

AMA Health Workforce Mapper User Manual

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Introduction and Background

The AMA Health Workforce Mapper has its roots in the AMA Geographic Mapping Initiative, which supports the creation of maps that demonstrate the practice locations of physician and non-physician healthcare professionals throughout the United States. For the first time, in addition to being available as PDF maps, data from the AMA Geographic Mapping Initiative are available in an online format through the AMA Health Workforce Mapper. The AMA Health Workforce Mapper is a modern, dynamic tool that represents the natural next step in proactive, solutions-oriented and evidence-based advocacy.

To use the AMA Health Workforce Mapper, you must have Adobe Flash Player 10.0 or higher installed on your computer. Adobe Flash Player is not compatible with Apple mobile devices or Android phones at this time.

In addition to online, interactive data display, there are a few other key uses of the AMA Health Workforce Mapper. For example, one important use of this tool is that a medical society can use it to overlay the physician and non-physician maps to visually demonstrate to lawmakers the practice locations of physician and non-physician healthcare professionals. Through mapping locations of healthcare providers, users can identify high-priority areas for workforce expansion. Additionally, the AMA Health Workforce Mapper enables users to build a comprehensive picture of the health care workforce through adding supplemental data such as layers showing hospitals, Rural Health Clinics, and Health Center Program Sites to maps of physician and non-physician practice locations.

The AMA Health Workforce Mapper was created in partnership with the AAFP's Robert Graham Center and HealthLandscape and was funded by the AMA Scope of Practice Partnership.

Data Overview

Data Sources

The main data sources in the AMA Health Workforce Mapper are the AMA Physician Masterfile and the Centers for Medicare and Medicaid Services' National Plan and Provider Enumeration System (NPPES).

AMA Physician Masterfile

According to the AMA:

“The Physician Masterfile includes current and historical data for over 1.4 million physicians, residents, and medical students in the United States. This figure includes approximately 411,000 graduates of foreign medical schools who reside in the United States and who have met the educational and credentialing requirements necessary for recognition. A record is established when individuals enter medical schools accredited by the Liaison Committee on Medical Education (LCME), or in the case of international medical graduates, upon entry into a post-graduate residency training program accredited by the Accreditation Council for Graduate Medical Education (ACGME)...Masterfile records are never removed even in the case of a physician's death. The Physician Masterfile records include data about a physician's specialty, address, present employment, age, and gender.”¹

The AMA is constantly working to update its data in the Masterfile through physician surveys, and the collection of missing values through a variety of other sources.

The Robert Graham Center completed the data processing for AMA Masterfile data, and the AMA Health Workforce Mapper currently uses AMA Masterfile data accessed in January 2016. Data processing involved geocoding providers' best available practice address by matching these addresses with a privately maintained and licensed address database. Once longitude and latitude location attributes were applied to the address data, they were joined to U.S. Census geography files for geographic boundary identifiers. For information on physician specialties included in the AMA Health Workforce Mapper, see [Appendix A: Data Definitions](#).

Centers for Medicare and Medicaid Services' NPPES

The Centers for Medicare and Medicaid Services National Plan and Provider Enumeration System (NPPES) assigns a National Provider Identifier Standard (NPI) number to healthcare providers for identification in HIPAA-compliant administrative and financial transactions. When applying for an NPI number, providers select a Health Care Provider Taxonomy code that best describes their specialization. Records in the NPPES include information about non-physician specialty, address, and gender. NPPES data are updated on a monthly basis, but individual records are only updated when a provider logs onto the system and makes changes.

The Robert Graham Center completed the data processing for the CMS NPPES data and the Health Workforce Mapper currently uses NPPES data accessed in January 2016. Data processing involved geocoding providers' best available practice address by matching these addresses with a privately maintained and licensed address database. Once longitude and latitude location attributes were applied to the address data,

¹ www.ama-assn.org/ama/pub/about-ama/physician-data-resources/physician-masterfile.page

they were joined to U.S. Census geography files for geographic boundary identifiers. For more information on non-physician specialties included in the AMA Health Workforce Mapper, see [Appendix A: Data Definitions](#).

Data Considerations

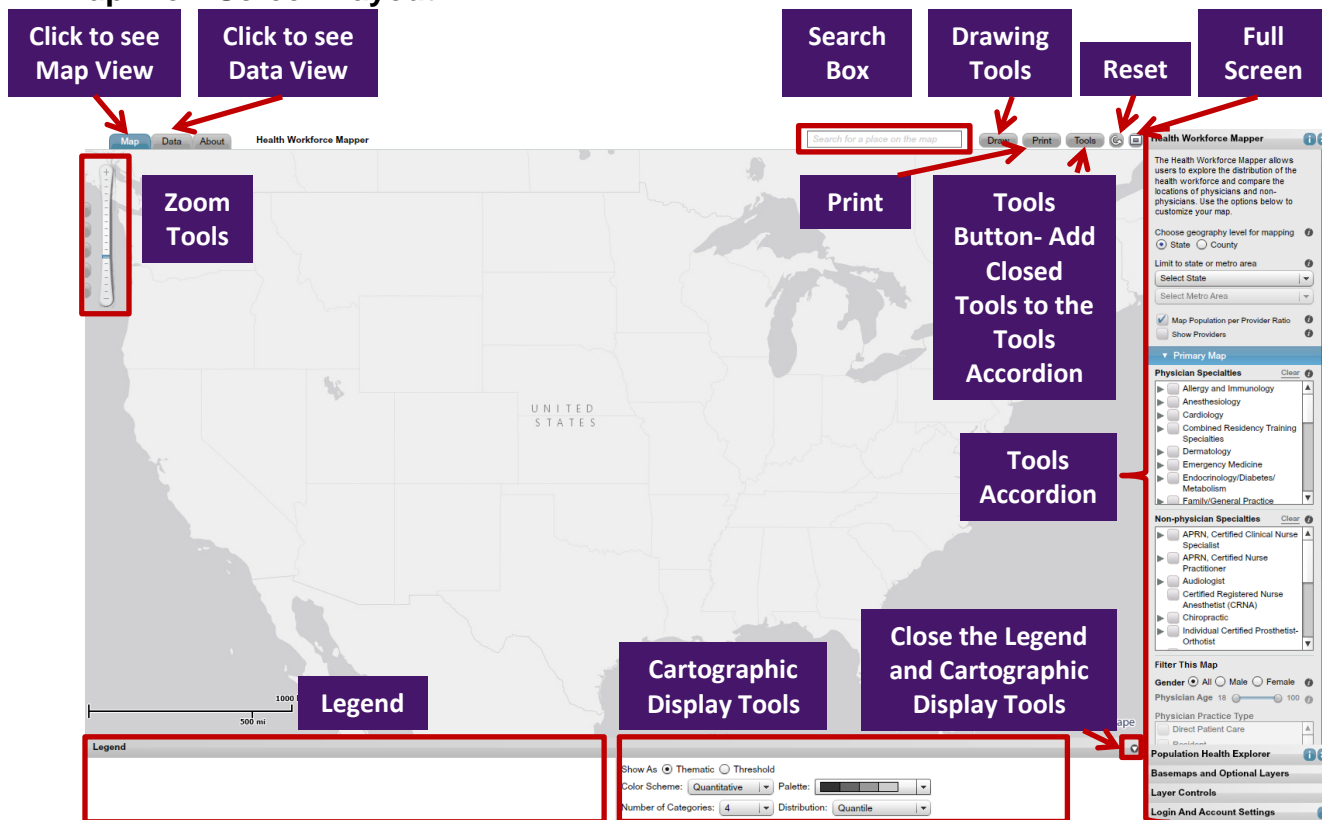
When interpreting AMA Health Workforce data, there are a few important considerations to keep in mind:

1. Physician and non-physician practice locations and specialties are self-reported. To place the provider location data on the map, the longitude and latitude coordinates of the best available practice addresses were found by matching these addresses with a privately maintained and licensed address database. This process is known as geocoding.
2. For the AMA Physician Masterfile data, if the physician practice location was not available, the home address was used as the practice location for geocoding. It is estimated that over 90 percent of active U.S. physicians have a primary office location in the AMA Physician Masterfile.
3. For the NPPES non-physician data, the address used for geocoding was the business practice address, which may be administrative.
4. Although a health care provider may practice in multiple locations, each individual health care provider is always represented as only a single point.

Therefore, not all practice locations are placed on the map exactly where the health care provider practices.

AMA Health Workforce Mapper

Map View Screen Layout



Tools available within the AMA Health Workforce Mapper



Map

When the AMA Health Workforce Mapper is initially loaded, the screen shows a blank map of the continental United States. The Map tab is automatically selected. The Map tab corresponds with Map View, which displays provider selections and optional layers on a map when in the Health Workforce Mapper or population health data when in the Population Health Explorer. To return to Map View from Data View, click on the Map tab.

Data

Click on this tab to see Data View, which displays provider selection and Census population statistics in a table format when in the Health Workforce Mapper and demographic information when in the Population Health Explorer. The data tab is only available for AMA authorized users.

Search Box

The search box is the blank white box located above the center of the map to the left of the “Draw” button. To have the map zoom to a particular location, type into the search box the name of the town, city, state, or point of interest that you would like to see on the map. As you type, suggestions for the place name will appear in a drop-down menu below the search box. Once you see the place name you are looking for, click the place name in drop-down menu and the map will zoom to that location.

Draw

This button is located to the right of the Search Box. Clicking this button opens up the Drawing Tools toolbar. You can use the drawing tools to create points, lines, polygons, rectangles, and labels in order to highlight specific areas of the map. To close the Drawing Tools toolbar, click on the X in the upper right-hand corner of the toolbar.

Drawing Tools Toolbar



Shape Color: To change the color of the shape, point, or line that you are drawing, click the colored box next to “Shape Color”. This will open a menu of colors that you can choose from for your shape color.

Outline Only: To create a rectangle or polygon that has a colored outline but no color in the middle of the shape, select the check box next to “Outline Only”.

Label Color: To change the color of the label you are adding to the map, click the colored box next to “Label Color”. This will open a menu of colors that you can choose from for your label color.

Show Label Outline: To add a white background and thin black outline to the label, select this option.

Point: Clicking to select this tool allows you to add a point to the map. When you click on the map, a single point will be added. To deselect this tool, click on “Point”.

Line: Clicking to select this tool allows you to add a straight line to the map. To use this tool, click on the place on the map where you want the beginning of the line to be, drag your mouse where you want the line to go, and release the mouse where you want the end of the line to be. To deselect this tool, click on “Line”. You cannot change the line width in the Line tool.

Free Line: Clicking to select this tool allows you to add a line that is not straight. To use this tool, click on the spot on the map where you want the line to start and hold down the mouse button; a line will be drawn on the screen following the path of your mouse. To complete this line, release the mouse button. To deselect this tool, click on “Free Line”. You cannot change the line width in the Free Line tool.

Label: Clicking to select this tool allows you to add text to the map. To add a label, click on the spot on the map where you want to place the label. Type your label into the box. Press enter on your keyboard to finalize the label. To deselect this tool, click on “Label”. You cannot change the label font or font size in the Label tool.

Rectangle: Clicking to select this tool allows you to add a rectangle that is a solid color. To use this tool, click on the spot on the map where you want the rectangle to originate and hold down your mouse button. Drag your mouse to make the rectangle the size you want it to be. To complete the rectangle, release the mouse button. To create a rectangle that has a colored outline but no color in the middle of the shape, select the check box next to “Outline Only”, which is located directly to the right of the Shape Color selection box prior to making your rectangle. To deselect the Rectangle tool, click on “Rectangle”.

Polygon: Clicking to select this tool allows you to add a polygon that is a solid color. To add a polygon, click on the locations on the map where you want to place the corners of your polygon. A line will automatically be drawn between the location where you clicked and the location where you previously clicked. To complete your polygon, double-click the last corner of your polygon. To create a polygon that has a colored outline but no color in the middle of the shape, select the check box next to “Outline Only”, which is located directly to the right of the Shape Color selection box prior to making your polygon. To deselect the Polygon tool, click on “Polygon”.

Move: Clicking to select this tool allows you to move any object (point, shape, line or label) created with the drawing tools. Click on “Move” then click on the object you want to move and hold down your mouse button. Drag your mouse to where you want to place the object. Release the mouse to finalize placing the object. To deselect this tool, click on “Move”.

Erase: Clicking to select this tool allows you to erase any object (point, shape, line, or label) created with the drawing tools. Click on “Erase” then click on the object you want to erase. To deselect this tool, click on “Erase”.

Clear All: Clicking “Clear All” will erase all objects (points, shapes, lines, or labels) you have created.

Print

Clicking the Print button opens up the Print Window. In the Print Window, you can find the options to allow you to print or save your map.

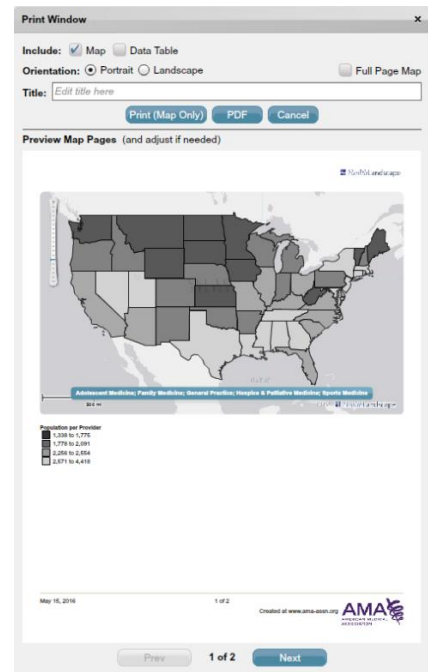
Printing selection: The options to select the map, select the data table (for authorized AMA users), or select both to print or save as a PDF are located next to “Include:”.

Orientation: Users have the option to change the orientation of the page that will be printed, either Portrait or Landscape. Users have the option to make the map a full page map in either orientation.

Title: Type the title of your map in the box with the text “Enter title here”, if desired.

Print (Map Only): Click to print the map directly to your printer; you cannot print the data table without first saving it as a PDF.


PDF: Click to save your selections as a PDF. When saving a PDF, make




sure you add “.pdf” to the file name if the file type is not already listed as an Adobe Acrobat Document in the drop-down menu next to “Save as type:”.

Preview Map Pages window: Shows how the map will look when printed and in the window you can adjust the zoom level and pan the map as needed.

Reset

The reset button is located to the right of the Print button. Clicking on the reset button  allows you to clear all layers selected on the map. Clicking this button opens a prompt that asks “Are you sure you want to reset this data and start over?” To reset, click “Yes”, and to cancel the reset, click “No”.

Full Screen

The full screen button is located to the right of the reset button. Clicking on the full screen button  allows you to view the map in the entire screen. To exit the full screen, hit the escape button on your keyboard.

Zooming and Panning

Zoom Bar

Located on the upper left-hand corner of the map, the zoom bar allows you to adjust the scale to a maximum of a world view and a minimum of a neighborhood view. You can click the plus sign at the top of the zoom bar to zoom in and the minus sign at the bottom of the zoom bar to zoom out. You can also click and drag the blue slider bar to adjust the zoom level. If you have selected the “Show Providers” check box and physician practice locations are displayed as points, the points will not be displayed past a zoom level of 1:65,000- the fourth line from the top- in order to protect the privacy of physician practice location addresses.



Zoom “Nubs”

On the upper left-hand edge of the map to the left of the zoom bar, there are five nubs that you can click on to zoom to Alaska, Hawaii, Puerto Rico, the continental United States, or all 50 states.

Panning

To change the area of the map you are viewing, click on the map, hold down your mouse button, and drag in the opposite direction of the area of the map that you want to see. For example, if you would like to see an area of the map that is west of the area that you are currently viewing, click and drag the map to the right.

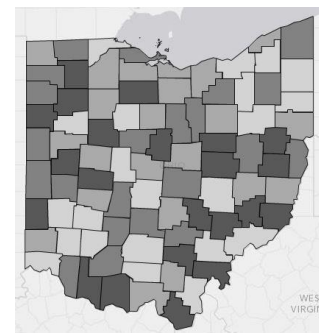
Changing cartographic display options

The cartographic display options are located below the map to the right of the legend. The two options for displaying data are thematic display and threshold display. Thematic display shows all of the selected data for the area you are mapping. Threshold display allows you to set a lower limit for a specified set of data and view only the regions that exceed that limit. Regions below the threshold value will not display on the map.

Thematic Data Display

When you display thematic data, different ranges of values are represented by different shades of colors. The color scheme refers to the characteristics of the colors you use for your map. There are three options of color schemes you can select:

The quantitative color scheme displays data values in gradient shades of a single color. This is the default color scheme for displaying data in the AMA Health Workforce Mapper. This is a useful color scheme for showing if the population per provider ratio or total providers value for a county or state is high, low, or in the middle compared to the population per provider ratios or total provider values for the rest of counties or states.



The qualitative color scheme displays data values in distinct colors. This is a useful color scheme for showing distinct differences between different groupings of population per provider or total provider values.

The diverging color scheme displays data values in gradients of two different colors. This is a useful color scheme for highlighting differences between counties or states with high population per provider ratios or total provider values and counties or states with low population per provider ratios or total provider values.

After choosing the color scheme, choose the palette (shades of colors) you would like for your data display.

You can choose between three and nine categories of ranges of data values for displaying your physician and/or non-physician selections on the map. If you choose a high number of ranges, there will be a lower number of data values in each category, and if you choose a low number of ranges, there will be a higher number of data values in each category.

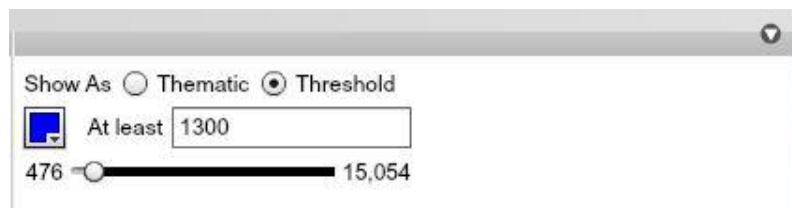
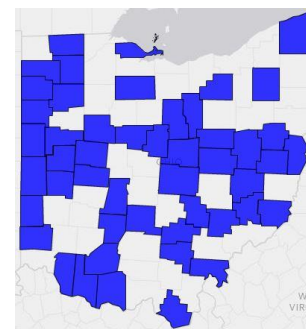
Data can be displayed on the map with the quantile, equal interval, or natural breaks distribution method. Quantile distribution classifies data values into equal groups regardless of the distribution of the data. In the AMA Health Workforce Mapper, the data are either the population per provider ratio or the total number of providers in each geography (county or state); and the groups, or classes, are the different color shadings that are displayed on the map. For example, if you are mapping the total number of providers for all 88 counties in Ohio in four quantiles, there should be 22 counties in each quantile. However, there may be more than or fewer than 22 counties in each quantile if there are multiple counties that have the same number of providers. This method helps to find the median (or middle) value within the data.

Equal interval distribution sets the groups of values in the data at equal intervals regardless of the distribution of the data. Let's say you are mapping the total number of providers by county in Ohio, and the number of providers in each county is between 1 and 100. If you are using an equal interval distribution with four groups, all the counties with 1-25 providers will be in the lowest group (lightest color on the map), all the counties with 26-50 providers will be in the second group, all the counties with 51-75 providers will be in the third group, and all the counties with 76-100 providers will be in the fourth and highest group (darkest color on the map). Similarly, if you were mapping five groups for this example, the ranges for the groups would be 1-20, 21-40, 41-60, 61-80, and 81-100. If you have an evenly distributed data set, meaning the data fall relatively evenly along the entire range of the data, not clustered at any point along that range, equal interval distribution may be a good way to classify your data.

Natural breaks distribution classifies data based on natural groupings inherent in the data. Class breaks are identified that best group similar values and that maximize the differences between classes. For example, if a user is mapping 30 states, 15 states with 0-1 values, 10 states with 16-18 values, and 5 states with 24-29 values, the "best" ranges are 0-1, 16-18, 24-29.


Threshold Data Display

The threshold data display shows data values that are greater than or equal to a specified value. Unlike thematic data display, the threshold data display only shows whether or not a state or county meets the minimum threshold value, not the specific value for the state or county itself. States or counties that do not meet the threshold value are not filled in on the map. To specify a threshold, enter the value for the threshold in the box next to "At least". Another way to specify a threshold value is to drag the button on the slider bar below the box where you can enter the threshold value. You can find and specify additional colors for data display by clicking on the colored square next to "At least", which will open up a menu of colors that you can choose from for displaying counties or states that meet the threshold criteria.



Legend

The map legend is located in the bottom left-hand corner of the screen next to the display options. The legend explains what the colors and symbols on the map represent. The legend automatically updates as you add and

remove layers from the map. As this happens, scroll arrows will appear on the sides of the legend, allowing you to scroll through the legend. When you print your map, the legend is included on the page. If you would like to minimize the legend and cartographic display options section, click the white triangle  at the top right corner of this section.



Tools Accordion

On the far right side of the map is the Tools Accordion which contains the tools with which you can interact. The tools that are available include the Health Workforce Mapper Tool; Population Health Explorer; Basemaps and Optional Layers; and Layer Controls. The tool that is active is the one with which you can interact. To activate a different tool, click its title bar; the tool will open and you will be able to interact with it. If you accidentally close a tool and it is removed from the Tools Accordion, click the “Tools” button above the map, next to the “Print” button to add it back into the Tools Accordion.

Health Workforce Mapper tool

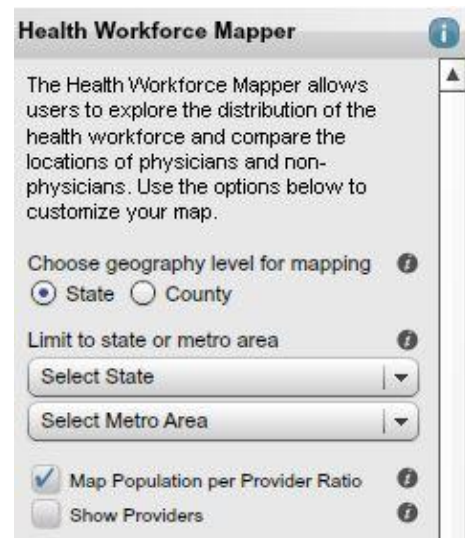
Select geography for mapping

To choose your geography level for mapping, select the button next to “State” or “County” below the prompt “Choose geography level for mapping” at the top of the Health Workforce Mapper section in the Tools Accordion on the right side of the screen as seen in the image below.

You can further limit your selection to a specific state or metro area (for definition of metro area, see [Appendix B: Glossary](#)). To map by state, choose a state from the drop down menu “Select State” directly below the prompt “Limit to state or metro area”. After you select a state, the map will zoom and center on that state. Once you select a provider type, data will be displayed at the county level. If you would like to further limit your selection to a metro area after limiting your selection by state, select a metro area from the drop-down menu “Select Metro Area”. You will see data displayed at the county level for the counties that comprise that metro area once you select a provider type.

Display provider selection

There are three options for mapping your provider selection, and these options are found at the top of the Health Workforce Mapper section directly below the geography selection options. The default option for mapping is to map the population per provider ratio, so the check box to the left of Map Population per Provider Ratio is automatically checked when the AMA Health Workforce Mapper is first loaded. The Map Population per Provider Ratio check box is located directly below the drop-down menus under “Limit to state or metro area”. Mapping by population per provider ratio displays data for the population of the state or



county (depending on the geography type you have chosen) divided by the number of selected providers in that state or county. Keep in mind that when you select multiple provider types, the population per provider ratio is based on the combined number of providers for all provider types you have selected, so the more providers you choose, the lower the population per provider ratio becomes.

If you uncheck the check box to the left of Map Population per Provider Ratio, the map will show the total number of providers for the geography you have selected. However, be careful when mapping total providers because larger counties or states tend to have more providers than smaller ones. If you are interested in physician availability, it is more meaningful to map population per provider ratio.

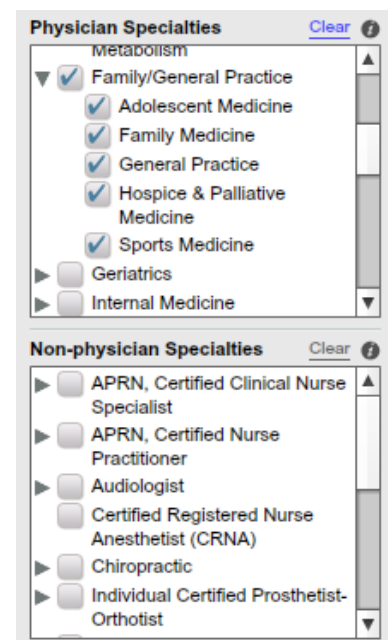
The Show Providers option is located directly below the Map Population per Provider Ratio option. Clicking the check box to the left of Show Providers displays the practice locations of physicians and non-physicians. Physician practice locations will display on the map as circles, and non-physician practice locations will display on the map as triangles. In order to protect the privacy of physician practice location addresses, the physician practice locations will not be displayed past a zoom level of 1:65,000- the fourth line from the top of the zoom bar.

Selecting Providers

The check boxes for provider specialty categories are located in the Primary Map section. You can select one or more provider specialties to display by selecting check boxes next to the specialty name. For specialties that have a gray arrow next to them, a list of specialties that fall into the larger category will be included; to see a list of those specialties, click the gray arrow. You may then deselect specialties within the group. To deselect your specialties selection or selections, click “Clear” at the top of the Physician Specialties menu for physicians and at the top of the Non-physician specialties menu for those specialties.

Please note that physician specialty categories are not exclusive. For example, a physician who has identified their specialty as dermatopathology is included in both the Dermatology and Pathology specialties. However, if both the Dermatology and Pathology specialties are selected, a physician will only be counted once in the total providers listing in the data. For more information about which specialties are included in each physician specialty category, please see [Appendix A: Data Definitions](#).

Non-physician specialty categories are exclusive. Non-physicians that are included in one non-physician specialty category selection will not be included in any other specialty category selections.



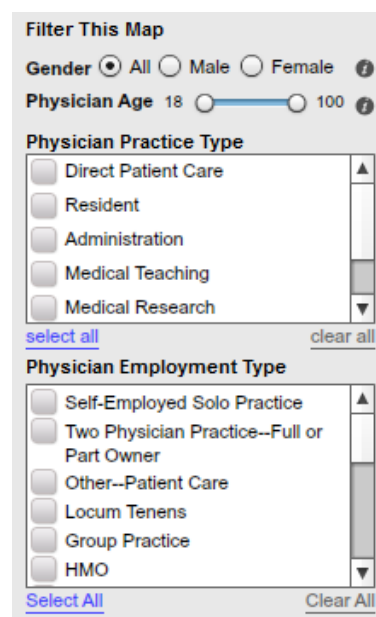
Filtering Selection

After choosing the geography and provider type or types you would like to display, there are options within the Primary Map tools to filter the displayed data. In the “Filter This Map” section, you can filter your selection based on provider gender for both physician and non-physician data, and by age, practice type, and employment type for only physician data.

Gender: To filter by gender, click the button next to “Male” or “Female”. To clear your gender filter selection, click the button next to “All”.

Age: You have the option to filter based on physician age, which is self-reported by physicians in the AMA Physician Masterfile. Drag the left button on the Physician Age slider bar to set a minimum age for your selection. Drag the right button to set a maximum age for your selection. As you drag the button, the age is displayed in a light yellow box above the slider bar. To clear the age filter selection, move the left button to farthest left edge of the slider bar, and the right button to the farthest right edge of the slider bar.

Physician Practice Type: The default option for mapping is to display data for all physicians. Physician practice types in the AMA include direct patient care, resident, administration, medical teaching, medical research, non-patient care, and no classification; there are a few records that still have old classification types that are not identified in the new type of practice field. All records are included in the default data display. To display data only for physicians in one or more of the current categories, select the button to the left of its name. To clear this filter selection, click the button again, or select “Clear All”.



Physician Employment Type: To filter by one or more physician employment types, select the button next to each employment type you want to select. To remove an individual physician employment type filter, uncheck the box next to the name of the physician employment type. To clear all filters for physician employment type, click “Clear All”. For more information about how these employment types are determined, see [Appendix A: Data Definitions](#).

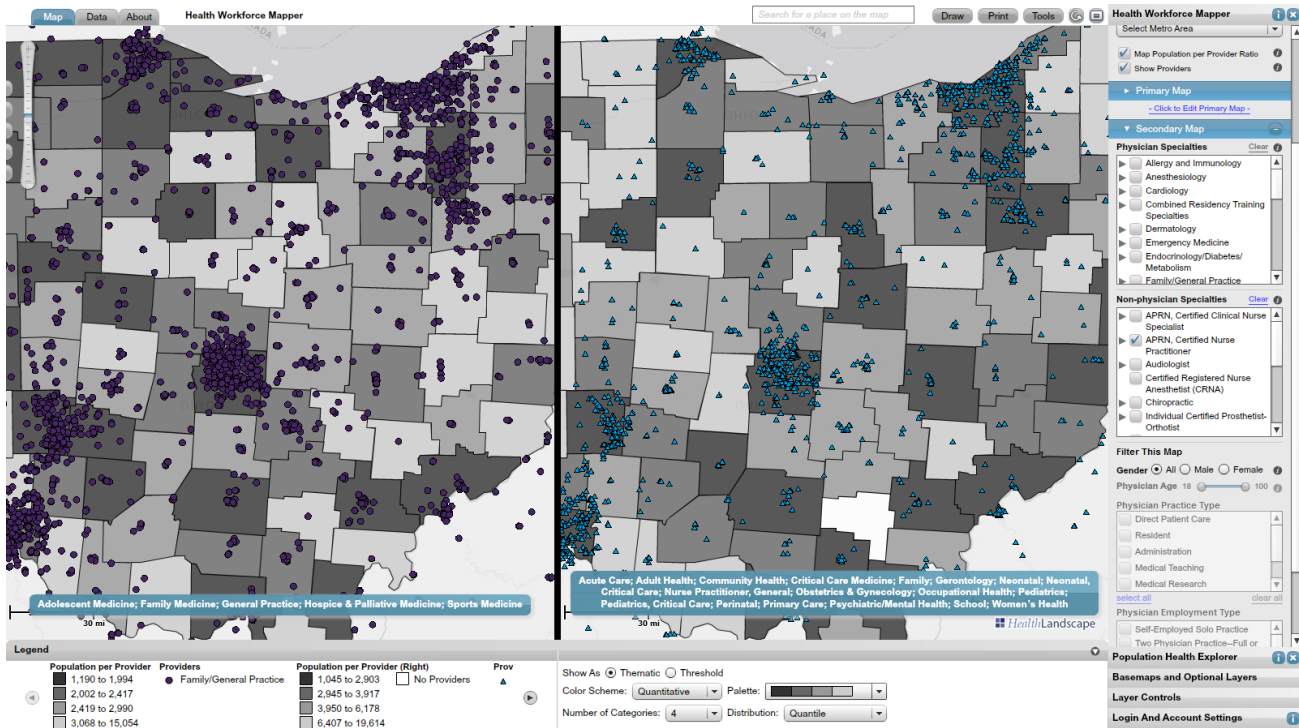
Rollover Window

You can view state or county data in the rollover window display. When you move your mouse over a state or county, demographic and health care provider data are displayed in a rollover window in the top right-hand or top left-hand corner of the map. You can only see the data for a particular state or county when your mouse is placed above the state or county. The data displayed in the rollover window are:


County (or State) Name	Hamilton County, Ohio
Total Providers	372
Population per Provider	2,157 : 1
Population (2010)	802,374
Change since 2000	-42,929
Population density (per square mile)	1,943.9
Percent population over 65	13 %
Percent population under 18	24 %

For more information on data sources and data processing for rollover window data, see [Appendix A: Data Definitions](#).

Side-by-side view



Use the side-by-side view to display two different datasets for the same geographic area. In the side-by-side view, the screen is split in half and you can control the data displays for two different maps. The maps are geographically linked, meaning that when you pan or zoom in one map, the other map automatically pans or zooms to the same location.

The primary map is on the left side of the screen, and it is the map created using the tools from the Primary Map section of the Tools accordion. To add a secondary map, click “Show comparison (side-by-side) map” at the bottom of the Primary Map section. This will open the Secondary Map section, and minimize the Primary Map section. This Secondary Map toolbar is identical to the Primary Map toolbar, but data that are selected will show up in the map on the right-hand side of the screen. To return to editing the primary map, click “Click to Edit Primary Map” in the Primary Map section. To erase the Secondary Map, click on the white dash in the blue circle  at the top of the Secondary Map section.

Data View

County	FIPS	Total Providers	Population per Provider	Population (2010)	Change since 2000	Population Density (per sq mi)	Percent Population over 65	Percent Population under 18
Adams	36001	4	7,138 : 1	28550	1220	48.7	0.15	0.25
Allen	36003	79	1,346 : 1	106331	-2142	261.4	0.15	0.24
Ashland	36005	13	4,088 : 1	53139	616	124.5	0.16	0.24
Austabula	36007	9	11,277 : 1	101497	-1231	143.1	0.16	0.24
Athens	36009	29	2,233 : 1	64757	2534	127.4	0.1	0.16
Auglaize	36011	6	7,658 : 1	45949	-662	114.3	0.15	0.25
Belmont	36013	27	2,607 : 1	70400	174	130.1	0.18	0.2
Brown	36015	7	6,407 : 1	44846	2561	90.7	0.14	0.25
Butler	36017	125	2,945 : 1	368130	35323	783.1	0.12	0.25
Carril	36019	3	9,612 : 1	28836	0	72.3	0.17	0.23
Champaign	36021	5	8,019 : 1	40097	1207	93.3	0.14	0.25
Clark	36023	29	4,770 : 1	138333	-6655	343.1	0.16	0.24
Clemson	36025	21	9,398 : 1	167363	19366	430.2	0.12	0.26
Clinton	36027	13	3,234 : 1	42040	1497	101.9	0.14	0.24
Columbiana	36029	19	5,676 : 1	107841	-4234	201.7	0.16	0.22
Coshocton	36031	7	5,272 : 1	36901	248	65	0.16	0.24
Crawford	36033	14	3,127 : 1	43764	-3182	108.7	0.18	0.23
Cuyahoga	36035	1,146	1,117 : 1	1260122	-113857	2766.9	0.16	0.23
Darke	36037	8	6,620 : 1	52959	-350	88.3	0.17	0.25
Defiance	36039	11	3,846 : 1	39037	-463	94.2	0.15	0.25
Delaware	36041	52	3,350 : 1	174214	64225	381.2	0.09	0.29
Erie	36043	21	3,670 : 1	77079	-2472	301.3	0.17	0.22
Fairfield	36045	37	3,950 : 1	146156	23397	287.3	0.12	0.26
Fayette	36047	10	2,903 : 1	29030	567	71.3	0.15	0.25
Franklin	36049	1,027	1,133 : 1	1163414	94436	2140.8	0.1	0.24
Fulton	36051	5	8,540 : 1	42668	614	104.8	0.14	0.26
Gailla	36053	15	2,092 : 1	30934	-135	65.7	0.16	0.24
Greoga	36055	13	7,184 : 1	93389	2494	228.7	0.15	0.26
Greene	36057	42	3,847 : 1	161573	13687	388.2	0.14	0.22
Guernsey	36059	11	3,644 : 1	40867	-705	75.9	0.16	0.24

Data View shows the data table based on the selections you selected in Map View. The Data View is only accessible by authorized AMA users. The data displayed in Data View are identical to the data included in the rollover window display (see [Rollover Window](#)). Additionally, the population per provider and total providers data are based on the provider selections and filtering option selections currently chosen in Map View. To switch to Data View, click on the Data tab at the top of the map. In Data View, the attributes of the data selected in Map View are listed in columns, and the county or state names are listed in rows.

To change the order of columns within the data table, click on the column name and hold down your mouse button; drag it to the right or left, and release it where you want to place it. To adjust the column width, move your mouse to the right side of the column name until you see a symbol with two arrows and then click and hold down your mouse button and drag to the right or left.

On the bottom left hand corner of the screen, you can select the columns you want to include in your data table by checking or unchecking the checkboxes. You can also hide these checkboxes by clicking the white triangle in the black circle in the right-hand corner of the white bar at the bottom of the screen.



To switch between ascending order and descending order based on a column value, click on the column name. When the triangle on the right side of the column name is pointing up, the data are sorted in ascending order based on the values in the specified column. When the triangle is pointing down, the data are sorted in descending order based on the values in the specified column.



To export your data table as a comma separated values (.csv) file that you can view and edit in Microsoft Excel, click on the button above and to the right of the table that says “Export”. When saving your document, make sure you add “.csv” to the file name if the file type in the drop-down menu to the right of “Save as type” is not already listed as a Microsoft Excel Comma Separated Values file so that you can open your data table in the correct format. To export your data table as a PDF, click “Print” above the data table towards the right, select the check box for “Data Table” next to “Include:”, click PDF, and save your document. When saving your document, make sure you add “.pdf” to the file name if the file type in the drop-down menu to the right of “Save as type” so that you can open your data table in the correct format.

Basemaps and Optional Layers

Basemaps

Basemaps are the maps underlying your data. In the AMA Health Workforce Mapper, there are six different options for basemaps: topographic, street, terrain, terrain with labels, canvas, and canvas with labels. The canvas basemap is the default map displayed when first loading the AMA Health Workforce Mapper. Other basemaps are useful for displaying different types of geographic information, so choose your basemap based on the type of geographic information you would like to include. To select the basemap you would like to display, click on the image of the map above its name.



Optional Layers

US & Census Geography: These layers show the boundaries of states, counties, metro areas, ZIP Codes, ZCTAs, 2010 Census Tracts, and 2010 Census Block Groups. For more information on what these layers represent, see [Appendix A: Data Definitions](#). To select the geography data you would like to display, check the check boxes to the left of the layer names. If you would like to add labels to a US or Census geographic boundary layer after selecting the layer, check the check boxes to the right of the layer names.

Transportation: These layers show interstate highways, primary highways, secondary highways, minor highways and all highways. To select the data you would like to display, click the check boxes to the left of the layer names.

Health Care Facilities: These layers show the locations of hospitals, Health Center Program Sites, Rural Health Clinics, Facility and Point HPSAs, and Critical Access Hospitals. For more information on what these layers represent, see [Appendix A: Data Definitions](#). To select the data you would like to display, click the check boxes to the left of the layer names.

Health Policy Layers: These layers show the boundaries of Primary Care Health Professional Shortage Areas, Medically Underserved Areas and Populations, Primary Care Service Areas, Hospital Referral Regions, and 114th U.S Congress Congressional Districts. For more information on what these layers represent, see [Appendix A: Data Definitions](#). To select the health policy data you would like to display, check the check boxes next to the layer names. If you would like to add labels after selecting your layers, click the check box to the right of the layer name.

US & Census Geographic Boundaries

- States
- Counties
- Metro Areas
- ZIP Codes
- ZCTAs
- Census Tracts (2010)
- Census Block Groups (2010)

Transportation

- Interstate Highways
- Primary Highways
- Secondary Highways
- Minor Highways
- All Highways

Health Care Facilities

- Hospitals
- Health Center Program Sites
- Rural Health Clinics
- Facility and Point HPSAs
- Critical Access Hospitals

Health Policy Layers

- Primary Care HPSAs
- MUA/Ps
- Primary Care Service Areas
- Hospital Referral Regions
- 114th US Congress Congressional Districts

Layer Controls

The Layer Controls tool lets you change the order for displaying the layers, hide layers that have been selected, and change the transparency of each layer.

Change order of layers: As you add layers to the map, the layer that was added most recently is displayed on top of the rest of the layers. However, since different layers display data in the same geographic area, you may want one layer to show up above another in order to view that particular layer more easily. Change the order of the layers by clicking on the up/down arrow below the layer name and holding the mouse button down. Then drag and drop the selected layer above or below other layers.

Hide layers: To hide a layer without deselecting it in its tool, click the check box next to the layer name. Click the check box again to see the layer on the map.

Change layer transparency: To increase transparency (decrease opacity) of a layer, drag the button on the slider bar below the layer name to the left. To decrease transparency (increase opacity), drag the button on the slider bar below the layer name to the right.

Layer Controls


Use drag and drop to change order of layers on map

- Non-physicians Layer
↑↓
- Physicians Layer
↑↓
- Health Workforce
↑↓
- Population Indicators
↑↓
- Draw Layer
- Basemap: Canvas

Contact Us

If you have any questions or comments about the AMA Health Workforce Mapper, click the Contact Us link on the AMA Health Workforce Mapper webpage. This link will take you to a form where you can enter your contact information and your question or comment, and a staff member from HealthLandscape will get back to you as soon as possible.

Contact Us: AMA Health Workforce Mapper



First name: *

Last name: *

Email: *

Phone:

Preferred contact method:

Type of Feedback:

Comment:

Please type the text seen in the image below:


* Required information

PARTNERS



Appendix A: Data Definitions

Health Workforce Mapper Physician Specialties

About the source, the AMA Masterfile

According to the AMA:

“The Physician Masterfile includes current and historical data for over 1.4 million physicians, residents, and medical students in the United States. This figure includes approximately 411,000 graduates of foreign medical schools who reside in the United States and who have met the educational and credentialing requirements necessary for recognition. A record is established when individuals enter medical schools accredited by the Liaison Committee on Medical Education (LCME), or in the case of international medical graduates, upon entry into a post-graduate residency training program accredited by the Accreditation Council for Graduate Medical Education (ACGME)... Masterfile records are never removed even in the case of a physician's death. The Physician Masterfile records include data about a physician's specialty, address, present employment, age, and gender.”²

The AMA is constantly working to update their data in the Masterfile through physician surveys and the collection of missing values through a variety of other sources.

The Robert Graham Center completed the data processing for AMA Masterfile data, and the AMA Health Workforce Mapper currently uses Masterfile data accessed in January 2016. Data processing involved geocoding providers' best available practice address by matching these addresses with a privately maintained and licensed address database. Once longitude and latitude location attributes were applied to the address data, they were joined to U.S. Census geography files for geographic boundary identifiers.

Physician Specialty Groupings

Taxonomy Code	Physician Specialty
Allergy and Immunology	
AI	Allergy
AI	Allergy & Immunology
ALI	Clinical Laboratory Immunology
IG	Immunology
Anesthesiology	
ACA	Adult Cardiothoracic Anesthesiology
AN	Anesthesiology
CCA	Critical Care Medicine
HPA	Hospice & Palliative Medicine
PME	Pain Management
OAN	Obstetric Anesthesiology
SMA	Sleep Medicine

² www.ama-assn.org/ama/pub/about-ama/physician-data-resources/physician-masterfile.page

Taxonomy Code	Physician Specialty
Cardiology	
ICE	Cardiac Electrophysiology
CD	Cardiovascular Diseases
IC	Interventional Cardiology
NC	Nuclear Cardiology
PDC	Pediatric Cardiology
Dermatology	
DDL	Clinical & Laboratory Dermatological Immunology
D	Dermatology
DMP	Dermatopathology
PDD	Pediatric Dermatology
PRD	Procedural Dermatology
Emergency Medicine	
ACC	Anesthesiology Critical Care Medicine
CCE	Critical Care Medicine
EM	Emergency Medicine
EMS	Emergency Medical Services
HPE	Hospice & Palliative Medicine
ETX	Medical Toxicology
PE	Pediatric Emergency Medicine
ESM	Sports Medicine
UCM	Urgent Care Medicine
UME	Undersea & Hyperbaric Medicine
Endocrinology/Diabetes/Metabolism	
END	Endocrinology, Diabetes, & Metabolism
DIA	Diabetes
Family/General Practice	
AMF	Adolescent Medicine
FM	Family Medicine
GP	General Practice
HPF	Hospice & Palliative Medicine
FSM	Sports Medicine
Geriatrics	
FPG	Geriatric Medicine
IMG	Geriatric Medicine
PYG	Geriatric Psychiatry

Taxonomy Code	Physician Specialty
Internal Medicine	
AMI	Adolescent Medicine
AHF	Advanced Heart Failure and Transplant Cardiology
ILI	Clinical & Laboratory Immunology
CLI	Clinical Informatics (Internal Medicine)
CCM	Critical Care Medicine
CHD	Adult Congenital Heart Disease
GE	Gastroenterology
HEM	Hematology
HEP	Hepatology
HPI	Hospice & Palliative Medicine
ID	Infectious Disease
IM	Internal Medicine
NEP	Nephrology
NTR	Nutrition
PCC	Pulmonary Critical Care Medicine
PUD	Pulmonary Disease
RHU	Rheumatology
SMI	Sleep Medicine
ISM	Sports Medicine
THP	Transplant Hepatology
VM	Vascular Medicine
CBG	Clinical Biochemical Genetics
CCG	Clinical Cytogenetics
Medical Genetics	
CG	Clinical Genetics
CMG	Clinical Molecular Genetics
MBG	Medical Biochemical Genetics
MG	Medical Genetics
MGG	Molecular Genetic Pathology (Medical Genetics)
Neurological Surgery	
ES	Endovascular Surgical Neuroradiology
ESN	Endovascular Surgical Neuroradiology
NS	Neurological Surgery
NSP	Pediatric Surgery

Taxonomy Code	Physician Specialty
Neurology	
BIN	Brain Injury Medicine
CHN	Child Neurology
CN	Clinical Neurophysiology
ENR	Endovascular Surgical Neuroradiology
EPL	Epilepsy
HPN	Hospice & Palliative Medicine
NN	Neurology
NDN	Neurodevelopmental Disabilities
NMN	Neuromuscular Medicine
SMN	Sleep Medicine
VN	Vascular Neurology
Obstetrics/Gynecology	
OCC	Critical Care Medicine
FPR	Female Pelvic Medicine and Reconstructive Surgery
GYN	Gynecology
HPO	Hospice & Palliative Medicine
MFM	Maternal & Fetal Medicine
OBS	Obstetrics
OBG	Obstetrics & Gynecology
REN	Reproductive Endocrinology and Infertility
Oncology	
HO	Hematology/Oncology
GO	Gynecological Oncology
ON	Medical Oncology
OMO	Musculoskeletal Oncology
PHO	Pediatric Hematology/Oncology
SO	Surgical Oncology
Ophthalmology	
OPH	Ophthalmology
OPR	Ophthalmic Plastic and Reconstructive Surgery
PO	Pediatric Ophthalmology
Orthopedics	
HSO	Hand Surgery
OAR	Adult Reconstructive Orthopedics
OFA	Foot & Ankle Orthopedics
ORS	Orthopedic Surgery
OSS	Orthopedic Surgery of the Spine
OTR	Orthopedic Trauma
OP	Pediatric Orthopedics
OSM	Sports Medicine

Taxonomy Code	Physician Specialty
Otolaryngology	
NO	Neurotology (Otolaryngology)
OTO	Otolaryngology
PDO	Pediatric Otolaryngology
PSH	Plastic Surgery within the Head & Neck
PSO	Plastic Surgery within the Head & Neck
SMO	Sleep Medicine
Pathology	
ATP	Anatomic Pathology
PTH	Anatomic/Clinical Pathology
BBK	Blood Banking/Transfusion Medicine
PCH	Chemical Pathology
CIP	Clinical Informatics
CLP	Clinical Pathology
PCP	Cytopathology
DMP	Dermatopathology
FOP	Forensic Pathology
HMP	Hematology
MM	Medical Microbiology
MGP	Molecular Genetic Pathology
NP	Neuropathology
PP	Pediatric Pathology
SP	Selective Pathology
Pediatrics	
ADL	Adolescent Medicine
CAP	Child Abuse Pediatrics
PLI	Clinical & Laboratory Immunology
DBP	Developmental-Behavioral Pediatrics
HPP	Hospice & Palliative Medicine
PDT	Medical Toxicology
NPM	Neonatal-Perinatal Medicine
NDP	Neurodevelopmental Disabilities
PDA	Pediatric Allergy
PAN	Pediatric Anesthesiology
CCP	Pediatric Critical Care Medicine
PEM	Pediatric Emergency Medicine
PDE	Pediatric Endocrinology
PG	Pediatric Gastroenterology
PDI	Pediatric Infectious Diseases
PN	Pediatric Nephrology
PDP	Pediatric Pulmonology

Taxonomy Code	Physician Specialty
PPR	Pediatric Rheumatology
PTP	Pediatric Transplant Hepatology
PD	Pediatrics
SMP	Sleep Medicine
PSM	Sports Medicine
Physical Medicine & Rehab	
BIP	Brain Injury Medicine
HPM	Hospice & Palliative Medicine
HPR	Hospice & Palliative Medicine
PM	Physical Medicine & Rehabilitation
NMP	Neuromuscular Medicine
RPM	Pediatric Rehabilitation Medicine
SCI	Spinal Cord Injury
PRS	Sports Medicine
Plastic Surgery	
CFS	Craniofacial Surgery
FPS	Facial Plastic Surgery
HSP	Hand Surgery
PS	Plastic Surgery
PSI	Plastic Surgery – Integrated
PSP	Plastic Surgery within the Head & Neck
Preventive Medicine	
AM	Aerospace Medicine
CIM	Clinical Informatics
GPM	General Preventive Medicine
PTX	Medical Toxicology
OM	Occupational Medicine
PHP	Public Health & General Preventive Medicine
UM	Undersea & Hyperbaric Medicine
Psychiatry	
ADP	Addiction Psychiatry
BIN	Brain Injury Medicine
CHP	Child and Adolescent Psychiatry
PFP	Forensic Psychiatry
HPN	Hospice & Palliative Medicine
NUP	Neuropsychiatry
PPN	Pain Medicine
P	Psychiatry
PYA	Psychoanalysis
PYM	Psychosomatic Medicine
SMN	Sleep Medicine

Taxonomy Code	Physician Specialty
Radiology	
AR	Abdominal Radiology
CTR	Cardiothoracic Radiology
DR	Diagnostic Radiology
HPD	Hospice & Palliative Medicine
MDP	Medical Physics
MSR	Musculoskeletal Radiology
RNR	Neuroradiology
NR	Nuclear Radiology
PDR	Pediatric Radiology
RO	Radiation Oncology
RP	Radiological Physics
RR	Radiology
VIR	Vascular & Interventional Radiology
Surgery	
AS	Abdominal Surgery
ASO	Advanced Surgical Oncology
CRS	Colon & Rectal Surgery
CHS	Congenital Cardiac Surgery
CS	Cosmetic Surgery
CCS	Surgical Critical Care
DS	Dermatologic Surgery
GS	General Surgery
HS	Hand Surgery
HSS	Hand Surgery
HNS	Head & Neck Surgery
HPS	Hospice & Palliative Medicine
OMF	Oral & Maxillofacial Surgery
PCS	Pediatric Cardiothoracic Surgery
PDS	Pediatric Surgery
PRO	Proctology
TS	Thoracic Surgery
TSI	Thoracic Surgery - Integrated
TTS	Transplant Surgery
TRS	Trauma Surgery
VS	Vascular Surgery
VSI	Vascular Surgery- Integrated
Urology	
UPR	Female Pelvic Medicine and Reconstructive Surgery
UP	Pediatric Urology
U	Urology

Taxonomy Code	Physician Specialty
Other	
ADM	Addiction Medicine
PA	Clinical Pharmacology
EP	Epidemiology
HOS	Hospitalist
LM	Legal Medicine
MDM	Medical Management
NM	Nuclear Medicine
OMM	Osteopathic Manipulative Medicine
OS	Other Specialty
PMM	Pain Medicine
APM	Pain Medicine
PMN	Pain Medicine
PMP	Pain Medicine
PLM	Palliative Medicine
PHM	Pharmaceutical Medicine
PHL	Phlebology
SME	Sleep Medicine
US	Unspecified
Combined Residency Training Specialties	
EFM	Emergency Medicine/Family Medicine
FMP	Family Medicine/Preventive Medicine
MEM	Internal Medicine/Emergency Medicine
IEC	Internal Medicine/Emergency Medicine/Critical Care Medicine
IFP	Internal Medicine/Family Medicine
IMA	Internal Medicine/Anesthesiology
IMD	Internal Medicine/Dermatology
MDG	Internal Medicine/Medical Genetics
MN	Internal Medicine/Neurology
INM	Internal Medicine/Nuclear Medicine
MPD	Internal Medicine/Pediatrics
MPM	Internal Medicine/Physical Medicine and Rehabilitation
IPM	Internal Medicine/Preventive Medicine
MP	Internal Medicine/Psychiatry
NRN	Neurology/Diagnostic Radiology/Neuroradiology
NNM	Neurology/Nuclear Medicine
NPR	Neurology/Physical Medicine and Rehabilitation
PDN	Pediatrics/Anesthesiology
PDM	Pediatrics/Dermatology
EMP	Pediatrics/Emergency Medicine

Taxonomy Code	Physician Specialty
PMG	Pediatrics/Medical Genetics
CPP	Pediatrics/Psychiatry/Child and Adolescent Psychiatry
PPM	Pediatrics/Physical Medicine and Rehabilitation
FPP	Psychiatry/Family Medicine
PYN	Psychiatry/Neurology

Health Workforce Mapper Non-Physician Specialties

About the source, the CMS NPPES

The Centers for Medicare and Medicaid Services’ (CMS) National Plan and Provider Enumeration System (NPPES) assigns a National Provider Identifier Standard (NPI) number to healthcare providers for identification in HIPAA-compliant administrative and financial transactions. When applying for an NPI number, providers select a Health Care Provider Taxonomy code that best describes their specialization. NPPES data are updated on a monthly basis, but individual records are only updated when a provider logs onto the system and makes changes.

The Robert Graham Center completed the data processing for the CMS NPPES data and the AMA Health Workforce Mapper currently uses NPPES data accessed in January 2016. Data processing involved geocoding providers’ best available practice address by matching these addresses with a privately maintained and licensed address database. Once longitude and latitude location attributes were applied to the address data, they were joined to U.S. Census geography files for geographic boundary identifiers.

Non-Physician Specialty Groupings

Taxonomy Code	Non-Physician Specialty
APRN, Certified Clinical Nurse Specialist	
364S00000X	Clinical Nurse Specialist, General
364SA2100X	Acute Care
364SA2200X	Adult Health
364SC0200X	Critical Care Medicine
364SC1501X	Community Health/Public Health
364SC2300X	Chronic Care
364SE0003X	Emergency
364SE1400X	Ethics
364SF0001X	Family Health
364SG0600X	Gerontology
364SH0200X	Home Health
364SH1100X	Holistic
364SI0800X	Informatics
364SL0600X	Long-term Care
364SM0705X	Medical-Surgical
364SN0000X	Neonatal

Taxonomy Code	Non-Physician Specialty
364SN0800X	Neuroscience
364SP0200X	Pediatrics
364SP0807X	Psychiatric/Mental Health, Child & Adolescent
364SP0808X	Psychiatric/Mental Health
364SP0809X	Psychiatric/Mental Health, Adult
364SP0810X	Psychiatric/Mental Health, Child & Family
364SP0811X	Psychiatric/Mental Health, Chronically Ill
364SP0812X	Psychiatric/Mental Health, Community
364SP0813X	Psychiatric/Mental Health, Geropsychiatric
364SP1700X	Perinatal
364SP2800X	Perioperative
364SR0400X	Rehabilitation
364SS0200X	School
364ST0500X	Transplantation
364SW0102X	Women's Health
364SX0106X	Occupational Health
364SX0200X	Oncology
364SX0204X	Oncology, Pediatrics
APRN, Certified Nurse Practitioner	
363L00000X	Nurse Practitioner, General
363LA2100X	Acute Care
363LA2200X	Adult Health
363LC0200X	Critical Care Medicine
363LC1500X	Community Health
363LF0000X	Family
363LG0600X	Gerontology
363LN0000X	Neonatal
363LN0005X	Neonatal, Critical Care
363LP0200X	Pediatrics
363LP0222X	Pediatrics, Critical Care
363LP0808X	Psychiatric/Mental Health
363LP1700X	Perinatal
363LP2300X	Primary Care
363LS0200X	School
363LW0102X	Women's Health
363LX0001X	Obstetrics & Gynecology
363LX0106X	Occupational Health
Audiologist	
231H00000X	Audiologist, General
231HA2400X	Audiologist, Assistive Technology Practitioner
Chiropractic	

Taxonomy Code	Non-Physician Specialty
Certified Registered Nurse Anesthetist (CRNA)	
Chiropractic	
111N00000X	Chiropractor
111NI0013X	Independent Medical Examiner
111NI0900X	Internist
111NN0400X	Neurology
111NN1001X	Nutrition
111NP0017X	Pediatric Chiropractor
111NR0200X	Radiology
111NR0400X	Rehabilitation
111NS0005X	Sports Physician
111NT0100X	Thermography
111NX0100X	Occupational Medicine
111NX0800X	Orthopedic
Individual Certified Prosthetist-Orthotist	
222Z00000X	Orthotist
224P00000X	Prosthetist
Midwives	
367A00000X	Certified Nurse Midwife (CNM)
176B00000X	Midwife
175M00000X	Midwife, Lay
Occupational Therapist in Private Practice	
225X00000X	Occupational Therapist
225XE0001X	Environmental Modification
225XE1200X	Ergonomics
225XF0002X	Feeding, Eating & Swallowing
225XG0600X	Gerontology
225XH1200X	Hand
225XH1300X	Human Factors
225XL0004X	Low Vision
225XM0800X	Mental Health
225XN1300X	Neurorehabilitation
225XP0019X	Physical Rehabilitation
225XP0200X	Pediatrics
225XR0403X	Driving and Community Mobility
Optometry	
152W00000X	Optometrist
152WC0802X	Corneal and Contact Management
152WL0500X	Low Vision Rehabilitation
152WP0200X	Pediatrics
152WS0006X	Sports Vision

Taxonomy Code	Non-Physician Specialty
152WV0400X	Vision Therapy
152WX0102X	Occupational Vision
156FX1800X	Technician
Other Service Providers	
171000000X	Military Health Care Provider
171100000X	Acupuncturist
172V00000X	Community Health Worker
174H00000X	Health Educator
174N00000X	Lactation Consultant, Non-RN
175F00000X	Naturopath
175L00000X	Homeopath
Physical Therapist in Private Practice	
225100000X	Physical Therapist
2251C2600X	Cardiopulmonary
2251E1200X	Ergonomics
2251E1300X	Electrophysiology, Clinical
2251G0304X	Geriatrics
2251H1200X	Hand
2251H1300X	Human Factors
2251N0400X	Neurology
2251P0200X	Pediatrics
2251S0007X	Sports
2251X0800X	Orthopedic
Physician Assistant	
363A00000X	Physician Assistant, General
363AM0700X	Physician Assistant, Medical
363AS0400X	Physician Assistant, Surgical
367H00000X	Anesthesiology Assistant
Podiatry	
213E00000X	Podiatrist
213EG0000X	General Practice
213EP0504X	Public Medicine
213EP1101X	Primary Podiatric Medicine
213ER0200X	Radiology
213ES0000X	Sports Medicine
213ES0103X	Foot & Ankle Surgery
213ES0131X	Foot Surgery

Taxonomy Code	Non-Physician Specialty
Psychologist, Clinical	
103T00000X	Psychologist, General
103TA0400X	Addiction (Substance Abuse Disorder)
103TA0700X	Adult Development & Aging
103TB0200X	Cognitive & Behavioral
103TC0700X	Clinical
103TC0700X	Psychologist, Clinical, non-specific
103TC1900X	Counseling
103TC2200X	Clinical Child & Adolescent
103TE1000X	Educational
103TE1100X	Exercise & Sports
103TF0000X	Family
103TF0200X	Forensic
103TH0004X	Health
103TH0100X	Health Service
103TM1700X	Men & Masculinity
103TM1800X	Mental Retardation & Developmental Disabilities
103TP0016X	Prescribing (Medical)
103TP0814X	Psychoanalysis
103TP2700X	Psychotherapy
103TP2701X	Group Psychotherapy
103TR0400X	Rehabilitation
103TS0200X	School
103TW0100X	Women
Registered Dietitian or Nutrition Professional	
133V00000X	Dietician, Registered
133VN1004X	Dietician, Registered, Nutrition, Pediatric
133VN1005X	Dietician, Registered, Nutrition, Renal
133VN1006X	Dietician, Registered, Nutrition, Metabolic

Filter This Map

Physician Practice Type (PP) Filters (AMA, January, 2016)

Physicians self-report their type of present practice type in the Masterfile. The filter options for present practice type are direct patient care, resident, administration, medical teaching, medical research, non-patient care or no classification.

Physician Employment (PE) Filters (AMA, January 2016)

Physicians self-report their type of present employment in the Masterfile. The filter options for present employment are self-employed solo practice, two physician practice – full or part owner, other – patient care, locum tenens, group practice, HMO, medical school, non-government hospital, city/county/state government hospital, city/county/state other than hospital, federal government-hospital army, federal government-hospital navy, federal government-hospital air force, federal government-hospital (U.S. Public Health Service),

veterans affairs, other federal agency, other-non-patient care, and no classification. Over 200,000 physicians were designated as having “no classification” in the January 2016 Masterfile.

Population per provider filter (AMA, January 2016, and/or CMS NPPES January 2016; 2010 U.S. Census)

This filter displays the ratio of state or county population as reported by the 2010 U.S. Census divided by number of healthcare providers in the selected categories within the state or county.

Health Workforce Mapper Rollover Window and Data Table

Total providers (AMA Masterfile, January 2016, and/or CMS NPPES, January 2016, geocoded for the best available practice address and prepared by the Robert Graham Center)

Total number of providers for all physician and non-physician specialties selected at the state or county level.

Population per provider (AMA Masterfile, January 2016, and/or CMS NPPES, January 2016; 2010 U.S. Census, prepared by the Robert Graham Center)

Ratio of total number of providers for all physician and non-physician specialty selections within a state or county to state or county population as reported by the 2010 U.S. Census.

Population (2010) (2010 U.S. Census)

State or county population.

Change since 2000 (2010 U.S. Census and 2000 U.S. Census, prepared by Esri)

Difference between state or county population in 2000 and 2010.

Population Density (per sq mi) (2010 U.S. Census, prepared by Esri)

State or county population divided by area of state or county in square miles.

Percent Population over 65 (2010 U.S. Census, prepared by the Robert Graham Center)

Percentage of state or county population age 65 or older.

Percent Population under 18 (2010 U.S. Census, prepared by the Robert Graham Center)

Percentage of state or county population age 18 or younger.

Population Health Explorer

Population health data increasingly are being recognized as vital information to personal health. Neighborhood, socioeconomic and demographic characteristics play significant roles in influencing health outcomes. The Population Health Explorer has been added to the Health Workforce Mapper to help provide context to the communities in which their healthcare providers work.

The Population Health Explorer tool allows the user to do cold-spot analysis using potential indicators of health status to find expected high-need areas based on data for the total population. The user can add an indicator by clicking on its checkbox. As the user moves the circles on the slider, only those geographies with a rate between the two settings on the slider will remain colored. When more than one indicator is turned on, colors will blend where they overlap.

The list of indicators chosen come from a resource guide published by the Centers for Disease Control and Prevention (CDC). The CDC compiled the most frequently recommended health outcomes and determinants in the Community Health Assessment for Population Health Improvement. The Population Health Explorer tool includes the majority of the health outcome and health determinant metrics identified in the report at the county level. Other indicators are included in the Population Health Explorer for health system usage metrics such as hospital readmissions and emergency department visits.

Population Health Indicators and Benchmarks

Indicator	Source	National Benchmark
Mortality (per 100,000)		
All-Cause Mortality Rate (Age-Adjusted)	CDC Vital Statistics, 2008-2012; Health Indicators Warehouse	740.3 per 100,000 (2009-2013)
Heart Disease Mortality Rate (Age-Adjusted)	CDC Vital Statistics, 2008-2012; Health Indicators Warehouse	175 per 100,000 (2009-2013)
All Cancer Mortality Rate (Age-Adjusted)	National Cancer Institute, 2007-2011; State Cancer Profiles	173.8 per 100,000 (2007-2011)
Breast Cancer Mortality Rate (Age-Adjusted)	National Cancer Institute, 2007-2011; State Cancer Profiles	22.2 per 100,000 (2007-2011)
Colon Cancer Mortality Rate (Age-Adjusted)	National Cancer Institute, 2007-2011; State Cancer Profiles	15.9 per 100,000 (2007-2011)
Chronic Lower Respiratory Disease Mortality Rate (Age-Adjusted)	CDC Vital Statistics, 2008-2012; Health Indicators Warehouse	42.1 per 100,000 (2009-2013)
Injury-Related Mortality Rate (Age-Adjusted)	CDC Vital Statistics, 2008-2012; Health Indicators Warehouse	57.9 per 100,000 (2009-2013)
Stroke Mortality Rate (Age-Adjusted)	CDC Vital Statistics, 2008-2012; Health Indicators Warehouse	37.9 per 100,000 (2009-2013)
Motor Vehicle Mortality Rate (Age-Adjusted)	CDC Vital Statistics, 2008-2012; Health Indicators Warehouse	10.7 per 100,000 (2009-2013)
Homicide Mortality Rate (Age-Adjusted)	CDC Vital Statistics, 2008-2012; Health Indicators Warehouse	5.3 per 100,000 (2009-2013)
Suicide Mortality Rate (Age-Adjusted)	CDC Vital Statistics, 2008-2012; Health Indicators Warehouse	12.3 per 100,000 (2009-2013)

Indicator	Source	National Benchmark
Morbidity		
% Age-Adjusted Obesity	CDC Diabetes Surveillance, 2012	28.3% Ages 18 & older (2013)
% Age-Adjusted Diabetes Prevalence	CDC Diabetes Surveillance, 2012	8.5% Ages 18 & older (2011)
% Low Birth Weight	CDC NVSS, 2007-2011; Health Indicators Warehouse	8.1% (2009-2013)
Avoidable Hospital Utilization Rate (per 1,000 Medicare Beneficiaries)	CMS, 2013; Geographic Variation PUF	59.3 per 1,000 (2012)
All Cancer Incidence Rate (per 100,000)	National Cancer Institute, 2007-2011; State Cancer Profiles	459.8 per 100,000 (2007-2011)
Breast Cancer Incidence Rate (per 100,000)	National Cancer Institute, 2007-2011; State Cancer Profiles	122.7 per 100,000 (2007-2011)
Colon Cancer Incidence Rate (per 100,000)	National Cancer Institute, 2007-2011; State Cancer Profiles	43.3 per 100,000 (2007-2011)
% Fair or Poor Health	BRFSS, 2006-2012; RWJ County Health Rankings	12.4% (2006-2012)
Chlamydia Rate (per 100,000)	CDC STD Surveillance, 2012; Health Indicators Warehouse	453.3 per 100,000 (2012)
HIV Prevalence Rate (per 100,000)	National Center for HIV/AIDS, 2010; RWJ County Health Rankings	18.3 per 100,000 (2012)
Health Care (Access & Quality)		
% Uninsured (Ages 18-64)	SAHIE, 2013	20.4% (2013)
% Uninsured (Under Age 19)	SAHIE, 2013	7.5% (2013)
Primary Care Physician Rate (per 100,000)	HRSA ARF, 2012	73.8 per 100,000 (2012)
Dentist Rate (per 100,000)	HRSA ARF, 2012	60.1 per 100,000 (2012)
Hospital Readmission Rate	CMS, 2013; Geographic Variation PUF	18.6% (2012)
Emergency Department Visit Rate (per 1,000 Medicare Beneficiaries)	CMS, 2013; Geographic Variation PUF	658 per 1,000 (2012)
Health Behaviors		
% Smokers	BRFSS, 2006-2012; RWJ County Health Rankings	18.1% (2006-2012)
% Age-Adjusted Physical Inactivity	CDC Diabetes Surveillance, 2012	30% (2012)
% Lack of Fruits/Vegetables	BRFSS, 2005-2009; Health Indicators Warehouse	79.2% (Median)* (2005-2009)
% Excessive Alcohol Use	BRFSS, 2006-2012; RWJ County Health Rankings	15% (2006-2012)
% (Age 50 or older) Mammogram	BRFSS, 2006-2010; Health Indicators Warehouse	80.4% (Median)* (2006-2010)
% (Age 50 or older) Colon Cancer Screening	BRFSS, 2006-2010; Health Indicators Warehouse	57.8% (Median)* (2006-2010)

Indicator	Source	National Benchmark
Demographics		
Median Age	ACS, 2009-2013	21 (2009-2013)
% Age 65 or greater	ACS, 2009-2013	3 (2009-2013)
Age Dependency Ratio	ACS, 2009-2013	15 (2009-2013)
Male to Female Sex Ratio	ACS, 2009-2013	68 (2009-2013)
% White	ACS, 2009-2013	3 (2009-2013)
% Black	ACS, 2009-2013	0 (2009-2013)
% Hispanic	ACS, 2009-2013	0 (2009-2013)
% Asian	ACS, 2009-2013	0 (2009-2013)
% Native American/Alaska Native	ACS, 2009-2013	0 (2009-2013)
% Hawaiian or Pacific Islander	ACS, 2009-2013	0 (2009-2013)
Social Environment		
Median Household Income	ACS, 2009-2013	\$52,250 (2013)
% Below 50% Poverty	ACS, 2009-2013	7% (2009-2013)
% Below 100% Poverty	ACS, 2009-2013	15.9% (2009-2013)
% Below 200% Poverty	ACS, 2009-2013	35% (2009-2013)
% High School Graduates (Highest Level of Education)	ACS, 2009-2013	28.1% (2009-2013)
% High School Graduates or Higher	ACS, 2009-2013	57% (2009-2013)
% Bachelor's Degree or Higher	ACS, 2009-2013	28.8% (2009-2013)
% Unemployed	BLS, 2013	8.1% (2013)
% Disabled	ACS, 2009-2013	12.1% (2009-2013)
% Foreign Born	ACS, 2009-2013	12.9% (2009-2013)
% Language Other than English	ACS, 2009-2013	79.3% (2009-2013)
% Single Mother Households (with children under age 18)	ACS, 2009-2013	7.3% (2009-2013)
Total Crime Arrest Rate (per 100,000)	FBI Uniform Crime Report, 2012; ICPSR	3548.8 per 100,000 (2012)
Violent Crime Arrest Rate (per 100,000)	FBI Uniform Crime Report, 2012; ICPSR	387 per 100,000 (2010-2012)
Sexual Offenses Arrest Rate (per 100,000)	FBI Uniform Crime Report, 2012; ICPSR	19.8 per 100,000 (2012)
% Social/Emotional Support	BRFSS, 2006-2010	81.7% (Median)* (2006-2010)

Basemaps and Optional Layers

U.S. & Census Geography

States: This layer displays U.S. state boundaries.

Counties: This layer displays county and county equivalent boundaries in the 50 states, the District of Columbia, and Puerto Rico.

Population: State and county population data are from the 2010 U.S. Census.

Metro Areas: This layer displays the counties comprising a Metropolitan Statistical Area (MSA), as defined by the Office of Management and Budget (OMB). An MSA contains a core urban area with a population of 50,000 or more and consists of the county or counties containing the core urban area, as well as any adjacent counties that have a high degree of social and economic integration. The level of integration is measured by patterns of commuting to work. For more information on how MSAs are defined, as well as current definition files, see: www.census.gov/population/metro/.

ZIP Codes: This layer displays ZIP Code boundaries in the 50 states, the District of Columbia, and Puerto Rico. ZIP Codes are defined by the U.S. Postal Service.

ZCTAs: This layer displays ZIP Code Tabulation Areas (ZCTAs), which are generalized representations of US Postal Service ZIP Codes. Currently, each ZCTA is built by aggregating Census 2010 blocks, whose addresses use a given ZIP Code, into a ZCTA which gets that ZIP Code assigned as its ZCTA code. While in most instances the ZCTA code equals the ZIP Code for an area, not all ZIP Codes have their own ZCTA. For more information, see: www.census.gov/geo/reference/zctas.html.

Census Tracts (2010): This layer displays census tracts as defined by the 2010 U.S. Census in the 50 states, the District of Columbia, and Puerto Rico. Census tracts are small statistical subdivisions of a county defined for Census data collection.

Census Block Groups (2010): This layer displays census block groups as defined by the 2010 U.S. Census in the 50 states, the District of Columbia, and Puerto Rico. Block groups are clusters of blocks within census tracts.

Health Care Facilities

Hospitals (Data from CMS, processed and geocoded by, downloaded from, the HRSA Data Warehouse, updated quarterly): This layer displays the location of all U.S. hospitals.

Health Center Program Grantee Sites (Data from HRSA Data Warehouse, updated quarterly): This layer displays the locations of service access points/sites of the diverse public and non-profit organizations and programs that are Health Center Program (HCP) grantees. HCP grantees receive federal funding under Section 330 of the Public Health Service (PHS) Act, as amended by the Health Centers Consolidated Act of 1996 (P.L. 104-299) and the Safety Net Amendments of 2002. HCP grantee reported service access points/sites include Community Health Centers, Migrant Health Centers, Health Care for the Homeless Health Centers, and Primary Care Public Housing Health Centers.

HCP Look-Alikes (Data from HRSA Data Warehouse, updated quarterly): This layer displays the locations of service access points/sites of the diverse public and non-profit organizations and programs that are Health Center Program (HCP) look-alikes. HCP look alike service access points are health centers that operate and provide services consistent with all statutory, regulatory, and policy requirements that apply to Health Center Program grantees, but do not receive funding under section 330.

Rural Health Clinics (Data from CMS, processed and geocoded by, downloaded from, the HRSA Data Warehouse, updated quarterly): This layer displays the location of all active Rural Health Clinics, as defined by Title XVIII, Section 1861(aa) of the Social Security Act, regardless of whether they receive facility or point HPSA (health professional shortage area) designation. For more information, see: www.raconline.org/topics/rural-health-clinics.

Facility and Point HPSAs (Data from HRSA Data Warehouse, updated quarterly): This layer displays the locations of six additional types of federally-linked provider delivery sites which have HPSA (health professional shortage area) designation (HCP look-alikes, Rural Health Clinics, Alaskan Native Tribal Population Facilities, Indian Health Service Facilities, Native American Tribal Population Facilities and Comprehensive Health Centers).

Critical Access Hospital (Data from CMS, processed and geocoded by, downloaded from, the HRSA Data Warehouse, updated quarterly): This layer displays the locations of Critical Access Hospitals. According to CMS, “A Critical Access Hospital (CAH) is a hospital certified under a set of Medicare Conditions of Participation (CoP), which are structured differently than the acute care hospital CoP. Some of the requirements for CAH certification include having no more than 25 inpatient beds; maintaining an annual average length of stay of no more than 96 hours for acute inpatient care; offering 24-hour, 7-day-a-week emergency care; and being located in a rural area, at least a 35-mile drive away from any other hospital or CAH (fewer in some circumstances).”³

Health Policy

Primary Care HPSAs (Data from HRSA Data Warehouse, updated quarterly): This layer displays primary medical care Health Professional Shortage Areas (HPSAs), which may be designated as having a shortage of primary medical care, may be urban or rural areas, population groups, or medical or other public facilities. For more information, see: www.hrsa.gov/shortage/.

MUA/Ps (Data from HRSA Data Warehouse, updated quarterly): This layer displays Medically Underserved Areas/Populations (MUA/Ps), which may be a whole county or a group of contiguous counties, a group of county or minor civil divisions, a group of urban census tracts in which residents have a shortage of personal health services, or Exceptional/Governor designated. Medically Underserved Populations (MUPs) may include groups of persons who face economic, cultural or linguistic barriers to health care. For more information, see: www.hrsa.gov/shortage/mua/index.html.

Primary Care Service Areas (Dartmouth Atlas of Healthcare 2007): As defined by the Dartmouth Atlas of Healthcare, Primary Care Service Areas are aggregates of ZIP Codes reflecting Medicare patient travel to primary care providers.⁴

Hospital Referral Regions (Dartmouth Atlas of Healthcare 2010): As defined by the Dartmouth Atlas of Healthcare, Hospital Referral Regions “represent regional healthcare markets for tertiary medical care that generally requires the services of a major referral center.”⁵

113th Congressional District Boundaries (Esri): This layer displays United States House of Representatives district boundaries for the 113th Congress (2013-present), as well as the party of each sitting representative. In the traditional color scheme, red shading indicates a Republican representative and blue shading indicates a Democratic representative.

³ www.hrsa.gov/healthit/toolbox/RuralHealthITtoolbox/Introduction/critical.html

⁴ www.dartmouthatlas.org/data/region/

⁵ www.dartmouthatlas.org/data/region/

Appendix B: Glossary

Basemap

Basemaps are the underlying maps onto which data are displayed. Basemaps provide a variety of general geographic data such as natural features, road names, county names, and city names.

Diverging Color Scheme

In a diverging color scheme, two distinct gradations of color originate from a midpoint data value. Values less than the midpoint value are displayed with colors from one gradation, while values greater than the midpoint value are displayed with colors from the other gradation. This color scheme works well, for example, when mapping population change. One color gradation (such as shades of blue) can be used to represent positive population change, while colors from another gradation (such as shades of red) can be used to represent negative population change.

Equal Interval

The equal interval system of distribution classifies data being mapped into groups that have equal data ranges represented. Since data ranges for each group are equal, the number of values in each group can differ. For example, if you are mapping 20 values that range between 0 and 20 in four equal interval categories, the categories will be 0-5, 5-10, 10-15, and 15-20, regardless of the number of records in each category.

Facility and Point Health Professional Shortage Area (HPSA)

A facility HPSA designation, as defined by the Public Health Service Act, is given to FQHCs and RHCs that meet the requirement of providing access to care regardless of ability to pay. FQHC in this definition includes all types of FQHCs: Health Center Program (HCP) grantees, HCP look-alikes, and outpatient health programs/facilities operated by tribal organizations (under the Indian Self-Determination Act) or urban Indian organizations (under the Indian Health Care Improvement Act).

Point HPSAs are only applicable to Alaskan Native and Native American Tribal populations. The Federally Recognized Native American Tribes and Alaskan Natives receive automatic population HPSAs. These HPSAs are represented as a point which is placed at a provider location/ facility within the tribal area.

FIPS Code

Federal Information Processing Standards (FIPS) codes are unique identifiers assigned to geographic regions to ensure standardization of identification across the entire federal government.

Geographic Information System (GIS)

A geographic information system (GIS) integrates hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information. GIS allows visualization, understanding, questioning, and interpretation of data in many ways that reveal relationships, patterns, and trends in the form of maps, globes, reports, and charts. The AMA Health Workforce Mapper is an example of a geographic information system. For more information see: <http://www.esri.com/what-is-gis>.

Health Center Program (HCP) Sites

These are sites where services are provided by Health Center Program grantees or look-alikes.

Health Center Program (HCP) Grantee

An HCP grantee is a public or private non-profit health care organization that meets certain criteria under the Medicare and Medicaid Programs (respectively, Sections 1861(aa)(4) and 1905(l)(2)(B) of the Social Security Act and receives funds under the Health Center Program (Section 330 of the Public Health Service Act) (i.e., Community Health Centers, Migrant Health Centers, Healthcare for the Homeless Programs, and Public Housing Primary Care Programs). For more information on Health Center Program grantees see: <http://bphc.hrsa.gov/about/>. For a more detailed explanation of health center program terminology, see: http://bphc.hrsa.gov/technicalassistance/health_center_terminology_sheet.pdf.

Health Center Program (HCP) Look-Alike Sites

Health Center Program (HCP) look-alikes are health centers that operate and provide services consistent with all statutory, regulatory, and policy requirements that apply to Health Center Program grantees, but do not receive funding under section 330 of the Public Health Service (PHS) Act, as amended by the Health Centers Consolidated Act of 1996 (P.L. 104-299) and the Safety Net Amendments of 2002.

Hospital Referral Region (HRR)

According to the Dartmouth Atlas of Health Care, hospital referral regions represent regional health care markets for tertiary medical care that generally requires the services of a major referral center. The regions were defined by determining where patients were referred for major cardiovascular surgical procedures and for neurosurgery. Each hospital service area (HSA) was examined to determine where most of its residents went for these services. The result was the aggregation of the 3,436 hospital service areas into 306 HRRs. Each HRR has at least one city where both major cardiovascular surgical procedures and neurosurgery are performed. For more information, see: www.dartmouthatlas.org/data/region/.

Layer

In GIS, a layer is a visual representation of a dataset, generally rendered based upon attributes linked to geographically related records. For example, in the AMA Health Workforce Mapper, primary care physicians, roads, and states are different layers because they contain different types of geographic information.

Locum tenens

Locum tenens refers to a provider who works in a location for a temporary period of time, often to fill in for an absent physician or to provide extra staff to a practice during peak visit seasons. For more detailed information and the history of the locum tenens model of practice, see: www.locumtenens.com/about/locum-tenens.aspx.

Medically Underserved Area/Population (MUA/P)

A medically underserved area (MUA) may be a whole county or a group of contiguous counties; a group of county or civil divisions; or a group of urban census tracts that the Department of Health and Human Services (HHS) has designated as having a shortage of health services for residents. Designations are based on the qualifications outlined in the Index of Medical Underservice (IMU), published in the Federal Register on October 15, 1976. A medically underserved population (MUP) may include groups of persons who face economic, cultural or linguistic barriers to health care. Designations are also based on the qualifications outlined in the Index of Medical Underservice (IMU), and exceptional MUP designations are based on the provisions of Public Law 99-280, enacted in 1986. For more information, see: www.hrsa.gov/shortage/mua/.

Metro Area

Metro areas in the AMA Health Workforce Mapper correspond to current metropolitan statistical areas (MSAs), which are geographic entities defined by the Office of Management and Budget (OMB) and used by federal statistical agencies including the Census Bureau for the collection, tabulation and analysis of statistics. An MSA contains a core urban area with a population of 50,000 or more and consists of the county or counties containing the core urban area, as well as any adjacent counties that have a high degree of social and economic integration. The level of integration is measured by patterns of commuting to work. For more information on how MSAs are defined, as well as current definition files, see: www.census.gov/population/metro/.

Natural Breaks

Natural breaks distribution classifies data based on natural groupings inherent in the data. Class breaks are identified that best group similar values and that maximize the differences between classes. For example, if a user is mapping 30 states, 15 states with 0-1 values, 10 states with 16-18 values, and 5 state with 24-29 values, the "best" ranges are 0-1, 16-18, 24-29.

Primary Care Health Professional Shortage Areas (HPSAs)

Primary Care HPSAs are areas that have been designated as having a shortage of primary care providers. They must represent a rational service area for the delivery of primary medical care services, have high population to provider ratios and demonstrate that primary care providers in contiguous areas are over utilized, excessively distant, or inaccessible to the population under consideration. For more information see: <http://bhpr.hrsa.gov/shortage/hpsas/index.html>

Primary Care Service Areas (PCSAs)

According to the Dartmouth Atlas of Health Care, "Primary Care Service Areas (PCSAs) are the first national database of primary care resources and utilization for small areas. The current version of PCSAs is based on 2010 US Census Tracts to reflect Medicare patient primary care utilization. These geographic markets of primary care are linked to hundreds of measures relevant to improving the availability of primary care services." See <http://www.dartmouthatlas.org/keyissues/issue.aspx?con=4623> for more information.

Qualitative Color Scheme

In a qualitative color scheme, unique colors correspond to unique variables being mapped. This type of color scheme is best for variables that have no sequential or quantitative relationship, such as a map displaying the most common surname in each state. Each surname would have a unique color with no quantitative relation to the other colors on the map.

Quantile

The quantile system of distribution classifies the data being mapped into groups that contain the same number of values regardless of the distribution of the data. For example, if a user is mapping 20 records in four quantiles, there will most likely be five records in each category.

Quantitative Color Scheme

In a quantitative color scheme, a single gradation of colors corresponds to a sequential change in the values being mapped. For instance, if lighter colors correspond to lower values, darker colors correspond to higher values.

Rural Health Clinic (RHC)

The Rural Health Clinics (RHC) program was designed to increase access to primary care services for Medicare and Medicaid patients living in rural areas. RHCs can be public, private, or non-profit entities. RHCs must be located in underserved rural areas, as designated by HRSA, and must employ midlevel practitioners (i.e., physician assistants or nurse practitioners) alongside physicians as part of a team-based approach to patient care. For more information and a listing of RHCs from the Centers for Medicare and Medicaid Services, see: <https://www.ruralhealthinfo.org/topics/rural-health-clinics>.

Thematic representation

This type of representation shows all of the selected data for the area the user is mapping. The respective units of geography will be colored in gradations of colors depending on the color scheme and palette selected by the user.

Threshold representation

This type of representation allows the user to set a lower limit for a specified set of data and view only the regions that exceed that limit. Regions below the threshold value will appear in white on the AMA Health Workforce Mapper, indicating that there are no providers who meet the criteria in that region.

ZIP Code Tabulation Areas (ZCTAs)

ZIP Code Tabulation Areas (ZCTAs) are generalized representations of US Postal Service ZIP Codes. Currently, each ZCTA is built by aggregating Census 2010 blocks, whose addresses use a given ZIP Code, into a ZCTA which gets that ZIP Code assigned as its ZCTA code. While in most instances the ZCTA code equals the ZIP Code for an area, not all ZIP Codes have their own ZCTA. For more information, see: www.census.gov/geo/reference/zctas.html.

Appendix C: Frequently Asked Questions (FAQ)

Last updated May 2016

How do I select a specific state or metro area?

In the AMA Health Workforce Mapper, on the right hand side of the map, there is a prompt that says “Limit to state or metro area”. Click on the “Select State” to expand the state drop-down menu, and select the state you wish to view. Once you have selected a state, you can further select a metro area within that state from the “Select Metro Area” drop-down menu. The counties within that metro area will then be displayed on the map.

How do I clear what is on my map?

To clear the data displayed on the map, click on the reset button (the button with the circular arrow) located in the upper-right hand corner above the map. This will erase everything that is on the map and display what you saw when first loading the map.

How do I zoom in and out?

You can zoom in or out on the map using the zoom bar in the top left-hand corner of the map. The nubs to the left of the zoom bar also allow you to select specific zoom levels for the continental United States, Alaska, Hawaii and more. You can also zoom in by holding the shift key and creating a rectangle by left-clicking and dragging your mouse.

How do I print the map on the screen?

A map can be printed directly from the mapping screen by clicking the “Print” button above the map directly left of the reset button. The map and legend will be included in your printed document.

What does it mean when a state or county shows up as white?

White represents no providers in the selected groups in that state or county.

How do I find a city or street address on the map?

Enter the city or street address in the white box located above the map to the left of the “Draw” button. When you have entered a location, press the enter key on your keyboard and the map will zoom directly to that location.

How do I compare two data sets?

You can view two sets of data simultaneously by clicking on the link that says “Show comparison (side-by-side) map” at the bottom of the AMA Health Workforce Mapper tool. This will create two different maps on the right and left sides of the mapping window. You can choose display options for the map on the left side through the primary map section of the AMA Health Workforce Mapper tool, and choose display options for the map on the right side through the secondary map section of the AMA Health Workforce Mapper tool.

I would like to make some data layers more visible, and others less visible. How do I do that?

When using a Geographic Information System, the layer that is most recently added is displayed on top of all the other layers. In the AMA Health Workforce Mapper, you can modify the order in which layers are displayed by dragging layers up or down in the Layer Controls tool in the Tools Accordion. The list of layers in the Layer Controls tool mimics the order the layers are drawn on the map- top of the list is the top-most layer and bottom of the list is the bottom-most layer. Click on the double-headed arrow for the layer you want to move and then drag it to the position in which you would like it to display on the map. You can also adjust the transparency of the layers in Layers Control by sliding the circle along the bar beside the double-headed arrow.

What happens when I uncheck the toggle button for show population per provider ratio?

By default, when you select physician or non-physician layers, the option to “Map Population per Provider Ratio” is selected. If you uncheck the toggle button for map population per provider ratio, the total providers for the state or county are mapped. Be careful when mapping total providers, because larger states or counties tend to have more providers than smaller counties. Compared to mapping total providers, mapping population per provider ratio tells you more about the availability of providers relative to the population size.

How do I remove a layer that I added?

You can remove layers by clicking on checked toggle buttons within the Health Workforce Mapper, Population Health Explorer, Basemaps and Optional Layers, or Layer Controls tools.

Why can't I see the physician point data when I zoom to a city?

The point level physician data are only visible to the fourth zoom level from the top of the zoom bar. Once you zoom to the third zoom level or higher, the points will disappear in order to protect the privacy of provider addresses.

I want to see place names on my map. Why can't I?

You can view place names on your map by selecting a new basemap under the Basemaps and Optional Layers tab. The “Street,” “Terrain with Labels,” and “Canvas with Labels” options all include city names. Other basemaps include information such as topography, streets and bodies of water. You may need to adjust the transparency of another layer in order to see the place names. If so, please use the Layer Controls tool to adjust transparency.

What does threshold mean and how do I use it?

The threshold function allows you to set a lower limit for a specified set of data and view only the regions that exceed that limit. You can use this function by selecting “Threshold” in the Legend, below the map, then either typing in your threshold value or by sliding the circle along the slider bar until you reach the desired value.

What is the difference between quantile, equal interval and natural break distribution?

If you choose to map your data using thematic representation (which shows all of the selected data for the area you are mapping), you have the option to choose either the quantile, equal interval or natural breaks distribution method for your data. Quantile distribution classifies data values into equal groups regardless of the distribution of the data. In the AMA Health Workforce Mapper, the data are either the population per provider ratio or the total number of providers in each geography (county or state); and the groups (or classes)

are the different color shadings that are displayed on the map. For example, if you are mapping the total number of providers for all 88 counties in Ohio in four quantiles, there should be 22 counties in each quantile. However, there may be more than or fewer than 22 counties in each quantile if there are multiple counties that have the same number of providers. This method helps to find the median (or middle) value within the data.

Equal interval distribution sets the groups of values in the data at equal intervals regardless of the distribution of the data. Let's say you are mapping the total number of providers by county in Ohio, and the number of providers in each county is between 1 and 100. If you are using an equal interval distribution with four groups, all the counties with 1-25 providers will be in the lowest group (lightest color on the map), all the counties with 26-50 providers will be in the second group, all the counties with 51-75 providers will be in the third group, and all the counties with 76-100 providers will be in the fourth and highest group (darkest color on the map). Similarly, if you were mapping five groups for this example, the ranges for the groups would be 1-20, 21-40, 41-60, 61-80, and 81-100. If you have an evenly distributed data set, meaning the data fall pretty evenly along the entire range of the data, not clustered at any point along that range, equal interval distribution may be a good way to classify your data.

Natural breaks distribution classifies data based on natural groupings inherent in the data. Class breaks are identified that best group similar values and that maximize the differences between classes. For example, if a user is mapping 30 states, 15 states with 0-1 values, 10 states with 16-18 values, and 5 states with 24-29 values, the "best" ranges are 0-1, 16-18, 24-29

What is the difference between thematic and threshold data representation?

Thematic representation shows all of the selected data for the area you are mapping. Threshold representation allows you to set a lower limit for a specified set of data and view only the regions that exceed that limit. Regions below the threshold value will appear in white in the AMA Health Workforce Mapper, indicating that there are no providers who meet the criteria in that region.

Where do I find what the colors and symbols on the map represent?

You can find what the map data represent in the Legend on the bottom left-hand corner of the screen. The Legend will be included when you print your map.

What is the source of the population data?

The AMA Health Workforce Mapper currently uses population data from the 2010 U.S. Census.

What is the source of the physician data?

The AMA Health Workforce Mapper currently uses American Medical Association Masterfile data accessed in January 2016.

Why can't I access the data tab?

The data tab that is located in the upper left hand corner of the mapper, next to the "Map" tab is only accessible to the American Medical Association and its authorized users.

What is the source of the non-physician data?

The AMA Health Workforce Mapper currently uses Centers for Medicare and Medicaid Services' National Plan and Provider Enumeration System (NPPES) data accessed in January, 2016.

What is the National Plan and Provider Enumeration System (NPPES)?

The National Plan and Provider Enumeration System (NPPES) is the system devised by the Centers for Medicare and Medicaid (CMS) to assign standard unique identifiers to health care providers and health plans, as mandated by the Health Insurance Portability and Accountability Act (HIPAA) in 1996. These identifiers are assigned in order to improve the efficiency of the electronic transmission of health information.

Can I view the data in a table rather than just as rollovers?

To view all data for your selection, select the Data tab at the top left-hand corner above the map. In Data View, you can view a table of all the data attributes for the provider types that you have selected and all the records for the highlighted area on your map. The data table is only accessible to the American Medical Association and its authorized users.

What is the source of the Population Health Explorer data?

The Population Health Explorer currently uses data from a variety of sources. This includes CDC Vital Statistics, National Cancer Institute, CDC Diabetes Surveillance, National Vital Statistics System, Centers for Medicare and Medicaid, Behavioral Risk Factor Surveillance System, CDC STD Surveillance, National Center for HIV/AIDS, Small Area Health Insurance Estimates, Area Health Resource File, American Community Survey, Bureau of Labor Statistics, and the FBI Uniform Crime Report. More information can be found in the Data Definitions document found where these FAQs were accessed.

What does the slider do in the Population Health Explorer?

The slider is used to set a benchmark for the selected indicator. There are two thresholds for each indicator. One threshold starts out set to the national benchmark with the other at the maximum or minimum of the dataset. The range between these two settings includes those values that are worse than the national benchmark. The vertical lines on the slider represent the high and low for the specific indicator for the current geography selected.

What does the color gradient the Population Health Explorer represent?

When one indicator is selected and a range is set, the counties that fall into the specified range for that indicator remain light green. As indicators are added and their ranges are set, counties that fall into the range for multiple indicators will become a darker shade of green. In other words, the darker the green, the more times that county falls into the ranges of selected indicators.

Can I add additional information or drawings to the map?

Yes; click the 'Draw' button at the top right of the map area to add drawings, points, lines, shapes, and text.

Can I change the font or the font size in the label I have added to the map?

No, you cannot. Only one font and font size is available.

Can I change the width of lines I have drawn on the map?

No, you cannot. Only one line width is available.

What is a ZCTA?

ZIP Code Tabulation Areas (ZCTAs) are generalized representations of US Postal Service ZIP Codes. Currently, each ZCTA is built by aggregating Census 2010 blocks, whose addresses use a given ZIP Code, into a ZCTA which gets that ZIP Code assigned as its ZCTA code. While in most instances the ZCTA code equals the ZIP Code for an area, not all ZIP Codes have their own ZCTA. For more information, see: www.census.gov/geo/reference/zctas.html.

Can I view data in different geographic areas at the same time?

No, you can only view one geographic area at a time. The side-by-side comparison tool is used to create two maps within the same mapping window that are geographically linked, which means that both maps will always show the same geographic area at the same zoom level.

What does locum tenens mean?

Locum tenens refers to a provider who works in a location for a temporary period of time, often to fill in for an absent physician or to provide extra staff to a practice during peak visit seasons. For more detailed information and the history of the locum tenens model of practice, see: www.locumtenens.com/about/locum-tenens.aspx.

How do I compare physician data to non-physician data?

Physician data can be compared to non-physician data in two ways. First, you can turn on the point locations of physicians and non-physicians by selecting specialties and then selecting the “show provider locations” button above the specialty boxes. That will turn on circles for the physicians and triangles for the non-physicians. Second, at the bottom of the Health Workforce Mapper tools accordion, you can click on the link that says “show comparison (side-by-side) map” This link will allow you to select additional specialties and display them in a new map window beside your primary map window at provider to population ratios, counts, or show point locations as well.