



**SC BIRTH OUTCOMES INITIATIVE**  
Geospatial Environmental Scan<sup>®</sup>  
**User Guide**

**JUNE 2021**

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**Institute for Families in Society**

*Improving Policy. Advancing Practice.  
Strengthening Communities and Family Well-Being.*

# SC Birth Outcomes Initiative Geospatial Environmental Scan<sup>®</sup>

## USER GUIDE

University of South Carolina  
Institute for Families in Society

June 2021

The Birth Outcomes Initiative (BOI) Geospatial Environmental Scan<sup>®</sup> (GeoEScan<sup>®</sup>) User Guide is a companion to the BOI GeoEScan<sup>®</sup>. It is designed to help users navigate and use the environmental scan content and explore the interactive map layers in support of local BOI planning and programming efforts.

The goal of the BOI GeoEScan<sup>®</sup> is to present a platform from which to examine social determinants of health and their association with and impact on birth outcomes. Interactive maps of South Carolina in this document provide valuable population, social determinant, and birth outcome information at county and local ZIP Code Tabulation Area (ZCTA) levels. These maps enable users to geospatially visualize population health patterns, identify socioeconomically disadvantaged areas (e.g., areas characterized by high levels of poverty), and evaluate areas for further research, program development, or outreach efforts.

The SC Birth Outcomes Initiative (BOI) Geospatial Environmental Scan<sup>®</sup> (GeoEScan<sup>®</sup>) was developed under contract with the South Carolina Department of Health and Human Services.

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## GETTING STARTED SUCCESSFULLY



1. Be sure that you have a current version of Adobe® Reader (a free download) installed on your computer. You must have it to view the interactive maps contained in the Scan®. The screenshots in this guide were made using Adobe® Acrobat Pro DC®, Continuous Release, Version 2021.005.20048. Depending on the specific Adobe® product and version you are using, the Acrobat interface may look slightly different from the ones pictured, but the functions described are the same.



2. View the Scan® on a Windows® or Macintosh™ desktop or laptop, NOT a mobile device such as a tablet or smart phone.



3. Do not run the Scan® from a flash drive. If you open it in a web browser, please download and save the Scan® file to your computer, right-click on the downloaded file and open it using Adobe® Reader.



How the Adobe interface looks in this guide may not exactly match what you see on your computer. Your view will depend on the specific Adobe product or version of Adobe Reader you are using.

Please contact your IT support if you have any technical issues viewing the Scan®.

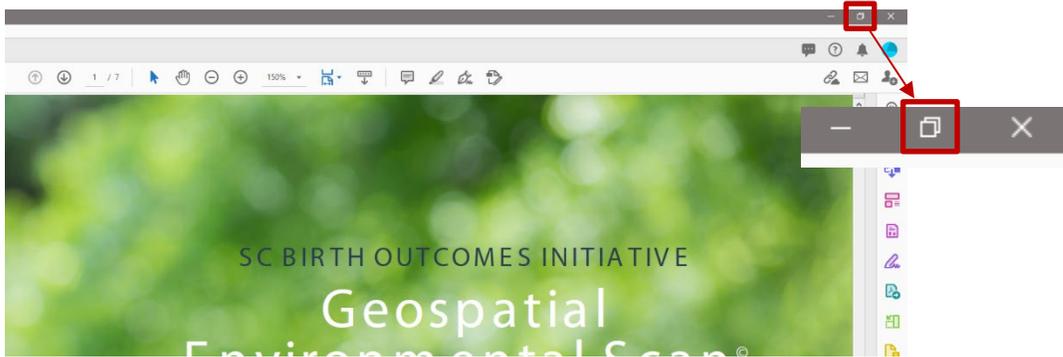
## NAVIGATING THE PDF

This section provides basic information you will need to know about Adobe® Reader in order to optimize your viewing of the Scan®.

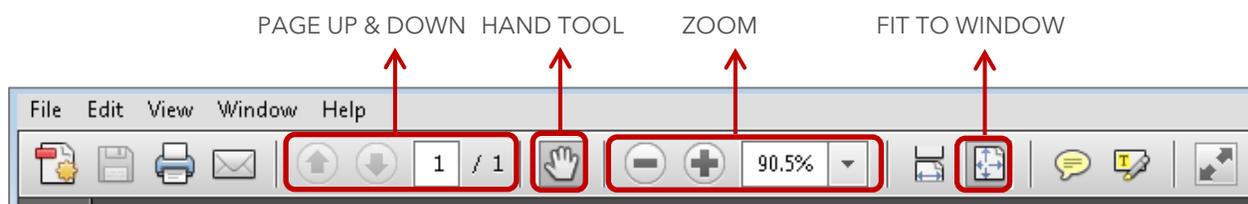
### Sizing, Zooming, and Panning the PDF

For the best view of the Scan®, use the maximum window size of Adobe® Reader (Figure 1), and click the “fit full page to window” icon (Figures 2a, 2b) to see the whole cover page. To zoom in or out of specific areas of the maps or tables, use the “-” or “+” icons (Figures 2a, 2b) found on the Adobe Reader tool bar, or specify the zoom level (Figures 2a, 2b).

Zoomed in, you can use the “hand” tool (Figures 2a, 2b) to move around the map or table.



**Figure 1:** Maximize window size



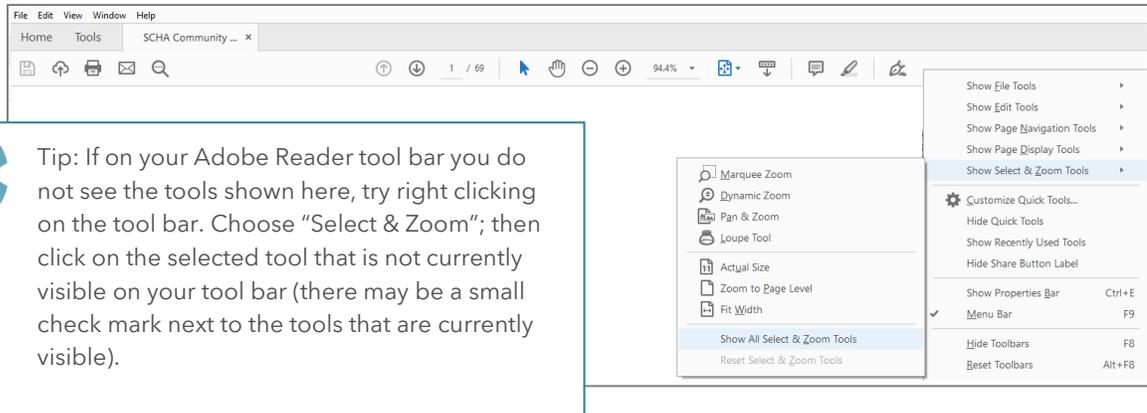
**Figure 2a:** Adobe Reader X tool bar (page up and down, hand, zoom, fit window)



**Figure 2b:** Adobe Reader DC tool bar (page up and down, hand, zoom, fit window)



Tip: If on your Adobe Reader tool bar you do not see the tools shown here, try right clicking on the tool bar. Choose "Select & Zoom"; then click on the selected tool that is not currently visible on your tool bar (there may be a small check mark next to the tools that are currently visible).



If the right-hand menu bar shown below is visible, you can click on the small arrowhead in the middle of the page next to the scroll bar to hide it (Figure 3).

*Small arrowhead used to minimize right-hand menu bar*



RIGHT-HAND MENU BAR



Tip: The right-hand menu shown here is not necessary for viewing or interacting with the Scan<sup>®</sup>. Just disregard the Figure 3 instructions if this menu is not visible.

**Figure 3:** Minimizing the right-hand Menu bar

## Moving from Page to Page

You can move from page to page within the Scan® exactly as you would any other PDF document.

To move through it, you can:

- use the Acrobat arrow tools to review the pages one-by-one (Figure 4);
- directly enter the page number you want to access (Figure 4);
- use the scroll bar to move the pages up and down (Figure 5);
- use the up and down arrows on your keyboard; or
- use your mouse wheel.



**Figure 4:** Adobe Reader tool bar (page up and down and enter page number)

## Using Hyperlinks in the PDF

You can also navigate using hyperlinks built into the Scan®.

- The button on the cover page takes you to the Table of Contents (Figure 5).



**Figure 5:** Cover page button and page scroll bar

- Each entry in the Table of Contents is a hyperlink that will take you directly to the referenced page.
- In the footer of every page, the Institute for Families in Society (IFS) logo (Figure 6) will take you back to the Table of Contents.



**Figure 6:** IFS logo

## REVIEWING THE INTRODUCTORY PAGES

The Introductory Pages are an important source of information that you should review before using the Scan<sup>®</sup>. They include important details about the data usage and restrictions, details on what an environmental scan is and why it is useful, features within the Scan<sup>®</sup>, information about the data used, and key statewide findings.

## USING THE INTERACTIVE MAP

The SC map in the Community Needs Assessment: GeoEScan<sup>®</sup> is interactive, allowing you to show or hide different information, depending on which layers you select. Because there is so much interactive content available for you to use, you may notice a delay in response when the Scan<sup>®</sup> PDF is first opened and loading.

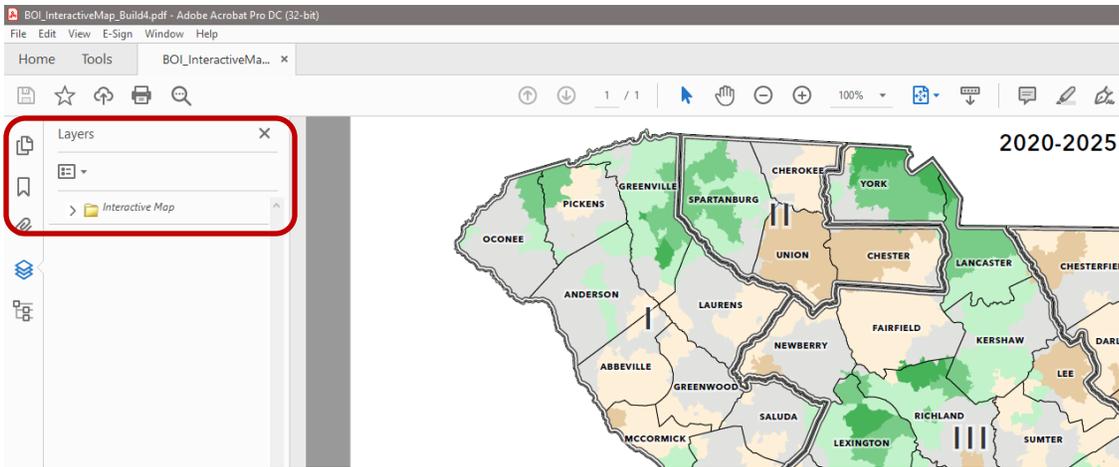
The following sections walk you through how to use the map layers. To start, you need to make sure that the “Layers” panel is visible.

### Opening the “Layers” Panel

The “Layers” panel is used to build the maps and add views of different point features and overlays. When opening the Scan<sup>®</sup>, what you see on the left will depend on your specific computer’s settings. On the left, you may already see the “Layers” panel as shown here. (Figure 7).

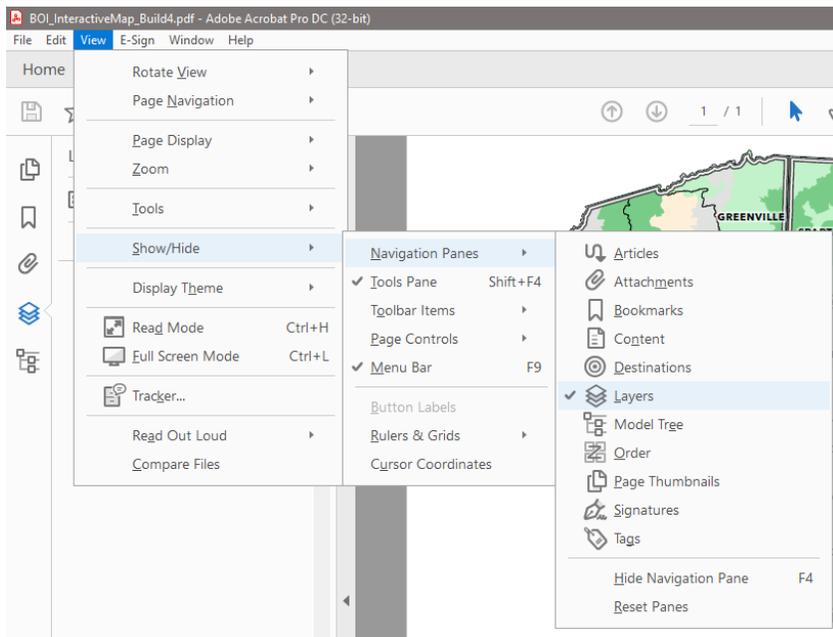


The Interactive map may take several seconds to load. This may cause a delay in response when first opening the scan, changing pages, or when turning to the interactive map page.



**Figure 7:** Default view with the “Layers” panel open

If the “Layers” panel is not visible, click the “View” menu item and put the cursor on “Show/Hide,” then “Navigation Panes,” and click “Layers” (Figure 8).



**Figure 8:** Show “Layers” panel



Tip: You will NOT be able to use the interactive features of the map without the Layers panel.

Please review Figures 7, 8, & 9 for help finding this panel. If this does not help, please contact your IT support for technical assistance.

If you have this view of the Navigation Pane (Figure 9), click the “Layers” Icon to open the “Layers” panel.

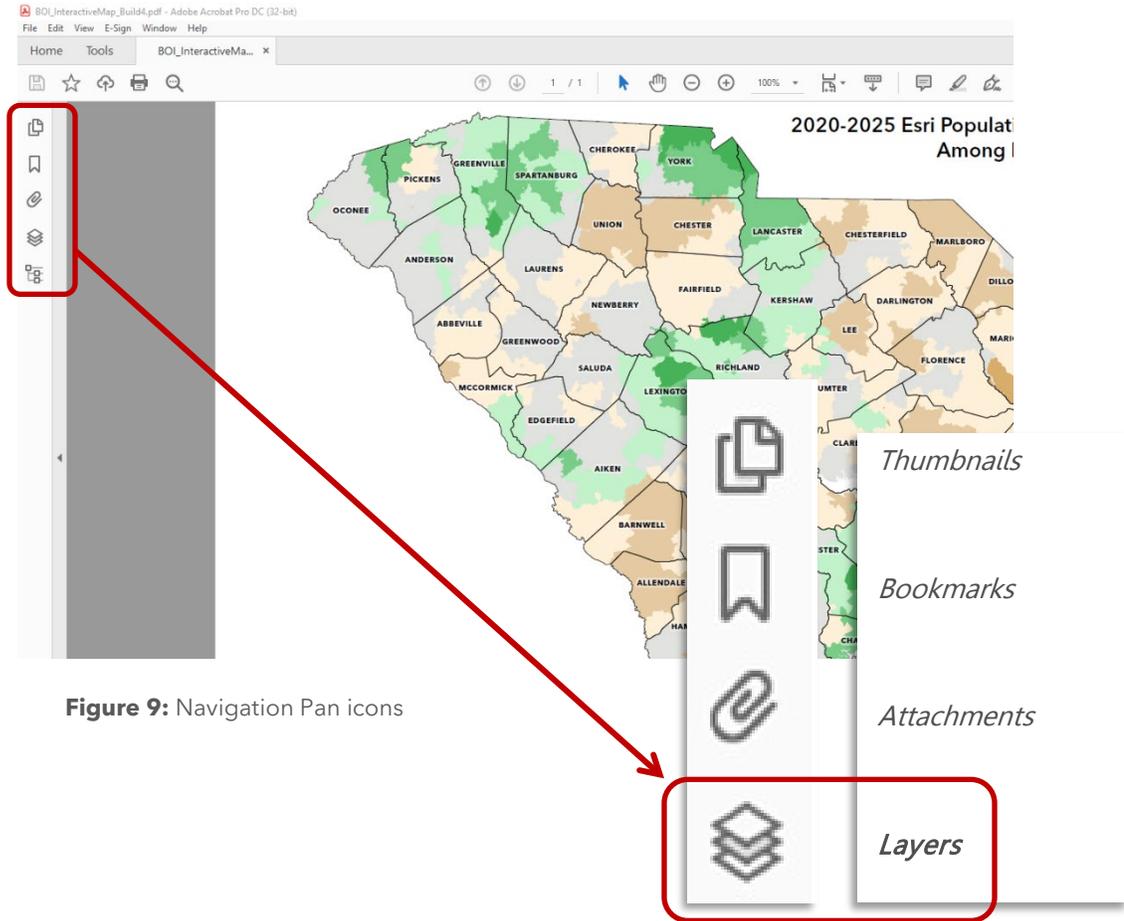


Figure 9: Navigation Pan icons

Tip: If you do not see the “Layers” icon or panel using the steps in Figures 8 & 9, check to make sure that you:

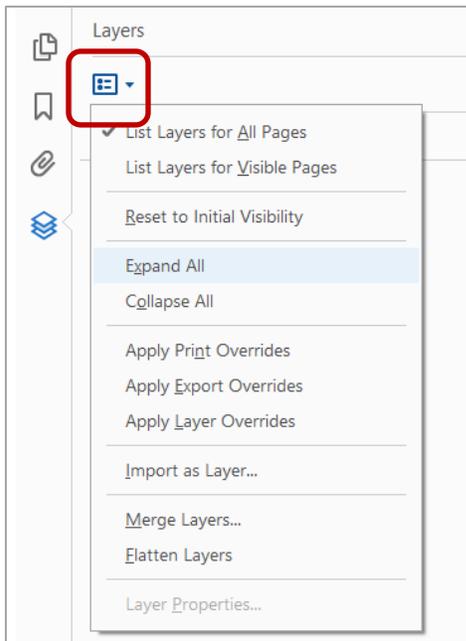
- have **not** opened this document inside of a web browser (e.g. Internet Explorer, Mozilla, Chrome, etc.);
- have saved this document to your computer; and/or
- have right-clicked on the saved copy of this file on your computer and chosen “Open with”>“Adobe Reader.”



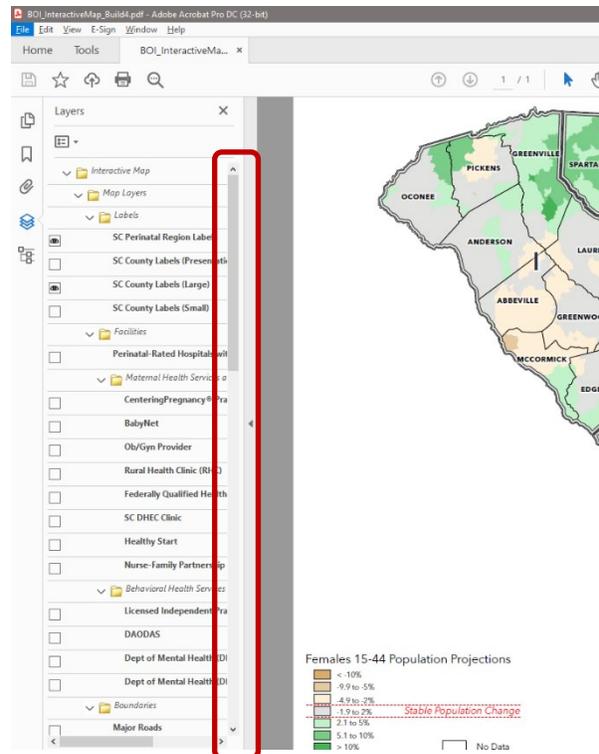
If you have done everything above and still do not see the “Layers” icon or panel, please contact your IT support for further technical assistance.

## Expanding All Map Layers

Expanding all of the map layers allows you to see the data options available for mapping. To expand them, click the “Layer Options” button on the upper left of the “Layers” panel and then select “Expand All” (Figure 10). This will display the titles of all the layers inside the “Layers” panel. You can also click the plus (+) or minus (-) icons to the left of each folder in the “Layers” panel to expand or collapse any layer groupings. Due to the large number of layers and groupings in the map, you will need to scroll down (using the scroll bar to the right of the layers list) to see all of the available layers (Figure 11).



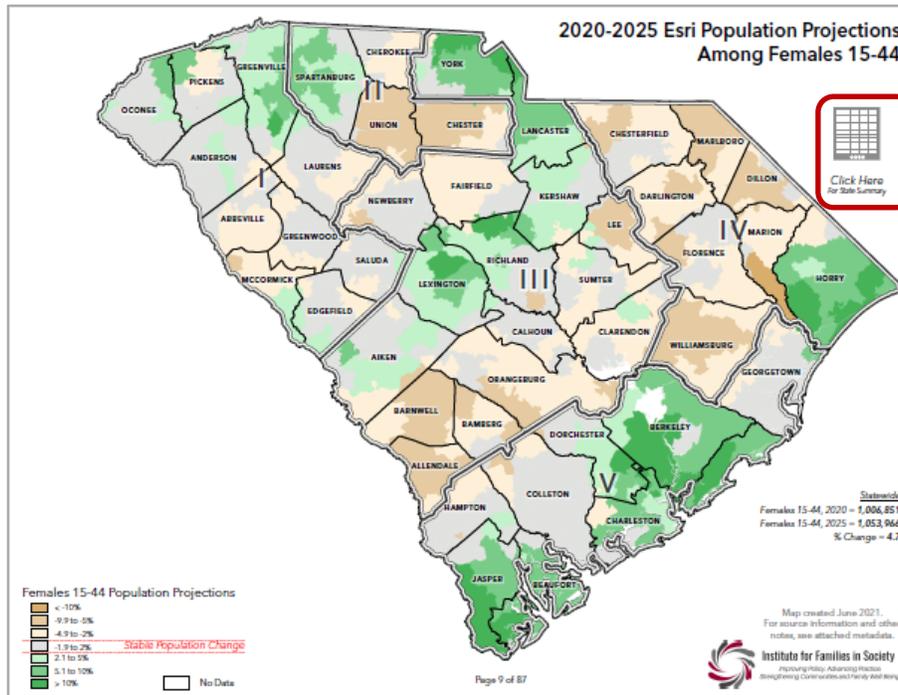
**Figure 10:** Using the “Layers Options” button and “Expand All”



**Figure 11:** “Layers” scroll bar

## Using the Statewide Summary Button

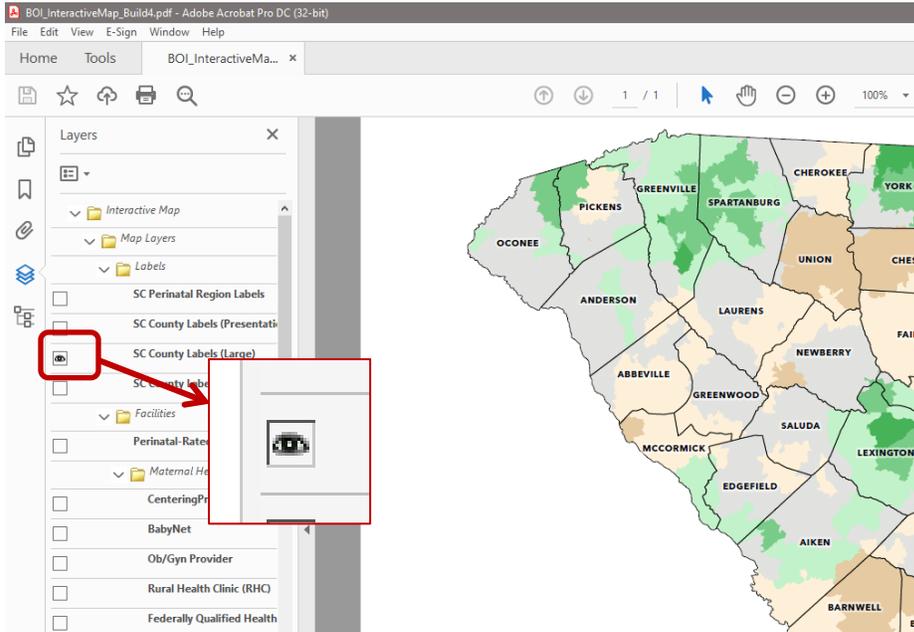
On the interactive map, you can click on the table icon in the upper right-hand corner (Figure 12) to view the map-specific Statewide Summary Table. This table provides total counts and percentages/rates for South Carolina as a whole and for urban/suburban/rural areas. In turn, each measure on the Statewide Summary Table, when clicked, will take you back the interactive map, which then will display the specified measure.



**Figure 12:** Statewide Summary Table Button in Interactive Map

## Using the Map Layers

The default view of the expanded “Layers” panel in the map shows you that the following layers and map elements are visible (as **indicated by the eye symbol**) (Figure 13) (listed by order of appearance): “SC Perinatal Region Labels” (in the “Labels” folder), “SC County Labels (Large)” (in the “Labels” folder), “SC Perinatal Region” (in the “Boundaries” folder), “SC County” (in the “Boundaries” folder), and “Female 15-44 Population Projections” (in the “Basemaps” folder).



**Figure 13:** Visible layers (eye symbol)

With the “Layers” panel visible, you can click each layer’s eye symbol (to the left of the layer name) to turn it on or off. Click the plus (+) or minus (-) icons left of each folder to expand or collapse any layer groupings.

## Dynamic Map Legend Elements

The map legend is dynamic and driven by the layers you turn on in the “Layers” panel. If you don’t see it in the legend, then it has not been selected as a visible layer.

## Choosing Map Layers

How do you know which layers to choose? Which layers can be viewed simultaneously? Here are a few pointers to help you build useful maps.

## Build From the Bottom Up

It is recommended that you build your map from the bottom up and limit your concurrent selections so that the map is easier to understand. *What do we mean by “building your map?”* It means that you can generate maps that display various data by selecting different elements from the “Layers” panel. See Figure 14 for a complete list of options available within these four groups of map data: Basemaps, Overlays, Point Features, and Map Labels & Boundaries. The following sections describe each of these groups in more detail.



### Did You Know?

Basemaps include notes on statewide total populations, rates, and caveats specific to each measure. See the bottom right corner of the interactive map for each measure you select.

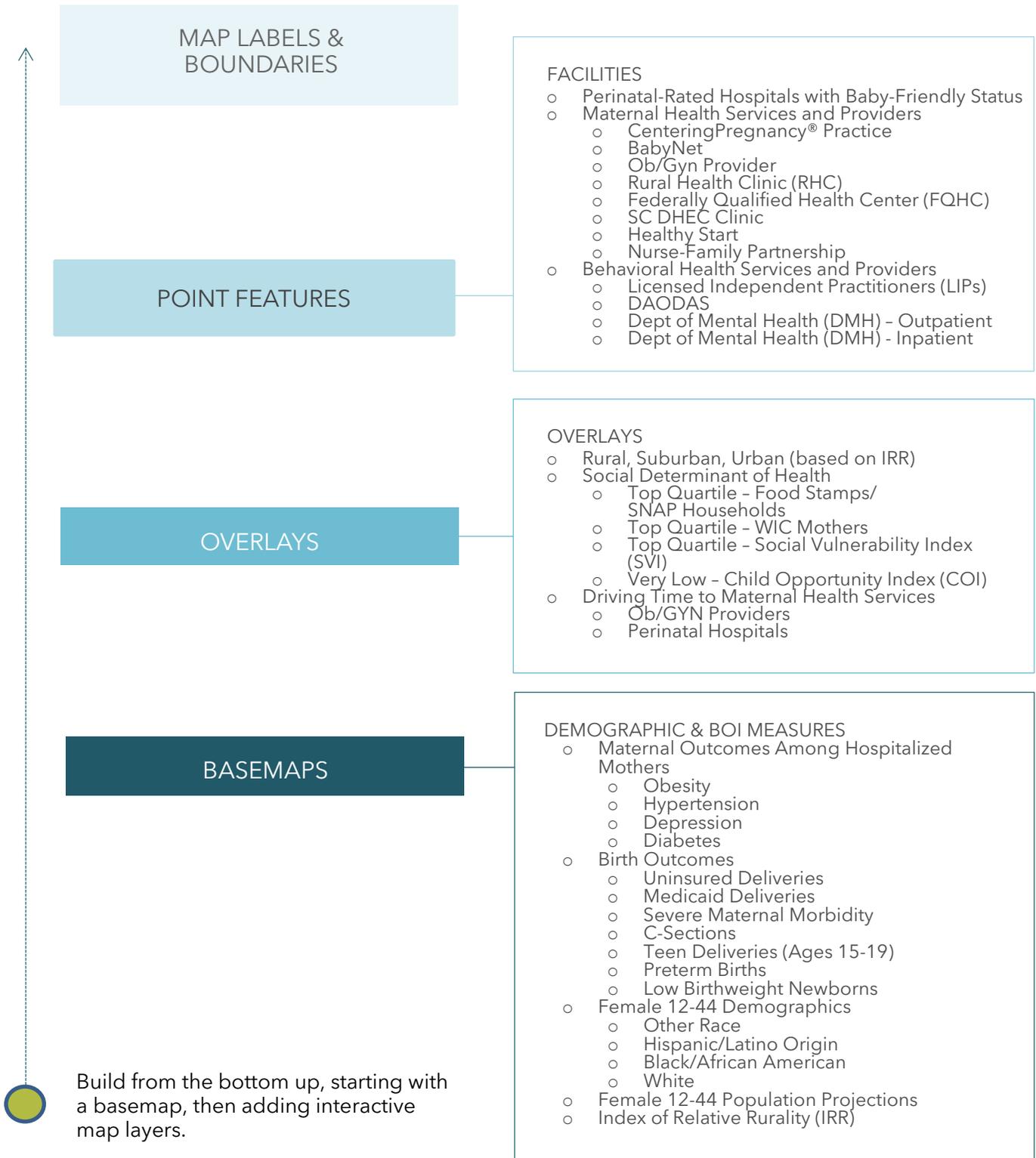
## Basemaps

Basemaps are the foundation of the map you will build. Because each basemap fills the SC counties with solid colors, **only one basemap can be viewed at a time**. Basemaps are found in the “Layers” panel in the “Basemaps” folder. Within the “Basemaps” folder are different subfolders with basemaps grouped by data type. These subfolders include Maternal Outcomes Among Hospitalized Mothers, Birth Outcomes, Female 15-44 Demographics, as well as Female 15-44 Population Projections and the Index of Relative Rurality (IRR) (Figure 15).

Basemaps
Maternal Outcomes Among Hospitalized Mothers
Obesity
Hypertension
Depression
Diabetes
Birth Outcomes
Uninsured Deliveries
Medicaid Deliveries
Severe Maternal Morbidity
C-Sections
Teen Deliveries (Ages 15-19)
Preterm Births
Low Birthweight Newborns
Female 15-44 Demographics
Other Race
Hispanic/Latino Origin
Black/African American
White
Female 15-44 Population Projections
Index of Relative Rurality (IRR)

**Figure 15:**  
Basemap subfolders and their contents

**Figure 14**  
**AVAILABLE MAP DATA**



Build from the bottom up, starting with a basemap, then adding interactive map layers.

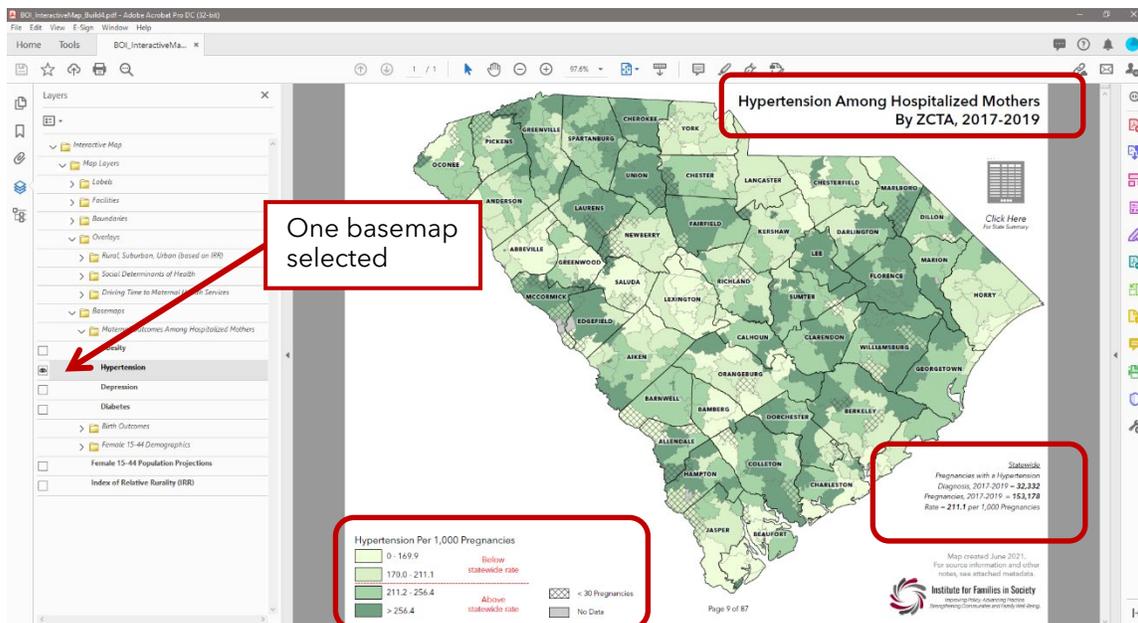


## Did You Know?

ZIP Code Tabulation Areas (ZCTAs) are approximate area representations of U.S. Postal Service (USPS) five-digit ZIP Code service areas used by the Census Bureau to present statistical data from censuses and surveys (See Metadata for more details).

Each basemap you select will change the title, footnotes, and basemap legend (bottom left of map layout on the interactive map). If you select more than one basemap at the same time, only the top-most basemap in the "Layers" panel and its corresponding title and legend elements will be visible (Figure 16). You will see in Figure 16 that even though there are two basemaps selected, only the one closer to the top of the layers list is visible on the map.

Note that this basemap-specific symbolization is different from the overlays in the next section that you can turn off and on.



**Figure 16:** One basemap selected with corresponding title, footnotes, and basemap legend (bottom left of map layout)

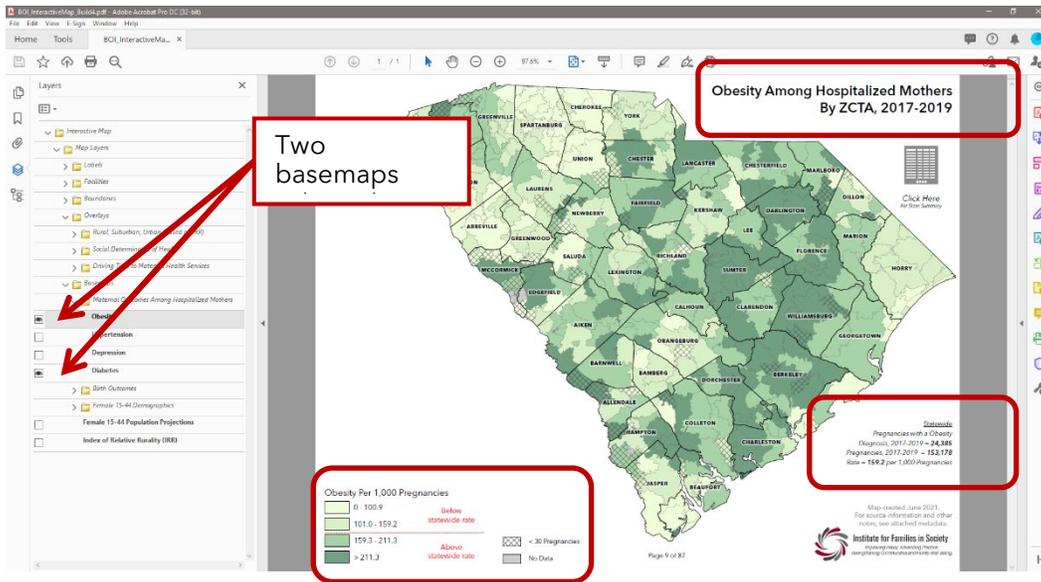


Figure 17: Two basemaps selected - only the topmost selection is visible

## Overlays

Overlays can be viewed at the same time as basemaps. They will show up as stippled dots, stippled squares, or lines on top of the selected basemap (Figure 18). The size, shape, and color differences in the stipple patterns, as well as the direction the lines are drawn, indicate a different overlay measure. Please refer to the legend in order to identify each overlay by its designated pattern (some similar types of overlays use the same pattern).

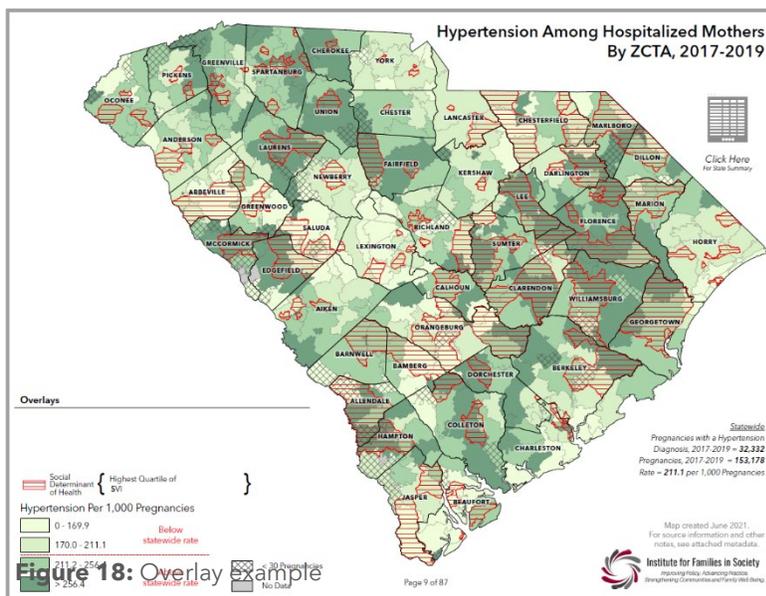
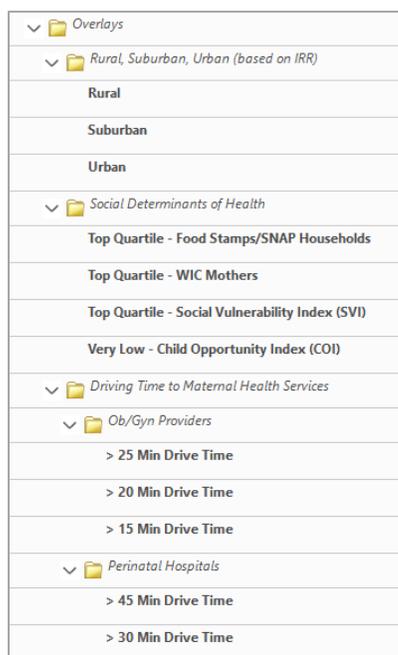


Figure 18: Overlay example

All of the available overlays are found in the “Overlays” folder (Figure 19). You can turn on multiple overlays as desired, but note that the more you turn on, the harder it becomes to see each overlay’s distinct pattern. On the other hand, if the distinct pattern of each overlay is not as important as whether a local community of interest is in any of these areas, then you may find it useful to have multiple overlays visible at the same time.

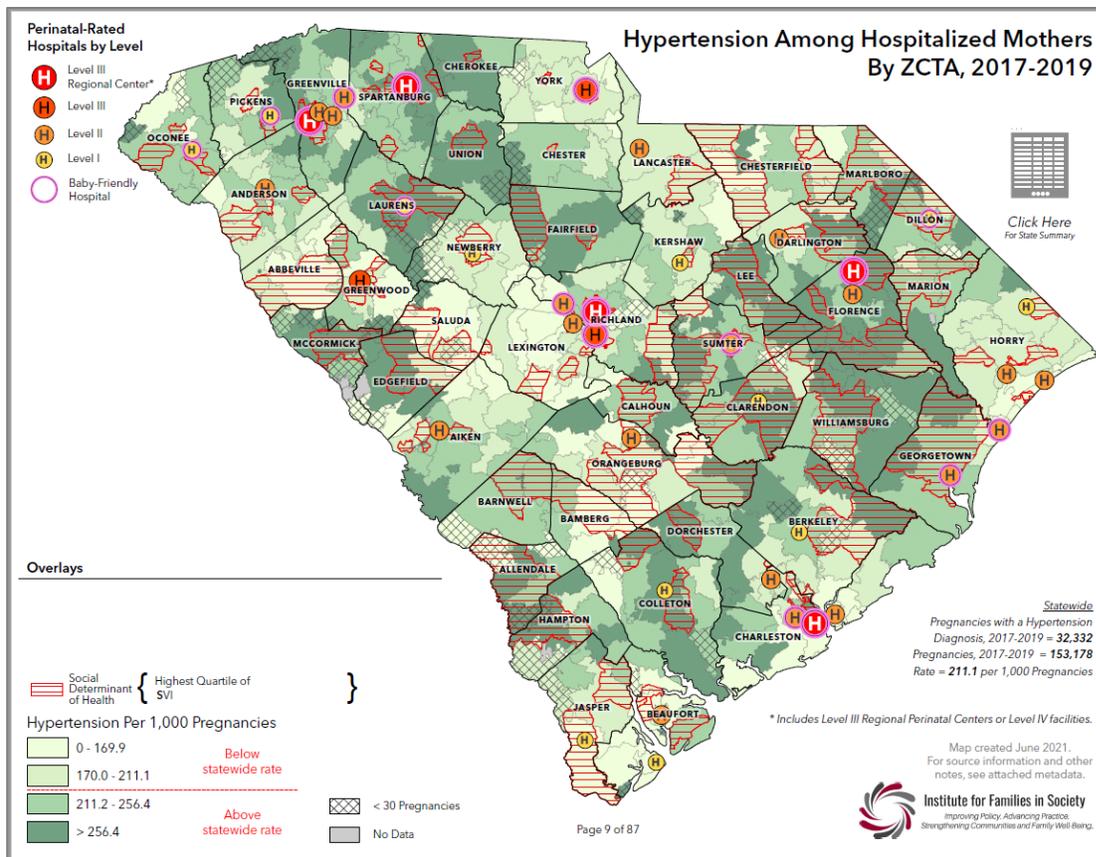


**Figure 19:** Overlay folders in the interactive map

## Point Features

Point Features in this map show geographic locations for facilities of interest or provider counts by county. Point features come in different colors and shapes such as circles, stars, and squares. Point features can be viewed on top of basemaps and at the same time as overlays (Figure 20). They can be found in the “Facilities” folder in the “Layers” panel (Figure 21) in the following categories: Perinatal-Rated Hospitals with Baby-friendly Status, Maternal health Services and Providers, and Behavioral health Services and Providers.

Viewing all point features at the same time will cause some points to be hidden underneath others. This can make the map hard to interpret. Limit your selections so that the map is easier to understand.



**Figure 20:** Point features with basemap and overlay

<div style="display: flex; align-items: center;"> <span style="font-size: 1em;">▼</span> <span style="margin-left: 5px;">📁 Facilities</span> </div>
<b>Perinatal-Rated Hospitals with Baby-Friendly Status</b>
<div style="display: flex; align-items: center;"> <span style="font-size: 1em;">▼</span> <span style="margin-left: 5px;">📁 Maternal Health Services and Providers</span> </div>
<b>CenteringPregnancy® Practice</b>
<b>BabyNet</b>
<b>Ob/Gyn Provider</b>
<b>Rural Health Clinic (RHC)</b>
<b>Federally Qualified Health Center (FQHC)</b>
<b>SC DHEC Clinic</b>
<b>Healthy Start</b>
<b>Nurse-Family Partnership</b>
<div style="display: flex; align-items: center;"> <span style="font-size: 1em;">▼</span> <span style="margin-left: 5px;">📁 Behavioral Health Services and Providers</span> </div>
<b>Licensed Independent Practitioners (LIPs)</b>
<b>DAODAS</b>
<b>Dept of Mental Health (DMH) - Outpatient</b>
<b>Dept of Mental Health (DMH) - Inpatient</b>

**Figure 21:** “Point Features” folder and contents

## Map Labels

Labels can be used with any combination of basemap, overlay, and/or point feature. There are four label options available in the “Labels” folder (Figure 22).

<div style="display: flex; align-items: center;"> <span style="font-size: 1em;">▼</span> <span style="margin-left: 5px;">📁 Labels</span> </div>
<b>SC Perinatal Region Labels</b>
<b>SC County Labels (Presentation)</b>
<b>SC County Labels (Large)</b>
<b>SC County Labels (Small)</b>

**Figure 22:** “Labels” folder and content

Most four are county labels but at different sizes. The “SC Perinatal Region Labels” represent the DHEC Perinatal Regions by roman numeral labels. The “SC County Labels (Large)” labels (Figure 23) are the standard county labels. These are easy to read on any basemap. The “SC County Labels (Small)” labels (Figure 24) are less visible but allow you to see any point features that may lie underneath the label. These labels are useful if you are viewing these maps on your desktop or laptop. The “SC County Labels (Presentation)” labels are very large and may be more useful when the maps are used in conjunction with a projector.

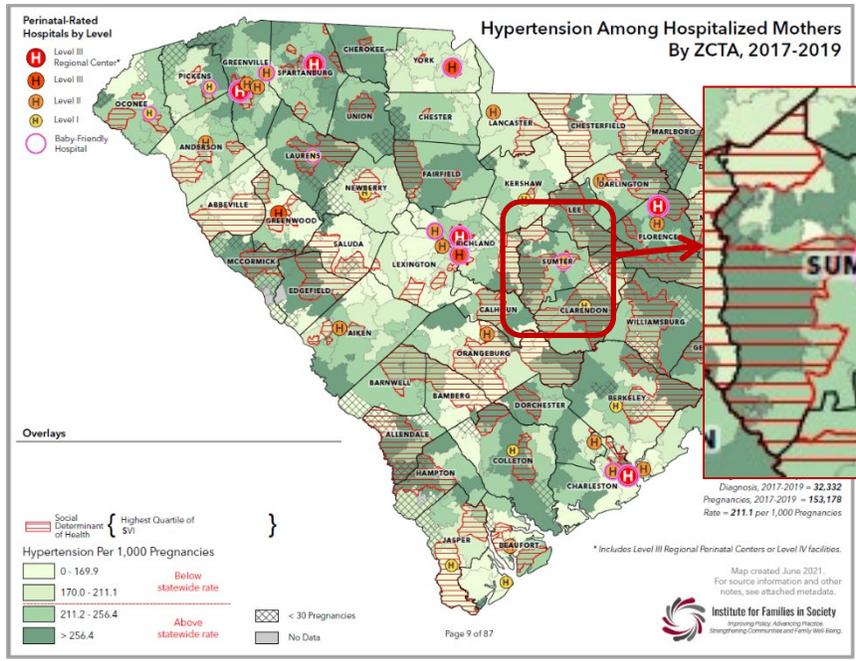


Figure 23: Large labels

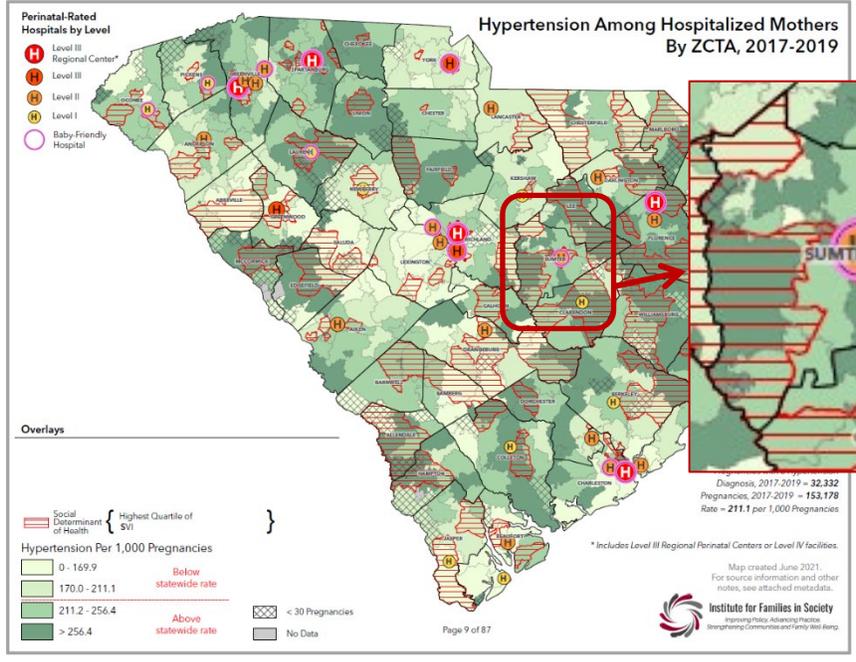
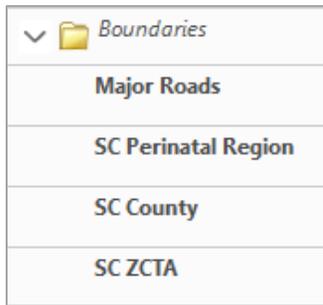


Figure 24: Small labels

## Boundaries

In this map, there are three boundary options (“SC County”, “SC ZCTA”, and “SC Perinatal Regions”), found in the “Boundaries” folder of the “Map Layers” panel (Figure 25). There is also a layer for major roads that includes interstates and major highways. By default, the SC County boundary and SC Perinatal Region boundary layers will be visible. The ZCTA boundaries visually delineate the different ZCTA areas. The SC Perinatal Region layer highlights the DHEC Perinatal Regions. Boundaries can be used with any combination of basemap, overlay, point feature, and/or label.



**Figure 25:** Boundaries folder and content

## UNDERSTANDING THE GEOGRAPHY USED

In addition to knowing how interact with the map, it's important to understand the levels of geography used on the map.

Our goal is to provide the most reliable, meaningful data at the smallest geography possible without releasing any protected health information (PHI). For our maps, this requires that we protect individuals from being identified while still showing the geographic variations that can be useful in policy development and programming.

ZIP Code Tabulation Areas (ZCTAs) are approximate representations of U.S. Postal Service (USPS) five-digit ZIP Code service areas that the Census Bureau creates to present statistical data from censuses and surveys. Using ZCTA level data provides a good compromise between protecting health information, ensuring rates are reliable, and showing geographic variation at a finer level.

Be careful when comparing ZCTA level data to county level data. When interpreting data at county levels, it is important to remember that county data is an average of the entire county and not a true representation of any specific location within that county.

## FINDING ZCTAS OF INTEREST

As you use the map, you may be interested in identifying specific ZCTAs. You will need to turn on the ZCTA Boundaries layer (see the "Boundaries" section on page 22) and use the "zoom" feature to zoom in to the area of interest. Working back and forth between the interactive map and the ZCTA Locator Maps, you should be able to identify the ZCTA (e.g. 29201 or 29073). Once you know the ZCTA, you can use both the ZCTA Information Table (page 10 of the Scan<sup>®</sup>) and the ZCTA Locator Information Table (page 48 of the Scan<sup>®</sup>).

There are five (5) ZCTA Locator Maps which represent five (5) perinatal regions of South Carolina: I, II, III, IV and V. These maps allow you to visually locate and identify ZCTAs. Make use of the "zoom" and "hand" tools to take a closer look at the ZCTA maps.

To zoom in or out of specific areas of the maps or tables, use the "+" or "-" icons (Figures 2a, 2b on page 5) found on the Adobe Reader tool bar or specify the zoom level.

Once zoomed in, you can use the "hand" tool (Figures 2a, 2b on page 5) to move around the map or table.



### Did You Know?

The Metadata tables provide data sources, definitions and calculation notes. It may be helpful to print out the Metadata tables so you can refer to them as you work with the interactive map.

## REVIEWING THE TABLES AND METADATA

The tables supplied in the additional pages of the Scan<sup>®</sup> contain valuable information, including the summary of measures at the state level, a summary of select measures at the ZCTA level, and location information about each ZCTA.

The metadata at the end of the BOI GeoEScan<sup>®</sup> provides source information about all data elements as well as additional notes, definitions, and methodology on how the data were pulled.

## FREQUENTLY ASKED QUESTIONS (FAQS)

1. *Where do I find the "Layers" panel to change the interactive map?*

Please refer to the "Opening the Layers Panel" section on page 8. Make sure you check out the tool tips as well. If you are still unable to find the "Layers" panel in your Adobe Reader, please contact your IT support.

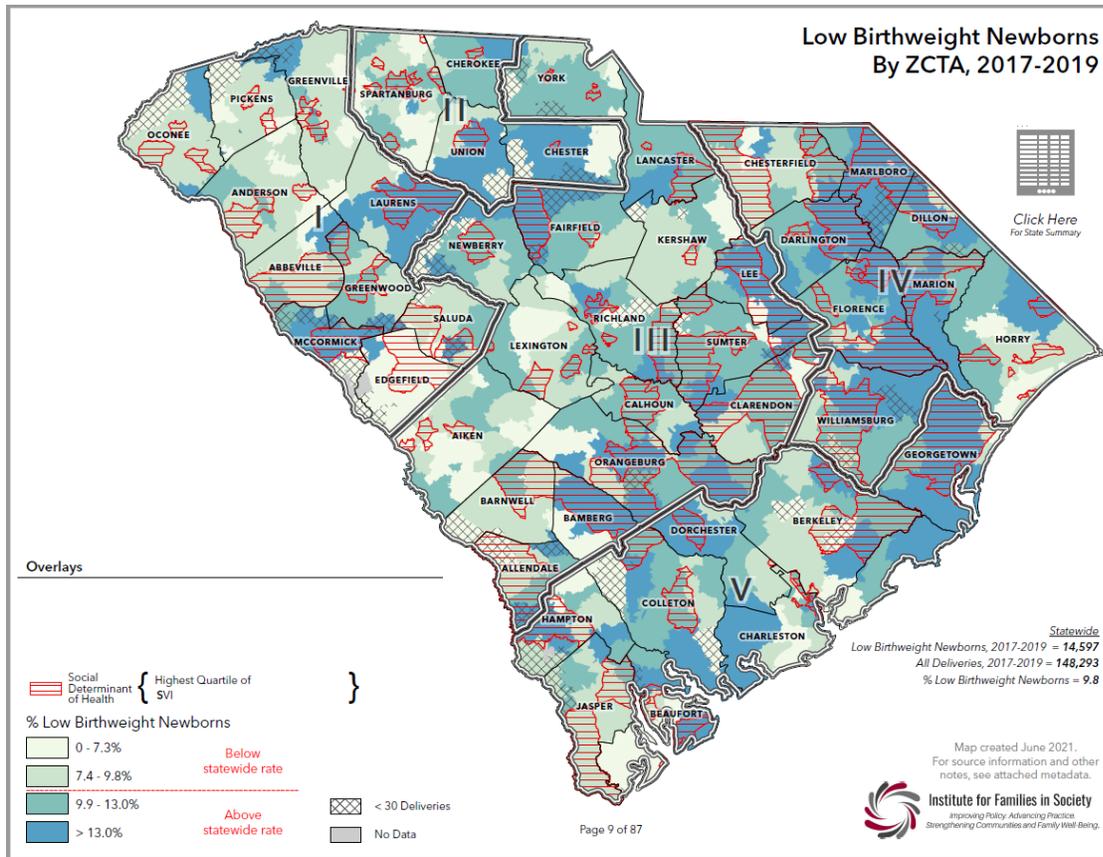
2. *How do I know what map layers to choose?*

This will depend on what you want to see. Let's walk through an example:

Say you are interested in knowing if there is any association between the high rates of low birthweight newborns and the Social Vulnerability Index (SVI) in South Carolina. Use the interactive map and turn on the following layers. (See the final product in Figure 27.)

- In the "Basemaps" folder under the "Birth Outcomes" folder:  
Select "Low Birthweight Newborns"
- In the "Overlays" folder under the "Social Determinants of Health" folder:  
Select "Top Quartile - Social Vulnerability Index (SVI)"
- Labels under the "County Labels" folder:  
Verify "SC County Labels (Large)" and the "SC Perinatal Region Labels" are selected
- Boundaries under the "Boundaries" folder:  
Verify "SC County" and the "SC Perinatal Region" layers are selected

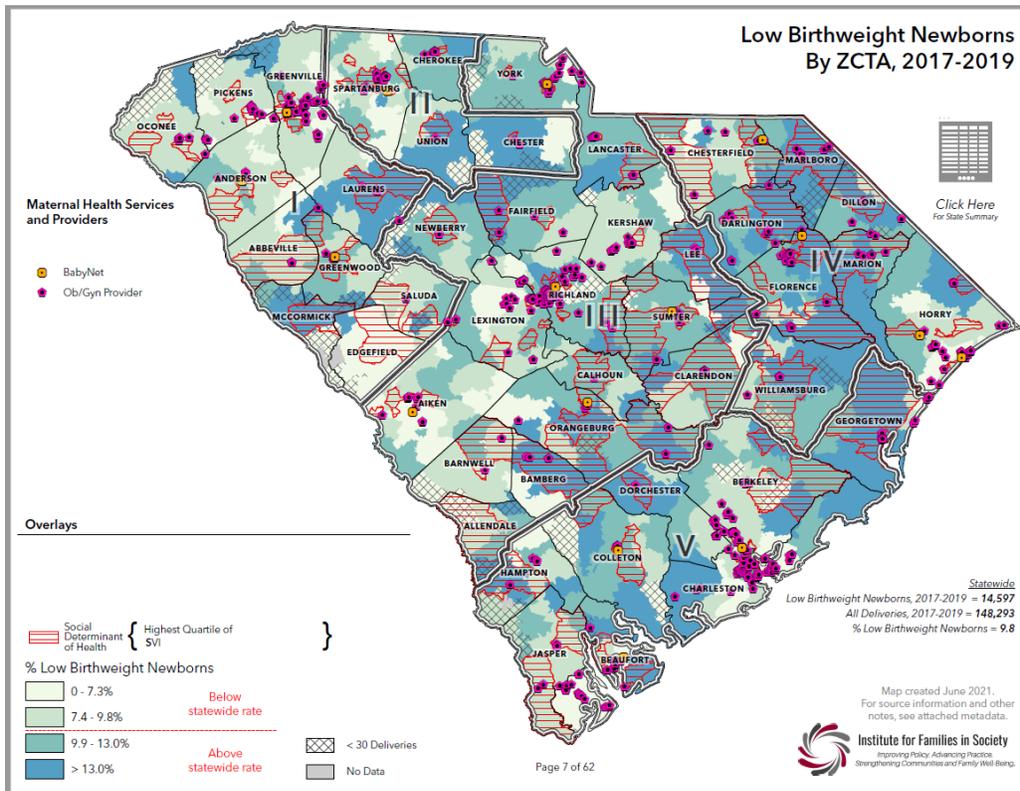
In Figure 27, you can see there are a several areas with high percent of low birthweight newborns and the top quartile of the SVI (e.g. Union, Laurens, McCormick, Fairfield, Richland, Bamberg, Orangeburg, Sumter, Lee, Darlington, Marlboro, Dillon, Marion, Florence, Horry, Georgetown, Williamsburg, Clarendon, Berkeley, Charleston, Beaufort, and Hampton counties). Now you may want to know "Are there any resources to provide prenatal care to areas with high rates of low birthweight newborns and a lack of prenatal care options?"; "Are these low birthweight rates due to a lack of resources?" or "What amount of the low birthweight rates are enrolled in Medicaid or other means-tested programs?"



**Figure 27:** Example map with selected layers

Some of these questions require further investigation, while some can be answered by adding other layers to the map. To answer the question of whether there are any resources to provide support for healthy weight newborns to areas with high rates of low birth weights, turn on “BabyNet” and “Ob/Gyn Provider” in the “Facilities” folder under “Maternal Health Services and Providers” (Figure 28):

Turning on this facility point feature may drive you to ask more questions. Try adding another overlay or point feature, or start fresh with a new basemap selection.



**Figure 28:** Example map with selected layers and added facility points

3. *Why did the layer I selected not show up on the map?*

Basemaps fully cover the map and have a solid fill color. If you select more than one basemap at a time, the one closest to the top of the “Layers” panel will be the only one visible. If you are having problems seeing layers that you selected, turn everything off and build your map again using the suggestions in the “Build from the Bottom Up” section on page 14.

4. *Why can I not see the facility I selected?*

Because the facilities are represented as points on a map and facilities tend to co-locate (i.e. be physically near each other), it may be hard to distinguish individual locations. Turn off all but one facility layer to see if it is easier to determine the location of the facility in which you are interested. Also, it may be helpful to either turn off the county labels or switch to the smaller county labels.

5. *The county labels are in my way; can I move them?*  
You can't move them, but you can turn them off. If the county label is covering the location of a facility or the ZCTA you are interested in, you can turn the labels off or choose the smaller county label. See the "Map Labels" section on page 20 for more information.



### Did You Know?

The GeoEScan can show you where events are correlated. It does NOT allow you to determine whether one causes the other.