Making Connections

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An examination of the movement of educators within and across three Midwest Region states

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In collaboration with the Midwest Educator Effectiveness Research Alliance

Key findings

- An average of 6.8–9.3 percent of teachers and administrators in Iowa, Minnesota, and Wisconsin moved to a different school in the same state each year between 2006/07 and 2010/11.
- Less than 0.1 percent of the educator workforce within these three states moved to a school in another state between 2005/06 and 2011/12.
- Teachers were more likely to move to another school if they had less teaching experience, were in an urban school, or taught in a school with lower average academic performance, fewer students, or more economically disadvantaged students.

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Summary

Education leaders have expressed concern about educators' moving to different schools—within the same state or in another state—because these moves create costs for the home district and have potential impacts on the equitable distribution of effective educators among schools. However, many states do not routinely monitor mobility among educators. Such was the case in Minnesota in fall 2012, when Minnesota members of the Midwest Educator Effectiveness Research Alliance requested that Regional Educational Laboratory (REL) Midwest examine two issues: anecdotal evidence suggested that a substantial number of educators were leaving urban schools that serve low-income students to work in suburban schools that serve more affluent students and that a disproportionate number of teachers were leaving positions in Minnesota schools to take teaching positions in the neighboring states of Iowa and Wisconsin. In response to these concerns, REL Midwest conducted a study on the mobility of teachers and administrators in public schools within and between Iowa, Minnesota, and Wisconsin. The study was supported by representatives of the state education agency in each state.

This study is the first to examine educator mobility using the same methodology across these three states. The findings provide initial insights into the intrastate and interstate mobility of educators and whether educators are more likely to move away from certain types of schools (raising the issue of equitable distribution of educators), whether some states are losing substantial numbers of teachers to neighboring states, and whether states are obtaining substantial numbers of educators from neighboring states.

Key findings include the following:

- The average annual percentage of teachers and administrators moving to another school in the same state each year between 2006/07 and 2010/11 was 6.8 percent in Iowa, 9.3 percent in Minnesota, and 8.2 percent in Wisconsin.
- The annual intrastate mobility rate for teachers ranged from 5.5 percent to 7.1 percent in Iowa, 8.4 percent to 9.8 percent in Minnesota, and 7.0 percent to 10.7 percent in Wisconsin between 2006/07 and 2010/11.
- The percentage of educators working in one school in 2006/07 and another school in the same state in 2011/12 was 19.3 percent in Iowa, 21.0 percent in Minnesota, and 19.7 percent in Wisconsin.
- The teacher mobility rate varied by subject area taught and across regions within states. Special education and foreign language teachers had the highest mobility rates in all three states.
- Teachers were more likely to move to another school if they had less teaching experience, were in an urban school, or taught in a school with lower average academic performance, fewer students, or more economically disadvantaged students. The relationships between these characteristics and the mobility of principals were less consistent.
- Between 2005/06 and 2011/12 total exits and inflows of educators among these three states totaled less than 0.1 percent of the average educator workforce.

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Why this study?

Teachers and administrators change schools for a variety of reasons. Personal life factors, salary and other job benefits, and assignment and classroom factors were cited as the most important reasons for moving in a national survey of public school teachers (Goldring, Taie, & Riddles, 2014). Some mobility is inevitable, even desirable, and can be beneficial to schools and students if it results in a better match of the person to the job or in the replacement of ineffective educators by higher-quality educators (Ingle, 2009).

Education policymakers, however, are particularly concerned about the potential negative effects of mobility because high mobility can pose challenges to the development of strong and stable faculties (Allensworth, Ponisciak, & Mazzeo, 2009). Educator mobility produces costs to schools, districts, and students (Barnes, Crowe, & Schaefer, 2007; Feng & Sass, 2011; Coggshall & Sexton, 2008). The National Commission for Teaching and America's Future, for example, has estimated the cost to schools and districts to recruit, hire, and mentor replacement teachers at more than $15,000 per teacher in two large urban districts, just below $10,000 in a suburban district, and at more than $4,000 in a small rural district (Barnes et al., 2007).

There are growing concerns about the potential impact of educator mobility on the equitable distribution of effective educators across schools. However, many states do not routinely monitor mobility rates among educators

Educators who take new positions in other states can incur substantial costs as well. Because full reciprocity of educator licenses between states is rare (Coggshall & Sexton, 2008), educators may incur considerable costs in time and money to become licensed in their new states. Depending on state policies regarding pension portability, educators who relocate to another state can experience substantial loss of pension wealth—as much as $522,865 over a teacher's career (Costrell & Podgursky, 2009). Such a loss may inhibit the movement of experienced educators while having less effect on new teachers, whose investment in the pension system is minimal.

There are also growing concerns about the potential impact of educator mobility on the equitable distribution of effective educators across schools. Mobility may widen the gap in education quality across schools if schools serving disadvantaged populations lose their best educators to schools serving more advantaged students. For example, studies suggest that educators are more likely to move from schools serving larger racial/ethnic minority populations, schools serving larger populations of economically disadvantaged students, and schools showing chronic low performance (Borman & Dowling, 2008, Feng & Sass, 2011; Gates et al., 2006; Hanushek, Kain, & Rivkin, 2004; Plecki, Elfers, Loeb, Zahir, & Knapp, 2005).

Examining educator mobility may help states better understand where mobility is having its greatest impact. However, many states do not routinely monitor mobility rates among educators. Such was the case in fall 2012, when Minnesota members of the Midwest Educator Effectiveness Research Alliance requested that REL Midwest examine two mobility issues. First, anecdotal evidence suggested that many educators were leaving urban schools that serve low-income students to work in suburban schools that serve more affluent students. Second, there was some concern that a disproportionate number of teachers were leaving positions in Minnesota schools to take teaching positions in the neighboring states of Iowa and Wisconsin. In response to these concerns REL Midwest conducted this study, which focused on the mobility of teachers and administrators in public schools within and between Iowa, Minnesota, and Wisconsin. The study was supported by representatives of the state education agency in each state.

This study is the first to examine educator mobility within and among these states using the same methodology. Findings from this study can provide policymakers and state education agencies in these three states with information on educator mobility as well as on teacher and school characteristics that are related to educator mobility. The findings can help state education agencies determine the level and patterns of educator mobility, the characteristics of schools from which educators are more likely to move, and whether educators with particular characteristics are more likely to relocate to other schools.

What the study examined

This study addressed the following research questions.

1. What were intrastate mobility rates for teachers, principals and assistant principals, and district superintendents and assistant superintendents in Iowa, Minnesota, and Wisconsin between 2006/07 and 2010/11?
   - Did mobility rates differ by
     - Administrative level (teacher, school principal, and district superintendent)?
     - The subject area teachers taught?
     - Region within the state?
   - Were mobility rates reliably predicted by
     - Educator characteristics (gender, racial/ethnic minority status, or years of experience working in public education in the state)?
     - School characteristics (average academic performance, size, percentage of economically disadvantaged students, or urbanicity)?

2. What were interstate educator mobility rates between 2005/06 and 2011/12 among Iowa, Minnesota, and Wisconsin?

The findings can help state education agencies determine the level and patterns of educator mobility, the characteristics of schools from which educators are more likely to move, and whether educators with particular characteristics are more likely to relocate to other schools

The study team obtained annual educator staffing data for the 2005/06–2012/13 school years and school-level data on student performance and demographics for the same school years from the state education agencies in the three states.[1] In each state, staff records were linked over time by unique staff identification numbers. Thus, rather than a simple snapshot of the educator workforce using cross-sectional data, this study's use of longitudinal data permitted analysis of employment information over a given period, which revealed staff mobility (that is, entry into the workforce, exit from the workforce, or change in work locations). The study team analyzed these data to identify mobility rates and mobility patterns over time, both within and across states. The data and methods used to address each research question are summarized in box 1 and detailed in appendix A.

Box 1. Data and methods

Data

This study used two types of data for school years 2005/06–2012/13:

- *Listings of licensed staff serving in each school year.* Each state education agency collects these data each fall. Educators (teachers, principals and assistant principals, and superintendents and assistant superintendents) were listed by name and a unique identifier assigned by the state agency. These data were obtained through data-sharing agreements between each state education agency and Regional Educational Laboratory Midwest.
- *School-level data on school performance on state standardized tests and characteristics of the students enrolled.* These data were provided by education agency staff or downloaded from state education agency websites.

During the school years examined, the average number of teachers in public schools was 37,522 in Iowa, 55,118 in Minnesota, and 61,249 in Wisconsin; the average number of principals was 1,509 in Iowa, 1,817 in Minnesota, and 2,403 in Wisconsin; and the average number of superintendents was 350 in Iowa, 342 in Minnesota, and 424 in Wisconsin. (The size of the workforce in public schools in each state for each school year is shown in table A1 in appendix A.)

Methods

This study focuses on the movements of the three groups of educators within and across states. Educator mobility was defined as the departure of teachers, principals and assistant principals, and superintendents and assistant superintendents from positions in one school to fill positions in another school (regardless of whether they took a different type of position in the other school) within and across Iowa, Minnesota, or Wisconsin. The analysis of superintendents' and assistant superintendents' mobility focuses on movement between school districts.

Within each state the educators' annual employment records were merged with selected school-level information by school identifier and year. Annual educator employment records were merged using the unique identifiers assigned in that state to determine which educators were working in which schools at the beginning of each school year. Records of educators who changed schools were flagged and used to calculate intrastate mobility rates. Some educators stopped appearing in each state's employment data available for these analyses. The last observed employment records for these educators were flagged and then matched by name and birthdate to the employment records from the other two states for all subsequent years to identify interstate movers.

The study team calculated three types of mobility rates:

- *Annual intrastate mobility rate.* The annual intrastate mobility rate was defined as the share of educators in a state in a given year who were observed working in a different school or district in the next year. Annual mobility rates were calculated for each of the three staff categories (teachers, principals and assistant principals, and superintendents and assistant superintendents). For example, the annual intrastate mobility rate for Iowa teachers for 2006/07 was calculated by dividing the number of teachers who were working in an Iowa public school in 2006/07 and were working in a different Iowa public school in 2007/08 by the total number of teachers who were working in Iowa schools in 2006/07.
- *Average annual intrastate mobility rate.* For each state the study team calculated the year-to-year intrastate mobility for school years 2006/07–2010/11. The average annual mobility rate was calculated by averaging the year-to-year mobility rates across the five-year period.

(continued)

Box 1. Data and methods *(continued)*

- *Five-year intrastate mobility rate.* The five-year intrastate mobility rate was calculated as the percentage of educators in 2006/07 who were identified as still working in their state in 2011/12 but in a different school.

Because of the small number of interstate movers identified, the report presents only the total number of interstate movers between 2005/06 and 2011/12.

The study team also examined whether different educator characteristics (gender, racial/ethnic minority status, and experience) and school characteristics (average academic performance, size, urbanicity, and percentage of economically disadvantaged students) were associated with whether an educator moved from year to year or was working in a different school at the end of the five-year span. The study team used multivariate logistic regressions to analyze annual and five-year mobility rates to determine how educator characteristics and the characteristics of the schools educators moved from were related to the odds that educators continuing their employment would change schools rather than stay employed in the same school.

See appendix A for detailed descriptions of data sources and methods.

What the study found

This section reports the trends and patterns of mobility for three groups of professional educators (teachers, principals, and superintendents) within and among Iowa, Minnesota, and Wisconsin between 2006/07 and 2010/11.

Principals had the highest average annual mobility rate in all three states. The average annual principal mobility rate ranged from 9.2 percent in Iowa to 11.9 percent in Wisconsin

The average annual intrastate educator mobility rate was 6.8 percent in Iowa, 9.3 percent in Minnesota, and 8.2 percent in Wisconsin between 2006/07 and 2010/11

On average, considering all types of professional educators, 6.8 percent of licensed educators in Iowa, 9.3 percent in Minnesota, and 8.2 percent in Wisconsin moved between schools within their state from year to year between 2006/07 and 2010/11 (table 1). Within each state, mobility rates varied by administrative level.

Principals had the highest average annual mobility rate in all three states. The average annual principal mobility rate ranged from 9.2 percent in Iowa to 11.9 percent in Wisconsin. The average annual teacher mobility rate was 6.7 percent in Iowa, 9.2 percent in Minnesota, and 8.0 percent in Wisconsin. The average annual superintendent mobility rate was 7.1 percent in Iowa, 5.9 percent in Minnesota, and 6.4 percent in Wisconsin. The differences between the mobility rates for principals and teachers and between those for principals and superintendents were statistically significant in all three states, but the difference between the mobility rates for teachers and superintendents was significant only in Minnesota.

The five-year intrastate mobility rate, which reflects the proportion of educators employed in 2006/07 who were still working in 2011/12 but in a different school in their state, revealed that 19.3 percent of professional educators in Iowa, 21.0 percent in Minnesota, and 19.7 percent in Wisconsin moved between schools in their state (see table 1).

Principals also had the highest five-year mobility rate in all three states. The difference between the five-year intrastate mobility rates for principals and teachers and the difference

Table 1. Average annual and five-year educator intrastate mobility rates in Iowa, Minnesota, and Wisconsin, by subject taught, 2006/07–2010/11 (percent)

Administrative level	Iowa		Minnesota		Wisconsin	
	Average annual	Five year	Average annual	Five year	Average annual	Five year
Teachers	6.7†	18.9†	9.2†	20.8†	8.0†	19.4†
Principals[a]	9.2‡	27.5‡	10.5‡	29.2‡	11.9‡	30.0‡
Superintendents[b]	7.1†	21.0†	5.9§	20.7†	6.4†	17.0§
All educators	6.8	19.3	9.3	21.0	8.2	19.7

Note: Average annual mobility rates are the averages of year-to-year mobility rates from 2006/07 to 2010/11, where the mobility rate for each year reflects the movement of educators between that year and the subsequent year (for example, the rate for 2006/07 reflects the percentage of educators employed in 2006/07 who worked in a different school in 2007/08). Five-year mobility rates are the percentage of educators employed in 2006/07 who worked in a different school in 2011/12. Within each row, mobility rates with different superscripts (†, ‡, §) are significantly different from each other at $p < .05$. For example, the first row shows that mobility rates for teachers and superintendents are significantly lower than the rate for principals (which has superscript ‡) but are not significantly different from each other (both have the same superscript †). See table A1 in appendix A for the number of educators in each group for each state.

Source: Authors' analysis of data from the state education agencies in Iowa, Minnesota, and Wisconsin (see appendix A).

Principals also had the highest five-year mobility rate in all three states. The difference between the five-year intrastate mobility rates for principals and teachers and the difference between the rates for principals and superintendents were statistically significant

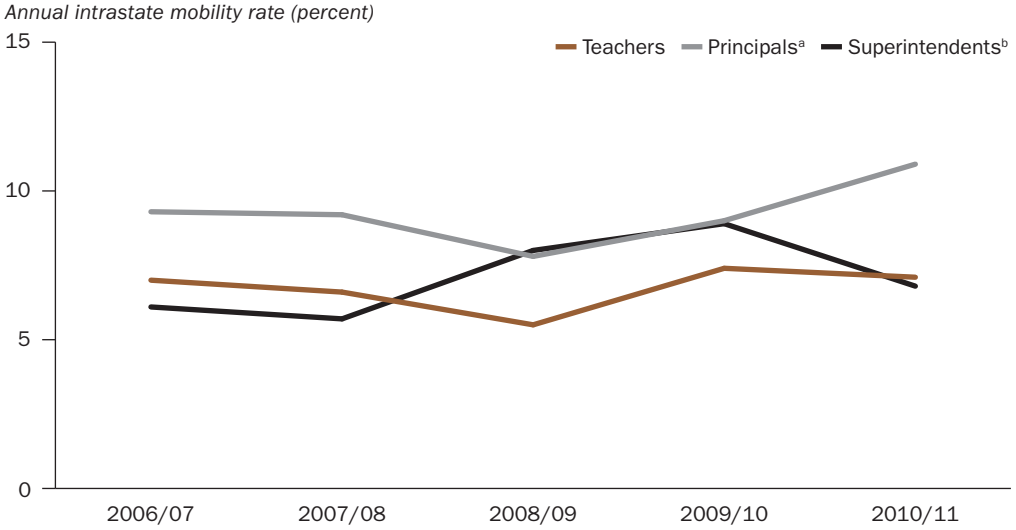
between the rates for principals and superintendents were statistically significant, ranging from 6.5 percentage points (between principals and superintendents in Iowa) to 13.0 (between principals and superintendents in Wisconsin). The difference in the five-year mobility rate between teachers and superintendents was statistically significant in Wisconsin but not in Iowa or Minnesota.

Iowa. The annual mobility rate between 2006/07 and 2010/11 in Iowa ranged from 5.5 percent to 7.4 percent for teachers, from 7.8 percent to 10.9 percent for principals, and from 5.7 percent to 8.9 percent for superintendents (figure 1). It fluctuated less than 2 percentage points from year to year for teachers and principals and less than 2.5 percentage points for superintendents. No clear trend in mobility was observed for educators in any of the professional categories during this period.

Minnesota. The annual mobility rate between 2006/07 and 2010/11 in Minnesota ranged from 8.4 percent to 9.8 percent for teachers, from 8.8 percent to 11.4 percent for principals, and from 2.8 percent to 7.5 percent for superintendents (figure 2). The annual teacher mobility rate fluctuated by no more than 1.4 percentage points during the period. However, the principal mobility rate decreased by 2.4 percentage points from 2009/10 to 2010/11, and the superintendent mobility rate increased by 3.5 percentage points from 2006/07 to 2007/08.

Wisconsin. All three professional educator groups in Wisconsin saw an increase in their annual mobility rate from 2009/10 to 2010/11. The annual mobility rate for teachers was stable from 2006/07 to 2009/10—with a year-to-year change of less than 1 percentage point—but increased by 3 percentage points from 2009/10 to 2010/11 (figure 3). The mobility rate for principals fluctuated more than the mobility rate for teachers between 2006/07 and 2009/10 and increased by 2.4 percentage points from 2009/10 to 2010/11. In contrast, the mobility rate for superintendents declined from 8.6 percent in 2006/07 to 4.6 percent in 2009/10 (with an average year-to-year decrease of 1.3 percentage points) but then increased by 1 percentage point from 2009/10 to 2010/11.

Figure 1. The annual intrastate mobility rate between 2006/07 and 2010/11 in Iowa fluctuated less than 2 percentage points from year to year for teachers and for principals and less than 2.5 percentage points for superintendents, with no clear trend



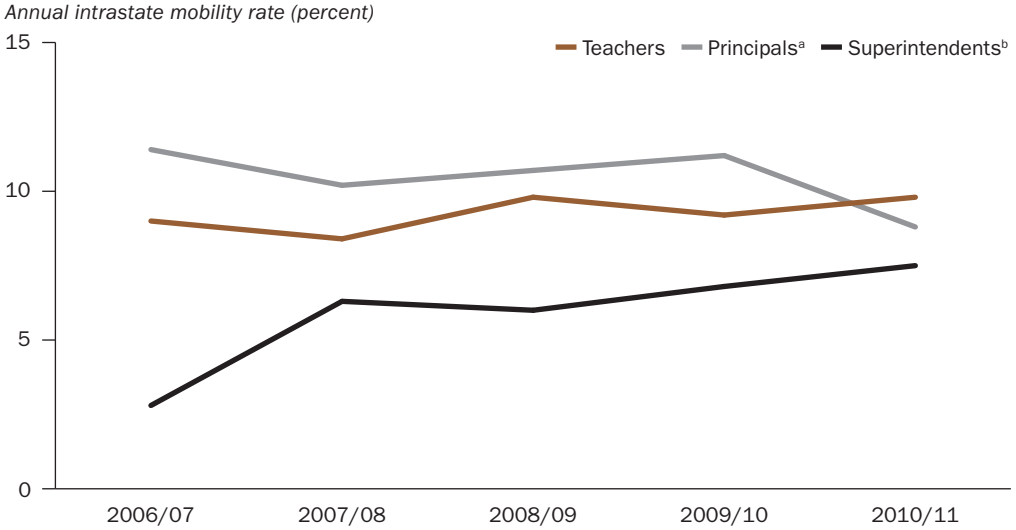
Note: The mobility rate for each year reflects the movement of educators between that year and the subsequent year. For example, the rate for 2006/07 reflects the percentage of educators employed in 2006/07 who worked in a different school in 2007/08. See table A1 in appendix A for the number of educators in each group for each year.

a. Includes assistant principals.

b. Includes assistant superintendents.

Source: Authors' analysis of data from the Iowa Department of Education (see appendix A).

Figure 2. The annual intrastate mobility rate between 2006/07 and 2010/11 in Minnesota fluctuated no more than 1.4 percentage points from year to year for teachers



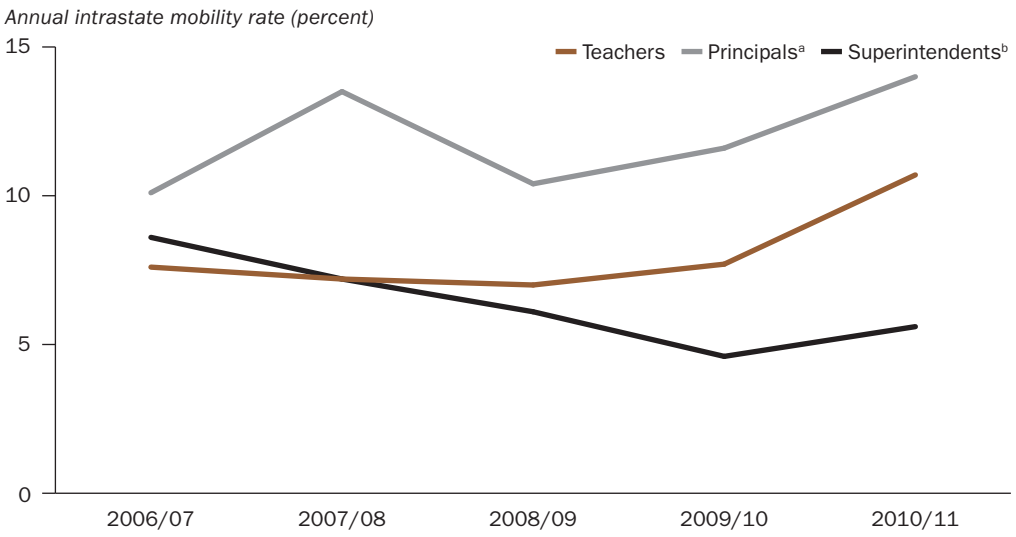
Note: The mobility rate for each year reflects the movement of educators between that year and the subsequent year. For example, the rate for 2006/07 reflects the percentage of educators employed in 2006/07 who worked in a different school in 2007/08. See table A1 in appendix A for the number of educators in each group for each year.

a. Includes assistant principals.

b. Includes assistant superintendents.

Source: Authors' analysis of data from the Minnesota Department of Education (see appendix A).

Figure 3. All three educator groups in Wisconsin saw an increase in their annual intrastate mobility rate between 2009/10 and 2010/11



Note: The mobility rate for each year reflects the movement of educators between that year and the subsequent year. For example, the rate for 2006/07 reflects the percentage of educators employed in 2006/07 who worked in a different school in 2007/08. See table A1 in appendix A for the number of educators in each group for each year.

a. Includes assistant principals.

b. Includes assistant superintendents.

Source: Authors' analysis of data from the Wisconsin Department of Public Instruction (see appendix A).

Special education teachers and foreign language teachers had higher intrastate mobility rates than did teachers in other subject areas in all three states

Within each of the three states there were statistically significant differences in the average annual mobility rate and the five-year mobility rate for teachers in different subject areas.

The average annual intrastate mobility rate for teachers ranged from 4.1 percent for Iowa high school science teachers to 14.8 percent for elementary school special education teachers in Minnesota

The mobility rate was lowest for high school subject area teachers and highest for special education teachers. The average annual intrastate mobility rate for teachers ranged from 4.1 percent for Iowa high school science teachers to 14.8 percent for elementary school special education teachers in Minnesota (table 2). The average annual mobility rate for other elementary school teachers and high school foreign language teachers in Minnesota and Wisconsin was 10 percent or more. The average annual mobility rate (about 6.5 percent) and the five-year mobility rate (about 18 percent) for general elementary teachers was consistent across states.

The five-year mobility rate for teachers always exceeded 10 percent and was consistently above 20 percent for special education teachers. The lowest five-year mobility rate was for high school teachers of core academic subjects (math, English language arts, social studies, and science).

Table 2. Average annual and five-year intrastate teacher mobility rates in Iowa, Minnesota, and Wisconsin by subject taught, 2006/07–2010/11 (percent)

School level and subject taught	Iowa		Minnesota		Wisconsin	
	Average annual	Five-year	Average annual	Five-year	Average annual	Five-year
General elementary school teacher	6.0	17.8	6.6	18.0	6.3	17.8
Elementary special education teacher	8.7	23.0	14.8	29.6	13.2	31.0
Other elementary school teacher	7.7	20.0	11.4	21.2	12.8	25.7
High school English language arts	5.0	12.5	8.1	16.3	6.8	16.5
High school math	4.4	12.2	8.0	17.4	5.6	14.3
High school science	4.1	12.8	7.0	15.1	4.9	12.7
High school social studies	4.3	12.4	6.1	15.1	4.9	13.4
High school special education	12.0	26.4	12.7	28.1	10.6	23.7
High school foreign languages	4.5	12.5	13.5	26.4	11.0	22.9
Other high school teacher	6.2	19.0	10.1	21.5	7.3	17.0

Note: Average annual mobility rates are the averages of year-to-year mobility rates from 2006/07 to 2010/11, where the mobility rate for each year reflects the movement of teachers between that year and the subsequent year (for example, the rate for 2006/07 reflects the percentage of teachers employed in 2006/07 who worked in a different school in 2007/08). Five-year mobility rates are the percentage of teachers employed in 2006/07 who worked in a different school in 2011/12. Analyses of variance showed that within all three states the overall differences in both the annual and five-year mobility rates between teachers who taught different subjects were statistically significant at $p < .01$. See table A1 in appendix A for the number of teachers in each year.

Source: Authors' analysis of data from the state education agencies in Iowa, Minnesota, and Wisconsin (see appendix A).

The five-year mobility rate for teachers always exceeded 10 percent and was consistently above 20 percent for teachers with a primary assignment in special education

Teacher mobility rates varied across regions in all three states; principal mobility rates varied across regions in Iowa and Wisconsin but not in Minnesota

Differences in mobility rates across regions were statistically significant for teachers in all three states and for principals in Iowa and Wisconsin (see tables B1–B6 in appendix B). Most moves were to another school within the same region rather than to a school in another region.

Iowa. Among the nine regions served by each of Iowa's area education agencies, the annual and five-year teacher mobility rates were highest in the Heartland (7.7 percent and 21.1 percent) and Prairie Lakes (7.5 percent and 22.4 percent) regions and lowest in the Mississippi Bend (5.3 percent and 15.9 percent) and Great Prairie (5.3 percent and 15.2 percent) regions (see table B1 in appendix B). The highest principal mobility rates were in Mississippi Bend (10.2 percent annual and 32.1 percent five-year) and Great Prairie (12.9 percent annual and 38.7 percent five-year; see table B2 in appendix B).

Minnesota. Among the 13 economic development regions in Minnesota, the annual and five-year teacher mobility rates were highest in the Arrowhead and Metro regions (more than 10 percent annual and more than 22 percent five-year; see table B3 in appendix B) and lowest in the Headwaters and Northwest regions (5.4 percent and 5.9 percent annual and 13.5 percent and 13.4 percent five-year). The overall differences in annual and five-year principal mobility rates across Minnesota's economic development regions were not statistically significant (see table B4 in appendix B).

Wisconsin. Among the 12 cooperative educational service agency–based regions in Wisconsin, teacher mobility rates were highest in region 1 (Milwaukee and environs) and region 6 (districts near Fond du Lac and Oshkosh) at 10.2 percent and 8.9 percent annual

and 23.5 and 21.8 percent five-year (see table B5 in appendix B) and lowest in region 4 and region 9 (5.9 percent and 6.1 percent annual and 15.1 and 13.9 percent five-year). Principal mobility rates were highest in region 1 (16.0 percent annual and 34.5 percent five-year; table B6 in appendix B).

Several educator and school characteristics were found to predict intrastate mobility among teachers and principals

The likelihood of teachers and principals moving to another school within a one-year or five-year span is related to the educators' gender and level of experience and to the exited schools' average academic performance, size, urbanicity, and percentage of students who were economically disadvantaged. Analysis for superintendents found no statistically significant relationship between their personal characteristics and mobility. No analysis was conducted to examine the relationship between superintendent mobility and district characteristics because of the small sample size.

While gender was not related to annual intrastate mobility (table 3), female teachers were less likely than male teachers to relocate to another school in a five-year span (table 4).

Table 3. Relationships between annual intrastate mobility and educator and school characteristics in Iowa, Minnesota, and Wisconsin, 2006/07–2010/11 (odds ratio)

	Iowa		Minnesota		Wisconsin	
Predictor	Teachers (*n* = 33,423)	Principals[a] (*n* = 1,290)	Teachers (*n* = 50,306)	Principals[a] (*n* = 1,708)	Teachers (*n* = 58,068)	Principals[a] (*n* = 2,313)
Educator characteristics						
Female[b]	0.992	1.012	na	na	0.969	1.121
Racial/ethnic minority[c]	1.030	1.209	na	na	1.053	1.205
Experience (years)[d]	0.964***	0.979**	0.949***	0.967***	0.955***	0.954***
School characteristics						
Academic performance (percent proficient)	0.992***	0.999	0.995***	0.988**	0.995***	0.97***
Size (per 100 students)	0.930***	0.903***	0.981***	1.000	0.990***	0.988
Urban versus nonurban	1.196***	0.877	1.352***	1.124	1.472***	1.438*
Percentage of economically disadvantaged students	1.004***	1.004	1.006***	1.013**	1.012***	0.996

na is not applicable because data on that predictor were unavailable for Minnesota.

* Significant at $p < .05$; ** significant at $p < .01$; *** significant at $p < .001$.

Note: Estimates are based on the multivariate logit model described in appendix B and indicate how each predictor variable is related to the odds that an educator moves versus stays at the same school in the following year. Values greater than 1 indicate that increases in the predictor variable are associated with higher odds that an educator moves. Values less than 1 indicate that increases in the predictor variable are associated with lower odds. For example, the odds of moving versus staying in the same school between two consecutive years are 1.196 times higher for an Iowa teacher in an urban school than for an Iowa teacher in a nonurban school. The analysis used data from one pair of school years for each state: 2006/07–2007/08 for Iowa and 2009/10–2010/11 for Minnesota and Wisconsin.

a. Includes assistant principals.

b. Male is the reference group.

c. Non-racial/ethnic minority (that is, non-Hispanic White) is the reference group.

d. Refers to the number of years in the relevant state.

Source: Authors' analysis of data from the state education agencies in Iowa, Minnesota, and Wisconsin (see appendix A).

Table 4. Relationships between five-year intrastate mobility and educator and school characteristics in Iowa, Minnesota, and Wisconsin, 2006/07–2011/12 (odds ratio)

Predictor	Iowa		Minnesota		Wisconsin	
	Teachers (*n* = 33,423)	Principals[a] (*n* = 1,290)	Teachers (*n* = 51,312)	Principals[a] (*n* = 1,764)	Teachers (*n* = 58,908)	Principals[a] (*n* = 2,321)
Educator characteristics						
Female[b]	0.917**	1.017	na	na	0.955***	0.912
Racial/ethnic minority[c]	1.083	0.941	na	na	1.069	0.957
Experience (years)[d]	0.970	0.962***	0.959***	0.959***	0.967***	0.960***
School characteristics						
Academic performance (percent proficient)	0.987***	0.992	0.994***	0.990*	0.993***	0.988***
Size (per 100 students)	0.918***	0.914***	0.969***	0.996	0.957***	0.994
Urban versus nonurban	1.487***	0.708	1.417***	1.005	1.306***	1.612*
Percentage of economically disadvantaged students	1.006***	1.007	1.008***	1.018***	1.009***	1.006

na is not applicable because data on that predictor were unavailable for Minnesota.

* Significant at $p < .05$; ** significant at $p < .01$; *** significant at $p < .001$.

Note: Estimates are based on the multivariate logit model described in appendix B and indicate how each predictor variable is related to the odds that an educator moves versus stays at the same school in a five-year span. Values greater than 1 indicate that increases in the predictor variable are associated with higher odds that an educator moves. Values less than 1 indicate that increases in the predictor variable are associated with lower odds. For example, the odds of moving versus staying in the same school over the five-year period are 1.487 times higher for an Iowa teacher in an urban school than for an Iowa teacher in a nonurban school. The analysis used data from school years 2006/07 and 2011/12.

a. Includes assistant principals.

b. Male is the reference group.

c. Non-racial/ethnic minority (that is, non-Hispanic White) is the reference group.

d. Refers to the number of years in the relevant state.

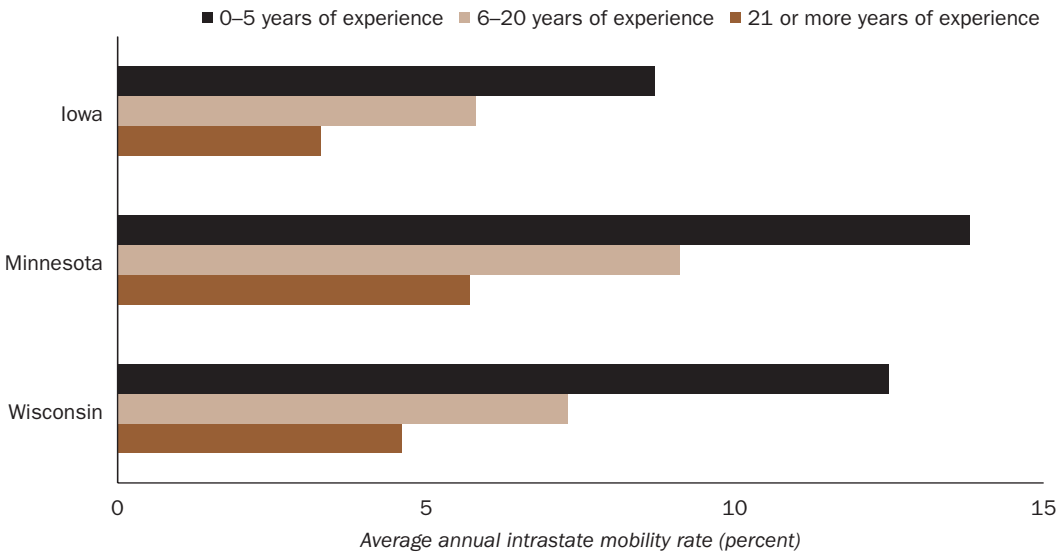
Source: Authors' analysis of data from the state education agencies in Iowa, Minnesota, and Wisconsin (see appendix A).

Both annual mobility and five-year mobility were negatively related to the level of educator experience: teachers with fewer years of experience were more likely to move

Both annual mobility and five-year mobility were negatively related to the level of educator experience: teachers with fewer years of experience were more likely to move.[2] This pattern is evident in all three states (figure 4). For illustrative purposes, teachers' experience was classified into three intervals. Teachers with 0–5 years of experience had the highest mobility rates in all three states. Mobility rates fall for teachers with 6–20 years of experience and are lowest for teachers with 21 or more years of experience. Mobility rates tend to decline with experience even after controlling for other contextual factors (see figure 4).

Teachers and principals were less likely to move away from a school with higher average academic performance (see table 3). Teachers at larger schools were less likely to move. Teachers in urban schools were significantly more likely to move than were teachers in nonurban schools. For principals, however, the urbanicity–mobility relationship was statistically significant only in Wisconsin. Schools with higher percentages of economically disadvantaged students had higher teacher mobility rates. The relationship between school percentage of economically disadvantaged students and educator mobility was also generally true for principals; however, the effect was not consistently significant. For illustrative purposes, schools were assigned to one of three categories based on the percentage of

Figure 4. Teachers in Iowa, Minnesota, and Wisconsin with fewer years of experience were more likely to move to another school in the same state, 2006/07–2010/11



Note: Sample consists of teachers who taught in public schools in each state between 2006/07 and 2011/12. Years of experience refers to the number of years in the relevant state.

Source: Authors' analysis of data from the state education agencies in Iowa, Minnesota, and Wisconsin (see appendix A).

economically disadvantaged students. Teachers in high-poverty schools (defined as schools in the highest quartile of percentage of students eligible for the school lunch program in their state) had higher mobility rates in all three states (figure 5). The difference in annual mobility rates for teachers in high-poverty schools and those in low-poverty schools (defined as schools in the lowest quartile of percentage of students eligible for the school lunch program in their state) was 0.8 percentage point in Iowa, 2.8 percentage points in Minnesota, and 4.0 percentage points in Wisconsin (see figure 5).

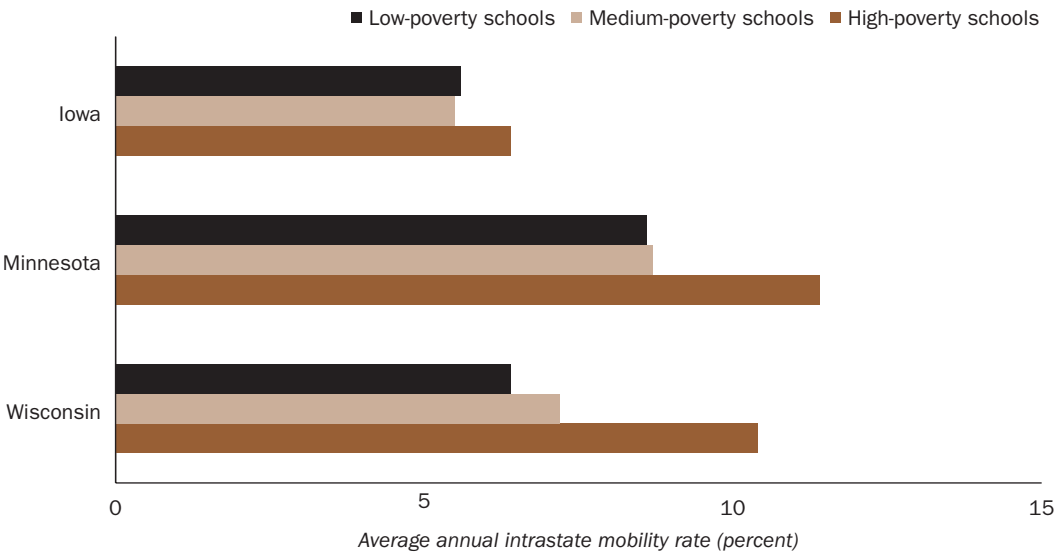
Few educators moved across the three states between 2005/06 and 2011/12

Over the seven-year period from 2005/06 to 2011/12, 1,054 educators moved from one state to another, but the net flow was small (table 5).[3] For example, over this period 288 educators moved from Minnesota to Wisconsin, while 282 made the reverse migration. Thus the net flow between these two states was only 6 educators. Over the same period 121 educators moved from Minnesota to Iowa and 150 educators moved from Iowa to Minnesota. Thus there was a net inflow of 29 educators from Iowa to Minnesota.

Overall, the interstate flows of educators represent a small fraction of the workforce, with total exits and inflows as a percentage of the average workforce representing an annual rate of less than 0.1 percent

Overall, the interstate flows of educators represent a small fraction of the workforce with total exits and inflows as a percentage of the average workforce representing an annual rate of less than 0.1 percent. This rate is much lower than the annual intrastate mobility rates for teachers, which ranged from 5 percent to 10 percent of the workforce. The interstate transfer rate is somewhat higher for superintendents, though it is only about 0.3 percent to 0.4 percent a year. The very low rates of teacher interstate mobility found in this study mirror those of a recent study of teacher mobility between Oregon and Washington state (Goldhaber, Grout, Holden, & Brown, 2015).

Figure 5. Teachers in high-poverty schools in Iowa, Minnesota, and Wisconsin were more likely to move to another school in the same state, 2006/07–2010/11



Note: Sample consists of teachers who taught in public schools in each state between 2006/07 and 2011/12. Low-poverty schools are those in the lowest quartile of percentage of students eligible for the school lunch program; medium-poverty schools are those in the middle two quartiles of percentage of students eligible for the school lunch program; high-poverty schools are those in the highest quartile of percentage of students eligible for the school lunch program.

Source: Authors' analysis of data from the state education agencies in Iowa, Minnesota, and Wisconsin (see appendix A).

Table 5. Interstate mobility across Iowa, Minnesota, and Wisconsin: Cumulative moves between 2005/06 and 2011/12 for all professional educators

State that educators left	State to which educators moved			Total number who moved out of each state
	Iowa	Minnesota	Wisconsin	
Iowa	—	150	94	244
Minnesota	121	—	288	409
Wisconsin	119	282	—	401
Total into each state	240	432	382	1,054

Note: Only cumulative moves between 2005/06 and 2011/12 are reported. Year-by-year moves ranged from 115 in 2008/09 to 168 in 2010/11.

Source: Authors' analysis of data from the state education agencies in Iowa, Minnesota, and Wisconsin (see appendix A).

Implications of the study findings

The findings provide policymakers and state education agency staff in the three participating states with detailed information on mobility patterns within their state and between states. No objective standards exist to determine whether the rate of educator mobility in these three states merits concern for policymakers. At the very least, the mobility rates shown in this report can serve as a baseline against which later rates can be compared. Although some mobility of educators is to be expected given personal life events and

personal workplace and community preferences, policymakers may want to monitor these rates for signs that they are increasing. Such increases would indicate that schools and districts may need to spend additional funds for recruiting, interviewing, and hiring licensed educators; that schools and districts experiencing inordinate loss of staff due to mobility may be challenged to sustain school improvement efforts; and that the states' efforts at equitable distribution of educators may be experiencing challenges.

This study found that teachers and principals were less likely to move from one school to another as their experience increased. Teachers were also less likely to move from schools with higher levels of student proficiency on state assessments. Conversely, teachers' likelihood of moving rises with the percentage of economically disadvantaged students at the school. Teachers in urban schools are more likely than teachers in rural schools to move. This mobility pattern was not consistently observed for principals.

Future studies could examine empirically the link between interstate mobility and state policies and practices related to educator licensure and pensions for in-migrating and out-migrating educators

Not only do the schools serving challenged student populations have to commit more resources to hiring replacement teachers, but research suggests that student learning suffers as well when teacher mobility is high (Ronfeldt, Loeb, & Wyckoff, 2013). State policymakers, who are ultimately responsible for ensuring that public schools are adequately staffed with licensed educators, need to be aware of these empirical patterns in educator flows to make informed decisions. These data can help identify the root causes of inequities in school staffing. State policymakers may need to consider ways of incentivizing the retention of special education teachers and teachers in urban, low-performing, high-poverty schools, and also ways to assist these schools and their districts with the costs of hiring replacement teachers as needed. Depending on the scope of problems, a more detailed investigation of mobility may be warranted to look at particular districts or schools.

A unique contribution of this study is the development of data on interstate mobility of educators. The low mobility rates among these three continguous states, which share some common metropolitan areas, raises the question as to whether mobility is inhibited by state policies, such as licensing and limited pension portability. A policy scan conducted by the study team found that the pension plans for public school educators in Iowa, Minnesota, and Wisconsin lack portability for both those entering and those leaving the state,[4] which may have inhibited mobility. Future studies could examine empirically the link between interstate mobility and state policies and practices related to educator licensure and pensions for in-migrating and out-migrating educators. To do so would require an examination of potential loss of pension wealth or a study of data from educators about the incentive values of these policies or practices.

Finally, the study examined whether the movement of educators from one school to another was statistically related to educator and school characteristics. Though the investigation into these statistical relationships provides some insight into factors that may be behind educator mobility, this study did not attempt to discern educators' reasons for moving to another position. Future studies can explore educators' reasons for moving and use such information to create incentives or programs that reduce educators' motivations to move to another school.

Limitations of the study

The findings from this study are not generalizable to other states. This study examined the mobility of educators within and between Iowa, Minnesota, and Wisconsin, and policymakers in these states will be most informed by it. These three continguous states have all experienced modest population growth since 2000, with 2000–2010 growth rates of 4.1 percent in Iowa, 7.8 percent in Minnesota, and 6.0 percent in Wisconsin (Mackun & Wilson, 2011). The mobility patterns, particularly the interstate patterns, may differ for other regions that involve contiguous states with different population growth rates (for example, a state with rapid population growth bordering a state with a stagnant or declining population).

Reasons for observed mobility could not be reliably determined from administrative employment data used for this research. This means that overall mobility rates include changes in places of employment that resulted from both voluntary and involuntary moves. Likewise, educators who stopped appearing in their state's educator employment data and did not appear in one of the participating neighboring states' data include retired and deceased former employees. Finally, this study is correlational in nature. The findings show patterns of relationships between educator mobility and educator and school characteristics. The relationships are not necessarily causal. The relatively small sample sizes for administrators made it impractical to conduct statistical modeling of mobility for superintendents and contributed to some findings that were not statistically significant for principals and assistant principals.

Overall mobility rates include changes in places of employment that resulted from both voluntary and involuntary moves

Appendix A. Data and methodology

This study used administrative datasets made available by the Iowa, Minnesota, and Wisconsin state departments of education supplemented with a variable (data on school district locale codes) from the Common Core of Data (CCD) (U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2009). State education department administrative data included the following:

- Annual employment files.
- Annual records of school-level enrollments and student demographics.
- Annual school-level records of performance on state proficiency exams.

This appendix describes the procedures used to build analytical datasets from the administrative data files and the analyses of the resulting analytical data files.

Building the analytic dataset

The following steps and processes were executed on administrative datasets to reduce annual employment files to only one record per person and to merge the files to determine employment patterns for each professional educator in public schools in the participating states. Note that many of the following processes provide operational definitions for key employment variables used in this report.

Step 1. The study team first processed each annual employment data file to create a single file for each year containing only one observation for each person who was reported as employed in a professional position. The single record created for each person reflects the school, position, and specific assignment where the individual was reported spending the most time. Ties for primary position or assignment, which are rare, were broken based on the following order of priority: teacher first; principal or assistant principal second; superintendent or assistant superintendent third; other professional staff position fourth. So a person whose time was evenly split between principal and assistant superintendent would have been assigned to the principal or assistant principal group.

Step 2. The annual unduplicated employment files created in step 1 were then merged by unique identifiers. The merged files contained a single record for each person who appeared in any of the annual professional employment files with a variable for each year indicating whether the person was working in a professional position in that year.

Step 3. The study team then analyzed the data created in step 2, by person, to classify each person's end-of-year employment status into one of the following three categories for each year the person appeared in the data.

- *Stayers.* Individuals in a professional position in a given year (t) and in a professional position in the next year ($t + 1$) were classified as "stayers" in the state's professional educator workforce.
- *Leavers.* Individuals in a professional position in year t who never again appeared in available data for the state's professional educator workforce were classified as "leavers" from the state's professional educator workforce. As such, the leavers group includes individuals who left to teach in another state, who left to work outside of education, and who withdrew from the workforce (including those who retired or died). This is consistent with the study team's efforts to characterize

aggregate flows into and out of the public education professional workforce in each state.

- *Stop-outs.* Individuals in a professional position in year *t* who did not appear in year *t* + 1 but did appear in a later year in a professional position were classified as "stop-outs."

Step 4. The study team analyzed the data created in step 2, by person, to classify the beginning-of-year employment status for each year the person appeared in the data, starting with the second year for which data were provided. Each individual was assigned to one of the following categories:

- *New employees.* Individuals appearing for the first time in the data in any year except the first year of the available data were coded as "new employees."
  - If recorded experience for a new employee was greater than one year, the individual was assigned to a "new employee with prior experience" group.
  - If recorded experience for a new employee was not greater than one year, the individual was assigned to a "new employee with no prior experience" group.
- *Returning employees.* Individuals employed in year *t* who also were employed in the prior year were coded as "returning employees."
  - *Stayers.* The primary school where a returning employee worked was compared to the primary school where that person worked during the prior year. Those in the same school were assigned to the "stayers" group.
  - *Movers.* A returning employee working in a school different from the one in which they worked during the prior year was assigned to the "movers" group. This group includes the educators examined in detail for this report on educator mobility.

Step 5. Data about public schools in each state were retrieved or requested from state departments of education and linked to employment records based on common school identifiers. Data elements included the following:

- Demographics of student population, including, as separate variables, percentage of students eligible for the school lunch program and school total enrollment.
- School performance on state math and reading/language arts proficiency exams. The performance measure used was the average percentage of students tested in a school who were classified as proficient or higher in the two subjects.
- Urbanicity of schools based on locale codes for schools from CCD files were determined by merging the urban-centric locale codes from 2006/07 CCD files with employment records by school IDs. Schools reported in categories 11 (city, large) and 12 (city, midsize) were classified as urban; all others were classified as non-urban. All employee records from the same school were assigned the same value for the urbanicity variable.
- Within-state regions in which schools were located were merged by district ID with employment records.

Step 6. The study team calculated five-year employment status variables for each person appearing in the 2006/07 employment data for each state by matching the 2006/07 employment records to the 2011/12 employment records in the same state. Employing schools were compared for individuals appearing in professional positions in both years. Those in the same school were coded as stayers; those in different schools were coded as movers; individuals not appearing in the 2011/12 data were coded as leavers.

Step 7. The study team then determined which educators who left professional employment in one state (step 4) appeared in subsequent professional employment records in one of the other two states. The key for cross-state matching was based on name and birth year plus birth month for each person appearing in each state's employment files. The study team first matched all leavers from one state to employment records in the other states by name and birthdate information. If a unique match was made (that is, only one person in one of the other states had a matching key) and the year the match was first observed was in a year after an educator left her or his "home state," then the leaver was coded as an interstate mover.

Step 8. The study team determined the primary subject taught by every teacher appearing in each annual employment file based on specific assignment codes reported in employment records. The first assignment reported for each teacher or the assignment with the largest value for full-time equivalent was treated as the teacher's primary teaching assignment.

This process provided data files with relevant variables for describing and tabulating educator flows, calculating mobility rates, and analyzing factors related to educator mobility. The number of educators by professional position for each year with data available in each state is presented in table A1.

Table A1. Professional educator workforce in public schools in Iowa, Minnesota, and Wisconsin, 2004/05–2013/14

State and position	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	Total
Iowa											
Teachers	—	37,608	37,839	37,269	37,130	37,165	37,846	37,885	38,168	38,402	339,312
Principals or assistant principals	—	1,476	1,449	1,454	1,472	1,510	1,576	1,590	1,568	1,571	13,666
Superintendents or assistant superintendents	—	375	376	353	349	349	339	333	334	330	3,138
Other	—	6,099	6,045	6,658	7,027	6,980	7,150	7,519	8,155	8,536	64,169
Total	—	45,558	45,709	45,734	45,978	46,004	46,911	47,327	48,225	48,839	420,285
Minnesota											
Teachers	54,576	54,489	54,886	55,125	55,216	55,182	55,147	55,154	55,973	—	495,748
Principals or assistant principals	1,810	1,788	1,823	1,829	1,822	1,822	1,794	1,813	1,846	—	16,347
Superintendents or assistant superintendents	347	357	352	351	351	338	333	325	333	—	3,087
Other	2,121	2,290	2,429	2,669	2,779	3,050	3,067	3,147	3,288	—	24,840
Total	58,854	58,924	59,490	59,974	60,168	60,392	60,341	60,439	61,440	—	540,022
Wisconsin											
Teachers	62,222	61,740	61,619	61,490	61,902	61,465	61,233	59,786	59,894	—	551,351
Principals or assistant principals	2,443	2,408	2,397	2,389	2,427	2,440	2,404	2,363	2,364	—	21,635
Superintendents or assistant superintendents	440	443	442	433	426	418	414	413	415	—	3,844
Other	1,702	1,571	1,569	1,534	1,810	1,680	1,656	1,528	1,622	—	14,672
Total	66,807	66,162	66,027	65,846	66,565	66,003	65,707	64,090	64,295	—	591,502

— Data for this year were unavailable from this state.

Source: Authors' analysis of data from the state education agencies in Iowa, Minnesota, and Wisconsin.

Analytic methods

Data addressing the research questions were first analyzed one state at a time. Analyses were conducted separately for teachers, principals, and superintendents. Many of the results presented in this report are descriptive statistics showing counts (number of movers) and rates (percentages of movers). The following mobility rates were calculated for teachers, principals, and superintendents.

- *The annual intrastate mobility rate* was calculated by dividing the number of intrastate movers identified between the base year (*t*) and the following year (*t* + 1) (step 4) by the total number of educators in the base year (*t*).
- *The average annual intrastate mobility rate* for each state presented in table 1 of the main report was the average of the annual intrastate mobility for the five years from 2007 to 2011.
- *The five-year intrastate mobility rate* for each state presented in this report was calculated as the number of educators in the base year of 2006/07 (*t*) who were identified in 2011/12 staffing files (that is, *t* + 5) in a different school in 2011/12 divided by the total number of educators in 2006/07.

The intrastate mobility rates reported are for 2006/07–2010/11. The years are indicated by the denominator or base year in the rate. Thus a 10 percent mobility rate in 2006/07 means that 10 percent of the teachers who were employed at a given school in 2006/07 were working in a different school within the same state in 2007/08. Data for 2011/12 are not included because our analysis of stayers, movers, leavers, and stop-outs required at least two more years of employment data to define labor force exits (true leavers rather than "stop-outs"). This approach is consistent with the methodology in the Teacher Follow-Up Survey, which is part of the Schools and Staffing Survey, a large national survey of teachers and schools periodically undertaken by the National Center for Education Statistics.[5] Such analysis would have required 2013/14 data to identify 2011/12 leavers. The study team did not have access to the 2013/14 data from all participating states.

Identifying interstate moves involved matching leavers from one state to other state employment records from subsequent years. So for this study an interstate mover would be an educator from 2005/06 coded as a leaver in state A (did not appear in 2006/07 or 2007/08 or any later year in the state A employment data) and whose identifying information was matched to school employment data from state B or C in 2006/07 or later. If a teacher who left one state in year *t* was observed employed in another state in year *t* +1, that was likely a permanent move. Therefore the study team was able to identify interstate movers between 2005/06 and 2011/12. Because of the small number of interstate movers (step 7) identified in the analyses, the main report presents only the cumulative number of interstate movers between 2005/06 and 2011/12. No annual or five-year interstate mobility rates were calculated.

The study team also calculated the annual intrastate mobility rates and five-year intrastate mobility rates for teachers by subject taught (in the base year) and for teachers and principals by within-state regions. For this analysis, the study team calculated a "weighted average" annual mobility rate—the total number of movers between 2006/07 and 2011/12 divided by the total number of educators employed during the time span. ANOVA F tests were conducted to determine whether the variation observed in mobility by subject area or across region groups was statistically significant.

Multinomial logit models were used to examine the relationships between intrastate mobility and educator characteristics and school characteristics (for a description of the multinomial logit model, see Greene, 2011). The logit model for five-year mobility, for example, is expressed as

$$\ln\left(\frac{P(Y_{ijt=m})}{P(Y_{ijt=1})}\right) = \gamma_m + X_{ijt-5}\gamma_2 + S_{ijt-5}\gamma_1.$$

For every educator employed in 2006/07, the dependent variable defines this educator's status five years later: same school, different school, not employed in a public school in the state. The subscript *i* indexes individuals, *j* indexes schools, and *t* indexes time. The multivariate, multinomial modeling framework was used to identify the key individual- (X_{ijt-5}) and school-level (S_{ijt-5}) characteristics that are associated with mobility outcomes relative to the "baseline" condition of employment in the same school between years. Prior individual characteristics and school characteristics (year $t - 5$) were used to predict mobility over the following five years (year t). The vector X_{ijt-5} included individual characteristics (gender, racial/ethnic minority status, and years of experience working in public education in the state),[6] and the vector S_{ijt-5} included school-level characteristics (average academic performance, size, urbanicity, and percentage of economically disadvantaged students). For models involving superintendents, *S* would represent district-level characteristics rather than school-level characteristics. The one-year mobility model is similar to the five-year model; simply replace $(t - 5)$ with $(t - 1)$.

The estimated coefficients for γ_1 and γ_2 would indicate how each predictor variable is related to the odds that an educator moves versus stays at the same school. The coefficients were converted into odds ratios for ease of interpretation. An odds ratio greater than 1 indicates that increases in the predictor variable are associated with higher odds that an educator moves to a different school. An odds ratio less than 1 indicates that increases in the predictor variable are associated wtih lower odds.

The logit model for annual mobility was similar to that for five-year mobility, only the dependent variable defines educators' status one year from the base year. The annual model used employment comparisons based on only one pair of years from each state: 2010/11 to 2011/12 for Minnesota and Wisconsin and 2006/07 to 2007/08 for Iowa. The school-level test performance data for Iowa were unavailable for 2010/11.

Appendix B. Teacher and principal mobility across regions within the state

This appendix presents additional findings on the flow of teachers and principals across regions in each state (tables B1–B6). The tables display the average annual mobility rate and five-year mobility rate from each region to each of the other regions in the state as well as the overall mobility rate for each region (see the last column of each table).

Table B1. Teacher average annual and five-year mobility rates across area education agency regions within Iowa, 2006/07–2010/11 (percent)

Region that teachers leave	Mobility rate	Region to which teachers move									Total mobility from region***
		Area Education Agency 267	Grant Wood	Great Prairie	Green Hills	Heartland	Keystone	Mississippi Bend	Northwest	Prairie Lakes	
Area Education Agency 267	Annual	5.6	0.3	0.1	0.1	0.4	0.1	0.1	0.0	0.2	6.9
	Five-year	14.7	0.7	0.2	0.2	1.2	0.3	0.2	0.1	0.5	18.4
Grant Wood	Annual	0.2	5.6	0.1	0.0	0.2	0.1	0.1	0.0	0.0	6.4
	Five-year	0.5	16.2	0.3	0.1	0.8	0.4	0.4	0.1	0.1	19.0
Great Prairie	Annual	0.2	0.3	4.2	0.1	0.3	0.0	0.1	0.0	0.0	5.3
	Five-year	0.4	0.9	11.9	0.2	1.1	0.1	0.2	0.1	0.1	15.2
Green Hills	Annual	0.1	0.1	0.0	5.1	0.5	0.0	0.0	0.2	0.1	6.4
	Five-year	0.4	0.4	0.2	12.7	1.2	0.1	0.0	0.5	0.3	16.0
Heartland	Annual	0.2	0.1	0.1	0.1	7.1	0.0	0.0	0.0	0.1	7.7
	Five-year	0.6	0.3	0.3	0.2	19.2	0.1	0.1	0.2	0.2	21.2
Keystone	Annual	0.3	0.2	0.0	0.0	0.1	5.0	0.1	0.0	0.0	5.8
	Five-year	1.0	0.6	0.1	0.2	0.4	14.2	0.3	0.1	0.1	16.9
Mississippi Bend	Annual	0.1	0.2	0.1	[a]	0.2	0.1	4.6	0.0	0.0	5.3
	Five-year	0.3	0.9	0.4	0.0	0.6	0.2	13.2	0.1	0.1	15.9
Northwest	Annual	0.1	0.0	0.0	0.1	0.2	0.0	0.0	4.8	0.3	5.6
	Five-year	0.3	0.1	0.1	0.4	0.6	0.0	0.1	14.3	0.8	16.8
Prairie Lakes	Annual	0.3	0.1	0.1	0.1	0.5	0.0	0.0	0.2	5.8	7.5
	Five-year	1.0	0.5	0.3	0.3	1.7	0.0	0.1	0.8	17.5	22.4

*** Total mobility rates are statistically significant across regions at the $p < .001$ level.

Note: Shaded cells along the diagonal indicate the percentage of teachers within the region who relocated to another school within the region. Average annual mobility rates are the averages of year-to-year mobility rates from 2006/07 to 2010/11, where the mobility rate for each year reflects the movement of teachers between that year and the subsequent year (for example, the rate for 2006/07 reflects the percentage of teachers employed in 2006/07 who worked in a different school in 2007/08). Five-year mobility rates are the percentage of teachers employed in 2006/07 who worked in a different school in 2011/12.

a. No teachers moved from the region representing the row to the region representing the column.

Source: Authors' analysis of data from the Iowa Department of Education (see appendix A).

Table B2. Principal average annual and five-year mobility rates across area education agency regions within Iowa, 2006/07–2010/11 (percent)

Region that principals[a] leave	Mobility rate	Region to which principals[a] move: Area Education Agency 267	Grant Wood	Great Prairie	Green Hills	Heartland	Keystone	Mississippi Bend	Northwest	Prairie Lakes	Total mobility from region*
Area Education Agency 267	Annual	7.2	0.5	0.3	0.3	0.6	0.2	0.1	0.3	0.1	9.9
	Five-year	19.0	3.0	[b]	0.5	2.0	0.5	[b]	[b]	0.5	25.5
Grant Wood	Annual	0.5	5.6	0.3	[b]	0.5	0.3	0.4	0.1	0.1	7.8
	Five-year	1.6	19.6	0.5	0.5	1.6	1.1	0.5	[b]	0.5	26.1
Great Prairie	Annual	0.8	1.0	9.3	0.2	0.8	0.2	0.2	[b]	0.3	12.9
	Five-year	3.4	1.7	28.6	0.8	0.8	[b]	1.7	0.8	0.8	38.7
Green Hills	Annual	0.3	0.2	[b]	7.0	0.8	0.2	0.2	[b]	[b]	8.6
	Five-year	1.7	[b]	[b]	18.8	4.3	0.9	0.9	0.9	[b]	27.4
Heartland	Annual	0.5	0.1	0.1	0.1	6.4	0.1	[b]	0.1	0.1	7.4
	Five-year	1.9	[b]	[b]	[b]	18.0	0.3	[b]	[b]	0.3	20.7
Keystone	Annual	1.2	0.5	0.2	[b]	0.2	4.1	0.2	0.2	0.5	7.1
	Five-year	5.4	2.7	[b]	[b]	[b]	12.5	[b]	0.9	2.7	24.1
Mississippi Bend	Annual	0.1	1.1	0.1	0.1	0.1	0.1	8.2	0.1	[b]	10.2
	Five-year	0.7	4.4	0.7	[b]	1.5	1.5	21.9	1.5	[b]	32.1
Northwest	Annual	[b]	0.3	0.2	0.3	0.3	0.2	[b]	7.8	0.6	9.7
	Five-year	[b]	[b]	[b]	1.6	2.4	0.8	[b]	24.6	0.8	30.2
Prairie Lakes	Annual	0.8	0.2	0.8	0.2	0.2	0.2	0.4	0.4	6.9	10.1
	Five-year	2.1	[b]	2.1	[b]	1.1	[b]	2.1	[b]	20.0	27.4

* Total mobility rates are statistically significant across regions at the $p < .05$ level.

Note: Shaded cells along the diagonal indicate the percentage of principals within the region who relocated to another school within the region. Average annual mobility rates are the averages of year-to-year mobility rates from 2006/07 to 2010/11, where the mobility rate for each year reflects the movement of principals between that year and the subsequent year (for example, the rate for 2006/07 reflects the percentage of principals employed in 2006/07 who worked in a different school in 2007/08). Five-year mobility rates are the percentage of principals employed in 2006/07 who worked in a different school in 2011/12.

a. Includes assistant principals.

b. No principals moved from the region representing the row to the region representing the column.

Source: Authors' analysis of data from the Iowa Department of Education (see appendix A).

Table B3. Teacher average annual and five-year mobility rates across economic development regions within Minnesota, 2006/07–2010/11 (percent)

Region that teachers leave	Mobility rate	Region to which teachers move													Total mobility from region***
		Arrow-head	Central	East Central	Head-waters	Metro	North Central	North-west	South Central	South-east	South-west	South-west Central	Upper MN Valley	West Central	
Arrowhead	Annual	10.6	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.1	0.0	0.0	[a]	0.0	11.4
	Five-year	20.7	0.1	0.3	0.2	0.6	0.2	0.1	0.0	0.2	[a]	0.0	[a]	0.1	22.7
Central	Annual	0.0	6.0	0.1	0.0	0.7	0.2	0.0	0.1	0.1	0.0	0.1	0.0	0.1	7.5
	Five-year	0.2	14.2	0.3	0.1	1.2	0.6	0.1	0.1	0.2	0.1	0.2	0.1	0.2	17.7
East Central	Annual	0.3	0.6	4.7	0.0	0.7	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.1	6.9
	Five-year	0.6	1.4	9.9	0.1	1.8	0.5	0.2	0.3	0.6	0.1	[a]	[a]	0.2	15.8
Headwaters	Annual	0.3	0.1	0.1	4.1	0.2	0.2	0.2	0.0	0.1	0.0	0.0	[a]	0.1	5.4
	Five-year	0.8	0.3	0.2	9.2	0.5	1.1	0.8	0.3	0.2	[a]	0.1	[a]	[a]	13.5
Metro	Annual	0.0	0.2	0.1	0.0	9.8	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	10.3
	Five-year	0.1	0.3	0.1	0.0	21.6	0.1	0.0	0.1	0.3	0.1	0.1	0.0	0.1	22.9
North Central	Annual	0.2	0.2	0.1	0.3	0.3	4.8	0.1	0.0	0.1	0.0	0.0	0.0	0.4	6.6
	Five-year	0.8	0.3	0.2	1.0	0.7	11.7	0.3	0.1	0.2	0.1	0.1	0.1	0.9	16.5
Northwest	Annual	0.2	0.1	0.0	0.2	0.1	0.0	4.9	0.0	0.1	0.0	0.0	[a]	0.2	5.9
	Five-year	0.3	0.1	[a]	0.6	0.1	[a]	11.9	0.1	[a]	[a]	[a]	0.1	0.4	13.4
South Central	Annual	0.1	0.1	0.1	0.0	0.5	0.0	[a]	7.1	0.4	0.2	0.1	0.0	0.1	8.7
	Five-year	0.1	0.2	0.1	0.1	1.4	0.2	0.1	15.2	1.0	0.5	0.1	0.1	0.1	19.1
Southeast	Annual	0.1	0.1	0.1	0.0	0.6	0.0	0.0	0.2	6.8	0.0	0.0	0.0	0.0	7.9
	Five-year	0.1	0.2	0.1	0.0	1.3	0.1	0.1	0.3	16.4	0.1	0.1	[a]	0.1	18.9
Southwest	Annual	0.1	0.1	0.1	0.0	0.2	0.1	0.1	0.3	0.2	6.0	0.2	0.1	0.1	7.6
	Five-year	0.2	0.4	0.1	0.1	0.9	0.1	0.3	0.8	0.8	13.0	0.4	0.5	0.3	17.8
Southwest Central	Annual	0.1	0.6	0.0	0.0	0.3	0.0	0.1	0.1	0.1	0.1	5.5	0.2	0.1	7.3
	Five-year	0.1	1.3	0.2	0.1	0.9	[a]	[a]	0.2	0.3	0.5	13.5	0.3	0.7	18.2
Upper MN Valley	Annual	0.0	0.2	0.1	[a]	[a]	0.0	0.1	0.1	0.2	0.5	0.2	5.7	0.2	7.4
	Five-year	[a]	0.7	[a]	[a]	0.2	0.3	0.2	0.3	0.5	1.0	0.9	12.5	0.3	17.2
West Central	Annual	0.0	0.2	0.1	0.1	0.2	0.2	0.1	0.0	0.1	0.1	0.0	0.1	5.7	6.9
	Five-year	0.1	0.4	0.1	0.1	0.7	0.6	0.3	0.1	0.1	0.1	0.1	0.1	13.0	15.8

*** Total mobility rates are statistically significant across regions at the $p < .001$ level.

Note: Shaded cells along the diagonal indicate the percentage of teachers within the region who relocated to another school within the region. Average annual mobility rates are the averages of year-to-year mobility rates from 2006/07 to 2010/11, where the mobility rate for each year reflects the movement of teachers between that year and the subsequent year (for example, the rate for 2006/07 reflects the percentage of teachers employed in 2006/07 who worked in a different school in 2007/08). Five-year mobility rates are the percentage of teachers employed in 2006/07 who worked in a different school in 2011/12.

a. No teachers moved from the region representing the row to the region representing the column.

Source: Authors' analysis of data from the Minnesota Department of Education (see appendix A).

Table B4. Principal average annual and five-year mobility rates across state economic development regions within Minnesota, 2006/07–2010/11 (percent)

Region that principals[a] leave	Mobility rate	Region to which principals[a] move													Total mobility from region[b]
		Arrow-head	Central	East Central	Head-waters	Metro	North Central	North-west	South Central	South-east	South-west	South-west Central	Upper MN Valley	West Central	
Arrowhead	Annual	8.7	0.4	c	0.4	c	c	0.2	0.4	c	0.2	c	c	c	10.4
	Five-year	28.4	c	c	0.9	c	c	c	0.9	c	c	c	c	c	30.3
Central	Annual	c	7.5	0.1	c	1.0	0.1	c	0.1	0.1	c	c	c	0.6	9.5
	Five-year	c	23.7	c	c	3.6	c	c	0.7	c	c	c	c	1.4	29.5
East Central	Annual	c	1.5	4.1	0.4	1.5	c	c	c	0.8	c	c	c	c	8.3
	Five-year	c	3.8	7.6	c	9.4	c	c	c	c	c	c	c	c	20.8
Headwaters	Annual	c	c	c	9.6	c	1.1	c	c	c	c	c	c	c	11.3
	Five-year	c	c	c	18.9	c	c	2.7	c	2.7	c	c	c	2.7	29.7
Metro	Annual	c	0.2	0.0	0.0	10.6	0.1	c	c	0.1	c	c	c	c	11.1
	Five-year	c	0.3	0.1	c	28.4	0.2	c	c	0.2	c	c	c	c	29.4
North Central	Annual	c	c	c	0.8	c	6.2	0.4	c	0.4	c	0.4	c	0.4	8.5
	Five-year	c	c	c	c	c	27.6	c	c	3.5	c	1.7	c	c	32.8
Northwest	Annual	0.5	0.5	c	1.0	c	c	7.6	c	0.5	c	c	c	0.5	10.4
	Five-year	c	c	c	2.2	c	c	19.6	c	c	c	c	c	2.2	23.9
South Central	Annual	0.3	0.3	c	c	1.1	c	c	6.0	1.1	0.3	0.6	c	c	9.6
	Five-year	1.4	c	c	1.4	1.4	c	c	20.8	1.4	c	1.4	c	c	27.8
Southeast	Annual	c	c	c	c	0.9	0.3	0.1	c	7.1	0.1	0.1	c	c	8.6
	Five-year	c	0.6	c	c	1.9	0.6	0.6	c	23.6	c	c	c	c	27.3
Southwest	Annual	0.4	c	c	c	0.4	c	0.4	c	1.6	7.5	0.4	c	c	11.1
	Five-year	4.4	c	c	c	c	c	2.2	c	4.4	21.7	c	c	c	32.6
Southwest Central	Annual	c	2.3	c	c	2.3	c	0.6	0.6	0.6	c	5.7	c	c	11.9
	Five-year	c	5.4	c	c	2.7	c	c	2.7	c	c	18.9	c	c	29.7
Upper MN Valley	Annual	2.0	c	c	c	c	c	c	1.0	c	c	c	7.8	c	11.8
	Five-year	5.0	c	c	c	c	c	c	c	c	c	c	30.0	c	40.0
West Central	Annual	0.6	0.3	0.3	c	0.6	0.9	0.3	0.3	c	c	c	c	5.9	9.3
	Five-year	c	1.5	1.5	c	3.0	c	1.5	1.5	c	c	c	c	19.7	30.3

Note: Shaded cells along the diagonal indicate the percentage of principals in the region who relocated to another school within the region. Average annual mobility rates are the averages of year-to-year mobility rates from 2006/07 to 2010/11, where the mobility rate for each year reflects the movement of principals between that year and the subsequent year (for example, the rate for 2006/07 reflects the percentage of principals employed in 2006/07 who worked in a different school in 2007/08). Five-year mobility rates are the percentage of principals employed in 2006/07 who worked in a different school in 2011/12.

a. Includes assistant principals.

b. Total mobility rates are not statistically significant across regions at $p < .05$.

c. No principals moved from the region representing the row to the region representing the column.

Source: Authors' analysis of data from the Minnesota Department of Education (see appendix A).

Table B5. Teacher average annual and five-year mobility rates across cooperative educational service agency regions within Wisconsin, 2006/07–2010/11 (percent)

Region that teachers leave	Mobility rate	Region to which teachers move												Total mobility from region***
		Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	Region 8	Region 9	Region 10	Region 11	Region 12`	
Region 1	Annual	9.7	0.3	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	10.2
	Five-year	22.0	0.7	0.0	0.0	0.1	0.4	0.2	0.0	0.1	[a]	0.0	0.0	23.5
Region 2	Annual	0.3	6.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	6.8
	Five-year	0.9	15.3	0.1	0.2	0.2	0.4	0.2	0.0	0.1	0.1	0.1	0.0	17.6
Region 3	Annual	0.0	0.4	4.8	0.1	0.2	0.1	0.0	0.0	0.0	0.1	0.1	[a]	5.8
	Five-year	0.1	1.0	12.7	0.2	0.4	0.2	0.2	[a]	0.1	0.2	0.2	0.1	15.5
Region 4	Annual	0.1	0.1	0.1	5.1	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.0	5.9
	Five-year	0.2	0.3	0.2	12.9	0.4	0.1	0.1	0.1	0.1	0.6	0.3	0.0	15.1
Region 5	Annual	0.1	0.3	0.1	0.1	6.2	0.2	0.1	0.1	0.2	0.1	0.1	0.0	7.5
	Five-year	0.2	1.0	0.4	0.3	14.3	0.7	0.2	0.2	0.3	0.3	0.2	0.0	18.1
Region 6	Annual	0.2	0.2	0.0	0.0	0.1	8.0	0.3	0.0	0.0	0.0	0.0	0.0	8.9
	Five-year	0.8	0.5	0.0	0.1	0.3	18.9	0.9	0.0	0.1	0.0	0.1	0.0	21.8
Region 7	Annual	0.2	0.1	0.0	0.0	0.0	0.3	7.0	0.1	0.0	0.0	0.0	0.0	7.8
	Five-year	0.5	0.3	0.0	0.1	0.1	1.0	16.0	0.3	0.1	0.1	0.1	0.0	18.6
Region 8	Annual	[a]	0.1	0.0	0.1	0.2	0.3	0.5	5.5	0.3	0.0	0.1	0.0	7.1
	Five-year	[a]	0.3	[a]	0.2	0.5	0.8	1.4	14.2	0.9	0.1	0.1	0.2	18.7
Region 9	Annual	0.1	0.1	0.0	0.1	0.2	0.1	0.1	0.1	5.1	0.1	0.1	0.1	6.1
	Five-year	0.2	0.5	0.1	0.1	0.2	0.1	0.4	0.2	11.6	0.3	0.2	0.1	13.9
Region 10	Annual	0.1	0.1	0.0	0.1	0.2	0.1	0.1	0.1	0.2	5.5	0.5	0.0	6.9
	Five-year	0.1	0.3	[a]	0.3	0.4	0.2	0.2	0.0	0.7	12.2	1.4	0.2	16.2
Region 11	Annual	0.0	0.1	0.0	0.1	0.0	0.1	0.1	0.0	0.1	0.3	5.3	0.1	6.1
	Five-year	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.0	0.1	0.4	14.4	0.2	16.0
Region 12	Annual	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	5.8	6.8
	Five-year	0.2	0.2	[a]	0.1	0.3	0.2	0.1	0.2	0.2	0.4	0.7	15.0	17.4

*** Total mobility rates are statistically significant across regions at the $p < .001$ level.

Note: Shaded cells along diagonal indicate the percentage of teachers within the region who relocated to another school in the region. Average annual mobility rates are the averages of year-to-year mobility rates from 2006/07 to 2010/11, where the mobility rate for each year reflects the movement of teachers between that year and the subsequent year (for example, the rate for 2006/07 reflects the percentage of teachers employed in 2006/07 who worked in a different school in 2007/08). Five-year mobility rates are the percentage of teachers employed in 2006/07 who worked in a different school in 2011/12.

a. No teachers moved from the region representing the row to the region representing the column.

Source: Authors' analysis of data from the Wisconsin Department of Public Instruction (see appendix A).

Table B6. Principal average annual and five-year mobility rates across cooperative educational service agency regions within Wisconsin, 2006/07–2010/11 (percent)

Region that principals[a] leave	Mobility rate	Region to which principals[a] move												Total mobility from region[b]
		Region 1	Region 2	Region 3	Region 4	Region 5	Region 6	Region 7	Region 8	Region 9	Region 10	Region 11	Region 12	
Region 1	Annual	15.2	0.4	[c]	0.0	[c]	0.3	0.0	[c]	0.0	[c]	[c]	0.0	16.0
	Five-year	32.3	0.9	[c]	[c]	0.1	0.8	0.3	[c]	[c]	[c]	[c]	[c]	34.5
Region 2	Annual	0.5	8.7	0.2	0.3	0.2	0.2	0.1	0.1	[c]	0.2	0.1	[c]	10.4
	Five-year	1.5	24.6	0.5	0.8	1.5	0.3	0.3	[c]	0.3	[c]	0.3	0.3	30.2
Region 3	Annual	0.4	1.7	9.7	0.7	0.4	[c]	[c]	[c]	[c]	0.4	[c]	[c]	13.1
	Five-year	[c]	3.6	25.5	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	[c]	29.1
Region 4	Annual	0.4	0.2	0.2	7.4	0.2	0.2	[c]	0.2	0.2	0.8	0.4	0.4	10.5
	Five-year	1.0	[c]	[c]	21.0	[c]	1.0	[c]	[c]	[c]	1.9	1.0	1.0	26.7
Region 5	Annual	0.1	1.4	0.1	0.4	6.2	0.7	0.5	0.1	0.1	0.3	0.4	[c]	10.4
	Five-year	0.6	2.5	0.6	0.6	19.0	1.9	1.3	[c]	0.6	0.6	1.3	[c]	29.1
Region 6	Annual	0.3	0.6	0.2	0.2	0.2	10.2	0.8	0.1	0.2	0.1	[c]	[c]	12.7
	Five-year	1.9	1.9	0.4	0.4	0.8	25.5	1.5	0.8	0.4	[c]	[c]	[c]	33.3
Region 7	Annual	0.3	0.3	[c]	0.1	0.2	0.4	6.6	0.2	0.1	0.2	0.3	0.2	8.9
	Five-year	0.4	1.3	[c]	0.4	0.9	1.8	18.0	0.4	0.4	0.4	0.9	0.9	25.9
Region 8	Annual	0.9	0.6	[c]	[c]	[c]	0.3	0.3	5.5	[c]	[c]	[c]	0.3	7.8
	Five-year	[c]	1.5	[c]	[c]	[c]	1.5	1.5	15.9	[c]	[c]	[c]	[c]	20.3
Region 9	Annual	[c]	0.2	[c]	[c]	[c]	0.6	0.6	0.2	5.3	0.4	0.4	0.2	8.0
	Five-year	[c]	1.0	[c]	[c]	[c]	1.0	4.1	[c]	15.5	1.0	1.0	[c]	23.7
Region 10	Annual	0.2	0.4	[c]	0.2	[c]	[c]	[c]	0.2	[c]	6.4	0.4	0.2	8.1
	Five-year	[c]	[c]	[c]	1.0	[c]	[c]	[c]	[c]	[c]	24.2	[c]	[c]	25.3
Region 11	Annual	0.3	0.3	0.5	0.3	0.2	[c]	0.2	0.2	[c]	0.5	6.3	0.2	8.8
	Five-year	[c]	[c]	0.8	[c]	0.8	[c]	0.8	[c]	[c]	3.1	20.3	0.8	26.6
Region 12	Annual	[c]	[c]	0.4	[c]	0.4	0.4	[c]	[c]	0.4	[c]	[c]	8.0	9.6
	Five-year	[c]	[c]	[c]	[c]	[c]	[c]	2.1	[c]	[c]	[c]	[c]	18.8	20.8

Note: Shaded cells along diagonal indicate the percentage of principals within the region who relocated to another school in the region. Average annual mobility rates are the averages of year-to-year mobility rates from 2006/07 to 2010/11, where the mobility rate for each year reflects the movement of principals between that year and the subsequent year (for example, the rate for 2006/07 reflects the percentage of principals employed in 2006/07 who worked in a different school in 2007/08). Five-year mobility rates are the share of principals employed in both 2006/07 and 2011/12 who worked in a different school in those two years.

a. Includes assistant principals.

b. Total annual mobility rates are statistically significant across regions at $p < .001$; total five-year mobility rates are not statistically significant across regions at $p < .05$.

c. No principals moved from the region representing the row to the region representing the column.

Source: Authors' analysis of data from the Wisconsin Department of Public Instruction (see appendix A).

Notes

1. The analyses in this report focus on the school years for which mobility could be determined in all three states (school years 2006/07–2010/11). For technical reasons the study team was also able to analyze teacher mobility between states for 2005/06–2010/11. Details are provided in box 1 and appendix A.
2. Analyses suggest a simple linear relationship between educator experience and likelihood of moving (see appendix A).
3. Because of the small number of interstate movers, the study team did not conduct the analysis by administrative level or examine the relationships between mobility and various educator and school characteristics.
4. The study team conducted a policy scan in response to a related request from the Educator Effectiveness Research Alliance members to examine policies within and between Iowa, Minnesota, and Wisconsin that may facilitate or impede educator mobility, including the transferability of educator licenses and the portability of educator pension benefits. The findings from the policy scan were presented to the alliance.
5. The National Center for Education Statistics Schools and Staffing Survey is available at https://nces.ed.gov/surveys/sass/.
6. To explore possible nonlinear relationships between experience and mobility, the study team conducted sensitivity analysis by treating experience as a categorical variable by including two indicators in the analysis model: 6–20 years of experience and 21 or more years of experience (0–5 years of experience was the reference category). The results showed a monotonic decline in the odds of moving relative to a low-experience teacher for all three states, suggesting mobility continues to decline over an educator's work life. The study team conducted additional analyses by adding a quadratic term (experience squared) to the model. The results showed that the quadratic term was not significant for teachers (p = .52) and was at the margin of statistical significance (p = .07) for principals. The coefficient of the squared term was virtually equal to 1, indicating a very small effect. The coefficient of the experience term remained significant and less than 1. These findings suggest that a simple linear specification for experience is appropriate.

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