Practical Spatial Statistics & Econometrics with R

Session 6: Fitting Model Variograms

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:

- Omnidirectional and directional variograms
- The idea of model fitting
- Variogram models (spherical, exponential etc)
- Model parameters (sill, nugget, range)

Skill

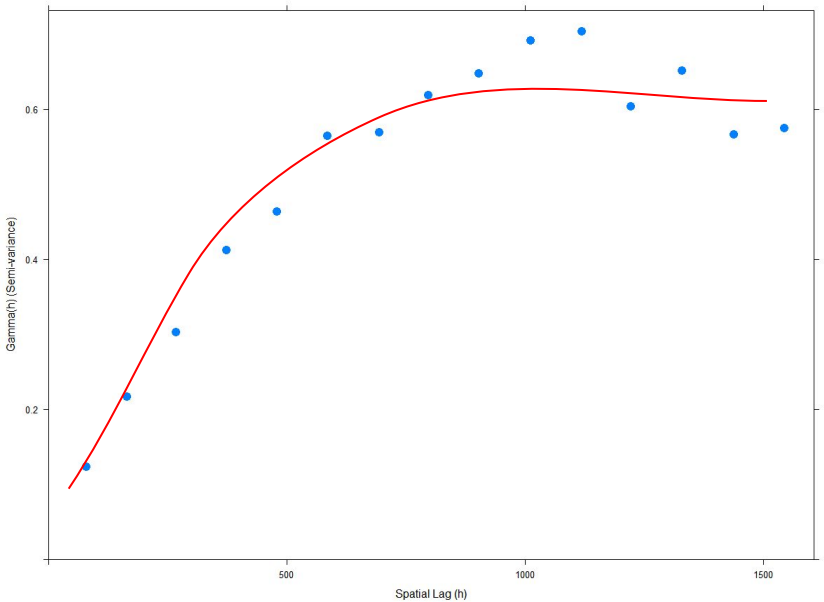
What we should have already done:

- Estimated omnidirectional and directional variograms using the `meuse` data set

What we will do now:

- **Estimate a variogram using a new data set**
- **Fit a model variogram to it**

Experimental Variogram



Gives us a value of variance for a set of discrete values of spatial lag h

But we want a value for any arbitrary value of h

We can fit a smooth function that approximates the values in between

Demo 6: Live Coding Session with R

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)