**Census Bureau Data Updates** Accessing Census Data about your Community

Puget Sound Regional Council June 8, 2022

Presenter: Lia Bolden Data Dissemination Specialist









#### **Meet Your Instructors**

Lia Bolden has been employed by the Census Bureau for over 20 years.

As a Data Dissemination Specialist, Lia promotes the use of census data to anyone with an interest or a need to work with this valuable information including community organizations, municipal officials, chambers of commerce, librarians, students, and businesspersons.

Lia's background includes consulting, marketing, community relations and co-manager of a consulting firm specializing in providing planning, training, facilitating, coaching and project management services to local communities and organizations engaged in community/ economic development.

#### **Data Dissemination and Training**

✓ Bring our data experts to you.
 <u>Request</u> a free data training for your organization.

#### ✓ Receive our <u>Data Gems</u>.

These short "how-to" videos are an easy and quick way to increase your knowledge of Census data. Get them in your inbox!

#### ✓ Get access to our <u>Courses</u>.

You will learn-at-your-own-pace with these video-tutorials designed for different skill levels.

#### ✓ Interact with our instructors via <u>Webinars</u>.

Learn about our data releases and tools while attending these live virtual classes.



Census Bureau

### Census.gov/Academy



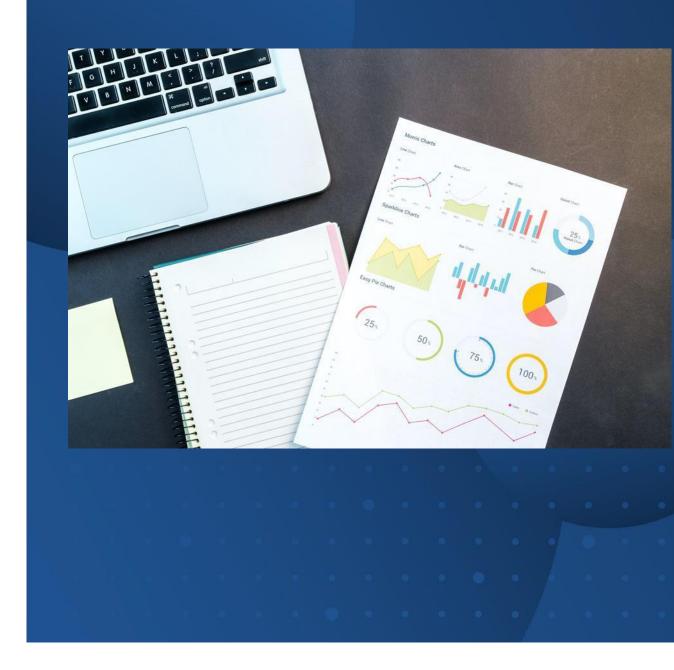
Census.askdata@census.gov 1-844-ASK-DATA

Share your ideas and feedback at <u>census.academy@census.gov</u>

#### Agenda

- Census Data Overview
- 2020 Census Products
- Disclosure Avoidance and Differential Privacy 101
- Other 2020 Census Products
- The American Community Survey
- Data.census.gov
- Live Demo





# Census Data Overview

1.



### The U.S. Census Bureau



The U.S. Census Bureau is the federal government's largest statistical agency.

We conduct more than 130 censuses and surveys each year, including

- <u>The Decennial Census</u> the once-a-decade population and housing count of all 50 states and U.S. territories
- The American Community Survey the ongoing, annual survey of the social, economic, housing, and demographic characteristics of the nation's population
- ✓ <u>The Economic Census</u> the official five-year measure of American businesses

"Our mission is to serve as the nation's leading provider of quality data about its people and economy"

census.gov/programs-surveys/surveys-programs.html

# 2.

# 2020 Census Data



# 2020 Census Data Products – Redistricting Data

- Redistricting Data:
  - Information states need to redraw or "redistrict" their legislative boundaries.
  - Redistricting data includes block-level counts of the population by:
    - Race
    - Ethnicity (Hispanic or Latino origin)
    - Voting age

- Housing occupancy status
- Group quarters population
- Redistricting data files released on data.census.gov on September 16,2021. <u>https://www.census.gov/newsroom/press-kits/2021/2020-census-</u> <u>redistricting.html</u>



### **2020 Census Data Products – Redistricting Data**

#### • Redistricting Data:

- Redistricting data includes 6 Tables:
- P1. Race
- P2. Hispanic or Latino, and Not Hispanic or Latino by Race
- P3. Race for the Population 18 Years and Over
- P4. Hispanic or Latino, and Not Hispanic or Latino by Race for the Population 18 Years and Over
- P5. Group Quarters Population by Major Group Quarters Type
- H1. Occupancy Status



#### 3.

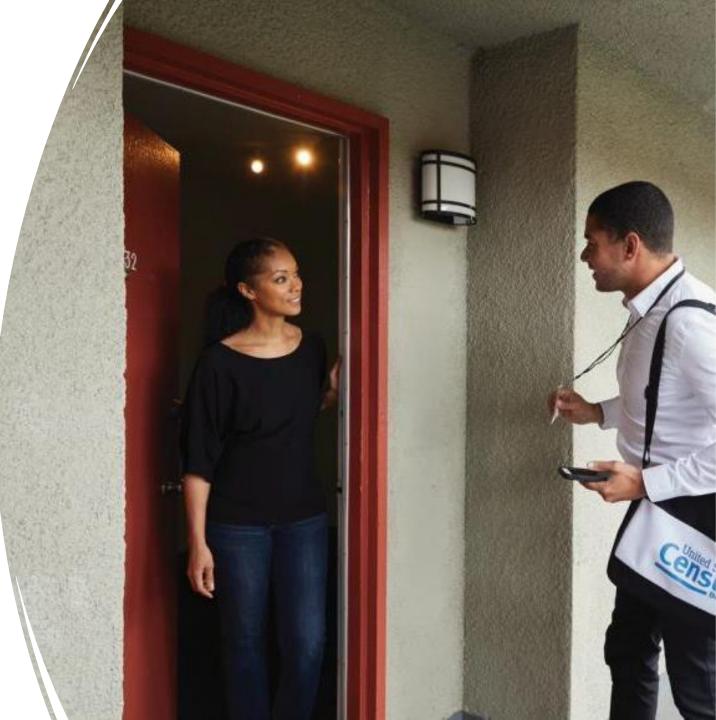
# **Disclosure Avoidance 101**



# Our Commitment to Privacy and Confidentiality

- Data stewardship is central to the Census Bureau's mission to produce high-quality statistics about the people and economy of the United States.
- Our commitment to protect the privacy of our respondents and the confidentiality of their data is both a legal obligation and a core component of our institutional culture.





### **The Privacy Challenge**

Every time you release any statistic calculated from a confidential data source you "leak" a small amount of private information.

If you release too many statistics, too accurately, you will eventually reveal the entire underlying confidential data source.

Dinur, Irit and Kobbi Nissim (2003) "Revealing Information while Preserving Privacy" PODS, June 9-12, 2003, San Diego, CA





# **The Growing Privacy Threat**

#### More Data and Faster Computers!

In today's digital age, there has been a proliferation of databases that could potentially be used to attempt to undermine the privacy protections of our statistical data products.

Similarly, today's computers are able to perform complex, large-scale calculations with increasing ease.

These parallel trends represent new threats to our ability to safeguard respondents' data.



# **Disclosure Avoidance**

Disclosure avoidance methods seek to make reconstruction and reidentification more difficult, by:

- Reducing precision
- Removing vulnerable records, or
- Adding uncertainty

#### Commonly used (legacy) methods include:

- Complementary suppression
- Rounding
- Top/Bottom coding of extreme values
- Sampling
- Record swapping
- Noise injection



# **Differential Privacy**

DP is not a disclosure avoidance "method" as much as it is a framework for <u>defining</u> and then <u>quantifying</u> privacy protection.

Every individual that is reflected in a particular statistic contributes towards that statistic's value.

Every statistic that you publish "leaks" a small amount of private information.

DP as a framework allows you to assess each individual's contribution to the statistic, and to measure (and thus, limit) how much information about them will leak.





# **Differential Privacy**

When combined with noise injection, DP allows you to precisely control the amount of private information leakage in your published statistics.

- Infinitely tunable parameter "dials" can be set anywhere from perfect privacy to perfect accuracy.
- Privacy guarantee is mathematically provable and future-proof.
- The precise calibration of statistical noise enables optimal data accuracy for any given level of privacy protection.\*

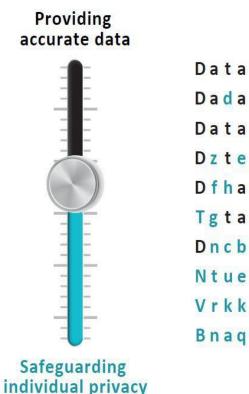
\*Absent post-processing requirements, which can introduce error independent of that needed to protect privacy.





# **Privacy vs. Accuracy**

- The only way to absolutely eliminate all risk of reidentification would be to never release any usable data.
- Differential privacy allows you to quantify a precise level of "acceptable risk," and to precisely calibrate where on the privacy/accuracy spectrum the resulting data will be.



Data	Quality	Bnae	Kegouqe
<mark>D a d</mark> a	Qualitg	Vrkk	Jzcfkdy
Data	Qaality	Dncb	P r h v B l n
Dzte	Qvality	Dncb	Prtnavy
Dfha	Quapyti	Tgta	Ppijacy
Tgta	Qucjity	Dfha	Pnjvico
Dncb	Qhulitn	Dzhe	Njivaci
Ntue	Quevdto	Dzte	Privecy
Vrkk	Zuhnvry	Dada	Privacg
Bnaq	Denorbe	Data	Privacy



# **Establishing a Privacy-loss Budget**

This measure is called the "Privacy-loss Budget" (PLB) or "Epsilon."

ε=0 (perfect privacy) would result in completely useless data
 ε=∞ (perfect accuracy) would result in releasing the

 $\epsilon = \infty$  (perfect accuracy) would result in releasing the data in fully identifiable form



Epsilon



# **Privacy-loss Budget Allocation**

**The Census Bureau's Data Stewardship Executive Policy Committee (DSEP)** will be making decisions about the PLB for the 2020 Census. This includes allocation across different 2020 Census data products, including:

- P.L. 94-171 Redistricting data
- Demographic and Housing Characteristics files (DHC)
- Detailed Demographic and Housing Characteristics files (D-DHC)
- ...and other uses of Decennial Census data.

DSEP will also be deciding how to allocate the PLB across the different sets of tabulations *within* each data product (by geographic level and by data element).



# **Disclosure Avoidance**

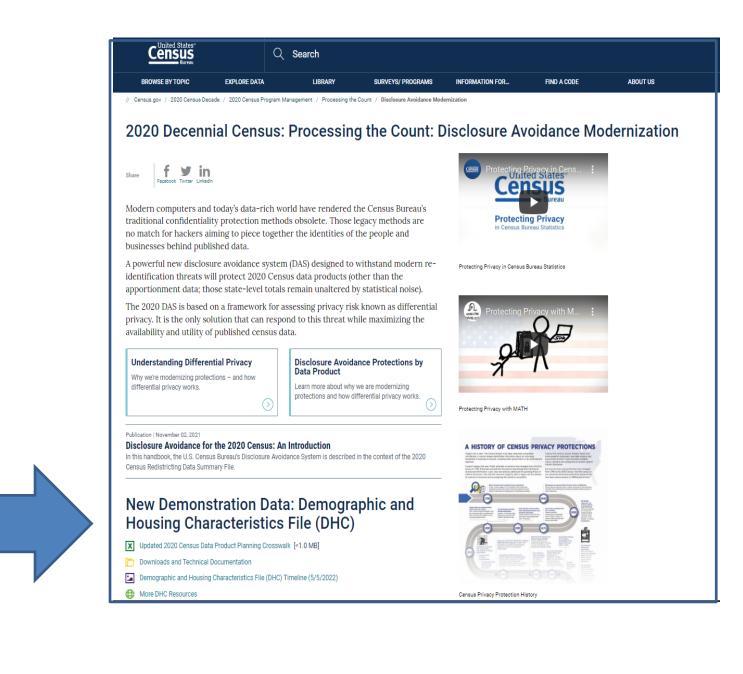
# Stay Informed: Visit Our Website

\*Search "Disclosure Avoidance"

at www.census.gov

**Find Latest Updates** 





### 4.

# 2020 Census Products (continued)



# **2020 Census Data Products**

- 1. Demographic profile May 2023
- 2. Demographic and Housing Characteristics (DHC) May 2023
- 3. Detailed Demographic and Housing Characteristics (DHC- D) 2023
- Detailed Demographic and Housing Characteristics File A (Detailed DHC-A) August 2023
- 5. Detailed Demographic and Housing Characteristics File B (Detailed DHC-B) TBD
- 6. Supplemental Demographic and Housing Characteristics File (S-DHC)-TBD

http<u>s://www.census.gov/programs-surveys/decennial-census/decade/2020/planning-</u>management/release/about-2020-data-products.html



# 2020 Census Data

#### **Products** Demographic Profile – DP1

This product will provide selected demographic and housing characteristics about local communities.

- Subjects: 5-year age groups, sex, race, Hispanic or Latino origin, household type, relationship to householder, group quarters population, housing occupancy, and housing tenure.
- Access: data.census.gov.
- Lowest level of geography: Places and minor civil divisions (MCDs).
- Planned release date: May 2023.

https://www.census.gov/programs-surveys/decennialcensus/decade/2020/planning-management/release/about-2020-dataproducts.html



# 2020 Census Product Demographic and Housing Characteristics File (DHC)

The DHC will include many of the demographic and housing tables previously included in the 2010 Census Summary File 1 (2010 SF1). Some tables are repeated by race and ethnicity.

- Subjects: Age, sex, race, Hispanic or Latino origin, household type, family type, relationship to householder, group quarters population, housing occupancy, and housing tenure.
- Access: data.census.gov.
- Lowest level of geography: Varies, with many tables proposed at the census block level.
- Planned release date: May 2023.



### **2020 Census Data Products**

### **Detailed Demographic and Housing Characteristics File (Detailed DHC)**

Based on data user feedback and development of the disclosure avoidance system, we've split the Detailed DHC into three separate products described below.

- The Detailed DHC-A and Detailed DHC-B will provide statistics for detailed racial and ethnic groups and American Indian and Alaska Native tribes and villages.
- The Supplemental-DHC will provide characteristics about people within households.



http<u>s://www.census.gov/programs-surveys/decennial-census/decade/2020/planning-</u>management/release/about-2020-data-products.html

### 2020 Census Data Products Detailed Demographic and Housing Characteristics File A (Detailed DHC-A)

- Subjects: Population counts and sex by age statistics for approximately 370 detailed racial and ethnic groups, such as German, Lebanese, Jamaican, Chinese, Native Hawaiian, and Mexican, as well as about 1,200 detailed American Indian and Alaska Native tribal and village population groups, such as Navajo Nation.
- Access: data.census.gov.
- Proposed 2020 geographies: Nation, state, county, and American Indian/Alaska Native/Native Hawaiian (AIANNH) areas. We're evaluating the feasibility of adding places (cities and towns) and census tracts, per data user feedback.
- Planned release date: August 2023.



# **2020 Census Data Products**

#### **Detailed Demographic and Housing Characteristics File B (Detailed DHC-B)**

- Subjects: Household type and tenure information for the same detailed race and ethnicity groups and American Indian and Alaska Native tribal and village population groups mentioned for the Detailed DHC-A.
- Access: data.census.gov.
- Proposed 2020 geographies: Nation, state, county, and American Indian/Alaska Native/Native Hawaiian (AIANNH) areas.
- Release date: To be determined.



https://www.census.gov/programs-surveys/decennial-census/decade/2020/planningmanagement/release/about-2020-data-products.html

# **2020 Census Data Products**

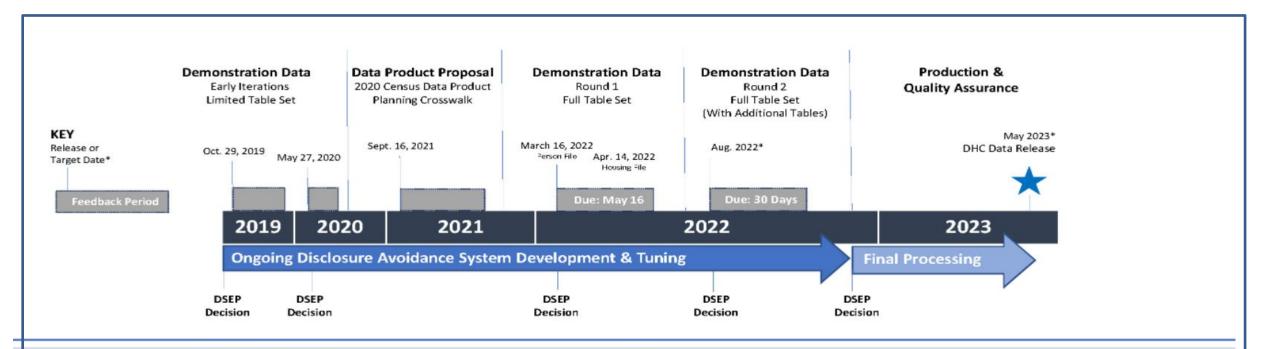
#### Supplemental Demographic and Housing Characteristics File (S-DHC)

- The S-DHC tables reflect especially complex relationships between the characteristics about households and the people living in them. These complex characteristics supplement the data about households and people available in the DHC product. We often refer to these tables as "complex person-household join tables" or "join tables." Some tables are repeated by race and ethnicity.
- Subjects: Data that combine characteristics about households and the people living in them, including the total population in households, average household size by age and tenure, average family size, household and family type for people under 18 years old, and total population in households by tenure.
- Access: data.census.gov.
- Proposed 2020 geographies: Varies with many tables available at the nation, state, county, census tract, places, and AIANNH areas.
- Release date: To be determined.



https://www.census.gov/programs-surveys/decennial-census/decade/2020/planningmanagement/release/about-2020-data-products.html

#### **Demographic and Housing Characteristics File - Timeline**



#### **Demonstration Data**



The demonstration data apply the latest version of the disclosure avoidance system (DAS) to 2010 Census data. This allows a side-by-side comparison of DAS impact, quantified by detailed summary metrics. All demonstration data include the person and housing files, but Round 1 split these files into two releases.

#### **DSEP Decision Points**

The Data Stewardship Executive Policy Committee (DSEP), composed exclusively of senior career officials, determines the allocation of privacy-loss budget across geography types and queries based on an analysis of data quality and disclosure risk. DSEP makes these determinations prior to every demonstration data release and prior to final release.

#### Feedback Periods and Due Dates

Data users have at least 30 days to evaluate and submit data feedback to help inform further development. Upcoming feedback deadlines are marked.

#### Read our blog to learn more:

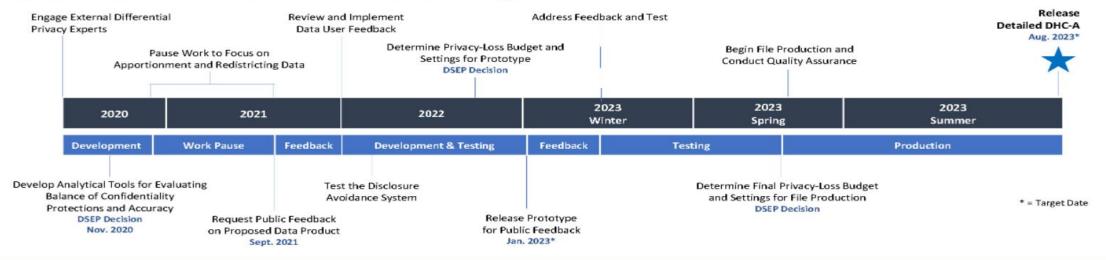
"2020 Census Data Products: Next Steps for Data Releases"



#### **Demographic and Housing Characteristics File A - Timeline**

# Detailed Demographic and Housing Characteristics File A (Detailed DHC-A)

Total Population and Sex by Age for Approximately 370 Detailed Racial and Ethnic Groups and 1,200 American Indian and Alaska Native Tribes and Villages



#### Prototype Release and Feedback



Data users will have 30 days to review a prototype file and submit feedback. We're calling it a "prototype" because it will look a little different than the demonstration data for the Redistricting File and the Demographic and Housing Characteristics File (DHC). It will include parameters and margins of error, using the available 2010 Census data as a proof of concept.

#### **DSEP Decision Points**

The Data Stewardship Executive Policy Committee (DSEP), composed exclusively of senior career officials, determines the allocation of privacy-loss budget across geography types and queries based on an analysis of data quality and disclosure risk.

#### Read our blog to learn more:

"Plans for Producing Detailed Racial, Ethnic and Tribal Data from the 2020 Census"



#### 5.

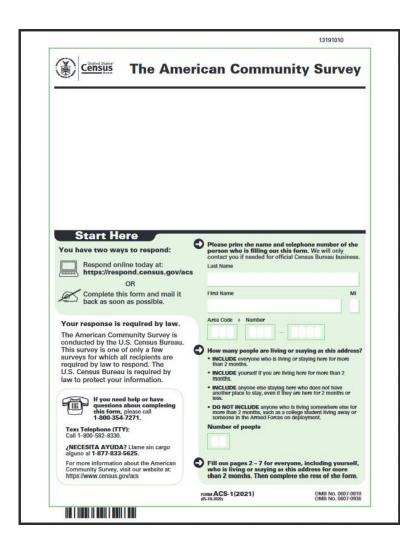
# The American Community Survey



#### The American Community Survey The Foundation

The American Community Survey is on the leading edge of survey design, continuous improvement, and data quality

- 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 3.5 million addresses and informs over \$675 billion of federal government spending each year
- Covers **40+ topics**, supports over **300** evidence-based Federal government uses, and produces **11 billion** estimates each year
- Typically provides three key annual data releases:
  - 1-year Estimates (for large populations, geographies of 65,000+ population)
  - 1-year Supplemental Estimates (for small populations, geographies of 20,000+ population)
  - 5-year Estimates (for very small populations, geographies down to Census Tracts and Block Groups)





# The American Community Survey

#### How is the American Community Survey Different from a Census?

	ACS	Census
Purpose	Sample estimates	Official counts
Collects	Detailed social, economic, housing, and demographic characteristics	Basic demographics
Produces	Population and housing characteristics – Trends and comparisons	Population and housing totals
New Data Every	Year	10 years
Data Reflect	Period of time (1 year and 5 years)	Point in time



# The American Community Survey

### Content Overview

POPULATION		HOUSING	
	SOCIAL Ancestry Citizenship Citizen Voting Age Population Disability Educational Attainment	DEMOGRAPHIC Age Hispanic Origin Race Relationship Sex	Computer & Internet Use Costs (Mortgage, Rent, Taxes, Insurance) Heating Fuel Home Value Occupancy Plumbing/Kitchen Facilities Structure Tenure (Own/Rent) Utilities Vehicles Year Built/ Year Moved In
	Fertility Grandparents Language Marital Status Migration School Enrollment Veterans	ECONOMIC Class of Worker Commuting Employment Status Food Stamps (SNAP) Health Insurance Hours/Week, Weeks/Year Income	

Industry & Occupation



### The American Community Survey

#### Impact of Data Collection Challenges on ACS Data Quality

- The COVID-19 pandemic impacted the ACS data collection operations in 2020
- Given the limitations in our data collection for the 2020 ACS, we were unable to collect information from certain segments of the population
- As a result, significant nonresponse bias was present in the collected data
- While all surveys have nonresponse bias, our standard methods for mitigating the nonresponse bias were insufficient for the 2020 ACS
- A report, An Assessment of the COVID-19 Pandemic's Impact on the 2020 ACS 1-Year Data, with more information on the 2020 ACS 1-year data and related quality metrics was released on October 27



#### The American Community Survey Geography and Population Controls

#### Geography

- Most geographies reflect 2020 geographic boundaries
- The following geographies reflect 2010 geographic boundaries and will be updated later:
  - ZIP Code Tabulation Areas-2021 ACS release
  - Public Use Microdata Areas-2022 ACS release
  - Urban/Rural definitions-2022 ACS release

census.gov/programs-surveys/acs/geography-acs/geography-boundaries-by-year.html

#### **Population Controls**

• The 2016-2020 ACS 5-year estimates will use the Vintage 2020 postcensal estimates

census.gov/programs-surveys/acs/technical-documentation/user-notes/2021-01.html



### The American Community Survey

Data User Guidance for the 2016-2020 ACS 5-Year Estimates

- Use caution when comparing the 2016-2020 ACS 5-year estimates with other ACS data or 2020 Census Data
- Due to data collection challenges in 2020 as a result of COVID, the ACS collected only two-thirds of the responses it usually collects
- This reduced number of interviews in the 2020 portion of the 2016-2020 5year estimates caused an increase in the margins of error by approximately 15-20% in relative terms
- Take the margins of error into account, especially when making comparisons for smaller geographies or populations
- Use caution when using estimates with high margins of error



### The American Community Survey

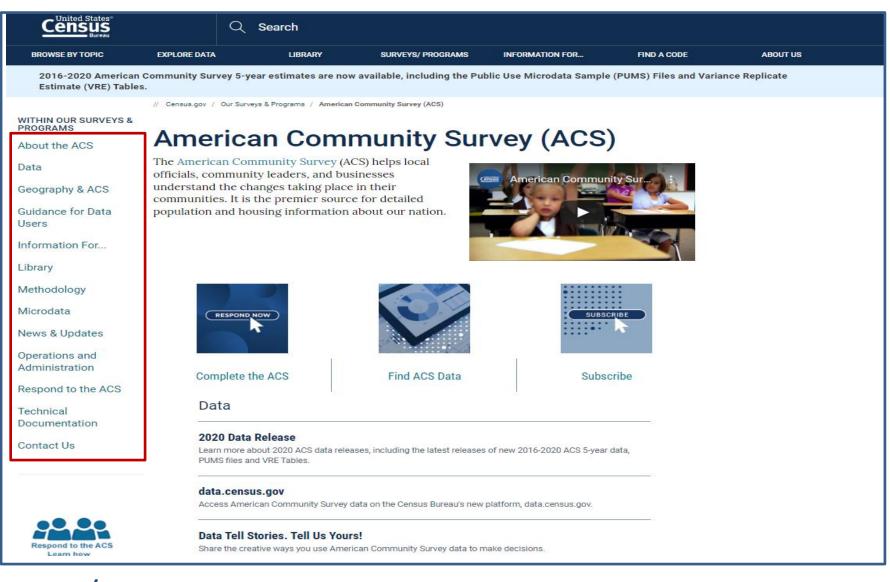
Data User Guidance for the 2016-2020 ACS 5-Year Estimates (Cont'd)

There are several challenges when making comparisons with the 2016-2020 ACS 5-year estimates, including:

- Changes to the weighting methodology implemented to address the nonresponse bias issues in the 2020 data
- Actual changes within the population and our ability to capture those changes
- Tendency of multiyear estimates to smooth out sudden changes
- The ACS population controls were not informed by the 2020 Census results



### **The American Community Survey- Main Page**







### The American Community Survey 5-Year Data Products

#### • Data Profiles (5)

- Selected Social, Economic, Housing, Demographic
- Selected Social Characteristics Puerto Rico
- Comparison Profiles (5)
  - 2016-2020 and 2011-2015
- Subject Tables (83)
- Detailed Tables (1,140)
- Narrative Profiles
- Data Tools
  - API, QuickFacts, My Tribal Area, Census Business Builder

#### American Community Survey Data Tables

There are many types of tables and profiles from the American Community Survey (ACS). Learn more about our data products, including a description of each product, geographic areas covered, and tools containing these products, to help you access the information you need from the ACS.

Need help using data.census.gov or the Application Programming Interface (API)? Check out How-to Materials for Using data.census.gov and ACS Data via API.

EXPAND ALL | COLLAPSE ALL

- Data Profiles (DP) Broad social, economic, housing, and demographic information in a total of four profiles
- Narrative Profiles Summaries of information in the Data Profiles using nontechnical text
- Comparison Profiles (CP) Comparisons of ACS estimates over time in the same layout as the Data Profiles
- Selected Population Profiles (S0201) Broad ACS statistics for population subgroups by race, ethnicity, ancestry, tribal affiliation, and place of birth

Detailed Tables (B or C) — Most detailed estimates on all topics for all geographies

 $\sim$  Subject Tables (S) – A span of information on a particular ACS subject presented in the format of both estimates and percentages

Ranking Tables (R) — State rankings across approximately 90 key variables



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

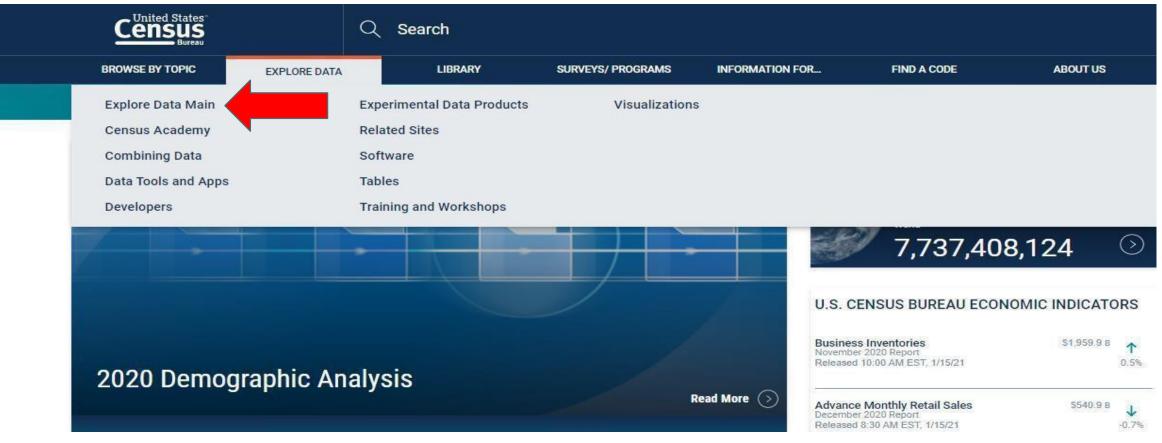
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### data.census.gov





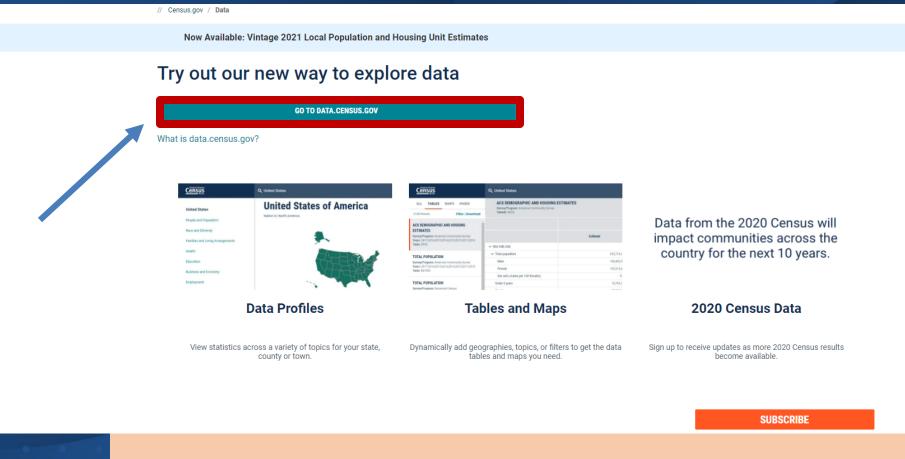
### **Explore Data Main**





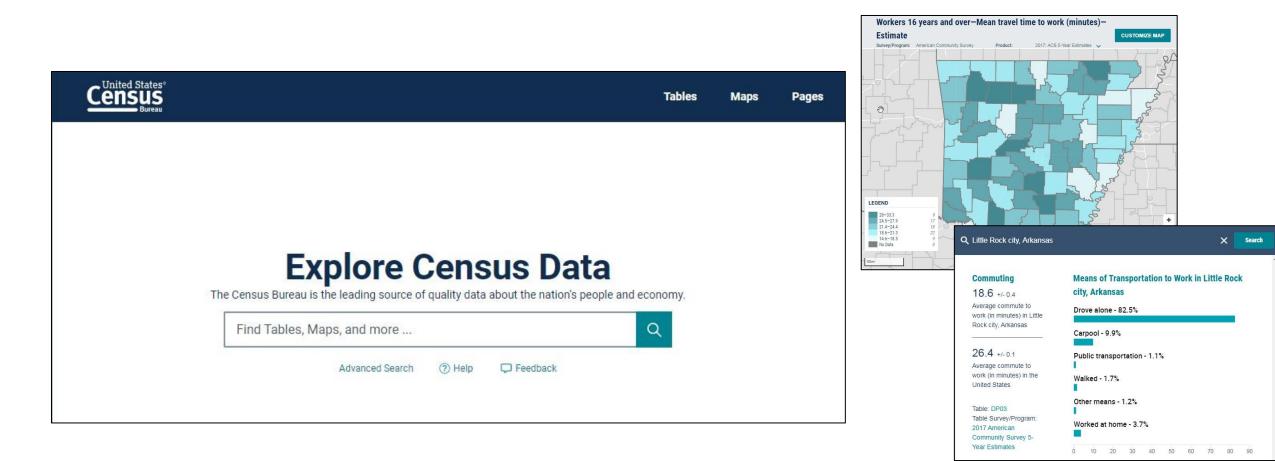
U.S. Department of Commerce Economics and Statistics Administration U.S. CENSUS BUREAU *census.gov* 

# **Explore Census Data**





### data.census.gov





### **Two Options To Start Your Search**

#### 1. Single Search:

• Free form search box

#### 2. Advanced Search

 Select search criteria in a step-bystep filtering experience where you select desired checkboxes



# **Explore Census Data**

The Census Bureau is the leading source of quality data about the nation's people and economy.

Advanced Search	(?)Help	Feedback	

• You can find many results with either search option

Tips:

 You can only access some complex topics/geographies using the advanced search. Give advanced search a try if you're not finding a quick answer to your data question with single search.

#### **Advanced Search: More Complex Searches**

The Mod Chatage	1			
Census Bureau	Search			
	All	Tables	Maps	Pages
Advanced Search				
Q Table ID (e.g., DP05)				
0 Filters ⑦				
1 Clear all				
Find a Filter				
Q Search				
123 Codes >				
📋 Surveys >				
Topics >				
TYears >				

### Use Advanced Search to specify:

- Geographies with:
  Complex names (ex: tracts)
  Collections (ex: all counties in CA)
  Components (ex: urban/rural)
- Multiple Topics
- Survey/Program/Table Type
- Population Groups Race, Tribal, Hispanic Origin, Ancestry, and Foreign Born groups



United States

### Resources

Census		Q Search						
BROWSE BY TOPIC	EXPLORE DATA	LIBRARY	SURVEYS/ PROGRAMS	INFORMATION FOR	FIND A CODE			
		// Census.gov > Data > <u>What is data</u>	.census.gov? > Guidance for Data Users	> Frequently Asked Questions				
WHAT IS DATA.CENSUS.GOV?	4	Evenuenth						
Frequently Asked Questions		Frequently Asked Questions						
How to Materials for Using data.census.gov	5	Check out our Frequently Asked Questions to learn about using data.census.gov, the						
How-to Materials for Using the Census API	îm	Census API, and Microdata Access. Find out what data, features, and functionality is available.						
How-to Materials for Using the Microdata Access		\A/leatic data						
Transition from AFF		What is data.census.gov?						
Transition from DataFerrett		What is data.census.gov	2					
Video Tutorials		Data.census.gov is the new platform to access data and digital content from the U.S. Census Bureau.						
Webinars		Why did the Census Bure	au develop data.census.g	ov?				
< Back to Guidance for Data		We are moving away from delivering data through many individual tools What are the benefits of using data census gov?						
Users								



### DEMO TIME – FINDING DATA EXAMPLES

Use Simple Search to find the homeownership rate for the state of Washington

Pull up the latest data profiles (DP02, DP03, DP04, DP05) for selected counties in your state

Access a selected population profile for a detailed race group for the counties in your service area

Pull ZCTA's in a county to find the median household income

How many grocery stores are in King County, WA?



## **Continue the Conversation**

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youtube.com/user/uscensusbureau

http<u>s://w</u>ww<u>.census</u>.gov/about/contactus/social\_media.html

Facebook



#### **Get in Touch With Us**



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