Welcome to the DataCommon! Whether you are a data novice or an expert researcher, the CentralMass DataCommon can help you get the information you need to learn more about your community, understand regional trends, and make more informed decisions. You can use the DataCommon to document existing conditions, research compelling data to make your case, design responsive policies, and measure progress on shared goals.

This tutorial will introduce you to the functionalities of the DataCommon, help you navigate the multiple levels of data access, and provide step-by-step tutorials for using some of the site’s more advanced features.

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Introduction: What is the DataCommon?

The CentralMass DataCommon is an important resource for those seeking to understand the people and municipalities of Central Massachusetts. An interactive data tool, it is packed with information on topics from health care and education to economic development and transportation. Residents, planners, city and town officials, educators, entrepreneurs, journalists, and others can explore data and use it to make informed decisions.

TOPIC AREAS

All of the data on the DataCommon is organized into one of twelve topic areas. These topic areas are intended to help users filter data to more easily identify datasets of interest. There are many pages on the DataCommon that have a topic area filter and/or icon. The twelve topic areas are:

- Demographics
- Arts & Culture
- Civic Vitality
- Economy
- Education
- Environment & Energy
- Housing
- Land Use & Zoning
- Public Health
- Public Safety
- Technology
- Transportation

DATA CATALOG

To users familiar with the DataCommon, the Data Catalog is a new and exciting feature. The Data Catalog is a resource for users interested in downloading spatial and tabular data. It provides access to the hundreds of datasets that MAPC collects, cleans and formats from dozens of primary data sources. Here, users can find data from national sources such as the U.S. Decennial Census, American Community Survey (ACS), Comprehensive Housing Affordability Strategy (CHAS), Bureau of Labor Statistics (BLS), and more, plus state sources such as the MA Department of Transportation (MassDOT), the Executive Office of Labor and Workforce Development (EOLWD), MassGIS, and others, and even more localized data such as MAPC’s Housing and Population Projections.

COMMUNITY PROFILES

Community Profiles are a quick and easy way to access data and basic information about a city, town, or subregion. The profiles pull together a wide range of commonly requested data for each community, and are a great place to start investigating data available on the DataCommon. Ready-made visualizations of the data are organized by Topic Area, and can be saved as images for use in grant applications or other documents. Visualizations can also be copied and customized. More detail on customizing visualizations in “Creating Your Own Visualization” on page 3.
Thousands of user-made maps, charts, tables and more are on display in the Visualization Gallery. You can explore these visualizations by topic area, dataset, or keyword. You can also create your own custom data visualization from any of the data in the DataCommon. For more details on custom visualizations, see “Creating Your Own Visualization” below.

In the Map Gallery you can view mapping and data projects completed by regional planning agencies. Again, these projects can be filtered by Topic Area and data source. PDFs of these completed projects are available for download. This is a good place to start searching for information you want because a map or analysis may already exist. For beginner data users or regional planning enthusiasts, this is also a great way to learn more about work going on around the region.

Creating Your Own Visualization

For users who want to dig deeper into the data and create your own data visualizations, there are two ways to make your own customized WEAVE data visualization. You can copy a visualization that has already been made by another user, or you can start from scratch. **Note: WEAVE requires the most current version of Flash be installed in the browser.**

Create an Account

The first step in making a custom visualization is to sign up for your own account. This is necessary whether you are building off of an already-made visualization or starting from scratch.

If you are new to the DataCommon, simply click ‘Sign Up’ at the top right corner of the page and create your account. When you sign up for a new account an email with an activation link will be sent to you. You must activate your account before you can save visualizations.
Develop a WEAVE Data Visualization from Scratch

There are many different types of data visualizations you can create using WEAVE. This tutorial will provide step-by-step instructions for making a map, a table, and a bar chart.

MAP

1. Begin by making sure you are logged in so that you can save your work. If you are successfully logged in you should see ‘Hi, <your username>’ in the top right corner of the page.

2. To make your own visualization from scratch, click Visualizations in the toolbar and choose Make Your Own from the dropdown. A blank workspace will open.

3. From the Tools Menu, select Add Map. Notice, in the Tools menu, the many other types of data visualizations that you can create.

4. A blank screen will appear with a flag in the top left corner above a gear icon that reads “Start Here.” The gear icon represents the location of settings for your visualization. Click on the gear to begin adding information to your map.

5. The gear icon will take you to Settings for MapTool. In order to get some initial geography boundaries on your map, click on the Geometry button, then in the next window, click on the load button next to the Geometry bar.

6. The map geography MUST be selected from Spatial Geography for Maps at the bottom of the list. The other folders contain the tabular data which will be used to color the map. Let’s create a map of Massachusetts Municipalities. Click on Spatial Geography for maps, and you will see a list on the right side of the screen. Choose Massachusetts Municipalities and a map of Massachusetts municipalities should appear in the background. Click Ok in each of the open windows.

7. It is a good idea to save your map now, and often. Fill in the Title, Year(s), and Abstract for your visualization, and choose the Topic Area and Data Source from the available options. For Institution choose Central Mass or Metro Boston depending on where you live or
work. Under **Public or Private** choose Public (default, encouraged). If you would like other DataCommon users to be able to see your visualization; if you do not want others to see your visualization, choose Private. You can edit this information at any time. Click the **Create** button at the bottom of the column to the right of the map.

8. Once you have your initial geometry selected you can customize your map by selecting the **gear tool** in the top left corner of the map. The gear will appear in the corner of every visualization you create and is what you click to begin editing your map or chart.

9. You can join data to your map to color it in. To the right of the geometry that you want to color, click the **Edit Properties** button. In the **Settings for Geometry Plotter** window that pops up, click on the load button next to the empty Color box.

10. Within the **Attribute Selector** are folders with the data. Navigate through the folders to find the data you would like to show on your map. When you select one, the fields within the table are displayed in the right column. **Let’s make a map for Median Age by Municipality.** Open the **Demographics** folder and find **Population by Age, 2000 & 2010 (Municipality).** Once you select the table, select the **Median Age, 2010** from the attributes/fields on the right. Click the **Ok** button once you have finished. **IMPORTANT: You must select only tables that match the geography you have selected.** In this example, you need to select Municipal data to join to Massachusetts Municipalities. If you picked a different geography the data, such as Census Tracts, it will not join or display any data.

11. You should now see a color map of Massachusetts. To edit the color, click the click **Edit Bins** button next to the load button to the right of the Color box in the **Settings for GeometryPlotter** window.

12. This will display the **Color Controller.** The **Binning** tab is where you can decide how you want to categorize or define your data into groups/ranges. The **Color Scale** tab is where you can select from a number of predefined color ranges. Play with bins and colors to see how your map changes.
13. Multiple geometries can be added to the map, but only one layer will have the color ranges. To add another geometry, click the **Geometry Button** in the **Settings for MapTool** window. A new Geometry Plotter will pop up.

14. This will add a new geometry layer to the list. Follow the same steps you used to add the Massachusetts Municipalities layer, choosing the geography you would like to add from the **Spatial Geography for Maps** collection at the bottom of the folder list. **Let’s add US States.** The geographies are listed in alphabetical order (except for Massachusetts and MAPC, which are the most often used). Click **Ok**.

15. **Optional:** The default settings for a layer can be modified by clicking the **Settings** button next to the layer. This will expand the layer allowing you to pick the fill color and border. You can also rearrange the order of the layers by dragging the layer above or below. For example, if you scroll over your map, you will notice that since you added US states, you can no longer select an individual municipality because the state of Massachusetts is on top. Simply press the **gear button**, select the geometry layer for Massachusetts Municipalities, and drag it to the bottom of the list.

16. You can add a legend for your map to your visualization, by selecting **Tools -> Add a Color Legend.**

   **Tip:** To ensure one of your visualizations does not cover/block another you can pin a visualization so it always remains on top by clicking the double window button on any visualization tool and choosing “Always above.”

17. To edit the information displayed when you scroll over a municipality, click on **Tools** in the main header toolbar, and choose **Edit Mouseover Info**.

18. There are two tabs in the **Mouseover Info Editor window:** **Header Columns** and **Data Columns.** The Header Columns tab will add the main labels you want to display. The Data Columns tab will add the value and name of the attribute. Scroll to the tabular data you would like to label. In our case, we want to show the Municipality’s name and Median Age. In the Header Columns tab, scroll to **Demographics > Municipal Data > Population by Age, 2000 & 2010**, and in the
right hand window choose *Municipality* and press the **Add Selected button**. In the Data Columns tab, repeat the same steps for *Median Age, 2010 (don’t forget to press Add Selected!)*. Press **Ok**. Now when you scroll over a municipality, you should see the name of the municipality and the value for its median age.

19. At this point, you can play with the size of your map and the zoom level. When you are happy with how your map looks, you can hide the gray dashboards to give it a more polished look by going to the **Tools tab** on the main toolbar and selecting **Enable dashboard mode**. If you later change your mind and want to adjust something on your map, you can always go back to **Tools** and select **Disable dashboard mode**. You can also click on the **Tools tab** on the toolbar and select **Enable Dashboard**.

20. You are done! Your visualization should look something like the image on the right.

**DATA TABLE**

If you want to include a view of the data behind the visualization you can add a Data Table to your visualization. You can also make a stand-alone Table as its own visual.

21. Select **Tools** then **Add Data Table**.

22. Clicking the gear button on the Data Table allows you to control which columns you see in the table. If you want to add fields, press the **Open selector button** and navigate to the data you want to add. If you want to remove any data, select it from the **Columns tab** and press the **Remove selected button**.

23. Click the **Open Selector button** to launch the **Attribute Selector** and pick the field(s). Once you have selected a field click the **Add Selected button** to add it to the list of columns that will be displayed.
Let’s add a bar chart that is dynamically linked to this map.

24. Click **Tools** and **Add Bar Chart**.

25. The chart that appears needs to be modified. We want it to sort and order the bars by Median Age, and display the height of the bar based on Median Age. Click the **gear** in the left corner of your bar chart. Make sure both your **Color** field and **Sort** boxes are set to Median Age, 2010. You can change the Color and Sort fields by clicking the **Load button** and navigating to the tabular data you want to use. Change the height field by pressing the **Open Selector button** at the bottom of the page.

26. You should now see a linked map and bar chart. You can move and resize the windows for each visualization and organize them as you would like in the display space. The corner commands in each visualization allow you to maximize, minimize or pin the image within the workspace.

**Step 25**

**Step 26**
Save your Visualization

27. Remember to fill in the **Title, Year(s), Abstract,** and other fields below your workspace if you have not already done so (in step 7).

28. **Institution:** Depending on where you live or work, choose Central Mass or Metro Boston as your primary institution.

29. **Public/Private:** The DataCommon is intended to be a community space to share information, so it is encouraged that you keep your visualization Public (the default option) so it is visible to other DataCommon users, and so that others may build off your work by duplicating it into their own account. However, if you are not ready to share your work, you may keep it hidden to the public by choosing Private. In this case, only you will be able to see your visualization when you are logged into the DataCommon.

30. **Delete:** You can delete your own visualization by clicking **Edit** on the visualization. At the bottom of the page is a link called **Destroy** which will delete it.

Modify an Existing Visualization

We are often inspired by the work of others. If you come across a visualization that is similar to one that you want to make, you can customize it to your own geography of interest or dataset. The following will take you through an example of duplicating and customizing an existing visualization and saving it to your profile.

31. In the **Gallery** under **Visualizations** find the scatterplot visualization titled **Boston Grade Three Reading Proficiency.** (Hint: You can find this visualization by filtering with Topic: Education and Source: DESE). You can also find this visualization by typing http://metrobostondatacommon.org/visualizations/78/ into your browser.

32. To start making changes to this visualization, click **Duplicate** at the bottom of the screen. The visualization is now copied to your profile and you can begin to customize it by clicking **Edit.**

33. In this scatterplot, the dots represent Massachusetts schools. Both axes represent the % of All Students that scored Proficient or Higher on Grade 3 Reading.
The deeper the color of the dot, the higher the percentage of All Students that scored Proficient or Higher of Grade 3 Reading.

34. We can modify this graph to understand relationships between different variables by changing the X-axis. Click the **gear**, and **Settings** for the **ScatterPlotTool box** opens.

35. Change the x column (axis) to different population groups to see how the scatterplot changes. You can also change the **color field** to see how the scatterplot changes. Click the **load button** to the right of the field to make your change.

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### Uploading Your Own Data

Many DataCommon users have their own datasets that they have collected and want to visualize in WEAVE. The following tutorial will take you through the steps necessary to upload your own data to the DataCommon. Your data will not be included in the Data Catalog or central DataCommon database, however it will be accessible to users via your WEAVE visualization, if you choose to make the visualization public.

A feature within Weave is the ability to add your own tabular data to the session which allows you to interact and create custom maps and charts. The following steps will take you through uploading a municipal dataset.

36. You will need the Municipal ID’s for each city and town. You can download an Excel file with municipal names and ID’s by clicking the **Template for Municipal Data (CSV)** link in the Visualization Help underneath the visualization window.

37. Add your data to the spreadsheet with the municipal ID and name, saving it locally on your computer. **Tip:** *Make sure you have a user account and are logged into the DataCommon in order to save your work. After adding your own data you can save and return to the visualization another time.*

38. Within the **Make a Visualization** section on the DataCommon go to: **Data -> Manage or browse data.** Click **New data source...**
39. In the Add new data source window, choose **XLS file** and fill in the following:

**Source Name:** Name that will be displayed

**Open local XLS file:** click the browse button and point to the file you created on MA_Municipalities.xls file. **Make sure the filename ends with .xls.**

**Key Type:** MUNI_ID

**Key Column:** muni_id

Click **Add this data source** once you have finished.

40. Now under **Manage data sources** you will see the data you have loaded into this session. **NOTE: the data is ONLY loaded into your current session. It will not be available in the main data list.** Now when you load a map, chart or table tool you can see your data added to bottom of the attribute selector list.

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**Feedback and Support**

If you encounter any problems or difficulties while exploring the site or using our tools, please send us feedback at [datacommon@mapc.org](mailto:datacommon@mapc.org).