

## Spatial Regression

Prepared by Matthew Marley

**Definition:** Spatial regression (also known as spatial econometrics) is “the collection of statistical and econometric methods specifically geared at dealing with problems of spatial dependence and spatial heterogeneity encountered in cross-sectional (and panel) data sets” (CSISS 2002). Regular regression analyses omit spatial components, which can be a major impediment if your analysis covers, for example, neighborhood effects, crime, etc. In other words, nearby neighborhoods (or houses) may affect your own neighborhood (or household), but regular regression will ignore this potential impact. Spatial regression allows you to include the effect of neighboring areas, thereby producing results that more closely affect the actual context of your unit of analysis.

### References/Sources:

- Anselin, Luc. 1995. Local Indicators of Spatial Association – LISA. *Geographical Analysis*, 27: 93-115.
- Anselin, Luc. 2002. Under the Hood: Issues in the Specification and Interpretation of Spatial Regression Models. *Agricultural Economics*, 27: 247-67.
- Anselin, Luc. 2003. Spatial Externalities, Spatial Multipliers, and Spatial Econometrics. *International Regional Science Review*, 26: 153-66.
- Anselin, Luc, and Anil K. Bara. 1998. Spatial Dependence in Linear Regression Models with an Introduction to Spatial Econometrics. Pp. 237-89 in A. Ullah and D.E.A. Giles, *The Handbook of Applied Economics Statistics*. New York: Marcel Dekker.
- Anselin, Luc, and D.A. Griffith. 1988. Do Spatial Effects Really Matter in Regression Analysis? *Papers of the Regional Science Association*, 65: 11-34.
- Center for Spatially Integrated Social Science. 2002. Spatial Regression Analysis. <http://www.csiss.org/events/workshops/2001/regression/index.htm>. Accessed 04/04/2006.
- Cesario, Frank J. 1975. Linear and Nonlinear Regression Models of Spatial Interaction. *Economic Geography*, 51: 69-77.
- LeSage, James P. 1997. Regression Analysis of Spatial Data. *Journal of Regional Analysis and Policy*, 27: 83-94.
- Piwowar, Joe. 2006. Spatial Regression Links. <http://uregina.ca/piwowarj/Links/SpatialRegression.htm>. Accessed 04/04/2006.