

# *Development of a Rural Typology GIS for Policy Makers*

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# The Current Problem

- There is no single, universally preferred definition of rural that serves all policy purposes.
  - *More than 15 definitions of rural are currently used by federal health programs.*
  - *There are over 50 definitions of rural for all federal programs.*
  - *30 million Census Bureau-defined rural people live in OMB-defined metropolitan areas.*
  - *20 million Census Bureau-defined urban people live in OMB-defined nonmetropolitan areas.*

# The Policy Considerations

- The choice of rural definition affects who benefits from a policy and who does not.
- Key considerations for understanding the policy implications of different rural definitions include the following:

# The Policy Considerations

- Rural definitions can be built on different units of geography, each of which has distinct advantages and disadvantages.
- The two most commonly used classification systems, those of the Census Bureau and the Office of Management and Budget, result in very different sets of places defined as rural.
- Policies and programs can be targeted when rural definitions are combined with key demographic, economic, or health care provider characteristics.

# The Policy Considerations

- Rural designations can change with shifts in population distribution or commuting patterns, or as a result of changes in geographic boundaries.
- Data availability is essential to support the application of the rural definition.
- There are many resources that can help with understanding the complexities of rural definitions.

*What are the potential unintended consequences of relying on commonly used, easily understood definitions, such as those for nonmetropolitan counties?*

- Differences between definitions, such as those of OMB and Census Bureau, must be clearly understood to anticipate potential unintended consequences.
- OMB's definition of counties as metropolitan or nonmetropolitan is often used as a proxy for urban and rural.

## *Should the selected rural definition be narrowly targeted or widely inclusive?*

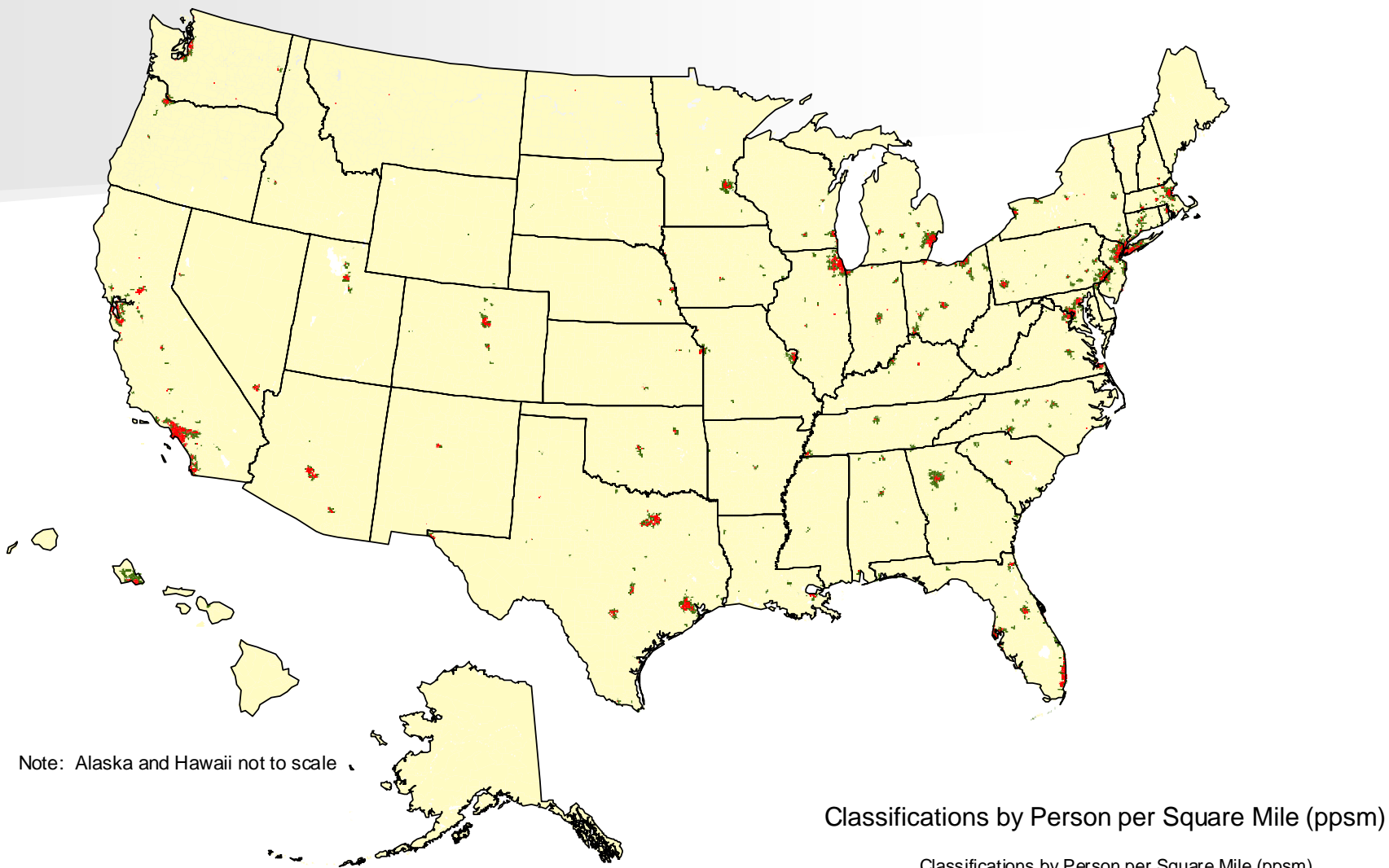
- While targeted, narrowly-defined definitions can direct resources to specific populations, they also have the potential consequence of eliminating from policy or program eligibility places or providers that should be covered. Conversely, more broadly defined definitions might result in the inclusion of areas with less need, with possible budgetary consequences.

# What Can the Impact of a Definition Be?

- A recent example is the use of the TRICARE definition of rural for applying access standards for Medicare Part D.
- Policy makers sought a broad, inclusive rural definition in hopes of ensuring Part D pharmacist availability across wide areas of rural America.
- The TRICARE definition defined rural so broadly that only central cities were excluded from the rural definition.
- Policy makers then mandated that pharmacies be available within 15 miles of 70% of the TRICARE-defined rural population.
- By including areas most people would consider suburban in the rural category, the residual 30% of the TRICARE-defined rural population not protected by the access standards is a number equal to the entire rural population under the most-used definition.



# Figure 1: Rural Areas as Defined by the TRICARE Retail Pharmacy Program



Source: ZIP Code population classifications from #MDA906-03-R-0002, DoD, 2003.  
Population data from U.S. Census, 2000.  
ZIP code spatial files based on U.S. Census ZIP Code Tabulation Areas, 2000.  
Cartography: RUPRI Center for Rural Health Policy Analysis, 2004.

# Most Common Definitions

- The most commonly used definitions of rural are based on either the Census Bureau Urbanized Area categorization of census blocks and block groups or the Office of Management and Budget (OMB) characterization of counties.
- The Census Bureau intentionally creates a definition of rural by designating census blocks and block groups as urban based on total population and population density, with all other areas being rural.
- The OMB classifies counties as *metropolitan*, when one or more county is the “core” and other counties are included based on commuting patterns into the core.
- The OMB *metropolitan* classification was not designed to create a definition of rural. However, many federal programs use the metropolitan designation to declare all other counties rural.

# The Building Blocks for Defining Rural

- Rural definitions are aggregations of one or more of the following units of geography:
  - Counties
  - ZIP code areas
  - Census tracts
    - Blocks and Block Groups

# Counties

- Advantages: County boundaries represent political jurisdictions and remain stable over time.
- Disadvantages: County size varies substantially across the United States, and larger counties include both urban and rural areas.

# ZIP Codes

- Advantages: ZIP code areas are easy to implement with programs that rely on provider or beneficiary address.
- Disadvantages: Because ZIP codes areas are designed for postal purposes, ZIP codes change frequently from year to year.

# Census Geography

- Advantages: Census geography represents the smallest and most precise geographic unit.
- Disadvantages: Census tract definitions can be hard to implement, because census geography information is not commonly used by programs and payers.

So What is Out There  
Currently

<u>DEFINITION</u>	<u>DEFINITION DESCRIPTION</u>	<u>% CLASSIFIED AS RURAL/NONMETROPOLITAN</u>		<u>GEOGRAPHIC UNIT USED</u>
		<i>Land</i>	<i>Population</i>	
<b>U.S. Census Bureau:</b> Urban and Rural Areas	The Census Bureau's classification of rural consists of all territory, population, and housing units located outside of urbanized areas and urban clusters. Urbanized areas include populations of at least 50,000, and urban clusters include populations between 2,500 and 50,000. The core areas of both urbanized areas and urban clusters are defined based on population density of 1,000 per square mile and then certain blocks adjacent to them are added that have at least 500 persons per square mile.	97.4%	19.7%	Census Block and Block Groups
<b>Economic Research Service, U.S. Department of Agriculture &amp; WWAMI Rural Health Research Center:</b> Rural-Urban Commuting Areas (RUCAs)	This classification scheme utilizes the U.S. Census Bureau's urbanized area and cluster definitions and work commuting information. The RUCA categories are based on the size of settlements and towns as delineated by the Census Bureau and the functional relationships between places as measured by tract-level work commuting data. This taxonomy defines 33 categories of rural and urban census tracts.	First Cut: <sup>1</sup> 78.8%	First Cut: <sup>1</sup> 19.6%	Census Tract, ZIP Code approximation available
<b>U.S. Office of Management and Budget (OMB):</b> Core Based Statistical Areas (i.e., metropolitan and nonmetropolitan areas)	A metropolitan area must contain one or more central counties with urbanized areas. Nonmetropolitan counties are outside the boundaries of metropolitan areas and are subdivided into two types, micropolitan areas and non-core counties. Micropolitan areas are urban clusters of 10,000 more persons.	74.5%	17.4%	County
<b>Economic Research Service, U.S. Department of Agriculture:</b> Rural-Urban Continuum Codes (Beale Codes)	This classification scheme distinguishes metropolitan counties by the population size of their metropolitan area, and non-metropolitan counties by degree of urbanization and adjacency to a metropolitan area or areas. All counties and county equivalents are grouped according to their official OMB metropolitan-nonmetropolitan status and further subdivided into three metropolitan and six nonmetropolitan groupings.	74.5%	17.4%	County
<b>Economic Research Service, U.S. Department of Agriculture:</b> Urban Influence Codes	This classification scheme subdivides the OMB metropolitan and nonmetropolitan categories into 2 metropolitan and 10 nonmetropolitan categories. Metropolitan counties are divided into two groups by the size of the metropolitan area. Nonmetropolitan-micropolitan counties are divided into three groups by their adjacency to metropolitan areas. Nonmetropolitan-noncore counties are divided into seven groups by their adjacency to metropolitan or micropolitan areas and whether they have their "own town" of at least 2,500 residents.	74.5%	17.4%	County



<b>Office of Rural Health Policy, U.S. Department of Health and Human Services:</b> RUCA Adjustment to OMB Metropolitan and Nonmetropolitan Definition	This method uses RUCAs 4-10 to identify small towns and rural areas within large metropolitan counties. In addition, census tracts within metropolitan areas with RUCA codes 2 and 3 that are larger than 400 square miles and have population density of less than 30 people per square mile are also considered rural.	8.0% <sup>3</sup>	4.1% <sup>3</sup>	Census Tract within OMB Metro Counties
<b>Economic Research Service, U.S. Department of Agriculture:</b> Commuting Zones (CZs) and Labor Market Areas (LMAs)	This classification scheme categorizes CZs and LMAs based on the size of the largest city, town, or census-designated place within the CZ and LMA. CZs and LMAs were developed as a means to capture the variations of local economic and labor force activities, as county boundaries are not adequate confines for an area's economy. Nonmetropolitan CZs and LMAs are broken down into three categories, classified by size: small town/rural (population of the largest town <5,000), small urban center (population of the largest town between 5,000 and 19,999), and larger urban center (population of largest town ≥20,000).	61.2%	11.2%	Commuting Zones and Labor Market Areas
<b>Federal Communications Commission:</b> Universal Service Fund – Rural Definition	This classification scheme utilizes the OMB's Core Based Statistical Areas (CBSAs). An area is classified as rural if it meets one of the following criteria: (1) area is outside of any CBSAs; (2) if considered a small CBSA, the area does not contain an urban area >25,000 residents; (3) if considered a large CBSA (>25,000 residents), census tract can be classified as rural if the individual tract within large CBSAs does not contain urban areas >25,000 residents.	87.1%	22.2%	Census Tract
<b>Administration on Aging</b>	This classification combines U.S. Census Bureau-defined urbanized areas with ZIP code postal boundaries to classify all ZIP codes as urban or rural. A ZIP area is designated urban by two criteria: (1) if 1% or more of the ZIP area falls within an urbanized area, and (2) if a ZIP area is affiliated within place of 20,000 to 49,000 residents outside urbanized area. All other ZIP code areas classified as rural.	86.5%	19.9%	ZIP code (area)
<b>Department of Housing and Urban Development:</b> Rural Housing and Economic Development – Rural Definition	This classification defines rural in five ways: (1) a place having fewer than 2,500 inhabitants, (2) a county or parish with an urban population of ≤20,000 inhabitants, (3) territory, person, and housing units in the rural portion of an "extended city," (4) open country that is not a part of or associated with an urban area, and (5) any place with a population not in excess of 20,000 inhabitants and not located in a metropolitan statistical area.	69.9%	13.0%	Counties

<b>National Center for Education Statistics:</b> Urban-Centric Locale Codes	This classification scheme is based on an address's proximity to an urbanized area (a densely settled cored with densely settled surrounding areas). Territories are classified into four major types: city, suburban, town, and rural. Cities and suburbs are gradations of size—small, midsize, or large. Towns and rural areas are further distinguished by their proximity to an urbanized area. They are characterized as fringe, distant, or remote. <i>(Note: In March 2006, NCES revised its system of local codes.)</i>	62.4%	17.0%	School level
<b>Department of Defense:</b> TRICARE Definition	This classification scheme categorizes areas by ZIP codes. Rural is defined as a ZIP code with a population density less than 1,000 persons per square mile.	98.0%	46.7%	ZIP Code
<b>National Center For Health Statistics:</b> Urban-Rural Classification Scheme	This classification scheme divides counties into four metropolitan and two nonmetropolitan categories. Classification is based on information from the 2003 OMB's metropolitan-nonmetropolitan designations, the ERS' Rural-Urban Continuum Codes and the Urban Influence Codes classification, and county-level data on several variables from the 2000 census and 2004 postcensal population estimates. Counties in an area with an urban cluster of 10,000-49,999 population are classified as nonmetropolitan-micropolitan. All counties with population under 10,000 are classified as noncore-nonmicropolitan.	74.5%	17.4%	Counties
<b>Definitions designed to designate frontier areas</b>				
<b>Frontier Education Center (FEC):</b> Frontier Areas	Frontier areas are determined using the matrix established by FEC for scoring density and isolation/distance. An area receives points for ranges of population density and mile distant from a market. An area must receive a minimum of 50 points to be considered frontier.	55.9%	3.7%	Counties
<b>U.S. Census Bureau:</b> Frontier Areas	A frontier area is designated as an area with extremely low population density of fewer than six people per square mile.	57.1%	0.9%	Census Block and Block Groups

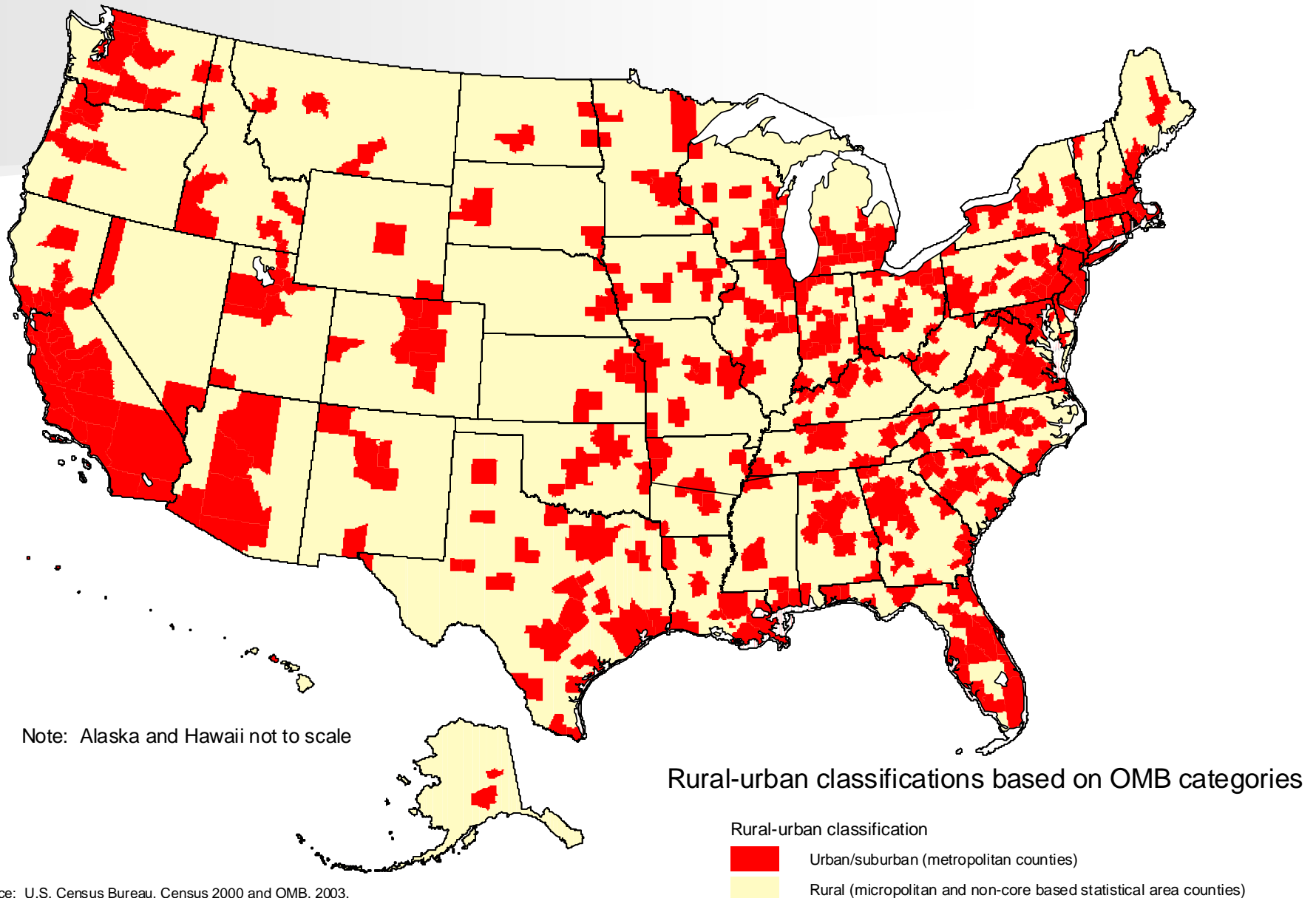
**Updated as of April 3, 2007**

<sup>1</sup> RUCA codes used to calculate for percent of land and people classified as rural as follows: [large rural/town, micropolitan] 4.0, 4.2, 5.0, 5.2, 6.0, 6.1, [small rural town focused] 7.0, 7.2, 7.3, 7.4, 8.0, 8.2, 8.3, 8.4, 9.0, 9.1, 9.2, [isolated small rural town focused] 10.0, 10.2, 10.3, 10.4, 10.5, and 10.6

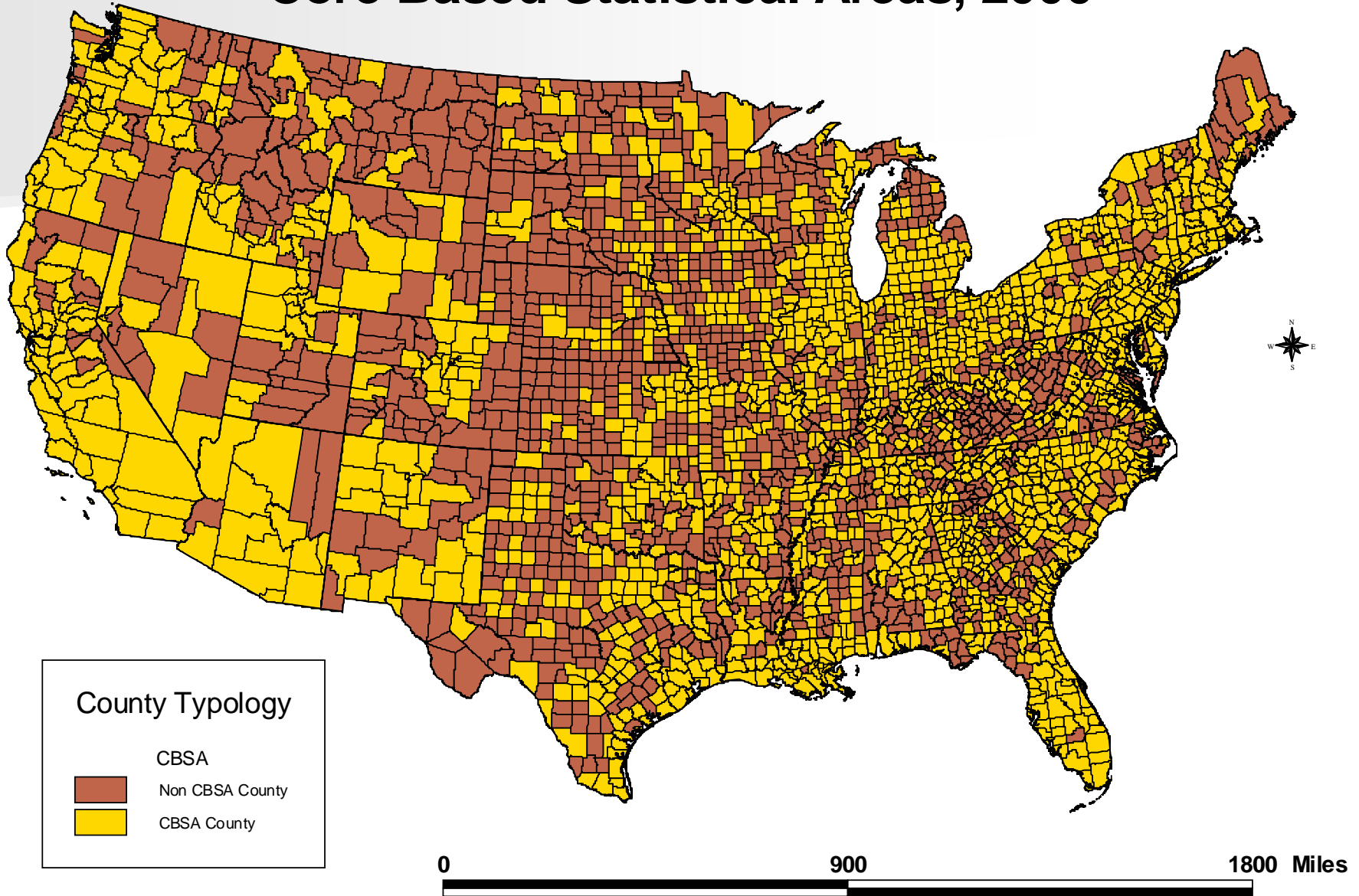
<sup>2</sup> RUCA codes used to calculate for percent of land and people classified as rural as follows: [small rural town focused] 7.0, 7.2, 7.3, 7.4, 8.0, 8.2, 8.3, 8.4, 9.0, 9.1, 9.2, [isolated small rural town focused] 10.0, 10.2, 10.3, 10.4, 10.5, and 10.6

<sup>3</sup> Calculations for percent of land and people classified as rural are low compared to all other measures. RUCA adjustment to OMB metropolitan and nonmetropolitan definition refers only to areas within metropolitan counties and therefore was calculated as such.

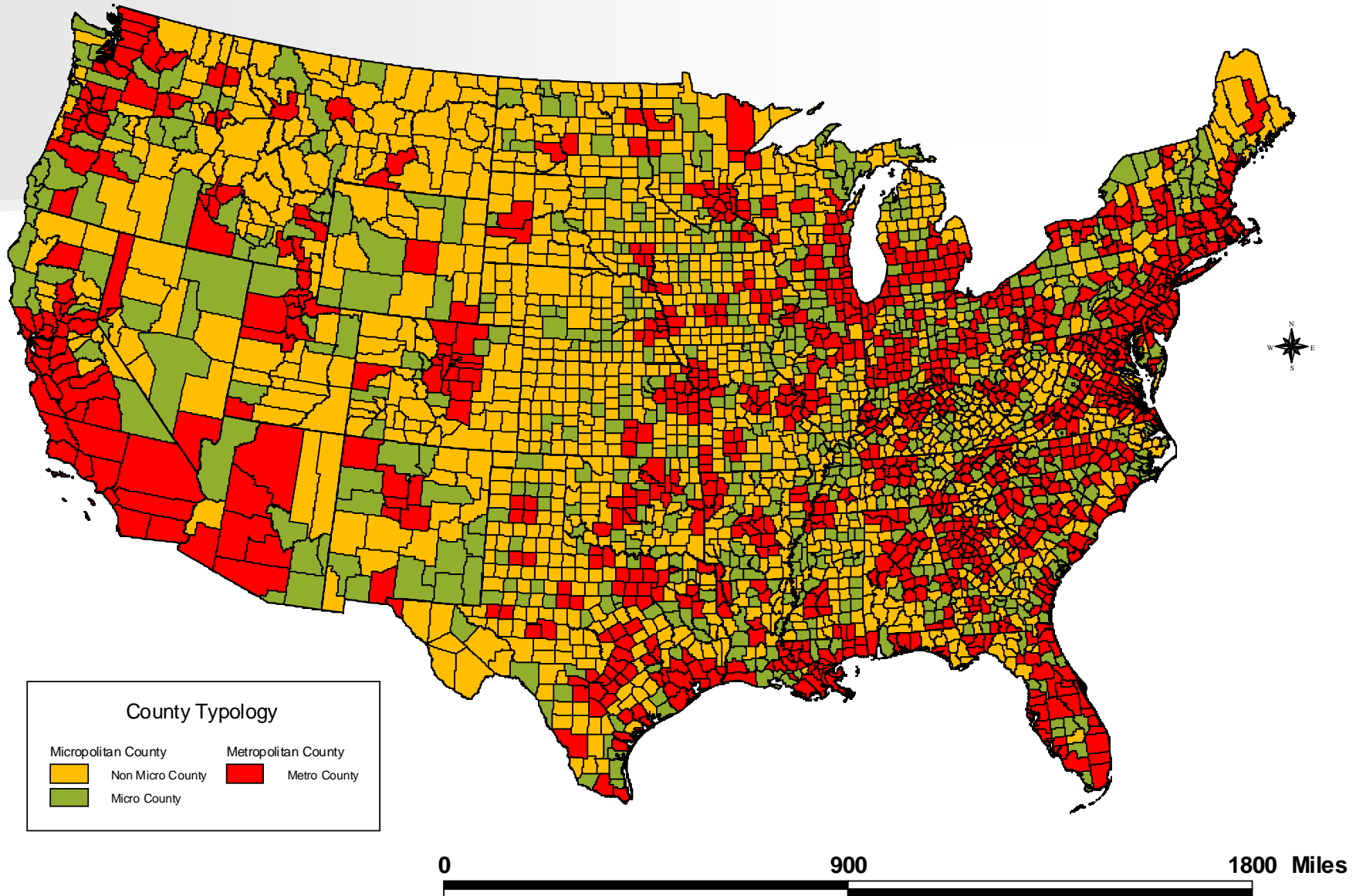
**Figure 2: Rural Areas as Defined using the Office of Management and Budget (OMB) Category of Nonmetropolitan, 2003**



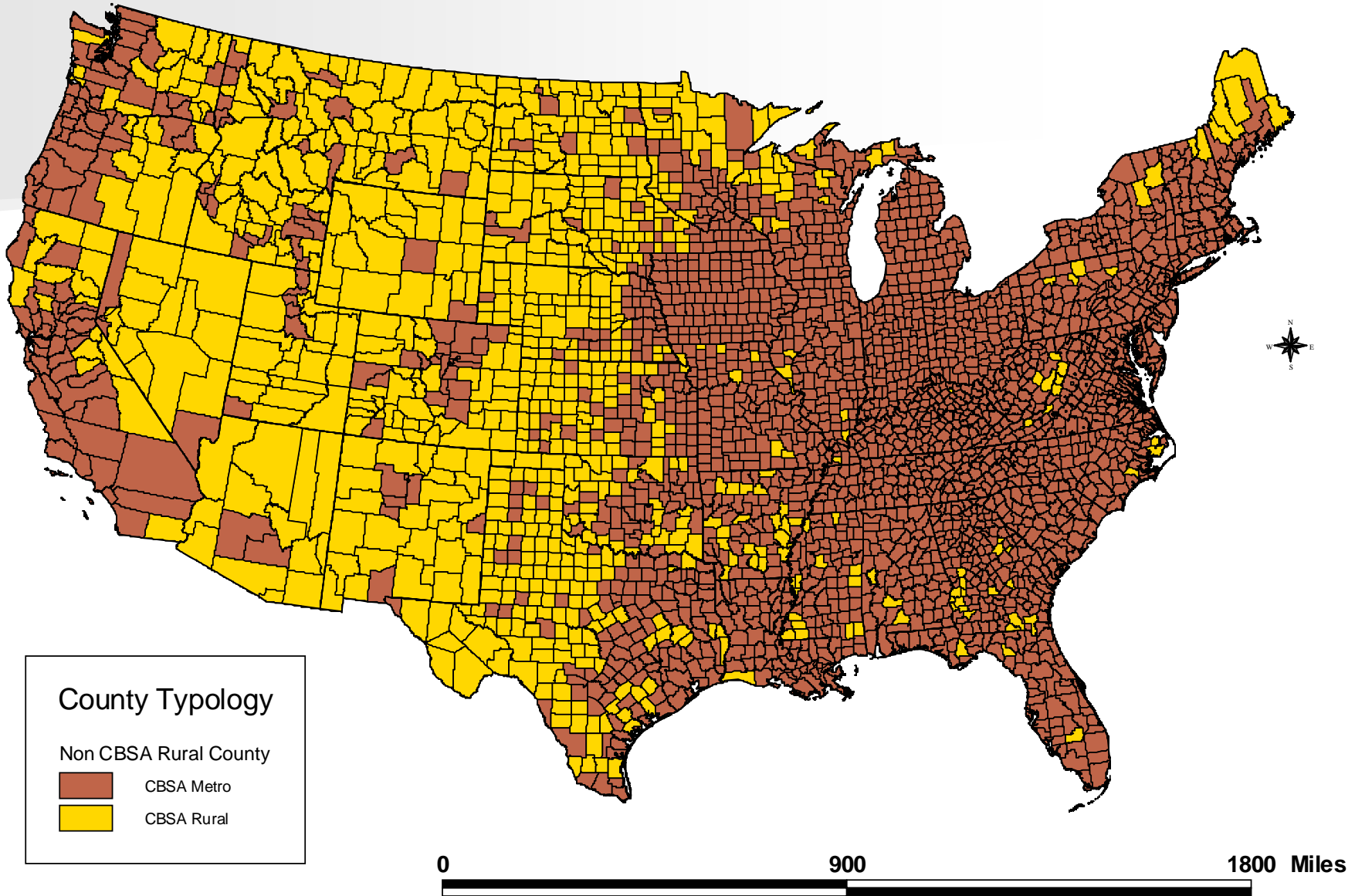
# Core Based Statistical Areas, 2000



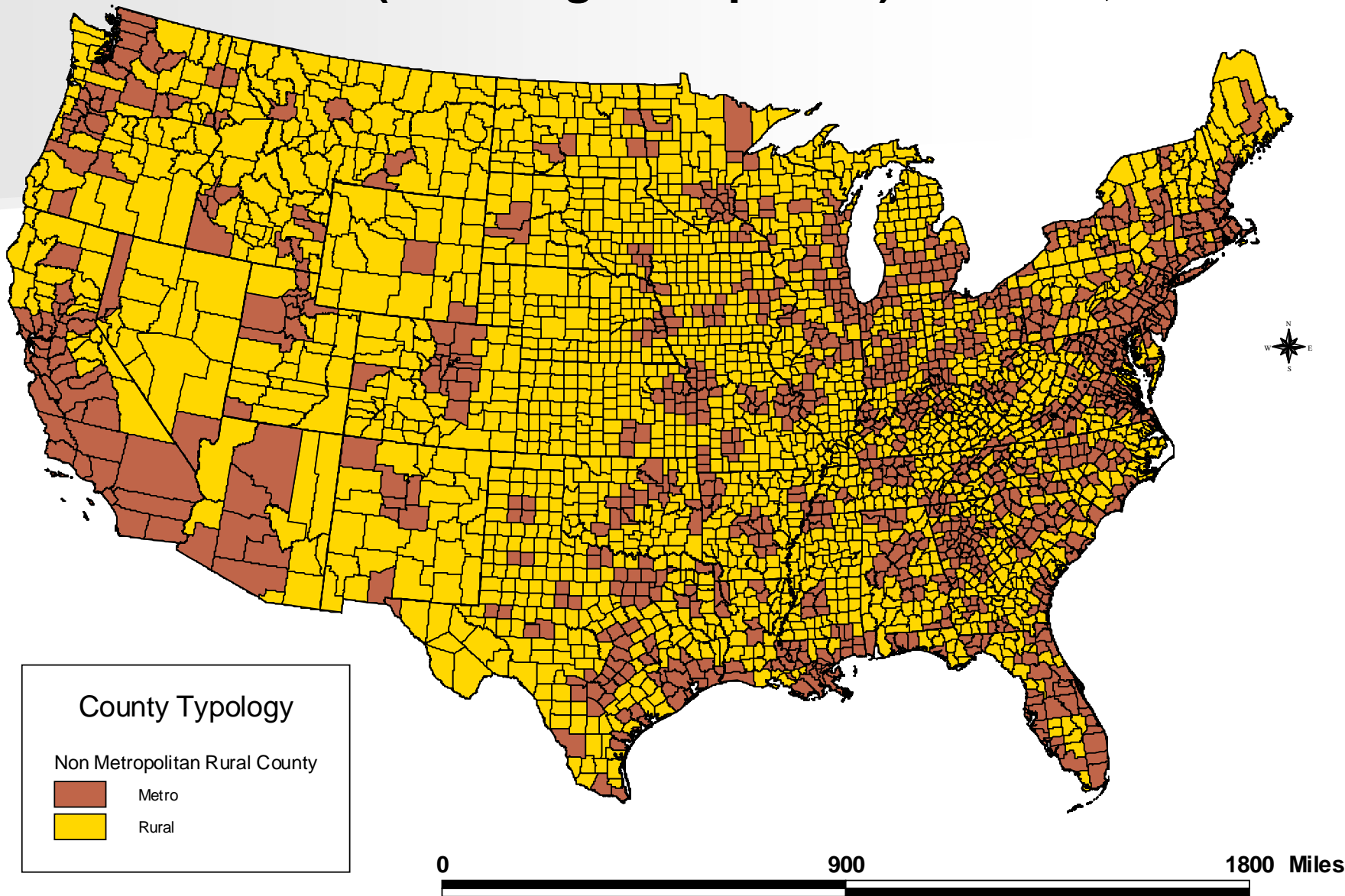
# Metropolitan, Micropolitan and Non-Metro Counties, 2000



# Non Core Based Statistical Area Rural Counties, 2000

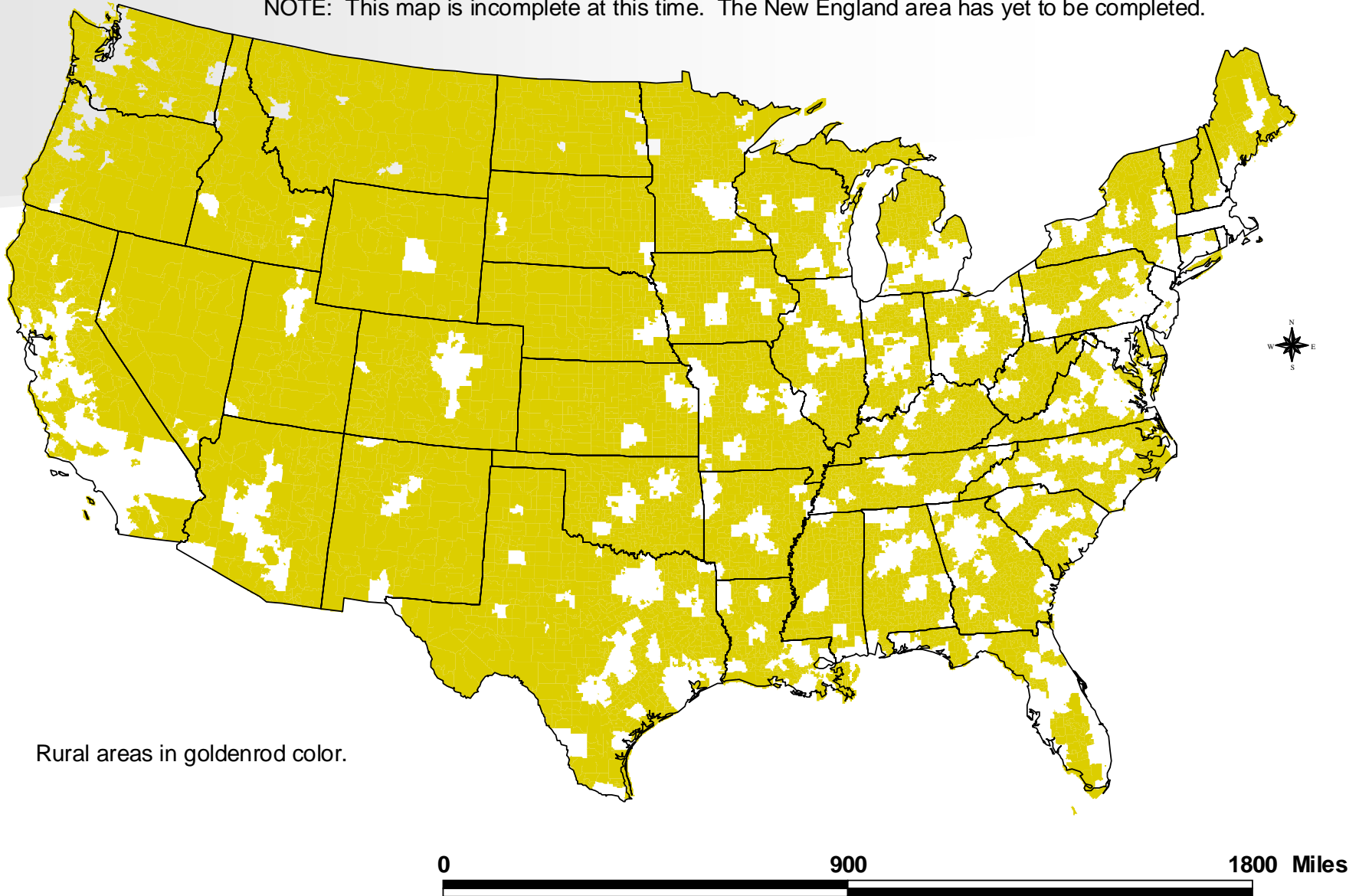


# Rural (Including Micropolitan) Counties, 2000



# Rural by ORHP Outreach Grant Program Definition, 2005

NOTE: This map is incomplete at this time. The New England area has yet to be completed.





# Recent Alternative Proposals

- Isserman's proposals
- RUCA's
- ESR Rural Typologies

# Recent work by Andrew Isserman, University of Illinois

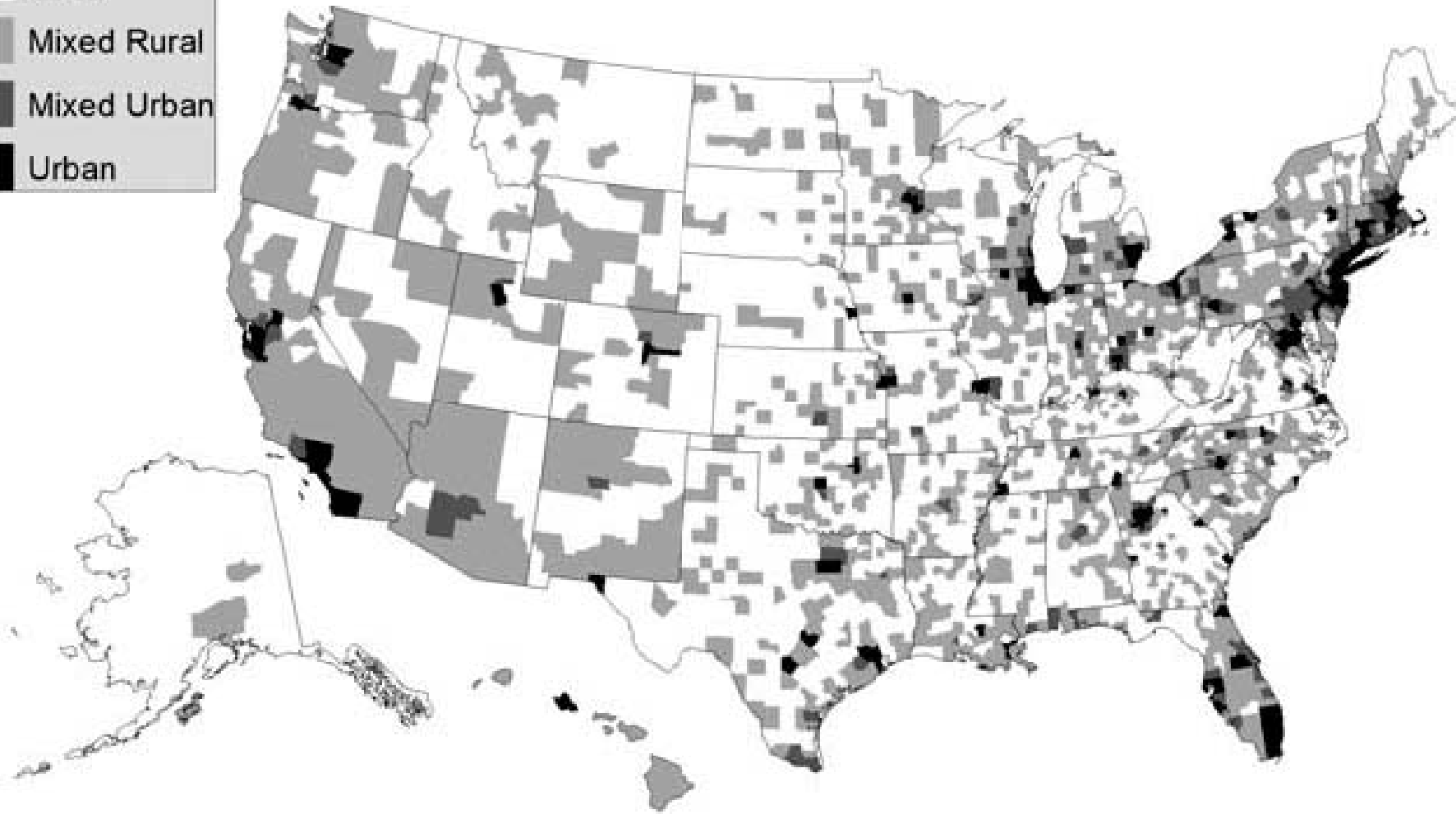
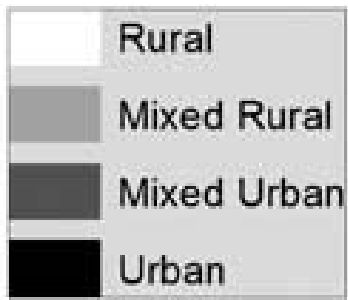
- *In the National Interest: Defining Rural and Urban Correctly in Research and Public Policy*  
(International Regional Science Review, 28, 4:465-499  
(October, 2005)
- Two alternative methods suggested. Most reasonable is a county level mixture of
  - Rural
  - Rural Urban Mix
  - Urban Rural Mix
  - URban

**TABLE 3. U.S. Population, Urban-Mixed-Rural Counties, 2000**

<i>Type</i>	<i>Number of Counties</i>	<i>Population</i>	<i>Percentage of U.S. Population</i>	<i>Density</i>	<i>Percentage of U.S. Land</i>	<i>Percentage in Urbanized Areas</i>	<i>Percentage in Urban Clusters</i>	<i>Percentage in Rural</i>	<i>Rural Population</i>	<i>Percentage of U.S. Rural</i>
Rural	1,790	27,964,452	10	13	62	1	23	76	21,267,242	36
Mixed rural	1,022	86,424,633	31	73	34	42	25	33	28,675,527	49
Mixed urban	158	41,106,320	15	446	3	82	4	15	6,117,981	10
Urban	171	125,926,501	45	1,560	2	97	1	2	3,000,617	5

**TABLE 4. Cross-Tabulation of Urban-Rural and Metro-Nonmetro Systems, 2000**

<i>Type</i>	<i>Number of Counties</i>	<i>Population</i>	<i>Percentage in Urbanized Areas</i>	<i>Percentage in Urban Clusters</i>	<i>Percentage in Rural</i>	<i>Density</i>	<i>Rural</i>	<i>Percentage of U.S. Rural</i>
Rural nonmetro	1,486	21,375,266	0	24	75	11	16,134,287	27
Rural metro	304	6,589,186	2	20	78	36	5,132,955	9
Mixed rural nonmetro	555	27,291,697	1	53	47	42	12,700,651	22
Mixed rural metro	467	59,132,936	61	12	27	109	15,974,876	27
Mixed urban nonmetro	11	175,003	0	79	21	593	36,328	0
Mixed urban metro	147	40,931,317	82	3	15	446	6,081,653	10
Urban metro	171	125,926,501	97	1	2	1,560	3,000,617	5



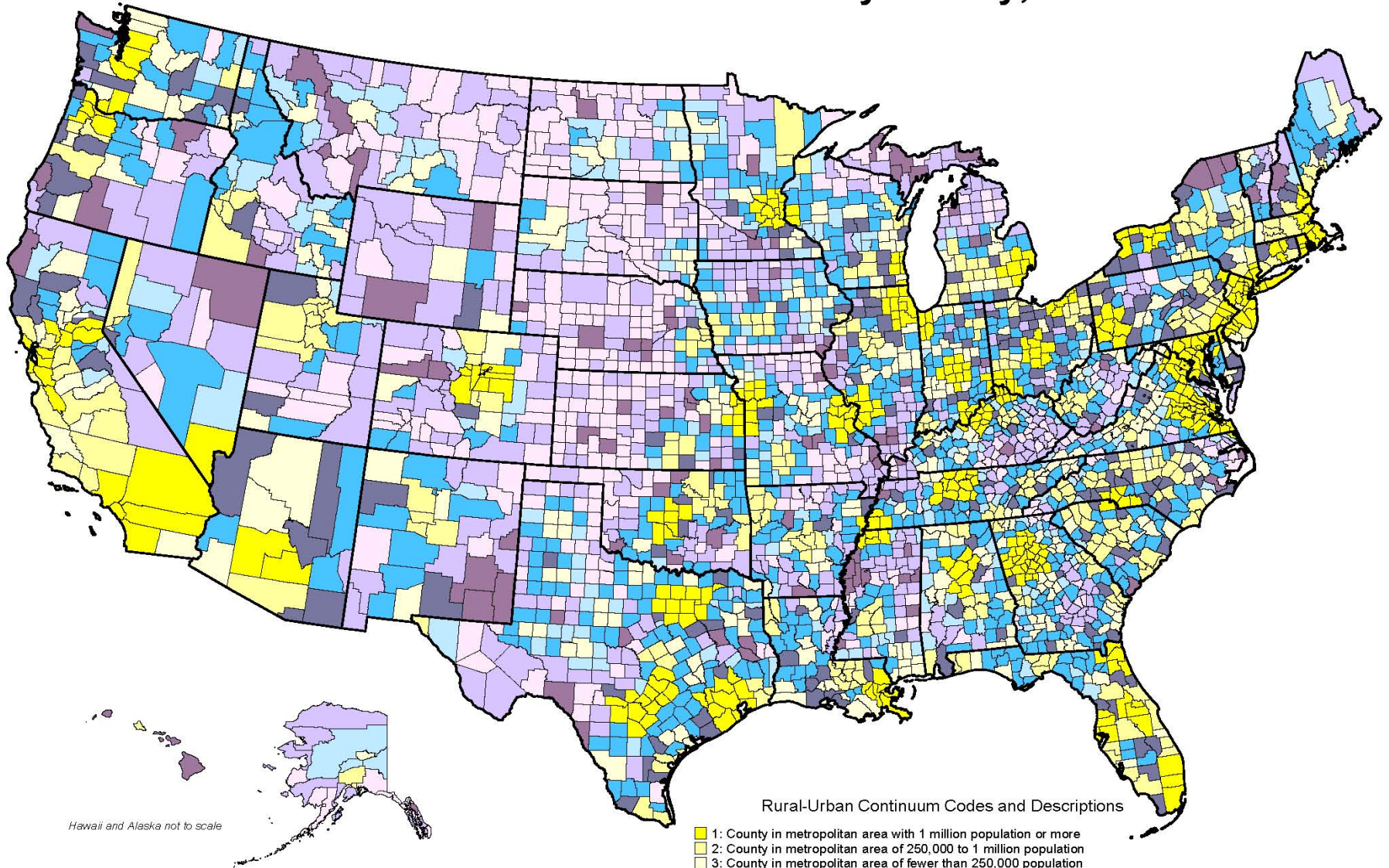
# The Rural-Urban Density Typology

# RUCA Codes

<http://depts.washington.edu/uwruca/>

- **RUCAs**, Rural-Urban Commuting Area Codes, are a Census tract-based classification scheme that utilizes the standard Bureau of Census Urbanized Area and Urban Cluster definitions in combination with work commuting information to characterize all of the nation's **Census tracts** regarding their rural and urban status and relationships. In addition, a ZIP Code RUCA approximation was developed.

# Rural-Urban Continuum Codes by County, 2003



Rural-Urban Continuum Codes and Descriptions

- 1: County in metropolitan area with 1 million population or more
- 2: County in metropolitan area of 250,000 to 1 million population
- 3: County in metropolitan area of fewer than 250,000 population
- 4: Nonmetro county with urban pop. of 20,000 or more, adjacent to metro area
- 5: Nonmetro county with urban pop. of 20,000 or more, not adjacent to metro area
- 6: Nonmetro county with urban pop. of 2,500-19,999, adjacent to metro area
- 7: Nonmetro county with urban pop. of 2,500-19,999, not adjacent to metro area
- 8: Nonmetro county less than 2,500 urban population, adj. to metro area
- 9: Nonmetro county less than 2,500 urban population, not adj. to metro area

Hawaii and Alaska not to scale

Sources: County Boundaries - U.S. Census Bureau, 2000. Rural-Urban Continuum Codes - Economic Research Service, US Department of Agriculture, 2003.

Prepared by the North Carolina Rural Health Research and Policy Analysis Center, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill.

# 2004 ERS/USDA County Typology Codes

<http://www.ers.usda.gov/briefing/rurality/Typology/>

- An area's economic and social characteristics have significant effects on its development and need for various types of public programs.
- To provide policy-relevant information about diverse county conditions to policymakers, public officials, and researchers, ERS has developed a set of **county-level** typology codes that captures differences in economic and social characteristics.

## Economic Type

Codes and definitions of the categories are as follows:

- **Farming-dependent** (440 total, 403 nonmetro) counties—either 15 percent or more of average annual labor and proprietors' earnings derived from farming during 1998-2000 or 15 percent or more of employed residents worked in farm occupations in 2000. Note that a few counties have changed farm dependency status from the preliminary group posted in May 2004. See methods, data sources, and documentation for an explanation of these changes.
- **Mining-dependent** (128 total, 113 nonmetro) counties—15 percent or more of average annual labor and proprietors' earnings derived from mining during 1998-2000.
- **Manufacturing-dependent** (905 total, 585 nonmetro) counties—25 percent or more of average annual labor and proprietors' earnings derived from manufacturing during 1998-2000.



## Economic Type

Codes and definitions of the categories are as follows:

- Federal/State government-dependent (381 total, 222 nonmetro) counties—15 percent or more of average annual labor and proprietors' earnings derived from Federal and State government during 1998-2000.
- Services-dependent (340 total, 114 nonmetro) counties—45 percent or more of average annual labor and proprietors' earnings derived from services (SIC categories of retail trade; finance, insurance, and real estate; and services) during 1998-2000.
- Nonspecialized (948 total, 615 nonmetro) counties—did not meet the dependence threshold for any one of the above industries.

## Policy Types

These indicators are not mutually exclusive;  
definitions of the types are as follows:

- Housing stress (537 total, 302 nonmetro) counties—30 percent or more of households had one or more of these housing conditions in 2000: lacked complete plumbing, lacked complete kitchen, paid 30 percent or more of income for owner costs or rent, or had more than 1 person per room.
- Low-education (622 total, 499 nonmetro) counties—25 percent or more of residents 25-64 years old had neither a high school diploma nor GED in 2000.
- Low-employment (460 total, 396 nonmetro) counties—less than 65 percent of residents 21-64 years old were employed in 2000.
- Persistent poverty (386 total, 340 nonmetro) counties—20 percent or more of residents were poor as measured by each of the last 4 censuses, 1970, 1980, 1990, and 2000.

## Policy Types

These indicators are not mutually exclusive;  
definitions of the types are as follows:

- Population loss (601 total, 532 nonmetro) counties—number of residents declined both between the 1980 and 1990 censuses and between the 1990 and 2000 censuses.
- Nonmetro recreation (334 designated nonmetro in either 1993 or 2003, 34 were designated metro in 2003) counties—classified using a combination of factors, including share of employment or share of earnings in recreation-related industries in 1999, share of seasonal or occasional use housing units in 2000, and per capita receipts from motels and hotels in 1997. See methods for more details.
- Retirement destination (440 total, 277 nonmetro) counties—number of residents 60 and older grew by 15 percent or more between 1990 and 2000 due to immigration.

# Tools for Determining Rurality Status



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## Am I Rural?

The [Am I Rural?](#) service can be used to help determine whether a specific location is considered rural based on various definitions of rural, including definitions that are used as eligibility criteria for federal programs. The information provided by this service addresses only the rural aspect of a program's requirements. Your "Am I Rural?" report is not a guarantee of your eligibility status. Please check with the program contacts directly to verify your eligibility for specific federal programs.

Create a custom report for your location: [Am I Rural?](#)

### Common Rural Definitions

- Rural Urban Commuting Areas (RUCAs), by ZIP code and Census tract
- Core Based Statistical Areas
- Rural Urban Continuum Codes (RUCC)
- Federal Communications Commission (FCC)
- Urban Influence Codes (UICs)

### Program-Related Definitions

- Centers for Medicare & Medicaid Services [Rural Health Clinics](#) status
- Centers for Medicare & Medicaid Services Medicare Telemedicine Reimbursement
- Office of Rural Health Policy Grant Programs:
  - [Small Rural Hospital Improvement Grant Program](#)
  - [Rural Access to Emergency Devices Grant Program](#)
  - [Rural Health Care Services Outreach Grant Program](#)
  - [Rural Health Network Development Grant Program](#)
  - [Rural Health Network Development Planning Grant Program](#)

For more information about rural definitions, please see the [What is Rural?](#) information guide.



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### Am I Rural?

Create a custom report of rural definitions for your location. Please see the [Introduction to Am I Rural?](#) for more information about this service.

#### Step 1: Select your location.

Enter a US address or intersection. **You must include a city and state or a ZIP code.**

Address:   
(street number and street name)

City:

State:  (2 letter state abbreviation. For example: IL)

ZIP Code:  (5 digit ZIP Code. For example: 65211)

Next->

The information provided by this service addresses only the rural aspect of a program's requirements. Your "Am I Rural?" report is not a guarantee of your eligibility status. Please check with the program contacts directly to verify your eligibility for specific federal programs.

# Additional Research Tools

- Web based GIS system that will allow researchers to experiment with the potential impacts of definitions of rural upon their policy and more importantly, the people it is intended to serve.

# Contact Information

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  - [www.rupri.org/healthpolicy](http://www.rupri.org/healthpolicy)



# Rural Policy Research Institute Health Panel

[www.rupri.org/ruralhealth](http://www.rupri.org/ruralhealth)

- *Andrew F. Coburn,*
- *A. Clinton MacKinney*
- *Timothy D. McBride*
- *Keith J. Mueller*
- *Rebecca T. Slifkin*
- *Mary K. Wakefield*

# Organizational Information



RUPRI Center for Rural Health Policy Analysis

– [www.rupri.org/healthpolicy/](http://www.rupri.org/healthpolicy/)



Nebraska Center for Rural Health Research

■ Nebraska Center for Rural Health Research.

– [www.unmc.edu/rural](http://www.unmc.edu/rural)



■ University of Nebraska Medical Center

– [www.unmc.edu](http://www.unmc.edu)