Your Place or Mine?
The Plausibility of Place and Other Sub-County Typologies*

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I. Introduction

a. Rationale - why sub-county geography?

Counties and county equivalents have been the mainstay of ERS and other typologies. Yet there is substantial and, at times, systematic variation in counties that should give us pause in using them as spatial units of analysis. For example, counties vary a good bit in land area. Of 3,142 counties and equivalents, 25 percent occupy less than 450 square miles and another 25 percent cover at least 900 square miles. Those in the western United States tend to encompass much more territory than do counties in the east. In terms of population variability, 25 percent of U.S. counties have fewer than 11,000 residents while another 25 percent have populations in excess of 60,000. To make things even more interesting, there are statewide idiosyncracies such as Louisiana's parishes and Virginia's treatment of independent cities as county equivalents, despite the fact that many such cities are themselves nested within other counties. Simply referring to counties by another name may be harmless enough. But, equating cities with counties that encapsulate them lessens uniformity and introduces substantial confusion.

In this paper, we consider the potential and practicality of smaller sub-county units. Are spatial units such as places, tracts, and the like viable candidates for typology construction? Which sub-county spatial units would work best and why? We review selected sub-county geographies and note various strengths and weaknesses. Among the criteria we employ are accessibility, scope of spatial coverage, stability, uniformity, and temporal issues.

b. Brief review of selected sub-county work in the rural research community

We are not aware of much in the way of previous work on rural America that has made use of sub-county units of analysis. There has been some interest among rural sociologists from time to time in using places (villages, townships, cities) as units of analysis. Fuguitt and colleagues have produced several pieces of research that focus, in part, on towns(see Fuguitt 1968; Johansen and Fuguitt 1984; and Fuguitt, Brown, and Beale 1989). In recent work of our own (Tolbert et al., 2002), we employed data on small towns (populations from 2,500 to 19,999). Census tracts have been used by Morrill, Cromartie, and Hart (1999) to describe the U.S. settlement system and commuting patterns.

II. Review of selected sub-county geographies

a. Places

Places are concentrated human settlements that take many forms (e.g., villages, towns, cities, metropolitan areas). Legal and/or political status is one fundamental distinction that can be made among places. Incorporated places exist under the laws of their respective states. Consolidated county and city governments can also be represented as places with legal status. In the geography header for the 2000 Summary File 3 (U.S. Bureau of the Census, 2002), there are 19,452 incorporated and consolidated places in the United States.

Settled areas that do not have legal or political status are still often known by area names. The Census Bureau refers to these places as Census Designated Places (CDPs). These areas are identified by the Bureau through its work with local officials. Geography information in the 2000 Summary File 3 shows 5,610 CDPs in the United States.

b. Minor civil divisions

Minor civil divisions (MCDs) are legal subdivisions of counties that are charged with a variety of administrative and governmental functions. While there is great variation by state, MCDs are present in some form in 28 of the United States. MCDs may be tribal lands, precincts, wards, road districts, assessment districts, townships, boroughs, and the like. To appreciate more fully the complexity of MCDs, it is useful to make a distinction between "strong" and "weak" MCD states. By strong, we mean states where MCDs are accorded the same government functionality as incorporated places. In alphabetical order, these states are (Connecticut, Maine, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and Wisconsin). By weak MCD state, we mean a state that identifies some sort of sub-county area as an MCD. However, the MCDs do not have governmental functions equivalent to those of incorporated places. The weak MCD states are Arkansas, Illinois, Indiana, Iowa, Kansas, Louisiana, Maryland, Mississippi, Missouri, Nebraska, North Carolina, North Dakota, Ohio, South Dakota, Virginia, and West Virginia.

c. Non-governmental county subdivisions

For 21 non-MCD states, the Census Bureau has delineated county subdivisions known as Census County Divisions (CCDs). These areas have been defined in consultation with state and local officials. The states for which CCDs have been designated are Alabama, Arizona, California, Colorado, Delaware, Florida, Georgia, Hawaii, Idaho, Kentucky, Montana, Nevada, New Mexico, Oklahoma, Oregon, South Carolina, Tennessee, Texas, Utah, Washington, and Wyoming. The Bureau's guidelines for formulating CCDs are that visible features should be followed and that the areas should coincide with census tracts.

At first glance, MCDs and CCDs taken together seem to provide an intriguing national set of sub-county areas that might be a reasonable basis for typology construction and other spatial analysis. Basic descriptive information on these geographies taken from the 2000 Summary File 3 is presented in Table 1. Readers are referred to Butler and Beale (1993) for information on the

derivation of the Rural-Urban Continuum coding scheme. For our purposes, suffice it to say that codes 0-3 represent metropolitan counties and codes 4-9 correspond to nonmetropolitan counties. The larger nonmetro counties have codes in the 4-7 range, while codes 8 and 9 refer to nonmetro counties with urban populations less than 2,500. Table 1 shows one potential advantage of MCDs and CCDs is that they provide more sub-county detail in the most rural counties than do Census tracts and block groups (see definitions below). We will return to this seemingly attractive feature as we assess these sub-county areas.

Table 1. Average Number of Sub-County Geographies by Rural-Urban Continuum County Code

	Average Units Per County		
Rural-Urban Code	CCD/MCD	Tracts	Block Groups
0	15.94	163.75	508.35
1	11.49	17.67	57.18
2	12.32	44.75	137.6
3	14.61	25.36	83.49
4	14.63	17.01	61.48
5	11.4	14.43	51.54
6	10.92	7.01	24.63
7	10.52	5.63	19.15
8	8.2	3.21	10.1
9	9.67	2.44	7.19

d. Other relevant Census sub-county geography

The Census Bureau geography also includes tracts, block groups, and blocks. Since only the most basic of short-form population data are published at the block level, we think blocks will not be very useful in typology development. Aggregates of blocks represented as block groups and tracts could be very useful because long-form data are released for many of these sub-county units.

1. Census tracts

Census tracts are county subareas that are viewed as reasonably permanent and typically identified by state and local participants in the Bureau's geography programs. The emphasis in definition of tracts is on the generation and maintenance of long-term statistical units. "Census tract boundaries are delineated with the intention of being maintained over many decades so that statistical comparisons can be made from decennial census to decennial census" (U.S. Census Bureau, 2001:A-11). While local developments (new subdivisions, highway construction, etc.) may necessitate adjustments, tracts are viewed as a basis for longitudinal data. The target population for a census tract is 4,000 persons.

2. Block groups

Block groups are sets of contiguous blocks within a census tract. Those primarily responsible for delineation of block groups are state and local residents involved in the Bureau's Participant Statistical Areas Program. Block groups are defined by the Bureau only when locals have declined to do so. The recommended population size is 1,500 persons. Block groups are completely contained with the boundaries of states and counties.

III. Criteria for assessment

Our criteria for assessing the utility of sub-county geographies include accessibility of geography and data, scope of spatial coverage, uniformity of definition, and temporal issues.

a. Accessability

1. Geography

Though it may seem obvious, users of geographic schemes must have access to information that defines boundaries and coverage. For the most part, the sub-county areas we discuss here pass this information test. As we shall see, however, information related to some of our other criteria is not always readily available. This is especially the case when the delineation process is carried out by a mix of local, state, and federal personnel. Idiosyncracies abound, and access to information about them can be hard to come by.

2. Data

For the geography to be of use in typology construction, analysts must have access to attributes of the areas that compose the geography. The sub-county units we focus on here are described in considerable detail in various Census Bureau data files. There are certainly other governmental and private-sector sources of data on at least some of these sub-county units. For purposes of brevity, we are limiting our discussion here to Census survey programs with which we are reasonably familiar. These include the familiar public domain files published for the decennial housing and population censuses, the American Community Survey, the economic censuses, and the population estimates program. In our discussion of the survey program data files, we make a distinction between summary data (data aggregated to a certain geographic level) and microdata (individual household or establishment responses). Though certain methods are used to guard against identifying individual responses, summary data from essentially all of these programs are publicly available. Fractions of sample microdata, however, are released only for population (household) data. Researchers wishing to analyze establishment microdata from economic censuses or all long-form sample data must do so under controlled circumstances at the Bureau's Center for Economic Studies or one of its satellite Research Data Centers (RDCs). Thus, data access for these sub-county areas can be as straightforward as downloading a public data file in some circumstances. In other cases, more restrictions apply.

b. Scope of spatial coverage

By scope of coverage, we are primarily referring to the exhaustiveness of spatial coverage. National typologies of the policy sort that ERS has constructed heretofore necessarily require spatial units that exhaust the United States territory. Still, there will be times when the focus is on spatial units that amount to a subset of the territory. For example, an analyst might wish to develop a taxonomy of rural small towns. In either case, the geographic scheme must lend itself to an assessment of scope of coverage. Particularly in the case of a scheme that subsets the territory (such as our small town example), the analyst needs to be able to assess the implications of omitted territory. Social and economic activity outside a town's limits may well contribute to socioeconomic conditions in town.

c. Uniformity of definition

It is important to assess any geography in terms of the extent to which valid and reliable criteria have been consistently applied in formulating the geography. In evaluating sub-county geographies, we consider how variations may creep into delineation activities. We also discuss the extent of variability and its potential impact on uses of the geography.

d. Temporal issues

Longitudinal analyses are premised on the availability of geographies and associated data over time. The temporal issues we raise here include stability of boundaries over time, existence of longitudinal data series, and frequency of data collection.

IV. Places

a. Accessibility

Herculean efforts are made prior to the decennial census to update the names and boundaries of incorporated places and Census designated places. That decennial snapshot of the national place system is updated on an intercensal basis in the Bureau's TIGER system. Thus, reasonably contemporaneous name and boundary information can be had for places. Access to data on places is less straightforward. Summary housing and population data at the incorporated place and CDP level are published for the decennial census. Only a handful of very largest places have been identified (by way of MSA codes) in public-use population microdata (PUMS) files. If the American Community Survey fulfills its promise, population data for places should be available every three years. It is not yet clear what sort of microdata would be released from the ACS or when. Internal versions of decennial long-form microdata accessible at the Bureau's Research Data Centers does contain place codes. Summary economic data are published on a quinquinnial basis for incorporated places with populations of 2,500 or more. This same place geography appears on individual economic census microdata records in confidential internal files available through the RDC system.

b. Scope of spatial coverage

Places do not exhaust the U.S. territory. Using places as units of analysis necessarily omits non-place space. To be sure, other geographies can be used to represent or fill in non-place data. One could, for example, include data for the non-place balance of a county.

c. Uniformity of definition

Owing to state and local variations in incorporation rules and regulations, it is hard to make a case that a uniform definition of place prevails. In a more conceptual way, though, it is reasonable to argue that residents do express a "sense of place" and identify with particular localities. If we presuppose that places are meaningful in this conceptual manner, then researchers may find some utility in studies of places. We think place-level analysis can be particularly useful when relatively homogeneous subsets of all places are analyzed.

d. Temporal issues

Place boundaries appear, disappear, and change over time. New incorporations and annexations are two obvious ways that places morph across time. Incorporated places can also disincorporate. From one decennial census to another, CDPs may be newly recognized or eliminated. Between each economic census, a handful of places lose sufficient population to drop below the 2,500 threshold while a few others gain enough population to be identified in economic data.

V. County divisions

In that they both represent subdivisions of counties, we consider Minor Civil Divisions (MCDs) and Census County Divisions (CCDs) together.

a. Accessibility

Boundaries of MCDs and CCDs are identified in the Census TIGER system. Decennial census results are summarized at the MCD and CCD level and are publicly available in summary files. If the ACS maintains the stated goal of replicating census geographies, we expect to see summarized data for MCDs and CCDs. MCDs and CCDs are not reported in public-use decennial microdata. These geocodes do appear on internal versions of the long-form data available at RDCs. MCDs appear in economic census data from strong MCD states where the MCDs are coterminous with incorporated places. There are no MCD or CCD geographies on the internal Census Bureau economic microdata files.

b. Scope of spatial coverage

Taken together, the MCD geography and CCD geography exhaust the U.S. territory. These spatial units constitute a set of sub-county areas with complete coverage. Moreover, these units appear relatively more often than other Census sub-county geographies in the most rural of U.S. counties.

c. Uniformity of definition

If all states fell into the strong MCD category, there might be some hope for uniformity in definitions of these sub-county units. As stands, however, the weak MCD states use too wide a variety of bases for defining MCDs. The criteria for CCD definition–following major features and Census tracts–hold little promise for comparability with MCDs from strong or weak states. Thus, we contend that taking these three sub-county area types–strong and weak MCDs, CCDs–as a national system of county divisions is ill advised. This would include, of course, using these geographies for national typology construction. However, intensive local- and state-level studies might profit from the use of these areas. This is especially the case in nonmetro areas where they may be relatively fewer Census tracts and block groups.

d. Temporal issues

By definition, many MCDs are in a state of flux. MCDs that are incorporated places will exhibit the same sorts of changes we observe for those places (primarily annexations). MCDs that are administrative units are subject to change. One reason is changes in governmental management strategies. Another has to do with redistricting for electoral purposes. In contrast, CCDs built around Census tracts have the potential for longer-term stability.

VI. Census tracts and block groups

Since blocks are clustered in block groups within census tracts, we consider these geographies together. Table 2 displays some basic information about tracts and block groups in nonmetropolitan counties of the U.S.

Table 2. Counts of Nonmetropolitan Counties by Sub-County Geography

Total Nonmet Counties	2304	Mean N BGs	Min BGs	Max BG's
Number of Nonmet Counties With 1 Tract	201	3.06	1	8
Number of Nonmet Counties With 2 Tracts	322	6.62	2	14
Number of Nonmet Counties With 3 Tracts	318	9.96	3	20
Number of Nonmet Counties With 4 Tracts	279	13.31	5	27
Number of Nonmet Counties With 5 Tracts	245	16.88	6	32
Number of Nonmet Counties With 1 Block Group	28			
Number of Nonmet Counties With 2 Block groups	47			
Number of Nonmet Counties With 3 Block Groups	75			

a. Accessibility

Geographical definitions for Census tracts and block groups are readily available through the TIGER system. Summary population and housing data at the tract- and block-group level are published after each decennial census. Tract and block-group are not identified on public-use microdata from the decennial census. These geographies do appear on internal Census decennial microdata files that can be accessed through the RDC system. However, our experience with these internal data on individuals suggests that allocation and imputation rates below the county level are rather high. The ACS promises to provide summary tract and block-group data on a "rolling" basis that would yield new data about every five years. Census tract and block group information is not reported in public or confidential economic census data.

b. Scope of spatial coverage

Since 1990, block group coverage in the decennial census has been nationwide. Block groups covered portions of the U.S. in 1970 and 1980. Complete national coverage for Census tracts was achieved for the first time in 2000. In 1990, a combination of block numbering areas (BNAs) and census tracts was used. Nationwide coverage in 2000 does not necessarily mean rich detail in nonmetro areas. In Table 2, we see that almost 10 percent of the 2304 nonmetro counties are not subdivided at all; they consist of a single tract and a single block group. More than one third of the nonmetro counties have three or fewer tracts and a corresponding number of block groups. Thus, national coverage does not necessarily produce a higher degree of spatial resolution within nonmetro counties.

c. Uniformity of definition

The definitional criteria advertised by the Census Bureau contribute to a reasonable amount of uniformity, especially for tracts. Block groups are somewhat arbitrary in that blocks can be clustered in different ways. Major geographic features, transportation routes, and boundaries of political entities constitute relatively stable universal standards for establishing tracts. The suggested population parameters for tracts and block groups are another source of uniformity

d. Temporal issues

Local and state personnel involved in block group decisions may change them over time to suit changing local conditions. In contrast, the emphasis on preserving longitudinal comparability of tracts contributes to uniformity across time. Especially in the cores of longstanding metropolitan areas, Census tracts provide a sound basis for longitudinal analysis.

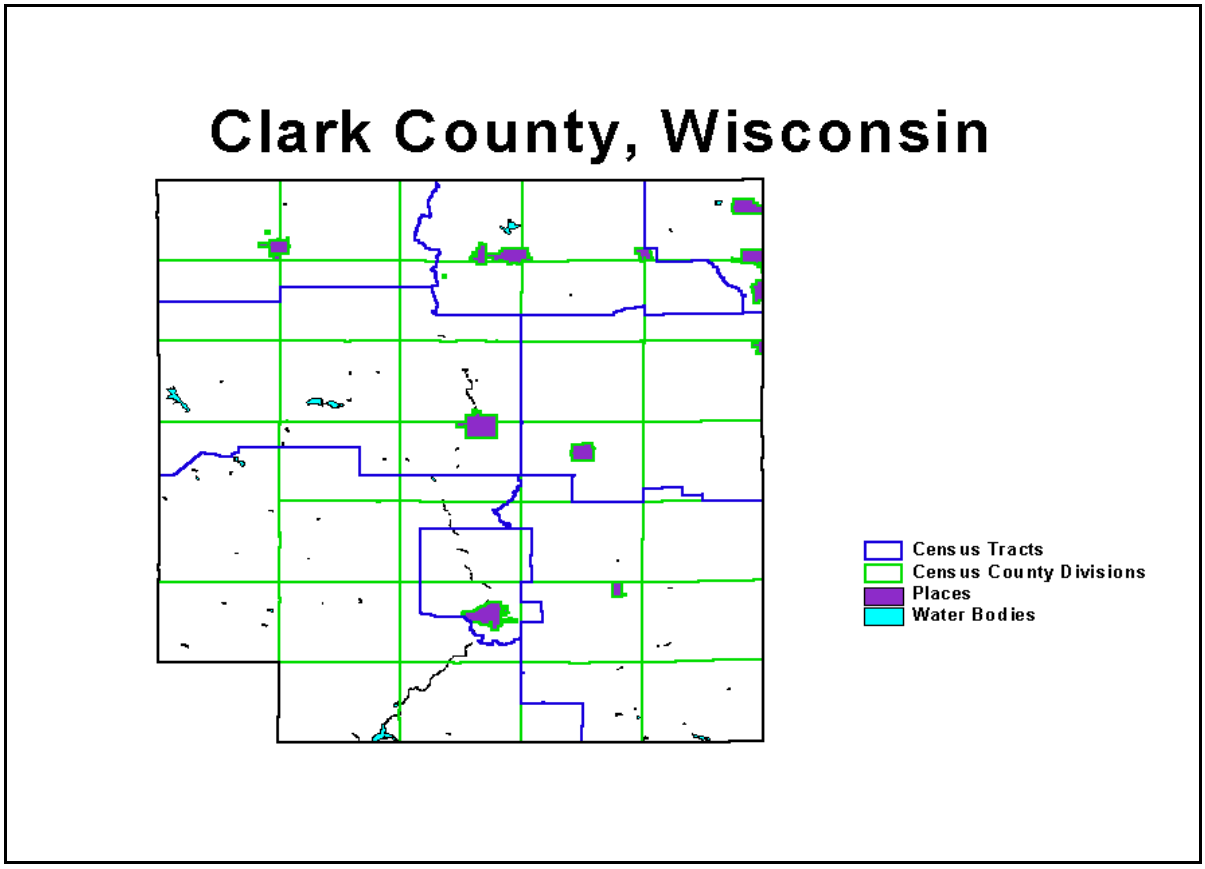
VII. Case studies of sub-county geographies

Let us anchor our verbal characterizations in some specific examples of nonmetro counties and their sub-county geographies. We present three counties–one from a strong MCD state, one from a weak MCD state, and one from a non-MCD state.

a. Clark County, Wisconsin

As an example of a nonmetro county in a "strong" MCD state, we offer Clark County, Wisconsin. With a total population of 33,557, Clark is assigned a six on the ERS rural-urban continuum. It is adjacent to Marathon County, Wisconsin, and the Wausau MSA. In terms of other ERS typologies, Clark County is classified as farm-dependent. It has no policy classification.

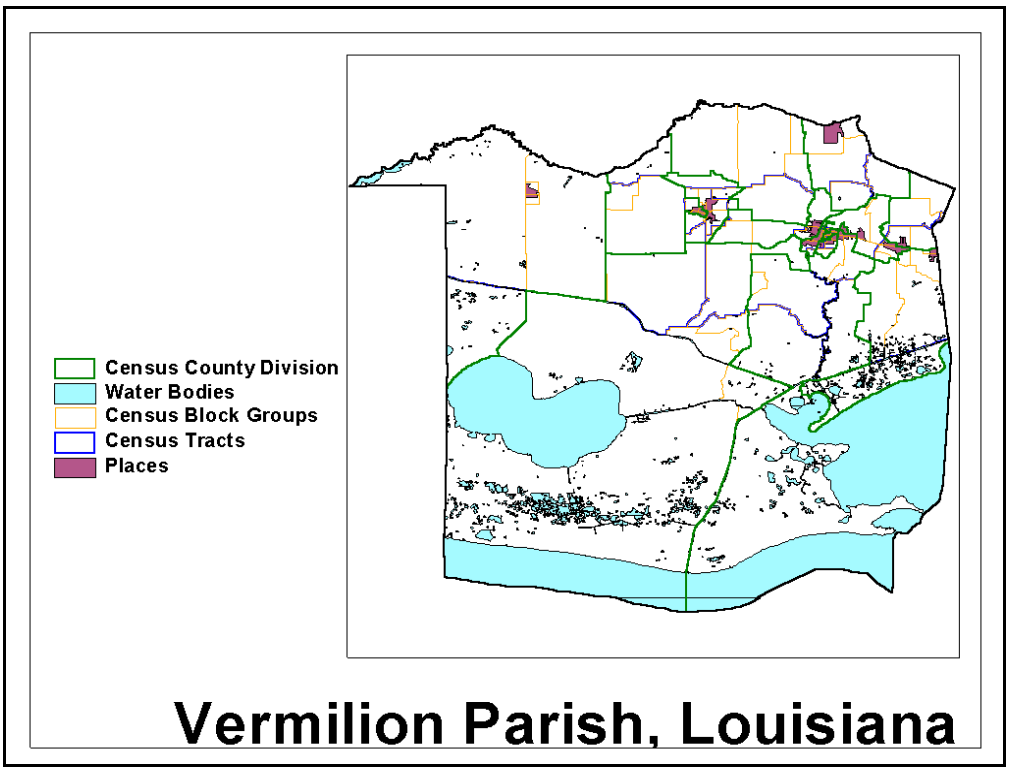
With respect to sub-county areas, there are eight Census tracts for 2000 that contain 28 block groups. Clark County has a total of 12 incorporated places in which 40% of the county population resides. There are 45 MCDs. With the exception of the places (which are also treated as MCDs), the remaining units are laid out in a seemingly uniform grid. Lastly, as the map suggests, there is no spatial correspondence between tracts and MCDs.



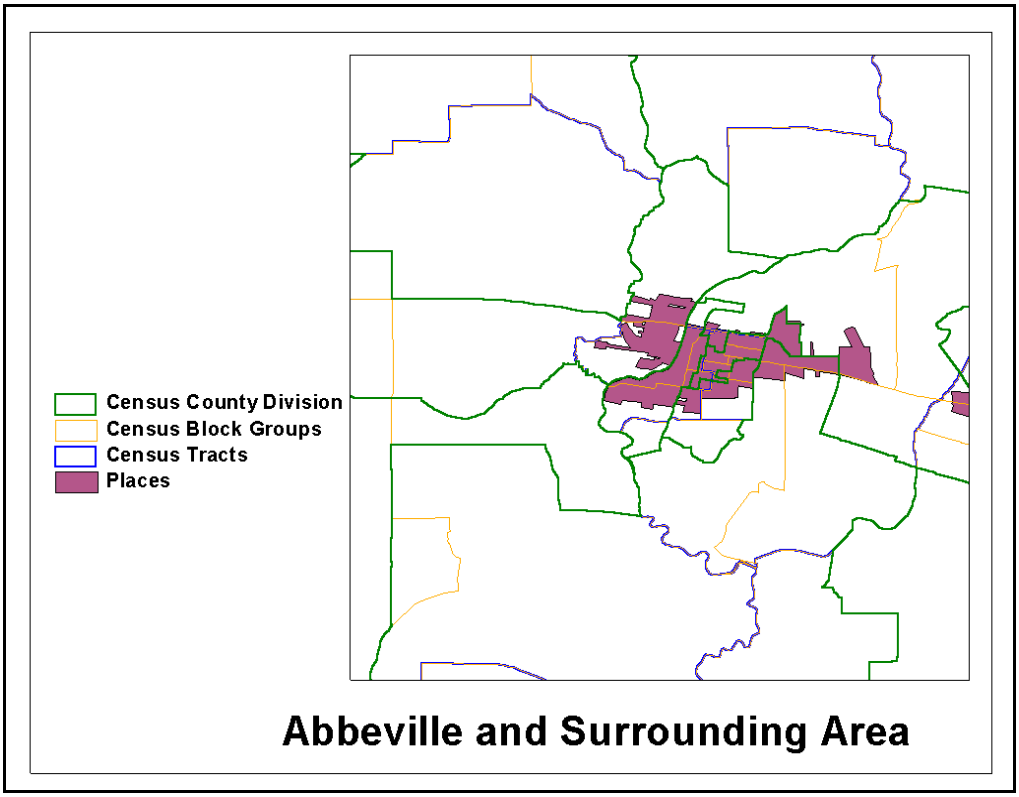
b. Vermilion Parish, Louisiana

As an example of a "weak" MCD state, consider Vermilion Parish, Louisiana. In terms of ERS typologies, Vermilion is coded six on the rural-urban continuum (i.e., urban population 2,500 to 19,999 and adjacent to a metropolitan county which is Lafayette Parish). Vermilion is classified as "services-dependent" in the ERS economic typology. It has no policy type in the ERS policy classification.

Initial observations on sub-county geographies for nonmetro Vermilion Parish indicate 42 block groups and 10 tracts. There are 14 MCDs that exhaust the parish territory. The SF-3 documentation does not help us in understanding what sorts of areas these MCDs are. State Demographer, Karen Paterson, tells us that these are Parish Governing Authority Districts. Previously, they were wards. Further, the state has resisted the Bureau's suggestion that it convert to CCDs. Local politicians on police juries (i.e, county commissions) maintain that they need data on their constituents. The lines are redrawn by the legislature and/or the courts as the districts change over time. There are six places in Vermilion Parish; all are incorporated. Abbeville is the county seat.

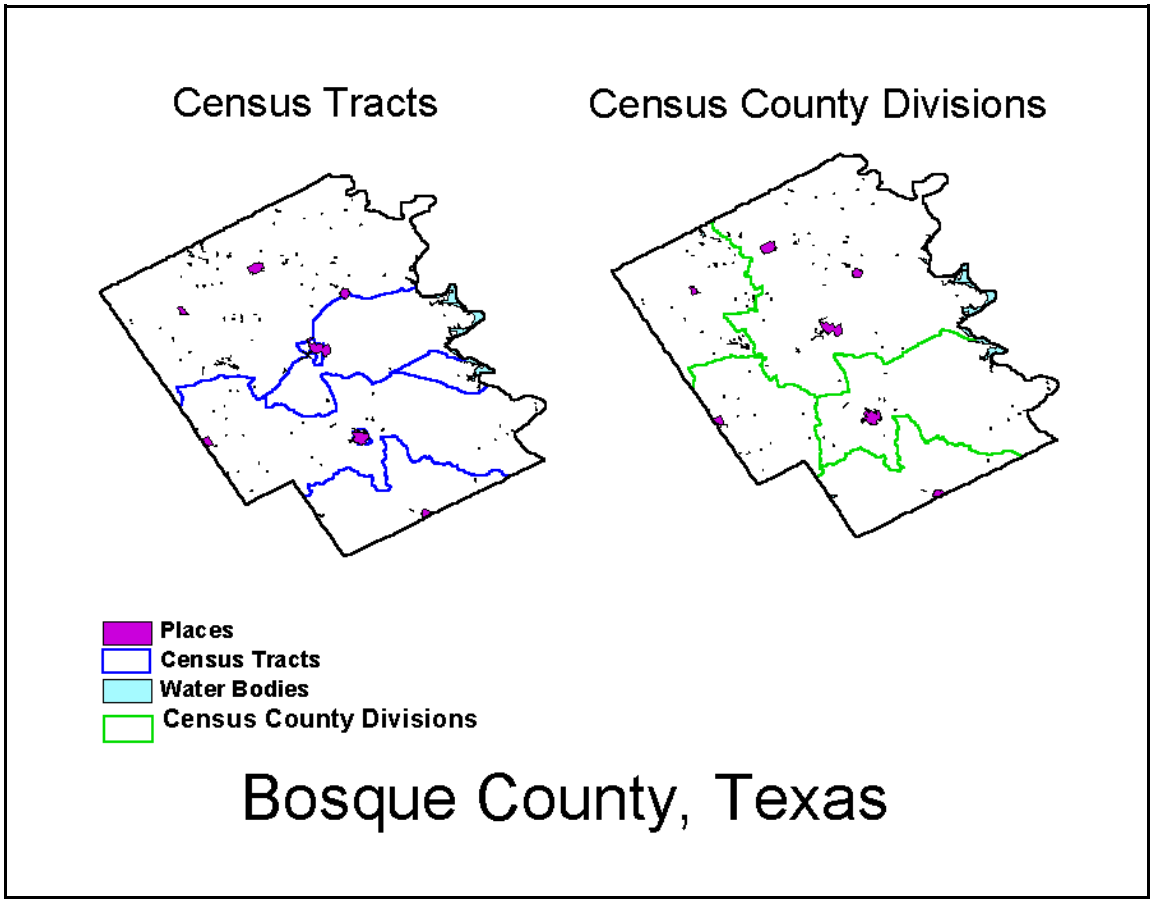


As is evident in closeup of Abbeville area, MCDs (Parish Governing Authority Districts) cut across tracts such that they are incompatible spatially.

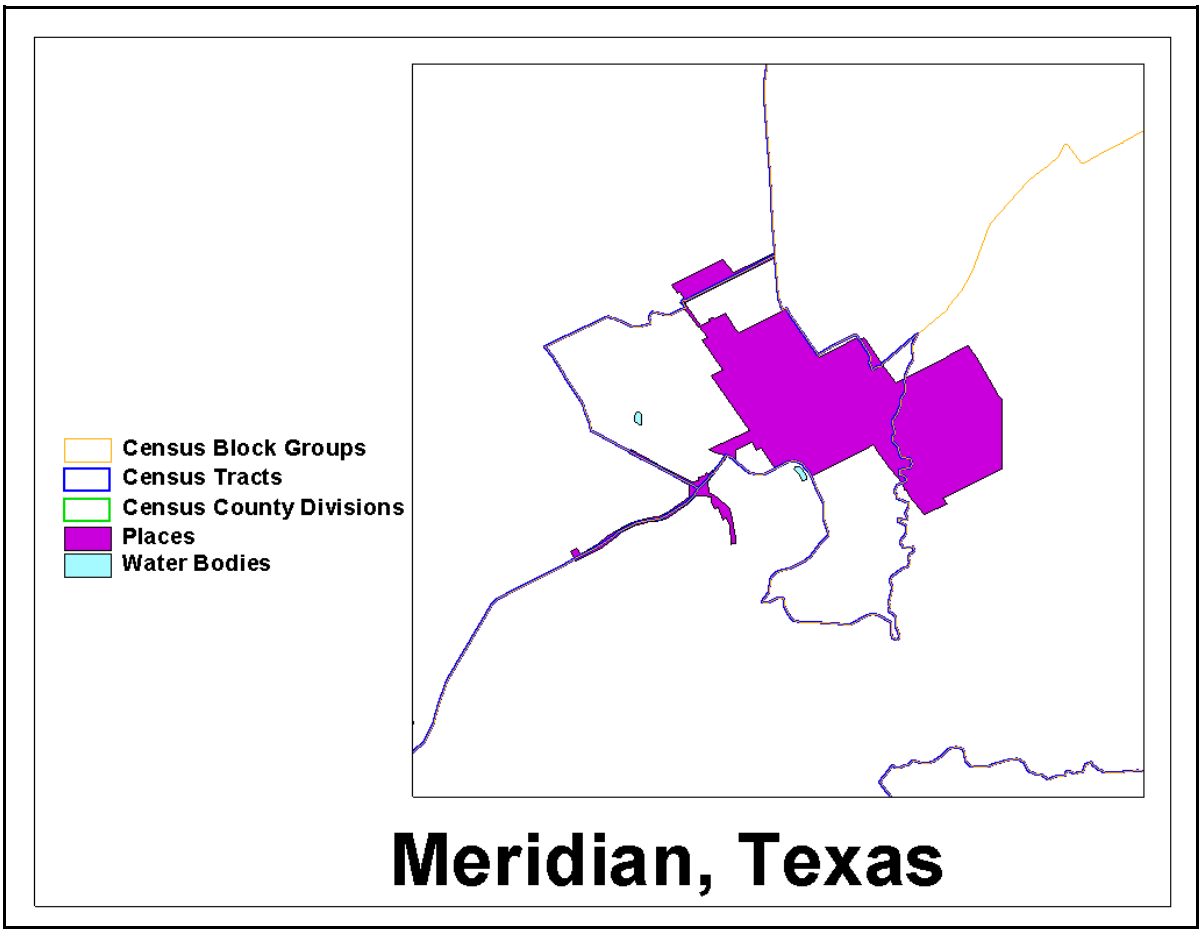


c. Bosque County, Texas

Texas is a non-MCD state. Bosque County is a nonmetro county with a 2000 population of 17,204 of which 8,097 persons reside in seven incorporated places. In terms of ERS classifications, it is coded six (adjacent with an urban population of 2,500 to 19,999) on the rural-urban continuum code. It has no policy designation, but is assigned an economic category of "nonspecialized." The seven Census tracts and five CCDs are exhaustive and can be combined or split to be equivalents of one another.



The county seat of Bosque is Meridian, a town with just over 1,400 residents. A closer look at Meridian shows that the place geography and county tract boundaries (hence CCDs) do not coincide well.



VIII. Conclusions

Though we began this exercise by noting some inherent weaknesses in the use of counties as units of analysis, we conclude by noting at least as many problems with sub-county units of analysis. As national systems of spatial units for purposes of typology construction, sub-county areas leave much to be desired. Still, we think there are occasions when researchers will find the use of these sub-county units fruitful. These occasions will likely involve a careful gathering of sub-county units into homogeneous groups. This could take the form of selection of places of a certain size. Another approach might involve use of sub-county units within a particular state or across a handful of states using similar approaches to small area definition. With attention to some of the issues raised here, policy analysts can profit from higher spatial resolutions than those provided at the county level.

References

Butler, Margaret A. and Calvin L. Beale. 1994. *Rural-Urban Continuum Codes for Metro and Nonmetro Counties, 1993.* Agriculture and Rural Economy Division, Economic Research Service, U.S. Department of Agriculture. Staff report No. 9425, September.

Fuguitt, G.V. 1968. "Some Characteristics of Villages in Rural America." Pp. 51-73 in *Rural Poverty in the United States,* edited by G.L. Wilbur and C. E. Bishop. Washington, DC: U.S. Government Printing Office.

Fuguitt, G.V., D.L. Brown, and C.L. Beale. *Rural and Small Town America.* New York: Russell Sage.

Johansen, H.E. and G.V. Fuguitt. 1984. *The Changing Rural Village in America: Demographic and Economic Trends Since 1950*. Cambridge, MA: Ballinger.

Morrill, Richard, John Cromartie, and Gary Hart. 1999. "Metropolitan, Urban, and Rural Commuting Areas: Toward a Better Depiction of the United States Settlement System." *Urban Geography* 20: 727-748.

Tolbert, Charles M., Michael Irwin, Thomas Lyson, and Alfred Nucci. 2002. "Civic Community in Small-Town America" *Rural Sociology* 67:90-113.

U.S. Census Bureau. 2001. *Technical Documentation: Census 2000 Redistricting Data (Public Law 94-171) Summary File.* Washington: The Bureau.

_____. 2002. *2000 Census of Population and Housing, Summary File 3: Technical Documentation.* Washington: The Bureau.