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Availability of Selected Public Facilities in Rural Communities

Preliminary Estimates

J. Norman Reid
Thomas F. Stinson
Patrick J. Sullivan
Leon B. Perkinson
MonaCheri P. Clarke
Eleanor Whitehead

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AVAILABILITY OF SELECTED PUBLIC FACILITIES IN RURAL COMMUNITIES: PRELIMINARY ESTIMATES. J. Norman Reid, Thomas F. Stinson, Patrick J. Sullivan, Leon B. Perkinson, MonaCheri P. Clarke, and Eleanor Whitehead, Economic Development Division, Economic Research Service, U.S. Department of Agriculture. Washington, D.C. 20250. March 1984. ERS Staff Report No. AGES840113.

ABSTRACT

This report presents preliminary estimates for a selection of variables from the National Rural Community Facilities Assessment Study (NRCFAS), a nationwide sample survey of the availability and condition of essential public facilities in rural America. The variables were chosen to indicate the availability of facilities in rural America; in a few cases, data reflecting facility condition are also reported. Included in this report are data collected by survey for public water supply, fire protection, and local roads and bridges. The report also contains national estimates for wastewater treatment, hospital, and nursing home facilities drawn from secondary data sources.

Keywords: Public facilities, public service, rural development, rural communities, infrastructure, fire protection, water supply, wastewater treatment, hospitals, nursing homes, roads, bridges.

ACKNOWLEDGMENTS

The authors would like to thank Karen Wang for valuable assistance in preparing the hospital and nursing home data for analysis and Mary E. DeNoble, Venita Dimmick, and Laura Weinstein for their skillful preparation of the manuscript.

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SUMMARY

This report presents preliminary estimates¹ of selected data items from the National Rural Community Facilities Assessment Study (NRCFAS). The NRCFAS, a nationwide sample survey of the availability and condition of public facilities serving rural America, collected primary data for fire protection, public water systems, transportation, and other public facilities. Data on hospitals, nursing homes, and wastewater treatment facilities serving the sample communities were also obtained from existing data sources. This report includes variables chosen to provide an inventory of major facilities and, to a lesser degree, their condition.

There are more than 45,000 rural communities in the U.S., as defined for the NRCFAS. The great majority of the 16,000 incorporated communities have fewer than 2,500 residents, but those with 10,000 or more residents include about 20 percent of the rural population. Despite the importance of incorporated communities, about 65 percent of rural communities were unincorporated, and 55 percent of the rural population lived in these unincorporated areas in 1978. Unincorporated areas grew by more than 12 percent between 1970 and 1980, following a decade of little net population change. While it is common for fewer public facilities to be available outside incorporated places, the rate of population growth in unincorporated areas during the last 10 years suggests that their public service needs may assume greater importance in the eighties and nineties.

Virtually all rural cities with populations of 2,500 or more have some access to, or service by, each of the public facilities included in the study. This is also true for a majority of smaller cities, although the range and level of facilities available to them are typically less. There are many more gaps in the availability of public facilities to unincorporated rural areas.

¹/ Estimates shown in this report are based upon a preliminary series of weights and imputations for missing data items which are subject to adjustments. Such adjustments, if necessary, are expected to be small, however, and will not greatly affect the magnitude of the estimates reported here.

Some highlights by community size are:

Public water supply. While in most rural cities 67 percent of the year-round households have public water service, only 37 percent of unincorporated rural communities have any public water service, and in 54 percent of these less than 67 percent of the year-round households are served.

Wastewater treatment. About 50 percent of incorporated communities with under 2,500 residents, and only 11 percent of unincorporated areas, are served by a treatment plant. In nearly 25 percent of rural communities with their own wastewater treatment plant the average effluent flow is greater than the level for which the plants were designed.

Hospitals. Most rural communities have access to three or more hospitals within 30 miles, but some of the more specialized hospital facilities, such as neonatal intensive care and hemodialysis, are not available within this distance for many rural communities.

Fire protection. Nearly all rural communities have some fire protection, but over 40 percent of rural communities with fire protection service, predominantly in unincorporated areas, lack complete hydrant coverage or tank trucks with total capacity of at least 3,000 gallons.

Local roads and streets. Most unincorporated areas do not have their own local roads, relying instead on Federal, State, or county governments to provide them. Of those that have some local roads, 75 percent have some that are unpaved and 40 percent have some that are narrow or posted with restrictive weight limits.

Local bridges. Nearly 75 percent of rural communities have no bridges at least 20 feet long that they maintain themselves. However, 60 percent of unincorporated communities that do have such bridges have one or more with restrictive weight limitations and over 35 percent have at least one that is narrow or, though open to traffic, has been assessed as structurally deficient or functionally obsolete.

While no region is entirely without access to the public facilities included in this study, rural places in the North Central and Northeastern regions are more often lacking these facilities or, where they exist, are more likely to have problems due to facility condition. The chief exception to this generalization is hospital facilities, which are less available to rural communities in the West and North Central regions.

Some regional highlights are:

Public water supply. Nearly 60 percent of rural communities in the North Central region and 45 percent in the Northeast have no public water supply. Of those that do, the great majority have systems that serve under 67 percent of year-round households. Rural communities in the South and West are more widely served by public water systems.

Wastewater treatment. Only 23 percent of rural communities in the North Central region and under 30 percent of those in the Northeast are served by a wastewater treatment plant. Nearly 50 percent of Western rural communities have some service. In all regions, some communities were served by plants with average effluent flow exceeding the level for which the plants were designed, but the problem is more widespread in the Northeast and North Central regions.

Hospitals. While virtually all rural communities in all regions have access to at least one hospital within 30 miles, many rural communities in the West have only one or two hospitals within this distance. In other regions, the great majority have three or more. The number of hospital beds available to Western and North Central communities tends to be smaller, and the availability of specialized hospital services such as blood banks, electroencephalography, psychiatry, and hemodialysis, also tends to be more limited in these regions.

Fire protection. Nearly all rural communities in all regions have at least some fire protection. In all regions, between 35 and 50 percent of all rural communities lack both complete hydrant coverage and tank trucks totalling 3,000 gallons of water capacity.

Local roads and streets. Nearly all rural communities in the Northeast maintain some local roads, and 62 percent of those in the North Central region do, compared with less than 50 percent in the West and South. Eighty percent of Western communities with roads have some that are unpaved. Narrow roads and those posted with restrictive weight limits are most common in the Northeast.

Local bridges. Half of rural communities in the Northeast maintain at least one local bridge, much more than rural communities in other regions. Northeastern communities are more likely to have bridges with restrictive load limits or that have been assessed as structurally deficient or functionally obsolete. In general, local bridges in the West appear to have the fewest restrictions or problems.

AVAILABILITY OF SELECTED PUBLIC FACILITIES IN
RURAL COMMUNITIES: PRELIMINARY ESTIMATES

By J. Norman Reid, Thomas F. Stinson, Patrick J.
Sullivan, Leon B. Perkinson, MonaCheri P. Clarke, and
Eleanor Whitehead²

INTRODUCTION

The National Rural Community Facilities Assessment Study (NRCFAS) was funded by the Farmers Home Administration to collect information on the availability and condition of essential community facilities in rural areas of the United States. Field interviews with knowledgeable public officials began in the Fall of 1981 and were conducted in a stratified random sample of 520 rural communities throughout the 48 contiguous States. The interviews were designed to identify the availability of selected public facilities and services, including fire protection, public water systems, and transportation. Additional data on hospitals, nursing homes, and wastewater treatment facilities were obtained from existing data files. The data collected by the study pertain to calendar year 1980.

Both the survey design and data collection phases of the project were conducted by Abt Associates, Inc. The field interviews were completed during the Spring of 1982; editing and cleaning functions and preparation of the final data tapes and survey documentation were completed during the Fall and Winter of 1982. During the Winter of 1982, the survey data were turned over to the Economic Research Service, USDA, to analyze and prepare final reports.

This report contains estimates for selected items from the NRCFAS. Because the amount of data collected by the study is so extensive, only a portion can be reported here. The items contained in this report were chosen to provide an inventory of the availability of major facilities and, to a lesser degree, the condition of those facilities.

This report does not draw conclusions about the adequacy of the amount, type, or condition of these facilities. In order to come to valid conclusions about unmet needs for public facilities, it is first necessary to have standards by which existing facilities can be judged.

^{2/} State and Local Government Section, Economic Development Division, Economic Research Service, U.S. Department of Agriculture.

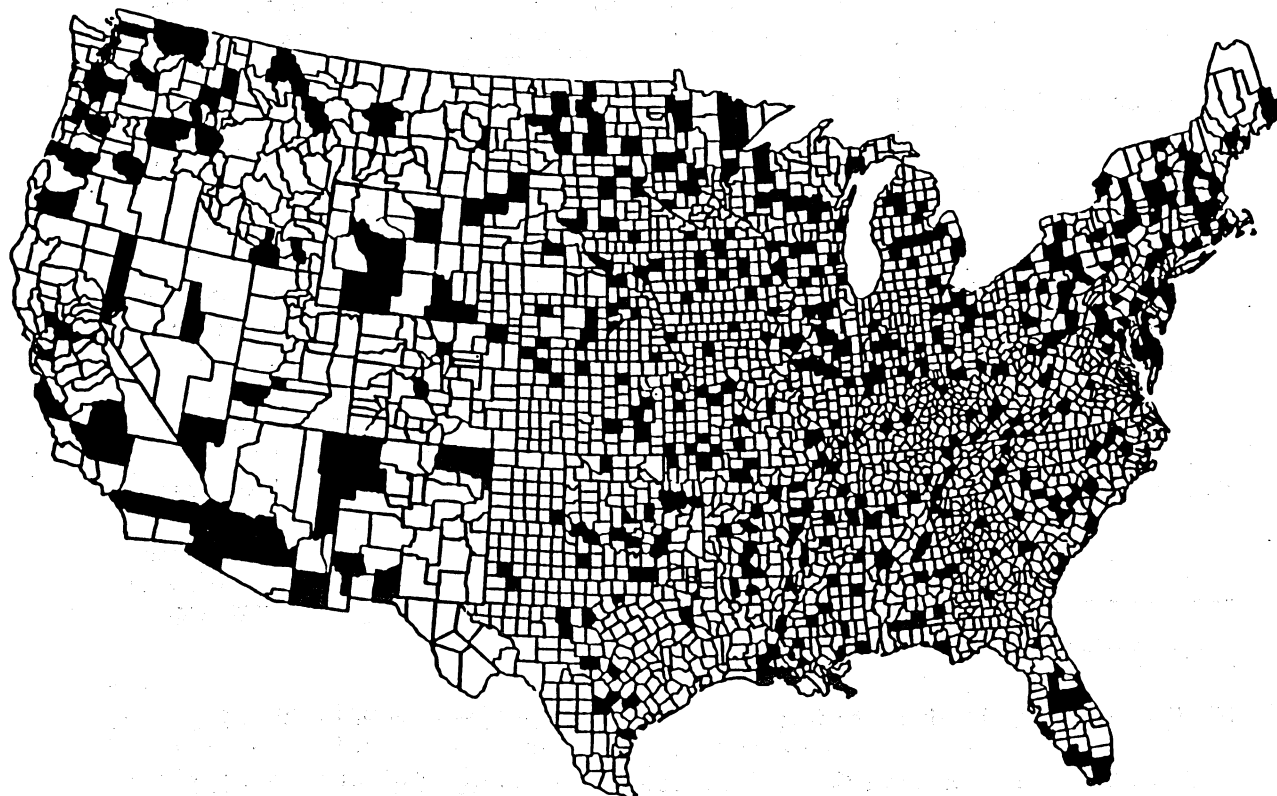
For instance, knowing how many hospital beds are available to a community's residents does not permit conclusions about the adequacy of those beds. It is also necessary to know (among other things) how many residents are served by those beds. Defining such standards, and analyzing the data in a way that permits conclusions about facility adequacy, are outside the scope of the present report. When facilities are evaluated in relation to the demands placed on them, the appropriateness of their design, or their physical condition, very different conclusions than those apparent from the data presented here may result. For this reason, the authors caution readers to draw such conclusions carefully or avoid them altogether.³

The data in this report are arranged by Census region and size of community and are reported on a preliminary basis. The NRCFAS took a community perspective and sought to identify the number of rural communities served by a particular service or facility. Thus, for the most part, the data show the percentage of communities with a particular condition or characteristic. For example, table 5 shows the percentage of rural communities served by a public water system that lacks emergency supplies of water. Where estimates in this report do not take a community focus, they are clearly labeled as such.

Because the data are derived from a sample survey, the figures presented in this report are estimates of rural conditions, and not exact totals. Any such statistical estimate is subject to sampling error and these estimates, therefore, may deviate from the true figures. It is customary when reporting estimated data to present their standard errors. These can be used to calculate confidence limits: ranges within which, with a known degree of probability, the true figure lies. The procedure for calculating confidence limits is discussed in the section on survey method at the end of the report. Standard errors are reported in parentheses for each observation in tables 3 through 24.

^{3/} A more detailed discussion of the methods used in the NRCFAS and issues regarding the evaluation of facility inventory data are given in J. Norman Reid and Patrick J. Sullivan, "Counting Community Capital: The Status of Rural Infrastructure," in Outlook '84: Proceedings of the Annual Agricultural Outlook Conference (Washington, D.C.: U.S. Department of Agriculture, November 1983), pp. 733-746.

FIGURE 1--COUNTIES CONTAINING ONE OR MORE NRCFAS SAMPLE COMMUNITIES



RURAL POPULATION

There are more than 45,000 communities in the rural United States as defined for the NRCFAS (fig. 1).⁴ Of these, 16,049 are incorporated places with populations of up to 50,000 (table 1). The remaining communities--nearly two-thirds of the total--are unincorporated areas such as townships or equivalent areas. The great majority of these rural communities have small populations. Almost 80 percent of incorporated places have fewer than 2,500 residents and nearly 90 percent are smaller than 5,500. Large

⁴/ The NRCFAS was limited to the 48 contiguous States. Thus, throughout this report whenever statements are made about the rural United States, they are meant to refer only to the 48 contiguous States. A complete definition of the NRCFAS rural universe is given in the section on survey method at the end of the report.

Table 1 — Number of rural communities, by community size and region, 1978

Community size	Northeast	North Central	South	West	U.S.
			<u>Number</u>		
Incorporated places:					
20,000-49,999	34	80	111	71	296
10,000-19,999	64	173	237	83	557
5,500-9,999	103	279	338	117	837
2,500-5,499	226	619	714	262	1,821
0-2,499	941	6,325	4,157	1,115	12,538
Unincorporated places	3,598	16,145	8,009	1,965	29,717
Total	4,966	23,621	13,566	3,613	45,766

NOTE: Excludes Alaska and Hawaii.

SOURCE: National Planning Data Corporation, Universe of Rural and Urban Communities, 1980.

PREPARED BY: State and Local Government Section, Economic Development Division, ERS, USDA,
December 1983.

communities are relatively scarce in rural areas; only 5 percent have more than 10,000 residents and fewer than 2 percent have populations of 20,000 or more.

Unincorporated communities range up to nearly 49,000 in population, but the great majority of these, too, are small. Eighty-two percent have fewer than 2,500 residents, while only 2 percent have 10,000 or more residents.

The largest number of rural communities is found in the North Central States, which have half of all rural unincorporated communities and just under half of rural incorporated places. The West and Northeast have the fewest rural communities. The North Central region has both the largest number and the highest proportion of incorporated places under 2,500 population. The Western and Northeastern States have a somewhat larger proportion of their incorporated places in the higher population categories.

Some 85 million persons reside in these rural communities (table 2). Most (55 percent) live outside incorporated places; another 11 percent live in incorporated places with less than 2,500 residents (fig. 2). Over half of residents of incorporated places live in communities with less than 10,000 population. Thus, while large numbers of rural citizens live in places of some size, the great majority do not. Most choose to reside in an area not served by an incorporated municipality.

The rural population is concentrated in the South and the North Central regions, home to over 70 percent of all rural citizens. The West, with 11.6 million rural residents, has the smallest rural population.

Table 2 — Population in rural communities, by community size and region, 1978

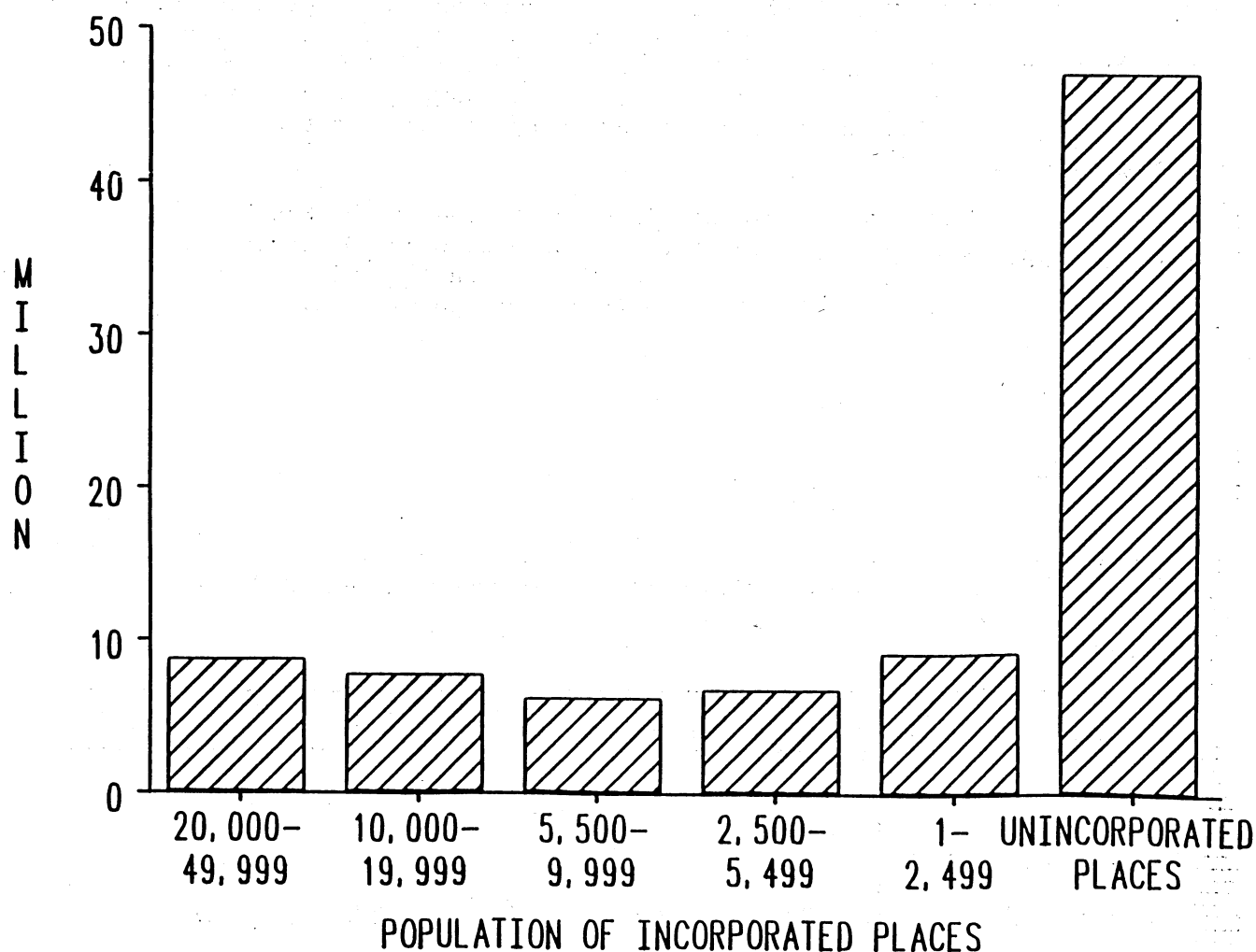
Community size	: Northeast :	North : Central :	South :	West :	U.S.
	:				
	:		<u>Millions</u>		
	:				
Incorporated places:	:				
	:				
20,000-49,999	: 0.9	2.4	3.2	2.2	8.7
	:				
10,000-19,999	: 0.9	2.4	3.2	1.1	7.7
	:				
5,500-9,999	: 0.7	2.0	2.5	0.9	6.2
	:				
2,500-5,499	: 0.8	2.3	2.6	1.0	6.7
	:				
0-2,499	: 0.9	4.1	3.3	0.9	9.2
	:				
Unincorporated places	: 9.1	11.9	20.6	5.5	47.1
	:				
Total	: 13.4	25.1	35.4	11.6	85.6
	:				

NOTE: Detail may not add to totals due to rounding. Excludes Alaska and Hawaii.

SOURCE: National Planning Data Corporation, Universe of Rural and Urban Communities, 1980.

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FIGURE 2--POPULATION IN RURAL COMMUNITIES, BY COMMUNITY SIZE, 1978



PUBLIC WATER SUPPLY

A public water system is one which provides piped water for human consumption to at least 15 service connections. The term does not imply public ownership and many public water systems are, in fact, privately owned and operated. Approximately 55 percent of the Nation's rural communities are served by one or more public water systems (table 3). The remaining 45 percent of rural communities rely on private wells, small cluster wells, other on-site water supplies, or hauled water for all of their water needs. Virtually all cities with populations exceeding 5,500, and the vast majority of smaller sized cities, have public water service for at least a portion of their populace. In most cities more than 67 percent of the year-round households have access to a public water system (fig. 3).

Table 3 — Rural communities served by a public water system, by community size, 1980, preliminary estimates

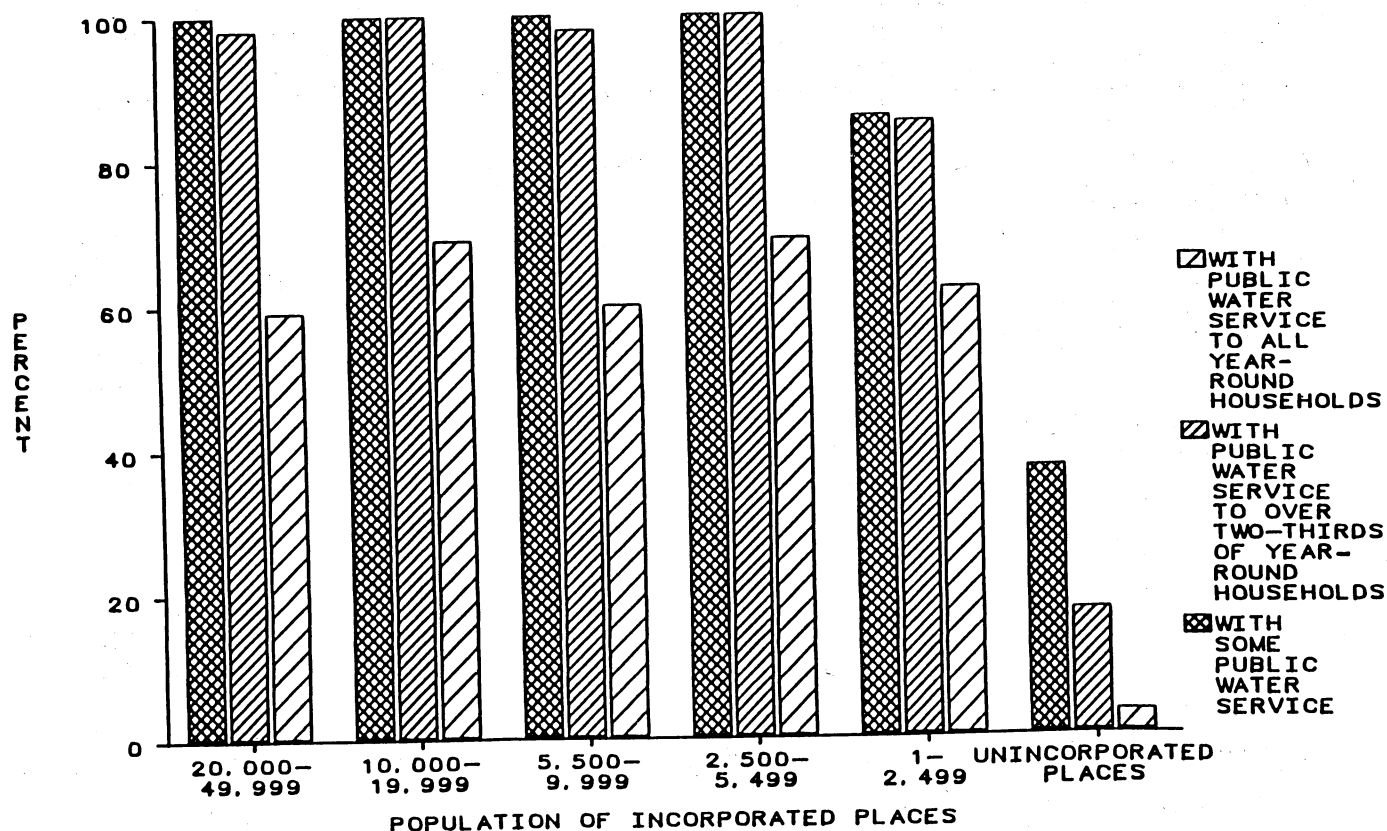
Item	Population, 1978					Unincorporated areas	U.S.
	20,000-49,999	10,000-19,999	5,500-9,999	2,500-5,499	1-2,499		
<u>Percent of communities</u>							
Community served by:							
No public water system	0 (NA)	0 (NA)	0 (NA)	0.5 (0.5)	14.5 (4.0)	62.5 (3.6)	44.7 (2.6)
One public water system	93.3 (5.0)	83.9 (5.7)	96.2 (7.1)	94.3 (5.8)	80.4 (5.3)	20.8 (3.1)	42.6 (2.5)
Two or more public water systems	6.7 (3.6)	16.1 (5.8)	3.8 (3.0)	5.3 (3.0)	5.2 (2.3)	16.6 (2.3)	12.7 (1.6)
Communities with public water service to:							
0-33 percent of households	0 (NA)	0 (NA)	0 (NA)	0.5 (0.5)	14.7 (4.1)	73.9 (3.4)	52.2 (2.5)
34-66 percent of households	1.6 (1.4)	0 (NA)	2.1 (2.0)	0 (NA)	0 (NA)	8.8 (2.0)	5.8 (1.3)
67-99 percent of households	39.7 (6.7)	31.4 (7.2)	37.9 (8.6)	30.8 (6.4)	23.1 (4.6)	14.1 (2.6)	18.0 (2.1)
100 percent of households	58.7 (6.8)	68.6 (6.8)	60.0 (7.3)	68.7 (6.7)	62.2 (6.0)	3.3 (1.4)	24.1 (1.9)

NOTE: Standard errors shown in parentheses. NA indicates standard error not applicable. Detail may not add to 100 percent due to rounding. Excludes Alaska and Hawaii.

SOURCE: Public Water Supply and General Community Information questionnaires, National Rural Community Facilities Assessment Study.

PREPARED BY: State and Local Government Section, Economic Development Division, ERS, USDA, December 1983.

FIGURE 3—PERCENT OF RURAL COMMUNITIES WITH PUBLIC WATER SERVICE,
BY COMMUNITY SIZE, 1980: PRELIMINARY ESTIMATES



Only 38 percent of unincorporated rural communities are served by a public water system. The areal coverage provided by public water systems in unincorporated areas appears to be more limited than that found in incorporated cities and towns. Only 17 percent of the unincorporated areas in rural America have systems that serve over 67 percent of the community's year-round households. Only 3 percent of unincorporated areas have systems which serve the entire community, compared with 63 percent of the incorporated cities and towns.

A higher percentage of rural communities in the North Central and Northeast regions of the country lack public water service than in the South and the West (table 4). To some extent the greater availability of on-site water supplies in the Northeast and North Central regions, through relatively shallow wells and springs, may

Table 4 — Rural communities served by a public water system, by region, 1980, preliminary estimates

Item	North Central	North Central	South	West	U.S.
	<u>Percent of communities</u>				
Communities served by:					
No public water system	45.3 (6.5)	58.9 (3.7)	26.7 (4.8)	18.0 (6.9)	44.7 (2.6)
One public water system	44.3 (8.2)	35.0 (3.5)	53.0 (4.7)	50.8 (6.9)	42.6 (2.5)
Two or more public water systems	10.4 (4.1)	6.1 (2.1)	20.3 (3.3)	31.2 (7.3)	12.7 (1.6)
Communities with public water service to:					
0-33 percent of households	53.0 (6.6)	63.9 (3.4)	37.9 (5.0)	27.5 (7.7)	52.2 (2.5)
34-66 percent of households	13.0 (7.1)	3.2 (1.6)	7.2 (3.5)	7.5 (5.6)	5.8 (1.3)
67-99 percent of households	11.1 (4.4)	12.7 (2.8)	27.7 (4.8)	25.8 (7.6)	18.0 (2.1)
100 percent of households	22.9 (4.4)	20.2 (2.6)	27.2 (4.0)	39.1 (6.2)	24.1 (1.9)

NOTE: Standard errors shown in parentheses. Detail may not add to 100 percent due to rounding. Excludes Alaska and Hawaii.

SOURCE: Public Water Supply and General Community Information questionnaires, National Rural Community Facilities Assessment Study.

PREPARED BY: State and Local Government Section, Economic Development Division, ERS, USDA, December 1983.

explain these differences. On-site water supplies are more scarce in the West. The relatively heavy reliance on public water systems by communities in the South and West may also be due to recent population growth in these regions.

Most rural water systems rely on groundwater for at least a portion of their water supplies: nearly 80 percent of rural communities served by a public water system rely on this source (table 5).⁵ Approximately 29 percent of communities with a public water system receive some of their water from surface sources; 21 percent are served by systems that purchase water from other systems. Alternative sources of water, such as the reuse of cooling water or the desalination of ocean water, are relied upon by systems serving less than 9 percent of the rural communities with a public water system.

Surface sources are more frequently relied upon by large water systems and a high percentage of large communities receive at least some of their water from surface sources. Purchasing water from other systems on a regular basis is more common for the public water systems serving unincorporated areas.

More than half of the rural communities with public water service received their water from a system which lacked emergency supplies of water. While there was no pronounced difference among communities of varying sizes, communities in the Northeast were more likely to be served by systems with emergency supplies available (table 6).

The age of the water distribution system is an indicator of the potential need for repairs and replacement of the system. Older pipes are more likely to break, interrupting service, or to leak, adding to production requirements and raising public health concerns. About 18 percent of rural communities have more than 67 percent of their pipelines over 50 years old (table 5). Communities located in the Northeast are more likely to have a high percentage of older pipeline in their water distribution systems than are communities in the South and the West (table 6). Among Northeastern communities with public water service, 44 percent have distribution systems with more than 67 percent of their pipeline over 50 years of age.

^{5/} Roughly 25 percent of rural communities rely on more than one source of water; thus, the percentages do not sum to 100.

Table 5 — Service characteristics of public water systems serving rural communities, by community size, 1980, preliminary estimates

Item	Population, 1978					Unincorporated areas	U.S.
	20,000-49,999	10,000-19,999	5,500-9,999	2,500-5,499	1-2,499		
<u>Percent of communities with public water service</u>							
Communities with one or more public water systems which did not:							
Test for coliform bacteria at least 12 times in previous year	0 (NA)	4.9 (2.5)	1.9 (1.9)	5.7 (3.0)	10.4 (3.5)	20.5 (5.8)	13.9 (3.0)
Test for inorganic materials at least once in previous year	12.5 (4.3)	8.8 (3.6)	21.1 (5.9)	21.7 (5.5)	26.5 (5.3)	35.7 (5.1)	29.4 (3.2)
Test for organic contaminants at least once in previous year	20.9 (5.5)	24.2 (6.2)	15.0 (5.0)	17.7 (5.0)	31.2 (5.3)	45.1 (5.9)	35.5 (3.4)
Test for turbidity at least once in previous year	11.7 (4.1)	22.1 (6.5)	38.4 (8.4)	33.0 (6.3)	57.0 (6.0)	58.7 (6.0)	54.1 (3.7)
Test for radioactivity at least once in last 3 years	21.0 (5.4)	41.6 (7.9)	25.5 (6.3)	31.8 (6.4)	44.1 (5.4)	53.7 (5.9)	46.4 (3.5)
Have emergency supplies of water available	53.3 (7.0)	49.1 (7.3)	65.6 (9.2)	60.5 (7.6)	62.0 (5.9)	66.6 (5.5)	63.6 (3.5)
Communities with one or more public water systems which derived water from:							
Surface sources	65.9 (6.8)	59.8 (7.6)	37.9 (7.1)	37.7 (6.2)	16.2 (4.1)	37.2 (5.9)	29.2 (3.2)
Groundwater	72.2 (6.6)	54.3 (7.3)	73.8 (9.1)	76.4 (7.2)	83.1 (5.2)	76.4 (6.2)	78.6 (3.5)
Other sources under own control	6.9 (3.7)	10.1 (4.4)	0 (NA)	5.9 (3.0)	5.9 (3.5)	12.2 (4.4)	8.6 (2.4)
Other systems	9.0 (4.0)	15.7 (5.4)	5.3 (3.7)	7.5 (3.3)	10.4 (3.6)	35.2 (6.0)	21.0 (3.0)

--continued

Table 5 — Service characteristics of public water systems serving rural communities, by community size, 1980, preliminary estimates — continued

Item	Population, 1978						Unincorporated areas	U.S.
	20,000-49,999	10,000-19,999	5,500-9,999	2,500-5,499	1-2,499			
<u>Percent of communities with public water service</u>								
Communities with distribution system over 50 years old:								
1-33 percent of pipeline	52.0 (6.8)	30.0 (6.0)	36.9 (8.8)	44.6 (8.0)	11.7 (3.6)	25.1 (5.3)	21.7 (2.8)	
34-67 percent of pipeline	30.0 (6.3)	34.7 (8.7)	16.8 (4.5)	17.3 (5.1)	13.4 (3.7)	8.3 (3.3)	12.2 (2.2)	
67-100 percent of pipeline	13.4 (3.8)	17.8 (5.7)	29.2 (7.0)	21.2 (5.5)	20.7 (5.0)	15.0 (5.1)	18.4 (3.1)	

NOTE: Standard errors shown in parentheses. NA indicates standard error not applicable. Public water systems may derive water from multiple sources. Excludes Alaska and Hawaii.

SOURCE: Public Water Supply questionnaire, National Rural Community Facilities Assessment Study.

PREPARED BY: State and Local Government Section, Economic Development Division, ERS, USDA, December 1983.

In addition to the physical characteristics of a water system, water quality heavily depends on the system's operating procedures. Testing is an important part of the process of assuring an adequate supply of safe water. Adequate disinfection of contaminated water requires periodic monitoring of water quality. A number of rural communities (particularly unincorporated areas and very small cities) have systems that have not performed one or more tests of their water supply on a periodic basis. Among those served by a public water system, 20 percent of unincorporated areas and 10 percent of cities with less than 2,500 residents failed to test for the presence of coliform bacteria at least monthly during the previous year. Over 35 percent of the unincorporated areas with public water service had systems that did not test for organic contamination or inorganic materials at least once during the previous year. Nearly 60 percent of the unincorporated areas and the smallest incorporated communities with public water service received water from a system that had not tested for turbidity in the prior year. Nearly as many were served by a system which had not tested for radioactive contamination in the previous 3 years.

Table 6 — Service characteristics of public water systems serving rural communities, by region, 1980, preliminary estimates

Item	Northeast	North Central	South	West	U.S.
<u>Percent of communities with public water service</u>					
Communities with one or more public water systems which did not:					
Test for coliform bacteria at least 12 times in previous year:	15.7 (11.3)	17.9 (5.5)	8.8 (3.5)	16.3 (7.9)	13.9 (3.0)
Test for inorganic materials at least once in previous year:	12.3 (7.5)	28.2 (5.6)	27.1 (4.7)	56.8 (10.1)	29.4 (3.2)
Test for organic contaminants at least once in previous year:	18.3 (8.7)	38.1 (6.3)	32.2 (4.8)	53.3 (10.0)	35.5 (3.4)
Test for turbidity at least once in previous year:	24.3 (9.3)	64.7 (6.5)	50.0 (5.8)	59.2 (9.1)	54.1 (3.7)
Test for radioactivity at least once in last 3 years:	25.5 (8.8)	49.3 (6.1)	49.4 (5.0)	46.3 (11.4)	46.4 (3.5)
Have emergency supplies of water available:	32.3 (9.1)	66.6 (6.2)	63.8 (5.6)	81.3 (8.6)	63.6 (3.5)
Communities with one or more public water systems which derived water from:					
Surface sources:	49.4 (10.6)	21.3 (4.9)	28.8 (4.9)	38.4 (10.2)	29.2 (3.2)
Groundwater:	69.9 (12.2)	82.5 (4.9)	76.6 (6.5)	80.0 (8.0)	78.6 (3.5)
Other sources under own control:	3.7 (2.5)	7.5 (3.8)	12.2 (4.8)	4.3 (3.4)	8.6 (2.4)
Other systems:	8.1 (6.5)	18.2 (5.1)	23.5 (5.0)	33.3 (8.7)	21.0 (3.0)

— continued

Table 6 — Service characteristics of public water systems serving rural communities, by region, 1980, preliminary estimates — continued

Item	: Northeast :	North : Central :	South :	West :	: U.S. :
	:				
	:	<u>Percent of communities with public water service</u>			
	:				
Communities with dis-	:				
tribution system over	:				
50 years old:	:				
1-33 percent of	: 14.4	12.5	31.0	27.5	21.7
pipeline	: (7.2)	(3.8)	(5.3)	(8.3)	(2.8)
	:				
34-66 percent of	: 18.2	18.4	6.2	6.4	12.2
pipeline	: (8.6)	(4.6)	(2.1)	(3.6)	(2.2)
	:				
67-100 percent of	: 44.1	22.4	9.0	12.8	18.4
pipeline	: (14.6)	(6.2)	(3.2)	(3.6)	(3.1)
	:				

NOTE: Standard errors shown in parentheses. Public water systems may derive water from multiple sources. Excludes Alaska and Hawaii.

SOURCE: Public Water Supply questionnaire, National Rural Community Facilities Assessment Study.

PREPARED BY: State and Local Government Section, Economic Development Division, ERS, USDA, December 1983.

WASTEWATER TREATMENT Fewer than a third of all rural communities were served by wastewater treatment plants in 1980 (tables 7 and 8).⁶ Nearly all communities served had their own plants, but a small percentage used a facility located outside the community's border. Of those without a treatment plant, about 13 percent had made formal plans to construct one.

Most communities without treatment facilities were unincorporated areas where individual, on-site disposal, or community septic systems are used. Only 13 percent of unincorporated areas had any residents served by a treatment plant, and only 8 percent had a treatment

^{6/} Wastewater treatment facilities serving the sample communities were identified by a phone survey conducted by Abt Associates, Inc. Community septic systems and sewer systems which discharged without treatment were not considered to be treatment facilities.

Table 7 — Rural communities served by a wastewater treatment plant or with plans to build a plant, by community size, 1980, preliminary estimates

Item	Population, 1978						Unincorporated areas	U.S.
	20,000-49,999	10,000-19,999	5,500-9,999	2,500-5,499	1-2,499			
<u>Percent of communities</u>								
Communities served by wastewater treatment plant	94.3 (5.0)	96.5 (5.8)	96.2 (8.0)	93.1 (6.0)	62.0 (4.3)	13.4 (2.5)	30.4 (2.2)	
With own plant	91.9 (4.9)	96.5 (5.8)	94.1 (8.2)	90.2 (6.4)	60.8 (4.3)	8.4 (2.0)	26.7 (2.0)	
With plans to build own plant	13.7 (4.5)	2.9 (1.9)	6.1 (2.8)	5.3 (2.6)	26.5 (5.1)	10.4 (2.2)	14.5 (2.0)	
Exhibit: Communities without existing plant, but with plans to build own plant		18.1 (15.6)			53.0 (8.7)	3.6 (1.4)	12.9 (2.0)	

NOTE: Standard errors shown in parentheses. Excludes Alaska and Hawaii.

SOURCE: U.S. Environmental Protection Agency, 1980 Wastewater Needs Survey.

PREPARED BY: State and Local Government Section, Economic Development Division, ERS, USDA, February 1984.

plant actually located in the community. By contrast, more than 60 percent of cities with populations under 2,500, and more than 90 percent of cities with populations between 2,500 and 50,000, had their own wastewater treatment systems. In 1980, 53 percent of cities with populations under 2,500 without treatment plants had plans for one, while under 4 percent of the unincorporated communities had such plans.

Approximately 58 million people lived in the service areas of rural wastewater treatment plants in 1980.⁷ However, only 51 million actually used these

^{7/} Estimates are based on a sample of wastewater treatment plants located in rural communities. Service areas, however, may include both urban and rural residents since some plants serve more than one community. As a result, population in the service area and population served cannot be compared with either total rural population or the total population of any particular subclass of rural communities.

Table 8 — Rural communities served by a wastewater treatment plant or with plans to build a plant, by region, 1980, preliminary estimates

Item	: Northeast :	North : Central :	South :	West :	: U.S.
	:	:	:	:	:
	:	:	<u>Percent of communities</u>		
Communities served by	:	:	:	:	:
wastewater treatment	: 28.9	26.2	34.5	44.9	30.4
plant	: (7.5)	(3.0)	(4.0)	(8.6)	(2.2)
	:	:	:	:	:
With own plant	: 26.0	24.4	27.4	40.4	26.7
	: (7.5)	(2.8)	(3.1)	(8.3)	(2.0)
	:	:	:	:	:
With plans to build	: 21.8	7.5	20.7	26.7	14.5
own plant	: (7.3)	(2.2)	(4.3)	(8.9)	(2.0)
	:	:	:	:	:
Exhibit: Communities	:	:	:	:	:
without existing	: 26.8	7.7	14.4	26.2	12.9
plant, but with	: (10.1)	(2.0)	(3.9)	(9.5)	(2.0)
plans to build	:	:	:	:	:
own plant	:	:	:	:	:

NOTE: Standard errors shown in parentheses. Excludes Alaska and Hawaii.

SOURCE: U.S. Environmental Protection Agency, 1980 Wastewater Needs Survey.

PREPARED BY: State and Local Government Section, Economic Development Division, ERS, USDA, February 1984.

facilities. The other 7 million relied on on-site disposal (tables 9 and 10). By far the largest portion of those using on-site disposal methods lived in the South, where there were more than 4.5 million people within the service area of an existing plant, yet not connected to it.

Data from the 1980 Environmental Protection Agency (EPA) Wastewater Needs Survey indicate that it would cost (in 1980 dollars) slightly more than \$20 billion to bring wastewater treatment facilities located in rural communities up to the level established as a 1983 goal by the Clean Water Act (tables 11 and 12). Of that \$20 billion, approximately \$14 billion would go to upgrade existing facilities, while \$6 billion would be needed for new treatment plants. Approximately 40 percent of the funds needed would go to unincorporated areas and about 25 percent to cities with populations of less than 2,500 (fig. 4).

Table 9 — Population within service area of rural wastewater treatment plants, by community size, 1980, preliminary estimates

Item	Population, 1978						Unincorporated areas	U.S.
	20,000-49,999	10,000-19,999	5,500-9,999	2,500-5,499	1-2,499			
	<u>Millions</u>							
Population served	9.8 (0.6)	8.5 (0.6)	6.2 (0.4)	5.8 (0.4)	6.8 (0.9)	14.2 (6.0)	51.4 (7.2)	
Population not served	1.3 (0.5)	1.2 (0.3)	1.2 (0.3)	1.0 (0.3)	0.7 (0.2)	1.7 (0.9)	7.1 (1.2)	
Total population in service area	11.2 (0.9)	9.7 (0.8)	7.4 (0.5)	6.8 (0.5)	7.5 (1.1)	15.9 (7.5)	58.5 (7.7)	

NOTE: Standard errors shown in parentheses. Detail may not add to totals due to rounding. Excludes Alaska and Hawaii.

SOURCE: U.S. Environmental Protection Agency, 1980 Wastewater Needs Survey.

PREPARED BY: State and Local Government Section, Economic Development Division, ERS, USDA, February 1984.

Table 10 — Population within service area of rural wastewater treatment plants, by region, 1980, preliminary estimates

Item	Northeast	North Central	South	West	U.S.
			<u>Millions</u>		
Population served	5.9 (1.1)	21.1 (6.6)	16.6 (1.9)	7.9 (2.4)	51.4 (7.4)
Population not served	1.0 (0.2)	1.2 (0.4)	4.5 (1.1)	0.4 (0.2)	7.1 (1.2)
Total population in service area	6.9 (1.3)	22.2 (6.8)	21.0 (2.4)	8.3 (2.4)	58.5 (7.7)

NOTE: Standard errors shown in parentheses. Detail may not add to totals due to rounding. Excludes Alaska and Hawaii.

SOURCE: U.S. Environmental Protection Agency, 1980 Wastewater Needs Survey.

PREPARED BY: State and Local Government Section, Economic Development Division, ERS, USDA, February 1984.

Table 11 — Construction costs if rural wastewater treatment is to meet 1983 goals of Clean Water Act, by community size, 1980, preliminary estimates

Item	Population, 1978						Unincorporated areas	U.S.
	20,000-49,999	10,000-19,999	5,500-9,999	2,500-5,499	1-2,499			
<u>Billion dollars</u>								
Improvement of existing facilities	1.6 (0.4)	1.7 (0.4)	1.4 (0.3)	1.7 (0.2)	1.4 (0.3)	6.2 (4.3)	14.0 (4.4)	
Construction of planned facilities	0.2 (0.1)	0.1 (0.1)	0.1 (0.1)	0.1 (0.1)	3.6 (0.9)	2.3 (1.1)	6.4 (1.4)	
Total	1.8 (0.5)	1.8 (0.4)	1.5 (0.3)	1.8 (0.3)	5.0 (0.9)	8.5 (4.4)	20.4 (4.5)	

NOTE: Standard errors shown in parentheses. Detail may not add to totals due to rounding. Excludes Alaska and Hawaii. Amounts in 1980 dollars.

SOURCE: U.S. Environmental Protection Agency, 1980 Wastewater Needs Survey.

PREPARED BY: State and Local Government Section, Economic Development Division, ERS, USDA, February 1984.

Table 12 — Construction costs if rural wastewater treatment is to meet 1983 goals of Clean Water Act, by region, 1980, preliminary estimates

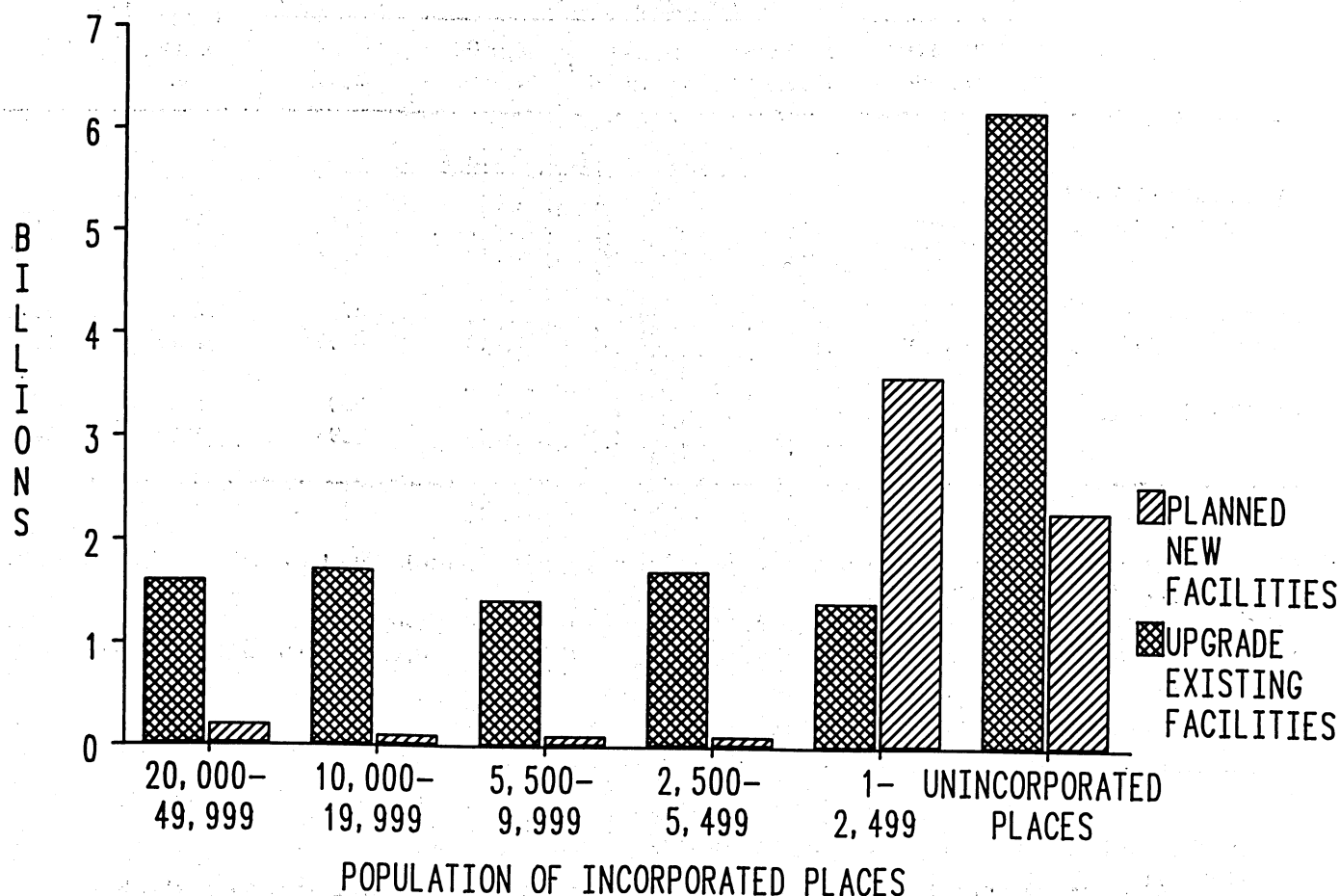
Item	Northeast	North Central	South	West	U.S.
<u>Billion dollars</u>					
Improvement of existing facilities	2.6 (0.8)	6.4 (4.2)	4.3 (0.9)	0.7 (0.2)	14.0 (4.4)
Construction of planned facilities	2.2 (1.0)	1.8 (0.8)	2.0 (0.6)	0.3 (0.1)	6.4 (1.4)
Total	4.8 (1.2)	8.2 (4.2)	6.3 (1.0)	1.0 (0.2)	20.4 (4.5)

NOTE: Standard errors shown in parentheses. Detail may not add to totals due to rounding. Excludes Alaska and Hawaii. Amounts in 1980 dollars.

SOURCE: U.S. Environmental Protection Agency, 1980 Wastewater Needs Survey.

PREPARED BY: State and Local Government Section, Economic Development Division, ERS, USDA, February 1984.

FIGURE 4—CONSTRUCTION COSTS IF RURAL WASTEWATER TREATMENT IS TO MEET 1983 GOALS OF CLEAN WATER ACT, BY COMMUNITY SIZE, 1980: PRELIMINARY ESTIMATES



One measure of the adequacy of existing wastewater treatment is the ratio of existing flow to the facility's design flow. If the ratio of average existing flow to design flow is greater than 1.0, additional treatment capacity is required to meet even normal conditions. In 1980, about 23 percent of all rural communities with wastewater treatment plants had wastewater flow ratios of greater than 1.0 (tables 13 and 14). About 13 percent of rural communities had flows that exceeded the design capacity of their treatment plants by more than 20 percent.

HOSPITAL SERVICES

Nearly all rural communities were served by some kind of hospital facility (table 15).⁸ Only 2 percent had no hospital within a 30-mile radius and only 12 percent had

^{8/} Data for hospitals were taken from the American Hospital Association's 1977 Annual Survey of Hospitals.

Table 13 — Ratio of existing flow to design flow in rural wastewater treatment plants, by community size, 1980, preliminary estimates

Item	Population, 1978						Unincorporated areas	U.S.
	20,000-49,999	10,000-19,999	5,500-9,999	2,500-5,499	1-2,499			
<u>Percent of communities served by own treatment plant</u>								
Ratio of average existing flow to design flow:								
80 percent or less	64.3 (6.9)	60.6 (7.5)	60.2 (9.1)	59.1 (6.9)	47.7 (8.1)	43.8 (13.7)	50.2 (5.3)	
80 - 100 percent	24.0 (5.9)	25.3 (6.2)	17.3 (5.9)	18.0 (5.3)	26.9 (6.8)	37.1 (9.4)	27.0 (4.2)	
100 - 120 percent	6.6 (3.5)	13.1 (4.7)	10.6 (4.8)	5.7 (3.4)	11.2 (4.6)	10.0 (7.2)	10.1 (2.9)	
More than 120 percent	5.1 (3.3)	1.0 (1.0)	12.0 (6.0)	17.2 (5.8)	14.2 (5.2)	9.1 (9.1)	12.7 (3.5)	
Exhibit: More than 100 percent	11.7 (4.8)	14.0 (4.8)	22.5 (7.5)	22.9 (5.9)	25.4 (6.5)	19.2 (11.6)	22.8 (4.3)	

NOTE: Standard errors shown in parentheses. Detail may not add to totals due to rounding. Excludes Alaska and Hawaii.

SOURCE: U.S. Environmental Protection Agency, 1980 Wastewater Needs Survey.

PREPARED BY: State and Local Government Section, Economic Development Division, ERS, USDA, February 1984.

fewer than three hospitals within that same area (fig. 5). Sixty percent of rural communities were served by 5 or more hospitals. Only in the North Central region and in unincorporated communities were the number of communities lacking access to a hospital statistically different from zero (tables 15 and 16).

This does not mean, however, that the vast majority of rural communities have a hospital within their borders. Regardless of where they live, people routinely travel to obtain medical care. This study assumed that all facilities within 30 miles of the sample community serve the community's residents.

Nearly all rural communities have access to at least 50 hospital beds, and the great majority have access to more than 300 (fig. 5). Somewhat larger numbers of

Table 14 — Ratio of existing flow to design flow in rural wastewater treatment plants, by region, 1980, preliminary estimates

Item	North East	North Central	South	West	U.S.
<u>Percent of communities served by own treatment plant</u>					
Ratio of average existing flow to design flow:					
80 percent or less	33.5 (16.6)	42.6 (7.7)	62.4 (8.7)	64.0 (18.2)	50.2 (5.3)
80 - 100 percent	33.2 (15.9)	33.4 (6.8)	16.0 (5.3)	24.3 (11.0)	27.0 (4.2)
100 - 120 percent	6.1 (4.0)	15.8 (5.8)	3.7 (1.2)	7.6 (6.7)	10.1 (2.9)
More than 120 percent	27.2 (18.1)	8.2 (4.3)	17.9 (6.7)	4.1 (2.5)	12.7 (3.5)
Exhibit: More than 100 percent	33.4 (18.2)	24.0 (6.6)	21.6 (6.8)	11.7 (7.2)	22.8 (4.3)

NOTE: Standard errors shown in parentheses. Detail may not add to totals due to rounding.
Excludes Alaska and Hawaii.

SOURCE: U.S. Environmental Protection Agency, 1980 Wastewater Needs Survey.

PREPARED BY: State and Local Government Section, Economic Development Division, ERS, USDA,
February 1984.

rural communities were found to be without some services often provided by hospitals. Only about 3 percent of rural communities did not have access to an emergency room, and 6 percent did not have access to a hospital blood bank. But the more specialized hospital services are available in far fewer rural communities. Only 37 percent have neonatal intensive care and 46 percent have hemodialysis facilities. Psychiatry was available to 55 percent, premature nursery services to 69 percent, pediatrics to 76 percent, and electroencephalography to 81 percent.⁹ Unincorporated communities and those in the West and North Central regions were more often

^{9/} Some of these services may have been available to the community from other than hospital providers.

Table 15 — Hospital services available to rural communities, by community size, 1977, preliminary estimates

Item	Population, 1978						Unincorporated areas	U.S
	20,000-49,999	10,000-19,999	5,500-9,999	2,500-5,499	1-2,499			
<u>Percent of communities</u>								
Hospitals:								
None	0 (NA)	0 (NA)	0 (NA)	0 (NA)	2.2 (1.5)	2.3 (1.1)	2.1 (0.8)	
One	5.8 (2.3)	9.8 (4.4)	2.8 (2.7)	3.8 (2.0)	4.2 (1.8)	5.5 (1.7)	5.1 (1.2)	
Two	0 (NA)	5.4 (3.0)	6.8 (2.8)	10.4 (4.2)	7.1 (2.6)	7.0 (2.0)	7.1 (1.5)	
Three or four	16.9 (5.2)	21.4 (6.1)	14.9 (5.3)	17.8 (4.4)	19.3 (4.3)	26.6 (3.6)	23.9 (2.6)	
Five or more	77.5 (6.1)	63.5 (7.0)	75.5 (8.3)	68.0 (7.2)	67.1 (5.6)	58.6 (3.8)	61.8 (2.9)	
Hospital beds:								
None	0 (NA)	0 (NA)	0 (NA)	0 (NA)	2.2 (1.5)	2.3 (1.1)	2.1 (0.8)	
1-49	0 (NA)	0 (NA)	2.8 (2.8)	3.8 (2.0)	2.4 (1.7)	1.6 (0.9)	1.9 (0.8)	
50 - 99	2.0 (1.7)	11.6 (4.3)	0 (NA)	3.5 (2.5)	4.2 (1.8)	5.7 (1.8)	5.2 (1.3)	
100 - 299	6.2 (3.1)	12.6 (4.8)	13.6 (4.3)	19.3 (5.1)	22.7 (4.3)	25.1 (3.1)	23.7 (2.3)	
300 or more	91.9 (4.3)	75.8 (5.4)	83.6 (7.2)	73.4 (6.5)	68.5 (5.3)	65.4 (3.6)	67.2 (2.8)	
Emergency rooms:								
None	0 (NA)	0 (NA)	0 (NA)	0 (NA)	4.0 (2.0)	3.5 (1.4)	3.4 (1.1)	
One	5.8 (2.3)	9.8 (4.4)	4.8 (3.3)	8.7 (3.3)	3.5 (1.7)	5.3 (1.7)	5.0 (1.1)	
Two	0 (NA)	12.0 (5.2)	4.8 (2.7)	5.6 (2.9)	6.0 (2.3)	11.2 (2.5)	9.4 (1.8)	
Three or four	21.4 (5.3)	22.4 (6.1)	17.1 (5.4)	24.1 (5.2)	27.3 (4.6)	27.0 (3.6)	26.7 (2.7)	

— continued

Table 15 — Hospital services available to rural communities, by community size, 1977, preliminary estimates
— continued

Item	Population, 1978						Unincorporated areas	U.S.
	20,000-49,999	10,000-19,999	5,500-9,999	2,500-5,499	1-2,499			
	Percent of communities							
Five or more	72.8 (5.9)	55.8 (6.9)	73.3 (8.6)	61.7 (6.9)	59.1 (5.6)	52.9 (3.7)		55.5 (2.9)
Blood bank:								
None	2.0 (3.9)	8.9 (4.5)	9.4 (4.1)	7.7 (3.7)	6.7 (2.5)	5.8 (1.8)		6.2 (1.3)
One	11.5 (3.9)	7.0 (3.7)	6.1 (3.4)	10.1 (3.2)	13.1 (3.4)	12.2 (2.6)		12.2 (1.9)
Two	4.6 (3.1)	16.3 (6.1)	10.9 (4.4)	15.0 (4.7)	17.6 (4.3)	20.2 (3.3)		19.0 (2.4)
Three or four	30.8 (6.4)	20.3 (5.4)	22.1 (7.3)	17.2 (5.5)	24.4 (5.0)	23.3 (3.5)		23.3 (2.6)
Five or more	51.0 (6.1)	47.5 (6.6)	51.5 (6.9)	49.9 (6.9)	38.2 (4.9)	38.5 (3.3)		39.3 (2.6)
Other services:								
Postoperative recovery room	100.0 (NA)	100.0 (NA)	100.0 (NA)	97.5 (5.5)	96.7 (4.0)	94.7 (2.8)		95.6 (2.1)
Intensive care	100.0 (NA)	96.9 (4.8)	98.7 (6.3)	98.7 (5.4)	94.8 (4.2)	97.1 (2.5)		96.6 (2.0)
Neonatal intensive care	55.8 (6.8)	39.5 (6.4)	51.2 (9.3)	42.5 (7.2)	40.5 (5.7)	35.2 (3.6)		37.4 (2.8)
Electroencephalograph	97.8 (3.9)	87.7 (5.5)	89.8 (7.1)	82.8 (6.6)	82.4 (5.2)	79.8 (3.6)		81.0 (2.8)
Hemodialysis	59.9 (6.3)	50.6 (7.0)	50.0 (9.1)	52.8 (6.9)	46.8 (5.4)	45.0 (3.8)		46.1 (2.9)
Psychiatry	74.9 (6.3)	55.9 (5.9)	58.6 (8.8)	59.9 (7.0)	50.2 (5.2)	55.8 (3.7)		54.6 (2.8)
Pediatrics	91.6 (4.6)	77.9 (6.5)	76.3 (7.9)	81.4 (6.4)	76.7 (5.6)	74.4 (3.6)		75.5 (2.8)
Premature nursery	86.7 (5.6)	78.1 (6.6)	82.7 (7.7)	78.1 (6.7)	72.9 (5.5)	66.7 (3.7)		69.4 (2.9)

— continued

Table 15 — Hospital services available to rural communities, by community size, 1977, preliminary estimates
— continued

Item	Population, 1978						Unincorporated areas	U.S
	20,000–49,999	10,000–19,999	5,500–9,999	2,500–5,499	1–2,499			
Pharmacy	100.0 (3.6)	100.0 (NA)	100.0 (NA)	97.6 (5.5)	97.8 (3.8)	97.1 (2.5)	97.4 (1.9)	

NOTE: Standard errors shown in parentheses. NA indicates standard error not applicable. Services are considered available to a community if a hospital is located within 30 miles. Detail may not sum to 100 percent due to rounding. Excludes Alaska and Hawaii.

SOURCE: American Hospital Association, Annual Survey of Hospitals, 1977.

PREPARED BY: State and Local Government Section, Economic Development Division, ERS, USDA, December 1983.

FIGURE 5—PERCENT OF RURAL COMMUNITIES WITH BASIC HOSPITAL SERVICES WITHIN 30 MILES, BY COMMUNITY SIZE, 1977: PRELIMINARY ESTIMATES

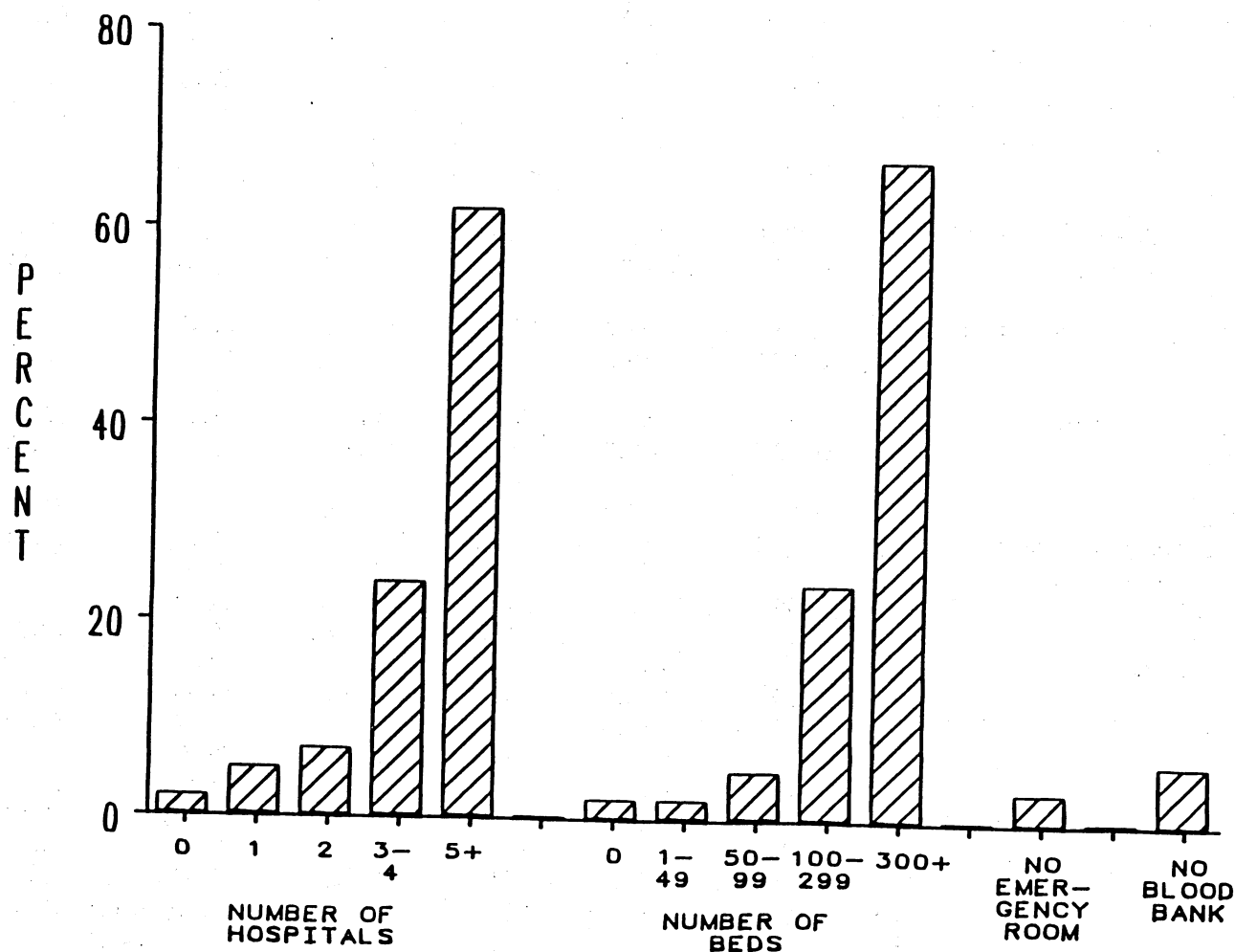


Table 16 — Hospital services available to rural communities, by region, 1977, preliminary estimates

Item	: Northeast :	North : Central :	South :	West :	: U.S.
	<u>Percent of communities</u>				
Hospitals:					
None	: 2.0	2.1	1.6	3.4	2.1
	: (2.0)	(1.2)	(1.6)	(2.1)	(0.8)
One	: 2.7	5.4	0.9	22.4	5.1
	: (2.7)	(2.0)	(0.8)	(6.5)	(1.2)
Two	: 10.2	6.5	2.6	23.6	7.1
	: (5.7)	(2.2)	(1.4)	(7.8)	(1.5)
Three or four	: 10.3	26.3	25.3	21.9	23.9
	: (5.5)	(3.9)	(4.7)	(7.5)	(2.6)
Five or more	: 74.8	59.7	69.5	28.7	61.8
	: (7.7)	(4.4)	(5.2)	(7.3)	(2.9)
Hospital beds:					
None	: 2.0	2.1	1.6	3.5	2.1
	: (2.0)	(1.2)	(1.6)	(2.1)	(0.8)
1-49	: 0	2.2	1.2	4.8	1.9
	: (NA)	(1.2)	(1.2)	(2.5)	(0.8)
50 - 99	: 7.3	5.0	0.5	20.9	5.2
	: (5.1)	(2.0)	(0.3)	(6.8)	(1.3)
100 - 299	: 8.6	31.2	11.7	40.8	23.7
	: (5.6)	(3.8)	(2.9)	(9.6)	(2.3)
300 or more	: 82.1	59.5	85.0	30.0	67.2
	: (6.6)	(4.1)	(5.2)	(7.2)	(2.8)
Emergency rooms:					
None	: 2.0	4.3	1.6	5.9	3.4
	: (2.0)	(1.7)	(1.6)	(3.3)	(1.1)
One	: 2.7	4.8	1.9	21.6	5.0
	: (2.7)	(1.9)	(1.0)	(6.4)	(1.1)
Two	: 10.2	9.7	4.6	24.1	9.4
	: (5.7)	(2.7)	(2.2)	(8.1)	(1.8)
Three or four	: 10.3	29.1	30.4	19.6	26.7
	: (5.5)	(4.0)	(5.1)	(7.3)	(2.7)

— continued

Table 16 — Hospital services available to rural communities, by region, 1977, preliminary estimates — continued

Item	Northeast	North Central	South	West	U.S.
	<u>Percent of communities</u>				
Five or more	74.8 (7.7)	52.1 (4.3)	61.5 (5.2)	28.7 (7.3)	55.5 (2.9)
Blood bank:					
None	2.0 (2.0)	6.7 (2.1)	3.5 (1.9)	18.6 (5.3)	6.2 (1.3)
One	11.3 (6.0)	12.2 (2.9)	7.3 (2.7)	31.4 (8.1)	12.2 (1.9)
Two	5.4 (3.1)	25.3 (4.0)	12.5 (3.7)	20.9 (7.0)	19.0 (2.4)
Three or four	15.8 (6.6)	24.2 (4.0)	26.8 (4.8)	14.8 (6.3)	23.3 (2.6)
Five or more	65.5 (7.9)	31.6 (3.5)	49.9 (5.2)	14.2 (4.5)	39.3 (2.6)
Other services:					
Postoperative recovery room	98.0 (7.4)	93.8 (2.7)	98.4 (4.2)	93.1 (7.5)	95.6 (2.1)
Intensive care	98.0 (7.4)	95.8 (2.3)	98.3 (4.2)	93.1 (7.5)	96.6 (2.0)
Neonatal inten- sive care	47.8 (8.2)	32.7 (4.0)	44.4 (5.6)	27.2 (6.6)	37.4 (2.8)
Electroencephalo- graph	91.3 (7.9)	78.8 (4.0)	85.2 (5.0)	65.9 (9.0)	81.0 (2.8)
Hemodialysis	59.3 (8.0)	40.6 (4.3)	54.8 (5.3)	31.1 (8.1)	46.1 (2.9)
Psychiatry	80.9 (8.2)	46.4 (4.0)	66.3 (5.6)	27.9 (7.0)	54.6 (2.8)
Pediatrics	93.8 (7.6)	71.8 (4.0)	78.7 (5.4)	61.9 (8.1)	75.5 (2.8)

— continued

Table 16 — Hospital services available to rural communities, by region, 1977, preliminary estimates — continued

Item	Northeast	North Central	South	West	U.S.
Premature nursery	82.0 (6.7)	59.5 (4.4)	86.4 (4.9)	52.9 (7.8)	69.4 (2.9)
Pharmacy	98.0 (7.4)	97.0 (2.1)	98.4 (4.2)	95.4 (7.1)	97.4 (1.9)

NOTE: Standard errors shown in parentheses. NA indicates standard error not applicable. Services are considered available to a community if a hospital is located within 30 miles. Detail may not sum to 100 percent due rounding. Excludes Alaska and Hawaii.

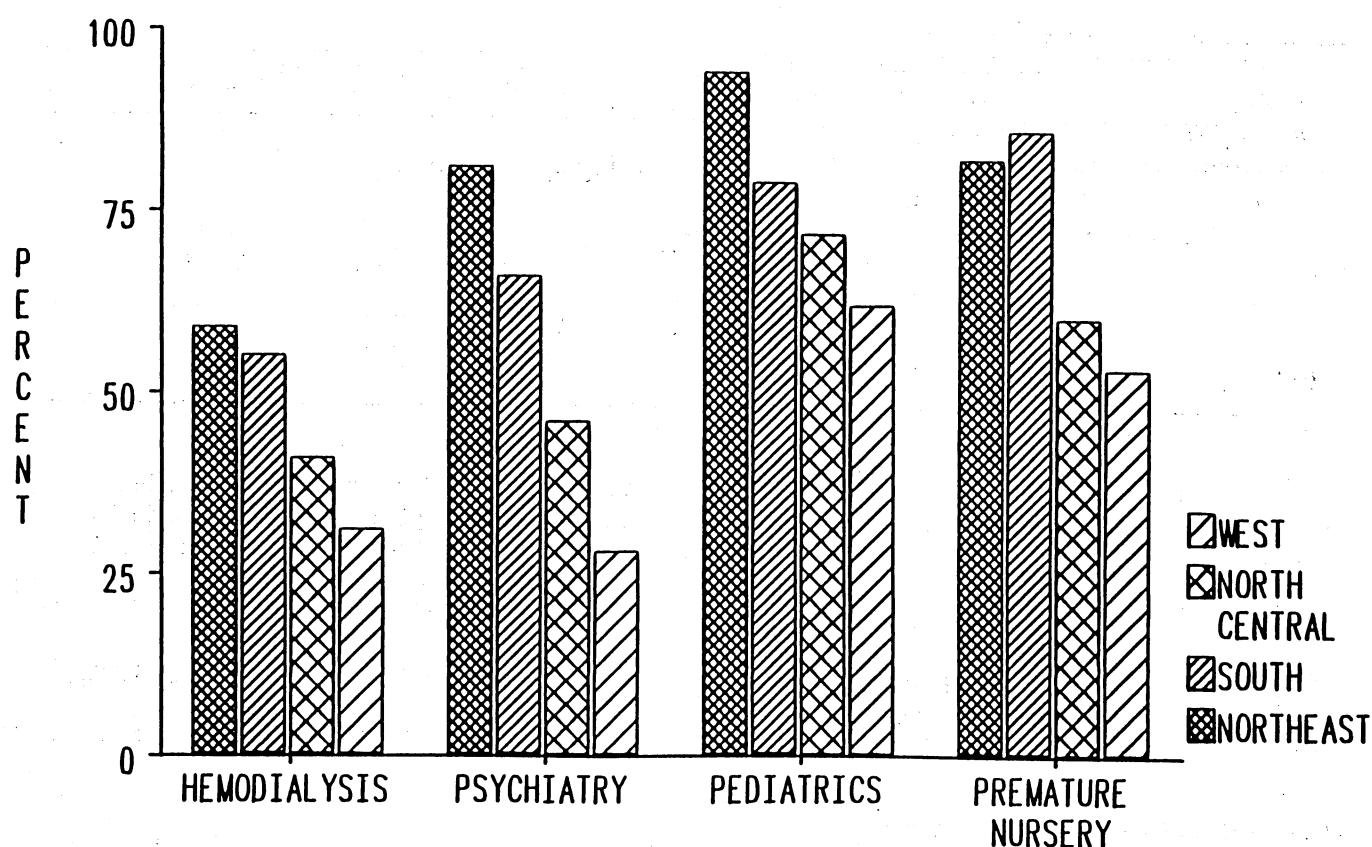
SOURCE: American Hospital Association, Annual Survey of Hospitals, 1977.

PREPARED BY: State and Local Government Section, Economic Development Division, ERS, USDA,
December 1983.

without these hospital services (fig. 6).¹⁰ These data provide only a partial profile of the availability of health care facilities to rural communities. Many medical and health care services are provided by individuals, or by institutions other than hospitals, most notably by medical and other health care clinics and by private practitioners. Thus, these findings, while indicating the availability of important hospital-based facilities, do not necessarily indicate the overall quality of health services available to rural residents.

10/ While the percentage of communities with these services generally declines with population size class, the differences are statistically significant only between the large communities and the unincorporated places.

FIGURE 6--PERCENT OF RURAL COMMUNITIES WITH SPECIALIZED HOSPITAL SERVICES WITHIN 30 MILES, BY REGION, 1977: PRELIMINARY ESTIMATES



NURSING HOME SERVICES

Almost all rural communities had access to some nursing home services (tables 17 and 18). Less than 2 percent did not have at least one nursing home within a 30-mile radius.¹¹ About 1 percent of rural communities had one nursing home within this area; over 92 percent had access to five or more nursing homes. Again, this does not mean that 98 percent of rural communities have a nursing home within their borders; rather, the nursing homes are located within a broader area.

Although regional differences in the availability of nursing homes are noticeable, they are for the most part not statistically significant. An exception is the West, where rural communities have a smaller number of nursing homes within 30 miles (table 17). The number of rural communities with access to fewer than five nursing homes was not statistically different from zero except among unincorporated communities and incorporated places with fewer than 5,500 residents (table 18).

^{11/} The community's health service area was defined differently for nursing homes and hospitals because of differences in the data available. See the survey method section at the end of the report for a discussion.

Table 17 — Nursing homes available to rural communities, by community size, 1978, preliminary estimates

Number of nursing homes	Population, 1978					Unincor- porated areas	U.S.
	20,000- 49,999	10,000- 19,999	5,500- 9,999	2,500- 5,499	1- 2,499		
	Percent of communities						
None	0 (NA)	0 (NA)	0 (NA)	1.3 (1.3)	0.9 (0.9)	1.8 (1.0)	1.5 (0.7)
One	3.9 (2.2)	0 (NA)	5.6 (3.3)	0 (NA)	0 (NA)	1.2 (0.7)	0.9 (0.4)
Two	1.9 (1.7)	2.7 (1.6)	0 (NA)	0 (NA)	1.7 (1.1)	2.2 (0.9)	1.9 (0.7)
Three or four	1.9 (1.7)	3.1 (2.9)	2.7 (1.8)	4.5 (2.1)	1.6 (1.1)	3.7 (1.4)	3.2 (1.0)
Five or more	92.3 (3.9)	94.3 (4.9)	91.7 (6.9)	94.2 (6.1)	95.7 (4.0)	91.1 (2.7)	92.5 (2.1)

NOTE: Standard errors shown in parentheses. NA indicates standard error not applicable. Services are considered available to a community if a nursing home is located within 30 miles. Detail may not sum to 100 percent due to rounding. Excludes Alaska and Hawaii.

SOURCE: U.S. Department of Health and Human Services, Master Facility Inventory.

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FIRE PROTECTION

Most rural communities had access to fire protection in 1980. Only 2 percent, concentrated entirely in the unincorporated areas, had no fire service (table 19). Of those with fire service, only about 7 percent have fire equipment other than pickups, jeeps, or autos housed outside a fully enclosed building.

Slightly more than 40 percent of rural communities with fire service had neither full coverage of their community with fire hydrants nor service by trucks with at least 3,000 gallons of tank capacity. More than half the communities in unincorporated areas lacked such tank truck capacity and hydrant coverage (fig. 7).

LOCAL ROADS

In 58 percent of all rural communities, community-level governments have responsibility for the construction, maintenance, and replacement of at least some local public streets and roads. Nearly all incorporated places have some locally maintained roads, usually streets and alleys other than major through streets

Table 18 — Nursing homes available to rural communities, by region, 1978, preliminary estimates

Number of nursing homes	: Northeast	: North : Central	: South	: West	: U.S.
	:	<u>Percent of communities</u>			
None	: 0	2.3	0	3.4	1.5
	: (NA)	(1.4)	(NA)	(2.2)	(0.7)
One	: 0	0	0	11.5	0.9
	: (NA)	(NA)	(NA)	(5.7)	(0.4)
Two	: 0	0.8	0.8	16.3	1.9
	: (NA)	(0.8)	(0.8)	(6.2)	(0.7)
Three or four	: 0	2.5	1.5	18.0	3.2
	: (NA)	(1.4)	(0.9)	(7.6)	(1.0)
Five or more	: 100.0	94.4	97.7	50.8	92.5
	: (NA)	(2.7)	(4.3)	(7.4)	(2.1)

NOTE: Standard errors shown in parentheses. NA indicates standard error not applicable. Services are considered available to community if a nursing home is located within 30 miles. Excludes Alaska and Hawaii.

SOURCE: U.S. Department of Health and Human Services, Master Facility Inventory, 1978.

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December 1983.

maintained by a higher level government. In unincorporated areas, on the other hand, these local roads provide a supplementary feeder system that connects homes and farms with Federal, State, and county roads. Most unincorporated communities have no roads under the control of community-level governments since their governmental functions are handled by the county or some other level of government (table 21).

Thirty-eight percent of all rural communities with roads have under 10 miles of local roads. The larger rural communities tend to maintain more miles of local roads and the great majority of those with populations of 10,000 or more have at least 51 miles of local roads (fig. 8). The smallest incorporated places usually have under 11 miles of local streets and roads. Nearly all (97 percent) communities in the Northeast have some

Table 19 — Availability of fire protection in rural communities, by community size, 1980, preliminary estimates

Item	Population, 1978						Unincorporated areas	U.S.
	20,000-49,999	10,000-19,999	5,500-9,999	2,500-5,499	1-2,499			
	<u>Percent of communities</u>							
Percent of rural communities without fire protection	0 (NA)	0 (NA)	0 (NA)	0 (NA)	0 (NA)	3.4 (1.5)		2.2 (1.0)
Percent of rural communities served by departments with 1 or more trucks not housed in fire station	13.9 (5.1)	14.0 (5.3)	14.4 (7.4)	9.2 (3.8)	7.0 (2.9)	5.9 (1.7)		6.7 (1.4)
Percent of rural communities with fire service, but lacking: complete hydrant coverage or truck tank capacity totalling 3,000 gallons	11.1 (3.9)	8.3 (3.5)	8.5 (4.3)	11.6 (3.7)	20.5 (4.8)	54.1 (4.2)		41.3 (3.0)

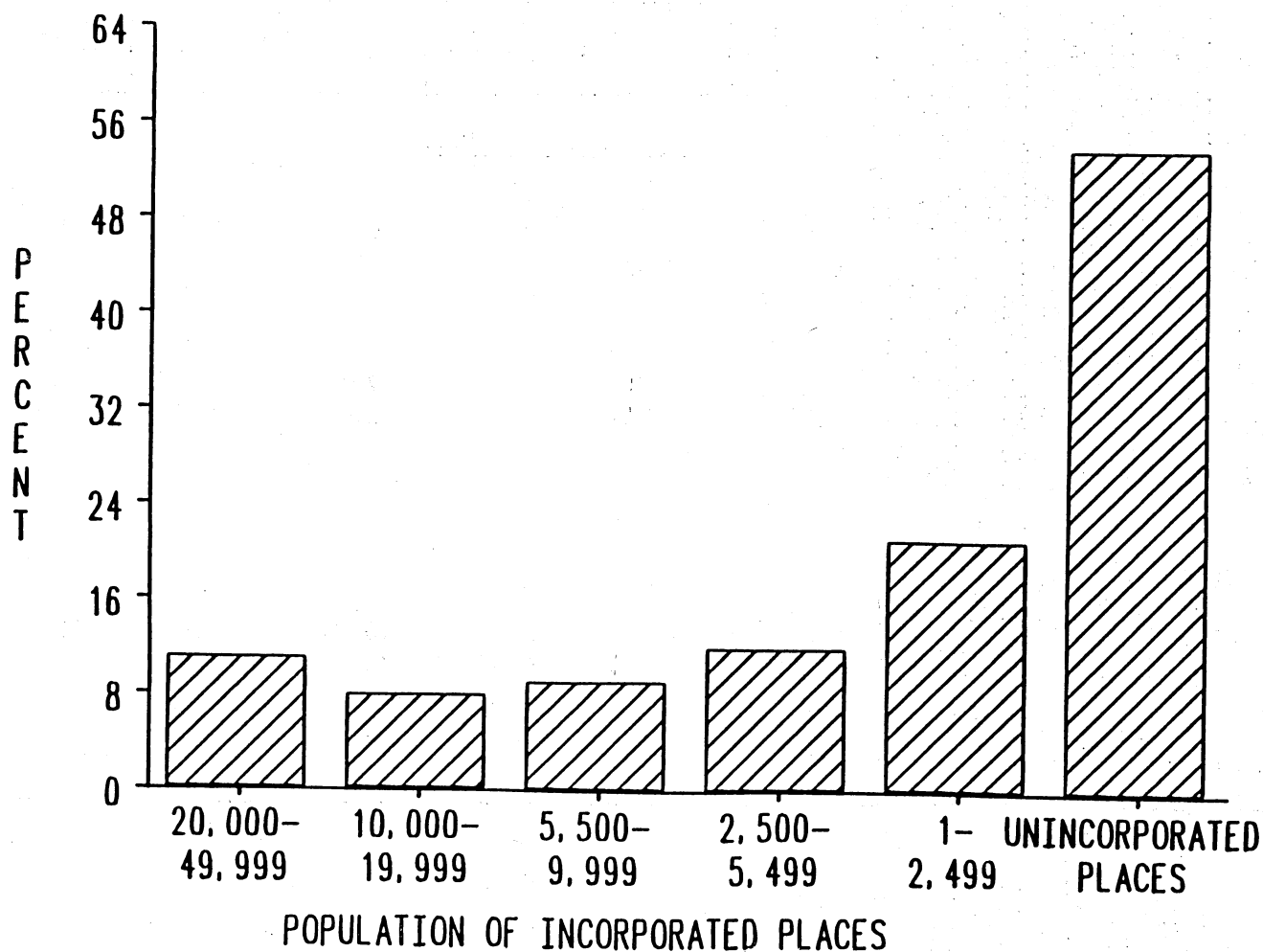
NOTE: Standard errors in shown parentheses. NA indicates standard error not applicable. Excludes Alaska and Hawaii.

SOURCE: Fire Agency questionnaire, National Rural Community Facilities Assessment Study.

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local roads, as do 62 percent of communities in the North Central region (table 22); township governments are prevalent in both regions and in both it is common for local roads in unincorporated communities to be managed at the community level. On the other hand, less than half of rural communities in the West and South have any local roads, largely because township governments are rare or nonexistent in these two regions and local roads are operated at the county or some other level of government. Northeastern rural communities with local roads also have the highest average road mileage. Of those in the South with local roads, most have 10 miles or less.

FIGURE 7—PERCENT OF RURAL COMMUNITIES WITH FIRE SERVICE BUT WITHOUT COMPLETE HYDRANT COVERAGE OR TRUCKS WITH A TOTAL OF 3000 GALLONS OF TANK CAPACITY, BY COMMUNITY SIZE, 1980: PRELIMINARY ESTIMATES



Few rural communities have local roads with three or four lanes. These are concentrated among the communities with 10,000 or more inhabitants. Nearly all rural communities with local roads have some with two lanes at least 10 feet wide. The more populous communities have many more miles of these roads to maintain than small incorporated places. Most unincorporated areas with local roads also maintain larger amounts of mileage.

Narrow roads are common in rural communities. One-third of all rural communities with local roads have some with only one lane or with two lanes less than 10 feet wide. They are most evident in unincorporated communities and in the larger incorporated places.

Table 20 — Availability of fire protection in rural communities, by region, 1980, preliminary estimates

[illegible]

NOTE: Standard errors shown in parentheses. NA indicates standard error not applicable.
Excludes Alaska and Hawaii.

SOURCE: Fire Agency questionnaire, National Rural Community Facilities Assessment Study.

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Sixty percent of all rural communities with local roads have some that are unpaved (defined for the NRCFAS as being made up of other than concrete, bituminous, gravel, or other semipermanent materials). Communities of all sizes have some unpaved roads, but unincorporated places have the most mileage. Eighty percent of rural communities in the West with local roads have some that are unpaved. In the Northeast, 35 percent of communities with local roads have more than 10 miles of unpaved roads, while only 5 percent of Southern communities do.

Table 21 — Local road conditions in rural communities, by community size, 1980, preliminary estimates

Item	Population, 1978						Unincorporated areas	U.S.
	20,000-49,999	10,000-19,999	5,500-9,999	2,500-5,499	1-2,499			
<u>Percent of communities</u>								
No local roads	0 (NA)	0 (NA)	0 (NA)	2.6 (1.7)	5.8 (2.5)	61.8 (3.1)	41.9 (2.1)	
Some local roads:	100.0 (NA)	100.0 (NA)	100.0 (NA)	97.4 (5.7)	94.2 (4.4)	38.2 (2.9)	58.1 (2.2)	
Miles of local roads:								
10 miles or less	0 (NA)	0 (NA)	3.5 (2.6)	4.5 (3.0)	70.4 (5.9)	3.7 (1.2)	21.8 (1.8)	
11-35 miles	1.5 (1.4)	6.7 (3.5)	17.8 (5.9)	69.9 (6.8)	20.5 (4.2)	12.5 (2.5)	16.9 (2.0)	
36-50 miles	3.2 (2.2)	8.8 (4.0)	31.7 (7.1)	10.0 (3.8)	2.0 (1.3)	12.5 (2.6)	9.8 (1.8)	
51 or more miles	95.3 (5.0)	84.6 (6.7)	47.1 (8.9)	13.1 (4.6)	1.3 (1.3)	9.6 (2.0)	9.6 (1.4)	
Roads with 4 lanes:								
None	17.5 (4.9)	40.1 (5.9)	64.9 (8.8)	91.5 (6.2)	90.4 (4.8)	35.2 (2.8)	52.9 (2.3)	
Some	82.5 (6.7)	59.9 (7.7)	35.1 (7.1)	5.9 (2.9)	3.8 (1.8)	3.1 (1.0)	5.2 (0.9)	
Roads with 3 lanes:								
None	58.0 (7.0)	66.0 (7.2)	94.1 (7.1)	90.9 (6.7)	93.5 (4.5)	38.1 (2.9)	56.7 (2.3)	
Some	42.0 (6.9)	34.0 (6.8)	5.9 (3.1)	6.5 (2.7)	0.7 (0.7)	0.2 (0.2)	1.4 (0.3)	
Miles with 2 lanes								
10 feet wide:								
None	0 (NA)	0 (NA)	2.3 (2.4)	4.1 (3.1)	4.9 (2.2)	4.6 (1.5)	4.6 (1.1)	
10 miles or less	1.7 (1.6)	0.8 (0.8)	3.7 (2.9)	10.5 (4.3)	69.0 (6.0)	6.2 (1.9)	23.3 (2.1)	
11-25 miles	2.2 (2.1)	5.9 (3.6)	10.9 (4.6)	44.5 (6.8)	17.0 (4.0)	6.1 (1.9)	10.6 (1.7)	

— continued

Table 21 — Local road conditions in rural communities, by community size, 1980, preliminary estimates
— continued

Item	Population, 1978					Unincorporated areas	U.S.
	20,000-49,999	10,000-19,999	5,500-9,999	2,500-5,499	1-2,499		
	Percent of communities						
26 or more miles	96.2 (4.4)	93.3 (5.8)	83.1 (8.9)	38.4 (6.9)	3.3 (1.9)	21.4 (3.0)	19.6 (2.0)
Miles with 1 lane or 2 lanes less than 10 feet wide:							
None	64.7 (7.5)	61.3 (6.9)	64.0 (8.5)	73.4 (7.2)	73.1 (5.4)	22.0 (3.1)	39.5 (2.5)
10 miles or less	22.0 (5.3)	23.6 (6.6)	25.0 (6.7)	16.7 (4.5)	18.3 (4.5)	6.8 (1.8)	11.0 (1.7)
11-25 miles	11.2 (3.9)	7.8 (3.2)	4.5 (3.1)	5.7 (3.4)	1.9 (1.4)	2.2 (0.9)	2.4 (0.7)
26-35 miles	0 (NA)	2.5 (1.8)	6.6 (3.7)	1.6 (1.6)	0.9 (1.0)	3.1 (1.4)	2.5 (0.9)
36 or more miles	2.2 (2.1)	4.8 (3.5)	0 (NA)	0 (NA)	0 (NA)	4.2 (1.5)	2.8 (1.0)
Miles of unpaved roads:							
None	60.6 (6.9)	43.9 (6.4)	47.0 (5.9)	49.3 (7.0)	45.8 (5.6)	10.0 (2.2)	22.7 (2.1)
2 miles or less	10.7 (4.3)	14.5 (4.9)	38.6 (7.6)	20.7 (5.5)	25.5 (5.3)	3.4 (1.1)	11.0 (1.7)
3-10 miles	19.5 (4.9)	28.0 (7.1)	8.0 (4.8)	12.3 (4.3)	19.4 (4.3)	7.9 (2.1)	11.5 (1.8)
11-30 miles	9.3 (3.6)	11.6 (4.7)	5.0 (3.5)	15.1 (5.2)	3.4 (2.0)	7.4 (2.0)	6.7 (1.5)
31 or more miles	0 (NA)	1.9 (1.9)	1.5 (1.5)	0 (NA)	0 (NA)	9.5 (2.3)	6.3 (1.5)
Miles due for resurfacing in the last year:							
None	6.9 (4.1)	5.4 (3.8)	10.9 (4.4)	8.0 (3.6)	28.4 (5.7)	5.7 (1.9)	12.1 (2.0)

— continued

Table 21 — Local road conditions in rural communities, by community size, 1980, preliminary estimates
— continued

Item	Population, 1978						Unincorporated areas	U.S.
	20,000-49,999	10,000-19,999	5,500-9,999	2,500-5,499	1-2,499			
<u>Percent of communities</u>								
2 miles or less	4.5 (2.6)	10.8 (4.9)	13.1 (5.1)	32.3 (6.3)	38.6 (5.7)	8.3 (1.9)	17.6 (2.0)	
3-10 miles	46.7 (6.7)	53.6 (7.8)	44.7 (9.0)	37.4 (7.3)	21.0 (4.2)	14.9 (2.6)	18.7 (2.1)	
11 or more miles	41.9 (6.5)	30.3 (6.5)	31.4 (6.9)	19.7 (4.9)	6.2 (2.5)	9.5 (2.3)	9.8 (1.7)	
Miles resurfaced in last year:								
None	10.7 (4.8)	17.4 (5.8)	25.0 (5.9)	22.0 (5.7)	52.8 (6.3)	9.2 (2.3)	22.0 (2.3)	
2 miles or less	6.0 (3.0)	25.6 (6.2)	29.8 (7.4)	49.7 (7.1)	32.5 (4.9)	10.1 (2.1)	18.2 (2.0)	
3-10 miles	66.3 (6.5)	43.8 (6.8)	33.7 (8.0)	18.2 (5.5)	8.9 (3.2)	14.7 (2.6)	14.3 (1.9)	
11 or more miles	17.1 (5.4)	13.1 (4.8)	11.6 (4.3)	7.5 (3.9)	0 (NA)	4.3 (1.7)	3.6 (1.1)	
Miles closed awaiting repair:								
None	94.1 (4.4)	95.1 (6.1)	98.8 (6.9)	93.3 (6.0)	90.6 (4.9)	33.4 (3.0)	53.7 (2.4)	
2 miles or less	5.9 (3.0)	4.9 (2.8)	1.2 (1.2)	2.5 (2.4)	2.1 (1.5)	2.3 (1.2)	2.3 (0.9)	
3 or more miles	0 (NA)	0 (NA)	0 (NA)	1.6 (1.6)	1.5 (1.1)	2.6 (1.4)	2.1 (1.0)	
Miles posted for 20-ton load limit or less:								
None	56.9 (6.8)	57.9 (7.7)	72.6 (6.8)	64.4 (7.7)	62.1 (5.2)	21.8 (2.6)	36.1 (2.2)	

— continued

Table 21 — Local road conditions in rural communities, by community size, 1980, preliminary estimates
— continued

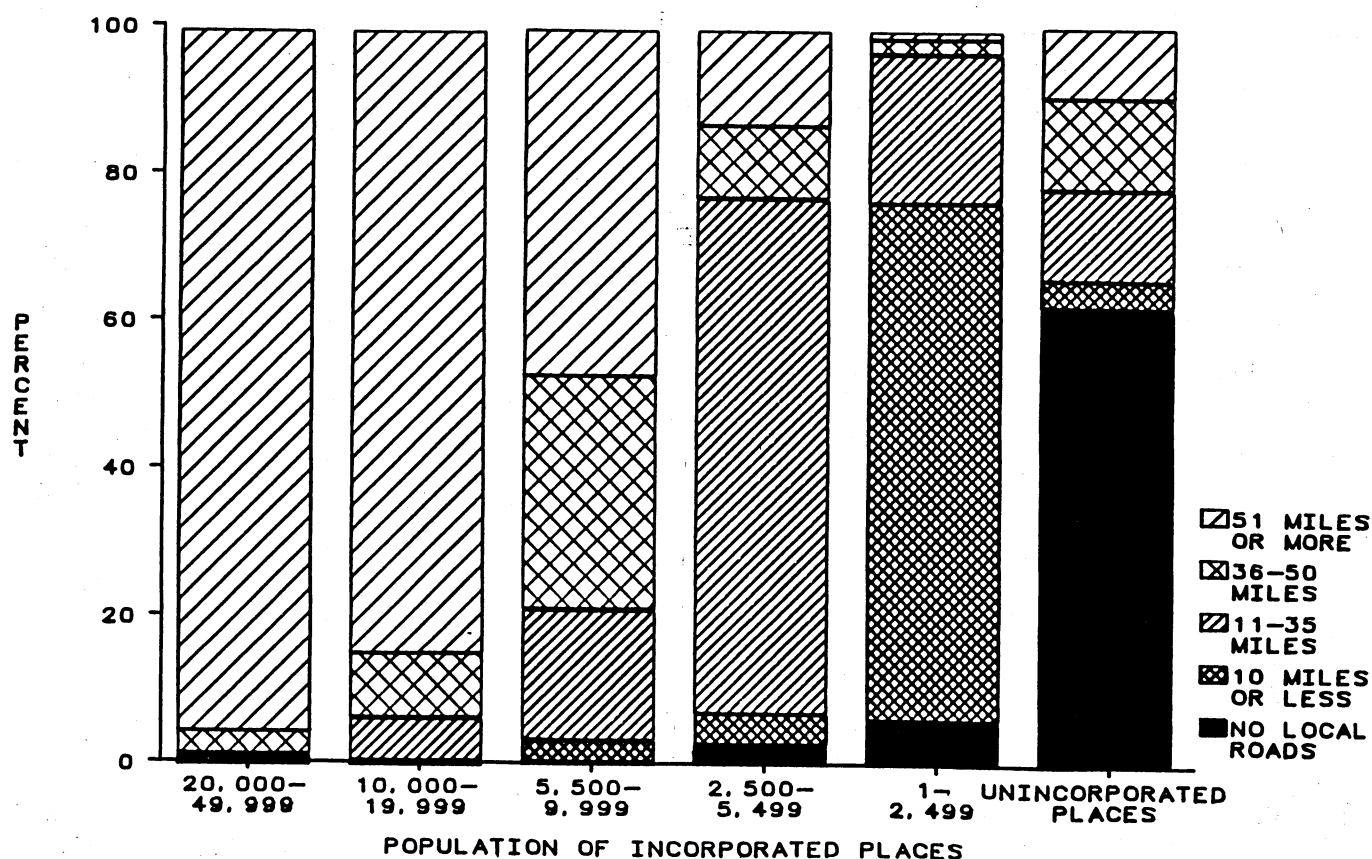
Item	Population, 1978					Unincorporated areas	U.S.
	20,000-49,999	10,000-19,999	5,500-9,999	2,500-5,499	1-2,499		
	Percent of communities						
2 miles or less	11.1 (3.4)	11.4 (5.1)	14.7 (6.3)	16.2 (4.8)	13.6 (3.8)	5.7 (1.9)	9.1 (1.6)
3-10 miles	16.0 (5.0)	19.3 (5.1)	1.8 (0.0)	9.9 (3.4)	15.9 (4.4)	4.6 (1.5)	8.1 (1.6)
11 or more miles	16.0 (4.6)	11.4 (4.9)	10.9 (5.6)	6.9 (3.4)	2.7 (1.9)	5.2 (1.8)	4.9 (1.3)
Number of locations frequently made impassable by natural events:							
None	76.6 (6.6)	88.7 (7.0)	76.2 (8.3)	80.3 (7.1)	83.6 (5.0)	20.5 (2.8)	42.3 (2.3)
1-4	14.4 (4.5)	6.1 (2.9)	18.5 (5.9)	13.8 (4.7)	9.7 (3.2)	8.4 (2.2)	9.2 (1.7)
5 or more	9.1 (4.0)	5.2 (2.5)	5.3 (3.7)	3.3 (2.4)	0.9 (1.0)	9.3 (2.5)	6.7 (1.7)

NOTE: Standard errors shown in parentheses. NA indicates standard error not applicable. Detail may not add to totals due to rounding. Excludes Alaska and Hawaii.

SOURCE: General Community Information questionnaire, National Rural Community Facilities Assessment Study.

PREPARED BY: State and Local Government Section, Economic Development Division, ERS, USDA, December 1983.

FIGURE 8—RESPONSIBILITY FOR LOCAL ROADS IN RURAL AREAS,
BY COMMUNITY SIZE, 1980: PRELIMINARY ESTIMATES



During the fiscal year preceding the survey, 79 percent of all rural communities with local roads had some in need of resurfacing. The largest communities and unincorporated places had the most mileage in need of resurfacing; the smallest places had the least. Sixty-two percent of rural communities with roads had some of their local roads resurfaced during that same year. The largest communities and unincorporated places had the most travel miles resurfaced. Very few rural communities have mileage closed awaiting repair. Unincorporated places most frequently have some roads closed, but even among these 87 percent have no roads closed.

Some community roads are regulated by load limits. Over 33 percent of all rural communities with local roads have roads posted with limits of 10 tons per axle or 20 tons gross or less. The largest communities and unincorporated places tend to have the most posted mileage; the smaller communities have the least.

Table 22 — Local road conditions in rural communities, by region, 1980, preliminary estimates

Item	Northeast	North Central	South	West	U.S.
	<u>Percent of communities</u>				
No local roads	3.2 (3.1)	37.9 (3.3)	59.8 (3.9)	52.9 (5.1)	41.9 (2.1)
Some local roads:	96.8 (7.5)	62.1 (3.4)	40.2 (3.5)	47.1 (3.0)	58.1 (2.2)
Miles of local roads:					
10 miles or less	23.2 (5.9)	20.7 (2.2)	24.7 (3.9)	17.2 (5.6)	21.8 (1.8)
11-35 miles	24.5 (6.6)	20.8 (3.3)	6.4 (1.6)	20.0 (5.9)	16.9 (2.0)
36-50 miles	18.0 (7.2)	13.0 (2.9)	3.8 (1.4)	0.5 (0.3)	9.8 (1.8)
51 or more miles	31.1 (7.0)	7.7 (2.1)	5.3 (0.9)	9.4 (0.9)	9.6 (1.4)
Roads with 4 lanes:					
None	84.9 (8.6)	59.6 (3.4)	33.2 (3.5)	40.5 (4.6)	52.9 (2.3)
Some	11.9 (4.8)	2.5 (0.5)	7.0 (2.0)	6.6 (2.1)	5.2 (0.9)
Roads with 3 lanes:					
None	94.6 (7.8)	61.4 (3.5)	38.8 (3.5)	42.7 (4.0)	56.7 (2.3)
Some	2.2 (1.2)	0.7 (0.2)	1.4 (0.3)	4.4 (2.5)	1.4 (0.3)
Miles with 2 lanes, 10 feet wide:					
None	9.8 (5.2)	3.7 (1.7)	4.0 (1.1)	5.5 (2.5)	4.6 (1.1)
10 miles or less	26.6 (6.8)	23.9 (2.9)	21.9 (3.9)	20.2 (5.5)	23.3 (2.1)
11-25 miles	22.4 (6.4)	10.9 (2.6)	5.2 (1.6)	13.2 (5.3)	10.6 (1.7)
26 or more miles	38.0 (8.2)	23.7 (3.4)	9.1 (1.5)	8.2 (1.3)	19.6 (2.0)

— continued

Table 22 — Local road conditions in rural communities, by region, 1980, preliminary estimates — continued

Item	North Central	North Central	South	West	U.S.

—continued

Table 22 — Local road conditions in rural communities, by region, 1980, preliminary estimates — continued

[illegible]

— continued

Table 22 — Local road conditions in rural communities, by region, 1980, preliminary estimates — continued

Item	North Northeast	North Central	South	West	U.S.
	<u>Percent of communities</u>				
11 or more miles	7.2 (4.0)	7.1 (2.3)	1.1 (0.5)	0.7 (0.3)	4.9 (1.3)
Number of locations frequently made impassable by natural events:					
None	63.1 (8.0)	44.4 (3.5)	32.5 (3.5)	37.3 (4.9)	42.3 (2.3)
1-4	21.0 (6.8)	8.3 (2.4)	6.8 (2.5)	8.6 (5.2)	9.2 (1.7)
5 or more	12.8 (6.6)	9.5 (2.7)	1.0 (1.6)	1.3 (0.6)	6.7 (1.9)

NOTE: Standard errors shown in parentheses. NA indicates standard error not applicable. Detail may not add to totals due to rounding. Excludes Alaska and Hawaii.

SOURCE: General Community Information questionnaire, National Rural Community Facilities Assessment Study.

PREPARED BY: State and Local Government Section, Economic Development Division, ERS, USDA, December 1983.

Communities occasionally suffer from locations on local roads made repeatedly impassable by bad weather, flooding, landslides, or other natural events. Twenty-seven percent of rural communities with local roads have some that are affected by these problems. Twelve percent have 5 or more such locations. Nearly 50 percent of the unincorporated communities with roads have locations that are sometimes closed; 25 percent have five or more.

LOCAL BRIDGES

Over 27 percent of all rural communities have bridges in use on local roads for which they have responsibility (table 23). For the purpose of this study, bridges include active bridges or overpasses over 20 feet long. Bridges on Federal, State, county, or private roads are excluded.

Table 23 — Local bridge conditions in rural communities, by community size, 1980, preliminary estimates

Item	Population, 1978						Unincorporated areas	U.S.
	20,000-49,999	10,000-19,999	5,500-9,999	2,500-5,499	1-2,499			
	Percent of communities							
Without bridges	10.5 (3.7)	27.3 (6.7)	42.2 (8.2)	51.6 (7.2)	77.4 (5.4)	74.3 (3.3)	72.6 (2.6)	
With bridges:	89.5 (5.3)	72.8 (7.2)	57.9 (6.8)	48.4 (6.8)	22.6 (4.4)	25.8 (2.9)	27.4 (2.3)	
1 bridge	12.2 (4.2)	12.0 (4.3)	28.0 (5.9)	20.6 (5.0)	15.4 (3.9)	4.5 (1.6)	8.7 (1.5)	
2 - 4 bridges	36.2 (6.5)	25.2 (6.1)	20.6 (6.1)	22.6 (5.9)	7.2 (2.6)	7.7 (2.0)	8.8 (1.5)	
5 or more bridges	41.2 (6.5)	35.6 (6.5)	9.2 (4.6)	5.2 (2.6)	0 (NA)	13.6 (2.7)	9.9 (1.8)	
With load limits of 16 tons or less, gross	34.1 (6.2)	30.9 (6.6)	17.7 (6.7)	19.1 (5.3)	5.8 (2.5)	15.8 (2.8)	13.6 (1.9)	
With load limits of 6 tons or less, gross	24.5 (5.9)	18.4 (5.7)	9.9 (5.2)	11.6 (4.7)	3.5 (2.1)	9.1 (2.3)	7.9 (1.6)	
Narrow bridges:								
None	77.1 (6.3)	60.3 (7.9)	45.9 (5.6)	41.1 (6.9)	17.7 (3.9)	16.6 (2.8)	19.4 (2.1)	
Some	12.5 (4.6)	12.5 (4.1)	12.0 (6.1)	7.3 (3.0)	4.9 (2.5)	9.1 (2.2)	8.0 (1.6)	
With maintenance deferred 1 year or more:								
None	60.5 (6.2)	35.3 (7.0)	45.9 (7.3)	36.3 (6.0)	18.2 (4.1)	15.5 (2.7)	18.1 (2.1)	
Some	29.0 (4.5)	37.5 (6.6)	12.0 (4.8)	12.1 (4.4)	4.4 (2.0)	10.3 (2.3)	9.2 (1.6)	
Number inspected in last 3 years:								
None	8.3 (4.0)	3.6 (2.0)	5.7 (2.8)	5.4 (2.7)	2.1 (1.5)	1.2 (1.0)	1.8 (0.7)	
Some	16.9 (3.8)	1.6 (1.5)	2.9 (2.2)	7.6 (2.8)	0 (NA)	2.0 (1.2)	1.8 (0.8)	

Table 23 — Local bridge conditions in rural communities, by community size, 1980, preliminary estimates
— continued

Item	Population, 1978					Unincorporated areas	U.S.
	20,000-49,999	10,000-19,999	5,500-9,999	2,500-5,499	1-2,499		
	Percent of communities						
All	64.3 (6.6)	67.5 (7.4)	49.3 (7.4)	35.4 (6.6)	20.5 (4.2)	22.6 (2.9)	23.8 (2.2)
Inspected bridges that are structurally deficient or functionally obsolete:							
None	48.7 (7.3)	40.3 (6.9)	37.8 (6.5)	38.8 (6.8)	20.2 (4.3)	14.1 (2.6)	17.8 (2.1)
Some	40.9 (6.8)	32.5 (6.3)	20.1 (6.9)	9.6 (3.9)	2.4 (1.6)	11.6 (2.4)	9.6 (1.6)
Some open to traffic	36.8 (6.6)	26.0 (6.1)	20.1 (6.9)	9.6 (3.9)	2.4 (1.6)	9.6 (2.1)	8.2 (1.5)
Natural or constructed barriers that permanently divide community:							
None	76.8 (6.2)	76.4 (6.8)	80.8 (8.1)	85.6 (6.5)	95.3 (4.3)	87.6 (3.0)	89.3 (2.3)
Some	23.2 (6.1)	23.6 (6.5)	19.2 (6.2)	14.4 (4.9)	4.7 (2.4)	12.4 (2.4)	10.7 (1.7)

NOTE: Standard errors shown in parentheses. NA indicates standard error not applicable. Detail may not add to totals due to rounding. Excludes Alaska and Hawaii.

SOURCE: General Community Information questionnaire, National Rural Community Facilities Assessment Study.

PREPARED BY: State and Local Government Section, Economic Development Division, ERS, USDA, December 1983.

The great majority of the larger incorporated places have responsibility for at least one local bridge, and most have two or more. As the populations decrease in size, the percentage of communities with bridges steadily decreases (fig. 9). Under 25 percent of the smallest cities have any locally maintained bridges, and nearly all of these have only one. In contrast, nearly half of communities in the two largest categories have five or more bridges. Half of the rural communities in the Northeast have one or more local bridges, more than any other region (table 24). The South has few communities with local bridges; only 11 percent have any at all, and many of these have only one bridge.

Local bridges in rural communities are sometimes posted with restrictive load limits. About half of all rural communities with local bridges have at least one limited to 16 tons or less, and nearly 30 percent have one or more posted with 6-ton limits. Unincorporated

FIGURE 9--SELECTED FEATURES OF LOCAL BRIDGES IN RURAL AREAS, BY COMMUNITY SIZE, 1980: PRELIMINARY ESTIMATES

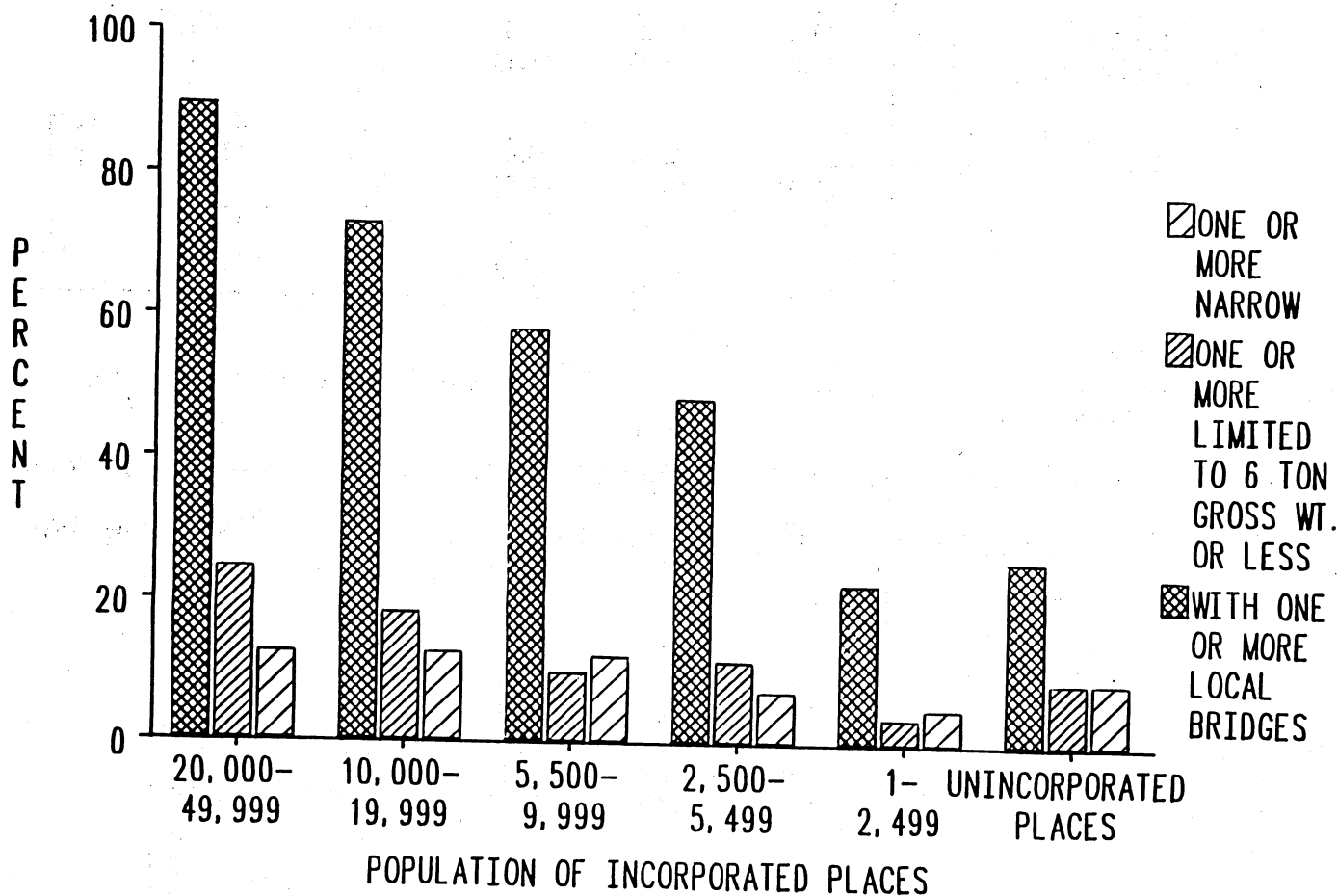


Table 24 — Local bridge conditions in rural communities, by region, 1980, preliminary estimates

Item	Northeast	North Central	South	West	U.S.
	<u>Percent of Communities</u>				
Without bridges	49.8 (9.5)	67.3 (3.6)	89.2 (4.9)	75.9 (7.5)	72.6 (2.6)
With bridges:	50.2 (8.2)	32.7 (3.7)	10.8 (2.0)	24.1 (6.5)	27.4 (2.3)
1 bridge	12.8 (5.3)	9.8 (2.4)	3.6 (1.3)	14.8 (5.5)	8.7 (1.5)
2 - 4 bridges	17.1 (5.4)	9.3 (2.4)	5.1 (1.6)	8.2 (5.2)	8.8 (1.5)
5 or more bridges	20.2 (6.4)	13.6 (3.1)	2.1 (0.7)	1.1 (0.8)	9.9 (1.8)
With load limits of 16 tons or less, gross	34.3 (7.5)	16.7 (3.3)	2.8 (1.3)	5.6 (3.8)	13.6 (1.9)
With load limits of 6 tons or less, gross	20.2 (6.2)	10.2 (2.8)	1.8 (1.1)	0.2 (0.2)	7.9 (1.6)
Narrow bridges:					
None	32.6 (7.5)	22.3 (3.5)	8.4 (1.8)	23.7 (6.5)	19.4 (2.1)
Some	17.6 (5.8)	10.4 (2.7)	2.4 (1.3)	0.4 (0.2)	8.0 (1.6)
With maintenance deferred 1 year or more:					
None	28.3 (7.3)	22.9 (3.6)	6.3 (1.6)	17.4 (5.5)	18.1 (2.1)
Some	21.9 (5.6)	9.7 (2.6)	4.5 (1.5)	6.7 (5.2)	9.2 (1.6)
Number inspected in last 3 years:					
None	2.6 (2.3)	2.0 (1.2)	1.3 (0.9)	1.1 (0.8)	1.8 (0.7)
Some	3.0 (1.8)	2.6 (1.5)	0.3 (0.2)	0.6 (0.2)	1.8 (0.8)

—continued

Table 24 — Local bridge conditions in rural communities, by region, 1980, preliminary estimates —continued

Item	North East	North Central	South	West	U.S.
	<u>Percent of communities</u>				
All	44.6 (8.3)	28.1 (3.7)	9.3 (2.0)	22.4 (6.5)	23.8 (2.2)
Inspected bridges that are structurally de- ficient or function- ally obsolete:					
None	22.0 (6.2)	21.6 (3.5)	7.9 (1.9)	23.2 (6.5)	17.8 (2.1)
Some	28.2 (6.5)	11.0 (2.7)	2.9 (1.1)	0.9 (0.4)	9.6 (1.6)
Some open to traffic	22.1 (5.5)	10.0 (2.6)	2.2 (0.9)	0.8 (0.4)	8.2 (1.5)
Natural or constructed barriers that per- manently divide com- munity:					
None	84.9 (7.4)	91.2 (2.8)	92.8 (4.9)	70.6 (8.7)	89.3 (2.3)
Some	15.1 (6.9)	8.8 (2.5)	7.2 (2.0)	29.4 (8.5)	10.7 (1.7)

NOTE: Standard errors shown in parentheses. Detail may not add to totals due to rounding.
Excludes Alaska and Hawaii.

SOURCE: General Community Information questionnaire, National Rural Community Facilities Assessment Study.

PREPARED BY: State and Local Government Section, Economic Development Division, ERS, USDA,
December 1983.

communities are the most likely to have posted bridges. Restrictive load limits are most common in the Northeast and North Central States, where 40 and 31 percent, respectively, of rural communities have bridges with limits of 6 tons gross weight or less. Few Southern or Western communities have bridges with these limits.

Over 25 percent of rural communities with local bridges have one or more posted as being narrow. Few of the smaller cities and unincorporated communities have any locally maintained bridges, but those that do are more likely to have narrow bridges than are the larger communities. The proportion of communities with narrow bridges is highest in the Northeast and North Central regions. In the West, only 2 percent of rural communities with local bridges have any posted as being narrow.

A third of rural communities with local bridges deferred maintenance for a year or more on one or more of their bridges. Deferred maintenance on bridges is most prevalent among larger cities and unincorporated communities. Half of the communities with 10-20,000 people with local bridges have deferred maintenance on some for a year or more. The problem is least common among the smallest communities. Deferred bridge maintenance is somewhat more common in the Northeast and the South.

Nearly all communities with local bridges report having undertaken some bridge inspections in the preceding 3 years, and the great majority report all bridges to have been inspected during this period. There were few important differences among community size categories or regions.

As of 1978, standards set by the Federal Highway Administration broadened the scope of bridge inspection to include other bridges not previously considered a part of the Federal Aid System. Bridges are assessed as either being deficient in structure (requiring rehabilitation) or obsolete in the function of the bridge (clearance, bridge deck, or the alignment of approach roadway). Over 35 percent of rural communities with local bridges have deficient or obsolete bridges, many of which remain open to traffic. This condition is most prevalent in the larger cities and in unincorporated areas and is especially widespread in the Northeast. Few Western communities have obsolete or deficient bridges.

Many areas in the Nation have barriers, either constructed or natural, that permanently divide the community. Such barriers were defined in the survey to include rivers or gorges without bridges and access highways without under- or overpasses. About 10 percent

of rural communities have one or more such barriers. They are most frequently found among the larger communities, nearly 25 percent of which have such barriers. Very few communities with populations under 2,500 have these barriers. Nearly 30 percent of Western rural communities are divided in this way.

SURVEY METHOD

In order to make estimates about the Nation's more than 45,000 rural communities, a stratified random sample of 520 communities was drawn. The sample was designed to make possible estimates about the availability and condition of public facilities in four Census regions and in 6 community-size categories defined for the NRCFAS.

Although the survey extended to 520 sample communities, it was not always possible to complete interviews in each community for each service. Thus, for each service the number of responding communities is slightly less than the total number of communities in the sample. However, the response rates for the survey were extraordinarily high, and in all cases more than 95 percent of the intended interviews were conducted.

Since the NRCFAS data are derived from a sample survey, the data in this report are estimates of rural conditions and not exact totals. Like any statistical estimate, the figures are therefore subject to sampling error. This means that, while the data reported are the best available estimates, they may deviate from the true figures. It is customary when reporting estimated data to present their standard errors, which can be used to calculate confidence limits--ranges within which, with a high degree of probability, the true figure lies. The standard errors are shown in the tables in parentheses.

By using the standard errors it is possible to estimate whether any number in the report (such as the number of rural communities without fire protection) is greater than zero. This is referred to as a test of statistical significance. The test is performed by choosing the degree of confidence one wishes to have in the estimate (e.g., 90 percent, 95 percent, etc.) and consulting a table of t-statistics.¹² By multiplying the relevant t-statistic by the standard error, a confidence interval is obtained which can be used to evaluate the estimate. If the estimated figure minus the confidence interval is greater than zero, it can be said that the estimate is greater than zero with a specified degree of confidence.

Using the percentage of rural communities without fire service (table 20) as an example, the U.S. total

^{12/} For a discussion, see Hubert M. Blalock, Jr., *Social Statistics*, 2nd ed. (New York: McGraw Hill Book Company, 1972), chap. 12.

estimate is 2.2 percent and the standard error is 1.0. The standard error is multiplied by the t-statistic for a one-tailed test at the 95-percent confidence level, 1.645, which gives a confidence interval of 1.645. Since the estimate of 2.2 minus 1.645 exceeds zero, we can say that there is more than a 95-percent probability that the true value is also greater than zero. On the other hand, the estimate for the North Central statistic is 1.9 percent and its standard error is 1.4. Since 1.4 times 1.645 is 2.37, the estimate for the North Central States is not significantly different from zero at the 95-percent confidence level.

This report includes estimates for all data, along with their standard errors, regardless of whether they meet a test of statistical significance. Using the above methods, the reader can determine which numbers are significant at any desired level of confidence. However, in the text discussion of these numbers, no figure is mentioned that is not significantly different from zero using a one-tailed test at the 95-percent level. In addition, no contrasts are drawn among regions or community size categories unless these differences meet a two-tailed test at the 90-percent confidence level.

The figures presented in this report are preliminary. For technical reasons the weights used to convert the sample data into national estimates are subject to later adjustment. Such adjustments, if needed, should result in only slight changes in the final estimates. Second, as happens in all surveys, a small percentage of respondents failed to answer each question. It is customary to adjust the data to account for such item nonresponse. While the data in this report have been so adjusted, minor changes in the adjustment method may be needed at a later time. Such future adjustments, if any, are expected to be quite small.

As defined for the NRCFAS, rural areas consist of all communities outside urbanized areas (as defined for the 1970 Census of Population), except communities with a 1978 population of 50,000 or more and communities designated as a central city of a Standard Metropolitan Statistical Area (SMSA).

Since the NRCFAS is a survey of facilities serving rural communities, it was necessary to define the term community. So that the survey results would include both cities and open country areas, the sample frame included all incorporated places, Minor Civil Divisions (MCD), and Census County Divisions (CCD) as defined by the Census Bureau. This definition has the practical advantage of making it possible to obtain other Census information about the communities, and it is relatively easy to implement. However, it has the disadvantage of

defining as communities some that are not recognized as such by local residents. This is particularly true for unincorporated communities, some of which may encompass large geographic areas.

Information about public facilities was gathered in several ways. For some facilities, field interviews were conducted with knowledgeable public officials in the 520 sample communities. Three sets of questionnaires were administered: fire protection; public water systems; and general community information, which included transportation and miscellaneous public facilities. For fire protection, the interviews were usually conducted with the local fire chief or other responsible person knowledgeable about fire service in the community. Public water system managers were the most frequent respondents regarding the condition of public water systems serving the sample communities. Most of the general community information was supplied by the mayor, county executive, or other leading governmental executive serving the community. In a few communities, several persons were interviewed to obtain all the necessary information requested in the general community information questionnaire.

Other data were drawn from existing secondary data sources. Data about wastewater treatment systems were obtained from U.S. Environmental Protection Agency administrative records. Treatment systems serving the sample communities were identified through telephone inquiries. Information about hospitals was obtained from American Hospital Association records. Since people can travel outside their home community to obtain needed medical services, medical service areas were defined for each sample community. These areas were based on a 30-mile distance. With some exceptions, all hospitals within 30 miles of a sample community are considered to be providing medical services to the community.

Figures on nursing homes were taken from the Department of Health and Human Services' Master Facilities Inventory (MFI). For nursing homes, too, service areas that encompass a wider territory were defined for each sample community and all nursing homes within these service areas were considered to be providing services to the community. Unlike hospital service areas, however, the nursing home service areas were defined on the basis of county boundaries. Counties with at least 25 percent of their surface area within 30 miles of a sample community were included in the service area of that community. All nursing homes within counties meeting this criterion, as well as those counties in which the community is located, were assumed to serve the sample community.

