

What's New in Spatial Statistics

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2021 ESRI FEDERAL GIS CONFERENCE

What are
Spatial Statistics?

Spatial statistics are a set of exploratory techniques for describing and modeling **spatial distributions, patterns, processes, and relationships.**

They aren't just traditional statistics that *happen* to be applied to spatial data.

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They use geography in their calculations.

Proximity, coincidence, connectivity, shape, direction...

That's all true.

But it's actually a lot more exciting than it seems!

And a lot more **important**.



Spatial statistics **extend** what our eyes and our minds do naturally whenever we look at a map

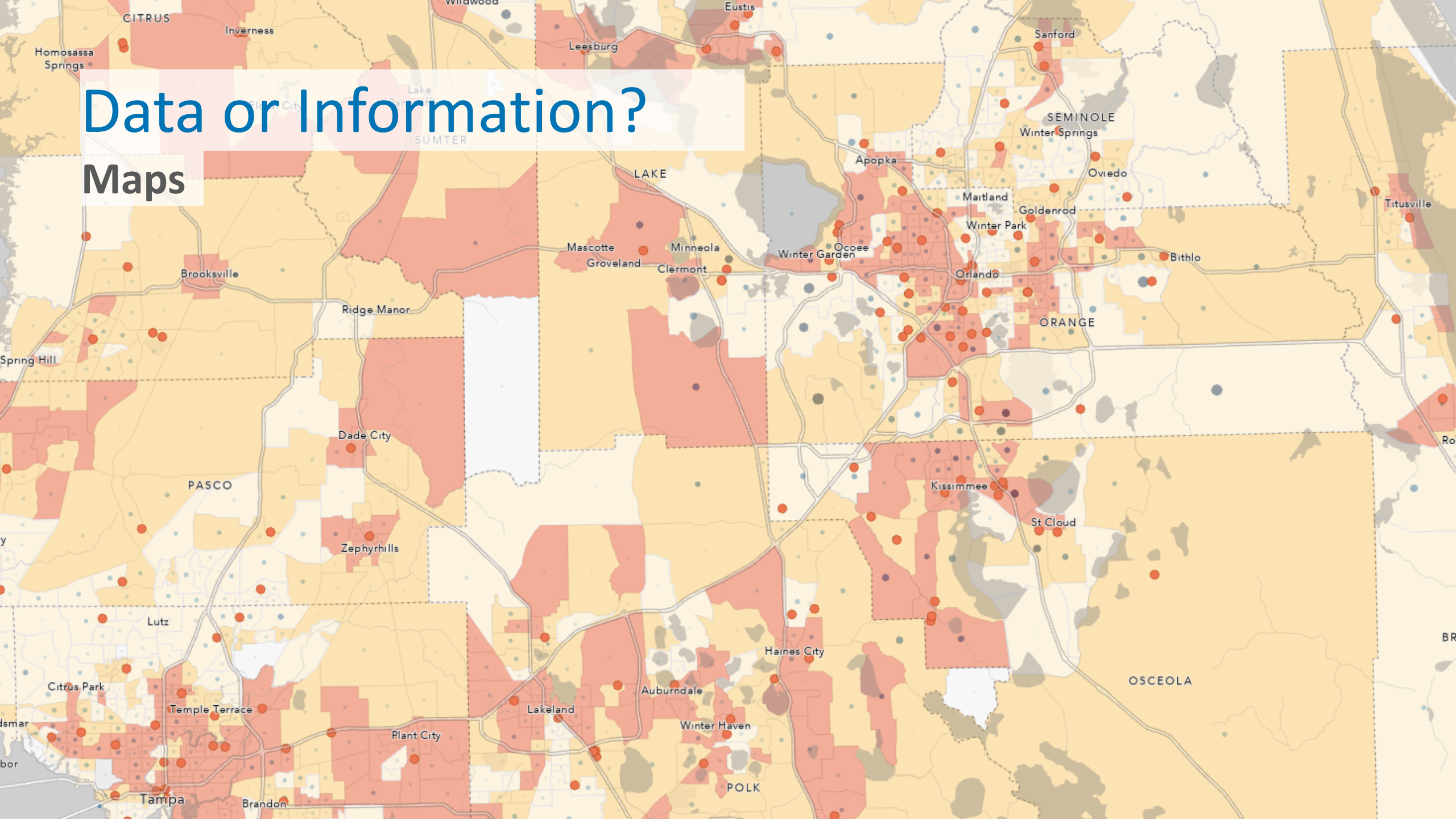
Turning **data** into **information**



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Data or Information?

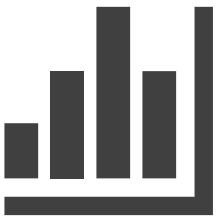
Maps



Data or Information?

Spreadsheets

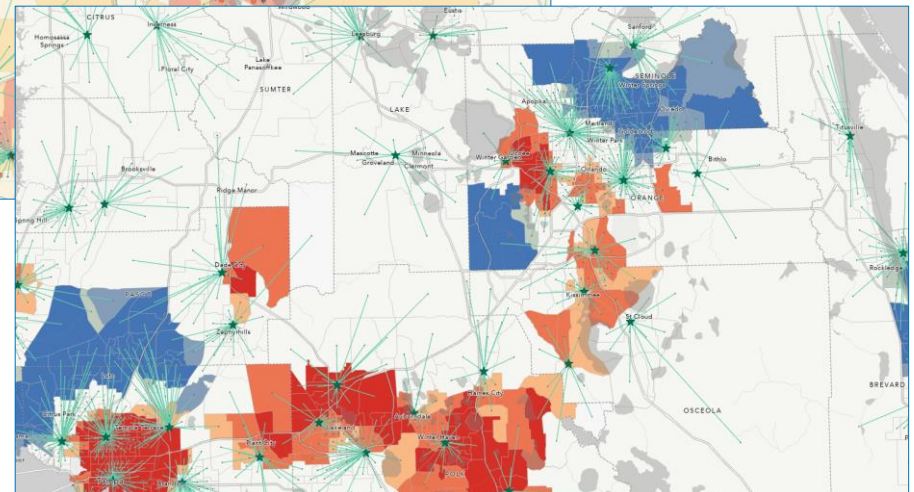
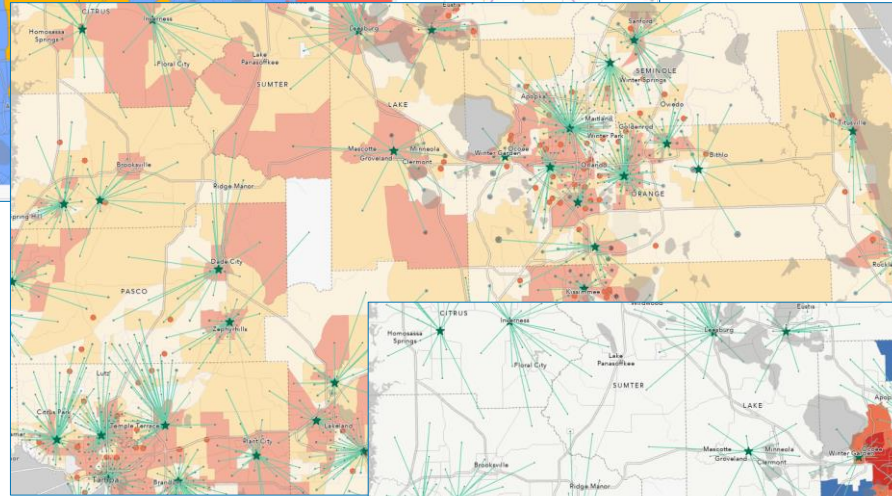
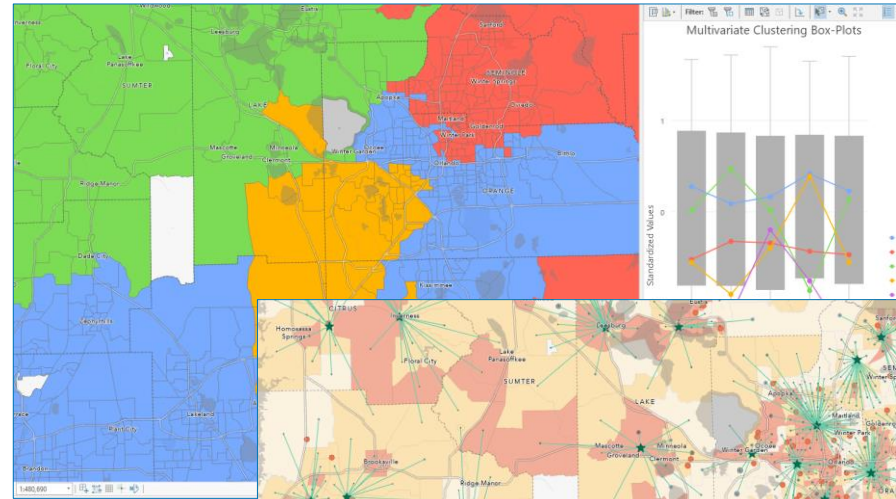
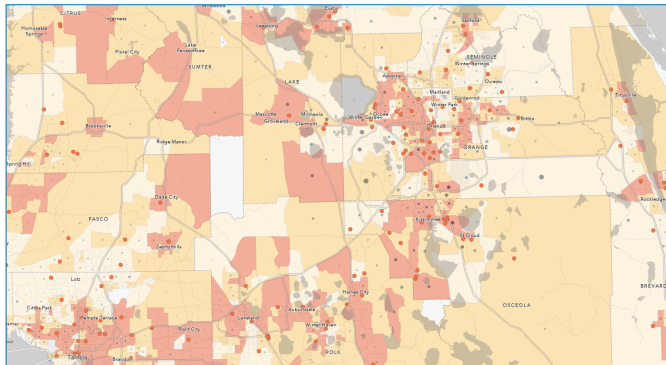
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min
max
 \bar{x}
std(X)

Data or Information?

Maps



Spatial Analysis & Data Science



Data
Engineering



Visualization
& Exploration



Spatial
Analysis



Machine
Learning & AI



Big Data
Analytics



Modeling
& Scripting



Sharing &
Collaboration

What's new?

- **Data Engineering**
 - Standardize
 - Transform
 - Reclassify
 - Encode
- **Dimension Reduction**
- **Neighborhood Summary Statistics**
- **Spatial Outlier Detection**
- **Spatial Association Between Zones**

Data Engineering

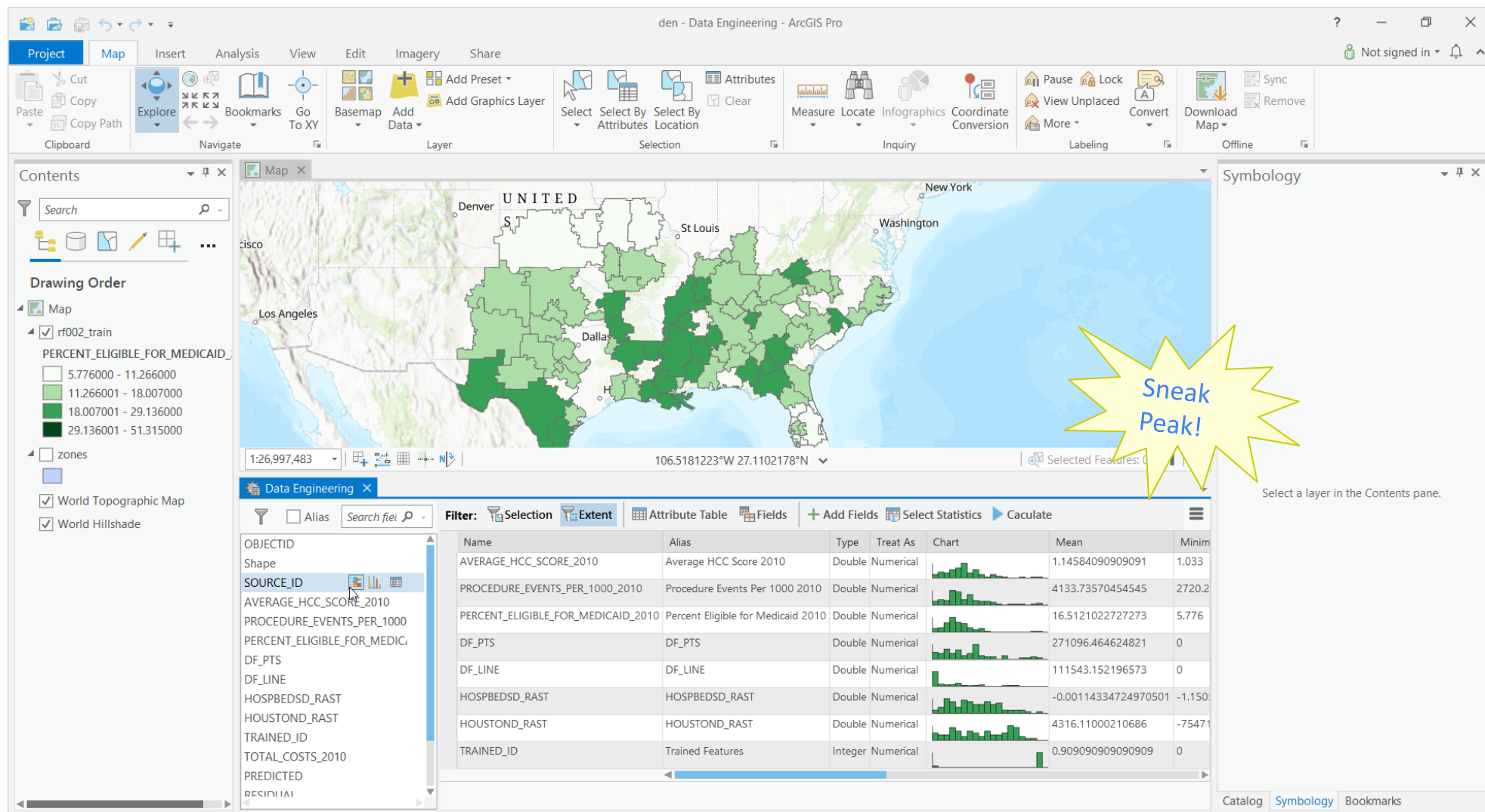
- Getting your data **ready for analysis**
 - What's missing?
 - What's wrong?
 - What can you add?
 - What should you transform?

Data Engineering

The Fun Stuff



Data Engineering Experience



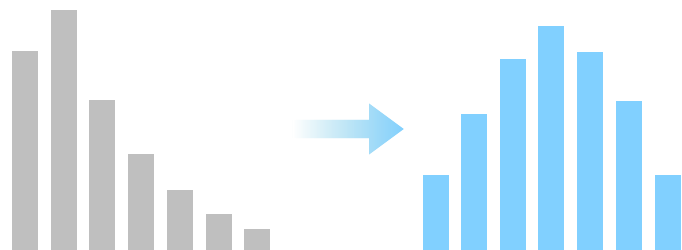
New Data Engineering Tools

Alberto Nieto

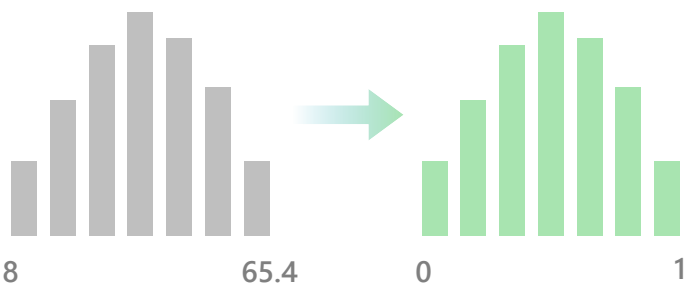
Data Engineering Tools

Released in ArcGIS Pro 2.7

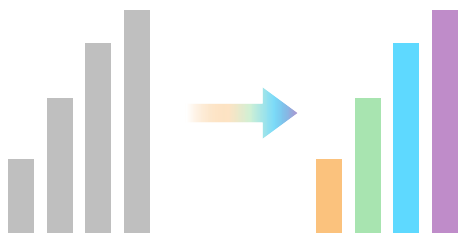
Transform Field








Standardize Field







Reclassify Field



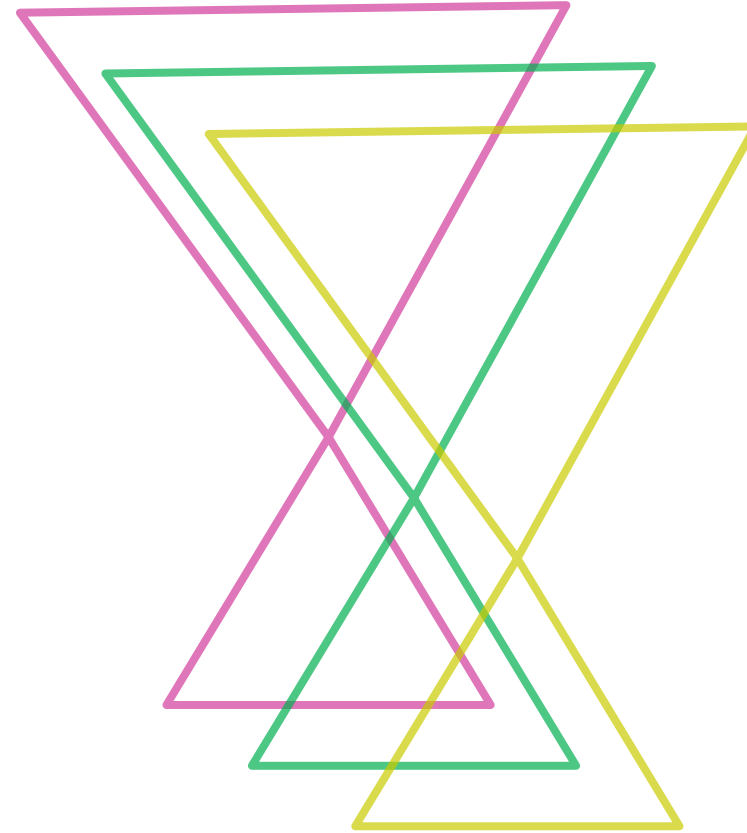
Encode Field

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2	
3	
4	
5	

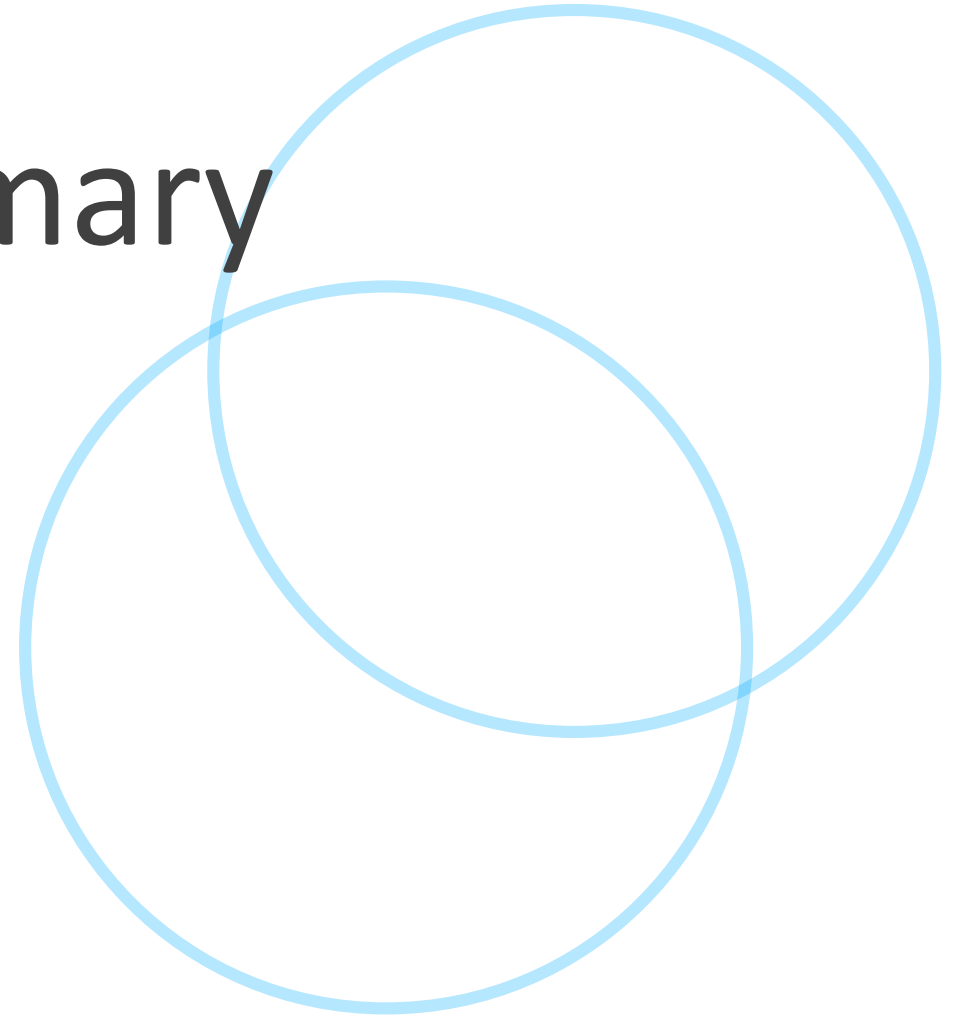


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Dimension Reduction



Neighborhood Summary Statistics

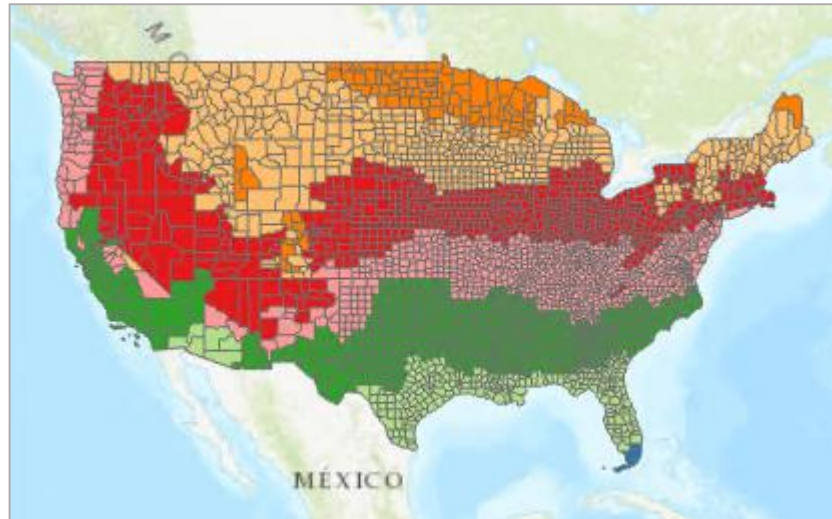




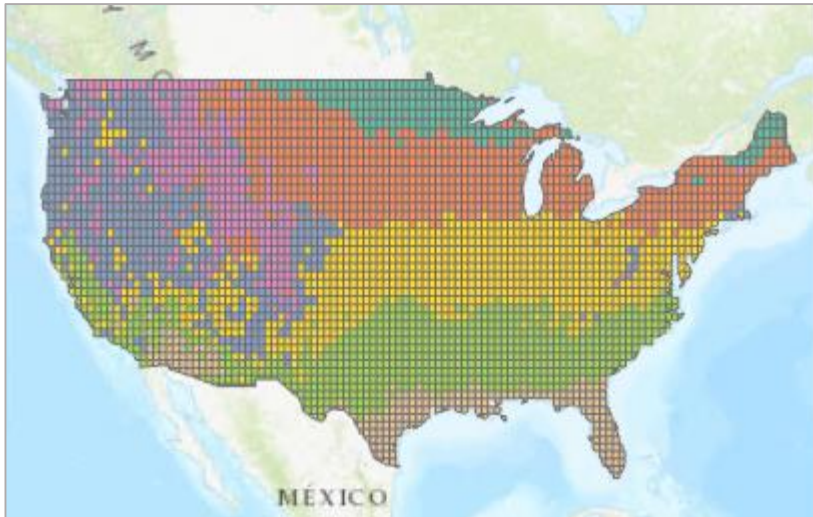
Spatial Association

Between Zones

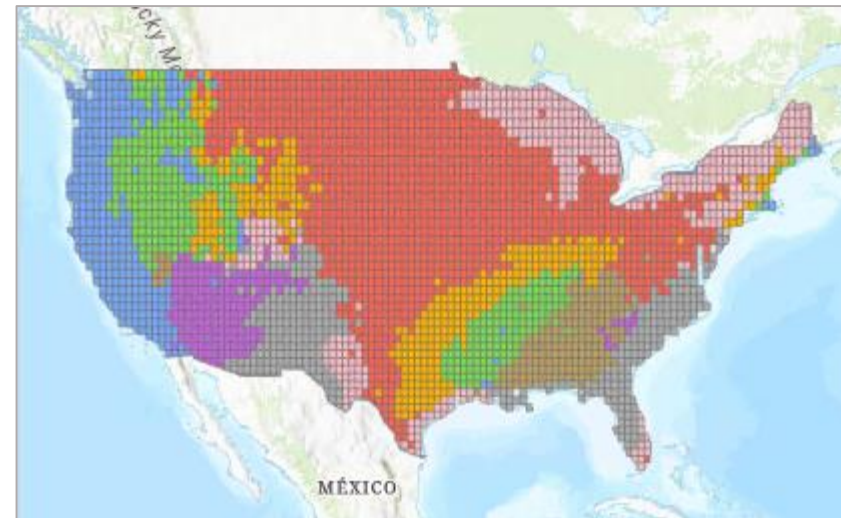
Map A



Map B



Map C





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