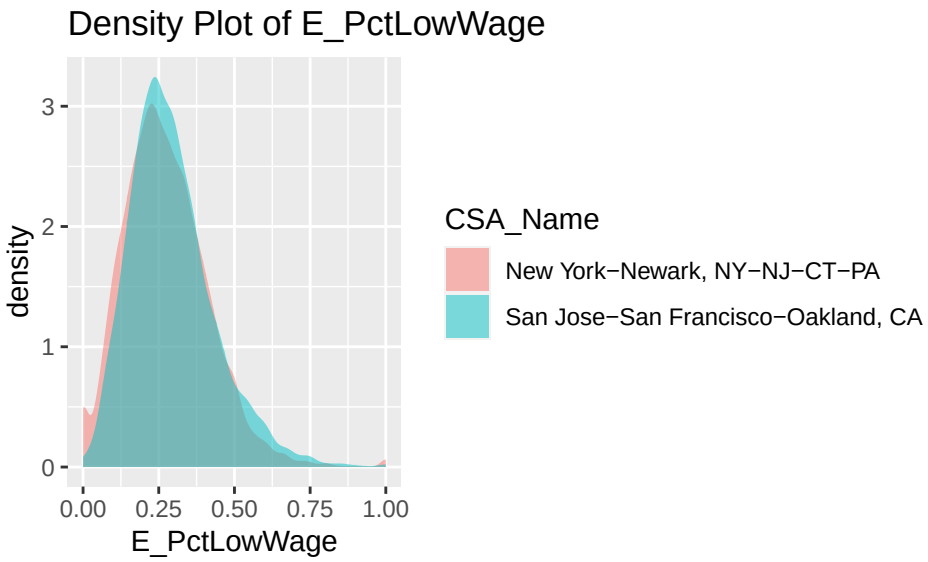

Density Plot of E8_Hlth
density
0.03
0.02
0.01
0.00
0
10000
20000
30000
E8_Hlth
C

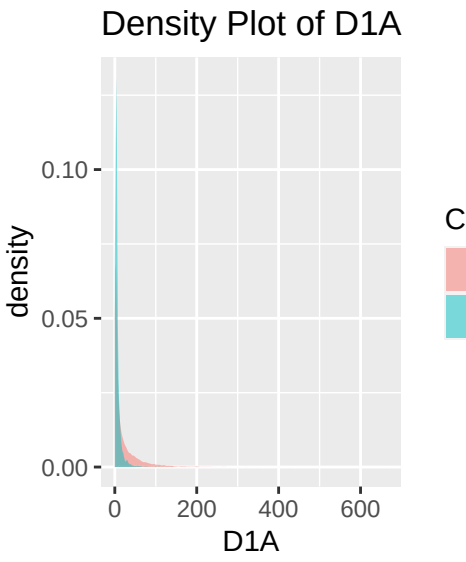

Density Plot of E8_Pub
density
0.0075
0.0050
0.0025
0.0000
0
10000
20000
30000
E8_Pub
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

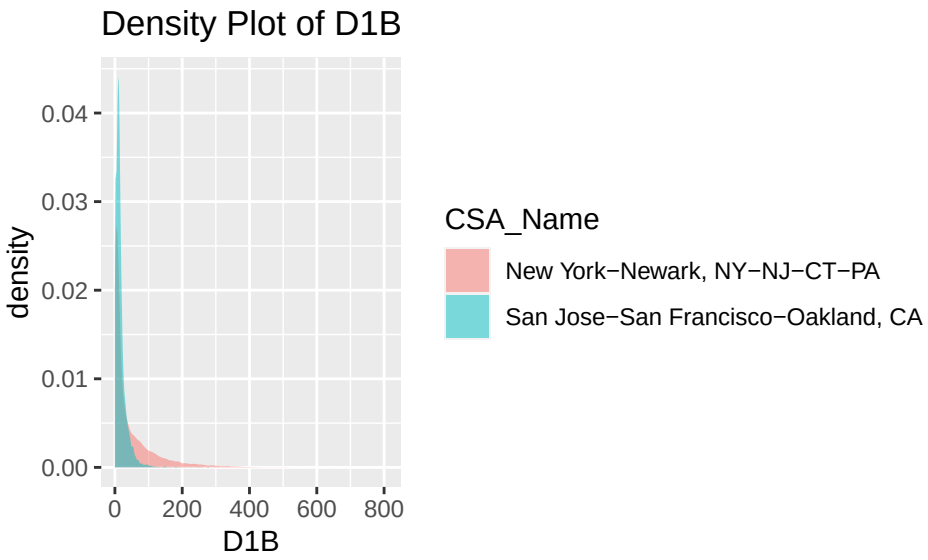

Density Plot of E_Low
density
0.0125
0.0100
0.0075
0.0050
0.0025
0.0000
0
5000
10000
15000
20000
E_LowWageWk
C

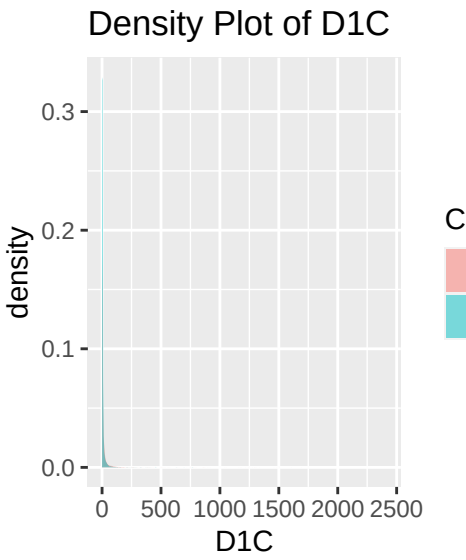

Density Plot of E_MedWageWk
density
0.008
0.006
0.004
0.002
0.000
0
5000
10000
15000
E_MedWageWk
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

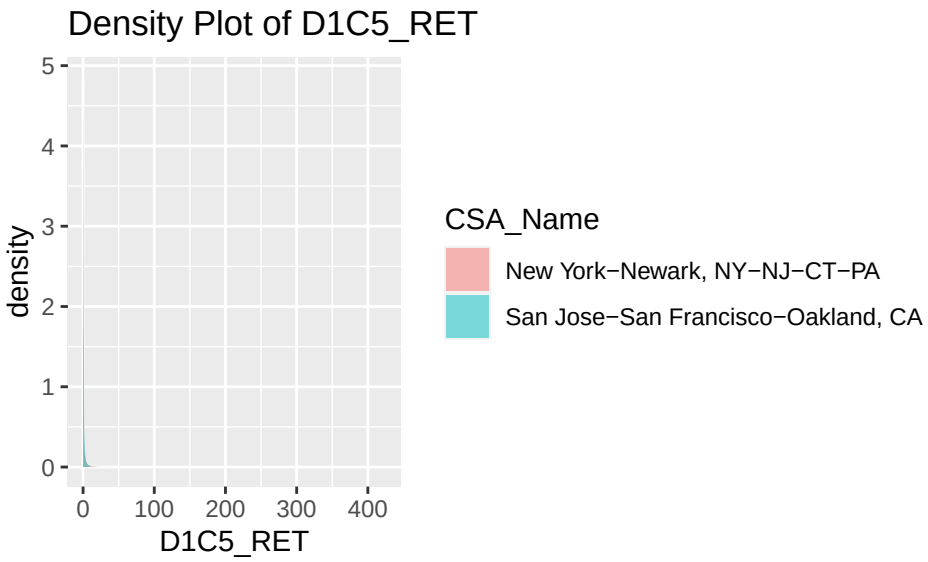

Density Plot of E_HiWa
density
0.008
0.006
0.004
0.002
0.000
0
20000
40000
60000
80000
E_HiWageWk
C


Density Plot of E_PctLowWage
density
3
2
1
0
0.00
0.25
0.50
0.75
1.00
E_PctLowWage
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

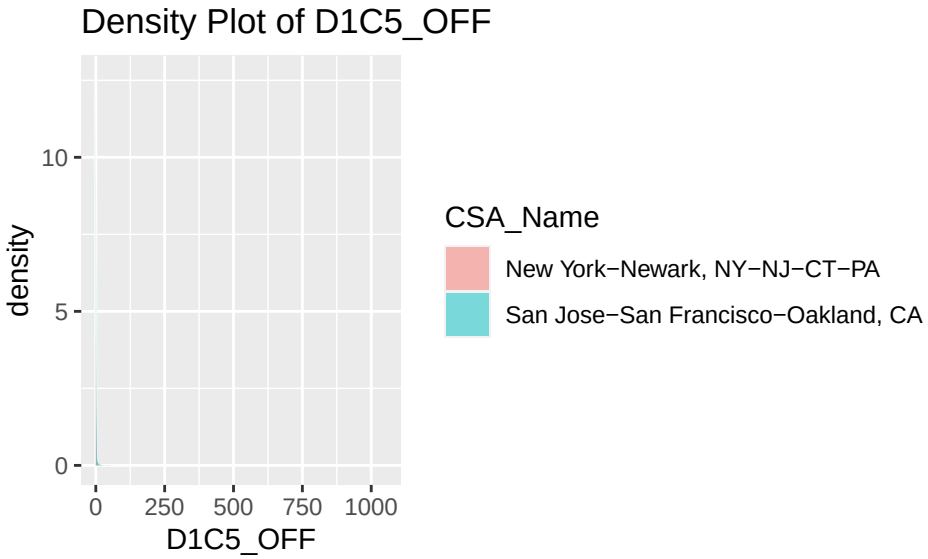

Density Plot of D1A
density
0.10
0.05
0.00
0
200
400
600
D1A
C

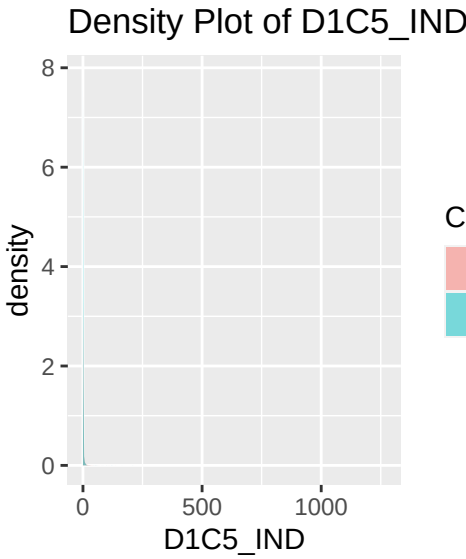


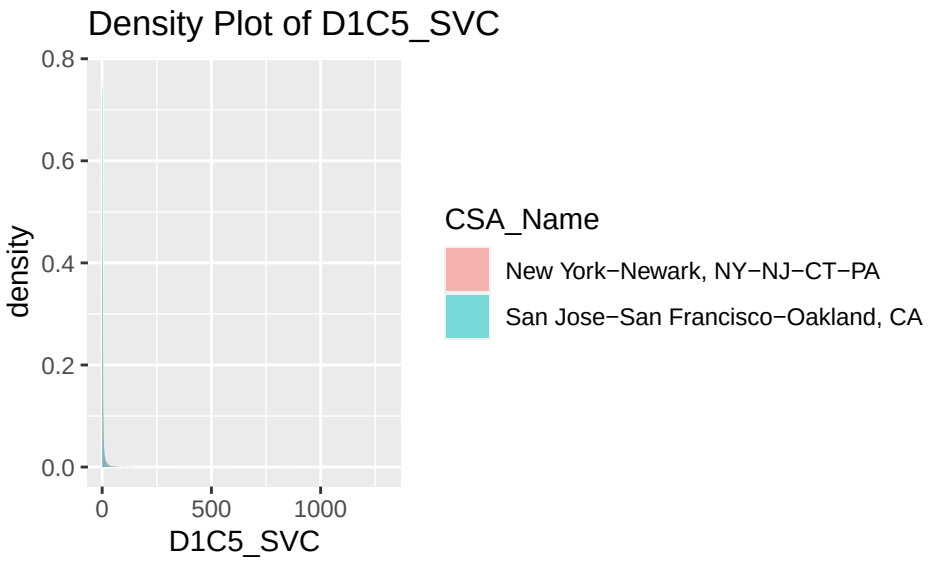


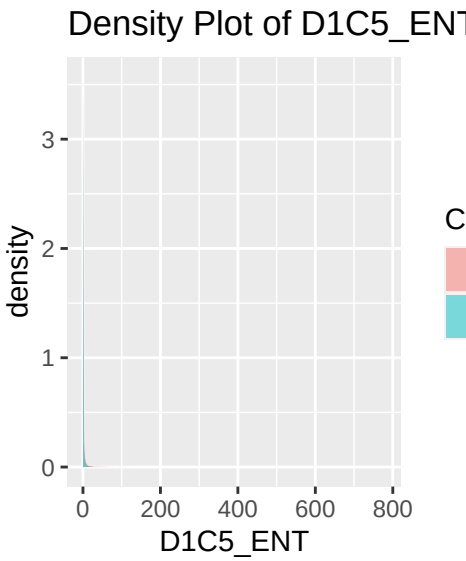


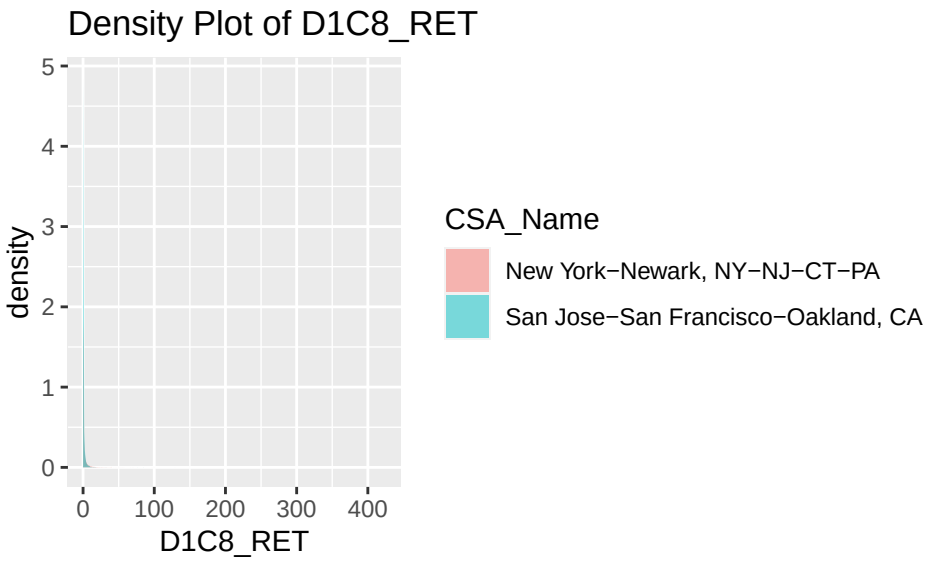

```
create_density_plots_subset(NewYork_SanFrancisco_data, 55, 75)
```

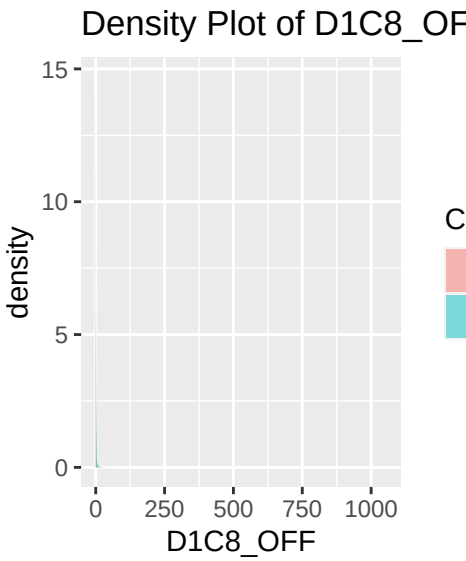

Density Plot of D1C5_OFF
density
D1C5_OFF
0
5
10
0
250
500
750
1000
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

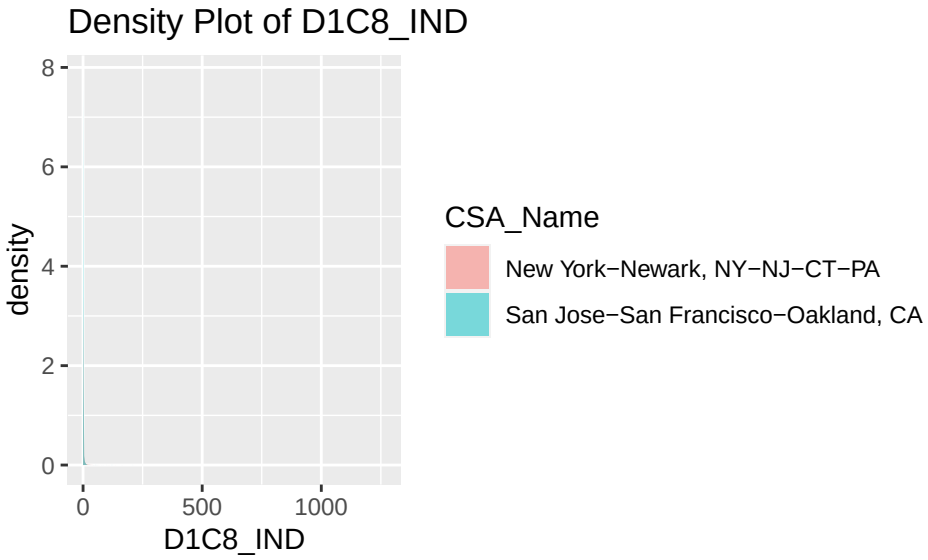

Density Plot of D1C5_IND
density
D1C5_IND
0
2
4
6
8
0
500
1000

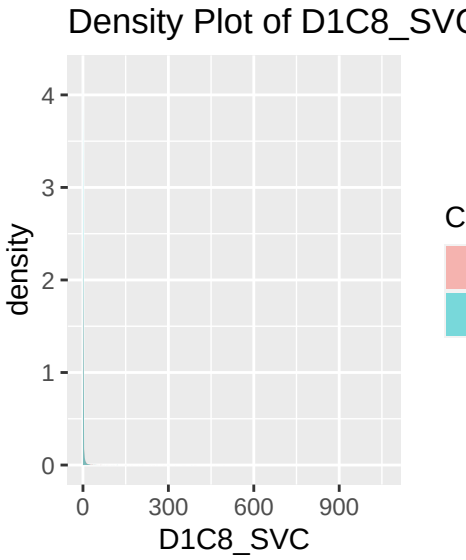

Density Plot of D1C5_SVC
density
D1C5_SVC
0.0
0.2
0.4
0.6
0.8
0
500
1000
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

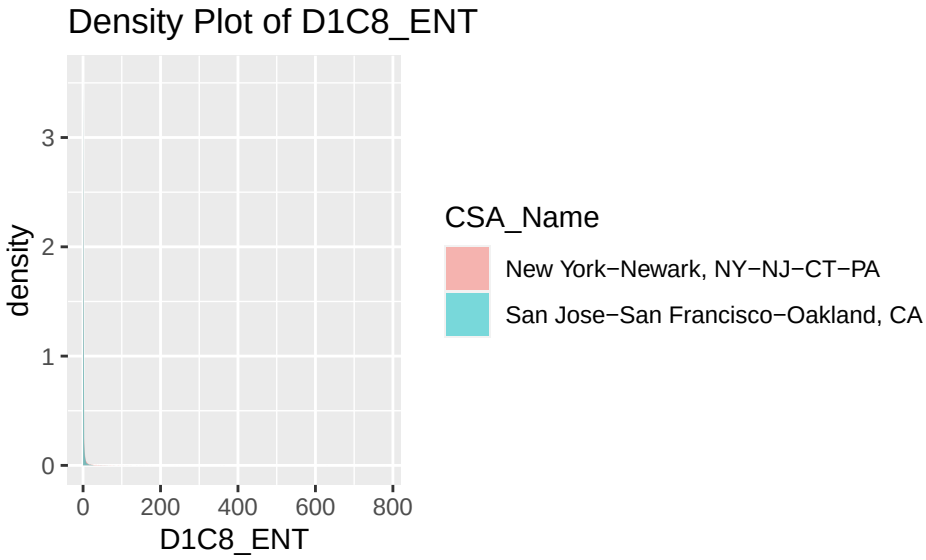

Density Plot of D1C5_ENT
density
D1C5_ENT
0
1
2
3
0
200
400
600
800

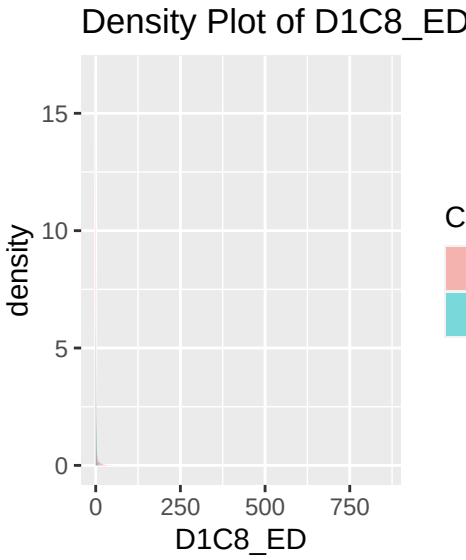

Density Plot of D1C8_RET
density
D1C8_RET
0
100
200
300
400
0
1
2
3
4
5
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

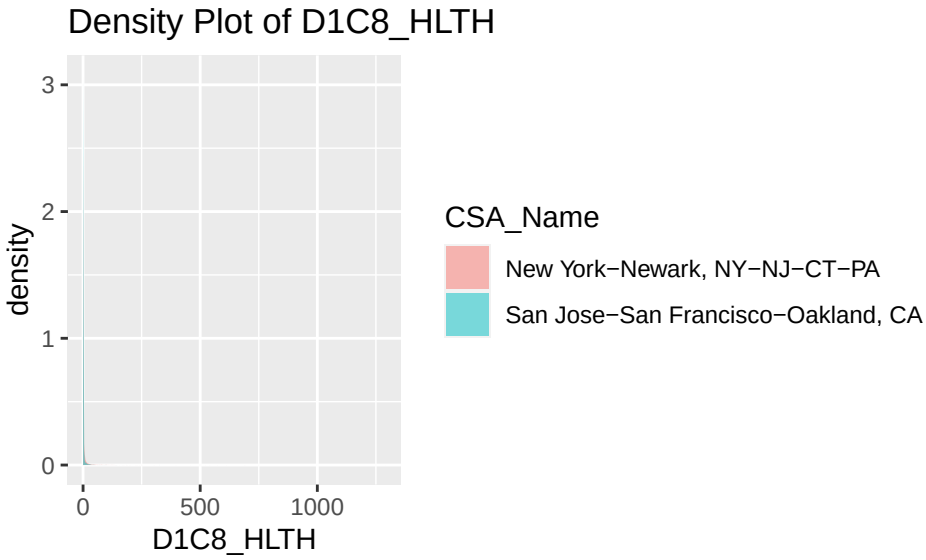

Density Plot of D1C8_OF
density
D1C8_OFF
0
250
500
750
1000
0
5
10
15
C

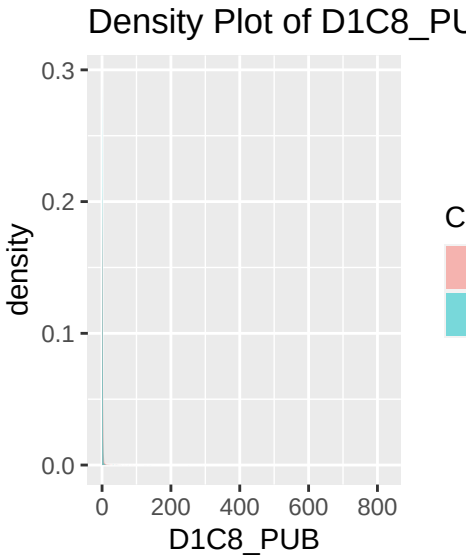

Density Plot of D1C8_IND
density
D1C8_IND
0
500
1000
0
2
4
6
8
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

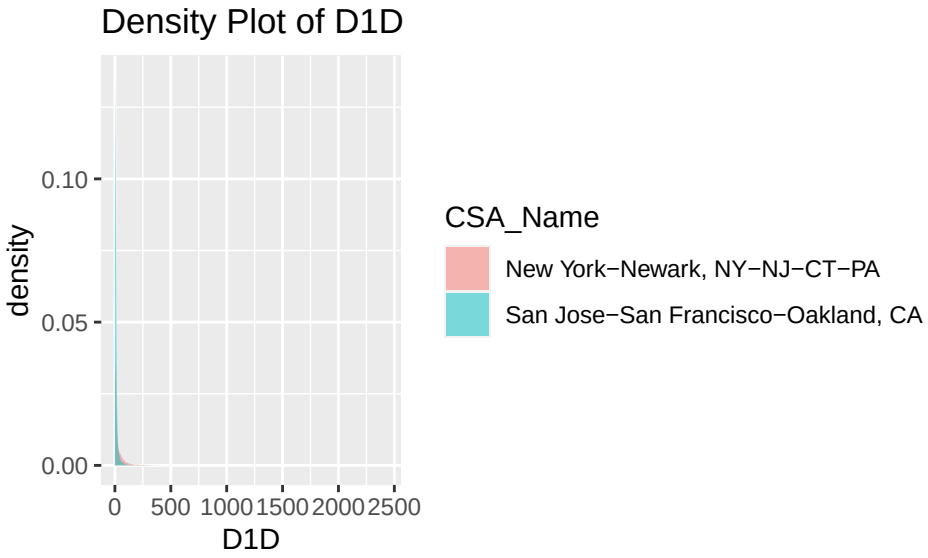

Density Plot of D1C8_SVC
density
D1C8_SVC
0
300
600
900
0
1
2
3
4
C

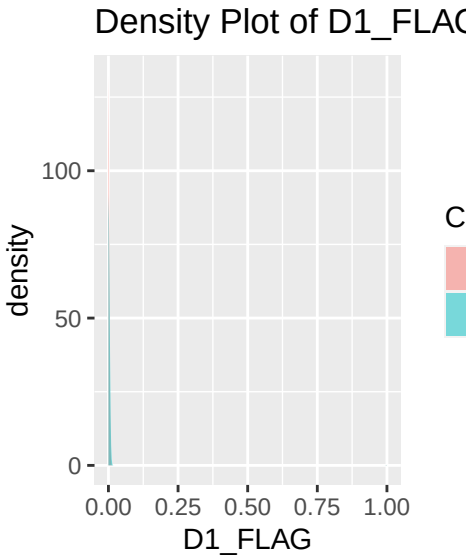

Density Plot of D1C8_ENT
density
D1C8_ENT
0
1
2
3
0
200
400
600
800
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

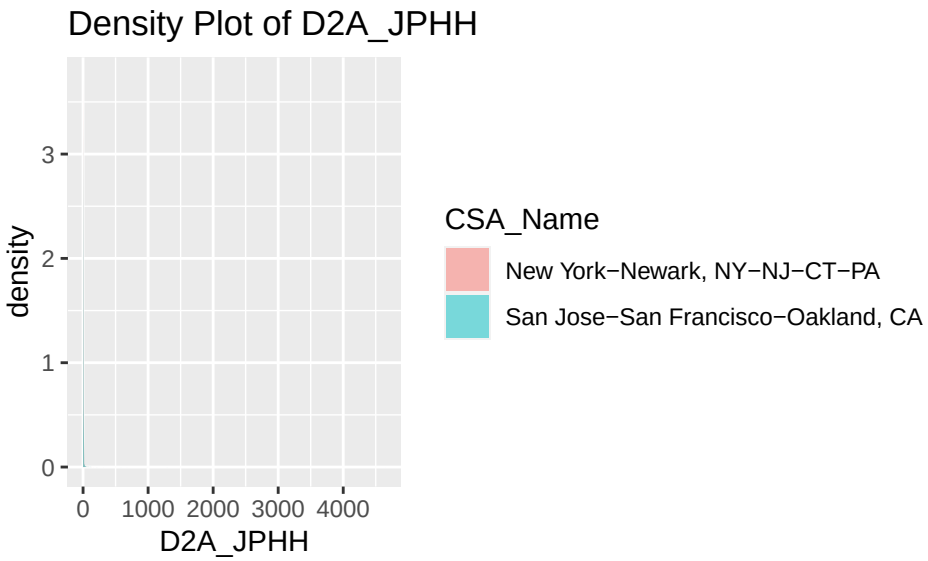

Density Plot of D1C8_ED
density
D1C8_ED
0
5
10
15
0
250
500
750

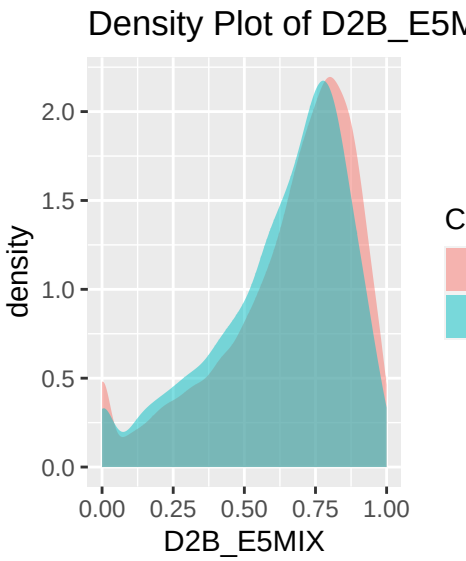

Density Plot of D1C8_HLTH
density
D1C8_HLTH
0
1
2
3
0
500
1000
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

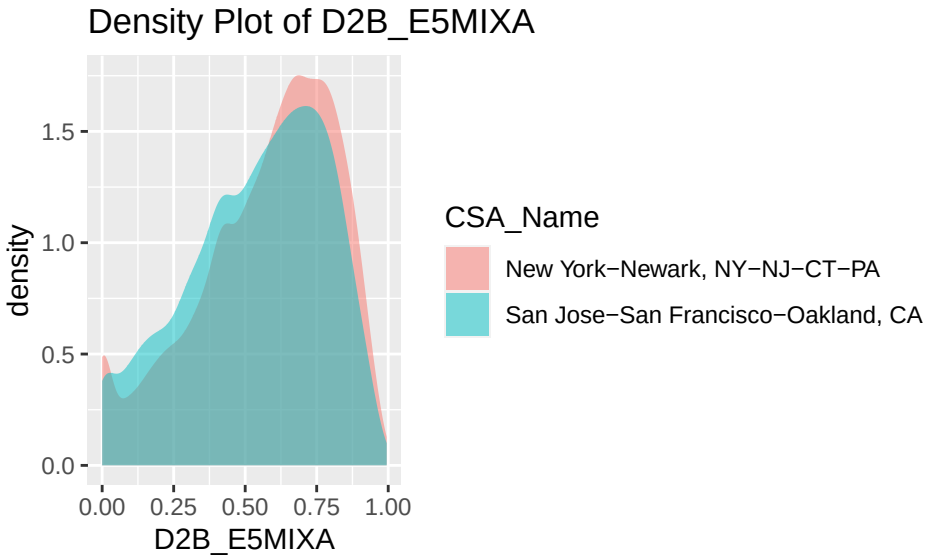

Density Plot of D1C8_PU
density
D1C8_PUB
0.0
0.1
0.2
0.3
0
200
400
600
800

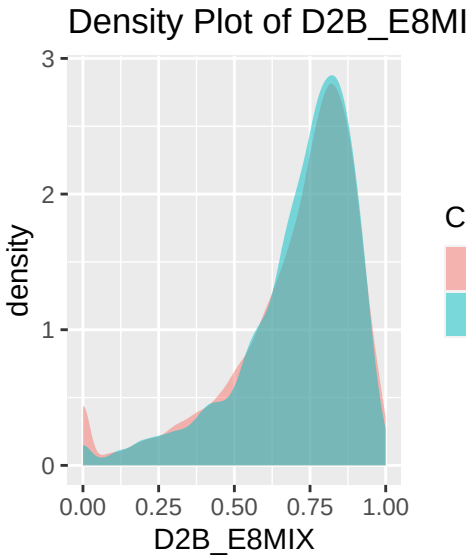

Density Plot of D1D
density
0.10
0.05
0.00
0
500
1000
1500
2000
2500
D1D
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

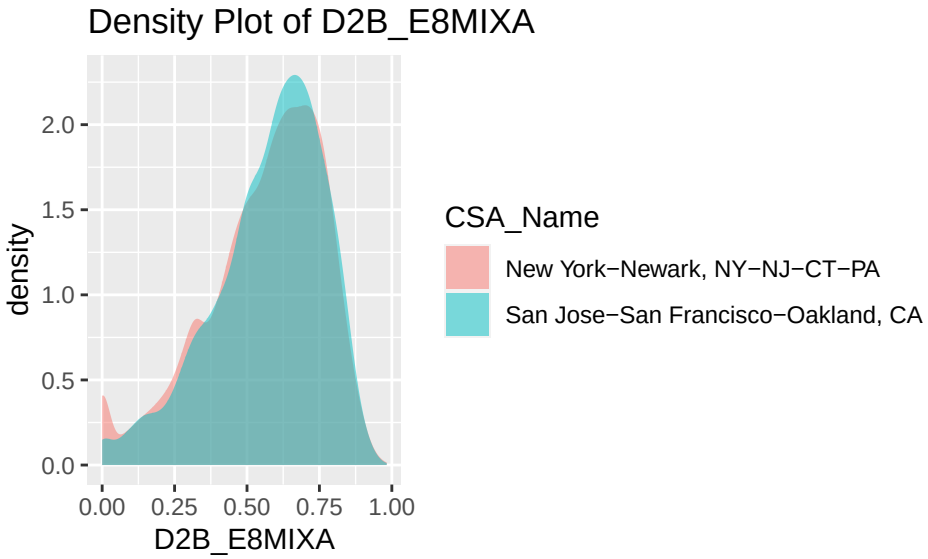

Density Plot of D1_FLAG
density
100
50
0
0.00
0.25
0.50
0.75
1.00
D1_FLAG

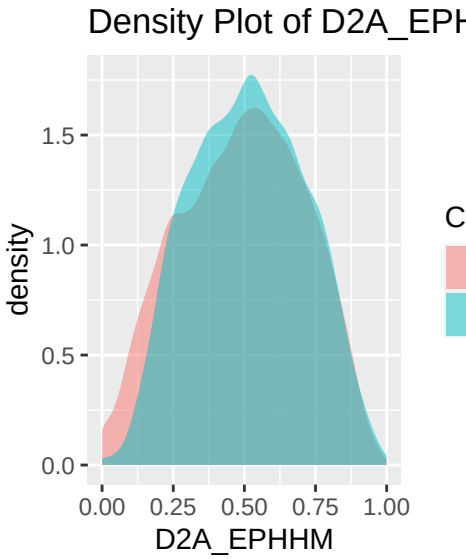

Density Plot of D2A_JPHH
density
3
2
1
0
0
1000
2000
3000
4000
D2A_JPHH
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

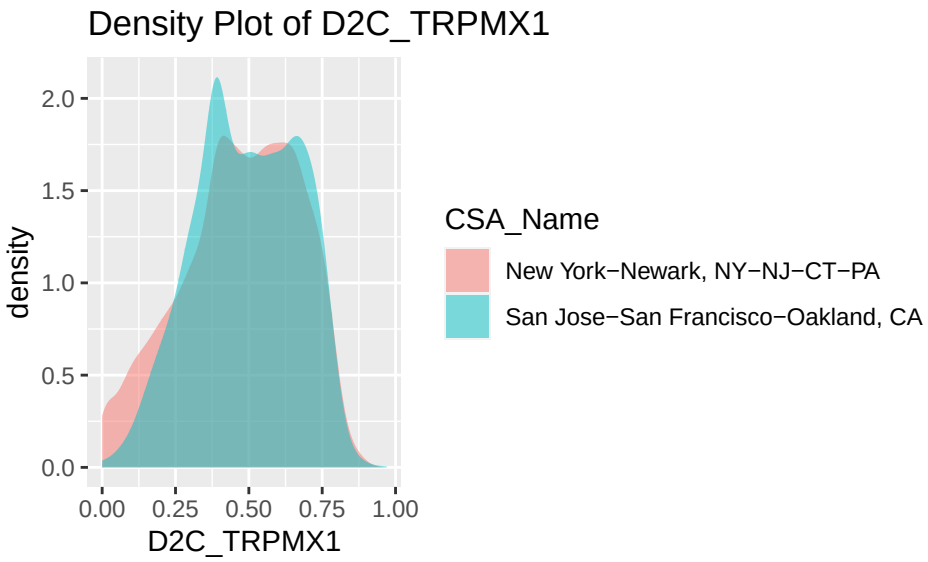

Density Plot of D2B_E5M
density
2.0
1.5
1.0
0.5
0.0
0.00
0.25
0.50
0.75
1.00
D2B_E5MIX


Density Plot of D2B_E5MIXA
density
D2B_E5MIXA
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

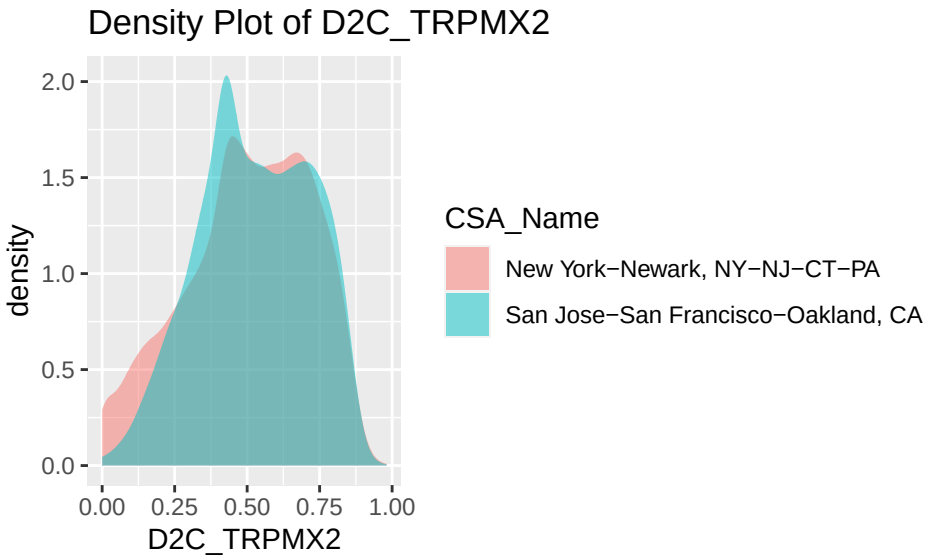

Density Plot of D2B_E8MI
density
D2B_E8MIX

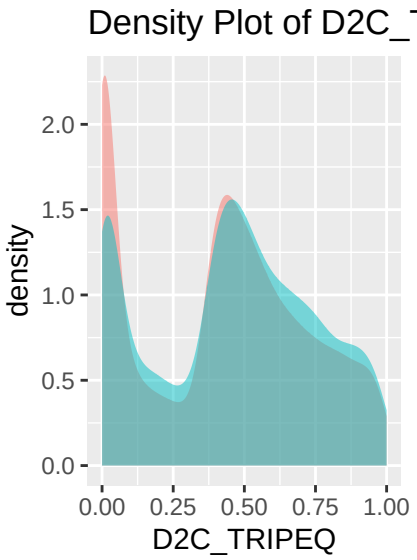

Density Plot of D2B_E8MIXA
density
D2B_E8MIXA
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

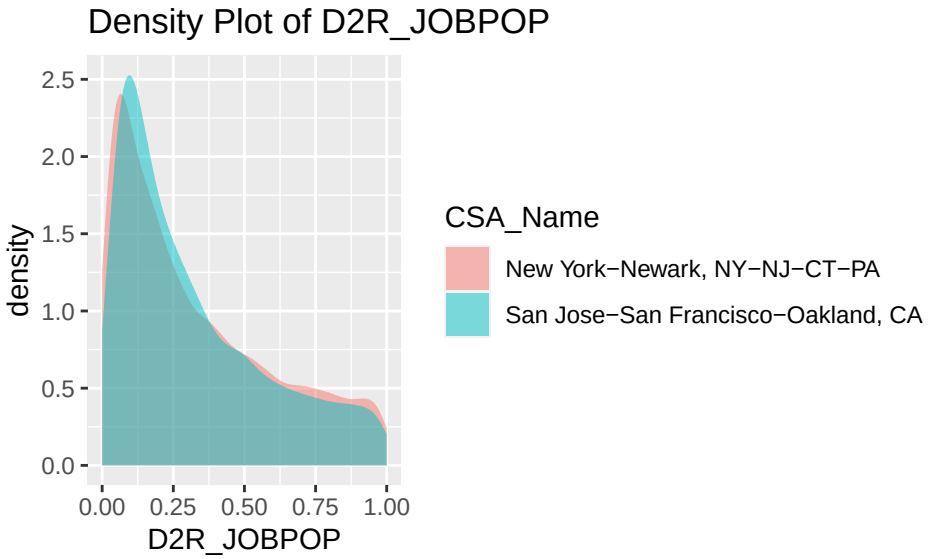

Density Plot of D2A_EPH
density
D2A_EPHHM

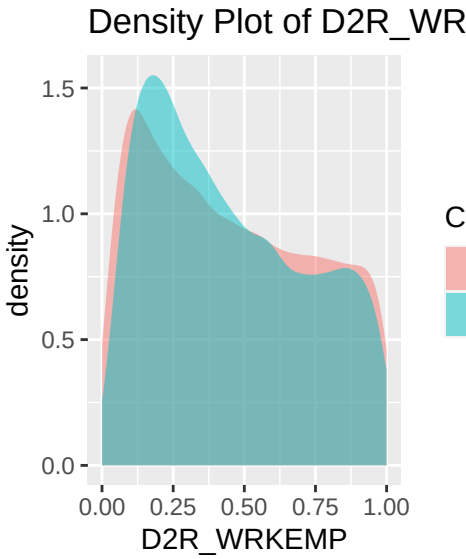


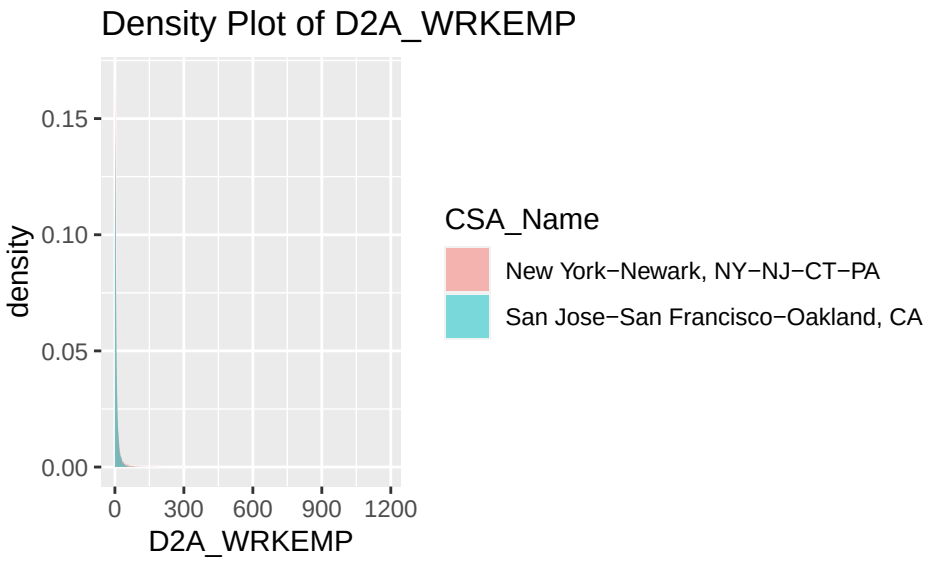

```
create_density_plots_subset(NewYork_SanFrancisco_data, 76, 96)
```

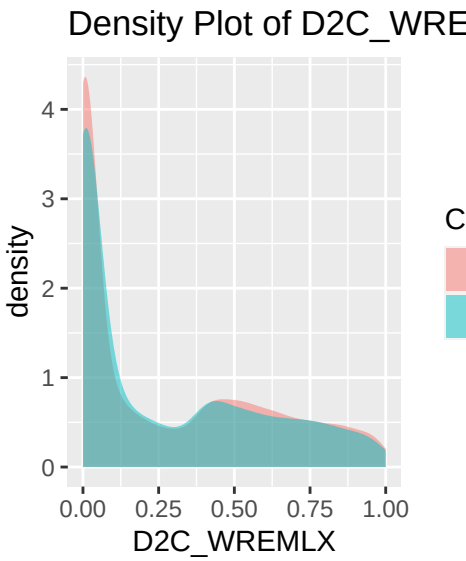


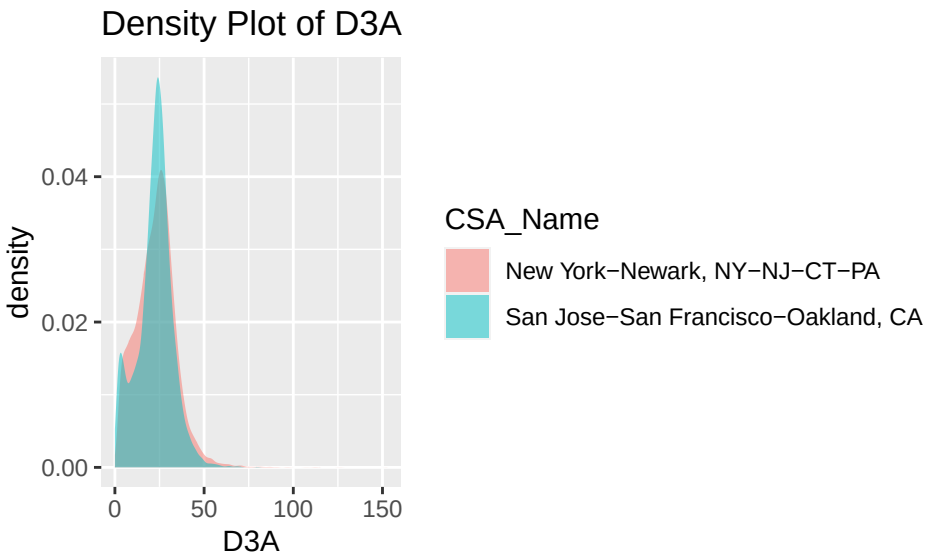


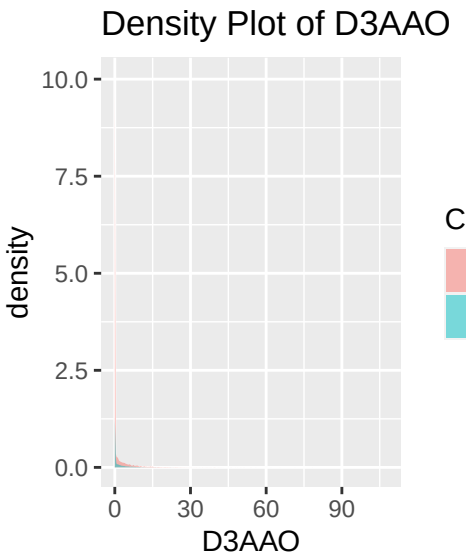

Density Plot of D2R_JOBPOP
density
D2R_JOBPOP
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

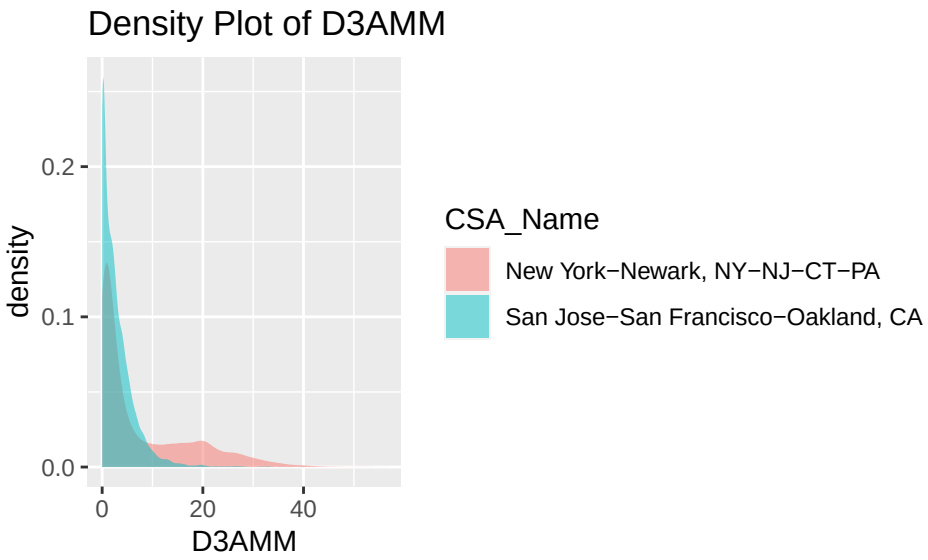

Density Plot of D2R_WR
density
D2R_WRKEMP

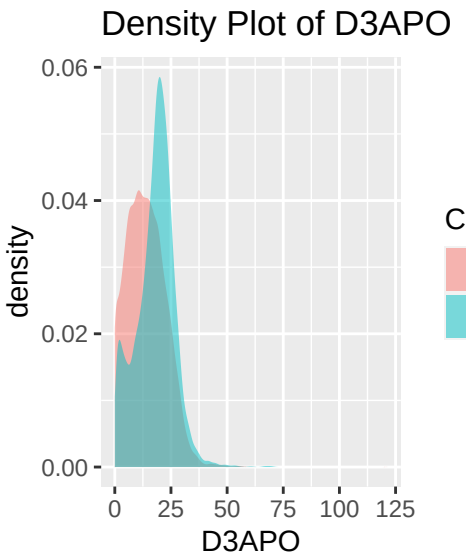

Density Plot of D2A_WRKEMP
density
D2A_WRKEMP
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

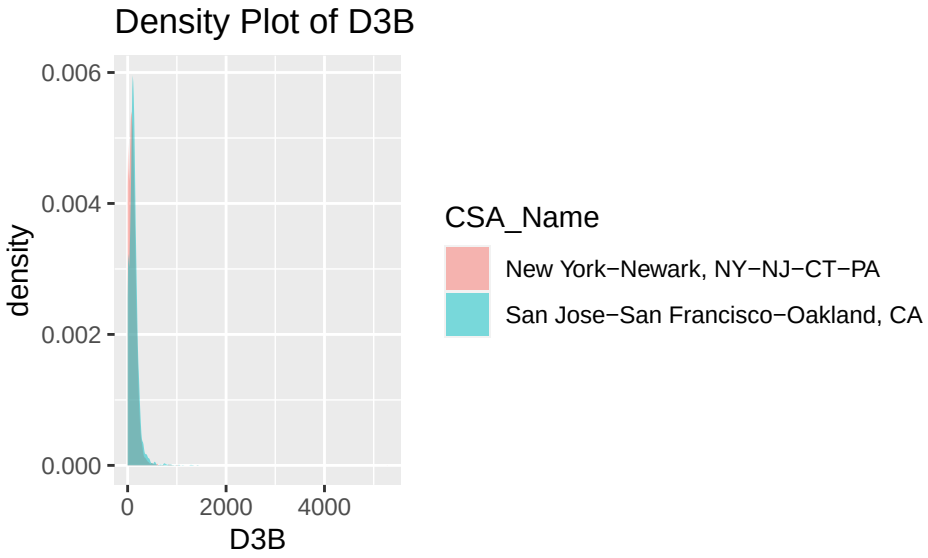

Density Plot of D2C_WRE
density
D2C_WREMLX

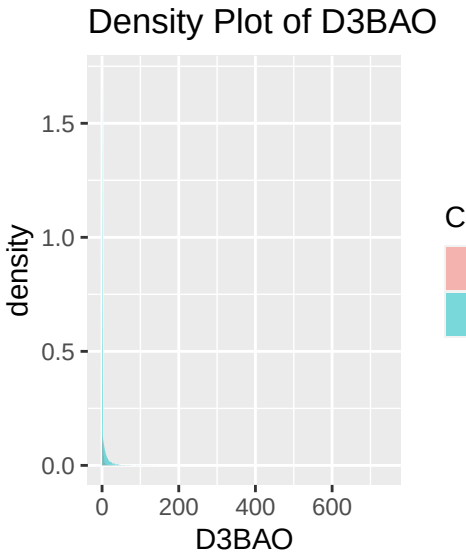

Density Plot of D3A
density
0.04
0.02
0.00
0
50
100
150
D3A
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

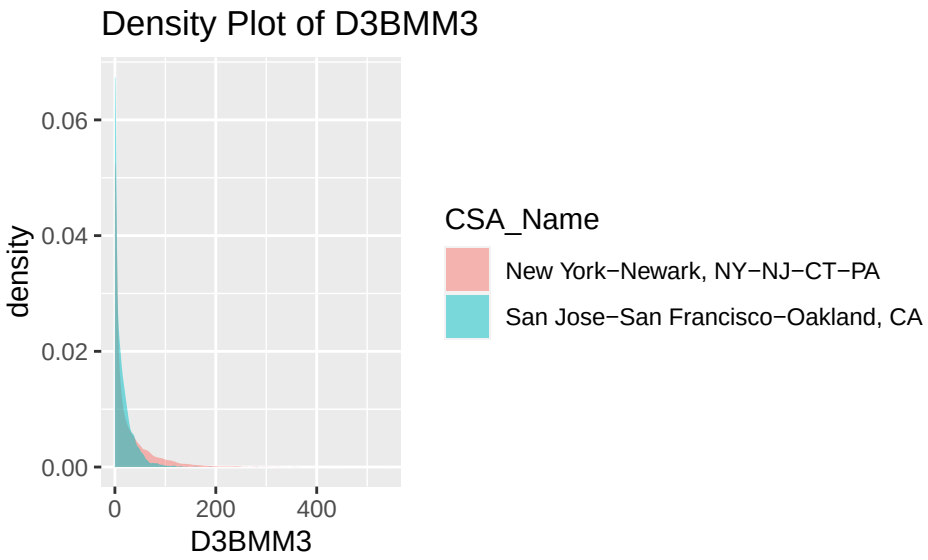

Density Plot of D3AAO
density
10.0
7.5
5.0
2.5
0.0
0
30
60
90
D3AAO

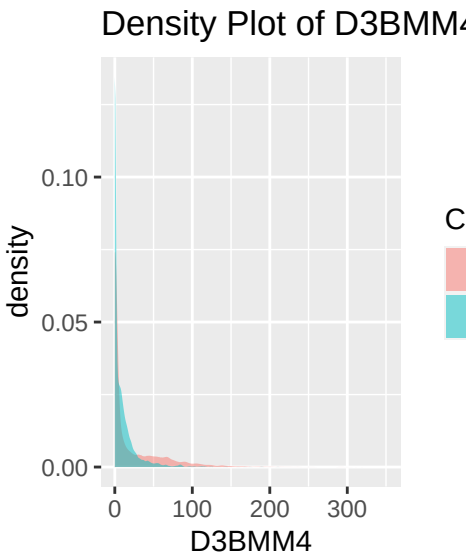

Density Plot of D3AMM
density
0.2
0.1
0.0
0
20
40
D3AMM
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

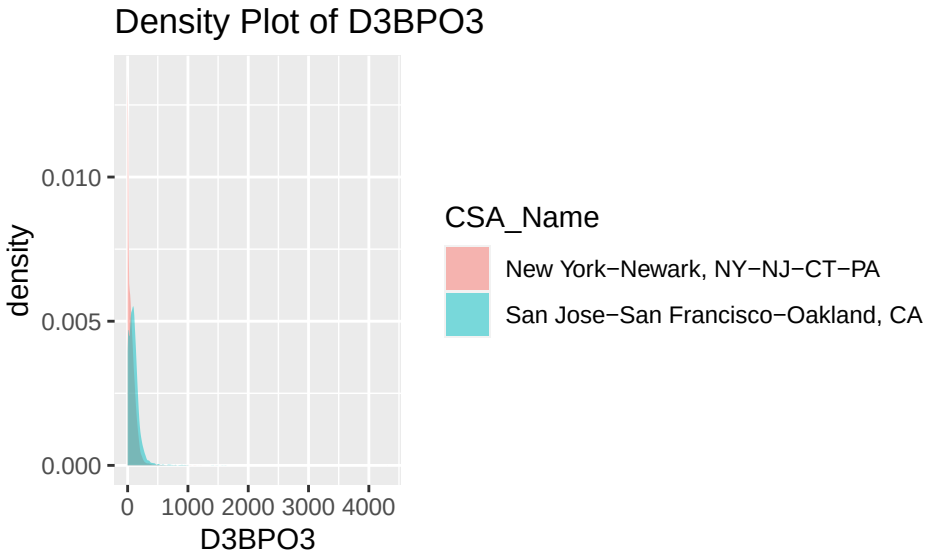

Density Plot of D3APO
density
0.06
0.04
0.02
0.00
0
25
50
75
100
125
D3APO

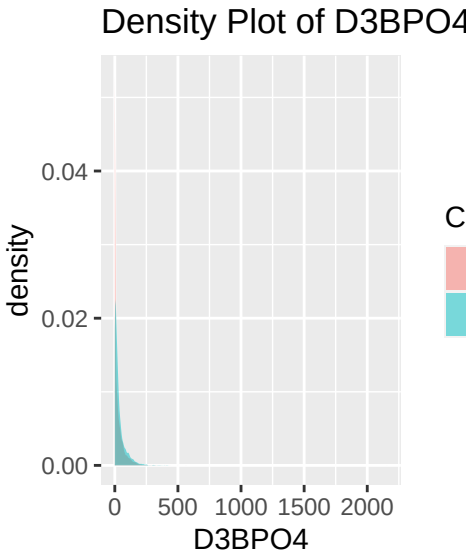

Density Plot of D3B
density
0.006
0.004
0.002
0.000
0
2000
4000
D3B
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

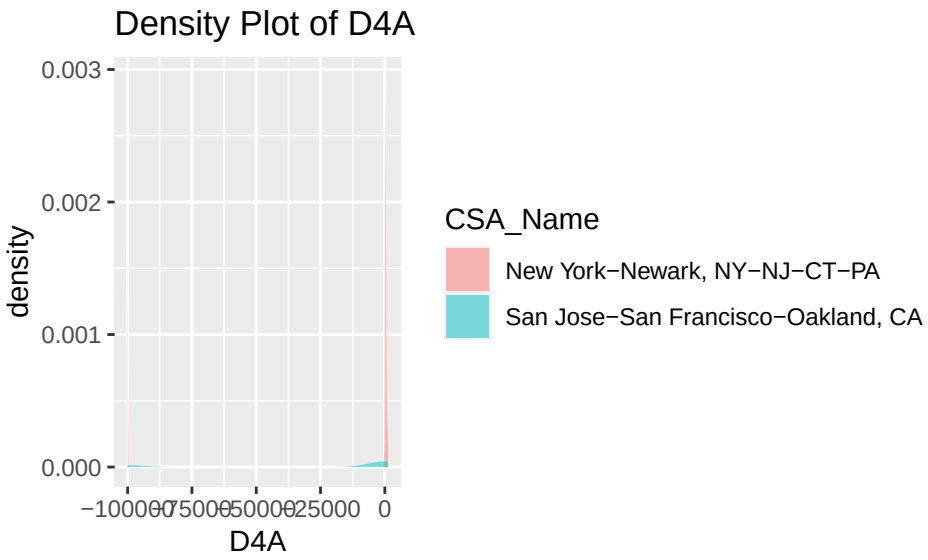

Density Plot of D3BAO
density
1.5
1.0
0.5
0.0
0
200
400
600
D3BAO

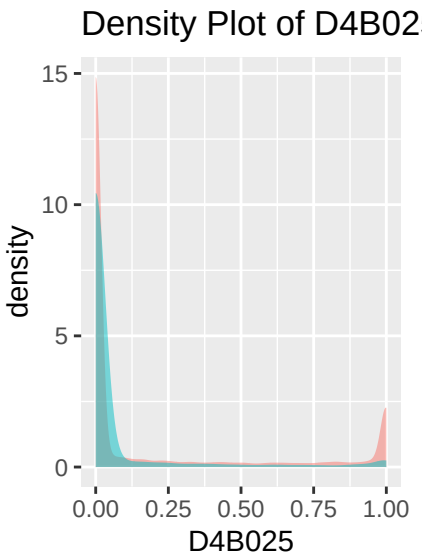

Density Plot of D3BMM3
density
0.06
0.04
0.02
0.00
0
200
400
D3BMM3
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

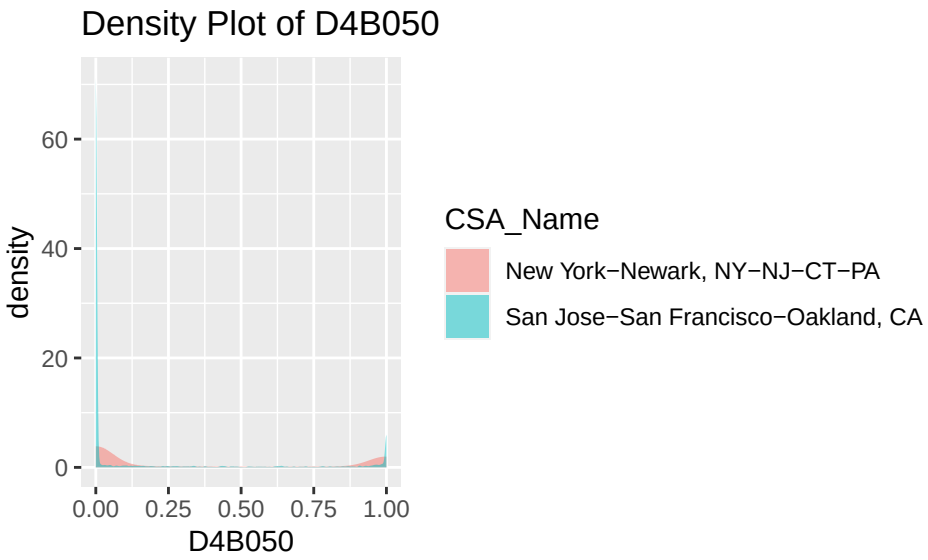

Density Plot of D3BMM4
density
0.10
0.05
0.00
0
100
200
300
D3BMM4

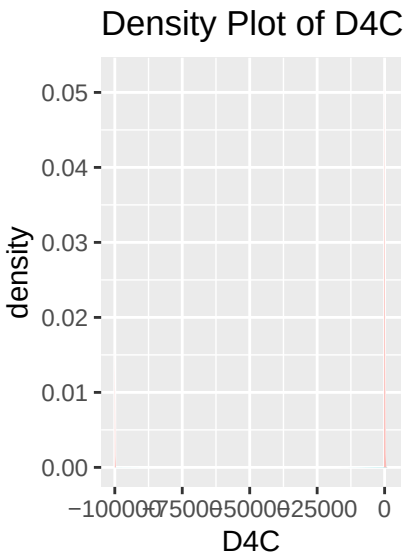

Density Plot of D3BPO3
density
0.010
0.005
0.000
0
1000
2000
3000
4000
D3BPO3
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

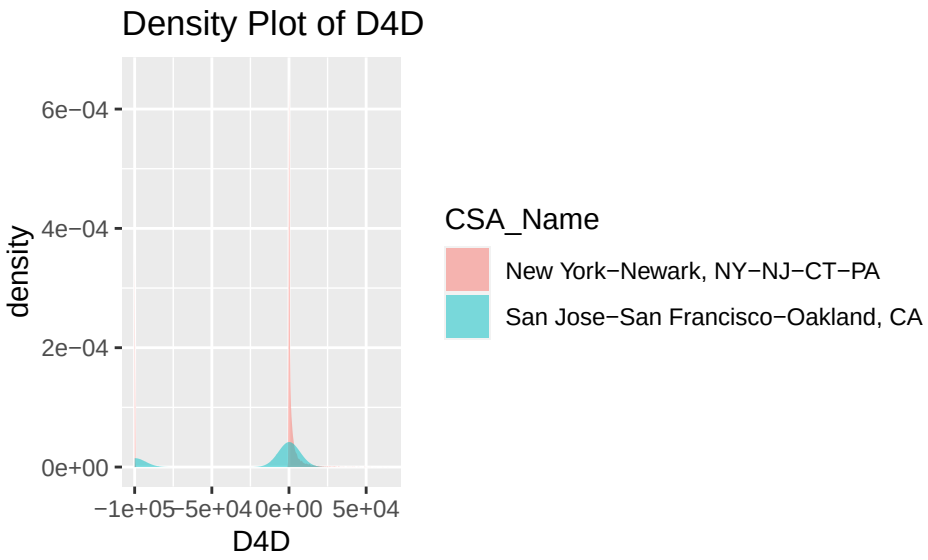

Density Plot of D3BPO4
density
0.04
0.02
0.00
0
500
1000
1500
2000
D3BPO4


Density Plot of D4A
density
0.003
0.002
0.001
0.000
−100000
−75000
−50000
−25000
0
D4A
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

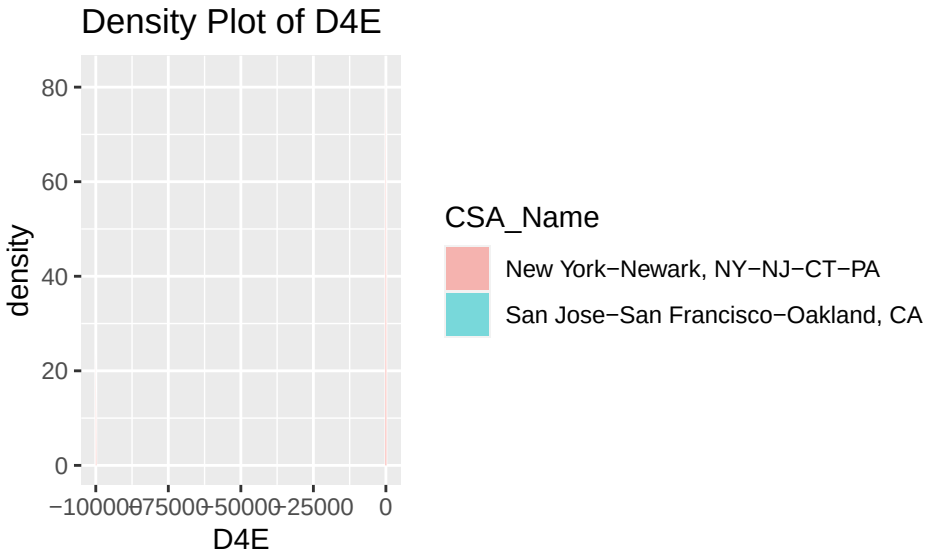

Density Plot of D4B025
density
15
10
5
0
0.00
0.25
0.50
0.75
1.00
D4B025

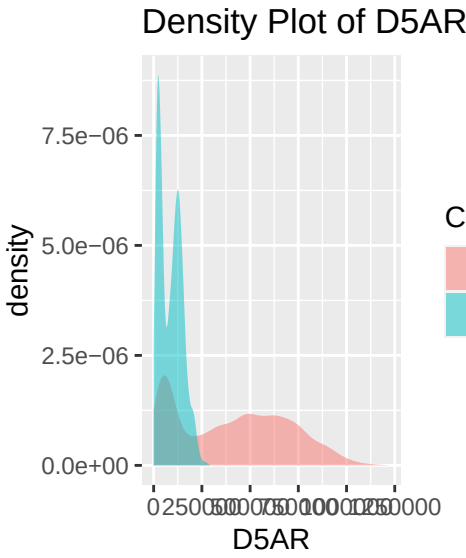


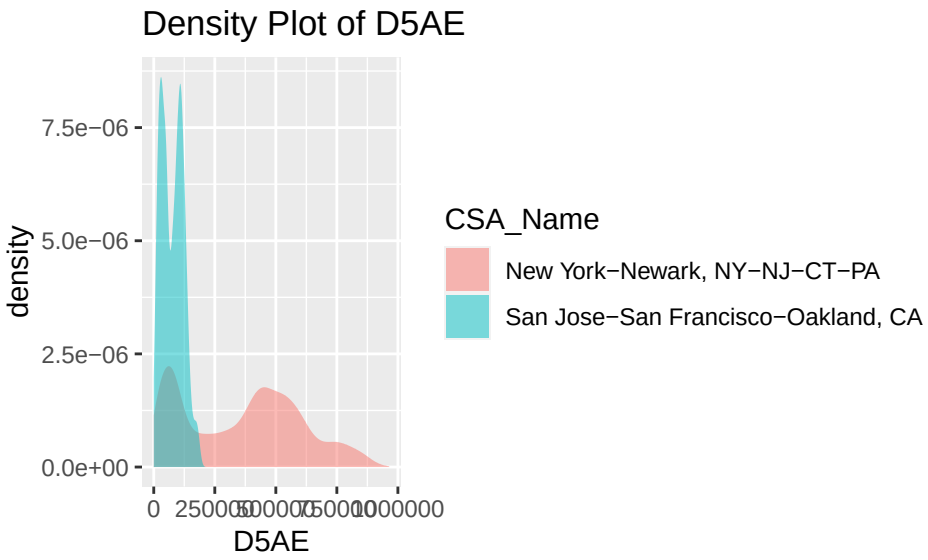


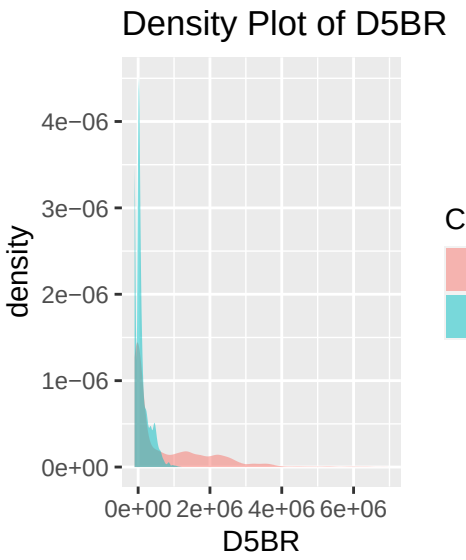


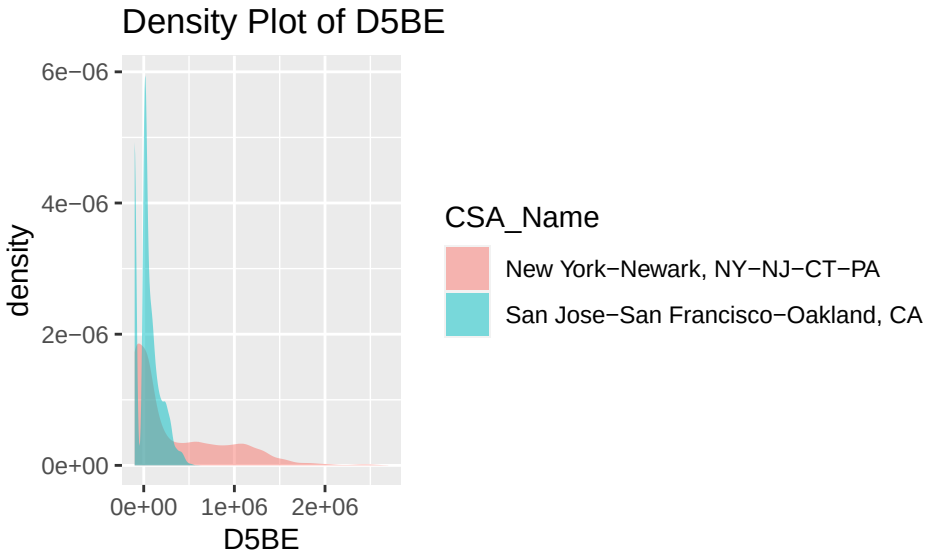

```
create_density_plots_subset(NewYork_SanFrancisco_data, 97, 118)
```

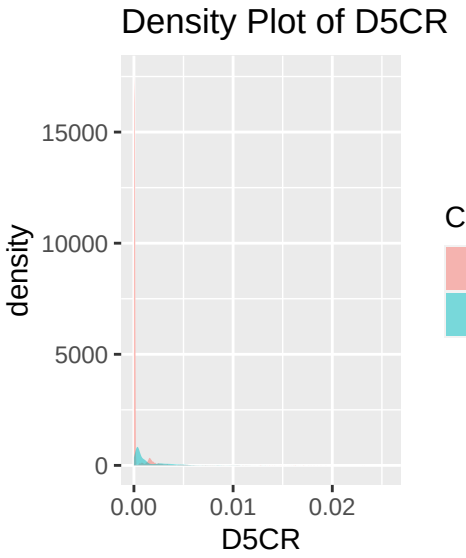

Density Plot of D4E
density
80
60
40
20
0
−100000
−75000
−50000
−25000
0
D4E
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

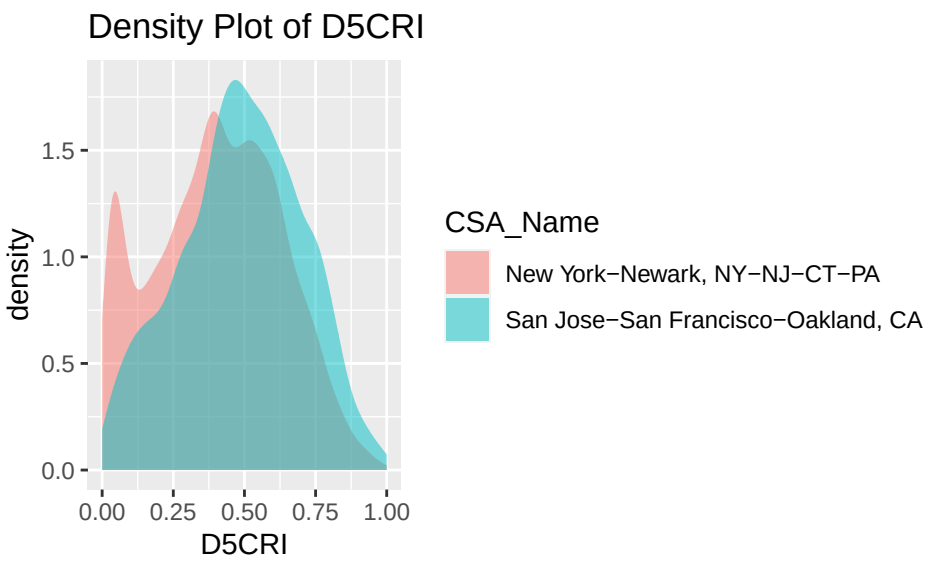

Density Plot of D5AR
density
7.5e−06
5.0e−06
2.5e−06
0.0e+00
D5AR

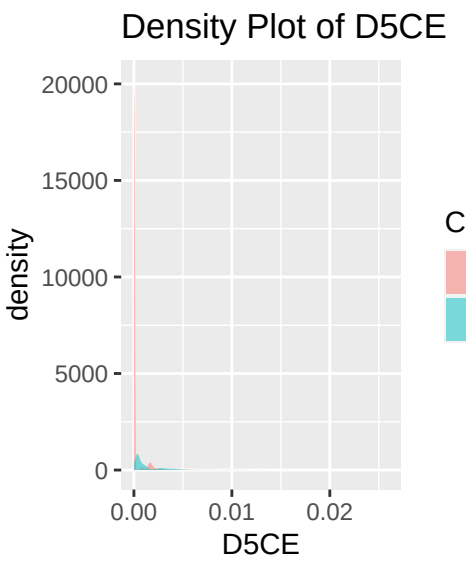

Density Plot of D5AE
density
7.5e−06
5.0e−06
2.5e−06
0.0e+00
0
D5AE
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

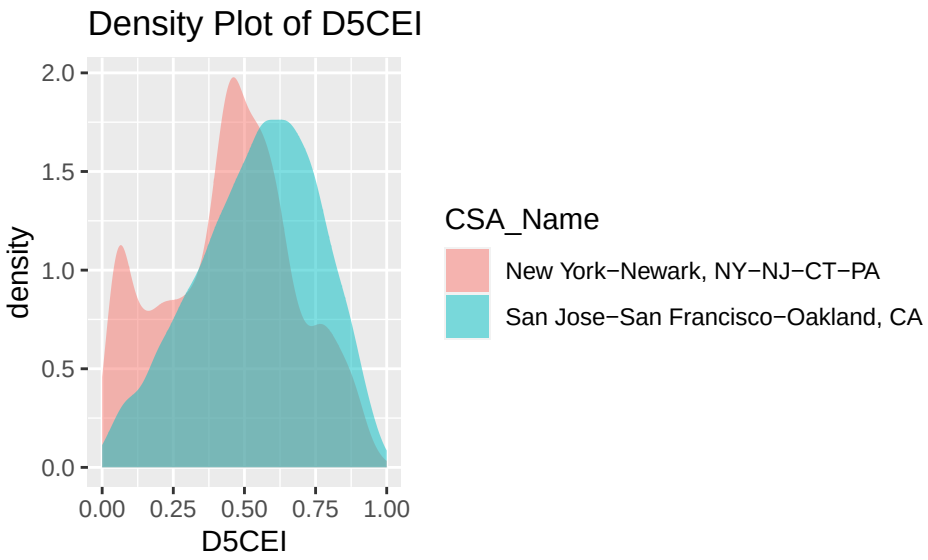

Density Plot of D5BR
density
4e−06
3e−06
2e−06
1e−06
0e+00
0e+00
2e+06
4e+06
6e+06
D5BR

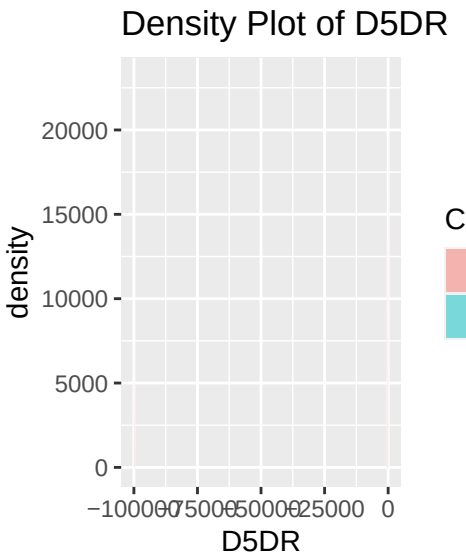

Density Plot of D5BE
6e−06
4e−06
2e−06
0e+00
density
0e+00
1e+06
2e+06
D5BE
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

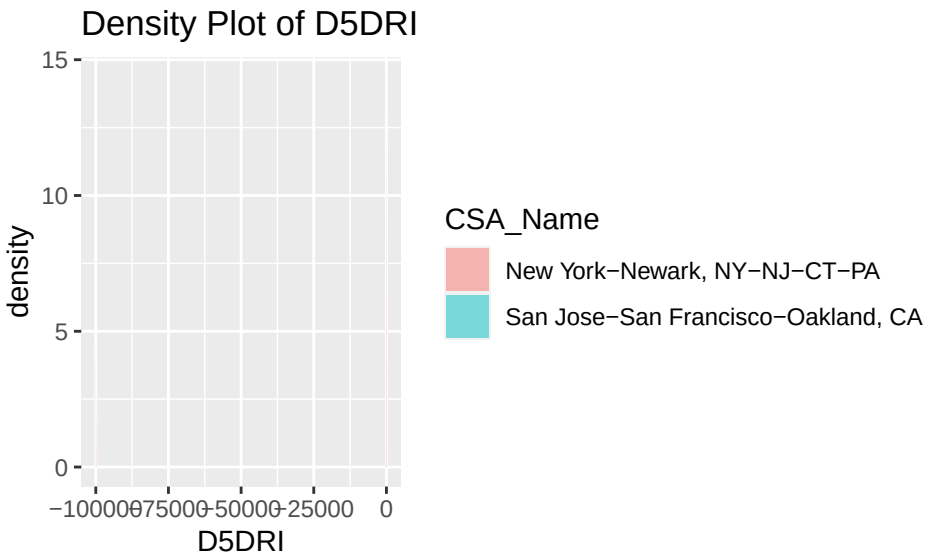

Density Plot of D5CR
15000
10000
5000
0
density
0.00
0.01
0.02
D5CR
C

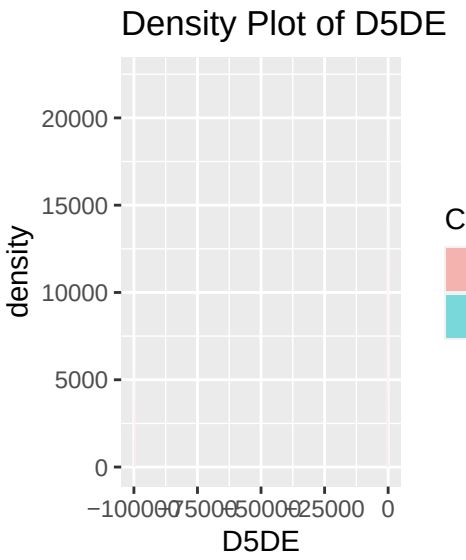

Density Plot of D5CRI
1.5
1.0
0.5
0.0
density
0.00
0.25
0.50
0.75
1.00
D5CRI
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

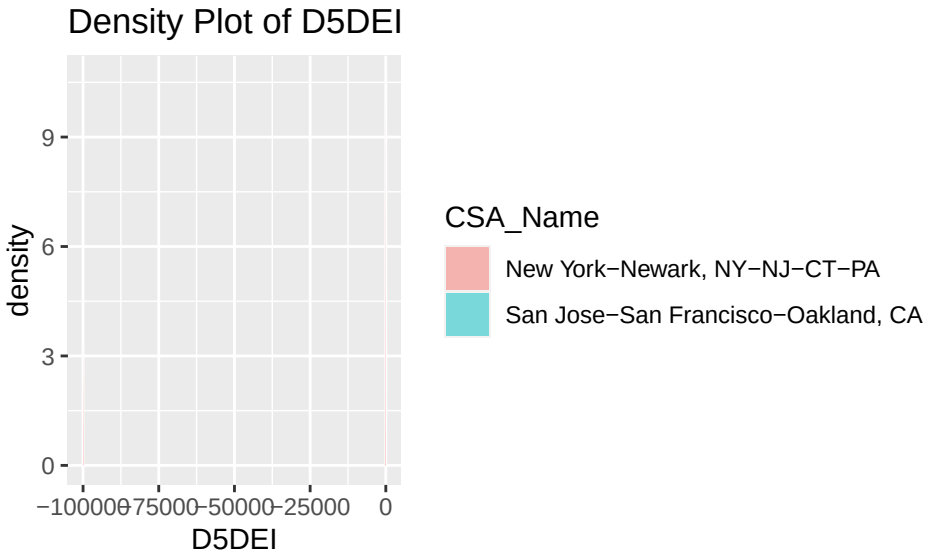

Density Plot of D5CE
20000
15000
10000
5000
0
density
0.00
0.01
0.02
D5CE
C

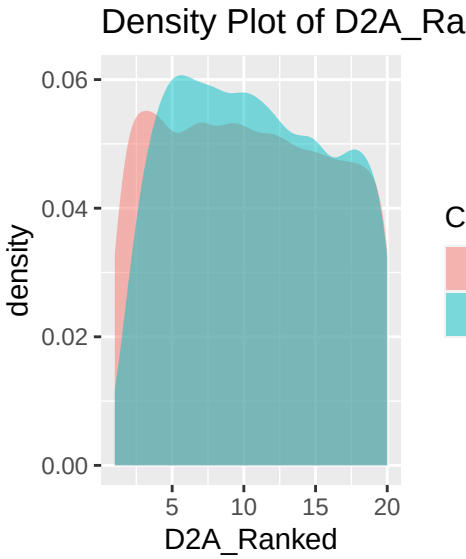

Density Plot of D5CEI
density
D5CEI
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

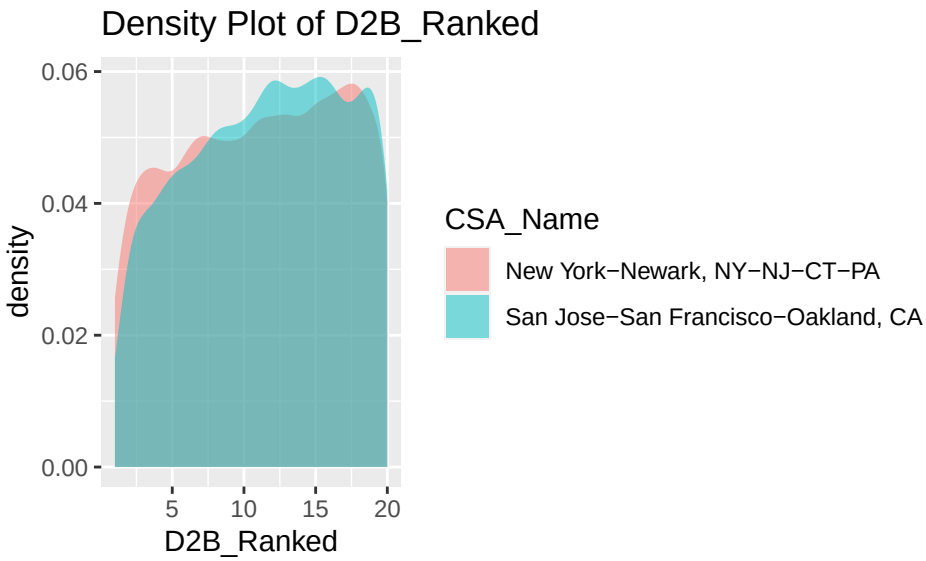

Density Plot of D5DR
density
D5DR

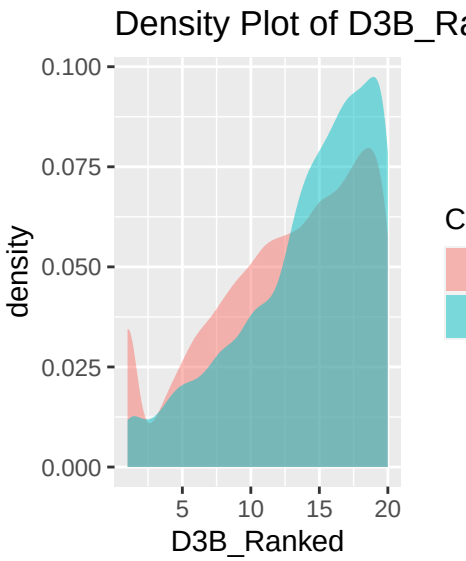

Density Plot of D5DRI
density
D5DRI
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

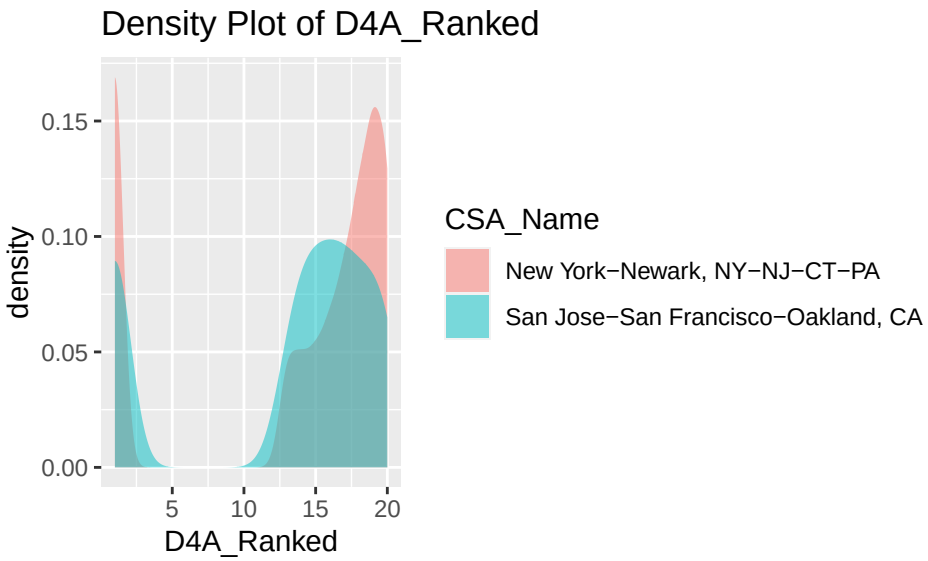

Density Plot of D5DE
density
D5DE

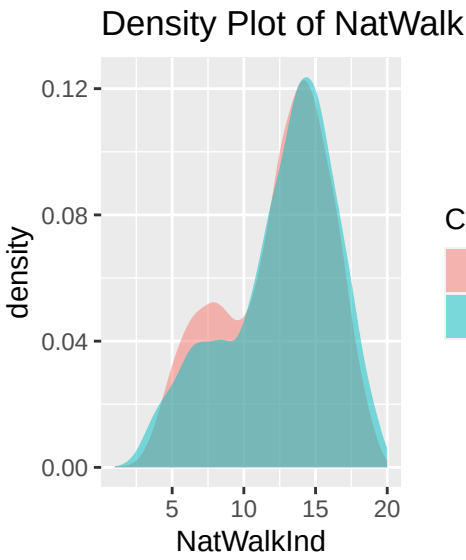

Density Plot of D5DEI
density
9
6
3
0
−100000
−75000
−50000
−25000
0
D5DEI
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

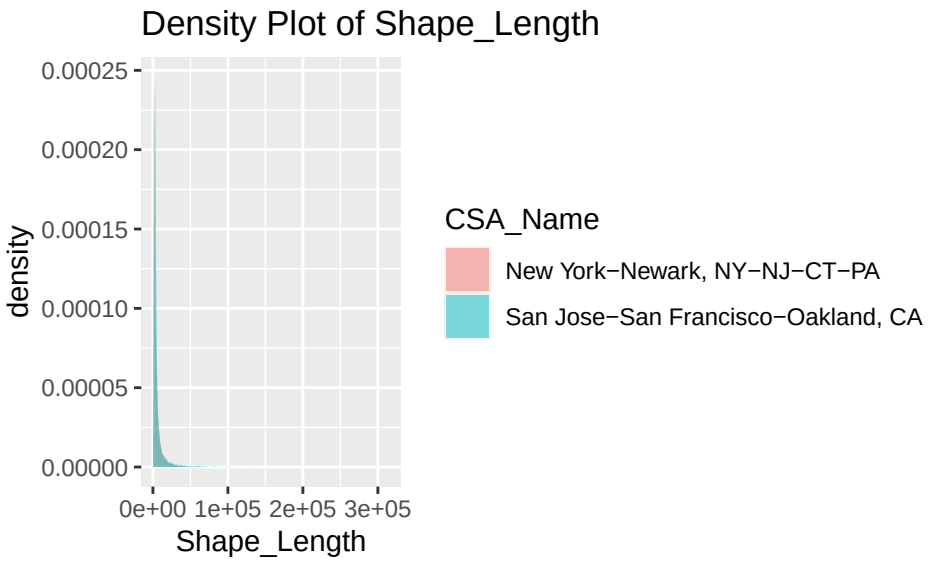

Density Plot of D2A_Ra
density
0.06
0.04
0.02
0.00
5
10
15
20
D2A_Ranked
C

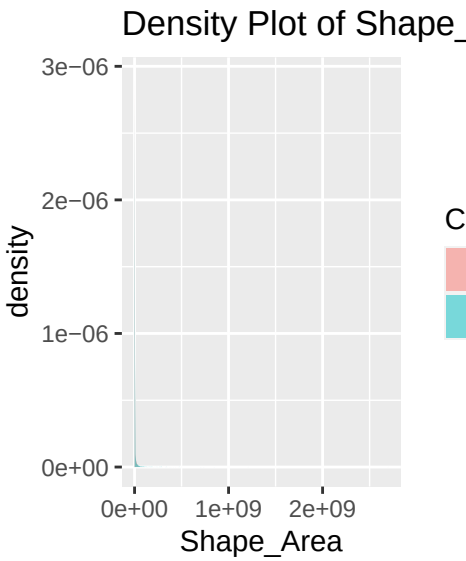

Density Plot of D2B_Ranked
density
0.06
0.04
0.02
0.00
5
10
15
20
D2B_Ranked
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA


Density Plot of D3B_Ra
density
0.100
0.075
0.050
0.025
0.000
5
10
15
20
D3B_Ranked
C


Density Plot of D4A_Ranked
density
0.15
0.10
0.05
0.00
5
10
15
20
D4A_Ranked
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA


Density Plot of NatWalk
density
0.12
0.08
0.04
0.00
5
10
15
20
NatWalkInd
C


Density Plot of Shape_Length
density
0.00025
0.00020
0.00015
0.00010
0.00005
0.00000
0e+00
1e+05
2e+05
3e+05
Shape_Length
CSA_Name
New York−Newark, NY−NJ−CT−PA
San Jose−San Francisco−Oakland, CA

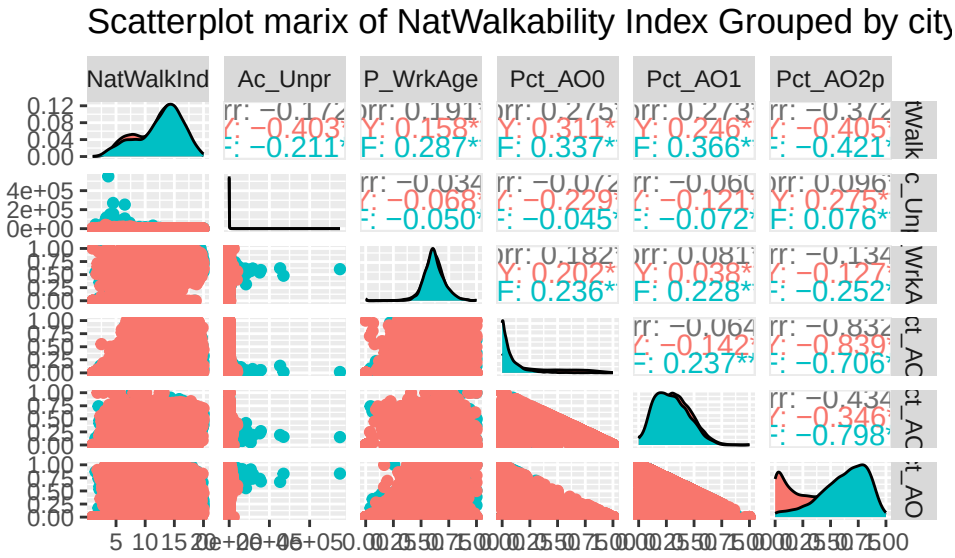

Density Plot of Shape_
density
3e−06
2e−06
1e−06
0e+00
0e+00
1e+09
2e+09
Shape_Area
C

For columns 11 to 20:

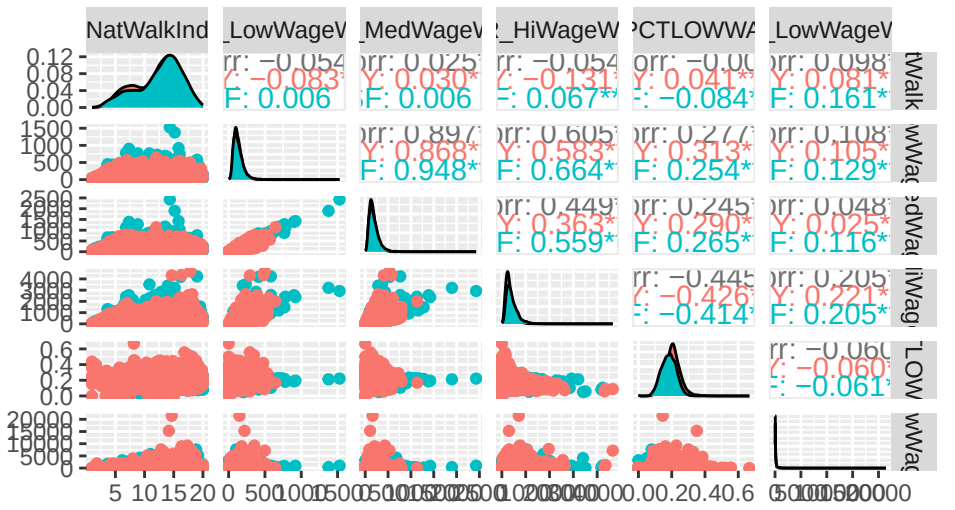
#Selecting Variables (there is way too many of them to run ggpairs on all of them)

```
NewYork_SanFrancisco_data <- NewYork_SanFrancisco_data %>%
  mutate(CSA_Name_ABBREV = gsub("New York-Newark, NY-NJ-CT-PA", "NY", CSA_Name)) %>%
  mutate(CSA_Name_ABBREV = gsub("San Jose-San Francisco-Oakland, CA", "SF", CSA_Name))

# Remove leading and trailing whitespace
NewYork_SanFrancisco_data$CSA_Name_ABBREV <- trimws(NewYork_SanFrancisco_data$CSA_Name_ABBREV)

# Replace "New York-Newark, NY-NJ-CT-PA" with "NY"
NewYork_SanFrancisco_data$CSA_Name_ABBREV <- gsub("New York-Newark, NY-NJ-CT-PA", "NY", NewYork_SanFranc

# Replace "San Jose-San Francisco-Oakland, CA" with "SF"
NewYork_SanFrancisco_data$CSA_Name_ABBREV <- gsub("San Jose-San Francisco-Oakland, CA", "SF", NewYork_Sa


NY_SF_focus <- NewYork_SanFrancisco_data %>%
  select(NatWalkInd, CSA_Name_ABBREV, Ac_Unpr, P_WrkAge, P_WrkAge, Pct_AO0, Pct_AO1, Pct_AO2p, R_LowWage
```

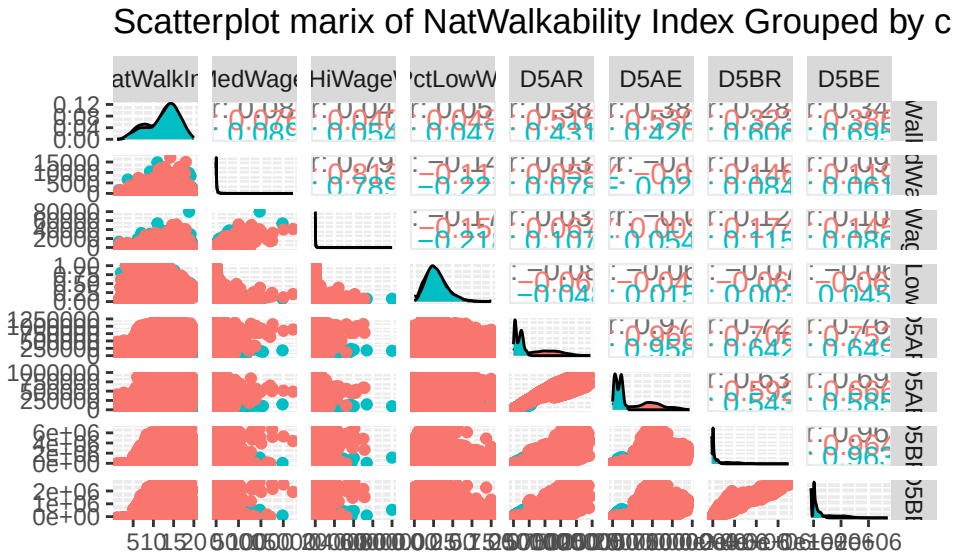
```
plot_1 <- suppressWarnings(ggpairs(NY_SF_focus[, c(1, 3:7)],
        aes(color = NY_SF_focus$CSA_Name_ABBREV),
        title = "Scatterplot marix of NatWalkability Index Grouped by city",
        subtitle = "Using the first 4 potential predictors"))
plot_1
```




```
ggpairs(NY_SF_focus[, c(1, 8:12)],
        aes(color = NY_SF_focus$CSA_Name_ABBREV),
        title = "Scatterplot marix of NatWalkability Index Grouped by city",
        subtitle = "Using the next 5 potential predictors")
```




```
ggpairs(NY_SF_focus[, c(1, 13:19)],
        aes(color = NY_SF_focus$CSA_Name_ABBREV),
        title = "Scatterplot marix of NatWalkability Index Grouped by city",
        subtitle = "Using the following 5 potential predictors")
```




```
ggpairs(NY_SF_focus[, c(1, 20:24)],
        aes(color = NY_SF_focus$CSA_Name_ABBREV),
        title = "Scatterplot marix of NatWalkability Index Grouped by city",
        subtitle = "Using the last 4 potential predictors")
```