

How to Use American Community Survey (ACS) Geodatabase Files and ArcMap

May 16, 2018

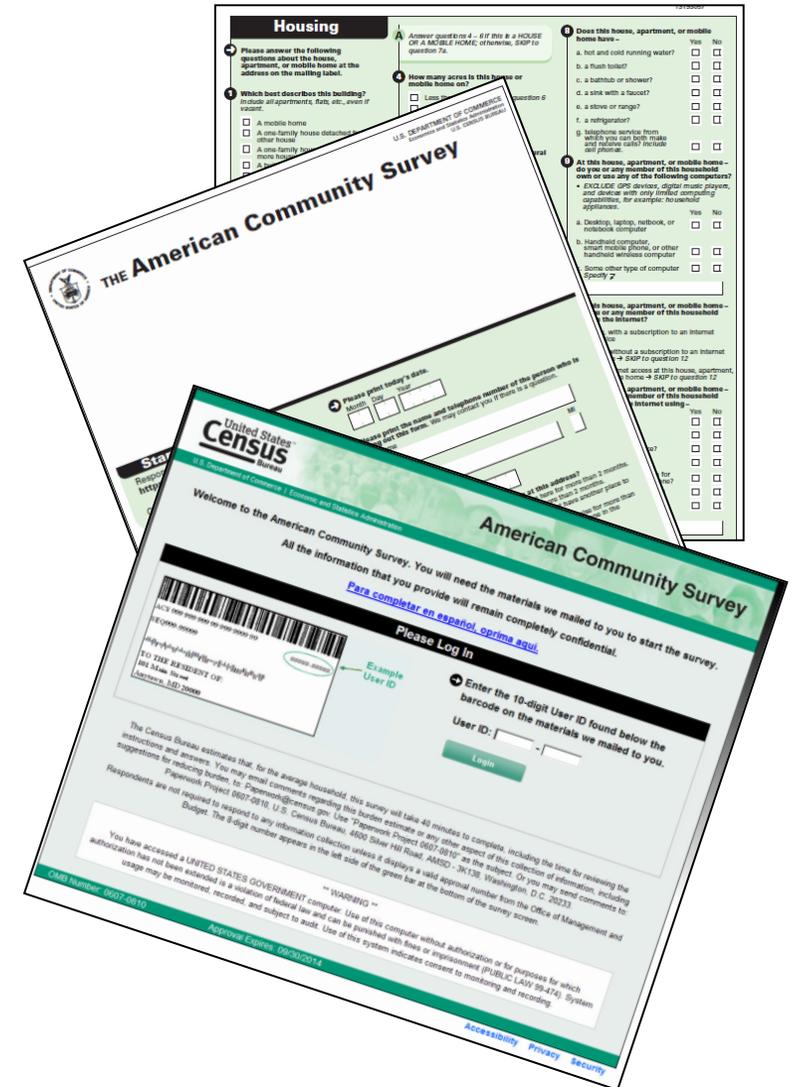
Justin Keller, American Community Survey Office
Fay Dahlquist, Geography Division, U.S. Census Bureau

Outline

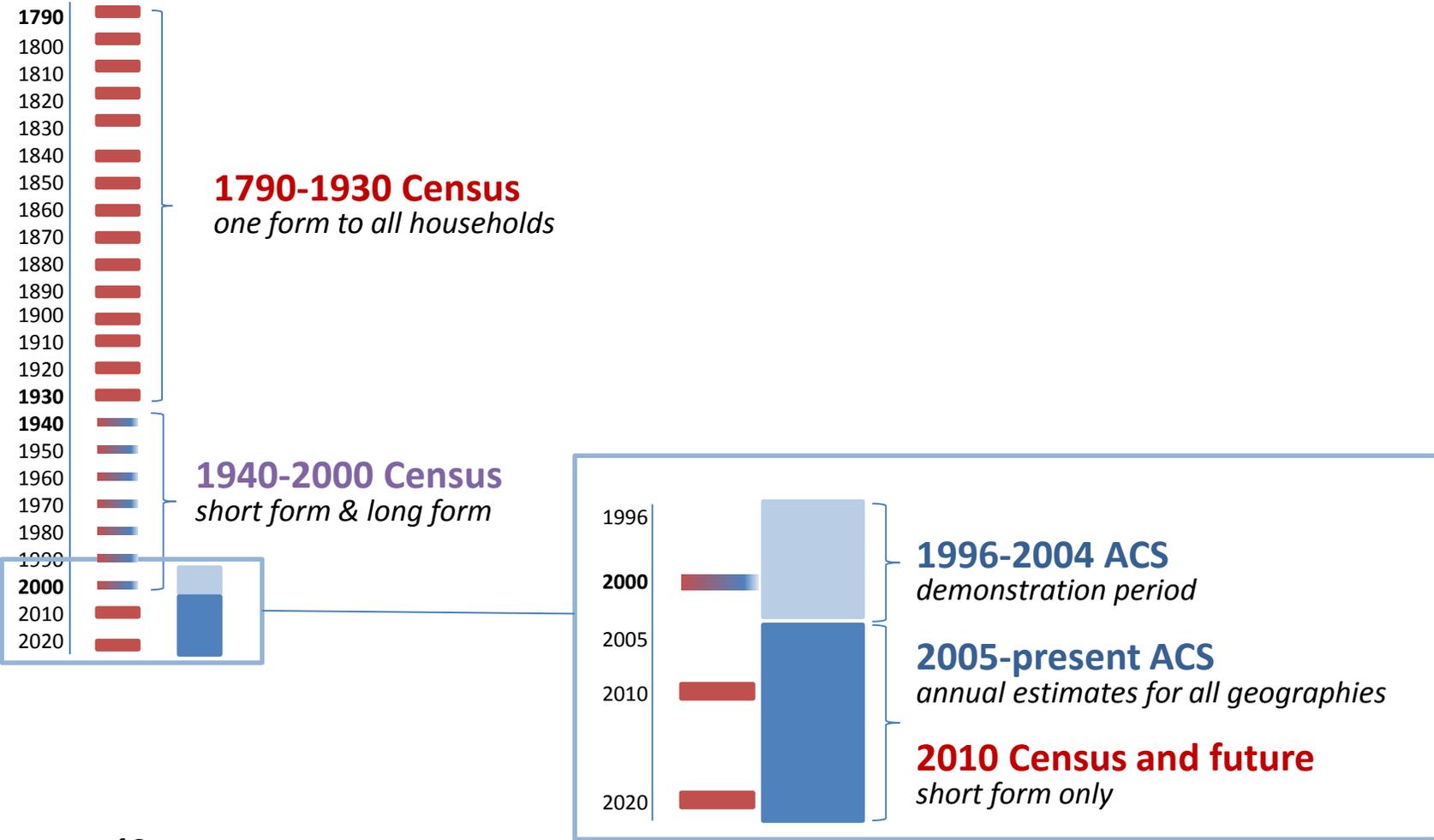
- **American Community Survey (ACS) basics**
- Background Information
- Location of Census Geodatabases
- Downloading Geodatabase
- Joining feature class to tables
- Using metadata tables to identify full descriptions
- Wrap-up/Questions

American Community Survey is Foundational

- The nation's most current, reliable, and accessible data source for local statistics on critical planning topics such as age, children, veterans, commuting, education, income, and employment
- Surveys about **3.5 million** addresses and informs **\$675 billion** of Federal government spending each year
- Designed to produce critical information on **small areas and small population groups** previously collected on the decennial long form
- Covers **35+ topics**, supports over **300** evidence-based Federal government uses, and produces **11 billion** estimates each year
- Three key annual data releases:
 - 1-year estimates (12 months of data)
 - 1-year Supplemental Estimates (12 months of data)
 - 5-year estimates (60 months of data)



Decennial Census and the American Community Survey



How is the ACS Different from a Census?

	ACS	2010 and 2020 Census
<i>Purpose</i>	Sample estimates	Official counts
<i>Produces</i>	Population characteristics	Population totals
<i>New Data Every</i>	Year	10 years
<i>Data Reflect</i>	Period of time	Point in time
<i>Collects</i>	Information previously on the census“ long form	“Short form” information

ACS Data Collection Process

Online



Mail



Personal Visit



Self-Response Modes

Non-Response Mode

ACS Content

Social	Demographic	Housing
Ancestry Citizenship Status Disability Status Educational Attainment & School Enrollment Fertility Grandparents as Caregivers Language Spoken at Home Marital History; Marital Status Migration/Residence 1 Year Ago Period of Military Service Place of Birth Undergraduate Field of Degree Veteran Status Year of Entry	Age Hispanic or Latino Origin Race Relationship to Householder Sex	Bedrooms Computer and Internet Use House Heating Fuel Kitchen Facilities Occupancy/Vacancy Status Occupants Per Room Plumbing Facilities Rent Rooms Selected Monthly Owner Costs Telephone Service Available Tenure (Owner/Renter) Units in Structure Value of Home Vehicles Available Year Householder Moved into Unit Year Structure Built
	Economic	
	Commuting (Journey to Work) & Place of Work Employment Status Food Stamps/SNAP Health Insurance Coverage Income and Earnings Industry, Occupation, & Class of Worker Poverty Status Work Status Last Year	

35+ Topics → 1000+ Tables → 11 Billion Estimates

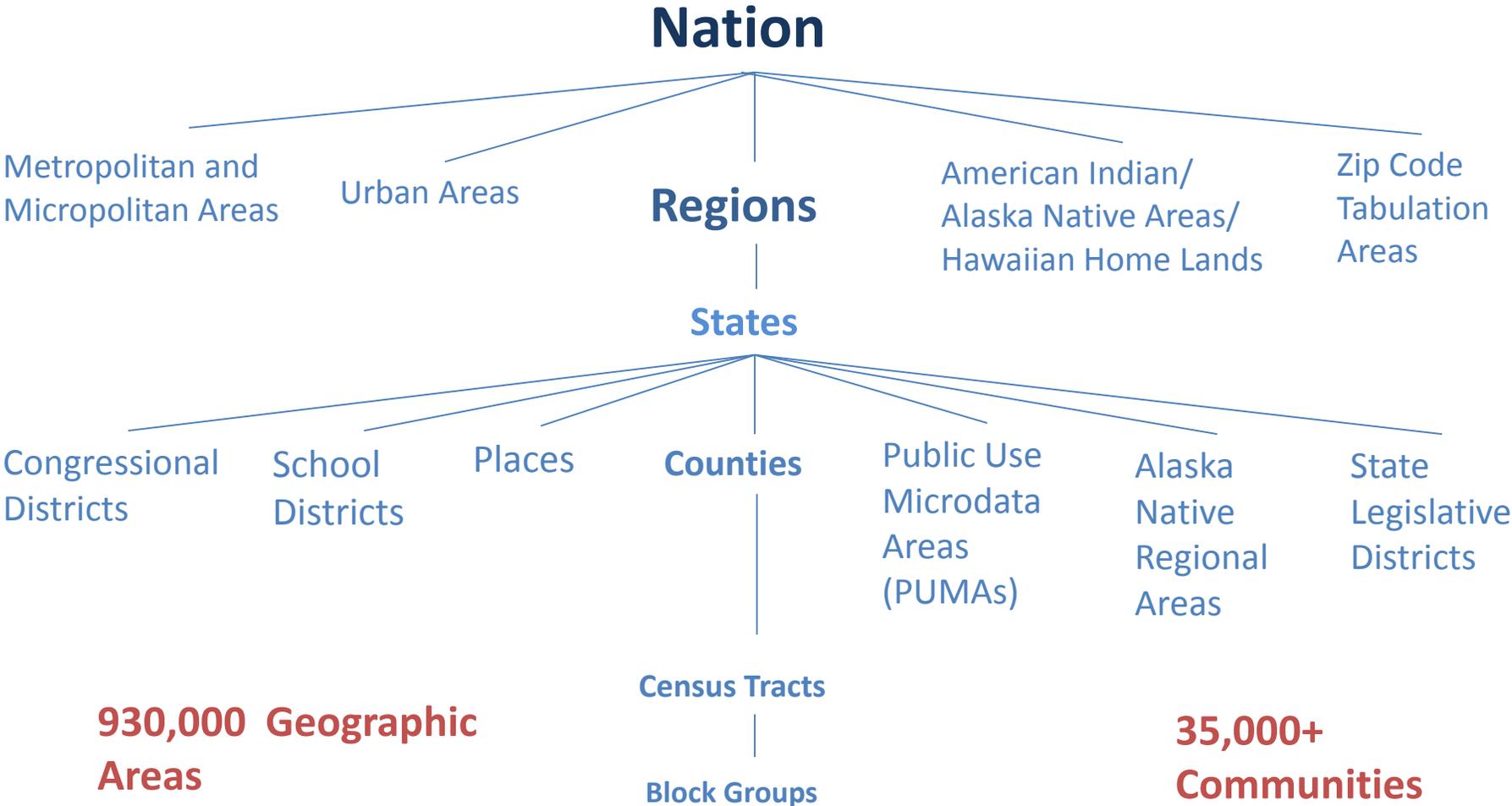
Table/Profile Numbering

B06004APR

- B=Data Product Type (Base Table)
- 06=Subject (Place of Birth)
- 004=Sequential Number (2 or 3 digits)
- A=Race/Hispanic Origin (White Alone)
- PR=For Puerto Rico Geographies Only

[census.gov/programs-surveys/acs/guidance/which-data-tool/table-ids-explained.html](https://www.census.gov/programs-surveys/acs/guidance/which-data-tool/table-ids-explained.html)

Selected Census Geographic Concepts



Availability of ACS Data Products

Estimated Population of Geographic Area	1-Year Estimates	1-Year Supplemental Estimates	5-Year Estimates
65,000 or more	X	X	X
20,000 to 64,999		X	X
Less than 20,000			X
Release Date	September 13	October 18	December 6

census.gov/programs-surveys/acs/news/data-releases.html

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- Location of Census Geodatabases
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- Wrap-up/Questions

Background Information

- Geodatabases bring together geography from the 2016 TIGER/Line Shapefiles and data from the 2012-2016 American Community Survey (ACS) 5-year estimates.
- The geodatabases were developed for Census Bureau partners and the public who wanted an easier way to join ACS data to geographic boundaries.

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Census.gov

The screenshot shows the top navigation bar of the Census.gov website. The 'GEOGRAPHY' menu item is circled in red. Below it, a grid of navigation buttons includes 'Geography Main', 'About', 'Education', 'GSS Initiative', 'Interactive Maps', 'Maps & Data' (circled in red), 'Metropolitan & Micropolitan', 'Partnerships', 'Reference', and 'Research'. Below the navigation is a featured story titled 'Economic Census Goes All Electronic' with a photo of a man working at a computer. At the bottom, there are three widgets: 'POPULATION CLOCK' showing U.S. and World population, 'QUICKFACTS' showing the median household income of Darien city, Illinois is \$82,255, and 'U.S. Census Bureau Economic Indicators' showing various economic data points.

United States Census Bureau

U.S. Department of Commerce | Blogs | Index A-Z | Glossary | FAQs

TOPICS: Population, Economy, **GEOGRAPHY** (Maps, Products), LIBRARY: Infographics, Publications, DATA: Tools, Developers, SURVEYS/PROGRAMS: Respond, Survey Data, NEWSROOM: News, Blogs, ABOUT US: Our Research

Search

Geography Main | About | Education | GSS Initiative

Interactive Maps | **Maps & Data** | Metropolitan & Micropolitan | Partnerships

Reference | Research

Economic Census Goes All Electronic

Check out this featured story of America Counts: **Stories Behind the Numbers** to learn how a new respondent portal will increase privacy and convenience.

POPULATION CLOCK

U.S. Population: 327,589,048

World Population: 7,468,472,147

Apr 23, 2018 17:33 UTC (+4) [Learn More >>](#)

QUICKFACTS

Did You Know

Median household income of Darien city, Illinois is **\$82,255**

Source: American Community Survey

Select a state to begin

U.S. Census Bureau Economic Indicators

New Residential Construction	1,319,000	↑*
March 2018 Report	Housing starts	1.9%
Released 8:30 AM EDT, 4/17/18		
Business Inventories	\$1,928.8 B	↑
February 2018 Report		0.6%
Released 10:00 AM EDT, 4/16/18		
Advance Monthly Retail Sales	\$494.6 B	↑

View All * change not statistically significant * significance not reported / applicable

Is this page helpful? Yes No

TIGER Products

You are here: [Census.gov](#) > [Geography](#) > [Maps & Data](#)

Geography

[Main](#) | [About](#) | [Maps & Data](#) | [Reference](#) | [Partnerships](#) | [Education](#) | [Research](#) | [GSS-I](#) | [Contact Us](#)

Maps & Data

[Maps & Data Main Page](#)

Maps

- [Census Data Mapper](#)
- [Reference](#)
- [Thematic](#)
- [Maps Available for Purchase](#)

Data

- [TIGER Products](#)
- [Census Geocoder](#)
- [Partnership Shapefiles](#)
- [Relationship Files](#)
- [Gazetteer Files](#)
- [Block Assignment Files](#)
- [Name Lookup Tables](#)
- [Tallies](#)
- [LandView](#)

Maps & Data

Find geographic data and products such as the TIGER/Line Shapefiles, KMLs, TIGERweb, cartographic boundary files, geographic relationship files, and reference and thematic maps.



Maps

[Census Data Mapper](#)

The Census Data Mapper is a web mapping application intended to provide users with a simple interface to view, save and print county-based demographic maps of the United States.

[Reference Maps](#)

Reference maps are designed to show the geographic locations of features and boundaries. These maps usually contain features, such as roads and rivers, and boundaries, such as county, place, census tracts, or many more. These maps do not contain demographic data and are used solely to show the location of and relationship between boundaries and features. For interactive reference maps see TIGERweb.

[Thematic Maps](#)

Thematic maps are designed to show demographic, economic, business, or socioeconomic data about or characteristics of an area. Thematic maps tell a story spatially. They show a theme, or special topic, for a geographic area. Thematic maps may use features from reference maps as their base and then display additional data to tell a story about that area.

Geographic Data

[TIGER Products](#)

Geospatial Files and Applications from our MAF/TIGER database. Tools for use in GIS software, Web Mapping Services (WMS) to use in your applications, and browsers to view geographic data.

[Census Geocoder](#)

The Census Geocoder allows users to look up the geography an address is located within for up to 1,000 addresses at a time.

[Partnership Shapefiles](#)

The Partnership Shapefiles are used in our partner programs to share data with and capture data from our partners.

[Relationship Files](#)

Relationship files help users compare different vintages of geography, such as Census 2000 blocks to 2010 Census blocks in text format.

TIGER/Line with Selected Demographic and Economic Data

Product	Best For...	File Format	Type of Data	Level of Detail	Descriptive Attributes	Vintages Available
TIGER/Line Shapefiles	Most mapping projects--this is our <i>most comprehensive dataset</i> . Designed for use with GIS (geographic information systems).	Shapefiles (.shp) and database files (.dbf)	Boundaries, roads, address information, water features, and more	Full detail (not generalized)	Extensive	2006 - 2017, CD 113
TIGER Geodatabases	Useful for users needing national datasets or all major boundaries by state. Designed for use in ArcGIS. Files are extremely large.	Geodatabase (.gdb)	Boundaries, roads, address information, water features, and more	Full detail (not generalized)	Limited	2013-2017
TIGER/Line with Selected Demographic and Economic Data	Data from selected attributes from the 2010 Census, 2006-2010 through 2010-2014 ACS 5-year estimates and County Business Patterns (CBP) for selected geographies. Designed for use with GIS.	Shapefiles (.shp) and Geodatabases	Boundaries, Population Counts, Housing Unit Counts, 2010 Census Demographic Profile 1 attributes, 2006-2010 through 2012-2016 ACS 5-year estimates data profiles, CBP data.	Full detail (not generalized)	Limited	2012 CBP, 2010, 2006-2010 to 2012-2016 ACS 5-Year Estimates
Cartographic Boundary Shapefiles	Small scale (limited detail) mapping projects clipped to shoreline. Designed for thematic mapping using GIS.	Shapefiles (.shp)	Selected boundaries	Less detail (generalized)	Limited	2013-2017, 2010, 2000, 1990
KML - Cartographic Boundary Files	Viewing data or creating maps using Google Earth, Google Maps, or other platforms that use KML.	KML (.kml)	Selected boundaries	Less detail (generalized)	Limited	2013-2017
TIGERweb	Viewing spatial data online or streaming to your mapping application.	Interactive viewer, HTML data files, plus REST and WMS map services	Boundaries, roads, address information, water features, and more	Detailed	Extensive	Current, 2015 ACS, 2014 ACS, 2010 Census

2012 – 2016 Detailed Tables

The screenshot shows the U.S. Census Bureau website's 'Geography' section. The main heading is 'TIGER/Line® with Selected Demographic and Economic Data'. Below this, there is a list of links for various years and data types. The link for '2012 - 2016 Detailed Tables' is circled in red. Other links include '2011 - 2015 Detailed Tables', '2010 - 2014 Detailed Tables', '2009 - 2013 Detailed Tables', '2008 - 2012 Detailed Tables', '2007 - 2011 Block Group Data', '2007 - 2011 Data Profiles', '2006 - 2010 Block Group Data', and '2006 - 2010 Data Profiles'. There are also sections for '2010 Census' and 'County Business Patterns — Geodatabase Format'.

www.census.gov/geo/maps-data/data/tiger-data.html

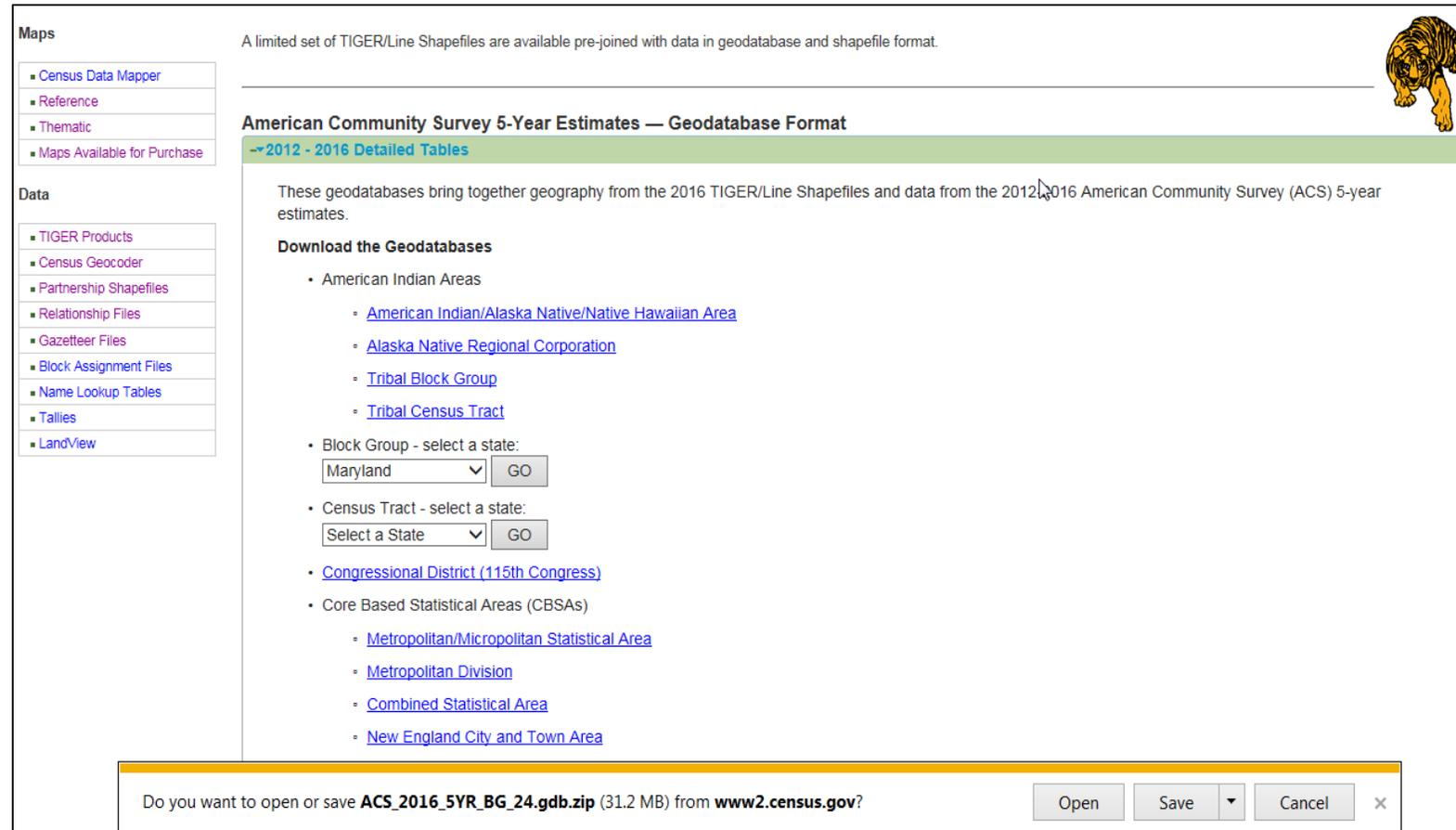
Outline

- American Community Survey (ACS) basics
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- **Downloading Geodatabase**
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Block Group

The screenshot shows the 'Geography' section of the U.S. Census Bureau website. The main heading is 'TIGER/Line® with Selected Demographic and Economic Data'. Below this, there is a section for 'American Community Survey 5-Year Estimates — Geodatabase Format' with a link to '2012 - 2016 Detailed Tables'. The page lists various geodatabases for download, including American Indian Areas, Tribal Census Tract, and Core Based Statistical Areas (CBSAs). A red circle highlights the 'Block Group - select a state:' dropdown menu, which includes a 'Select a State' dropdown and a 'GO' button. Other dropdown menus for 'Census tract - select a state:' and 'County Subdivision - select a state:' are also visible. A small tiger logo is in the top right corner, and a 'Is this page helpful?' feedback box is in the bottom right corner.

ZIP File pop ups



The screenshot shows a web interface for downloading geodatabases. On the left, there are navigation menus for 'Maps' and 'Data'. The main content area is titled 'American Community Survey 5-Year Estimates — Geodatabase Format' and includes a sub-section for '2012 - 2016 Detailed Tables'. A text block explains that these geodatabases combine 2016 TIGER/Line Shapefiles with 2012-2016 ACS 5-year estimates. Below this, a 'Download the Geodatabases' section lists various geographic areas with corresponding links. At the bottom, a yellow-bordered popup window asks if the user wants to open or save a file named 'ACS_2016_5YR_BG_24.gdb.zip' (31.2 MB) from 'www2.census.gov?'. The popup has 'Open', 'Save', and 'Cancel' buttons.

Maps

- Census Data Mapper
- Reference
- Thematic
- Maps Available for Purchase

Data

- TIGER Products
- Census Geocoder
- Partnership Shapefiles
- Relationship Files
- Gazetteer Files
- Block Assignment Files
- Name Lookup Tables
- Tallies
- LandView

A limited set of TIGER/Line Shapefiles are available pre-joined with data in geodatabase and shapefile format.

American Community Survey 5-Year Estimates — Geodatabase Format

[→ 2012 - 2016 Detailed Tables](#)

These geodatabases bring together geography from the 2016 TIGER/Line Shapefiles and data from the 2012-2016 American Community Survey (ACS) 5-year estimates.

Download the Geodatabases

- American Indian Areas
 - [American Indian/Alaska Native/Native Hawaiian Area](#)
 - [Alaska Native Regional Corporation](#)
 - [Tribal Block Group](#)
 - [Tribal Census Tract](#)
- Block Group - select a state:
- Census Tract - select a state:
- [Congressional District \(115th Congress\)](#)
- Core Based Statistical Areas (CBSAs)
 - [Metropolitan/Micropolitan Statistical Area](#)
 - [Metropolitan Division](#)
 - [Combined Statistical Area](#)
 - [New England City and Town Area](#)

Do you want to open or save **ACS_2016_5YR_BG_24.gdb.zip** (31.2 MB) from **www2.census.gov?**

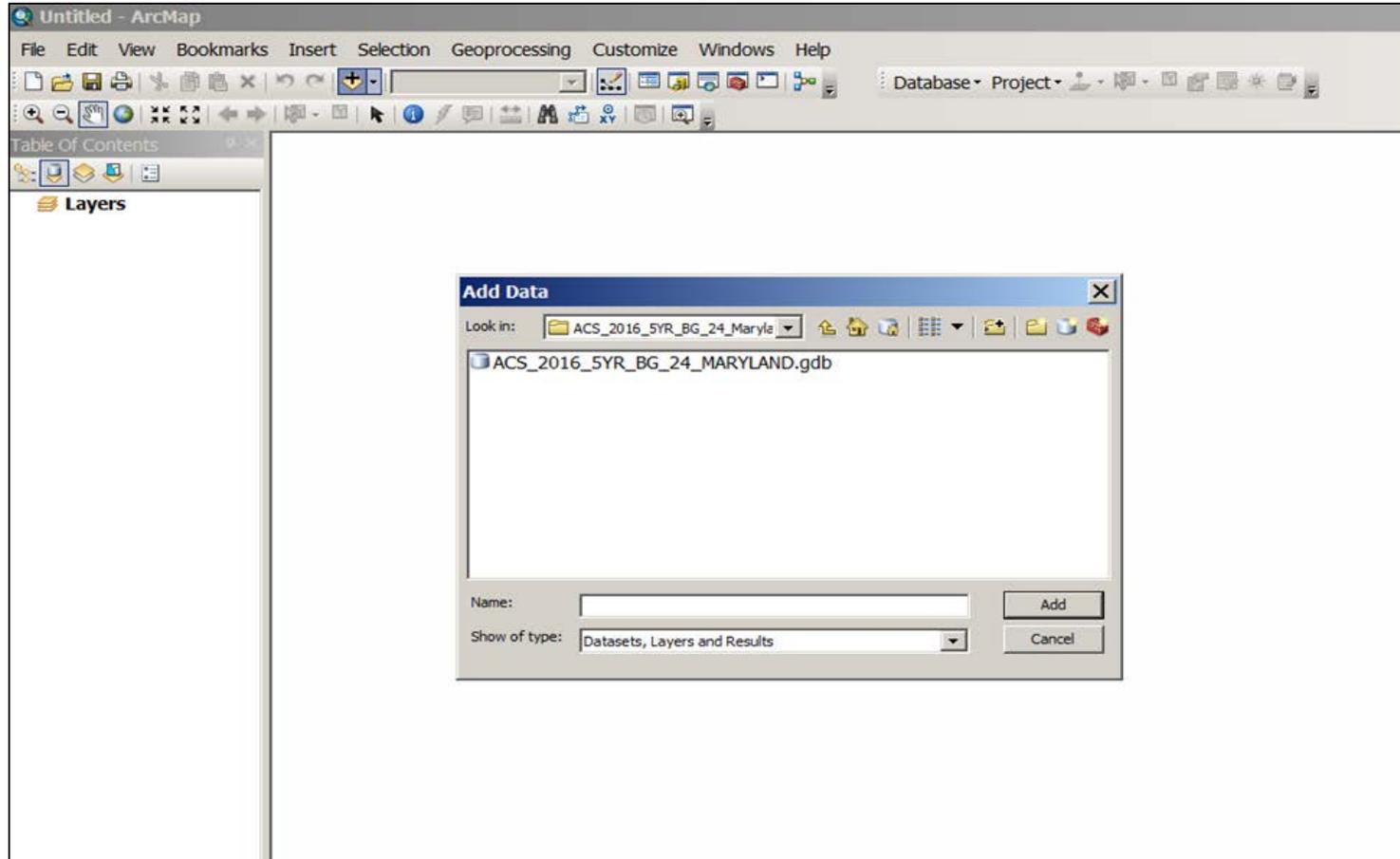
Unzip Files Once Download is Complete

Name	Date modified ^	Type	Size
 ACS_2016_5YR_BG_24_MARYLAND.gdb	4/10/2018 4:58 PM	File folder	

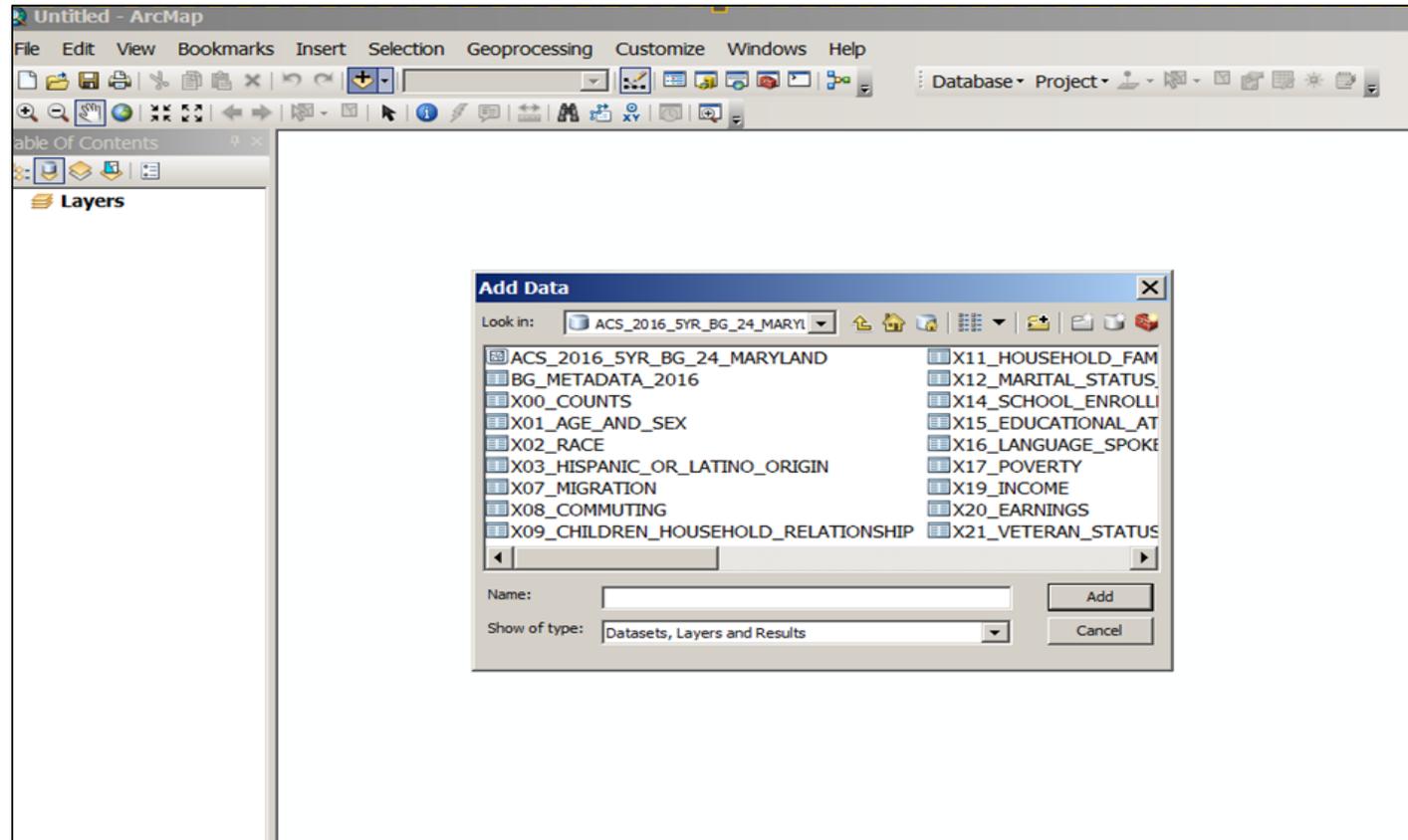
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Adding Geodatabase

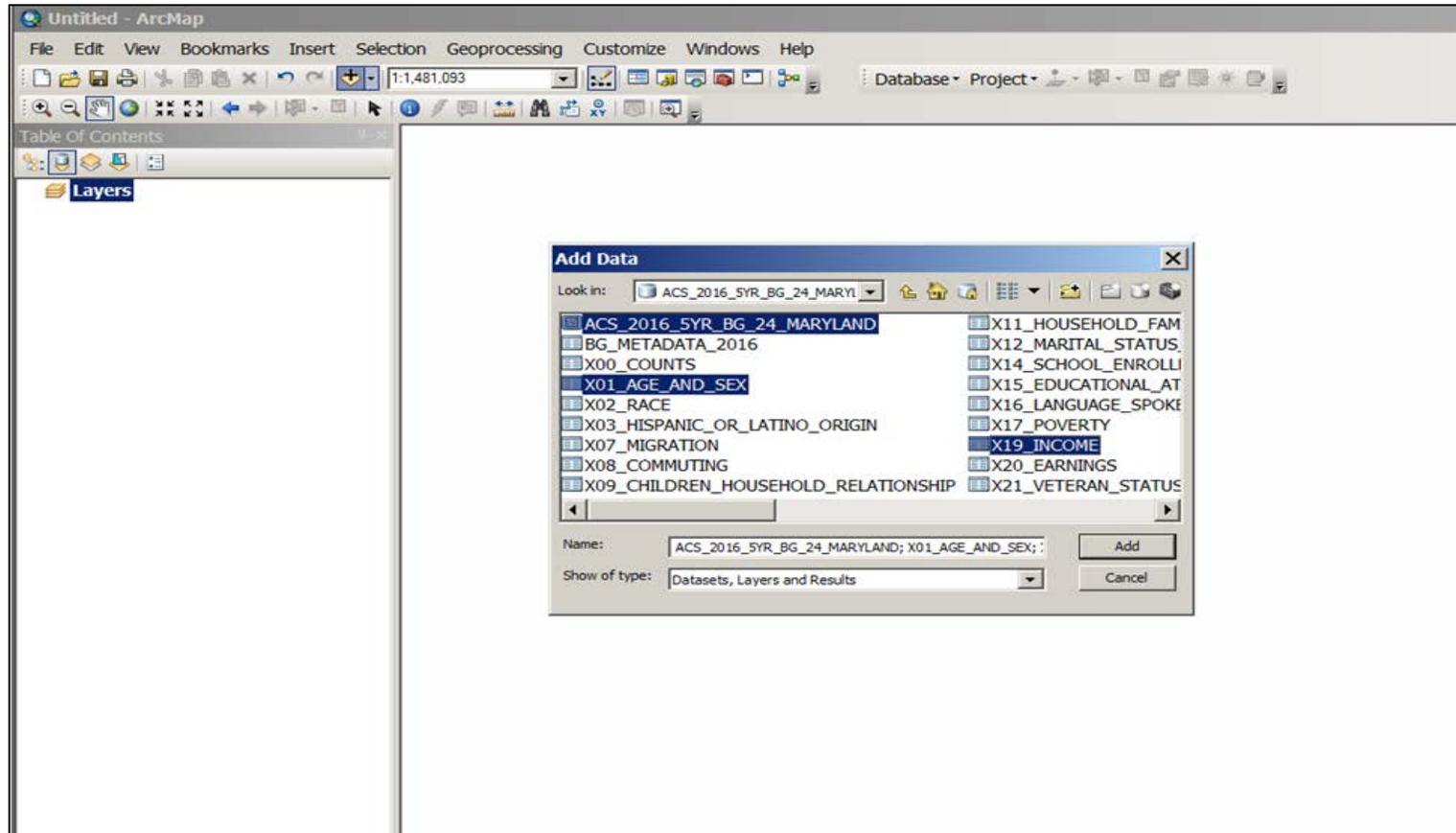


Choose Feature Class and Tables

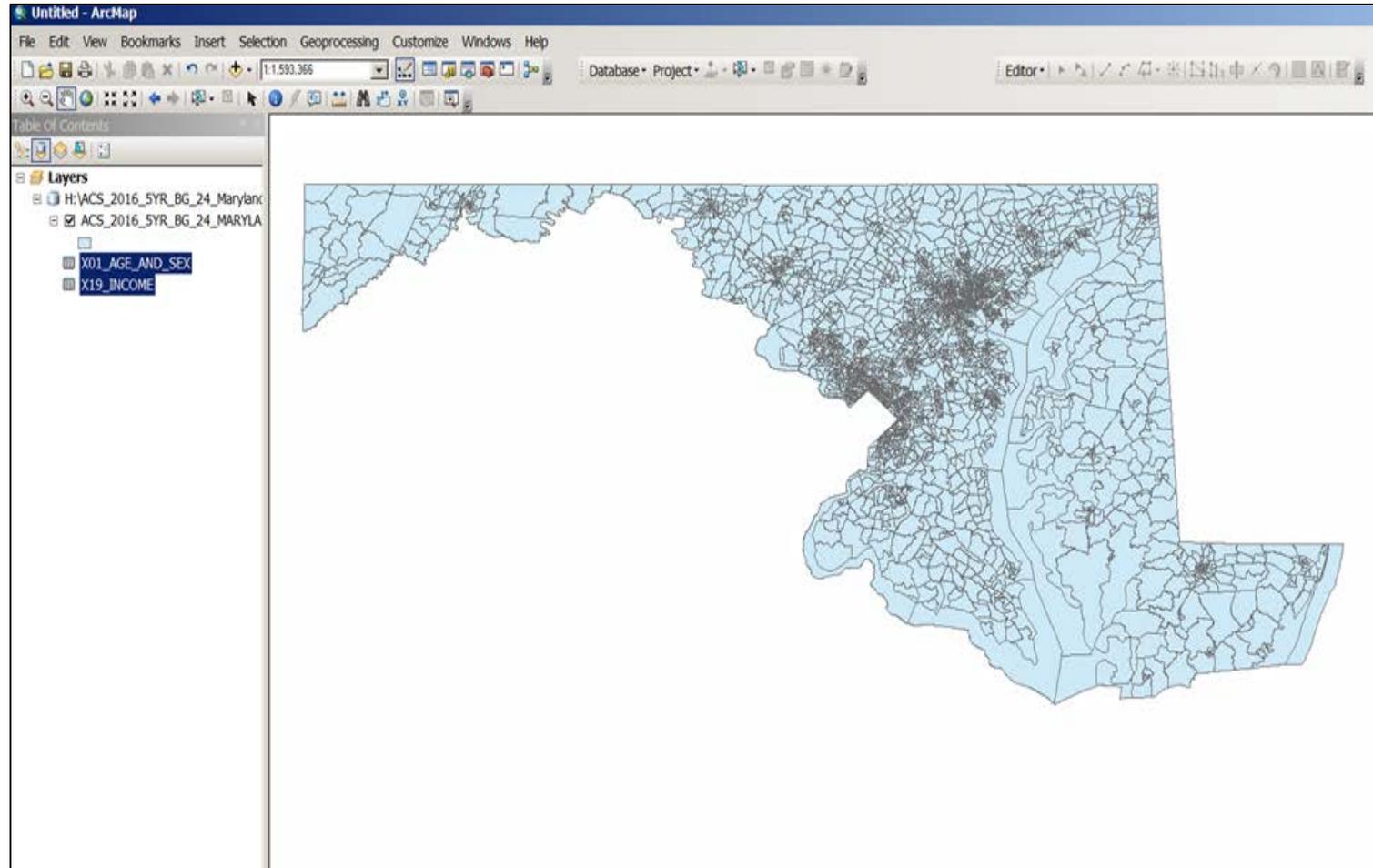


www.census.gov/geo/reference/mtfcc.html

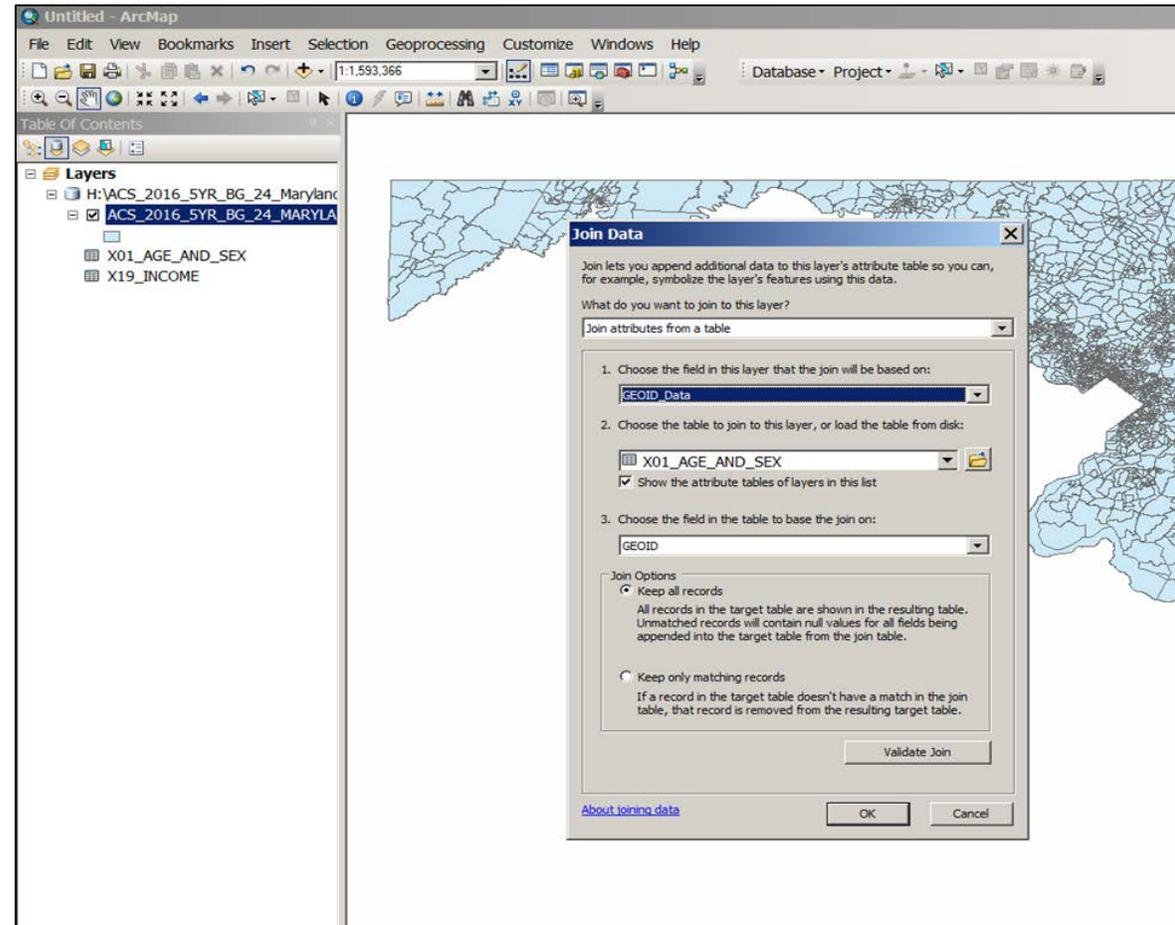
Feature Class, Age and Sex, & Income



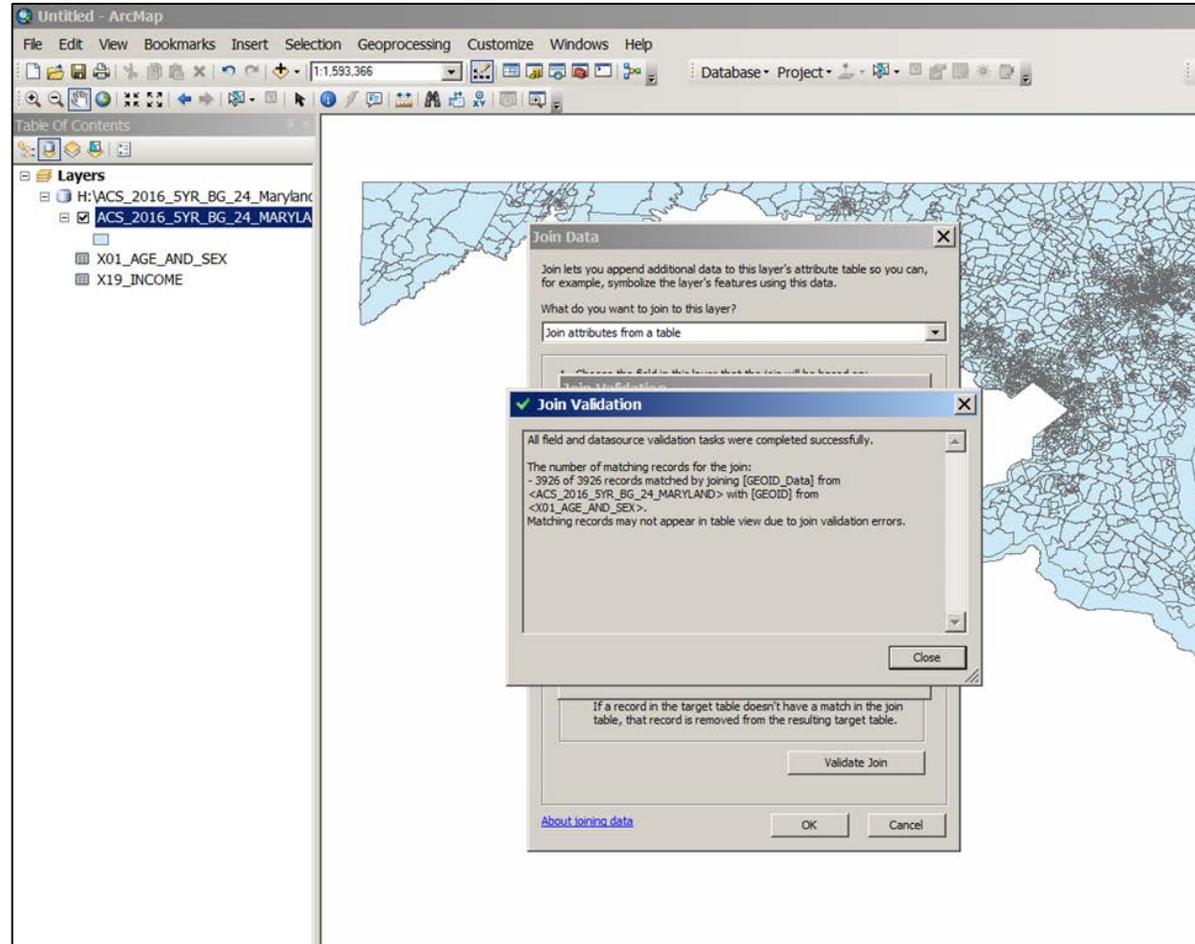
View in ArcMap



Joining the Table to the Feature Class



Validation Check



Attribute Table of Successful Join

Table							
ACS_2016_5YR_BG_24_MARYLAND							
GEOID *	B01001e1	B01001m1	B01001e2	B01001m2	B01001e3	B01001m3	B01001e4
15000US240054112023	902	236	453	146	12	18	11
15000US240135030003	1133	255	565	151	13	23	13
15000US240135010013	408	141	212	82	0	12	0
15000US240253013021	2224	557	920	292	170	147	54
15000US240253016012	1819	602	707	316	140	109	116
15000US240338069002	1739	567	1035	393	28	30	32
15000US240338035223	1002	322	448	204	16	19	34
15000US240338046002	972	216	449	120	56	32	26
15000US240317010061	1370	213	658	142	15	17	28
15000US240317008292	1683	213	861	130	94	68	81
15000US240317012162	1855	268	855	175	34	53	31
15000US240317012135	1342	268	464	134	19	29	46
15000US240317008343	2238	357	916	201	117	74	183
15000US240317012013	2069	527	1075	275	22	35	74
15000US240317035013	891	209	444	124	13	19	0
15000US240317012161	644	105	258	92	19	23	0
15000US240317012163	1155	246	701	161	0	12	0
15000US240317003063	2169	375	995	222	50	37	178
15000US240317008332	2196	367	1096	187	25	28	154
15000US240317010051	2907	300	1473	207	65	43	78
15000US240276023043	1698	369	793	141	74	59	44
15000US240276023061	2470	429	1014	140	31	34	58
15000US240317008113	2178	350	1105	197	44	32	92
15000US240317009012	1705	387	828	261	65	47	38
15000US240317010012	2059	352	867	156	50	35	50
15000US240276026002	967	301	469	173	14	28	46
15000US240317006142	944	368	370	158	19	31	24
15000US240317012211	2035	269	1006	160	39	31	71
15000US240317012153	1959	405	755	231	21	33	0
15000US240317012133	1141	264	500	150	0	12	17
15000US240317008201	2755	276	1387	195	98	41	105

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Metadata – Example 1

Documentation

Data are available for the United States and some data sets are available for Puerto Rico.

In each geodatabase is a metadata table with a short name and a full description of each data element. be difficult to read in a GIS, and are provided here as text files:

- American Indian Areas
 - [American Indian/Alaska Native/Native Hawaiian Area Metadata](#) [TXT]
 - [Alaska Native Regional Corporation Metadata](#) [TXT]
 - [Tribal Block Group Metadata](#) [TXT]
 - [Tribal Census Tract Metadata](#) [TXT]
- [Block Group Metadata](#) [TXT]
- [Census Tract Metadata](#) [TXT]
- [Congressional District \(115th Congress\) Metadata](#) [TXT]
- Core Based Statistical Areas (CBSAs)
 - [Metropolitan/Micropolitan Statistical Area Metadata](#) [TXT]
 - [Metropolitan Division Metadata](#) [TXT]
 - [Combined Statistical Area Metadata](#) [TXT]
 - [New England City and Town Area Metadata](#) [TXT]
 - [New England City and Town Area Division Metadata](#) [TXT]
 - [Combined New England City and Town Area Metadata](#) [TXT]
- [County Metadata](#) [TXT]

<https://www.census.gov/geo/maps-data/data/tiger-data.html>

Tips

- When joining tables to the feature class, use the GEOID_Data field *not* the GEOID field.
- Metadata can be viewed as a table or text document.

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Continue the Conversation

#ACSdata #CensusGeo



Sign up for and manage alerts at

<https://public.govdelivery.com/accounts/USCENSUS/subscriber/new>



More information online:

<https://www.census.gov/acs>

<https://www.census.gov/geography.html>



1-800-923-8282



acso.users.support@census.gov

geo.tiger@census.gov



Social media: @uscensusbureau

Questions?



- Purpose:
 - Improve understanding of the value and utility of ACS data.
 - Promote information sharing among data users about key ACS data issues and applications
- Membership is free and open to all interested ACS data users
- Presentations and recordings from past conferences available
- Webinars and special sessions at professional meetings planned
- Users group website and online community

acsdatacommunity.prb.org

Need Local Stats?

- Assistance Near You!
Our regional data staff can help you access local statistics from the ACS or offer training to help build your skills.
- Contact us at:
1-844-ASK-DATA
(1-844-275-3282)
census.askdata@census.gov

