Using American Community Survey Estimates and Margins of Error

April 19th, 2017

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Decennial Statistical Studies Division
U.S. Census Bureau

Outline

- ACS Estimates
- What is the Margin of Error (MOE)
- Why do MOEs Matter
- Statistical Testing Using the MOE
- Special Cases
- Approximating the MOE
- Available Resources
- Questions

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ACS Estimates

- Every year, over 3.5 million housing unit addresses are contacted to participate in the ACS
- ACS estimates are based on a sample of the population
  - Creates uncertainty in the data
- For more information on ACS Design and Methodology, please visit:

  https://census.gov/programs-surveys/acs/methodology.html

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
Planned Release Date	September	October	December

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

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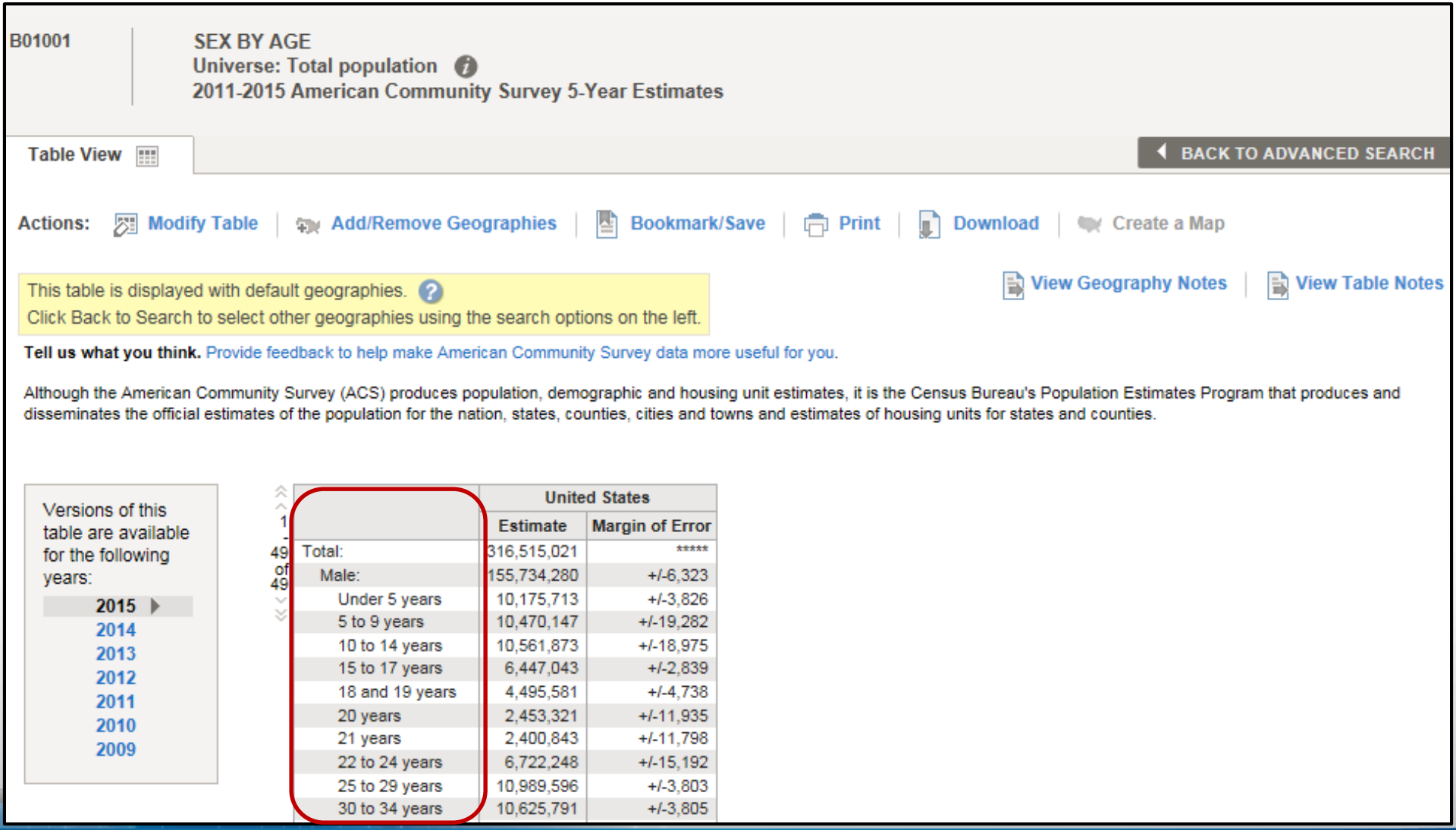
What is the Margin of Error?



B01001

SEX BY AGE
Universe: Total population
2011-2015 American Community Survey 5-Year Estimates

Table View

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Tell us what you think. Provide feedback to help make American Community Survey data more useful for you.

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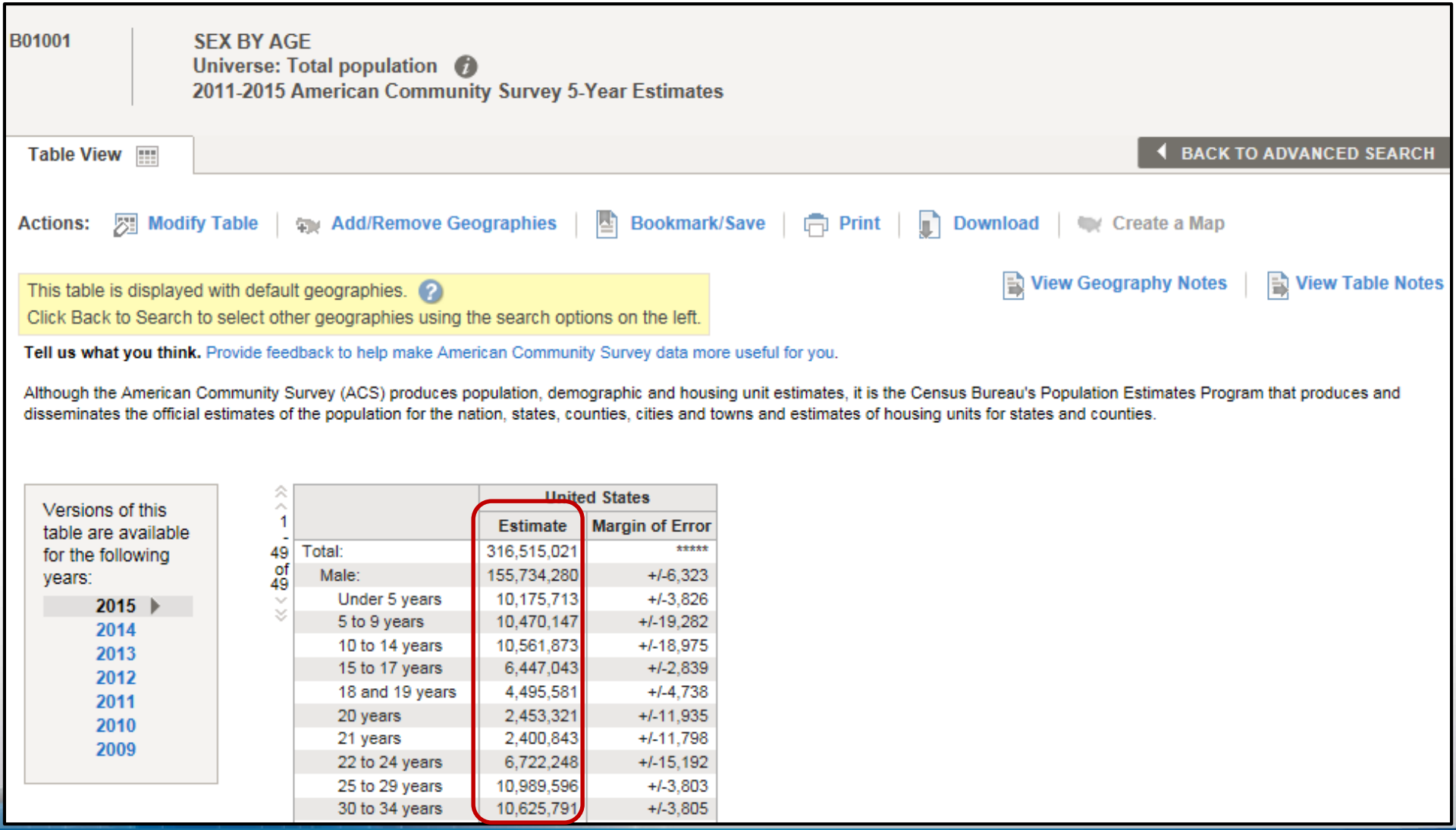
Versions of this table are available for the following years:

- 2015
- 2014
- 2013
- 2012
- 2011
- 2010
- 2009

1 - 49 of 49

	United States	
	Estimate	Margin of Error
Total:	316,515,021	*****
Male:	155,734,280	+/-6,323
Under 5 years	10,175,713	+/-3,826
5 to 9 years	10,470,147	+/-19,282
10 to 14 years	10,561,873	+/-18,975
15 to 17 years	6,447,043	+/-2,839
18 and 19 years	4,495,581	+/-4,738
20 years	2,453,321	+/-11,935
21 years	2,400,843	+/-11,798
22 to 24 years	6,722,248	+/-15,192
25 to 29 years	10,989,596	+/-3,803
30 to 34 years	10,625,791	+/-3,805

What is the Margin of Error?



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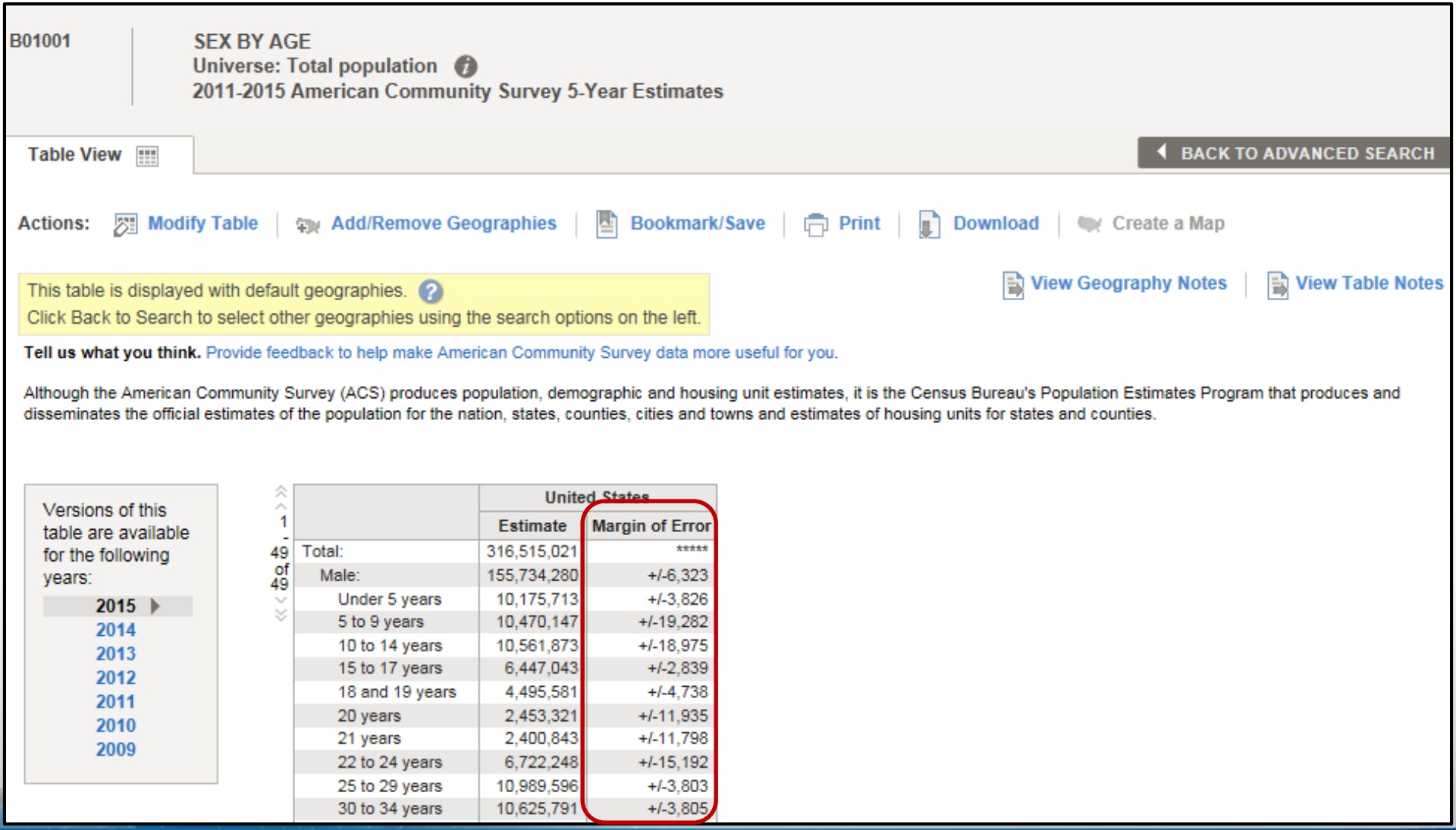

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What is the Margin of Error?

- **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

What is the Margin of Error?

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Measures of Sampling Variability

Variance

(Calculated with estimate)

Standard Error

$$\mathrm{SE} = \sqrt{\mathrm{Variance}}$$

Margin of Error

$$\mathrm{MOE} = 1.645 \times \mathrm{SE}$$

(Census Bureau Standard: 90 percent Confidence Level)

Alternate Confidence Levels

Confidence Level	Margin of Error (MOE)
90%	1.645 x SE
95%	1.96 x SE
99%	2.58 x SE

Converting MOE to different confidence level:

$$\text{MOE}_{95\%\text{ confidence level}} = \frac{1.96}{1.645} \times \text{MOE}_{90\%\text{ confidence level}}$$

$$= 1.96 \times \frac{\text{MOE}_{90\%\text{ confidence level}}}{1.645}$$

Alternate Confidence Levels

B01001	SEX BY AGE Universe: Total Population 2011-2015 American Community Survey 5-Year Estimates	
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Under 5 years	10,175,713	+/-3,826

$$\text{MOE}_{95\%\text{ confidence level}} = \frac{1.96}{1.645} \times 3{,}826$$

$$= +/- 4{,}559$$

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$$\text{MOE}_{95\%\text{ confidence level}} = \frac{1.96}{1.645} \times 3{,}826$$

$$= +/- 4{,}559$$

Confidence Level	Margin of Error (MOE)	MOE for Example Estimate
90%	1.645 x SE	+/- 3,826
95%	1.96 x SE	+/- 4,559
99%	2.58 x SE	+/- 6,001

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Confidence Intervals

Confidence Interval: (Estimate - MOE, Estimate + MOE)

Geography	Median Household Income ($)	MOE ($)
Block Group 1	37,284	+/- 20,922

$$\text{Upper Bound} = \$37{,}284 + 20{,}922 = \$58{,}206$$

$$\text{Lower Bound} = \$37{,}284 - 20{,}922 = \$16{,}362$$

Confidence Interval $_{90\%}$: $(\$16{,}362, \$58{,}206)$

Why MOEs Matter

Geography	Median Household Income ($)	MOE ($)
Block Group 1	37,200	
Block Group 2	42,797	
Block Group 3	56,875	
Block Group 4	66,725	
Block Group 5	76,850	

Why MOEs Matter

Geography	Median Household Income ($)	MOE ($)
Block Group 1	37,200	+/-20,920
Block Group 2	42,797	+/-21,305
Block Group 3	56,875	+/-20,956
Block Group 4	66,725	+/-32,137
Block Group 5	76,850	+/-47,200

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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

Statistical Testing

Generic Z-score formula:

$$\frac{|Est_1 - Est_2|}{\sqrt{MOE_{est1}{}^2 + MOE_{est2}{}^2}}$$

Statistical Testing

S0201	SELECTED POPULATION PROFILE IN THE UNITED STATES 2015 American Community Survey 1-Year Estimates			
Subject	United States		New York	
	Total Population		Total Population	
	Estimate	Margin of Error	Estimate	Margin of Error
25 to 34 years	13.7%	+/-0.1	14.5%	+/-0.1
35 to 44 years	12.7%	+/-0.1	12.6%	+/-0.1
45 to 54 years	13.4%	+/-0.1	13.9%	+/-0.1
55 to 64 years	12.7%	+/-0.1	12.8%	+/-0.1
65 to 74 years	8.6%	+/-0.1	8.4%	+/-0.1
75 years and over	6.3%	+/-0.1	6.6%	+/-0.1
Median age (years)	37.8	+/-0.1	38.3	+/-0.2
18 years and over	77.1%	+/-0.1	78.7%	+/-0.1
21 years and over	72.9%	+/-0.1	74.6%	+/-0.1

Statistical Testing

Subject	United States		New York	
	Total Population		Total Population	
	Estimate	Margin of Error	Estimate	Margin of Error
Median age (years)	37.8	+/-0.1	38.3	+/-0.2

Step	Process	Result
1	Take the difference of the estimates	$37.8 - 38.3 = -0.5$
2	Take the absolute value of step 1	$\lvert -0.5 \rvert = \text{abs}(-0.5) = 0.5$
3	Square the MOEs	$0.1^2 = 0.01$ $0.2^2 = 0.04$
4	Add the squared MOEs together	$0.01 + 0.04 = 0.05$

Statistical Testing

Step	Process	Result
5	Take the square root of the sum	$\sqrt{0.05} \approx 0.224$
6	Divide step 2 by step 5	$0.5 \,/\, 0.224 = 2.24$
7	Compare result to 1.0	$2.24 > 1.0$

If the result is greater than 1.0,
then the estimates are statistically different
at the 90% confidence level

Statistical Testing

Generic Z-score formula:

$$\frac{|Est_1 - Est_2|}{\sqrt{MOE_{est1}{}^2 + MOE_{est2}{}^2}}$$

Example:

$$\frac{|37.8 - 38.3|}{\sqrt{(0.1)^2 + (0.2)^2}} = 2.24$$

Statistical Testing

This method is used for:

- Any type of estimate (count, percent, median, rate, etc.)
- Between years
  - Not between single-year and multi-year estimates
- Between non-overlapping multi-year periods
- Across geographic areas
- Between surveys (e.g. ACS vs Census)
  - To check ACS/ Census compatibility, visit:

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

Statistical Testing Tool

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

American Community Survey (ACS)

- About the Survey
- Respond to the Survey
- News & Updates
- Data
- **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
  - **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 stastical 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

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

Statistical Testing Tool

Statistical Testing Tool

Statistical Testing for Two Estimates

United States Census Bureau

Purpose

This spreadsheet determines whether there is statistical evidence to conclude that two estimates are different from each another.

Results

Yes	Estimates are statistically different.
No	Estimates are NOT statistically different (or are statistically tied).
N/A	Statistical testing is not applicable for one or both of the estimates.

Overview | Instructions | Statistical Testing for Multiple Estimates | Worked Example | Contact Us

	Label	First Estimate	First Margin of Error (MOE)	Second Estimate	Second Margin of Error (MOE)	Statistically Different?
1	Median age (years)	37.8	+/-0.1	38.3	+/-0.2	Yes
2						
3	Block Groups	37,200	20,920	76,850	47,200	No
4						

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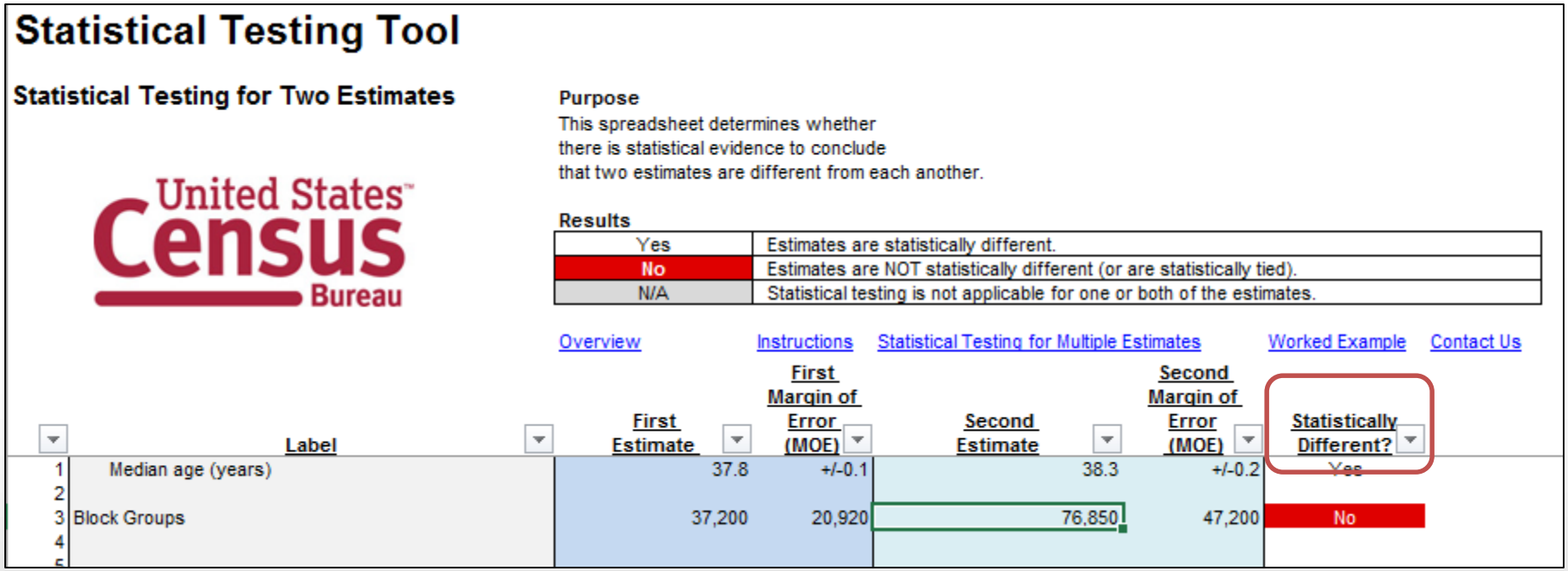

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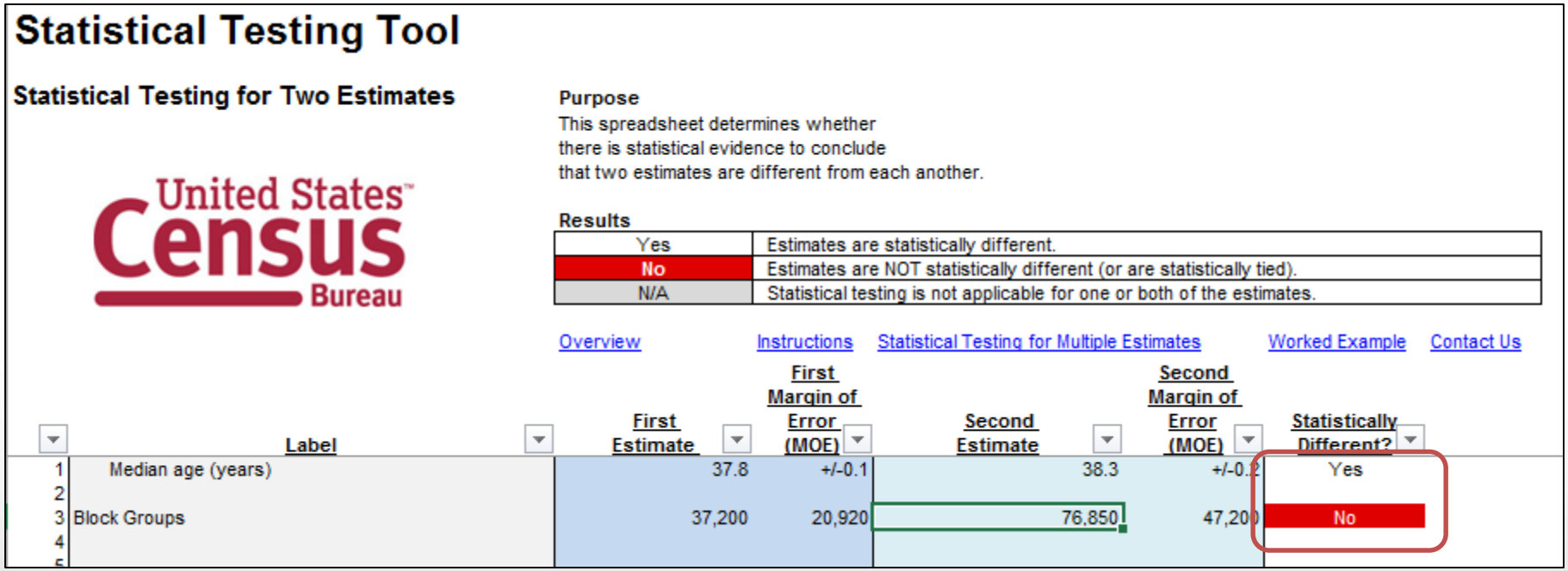

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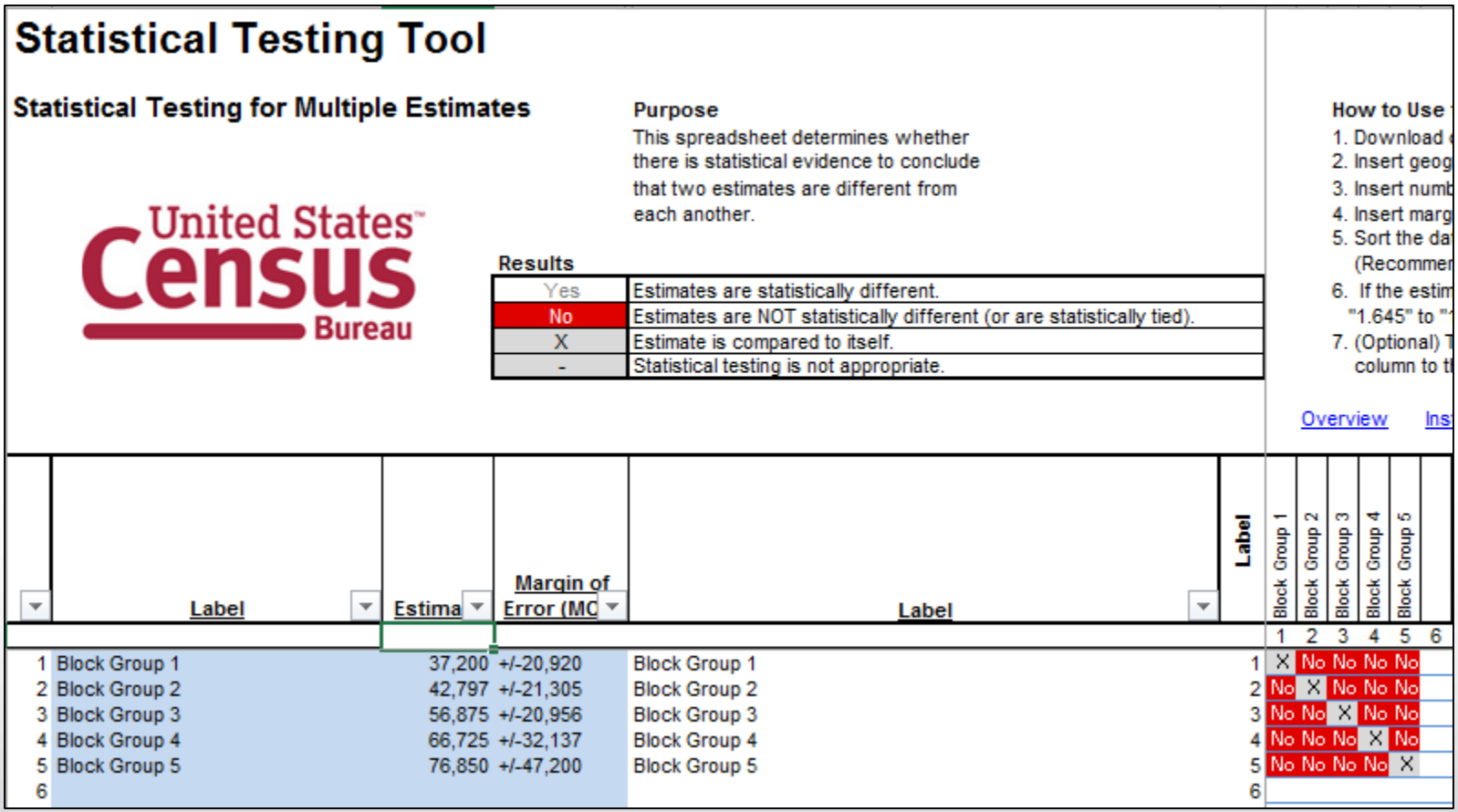

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3	Block Group 3	56,875	+/-20,956	Block Group 3	3	No	No	X	No	No	
4	Block Group 4	66,725	+/-32,137	Block Group 4	4	No	No	No	X	No	
5	Block Group 5	76,850	+/-47,200	Block Group 5	5	No	No	No	No	X	
6					6						

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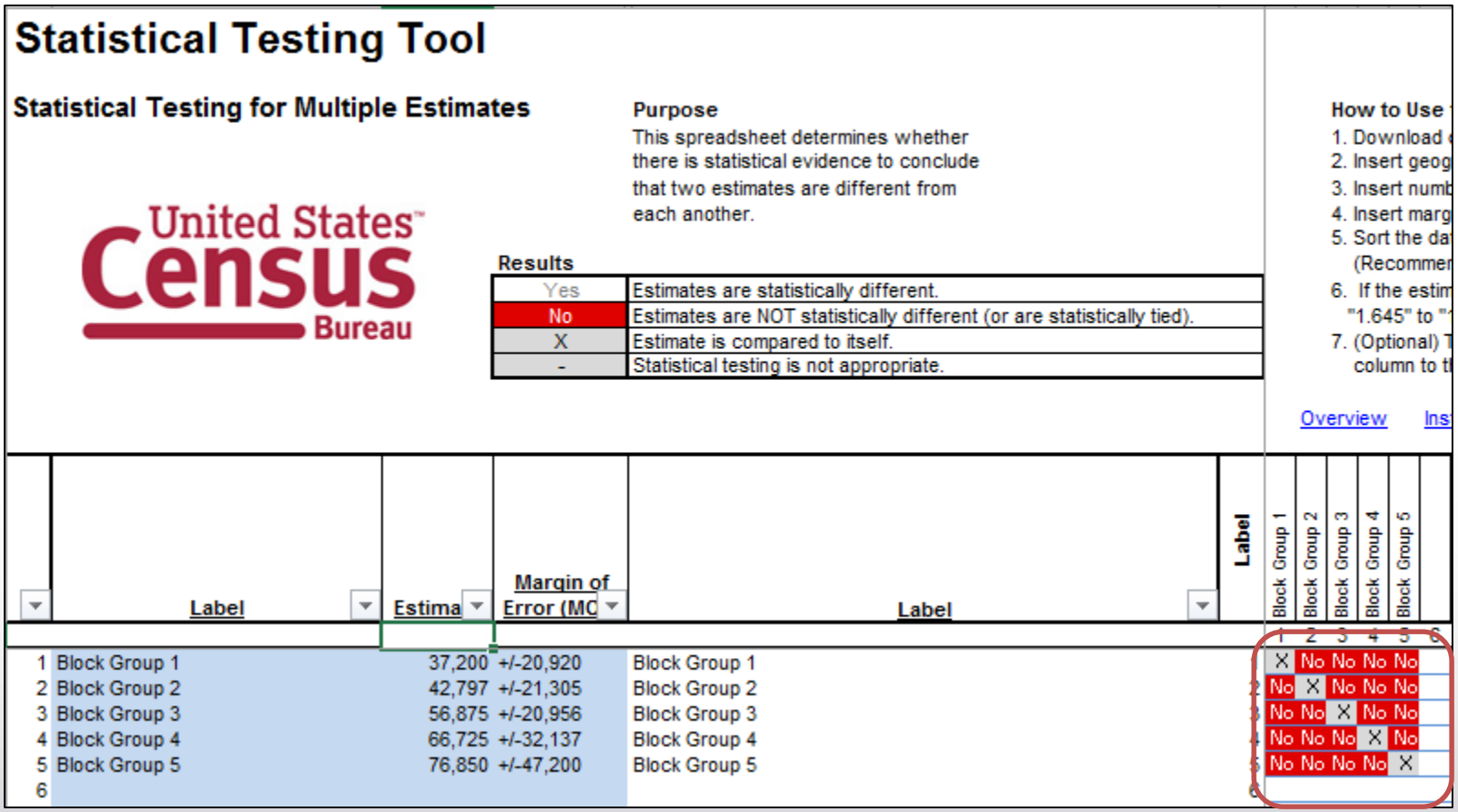

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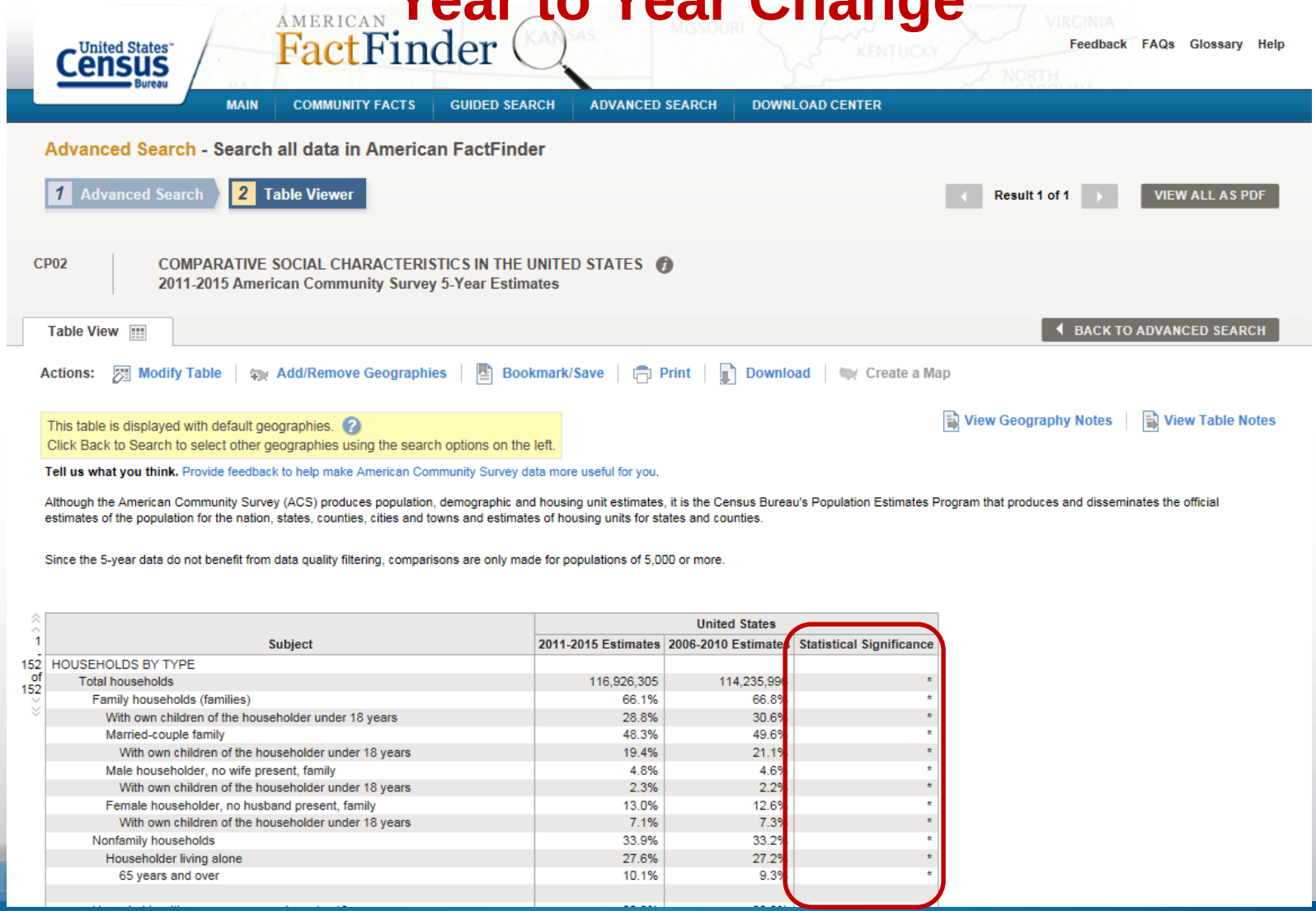
ACS Comparison Profile

Year to Year Change



United States Census Bureau | AMERICAN FactFinder

Feedback FAQs Glossary Help

MAIN | COMMUNITY FACTS | GUIDED SEARCH | ADVANCED SEARCH | DOWNLOAD CENTER

Advanced Search - Search all data in American FactFinder

1 Advanced Search | 2 Table Viewer

Result 1 of 1 | VIEW ALL AS PDF

CP02

COMPARATIVE SOCIAL CHARACTERISTICS IN THE UNITED STATES
2011-2015 American Community Survey 5-Year Estimates

Table View | BACK TO ADVANCED SEARCH

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Since the 5-year data do not benefit from data quality filtering, comparisons are only made for populations of 5,000 or more.

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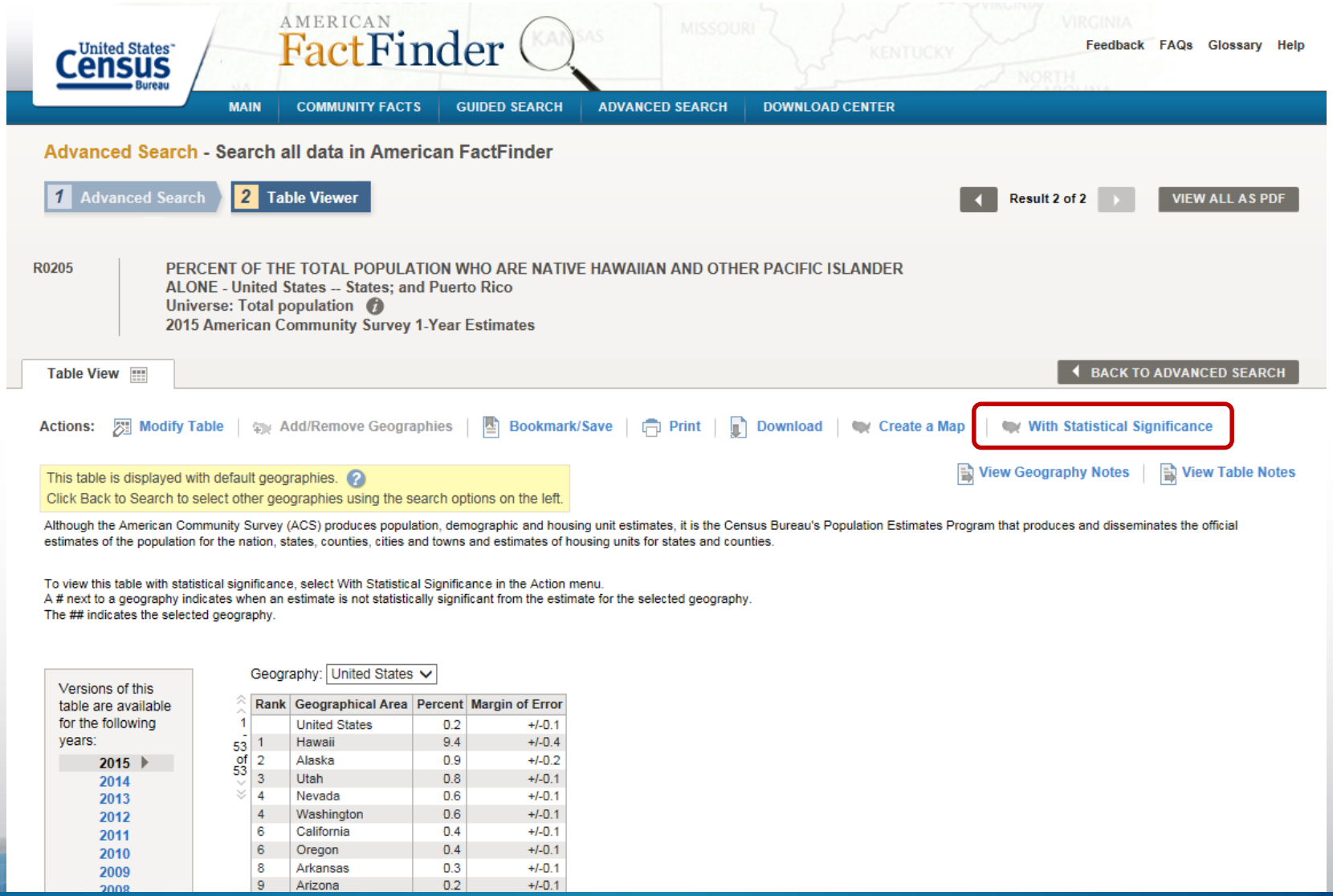
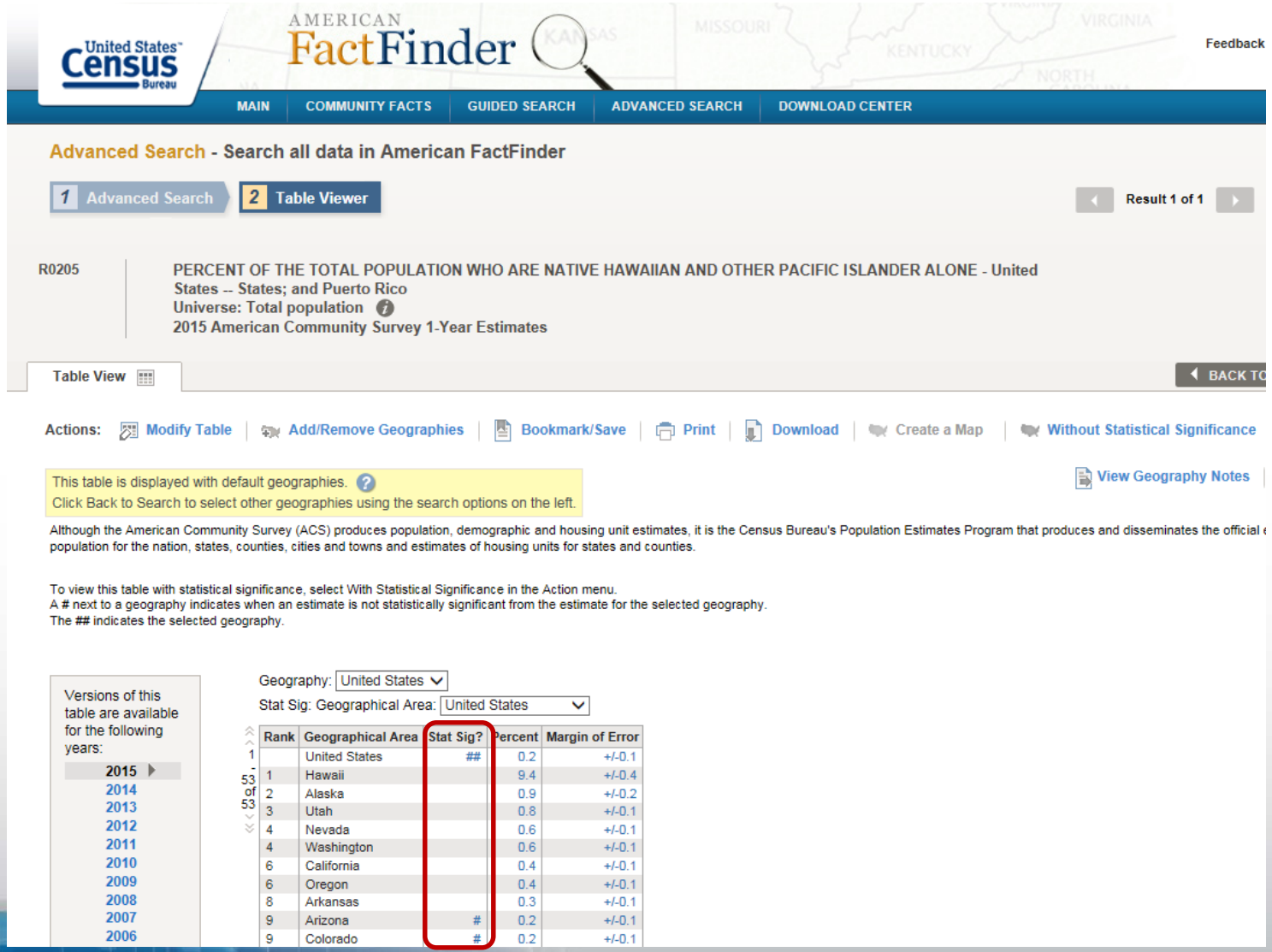
Subject	United States		
	2011-2015 Estimates	2006-2010 Estimates	Statistical Significance
HOUSEHOLDS BY TYPE			
Total households	116,926,305	114,235,99	*
Family households (families)	66.1%	66.8	*
With own children of the householder under 18 years	28.8%	30.6	*
Married-couple family	48.3%	49.6	*
With own children of the householder under 18 years	19.4%	21.1	*
Male householder, no wife present, family	4.8%	4.6	*
With own children of the householder under 18 years	2.3%	2.2	*
Female householder, no husband present, family	13.0%	12.6	*
With own children of the householder under 18 years	7.1%	7.3	*
Nonfamily households	33.9%	33.2	*
Householder living alone	27.6%	27.2	*
65 years and over	10.1%	9.3	*

ACS Ranking Tables

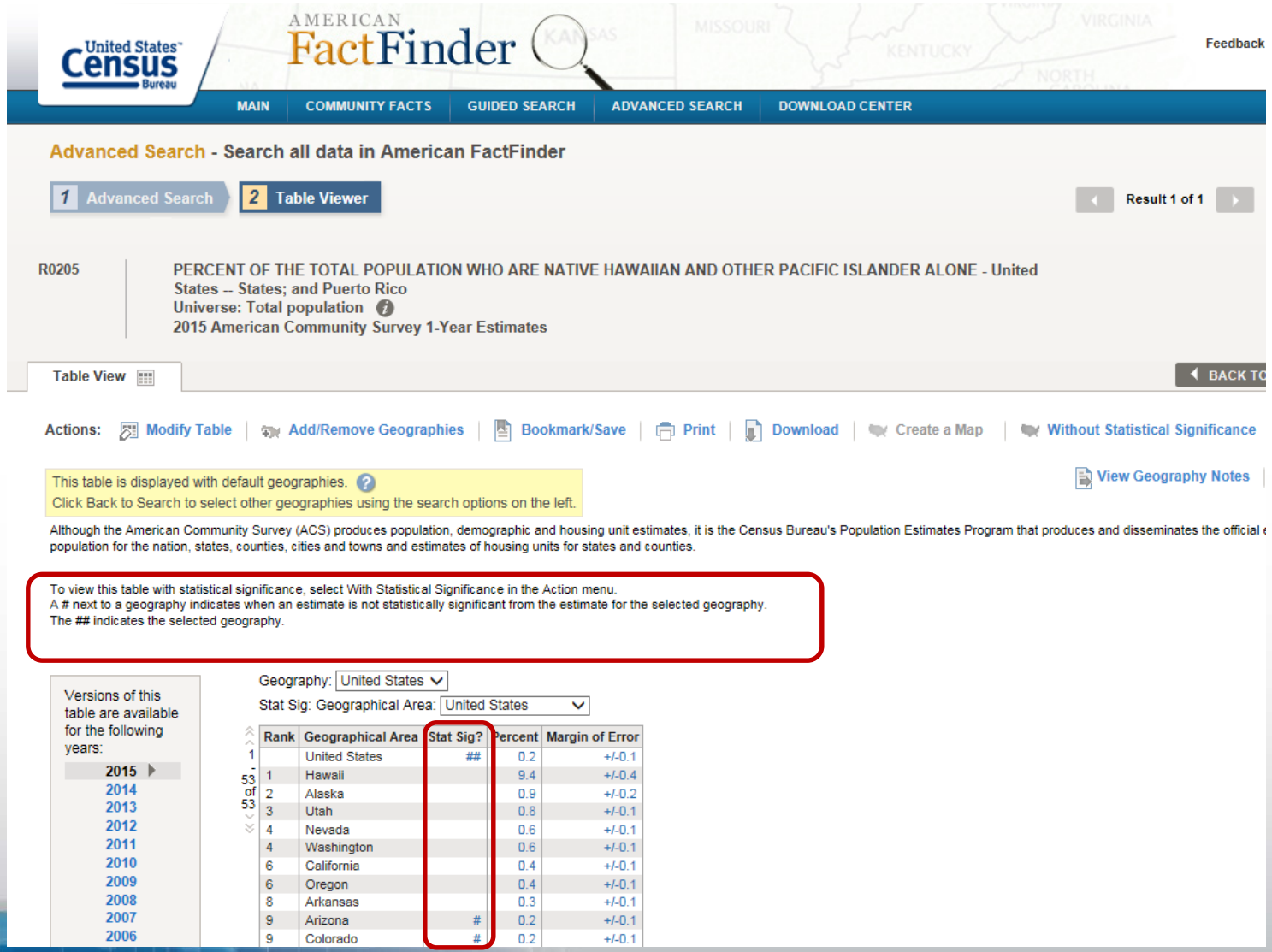


Rank	Geographical Area	Percent	Margin of Error
	United States	0.2	+/-0.1
1	Hawaii	9.4	+/-0.4
2	Alaska	0.9	+/-0.2
3	Utah	0.8	+/-0.1
4	Nevada	0.6	+/-0.1
4	Washington	0.6	+/-0.1
6	California	0.4	+/-0.1
6	Oregon	0.4	+/-0.1
8	Arkansas	0.3	+/-0.1
9	Arizona	0.2	+/-0.1

ACS Ranking Tables



ACS Ranking Tables



Outline

- ACS Estimates
- What is the Margin of Error (MOE)
- Why do MOEs Matter
- Statistical Testing Using the MOE
- **Special Cases**
- Approximating the MOE
- Available Resources
- Questions

Special Case
Controlled Estimates

- MOE = ***** (5 asterisks)
- Set MOE = 0 for statistical testing

B01001	SEX BY AGE Universe: Total Population 2011-2015 American Community Survey 5-Year Estimates	
	United States	
	Estimate	Margin of Error
Total:	316,515,021	*****
Male:	155,734,280	+/-6,323
Under 5 years	10,175,713	+/-3,826
5 to 9 years	10,470,147	+/-19,282
10 to 14 years	10,561,873	+/-18,975
15 to 17 years	6,447,043	+/-2,839

Special Case
Zero Estimate MOEs

- Zero estimates will have an MOE

B01001E	SEX BY AGE (NATIVE HAWAIIAN AND OTHER PACIFIC ISLANDER ALONE) Universe: People who are Native Hawaiian and Other Pacific Islander alone 2011-2015 American Community Survey 5-Year Estimates							
	Maine		New Hampshire		Vermont		Rhode Island	
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error
Total:	187	+/-67	228	+/-99	249	+/-91	373	+/-179
Male:	63	+/-33	118	+/-75	93	+/-60	224	+/-134
Under 5 years	0	+/-22	0	+/-26	0	+/-20	0	+/-29
5 to 9 years	0	+/-22	0	+/-26	0	+/-20	41	+/-37
10 to 14 years	16	+/-20	0	+/-26	8	+/-16	35	+/-36
15 to 17 years	0	+/-22	0	+/-26	0	+/-20	0	+/-29
18 and 19 years	0	+/-22	4	+/-7	0	+/-20	0	+/-29
20 to 24 years	0	+/-22	22	+/-27	18	+/-23	89	+/-98
25 to 29 years	17	+/-23	0	+/-26	25	+/-38	0	+/-29

Special Case
Medians and Aggregates

B06001	MEDIAN INCOME IN THE PAST 12 MONTHS (IN 2015 INFLATION-ADJUSTED DOLLARS) BY PLACE OF BIRTH IN THE UNITED STATES Universe: Population 15 years and over in the United States with income 2011-2015 American Community Survey 5-Year Estimates	
	Haena CDP, Hawaii	
	Estimate	Margin of Error
Median income in the past 12 months --		
Total:	19,107	+/-6,953
Born in state of residence	14,773	+/-9,473
Born in other state of the United States	32,917	+/-22,935
Native; born outside the United States	-	**
Foreign born	2,500-	***

- Median and Aggregates with too few observations
  - Estimate = "-", MOE = "**"
- Medians in lower or upper categories:
  - Estimate = "$2,500-", MOE = "***"
  - Estimate = "$250,000+", MOE = "***"

Statistical testing **NOT** possible

Special Case
Medians and Aggregates

B06001	MEDIAN INCOME IN THE PAST 12 MONTHS (IN 2015 INFLATION-ADJUSTED DOLLARS) BY PLACE OF BIRTH IN THE UNITED STATES Universe: Population 15 years and over in the United States with income 2011-2015 American Community Survey 5-Year Estimates	
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Foreign born	2,500	***

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	Estimate	Margin of Error
Median income in the past 12 months --		
Total:	19,107	+/-6,953
Born in state of residence	14,773	+/-9,473
Born in other state of the United States	32,917	+/- 22,935
Native; born outside the United States	-	**
Foreign born	2,500-	***

- Median and Aggregates with too few observations
  - Estimate = "-", MOE = "**"
- Medians in lower or upper categories:
  - Estimate = "$2,500-", MOE = "***"
  - Estimate = "$250,000+", MOE = "***"

Statistical testing **NOT** possible

Estimates with Large MOEs

B17001

POVERTY STATUS IN THE PAST 12 MONTHS BY SEX BY AGE
Universe: Population for whom poverty status is determined
2011-2015 American Community Survey 5-Year Estimates

Table View

Actions: Modify Table | Add/Remove Geographies | Bookmark/Save | Print | Download | Create a Map

Versions of this table are available for the following years:

2015
2014
2013
2012
2011
2010
2009

1 - 18 of 2,296

1 - 59 of 59

	Census Tract 9601, Acadia Parish, Louisiana		Census Tract 9602, Acadia Parish, Louisiana		Census Tract 9603, Acadia Parish, Louisiana		Census Tract 9604, Acadia Parish, Louisiana		Census Tract 9605, Acadia Parish, Louisiana		Ce 96 L
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error	Estin
Total:	5,879	+/-547	5,859	+/-559	3,618	+/-357	6,591	+/-570	6,476	+/-683	5,
Income in the past 12 months below poverty level:	1,837	+/-468	404	+/-212	347	+/-170	898	+/-421	1,151	+/-428	
Male:	629	+/-247	243	+/-170	129	+/-80	332	+/-171	439	+/-215	
Under 5 years	66	+/-68	0	+/-17	38	+/-47	14	+/-17	24	+/-39	
5 years	13	+/-23	0	+/-17	0	+/-12	0	+/-17	0	+/-17	
6 to 11 years	172	+/-183	12	+/-20	0	+/-12	30	+/-36	75	+/-89	
12 to 14 years	70	+/-92	12	+/-20	0	+/-12	30	+/-29	0	+/-17	
15 years	68	+/-81	0	+/-17	0	+/-12	0	+/-17	0	+/-17	
16 and 17 years	0	+/-17	11	+/-18	19	+/-30	0	+/-17	0	+/-17	
18 to 24 years	48	+/-71	100	+/-142	0	+/-12	11	+/-17	22	+/-34	
25 to 34 years	0	+/-17	12	+/-21	15	+/-31	38	+/-29	82	+/-90	
35 to 44 years	0	+/-17	0	+/-17	0	+/-12	54	+/-57	20	+/-34	
45 to 54 years	109	+/-81	13	+/-22	0	+/-12	0	+/-17	57	+/-88	
55 to 64 years	40	+/-57	53	+/-49	35	+/-53	88	+/-89	62	+/-61	
65 to 74 years	0	+/-17	30	+/-34	0	+/-12	0	+/-17	97	+/-8	

Estimates with Large MOEs

- Exercise Caution
  - Questionable Reliability
  - Small Sample Size
- Possible Solutions:
  - Use a larger geography
  - Combine estimates across characteristics, geographies or both

Outline

- ACS Estimates
- What is the Margin of Error (MOE)
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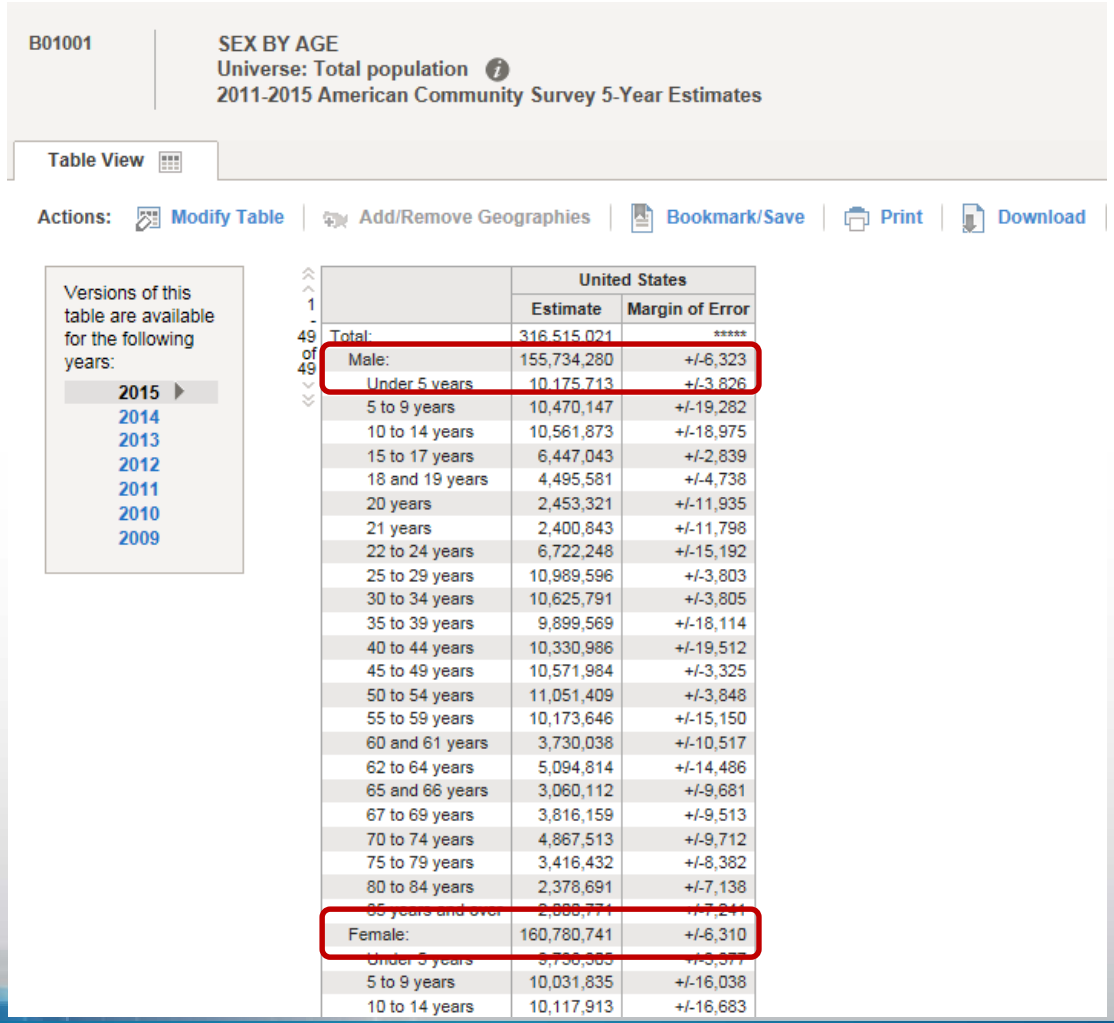
Deriving New Estimates

Must approximate the MOE



B01001

SEX BY AGE
Universe: Total population
2011-2015 American Community Survey 5-Year Estimates

Table View

Actions: Modify Table | Add/Remove Geographies | Bookmark/Save | Print | Download

Versions of this table are available for the following years:

2015
2014
2013
2012
2011
2010
2009

1 - 49 of 49

	United States	
	Estimate	Margin of Error
Total:	316,515,021	*****
Male:	155,734,280	+/-6,323
Under 5 years	10,175,713	+/-3,826
5 to 9 years	10,470,147	+/-19,282
10 to 14 years	10,561,873	+/-18,975
15 to 17 years	6,447,043	+/-2,839
18 and 19 years	4,495,581	+/-4,738
20 years	2,453,321	+/-11,935
21 years	2,400,843	+/-11,798
22 to 24 years	6,722,248	+/-15,192
25 to 29 years	10,989,596	+/-3,803
30 to 34 years	10,625,791	+/-3,805
35 to 39 years	9,899,569	+/-18,114
40 to 44 years	10,330,986	+/-19,512
45 to 49 years	10,571,984	+/-3,325
50 to 54 years	11,051,409	+/-3,848
55 to 59 years	10,173,646	+/-15,150
60 and 61 years	3,730,038	+/-10,517
62 to 64 years	5,094,814	+/-14,486
65 and 66 years	3,060,112	+/-9,681
67 to 69 years	3,816,159	+/-9,513
70 to 74 years	4,867,513	+/-9,712
75 to 79 years	3,416,432	+/-8,382
80 to 84 years	2,378,691	+/-7,138
85 years and over	2,886,774	+/-7,241
Female:	160,780,741	+/-6,310
Under 5 years	9,736,385	+/-3,377
5 to 9 years	10,031,835	+/-16,038
10 to 14 years	10,117,913	+/-16,683

Approximating the MOE

To calculate total number of children under the age of 5 years old:

1. Sum the estimates for males and females

2. Approximate the MOE:

$$MOE(Sum) = \sqrt{MOE_{est1}{}^2 + MOE_{est2}{}^2 \ldots}$$

Approximating the MOE

Characteristics	Estimate	MOE
Under 5 years, Males	10,175,713	+/-3,826
Under 5 years, Females	9,736,305	+/-3,377

$$\text{Estimate of the Sum} = 10{,}175{,}713 + 9{,}736{,}305 = 19{,}912{,}018$$

$$MOE(Sum) = \sqrt{3{,}826^2 + 3{,}377^2} \approx 5{,}103$$

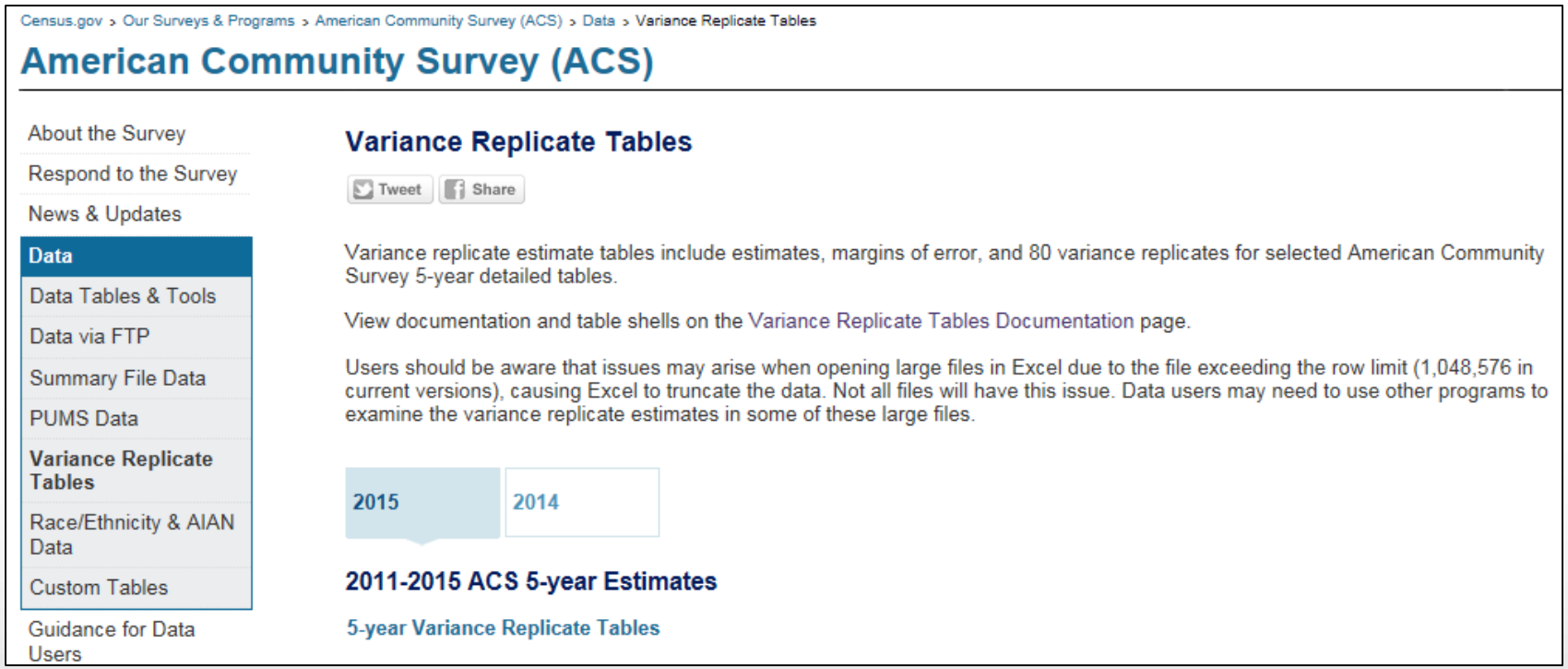
Approximating the MOE

Characteristics (Native Hawaiian and Other Pacific Islander alone)	Estimate	MOE
Under 5 years old (Maine)	0	+/-22
5 to 9 years old (Maine)	0	+/-22
Under 5 years old (Rhode Island)	0	+/-29
5 to 9 years old (Rhode Island)	41	+/-37
TOTAL	41	+/-47

When approximating a sum,
use only the largest zero estimate MOE, once:

$$MOE(Sum) = \sqrt{37^2 + 29^2} \approx 47$$

Variance Replicate Tables



https://www.census.gov/programs-surveys/acs/technical-documentation/variance-tables.html

Collapsed Tables

Detailed Table

B01001B SEX BY AGE (BLACK OR AFRICAN AMERICAN ALONE)
Universe: People who are Black or African American alone
2015 American Community Survey 1-Year Estimates

	United States	
	Estimate	Margin of Error
Total:	40,695,277	+/-62,504
Male:	19,429,854	+/-32,285
Under 5 years	1,412,491	+/-11,790
5 to 9 years	1,477,954	+/-17,659
10 to 14 years	1,462,379	+/-17,613
15 to 17 years	935,817	+/-8,432
18 and 19 years	657,217	+/-10,080
20 to 24 years	1,731,314	+/-14,258
25 to 29 years	1,521,425	+/-12,236
30 to 34 years	1,340,115	+/-11,969
35 to 44 years	2,506,498	+/-13,899
45 to 54 years	2,528,302	+/-13,049
55 to 64 years	2,148,437	+/-7,771
65 to 74 years	1,118,537	+/-7,828

Collapsed Table

C01001B SEX BY AGE (BLACK OR AFRICAN AMERICAN ALONE)
Universe: People who are Black or African American alone
2015 American Community Survey 1-Year Estimates

	United States	
	Estimate	Margin of Error
Total:	40,695,277	+/-62,504
Male:	19,429,854	+/-32,285
Under 18 years	5,288,641	+/-22,715
18 to 64 years	12,433,308	+/-22,683
65 years and over	1,707,905	+/-7,693
Female:	21,265,423	+/-44,169
Under 18 years	5,111,963	+/-30,317
18 to 64 years	13,595,889	+/-21,310
65 years and over	2,557,571	+/-7,393

Outline

- ACS Estimates
- What is the Margin of Error (MOE)
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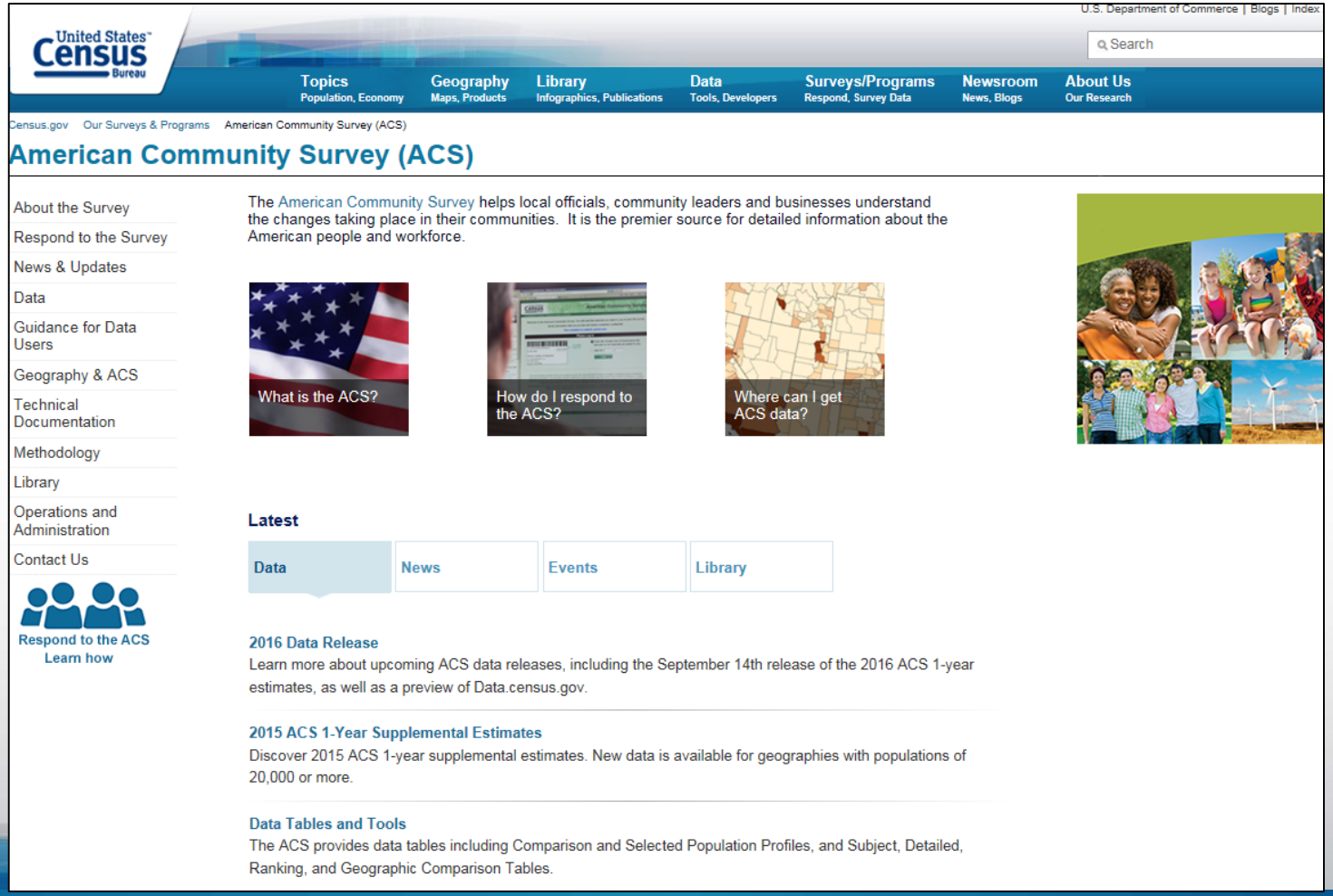
- Questions

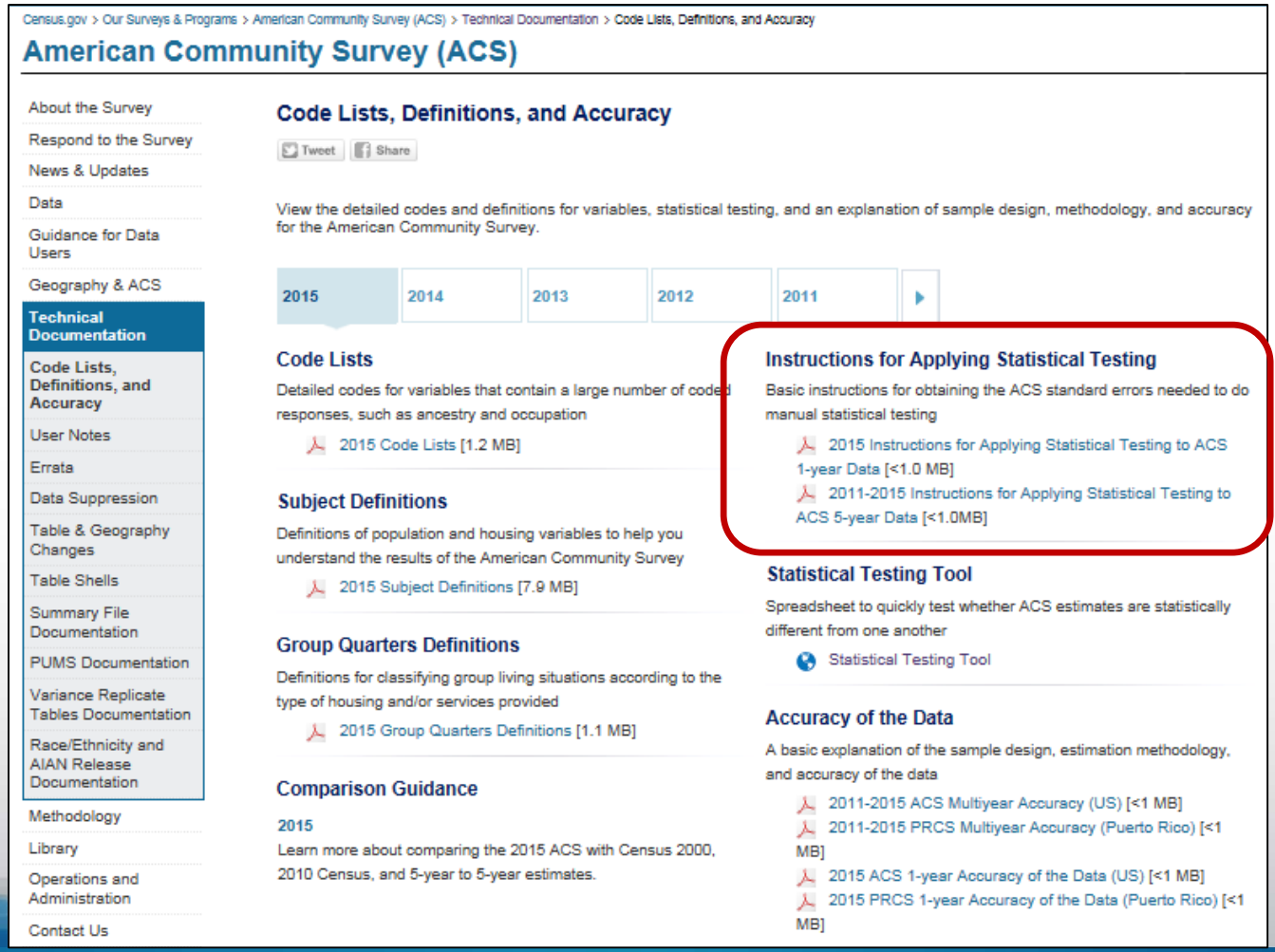
Resources

https://www.census.gov/programs-surveys/acs/



ACS Documentation

https://www.census.gov/programs-surveys/acs/technical-documentation/code-lists.html



ACS Documentation

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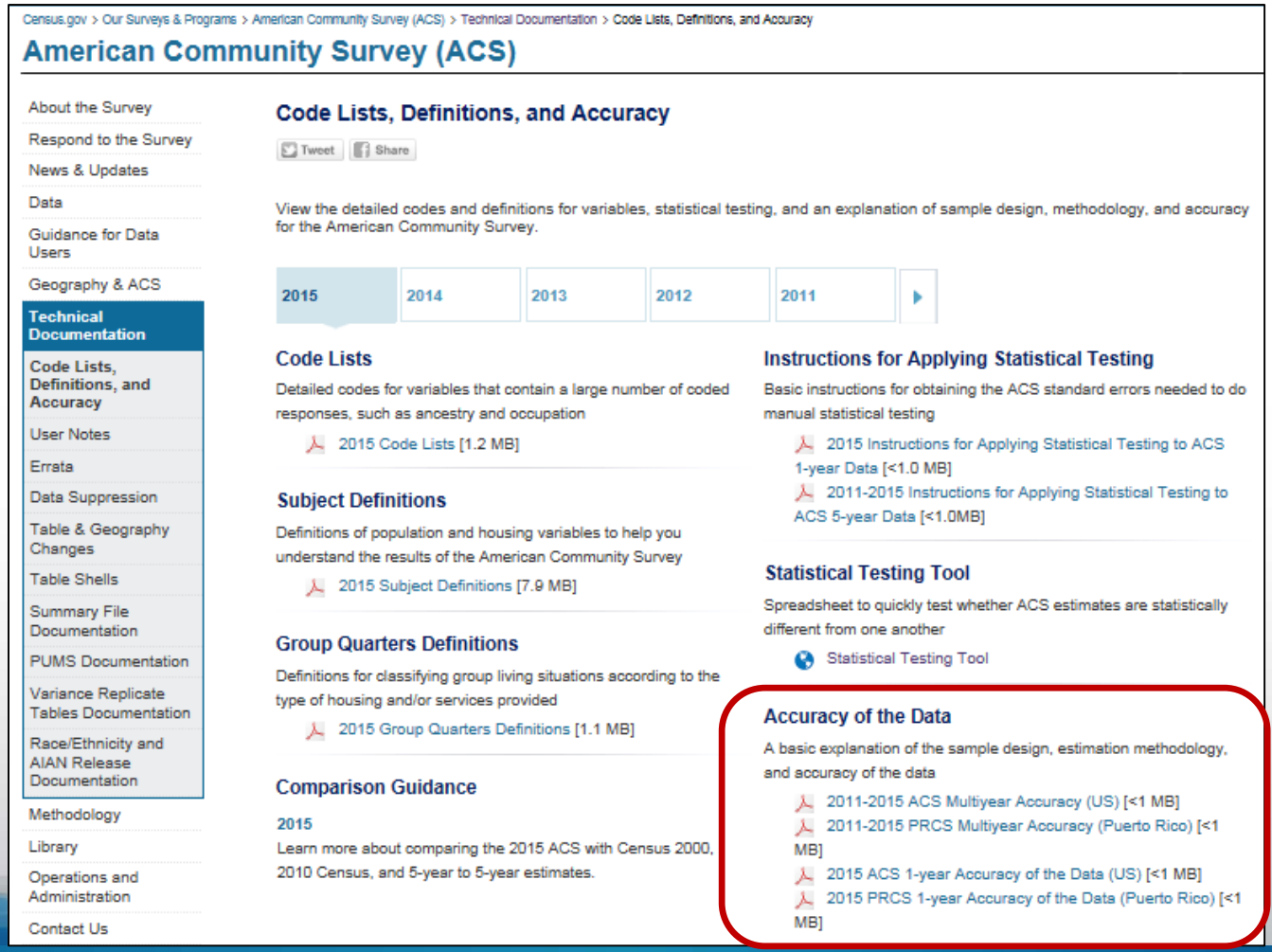


Census.gov > Our Surveys & Programs > American Community Survey (ACS) > Technical Documentation > Code Lists, Definitions, and Accuracy

American Community Survey (ACS)

- About the Survey
- Respond to the Survey
- News & Updates
- Data
- 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 AIAN Release Documentation
- Methodology
- Library
- Operations and Administration
- Contact Us

Code Lists, Definitions, and Accuracy

Tweet Share

View the detailed codes and definitions for variables, statistical testing, and an explanation of sample design, methodology, and accuracy for the American Community Survey.

2015 | 2014 | 2013 | 2012 | 2011

Code Lists

Detailed codes for variables that contain a large number of coded responses, such as ancestry and occupation

2015 Code Lists [1.2 MB]

Subject Definitions

Definitions of population and housing variables to help you understand the results of the American Community Survey

2015 Subject Definitions [7.9 MB]

Group Quarters Definitions

Definitions for classifying group living situations according to the type of housing and/or services provided

2015 Group Quarters Definitions [1.1 MB]

Comparison Guidance

2015

Learn more about comparing the 2015 ACS with Census 2000, 2010 Census, and 5-year to 5-year estimates.

Instructions for Applying Statistical Testing

Basic instructions for obtaining the ACS standard errors needed to do manual statistical testing

2015 Instructions for Applying Statistical Testing to ACS 1-year Data [<1.0 MB]

2011-2015 Instructions for Applying Statistical Testing to ACS 5-year Data [<1.0MB]

Statistical Testing Tool

Spreadsheet to quickly test whether ACS estimates are statistically different from one another

Statistical Testing Tool

Accuracy of the Data

A basic explanation of the sample design, estimation methodology, and accuracy of the data

2011-2015 ACS Multiyear Accuracy (US) [<1 MB]

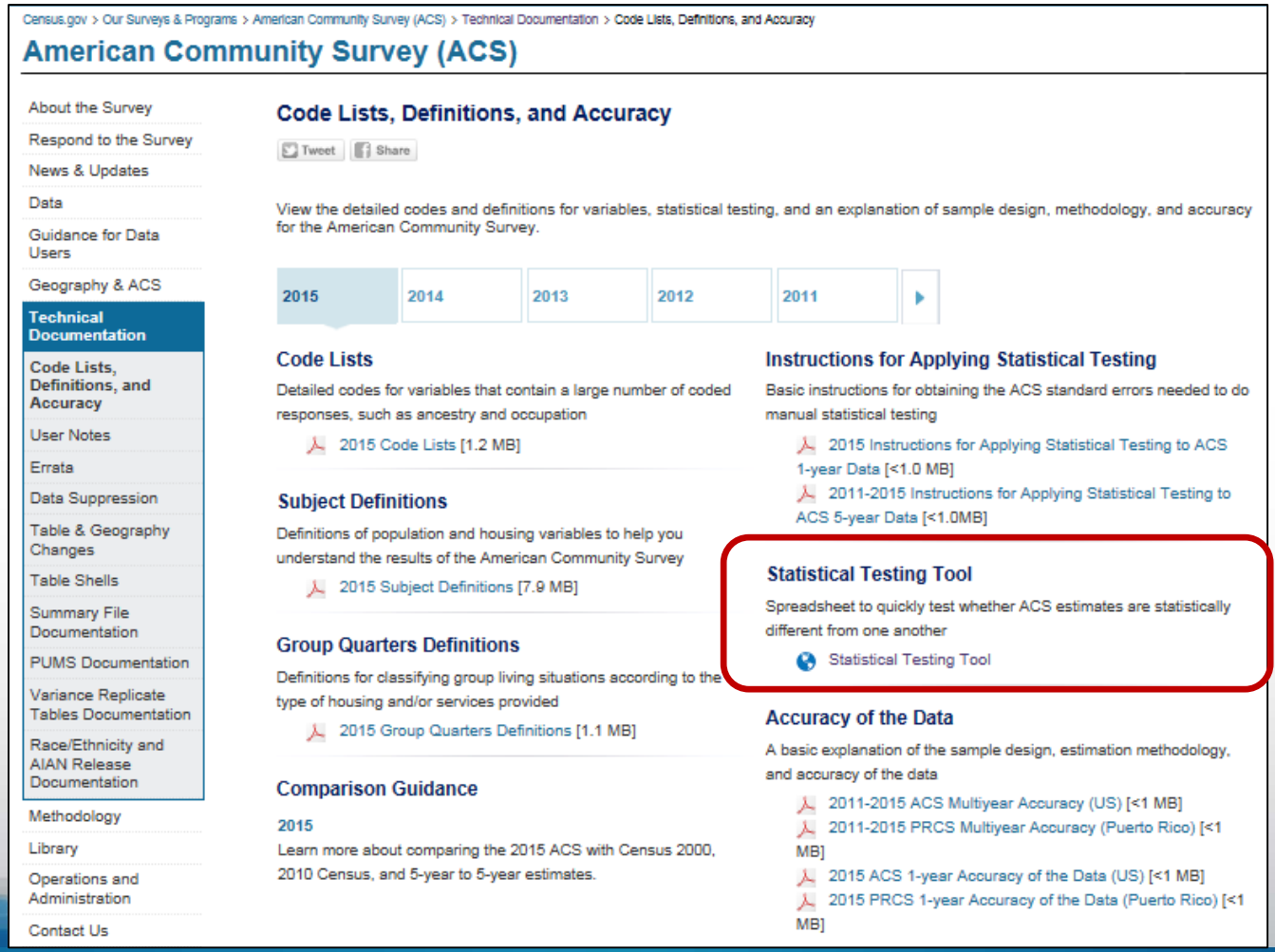
2011-2015 PRCS Multiyear Accuracy (Puerto Rico) [<1 MB]

2015 ACS 1-year Accuracy of the Data (US) [<1 MB]

2015 PRCS 1-year Accuracy of the Data (Puerto Rico) [<1 MB]

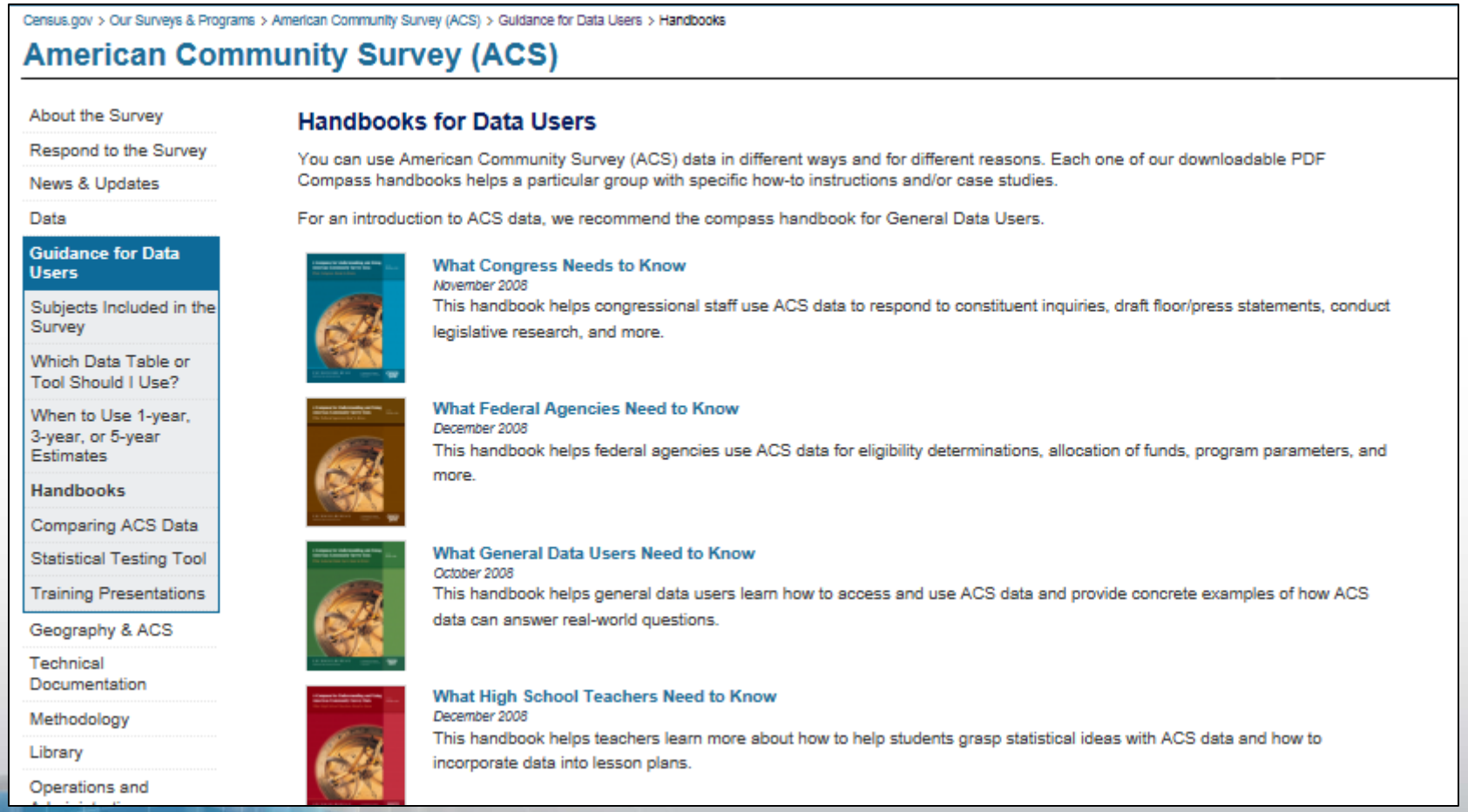
ACS Documentation

https://www.census.gov/programs-surveys/acs/technical-documentation/code-lists.html



Compass Handbooks

https://www.census.gov/programs-surveys/acs/guidance/handbooks.html



Census.gov > Our Surveys & Programs > American Community Survey (ACS) > Guidance for Data Users > Handbooks

American Community Survey (ACS)

- About the Survey
- Respond to the Survey
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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
  - Statistical Testing Tool
  - Training Presentations
- Geography & ACS
- Technical Documentation
- Methodology
- Library
- Operations and

Handbooks for Data Users

You can use American Community Survey (ACS) data in different ways and for different reasons. Each one of our downloadable PDF Compass handbooks helps a particular group with specific how-to instructions and/or case studies.

For an introduction to ACS data, we recommend the compass handbook for General Data Users.

What Congress Needs to Know
November 2008
This handbook helps congressional staff use ACS data to respond to constituent inquiries, draft floor/press statements, conduct legislative research, and more.

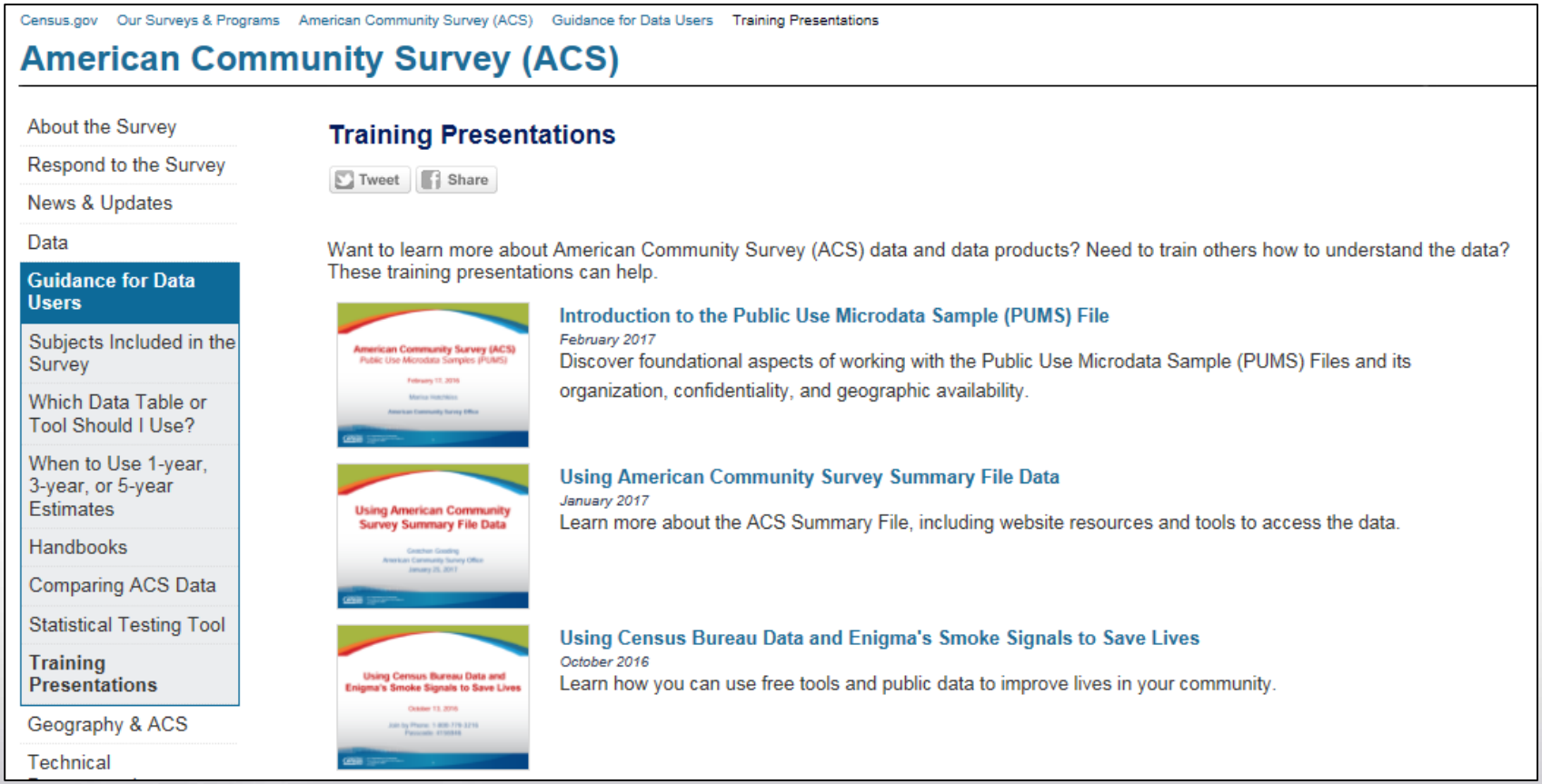
What Federal Agencies Need to Know
December 2008
This handbook helps federal agencies use ACS data for eligibility determinations, allocation of funds, program parameters, and more.

What General Data Users Need to Know
October 2008
This handbook helps general data users learn how to access and use ACS data and provide concrete examples of how ACS data can answer real-world questions.

What High School Teachers Need to Know
December 2008
This handbook helps teachers learn more about how to help students grasp statistical ideas with ACS data and how to incorporate data into lesson plans.

Training Presentations

https://www.census.gov/programs-surveys/acs/guidance/training-presentations.html



Census.gov Our Surveys & Programs American Community Survey (ACS) Guidance for Data Users Training Presentations

American Community Survey (ACS)

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  - Handbooks
  - Comparing ACS Data
  - Statistical Testing Tool
  - **Training Presentations**
- Geography & ACS
- Technical

Training Presentations

Tweet Share

Want to learn more about American Community Survey (ACS) data and data products? Need to train others how to understand the data? These training presentations can help.

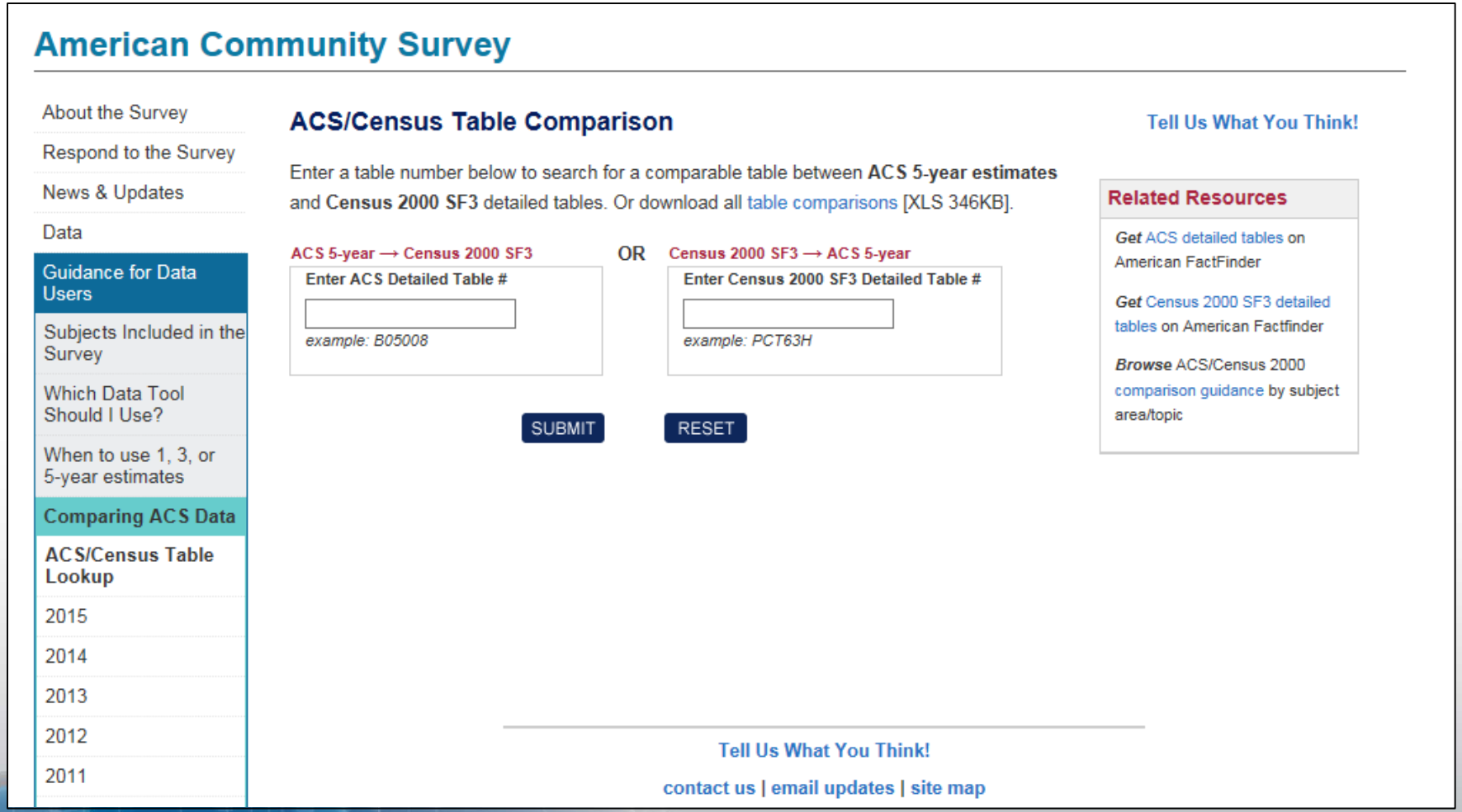
Introduction to the Public Use Microdata Sample (PUMS) File
February 2017
Discover foundational aspects of working with the Public Use Microdata Sample (PUMS) Files and its organization, confidentiality, and geographic availability.

Using American Community Survey Summary File Data
January 2017
Learn more about the ACS Summary File, including website resources and tools to access the data.

Using Census Bureau Data and Enigma's Smoke Signals to Save Lives
October 2016
Learn how you can use free tools and public data to improve lives in your community.

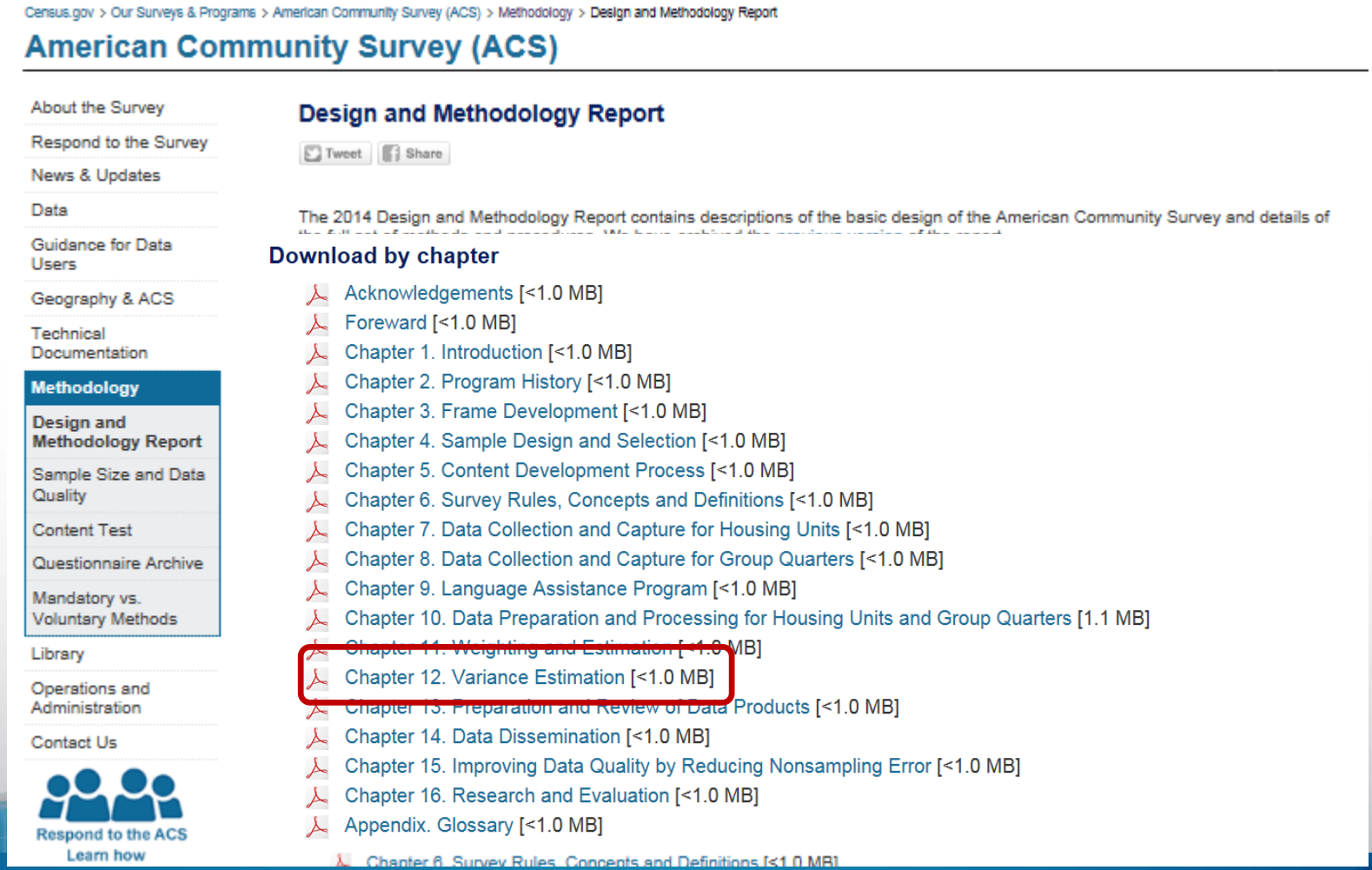
Crosswalk

https://www.census.gov/acs/www/guidance/comparing-acs-data/acscensus-table-lookup



Design and Methodology

https://www.census.gov/programs-surveys/acs/methodology/design-and-methodology.html



Source Us!

U.S. Census Bureau's *[YYYY-YYYY]* American Community Survey *[1/5]*-year *[estimates/statistics/data release]*

College Destinations: How We Rank Them
American Institute for Economic Research - Apr 7, 2014
Sources: **U.S. Census Bureau**; **American Community Survey**, **2011 American Community Survey 1-Year Estimates**, Table B01003; using ...

NMSU Valencia County Extension providing youth develo…
New Mexico State University NewsCenter - Apr 14, 2015
... Mexico and $53,046 for the United States, according to the **U.S. Census Bureau's 2009-2013 American Community Survey 5-Year Estimate**.

Census Estimates Show Progress Toward ACA Coverag…
Health Affairs (blog) - Sep 28, 2015
Source: **U.S. Census Bureau**, 2013 and **2014 American Community Survey 1-year estimates** from Table S2701 in American Fact Finder.

Continue the Conversation #ACSdata

Sign up for and manage alerts at:
https://public.govdelivery.com/accounts/USCENSUS/subscriber/new

More information on the American Community Survey:
https://www.census.gov/acs

(800) 923-8282 or
(301) 763-1405

Email us at:
acso.users.support@census.gov

facebook.com/uscensusbureau

twitter.com/uscensusbureau

youtube.com/user/uscensusbureau

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pinterest.com/uscensusbureau

AMERICAN COMMUNITY SURVEY DATA USERS GROUP

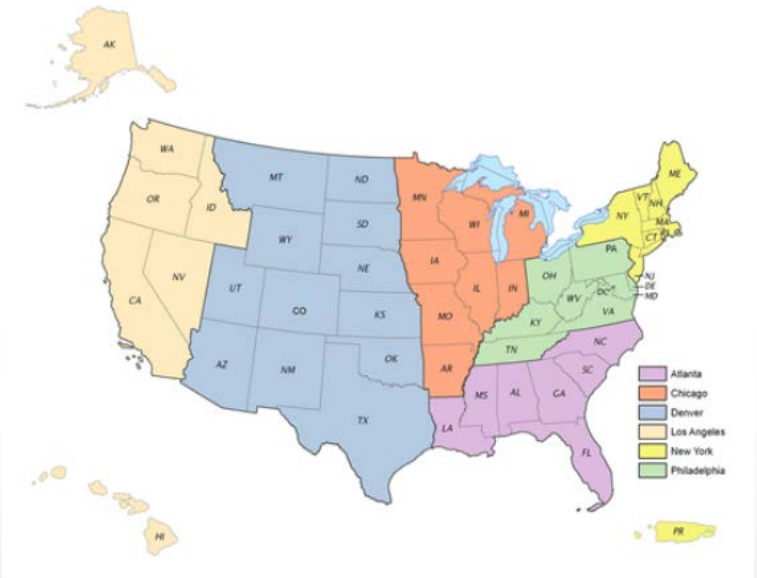
https://acsdatacommunity.prb.org

- 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, 2017

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 local specialists at:

1-844-ASK-DATA

(1-844-275-3282)

census.askdata@census.gov

Outline

- ACS Estimates
- What is the Margin of Error (MOE)
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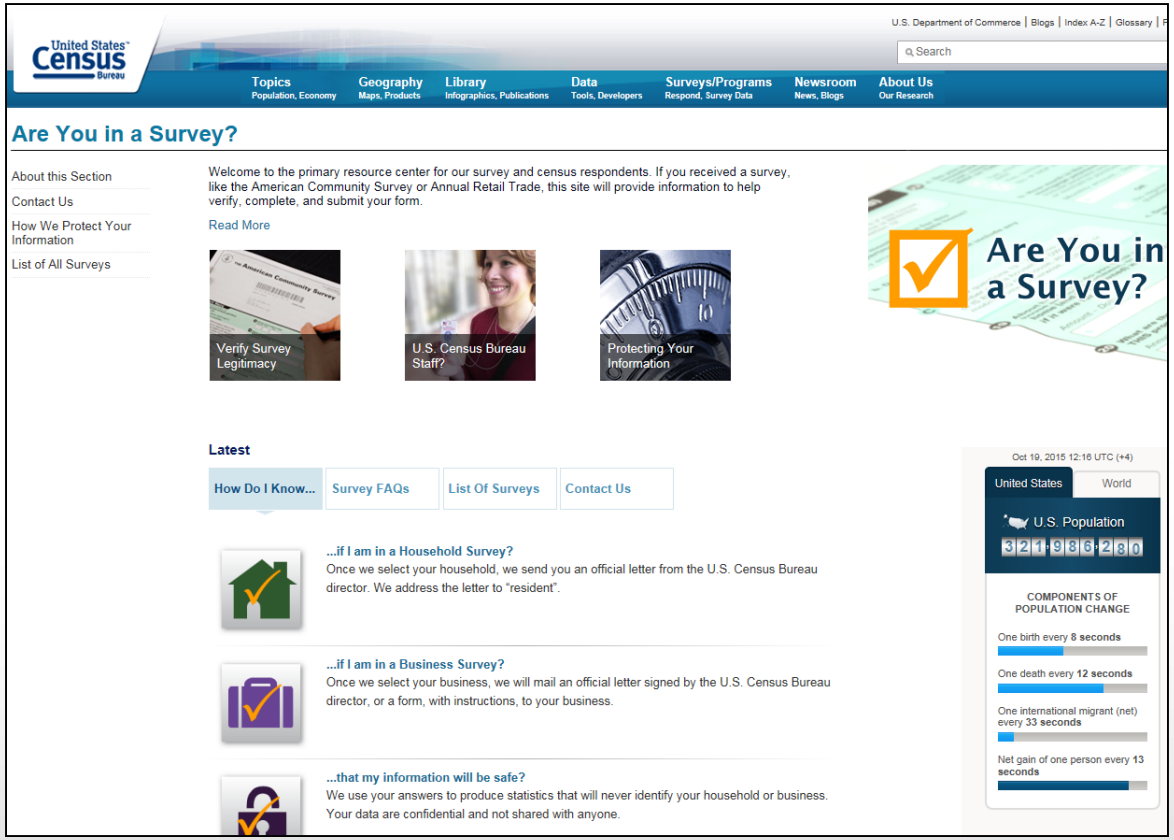
Questions?

Email us at:
acso.users.support@census.gov

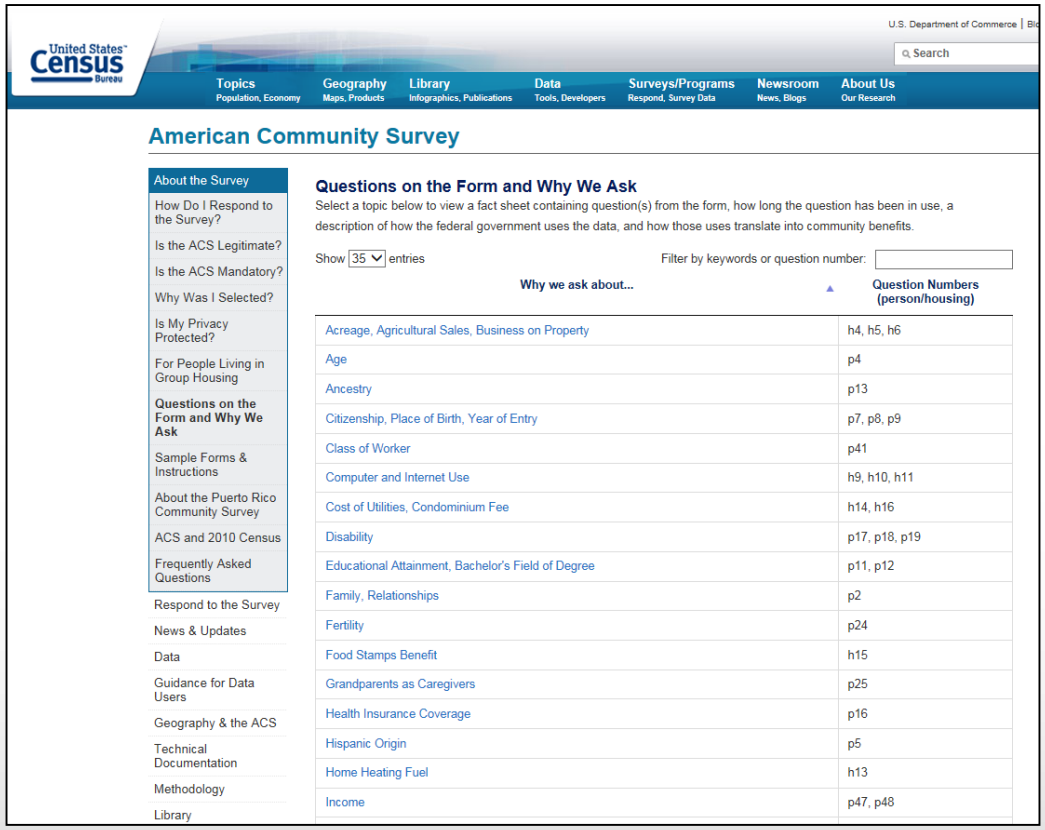
Bonus Slides

Bonus Slide:
How to Determine if you are in a Survey



https://www.census.gov/programs-surveys/are-you-in-a-survey.html

Bonus Slide:
Why We Ask the Questions on the ACS



https://www.census.gov/acs/www/about/why-we-ask-each-question/

Bonus Slide: Explanation of Detailed Table Code

B01001APR

- B is for Detailed Table, C is for Collapsed
- 01 is a 2-digit code for the subject
  - For more information on ACS Subjects, visit: https://www.census.gov/programs-surveys/acs/guidance/subjects.html
- 001 is the table number
- A is if the table is a race/Hispanic iterated table
  - (A is white alone non-Hispanic, iterations are A through I)
- PR appears only if the table is published exclusively for Puerto Rico