Research Working Papers

A Better Delineation of U.S. Metropolitan Areas

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Official U.S. delineations of metropolitan areas stray significantly from common-sense perceptions of areas within which people travel daily. A simple algorithm delineates “Kernel-Based Metropolitan Areas” to better match these areas.

Link to published version in the *Journal of Urban Economics*.

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Metropolitan areas are a fundamental unit of economic analysis. Broadly defined, they are unions of built-up locations near each other among which people travel between places of residence, employment, and consumption. Despite the importance of metropolitan areas, metropolitan Core-Based Statistical Areas and other official U.S. delineations considerably stray from this broad definition. We develop a simple algorithm to better match it, using commuting flows among U.S. census tracts in 2000. Three judgmental parameters govern the threshold strength of commuting ties between locations to include them in the same metropolitan area, the maximum separating distance between locations, and the threshold density of outlying settlement. A parameterization that balances encompassing commuting flows and excluding sparsely settled land delineates 361 Kernel-Based Metropolitan Areas (KBMAs), in aggregate capturing almost all the population and employment of metropolitan CBSAs in a small fraction of their land area. We benchmark KBMAs against two alternative parameterizations, one that prioritizes encompassing commuting flows and one that prioritizes excluding less built-up and less near locations.

JEL classifications: R12, R14, R23

Kernel-Based Metropolitan Areas (KBMAs)

Our preferred parameterization, likely to be appropriate for most questions and purposes. KBMAs balance encompassing commuting flows with excluding locations that are farther away or less densely settled.

- Enumeration of 361 KBMAs
- Detailed Variables and Tables

- Illustrative maps
- Shape Files for mapping software

Kernel-Based Metropolitan Regions (KBMRs)

An alternative benchmark that emphasizes encompassing commuting flows, KBMRs are considerably more expansive than KBMAs.

- Enumeration of 435 KBMRs
- Detailed Variables and Tables
- Illustrative Maps
- Shape Files

Kernel-Based Urban Areas (KBUAs)

An alternative benchmark with more stringent criteria for combining locations. KBUAs are more compact than KBMAs and typically encompass a lower share of commuting flows.

- Enumeration of 346 KBUAs
- Detailed Variables and Tables
- Illustrative Maps
- Shape Files

Additional Materials

- Maps comparing KBMAs, KBMRs, and KBUAs
- Pairwise commuting flows between cores
- Iterative kernel joins
- Cross commuting among metropolitan CBSAs
- Computer Code for Construction
- All Supplemental Files in a single zip archive

Article Citations

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Related Research

- Desmet, Klaus, and Jordan Rappaport. 2017. "The Settlement of the United States, 1800–2000: The Long Transition Towards Gibrat's Law." *Journal of Urban Economics*, vol. 98, pp. 50–68. Available at https://doi.org/10.1016/j.jue.2015.03.004
- Rappaport, Jordan. 2016. "Productivity, Congested Commuting, and Metro Size." Federal Reserve Bank of Kansas City, Research Working Paper no. 16-03, January. Available at https://doi.org/10.18651/RWP2016-03
- Rappaport, Jordan. 2018. "The Faster Growth of Larger, Less Crowded Locations." Federal Reserve Bank of Kansas City, Economic *Review*, vol. 105, no. 4, pp. 5–38. Available at https://doi.org/10.18651/ER/4q18Rappaport

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