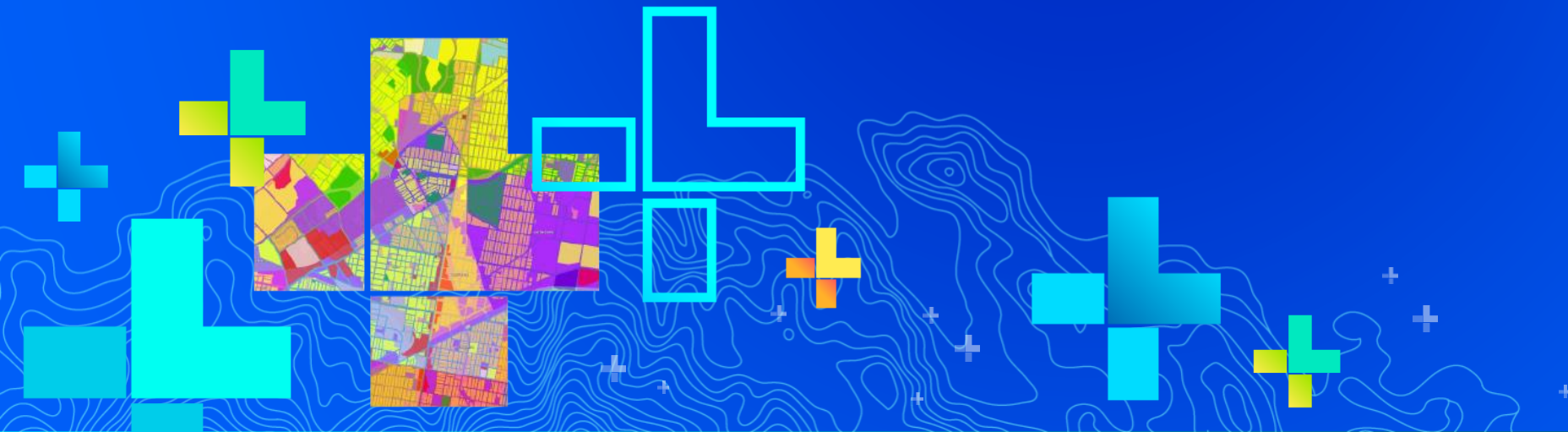


Polygon-to-Polygon Predictions Using Areal Interpolation

Eric Krause



Sessions of note...

Tuesday

- Interpolating Surfaces in ArcGIS (1:00-2:00 SDCC Rm33C)
- Kriging: An Introduction to Concepts and Applications (2:30-3:30 SDCC Rm33C)
- Geostatistical Analyst: An Introduction (4:00-5:00 SDCC Rm30C)

Wednesday

- Surface Interpolation in ArcGIS (11:15-12:00 SDCC Demo Theater 10)
- Empirical Bayesian Kriging and EBK Regression Prediction in ArcGIS (2:30-3:15 SDCC Demo Theater 10)

Thursday

- Geostatistics in Practice: Learning Interpolation Through Examples (8:30-9:30 SDCC Rm30A)
- Polygon-to-Polygon Predictions Using Areal Interpolation (11:15-12:00 SDCC Demo Theater 10)
- Geostatistical Analyst: An Introduction (1:00-2:00 SDCC Rm30A)
- Using Living Atlas Data and ArcGIS Pro for 3D Interpolation (2:30-3:30 SDCC Rm 30C)
- Interpolating Surfaces in ArcGIS (4:00-5:00 SDCC Rm15A)
- Kriging: An Introduction to Concepts and Applications (4:00-5:00 SDCC Rm15B)

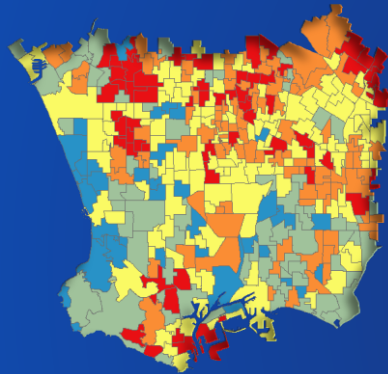
Geostatistical Analyst Resources

<http://esriurl.com/GeostatGetStarted>

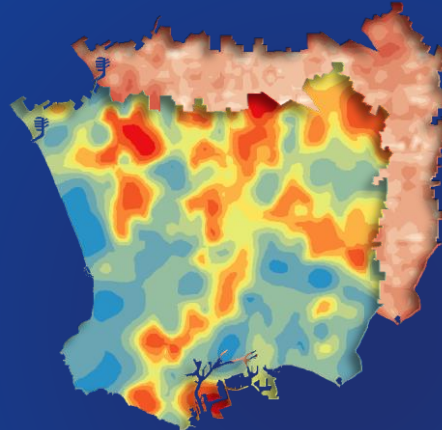
- GeoNet – community.esri.com
 - Blogs
 - Free textbook and datasets
 - Spatial Statistical Analysis For GIS Users
 - Lots of discussions and Q&A
- Learn GIS – learn.arcgis.com
 - Model Water Quality Using Interpolation
 - Analyze Urban Heat Using Kriging
 - Interpolate 3D Oxygen Measurements in Monterey Bay



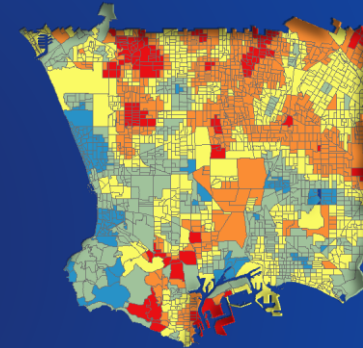
Areal Interpolation



Obesity by school zone



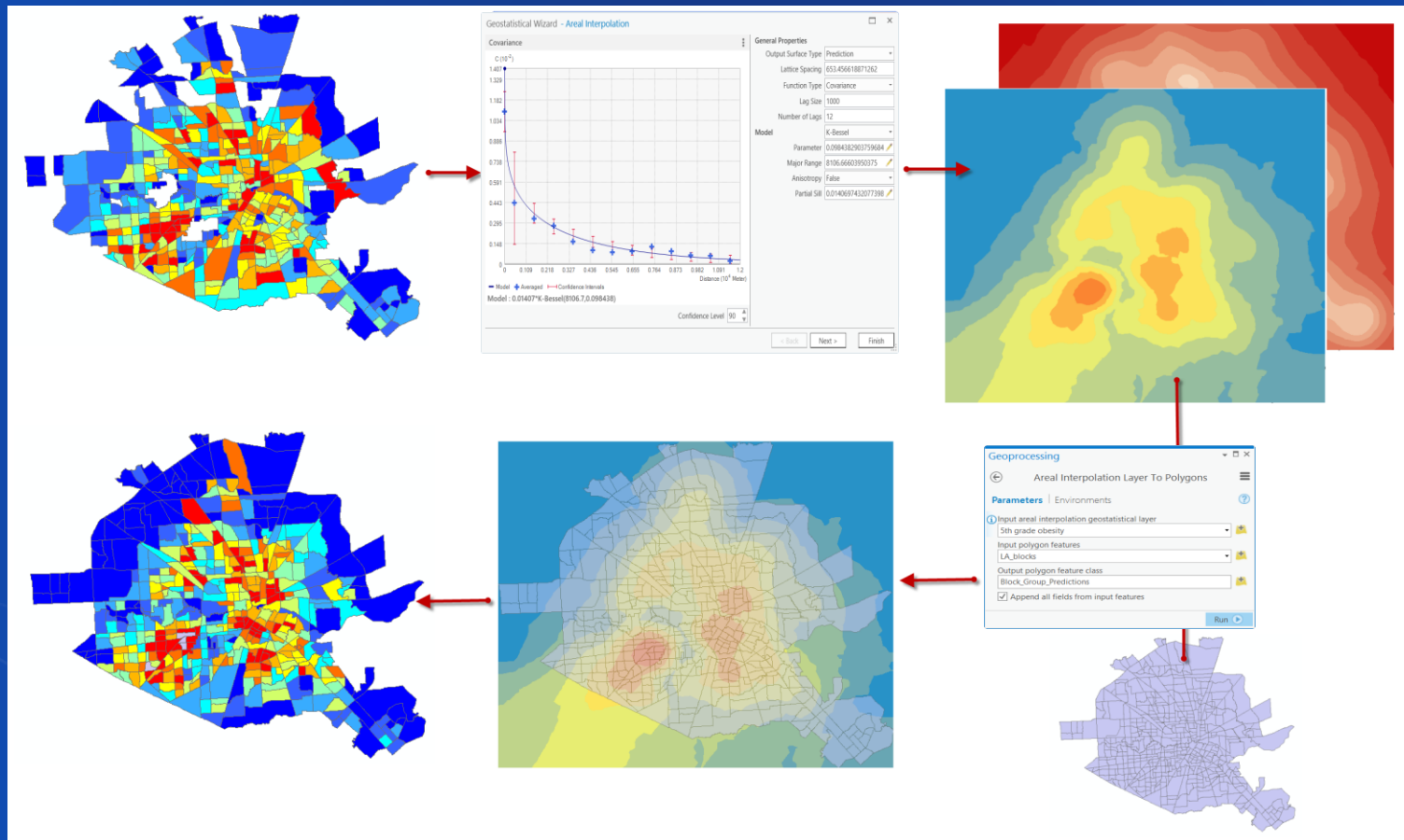
Obesity surface and
error surface



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

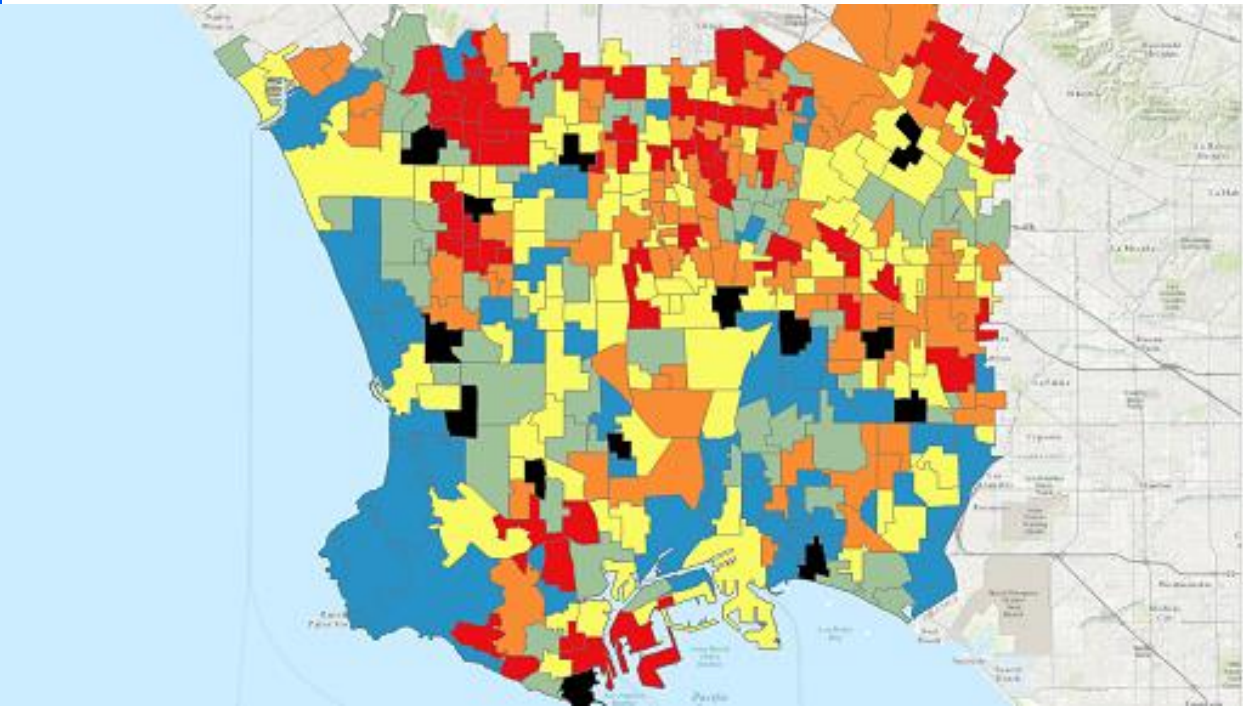


Types of Areal Interpolation

Count (Overdispersed Poisson) Areal Interpolation

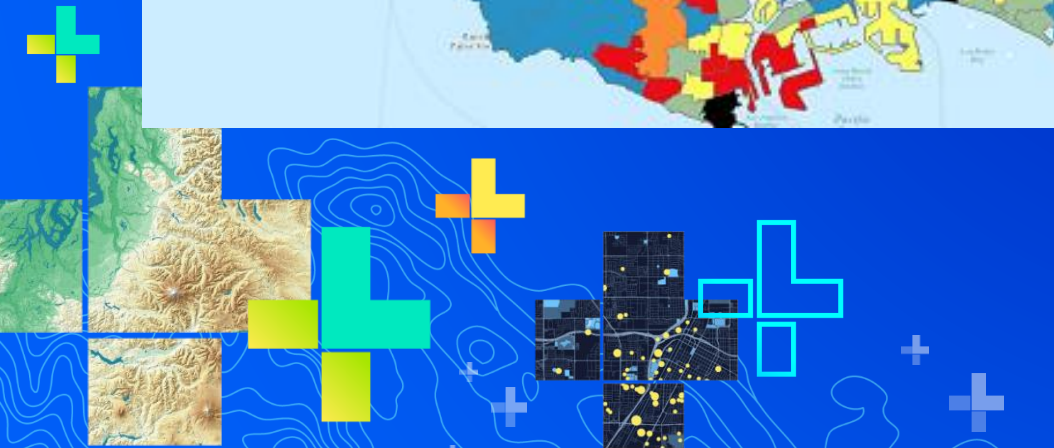
- **Example:**
 - Counts of whales over polygons in the ocean
- **Takes two input fields:**
 - Number of instances of a certain event counted within a polygon
 - Amount of time spent counting within the polygon
- **Variable of interest**
 - Interpolate on density/risk of making an observation at a given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





Areal Interpolation Demo

Eric Krause





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WHERE**

