The Illinois Health Workforce:

Challenges for Rural Communities

Judith A. Cooksey, MD, MPH
Illinois Regional Health Workforce Center
University of Illinois at Chicago

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Introduction

In many ways, the health of rural communities and residents mirrors the health of the Nation. The residents of rural areas know that having health care services within their communities helps maintain economic vitality, enhances residents' access to health care, and adds substantial individual assets and contributions to the life and health of their communities. However rural communities have fewer health care resources, including health personnel, and, despite years of public policy efforts, these resource deficits remain unresolved. While all areas of the country face shortages of health professionals, many rural areas face particularly challenging times.

The importance of health workforce policy development has increased in the last few years, reaching state legislatures and Congress. The Illinois Rural Health Association recognized the importance of rural health workforce issues and invited this paper to be presented for discussion at their annual Public Policy Forum held in Springfield Illinois in March 2002.

The paper begins with a summary review of health workforce policy issues on the national policy agenda as of Spring 2002. Key findings on differences in rural residents' health status are presented utilizing data contained in the 2001 report on the Nation's health.[1] Next, the supply of health professionals and workers within Illinois is compared to the national level and state ranking.

The next section presents brief findings from on selected recent Illinois-based studies to illustrate a variety of workforce studies with state-level policy relevance. The Illinois studies presented in this report were conducted by the University of Illinois at Chicago Illinois Regional Health Workforce Center, one of five regional health workforce research centers funded by the US Health Resources and Services Administration (HRSA) Bureau of Health Professions (BHPr). The final section discusses opportunities for rural communities to address some of the health workforce challenges.

A final comment would be a strong endorsement for continued monitoring of Illinois health workforce issues since these issues affect many aspects of the State's economy and quality of life. For example, the quality of health care is considered an important determinant for attracting new employers to an area. The health care sector remains a strong economic engine and source of jobs at all skill levels. Illinois has made a strong commitment to investing in health professions education programs at colleges and universities across the Sate, thus information on the supply and demand needs of the State could inform decisions on new and continued investments. The continued monitoring of the Illinois health workforce, particularly including rural communities, should be a high priority for Illinois policy makers, health care providers, health professionals, educators, and consumers of health care.

Health Workforce Policy Issues in 2002

Presented below is a list of major national health care workforce policy issues for 2002. This inventory was developed following reviews of government and private sector workforce reports, professional association policy statements and white papers, health workforce research studies, and communications with professionals across the country. To varying degree, these issues are relevant for all areas of the country and rural and non-rural communities.

The first issue (*shortages of health professionals*) has a high priority problem for employers, the professions, educators, and federal and state policy makers. The nurse shortage is at a serious level and it affects all areas of the country. Nurses are the largest professional group and they are key providers and an organizing element for almost every aspect of health care services. The current shortage is due to high demand for nurses and insufficient supply to meet this demand. Prior shortages were felt to reflect cyclic changes in the market, however the current nurse shortage is expected to be a long-term problem. A recent analysis estimated that in 2000, the country faced a shortage of about 110,000 RNs, representing about 6% of the FTE RNs; by 2010 this is expected to increase to 275,000 or 12% of the FTE RNs.[3]

The pharmacist shortage also relates to very high growth in demand for pharmacists that has outpaced the supply. The shortage began in mid1998 and continues through 2002; it affects all parts of the country, and it may have an even stronger effect rural areas that cannot compete with the rapidly rising salaries offered in other area.[4] The major factor affecting demand has been the striking growth in prescriptions dispensed from retail pharmacies and drug stores, increasing from about 1.9 billion in 1992 to 2.8 billion in 1998.

A supply related problem has been the "aging" of the workforce.[5] For example, the average age of nurses was 45.2 years in 2000; only 9% were under 30 years of age, compared to 25% in 1980.[6] A contributor to this shift in age in nursing has been the smaller numbers of new entrants into the profession, older ages of new graduates (e.g. the average graduate from a community college nursing programs was 33 years old in 2000), and relatively long professional careers of many nurses.[3] Physicians and dentists are also aging. These aging effects is could lead to further shortages as the older practitioners begin to retire in the next ten to fifteen years.

A new concern since September 2001 has been the need to train health care professionals in managing bioterrorism or other mass casualty terrorist events, as the threat of additional events remains high. Federal funding has become available to strengthen the public health infrastructure and to support hospital readiness and health professionals training. State level planning and preparedness efforts are critical to the homeland security strategy.

The continued federal policy debate about the long term financial viability of the Medicare program, and program reform efforts such as continued management of reimbursements, affect many health care providers. In 2002, adding a prescription drug benefit was a high priority issue that has not yet been resolved. Any such benefit would increase demand on pharmacists since Medicare enrollees are very high users of medications and pharmaceutical care services.[7]

Various stakeholders (consumers, advocates, employers, professional groups, educators, regulators) have been the voice for the remaining policy issues listed below. While few of these issues have attracted the attention of Congress or state legislators, they are issues discussed by the health professional groups. Options and solutions to these issues may come from the private sector and not involve public policy intervention. While these issues change somewhat from year to year, most issues listed below will likely remain as priorities over the next several years.

Health Workforce Policy Issues – 2002

1. *Shortages of health professionals*, particularly nurses, pharmacists, clinical laboratory personnel and medical technologists, radiologic technicians, long term care nursing assistants.

1. *Preparedness to manage bioterrorism and mass casualty events* and related training of health professionals.

2. *Medicare financial viability and coverage of essential services,* such as a new medication drug benefit. The effect of Medicare reimbursement policy affects physicians, pharmacists, therapists, home health providers, and others.

3. *Access to health care providers* has been largely address as a health financing or a patient choice issue, but insufficient numbers of practitioners also restricts access.

4. *Patient safety and prevention of medical errors* have become policy issues since the Institute of Medicine released its sentinel report in 2000.[2] Several professional groups have noted that workforce shortages have led to reduced staffing, perhaps placing patient safety and quality of care at risk.

5. *Job-related stress and less job satisfaction*, related to demands for services, continued cost cutting by employers, and shortages and overtime work requirements have had dramatic effects on selected groups and providers.

6. *The aging of the health workforce* with fewer young persons pursuing health careers.

7. *Restrictive state practice acts* often fail to recognize advanced training and experience of professionals. This is a charged issue that often pits professions against each other.

8. *Keeping abreast of rapidly changing technologies and therapeutics* is a challenge for busy practitioners with limited time and information overload.

9. *Lack of diversity and diverse cultural competency among professionals* is seen as a problem as out population diversity has increased substantially.

10. *Declining numbers of faculty members in health professional schools* when new schools or larger enrollments maybe needed to produce more graduates and relieve shortages.

Rural Resident's Health Status – Disease Specific Mortality Rates

Key anticipated outcomes of access to health care services and providers are improved diagnosis, therapy, and recovery or management of medical conditions and access to preventive care and counseling services. The ultimate goals of care are improved individual and collective health status, quality of life, functional level, and longevity.

Traditional measures of the health status of populations include mortality and morbidity rates; with mortality rates generally adjusted to the age distribution of the population and presented as *overall* mortality and *disease specific* mortality. Nationwide, the age-adjusted mortality rates for four of the five leading causes of death (heart disease, cancer, stroke, and unintentional injuries) declined over the 1990s. However, mortality rates from chronic lung disease, the fourth leading cause of death, increased during the 1990s.

Other health status measures of risk include personal behaviors (smoking, physical activity, eating habits), environmental effects (pollution levels), social factors (stress, social support systems), genetics factors (conditions that run in families), and personal beliefs, attitudes, and health seeking behaviors.

While this report does not focus on differences in rural and urban resident health status, an important and complex issue for both health research and policy, it presents comparative information on one measure of health status, namely disease specific mortality. The purpose is to illustrate striking examples of higher (and lower) death rates among rural residents, and possible associated risk factors. The mortality rate can be considered as one basic bottom-line, but coarse measure of health status.

The 2001 *Urban and Rural Health Chartbook* provides extensive comparative data on population demographic characteristics, health behaviors and other risk factors, and health care access and use measures.[1] These data are presented by the four large Census regions (Northeast, Midwest, South, and West) and by five urbanization levels (counties aggregated into three metropolitan/urban groups - about 80% of the US population) and two nonmetropolitan/rural groups (with a city of 10,000 or more or without).[1] These data show differences within the urban and rural categories thus caution is needed in drawing conclusions about the differences between rural and urban categories . The chart below presents brief highlights of differences in disease specific mortality (1996-1998 data).

More comprehensive data and more rigorous analysis of these outcomes is necessary to assess whether rural status alone contributes to the excess mortality. These analyses would include other population characteristics that could affect mortality such as ethnicity, personal income, educational attainment, personal behaviors, health care use, and psychosocial and environmental risk factors. An important issue that is not measured is the role of health promotion and disease and risk prevention (such as smoking cessation counseling, information about diagnosing and managing depression, road safety, etc.) and ways that simply having more health care resources ina a community expands access to these services.

Disease Specific Mortality Contrasts

1. Chronic lung disease deaths were *higher among men* in rural compared to urban areas (80 vs. 65 deaths per 100,000 men), with no differences among women (50 deaths per 100,000). This variation has been related to the higher smoking rates for men in rural areas.

2. Rural residents have substantially *higher* age-adjusted death rates from injuries, about 79 compared to 42 for men, and 36 compared to 20 for women. Unintentional injuries, such as motor vehicle crashes (about half of deaths), falls, drownings, poisoning, and suffocation, are the number one cause of death in the one-year to 44-year-old age group. Rural environment factors (highways), personal behaviors, and access to emergent and specialized health care may affect outcomes of crashes. The following were noted as possible reasons for higher rural mortality "two lane highways, narrow or nonexistent shoulders …lower rates of seat belt use, delays in recovery and extended Emergency Medical Services (EMS) response times, and lack of medical emergency and trauma care facilities." (Health US 2001 p. 54).

3. Rural areas have *lower* annual homicide rates than those found in large urban areas (8 vs. 19 for men and 3 vs. 4 for women).

4. Suicide deaths, which were the eighth leading cause of death, were *substantially higher* among men in rural areas (31 vs. 22); this difference was not seen in women, where rates were about 6 in both areas. Health seeking behavior and access may be associated risk factors, "Lower treatment rates for depression in rural areas may contribute to the higher suicide rates." (Health p 58).

Health Workforce Research

The health workforce includes nurses, physicians, pharmacists, dentists, technicians, technologists, therapists, and many other occupations related to health and health care. Health workforce research is policy focused and covers topics such as the supply, distribution, education, characteristics, work settings, and professional activities of various health professions. Studies also examine the demand for various professions, assess labor shortages, and relate market factors, employment, wages and reimbursement for services, to demand. Also included are health outcomes research through assessment of access, quality, costs, and clinical outcomes of care, and emerging models of care.

Data limitations are a major factor in restricting the scope of health workforce research. Another limitation is that most studies examine a single profession in isolation from other professions. This narrow focus is particularly problematic when more than one profession may be providing a service, or when professions work together in teams or in relationships where work can be delegated.

Sponsors for health workforce research have typically included federal agencies, professional associations, major health care providers, advocacy groups, and more recently state level groups. Within the US Department of Health and Human Services (HHS), the key agency responsible for health workforce studies has been the Bureau of Health Professions (BHPr), located within HRSA.

Major responsibility for data collection and analysis across all occupational groups, not only health occupations, resides with the Bureau of Labor Statistics (BLS) of the Department of Labor. The US Census Bureau collects much useful occupational data through its many surveys. Private organizations fund data collection (usually surveys) and analyses. Often a large national professional association (such as the American Medical Association, AMA, or the American Dental Association, ADA) will conduct their own surveys and allow this data to be used by researchers under specified conditions.

State agencies also collect occupational data. For example, the Illinois Department of Employment Security (IDES), collects extensive employment and wage data from a employers through contract with the BLS. The Illinois Department of Professional Regulation (IDPR) collects and reports licensure counts for all major health professions in the State. In some states, surveys are conducted at the time of relicensure to gather more information on health professionals.

The University of Illinois at Chicago Illinois Regional Health Workforce Center has been funded as workforce research center since 1998, with major support from HRSA, BHPr. UIC received funding in the 1990s for Illinois physician and nurse workforce studies from the Illinois Board of Higher Education (IBHE), IDPR, the Chicago Community Trust, the Illinois Department of Public Health (IDPH), and the Illinois Primary Health Care Association (IPHCA). Other research and policy centers within Illinois conduct rural health and workforce studies; these include the Illinois Institute for Rural Affairs at Western Illinois University, the Center for Rural Health and Social Service Development at Southern Illinois University, and the Rural Health Workshop at the University of Illinois Urbana Champaign.

Occupational/Professional Titles and Educational, Licensure, Credentialing

Many health professional occupational areas have several levels (and titles) of workers, reflecting different educational preparation, scope of practice, and licensure/credentialing requirements.

Occupational Levels and Educational Preparation

Professional Level
Requires a college or post-college professional school education, often granted a professional degree, and most often requires special certifying or licensing exams.

- Included are those professions that use the title "doctor" such as physicians, dentists, optometrists, podiatrists, psychologists, and chiropractors.
- The registered nurse (RN) is also a professional title, but the educational preparation may be a bachelor's degree (BSN), a diploma, or an associate arts degree (AA).
- Pharmacist education is moving from the bachelor' degree to the doctorate in clinical pharmacy (PharmD).
- Many therapists professions are moving from a bachelor's degree to a required masters degree for the entry level to the profession (physical therapy, speech and language pathology and audiology, and occupational therapy).
- Technologists may be trained at the college level with an additional period of professional training (often a year), for example a medical technologist.

Technician/Assistant Level

Educational requirements vary, AA degree or certificate programs at community colleges, hospital training programs, vocational schools, or on-the job training. The technician is considered an extender of the professional titled worker, with limited work activities. States may regulate supervisory requirements and they vary in regulation by occupation from licensure, registration, certification, or no regulation.

- Pharmacy technicians generally have certificate or on-the-job training, with restricted activities, and must work under the supervision of a pharmacist.
- An occupational therapy assistant requires an AA degree and works under a treatment plan of an occupational therapist.

Support Level
Requirements vary, generally a specified number of hours that may be obtained through formal programs (high schools, vocational schools, other organizations) that may award certificates, to less formal on-the-job training.

- Nursing assistants and dental assistants function at the support level.

The Health Workforce

Before presenting Illinois data, a brief review of the total US health workforce will be presented.

The US Health Workforce

- The health workforce comprised 10.5% of the total US civilian workforce, about 14.6 million of 139.4 million workers (1999)
- 12.5 million individuals (9.0% of all workers) were employed in health services settings (hospitals, clinics, nursing facilities, home health care, laboratories, etc.)
    - 8.4 million health professionals
    - 4.1 million other workers (support staff, clerical, etc.)
- 2.1 million health professionals worked in other settings (schools, insurance companies, colleges and universities, etc)

The Illinois Health Workforce

In Illinois, about 485,000 individuals were employed in *health care settings*, representing 8.4% of the State's workforce. [8] Using national data above, one could expect another 70,000 health professionals working in other settings, for an estimated size of the health workforce of 555,000. Overall, Illinois ranked 30th among states in the population adjusted numbers in health services employment.

Table 1. Illinois Health Workforce Employed in Health Care Settings

Health Care Setting	Employment	% Total
All settings	484,302	100%
Hospitals	248,618	51%
Offices and clinics – total	116,311	24%
Physicians offices	67,894	
Dentists offices	28,659	
Other offices	19,758	
Nursing and personal care facilities	81,376	17%
Home health care	19,612	4%
Laboratories	5,993	1%
Other settings	12,392	3%

Source: HRSA Illinois State Workforce Profile.

Illinois employment in health services grew by 29% between 1988 and 1998, while the population grew by about 6%. The net Illinois employment grew at a rate comparable to national rate. Hospitals have been the largest employers, followed by offices and clinics, and nursing and personal care facilities (Table 1).

The numbers of active health professionals in Illinois for several occupations are listed in Table 2. Registered nurses (RNs) were the largest professional group, with about 102,000 active nurses in the State, about 819 per 100,000 population, or 8 nurses per 1,000 residents. The Illinois RN supply was higher than the national average, yet Illinois ranked 29th on population-adjusted supply among the states.

Illinois ranked in the top ten states for only the professions of dentistry and occupational therapy. Among several professions, the Illinois supply ranked in the lower half of states (below 25th ranking), including registered nurses, dental hygienists, laboratory technologists and technicians, licensed practical nurses, and radiologic technicians,

Table 2. Health Professions Supply in Illinois, Compared to the US Average, and Illinois Ranking Among States, 1998 Data

	Illinois (Total count)	**Illinois** (per 100,000 population)	**U.S.** (per 100,000 population)	**Illinois rank** (1=highest supply)
Nurses (RNs)*	101,660	819	782	29
Physicians	23,240	192	198	18
Pharmacists	8,370	69	66	21
Dentists	6,740	56	48	8
Occupational therapists	3,700	31	24	8
Physical therapists	5,490	46	41	14
Speech-language path-audiologists	4,980	41	33	12
Dental hygienists	6,280	52	52	27
Laboratory technologists/technicians	12,570	104	105	27
Nurses- LPNs	25,140	208	249	33
Radiologic techs	7,040	58	54	29
Dieticians and nutritionists	2,190	18	17	14
Psychologists	3,310	27	31	25

*Source: HRSA Illinois State Workforce Profile. * 2000 data HRSA The Registered Nurse Population 2000*

These data can also be used to assess the relative supply among various professions. For example, the Illinois ratio of dentist to dental hygienist was about one to one (6,740 to 6,280), the ratio of RNs to LPNs was four to one (102,200 to 25,140), and the ratio of physicians to pharmacists was under three to one.

Wages of Health Professions in Illinois

Wage data is a useful measure for assessing the workforce. Wages generally relate to the years and complexity of formal training, the practice scope, and various other market

and employment factors. Median hourly wages and estimated annual wages for several professional, technical, and support health workers are shown in Table 3 (annual wages are calculated at 2080 hours per year). These data show differences in wages across professions and within the same professional area, between the various levels. For example, note the difference in wages between an occupational therapist (professional level) and an occupational therapy assistant (technical level). One cautionary note is that wages can respond rapidly to the market, as seen in the rapid rise in pharmacists' wages over the last several years.[17]

Table 3. Annual and Hourly Wages by Profession
1998 BLS Data

Professional level	Hourly Wage	Annual Wage	**Technician/Assistant**	Hourly Wage	Annual Wage
Nurse (RN)	$18.40	$38,272	Licensed practical nurse	$12.69	$26,395
Pharmacist	$31.84	$66,227	Pharmacy technician	$8.54	$17,763
Physical therapist	$28.01	$58,261	Physical therapy assistant	$12.19	$25,355
Occupational therapist	$24.18	$50,294	Occupational therapy asst	$15.82	$32,906
Dental hygienist	$21.86	$45,469	Dental assistant	$9.73	$20,238
Dietician/nutritionist	$15.44	$32,115	Respiratory therapist	$15.53	$32,302
Speech/language/audiolog	$19.78	$41,142	Nurses aide	$7.76	$16,141
Psychologist	$24.02	$49,962	Home health aide	$8.13	$16,910
			Emergency medical tech	$9.46	$19,677
			Radiologic technician	$14.87	$30,930

Source: HRSA Illinois State Workforce Profile.

Studies of the Illinois Health Workforce

Several Illinois health workforce studies used county-level data that was aggregated to the regional level and named in each chart by the largest city in the region. Appendix I shows an Illinois map with the ten regions and the counties included. Counties were also categorized by the rural/urban continuum code system (RUCC) that has ten categories (four metropolitan and six nonmetropolitan) based on the degree of urbanization and proximity to metropolitan areas. These categories were aggregated to two metro and two non-metro or rural groups. Overall, the two rural categories included 74 of the 102 counties in Illinois and 15.5% of the total State population. Appendix II lists the counties in each category and provides a more detailed description of the categories.

Data for these studies was obtained from several State level sources, national professional associations, and a useful composite data set prepared by HRSA known as the Area Resource File (ARF) which has county level data for all US counties.

One can use the Illinois regional data to infer some degree of the differences between metropolitan regions and those that are largely rural. For example, the Carbondale region, which includes 22 of the southern most counties, may be considered rural, and the greater Chicago regions, are metropolitan.

Illinois Physicians by Region and by Primary Care and Specialist Practitioners

An Illinois study of primary care physicians using 1995 AMA data in the ARF dataset, described the regional supply for of all active patient care physicians, primary care physicians, and specialist physicians (aggregated).[9] In 1995, there were 21,382 active patient care physicians in Illinois or a ratio of 181 physicians per 100,000 population (Table 4). One can estimate the number of physicians for each region by multiplying the region's ratio (physicians/100,000) by the region's population.

The Illinois distribution of total physicians by specialties showed a higher supply of all physicians and specialists in metropolitan areas and counties and a higher and more evenly distributed supply of family physicians among rural county regions. Similar findings were reported in a national study of the distribution of physicians.[10] Among the ten regions of the State, those with the lowest total physician supply were Kankakee, Carbondale, and East St. Louis. The highest supply ratios were seen in metropolitan Chicago (Cook/DuPage counties and the three-county area of Kane/Lake/McHenry.

Table 4. Illinois Physicians, Ratios per 100,000 Population by Regions
1995 AMA/ARF Data

	All Physicians	Family Practice	General Internal Medicine	General Pediatrics	Specialist Physicians	Regional Population
Physician count	21,382	3,133	3,334	1,530	13,385	11,829,940
Physicians to 100,000 pop	181	27	28	13	113	
Regions						
Rockford	134	26	14	8	85	617,776
Peoria	141	30	15	7	89	674,089
Springfield	144	29	16	8	92	577,243
Champaign	130	26	17	7	79	786,512
Carbondale	93	31	13	5	43	630,066
Chicago(Co/DP)	233	29	40	18	146	5,990,335
Kane/Lake/McH	162	19	23	13	108	1,157,058
Kankakee	88	15	12	8	53	595,982
Rock Island	111	24	16	5	67	218,993
East St. Louis	98	17	15	6	60	581,886

Family practice physicians accounted for about 15% of all physicians and were relatively more evenly distributed across the regions, with very low ratios in Kankakee and East St. Louis. Physicians in general internal medicine and general pediatrics accounted for 16% and 7% of all physicians and had high supply ratios in the Chicago metropolitan areas (twice as high as other regions). In most regions, the family practice physicians outnumbered the combined counts of

general internists and general pediatricians.

The distribution of specialists shows high supply ratios in the Chicago metropolitan regions, and low ratios in four regions that were rural or had low overall physician supply. There were more specialists than primary care physicians across all regions except Carbondale; the statewide ratio was 1.7 to 1.0.

Many factors affect physicians' practice location decisions, with the location of training programs being one that can be affected by policy and educator intervention. The family practice training programs in Illinois are the most widely geographically distributed among community hospitals and this may be one contributing factor to the broader distribution of family practice physicians observed here.[11,12]

Dentist Supply and Characteristics Comparisons of Rural and Urban Areas

This study analyzed the Illinois dentist supply compared across four metro to rural categories using year 2000 ADA data.[13,14] Overall, there were 6,920 active patient care dentists in Illinois, with 83% general dentists, 2% pediatric dentists, and 15% other dental specialties (Table 5).

The rural areas had *far fewer* dentists (in absolute terms and after adjusting to the population). The average number of dentists per county in the rural categories was 5 and 10 dentists, compared to 597 dentist in the most metropolitan counties and 36 dentists in the metro-other category. When adjusted to the population, the most rural category had 28 dentists per 100,000 population, about half the ratio of the most metropolitan area. Rural areas also had proportionately fewer dental specialists; only 3 pediatric dentists were located in all 74 counties in the two rural categories

There were also notable demographic differences across the four urban/rural categories. Rural areas had fewer women dentists and few non-white dentists. The rural areas had proportionately older dentists. The average hours worked by women dentists and older dentists is less, and older dentists are at higher risk for retirement.[15] Thus rural areas have considerably less access to dentists now and this may worsen over the next decade.

Another important issue for the Illinois dentist supply has been the dramatic drop in new dental school graduates in Illinois due to the downsizing of the largest program at the University of Illinois at Chicago and the closure of two private dental schools in the State (Loyola and Northwestern University). The number of new dental graduates dropped from about 400 graduates per year in the 1980s to about 110 graduates in 2001. Both UIC and the dental school at Southern Illinois University have noted this situation and expressed interest increasing their class size if funding assistance were available.

Table 5. Dentist Supply and Characteristics by Metro and Rural Categories,
2000 American Dental Association (ADA) Data

	Illinois	Metro-central	Metro-other	Rural-Adjacent	Rural-nonadjacent
Total population	12,128,370	8,350,158	1,902,599	1,268,430	607,183
Number of counties	102	8	20	37	37
All dentists	6,920	5,451	865	423	181
General practice	83%	83%	82%	89%	92%
Pediatric dentists	2%	2%	2%	1%	0%
Other specialties	15%	15%	16%	10%	8%
Average number of dentists per county	58	579	36	10	5
Dentist to Population Ratio*	49	55	38	30	28
Dentist Characteristics					
Women	17%	20%	9%	8%	5%
White	85%	82%	94%	97%	98%
Age Group:					
Age <35	11%	12%	9%	7%	8%
Age 35-54	66%	66%	67%	65%	63%
Age 55-74	23%	22%	24%	29%	29%

Source: Byck 2002. * General and pediatric dentists per 100,000 population

The Illinois study also assessed dentists' participation in the Medicaid dental program and service to children with Medicaid coverage. Only 33% of children with Medicaid coverage saw a dentist in 2000, and only 26% of general dentists and pediatric dentists treated these children. However, one notable finding was that dentists in rural counties were *more* likely to participate in the dental Medicaid program. In the rural categories, about 49% of the dentists participated and only 24% of the dentists in metropolitan areas participated.[14]

Source: Illinois Department of Professional Regulation, 1997. U.S. Census Bureau, Population Estimates for Counties: July 1, 1997.

The Illinois Registered Nurse Workforce

Illinois, as most of the Nation, has faced a serious shortage of registered nurses (RNs). Findings from the Illinois 2000 Survey of Registered Nurses Illinois are presented in detail in a report that describes the supply, distribution, and educational and professional characteristics of Illinois RNs.[16] An estimated 82% of all RNs licensed in Illinois were working in nursing, with 72% (102,534) employed in Illinois. Both the Illinois survey and the national nurse survey reported a *decline* in the number of nurses employed in Illinois in 2000 compared to 1996.[17]

Illinois nurses worked in a variety of settings, with hospitals having the largest numbers of nurses (58%), followed by clinics and physicians offices (13%), nursing homes (7%), and home health care (5%). About 73% of Illinois nurses reported working full-time (more than 32 hours per week) and 27% worked part-time. Among all of working nurses, about one in five worked at more than one job. The report presents detailed information on nurses by each of 11 regions of the State. This study was the seventh in a series of survey studies conducted since 1986 by the University of Illinois College of Nursing for the Illinois Department of Professional Regulation. The UIC group also studied the licensed practical nurses (LPNs) in Illinois in 2001.[18]

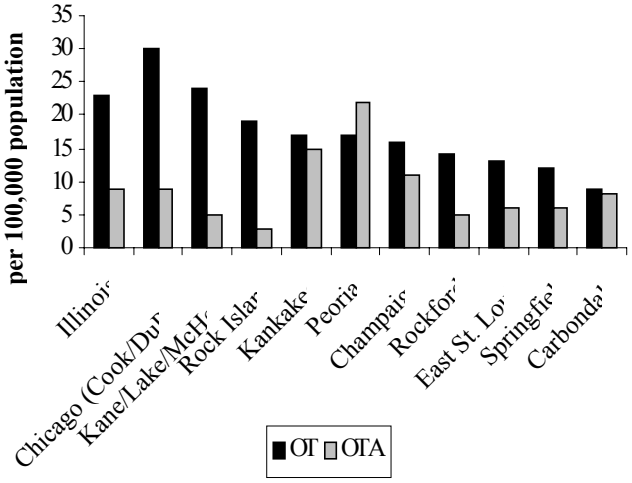
The Illinois Occupational Therapy Workforce

This study assessed the supply and distribution of occupational therapists (OTs) and occupational therapist assistants (OTAs) in Illinois using licensure data.[19] More than half of Illinois occupational therapists were in the greater metropolitan Chicago area (65% OTs and 50% OTAs). Many small population counties had only two to three OTs per county and about the same number of OTAs.

Of note, the study found a different distribution for OTs and OTAs, by region and by urban vs. rural counties. When population adjusted, the statewide OT count was 23 OTs per 100,000 people (Figure 11). Chicago had the highest ratio for OTs (30 per 100,000), second highest was the region of collar counties surrounding Chicago (Kane, Lake, McHenry) at 24, followed by many regions with about 18 to 12 OTs per 100,000, with the lowest ratio in Carbondale, the southern-most region of the state (9).

In comparison, the statewide OTA ratio was 9 per 100,000 people. The OTA ratio for the Chicago area was also 9, with several regions having higher ratios, Peoria (23), followed by Kankakee and Champaign. This may relate to the location of OTA training programs in Peoria, Champaign and near Kankakee.

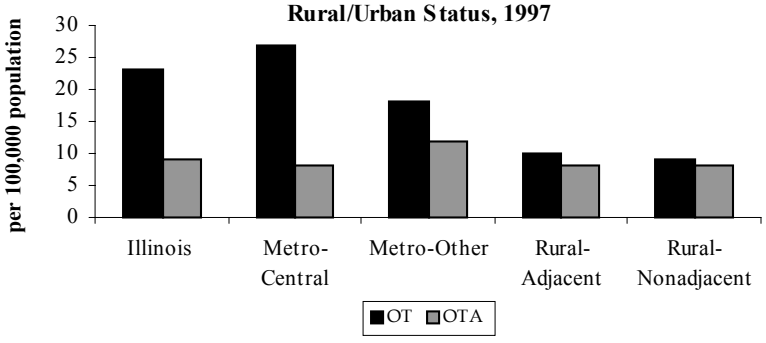
Figure 11. Licensed Illinois OTs and OTAs by Region, 1997



Source: Illinois Department of Professional Regulation, 1997. U.S. Census Bureau, Population Estimates for Counties: July 1, 1997.

The distribution of OTs and OTAs across urban and rural counties was examined using the metro and non-metro/rural categories described above. When adjusted to population, the metro-central counties had a high supply ratio of OTs, about three OTs for each OTA (Figure 10). The rural areas had an almost equal supply of OTAs and OTs, thus almost half of the OT workforce in rural areas consisted of OTAs.

Figure 10. Illinois OT and OTA Distribution by Rural/Urban Status, 1997



Source: Illinois Department of Professional Regulation, 1997. U.S. Census Bureau, Population Estimates for Counties: July 1, 1997.

The National Pharmacist Shortage and the Impact on Rural Communities

In December 2000, HRSA BHPr reported that there was a shortage of pharmacists evidenced by high vacancy rates, rising pharmacist salaries, and other market responses (labor substitution and automation).[4] The key dynamic for the shortage was a rapid growth in demand for pharmacists (due to increases in the volume and range of activities conducted by pharmacists, notably the striking growth in the numbers of prescriptions dispensed) that could not be met by the available pharmacist supply. The shortage was reported to affect all regions of the country and threatened the quality of pharmaceutical care. The research team for this study included several researchers from UIC (Cooksey, Walton, Stankewicz) and LaVonne Straub who wrote the two sections of the report that examined pharmacist supply and demand from the rural perspective.

Studies have shown that while rural areas have a lower supply of pharmacists than urban areas, pharmacists do evidence a broader distribution across rural areas than other professions (such as physicians) that tend to be more concentrated in urban areas.[20]

Research by Dr. Straub and colleagues found that Illinois rural counties had lost pharmacies, probably reflecting a trend of pharmacies to be consolidated around larger population centers.[21,22] Challenges facing rural communities to sustain pharmacy services were reported to be substantial and included salary competition for new pharmacists (higher salaries are generally found in more metropolitan areas) and greater financial threats from managed care contracting and price discounts required of pharmacies which may not be achievable by smaller independent drug stores, as compared to chain drug stores which may have better purchasing options.

Summary of Findings: The Illinois Health Workforce Supply and Rural Areas

Summary of Findings

- The health workforce in Illinois represents about 9% of all Illinois workers.
- Illinois ranks in the mid-range among states in the supply of professionals.
- While Illinois ranked in the top ten states for dentists, this rank may decline due to sharp reductions in Illinois dental school graduates over the past decade.
- Among several professions, the Illinois supply ranked in the lower half of states (below 25th ranking), including registered nurses, dental hygienists, laboratory technologists and technicians, licensed practical nurses, and radiologic technicians.
- There has been an absolute *decline* in the number of nurses employed in Illinois in 2000 compared to 1996.
- Many regions of the State have substantially lower numbers of health professionals (after adjusting for the population differences).
- Rural areas have *far* fewer dentists and physicians per population than more urban areas of the State.
- Overall, the findings from the Illinois studies are consistent with published national studies that generally describe rural areas as having
    - fewer health professionals (when adjusted to the population);
    - more generalist practitioners and fewer specialists; and
    - for medicine and dentistry, fewer women and more older practitioners in rural regions.

The Illinois studies also found:

- Dentists in rural counties were more likely to treat children with Medicaid insurance than dentists in metropolitan areas; and
- The location of training programs appeared to be associated with higher numbers of practitioners in these areas, a finding for occupational therapy assistants.

Further study and data is needed to continue to clarify the factors associated with the supply of health professionals in rural communities.

Useful resources for additional information on rural health workforce include a comprehensive text edited by Thomas Ricketts[23] and the *Journal of Rural Health.*

Opportunities and Challenges for the Rural Health Workforce, Rural Communities, and Policy Makers

With the current health care environment, the shortages of critical health personnel, rising health care costs, and demand for services, one can readily forecast continued challenges to sustain a robust rural health workforce. Recruitment and retention of rural practitioners may remain difficult. Thus multiple strategies should be considered to address this challenge. Several Illinois initiatives are directed at increasing the supply pipeline by increasing the number of Illinois students interested in rural health care careers. Unfortunately it is beyond the scope of this paper to describe these excellent programs, but a common feature is to provide opportunities for educational or training experiences in rural communities, with rural practitioners as mentors. For example, the Rural Medicine Program (RMed) at the University of Illinois College of Medicine at Rockford is an initiative that recruits and trains medical students that plan to practice in rural Illinois communities.

Other strategies may draw on the special resources or attributes of rural communities and practice opportunities to assist recruitment and retention efforts. In addition, strategies are being developed which expand the resources available to rural residents and their providers (eg telemedicine).

Rural Health Workforce Development – Strategies to Consider

- Expand education and training opportunities for health professional students in rural areas through partnerships with health professions education programs.
- Evaluate options to increase community college health degree programs that train technical level health professionals. Community hospitals may serve as clinical training sites.
- "Grow your own" – that is, strengthen middle school and high school students' interests and teachers' and counselors' knowledge of the full range of health occupations and career options. Develop ways for the community to show its support of these interests.
- Consider telemedicine and telehealth as ways to allow patients (and their providers) access to specialists without leaving their communities.
- Clinicians may extend their services range through programs that allow regular but not continuous on-site supervision (e.g. occupational therapists may design treatment plans that are carried our by OT assistants under supervision).
- Rural quality of life may appeal to health professionals; engage the broad community in recruitment and retention efforts. Consider creative ways to allow for coverage of call schedules to allow respite for busy practitioners.
- Explore options for salary enhancements for professionals.
- Consider a vibrant health care sector as a community development asset, engage corporate and civic partners in recruitment and retention efforts.
- Consider innovative lower cost health care services alternatives for specific group or individual care needs that allow for expanded use of health care extenders.
- Take advantage of federal funding initiatives to preserve or add additional health care resources such as the critical access hospital program, the expansion of community health centers, education program support, and public health in infrastructure investment (county health departments and hospitals).

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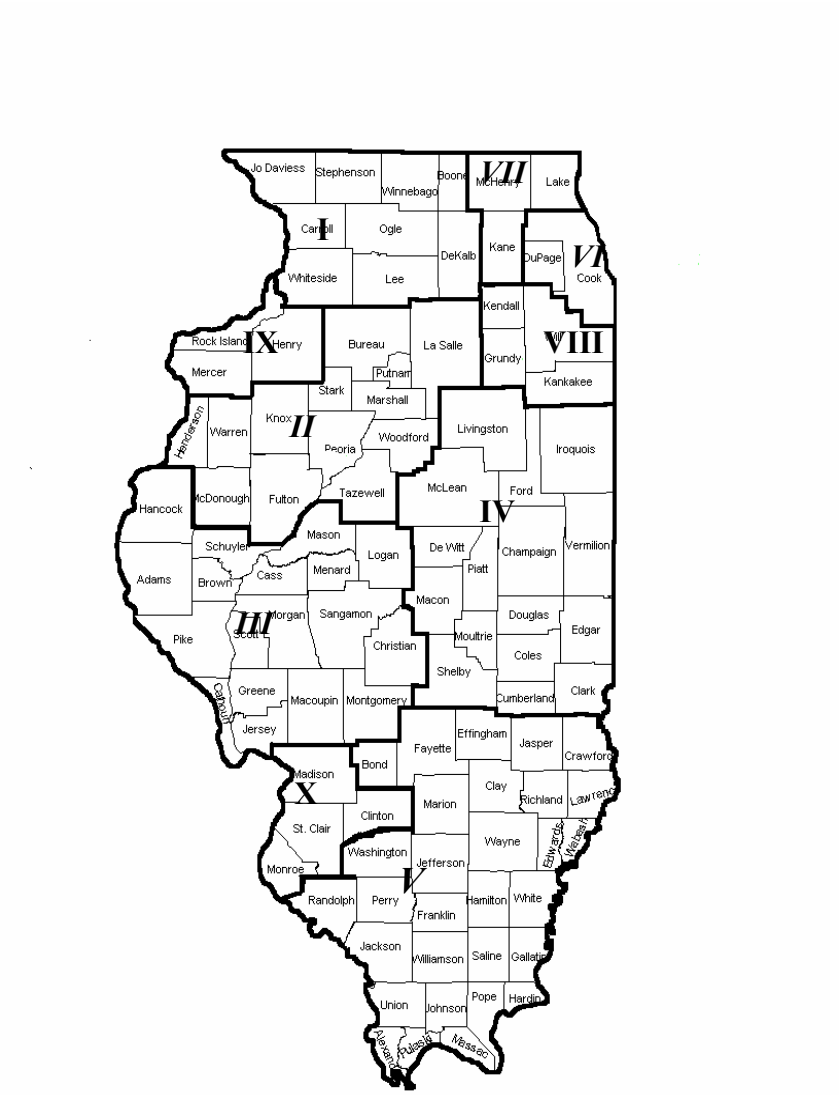
Appendix 1

Counties included in each of the ten Illinois regions.



Appendix II Illinois Counties by Metro and Rural Categories

Illinois Counties: Rural/Urban Designation

Metro-central	Metro-other	Rural-adjacent	Rural-nonadjacent
Cook	Boone	Adams	Alexander
DuPage	Champaign	bond	Brown
Kane	Clinton	Cass	Bureau
Lake	De Kalb	Christian	Calhoun
Madison	Grundy	Clark	Carroll
McHenry	Henry	Coles	Clay
Saint Clair	Jersey	Dewitt	Crawford
Will	Kankakee	Douglas	Cumberland
	Kendall	Edgar	Edwards
	Macon	Fayette	Effingham
	McLean	Ford	Franklin
	Menard	Fulton	Gallatin
	Monroe	Greene	Hamilton
	Ogle	Iroquois	Hancock
	Peoria	Jackson	Hardin
	Rock Island	Jo Daviess	Henderson
	Sangamon	Knox	Jasper
	Tazewell	La Salle	Jefferson
	Winnebago	Livingston	Johnson
	Woodford	Logan	Lawrence
		Macoupin	Lee
		Marshall	Marion
		Mason	Massac
		McDonough	Perry
		Mercer	Pike
		Montgomery	Pope
		Morgan	Pulaski
		Moultrie	Putnam
		Piatt	Richland
		Randolph	Saline
		Shelby	Schuyler
		Stephenson	Scott
		Vermilion	Stark
		Washington	Union
		White	Wabash
		Whiteside	Warren
		Williamson	Wayne

Description of Metro/Rural Categories

Code 0 – Metro-central
Codes 1, 2,3 – Metro-other
Codes 4, 5,6 – Rural-adjacent
Codes 7,8,9 – Rural-nonadjacent

0 - Central counties of metro area of 1 million population or more
1 - Fringe counties of metro areas of 1 million population or more
2 - Counties in metro areas of 250,000 to 1 million people
3 - Counties in metro areas of fewer than 250,000 people
4 - Urban population of 20,000 or more, adjacent to a metro area
5 - Urban population of 20,000 or more, not adjacent to a metro area
6 - Urban population of 2,500 to 19,999, adjacent to a metro area
7 - Urban population of 2,500 to 19,999, not adjacent to a metro area
8 - Completely rural or <2,500 urban population adjacent to a metro area
9 - Completely rural or <2,500 urban population not adjacent to a metro area