

2020 Census Data Products and Disclosure Avoidance

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Washington & Oregon State Data Centers

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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.

<input type="checkbox"/> Opposite-sex husband/wife/spouse	<input type="checkbox"/> Father or mother
<input type="checkbox"/> Opposite-sex unmarried partner	<input type="checkbox"/> Grandchild
<input type="checkbox"/> Same-sex husband/wife/spouse	<input type="checkbox"/> Parent-in-law
<input type="checkbox"/> Same-sex unmarried partner	<input type="checkbox"/> Son-in-law or daughter-in-law
<input type="checkbox"/> Biological son or daughter	<input type="checkbox"/> Other relative
<input type="checkbox"/> Adopted son or daughter	<input type="checkbox"/> Roommate or housemate
<input type="checkbox"/> Stepson or stepdaughter	<input type="checkbox"/> Foster child
<input type="checkbox"/> Brother or sister	<input type="checkbox"/> 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.*

<input type="checkbox"/> Chinese	<input type="checkbox"/> Vietnamese	<input type="checkbox"/> Native Hawaiian
<input type="checkbox"/> Filipino	<input type="checkbox"/> Korean	<input type="checkbox"/> Samoan
<input type="checkbox"/> Asian Indian	<input checked="" type="checkbox"/> Japanese	<input type="checkbox"/> Chamorro
<input type="checkbox"/> Other Asian – <i>Print, for example, Pakistani, Cambodian, Hmong, etc.</i> <input checked="" type="checkbox"/>	<input type="checkbox"/> Other Pacific Islander – <i>Print, for example, Tongan, Fijian, Marshallese, etc.</i> <input checked="" type="checkbox"/>	

Some other race – *Print race or origin.*

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

2020 Census Data Products

Released

Apportionment

April 26, 2021

Redistricting File
(Public Law 94-171)

August 12, 2021
September 16, 2021

Demographic Profile

Demographic and Housing
Characteristics File (DHC)

Released May 2023

Detailed DHC-A

Released Sept 2023

Detailed DHC-B

Release Date TBD

Supplemental DHC (S-DHC)

Release Date TBD

Future Effort

Privacy Protected Microdata
File (PPMF)

Special Tabulations

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

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)

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

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

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

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		

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		

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		

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

Detailed DHC-A includes population counts repeated by approximately 370 detailed racial and ethnic groups and 1,200 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
- **Proposed levels of geography:** Nation, State, County, Tract, Place, AIANNH areas
- **Disclosure avoidance:** Differentially private SafeTab-P algorithm

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

In addition to providing data for Hispanic origin groups, data will be 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.

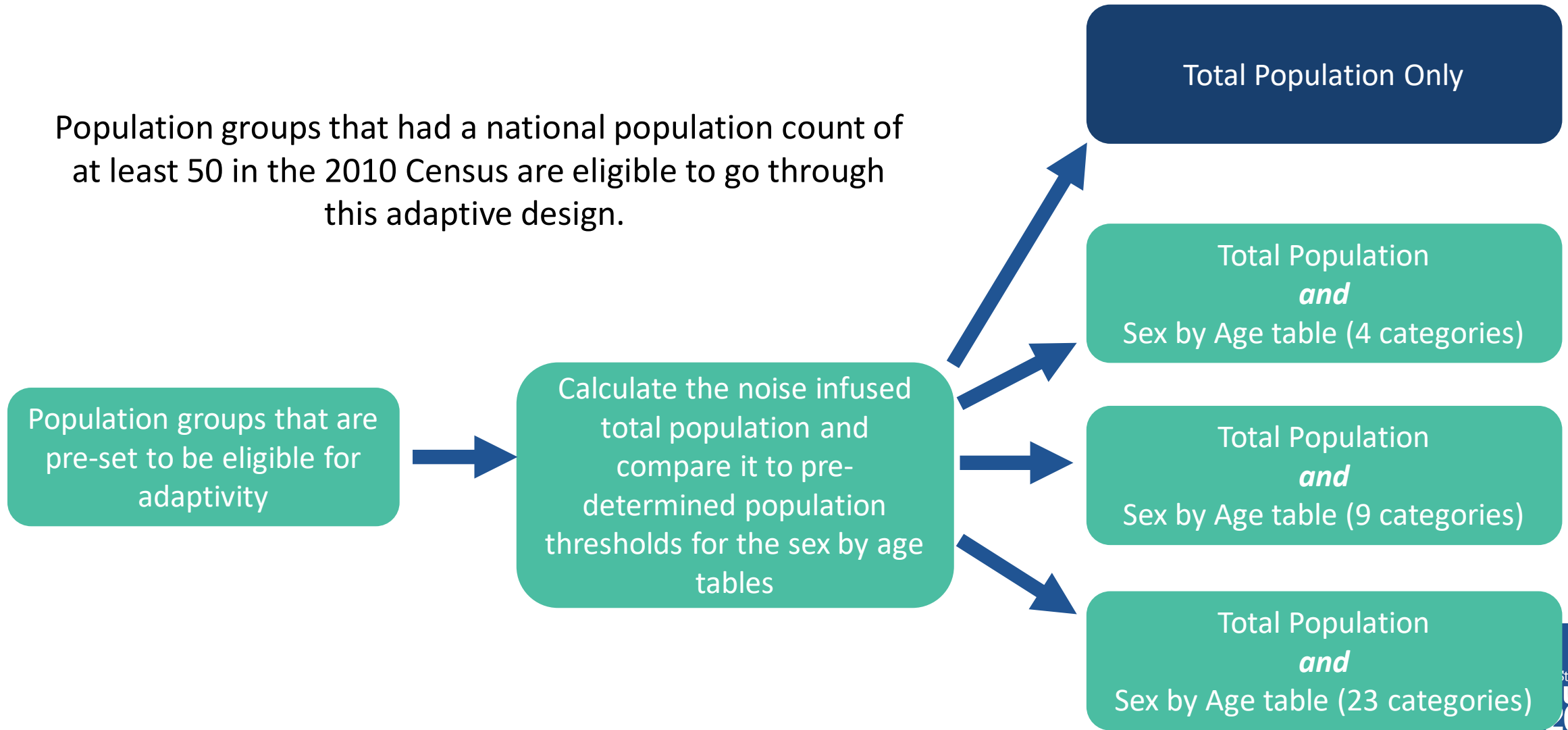
Using Adaptive Design to Produce the Detailed DHC-A



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.

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.

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

Most comprehensive table type produced	Detailed groups		Regional groups	
	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.

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

Detailed DHC-B includes household counts repeated by approximately 370 detailed racial and ethnic groups and 1,200 detailed American Indian and Alaska Native (AIAN) tribal and village population groups

- **Expected release date:** TBD
- **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

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

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

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

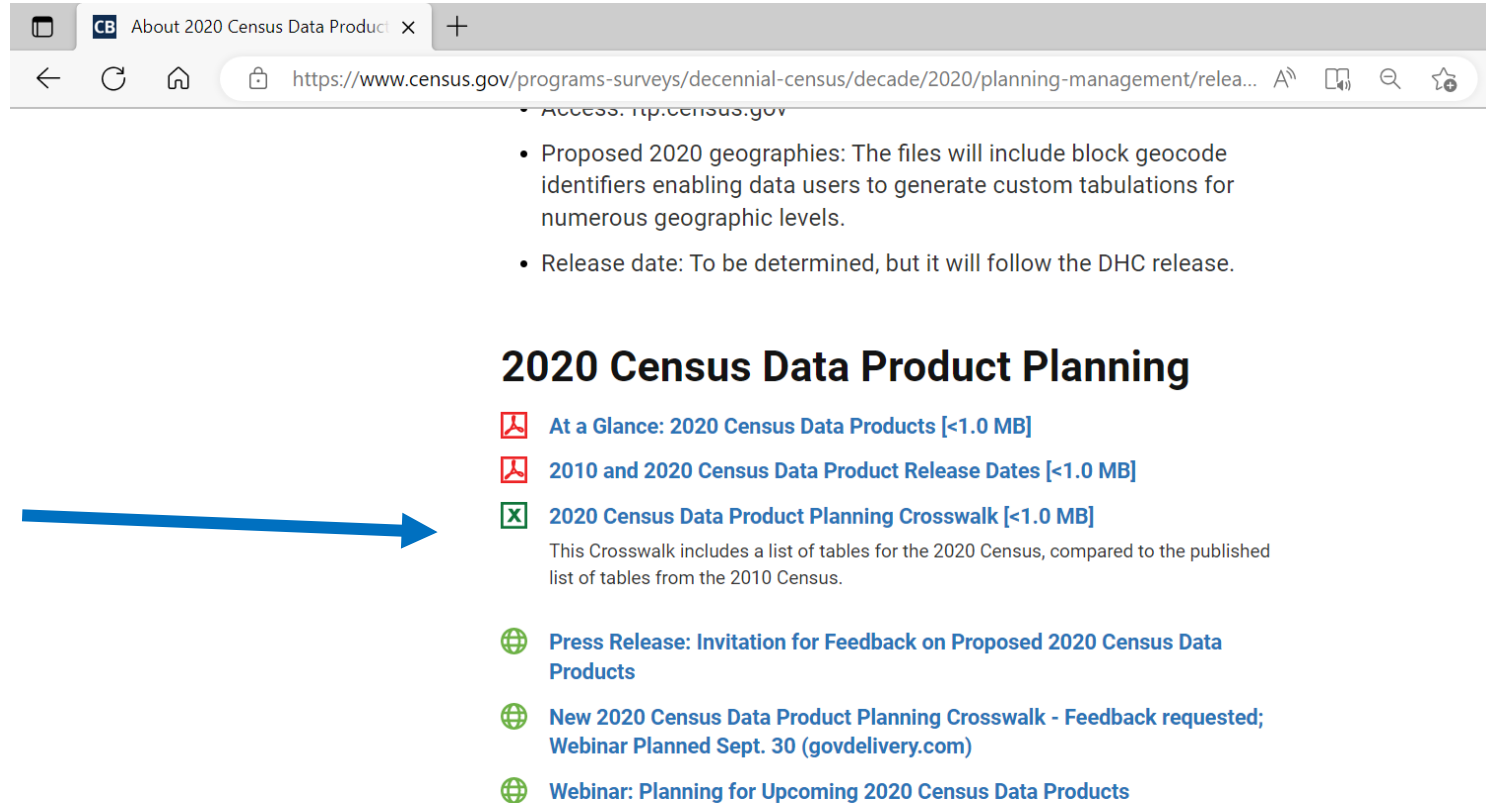
**Indicates the table is proposed to be repeated by major Hispanic origin and race groups*

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

2020 Census Data Product Planning Crosswalk

- Excel document that provides 2020 Census table shells and content
- Go to <https://www.census.gov/>
- Search “2020 Census data products”
- Click 2020 Census data products”
- Scroll to "2020 Census Data Product Planning"
- Open “2020 Census Data Product Planning Crosswalk”



Browser address bar: <https://www.census.gov/programs-surveys/decennial-census/decade/2020/planning-management/relea...>

- Access: www.census.gov
- Proposed 2020 geographies: The files will include block geocode identifiers enabling data users to generate custom tabulations for numerous geographic levels.
- Release date: To be determined, but it will follow the DHC release.

2020 Census Data Product Planning

- 📄 [At a Glance: 2020 Census Data Products](#) [[<1.0 MB](#)]
- 📄 [2010 and 2020 Census Data Product Release Dates](#) [[<1.0 MB](#)]
- 📄 [2020 Census Data Product Planning Crosswalk](#) [[<1.0 MB](#)]
This Crosswalk includes a list of tables for the 2020 Census, compared to the published list of tables from the 2010 Census.
- 🌐 [Press Release: Invitation for Feedback on Proposed 2020 Census Data Products](#)
- 🌐 [New 2020 Census Data Product Planning Crosswalk - Feedback requested; Webinar Planned Sept. 30 \(govdelivery.com\)](#)
- 🌐 [Webinar: Planning for Upcoming 2020 Census Data Products](#)

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 <i>more</i> 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

data.census.gov Walkthrough

Questions?

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