

# Regional Industry Cluster Analysis

## Using Spatial Concepts

### **IV. Space as a container**

Edward Feser & Stuart Sweeney

Pre-Conference Training

ACCRA 46<sup>th</sup> Annual Conference, 7 June 2006, Charlotte, NC

# Module organization

- Analytical perspectives on space
- GeoDa application with location quotients

# Analytical perspectives on space

- Space as container
  - Assumes location is simply label
    - Used to define region / sub-area
  - Observations are independent
- Space as indicator
  - Relative location is meaningful
  - Connectivity is used directly to define measures

# Scenario: Industry co-location

- Are member firms co-located in specific regions?
  - **Localized:** *Clusters in which firms are co-located in specific regions (including regions that span jurisdictional boundaries)*
  - **Non-localized:** *Linked firms that are not co-located in any particular region but exist to a significant degree in the state/country as a whole*

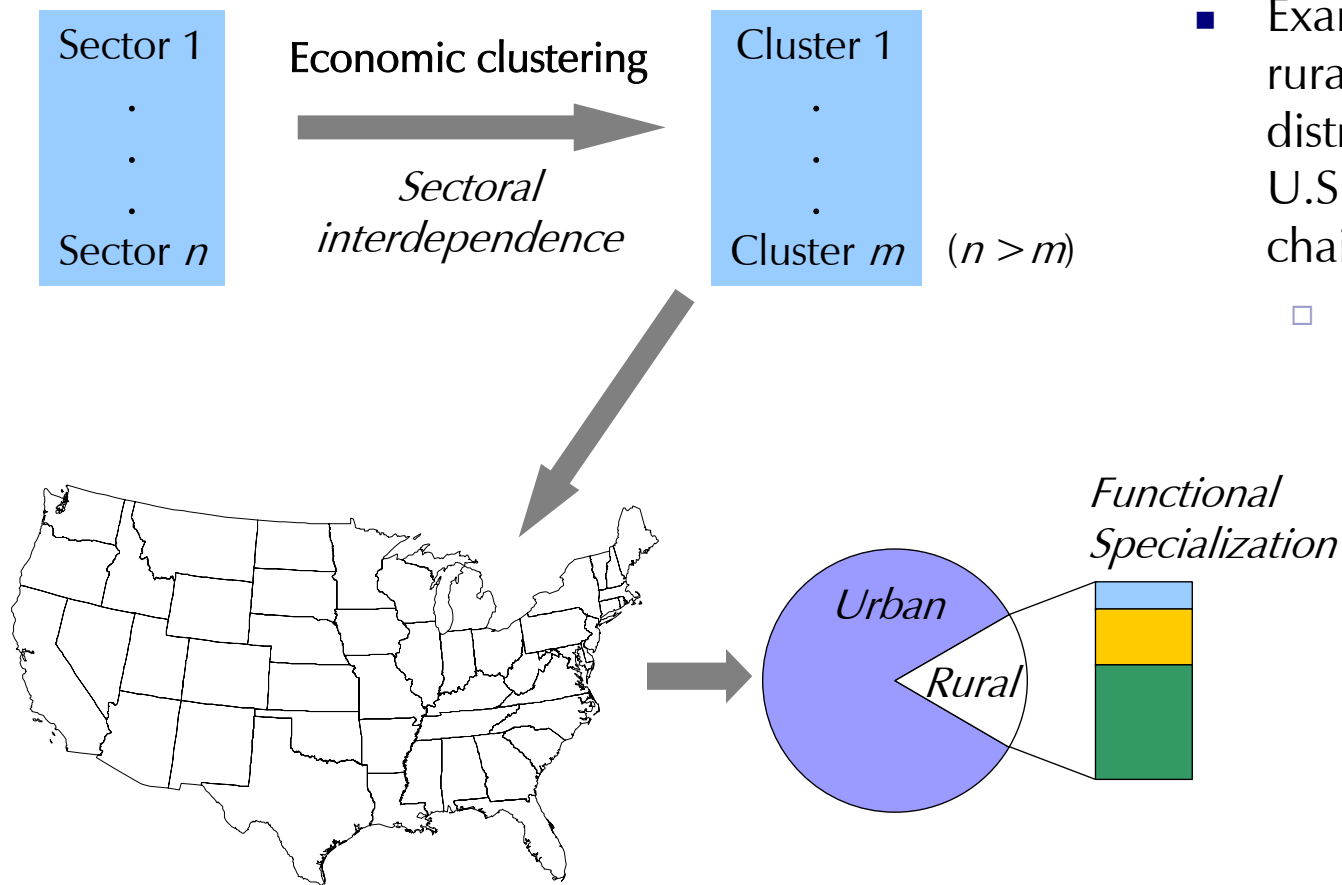
# Space as container

- Derive cluster membership
- Aggregate sector data to clusters
- Observe characteristics of clusters within jurisdiction of study (size, share, relative share)
- For example, with a location quotient:

$$LQ_{ir} = \frac{e_{ir} / e_{i,Total}}{E_r / E_{Total}}$$

*i indexes region*  
*r indexes cluster*  
*e = regional activity (employment)*  
*E = base comparison case (e.g., nation) activity*

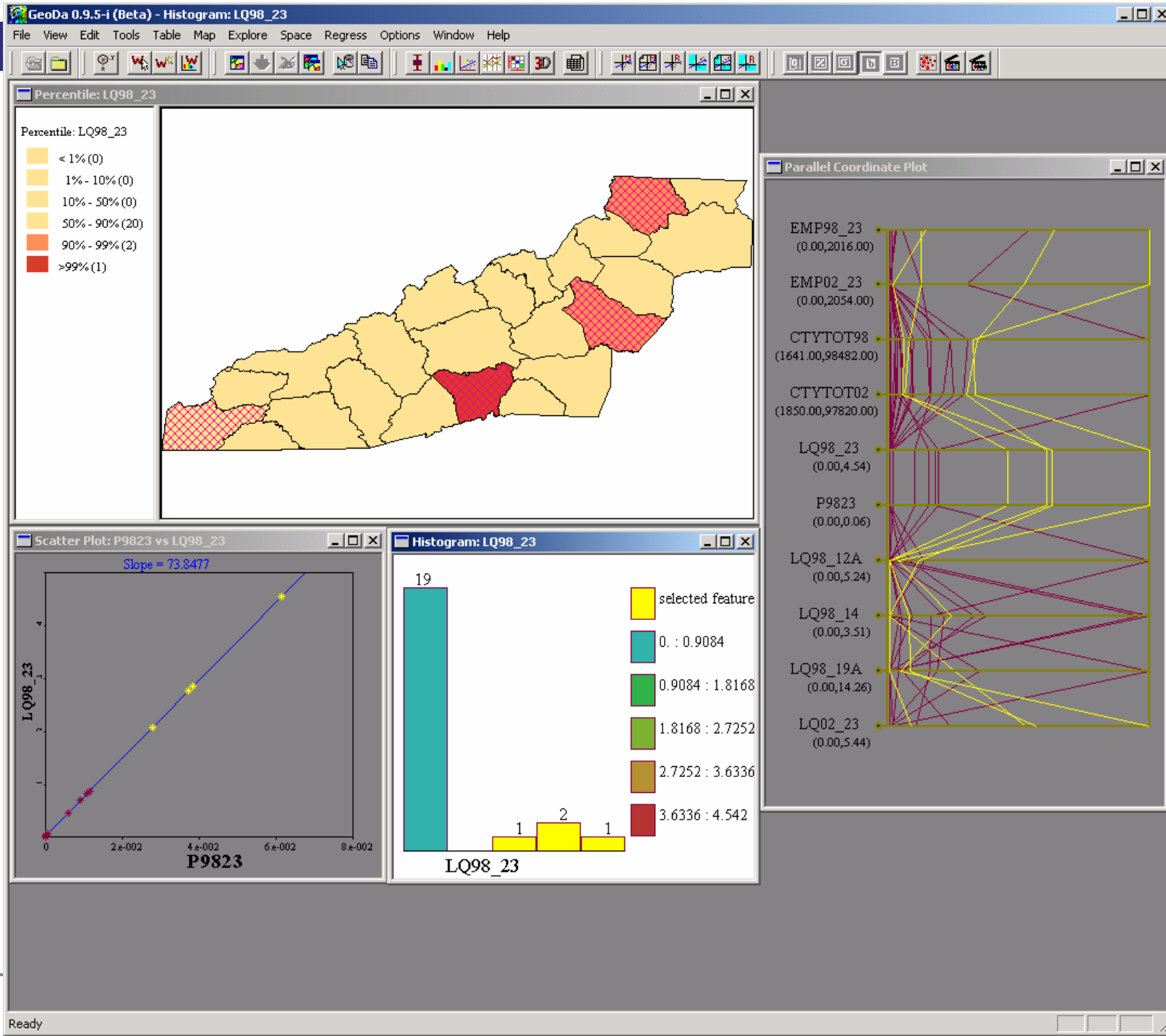
# Space as container: Example



- Example: What is the rural-urban distribution of the U.S. chemicals value chain?
  - Within rural areas, what is the value chains functional mix?

# GeoDa: LQ example

- Visual exploration and brushing w/ LQ
- Parallel coordinate plots
- Issues with LQ as a measure
  - $emp = f(\text{area size})$ , LQ unitless
  - P, LQ both have same distribution
  - Non-symmetric, heavily right-skewed
  - Raw LQ map will always show apparent “clustering”



# Application II: LQ and parallel coordinate plot

- Create new variable:
  - Open table (button next to 3D)
  - Choose: Table>Add field (name it P9823)
  - Choose: Table>Field Calc>Binary operator tab.
    - $P9823 = e98\_23 / ctytot98$
- Carry out the following:
  - Make percentile map of LQ98\_23
  - Make histogram of LQ98\_23
  - Make scatterplot of LQ98\_23 x P9823

# Application II: LQ and parallel coordinate plot

- Parallel Coordinate Plots:
  - Choose: Explore > Parallel Coordinate Plot
  - Add variables of interest by double-clicking
    - Move variables from left column to right column
- Fine tuning:
  - Right-clicking on any “view” reveal options
  - Use options to set background color to gray
    - Easier to see brushed selections

# Module IV review

- Analytical perspectives on space
- GeoDa application with location quotients