

GAO

Report to the Chairman, Committee on
Health, Education, Labor, and
Pensions, U.S. Senate

October 2003

PHYSICIAN WORKFORCE

Physician Supply
Increased in
Metropolitan and
Nonmetropolitan
Areas but Geographic
Disparities Persisted





Highlights of [GAO-04-124](#), a report to the Chairman, Committee on Health, Education, Labor, and Pensions, U.S. Senate

Why GAO Did This Study

Through a variety of programs, the federal government supports the training of physicians and encourages physicians to work in underserved areas or pursue primary care specialties. GAO was asked to provide information on the physician supply and the generalist and specialist mix of that supply in the United States and the changes in and geographic distribution of physician supply in metropolitan and nonmetropolitan areas. To address these objectives, GAO analyzed data on physician supply and geographic distribution from 1991 and 2001.

PHYSICIAN WORKFORCE

Physician Supply Increased in Metropolitan and Nonmetropolitan Areas but Geographic Disparities Persisted

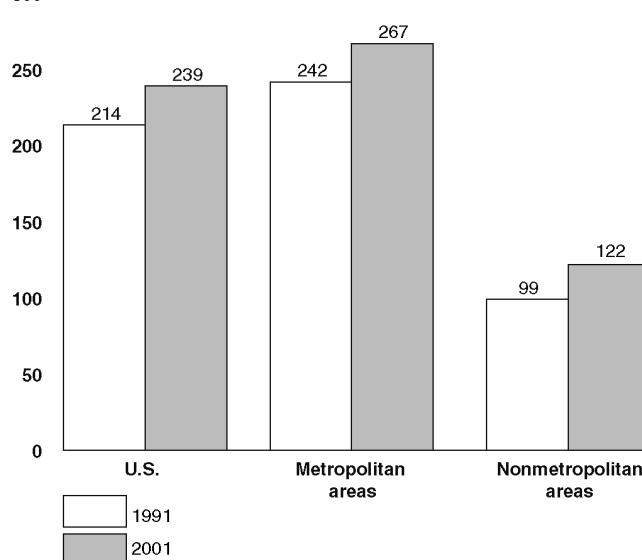
What GAO Found

The U.S. physician population increased 26 percent, which was twice the rate of total population growth, between 1991 and 2001. During this period the average number of physicians per 100,000 people increased from 214 to 239 and the mix of generalists and specialists in the national physician workforce remained about one-third generalists and two-thirds specialists. Growth in physician supply per 100,000 people between 1991 and 2001 was seen in historically high-supply metropolitan areas as well as low-supply statewide nonmetropolitan areas.

Between 1991 and 2001, all statewide nonmetropolitan areas and 301 out of the 318 metropolitan areas gained physicians per 100,000 people. Of those 17 metropolitan areas that experienced declines in the number of physicians per 100,000 people, only 2 had fewer total physicians in 2001 than 1991. Overall, nonmetropolitan areas experienced higher proportional growth in physicians per 100,000 people than metropolitan areas, but the disparity in the supply of physicians per 100,000 people between nonmetropolitan and metropolitan areas persisted. Nonmetropolitan counties with a large town (10,000 to 49,999 residents) had the biggest increase in physicians per 100,000 people of all county categories but their supplies per 100,000 people were still less than large and small metropolitan counties' supplies in 1991 and 2001.

In written comments on a draft of this report, the Health Resources and Services Administration agreed with GAO findings of persisting disparities between metropolitan and nonmetropolitan areas.

Physicians Per 100,000 people, 1991 and 2001
Physicians per 100,000 people



Sources: American Medical Association, American Osteopathic Association, Bureau of Census, and Centers for Medicare & Medicaid Services.

www.gao.gov/cgi-bin/getrpt?GAO-04-124.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Laura A. Dummit at (202) 512-7119.

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Abbreviations

AMA	American Medical Association
AOA	American Osteopathic Association
CMS	Centers for Medicare & Medicaid Services
COGME	Council on Graduate Medical Education
DO	doctor of osteopathic medicine
GMENAC	Graduate Medical Education National Advisory Committee
HHS	Department of Health and Human Services
HPSA	health professional shortage area
HRSA	Health Resources and Services Administration
IOM	Institute of Medicine
MD	medical doctor
MSA	metropolitan statistical area
NECMA	New England county metropolitan area
NHSC	National Health Service Corps
PHSA	Public Health Service Act
PMSA	primary metropolitan statistical area

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G A O

Accountability * Integrity * Reliability

United States General Accounting Office
Washington, DC 20548

October 31, 2003

The Honorable Judd Gregg
Chairman
Committee on Health, Education, Labor, and Pensions
United States Senate

Dear Mr. Chairman:

The federal government has had a long-standing interest in ensuring an adequate supply of physicians to meet the health care needs of the U.S. population. Several federal programs provide funding to train physicians and encourage physicians to work in underserved areas. Other programs attempt to encourage physicians to train as general or primary care practitioners rather than specialists.

In anticipation of the reauthorization of several programs administered by the Health Resources and Services Administration (HRSA) that fund physician education and encourage physicians to practice primary care in underserved areas, you asked us to provide information on the physician supply in the United States. We are providing information on (1) the national physician supply, supply per 100,000 people, and the generalist and specialist mix in 1991 and 2001 and (2) changes from 1991 to 2001 in physician supply, supply per 100,000 people, and the geographic distribution of that supply in metropolitan and statewide nonmetropolitan areas.

To address these objectives, we analyzed physician supply data from 1991 and 2001 for the nation, 318 individual metropolitan areas, 48 statewide nonmetropolitan areas, and county categories.¹ To provide information on

¹Metropolitan areas are metropolitan statistical areas (MSA), primary metropolitan statistical areas (PMSA), or New England county metropolitan areas (NECMA) as of 2001. If a county was designated as metropolitan in 2001, we considered it a metropolitan area in 1991. A statewide nonmetropolitan area encompasses all counties within a state that are not in an MSA, PMSA, or NECMA. The District of Columbia, New Jersey, and Rhode Island have no nonmetropolitan areas.

the physician workforce² and its generalist-specialist mix,³ we analyzed data from the American Medical Association (AMA) Physician Masterfile and the American Osteopathic Association (AOA) Physician Masterfile. We used data from the Census Bureau for resident population estimates based on the 2000 Census. We aggregated county-level information to metropolitan and statewide nonmetropolitan areas. We used urban influence codes, a county categorization system developed by researchers with the Economic Research Service in the Department of Agriculture, to categorize metropolitan counties according to the size of the metropolitan area and nonmetropolitan counties according to the size of the county's largest city and proximity to metropolitan areas.⁴ We also reviewed relevant literature and interviewed experts on the U.S. physician workforce. For more information on our scope and methodology see appendix I. We performed our work from April through October 2003 in accordance with generally accepted government auditing standards.

Results in Brief

The number of physicians in the United States increased about 26 percent from 1991 to 2001, twice as much as the nation's population. The average number of physicians per 100,000 people rose from 214 in 1991 to 239 in 2001 and the mix of generalists and specialists in the national physician workforce remained about one-third generalists and two-thirds specialists. Growth occurred in areas with relatively low and high supplies of physicians per 100,000 people. The number of individual metropolitan and statewide nonmetropolitan areas with fewer than 100 physicians per 100,000 people decreased and more areas had at least 300 physicians per 100,000 people.

²We counted active, nonfederal, patient-care physicians with a known address.

³Generalists are physicians whose primary specialty is family practice, general practice, general internal medicine, or general pediatrics as reported in the American Medical Association or American Osteopathic Association Masterfiles. Other physicians are designated specialists.

⁴T.C. Ricketts, K.D. Johnson-Webb, P. Taylor, *Definitions of Rural: A Handbook for Health Policy Makers and Researchers*, Prepared for the Federal Office of Rural Health Policy, Health Resources and Services Administration, United States Department of Health and Human Services, June 1998. Downloaded from www.shepscenter.unc.edu/research_programs/rural_program/wp.html (downloaded April 2003).

Between 1991 and 2001, all but 17 areas gained physicians per 100,000 people. Of the 48 statewide nonmetropolitan areas, all gained physicians per 100,000 people and fewer of these statewide nonmetropolitan areas were below 100 physicians per 100,000 people in 2001 than in 1991. Of the 318 individual metropolitan areas, 17 experienced declines in the number of physicians per 100,000 people from 1991 to 2001, but only 2 had fewer total physicians in 2001 than in 1991. Overall, nonmetropolitan areas experienced larger proportional gains in physicians per 100,000 people than metropolitan areas, but the disparity in the supply of physicians per 100,000 people between metropolitan and nonmetropolitan areas persisted. Nonmetropolitan counties that included a large town had the largest percentage increase in physicians per 100,000 people from 1991 to 2001 of any type of metropolitan or nonmetropolitan county. Like metropolitan counties, nonmetropolitan counties with large towns had more specialists than generalists per 100,000 people, while nonmetropolitan counties without a large town and rural counties had more generalists per 100,000 people than specialists in 1991 and 2001.

In written comments on a draft of this report, HRSA agreed with our findings of persisting disparities between metropolitan and nonmetropolitan areas.

Background

From the 1950s until the early 1970s, concerns about physician shortages prompted measures by the federal and state governments to increase physician supply. Federal and state governments supported the growth in the physician population by providing funds for constructing medical schools and increasing medical school class sizes, offering loans and scholarships to medical students, and paying hospitals through Medicare to subsidize residency training costs. Concurrent with these initiatives, the total physician supply and per-capita supply increased in the United States.

By the 1980s and through the 1990s, however, concerns were raised about the adequacy of the physician supply. A 1981 study by the Graduate Medical Education National Advisory Committee (GMENAC) and a series of reports from 1992 to 1999 by the Council on Graduate Medical

Education (COGME) forecast a national physician surplus.^{5,6} COGME based these estimates on its determination that the appropriate target for physician supply ranged from 145 to 185 physicians per 100,000 people. These estimates were predicated in part on the belief that managed care, with its emphasis on preventive care and reliance on primary care gatekeepers exercising tight control over access to specialists, would become a more typical health care delivery model. COGME and others have noted that managed care has not become as dominant as predicted. By 2000, some research concluded that physician supply increased even more than these studies predicted.⁷ Some researchers, however, questioned whether there was a national surplus of physicians.⁸

A report from the Institute of Medicine (IOM) describes why studies of the physician workforce vary.⁹ According to the IOM report, disagreement about the adequacy of physician supply arises because there is no single accepted approach to estimating physician supply or demand. Varying assumptions related to factors that may affect future supply or demand can lead to different conclusions about the adequacy of future physician supply. Projecting future physician supply depends on the approach used to count physicians, measure their productivity, and estimate the rate of entrance into and exit from the profession. Estimating demand for physicians' services requires even more assumptions. Demand for physicians' services can be estimated using current and projected service utilization patterns or by determining an ideal level of care to treat the projected incidence and prevalence of illness among the population. In addition, physician practice patterns, the use of new technology, the

⁵GMENAC, *Summary Report to the Secretary, Department of Health and Human Services*, Vol. 1, DHHS Pub. No. (HRA) 81-651 (Washington, D.C.: Health Resources Administration, Department of Health and Human Services, April 1981).

⁶For a complete list of COGME reports see the COGME Web site: <http://www.cogme.gov/rptmail.htm>.

⁷E.S. Salsberg and G.J. Forte, "Trends in the Physician Workforce, 1980-2000," *Health Affairs*, vol. 21, no. 5 (2002).

⁸See for example, Salsberg and Forte, "Trends in the Physician Workforce, 1980-2000," J.P. Weiner, "A Shortage of Physicians or a Surplus of Assumptions?" *Health Affairs*, vol. 21, no.1 (2002), and R.A. Cooper, "Perspectives on the Physician Workforce to the Year 2020," *JAMA*, vol. 274, no. 19 (1995).

⁹IOM, *The Nation's Physician Workforce: Options for Balancing Supply and Requirements*, K.N. Lohr, N.A. Vanselow, and D.E. Detmer, eds (Washington, D.C.: National Academy Press, 1996).

supply and role of nonphysician providers,¹⁰ and rates and levels of insurance coverage also affect estimates of the demand for and supply of physicians' services.

In spite of the difficulty of determining whether the overall number of physicians is indeed the right number, there is little disagreement that physicians have been located disproportionately in metropolitan areas relative to the U.S. population. Geographic disparities in physician supply have persisted even as the national physician supply has increased steadily. Economic factors and professional preferences have all been offered as evidence to explain why physicians, and specialists in particular, locate in metropolitan areas.¹¹ For example, physicians depend on the availability of hospitals, laboratories, and other technology, and metropolitan areas tend to have more of these facilities and equipment than nonmetropolitan areas. Small nonmetropolitan areas generally lack a large enough population or hospital resources to support a specialty practice, because specialists handle less prevalent but more complicated illnesses and require more specialized support facilities and technology.¹²

To influence overall physician supply and address perceived physician shortages in certain areas, several federal programs fund efforts to address these issues. The bulk of federal dollars to support physician education is through Medicare's graduate medical education (GME) payments to teaching hospitals, which totaled an estimated \$7.8 billion in 2000, the latest year for which data were available. These GME payments are distributed based on the number of physicians being trained and Medicare's share of patient days in the hospital. Medicare also pays physicians a 10 percent bonus above the usual payment amount for services they provide to beneficiaries in health professional shortage areas

¹⁰Although this report describes the supply and geographic distribution of the physician workforce, other providers, such as physicians' assistants and nurse practitioners, also provide many health care services that physicians provide.

¹¹H.K. Rabinowitz and N. P. Paynter, "The Rural vs. Urban Practice Decision," *JAMA*, vol. 287, no.1 (2002).

¹²H.J. Jiang and J.W. Begun, "Dynamics of Change in Local Physician Supply: An Ecological Perspective," *Social Science & Medicine*, vol. 24 (2002).

(HPSAs).¹³ These Medicare Incentive Payments totaled \$104 million in 2002.¹⁴

Programs intended to encourage health professionals to practice in underserved areas and to support the training and education of health professionals are administered by HRSA, within the Department of Health and Human Services (HHS). HRSA programs include the National Health Service Corps (NHSC) and grant and loan support programs for health professions education and training. Most of these programs address three objectives of improving the distribution of health professionals in underserved areas, increasing representation of minorities and individuals from disadvantaged backgrounds in health professions, and increasing the supply of health professionals. They also address other objectives such as improving the quality of education and training. In fiscal year 2001, spending for the NHSC was \$70.8 million and spending for health professions education and training programs was \$266 million. Funds for the NHSC and for health professions education and training programs support a range of health professions including medicine. See appendix II for more information about program spending or appropriations and program objectives.

¹³The Department of Health and Human Services (HHS) designates areas having a critical shortage of primary care providers as HPSAs. A HPSA may be a distinct geographic area (such as a county), a specified population group within the area (such as migrant farm workers), or a public or nonprofit facility (such as a prison).

¹⁴The number of physicians who received these payments in 2002 cannot be readily assessed from the Centers for Medicare & Medicaid Services (CMS) physician claims data. In 1999, we reported that specialists receive most of the Medicare Incentive Payment program dollars, even though primary care physicians have been identified as being in short supply. See U.S. General Accounting Office, *Physician Shortage Areas: Medicare Incentive Payments Not an Effective Approach to Improve Access*, [GAO/HEHS-99-36](#) (Washington, D.C.: Sept. 26, 1999). In 1994, the HHS Office of Inspector General found that the program may be paying physicians for providing care to Medicare beneficiaries who do not live in HPSAs. See HHS Office of Inspector General, *Design Flaws in the Medicare Incentive Payment Program*, OEI-01-93-00051 (Washington, D.C.: June 1994).

National Physician Supply Grew at Twice the Rate of the U.S. Population

The number of physicians in the United States increased about 26 percent, from about 541,000 to about 681,000 from 1991 to 2001. Physician growth was twice that of national population growth during this period. As a result, the total number of physicians per 100,000 people in the United States climbed 12 percent, from 214 in 1991 to 239 in 2001.¹⁵ The number of generalists per 100,000 people increased at about the same rate as the number of specialists per 100,000 people. (See table 1.) The national physician workforce maintained approximately a one-third generalist to two-thirds specialist composition between 1991 and 2001.

Table 1: Physicians Per 100,000 People in the United States, 1991 and 2001

	1991	2001	Change from 1991 to 2001 (percentage)
All physicians	214	239	12
Generalists	78	87	13
Specialists	133	150	13

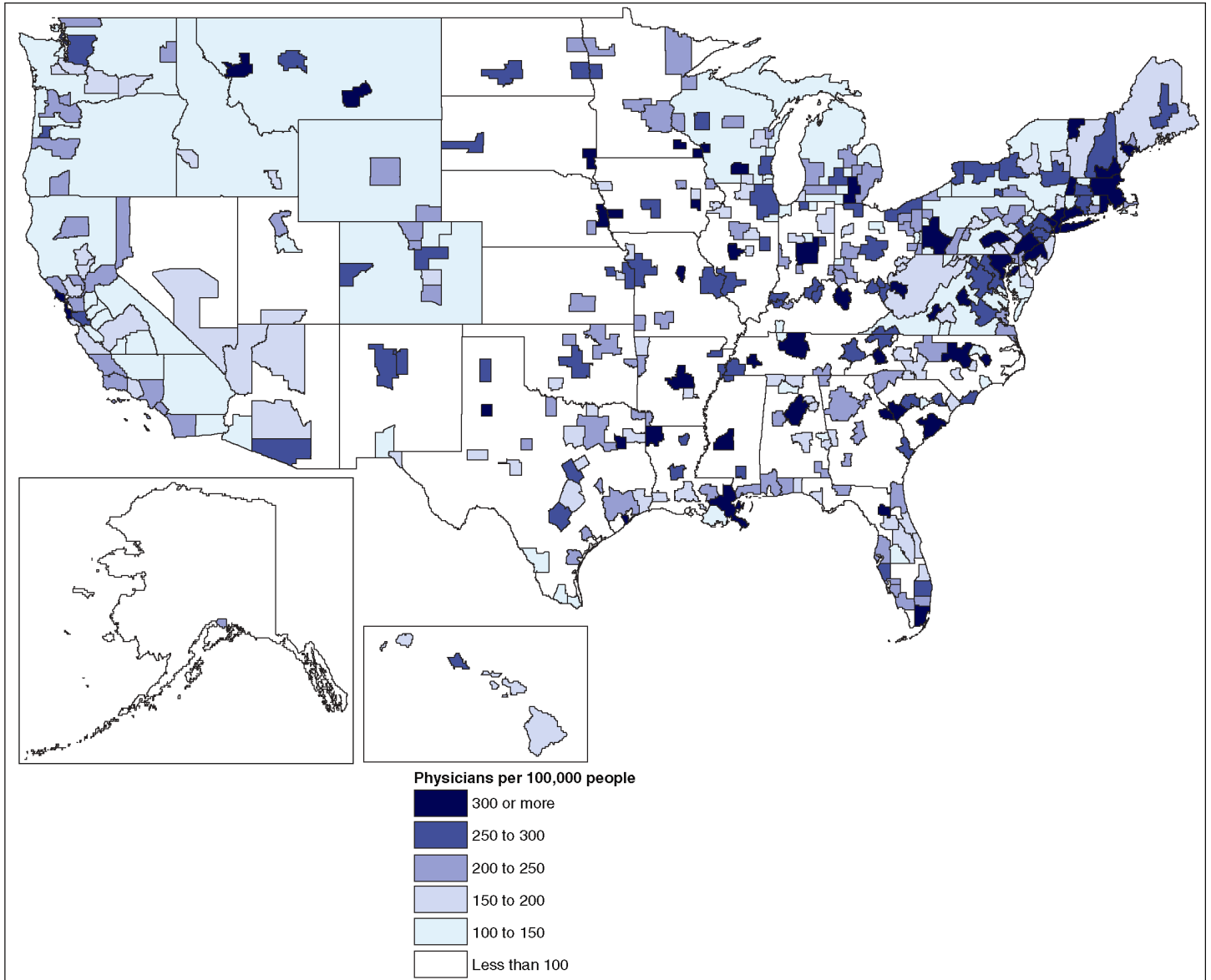
Sources: AMA, AOA, Bureau of Census, and Centers for Medicare & Medicaid Services (CMS).

Notes: Physicians refer to active, nonfederal, patient-care physicians with a known address. We could not categorize some physicians as generalists or specialists because there was no information about their specialty in the AMA or AOA Masterfiles. Specifically, records for 7,185 physicians (1 percent) in 1991 and 4,982 physicians (0.7 percent) in 2001 did not have information that would allow us to classify them as generalists or specialists. These physicians are included in the all physicians total but not in the generalist and specialist totals. The percentage change calculations are based on rates prior to rounding.

Growth in physician supply reduced the number of metropolitan and nonmetropolitan areas with fewer than 100 physicians per 100,000 people and increased the number of areas with greater than 300 physicians per 100,000 people. In 1991, 8 metropolitan areas and 27 statewide nonmetropolitan areas had fewer than 100 physicians per 100,000 people. By 2001, no metropolitan areas and 7 statewide nonmetropolitan areas had fewer than 100 physicians per 100,000 people. Twice as many metropolitan areas and statewide nonmetropolitan areas had at least 300 physicians per 100,000 people in 2001 as in 1991. (See figs. 1 and 2.) In 1991, the 25 percent of areas with the lowest physician supplies per 100,000 people had an average of 106 physicians per 100,000 people. By 2001, the 25 percent of areas with the lowest physician supplies per 100,000 people had an average of 132 physicians per 100,000 people. Similarly, the 25 percent of

¹⁵The growth rate of physicians per 100,000 people was slightly higher (13 percent) from 1996 to 2001 than from 1991 to 1996 (11 percent).

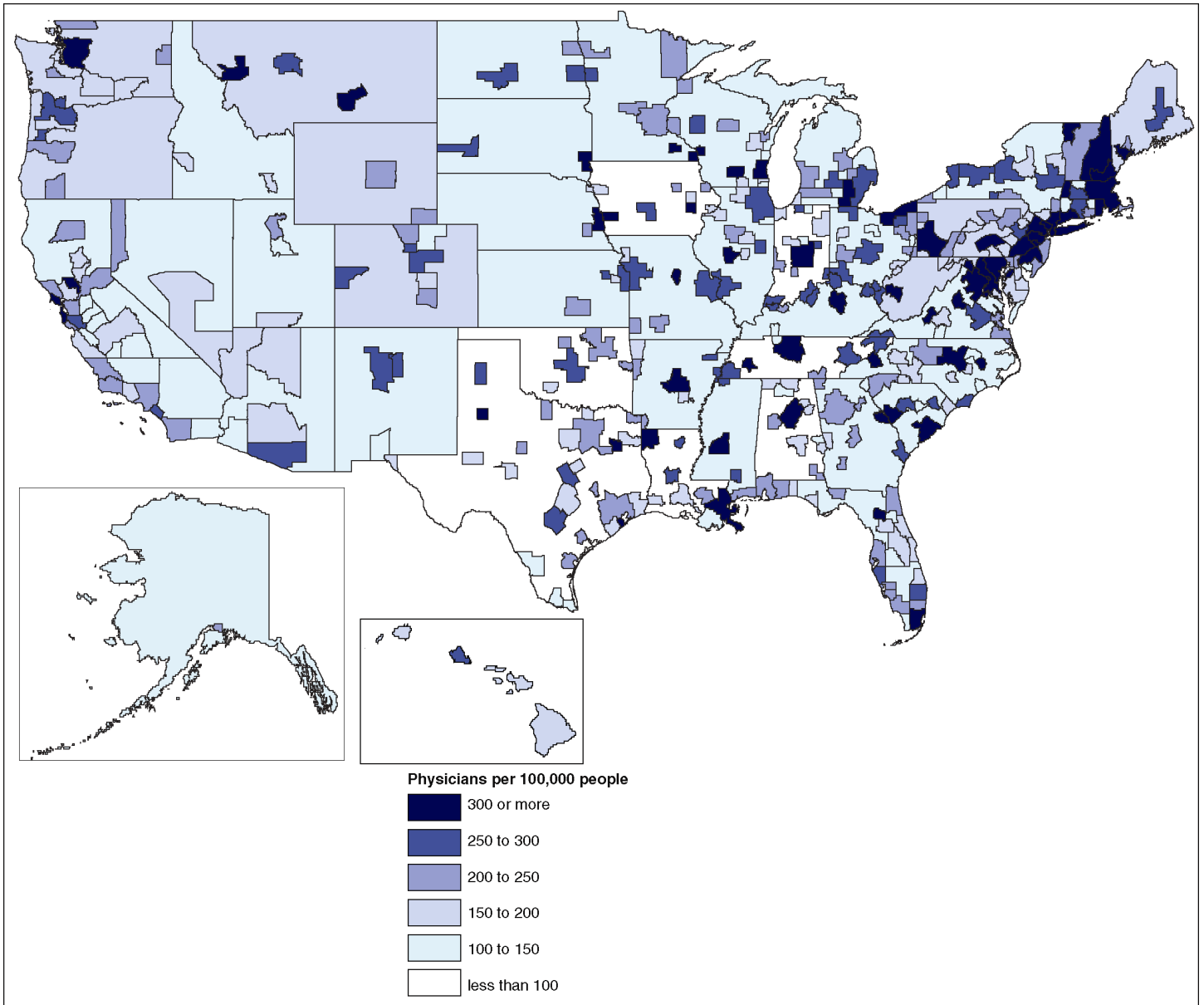
Figure 1: Physicians Per 100,000 People in the United States by Metropolitan Areas and Statewide Nonmetropolitan Areas, 1991



Sources: AMA, AOA, Bureau of Census, and CMS.

Notes: Physicians refer to active, nonfederal, patient-care physicians with a known address. The District of Columbia, New Jersey, and Rhode Island do not have nonmetropolitan areas.

Figure 2: Physicians Per 100,000 People in the United States by Metropolitan Areas and Statewide Nonmetropolitan Areas, 2001



Sources: AMA, AOA, Bureau of Census, and CMS.

Notes: Physicians refer to active, nonfederal, patient-care physicians with a known address. The District of Columbia, New Jersey, and Rhode Island do not have nonmetropolitan areas.

areas with the highest physician supplies per 100,000 people had an average of 319 physicians in 1991 and 362 physicians in 2001. See appendix III for information on physician supply by state metropolitan and nonmetropolitan areas in 1991 and 2001.

Physician Supply Per 100,000 People Increased in Most Areas but Geographic Disparities Persisted

All 48 statewide nonmetropolitan areas experienced an increase in the number of physicians per 100,000 people from 1991 to 2001 and 301 of 318 metropolitan areas experienced an increase in physicians per 100,000 people. Overall, the nonmetropolitan areas had higher proportional growth in physicians per 100,000 people than the metropolitan areas, but the disparity in the supply of physicians per 100,000 people between the metropolitan and nonmetropolitan areas persisted. Rates of growth in the number of physicians per 100,000 people, the supply of physicians per 100,000 people, and the mix of generalists and specialists among categories of metropolitan and nonmetropolitan counties varied. Among the five county categories we analyzed, nonmetropolitan counties with a large town had the biggest increase in physicians per 100,000 people from 1991 to 2001 and more physicians per 100,000 people than either nonmetropolitan counties without a large town or rural counties, but still fewer than metropolitan counties. Like metropolitan counties, nonmetropolitan counties with large towns had more specialists than generalists, while other nonmetropolitan counties had more generalists than specialists.

Almost All Areas Gained Physicians Per 100,000 People

The 48 statewide nonmetropolitan areas, including those with the lowest supplies of physicians per 100,000 people in 1991, registered gains in physicians per 100,000 people between 1991 and 2001. However, this growth rate was not even across all statewide nonmetropolitan areas and 7 areas remained below 100 physicians per 100,000 people. Five of these 7 statewide nonmetropolitan areas—Iowa, Indiana, Louisiana, Oklahoma, and Texas—that remained below 100 physicians per 100,000 people, had average increases in physicians per 100,000 people that were less than the 23 percent average increase for the nonmetropolitan United States. The remaining 2—statewide nonmetropolitan Alabama and Tennessee—had increases in physicians per 100,000 people that exceeded the national nonmetropolitan area average, but the number of physicians in these areas was so low in 1991 that this growth was not enough to elevate their physician supply above 100 per 100,000 people in 2001.

In the aggregate, the 318 metropolitan areas of the United States experienced an increase in physicians per 100,000 people between 1991 and 2001. However, 17 (5 percent) metropolitan areas experienced declines in the number of physicians per 100,000 people during this period. (See table 2.) In 2001, 11 of these areas had physician supplies per 100,000 people that were below the national average of 239 physicians per 100,000 people. Only 2 individual metropolitan areas, however—the Topeka, Kansas and Enid, Oklahoma MSAs—experienced an actual decrease in their physician populations between 1991 and 2001. While the remaining 15 areas had more physicians in 2001 than in 1991, the population increase for all of them was large enough that they still experienced a decline over that decade in the number of physicians per 100,000 people. Five of these areas had physician population growth in excess of the national average of 26 percent. However, in these areas the higher-than-average growth in physician supply was exceeded by population growth that was also above the national average of 13 percent, resulting in a decline in physicians per 100,000 people.¹⁶

¹⁶Other areas with higher-than-average population growth experienced increases in their physician populations per 100,000 people. For example, the physician supply in the Las Vegas, Nevada-Arizona MSA outpaced the area's very high population growth during this period, resulting in a 20 percent increase in the number of physicians per 100,000 people.

Table 2: Areas with Reductions in Physicians Per 100,000 People from 1991 to 2001

	Change in physician population, 1991-2001 (percentage)	Population increase, 1991-2001 (percentage)	Physicians per 100,000, 2001	Change in physicians per 100,000, 1991-2001 (percentage)
Phoenix-Mesa, Ariz. MSA	41	46	197	-4
Yuma, Ariz. MSA	38	47	100	-7
Greeley, Colo. PMSA	38	45	136	-5
Raleigh-Durham-Chapel Hill, N.C. MSA	33	38	398	-4
Denver, Colo. PMSA	27	29	265	-2
Tucson, Ariz. MSA	25	27	285	-1
Riverside-San Bernardino, Calif. PMSA	18	24	138	-5
Modesto, Calif. MSA	17	21	144	-4
Merced, Calif. MSA	15	18	101	-3
Stockton-Lodi, Calif. MSA	13	21	134	-6
Miami, Fla. PMSA	13	16	303	-2
Reading, Pa. MSA	9	10	180	-1
Iowa City, Iowa MSA	5	14	1004	-8
Los Angeles-Long Beach, Calif. PMSA	4	8	238	-3
Jersey City, N.J. PMSA	1	9	171	-7
Topeka, Kans. MSA	-1	4	252	-5
Enid, Okla. MSA	-4	1	212	-5

Sources: AMA, AOA, Bureau of Census, and CMS.

Note: Physicians refer to active, nonfederal, patient-care physicians with a known address.

Statewide Nonmetropolitan Areas Had Greater Proportional Increases in Physicians Per 100,000 People Than Metropolitan Areas but Geographic Disparities Persisted

The number of physicians per 100,000 people in nonmetropolitan areas, in which 19 percent of the U.S. population resided in 2001, increased 23 percent from 1991 to 2001. During this same time, the number of physicians per 100,000 people in metropolitan areas, in which 81 percent of the U.S. population resided in 2001, increased 10 percent. (See table 3.) The higher growth rate in physicians per 100,000 people in nonmetropolitan areas over the decade did not translate into a reduction in the gap in the supply of physicians per 100,000 people in metropolitan versus nonmetropolitan areas. The disparity in the supply of physicians per 100,000 people between nonmetropolitan and metropolitan areas

persisted because physicians continued to disproportionately locate in metropolitan areas. On net, about 17,000 physicians (12 percent of the physician population increase) went to nonmetropolitan areas between 1991 and 2001, while about 123,000 (88 percent of the physician population increase) went to metropolitan areas. The difference in physician supply between metropolitan and nonmetropolitan areas remained relatively unchanged from 1991, when the difference in supply was 143 per 100,000 people, to 2001 when the difference was 145 per 100,000 people.

Table 3: Physicians Per 100,000 People in Statewide Nonmetropolitan and Metropolitan Areas, 1991 and 2001

	1991	2001	Change from 1991 to 2001 (percentage)
Nonmetropolitan			
All physicians	99	122	23
Generalists	49	59	19
Specialists	49	63	28
Metropolitan			
All physicians	242	267	10
Generalists	85	94	11
Specialists	154	171	11

Sources: AMA, AOA, Bureau of Census, and CMS.

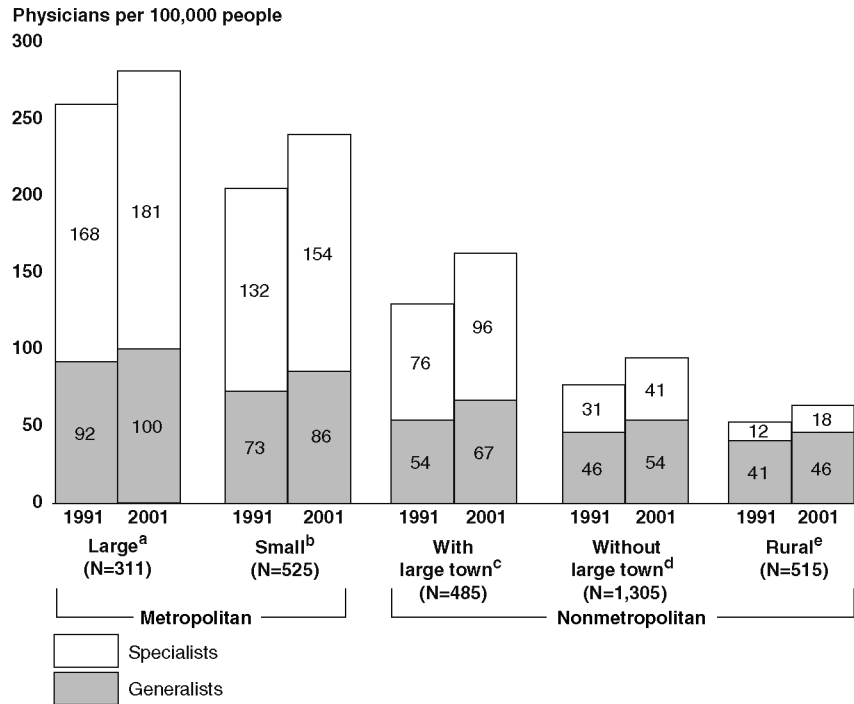
Notes: Physicians refer to active, nonfederal, patient-care physicians with a known address. We could not categorize some physicians as generalists or specialists because there was no information about their specialty in the AMA or AOA Masterfiles. Specifically, records for 7,185 physicians (1 percent) in 1991 and 4,982 physicians (0.7 percent) in 2001 did not have information that would allow us to classify them as generalists or specialists. These physicians are included in the all physicians total, but not in the generalist and specialist totals. The percentage change calculations are based on rates prior to rounding.

In nonmetropolitan areas, the number of specialists per 100,000 people increased faster than the number of generalists per 100,000 people. As a result, the generalist and specialist composition shifted from an even mix of generalists and specialists in 1991 to 48 percent generalists and 52 percent specialists in 2001. In metropolitan areas, generalists and specialists per 100,000 people increased at approximately the same rate, shifting the composition less than 1 percent from 36 percent generalists and 64 percent specialists in 1991 to 35 percent generalists and 65 percent specialists in 2001.

Rates of Growth in Physician Supply Differed Among Categories of Nonmetropolitan and Metropolitan Counties

To obtain additional information about physician supply within nonmetropolitan and metropolitan areas, we aggregated county physician and population data into five categories defined by a county's nonmetropolitan or metropolitan status and the presence and size of a town within the county. All five county categories had an increase in physicians per 100,000 people from 1991 to 2001. (See fig. 3.) But the rates of growth in physician supply per 100,000 people, supply of physicians per 100,000 people, and mix of generalists and specialists varied by county category. While nonmetropolitan counties with a large town (10,000 to 49,999 residents) had the biggest percentage increase in physicians per 100,000 people of all county categories, their supplies per 100,000 people were still less than large and small metropolitan counties' supplies in 1991 and 2001. Among nonmetropolitan counties, however, those with a large town had more physicians per 100,000 people than those without a large town or rural counties in 1991 and 2001. Like metropolitan counties, nonmetropolitan counties that are more urbanized—those with a large town—had more specialists than generalists per 100,000 people. Less urbanized nonmetropolitan counties—those without a large town—and rural counties had more generalists than specialists per 100,000 people in 1991 and 2001.

Figure 3: Physicians Per 100,000 People by Metropolitan and Nonmetropolitan County Categories, 1991 and 2001



Sources: AMA, AOA, Bureau of Census, and CMS.

Notes: Counties without urban influence codes are not included in these figures. Physicians refer to active, nonfederal, patient-care physicians with a known address.

^aLarge metropolitan areas have at least one million residents.

^bSmall metropolitan areas have 50,000 to 999,999 residents.

^cLarge towns have 10,000 to 49,999 residents.

^dCounties without large towns include those with or without a town of 2,500 to 9,999 residents.

^eRural counties have fewer than 2,500 residents.

Agency Comments

We provided a draft of this report to HRSA for comment. HRSA said that the study supports the conclusion that the disparity in the distribution of physicians in rural and urban areas persists and has narrowed. HRSA also agreed with our assessment of the difficulties and variation associated with determining an appropriate supply for any given geographic area. However, HRSA noted that the report should draw conclusions to make the report more complete.

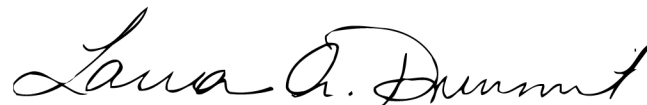
HRSA also commented that rural citizens are still grossly underserved, noting that physician supply can be a rough measure of access to physician services in a given area and that even in areas with a large number of physicians many people still lack access due to a number of factors. HRSA's comments are reprinted in appendix IV.

Although we found that a geographic disparity persists, we did not find that the disparity in the distribution between metropolitan and nonmetropolitan areas has narrowed. Physician supply grew faster in nonmetropolitan than metropolitan areas, on a national basis, but this did not reduce the disparity because there are so many physicians in metropolitan areas. As we stated in the draft report that HRSA reviewed, while nonmetropolitan areas experienced higher growth rates in physicians per 100,000 people, the difference in physician supply per 100,000 people remained relatively unchanged from 1991 to 2001.

HRSA noted that physician supply is only one of several factors affecting the accessibility of health care in an area. However, assessing the adequacy of access to physicians was beyond the scope of our work. HRSA also provided technical comments that we incorporated as appropriate.

We are sending copies of this report to the Administrator of the Health Resources Services Administration and other interested parties. We will also provide copies to others upon request. In addition, the report will be available at no charge on the GAO Web site at <http://www.gao.gov>. If you or your staff have any questions about this report, please call me at (202) 512-7119 or Christine Brudevold at (202) 512-2669. Major contributors to this report were Kathryn Linehan and Ann Tynan.

Sincerely yours,



Laura A. Dummit
Director, Health Care—Medicare Payment Issues

Appendix I: Scope and Methodology

To conduct this work, we counted active, nonfederal, patient care physicians with a known address, including interns and residents, in the United States. We used individual physician-level data on medical doctors (MD) from the 1991 and 2001 American Medical Association (AMA) Physicians' Professional Data, also known as the AMA Masterfile and 1991 and 2001 data on doctors of osteopathic medicine (DO) from the American Osteopathic Association (AOA) Masterfile. These data are widely used in studies of physician supply because they are a comprehensive list of U.S. physicians and their characteristics.

To determine physician supply per 100,000 people, we obtained county-level resident population data for 1991 and 2001 from the U.S. Census Bureau Web site.¹ We used data from the Department of Agriculture Web site to determine urban influence codes for each county.² For additional information about physician supply in the United States, we reviewed relevant literature and interviewed academic researchers on the topic of the U.S. physician workforce.

To obtain federal program information, we interviewed officials from the Health Resources and Services Administrative (HRSA) and officials at the Centers for Medicare & Medicaid Services (CMS). HRSA officials provided information on the scope and expenditures of health professions training and education programs and the National Health Service Corps. CMS officials provided information on the Medicare Incentive Payments to physicians providing services in health professional shortage areas.

We combined counts of MDs and DOs to determine the total number of physicians in each of our study years. Each physician was counted without adjustment for hours worked. To determine physicians per 100,000 people, we divided the physician population in a given area by the total population in the area in that same year. To count generalists and specialists we used each physician's specialty information in the AMA and AOA data files to categorize physicians as generalists or specialists. Physicians whose specialty information was listed as family practice, general practice,

¹Data for 1991 were from <http://eire.census.gov/popest/data/counties/tables/CO-EST2001-12.php> (downloaded on July 3, 2003). Data for 2001 were from http://eire.census.gov/popest/estimates_dataset.php (downloaded on March 13, 2003).

²Data on urban influence codes from the Department of Agriculture were from <http://www.ers.usda.gov/briefing/Rurality/UrbanInf/Urbaninfl.xls> (downloaded on March 12, 2003).

general internal medicine, and general pediatrics were categorized as generalists. All other physicians with specialty information available were categorized as specialists.

To assign physicians to a geographic area in the United States, we used address information in the AMA and AOA data files. The address information in these files does not specify whether the address refers to the physician's home, office, or some other location and it is possible that some physicians live and work in different counties. Because of this limitation, we did not analyze the data at the individual county level. We combined multiple, adjacent counties into larger geographic units. We assigned counties to a metropolitan statistical area (MSA), primary metropolitan statistical areas (PMSA), or New England county metropolitan area (NECMA). We grouped data from all areas within a state that were not in a MSA, PMSA, or NECMA into one statewide nonmetropolitan area for each state. We used 2001 MSA, PMSA, and NECMA classifications for the 2001 and 1991 data.

For analysis by county categories, we used urban influence codes, which group metropolitan and nonmetropolitan counties according to the official metropolitan status announced by the Office of Management and Budget in 1993, based on 1990 Census data. Urban influence codes group counties, county equivalents, and independent cities into nine categories.³ Metropolitan counties are grouped into two categories (1 and 2) by the size of the metropolitan area. Nonmetropolitan counties are grouped into seven groups (3 through 9) by their adjacency to metropolitan areas and the size of their own city. For this analysis of physician supply, we maintained categories 1, 2, and 9 and collapsed the remaining six categories into two, for a total of five categories. This analysis combines codes 3, 5, and 7 into one category (i.e., nonmetropolitan with a large town) and 4, 6, and 8 into one category (i.e., nonmetropolitan without a large town).

³For more information about urban influence codes see T.C. Ricketts, K.D. Johnson-Webb, P. Taylor, *Definitions of Rural: A Handbook for Health Policy Makers and Researchers*, Prepared for the Federal Office of Rural Health Policy, Health Resources and Services Administration, United States Department of Health and Human Services, June 1998. Downloaded from www.shepscenter.unc.edu/research_programs/rural_program/wp.html (downloaded April 2003).

Appendix II: HRSA Programs That Address Supply and Distribution of Health Professionals

HRSA administers programs that encourage health professionals to practice in underserved areas and support health professions education and training. The National Health Service Corps and the State Loan Repayment Program, authorized by Title III of the Public Health Service Act, offer scholarships and loan repayments to health professionals in exchange for a commitment to practice in health professional shortage areas.¹ Grant and loan support programs that support health professions education and training, authorized by Title VII of the Public Health Service Act, have diverse objectives.² Generally, these programs support education and training for a range of health professions including medicine, chiropractics, dentistry, optometry, pharmacy, physician assistants, allied health, and public health. While most of the Title VII programs address three objectives of improving the distribution of health professionals in underserved areas, increasing representation of minorities and individuals from disadvantaged backgrounds in health professions, and increasing the supply of health professionals, they also address other objectives such as improving the quality of education and training. Table 4 provides information on Title III and Title VII program spending or appropriations and objectives.

¹Public Health Service Act (PHSA), July 1, 1944, ch. 373, 58 stat. 682 (classified to 42 U.S.C. §§ 201 et seq.) Title III of the PHSA is classified to 42 U.S.C. §§ 241 et seq.

²Title VII of the PHSA is classified to 42 U.S.C. §§ 292 et seq.

**Appendix II: HRSA Programs That Address
Supply and Distribution of Health
Professionals**

Table 4: HRSA Programs' Expenditures or Appropriations and Objectives

Program	Program expenditures or appropriations ^a (in millions of dollars)		Program objectives			
	FY 1991	FY 2001	Improving distribution of health professionals in underserved areas	Increasing representation of minorities and individuals from disadvantaged backgrounds in health professions	Increasing supply of health professionals	Improving training for health professionals in geriatrics and in public health
Programs authorized by Title III of the Public Health Service Act						
Scholarships and loan repayments to individuals in exchange for commitments to practice in underserved areas						
National Health Service Corps	\$42.5	\$70.8	X			
State Loan Repayment	6.0	7.2	X			
Title III Total	\$48.5	\$78.0				
Programs authorized by Title VII of the Public Health Service Act						
Scholarships and loans to individuals in exchange for commitment to train in and practice primary care medicine						
Exceptional Financial Need Scholarships	\$9.6	\$1.0		X	X	
Financial Assistance for Disadvantaged Health Professions	6.1	.6		X	X	
Primary Care Loan ^{b,c,d}	N.A.	9.9			X	

**Appendix II: HRSA Programs That Address
Supply and Distribution of Health
Professionals**

Program	Program expenditures or appropriations ^a (in millions of dollars)		Program objectives			
	FY 1991	FY 2001	Improving distribution of health professionals in underserved areas	Increasing representation of minorities and individuals from disadvantaged backgrounds in health professions	Increasing supply of health professionals	Improving training for health professionals in geriatrics and in public health
Scholarships, loans, and loan repayments to individuals in health professions training						
Health Professions Student Loan ^{b, c}	3.5	1.2			X	
Loans for Disadvantaged Students ^c	2.8	.2		X		
Scholarships for Disadvantaged Students	8.2	41.0	X	X		
Faculty Loan Repayment Program	.5	1.0		X		
Grants to institutions or individuals for health professions education and training						
Quentin N. Burdick Program for Rural Interdisciplinary Training	3.8	6.0	X			
Training in Primary Care Medicine and Dentistry	70.4	91.1	X	X	X	
Area Health Education Centers	19.2	33.4	X	X	X	
Geriatric Training for Physicians, Dentists, and Behavioral and Mental Health Professionals	3.9	2.9	X			X

**Appendix II: HRSA Programs That Address
Supply and Distribution of Health
Professionals**

Program	Program expenditures or appropriations ^a (in millions of dollars)		Program objectives			
	FY 1991	FY 2001	Improving distribution of health professionals in underserved areas	Increasing representation of minorities and individuals from disadvantaged backgrounds in health professions	Increasing supply of health professionals	Improving training for health professionals in geriatrics and in public health
Geriatric Academic Career Awards	N.A.	.8				X
Geriatric Education Center Program	9.5	7.5				X
Centers of Excellence	14.5	30.6		X		
Health Careers Opportunity Program	24.2	32.0		X		
Preventive Medicine Residency Grant Program	U.A.	2.1	X	X		X
Public Health Training Center Program	N.A.	4.7				X
Title VII Total	\$176.2	\$266.0				

Source: HRSA.

Legend: NA = not applicable because program not operational this year

UA = data not available

Notes: All programs provide support for a range of health professions including medicine, chiropractics, dentistry, optometry, pharmacy, physician assistants, allied health, and public health, except as noted.

^aFor Title III programs, expenditures are given. For Title VII programs, appropriations are given.

^bProgram provides support for medical students, residents, and physicians.

^cLoan programs financed by revolving loan fund.

^dThe Primary Care Loan Program replaced Health Professions Student Loan Program in 1993 for allopathic and osteopathic medicine programs.

Appendix III: Physicians Per 100,000 People by State Metropolitan and Nonmetropolitan Areas, 1991 and 2001

Areas	Physicians per 100,000 people		Generalists per 100,000 people		Specialists per 100,000 people	
	1991	2001	1991	2001	1991	2001
Alabama						
Metropolitan Alabama	201	238	69	82	129	154
Nonmetropolitan Alabama	61	78	36	45	25	33
Alaska						
Metropolitan Alaska	176	246	60	91	115	156
Nonmetropolitan Alaska	97	134	54	76	42	58
Arizona						
Metropolitan Arizona	214	207	73	73	138	133
Nonmetropolitan Arizona	90	111	52	56	38	55
Arkansas						
Metropolitan Arkansas	231	265	78	91	148	172
Nonmetropolitan Arkansas	85	101	48	55	35	45
California						
Metropolitan California	225	229	78	83	144	143
Nonmetropolitan California	112	129	52	59	58	69
Colorado						
Metropolitan Colorado	231	240	81	85	147	154
Nonmetropolitan Colorado	112	154	58	71	53	83
Connecticut						
Metropolitan Connecticut	288	324	96	108	188	214
Nonmetropolitan Connecticut	125	133	53	60	72	72
Delaware						
Metropolitan Delaware	217	249	80	93	135	154
Nonmetropolitan Delaware	153	194	53	66	99	128
District of Columbia						
Metropolitan District of Columbia	544	554	169	171	363	373
Florida						
Metropolitan Florida	214	237	71	82	141	154
Nonmetropolitan Florida	98	117	40	49	57	68
Georgia						
Metropolitan Georgia	208	228	64	77	140	150
Nonmetropolitan Georgia	97	117	43	52	54	64

**Appendix III: Physicians Per 100,000 People
by State Metropolitan and Nonmetropolitan
Areas, 1991 and 2001**

Areas	Physicians per 100,000 people		Generalists per 100,000 people		Specialists per 100,000 people	
	1991	2001	1991	2001	1991	2001
Hawaii						
Metropolitan Hawaii	252	284	91	101	154	181
Nonmetropolitan Hawaii	157	190	70	80	87	109
Idaho						
Metropolitan Idaho	162	198	55	69	106	128
Nonmetropolitan Idaho	108	129	49	54	56	73
Illinois						
Metropolitan Illinois	240	270	91	102	145	166
Nonmetropolitan Illinois	89	108	46	54	42	53
Indiana						
Metropolitan Indiana	190	234	69	82	118	151
Nonmetropolitan Indiana	83	99	43	49	39	50
Iowa						
Metropolitan Iowa	261	288	92	102	165	183
Nonmetropolitan Iowa	88	100	50	58	37	42
Kansas						
Metropolitan Kansas	253	278	88	100	162	176
Nonmetropolitan Kansas	93	114	54	61	38	53
Kentucky						
Metropolitan Kentucky	252	285	84	91	166	191
Nonmetropolitan Kentucky	93	121	45	56	47	64
Louisiana						
Metropolitan Louisiana	226	283	65	86	157	194
Nonmetropolitan Louisiana	68	78	39	43	28	34
Maine						
Metropolitan Maine	229	300	88	115	140	183
Nonmetropolitan Maine	151	195	74	90	76	103
Maryland						
Metropolitan Maryland	311	335	105	112	199	217
Nonmetropolitan Maryland	144	181	53	66	91	114
Massachusetts						
Metropolitan Massachusetts	308	362	105	118	199	240
Nonmetropolitan Massachusetts	134	150	63	67	71	83

**Appendix III: Physicians Per 100,000 People
by State Metropolitan and Nonmetropolitan
Areas, 1991 and 2001**

Areas	Physicians per 100,000 people		Generalists per 100,000 people		Specialists per 100,000 people	
	1991	2001	1991	2001	1991	2001
Michigan						
Metropolitan Michigan	237	273	88	104	145	167
Nonmetropolitan Michigan	106	129	52	60	53	68
Minnesota						
Metropolitan Minnesota	274	296	102	108	169	185
Nonmetropolitan Minnesota	91	114	58	70	31	43
Mississippi						
Metropolitan Mississippi	224	261	73	76	148	183
Nonmetropolitan Mississippi	83	107	40	49	42	58
Missouri						
Metropolitan Missouri	270	292	92	99	174	192
Nonmetropolitan Missouri	90	111	50	60	39	51
Montana						
Metropolitan Montana	236	302	52	82	183	219
Nonmetropolitan Montana	124	157	63	73	59	83
Nebraska						
Metropolitan Nebraska	262	300	88	106	171	192
Nonmetropolitan Nebraska	83	115	49	63	34	52
Nevada						
Metropolitan Nevada	161	180	53	63	106	116
Nonmetropolitan Nevada	44	125	27	60	16	65
New Hampshire						
Metropolitan New Hampshire	161	192	56	72	105	119
Nonmetropolitan New Hampshire	287	353	103	119	180	230
New Jersey						
Metropolitan New Jersey	256	296	97	110	156	184
New Mexico						
Metropolitan New Mexico	247	264	84	97	161	166
Nonmetropolitan New Mexico	99	114	51	55	48	59
New York						
Metropolitan New York	318	357	115	127	200	228
Nonmetropolitan New York	121	149	51	62	67	85

**Appendix III: Physicians Per 100,000 People
by State Metropolitan and Nonmetropolitan
Areas, 1991 and 2001**

Areas	Physicians per 100,000 people		Generalists per 100,000 people		Specialists per 100,000 people	
	1991	2001	1991	2001	1991	2001
North Carolina						
Metropolitan North Carolina	221	257	73	86	145	170
Nonmetropolitan North Carolina	96	125	41	54	54	70
North Dakota						
Metropolitan North Dakota	283	321	95	114	184	203
Nonmetropolitan North Dakota	100	124	55	67	43	54
Ohio						
Metropolitan Ohio	239	274	87	101	149	172
Nonmetropolitan Ohio	92	114	44	57	47	57
Oklahoma						
Metropolitan Oklahoma	220	236	79	87	138	147
Nonmetropolitan Oklahoma	87	96	50	54	36	41
Oregon						
Metropolitan Oregon	234	249	82	92	150	156
Nonmetropolitan Oregon	128	156	58	70	69	84
Pennsylvania						
Metropolitan Pennsylvania	277	317	100	114	173	202
Nonmetropolitan Pennsylvania	133	152	55	66	77	86
Rhode Island						
Metropolitan Rhode Island	250	313	98	115	149	196
South Carolina						
Metropolitan South Carolina	192	241	65	80	124	159
Nonmetropolitan South Carolina	88	120	44	55	43	65
South Dakota						
Metropolitan South Dakota	257	315	84	100	160	212
Nonmetropolitan South Dakota	93	122	54	65	38	54
Tennessee						
Metropolitan Tennessee	255	290	83	95	168	193
Nonmetropolitan Tennessee	77	98	42	52	35	45
Texas						
Metropolitan Texas	195	213	65	73	127	139
Nonmetropolitan Texas	72	81	42	45	29	36

**Appendix III: Physicians Per 100,000 People
by State Metropolitan and Nonmetropolitan
Areas, 1991 and 2001**

Areas	Physicians per 100,000 people		Generalists per 100,000 people		Specialists per 100,000 people	
	1991	2001	1991	2001	1991	2001
Utah						
Metropolitan Utah	203	208	64	70	137	137
Nonmetropolitan Utah	85	115	40	50	43	64
Vermont						
Metropolitan Vermont	388	487	142	179	240	300
Nonmetropolitan Vermont	174	223	76	96	97	126
Virginia						
Metropolitan Virginia	224	257	76	90	144	165
Nonmetropolitan Virginia	112	135	51	62	60	72
Washington						
Metropolitan Washington	222	245	82	90	137	153
Nonmetropolitan Washington	128	152	63	73	63	78
West Virginia						
Metropolitan West Virginia	214	273	78	106	133	164
Nonmetropolitan West Virginia	156	186	67	80	88	103
Wisconsin						
Metropolitan Wisconsin	225	268	78	95	143	171
Nonmetropolitan Wisconsin	107	131	56	68	50	62
Wyoming						
Metropolitan Wyoming	190	223	87	87	103	134
Nonmetropolitan Wyoming	112	150	55	65	57	85

Sources: AMA, AOA, Bureau of Census, and CMS.

Note: Physicians refer to active, nonfederal, patient-care physicians with a known address. The District of Columbia, New Jersey, and Rhode Island do not have nonmetropolitan counties. We could not categorize some physicians as generalists or specialists because there was no information about their specialty in the AMA or AOA Masterfiles. Specifically, records for 7,185 physicians (1 percent) in 1991 and 4,982 physicians (0.7 percent) in 2001 did not have information that would allow us to classify them as generalists or specialists. These physicians are included in the all physicians total but not in the generalist and specialist totals.

Appendix IV: Comments from the Health Resources and Services Administration



DEPARTMENT OF HEALTH & HUMAN SERVICES

Health Resources and Services
Administration

Rockville MD 20857

OCT 24 2003

TO: Director, Health Care-Medicare Payment Issues
FROM: Administrator
SUBJECT: General Accounting Office Draft Report, "PHYSICIAN WORKFORCE: Supply Increased Nationally, But Geographic Disparities Persisted" (GAO-04-124)

Attached please find the Health Resources and Services Administration's comments on this draft report. Staff questions may be referred to Gail Lipton on (301)-443-6509.

A handwritten signature in cursive script, appearing to read "Betty James Duke".

Betty James Duke

**Comments of the Health Resources and Services Administration on the
General Accounting Office Draft Report “PHYSICIAN WORKFORCE: Supply Increased
in Metropolitan and Nonmetropolitan Areas But Geographic Disparities Persisted”**

General Comments

The Health Resources and Services Administration (HRSA) appreciates the opportunity to provide our comments on the General Accounting Office (GAO) draft report, “PHYSICIAN WORKFORCE: Supply Increased in Metropolitan and Nonmetropolitan Areas But Geographic Disparities Persisted.” Overall, the GAO’s report appears to support its conclusion that the disparity in the distribution of physicians in rural and urban areas has narrowed over the past decade but continues to persist.

Specific Comments

-Brief Conclusions Should Be Drawn Even If Recommendations Are Not Made. Alternatively, the Report Should Contain an Explicit Statement at the Beginning of the Report That There Will Be No Analysis of the Findings.

We agree with GAO’s statements on pages four and five of the report, describing the difficulty and variation associated with determining an “appropriate” physician supply for any given geographic area. However, we recommend including a brief conclusions section at the end of the report to make the report more complete. The GAO does not have to make recommendations based on these conclusions. If the report is not intended to provide any analysis of the information delivered, but is intended merely to provide background and context to upcoming deliberations, an explicit statement to that effect should be placed at the beginning of the document so that the reader will know what to expect.

-Rural Populations Still Appear to Be Grossly Underserved.

We note with concern that despite some progress, rural citizens still are served by roughly half as many physicians per 100,000 as the total United States (U.S.) population, with only 12 percent of the decade’s physician population increase going to nonmetropolitan areas. The healthcare workforce in rural areas and related issues that contribute to the problem clearly need continued support and attention. We will continue to support efforts to address the geographic disparities your report conveys to the best of our abilities.

It is important to recognize that geographic measures of physician supply can be a very rough measure of the actual accessibility of physician services in a given area. The history of the Health Professional Shortage Area and Medically Underserved Area designations has shown that many people lack access even in an area with a large number of physicians. This lack of access is often due to economic factors; lack of insurance, Medicaid coverage, or low income in general may prevent many residents from receiving care from many of the physicians in an area. In addition, there may be language and cultural barriers that keep the residents from seeking or receiving appropriate care. While geographic distribution is a useful first, higher level way to

assess supply, it does not tell the entire story.

The study provides data regarding the number and percentage of physicians, their designation as specialists or generalists, and their distribution in metropolitan and nonmetropolitan areas. Despite the study introduction under GAO Highlights section on the first page of the report, the study does not provide additional substance to a discussion on the "adequacy" of that supply or distribution with respect to the health care needs of the U.S. population. The study does not mention disease burden or health insurance coverage rates in those geographic areas studied. The report does mention some of the health care infrastructure factors which affect physician practice, such as access to specialists, but lacks a discussion on the degree to which infrastructure factors such as hospital access are involved.

Based on the disease burden, populations vary with respect to their health care needs and require access to different levels and types of health care services. From HRSA's perspective, a few of the health care infrastructure considerations that affect physicians' ability to provide adequate health care services include: patient access to infectious disease and other tertiary care specialists, adequate Medicaid reimbursement for (HIV/AIDS) primary and specialty patient care encounters and tests, and an adequate supply of nursing and social service professionals. Perhaps a future study could provide additional information useful for a discussion of the physician and health care resources needed to ensure adequate care for the U.S. population.

Related GAO Products

Health Workforce: Ensuring Adequate Supply and Distribution Remains Challenging. [GAO-01-1042T](#). Washington, D.C.: August 1, 2001.

Nursing Workforce: Emerging Nurse Shortages Due to Multiple Factors. [GAO-01-944](#). Washington, D.C.: July 10, 2001.

Nursing Workforce: Multiple Factors Create Nurse Recruitment and Retention Problems. [GAO-01-912T](#). Washington, D.C.: June 27, 2001.

Nursing Workforce: Recruitment and Retention of Nurses and Nurse Aides Is a Growing Concern. [GAO-01-750T](#). Washington, D.C.: May 17, 2001.

Health Care Access: Programs for Underserved Populations Could Be Improved. [GAO/T-HEHS-00-81](#). Washington, D.C.: March 23, 2000.

Community Health Centers: Adapting to Changing Health Care Environment Key to Continued Success. [GAO/HEHS-00-39](#), Washington, D.C.: March 10, 2000.

Physician Shortage Areas: Medicare Incentive Payments Not an Effective Approach to Improve Access. [GAO/HEHS-99-36](#). Washington, D.C.: February 26, 1999.

Health Care Access: Opportunities to Target Programs and Improve Accountability. [GAO/T-HEHS-97-204](#). Washington, D.C.: September 11, 1997.

Foreign Physicians: Exchange Visitor Program Becoming Major Route to Practicing in U.S. Underserved Areas. [GAO/HEHS-97-26](#). Washington, D.C.: December 30, 1996.

National Health Service Corps: Opportunities to Stretch Scarce Dollars and Improve Provider Placement. [GAO/HEHS-96-28](#). Washington, D.C.: November 24, 1995.

Health Care Shortage Areas: Designations Not a Useful Tool for Directing Resources to the Underserved. [GAO/HEHS-95-200](#). Washington, D.C.: September 8, 1995.

Health Professions Education: Role of Title VII/VIII Programs in Improving Access to Care is Unclear. [GAO/HEHS-94-164](#). Washington, D.C.: July 8, 1994.

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