

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

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:

- 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



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.

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

MAIN SEARCH WHAT WE PROVIDE USING FACTFINDER Feedback FAQs Glossary Help

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)

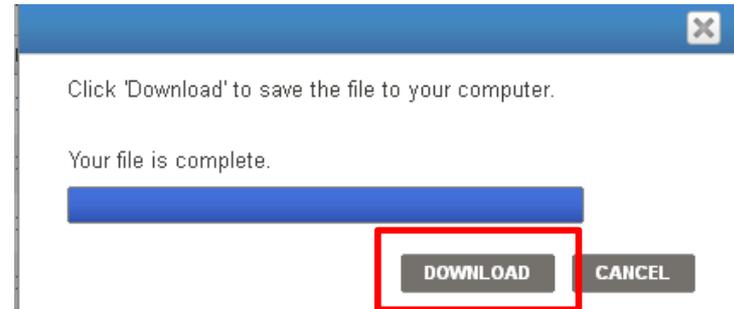
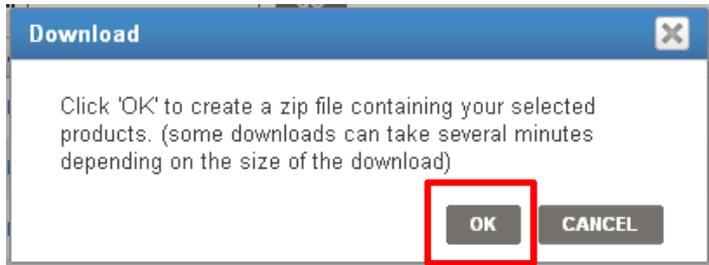
Search Results: 26-50 of 141 tables and other products match 'Your Selections' per page: 25

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	?
<input type="checkbox"/> P12E	SEX BY AGE (NATIVE HAWAIIAN AND OTHER PACIFIC ISLANDER ALONE)	2010 SF1 100% Data	?
<input type="checkbox"/> P12F	SEX BY AGE (SOME OTHER RACE ALONE)	2010 SF1 100% Data	?
<input type="checkbox"/> P12G	SEX BY AGE (TWO OR MORE RACES)	2010 SF1 100% Data	?
<input type="checkbox"/> P12H	SEX BY AGE (HISPANIC OR LATINO)	2010 SF1 100% Data	?
<input type="checkbox"/> P12I	SEX BY AGE (WHITE ALONE, NOT HISPANIC OR LATINO)	2010 SF1 100% Data	?
<input checked="" type="checkbox"/> P13	MEDIAN AGE BY SEX	2010 SF1 100% Data	?
<input type="checkbox"/> P13A	MEDIAN AGE BY SEX (WHITE ALONE)	2010 SF1 100% Data	?

- 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.csv - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Id-Ins Smart View HP ALM JMP Acrobat SAS SA

Clipboard Font Alignment Number Styles Cells Editing

Calibri 11 Wrap Text Merge & Center Text \$ % .00 .00 Conditional Formatting Format as Table Cell Styles Insert Delete Format Sort & Filter Find & Select

	A	B	C	D	E	F	G
1	GEO.id	GEO.id2	GEO.display-label	D002	D003	D004	
2	Id	Id2	Geography	Median age	Both sexes	Median age	Male Median age Female
3	1400000US2612512000	26125120000	Census Tract 1200, Oakland County, Michigan		42.1	42.5	41.6
4	1400000US2612512030	26125120300	Census Tract 1203, Oakland County, Michigan		46.3	45.5	46.9
5	1400000US2612512100	26125121000	Census Tract 1210, Oakland County, Michigan		36.4	34.4	37.8
6	1400000US2612512140	26125121400	Census Tract 1214, Oakland County, Michigan		37.3	37.4	37.3
7	1400000US2612512150	26125121500	Census Tract 1215, Oakland County, Michigan		38.5	38.2	38.8
8	1400000US2612512170	26125121700	Census Tract 1217, Oakland County, Michigan		40.4	39.7	41.2

- Once unzipped, open **DEC_10_SF1_P13_with_ann.csv** in Excel.
 - For best results, open a blank Excel spreadsheet and then open the .csv file using **File – Open**.
- 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.
 - Note: If the field is formatted in scientific notation (2.61E+10) try expanding the column so that all of the numbers are displayed.
- Change the format of the **GEO.id2** column from **General** to **Text**.
- Next, remove the second row of headers, so that only one row of headers exists.
 - Note: The description of data fields (D002, D003, D004) is in the second row of headers. The description can also be found using the steps in the next slide.
- Save the file using **File – Save As an Excel Workbook**.

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

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A1	GEO.id											
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							

WinZip Pro - aff_download.zip

File Actions View Jobs Options Help

New Open Favorites Add Extract ZipSend Encrypt View Unzip

Name	Type	Modified	Size	Ratio	Packed	Path
DEC_10_SF1_P13_metadata.csv	Microsoft Ex...	1/11/2013 9:41 AM	142	32%	96	



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 as Table Cell Styles

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

[2010 TIGER/Line Shapefiles Main](#)

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.

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

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

Census Tract (2000)

--Select a state--

2010 TIGER/Line® Shapefiles: Census Tracts

Oakland County

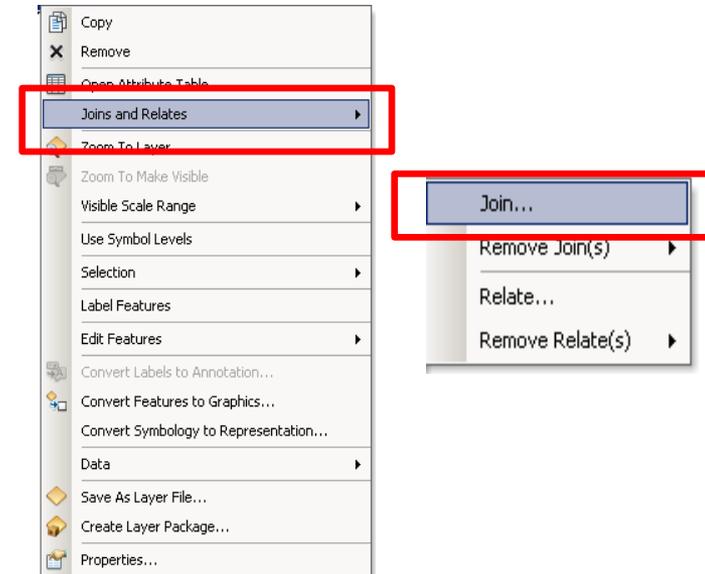
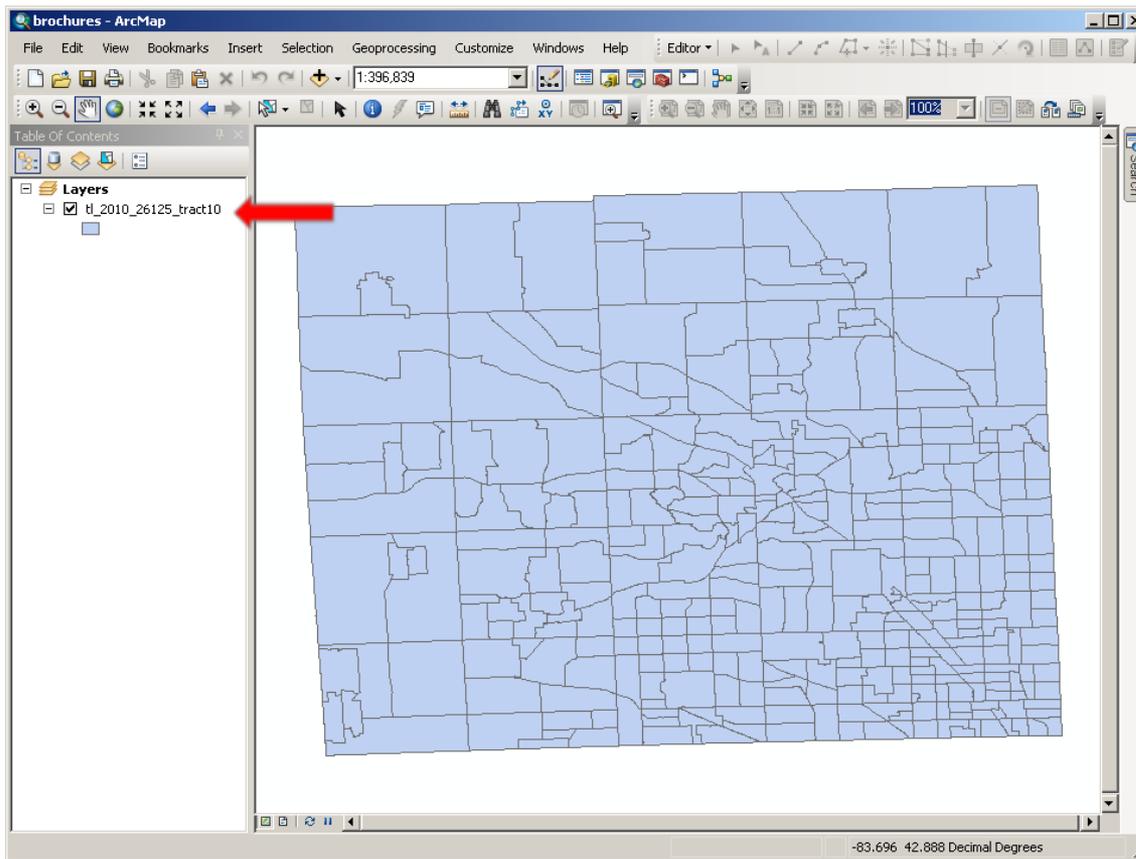
- Select **Census Tracts** in the dropdown menu and click **submit**.
- Under **Census Tracts (2010)**, Select **Michigan**, click **Submit**.
- Select **Oakland County**, click **Download**.
- Save the zipped file to your computer and unzip it.

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**.

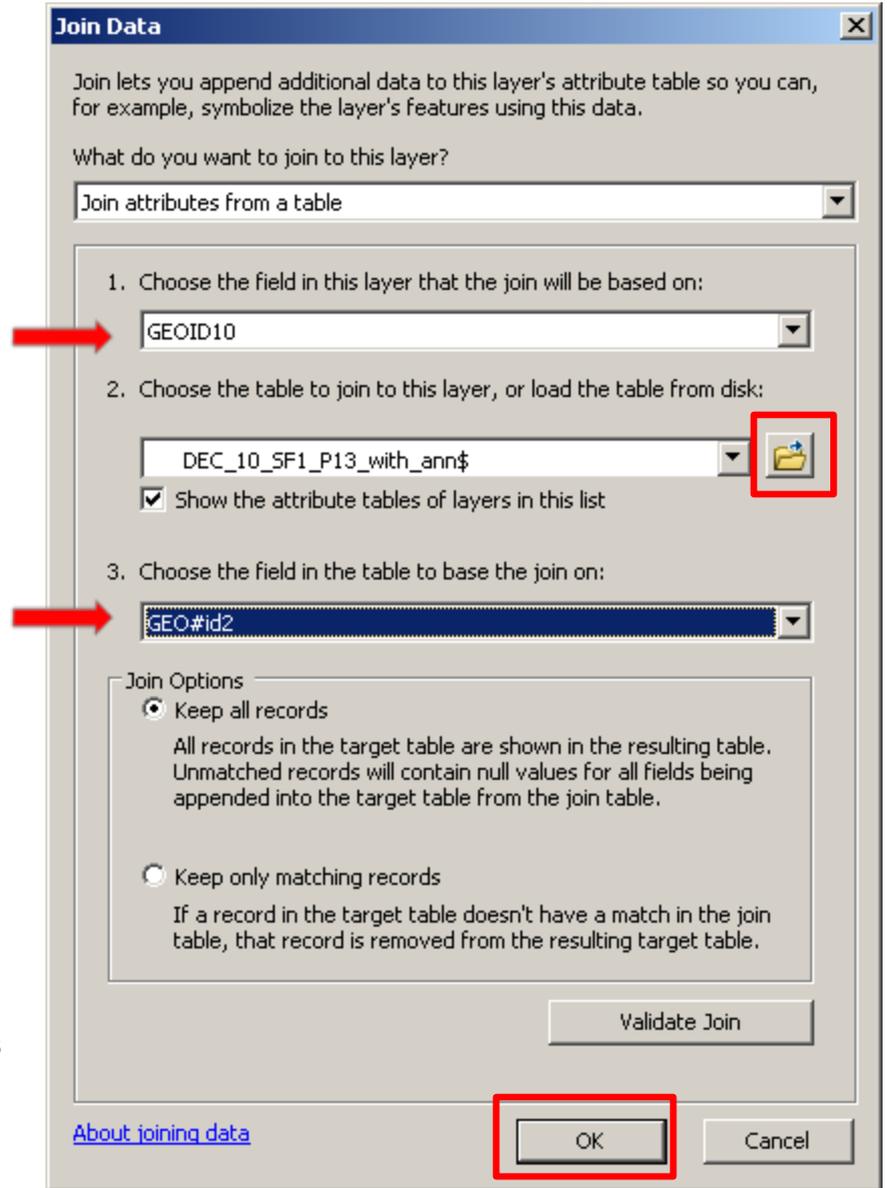


- Both the data file and the TIGER/Line Shapefile contain fields that uniquely identify a geographic entity necessary for creating a join.



- 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**.

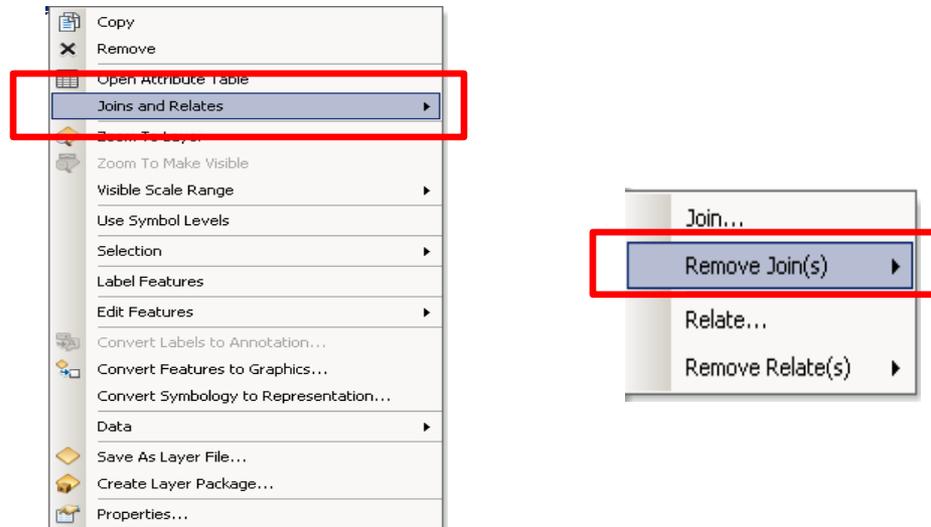


The screenshot shows the ArcMap interface with a context menu open over a TIGER/Line Shapefile. The menu options include Copy, Paste, Open Attribute Table (highlighted with a red box), Joins and Relates, Zoom To Layer, Zoom To Make Visible, Visible Scale Range, Use Symbol Levels, Selection, Label Features, 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 of census tract data is displayed. The table has columns for NAMELSAD10, MTFCC10, FUIFCSTAT10, ALAND10, AWATER10, and GEO#id. The data includes rows for Census Tract 1905, 1803, 1340, 1343, 1344, 1349, 1285, 1318, and 1215.

NAMELSAD10	MTFCC10	FUIFCSTAT10	ALAND10	AWATER10	GEO#id
Census Tract 1905	G5020	S	5780488	0	US26125190500
Census Tract 1803	G5020	S	1204763	0	US26125180300
Census Tract 1340	G5020	S	5233295	1258644	US26125134000
Census Tract 1343	G5020	S	6034712	1204888	US26125134300
Census Tract 1344	G5020	S	9817232	1136804	US26125134400
Census Tract 1349	G5020	S	3005143	460625	US26125134900
Census Tract 1285	G5020	S	3187151	126559	US26125128500
Census Tract 1318	G5020	S	15452715	462522	US26125131800
Census Tract 1215	G5020	S	3305553	567078	US26125121500

- 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

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Economics and Statistics Administration
U.S. CENSUS BUREAU
Census.gov

