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ABSTRACT

This report presents research from seven Midwestern states on teacher shortages, using data from teams of state, higher education, and teacher union officials who selected the highest priority indicators of teacher supply and demand. Researchers conducted a data gap analysis to identify data being collected nationally and statewide regarding the key indicators. Results indicate that: most Midwestern states do not have the information needed to make good policy decisions in this area; there are shortages of teachers in some but not all curriculum areas; changing demographics have increased the need for teachers of color; special education is a unique area of concern regionally and nationally; the region produces enough elementary teachers; and teacher attrition is a problem regionally. Recommendations include: leadership in state agencies and legislatures need to make data collection and analysis a priority; more effective efforts are needed to communicate teacher supply and demand situations to policymakers and the general public; and state agencies need support as they seek ways to improve information on teacher supply and demand. The four appendixes present: methodology and limitations; models for determining shortage areas; shortage areas identified by the American Association of Employment in Education and several states; and reasons for leaving. (Contains 23 references.) (SM)

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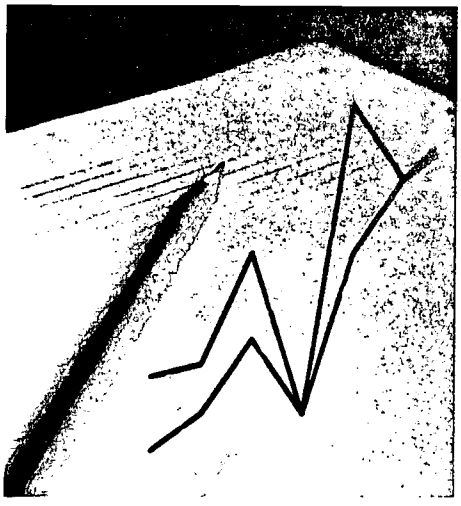

TEACHER SHORTAGES IN THE MIDWEST: CURRENT TRENDS AND FUTURE ISSUES

NCREL
North Central Regional Educational Laboratory
"Applying Research and Technology to Learning"

TEACHER SHORTAGES IN THE MIDWEST: CURRENT TRENDS AND FUTURE ISSUES

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We welcome reactions, suggestions, and comments. Please contact the authors at the Center for School Change, 234 Humphrey Center, 301 19th Avenue South, Minneapolis, MN 55455, 612-626-1834.

About the Center for School Change

The Center for School Change is a program of the Humphrey Institute of Public Affairs at the University of Minnesota. The Center is funadamentally committed to increasing student achievement and strengthening communities through improved school-community-family partnerships. Among its key goals is to stimulate change in local, state, and federal institutions by increasing knowledge about key education issues. Towards this end, the Center has conducted research in the areas of teacher supply and demand, teacher preparation, family involvement, student assessment, school facilities, and public school choice (including charter schools). In addition to conducting research and holding conferences on key education issues, the Center works directly with schools and communities to create more effective models of education. For more information on the Center for School Change, please call 612-626-1834 or visit the Web site at www.hhh.umn.edu/center/school-change.

About the North Central Regional Educational Laboratory

The North Central Regional Educational Laboratory (NCREL) is a not-for-profit organization dedicated to helping schools—and the children they serve—reach their full potential. NCREL's mission is to strengthen and support schools and communities so that all students achieve standards of educational excellence. We accomplish our mission through policy analysis, professional development, and technical assistance, and by leveraging the power of partnerships and networks. One of ten regional educational laboratories, NCREL serves a seven-state region of the Midwest that includes Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio, and Wisconsin.

NCREL also operates the North Central Regional Technology in Education Consortium (NCRTEC) and the North Central Mathematics and Science Consortium (MSC).

Contents

Executive Summary

Are shortages of high-quality teachers having an impact on Midwestern states? What can be done about shortages of teachers in several key curriculum areas throughout the Midwest? What are the most important steps states can take to attract, train, and retain excellent teachers? These are the questions this report seeks to help answer. The report brings together, for the first time, research from seven Midwestern states (Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio, and Wisconsin) on these critical issues. This study found that:

- Most Midwestern states do not have the information needed to make good policy decisions in these areas. Many states do not have information about issues such as the supply and demand of teachers, the number of teachers leaving the profession, and curricular areas encountering teacher shortages or surpluses. Meaningful, comparable, and current data is not available in a number of key areas across all states in the region.
- Available data suggest that there are shortages of teachers in some but not all curriculum areas. A booming economy, increased retirements, and competition from other parts of the country desperate for teachers are likely to challenge the ability of Midwestern schools to attract and retain excellent math, science, and industrial technology teachers.
- The changing demographics of the region have increased the need for teachers of color. Although not much information has been gathered, existing research shows that the demand for teachers of color far exceeds supply in urban, suburban, and rural areas.
- Special education is a unique area of concern for the region and nation. National research and some Midwestern state studies found that the attrition rate is the highest in the area of special education. Emergency licenses in several states go disproportionately to special education teachers. Problems in this area are complex and not simply a matter of numbers.
- Available data show that the region produces enough elementary teachers to meet its needs, and some states produce a large surplus.
- Quality of teacher preparation is an issue throughout the region. Models used to define shortages in specific curriculum areas are inadequate if they do not include some measure of teacher quality. Most states in the region are undertaking efforts to improve teacher quality.
- The effectiveness of attempts to better train, attract, and retain educators across the region and nation is in many cases unknown. Evaluating and comparing various approaches would be of great value as states in the region seek to implement new programs or improve current ones.
- Attrition of teachers appears to be a problem across the region. However, high-quality mentoring and induction programs can reduce the number of people leaving the profession and help produce more effective teachers. Four states in the region have undertaken differing approaches to induction.
- There is an enormous desire among most Midwestern states to move beyond the current situation of inadequate data collection and to learn from each other.

Based on the research conducted, the following recommendations are offered:

- Leadership in state agencies and legislatures in each state need to make data collection and analysis a higher priority. The vast majority of states in the region do not currently have the capacity to analyze existing data, let alone add new data collection to their systems. Most of the states in the region, for example,

do not collect any information about demand for teachers. They also have difficulty reporting in meaningful detail the number of licenses issued annually in the state.

- More effective efforts are needed to communicate the teacher supply and demand situation to policymakers and the general public. The situation is more complex than "state x has a massive shortage of teachers." Both policymakers and the broader public need accurate information to make good decisions. They need to understand, for example, that most states do not have an overall shortage of teachers being trained.
- Support should be provided to state agencies as they look for ways to improve information on teacher supply and demand. Such support might include continued facilitation of information exchange between states through face-to-face meetings, an e-mail list, and Web-based material on best practices in data collection and retention/attraction strategies.
- State agency and legislative leadership from Midwestern states should be convened to build support for improvements in data collection; to learn from each other about best practices in data collection and specific policies relating to teacher supply and demand; and to move ahead with implementation of effective policies. For example, a meeting might be held to look specifically at the issue of special education.
- New research and analyses that further knowledge about the regional impacts of teacher supply and demand should be conducted by a regional organization.
- Significantly increased communication among state, regional, and federal data-gathering efforts is needed to reduce duplication and make effective use of resources. Relationships between state agencies, regional organizations, and the National Center for Education Statistics (NCES) should be strengthened to maximize the utility of federal data-collection efforts for state and regional purposes.

Introduction

The Midwest region has traditionally been a net exporter of an abundant crop of new teachers. For years, policymakers and the public have assumed that shortages of high-quality teachers occur in other parts of the country, but not in most places in the Midwest. However, times are changing. Recent studies indicate that while it is probably true that the region continues to produce a larger number of teachers than it needs, shortages already have begun to show up in certain teaching areas and geographic regions (Illinois State Board, 1999; Hare & Nathan, 1999). Part of the reason is the changing demographics, which have increased the need for more teachers of color. Additional factors likely to have an impact on the ability of Midwestern schools to get and keep the best teachers include a booming economy, increased retirements, and competition from other parts of the country desperate for teachers.

At the national level, focusing on teacher quantity and the quality of the preparation teachers receive in schools of education is increasing in importance for state policymakers, who placed improving teacher preparation and helping to improve public schools as two of the top three priorities for higher education in their states (Haycock, 1997). In 1998, Congress reauthorized the Higher Education Act spurring teacher preparation programs to begin thinking through how to collect and report on information about their graduates not previously made available to the public. In a related effort, the National Commission on Teaching and America's Future (NCTAF) began working with its 15 partner states on identifying indicators of success in improving teacher quality as a result of states implementing reforms around teacher preparation and professional development, recruitment, and higher standards for teachers. All of these efforts have placed new burdens on existing state systems for collecting and reporting teacher-quality data. Institutions of higher education, state education agencies, and boards of higher education, as well as unions and state retirement agencies, have little experience working together to collect, analyze, and report data on the number of teachers in the pipeline or on the quality of current and future teachers.

To better understand this issue of teacher supply and demand, the North Central Regional Educational Laboratory (NCREL) commissioned a study (1) to begin to identify the availability of accurate and timely data (see Appendix A) on the quantity of teachers being prepared for the teaching profession and those already in the pipeline, and (2) to highlight existing identifiable gaps in the supply of teachers in the upper Midwest. NCREL convened teams of state, higher education, and teacher union officials from seven Midwestern states (Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio, and Wisconsin) and asked them to select the highest priority indicators of teacher supply and demand. Researchers from the Center for School Change at the University of Minnesota then conducted a data gap analysis to identify data being collected nationally and in each state relating to the key indicators. Based on the data gap analysis, this report summarizes what we do and don't know about three important interlocking areas in the region: teacher shortages and surpluses, alternatives for training teachers, and why teachers leave and how to keep them. Conclusions and recommendations follow.

Teacher Shortages and Surpluses

Defining Shortages and Surpluses

A variety of approaches to determining teacher shortages and surpluses are used nationally and in the Midwest. The model used for defining these areas is important. For example, Wisconsin uses a model that looks at the number of teacher preparation graduates who receive employment by field, attrition rates by field, and information about applicant pools and enrollment projections (Laurtizen, 1999). Illinois looks at unfilled positions, the number of new positions, and

supply available from teacher preparation programs and the reserve pool (those holding a valid license but not teaching) (Illinois State Board, 1999). Minnesota and the American Association of Employment in Education (AAEE) take a survey approach. Minnesota asked principals and superintendents to identify areas with shortages of high-quality applicants and AAEE surveys teacher preparation institution placement offices for their estimation of shortage areas (American Association of Employment in Education [AAEE], 1999; Hare & Nathan, 1999; Yussen, Grey Browning, & Colby, 1999). A more detailed description on each of these models is available in Appendix B.

Shortage Areas

Most national studies on teacher supply and demand conclude that, nationally, there is an overabundance of teachers, but shortages are showing up in certain curriculum areas and in certain geographic areas (Darling-Hammond, 1997). Three states in the region (Illinois, Minnesota, and Wisconsin) and the AAEE collect data that identifies teacher shortage areas (AAEE, 1999; Illinois State Board, 1999; Hare & Nathan, 1999; Lauritzen, 1999). Areas identified by at least two of these four entities are listed below (a more detailed list can be found in Appendix C):

- Special Education (AAEE, IL, MN, WI)
- Bilingual/ESL (AAEE, IL, MN, WI)
- Technology/Computer Ed (AAEE, IL, WI)
- Library/Media Specialist (AAEE, WI, MN)
- Business (AAEE, WI, MN)
- Mathematics (AAEE, MN)
- Physical Science (AAEE, MN)
- Family/Consumer Science (MN, WI)
- Music (MN, IL)

While identified shortage areas do overlap, some important differences can be found among states in the region. For example, national and regional analyses often mention shortages in mathematics and physical science. However, state-level analyses conducted in Illinois and Wisconsin do not (Illinois State Board, 1999; Lauritzen, 1999). While our analysis did not address why the situation is different in these two states, there are clearly ramifications for state-level policymakers.

Some shortage areas do show up across the region. The most important of these is special education, a unique area of concern, not only in the Midwest but nationwide. The depth of this shortage is shown by another method of assessing teacher shortages—looking at the teaching areas where a large number of emergency licenses are being issued. Table 1 summarizes the number of special education emergency licenses being issued for those states with available data. As this table indicates, teachers without full credentials are teaching some of the region's most needy students.

Table 1: Number of Emergency/Limited/Temporary Licenses Issued in the Area of Special Education by State

	Type of License and Number Issued in Special Education Areas
Indiana (1997-98)	1,149 Limited Licenses (937 in Special Education)
Iowa (1998-99)	1,463 Conditional Licenses (569 in Special Education)
Ohio (1999)	3,090 Full-Time Temporary Licenses (1,200+ in Special Education)
Wisconsin (1998-99)	1,934 Emergency Licenses (869 in Special Education)

Sources: Indiana Professional Standards Board, June, 1999; Iowa Department of Education, Judy Jeffrey, personal communication, 2000; Ohio Department of Education, John Nichelson, personal communication, 2000; and Lauritzen, 1999.

Surplus Areas

Two sources of standardized data on the oversupply of teachers are available across all states in the region. The first is the Bureau of Labor Statistics (BLS). Each state works with the bureau to estimate the number of annual job openings for all occupations. In the area of education, these are fairly broadly defined (i.e., elementary education, secondary education, special education) but do provide some information on demand for teachers in a state. The second source is the Integrated Postsecondary Education Data System (IPEDS), which includes information on the number of people completing programs in education (and other areas) by higher education institution (Bureau of Labor Statistics, 2000; National Center for Education Statistics [NCES], 2000). Comparison of these two sets of data provides a highly simplified view of how supply and demand differ because the categories are fairly broadly defined. Thus, the only meaningful comparison is in the area of elementary education because states tend to define this category in the same way, as shown in Table 2.

Table 2: Supply and Demand for Elementary Educators

State	BLS Estimated Annual Openings to 2006	IPEDS 1996-97 Completers
Illinois	1,460	3,143
Indiana	810	2,205
Iowa	430	1,485
Michigan	NA	1,728
Minnesota	910	1,430
Ohio	1,690	2,903
Wisconsin	1,170	1,211

Sources: Bureau of Labor Statistics, undated; National Center for Education Statistics, undated

While Table 2 supports anecdotal evidence that the Midwest is a net exporter of elementary educators, it does not include some important variables. For example, geographic regions (e.g., urban areas) may be having difficulty attracting elementary educators. Illinois reports shortages of elementary teachers in the Chicago area (Illinois State Board, 1999). In addition, this approach says little about the ethnicity of teachers being supplied. Research conducted in Minnesota indicated shortages of teachers of color in all regions of the state including rural areas (Hare & Nathan, 1999).

Numbers Can Be Misleading

Most econometric models concentrate heavily on numbers and, to some extent, assume all individuals are equally capable of filling job vacancies. However, models for calculating supply and demand that concentrate too heavily on numbers can and do lead to distorted and faulty conclusions. Take special education for example. Colleges of education seem to be producing an abundance of teachers holding licenses to teach special education in some states, but in these same states special education vacancies attract only a small number of applicants. A survey of special education directors in Minnesota revealed that the "quality of life" for special education teachers is quite low due to a variety of factors (Nathan, Hare, & Cheung, 1999). One outcome of these shortages is that states have had to issue a disproportionate number of limited or emergency licenses to teach special education.

Sources: Nathan, Cheung, & Hare, 1998

Teachers' Reciprocity

Data from Wisconsin and Minnesota show that teachers are mobile (Lauritzen, 1999; Nathan, Hare, & Cheung, 1999). One-third of new Minnesota licenses are issued to applicants from other states, and one-fifth to one-half of applicants for open teaching positions in Wisconsin districts are coming from other states (mostly in the Midwest).

Four states have significant reciprocity of licenses between states as part of the National Association of State Directors of Teacher Education and Certification (NASDTEC) reciprocity agreement. Twenty-six

states in other regions of the U.S. also have signed on. Of the NCREL states, only Iowa, Wisconsin, and Minnesota are not part of the agreement. Wisconsin issues an immediate limited license to licenseholders from other states. This license requires the holder to make any necessary upgrades during a specified time period. In states with no reciprocity agreement, transcripts from an out-of-state applicant are reviewed before a "limited" license is issued, and the applicant is required to meet state requirements (National Association of State Directors of Teacher Education and Certification [NASDTEC], 1998-99).

Mobility of Supply: Wisconsin Looks at Applicant Pools

The Wisconsin Department of Education selected five representative districts in which they analyzed the applications for open positions. Applicants' zip codes were plotted to determine where the supply was coming from geographically. The 1999 analysis showed that:

- *The largest concentration of candidates came from Wisconsin and surrounding states. The Reedsberg District (in south central Wisconsin) attracted 21.3 percent of candidates from other states including neighboring states of Illinois, Minnesota, and Michigan. Ten applicants were from places as far away as Texas. Other districts showed a similar pattern of applicants from other states with the exception of the Kenosha District.*
- *Secondary positions, particularly those dominated by males, attract candidates from a wider geographic area than elementary positions. In the Kenosha District, for example, 50 percent of social studies, 45 percent of technology education, and 41 percent of mathematics applicants were from out of state.*

Wisconsin also conducts follow-up phone interviews with a sample of applicants, which revealed that:

- *Most of the candidates lived within 30 miles of the district to which they were applying.*
- *The majority of the applicants were experienced educators trying to improve their positions or relocate.*
- *Applicants found out about jobs from a variety of sources, but many sent applications to districts of interest without a notice of vacancy.*

Source: Lauritzen, 1999

Existing State and Local Strategies for Addressing Shortages

Local schools and districts across the region are responding to the need to fill their classrooms in identifiable shortage areas. National data collected by the American Federation of Teachers (AFT) from districts indicating shortages, and state-level data from Minnesota principals provide some information on exactly how they are responding. AFT and Minnesota data indicate that the most frequently employed strategy to fill shortage areas is to issue alternative or emergency licensing. Seventy-five percent of the districts (indicating a shortage) in AFT's study reported using emergency credentials, while 60 percent of urban and 32 percent of rural Minnesota principals said they had used alternative licensure as a strategy. The AFT study also found that districts broadened outreach to new teachers (63%), increased all pay (69%), increased beginning pay (28%), and used signing bonuses (17%). In Minnesota, principals reported training paraprofessionals (51% urban, 21% rural), placing high-needs candidates higher than entry level on the salary scale (30%), and giving candidates credit for nonteaching experience (23% urban, 14% rural). Minnesota data also show that strategies are being employed at greater levels in urban settings where shortages have long been an issue (American Federation of Teachers [AFT], 1998; Hare & Nathan, 1999).

In addition, five states in the Midwest have Web pages that include job openings statewide. Two states have recruitment programs in high schools and one has a similar program in colleges. Three states currently have scholarship or loan forgiveness programs for minorities and two have such programs in shortage areas ("Quality counts," 2000).

What We Need to Know

1. *A majority of states in the region do not currently identify shortage areas.* Effective state policy is contingent upon understanding the nature of

shortages within the state. Because areas vary by geographic region and by teaching area, relying on national data, data from other states, and anecdotal evidence may result in faulty policies. For example, policies designed to address the special education area would look quite different than policies designed to address the area of mathematics. Attracting teachers to rural areas might call for different policies than attracting teachers to urban areas.

2. *Basic information needed to determine shortage areas is not collected or cannot be reported in a majority of states.* Most states do not collect detailed teacher demand data. Bureau of Labor Statistics data is too broadly defined in areas other than elementary education to be useful. Many states have database problems, which prohibit reporting on new licenses issued or current licenses held in meaningful ways. Common problems include an inability to distinguish between new licenses and additional endorsements for current teachers (a problem with six of seven state databases in the NCREL region) and the availability of information by license type rather than by endorsement area (i.e., provisional license instead of elementary license).

3. *Little is known about the comparative effectiveness of state and local strategies designed to attract new teachers into the profession.* In fairness, some of these policies and programs are quite new and sufficient time has not passed to judge effectiveness, but there is little evidence that sufficient systems have been put in place to evaluate effectiveness at a later date.

4. *While most agree that the quality of teachers is an important element of assessing the supply and demand situation, it is not clear how quality should be included.* In Minnesota administrators were asked to rate the number of "high-quality" applicants for open positions. This is just one approach to including quality. Because issues of quality can be difficult to measure, subjective, and controversial, they often are excluded from such analyses.

5. *Mobility of supply across the region is not well understood.* Most states in the region have some idea about the number of newly hired teachers coming from outside the state. Few, however, have done a careful analysis of where these teachers were educated or grew up and how this information might be used to attract high-needs teachers.

Alternative Approaches to Training Teachers

Looking at teacher supply and demand numbers without considering quality is dangerous. One obvious negative impact of teacher shortages is unfilled teaching positions. But perhaps a more hidden negative impact is the positions that are filled with ineffective teachers. Although the states involved in this project did not identify quality of teacher preparation as a high priority for research, they did say more information was needed across the region about alternative routes to preparation.

Alternative approaches to teacher preparation have been developed to draw nontraditional people into the teaching profession, address shortage areas, and improve the quality of teacher preparation. According to the 2000 National Center on Education Information state-by-state analysis of alternative teacher preparation programs, six states in the NCREL region are currently operating alternative preparation programs (Feistritzer & Chester, 2000). Table 4 summarizes the programs operating in the region.

TABLE 4: ALTERNATIVE ROUTES TO TEACHER CERTIFICATION						
		Programs targeted at teacher certification for the following:				
	Name of Program(s)	Transition Military	Recent Liberal Arts Grads	Reentrants Needing Upgrades	Mid-Career Changers	Returning Peace Corps Members
Illinois	Teachers for Chicago, DePaul/ Glenview Clinical Program, Teacher Corps		Yes	Yes	Yes	Yes
Indiana	N/A	N/A	N/A	N/A	N/A	N/A
Iowa*	Alternative Preparation				Yes	
Michigan	Michigan's Alternative Routes to Teacher Certification	Yes	Yes		Yes	Yes
Minnesota	Alternative Preparation to Licensure Program		Yes	Yes	Yes	
Ohio	Internship Certification Program	Yes	Yes			
Wisconsin	Experimental and Innovative Teacher Education Programs	Yes	Yes			

*Iowa data was provided by the Iowa Department of Education, Judy Jeffrey, personal communication, 2000

Source: National Center for Education Information, 2000

A variety of high-quality alternative programs have been developed in Illinois. These programs share a number of characteristics: They address shortage areas (curricular, ethnicity); place participants immediately and continuously in a classroom; provide training during the summer and on evenings and weekends that is integrated with K-12 classroom time; provide compensation for time in the classroom; support participants with mentors; and result in full licensure within two to three years (Feistritzer & Chester, 2000).

While alternative preparation programs and licensure often are considered mechanisms for addressing teacher shortages, they also can be viewed as important vehicles for improving teacher preparation and the quality of individuals brought into the profession. Alternative programs can and have developed effective, new approaches to teacher preparation. If information is appropriately shared, these programs can serve as important learning laboratories for traditional preparation programs. In a 1999 study conducted by the Center for School Change, principals in Minnesota reported that many newly prepared teachers knew their content but did not know how to teach it (Nathan, Cheung, & Hare, 1998). Many of

Illinois Creates Alternatives

In Illinois, four alternative teacher preparation programs, rated highly by the National Center for Education Information (National Center for Education Information, 2000), are under way. The report *Alternative Teacher Certification: State-by-State Analysis 2000* by NCEI describes these programs.

The Illinois Teacher Corp is a collaborative program between school districts and Concordia University aimed at educating and inducting nontraditional candidates into teaching. Individuals who participate must already possess a bachelor's degree, have five years of professional experience in the area they wish to teach, pass the state's basic skills test, and enroll in Concordia's program. Once in the program, the candidate serves immediately as an intern supervising his or her own classroom for a two-year internship period. During this two-year period, he or she works closely with a mentor teacher and completes coursework to earn a full license. The intern also receives compensation and tuition reductions during the internship.

Northwestern University/GATE (Golden Apple Teacher Education) is geared toward preparing high school math and science teachers. Candidates must hold a B.A. and a major in science or math. GATE training is divided into three parts: a summer curriculum, the first year of teaching, and "closure"" after the first year of teaching. Interns who successfully complete the summer curriculum receive a provisional teaching license and a yearlong position with the Chicago Public Schools at full salary and benefits. Interns are evaluated during their first year of teaching and, if successful, will receive a renewable license to teach in Illinois. The summer curriculum consists of six weeks of summer school practice and instruction bordered by preparatory and reflective sessions. Morning sessions are held in Chicago Public Schools where interns spend time with award-winning teachers observing and assisting with instruction. Afternoon sessions are presented by award-winning teachers and Northwestern faculty. Once they enter their first year of teaching, interns are supported by a comprehensive network of experienced mentor teachers. Interns also participate in bimonthly coursework sessions and one weekend retreat.

The DePaul/Glenview Clinical Model Teacher Preparation Program grew out of efforts to respond to the needs of nontraditional students interested in moving into teaching from other fields. Candidates must possess a B.A. and two years of full-time professional experience, among other things. This program provides a three-year sequence during which college graduates earn an elementary teaching certificate and a master's degree. Candidates participate in Glenview Public School District 34 as an intern for the first year and as a resident teacher for the following two years. Tuition is paid by the school district and participants receive an increasingly larger stipend during their three years. The program provides integration of theory and practice and extensive hands-on experience. Coursework is completed in the summers and in the evenings. Interns coplan and coteach under the guidance of a team, which includes an experienced mentor teacher. Participants are always in the classroom with their mentor teacher during the first year. During the two resident years, participants have full teaching responsibility in their own classrooms. Mentor teachers continue to provide support.

Teachers for Chicago is a partnership between nine higher education institutions, Chicago Public Schools, the Chicago Teachers Union, and the Golden Apple Foundation. The program is particularly interested in attracting qualified minority candidates to the profession. Theoretical content is provided in academic coursework scheduled in the evenings, on Saturdays, and in the summers. Paid interns serve under the supervision of experienced mentor teachers and are in charge of their own classrooms. The paid interns are licensed as substitute teachers, which legally authorizes their permanent employment. Interns work in teams of four and pledge to work in Chicago Public Schools for a period of two years upon completion of the program.

Source: Feistritzer & Chester, 2000

the alternative programs being developed, like those in Illinois, establish entirely new kinds of relationships with K-12 schools and often provide far more time in an actual classroom. Retiring military, mid-career changers, returning Peace Corps volunteers, and others can have much to offer students, but might find it difficult to give up working to pursue preparation programs that take years to complete. Programs that provide compensation, place participants in classrooms quickly, and provide training at flexible times have the potential to attract high-quality people into the field.

A Matter of Quality

As part of a Center for School Change study on the quality of teacher preparation, several Minnesota administrators indicated that when they get the chance, they hire graduates from Wisconsin. Why? Wisconsin requires a considerably longer student teaching experience, which administrators felt produces new teachers better prepared to "hit the classroom running" (Nathan, Cheung, & Hare, 1998).

While quality can be an elusive, nonquantitative aspect of the supply-demand picture, it is crucial that it be included in any model. All seven NCREL states are looking at ways to improve teacher preparation. Three states in the region (Illinois, Indiana, and Ohio) are partnering with the National Commission on Teaching and America's Future and are moving aggressively to institute a performance-based system of accrediting teacher preparation institutions. It will be important to understand the impact of these initiatives on the quality of new teachers applying for vacancies and receiving jobs in the region's schools. Sharing such information across the region will help each state learn from the successes of the others.

Sources: Nathan, Cheung, & Hare, 1998

While the majority of states in the region are moving forward on alternative routes to teacher preparation, it would appear that there is a need for more creative approaches typified by Illinois's four programs. These approaches currently serve only a small minority of the teachers in preparation and hold great promise for meeting needs in shortage areas, increasing diversity, and improving the way teachers are prepared.

What We Need to Know

1. Most states in the region have implemented alternative routes to teacher preparation, but little is publicly known about the quality and effectiveness of these approaches. While individual programs may have conducted evaluations, this information is not widely available and shared. If alternative programs are to play a significant role in shortage areas and in improving the quality of people entering teaching and their preparation, policymakers need to know more about them and about which approaches have shown the most promise.
2. Given the critical importance of high-quality teachers to student success, more needs to be known about the strengths and weaknesses of current preparation programs and efforts to improve them throughout the region. All states in the region are implementing programs to improve preparation, including standards- and performance-based approval approaches. These efforts vary across the region. For example, some states are examining ways to increase involvement in teacher preparation programs of unusually effective K-12 educators, family, advocacy, and business groups. Some states are connecting teacher preparation standards with student standards. Other states are evaluating new teachers based on student achievement. Much can be learned from sharing information about different approaches.

Why Teachers Leave and How to Keep Them

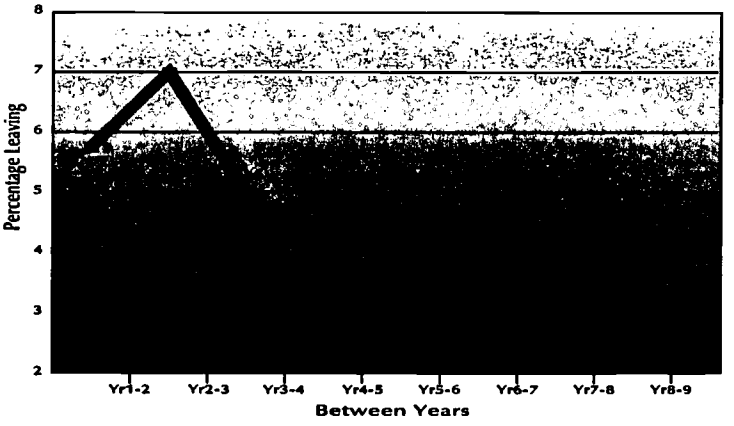
It isn't enough to just attract many bright, talented people to the teaching profession and to train them well. We must keep them in the profession once they enter. Teacher attrition is an important issue across the region. High rates of attrition are especially alarming given evidence that the teachers leaving are some of the most effective. By a five-to-one margin, Minnesota principals rated those teachers leaving as effective or highly effective on average as opposed to ineffective (Hare & Nathan, 1999). Table 5 summarizes what we know about attrition rates in the region based on individual state data, where available, and on data from the National Center for Education Statistics' Schools and Staffing Survey (SASS), 1994-95, the latest data available.

As Table 5 indicates, attrition is a particularly big problem in the area of special education. In some cases, it is more than double the rate for all teachers (NCES, 1997; Ohio Department of Education, 1997). As discussed in Teacher Shortages and Surpluses earlier in this report, special education teachers also are some of the most difficult to replace.

Do New Teachers Leave at Greater Rates?: Ohio's Research

National research and anecdotal evidence suggest that teacher attrition is higher among new teachers. Data from Ohio supports this conclusion. An analysis shows that the average rate of attrition from Year 1 of teaching to Year 2 has been 5.75 percent. This rate increases between Year 2 and 3 to 7.04 percent and then drops back to 5 percent between Year 3 and 4. Rates continue to drop to 2.75 percent between Years 7 and 8.

The same analysis also shows a general pattern of increased attrition rates between 1987 and 1997 and that only 66 percent of the new teachers in 1987 were still teaching ten years later in 1997.



Source: Ohio Department of Education, 1997

Table 5: Selected Attrition Rates

	All Teachers	Secondary	Elementary	Special Education
SASS Nationwide (for 1994-95)	6.6%	6.7%	6.8%	14.1%
SASS Midwest (for 1994-95)	8.2%			
Ohio* (for 1997)	9.9%	6.6%	6.5%	23.4%
Minnesota (1997-98)	8.9%			
Illinois **	7.4%			
Iowa (1998-99)	7.8%			
Wisconsin (1997-98)	6.3% ***	6.7%	5.7%	10.1%

*The percentage of new teachers may include some growth in the number of positions.
**Illinois numbers do NOT include Chicago and do include teachers transferring between Illinois schools.
Sources: Ohio Department of Education, 1997; Hare & Nathan, 1999; Illinois Teacher Service Record, Jim Sweeney, personal communication, 2000; Iowa Department of Education, Steve Boal, personal communication, 2000; Lauritzen, 1999; National Center for Education Statistics, 1997
***Wisconsin combines secondary and elementary in the category "All Teachers" but does not report an overall rate that includes special education.

Reasons for Leaving

Why are teachers leaving? Data from the National Center for Education Statistics and the states of Illinois and Minnesota show that the number one reason people are leaving is to retire (NCES, 1997; Illinois State Board, 1999; Hare & Nathan, 1999). The other top reasons for leaving are summarized in Table 6. (A table describing all reasons for leaving and the percentages associated with each for Minnesota and Illinois can be found in Appendix D.)

Table 6: Top Five Reasons for Leaving Teaching

Nationally (NCES)	Illinois*	Minnesota
Retirement	Retirement	Retirement
Pregnancy/ Child Rearing	Domestic Responsibility	Personal Reasons
New Career	Childcare Leave	Alternative Career
Move	Left State	Staff Reduction
Personal Reasons	Staff Reduction	Maternity/ Paternity

*Illinois information does not include Chicago

Sources: Illinois State Board, 1999; Hare & Nathan, 1999; NCES, 1997

Retirements

Retirements for both teachers and school administrators are projected to increase across the region during the next decade, driving overall attrition rates up. Three states in the region have projected teacher retirements as summarized in Table 7.

A rough estimation of retirements also can be made based on the age of current staff. In Figure 1, the percentage of teachers over age 55 in 1993-94 is compared for NCREL states. The percentage of teachers over 55 years of age has likely increased proportionately for all states since 1993-94.

Teacher retirement associations in most states also project retirement rates for their members. Unfortunately, these projections often include people who are no longer teaching, and cannot be connected to information about what and where people are teaching. Research conducted in Minnesota by the Center for School Change did apply retirement association projection criteria to current teachers. This type of analysis allowed for retirement projections by geographic region and by teaching area. In Minnesota, the physical sciences and mathematics take a particularly hard hit with 59.9 percent of the full-time equivalents (FTEs) teaching chemistry projected to retire between 1998 and 2008; 53.4 percent of physics FTEs; and 45.8 percent of mathematics FTEs (Nathan, Hare, & Cheung, 1999).

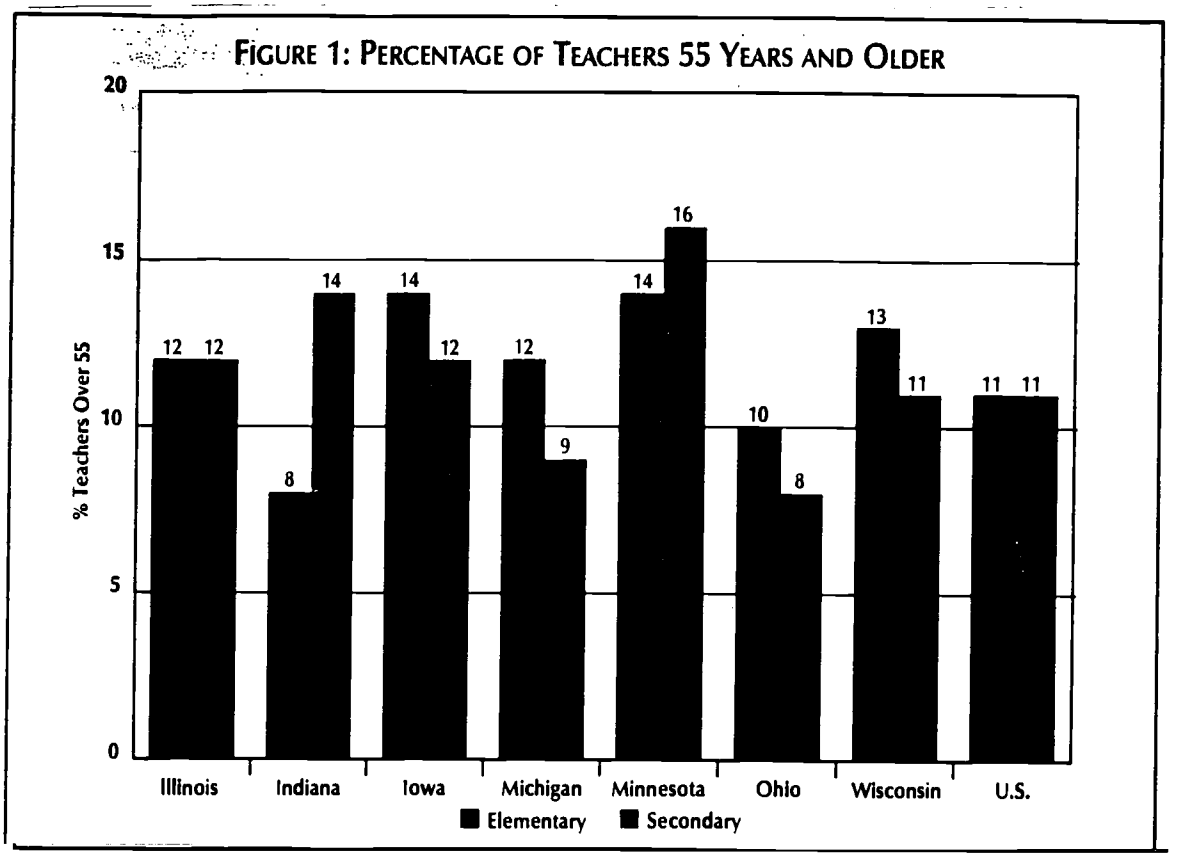
Table 7: Projected Number of Retirements for Minnesota, Illinois, and Wisconsin

	Total Number Teachers	2000	2001	2002	2003	2004	2005	2006	2007	2008
Illinois	121,179*	1,214	1,443	1,696	1,907	2,107				
Minnesota	63,695**	1,510	1,563	1,721	1,881	1,965	1,993	2,010	2,002	2,009
Wisconsin	N/A	1,701	1,866	2063	2,279	2,473	2,618	2,650	2,732	2,806

*Number of full-time instructional staff (1998-99)

**Number of teachers, includes part-time (1997-98)

Sources: Illinois State Board, 1999; Lauritzen, 1999; Nathan, Hare, & Cheung, 1999



Source: National Center for Education Statistics, 1996

Some geographic regions of Minnesota also are projected to have higher-than-average retirements in these high-needs and other areas of teaching. For example, the central region of Minnesota is projected to lose virtually all of its current chemistry teachers by 2008 (Hare & Nathan, 1999).

RETIREMENT INTENTIONS OF IOWA ADMINISTRATORS

In October of 1999, Iowa was considering some changes to the calculation of retirement benefits for administrators. This policy decision prompted a study of how such changes might affect "administrator intentions" to retire.

Administrators were surveyed and asked about their retirement plans under current conditions and under proposed changes. Seventy-six percent of them responded. Under either plan, over 32 percent, or 610 of the state's 1,880 administrators, said that they would be retiring by 2003.

Source: School Administrators of Iowa and Iowa Department of Education, 1999

While retirement is the most frequent reason people leave, roughly 75 percent leave for other reasons (NCES, 1997). Reductions in staff are primary reasons for leaving in Minnesota and Illinois, but not nationally. While this and other reasons, such as maternity/paternity, may not be controllable, state policies might be targeted at reducing the number of career changers or those who leave for personal reasons.

REDUCING ATTRITION

The primary state-level solution to attrition has been mentoring and induction programs. These beginning teacher support systems have been adopted by five states in the region in an attempt to stem the tide of teachers leaving early in their careers. These state programs, which vary considerably, are summarized in Table 8.

TABLE 8: COMPONENTS OF BEGINNING TEACHER SUPPORT SYSTEMS

	% New Teachers Included	Includes a Support System	Includes Training for Support	Includes Inservice for New Teachers	Additional Funding Is Provided	Includes Evaluation of the New Teacher	Includes Evaluation of the Program	Program Voluntary for	
								School District	New Teacher
Indiana	100%	Yes	Yes	No	Yes	Yes	Yes	No	No
Michigan	100%	Yes	Yes	Yes	No	Yes	No	No	No
Ohio	Varies	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Iowa	Varies				Yes		Yes	Yes	Yes
Wisconsin	Not Mandated	Yes	Yes	Yes	Proposed	No	Yes		

Sources: NASDTEC, 1998-99

As Table 8 indicates, some of the programs are more comprehensive, requiring all teachers and school districts to participate. Others allow districts and teachers to opt into the program. In addition to the state-level programs listed in Table 7, Illinois, Minnesota, and other states in the region have a variety of locally based mentoring and induction programs in collaboration with professional organizations and teacher preparation programs.

TEACHER SALARIES

Teacher unions and others involved in education often mention teacher salaries as an important tool in attracting high-quality people to the teaching profession. According to an annual study conducted by the American Federation of Teachers, salaries in the Midwest are on average very competitive with other regions of the country. When adjusted for cost of living, average salary levels for 3 NCREL states rank in the top 10 nationally (one state ranks number 1 in the nation) and 6 states rank in the top 14 (AFT, 1998). Analyzing "average" salaries, however, can mask some important salary-related issues.

Average salary levels for beginning teachers vary across the region from a state average of approximately $22,000 to $28,000 (AFT, 1998). Low beginning salaries and higher mid- or late-career salaries can result in a high average salary. While higher salaries later in a career may be important to prospective teachers, low beginning salaries may have a bigger impact when job choices are being made. A recent AFT study found that 28 percent of districts with shortage situations were increasing beginning teacher salaries (as opposed to all teacher salaries) (AFT, 1998).

The current system of compensation that largely pays all teachers based on education level and years of service does not reflect overall changes in the job market and may make it difficult to attract people to certain shortage areas. For example, while current salary levels may be adequate to attract a high-quality social studies teacher (an area of surplus), they may not be adequate to attract a high-quality technology teacher. Strategies that involve increasing all teacher salaries regardless of content expertise and that are not informed by supply and demand market data, may be inefficient for this reason. A more targeted approach is practiced by 30 percent of Minnesota schools surveyed as part of a 1999 Center for School Change study (Hare & Nathan, 1999). These schools reported placing new high-needs teachers higher on the current pay scale than other new teachers.

Equity of salaries between districts in a state is also an important factor. Research conducted in Indiana shows a gap in beginning teacher salaries of nearly $5,000 between districts, and this gap grows over time to an $11,000 difference at mid-career (Indiana Professional

TABLE 9: INDIANA EXAMINES SALARY DIFFERENCES BY REGION

According to the Indiana State Teachers Association, beginning teacher salaries in five school districts ranged from $23,650 to $28,162. The disparity between salaries grows as teachers become more experienced. By mid-career, salaries ranged from $32,164 to $43,427—a difference of more than $11,000.

School Corporation (District)	Beginning Salary	Mid-Career (12 years experience)
MSD Washington Township	$27,838	$43,427
Indianapolis Public Schools	$26,878	$41,441
Hammond Schools	$28,162	$37,890
New Albany-Floyd Co. Schools	$25,317	$33,418
Oak Hill United Schools	$23,650	$32,164

Source: Indiana Professional Standards Board, 1999, June

Standards Board, 1999, June). Such salary differences can result in shortages of high-quality teachers in certain geographic areas of a state.

These issues and others support the need to reexamine the traditional compensation model. If one assumes that states and school districts are unlikely to provide additional funding necessary to significantly increase all teacher salaries, creative solutions will need to be found. These solutions might include additional compensation for only those teaching areas that face significant market competition; reorganizing schools to provide additional compensation for teachers willing to take on more responsibilities (i.e., school leadership and administration); and merit-based systems that reward results.

WHAT WE NEED TO KNOW

1. *A majority of states in the region do not have information about how many teachers are leaving and why they are leaving.* Two out of the seven states in the NCREL region collect this type of information routinely as part of their main fall district data-collection efforts. Five states do not. The two states that do collect such information do not analyze the data regularly. This type of data collection is important to gauge the effectiveness of policies and to understand trends in attrition.
2. *Retirement projections for most states in the region are too broad.* While there is some evidence that projected retirements vary across geographic region and curriculum area, most states do not project retirements this finely. In fact, many states use only teacher age as an estimation tool for future retirements.
3. *A variety of approaches to new teacher support have been or are being implemented across the region, but little is known about the comparative effectiveness of these approaches.* Systems of comparative evaluation should be implemented to understand, for example, the effectiveness of different state-level mentoring and induction programs and the effectiveness of different locally designed models. Are there key elements that make a program more successful?
4. *The impact of teacher salaries is complicated and many aspects of this important variable are not fully understood.* Salary levels are affected

by a variety of factors including nine-month schedules, availability of additional income for extracurricular activities, cost-of-living indexes, and other intangibles such as the desire to return to or stay in a hometown. Many of these factors have not been taken into account in current salary analyses.

Summary

Most national studies on teacher supply and demand conclude that, nationally, there is an overabundance of teachers, but shortages are showing up in certain curriculum areas and in certain geographic areas. Factors likely to have an impact on the ability of Midwestern schools to get and keep the best teachers include a booming economy, increased retirements, and competition from other parts of the country desperate for teachers. Local schools and districts across the region are responding to the need to fill their classrooms in identifiable shortage areas. Their strategies range from issuing alternative or emergency licensing to instituting loan forgiveness programs for minorities.

Alternative approaches to teacher preparation have been developed to draw nontraditional people into the teaching profession, address shortage areas, and improve the quality of teacher preparation. High rates of attrition are especially alarming given evidence that the teachers leaving are some of the most effective. Retirements are projected to increase across the region during the next decade. The primary state-level solution to attrition has been mentoring and induction programs. Teacher unions and others involved in education often mention teacher salaries as an important tool in attracting high-quality people to the teaching profession.

Conclusions

The following conclusions for the Midwest are based on the data currently available from state and federal sources, as well as gaps in data identified as part of this project:

- Most Midwestern states do not have the information needed to make good policy decisions about the supply and demand of teachers, the number of teachers leaving the profession, and curricular areas with teacher shortages or surpluses. Meaningful, comparable, and current data is not available in a number of key areas across all states in the region.
- Available data suggest there are shortages of teachers in some but not all curriculum areas. A booming economy, increased retirements, and competition from other parts of the country desperate for teachers also are likely to challenge the ability of Midwestern schools to attract and retain excellent math, science, and industrial technology teachers.
- The changing demographics of the region also have increased the need for teachers of color. Although not much information has been gathered, existing research shows that demand for teachers of color far exceeds supply in urban, suburban, and rural areas.
- Special education is a unique area of concern for the region and nation. National research and some studies conducted by Midwestern states found that attrition rates are the highest in the area of special education. Emergency licenses in several states go disproportionately to special education teachers. Problems in this area are complex and not simply a matter of numbers.
- Available data show that the region produces enough elementary teachers overall to meet its needs. Some states produce a large surplus of elementary teachers.
- Quality of teacher preparation is an issue throughout the region. Models used to define shortages in specific curriculum areas are inadequate if they do not include some measure of teacher quality. Most states in the region are undertaking efforts to improve teacher quality.

- Effectiveness of attempts to better train, attract, and retain educators across the region and nation is in many cases unknown. Evaluating and comparing various approaches would be valuable as states in the region seek to implement new programs or improve current ones.
- The regional impact of teacher supply and demand is unclear. States tend to concentrate heavily on what happens within their borders. Some states do not know whether looking beyond to the surrounding region will help them make better decisions. Efforts to understand how these issues affect an entire region such as the Midwest have been limited.
- Attrition of teachers appears to be a problem across the region. However, high-quality mentoring and induction programs can reduce the number of people leaving the profession and help produce more effective teachers. Four states in the region have undertaken differing approaches to induction.
- Most Midwestern states are eager to move beyond the current situation of inadequate data collection and to learn from each other.

Recommendations

Based on the research conducted, the following recommendations are offered:

1. Leadership in state agencies and legislatures in each state need to make data collection and analysis a higher priority. The vast majority of states in the region do not have the capacity to analyze existing data, let alone add new data collection to their systems. Most of the states in the region, for example, do not collect any information about demand for teachers. Most states in the region have difficulty reporting in meaningful detail the number of licenses issued annually in the state.
2. More effective efforts are needed to communicate the teacher supply and demand situation to policymakers and the general public. The situation is more complex than "state x has a massive shortage of teachers." Both policymakers and the broader public need accurate information to make good decisions. They need to understand, for example, that in most states there is not an overall shortage of teachers being trained.
3. Support should be provided to state agencies as they look for ways to improve information on teacher supply and demand. Such support might include continued facilitation of information exchange between states through face-to-face meetings, an e-mail list, and Web-based material on best practices in data collection and retention/attraction strategies.
4. State agency and legislative leadership from Midwestern states should be convened to build support for improvements in data collection; to learn from each other about best practices in data collection and specific policies relating to teacher supply and demand; and to move ahead with implementation of effective policies. For example, a meeting might be held to look specifically at the issue of special education.
5. New research and analyses that further knowledge about regional impacts of teacher supply and demand should be conducted by a regional organization.
6. Significantly increased communication among state, regional, and federal data-gathering efforts is needed to reduce duplication and make effective use of resources. Relationships between state agencies, regional organizations, and the National Center for Education Statistics (NCES) should be strengthened to maximize the use of federal data-collection efforts for state and regional purposes.

References

American Association for Employment in Education. (1999). *Teacher supply and demand in the United States, 1999 report.* Evanston, IL: Author.

American Federation of Teachers. (1998) *Survey and analysis of teacher trends 1998.* Washington, DC: Author.

Bureau of Labor Statistics. [Online]. Available: http://stats.bls.gov/emphome.htm

Darling-Hammond, L. (1997, November). *Doing what matters most: Investing in high quality teaching.* Kutztown, PA: National Commission on Teaching and America's Future.

Feistritzer, E. C., & Chester, D. T. (2000). *Alternative teacher certification: A state-by-state analysis 2000.* Washington, DC: National Center for Education Information.

Hare, D., & Nathan, J. (1999, November). *The need is now: Dealing with Minnesota's teacher shortages.* Minneapolis, MN: Center for School Change, University of Minnesota.

Haycock, K. (1997). K-16 reform: What's in it for schools? What's in it for universities? *Thinking K-16,* (3)1, 6-10.

Illinois State Board of Education Research Division. (1999, December). *Supply and demand for education staff.* Springfield, IL: Author.

Indiana Professional Standards Board. (1999, June). *The conditions of teaching and learning in Indiana: A policy inventory.* Indianapolis, IN: Author.

Lauritzen, P. (1999). *Supply and demand of educational personnel for Wisconsin public schools: An examination of data trends, 1999.* Madison, WI: Wisconsin Department of Public Instruction.

Nathan, J., Hare, D., & Cheung, S. (1999, March). *Asking the right questions: Minnesota teacher supply and demand.* Minneapolis, MN: Center for School Change, University of Minnesota.

Nathan, J., Cheung, S., & Hare, D. (1998, December). *Improvements are needed: Minnesota principals, superintendents, and parent/community advocates assess teacher preparation.* Minneapolis, MN: Center for School Change, University of Minnesota.

National Association of State Boards of Education Study Group on Teacher Development, Supply and Demand. (1998, October). *The numbers game: Ensuring quantity and quality in the teaching force.* Alexandria, VA: Author.

National Association of State Directors of Teacher Education and Certification. (1999). *Manual on the preparation and certification of educational personnel: Fourth edition. 1998-99.* Dubuque, IA: Kendall-Hunt Publishing Company.

National Center for Education Information. (2000). *Alternative teacher certification: A state-by-state analysis 2000.* Washington, DC: Author.

National Center for Education Statistics. (1996, November). *SASS by State 1993-94, Schools and staffing survey: Selected state results.* Washington, DC: Author.

National Center for Education Statistics. (1997, May). *Characteristics of stayers, movers and leavers: Results from the teacher follow-up survey: 1994-95.* Washington, DC: Author.

National Center for Education Statistics. (2000, January 13). *Reference and reporting guide for preparing state and institutional reports on the quality of teacher preparation. Title II, Higher Education Act.* Washington, DC: Author.

National Center for Education Statistics. (undated). *Integrated Postsecondary Education Data System.* [Online]. Available: http://nces.ed.gov/ipeds/data.html

Ohio Department of Education. (1997, November). *The best teachers for Ohio's children: A report to the public about the status of teaching in Ohio in partnership with the National Commission on Teaching and America's Future.* Columbus, OH: Author.

Quality counts 2000: Who should teach? (2000, January 13). *Education Week.* [Online]. *XIX.* Available: www.edweek.org

School Administrators of Iowa and Iowa Department of Education. (1999, October). *Iowa administrator retirement intentions study: Executive summary.* Des Moines, IA: Authors.

Yussen, S., Grey Browning, J., & Colby, J. (1999, Fall). *District and stakeholder perspectives on teachers for our schools: A statewide analysis of teacher vacancies for 1999-2000 and predicted vacancies for 2001 and 2003 reported by school districts in Minnesota.* Minneapolis, MN: College of Education and Human Development, University of Minnesota.

Appendix A: Methodology and Limitations

To gather state-level data, the Center for School Change requested a long list of information from a state-designated contact. In addition, they contacted the retirement association(s), teacher union(s), and the agency handling labor market information in each state. Several national organizations also were contacted, including the U.S. Department of Education (National Center on Education Statistics and the Office of Post-secondary Education), the NEA, the AFT, the American Association of Employment in Education, the American Association of Colleges of Teacher Education, and the National Bureau of Labor Statistics. This report does not include any new data analyses. The source of each data item is cited in the text and References section.

State agency staff worked hard to provide the data needed for this study. Unfortunately, they encountered many challenges as they did so. Most state data-collection systems were designed for purposes other than determining supply and demand of educators. These systems are in many cases antiquated and difficult to extract data from, and they collect information based on federal requirements. Data about current staff and data about licenses are often handled by different divisions of a state agency. As a result, these databases are not always compatible or linked. In some states, only a handful of people are capable of doing the programming necessary to pull out data in meaningful ways. The time and energy of these few people is in great demand to produce what is already required for state and national purposes. Additional requests for data must wait in a long line. For all of the above reasons, some important kinds of data (such as the number of new licenses issued by state) are not included in this report. Developing systems that are capable of generating the type of data needed for good decision making in the area of teacher supply and demand has not and will not happen overnight. The information presented in this report represents the best that is available given all of these constraints.

Appendix B: Models for Determining Shortage Areas

Wisconsin

Wisconsin reports annually on the employment outlook by individual subject fields. The outlook ranges from "Excellent" (chances of employment are high in almost all geographic regions; even those not willing to relocate should find full-time employment) to "Very Poor" (the supply of educators considerably exceeds the vacancies, those seeking positions will have little chance for employment). Ratings are based on numerous factors including the number of Wisconsin program completers and the percentage receiving employment in Wisconsin schools; attrition rates including retirements; and information about applicant pools collected from representative districts and enrollment projections (Lauritzen, 1999).

Illinois

In Illinois's 1999 report, new supply was defined as the number of new graduates of teacher preparation programs (or the number of "entitlements") by subject area. New demand was defined as new hires plus unfilled positions (collected by survey each fall). New supply and new demand are then compared to reveal areas of over- and undersupply. A second analysis adds to new supply the number of license holders who are not currently teaching (the reserve pool). When the total reserve pool is considered, very few teaching areas show an undersupply or shortage. The current balance of supply and demand is used to predict future needs. However, Illinois is planning to implement a model that uses projected enrollment growth, teacher-pupil ratios, and attrition (each by subject area) to predict future demand (Illinois State Board, 1999).

Minnesota

Minnesota's Center for School Change and the University of Minnesota College of Education took an entirely different approach than the other states to determining the balance between supply and demand in recent studies they conducted. Superintendents and principals were asked to rate the number of "high-quality" or "qualified" individuals applying for job openings in the fall of 1999. This approach relies on the perceptions of hiring authorities, does not quantify the situation, and adds an element of quality to the equation. In March 1999, the Center for School Change also completed a study that did rely on numbers. For this study, supply was defined as program completers plus an estimate of Minnesota licenses issued to teachers from other states (generally around 33% of the new licenses granted). New demand was defined by estimated attrition rates including retirements. Teacher-student ratios were considered to be stable, as were enrollment levels. The results of these two approaches were somewhat consistent in defining shortage areas (Hare & Nathan, 1999; Yussen, et al., 1999).

American Association of Employment in Education

The American Association of Employment in Education has been collecting information about teacher supply and demand for the past 24 years. Surveys are sent to the directors of career services at all 1,269 teacher preparation institutions in the nation. In 1999, 47 percent (or 602) returned surveys. Respondents are asked questions about their perception of the supply and demand situation for a long, comprehensive, and fairly narrowly defined

list of teaching areas. They also answer questions about the number of minorities in teacher preparation programs, program offerings in specific teaching areas, and factors affecting hiring opportunities. Perceptions of supply and demand (ranked from "Considerable Shortage" to "Some Surplus") are broken down by region. AAEE's Region 7 includes five of the seven NCREL states (and no other states). Minnesota and Iowa are included in Region 4 with other "Great Plains" states. During the past six years, AAEE has done three correlation studies, one exclusively on Region 7. For the studies, school administrators were asked fundamentally the same questions (with appropriate context changes). Administrator responses were then matched with responses from directors of career services to see how well they correlated. There was a .82 overall correlation for the Region 7 study (AAEE, 1999).

Appendix C: Shortage Areas Identified by AAEE and Individual States

AAEE Teaching Fields With Considerable Shortage or Some Shortage	Wisconsin Good to Excellent Chance of Employment	Minnesota At Least One Region Reporting Serious Shortages	Illinois Undersupply Areas (Without Reserve Pool)
			Self-Contained Classroom (Elementary)
Science Physics		Physical Science	
Speech Pathology	Speech/Language		Speech/Language Impaired
Special Education – Mentally Handicapped			
Special Education – Multiple Handicapped			
Special Education– Behavioral Disorders	Emotional Disturbance	Emotional/ Behavioral Disorders	
Special Education – Physically Impaired			Physically Handicapped
Special Education – Hearing Impaired	Hearing Impaired	Deaf/Hard of Hearing	
Special Education – Learning Disabilities			
Technology Education	Technology Education		
Mathematics		Mathematics	
Bilingual Education			Bilingual Education
Agriculture			
Computer Science/ Education			Computer Education/Tech
Audiology			
English as a Second Language	English as a Second Language	English as a Second Language	
Science – Earth/Physical			
Home Economics/Family Consumer Science	Family/Consumer Education	Family/Consumer Science	
Psychologist (School)			
Science – General			
Science – Biology			
Library Science/Media Technology	Library/Media	Library/ Media Specialist	
Languages – Japanese			
Gifted/Talented Education			Gifted Education
Business Education	Business and Marketing	Business	
		Industrial Arts	
			Early Childhood Special Education
		Music	Vocal and Instrumental Music
Counselor Education			

Sources: American Association for Employment in Education, 1999; Lauritzen, 1999; Hare & Nathan, 1999; Illinois State Board of Education, 1999

Appendix D: Reasons for Leaving

Illinois*			Minnesota		
Reason	'98-99 Number	'98-99 Percent	Reason	'97-98 Number	'97-98 Percent
Other IL Public School	2,485	2.18%			
Other IL Non-Public School	70	0.06%			
Out of State	527	0.46%	Educator in Other State/ Outside U.S.	162	0.25%
Noneducation/ Nonmilitary Vocation	256	0.22%	Extended Leave/Alternative Career Exploration/ Alternative Career	458	0.72%
Filling Temp Position	48	0.04%	Staff Reduction/ Unrequested Leave	348	0.55%
College	66	0.05%			
Domestic Responsibility	706	0.62%	Personal Reasons	1,429	2.24%
LOA Childcare	558	0.49%	Maternity/Paternity/ Adoption	301	0.47%
Death/Incapacitated	114	0.10%	Death	48	0.08%
LOA Health	86	0.07%	Illness	188	0.30%
Retired	1,185	1.04%	Retirement	1,548	2.43%
Reduction in Funding	341	0.30%			
Asked to Resign	170	0.15%	Not Offered Reemployment for Reasons Other Than Staff Reduction	256	0.40%
LOA – Military	3	0.002%			
LOA – Professional	119	0.10%	Professional Growth	150	0.24%
LOA – Other	260	0.22%			
			Left to Become Substitute Teacher	159	0.25%
			Unknown	567	0.89%
Other	1,144	1.01%	Other	81	0.13%
TOTAL	8,138	7.2%		5,695	8.94%
Total Number of Teachers	113,664			63,695	

* This analysis does not include information from those who left teaching in Chicago.

Source: Illinois Teacher Service Record, Jim Sweeney, personal communication, 2000; Hare & Nathan, 1999

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