6. THE AVAILABILITY OF VITAL AND HEALTH STATISTICS FOR NONMETROPOLITAN AREAS

Given the diversity of nonmetropolitan areas, it is important to present vital and health and statistics by State, region, or by nonmetropolitan typology. Data from the decennial Census and national vital statistics (e.g., natality and mortality data) are published for nonmetropolitan areas by State and degree of urbanization, but few other sources of health information are published along these dimensions. For example, the National Center for Health Statistics does not publish detailed nonmetropolitan data (e.g., cross-tabulated by Federal region) in their reports on National Health Interview and National Medical Care Utilization and Expenditure Surveys. Sometimes, limitations of the way in which the data are collected (e. g., the sample size or frame) limit the extent to which nonmetropolitan data can be displayed. In general, however, survey data files are available for public use and can be analyzed by area.

The choice of definition of "rural" used to present demographic and health data can make a substantive difference. For example, whether a disproportionate number of rural residents are elderly depends on how rural is defined. Table 17 shows the proportion of the population aged 65 and older according to metro/nonmetropolitan and urban/rural designations. The elderly appear to make up a larger proportion of the total population in nonmetropolitan than metropolitan areas (13.0 v. 10.7 percent). Using the urban/rural categories, however, the opposite is true--there is a greater proportion of elderly residents in urban than rural areas (11.4 v. 10.9). The explanation of this discrepancy appears to be that there are proportionately more persons 65 and older living in urban nonmetropolitan areas (14.3 percent) and fewer in rural metropolitan areas (9.0 percent). Moreover, when nonmetropolitan county MSA-adjacency and size of the urbanized population are considered, the aged appear to be over-represented in the less urbanized and non-adjacent counties (see table 18).

Table 17--- Proportion of the Population 65 and Older by Metropolitan/Non metropolitan and Urban/Rural Residence

Area	U.S. population	Percent age 65 and over
Metropolitan	169,430,577	10.7
Nonmetropolitan	57,115,228	13.0
Urban	167,054,638	11.4
Rural	59,491,167	10.9
Metropolitan		
Urban	145,451,315	10.9
Central cities	67,854,918	11.8
Not central cities	77,596,397	10.2
Rural	23,979,262	9.0
Nonmetropolitan		
Urban	21,603,323	14.3
Rural	35,511,905	12.2

SOURCE: U.S. Department of Commerce, Bureau of the Census, 1980 Census: General Social and Economic Characteristics.

Table 18--- Proportion of Nonmetropolitan Population Age 65 and Older by Level of Urbanization and Adjacency to an MSA[a] (1980)[b]

	U.S. Population (1,000s)	Percent age 65 and older
U.S. total	226,546	11.2
Metropolitan counties	163,526	10.7
Nonmetropolitan counties	63,020	12.8
Urbanized		
Adjacent to metro area	14,802	11.9
Not adjacent	9,594	11.0
Less urbanized		
Adjacent to intro area	15,350	13.3
Not adjacent	15,529	13.5
Totally rural		
Adjacent to metro area	2,737	13.7
Not adjacent	5,008	14.6

[a] Urbanized counties are those with an urban population of at least 20,000; less urbanized counties are those with an urban population of between 2,500 to 19,999; and totally rural counties are those with no populations of 2,500 or more.

[b] 1980 Census information is displayed using the 1970 classification of counties.

SOURCE: D. A., McGranahan, et al. , "Social and Economic Characteristics of the Population in Metro and Nonmetro Counties, 1970-80," USDA, ERS, Rural Development Research report 58, appendix, table 2.

Infant mortality is also better understood by looking beyond metropolitan/nonmetropolitan comparisons. Department of Health and Human Services (DHHS) publishes data on infant mortality for urban and "not urban" places within metropolitan and nonmetropolitan counties (nonmetropolitan urban places are defined as those with populations of 10,000 or more).[1] Table 19 shows that within U.S. nonmetropolitan areas (1985-1986), white infant mortality rates were *lower* in nonurban places than in urban places (9.3 versus 9.9). Black infant mortality, in contrast, is *higher* in non urban places (17.8 versus 16.5). In some nonmetropolitan areas (e.g., Alabama), infant mortality is higher in the more rural areas for both whites and blacks (see table 19).

In summary, quite different conclusions about the rural population may be reached by changing the definition of rural areas. Furthermore, important within-area variations are obscured when national data are not published for sub nonmetropolitan areas.

The problem of limited rural data is not a new one for policy makers. In 1981, the National Academy of Sciences addressed the issue in a report, *Rural America in Passage: Statistics for Policy.* A panel on Statistics for Rural Development Policy comprised of agricultural economists, statisticians, geographers, sociologists, and demographers made a number of recommendations to improve the perceived poor availability and quality of rural statistical databases. The panel recommended that the Federal Government "take a more active role in the coordination of statistical activities and in developing and promulgating common definitions and other statistical standards that are appropriate for implementation at the Federal, State, and local levels." The panel concluded that a single definition of "rural" is neither feasible nor desirable but recommended that data be organized in a building-block approach so that different definitions and topologies could be constructed. The panel recognized the need for a common aggregation scheme for counties. It recommended the development of a standard classification of nonmetropolitan counties related to the level of urbanization. The panel recommended that if possible, the county classification should be supplemented by a distinction between urban and rural areas within counties (13).

Table 19.--Nonmetropolitan Infant Mortality Rates by Urban Area and Race, U.S. Total and Alabama (1986)

Infant mortality rate (no. deaths)
(deaths under age 1 per 1,000 births)

	United States	Alabama
Nonmetropolitan	10.4 (17,926)	12.7 (553)
Urban places[a]	10.8 (4,075)	10.9 (115)
White	9.9 (3,019)	7.4 (47)
Black	16.5 (958)	16.3 (67)
Other	7.1 (98)	7.6 (1)
Balance of area	10.3 (13,851)	13.3 (438)
White	9.3 (10,644)	10.5 (228)
Black	17.8 (2,632)	19.2 (210)
Other	10.7 (575)	.. (o)

[a]Urban places in nonMSA counties are those with populations of 10,000 or more.

SOURCE: Department of Health and Human Services, Public Health Service, Vital Statistics of the U. S.: 1986, 1985, Vol. 1, Natality, Pub. No. 88-1123, 88-1113 (Washington, DC: U.S. Government Printing Office, 1988, 1987); 1986, 1985, Vol. 2, Mortality, Pub. No. 88-1114, 88-1102 (Washington, DC: U.S. Government Printing Office, 1988, 1987).

The lack of consistent county coding poses difficulties for those interested in developing county-based definitions and topologies. Unique county identifiers called county FIPS (Federal Information Processing Standards) codes are provided by the National Institute of Measurement and Technology

1 DHHS defines urban places in USA counties as those with populations of 10,000 or more but less than 50,000. This urban definition differs from the Bureau of the Census definitions of urban or urbanized areas.

2 The National Institute of Measurement and Technology was formerly the Bureau of National Standards.

but are not universally used *(8).* The panel recommended that Federal and State data be recorded with such county codes to permit tabulations for individual counties and groups of counties. Adherence to a county coding system would facilitate aggregation of information regardless of how rural is defined. Since the report was issued in 1981, few of its recommendations have been implemented (8).

The relative merits of the county-based topologies for health service planning and research can be evaluated using the Area Resource File (ARF), a county-level data base maintained by the Health Resources and Services Administration (61). The file contains data necessary for the Bureau of Health Professions to carry out its mandated program of research and analysis of the geographic distribution and supply of health personnel. Population, economic, and mortality data, and measures of health personnel, health education, and hospital resources, are included in the file (61).

The ARF has been used to show how the availability of physician and hospital resources varies by type of nonmetropolitan area (table 20) (18). For example, when physician availability is examined by type-of-county, wide variations in physician-to-population ratios are evident. The average physician-to-population ratio is 64 per 100,000 in nonmetropolitan counties[3] but it ranges from 131 per 100,000 in high-density counties to a low of 45 per 100,000 in persistent poverty counties (see table 20). Somewhat surprisingly, there appear to be relatively more physicians in nonadjacent than adjacent nonmetropolitan counties (67 compared to 59 per 100,000). A possible explanation is that physicians serving many of the residents of the adjacent nonmetropolitan counties are preferentially locating in the outlying suburban areas of **MSAs.**

Maps effectively illustrate geographic variation in health status and access to health care resources. U.S. cancer atlases have been published at the county level providing a visualization of geographic patterns of cancer mortality not apparent from tabular data (60).[4] Rural women in the lower socioeconomic classes have high rates of cervical cancer and for white women, maps show concentrations of cervical cancer throughout the South, especially in Appalachia (see figure 6).

Maps of the United States by county show higher death rates due to unintentional injury (e.g., housefires and drownings) and motor vehicle crashes in rural areas, particularly in Western, sparsely populated counties (see figures 7-8). The large volume of travel on major routes traversing rural areas does not account for the high rural death rates. Instead, road characteristics, travel speeds, seat-belt use, types of vehicles, and availability of emergency care are factors that may contribute to the excess of motor vehicle crash deaths in rural areas (3).

Maps of nonmetropolitan county variation in health indicators (e. g., infant mortality) and the distribution of health care resources (e.g., physicians, hospitals) will soon be published in the *Rural Health Atlas.*[5] A typology of rural medical care is being developed for the Atlas, which incorporates measures of access to primary care physicians and health facilities. Such a typology will help identify isolated communities with limited access to health care (35).

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3 This analysis was limited to nonmetropolitan counties of less than 50,000 population in 1985. Only physicians engaged in patient care are included.

4 The U.S. Cancer Atlas maps cancer mortality by county groupings called State Economic Areas (SEA). 506 SEAS were delineated by the Bureau of the Census in 1960. SEAS are geographic units with similar demographic, climatic, physiographic, and cultural features (60).

5 The atlas is scheduled to be published by researchers at the University of North Carolina by October, 1989 (35).

Table 20.--Characteristics of Different Categories of U.S. Nonmetropolitan Counties (2,092 nonmetropolitan counties of less than 50,000 population in 1985)[a]

Category (numbet of counties)	1985 M.D.+ DO/100,000	1986 hospital beds/1,000	1986 hospital days per 1,000	1980 Age over 65	1979 X in poverty
U.S. total (2092)	64.2	5.0	962	14.2	17.6
Urbanized (83)	113.7	6.4	1421	12.5	15.2
Less urban (1239)	71.9	5.5	1081	13.9	16.7
Rural (770)	46.5	4.1	721	15.1	19.3
MSA adjacent (751)	58.6	4.3	858	13.9	16.4
MSA nonadjacent (1341)	67.3	5.4	1021	14.8	18.2
1980 population density					
3 or less (194)	48.9	4.9	838	13.1	17.9
>3 and < 6 (181)	59.2	7.2	1382	14.7	16.5
>6 and < 9 (123)	63.4	6.1	1035	15.9	16.1
>9 and < 50 (1235)	60.5	4.6	858	14.8	18.5
>50 and < 100 (320)	80.5	4.9	1053	12.5	15.7
more than 100 (39)	130.5	7.7	1959	11.4	12.0
East (59)	115.7	5.5	1443	13.5	12.8
South Atlantic (324)	60.7	4.2	866	12.7	20.7
South (624)	54.4	4.3	680	14.8	22.0
Central (799)	64.9	5.9	1193	16.0	14.3
West (286)	75.4	5.1	942	11.5	14.3
Agricultural only (464)	52.2	5.7	1o11	16.6	17.1
Agricultural total (680)	49.1	5.1	944	15.9	18.8
Manufacturing only (290)	68.3	4.5	847	13.2	15.2
Manufacturing total (500)	62.4	4.3	824	13.4	16.8
Mining only (97)	61.2	5.1	774	12.2	16.0
Mining total (183)	57.1	4.3	689	11.8	16.5
Federal Lands only (35)	106.8	3.8	698	10.0	12.0
Federal lands total (210)	75.8	3.9	643	11.4	14.8
Government only (75)	76.5	9.9	2382	13.4	18.0
Government total (246)	66.6	7.0	1603	13.2	19.4
Poverty only (41)	45.3	3.4	535	13.5	29.9
Poverty total (238)	43.0	3.3	575	13.6	28.3
Retirement only (140)	79.1	4.5	841	16.9	16.0
Retirement total (420)	67.5	4.0	743	15.6	17.6

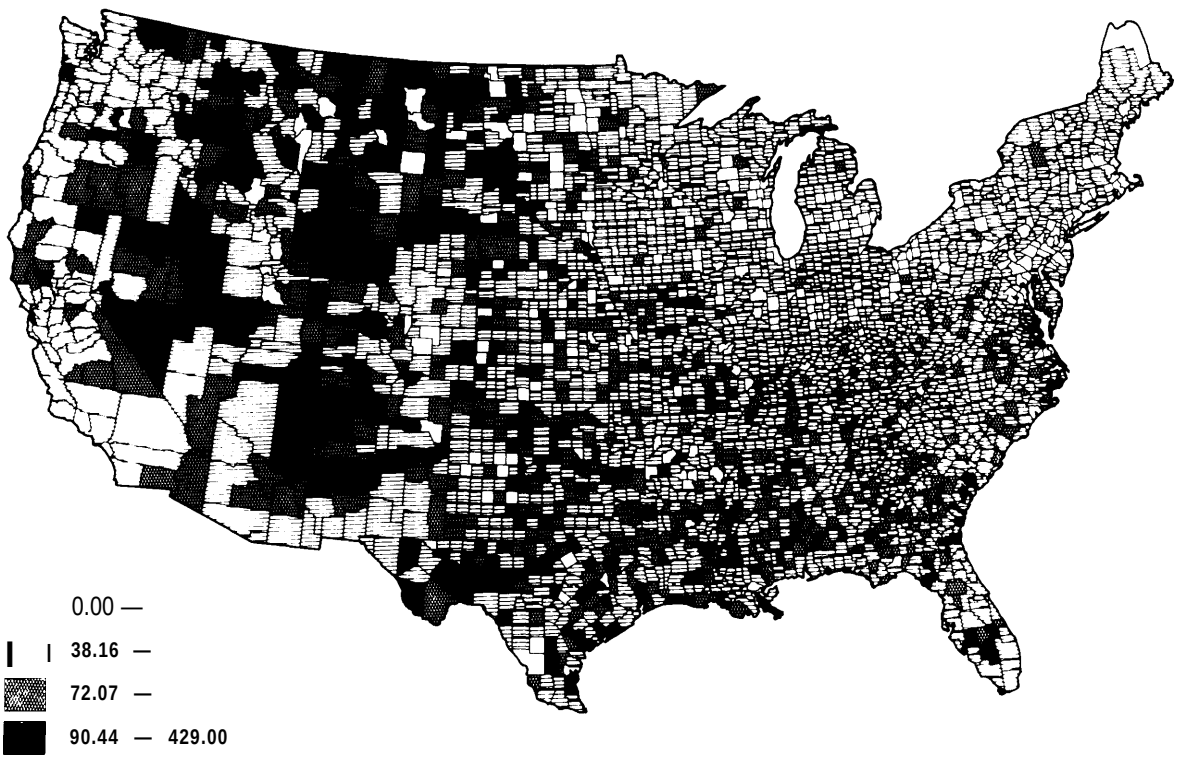
[a]282 nonmetropolitan counties with 50,000 or more population were excluded from analyses.

SOURCE: Kindig, D.A., et al., "Nonmetropolitan County Typology and Health Resources;" unpublished manuscript, Dec. 15, 1988.

Figure 6--- Areas With Cervical Cancer Mortality Rates Significantly Higher Than the U.S. Rate, and in the Highest 1O°/o of all SEA Rates (White Females, 1970-1980)

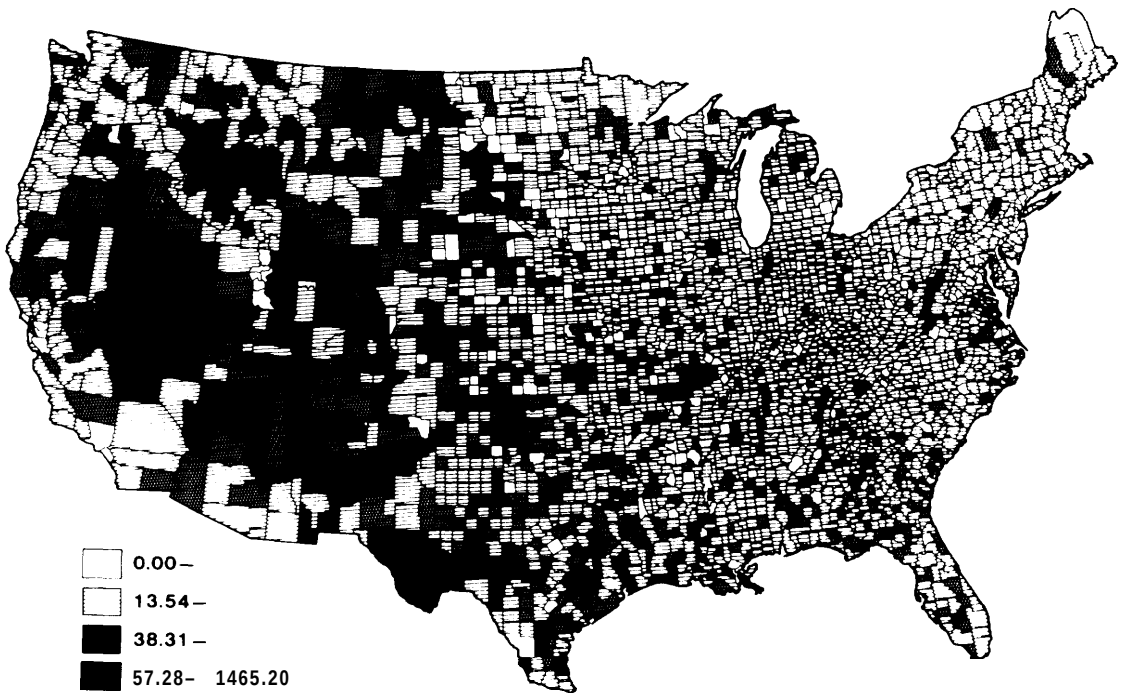
SOURCE: U.S. Department of Health and Human Services, Public Health Service, National Institutes of Health, Atlas of U.S. Cancer Mortality Among Whites: 1950-1980, DHHS Pub. No. (NIH) 87-2900 (Bethesda, MD: 1987).

Figure 7--- Death Rates Due to Unintentional Injury by County



SOURCE: Baker, S. P., Whitfield, R. A., and O'Nei 11, B., "County Mapping of Injured Mortal ity," The Journal of Trauma 28(6):741-745, June 1988.

Figure 8--- Death Rates Due to Motor Vehicle Crashes by County



SOURCE: Baker, S. P., Whitfield, R.A., and O'Neill, B., "Geographic Variations in Mortality From Motor Vehicle Crashes," New England Journal of Medicine 316(22):1384-1387, May 28, 1987.