

# GIS for Digital Humanities

## Tutorial: Web Mapping with CartoDB

### Overview

This tutorial will take you through the process of creating a simple interactive map of Philadelphia Registered Historic Places.

### 1. Let's Get Started!

#### Etherpad

[ph.ly/thatcampmaps](http://ph.ly/thatcampmaps) Lots of Important links will be available on the etherpad.

#### Formulate a Spatial Question

Where are Registered Historic Sites in Philadelphia in relationship to City Council Districts? We'll make a web map to display this information and use it for outreach and engagement with Council Members to promote historic sites.

#### Create a [FREE] CartoDB Account

Create a free CartoDB account at [cartodb.com/signup](http://cartodb.com/signup) and Login. Note: CartoDb only allows 5 tables per free account, so if you already have an account with tables, you will want to make a new free account for today. We will be adding 3 tables. Take a few minutes to explore the interface. See: *Dashboard, Tables, Visualizations*.

### 2. Gather your Data

#### Create a working folder

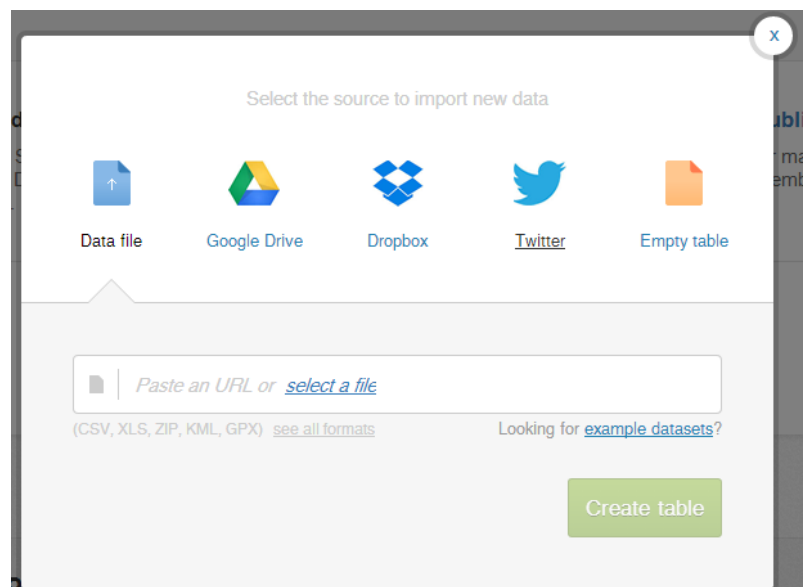
Create a working folder on the desktop of your machine. We will save data we download on the web to here.

#### Assemble Data

*\*You might have already received the data described below earlier today. Visit <http://www.OpenDataPhilly.org>. Search for *Registered Historic Sites* and download the *Philadelphia Registered Historic Sites shapefile*. This file will be a zipped file, save it to your working folder. Also download the *Philadelphia Council Districts 2016 shapefile*. Unzip the Council Districts and inspect the folder. (But keep the zip file too!) We'll discuss why there are so many files. Is the data we downloaded raster or vector? Is it points, lines or polygons?*

#### Add Data to CartoDB

Add these datasets to CartoDB by selecting the *Create your First Table* button and navigate to the *Data File* option. Select the *Zippered Council Districts*



from your working folder and select *Create Table*. Return to your Dashboard. Repeat with *Registered Historic Sites*.

Toggle between *Table View* and *Map View* to inspect your datasets. Rename your tables to something more concise and meaningful like “Council Districts” and “Historic Places” by clicking on the table name in the upper left hand corner. (Don’t worry about the API warning). Return to the Dashboard.

## Create a Spreadsheet of Proposed Historical Sites

Using the *New Table > Empty Table* option in CartoDB, we’ll create a new table which we’ll use to add locations of proposed Historic sites.

Using the *Add Columns* button in the lower right hand corner, Add 1 *Number* Column named:

[ID]

And Add 5 *String* Columns named:

[Name] [Address] [City] [State] [Zip]

Add 5 new rows and populate each field with an ID, name, and elements of a real Philadelphia address (you choose)! Rename your table to *Proposed Site Locations* by clicking on the *untitled\_table* text in the upper left hand corner.

**If you are having trouble**, (sometimes adding columns and rows is sloooowwww, etc.) you can find a spreadsheet of *Proposed Site Locations* on the google drive (linked from the etherpad).

**Tip:** Below are some smart tips for formatting your data (especially during data collection):

- Assign a **unique ID** to each record
- **Avoid special characters** and numbers in field names
- Each address element gets **its own field** (Address, Apt, City, State, Zip)
- Store Address elements including zip codes as **text** fields
- **Clean Address Data = Better Results**

This data needs to be geocoded... meaning we’ll need to find the Latitude and Longitude for each location so they know where to go on the map! CartoDB has a built in tool to do this.

## Geocode your Proposed Site Locations

The *Georeference* tool will be used to geocode your data. When viewing the table, access this tool by selecting the *Options* dropdown in the upper right hand corner and selecting *Georeference*.

Select the “*You have one or more columns with the address*” and add all column names in your table that comprise the complete address. Note: they should auto populate as you type them. Select *Georeference*.

Note: You will receive 100 free geocodes with CartoDB’s free account per month. You can also use other web

A screenshot of the "Georeference your data" form in CartoDB. The form has a title "Georeference your data" and four radio button options. The first three are "You have lon/lat columns in your table", "You have a column identifying administrative regions", and "You have a column identifying IP Address locations". The fourth option, "You have one or more columns with the address", is selected. Below this option is a text input field with the placeholder "{address} {state} {city} {zip}". A hint below the field says "HINT You can add also extra text to make geocoding more accurate (eg. {school}, New York, USA)". On the right side of the form, it says "100 geocoding credits still available." with a progress bar. At the bottom right is a "Georeference" button. The background shows a map of Philadelphia with a table of data.

services (free and paid) to geocode. Consult this blog to geocode using a special tool in Google Docs: [ph.ly/geocodeblog](http://ph.ly/geocodeblog).

Switch to Map View to see your locations should now appear on the map!

Return to your dashboard.

### 3. Make a Map!

#### Create a New Visualization

Now we are ready to put all of our datasets together in one map. We have many options for the customization of how the datasets are displayed and interact. We'll take advantage of these to make a pretty and informative interactive map!

In CartoDB, **Tables = Data** and **Visualization = Map**. Your data is organized in the *Tables* page of your Dashboard. In order to make a robust map of our tables, we'll need to make a *Visualization*. *Visualizations* are the maps that have custom display properties and can be shared as a single map on the web. Think about it like a *Cake*: *Tables* are like the layers in the cake (they are the elements that contribute to the final product) and the *Visualization* is the final cake (you will share this final product with your friends).

So far while on our dashboard, we've been on the *Tables* page. Now, let's switch to the *Visualizations* page. Select *Create your first vizz*. (if you've already made a visualization, you'll select Create New Visualization). Select the 3 tables we added today and name your visualization. Switch to Map View. In the bottom left corner, use *Select Basemap* and chose a new basemap (your choice!)

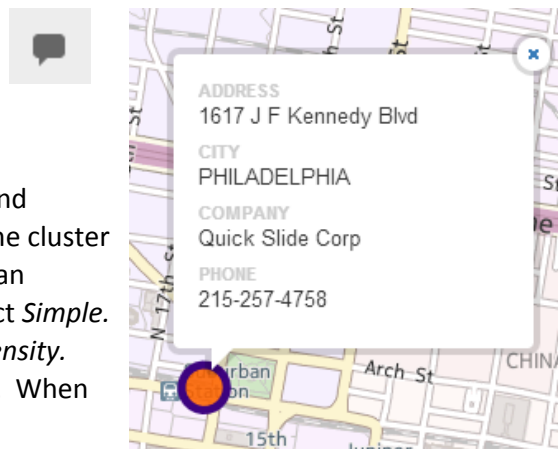
#### Visualize and Customize our Tables in your Map

Expand the panel on the right. This panel has all the options for customization for your map. You will see three stacked layers, one for each dataset. We'll start with the Council Districts. We want each Council District to be a different color, mostly transparent and have an infowindow to show the council district number. Using the *Visualization Wizard*, we'll select the *Category* visualization tool. In the Column field, select "District" with a .4 polygon fill (transparency). Feel free to customize fill color and stroke.



Next use the *infowindow* option, and turn on column names in your infowindow. For Council Distircts, select "District" to display the district number in the infowindow. (Note: you can always switch to *Data View* to inspect the columns in your table and determine which you want to display in the infowindow).

Repeat the visualization steps for the other layers: Historic Places and Proposed Site Locations. Keep in mind how you want to visualize the cluster of historic place points. If you want your user to be able to click on an individual point and learn more about it, then you will want to select *Simple*. If you want to show clustering of sites, select *Cluster*, *Bubble* or *Intensity*. But you will lose the ability to find out more info on individual sites. When



you visualize the *Proposed Site Locations*, you want these to stand out, so make them bigger and brighter than the *Historic Places*.

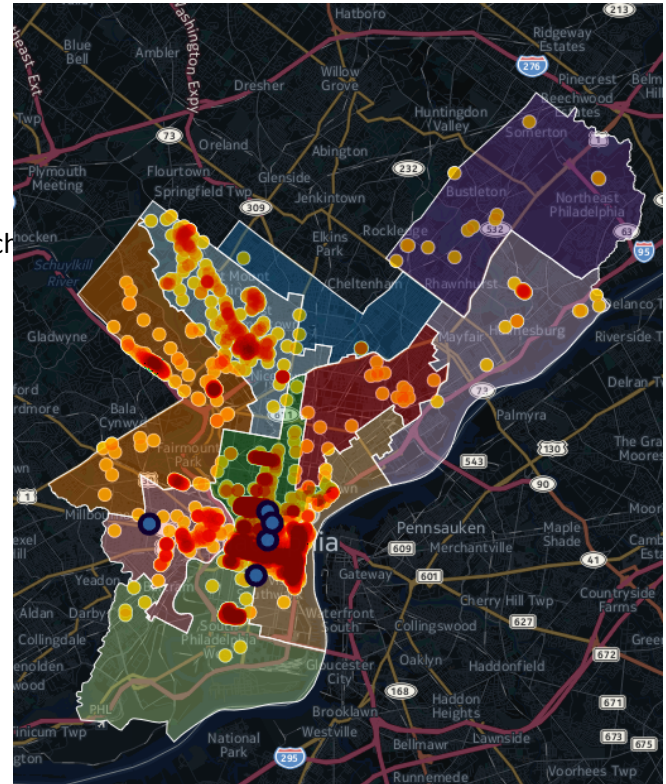
Hint: you can reorder the layers in your visualization by dragging the layers around in the panel. But beware, don't put point features under polygon features (they will be hidden!)

## Publish and Share your Map

In the upper left hand corner below the title, select *Edit Metadata* to Add *Description* and *Tags* to your map to make it more easily discoverable.

On the *Options* button on the bottom left hand corner (beware there are two option buttons!) configure which elements will be on your final shared map. I recommend: Title, Description, Search Box, Share Options and Zoom Controls. But it is up to you!

Finally, in the upper right hand corner, select *Share* and select how you will share it. Share the map using the the *Public URL* or embed the map on a website or blog using the *Embed URL* or *Iframe* and pasting it into your website.



## Additional Tips

1. Experiment with the *visualization wizard* to change how your points are visualized on your map.
2. Find additional guides and tutorials on CartoDB's website: [developers.cartodb.com/tutorials.html](http://developers.cartodb.com/tutorials.html)

## 4. Recap:

1. Web mapping is good at quickly visualizing data on the web. This includes display of density and clustering of points and ability to have an infowindow display more information about a feature.
2. There are other free web mapping tools that are out there. Try Mapbox, ArcGISOnline, GoogleMaps and GeoCommons.
3. Desktop mapping software is much better at analyzing data, this includes analyzing the relationship of one dataset to another or doing other advanced spatial or attribute calculations.

## 5. Now Choose your own Adventure!

1. Visit [OpenDataPhilly.org](http://OpenDataPhilly.org) and download 2 other shapefiles and add them to your CartoDB account. Make a visualization with them. Think about a problem you could solve or a question you could answer by visualizing data and sharing it. In OpenDataPhilly search for key terms like health, food, parks, planning, safety and more! Is there a dataset that is missing that you would like to map?
2. Pick another major US city and search for their open data portal. Create a CartoDB map using another city's data. Compared to other cities, is Philadelphia doing a good or poor job at publishing data to the public?
3. In your CartoDB dashboard, browse CartoDB's *Common Data page* (to the right of *Visualizations*). Make a new map with one of these datasets.