

How to Use the AFFH Data and Mapping Tool for Fair Housing Planning

This tutorial video describes how HUD grantees and public housing authorities can use the AFFH Data and Mapping Tool, also known as the AFFH-T, for Fair Housing Planning.

The AFFH-T was developed by the US Department of Housing and Urban Development with the goal of supporting jurisdictions and public housing authorities in their fair housing planning processes. The tool is available at no cost and is accessible to the general public, so the AFFH-T can also be used by anyone interested in better understanding fair housing-related conditions.

The AFFH-T reflects HUD's commitment to provide program participants with data to assist in conducting their fair housing planning process and to aid them in making informed choices that ultimately lead to meaningful actions that fulfill the obligation to affirmatively further fair housing.

In this video, you will learn:

How to use the AFFH-T Data and Mapping Tool – an online interface that contains several powerful tools for analysis of fair housing issues; how to use the AFFH-T Raw Data; and lastly, how both of these tools can be employed in fair housing planning by looking at two completed fair housing planning efforts that used these tools in different ways. This video consists of two parts – one for the tool and one for the raw data, with a real-world fair housing planning effort featured as a case study for each one.

Part 1: Using the AFFH-T Data and Mapping Tool

The AFFH-T Data and Mapping Tool is the interactive online interface HUD created to assist jurisdictions in fair housing planning. The tool includes both tabular data (meaning data in table form), which provides specific measures, values, or index scores by protected class group, and a series of maps and powerful tools that reveal patterns and relationships that might not be evident from tabular data alone. The data are specific to local jurisdictions and regions and provide an excellent starting point for fair housing planning. The tool is free and publicly accessible.

The tool is a valuable addition to HUD's other tools and guidance on fair housing planning because it enables standardization and transparency for fair housing planning across grantees and public housing authorities – it provides a common dataset and visualization approach to complement the Assessment of Fair Housing framework.

In addition, because the tool presents a wide range of fair housing data and maps and is usable by those with little-to-no GIS experience, it provides both a way for members of the general public to undertake their own analyses of fair housing issues (potentially better enabling them to participate in fair housing planning processes). It also enables grantees and public housing authorities to assess a wide range of fair housing issues without the need for robust in-house GIS capacity or a large consulting budget. While supplementary information, including local data and knowledge, will still be needed to adequately assess fair housing conditions, the AFFH-T provides an excellent starting point.

To provide a more intuitive starting point for working with the AFFH-T, it is also helpful to briefly orient to the assessment of fair housing framework. This includes:

- A demographic summary
- An analysis of Segregation and Integration

- An analysis of racially or ethnically concentrated areas of poverty, or RECAPs
- An analysis of Disparities in Access to Opportunity, covering:
 - Education
 - Employment
 - Transportation
 - Low poverty exposure
 - Environmentally healthy neighborhood and
 - Patterns in disparities to access to opportunity
- An analysis of Disproportionate Housing Needs
- An analysis of Publicly-supported Housing
- An analysis of Disability and Access, and
- Fair Housing Enforcement, Outreach Capacity, and Resources Analysis.

Together, these topics make up the Analysis of Fair Housing Issues component of an assessment of fair housing. The AFFH-T provides a starting point for assessing each of these issues with the exception of fair housing enforcement, outreach capacity and resources.

To access the tool, visit hud.gov/AFFH and scroll down to the AFFH Data and Mapping Tool. You'll notice there is also a user guide just below this link that provides detailed information about how to use the tool and can be a helpful complementary resource to this video.

Or you can also access the tool directly at egis.hud.gov/affht.

When you first access the AFFH-T, a dialogue box appears that asks you to select the participant type and area you wish to analyze. First, select a State or territory, and then select a jurisdiction.

Once you have selected the jurisdiction, you can then choose to begin your analysis at the level of a jurisdiction or a region. Selecting "jurisdiction" will limit the map that displays to the boundaries of the selected jurisdiction, while selecting "region" will display a map that includes the Core Based Statistical Area, or CBSA, which is the region within which the jurisdiction is located. If the regional view is selected, the boundaries of the jurisdiction will still appear within the larger boundaries of the region.

For now, let's select Auburn, Alabama and view the jurisdiction map. When you click the "Select a Map" button you see a list of maps to choose from to begin the analysis. The AFFH-T provides maps related to a number of demographic characteristics, patterns of segregation and integration, racially or ethnically concentrated areas of poverty, the locations of publicly supported housing, disproportionate housing needs, and the distribution of important opportunity indicators, such as low-poverty areas and access to proficient schools, transit, and employment. The information captured by these maps aligns with key questions in the analysis framework for the assessment of fair housing.

For now, let's begin with Map 2, race and ethnicity trends, which is a demographic dot density map to explore the mapping and data tool's features. And we'll choose 2010 as our year to display for now. After selecting a map, the AFFH-T interface will load the selected map.

In the center of the screen you can see the map we selected, including the boundaries of the jurisdiction. Around the edges of the map there are a number of features to help you understand and analyze the content of the map. Let's walk through each of the features, beginning in the top left corner of the AFFH-T.

On the left side of the interface, are two buttons for zooming in and out on the map. The button with a plus symbol is for zooming in. The button with a minus symbol is for zooming out. Alternately, to zoom in on a particular area of the map, hold down the shift key on your keyboard, and use your mouse to select the area you'd like to zoom in on.

Another option is to use the wheel of your mouse. To pan, click and drag anywhere on the map.

Below those is a speaker icon, which can be toggled to control whether the interface makes a dinging sound when the map is done loading.

Just above those are drop-down menus to change the map's variation and theme. These may or may not be available depending on which map you selected in the initial dialog box. In this case, since we choose Map 2, race and ethnicity trends, we have the option of changing the variation to select another year of data to display.

At the bottom left of the screen is a toggle button to switch between viewing the jurisdiction and the region.

Clicking the button with the three lines at the top left will reveal a menu with a few additional options. The first allows selection of the map's background from a number of base map options. A base map contains general reference information such as streets and place names that orient the user to the map. Note that the base map provides more detail as the user zooms in further. Which base map you use is partly a matter of personal preference, but you may find certain base maps are more helpful than others for seeing certain patterns or components within the maps. So this is not only an aesthetic choice. For example: It may be useful to examine a dot density map using the Dark Gray Canvas background so that the dots appear more vibrantly. Census tract boundaries are easier to see in the Oceans background.

The Streets map adds labels to roads and neighborhoods, and displays the size and location of physical structures, including houses, businesses, and schools; this can be particularly useful when trying to orient yourself to a particular geography. The Topographic map displays physical characteristics of land in a jurisdiction, which may help you understand land development patterns.

The AFFH Maps button, which is the second button, allows you to easily switch to a different jurisdiction or a new map for the current jurisdiction. Alternately, you can choose the "Select a new grantee" button at the bottom of the dialogue box to select a new jurisdiction or region to map.

The data version will change which vintage of the AFFH-T dataset you are viewing (currently we're looking at version 6).

Export tables will allow you to export one or more summary tables for the selected jurisdiction and region. Similar to maps, the tables include data on a jurisdiction or region's demographics, publicly-supported housing, and key opportunity indicators. In fact, the maps and tables are based on the same underlying data – thus the AFFH-T provides multiple ways to explore and analyze HUD-provided data to assess fair housing issues.

You can access all the tabular data for a jurisdiction or region regardless of which map you are currently working in; that is, you do not need to be working in the map for Disability Type, to access the tabular data on disability. You have the option to download one table at a time or you can download all tables at once by selecting the “All Table” option.

After generating, the table file can be downloaded and opened in Excel. Each table contains a specific set of information relevant to answering a different question related to fair housing planning. For example, Table 2 presents information about demographic trends to show how the population is changing over time by protected class status.

The print button will allow you to create a polished image of your map that you can print to an image file or pdf file for use in fair housing planning discussions or documents.

Finally, the last button opens the User Guide.

There is one additional tool from this menu, which only shows up in certain maps. If we switch to the publicly supported housing map and open the menu again, we now see the Query Tool. Running this tool will generate a customizable analysis of the relationship between the demographics of people living in federally assisted housing and those living in the surrounding census tracts. This appears as a table at the bottom of the screen and can be exported to excel for further analysis or incorporation into fair housing planning processes.

On the right side of the map interface are several features that provide information about the currently displayed map or allow you to manipulate the display options for the map. The sidebar can be opened and closed by selecting the icon at the top right corner of the window. This menu has three tabs.

The first tab displays basic information about the map – the map name and number, the information displayed, the jurisdiction and region, and the dataset version. The second tab shows a legend for the information displayed on the map, including all boundaries and points. This indicates the icons, classifications, and colors for each selected map layer. In our current map view, for example, the legend indicates that public housing sites are displayed as purple or light blue circles while project-based Section 8 sites are displayed in orange.

Demographic information in the AFFH-T is typically displayed as dot density maps with a default setting of 1 dot being equal to 75 people, though this can be changed as we’ll see shortly. Note that regardless of which dot value you choose, the dots do not reflect the exact location of the displayed variable, but rather are plotted randomly within a tract.

Finally, the TOC tab, short for table of contents, allows for customization of the map, including: using the checkboxes to click on and off the layers; changing the transparency of the layers using the slider; changing the value and dot sizes for dot density maps; using the info icons to display more information about the data layer; and finally, for certain layers, opening a tabular view of the data, which we’ll talk about more shortly.

Regardless of which maps you are viewing, there will always be two layers available to assist with your fair housing analysis: census tracts and racially or ethnically concentrated areas of poverty. These can be turned on or off and their opaqueness adjusted.

For your analysis, the census tract layer may be helpful in identifying boundaries of particular neighborhoods or aligning HUD-provided data with other sources of tract-level data available through

local data or local knowledge. Analysis of and racially or ethnically concentrated areas of poverty is a key component of the fair housing analysis and you will use it throughout an AFH or AI.

The tabular view is a very helpful feature, as it allows for sorting geographies or public housing developments by different characteristics and selecting these from the table to identify where they are in the map.

One final feature of the map interface is the ability to click on an area or point to display more information about it. This can be useful to do exploratory analysis and understand some patterns without having to toggle back and forth between maps as frequently.

Part I Case Study: Burlington, Vermont

Now that we've seen what the AFFH-T Data and Mapping Tool is capable of, let's take a look at a successful use of this tool in the completion of the joint Assessment of Fair Housing by the City of Burlington, Vermont along with both the Burlington and Winooski Housing Authorities. The final AFH document is available from the City of Burlington's website. In addition to utilizing the AFFH-T in the planning process, the City's fair housing page also encourages community members to use the AFFH-T to better understand the fair housing challenges in the region.

The city and housing authorities utilized data from HUD's AFFH-T in a number of ways throughout its analysis of fair housing issues. First, many of HUD's preconstructed tables that are downloadable from the mapping interface are used directly in the document and are a main source of information for the interpretation and analysis.

For example, this table showing the top 10 countries of origin for residents born outside the U.S. for both the jurisdiction and region. Combined with some additional more recent national data collected from the 2011 to 2015 ACS and some local knowledge about historical settlement patterns of different populations over time, HUD's data provided a helpful and ready-to-use starting point for analysis.

Similarly, many of the default maps generated from the AFFH-T Data and Mapping tool were able to be used directly in the analysis. For example, this map shows HUD's job proximity index to inform the analysis of disparities in access to opportunity. However, in some cases, the joint AFH team used simple and readily-available tools to add value to the AFFH-T data. For example, here is the default racial and ethnic dissimilarity trends table, which is Table 3 in HUD's preconstructed tables.

In addition to including the table itself, the joint AFH team also visualized this information in excel to make the trends more apparent for analysis and discussion. The chart on the left shows the racial/ethnic dissimilarity trends for the City of Burlington, while the chart on the right shows the same trends for the region. The differences in the change in the patterns is clearer in these visualizations than in the table alone.

Finally, the joint AFH team realized in some cases that the default maps from the AFFH-T did not always convey the information in a clear way, as highlighted in the text above this map of population by race and ethnicity demonstrates. To address this, the joint AFH team used the tools built into the AFFH-T table of contents to modify the default map display and provide a more helpful picture of the geographic distribution of protected class status.

While this discussion focused specifically on the use of AFFH-T tables and maps, Burlington's AFH includes a wide range of additional local and national data to complement the data provided by HUD and improve the quality of the resulting Assessment of Fair Housing.

Part II: Using the AFFH-T Raw Data

The AFFH-T Raw Data is another way to use the AFFH-T. This data contains all of the information presented in the Data and Mapping Tool, along with many additional variables. The dataset is not specific to a jurisdiction or public housing authority, and instead has data for all areas nationwide that are covered by the AFFH-T.

The biggest advantage of working with the Raw data is it provides greater flexibility. For example, you can undertake an analysis of custom neighborhood boundaries using the RAW data in a way that would be impossible in the online mapping tool. Unfortunately, this flexibility comes with greater dataset size and complexity that means users will need more capacity for data analysis and GIS in order to use it effectively.

To access the raw data and documentation, visit hud.gov/AFFH and scroll down to the AFFH-T section. There you will find a series of links related to the AFFH-T. First, the Data Documentation, which describes the methods used to generate the AFFH-T Dataset. HUD has published multiple updates to the AFFH-T dataset but makes the previous versions available as well. The highest number corresponds to the most recent dataset. Note that a more specific data dictionary is included in the download, so this data documentation focuses more on methods than field definition.

Second is a set of known issues from earlier versions of the data that in most cases were corrected in subsequent version releases. Last is the link to download the raw data itself. The download is contained in a zipped file archive, so once downloaded, the raw data will need to be extracted from this archive. If you have trouble doing this using the built-in extraction tools in your operating system, you can try using a third-party alternative.

Once extracted, you will see a set of files consisting of excel workbooks and comma separated values. Generally, the AFFH-T raw dataset is broken into files associated with geographic units of analysis and/or type of housing program. For example, there is a file for block group-level data, another file for census tract data, another for county-level data, and so on. Note that not all data are available at all geographic levels, so you will need to understand which tables contain which variables of interest.

Most fair housing planning processes will make use of data contained in multiple tables but would not need to use all tables. If you are using the raw data for the first time, the Public Use Data Dictionary file is a great place to start. This file presents descriptive names for every field in every table. Each table is represented as a separate worksheet in this file and each variable or field is listed as a row with the description and data type listed in the additional columns. Thus, it is an efficient way to orient yourself to the raw data, see what information is available and how it is organized.

Once you have located the file and information you need, you can open the relevant file and start working with the data. This image shows the information in the county-level file, which has 3,294 rows (one for each county in the U.S.) and 546 columns. The census tract file contains 74,001 rows and 312 columns. In other words, these are large datasets and can be cumbersome to work with. A first step is generally to narrow down the set of information based on the geographies you are analyzing. But even this can be a significant undertaking, as you will need to identify each and every census tract, block

group, county, and so forth that are relevant to your analysis and join each to the corresponding dataset in order to filter it. This can be done in a number of ways, but the size of the datasets generally prohibits manual selection.

One common use case for working with the raw data is to be able to combine census tracts and/or block groups and aggregate point data into custom geographies, such as neighborhood units used in local planning and political processes. In order to do this, you will need to identify or create what is known as a geographic crosswalk between your geographies of interest and the standard census geographies.

This example shows a simplified version of what this could look like with a set of census tracts being related to named neighborhoods that do not have perfect geographic correspondence. Some method of estimation would be needed to determine the percent in census tract values not equal to 100. If your jurisdiction regularly uses geographies like neighborhoods for administrative or planning purposes, a local agency may have already created a crosswalk like this in order to create similar estimates.

A second common use case for this type of data is use in custom visualizations such as maps that are created in professional GIS software instead of via the AFFH-T Mapping tool. This allows for greater customization of the visualizations but requires additional time and GIS capacity to do effectively. We will now turn to an example of a jurisdiction that has done exactly this.

Part II Case Study: Chicago, Illinois.

The City of Chicago recently completed its Chicago Blueprint for Fair Housing, the Chicago portion of a regional fair housing planning process based on the AFFH process involving 13 jurisdictions and 6 public housing authorities in Cook County, Illinois. Unlike Burlington's process, which utilized many maps and tables created directly from the AFFH-T data and mapping tool, Chicago's process relied more heavily on the use of the AFFH-T raw data.

This was done for a few reasons. First, the City of Chicago and the Chicago Housing Authority wanted to utilize local planning geographies called "Chicago Community Areas," for which geographic crosswalks had already been created. Using HUD's RAW data and this geographic crosswalk allowed the City to summarize fair housing-related information by a geography that was most relevant to other planning activities and public recognition of neighborhood areas.

Second, because the process involved a wide range of other local data that could not be uploaded to the AFFH-T tool and visualized, using the raw data allowed the city to achieve a consistent design approach between both federal and most local data sources. This improves legibility and facilitates interpretation.

The two maps on the left show % foreign born and HUD's labor market engagement index, both variables used directly from the AFFH-T raw data. The map on the right is from a local data source but has a consistent design approach.

Lastly, given that a total of 19 different jurisdictions and housing authorities were undertaking the process together but each needed a separate analysis of their own conditions, there were efficiency gains in programmatically summarizing and mapping data, rather than manually creating maps and tables for each entity separately through HUD's tool. This also enabled easier comparison of trends across the jurisdictions within the region, since comparison tables presenting data on the geographies of all 19 jurisdictions could readily be created.

Note that this did require more substantial data and mapping capacity to undertake, but in Chicago's case, the Chicago Blueprint for Fair Housing and the associated regional AFH process is an excellent use case for the AFFH-T raw data.

We hope this has been a helpful tutorial on the use of the AFFH Data and Mapping Tool and raw data for fair housing planning. To learn more about this tool and fair housing planning more generally, please visit HUD's Affirmatively Furthering Fair Housing Page.