

## SUPPRESSION

In order to maintain the confidentiality promised respondents and required by law, it is necessary for the Census Bureau to make sure that its public data, in print or on tape, do not disclose information about any individual. Therefore, the Bureau suppresses tabulations of characteristics of very small groups of people or housing units. On summary tapes, zeroes are entered in suppressed cells and flag fields which indicate suppression are shown on each record. However, a zero in a cell does not automatically mean suppression. Only by checking the suppression flag can it be determined if the zero in a specific table is suppressed data or an actual count of zero.

This discussion outlines the rules for suppression of 100-percent data, how its occurrence can be identified by the user, and how to handle it.

### No Suppression

Several basic counts are never suppressed, even if there is a count of only one. They are as follows:

- Total population
- Total housing units
- Year-round housing units
- Occupied units
- Vacant year-round housing units
- Count of persons and households in each  
race or Spanish origin group

### Primary Suppression

Suppression of Population Characteristics. Characteristics of persons other than race or Spanish origin (e.g., age, relationship) are shown only if there are 15 or more persons in the geographic area. For example, on a record for an enumeration district with a population of 1 to 14 persons, population characteristics such as age and relationship are suppressed. Only counts for total population and the number of persons within specific race or Spanish origin groups are provided.

However, when the geographic area being summarized has 15 or more persons, no suppression of population characteristics will occur--except possibly when tables are cross-classified by race or Spanish origin. The rules for this type of suppression are outlined below in Suppression of Tables Cross-Classified by Race or Spanish Origin. Please see Figure 5 on the following page for a schematic of the suppression of population characteristics.

Suppression of Year-round Housing Characteristics. Characteristics of year-round housing units which are not classified by occupancy status (e.g., number of rooms, plumbing facilities, etc.) are suppressed

Figure 5. Suppression Schematic - 100 Percent Data

Population

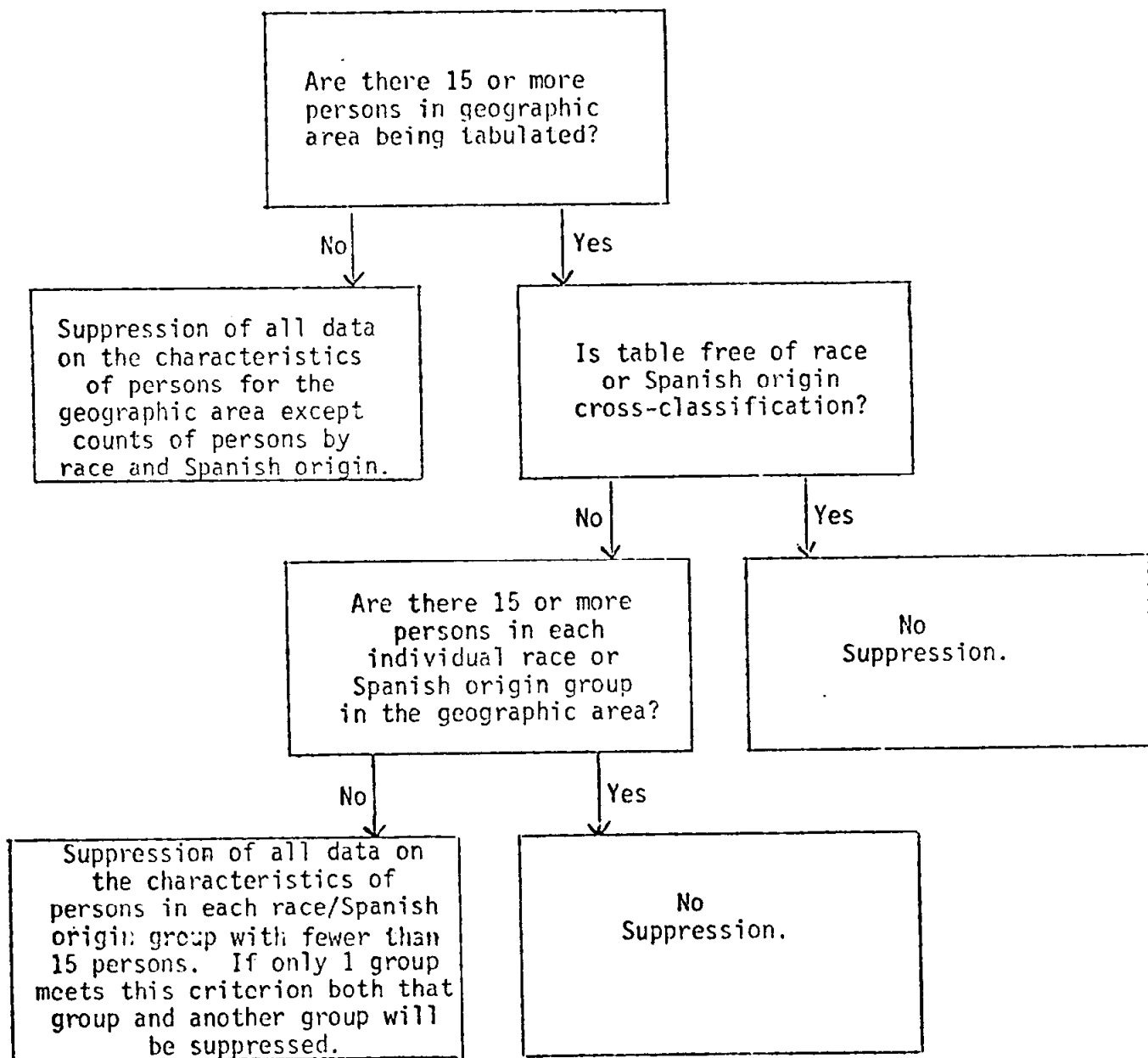
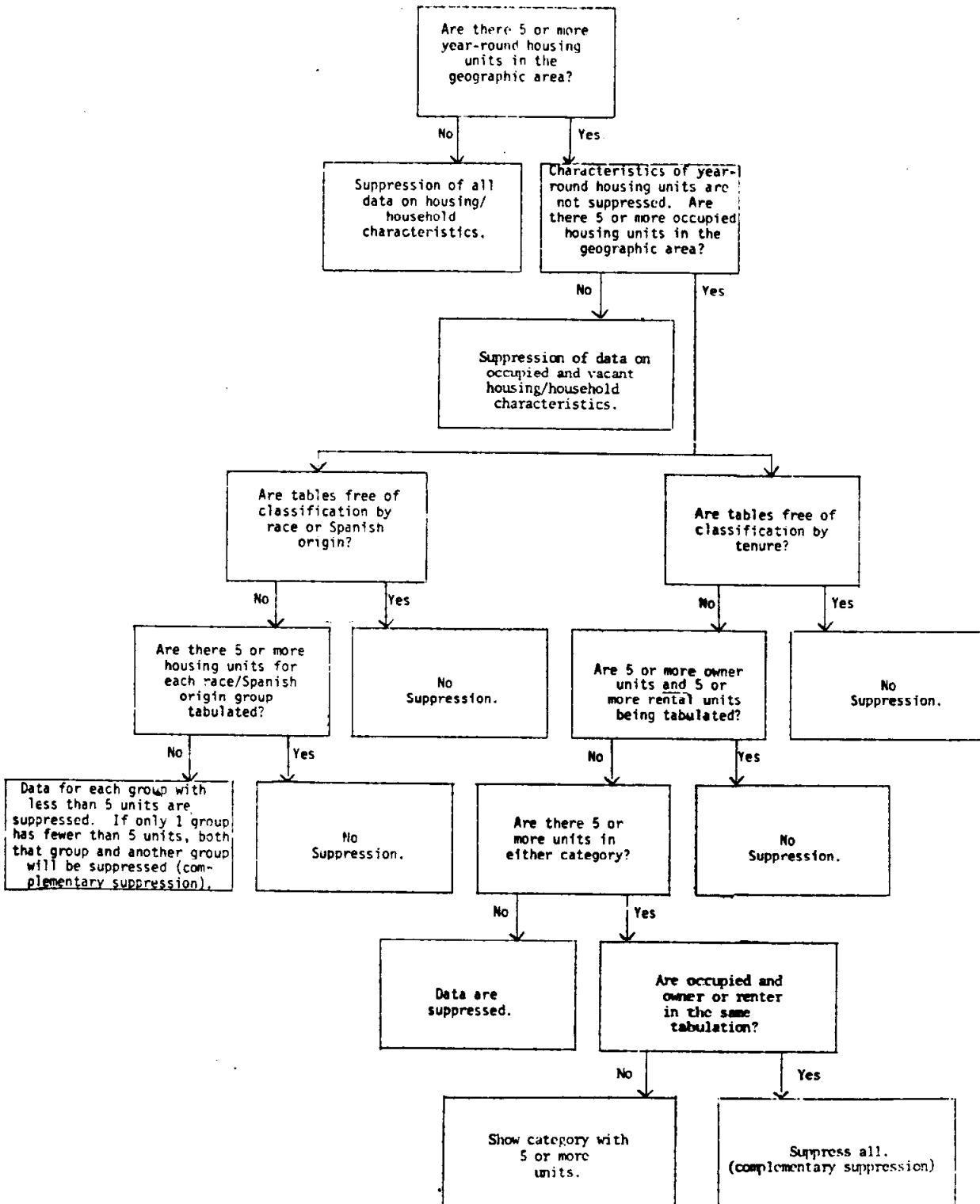


Figure 6. Suppression Schematic - 100 Percent Data

Housing Units



only when there are fewer than five year-round housing units in the geographic area being tabulated regardless of the number of occupied housing units or the number of persons. See Figure 6.

Suppression of Family, Household, or Occupied Housing Characteristics. Characteristics of families, households, or occupied housing units are shown if there are at least five occupied housing units within the geographic area tabulated.

Suppression of Owner or Renter Characteristics. Distributions of data for owners or renters are shown only when the number of owners is at least five and the number of renters is also at least five.

Suppression of Tables Cross-Classified by Race or Spanish Origin. Population and housing characteristics cross-classified by race or Spanish origin are subject to an additional level of scrutiny. On this level the 15 person or five household criteria stated above are also applied to each race or Spanish origin category. For example, a table of race by age for a geographic area which has 80 persons--40 White, 20 Black, 14 American Indian, Eskimo and Aleut, and 6 Asian and Pacific Islanders shows data on age for Whites and Blacks. None of the data for these 2 groups are suppressed since they meet the criteria of having 15 persons of that race or Spanish origin group in the geographic area ("rule of 15"). Data for the other two race groups would not be shown.

Individual cells of data for specific race or Spanish origin groups are never suppressed when there are 15 or more persons of that group in a geographic area unless required by complementary suppression (see below). For example, a table on age by race indicating 2 Blacks under 5 years, 10 Blacks 5 to 17 years, 4 Blacks 18 to 64 years, and 4 Blacks 65 years and over is presented since there are 15 or more total Blacks in the geographic area being tabulated.

The population and housing suppression criteria are applied independently of one another. For example, if there are 16 Spanish origin persons but only four households with Spanish origin householders, the person characteristics will be shown but the family, household, and housing characteristics will be suppressed.

#### Complementary Suppression

In some cases complementary suppression is applied to prevent the derivation of suppressed data by subtraction. For instance, when a table shows the number of persons in unit for all households and also for renters, there must be at least five owners and five renters for the renter data to be shown; otherwise the characteristics of the owners could be derived by subtracting renter data from data for all households.

The following example illustrates complementary suppression as applied to a table of population characteristics cross-classified by race.

EXAMPLE: This is a hypothetical table of race by age. The first column indicates the actual figures, while the second column indicates the data as they appear after applying both primary and complementary suppression.

Race by Age	(1) Actual	(2) Data as made Public	
<b>Total:</b>			
Under 5 years.	10	10	
5 to 17 years	20	20	
18 to 64 years	140	140	
65 years and over	30	30	
<b>White:</b>			
Under 5 years	7	7	
5 to 17 years	11	11	
18 to 64 years	90	90	
65 years and over	16	16	
<b>Black:</b>			
Under 5 years	1	0(s)	
5 to 17 years	1	0(s)	Primary
18 to 64 years	10	0(s)	Suppression
65 years and over	2	0(s)	
<b>American Indian, Eskimo and Aleut:</b>			
Under 5 years	2	0(s)	
5 to 17 years	8	0(s)	Complementary
18 to 64 years	40	0(s)	Suppression
65 years and over	12	0(s)	
<b>Asian and Pacific Islander:</b>			
Under 5 years	0	0	
5 to 17 years	0	0	
18 to 64 years	0	0	
65 years and over	0	0	
<b>Other:</b>			
Under 5 years	0	0	
5 to 17 years	0	0	
18 to 64 years	0	0	
65 years and over	0	0	

Comparing the columns, the actual count (col. 1) indicates more than 15 persons for both Whites and American Indians, Eskimos, and Aleuts, less than 15 Blacks, and 0 for both Asian and Pacific Islanders and Other. Since there are fewer than 15 Blacks, data for this group are suppressed. However, since only one race group is suppressed, complementary suppression rules must be applied. Since it would be a simple matter to determine the number of Blacks by subtracting the sum of Whites and American Indians, Eskimos, and Aleuts from the

total, it is necessary to suppress the data for American Indians, Eskimos, and Aleuts as well (complementary suppression). Column 2 indicates the figures which would appear with an indication whether suppression is primary or complementary. It should be noted that "other" is the first race category to which complementary suppression is applied if there are persons in that category. This complementary suppression may not always be obvious because many tables do not present data about "other races" directly, but require them to be derived by subtraction.

### Examples of Suppression

The following example shows four tables from the STF 1 Data Dictionary. The first table (Table 7) will never be suppressed because it is a basic count. The second table (Table 10) will only be suppressed if there are fewer than 15 persons in the geographic area being summarized. The third table (Table 19) will be suppressed if there are fewer than five occupied housing units in the tabulation area. The fourth table (Table 12) will have portions suppressed for race groups with fewer than 15 members in the geographic area tabulated or if complementary suppression is applied.

#### EXAMPLES:

TABLE 7                    9        370    370        N            15  
 (TAB7)  
 RACE (15)  
 This table has no suppression  
 Universe: Persons  
 SEE FOOTNOTE 3 4

<p>This table has no suppression because a count of persons by race is never suppressed.</p>	<p>TAB7          (1)            370 White          (2)            379 Black          (3)            388 American Indian, Eskimo, and Aleut:          (4)            397 American Indian          (5)            406 Eskimo                           Aleut          (6)            Asian and Pacific Islander:          (7)            415 Japanese          (8)            424 Chinese          (9)            433 Filipino          (10)           442 Korean          (11)           451 Asian Indian          (12)           460 Vietnamese          (13)           469 Hawaiian          (14)           478 Guamanian          (15)           487 Samoan                           496 Other</p>
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SEX (2) BY AGE (26)

SUPFLG01 applies to all cells

Universe: Persons

THE STRATIFIERS ARE  
Sex BY  
Age

This table will be suppressed only when there are 1-14 persons in the geographic area.

TAB10

	Total:	
(1,1)	595	Under 1 year
(1,2)	604	1 and 2 years
(1,3)	613	3 and 4 years
(1,4)	622	5 years
(1,5)	631	6 years
(1,6)	640	7 to 9 years
(1,7)	649	10 to 13 years
(1,8)	658	14 years
(1,9)	667	15 years
(1,10)	676	16 years
(1,11)	685	17 years
(1,12)	694	18 years
(1,13)	703	19 years
(1,14)	712	20 years
(1,15)	721	21 years
(1,16)	730	22 to 24 years
(1,17)	739	25 to 29 years
(1,18)	748	30 to 34 years
(1,19)	757	35 to 44 years
(1,20)	766	45 to 54 years
(1,21)	775	55 to 59 years
(1,22)	784	60 and 61 years
(1,23)	793	62 to 64 years
(1,24)	802	65 to 74 years
(1,25)	811	75 to 84 years
(1,26)	820	85 years and over
		Female:
(2,1)	829	Under 1 year
(2,2)	838	1 and 2 years
(2,3)	847	3 and 4 years
(2,4)	856	5 years
(2,5)	865	6 years
(2,6)	874	7 to 9 years
(2,7)	883	10 to 13 years
(2,8)	892	14 years
(2,9)	901	15 years
(2,10)	910	16 years
(2,11)	919	17 years
(2,12)	928	18 years
(2,13)	937	19 years
(2,14)	946	20 years
(2,15)	955	21 years
(2,16)	964	22 to 24 years
(2,17)	973	25 to 29 years
(2,18)	982	30 to 34 years
(2,19)	991	35 to 44 years
(2,20)	1000	45 to 54 years
(2,21)	1009	55 to 59 years
(2,22)	1018	60 and 61 years
(2,23)	1027	62 to 64 years
(2,24)	1036	65 to 74 years
(2,25)	1045	75 to 84 years
(2,26)	1054	85 years and over

This table will be suppressed only when there are 1-4 occupied housing units in the area.

TABLE 19  
(TAB19)

HOUSEHOLD TYPE (4)

SUPFLG10 applies to all cells

Universe: Households With One Or More Persons Under 18 Years

TAB19

(1)	1822	Married-couple family
(2)	1831	Other family:
(3)	1840	Male householder, no wife present
		Female householder, no husband present
(4)	1849	Nonfamily household

RACE (5) BY AGE (4)

SUPFLG01 applies to cells 1-4  
 SUPFLG02 applies to cells 5-8  
 SUPFLG03 applies to cells 9-12  
 SUPFLG04 applies to cells 13-16  
 SUPFLG05 applies to cells 17-20

Universe: Persons

SEE FOOTNOTE 4

THE STRATIFIERS ARE  
 Race BY  
 Age

The portion of this table indicating total will only be suppressed when there are 1-14 persons in the geographic area.

The portion of the table containing summaries for White persons will be suppressed if there are 1-14 White persons in the geographic area, or if complementary suppression is applied. The same rule applies to each race/Spanish origin group.

TAB12

TAB12	Total:
(1,1)	1090 Under 5 years
(1,2)	1099 5 to 17 years
(1,3)	1108 18 to 64 years
(1,4)	1117 65 years and over
	White:
(2,1)	1126 Under 5 years
(2,2)	1135 5 to 17 years
(2,3)	1144 18 to 64 years
(2,4)	1153 65 years and over
	Black:
(3,1)	1162 Under 5 years
(3,2)	1171 5 to 17 years
(3,3)	1180 18 to 64 years
(3,4)	1189 65 years and over
	American Indian, Eskimo, and Aleut:
(4,1)	1198 Under 5 years
(4,2)	1207 5 to 17 years
(4,3)	1216 18 to 64 years
(4,4)	1225 65 years and over
	Asian and Pacific Islander:
(5,1)	1234 Under 5 years
(5,2)	1243 5 to 17 years
(5,3)	1252 18 to 64 years
(5,4)	1261 65 years and over

Programming with Suppression

Suppressed data cells contain zeroes. To distinguish between zeroes as suppression and zeroes as valid data, occurrences of suppression are identified by a series of flag fields in the geographic identification portion of each logical record. Programmers developing software should include procedures to check these fields for the presence of suppression and, if necessary, to flag the output of any cumulation which includes one or more suppressed fields.

In reviewing the data dictionary, the programmer can determine which suppression flags indicate suppression for particular tables by checking either the table description or the flag description. An example of each is on the following page.

Example: The boxed illustration below is the table description as it appears in the data dictionary. The other portion illustrates the suppression flag to which the table description refers.

TABLE 43                    9    2762    1124  
 (TAB43)  
                               CONTRACT RENT (14)  
                               SUPFLG18 applies to all cells

SUPFLG18

Renter Occupied Housing Unit  
 Suppression Flag  
 A 1 in this field indicates suppression because there are fewer than five housing units in the renter-occupied category of the geographic area being summarized or complementary suppression is applied. This effects the following tables:  
                               43  
                               44  
                               45(cell 1)  
                               46(cell 1)  
                               0    No suppression  
                               1    Suppression

Figure 7 which follows, lists each suppression flag, its location within the record, and the tables or cells within tables which are affected when suppression is applied. The suppression flag field which applies to each table or portion of a table is also identified in the table description in the data dictionary. The flags are located in the geographic identification section of each record segment in positions 205-225.

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Figure 7. Suppression Flags

<u>Name</u>	<u>Begin</u>	<u>Table</u>
SUPFLG01	205	6, 10, 11, 12 (cells 1-4) 14, 15, 17, 18, 20
SUPFLG02	206	12 (cells 5-8)

SUPFLG03	207	12 (cells 9-12)
SUPFLG04	208	12 (cells 13-16)
SUPFLG05	209	12 (cells 17-20)
SUPFLG06	210	13 (1-4)
SUPFLG07	211	13 (cells 5-8)
SUPFLG08	212	13 (cells 9-12)
SUPFLG09	213	29 (cell 1), 30, 31, 32 (cell 1), 47 (cells 1-2), 55
SUPFLG10	214	2, 16, 19, 21, 22, 23, (cells 1-2) 24, 26 (cell 2), 29 (cells 3-4), 32 (cells 3-5), 33 (cells 1-6), 34, 35, 36 (cell 1), 37 (cells 1-3), 47 (cells 3-4), 48 (cell 1), 49 (cell 1), 50, 51
SUPFLG11	215	27 (cell 6)
SUPFLG12	216	27 (cell 7)
SUPFLG13	217	27 (cell 8)
SUPFLG14	218	27 (cell 9)
SUPFLG15	219	27 (cell 10)
SUPFLG16	220	23 (cells 3-4), 29 (cell 2), 32 (cell 2), 33 (cells 7-12), 36 (cell 2), 37 (cells 4-6), 47 (cells 5-6), 48 (cell 2), 49 (cell 2)
SUPFLG17	221	38, 39, 40 (cell 1), 41 (cell 1), 42 (cell 1)
SUPFLG18	222	43, 44, 45 (cell 1), 46 (cell 1)
SUPFLG19	223	28 (cell 4)
SUPFLG20	224	28 (cell 5)
SUPFLG21	225	28 (cell 6)

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## Evaluating the Effect of Suppression

In most cases, suppressed data values are small (fewer than 5 or 15) except where a large population is affected by complementary suppression. Therefore, in certain noncritical applications, users may simplify programming operations by ignoring suppression and treating suppressed cells as zero cells.

However, if the user is adding up blocks or enumeration districts to derive tables for user-defined areas, ignoring suppression can result in a downward bias in the totals. The impact of that downward bias can be gauged by comparing sums associated with tables subject to suppression with nonsuppressed sums for the same aggregation of areas. For example, if age data for Blacks from table 12 are added together for a group of blocks, the impact of suppression can be gauged by adding the ages together to get a total, and comparing that number to the number of Blacks derived from summary table 7 for the same group of blocks (table 7 is not subject to suppression).

