



UNIVERSITY OF NEBRASKA AT OMAHA

CENTER FOR PUBLIC AFFAIRS RESEARCH

# Data and Research Series for Community Impact

PART TWO

SEPTEMBER 23, 2025





**Behind the Numbers:  
*How the Census Bureau  
Delivers Reliable Data for  
a Changing Nation***

**Mary Ana McKay, Ph.D.**

Survey Statistician

U.S. Census Bureau, American Community Survey Office

# Behind the Numbers: How the Census Bureau Delivers Reliable Data for a Changing Nation

*University of Nebraska at Omaha  
Center for Public Affairs Research  
Data and Research Series for Community Impact*

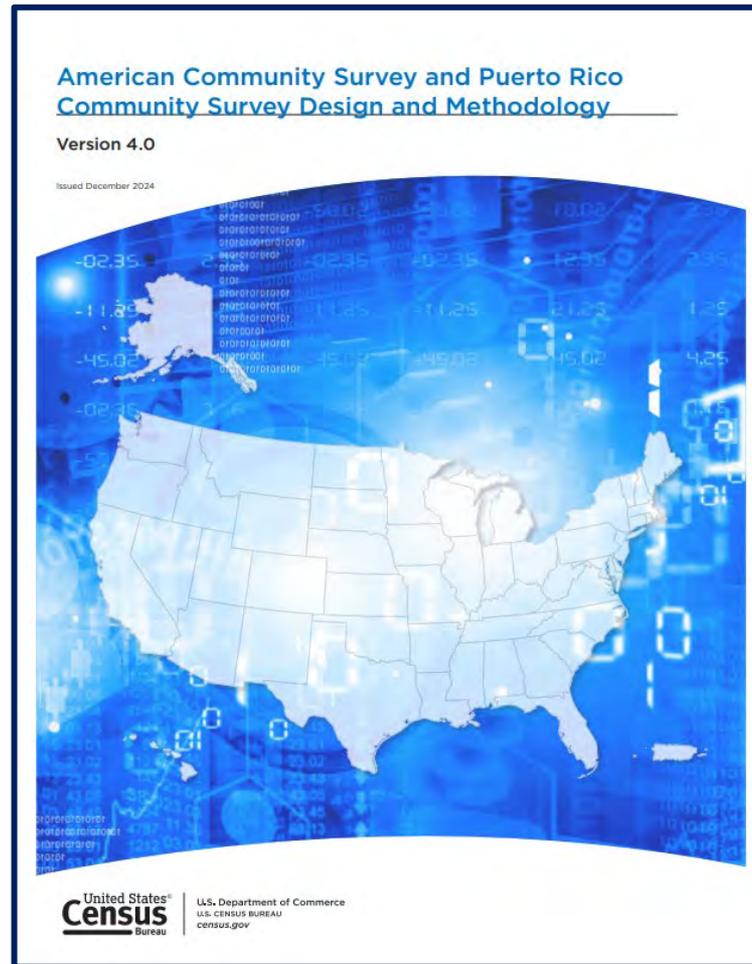
September 23, 2025

*Mary Ana McKay, PhD  
Survey Statistician  
American Community Survey Office*



# The American Community Survey

## Design and Methodology



United States®  
**Census**  
Bureau

[www.census.gov/programs-surveys/acs/methodology/design-and-methodology.html](http://www.census.gov/programs-surveys/acs/methodology/design-and-methodology.html)

# The American Community Survey

## Outline

- **American Community Survey (ACS) overview**
- Survey sample development
- Data collection
- Data preparation and weighting
- Data tabulation and dissemination process
- New innovations



# The American Community Survey

## The Foundation

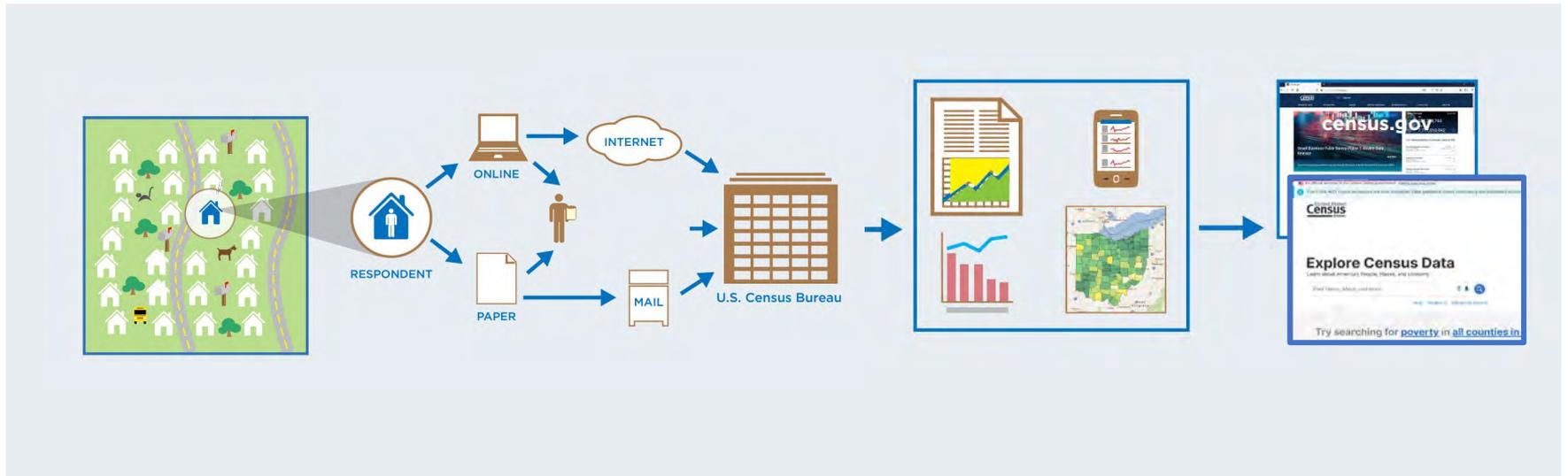
- The American Community Survey (ACS) is the premier source of detailed information about the nation's people and housing
- Surveys **3.5 million** addresses to produce annual social, economic, housing, and demographic estimates for communities throughout the 50 states, DC, and Puerto Rico
- Covers **40+ topics** — Collects detailed information previously collected by the decennial census each decade
- Helps inform how federal funds are distributed each year, supports over **300** evidence-based federal government uses
- Data released the year after collection as 1-year and 5-year estimates
- Officially started in 2005

The image displays two versions of the American Community Survey interface. The top screenshot is a computer monitor showing the website's login page. It features the 'United States Census Bureau' logo, the title 'American Community Survey', and a 'Welcome! Start here to respond:' section. Below this, there are instructions to enter the User ID and a 'Login' button. A 'U.S. Census Bureau Notice and Consent Warning' is visible at the bottom of the page. The bottom screenshot is a paper form titled 'Start Here' with instructions on how to respond, including online and mail options. It includes fields for 'Last Name', 'First Name', and 'Area Code + Number'. There are also checkboxes for 'How many people, including yourself, live or stay at this address?' and a section for 'Number of people'. The form includes a phone icon for help and a 'NECESITA AYUDA?' section. At the bottom, it provides the form number 'FORM ACS-1(2025)' and the OMB number '097-0810'.



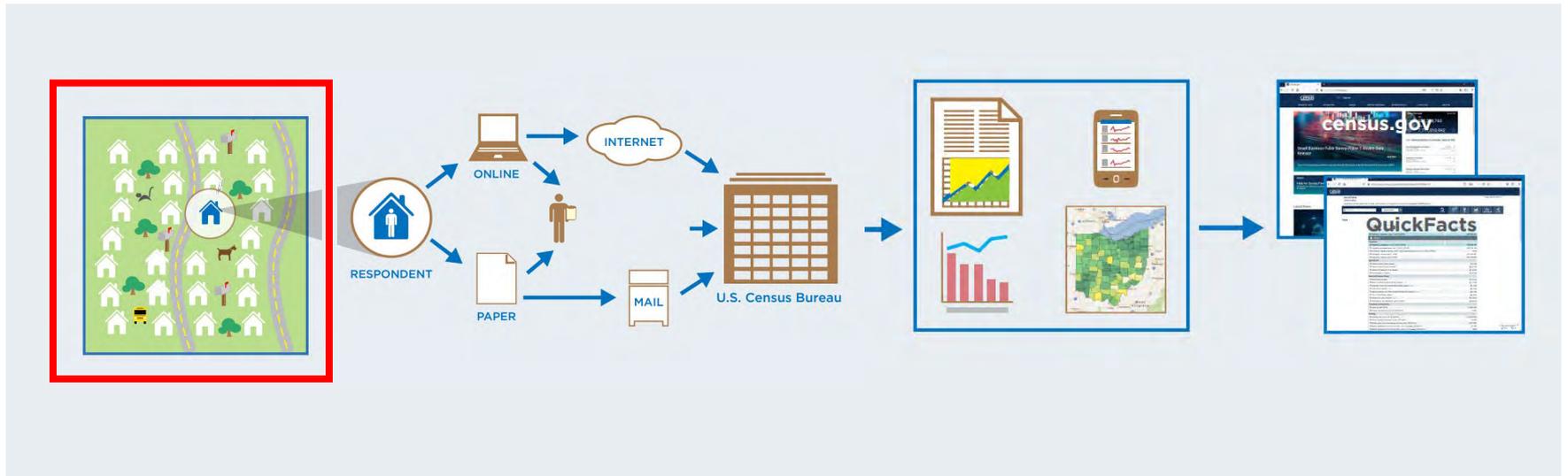
# The American Community Survey

## Overview of Process



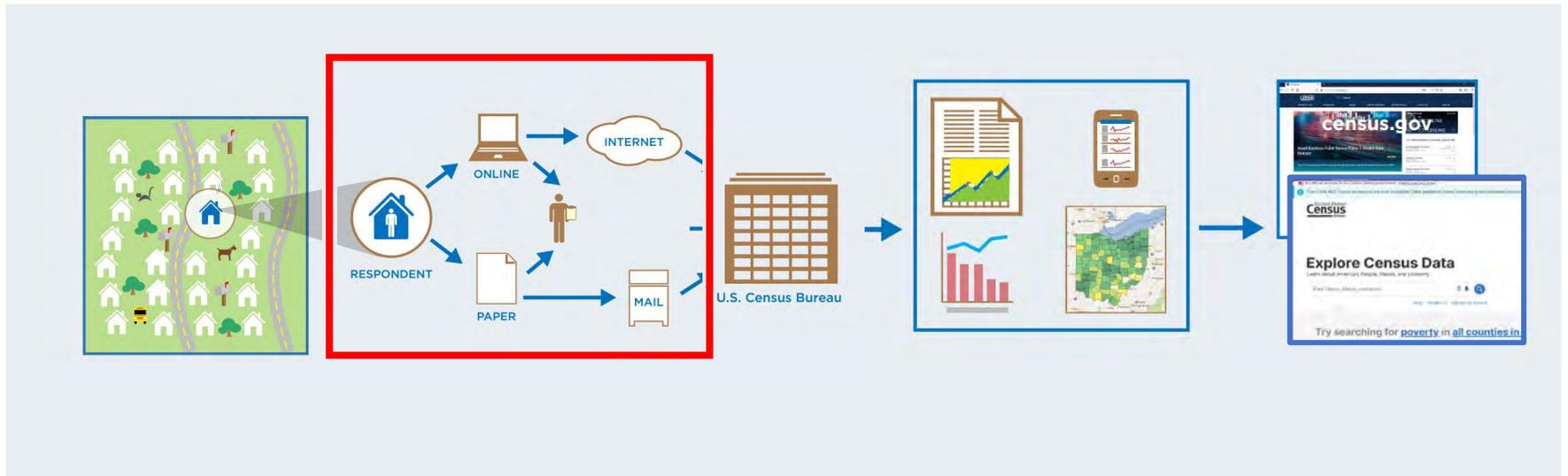
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## Overview of Process



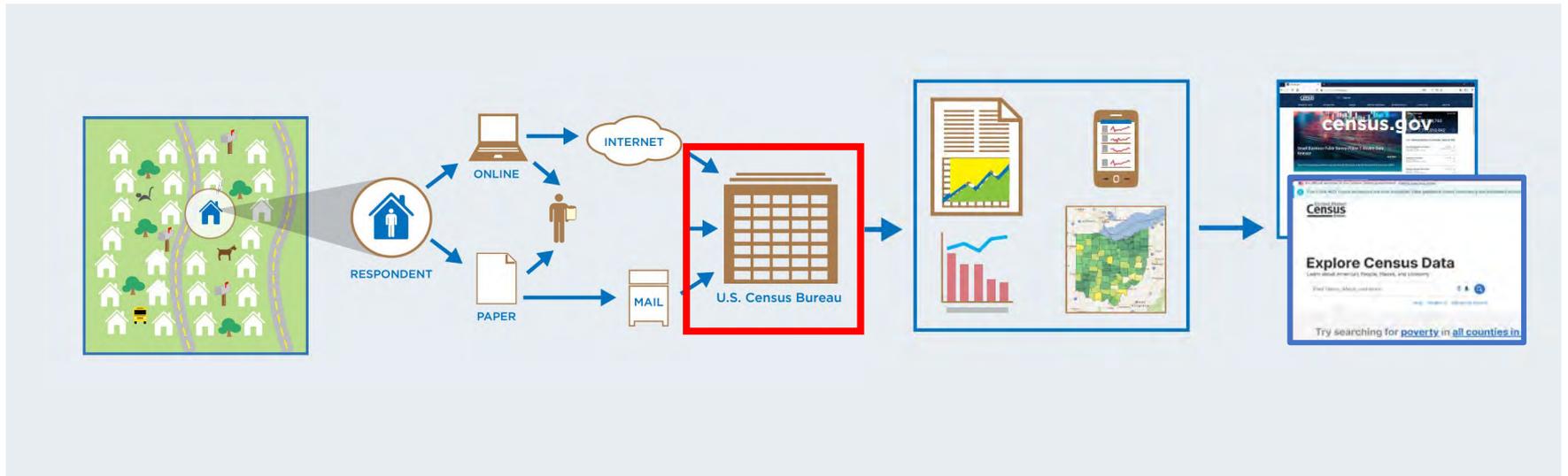
# The American Community Survey

## Overview of Process



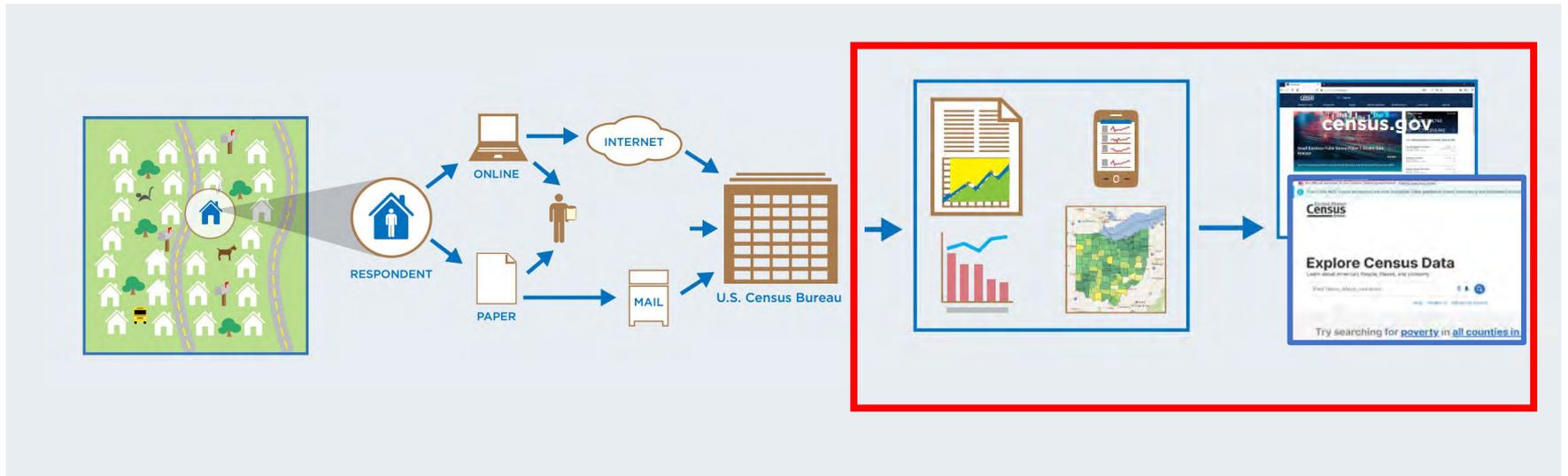
# The American Community Survey

## Overview of Process



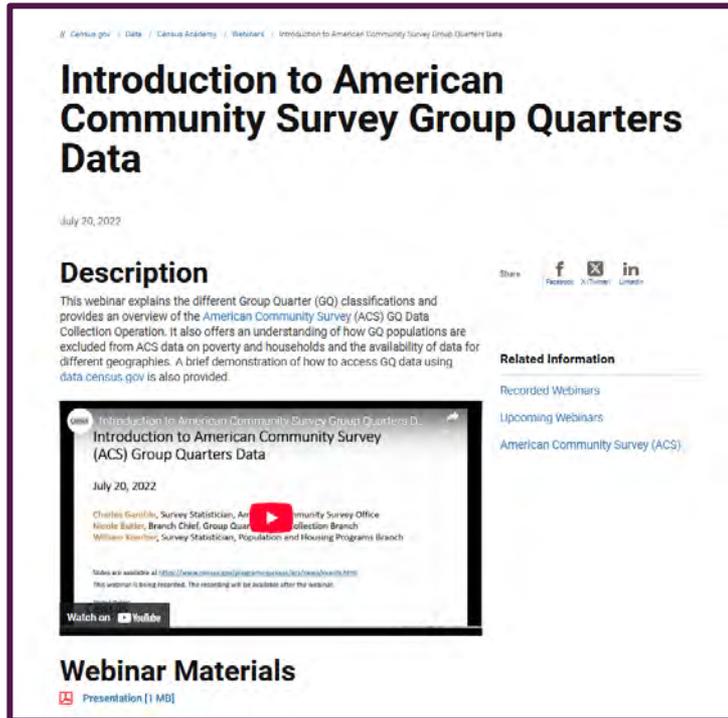
# The American Community Survey

## Overview of Process



# The American Community Survey

## The ACS Data Collection Process: Group Quarters



The screenshot shows a webpage from the Census Bureau. The main heading is "Introduction to American Community Survey Group Quarters Data" with a sub-heading "Data". The date is "July 20, 2022". Under "Description", it states: "This webinar explains the different Group Quarter (GQ) classifications and provides an overview of the American Community Survey (ACS) GQ Data Collection Operation. It also offers an understanding of how GQ populations are excluded from ACS data on poverty and households and the availability of data for different geographies. A brief demonstration of how to access GQ data using data.census.gov is also provided." There are social media share buttons for Facebook, X, and LinkedIn. A "Related Information" section lists "Recorded Webinars" and "Upcoming Webinars", with "American Community Survey (ACS)" listed under the latter. A video player thumbnail is visible, showing the webinar title and speakers: Charles Gantlike, Survey Statistician, American Community Survey Office; Nicole Butler, Branch Chief, Group Quarters Data Collection Branch; and William Kientler, Survey Statistician, Population and Housing Programs Branch. At the bottom, there is a "Webinar Materials" section with a link to a "Presentation (1 MB)".

## Examples include, but are not limited to:

- College or University student housing
- Residential treatment centers
- Skilled nursing facilities
- Military barracks
- Correctional facilities

# The American Community Survey

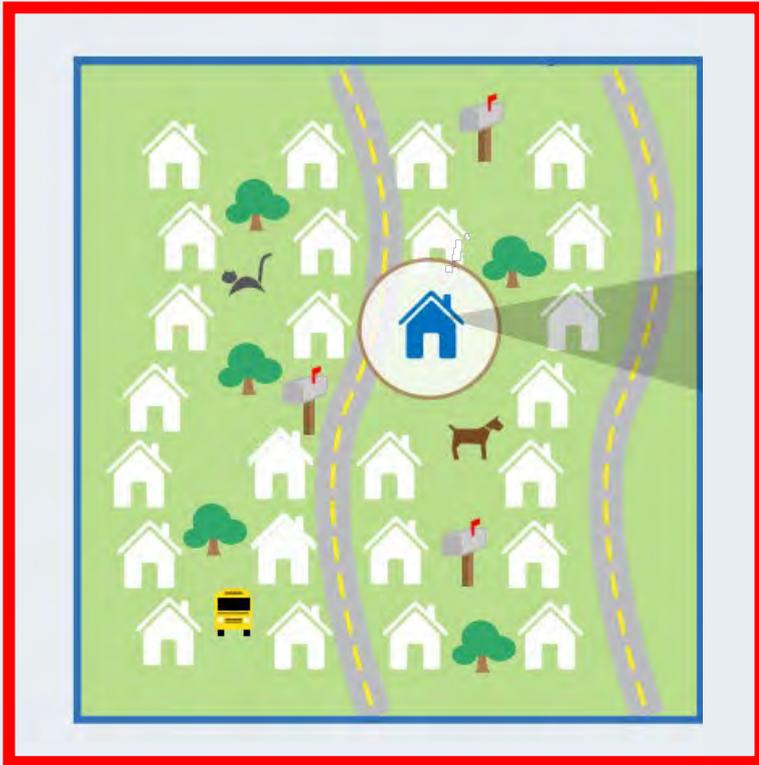
## Outline

- American Community Survey (ACS) overview
- **Survey sample development**
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- Data preparation and weighting
- Data tabulation and dissemination process
- New innovations



# The American Community Survey

## Survey Sample Development



- **Master Address File (MAF):** the Census Bureau's official inventory of known housing units, group quarters, and selected non-residential units (public, private, and commercial) in the United States and Puerto Rico
- **Topologically Integrated Geographic Encoding and Referencing (TIGER):** the digital representation of all census-required map features and related attributes
- **ACS Frame:** an extract from the linked MAF/TIGER database (MTdb) that has all possible addresses for the ACS sample

# The American Community Survey

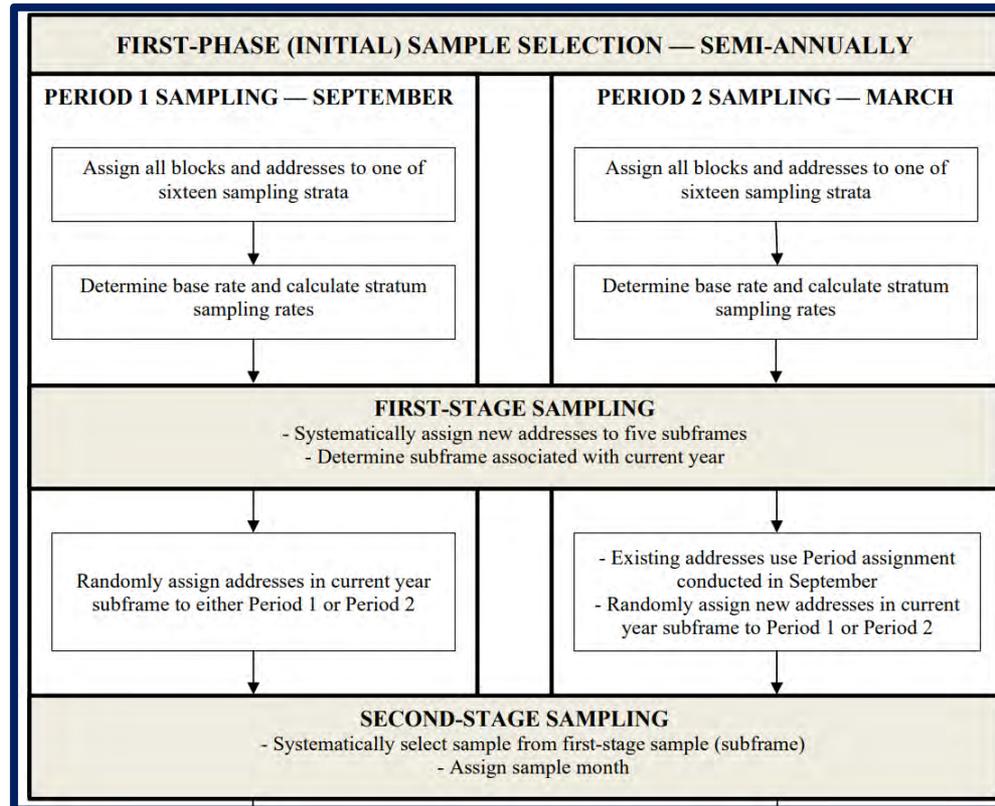
## Survey Sample Development



[census.gov/programs-surveys/acs/methodology/design and methodology/2024/acs design methodology ch03 2024.pdf](https://www.census.gov/programs-surveys/acs/methodology/design%20and%20methodology/2024/acs_design_methodology_ch03_2024.pdf)

# The American Community Survey

## Survey Sample Development



[census.gov/programs-surveys/acs/methodology/design and methodology/2024/acs\\_design methodology\\_ch04\\_2024.pdf](https://www.census.gov/programs-surveys/acs/methodology/design%20and%20methodology/2024/acs_design_methodology_ch04_2024.pdf)

# The American Community Survey

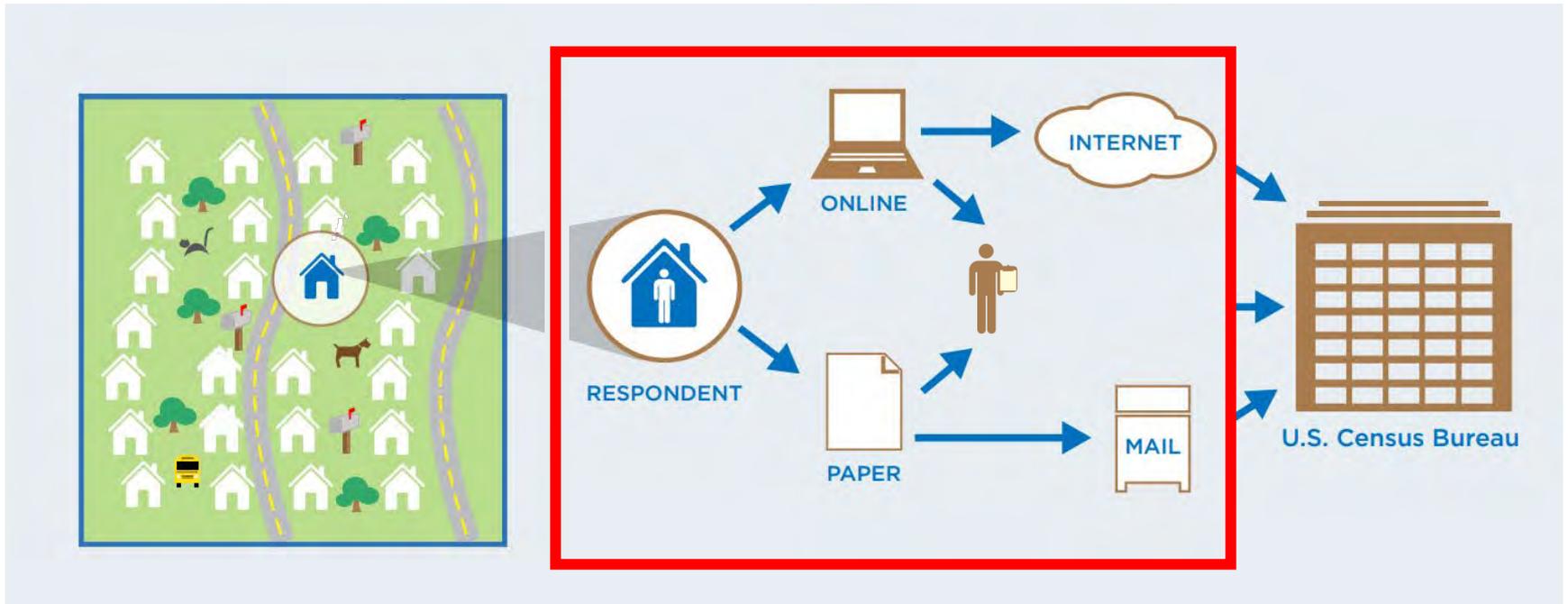
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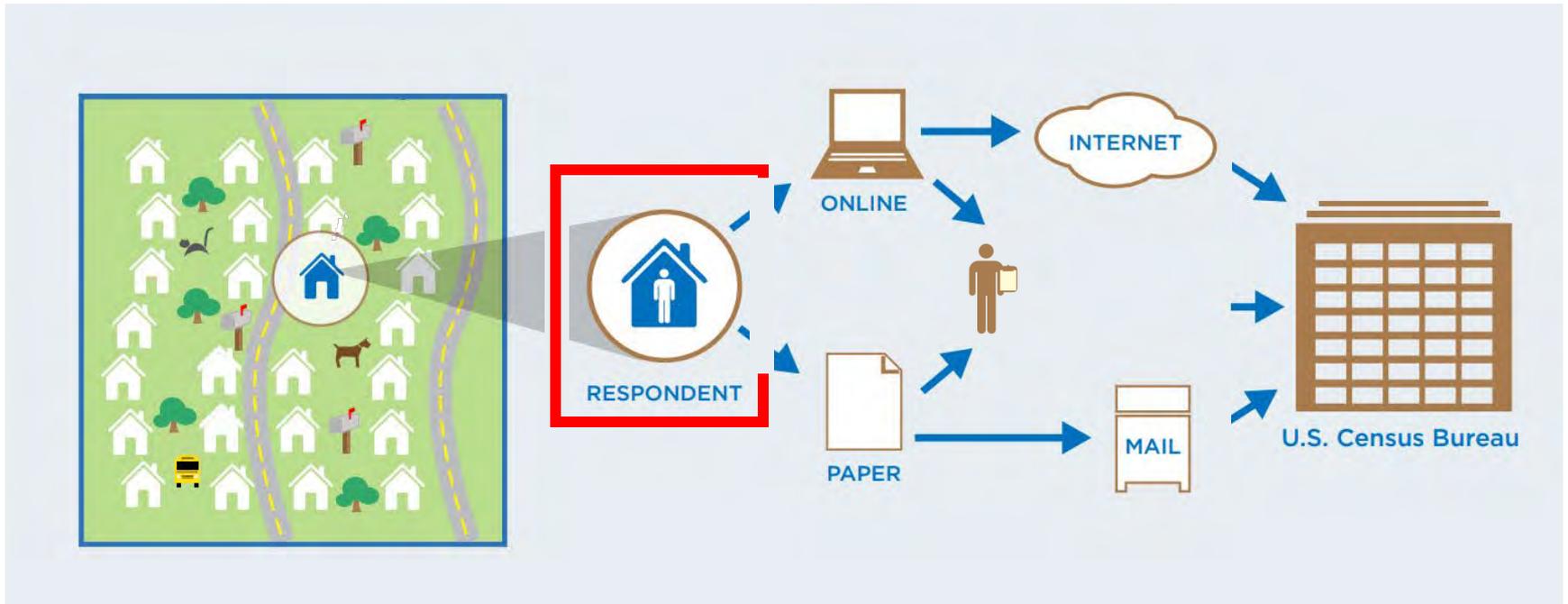
## Data Collection



[census.gov/programs-surveys/acs/methodology/design and methodology/2024/acs\\_design methodology ch07 2024.pdf](https://census.gov/programs-surveys/acs/methodology/design%20and%20methodology/2024/acs_design_methodology_ch07_2024.pdf)

# The American Community Survey

## Data Collection



[census.gov/programs-surveys/acs/methodology/design\\_and\\_methodology/2024/acs\\_design\\_methodology\\_ch06\\_2024.pdf](https://census.gov/programs-surveys/acs/methodology/design_and_methodology/2024/acs_design_methodology_ch06_2024.pdf)

# The American Community Survey Data Collection

United States  
**Census**  
Bureau

## American Community Survey

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**Start Here**

You have two ways to respond:

Respond online today at:  
[respond.census.gov/acs](https://respond.census.gov/acs)

OR

Complete this form and mail it back as soon as possible.

**Your response is required by law.**

The American Community Survey is conducted by the U.S. Census Bureau. This survey is one of only a few surveys for which all recipients are required by law to respond. The U.S. Census Bureau is required by law to protect your information.

If you need help or have questions about completing this form, please call 1-800-354-7271.

¿NECESITA AYUDA? Llame al 1-877-833-9625.

For more information about the American Community Survey, visit our website at: [census.gov/acs](https://census.gov/acs)

FORM **ACS-1(2025)**  
10-19-2024

OMB No. 0607-0810  
OMB No. 0607-0936

13195029

**Person 1**

(Person 1 is the person living or staying here in whose name this house or apartment is owned, being bought, or rented. If there is no such person, start with the name of any adult living or staying here.)

→ **NOTE: Please answer BOTH Question 5 about Hispanic origin and Question 6 about race. For this survey, Hispanic origins are not races.**

**5 Is Person 1 of Hispanic, Latino, or Spanish origin?**

No, not of Hispanic, Latino, or Spanish origin

Yes, Mexican, Mexican Am., Chicano

Yes, Puerto Rican

Yes, Cuban

Yes, another Hispanic, Latino, or Spanish origin – Print, for example, Salvadoran, Dominican, Colombian, Guatemalan, Spaniard, Ecuadorian, etc. \_\_\_\_\_

**6 What is Person 1's race?**  
Mark (X) one or more boxes AND print origins.

White – Print, for example, German, Irish, English, Italian, Lebanese, Egyptian, etc. \_\_\_\_\_

Black or African Am. – Print, for example, African American, Jamaican, Haitian, Nigerian, Ethiopian, Somali, etc. \_\_\_\_\_

American Indian or Alaska Native – Print name of enrolled or principal tribe(s); for example, Navajo Nation, Blackfeet Tribe, Mayan, Ateac, Native Village of Barrow Inupiat Traditional Government, Nome Eskimo Community, etc. \_\_\_\_\_

Chinese  Vietnamese  Native Hawaiian

Filipino  Korean  Samoan

Asian Indian  Japanese  Chamorro

Other Asian – Print, for example, Pakistani, Cambodian, Hmong, etc. \_\_\_\_\_

Other Pacific Islander – Print, for example, Tongan, Fijian, Marshallese, etc. \_\_\_\_\_

Some other race – Print race or origin. \_\_\_\_\_

2



[census.gov/data/academy/webinars/2025/how-question-becomes-part-of-acs](https://census.gov/data/academy/webinars/2025/how-question-becomes-part-of-acs)

# The American Community Survey

## Content Overview

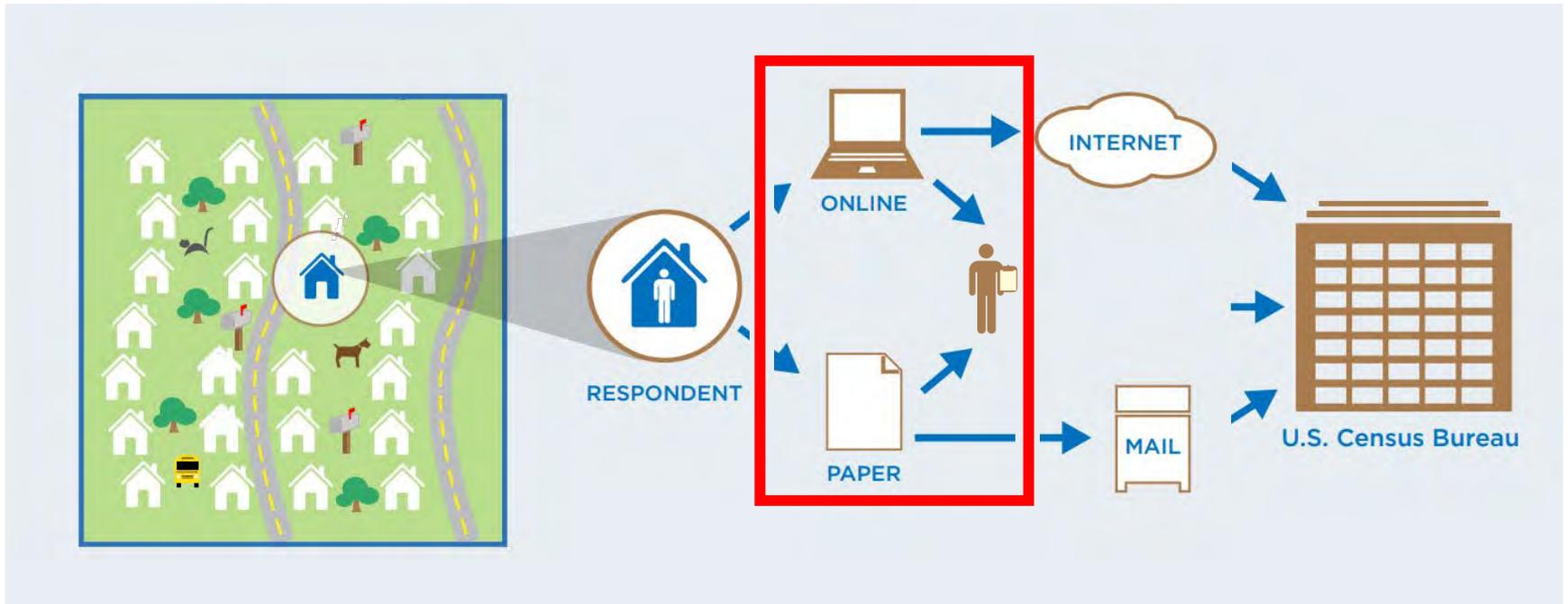
POPULATION		
Social	Economic	Demographic
<ul style="list-style-type: none"> <li>• Ancestry</li> <li>• Citizenship Status</li> <li>• Citizen Voting-Age Population</li> <li>• Disability Status</li> <li>• Educational Attainment</li> <li>• Fertility</li> <li>• Grandparents as Caregivers</li> <li>• Language Spoken at Home</li> <li>• Marital History and Status</li> <li>• Migration/Residence 1 Year Ago</li> <li>• Place of Birth</li> <li>• School Enrollment</li> <li>• Undergraduate Field of Degree</li> <li>• Veterans Status; Period of Military Service</li> <li>• Year of Entry</li> </ul>	<ul style="list-style-type: none"> <li>• Class of Worker</li> <li>• Commuting and Place of Work</li> <li>• Employment Status</li> <li>• Food Stamps (SNAP)</li> <li>• Health Insurance Coverage</li> <li>• Income and Earnings</li> <li>• Industry and Occupation</li> <li>• Poverty Status</li> <li>• Weeks Worked Last Year</li> </ul>	<ul style="list-style-type: none"> <li>• Age</li> <li>• Group Quarters Population</li> <li>• Hispanic or Latino Origin</li> <li>• Race</li> <li>• Relationship to Householder</li> <li>• Sex</li> <li>• Total Population</li> </ul>

HOUSING
<ul style="list-style-type: none"> <li>• Bedrooms</li> <li>• Computer &amp; Internet Use</li> <li>• Costs (Mortgage, Rent, Taxes, Insurance)</li> <li>• Electric Vehicles</li> <li>• House Heating Fuel</li> <li>• Kitchen/Plumbing Facilities</li> <li>• Occupancy/Vacancy Status</li> <li>• Occupants per Room</li> <li>• Rooms</li> <li>• Solar Panels</li> <li>• Telephone Service Available</li> <li>• Tenure (Owner/Renter)</li> <li>• Units in Structure</li> <li>• Value of Home</li> <li>• Vehicles Available</li> <li>• Year Householder Moved Into Unit</li> <li>• Year Structure Built</li> </ul>



# The American Community Survey

## Data Collection

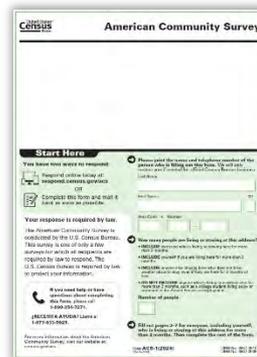


# The American Community Survey Data Collection

## Online Response



## Paper Questionnaire



## Computer-Assisted Interviewing In-Person and Telephone



subsample →

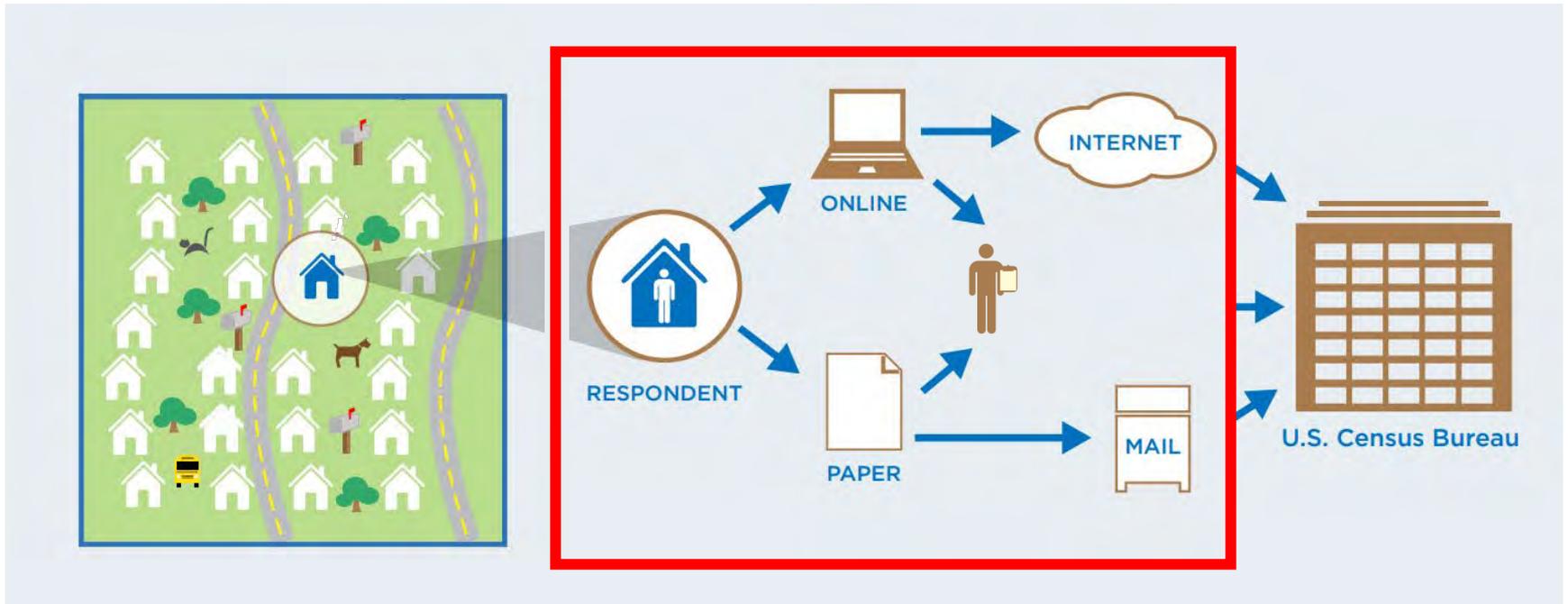
**Self-Response**  
(about 8 weeks)

**Nonresponse Follow-up**  
(about 4 weeks)



# The American Community Survey

## Data Collection



[census.gov/programs-surveys/acs/methodology/design and methodology/2024/acs\\_design methodology ch07 2024.pdf](https://www.census.gov/programs-surveys/acs/methodology/design%20and%20methodology/2024/acs_design_methodology_ch07_2024.pdf)

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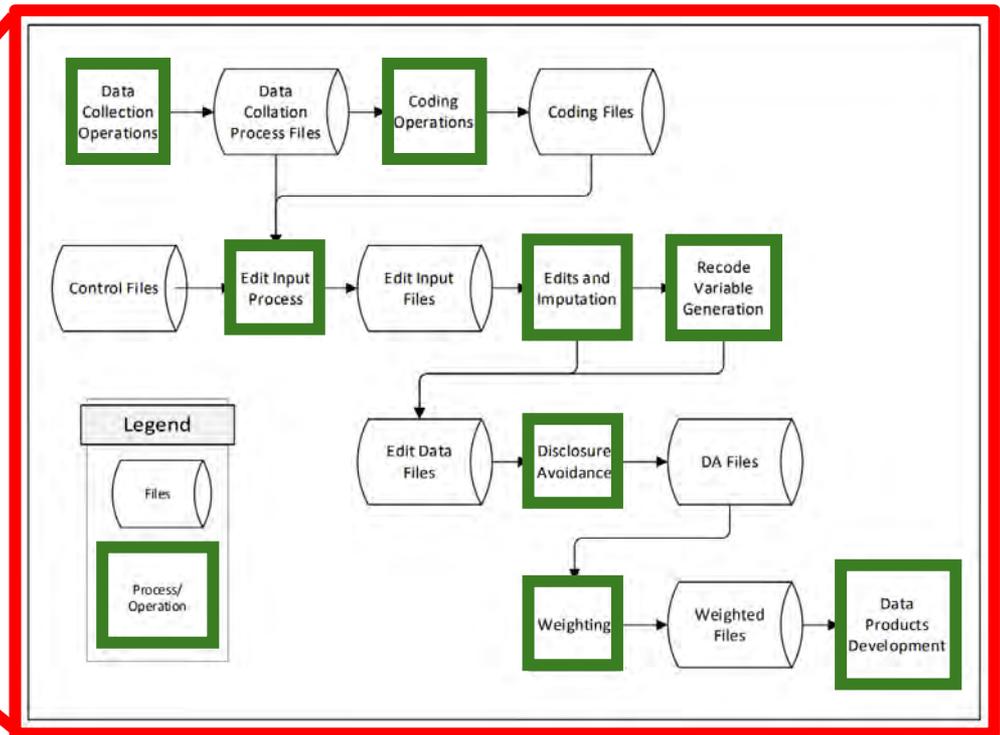
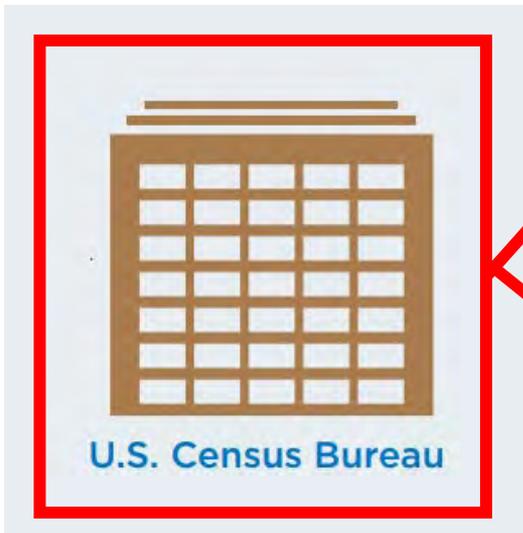
## Data Preparation and Weighting



[census.gov/programs-surveys/acs/methodology/design](https://www.census.gov/programs-surveys/acs/methodology/design) and [methodology/2024/acs\\_design\\_methodology\\_ch10\\_2024.pdf](https://www.census.gov/programs-surveys/acs/methodology/2024/acs_design_methodology_ch10_2024.pdf)

# The American Community Survey

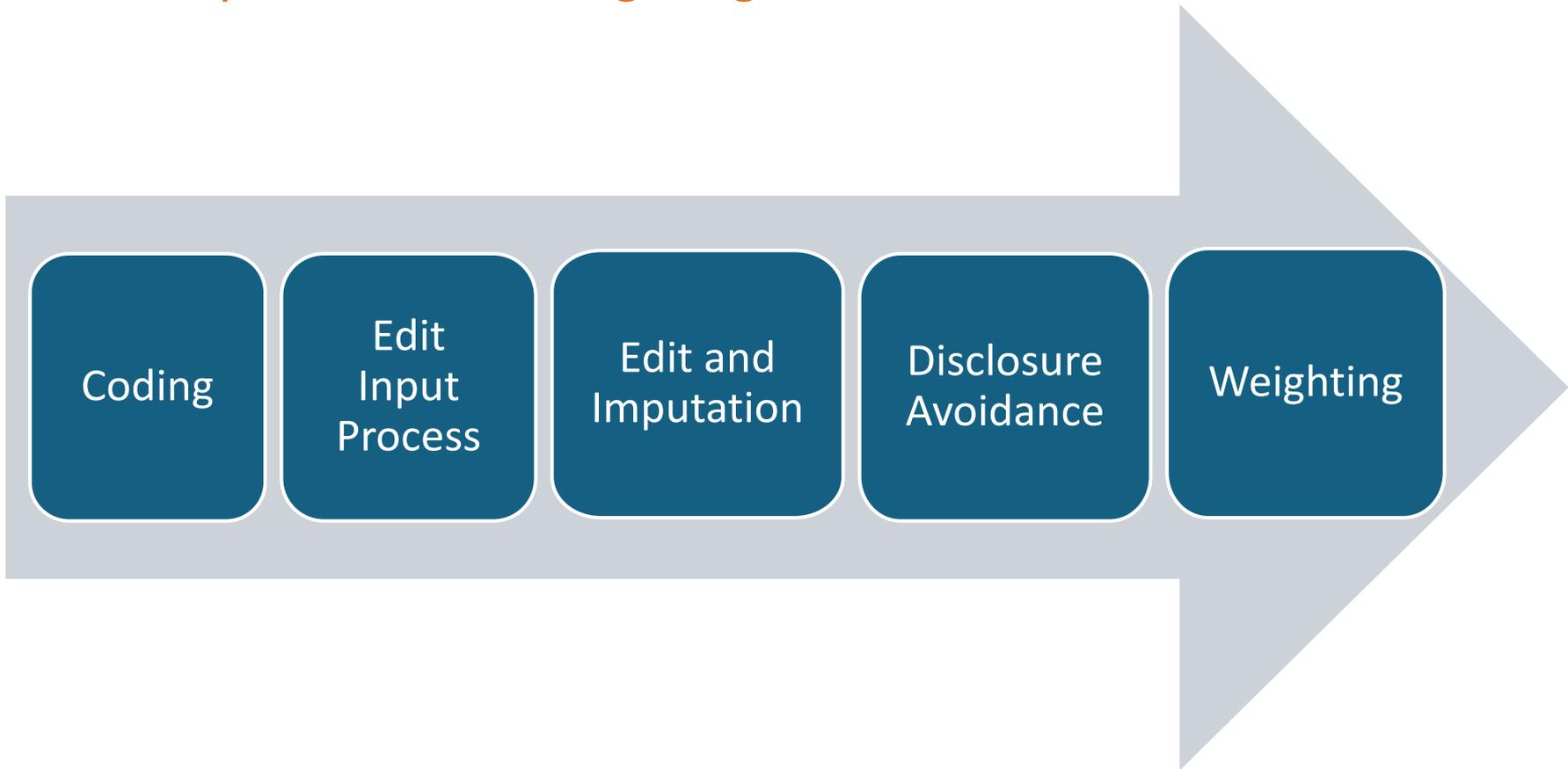
## Data Preparation and Weighting



[census.gov/programs-surveys/acs/methodology/design and methodology/2024/acs design methodology ch10 2024.pdf](https://census.gov/programs-surveys/acs/methodology/design%20and%20methodology/2024/acs%20design%20methodology%20ch10%202024.pdf)

# The American Community Survey

## Data Preparation and Weighting

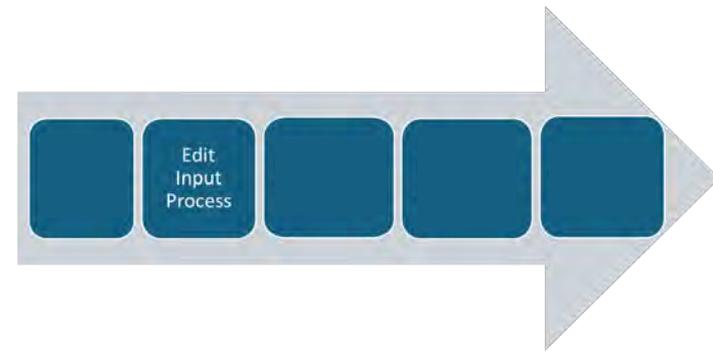


# The American Community Survey Data Preparation and Weighting



## Write-In Response Coding

# The American Community Survey Data Preparation and Weighting



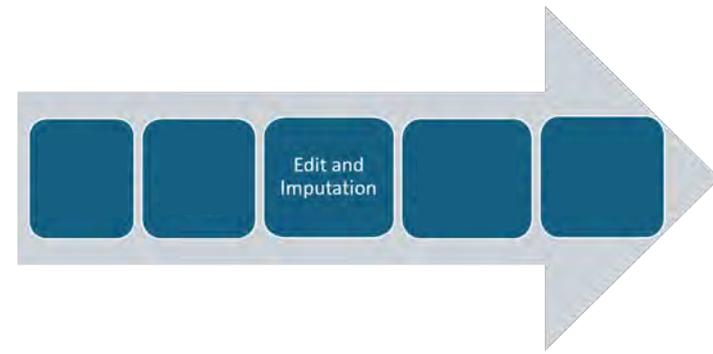
## Edit Input Process

Is there inconsistency in the response type?  
What about the number of people in the household?

Is the return filled out enough to consider complete?

Are there multiple returns? Which one will be used?

# The American Community Survey Data Preparation and Weighting



## Edits and Imputation

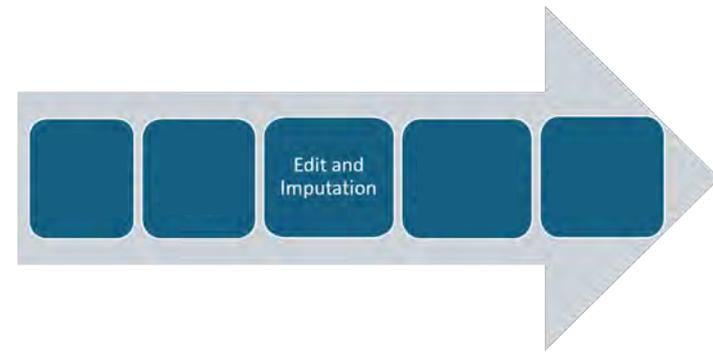
Editing and  
Imputation

Generating  
recoded  
variables

Reviewing edit  
results

Creating input  
files for data  
products

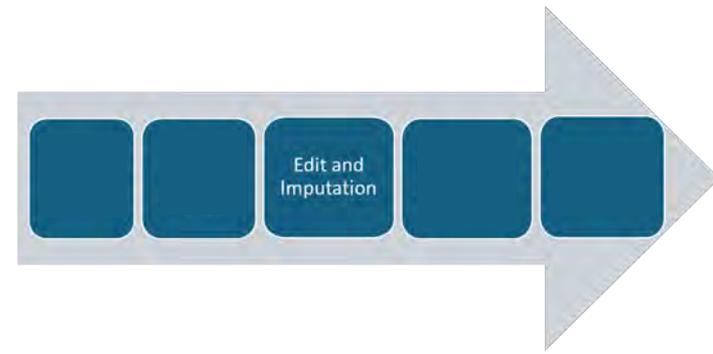
# The American Community Survey Data Preparation and Weighting



## Edits and Imputation

Editing and  
Imputation

# The American Community Survey Data Preparation and Weighting

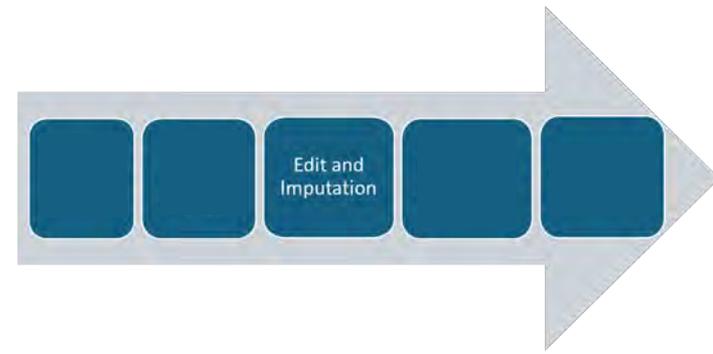


## Edits and Imputation



# The American Community Survey

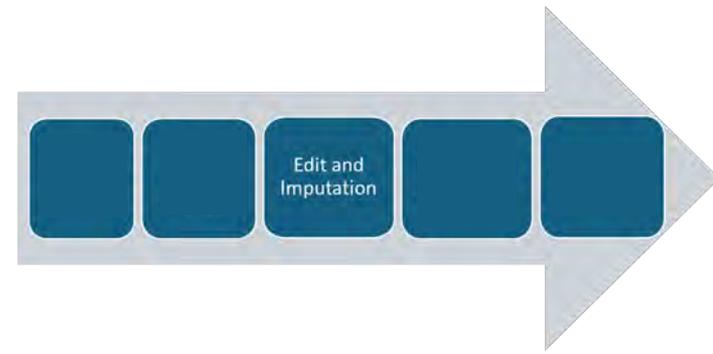
## Data Preparation and Weighting



## Edits and Imputation



# The American Community Survey Data Preparation and Weighting



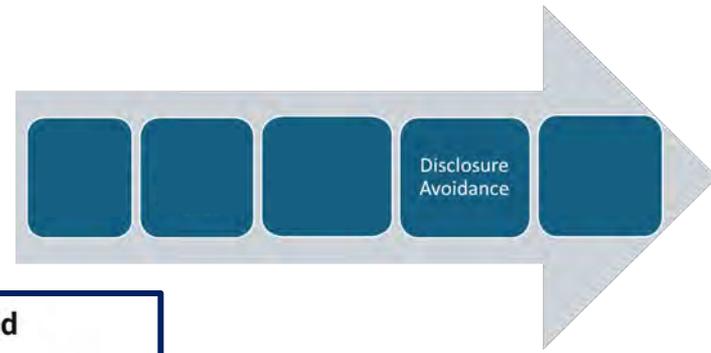
## Edits and Imputation



Creating input  
files for data  
products

# The American Community Survey

## Data Preparation and Weighting



### Accuracy of the Data

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

-  [2023 ACS 1-year Accuracy of the Data \(US\) \[<1.0 MB\]](#)
-  [2023 PRCS 1-year Accuracy of the Data \(Puerto Rico\) \[<1.0 MB\]](#)
-  [2019-2023 ACS 5-year Accuracy of the Data \(US\) \[<1.0 MB\]](#)
-  [2019-2023 PRCS 5-year Accuracy of the Data \(Puerto Rico\) \[<1.0 MB\]](#)

**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 American Community Survey.

2023

**Code Lists**  
Detailed codes for variables that contain a large number of coded responses, such as ancestry and occupation.  
[2023 Code List \[1.0 MB\]](#)

**Subject Definitions**  
Definitions of population and housing variables to help you understand the results of the American Community Survey.  
[2023 Subject Definitions \[1.4 MB\]](#)

**Group Quarters Definitions**  
Definitions for classifying group living situations according to the type of housing and/or services provided.  
[2023 Group Quarters Definitions \[1.0 MB\]](#)

**Accuracy of the Data**  
A basic explanation of the sample design, estimation methodology, and accuracy of the data.  
[2023 ACS 1-year Accuracy of the Data \(US\) \[<1.0 MB\]](#)  
[2023 PRCS 1-year Accuracy of the Data \(Puerto Rico\) \[<1.0 MB\]](#)  
[2019-2023 ACS 5-year Accuracy of the Data \(US\) \[<1.0 MB\]](#)  
[2019-2023 PRCS 5-year Accuracy of the Data \(Puerto Rico\) \[<1.0 MB\]](#)

**Instructions for Applying Statistical Testing**  
Basic instructions for obtaining the ACS standard errors needed to do manual statistical testing.  
[2023 Instructions for Applying Statistical Testing to ACS 1-year and 5-year Data](#)

**Worked Examples for Approximating Margins of Error**  
Worked Examples on approximating standard errors for various types of ACS estimates.  
[2023 Worked Examples for Approximating Margins of Error](#)

**Statistical Testing Tool**  
Spreadsheet to quickly test whether ACS estimates are statistically different from one another.  
[Statistical Testing Tool](#)

**Comparison Guidance**  
Learn more about comparing the 2023 ACS with 2010 Census, 2010 Census, and 5-year to 5-year estimates.  
[2023 Comparison Guidance](#)

**Jam Values**  
Character or numeric values used to explain the absence of data.  
[Jam Values \[1.0 MB\]](#)

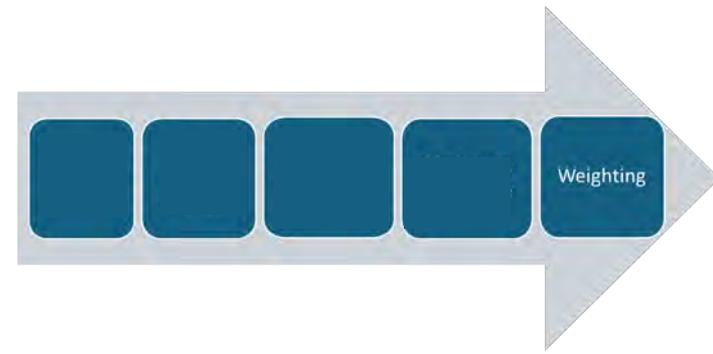
Some estimates in ACS data products are modified or suppressed to protect respondents' confidentiality. More information on confidentiality protection in the ACS can be found in the Accuracy of the Data documents



[census.gov/programs-surveys/acs/methodology/design and methodology/2024/acs design methodology ch13 2024.pdf](https://census.gov/programs-surveys/acs/methodology/design%20and%20methodology/2024/acs%20design%20methodology%20ch13%202024.pdf)

# The American Community Survey

## Data Preparation and Weighting



# ACS Housing Unit and Person Weighting

## Account for the sampling rates which vary by area

- *Makes the sample representative of the sample frame*

## Adjust for housing unit non-response

- *Makes the sample interviews also account for nonresponding units*

## Adjust for coverage error

- *Mitigates coverage error due to deficiencies in the frame or differential response rates*



[census.gov/programs-surveys/acs/methodology/design and methodology/2024/acs design methodology ch11 2024.pdf](https://www.census.gov/programs-surveys/acs/methodology/design%20and%20methodology/2024/acs_design_methodology_ch11_2024.pdf)

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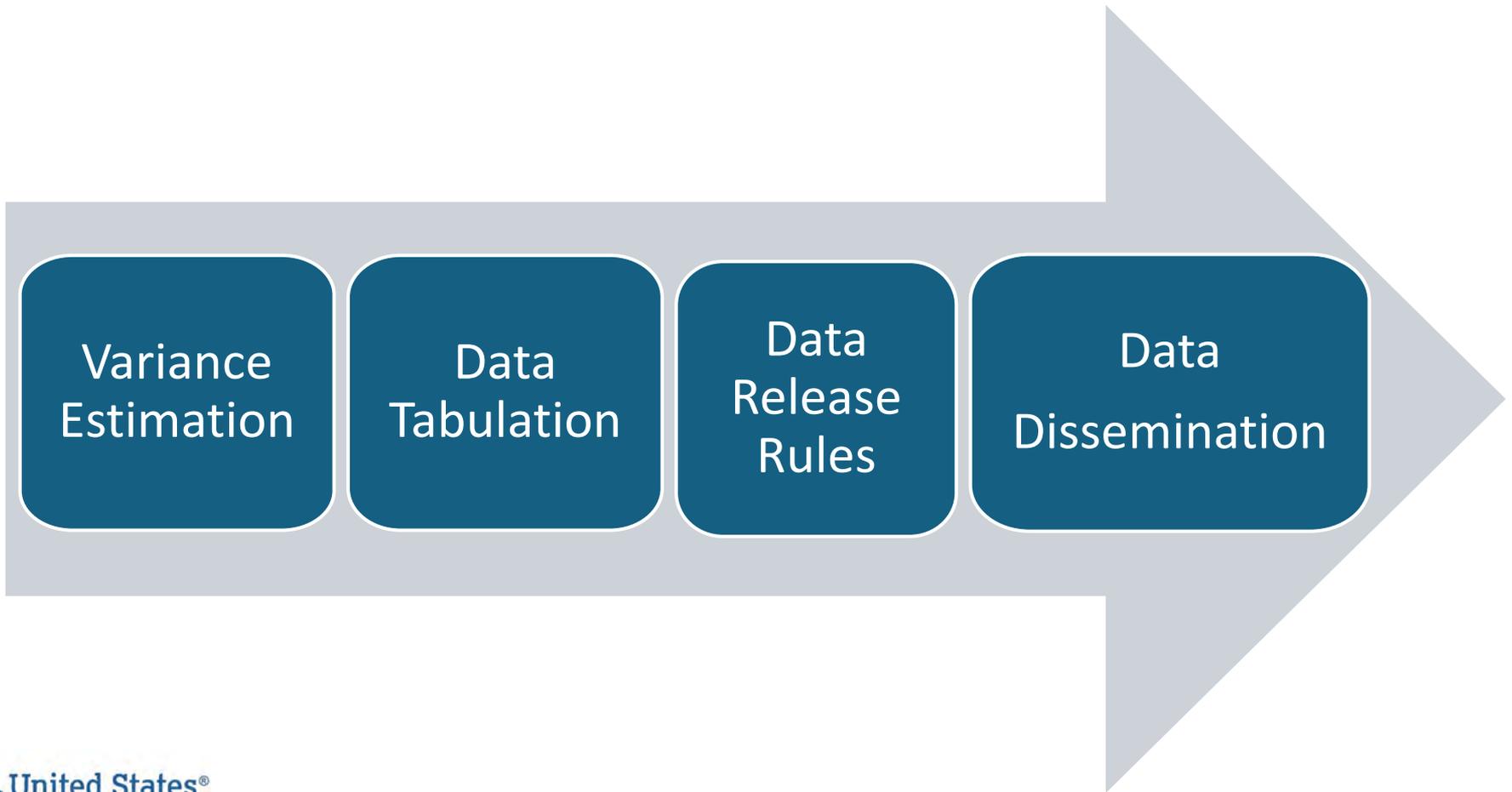
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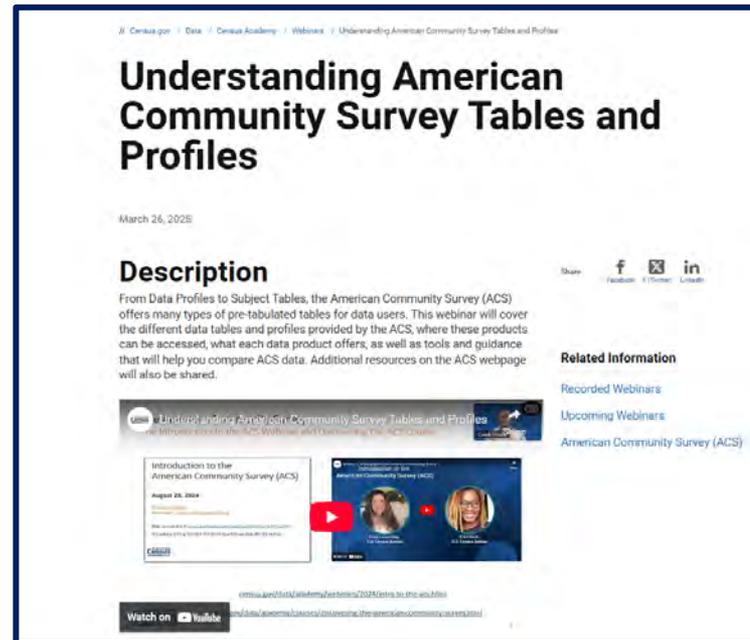
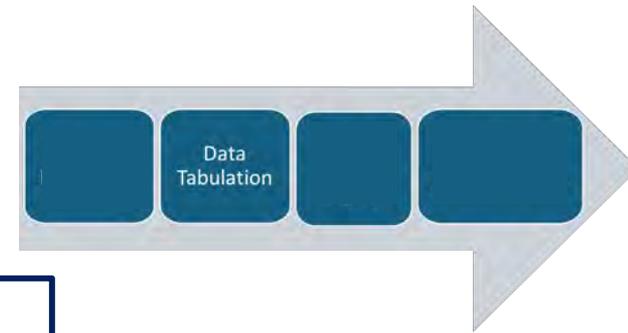
# The American Community Survey

## Data Tabulation and Dissemination Process





# The American Community Survey Data Tabulation and Dissemination Process

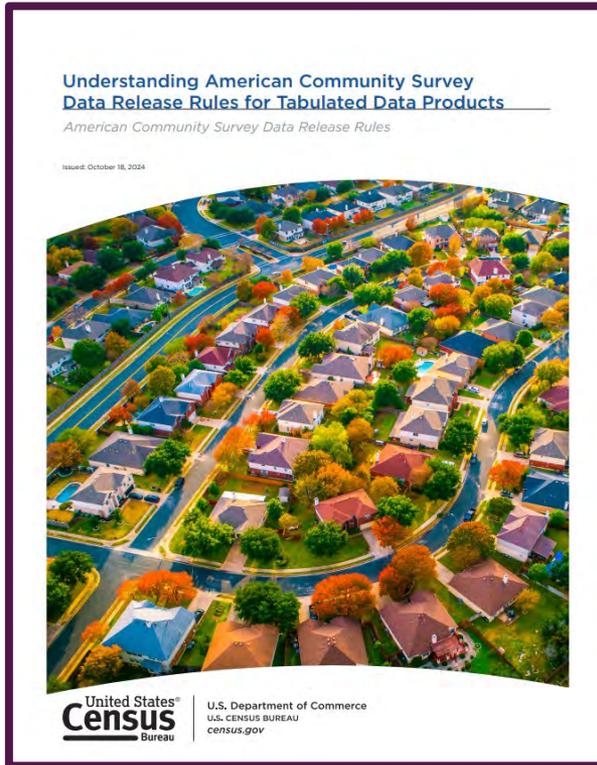
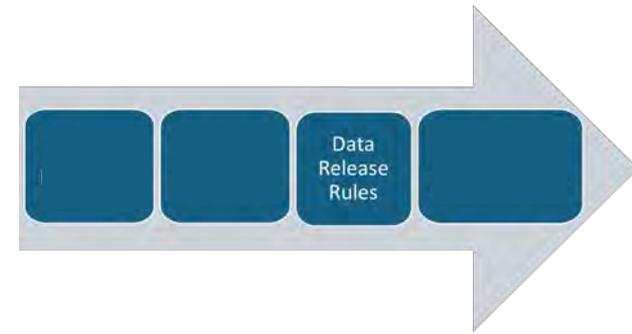


[census.gov/programs-surveys/acs/methodology/design\\_and\\_methodology/2024/acs\\_design\\_methodology\\_ch13\\_2024.pdf](https://www.census.gov/programs-surveys/acs/methodology/design_and_methodology/2024/acs_design_methodology_ch13_2024.pdf)



[census.gov/data/academy/webinars/2025/understanding-acs-tables-and-profiles.html](https://www.census.gov/data/academy/webinars/2025/understanding-acs-tables-and-profiles.html)

# The American Community Survey Data Tabulation and Dissemination Process



## Data Release Rules

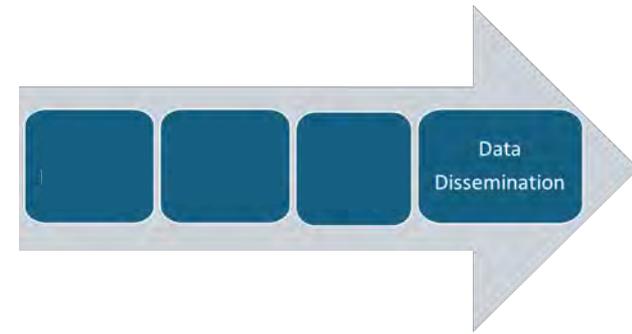
- Geographic-area population thresholds
- Subpopulation thresholds
- Data quality filtering
- DRB rules

[census.gov/programs-surveys/acs/methodology/design and methodology/2024/acs design methodology ch13 2024.pdf](https://www.census.gov/programs-surveys/acs/methodology/design%20and%20methodology/2024/acs%20design%20methodology%20ch13%202024.pdf)

[census.gov/programs-surveys/acs/tech docs/data suppression/ACS Data Release Rules.pdf](https://www.census.gov/programs-surveys/acs/tech%20docs/data%20suppression/ACS%20Data%20Release%20Rules.pdf)



# The American Community Survey Data Tabulation and Dissemination Process



[census.gov/programs-surveys/acs/methodology/design](https://www.census.gov/programs-surveys/acs/methodology/design) and [methodology/2024/acs design methodology ch14 2024.pdf](https://www.census.gov/programs-surveys/acs/methodology/design)

# The American Community Survey

## Outline

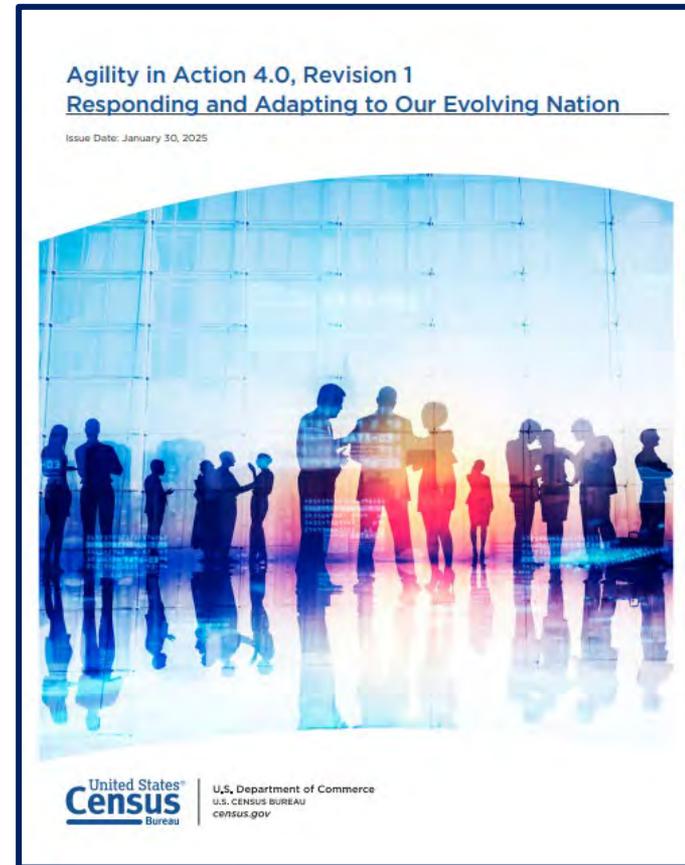
- American Community Survey (ACS) overview
- Survey sample development
- Data collection
- Data preparation and weighting
- Data tabulation and dissemination process
- **New innovations**



# The American Community Survey

## New Innovations

- Administrative data
- GQ Internet Response Option



[census.gov/content/dam/Census/programs-surveys/acs/methodology/agility-in-action/Agility-in-Action-4.0-Revision-1.pdf](https://census.gov/content/dam/Census/programs-surveys/acs/methodology/agility-in-action/Agility-in-Action-4.0-Revision-1.pdf)

# The American Community Survey

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