

Census Blocks and Block Groups

Census blocks, the smallest geographic area for which the Bureau of the Census collects and tabulates decennial census data, are formed by streets, roads, railroads, streams and other bodies of water, other visible physical and cultural features, and the legal boundaries shown on Census Bureau maps. Census data for these areas serve as a valuable source for small-area geographic studies. The Census Bureau has responded to public demand for more geographic coverage of census block data by expanding the Census Block Statistics Program each decade since block data first were published in 1940. For the 1990 decennial census, the Census Bureau tabulated data by census block for the entire Nation, as well as Puerto Rico and the Outlying Areas (American Samoa, Guam, the Northern Mariana Islands, Palau, and the Virgin Islands of the United States). In 1990, the Census Bureau tabulated data for 7,020,924 census blocks.

Block groups (BGs) are the next level above census blocks in the geographic hierarchy (see Figure 2-1 in Chapter 2). A BG is a combination of census blocks that is a subdivision of a census tract or block numbering area (BNA). (A county or its statistically equivalent entity contains either census tracts or BNAs; it can not contain both.) A BG consists of all census blocks whose numbers begin with the same digit in a given census tract or BNA; for example, BG 3 includes all census blocks numbered in the 300s. The BG is the smallest geographic entity for which the decennial census tabulates and publishes sample data. It has now largely replaced the earlier enumeration district (ED) as a small-area geographic unit for purposes of data presentation.

For the 1990 decennial census, local census statistical areas committees were given the opportunity to delineate BGs in counties with census tracts. State officials were invited to delineate BGs in the remaining counties. The Census Bureau delineated BGs for counties in which local and State officials chose not to participate in the BG program. The total number of BGs delineated for the 1990 decennial census was 229,466.

History of Small Areas in U.S. Censuses

Throughout most of the 1800s, the smallest data unit for which the Census Bureau collected information was the area assigned to an individual enumerator, and the smallest area for which it reported data corresponded to geographic entities such as wards, communities, and townships. Histories of the early U.S. censuses contain very little precise information about how these entities were subdivided for enumeration. Many of the assignments were verbal descriptions based on legally defined entities, community names, and major physical features. Some enumerators developed their own geographic solutions by drafting sketch maps and by writing descriptions of their enumeration area boundaries.

Development of Enumeration Districts From 1870 Through 1980

Over time, the instructions for enumerators became more specific; they revealed an increasing concern for the boundaries, size, and identification of geographic subdivisions. For the 1870 census, the Census Office (predecessor of the Census Bureau) lowered the maximum size of the subdistricts used for enumeration from 50,000 to 6,000 people. For the 1880 census, this number was reduced to 4,000, resulting in approximately 28,000 *districts of enumeration* (later called *enumeration districts*, or *EDs*). This census also was the first in which the Census Office provided maps of EDs for use in taking the census.

For 1910, the Census Bureau began to delineate EDs to follow the boundaries of legally or administratively defined entities such as villages, cities, wards, and minor civil divisions (MCDs). This approach permitted the convenient aggregation of EDs into larger geographic entities for tabulation and publication. It also underlined the need for maps to show the boundaries of counties, incorporated places, and MCDs in their correct location. The Census Bureau began to improve the ED maps, and for the 1930 census, included ED boundaries and numbers on all maps used in the field canvass.

The ED, with minor revisions and improvements, continued to be the smallest geographic unit for which census data were available until census

blocks were introduced for larger places in the 1940 census; even then, because blocks were numbered only in limited areas, EDs continued to be used as a collection and reporting unit in decennial censuses through the 1980 census.

Census Blocks as Collection, Tabulation, and Publication Units

Like the ED, the census block originally served the operational needs of the Census Bureau. As early as the 1920 census, the Census Bureau was instructing its enumerators in cities and built-up areas to do their work block by block:

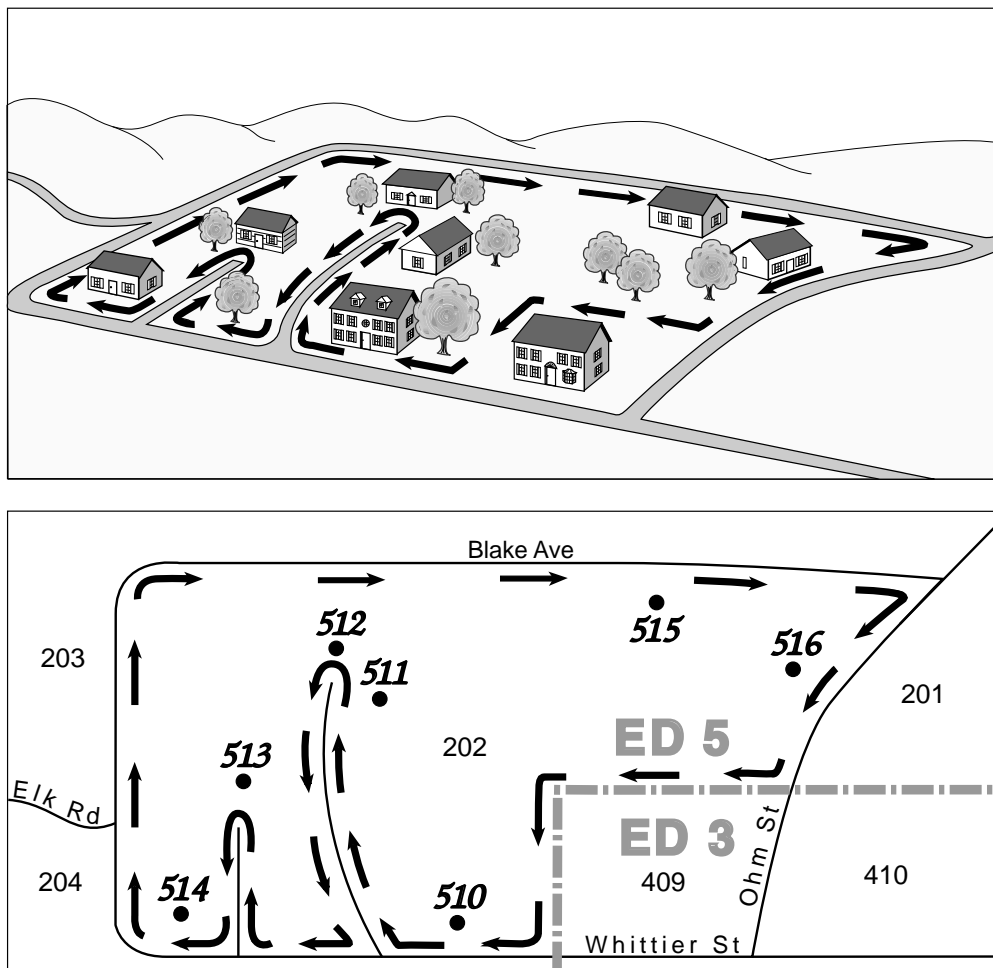
“. . . canvass one block or square at a time . . . Do not go back and forth across the street . . . Be sure you have gone around and through the entire block before you leave it.”

The Census Bureau found that following a block-by-block sequence was an efficient way to compile data summaries at the ED level, and it gradually extended this enumeration method to rural areas as well as urban. Canvassing individual blocks in a geographic sequence remains the Census Bureau’s standard method of listing and verifying addresses or conducting a traditional door-to-door enumeration (see Figure 11-1).

Demographers, statisticians, and other data users had wanted to obtain census data by block long before the Census Bureau was able to undertake such detailed geographic subdivision. For instance, in 1909, the Tenement House Department of New York city had wanted the Census Bureau to identify more than 49,000 city blocks as part of the data dissemination for the 1910 census. Expression of such needs undoubtedly influenced the Census Bureau’s eventual decision to compile and present information at the block level.

The Census Bureau first published census block data in 1940 as part of the newly created Census of Housing. These block statistics provided a detailed inventory of housing conditions within major cities during an era of Federal financial support for public works projects. City governments needed detailed housing information for purposes such as efficiently upgrading the

Figure 11-1. Field Enumeration of a Census Block Prior to 1990



For censuses earlier than 1990, an enumerator was asked to systematically cover that portion of Block 202 within ED 5. This did not include the entire area of Block 202 because a portion, including a housing unit, was within ED 3. The latter requirement often confused enumerators and caused the Census Bureau, in some cases, to miss housing units.

This problem was corrected in the 1990 census when the Census Bureau decided to have enumerators canvass the physical entirety of each block. Proceeding in a clockwise direction, the enumerator identified the location of all housing units to his/her right, and located and indexed these on the enumerator map. The enumerator recorded the street or postal address for each housing unit in the address register within the correct block number. All roads had to be canvassed so that hidden housing units were not missed.

level of urban services, modifying building codes, establishing and implementing zoning ordinances, and preparing plans for capital improvements. In the 1940 and 1950 censuses, for cities that had census blocks, each individual block was identified on the ED map, and enumerators were instructed to write the block number on the census questionnaire as they canvassed each housing unit. Census blocks were numbered beginning with *one* in each census tract, city ward, or *block area* that carried a one-letter identifier. (The *block area* was a summary unit used in place of census tracts in block numbered cities that did not have census tracts; it could not extend beyond the city limits.)

Data published for census blocks in 1940 were limited to selected housing statistics collected for 191 cities that had a population of 50,000 or more at the time of the 1930 census. The same criterion applied in 1950 (using the 1940 census counts), after which the Census Bureau published census block data for 209 places. There were separate published reports for each, including a map to accompany the data. In the 1960 census, the Census Bureau published the total population for each block, and reported block statistics for 295 cities with a 1950 population of 50,000 or more. The Census Bureau also expanded the program to include an additional 172 places, in which data users paid the Census Bureau to collect and publish census block data. In total, the Census Bureau published data for over 736,000 census blocks in the 1960 census.

Census Blocks and Block Groups for the 1970 Census

Census block coverage and the mail census In 1970, for the first time, a large portion of the U.S. population was enumerated by mail rather than by the conventional door-to-door enumeration. As part of the mail census, the Census Bureau introduced many improvements in the base maps it used for the Nation's major urban centers (the Metropolitan Map Series), and in its methodologies for the collection, tabulation, and dissemination of small-area data. These changes had a direct positive effect on the delineation of census blocks and BGs, allowing the Census Bureau to expand census block coverage to include the expected extent of all 1970 urbanized areas.

First use of block groups In the block numbered areas, the Census Bureau devised the block group (BG) as a data tabulation and publication unit equivalent to the ED in non-block numbered areas. Originally referred to as *quarter tracts*, BGs were subdivisions of a census tract or block numbering area (BNA).

Each BG consisted of a cluster of contiguous census blocks identified by the same first digit of their three-digit block number. For instance, Block Group 1 consisted of Blocks 101 to 199, Block Group 2 of Blocks 201 to 299, and so forth. Each census tract/BNA could contain as many as nine BGs (Block Groups 1 to 9; there was no Block Group 0). The number of BGs in a census tract/BNA usually depended on the number of census blocks existing within the census tract/BNA.

Another advantage of the BG over the ED for data tabulation was the simplicity of its cartographic presentations. Urban area maps were freer from clutter because it was no longer necessary to depict ED numbers and boundaries.

Areas with census blocks for 1970 Approximately 1,618,000 census blocks were numbered in and adjacent to UAs, and in areas that contracted for census block data in the 1970 census. The number of contract block areas grew to 966. For example, the State of New York, anticipating its needs for Congressional and State legislative redistricting, contracted to receive block data for all cities and towns (MCDs) with a 1960 population of 2,500 or more.

The Census Bureau published census block data in reports according to standard metropolitan statistical area (SMSA). For each State, it included all census blocks outside of SMSAs in a single *Balance of State* report. It also included data to the block level for these areas on the Third Count Summary Tape.

Expansion of Census Block and Block Group Coverage for 1980

For 1980, the census block program expanded once again to include, in addition to urbanized areas, all incorporated places of 10,000 or greater population. Selection of these places was based either on the 1970 population count, an official Census Bureau estimate published in 1973, 1975, or 1976, or a special census conducted before December 31, 1977. Also, States and local agencies continued to contract with the Census Bureau for census block data for additional areas. For the 1980 census, five States (Georgia, Mississippi, New York, Rhode Island, and Virginia) contracted with the Census Bureau to provide census block statistics for their entire area and population. The Census Bureau published selected data for over 2.5 million census blocks (an increase of 900,000 over 1970) and 154,456 BGs. Census block coverage included approximately 78 percent of the Nation's population and 7 percent of its land area. In cases where the extension involved only limited additional territory, the Census Bureau extended the census block coverage from the potential urbanized area to include the entire area of the county in which the potential urbanized area was located.

In its 1980 data products, the Census Bureau again published statistics for tabulated blocks by SMSA. It also produced a *Selected Areas* report for each State to cover all census blocks outside of metropolitan areas. For the first time, the maps were published separately from the reports. The Census Bureau's Summary Tape File (STF) 1B included data for census blocks and BGs. Both the published reports and the STF 1B included a special table that listed census blocks with no population and housing.

Census Block and Block Group Delineation for the 1990 Census TIGER, the Census Bureau's National Spatial Data Base

Following the 1980 census, the Census Bureau made a major commitment to develop a geographic data base that would provide better data tabulations and presentations for the entire Nation, Puerto Rico, and the Outlying Areas. Historically, the delivery of geographic materials and services at the Census Bureau involved a series of complex and functionally separate

operations that produced maps, created address reference files, and established various geographic code files for use in documenting geographic relationships at the time of each census and survey. Because all these types of geographic products were produced in separate clerical operations, there were errors, omissions, and inconsistencies that caused problems for field operations, other data collection and processing operations, and data users. This was particularly true in regard to the inventory of census blocks. At times, the clerical procedures used to assign numbers to census blocks and to revise other tabulation entities were out of phase with revisions to the census maps. There were instances where duplicate census block numbers were assigned within a single BG, or where census block numbers accidentally were removed from the maps. There was a need for a stable structure of census collection geography at the census block level. The development of the Topologically Integrated Geographic Encoding and Referencing (TIGER) System, an automated geographic data base, permitted the Census Bureau to delineate census blocks on a nationwide basis for the 1990 census.

Delineating Census Blocks and Block Groups in TIGER

The delineation of census blocks and BGs could not begin until the TIGER data base contained an updated system of physical features and geographic boundaries. The Census Bureau created the TIGER data base using raster-scanned images of the U. S. Geological Survey's (USGS) 1:100,000-scale topographic maps. In the built-up metropolitan cores, the previous GBF/DIME-Files were reformatted and inserted into the new data base. The Census Bureau then updated this digital map base using current map sources, and added new features, street names, and address ranges. The digitized images from the 1:100,000-scale maps were vectorized, merged, and reformatted into whole county partitions. The Census Bureau inserted 1980 geographic boundaries, such as county, place, MCD, American Indian areas, census tracts, and BGs into the data base from two sources. For areas covered by GBF/DIME-Files, the Census Bureau transferred geographic entity boundary information from those files. For areas beyond GBF/DIME-File coverage, the Census Bureau inserted higher-level 1980 geographic information by digitizing the boundaries of 1980 BGs where BGs were the collection unit,

and EDs for all other areas. This provided complete geographic coverage for all 1980 census geography, and served as a basis for structuring the 1990 geographic entities.

All features in the TIGER data base were classified according to feature type and characteristic. For example, single- and double-line drainage as shown on USGS topographic maps were differentiated, and roads were classified by type. Census block number information from the 1980 census was preserved only for GBF/DIME-File areas.

State and Local Participation in the Delineation Process

Within counties with census tracts, the Census Bureau invited local census statistical areas committees to participate in delineating the 1990 BGs at the same time they delineated their 1990 census tracts. Agencies were permitted to delineate as many as nine BGs within each BNA or census tract. The guidelines specified an ideal size for a BG of 400 housing units, with a minimum of 250, and a maximum of 550 housing units. The guidelines further required that BG boundaries follow clearly visible features, such as roads, rivers, and railroads.

In the summer of 1985, the Census Bureau offered State governments, as well as the governments of Puerto Rico and the Virgin Islands of the United States, the opportunity to delineate, for use in the 1990 census, BNAs and BGs in counties or statistically equivalent entities that did not have census tracts. Where local and State agencies chose not to participate, the Census Bureau completed the delineation of BNAs and BGs. The program resulted in the delineation of 224,691 collection BGs in the United States, and a total of 228,202 BGs in all areas under U.S. jurisdiction. The average number of BGs per census tract was 3.7 for counties with census tracts, and 3.9 per BNA for counties with BNAs.

Identifying and Numbering Census Blocks

Although most people intuitively think of census blocks as being rectangular or square, of about the same size, and occurring at regular intervals, as in many cities of the United States, census block configurations actually

are quite different. Patterns, sizes, and shapes of census blocks vary within and between areas. Factors that influence the overall configuration of census blocks include topography, the size and spacing of water features, the land survey system, and the extent, age, type, and density of urban and rural development.

The Census Bureau entirely automated the assignment of census block numbers for the 1990 census. The magnitude and complexity of the undertaking generally precluded major State or local involvement in the delineation of census block boundaries. Also, it was important to be consistent when adhering to census block number assignment guidelines. As part of the Census Bureau's Redistricting Data Program (see Chapter 14, "Voting Districts," for further information), the Census Bureau did allow State agencies to specify features that would be held as 1990 census block boundaries (*must-hold* features).

As part of the Census Block Definition Program, the Census Bureau also allowed the officials of American Indian reservations to identify *must-hold* features. Based on the stated goals of maximizing the number of census blocks within each BG, the Census Bureau developed a computer routine that analyzed the network of TIGER data base features that formed polygon areas within each 1990 BG and assigned a number to each. This eliminated the earlier problems of duplicate numbers, areas with no number assigned, and areas with multiple numbers assigned.

The program for assigning census block numbers gave major consideration to the type of feature, as well as the shape and minimum size of a potential census block:

- The minimum size of a census block was 30,000 square feet (0.69 acre) for polygons bounded entirely by roads, or 40,000 square feet (0.92 acres) for other polygons. There was no maximum size for a census block.
- Exceptions to the minimum polygon sizes were made where the polygon was entirely bounded by *must-hold* features that needed to be maintained as census block boundaries.

- Polygon shapes were measured to eliminate extremely narrow *slivers* as potential census blocks. This was done by comparing the ratio of the perimeter of the polygon to the area of the polygon, with the ratio of the perimeter of a circle to its area; in addition, the polygon had to have an estimated width of at least 70 feet.
- Features were ranked according to their importance as census block boundaries based on (1) the type of boundary, (2) the feature with which it coincided, (3) the existence of special land use areas (such as military reservations), and (4) the presence of governmental boundaries, in particular, State boundaries. Boundaries were assigned a ranking preference according to these four factors (See Table 11-1).
- In GBF/DIME-File areas, the existing 1980 census block designations were preserved where the census block boundary features had not changed between the 1980 and 1990 censuses.
- At least one side of a potential census block had to be a road feature.
- Extensions from dead-end roads/streets were used to split oversized polygons into separate blocks; such extensions were made wherever road features protruded into a large polygon and ended within 300 feet of non-road features, such as shorelines and railroads.

In addition, the Census Bureau developed automated processing routines to selectively recognize various geographic attributes of the polygons within which it would assign census block numbers.

Assigning Census Block Numbers

A major limiting factor in the delineation of census collection blocks was the range of three-digit numbers available within each BG, n00 through n99 (where n was the BG number). The Census Bureau reserved block numbers n00 and n98 for possible special uses, and it used the n99 block for water areas). Each BG therefore could include no more than 97 census blocks. Within BGs with more than 97 polygons, the program grouped sliver or small-block polygons with adjoining larger polygons for purposes of assigning block numbers and reducing the number of census

Table 11-1. **Hierarchy of Census Feature Classes for Use as Block Boundaries**

Qualifying features ranked from highest to lowest priority:

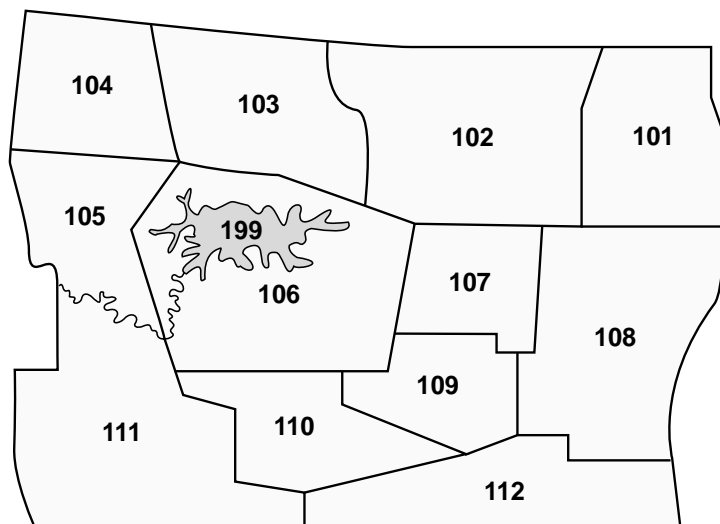
- (1) Must-hold census block boundary (see “Identifying and Numbering Census Blocks” section)
- (2) Water area (*double-line drainage*)
- (3) Named, addressable divided roads (*by road class*)
- (4) Named, addressable undivided roads (*by road class*)
- (5) Unnamed addressable divided roads (*by road class*)
- (6) Unnamed addressable undivided roads (*by road class*)
- (7) Other addressable features
- (8) Feature extensions (*manually inserted*)
- (9) 1980 statistical/governmental unit boundary (*by category*)
- (10) Main rail line feature
- (11) Railyard
- (12) Rail spur and other rail feature
- (13) Named perennial stream (*single-line drainage*)
- (14) Power transmission line
- (15) Pipeline
- (16) Unnamed perennial stream (*single-line drainage*)
- (17) Named perennial or unclassified canal, ditch, or aqueduct
- (18) Unnamed perennial or unclassified canal, ditch, or aqueduct
- (19) Named intermittent stream or wash (*single-line drainage*)
- (20) Named braided stream (*single-line drainage*)
- (21) Unnamed braided stream (*single-line drainage*)
- (22) Named intermittent canal, ditch, or aqueduct
- (23) Topographic feature (*such as bluffs, cliffs*)
- (24) Fence line
- (25) Point-to-point line
- (26) Feature extension, other than manually inserted extension
- (27) Other special transport feature
- (28) Physical feature not listed

Note: Examples of features that did not qualify as block boundaries are rail features in tunnel; property line; airport, airfield, or terminal feature; cemetery boundary; golf course boundary; unnamed, intermittent stream or wash; unnamed intermittent canal, ditch, or aqueduct; water boundaries and special water features; and all nonvisible boundary features and statistical boundary features (unless tagged must-hold).

blocks. Among the important considerations in grouping such small block polygons were the size of adjoining potential census block polygons as well as the type of bounding features. The program attempted to identify, with separate numbers, potential census block polygons that fell within the size range of typical residential blocks.

The program generally produced a serpentine pattern of block numbers beginning in the upper right of each BG (see Figure 11-2). The program was able to skip those polygons that retained their 1980 census block number; this measure ensured intercensal and numeric geographic comparability for those census blocks that had retained the same boundaries. The program assigned all water body polygons within a BG to a single block number ending in 99 (for instance, water in BG 1 was assigned to Census Block 199, water in BG 2 was assigned to Census Block 299) regardless of whether those water polygons were contiguous. The automated delineation resulted in a national total of 6,461,804 collection blocks (6,517,390 including Puerto Rico and the Outlying Areas). Of this total, approximately two million census collection blocks contained zero population based on the results of the 1990 census.

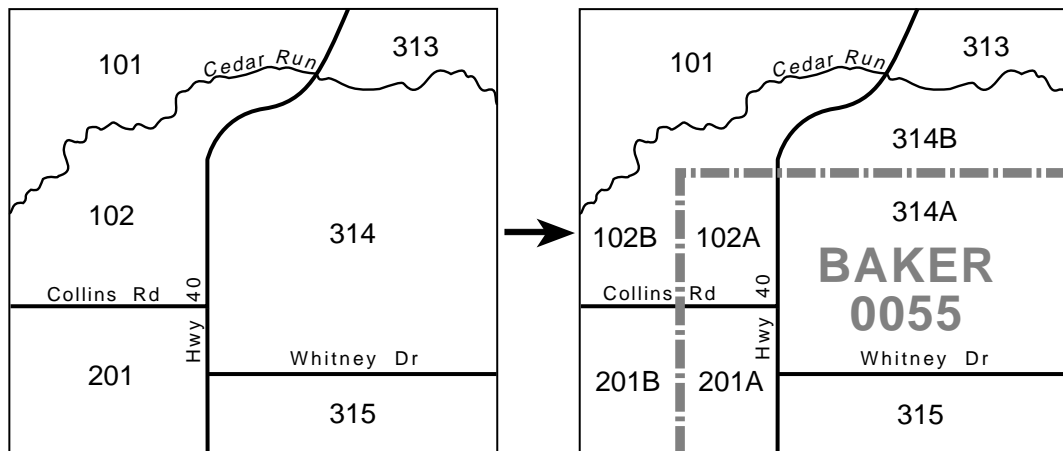
Figure 11-2. **Serpentine Pattern of Census Block Numbering**



Collection Blocks and Tabulation Blocks

In most instances, the census collection block is identical to the tabulation block. The difference arises where the boundary of a higher-level geographic entity, such as an incorporated place or an MCD, splits a collection block. In such instances, the Census Bureau adds an alphabetic suffix to the collection block number, thereby uniquely identifying each piece of tabulation geography located within the census collection block. This methodology permits the Census Bureau to accommodate changes to the boundaries of legally recognized entities as they occur and still maintain a stable inventory of collection blocks. It also corrects a source of great confusion that occurred during earlier block number presentations in which all portions of the collection block had the same block number and the data user had to search all other geographic entity codes to determine why data were presented for what appeared to be only a portion of the block.

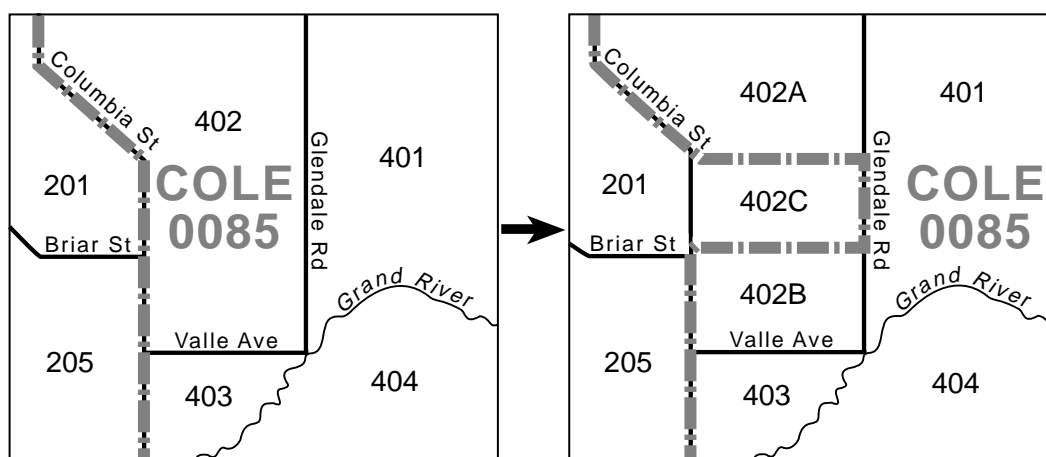
Figure 11-3. **Collection Blocks Split by a Geographic Entity Boundary**



After assigning alphabetic suffixes to all portions of the collection blocks intersected by another tabulation boundary, the Census Bureau refers to them as census tabulation blocks. (Not all tabulation blocks carry suffixes; in fact, most tabulation block numbers are identical to the collection block numbers.) Only where a collection block is split by a geographic boundary is a suffix added to the collection block number. In the example shown in

Figure 11-3, Census Block 315 is contained wholly within the place of Baker and does not carry a suffix, whereas the blocks numbered 102, 201, and 314 contain suffixes because they are split by the boundary of Baker. It is customary to use the suffix A for the area of the collection block contained within a place, and the suffix B for the area of the collection block in the balance of the county. The result is that each distinct piece of ground is block numbered uniquely. Where two pieces of a single collection block are within the same place, but are discontinuous and separated by area not in the place, the Census Bureau assigns three suffixes, (as shown in Figure 11-4), one for each part in the place (suffixes A and B), and a third for the balance of the block (suffix C).

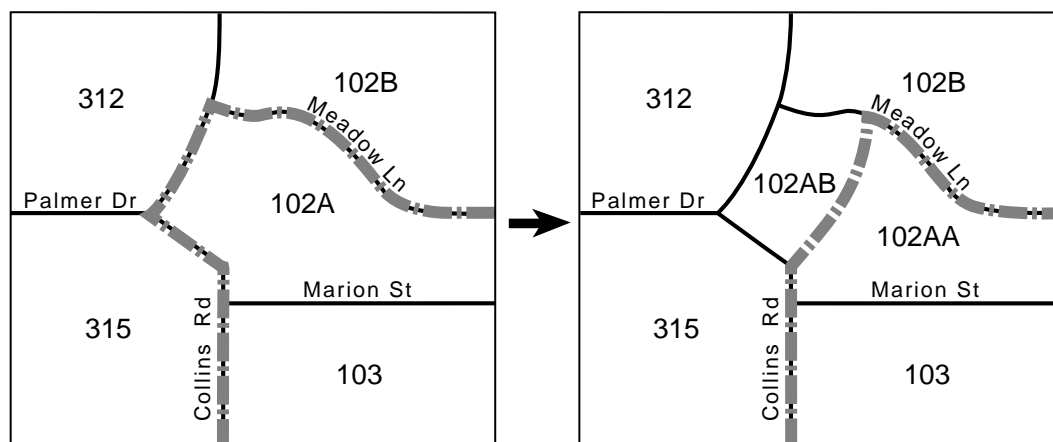
Figure 11-4. **Collection Block Split With Multiple Suffixes for an Entity**



The Census Bureau tabulated data for a total of 6,961,150 census tabulation blocks in the United States (7,020,924 including Puerto Rico and the Outlying Areas). The United States had 234,078 water blocks, 864,423 census blocks with suffixes, and 2,023,109 tabulation blocks with zero population. The percentage of tabulation blocks with zero population varied considerably from one State and region to another—from a low of 14.1 percent within the State of Rhode Island to a high of 64.7 percent within the State of Wyoming. The median State was the State of Washington with 31.1 percent.

The Census Bureau's Count Question Resolution (CQR) Program accommodates changes to geographic boundaries reported after the release of the 1990 census data tabulations. Such changes usually are the result of corporate annexation/detachment activity or of updates to published 1990 geographic boundaries. Often these changes have been reported to the Census Bureau by local governments and other data users with a request for review and possible update. (Other post-1990 block changes may result from the needs of the economic censuses and related programs.) The Census Bureau makes postcensal block updates by adding additional suffixes to the census tabulation block number. Figure 11-5 shows a corporate boundary change that splits Block 102A into 102AA and 102AB. This use of a second suffix position in the block number shows that the change resulted from a post-1990 resolution of a count question.

Figure 11-5. **Tabulation Block Split as a Result of Count Question Resolution**



Relationships to Other Geographic Entities

The relationship of census blocks to other geographic entities depends on several factors. The major factors are the type of geographic entity, the stability of the particular geographic boundary, the coincidence of physical features with the boundary, and enumeration considerations. As explained in the section in this chapter entitled "Collection Blocks and Tabulation Blocks" (and shown in Figures 11-3, 11-4, and 11-5), geographic boundaries that cross census collection blocks result in a suffixing of the census

collection block number; census blocks that nest entirely within collection blocks are not suffixed. A census block is always unique to, and can never cross the boundaries of, either a census tract or a BNA. All standard geographic tabulation entities are made up of whole tabulation blocks.

States and Counties

State and county boundaries form the framework within which the Census Bureau numbers census tracts and BNAs; thus, census blocks never cross these boundaries. In the rare instances where a State or county boundary change is reported after census tract/BNA numbers are entered, the Census Bureau assigns suffixes to the census block numbers for data tabulation.

County Subdivisions

County subdivisions include census county divisions (CCDs) and minor civil divisions (MCDs). CCD boundaries usually do not split census blocks. This is because they generally follow physical features that normally are held as census tract/BNA boundaries. On the other hand, many MCD boundaries do not follow physical features; thus, they frequently split census collection blocks, except in certain States (Connecticut, Maine, Michigan, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and Wisconsin) where they are more stable and often held as census tract/BNA boundaries.

Places

As with MCDs, many incorporated place boundaries do not follow physical features; as a result, they usually split census collection blocks. (An exception often is made when the boundary of an incorporated place is conjoint with the boundary of another incorporated place; in these cases, the Census Bureau allows the place boundary to also be a census tract/BNA boundary.) In some States (Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont), most incorporated place boundaries also coincide with MCD lines. These lines are stable in these States, and are held as census block boundaries. Census designated place (CDP) boundaries usually are defined to follow physical features. Therefore, many of their boundaries also are census collection block boundaries. Since

CDP boundaries were inserted into the TIGER data base after census blocks were delineated, some CDP boundaries were not held as collection block boundaries and had to be suffixed. In Alaska, CDP boundaries were inserted and held as census collection blocks because of the difficulty in enumerating this State.

American Indian and Alaska Native Areas

The boundaries of American Indian reservation and subreservation areas were held as census collection block boundaries where feasible for enumeration (a road into the area was a requirement for boundaries to be held), as were the boundaries of Alaska Native village statistical areas. This was done because of the difficulty in enumerating such areas.

Other Standard Geographic Tabulation Entities

The boundaries of urbanized areas (UAs) always follow the boundaries of tabulation census blocks. This is the only type of geographic entity boundary that UAs must follow, although most places are either entirely within, or entirely outside of, the UA boundary.

The Census Bureau requested that the State officials delineating Congressional districts for the 103rd Congress follow the boundaries of census tabulation blocks; most of them complied with this request. In the few instances where a Congressional district boundary subdivided a census block, the Census Bureau depicted the district boundary in its correct location and assigned the entire population of the census block to one district or the other in accordance with the State's instructions.

Nonstandard Geographic Tabulation Entities

The Census Bureau offers the opportunity for other Federal agencies, State agencies, and other data users to delineate nonstandard or *special geographic tabulation entities* on a fee basis. Such entities include school districts, traffic analysis zones, and other kinds of neighborhood- or community-based entities. The Census Bureau produces data for such special areas by aggregating the component census tabulation blocks.

In instances where special area boundaries subdivide a census tabulation block, the Census Bureau allocates the data according to procedures agreed upon with the purchaser. For instance, the allocation may be on the basis of the land area of the subdivided part(s) or may require a detailed examination of 1990 census records.

Census Block Configurations

Census Block Patterns in Larger Urban Areas

The core area of most urban agglomerations consists of a grid system of relatively small blocks, disrupted here and there by water features; topographic relief; special land uses such as parks, industrial areas, and commercial areas; transport features such as airports and railyards; and institutions such as hospitals, schools, and detention facilities. The surrounding older suburbs tend to repeat this pattern; however, development since the 1960s often involved larger residential blocks with curvilinear street patterns and cul-de-sacs. This new pattern of urban development reflects the application of urban planning concepts and a concern for residential amenities. The road patterns in rural areas follow both a branching and a grid pattern, depending on local factors as well as the rural settlement patterns in particular regions of the Nation. Rural patterns greatly reflect the topography and land survey system that was in place at the time of settlement.

Regional Factors

Regional variations in census block patterns are related to the age of the settlement pattern and the relative density of the population. In the urban cores of most older cities, census blocks are small because development preceded the introduction of urban transportation technologies (such as interurban railways, streetcars, and the automobile) and the decentralization of industries and jobs. Surrounding these urban cores in the eastern and southern regions of the Nation, one typically finds dense, irregular street patterns and an extensive system of connecting roads due principally to the metes and bounds survey system.

The presence of coastal and inland water features often influence the settlement pattern. In areas influenced by French settlement, such as within the

State of Louisiana, the census block pattern preserves the riparian pattern of elongated strips of land, each having access to a major water feature. Rural areas in the central part of the country usually continue the grid-type road pattern of the urban core areas, primarily because of the introduction of the township and range survey system, but also due to the general lack of topographic relief.

Suburban and rural census block configurations in the West vary from grid to irregular patterns depending on the local topography and the survey system at the time of settlement. The rural census blocks in the West tend to be larger because of the relatively low population densities as well as the lack of a dense system of roads and water features. There were a few individual census blocks delineated during the 1990 census in the West that were over 250 square miles in area.