BST 6200 Spatial Statistics and Disease Mapping
Homework 3

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4/2/2020

Due 5:15 pm, April 15, 2020

The Ph in soil samples taken in the Great Smokey Mountain National Park are in the file SmokeyMountain.eps. The first few lines of this file are shown below.

Easting	Northing	Ph	Elevation
-79.19	-22.53	7.91	0.244
-61.66	-55.39	7.14	0.375
-69.63	-31.93	6.81	0.567
-54.82	-44.38	6.97	0.512
-62.14	-37.94	7.21	0.408
-55.29	-14.60	6.94	0.512

Use the methods of section 6.8 in the book, including

- Nearest neighbor interpolation (using Voronoi polygons)
- Inverse distance weighting (use $\alpha = 0.5$).
- Kriging (in the semivariogram, give an eyeball estimate of the sill, range, and nugget.)

Explain your reasoning and justify your assertions with the appropriate plots. Submit a PDF file to Blackboard, obtained either by using Word with copy & paste from R, or by creating a PDF file in RMarkdown.

Important note: If you follow the book's development on the fulmar data set, notice that fulmar is the name of the data frame and also one of the variables in the data frame. This can be confusing because you can't tell whether you should tell R what the data frame is or which variable in the data from to refer to. Sometimes fulmar would translate to smokeyMountain (if you call your data frame smokeyMountain) and sometimes fulmar would translate to Ph (if you're referring to the outcome variable in the data frame).