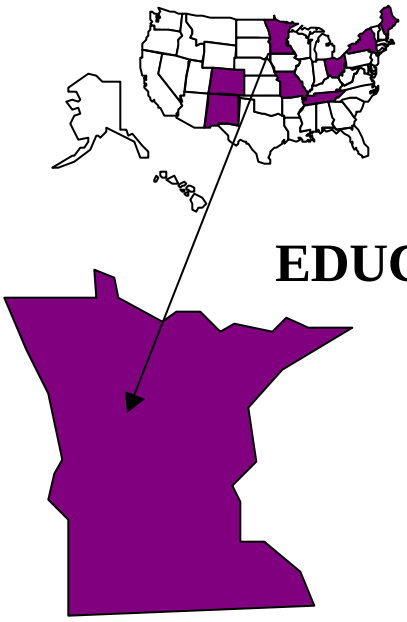

THE HEALTH CARE WORKFORCE IN EIGHT STATES: EDUCATION, PRACTICE AND POLICY

Spring 2002

MINNESOTA

TABLE OF CONTENTS

The Health Care Workforce in Eight States: Education, Practice and Policy

PROJECT DESCRIPTION

Historically, both federal and state governments have had a role in developing policy to shape the health care workforce. The need for government involvement in this area persists as the private market typically fails to distribute the health workforce to medically underserved and uninsured areas, provide adequate information and analysis on the nature of the workforce, improve the racial and ethnic cultural diversity and cultural competence of the workforce, promote adequate dental health of children, and assess the quality of education and practice.

It is widely agreed that the greatest opportunities for influencing the various environments affecting the health workforce lie within state governments. States are the key actors in shaping these environments, as they are responsible for:

- financing and governing health professions education;
- licensing and regulating health professions practice and private health insurance;
- purchasing services and paying providers under the Medicaid program; and
- designing a variety of subsidy and regulatory programs providing incentives for health professionals to choose certain specialties and practice locations.

Key decision-makers in workforce policy within states and the federal government are eager to learn from each other. This initiative to compile in-depth assessments of the health workforce in 8 states is an important means of insuring that states and the federal government are able to effectively share information on various state workforce data, issues, influences and policies.

Products of this study include individual health workforce assessments for each of the eight states and a single assessment that compares various data and influences across the eight states. In general, each state assessment provides the following:

1) A summary of health workforce data, available resources and a description of the extent the state invests in collecting workforce data. [Part of this information has been provided by the Bureau of Health Professions];
2) A description of various issues and influences affecting the health workforce, including the state's legislative and regulatory history and its current programs, financing and policies affecting health professions education, service placement and reimbursement, planning and monitoring, and licensure/regulation;
3) An assessment of the state's internal capacity and existing strategies for addressing the above workforce issues and influences; and
4) An analysis of the policy implications of the state's current workforce data, issues, capacity and strategies.

The development of the project's data assimilation strategy, content and structure was guided by an expert advisory panel. Members of the advisory panel included both experts in state workforce policy (i.e., workforce planners, researchers and educators) and, more broadly, influential state health policymakers (i.e., state legislative staff, health department officials). The advisory panel has helped to ensure the workforce assessments have an appropriate content and effective format for dissemination and use by both state policymakers and workforce experts/officials.

STUDY METHODOLOGY

Study Purpose and Audience

Key decision-makers in workforce policy within states and the federal government are eager to learn from each other. Because states increasingly are being looked to by the federal government and others as proving grounds for successful health care reform initiatives, new and dynamic mechanisms for sharing innovative and effective state workforce strategies between states and with the federal government must be implemented in a more frequent and far reaching manner. This initiative to compile comprehensive capacity assessments of the health workforce in 8 states is an important means of insuring that states and the federal government are able to effectively share information on various state workforce data, issues and influences.

Each state workforce assessment report is not intended to be voluminous; rather, information is presented in a concise, easy-to-read format that is clearly applicable and easily digestible by busy state policymakers as well as by workforce planners, researchers, educators and regulators.

Selection of States

NCSL, with input from HRSA staff, developed a methodology for identifying and selecting 8 states to assess their health workforce capacity. The methodology included, but was not limited to, using the following criteria:

a. States with limited as well as substantial involvement in one or more of the following areas: statewide health workforce planning, monitoring, policymaking and research;
b. States with presence of unique or especially challenging health workforce concerns or issues requiring policy attention;
c. States with little involvement in assessing health workforce capacity despite the presence of unique or especially challenging health workforce concerns or issues requiring policy attention;
d. Distribution of states across Department of Health and Human Services regions;
e. States with Bureau of Health Professions (BHPr) - supported centers for health workforce research and distribution studies;
f. States with primarily urban and primarily rural health workforce requirements; and
g. States in attendance at BHPr workforce planning workshops or states that generally have interest in workforce modeling.

Collection of Data

NCSL used various means of collecting information for this study. Methods exercised included:

a. Phone and mail interviews with state higher education, professions regulation, and recruitment/retention program officials;
b. Custom data tabulations by national professional trade associations and others (i.e., Quality Resource Systems, Inc.; Johns Hopkins University School of Public Health) with access to national data bases;
c. Tabulations of data from the most recent edition of federal and state government databases (e.g., National Health Service Corps field strength);
d. Site visit interviews with various officials in the ten profile states;
e. Personal phone conversations with other various state and federal government officials;
f. Most recently available secondary data sources from printed and online reports, journal articles, etc.; and
g. Comments and guidance from members of the study's expert advisory panel.

STATE SUMMARY

Minnesota's growing metropolitan population is offset by a significant rural population. Just 10 percent of the state's population are minority or ethnic in nature. Minnesota's population also has a much lower proportion of persons without health insurance than nationwide, and a percentage of those living in primary care and dental health professional shortage areas (HPSAs) that is well below the national average.

Although Minnesota's number of physicians, physician assistants and nurse practitioners per 100,000 population is below the U.S. average, the state's ratio of nurses, pharmacists, dentists and dental hygienists exceeds the national average. The percentage of physicians practicing primary care and the proportion of registered nurses employed in nursing are significantly above national amounts.

Like other states, Minnesota has experienced major economic expansion in recent years. Employment growth in the health care industry has been well above overall job growth in state, fueling a gap in the number of jobs and the available workforce. The demand for health workers and the gap between supply and demand is expected to continue. For example, recent reports have found serious shortfalls in the current supply of pharmacists, nurses, dentists and medical technology specialists. In recent years, the state has its increased efforts to track changes in the health workforce climate.

Significant efforts have been made in recent years to address health workforce shortages statewide. One collaborative effort is the Minnesota Health Professions Workforce Partnership which sponsored a series of regional forums across the state in 2001 intended to highlight problems and concerns, gather data to share with state lawmakers, and encourage local and regional thinking about potential solutions. Initial efforts to obtain state funding to support this initiative failed. The Minnesota Hospital Association has also formed a task force to develop solutions. In addition, the University of Minnesota Academic Health Center is seeking federal and state funds to establish an Area Health Education Center program in the state.

State lawmakers have also become more aware and attentive of health workforce shortage issues. Minnesota has established or expanded several initiatives aimed at improving health workforce supply and access to care in rural and other underserved communities. Continuing to seek solutions to the workforce shortage with additional resources from state government will be problematic. In 2001, a weeks-long budget impasse between the governor and legislature that threatened to shut down state government ultimately resulted in a tax cut that significantly reduced state funds for current (not to mention new) programs.

Although the state's overall supply of physicians is less than national figures, the problem in Minnesota is largely one of distribution. A current lack of consensus exists on which specialties have greater shortages. The proportion of medical school graduates who choose family medicine is twice the national average.

An August 2001 Department of Economic Security report states the number of nurse vacancies in institutional settings to be 3,000—one-third of these are outside the greater Minneapolis area. The number of current registered and licensed practical nurses licensed in Minnesota not employed in nursing who are willing to return promptly to the nurse workforce is very small—less than second percent.

Over 20 percent of Minnesota's dentists are expected to retire in the next 10 years and a small proportion of dentists provide a significant level of service to Medicaid recipients. The growing shortage of dentists is most acute in rural Minnesota. In 2001, despite pending budget constraints, significant legislation was passed to support an increase in dental workforce capacity and encourage recruitment of dentists to rural and underserved areas.

I. WORKFORCE SUPPLY AND DEMAND

Arguably, it is most important initially to understand the marketplace for a state's health care workforce. How many health professionals are in practice statewide and in medically underserved communities? What are the demographics of the population served? How is health care organized and paid for in the state? This section attempts to answer some of these questions by presenting state-level data collected from various sources.

Table I-a.

POPULATION		MN	U.S.
Total Population (2000)		**4,919,479**	281,421,906
Sex (2000)	% Female	**50.5**	50.9
	% Male	**49.5**	49.1
Age (2000)	% less than 18	**26.2**	25.7
	% 18-64	**61.7**	61.9
	% 65 or over	**12.1**	12.4
% Minority/Ethnic (1997-99)		**10.3**	29.1
% Metropolitan (2000)*		**70.4**	79.9

* As defined by the U.S. Office of Management and Budget

Sources: U.S. Census Bureau, AARP.

Only 10% of Minnesota's population are minorities. Seventy percent of state residents live in metropolitan areas.

Table I-b.

PROFESSION UTILIZATION	MN	U.S.
% Adults who Reported Having Routine Physical Exam Within Past Two Years (1997)	**81.9**	83.2 (Median)
Average # of Retail Prescription Drugs per Resident (1999)	**8.7**	9.8
% Adults who Made Dental Visit in Preceding Year by Annual Family Income (1999):		
Less than $15,000	**N/A**	
$15,000 - $34,999	**N/A**	
$ 35,000 or more	**N/A**	

N/A = Data was not available

Sources: CDC, AARP, GAO.

Fewer Minnesota adults reported having routine physical exams within the past two years than the national average.

Table I-c.

ACCESS TO CARE		MN	U.S.
% Non-elderly (under age 65) Without Health Insurance	1999-2000	**9**	16.0
	1997-1999	**10**	18.0
% Children Without Health Insurance	1999-2000	**8**	12.0
	1997-1999	**8**	14.0
% Not Obtaining Health Care Due to Cost (2000)		**7.7**	9.9
% Living in Primary Care HPSA (2001)		**15.7**	19.9
# Practitioners Needed to Remove Primary Care HPSA Designation (2001)		**138**	--
% Living in Dental HPSA (2001)*		**5.4**	13.7
# Practitioners Needed to Remove Dental HPSA Designation (2001)		**36**	--

HPSA = Health Professional Shortage Area
* It is commonly believed that there are additional areas in the state that may be eligible to receive HPSA designation.

Sources: KFF, AARP, BPHC-DSD.

Minnesota has a lower proportion of children and non-elderly who are uninsured than the U.S. average. The state also has a smaller proportion of people living in primary care HPSAs and a much lower proportion of people living in dental HPSAs.

Table I-d.

PROFESSIONS SUPPLY				
Profession		**# Active Practitioners**	**# Active Practitioners per 100,000 Population**	
			MN	**U.S.**
Physicians (1998)		**8,809**	**186.8**	198
Physician Assistants (1999)		**417**	**8.7**	10.4
Nurses	RNs (2000)	**47,102**	**957**	782
	LPNs (1998)	**16,690**	**353.1**	249.3
	CNMs (2000)	**138**	**2.9**	2.1
	NPs (1998)	**850**	**18.0**	26.3
	CRNAs (1997)	**894**	**19.1**	8.6
Pharmacists (1998)		**3,330**	**70.5**	65.9
Dentists (1998)		**2,452**	**51.9**	48.4
Dental Hygienists (1998)		**3,140**	**66.4**	52.1
% Physicians Practicing Primary Care			**37.0** (30.0 U.S.)	
% Registered Nurses Employed in Nursing			**85.8** (81.7 U.S.)	
% of MDs Who Are International Medical Graduates (IMGs)			**11.0** (24.0 U.S.)	

RN= Registered Nurse, LPN= Licensed Practical Nurse, CNM= Certified Nurse Midwife, NP= Nurse Practitioner
CRNA= Certified Registered Nurse Anesthetist

Source: HRSA-BHPr.

Minnesota has a higher percentage of physicians practicing primary care and a higher percentage of registered nurses employed in nursing than the U.S. as a whole.

Table I-e.

NATIONAL HEALTH SERVICE CORPS (NHSC) FIELD STRENGTH			
Total Field Strength (FY 2001) * Includes mental/behavioral health officials	% in Urban Areas	% in Rural Areas	# Per 10,000 Population Living in HPSAs
44	**33**	**67**	**0.57** (0.49 U.S.)

Field Strength by Profession	
Physicians	**17**
Nurses	**4**
Physician Assistants	**6**
Dentists/Hygienists	**0**

HPSA= Health Professional Shortage Area

Source: BHPrNHSC.

Minnesota has more NHSC professionals per 10,000 population living in HPSAs than the U.S. as a whole.

Table I-f.

MANAGED CARE				
Penetration Rate of Commercial and Medicaid HMOs (as % of total population), 2000			**MN**	**U.S.**
			27.8	28.1
Profession	MCOs required by state to include profession on their provider panel*	Profession allowed by state to serve as primary care provider in MCOs	Profession allowed by state to coordinate primary care as part of a standing referral	Profession allowed by state to engage in collective bargaining with MCOs
Physicians	**No**	**No**	**No**	**No**
Nurses	**No**	**No**	**No**	**No**
Pharmacies	**Yes** (independent Pharmacists)	**No**	**No**	**No**
Dentists	**No**	**No**	**No**	**No**
State requires certain individuals enrolled in MCOs to have direct access to certain specialty (OB/GYN, etc.) providers.				**Yes**
State requires certain individuals enrolled in MCOs to receive a standing referral to a specialist (OB/GYN, etc.).				**Yes**

MCOs = Managed Care Organizations HMOs = Health Maintenance Organizations OB/GYN = Obstetrician/Gynecologist

* This requirement does not preclude MCOs from including additional professions on their provider panels.

Sources: HPTS, AARP.

Approximately 28% of Minnesota residents receive their health care from an HMO.

Table I-g.

REIMBURSEMENT OF SERVICES					
	Profession	% Active Practitioners Enrolled	% Enrolled Receiving Annual Payments Greater Than $10,000[1]	Increase of 10% or More in Overall Payment Rates 1995-2000	Bonus or Special Payment Rate for Practice in Rural or Medically Underserved Area
Medicaid	Physicians	*****	**20**	**No**	**No**
	NPs	*****	**65**	**No**	**No**
	Dentists	**87.8**	**30**	**No**	**No**
	# of Enrolled Pharmacies				**986**
	% Change in Physician Fees (All Services), 1993-1998				**1.27**
	Recent State-Mandated Payment Increases				**Yes** (Physicians, Dentists, unspecified)
Medicare	# Active Practitioners Enrolled (2000)				**9,508**
	% Practitioners who Accept Fee as Full Payment (2001)				**79.9**

[1] Generally seen as an indicator of significant participation in the Medicaid program.
[2] Denominator number from HRSA State Health Workforce Profile, December 2000.
* Numerator data for physicians and nurse practitioners from state Medicaid agencies were unusable: many professionals were apparently double-counted, perhaps due to varying participation in different health plans.

Sources: State Medicaid programs, Norton and Zuckerman "Trends", HPTS, AARP.

Nearly 90% of Minnesota's dentists are enrolled in Medicaid, but just 30% of them receive more than $10,000 annually in payments.

II. HEALTH PROFESSIONS EDUCATION

State efforts to help ensure an adequate supply of health professionals can be understood in part by examining data on the state's health professions education programs–counts of recent students and graduates, amounts of state resources invested in education, and other factors. State officials can gauge how well these providers reflect the state's population by also examining how many students and graduates are state residents or minorities. Knowing to what extent states are also investing in primary care education and how many medical school graduates remain in-state to complete residencies in family medicine is also important.

Table II-a.

UNDERGRADUATE MEDICAL EDUCATION			
# of Medical Schools *(Allopathic and Osteopathic)*	**3**	Public Schools	**2**
		Private Schools	**1**
		Osteopathic Schools	**0**
# of Medical Students *(Allopathic and Osteopathic)*	1997-1998	**1149**	
	1999-2000	**1113**	
# Medical Students per 100,000 Population[1]	1999-2000	**22.6**	
% Newly Entering Students (*Allopathic)* who are State Residents, 1999-2000		**80.4**	
Requirement for Students in Some/All Medical Schools to Complete a *Primary Care Clerkship*	By the State	**No**	
	By Majority of Schools	**Yes**	
# of Medical School Graduates *(Allopathic and Osteopathic)*	1998	**284**	
	2000	**275**	
# Medical School Graduates per 100,000 Population[1]	2000	**5.6**	
% Graduates *(Allopathic)* who are Underrepresented Minorities, 1994-1998		**6.45** (10.5 U.S.)	
% 1987-1993 Medical School Graduates *(Allopathic)* Entering Generalist Specialties		**35.2** (26.7 U.S.)	
State Appropriations to Medical Schools *(Allopathic and Osteopathic)*, 1999-2000	Total	**$ 65.9 million**	
	Per Student	**$ 59,237**	

[1] Denominator number is state population from 2000 U.S. Census.

Sources: AAMC, AAMC Institutional Goals Ranking Report, AACOM, Barzansky et al. "Educational Programs", State higher education coordinating boards.

Eighty percent of newly entering medical school students are state residents. Only 6% of medical school graduates in Minnesota are underrepresented minorities.

Table II-b.

GRADUATE MEDICAL EDUCATION (GME)		
# of Residency Programs *(Allopathic and Osteopathic)*, 1999-2000[1]		**148**
# of Physician Residents *(Allopathic and Osteopathic)*, 1999-2000[1]		**1984**
# Residents Per 100,000 Population, 1999-2000		**40.3**
% Allopathic Residents from In-State Medical School, 1999-2000		**27.9**
% Residents who are International[2] Medical Graduates, 1999-2000		**20.3** (26.4 U.S.)
Requirement to Offer Some or All Residents a *Rural Rotation*	By the State	**No**
	By Most Primary Care Residencies	**No**
State Appropriations for Graduate Medical Education, 2000-2001[4,5]	Total	**Data not available**
	Per Resident	**Data not available**
Medicaid Payments for Graduate Medical Education, 1998[3]		**$ 39 million**
	Payments as % of Total Medicaid Hospital Expenditures	**14.7** (7.4 U.S.)
	Payments Made Directly to Teaching Programs Under Capitated Managed Care	Yes
	Payments Linked to State Workforce Goals/ Goals of Improved Accountability	**No**
Medicare Payments for Graduate Medical Education, 1998[3]		**$ 88.17 million**

[1] Includes estimated number of osteopathic residencies/residents not accredited by the Accreditation Council for Graduate Medical Education.
[2] Does not include residents from Canada.
[3] Explicit payments for both direct and indirect GME cost.
[4] Funds largely are for graduate education.
[5] Dollar amounts refer largely to funding for family medicine training programs. However, these funds that flow directly to teaching hospitals are not necessarily earmarked by the state for graduate medical education.

Sources: AMA, AMA State-level Data, AACOM, State higher education coordinating boards, Henderson "Funding", Oliver et al. "State Variations."

Neither the state of Minnesota nor most primary care residencies require training programs to offer some or all physician residents a rural rotation.

Table II-c.

FAMILY MEDICINE RESIDENCY TRAINING			
# of Residency Programs, 2001	**12**	# Residencies Located in Inner City	**7**
		# Residencies Offering Rural Fellowships or Training Tracks	**0**
# of Family Medicine Residents, 1999-2000			**64**
# Family Medicine Residents per 100,000 Population, 1999-2000[1]			**1.3**
% Graduates *(from state's Allopathic and Osteopathic medical schools)* who were First Year Residents in Family Medicine, 1995-2000			**27.7** (14.8 U.S.)
% Graduates *(from state's Allopathic medical schools)* Choosing a Family Medicine Residency Program Who Entered an In-State Family Medicine Residency, 1995-2000			**62.9** (48.1 U.S.)
State Appropriations for Family Medicine Training,[2] 1995-1996		Total	**$6.8 million**
		Per Residency Slot	**$ 66,430**

[1] Denominator number is state population from 2000 U.S. Census.

[2] Dollar amounts refer largely to funding family medicine training programs. However, these funds that flow directly to teaching hospitals are not necessarily earmarked by the state for graduate medical education.

Sources: AAFP, AAFP State Legislation, Kahn et al., Pugno et al. and Schmittling et al. "Entry of U.S. Medical School Graduates".

Nearly 30% of Minnesota's medical school graduates were first year residents in family medicine in the late 1990s.

Table II-d.

NURSING EDUCATION				
# of Nursing Schools	**26**	Public Schools		**19**
		Private Schools		**7**
# of Nursing Students[1] 1998-2000	**4,182**	# Associate Degree, 1998-1999		**1736**
		# Baccalaureate Degree	1998-1999	**1902**
			1999-2000	**1837**
		# Masters Degree	1998-1999	**512**
			1999-2000	**614**
		# Doctoral Degree	1998-1999	**32**
			1999-2000	**35**
	# Per 100,000 population[2]			**85.0**
# of Nursing School Graduates[1] 1999-2000	**1,804**	# Associate Degree, 1999		**807**
		# Baccalaureate Degree	1999	**757**
			2000	**694**
		# Masters Degree	1999	**231**
			2000	**191**
		# Doctoral Degree	1999	**9**
			2000	**12**
	# Per 100,000 population[2]			**36.7**
State Appropriations to Nursing Schools *(Baccalaureate, Masters and Doctoral)*, 1998-1999	Per Student: **$8,056** (2 schools reporting)			

[1] Annual figure for Associate, Baccalaureate, Masters and Doctoral students/graduates for most recent years available.
[2] Denominator number is the state population from the 2000 U.S. Census.

Sources: NLN, AACN, State higher education coordinating boards.

The number of nursing school graduates in Minnesota's baccalaureate and masters degree programs declined slightly between 1999 and 2000.

Table II-e.

PHARMACY EDUCATION			
# of Pharmacy Schools	**1**	Public Schools	**1**
		Private Schools	**0**
# of Pharmacy Students, 2000-2001	**391**	# Baccalaureate Degree	**0**
		# Doctoral Degree *(PharmD)*	**391**
	# Per 100,000 population*		**7.9**
# of Pharmacy Graduates, 2000	**85**	# Baccalaureate Degree	**0**
		# Doctoral Degree *(PharmD)*	**85**
	# Per 100,000 population*		**1.7**

* Denominator number is state population from 2000 U.S. Census.

Source: AACP.

Table II-f.

PHYSICIAN ASSISTANT EDUCATION		
# of Physician Assistant Training Programs, 2000-2001		**1**
# of Physician Assistant Program Students, 2000-2001		**N/A**
# Physician Assistant Program Students per 100,000 Population[1]		**N/A**
# of Physician Assistant Program Graduates, 2001		**N/A**
# Physician Assistant Program Graduates per 100,000 Population[1]		**N/A**
State Appropriations for Physician Assistant Training Programs, 2000-2001[2]	Total	**$21,000**
	Per Student	**N/A**
	As % of Total Program Revenue	**2.8**

[1] Denominator number is state population from 2000 U.S. Census.
[2] In general, state appropriations are not directly earmarked for these programs, but rather to their sponsoring institutions.
N/A = Data was not available

Sources: APAP, APAP Annual Report.

Table II-g.

DENTAL EDUCATION			
# of Dental Schools	**1**	Public Schools	**1**
		Private Schools	**0**
# of Dental Students, 2000-2001	**335**		
# Dental Students per 100,000 Population*	**6.8**		
# of Dental Graduates, 2001	**79**		
# Dental Graduates per 100,000 Population*	**1.6**		
State Appropriations to Dental Schools, 1998-1999	Per Student: **$21,437**		
	As % of Total Revenue: **32.1** (31.6 U.S.)		

* Denominator number is state population from 2000 U.S. Census.

Source: ADA.

Table II-h.

DENTAL HYGIENE EDUCATION			
# of Dental Hygiene Training Programs	**9**	Public Schools	**8**
		Private Schools	**1**
# of Dental Hygiene Program Students, 1997-1998	**364**		
# Dental Hygiene Program Students per 100,000 Population*	**7.4**		
# of Dental Hygiene Program Graduates, 1998	**164**		
# Dental Hygiene Program Graduates per 100,000 Population*	**3.3**		

* Denominator number is state population from 2000 U.S. Census.

Sources: ADHA, AMA Health Professions.

III. PHYSICIAN PRACTICE LOCATION

The following tables examine in-state physician practice location from two different vantage points: (1) of all physicians who were trained (went to medical school or received their most recent GME training) in the state between 1975 and 1995, and (2) of all physicians who are now practicing in the state, regardless of where they were trained. Complied from the American Medical Association's 1999 Physician Masterfile by Quality Resource Systems, Inc., the data importantly illustrates to what extent physician graduates practice in many of the state's small towns, using the rural-urban continuum developed by the U.S. Department of Agriculture.

PRACTICE LOCATION (URBAN/ RURAL) OF PHYSICIANS WHO RECEIVED THEIR ALLOPATHIC MEDICAL SCHOOL TRAINING IN MINNESOTA BETWEEN 1975 AND 1995.

Table III-a.

MINNESOTA		
Number of physicians who were trained in MN and who are now practicing in MN **as a percentage of all physicians practicing in MN**.		**40.03**
Number of physicians who were trained in MN and are practicing in MN, **by practice location** (metro code[1]), **as a percentage of all physicians practicing in MN**.	#00	43.20
	#01	64.42
	#02	0.00
	#03	25.85
	#04	37.04
	#05	42.86
	#06	66.00
	#07	47.36
	#08	38.46
	#09	43.55
Number of physicians who were trained in MN and who are now practicing in MN **as a percentage of all physicians who were trained in MN**.		**51.15**
Number of physicians who were trained in MN and are practicing in MN, **by practice location** (metro code[1]), **as a percentage of all physicians trained in MN**.	#00	59.35
	#01	71.66
	#02	0.00
	#03	52.45
	#04	36.04
	#05	20.61
	#06	60.00
	#07	62.14
	#08	31.25
	#09	54.00

[1] 1995 Rural/Urban Continuum Codes for Metro and Nonmetro Counties. Margaret A. Butler and Calvin L. Beale. Agriculture and Rural Economy Division, Economic Research Service, U.S. Department of Agriculture.

Codes # 00-03 indicate metropolitan counties:
00: Central counties of metro areas of 1 million or more
01: Fringe counties of metro areas of 1 million or more
02: Counties with metro areas of 250,000 - 1 million
03: Counties in metro areas of less than 250,000

NA: Not Applicable; no counties in the state are in the R/U Continuum Code

Codes # 04-09 indicate non-metropolitan counties:
04: Urban population of 20,000 or more, adjacent to metro area
05: Urban population of 20,000 or more, not adjacent to metro area
06: Urban population of 2,500-19,999, adjacent to metro area
07: Urban population of 2,500-19,999, not adjacent to metro area
08: Completely rural (no place w population > 2,500), adjacent to metro area
09: Completely rural (no place w population > 2,500), not adjacent to metro area

PRACTICE LOCATION (URBAN/ RURAL) OF PHYSICIANS WHO RECEIVED THEIR MOST RECENT GME TRAINING IN MINNESOTA BETWEEN 1978 AND 1998.

Table III-b.

MINNESOTA		
Number of physicians who received their most recent GME training in MN and who are now practicing in MN **as a percentage of all physicians practicing in MN**.		**60.41**
Number of physicians who received their most recent GME training in MN and are practicing in MN, **by practice location** (metro code[1]), **as a percentage of all physicians practicing in MN**.	#00	63.64
	#01	68.47
	#02	0.00
	#03	60.89
	#04	49.06
	#05	28.79
	#06	48.79
	#07	41.39
	#08	30.00
	#09	37.29
Number of physicians who received their most recent GME training in MN and who are now practicing in MN **as a percentage of all physicians who were trained in MN**.		**46.47**
Number of physicians who received their most recent GME training in MN and are practicing in MN, **by practice location** (metro code[1]), **as a percentage of all physicians trained in MN**.	#00	56.06
	#01	62.33
	#02	0.00
	#03	59.06
	#04	26.40
	#05	8.41
	#06	43.37
	#07	53.22
	#08	20.00
	#09	53.66

[1] 1995 Rural/Urban Continuum Codes for Metro and Nonmetro Counties. Margaret A. Butler and Calvin L. Beale. Agriculture and Rural Economy Division, Economic Research Service, U.S. Department of Agriculture.

Codes # 00-03 indicate metropolitan counties:

00: Central counties of metro areas of 1 million or more

01: Fringe counties of metro areas of 1 million or more

02: Counties with metro areas of 250,000 - 1 million

03: Counties in metro areas of less than 250,000

Codes # 04-09 indicate non-metropolitan counties:

04: Urban population of 20,000 or more, adjacent to metro area

05: Urban population of 20,000 or more, not adjacent to metro area

06: Urban population of 2,500-19,999, adjacent to metro area

07: Urban population of 2,500-19,999, not adjacent to metro area

08: Completely rural (no place w population > 2,500), adjacent to metro area

09: Completely rural (no place w population > 2,500), not adjacent to metro area

NA: Not Applicable; no counties in the state are in the R/U Continuum Code.

IV. LICENSURE AND REGULATION OF PRACTICE

States are responsible for regulating the practice of health professions by licensing each provider, determining the scope of practice of each provider type and developing practice guidelines for each profession. The tables below illustrate the licensure requirements for each of the health professions covered in this study as well as additional information on recent expansions in scope of practice or other novel regulatory measures taken by the state.

Table IV-a.

PHYSICIANS	
LICENSURE REQUIREMENTS	Graduation from an accredited medical or osteopathic school; successfully completed one year of U.S./Canadian graduate, clinical medical training in a accredited program; United States Medical Licensing Exam (USMLE), National Board, Licensing Commission on Medical Education (LMCC), Federation Licensing Examination (FLEX) or state exam.
LICENSURE REQUIREMENTS: *INTERSTATE TELE-CONSULTATION*	Does not require physicians to be licensed while in actual consultation providing s/he is licensed in another state or country.
STATE MANDATES INDIVIDUAL PROFESSION PROFILES TO BE PUBLICLY ACCESSIBLE	No.

Sources: State licensing board, HPTS.

Table IV-b.

PHYSICIAN ASSISTANTS	
LICENSURE REQUIREMENTS	Current NCCPA registration required for state registration (not required for renewal if PA does not prescribe.)
RECENT STATE MANDATED EXPANSIONS IN SCOPE OF PRACTICE	*PRESCRIPTIVE AUTHORITY* **Yes.** National Commission on Certification of Physician Assistants (NCCPA) -certified PAs may prescribe controlled and non-controlled drugs. Physician must sign and date daily reviews. PAs authorized to prescribe controlled medications must register with Drug Enforcement Agemcy. *PHYSICIAN SUPERVISION* Constant presence of supervising physician is not required so long as the PA and supervising physician can be in touch via telecommunication.

Source: State licensing board.

Table IV-c.

NURSES	
LICENSURE REQUIREMENTS	**Registered Nurses (RNs)** Affirm that you have not engaged in conduct warranting disciplinary action; submit an affidavit of graduation from an approved nursing program to the Board of Nursing; meet the testing requirements established by the National Council of State Boards of Nursing; pass the National Council Licensing Examination (NCLEX). **Advanced Practice Nurses (APNs)** A registered nurse who is certified as a clinical nurse specialist, nurse anesthetist, nurse-midwife, or nurse practitioner, may practice advanced practice registered nursing without obtaining a separate license. Current certification by a national nurse certification organization acceptable to the Board is required to practice as a clinical nurse specialist, nurse anesthetist, nurse-midwife, or nurse practitioner. **Licensed Practical Nurses (LPNs)** Affirm that you have not engaged in conduct warranting disciplinary action; submit an affidavit of graduation from an approved nursing program to the Board of Nursing; meet the testing requirements established by the National Council of State Boards of Nursing; pass the NCLEX examination.
LICENSURE REQUIREMENTS: *FOREIGN-TRAINED NURSES*	Affirm that you have not engaged in conduct warranting disciplinary action; pass the Commission on Graduates of Foreign Nursing Schools (CGFNS) examination; meet the testing requirements established by the National Council of State Boards of Nursing; pass the NCLEX examination.
LICENSURE REQUIREMENTS: *INTERSTATE TELE-CONSULTATION*	***Full License.***
RECENT STATE MANDATED EXPANSIONS IN SCOPE OF PRACTICE	*PRESCRIPTIVE AUTHORITY* All APNs may prescribe drugs and therapeutic devices within the authorized scope of practice. The requirements for prescribing vary slightly for each of the four categories as follows: **CNMs** : Certification by the American College of Nurse-Midwives Certification Council **NPs:** Certification by a national nurse certification organization acceptable to the Board; Written agreement with a physician based on board established standards. **CRNAs:** Certification by the Council on Certification of Nurse Anesthetists; Written agreement with a physician based on board established standards. *PHYSICIAN SUPERVISION* Must practice within a health care system that provides for consultation, collaborative management, and referral as indicated by the status of the patient.
RECENT STATE REQUIREMENTS TO IMPROVE WORKING CONDITIONS IN CERTAIN INSTITUTIONS	**Yes.** New studies to examine working conditions.
STATE MANDATES INDIVIDUAL PROFESSION PROFILES TO BE PUBLICLY ACCESSIBLE	**Yes**, available on web.

Sources: State licensing board, AANA, ACNM, Pearson "Annual Legislative Update", HPTS.

Table IV-d.

DENTISTS	
LICENSURE REQUIREMENTS	Graduation from accredited dental school and passing scores on national and state exams.
LICENSURE REQUIREMENTS: *INTERSTATE TELE-CONSULTATION*	**Full License.**

Source: State licensing board.

Table IV-e.

PHARMACISTS	
LICENSURE REQUIREMENTS	Be a graduate of a school or college of pharmacy approved by the board, have not less than one year of experience under the direction of a pharmacist in accordance with the programs of supervised training established by regulation of the board, pass an examination approved by the board, and pass an examination approved by the board, which examination shall be based on federal and state drug laws and regulations.
RECENT STATE MANDATED EXPANSIONS IN SCOPE OF PRACTICE	**Yes**. Collaborative practice agreements w/ physicians can give pharmacists limited authority to amend or delete drug therapy.
STATE MANDATES INDIVIDUAL PROFESSION PROFILES TO BE PUBLICLY ACCESSIBLE	**Yes**, is public information and is available on the web.

Source: State licensing board.

Table IV-f.

DENTAL HYGIENISTS	
LICENSURE REQUIREMENTS	Graduation from accredited dental hygiene school and passing scores on national and state exams.
RECENT STATE MANDATED EXPANSIONS IN SCOPE OF PRACTICE	*PRESCRIPTIVE AUTHORITY* No. *DENTIST SUPERVISION* Legislation being considered that authorizes dental hygienists to be employed or retained by a health care facility to perform certain dental hygiene services when in a collaborative agreement with a licensed dentist.

Source: State licensing board, ADHA.

Glossary of Acronyms

CNM: Certified nurse midwife.
CRNA: Certified registered nurse anesthetist.
NP: Nurse practitioner.

V. IMPROVING THE PRACTICE ENVIRONMENT

States have the challenge of not only helping to create an adequate supply of health professionals in the state, but also ensuring that those health professionals are distributed evenly throughout the state. Various programs and incentives are used by states to encourage providers to practice in rural and other underserved areas. The tables in this section describe Minnesota's programs as well as the perceived effectiveness of these programs.

RECRUITMENT/ RETENTION INITIATIVES

Table V-a.

INITIATIVE	In Use	Perceived or Known Impact (1= high, 5= low)	Health Professions Affected					
			Physicians	Nurses	Pharmacists	Dentists	Dental Hygienists	Physician Assistants
FOCUSED ADMISSIONS / RECRUITMENT OF STUDENTS FROM RURAL OR UNDERSERVED AREAS	Yes	3	X	X	X			X
SUPPORT FOR HEALTH PROFESSIONS EDUCATION (stipends, preceptorships) IN UNDERSERVED AREAS	Yes	3	X	X	X			X
RECRUITMENT / PLACEMENT PROGRAMS FOR HEALTH PROFESSIONALS	Yes	3	X	X	X	X	X	X
PRACTICE DEVELOPMENT SUBSIDIES (i.e., start-up grants)	No							
MALPRACTICE PREMIUM SUBSIDIES	No							
TAX CREDITS FOR RURAL / UNDERSERVED AREA PRACTICE	No							
PROVIDING SUBSTITUTE PHYSICIANS (*locum tenens* support)	No							
MALPRACTICE IMMUNITY FOR PROVIDING VOLUNTARY OR FREE CARE	No							
PAYMENT BONUSES / OTHER INCENTIVES BY MEDICAID OR OTHER INSURANCE CARRIERS	Yes	4	X					
MEDICAID REIMBURSEMENT OF TELEMEDICINE	Yes	Don't know	X					

***Source*:** State health officials.

Minnesota has established various recruitment and placement programs for all the major health professions.

LOAN REPAYMENT/ SCHOLARSHIP PROGRAMS *

Table V-b.

Program Type	Number of Programs	Number of Annual Participants	Average Retention Rate	Eligible Health Professions					
				Physicians	Nurses	Pharmacists	Dentists	Dental Hygienists	Physician Assistants
LOAN REPAYMENT	6	38.5	Not Available	X	X		X	X	X
SCHOLARSHIP	0	0	N/A*						

* Includes only state-funded programs which require a service obligation in an underserved area. (NHSC state loan repayment programs are included since the state provides funding.)
N/A* = Data is not applicable

Source: State health officials.

WORKFORCE PLANNING ACTIVITIES*

Table V-c.

ACTIVITY	In Use	Health Professions Affected					
		Physicians	Nurses	Pharmacists	Dentists	Dental Hygienists	Physician Assistants
COLLECTION / ANALYSIS OF PROFESSIONS SUPPLY DATA: FROM *PRIMARY* SOURCES (e.g., licensure renewal process; other survey research)	Yes	X	X	X	X	X	X
FROM *SECONDARY* SOURCES (e.g., state-based professional trade associations)	Yes	X	X	X	X	X	X
PRODUCTION OF RECENT STUDIES OR REPORTS THAT DOCUMENT / EVALUATE THE SUPPLY, DISTRIBUTION, EDUCATION OR REGULATION OF HEALTH PROFESSIONS	Yes	X		X	X		
RECENT REGULATORY ACTIONS INTENDED TO REQUIRE OR ENCOURAGE COORDINATION OF POLICIES AND DATA COLLECTION AMONG HEALTH PROFESSIONS GROUPS OR LICENSING BOARDS	No						

* One state health official supplied these responses. Therefore, data may be limited and may not accurately reflect all current workforce-planning activities in the state.

Minnesota collects and analyzes supply data on all the major health professions.

VI. EXEMPLARY WORKFORCE LEGISLATION, PROGRAMS AND STUDIES

The following abstracts describe several of Minnesota's recent endeavors to understand and describe the status of the state's current health care workforce.

Legislation and Programs

SB-4 (2001)

- Health and Long-term Care Careers Promotion
  - Authorizes the commissioner of health to make grants to qualifying consortia to encourage middle and high school students to work and volunteer in health care and long-term care settings.
- Dentists Loan Forgiveness
  - Creates a dentist education account to establish a loan forgiveness program for dentists who agree to care for a substantial number of state public program participants.
- Workforce Shortage Study
  - Directs the commissioner of health to review data and assess the effect of health care labor availability on health care costs.
- Dental Access
  - Awards grants to teaching institutions and clinical training sites for projects to increase dental access for underserved populations.
- Retired Dentist Program
  - Authorizes reimbursement of malpractice insurance and licensure fees to retired dentist who perform 100 hours of voluntary service
- Dental Practice Donation Program
  - Establishes a dental practice donation program where a dentist may donate a practice to a qualified charitable organization and assists in locating a dentist.
- Dental Access Grants/Advisory Committee
  - Establishes a dental access advisory committee to award grants to organizations that demonstrate the ability to provide dental services to public program recipients and monitor public health care programs to ensure dental care access.
- Dental Hygienists
  - Allows the dental hygienists to perform dental hygiene services without the patient first being examined by a licensed dentist if the dental hygienist has two-years practical clinical experience and has entered into a collaborative agreement with a licensed dentist.
- Dental Clinics
  - Establishes community based dental clinics at state colleges and universities to be used as training sites and as public community-based dental clinics for public program recipients during times when school is not in session.

Collaborative Rural Nurse Practitioner Project

Minnesota Schools of Nursing

In 1993 the Minnesota Legislature funded a grant initiative to improve access to education for rural nurse practitioner students, to develop rural education sites, and to develop opportunities for nurse practitioners to establish practices in rural communities. All graduate nurse practitioner and nurse-midwifery programs are collaborating to increase the supply of nurse practitioners and certified nurse midwives in the rural areas of the state. Since 1994 approximately 250 rural clinical practice

education sites have been developed and 37% of all students admitted to graduate nursing programs are from rural communities.

Health Workforce Innovation Pilot Tests

Minnesota Policy Incubator for Innovation in Health Workforce Education, Deployment, and Services Delivery, 2000

The project plans to implement three workforce innovations in pilot form during 2002. The pilot programs include educating health professionals for integrated interdisciplinary primary care, standardizing pre-professional core curricula and health career guidance, and education to mobilize community and family resources for home-based and long-term care. The project plan also calls for changes in the certification, licensure, and scope of practice regulations and better collection of workforce data to support workforce innovations.

Studies

Critical Resources: Forums Addressing Minnesota's Health Care Worker Shortage

Office of Rural Health Priry Care, Minnesota Department of Health, Minnesota Health Professions Workforce Partnership, March 2001

The Minnesota Health Professions Workforce Partnership held regional forums across the state on the health care worker shortage. This article is an overview of their findings. The report address, recruitment and retention issues, regulation and reimbursement reform, non-competitive wages and benefits, educational capacity, regional issues, and increasing productivity.
www.health.state.mn.us/divs/chs/workdata.htm

Workforce Profiles

Office of Rural Health Primary Care, Minnesota Department of Health, April 2001

The Office of Rural Health website has profiles for licensed practical nurses, registered nurses, dentists, physicians, and pharmacists in the state. Each profile contains information about the supply and demand for each profession as well as information on demographics and distribution.
www.health.state.mn.us/divs/chs/workdata.htm

Dental Access for Minnesota Health Care Programs Beneficiaries: Report to the 2001 Minnesota Legislature

Minnesota Department of Human Services, January 15, 2001

The Minnesota State Legislature required the Department of Human Services to study in depth the dental access issues for Minnesota Health Care Program (MHCP) Beneficiaries. The report found that utilization of services in the state was very low for MHCP beneficiaries. Only 30% visited a dentist in the mid-1990's compared to 70% of Americans with commercial insurance. The study also noted disparities in utilization among geographic regions and racial groups. The study found that low levels of provider participation, low payment rates, insufficient numbers of providers, administrative burdens, financial challenges for safety-net providers, scarcity of comprehensive data on oral health needs, and low demand from MHCP beneficiaries contributed to the low utilization rates. The report recommends payment rate increases that ate tied to the performance of the providers, using dental access improvement grants, creating a standing Minnesota Health Care Program dental advisory committee, and developing new models for purchasing and delivering dental care.

Survey of Minnesota Dentists

Wilder Research Center for the Minnesota Department of human Services (DHS), November 2000

The survey, which had a 47% response rate, asked dentists about Minnesota Health Care Program participation. Some of the key findings include:

- 58.7 % currently accept some MHCP patients
- 24.3% will accept any patient
- 41.7% will accept only number of patients required by Rule 101
- 5.9% said that more than 30% of their current patients were covered by Medical Assistance, General Assistance Medical Care or Minnesota Care
- 77.7% said that Medical Assistance reimbursement accounted for less than 10% of their gross practice income
- 85.4% said they have a net loss for providing treatment to Medical Assistance, General Assistance Medical Care or Minnesota Care Patients

Minnesota Nursing Workforce

Minnesota Nurses Association and Sandra Edwardson, 2000

This report looks at the supply of nurses in Minnesota and examines a possible shortage. The report cites the aging of the population as creating an increased need for skilled nursing care and concludes that increasing the supply of nurses is necessary but will be insufficient to address the current and future shortage. Policy makers will have to address the issue of increased demand for services and retention of nurses.

Treading Water: Minnesota's Dental Workforce in the Year 2000

David Born, Ph.D., October 2000

This article provides an introduction to some of the issues involved in interpreting dental workforce data and a profile of the current situation. The paper shows the dentist to population ratio in the state and the dentist to hygienist ratio. It also looks at the average age of actively licensed dentists and dental hygienists in the State. Born states that the dental workforce is "barely keeping its head above the waters of demand."

Bringing Health Care to the Heartland: A Evaluation of Minnesota's Loan Forgiveness Programs for Select Health Care Occupations

Minnesota Department of Health, Office of Rural Health and Primary Care, August 1999

Since 1990, the Legislature has supported 82 medical students who began their practice in rural Minnesota. The program was expanded in 1993 to include midlevel practitioners as well and has served 43 midlevel practitioners to date. In April of 1999, program participants and sponsoring facilities were asked to complete an evaluation survey. This report evaluates the loan forgiveness program based on those responses. The report found that the rural loan forgiveness programs were effective in getting medical practitioners into Rural Minnesota. It also found that the majority of health professionals who complete their service obligation remain in rural Minnesota to continue their practice. In addition, the report cites opportunities to increase awareness and improve performance of the programs.

Survey of Nurse Practitioner/Nurse-Midwifery Graduates from Minnesota Graduate Nurse Practitioner/Nurse-Midwifery Education Programs

Collaborative Rural Nurse Practitioner Project, June 2001

This survey is part of an evaluation of the Collaborative Rural Nurse Practitioner Project. Data from the survey will be considered when implementing curriculum changes for the project.

Magnet Hospitals: A Positive Approach to Minnesota's Nursing Shortage
Minnesota Department of Health, December 2001
This report examines the Magnet Nursing Services Recognition Program, a national hospital accreditation program which recognizes health care organizations that provide high quality nursing care and support professional nursing practice. The report recommends that the state plan and undertake a plan to promote the magnet hospital program within the state. According to the report, magnet hospital enjoy higher levels of RN job satisfaction and lower levels of burnout and are consistent with better patient outcomes and less staff turnover.

Expanding the Horizons of Health Care
Minnesota Partnerships for Training Project Office
This reference guide provides information on education, reimbursement, and recruitment and retention of nurse practitioners, certified nurse midwives, and physician assistants.

Access to Rural Pharmacy Services in Minnesota, North Dakota, and South Dakota
University of Minnesota Rural Health Research Center, July 2001
This report describes the current status of rural retail pharmacies in three states. Key recommendations included: 1) target state policy initiatives to address problems with geographic access to rural pharmacies that are critical to access; 2) evaluate the capacity of colleges of pharmacy to produce an adequate supply of rural pharmacists; 3) explore additional options to provide affordable relief coverage for rural pharmacists; and 4) implement comprehensive approaches to ensure financial access to prescription drug programs for vulnerable populations.

Reshaping Long-Term Care in Minnesota
Minnesota Department of Human Services, Long-Term Care Task Force, January 2001
This report identifies critical long-term care issues in Minnesota and recommends policy directions to address these issues. The report recognizes current and future worker shortages in health and long-term care and specifically alludes to shortages of nurses and "direct support" workers, such as nursing assistants, personal care assistants and home health aides. To address workforce shortage problems, the taskforce recommends that the state 1) encourage middle and high school students to volunteer and work in health and long-term care settings; 2) expand tuition credits and loan forgiveness options, and develop a "GI bill" for health and long term care workers; 3) require key health workforce partnerships to focus on the needs of direct support workers.

Healthcare Workers – STAT!
Rachel Hillman and Annie Tietema, 2002
This article discusses the current shortage of registered nurses, nursing aides, and technicians in the state. According to the article, demand for nurses and technicians has increased due to an aging population, a growing emphasis on disease management, and technological changes in the field. At the same time supply has been affected by low pay, long hours, licensing requirements, high stress, and an aging workforce. The article suggests that long training periods and non-competitive wages are major barriers to increasing supply and that the to meet the needs of an aging population, the health care industry must find ways to recruit and retain new employees.

HRSA State Health Workforce Profile
Bureau of Health Professions, December 2000
The State Health Workforce Profiles provide current data on the supply, demand, distribution, education and use of health care professionals in each state. Each state profile has an overview of the health status of state residents and health services within the state. In addition the profiles have breakdowns of health care employment by place of work and profession.
http://bhpr.hrsa.gov/healthworkforce/profiles/default.htm

VII. POLICY ANALYSIS

Organizations with Significant Involvement in Health Workforce Analysis/Development

- **Minnesota Department of Health: Office of Rural Health and Primary Care**
  Medical Economics and Research Costs Program
- **Minnesota Center for Rural Health**
- **Minnesota Hospital and Healthcare Partnership**
- **University of Minnesota Academic Health Center**
- **Minnesota State Colleges and Universities (MnSCU)**
- **Minnesota Nurses Association**
- **Minnesota Dental Association**
- **Legislature**

Evidence of Collaboration: Moderate to Significant (largely associated with workforce data collection and supply assessment, and workforce training program development)

Minnesota's growing metropolitan population is offset by a significant rural population. Just 10 percent of the state's population are minority or ethnic in nature. Minnesota's population also has a much lower proportion of persons without health insurance than nationwide, and a percentage of those living in primary care and dental health professional shortage areas (HPSAs) that is well below the national average.

Although Minnesota's number of physicians, physician assistants and nurse practitioners per 100,000 population is below the U.S. average, the state's ratio of nurses, pharmacists, dentists and dental hygienists exceeds the national average. The percentage of physicians practicing primary care and the proportion of registered nurses employed in nursing are significantly above national amounts.

Health professionals have received little increase in Medicaid payment rates in recent years. Under a third of all physicians and dentists enrolled in Medicaid provide a significant amount of service to Medicaid patients. Although Medicaid provides payment bonuses to physicians for rural practice and reimburses for certain telemedicine services, state officials believe such incentive programs have had little impact in improving health workforce recruitment and retention in HPSAs and medically underserved communities.

Like other states, Minnesota has experienced major economic expansion in recent years. Employment growth in the health care industry has been well above overall job growth in state, fueling a gap in the number of jobs and the available workforce. The demand for health workers and the gap between supply and demand is expected to continue. For example, recent reports have found serious shortfalls in the current supply of pharmacists, nurses, dentists and medical technology specialists. In early 2001, the University of Minnesota Academic Health Center estimated the following shortcomings and their proposed plans to address the problem:

- 200 openings for pharmacists. The state's one pharmacy school has proposed expanding its enrollment by 50 percent to 150 students per class starting in fall 2002. This would bring the state closer to the national average of the number of graduates (3.1) per 100,000 population. The proposal includes establishing a branch site in Duluth—a more rural area of Minnesota that has greater shortages of pharmacists than the state's urban areas.

- Over 1,700 openings in hospitals for registered nurses and 180 openings for nurses with specialty preparation. Over half of these openings are outside the Minneapolis/St. Paul area. Proposals by the University of Minnesota call for expanding nursing education at the University's Rochester campus and other area locations.
- Over 20 percent of Minnesota's dentists are expected to retire in the next 10 years. The growing shortage of dentists is most acute in rural Minnesota. The state's only dental school has proposed establishing two dental training programs in rural Minnesota to educate and recruit dental graduates for practice in rural communities.

In recent years, the state has its increased efforts to track changes in the health workforce climate. Efforts include the following:

- The Office of Rural Health and Primary Care has developed workforce profiles documenting changes in the supply and demand for physicians, nurses, dentists, pharmacists and other health professionals across Minnesota. This initiative is part of a 2001 law that directed the commissioner of health to review available information and assess the effects of health workforce availability and its effect on health care costs. A report was due to the legislature in early 2002.
- Since 1993, the Minnesota Center for Rural Health has conducted a statewide rural and underserved health workforce demand assessment that tracks the number of health professionals being recruited and the amount of time and resources being used for recruitment activities.
- The Minnesota Department of Economic Security in partnership with Minnesota State Colleges and Universities routinely produces estimates of job openings statewide for various health care occupations.

Furthermore, significant efforts have been made in recent years to address health workforce shortages statewide. One collaborative effort is the Minnesota Health Professions Workforce Partnership. This collaboration of health care organizations sponsored a series of regional forums across the state in 2001 intended to highlight problems and concerns, gather data to share with state lawmakers, and encourage local and regional thinking about potential solutions. Initial efforts to obtain state funding to support this initiative failed. The Minnesota Hospital Association has also formed a task force to develop solutions. In addition, the University of Minnesota Academic Health Center is seeking federal and state funds to establish an Area Health Education Center program in the state.

In recent years, state lawmakers have become more aware and attentive of health workforce shortage issues. Minnesota has established or expanded several initiatives aimed at improving health workforce supply and access to care in rural and other underserved communities. These include:

- State loan repayment programs for all the major health professions have been expanded or established in the past two years. The Department of Health conducted an evaluation of selective state loan repayment programs in 1999.
- A nurse training grant program is expanded to establish rural clinical sites for nurse practitioner education.
- Dental education innovation grants, supported in part by additional funds received through the federal Medicaid match, is established, as well as expanded duties for dental hygienists and assistants.
- Allocation of a portion of the state's tobacco settlement funds to the University of Minnesota Academic Health Center goes to support medical school and other training programs of health professions deemed in short supply in the state.

Continuing to seek solutions to the workforce shortage with additional resources from state government will be problematic. In 2001, a weeks-long budget impasse between the governor and legislature that threatened to shut down state government ultimately resulted in a tax cut that significantly reduced state funds for current (as well as new) programs. Minnesota's health care costs have risen nearly twice as fast as the national average in the past two years. This prompted the

governor in late 2001 to create a task force to examine ways to lower the state's health care costs and delaying consideration of proposals to cut such costs for at least a year. Minnesota faces a $2 billion budget deficit in 2002.

Physicians

The state's overall supply of physicians is maldistributed. A current lack of consensus exists on which specialties have greater shortages. The proportion of medical school graduates who choose family medicine residencies is twice the national average. Nearly two-thirds of those graduates choosing a family medicine residency enter an in-state family medicine training program. Yet, studies show that in rural areas since 1995, the demand for family physicians has decreased, and demand for specialty physicians is on the rise. Also, the demand for physician assistants and advanced practice nurses has decreased significantly. The state's third medical school at the University of Minnesota at Duluth serves as Minnesota's main supplier of physicians for rural practice. The program provides 9-month rural clerkships in a student's third year which have been helpful in assuring that a large number of graduates go into rural practice upon completion of residency training.

State support for graduate medical education is undergoing new scrutiny. There are debates over whether physician and other health professions training should continued to be funded in part by a state provider tax. Also, changes in how Medicaid payments for GME are distributed have occurred recently.

Nursing

Recent health workforce profiling in Minnesota has documented a shortage of nurses in the state. An August 2001 Department of Economic Security report states that the number of nurse vacancies in institutional settings to be 3,000—one-third of these are outside the greater Minneapolis area. The number of current registered and licensed practical nurses licensed in Minnesota, and who are not employed in nursing and willing to return promptly to the nurse workforce, is very small—less than second percent.

Nurses in urban settings are heavily unionized. A recent strike by 1,300 nurses at two Minneapolis hospitals over salary, benefits and working conditions received national attention. Several new studies are examining the current working environment for nurses in hospitals and other settings. A measure to limit mandatory overtime for nurses failed to pass in 2001, but was introduced again in 2002.

Also in 2002, the commissioner of health was expected to develop a recommendation that would create incentives to develop magnet hospitals in Minnesota. A report on the issue was produced by the Department of Health in late 2001. Magnet hospital designation is an indication of excellence in nursing care and nurse staffing given by the American Nurses Association. The initial high costs to implement such a program have been a limitation for many hospitals, especially small rural institutions.

Graduations from Minnesota's nursing schools have been flat or in a small decline in recent years. The state's nursing schools in small universities and community colleges train more nurses (mainly associate degree/licensed practice nurse degree) than the University of Minnesota (bachelor-level registered nurse degree). However, debates continue over whether the majority of nurses trained are appropriately educated for assigned duties. Concern about shortages in qualified faculty and clinical training sites also persist, particularly in smaller nursing programs. Efforts in 2001 to expand nurse scholarship and loan forgiveness programs failed due to legislative priorities to accept the governor's tax cut proposal.

Dentists

As is becoming evident elsewhere, Minnesota increasingly is suffering from an overall shortage of dentists as well as dentists willing to care for Medicaid and low-income populations. As noted above, over 20 percent of Minnesota's dentists are expected to retire in the next 10 years, and a small proportion of dentists provide a significant level of service to Medicaid recipients. The growing shortage of dentists is most acute in rural Minnesota. According to a recent survey by the Minnesota Dental Association, there are 250 vacancies for dentists statewide, particularly in rural communities. Data on the supply and demand for dentists, and access to dental services by Medicaid recipients in the state, is well documented.

The state's one dental school in Minneapolis is under pressure to expand class size (as noted earlier). The school faces certain constraints in doing so because it grants a portion of available slots to students from nearby states that do not have dental schools. There is also discussion of creating a new dental education program in Duluth.

Despite pending budget constraints, significant legislation was passed in 2001 to support an increase in dental workforce capacity and encourage recruitment of dentists to rural and underserved areas. Measures included significant Medicaid payment increases and regulatory simplification for participating dental providers, dental access grants to teaching institutions and clinical training sites, and enhanced practice flexibility for retired dentists and those dentists wishing to volunteer their services.

Debate remains among dentists over the new measure that grants expanded duties to dental hygienists and assistants. There is also discussion about whether the dental board should create a new type of dental health professional. The state dental association has a task force that is examining the issue. The association is also party to efforts to examine ideas for developing new models of purchasing and delivering dental care in the state. A 2001 law required the state dental board to make recommendations by early 2002 that would permit a foreign-trained dentist to practice as a dental hygienist or as a registered dental assistant.

Pharmacists

As with dentistry, there is growing concern over the aging pharmacist workforce in Minnesota and the expected large number of retirements in coming years, particularly in rural areas. A recent study found that 50 rural pharmacies closed in Minnesota, North Dakota and South Dakota between 1996 and 1999. More recent estimates by the Department of Health and Board of Pharmacy place the number of pharmacist vacancies in Minnesota at 300 to 400—two-thirds in the greater twin cities area.

Production of new pharmacists has been flat in recent years. The state's one pharmacy school's ability to expand training capacity is limited by the space in its physical facilities. Minnesota also is importing fewer pharmacists from border states. No attention is being placed to expanding practice opportunities for pharmacy technicians.

DATA SOURCES

Workforce Supply and Demand

American Association of Retired Persons, Public Policy Institute (AARP). Reforming the Health Care System: State Profiles 2001. (Washington, DC: 2002).

Bureau of Primary Health Care, Division of Shortage Designation (BPHC-DSD). Selected Statistics on Health Professional Shortage Areas (Bethesda, MD: December 2001).

Bureau of Primary Health Care, National Health Service Corps (BPHC-NHSC). National Health Service Corps Field Strength: Fiscal Year 2001 (Bethesda, MD: March 2002).

Centers for Disease Control and Prevention (CDC). Morbidity and Mortality Weekly Report: State Specific Prevalence of Selected Health Behaviors, by Race and Ethnicity—Behavioral Risk Factor Surveillance System, 1997. (Atlanta, GA: March 24, 2000) Vol. 49, No. SS-2.

Health Resources and Services Administration, Bureau of Health Professions, National Center for Health Workforce Information and Analysis (HRSA-BHPr). State Health Workforce Profiles (Bethesda, MD: December 2000).

Health Resources and Services Administration, Bureau of Health Professions, Division of Nursing (HRSA-BHPr). The Registered Nurse Population, March 2000: Findings from the National Sample Survey of Registered Nurses (Rockville, MD: February 2002).

Kaiser Family Foundation, Kaiser Commission on Medicaid and the Uninsured (KFF). Health Insurance Coverage in America: 1999 Data Update (Palo Alto, CA: January 2001).

National Conference of State Legislatures, Health Policy Tracking Service (HPTS).

Personal conversations with HCFA regional office officials.

S. Norton and S. Zuckerman. "Trends in Medicaid Physician Fees" Health Affairs. 19(4), July/August 2000.

State Medicaid programs (data from NCSL survey).

United States Department of Commerce, U.S. Census Bureau.

United States General Accounting Office (GAO). Oral Health: Dental Disease is a Chronic Problem Among Low-Income Populations. (Washington, DC: April 2000) GAO/HEHS-00-72.

Health Professions Education

American Academy of Family Physicians (AAFP)

American Academy of Family Physicians. State Legislation and Funding for Family Practice Programs. (Washington, DC).

American Association of Colleges of Nursing (AACN)

American Association of Colleges of Osteopathic Medicine (AACOM). Annual Statistical Report. (Chevy Chase, MD).

American Association of Colleges of Pharmacy (AACP). Profile of Pharmacy Students. (Alexandria, VA).

American Dental Association (ADA)

American Dental Association. 1997-1998 Survey of Predoctoral Dental Educational Institutions. (Washington, DC).

American Dental Hygienist Association (ADHA)

American Medical Association (AMA). Health Professions Career and Education Directory.

American Medical Association. State-level Data for Accredited Graduate Medical Education Programs in the U.S.: 2000-2001. (Washington, DC: 2002)

Association of American Medical Colleges (AAMC)

Association of American Medical Colleges. Institutional Goals Ranking Report. (AAMC website).

Association of Physician Assistant Programs (APAP).

Association of Physician Assistant Programs. Seventeenth Annual Report on Physician Assistant Educational Programs in the United States, 2000-2001. (Loretto, PA: 2001).

Barzansky B. et al., "Educational Programs in U.S. Medical Schools, 2000-2001" JAMA. 286(9), September 5, 2001.

Henderson, T., Funding of Graduate Medical Education by State Medicaid Programs, prepared for the Association of American Medical Colleges, April 1999.

Kahn N. et al., "Entry of U.S. Medical School Graduates into Family Practice Residencies: 1997-1998 and 3-year Summary" Family Medicine. 30(8), September 1998.

Kahn N. et al., "Entry of U.S. Medical School Graduates into Family Practice Residencies: 1996-1997 and 3-year Summary" Family Medicine. 29(8), September 1997.

Kahn N. et al., "Entry of U.S. Medical School Graduates into Family Practice Residencies: 1995-1996 and 3-year Summary" Family Medicine. 28(8), September 1996.

National League for Nursing (NLN)

Oliver T. et al., State Variations in Medicare Payments for Graduate Medical Education in California and Other States, prepared for the California HealthCare Foundation. (Data from the Health Care Financing Administration, compiled by the Congressional Research Service.)

Pugno P. et al.. "Entry of U.S. Medical School Graduates into Family Practice Residencies: 1999-2000 and 3-year Summary" Family Medicine. 32(8), September 2000.

Pugno P. et al.. "Entry of U.S. Medical School Graduates into Family Practice Residencies: 2000-2001 and 3-year Summary" Family Medicine. 33(8), September 2001.

Schmittling G. et al. "Entry of U.S. Medical School Graduates into Family Practice Residencies: 1998-1999 and 3-year Summary" Family Medicine. 31(8), September 1999.

State higher education coordinating board/university board of trustees (data from NCSL survey).

Physician Practice Location

1999 American Medical Association Physician Masterfile. Computations were performed by Quality Resource Systems, Inc. of Fairfax, Virginia.

Licensure and Regulation of Practice

American Association of Nurse Anesthetists (AANA)

American College of Nurse Midwives (ACNM). Direct Entry Midwifery: A Summary of State Laws and Regulations. (Washington, DC: 1999).

American College of Nurse Midwives. Nurse-Midwifery Today: A Handbook of State Laws and Regulations. (Washington, DC: 1999).

American Dental Hygienist Association

National Conference of State Legislatures, Health Policy Tracking Service.

Pearson L., editor. "Annual Legislative Update: How Each State Stands on Legislative Issues Affecting Advanced Nursing Practice" The Nurse Practitioner. 25(1), January 2001.

State licensing boards (NCSL survey).

Improving the Practice Environment

State health officials (NCSL survey).