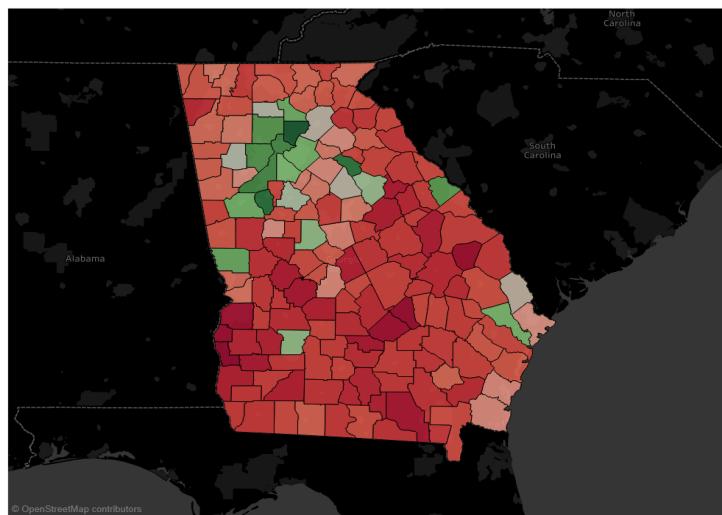


Map Census Data with Tableau

The United States Census is one of the most widely used data sources in all of data science and data visualization. This training will run through the process of gathering, modifying, and visualizing census data.

End Product should look like this:



STEP ONE: Gathering Data

In this training we will be using American FactFinder (<https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>). American FactFinder is the best source of all Census data. The website allows you to query data to meet almost all of your needs.

How to Query

1. When you are on their website, click on **Advanced Search**

AMERICAN FactFinder

MISSOURI KENTUCKY VIRGINIA

Feedback FAQs Glossary Help

English Español

i Check out the early preview of our new dissemination platform at data.census.gov.

MAIN COMMUNITY FACTS GUIDED SEARCH ADVANCED SEARCH DOWNLOAD CENTER

▼ Community Facts

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

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

e.g., Atlanta, GA

► Guided Search

► Advanced Search

► Download Center

Popular Tables

Population and Housing	Poverty and Income
<ul style="list-style-type: none"> ■ Annual Population Estimates (2017 PEP, PEPANNRES) ■ Demographic and Housing Estimates (2017 ACS, DP05) ■ General Housing Characteristics (2017 ACS, DP04) ■ General Demographic Characteristics (2010 Census, DP-1) 	<ul style="list-style-type: none"> ■ General Economic Characteristics (2017 ACS, DP03) Age, Race, Sex and Education <ul style="list-style-type: none"> ■ Selected Social Characteristics (2017 ACS, DP02) ■ Educational Attainment (2017 ACS, S1501)

American FactFinder provides access to data about the United States, Puerto Rico and the Island Areas. The data

News and Notes

Note: This is the main page for Querying data. The four boxes on the left-hand side will allow us to filter the data to suit our needs. For this training we will be using data that consists of the median household income in Georgia by county and the median age in Georgia by county. To do this, click on topics and select People ->Basic Count/Estimate -> Resident Population.

2. **Filter** this data down to Georgia Counties. To do this:
 - a. click on Add/Remove Geographies,
 - b. Select Counties,
 - c. Select Georgia, and then select all counties.

You should end up with the following:

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

Your Selections

Search using...
People Basic Count/Estimate:
Resident Population
County
All Counties within Georgia
clear all selections and start a new search

load search | save 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, ...)

Search Results: 1-25 of 32 tables and other products match "Your Selections"

Refine your search results: topic or table name state, county or place (optional) topics race/ancestry industries occupations

1 Selected:

Show results from: All available years All available programs

ID	Table, File or Document Title	Dataset	About
PEPAGESEX	Annual Estimates of the Resident Population for Selected Age Groups by Sex for the United States, States, Counties, and Puerto Rico Commonwealth and Municipalities: April 1, 2010 to July 1, 2017	2017 Population Estimates	<input type="button" value="?"/>
PEPANNRES	Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2017	2017 Population Estimates	<input type="button" value="?"/>
PEPSRSH	Annual Estimates of the Resident Population by Sex, Race Alone or in Combination, and Hispanic Origin for the United States, States, and Counties: April 1, 2010 to July 1, 2017	2017 Population Estimates	<input type="button" value="?"/>
PEPSR6H	Annual Estimates of the Resident Population by Sex, Race, and Hispanic Origin for the United States, States, and Counties: April 1, 2010 to July 1, 2017	2017 Population Estimates	<input type="button" value="?"/>
PEPAGESEX	Annual Estimates of the Resident Population for Selected Age Groups by Sex for the United States, States, Counties, and Puerto Rico Commonwealth and Municipalities: April 1, 2010 to July 1, 2016	2016 Population Estimates	<input type="button" value="?"/>
PEPALL5N	Annual Estimates of the Resident Population by Sex, Single Year of Age, Race Alone or in Combination, and Hispanic Origin for the United States: April 1, 2010 to July 1, 2016	2016 Population Estimates	<input type="button" value="?"/>
PEPANNRES	Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2016	2016 Population Estimates	<input type="button" value="?"/>
PEPASRSH	Annual Estimates of the Resident Population by Sex, Age, Race Alone or in Combination, and Hispanic Origin for the United States and States: April 1, 2010 to July 1, 2016	2016 Population Estimates	<input type="button" value="?"/>
PEPASRSH	Annual Estimates of the Resident Population by Sex, Age, Race, and Hispanic Origin for the United States and States: April 1, 2010 to July 1, 2016	2016 Population Estimates	<input type="button" value="?"/>
PEPCOMPN	Estimates of the Components of Resident Population Change by Race and Hispanic Origin for the United States: April 1, 2010 to July 1, 2016	2016 Population Estimates	<input type="button" value="?"/>

3. **Select** the right dataset on the result list.

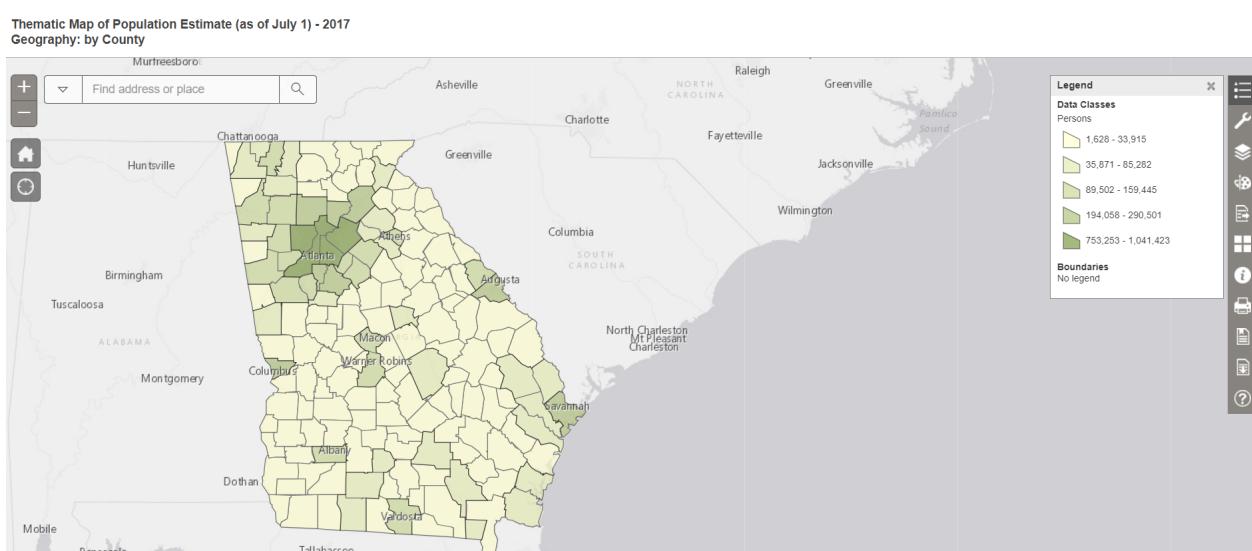
Click on the second dataset. It is titled Annual Estimates of Resident Population: April 1, 2010 to July 1, 2017. You should see something like the following:

Versions of this table are available for the following years:	Geography	April 1, 2010		Population Estimate (as of July 1)							
		Census	Estimates Base	2010	2011	2012	2013	2014	2015	2016	2017
2017	Appingedauk County, Georgia	18,236	18,336	18,436	18,536	18,635	18,502	17,550	16,390	16,236	16,236
2016	Bacon County, Georgia	8,093	8,855	9,379	8,279	9,229	9,229	9,229	8,379	8,542	8,542
2015	Bacon County, Georgia	11,095	11,054	11,162	11,177	11,205	11,216	11,267	11,365	11,319	11,319
2014	Baker County, Georgia	3,451	3,435	3,316	3,377	3,351	3,298	3,201	3,208	3,200	3,200
2013	Baldwin County, Georgia	45,720	45,840	45,691	45,147	46,499	46,166	45,853	45,518	45,190	44,506
2012	Banks County, Georgia	18,395	18,389	18,421	18,267	18,153	18,244	18,248	18,382	18,309	18,634
2011	Barrow County, Georgia	69,367	69,367	69,694	69,894	70,206	71,319	72,959	75,067	77,091	79,061
2010	Bartow County, Georgia	100,157	100,123	100,095	100,213	100,365	101,056	101,397	102,176	103,431	105,054
2009	Ben Hill County, Georgia	17,634	17,634	17,620	17,563	17,577	17,426	17,423	17,323	17,190	16,996
2008	Benvenuto, Georgia	19,286	19,356	19,381	19,166	19,061	18,821	18,988	19,014	19,186	19,186
2007	Bibb County, Georgia	155,547	155,806	155,274	154,902	155,071	154,422	155,071	155,071	152,862	152,862
2006	Bio-Brumby, Georgia	13,000	13,000	13,083	13,080	12,588	12,588	12,577	12,577	12,698	12,698
2005	Brantley County, Georgia	18,411	18,410	18,461	18,540	18,509	18,237	18,337	18,393	18,355	18,731
2004	Brooks County, Georgia	16,243	16,322	16,255	15,994	15,631	15,665	15,634	15,668	15,693	15,887
2003	Bryan County, Georgia	30,233	30,213	30,376	31,271	32,258	33,038	33,678	34,798	35,842	37,060
2002	Bulloch County, Georgia	70,217	70,251	70,571	72,687	73,167	71,873	72,734	73,233	74,721	76,149
2001	Burke County, Georgia	23,316	23,316	23,327	23,502	23,045	22,827	22,628	22,642	22,608	22,522
2000	Butts County, Georgia	23,655	23,655	23,747	23,575	23,412	23,203	23,317	23,489	23,710	24,059
1999	Calhoun County, Georgia	6,694	6,694	6,625	6,566	6,599	6,516	6,552	6,393	6,455	6,455
1998	Candler County, Georgia	50,513	50,513	50,660	50,308	51,132	51,413	51,926	52,462	52,416	53,044
1997	Campbell County, Georgia	10,995	11,022	11,242	11,171	10,970	10,885	10,903	10,915	10,797	10,797
1996	Catoosa County, Georgia	63,942	63,936	64,077	64,760	64,672	65,224	65,488	65,621	66,267	66,550
1995	Charlton County, Georgia	12,171	12,171	12,853	14,362	13,362	13,122	13,038	13,190	12,751	12,715
1994	Chatham County, Georgia	265,128	265,128	265,846	271,870	276,503	277,963	282,658	286,819	289,390	290,501
1993	Chattahoochee County, Georgia	11,267	11,267	11,188	11,263	12,276	12,246	11,714	11,075	10,100	10,343
1992	Chattooga County, Georgia	26,015	26,015	25,590	25,677	25,619	25,044	24,859	24,896	24,833	24,770
1991	Cherokee County, Georgia	214,342	214,362	215,189	217,860	220,773	224,487	230,396	235,424	241,600	247,573
1990	Clarke County, Georgia	116,714	116,754	117,481	118,433	120,135	121,094	120,721	123,875	125,018	127,064

4. Gather the map data. To do this:

- a. click on create a map. (American FactFinder will ask you to click on a data. For this case it does not really matter, but I will select Population Estimate 2017.) You will see the following:

Actions: [Bookmark/Save](#) | [Print](#) | [Download](#) | [Create a Different Map](#)



We are looking at a map that is very similar to our final product. So, **why do we need to put this into tableau??**

The reason of that, and the goal of this workshop is:

- create an interactive visualization with Tableau (the current view is static);
- customize the color, label and other details as you wish;

have the option of saving it on your local machine, embed to your presentation, publication or website;

5. View the geographical data (here called spatial data).

- We do this by clicking “download”. This creates a zip file. Open this Zip and copy all of the files into a folder on your desktop. We will be using this folder later. It will hold all our data.
- Go back to the table view. The table currently shows years 2010-2017. For readability, remove the second and third columns. To do this, click on modify table and uncheck the first two rows.

6. Download the data

- Now hit download to get the data. Click on use the data. The data is now in a zip file. Open the zip file and copy the file called “Pep_2017_Pepannres_with_ann. Put it in the same folder as our spatial files. Open the file. You should see the following:

C2	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	GEO.id	GEO.id2	GEO.displa	resp0720	resp0720														
2	Id	Id2	Geograph	Populatior	Population	Estimate (as of July 1) - 2017													
3	05000000U	13001	Appling Co	18336	18469	18402	18395	18502	18450	18485	18521								
4	05000000U	13003	Atkinson C	8365	8373	8273	8285	8243	8375	8320	8342								
5	05000000U	13005	Bacon Cou	11064	11162	11177	11205	11218	11287	11365	11319								
6	05000000U	13007	Baker Cou	3435	3316	3377	3351	3295	3201	3208	3200								
7	05000000U	13009	Baldwin Cc	45691	45147	46499	46166	45853	45518	45190	44906								
8	05000000U	13011	Banks Cou	18421	18267	18153	18244	18248	18382	18309	18634								
9	05000000U	13013	Barrow Cc	69696	69894	70206	71319	72959	75067	77091	79061								
10	05000000U	13015	Bartow Cc	100095	100213	100365	101056	101397	102176	103431	105054								
11	05000000U	13017	Ben Hill Cc	17620	17563	17577	17426	17423	17323	17190	16996								
12	05000000U	13019	Berrien Co	19356	19381	19166	19061	18821	18988	19014	19186								
13	05000000U	13021	Bibb Count	155820	156216	156665	155071	154422	154057	153205	152862								
14	05000000U	13023	Bleckley C	13033	13080	12888	12740	12712	12717	12898	12830								
15	05000000U	13025	Brantley C	18461	18540	18509	18237	18337	18393	18355	18731								
16	05000000U	13027	Brooks Co	16255	15994	15631	15665	15534	15668	15693	15587								
17	05000000U	13029	Bryan Cou	30376	31271	32258	33038	33678	34798	35842	37060								
18	05000000U	13031	Bulloch Cc	70571	72687	73167	71873	72734	73233	74721	76149								
19	05000000U	13033	Burke Cou	23327	23502	23045	22827	22628	22642	22608	22522								
20	05000000U	13035	Butts Cou	23747	23575	23412	23203	23317	23489	23710	24059								
21	05000000U	13037	Calhoun C	6694	6625	6566	6599	6516	6552	6393	6455								
22	05000000U	13039	Camden C	50660	50308	51352	51413	51926	52462	52416	53044								
23	05000000U	13043	Candler Cc	11022	11208	11110	10970	10885	10903	10915	10797								
24	05000000U	13045	Carroll Cou	110667	110758	111452	112300	113596	114491	116291	117812								
25	05000000U	13047	Catoosa C	64077	64760	64872	65224	65488	65821	66267	66550								
26	05000000U	13049	Charlton C	12853	13462	13362	13122	13038	13190	12751	12715								
27	05000000U	13051	Chatham C	265846	271870	276503	277963	282858	286819	289390	290501								
28	05000000U	13053	Chattahoo	11188	11263	12276	12246	11714	11075	10100	10343								
29	05000000U	13055	Chattooga	25950	25677	25619	25044	24859	24896	24833	24770								

As you can tell, this data is a little jumbled.

7. Clean the data

The first column is something called Geoid. This will link to our spatial data from earlier. In order to make this more Readable. Delete the 1st row and 2nd columns. The 1st row are repetitive headers and the 2nd column is spatial data we do not need for this exercise. Save and rename the file as Pop_GA.

[Pop-Quiz] Take 5 minutes to try and find the income data for Georgia Counties. We will go over this after. Use the data set called INCOME IN THE PAST 12 MONTHS (IN 2017 INFLATION-ADJUSTED DOLLARS) ID: S1902.

Actions: [Modify Table](#) | [Add/Remove Geographies](#) | [Bookmark/Save](#) | [Print](#) | [Download](#) | [Create a Map](#)

[View Geography Notes](#) | [View Table Notes](#)

Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the official estimates of the population for the nation, states, counties, cities, and towns and estimates of housing units for states and counties.

Appling County, Georgia											Atkinson County, Georgia											Bacon County, Georgia				
Subject	Households			Families			Married-couple families			Nonfamily households			Households			Families			Married-couple families			Nonfamily households			Households	
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error		
Total	6,702	+/-245	4,806	+/-262	3,446	+/-287	1,896	+/-234	2,835	+/-120	1,902	+/-154	1,361	+/-160	933	+/-140	3,989	+/-177	10,1%	+/-6,1	10,1%	+/-2,8				
\$less than \$10,000	11.2%	+/-2.6	7.8%	+/-3.1	2.6%	+/-1.7	24.9%	+/-7.1	9.7%	+/-2.7	9.6%	+/-3.8	1.7%	+/-1.6	16.7%	+/-6.1	10.1%	+/-5.7	8.8%	+/-2.9	+/-5.7	+/-3.9				
\$10,000 to \$14,999	8.3%	+/-2.5	6.3%	+/-2.9	4.2%	+/-2.3	14.9%	+/-5.2	8.1%	+/-2.6	4.5%	+/-2.5	3.7%	+/-3.1	15.9%	+/-5.3	14.3%	+/-7.7	+/-3.9	+/-3.9	+/-3.9	+/-3.9				
\$15,000 to \$24,999	14.9%	+/-2.3	13.4%	+/-3.0	7.4%	+/-2.5	18.2%	+/-5.5	19.2%	+/-3.8	16.6%	+/-4.5	16.5%	+/-5.3	23.6%	+/-7.7	+/-7.7	+/-7.7	+/-7.7	+/-7.7	+/-7.7	+/-7.7	+/-7.7			
\$25,000 to \$34,999	12.2%	+/-2.8	10.2%	+/-2.8	8.4%	+/-3.2	13.5%	+/-5.7	19.1%	+/-4.8	18.9%	+/-6.0	17.6%	+/-7.1	17.6%	+/-8.2	12.0%	+/-3.5	+/-3.5	+/-3.5	+/-3.5	+/-3.5	+/-3.5			
\$35,000 to \$49,999	15.7%	+/-3.3	16.3%	+/-3.5	17.1%	+/-4.1	15.1%	+/-5.5	11.6%	+/-5.5	10.8%	+/-4.5	12.8%	+/-5.5	10.5%	+/-4.8	14.8%	+/-3.2	+/-3.2	+/-3.2	+/-3.2	+/-3.2	+/-3.2			
\$50,000 to \$74,999	16.0%	+/-3.4	14.4%	+/-3.6	12.3%	+/-4.0	12.3%	+/-5.7	12.3%	+/-5.7	12.3%	+/-4.0	12.3%	+/-5.7	12.3%	+/-4.0	12.3%	+/-3.2	+/-3.2	+/-3.2	+/-3.2	+/-3.2	+/-3.2			
\$75,000 to \$99,999	9.2%	+/-2.1	10.9%	+/-2.8	15.2%	+/-3.7	4.7%	+/-2.3	8.9%	+/-2.7	8.7%	+/-2.9	10.7%	+/-3.4	7.5%	+/-5.5	14.1%	+/-4.0	+/-4.0	+/-4.0	+/-4.0	+/-4.0	+/-4.0			
\$100,000 to \$145,999	9.8%	+/-2.2	12.7%	+/-2.9	16.5%	+/-3.9	2.6%	+/-2.6	4.9%	+/-2.3	7.4%	+/-3.4	9.8%	+/-4.7	0.0%	+/-3.9	9.6%	+/-2.8	+/-2.8	+/-2.8	+/-2.8	+/-2.8	+/-2.8			
\$150,000 to \$199,999	1.3%	+/-0.7	1.8%	+/-1.0	2.6%	+/-1.4	0.0%	+/-2.0	1.7%	+/-1.2	2.5%	+/-1.8	2.2%	+/-2.1	0.0%	+/-3.9	1.1%	+/-0.9	+/-0.9	+/-0.9	+/-0.9	+/-0.9	+/-0.9			
\$200,000 or more	1.4%	+/-1.0	2.0%	+/-1.4	2.8%	+/-1.9	0.1%	+/-0.1	1.8%	+/-1.3	2.6%	+/-1.8	2.8%	+/-2.2	0.3%	+/-0.5	0.6%	+/-0.6	+/-0.6	+/-0.6	+/-0.6	+/-0.6	+/-0.6			
Median income (dollars)	37,089	+/-3,056	46,707	+/-3,850	63,810	+/-4,200	22,516	+/-5,324	33,063	+/-4,483	35,357	+/-7,963	45,868	+/-9,399	21,569	+/-3,082	38,824	+/-3,793	+/-3,793	+/-3,793	+/-3,793	+/-3,793	+/-3,793			
Mean income (dollars)	52,094	+/-3,865	60,769	+/-5,585	N	N	27,313	+/-3,538	50,808	+/-7,044	59,220	+/-10,110	N	N	29,909	+/-4,002	50,444	+/-4,186	+/-4,186	+/-4,186	+/-4,186	+/-4,186	+/-4,186			
PERCENT ALLOCATED																										
Household income in the past 12 months	44.6%	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)			
Family income in the past 12 months	(X)	(X)	45.0%	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)			
Nonfamily income in the past 12 months	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)	(X)			

Source: U.S. Census Bureau. 2013-2017 American Community Survey 5-Year Estimates

This data is useful, but we do not need all of it. We only need median income. Once again, use the modify table tool. Once again, go into the file and delete the first and second row. Name it Income_Ga

Now we should end up with two excel files (Pop_Ga and Income_Ga) as well as all the spatial files.

STEP TWO: Create Interactive Visualization in Tableau

1. Open a new workbook in Tableau.
2. **Import** data
 - a. Go to data Source add the spatial file.
 - b. Add the 05000.shp file (drag and drop it on the top white space).
3. **Union** data sheets (essentially a JOIN statement)
 - a. Add Pop_Ga.csv file (again, drag and drop it on the top white space)
 - b. Select Geo Id = Id

File Data Server Window Help

Connections Add

- 05000 Spatial file
- Pop_GA Text file

Files

Use Data Interpreter
Data Interpreter might be able to clean your Text file workbook.

- Georgia_Income.csv
- IncomeGeorgia.csv
- Locations.csv
- Median Age.csv
- PEP_2017_PEPAs...with_ann.csv
- Pop_GA.csv
- readme.txt
- routes.csv
- Workshopdata.csv
- New Union

05000.shp+ (Multiple Connections)

Connection Live Extract Filters 0 | Add

05000.shp Pop_GA.csv

Join

Inner Left Right Full Outer

Data Source Pop_GA.csv

Geo Id = Id

Sort fields Data source order

Abs	05000.shp	05000.shp	05000.shp	Abs	05000.shp	05000.shp	05000.shp	Abs	05000.shp	05000.shp	#	Abs	05000.shp	05000.shp	#	Abs	05000.shp	05000.shp	#
Geo Id	State	County	Name	Lsd	Shape Area	Shape Len	Geometry	Id	Pop_GA.csv	Pop_GA.csv	Population Es...	Id	Pop_GA.csv	Pop_GA.csv	Population Es...	Geography	Pop_GA.csv	Pop_GA.csv	Population Es...
05000000US13001	13	001	Appling	County	1,839,680,258.28	228,585.48	POLYGON	05000000US13001	Appling County, ...	05000000US13001	18,336	18.4	05000000US13003	Atkinson County, ...	05000000US13003	8,365	8.3		
05000000US13003	13	003	Atkinson	County	1,224,225,675.37	173,620.06	POLYGON	05000000US13005	Bacon County, Ge...	05000000US13005	11,064	11.1	05000000US13005	Bacon County, Ge...	05000000US13007	3,435	3.3		
05000000US13005	13	005	Bacon	County	1,023,939,157.81	151,912.88	POLYGON	05000000US13007	Baker County, Ge...	05000000US13007	12,370,082,819.47	198,131.07	POLYGON	05000000US13009	Baldwin County, ...	05000000US13009	45,691	45.1	
05000000US13007	13	007	Baker	County	988,409,924.89	165,058.01	POLYGON	05000000US13011	Banks County, ...	05000000US13011	895,070,191.92	122,481.52	POLYGON	05000000US13013	Barrow County, ...	05000000US13013	69,696	69.8	
05000000US13009	13	009	Baldwin	County	1,783,942,851.96	183,168.66	POLYGON	05000000US13015	Bartow County, ...	05000000US13015	911,503,432.31	157,385.00	POLYGON	05000000US13017	Ben Hill County, ...	05000000US13017	100,095	100.2	
05000000US13011	13	011	Banks	County	1,783,942,851.96	183,168.66	POLYGON	05000000US13019	Berrien County, ...	05000000US13019	1,621,463,171.21	191,342.98	POLYGON	05000000US13021	Dink County, ...	05000000US13021	19,356	19.3	
05000000US13013	13	013	Barrow	County	1,783,942,851.96	183,168.66	POLYGON	05000000US13021	Ben Hill County, ...	05000000US13021	1,621,463,171.21	191,342.98	POLYGON	05000000US13023	Dink County, ...	05000000US13023	1,621,463,171.21	191,342.98	
05000000US13015	13	015	Bartow	County	1,783,942,851.96	183,168.66	POLYGON	05000000US13017	Ben Hill County, ...	05000000US13017	911,503,432.31	157,385.00	POLYGON	05000000US13019	Berrien County, ...	05000000US13019	17,620	17.5	
05000000US13017	13	017	Ben Hill	County	1,783,942,851.96	183,168.66	POLYGON	05000000US13019	Berrien County, ...	05000000US13019	1,621,463,171.21	191,342.98	POLYGON	05000000US13021	Dink County, ...	05000000US13021	19,356	19.3	
05000000US13019	13	019	Berrien	County	1,783,942,851.96	183,168.66	POLYGON	05000000US13021	Dink County, ...	05000000US13021	1,621,463,171.21	191,342.98	POLYGON	05000000US13023	Dink County, ...	05000000US13023	1,621,463,171.21	191,342.98	
05000000US13021	13	021	Dink	County	1,783,942,851.96	183,168.66	POLYGON	05000000US13023	Dink County, ...	05000000US13023	1,621,463,171.21	191,342.98	POLYGON	05000000US13025	Dink County, ...	05000000US13025	1,621,463,171.21	191,342.98	

Go to Worksheet

Data Source Sheet1

- c. Add the income data. Once again select add CSV and add Income_Ga.csv. You should end up with the following:

File Data Server Window Help

Connections Add

- 05000 Spatial file
- Pop_GA Text file
- Georgia_Income Text file

Files

Use Data Interpreter
Data Interpreter might be able to clean your Text file workbook.

- Georgia_Income.csv
- IncomeGeorgia.csv
- Locations.csv
- Median Age.csv
- PEP_2017_PEPAs...with_ann.csv
- Pop_GA.csv
- readme.txt
- routes.csv
- Workshopdata.csv
- New Union

05000.shp+ (Multiple Connections)

Connection Live Extract Filters 0 | Add

05000.shp Georgia_Income.csv

Join

Inner Left Right Full Outer

Data Source Georgia_Income.csv

Geo Id = Id

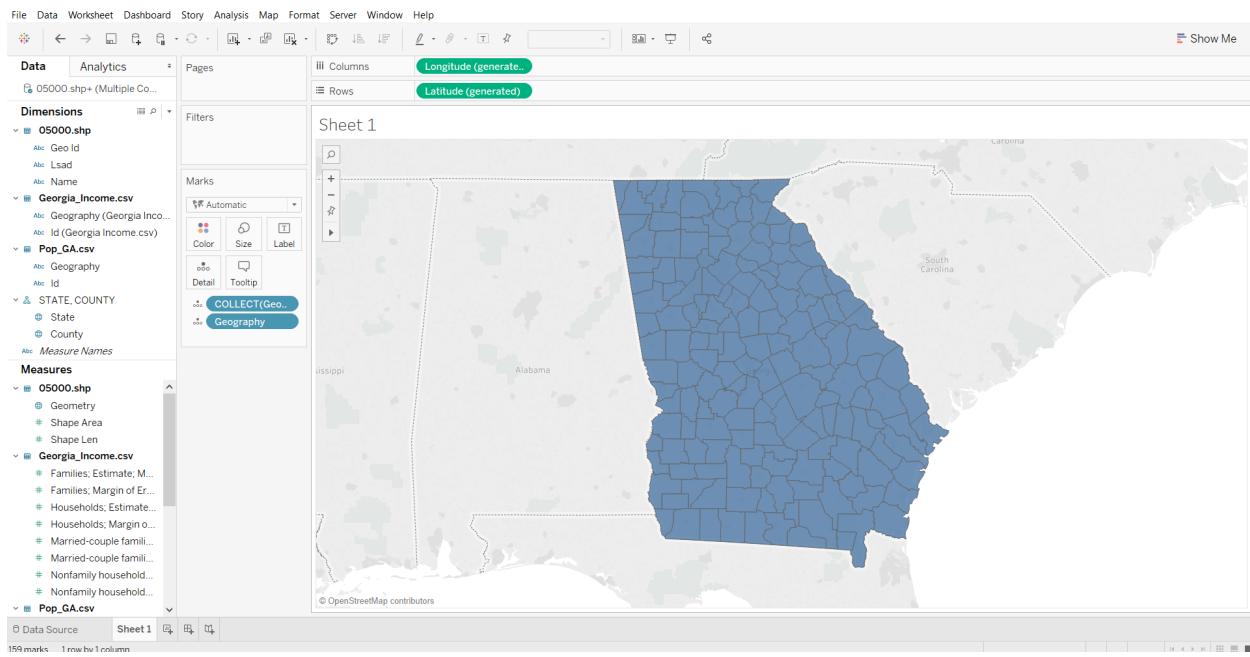
Sort fields Data source order

Abs	05000.shp	05000.shp	05000.shp	Abs	05000.shp	05000.shp	05000.shp	Abs	05000.shp	05000.shp	#	Abs	05000.shp	05000.shp	#	Abs	05000.shp	05000.shp	#			
Geo Id	State	County	Name	Lsd	Shape Area	Shape Len	Geometry	Id	Georgia_Income.csv	Georgia_Income.csv	Households E...	Id	Georgia_Income.csv	Georgia_Income.csv	Households E...	Geography (G...	Georgia_Income.csv	Georgia_Income.csv	Households ...			
05000000US13001	13	001	Appling	County	1,839,680,258.28	228,585.48	POLYGON	05000000US13001	Appling County, ...	37,089	3.0	05000000US13003	Atkinson County, ...	33,063	1.4	05000000US13005	Bacon County, Ge...	38,824	3.7			
05000000US13003	13	003	Atkinson	County	1,224,225,675.37	173,620.06	POLYGON	05000000US13005	Bacon County, Ge...	1,023,939,157.81	151,912.88	POLYGON	05000000US13007	Baker County, Ge...	43,867	6.3	05000000US13007	Baker County, Ge...	12,370,082,819.47	198,131.07	POLYGON	
05000000US13005	13	005	Bacon	County	1,023,939,157.81	151,912.88	POLYGON	05000000US13009	Baldwin County, ...	988,409,924.89	165,058.01	POLYGON	05000000US13011	Banks County, ...	895,070,191.92	122,481.52	POLYGON	05000000US13013	Barrow County, ...	69,696	69.8	
05000000US13007	13	007	Baker	County	1,224,225,675.37	173,620.06	POLYGON	05000000US13015	Barrow County, ...	1,783,942,851.96	183,168.66	POLYGON	05000000US13017	Ben Hill County, ...	911,503,432.31	157,385.00	POLYGON	05000000US13019	Berrien County, ...	1,621,463,171.21	191,342.98	POLYGON
05000000US13009	13	009	Baldwin	County	1,783,942,851.96	183,168.66	POLYGON	05000000US13021	Ben Hill County, ...	1,783,942,851.96	183,168.66	POLYGON	05000000US13023	Dink County, ...	1,621,463,171.21	191,342.98	POLYGON	05000000US13025	Dink County, ...	1,621,463,171.21	191,342.98	POLYGON
05000000US13011	13	011	Banks	County	1,783,942,851.96	183,168.66	POLYGON	05000000US13013	Barrow County, ...	1,783,942,851.96	183,168.66	POLYGON	05000000US13015	Barrow County, ...	1,783,942,851.96	183,168.66	POLYGON	05000000US13017	Ben Hill County, ...	52,393	2.2	
05000000US13013	13	013	Barrow	County	1,783,942,851.96	183,168.66	POLYGON	05000000US13015	Barrow County, ...	1,783,942,851.96	183,168.66	POLYGON	05000000US13017	Ben Hill County, ...	32,344	2.9	05000000US13019	Berrien County, ...	38,297	3.2		
05000000US13015	13	015	Bartow	County	1,783,942,851.96	183,168.66	POLYGON	05000000US13017	Ben Hill County, ...	1,783,942,851.96	183,168.66	POLYGON	05000000US13019	Berrien County, ...	1,621,463,171.21	191,342.98	POLYGON	05000000US13021	Dink County, ...	20,102	1.8	
05000000US13017	13	017	Ben Hill	County	1,783,942,851.96	183,168.66	POLYGON	05000000US13019	Berrien County, ...	911,503,432.31	157,385.00	POLYGON	05000000US13021	Dink County, ...	1,621,463,171.21	191,342.98	POLYGON	05000000US13023	Dink County, ...	1,621,463,171.21	191,342.98	POLYGON
05000000US13019	13	019	Berrien	County	1,783,942,851.96	183,168.66	POLYGON	05000000US13021	Dink County, ...	1,621,463,171.21	191,342.98	POLYGON	05000000US13023	Dink County, ...	1,621,463,171.21	191,342.98	POLYGON	05000000US13025	Dink County, ...	1,621,463,171.21	191,342.98	POLYGON
05000000US13021	13	021	Dink	County	1,783,942,851.96	183,168.66	POLYGON	05000000US13023	Dink County, ...	1,621,463,171.21	191,342.98	POLYGON	05000000US13025	Dink County, ...	1,621,463,171.21	191,342.98	POLYGON	05000000US13027	Dink County, ...	1,621,463,171.21	191,342.98	POLYGON

Sheet1

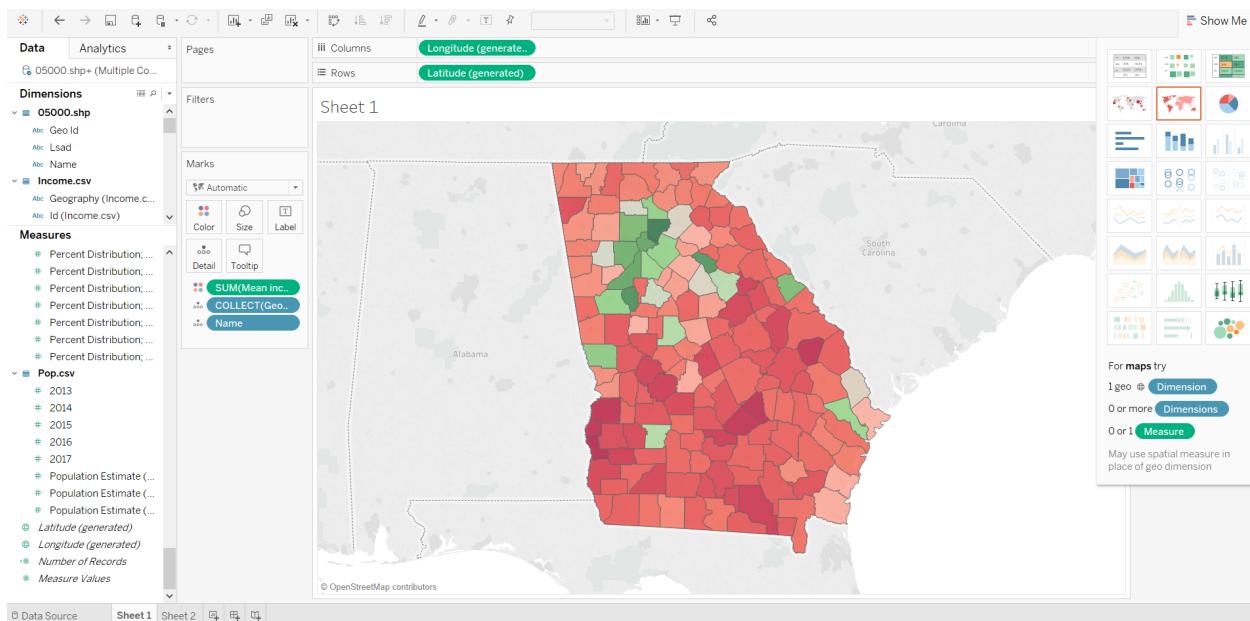
4. Visualization – Create a Map

- under measures and 05000.shp, double click on Geometry.
- The state of Georgia will pop up.
- Drag Geography from Pop_Ga onto the marks.



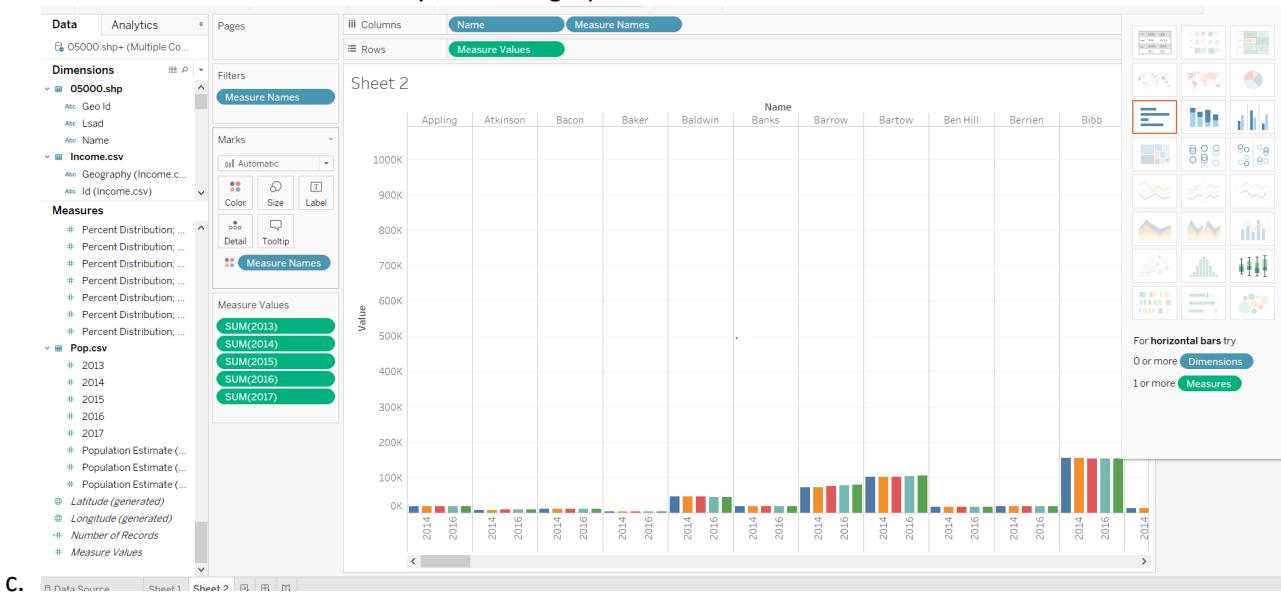
5. Visualization - Overlay household Income on the map

- Drag Mean income from the Georgia_income.csv file and put it on color.
- Change the colors by hitting color and edit color.
- Select Red green diverging.
- Change the Opacity to 100%.

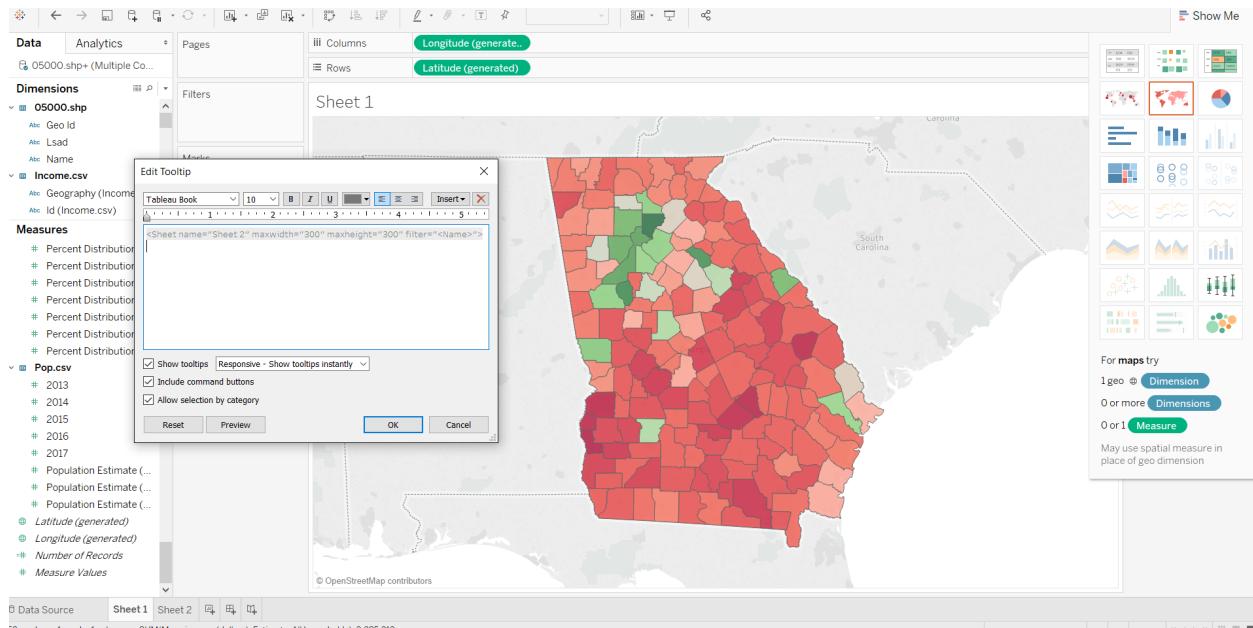


6. Visualization - create a tooltip to show the household population

- Create a new sheet, add name to columns and the years 2010-2017 on rows.
- Select the side by side bars graph on the show me button.



- go back to the map, click tooltip and insert sheet2. Filter on<Name> and expand the size of the viz in tooltip.



7. Visualization – change the map layer

- Click on map and select the dark theme.

