

Introduction to MapED

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This module will introduce users to the MapED data tool and describe the tool's topics, programs, and functionality.

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MapED is a new NCES mapping data tool that provides geographic context to various demographic datasets. MapED users may customize their own Interactive Data Maps or use pre-existing Story Maps based on their needs. It uses data from NCES, the U.S. Census Bureau, and other education data sources and represents data from the 50 United States, the District of Columbia, and U.S. territories, including American Samoa, Guam, Puerto Rico, and the U.S. Virgin Islands. MapED is a dynamic tool that evolves as new data become available. It has flexible and comprehensive options to meet user needs. This module is not an exhaustive tutorial on all of MapED's capabilities, but serves as an introduction to the data tool. The best way to make use of MapED's functionality is to use the tool for your specific data purposes after viewing this module.

More information about MapED can be accessed by clicking the corresponding underlined screen text.

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MapED has two main functions: Story Maps and Interactive Data Maps. These two functions may be accessed from the MapED homepage.

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Story Maps present a high-level visual overview of data from the Department of Education, NCES, and Census Bureau, as well as other education data sources. They also show interesting pre-selected topics from NCES programs and occasionally from other education data sources.

More information about Story Maps can be accessed by clicking the corresponding underlined screen text.

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Selecting Topics allows users to analyze similar data elements within various assessment, demographic, economic, employment, housing, and social categories that span one or more datasets within the Interactive Data Map. All of the data available under the Topics categories come from various Census and NCES datasets.

More information about Topics can be accessed by clicking the corresponding underlined screen text.

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Selecting Programs allows users to select a specific dataset to analyze in the Interactive Data Map. The available datasets include the School Attendance Boundary Survey (or SABS), NCES Locales, American Community Survey (or ACS) and District Special Tabulations, Common Core of Data (or CCD), Integrated Postsecondary Education Data System (or IPEDS), National Assessment of Educational Progress (or NAEP), and the Private School Universe Survey (or PSS). More information about Programs can be accessed by clicking the corresponding underlined screen text.

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MapED allows users to create different types of Interactive Data Maps, depending upon the data elements and datasets that are used. The first type of data map is a point map. Point maps show particular locations on the map, such as the location of schools and universities. IPEDS and PSS both collect school point data, which means their spatial representation is depicted with a single point location even though the school itself may have a larger attendance area (such as a school boundary). In point maps, the specific point will be color-coded by one or more attributes.

The second type of map is a boundary map. Boundary maps include map features that bound an area, such as a state boundary on a country map or a school district on a city map. ACS, NAEP, and SABS are boundary data. CCD data are used in both point and boundary maps.

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This map illustrates Integrated Postsecondary Education Data System (or IPEDS) 2013 data, which includes postsecondary, technical, and vocational institutions. The tool bar on the right shows that “School Type” is highlighted in orange and the Legend in the bottom left of the screen shows the school types. Each point reveals detailed information on a particular school, such as tuition and enrollment numbers. This point map shows school types across the United States.

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This map illustrates American Community Survey (or ACS) and District Special Tabulations 2010-2014 data of the median age of residents in a given school district. The toolbar on the right shows that “Median age (years)” is highlighted in orange and the legend in the bottom left shows the four age ranges.

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To use the Interactive Data Map, click on the corresponding topic or program on the MapED homepage. To demonstrate, start by clicking the “States” link under National Assessment of Educational Progress (or NAEP) in the Interactive Maps section of the MapED homepage. The default Interactive Data Map shows the contiguous 48 states, but users may move the map in any direction and zoom in and out to change the view.

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The map legend is located in the lower left corner of the screen. For this map, the legend shows 4th grade math scores and color-codes the map accordingly. As additional data are added to the interactive data map, a slider bar will appear to expand the legend.

The icons in the upper left corner allow users to zoom in and out of the map. Another way to zoom in on the map is to double click on it. The “Home” icon centers the map and zooms in or out to go back to its original position, which is centered on the contiguous United States. The magnifying glass is the “Search” icon. Clicking the “Search” icon brings up a search bar that prompts users to locate an address or place. A drop-down menu allows for the use of specific search engines, such as Esri World Geocoder, Schools, or School Districts. New users are encouraged to use the “Search” icon to look up a state, school or school district they are familiar with first (such as their high school or home school district) to establish a frame of reference for the rest of the map. For instance, click the “Search” icon and choose “School Districts” from the drop-down menu. Then type “Los Angeles Unified School District” into the search bar to focus the map on that school district.

The next section will instruct users on the functions and options available in the Interactive Data Map.

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To the right of the map there is a toolbar that allows users to customize the data map. The “Indicators” shows which variable is illustrated in the map; in this case the variable is “4th Grade Math.” To adjust the map, click on another Indicator. The “Find an Indicator” search bar lets users search for a particular indicator within the dataset by typing in a name or selecting an option from the drop-down menu. New users are encouraged to create maps with data with which they are familiar and zoom in on an area or school they know well (i.e., a high school or home state) to better orient themselves with the Interactive Data Map. To learn more about the datasets, consult the dataset’s respective homepage.

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Under the “Indicators” tab there are several options to customize the topics, year, and level shown on the map. The “Topic” drop-down menu on the right side toolbar contains submenus for Programs and Topics. The Programs and Topics reflect what was originally shown on the Interactive Data Map. For instance, since this Interactive Data Map was initially created by first selecting Programs and then National Assessment of Educational Progress (or NAEP), users can see that NAEP is selected under the Programs section of the “Topic” drop-down menu. These sections show what programs or topics are added to the map. Once a program or topic is added to the map, a slider bar will appear in the “Legend” to show the appropriate key for the selected datasets.

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The “Year” drop-down menu allows users to select different data collection years to depict on the Interactive Data Map. The drop-down menu shows all of the year options

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available for the dataset. In this case, the most recent data collection year, 2015, is pre-selected, however users can change the year as far back as 2005. The dataset and variables used in the map will determine the years available for use.

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The “Level” drop-down menu shows the level of data shown. In this Interactive Data Map, the level is state boundary, as each state is color-coded based on the legend for 4th grade math scores. The other level options include school boundary, district boundary, and school point. The dataset and variables used in the map will determine the levels available for use. For instance, NAEP data are only available at the state level, however ACS data are available at the district level.

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The “Filters” tab allows users to select specific areas to include in the map, ranging from individual states to all states. This allows the Interactive Data Map to be customized to boundary specifications. By default, all areas included in the data are automatically selected but can easily be tailored to individual states by unselecting “All States” and then clicking on the state(s) of interest. In the map on the screen, “All States” has been unselected and Delaware, Georgia, and Kansas have been selected as states of interest.

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The “Maps” tab allows users to apply “Map Layers” to their Interactive Data Map. In this map, “National Assessment of Educational Progress” and “State Boundaries” are selected as map layers.

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The “Maps” tab also has an option to include a “Basemap.” The Basemap function allows users to place an additional geographical layer on their Interactive Data Map and includes options for streets, oceans, terrain, and imagery among others. In this map, “Topographic” is selected as a geographical layer. Basemaps can be used and changed with any Interactive Data Map and they will show up underneath the point and boundary layers. Although Basemaps may be applied to both point and boundary maps, they are most easily seen under point maps, which will be shown later in Example 1.

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MapED allows users to create multiple Interactive Data Maps as a way to compare multiple variables or boundaries. To do this, click the “Add a Map” icon above the Indicator tab. By default the new map will be the same as the original map which shows 4th grade math scores. To alter the second map select a new indicator from the Topic area, for this example 4th grade reading scores has been chosen. The original map is on top and the new map is on the bottom of the screen. Users can confirm the differences between the maps by consulting the corresponding legend. It should be

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noted that when using multiple maps, the map layers are only applied to the “active” map. The “active” map is outlined by a blue border. Users can only use the tools and legend of the “active” map, as these are dimmed for the “inactive” map. When multiple maps are used, a fifth icon, a “Sync” button, appears on the left side of the screen. When clicked, this button will sync all of the maps to the same zoom level as the “active” map. Simply click anywhere in the “inactive” map to make it the “active” map. Keep in mind that up to three additional Interactive Data Maps may be added to the original map, for a total of four maps. Once a map is added, it can be closed by clicking the corresponding “X” button in the upper right hand corner of the map.

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The “Download” icon in the toolbar on the right allows users to download demographic, academic, and geographic data into a geographic information system (or GIS) for additional analysis. To choose a dataset, click the corresponding button to be taken to a new webpage with directions on downloading.

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To print or save an Interactive Data Map, click the “Printer” icon in the upper right hand corner of the screen to create a print-friendly PDF. Users can choose either the landscape or portrait option. Once a PDF has been created, the map can then either be printed or saved.

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The “Share” icon on the right hand tool bar allows users to share or save a link of their Interactive Data Map. The icon creates a custom link for the map that users can share via social media or email. Click the “Share” icon and then the Tweet box to reveal the full link for the interactive data map. Users may log in to Twitter to share the map or copy and paste the link for use outside of Twitter. The link can be used to return to the map at another time, serving as a “Save” function.

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The Interactive Data Map defaults the legend to four class breaks along natural break lines, as shown in the right hand toolbar. Users may select another area data classification from the drop-down menu, which gives the options of natural breaks, equal interval, and quantile. Notice how the legend changes when the area data classification is altered. The class breaks may also be altered based on user needs, with as few as two breaks and as many as seven. Notice how the legend changes when the class breaks are increased or decreased. Above the area data classification and class breaks section is “Area Transparency.” “Area Transparency” is a sliding scale that allows users to fade and deepen the colors on the map. Drag the circle to the bottom left area of “Area Transparency” to fade the colors of the map and drag the circle to the bottom right area to deepen the colors of the map.

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To create a map that shows colleges and universities displayed on a street map, users will select college and university data from the Integrated Postsecondary Education Data System (or IPEDS) programs tab. To enter the Interactive Data Map click the “School Points” link under IPEDS in the Interactive Maps Section of the MapED homepage. Once in the Interactive Data Map, select “School Type” under “Topic” in the “Indicators” tab.

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To add the street layer to the map, click the “Map” tab from the right side toolbar. Below the Map Layers options, click on “Basemap” and then “Streets.” Then, zoom in on a particular area to see a more detailed depiction of colleges and universities displayed on a street-level map.

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Zoom in on a particular state or area to see what colleges and universities are there. In the example on the screen, the area that has been zoomed in on is Columbus, Ohio. The legend shows how postsecondary, technical, and vocational institutions are classified. Click a point on the map to learn about that institution. A pop-up window will open with detailed information on that institution, such as tuition and enrollment numbers. By using a Basemap, users are able to have a geographical representation of an area and the institutions that are in that vicinity. Combining IPEDS data with the Basemap function allows users to create a map that shows colleges and universities on a street map.

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As a second example of the functionality of the Interactive Data Map, we’ll create a visual representation of the percentage of people in Virginia who have a bachelor’s degree as well as what colleges and universities are in Virginia. To start, click the “School Districts” link under American Community Survey (or ACS) in the Interactive Maps Section of the MapED homepage. In the “Topics” section of the “Topic” tab select “Education” under the Social header. Select “Bachelor’s degree” under “Topic” in the “Indicators” tab.

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From the map of the United States showing bachelor’s degree attainment, we can narrow down the map to show only Virginia. To do this, click “Filters” in the right hand tool bar. Notice at the top of the “Filters” tab that “Unified School District” and “Elementary School District” are automatically selected. The “Filters” tab also automatically selects “All States” to show the entire country. Unselect “All States” and scroll down to choose “Virginia.”

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To add data from the Integrated Postsecondary Education Data System (or IPEDS) to show the colleges and universities in Virginia, click on the “Indicators” tab in the right hand tool bar. Then click the “Topic” drop-down menu and select “Integrated Postsecondary Education Data System” from the “Programs” section to insert data on colleges and universities. Then click on “School Type” to identify the colleges and universities as either public, private, other, or no data. By adding a second dataset to the map, the legend will be expanded. Then zoom in on Virginia until the desired area of focus is visible.

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This module has introduced users to the MapED data tool and described the tool’s topics, programs, and functionality. Important resources that have been provided throughout the module are summarized in this slide. You may now click the “Exit” button to return to the landing page.