Client-Side Web GIS

Layer Symbology and Pop-Ups

Image from NASA: https://commons.wikimedia.org/wiki/File:Earth_Western_Hemisphere_transparent_background.png#filelinks

WV VIEW

AmericaView
Empowering Earth Observation Education
AmericaView.org - Est. 2003

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Layer Symbology

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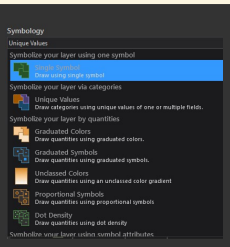
Layer Symbology in ArcGIS



- Same symbol for all features
- Different symbol for each category or unique value
- Graduated colors
- Unclassified colors
- Graduated symbols
- Proportional symbols
- Dot Density

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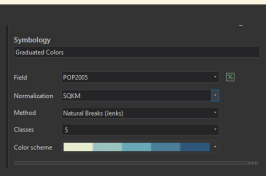
Normalization

- Divide value by another value to normalize the measurements
- For example: population vs. population per square kilometers
- Provides for a fairer comparison
- Should normalize when producing choropleth maps



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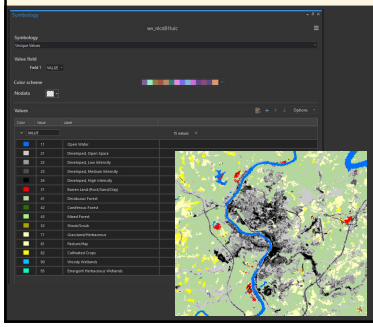
Symbolizing Categories



- Land cover type, private vs. public, urban vs. rural, soil types, etc.
- Use colors that make sense for the category (if appropriate)
- Colors should not be ordered

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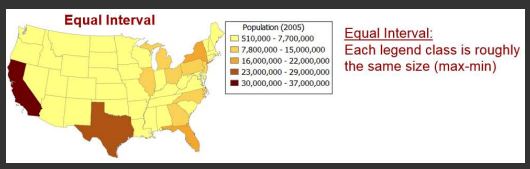
Equal Interval

- Breaks data range into equal intervals
- Does not take into account natural breaks in the data



Equal Interval:
Each legend class is roughly the same size (max-min)

Created by Mike and Jackie Strager

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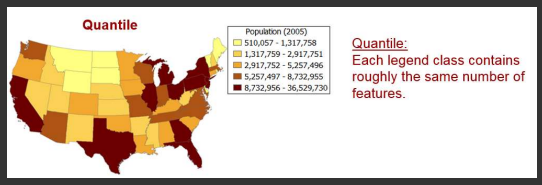
Quantiles

- Same number of features in each bin
- Does not take into account natural breaks in the data



Quantile:
Each legend class contains roughly the same number of features.

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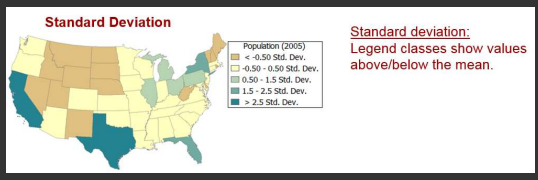
Mean-Standard Deviation

- Bins defined based on standard deviation of data subtracted or added to mean



Standard deviation:
Legend classes show values above/below the mean.

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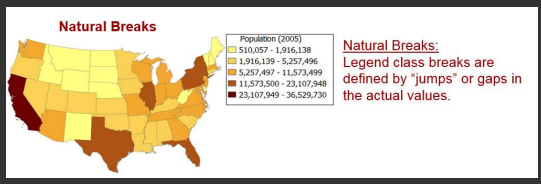
Jenks-Caspell/Fisher-Jenks

- Algorithms that attempts to find "natural breaks" in the data
- ArcGIS uses an implementation of Fisher-Jenks



Natural Breaks:
Legend class breaks are defined by "jumps" or gaps in the actual values.

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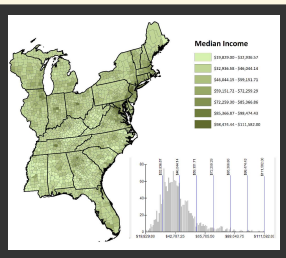
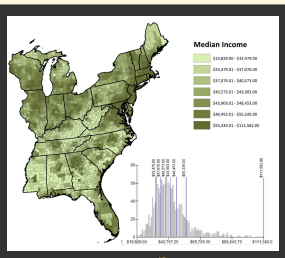
Classification Methods Compared



Equal Interval



Quantile

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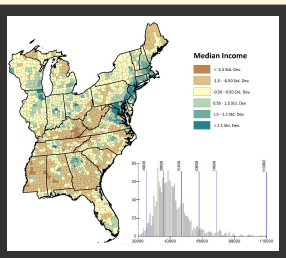
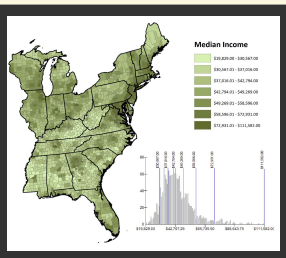
Classification Methods Compared



Mean-Standard Deviation



Natural Break

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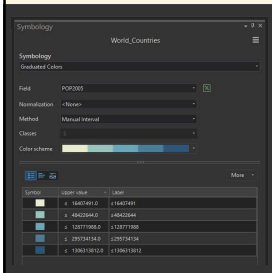
Manual Classification



❖Define your own breaks

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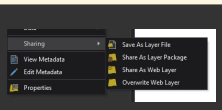
Layer Files (ArcGIS)



- Can be used to save layer symbology for later use

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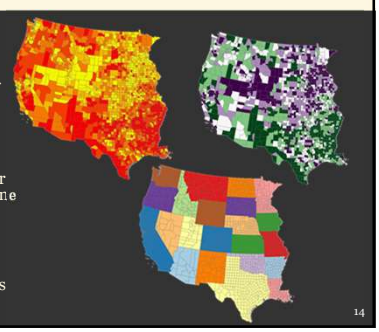
Color Ramp

- You can change the colors used to symbolize your data
- You can also change the number of categories
- Nominal Color Scheme = used for categorical data (not ordered)
- Sequential Color Scheme = used for continuous data that increases in one direction
- Diverging Color Scheme = used for continuous data that diverges
- Think about how we perceive colors



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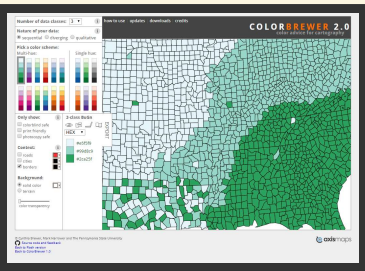
ColorBrewer 2.0



http://colorbrewer2.org/#type=sequential&scheme=BuGn&n=3

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Some considerations

- Layers published from ArcGIS Pro can maintain the original symbology
- Can also maintain pop-ups
- Not all symbols may work in ArcGIS Online
- I find it easiest to edit symbology and pop-ups in ArcGIS Pro as opposed to ArcGIS Online
- However, it is pretty simple to edit layer symbology in ArcGIS Online

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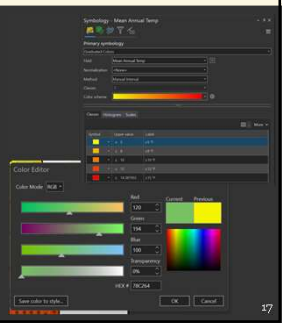
Symbology in ArcGIS Pro (Vector)

- Right-click layer in Contents pane → Symbology
- Symbology options will depend on layer type
- Methods = Single Symbol, Unique Values, Graduated Colors, Bivariate Colors, Unclassified Colors, Graduated Symbol, Proportional Symbol
- Selecting Colors
  - Gallery
  - Properties



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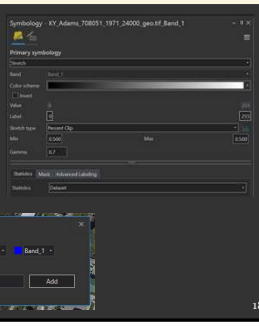
Symbology in ArcGIS Pro (Raster)

- Right-click layer in Contents pane → Symbology
- Symbology options will depend on layer type
- Methods = RGB, Stretch, Discrete, Classify, Unique Values, Vector Fields
- Selecting Colors
  - Gallery
  - Properties



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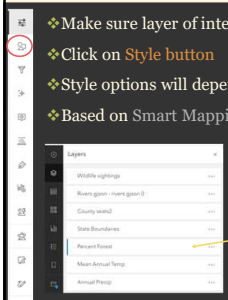
Layer Symbology in ArcGIS Online (Vector)



- Make sure layer of interest is selected under Layers
- Click on Style button
- Style options will depend on layer geometry and attribute(s)
- Based on Smart Mapping for data visualization and exploration

Make sure layer of interest is selected

https://www.esri.com/en-us/arcgis/products/mapping/smart-mapping

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Layer Symbology in ArcGIS Online (Points)

- Counts and Amounts (size) = width of line based on continuous attribute
- Counts and Amounts (color) = color of line based on continuous attribute
- Color and Size = width of line and color based on continuous attributed
- Types (unique symbol) = unordered colors for categorical/nominal data
- Location (single symbol) = single symbol/no attribute visualized
- Heat Map = density of points (kernel density)

*Other methods available
*Available symbology will depend on the number of and types of attributes being visualized

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Layer Symbology in ArcGIS Online (Lines)

- Counts and Amounts (size) = width of line based on continuous attribute
- Counts and Amounts (color) = color of line based on continuous attribute
- Color and Size = width of line and color based on continuous attributed
- Types (unique symbol) = unordered colors for categorical/nominal data
- Location (single symbol) = single symbol/no attribute visualized

*Other methods available
*Available symbology will depend on the number of and types of attributes being visualized

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Layer Symbology in ArcGIS Online (Polygons)

- Counts and Amounts (size) = graduated or proportional symbol
  - If Classify data is selected = graduated symbol
  - If Classify data is not selected = proportional symbol
- Counts and Amounts (color) = choropleth
  - If Classify data is selected = Classified colors
  - If Classify data is not selected = Unclassified colors
- Color and Size = combine graduated/proportional symbol and choropleth
  - Can assign different attributes to size and color
- Dot Density = Dot density
- Types (unique symbol) = for categorical/nominal data with no implied order
- Location (single symbol) = single symbol/no attribute visualized
- Relationship = bivariate choropleth
- Types and Size = color shows category and size show a continuous variable

*Other methods available
*Available symbology will depend on the number of and types of attributes being visualized

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Layer Symbology ArcGIS Online (Raster)

- More limited symbology options in ArcGIS Online in comparison to vector data
- Cannot change symbology of a Raster Tile Layer (pre-rendered tiles)
- Suggest preparing symbology in ArcGIS Pro then sharing a Raster Tile Layer.

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Layer Symbology ArcGIS Online (Vector Tile Layer)

- https://doc.arcgis.com/en/arcgis-online/reference/update-vector-tile-style.htm

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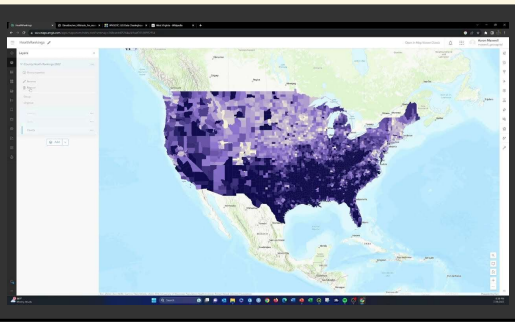
Video: Symbology in AGOL



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Layer Pop-Ups

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Recommendations

- Disable pop-ups when unnecessary (such as for reference layers)
- You can edit pop-ups in both ArcGIS Online and ArcGIS Pro (I prefer ArcGIS Pro)
- Pop-up edits made in ArcGIS Pro should carry over to ArcGIS Online when the layer is published
- Only show fields, graphics/images, and/or charts that are meaningful
- Try to avoid using poorly formatted field names (use alias/display names or provide a better name)
- Take some time to format text and numbers
- If you want to include different links for each feature, include the links in an attribute table column
- If you want to include different graphics/images for each feature, include links in an attribute column
- If the same link for graphic will be used for all pop-ups, you do not need to include this link in the attribute table
- ArcGIS Arcade and HTML code can be used to further customize pop-ups

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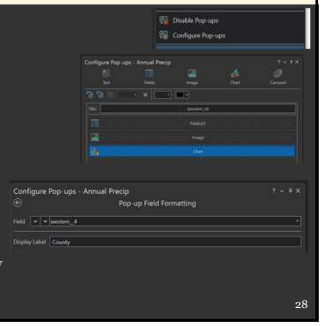
Pop-Ups in ArcGIS Pro

- Right-Click Layer in Contents Pane → Disable/Enable Pop-ups
- Right-Click Layer in Content Pane → Configure Pop-Ups
- When referencing fields, field names are provided in {}
- Can add:
  - Title
  - Text
  - Fields
  - Image
  - Chart
  - Carousel
- Can edit text font, font size, and color
- Can change field names using field options: Display label



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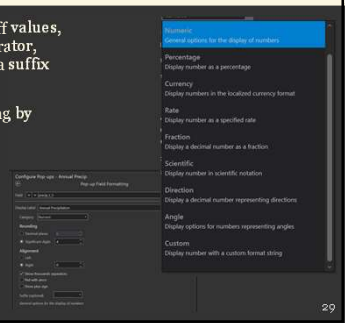
Pop-Ups in ArcGIS Pro

- Can edit numeric attributes to round off values, apply alignment, show thousands separator, pad with zeros, show plus sign, or add a suffix (e.g., units)
- Can apply additional number formatting by changing the Category



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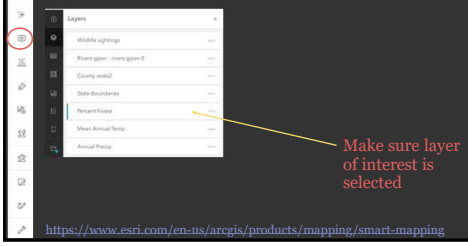
Pop-Ups in ArcGIS Online

- Make sure layer of interest is selected under Layers
- Click on Pop-ups button



https://www.esri.com/en-us/arcgis/products/mapping/smart-mapping

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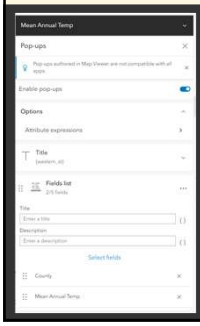
Pop-Ups in ArcGIS Pro



- Can enable or disable pop-ups
- I recommend configuring table alias names and numeric formatting in ArcGIS Pro before publishing to ArcGIS Online
- When referencing fields, field names are provided in {}
- Can add alternative text when referencing graphics/images to aid in accessibility
- Pop-ups authored in Map Viewer are not compatible with all apps

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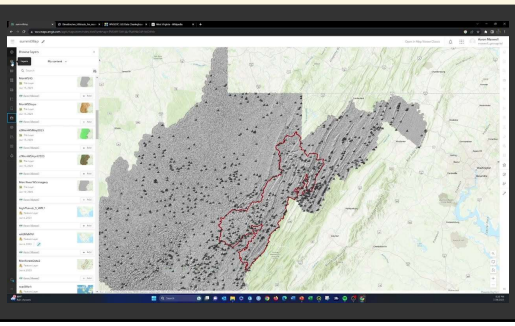
Video: Pop-Ups



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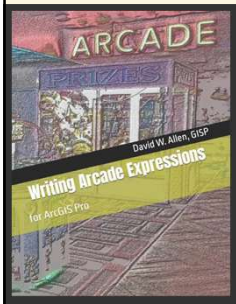
Learn ArcGIS Arcade



- Used to create custom content in ArcGIS applications
- https://www.amazon.com/Writing-Arcade-Expressions-ArcGIS-Pro/dp/0578533006
- https://developers.arcgis.com/arcade/

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This is the end of this lecture module.

Please return to the West Virginia View Webpage for additional content.

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