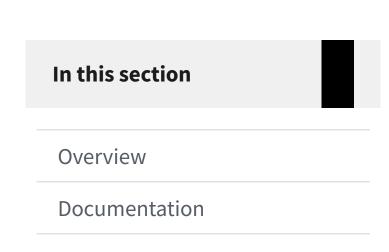
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Rural-Urban Commuting Area Codes - Documentation

Updated: 1/6/2025 **Contact:** John Cromartie



Planned 2020 RUCA code information release update: Plans are underway for the decennial update of the RUCA codes, however the release date is uncertain. USDA, Economic Research Service (ERS) will update its RUCA codes using population data from the 2020 Census and the latest urban area delineations from the Census Bureau, which were released in December 2022. ERS's RUCA codes also require a third input: updated commuting data from the American Community Survey, measured at the census tract level. Currently, we estimate that the 2020 RUCA codes would be released no earlier than Spring 2025. We will update this notice as more information becomes available.

2010 Rural-Urban Commuting Area (RUCA) Codes

To determine a census tract, please see the Federal Financial Institutions Examination Council's FFIEC Geocoding/Mapping System

Background

areas.

The rural-urban commuting area (RUCA) codes, a detailed and flexible scheme for delineating sub-county components of rural and urban areas, have been updated using data from the 2010 decennial census and the 2006–10 American Community Survey (ACS). RUCA codes are based on the same theoretical concepts used by the Office of Management and Budget (OMB) to define county-level metropolitan and micropolitan areas. We applied similar criteria to measures of population density, urbanization, and daily commuting to identify urban cores and adjacent territory that is economically integrated with those cores. We adopted OMB's metropolitan and micropolitan terminology to highlight the underlying connectedness between the two classification systems. However, the use of census tracts instead of counties as building blocks for RUCA codes provides a different and more detailed geographic pattern of urban and rural

Census tracts are used because they are the smallest geographic building block for which commuting flow estimates are available from the U.S. Census. Tract-to-tract commuting flow files were constructed from ACS data as part of a special tabulation for the Department of Transportation—the Census Transportation Planning Package. To derive estimates for small geographic units such as census tracts, information collected annually from over 3.5 million housing units was combined across 5 years (2006–10). As with all survey data, ACS estimates are not exact because they are based on a sample. In general, the smaller the estimate, the larger the degree of uncertainty associated with it. A second dataset applies 2010 RUCA classifications to ZIP code areas by transferring RUCA values from the census tracts in which they are located.

The classification contains 10 primary and 21 secondary codes. Few, if any, research or policy applications need the full set of codes; the system allows for the selective combination of codes to meet varying definitional needs.

Primary and Secondary RUCA Codes

The 10 whole numbers shown in Table 1 below refer to the primary, or single largest, commuting share. Metropolitan cores (code 1) are defined as census tract equivalents of urbanized areas. Micropolitan and small town cores (codes 4 and 7, respectively) are tract equivalents of urban clusters. Tracts are included in urban cores if more than 30 percent of their population is in the urbanized area or urban cluster.

High commuting (codes 2, 5, and 8) means that the largest commuting share was at least 30 percent to a metropolitan, micropolitan, or small town core. Many micropolitan and small town cores themselves (and even a few metropolitan cores) have high enough out-commuting to other cores to be coded 2, 5, or 8; typically these areas are not job centers themselves but serve as bedroom communities for a nearby, larger city. Low commuting (codes 3, 6, and 9) refers to cases where the single largest flow is to a core, but is less than 30 percent. These codes identify "influence areas" of metro, micropolitan, and small town cores, respectively, and are similar in concept to the "nonmetropolitan adjacent" codes found in other ERS classification schemes (<u>Rural-Urban Continuum Codes</u>, <u>Urban Influence Codes</u>). The last of the general classification codes (10) identifies rural tracts where the primary flow is local or to another rural tract.

Primary RUCA codes, 2010

Code	Classification description
1	Metropolitan area core: primary flow within an urbanized area (UA)
2	Metropolitan area high commuting: primary flow 30% or more to a UA
3	Metropolitan area low commuting: primary flow 10% to 30% to a UA
4	Micropolitan area core: primary flow within an urban cluster of 10,000 to 49,999 (large UC)
5	Micropolitan high commuting: primary flow 30% or more to a large UC
6	Micropolitan low commuting: primary flow 10% to 30% to a large UC
7	Small town core: primary flow within an urban cluster of 2,500 to 9,999 (small UC)
8	Small town high commuting: primary flow 30% or more to a small UC
9	Small town low commuting: primary flow 10% to 30% to a small UC
10	Rural areas: primary flow to a tract outside a UA or UC
99	Not coded: Census tract has zero population and no rural-urban identifier information

These 10 codes offer a relatively straightforward and complete delineation of metropolitan and nonmetropolitan areas based on the size and direction of primary commuting flows. However, secondary flows may indicate other connections among rural and urban places. Thus, the primary RUCA codes are further subdivided to identify areas where classifications overlap, based on the size and direction of the secondary, or second largest, commuting flow (table 2). For example, 1.1 and 2.1 codes identify areas where the primary flow is within or to a metropolitan core, but another 30 percent or more commute to a larger metropolitan core. Similarly, 10.1, 10.2, and 10.3 identify rural tracts for which the primary commuting share is local, but more than 30 percent also commute to a nearby metropolitan, micropolitan, or small town core, respectively.

Errata: On July 3, 2019, the Rural-Urban Commuting Area (RUCA) Codes data product was revised to correct a programming error affecting the 2010 secondary RUCA codes. The revision corrects the secondary codes of 10,909 of 74,002 census tracts. Secondary RUCA codes may be used to classify census tracts into rural and urban categories. The revised secondary codes result in an increase in the number of census tracts classified as rural. The 2010 primary RUCA codes are not affected by this revision.

Secondary RUCA codes, 2010

1 Metropolitan area core: primary flow within an urbanized area (UA) 1.0 No additional code 1.1 Secondary flow 30% to 50% to a larger UA 2 Metropolitan area high commuting: primary flow 30% or more to a UA 2.0 No additional code 2.1 Secondary flow 30% to 50% to a larger UA 3 Metropolitan area low commuting: primary flow 10% to 30% to a UA 3.0 No additional code 4 Micropolitan area core: primary flow within an urban cluster of 10,000 to 49,999 (large UC) 4.0 No additional code 4.1 Secondary flow 30% to 50% to a UA 5 Micropolitan high commuting: primary flow 30% or more to a large UC 5.0 No additional code 5.1 Secondary flow 30% to 50% to a UA 6 Micropolitan low commuting: primary flow 10% to 30% to a large UC 6.0 No additional code 7 Small town core: primary flow within an urban cluster of 2,500 to 9,999 (small UC) 7.0 No additional code 7.1 Secondary flow 30% to 50% to a UA 7.2 Secondary flow 30% to 50% to a large UC 8 Small town high commuting: primary flow 30% or more to a small UC 8.0 No additional code 8.1 Secondary flow 30% to 50% to a UA
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8 Small town high commuting: primary flow 30% or more to a small UC 8.0 No additional code
8.0 No additional code
8.1 Secondary flow 30% to 50% to a UA
8.2 Secondary flow 30% to 50% to a large UC
9 Small town low commuting: primary flow 10% to 30% to a small UC
9.0 No additional code
10 Rural areas: primary flow to a tract outside a UA or UC
10.0 No additional code
10.1 Secondary flow 30% to 50% to a UA
10.2 Secondary flow 30% to 50% to a large UC
10.3 Secondary flow 30% to 50% to a small UC
99 Not coded: Census tract has zero population and no rural-urban identifier information

ZIP Code Approximation of RUCA Codes

A second dataset applies 2010 RUCA classifications to ZIP code areas by transferring RUCA values from the census tracts in which they are located. The dataset includes both "area" ZIP codes and "point" ZIP codes, the latter representing post offices or large volume customers. This file replaces the ZIP RUCA 3.1 dataset maintained by the University of North Dakota's Center for Rural Health, and reflects the correction to the secondary codes described above.

The transfer of tract-based RUCA classifications to ZIP code areas was carried out using ESRI ARC-GIS spatial analysis tools. The methodology differed for "area" and "point" ZIP codes. There were two spatial datasets used in the analysis: the ZIP code boundaries (<u>U.S. ZIP Code Areas (Five-Digit</u>), 2019, United States Postal Service, ESRI, TomTom North America, Inc. [Accessed May 2020]), represented as polygons, and the ZIP code centroids (<u>U.S. ZIP Code Points</u>, 2019, United States Postal Service, ESRI, TomTom North America, Inc.[Accessed July 2020]), represented as points. Both were spatially combined and compared with census tract boundaries containing the RUCA primary and secondary classification values.

Area ZIP code methodology

Many of the ZIP code polygons contained multiple census tracts. When two or more census tracts in one ZIP code area had different RUCA codes, a choice was made based on population size. In such cases, ARC-GIS software was used to transfer the RUCA code combination (primary and secondary codes considered jointly) from the census tract or tracts that included the highest number of people for a RUCA code combination in that ZIP code area. A ½ kilometer gridded population dataset was used as a population weight to assign RUCA codes. The gridded population data were developed from census block level 2010 population counts distributed to the grid cells. The following steps transferred the census-tract RUCA code to a ZIP code area:

- 1. Census tracts with the same RUCA1/RUCA2 combination of codes were merged together using the "dissolve" function in ESRI.
- tract boundaries. The resulting polygon dataset included each ZIP code split into separate polygons of all their respective overlapping merged census tracts. 3. The tract/ZIP dataset was then combined with the gridded population data. The "zonal sum" tool was used to

2. The ESRI "union" tool was used to generate the full set of all coincident ZIP code boundaries and merged census

- quantify the estimated total gridded population count in each tract/ZIP part. The zonal sum function added up the 2010 population of all ½ kilometer grid cell centroids existing within each tract/ZIP polygon. 4. The primary and secondary RUCA code values from the tract/ZIP part having the highest population count were
- assigned to the ZIP code area. 5. Some ZIP code polygons smaller than ½ kilometer did not get assigned a RUCA code in this manner, because the
- zonal sum function did not encounter a ½ km population grid centroid. For those polygons, the RUCA code from the merged census tract comprising the largest area of the ZIP code was selected.

Point ZIP code methodology

The ZIP code "point" dataset was used to identify ZIP codes that only exist as points, representing post offices or large volume customers. Transferring census tract RUCA values to these types of ZIP codes did not require a population analysis, because a point can only fall into one census tract. ESRI's "identity" function was used to identify the corresponding census tract for each of these ZIP code points and assign the tract's primary and secondary RUCA codes.

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