Where the Grass Grows Greener: Web Tool User Guide – NASA Equity and Environmental Justice Program

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Getting Started – About the Tool

When opening the web tool, you will be presented with the following screen. **Please note** the four tabs (surrounded with red boxes) at the top of the right-hand side panel within the web tool. These four tabs will be the main mode of navigation throughout the tool. As a default, the tool begins in the "About" tab, which provides basic background about the tool, how to interact with it, and areas of interest which are also highlighted in other areas of the tool.

Throughout this user guide, we will explore the functionality and information contained in the three additional tabs: (1) **View the Data** (2) **Resilience Hotspots** and (3) **Resource Guide**

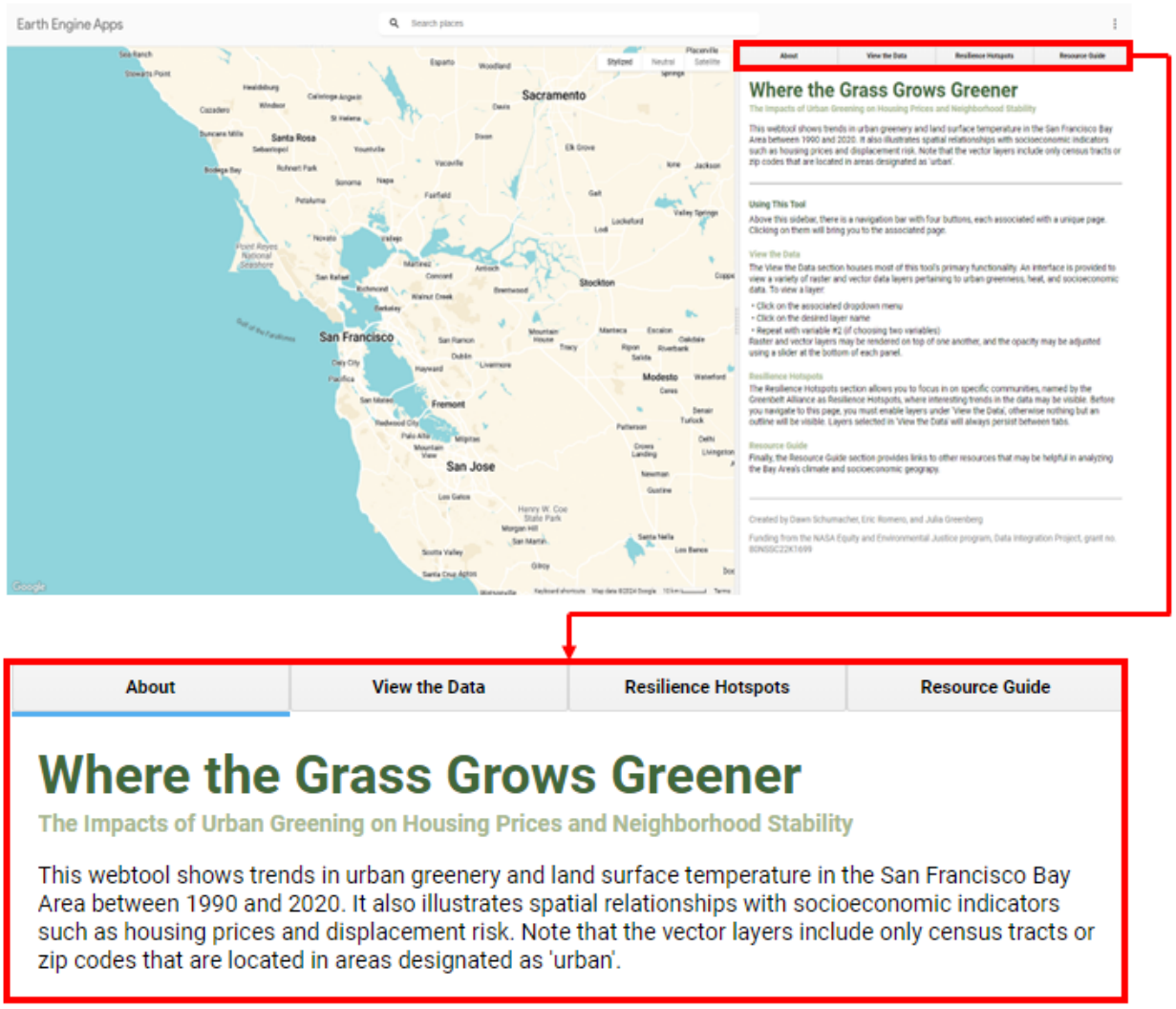

Figure 1: Example of the web tool layout and a zoomed in image of the main web tool navigation tabs.

Viewing the Data

Taking a closer look at the side panel, we can start to explore the tool in a bit more detail. If you click on the "View the Data" tab, you will be shown the following display on the right-hand panel of the web tool

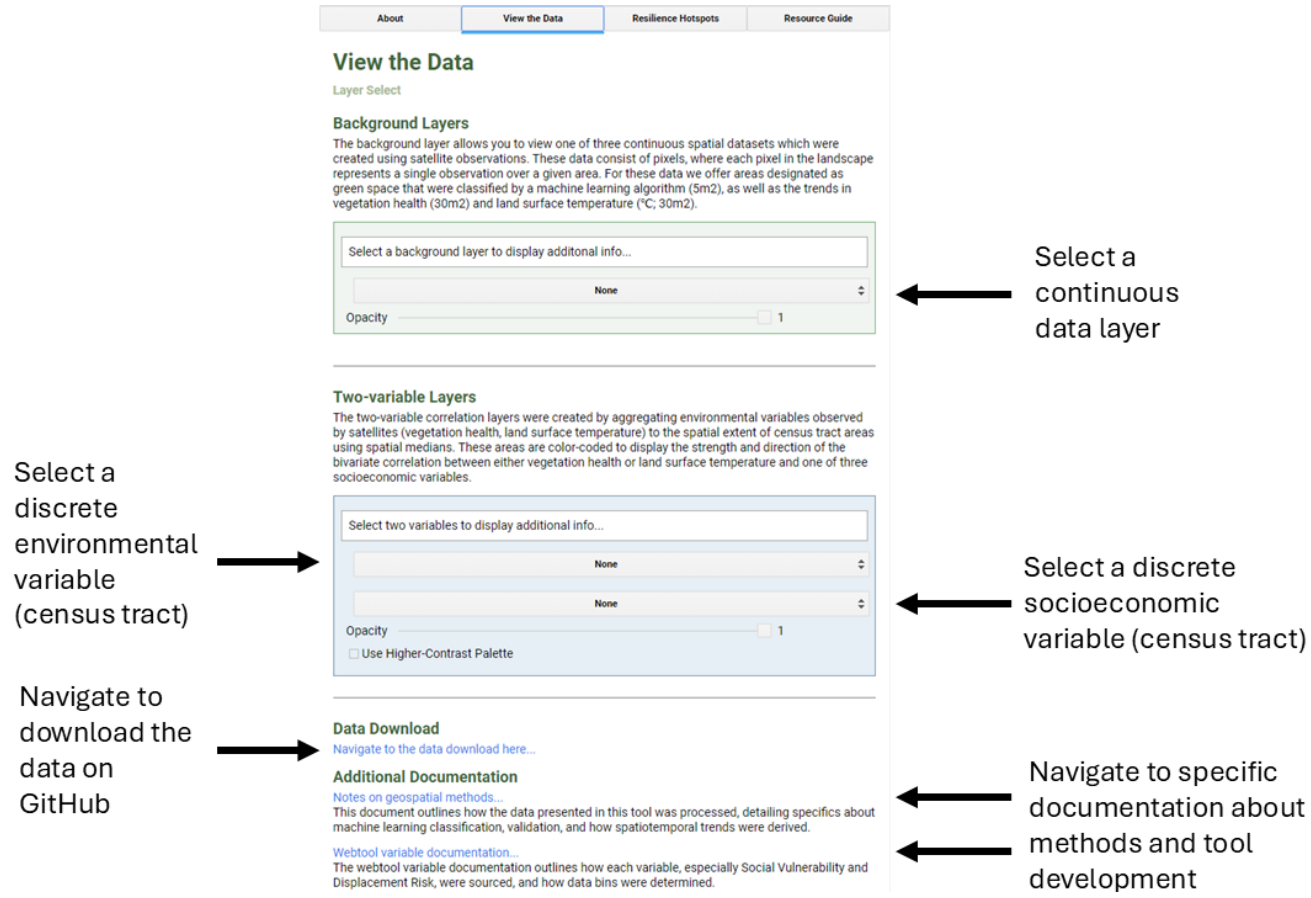

Figure 2: Overview of the "View the Data" tab. Display options for continuous and discrete data layers shown

In the panel above, there are two data display options: (1) a continuous background data layer and (2) a discrete two-variable correlation between an environmental data layer and a socioeconomic data layer. The the continuous background data layer is represented as pixels, where each pixel represents a specific value over a uniform grid. The discrete two-variable correlation data layer is represented using polygons of census tracts. There are also links to an external GitHub repository where you can view documentation on the development of the web-tool as well as download the data in .CSV file format.

In the next figures, we will explore different examples to display these data. Please also note the option to increase or decrease the opacity using the "Opacity" sliders at the bottom of the Background Layer and Two-variable Correlation boxes. This slider will

adjust the transparency of the continuous data that you select. Another option that is available is the "Higher Contrast Palette" check box for the two-variable correlation. Checking this box will use a color palette display with greater visual contrast when displaying the discrete correlations at the census/zip code level.

In the following example, we will display a continuous background data layer. Here we have selected the green space classification by clicking on it from the drop-down list of background layer options. The left-hand map display should now show the classified greenspace data.

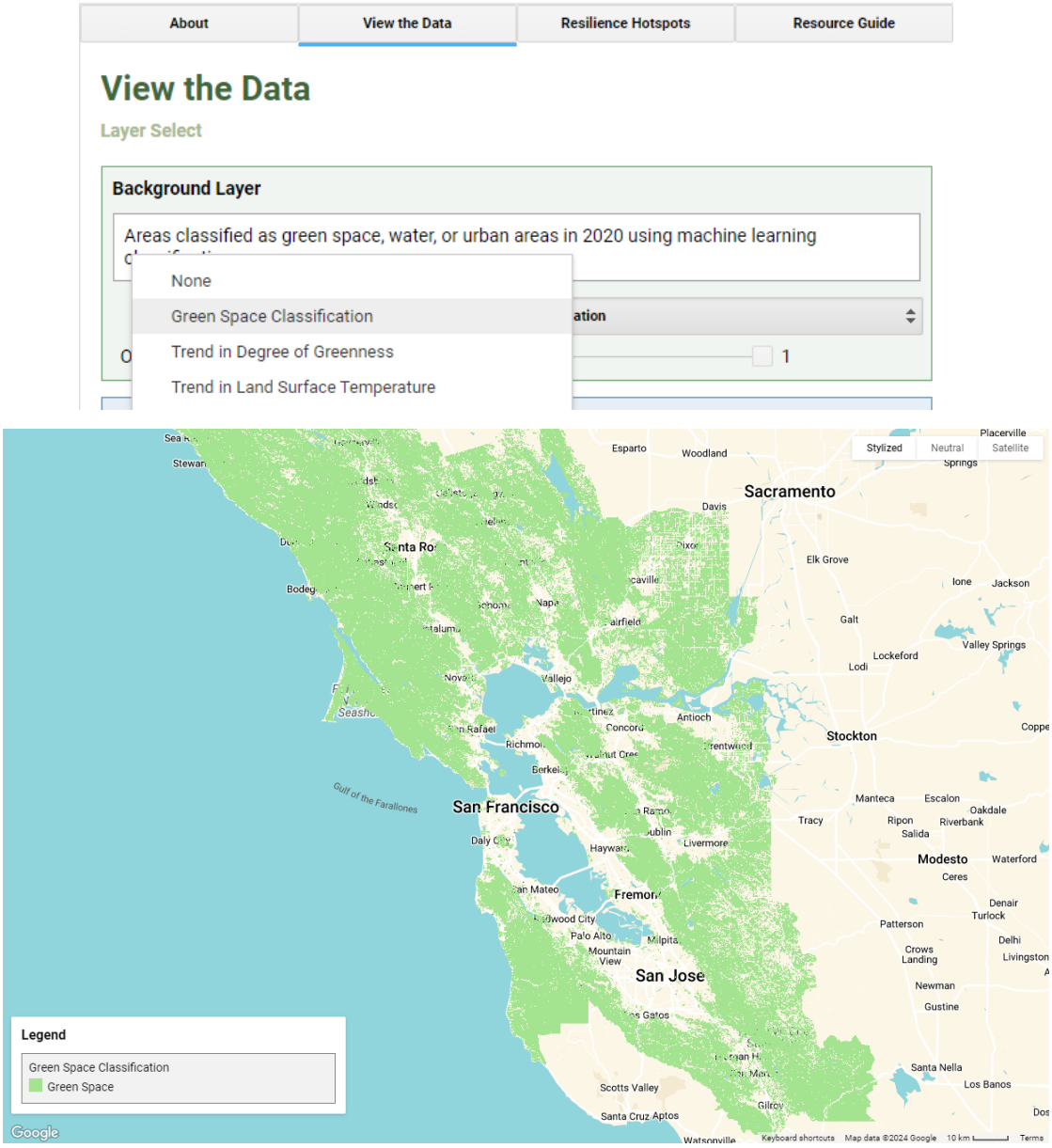

Figure 3: Example of continuous background layer data selection and displayed classified green space inside the data viewer.

In the example above, we can see the classified green space background data layer. In this dataset, every pixel corresponds to a $5m^2$ area which has been classified as green space by a machine learning algorithm. Try exploring the other options for the background data layers as well. Please note that when you select a layer from the drop-down tab, a brief description of that layer will appear just below the tab selection.

Now, we'll explore displaying some of the discrete two-variable correlation census tract data layers. Again, in the right-hand panel inside of the "View the Data" tab, we can select data for the two-variable correlation display. The first drop-down list provides options for remotely sensed environmental variables, either degree of greenness or land surface temperature. The second drop-down list provides options for socio-economic variables. In Figure 4 below, we can see how these options are presented to us in their respective drop-down lists inside of the tool. Let's select 'Land Surface Temperature' as the environmental variable, and 'Social Vulnerability' as the socio-economic variable. Figure 5 shows new data populating the viewer. The updated display now shows census tracts that have been color-coded based on the magnitude and direction of the bivariate correlations between the two variables we selected. Try exploring more of these relationships with all the variables available in the viewer.

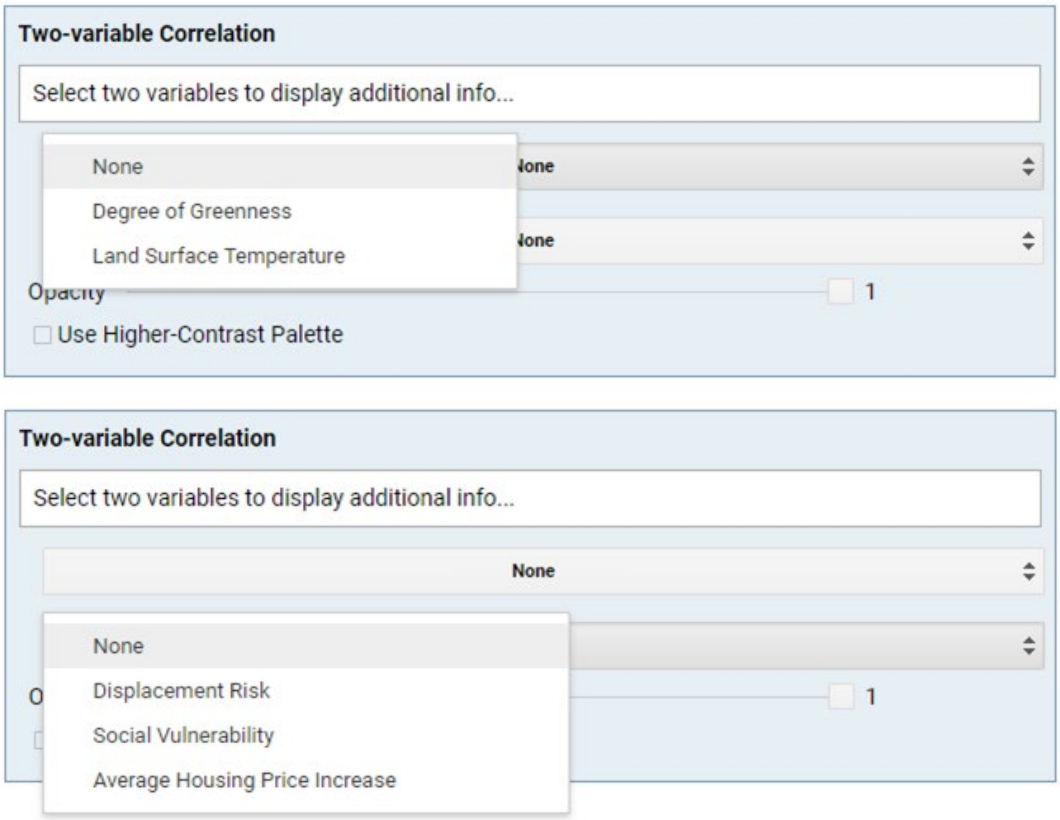

Figure 4: Example of discrete two-variable correlation data selection

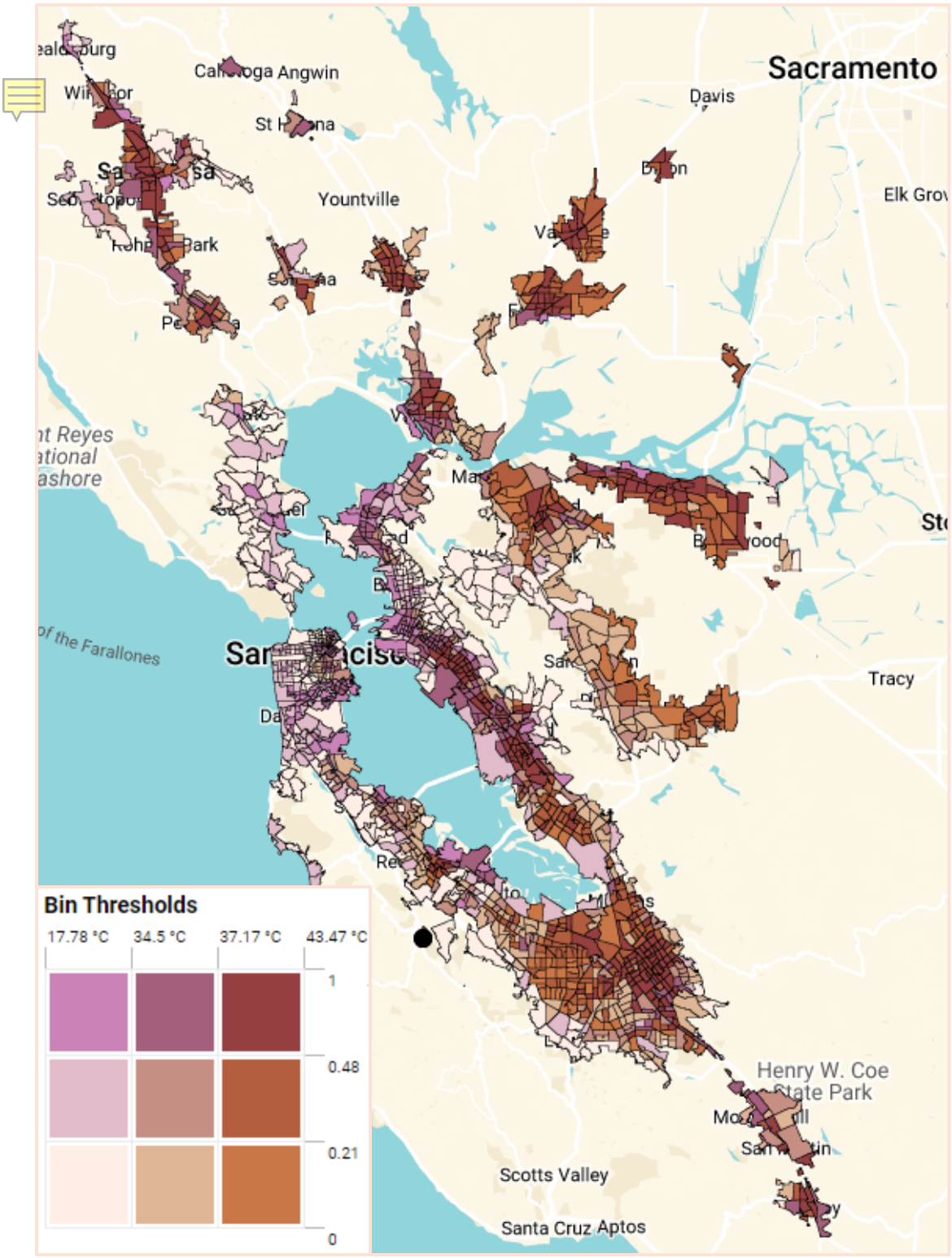

Figure 5: Example of two-variable correlation displayed in the data viewer. The current variables are Land Surface Temperature and Social Vulnerability.

Resilience Hotspots

Next, we will explore the "Resilience Hotspots" tab in the right-hand panel. The Resilience Hotspots highlighted by this tool are regions that have been identified by the Greenbelt Alliance as communities that stand to lose the most in the face of climate change in ways that co-benefit habitats, open spaces, biodiversity, recreation, and more. The Greenbelt Alliance is a non-profit land conservation organization in the San Francisco Bay Area that works through public policy, advocacy, and education to promote sustainable urban growth and livability so that the region can endure a changing climate.

After going through the data display selection in the "View the Data" tab, we can navigate to the "Resilience Hotspots" tab. This tab contains a single drop-down list which allows the user to select and immediately zoom to one of several Resilience Hotspots in the Bay Area. In the figures below, you can see the options provided in the drop-down list as well as a zoomed in example of the Southwest Santa Rosa Resilience Hotspot. In the Southwest Santa Rosa example, we have selected the two-variable correlation census tract data, which displays the relationship between Degree of Greenness and Social Vulnerability. Please note that to see the background geographic reference information (city names, land markers, road names), the opacity of the display layer needs to be set to a value less than 1 using the opacity slider in the "View the Data" tab. Please also note, that for any data to appear when you zoom into regions using the "Resilience Hotspot" tab, you must first select which data you would like to display inside of the "View the Data" tab. If you do not do this, then only the base-layer map with geographic reference information will be displayed.

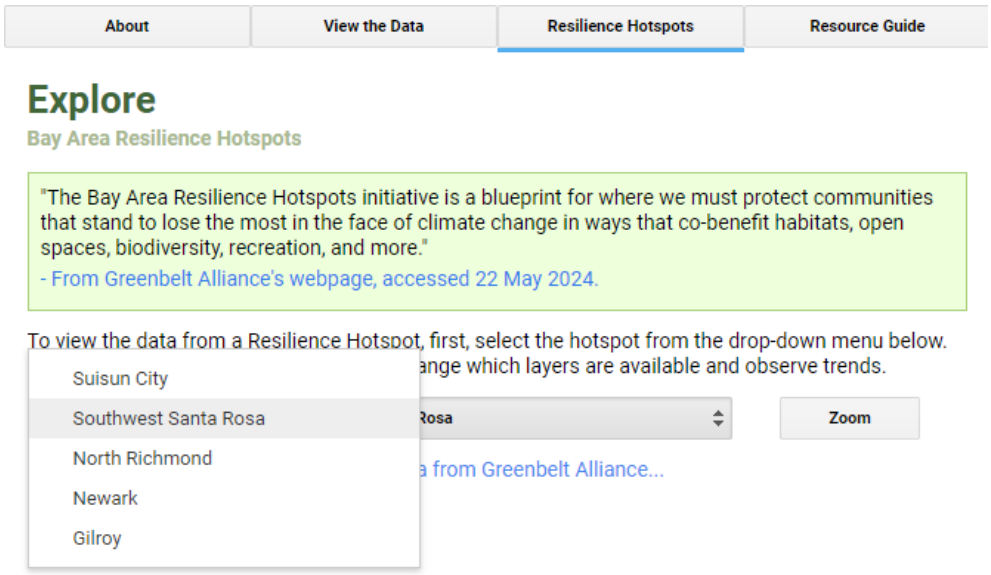

Figure 6: Resilience Hotspots drop-down list options highlighting Southwest Santa Rosa

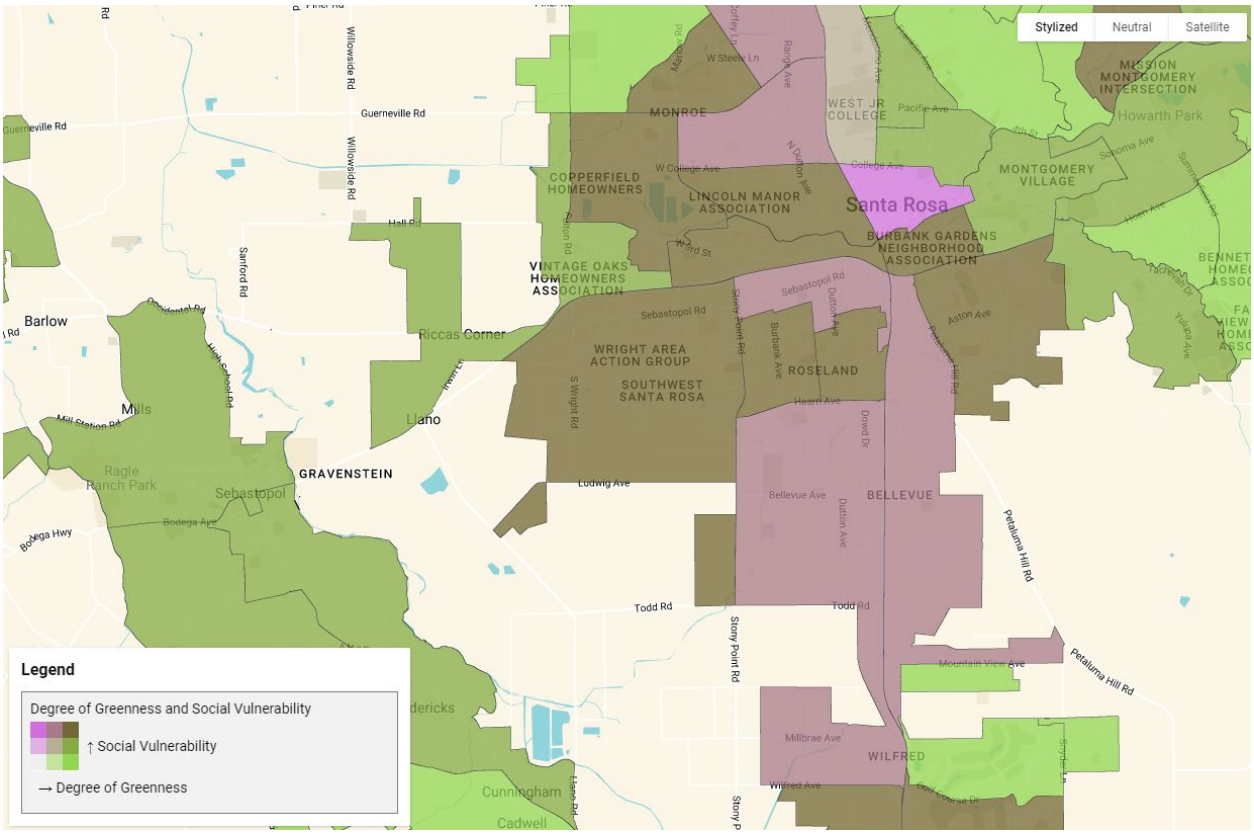

Figure 7: Zoomed-in display of the Southwest Santa Rosa Resilience Hotspot region after selecting the Degree of Greenness-Social Vulnerability Two-variable correlation data display and setting opacity to 0.7 from the "View the Data" tab

Resource Guide

Finally, we'll explore the "Resource Guide" tab. The contents pane of this tab contains links to external websites that have been compiled by other groups highlighting similar socioeconomic and environmental studies, datasets, web tools, and analyses similar to what is contained in this web tool. These resources have been compiled for both the Bay Area and regions elsewhere. We have conveniently provided a drop-down tab to help you filter by the kind of resource available at the corresponding web link. The figure below shows the contents of this tab with the drop-down menu options on display.

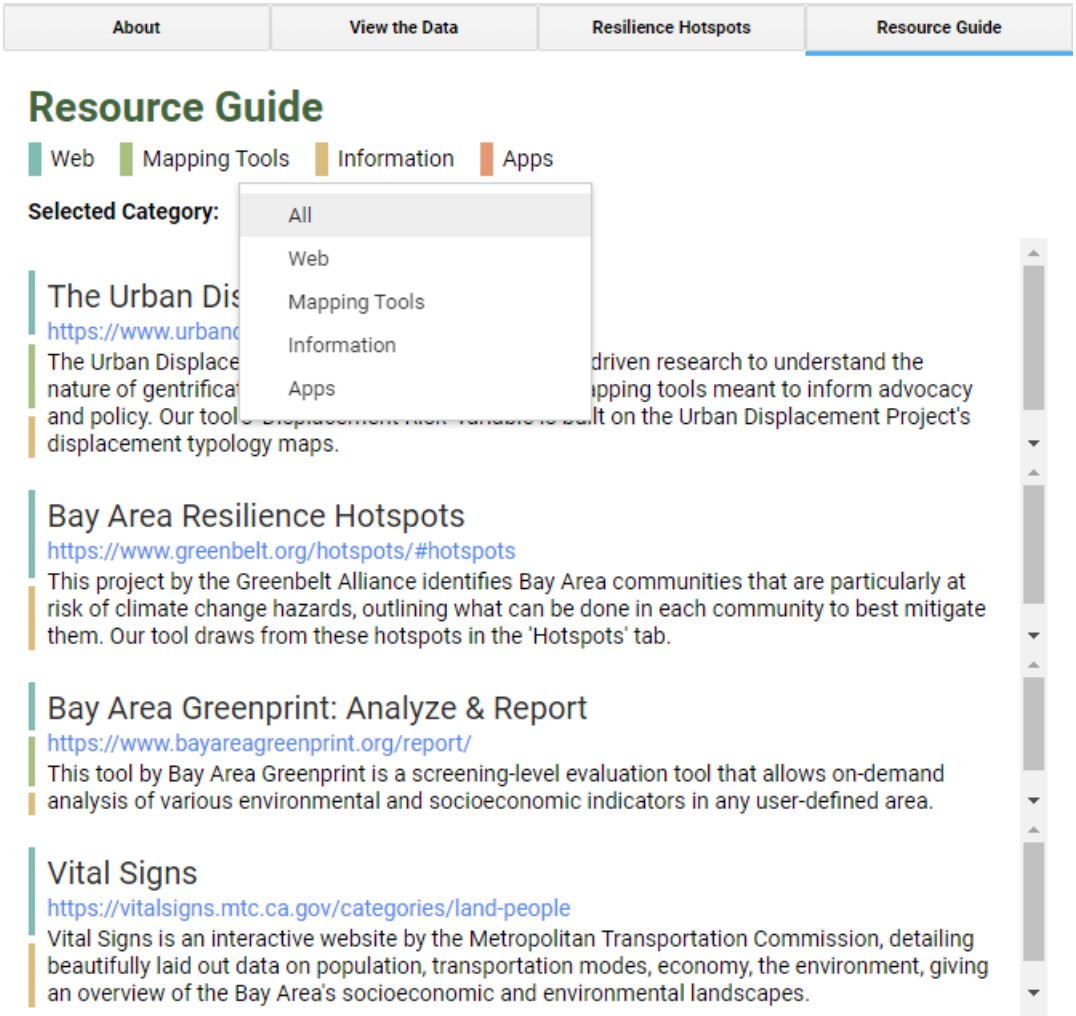

Figure 8: Contents of the Resource Guide tab with full drop-down menu filtering options displayed, allowing the user to navigate to external web resources for similar socioeconomic-environmental information across the Bay Area and elsewhere.

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