Point of Contention: Defining Neighborhoods

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Neighborhoods are a natural construct widely used for analytical purposes in research, policymaking, and practice, but defining a neighborhood for these purposes has always been difficult. This Point of Contention offers four articles about precisely bounding this often fuzzy concept. The authors provide a range of perspectives, from practitioner to researcher, about the construction of neighborhoods and the complexity of what neighborhood really means.

The Tyranny of Census Geography: Small-Area Data and Neighborhood Statistics

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The opinions expressed in this article are those of the author and do not necessarily reflect those of the U.S. Department of Housing and Urban Development.

Census-defined small-area geographies and statistics in the United States are highly accessible, relatively easy to use, and available across time and space. The singular and strict use of block groups, census tracts, or ZIP Codes as proxies for neighborhood, however, are often inappropriate and can result in flawed findings, poor public policy decisions, and even situations in which families or businesses are disqualified from place-based government programs. Perceptions of neighborhoods are social constructs and context dependent. Yet social science literature is replete with an unquestioning use of these geographies to measure neighborhood effects, despite evidence that the use of alternative spatial scales and techniques can deliver very different results.[1]

Census small-area statistics are artifacts of the geographic boundaries created by the Census Bureau, often in collaboration with local stakeholders. Census small-area data were first used for policy and research purposes based on a request by New York City in the early 1900s for permanent census tract areas (sanitary districts), not subject to the political manipulation of wards

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[1] Although this article focuses uniquely on census small-area geographies, any geographic template will have limitations and resulting analyses should not be considered definitive.

and assembly districts, to measure and monitor public health conditions (Salvo, 2012). Given ongoing changes in socioeconomic, demographic, land use, and other characteristics, maintaining permanent statistical areas over time has proved to be neither ideal nor practical.

Geographers and statisticians learn early in their careers that, when you change the geography, you change the statistics. For example, those involved in legislative redistricting understand how alternative boundaries can affect political outcomes, and families with school-age children understand how redistricting school boundaries can affect their children's social relationships and educational outcomes. Similarly, neighborhood statistics take on new meanings by sometimes small changes in their boundaries (Wong 2009).

Before every decennial census, local statistical areas committees must evaluate tradeoffs between different user needs (for example, research and planning) in creating, maintaining, or revising small-area statistical boundaries. Collectively, they must resolve the competing objectives and inherent contradiction between maintaining spatial continuity for data comparability and the need to create meaningful statistics based on areas with relatively similar socioeconomic and demographic characteristics as they attempt to capture the spatial growth and reorganization of the built environment. And, with the advent of the American Community Survey (ACS), these tradeoffs have become even more challenging as increased emphasis has been placed on the population size of census tracts and block groups, in an effort to promote more reliable estimates.

Despite the importance of defining and/or revising census statistical boundaries in the current 10-year cycle, local input varies from place to place. Broad participation from stakeholder groups may not exist and participants may not be uniformly cognizant of the full effect of their work. In some instances where local input is minimal or nonexistent, Census Bureau staff will create or redesignate census tracts and block groups at their discretion.

Constructing Neighborhoods From Census Geographies

Census tracts are often the de facto neighborhood unit of analysis in social science research (for further discussion, see Coulton et al., 2001; Nicotera, 2007; White, 1987). Therefore, defining and delineating these and other statistical area boundaries are critical in determining place-based characteristics. The most relevant data aspects of using tracts, block groups, or ZIP Codes as neighborhood geographies can be categorized along three dimensions—definitional, spatial, and temporal.

Using census geography to define neighborhood borders requires an understanding of the basic building block of all census geography and statistics—the census block. The Census Bureau first published census block data in 1940 for major urban areas as part of a newly created Census of Housing. These blocks provided "a detailed inventory of housing conditions within major cities for purposes such as efficiently upgrading the level of urban services, modifying building codes, establishing and implementing zoning ordinances, and preparing plans for capital improvements" (U.S. Census Bureau, 2012: 11-3).

The use of census blocks aligned well with the early technical and geocoding advances that made a mail-out/mail-back census feasible and later as a means to support state redistricting needs. With the advent of nationwide block numbering and the development of the 1990 TIGER database,

census blocks became the geographic and statistical unit of analysis for all areas of the country. Since 2000, the entire United States has been divided into the common small-area geographies of block group, census tract, and ZIP Code Tabulation Area.

Use of the census block model, however, has involved a number of challenges and limitations. Changes in local government boundaries from secession and annexation rarely conform to census blocks and create ongoing data quality challenges. Just as census tracts do not conform to the popular conception of a neighborhood, census blocks do not always align with the popular notion of a block, particularly in urban areas where both sides of a street are considered part of the same block. As one consequence, people and businesses are sometimes denied program eligibility for place-based programs because they are located on the wrong side of a street, which is in a different census tract.

Census tracts are the most widely used small-area geography for neighborhood and community research. Eligibility for many federal and state place-based funding programs often require that the household or business be located in neighborhoods that meet specified criteria. In many cases, neighborhoods are equated with census tract boundaries and the criteria to determine eligibility are based on sample data from the census tract, often without regard to standard errors.

Tracts, however, may contain pockets of demographic, social, and economic characteristics and patterns that may not be reflected in their summary statistics. Indeed, as stated earlier, maintaining tract homogeneity is no longer really possible given changing patterns of settlement and density in large urban areas. For example, Housing Choice Voucher (Section 8) recipients may be moving to "neighborhoods" of less poverty, but, in practice, they may be moving to high or similar poverty areas within a different census tract. Tracts that contain both high-income and low-income areas may appear as middle-income tracts. Furthermore, spatial proximity or inclusion in a wider statistical area, in itself, does not necessarily lead to increased opportunity or integration.

Block groups—hierarchical subdivisions of census tracts and aggregations of census blocks—were rarely used in any systematic way until the 1990 Census. They offer a better approximation of neighborhood areas, albeit a smaller and less reliable sample size that limits their broader use. While more likely to change their boundaries from census to census, block groups were seen as a way to create more socioeconomically homogeneous areas because census tracts were becoming more and more disparate from their original conceptions.

The sample size of ACS block groups, however, is considerably less than previous decennial censuses so that most researchers are returning to the census tract as the default small-area geography. In fact, for many purposes census tracts need to be aggregated into larger geographic areas because the ACS sample is too small. For example, in New York City, demographers have aggregated more than 2100 census tracts into Neighborhood Tabulation Areas as a means of achieving adequate sample size, using a template that has at least some on-the-ground connection to neighborhoods.

ZIP Codes are also well-known, popular geographies for representing neighborhoods. ZIP Codes, however, are designed solely to meet the day-to-day operational needs of the U.S. Postal Service and are subject to change at any time, with no systematic method for delineating them. ZIP Codes have no minimum population or housing unit thresholds and often contain widely disparate demographic and socioeconomic characteristics, making them more susceptible to capturing

extreme data points within the same boundary. Although ZIP Code data may be good enough for marketing or other gross estimates, they are rarely appropriate for rigorous social science research. These entities present an additional data quality challenge in that the Census Bureau uses its block-based model to represent ZIP Codes as tabulation areas, which leads to a built-in misallocation of housing units along the boundaries.

Until the advent of the ACS, small-area census estimates were based on data collected at a specific point in time. Fundamentally different than these decennial long-form surveys, ACS block group, tract, and ZIP Code estimates are based on rolling samples averaged across 5 years. Although small-area estimates are now more current and non-sampling errors have been reduced, sampling issues are considerably more problematic than in previous decennial censuses.

Conclusion

Census small-area geographies are often used as proxies for neighborhoods in social science research as well as for policy and decisionmaking. Yet, neighborhoods are context dependent. Residents may define their neighborhood by their block, school bus route, or other formal or informal associations, and that definition may change as the context and characteristics of a place change. No unit of statistical or administrative geography will ever be able to capture all of these nuances, and neighborhood boundaries will always be the subject of countless debates.

What is a social science researcher to do? Consideration needs to be given to a process that uses property address or parcel boundaries as the nuclear unit for defining neighborhoods. These units are the cornerstones of constructing any larger areal unit that would represent a neighborhood. Then, a discussion needs to take place on how meaningful these spatial units are, given historical and common on-the-ground definitions of neighborhoods, always with an understanding that these will be approximate in their designation. Once designated, these areas then need to be examined relative to the statistical geography that is available for the tabulation of data and a compromise achieved.

Do pockets of significantly different populations exist within a census tract that may be hidden by overall averages? Do analyses of similar phenomena using different geographies and alternative representations create different stories? Have appropriate statistical and spatial methods been used to account for sample estimates and standard errors and the "rolling" or "continuous measurement" nature of the ACS when combining and comparing small-area census data across geography and time? These are some questions that can be asked about the census boundaries chosen to represent neighborhoods and the resulting analyses of these areas.

This article focused on some of the challenges and appropriateness of the singular use of small-area census data and geography to represent neighborhoods. Although their use can lead to misinter-pretation, the absence of alternative data-rich spatial configurations forces us not to abandon them altogether. Awareness of their limitations and the uncertainty of our findings from their generalized use are critical. Implied from this discussion is the need for the concomitant use of methodologies and spatial analysis techniques that both aid the defining of neighborhood boundaries and offer complementary and more nuanced perspectives and meaning to available data from the census and

ancillary sources. For the purposes of research and public policy, both the selection of geographic areas and the use of spatial and statistical techniques must be adaptive and based on the particular questions being posed as well as the type of data available. Otherwise, social science researchers may continue to use neighborhood definitions that may not reflect or represent the true nature of the areas being studied.

Acknowledgments

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References

Coulton, Claudia J., Jill Korbin, Tsui Chan, and Marilyn Su. 2001. "Mapping Residents' Perceptions of Neighborhood Boundaries: A Methodological Note," *American Journal of Community Psychology* 29 (2): 371–383.

Nicotera, Nicole. 2007. "Measuring Neighborhood: A Conundrum for Human Services Researchers and Practitioners," *American Journal of Community Psychology* 40: 26–51.

Salvo, Joseph J. 2012. "Census Tracts." In *Encyclopedia of the U.S. Census,* 2nd ed.: *From the Constitution to the American Community Survey*, edited by Margo J. Anderson, Constance F. Citro, and Joseph J. Salvo. Washington DC: CQ Press: 82–84.

U.S. Census Bureau. 2012. "Geographic Areas Reference Manual." http://www.census.gov/geo/www/GARM/Ch11GARM.pdf (accessed May 12, 2012).

White, Michael J. 1987. *American Neighborhoods and Residential Differentiation*. National Committee for Research on the 1980 Census. New York: Russell Sage Foundation.

Wong, David. 2009. "The Modifiable Areal Unit Problem." In *The SAGE Handbook of Spatial Analysis*, edited by A. Stewart Fotheringham and Peter A. Rogerson. London, United Kingdom: SAGE Publications: 105–123.