Recruitment, Retention and Salaries of Teachers and Other School Personnel in Montana

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I. Introduction and Summary

This study analyzes salaries, turnover, difficulty hiring and other dimensions of recruitment and retention for school personnel in Montana. We compare Montana's experience in the late 1980s when salaries were closer to the national average with more recent data when salaries are considerably below average. We also compare Montana to other states in the West, some of which are experiencing similar declines in enrollment and relative salaries, and some of which are experiencing rapid enrollment growth and relatively high salaries. Finally, we compare school districts within Montana to each other, examining how salary, isolation and other factors are related to recruitment and retention problems.

Our findings, details of which are provided in the text below, lead to several conclusions. One is that non-salary factors are crucial to understanding recruitment and retention problems. One of these factors is whether enrollment is growing or declining. States with rapidly growing enrollments, such as Arizona and Nevada, and to a lesser extent Colorado and Washington, are hiring large numbers of new teachers and other personnel – not just replacing those who retire or leave for other reasons. In general, these high growth states report more recruitment and retention problems, and perhaps as a result of these difficulties, high growth states pay the most. The combination of relatively good pay and expanding employment opportunities keeps most graduates of their teaching colleges in state.

The situation is quite different in states with declining enrollments – states like South Dakota, North Dakota, Montana, and to a lesser extent Wyoming. Compared with rapidly growing states, the states with declining enrollments have lower demands for additional teachers and other school personnel. In general, these states have fewer recruitment and retention problems. These states also pay less, and the combination of lower pay and expanding employment opportunities in other states leads more of the graduates of their teaching colleges to leave for other states.

From the standpoint of economics, this is largely what would be expected from the enrollment trends. In high growth states, the demand for school personnel is rapidly expanding, and as a result salaries are driven up as schools try to hire more personnel. Schools in the high growth states also compromise on quality by hiring teachers who lack certification or are not fully qualified in the fields that they teach. The demand and supply picture is quite different in states with declining enrollments. Except for reductions in class size or special programs, there is less pressure to hire more teachers. Schools are more readily able to fill their openings with qualified teachers, and there is less pressure to increase salaries to attract additional applicants. As a result salaries deteriorate relative to those available in the high growth states, and new graduates of teacher colleges find more opportunities and higher pay elsewhere.

Does this mean that teacher recruitment and retention is *not* a problem in Montana? Montana's problems with turnover, difficulty hiring, and uncertified teachers and teaching out of field are all at or below national averages. But while state-wide averages are useful for comparing Montana as a whole with other states in the West, they reveal little about the differences that exist within the state.

The analysis of school districts *within* Montana reveals that recruitment and retention problems are more severe in some districts than in others. A second factor besides salary – in this case, district isolation – plays an important role in these problems. Montana's most isolated school districts have higher turnover, more difficulty recruiting, and are more likely to have misassigned teachers. In some cases, the gap between urban and isolated districts is very large. For example, turnover is more than twice as high and the incidence of misassigned teachers is more three times as high in the most isolated districts as compared with urban districts. Thus, recruitment and retention problems do exist in Montana, especially in the most isolated districts.

What then is the role of salary, or more broadly compensation including benefits? First, simple comparisons of salaries with recruitment and retention problems can be highly misleading. For example, among states in the West, the higher paying states generally have *more* recruitment and retention problems. The reason is *not* that higher pay *causes* recruitment and retention problems. Rather, states with more recruitment and retention problems – typically because of rapid enrollment growth – are driven to offer higher pay as a means of overcoming these problems. Indeed, when the relationship between salaries and recruitment/retention problems is analyzed controlling for the effects of growth, there is a small negative impact of salaries. In other words, higher salaries do modestly reduce recruitment and retention problems, if other factors are held constant.

Comparisons of districts within Montana yield similar conclusions. Controlling for the effects of isolation, the lowest paying districts have more recruitment and retention problems than the medium and high paying districts. These effects are statistically significant and important in magnitude, implying that raising salaries in those districts would reduce recruitment and retention problems. However, there is no significant difference between recruitment/retention problems in medium and high paying districts, and thus no evidence that raising the salaries of medium paying districts would reduce these problems.

These findings imply very different effects of two alternative pay policies. One policy would be to increase the salaries of all teachers in the state by roughly the same amount. This policy would raise the pay of Montana teachers relative to those in others states, and of teaching relative to other occupations. This policy can be expected to have only modest benefits in terms of state-wide reductions in recruitment and retention problems, because most of the pay increases will accrue to the larger, more urbanized districts which have the fewest problems. A second policy would be to concentrate pay increases in the districts where recruitment and retention problems are the worst. As indicated above, these are typically the most isolated districts, and they are more likely to be low-paying than other districts. This policy is likely to have a larger impact on recruitment and retention problems, because it is directed at the problem itself.

The Structure of This Report

How do salaries affect recruitment and retention in Montana? There are two ways to think about this question. First, if salaries were raised for all Montana teachers, districts would be able to draw on a larger pool of applicants from other states and professions. Part II of this report makes these kinds of comparisons: How do salaries, recruitment, and retention in Montana compare with other states and how has Montana's position changed over time. Alternatively, if particular districts in Montana increased their salaries, while other districts did not (or increased by a smaller amount), then a larger pool of applicants would be drawn not just from other states and professions, but also from other districts within the state. For example, when Helena raised starting salaries to $30,000, this led to a greater pool of teachers who might have chosen to work in another state or to quit teaching, and it also attracted applicants from other districts in Montana. Part III of this report examines this kind of data: How do salaries, recruitment and retention differ between districts in Montana, and what role is played by other factors such as district isolation, benefits, and opportunities for salary growth? Part IV analyzes salaries and recruitment for non-teaching personnel. Part V concludes.

II. Teachers in Montana: Changes Over Time and Comparisons with Other States

A. Data and Methods

We examine trends in salary and recruitment and retention using the Schools and Staffing Survey (SASS) and several other sources with more recent data.[1] The SASS is a national survey that allows for comparisons with other states. The data is available over several years, with waves in 1987, 1990, 1993, and 1999. These years coincide with a period when Montana teacher salaries fell dramatically relative to the national average. The SASS also has good coverage of Montana: about 1,078 teachers in Montana are in the 1999 wave, or about 10% of the teaching workforce. These teachers came from 168 schools in 124 different districts.

The SASS data ends with the 2000-01 follow-up. (A new wave is in progress, but the data will not be released for several years.) Are these data too dated to be useful? If there is a pattern for how teachers respond to salaries in general, this pattern will likely hold true for current years. In fact, between 1999 and 2005, salaries in Montana have not changed much relative to the national average, indicating that the effect of salary may be similar.

However, to make sure that other factors have not dramatically changed the relationship between salary and recruitment and retention, we also compare indicators for Montana in 1999 in the SASS with current recruitment and retention reports for Montana schools, and with the Montana Board of Public Education 2001 and 2002 reports "Who Will Teach Montana's Children," written by Dori Nielson.[2] As described below, these different sources largely present a similar picture of recruitment and retention in Montana, raising confidence in the SASS data.

How does the Schools and Staffing Survey measure recruitment and retention?[3] There are several measures.

1. Turnover Rate

First, areas where teaching turnover is high incur more recruiting costs and may have more difficulty retaining teachers. The SASS indicates the number of new teachers hired and the number of teaching positions. The ratio is the turnover rate.

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[1] National Center for Education Statistics, *Schools and Staffing Survey and Teacher Follow-up*, US Department of Education.

[2] Nielson, Dori Burns, *Who Will Teach Montana's Children?,* Report for the Certification Standards and Practices Advisory Council (CSPAC) of the Montana Board of Public Education, February 2001; Nielson, Dori Burns, *Who Will Teach Montana's Children? 2002 Follow-up Study*, Report for the Certification Standards and Practices Advisory Council (CSPAC) of the Montana Board of Public Education, July 2002.

[3] Each of these measures is computed using the weights provided in the SASS that are designed to ensure the samples are nationally representative.

2. Percent of new BAs who leave a state

Areas with few applicants have more difficulty recruiting quality teachers. Another measure is the fraction of teachers with less than three years of experience who teach in a state different from where they received their BA. This fraction is related to the number of openings in the state. If a state has a growing student enrollment, more of their graduates will remain in the state. It may also indicate how attractive employment in one state is relative to another.

3. Schools reporting positions "very difficult" to fill

Schools also report in the SASS how difficult it was to fill teaching positions. The fraction of schools with at least one position that was "very difficult" or "impossible" to fill is a third indicator of recruitment and retention difficulties.

4. Out of field teaching and uncertified teachers

Finally, teacher quality may indicate how hard it is to fill positions. If many positions are staffed with unqualified teachers, it is likely that administrators had few options when hiring. In 1999, the SASS reports the fraction of teachers who do not have a major or a minor in their main teaching field. It also reports the fraction of teachers who are uncertified in their field.

B. Montana's Experience over Time

Table 1 presents information on these recruitment and retention indicators over time in Montana. The first column shows that between 1987 and 1999, salaries in Montana fell from 85% of the national average to 76% of the national average.[4] Today, teacher salaries in Montana are about 78% of the national average. This pay difference for teachers is similar to the pay difference for other occupations: Most professional occupations in Montana also pay about the same percentage of the national average, as will be seen in Section IV below.[5]

Each of the recruitment and retention indicators is also affected by trends in enrollment. During most of this period, student enrollment declined in Montana. The 1993 survey is the only year in which student population had increased in the five previous years.

Did falling salaries relative to other states over this period lead to more difficulty recruiting and retaining teachers? The percent of teachers who are new hires (turnover rate) is presented in column 4.[6] This fraction was largely similar across the years, although the 1999 rate was the highest reported, at 12 percent. Column 5 reports the

[4] Enrollment and average state teacher salaries from US Department of Education. National Center for Education Statistics. *Digest of Education Statistics*. Washington, D.C., various years.
[5] US Bureau of Labor Statistics, *Occupational Employment Statistics*, Washington, D.C., May 2004.
[6] Comparable data are not available from the 1987 SASS.

fraction of new teachers (less than 3 years experience) with a BA from Montana who teach in another state.[7] In 1999, this fraction was 44 percent. This is the highest fraction, higher even than in 1987 when student population was declining even more rapidly. However, the fraction of schools that reported at least one position was "Very Difficult" or "Impossible" to fill did not change during this period.[8]

Table 1. Salary, Enrollment, and Recruitment Retention Over Time

Year	Montana Average Salary/ US Average Salary	Growth Student Enrollment, Past 5 Years	% Teachers who are New Hires	% Montana Graduates w/ <3 Years Experience, Teach Outside MT	% Schools report "Very Difficult" or "Impossible" to Fill at Least one Position
1987	.85	-9.3%		37%	
1990	.88	-2.3%	10%		41%
1993	.79	7.8%	7%	26%	42%
1999	.76	-4.8%	12%	44%	42%
2005*	.78	-6.9%			

State and US Salaries and enrollment growth from US Department of Education, *Digest of Education Statistics*, various years. Other indicators from US Department of Education, *Schools and Staffing Survey*.
*2005 salary data from Morgan Quinto; enrollment growth from OPI

C. Comparisons Between SASS and Other Data: Updating the Measures

It is difficult to make exact comparisons with other studies because measures of recruitment and retention and the surveys and methods all vary. However, a few comparisons are possible

1. Turnover Rate

Table 2 compares the SASS turnover rate with a turnover rate calculated from fiscal years 2003, 2004 and 2005 OPI Recruitment and Retention reports. As discussed more in Section III, not all districts submitted this report, and many of the non-filers probably did not hire any teachers. The SASS 1999 turnover rate was 12 percent, similar to the turnover rate in the OPI data.

[7] Comparable data are not available from the 1990 SASS.
[8] Comparable data are not available from the 1987 SASS.

Table 2. Turnover Rates

Date	Source	Measure	Fraction
1999-00	SASS	New Hires/Total Teachers	12%
FYs 2003, 2004, 2005	OPI Recruitment and Retention Reports	Open Positions/FTE, assuming non-filers have no openings	9%
FYs 2003, 2004, 2005	OPI Recruitment and Retention Reports	Open Positions/FTE for only filers	12%

2. Fraction of New MT Graduates who Do Not Teach in Montana

One highly publicized indicator for recruitment and retention in Montana comes from Dori Nielson's Montana Board of Public Education studies "Who Will Teach Montana's Children?" She used lists of 1996-1997 and 1997-1998 graduates from Montana teacher preparation programs and matched these individuals with OPI lists of Montana teaching certificate holders and the Personnel Reports that all schools file each year. This Personnel Report lists the license numbers of all individuals teaching in Montana, enabling her to calculate the number of graduates who were not teaching.[9]

Based on the 1999-2000 data, Nielson found that 71 percent of new graduates were not teaching in Montana 2 or 3 years after graduating. This 71 percent figure includes new graduates who left Montana to teach in another state, new graduates who began teaching and quit, as well as individuals who never taught. Nielson also found that 35 percent of new graduates did not hold a Montana teaching certificate, making it unlikely that they planned to teach in Montana. The remainder of the teachers in the Nielsen study may have begun teaching in Montana, but either quit teaching in the first year or two or moved to another state.

How does this 71 percent figure compare with the SASS and with current data? The comparable figure would be the fraction of new MT graduates teaching in other states plus the fraction who left teaching or never taught. Table 3 compares Nielson's total not teaching in Montana with its components in the SASS. To update these figures, we surveyed many of the teaching preparation programs in the state. Many programs give surveys to new graduates and ask where they plan to work. The full details of this survey for the specific universities are in the Appendix Table A1. In 2005, about 44 percent of students who responded to the survey indicated that they were working in another state. In 2000, 47 percent reported working in another state. These fractions are very similar to the 44 percent figure in the SASS and the 35 percent figure in Nielson's study of graduates who do not get Montana certificates. It does not appear that the fraction of students who leave Montana has changed substantially since 1999.

The SASS also follows a subsample of teachers in 1999 a year later (2000-01) to see how many are still teaching in the same school, how many switch schools, and how many leave teaching altogether. (For Montana, this follow-up group is small and includes only

[9] Her procedure is described in the two reports. We also confirmed our description of her approach through personal correspondence.

81 teachers, so caution should be used with the estimates.) Table 3 shows that in the nation as a whole, about 23 percent of teachers left teaching after their first or second year. In Montana, about 30 percent of teachers in Montana left teaching after their first or second year. Although the follow-up group in Montana is small, Teacher Retirement System data for Montana for 1995-2001 also indicate that about 35 percent of teachers in Montana leave the system after their first year.[10]

To summarize, for a graduating class of 100 people who begin teaching, the SASS and current surveys of schools predict 44 will leave the state. Of the remaining 56 in Montana, about 30 to 35 percent will stop teaching after their first or second year, leaving 38 teaching in Montana. The SASS does not include information on people who never taught at all, but the overall picture from the SASS is similar to the Nielson study. Our updated survey of Montana graduates and data from the Teachers Retirement System suggest that the SASS data are not out of date, but reflects current conditions as well. The similarity is not surprising, as Montana teacher salaries have remained at about 78 percent of the national average throughout this period, enrollments have steadily declined since 1995, and the Neilson study covers the same dates as the SASS (1999-00).

Table 3. Teacher Movements between States

Date	Source	Measure	Fraction
		Total New MT Graduates not Teaching in Montana after 2-3 years	
1999-00	Nielson, WhoWill Teach Montana's Children, 2001	1996 & 1997 MT graduates who are not teaching in Montana 2 years later (May be teaching in other states or may have left teaching)	71%
		MT Graduates Teaching in Other States	
1999-00	SASS	New teachers (<3 yrs experience) with MT BA teaching elsewhere	44%
1999-00	Survey of teacher preparation programs	Graduates who respond to survey who report teaching in another state	47%
2003-04	Survey of teacher preparation programs	Graduates who respond to survey who report teaching in another state	44%
		Teachers Who Leave Teaching Within 3 Years	
2000-01	SASS, Teacher Follow up	National Fraction of teachers who leave teaching before they have taught 3 years	23%
2000-01	SASS, Teacher Follow up	MT Fraction of teachers who leave teaching before they have taught 3 years	30%
1995-2001	Teachers' Retirement System of Montana	Fraction of teachers who exit system after one year	35%

[10] Teachers' Retirement System of Montana, *Investigation of Active Member Demographic Experience*, prepared by Milliman USA. See Exhibit 11.

D. Montana's Experience Compared with Other States

How does recruitment and retention in Montana compare with other states? By comparing Montana with neighboring states that earn more or less than in Montana, the data can indicate the effect of salary on turnover. Table 4 compares Montana with three sets of states: North Dakota and South Dakota, where teachers were paid less than in Montana in 1999; Wyoming and Idaho, where teachers were paid more; and other Western states that have been growing rapidly and may be competing for Montana graduates. The states are arranged in order of salary, from lowest to highest. Salary relative to the national average is given in Column 1. Column 2 lists the student enrollment growth rates over a 10 year period. Montana experienced declining student enrollment, as did South Dakota, North Dakota and Wyoming. The other states all experienced increasing student enrollment, ranging from 7 percent growth in Idaho to a stunning 66 percent growth in Nevada.

How do recruitment and retention indicators compare across states? The third column of Table 4 compares the fraction of new hires (turnover rate) across the states. As can be seen, turnover is very similar across all states, with higher growth states having only slightly higher turnover rates than states like Montana. Turnover does not appear to be related to salary differences across states in the table or in regressions that control for student population growth and student demographic characteristics.[11]

The fourth column of Table 4 shows the fraction of schools reporting that at least one vacancy was "very difficult" or "impossible" to fill. This indicator is related to both salary and student growth. In general, states that are growing more rapidly have more difficulty filling positions. Salary also appears to have an effect. For example, consider Montana and Idaho. Idaho is growing more rapidly, but reports less difficulty hiring, perhaps because salaries are higher in Idaho. This pattern is confirmed in statistical analysis showing that salary modestly decreases hiring difficulty, after accounting for student enrollment growth and student demographic characteristics.

The fifth column of Table 4 reports the fraction of graduates from each state who left to teach in a different state. Again, statistical analysis suggests more teachers leave when salaries are lower relative to other states and when student enrollment growth is slower. The final two columns of Table 4 report the fraction of teachers who do not have a major or minor in their field and the fraction of teachers who are uncertified. Neither appears to be related to salary, but both are strongly affected by enrollment growth.

[11] Regression control variables include the percentage of students in the school who are nonwhite, the percentage of students eligible for free or reduced price lunch, the type of school (elementary, middle, secondary, K-12), the urbanicity of the school, state student enrollment growth, and state salaries relative to the national average.

Table 4. Turnover and Hiring Difficulty, MT and other Western States

	State Average Salary/ National Average	Student Enrollment Growth, 1993-2003	% New Hires	% Schools with Vacancies "Very Difficult" or "Impossible" to Fill	% Graduates w/ <3 Years Experience, Teach in Another State	% Teachers with no Major or Minor in Field	% Teachers without State Certification
SD	.71	-6.1	12%	42%	64%	18%	3%
ND	.74	-13.6	8%	43%	31%	13%	3%
MT	.78	-6.3	12%	42%	44%	17%	5%
WY	.85	-12	12%	37%	23%	14%	4%
ID	.87	7.3	10%	33%	32%	21%	4%
AZ	.89	36.9	14%	60%	24%	25%	10%
NV	.91	66.2	14%	41%	26%	21%	7%
CO	.93	22.7	14%	47%	18%	19%	12%
WA	.98	13.2	13%	43%	27%	24%	4%
U.S.		13	12%	43%		22%	10%

State and US Salaries and enrollment growth from US Department of Education, *Digest of Education Statistics*. various years. Other indicators from US Department of Education, *Schools and Staffing Survey 1999*.

E. Conclusions from the SASS

Montana salaries have fallen relative to the national average since the 1980s, and have remained at about 78 percent of the national average since 1999. Over this period, an increasing fraction of Montana teacher graduates left the state, but the fraction of schools in Montana that report difficulty hiring has not changed. However, cross-state comparisons suggest that difficulty hiring is at least modestly related to salary. Student population growth emerges as the most important factor affecting recruitment and retention indicators. Turnover, the percent of teachers without a major or minor, and the percent who are uncertified are roughly similar across states and do not appear to be strongly related to average state salary differences.

While the above comparisons are useful for comparing Montana with other states, they are statewide averages that conceal the considerable diversity in recruitment and retention experiences among districts within the state. This is the subject of the next section.

III. Teachers in Montana: Comparisons Between Montana Districts

A. Teachers' Salaries

The analysis of Montana districts is based on salary data from fiscal years 2003, 2004, and 2005. The MEA-MFT annual survey is the source for most of these data. The MEA-MFT survey provides starting salaries for teachers with a Bachelor's degree and no experience, and, in some cases, for other points on the salary "ladder," such as a Master's degree and 10 years of experience (MA10). The survey also requests data on medical insurance, but these data are often missing. Additional salary data are available from the Montana Small School Alliance and the survey of Class "C" schools performed at the University of Montana – Western, but this data are for fiscal year 2003 only.

The analysis focuses on starting salaries because these are the most complete and comparable available data. Although opportunities for salary increases influence recruitment and especially retention, the data on salaries at advanced levels are missing for many districts. Data on starting salaries are in most cases comparable across districts, a distinct advantage over salaries of individual teachers who vary in education and experience. However, the Montana Small School Alliance and Class "C" surveys report "low" salaries rather than starting salaries. These data are treated as if they were starting salaries, even though in some cases they are paid to teachers with substantial experience. A more comprehensive survey of teacher salaries would be an aid to future research.

Table 5 below displays starting salaries for the 245 districts for which data are available in all three fiscal years. Approximately 9,000 of Montana's Full Time Equivalent (FTE) teachers are employed in these districts, almost 90 percent of all teacher FTE in the state. Starting salaries ranged from less than $17,000 to more than $26,000 in fiscal year 2003, with an average of approximately $22,500.[12] The average starting salary increased 8.4 percent by 2005, about 3 percent more than consumer price inflation.[13] The minimum salary increased by a smaller 6 percent, while the maximum starting salary jumped a substantial 14 percent.[14]

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[12] Here and elsewhere in this report, average salaries are weighted averages based on the number of teachers (FTE) in each district. Thus, the average is representative of the typical teacher in the state – not the typical district – since the salaries paid in districts with more teachers receive more weight.

[13] Economic Report of the President, 2003 and 2005. Based on comparing Dec 2002 and Dec 2004.

[14] The American Federation of Teachers estimates that the average starting salary in Montana in 2004 was $23,790 (Education State Rankings 2004-2005, Morgan Quinto Press, p. 346). This figure is slightly higher than the estimate in Table xx, perhaps because our estimate includes more of the smaller districts that are not included in the MEA-MFT survey results. Even by the higher AFT figure, Montana starting salaries ranked last among the states.

Table 5. Starting Salaries for Districts that Reported All Three Years

Fiscal Year	FTE	Average	Minimum	Maximum
2003	9,010	$22,523	$16,794	$26,279
2004	8,966	$23,270	$17,813	$26,778
2005	8,903	$24,418	$17,813	$30,000
% Change 2003-2005	-1.0%	8.4%	6.1%	14.2%

Salaries also show significant variation by region of the state. Table 6 below displays starting salaries in six major counties and two regions for fiscal year 2003 (because the data are most complete for this year). In fiscal year 2003, average starting salaries in the larger counties ranged from $22,000 (Lewis and Clark) to almost $24,000 (Cascade and Yellowstone). In contrast, starting salaries in the rest of Southwest Montana averaged about $21,700 and in the rest of Northeast Montana about $21,200. The state as a whole averaged about $22,400. Thus, the larger counties tend to pay higher starting salaries, and the less populated counties pay less, on the average.

Table 6. Starting Salaries by Region, Fiscal Year 2003

Region	FTE	Average	% Change in Enrollment 1995 - 2005
Cascade	853	$23,868	-17.5%
Yellowstone	1,344	$23,860	-0.9%
Missoula	865	$22,863	-8.0%
Lewis & Clark	509	$21,990	-9.6%
Gallatin	593	$23,565	10.6%
Flathead	758	$23,241	0.3%
Southwest*	2,320	$21,715	-12.5%
Northeast**	2,467	$21,212	-21.5%
State	**9,708**	**$22,422**	**-10.7%**

*Southwest Counties Include: Lincoln, Sanders, Lake, Mineral, Powell, Granite, Ravalli, Deer Lodge, Silver Bow, Jefferson, Broadwater, Beaverhead, Madison, Park, Sweet Grass, Stillwater, Carbon.
** Northeast Counties Include: Glacier, Pondera, Toole, Liberty, Hill, Blaine, Phillips, Valley, Daniels, Sheridan, Roosevelt, Richland, McCone, Dawson, Garfield, Treasure, Rosebud, Custer, Prairie, Wibaux, Fallon, Carte, Powder River, Big Horn, Musselshell, Golden Valley, Wheatland, Meagher, Judith Basin, Fergus, Petroleum, Chouteau, Teton.

Enrollment trends also differ substantially by county and region. Cascade County lost 17.5 percent of their students between 1995 and 2005, the non-urban Northeast lost more than 20 percent, while Gallatin County gained 10.6 percent. The state as a whole lost about 11 percent of its students. Enrollment trends affect recruitment and retention because districts with high enrollment growth are seeking to expand their teaching staff, while districts with declining enrollments may be making layoffs rather than new hires.

The analysis of salaries divides districts into three categories corresponding to low, medium and high starting salaries, plus a fourth category for districts without salary data. Table 7 displays the number of districts, teachers (FTE), and enrollment in each of the salary categories. In fiscal year 2003, about 32 percent of districts had starting salaries of up to $20,000. However, these are mostly smaller districts, so they included only 12 percent of teachers and 9 percent of students. Forty-one percent of districts had starting salaries between $20,000 and $23,000. They included about 43 percent of teachers and students. Only 15 percent of districts had starting salaries of $23,000 or more, and they tended to be larger districts including 39 percent of teachers and 44 percent of students. Data are not available for the remaining 55 districts which include 6 percent of teachers and 5 percent of students.

Table 7. Low, Medium, and High Salary Districts by Year

FY	Salary Group	Number of Districts	Percent of Districts	Percent of FTE	Percent of Enrollment
2003	≤ $20,000	139	31.5%	12.2%	9.2%
	$20,000 to $23,000	181	41.0%	43.0%	42.5%
	≥ $23,000	66	15.0%	38.9%	43.6%
	No Data	55	12.5%	5.9%	4.7%
2004	≤ $20,000	70	16.1%	6.9%	4.6%
	$20,000 to $23,000	168	38.5%	36.7%	34.9%
	≥ $23,000	79	18.1%	51.8%	57.1%
	No Data	119	27.3%	4.6%	3.4%
2005	≤ $20,000	47	10.8%	4.2%	2.6%
	$20,000 to $23,000	155	35.7%	26.3%	23.4%
	≥ $23,000	102	23.5%	63.7%	69.5%
	No Data	130	30.0%	5.8%	4.4%

The data for 2004 and 2005 confirm the 2003 pattern: Larger districts tend to have higher starting salaries. In addition, the data show a steady movement toward higher starting salaries. The proportion of districts with starting salaries of $23,000 or more approximately doubled by 2005. The large drop in the number of districts paying less than $20,000 between 2003 and 2004 is mostly because salary data are not available for many of the smaller, low paying districts except in 2003. These districts show up as "No Data" in 2004 and 2005. Still, the proportion of low paying districts also dropped between 2004 and 2005, a period for which the data are largely consistent, confirming the overall trend of growth in starting salaries.[15]

B. Recruitment and Retention Indicators

Three indicators of recruitment and retention problems are utilized in this study. The first is the turnover rate, the second is a measure of difficulty in hiring, and the third is the proportion of schools in a district with at least one misassigned teacher. None of these measures is perfect, but taken together they tell a consistent story about recruitment and retention problems in Montana.

A district's teacher turnover rate is defined as the number of openings divided by the number of full time equivalent teaching staff. For example, a district with 10 teachers and one opening would have a turnover rate of 0.10 or 10 percent. FTE staff data are available from the OPI website.[16] The number of openings is reported by a district if it files a recruitment and retention report with OPI. Unfortunately (from the standpoint of performing an accurate analysis), districts often do not file this report. In fact, over the three years analyzed here, districts failed to file a report 47 percent of the time.

Missing data are a common problem in economics and other research. The important issue is whether or not the data are randomly missing, or missing for systematic reasons. If the data are randomly missing, then the available data are representative of all the districts, and the proper approach is to confine the analysis to the districts that filed recruitment and retention reports.

However, the pattern of nonreporting is far from random in these data. In particular, the probability that a district will report is closely related to the size of the district, with small districts much less likely to report than larger districts. As Table 8 shows, districts with less than 5 teachers on staff filed a report only 26 percent of the time, while larger districts filed reports more than 60 percent of the time. The most plausible explanation is that districts do not file a report unless they actually have an opening. Thus, smaller districts are less likely to file a report because they are less likely to have an opening. An example may help. Suppose that turnover rates are in fact 10% in districts of all sizes. A district with one teacher will then have an opening on average only once in every ten years. But a district with 10 teachers is likely to have *at least one opening* about 65 percent of the time.[17]

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[15] A surprising feature of the data is that the percentage of students in "No Data" districts declines as the percentage of districts increases from 2003 to 2004 and 2005. This is a result of two factors: First, most of the districts for which salary data are available only in 2003 are very small. Thus, they swell the percentage of districts with "No Data" in FYs 2004 and 2005 but don't include very many students. Second, a few relatively large districts did not report salary in 2003 but did so in the following two years, among them Shelby and Sidney. Thus, enrollment in the "No Data" category dropped significantly when these districts left.

[16] http://www.opi.state.mt.us/ Click on "Ed Data" and see "Downloadable FTE Files."

[17] More precisely, the probability of at least one opening is $1 - (1\text{-}t)^{FTE}$, where t is the turnover rate and FTE is the size of the teaching staff.

Table 8. Districts Reporting Openings by Size of District

Size (FTE)	Less than 5	5 to 20	More than 20
% of Districts Reporting	26%	61%	66%

Other factors also affect reporting, including limited administrative time to file an increasing number of reports required by state and Federal regulations, and turnover in district administration.[18] Thus, some nonreporting occurs because districts simply do not have openings, while other nonreporting is associated with administrative or other factors.

An additional concern is the quality of the available data on openings, even when districts do report. Districts are asked to report the number of teacher openings in each of 19 specific fields, as well as administrative, support staff, and special education openings in an additional 25 fields. In addition districts are asked - for each of these 44 employee categories - to report the number of openings due to retirement and to rate the difficulty hiring. A separate section of the report asks districts to estimate how various factors have affected turnover in their districts, including seven separate financial influences, six identified reasons for leaving position, and eight other influences. Districts are supposed to report all of these data separately for high school and elementary districts, but this does not always occur.[19]

The analysis of these data involved several steps. First we removed obvious discrepancies, such as high school districts hiring elementary teachers, and districts that reported the same hiring in all fields for both elementary and high school districts. We also contacted one large district (Great Falls) and asked them to check the data. This resulted in substantial revisions. But the nature and time limitations of this study made it impossible to resolve all of the problems inherent in the data currently available.

Two statewide teacher turnover rates can be computed based on the available data. Both use the number of openings reported by the districts as the numerator. If the denominator is the number of FTE of *just the reporting districts*, then the average turnover rate is 12.3 percent. This measure would be correct if the reporting districts were just like the nonreporting districts. Alternatively, if the denominator is the number of FTE of *all districts whether they reported or not*, then the average turnover rate is 8.7 percent. This measure would be correct if districts reported if and only if they had at least one opening. As discussed above, neither of these measures is likely to be correct, because districts usually don’t report unless they have an opening, but some districts don’t report even when they have openings. However, these two figures provide a range for the likely teacher turnover rate in Montana. That is, the statewide teacher turnover rate is probably

[18] For example, Bozeman Elementary and High School districts did not file reports in two of the three years included in this study, even though Bozeman is sufficiently large that it has numerous teacher openings every year. The missing data occurred during a period of transition from one personnel director to another.

[19] For example, some high school districts report hiring large numbers of elementary teachers while failing to file a report for the elementary district, and some high school and elementary districts report hiring the same numbers of *all* types of teachers (music, math, etc.), suggesting that the high school and elementary districts are each reporting the combined totals for both districts.

between 8.7 and 12.3 percent.[20] Future research would benefit from a system that encourages reporting even if the number of openings is zero, and provides checks on the quality of the data.

Although these turnover measures are imperfect, they are still valuable indicators of differences between districts. That is, a finding that lower paying districts have higher turnover rates is unlikely to be a result solely of the data problems discussed above. The analysis below presents turnover rates based on the assumption that districts report if and only if they have at least one opening. While these turnover rates are no doubt biased downward, the *differences* between districts are likely to be good indicators of actual differences in turnover. In addition, we have also done much of the analysis under the alternative assumption that the reporting districts are no different than the nonreporting districts. The turnover rates from this analysis are of course higher, but the findings about what factors influence *differences* among districts are largely unchanged.

The remaining two indicators of recruitment and retention are more straight-forward. Nearly all districts that report teacher openings also report a subjective measure of "difficulty hiring." As Table 9 indicates, difficulty hiring is measured on a scale of 1 to 4 with 1 indicating "easy" and 4 indicating "very hard."

Table 9. Measures of Difficulty Hiring

Measure	Definition
1	*Easy*: Several Qualified Applicants
2	*Possible*: Some Qualified Applicants
3	*Difficult*: Shortage of Applicants
4	*Very Hard*: No Applicant, Not Filled, Emergency Measures Used

The final indicator of recruitment and retention problems is the percentage of schools in a district with at least one misassigned teacher. These data come from the annual accreditation reports filed with OPI. Misassigned teachers occur because districts are unable to hire teachers who are certified to teach in particular fields such as music or math.

C. Results

Table 10 displays the relationship between salary and recruitment/retention indicators. Turnover rates average 11.1 percent in the lowest paid districts, 8.1 percent in the middle salary category, and 8.3 percent in the high salary category. Thus, the lowest salary districts have higher turnover rates than the medium and high salary districts, but there is no significant difference between the medium and high salary districts.

[20] It is theoretically possible that the rate exceeds 12.3 percent. This would occur if the nonreporting districts actually had higher turnover rates than the reporting districts. This is unlikely, however, because many nonreporting districts have zero openings, while almost no reporting districts have zero openings.

Table 10. Recruitment and Retention by Salary Category

Stating Salary	Turnover	Difficulty	Misassigned
≤ $20,000	11.1%	2.5	19%
$20,000 to $23,000	8.1%	2.4	12%
≥ $23,000	8.3%	2.1	6%

These results continue to hold when controlling for other district characteristics including Size (FTE), Type (Elementary, High School, K-12), Region, Student Characteristics (Percent Nonwhite, Percent Reduced Price/Free Lunch) and Isolation. As described in the Appendix, regression analysis confirms that low salary districts have higher turnover, more difficulty, and more misassgned teachers. The quantitative magnitude of the relationships sometimes changes, but the qualitative findings do not.

Another factor influencing recruitment and retention is district "isolation." There are a large number of stories – some might call them horror stories – as well as some prior evidence that recruitment/retention problems are more severe in isolated districts. But it is not clear exactly how isolation should be measured.

This study measures isolation by square miles per student. Geographic information system data reveal how many square miles there are in each school district. That figure is divided by the number of students in a district, thus obtaining square miles per student. This measure is just the inverse of density – that is, students per square mile.[21]

Districts are again divided into 3 groups based on their isolation (Table 11). The first group is the least isolated, with one square mile or less per student. These are the more urbanized districts which also tend to be larger, so while they are just 22% of all districts, they include 62% of the teachers. The second group has 1 to 10 square miles per student. They are about half of the districts and include about one third of the teachers. The most isolated districts have ten square miles or more per student. While these districts are about one-quarter of all districts, they only include about five percent of the teachers.

Table 11. Districts Classified by Isolation

Square Miles per Student	Percent of Districts	Percent of FTE	Percent of Students
≤1	22	62	68
1 to 10	51	33	29
≥ 10	27	5	3

[21] An alternative definition of isolation is square miles divided by students per grade. This definition has the advantage that comparisons between different types of schools are unaffected. That is, a K-8 elementary, 9-12 high school, or K-12 located in the same geographic area would all have about the same measure of isolation if enrollment is evenly distributed among the grades. Regression results suggest that this alternative definition has little impact on the estimated effects of isolation, except that the units are larger.

How does isolation relate to recruitment and retention? As Table 12 displays, more isolated districts have higher turnover rates, report more difficulty recruiting, and are more likely to have misassigned teachers. The magnitude of the differences in turnover is even larger than between districts with different starting salaries. For example, turnover rates range from 8.1 percent to 11.1 percent across salary groups, but turnover rates range from 7.5 percent to 16.4 percent across isolation groups.

Table 12. Recruitment and Retention by Isolation Category

Square Miles per Student	Turnover	Difficulty	Misassigned
≤1	7.5%	2.0	5%
1 to 10	9.8%	2.4	13%
≥ 10	16.4%	2.5	17%

These two variables, salary and isolation are a good example of confounding influences. Each of them separately is related to recruitment and retention, but they are also related to each other. As Table 13 displays, starting salaries in the more urbanized districts average about $24,000, the middle group averages about $22,000, and starting salaries in the most isolated districts average about $20,300. Thus, isolation and salary are correlated, and a comparison of either one of them alone with turnover can be misleading, if the other is not controlled for. However, the results of regression analysis, reported in the Appendix, confirm the qualitative conclusions already presented: Low salary districts have more recruitment and retention problems than medium and high salary districts, controlling for isolation and other factors, and more isolated districts have more recruitment and retention problems than less isolated districts, controlling for salary and other factors.[22]

Table 13. Starting Salary by Isolation Category

Square Miles per Student	Average Salary
≤1	$24,002
1 to 10	$22,087
≥ 10	$20,396

A number of other factors in addition to salary and isolation also affect recruitment and retention. Specifically, the data indicate that:

- Smaller districts have higher turnover and more difficulty hiring.
- Districts with more generous medical insurance plans have lower turnover and less difficulty hiring.
- Districts with higher salary growth have lower turnover.
- High school districts report more misassigned teachers than elementary districts.

[22] Other studies have also found that low salaries in rural schools in Montana make recruitment and retention more difficult. See Ashley Strecker, *Recruiting and Retaining Quality Teachers in Rural School Districts*, mimeo, University of Connecticut, 2005.

This last finding is not surprising, because teacher assignments are more specific at the high school level, e.g. for biology, history or math.[23]

Many of these factors are confounded, so rural districts are often not only isolated, but also are smaller, offer lower salaries and fewer benefits, and lower salary growth. Thus recruitment and retention problems are concentrated in these kinds of districts.

D. How *much* would an increase in salaries affect recruitment and retention?

Salary (and benefit) increases make a district a more attractive place to work and can be expected to reduce recruitment and retention problems, other things held constant. This section assesses the quantitative effects of salary increases on recruitment and retention. That is, we seek to answer the question, how *much* would an increase in salaries affect recruitment and retention?

The effect of a salary increase in a particular district depends on current salaries in that district and on whether other districts also increase their salaries. As already seen (Table 10), low salary districts have higher turnover rates than medium salary districts, but turnover rates are similar in medium and high salary districts. Regression results confirm these relationships while controlling for many other factors that affect turnover (see the Appendix for details). Thus, the evidence is that salary increases in low salary districts will be effective in reducing turnover in those districts, but there is no evidence that increasing salaries in medium or high salary districts will reduce turnover.

These results are consistent with the fact that much of the teacher supply to Montana districts comes from other districts within the state. That is, when a particular district raises its salary, it can expect an increase in applicants who otherwise might have gone to a different district within the state. Of course, applicants may also come from other states, from those who might have otherwise left the state, and even from those who might have otherwise left the teaching profession entirely. However, moving between districts within Montana is usually less costly than moving between states, and much less costly than changing professions. Thus, when a particular district raises its salary, it can expect an increased supply from other districts.

These results are also consistent with the finding that turnover rates are already quite modest in medium and high salary districts. All districts experience some amount of turnover, just as other employers do, even if pay levels are competitive. Employees leave jobs for many reasons besides salary, including pregnancy, spousal considerations, health problems, or retirement. Salary is unlikely to have very much of an effect on many of these decisions, and thus raising salaries may be largely ineffective in districts where pay is already competitive.

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[23] We also examined two student characteristics, percent nonwhite and percent eligilble for free or reduced price lunch. In addition, we examined average non-teaching wages in different parts of the state. None of these measures was consistently related to recruitment and retention problems.

However, it *does* matter whether all districts raise their salaries, or just the low salary districts. If all districts raise their salaries by the same amount, the attractiveness of teaching in a low salary district has not changed in comparison with a medium or low salary district. Additional teachers will be drawn to low salary districts only to the extent that teachers from other states, or who would have gone to other states or left the profession, are now willing to teach in low salary districts in Montana. If all districts raise their salaries by the same amount, the impact on recruitment and retention in low salary districts will be smaller than if just the low salary districts raise their salaries. And the low salary districts are where the recruitment and retention problems are most severe.

Increasing salaries by 10 percent in the lowest paying districts would make their starting salaries about equal to the average of the middle salary group.[24] Based on the regression analysis, turnover rates in the lowest paying districts would decline by approximately two percentage points. That is, turnover rates are predicted to decline from about 11 percent per year to about 9 percent per year, a decline of almost 20 percent. Difficulty hiring is predicted to decline by 0.2 from 2.5 to 2.3, or by almost 10 percent. Finally, the percentage of schools with misassigned teachers is predicted to decline by about 6 percentage points, from 19 percent to 13 percent. This amounts to almost a 30 percent decline in misassigned teachers among the lowest paying districts. Thus, increasing salaries for the lowest paid teachers would have favorable impacts on all three measures of recruitment and retention.

How does the impact of salary increases compare with that of isolation? The data suggest that a district with 20 square miles per student has about a 2 percentage point higher turnover rate than an urban district with less than one square mile per student, other things held constant (see the Appendix). This 2 percentage point difference is the same amount that raising salaries in low paying districts can be expected to lower turnover. Thus, raising salaries by 10 percent in the lowest paying districts is expected to approximately offset the impact of an increase in isolation of 20 square miles per student, assuming that all other factors (benefits, salary growth, etc) are the same for the two districts.

[24] For the three years of salary data combined, a 10 percent increase in the lowest paying districts amounts to an increase of approximately $2,000 per teacher per year. Starting from FY2005, a 10 percent increase would be somewhat more, because salaries have risen (see Table 5). The exact figure can not be determined because salary data is missing from so many districts in FY2005.

IV. Non-Teaching Personnel

A. Comparing Salaries for Education Professionals with Other Professionals in Montana

Is the pay of non-teaching professionals who work in schools sufficiently high to attract and retain quality individuals? One way to think about this question is to compare the pay of Montana school employees with the pay of other non-school employees in the same occupation. For example, a nurse could work either for public schools or for an employer in a different sector. Another way to think about this question is to compare school salaries in Montana with school salaries in other states. For example, a school nurse could choose to work in Montana or elsewhere.

Both comparisons are likely to be relevant and it is important to examine each. There are several factors to bear in mind when making these comparisons. First, salaries in Montana across all occupations are about 80 percent of the national average. Simply comparing school nurses in Montana with school nurses in other states ignores the fact that there are many differences in the cost of living and other factors across states.

Second, it is difficult to directly compare school professionals with professionals in other sectors because the occupations are not exactly the same. For example, accountants who work for the school system probably have similar training and skills to accountants who work for other employers. However, comparing administrators is more problematic: the skills of a principal may be very different from those of an owner of a business. Third, for many employees in the public school system, an annual salary may pertain primarily to a 9 or 10 month year. Weekly hours may also vary. These issues must be kept in mind when making comparisons between the school and non-school sectors.

Data and Methods

The following two tables compare annual salaries of employees of public elementary and secondary schools in Montana with similar professionals working for other employers. The data for this table come from the Montana Department of Labor. The Department of Labor, in conjunction with the Bureau of Labor Statistics (BLS), publishes quarterly data on average wages of individuals working in various occupations from the Occupational Employment Statistics (OES) surveys of employers. The data in the tables comes from the latest survey available, May 2004. Note that because it is a survey of employers, it does not include information for people who are self employed. Because of confidentiality restrictions, much of this information is not available for specific occupations in public schools in Montana at the regional or county level.

B. Comparing Non-Teaching Occupation in Montana Public Schools with other Montana Employers

Table 14 asks "How Do Salaries in Montana Public Schools Compare with Salaries of other Montana Employers?" The first column lists the average annual salary in Montana public schools. The second column lists average salaries for the same occupation in other employers. The individual occupational categories are defined by the Bureau of Labor Statistics. For example, "General and operations managers" includes people who "Plan, direct, or coordinate the operations of companies or public and private sector organizations." For schools, this category would include building or operations managers. For non-school employers, this includes owners or managers of a small business. The broad occupational group totals contain the sub-occupations listed below. For example, Superintendents are not included in "Managers and Administrators" because there are too few for BLS to report this group individually.

Table 14 shows that on average, Montana professionals in schools earn slightly more than Montana employees in other sectors, but this is not uniform across occupations. Averaged across *all* occupations, employees in Montana public schools earn $30,619, about 3% more than employees in other sectors in Montana who earn $29,607 on average. A number of occupations appear to be more highly paid in public schools. Managers and administrators in the school system earn about 10 percent more than other managers and administrators, with the exception of financial and administrative service managers. However, making comparisons among administrators is difficult. Social service employees (counselors, psychologists, social workers) also tend to be paid more in public schools: psychologists working for schools earn about 20% more, counselors about 40% more. Librarians also earn more in public schools.

Other occupations are paid more highly outside of public schools. Technical support workers (accountants, computer support) earn about 20% less in public schools. All health professionals earn less in schools except for occupational therapists. For registered nurses, the average salary gap is about $10,000, about 20% less than nurses in other sectors. Education support workers (library technicians, instructional coordinators) also earn less outside of the school system, although these occupations may not be directly comparable.

Table14. How Do Salaries in Montana Public Schools Compare with Salaries of other Montana Employers?

	Average MT Salary, Public Schools	Average MT Salary, Other Employers	MT School Salary/ MT Nonschool Salary	US School Salary/ US Nonschool Salary
All Occupations	$30,619	$29,607	103%	104%
Managers and Administrators	**$59,811**	**$54,949**	**109%**	**62%**
General and operations managers	$74,332	$54,754	136%	102%
Administrative services managers	$44,678	$51,159	87%	100%
Financial managers	$40,277	$59,951	67%	82%
Preschool/childcare administrators	$56,453	$28,465	198%	143%
Elem. and Second. School administrators	$60,705	$55,717	109%	125%
Education administrators, all other	$63,336	$57,406	110%	116%
Technical Support	**$34,712**	**$43,780**	**79%**	**77%**
Accountants and auditors	$34,921	$44,365	79%	87%
Computer support	$34,677	$43,154	80%	74%
Office and administrative support	**$22,985**	**$23,874**	**97%**	**97%**
Social Services	**$44,975**	**$32,512**	**138%**	**130%**
Psychologists (Clinical, counseling, school)	$50,448	$42,451	119%	101%
Counselors (Educational, vocational, school)	$44,890	$32,543	138%	131%
Social workers	$34,962	$31,196	112%	130%
Health	**$40,058**	**$42,011**	**95%**	**92%**
Registered nurses	$36,605	$46,171	79%	79%
Licensed practical/vocational nurses	$26,605	$28,573	93%	84%
Occupational therapists	$55,361	$53,661	103%	87%
Speech-language pathologists	$40,329	$52,951	76%	83%
Education Support	**$33,585**	**$28,631**	**117%**	**120%**
Librarians	$38,920	$33,413	116%	105%
Library technicians	$17,546	$20,551	85%	90%
Instructional coordinators	$28,550	$32,168	89%	118%
Service Workers	**$20,088**	**$16,263**	**124%**	**118%**
Food service workers	$17,875	$16,237	117%	108%
Maintenance workers	$22,364	$18,959	118%	120%
Child care workers	$16,315	$16,621	98%	115%

Source: Bureau of Labor Statistics, Occupational Employment Statistics, May 2004.

How does the school-non-school pay gap in Montana compare with the same gap in other states? Examining the same gap in other areas helps to control for differences in the type of work done in schools and for differences in annual weeks or hours. The final column of Table 14 shows the average US school salary as a fraction of the US non-school salary. In general, the relative pay gap of school and non-school workers is similar in the US to the Montana gaps. On average, employees in Montana schools are paid 3% more than in the non-school sector; in the US as a whole, school employees are paid 4% more. Like in Montana, administrators, psychologists and social service workers, and librarians are paid more highly in the school sector in other states than they are paid in the non-school sector, with proportions ranging from 105% to 143% of the national non-school salary. Again like in Montana, health professionals and technical and administrative support workers are paid about 15-25% less. The exact gap varies somewhat across occupations.

C. Comparing Salaries in Montana Public Schools with other States

Table 14 asked how salaries compare across sectors. Table 15 asks "How Do Salaries in Montana Public Schools Compare with School Salaries in Other States?" In other words, if someone has decided to be a nurse for a school system, how does Montana pay compare with pay in other states? In general, Table 15 shows that Montana school employees earn about 80% of the salary of school employees in other states. This is true for teachers (78%) as well as non-teaching occupations. Administrators' salaries in Montana are also about 78 percent of the national average. The gap for education support workers, health workers and service workers is somewhat smaller, with Montana school salaries ranging from 85 – 92 percent of the national average. In general, one of the most striking patterns in Table 15 is how similar the gap is across school professionals. The occupations where pay is higher in Montana schools (preschool administrators and occupational therapists) or much lower in Montana schools (financial managers, instructional coordinators) tend to be occupations where there are not many people employed in Montana. It may be that in these occupations there are a few highly under or over-paid individuals that dramatically affect the reported average.

Table 15 also shows that the pay gap for school employees is similar to the gap between non-school employees in Montana and in other states. The final column of the table shows the percentage of national salary earned by a non-school employee in Montana. All workers in Montana earn about 80% of average salaries in the US as a whole. The Montana-US wage gap is very similar for school and non-school professionals across various occupations. The main difference is that managers and administrators outside of public schools in Montana earn substantially less than managers and administrators in other states.

Table15. How Do Salaries in Montana Public Schools Compare with School Salaries in Other States?

	Average MT Salary, Public Schools	Average US Salary, Public Schools	MT School Salary/ US School Salary	MT Nonschool Salary/ US Nonschool Salary
Total all occupations	$30,619	$38,440	80%	80%
K-12 Teachers (includes special ed.)	**$36,679**	**$46,887**	**78%**	**80%**
Managers and Administrators	$59,811	$76,214	78%	62%
General and Operations Managers	$74,332	$93,500	79%	60%
Administrative Services Managers	$44,678	$66,820	67%	77%
Financial Managers	$40,277	$75,770	53%	65%
Preschool/childcare administrators	$56,453	$54,530	104%	74%
Elem. and Second. School administrators	$60,705	$76,010	80%	92%
Education Administrators, All Other	$63,336	$75,420	84%	88%
Technical and Administrative Support	**$34,712**	**$44,369**	**78%**	**76%**
Accountants and Auditors	$34,921	$49,780	70%	78%
Computer support	$34,677	$42,910	81%	75%
Office and administrative support	**$23,092**	**$28,070**	**82%**	**82%**
Social Services	**$44,975**	**$53,369**	**84%**	**79%**
Psychologists (Clinical, counseling, school)	$50,448	$61,040	83%	70%
Counselors (Educational, vocational, school)	$44,890	$52,710	85%	81%
Social Workers	$34,962	$47,130	74%	86%
Education Support	**$33,586**	**$47,211**	**85%**	**73%**
Librarians	$38,920	$48,870	80%	72%
Library Technicians	$17,546	$24,090	73%	77%
Instructional Coordinators	$28,550	$56,280	51%	67%
Health	**$40,058**	**$45,954**	**87%**	**84%**
Registered Nurses	$36,605	$43,160	85%	85%
Licensed Practical/Vocational Nurses	$26,605	$29,460	90%	82%
Occupational Therapists	$55,361	$49,990	111%	93%
Speech-Language Pathologists	$40,329	$50,620	80%	86%
Service Workers	**$20,088**	**$21,787**	**92%**	**88%**
Food service workers	$17,890	$18,930	87%	95%
Maintenance workers	$22,364	$25,270	90%	89%
Child care workers	$16,315	$19,940	96%	82%

Source: Bureau of Labor Statistics, Occupational Employment Statistics, May 2004.

D. Openings and Recruitment Difficulty

Table 16 displays the number of openings and turnover rate for various non-teaching positions in Montana schools. These data are derived from the same recruitment and retention reports as the data on teacher openings, so the same caveats apply. In particular, it is unclear whether a nonreport indicates no opening, or simply a failure to file the report.

Because the number of openings in any particular year is relatively small, the figures from FYs 2003, 2004, and 2005 are averaged. That is, the total number of openings over the three years is added up, and then divided by three. Thus, the figures represent annual averages of openings.

Table 16. Openings for Non-Teachers

	Openings	**Positions (FTE)**	**Turnover Rate**
Superintendent	27	137	19%
Principal	55	406	14%
School Counselor	46	422	11%
Instructional Paraprofessional	125	755	17%
Psychologist	11	49	23%
Other Support Staff	93	N/A	N/A
Special Education:			
Special Ed Director	5	21	23%
Special Ed Instructional Paraprofessional	125	1,086	12%
Other Special Ed Staff	61	N/A	N/A

Based on averages of data from FYs 2003, 2004, 2005
Instructional Paraprofessional Staff for FY 2003 are estimates.

School districts report an average of 27 openings per year for superintendents. Over the same three year period, the number of superintendent positions in Montana averaged 137. Thus, the turnover rate was 19 percent. Turnover rates are lower for principals, school counselors, and instructional paraprofessionals, and higher for psychologists.[25] Perhaps the most striking feature of the table is that all of these turnover rates are higher than for teachers.

The lower portion of the table refers specifically to Special Education Personnel (other than teachers). While there are relatively few FTE devoted to Special Education Directors, the number of paraprofessionals is large – about 10 percent of the number of teachers. The turnover rates for these groups are also higher than for teachers in general.

[25] We are unable to compute a turnover rate for other support staff because the number of positions statewide is difficult to determine from the available data. The same applies to other special education staff.

VI. Conclusion

We analyze salaries for teachers and other public school personnel in Montana in relation to recruitment and retention. Findings include:

Section II

- During the period 1988 – 2000, Montana teacher salaries decreased from 85% of the national average to 76%. Salaries are currently (2004) about 78% of the national average.
- Among states in the West, expanding student enrollment is associated with greater recruitment and retention problems and higher salaries. In contrast states with declining enrollments tend to have fewer recruitment and retention problems and lower salaries. In particular,
    - States with higher enrollment growth tend to have more problems with teacher certification and teaching out of field.
    - States with higher enrollment growth generally report more difficulty attracting qualified applicants.
    - States with higher enrollment growth have higher turnover rates as measured by new hires as a percentage of teaching staff.
- Both declining student enrollment and declining relative salaries have led an increasing fraction of new teaching graduates to leave Montana. About 40% of recent graduates teach in other states.
- The fraction of Montana schools who report difficulty hiring showed little change as salaries in Montana fell relative to the national average. However, the fraction of schools in Western states who report difficulty hiring appears to be modestly related to salary differences across states, controlling for enrollment growth.

Section III

- Among Montana districts, starting salaries for teachers ranged from less than $20,000 to $30,000 in fiscal year 2005.
- Districts with the lowest starting salaries have higher turnover, more difficulty recruiting, and are more likely to fail to meet accreditation standards because of misassigned teachers.
- A salary increase of approximately 10 percent in the lowest paying districts would reduce turnover by about 20 percent, difficulty hiring by about 10 percent, and misassigned teachers by about 30 percent.
- There is little difference in recruitment and retention experiences between high and medium salary districts, controlling for other district characteristics.
- Besides salary, many other district characteristics significantly influence recruitment and retention. These include district contributions for medical

insurance, opportunities for salary growth, region, geographic isolation, and school size.
- In some cases, a combination of factors has a substantial impact on recruitment and retention. In particular, more isolated districts also tend to have lower starting salaries, smaller size, and contribute less (if at all) to medical insurance. As a result, more isolated districts have the most severe recruitment and retention problems.
- More urbanized districts tend to have higher starting salaries and well-defined opportunities for salary increases with experience and additional education. They are also less isolated and are typically larger schools. All of these factors are associated with fewer recruitment and retention problems.

Section IV

- Some non-teaching occupations in Montana are more highly paid in the school sector than the non-school sector, and some are not.
    - Administrators and managers, social service professionals (counselors, psychologists and social workers), and librarians are more highly paid in the school sector than the non-school sector.
    - Health professionals and technical support workers (computer support, accountants, auditors) are paid less in the school sector.
    - These pay differences are similar to the pay discrepancies between school and non-school personnel in other states.
- Nearly all occupations in the school sector in Montana are paid about 80% of what similar workers in schools in other states are paid. This is similar to the pay gap between Montana and other states in the non-school sector.

Limitations of the Current Study and Suggestions for the Future

This study has analyzed the relationship between compensation and recruitment and retention problems. We were not asked, and have not sought to answer, the broader and in some ways philosophical question of, "how much should teachers be paid?" Rather the analysis has focused exclusively on the relationship between compensation and recruitment/retention. From that perspective, we have reached the conclusions described above.

Several problems were encountered in the course of this study, some of which could be remedied in order to provide the basis for improved future work. As described in detail in Section IV, the data on personnel openings at the district level could be substantially improved. It would be very helpful, for example, if districts would report the number of teacher and other openings every year, even if just to say that it is zero. In addition, even when districts do report, the data are sometimes quite inaccurate. These problems are concentrated in the smaller districts, but sometimes large districts also fail to report or do so inaccurately.

Compensation data are also weak at both the district and state levels. Within Montana, three different surveys report benchmark salary data but only one of these is done annually, and the benchmarks are not entirely consistent (“starting” and “low” salaries are not necessarily the same). Data on benefits, particularly medical insurance, are even weaker. These problems are also concentrated in the smaller districts. While the smaller districts include relatively few teachers, they often have the most severe recruitment and retention problems, and hence accurate data for them would be most helpful in addressing these problems. In addition there is no data on supplemental compensation provided for additional duties such as coaching. The same remarks generally apply to cross-state comparisons: Data on benefits and supplemental compensation are not generally available.

Appendix

Table A1. Surveys of Recent Elementary and Secondary Education Majors

Year	School	Number of graduates	% Graduates who Responded to School Survey	% Respondents Working in Teaching Montana
2000	MSU - Bozeman	147	29%	33%
	UM - Missoula	225	55%	50%
	UM - Dillon	96	63%	43%
	MSU - Billings	146	75%	73%
	MSU - Havre	65	32%	76%
	State average	**679**		**53%**
2004	MSU - Bozeman	133	55%	34%
	UM - Missoula	215	56%	54%
	UM - Dillon	75	77%	47%
	MSU - Billings	124	.86%	78%
	MSU – Havre (2003)	68	46%	78%
	State average	**615**		**56%**

From College of Education or Career Services surveys of graduates. Rocky Mountain College, Carroll College, and UGF, Great Falls did not collect data on the state where graduates worked.

A. Salary Growth

Data on teacher salaries at the MA + 10 years of experience level are available for a limited number of districts. Combining the data for all three fiscal years, a total of 713 observations are available. We create a salary growth variable based on the annual average increase in salary from the first year to the 11th year. That is salary growth is defined to be: (MA10 salary – starting salary)/10.

The table below displays average turnover, difficulty hiring, and percentage of schools with misassigned teachers for the 713 districts for whom salary growth could be computed. Of these 713, only 439 reported data on difficulty hiring.

Table A2 Recruitment and Retention by Salary Growth

(MA10 Salary – Starting Salary)/10	Turnover	Difficulty	Misassigned
≤ $1,000 per year	10.8%	2.4	13.1%
$1,000 to $1,300 per year	8.3%	2.3	11.5%
≥ $1,300 per year	6.5%	2.2	7.1%

B. Regression Analysis

The following table displays results of the regression analyses of Turnover, Difficulty Hiring, and Schools with Misassigned Teachers. This analysis provides estimates of the effects of each of the variables, controlling for the others. The first entry in each cell is the estimated coefficient. The absolute value of the t-statistic is displayed below the coefficient. Approximate significance levels for the t-statistics are:

$t > 1.65$: 10%
$t > 1.96$: 5%
$t > 2.58$: 1%

Table A3 Regression Analysis

Dependent Variable	*Turnover*	*Difficulty*	*Misassigned*
Independent Variables			
Teachers (FTE)	-0.0098	-0.001	-0.005
	3.8	5.0	0.7
Low Salary	2.24	0.18	6.43
	1.8	1.5	2.8
High Salary	0.86	-0.01	-2.32
	1.1	0.2	1.1
No Salary Data	3.40	0.16	-5.69
	2.3	1.2	2.3
Insurance	-0.217	-0.026	0.069
	1.5	2.3	0.2
Isolation	0.095	0.009	0.0081
	2.7	1.6	0.3
Elementary	-0.44	-0.26	-7.58
	0.5	3.4	3.8
High School	2.15	0.03	7.55
	1.9	0.3	2.9
Free/Reduced Lunch (%)	5.98	0.074	2.57
	2.2	0.3	0.6
Nonwhite (%)	-0.58	0.17	-8.20
	2.1	1.0	2.0
Region 1	-5.09	0.12	5.94
	4.6	1.4	2.4
Region 2	-4.58	-0.03	2.68
	5.1	0.4	1.1
Constant	10.38	2.35	12.2
	1.6	19.3	3.7
R^2	.06	.23	.10
Observations	1211	670	1211

Definitions of the salary groups are provided in the body of the text. The omitted group is the medium salary districts. Therefore the coefficient on the Low Salary variable refers to the difference between the low salary districts and the medium salary districts. The coefficient on the High Salary variable refers to the difference between the high salary districts and the medium salary districts.

Insurance is the employer's contribution toward medical insurance for a single employee, measured in thousands of dollars per year. Thus, the coefficient in the turnover equation implies that an increase in employer insurance contribution of $1,000 per year reduces turnover by 0.2 percentage points, other factors held constant.

Isolation is measured in square miles per student. See the body of the report.

Elementary is a dichotomous variable = 1 if the district is an elementary district; 0 otherwise.
High School is a dichotomous variable = 1 if the district is a high school district; 0 otherwise.
The omitted school type is K-12.

Free/Reduced Lunch is the percentage of students in the district eligible for free or reduced price lunches.

Nonwhite is the percentage of students in the district who are nonwhite.

Region 1 includes to Big Horn, Blaine, Carter, Chouteau, Custer, Daniels, Dawson, Fallon, Fergus, Garfield, Glacier, Golden, Hill, Judith Basin, Liberty, McCone, Musselshell, Petroleum, Phillips, Ponderosa, Powder Horn, Prairie, Richland, Roosevelt, Rosebud, Sheridan, Stillwater, Sweet Grass, Teton, Toole, Treasure, Valley, Wheatland and Wibaux counties.

Region 2 includes Beaverhead, Broadwater, Deer Lodge, Flathead, Gallatin, Granite, Jefferson, Lake, Lewis and Clark, Lincoln, Madison, Meagher, Mineral, Park, Powell, Ravalli, Sanders, and Silver Bow counties.

The omitted region contains the remainder of the counties.