

Supply Dynamics of the Mental Health Workforce: Implications for Health Policy

SUSAN L. IVEY, RICHARD SCHEFFLER,
and JAMES L. ZAZZALI

University of California, Berkeley

THE CURRENT U.S. MENTAL HEALTH WORKFORCE is composed of professionals who have been variously trained in the fields of clinical social work, clinical psychology (master's and doctoral levels), education and counseling (master's-level counseling licenses), and medicine (including psychiatrists, other physicians, and "midlevel" providers like nurse practitioners and certified nurse specialists). In certain treatment settings, such as community mental health centers or substance abuse programs, paraprofessionals with associate-level degrees and lay people without formal training may substitute for, or complement, formally trained and licensed professionals. The educational requirements for mental health professionals have been described well elsewhere (Manderscheid and Sonnenschein 1992). Although we recognize that there are controversies about the degree of substitutability among providers with differing lengths and types of training, we can safely say that these professionals may perform similar duties at certain times. The few published outcomes studies (including one randomized, controlled trial) comparing types of mental health specialists across disciplines demonstrate similar outcomes or utilization of certain modalities of care like antidepressants and length of counseling sessions (Scott et al. 1994; Meredith et al. 1996).

The Milbank Quarterly, Vol. 76, No. 1, 1998
© 1998 Milbank Memorial Fund. Published by Blackwell Publishers,
350 Main Street, Malden, MA 02148, USA, and 108 Cowley Road,
Oxford OX4 1JF, UK.

Overlapping roles within the mental health workforce are not a new phenomenon. Boundaries have changed as providers practicing in the mental health field responded to social and economic trends: the increased demand for mental health treatment following World War II; the community mental health movement of the 1960s; increasing autonomy (including direct, third-party billing) for psychologists and master's-level therapists; deinstitutionalization in the 1980s; reductions in insurance coverage for mental health services; and corporatization (Blum and Redlich 1980; Goldman and Manderscheid 1987; Levine et al. 1989; Buck and Umland 1997). Recent changes in mental health services delivery, such as managed care, have also had a substantial impact on the roles of mental health providers (Anderson and Berlant 1995; Dorwart 1990).

The distribution of workers within mental health organizations suggests an overlapping of the roles and functions of these providers, a phenomenon sometimes referred to as "role diffusion" (Madenlian, Patison, and Saxon 1980). A system in which multiple providers perform similar services is unstable, divisive, and potentially inefficient. Lower-cost providers may erode the market share of higher-cost providers when purchasers perceive that similar services are offered at different prices. Additionally, a focus on substitution of one provider for another threatens to increase the intensity of existing "turf wars" (Cummins 1990). When health professionals are asked about the type of provider most likely to provide the best level of service, they tend to favor their own profession (Koeske, Koeske, and Mallinger 1993). Although providers themselves often feel that their skills are sufficiently differentiated from other types of mental health workers, purchasers, and even clients, may be less aware of such distinctions (Murstein and Fontaine 1993). Critical to the continuing success of each profession will be the ability to define the areas where its particular skills complement and add value to the skills of other groups.

The first section of this article gives an overview of the composition of the mental health workforce. We then synthesize data on growth in supply and geographic distribution of several specialists within the mental health workforce: psychiatrists, clinical psychologists, and clinical social workers. We also discuss the expanding role of clinical nurse specialists in mental health. This is followed by a discussion of specific issues facing the mental health workforce and the mental health care needs of special populations. We conclude with an assessment of the

adequacy of the supply of mental health professionals and the main issues that must be addressed by policy makers.

The Supply of Mental Health Professionals

Physicians

The number of physician specialists in mental health is often estimated as equal to the number of physicians who self-report as psychiatrists to the American Medical Association (AMA). Among allopathic physicians, there were 42,914 total (federal and nonfederal, active and non-active) self-reported child and adult psychiatrists in the AMA master file as of January 1, 1994 (6.3 percent of all allopathic physicians). Of these physicians, nearly 32,000 were adult and child psychiatrists working directly with patients in civilian practices within the 50 states and Washington, D.C. (American Medical Association 1996). These numbers do not include physicians specializing in addiction medicine, who may come from fields like internal medicine and family practice. Additionally, about 650 osteopathic physicians reported in 1995 that their primary practice was an area of mental health, including all osteopathic subspecialties of psychiatry and addiction medicine specialists (American Osteopathic Association 1996). Thus, the combined number of both osteopathic and allopathic physicians in the active practice of psychiatry is over 32,000 (American Medical Association 1996; American Osteopathic Association 1996). The Center for Mental Health Services (CMHS), which used 33,486 as the number of "clinically trained" psychiatrists, estimated that, of this group, 29,603 in the civilian, or nonfederal, category were clinically active (Manderscheid and Sonnenschein 1997). Such variations often depend on which categories are included in counts.

Both allopathic and osteopathic schools turn out low levels of psychiatrists, as only 3 to 4 percent of seniors choose psychiatry (Sierles and Taylor 1995; American Association of Colleges of Osteopathic Medicine 1993). Since 1989, psychiatric residencies have continued a recent trend of being less likely to fill (Sierles and Taylor 1995), although the long-term pattern is cyclic. Initial 1996 match results for the first postgraduate-year (PGY-1) position in psychiatry showed that 4.3 percent of all applicants matched into psychiatry, including both U.S. seniors and other medical school graduates (international and other U.S. medical graduates who may cycle into psychiatry from other fields) (National

Resident Matching Program 1996). Of these PGY-1 matches, only 48.9 percent filled with U.S. medical graduates (USMGs).

The majority of U.S. patients seeking care for mental health conditions will see physicians in a primary care setting (Regier et al. 1993; deGruy 1996), and these physicians are not counted here. Ten to 20 percent of the general population will consult a primary care clinician for a mental health problem annually (deGruy 1996). However, utilization and intensity of service are higher for mental health conditions cared for in the mental health sector (Narrow et al. 1993), a result of the acuity and chronicity of the types of conditions seen by these specialists.

Doctoral-level Psychologists Providing Health Services

There are both doctoral-level (PhD or PsyD) and master's-level psychologists. In addition, some small number of people with degrees like EdD (doctor of education) and DMH (doctor of mental health) will be practicing clinical psychology. We use the term "clinical psychologist" in this article to denote doctoral-level psychologists who provide direct health services regardless of their subspecialty within the broader field of psychology. In some states, individuals without doctoral training may have "grandfathered" into the field, thereby obtaining independent licenses to practice clinical psychology. For all of these reasons, as well as the lack of a national database for doctoral psychologists, the exact number of those clinically trained or active in this category is harder to enumerate than the number of active psychiatrists.

The American Psychological Association (APA) reports over 69,000 U.S. licensed, clinically trained doctoral psychologists (both active and inactive) in 1996, compared with approximately 45,000 in 1983 (APA estimate, 1996). An estimate of clinically active psychologists is 53,060 (Manderscheid and Sonnenschein 1997). The APA calculated that anywhere from 75 to 80 percent of doctoral psychologists worked in clinical practice settings in 1995 (American Psychological Association 1996). Other psychologists are engaged in research and teaching (Manderscheid and Sonnenschein 1990). Currently, there are about 3,000 new graduates of psychology PhDs and PsyD programs each year (APA estimate, 1996), of whom 2,400 received doctorates in the clinical specialties in 1996.

Licensed Clinical Social Workers

Licensed clinical social workers (LCSWs) are a key component of the mental health services delivery system. They have generally received master's-level training in programs that stress family dynamics, psychotherapy, crisis intervention, and a social culture model. The number of clinical workers in this category can only be estimated because their training overlaps with both baccalaureate and nonclinical master's-level social workers who work in other systems (e.g., social welfare, criminal justice) and because the reporting categories used by the Bureau of Labor Statistics are so broad (Bureau of Labor Statistics 1996). In 1991, there were 603,000 workers listed in the total social-work workforce (self-defined "social workers," Bureau of Labor Statistics); an estimate from the BLS for 1995 was 641,000. No centralized, federal-level data are regularly collected on more specific categories (e.g., LCSW).

The American Association of State Social Work Boards (AASSWB) estimates that there are anywhere from 270,000 to 300,000 social workers at the baccalaureate level or above. The narrower category of master's-level workers who meet the strictest definition of clinical social worker (CSW) was estimated at over 101,000 (AASSWB estimate, 1996). The strictest definition includes at least a master's degree and five years of clinical practice (two under direct supervision). From state-level data, the American Board of Examiners in Clinical Social Work (ABECSW) estimates that in 1996 there were from 125,000 to 140,000 clinically trained social workers who fit the strictest definition, although only a small number seek board certification (ABECSW estimate, 1996). A second estimate, based on 1996 data collected from the National Association of Social Workers by the CMHS, concluded that there were 94,218 clinically trained social workers (active and inactive) in the 50 states and the District of Columbia (Manderscheid and Sonnenschein 1997). Estimates made by the NASW for full-time mental health social workers based on their membership survey projected 84,433 social workers of this type (Gibelman and Schervish 1993, 1995). This remains one of the most difficult groups to quantify.

The number of social-work students at all levels increased between 1989 and 1995, and the number of graduates at the master's and doctoral levels has also increased markedly. In 1989, there were 9,509 master's-level graduates in social work and 189 doctoral graduates. By 1995, there were 12,918 master's-level graduates and 279 doctoral grad-

uates in social work (Council on Social Work Education communication, 1996). This represents a 36 percent growth in post-baccalaureate social work graduates since 1989.

Nursing Professionals

Nursing is another core discipline within the mental health workforce. Because many levels of nursing providers work in mental health settings but are not necessarily engaged in the direct provision of clinical services (Manderscheid and Sonnenschein 1997), we chose to focus on two groups of advanced workers: nurse practitioners (NPs) and clinical nurse specialists (CNSs). As of 1992, only 21 percent of all registered nurses had completed additional academic preparation after receiving their initial degree (Moses 1994). Among advanced practice nurses (APNs) there are now formal training programs for clinical nurse specialists in both adult and child psychiatry, a few programs for psychiatric nurse practitioners (PsyNPs), and some family nurse practitioner (FNP) programs that provide focused training in mental health, enabling these FNPs also to function as members of the mental health team. Forty percent of NPs and 99 percent of CNSs hold a master's degree (Moses 1994).

The largest group of the advanced practice nurses recorded in a 1992 survey comprised clinical nurse specialists, estimated at 58,185 in 1992 (U.S. Department of Health and Human Services 1992); however, of these, only 13.5 percent were certified by credentialing bodies like the American Nurses Credentialing Center (ANCC). For this reason, most workforce analyses use the much smaller number of certified CNSs who are employed in clinician roles (11,541 were reported by DHHS to hold a title of clinical nurse specialist). By 1995, a total of 6,800 CNSs were certified in the specialties of adult and child psychiatric nursing (ANCC communication, 1996).

The second largest group of APNs comprised nurse practitioners (48,237 were formally trained as NPs; 27,903 were certified). They are much less likely to work in a mental health setting, thus representing a smaller percentage of the advanced nurse workforce within mental health disciplines. However, NPs are much more likely to be certified (57.8 percent) than CNSs, and their broader-based clinical training offers a skill that complements the skills of other classes of workers in areas like

intake medical evaluation, screening and referral of chronic medical conditions, and monitoring of medical complications of drug treatment (McConnell et al. 1992; Shires and Tappan 1992). Outcomes research on psychiatric nurses at all levels has demonstrated that they are skilled in recognizing mental illness and that their presence improves outcomes on inpatient units, as measured by better patient cognition, less frequent use of restraints, and higher patient satisfaction (Merwin and Mauck 1995).

In 1994, 22 percent of enrollees in graduate psychiatric mental health nursing were in NP programs; 74 percent of these were in advanced clinical practice programs (Manderscheid and Sonnenschein 1997). Thus, it appears that the number of psychiatric NPs may be increasing at a time when the number of mental health CNSs is either growing very slowly or decreasing. The students' choices of NP over CNS programs could reflect the fact that NPs are more frequently included than are CNSs in advanced practice nursing laws (nurse practice acts). Although mental health nurse specialists represent only a fraction of all APNs (0.7 percent of certified NPs and 63 percent of CNSs in 1992), they compose a highly educated resource for the delivery of both inpatient and outpatient care (Washington Consulting Group 1994).

Emerging Professionals in the Mental Health Workforce

A growing number of counselors provide direct clinical services of varying types. Master's-level counselors from various disciplines provide mental health services, including marriage and family counseling, educational counseling, pastoral counseling, and substance abuse counseling. The exact size of the counseling workforce is difficult to measure, but the APA estimated in 1993 that there were 130,000 master's-level counselors licensed at the state level (Kohout 1993). The American Association of Marriage and Family Therapists (AAMFT) estimates that 46,227 workers were licensed to practice marriage and family therapy in 1996 (AAMFT estimate, 1996). The National Board for Certified Counselors (NBCC) estimates that there are nearly 69,800 clinically trained counselors (53,000 of whom are clinically active) (NBCC estimate, 1996). A fuller accounting of the amount of mental health care delivered by these workers, and by physicians from the primary care sector, is needed.

Ideally, those workers not already counted by other methods should be included in policy discussions on supply of needed workers in the area of mental health. Improving data will afford a picture of an integrated mental health workforce.

The Growth in Aggregate Supply of Mental Health Professionals

The overall supply of the mental health workforce has increased significantly over the last decade. In broad terms, we currently have nearly twice as many psychologists as psychiatrists and about twice as many clinical social workers as psychologists in the mental health workforce. There are roughly as many other types of master's-level mental health professionals as master's-level social workers (Cummings 1995). In summary, the 1995 estimates are as follows: 33,000 psychiatrists (allopathic and osteopathic, adult and child, active nonfederal in 50 states and the District of Columbia, excluding trainees); 69,000 doctoral psychologists trained in clinical specialties (a smaller number are clinically active); 125,000 social workers estimated to be fully clinically trained; 46,000 marriage and family counselors estimated as clinically trained; 53,000 other counselors estimated as certified and clinically trained; and 6,800 certified clinical nurse specialists in mental health (clinically trained and certified, although inclusion of noncertified nurse specialists may bring the total 11,000). (See data sources listed in the Appendix.)

Figure 1 shows the growth in particular mental health providers from 1989 to 1995. Over this period, there was an increase of 16 percent in the number of clinically trained social workers, according to NASW surveys. The number of clinically trained psychologists grew by about 23 percent (from 1989 to 1995) (Manderscheid and Sonnenschein 1997). The number of trained psychiatrists during this same time period grew by about 11 percent between 1989 and 1994 (American Medical Association 1996). In 1996, there were 95,000 to 125,000 clinical social workers and roughly 55,000 to 70,000 psychologists; thus there were about half as many psychologists as LCSWs (based on ABECSSW and APA 1996 estimates). The most recently reported population ratios for clinically trained personnel based on total number of providers were 26.7 per 100,000 psychologists and 36.0 per 100,000 clinical social workers (Manderscheid and Sonnenschein 1997). In contrast, in 1995,

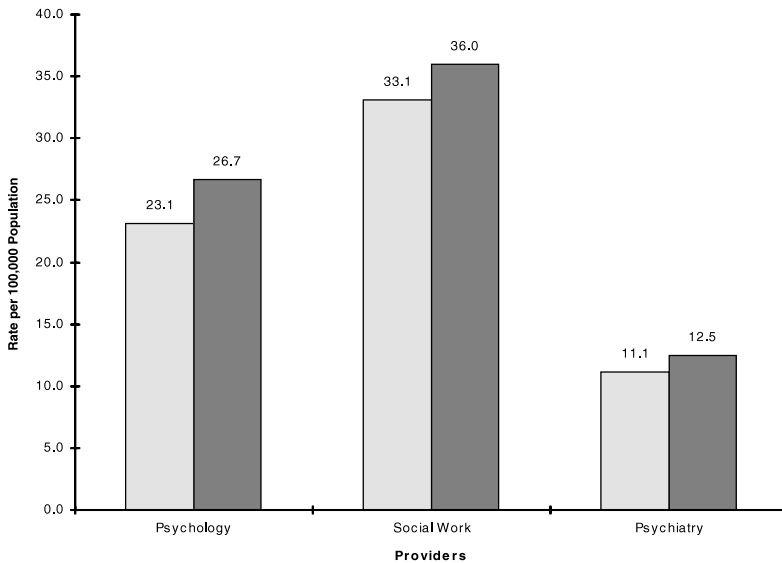


FIG. 1. Growth in mental health providers per 100,000 population from 1989 to 1995. The social work data are for 1996, not 1995. Social work and psychology data reflect clinically trained providers. ■ = 1989; ■ = 1995. Sources: Center for Mental Health Services and the American Medical Association.

the ratio of psychiatrists per 100,000 based on AMA master file data was 12.5 (American Medical Association 1997), roughly half the number of psychologists per 100,000. Ideally, workforce estimates of the total number of clinically active mental health clinicians per 100,000 would include LCSWs, doctoral psychologists, and psychiatrists, as well as the growing numbers of psychiatric APNs, therapists, and counselors providing direct clinical services on a full- or part-time basis.

The Changing Mix and Geographic Distribution of Mental Health Providers

Aggregate trends mask considerable regional variation in the distribution of mental health providers in all categories (figs. 2–4). In 1994, there were just over 12.2 active nonfederal psychiatrists per 100,000 U.S. civilian population (American Medical Association 1996). Varia-

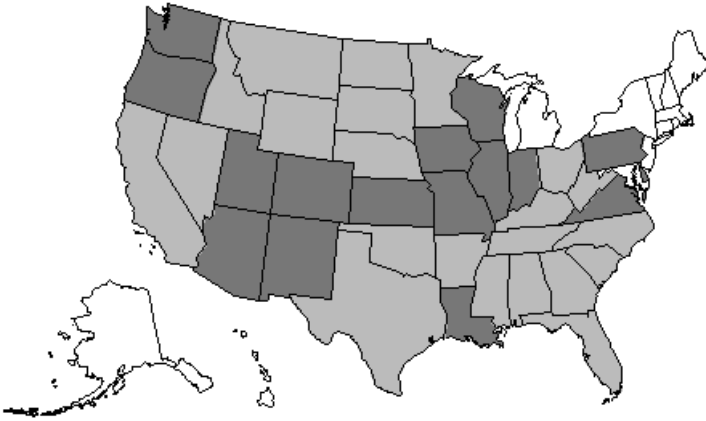


FIG. 2. Clinical social workers per 100,000 population in 1995. The U.S. average was 35.9 per 100,000. Clinical social workers shown here are master's- and/or doctorate-level, clinically trained social workers. The values are reported as number of providers per 100,000 population: ■ = low (11–26); ■ = medium (27–48); □ = high (49–108). Sources: National Association of Social Workers, 1995; Center for Mental Health Services, 1997.

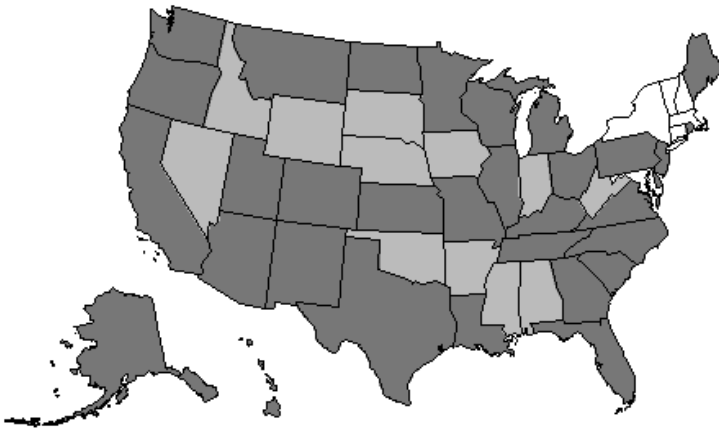


FIG. 3. Psychiatrists per 100,000 population in 1994. The U.S. average was 12.2 per 100,000. Physicians in this file are "self-reported" child and adult psychiatrists. The values are reported as number of providers per 100,000 population: ■ = low (4.5–7.6); ■ = medium (7.7–15.6); □ = high (15.7–55.0). Source: *AMA Physician Characteristics, 1995/1996*.

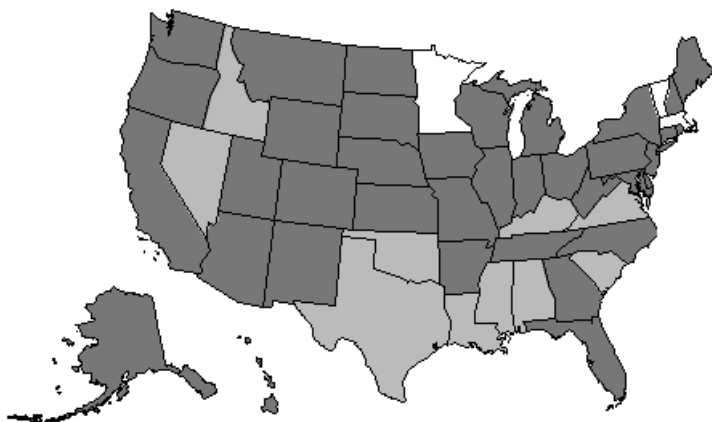


FIG. 4. Doctoral clinical psychologists per 100,000 population in 1995. The U.S. average was 20.2 per 100,000 in that year. Clinical psychologists are doctoral-level, clinically active providers. The values are reported as number of providers per 100,000 population. \square = low (5–11); \blacksquare = medium (11–33); \square = high (33–157). Sources: Center for Mental Health Services, 1997; American Psychological Association Practice Directorate, 1995.

tions in counts often reflect whether trainees or physicians practicing in the U.S. territories are counted as clinically active. Using CMHS data by regions, the 1996 ratio of psychiatrists in New England was 21.3 per 100,000, compared with 6.8 per 100,000 in the East South Central region (Alabama, Kentucky, Mississippi, Tennessee). The national ratio of clinically active psychologists was estimated by CMHS as 20.2 psychologists per 100,000 population in 1996 (Manderscheid and Sonnenschein 1997). In a pattern similar to that of psychiatrists, New England had a ratio of 40.0 and the East South Central region had a ratio of only 10.0 per 100,000 in 1995. Regional difference was more dramatic for clinical social workers. In 1996, the national ratio of clinically trained social workers was estimated to be 35.9 per 100,000 nationally, varying from 76.4 in New England to only 17.6 per 100,000 in East South Central (Manderscheid and Sonnenschein 1997).

States with higher ratios of psychiatrists per 100,000 typically have higher ratios of other types of mental health workers. This trend would appear to reflect a higher demand for mental health services, rather than substitution among mental health workers. A number of possible reasons would explain why regions with higher rates of psychiatrists gen-

erally have higher ratios for other types of mental health providers: regional variation in insurance coverage and state expenditures on health; level of income for both clients and providers; state regulation of licensing and scope of practice; regional preferences for certain types of providers (U.S. Department of Health and Human Services 1997; Pearson 1996). In addition, location of training programs has been shown to account for concentrations of health workers in certain areas (Rosenthal, Rosenthal, and Lucas 1992).

Current Mental Health Workforce Policy Issues

General Issues Affecting All Professionals

All mental health workers are concerned about the growing impact of managed care, both on certain specialty groups (Zimet 1989; Bennett 1993) and on the quality of mental health care for persons with mental illness, particularly ethnic minorities, the Medicaid population, and the elderly. Within the framework of managed care, mental health services can be delivered either by a full-service managed care organization (MCO) or by a managed behavioral health care organization, or “carve-out.” The term carve-out, as used here, refers to niche, or specialized, organizations that solely deliver mental health and/or substance abuse services. Carve-outs contract with HMOs, PPOs, insurers, and self-insured entities and use special cost-control methods like case management and utilization review (Anderson and Berlant 1995). Financing of mental health services within carve-outs may be structured such that the carve-out is a fully, partially, or non-risk-bearing entity (Frank et al. 1996). Current debate centers on whether mental health care is more appropriately delivered within a full-service MCO or through a carve-out MCO (Mechanic 1990; Frank et al. 1996).

Many mental health professionals who are not physicians are now finding employment opportunities within a carve-out setting (Anderson and Berlant 1995). It may be that they are more willing to contract with carve-outs for a discounted fee for service because they have sometimes been excluded from full-service (integrated) HMOs. “Any-willing-provider” laws, which mandate the inclusion of licensed and qualified providers from a variety of fields on MCO panels, may permit more nonphysician providers, particularly LCSWs and APNs, to gain creden-

tials in MCOs. Conversely, some MCOs claim that any-willing-provider laws may restrict their ability to choose the most efficient, highest-quality mental health care providers. Recent data (Anderson and Berlant 1995) and our own unpublished research, however, indicate that the use of all types of mental health providers is now more common within MCOs than in indemnity plans.

Another issue impacting all mental health providers remains the lack of full parity (Frank, Koyanagi, and McGuire 1997). The financing of physical health over mental health persists. Although in 1996 the “parity discussion” arose again in the debate over the Health Insurance Portability and Accountability Act of 1996,¹ the final language only partially addressed the concerns of mental health professionals. An amendment (Domenici–Wellstone) to the VA–HUD appropriations bill,² required that lifetime and annual limits on insurance policies be the same for physical and mental health benefits, but retained the right of employers to disallow certain conditions, set high deductibles or copayments, or restrict the number of visits allowable for certain diagnoses. More recently, the Title XXI amendment to the Social Security Act (SSA), passed in 1997, failed to achieve full parity for mental health services for children.³ Despite documented offsets in medical costs and in lost work time and salary when mental health benefits are provided (an argument for parity in benefits), the concerns over moral hazard dominate such debates (Hennessy and Stephens 1997). As these changes move forward into law, the impact on costs and access will become more clear.

All providers share a concern about offering the best quality of care. Quality improvement and quality assurance activities are now common; performance measures have been adopted by an increasing number of MCOs (e.g., HEDIS reporting) and hospitals, and are financed as part of their administrative activity. Presently there are multiple entities for accrediting organizations that deliver mental health services: the National Committee for Quality Assurance (NCQA); the American Managed Behavioral Healthcare Association (AMBHA); the Joint Commission

¹P.L. 104–204, originally H.R. 3666, became law in September 1996.

²H.R. 3103, often called the Kennedy–Kassebaum bill, was signed into law in August 1996 as P.L. 104–191.

³State Children’s Health Insurance Program (Social Security Act, Title XXI, Subtitle J, § 2103) was part of the Budget Reconciliation Act of 1997.

for the Accreditation of Healthcare Organizations (JCAHO), among others. Each of these organizations has recommended certain quality indicators to monitor care of persons with mental illness (Minden and Hassol 1996). Monitoring quality indicators was less common under the earlier FFS private practice model. Where quality and outcomes are equivalent among different workers for specific diagnoses (Scott et al. 1994), lower-paid workers offer economic efficiencies. Where quality of care is clearly not similar, as was previously demonstrated for primary care providers (Wells et al. 1989; Wells and Sturm 1995), complementary roles for mental health specialists can improve patient care (Katon 1997).

Issues for Psychiatrists

In this article, we have made an arbitrary delineation between “physicians” and “nonphysicians” in order to facilitate discussion of the different policies that concern these groups. As specialist physician providers in the field of mental health, psychiatrists are faced with a set of considerations that do not affect other mental health professionals. Unlike other groups that see the number of graduates in their field growing, psychiatrists must address the falling rate of U.S. medical graduates who are training within the specialty of psychiatry. Although the total number of psychiatrists has grown, the percentage of the physician workforce practicing psychiatry has declined. This reflects the decreasing numbers of medical students choosing a career in psychiatry (National Resident Matching Program 1996).

An ongoing topic of debate is whether to move in the direction of revitalizing student interest in psychiatry or to begin reducing psychiatric residency slots in order to accommodate the reduced interest of USMGs. Recent recommendations for reducing residency positions target international medical graduates (IMGs), a move that is likely to have a greater impact on psychiatry (Lohr, Vanselow, and Detmar 1996). At least one analysis, of non-mental-health house staff, suggests that replacing IMGs with hospital-based clinicians like advanced practice nurses and physician assistants could cost more (Green and Johnson 1995). Similar analyses of the cost of utilizing other types of mental health professionals in hospital-based environments would inform discussions of residency reductions in psychiatry.

Recommendations to reduce the number of IMGs as a method of creating a smaller physician workforce are not new. When the 1976 Health Professions Education Assistance Act passed, it proposed reductions in graduates of foreign medical schools in a manner similar to recent recommendations made by the Pew Commission and the Association of American Medical Colleges (1995). At least one state, Michigan, examined the possible impact of the 1976 law and concluded that USMGs would be unable to replace the needed psychiatric workforce in that state. At that time, the psychiatry profession had already reported that it depended on IMGs as a primary source of psychiatrists (Day et al. 1978). Similarly, current psychiatric training programs have come to rely on IMGs to fill residency slots left vacant by USMGs. Since 1990, the number of IMGs entering psychiatric residencies has increased by 64.7 percent (Manderscheid and Sonnenschein 1997).

Whitcomb and Miller reported that, in 1993, of the 20,170 first-year residents in six core specialties, 31.8 percent were IMGs (based on AMA files). In psychiatry, IMGs made up 49.5 percent of all first-year residents (Whitcomb and Miller 1995). Of the principal teaching hospitals nationwide, 106 of 688 were characterized as dependent on IMG labor. A number of these hospitals (77) were considered to have a disproportionate share of poor patients, which suggests that reductions in the IMG residency workforce could reduce levels of care to populations that are already underserved (Mick and Lee 1997). This leaves open the important question of who would provide mental health services to the poor. It is critical to assess the potential impact of large-scale cutbacks in psychiatric residencies in order to preserve safety net services to vulnerable populations.

The psychiatry profession will need to redefine which services constitute its unique domain (e.g., psychopharmacology, psychiatric/neurological differential diagnostics, consultation/liason with non-specialists). Psychiatry must decide whether to continue its current level of residency training or to accept the changing composition of the mental health workforce, with psychiatrists ceding certain tasks to other physicians and other types of mental health professionals. It is commonly recognized that a significant amount of mental health care is provided by primary care physicians (deGruy 1996). Up to 40 percent of primary care patients have a diagnosable mental disorder, as defined by the *Diagnostic and Statistical Manual (DSM)*; however, many, if not most, of these patients present to the primary care phy-

sician with a physical complaint (Kroenke et al. 1994). The need to sort through a number of physical and emotional diagnoses certainly contributes to underdiagnosis of mental disorders in this population. One-half to two-thirds of patients meeting the *DSM* criteria for mental disorders are likely to be unrecognized in the primary care setting (Kirmayer et al. 1993; Mechanic 1990). Thus, psychiatrists might take up the critical task of improving the training of primary care providers in the diagnosis and treatment of mental illness, collaborating with them as well to enhance the quality of care available to patients who present to (and often prefer to remain in) a primary care setting (Katon et al. 1997; Salazar 1996; Badawi, Kramer, and Eaton 1996; Lazarus 1995).

Issues for Other Mental Health Providers

Supply issues are a concern for nonphysicians as well. The numbers of doctoral psychology graduates and graduates from MSW and other master's-level programs remain high. Are there, and will there continue to be, enough clinical jobs for these graduates (Robiner 1991)? New roles have emerged within managed care organizations for NPs and PAs in other medical specialties (Hooker 1993). Will a similar phenomenon occur for mental health professionals?

Other clinicians continue to be affected by state laws that exclude nonphysicians from either independent practice or prescriptive authority or both. Theoretically, mental health workers could assume many of the duties currently performed by psychiatrists, except for prescriptive privilege. NPs' and PAs' substitution ratios for primary care physicians range from .50 to .75 (meaning that the midlevel provider can perform 50 to 75 percent of the physician's duties) (Record et al. 1980). There has been an ongoing debate on the issue of prescriptive privileges for other categories of workers, including psychologists, psychiatric CNSs, NPs, and PAs. In some states, nurse practitioners and other advanced practice nurses have independent prescriptive privileges (Pearson 1996; Washington Consulting Group 1994). Although about 14 states and the District of Columbia have granted independent prescriptive privileges to NPs, in certain states the clinical nurse specialist has not been specifically recognized as an advanced practice nurse with rights to independent practice. In other states, however, nursing providers may

be practicing independently in a manner similar to other master's-trained counselors, with the ability to bill directly for their services (independent enrollment). Thirty-nine states and the District of Columbia specifically include CNSs in the language of the Nurse Practice Act (Pearson 1996). Some states also specifically recognize psychiatric CNSs within the regulation of prescriptive authority (26 states and the District of Columbia), permitting them a scope of practice that varies between independent and supervised prescribing. Hospital admission privileges have not always been granted to NPs in states with expanded nurse practice acts (Timmons and Ridenour 1993).

While the scope of practice laws for nurse practitioners has rapidly evolved, change has occurred more slowly during this decade for doctoral-level psychologists. This group has enjoyed an independent scope of practice in all 50 states and the District of Columbia since 1977, the year it achieved statutory recognition (Cummings 1990). Independent reimbursement legislation was an issue during the late 1960s, and by 1990 all but eight states granted direct billing through freedom-of-choice statutes requiring health insurers also to reimburse qualified psychologists if psychiatrists are reimbursed (Cummings 1990). In the area of prescriptive privileges for doctoral psychologists, many experiments have been tried, including the doctorate in mental health (DMH) program in California (Wallerstein 1991) and the demonstration prescriptive training program funded by the Department of Defense from 1990 to 1996 (U.S. General Accounting Office 1997; American Psychological Association 1997). However, no state currently allows doctoral psychologists to prescribe medication. California, Hawaii, and Missouri all unsuccessfully introduced legislation for such prescriptive privileges in 1996 (APA communication, 1996).

Some within the medical profession are concerned about the extension of prescriptive authority to nonphysicians. Psychotropic medications may have high side-effect profiles and can lead to a potentially serious drug interactions. Physicians have raised the issue of whether limited training or prescriptive authority programs are in the patient's best interest. Realistic discussion of such concerns among interest groups may lead to the development of broader standardized training curricula for specific providers that permit more comprehensive prescriptive authority, with its concomitant educational, medicolegal, and registration requirements. The cost-effectiveness of psychopharmacological training for nonphysician workers remains a separate question.

There are both gender and ethnic implications in substituting other types of workers for more highly educated and trained professionals. Physicians and doctoral psychologists are more likely to be male and white, although both workforces are much less male dominated than in the past. Conversely, the social work and psychiatric nursing workforces are heavily female (78 percent for social work, 94 percent for CNS) (Gibelman and Schervish 1993; Washington Consulting Group 1994). The increasing reliance on social workers and nurses could affect the gender mix of the mental health workforce, as could the rising numbers of women in the fields of psychiatry and psychology. Both trends will lead to a workforce that is more female, regardless of the substitution between classes of workers that stems from wage differentials (particularly as the “wage gap” narrows for certain professionals) (Hummel and Pirzada 1994). The feminization of various professional groups could have additional implications for workforce planning (Simpson and Weiser 1996). The degree of substitution that occurs between types of professionals and the rate of feminization still remain to be seen.

During the 1960s and 1970s, there was a move toward use of non-professionals for delivery of mental health services, a trend called deprofessionalization. This trend tends to increase the numbers of minority and female health workers (Himmelstein et al. 1996). The increase in workforce diversity that accompanies deprofessionalization has attendant changes that may be welcomed by consumers, particularly women and ethnic minority patients, who may choose a provider with whom they can share a sense of identity. The strength of a deprofessionalized workforce has been that workers have experiences in common with their clients. Often the workers have a direct knowledge of the community, including language skills and cultural connections. While this is important factor, it is equally critical to ensure appropriate scope of practice and availability of adequate consultation resources to guarantee timely, high-quality care for more complex cases. More recent data from CMHS have documented a shift toward “reprofessionalization” (Manderscheid and Sonnenschein 1994).

Vulnerable Mental Health Populations

A consideration of the changes now occurring in the mental health workforce must also take into account their potential impact on vul-

nerable populations. Subpopulations often have distinct needs for mental health services (Hu et al. 1991). The elderly, ethnic minorities, children, and persons with severe mental illness clearly need specialized patterns of care. Workforce needs may also be different for urban and rural settings (Office of Technology Assessment 1990). A close look at the large numbers of mental health specialists of various types (over 400,000) may raise questions about the adequacy of the national mental health workforce when subjected to a needs-based analysis (Faulkner and Goldman 1997). There are shortages of providers available to special populations, often related to growing numbers within subpopulations. Additionally, these groups tend to underutilize services, compared with less disadvantaged groups of people (Dellasega 1991; Sue et al. 1991; Manderscheid and Sonnenschein 1994). Thus, whereas general supply trends might suggest a future oversupply of a given mental health specialist, a more microeconomic view would suggest the need to reallocate various mental health specialists into areas where demand for care remains high and the supply of providers is low.

The Elderly

The mental health needs of the elderly illuminate the interplay between supply dynamics and the potential effects of supply on a subpopulation. More attention has been focused on the physical needs of the elderly than on their mental health needs. As the average U.S. life expectancy increases, the elderly population is growing at an unprecedented rate. In 1990, there were 31 million Americans older than 65; this figure is expected to reach 52 million by the year 2020 (Estes and Bodenheimer 1994). On sheer numbers alone, it is likely that the special mental health needs of the elderly could overwhelm the supply of trained geriatric clinicians. Empirical evidence suggests that even the current needs of the elderly for mental health services are unmet. Several studies indicate that 2 to 4 percent of mental health providers' practice time is devoted to the elderly (Dellasega 1991). Yet it is estimated that 15 to 25 percent of the elderly have mental impairment. One study of elderly people in nursing homes found that although two-thirds of the elderly residents studied had a mental disorder (including dementia), only 4.5 percent had received mental health treatment within a one-month period, and only 2.3 percent had received treatment from a mental health

specialist (Burns et al. 1993). Considering these documented needs, the delivery of services seems suboptimal.

Part of the reason that mental health needs are unmet is that reimbursement is uneven; insurers favor reimbursement of physical conditions over mental health needs (Dellasega 1991). This lack of parity for mental health reimbursement continues despite evidence documenting an offset in medical costs for physical ailments when mental health needs are appropriately addressed. An example of medical offset, which is particularly relevant for elderly populations, is exemplified by dementia, a condition that can be caused by a myriad of both physical and mental ailments. One of psychiatry's contributions has been the recognition that depression in the elderly can present as dementia. The ability to sort a treatable condition, depression, from chronic dementia of a less treatable nature can avoid long-term-care costs related to inappropriate treatment or misdiagnosis.

Ageism may also be a factor in the underserving of mental health needs of the elderly. Patients who perceive that a provider is reluctant to care for the elderly may be discouraged from pursuing treatment for mental health or life-adjustment disorders (Dellasega 1991). Furthermore, the elderly themselves may harbor negative attitudes toward mental illness. Other factors that contribute to underservice of the elderly are the deinstitutionalization movement of the 1980s and the placement of nonelderly persons with chronic mental illness into nursing homes (Meeks et al. 1990). A misallocation of nursing-home resources can result when persons with severe mental illness are placed in settings originally designed for the care of elderly persons.

Rural–Urban Maldistribution of Providers

Approximately one-quarter of all Americans lives in rural areas (Human and Wasem 1991). Even though the problem of adequate physical health care of rural Americans has received increasing attention in recent years, their mental health needs have been less publicized. Many researchers suggest that the unique economic, geographic, and sociocultural characteristics of rural America compound the challenge of addressing the mental health needs of rural residents, which are not currently being met. The probability of using mental health services was found to be

generally lower in rural areas (Scheffler and Watts 1986), even after controlling for the percentage of physicians who are psychiatrists. Mental health providers tend to be concentrated in urban areas, and those who are available in rural areas are more likely to be hospital based, thus indicating that providers are less available to meet the needs of the rural populations (Human and Wasem 1991).

A study from Minnesota exemplifies such imbalances: for the 20 southwestern counties of this state, with a combined population of 20,000, only one practicing private psychiatrist was present in the area during the study period (Meyer 1990). Other mental health professionals were not considered. The ability of rural residents to access mental health services is also a challenge, as they often have to travel long distances in order to obtain services and they have no public transportation on which to rely (Human and Wasem 1991). Some researchers have suggested that lack of transportation is far less likely to pose a problem for middle- and upper-class families than for poorer ones (Meyer 1990). Other barriers, like language and cultural differences, can represent unique problems for minorities living in rural areas that lack providers possessing the cultural competence or bilingual skill needed to care for them.

In assessing the mental health service needs of rural residents, one must also consider whether the services offered are acceptable or congruent with local values (Human and Wasem 1991). Components of the problem may include residents' perceptions of mental illness or may lie with the urban orientation or training of the provider. Stigma also plays a role in refusal of mental health care. Although not unique to the rural setting, this factor may be exacerbated by the relative lack of anonymity in seeking services (Meyer 1990).

Other factors hindering access to care stem from rural demographics and economic conditions, as this population is more likely to be poor, elderly, and chronically ill (Human and Wasem 1991). Rural areas often have economies with boom and bust cycles, another factor in underutilization of services by residents and a barrier to provider recruitment and retention. The economic decline of rural America in Minnesota in the 1980s resulted in many families losing their insurance coverage and thus any insured access to mental health services (Meyer 1990). During this time it is likely that mental health needs were higher, as many types of mental disorders, from adjustment dis-

orders to depression, would be expected to increase after losing one's livelihood and property.

Racial and Ethnic Minorities

An assessment of mental health utilization for Asian, African, Mexican, and white Americans found that Asian ethnic minorities underutilized mental health services (Sue et al. 1991). Some studies have demonstrated that ethnic congruence between patient and therapist was associated with higher numbers of outpatient visits for African Americans (Padgett et al. 1994) and certain groups of Asians (Ying and Hu 1994). Other studies have shown problems in the diagnosis of schizophrenia and affective disorders in minorities that suggest that certain symptoms may be more common in certain ethnic groups, but they do not necessarily indicate major disorders (Jones and Gray 1986). Language barriers and racism may represent special obstacles to appropriate diagnosis and treatment in certain populations (Flaskerud 1986). Inpatient care and the use of psychotropic medication may substitute for outpatient care in certain ethnic groups (Segal 1996).

Explanations abound for the lower utilization of outpatient mental health services by certain minorities. Acculturation effects, specific cultural beliefs, and reliance on nontraditional healers likely contribute to this pattern. One interesting investigation used an analytic path model, showing that socioeconomic class, not minority ethnic status, along with life stress and depression, predicted utilization of professional mental health care (Briones et al. 1990). In this study, Hispanic ethnic minorities who were wealthier, and thus buffered from the effects of poverty, used the mental health system when they needed it in a pattern similar to whites. Thus, a determining factor in utilization may be the socioeconomic status and not the race or ethnicity of the client per se. Another factor in the utilization of mental health services is educational level, which often correlates with socioeconomic status (Badawi, Kramer, and Eaton 1996).

Persons with Severe Mental Illness

Estimates of the number of individuals classified with severe mental illness (SMI) vary. However, one investigator has estimated that at least

1 percent of the U.S. population has SMI (Rupp 1991). Estimates for the total costs of SMI vary as well, but in 1985 the figure was estimated to be \$103.7 billion (Rupp 1991). In terms of mental health care access and utilization, the largest problems for this population are insufficient insurance coverage and indigence (Frank 1989). The number of uninsured mentally ill was estimated to be about 300,000 in 1989 (Rupp 1991). Because of the chronicity of these diseases, availability of long-term care (LTC) is critical. Often there are annual and lifetime limits on mental health benefits, so it is not uncommon for persons with chronic mental illness to use up any benefits they do have, placing them at higher risk for uninsured care and for Medicaid eligibility. Thus, persons with SMI are more likely to use public resources like Medicaid. Escalating Medicaid costs provide an incentive for using managed care in this population, but quality-of-care concerns must be addressed.

Children and Adolescents

The Graduate Medical Education National Advisory Committee (GMENAC) report from the 1980s focused on the critical shortage of child psychiatrists. GMENAC used a needs-based method to forecast psychiatric workforce needs, which it projected as an additional 12,000 child and adult psychiatrists by 1990; the shortage of child psychiatrists was more acute (Pardes and Pincus 1983). This type of detailed estimate has not been conducted for other professions within mental health. Later reports (Council on Graduate Medical Education, Second and Third reports) reiterated a need for child psychiatrists (Rivo and Satcher 1993). These projected shortages were based on expected increases in the use of mental health services that would exceed the supply of both child and adult psychiatrists (a needs-based analysis). It is estimated that 3 to 5 percent of all school-aged children may have severe emotional disorders, yet less than 1 percent of these children have been identified as requiring special education (Manderscheid and Sonnenschein 1994). This suggests that professionals with specific pediatric mental health training are needed from all disciplines.

Whereas a managed-care model often depends on primary care physicians as gatekeepers, many primary care providers, including pediatricians, receive little training in detection or treatment of mental illness in children (Wells et al. 1989). Additionally, some studies have shown

that primary care physicians may identify fewer psychiatric problems in children that are later identified by psychological testing than do concerned parents (Dulcan et al. 1990). In another study, less than 50 percent of children identified with mental illness were referred to specialists, although it was not clear whether referral patterns reflected a lack of specialists in a given referral pool or the failure of primary care providers to provide appropriate referrals (Hankin and Starfield 1986). The care of children with mental illness, including treatment for substance abuse, may be significantly enhanced by collaboration among gatekeepers, mental health specialists, and parents.

The 1997 amendment to the Social Security Act (Title XXI), increasing access to health insurance for uninsured children, gives states a great deal of latitude in the specific mental health services that must be provided, allowing states to benchmark against a federal employee package, a state employee package, or the package of the largest non-Medicaid managed care organization within that state. Appropriate inclusion of state-level funding of child mental health services would likely encourage more providers to specialize in this area of care and to serve low-income children and their families, a group that has traditionally had less access to mental health services.

Conclusions

Several different categories of workers provide mental health services. The overall supply of these professionals is increasing over time and is punctuated by geographic variations. Furthermore, certain categories, like clinical social workers and psychologists, are growing more rapidly than others. Parity in mental health benefits and any-willing-provider-law policies may address the misallocation and substantial regional variation in supply of certain mental health professionals.

The data for current workforce levels of each category of worker are collected from a variety of sources because no centralized national database exists for licensed nonphysician providers (LCSW, doctoral psychologist, marriage and family counselors). Such a database is a necessary first step toward achieving accurate estimates of clinically active providers that do not overcount professionals who may be licensed in more than one state or who have retired.

Economists and policy analysts disagree on which methodology provides the best estimate of workforce needs. Such projections can be based on market demand or employ needs-based estimates, using prevalence of disease and projections of the expected population size and distribution (Hart et al. 1997; Goodman et al. 1996; Weiner 1994; Reinhardt 1996; Pardes and Pincus 1983). Recent workforce projections have used HMO data as a benchmark (Schroeder 1996; Weiner et al. 1996). Our data suggest strong growth of the mental health workforce and of opportunities for employment, leading to the conclusion that, except for psychiatrists, we have not yet reached a position of oversupply among most categories of workers. However, certain markets with high ratios of providers to population or high penetration of managed care may approach saturation sooner than others. The demand for psychiatrists appears stable. The demand for psychologists may be moderating slightly, and it has continued to increase for clinical social workers and other master's-level workers like advanced practice nurses.

No matter which model is used, estimates of the needed workforce must take into account the shift toward managed care and its potential impact on meeting the mental health care needs of populations that underutilize services (Sue et al. 1991). Estimates of workforce needs must not be limited to a managed care paradigm but, rather, must incorporate an awareness that the current, non-managed-care safety net protects vulnerable groups. A managed care model focusing primarily on cost savings to the exclusion of quality of care is not likely to serve persons with severe mental illness well.

A separate issue continues to be the need to demonstrate which workforce configurations provide the best quality of care. Multiple private sector accreditation organizations promote various quality measures (NCQA, AMBHA, JCAHO), including provider profiling. Standardized performance indicators have been recommended by the Mental Health Statistics Improvement Program (Minden and Hassol 1996). Although participation in such processes is sometimes voluntary, employers purchasing coverage and the federally funded programs are entitled to require such reporting. Future attention should be paid to ensuring that outcomes and other quality measures can be stratified across provider types. Any differentials that are uncovered and that persist over time may warrant direct access legislation, enabling patients to access a specialist of their choice.

Policy Considerations

Public policy makers must recognize that the mental health workforce is growing and has absorbed a large number of workers who are not physicians. Differences in the geographic distribution of mental health workers suggest that legal restrictions on scope of practice at the state level, differences in reimbursement policy for different provider groups, and organizational changes (like managed care penetration) may affect the mix and supply of mental health workers. States with less restrictive laws may create a mechanism that would reallocate workers to meet the needs of underserved and special populations and provide a more cost-effective supply of mental health workers, but further research is needed on how to do this. Broadening the scope of practice of various providers while maintaining the quality of mental health services will be the challenge.

We offer the following policy recommendations:

- Maintain flexible use of nonphysician providers via “any-willing-provider” laws and expanded state practice acts that allow professionals to maximize the use of demonstrated skills and competencies.
- Advocate that federal and state-level modifications of health care coverage (e.g., those resulting from the VA–HUD appropriations bill, the Health Insurance Portability and Accountability Act, and the Title XXI amendment to the Social Security Act) include parity in mental health financing.
- Implement a standardized national health care workforce database that is updated annually.
- Standardize mental health quality indicators, including stratification across provider types and cultural competency and language access standards. Require use of these for accreditation and federal reimbursement of care for Medicare and Medicaid beneficiaries. Encourage employers to demand mental health quality reporting.
- Expand funding of mental health services research so that the cost-effectiveness and optimal mix of various mental health providers across organization types can be determined.

References

- American Association of Colleges of Osteopathic Medicine. 1993. *AACOM 1993 Annual Statistical Report*, ed. A. Singer. Rockville, Md.

- American Medical Association. 1996. *AMA Physician Characteristics and Distribution in the US*, 1995/96 edition. Chicago.
- . 1997. *AMA Physician Characteristics and Distribution in the US*, 1996/97 edition. Chicago.
- American Osteopathic Association. 1996. *1995 Physician Biography File*. Washington, D.C.
- American Psychological Association, Practice Directorate. 1996. *The Committee for the Advancement of Professional Practice: CAPP Practitioner Survey Results*. Washington, D.C.
- . 1997. Rebuttal of GAO conclusions on Psychopharmacology Demonstration Project. Washington, D.C.
- Anderson, D., and J. Berlant. 1995. Managed Mental Health and Substance Abuse Services. In *Essentials of Managed Health Care*, ed. P. Kongstvedt. Gaithersburg, Md.: Aspen.
- Association of American Medical Colleges. 1995. *AAMC Data Book: Statistical Information Related to Medical Education*. Washington, D.C.
- Badawi, M., M. Kramer, and W. Eaton. 1996. Use of Mental Health Services by Households in the United States. *Psychiatric Services* 47(4):376–80.
- Bennett, M. 1993. Views from the Bridge: Reflections of a Recovering Staff Model HMO Psychiatrist. *Psychiatric Quarterly* 64:45–75.
- Blum, J., and F. Redlich. 1980. Mental Health Practitioners: Old Stereotypes and New Realities. *Archives of General Psychiatry* 37:1247–53.
- Briones, D., P. Heller, H. Chalfant, A. Roberts, S. Aguirre-Hauchbaum, and W. Farr. 1990. Socioeconomic Status, Ethnicity, Psychological Distress, and Readiness to Utilize a Mental Health Facility. *American Journal of Psychiatry* 147:1333–40.
- Buck, J., and B. Umland. 1997. Covering Mental Health and Substance Abuse Services. *Health Affairs* 16(4):120–6.
- Bureau of Labor Statistics. 1996. Website Estimate of Social Workers in the Total Work Force, 1995. Washington, D.C. (<http://www.bls.gov>).
- Burns, B., R. Wagner, J. Taube, J. Magaziner, T. Permutt, and R. Landerman. 1993. Mental Health Service Use by the Elderly in Nursing Homes. *American Journal of Public Health* 83:331–7.
- Cummings, N. 1990. The Credentialing of Professional Psychologists and Its Implications for the Other Mental Health Disciplines. *Journal of Counseling and Development* 68:485–90.
- . 1995. Impact of Managed Care on Employment and Training: A Primer for Survival. *Professional Psychology: Research and Practice* 26:10–15.
- Day, H., D. Smith, N. Enzer, D. Knesper, and C. Mowbrey. 1978. The Impact of the Health Professions Act on State Mental Health Systems. *Hospital and Community Psychiatry* 29(2): 127–31.

- deGruy, F. 1996. Appendix D: Mental Health Care in the Primary Care Setting. In *Primary Care: America's Health in a New Era*, eds. M. Donaldson et al. Washington, D.C.: National Academy Press.
- Dellasega, C. 1991. Meeting the Mental Health Needs of Elderly Clients. *Journal of Psychosocial Nursing* 29(2):10–14.
- Dorwart, R. 1990. Managed Mental Health Care: Myths and Realities in the 1990's. *Hospital and Community Psychiatry* 41:1087–91.
- Dulcan, M., E. Costello, A. Costello, C. Edelbrock, D. Brent, and S. Janiszewski. 1990. The Pediatrician as Gatekeeper to Mental Health Care for Children: Do Parents' Concerns Open the Gate? *Journal of the American Academy of Child and Adolescent Psychiatry* 29:453–8.
- Estes, C., and T. Bodenheimer. 1994. Paying for Long-Term Care. *Western Journal of Medicine* 160(1): 64–9.
- Faulkner, L., and C. Goldman. 1997. Estimating Psychiatric Manpower Requirements Based on Patients' Needs. *Psychiatric Services* 48:666–70.
- Flaskerud, J. 1986. Diagnostic and Treatment Differences among Five Ethnic Groups. *Psychological Reports* 58:219–35.
- Frank, R. 1989. The Medically Indigent Mentally Ill: Approaches to Financing. *Hospital and Community Psychiatry* 40:9–12.
- Frank, R., H. Huskamp, T. McGuire, and J. Newhouse. 1996. Some Economics of Mental Health "Carve Outs." *Archives of General Psychiatry* 53:933–7.
- Frank, R., C. Koyanagi, and T. McGuire. 1997. The Politics and Economics of Mental Health "Parity" Laws. *Health Affairs* 16(4):108–19.
- Gibelman, M., and P. Schervish. 1993. *Who We Are: The Social Work Labor Force as Reflected in the NASW Membership*. Washington, D.C.: NASW Press. (Chapters 1,2, and 7 [tables and text] discuss workforce structure within the subgroup of clinical social workers.)
- . 1995. Practice Areas and Settings of Social Workers in Mental Health. *Psychiatric Services* 46:1237.
- Goldman, H., and R. Manderscheid. 1987. Chronic Mental Disorders in the United States. In *Mental Health, United States, 1987*, eds. R. Manderscheid and S. Barrett. DHHS pub no. (ADM) 87-1518. Washington, D.C.: U.S. Department of Health and Human Services.
- Goodman, D., E. Fisher, T. Bubolz, J. Mohr, J. Poage, and J. Wennberg. 1996. Benchmarking the US Physician Workforce: An Alternative to Needs-based or Demand-based Planning. *Journal of the American Medical Association* 276:1811–17.
- Green, B., and T. Johnson. 1995. Replacing Residents with Mid-level Practitioners: A New York City-Area Analysis. *Health Affairs* 14(2):192–8.

- Hankin, J., and B. Starfield. 1986. Epidemiologic Perspectives on Psychosocial Problems in Children. In *Child Health Behavior: A Behavioral Pediatrics Perspective*, eds. N. Krasnegor, J. Araaseth, and M. Cataldo. New York: Wiley.
- Hart, G., E. Wagner, S. Pirzada, A. Nelson, and R. Rosenblatt. 1997. Physician Staffing Ratios in Staff-Model HMOs: A Cautionary Tale. *Health Affairs* 16(1):55–70.
- Hennessy, K., and S. Stephens. 1997. Mental Health Parity: Clarifying Our Objectives. *Psychiatric Services* 48(2): 61–4.
- Himmelstein, D., J. Lewontin, and S. Woolhandler. 1996. Medical Care Employment in the United States, 1968 to 1993: The Importance of Health Sector jobs for African Americans and Women. *American Journal of Public Health* 86:525–8.
- Hooker, R. 1993. The Role of the Physician Assistants and Nurse Practitioners in a Managed Care Organization. In *The Role of Physician Assistants and Nurse Practitioners in Primary Care*, eds. D. Clawson and M. Osterweis. Washington, D.C.: Association of Academic Health Centers.
- Hu, T., L. Snowden, J. Jerrell, and T. Nguyen. 1991. Ethnic Populations in Public Mental Health: Services Choice and Level of Use. *American Journal of Public Health* 81:1429–34.
- Human, J., and C. Wasem. 1991. Rural Mental Health in America. *American Psychologist* 46(3):232–9.
- Hummel, J., and S. Pirzada. 1994. Estimating the Cost of Non-Physicians Providers in Primary Care Teams in an HMO: Where Would the Savings Begin? *HMO Practice* 8(4):162–4.
- Jones, B., and B. Gray. 1986. Problems in Diagnosing Schizophrenia and Affective Disorders among Blacks. *Hospital and Community Psychiatry* 37(1):61–5.
- Katon, W., M. Von Korff, E. Lin, et al. 1997. Collaborative Management to Achieve Depression Treatment Guidelines. *Journal of Psychiatry* 58(suppl. 1):20–3.
- Kirmayer, L., J. Robbins, M. Dworkind, and M. Yaffe. 1993. Somatization and the Recognition of Depression and Anxiety in Primary Care. *American Journal of Psychiatry* 150:734–41.
- Koeske, G., R. Koeske, and J. Mallinger. 1993. Perceptions of Professional Competence: Cross-disciplinary Ratings of Psychologists, Social Workers, and Psychiatrists. *American Journal of Orthopsychiatry* 63(1):45–54.
- Kohout, J. 1993. Employment Opportunities in Psychology: Current and Future Trends. Presentation for the American Psychological Association Practice Directorate, August, Washington, D.C.

- Kroenke, K., R. Spitzer, J. Williams, et al. 1994. Physical Symptoms in Primary Care. Predictors of Psychiatric Disorders and Functional Impairment. *Archives of Family Medicine* 3:774–9.
- Lazarus, A. 1995. The Role of Primary Care Physicians in Managed Mental Health Care. *Psychiatric Services* 46(4):343–5.
- Levine, S., R. Rosen, T. Kennon, and D. Anderson. 1989. Corporatization and Community Health Services. *Administration and Policy in Mental Health* 17(2):67–77.
- Lohr, K., N. Vanselow, and D. Detmar. Eds. 1996. *The Nation's Physician Workforce: Options for Balancing Supply and Requirements*. Washington, D.C.: National Academy Press.
- Madenlian, R., M. Pattison, and S. Saxon. 1980. Economic Viability of the Mental Health Worker. *Hospital and Community Psychiatry* 31(5):328–31.
- Manderscheid, R., and S. Sonnenschein. Eds. 1990. *Mental Health, United States, 1990*. Rockville, Md.: Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services.
- . 1992. *Mental Health, United States, 1992*. Rockville, Md.: U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services.
- . 1994. *Mental Health, United States, 1994*. Rockville, Md.: U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services.
- . 1997. *Mental Health, United States, 1996*. Rockville, Md.: U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services.
- McConnell, S, et al. 1992. Primary Health Care in the CMHC: A Role for the Nurse Practitioner. *Hospital and Community Psychiatry* 43: 724–7.
- Mechanic, D. 1990. Treating Mental Illness: Generalist versus Specialist. *Health Affairs* 9(4):61–75.
- Meeks, S. et al. 1990. Mental Health Needs of the Chronically Mentally Ill Elderly. *Psychology in Aging* 5(2):163–71.
- Meredith, L., K. Wells, and P. Camp. 1994. Clinician Specialty and Treatment Style for Depressed Outpatients with and without Medical Comorbidities. *Archives of Family Medicine* 3:1065–72.
- Meredith, L., K. Wells, S.H. Kaplan, and R.M. Mazel. 1996. Counseling Typically Provided for Depression. Role of Clinician Specialty and Payment System. *Archives of General Psychiatry* 53:905–12.

- Merwin, E., and A. Mauck. 1995. Psychiatric Nursing Outcome Research: The State of the Science. *Archives of Psychiatric Nursing* 9(6):311–31.
- Meyer, H. 1990. Rural America: Surmounting the Obstacles to Mental Health Care. *Minnesota Medicine* 73(8):24–32.
- Mick, S., and S. Lee. 1997. The Safety Net Role of International Medical Graduates. *Health Affairs* 16(4):141–50.
- Minden, S., and A. Hassol. 1996. Final Review of Available Information on Managed Behavioral Health Care. (A special report prepared by Abt Associates for the U.S. Center for Mental Health Services.) Rockville, Md.: U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration.
- Moses, E. 1994. *The Registered Nurse Population: Findings from the 1992 National Sample Survey of Registered Nurses*. Rockville, Md.: Bureau of Health Professions, Division of Nursing, Health Resources and Services Administration.
- Murstein, B, and P. Fontaine. 1993. The Public's Knowledge about Psychologists and Other Mental Health Professionals. *American Psychologist* 48:839–45.
- Narrow, W., D. Regier, D. Rae, R. Manderscheid, and B. Locke. 1993. Use of Services by Persons with Mental and Addictive Disorders. Findings from the NIMH Epidemiologic Catchment Area Program. *Archives of General Psychiatry* 50(2):95–107.
- National Resident Matching Program. 1996. *NRMP Program Results—1996 Match and NRMP Data*. (March.) Washington, D.C.
- Office of Technology Assessment. 1990. *Health Care in Rural America*. OTA-H-434. Washington, D.C.: U.S Congress.
- Padgett, D., C. Patrick, B. Burns, and H. Schlesinger. 1994. Ethnicity and the Use of Outpatient Mental Health Services in a National Insured Population. *American Journal of Public Health* 84:222–6.
- Pardes, H., and H.A. Pincus. 1983. Report of the GMENAC and Health Manpower Development: Implications for Psychiatry. *Archives of General Psychiatry* 40:97–102.
- Pearson, L. 1996. Annual Update of How Each State Stands on Legislative Issues Affecting Advanced Nursing Practice. *Nurse Practitioner* 21(1):10–70.
- Record, J., M. McCally, S. Schweitzer, R. Blomquist, and B. Berger. 1980. New Health Professions after a Decade and a Half: Delegation, Productivity, and Costs in Primary Care. *Journal of Health Politics, Policy, and Law* 5:470–95.
- Regier, D., W. Narrow, D. Rae, R. Manderscheid, B. Locke, and F. Goodwin. 1993. The de facto US Mental and Addictive Disorders

- Service System. Epidemiologic Catchment Area Prospective 1-Year Prevalence Rates of Disorders and Services. *Archives of General Psychiatry* 50(2):85–94.
- Reinhardt, U. 1996. The Economic and Moral Case for Letting the Market Determine the Health Workforce. In *The US Health Workforce: Power, Politics, and Policy*, eds. M. Osterweis et al. Washington, D.C.: Association of Academic Health Centers.
- Rivo, M., and D. Satcher. 1993. Improving Access to Health Care through Physician Workforce Reform. *Journal of the American Medical Association* 270:1074–8.
- Robiner, W. 1991. How Many Psychologists Are Needed? A Call for a National Psychology Human Resource Agenda. *Professional Psychology: Research and Practice* 22(6):427–40.
- Rosenthal, T.C., G.L. Rosenthal, and C. Lucas. 1992. Factors in the Physician Practice Location Puzzle: A Survey of NY State Residencies Training Family Practitioners. *Journal of the American Board of Family Practice* 5(3):265–73.
- Rupp, A. 1991. Underinsurance for Severe Mental Illness. *Schizophrenia Bulletin* 17:401–5.
- Salazar, W. 1996. Management of Depression in the Outpatient Office. *Medical Clinics of North America* 80:431–55.
- Scheffler, R., and C. Watts. 1986. Determinants of Inpatient Mental Health Use in a Heavily Insured Population. *Journal of Human Resources* 21:338–58.
- Schroeder, S. 1996. How Can We Tell Whether There Are Too Many or Too Few Physicians? The Case for Benchmarking. *Journal of the American Medical Association* 276:1841–3.
- Scott, J., C.A. Moon, C.V. Blacker, and J.M. Thomas. 1994. AIF Scott and CPL Freeman's "Edinburgh Primary Care Depression Study." *British Journal of Psychiatry* 164(3):410–15.
- Segal, S. 1996. Race, Quality of Care, and Antipsychotic Prescribing Practices in Psychiatric Emergency Services. *Psychiatric Services* 47(3):282–6.
- Shires, B., and T. Tappan. 1992. The Clinical Nurse Specialist as Brief Psychotherapist. *Perspectives in Psychiatric Care* 28(4):15–18.
- Sierles, F., and M. Taylor. 1995. Decline of US Medical Student Career Choice of Psychiatry and What to Do about It. *American Journal of Psychiatry* 152:1416–26.
- Simpson, M., and M. Weiser. 1996. Studying the Impact of Women on Osteopathic Workforce Predictions. *Journal of the American Osteopathic Association* 96(2):106–11.

- Sue, S., D. Fujino, L. Hu, D. Takeuchi, and N. Zane. 1991. Community Mental Health Services for Ethnic Minority Groups: A Test of the Cultural Responsiveness Hypothesis. *Journal of Consulting and Clinical Psychology* 59:533–40.
- Timmons, G., and N. Ridenour. 1993. Restraint of Trade Implications for Nurse Practitioners: Denial of Hospital Admitting or Staff Privileges. *Journal of the American Academy of Nurse Practitioners* 5(4):175–8.
- U.S. Department of Health and Human Services. 1992. *Health Personnel in the United States: Eighth Report to Congress, 1991*. DHHS pub. no. HRS-P-OD-92–1. Washington, D.C.
- . 1997. *Health: United States, 1996–97*. DHHS pub. no. (PHS) 97-1232. Hyattsville, Md.: National Center for Health Statistics.
- U.S. General Accounting Office. 1997. Defense Health Care. HEHS-97-83. Rockville, Md. (www.gao.gov).
- Wallerstein, R. Ed. 1991. *The Doctorate in Mental Health: An Experiment in Mental Health Professional Education*. Lanham, Md.: University Press of America.
- Washington Consulting Group. 1994. *Survey of Certified Nurse Practitioners and Clinical Nurse Specialists: December, 1992*. Washington, D.C. (Special report prepared for the Division of Nursing, Bureau of Health Professions, U.S. Department of Health and Human Services.)
- Weiner, J. 1994. Forecasting the Effects of Health Reform on US Physician Workforce Requirements: Evidence from HMO Staffing Patterns. *Journal of the American Medical Association* 272:222–30.
- Weiner, J., C. McLaughlin, and S. Gamliel. 1996. Extrapolating HMO Staffing to the Population at Large. In *The US Health Workforce: Power, Politics, and Policy*, eds. M. Osterweis et al. Washington, D.C.: Association of Academic Health Centers.
- Wells, K., R. Hays, M. Burnam, W. Rogers, S. Greenfield, and J.E. Ware. 1989. Detection of Depressive Disorder for Patients Receiving Prepaid or Fee-for-Service Care. Results from the Medical Outcomes Study. *Journal of the American Medical Association* 262:3298–302.
- Wells, K., and R. Sturm. 1995. Care for Depression in a Changing Environment. *Health Affairs* 14(3):78–89.
- Whitcomb, M., and R. Miller. 1995. Participation of IMG's in Graduate Medical Education and Hospital Care for the Poor. *Journal of the American Medical Association* 274:696–9.
- Ying, Y., and L. Hu. 1994. Public Out-Patient Mental Health Services: Use and Outcome among Asian Americans. *American Journal of Orthopsychiatry* 64:448–55.

Zimet, C. 1989. The Mental Health Care Revolution: Will Psychology Survive? *American Psychologist* 44:703-8.

Acknowledgments: The authors would like to acknowledge the contributions of the following individuals: AHCPR trainee John Hillman and NIMH trainee Martin Marciniak, for research assistance; Wil Yu, for technical and computer assistance; and Franci Duitch, for editorial help on earlier manuscripts. In addition, we would like to thank three anonymous reviewers who provided a constructive critique of an earlier manuscript. The research support for Dr. Ivey and Mr. Zazzali came from NIMH traineeship number T32 MH 18828-10. Part of Dr. Scheffler's support for this project came from the Center on Financing of Care for the Severely Mentally Ill under grant number P50 MH 43694-10.

Address correspondence to: Susan L. Ivey, MD, MHSA, Center for Family and Community Health, 140 Warren Hall, University of California, Berkeley, CA 94720. (e-mail: sliveymd@socrates.berkeley.edu)

Appendix

Estimates for the data in this section were obtained from the following sources: American Board of Examiners in Clinical Social Work, 1996; American Psychological Association, 1995; American Association of Marriage and Family Therapists, 1996 (licensed); National Board of Certified Counselors, 1996 (active); and the American Nurses Credentialing Center, 1994 (the number of active clinical nurse specialists is higher, but no trend figures exist); American Medical Association, 1996 (nonfederal, active child and general psychiatrists in the 50 states and Washington, DC, excluding residents and fellows); American Osteopathic Association, 1996.