



# Polygon-to-Polygon Predictions Using Areal Interpolation

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An abstract graphic on the right side of the slide. It features a dark blue background with various geometric shapes and lines in shades of teal, orange, and yellow. A prominent feature is a series of white contour lines, similar to a topographic map, that curve across the scene. There are also several rectangular and polygonal shapes in different colors, some overlapping each other. The overall composition is dynamic and modern.

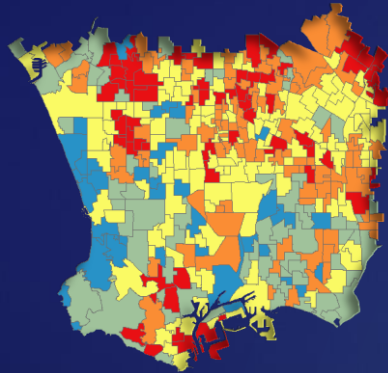
**GIS  
INSPIRING  
WHAT'S  
NEXT**

# Geostatistical Analyst Resources

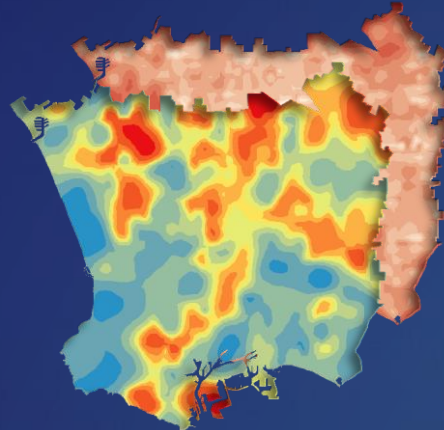
<http://esriurl.com/GeostatGetStarted>

- GeoNet – [community.esri.com](http://community.esri.com)
  - Blogs
  - Free textbook and datasets
    - Spatial Statistical Analysis For GIS Users
  - Lots of discussions and Q&A
- Learn GIS – [learn.arcgis.com](http://learn.arcgis.com)
  - Model Water Quality Using Interpolation
  - Analyze Urban Heat Using Kriging

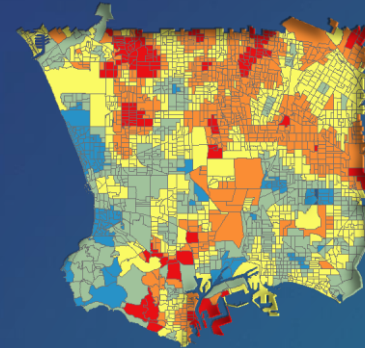
# Areal Interpolation



Obesity by school zone



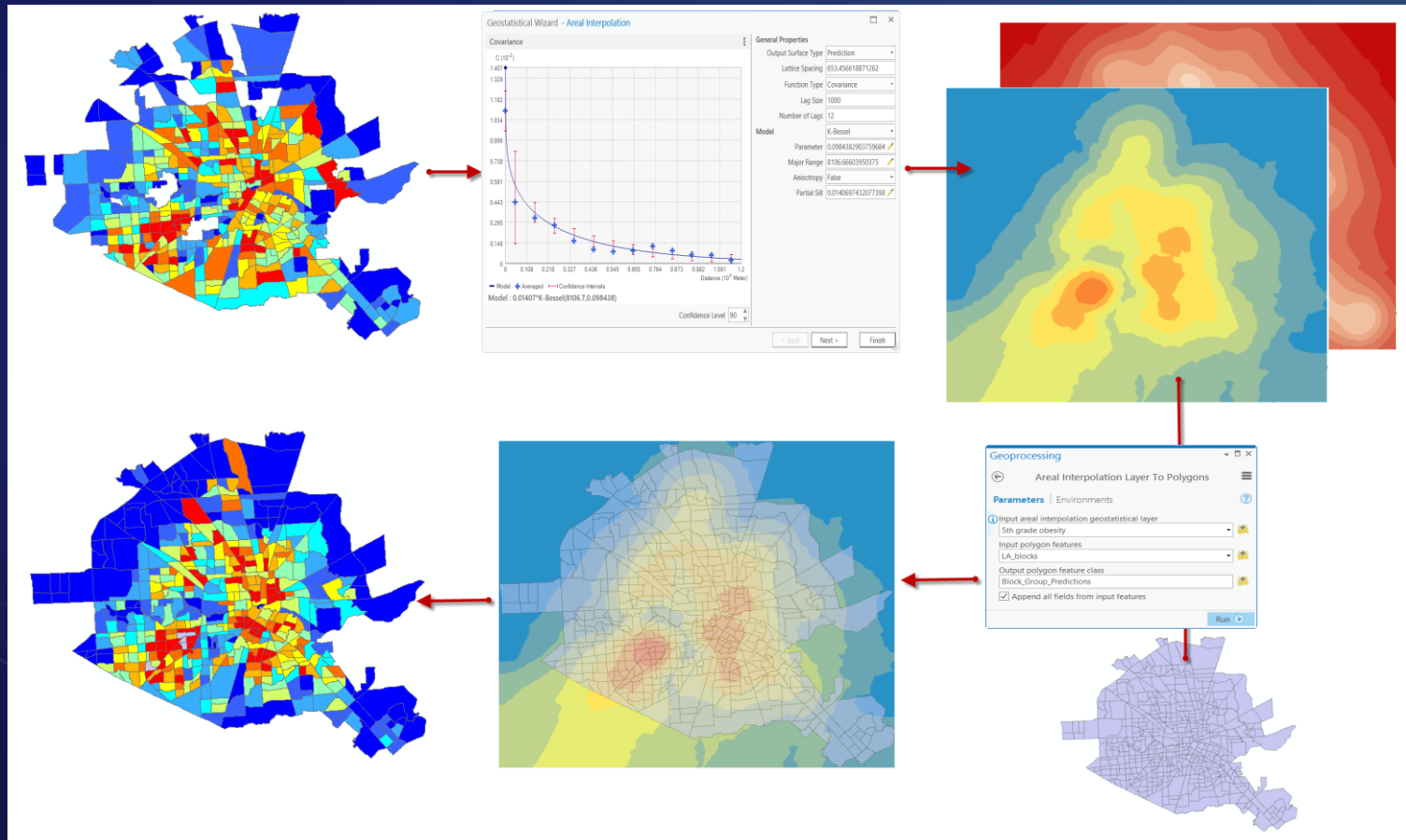
Obesity surface and  
error surface



Obesity by census block

- Predict data in a different geometry
  - School zones to census block groups
- Model and fill-in missing data

# Areal Interpolation Workflow



# Types of Areal Interpolation

- **Average (Gaussian) Areal Interpolation**
  - **Example:**
    - Interpolate radiation levels from measurements averaged in polygons
    - Median age, average household income
  - **Takes Gaussian data averaged over polygons**
  - **Variable of interest**
    - Interpolate to predict value of Gaussian variable at individual point locations

# Types of Areal Interpolation

- **Rate (Binomial) Areal Interpolation**

- **Example:**

- Interpolate proportion of lung cancer cases

- **Takes two input fields:**

- Number of individuals randomly sampled from the population of a polygon

- Number of individuals with a particular characteristic

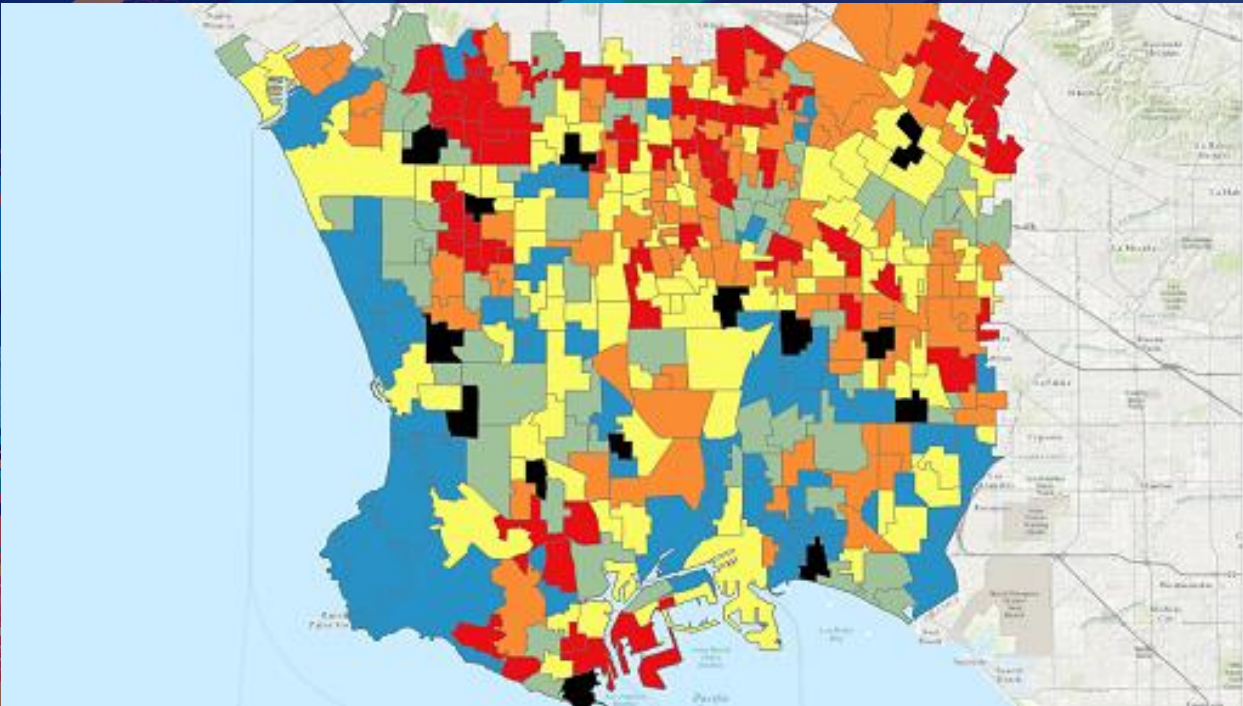
- **Variable of interest**

- Proportion of individuals with the characteristic

# Types of Areal Interpolation

## Count (Overdispersed Poisson) Areal Interpolation

- **Example:**
  - Counts of whales over polygons in the ocean
- **Takes two input fields:**
  - Number of instances of a certain event counted within a polygon
  - Amount of time spent counting within the polygon
- **Variable of interest**
  - Interpolate on density/risk of making an observation at a given location



# Areal Interpolation Demo





esri

THE  
SCIENCE  
OF  
WHERE