Methodology for StoryMap Features

Licenses & Permissions

- IBank StoryMap
    - The StoryMap as a resource should be public and accessible to IBank or any other partners for sharing
    - For editing or replication purposes, a guest account through CMU may be necessary
        - For information on guest permissions, contact Carey Zehnder, Heinz Liason
        - For access questions regarding the current StoryMap, contact the teaching team connected to the Policy Innovation Lab Course
- ArcGIS Licenses
    - Consider purchasing an Esri license as this will be the most efficient way to make edits and mapping products.
        - More information: https://www.esri.com/en-us/arcgis/products/arcgis-pro/buy
- GitHub Repository
    - All materials and information will be present in a public repository (linked below). This is connected to a non-CMU email account, so access should not be an issue.

Utility Maps

Sources:

- California Energy Commission: https://cecgis-caenergy.opendata.arcgis.com/pages/pdf-maps
- Sharing the Sun Community Solar Project Data (December 2021): https://data.nrel.gov/submissions/185

Map Methodology:

- California Community Solar Map
    - Using the dataset (Excel) sheet provided on NREL website, save the “Project List” tab as a CSV
    - Import into ArcGIS Pro as a standalone table
    - Geocode using city-state, should now be ready to use as a point layer
    - Start a new map, initialize with light Grey Basemap
    - Import project point data as a layer to the map
    - Restrict to California (state == CA)
    - Symbolize as desired

    - Create layout for export
- Utility maps:
    - Convert the PDF utility maps (from the California Energy Commission) to TIFF file (raster format)
        - Using an online (free) PDF-TIFF converter
    - Add the project point data as layer to the map (using whatever basemap of choice)
        - Restrict to California projects only
    - Import the utility TIFF layer, and display over California to have the points layer on the TIFF file
        - Check coordinate system to make sure they match up
    - Remove basemap, create layout for export

Equity Maps/Analysis

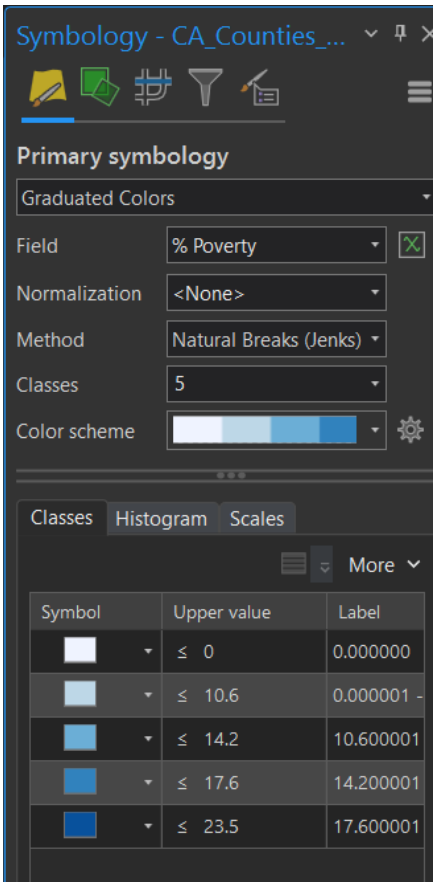
1. Download California County Boundaries (shapefile) from this website. Name it California County Boundaries.
2. Download the 'US and All States and Counties' Excel sheet from this website.
3. Download the Community Resilience Estimates Equity Supplement 'County' Excel file from this website. Name it EquityResilience_CA.
4. Download poverty-related data from this website. Name it Poverty_Income_CA.
5. Download solar supply curve data from this website. Name it PV_references. PV stands for photo voltaic.
6. Download solar ordinances-related data from this website. Name it Solar Ordinance.
7. Download renters-related data from this website. Name it California_Rent_Data
8. Convert all Excel files to CSV format.
9. In ArcGIS Insights, go to Workbook > New Workbook > on the Add to Page website > click Upload file > select all the above-downloaded files. Note that all Excel files must be in CSV format to be uploaded to ArcGIS Insights.
10. On the header, find the 'Create Relationships' tab and click it.
11. Drag the "California County Boundaries" and "Poverty_Income_CA" data tables to the workspace. Click the pencil sign joining the two file names, and in the edit relationship window, select "left join" and merge at the county level. Name the resulting data table "Boundaries_Poverty".
12. Repeat step 5 with the "Boundaries_Poverty" and "EquityResilience_CA" data tables, and name the new data table appropriately.
13. Left-join the "California County Boundaries" with the "California_Rent_Data" data table, and name the new data table appropriately.
14. Left-join the "California County Boundaries" with the "Solar Ordinance" data table, and name the new data table appropriately.

15. Left-join the "California County Boundaries" with the "PV_references" data table (where "Distance to Transmission" is an attribute within PV_references), and name the new data table appropriately.
16. Once all the merges are done, drag these data tables to the space on the right, and click "Map" to create a map.
17. On the top right portion of the map, a lean rectangle containing an attribute will be seen. Click the arrow to expand the 'Layer Options' and choose the appropriate attribute by clicking the symbology section within the layer options. In the 'Style by' drop-down menu, choose the attributes (such as "Total Housing Units", "GINI Income Inequality", etc., depending on the data table dragged). Choose the symbol type of your choice (e.g., graduated color symbols and counts and amounts (size)). Change the appearance as appropriate by clicking the "Appearance" section within the layer options.
18. To show the legend, click the first section "Legend," click the arrow next to the trash and cross, and the legend will appear on the map. Customize the size of the resulting legend window to fit into the map.
19. Repeat step 11 for each relevant data table to show "Total Housing Units", "Renters percent", "GINI Index of Income Inequality", "Median Income", "Average Potential Solar Capacity by County", "Distance to Transmission Lines", etc., and choose the appropriate symbol type to show "Distance to Transmission Lines" and "Average Solar Capacity of the Regions." Heat map is recommended.
20. Click "Widgets" on the top right-hand header to include text and media on the sides of the map.

Interactive Map

- Poverty Rate Basemap
    - Create new project
    - Creating County Boundaries
        - In ArcGIS
            - Map Tab → Add Data
                - Download the ‘CA County Boundaries’
                - Unzip folder and import shapefile
    - Importing Poverty Level Data
        - Download ‘PIL_CountyLevelExploreInfo.csv’
        - In ArcGIS
            - Map Tab → Add Data → ‘PIL_CountyLevelExploreInfo.csv’
            - Join to County Boundaries
                - Contents Pane → Right Click CA Counties Layer Name
                - Joins and Rellates → Add Join
                    - Input Table: CA Boundaries
                    - Input Join Field: NAME
                    - Join Table: ‘PIL_CountyLevelExploreInfo.csv’
                    - Join Table Field: CountyName
            - Export Feature Class

        - This is important so you can migrate the map to ArcGIS Online
        - In ArcGIS
            - Contents Pane → Select Boundaries Layer
            - Data Tab → Export Group → Export Features
                - Choose the Name and Location of Feature Class
            - Contents Pane → Right Click Original Layer → Remove



    - Symbology and Color Scheme
        - Contents Pane → Right Click CA Boundaries Layer → Symbology
    - Creating Color Scheme
        - In ArcGIS
            - Replicate the Symbology Pane values shown to the right.
            - Color Scheme Name: Blues (5 classes)
            - Close Tab
    - Labeling
        - In ArcGIS
            - Contents Pane → Select Boundaries Layer File → Labeling Tab
            - Label Class Group → Field: NAME
            - Layer Group → Label
    - Export to ArcGIS Online
        - In ArcGIS
            - Share Tab → Share As Group → WebMap
                - Name Map, write summary and tags, Choose appropriate location and sharing access
            - Share Button
- Creating Interactive Map
    - In ArcGIS StoryMap Builder:
        - Add Content Block → Map Tour
        - Start with a feature service
            - Choose Base map created previously
        - Location Pins
            - Choose ‘Add Location’ under each county card
                - Choose Location in County

- Input Information:
    - ‘PIL_CountyLevelExploreInfo.csv’ into each cell with the appropriate picture

Link to Resources

CA Boundaries Shapefile: https://data.ca.gov/dataset/ca-geographic-boundaries