

ArcGIS Pro: An Introduction to Mapping and Visualization

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2021 ESRI FEDERAL GIS CONFERENCE

Meet your friendly Esri Presenters



Rami



Thomas

ArcGIS Pro

- Our modern, primary desktop app for the ArcGIS Platform
- Integrated 2D and 3D approaches
- Used for creating, analyzing, visualizing, and sharing data



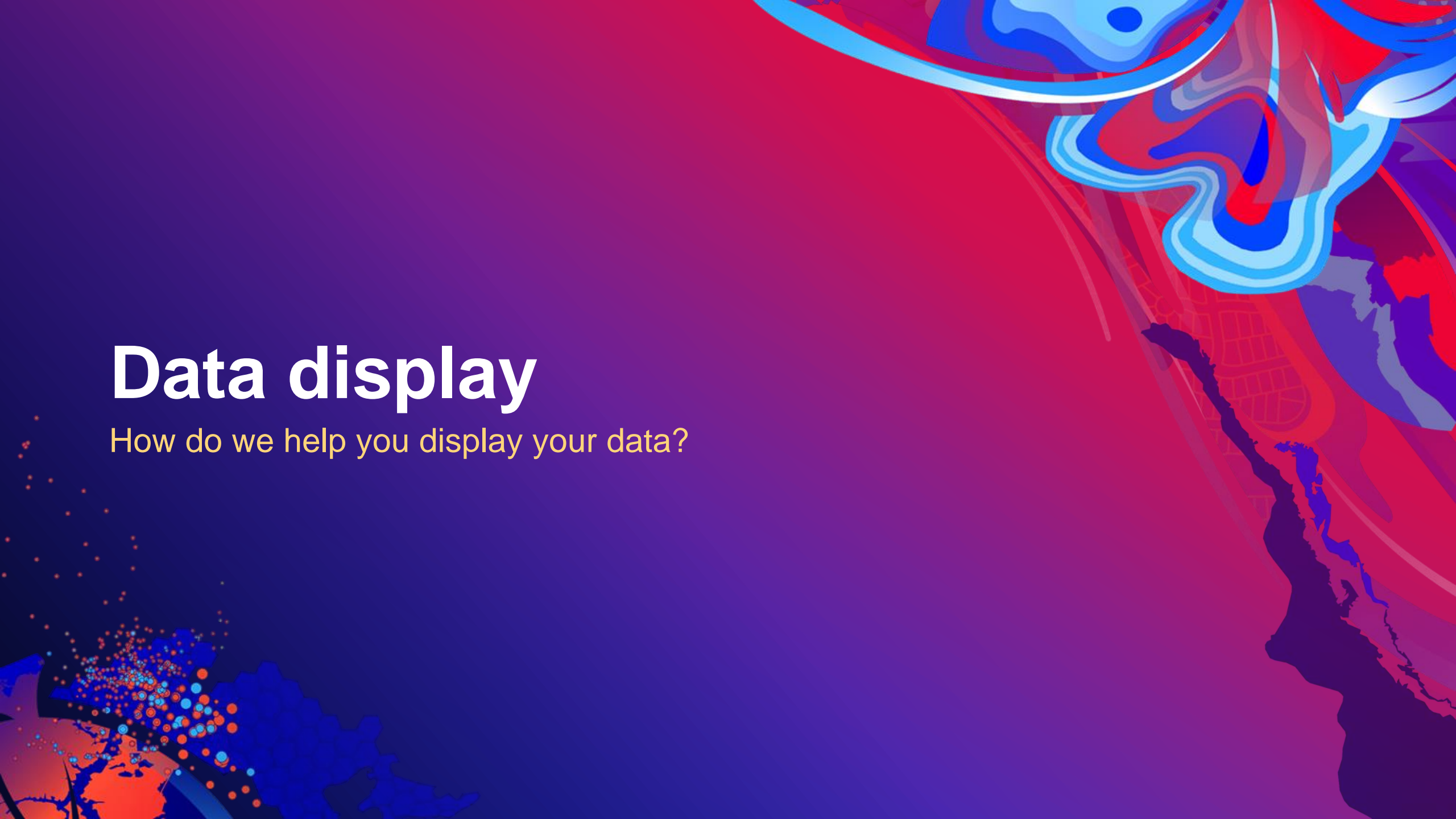
Mapping and visualization in ArcGIS Pro

- **Common tasks:**
 - Data display
 - Editing and generalizing
 - Symbolizing and labeling
 - Layouts and sharing






Data display

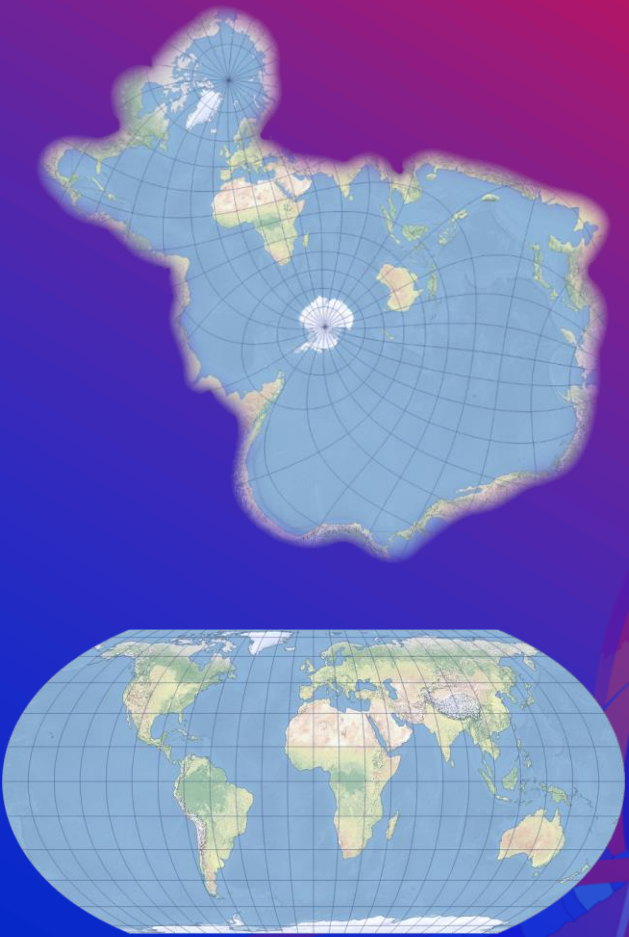
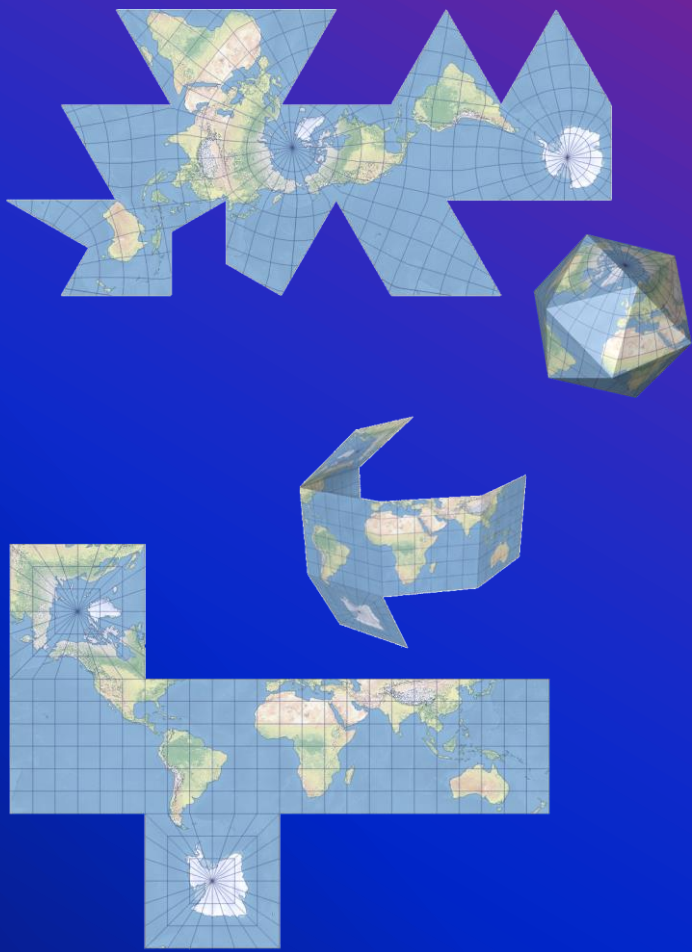
How do we help you display your data?



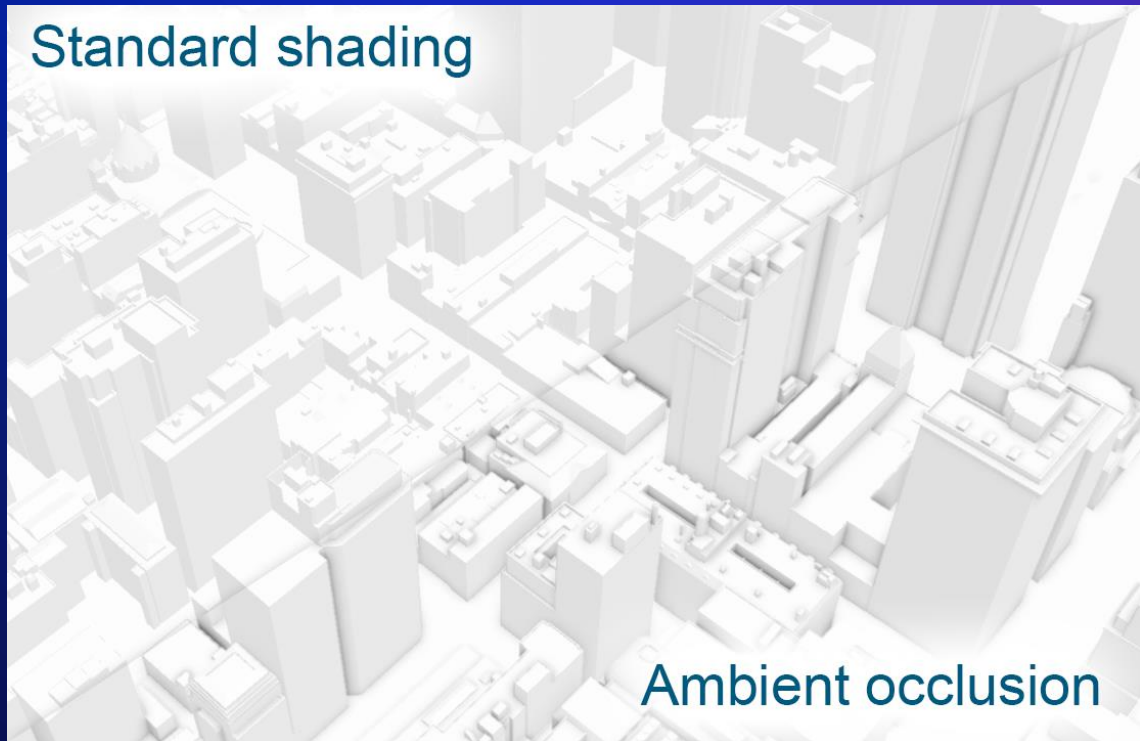
Coordinate system support

List of supported map projections

Map projection	Example	Description
Adams square II		This projection shows the world in a square. It is a conformal projection except in the four corners of the square.
Aitoff		This compromise modified azimuthal projection takes a form of an ellipse. It is used primarily for world maps.
Albers		This equal-area conic projection is best suited for land masses extending in an east-to-west orientation at midlatitudes.
Aspect-adaptive cylindrical		This compromise map projection adjusts the parallels to the height-to-width (aspect) ratio of a canvas. The aspect ratio must be between 0.3 and 1.
Azimuthal equidistant		The projection preserves both distance and direction from the central point. It is used primarily for hemisphere maps.
Behrmann		This is a cylindrical equal-area projection with standard parallels at 30°.
Berghaus star		This interrupted projection takes a form of a star, and it is used by the Association of American Geographers (AAG) in their logo.
Bonne		This equal-area projection was historically used to map continents. Its graticule takes a form of a heart.
Cassini		This transverse cylindrical equidistant projection is appropriate for large-scale maps with predominantly north-to-south extent.
Compact Miller		This compromise cylindrical world map projection compresses polar areas in comparison to the Miller projection.
Craster parabolic		This pseudocylindrical equal-area projection is primarily used for thematic maps of the world.
Cube		This is a faceted projection consisting of six square sides that can be folded into a cube.



Graphics



Color management

App settings

Options

Project

Current Settings

Units

Tasks

Application

General

Map and Scene

Navigation

Selection

Editing

Geoprocessing

Share and Download

Raster and Imagery

Full Motion Video

Display

Layout

Text and Graphics

Color Management

CAD and BIM

Metadata

Set options for color management

Default color model for new items

RGB

Enable color management

Color profiles

RGB

sRGB IEC61966-2-1 noBPC

CMYK

U.S. Web Coated (SWOP) v2

Conversion rules

Color conversion rule

Preserve color appearance

Rendering intent

Relative colorimetric

Use black point compensation

Learn more about color management options

OK

Cancel

Map properties

Map Properties: Map

General

Extent

Clip Layers

Metadata

Coordinate Systems

Transformation

Illumination

Labels

Color Management

Color model

RGB

Color profiles

RGB

sRGB IEC61966-2-1 noBPC

CMYK

U.S. Web Coated (SWOP) v2

Learn more about color management settings

OK

Cancel

Layout properties

Layout Properties

General

Metadata

Page Setup

Map Series

Color Management

Color model

RGB

Color profiles

RGB

sRGB IEC61966-2-1 noBPC

CMYK

U.S. Web Coated (SWOP) v2

Learn more about color management settings

OK

Cancel

Styles

demoStyle

Style

Name

Status

Editable

Description

Tags

Color Management

Default color model for new items

RGB

Color profiles

RGB

sRGB IEC61966-2-1 noBPC


Description


Properties


Spot colors


Color Model Spot ▾

Spot Name

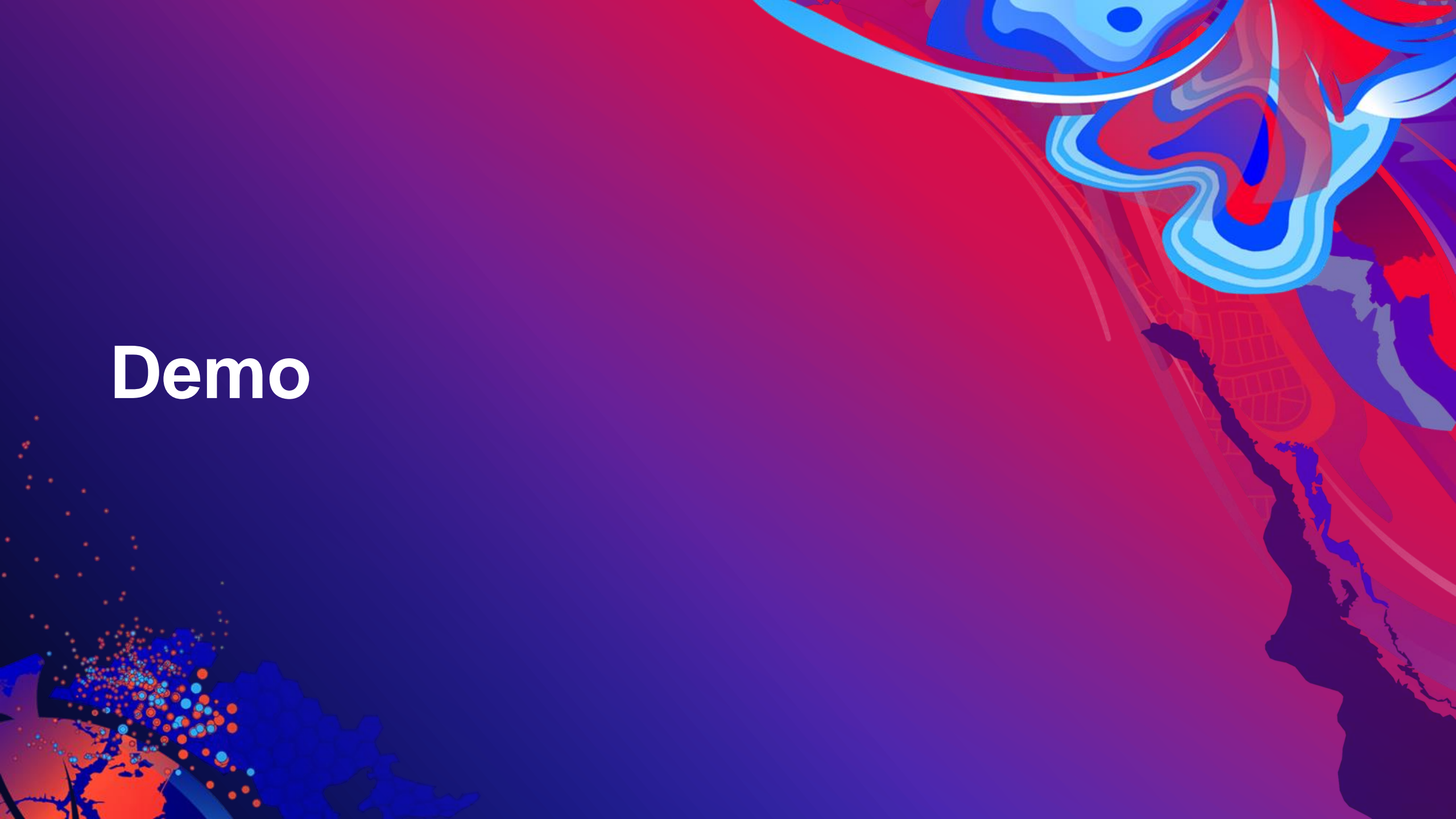
Alternative Color
 Change...

Tint 100% ▴ ▾


Transparency 0% ▴ ▾


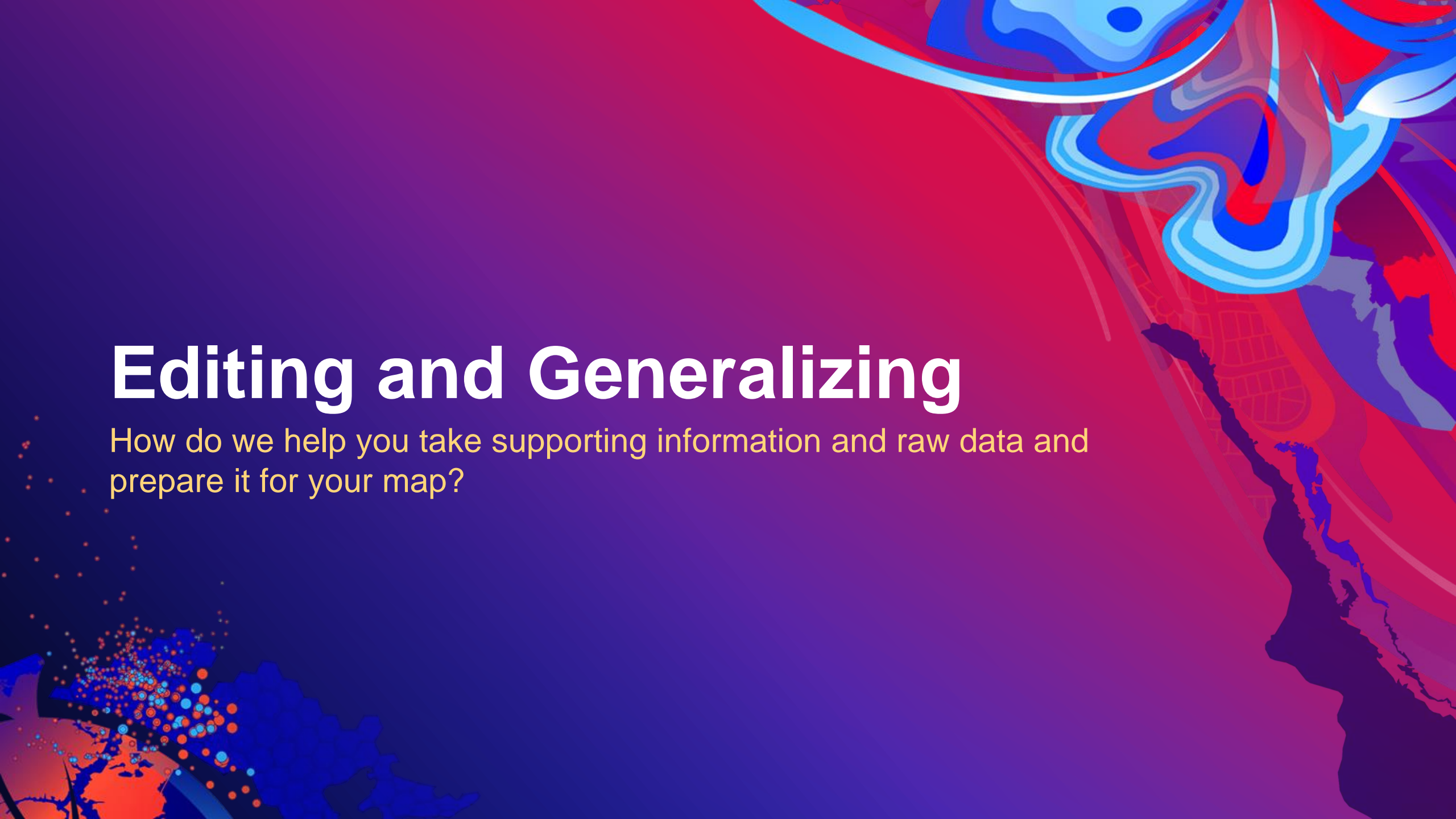
Alternative color preview


Demo



Editing and Generalizing

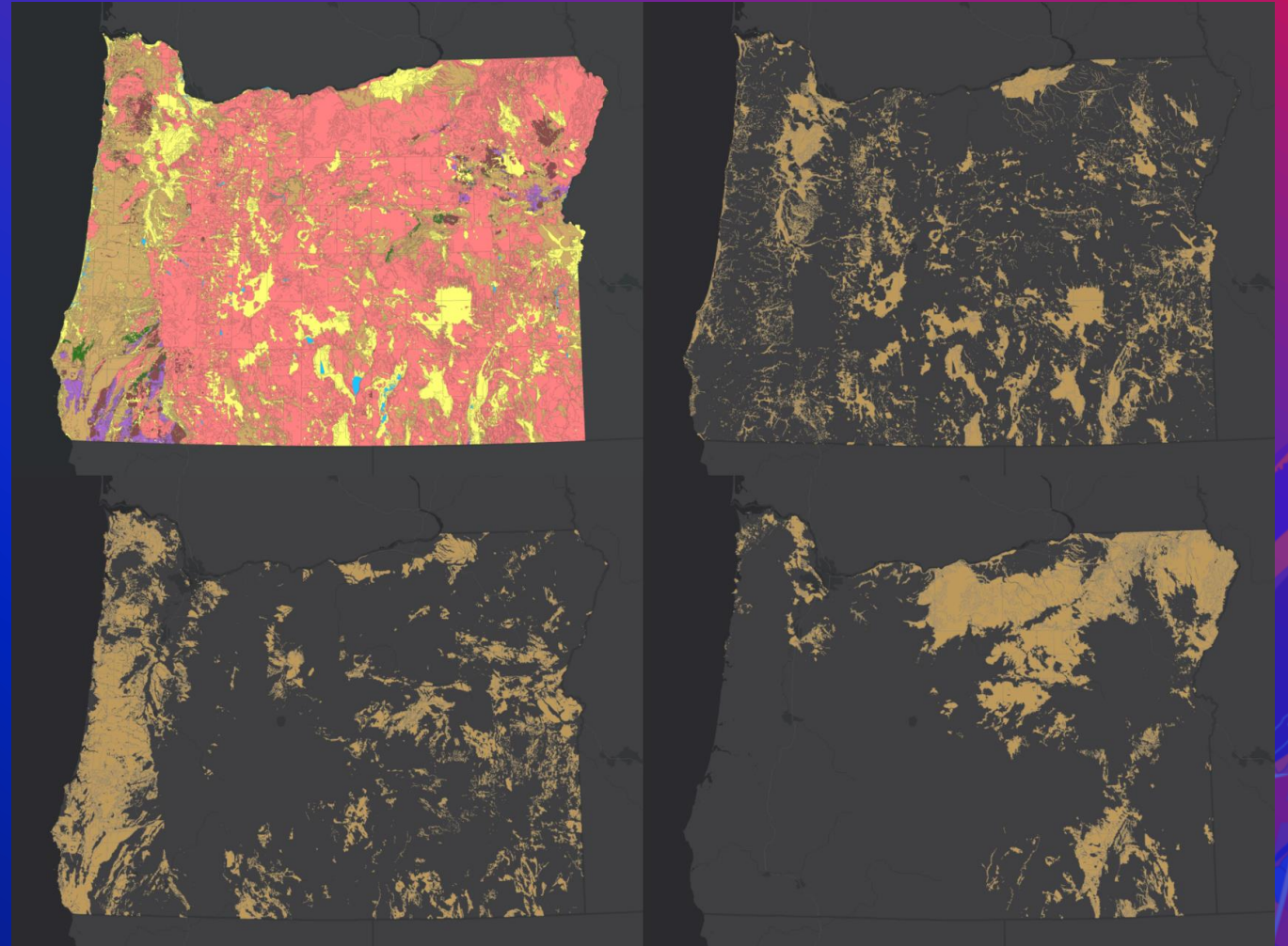
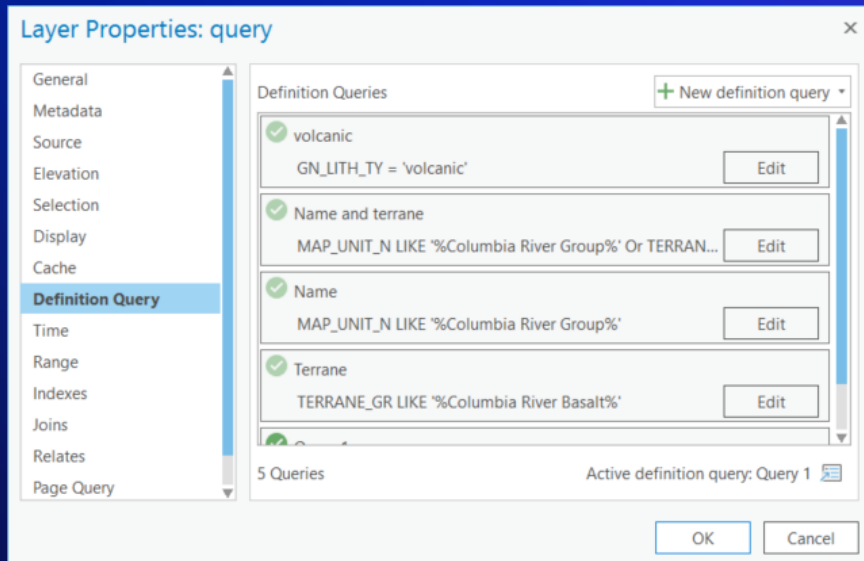
How do we help you take supporting information and raw data and prepare it for your map?



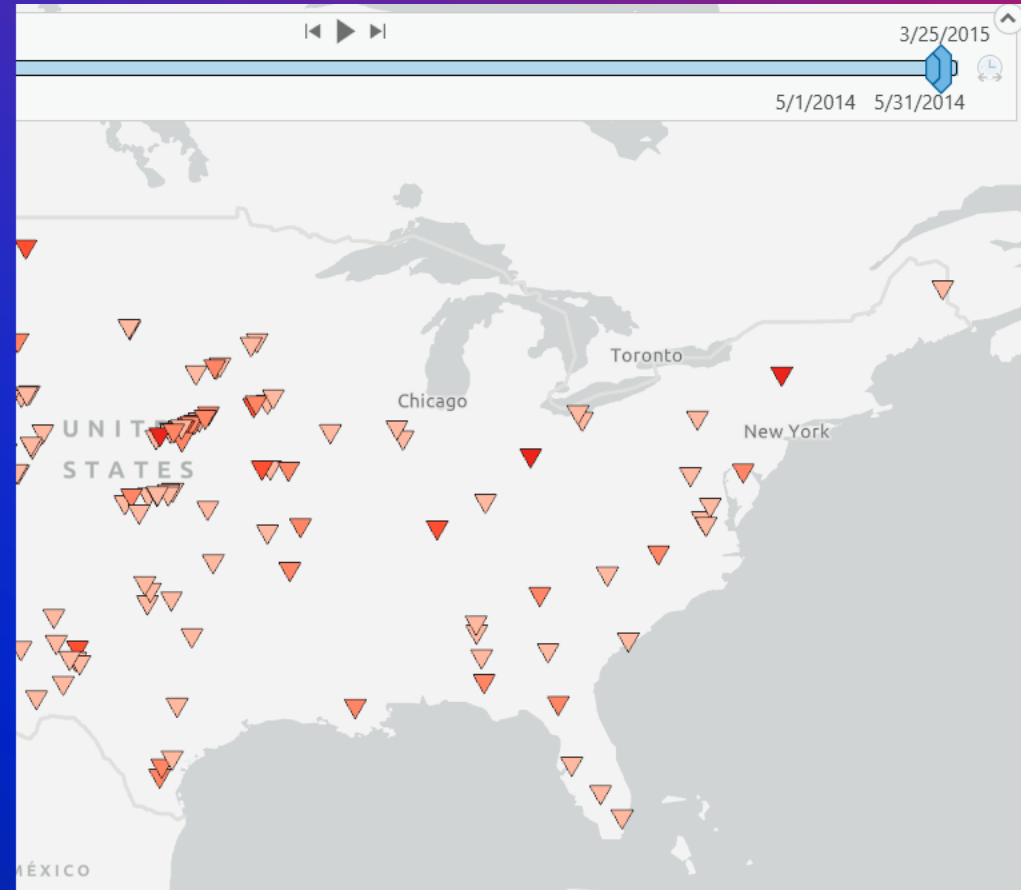
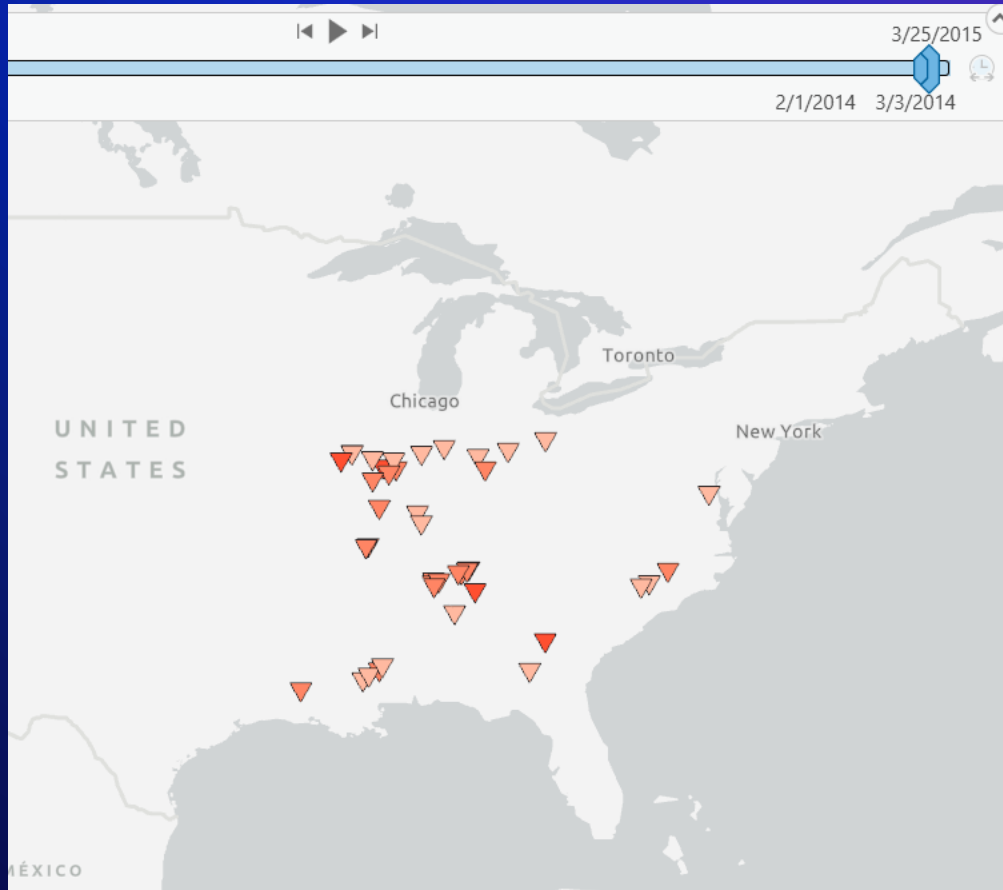
Map graphics



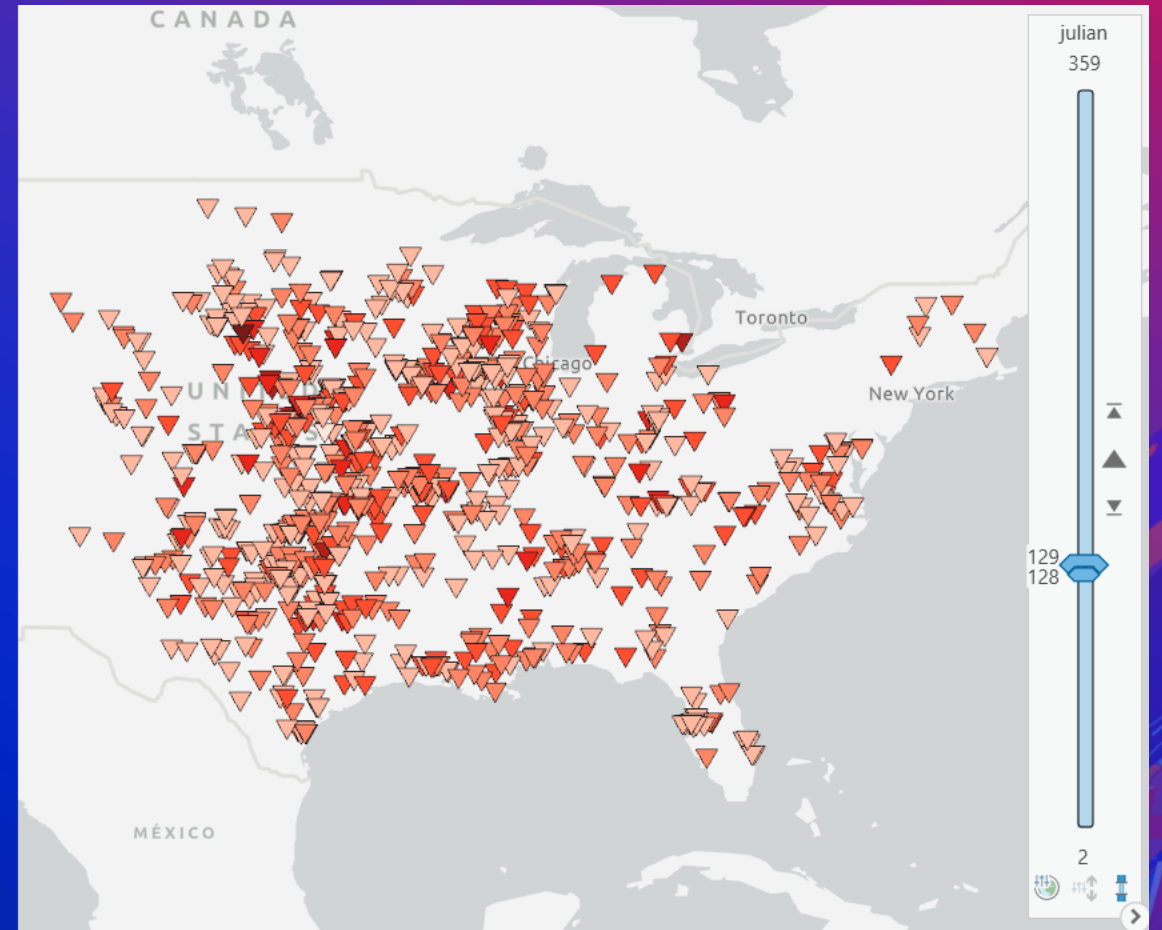
Definition Queries



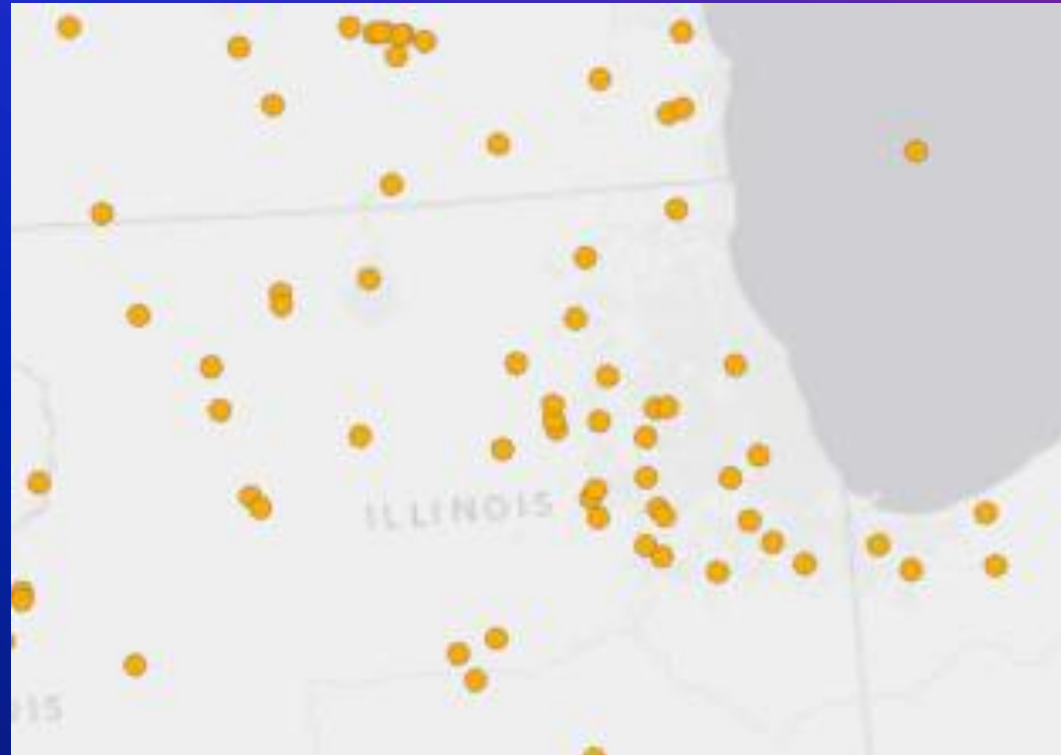
Display by scale, range, and time



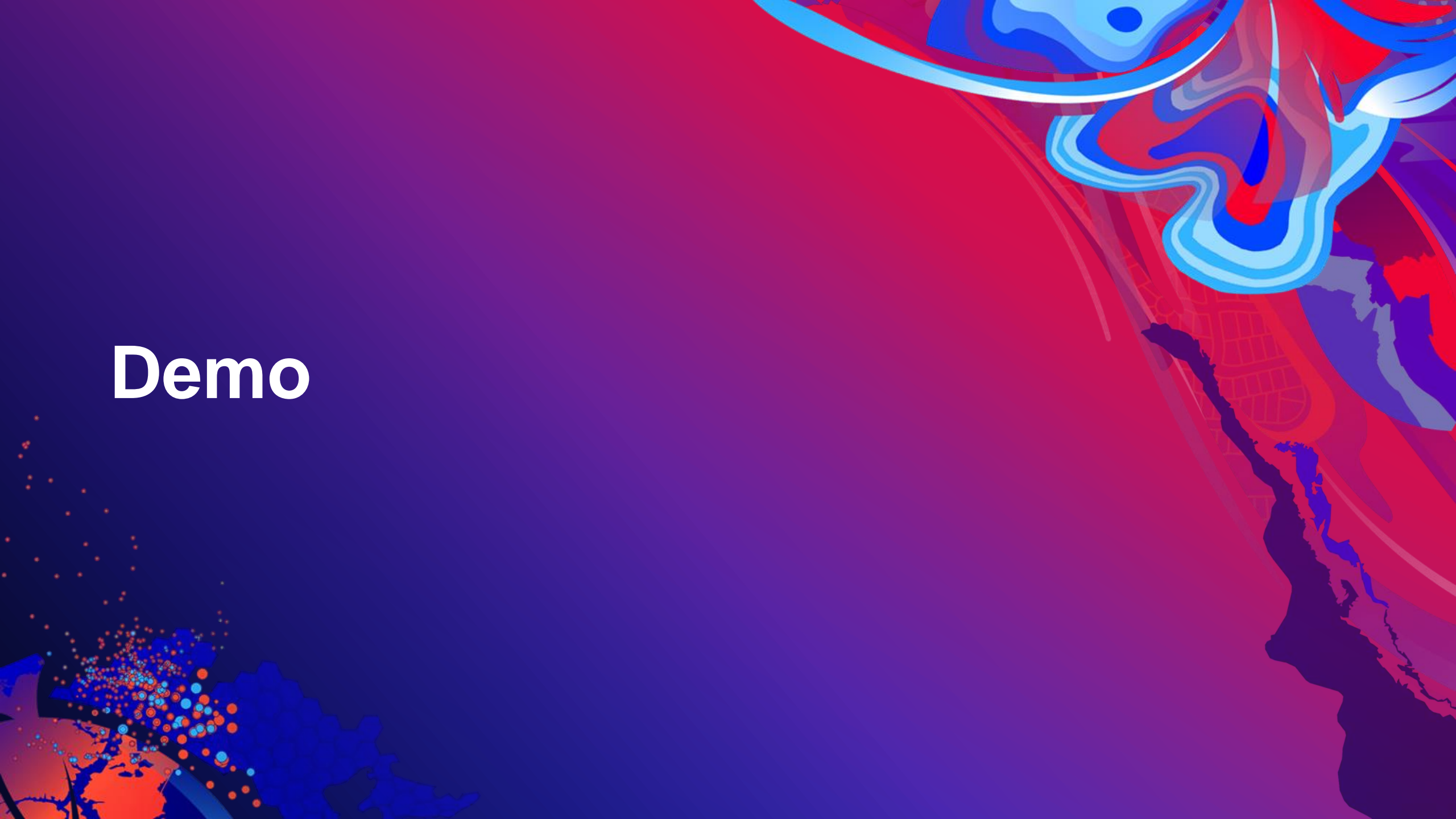
Display by scale, range, and time



Feature binning



Demo



Meet your friendly Esri Presenters



Rami



Thomas

Symbolizing and Labeling

How do we help you make your data clear, elegant, and engaging?



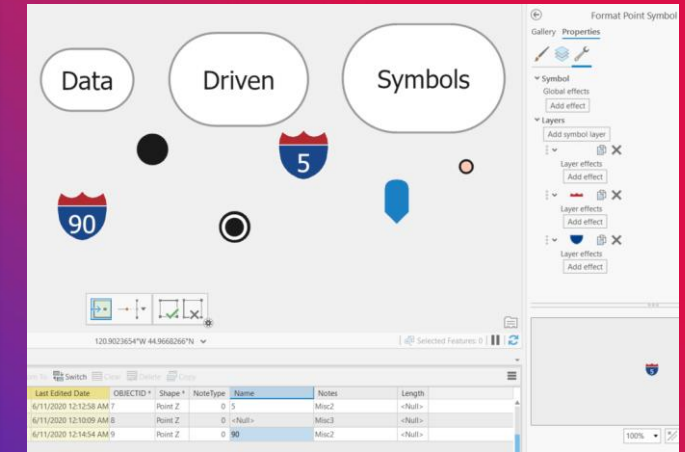
Symbology ArcGIS Pro

Symbol Layers

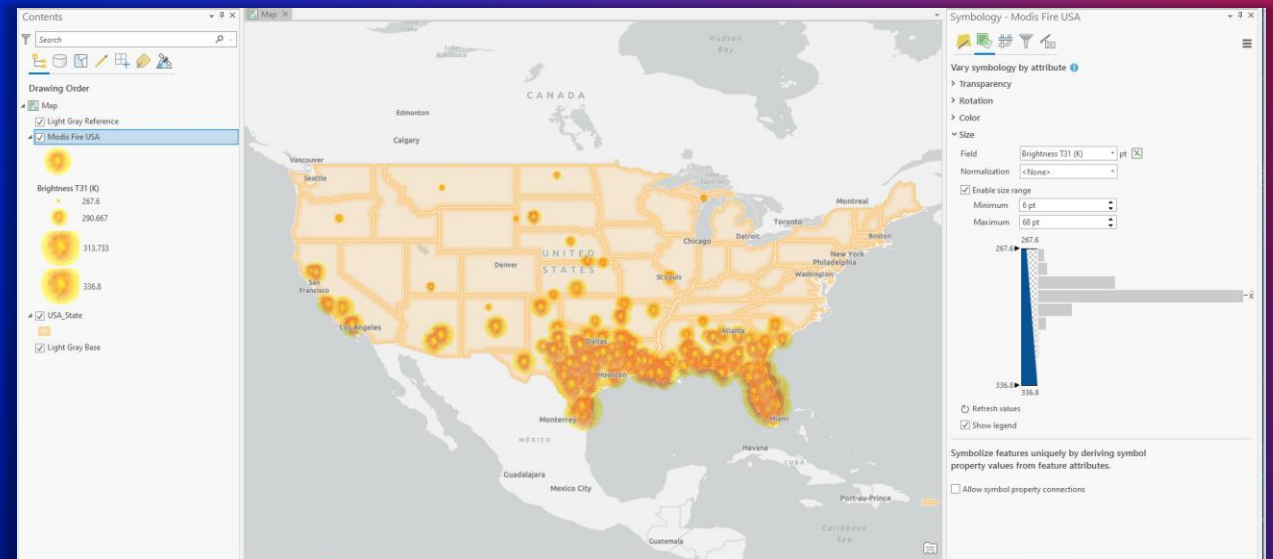
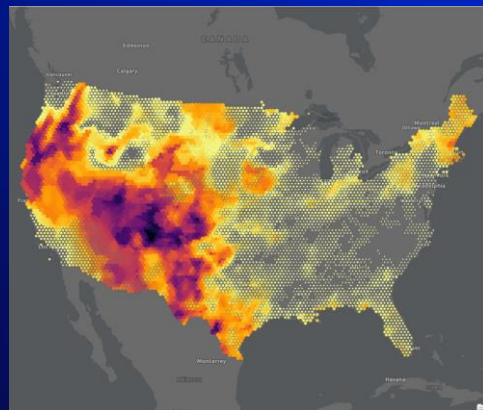
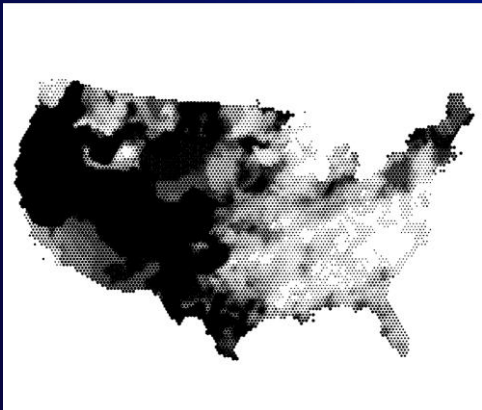
- Override the default drawing order
- Symbolize by attribute
- Import custom imagery
- Author multi scale symbology



Fire Symbology – PNG



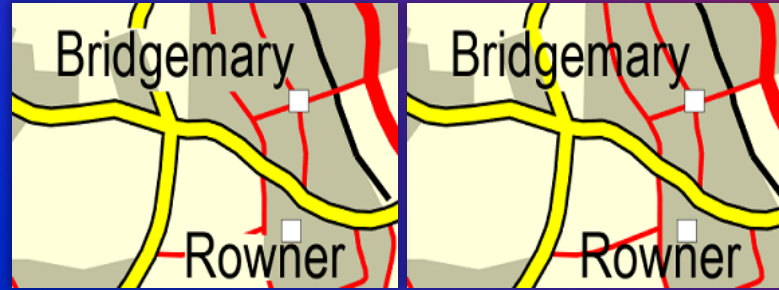
Fire USA - MODIS



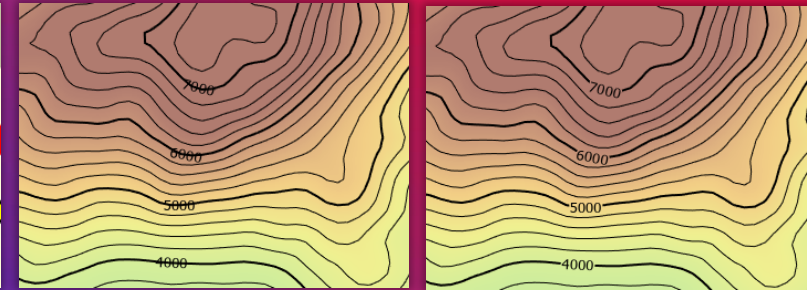
Symbology ArcGIS Pro

Mask Features

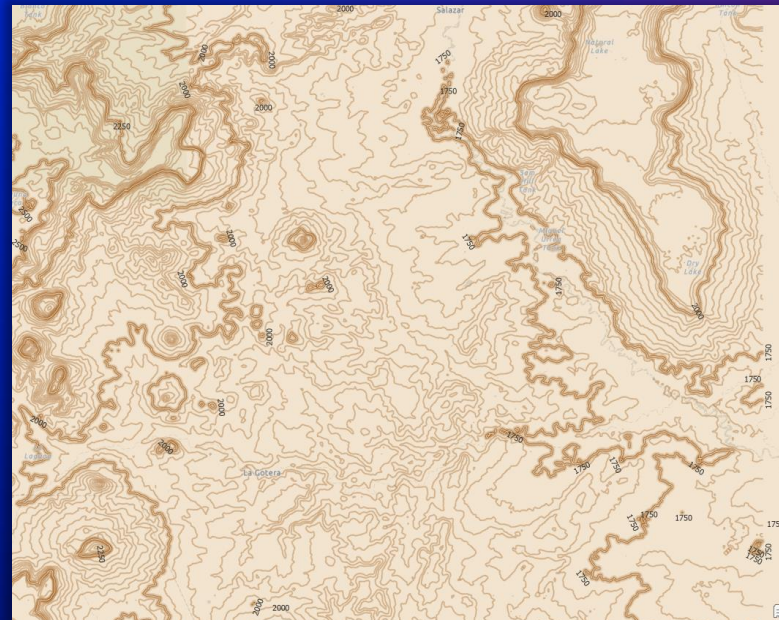
- Clarify dense or detailed map content
- Masking ensures the readability of the text
- Any feature layer can be masked.
- Only polygon feature layers can mask features.
- Geoprocessing tools to create masks:
 - Cul-De-Sac
 - Feature Outline Masks
 - Intersecting Layers Masks



Road Names Masking



Contour Lines Masking

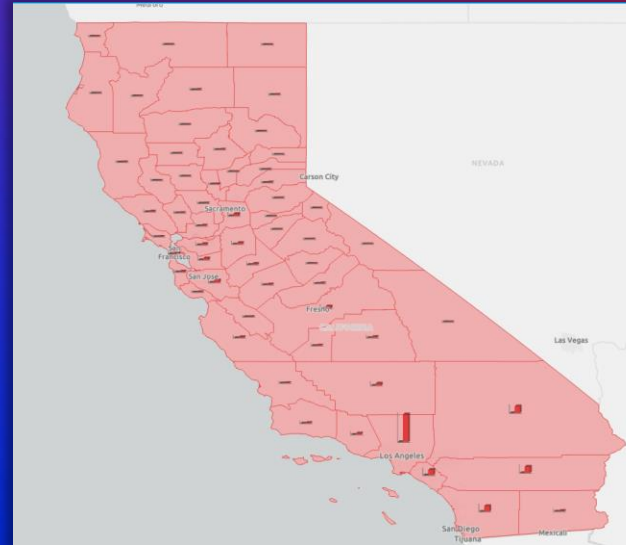


Contour Lines Masking

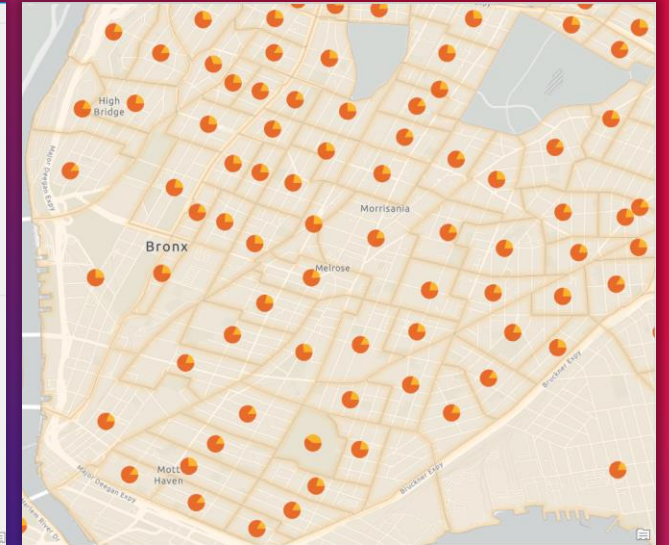
Symbology ArcGIS Pro

Charts

- Represent dynamic data
- Show qualitative and quantitative differences between attributes
- Supports points, lines and polygons features.
- Chart types:
 - Stacked Chart
 - Bar Chart
 - Pie Chart



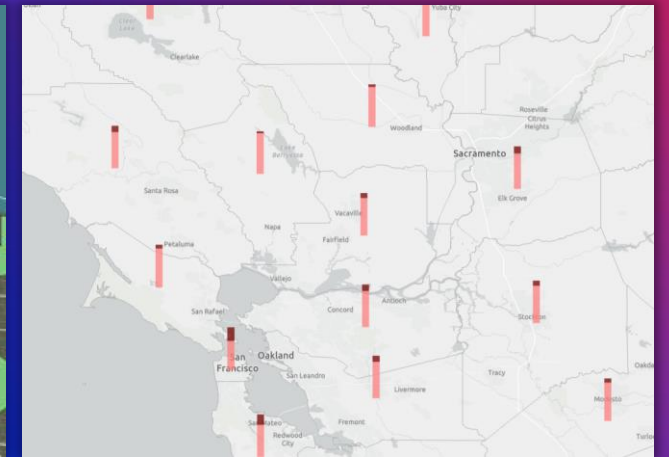
California covid-19 cases



NYC poverty tracts



New Orleans ethnicity percentage

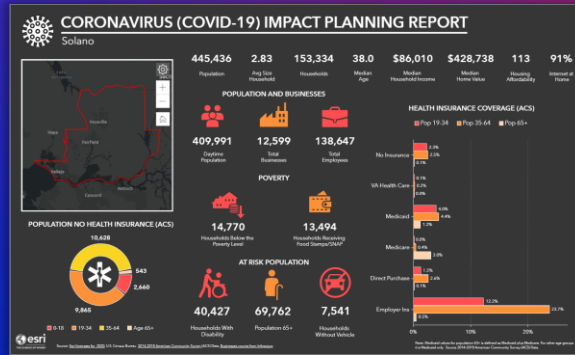


Bay Area count of people involved in car crashes

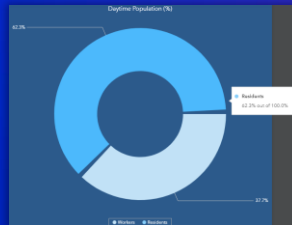
Symbology ArcGIS Pro

Infographics

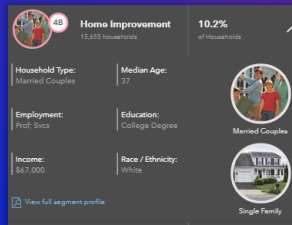
- Key Indicators
- Summarized information for selected locations
- Interactive charts
- Tables
- Maps
- Images



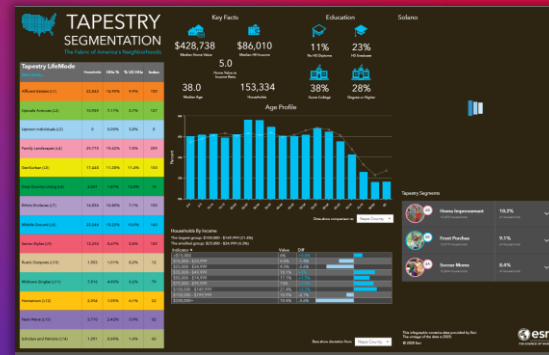
COVID-19 impact



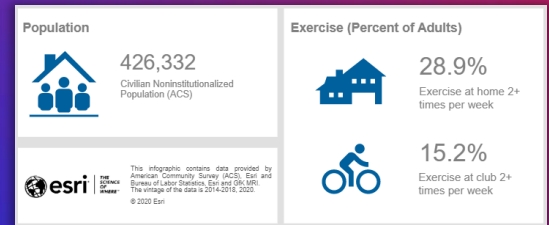
Daytime population



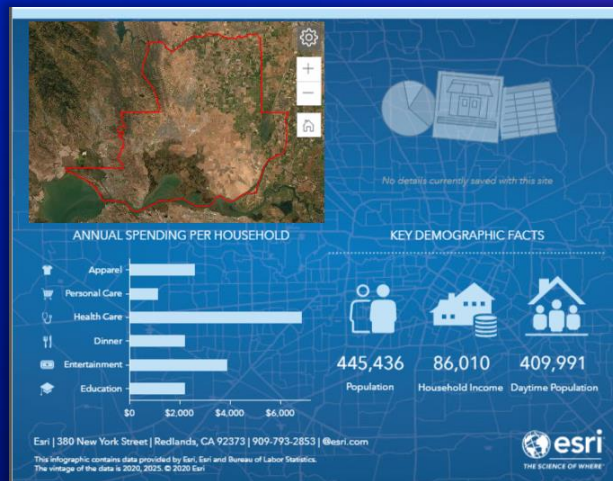
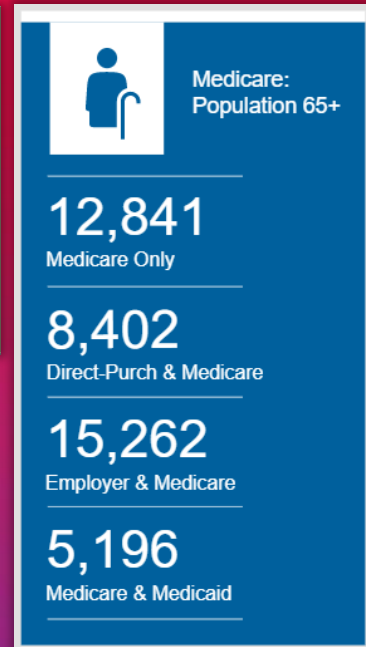
Tapestry segments



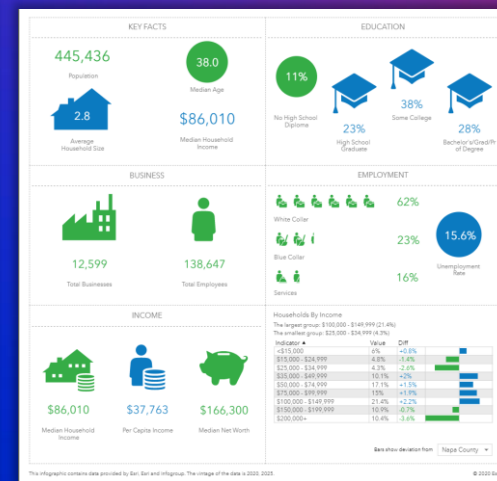
Tapestry



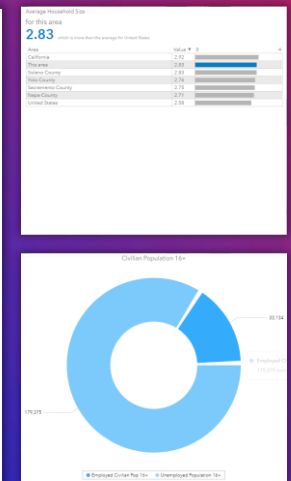
Health care



Property details



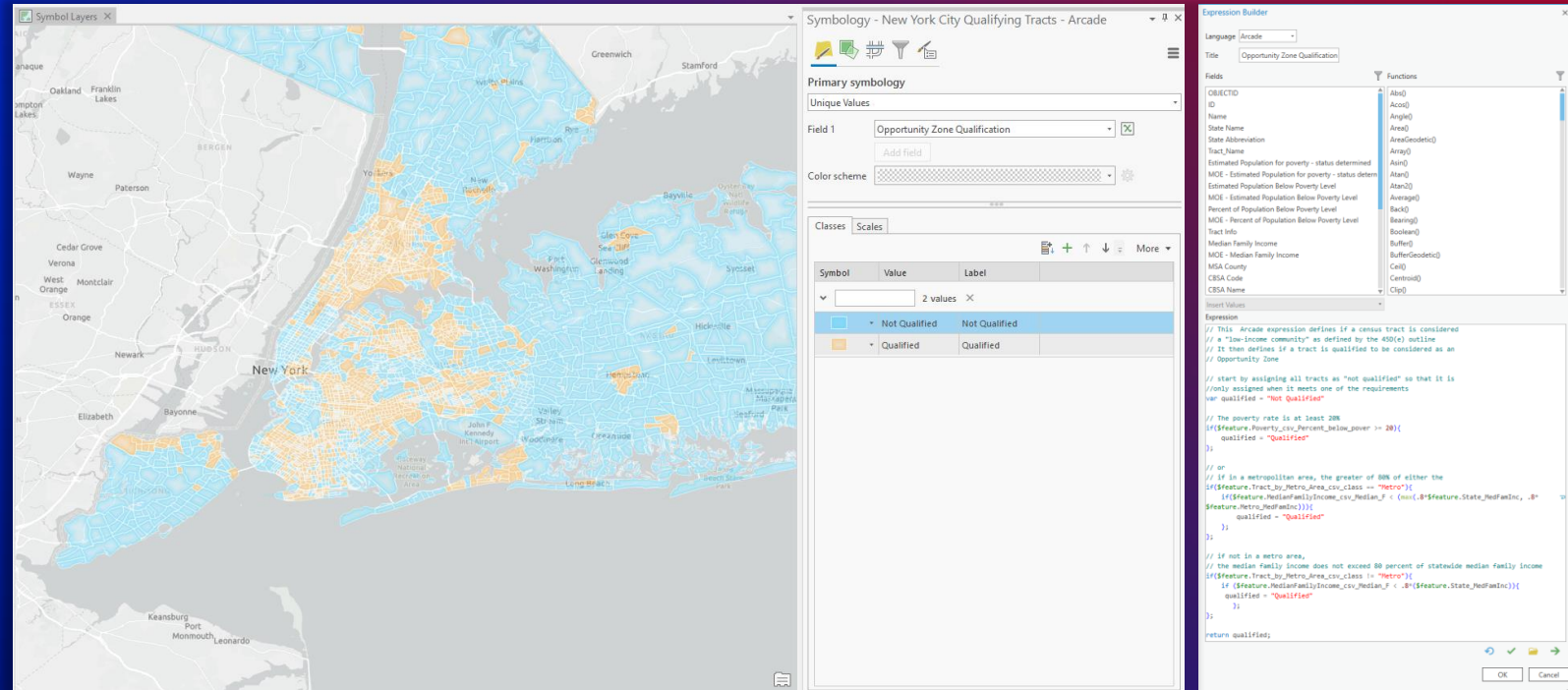
Key facts



Symbology ArcGIS Pro

Arcade

- Create in memory fields
- Calculate data values on the fly
- Dynamic symbology
- Simple scripting language built on JavaScript (single line)

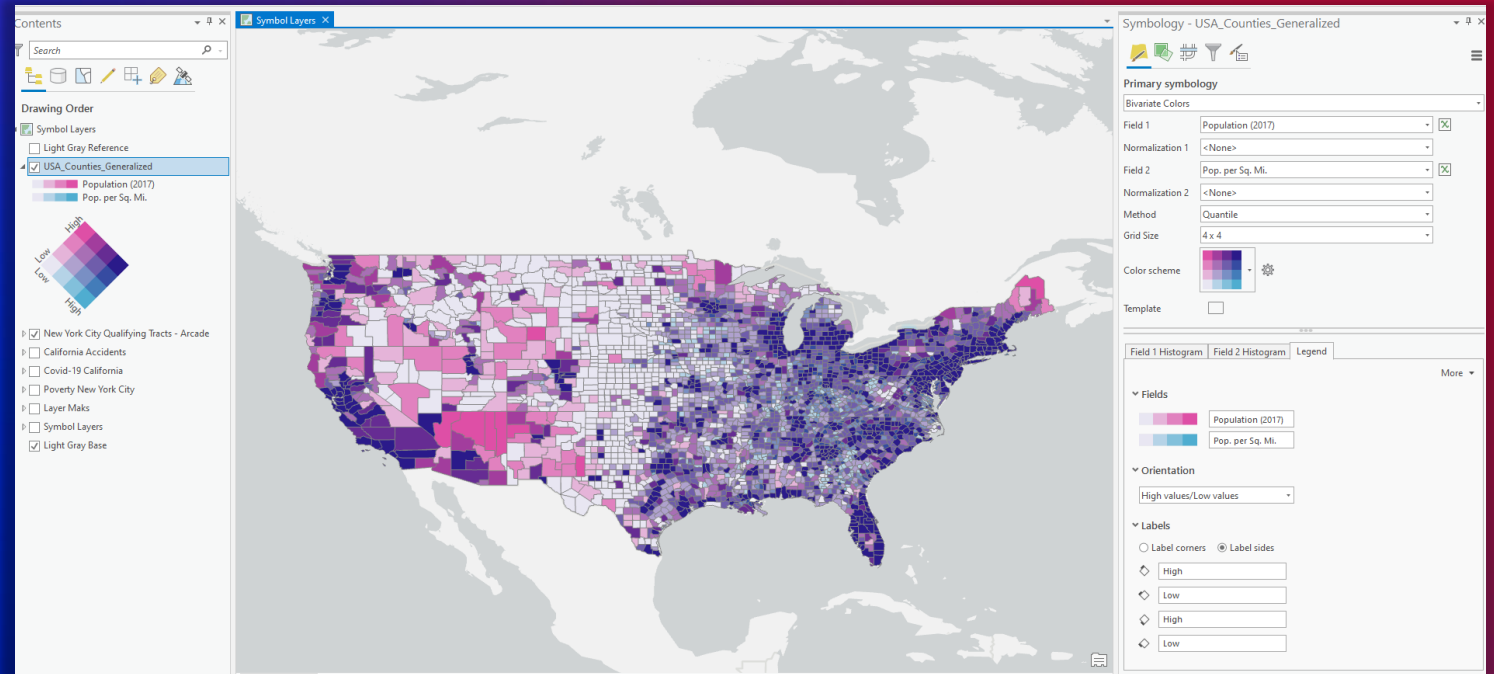


Poverty Tracts - Arcade

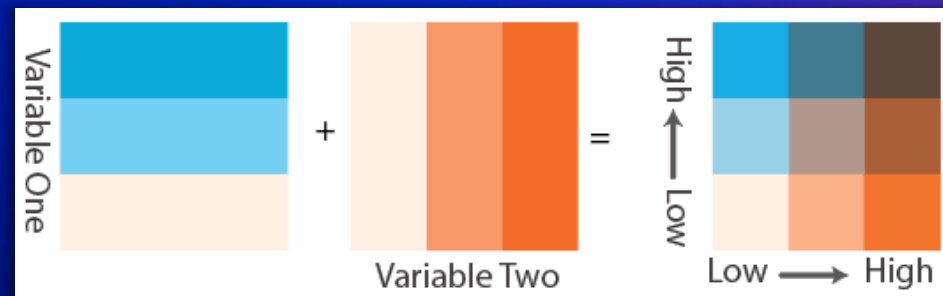
Symbology ArcGIS Pro

Bivariate colors

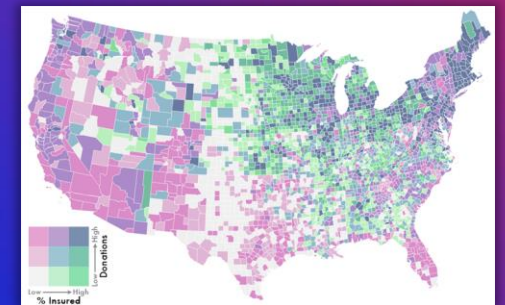
- Show quantitative relationship between two variables
- Customize your own color schema
- Classify variables and assign colors to each



Poverty Tracts - Arcade



Poverty Tracts - Arcade

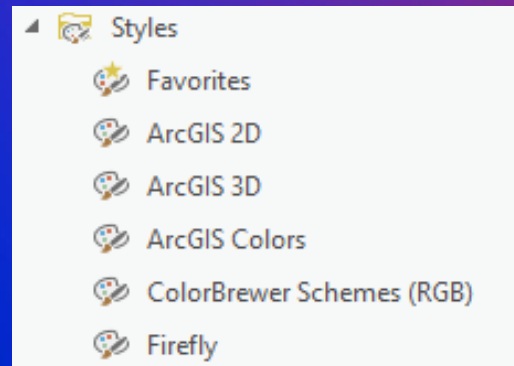


Poverty Tracts - Arcade

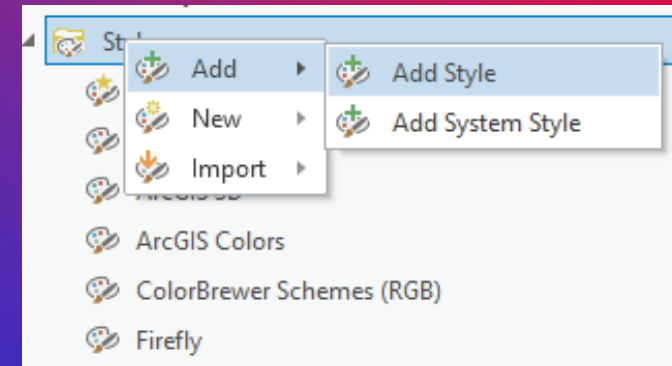
Symbology ArcGIS Pro

Styles

- Styles are containers that store:
 - Symbols
 - Colors
 - Color schemes
 - Label
 - Placements
 - Layouts
- Promote consistency and standardization across maps, scenes, and layouts
- Style types:
 - ArcGIS Pro style
 - Desktop style
 - Project style
 - Favorites style
 - System style
 - Custom style
 - Web style
 - Mobile style



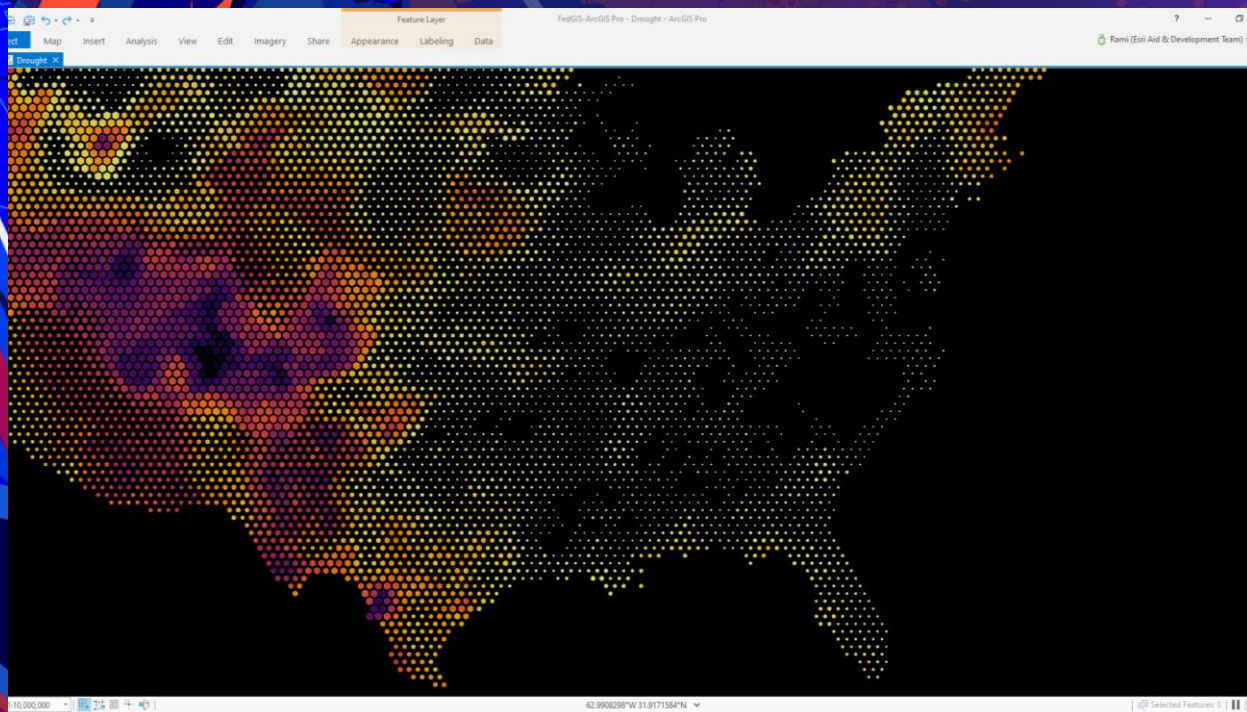
Styles directory



Adding new style

Grays (3 Classes)	Sequential	Grays (3 Classes)_S	Esri Pin 1 (40%)	POI-Large	Esri Pin 1 (40%)_PC	Lemongrass	Default	Lemongrass_Default
Grays (4 Classes)	Sequential	Grays (4 Classes)_S	Esri Pin 2	POI-Large	Esri Pin 2_POI-Larg	Light Apple	Default	Light Apple_Default
Grays (5 Classes)	Sequential	Grays (5 Classes)_S	Push Pin 1	POI-Large	Push Pin 1_POI-Lan	Beryl Green	Default	Beryl Green_Default
Grays (6 Classes)	Sequential	Grays (6 Classes)_S	Push Pin 2	POI-Large	Push Pin 2_POI-Lan	Apatite Blue	Default	Apatite Blue_Default
Grays (7 Classes)	Sequential	Grays (7 Classes)_S	Tear Pin 1	POI-Large	Tear Pin 1_POI-Lar	Yogo Blue	Default	Yogo Blue_Default
Grays (8 Classes)	Sequential	Grays (8 Classes)_S	Tear Pin 1 (40%)	POI-Large	Tear Pin 1 (40%)_Pi	Heliotrope	Default	Heliotrope_Default
Grays (9 Classes)	Sequential	Grays (9 Classes)_S	Tear Pin 2	POI-Large	Tear Pin 2_POI-Lar	Fuchsia Pink	Default	Fuchsia Pink_Default
Grays (Continuous)	Sequential	Grays (Continuous)	Star	POI-Large	Star_POI-Large_3	Gray 20%	Default	Gray 20%_Default
Oranges (3 Classes)	Sequential	Oranges (3 Classes)	Accessibility	POI-Medium	Accessibility_POI-A	Mars Red	Default	Mars Red_Default
Oranges (4 Classes)	Sequential	Oranges (4 Classes)	Aerial Tram	POI-Medium	Aerial Tram_POI-M	Fire Red	Default	Fire Red_Default_1
Oranges (5 Classes)	Sequential	Oranges (5 Classes)	Airport	POI-Medium	Airport_POI-Mediu	Electron Gold	Default	Electron Gold_Default
Oranges (6 Classes)	Sequential	Oranges (6 Classes)	Amusement Park	POI-Medium	Amusement Park_P	Solar Yellow	Default	Solar Yellow_Default
Oranges (7 Classes)	Sequential	Oranges (7 Classes)	Aquarium	POI-Medium	Aquarium_POI-Me	Peridot Green	Default	Peridot Green_Default
Oranges (8 Classes)	Sequential	Oranges (8 Classes)	ATM	POI-Medium	ATM_POI-Medium	Medium Apple	Default	Medium Apple_Default
Oranges (9 Classes)	Sequential	Oranges (9 Classes)	Beach	POI-Medium	Beach_POI-Mediu	Tourmaline Green	Default	Tourmaline Green_Default
Oranges (Continuous)	Sequential	Oranges (Continuous)	Border Crossing	POI-Medium	Border Crossing_Pi	Big Sky Blue	Default	Big Sky Blue_Default
Reds (3 Classes)	Sequential	Reds (3 Classes)_Sr	Bus Station	POI-Medium	Bus Station_POI-M	Cretan Blue	Default	Cretan Blue_Default
Reds (4 Classes)	Sequential	Reds (4 Classes)_Sr	Campground	POI-Medium	Campground_POI-	Amethyst	Default	Amethyst_Default
Reds (5 Classes)	Sequential	Reds (5 Classes)_Sr	Car Rental	POI-Medium	Car Rental_POI-Me	Ginger Pink	Default	Ginger Pink_Default
Reds (6 Classes)	Sequential	Reds (6 Classes)_Sr	Casino	POI-Medium	Casino_POI-Mediu	Gray 30%	Default	Gray 30%_Default
Reds (7 Classes)	Sequential	Reds (7 Classes)_Sr	Cemetery	POI-Medium	Cemetery_POI-Mec	Poinsettia Red	Default	Poinsettia Red_Default
Reds (8 Classes)	Sequential	Reds (8 Classes)_Sr	City Hall	POI-Medium	City Hall_POI-Medi	Flame Red	Default	Flame Red_Default
Reds (9 Classes)	Sequential	Reds (9 Classes)_Sr	Bar	POI-Medium	Bar_POI-Medium_3	Seville Orange	Default	Seville Orange_Default

ArcGIS Pro Styles

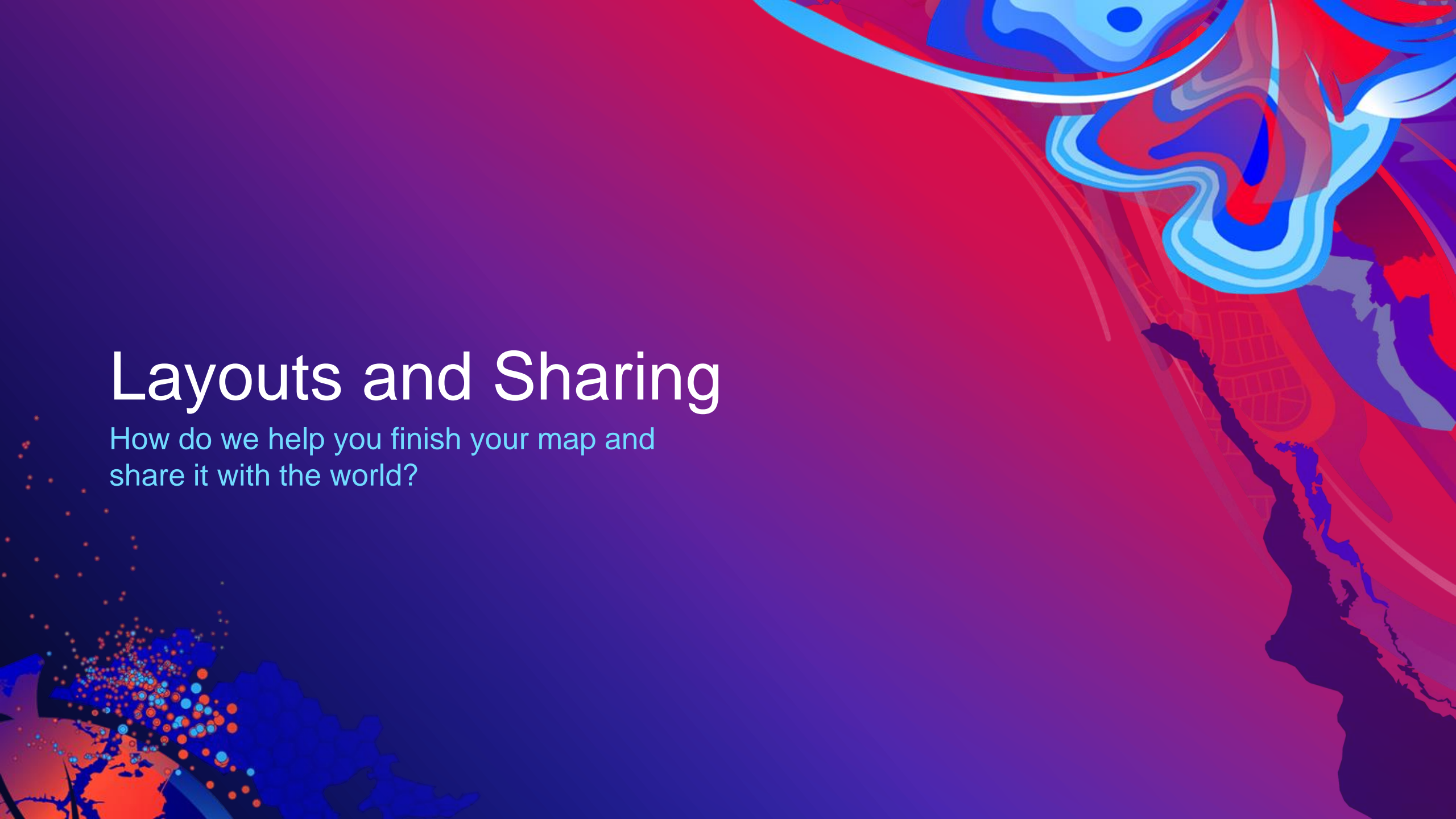


Demo

Symbology

Layouts and Sharing

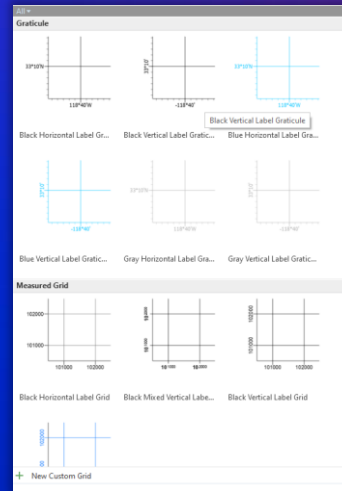
How do we help you finish your map and share it with the world?



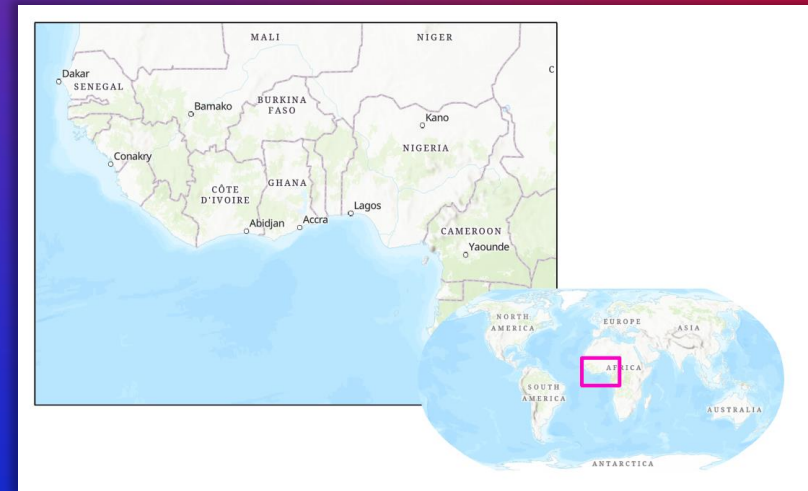
Layouts ArcGIS Pro

Elements

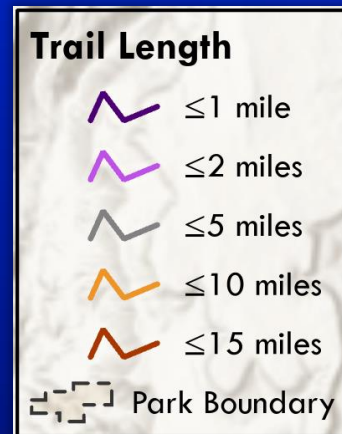
- Select from a variety of preset grids
- Customize and extend your Legend
- Customize legend style, layout, background, etc..
- Modify North Arrow Symbol
- Define custom extent indicators
- Produce dynamic infographics



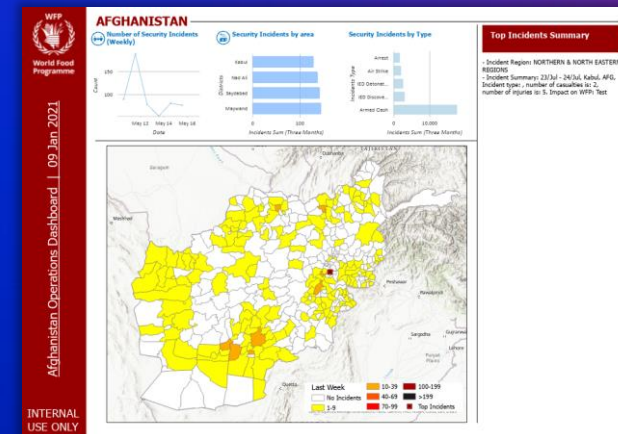
Grids and Graticules



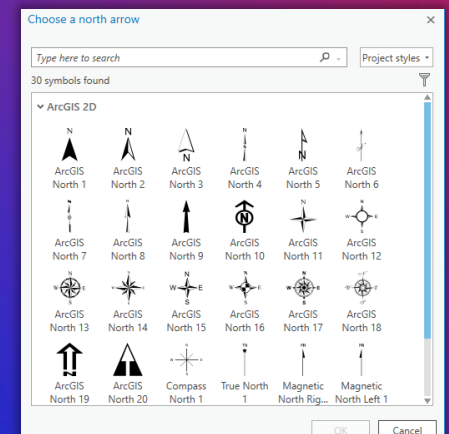
Extent Indicators and Inset Maps



Legends



Dynamic Layouts

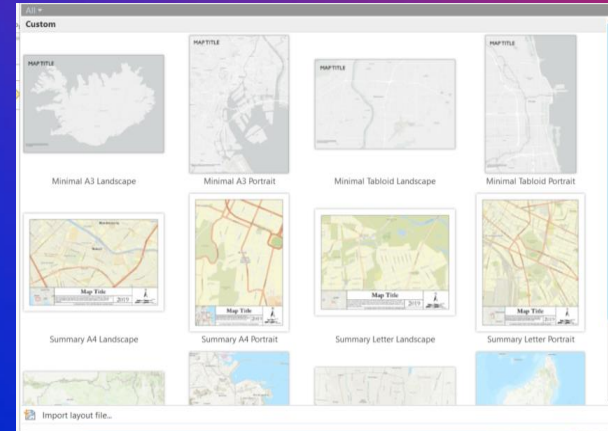


North Arrows

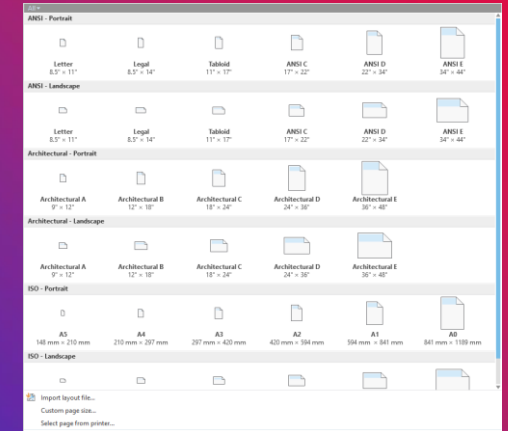
Layouts ArcGIS Pro

Layout Templates and Grids

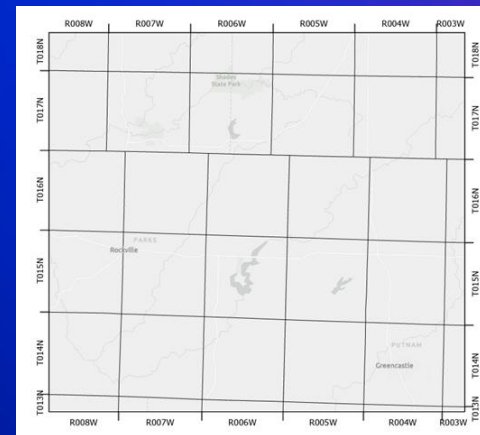
- Utilize existing layout templates or import your own
- Choose between a variety of architectural document sizes
- Custom grids based on a polygon or line feature
- Modify custom grid properties:
 - Name
 - Visible
 - Source
 - Neatline
 - Define map grid edges
 - Preview edges and corners
- Export layouts files and share them



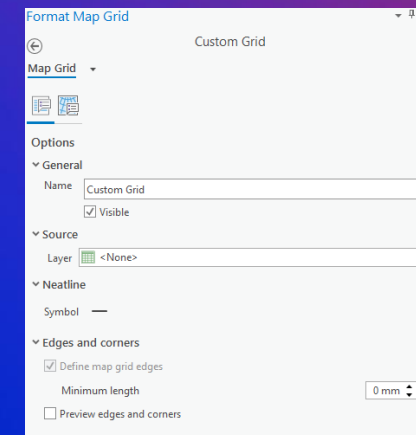
Layout Templates



Layout Page Sizes



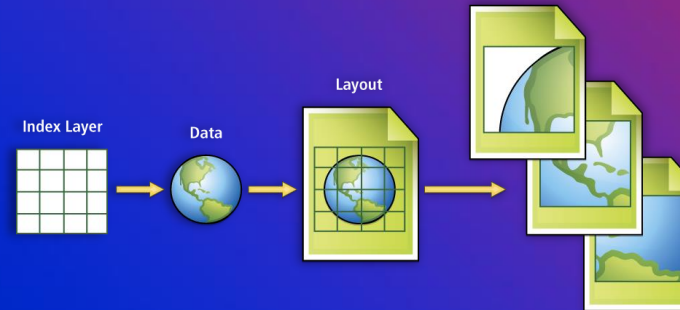
Custom Grids



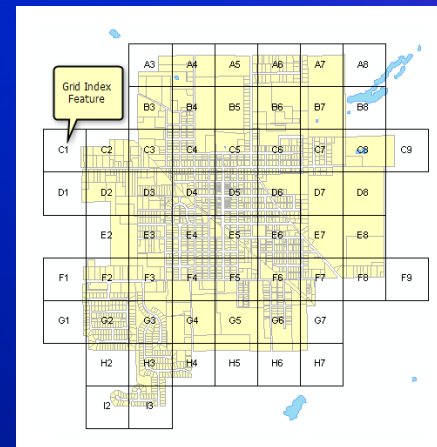
Layouts ArcGIS Pro

Map Series

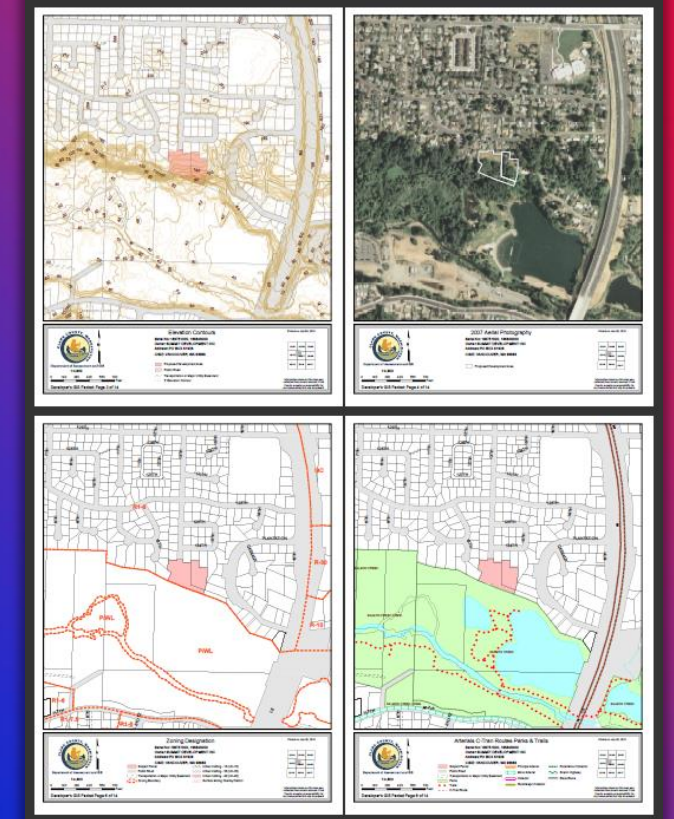
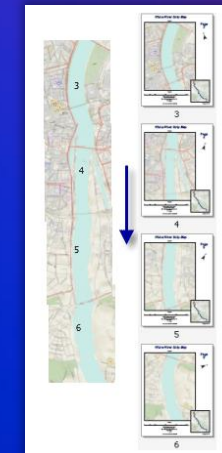
- Collection of map pages
 - In addition to pages like:
 - Titles, Table of Contents, index pages, etc.
- Referenced map Books
 - Series of pages that iterate across a geographic area
 - Reference grid based, strip maps, or feature based
 - Layout Map Series or Python Map Automation



Map Series Workflow



Collection Map Books

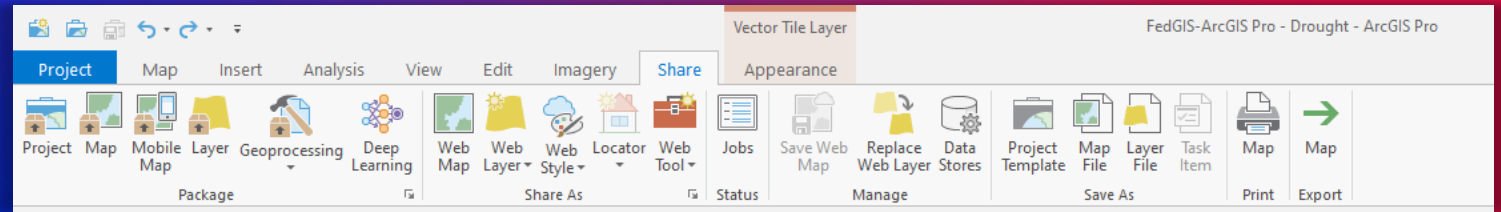


Thematic Map Series

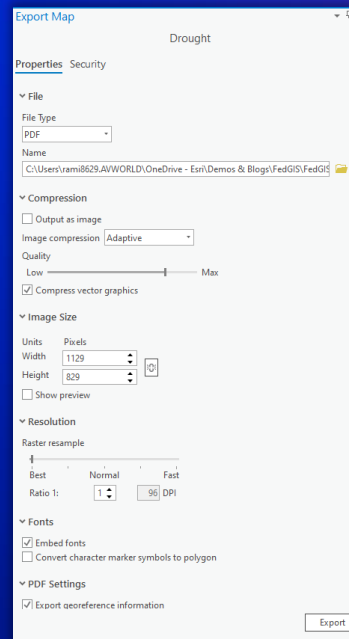
Sharing Layouts ArcGIS Pro

Exporting Layouts

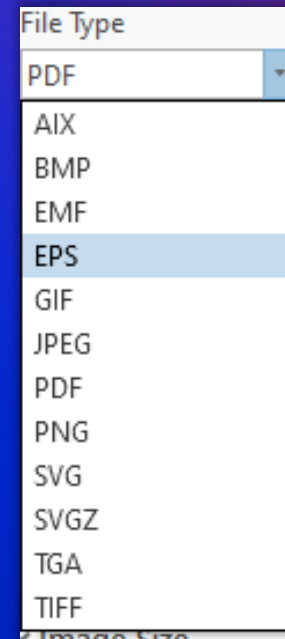
- Export your layout to a variety of file formats
- Define file quality, resolution, security, colors and much more..
- Automate the export process by utilizing built in Python Notebooks



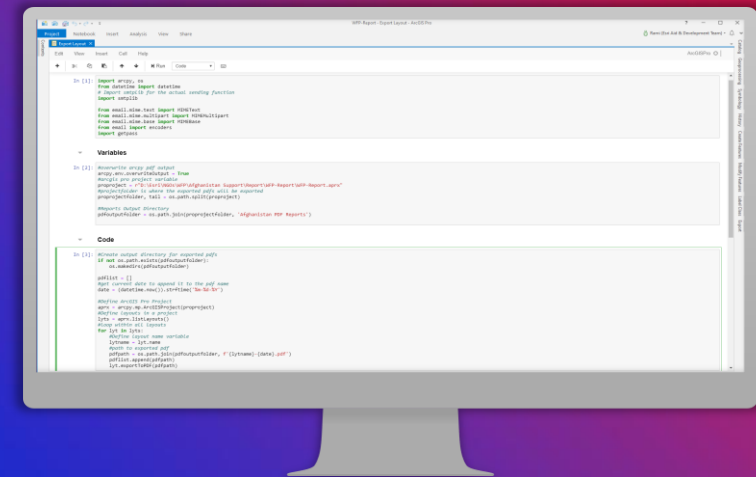
Sharing Toolbar



Export Map



Map Export Formats

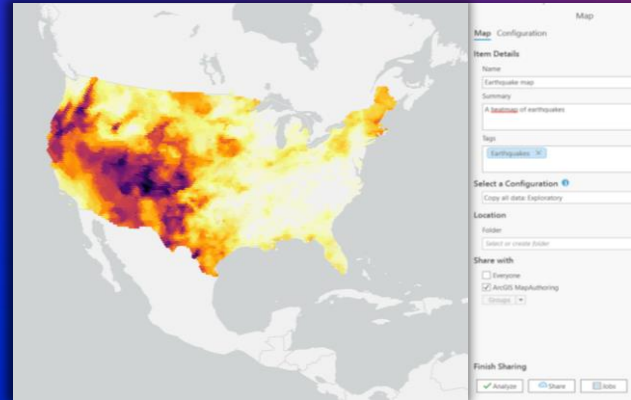


Automate Map Production

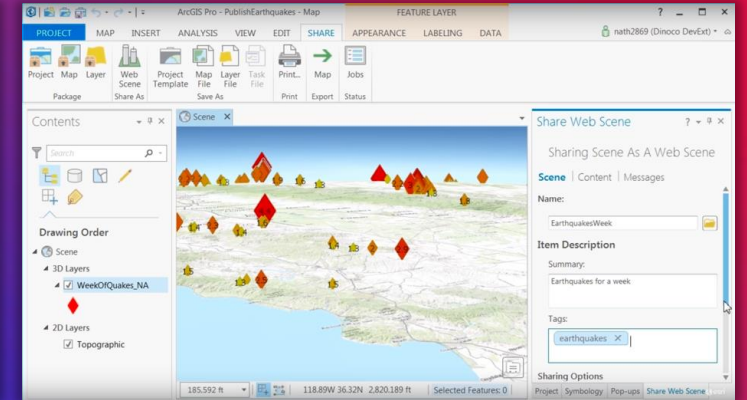
Sharing Layouts Layers ArcGIS Pro

Sharing to the Web

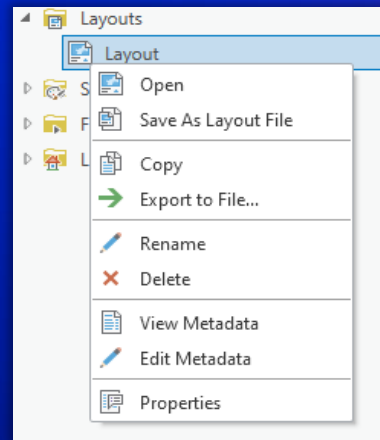
- Author and share web maps to your active portal
- Author and share web scenes to your active portal
- Export and import layouts to your project (.pagx) files.



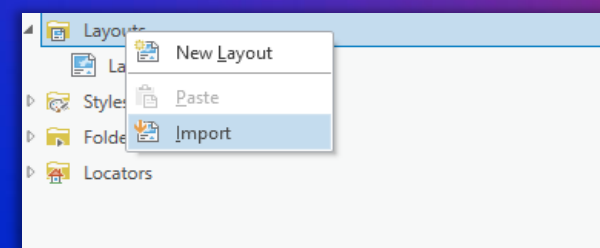
Publishing Web Map



Publishing Web Scene



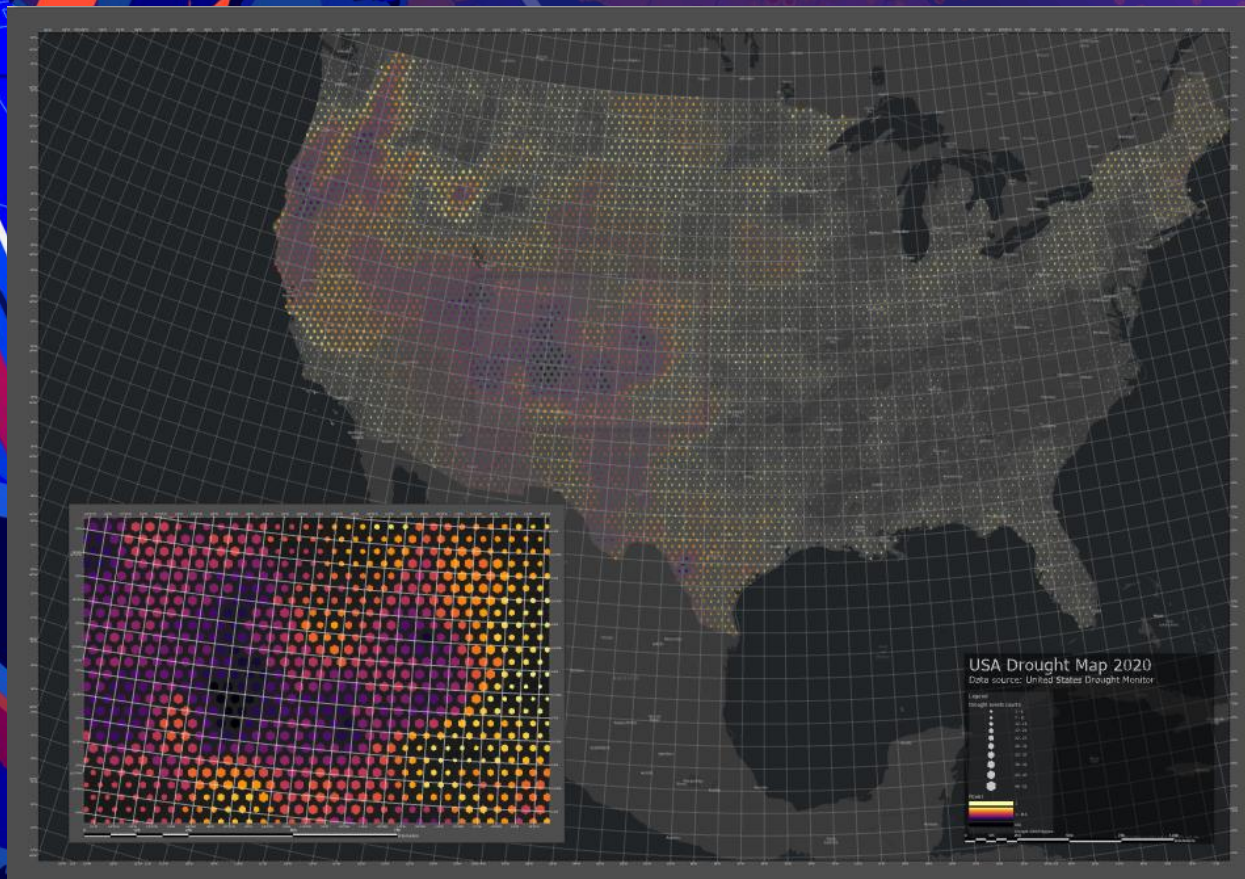
Export Layout



Import Layout

Demo

Layouts





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