American Community Survey (ACS)
Comparing Estimates

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Presented for: Government Publishing Office

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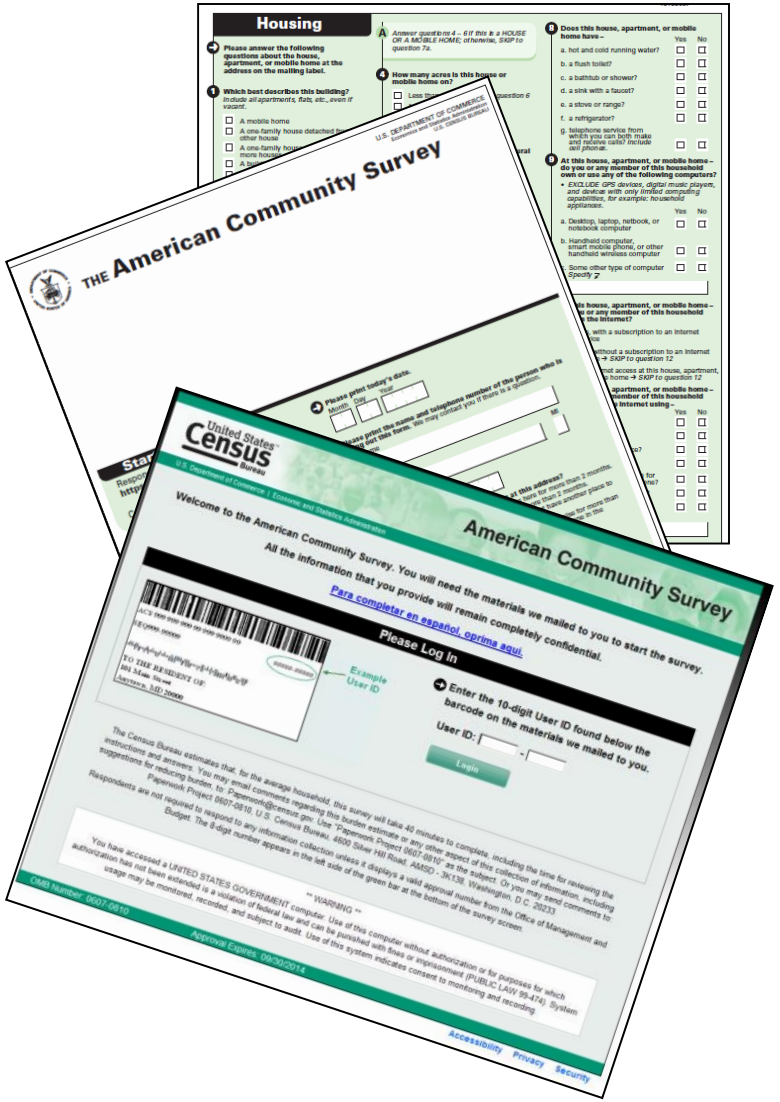
U.S. Census Bureau

Outline

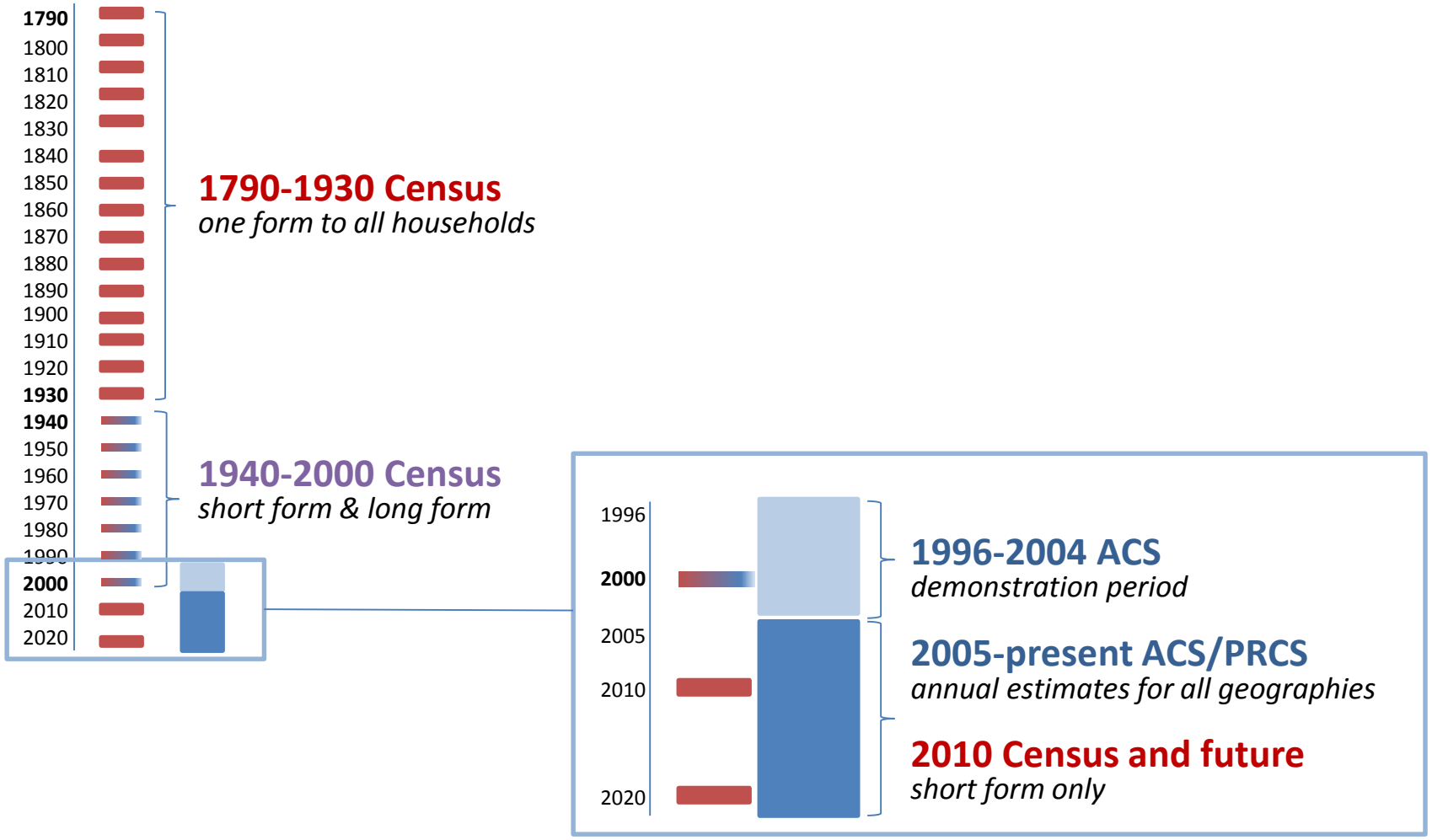
- **American Community Survey (ACS) basics**
- Accessing ACS data products
- Comparing Estimates
- Resources for Learning More
- Questions

ACS Basics

- Ongoing monthly survey sent to 3.5 million addresses per year to produce detailed population and housing estimates each year
  - Visit 20,000 Group Quarter facilities and sample approximately 194,000 residents each year
- Designed to produce *critical information on small areas and small population groups* previously collected on the decennial long form
- Covers 35+ topics and supports over 300 known Federal Government uses
- Data released three times each year
  - 1-year estimates (12 months of data)
  - 1-year Supplemental Estimates (12 months of data)
  - 5-year estimates (60 months of data)



Census & ACS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1990
2000
2010
2020
1790-1930 Census
one form to all households
1940-2000 Census
short form & long form
1996
2000
2005
2010
2020
1996-2004 ACS
demonstration period
2005-present ACS/PRCS
annual estimates for all geographies
2010 Census and future
short form only

ACS Data Collection Process

Online

Mail

Personal Visit

Self-Response Modes

Non-Response Mode

ACS Content

Social

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

Demographic

Age
Hispanic or Latino Origin
Race
Relationship to Householder
Sex

Economic

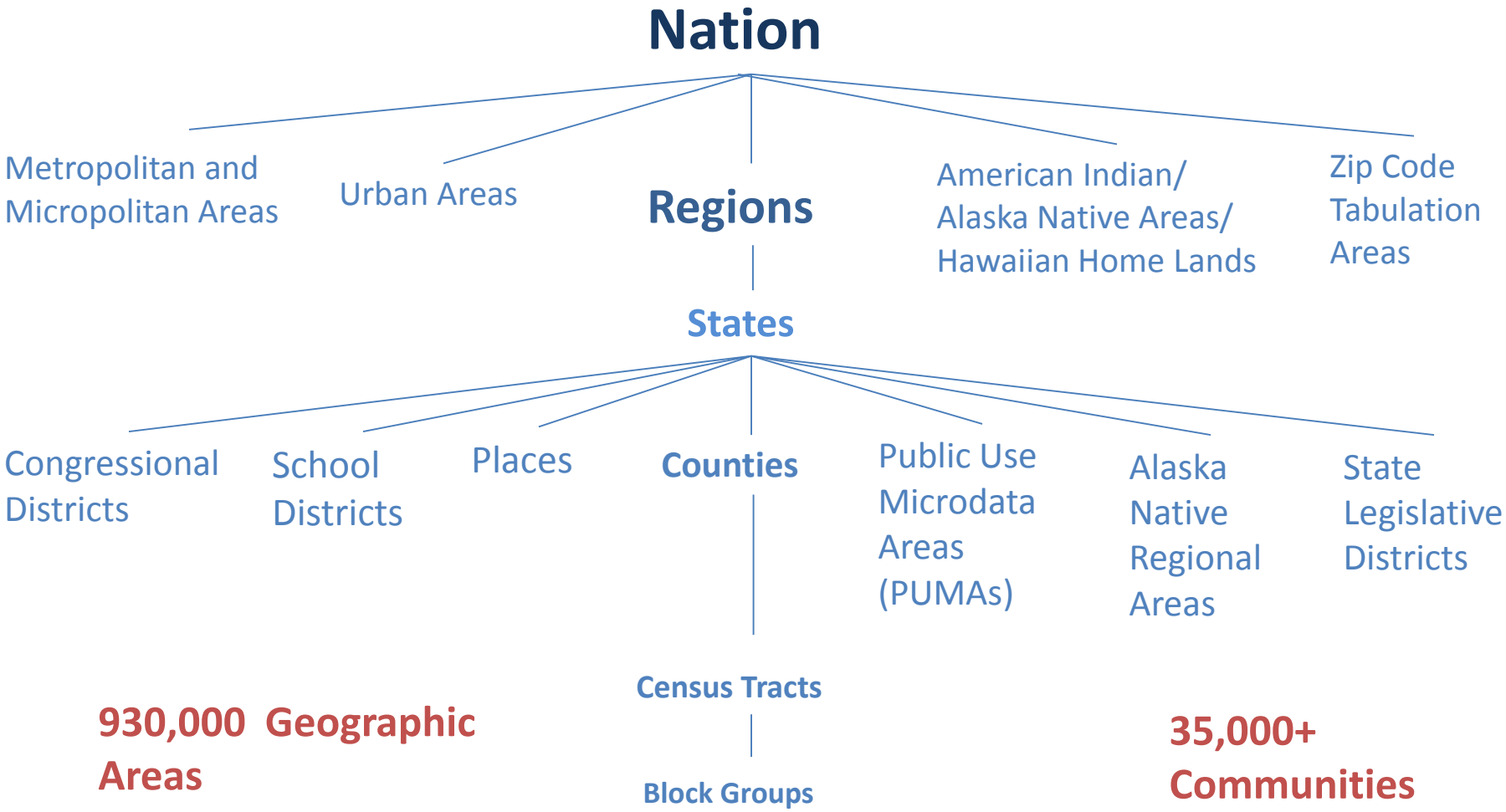
Commuting (Journey to Work) & Place of Work
Employment Status
Food Stamps/SNAP
Health Insurance Coverage
Income and Earnings
Industry, Occupation, & Class of Worker
Poverty Status
Work Status Last Year

Housing

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

35+ Topics ➡ 1000+ Tables ➡ 11 Billion Estimates

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 14	October 19	December 7

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

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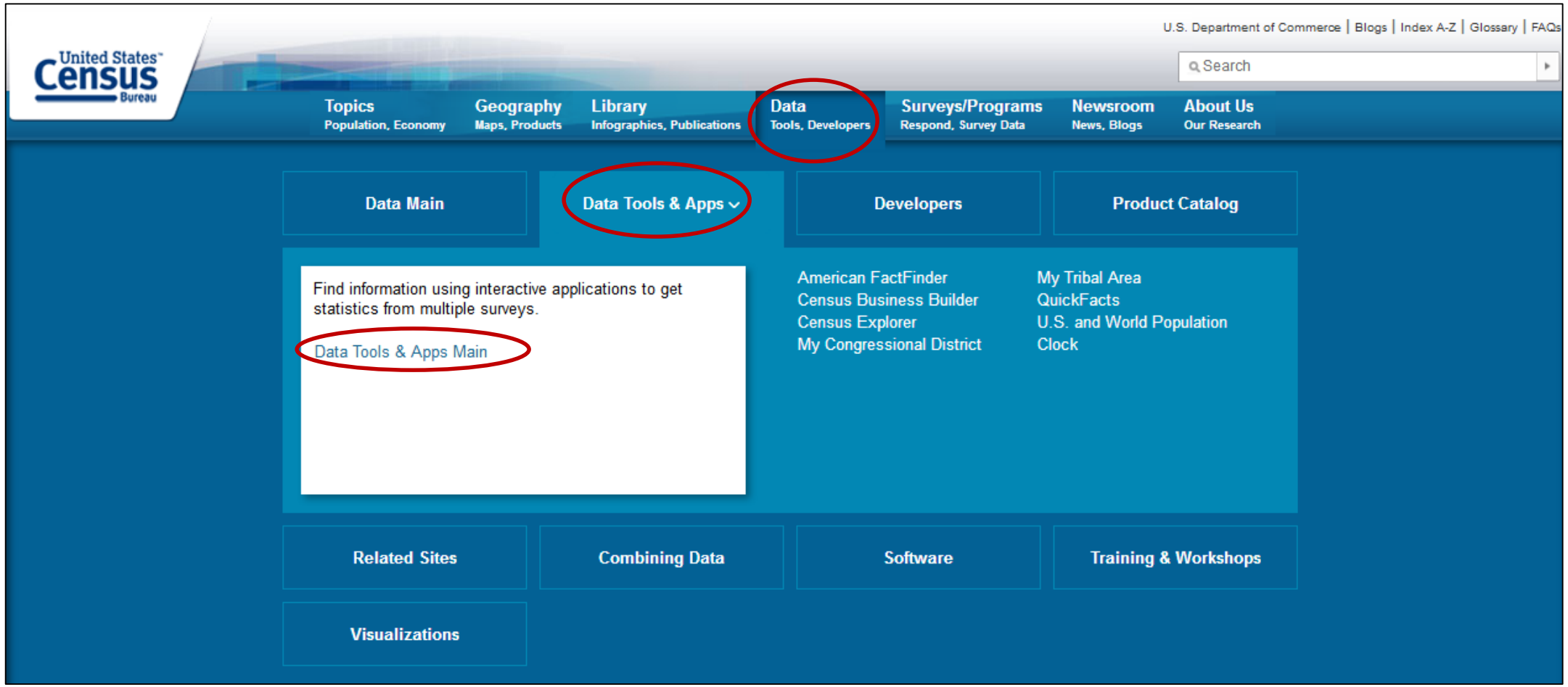
Selected Ways to Access Data

- QuickFacts
- OnTheMap for Emergency Management
- Census Business Builder
- American FactFinder
- Data.census.gov

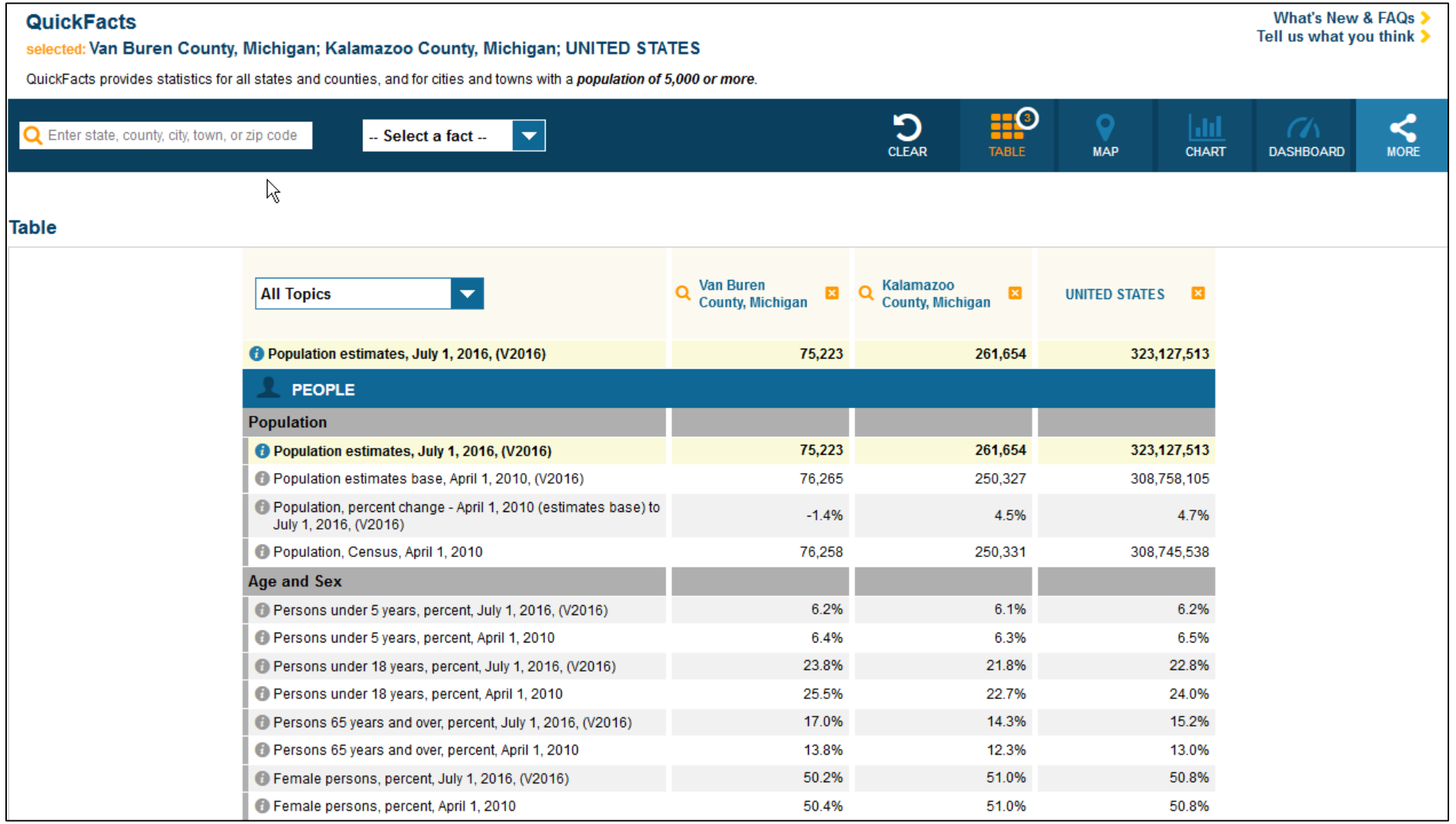
census.gov/programs-surveys/acs/guidance/which-data-tool/data-tools-chart.html

Find Data Tools on Census.gov



census.gov/data/data-tools.html

QuickFacts



QuickFacts

selected: **Van Buren County, Michigan; Kalamazoo County, Michigan; UNITED STATES**

What's New & FAQs
Tell us what you think

QuickFacts provides statistics for all states and counties, and for cities and towns with a ***population of 5,000 or more***.

Enter state, county, city, town, or zip code | -- Select a fact -- | CLEAR | TABLE | MAP | CHART | DASHBOARD | MORE

Table

All Topics	Van Buren County, Michigan	Kalamazoo County, Michigan	UNITED STATES
Population estimates, July 1, 2016, (V2016)	**75,223**	**261,654**	**323,127,513**
PEOPLE			
Population			
Population estimates, July 1, 2016, (V2016)	**75,223**	**261,654**	**323,127,513**
Population estimates base, April 1, 2010, (V2016)	76,265	250,327	308,758,105
Population, percent change - April 1, 2010 (estimates base) to July 1, 2016, (V2016)	-1.4%	4.5%	4.7%
Population, Census, April 1, 2010	76,258	250,331	308,745,538
Age and Sex			
Persons under 5 years, percent, July 1, 2016, (V2016)	6.2%	6.1%	6.2%
Persons under 5 years, percent, April 1, 2010	6.4%	6.3%	6.5%
Persons under 18 years, percent, July 1, 2016, (V2016)	23.8%	21.8%	22.8%
Persons under 18 years, percent, April 1, 2010	25.5%	22.7%	24.0%
Persons 65 years and over, percent, July 1, 2016, (V2016)	17.0%	14.3%	15.2%
Persons 65 years and over, percent, April 1, 2010	13.8%	12.3%	13.0%
Female persons, percent, July 1, 2016, (V2016)	50.2%	51.0%	50.8%
Female persons, percent, April 1, 2010	50.4%	51.0%	50.8%

You are here: Census.gov › Business & Industry › Center for Economic Studies › Longitudinal Employer-Household Dynamics

Longitudinal Employer-Household Dynamics

Main | Applications | Data | Learn More | Research | State Partners | Partner with Us | LED in Action

Applications

- J2J Explorer (Beta)
- QWI Explorer
- OnTheMap
- OnT… Management
- LED Extraction Tool

Useful Links

- Center for Economic Studies
- QWI Data
- LODES Data
- LED Workshop

Contact Information

Email us:

General

LODES/OnTheMap

QWI/QWI Explorer

J2J/J2J Explorer

or

Call us at (301) 763-8303

Further contact information

Join an LEHD mailing list

Beta Release of J2J Explorer

Job-to-Job Flows Explorer (Beta) is a new web-based analysis tool that enables comprehensive access to an innovative set of statistics on worker reallocation in the United States. J2J Explorer unlocks these statistics through an interactive analysis and visualization interface that allows for the construction of tables, maps and charts to compare, aggregate and analyze flows by worker and firm characteristics

Learn more (95 KB)

Start J2J Explorer

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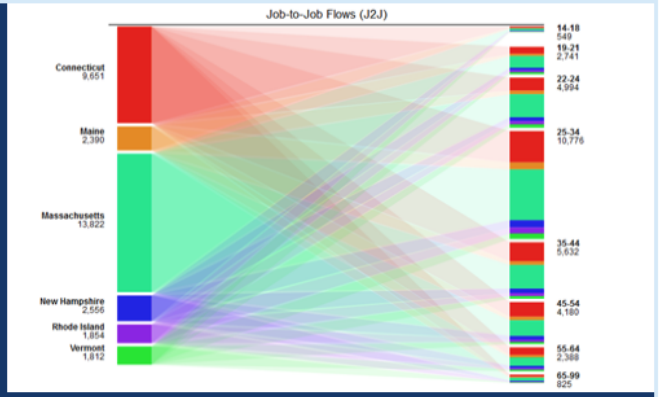


What's New?

There are no new announcements at this time.

View all announcements

About Us

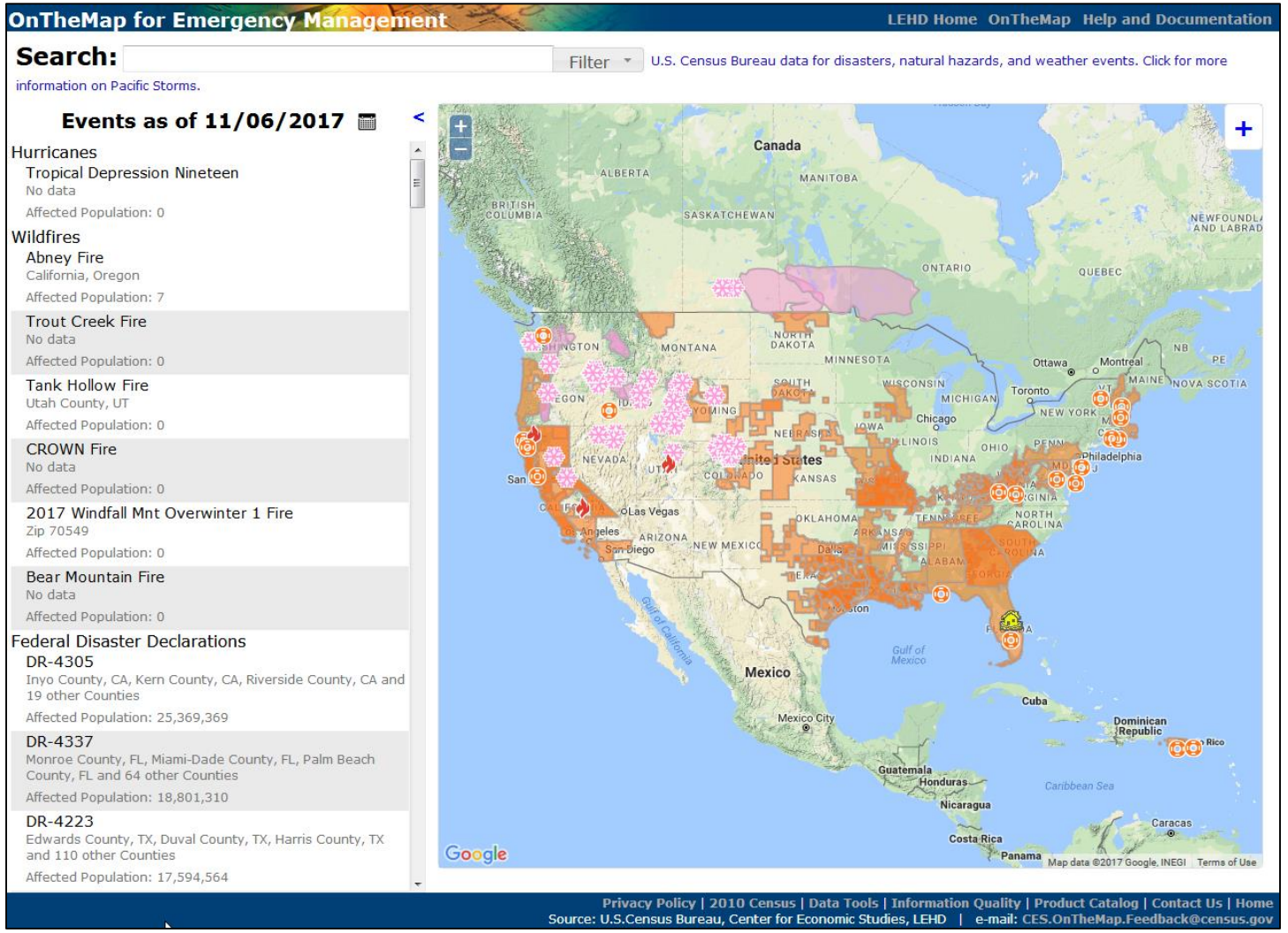
The Longitudinal Employer-Household Dynamics (LEHD) program is part of the Center for Economic Studies at the U.S. Census Bureau. The LEHD program produces new, cost effective, public-use information combining federal, state and Census Bureau data on employers and employees under the Local Employment Dynamics (LED) Partnership. State and local authorities increasingly need detailed local information about their economies to make informed decisions. The LED Partnership works to fill critical data gaps and provide indicators needed by state and local authorities.

Under the LED Partnership, states agree to share Unemployment Insurance earnings data and the Quarterly Census of Employment and Wages (QCEW) data with the Census Bureau. The LEHD program combines these administrative data, additional administrative data and data from censuses and surveys. From these data, the program creates statistics on employment, earnings, and job flows at detailed levels of geography and industry and for different demographic groups. In addition, the LEHD program uses these data to create partially synthetic data on workers' residential patterns.

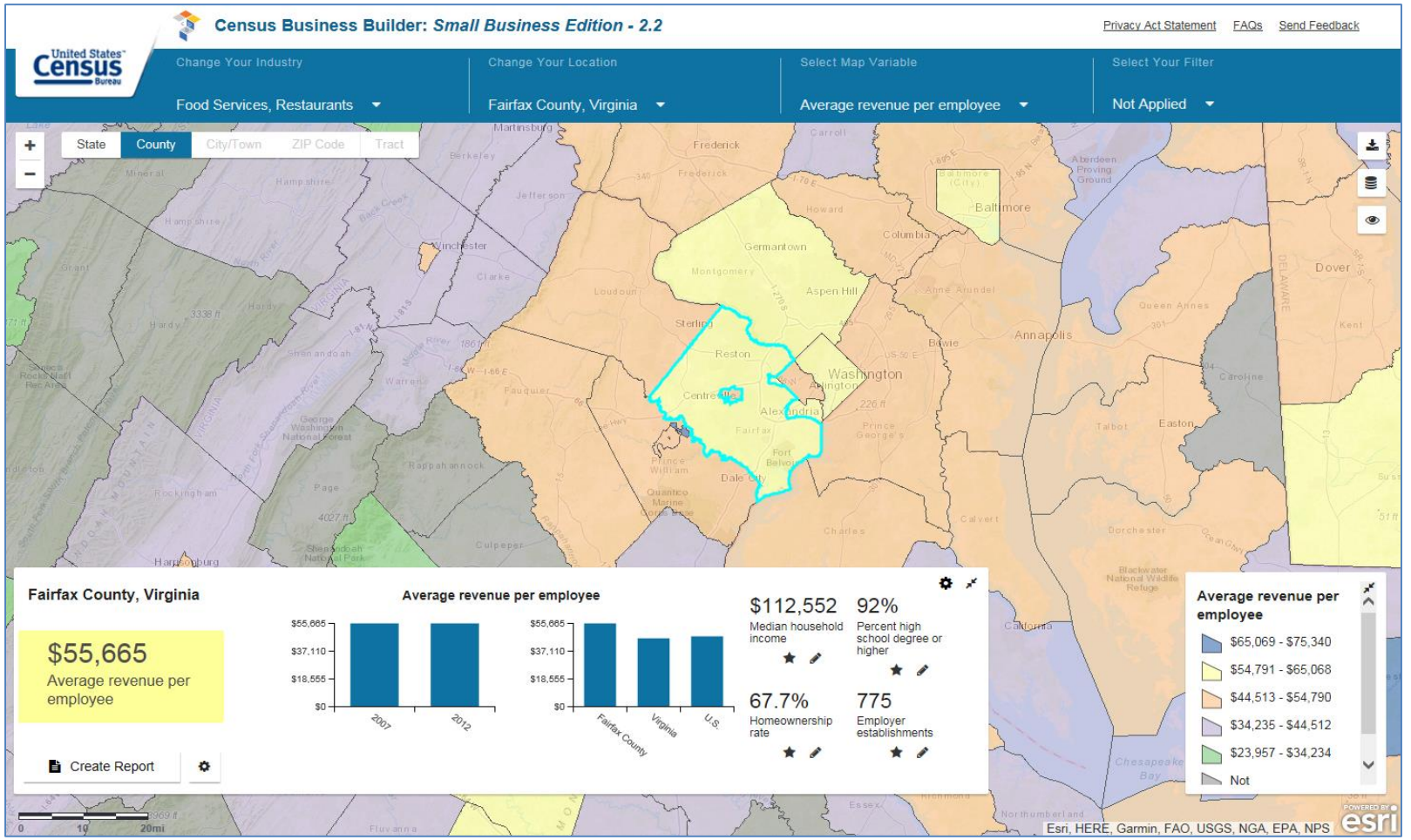
All 50 states, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands have joined the LED Partnership, although the LEHD program is not yet producing public-use statistics for Massachusetts, Puerto Rico, or the U.S. Virgin Islands. The LEHD program staff includes geographers, programmers, and economists.

Our mission is to provide new dynamic information on workers, employers, and jobs with state-of-the-art confidentiality protections and no additional data collection burden. See this one-page document on LED (153 KB) for more information.

OnTheMap for Emergency Management



Census Business Builder



census.gov/data/data-tools/cbb.html

American FactFinder

factfinder.census.gov

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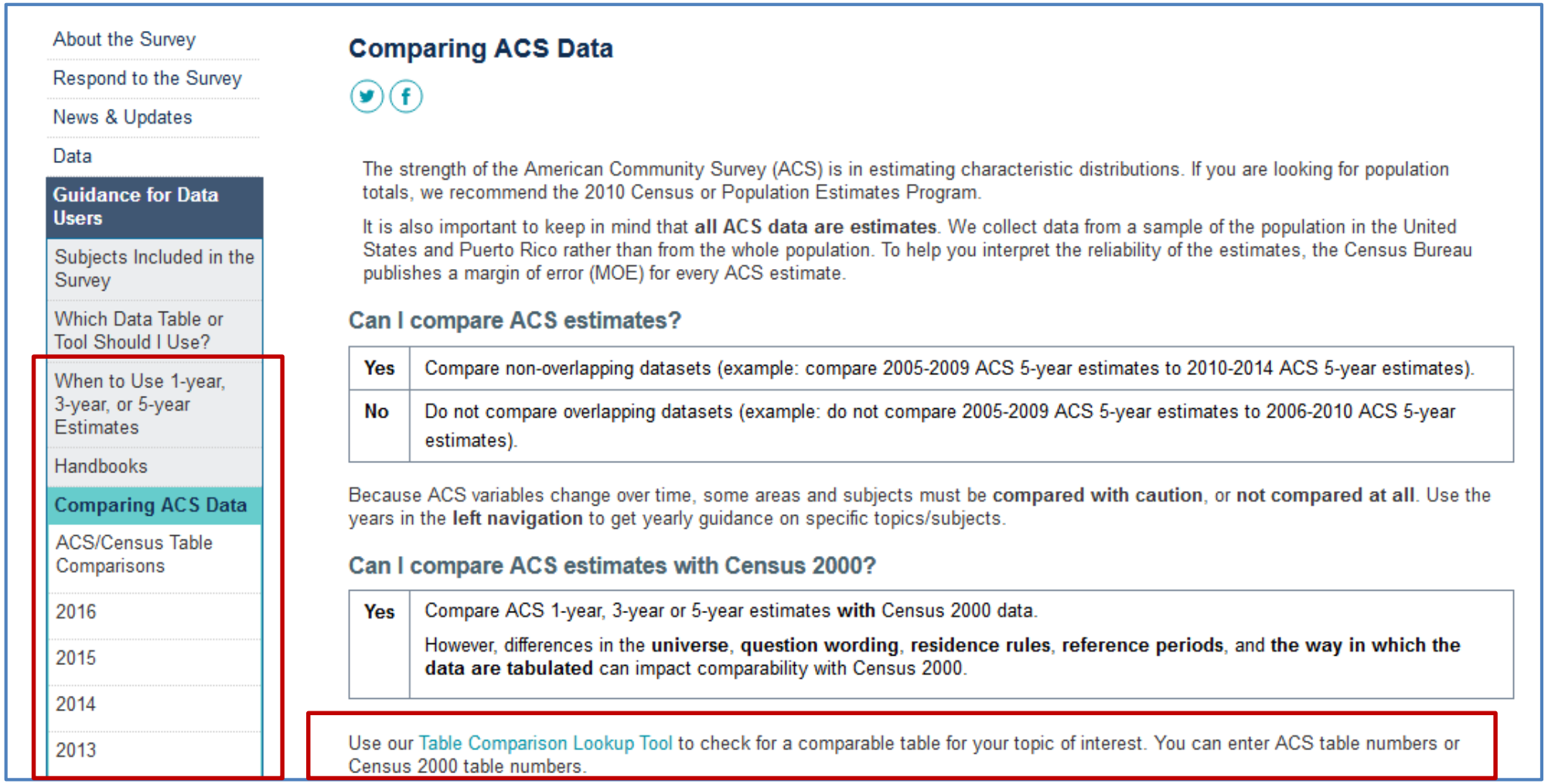
Comparison Guidance

Do	Do Not
Use ACS for population characteristics (i.e., percents, means, medians, rates)	Use ACS for population totals (instead use decennial census or the Population Estimates Program)
Compare non-overlapping datasets (i.e., 2005-2009 to 2010-2014)	Compare overlapping datasets (i.e., 2005-2009 to 2006-2010)
Compare similar period lengths (i.e., 1-year to 1-year)	Compare estimates from different period lengths (i.e., 1-year to 5-year)
Conduct statistical testing when making comparisons between estimates	Look at estimates alone to decide if they are higher or lower than one another

Comparison Guidance



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Guidance for Data Users
Subjects Included in the Survey
Which Data Table or Tool Should I Use?
When to Use 1-year, 3-year, or 5-year Estimates
Handbooks
Comparing ACS Data
ACS/Census Table Comparisons
2016
2015
2014
2013

Comparing ACS Data

The strength of the American Community Survey (ACS) is in estimating characteristic distributions. If you are looking for population totals, we recommend the 2010 Census or Population Estimates Program.

It is also important to keep in mind that **all ACS data are estimates**. We collect data from a sample of the population in the United States and Puerto Rico rather than from the whole population. To help you interpret the reliability of the estimates, the Census Bureau publishes a margin of error (MOE) for every ACS estimate.

Can I compare ACS estimates?

Yes	Compare non-overlapping datasets (example: compare 2005-2009 ACS 5-year estimates to 2010-2014 ACS 5-year estimates).
No	Do not compare overlapping datasets (example: do not compare 2005-2009 ACS 5-year estimates to 2006-2010 ACS 5-year estimates).

Because ACS variables change over time, some areas and subjects must be **compared with caution**, or **not compared at all**. Use the years in the **left navigation** to get yearly guidance on specific topics/subjects.

Can I compare ACS estimates with Census 2000?

Yes	Compare ACS 1-year, 3-year or 5-year estimates **with** Census 2000 data. However, differences in the **universe**, **question wording**, **residence rules**, **reference periods**, and **the way in which the data are tabulated** can impact comparability with Census 2000.

Use our Table Comparison Lookup Tool to check for a comparable table for your topic of interest. You can enter ACS table numbers or Census 2000 table numbers.

census.gov/programs-surveys/acs/guidance/comparing-acs-data.html

What is Statistical Testing?

- **Definition** : A test to determine if a difference is unlikely to occur by chance
- To be “statistically different”, there must be statistical evidence that there is a difference between two estimates
- Testing should be conducted for all comparisons, both implicit and explicit

What is the Margin of Error?

- **Definition:** An MOE is a measure of the possible variation of the estimate around the population value
- At a given confidence level, the estimate and the actual population value will differ by no more than the value of the MOE
  - 90% confidence level is the Census Bureau Standard
- ACS MOEs are provided in the same units as their respective estimates

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Subject	Adams County, Pennsylvania							
	Total		Percent		Males		Percent Males	
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error
Population 18 to 24 years	9,969	+/-74	(X)	(X)	5,049	+/-56	(X)	(X)
Population 25 years and over	70,365	+/-75	(X)	(X)	34,186	+/-71	(X)	(X)
Percent high school graduate or higher	(X)	(X)	87.3%	+/-0.8	(X)	(X)	86.1%	+/-1.0
Percent bachelor's degree or higher	(X)	(X)	21.7%	+/-0.9	(X)	(X)	20.9%	+/-1.1

We are 90% confident that the true percentage of high school graduates or higher in Adams County, PA is somewhere within 0.8% of the estimate (87.3%)

Statistical Testing Tool

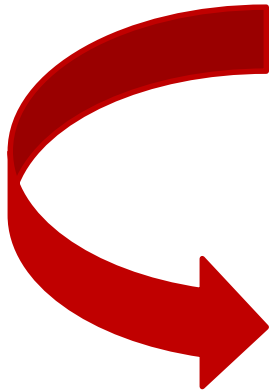
Algebraically, the significance test can be expressed as follows:

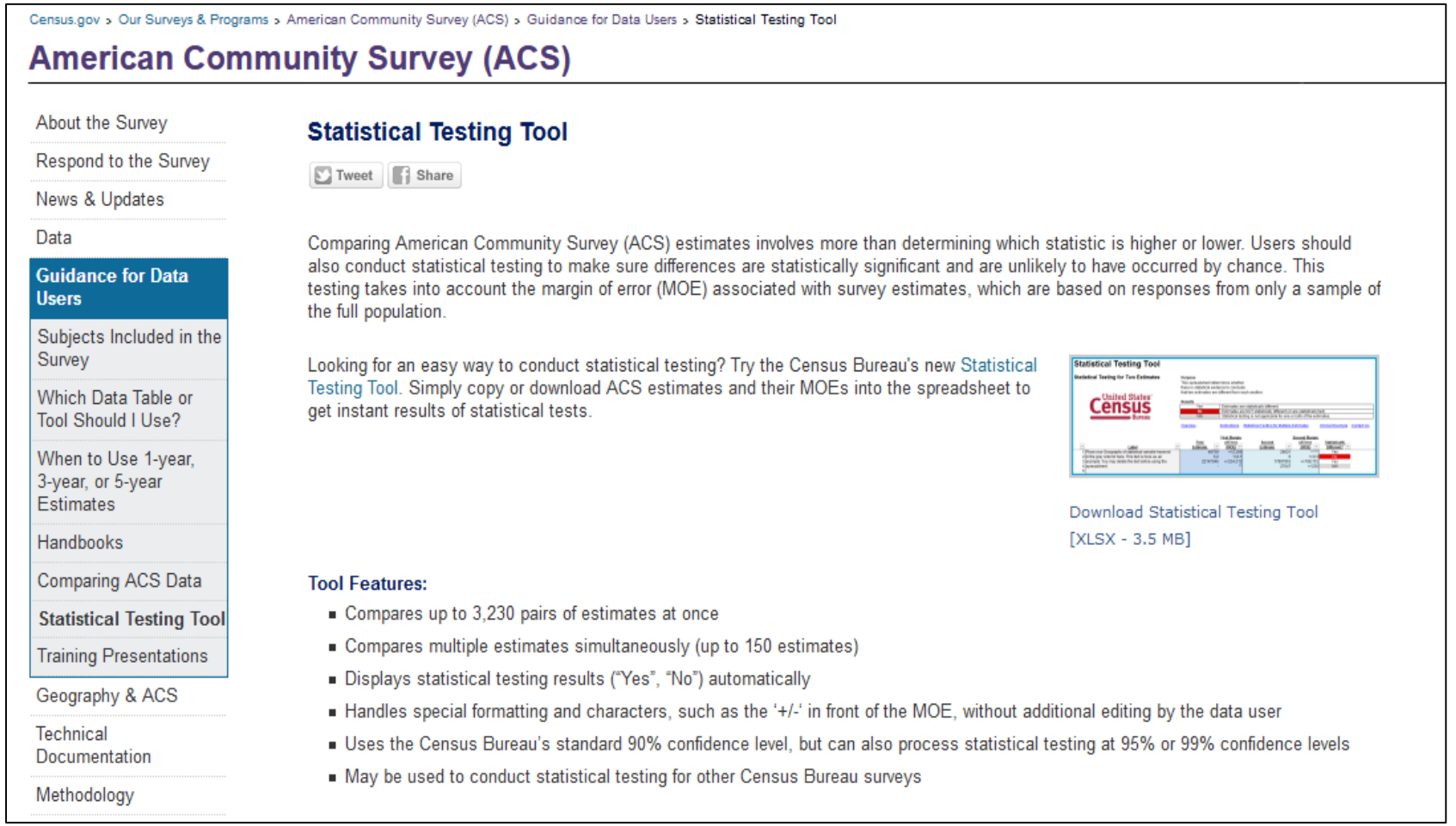
If $\left|\frac{\hat{X}_1 - \hat{X}_2}{\sqrt{SE_1^2 + SE_2^2}}\right| > Z_{CL}$, then the difference between estimates $\hat{X}_1$ and $\hat{X}_2$ is statistically significant at the specified confidence level, CL

where $\hat{X}_i$ is estimate i (=1,2)

SE_i is the SE for the estimate i (=1,2)

Z_{CL} is the critical value for the desired confidence level (=1.645 for 90 percent, 1.960 for 95 percent, 2.576 for 99 percent).





Census.gov › Our Surveys & Programs › American Community Survey (ACS) › Guidance for Data Users › Statistical Testing Tool

American Community Survey (ACS)

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- **Guidance for Data Users**
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  - Which Data Table or Tool Should I Use?
  - When to Use 1-year, 3-year, or 5-year Estimates
  - Handbooks
  - Comparing ACS Data
  - **Statistical Testing Tool**
  - Training Presentations
- Geography & ACS
- Technical Documentation
- Methodology

Statistical Testing Tool

Tweet Share

Comparing American Community Survey (ACS) estimates involves more than determining which statistic is higher or lower. Users should also conduct statistical testing to make sure differences are statistically significant and are unlikely to have occurred by chance. This testing takes into account the margin of error (MOE) associated with survey estimates, which are based on responses from only a sample of the full population.

Looking for an easy way to conduct statistical testing? Try the Census Bureau's new Statistical Testing Tool. Simply copy or download ACS estimates and their MOEs into the spreadsheet to get instant results of statistical tests.

Download Statistical Testing Tool
[XLSX - 3.5 MB]

Tool Features:

- Compares up to 3,230 pairs of estimates at once
- Compares multiple estimates simultaneously (up to 150 estimates)
- Displays statistical testing results ("Yes", "No") automatically
- Handles special formatting and characters, such as the '+/-' in front of the MOE, without additional editing by the data user
- Uses the Census Bureau's standard 90% confidence level, but can also process statistical testing at 95% or 99% confidence levels
- May be used to conduct statistical testing for other Census Bureau surveys

census.gov/programs-surveys/acs/guidance/statistical-testing-tool.html

AFF: Comparison Profiles

Your Current Year Estimate

Most Recent Look-back Year

2014 Look-back compares to 2016

- ✓ CP02: Social Characteristics
- ✓ CP03: Economic Characteristics
- ✓ CP04: Housing Characteristics
- ✓ CP05: Demographic Characteristics

Subject	District of Columbia								
	2016 Estimate	2015 Estimate	2016 - 2015 Statistical Significance	2014 Estimate	2016 - 2014 Statistical Significance	2013 Estimate	2016 - 2013 Statistical Significance	2012 Estimate	2016 - 2012 Statistical Significance
$35,000 to $49,999	7.6%	9.2%	*	8.8%	*	9.2%	*	10.6%	*
$50,000 to $74,999	12.9%	12.9%		13.0%		14.6%	*	13.3%	
$75,000 to $99,999	10.0%	11.1%		11.8%	*	10.4%		9.9%	
$100,000 to $149,999	15.7%	16.0%		14.8%		15.9%		15.9%	
$150,000 to $199,999	9.4%	8.7%		8.5%		8.1%	*	8.0%	*
$200,000 or more	15.1%	14.9%		13.7%	*	12.8%	*	13.3%	*
Median household income (dollars)	75,506	75,991		72,273		69,703	*	69,283	*
Mean household income (dollars)	114,432	116,049		104,954	*	106,009	*	106,794	*
With earnings	80.4%	80.6%		79.6%		80.6%		80.6%	
Mean earnings (dollars)	119,777	119,264		112,310	*	112,592	*	113,074	*
With Social Security	20.0%	18.4%	*	18.7%	*	18.9%		18.2%	*
Mean Social Security income (dollars)	15,926	16,013		14,882	*	14,961	*	15,340	
With retirement income	13.8%	13.8%		14.1%		14.5%		14.3%	
Mean retirement income (dollars)	45,565	45,798		41,053		39,618		39,730	
With Supplemental Security Income	5.4%	5.5%		5.8%		5.7%			
Mean Supplemental Security Income (dollars)	9,329	9,958		8,808		9,236			
With cash public assistance income	3.9%	3.3%		3.7%		4.2%			
Mean cash public assistance income (dollars)	3,420	3,037		3,303		3,549			
With Food Stamp/SNAP benefits in the past 12 months	14.5%	15				15.7%			

Asterisk indicates if there is statistical significance

For geographies with 65,000 persons +, you can use **1-year estimate ACS Comparison Profile Tables** that test Statistical Significance for you. The look-back is the prior four years.

AFF: Comparison Profiles

Comparison Profile Tables also come in a five-year estimate version. The look back is the next 5-year dataset that is non-overlapping

Most Recent 5-year look-back

- ✓ CP02: Social Characteristics
- ✓ CP03: Economic Characteristics
- ✓ CP04: Housing Characteristics
- ✓ CP05: Demographic Characteristics

Subject	District of Columbia		
	2012-2016 Estimates	2007-2011 Estimates	Statistical Significance
INCOME AND BENEFITS (IN 2016 INFLATION-ADJUSTED DOLLARS)			
Total households	276,546	260,136	*
Less than $10,000	10.2%	10.0%	
$10,000 to $14,999	4.4%	4.5%	
$15,000 to $24,999	7.1%	7.6%	
$25,000 to $34,999	6.7%	7.0%	
$35,000 to $49,999	9.1%	10.8%	*
$50,000 to $74,999	13.4%	14.7%	*
$75,000 to $99,999	10.5%	11.3%	*
$100,000 to $149,999	15.6%	14.3%	*
$150,000 to $199,999	8.7%	8.0%	*
$200,000 or more	14.2%	11.8%	*
Median household income (dollars)	72,935	65,903	*
Mean household income (dollars)	110,614	102,615	*

Most recent non-overlapping 5-year look-back

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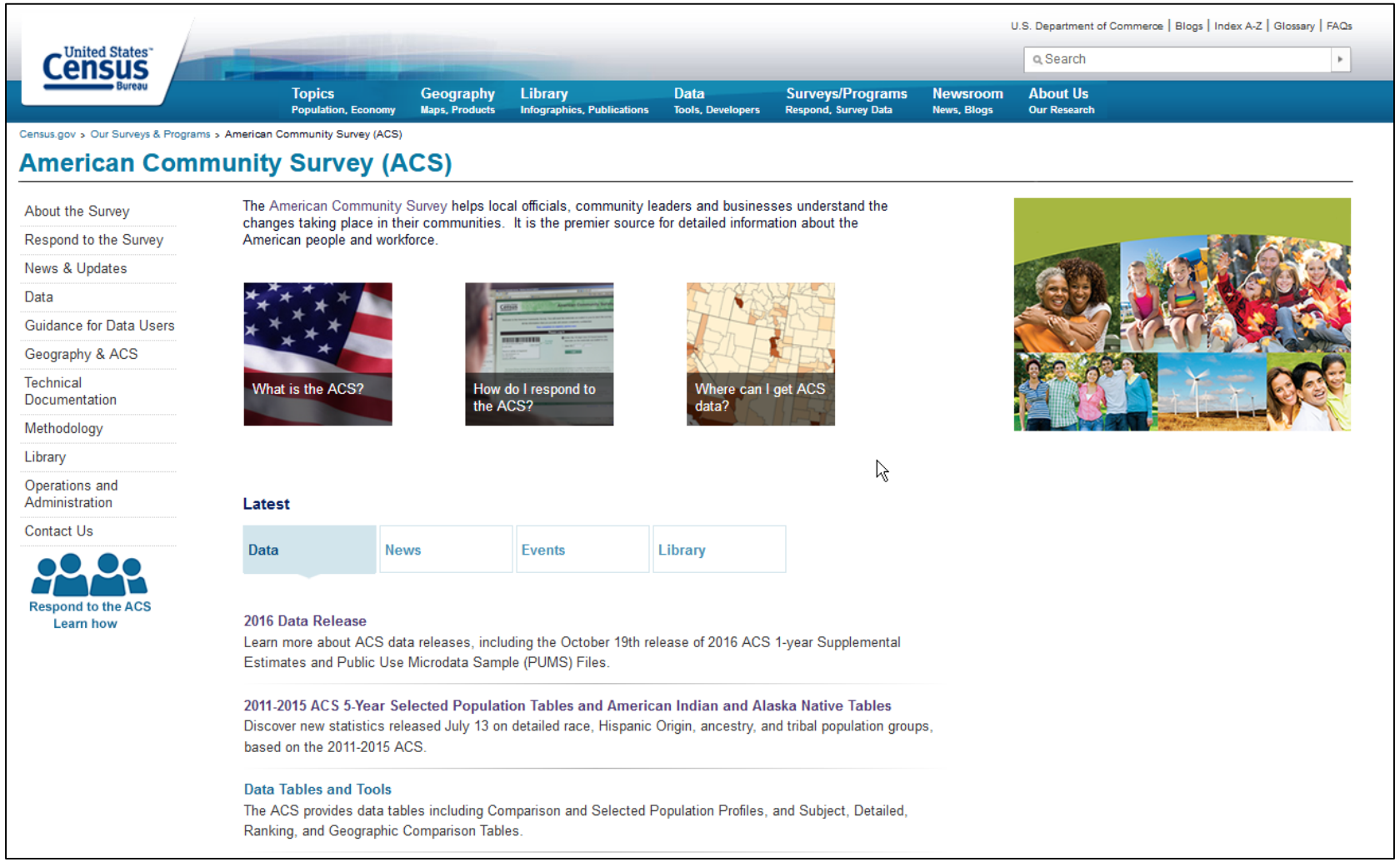
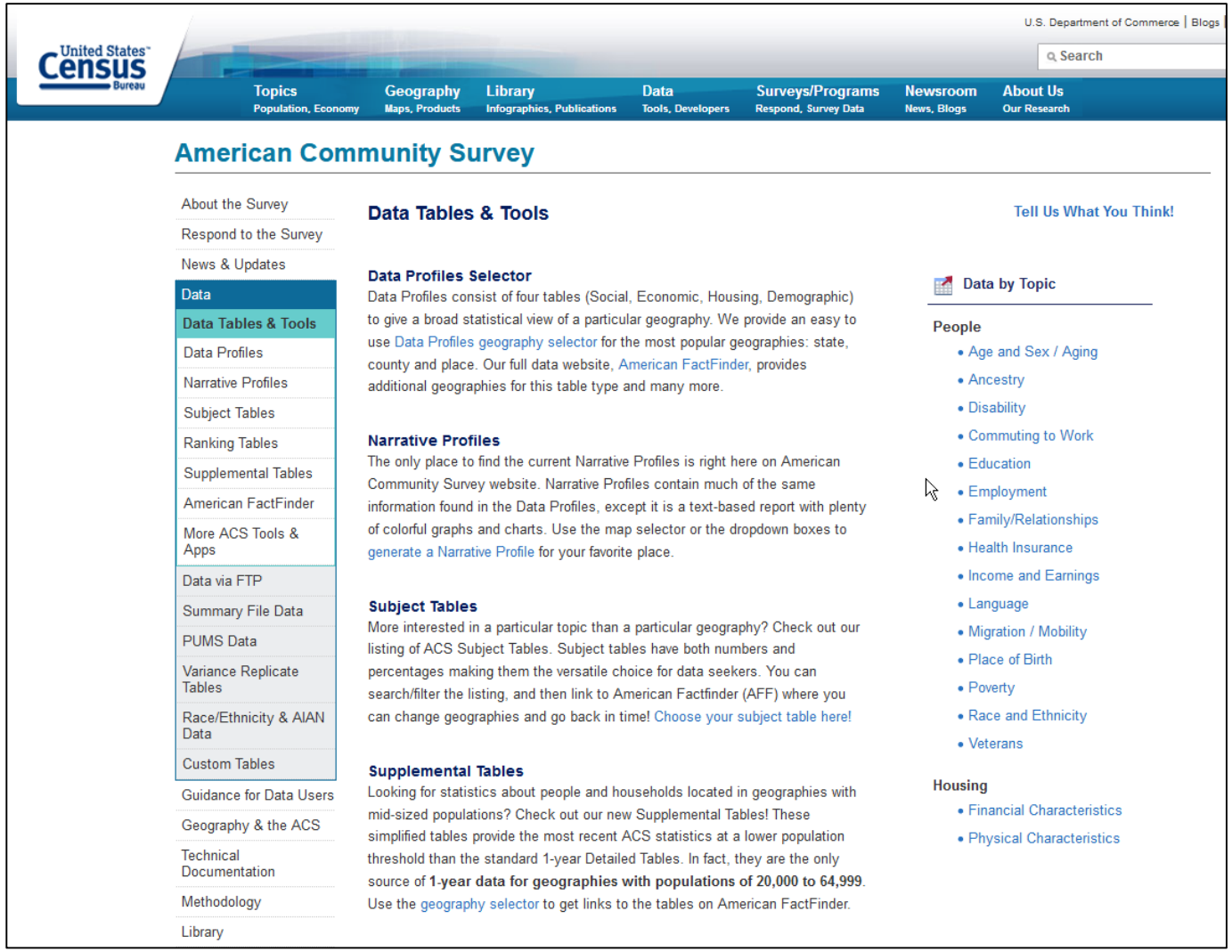
ACS Main Page



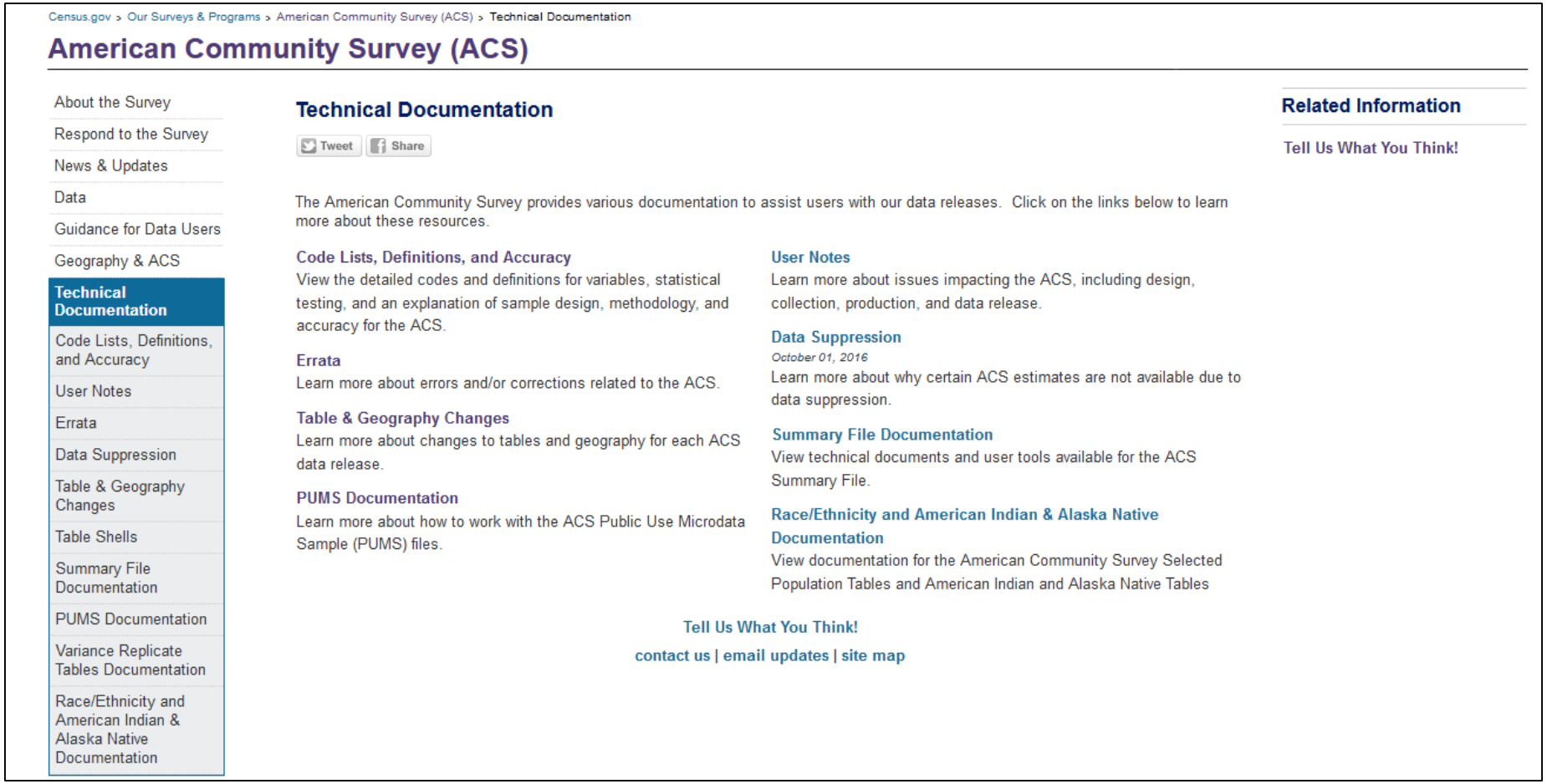
census.gov/acs

Data Tables & Tools



census.gov/acs/www/data/data-tables-and-tools/

Technical Documentation Page



Census.gov > Our Surveys & Programs > American Community Survey (ACS) > Technical Documentation

American Community Survey (ACS)

- About the Survey
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- Guidance for Data Users
- Geography & ACS
- **Technical Documentation**
  - Code Lists, Definitions, and Accuracy
  - User Notes
  - Errata
  - Data Suppression
  - Table & Geography Changes
  - Table Shells
  - Summary File Documentation
  - PUMS Documentation
  - Variance Replicate Tables Documentation
  - Race/Ethnicity and American Indian & Alaska Native Documentation

Technical Documentation

Tweet Share

The American Community Survey provides various documentation to assist users with our data releases. Click on the links below to learn more about these resources.

Code Lists, Definitions, and Accuracy
View the detailed codes and definitions for variables, statistical testing, and an explanation of sample design, methodology, and accuracy for the ACS.

Errata
Learn more about errors and/or corrections related to the ACS.

Table & Geography Changes
Learn more about changes to tables and geography for each ACS data release.

PUMS Documentation
Learn more about how to work with the ACS Public Use Microdata Sample (PUMS) files.

User Notes
Learn more about issues impacting the ACS, including design, collection, production, and data release.

Data Suppression
October 01, 2016
Learn more about why certain ACS estimates are not available due to data suppression.

Summary File Documentation
View technical documents and user tools available for the ACS Summary File.

Race/Ethnicity and American Indian & Alaska Native Documentation
View documentation for the American Community Survey Selected Population Tables and American Indian and Alaska Native Tables

Tell Us What You Think!

contact us | email updates | site map

Related Information

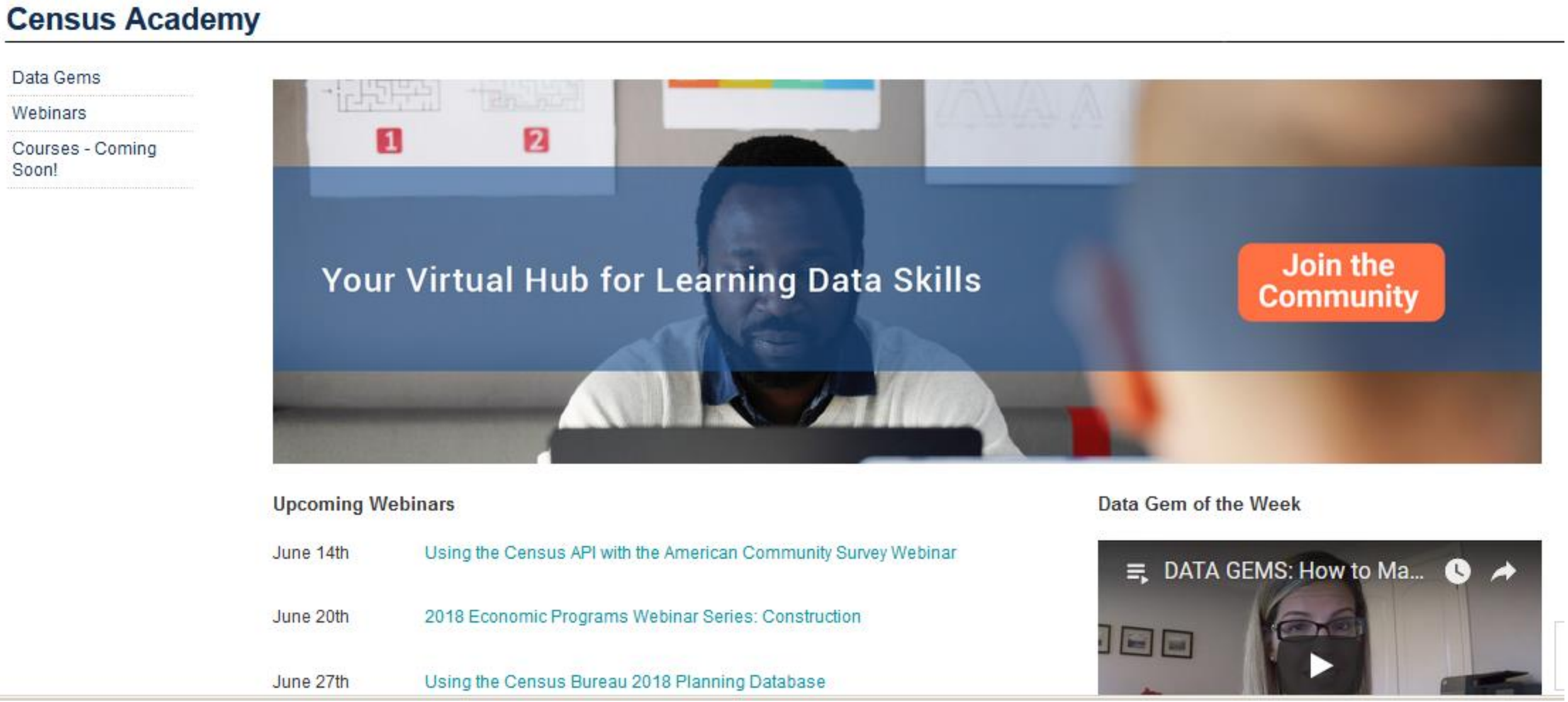
Tell Us What You Think!

census.gov/programs-surveys/acs/technical-documentation.html

- 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
- 2017 ACS Data Users Conference, May 11-12 (recordings available)
- Webinars and special sessions at professional meetings planned
- Users group website and online community

acsdatacommunity.prb.org

Census Academy

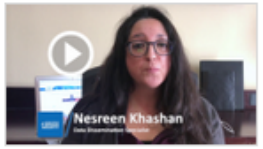


Census.gov/academy

Census Academy: Data Gems

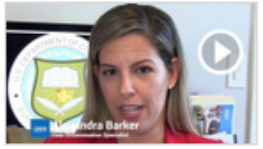
Data Gems

All | 2018



How to Access Data for My Congressional District
May 16, 2018
How to use the My Congressional District tool to access demographic, social, economic, housing and business statistics for your district.

How to Map Data Using the American FactFinder
May 16, 2018
How to create data visualization for your area using the American FactFinder.



How to Save Your Work in the American FactFinder
May 16, 2018
How to save your work when accessing data using the American FactFinder. Check this Data Gem and learn the trick that is a lifesaver!

Infographics - How to Find Census Data Visualizations
May 16, 2018
Whether you're looking for data visualizations about veterans, income, or race, we have a library of visualizations that you can use to enhance your project.

What is a CDP? Making Sense of Census Geography
May 16, 2018
Working with census geography can be confusing. If you need to access data for cities and towns, it is important to learn more about CDPs.

Census Academy: Webinars

- Data Tools and Apps
- Developers
- Product Catalog
- Related Sites
- Software
- **Training & Workshops**
- Visualizations

Upcoming Trainings

Training Opportunities

We Can Help You!
Let us show you how to find and use Census data for your everyday uses, including informing your business planning, supporting grant proposals and research projects, planning of local schools and hospitals, and much more! Whether you're looking for economic or demographic data, we can teach you how to get what you need for your various projects.

Options for Learning
There are three main ways that you can learn to find Census data. And all of it is free!

- Webinars – see the list below for our upcoming webinars. No registration is needed.
  We also have a network of Data Specialists who can provide training throughout the nation.
- Video Tutorials – We have a growing number in our Training Resources Library.
- Classroom Training – We do this when distance and staff resources allow. Often, as an alternative to a classroom training, we can schedule a webinar for you on the topic you're interested in!

Take Advantage of the Data Today!

On this Page:

- July 26, 2018 - CEDSCI (data.census.gov) Update
- August 2, 2018 - 2018 Economic Programs Webinar Series: Professional/Scientific
- August 8, 2018 - Directorate Defense Trade Controls IT Modernization Project
- September 12, 2018 - 2018 Economic Programs Webinar Series: Hidden Gems

July 26, 2018 - CEDSCI (data.census.gov) Update

Description: The Census Bureau is establishing a new paradigm in data dissemination – one where data users will no longer need to know which tools to use on www.census.gov – instead, they will simply start searching to find statistics, maps, web pages, and the other great Census Bureau products they need. In this session, participants will be provided with an update on the new platform as well as a demo of

Related Information

Training & Workshops

Recorded Webinars

Is this page help
Yes N

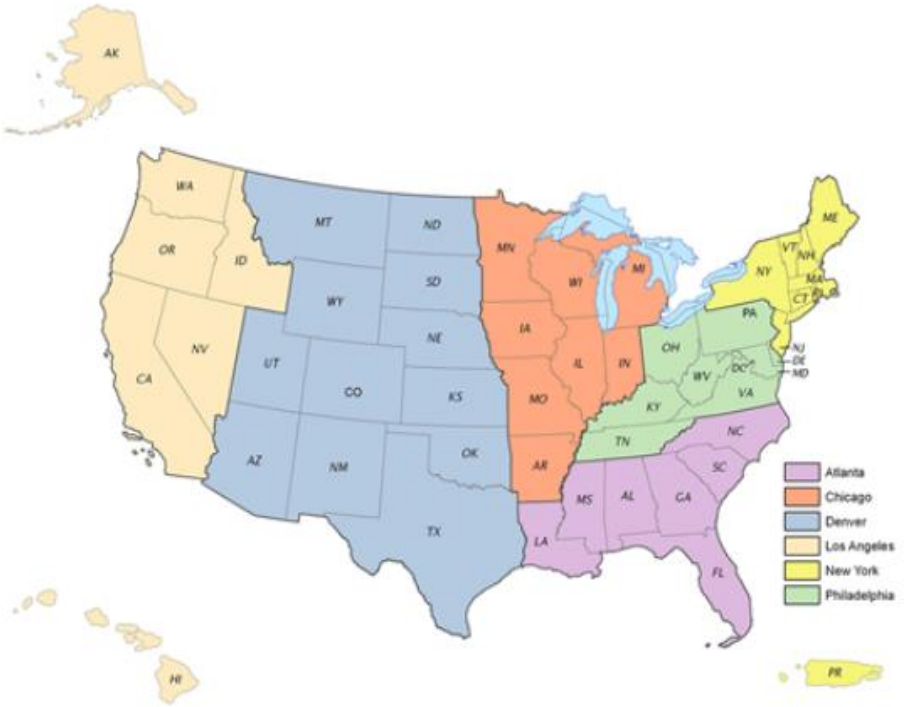
Need Local Stats?

- 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



Continue the Conversation #ACSdata

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Questions or Feedback?

Please feel free to contact me!

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