Disclosure Avoidance and the 2020 Census: How SafeTab-H Works

2020 Census Briefs

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INTRODUCTION

This is the fifth in a series of briefs describing disclosure avoidance methods used to protect 2020 Census data products and the implications of those methods for data users. This brief describes how differential privacy works and how it is applied to the 2020 Census Detailed Demographic and Housing Characteristics File B (Detailed DHC-B). The methodology used to protect the Detailed DHC-B is similar to the methodology used in the 2020 Census Detailed Demographic and Housing Characteristics File A (Detailed DHC-A), but there are important differences. This brief explains those differences and provides guidance for data users.

At the U.S. Census Bureau, disclosure avoidance is defined as a process used to protect the confidentiality of the information provided by our respondents. The Census Bureau has applied disclosure avoidance methods for decades to keep respondent information confidential and maintain public trust in the data.

Over time, the Census Bureau has published more detailed data while advances in data science, more powerful computers, and externally accessible data have increased the risk of identifying individuals from published statistics. With ever-advancing technology, the threats to disclosure are expected to continue growing with time. To reduce this risk, the Census Bureau is implementing new disclosure avoidance methods for the 2020 Census based on a framework known as differential privacy.

What Is Differential Privacy?

Differential privacy is a scientific framework for processing data to protect the identities and personal information of the people in the data. It works by adding statistical noise—small, random additions or subtractions—to every published statistic to reduce the likelihood that characteristics about a specific person or household can be accurately inferred using any combination of the published data.

Differential privacy forms the foundation of the Disclosure Avoidance System applied to the data to protect 2020 Census respondent confidentiality.

This brief builds on concepts from Disclosure Avoidance and the 2020 Census: How SafeTab-P Works, and we encourage data users to read it first. This SafeTab-H census brief primarily focuses on differences between disclosure avoidance methods for the Detailed DHC-A and Detailed DHC-B.

WHAT IS THE DETAILED DHC-B?

The Detailed DHC-B is the companion product to the Detailed DHC-A. The Detailed DHC-A provides total population and sex by age data for 300 detailed racial and ethnic groups, 1,187 American Indian and Alaska Native tribes and villages, and 28 regional groups. The

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Detailed DHC-B provides household data for those same groups. Detailed groups include:

- 30 detailed Hispanic or Latino origin groups such as Mexican, Salvadoran, and more.
- 270 detailed race groups such as Japanese, Native Hawaiian, Irish, Lebanese, Haitian, Brazilian, and more.
- 1,187 American Indian and Alaska Native tribes and villages such as the Navajo Nation, the Akiak Native Community, and more.

Regional groups are aggregated from detailed responses and include:[1]

- 4 regional Hispanic or Latino origin groups such as Central American, South American, and more.
- 24 regional race groups, alone and alone or in any combination, including Middle Eastern and North African, Sub-Saharan African, and more.

For all groups with data available in the Detailed DHC-A and Detailed DHC-B, refer to the 2020 Census Hispanic Origin and Race Iterations List.

The Detailed DHC-B provides household type (e.g., family and nonfamily) and tenure (i.e., owner or renter occupied) data. Both tables provide the total count of households by race of householder: households and occupied housing units, respectively. Together, the Detailed DHC-A and Detailed DHC-B are successors to the 2010 Census Summary File 2 and the 2010 Census American Indian and Alaska Native Summary File.

Compared to the 2010 Census, the 2020 Census reflects improvements in the design, processing, and coding of the 2020 Census Hispanic origin and race questions, allowing for the release of data for groups that did not receive data in previous censuses. However, there are fewer tables and geographies for the 2020 Census given disclosure risks.

In developing the Detailed DHC-A and Detailed DHC-B, the primary goal was to produce accurate and equitable data for our nation's myriad detailed racial and ethnic groups across all major race and ethnicity categories. The goal was also to provide as many population and household counts as confidentiality protections would allow at various geographic levels, for as many detailed racial and ethnic groups and American Indian and Alaska Native tribes and villages as possible.

WHAT IS ADAPTIVE DESIGN AND WHY DOES IT MATTER?

Adaptive design is a data-driven framework for choosing which statistics to publish. The Detailed DHC-B uses an adaptive design that adjusts the amount of household characteristic data published for a group based on a combination of predetermined thresholds—based on total population counts from the Detailed DHC-A—and level of geography. Adaptive design allows the Census Bureau to provide more detailed statistics for racial and ethnic groups with larger populations, while ensuring confidentiality protections.

Within the adaptive design framework, some data are not published based on population count thresholds from the Detailed DHC-A. For example, if population data do not meet the threshold for publication in the Detailed DHC-A, data are not published for the Detailed DHC-B. For the steps in the process, refer to Detailed DHC-B Adaptive Design Process.

For all other groups, if that group gets a count in the Detailed DHC-A and has at least one housing unit for a given geography, then the group gets—at a minimum—total household count data in the Detailed DHC-B. In addition, depending on size and geography thresholds, some groups receive additional detail for household characteristics. The levels of reported detail possible are specified in the next section (Table 1).

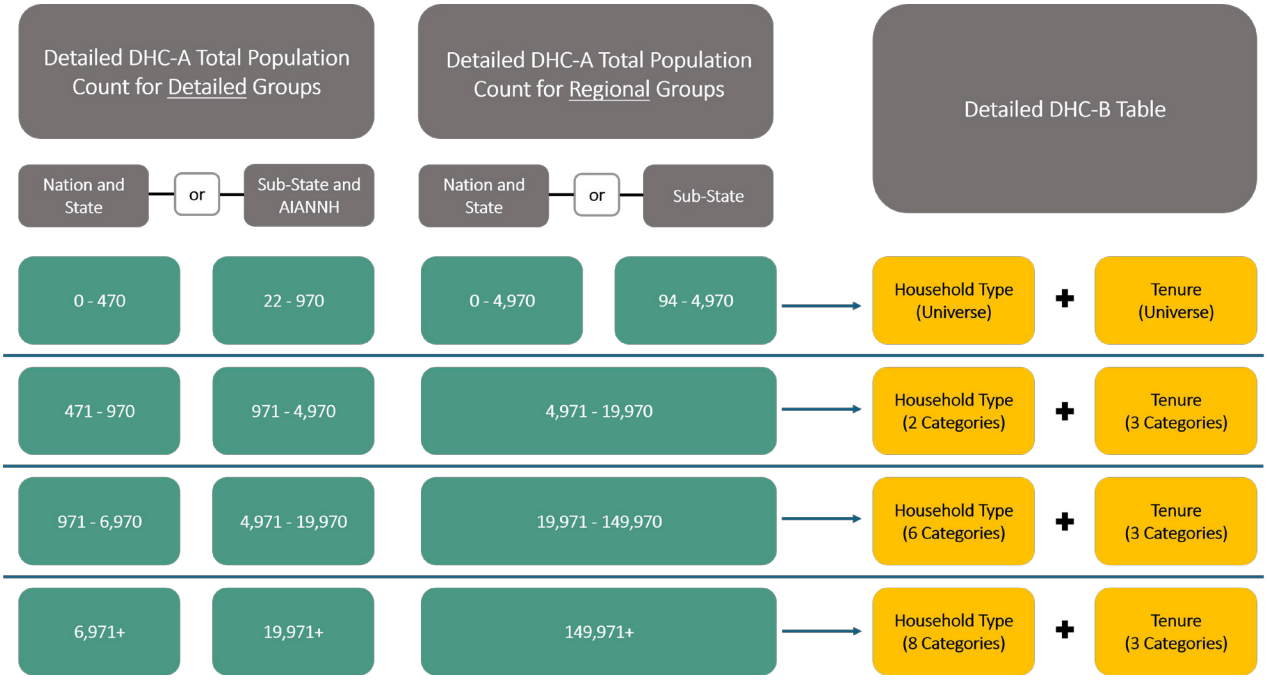
[1] The alone count includes respondents with one or more detailed race group(s) that aggregate into the same regional group. For example, respondents who reported only Hungarian, as well as those who reported both Lithuanian and Romanian, are part of the larger "European alone" regional group. The alone or in any combination count includes people who reported one or more detailed race group(s) that aggregate into the same regional group, as well as people who reported detailed race groups that aggregate into different regional groups. For example, respondents who reported Navajo Nation, as well as those who reported Hopi and Brazilian, are part of the larger American Indian alone or in any combination regional group.

Working With the Data

The 2020 Census Detailed Demographic and Housing Characteristics File B (Detailed DHC-B) is similar to the 2020 Census Detailed Demographic and Housing Characteristics File A (Detailed DHC-A) but different than other 2020 Census data products. Guidance when working with the data varies based on the specific 2020 Census data product. For the Detailed DHC-B, here are some "dos and don'ts" for using these statistics:

- **DON'T** expect consistency across table types within the Detailed DHC-B. The count of households may differ between the household type and tenure tables.
- **DON'T** expect consistency across geographies and population groups within the Detailed DHC-B. For example, counties may not sum to state totals and detailed groups may not sum to regional groups.
- **DON'T** combine data across the Detailed DHC-A and Detailed DHC-B to calculate average people per household. The Detailed DHC-A includes group quarters population (e.g., college residence halls, skilled-nursing facilities, military barracks), which should not be included in people per household calculations. The Detailed DHC-B does not include the group quarters population. In addition, because noise is infused separately to each data product, there may be more households for some detailed and regional groups in the Detailed DHC-B than there are people in those groups in the Detailed DHC-A.
- **DON'T** expect consistency with other 2020 Census data products. If you add up all the detailed household counts in the Detailed DHC-B, it will not match the major race or ethnicity group in the Redistricting Data (P.L. 94-171) Summary File or the Demographic and Housing Characteristics File (DHC).
- **DON'T** infer missing data by adding or subtracting published data. These data were suppressed for demographic reasonableness. Inferred totals may be unreliable (such as negative numbers).
- **DO** recognize that the count of households in household type tables frequently does not match the count of occupied units in the tenure tables.
  - Both household counts are equally accurate in the T03001 Household Type (Universe) and T04001 Tenure (Universe) tables. Use the total household count from the table with content of interest.
  - When your detailed or regional group receives more granular data, use the total household count from table T03002 Household Type (2 Categories). If that table is not available, then use the household count from table T04002 Tenure (3 Categories).
- **DO** use the published counts for detailed and regional groups and geographies whenever possible, rather than creating custom aggregations, which result in less accurate data.
- **DO** use caution if aggregation of published counts is necessary to produce statistics for custom groups or geographies. Unlike in the Redistricting Data (P.L. 94-171) Summary File and DHC, the Detailed DHC-B aggregations get noisier in proportion to the number of counts that are included in the aggregation.
- **DO** aggregate the smallest number of items possible. For example, if data for a custom geographic area can be calculated by summing the data across 10 tracts or subtracting the data for two tracts from a county total, subtracting the data for two tracts yields a more accurate result than combining the data across 10 tracts.
- **DO** refer to the "Guidance for Working With the Detailed DHC-B" section of this brief for information about calculating percentages, understanding suppressed counts, comparing to other U.S. Census Bureau data sources, and aggregating the Detailed DHC-B data.

Figure 1.
Adaptive Design and Minimum Population Counts



The level of detail published for a given group at a given geography is determined by population thresholds that are specific to each geography and detailed or regional racial and ethnic group (Figure 1). For example, a state with at least 6,971 people who are Jamaican alone receives eight household types and three tenure categories. A tract with 1,000 people who are Jamaican alone receives two household type categories and three tenure categories.

For additional information on adaptive design, refer to the Detailed DHC-B Adaptive Design Process. The data are located on data.census.gov, the Census Data API Discovery Tool, and are available in the summary file format. For information on how to access the data, refer to Chapter 2 in the 2020 Census Demographic and Housing Characteristics File B (Detailed DHC-B) Technical Documentation.

HOW THE SAFETAB-H ALGORITHM WORKS

Underlying this adaptive design is an algorithm called SafeTab-H, a series of mathematical procedures that first determines whether and how much household characteristic detail is published for each racial and ethnic group (refer to the "What Is Adaptive Design and Why Does it Matter?" section in this brief). First, the algorithm looks back to the Detailed DHC-A noisy total population count. Second, it compares that count to the Detailed DHC-B thresholds to determine which household type and tenure tables a detailed or regional group receives for a given geography. Third, it adds noise to the enumerated counts for the innermost lines in the table. Finally, a postprocessing routine adds up the innermost lines in the table to obtain aggregated counts in the table, suppresses negative values, and suppresses the race alone count when it is larger than the corresponding race alone or in any combination count.

Because SafeTab-H repeats this noise infusion process independently across the household type and tenure tables, geographies, and race and ethnic groups, Detailed DHC-B data are frequently inconsistent.

Additionally, and similar to SafeTab-P, SafeTab-H results in inconsistencies with other data products. For more information, refer to the "How Does Disclosure Avoidance for the Detailed DHC-B Compare With Other 2020 Census Products" section.

How Are Data Protection and Accuracy Balanced?

The risk of disclosure is a measure of the degree of confidentiality protection. Tracking the balance between accuracy and protection occurs through a privacy-loss budget. If the system is set to prioritize

Table 1.

Margins of Error (±) by Level of Geography and Characteristic Detail

Table shell	Detailed groups		Regional groups
	Nation and states	Substate and AIANNH areas	All geographies
T03001. Household Type (Universe)			
Total	**3**	**11**	**50**
T03002. Household Type (2 Categories)			
Total	**4**	**16**	**71**
Family households	3	11	50
Nonfamily households	3	11	50
T03003. Household Type (6 Categories)			
Total	**6**	**22**	**100**
Family households	4	16	71
Married couple family	3	11	50
Other family	3	11	50
Nonfamily households	4	16	71
Householder living alone	3	11	50
Householder not living alone	3	11	50
T03004. Household Type (8 Categories)			
Total	**7**	**25**	**112**
Family households	5	19	87
Married couple family	3	11	50
Other family	4	16	71
Male householder, no spouse present	3	11	50
Female householder, no spouse present	3	11	50
Nonfamily households	4	16	71
Householder living alone	3	11	50
Householder not living alone	3	11	50
T04001. Tenure (Universe)			
Total occupied housing units	**3**	**11**	**50**
T04002. Tenure (3 Categories)			
Total occupied housing units	**5**	**19**	**87**
Owned with a mortgage or a loan	3	11	50
Owned free and clear	3	11	50
Renter-occupied	3	11	50

Note: Substate includes county, place, and census tract. AIANNH is American Indian/Alaska Native/Native Hawaiian areas.
Source: U.S. Census Bureau.

accuracy for a certain set of results (such as state-level detailed groups), those groups require a larger share of the overall privacy-loss budget. "Balancing the budget" then requires adding more noise (a smaller share of the privacy-loss budget) to certain other results that may not require as much accuracy (or removing tables and geographies).

The total amount of noise can be set on a spectrum from "high accuracy but low protection" to "low accuracy but high protection." "Low accuracy but high protection" means that large noise values are added or subtracted from the enumerated count—completely distorting the data. "High accuracy but low protection" means that most of the noise added is at or close to zero.

The privacy-loss budget is set by the Census Bureau's Data Stewardship Executive Policy Committee to ensure fitness for use of the 2020 Census data while effectively protecting confidentiality. Details of the privacy-loss budget for the Detailed DHC-B are described in Chapter 4 of the Detailed DHC-B technical documentation.

How Accurate Is the Detailed DHC-B?

The Census Bureau set accuracy targets for each count that is produced in the Detailed DHC-B. Those targets ensure the published counts are within (plus or minus) a target margin of error (MOE) of their enumerated count about 95 percent of the time.[2] On average, differences between the enumerated and noise-infused counts will generally be much smaller than the 95-percent MOEs. This is because the noise

[2] The Disclosure Avoidance System (DAS) is not the only source of uncertainty in 2020 Census data. Noise introduced by disclosure avoidance may compound underlying errors or may offset those errors. Examples of these types of errors are available in the 2020 Census Post-Enumeration Survey at <www.census.gov/programs-surveys/decennial-census/about/coverage-measurement/pes.html>.

has a higher chance of being closer to zero than to the larger values.

The target MOEs for characteristics in the Detailed DHC-B, which are met 95 percent of the time, differ by geography and table line, and across detailed and regional groups (Table 1). For detailed groups that get total household counts only, the target MOE is ±3 households for the nation and states. The target MOE for an individual household characteristic, such as "owned free and clear" for detailed groups is ±3 at the national and state level.

For household counts produced at substate geographies and American Indian/Alaska Native/Native Hawaiian (AIANNH) areas, the target MOE for a detailed characteristic is ±11. For example, the target MOE for the count of Haitian alone households that are owned with a mortgage or a loan in Miami-Dade County, FL, is ±11. The MOEs for regional groups, which are generally larger than those for detailed groups, are ±50 at all levels of geography. For example, the count of European alone, renter-occupied households in Madison, WI, is expected to be within ±50 of the enumerated count.

In addition, it is important to remember that noisy counts are only produced for the most indented lines in the tables. Total household counts and subtotals (such as family and nonfamily households) represent the sum of the most indented lines in the table when characteristics are published. For Table T04002, noisy counts are produced for "owned with a mortgage or loan," "owned free and clear," and "renter occupied." Those three counts are summed to get the "total occupied housing units." As a result, noise is also aggregated hence the larger MOE. For example, in Madison, WI, the European alone or in any combination regional group (which gets detail for eight household type categories) has an MOE for each category (such as householder living alone) of ±50, but the MOE for subtotals (such as nonfamily households) is ±71, and the MOE for total households is ±112.

Because household totals in each table are derived from the innermost cells, the accuracy of total household counts may vary across tables. In general, household totals are more accurate in tables with fewer aggregations. For example, two tables (tables T03001 Household Type [Universe] and T04001 Tenure [Universe]) only have one table line, so no counts are aggregated. In this case, the total household count is equally accurate in both tables. However, these two totals are more accurate than the totals in the other tables. For example, table T03002 Household Type (2 Categories) has three table lines—two of which aggregate to the total. Therefore, the household total in table T03002 Household Type (2 Categories) is not as accurate as in table T03001 Household Type (Universe) or T04001 Tenure (Universe). Still, table T03002 Household Type (2 Categories) has a more accurate total household count than table T04002 Tenure (3 Categories). Similarly, table T04002 Tenure (3 Categories) has a more accurate total household count than tables T03003 Household Type (6 Categories) and T03004 Household Type (8 Categories).

The Census Bureau encourages data users to use total household count from tables with fewer aggregations (mainly tables T03001 or T04001 followed by T03002 then T04002). In addition, we encourage data users to use published counts, when possible, rather than creating custom aggregations of the Detailed DHC-B counts, which results in less accurate data.

Data Suppression and Unpublished Counts

Because of the way SafeTab-H adds noise to the data, there are demographically impossible results—like negative counts and impossible counts for race groups. To avoid misinterpretation, Detailed DHC-B data are suppressed to alleviate two data reasonableness concerns rather than for confidentiality protection. These reasons for suppression include:

- **Negative counts**. Because of the way noise is applied to data to protect confidentiality, some counts—usually small counts—are negative. These negative counts are suppressed and are denoted with an "X" in tables.
- **Impossible counts for race groups**. The alone counts are suppressed when they are larger than their corresponding alone or in any combination counts. These suppressed counts are denoted with an "X" in tables.

Unlike the Detailed DHC-A, the Detailed DHC-B does not suppress small counts for substate and AIANNH geographies. However, the Detailed DHC-B only receives data when a Detailed DHC-A noise-infused count is available. Some detailed and regional groups do not meet the minimum population thresholds for a given geography, so they are never published. For example, many groups do not meet the minimum population count for census tract data, and those groups do not appear in the noise-infused tabulations or on data.census.gov. As a result, the number of tracts published for a detailed group in a given state likely does not equal the number of tracts in that state.

Geographic Equivalents

Although SafeTab-H processes each group independently by geography, a postprocessing routine ensures that statistically equivalent geographies have the same counts. For example, the District of Columbia—which has the same boundaries whether it is listed as a state, county, or place—has state counts regardless of which level of geography is used to ensure demographic reasonableness. As a result of this postprocessing, some AIANNH areas may have counts for regional groups.

INCONSISTENT RESULTS AND OTHER LIMITATIONS

The Detailed DHC-B uses SafeTab-H to meet the needs of data users who reported a critical need for accurate household counts for detailed race and ethnicity groups, including American Indian and Alaska Native tribes and villages. However, this method also has several limitations:

- The count of households in household type tables frequently does not match the count of occupied units in the tenure tables even though they should match to be demographically reasonable.
  - Both household counts are equally accurate in the T03001 Household Type (Universe) and T04001 Tenure (Universe) tables. We recommend using the total household count from the table with content of interest.
  - When your detailed or regional group receives more granular data, we recommend using the total household count from table T03002 Household Type (2 Categories). If that table is not available, then we recommend using the household count from table T04002 Tenure (3 Categories).
- A group may have data in one type of table (household type or tenure), but the data are suppressed in the other (represented as an "X" on data.census.gov).
- Values from lower-level geographies may not sum to values from higher-level geographies. For example, summing up all the county data for a specific group in a state may yield a different total than the count for that state.
- There are inconsistencies between the Detailed DHC-A and Detailed DHC-B.
  - There may be more households in the Detailed DHC-B than population in the Detailed DHC-A.
  - The total population count for a group can be suppressed in the Detailed DHC-A, while the total household count is published in the Detailed DHC-B.
  - The Detailed DHC-A may have a very large population (for a given geography and population group) but a very small household count in the Detailed DHC-B. This may reflect either noise infusion or a group quarters population (not included in the Detailed DHC-B but included in the Detailed DHC-A).
- The Detailed DHC-B is not consistent with other 2020 Census data products, including the Redistricting Data (P.L. 94-171) Summary File, the DHC, and the Demographic Profile.

GUIDANCE FOR WORKING WITH THE DETAILED DHC-B

When working with the Detailed DHC-B, data users should consider the following guidance.

Calculating Percentages and Ratios

For detailed guidance calculating percentages and ratios, refer to the Detailed DHC-B technical documentation.

Dealing With Suppressed Counts

When an alone count has been suppressed, we recommend using the count from the equivalent alone or in any combination table, if available. There are situations where a data user may be able to subtract data and recreate a suppressed count. For example, the nonfamily household count may be suppressed in Table T03002 Household Type (2 Categories), but it could be obtained by subtracting the family household count from the total count. We do not recommend using these counts because they may be implausible or statistically unreliable.

Comparing to Previous Decennial Censuses and Other Sources

There are some cautions users should consider when comparing the Detailed DHC-B to previous decennial censuses, the American Community Survey, and other 2020 Census data products. For detailed guidance, refer to the Detailed DHC-B technical documentation.

Aggregating Data

To create new aggregations of detailed groups, remove or add as few groups as possible. For example:

- To create a Central American count that includes Mexican, take the Central American total and add the Mexican count, rather than adding together all detailed Central American groups.
- To create a count of West African groups, add together the counts for the desired West African groups, such as Senegalese and Ghanaian, rather than subtracting all non-West African detailed groups from the Sub-Saharan African total.

When using race data, data users should be mindful of whether they want to use the alone count or the alone or in any combination count.

To create counts for a custom geography, remove or add as few geographies as possible. For example:

- To create a count for the Pacific West states, add together the counts for Alaska, California, Hawaii, Oregon, and Washington, rather than subtracting the 46 other states and state equivalents from the national counts.
- To create a count for Arizona counties that are majority urban, remove Apache, Graham, Greenlee, Navajo, and Santa Cruz counties from the Arizona state total rather than adding together the 10 majority urban counties.

HOW DOES DISCLOSURE AVOIDANCE FOR THE DETAILED DHC-B COMPARE WITH OTHER 2020 CENSUS PRODUCTS?

The 2020 Census Redistricting Data (P.L. 94-171) Summary File and the DHC data are protected through a disclosure avoidance system called the TopDown Algorithm. However, the data requirements for the Detailed DHC-B are different than those for the Redistricting Data (P.L. 94-171) Summary File and the DHC data. In particular, the number of categories of detailed race, ethnicity, and American Indian and Alaska Native tribes and villages far exceed the 128 categories used in the Redistricting Data (P.L. 94-171) Summary File and the DHC data. These differences led the Census Bureau to create a new differential privacy algorithm that was tailored to improve the quality of the Detailed DHC-B data.

One advantage of the new method is that it produces unbiased estimates. One disadvantage is that results are inconsistent across tables and with other data products. For example, the state counts for detailed groups do not sum to the national counts for those groups. In fact, the more data you sum or combine, the less accurate the totals will be since you are also aggregating the noise. For more on this topic, refer to the "Inconsistent Results and Other Limitations" section of this brief.

Differences Between Detailed DHC-A and Detailed DHC-B

Although the Detailed DHC-A and Detailed DHC-B are similar, there are key differences.

- The Detailed DHC-A provides population counts, whereas the Detailed DHC-B provides household counts.
- The population count thresholds vary slightly between the Detailed DHC-A and Detailed DHC-B.
- The Detailed DHC-B has a larger relative error. The Detailed DHC-A uses the same MOEs and confidence intervals as the Detailed DHC-B, but the Detailed DHC-B universe is about one-third the size of the Detailed DHC-A because there are fewer households than people. In addition, the Detailed DHC-B does not include the group quarters population.
- There are inconsistencies within the Detailed DHC-B but not within the Detailed DHC-A. The household count frequently does not match between household type and tenure tables, but the total population count does match between the Detailed DHC-A total population and sex by age tables.
- There are inconsistencies between the Detailed DHC-A and Detailed DHC-B. For example:
  - There might be more households for some detailed groups in the Detailed DHC-B than there are people in the Detailed DHC-A.
  - A detailed or regional group may have a very large population for a given geography in the Detailed DHC-A, but a very small household count in the Detailed DHC-B.
  - The Detailed DHC-A total population count may be suppressed when the Detailed DHC-B household count is provided.

For more information, refer to Disclosure Avoidance and the 2020 Census: How SafeTab-P Works.

HOW HAS DATA USER FEEDBACK INFORMED THE PLANNING PROCESS?

The Census Bureau received invaluable feedback on disclosure avoidance from external stakeholders that informed our efforts and decision-making. These came via the 2020 DAS email <2020DAS@census.gov>, advisory meetings, tribal consultations, and comments provided during presentations at conferences and the Disclosure Avoidance Webinar Series. For example, after receiving feedback on the Detailed DHC-B Proof of Concept, the confidence interval was increased from 90 percent to 95 percent resulting in more accurate data and fewer outliers.

WHERE CAN I LEARN MORE?

- Detailed DHC-B Proof of Concept

  <www.census.gov/programs-surveys/decennial-census/decade/2020/planning-management/process/disclosure-avoidance/newsletters/detailed-dhc-b-proof-of-concept-released.html>

- Demonstration Data and Progress Metrics: Detailed DHC-B

  <https://www2.census.gov/programs-surveys/decennial/2020/program-management/data-product-planning/2010-demonstration-data-products/05-Detailed-DHC-B/detailed-summary-metrics-detailed-dhc-b-proof-of-concept.xlsx>

- 2020 Decennial Census: Processing the Count: Disclosure Avoidance Modernization

  <www.census.gov/programs-surveys/decennial-census/decade/2020/planning-management/process/disclosure-avoidance.html>

- Disclosure Avoidance Webinar Series

  <www.census.gov/data/academy/webinars/series/disclosure-avoidance.html>

- Disclosure Avoidance and the 2020 Census: How SafeTab-P Works

  <www.census.gov/library/publications/2023/decennial/c2020br-05.html>

For timely updates and to contact us, subscribe to the Census Bureau's 2020 Census Data Products Newsletter at <2020DAS@census.gov> or on the Decennial Census: Data Products and Operation Updates email sign-up page.

For key terms, refer to the "Glossary" in Disclosure Avoidance for the 2020 Census: An Introduction.