Practical Spatial Statistics & Econometrics with R

Session 7: Kriging and Cross-Validation

Saif Ali, IIIT Delhi

How to excel at spatial stats (or anything else)?

Understanding

Clear conceptual understanding

Listening, Reading, Thinking, Writing

Questioning, Solving on your own

Skill

Apply understanding to real world problems.

Doing, Trying, Failing, Coding

~~Watching to a lot of lectures (like this one)~~

~~Reading many programming books~~

Pause and Play frequently!

What should we know/will we learn in this session?

Understanding

What we should know:

- The idea of model fitting
- Kriging estimator and equations
- OLS

Skill

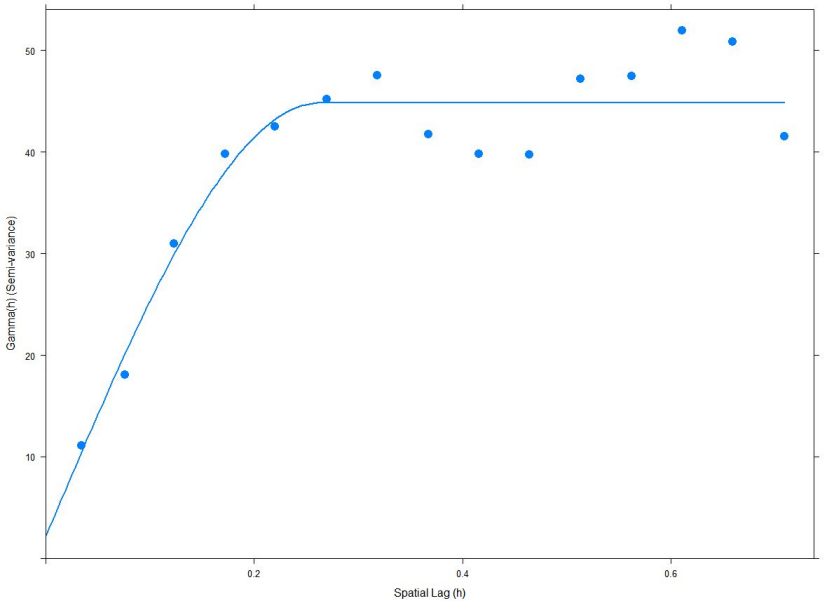
What we should have already done:

- Estimated and fitted variograms using the `meuse and westup.gwl` data sets

What we will do now:

- **Perform spatial predicting with ordinary kriging**
- **Cross-validate our model variogram selection**

Experimental and Fitted Variogram

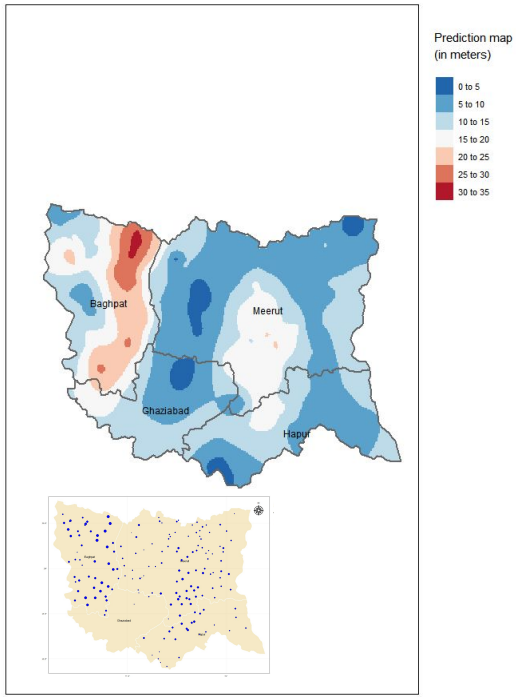


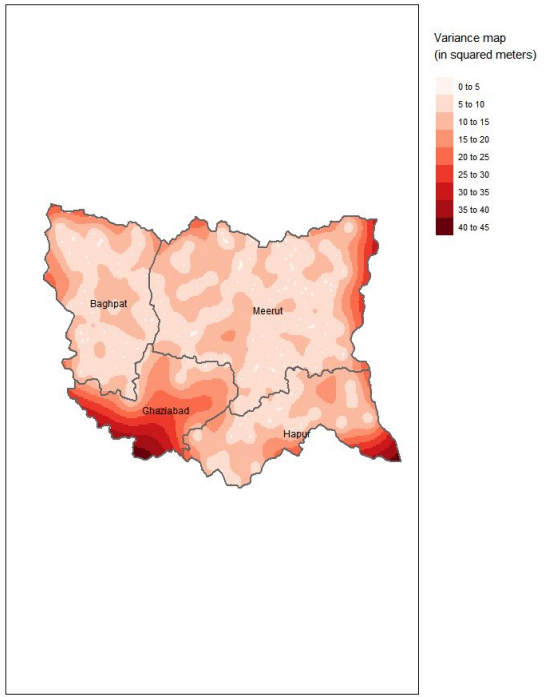
We get a value for variance for any arbitrary value of h, even for locations where there is no data!

We can use this for spatial interpolation using the kriging estimator

Demo 7: Live Coding Session with R

Predicted GWL and Prediction Variance





Summary

- **Estimated variogram with new data set**
- **Learned to load and plot a shapefile**
- **Fitted a variogram model to our estimated variogram**

Two new libraries: `tmap` (for plotting) and `rgdal` (for working with shapefiles)