

Methods – Urbanicity Data

We provide two track-level urbanicity measures, one based on the latest USDA rural-urban commuting area (RUCA) codes (2010)¹ and one based on the high level National Center for Education Statistics (NCES) urban/rural locale definitions² applied to 2010 Census urban/rural data. The RUCA-based measure describes the types of nearby cities and towns based on commuting patterns and characterizes general access to services typically found in urban areas. The NCES-based measure based on the NCES urban/rural locale definitions more closely corresponds to the rural/urban nature of the immediate environment. [Hart et al. 2005, Moss et al. 2019]

For the RUCA-based measure, we generate a dichotomous urbanicity variable based on the original RUCA codes using the University of Washington’s “Categorization C”³:

Category	RUCA codes
Urban focused	1.0, 1.1, 2.0, 2.1, 3.0, 4.1, 5.1, 7.1, 8.1, and 10.1
Rural city/town focused	4.0, 4.2, 5.0, 5.2, 6.0, 6.1, 7.0, 7.2, 7.3, 7.4, 8.0, 8.2, 8.3, 8.4, 9.0, 9.1, 9.2, 10.0, 10.2, 10.3, 10.4, 10.5, and 10.6

We also provide the original RUCA codes so researchers can create different categorical variables if desired.

For the NCES-based measure, we calculate the percentage of the tract population in each of the four top-level NCES urban/rural locale categories:

- City: in an Urbanized Area and a principal city
- Suburb: in an Urbanized Area but not in a principal city
- Town: in an Urban Cluster
- Rural: not in an Urbanized Area or an Urban Area

Where Urbanized Area and Urban Cluster are defined by the Census: urban areas with populations of 50,000 or more are designated as Urbanized Area; those with populations between 2,500 and 50,000 are designated as Urban Cluster. Census tracts are then assigned one of the four NCES categories if 90% of their population is in the area and tracts are assigned to a “Mixed” category otherwise. The original population percentages are provided to allow researchers to create other categorical variables if desired.

References:

- Hart LG, Larson EH, Lishner DM. Rural definitions for health policy and research. *Am J Public Health*. 2005 Jul;95(7):1149-55.
- Moss JL, Stinchcomb DG, Yu M. Providing Higher Resolution Indicators of Rurality in the Surveillance, Epidemiology, and End Results (SEER) Database: Implications for Patient Privacy and Research. *Cancer Epidemiol Biomarkers Prev*. 2019 Sep;28(9):1409-1416.

¹ See <https://www.ers.usda.gov/data-products/rural-urban-commuting-area-codes/>

² See <https://nces.ed.gov/surveys/ruraled/definitions.asp>.

³ See <http://depts.washington.edu/uwruca/ruca-uses.php>.