

Mapping with CARTO

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Learning Goals

1. Become familiar with CARTO's interface and functionality
2. Create a map from a data table
3. Solve a problem using tools of analysis

Total Estimated Time: 2 hours

Study

I. Review Examples (5 minutes)

CARTO is a web platform that allows users to create maps from geospatial data. It uses a simple interface to import, display, and visually analyze your information. This tool has applications in a variety of fields, including urban planning, environmental science, and education. Visit the sites below and watch the embedded videos to get a sense of CARTO's different capabilities.

- [Education and Research](#)
- [Earth Observation and Space](#)

II. Tutorial (35 minutes)

Follow the guides and tutorials linked below to learn the fundamentals of mapping with CARTO:

- CARTO pulls information from data you provide to help you create a map. All tables and maps you make are accessed through your CARTO account. [Sign up for an account](#) and read the [getting started guide](#) for a quick overview of how to turn your data into maps.

- It is important to make sure your data table is formatted correctly before you import it. [This guide](#) offers suggestions on how to prepare your data. The skills you learned in the Data Management module will also be useful for cleaning up data for CARTO.
- Learn how to [import](#) data tables to your CARTO account.
- CARTO displays your data as layers on a map. Read [this introduction](#) to learn how to view, add, and manipulate your layers.
- The bottom layer of every project is always the basemap, which displays the background geography for your map. Follow [this tutorial](#) to learn how to change and adjust basemaps.
- There are many different ways to style the data displayed in your maps. Complete [this walkthrough](#) to explore how to change the size, symbol, and color of points on a map.
- Pop-ups can be used to display more information when a user hovers or clicks on a point in your map. Read [this guide](#) for information on adding and modifying pop-ups.
- You can add and customize a legend for your map in the Legend tab. Read how [here](#).
- Adding interactive widgets to a map allows users to display, view, select, and filter the data displayed in the visualization. [This guide](#) discusses the different kinds of widgets available in CARTO.

Take some time to explore CARTO's interface on your own and become familiar with its other features.

- You can add labels to your points under the Style tab.
- It may be easier to explore your map if you enable Scroll Wheel Zoom in the Map Options, which are accessed by clicking on the slider icon on the far left side of the screen.

Sandbox

III. Map your data (25 minutes)

Goal: Display the location of dining facilities on Bryn Mawr's campus

For students new to Bryn Mawr, the number of dining options around campus can be overwhelming. There are vending machines, cafés, dining halls, and even a fancy restaurant. Plotting the locations of these dining facilities on a map and displaying information about their food, hours, price, and popularity can help incoming students decide where to stop for lunch after class.

1. Download and review the [Bryn Mawr Dining Facilities](#) spreadsheet.
2. Create a new map in Carto and connect this dataset.

3. Choose a basemap that shows all the buildings on campus. Refer back to [this guide](#) for help.
4. Enable Scroll Wheel Zoom in the settings.
5. Click on the layer with your data. Select the STYLE tab. Adjust the size and color of the points so they are clearly visible on the map (make sure that "NONE" is selected under Aggregation).
6. Style the maps according to the number of customers. Reread [this guide](#) for tips on how to style by value.
7. Next, style the map by type of dining facility. You can choose unique colors or icons for different types.
8. Create labels for the names of the dining options. The label options are also found under the STYLE tab.
9. Select the POP-UP tab to add pop-up windows to your map. Decide the type and order of the information you want to display. You can do hover, click, or both.
10. Select the LEGEND pane. Make an appropriate legend for the map.
11. Select the DATA tab and add a dynamic widget showing the popularity of each dining facility.
12. Interact with the widget to display the most popular food options. You can auto style or select columns in the graph.

IV. Answer a question (35 minutes)

Goal: Analyze the spatial relationship between dorms and food at Bryn Mawr

The administration is trying to determine the optimal location for a new dining hall on Bryn Mawr's campus. To make this decision, they need to know which dorms have the least convenient access to the dining options currently available. You can answer this question by mapping the locations of Bryn Mawr's dorms and analyzing their distances from Bryn Mawr's dining facilities. Use map styles and analysis tools to display clearly which dorms require more than a 100 meter walk to find food.

1. Watch this [video tutorial](#) on using analysis tools in CARTO. For this activity, you only need to watch up to the 12:00 minute mark.
2. For additional help consult the guides for adding [Areas of Influence](#) and [Intersecting Second Layer](#).
3. Download and review the [Bryn Mawr Buildings](#) spreadsheet
4. Return to your map of the dining facilities and add a new layer
5. Connect the Bryn Mawr Buildings dataset.
6. Choose suitable styles, labels, and pop-ups for these new points.
7. Add the Filter by Column Value analysis so that only the dorms are displayed. Watch [this section](#) of the video again to review how to add this analysis.
8. Create an area of influence for the dorms. Watch [this part](#) of the video again for a demonstration.

9. Make the individual dorm points appear again by dragging the filter into a new layer. See how that works [here](#).
10. Open the Dining layer and add the Intersect Second Layer analysis to display only the dining facilities within the areas of influence. Review [this clip](#) for help.
11. Style the points in this analysis.
12. Which dorms on campus do not have access to food within 100 meters?

Hints:

- It may help if you adjust the transparency of the areas of influence. You can do this in the Style tab.
- The intersection between the dining facilities and the dorms will be easier to see if the dining facilities are layered above the buildings. You can control the ordering of the layers by dragging them up or down in the Layers tab.

Share

V. Reflection (10 minutes)

Look over the maps you created and answer the following questions in your FLOGs:

- Did you find that certain basemaps were not well suited for your data? Why or why not?
- How did you decide the size or color style for your points?
- How much information should be displayed in pop-up windows? Should hover and click pop-ups say different things? Or is it better to choose one or the other?
- Are widgets helpful? Do they display the data in the best way? Are they easy to interact with?

VI. Discussion (10 minutes)

Have a discussion about your experience using CARTO. You can use these queries to get the conversation started:

- Did CARTO always behave the way you expected it to? Did you encounter any bugs? What were some of the biggest challenges with this platform?
- Did you find significant limitations in CARTO's functionality? Were there adjustments or options you wanted that didn't seem available?
- What other kinds of questions do you think you could answer with CARTO?