2020 Census Data Products and Disclosure Avoidance

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California State Data Centers

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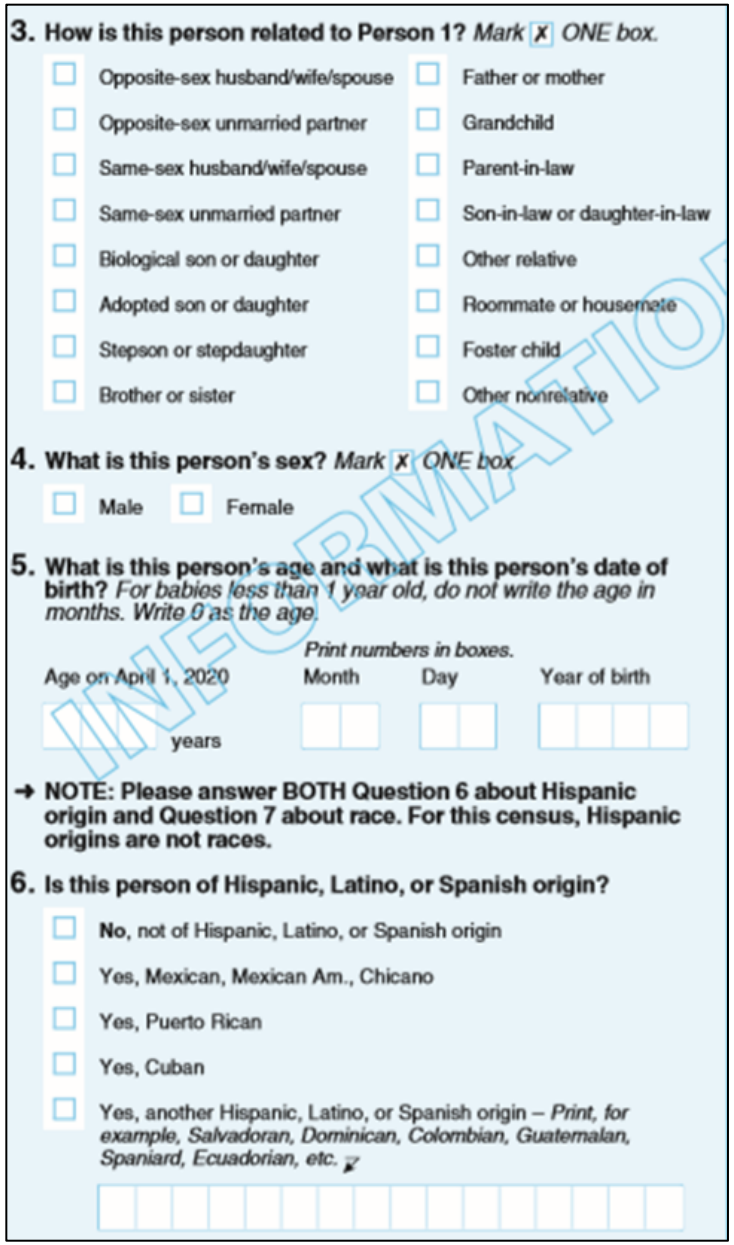
United States® Census 2020

Data Collection

- Vacancy status
- Tenure
- Relationship to Householder
- Sex
- Age and date of birth
- Hispanic origin
- Race



3. How is this person related to Person 1? *Mark ✗ ONE box.*

- ☐ Opposite-sex husband/wife/spouse
- ☐ Opposite-sex unmarried partner
- ☐ Same-sex husband/wife/spouse
- ☐ Same-sex unmarried partner
- ☐ Biological son or daughter
- ☐ Adopted son or daughter
- ☐ Stepson or stepdaughter
- ☐ Brother or sister
- ☐ Father or mother
- ☐ Grandchild
- ☐ Parent-in-law
- ☐ Son-in-law or daughter-in-law
- ☐ Other relative
- ☐ Roommate or housemate
- ☐ Foster child
- ☐ Other nonrelative

4. What is this person's sex? *Mark ✗ ONE box.*

☐ Male ☐ Female

5. What is this person's age and what is this person's date of birth? *For babies less than 1 year old, do not write the age in months. Write 0 as the age.*

Print numbers in boxes.

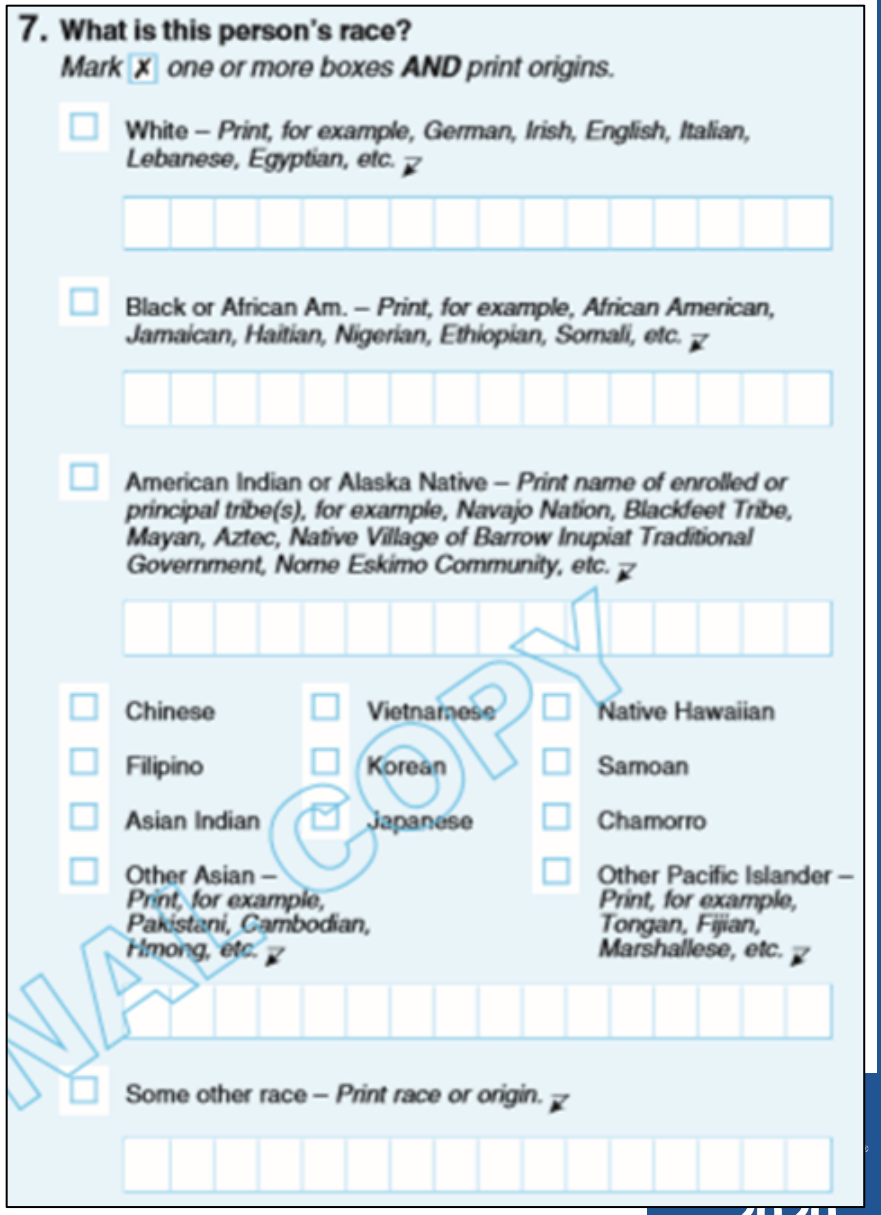
Age on April 1, 2020 — Month — Day — Year of birth

years

→ **NOTE: Please answer BOTH Question 6 about Hispanic origin and Question 7 about race. For this census, Hispanic origins are not races.**

6. Is this person 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.*



7. What is this person's race?

*Mark ✗ 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, Aztec, Native Village of Barrow Inupiat Traditional Government, Nome Eskimo Community, etc.*
- ☐ Chinese
- ☐ Filipino
- ☐ Asian Indian
- ☐ Other Asian – *Print, for example, Pakistani, Cambodian, Hmong, etc.*
- ☐ Vietnamese
- ☐ Korean
- ☐ Japanese
- ☐ Native Hawaiian
- ☐ Samoan
- ☐ Chamorro
- ☐ Other Pacific Islander – *Print, for example, Tongan, Fijian, Marshallese, etc.*
- ☐ Some other race – *Print race or origin.*

INFORMATIONAL COPY

2020

Data Protection in the 2020 Census Products

- We are legally obligated to protect all data under U.S. Code Title 13
- We have added a new tool, called **Differential Privacy**, to our toolbox
- We are using it in our 2020 Census data products to protect against disclosure risk

- Differential Privacy inserts random noise that creates small differences in counts of people and households, making it very difficult to identify people or households individually

- We have worked hard to make the data as useful as possible – within disclosure protection constraints

United States® Census 2020

2020 Census Data Products

Released

Apportionment
Released on
April 26, 2021

Redistricting File
(Public Law 94-171)
Released on
August 12, 2021 and
September 16, 2021

Demographic Profile
and
Demographic and Housing Characteristics File (DHC)
Released on May 25, 2023

Congressional District Summary Files
Released on August 31, 2023

Detailed DHC-A
Released: September 21, 2023

Upcoming Releases

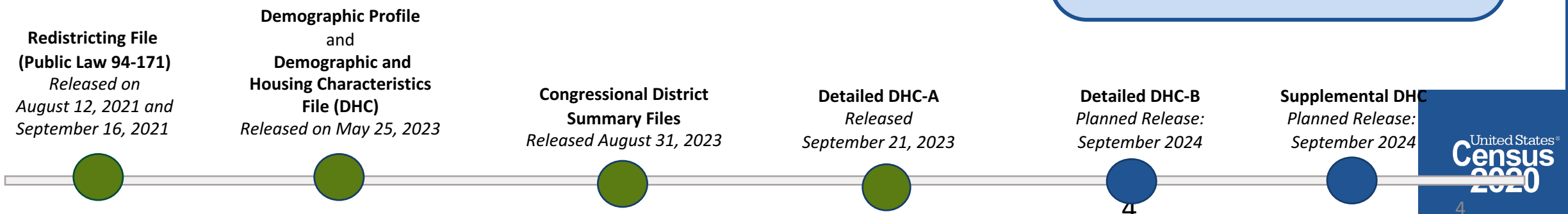
Detailed DHC-B
Planned Release: September 2024

Supplemental DHC (S-DHC)
Planned Release: September 2024

Future Effort

Privacy Protected Microdata File (PPMF)

Special Tabulations



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Apportionment Release

Apportionment is the process of dividing the 435 memberships, or seats, in the U.S. House of Representatives among the 50 states. At the conclusion of each decennial census, the results are used to calculate the number of seats to which each state is entitled.

- **Released on** April 26, 2021
- **Subjects include:**
    - Resident population
    - Overseas population
    - Apportionment population
- **Geography:** 50 states, the District of Columbia (DC), and Puerto Rico
- **Disclosure avoidance:** Results do not undergo disclosure avoidance

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Redistricting File (Public Law 94-171)

Public Law 94-171 directs the Census Bureau to provide data to the governors and legislative leadership in each of the 50 states for redistricting purposes. This product is the first file released that includes demographic and housing characteristics.

- **Released on** August 12, 2021 (Summary Files) and September 16, 2021 (data.census.gov)
- **Subjects include:**
  - Voting age
  - Race
  - Hispanic or Latino origin
  - Housing occupancy
  - Group quarters (GQ) population by major GQ type
- **Lowest level of geography:** Census Block
- **Disclosure avoidance:** Differentially private TopDown Algorithm (TDA)

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Demographic and Housing Characteristics File (DHC)

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

- **Released on** May 25, 2023
- **Subjects include:**
  - Sex by single year-of-age
  - Hispanic or Latino origin of householder by race of householder
  - GQ population by sex by age
  - Relationship by age for population under 18 years
  - Household type by relationship and presence of people of specific ages
  - Multigenerational households
  - Family type by presence of children
  - Tenure by household size
  - Tenure by household type by age of householder
  - Vacancy Status
- **Lowest level of geography:** Varies with many tables at Census Block
- **Disclosure avoidance:** Differentially private TDA

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Demographic Profile

This product will provide select demographic and housing characteristics about local communities in a streamlined, easy to use format.

- **Released on** May 25, 2023
- **Subjects include:**
  - Sex by 5-year age groups
  - Median age by sex
  - Race
  - Hispanic or Latino origin
  - Relationship to householder
  - GQ population
  - Household type
  - Housing occupancy
  - Housing tenure
- **Lowest level of geography:** Tract
- **Disclosure avoidance:** Differentially private TDA

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DHC Iterations

- Many tables are repeated by the following:
  A. White alone
  B. Black or African American alone
  C. American Indian and Alaska Native alone
  D. Asian alone
  E. Native Hawaiian and Other Pacific Islander alone
  F. Some Other Race alone
  G. Two or More Races
  H. Hispanic or Latino
  I. White alone, not Hispanic or Latino

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DHC Table Examples

HOUSEHOLDS BY TYPE AND PRESENCE OF OWN CHILDREN UNDER 18 YEARS

Universe: Households

Total:

- Married couple household:
  - With own children under 18
  - No own children under 18
- Cohabiting couple household:
  - With own children under 18
  - No own children under 18
- Male householder, no spouse or partner present:
  - Living alone
    - 65 years and over
  - With own children under 18
  - With relatives, no own children under 18
  - No relatives present
- Female householder, no spouse or partner present:
  - Living alone
    - 65 years and over
  - With own children under 18
  - With relatives, no own children under 18
  - No relatives present

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DHC Table Examples

HOUSEHOLD TYPE (AMERICAN INDIAN AND ALASKA NATIVE ALONE HOUSEHOLDER)
Universe: Households with a householder who is American Indian and Alaska Native alone
Total:

- Family households:
  - Married couple family
  - Other family:
    - Male householder, no spouse present
    - Female householder, no spouse present
- Nonfamily households:
  - Householder living alone
  - Householder not living alone

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DHC Table Examples

TENURE BY HOUSEHOLD SIZE (NATIVE HAWAIIAN AND OTHER PACIFIC ISLANDER ALONE HOUSEHOLDER)

Universe: Occupied housing units with a householder who is Native Hawaiian and Other Pacific Islander alone

Total:

- Owner occupied:
  - 1-person household
  - 2-person household
  - 3-person household
  - 4-person household
  - 5-person household
  - 6-person household
  - 7-or-more-person household
- Renter occupied:
  - 1-person household
  - 2-person household
  - 3-person household
  - 4-person household
  - 5-person household
  - 6-person household
  - 7-or-more-person household

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

Detailed DHC-A includes population counts repeated by 300 detailed racial and ethnic groups and 1,187 detailed American Indian and Alaska Native (AIAN) tribal and village population groups

- **Released on** September 21, 2023
- **Subjects are repeated by detailed racial and ethnic groups:**
  - Total population
  - Sex by Age for Selected Age Categories
- **Levels of geography:** Nation, State, County, Tract, Place, AIANNH areas
- **Disclosure avoidance:** Differentially private SafeTab-P algorithm

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

In addition to providing data for Hispanic origin groups, data are available for the race *alone* and race *alone or in any combination* populations.

- **Race *alone***
  - The minimum number of people who identified as that group.
  - Includes people who reported only one response.
- **Race *alone or in any combination***
  - The maximum number of people who identified as that group.
  - Includes people who reported only one response AND those who reported multiple responses.

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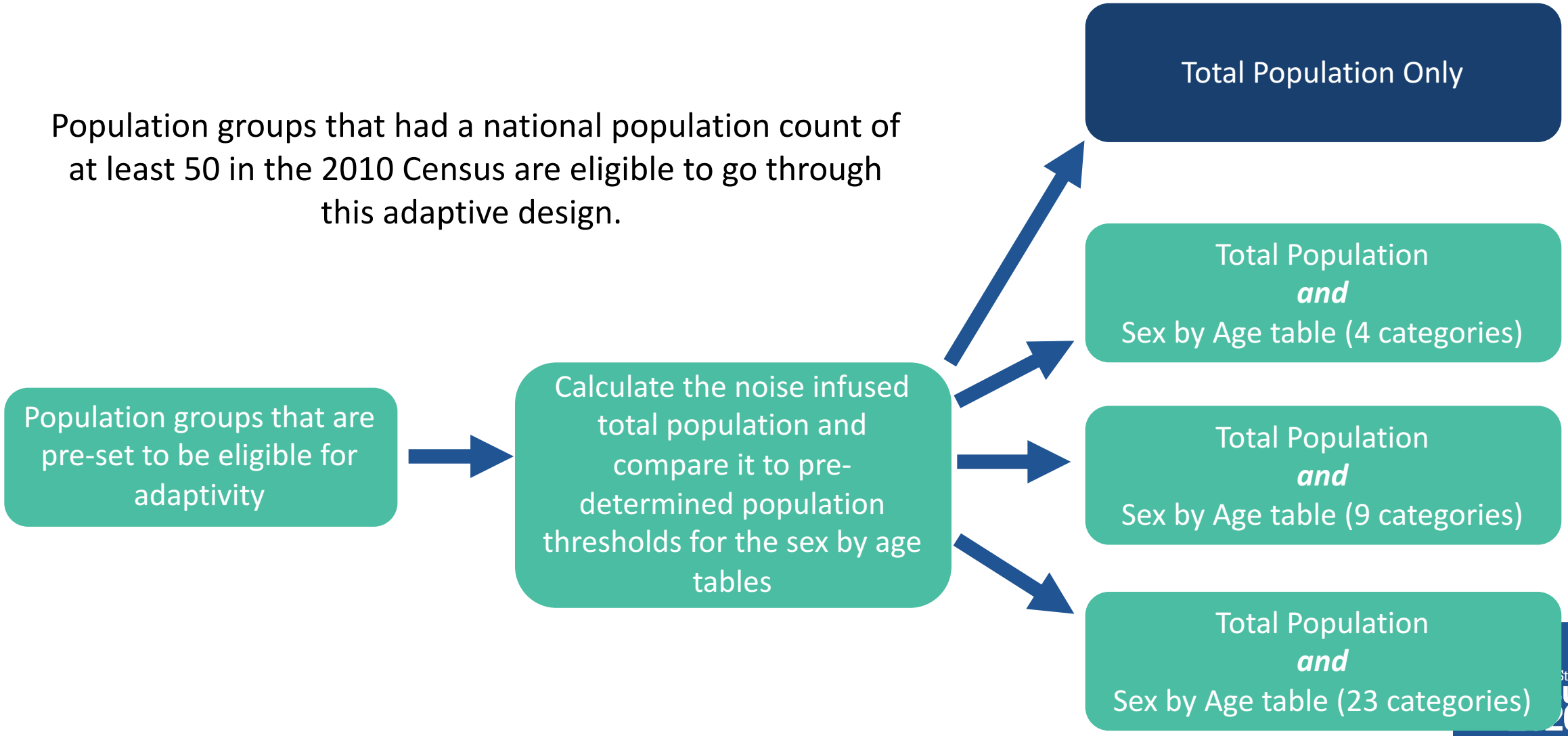
Using Adaptive Design to Produce the Detailed DHC-A

Detailed groups with a national population count less than 50 in the 2010 Census are pre-set to receive total population only in the Detailed DHC-A.

United States® Census 2020

Using Adaptive Design to Produce the Detailed DHC-A

Population groups that had a national population count of at least 50 in the 2010 Census are eligible to go through this adaptive design.



Sex by Age
23 categories

Sex x Age (23)		
Age Group	Male	Female
Under 5 years	146	147
5 to 9 years	130	131
10 to 14 years	109	107
15 to 17 years	79	77
18 and 19 years	68	97
20 years	34	89
21 years	64	76
22 to 24 years	150	151
25 to 29 years	235	265
30 to 34 years	237	302
35 to 39 years	230	374
40 to 44 years	177	356
45 to 49 years	187	372
50 to 54 years	139	275
55 to 59 years	84	151
60 and 61 years	27	53
62 to 64 years	30	60
65 and 66 years	7	15
67 to 69 years	12	27
70 to 74 years	12	25
75 to 79 years	13	12
80 to 84 years	3	7
85 years and over	2	3

Sex by Age
9 categories

Sex x Age (9)		
Age Group	Male	Female
Under 5 years	146	147
5 to 17 years	318	315
18 to 24 years	316	413
25 to 34 years	472	567
35 to 44 years	407	730
45 to 54 years	326	647
55 to 64 years	141	264
65 to 74 years	31	67
75 years and over	18	22

Sex by Age
4 categories

Sex x Age (4)		
Age Group	Male	Female
Under 18 years	464	462
18 to 44 years	1,195	1,710
45 to 64 years	467	911
65 years and over	49	85

Note: These are fictitious data for illustration purposes.

United States Census 2020

Detailed DHC-A Minimum Noise Infused Population Counts and Margins of Error (MOE) by Geography

	Detailed groups		Regional groups	
Most comprehensive table type produced	**Nation & state (MOE=3)**	**Sub-state & AIANNH (MOE=11)**	**Nation & state (MOE=50)**	**Sub-state (MOE=50)**
Total count only	0-499	22-999	0-4,999	94-4,999
Sex by age – 4 categories	500-999	1,000-4,999	5,000-19,999	5,000-19,999
Sex by age – 9 categories	1,000-6,999	5,000-19,999	20,000-149,999	20,000-149,999
Sex by age – 23 categories	7,000+	20,000+	150,000+	150,000+

Note: The listed population thresholds are applied to the population counts after they have been processed by the approved differential privacy mechanism.
Note: MOE refers to the margin of error

- Detailed groups include disaggregated groups such as Puerto Rican, Tuscarora Nation, Arctic Slope Corporation, etc.
- Regional groups include groups such as Caribbean, American Indian, Alaska Native, etc.

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Can I compare the Detailed DHC-A Data to….?

Data source	Comparison Guidance
Pre-2020 ACS race data	⚠ Use caution
Pre-2020 ACS Hispanic origin data	✓ Compare
ACS ancestry data	⚠ Use caution
2010 Census race data	⚠ Use caution
2010 Census Hispanic origin data	✓ Compare

For more details, visit:

- What You Should Know About the Upcoming Detailed Demographic and Housing Characteristics File A
  2020 Census Hispanic Origin and Race Code List
- Detailed Race and Ethnicity Crosswalk: 2010 to 2020

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Available Tools for Accessing Detailed DHC-A Data

Data visualization:

[Detailed Races and Ethnicities in the United States and Puerto Rico: 2020 Census]

Data Gems:

[How the Detailed DHC-A Adaptive Design Determines Data Availability]

[Accessing 2020 Census Detailed DHC-A Data on data.census.gov]

[Downloading, Exporting, and Sharing 2020 Census Detailed DHC-A Data]

[Accessing 2020 Census Detailed DHC-A Data: Census Tracts]

[Comparing 2020 Census Detailed DHC-A Data to 2010 Census Data]

[2020 Census Detailed DHC-A: Using the Census Data API to Get Individual Data Points]

[2020 Census Detailed DHC-A: Using the Census Data API to Get a Table]

Press Kit:

[2020 Census Detailed Demographic and Housing Characteristics File A Press Kit]

United States Census 2020

America Counts Stories

America Counts Story

New Population Counts for Nearly 1,500 Race and Ethnicity Groups

The Census Bureau releases official population counts for more than 200 new detailed race and ethnicity groups.

America Counts Story

Detailed Look at Native Hawaiian and Other Pacific Islander Groups

2020 Census data released this month provides detailed counts of 31 Native Hawaiian and Other Pacific Islander (NHPI) groups.

America Counts Story

Asian Indian Was The Largest Asian Alone Population Group in 2020

Detailed 2020 Census data on 41 Asian groups released today show Chinese, Except Taiwanese, was largest Asian alone or in any combination group.

America Counts Story

3.5 Million Reported Middle Eastern and North African Descent in 2020

Detailed data available from the 2020 Census for 26 Middle Eastern and North African groups.

Population

Eight Hispanic Groups Each Had a Million or More Population in 2020

Newly released detailed 2020 Census data show growth in Hispanic groups. Mexican population remained nation's largest Hispanic group.

Population

Detailed Data for Hundreds of American Indian and Alaska Native Tribes

2020 Census detailed data available for close to 1,200 AIAN tribes and villages for the nation, states and tribal areas.

United States Census 2020

Blogs, Working Paper, and Technical Documentation

Random Samplings Blog

What You Should Know About the Upcoming Detailed DHC File A

The upcoming 2020 Census Detailed DHC-A greatly expands what we know about the racial and ethnic composition of the U.S. population.

Random Samplings Blog

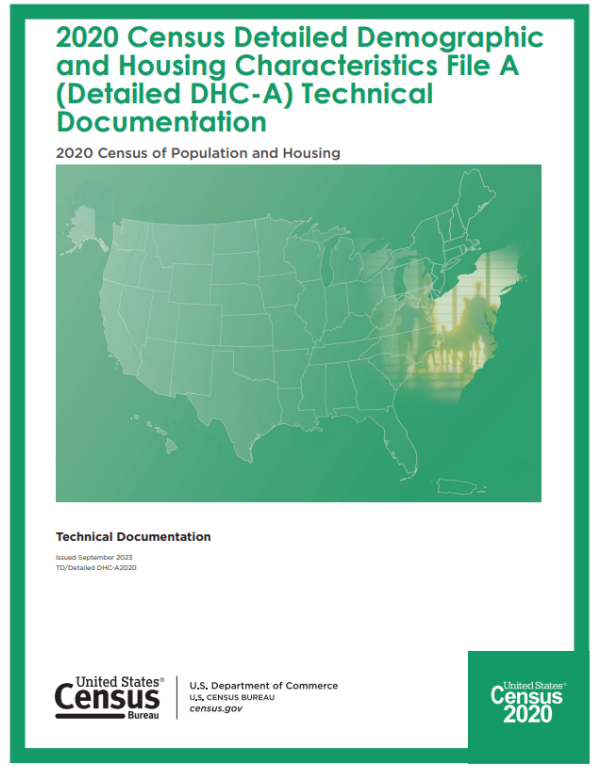
Data Quality and the Detailed DHC File A

Today the Census Bureau released new statistics about our nation's communities, providing population counts and sex-by-age statistics.

Working Paper

Understanding Counts of Afro-Latino Responses in the 2020 Census

Census counts for Afro-Latino and Garifuna were collected from the Hispanic origin question for the first time in Census Bureau history.



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

Detailed DHC-B includes household counts repeated by 300 detailed racial and ethnic groups and 1,187 detailed American Indian and Alaska Native (AIAN) tribal and village population groups

- **Expected release date:** September 2024
- **Subjects are repeated by detailed racial and ethnic groups:**
  - Household Type
  - Tenure
- **Proposed levels of geography:** Nation, State, County, Tract, Place, AIANNH areas
- **Disclosure avoidance:** Differentially private SafeTab-H algorithm
- **Goal**: keep this product similar to Detailed DHC-A, including geographies and use of adaptive design

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Detailed DHC-B

Adaptive design for Household Type

HOUSEHOLD TYPE (UNIVERSE)
Universe: Households
Total

HOUSEHOLD TYPE (2 CATEGORIES)
Universe: Households
Total:
- Family households
- Nonfamily households

HOUSEHOLD TYPE (6 CATEGORIES)
Universe: Households
Total:
- Family households:
  - Married couple family
  - Other family
- Nonfamily households:
  - Householder living alone
  - Householder not living alone

HOUSEHOLD TYPE (8 CATEGORIES)
Universe: Households
Total:
- Family households:
  - Married couple family
  - Other family:
    - Male householder, no spouse present
    - Female householder, no spouse present
- Nonfamily households:
  - Householder living alone
  - Householder not living alone

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Detailed DHC-B

Adaptive Design for Tenure

TENURE (UNIVERSE)

Universe: Occupied housing units

Total

TENURE (3 CATEGORIES)

Universe: Occupied housing units

Total:

- Owned with a mortgage or a loan
- Owned free and clear
- Renter occupied

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Supplemental Demographic and Housing Characteristics File (S-DHC)

S-DHC includes counts of children and people in households by certain characteristics, including average tables. Many tables are repeated by race and ethnicity.

- **Expected release date:** TBD
- **Subjects include:**
  - Average household size by age*
  - Household type for the population in households
  - Household type by relationship for the population under 18 years*
  - Population in families by age*
  - Average family size*
  - Family type and age for own children under 18 years
  - Total population in occupied housing units by tenure*
  - Average household size of occupied housing units by tenure*
- **Proposed levels of geography:** Currently being revised from initial proposal
- **Disclosure avoidance:** Differentially private PHSafe algorithm

**Indicates the table is proposed to be repeated by major Hispanic origin and race groups*

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S-DHC Example

HOUSEHOLD TYPE FOR THE POPULATION IN HOUSEHOLDS

Universe: Population in households

Total:

- In married couple household
  - Opposite-sex married couple
  - Same-sex married couple
- In cohabiting couple household
  - Opposite-sex cohabiting couple
  - Same-sex cohabiting couple
- Male householder, no spouse or partner present:
  - Living alone
  - Living with others
- Female householder, no spouse or partner present:
  - Living alone
  - Living with others

United States Census 2020

Differences Between the TopDown and SafeTab-P Differentially Private Algorithms

TopDown Redistricting Data (P.L. 94-171), DHC, Demographic Profile	SafeTab-P Detailed DHC-A
Algorithm produces privacy-protected microdata	Algorithm directly produces privacy-protected tabulations
All geographies aggregate as expected	Geographic totals may not aggregate as expected
When aggregating data, the statistical noise generally cancels out and the statistics become *more* accurate. **Guidance: try to aggregate small geographies (e.g. blocks)**	When aggregating data, it generally becomes more variable the more you aggregate
Consistency across data products	Not consistent with other 2020 Census data products
Does not use adaptive design	Uses adaptive design to determine the amount of data provided
Overall accuracy can be targeted, but **the exact levels of accuracy cannot be known in advance**	All margins of error are determined in advance and met 95% of the time

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Calculating Percentages/Ratios for Detailed Groups

Characteristic	To calculate the percentage of…	Use…as the denominator	Source of denominator
Race (White, Black or African American, etc.)	The Asian alone population that is Korean alone at the national level.	The total Asian alone population in the United States (19,886,049).	2020 Census Redistricting Data (P.L. 94-171) Summary File.
Hispanic or Latino origin	People of Hispanic or Latino origin who are Salvadoran in Washington, DC.	The total Hispanic or Latino origin population in Washington, D.C. (77,652).	2020 Census Redistricting Data (P.L. 94-171) Summary File.
Geography (California; Harris County, TX; etc.)	The population of Honolulu County, HI, that is Native Hawaiian alone or in any combination.	The total population of Honolulu County, HI (1,016,508).	2020 Census Redistricting Data (P.L. 94-171) Summary File.
Regional group (European, Caribbean, etc.)	The Sub-Saharan African alone or in any combination population that is Beninese alone.	The Sub-Saharan African alone or in any combination population.	2020 Census Detailed DHC-A.

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data.census.gov Walkthrough

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Questions?

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