

Using Google Maps to Display Election Information

U. S. Election Assistance Commission

633 3rd Street NW, Suite 200 | Washington, DC 20001

www.eac.gov



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Introduction

The use of Geographical Information Systems (GIS) has become more common in recent years, and like many other technologies, its use has expanded for 21st century customers. Elections are no exception to this; stakeholders are more technologically-savvy, and as their familiarity with technology increases, election officials are feeling the need to deliver information through more modern methods. There will always be a need for paper maps on a wall, but there is also a need for real-time updated maps on phone and tablet screens.

Many elections offices around the country, especially in large jurisdictions, have dedicated staff who train and specialize in GIS technology, enabling them to invest in, develop, and maintain large GIS platforms. But there are also many elections offices that do not have sufficient resources to support GIS-based services for voters.

This document is meant to offer jurisdictions an alternative option that is free, requires little training, and is quick to deploy. While it may be a limited option when compared to larger GIS platforms, it is a first step for displaying information in an accessible online mapping or wayfinding service. This toolkit walks election officials through using Google Maps to show different data sets on online maps and how to update the information on a regular basis.



Basic Concepts and Terms

To begin, there are basic concepts and terms that election officials should be familiar with. If you are already above the beginner level of GIS technology, feel free to skip to the next section of this document, [Creating Google Maps with geocoded data](#).

Data for a GIS System has two (2) basic components: location information and measurement information. Location information tells the system **where** your data should be presented on the map—from broad information, like a city or a zip code, to a specific set of coordinates. Measurement information is about **what** data is to be shown on the map; it does not have to be related to the location. Most election officials are already doing this; for example, when you create a spreadsheet of poll worker assignments, the columns describing the address of the polling place are describing the **where**, the columns showing pay rate, training completion, etc., are the **what**.

Election officials will often have the information they want presented stored in an existing system. In that case, it is important to understand how the data is stored:

- **Geocoded information:** information that is geocoded is information that describes an exact place on the Earth’s surface, coordinates for a specific point. Sometimes this information is called point-based data.
- **Segment based:** Some systems use segments instead of points to keep stored data. In that case, the system defines an address as being “within this segment,” which means all records in that segment are viewed as being in the same location. To show segmented data on a map there are two options:
 - You can present the data in “zones” displaying the data for an entire region. A map of population density per zip code is a good example of this.
 - You can geocode each data point to make it more accurate.

Google Maps will automatically geocode standard addresses, which means that regardless of how your current system is storing data, you only need to use the address and Google will automatically convert it to a geocoded point (in most cases; you may have a few exceptions you will need to handle separately).

Finally, it is important to understand layers. Put simply, layers are groups of data points. They are called layers because they are displayed over a base map, overlaying different categories on top of each other. For example, you can have a base map of a city, a layer with all the churches, another layer of all the schools, and a layer of county buildings. You can then use GIS to show all layers to look for potential polling places, or you can just show the layer of schools and county buildings if your jurisdiction cannot use churches.

More information is available in the EAC publication on [Geo-Enabled Elections](#).



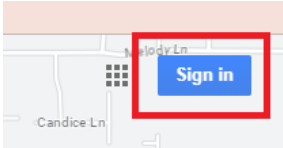
Creating Google Maps with geocoded data

Creating a map and sharing it

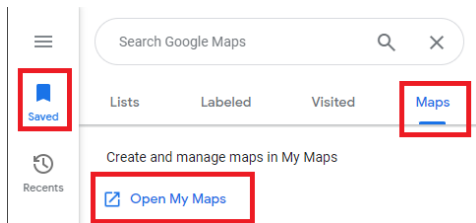
A pre-requisite for creating a Google map is having a Google Account. To set up a Google account, visit [Google's guide on creating an account](#).

Once you have established your Google account, follow these steps:

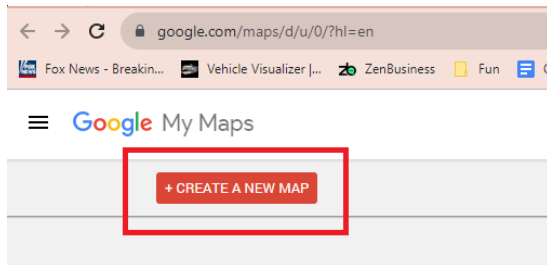
1. Go to maps.google.com
2. Click on the **Sign In** button on the top right corner and log in to the account you created.



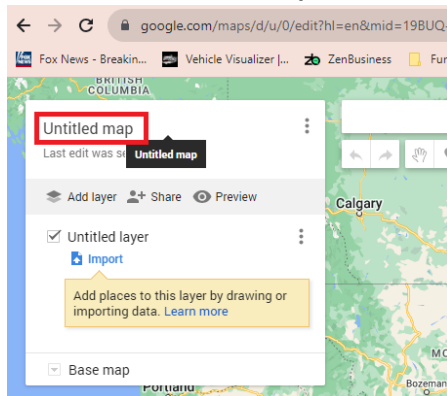
3. Once you have logged in, click on the **Saved** button on the toolbar on the left side of the screen. This will display a menu with some options. Click on **Maps** and then on **Open My Maps**.



4. A separate page will open. Click on create new map and wait for the map to load. You have already created a map, without any data on it and not publicly shared, that is in your catalog.



5. Click on the **Untitled map** name, to edit the map information.



- a. The name you enter in **Map Title** is what users will see, so pick a name that is descriptive of the map. Some examples of names: “*Early Voting Locations for XXXX County*,” “*Polling Places available for November 1, 2022*” or “*Training locations for Election Day Poll Workers*”.
- b. Enter a brief description of the contents of the map in the **Description** field. If there are words you think voters may use when searching for this information, it is a good idea to add them here. In the image below notice the use of the term “Vote Centers” in the description, it will help if voters search for that term together with polling places or locations.

The image shows a dialog box titled "Edit map title and description" with a close button (X) in the top right corner. It contains two text input fields. The first field, labeled "Map title", contains the text "Election Day Polling Places for Nov. 2023". The second field, labeled "Description", contains the text "This map shows the locations (vote centers) that voters in this county can use to cast their ballot during the Nov. 2023 General and Special Constitutional elections." Below the description field are two buttons: "Save" (highlighted with a red box) and "Cancel".

6. Click on **Save**.

Defining layers and preparing your data.

Before you start creating layers it is important to think through what purpose each layer will serve. The way you group the data you want to present can make the difference between a particularly useful map and one that no one pays attention to. Remember that the same set of points (the **where**) can be presented in different ways on a map according to the values (the **what**). For example: on a map that displays voter wait-time, polling places can be colored green/yellow/red according to the wait time (quick/average/slow), but regardless of their value, all locations should be in a single layer. It would not be a good idea to make a layer per current wait time. A good rule of thumb is that the points on the map should be consistent, while the data associated with each point could change.

The next step is to prepare the data you want presented on a layer. This is done by creating a spreadsheet that lists the points you want to show on the map. Each line in the spreadsheet must have a few key items for this to work:

1. **A unique code or key:** this will allow the system to make updates to the data without having to recreate a layer from scratch. If you are listing polling places, this can be the location code or the key precinct.
2. **A name for the point:** this will be used to label the dot on the map.
3. **The physical address of the point:** this can be done using separate columns (e.g., street address, city, and zip code) or a simple field with the full address. Just make sure all the lines have the same structure.

Any additional information you want to add can be used to determine how the points will look on the map. Going back to the example of wait-times, you can list the wait-time for the location in minutes and set the map to display green for wait-times of fifteen or less.

Table 1 - Example of data table for a layer in a map shows an example of a list of polling places, each indicating how many poll workers are needed, how many have been recruited and lastly, the difference between both numbers as the shortage of workers for the location. The columns headers in red are the

PP Code	Name	Address	City	Zip Code	Precinct	Needed	Confirmed	Shortage
001	LIGHT OF THE WORLD INTERNATIONAL CHURCH	3809 CHAPEL DR	SARASOTA	34234	101	5	5	0
002	NORTH SARASOTA PUBLIC LIBRARY	2801 NEWTOWN BLVD	SARASOTA	34234	103	7	7	0
003	LONGWOOD RECREATION CENTER	6050 LONGWOOD RUN BLVD	SARASOTA	34243	105	7	6	1
004	NEW LIFE LUTHERAN CHURCH	8010 FRUITVILLE RD	SARASOTA	34240	106	9	0	9
005	OLD MIAKKA UNITED METHODIST CHURCH	1620 MYAKKA RD	SARASOTA	34240	107	5	5	0
006	LIGHT OF THE WORLD INTERNATIONAL CHURCH	3809 CHAPEL DR	SARASOTA	34234	109	5	5	0
007	LIGHT OF THE WORLD INTERNATIONAL CHURCH	3809 CHAPEL DR	SARASOTA	34234	111	7	6	1
008	TRI PAR RECREATION HALL	5101 BEL AIR AVE	SARASOTA	34234	113	7	7	0
009	ROBERT L TAYLOR COMMUNITY CENTER	1845 34TH ST	SARASOTA	34234	115	9	9	0
010	CHURCH OF THE NATIVITY	5900 N LOCKWOOD RIDGE RD	SARASOTA	34243	117	9	9	0
011	FAITH CHURCH	1201 N BENEVA RD	SARASOTA	34232	119	10	10	0

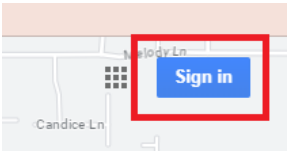
minimum needed for the data in the map to work (code, name, and address).

Table 1 - Example of data table for a layer in a map

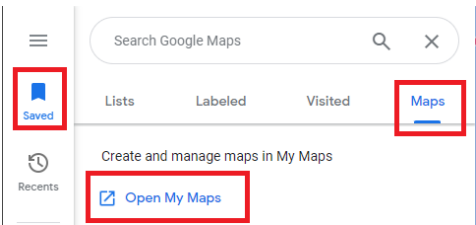
Import data into layers in a map.

These steps can be used to add the items into a map for the first time, for updating their values, or to replace all the data on a map. In the steps below, the data created is saved in a table format as an excel spreadsheet called MyData.xlsx.

1. Go to maps.google.com
2. Click on the **Sign In** button on the top right corner and log in to the account you created.

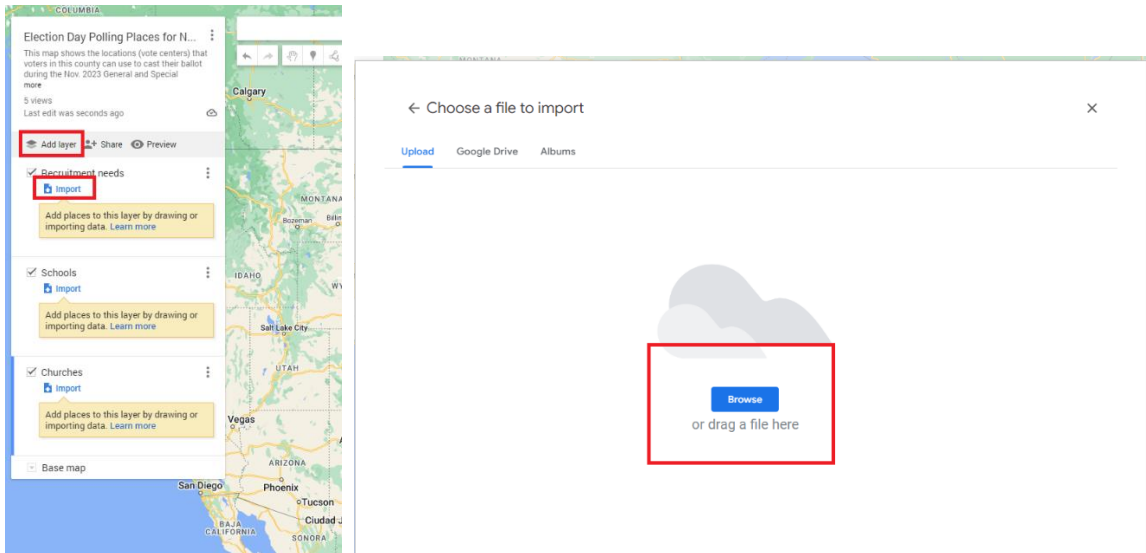


3. Once you have logged in, click on the **Saved** button on the toolbar on the left side of the screen. This will display a menu with some options. Click on **Maps** and then on **Open My Maps**.

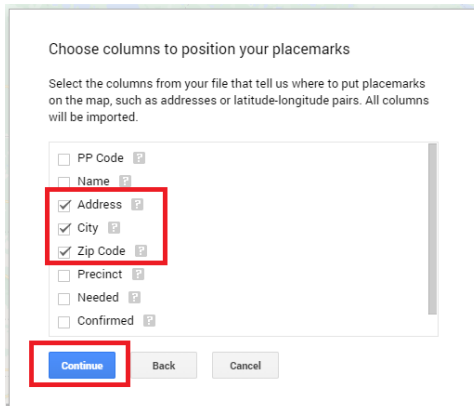


4. If you have created multiple maps, you will see them listed on this page. Click on the map you want to add the data to.

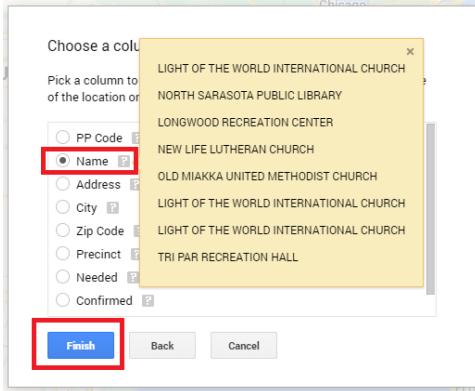
- On the left side of the map, you will see the list of layers in that map. Notice that when you create the map there is a layer already added to it by default. If you want to add new layers simply click on the **Add layer** option and edit the layer name when it appears on the list.
- On the layer where you want to add the data, click on the **Import** option. The file import screen will be presented, you can either drag and drop the file or click on **Browse** and find it in your folders.



- Google will ask you for information on how to interpret your file. First, it needs to know what information in the file defines the address. Notice it allows you to select more than one field, so if you decided, like in this example, to have the addresses split in multiple columns, you just have to select all the fields that are part of the address and then click on **Continue**.

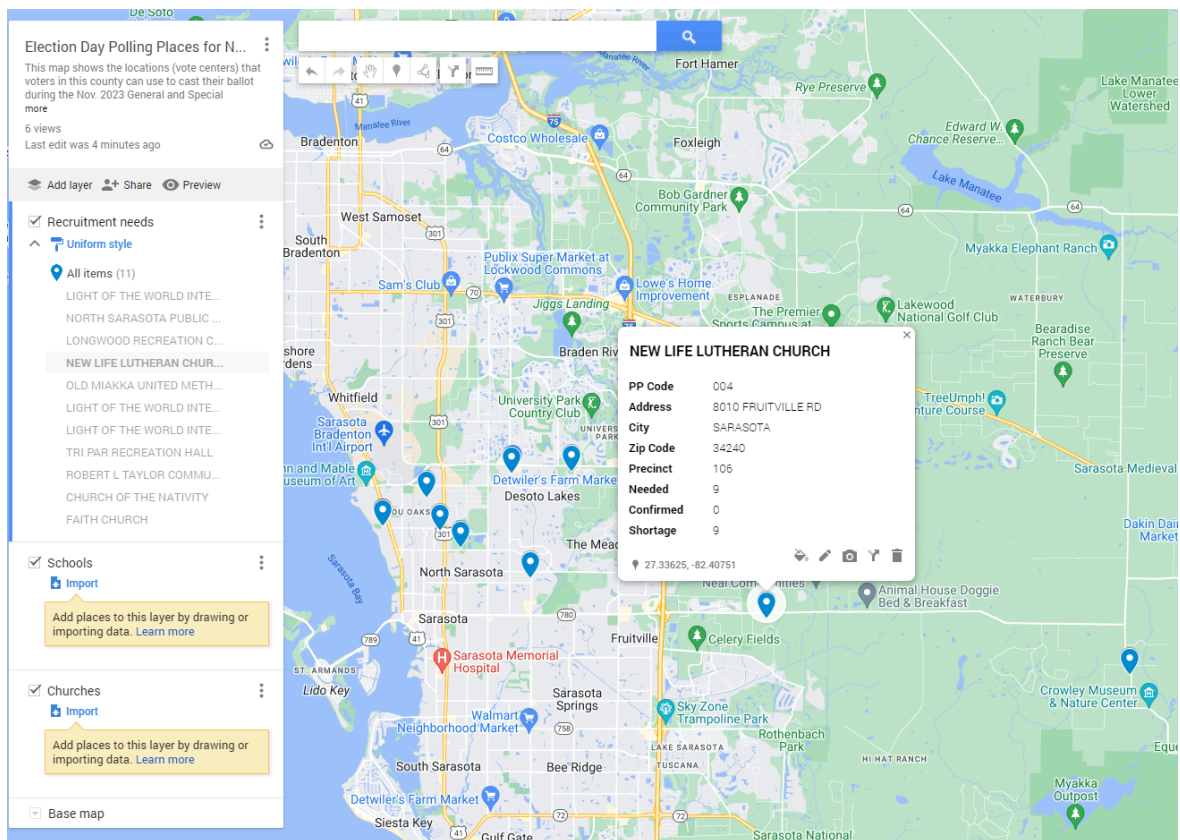


- Next, Google wants to know what text should be displayed next to the markers on the map. Select a column and then click on **Finish**. The system goes back to the map and starts loading the data; wait for it to finish.



Note: If you are not sure what each field is, remember that you can always click on the question mark (?) icon to see a sample.

- At this point you can click on any of the added pins on the map and visualize the data you imported related to each location. By default, all your data will be presented in *Uniform Style*, meaning they will all have the same icon and color. A later section will show you how to customize the look of the map.

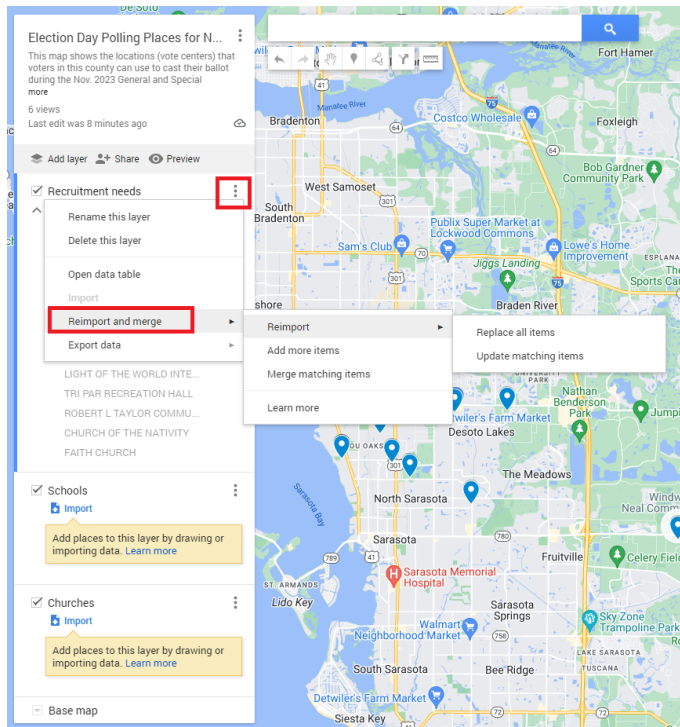


You can repeat the steps in this section for each layer to populate the different data sets into your maps.

Updating data in your map layers

Once your layers have data in them, if you are planning to make changes you have a few options on how to proceed. You can use the same option in the system for all your layers.

1. To the right of the map name, click on the **Layer options** button (the three vertical dots), then go to the **Reimport and merge** option.



- a. Use **Replace all items** if you want to wipe out the data on the layer and replace it with data in a new file. This will have the same effect as deleting the layer and importing a new file, but without having to define the fields of your file. This is recommended if you are adding or removing locations; it may be easier than trying to update individual changes. However, if you changed the structure of your data file, you should probably delete the layer (not the map, just the layer) and start over.
- b. Use **Update matching items** to push new data to the existing items on the layer. Non-matching data will be removed from your map. When doing an update, the system will ask which field in the new file should be used to match items; always use the same codes in your files for this to work. If you have changed polling place codes, you may want to replace all the data to avoid unintended errors.

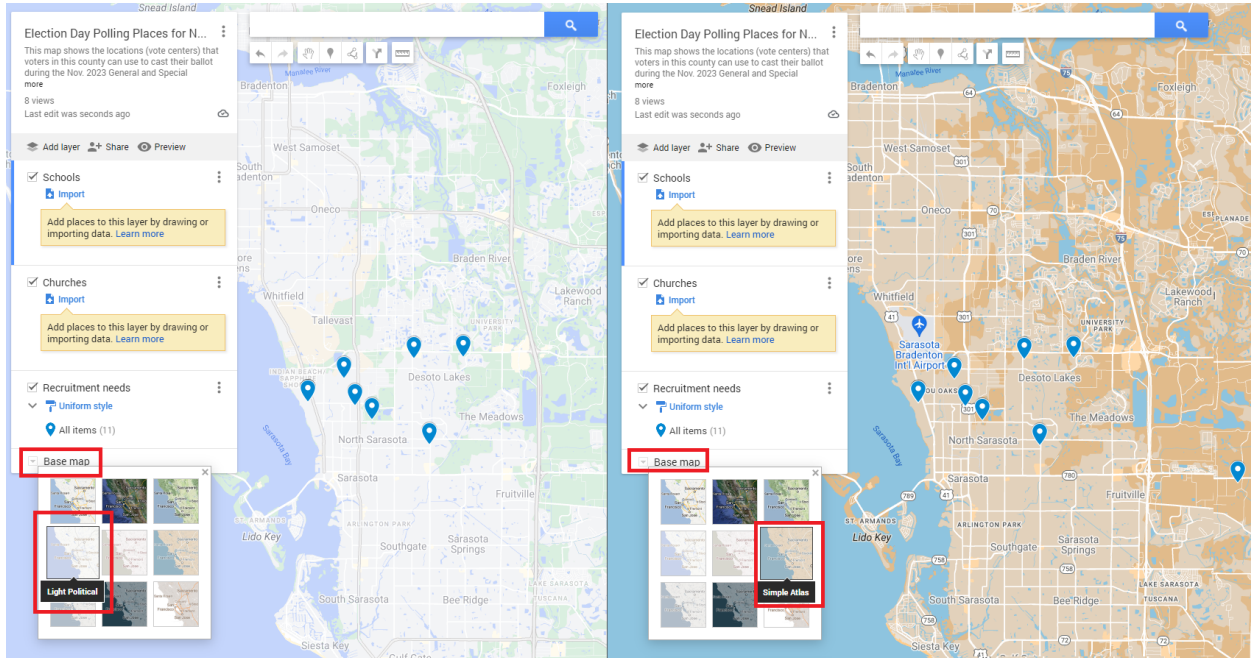
Details on how every option works can be found in the [Google online documentation](#).

Adjust the layout options of your map.

To adjust the look and feel to meet any aesthetic or usability needs, you can change two things: how the base map looks and how the place markers look.

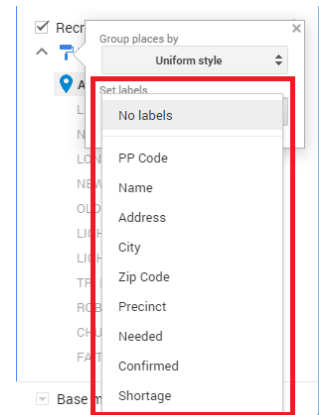
Base map

To select the look of the background for your map simply look for the **Base map** option at the bottom of the list of layers and select the look you prefer for the map.



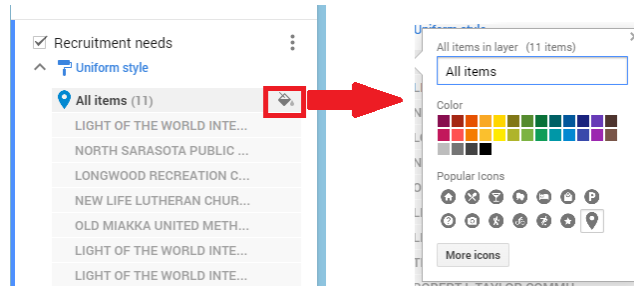
Layer icons

This option will let you decide how the icons for your data will look. Right under the layer name, you will see a drop down that, by default, will say **Uniform style**. Note that this option will only appear on the screen after you have added data to the layer. Regardless of the option you select, you have a second option you can use to decide how the points on the map will be labeled. You can use any of the fields in your data for this, which is why the list of options will depend on the data you prepare for the map.

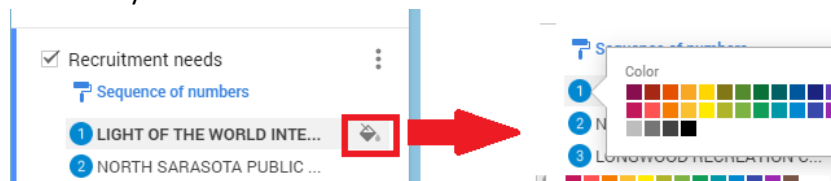


If you click on the first dropdown menu you will find the following options:

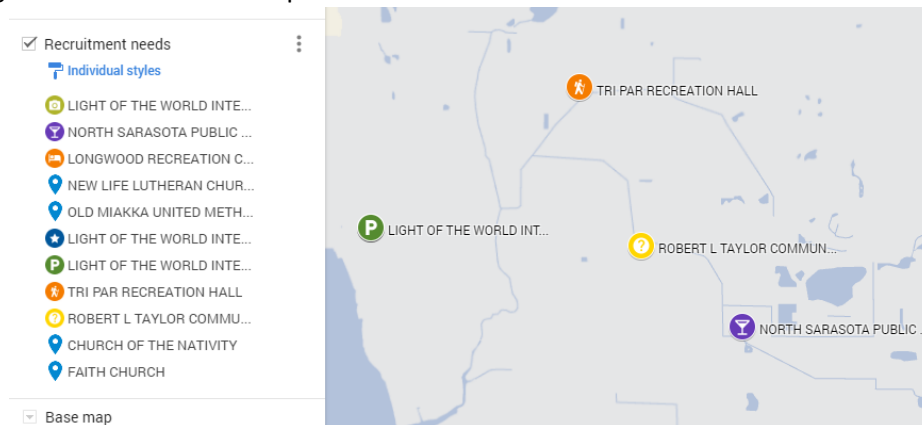
1. **Uniform Style:** this option will make all the data points look the same. Style changes are done by hovering over the **All items** option, and then clicking on the *paint bucket icon* that is displayed.



2. **Sequence of numbers:** the difference between this and the previous option is that you cannot choose an icon for your data points. The system will number them sequentially; you can only select the color for the numbers. To do that, hover over any of the items, you will see the same *paint bucket icon* that allows you to enter the color selection menu.

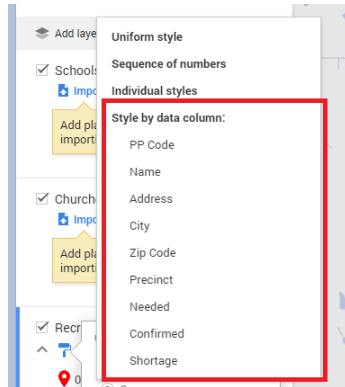


3. **Individual styles:** In this option you can select different icons and colors for each item in the layer. The image below shows an example of this.

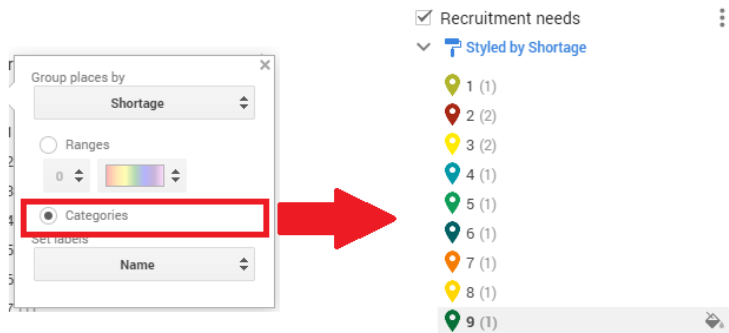
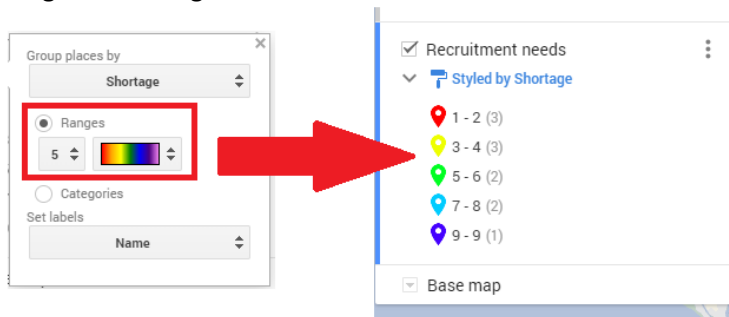


4. **Style by data column:** This option will allow you to model different looks for your map, depending on the values of one of the fields in the data. A classic example of this option is the red/yellow/green coloring for icons depending on a specific value, like wait-time. By doing this, you can update the colors of the icons on the map simply by updating the data.
 - a. The first step is selecting the field that will be used to determine the color of the icon. Right under the **Style by data column** option is a list of all the fields in your data set. Select

the field you want to use for determining the color of the icon. Make sure you select a field that is a number.

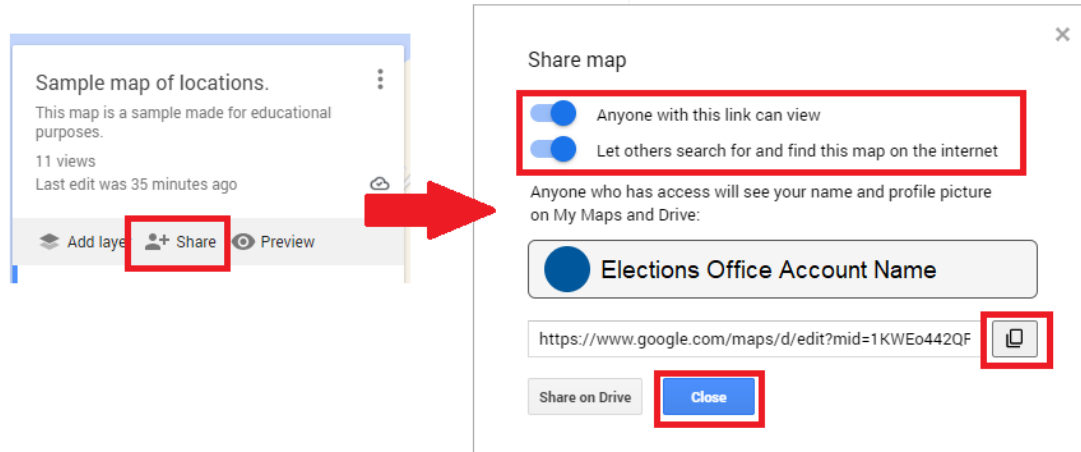


- b. Next, you need to tell the system if you want the items grouped automatically by ranges of the data, or if you want to create categories for each value found in that field. If you use the ranges option, you need to specify how many groups you want, and the system will do an automatic grouping depending on the values found in the data. If you select categories, the system will create a category for each value found in the data. Look at the example below: the data has values 1,2,3,4,5,6,7,8 and 9; when we select five (5) ranges it creates five groups with values 1-2, 3-4 and so on. But when we select categories, it creates a category for each value found in the data, hence nine (9) categories of colors. In either case, you can use the *paint bucket icon* to edit the color and icon selection for ranges and categories.



Sharing a map with the public

Once you are ready to publish your map, click on the **Share** button on the left side menu and activate the options to make the map public. You can also use the button to copy the direct link to the map. Once you are ready simply click on **Close**.



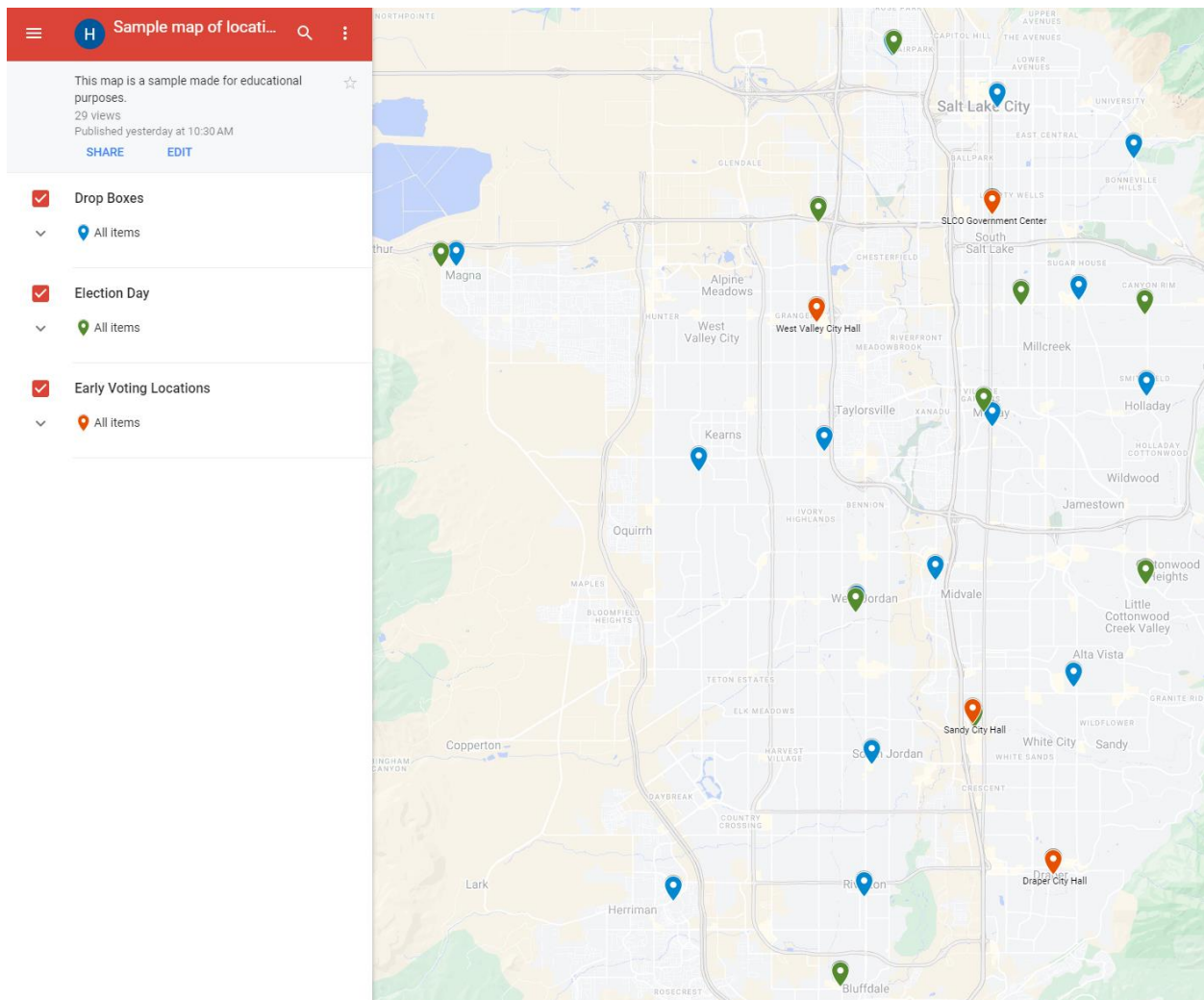
Keep in mind that you can turn on the option to share with the link but leave the second option off (*Let others search for and find this map on the internet*). This will allow you to share the map with specific people - for example to get feedback in the initial stages or to test privately - without releasing it to the world. You can make it private again at any point, and public again as many times as you want to or need to.

Examples of usage

The maps in this section will look slightly different than the previous ones, because these examples show the public view of the maps. All prior examples in this toolkit were in the administrative view.

Example #1: Drop boxes and polling places available.

This example shows three groups of data: one of them has locations for drop boxes, the other two have locations for Early Voting and for Election Day polling places. The map has three layers, all of them with uniform styles, but each of them with a distinct color. A separate spreadsheet with the locations was created for each layer. Notice that these three layers are static; this is a map that is not meant to change repeatedly.

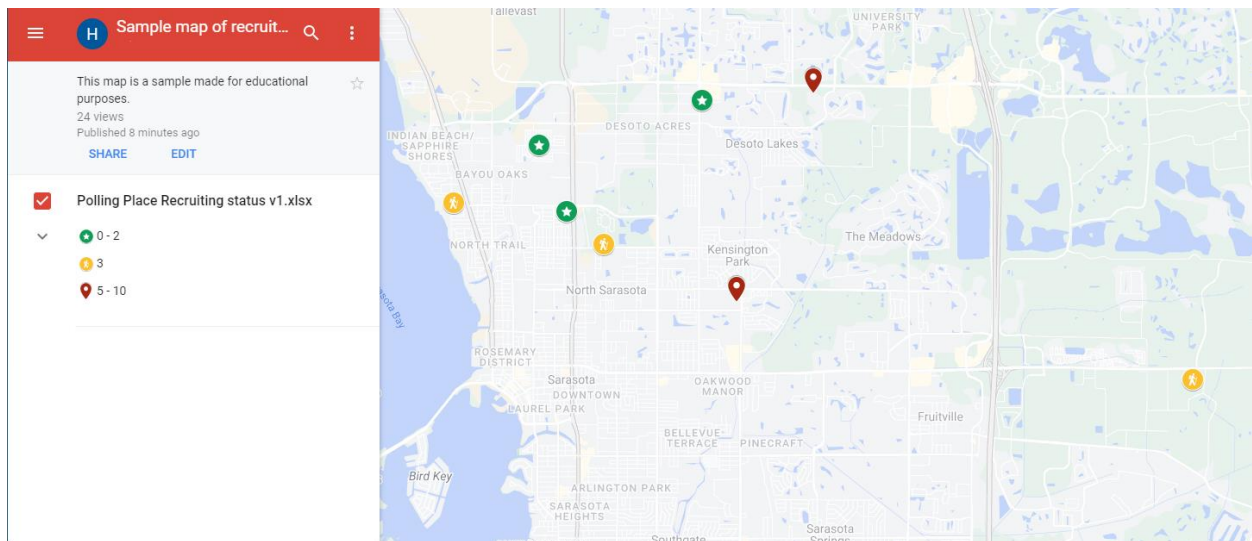


Example #2: Poll worker recruitment needs.

This example shows how a single layer can group data points of the same type that are then colored to reflect a value or a status that is in the data. The spreadsheet lists polling places, has along with the number of poll workers needed, the number recruited and the calculation of the shortage (needed minus recruited):

PP Code	Name	Address	City	Zip Code	Precinct	Needed	Confirmed	Shortage
001	LIGHT OF THE WORLD INTERNATIONAL CHURCH	3809 CHAPEL DR	SARASOTA	34234	101	5	3	2
002	NORTH SARASOTA PUBLIC LIBRARY	2801 NEWTOWN BLVD	SARASOTA	34234	103	7	4	3
003	LONGWOOD RECREATION CENTER	6050 LONGWOOD RUN BLVD	SARASOTA	34243	105	7	6	1
004	NEW LIFE LUTHERAN CHURCH	8010 FRUITVILLE RD	SARASOTA	34240	106	9	8	1
005	OLD MIAKKA UNITED METHODIST CHURCH	1620 MYAKKA RD	SARASOTA	34240	107	5	1	4
006	LIGHT OF THE WORLD INTERNATIONAL CHURCH	3809 CHAPEL DR	SARASOTA	34234	109	5	2	3
007	LIGHT OF THE WORLD INTERNATIONAL CHURCH	3809 CHAPEL DR	SARASOTA	34234	111	7	4	3
008	TRI PAR RECREATION HALL	5101 BEL AIR AVE	SARASOTA	34234	113	7	5	2
009	ROBERT L TAYLOR COMMUNITY CENTER	1845 34TH ST	SARASOTA	34234	115	9	5	4
010	CHURCH OF THE NATIVITY	5900 N LOCKWOOD RIDGE RD	SARASOTA	34243	117	9	6	3
011	FAITH CHURCH	1201 N BENEVA RD	SARASOTA	34232	119	10	5	5

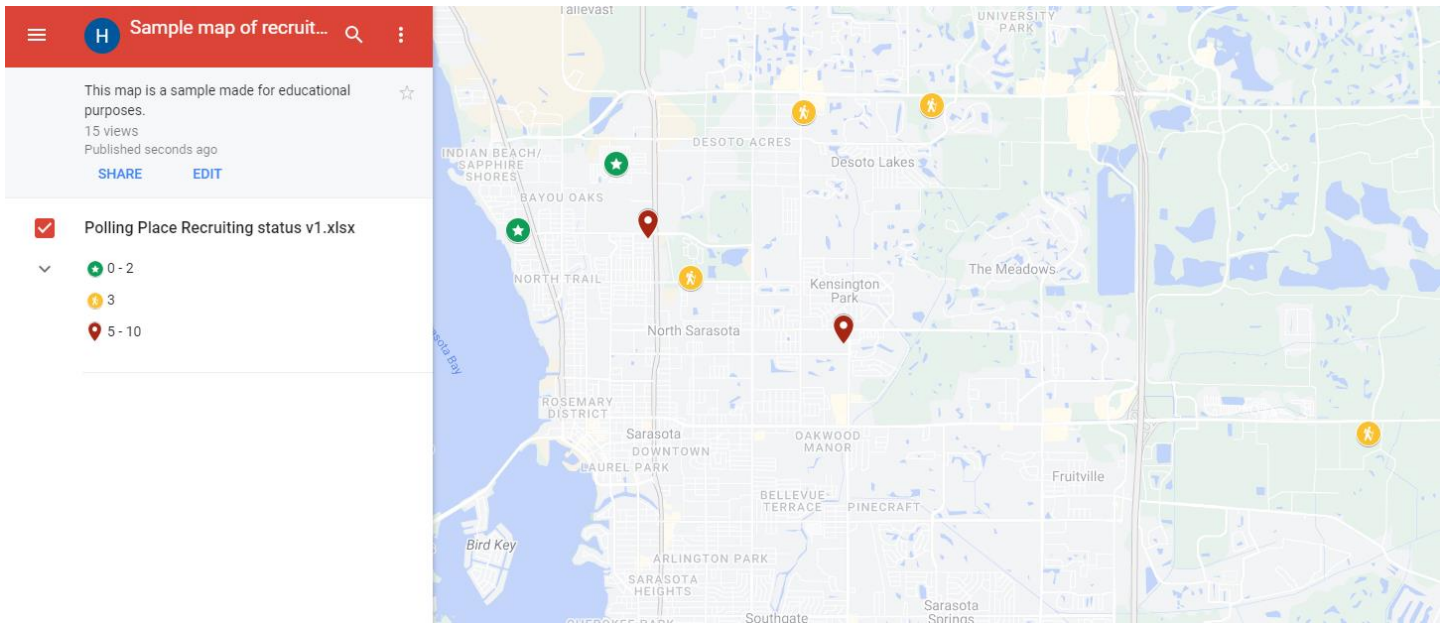
This map has a single layer, in which the icons are styled based on the *Shortage* column. Using the option to style by that column, the groups with the higher shortages are presented with a red pin, the middle range is a yellow icon and the locations short one or two people are presented in green:



You can use a map like this to show the public the locations where help is needed the most. The advantage of this method is that once the ranges are defined, all you need to do to present an updated map is update the data file and reimport. The table below is an example of an update to the data: all the numbers of confirmed poll workers were updated, together with the calculations of shortages. Once the data is

reimported into the map, using the *Replace all Items* described above, the map automatically updates the colors and styles for all the data points.

PP Code	Name	Address	City	Zip Code	Precinct	Needed	Confirmed	Shortage
001	LIGHT OF THE WORLD INTERNATIONAL CHURCH	3809 CHAPEL DR	SARASOTA	34234	101	5	5	0
002	NORTH SARASOTA PUBLIC LIBRARY	2801 NEWTOWN BLVD	SARASOTA	34234	103	7	6	1
003	LONGWOOD RECREATION CENTER	6050 LONGWOOD RUN BLVD	SARASOTA	34243	105	7	6	1
004	NEW LIFE LUTHERAN CHURCH	8010 FRUITVILLE RD	SARASOTA	34240	106	9	8	1
005	OLD MIAKKA UNITED METHODIST CHURCH	1620 MYAKKA RD	SARASOTA	34240	107	5	4	1
008	TRI PAR RECREATION HALL	5101 BEL AIR AVE	SARASOTA	34234	113	7	7	0
009	ROBERT L TAYLOR COMMUNITY CENTER	1845 34TH ST	SARASOTA	34234	115	9	6	3
010	CHURCH OF THE NATIVITY	5900 N LOCKWOOD RIDGE RD	SARASOTA	34243	117	9	8	1
011	FAITH CHURCH	1201 N BENEVA RD	SARASOTA	34232	119	10	7	3



Example #3: Grouping per district or area.

In this last example, you can create maps that will answer the question “what locations are in a specific district?” If you can create a file that has the districts for each location, then you can easily have Google Maps color the location icons according to the district. This can serve as a quick substitute for maps that have pins on top of the city or district boundaries. In the example below you can see the same data shown in two (2) different ways: colored by Town and colored by Zip Code.

There is a limitation in the tool: if you choose to style by one of the data fields, Google will automatically take the first twenty (20) and create categories and styles for them, leaving any remaining items in a single category called “*Other / No value*” that is colored in light gray. The example in this page intentionally shows how this would look to make you aware of the limitation. There are a couple of workarounds to resolve this issue:

1. You can have different layers with up to twenty different categories, and then show all the layers together to have all the data on the map. The challenge with this is coming up with a coloring scheme that is not confusing when all layers are displayed.
2. You can have different maps per macro-regions (e.g., Northeast, Northwest, Southeast and Southwest).



