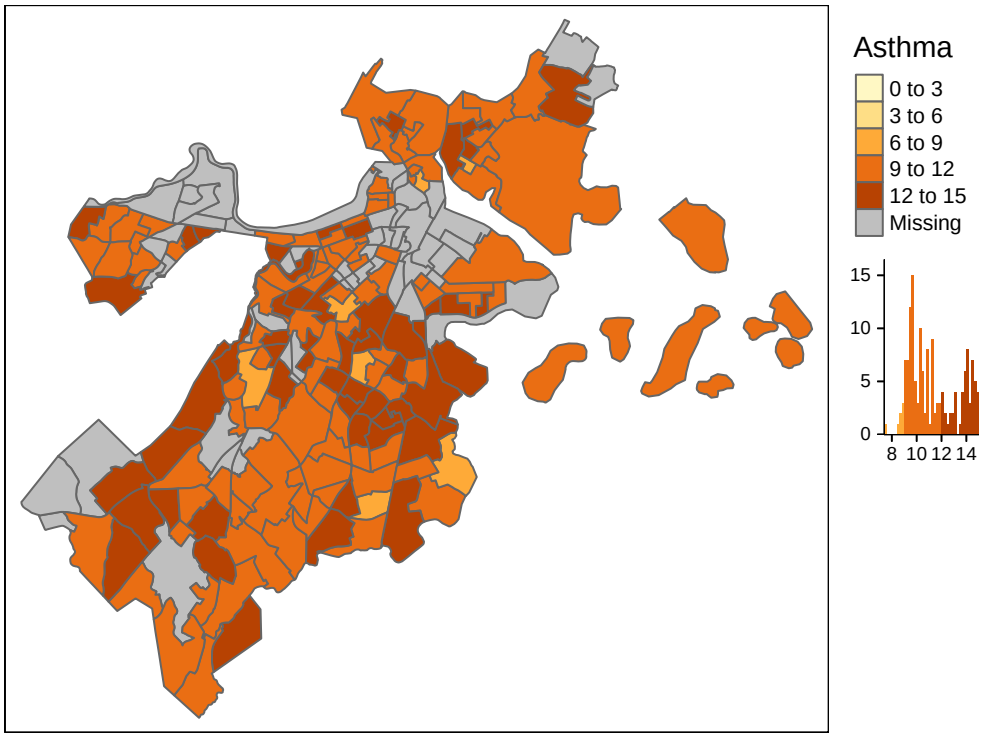
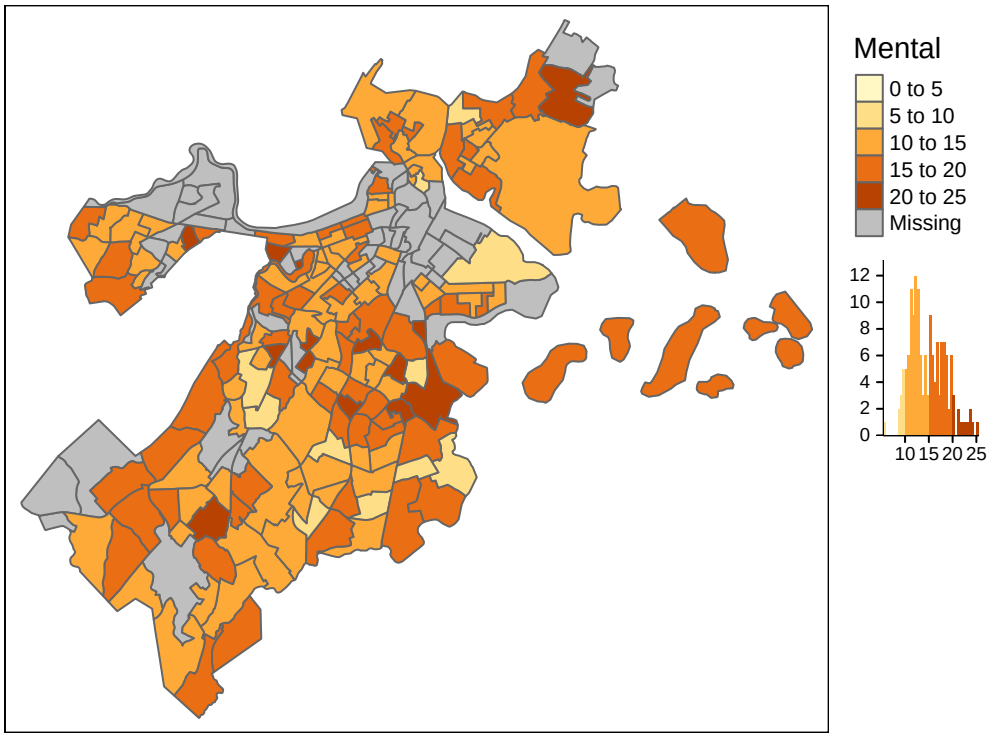
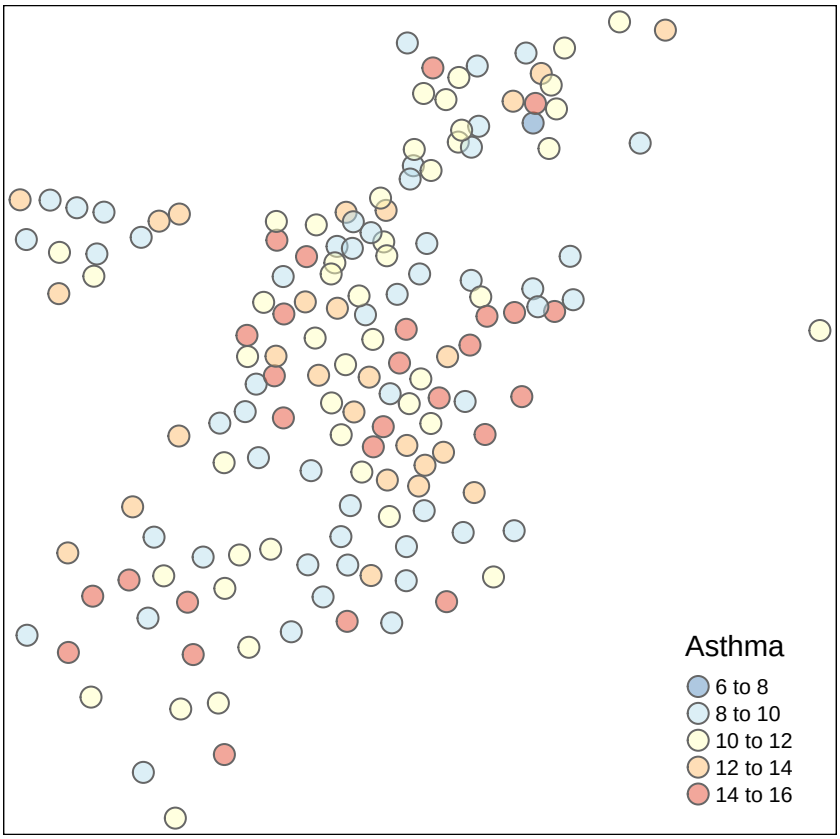
Smoothing - Health

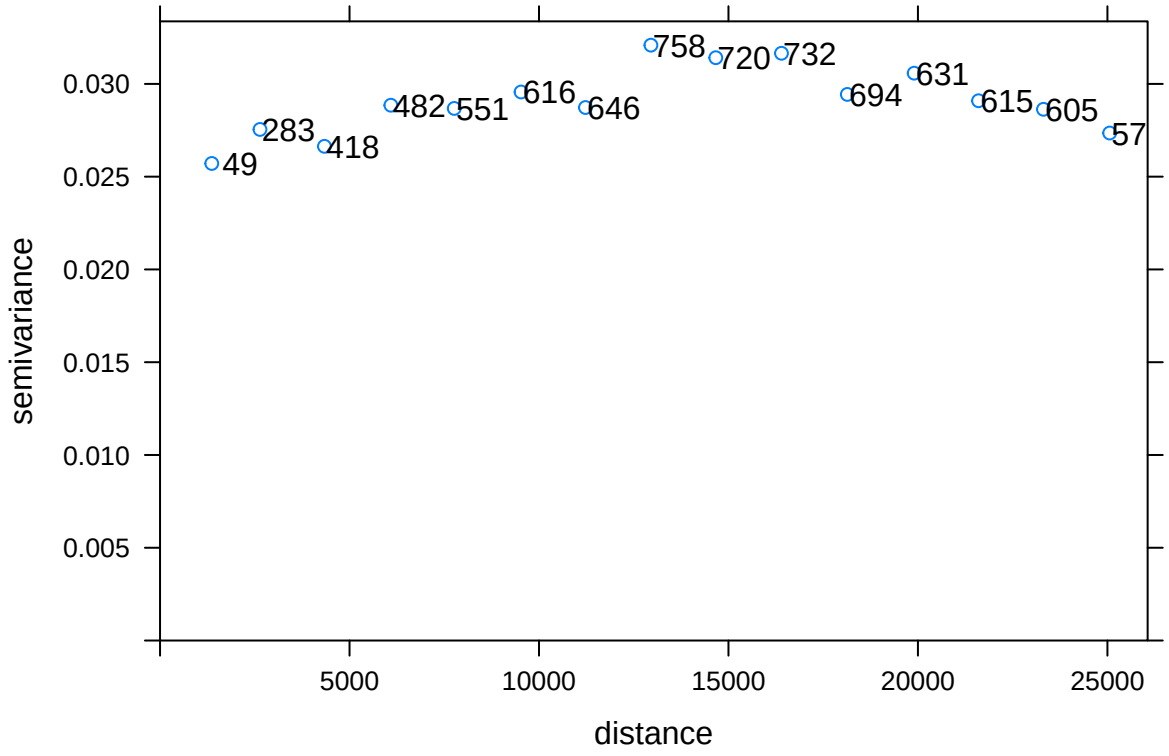
Yongrong Chai

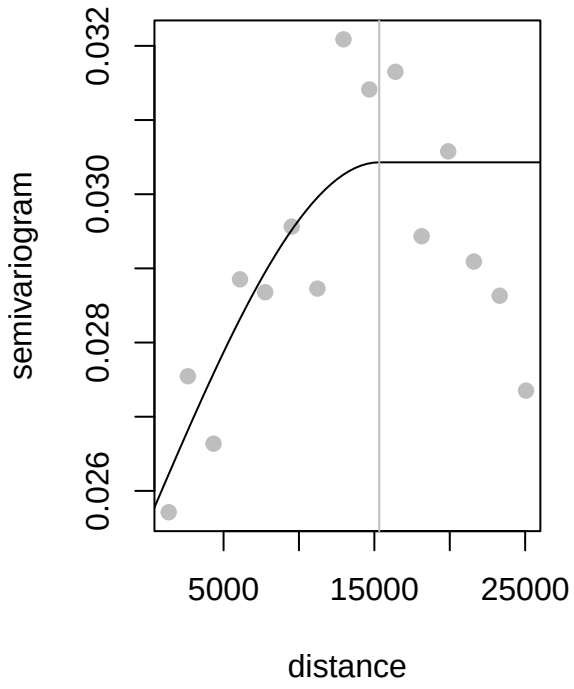
12/2/2021

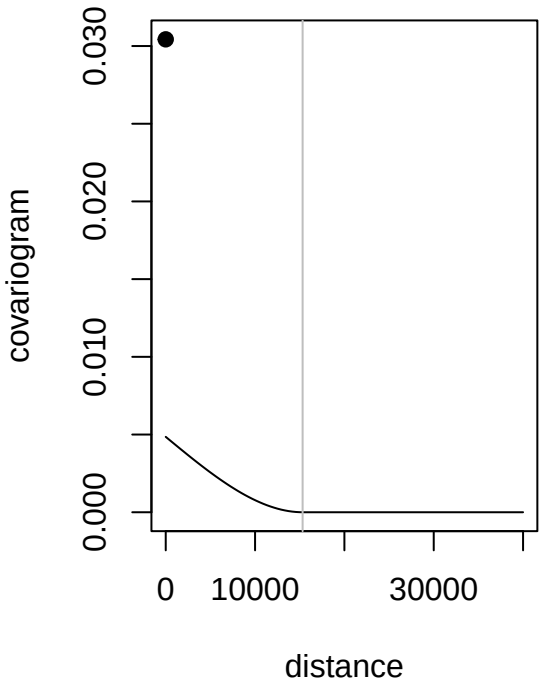


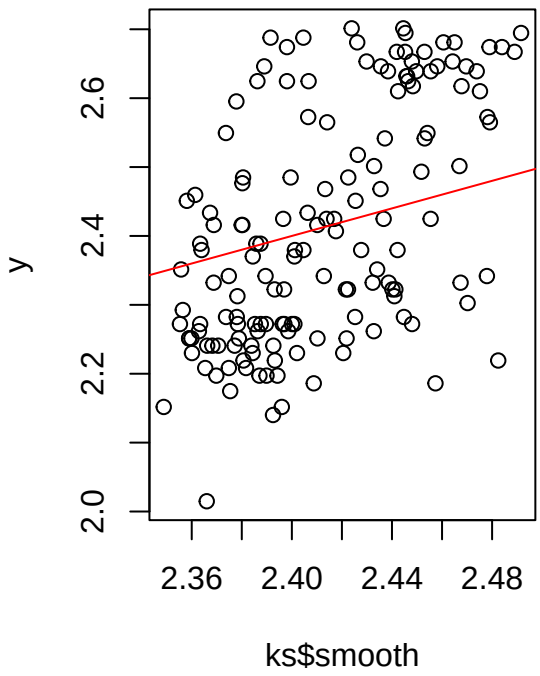

Mental
0 to 5
5 to 10
10 to 15
15 to 20
20 to 25
Missing
12
10
8
6
4
2
0
10 15 20 25

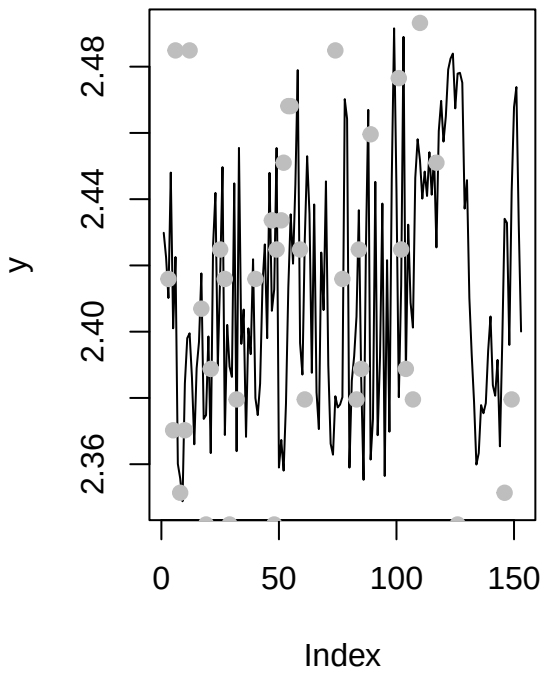

Asthma
6 to 8
8 to 10
10 to 12
12 to 14
14 to 16

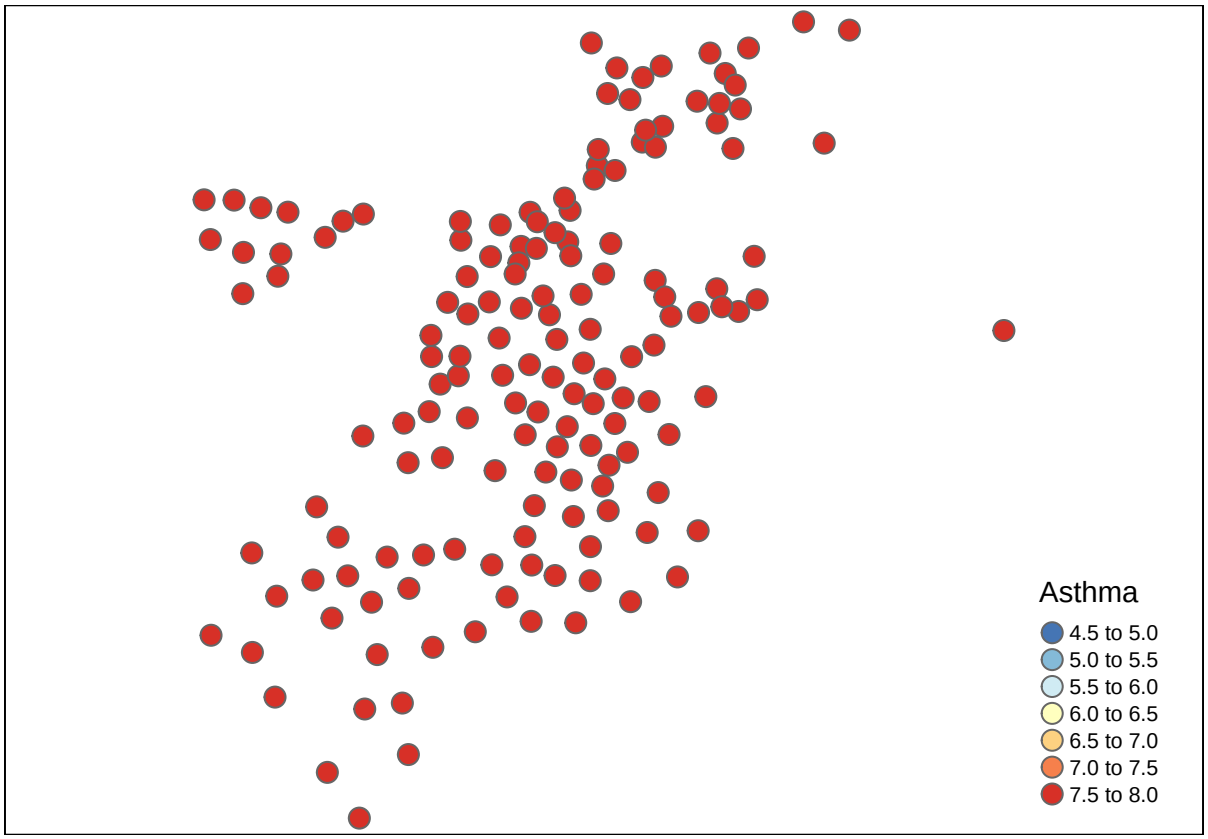

semivariance
0.030
0.025
0.020
0.015
0.010
0.005
5000
10000
15000
20000
25000
distance
758
720
732
631
694
615
605
57
616
646
482
551
283
418
49

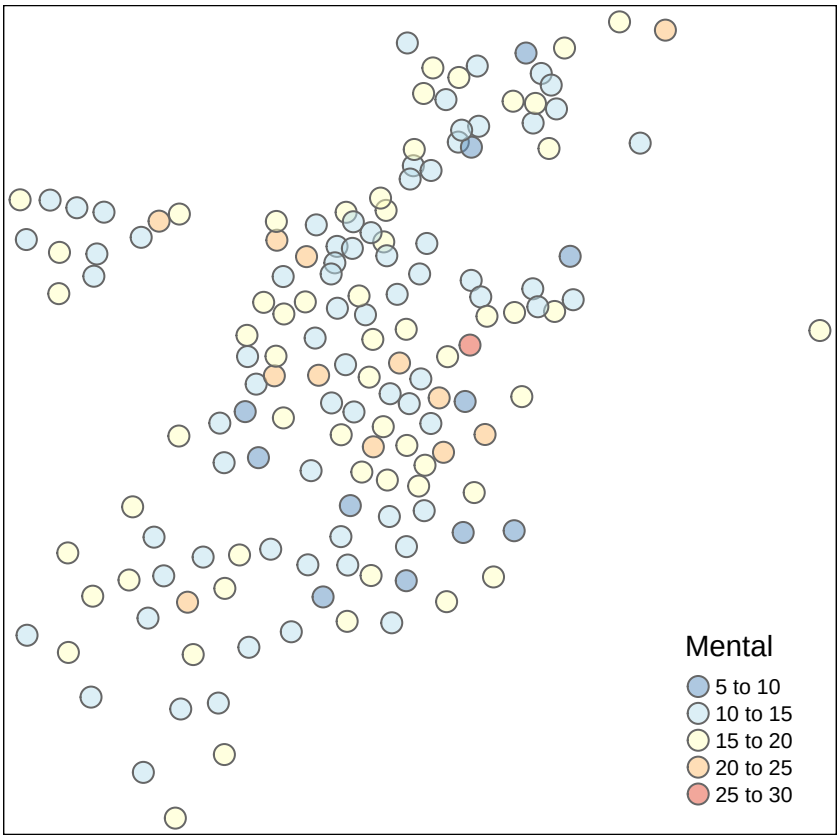

semivariogram
0.026
0.028
0.030
0.032
5000
15000
25000
distance

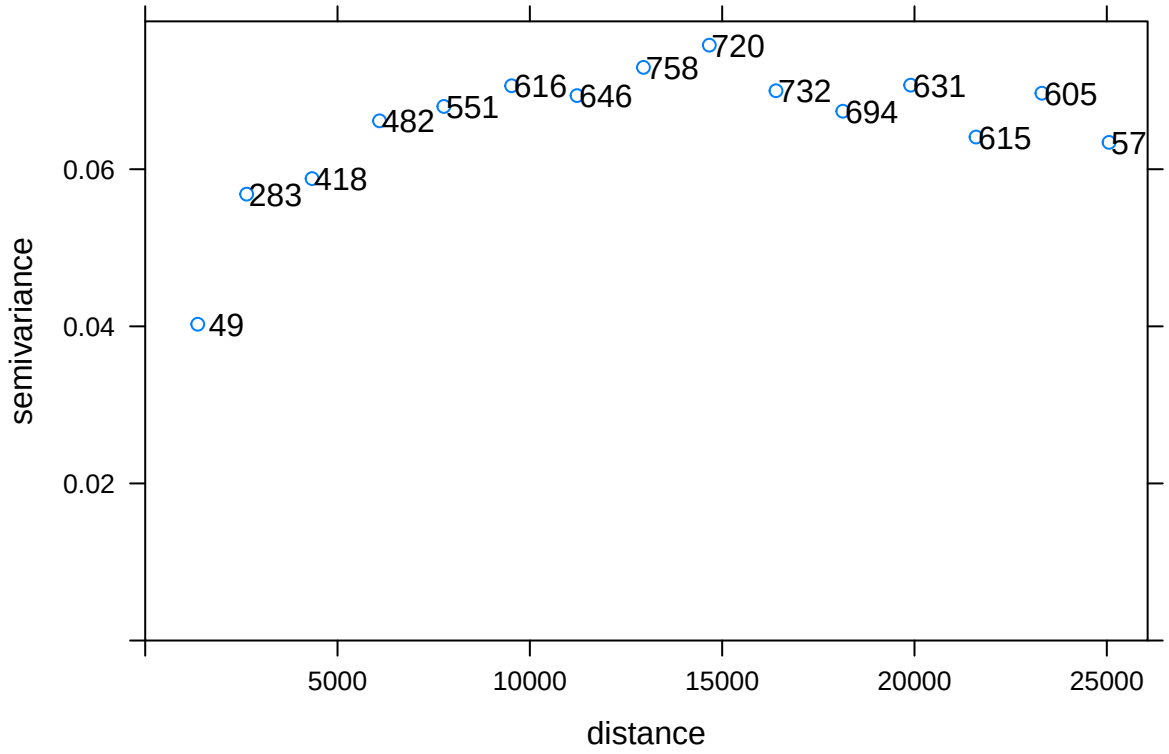

covariogram
0.000
0.010
0.020
0.030
0
10000
30000
distance

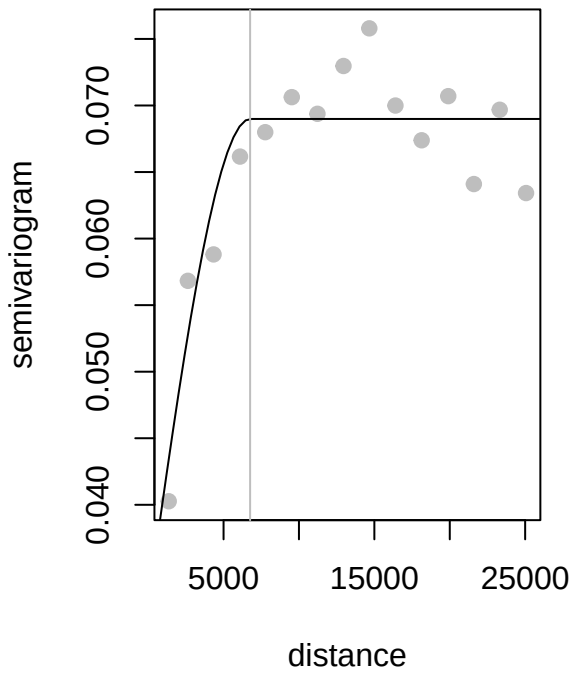

y
2.0
2.2
2.4
2.6
2.36
2.40
2.44
2.48
ks$smooth

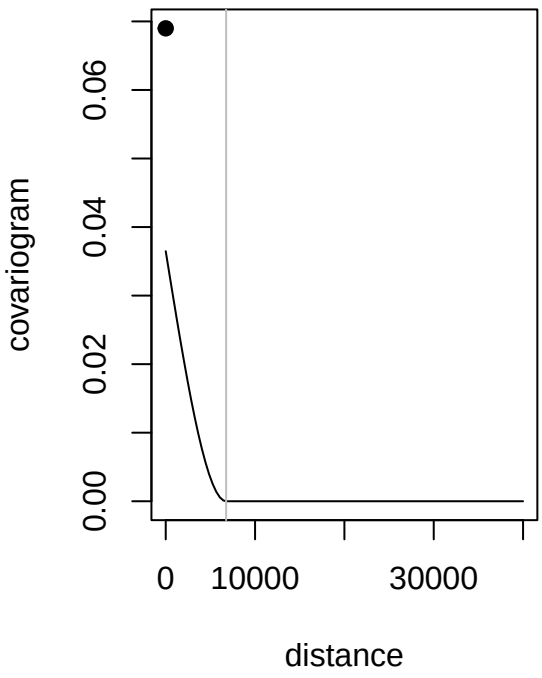

y
2.36
2.40
2.44
2.48
0
50
100
150
Index

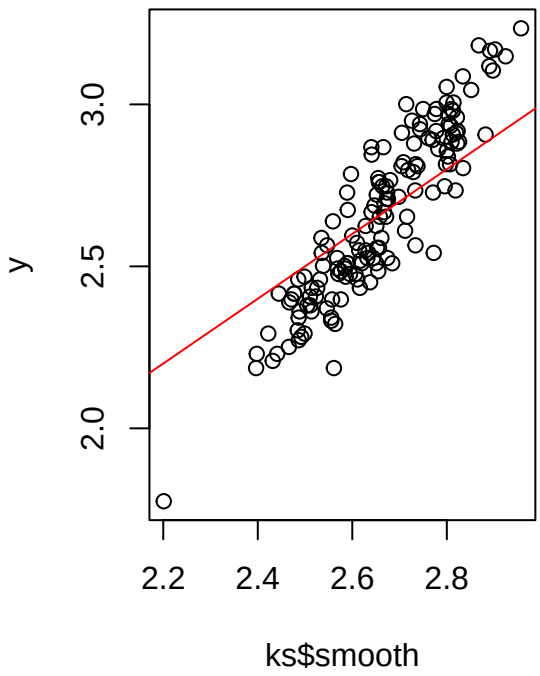

Asthma
4.5 to 5.0
5.0 to 5.5
5.5 to 6.0
6.0 to 6.5
6.5 to 7.0
7.0 to 7.5
7.5 to 8.0

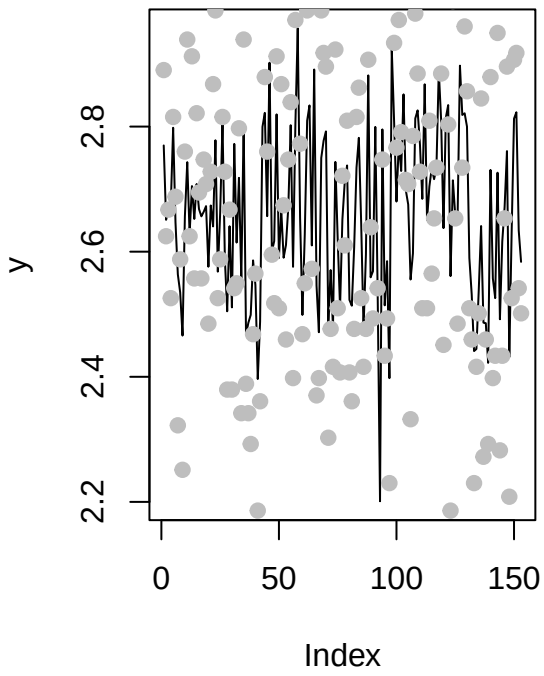

Mental
5 to 10
10 to 15
15 to 20
20 to 25
25 to 30

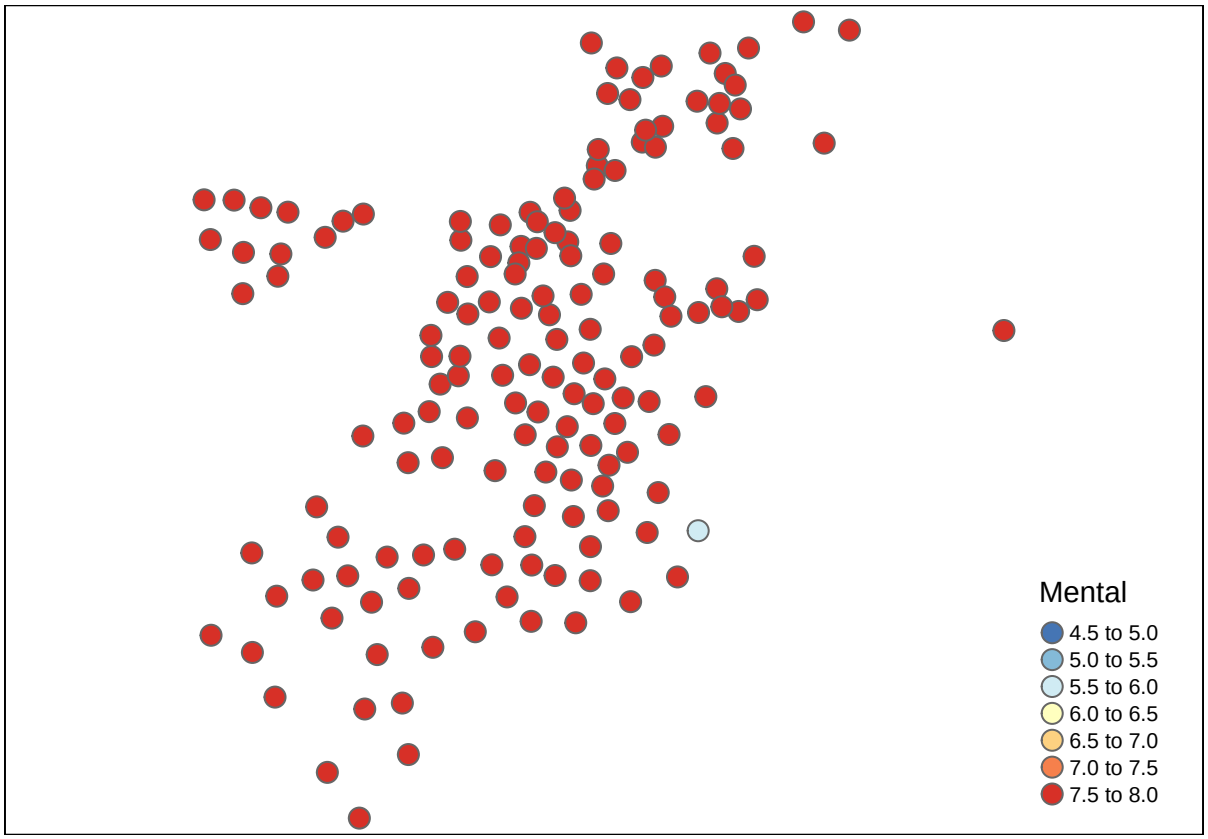

semivariance
0.02
0.04
0.06
5000
10000
15000
20000
25000
distance
49
283
418
482
551
616
646
758
720
732
694
631
615
605
57


semivariogram
0.040
0.050
0.060
0.070
5000
15000
25000
distance


covariogram
0.00
0.02
0.04
0.06
0
10000
30000
distance


y
3.0
2.5
2.0
2.2
2.4
2.6
2.8
ks$smooth

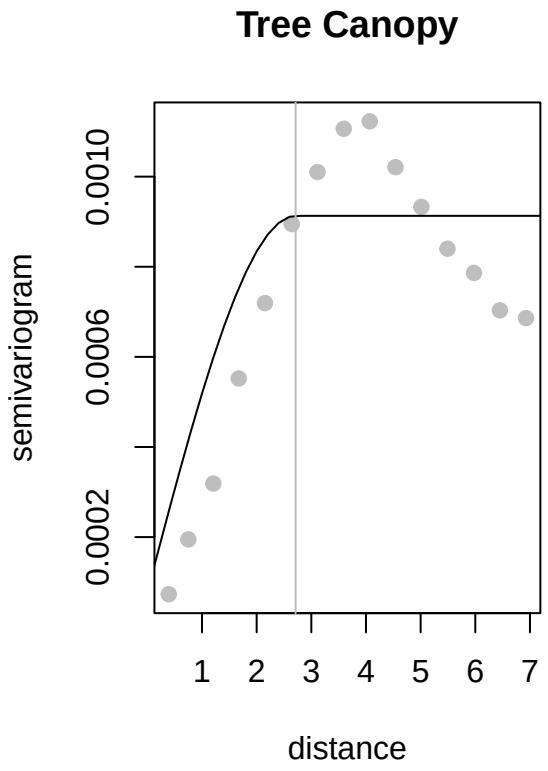

y
2.8
2.6
2.4
2.2
0
50
100
150
Index

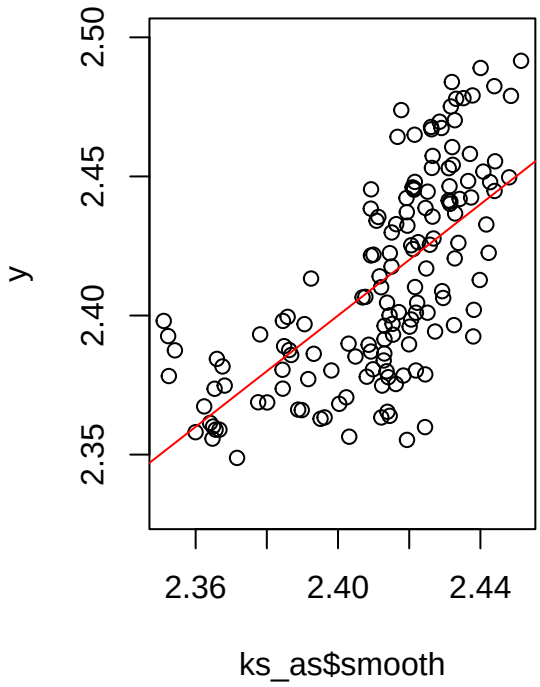


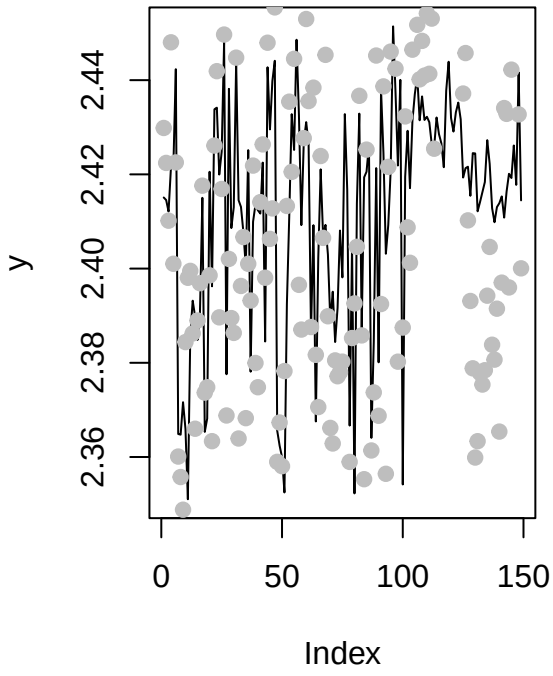
Merge data with enviornment group

```
##  [1] "GEOID20"   "men_tmp"   "mn_pm25"   "OBJECTI"   "STATEFP"   "COUNTYF"
##  [7] "TRACTCE"   "NAME20"    "NAMELSA"   "MTFCC20"   "FUNCSTA"   "ALAND20"
## [13] "AWATER2"   "INTPTLA"   "INTPTLO"   "Sh_STA_"   "Sh_STL_"   "Tre_Cnp"
## [19] "TotalPp"   "MinrPrc"   "PpDnsty"   "MedGrTx"   "Mdn_Inc"   "MnrPrc_t"
## [25] "MnrPrc_s"  "MnrPrc_r"  "MdGrTx_t"  "MdGrTx_s"  "MdGrTx_r"  "Mdn_Inc_t"
## [31] "Mdn_Inc_s" "Mdn_Inc_r" "mn_pm25_s" "mn_pm25_r" "mn_tmp_s"  "mn_tmp_r"
## [37] "geometry"
```

```
##  [1] "OBJECTID"   "STATEFP20"  "COUNTYFP20" "TRACTCE20"  "GEOID20"
##  [6] "NAME20"     "NAMELSAD20" "MTFCC20"    "FUNCSTAT20" "ALAND20"
## [11] "AWATER20"   "INTPTLAT20" "INTPTLON20" "Shape_STAr" "Shape_STLe"
## [16] "geometry"   "Asthma"     "Mental"     "a"          "smootha"
## [21] "b"          "smoothb"
```


Tree Canopy
semivariogram
0.0002
0.0006
0.0010
1
2
3
4
5
6
7
distance



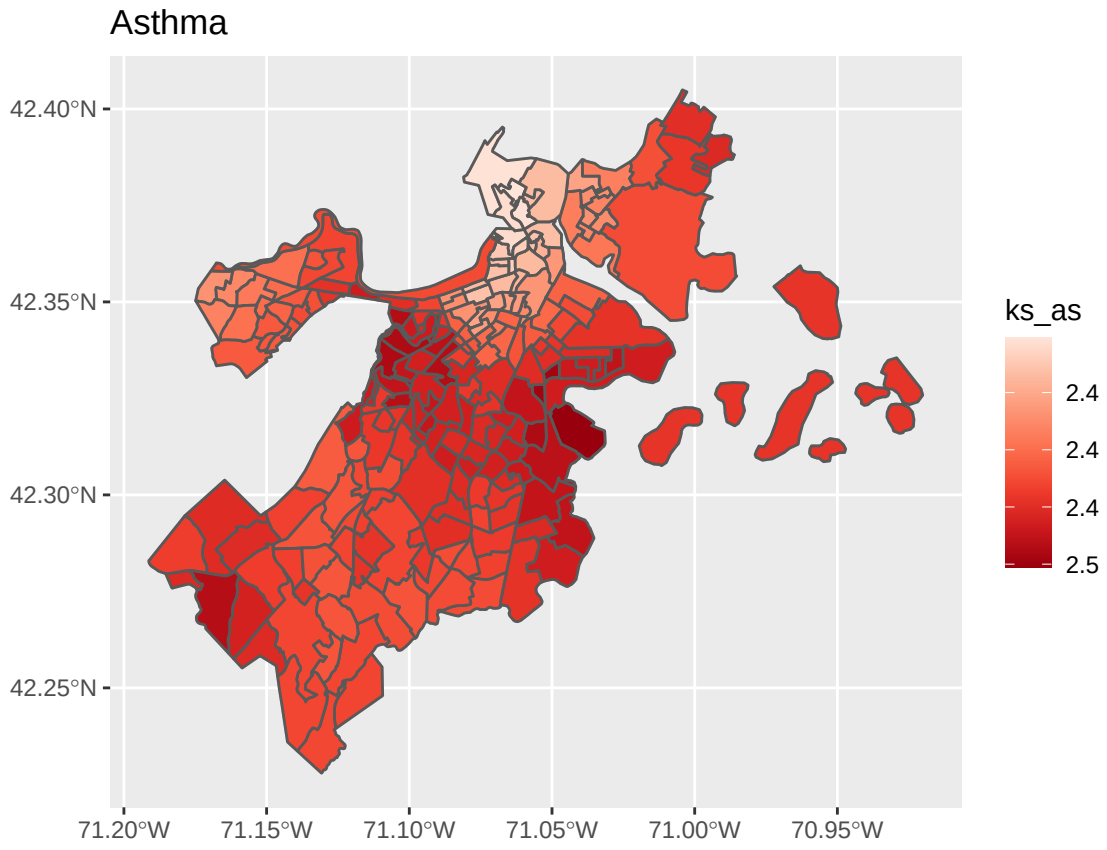


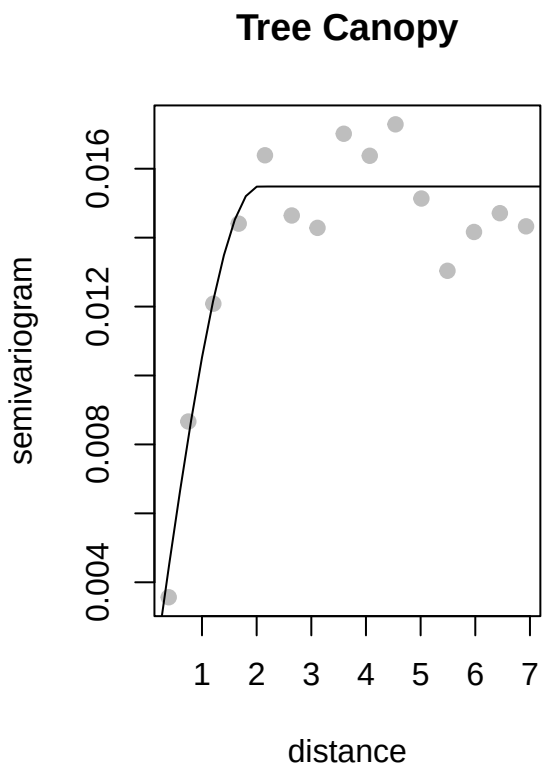

```
##      (Intercept) MnrPrc_s MnrPrc_r MdGrTx_s MdGrTx_r Mdn_Inc_s Mdn_Inc_r
## [1,]         8.2  -0.0062  -0.0024   -0.124   0.0028    -0.166   -0.0175
## [2,]         2.0   0.0036   0.0076    0.024   0.0018     0.048    0.0089
##      mn_pm25_s mn_pm25_r  mn_tmp_s   mn_tmp_r Tre_Cnp
## [1,]    -0.010     0.014 -0.000063 0.00000074   0.017
## [2,]     0.019     0.024  0.000040 0.00000451   0.042
```

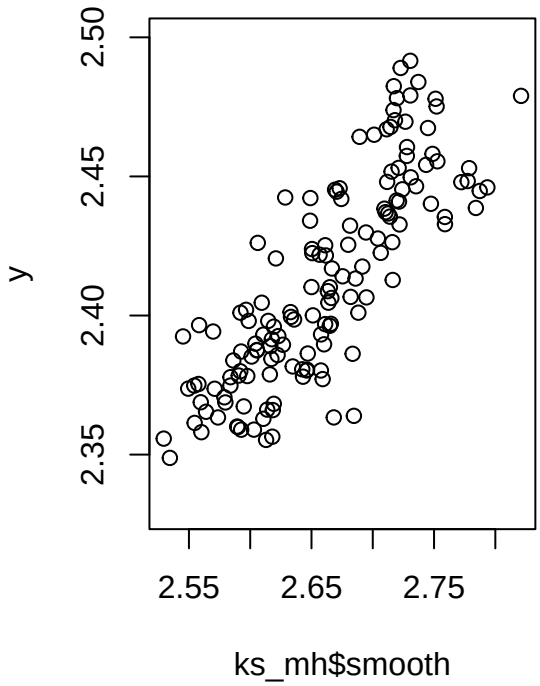
row.names(coef1)	V1	V2
(Intercept)	8.24169533	1.9697229
MnrPrc_s	-0.00616590	0.0036344
MnrPrc_r	-0.00236685	0.0075536
MdGrTx_s	-0.12446441	0.0237732
MdGrTx_r	0.00284747	0.0018065
Mdn_Inc_s	-0.16641901	0.0479271
Mdn_Inc_r	-0.01746738	0.0089063
mn_pm25_s	-0.01049538	0.0185436
mn_pm25_r	0.01356145	0.0244551
mn_tmp_s	-0.00006318	0.0000397
mn_tmp_r	0.00000074	0.0000045
Tre_Cnp	0.01673274	0.0424968

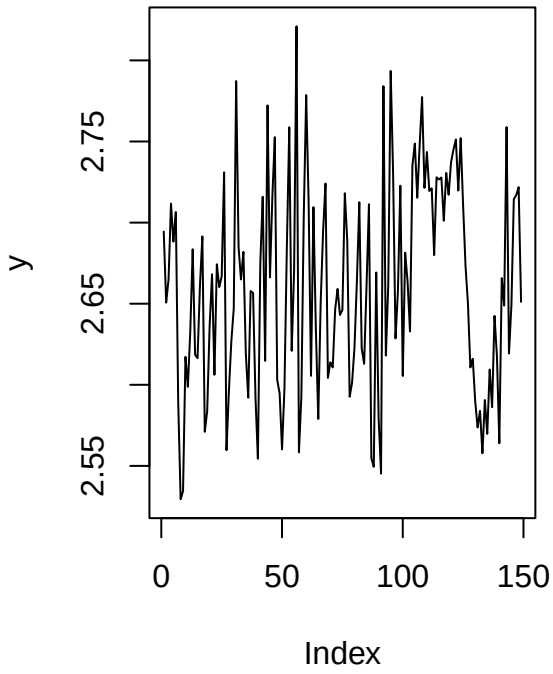
row.names(coef1)	V1	V2

```
## [using ordinary kriging]
```



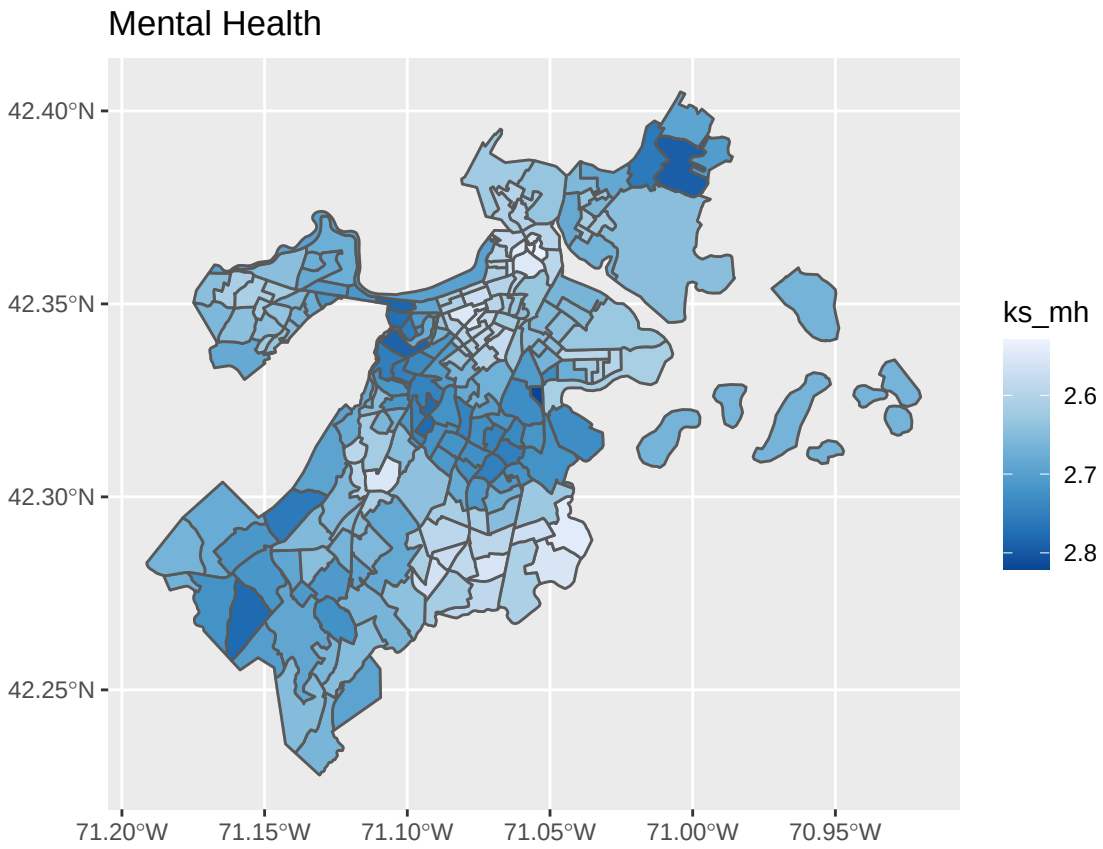

Tree Canopy
semivariogram
0.004
0.008
0.012
0.016
1
2
3
4
5
6
7
distance





row.names(coef2)	V1	V2
(Intercept)	3.810052	4.955669
MnrPrc_s	0.014590	0.005963
MnrPrc_r	-0.023110	0.008192
MdGrTx_s	-0.354464	0.044445
MdGrTx_r	0.004320	0.002019
Mdn_Inc_s	-0.068609	0.113720
Mdn_Inc_r	-0.046186	0.010228
mn_pm25_s	0.002598	0.024897
mn_pm25_r	0.020363	0.027121
mn_tmp_s	0.000050	0.000096
mn_tmp_r	-0.000017	0.000005
Tre_Cnp	0.325314	0.058076

```
## [using ordinary kriging]
```


Mental Health
42.40°N
42.35°N
42.30°N
42.25°N
71.20°W
71.15°W
71.10°W
71.05°W
71.00°W
70.95°W
ks_mh
2.6
2.7
2.8