

Rural Demography and the Health Workforce: Interstate Comparisons

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INTRODUCTION

There is an old saying, “If you have seen one rural place, you have seen one rural place.” Rural demography, economic status, and access to health services vary significantly across the United States. Thus, generalization from one rural place or region to another can be fraught with error. This variation occurs both across rural regions within single states (intrastate) and also between the 50 states (interstate). In this chapter, we address interstate variations in rural demography, economic status, and the availability of health care providers in rural settings. In Chapter 5, we present intrastate variation, although interstate comparisons can easily be made using the state profiles presented there.

To understand interstate variability in the workforce and supply of health care providers, it is useful to start with a portrait of the demographic and economic variation across the 50 states. In the pages that follow, we compare the 50 states according to the proportion of their population that is rural, size of the rural population, age structure, and economic status. This information gives demographic and economic context to the variation in the state-by-state per capita supply of health care providers. Finally, we provide interstate information on medical school and residency training. In this chapter, we examine interstate health care provider variation in detail, with an emphasis on the supply of physicians. (More comprehensive data on the supply of other types of health care professionals appear in the state health workforce profiles in Chapter 5.) Comparisons include interstate differences in rural/urban distribution of physicians, international medical graduates (IMGs), female physicians, dentists, nurses, and physician assistants.

RURAL POPULATION—PROPORTIONS VERSUS COUNTS

The fact that the U.S. Senate’s Rural Health Caucus Web page currently lists 86 members from 48 states highlights the importance of rural populations in states and state politics. By any definition, the majority of the U.S. population is urban (about 80% by the Office of Management and Budget [OMB] definition). Numerically, however, the rural population of the United States—about 55 million using the OMB metropolitan/nonmetropolitan definition—approaches the size of the entire population of Italy (see Chapter 3 for details). While the nation as a whole may be urban, many states are largely rural. In addition,

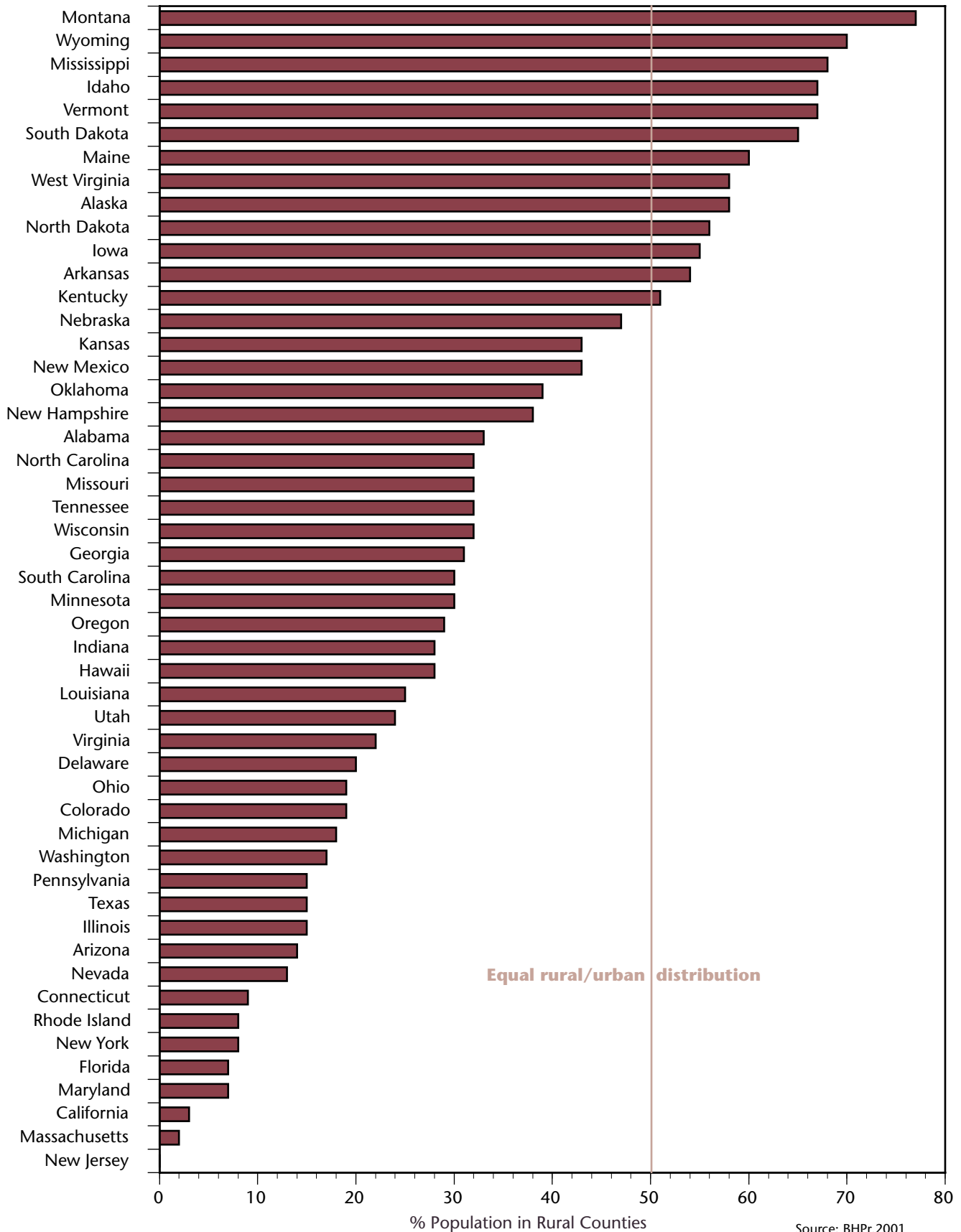
rural populations in several states number into the millions, even though they form a small proportion of the total population.

Rural population as a proportion of total state population is shown in Figure 4-1. In 13 states, more than 50 percent of the population resides in nonmetropolitan counties. Considered from this proportional perspective, Montana has the largest rural population in the nation, with more than 76 percent of its population living in nonmetropolitan counties. Twenty-nine states have nonmetropolitan populations that make up at least 25 percent of their total population.

Some states typically considered urban in nature actually have large numbers of rural residents. Figure 4-2, which ranks states according to the number of rural residents, illustrates this point clearly. For example, Texas has the most nonmetropolitan residents, 3.1 million, though it ranks 39th in proportion of residents in nonmetropolitan areas (15.1%). California ranks 24th in size of rural population but 48th in proportion of residents who are rural. By contrast, the most rural state by proportion of population, Montana, ranks only 35th in terms of count of rural residents. Twenty-six states have more than a million residents in rural areas. The fact that Figure 4-2 is based on a census-based definition should be noted. As discussed in Chapter 3, using a different classification could present a different picture of the number of rural residents in a state. For example, if a state has geographically large counties that are of both rural and urban character, using RUCAs instead of the OMB definition to define rural areas would result in huge increases in the population counted as rural (e.g., California, which gains hundreds of thousands of rural residents).

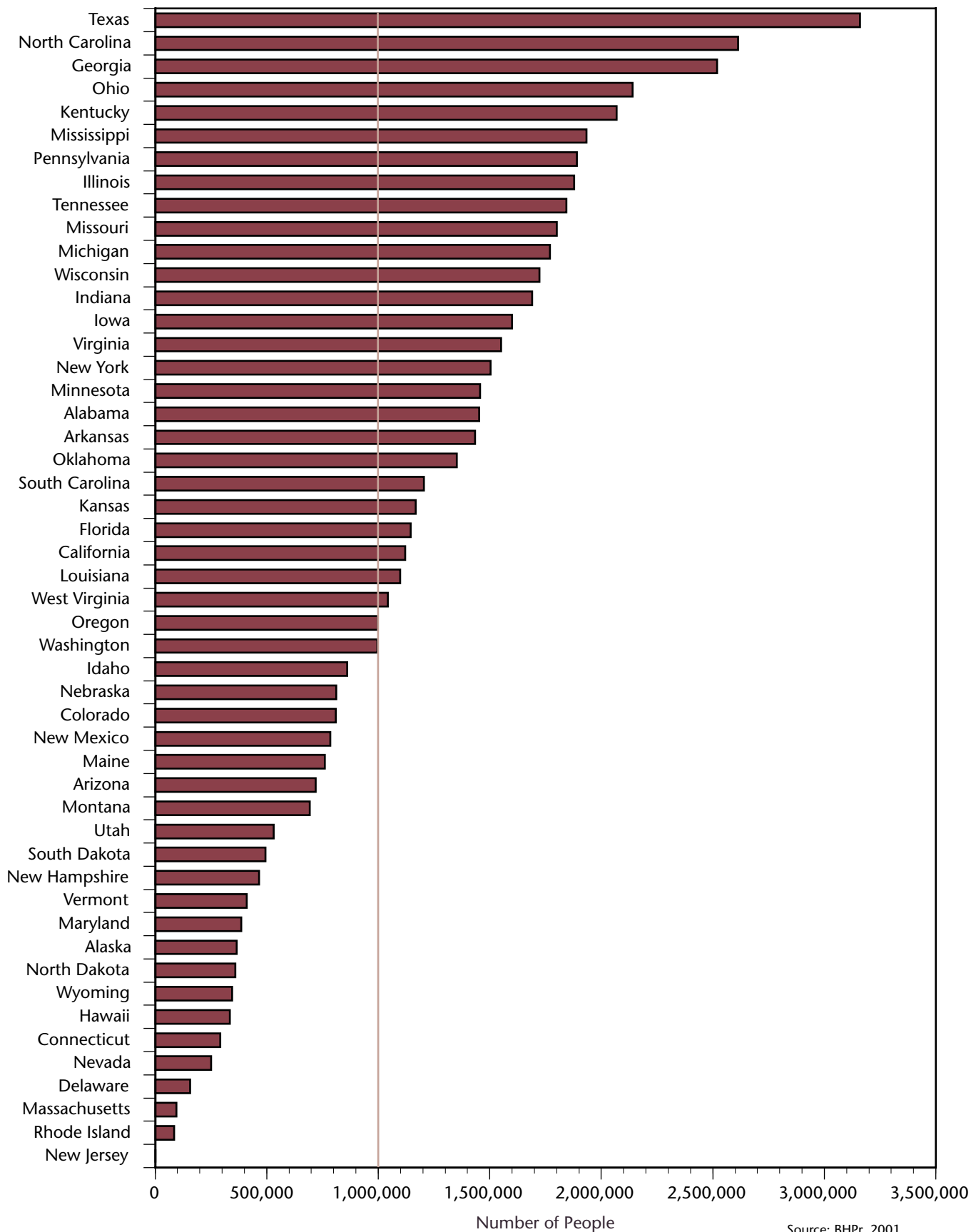
To address each state’s rural health care workforce needs, it is important first to understand the nature of rurality in the state. Providers, insurers, and governments in states with large proportions of rural residents, such as those in the mountain regions of the western United States, work in a very different health services context than do those in states such as California, with very large *numbers* of rural residents but a small *proportion* of them. The rest of this chapter is devoted to interstate comparisons of rural demography and rural health workforce resources that will help provide the national context for understanding the state-specific demographic and workforce data that are presented in Chapter 5.

Figure 4-1
Percentage of Population in
Rural Counties in 2000, by State



Source: BHP, 2001

Figure 4-2
Number of Residents in Rural Counties in 2000, by State



Source: BHP, 2001

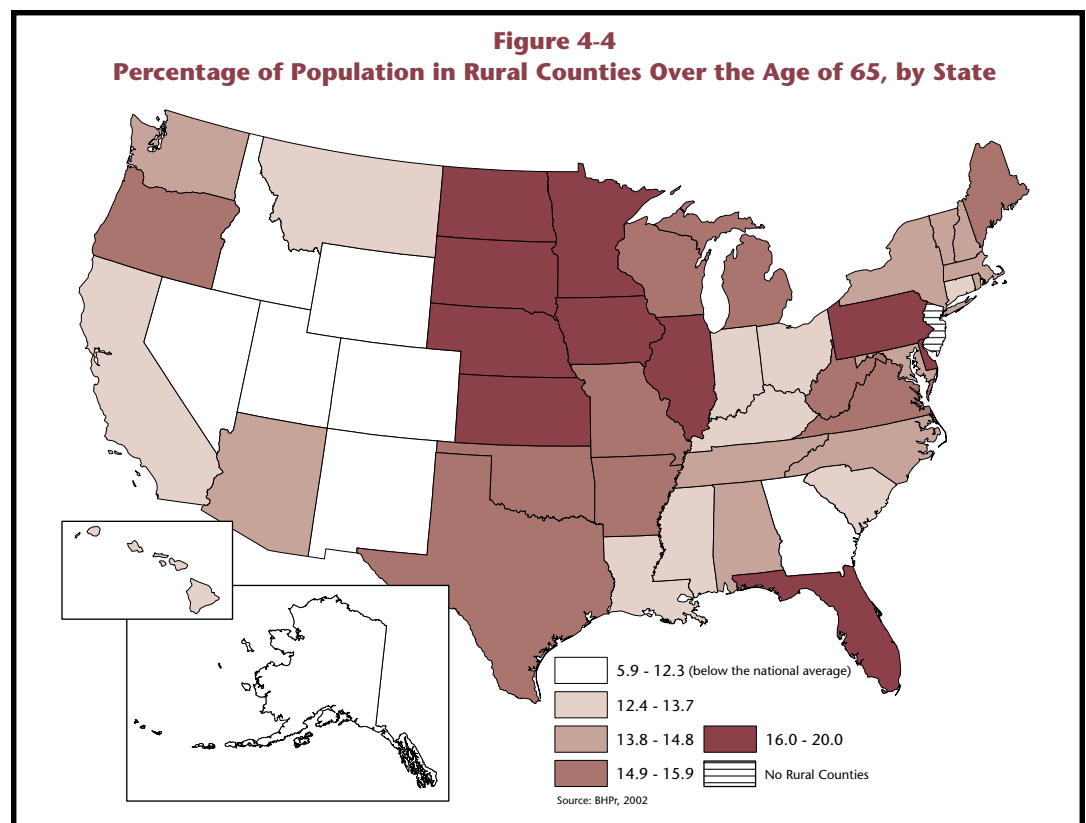
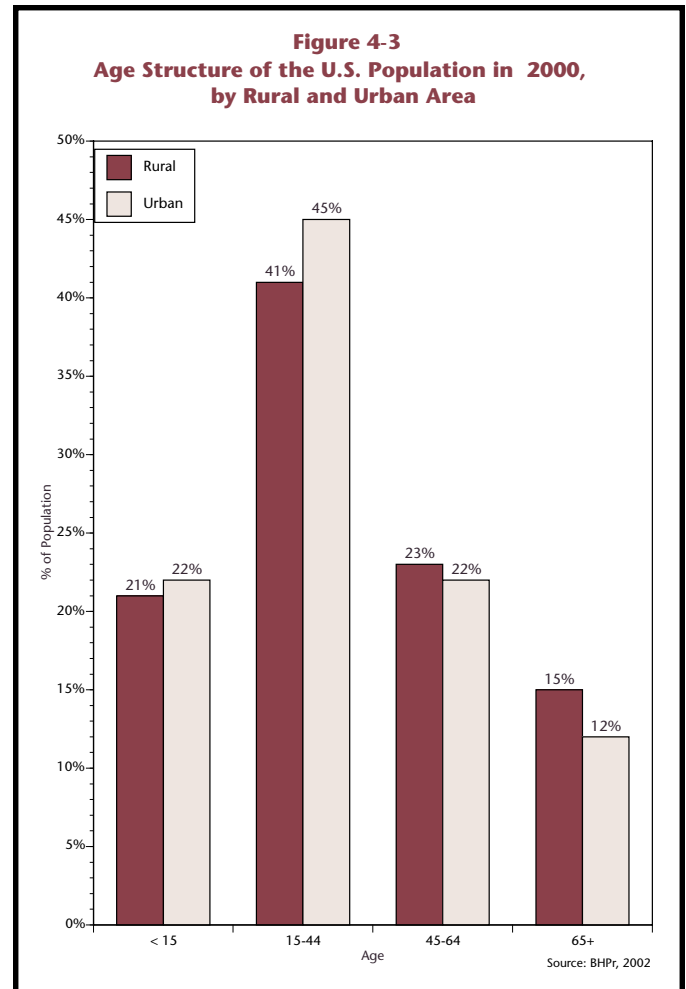
**AGE AND INCOME —
KEY RURAL DEMOGRAPHICS**

A complete interstate comparison of rural demographic trends is beyond the scope of this monograph. Randolph et al. (2002) recently published a thorough and useful review. Instead, we focus in this section on two key demographic issues that bear directly on the rural health workforce and access to care for rural residents: age and income. Rural health advocates often remind their audiences that rural residents are generally older, sicker, and poorer than urban residents. National data support this contention. As Figure 4-3 shows, 15 percent of rural residents are age 65 or older, compared to 12 percent in urban areas¹. Rural areas also have fewer residents in the healthiest and most economically productive age cohort—the 15 to 44 group. The implications of these demographic characteristics for rural health systems are myriad and include:

- A higher level of dependency on Medicare reimbursement for rural hospitals and providers.
- Greater than average prevalence of the chronic diseases associated with aging.
- A need for nursing home resources on a per capita basis beyond that usually seen in urban areas and a subsequent dependency on Medicaid dollars that pay for a significant amount of nursing home care in the United States.
- A high degree of unmet need for the local specialist care that an elderly population requires.
- Impaired access to health care of all sorts because of transportation problems associated with long distances to care and lack of public transportation, especially among the frail elderly.
- Limited options for end-of-life care such as hospice service.

The older age structure of the rural population is common across the 50 states. In the United States as a whole, 12.4 percent of the population is over the age of 65. As shown in Figure 4-4, only eight states have rural populations in which less than 12.5 percent of the population is 65 or older.

¹ Technical notes at the end of the volume describe how such summary statistics as these were derived.



Nationally, the rural population of the United States has a lower per capita income than the urban population. Additionally, rural families are more likely to live in poverty than are urban ones. Average per capita income in the United States in 2000 was \$29,296. In urban counties, the mean per capita income was \$31,175, while in rural counties, it was only \$21,780. Rural per capita income ranges from \$17,591 in New Mexico to more than \$30,000 in some New England states (see Figure 4-5). Only four states (Rhode Island, Connecticut, Massachusetts, and New Hampshire) have rural populations with incomes greater than the national average.

The proportion of rural families with household incomes below the federal poverty level also varies substantially across the states. In the United States as a whole, 9.2 percent of families live on incomes below the poverty threshold, which varies according to family size. Families living under the poverty level in urban and rural counties number 8.7 percent and 10.9 percent, respectively. Across the states, rates of rural poverty range from 19 percent in Louisiana to less than 6 percent in Wisconsin, New Hampshire, and Connecticut (see Figure 4-6).

As noted in Chapter 2, rural areas with older populations, lower incomes, and higher rates of poverty face substantial barriers in recruiting and retaining health professionals. Higher rates of dependency on Medicare and Medicaid payments, coupled with the higher rates of uninsurance and underinsurance in poor populations, make it difficult to sustain financially viable practices. Consequently, practices may offer low salaries, which hinder recruitment of new doctors who often face high medical school debt. Low rates of reimbursement cause many physicians to limit or exclude Medicare and Medicaid patients from their practices and impede their ability to pay sharply rising malpractice premiums. In the face of these financial challenges and their smaller bed capacity, rural hospitals may be unable to afford technological upgrades and other improvements necessary to provide services in an efficacious and economic manner. This financial and scope of service “death spiral” may lead to hospital closure, leaving rural residents without a local hospital and often without local physician services, as most physicians prefer to practice in settings that include access to a hospital for their patients. The federal Critical Access Hospital program, with its cost-based reimbursement for such small rural hospitals, has been one step in the right direction in an effort to prevent rural hospital closures.

RURAL PHYSICIAN SUPPLY—A BASIC MEASURE OF THE ADEQUACY OF RURAL HEALTH WORKFORCE

In 2000, 204 physicians were active in patient care per 100,000 population in the United States. The

distribution of physicians varied greatly between metropolitan counties (225 per 100,000 population) and nonmetropolitan counties (119 per 100,000 population). As noted in Chapter 3, much of this difference is explained by the fact that many medical specialty practices cannot sustain themselves in rural areas. To measure the adequacy of patient care in rural areas, it is therefore more indicative to compare the rural versus urban supply of generalist physicians only (family practitioners, general internists and general pediatricians). Nationally, metropolitan areas have about 78 generalist physicians per 100,000 residents, compared to 57 per 100,000 in nonmetropolitan areas. These supply numbers translate to generalist physician-to-population ratios of 1:1,282 in urban areas and 1:1,754 in rural areas. The percent of rural physicians who are generalists varies greatly, from 34 percent in New Hampshire to 62 percent in Minnesota (Figure 4-7). The percentages of physicians who are generalists are much lower for urban areas, as seen in the figure.

MALDISTRIBUTION—NOT SHORTAGE —IS THE REAL ISSUE

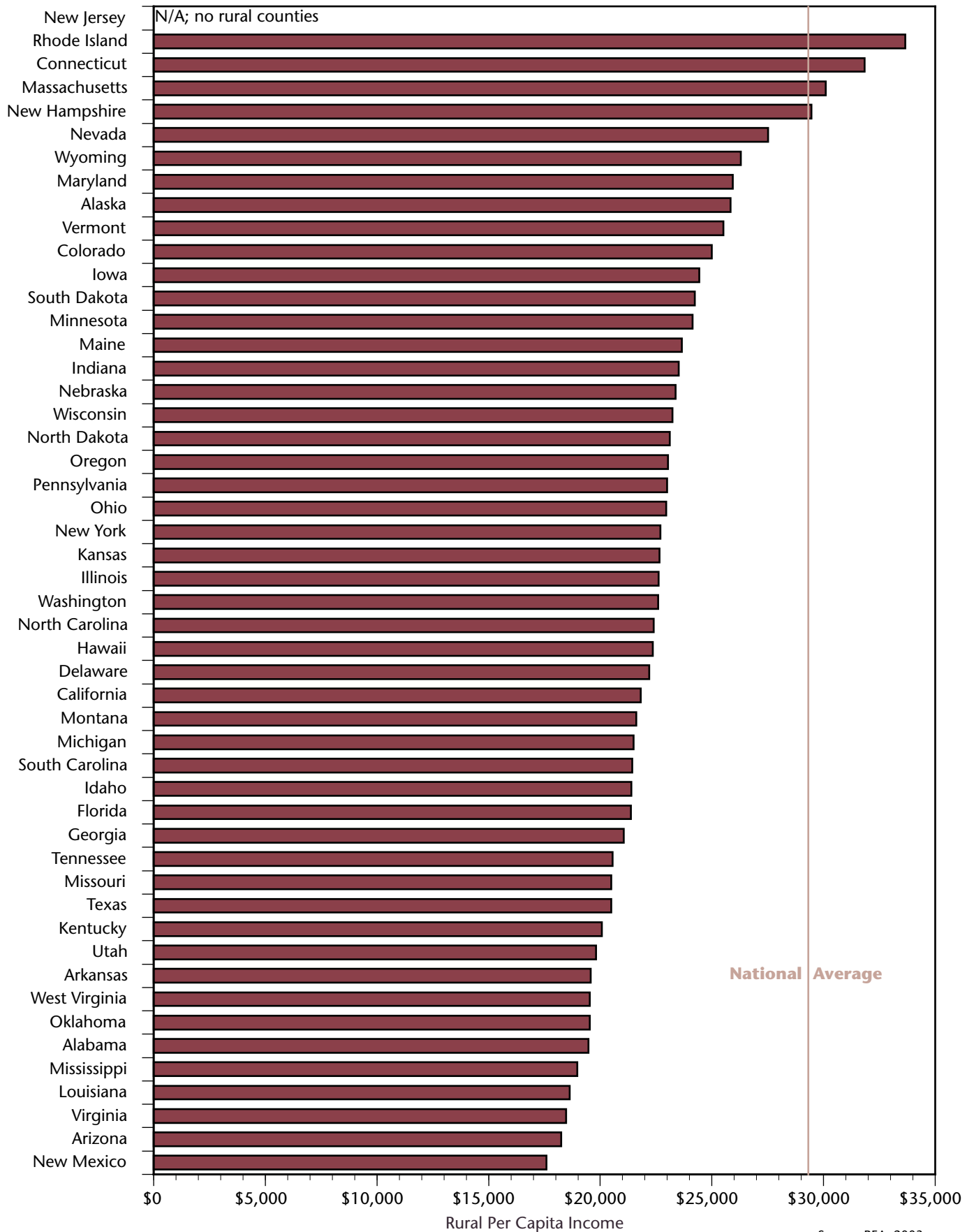
As noted in the previous chapter, while the overall supply of generalist physicians in the United States may be adequate, uneven distribution creates many smaller areas of real shortage. In an era when rural physician supply has grown, severe maldistribution of physicians in rural America causes more localized shortages, with the potential to undermine access to health care for many rural residents. While more populous rural areas, or those near urban centers, may have a sufficient supply of generalist physicians, this is often not the case in smaller and more remote rural locales. In 1997 for example, 802 entire nonmetropolitan counties were designated Primary Care HPSAs. Parts of 641 other nonmetropolitan counties were also designated as Primary Care HPSAs.

Interstate variation in rural/urban parity in the distribution of generalist physicians is shown in Figure 4-8. Several states, such as Nevada, New Hampshire, Montana, and Utah, have rural/urban ratios above or close to 1, meaning they have about the same number of generalists physicians per 100,000 population practicing in rural areas as in urban areas. In contrast, the rural/urban disparity in some other states is

Table 4-1: Rural/Urban Ratios Compared to Physician-to-Population Ratios

	Rural/urban generalist ratio	Generalist-population ratio	Generalist-population ratio (urban)	Generalist-population ratio (rural)
U.S.	.73	1:1,351	1:1,282	1:1,754
Illinois	.63	1:1,316	1:1,235	1:1,960
Louisiana	.63	1:1,666	1:1,515	1:2,380
New York	.63	1:1,111	1:1,075	1:1,694

Figure 4-5
Per Capita Income in Rural Counties, by State



Source: BEA, 2003

Figure 4-6
Percentage of of Families in Rural Counties
Under the Federal Poverty Level, by State

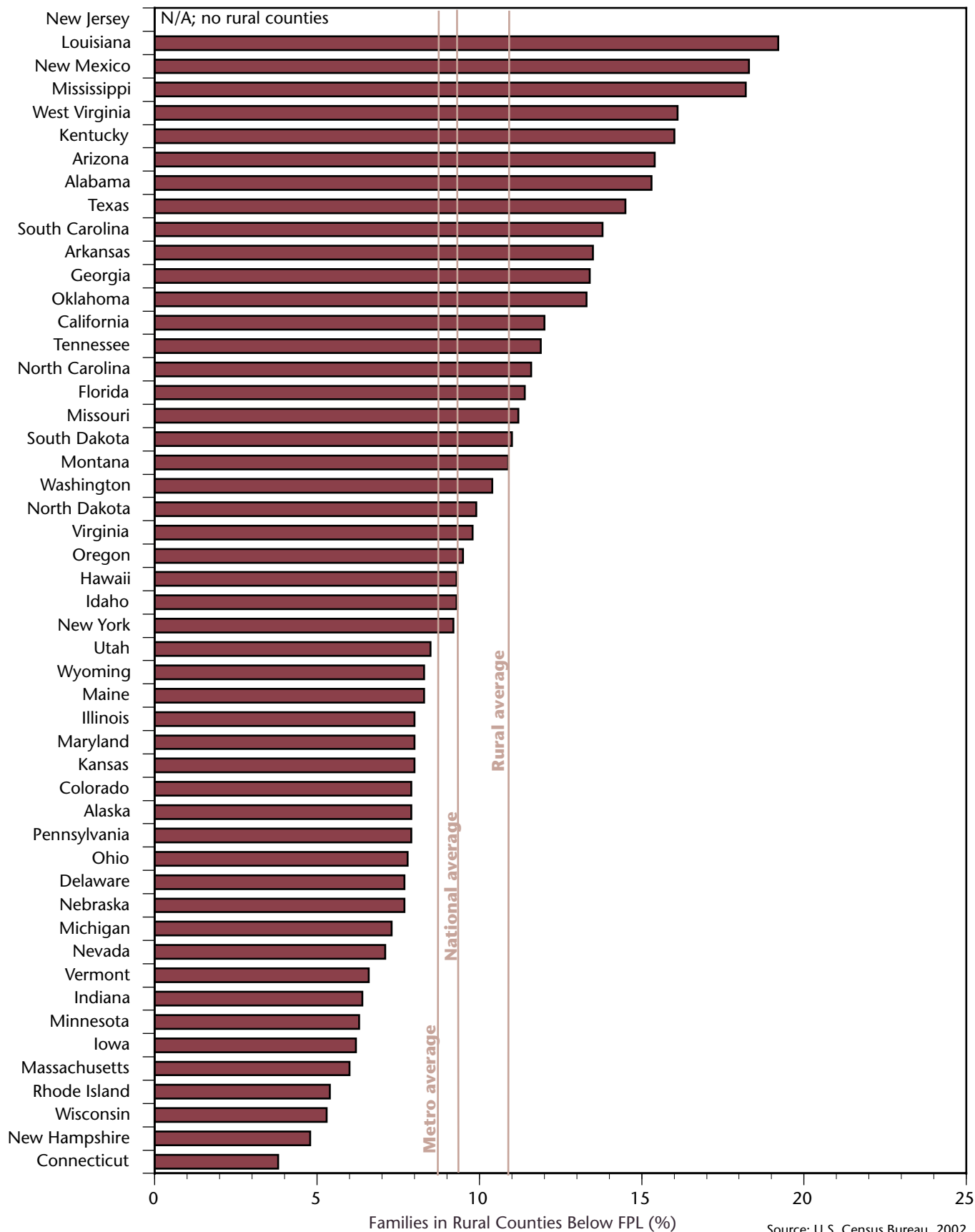
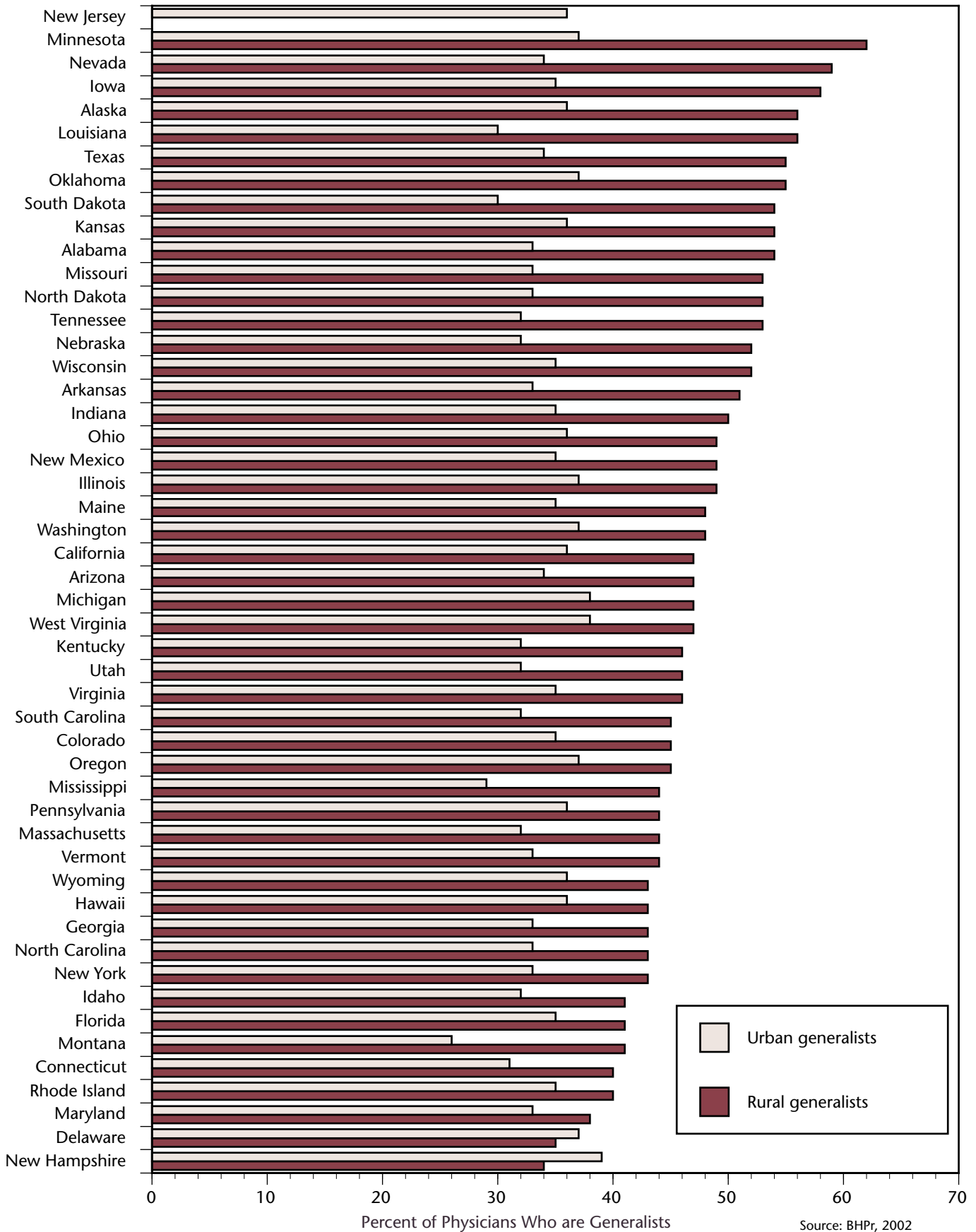


Figure 4-7
Percentage of Rural and Urban Physicians
Who are Generalists, by State



Source: BHP, 2002

quite pronounced. Louisiana, Illinois, and New York, for example, have only 0.63 generalist rural physicians for every generalist urban physician. The extent to which rural/urban maldistribution marks real shortages depends on the context provided by the overall generalist physician-to-population ratio in the state, as shown in Table 4-1.

When generalist physician-to-population ratios are compared, we find 1 generalist per 1,111 residents in New York (which has 90 generalist physicians per 100,000 population) and 1 generalist per 1,666 residents in Louisiana (which has 60 generalist physicians per 100,000 population). This substantial gap suggests wide differences in access. State generalist physician-to-population ratios are shown in Figure 4-9.

CHANGING DEMOGRAPHY OF THE RURAL PHYSICIAN WORKFORCE—FEMALE PHYSICIANS AND INTERNATIONAL MEDICAL GRADUATES

As noted in Chapter 2, two important demographic trends among physicians are an increasing percentage of women and increasing numbers of international medical graduates (IMGs). Overall, women remain underrepresented in the rural generalist workforce. While 30 percent of generalists are women, they make up only 22 percent of rural generalists. At the same time, substantial interstate variation exists in the proportion of women in the rural generalist workforce. The geographic distribution of female physicians

relative to their male counterparts varies significantly among states; generalist male to female ratios are higher than 10 to 1 in some states and lower than 3 to 1 in others (Doescher, Ellsberry, & Hart, 2000). Figure 4-10 shows that the proportion of women in the rural generalist workforce ranges from 36.8 percent in Alaska to 13.8 percent in Arkansas (see Figure 4-10). The impact of IMGs on rural medicine also varies enormously across the 50 states, as can be seen clearly in Figure 4-11. The figure shows that the ratios of IMGs per population vary dramatically, from low ratios in the Northwest to high ratios in many eastern states.

THE RURAL DENTAL WORKFORCE

The shortage of rural dentists is well documented and growing more severe (Caplan & Weintraub, 1993; DHHS, 2000; Wright et al., 2001). Of 2,304 nonmetropolitan counties in the United States, 247 were without a single practicing dentist in 1998. In metropolitan areas of the United States, there are about 43 dentists per 100,000 population, compared with 29 in rural areas. This translates to 1 dentist per 3,448 residents in rural areas. (A dentist-to-population ratio of greater than 1 per 5,000 residents [20 per 100,000] is considered a severe shortage by the federal government; 1 to 3,500 residents is considered well-served (Milgrom, 2001). But as with physicians, the national ratio belies severe shortages in some states and many counties. Figure 4-12 shows the rural counties in the United States with no dentists and those with fewer than 1 dentist per 5,000 residents. As shown in Figure 4-13, only a handful of states have ratios of rural-to-

urban dentists close to parity, and Figure 4-14 shows the wide rural variation in dentists per 100,000 population across states (ranging from above 50 to 16).

THE RURAL NURSING WORKFORCE

Nursing shortages now are being reported around the country and are expected to increase as the demand for medical care rises with the aging of the population and of the nursing workforce itself (Center for Health Workforce Studies, 2001; First Consulting Group for the American Hospital Association, 2002; Furino, Gott & Miller, 2000; North Carolina Center for Nursing,

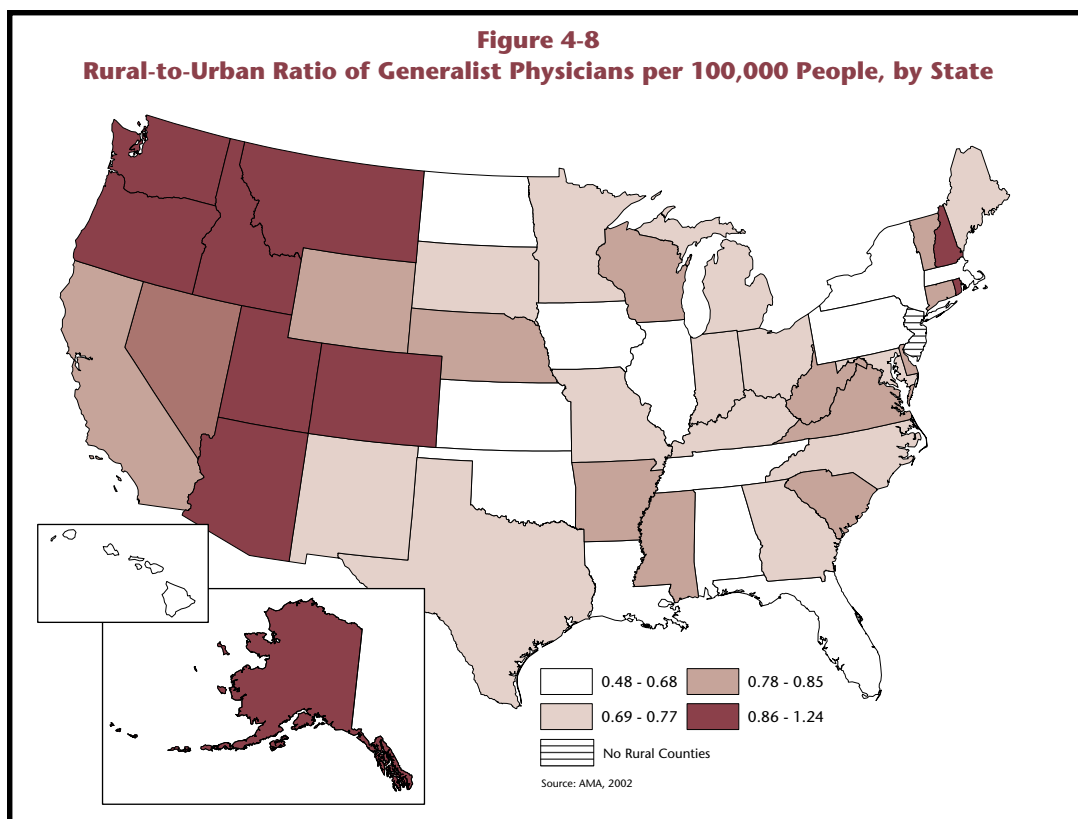
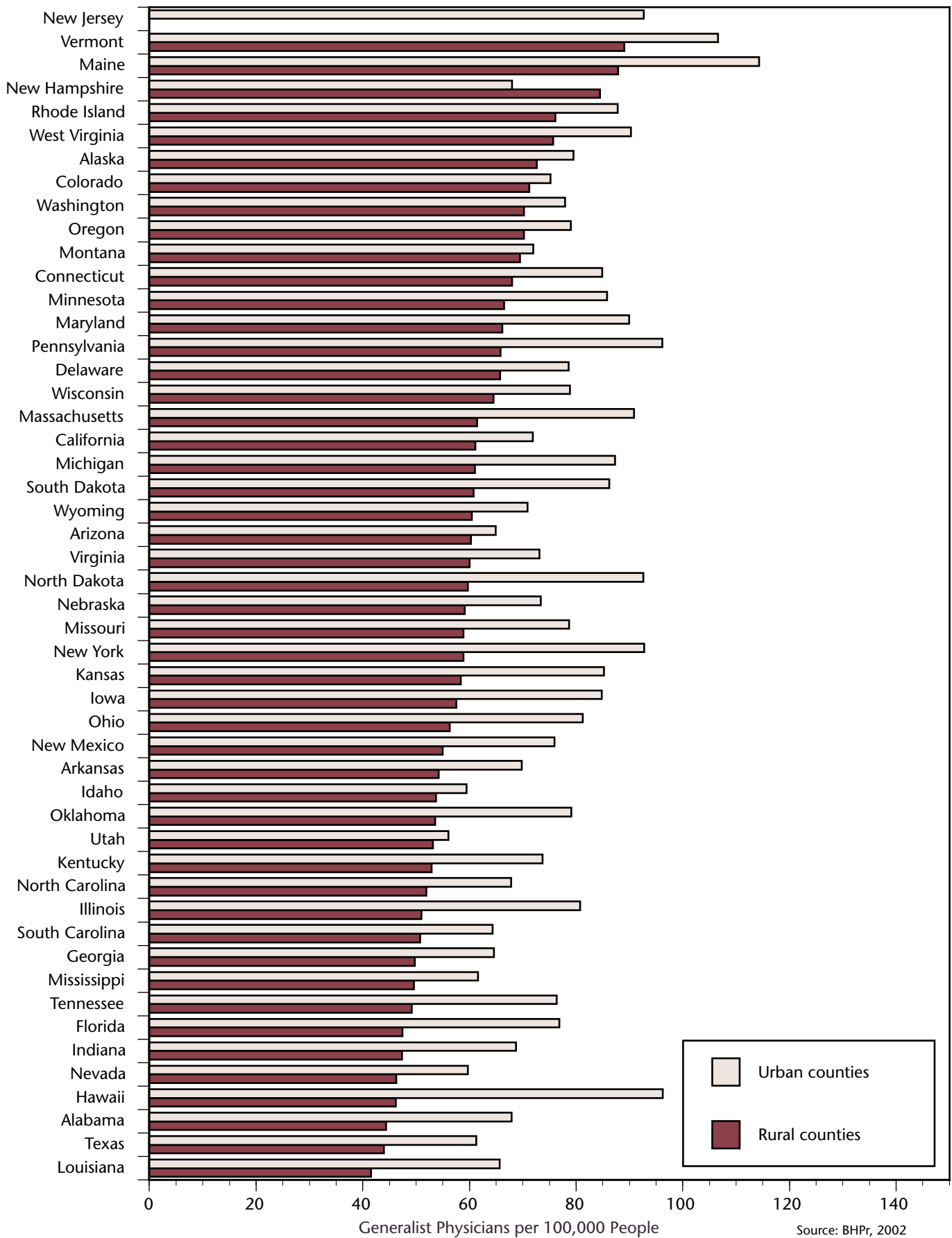


Figure 4-9
Generalist Physicians per 100,000 Population
in Urban and Rural Areas, by State



Source: BHP, 2002

Figure 4-10
Percentage of Rural Generalists Who are Female, by State

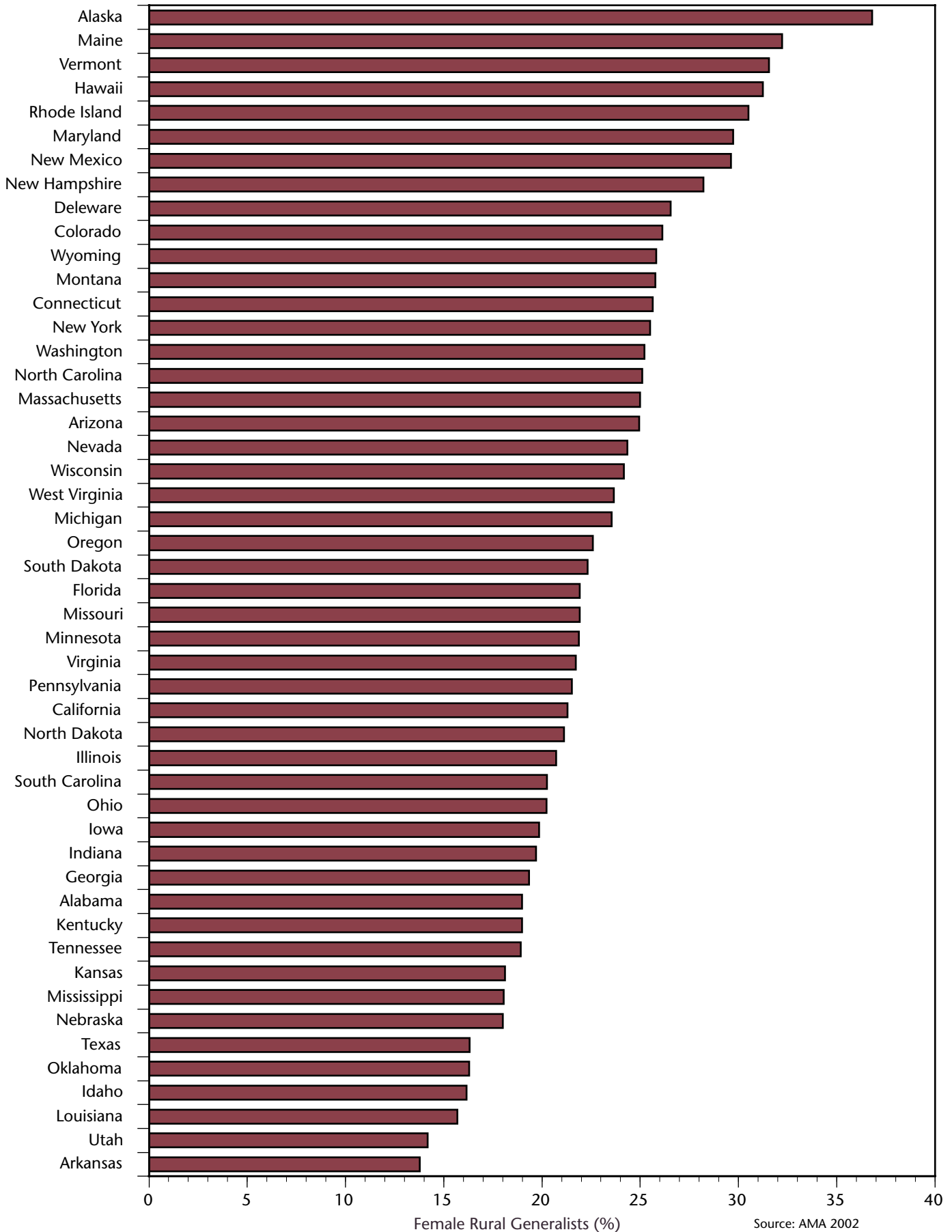
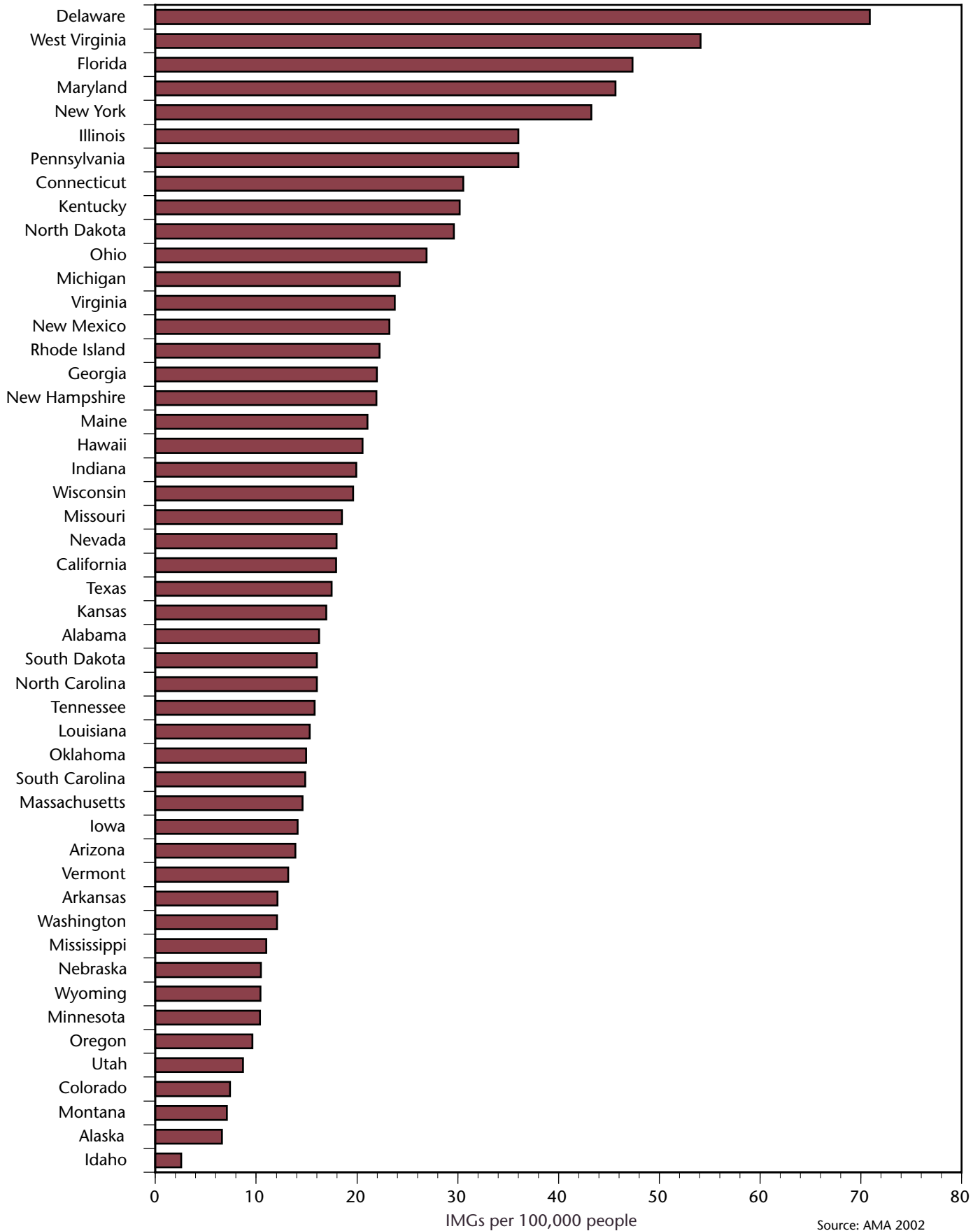


Figure 4-11
IMGs per 100,000 Population in Rural Counties, by State



Source: AMA 2002

2001; Sechrist, Lewis & Rutledge, 1999). A national shortage of nurses has not spared rural areas. Figures 4-15 and 4-16 show the number of rural and urban full-time and part-time registered nurses (RNs) per 100,000 population by state. The ranges are large, with the highest number of full-time RNs per 100,000 people in urban counties of South Dakota and the smallest number in rural counties of Rhode Island. The rural RN population differs from the urban RN population in several important ways. Data from the 2000 National Sample Survey of Registered Nurses indicate that rural nurses earn less than urban nurses and are more likely to work full time. Rural nurses are also less likely than urban nurses to work in hospitals. Urban nurses are more likely than rural nurses to hold baccalaureate and master's degrees (Skillman et al., 2003). Policy efforts to address the nursing shortage in rural settings needs to consider these differences in employment patterns.

MEDICAL EDUCATION

A critically important aspect of rural health workforce research and policy is the training of rural providers within rural locations. As indicated in Chapter 2, rural-based training is strongly associated with providers continuing to practice in rural areas, and it prepares them better to be effective clinicians in the rural milieu. Only 7.3 percent of family physician (FP) residency training took place in rural areas in 2000 (using the RUCA definition) (Hart, 2003). Figure 4-17 shows the FP full-time equivalent (FTE) training by state and distinguishes between training in rural and urban settings. A great variation exists between states, both in the total amount of training and the split between rural and urban training. The rural-based FTE training by state is illustrated in Figure 4-18. Pennsylvania, Michigan, Kentucky, West Virginia, Arkansas, and Illinois lead the nation in the training of rural physicians, while

Figure 4-12
Shortage of Dentists in Nonmetropolitan Counties
of the United States

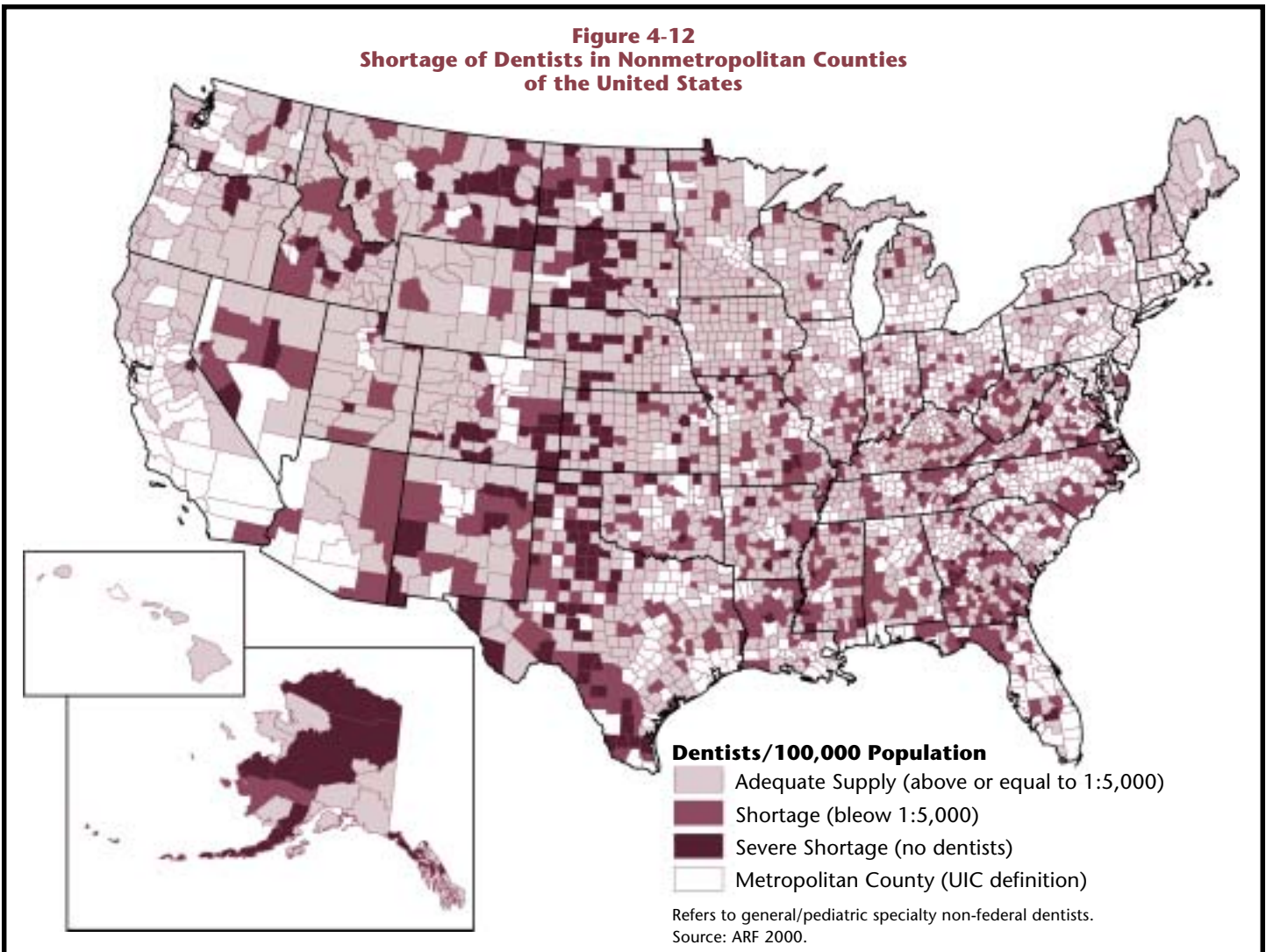
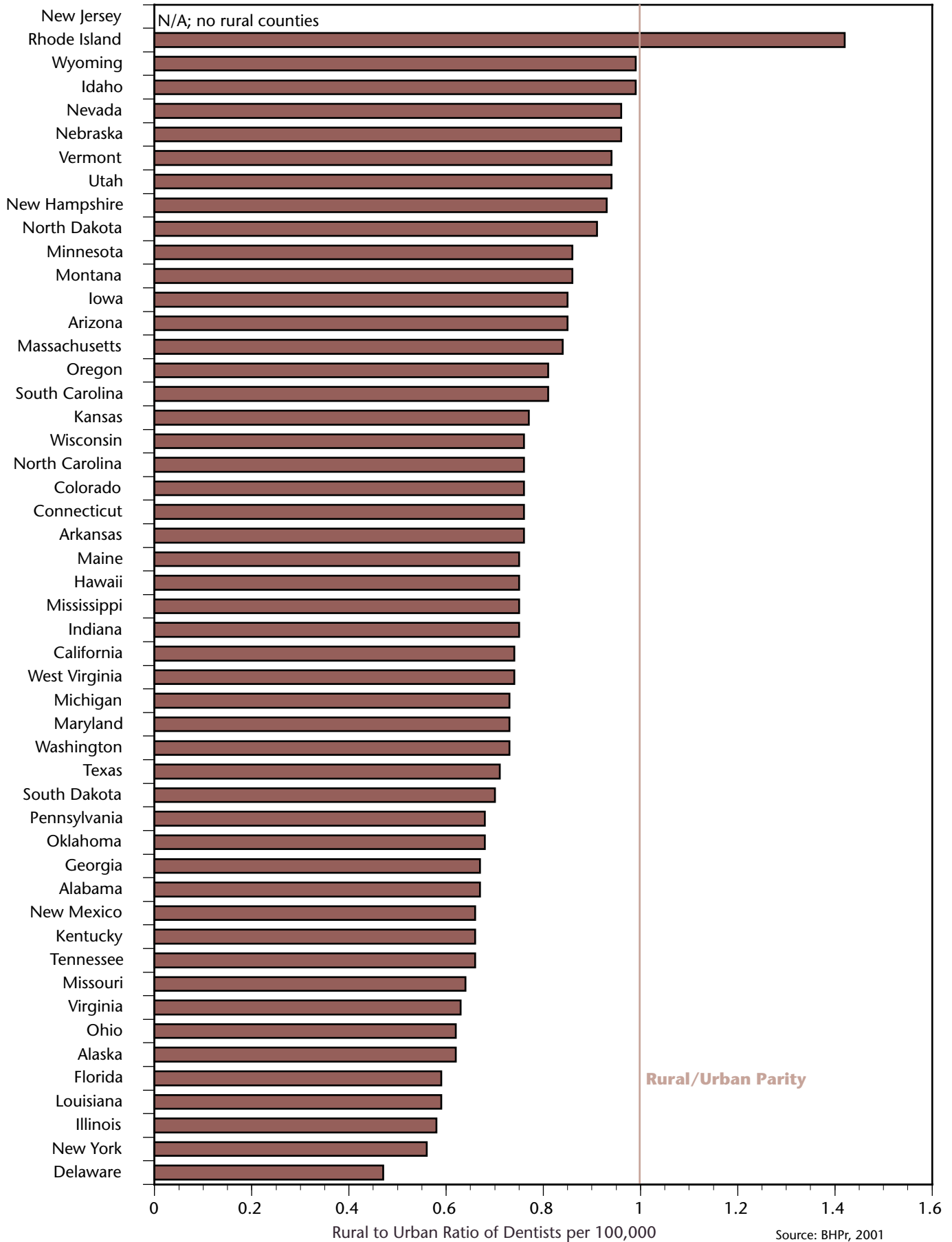
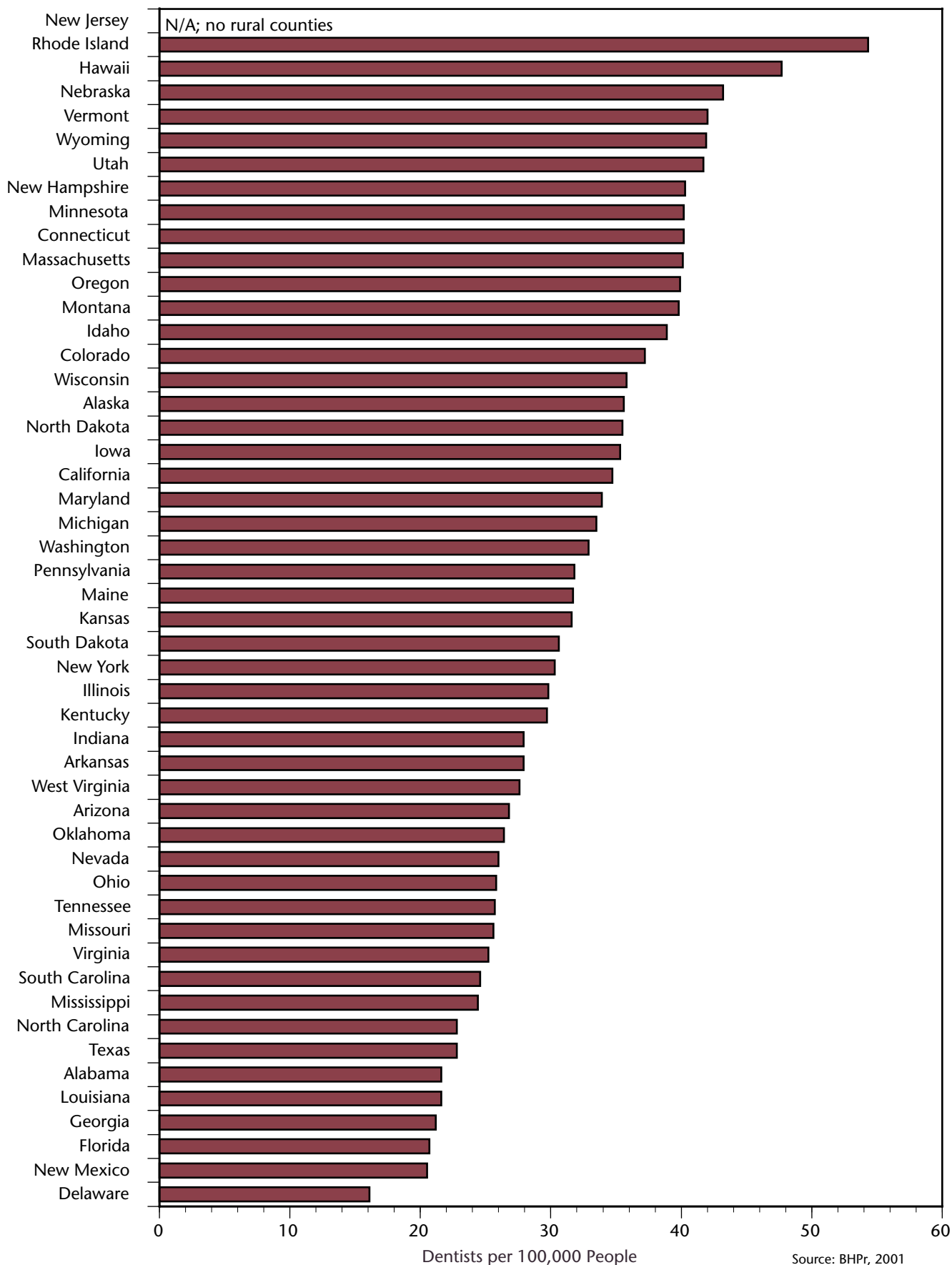


Figure 4-13
Rural-to-Urban Ratio of Dentists per 100,000, by State



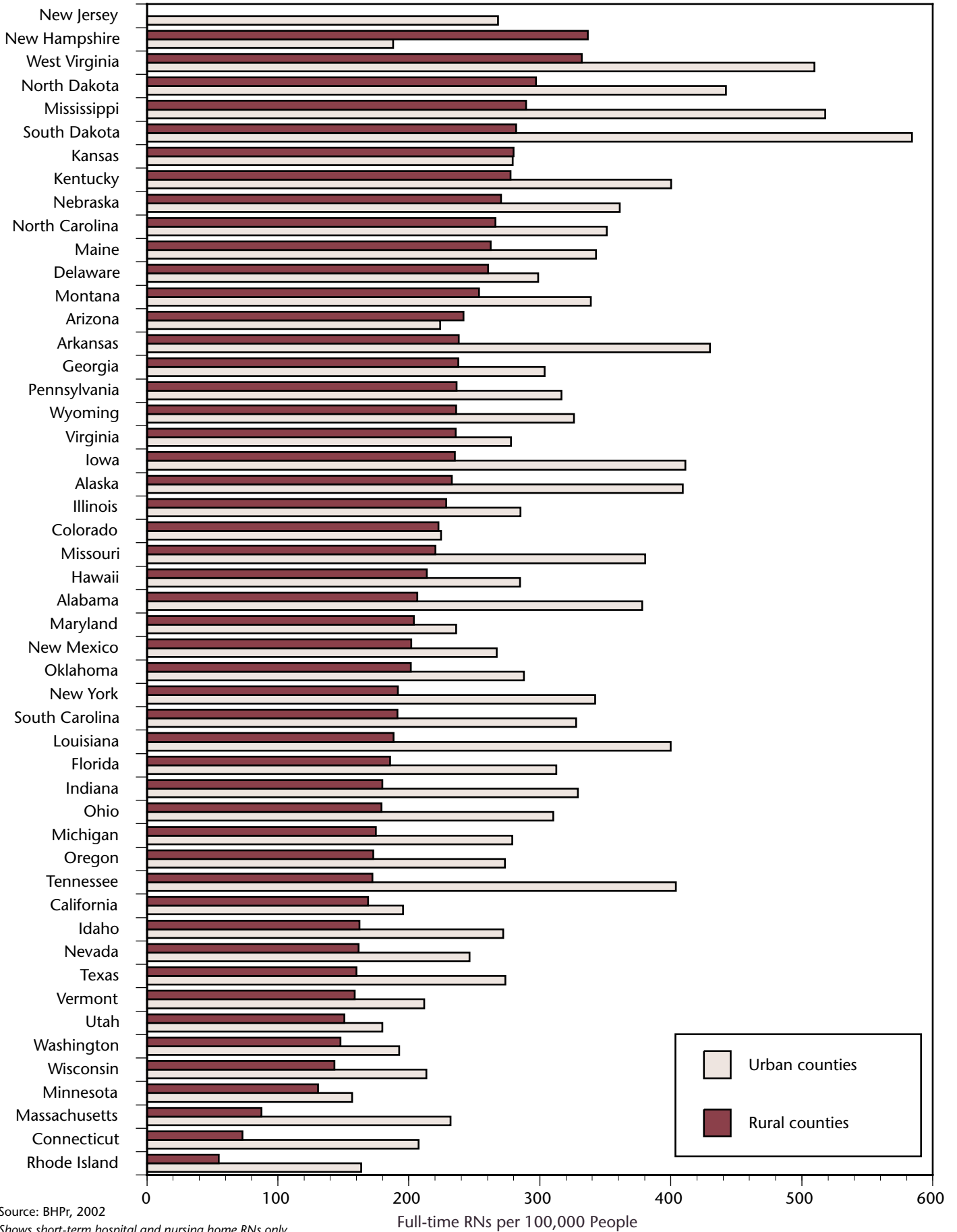
Source: BHPr, 2001

Figure 4-14
Dentists per 100,000 Population
in Rural Counties, by State



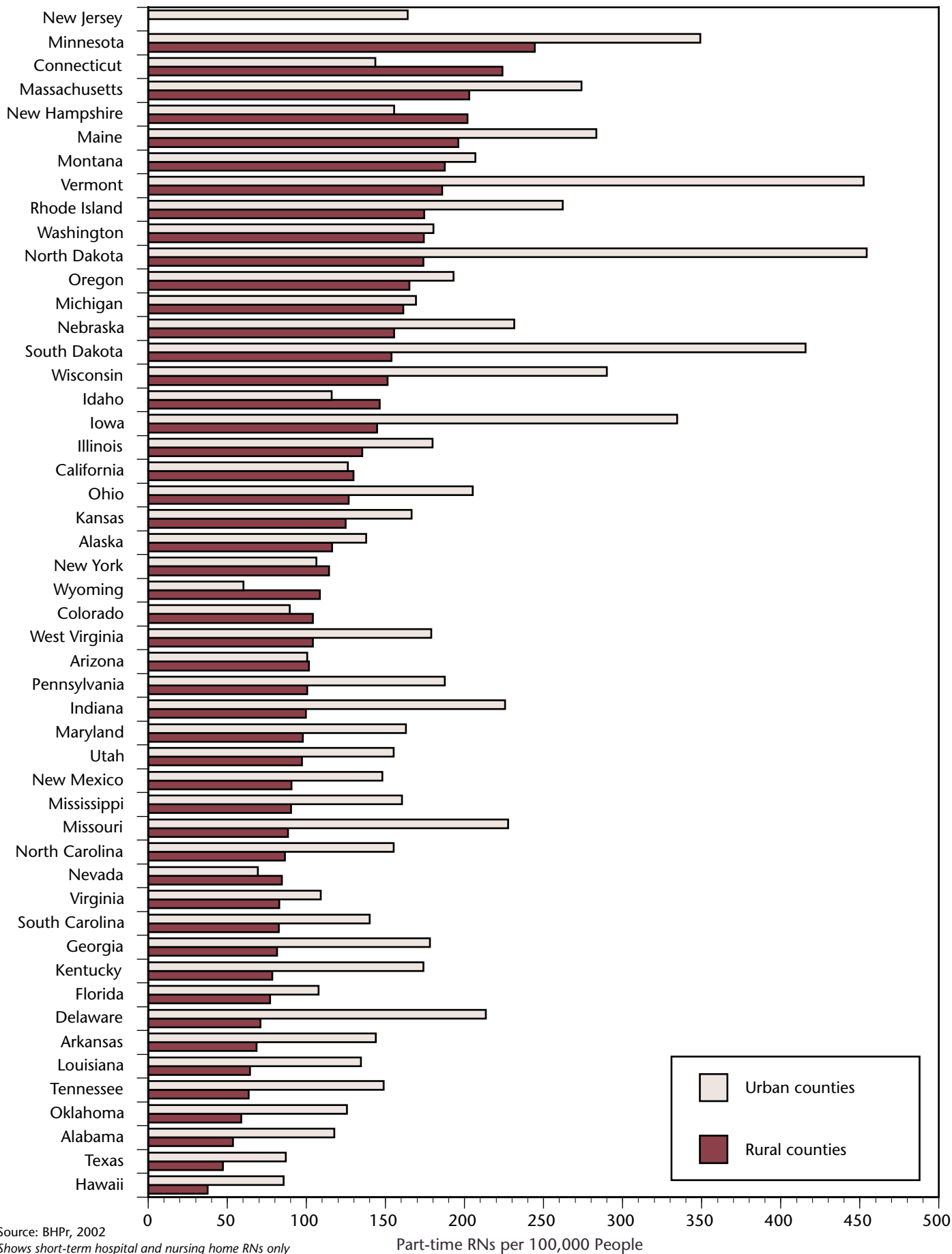
Source: BHP, 2001

Figure 4-15
Full-Time RNs per 100,000 Population in 2000
in U.S. Rural and Urban Counties



Source: BHP, 2002
 Shows short-term hospital and nursing home RNs only

Figure 4-16
Part-Time RNs per 100,000 Population in 2000
in U.S. Rural and Urban Counties



Source: BHP, 2002

Shows short-term hospital and nursing home RNs only

Part-time RNs per 100,000 People

Figure 4-17
FP Residency FTE Training by State

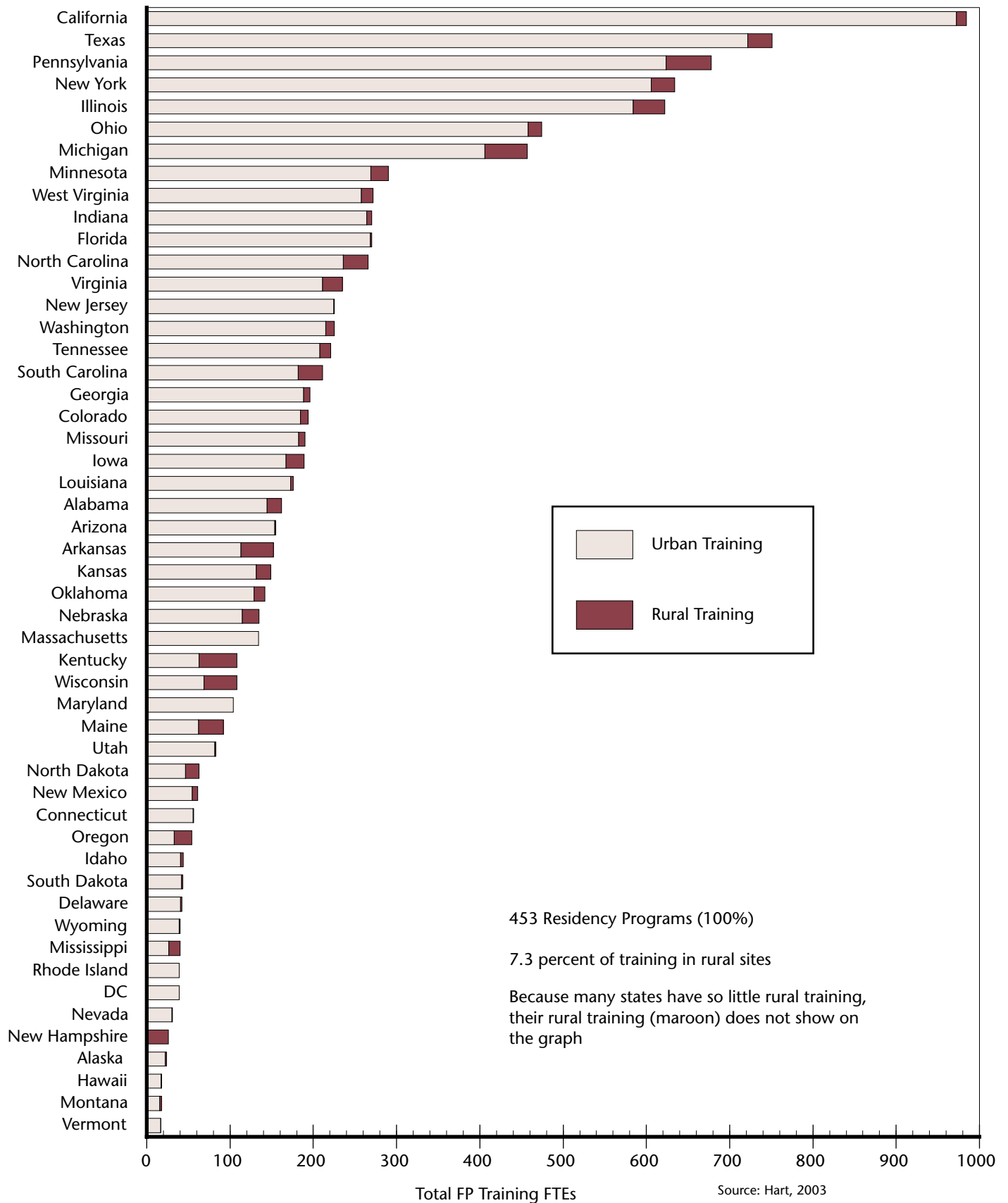
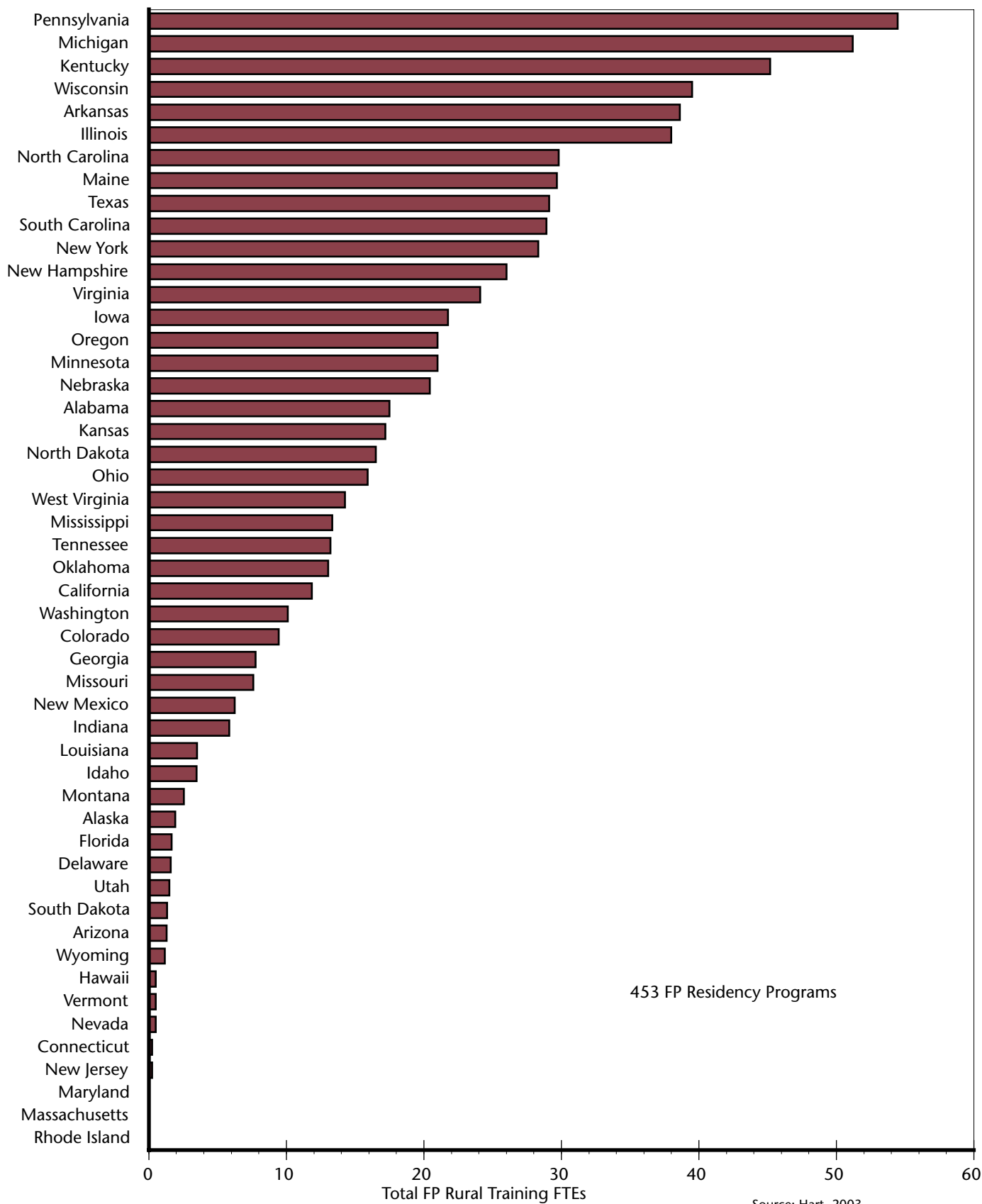


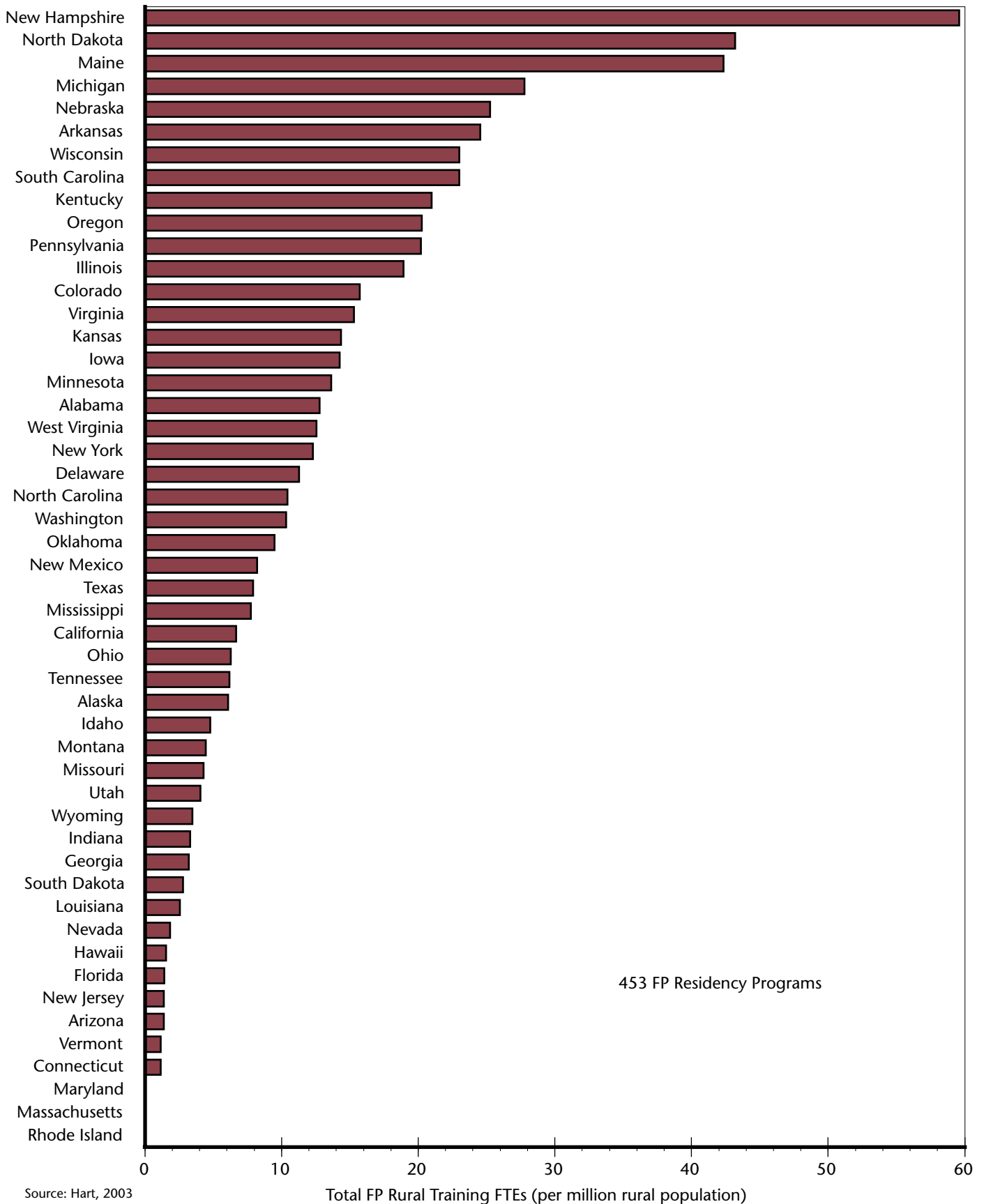
Figure 4-18
FP Residency FTE Rural Training, by State



453 FP Residency Programs

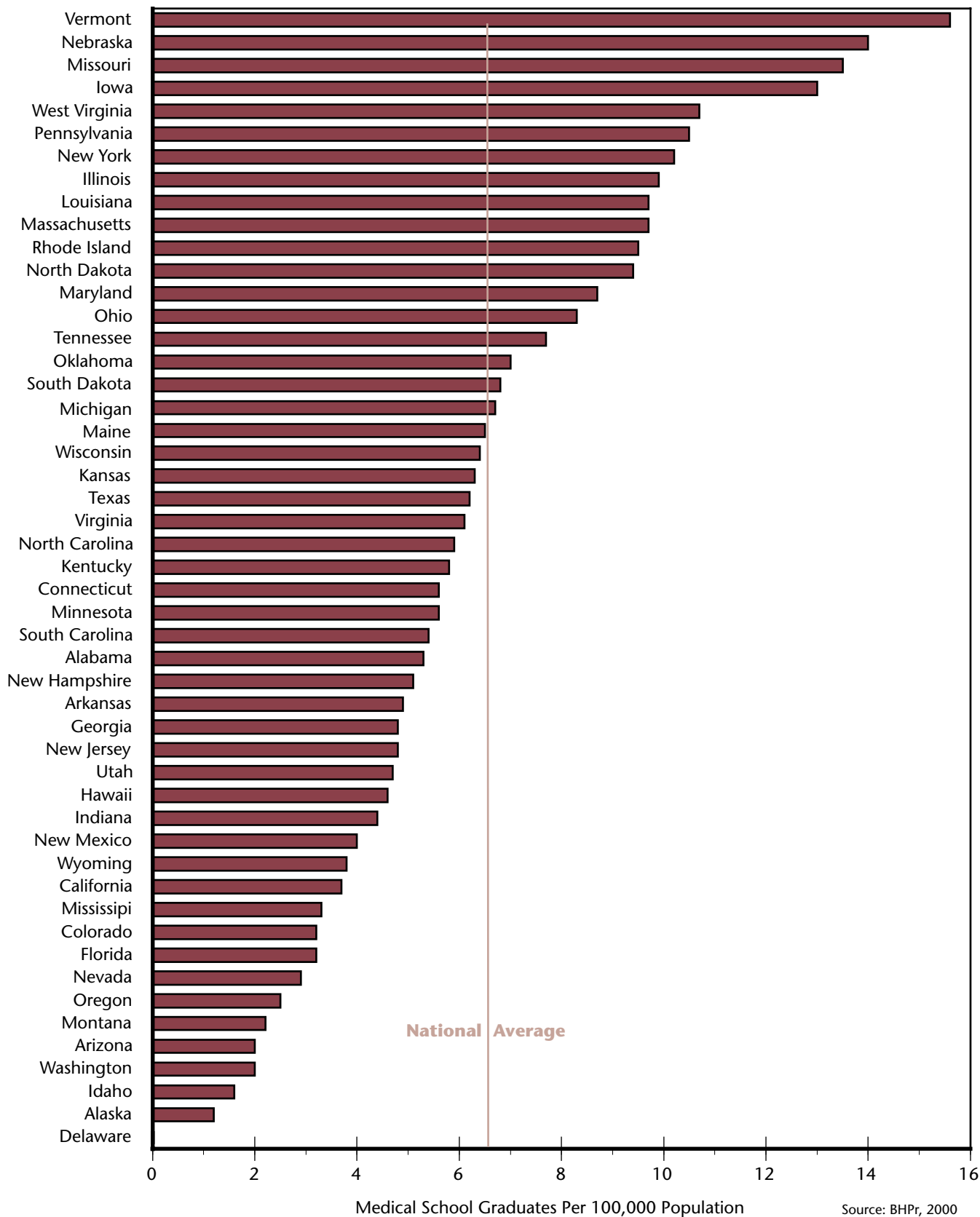
Source: Hart, 2003
 RUCAs used to rural areas

Figure 4-19
FP Residency FTE Rural Training
per Rural Population, by State



Source: Hart, 2003
 RUCAs used to define rural areas

Figure 4-20
1997 Medical School Graduates per 100,000 Population
 (Allopathic & Osteopathic, Public & Private)



there are many states that do almost no rural training, perhaps because of very small rural populations. To adjust for the size of the rural population, the FP residency training was calculated per one million population by state (Figure 4-19). As depicted, the data reveal substantial variation in rural training by state, from a high of 59.6 to a low of 0. The states that are highest in per capita rural FP residency training are New Hampshire, North Dakota, and Maine.

Figure 4-20 is similar to 4-19 except that it shows total medical student training per capita. Again, there is great variation across the states, from a high of 15.6 per 100,000 population to a low of 0. The states with the highest total medical student training per capita are Vermont, Nebraska, Missouri, and Iowa, while the states with the lowest are Delaware, Alaska, Idaho, Washington, Arizona, Montana, and Oregon. Some states clearly invest more money than do other states in medical training in general, and in rural training in particular.

SUMMARY

In this chapter, we have identified some of the important demographic and economic dimensions that create the context for understanding rural health workforce issues in the United States and the wide variation between states and regions. In general, the rural population is older, sicker, and poorer than the urban population. At the same time, the per capita supply of physicians, dentists, and other health professionals is significantly lower in rural areas than in urban areas. This is especially the case with specialist physicians, despite the fact that older populations often require more specialist services. The problems of an inadequate and geographically maldistributed rural health workforce are not restricted to a few states, although the severity of these problems varies significantly across the states. The amount of rural medical training that is provided locally also varies widely across the states, which often exacerbates provider shortage

problems. In addition, the underlying demographic and economic variations in rural populations across the states create very different policy milieus in which those problems can be addressed. While it is possible to generalize about rural demography and rural health workforce issues to some extent, policy solutions, especially at the state level, often require a considerably more detailed picture of state level demography and health workforce supply. In the following chapter, comprehensive health workforce profiles of each state contrast both rural/urban and intrarural variations in health workforce supply.

