

Utilizing Data from American FactFinder with TIGER/Line Shapefiles in ArcGIS

Getting Started

- You will need the following to use these instructions:
 - An Internet browser.
 - A utility to unzip files, such as WinZip.
 - Data processing software, such as Microsoft Excel
 - Esri's ArcGIS, version 10.x
- In these instructions, we will map the 2010 median age by census tract for those living in Oakland County, Michigan.
- First, we will download the table from American FactFinder.
- Then, we will download the TIGER/Line Shapefile.
- Finally, we will join the two in ArcGIS.

American FactFinder (AFF)

- Access data from:
 - 2010 and 2000 Decennial Census
 - Economic Census
 - American Community Survey
- <http://factfinder2.census.gov>

AFF Homepage

United States™
Census
Bureau

AMERICAN
FactFinder

MISSOURI KANSAS VIRGINIA KENTUCKY NORTH

Feedback FAQs Glossary Help

MAIN COMMUNITY FACTS GUIDED SEARCH **ADVANCED SEARCH** DOWNLOAD OPTIONS English Español

i Good News! We've released the new American FactFinder. If you're having any issues viewing the new site, [click here](#) for more information.

Community Facts

Find popular facts (population, income, etc.) and frequently requested data about your community.

Enter a state, county, city, town, or zip code:

GO

Guided Search

Advanced Search

Download Options



American FactFinder provides access to data about the United States, Puerto Rico and the Island Areas. The data in American FactFinder come from several censuses and surveys. For more information see [Using FactFinder](#) and [What We Provide](#).

News and Notes

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Jan 29, 2013

The Demographic Profile for American Samoa is available...



- Click on **Advanced Search**

Search - Use the options on the left (topics, geographies, ...) to narrow your search results

Your Selections
 "Your Selections" is empty

To search for tables and other files in American FactFinder:
 Enter search terms and an optional geography and click GO

Select Topics (CLOSE X)

Select Topics to add to "Your Selections" ?

- People
- Housing
- Business and Industry
- Year
- Product Type
- Program
- Dataset
 - 2012 Population Estimates (3)
 - 2011 ACS 5-year estimates (2,145)
 - 2011 ACS 3-year estimates (2,748)
 - 2011 ACS 1-year estimates (2,841)
 - 2011 American Housing Survey (56)
 - 2011 Annual Survey of Manufactures (8)
 - 2011 Population Estimates (19)
 - 2010 ACS 5-year Selected Population Tables (680)
 - 2010 ACS 5-year American Indian and Alaska Native Tables (275)

Your Selections

Search using...

Dataset:
 2010 SF1 100% Data

People: Age & Sex:
 Age

clear all selections and start a new search

Search using the options below:

Topics
 (age, income, year, dataset, ...)

Geographies
 (states, counties, places, ...)

Race and Ethnic Groups
 (race, ancestry, tribe)

Industry Codes
 (NAICS industry, ...)

EEO Occupation Codes
 (executives, analysts, ...)

- First, select the 2010 dataset: Age
 - Click **Topics, Dataset.**
 - Click the **2010 SF1 100% Data** and AFF adds the dataset to the **Your Selections** box.
 - Within the same **Select Topics** window, click on **People** (at the top), then **Age & Sex.**
 - Click on **Age** and AFF adds the data to the **Your Selections** box.
 - Close the **Select Topics** window using the **Close X** button.

Dataset: 2010 SF1 100% Data

People: Age & Sex: Age

clear all selections and start a new search

Search using the options below:

Topics (age, income, year, dataset, ...)

Geographies (states, counties, places, ...)

Race and Ethnic Groups (race, ancestry, tribe)

Industry Codes (NAICS industry, ...)

EEO Occupation Codes (executives, analysts, ...)

Select Geographies

List Name Address Map

Select geographies to add to Your Selections

Select from: most requested geographic types all geographic types

Select a geographic type:
..... Census Tract - 140

Select a state:
Michigan

Select a county:
Oakland

Select one or more geographic areas and click **Add to Your Selections**:

All Census Tracts within Oakland County, Michigan
Census Tract 1200, Oakland County, Michigan
Census Tract 1203, Oakland County, Michigan
Census Tract 1210, Oakland County, Michigan
Census Tract 1214, Oakland County, Michigan
Census Tract 1215, Oakland County, Michigan
Census Tract 1217, Oakland County, Michigan
Census Tract 1218, Oakland County, Michigan
Census Tract 1222, Oakland County, Michigan
Census Tract 1224, Oakland County, Michigan

ADD TO YOUR SELECTIONS

Didn't find your geographic type? Click the 'all geographic types' radio button above, or try the Name, Address or Map geography search options instead.

Your Selections

Search using...

Dataset: 2010 SF1 100% Data

People: Age & Sex: Age

Census Tract
All Census Tracts within Oakland County, Michigan

clear all selections and start a new search

- Now select the geography: all census tracts in Oakland County, MI
 - Click **Geographies**.
 - There are four search method options: **List** (choose between most requested geographic types or all geographic types), **Name** (contains all geographic types), **Address**, and **Map**.
 - Using the **List** search method, select **Census Tract - 140** in the dropdown.
 - Select **Michigan** as the state, **Oakland** as the county, and then **All Census Tracts within Oakland County, Michigan**.
 - Click **Add to Your Selections**.
 - Close the Geographies Window using the **Close X** button.
 - For additional information on using American FactFinder visit their Help Guides at http://factfinder2.census.gov/help/en/american_factfinder_help.htm#.

FACTFINDER

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Search - Use the options on the left (topics, geographies, ...) to narrow your search results

Your Selections

Search using...

Dataset:
2010 SF1 100% Data

People: Age & Sex:
Age

Census Tract:
All Census Tracts within Oakland County, Michigan

[clear all selections and start a new search](#)

Search using the options below:

Topics
(age, income, year, dataset, ...)

Geographies
(states, counties, places, ...)

Race and Ethnic Groups
(race, ancestry, tribe)

Industry Codes
(NAICS industry, ...)

EEO Occupation Codes

Recommendations (4) SHOW

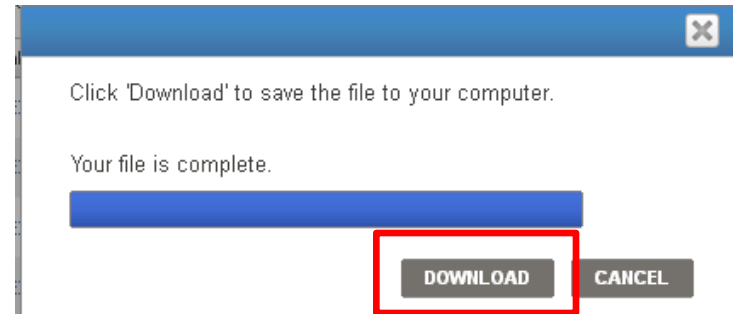
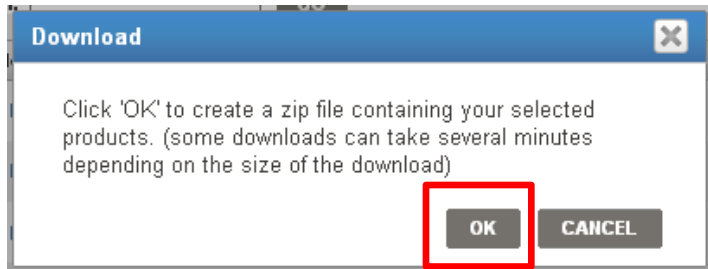
Search Results: 26-50 of 141 tables and other products match 'Your Selections' per page: 25

1 Selected: [View](#) [Download](#) [Compare](#) [Clear All](#)

Narrow your search: [GO](#)

ID	Table, File or Document Title	Dataset	About
<input type="checkbox"/> P12D	SEX BY AGE (ASIAN ALONE)	2010 SF1 100% Data	i
<input type="checkbox"/> P12E	SEX BY AGE (NATIVE HAWAIIAN AND OTHER PACIFIC ISLANDER ALONE)	2010 SF1 100% Data	i
<input type="checkbox"/> P12F	SEX BY AGE (SOME OTHER RACE ALONE)	2010 SF1 100% Data	i
<input type="checkbox"/> P12G	SEX BY AGE (TWO OR MORE RACES)	2010 SF1 100% Data	i
<input type="checkbox"/> P12H	SEX BY AGE (HISPANIC OR LATINO)	2010 SF1 100% Data	i
<input type="checkbox"/> P12I	SEX BY AGE (WHITE ALONE, NOT HISPANIC OR LATINO)	2010 SF1 100% Data	i
<input checked="" type="checkbox"/> P13	MEDIAN AGE BY SEX	2010 SF1 100% Data	i
<input type="checkbox"/> P13A	MEDIAN AGE BY SEX (WHITE ALONE)	2010 SF1 100% Data	i

- All available data tables are shown in the **Search Results** section.
- In this example, we will view the **Median Age by Sex (P13)** table.
 - The table is on **Page 2** of the search results.
 - You can scroll through the pages using the numbers in the top, right corner, or you can change your results per page, also found in the top, right corner.
 - Check the box next to **P13 Median Age by Sex** and click **Download**.

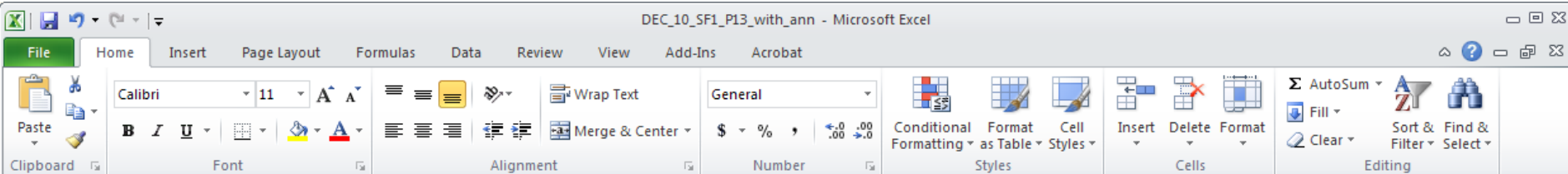


- Click **OK**.
- Click **Download**.
- Save the zipped file to your computer and unzip it.

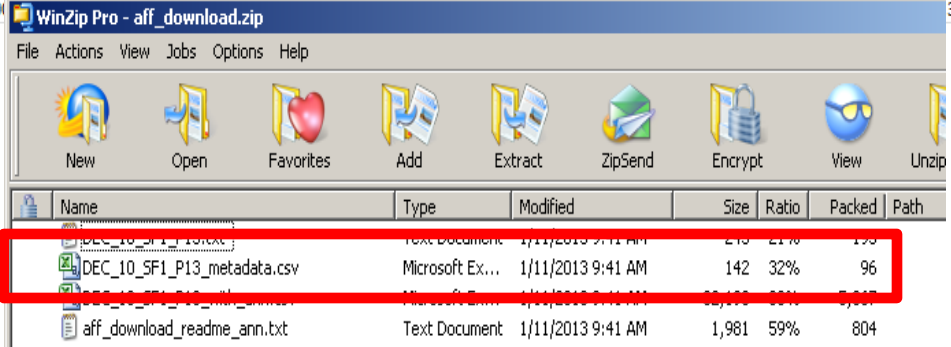
DEC_10_SF1_P13_with_ann - Microsoft Excel

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	GEO.id	GEO.id2	GEO.display-label	D002	D003	D004							
2	1400000US2612512000	26125120000	Census Tract 1200, Oakland County, Michigan	42.1	42.5	41.6							
3	1400000US2612512030	26125120300	Census Tract 1203, Oakland County, Michigan	46.3	45.5	46.9							
4	1400000US2612512100	26125121000	Census Tract 1210, Oakland County, Michigan	36.4	34.4	37.8							
5	1400000US2612512140	26125121400	Census Tract 1214, Oakland County, Michigan	37.3	37.4	37.3							
6	1400000US2612512150	26125121500	Census Tract 1215, Oakland County, Michigan	38.5	38.2	38.8							
7	1400000US2612512170	26125121700	Census Tract 1217, Oakland County, Michigan	40.4	39.7	41.2							
8	1400000US2612512180	26125121800	Census Tract 1218, Oakland County, Michigan	38.7	37.9	39.2							
9	1400000US2612512220	26125122200	Census Tract 1222, Oakland County, Michigan	42.6	42.2	43.1							
10	1400000US2612512240	26125122400	Census Tract 1224, Oakland County, Michigan	38.4	38.9	38.1							
11	1400000US2612512270	26125122700	Census Tract 1227, Oakland County, Michigan	41.6	41.9	41.4							
12	1400000US2612512290	26125122900	Census Tract 1229, Oakland County, Michigan	39.9	38.7	40.5							
13	1400000US2612512300	26125123000	Census Tract 1230, Oakland County, Michigan	41.7	41.7	41.8							
14	1400000US2612512310	26125123100	Census Tract 1231, Oakland County, Michigan	44.5	44.5	44.4							
15	1400000US2612512400	26125124000	Census Tract 1240, Oakland County, Michigan	42.6	41.8	43.3							

- Once unzipped, open **DEC_10_SF1_P13_with_ann.csv** in Excel.
- AFF provides a column with the fully qualified geographic identifier (**GEO.id2**) needed to join the data to the shapefiles, but it is not formatted as **Text** and that is necessary for use in ArcGIS.
- Change the format of the **GEO.id2** column from **General** to **Text** and **File - Save As** an **Excel Workbook**.



	A	B	C	D	E	F	G	H	I	J	K	L	M
1	GEO.id	GEO.id2	GEO.display-label	D002	D003	D004							
2	1400000US26125120000	26125120000	Census Tract 1200, Oakland County, Michigan	42.1	42.5	41.6							
3	1400000US26125120300	26125120300	Census Tract 1203, Oakland County, Michigan	46.3	45.5	46.9							
4	1400000US26125121000	26125121000	Census Tract 1210, Oakland County, Michigan	36.4	34.4	37.8							
5	1400000US26125121400	26125121400	Census Tract 1214, Oakland County, Michigan	37.3	37.4	37.3							
6	1400000US26125121500	26125121500	Census Tract 1215, Oakland County, Michigan	38.5	38.2	38.8							
7	1400000US26125121700	26125121700	Census Tract 1217, Oakland County, Michigan	40.4	39.7	41.2							
8	1400000US26125121800	26125121800	Census Tract 1218, Oakland County, Michigan	38.7	37.9	39.2							
9	1400000US26125122200	26125122200	Census Tract 1222, Oakland County, Michigan	42.6	42.2	43.1							
10	1400000US26125122200	26125122200	Census Tract 1222, Oakland County, Michigan	38.9	38.1								



	A	B	C	D
1	GEO.id	Id		
2	GEO.id2	Id2		
3	GEO.displ	Geography		
4	D002	Median age --- Both sexes		
5	D003	Median age --- Male		
6	D004	Median age --- Female		

- You may want to change the header rows so they are more meaningful.
- The **DEC_10_SF1_P13_metadata.csv** that is included in the zipped file defines the header rows.
- The three header rows will now become:
 - **D002 - MedianAgeB; D003 - MedianAgeM; D004 - MedianAgeF.**

DEC_10_SF1_P13_with_ann - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Add-Ins Acrobat

Clipboard Font Alignment Number Styles Cells Editing

Calibri 11 A A Wrap Text Merge & Center

General \$ % .0 .00

Conditional Formatting Format as Table Cell Styles

Insert Delete Format

AutoSum Fill Clear Sort & Filter Find & Select

A1 GEO.id

	A	B	C	D	E	F	G	H	I	J	K	L
1	GEO.id	GEO.id2	GEO.display-label	MedianAgeB	MedianAgeM	MedianAgeF						
2	1400000US26125120000	26125120000	Census Tract 1200, Oakland County, Michigan	42.1	42.5	41.6						
3	1400000US26125120300	26125120300	Census Tract 1203, Oakland County, Michigan	46.3	45.5	46.9						
4	1400000US26125121000	26125121000	Census Tract 1210, Oakland County, Michigan	36.4	34.4	37.8						
5	1400000US26125121400	26125121400	Census Tract 1214, Oakland County, Michigan	37.3	37.4	37.3						
6	1400000US26125121500	26125121500	Census Tract 1215, Oakland County, Michigan	38.5	38.2	38.8						
7	1400000US26125121700	26125121700	Census Tract 1217, Oakland County, Michigan	40.4	39.7	41.2						
8	1400000US26125121800	26125121800	Census Tract 1218, Oakland County, Michigan	38.7	37.9	39.2						
9	1400000US26125122200	26125122200	Census Tract 1222, Oakland County, Michigan	42.6	42.2	43.1						
10	1400000US26125122400	26125122400	Census Tract 1224, Oakland County, Michigan	38.4	38.9	38.1						
11	1400000US26125122700	26125122700	Census Tract 1227, Oakland County, Michigan	41.6	41.9	41.4						
12	1400000US26125122900	26125122900	Census Tract 1229, Oakland County, Michigan	39.9	38.7	40.5						
13	1400000US26125123000	26125123000	Census Tract 1230, Oakland County, Michigan	41.7	41.7	41.8						
14	1400000US26125123100	26125123100	Census Tract 1231, Oakland County, Michigan	44.5	44.5	44.4						
15	1400000US26125124000	26125124000	Census Tract 1240, Oakland County, Michigan	42.6	41.8	43.3						
16	1400000US26125124500	26125124500	Census Tract 1245, Oakland County, Michigan	36.3	34.8	38						
17	1400000US26125125000	26125125000	Census Tract 1250, Oakland County, Michigan	44.2	43.3	45.2						

- Save your work and close the **Excel Workbook**.

TIGER/Line Shapefiles and TIGER/Line Files

- TIGER/Line products are free spatial extracts from the Census Bureau's MAF/TIGER database, containing features such as roads, railroads, rivers, as well as legal and statistical boundaries.
 - Since 2007, the files are in shapefile format.
 - They are available for download here:
<http://www.census.gov/geo/maps-data/data/tiger-line.html>.

Downloading TIGER/Line Shapefiles

- There are four methods for downloading TIGER/Line Shapefiles:
 - Website Interface
 - Direct from the FTP site
 - Connect via FTP client
 - Direct from Data.gov
- This example will utilize the Website Interface method.
- For additional information about downloading and unzipping TIGER/Line Shapefiles, see the brochure “Downloading TIGER/Line Shapefiles”, available on our “How To” webpage:
<http://www.census.gov/geo/education/howtos.html>.

▪ TIGER Products
▪ Partnership Shapefiles
▪ Relationship Files
▪ Comparability Files
▪ Places
▪ County Subdivisions
▪ Gazetteer Files
▪ Block Assignment Files
▪ Name Lookup Tables
▪ Tallies
▪ LandView

- For use with geographic information system (GIS) software.
- Do not include demographic data, but they contain geographic entity codes that can be linked to the Census Bureau's demographic data, available on [American FactFinder](#).
- [Frequently Asked Questions](#)

2012 2011 **2010** 2009 2008 2007 2006SE Census 2000 1992

2010 TIGER/Line Shapefiles

All legal boundaries and names are as of January 1, 2010. Released beginning November 30, 2010. Last update March 26, 2012.

[Download](#)

Download by File Type

- [Web Interface](#)
- [FTP Site](#)

Download by State

- [FTP Site](#)

Special Release - Census Blocks with Population and Housing Unit counts

- [FTP site](#)

▸ [Technical Documentation](#)

▸ [File Availability](#)

▸ [User Notes](#)

- Visit <http://www.census.gov/geo/maps-data/data/tiger-line.html>.
- Since we downloaded 2010 demographic data, we need to use the 2010 TIGER/Line shapefiles.
- Click on the **2010** Tab.
- Click **Download**.
- Under **Download by File Type**, Click **Web Interface**.

2010 TIGER/Line® Shapefiles

In response to customer requests, we have redesigned the download interface for the 2010 TIGER/Line Shapefiles. Select the layer you are interested in from the dropdown menu and click 'submit', and you will then see the geographic areas for which that layer is available.

[2010 TIGER/Line Shapefiles Main](#)

Select a layer type

- American Indian Area Geography
- Geographic Areas**
- American Indian Area Geography
 - Blocks
 - Block Groups
 - Census Tracts**
 - Congressional Districts
 - Consolidated Cities
 - Core Based Statistical Areas
 - Counties (and equivalent)
 - County Subdivisions
 - Places
 - School Districts
 - States (and equivalent)
 - State Legislative Districts
 - SubMinor Civil Divisions
 - Urban Areas
 - Urban Growth Areas
 - Voting Districts
 - ZIP Code Tabulation Areas

submit

Documentation

- [What files are available?](#)
- [Technical Documentation](#)
- [User Notes](#)
- [Access our FTP site for additional downloading options](#)
- [Shapefiles included in the 2010 Census Redistricting \[P.L. 94-171\] delivery](#)

[Data Tools](#) | [Catalog](#) | [Census 2000](#) | [Quality](#) | [Privacy Policy](#) | [Contact Us](#) | [Home](#)

2010 TIGER/Line® Shapefiles: Census Tracts

Census Tract (2010)

Michigan

Submit

Census Tract (2000)

--Select a state--

Submit

2010 TIGER/Line® Shapefiles: Census Tracts

Oakland County

Download

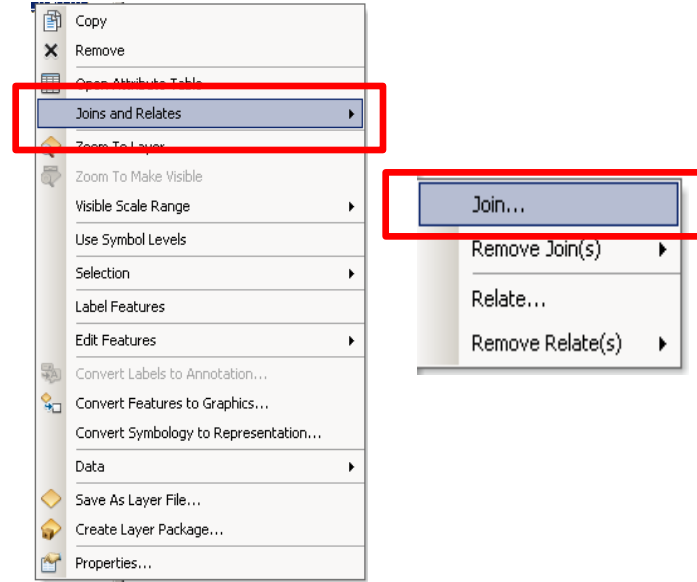
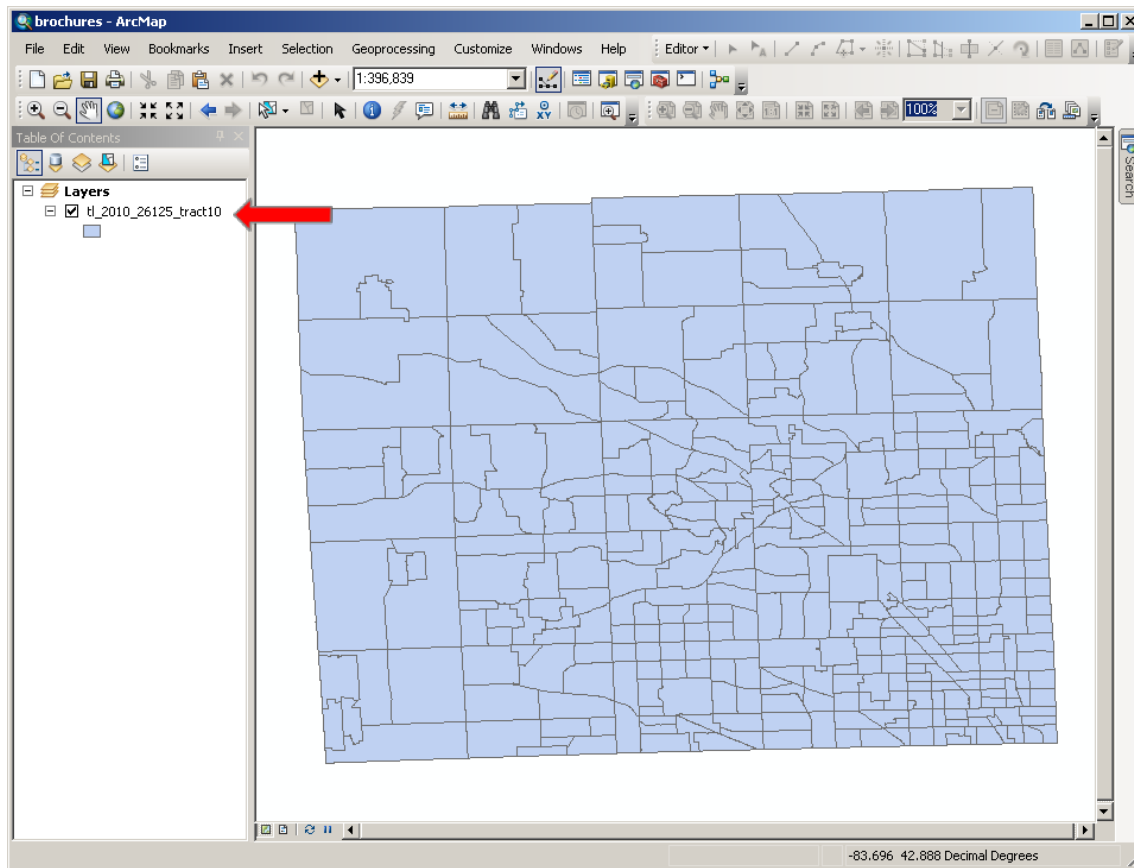
- Select **Census Tracts** in the dropdown menu and click **submit**.
- Under **Census Tracts (2010)**, Select **Michigan**, click **Submit**.
- Select **Oakland County**, click **Download**.
- Save the zipped file to your computer and unzip it.

Joining the AFF Table to the TIGER/Line Shapefiles

- Open ArcMap
- Add the census tract shapefile you previously downloaded using the **Add Data** icon or **File – Add Data – Add Data**.

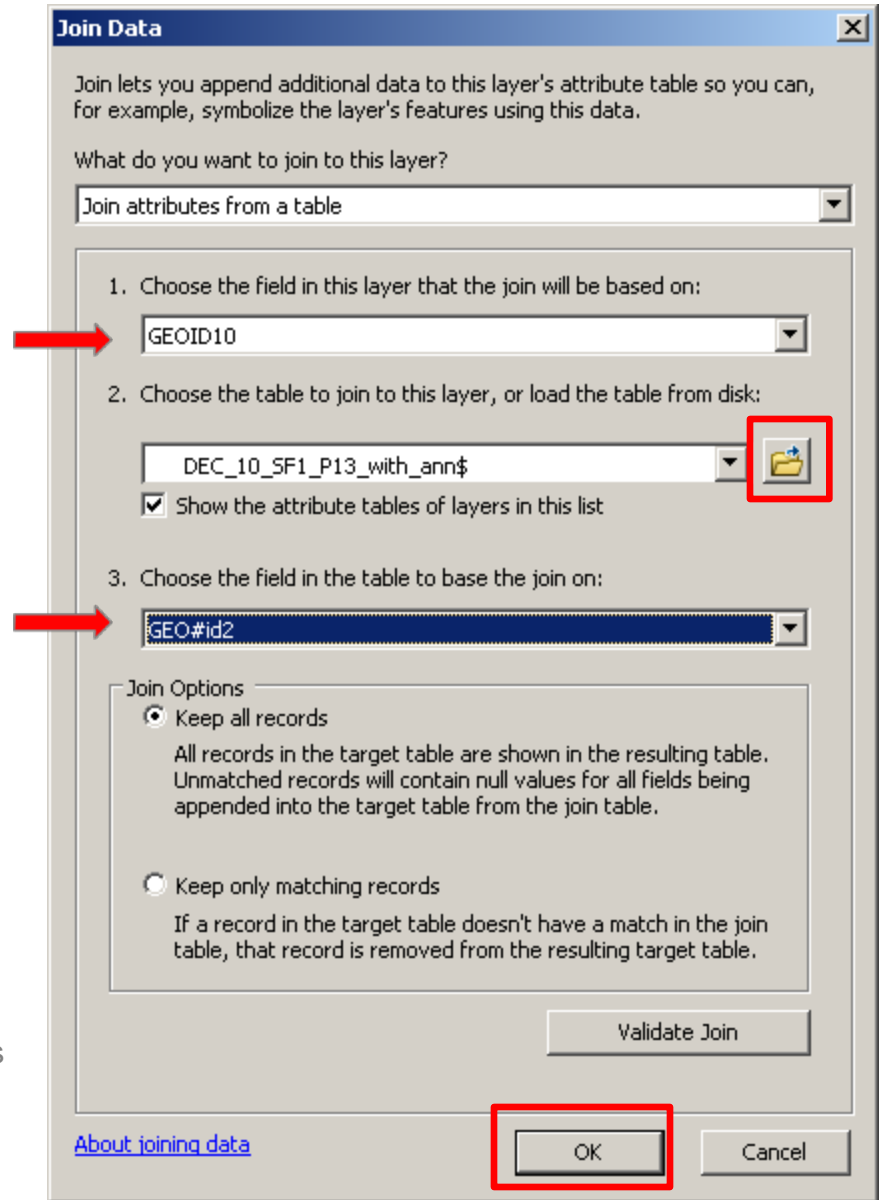


- Both the data file and the TIGER/Line Shapefile contain fields that uniquely identify a geographic entity necessary for creating a join.



- Right-click on the TIGER/Line Shapefile name.
- Select **Joins and Relates**.
- Select **Join**.

- A new screen appears for you to select the field from the shapefile that will be used to join the data.
 - You want the fully qualified geographic code. It is **GEOID10** in the 2010 TIGER/Line Shapefiles.
 - The TIGER/Line Shapefiles technical documentation has more information on the record layouts and definition of each field.
- Next, select the data file you saved as an Excel Workbook, using the browse (open folder icon).
- Finally, choose the field from the data table to base the join on.
 - The fully qualified geographic code in the AFF table is **GEO#id2** (ArcGIS changes the “.” from the original file to a “#”).
- Click **OK**.

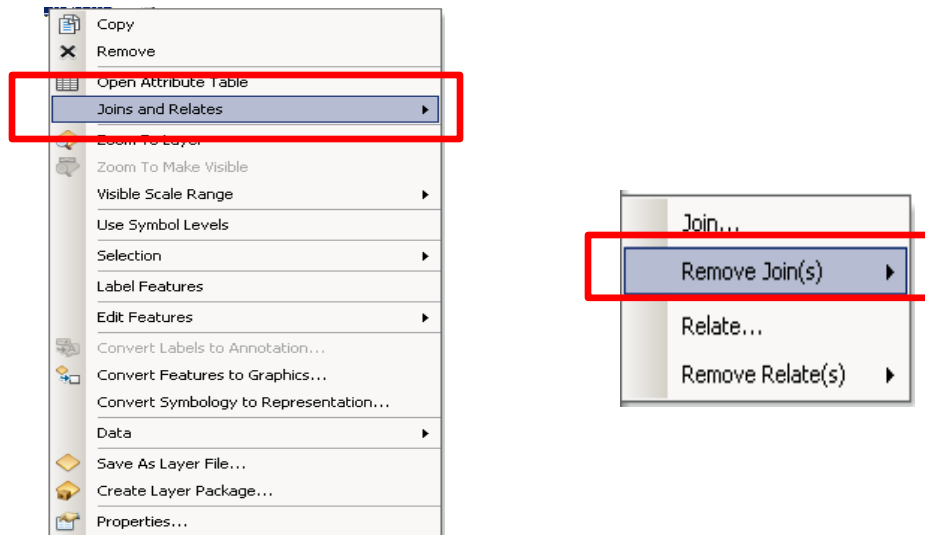


The screenshot shows the ArcMap interface. A context menu is open over a layer named 'tl_2010_26125_tract10'. The menu options include Copy, Remove, Open Attribute Table (highlighted with a red box), Join and Relates, Zoom To Layer, Zoom To Make Visible, Visible Scale Range, Use Symbol Levels, Selection, Label Features, Edit Features, Convert Labels to Annotation..., Convert Features to Graphics..., Convert Symbology to Representation..., Data, Save As Layer File..., Create Layer Package..., and Properties... Below the menu, a table window titled 'tl_2010_26125_tract10' is open, displaying a table with columns for census tracts and their attributes.

	NAMELSAD10	MTFCC10	FUICSTAT10	ALAND10	AWATER10					GEO#d	GEO#d2	GEO#display-label	MedianAgeB	MedianAg
▶	Census Tract 1905	G5020	S	5780488	0	+4				US26125190500	26125190500	Census Tract 1905, O	43.2	
	Census Tract 1803	G5020	S	1204763	0	+4				US26125180300	26125180300	Census Tract 1803, O	42	
	Census Tract 1340	G5020	S	5233295	1258644	+42.6063668	-083.4694680	1400000	US26125134000	26125134000	Census Tract 1340, O	38.5		
	Census Tract 1343	G5020	S	6034712	1204888	+42.5748470	-083.4890811	1400000	US26125134300	26125134300	Census Tract 1343, O	40.3		
	Census Tract 1344	G5020	S	9817232	1136804	+42.5862916	-083.4644498	1400000	US26125134400	26125134400	Census Tract 1344, O	41.1		
	Census Tract 1349	G5020	S	3005143	460625	+42.5319752	-083.4817100	1400000	US26125134900	26125134900	Census Tract 1349, O	40.1		
	Census Tract 1285	G5020	S	3187151	126559	+42.7705480	-083.2376838	1400000	US26125128500	26125128500	Census Tract 1285, O	34.8		
	Census Tract 1318	G5020	S	15452715	462522	+42.6585326	-083.6464004	1400000	US26125131800	26125131800	Census Tract 1318, O	40.5		
	Census Tract 1215	G5020	S	3305553	567078	+42.8232237	-083.2541967	1400000	US26125121500	26125121500	Census Tract 1215, O	38.5		

- To see the results, right-click on the TIGER/Line Shapefile name and select **Open Attribute Table**.
 - ArcMap builds a relationship between the shapefile and the data table.
 - The table now has the attributes from both the shapefile and the data table.
- The data can be used to create a thematic map or for other analysis.
- Multiple files can be joined to the shapefile.

Removing the Join



- Right-click on the TIGER/Line Shapefile name and select **Joins and Relates**.
- Select **Remove Joins**.
- Select the join to be removed or select **Remove All Joins**.

Questions

- Visit: www.census.gov/geo
- Email: geo.tiger@census.gov
 - Call: (301) 763-1128

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
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21

January 2013

