Practical Spatial Statistics & Econometrics with R

Session 3: Working with Spatial Data

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

Understanding

Clear conceptual understanding

Listening, Reading, Thinking, Writing

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:

- Spatial location, 2D XY plane, coordinates
- Types of spatial data (different from R data types)
    - Geostatistical, lattice, point pattern

Skill

What we should have already done:

- Installed the `gstat, sp` packages
- Loaded the `meuse` data set

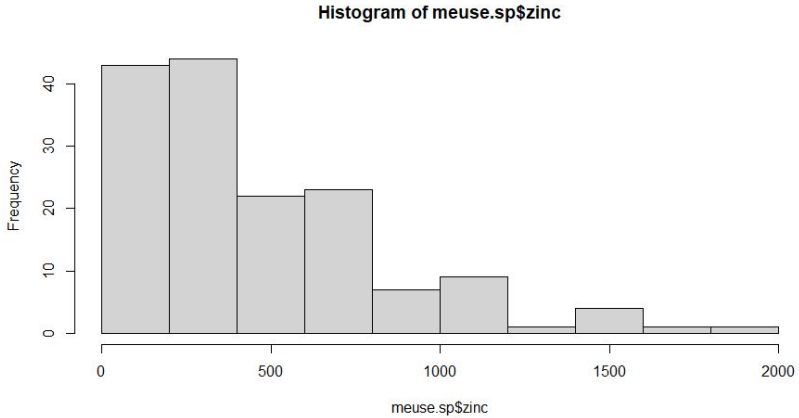
What we will do now:

- **Convert tabular data to spatial data**
- **See the difference between tabular and spatial data**
- **Plot spatial data**

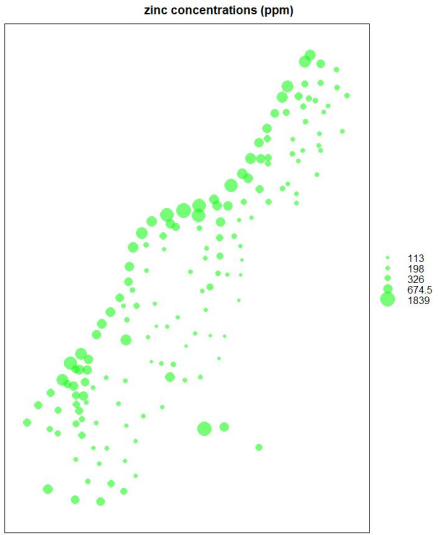
Demo 3: Live Coding Session with R

Frequency Vs Spatial Distribution

```
hist(meuse.sp$zinc)
```




```
bubble(meuse.sp, "zinc",
col=c("#00ff0088", "#00ff0088"),
main = "zinc concentrations (ppm)")
```



Exercise

What type of spatial data is in the `meuse.sp` spatial dataframe?

a) Lattice Data
b) Geostatistical Data
c) Point Pattern Data

Reason: Zinc concentration has a value at every point in the river bed which is a spatial domain that is a continuous region. The type of spatial data depends on the nature of the spatial domain over which the data is defined and NOT the R data type that is used to store the data.

```
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col=c("#00ff0088", "#00ff0088"),
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```

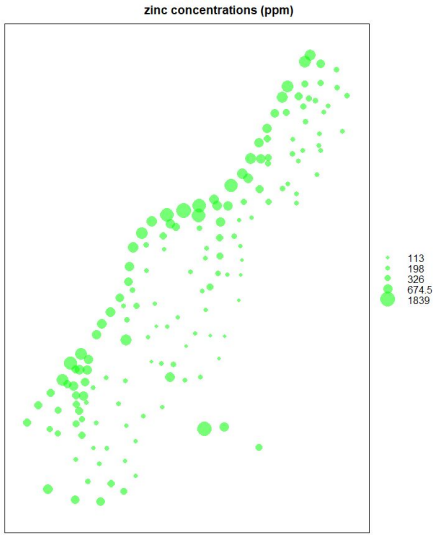

Summary

- **Converted ordinary dataframe to spatial dataframe in R**
- **Compared ordinary and spatial data frames**
- **Plotted spatial distribution of zinc concentrations**
- **Compared frequency distribution (histogram) with spatial distribution**
- **R functions, types**
  - `coordinates, bubble, SpatialPointsDataFrame`
- **R Operators**
  - `~ (formula operator)`